

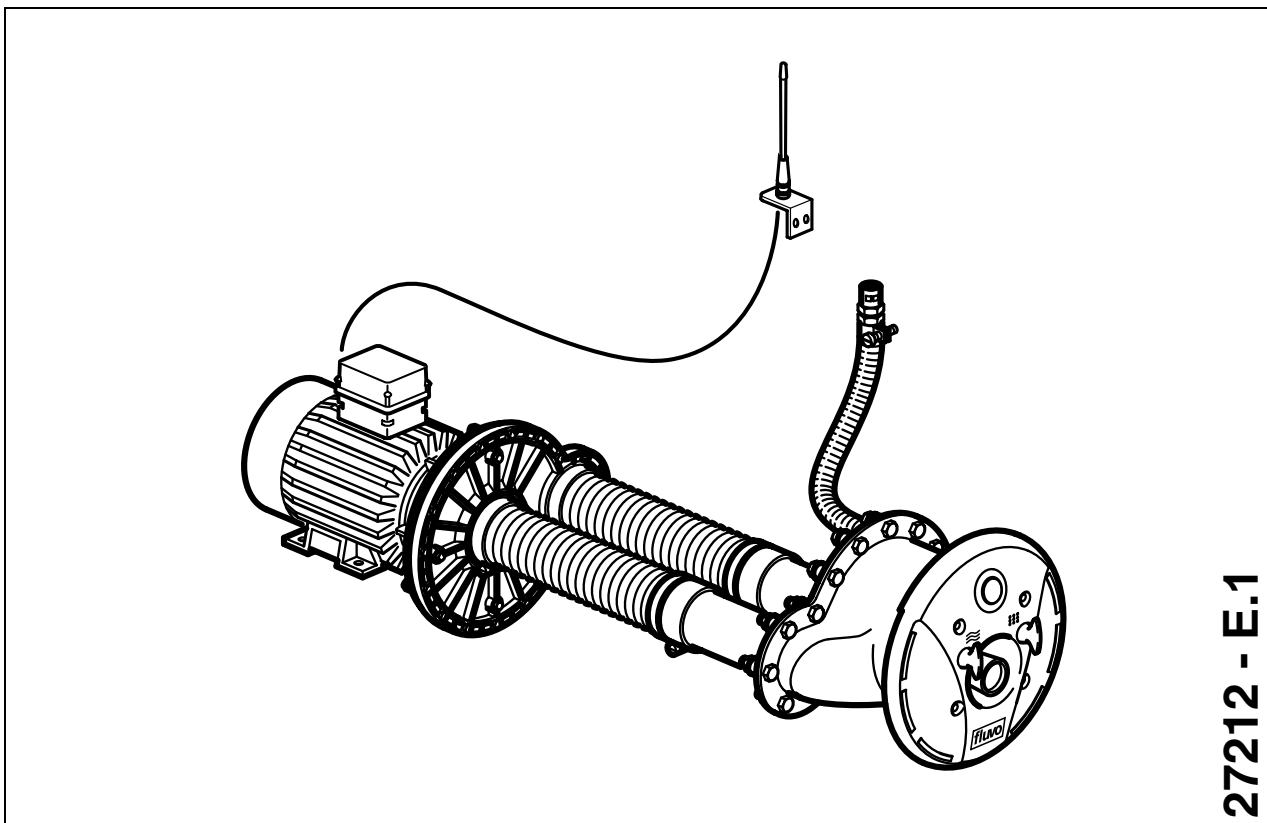
D

F

GB NT2G rondo

I

E



27212 - E.1

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1 General

1.1 Guarantee notice

If the instructions contained in this operator's manual are not observed then any claims under guarantee shall be void.

1.2 General

All parts coming into contact with media are designed for water quality to DIN 19643.

This counter-current swimming system is of state-of-the-art technology.

This manual does not take into account local regulations, the observance of which is the responsibility of the operator – also on behalf of installation personnel that may be involved.

The type plate specifies the machine series, the frame size, the most important operating data and the serial number. Please be sure to quote it in case you require more information and also when placing subsequent orders or ordering spare parts.

1.3 Usage Instructions

The counter-current system was designed for use in private swimming pools. Consequently it must not be installed in public swimming pools. Neither the entire unit nor parts thereof must be used in other systems. You are expressly directed to use it only in accordance with these instructions.

The counter-current system must not be operated beyond the parameters stated in the technical data (3.1). In case of doubt, please contact your customer service or the manufacturer.

2 Safety Instructions

2.1 General

- **Prior to starting up, make sure that the operators have read and understood the operator's manual. Not the operator but the owner is responsible for safety!**
- Make sure that the relevant safety regulations and laws are observed in the operating company and / or country where the counter-current systems are to be used.
- All parts that come into contact with the medium are resistant to an absolute salt content of up to 0.75% (4,500 mg/l Cl⁻). If the salt concentrations are greater than this, the manufacturer must be consulted.
- Use the counter-current system only if it is in perfect technical condition, in accordance with the regulations, observing safety requirements and danger conditions and strictly adhering to all the instructions in the operator's manual!
- Promptly remedy any faults that could influence safety.



For more details of safety instructions please see the operator's manual WK (27220).

2.2 Symbols

In these operating instructions the following symbols are used to draw your special attention to dangers:

**Warning! Danger of injury! / Warning! Risk of damage!**

This symbol warns you of dangers through mechanical effects and also warns of handling that could damage the product.

**Warning! Mortal danger!**

This sign warns you of the danger from electric shocks.

Notices attached directly to the counter-current system, e.g. **the arrow indicating the direction of rotation**, must always be observed and maintained in a clearly legible condition.

2.3 Safety Instructions for the Operator

1. Electrical equipment must be installed and maintained by qualified electricians. The appropriate local safety requirements and installation regulations must be observed. The expression "qualified person" is defined in VDE 0105 and IEC 364. There is no information contained in this operator's manual for unqualified persons. It must be pointed out that EU regulations prohibit the use of unqualified persons on electrical systems.
2. The details on the type plate must correspond to the electrical supply being connected to.
3. The counter-current system may only be operated using an earth leakage circuit breaker.
4. Under no circumstances must there be any conducting connection between the metal parts of the motor and the water.
5. If the counter-current system is built into a pump pit then it must be ensured that there is enough ventilation (for cooling the motor) and enough drainage facility for leaked water (at least DN 40).
6. Prior to carrying out repairs to the counter-current system it must be isolated from the electrical supply and protected from unintentional switching on.
7. Regardless of what nature they may be, repairs must only be carried out by qualified persons and the counter-current system must be emptied first.
8. The operator must ensure that
 - the operator's manual is always available for users to read,
 - instructions in the operator's manual are being observed,
 - the counter-current system is immediately stopped if abnormal electrical voltages, temperatures, noises, vibrations, leakages or other faults should arise.



9. Persons who are likely to be endangered by radio waves (e.g. wearers of heart pace makers) should not linger close to this counter-current swimming system with radio control. In such cases it is recommended to employ some other form of control (external or pneumatic).

3 Unit Description / General Technical Data

- The counter-current system complies with VDE (Association of German Engineers) regulations.
- The electric motor and the water conducting plastic pump are electrically separated.
- The electric motor complies with protection class IP 55.
- The entire counter-current system complies with protection class I.

The counter-current system is delivered as 3 assemblies:

1. Pump kit
2. Assembly kit
3. Installation kit

3.1 Technical Data

| System type | NT2G rondo 1.5 | NT2G rondo 1.5 WS* | NT2G rondo 1.9 | NT2G rondo 1.9 WS * | NT2G rondo 3.0 |
|---------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Power | 1.5 kW | 1.5 kW | 1.9 kW | 1.9 kW | 3.0 kW |
| Voltage [V] | 400 Y / 230 Δ | 230 Δ | 400 Y / 230 Δ | 230 Δ | 400 Y / 230 Δ |
| Frequency | 50 Hz | 50 Hz | 50 Hz | 50 Hz | 50 Hz |
| Current | 2,86 A | 9.5 A | 3,6 A | 11.5 A | 5,75 A |
| RPM | 2840 rpm | 2790 rpm | 2850 rpm | 2820 rpm | 2810 rpm |
| Delivery | 42 m ³ /h | 42 m ³ /h | 48 m ³ /h | 48 m ³ /h | 60 m ³ /h |
| Delivery pressure | 1.2 bar | 1.2 bar | 1.4 bar | 1.4 bar | 1.9 bar |
| Max. speed 2 m in front of the nozzle | 1.15 m/s | 1.15 m/s | 1.3 m/s | 1.3 m/s | 1.6 m/s |
| Max. water temperature | 50 °C | 50 °C | 50 °C | 50 °C | 50 °C |
| Expected sound pressure level | 65 + 2 dB (A) | 65 + 2 dB (A) | 67 + 2 dB (A) | 65 + 2 dB (A) | 70 + 2 dB (A) |
| Weight | 26 kg | 26 kg | 27 kg | 27 kg | 39 kg |

*AC = Alternating current

3.2 Device Units

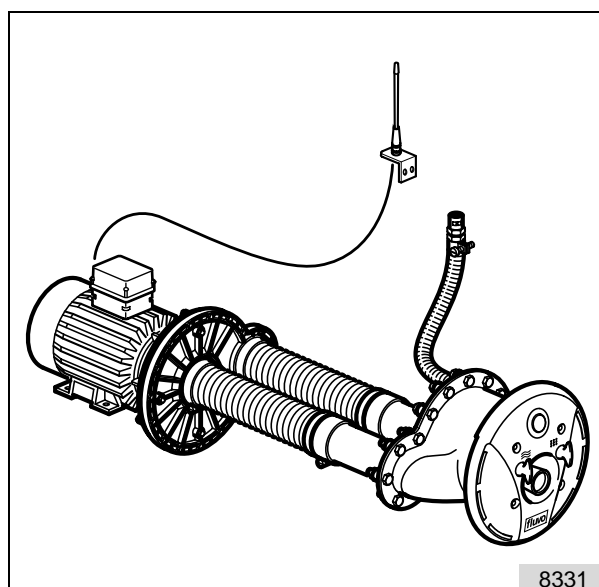


fig. 1

Overview of the Counter-current System

The counter-current system consists of:

1. Pump kit
2. Assembly kit
3. Installation kit

The installation kit is always different depending on the pool type.

There are 4 kinds of pool:

- Concrete-tile pool
- Concrete-liner pool
- Pre-fabricated pool (steel, plastic or similar)
- Wood-liner pool

The item numbers correspond to the numbers in the parts list.

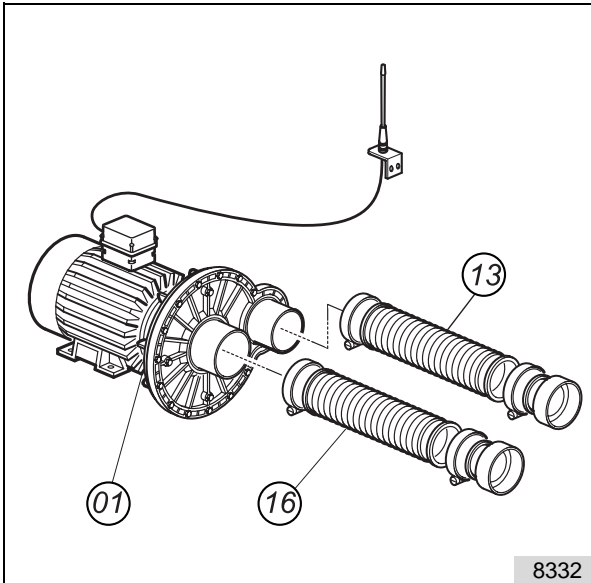


fig. 2

I - Pump kit

The pump kit consists of:

- | | |
|------------------|----------|
| 1. Pump assembly | Item 01* |
| 2. Suction hose | Item 16 |
| 3. Pressure hose | Item 13 |

*The pump kit is always identical no matter what sort of pool it is intended for.

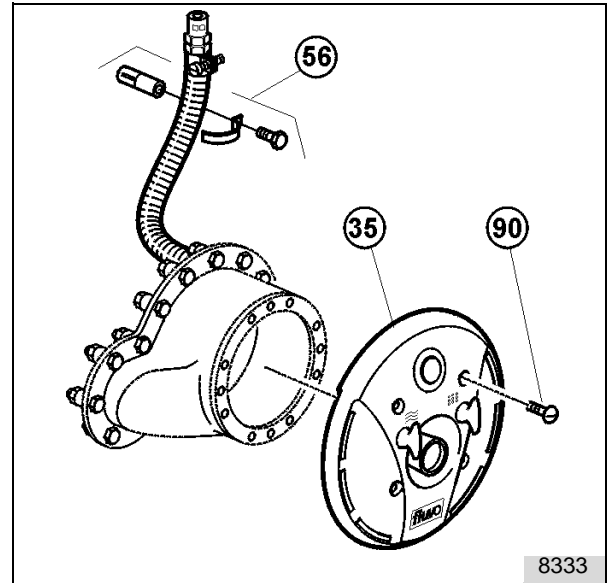


fig. 3

II - Assembly kit

The assembly kit consists of:

- | | |
|--|---------|
| 1. Face plate assembly | Item 35 |
| 2. Mounting screws | Item 90 |
| 3. Fixing bracket for non-return air valve | Item 56 |

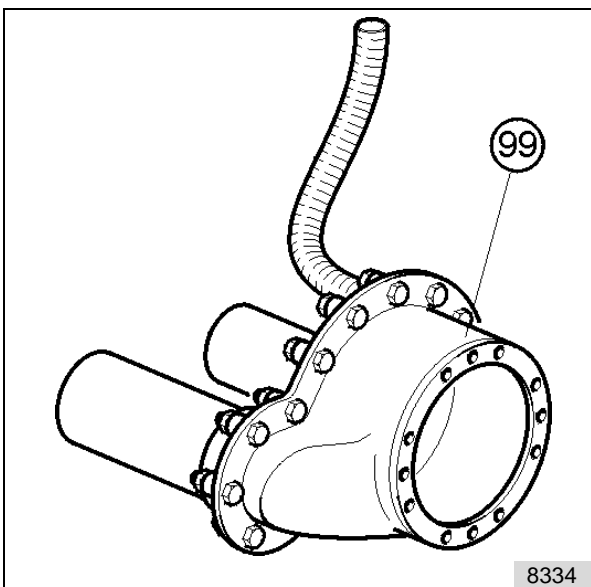


fig. 4

III - Installation kit / Concrete-tile pool

The installation kit consists of:

- | | |
|-------------------------|---------|
| 1. Installation housing | Item 99 |
|-------------------------|---------|

The installation kit is concreted into the concrete wall of the pool.

For details regarding installation, please see section 4.

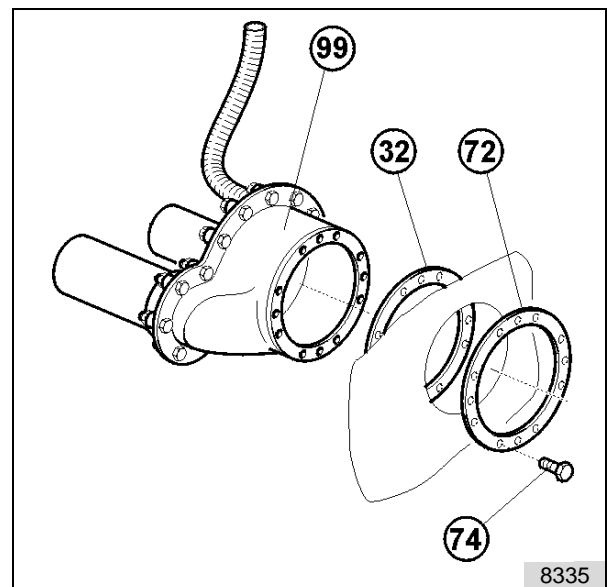


fig. 5

III - Installation kit for concrete-liner pool

The installation kit consists of:

- | | |
|-------------------------|---------|
| 1. Installation housing | Item 99 |
| 2. Clamp ring | Item 72 |
| 3. Clamp gasket | Item 34 |
| 4. Mounting screws | Item 74 |

Note: Parts 2 to 4 are delivered with the face plate assembly.

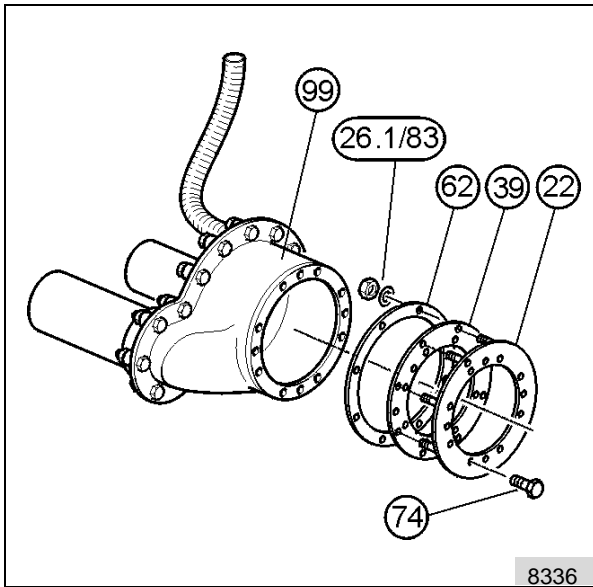


fig. 6

III - Installation kit for pre-fabricated pool

The installation kit consists of:

- | | |
|---|--------------|
| 1. Housing | Item 99 |
| For details regarding installation, please see section 4. | |
| 2. Hold-ring | Item 62 |
| 3. Clamp gasket | Item 39 |
| 4. Clamp ring | Item 22 |
| 5. Mounting screws | Item 74 |
| 6. Nuts and washers | Pos. 26.1/83 |

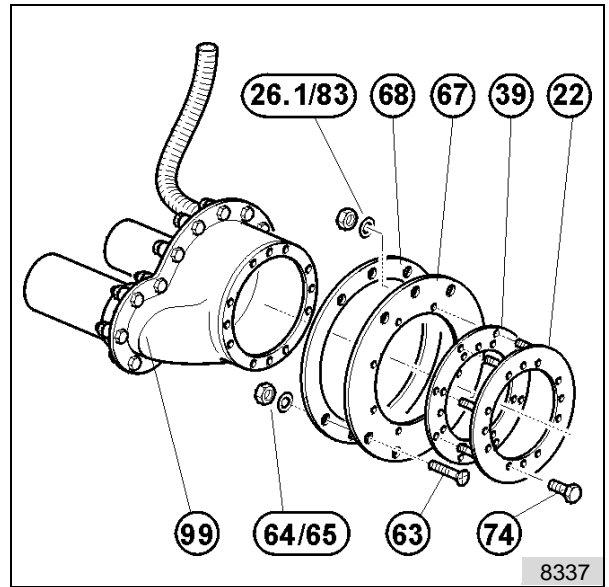


fig. 7

III - Installation kit for wood-liner pool

The installation kit consists of:

- | | |
|---|----------------------|
| 1. Housing | Item 99 |
| For details regarding installation, please see section 4. | |
| 2. Hold-ring | Item 68 |
| 3. Clamp ring | Item 67 |
| 4. Clamp gasket | Item 39 |
| 5. Clamp ring | Item 22 |
| 6. Mounting screws | Items 63/74 |
| 7. Nuts and washers | Items 64/65 84/85 |

4 Installation Site Specifications and Installation
4.1 Base frames for the installation

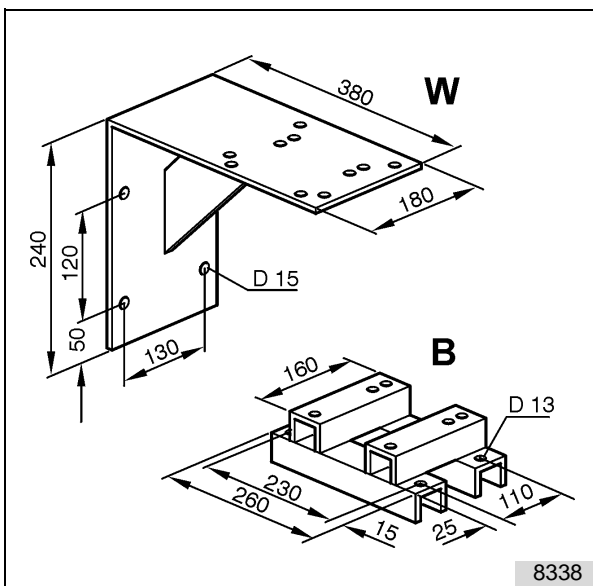


fig. 8

There are two base frames available that must be ordered separately to suit local circumstances.

1. **W** = for wall mounting
2. **B** = for floor mounting



Warning! Risk of damage!

As the pumps are not self-priming, the installation must be under water level. Make sure you take this into account during the installation planning phase.

4.2 Planning the pump pit

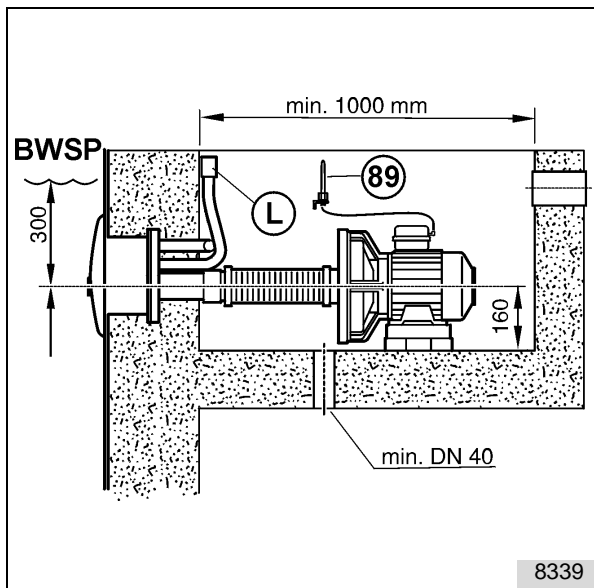


fig. 9: Cross-sectional view of the pump pit

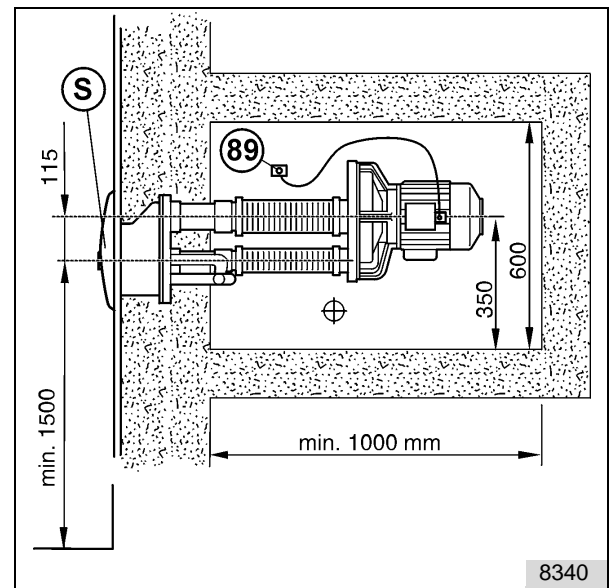


fig. 10: Top view of the pump pit

BWSP Pool water level (PWL)

L Air valve

89 Fixing bracket including aerial

S Transmitter

89 Fixing bracket including aerial

When planning a pump duct take into account:

1. Clear dimensions min. 600 x 600 x 600
2. Return connection min. 300 mm under the pool water level
3. Leakage water discharge pipe-end min. DN 40
4. Opening for cooling air min. 2x DN 125
5. Be sure to cover the pump pit if it is installed in the open air.
6. Power supply cable:



Warning! Mortal danger!

The mains power supply cable must be equipped with an all-pole separator with a contact opening of 3 mm.

7. The position of the non-return air valve (L) must always be over the **pool water level**.
8. In case of leakage from the pump, a suitable water drainage must be provided!

4.3 Installation Preparations / Concrete pool

Tailor the installation kit:

Place the installation kit on the formwork board and transfer the bore holes. Bore the holes into the pool-side formwork board (Pb). Mark out and cut holes into the outer formwork board (P) for the suction and pressure supplies and the two hoses.

Screw the installation kit complete with the mounting protection film (C) tightly to the pool-side formwork board (Pb).



Warning! Risk of damage!

1. The installation kit must be horizontal!
2. The distance between the centre of the installation kit and the water level (BWSP) must be 275 mm.

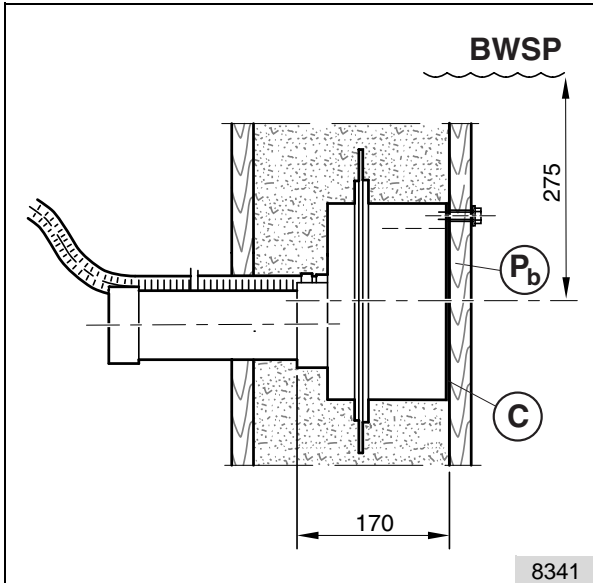


fig. 11

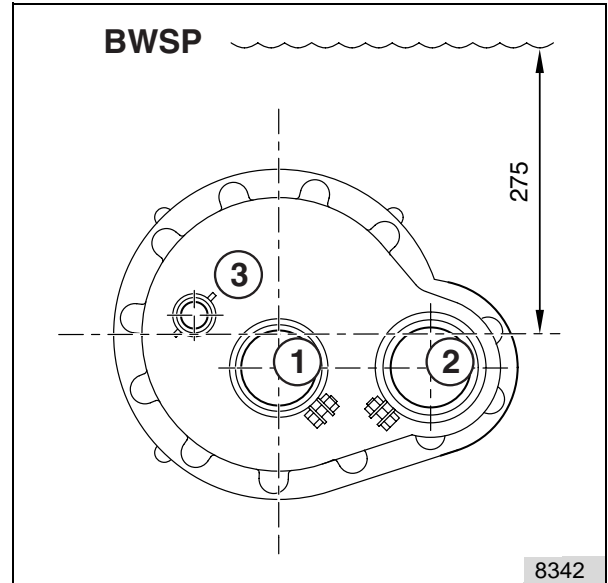


fig. 12: Rear of the installation kit

- C* Mounting protection film
P Outer formwork board
P_b Pool-side formwork board

1. Pressure pipe (DN 50)
2. Suction pipe (DN 65)
3. Air supply to the non-return air valve

4.4 Installation Preparations / Pre-fabricated pool

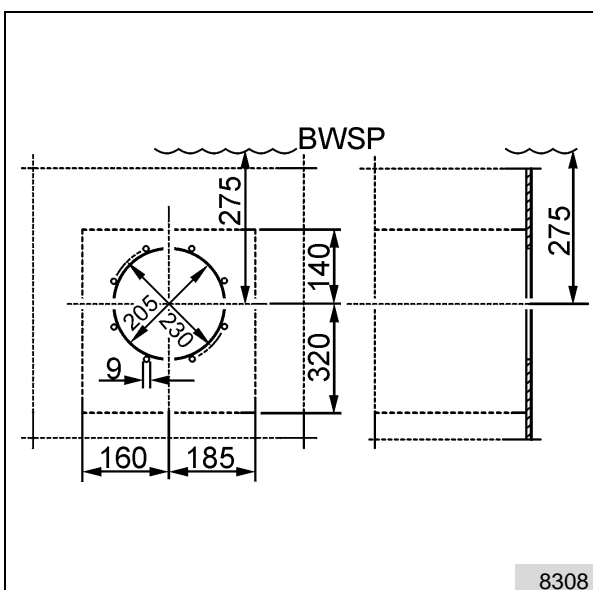


fig. 13: Boring diagram

Tailor the installation kit

Apply the cavity \varnothing 205 and the mounting holes \varnothing 9 to the pool wall.



Warning! Risk of damage!

The hold-ring (68) must be used as a template. Take note of the asymmetrical position of the holes!

4.5 Installation Preparations / Wood-liner pool

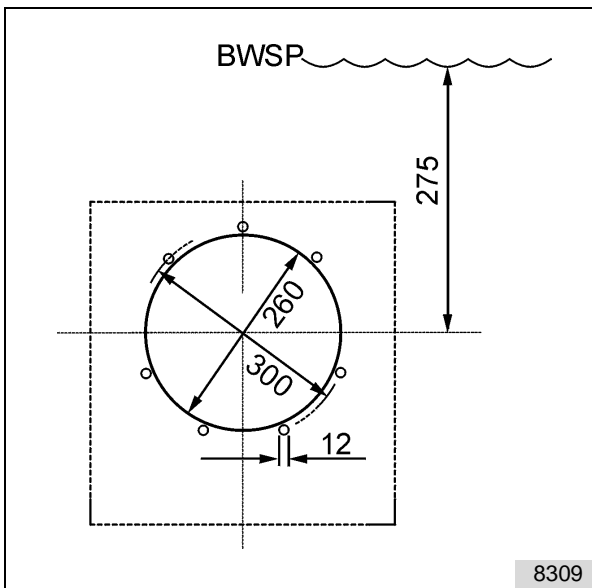


fig. 14: Boring diagram

Tailor the installation kit

Apply the cavity \varnothing 260 and the mounting holes \varnothing 12 to the pool wall.



Warning! Risk of damage!

The hold-ring (62) must be used as a template.

For backfilling the pool ensure that there is a cavity at least the size of the dotted lines.

4.6 Installation - general

Place the base frame in the desired position. Fasten the base frame with 4 screws (S).

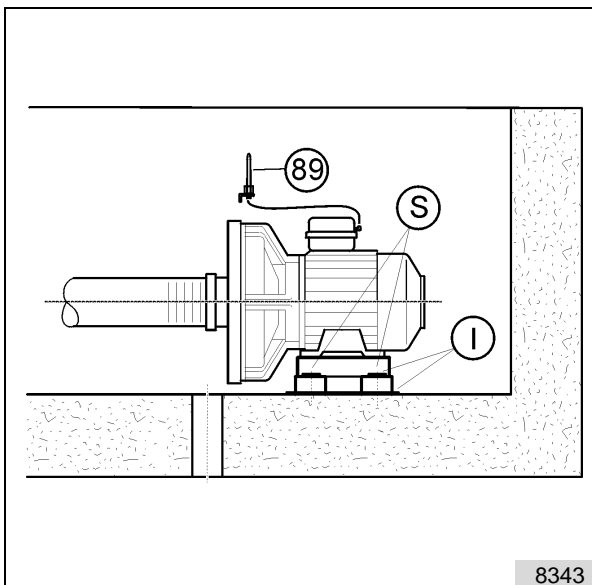


fig. 15

- I* *Insulation*
- S* *Screw*
- 89* *Fixing bracket including aerial*



Warning! Mortal danger!

If the motor is to be installed with a metal supporting foot, then it must be fastened insulated against the floor to avoid the transfer of spurious voltages to the device and swimming pool water.

4.7 Installation kit Installation / Pre-fabricated pool

Mount the clamp ring (22) with the clamp gasket (39) and the hold-ring (62) to the pool wall.

The sealing contact faces must be clean and smooth.

Then mount the installation housing (99) on the clamp ring (22) with the screws (74).

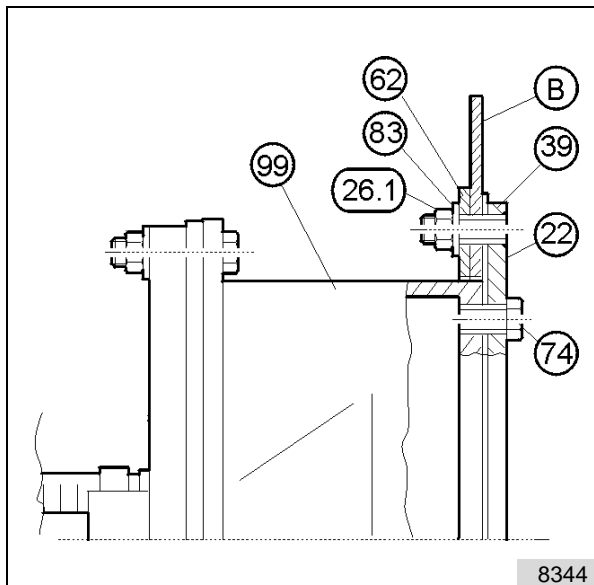


fig. 16

| | |
|-------------|-----------------------------|
| <i>B</i> | <i>Pool wall</i> |
| <i>22</i> | <i>Clamp ring</i> |
| <i>26.1</i> | <i>Hexagon nut</i> |
| <i>39</i> | <i>Clamp gasket</i> |
| <i>62</i> | <i>Hold-ring</i> |
| <i>74</i> | <i>Hexagon screw</i> |
| <i>83</i> | <i>Distance washer</i> |
| <i>99</i> | <i>Installation housing</i> |

4.8 Installation kit Installation / Wood-liner pool

Mount the hold-ring (67) with the distance washer (68) to the pool wall.

Hang in the liner (L). Fasten the liner (L) and the clamp gasket (39) together with the clamp ring (22) and cut out the liner (L). Then mount the installation kit (92) on the clamp ring (22) with the screws (74). See also detail X in fig. 18.

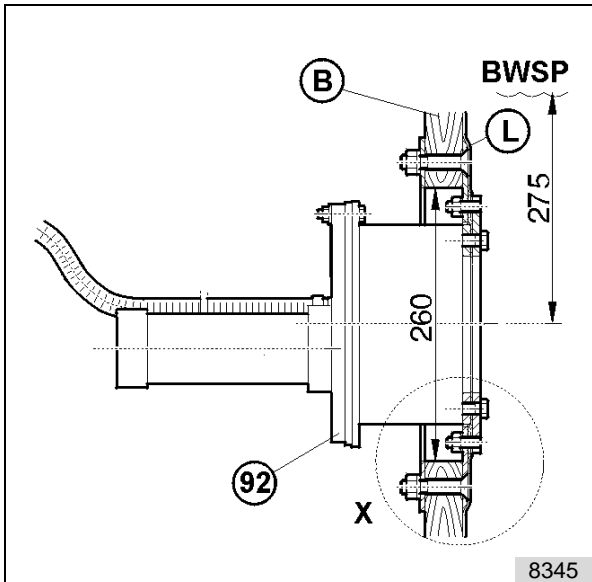


fig. 17

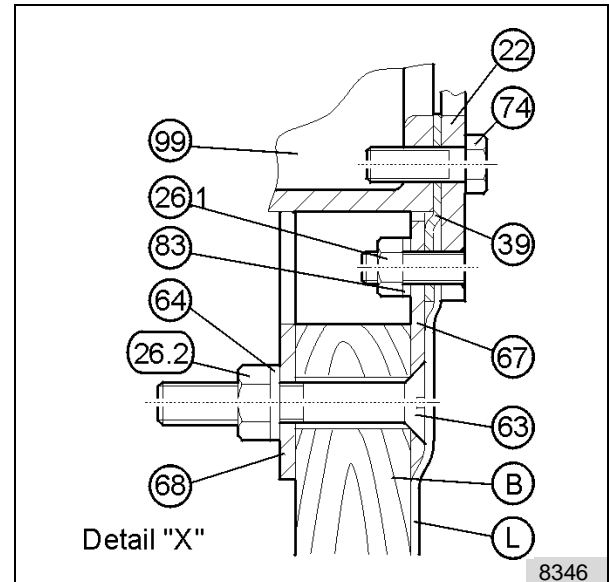


fig. 18: Detail X

B Pool wall
L Pool liner

22 Clamp ring
26.1 Hexagon nut
26.2 Hexagon nut
39 Clamp gasket
63 Countersunk screw

64 Distance washer
67 Hold-ring
68 Distance washer
74 Hexagon screw
83 Distance washer
92 Installation kit
99 Installation housing

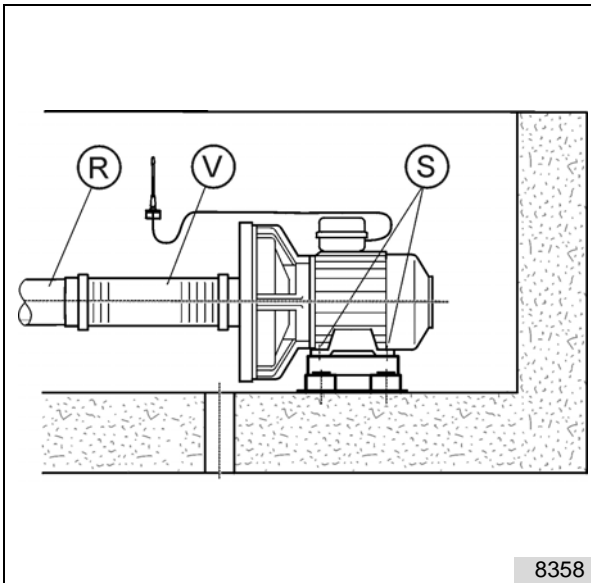
4.9 Pump Kit Installation

Mount the pump free of all tension with the hexagon screws M8 (S) on the base frame.



Warning!

1. Do not use any vibration dampers between the pump and the base frame.
2. If the pipework (R) to the pump is longer than 6 m then the nominal width must be increased.
 - Suction side from DN 65 to a min. of DN 80
 - Pressure side from DN 50 to a min. of DN 65.
3. Then always mount the adaptors (V) on the pump body.

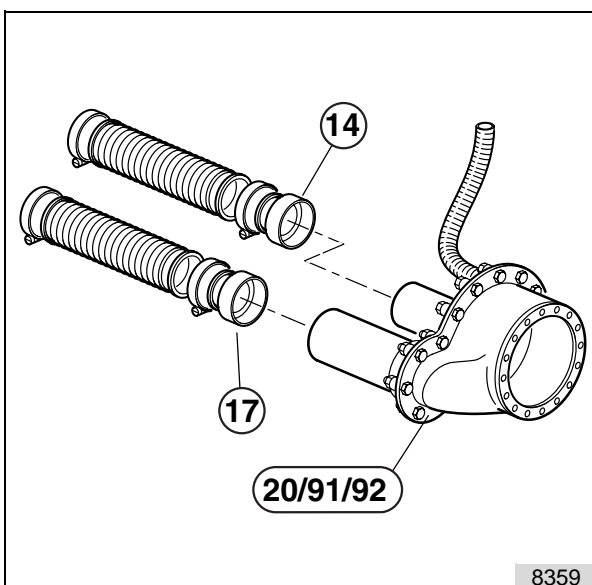


- R *Pipework*
- S *Hexagon screws M8*
- V *Adaptor*

fig. 19

4.9.1 Connection to the pool

Stick the adaptors (14+17) to the pipe connection on the installation kit (20/91/92). Alternatively, by using pipework, mount to the pump-side end of the pipework.



- 14 *Return connection*
- 17 *Suction connection*
- 20/91/92 *Installation kit*



Warning!

Always be sure to lay the pipework using bends and not angles to keep the pipe resistance to a minimum.

fig. 20

4.9.2 Connection to the pump

Connect the hose lines (13 pressure side + 16 suction side) to the pump body. Use the corresponding air pipe clamps (12.1, 12.2) on both sides for this.

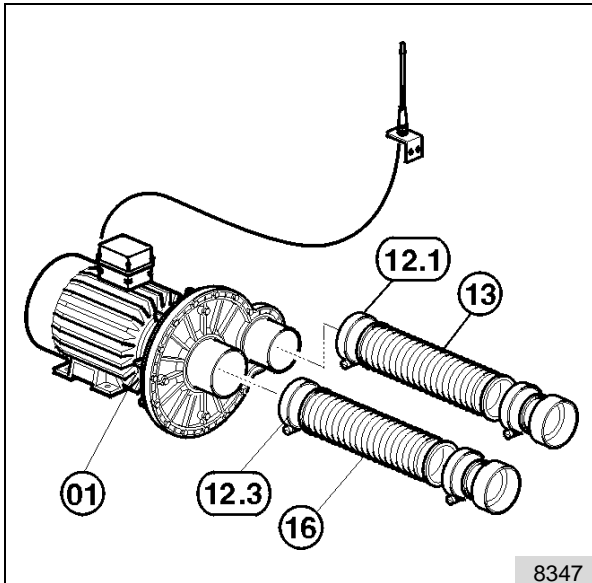


fig. 21

- 01 Motor
- 12.1 Air pipe clamp
- 12.3 Air pipe clamp
- 13 Hose line pressure side
- 16 Hose line suction side



Warning!

Make sure that the connections from the body of the pump to the installation kit / pipework are as nearly aligned as is possible.

The hose lines must always be attached to the pump on the one side (compensator function), see fig. 21.

4.9.3 Installing the aerial

Mount the aerial (33) with the fixing bracket (89) parallel to the pool wall close to the transmitter (S).

Keep the distance between the transmitter (S) in the face plate assembly and the aerial (33) as short as possible.

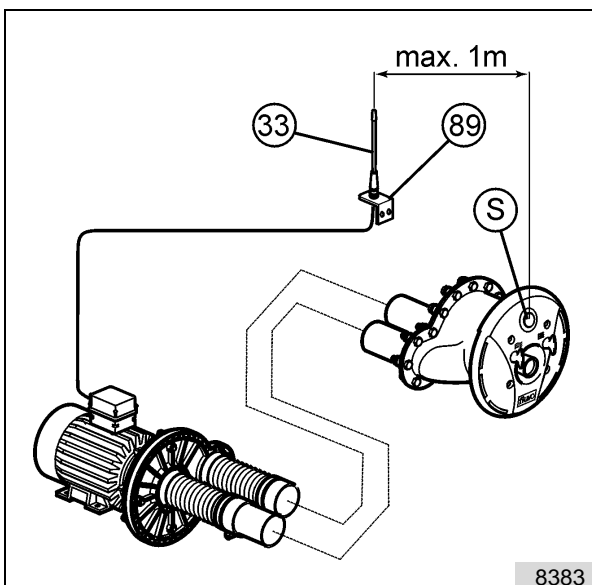


fig. 22

- S Transmitter
- 33 Aerial
- 89 Fixing bracket



Warning!

The direct distance between the transmitter (S) and the aerial (33) must not exceed 1m!

The aerial must not be put into the protective hose of the installation kit.

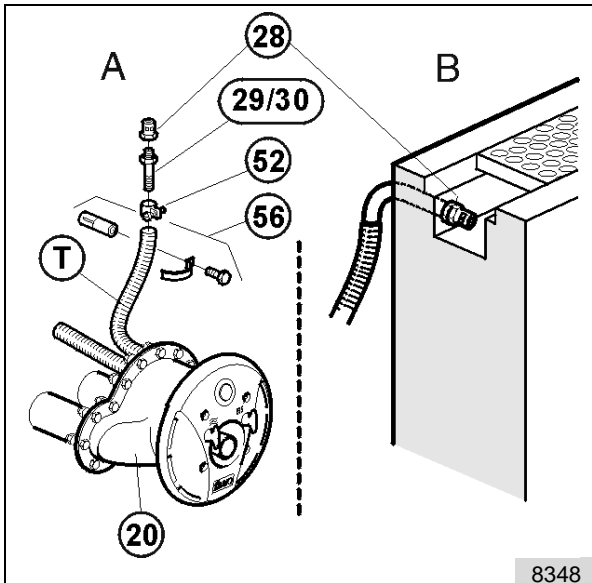
4.9.4 Non-return air valve Installation

Connect the non-return air valve (28) and the air line hose tail (29) to the air hose (T). Warm the air hose (T) up prior to connecting. Fasten with the air pipe clamp (52). Fasten the non-return air valve (28) with the fixing bracket (56) to the pool wall or similar. In the case of a ground level overflow, place the non-return air valve (28) in the duct, see fig. 23, detail B.



Warning!

For the positioning of the non-return air valve (28) be sure to observe the details stated in section 4.2, Planning the pump pit.

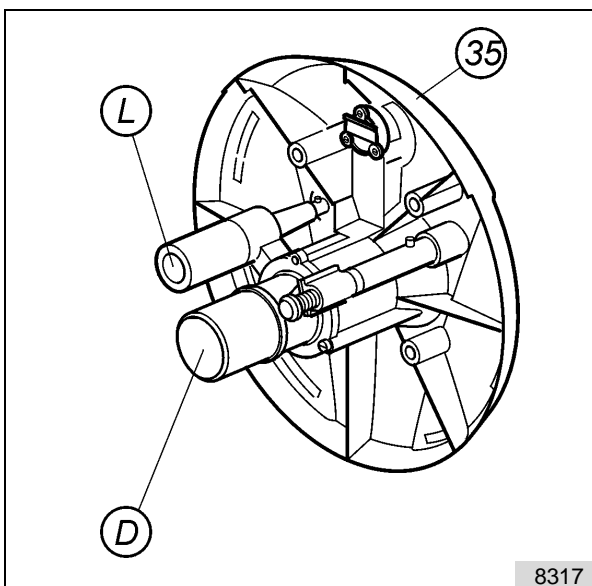


- T Air hose
- 20 Installation kit
- 28 Non-return air valve
- 29 Air line hose tail
- 30 Hose tail
- 52 Air pipe clamp
- 56 Fixing bracket

fig. 23

4.10 Mounting the face plate assembly

Figure 24 shows the rear of the face plate assembly.

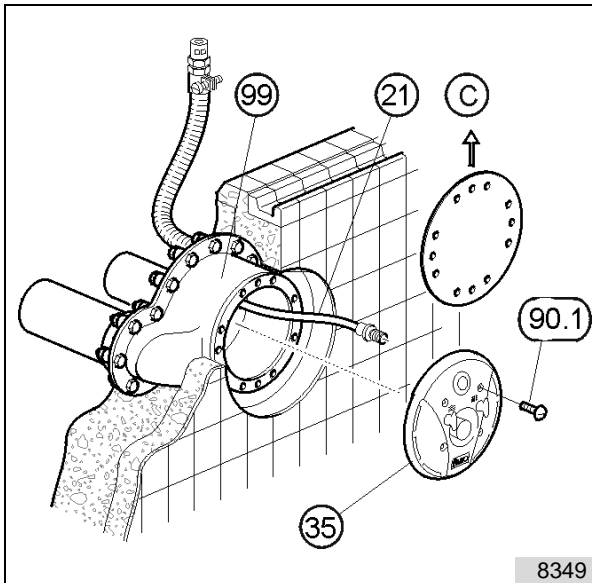


- D Return connection
- L Air connection
- 35 Face plate assembly

fig. 24

4.10.1 Face plate assembly Installation / Concrete-tile pool

Remove the mounting protection film (C). Put on the face plate assembly (35), this allows the pressure connection (D) and air connection (L) to slide into one another. Fasten to the installation housing (99) with the screws (90.1).



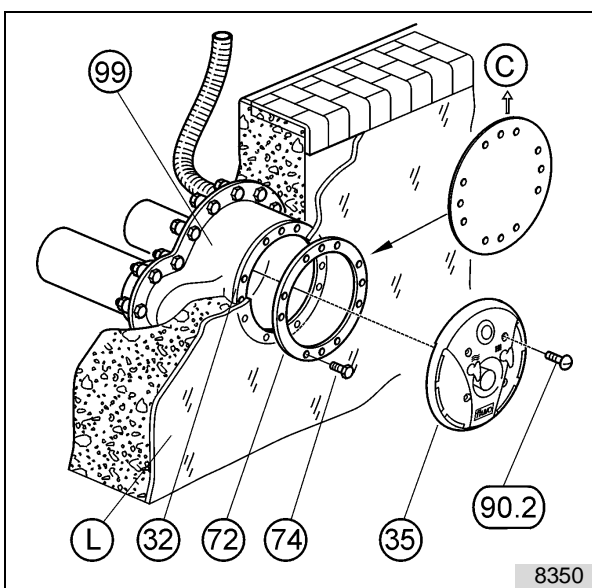
- C *Mounting protection film*
- 35 *Face plate assembly*
- 90.1 *Screw*
- 99 *Installation housing*

fig. 25

4.10.2 Face plate assembly Installation / Concrete-liner pool

Remove the mounting protection film (C). Place the clamp gasket (32) between the installation housing (99) and the liner (L) and screw the clamp ring (72) to the installation housing (99) using the screws (74). The sealing contact faces must be clean and smooth. Now cut out the pool liner (L).

Put on the face plate assembly (35), this allows the pressure connection (D) and air connection (L) to slide into one another. Fasten to the clamp ring (72) with the screws (90.2).



- C *Mounting protection film*
- 32 *Clamp gasket*
- 35 *Face plate assembly*
- 72 *Clamp ring*
- 74 *Screw*
- 90.2 *Screw*
- 99 *Installation housing*

fig. 26

4.10.3 Face plate assembly Installation / Pre-fabricated pool

Put on the face plate assembly (35), this allows the pressure connection (D) and air connection (L) to slide into one another. Fasten to the clamp ring (22) with the screws (90.3).

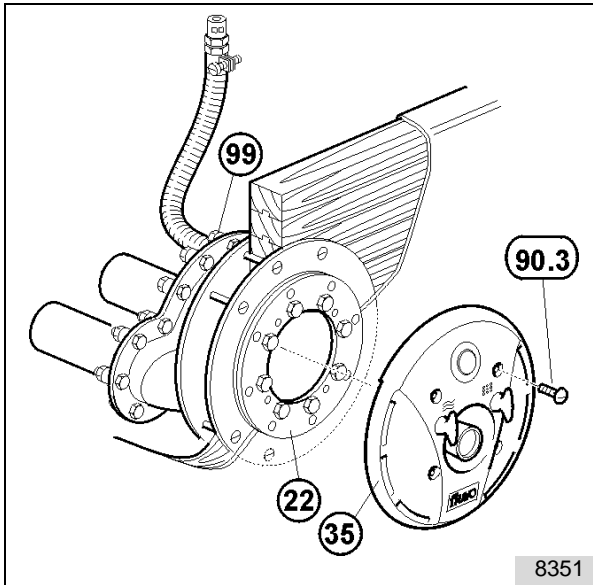


fig. 27

- 22 Clamp ring
- 35 Face plate assembly
- 90.3 Screw
- 99 Installation housing

4.10.4 Face plate assembly Installation / Wood-liner pool

Put on the face plate assembly (35), this allows the pressure connection (D) and air connection (L) to slide into one another. Fasten to the clamp ring (22) with the screws (90.3).

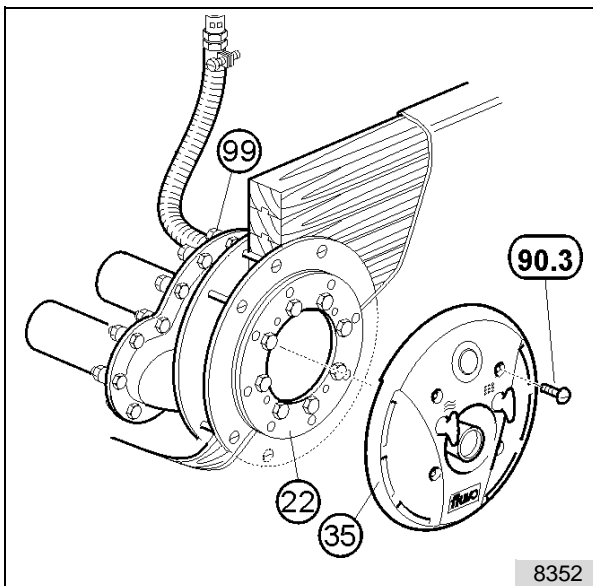


fig. 28

- 22 Clamp ring
- 35 Face plate assembly
- 90.3 Screw
- 99 Installation housing

5 Electrical Connections

5.1 Electrical Connections - general

The electrical connections to the counter-current swimming system must be carried out by a specialised company in the electrical engineering branch approved by the local energy provider, taking into account the technical connection requirements.



Warning! Mortal danger!

The connections must be carried out by a qualified electrician.

For this refer to the **TAB of the EVS**, the **VBG 4(§3)** and **DIN VDE 1000-10/1995-5, for example.**

The relevant **DIN VDE (Association of German Engineers) regulations 0100** and in the case of explosion protection **0165** must be observed.

If the installation is not carried out properly, there is a risk of getting electric shocks!



Warning!

Compare the available power supply voltage with the details on the motor's factory plate and select the appropriate switching.

We recommend the use of a motor protection facility. Explosion protected motors, increased safety (Ex)–e and temperature class T3, must always be connected in accordance with DIN VDE 0170/0171 via a motor protection switch. Connect the motor in accordance with the circuit diagrams in sections 5.3 and 5.4.

Please observe:

- The mains power connection must be a fixed connection.
- Under no circumstances must there be any conducting connection between the metal parts of the motor and the water.
- An earth leakage circuit breaker (nominal fault current ≤ 30 mA) must be fitted to the mains power connection.
- The mains power supply cable must be equipped with an all-pole separator with a contact opening of 3 mm.
- At the marked connection terminal (at the foot of the motor or next to the terminal box) an equalising potential with a cross-section of 10 mm² must be fitted.
- The counter-current swimming system must only be operated provided that the terminal box lid is closed!

5.1.1 Direction of rotation check

In the case of 3~ motors the direction of rotation must be the same as the direction of rotation arrow on the blower cover of the counter-current swimming system .



Warning!

Check by rapidly switching on and off.

If the direction of rotation is wrong for 3~ motors, change any two phases L1, L2 or L3 of the power supply in the motor terminal box over.

5.1.2 Additional motor equipment

**Warning!**

If particular control devices are to be used e.g. in connection with the installation of the counter-current swimming system in a process engineering facility, the instructions of the manufacturer of the control device must be strictly observed.

5.2 Electrical Connections AC

Mains voltage: 230 V for 1 ~ AC
 Mains power supply cable: 3 x 2.5 mm²
 Fuse: 16A passive
 Connecting cable e.g. HO7RNF.

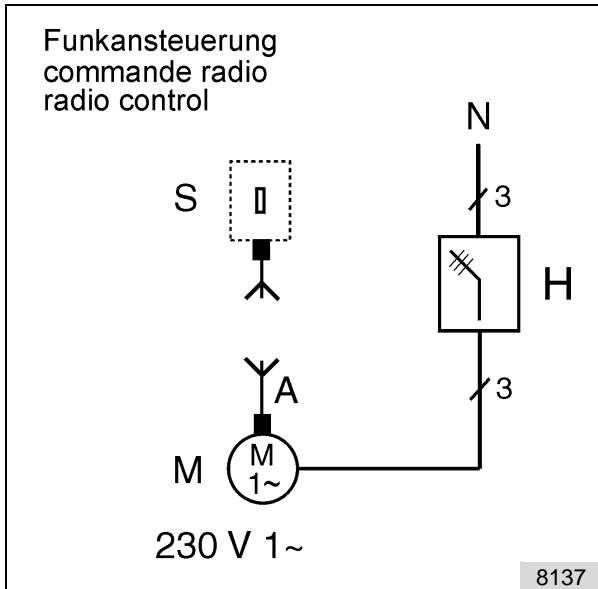


fig. 1: Schematic AC circuit diagram (for radio control)

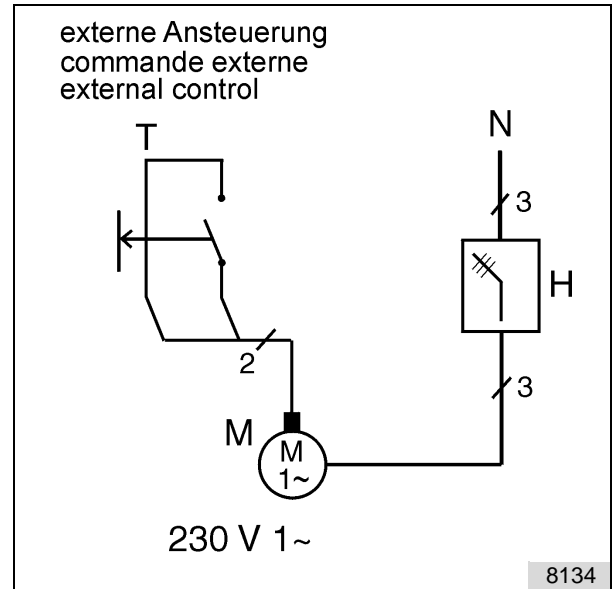


fig. 2: Schematic AC circuit diagram (for external control)

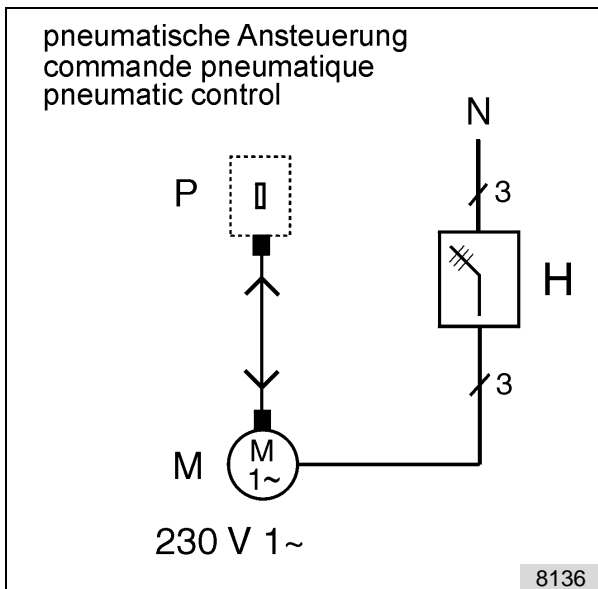


fig. 3: Schematic AC circuit diagram (for pneumatic control)

Legend for fig. 1-3:

- A Aerial
- H Master switch
- M Motor of the circulation pump with receiver
- N Mains power supply (230 V 1 ~)
- P Pneumatic switch
- S Transmitter
- T Button (no potential)

5.3 Electrical Connections three-phase current

Mains voltage: 230/400 V for 3 ~ AC
 Mains power supply cable: 4 x 2.5 mm²
 Fuse: 16A passive

Warning!
 The manufacturer must be consulted if the mains voltage is 230 V for 3~ AC.

Connecting cable e.g. HO7RNF. Further details regarding the connections can be found on the motor and pump type plates.

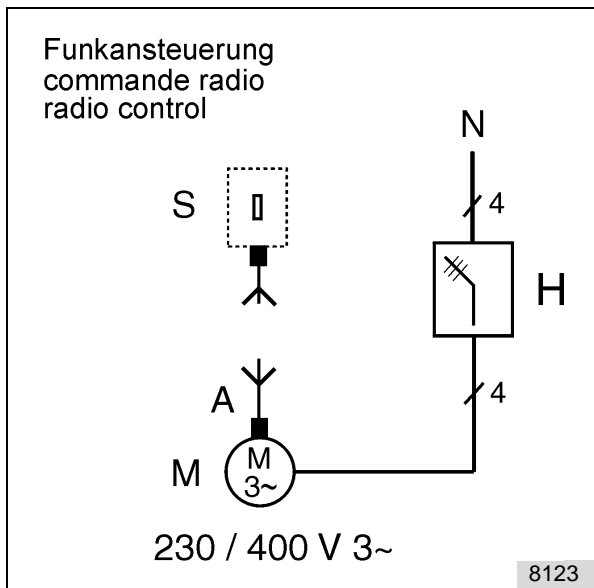


fig. 32: Schematic 3 ~ AC circuit diagram (for radio control)

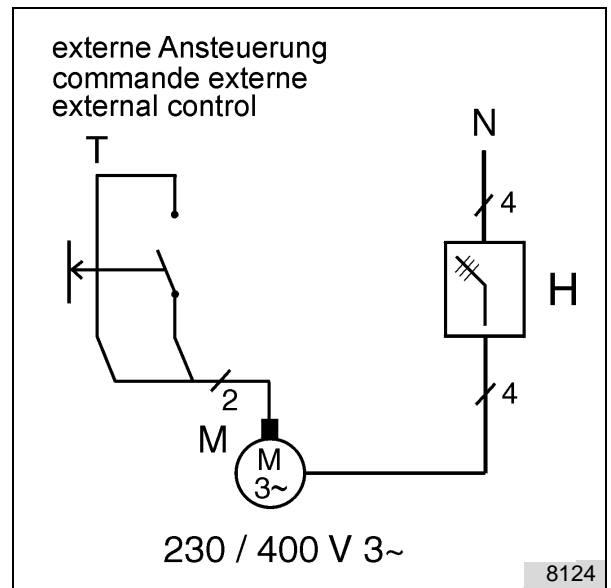


fig. 33: Schematic 3 ~ AC circuit diagram (for external control)

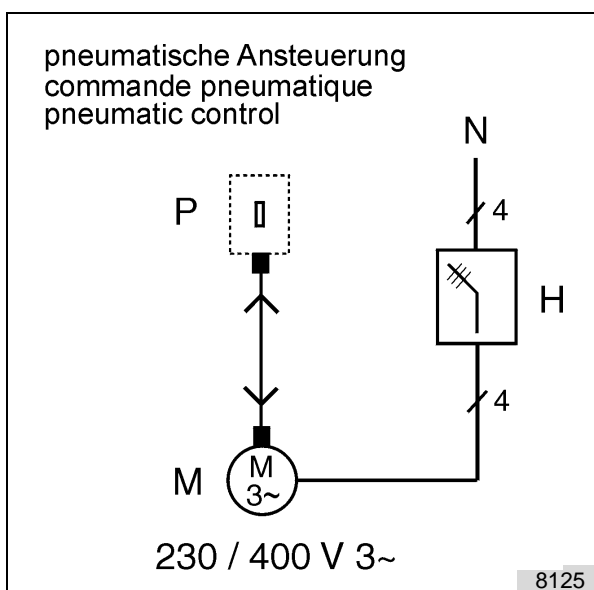


fig. 34: Schematic 3 ~ AC circuit diagram (for pneumatic control)

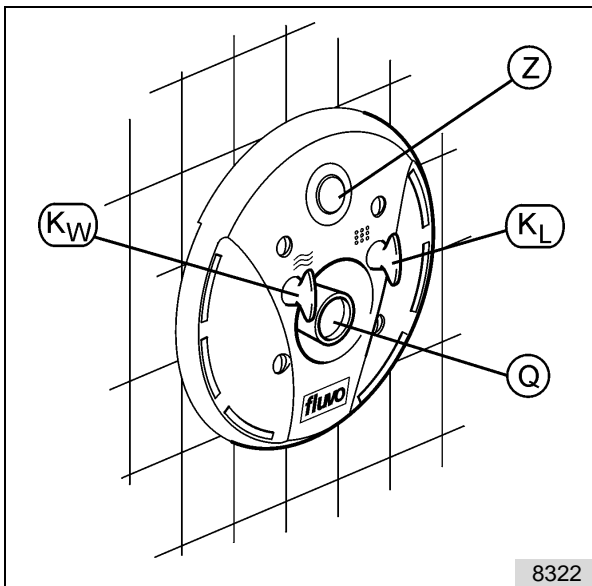
Legend for fig. 36-38:

- A Aerial
- H Master switch
- M Motor of the circulation pump with receiver
- N Mains power supply (400 V 3 ~)
- P Pneumatic switch
- S Transmitter
- T Button (no potential)

6 Start-up / Operating

- **Switch on the master switch**

After switching on the master switch, wait for approx. 10 seconds until the initialisation of the controller is complete.



| | |
|-------|-----------------------------|
| K_L | Air supply regulator knob |
| K_W | Water supply regulator knob |
| Q | Nozzle |
| Z | Switching button |



Warning! Risk of damage!

Never carry out a trial run with the motor as long as there is no water in the pump. A dry run will destroy the mechanical seal in the pump!

fig. 35

- **Switching the pump on and off**

The pump is switched on by pressing the switching button (Z). After 2 seconds the pump can be switched off by pressing the button again or a signal can be sent to the pump (on-off function).

The operating time of the pump can be set by a trained specialist in 4 minute intervals from 4 to 60 minutes. At the factory the operating time is set to D (continuous operation), see section 5.5 (Setting the operating time).

- **Water supply control**

By turning the knob (K_W) clockwise the water supply decreases, anti-clockwise it increases.

- **Air supply control / Air bubble bath**

By turning the knob (K_L) clockwise the air supply decreases, anti-clockwise it increases. The air supply to the water causes the water jet to become softer (air bubble bath).

- **Direction of jet**

The nozzle can be turned in any direction.

- **Counter-current swimming**

Set the maximum jet speed. Swing the nozzle (D) so that the water layer just under the surface of the water begins to flow quickly.

- **Attaching the massage set**

Switch off the counter-current swimming system prior to attaching the impulse-massage nozzle.

Pull back the sliding sleeve (V), push the hose coupling (F) into the nozzle (D), press the sliding sleeve (V) against the nozzle (D) and pull back on the hose coupling (F). That causes the hose coupling to be locked in place.

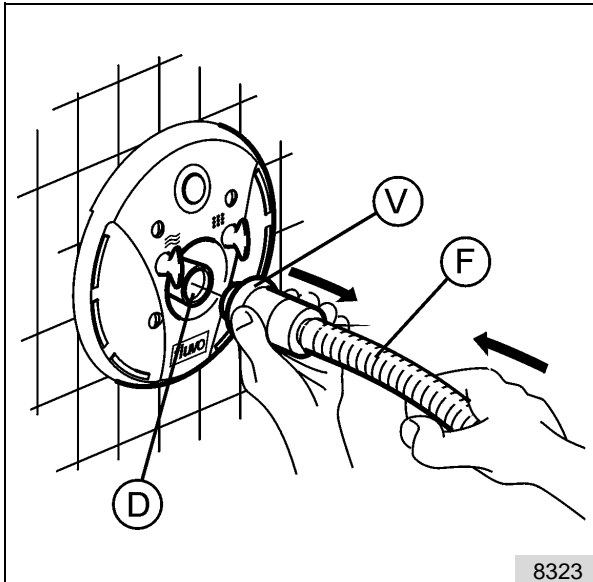


fig. 36: Attaching the massage set

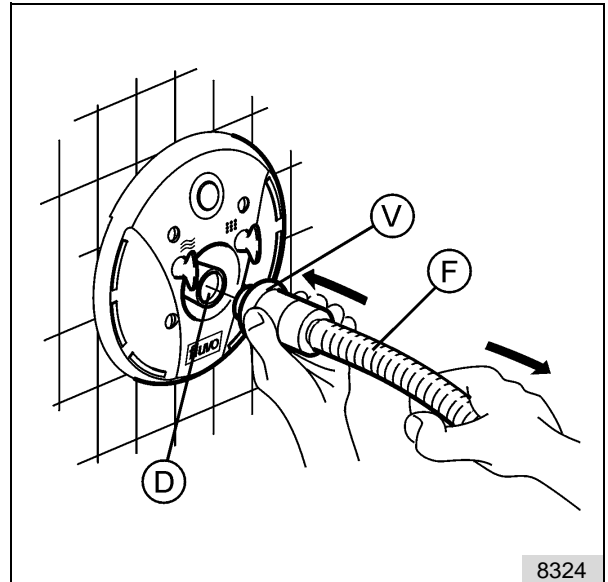


fig. 37: Detaching the massage set

D Nozzle
F Hose coupling

V Sliding sleeve

- **Detaching the massage set**

Switch off the counter-current swimming system prior to detaching the impulse-massage nozzle.

Press the hose coupling (F) against the sliding sleeve (V), take a hold of it and pull it back, pull out the hose coupling.

7 Shutdown / Overwintering

7.1 Empty the pool

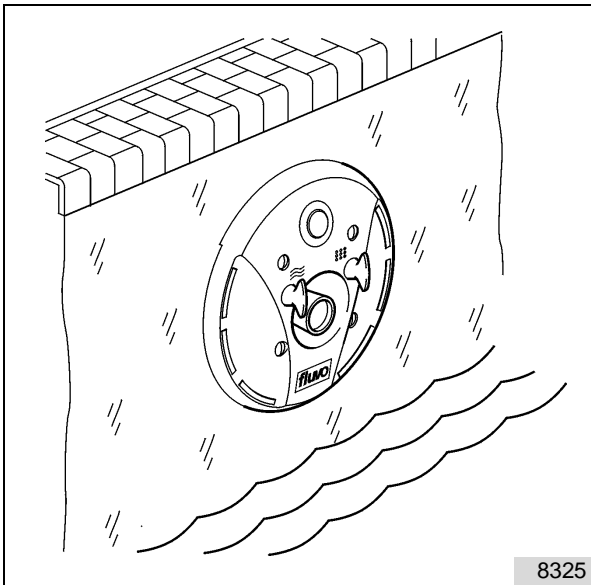


fig. 38



Warning! Risk of damage!

If there is a risk of freezing, then the facility must be made winterproof. Observe the instructions issued by the manufacturer of the pool and the following recommendations.

- Empty all the water out of the pool,
- or let the water out at least until it is 15-20 cm below the level of the face plate assembly.
- Switch off the master switch!

7.2 Face plate assembly overwintering

To prevent the transmitter battery from becoming discharged prematurely, remove the face plate assembly and store at room temperature.

7.3 Emptying the pump

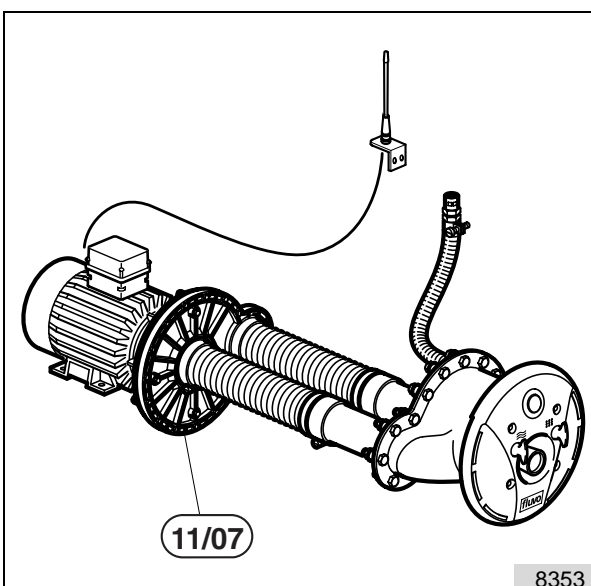
Screw out the plug screw (11) and drain the water.



Warning! Risk of damage!

Make sure that all the water runs off! Also empty the pipework connected to the pump, if any!

Then screw the plug screw (11) back in again with a new O-ring (07).
When restarting please observe the instructions in section 6.



- 07 O-Ring
- 11 Plug screw

fig. 39

8 Maintenance / Repairs

8.1 General Instructions.



Warning! Mortal danger!

In order to prevent electric shocks, work on the terminal box and the machine controller must never be carried out before the electrical connections have been isolated or disconnected.

The counter-current system must be protected against unintentional switching on!

8.2 Maintenance / Service

- The counter-current system is largely maintenance-free.
- Make sure that all the parts of the counter-current swimming system are kept clean.
- The gaskets on the motor shaft must be checked at regular intervals (at least once a year) by a trained engineer. If necessary, they must be replaced by original spare parts.

8.3 Repairs

- For repairs to the counter-current swimming system please observe the instructions for installation and start-up in this manual.
- Use exclusively original spare parts when carrying out repairs to the counter-current swimming system.

9 Spare parts

In the spare parts list there are all the parts required for your counter-current swimming system.

When ordering spare parts please do not fail to give us the following important information:

- Pump serial number and type description or alternatively the motor serial number
- Part number from the spare parts list
- Part description
- Material data from the specifications or the order confirmation

The pump serial number is on the type plate which is fastened to the blower cover of the motor.

The order confirmation or motor serial number may also be of assistance.

With this information you make it much easier for us to deliver the correct spare part for your counter-current swimming system!

The spare parts list and drawings are to be found in section 10 of the operating instructions.

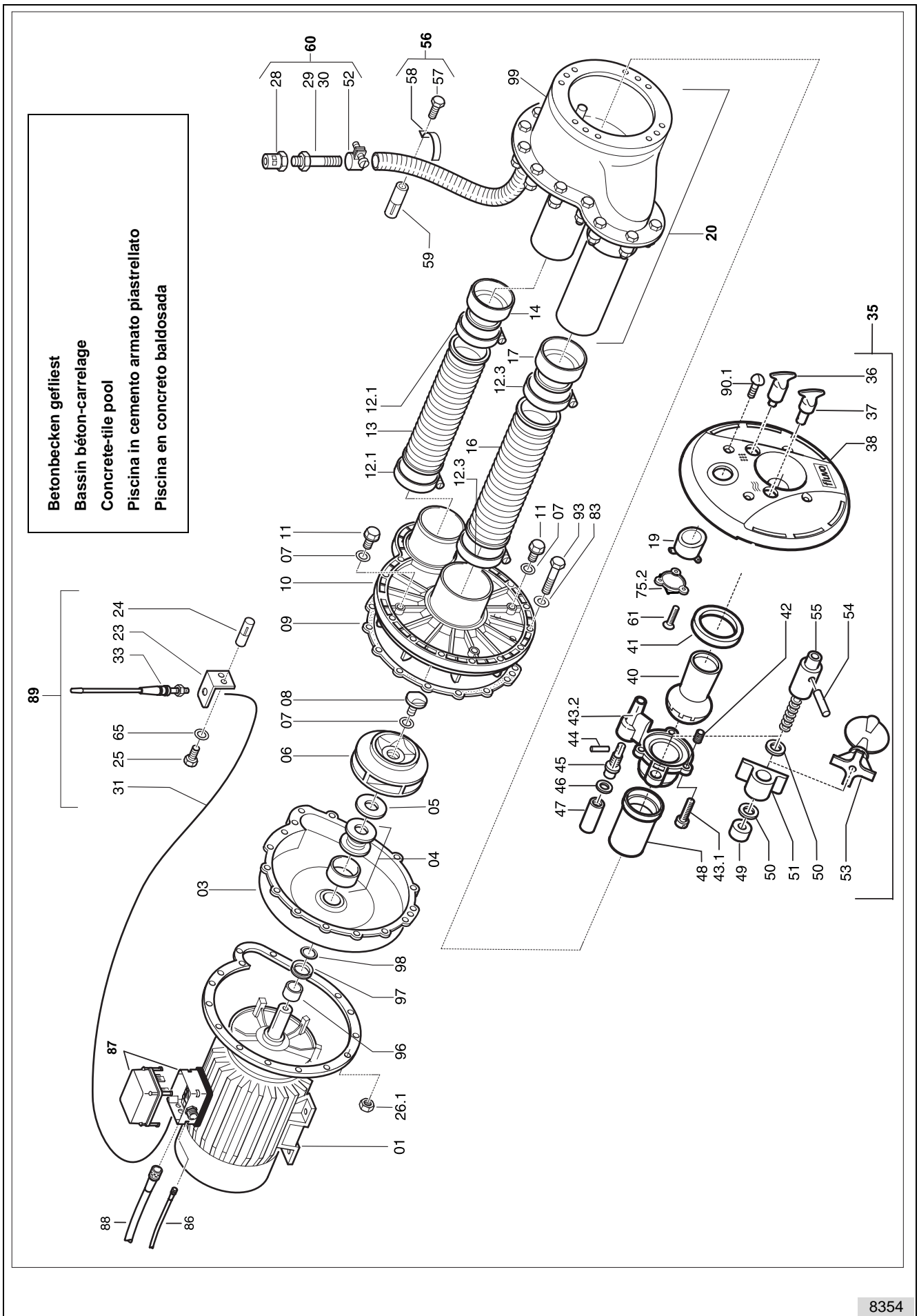
10 Spare Parts List and Drawing

10.1 Spare Parts List

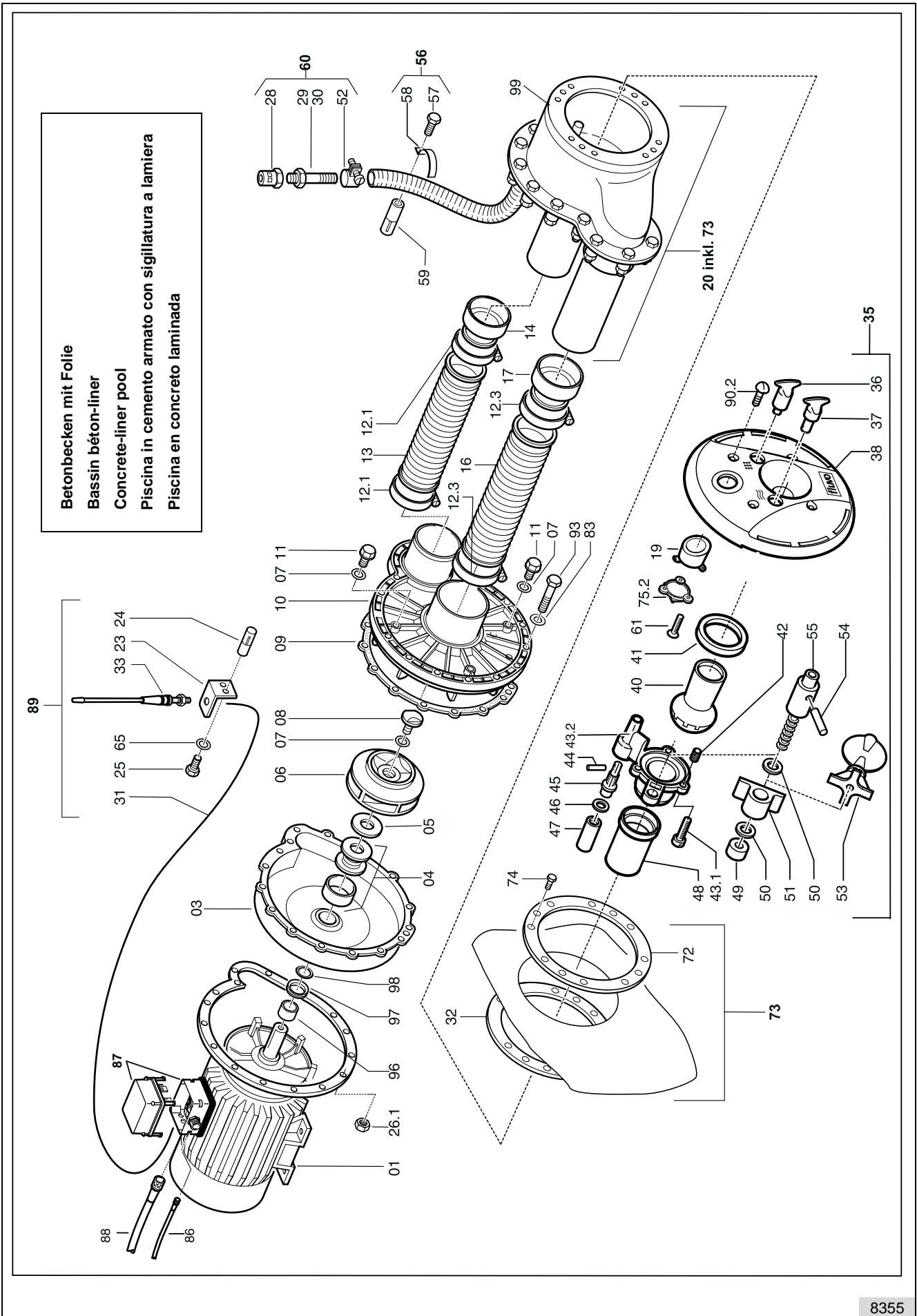
| Pos. | Best. Nr. No. de réf. Order No. | Bezeichnung | Désignation | Description | Stck. Nbre. Qty. | Bemerkung Remarque Remark |
|------|---------------------------------------|---------------------|------------------------|--------------------|------------------------|---------------------------------|
| 01.1 | 60037 | Drehstrommotor | Moteur triphasé | Motor 3-phase | 1 | 1,5 kW IEC 38 400 V |
| 01.2 | 336739 | Drehstrommotor | Moteur triphasé | Motor 3-phase | 1 | 1,9 kW IEC 38 400 V |
| 01.3 | 02440 | Drehstrommotor | Moteur triphasé | Motor 3-phase | 1 | 3,0 kW IEC 38 400 V |
| 01.4 | 60041 | Wechselstrommotor | Moteur monophasé | Motor 1-phase | 1 | 1,5 kW IEC 38 230 V |
| 01.5 | 60042 | Wechselstrommotor | Moteur monophasé | Motor 1-phase | 1 | 1,9 kW IEC 38 230 V |
| 03 | R47505 | Spiralgehäuse | Carter spirale | Spiral housing | 1 | |
| 04 | 21140 | Gleitringdichtung | Joint Mécanique | Mechanical seal | 1 | |
| 05 | 51066 | Unterlegscheibe | Rondelle | Distance washer | 1 | |
| 06.1 | 51047 | Lauftrad | Turbine | Impeller | 1 | 1,5 kW Ø 105 |
| 06.3 | 51021 | Lauftrad | Turbine | Impeller | 1 | 1,9 kW Ø 110 |
| 06.4 | 51022 | Lauftrad | Turbine | Impeller | 1 | 3,0 kW Ø 125 |
| 07 | 24133 | O-Ring | Joint torique | O-ring | 3 | 10,0 x 2,0 |
| 08 | 56033 | Lauftradschraube | Vis turbine | Impeller cap screw | 1 | |
| 09 | 22113 | Flachdichtung | Joint plat | Clamp Gasket | 1 | |
| 10 | 51007 | Saugdeckel | Couvercle d'aspiration | Suction cover | 1 | |
| 11 | 11104 | Verschluss-Schraube | Bouchon | Plug screw | 2 | G1/4" |
| 12.1 | 16097 | Schlauchschelle | Collier de serrage | Air pipe clamp | 2 | S73/25 SKZ |
| 12.3 | 16070 | Schlauchschelle | Collier de serrage | Air pipe clamp | 2 | S86/25 SKZ |
| 13 | 16095 | Schlauch | Tuyau flexible | Hose | 1 | Ø 60x300 mm |
| 14 | 56080 | Schlauchstutzen | Raccord pour tuyau | Adaptor | 1 | |
| 16 | 16099 | Schlauch | Tuyau flexible | Hose | 1 | Ø 75x300 mm |
| 17 | 56078 | Schlauchstutzen | Raccord pour tuyau | Adaptor | 1 | |

| Pos. | Best. Nr. No. de réf. Order No. | Bezeichnung | Désignation | Description | Stck. Nbre. Qty. | Bemerkung Remarque Remark |
|------|---------------------------------------|---|--|---|------------------------|---|
| 19 | 72203-0 | Sender | Émetteur | Transmitter | 1 | Adresse 0 |
| 20 | 93301 | Einbausatz | Pièce à sceller | Installation kit | 1 | |
| 21 | 67148 | Befestigungssatz inkl. Kabel und Antenne | Fixing bracket incl. cable and aerial | Lot de fixation incl. câble et antenne | 1 | |
| 22 | 45161 | Klemmring | Bague de serrage | Clamp ring | 1 | |
| 24 | 67020 | Spreizdübel | Cheville d'écartement | Rawl plug | 2 | SD 6 |
| 25 | 10475 | Sechskantschraube | Vis six pans | Hexagon screw | 2 | M6 x 20 |
| 26.1 | 12181 | Sechskantmutter | Écrou six pans | Hexagon nut | 8 / 15 | M8 |
| 26.2 | 12192 | Sechskantmutter | Écrou six pans | Hexagon nut | 7 | M10 |
| 27 | 55683 | Halterung | Fixation | Holding device | 1 | |
| 28 | 56031 | Rückschlagventil | Clapet anti-retour | Non-return valve | 1 | |
| 29 | 56055 | Übergangsnippel | Embout de réduction mâle | Air line hose tail | 1 | |
| 31 | 67149 | Kabel | Câble | Cable | 1 | |
| 32 | 22235 | Flachdichtung | Joint plat | Clamp gasket | 1 | 200x150x2,0 |
| 33 | 55673 | Antenne | Antenne | Aerial | 1 | |
| 35 | 92192-0 | Düsenkopf | Tête de buse complète | Face plate assembly | 1 | Adresse 0 / Adresse 0 / Address 0 |
| 36 | 65032 | Drehgriff Luftreg. | Bouton régl. air | Air regul. knob | 1 | |
| 37 | 65033 | Drehgriff Wasserreg. | Bouton régl. débit | Water flow knob | 1 | |
| 38 | 56232 | Düsengehäuse | Tête de buse | Face plate | 1 | |
| 39 | 22227 | Flachdichtung | Joint plat | Clamp gasket | 1 | 250x150x2,0 |
| 40 | 56035 | Düse | Buse | Nozzle | 1 | |
| 41 | 56050 | Kugelgleitring | Anneau de glissement à boule | Nozzle clamp seal | 1 | |
| 42 | 15103 | Druckfeder | Ressort de pression | Pressure spring | 4 | |
| 43.1 | 10401 | Schneidschraube | Vis coupante | Socket head cap screw | 3 | 5,5 x 25 |
| 43.2 | 56036 | Gehäuse | Boîter | Housing | 1 | |
| 44 | 13154 | Zylinderstift | Goupille cylindrique | Locking pin | 1 | |
| 45 | 55602 | Welle f. Luftregelung | Broche de régl. de l'air | Air regulator shaft | 1 | |
| 46 | 22008 | Flachdichtung | Joint plat | Clamp gasket | 1 | 16x08x3,0 |
| 47 | 56775 | Bundhülse | Douille à embase | Shaft collar | 1 | |
| 48 | 56777 | Zentrierhülse | Douille de centrage | Nozzle case sleeve | 1 | |
| 49 | 56682 | Gewindehülse | Douille filetée | Threaded sleeve | 1 | |
| 50 | 23073 | Dichtung | Joint | Gasket | 2 | |
| 51 | 56681 | Gleitmutter | Écrou-coulisseau | Regulator nut | 1 | |
| 52 | 16068 | Schlauchschelle | Collier de serrage | Air pipe clamp | 1 | |
| 53 | 56070 | Drosselklappe | Vanne papillon | Regulating flap | 1 | |
| 54 | 13226 | Zylinderkerbstift | Goupille encochée cylindrique | Locking pin | 1 | |
| 55 | 56680 | Verstellspindel | Broche de réglage | Water regulator shaft | 1 | |

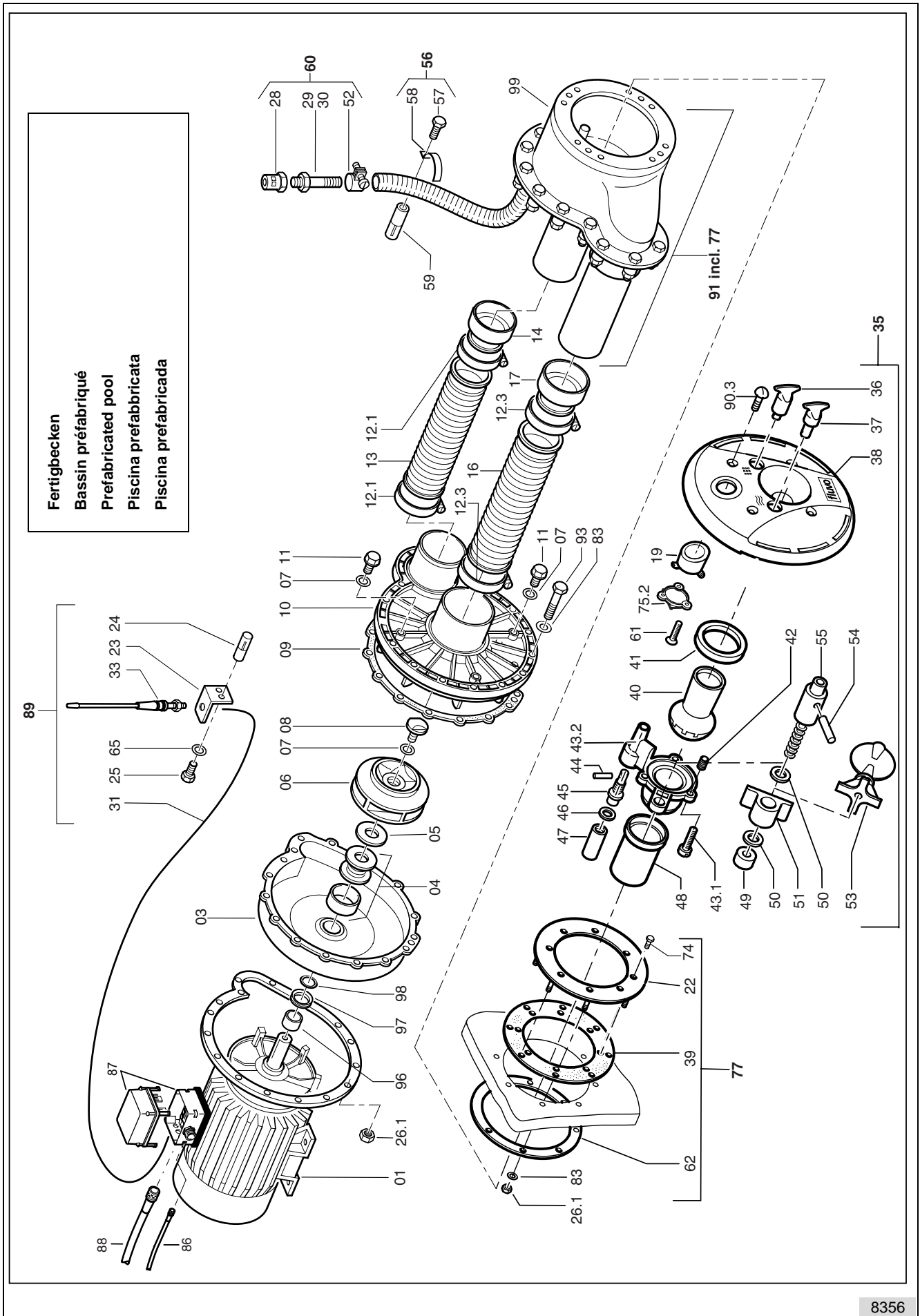
| Pos. | Best. Nr. No. de réf. Order No. | Bezeichnung | Désignation | Description | Stck. Nbre. Qty. | Bemerkung Remarque Remark |
|------|---------------------------------------|---|--|---|------------------------|--|
| 56 | 67122 | Befestigungssatz Luftventil | Fixation pour valve à air | Fixing bracket for air valve | 1 | |
| 57 | 10561 | Sechskantschraube | Vis six pans | Hexagon screw | 1 | M8 x 30 |
| 58 | 55272 | Befestigungsschelle | Collier de fixation | Clamp | 1 | |
| 59 | 67005 | Spreizdübel | Cheville d'écartement | Rawl plug | 1 | SD 8 |
| 60 | 60045 | Luftventil | Valve à air | Non-return air valve | 1 | |
| 61 | 10356 | Blechschraube | Vis parker | Tapping screw | 3 | 4,2x13 |
| 62 | 56229 | Haltering | Bague de retenue | Hold-ring | 1 | 204x155x4 |
| 63 | 10626 | Senkschraube | Vis à tête conique | Counter-sunk screw | 7 | M10 x 70 |
| 64 | 12397 | Unterlegscheibe | Rondelle | Distance washer | 7 | 10,5x21x2,0 |
| 65 | 12416 | Unterlegscheibe | Rondelle | Distance washer | 2 | 6,4 x12 x1,6 |
| 67 | 51303 | Klemmring | Bague de serrage | Clamp ring | 1 | |
| 68 | 56241 | Haltering | Bague de retenue | Hold-ring | 1 | 260x340x4 |
| 72 | 51306 | Klemmring | Bague de serrage | Clamp ring | 1 | 198x150x5 |
| 73 | 92022 | Einbauelemente | Fittings | Fittings | 1 | |
| 74 | 10518 | Sechskantschraube | Vis six pans | Hexagon screw | 8 | M8 x 25 |
| 75.2 | 70226 | Deckel | Couvercle | Cover | 1 | DR 59 |
| 77 | 92298 | Einbauelemente | Fittings | Fittings | 1 | |
| 78 | 92299 | Einbauelemente | Fittings | Fittings | 1 | |
| 83 | 12392 | Unterlegscheibe | Rondelle | Distance washer | 8 | 8,4x16x1,6 |
| 86 | 16090 | Pneumatikschlauch | Tuyau pneumatique | Pneumatic hose | 1 | nicht im Lieferumfang enthalten / non compris dans la fourniture / not included in the delivery schedule |
| 87.1 | 55808 | Empfänger Drehstrom | Recépteur triphasé | Reciever 3-phase | 1 | 400 V |
| 87.2 | 55811 | Empfänger Wechselstrom | Recépteur courant alternatif | Reciever alternating current | 1 | 230 V |
| 88 | 16137 | Kabel (steckfertig) | Câble (prêt à monter) | Cable (ready for use) | 1 | |
| 89 | 67148 | Befestigungssatz inkl. Kabel und Antenne | Lot de fixation incl. câble et antenn | Fixing bracket incl. areal and cable | 1 | |
| 90.1 | 10880 | Linsensenkschraube | Vis à tête conique bombée | Face plate screw | 4 | M8x100 |
| 90.2 | 10779 | Linsensenkschraube | Vis à tête conique bombée | Face plate screw | 4 | M8x70 |
| 90.3 | 10539 | Linsensenkschraube | Vis à tête conique bombée | Face plate screw | 4 | M8 x 45 |
| 91 | 93302 | Einbausatz | Pièce à sceller | Installation kit | 1 | |
| 92 | 93303 | Einbausatz | Pièce à sceller | Installation kit | 1 | |
| 93 | 10530 | Sechskantschraube | Vis six pans | Hexagon screw | 15 | M8 x 50 |
| 96 | 55539 | Abstandshülse | Douille distance | Distance washer | 1 | |



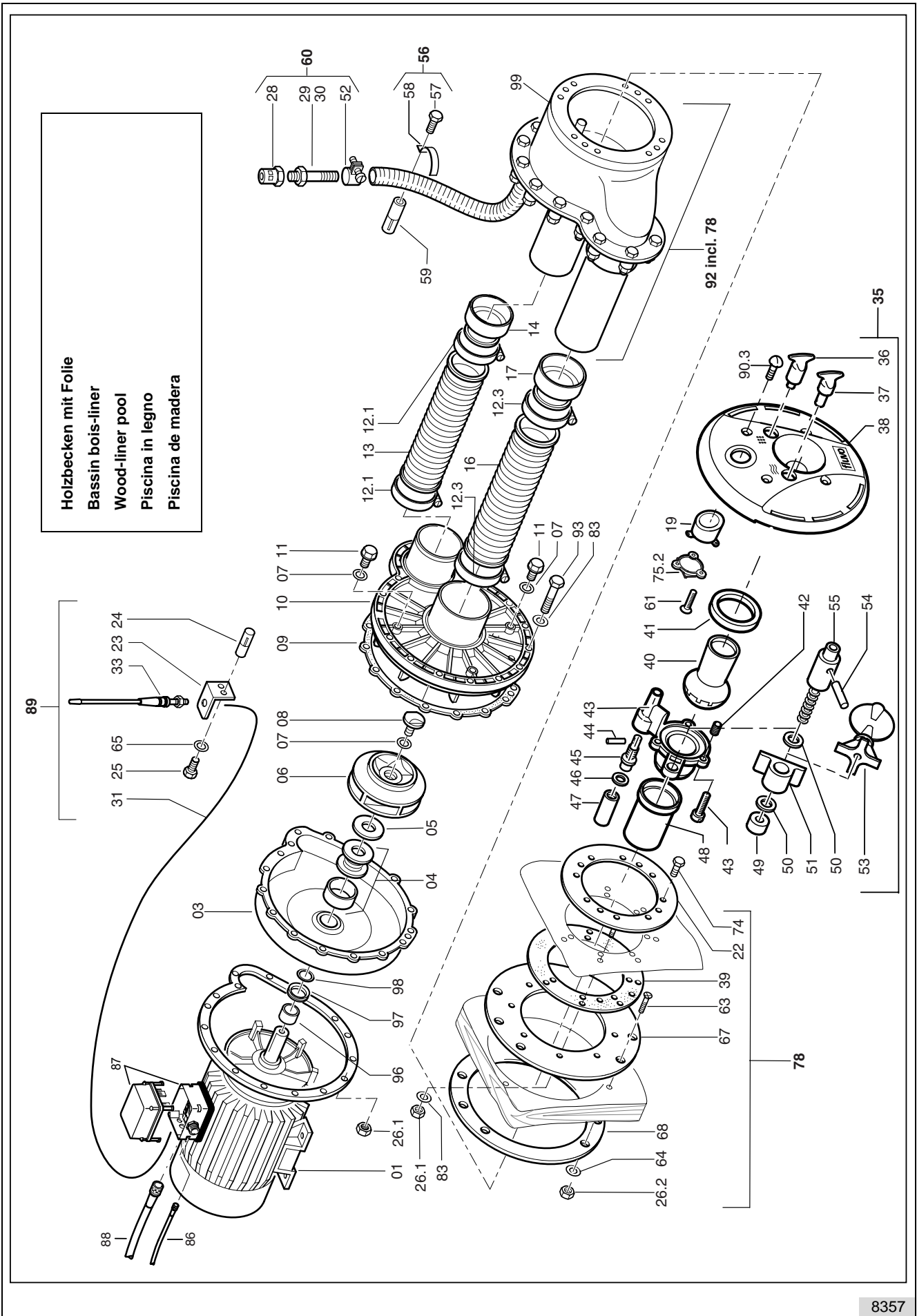
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