EN

3.2 Preliminary work

3.2.1 Preparing the connection sockets

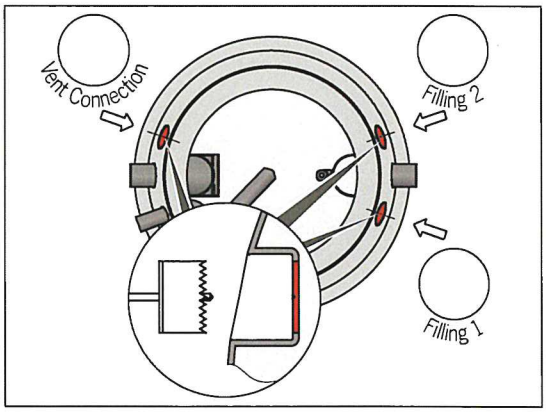
The housing is equipped with 3 DN 100/D 100 connection collars (marked with Vent Connection, Filling 1 and/or Filling 2) for connecting the on-site ventilation, supply and filling pipes. The sockets are closed off and must be opened.

IMPORTANT

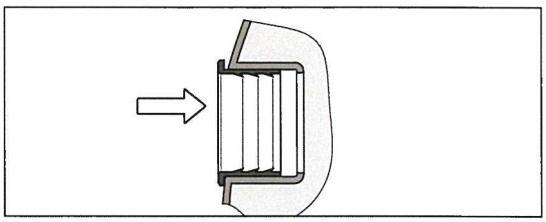
- Do not open sockets that are not required (depending on equipment level).
- The socket for the supply line must be drilled with a diameter of 130 mm. Only in this way can the cable gland be installed and, if necessary, inspected or replaced during operation, Chapter 3.4.9 „Installing the cable gland“.

Socket seals DN 100/110 mm are enclosed as loose items with the as-delivered separator.

→ Drill out the closed socket base with a hole saw (Ø 105 to max. 130 mm).



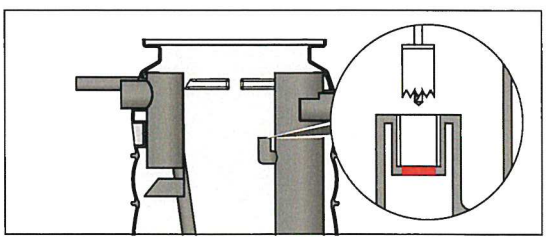
→ Insert the collar seal in the collar.



3.2.2 Preparing the sampler connection 27

A threaded collar R ¾“ on the submerged outlet pipe in the housing can be used to connect a sampling device (optional). The socket is closed off and must be opened.

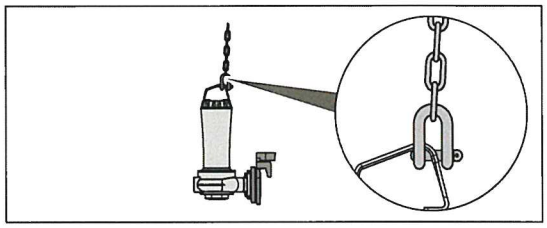
→ Use a hole saw to drill open the closed socket base (maximum Ø 22 mm).



3.2.3 Attach chain to disposal pump

A disposal pump with mounted coupling piece, a 4 m long chain and a connecting link (shackle) are supplied as loose parts on delivery.

→ Fix the chain with shackle to the carrying handle of the disposal pump.



3.3 Earthwork requirements

3.3.1 Installation site

- Load class A 15: the walk-on capable variant – ideal for inner courtyards and green spaces
- Load class B 125: car trafficable – perfect for entrances and parking areas
- Load class D 400: truck trafficable – the safe solution for heavy goods vehicles and storage areas and side strips (hard shoulders) of carriageways

3.3.2 Installation depth

IMPORTANT

- The housing of systems up to NS 4 - 400 must not be installed deeper than 3.00 m in the ground.
- The housing of systems from NS 4 - 800 must not be installed deeper than 3.60 m in the ground.

3.3.3 Installation in groundwater

- With extension system load class A 15 and B 125:
  - Buoyancy proof where groundwater levels are up to 0.5 m below the ground level
  - In cases of higher groundwater levels, a concrete casing is necessary on site: Concrete ring > Ø1,600 x 150 mm arranged above container rib
- Where groundwater levels reach the ground level, units with extension system load class D 400 are buoyancy proof.

3.3.4 Specifications for foundations / installation / structural analysis

IMPORTANT Explicit reference is made to compliance with any additional applicable standards and regulations. The following information does not claim to be complete and must be checked by the customer for each individual project.

Foundation

- Excavation according to DIN 18300
- Embankment / work space / shoring per DIN 4124
- the existing soil:
  - Soil group G1 to G4 according to ATV-DVWK-A 127
  - Degree of compaction $D_{Pr} \geq 95\,\%$
- Foundation:
  - Soil group G1 according to ATV-DVWK-A 127 or soil group GE, GW, Gi, SE, SW or SI according to DIN 18196
  - Degree of compaction $D_{Pr} \geq 97\,\%$
  - Layer thickness ≥ 30 cm
  - Dimension: ≥ 1.0 m around the outer edge of the building, if necessary replace / improve the soil

Installation

- Filling the working area / embedding:
  - Soil group G1 according to ATV-DVWK-A 127 or soil group GE, GW, Gi, SE, SW or SI according to DIN 18196
  - Degree of compaction $D_{Pr} \geq 97\,\%$
  - Dimensions ≥ 1.0 m around the outer edge of the building from the top edge of the foundation to the top edge of the ground surface
  - Installation in layers with ≤ 30 cm layers
  - Maximum grain size 16 mm
- Care must be taken to ensure that the recessed parts of the installation (floor, ribs, collar, etc.) are carefully underfilled.
- If higher requirements for the construction of the embedding can be derived from on-site requirements, applicable standards or guidelines (e.g. traffic areas according to ZTVE-StB 09 or ZTVA-StB), these must be observed.
- The building materials used in connection with the installation or which come into contact with the installation must not result in any negative influence with regard to material, deformation or damage; the same applies to the installation methods selected.
- The frame of the shaft cover should never be higher than the surface covering, rather the surface covering should be slightly higher and drawn up at the edge of the frame.
- The manhole cover must not be moved again when laying the covering (e.g. asphalt surface). It is not permitted to pave over the manhole cover.

- The extension system must not be loaded until the excavation pit is completely filled and the materials used have set sufficiently, e.g. compressive strength of the mortar of at least 10 N/mm².

Structural analysis

- The introduction of additional loads (other structures, additional buildings or similar) is not permitted, the load transfer is to be carried out below the foundation level of the installation, minimum clearances are to be maintained or suitable measures are to be taken on site.
- Depending on requirements (traffic load, installation depth), the system can be combined with an extension system including shaft cover from the system product range. The combination with other systems is not permitted.
- The maximum existing groundwater level must not be exceeded,
  Chapter 3.3.3 „Installation in the presence of ground water“.
- If the installation is installed in the vicinity of railway tracks or similar infrastructure, this must be examined separately and statically reassessed.

3.3.5 Backflow

If the static water level of the grease separator is below the backflow level, it must be drained via a downstream lifting plant/pump station.

3.3.6 Slings for transport using lifting gear

- Housing: Utilise at least 5 m long 2 piece suspension with shackle NG 5 according to DIN 82101
- Cover and adapter plate: Utilise shaft ring suspension with claws
- Load distribution plate: Utilise at least 2 – 3 m long 3 leg lifting tackle with shackle NG 1 to DIN 82101

EN

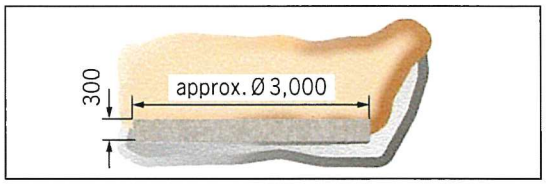
3.4 Installation work in the ground

IMPORTANT It is recommended that the work be carried out in the correct order.

3.4.1 Digging the excavation

Requirement: The pit excavation should be approx. Ø3,000 mm in size.

→ Excavate the pit and secure.
→ Make underfill/bedding.

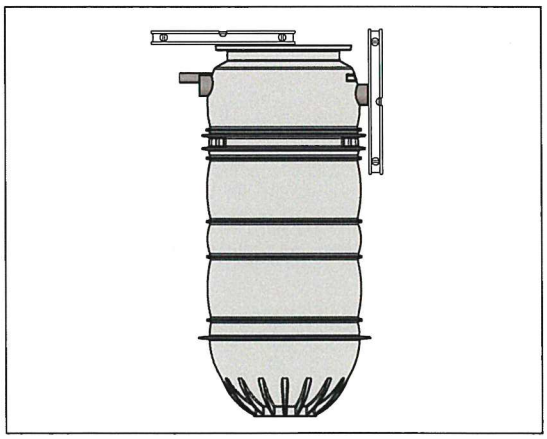


3.4.2 Installing the housing 26

IMPORTANT

- Transport lugs are designed for the load of the housing. Do not transport with attached parts.
- The installation direction must correspond to the flow direction (inlet and outlet are marked in the factory) and the longitudinal axial along the inlet and outlet of the housing must be aligned with the axis line of the connecting pipes. A marking on the bottom of the excavation pit and on the housing makes the work easier.

→ Place housing in the excavation pit and align horizontally. Weights of the enclosures, chapter 7.1.2 "Characteristics Data".



3.4.3 Connecting the on-site pipes and cables

IMPORTANT

- Before the on-site pipes are connected the housing must be filled with water up to the pipe invert of the outlet socket and then the pit must be backfilled up to this height, Chap. 3.3.4 „Backfill pit“.
- It is essential to clean the inside of the housing of any possible contamination before filling.

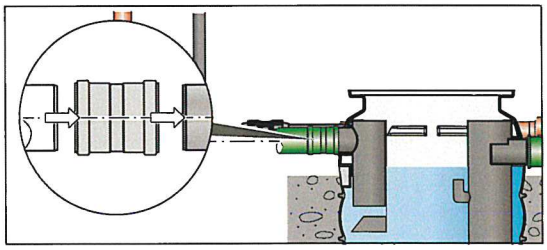
It can be filled with drinking water, rainwater or process water (when this complies with the local discharge conditions for effluent).

Inlet pipe 31

Specifications:

- Wastewater is to be fed to the grease separator with a gravity drainage pipe with gradient at least 1.5 – 2 %. If this is not possible, use of ACO upstream tank plants with positive-displacement pumps is recommended.
- The transition between downpipes to horizontal pipes is to be made with two 45° pipe bends and one connection pipe length at least 250 mm long (equivalent pipe bends with correspondingly large radius). A calm region must then be provided in the flow direction, the length of which is at least equal to 10 times the nominal diameter in mm of the inlet pipe of the grease separator.
- Lay an inlet pipe made of materials resistant to fatty acid (e.g. KML, PP, PE).

→ Connect on-site inlet pipe (e.g. with sliding coupling).

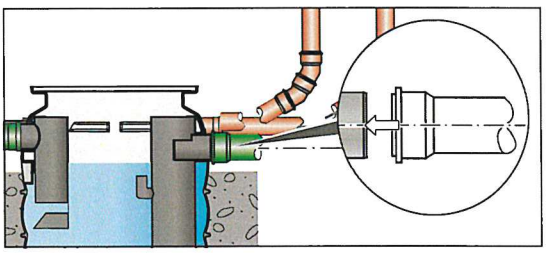


Outlet pipe 24

Recommendation:

Lay an outlet pipe made of material resistant to fatty acid (e.g. KML, PP, PE).

→ Connect the on-site outlet pipe.



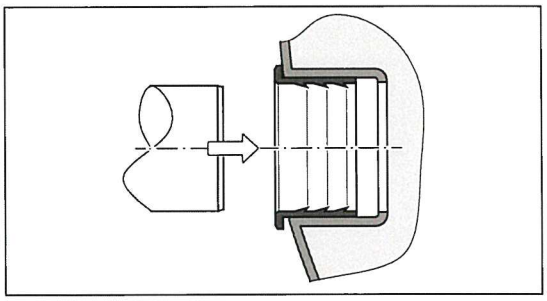
Ventilation line 3

Specifications:

- Route the vent stack up to above the roof. Ventilate connection pipes separately when longer than 5 m.
- If the inlet pipe above the grease separator has no separately ventilated connection pipe over 10 m length, it must be equipped with an additional vent stack as close as possible to the grease separator.
- Instead of an additional connection in the inlet pipe near the grease separator, the connection socket on the housing can be used.
- Ventilation valves are not permitted in areas at risk of backflow or for ventilating the grease separator.
- Lay ventilation pipes which are made of materials resistant to fatty acid (e.g. KML, PP, PE).

→ Connect on-site vent stack DN 100/ OD 110 mm to connection socket:

- ☐ Chamfer the tip end of the vent stack and grease it with an acid-free lubricant.
- ☐ Centre the pipe end and push it into the socket seal (up to the stop). The assembly stop of the socket seal prevents the connection pipe from being pushed through.



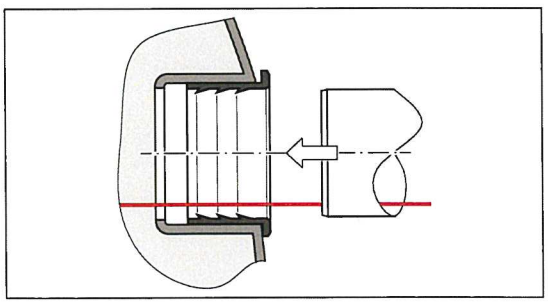
Connecting the supply pipe 17

Specifications:

- Lay the supply line (reserve conduit) from the plant room up to the housing (tank) with gradient at least 1.5 – 2 %. Do not reduce the stack cross-section.
- Do not use pipe bends with angles larger than 30°.
- Lay a high-quality pull wire ▬ directly in the reserve conduit at the same time.
- Lay supply line made of materials resistant to fatty acid (e.g. KML, PP, PE).

→ Connect on-site supply line DN 100/ OD 110 mm to the connection socket:

- ☐ Chamfer the tip end of the ventilation line and grease it with an acid-free lubricant.
- ☐ Centre the pipe end and push it into the socket seal (up to the stop). The assembly stop of the socket seal prevents the connection pipe from being pushed through.



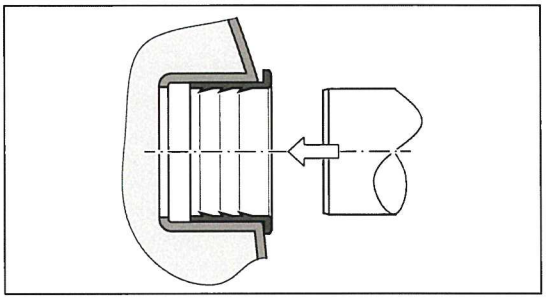
Connecting the filling pipe 18

Specifications:

- Lay the filling pipe (reserve conduit) from the plant room up to the housing (tank) with gradient at least 1.5 – 2 %. Do not reduce the stack cross-section.
- Do not use pipe bends with angles larger than 30°.
- Lay filling pipe as made of materials resistant to fatty acid (e.g. KML, PP, PE).

→ Connect on-site filling line DN 100/ OD 110 mm to connection socket:

- Chamfer the tip end of the filling line and grease it with an acid-free lubricant.
- Centre the pipe end and push it into the socket seal (up to the stop). The assembly stop of the socket seal prevents the connection pipe from being pushed through.



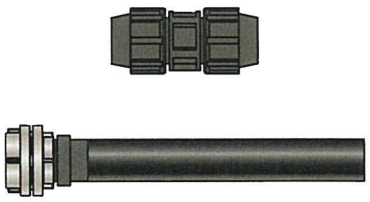
Disposal line 32

Specifications:

- Disposal pipes, as pressure and suction pipes, must be at least pressure rating PN 6. Use tension-proof connections for individual pipes and fittings.
- Lay disposal pipes made of corrosion-resistant materials (e.g. plastic pipes made of PE, PP).
- Lay disposal pipe from the grease separator up to the transfer point (disposal vehicle) with a continuously rising gradient, make alterations in direction in the pipe with 90° elbow bends with the largest possible radius.
- Install a disposal pipe with a diameter as uniform as possible up to the transfer point (disposal vehicle). Suction pipes with at least DN 50.

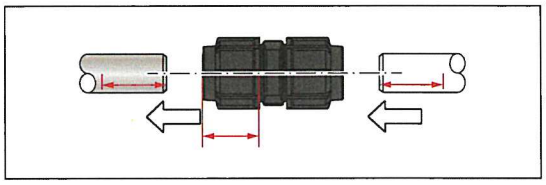
- A connection box with space for 2 connecting couplings, a remote control and a water connection can be purchased from ACO as an optional item.
- Compression fitting ID 75 to ID 90 mm is available from ACO as an optional extra.

- Two compression fittings DN 65 for/ 75 mm are enclosed as loose items with the as-delivered separator.
- Pipe with disposal connection DN 65 (connection coupling) and blind cover is supplied loose on delivery.



→ Connect on-site disposal pipe DN 65 / OD 75 mm to connection pipe on the housing or to pipe with disposal connection using a compression fitting:

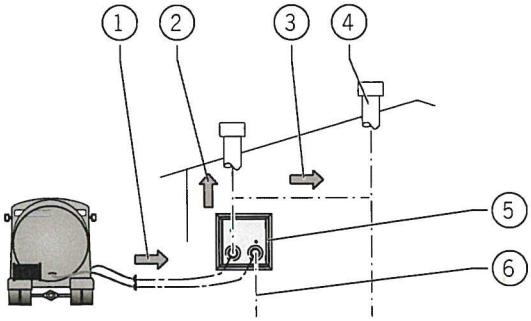
- Cut the on-site pipe at right-angles and grind the spigot end.
- Grease the spigot of the on-site line and connecting pipe with acid-free lubricant.
- Determine the insertion depth ↔ and mark it on the pipe.
- Loosen the conical nuts on the compression fitting by a 3 – 4 turn (do not loosen off completely).
- Insert the pipe to the end stop and/or marking in the compression fitting.
- Hand tighten the conical nuts.
- Tighten for an optimal strength with tools suitable for plastic compression fittings.



Ventilation connection (optional) 1

By using a pendulum gas pipe, odour nuisance during the disposal process (displaced air from the suction vehicle is discharged into the ambient air) can be prevented. The pendulum gas pipe can be routed separately over the roof or connected to the on-site vent stack.

There are no special requirements for the pendulum gas pipe.
Recommendation: use corrosion-resistant materials (e.g. plastic pipes made of PE, PP).



1 = Displaced air from the suction vehicle
2 = On-site pendulum gas pipe above roof
3 = On-site pendulum gas pipe connected to on-site vent stack
4 = On-site vent stack
5 = Connection box (optional)
6 = On-site disposal pipe

WARNING

Risk of falling into the housing

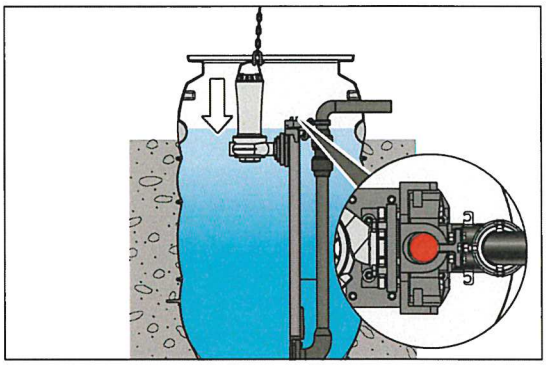
- During the following assembly work according to Chapter 3.4.4 to Chapter 3.4.9, particular care must be taken not to fall into the filled housing.

3.4.4 Insert disposal pump 28

IMPORTANT Insert disposal pump (approx. 55 kg) with suitable lifting gear.

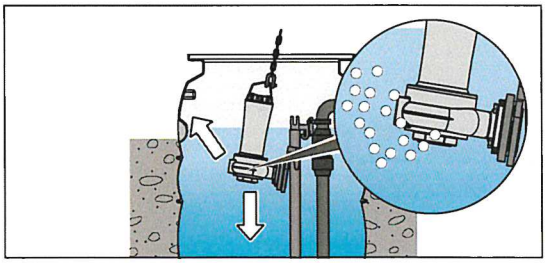
To ensure dry run protection, the pump chamber should be vented the first time it is placed in the water reservoir.

→ Thread the coupling piece for the pump onto the guide pipe: Position ●.



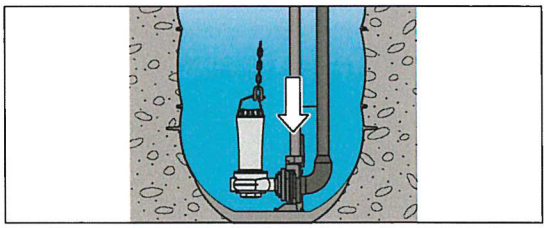
→ Pull the pump at an angle and lower further.

Air escapes from the pump chamber.



→ Lower the pump further vertically until the coupling piece sits in the underwater automatic coupling.

→ Hook the chain into the extension system at a fixing point provided by the customer (after installation of the extension system), 🕮 Chapter 3.4.12 "Fixing the type plate".



→ Protect the end of the connecting cable (30 m long) against moisture penetration and pull it with the pull wire through the supply line (reserve conduit) to the installation site of the control unit.
IMPORTANT 🕮 Chapter 3.4.9 "Installing the cable gland".

3.4.5 Insert bracket with HP head 30

The bracket with the mounted HP head (approx. 7 kg) is delivered loose and must be inserted into the housing.

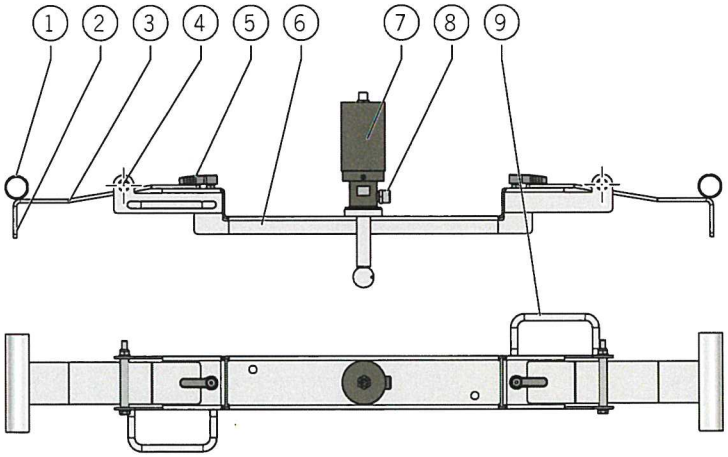
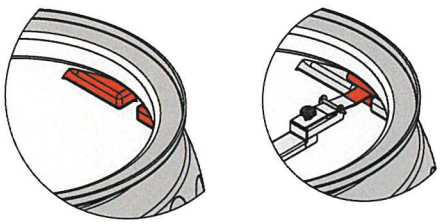


Figure: Bracket

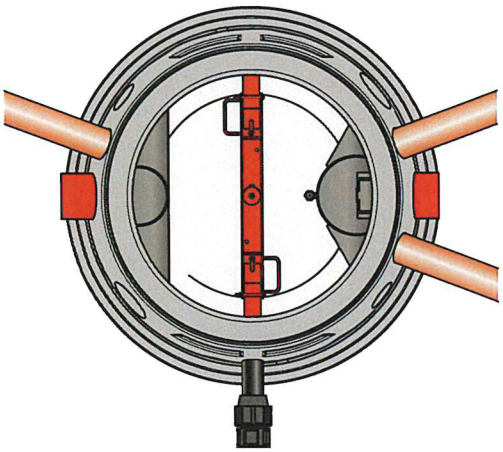
1 = Support tube
2 = Leg
3 = Side part
4 = Side part pivot point
5 = Stop lock
6 = Middle section
7 = HP head: Orbital spray head with drive
8 = Connection for high pressure hose
9 = Handle

Specifications:

- The side part of the bracket must lie in the housing with the support tube on the two cams and with the leg between the two cams pointing downwards.



- The bracket is to be positioned less than 90 ° relative to the inlet axis and outlet axis.

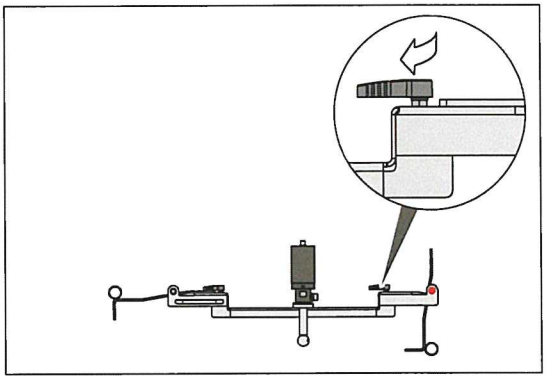


An operating key (article number 0178.12.75, length 1,735 mm, weight approx. 2.5 kg) for turning the stop locks can be obtained from ACO as an optional extra.

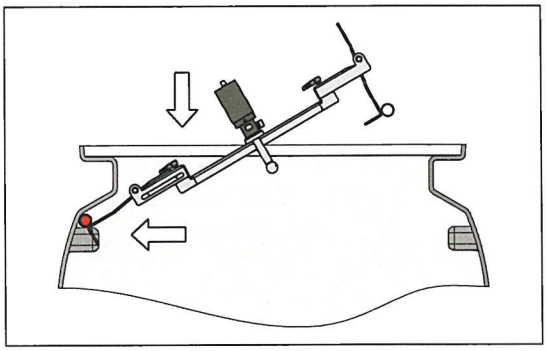


→ Turn the stop lock to one side by 180 ° (at least 90 °).

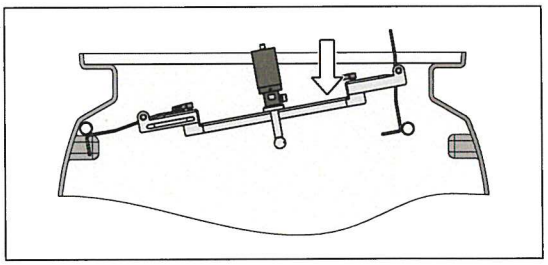
The side part can be moved freely around the pivot point ● and hangs downwards.



→ Insert the complete bracket into the housing and place it on a dogging element with the support tube ● for the fixed side part.



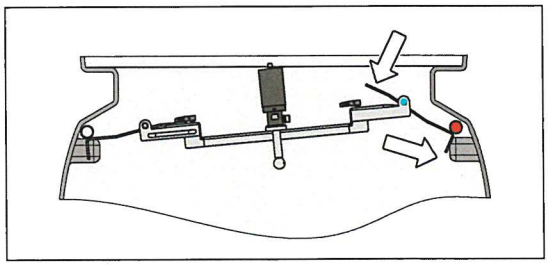
→ Push the entire bracket further down.



→ Press the side part down towards the middle part.

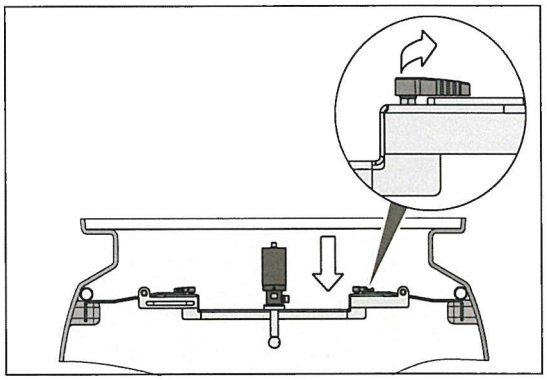
Side part rotates around the pivot point ●.

→ At the same time, place the side part with the carrier pipe on the ● opposite dogging element in the housing.



→ Press the bracket down fully into the horizontal position.
→ Turn the stop lock by 180 ° or 90 ° and "lock" the bracket in this position.

The bracket is completely installed.

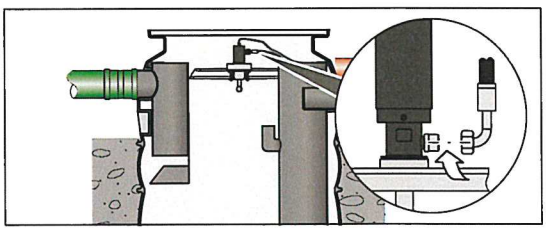


→ Protect the end of the connection cable (30 m long) of the HP head against moisture penetration and pull it with the pull wire through the supply line (reserve conduit) to the installation site of the control unit.
IMPORTANT 🕮 Chapter 3.4.9 "Installing the cable gland".

3.4.6 Connecting the high-pressure hose 22

High pressure hose (10 m_approx. 10 kg, 20 m_approx. 15 kg or 30 m_approx. 20 kg long) can be obtained from ACO as an optional extra.

→ **IMPORTANT** Connect the high pressure head with the 90° screw connection.
→ Protect the end of the high-pressure hose against the ingress of dirt and pull it with the pull wire through the supply line (reserve conduit) to the installation site of the HP unit.
IMPORTANT 🕮 Chapter 3.4.9 "Installing the cable gland".



3.4.7 Adjusting the pilot pipe and fixing on the bracket 29

Pitot tube and mounting parts (complete approx. 1 kg) are supplied loose on delivery. Pitot tube must be fixed to the bracket.

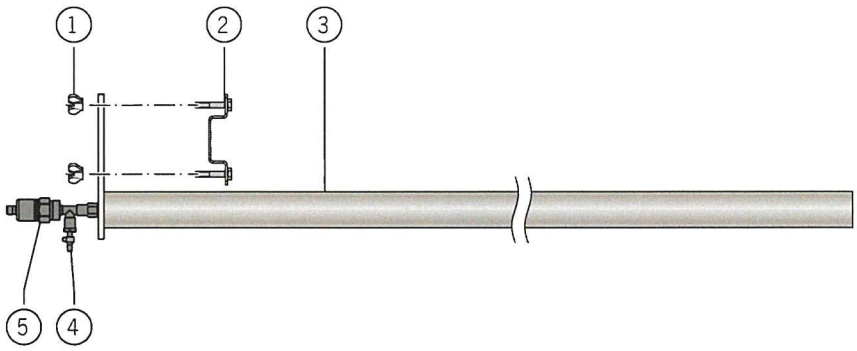
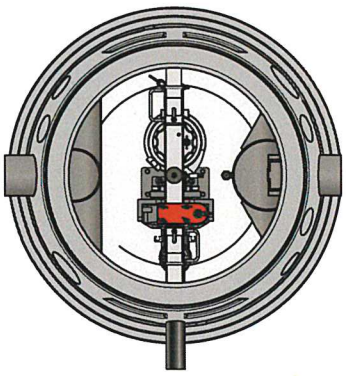


Figure: Components for pilot pipe

1 = Wingnut (4 pieces)
2 = Assembly bracket
3 = Pilot pipe with retaining plate
4 = Air bubble injection hose connection
5 = Pressure sensor

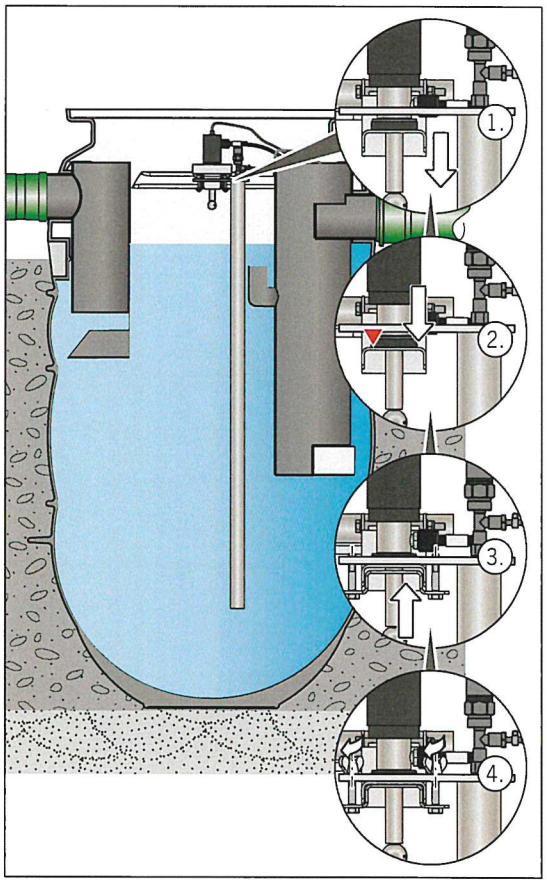
Specifications:

- Pitot tube is to be fixed to the bracket on the right side in the flow direction (axis inlet / outlet of the grease separator LipuMax-P-DAP) between the HP head and the stop lock ▬.



- → Insert the pitot tube with retaining plate and pressure sensor next to the bracket into the housing (1).
- → Place the retaining plate on the channel section ▼ of the bracket (2).
- → Push the assembly bracket from below into the channel section of the bracket and insert the threaded bracket through the holes in the retaining plate (3).
- → Screw the wingnut onto the threads of the assembly bracket and tighten them by hand (4).

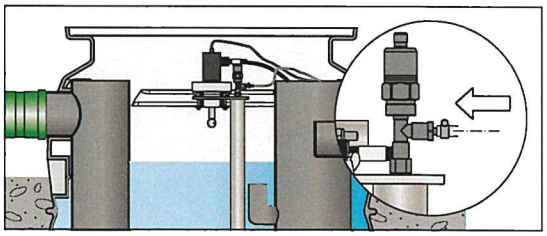
The pilot pipe is ready assembled.



3.4.8 Connect hose for air bubble injection 20

Hose (30 m long) and 2 hose clamps are delivered loose. The hose must be attached to the hose nozzle of the pressure sensor on the pitot tube.

- → Push the hose clamp over one end of the hose.
- → Put the hose end on the hose nozzle of the T-piece below the pressure sensor and fix it with hose clamp.
- → Protect the end of the hose against the ingress of moisture and dirt and pull it with the pull wire through the supply line (reserve conduit) to the installation site of the control unit (air diaphragm pump).
  IMPORTANT 📖 Chapter 3.4.9 "Installing the cable gland".

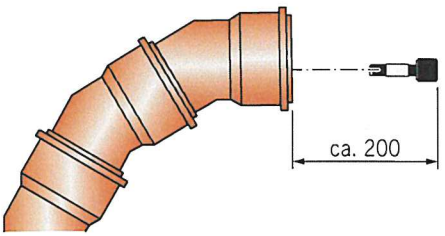


3.4.9 Installing cable gland 25

A cable bushing (approx. 1 kg) for sealing the connecting cables and hoses in the reserve conduit (supply line) is supplied loose with LipuMax - P - DM, - DA and - DAP on delivery.

Specifications:

- Maintain a projection of approx. 200 mm of the high-pressure hose beyond the end of the supply line (reserve conduit).



- Maintain a projection of approx. 0.5 – 1 m for the connecting cables and the air bubble tube beyond the installation location of the control unit.
- Lay out and fasten any excess length of the high-pressure hose in loops in the housing or attachment system.

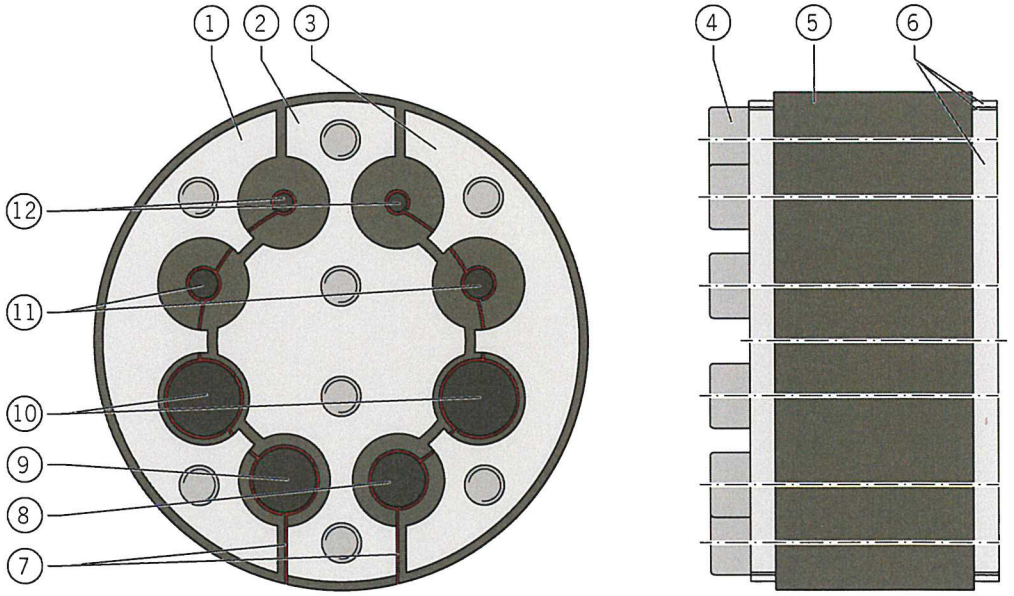


Figure: Cable gland

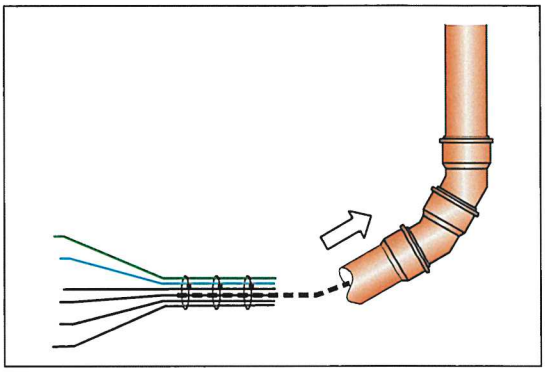
1 = Flange part (with through boring)
2 = Flange part (with through boring)
3 = Flange part (with through boring)
4 = Cylinder head screw
5 = Split sealing sleeve
6 = Flange part (with threaded hole)
7 = Splitting line of sealing sleeve
8 = Boring or placeholder no. 8/Ø 12 mm
9 = Boring or placeholder no. 7/Ø 14 mm
10 = Boring or placeholder no. 5+6/Ø 16 mm
11 = Boring or placeholder no. 3+4/Ø 7 mm
12 = Boring or placeholder no. 1+2/Ø 5 mm

Arrangement of the drillholes and connecting cables or hoses (suggestion)

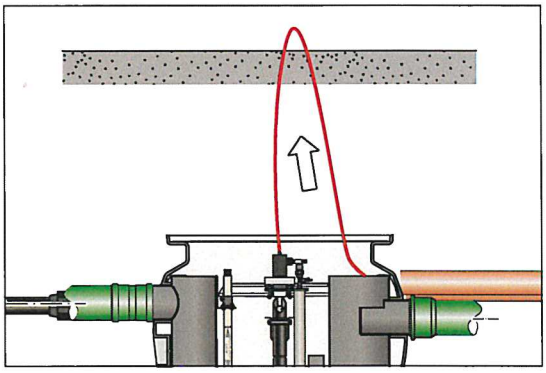
Drillhole number	Performance of (according to type of grease separator)
1 (Ø 5 mm)	Connecting cable for pressure sensor
3 (Ø 7 mm)	Hose for air bubble injection
4 (Ø 7 mm)	Connection cable for HP head
6 (Ø 16 mm)	High pressure hose
5 (Ø 16 mm)	Connection cable for grease layer thickness measuring device
8 (Ø 12 mm	Connection cable for disposal pump

Pulling in the connection cables or hoses

→ Attach the connecting cable and hoses to the pull wire ▪▪▪▪ with cable ties and pull them through the supply line (reserve conduit) into the plant room.



→ **IMPORTANT** Pull all connecting cables back until a loop can be ▬ made at the top edge of the ground. Only then can the loads be removed from the system during operation.



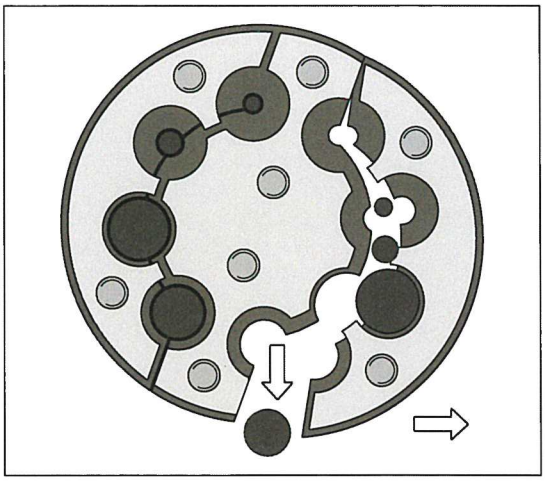
→ Hook the connection cable loops into the extension system at a fixing point provided by the customer (after installation of the extension system).

IMPORTANT With the exception of air bubble injection hose and high pressure hose:

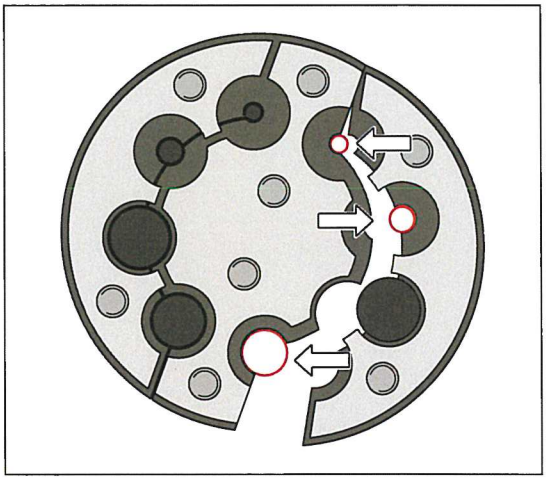
→ Arrange these in an almost horizontal position from the connection points to the start of the supply line.

Installation of the cable gland

- → Arrange the cable entry close to the sleeve of the supply line.
- → Loosen the cylinder head screw a little.
- → Unfold parts of the sealing sleeve as required.
- → Remove unnecessary placeholders.

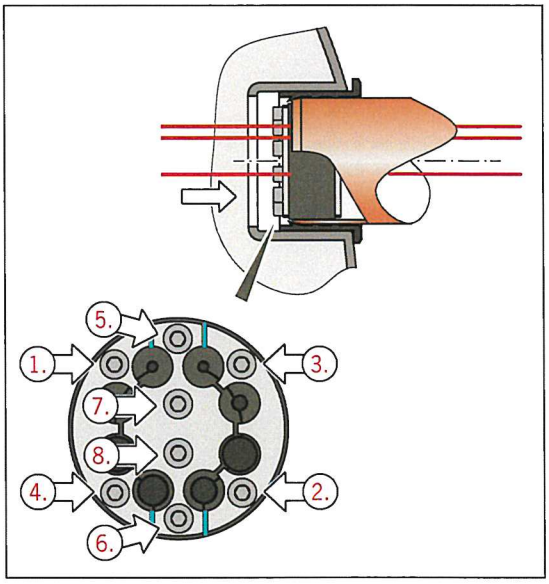


- → Insert the connection cable and hoses ○ and close the sealing sleeve again.



- → Push the complete unit into the beginning of the supply line (until the sealing sleeve sits in the empty pipe) and tighten the screw connections by hand.

IMPORTANT Note the tightening sequence 1 – 8 to avoid the mismatch of the flange parts ▬.



3.4.10 Installing the top section systems, load class A15 or B125 6

Cutting to length and installing the extension unit

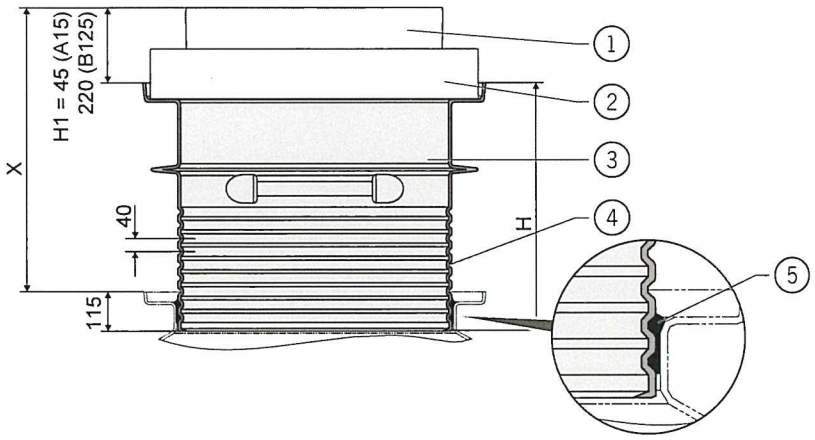
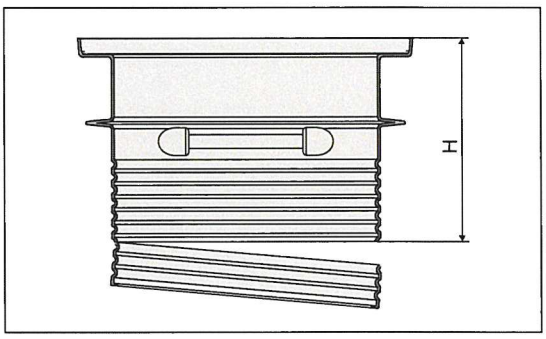


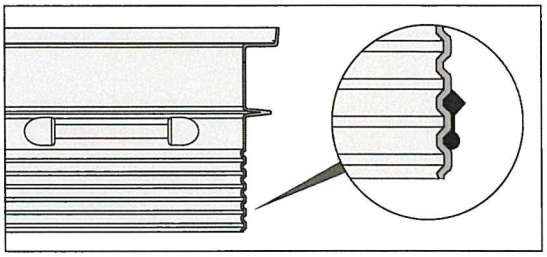
Figure: Extension system, load class B125

1 = Cover, A15 or B125
2 = Adapter plate
3 = Extension unit 750 mm high (22 kg) or 1,740 mm high (50 kg)
4 = Separating joints
5 = Combination ring

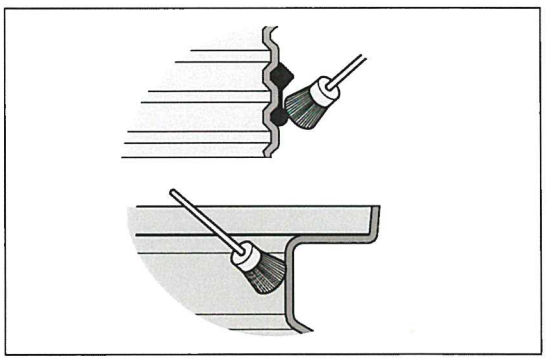
→ Measure dimension X (top of tank up to ground level).
→ Transfer dimension H (X - H1 + 115 mm) onto the delivered top section and cut at the nearest cutting joint.



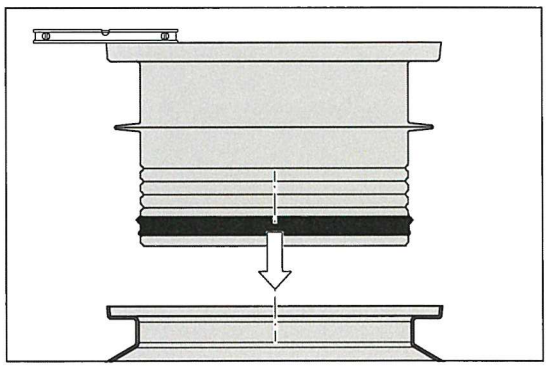
→ Pull on the combination ring in the first and second groove from the bottom.



→ Smear the bottom area (round sealing surface) of the combination ring and the surface of the "tank collar" with acid-free grease.



→ Push the top section into the tank up to the "Combination ring stop" and align horizontally.



Installing the cover, A15 or B125

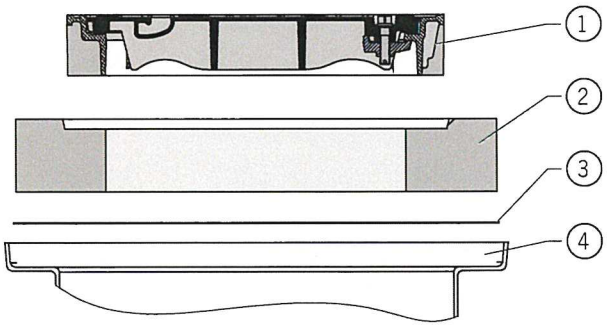


Figure: Structure for load class B125

1 = Cover, A15 (145 kg) or B125 (110 kg)
2 = Adapter plate (170 kg)
3 = Flat seal
4 = Tank or top section

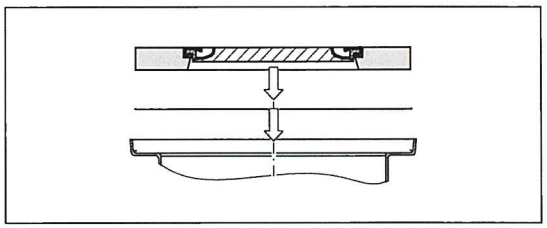
IMPORTANT

- Before installing, all bearing surfaces must be cleaned.
- Before the cover is installed, the excavation pit must be backfilled up to this level, Chapter 3.3.4 „Specifications for foundation / installation / structural analysis“.

A15:

→ Place the flat seal on the surface.

→ Insert the cover in the "retainer".



B125:

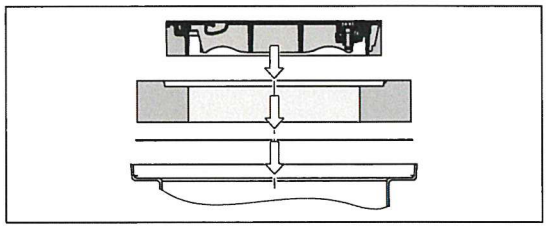
Standard supporting rings can be installed between the cover and the adapter plate to adjust to the ground level.

→ Place the flat seal on the surface.

→ Insert adapter plate into the "retainer".

→ Apply mortar bed (📖 "Mortar supplier information" of the mortar provided by the customer) on the surface of the rebate of the load distribution plate. Alternatively, the folded joint can also be glued (e.g. FD-plast A / plastic silicone).

→ Insert cover into the rebate of the adapter plate and align.



3.4.11 Installing the raising system, load class D400 6

Cutting to length and installing the top section

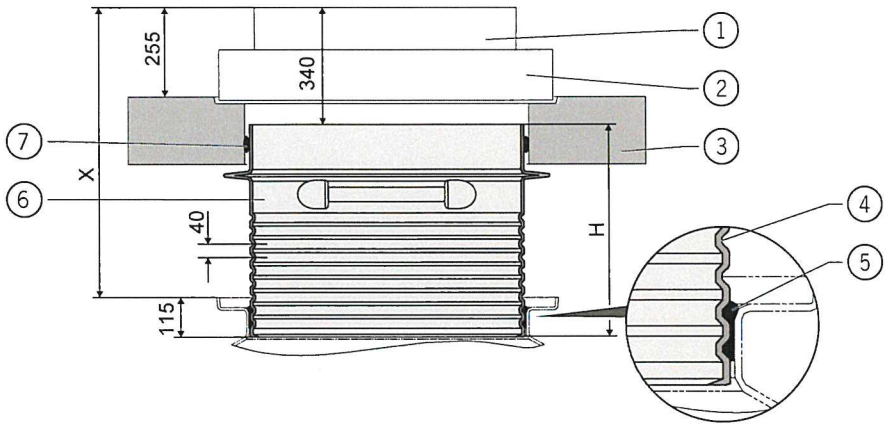
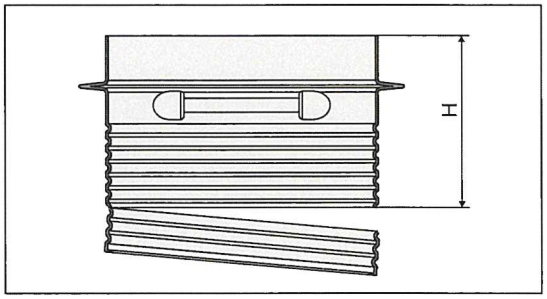


Figure: Extension system, load class D400

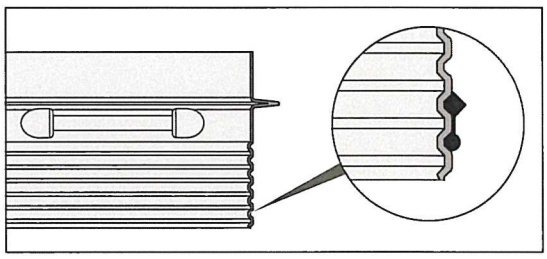
1 = Cover D400
2 = Adapter plate
3 = Load-distribution plate
4 = Separating joints
5 = Combination ring
6 = Extension unit: 1630 mm high (50 kg)
7 = Sealing ring: Ø780 mm and 20 mm

IMPORTANT Before the load distribution plate is installed, the excavation pit must be backfilled up to this level, Chapter 3.3.4 „Specifications for foundation / installation / structural analysis“.

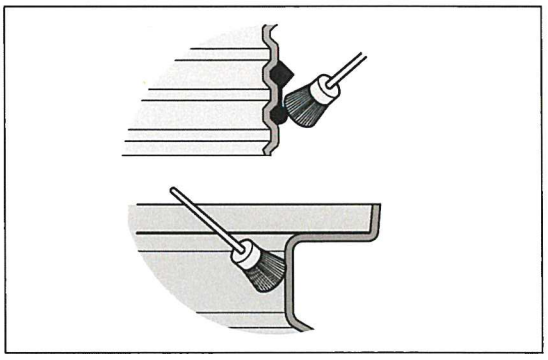
→ Measure dimension X (top of tank up to ground level).
→ Transfer dimension H (X - 340 + 115 mm) onto the delivered top section and cut at the nearest cutting joint.



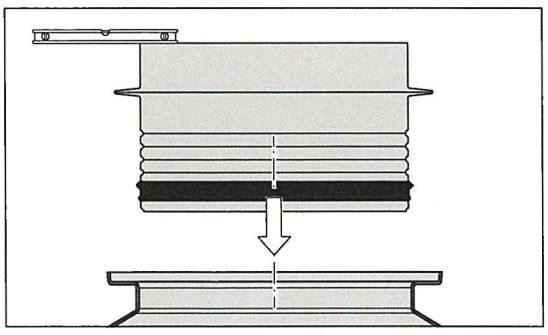
→ Pull on the combination ring in the first and second groove from the bottom.



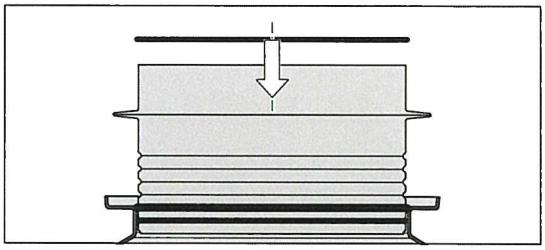
→ Smear the bottom area (round sealing surface) of the combination ring and the surface of the "tank collar" with acid-free grease.



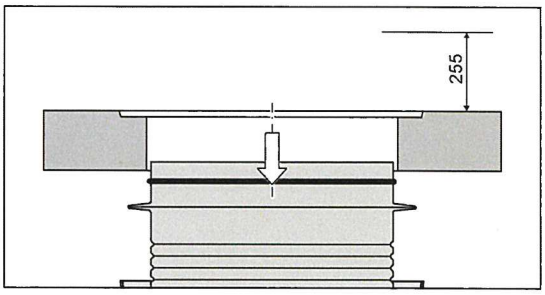
→ Push the top section into the tank up to the "Combination ring stop" and align horizontally.



→ Pull the sealing ring over the spigot.



→ Guide the load distribution plate over the spigot and fix at dimension 255 mm.



Installing the cover

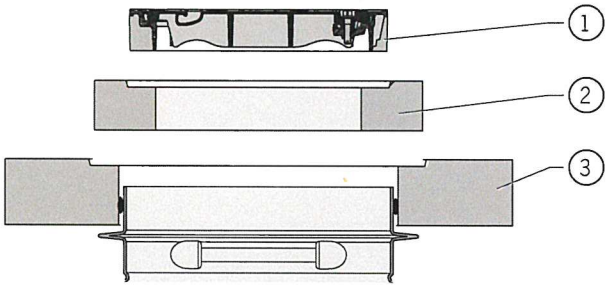


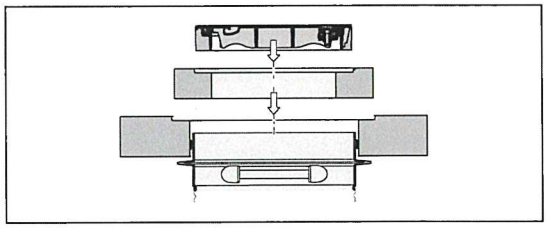
Figure: Structure for load class D400

1 = Cover D400 (110 kg)
2 = Adapter plate (170 kg)
3 = Load distribution plate: Ø 1550 x 200 mm high (700 kg)

IMPORTANT

- Before installing, all bearing surfaces must be cleaned.
- Before the cover is installed, the excavation pit must be backfilled up to this level, Chapter 3.3.4 „Specifications for foundation / installation / structural analysis“.

Standard supporting rings can be installed between the cover and the adapter plate to adjust to the ground level.



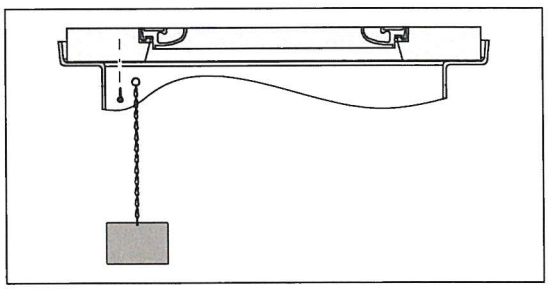
- → Apply mortar bed (📖 "Mortar supplier information" of the mortar provided by the customer) on the surface of the rebate of the load distribution plate. Alternatively, the folded joint can also be glued (e.g. FD-plast A / plastic silicone).
- → Insert adapter plate into the "retainer".
- → Apply mortar bed (📖 "Mortar supplier information" of the mortar provided by the customer) on the surface of the rebate of the load distribution plate. Alternatively, the folded joint can also be glued (e.g. FD-plast A / plastic silicone).
- → Insert cover into the rebate of the adapter plate and align.

3.4.12 Fixing the type plate 5

The type plate is supplied loose and must be fixed (in the extension system) under the cover.

Installation for version without extension system

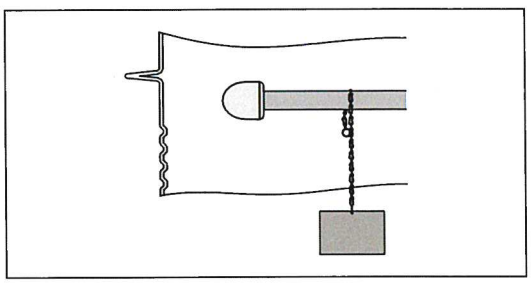
IMPORTANT Attach on the cover frame for A 15, and in the adapter plate for B 125.



- → Screw the on-site lifting lug screw with anchor into the concrete section.
- → Fix the keyring, delivered as a unit with knotted link chain and type plate, onto the lifting lug.

Installation for version with extension system

- → Loop the knotted link chain, delivered as a unit with key ring and type plate, around the pipe in the top section and use keyring to fix it onto the knotted link chain.



3.4.13 Leak test

All drainage systems on private ground must be leaktight (only applies to Germany. Provisions in other countries can vary).

The requirements and provisions for the leak test sequence must be enquired about for each individual country.

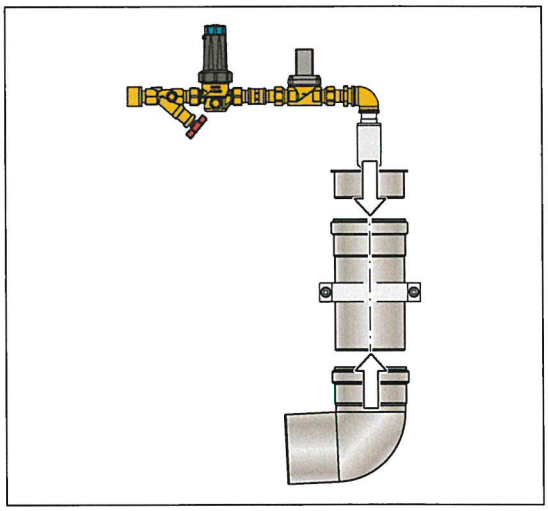
EN

3.5 Installation work in the plant room

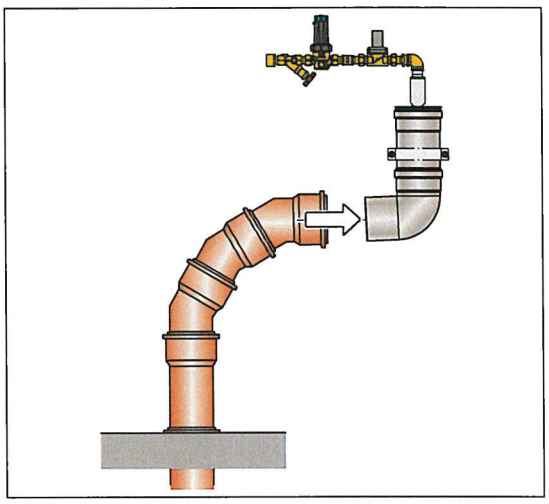
3.5.1 Installing the „filling pipe" parts 8

Requirement: Free wall area of approx. 800 x 800 mm

- → Use material provided on site (e.g. pipe clamp) to fix straight piece of pipe onto the wall.
- → Smear all spigot ends and collar seals with acid-free grease.
- → Push bend onto straight pipe.
- → Push the "filling unit" component into the collar of the straight pipe.



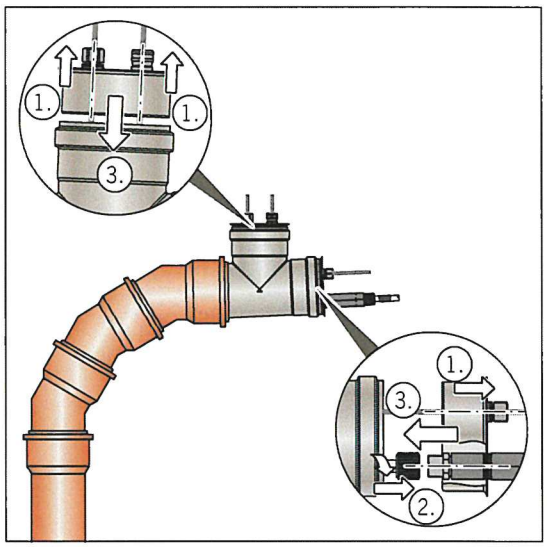
- → Connect the on-site filling pipe to the bend of the "filling unit" pipe parts.



3.5.2 Installing the supply pipe parts 10

The branch and both end covers with assembled cable glands and hose gland are supplied loose in the as-delivered condition.

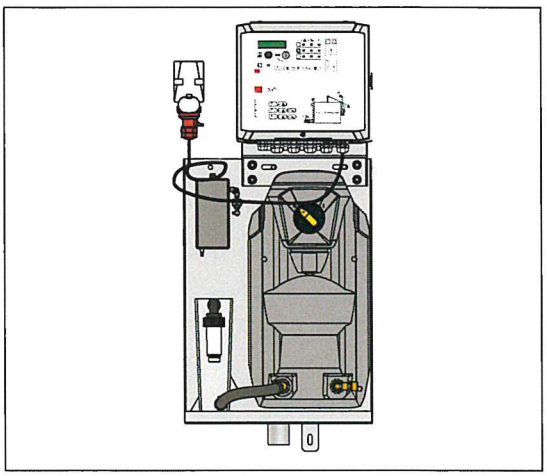
- → Lead all connecting cables drawn into the on-site supply line (circumference according to type of grease separator) through the branch and then through the cable glands of the end covers (1).
- → Connect high-pressure hose to the internal threaded connection of the end cover (2).
- → Grease all spigot and sleeve seals with acid-free lubricant.
- → Push the end cover into the branch joint (3).
- → Push branch into the socket of the on-site "supply line".
- → If necessary, tighten all connecting cables at the cable glands a little bit more and clamp them by hand using the main nut.



3.5.3 Fixing the HP unit 13

Requirement: Free and flood-proof wall area of approx. 600 x 1,200 mm.

- → Fix the HP unit (approx. 33 kg) to the wall with on-site material.



3.5.4 Connecting the hose to air diaphragm pump 20

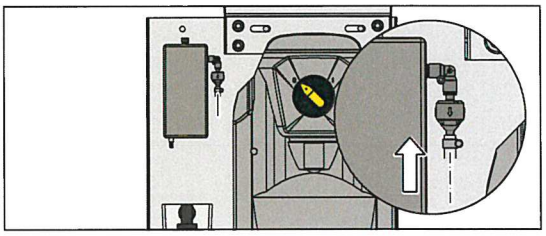
Hose clamp is supplied as loose in the as-delivered condition. The hose will be routed through the end cover from the LipuMax-P-DAP supply pipe, Chapter 3.5.2 „Assembling the pipe parts of the supply pipe“ and must be connected to the hose nozzle of the pneumatic box.

IMPORTANT To prevent malfunctions:

- Lay the hose in a rising, kink-free and frost-proof manner (e.g. in a reserve conduit at least DN 50).
- Adjust the length at right angles with a cutter knife.

→ Slide the hose clamp over the end of the hose.

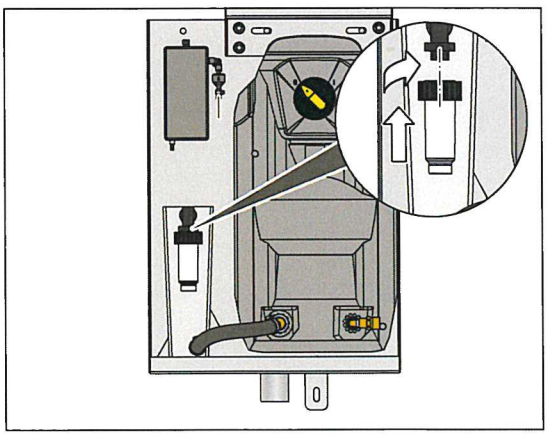
→ Put the end of the hose on the hose nozzle of the non-return valve and fix it with the hose clamp.



3.5.5 Connecting the on-site water pipe to the HP unit 16

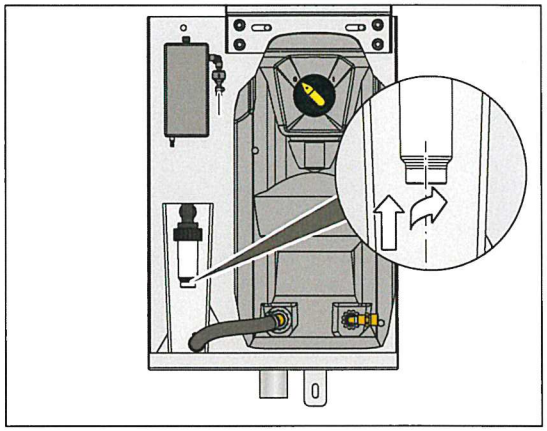
IMPORTANT

- Observe regional regulations for the connection of the HP unit to the drinking water network.
- To prevent malfunctions:
  - A shut-off valve must always be installed in the cold water pipe.
  - A required minimum flow rate of 30 l/minute must be ensured.
- If not already implemented, assemble the water filter (located inside the tank) on the threaded connection.



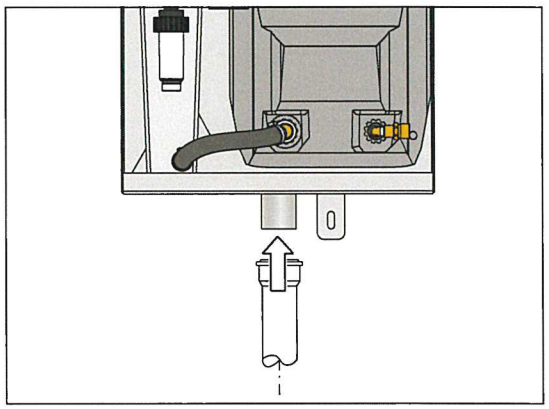
In order to optimise the cleaning process of the HP unit, hot water (maximum 60 °) can also be connected as an option.

→ Connect the cold water pipe to the threaded connection R ¾" of the HP unit.



3.5.6 Connect on-site drainage pipe to HP unit (optional) 15

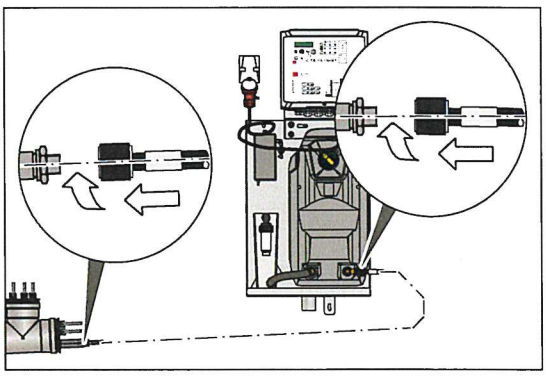
→ Connect drainage pipe DN 50 / OD 50 mm with odour trap to the HP unit.



3.5.7 Connecting the high-pressure hose 14

High-pressure hose (2.7 m long, approx. 0.8 kg) is supplied loose in the as-delivered condition.

→ Connect the high-pressure hose to the threaded connection of the "end cover" and the HP unit.



3.5.8 Connect the on-site water pipe to the filling device 7

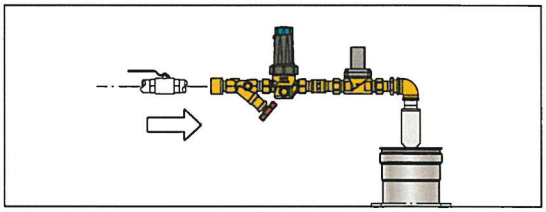
IMPORTANT Comply with the regional regulations for the connection of the filling unit to the drinking water network.

A permanent water connection pipe for filling the grease separator must have a free outlet in accordance with the legal requirements. ACO grease separators with filling unit always fulfil these requirements. An R ¾"drinking water connection is required for the filling unit. The installed pressure reducer is set to 4 bar.

IMPORTANT To prevent malfunctions:

- If possible, a shut-off valve must be installed in the cold water pipe.
- A required minimum flow rate of 30 l/minute must be ensured.

→ Connect the cold water pipe to the threaded connection Rp ¾" of the filling unit.



3.6 Electrical installation

WARNING

Electric shock risk in case of improper electrical installation

- The control unit must not be connected to the power supply until after the sanitary installation and electrical installation have been completed.
- Electrical connections may only be executed by qualified electricians.
- The power supply must comply with the directives of the local power supplier. In particular, attention should be paid to the specific protection measures and the cable cross-sections and potential compensation.
- Electrical connections must be executed in accordance with the circuit diagram, Chapter 7.2.2 "Characteristics_circuit diagram of the control unit" and 7.9.2 "Remote control connection plan".

3.6.1 Electrical data

Technical Data	LipuMax-P				
	-B	-D	-DM	-DA	-DAP
Performance	–	–	3.9 kW	3.9 kW	6.9 kW
Power supply	–	–	400 V/50 Hz		
CEE socket	–	–	X	X	X
Fusing on site	–	–	3 x 16 A (time lag)		
Degree of protection	–	–	Small housing with switched-mode power supply: IP 54	Control unit and remote control: IP 54	

3.6.2 Electrical installation

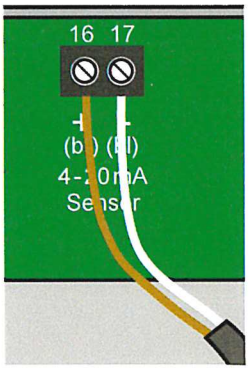
→ Install the CEE plug socket near the HP unit as specified by the manufacturer (connection cable 1.5 m long, with CEE plug socket 16 A) 11.

→ Connect solenoid valve connection cable to control unit 9.

→ Connect HP head connection cable to the control unit 19.

→ Connect pressure sensor connection cable to control unit 21.

IMPORTANT Contrary to the circuit diagram (📖 Chapter 7.2.2 "Characteristics_Circuit diagram of the control unit") the wire colours and the connection of the connecting cable on the board must be carried out according to the picture on the right: The brown cable of the pressure sensor must be connected to terminal 16 and the white cable to terminal 17.



→ Connect disposal pump connection cable to control unit 23.

IMPORTANT There is an arrow on the disposal pump.

→ Check the direction of turn

- Clean the impeller unit and then switch the disposal pump on and off briefly.
- Check the direction of turn against the arrow and, if necessary, reverse the phases on the contactor.

→ Install the remote control flood-proof near the disposal connection or in the plenum box (optional) 33.

→ Lay and connect the on-site electrical cable from the controller to the remote control 4:

- Permissible up to 50 m: Cable cross-section 7 x 1 mm² (without protective conductor)
- Required from 50 m to 200 m: Cable cross-section 7 x 1.5 mm² (without protective conductor)

IMPORTANT When routing cables, ensure that there is no electromagnetic interference from live components. If necessary, suitable shielding measures must be taken.

→ Set up group alarm message control system (optional). The control has a floating contact for transmission of a group alarm. A cable must be connected in the control system to forward on the potential-free contact as a group alarm 12.

- → Install the grease layer thickness measuring device (optional), evaluation unit and measuring rod near the HP unit, Additional information, 🕮 instructions for use „Multi Control grease layer thickness measuring device".
- → Install a earthed plug socket (optional) close to the grease layer thickness measuring device (optional) according to the details provided.
- → Set up group alarm message for grease layer thickness measuring device (optional). Additional information, 🕮 instructions for use „Multi Control grease layer thickness measuring device".

4 Operation

WARNING

Risk of injuries due to high-pressure inner cleaning

- During the cleaning process the raising system (maintenance opening) must be kept closed.

CAUTION

Risk of infection in the event of contact with wastewater

- Wear protective equipment, 🕮 Chap. 1.5 "Personal protective equipment".

4.1 Commissioning

A general inspection by a properly qualified technician is mandatory for the commissioning, 🕮 Chap. 1.4 „Personnel qualifications". Scope of the general inspection, 🕮 Chap. 5.4 „5 year general inspection".

Individual tasks can be omitted depending on the grease separator version:

→ Clean the grease separator.

→ Connect the HP unit to the power supply.

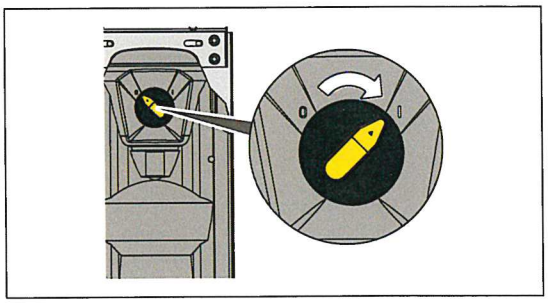
→ Connect control to the electrical supply and set automatic mode (solenoid valve of the filling device is automatically opened briefly 2x per day and the odour trap of the filling pipe is equipped with a water trap, 🕮 Chap. 4.2.1 „Grease separator control unit".

→ Open the shut-off valves in the cold water connection pipes of the filling device with solenoid valve and HP unit.

IMPORTANT

- Only switch on with LipuMax - P - DA and -DAP high pressure pump (HP pump).
- With LipuMax - P - DM the HP pump is only switched "On/Off" during the disposal process, 🕮 Chapter 4.4.4 "LipuMax -P - DM".

→ Switch on the "Off/On" switch of the HP pump.



If the grease separator still contains a water trap from the installation or leak test, the following „Filling“ step can be omitted.

→ Fill the grease separator with freshwater up to the static water level (pipe bottom, outlet socket):
- All types: via the maintenance opening (raising system)
- Alternatively for LipuMax - P - DM: via the ball valve of the filling unit
- Alternatively for LipuMax - P - DA and - DAP: Switch on automatic fresh water supply, Chapter 4.2.1 „Controls and displays“ (field 3).
  - Water level rises automatically depending on the time setting up to approx. 2/3 of the housing content (type - DA)
  - Water level rises automatically up to the lowering level in the housing (type - DAP)

→ Close maintenance opening.

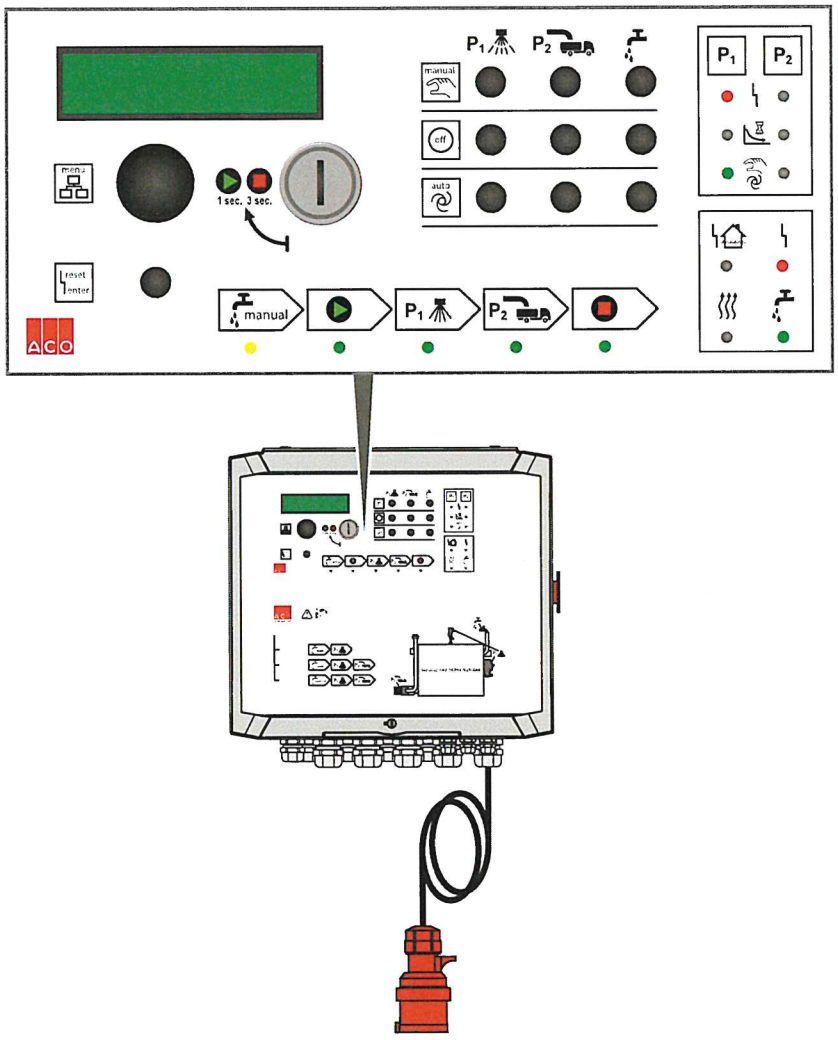
→ Open the penstock (if installed) in the inlet and outlet pipe.

→ For LipuMax - P - DM, - DA and - DAP with cleaning and / or disposal device: Perform a test run, Chapter 4.4 „Draining and cleaning“.

4.2 Grease separator control unit

Scope of delivery for LipuMax - P - DA and - DAP.

4.2.1 Operating elements and displays



Field	LED displays / symbols and meanings	
1	menu	Activate the rotary switch 'menu' to select menu items
	reset enter	Confirm setting (menu): Briefly press the "reset/enter" key. Acknowledge malfunction: Press and hold the "reset/enter" key for approx. 2 seconds.
2	▶	Programme start: Turn key switch to the position and hold for approx. 1 second.
	■	Programme stop: Turn key switch to the position and hold for approx. 3 seconds.

Field	LED displays / symbols and meanings				
3	manual Switch on manually off Switch off automatic mode auto Switch on automatic mode	P1 (HP pump Inner cleaning)	P2 (Disposal pump)	Fresh water supply	
4	P1 (HP pump Inner cleaning) P2 (Disposal pump)	LED glows: malfunction	LED flashes: stop delay period Shines: in operation	LED Flashes: in operation lights up: Automatic mode active	
5	LED lights up:	Liquid level in grease separator too high			
	LED lights up:	At least one malfunction is present			
	not functioning				
	LED flashes: LED lights up:	Fresh water supply in operation Automatic mode active			
6	LED indicators: Process steps (depending on expansion stage)				
	manual Filling	Prog. Start	P1 Cleaning	P2 Disposal	Prog. End

4.2.2 Settings in the menu

Settings in several menu items can only be made in Service mode and should be agreed with ACO Service. If Service mode is not activated the settings are displayed, but cannot be changed or saved.

If no entry is made within 20 seconds the display automatically switches back to the basic setting.

Amending the settings

→ Select menu items (upper line): Actuate rotary switch menu.

→ Amend settings (bottom line):

- Press reset enter button briefly. The most recently saved setting begins to flash.
- Turn the rotary switch menu (turn fast for a general setting, turn slowly for fine setting).

→ Confirm setting: Press the button reset enter briefly.

Menu overview

Menu items (top line)	Settings (bottom line)	Explanation when used with:	
		LipuMax-P-DA	LipuMax-P-DAP
Last faults	–	Display last malfunctions. Remains saved with non-resetting on voltage failure and can be deleted using the acknowledge button.	Display last malfunctions. Remains saved with non-resetting on voltage failure and can be deleted using the acknowledge button.
Pre-cleaning	Switched off 1 - 60 min	Duration of the pre-cleaning. The pre-cleaning starts after the "emptying", hardened grease layers are broken up to make them smaller.	Duration of the pre-cleaning. After programme start, the water level is lowered to the "lowering level". Then the pre-cleaning starts, hardened grease layers are crushed.
After-cleaning	1 – 60 min	Duration of the after-cleaning. The after-cleaning starts after the pre-cleaning. During after-cleaning the housing is cleaned thoroughly and at the same time it is emptied by the suction vehicle pump.	Duration of the after-cleaning. The after-cleaning starts after the pre-cleaning. During the subsequent cleaning phase, the housing is cleaned thoroughly and the water level is lowered to the set zero-point of the 'blank value measurement'.
Fill	1 – 60 min	Duration of the filling process. The filling starts after after-cleaning, the housing is filled with a water trap (housing is approx. 2/3 full).	–
Normal level	0 - 300 cm [1]	–	Water level, pipe bottom gully.
Reduced level	0 - 300 cm [1]	–	Water level, at which the "pre-cleaning" starts.
Blank value measurement	0 - 300 cm [1]	–	Water level, which is defined as "empty" for the "blank value measurement".
High water level	0 - 300 cm [1], [2]	–	Water level, at which an alarm is triggered.
Stop delay period	0 - 180 s	–	Specification of the time during which the disposal pump continues to run, after the water level has reached the "blank value measurement" level.
Refilling OT	0 - 60 s	Period during which the solenoid valve opens automatically 2 x per day and the odour trap (fresh water filling unit) is equipped with a water trap.	Period during which the solenoid valve opens automatically 2 x per day and the odour trap (fresh water filling unit) is equipped with a water trap.

Menu items (top line)	Settings (bottom line)	Explanation when used with: LipuMax-P-DA	LipuMax-P-DAP
Maximum current -1	0-16 A	Maximum power consumption for the internal cleaning for HP pump. Automatic switching off of the internal cleaning for HP pump if the set power consumption is exceeded.	–
Maximum current -2	0-16 A	–	Maximum power consumption for the disposal pump. Automatic switching off of the disposal pump if the set power consumption is exceeded.
Control system selection	Type P-DA Type OAP / RAP / DAP [3]	Selection of the control programme for LipuMax - P - DA.	Selection of the control programme for LipuMax - P-DAP.
Acoustic. Alarm	Is activated, is switched off	Activated: An alarm sounds in the event of a malfunction.	–
rot. Field Error	Is activated, is switched off	Activated: An alarm sounds if the phase sequence is incorrect or if a phase (L1, L2 or L3) is missing.	Activated: An alarm sounds if the phase sequence is incorrect or if a phase (L1, L2 or L3) is missing.
Service mode	Is activated Is switched off	Settings which should be agreed with ACO Service.	Settings which should be agreed with ACO Service.
Language	German, English...	Selection of the language for the menu items.	Selection of the language for the menu items.

[1] The measuring range should preferably be set to 0 - 250 cm.

[2] **IMPORTANT** If only "0-200 cm" is displayed in the "High water level" menu item, the high water level alarm must be adapted or deactivated accordingly (NS 8.5/NS 10), chapter 4.2.5 "Setting values LipuMax - P - DAP during commissioning".

[3] **IMPORTANT** If "Type OAP / RAP / DAP" is not displayed in the menu item "Control selection", "Type OAP / RAP" must be selected

4.2.3 Fault signals

If the red LED lights up, the display indicates the possible cause with a fault message.

LED	Fault signal	Cause / explanation / corrective measures
ϟ	Emergency stop active	Emergency stop switch on the side of the control is pressed. Unlock emergency stop button.
ϟ	rot. Field Error	Incorrect phase sequence or missing phase (L1, L2 or L3) in the power connection of the control unit. Correction by a qualified electrician.
ϟ	Overcurrent P1	Maximum current consumption for the HP pump is exceeded and HP internal cleaning is switched off. Keep "reset/enter" button pressed for approx. 2 seconds. If the malfunction remains: Contact ACO Service.

LED	Fault signal	Cause / explanation / corrective measures
ϟ	Overcurrent P2	Maximum current consumption for the disposal pump is exceeded and the disposal process is switched off. Keep "reset/enter" button pressed for approx. 2 seconds. If the malfunction remains: Contact ACO Service.
ϟ	No load	Load relay is not connected, no energy is consumed. Correction by a qualified electrician.
ϟ	Pressure fault	No pressure builds up in the suction line of the HP pump for 15 seconds. Check water supply, perhaps the ball valve in the feed line is not opened.
ϟ	High water level	Water level in the grease separator is above the set maximum level. Check condition.

4.2.4 Settings for LipuMax - P - DA during commissioning

All menu items are already pre-set on delivery. The values or settings must be controlled and/or adjusted during commissioning and entered manually in the following table according to the installed nominal size of the grease separator.

Menu items	Unit	Setting values factory-made LipuMax - P - DA Nominal size / SF type							on launch
		2/200	2/400 + 4/400	4/800 + 5.5/550	5.5/1000	7/700	8.5/850	10/1000	NS ...
Pre-cleaning	Minimum	5	5	10	10	10	10	10	
After-cleaning	Minimum	5	5	12	12	12	12	12	
Fill	Minimum	16	21	33	44	37	42	48	
Refilling OT	s	5							
Maximum current P1	A	7.5							
Control system selection	–	LipuMax-P-DA							

4.2.5 Settings for LipuMax - P - DAP during commissioning

Set values for pneumatic pressure measurement (level)

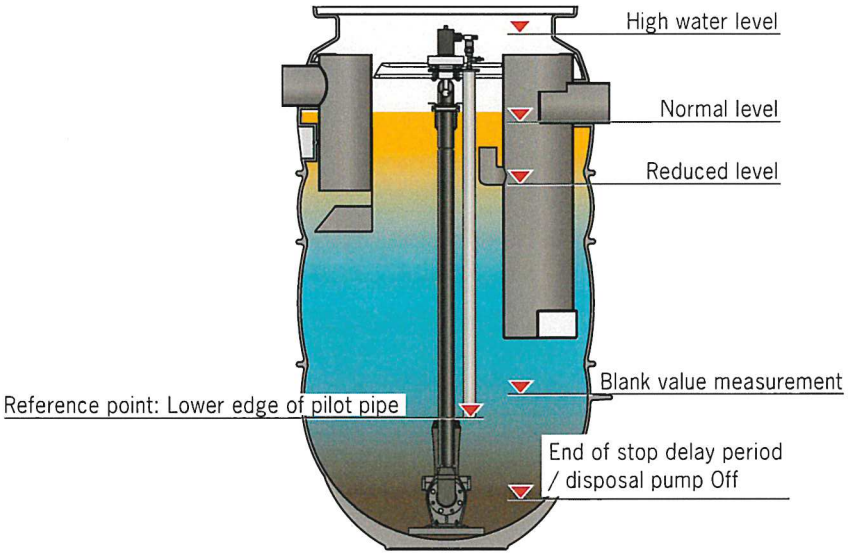


Figure: Water levels in the LipuMax-P-DAP housing

Settings

All menu items are already pre-set on delivery. The values or settings must be controlled and/or adjusted during commissioning and entered manually in the following table according to the installed nominal size of the grease separator.

IMPORTANT The stop delay period must be adapted to the on-site conditions (specification of the disposal line). Observe switch-off point, Chapter 4.4.7 „LipuMax - P - DAP with control“ or chapter 4.4.8 „LipuMax - P - DAP with remote control“.

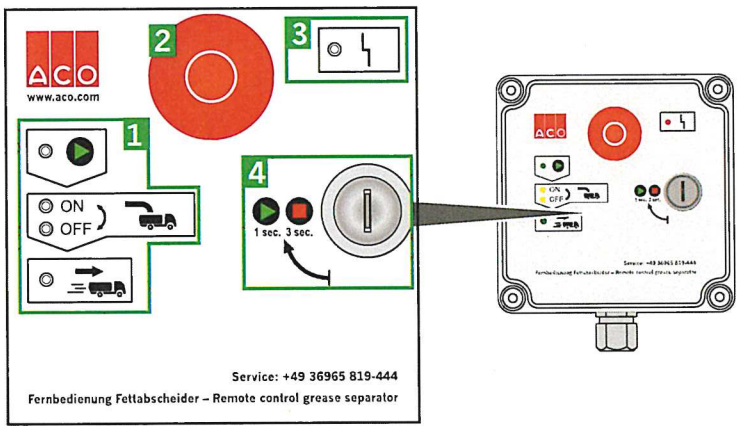
Menu items	Unit	Setting values factory-made LipuMax-P-DAP nominal size					on launch
		4	5.5	7	8.5	10	NS ...
Pre-cleaning	Minimum	5	10	10	10	10	
After-cleaning	Minimum	5	12	12	12	12	
Normal level	cm	82	131	154	175	200	
Reduced level	cm	57	106	129	150	178	
Blank value measurement	cm	5	5	5	5	5	
High water level	cm	112	161	184	205 *	230 *	
Stop delay	s	30	30	30	30	30	
Refilling OT	s	5					
Maximum current P1	A	7.5					

Menu items	Unit	Setting values factory-made LipuMax-P-DAP nominal size 4	5.5	7	8.5	10	on launch NS ...
Maximum current P2	A	6.4					
Control system selection	–	LipuMax-P-DAP					
* **IMPORTANT** If "0 - 200 cm" is displayed in the menu item "High water level", the high water level alarm must be adjusted or deactivated accordingly (NS 8.5/NS 10).							

4.3 Remote control grease separator

Scope of delivery for LipuMax - P - DA and - DAP.

4.3.1 Operating elements and displays



Field	LED displays / symbols and meanings
1	Process steps:
	LED lights up: Disposal/cleaning programme running
	Suction pump (suction vehicle): LED ON flashes: Signal indicating that the suction pump is switched on LED OFF lights up: Signal indicating that the suction pump is switched off
	LED lights up: Disposal/cleaning programme is finished Disconnect the suction hose (suction vehicle) from the disposal connection. The housing is automatically provided with the necessary "initial filling
2	Emergency stop button

Field	LED displays / symbols and meanings
3	LED lights up: Malfunction is present
4	Start disposal/cleaning programme: Turn key switch to position and hold for approx. 1 second
	Exit the disposal/cleaning programme: Turn key switch to position and hold for approx. 3 seconds

4.4 Emptying and cleaning

Grease separators must be emptied and cleaned at least once a month by properly qualified personnel, Chapter 1.4 „Personnel qualifications“. (Applies only to Germany. Provisions in other countries can vary). More frequently depending on the quantity of grease and/or sludge produced.

Enter the date and address of the disposal contractor in the operating log.
With the optional ACO "Comfort" grease thickness measuring device, the date and data of the grease thickness profile is stored on an integrated SD card.

4.4.1 Inspections

- Define additional disposal intervals. The storage capacity of the sludge trap (half sludge trap volume) and the grease separator (volume of the grease collection chamber) must not be exceeded.
- For grease separators with sludge and grease suction device or with disposal and rinsing device: Perform cleaning and function check, if necessary check that the outlet of the filling device is unobstructed in accordance with DIN EN 1717.
- Inspect cover of the extension system, especially its condition and the leaktightness of the seal.
- Clean the sampling equipment.

4.4.2 LipuMax-P-B

→ Interrupt the wastewater infeed or stop kitchen operation.
→ Open raising system (undo threaded fastener and lift off cover) and insert suction hose (suction vehicle).
→ Switch on the vacuum truck pump until the quantity in the housing has dropped by approx. ¼.
→ If necessary break up hardened grease layer in the housing.
→ Switch on vacuum truck pipe and empty the housing.
→ Switch off vacuum truck pump and clean the housing.

- → Switch on vacuum truck pump and pump out soiled cleaning water.
- → Switch off vacuum truck pump and remove suction hose from the grease separator.
- → Fill at least 2/3 of the housing capacity with fresh water.
- → Close off raising system (insert cover and screw tight) and switch on wastewater infeed or start up kitchen operation.

4.4.3 LipuMax-P-D

- → Interrupt the wastewater infeed or stop kitchen operation.
- → Connection suction hose (suction vehicle) to the disposal connection.
- → Switch on the vacuum truck pump until the quantity in the housing has dropped by approx. ¼.
- → If necessary break up hardened grease layer in the housing.
- → Switch on vacuum truck pipe and empty the housing.
- → Switch off vacuum truck pump and clean the housing.
- → Switch on vacuum truck pump and pump out soiled cleaning water.
- → Switch off vacuum truck pump and disconnect suction hose from the disposal connection.
- → Fill at least 2/3 of the housing capacity with fresh water.
- → Close off raising system (insert cover and screw tight) and switch on wastewater infeed or start up kitchen operation.

4.4.4 LipuMax-P-DM

- → Interrupt the wastewater infeed or stop kitchen operation.
- → Connection suction hose (vacuum truck) to the disposal connection.
- → Switch on vacuum truck pump for approx. 30 seconds.

Water level is lowered by approx. 250 mm.

- → Switch on HP pump (switch on HP pump).

Hardened grease layers in the housing are broken up and made smaller by the high-pressure water jet from the rotating HP head.

- → Switch off HP pump after „pre-cleaning“ time/minutes setting*.
- → Switch on vacuum truck pump and empty the housing.
- → Switch off vacuum truck pump and switch on HP pump.

Housing is cleaned.

- → Switch off HP pump after set „after-cleaning“ time/minutes*.
- → Switch on vacuum truck pump.
- → Dirty cleaning water is extracted.
- → Switch off vacuum truck pump after approx. 20 seconds and disconnect suction hose from the disposal connection.
- → Open ball valve of the filling device.

2/3 of the housing capacity is filled with fresh water.

→ Close ball valve after set „Filling“ time/minutes*.
→ Switch on wastewater supply or start kitchen operation.

* Minutes according to nominal size, Chapter 4.2.4 „Settings for LipuMax - P - DA during commissioning“.

4.4.5 LipuMax-P-DA with control

→ Interrupt the wastewater infeed or stop kitchen operation.
→ Connection suction hose (vacuum truck) to the disposal connection. Do not switch on suction pump yet.
→ Turn key-operated switch (control unit) into position and hold for approx. 1 second.

LED lights up: Disposal/cleaning programme starts.

→ Every time LED flashes: Switch on the suction pump (vacuum truck) until the LED stops flashing.

LED lights up: Disposal/cleaning programme is finished.

→ Disconnect the suction hose (vacuum truck) from the waste disposal connection.
→ Establish wastewater supply or commence work in the kitchen when the filling process is complete. LED lights up (flashes during the filling process).

4.4.6 LipuMax-P-DA with remote control

→ Interrupt the wastewater infeed or stop kitchen operation.
→ Connection suction hose (vacuum truck) to the disposal connection.
→ Turn key-operated switch (remote control) into position and hold for approx. 1 second.

LED lights up: Disposal/cleaning programme starts.

→ Each time the LED flashes: Switch on the suction pump (vacuum truck) until the LED lights up.

LED lights up: Disposal/cleaning programme is finished.

→ Disconnect the suction hose (vacuum truck) from the waste disposal connection.
→ Establish wastewater supply or commence work in the kitchen when the filling process is complete. LED (control) lights up (flashes during the filling process).

4.4.7 LipuMax-P-DA with control

→ Interrupt the wastewater infeed or stop kitchen operation.
→ Connection suction hose (vacuum truck) to the disposal connection. Do not switch on suction pump yet.
→ Turn key-operated switch (control unit) into position ▶ and hold for approx. 1 second.

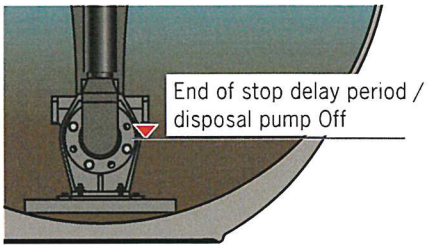
LED ▶ lights up: Disposal/cleaning programme starts.

→ Every time LED P_2 flashes: Switch on the suction pump (vacuum truck) until the LED stops flashing.

LED ■ lights up: Disposal/cleaning programme is finished.

→ Disconnect the suction hose (vacuum truck) from the waste disposal connection.

IMPORTANT Check the water level (via the opened maintenance opening) stop delay period has elapsed. The water level should be in the middle of the discharge nozzle of the disposal pump, otherwise adjust the stop delay period.



→ Establish wastewater supply or commence work in the kitchen when the filling process is complete. LED lights up (flashes during the filling process).

4.4.8 LipuMax-P-DA with remote control

→ Interrupt the wastewater infeed or stop kitchen operation.
→ Connection suction hose (vacuum truck) to the disposal connection.
→ Turn key-operated switch (remote control) into position ▶ and hold for approx. 1 second.

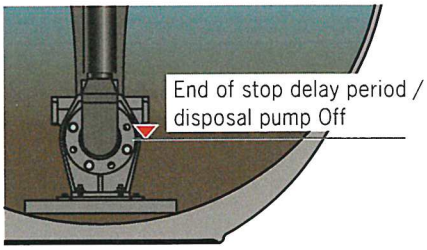
LED ▶ lights up: Disposal/cleaning programme starts.

→ Each time the LED ON/OFF flashes: Switch on the suction pump (vacuum truck) until the LED ON/OFF lights up.

LED ■ lights up: Disposal/cleaning programme is finished.

→ Disconnect the suction hose (vacuum truck) from the waste disposal connection.

IMPORTANT Check the water level (via the opened maintenance opening) stop delay period has elapsed. The water level should be in the middle of the discharge nozzle of the disposal pump, otherwise adjust the stop delay period.

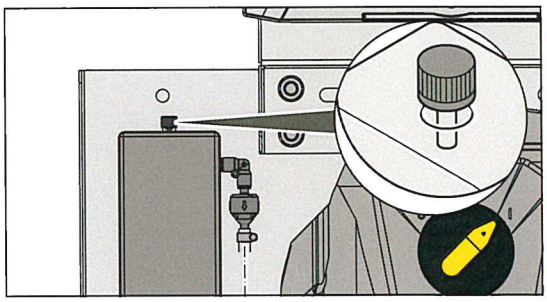


→ Establish wastewater supply or commence work in the kitchen when the filling process is complete. LED (control) lights up (flashes during the filling process).

4.5 Adjust air bubbling (optional)

To reduce noise and power consumption, adjust the air outlet on the air diaphragm pump.

→ Adjust the air bubbles with the screw on the air diaphragm pump so that only a few air bubbles escape at the end of the pitot tube (check via inspection opening).



5 Regular testing, inspection and maintenance

ACO recommends that you take out a maintenance contract. This ensures proper and on-schedule completion of the maintenance work by ACO product specialists, 🕮 Introduction „ACO Service".

Required qualifications for testing, inspection and maintenance, 🕮 Chapter 1.4 „Personnel qualifications".

Enter the tests, inspections, maintenance work and test results in the operating log:

- Inspections by the operator company
- Sampling
- Measuring: Water consumption, sludge layer and grease layer thickness, pH value, temperature
- Maintenance and general inspections
- Disposal (draining and cleaning)

IMPORTANT

- If defects are found during the tests or inspections, then the grease separator must not be put back into service until these defects have been remedied.
- Inspections carried out, any defects and their rectification must be documented in the operating logbook

5.1 Daily inspections, testing

Inspections by the operating company:

- Remove impurities in the coarse trap (if present) of the inlet pipe.

5.2 Weekly Inspections

Tests by the operating company (individual tasks can be omitted depending on the grease separator version):

- Inspect the grease separator, connections, mechanical and electrical components for external damage.
- Check the sludge volume and grease layer thickness in the grease separator (not applicable for LipuMax-P-DA and LipuMax - P - DAP).
- Remove coarse floating substances on the water surface (not applicable for LipuMax-P-DA and LipuMax-P-DAP)
- For grease separators with filling unit: Check water level in the odour trap.

5.3 Annual maintenance

Tests (after prior emptying and cleaning) by a properly qualified person (individual work can be omitted depending on the grease separator version):

- Remove the filter screen in the suction socket of the HP pump and clean it.
- Check the function of the HP pump and the HP orbital cleaning head.
- Check the oil level of the HP pump.
- Test the function of the disposal pump.
- Check the function of the back pressure measurement.
- Inspect and test the condition of the internal wall surfaces, built-in parts and electrical equipment.
- Test the functioning of electrical component installations, e.g. solenoid valve, HP pump.
- Inspect and test the function of the extraction equipment and free discharge of the filling unit in accordance with EN 1717. Clean the outlet of the filling unit.
- Check the cover of the extension system, especially the condition and sealing ability of the seal.
- Clean the sampling equipment as and when necessary.

5.4 5-yearly general inspection

Inspections (after prior emptying and cleaning) by a competent person prior to commissioning and thereafter at least every 5 years in accordance with the specifications of DIN 4040-100. The issues to be examined include the following:

- Inspect the dimensioning of the grease separator.
- Inspect the structural condition and leak tightness of the grease separator according to DIN 4040-100.
- Inspect and test the condition of the internal wall surfaces, built-in parts and electrical equipment.
- Inspect for proper execution of the vent stack of the grease separator as a vent stack above the roof according to DIN EN 1825-2.
- Inspect the completeness and plausibility of the entries in the operating log, e.g. verifications of proper disposal, constituents removed, sampling.
- Inspect for completeness of the required permits and documents, e.g. approvals, drainage plans, instructions for use.

6 Troubleshooting

WARNING

Electric shock

- Work on electrical connections must only be executed by qualified electricians.
- Disconnect the control from the power supply before troubleshooting.

CAUTION

Flooding and risk of infection in case of improper sanitary installation

- Work on the sanitary equipment must only be executed by qualified personnel, Chapter 1.4 "Personnel qualifications".
- Prevent contact with wastewater and wear protective equipment, Chapter 1.5 "Personal protective equipment".
- Never execute work on the connections and pipes unless they are depressurised.

Burns due to hot surfaces

- Allow the motor of the HP pump to cool.
- Always allow the motor of the disposal pump to cool down

IMPORTANT

Acoustic alarm with power failure and flood alarm

- Always interrupt the wastewater feed and remedy the causes.

Display of faults (control), Chapter 4.2 „Grease separator control“.

For safe and fault-free operation, only original spare parts from ACO are permitted, Introduction „Service“.

For repairs and spare part orders: Specify serial and article number, Chapter 2.5 „Product identification (type plate)“.

No claim is made that the list is complete.

Malfunction	Cause(s)	Action
Odour nuisance in normal operation	Odour trap without water trap	Open the ball valve of the manual filling device For operation with control: Set "Refilling OT" in the menu Check the solenoid valve of the filling unit, replace if necessary
	Seal of the cover of the extension system is damaged	Replace seals
	Control without power supply	Restore power supply (electrician)
	Automatic operation is switched off	Switch on automatic operation
	Emergency stop button (remote control) pressed	Unlock emergency stop button
	No fresh water supply (on site)	Restore fresh water supply (on site)
HP pump for internal cleaning not functioning	HP pump not switched on	Switch on HP pump
	Current consumption too high (Automatic switching off)	Keep "reset/enter" button pressed for approx. 2 seconds. If malfunction persists: Contact ACO Service
	Emergency stop button (remote control) pressed	Unlock emergency stop button
	HP monitor is defective	Replace HP monitor
	Control has no Power supply	Restore power supply (electrician)
	Automatic mode not switched on	Switch on automatic mode
HP pump Internal cleaning does not build up enough pressure	Filter in the inlet pipe of the HP pump is blocked	Clean filter in the inlet pipe
HP orbital cleaning head does not rotate	HP orbital cleaning head dirty	Clean HP orbital cleaning head
	Power supply interrupted	Restore power supply (electrician)
	HP orbital cleaning head is defective	Replace HP orbital cleaning head
HP orbital cleaning head without water outlet	Outlet nozzles in the HP orbital cleaning head blocked	Clean outlet nozzles
	HP orbital cleaning head is defective	Replace HP orbital cleaning head
Disposal pump is not functioning	Power consumption too high (automatic shut-off)	Keep "reset/enter" button pressed for approx. 2 seconds If the malfunction remains: Contact ACO Service
	Emergency stop switch on control or remote control pressed	Unlock emergency stop button
	Control unit without power supply	Restore power supply (electrician)
	Automatic mode not switched on	Switch on automatic mode

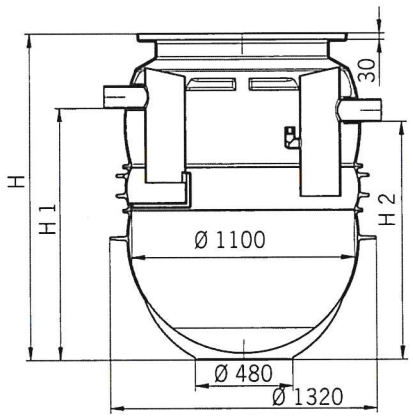
Malfunction	Cause(s)	Action
Disposal pump does not pump	Incorrect rotational direction Phases L1, L2, L3 interchanged	Check rotational direction, if necessary turn 2 phases via phase changer in the plug (electrician)
	Suction opening clogged	Clean suction opening
Disposal pump does not switch off	Pressure sensor incorrectly set and/or defective	Set "water level" in menu, 🕮 Chapter 4.2.2 and/or exchange pressure sensor
	Pneumatic pipe obstructed	Clean the pneumatic pipe
	Air diaphragm pump defective	Replace air diaphragm pump
Disposal pump only runs in manual operation	Pressure sensor incorrectly set and/or defective	Set "water level" in menu, 🕮 Chapter 4.2.2 and/or exchange pressure sensor
	Pneumatic pipe obstructed	Clean the pneumatic pipe
High water level alarm	Automatic mode is switched off	Switch on automatic mode
	Pump motor is defective	Pump replacement required (ACO Service)
	Impeller or grinder (pump) blocked	Pump maintenance required (ACO Service)
	Pressure pipe obstructed	Clean the pressure pipe
	Pump parts are worn	Pump repair required (ACO Service)
Knocking noises/ vibrations in the pressure pipe when switching off the disposal pumps	Stop delay period of the disposal pump is too short	Increase disposal pump stop delay period
Control unit	Control unit without power supply	Restore power supply (electrician)
	Emergency stop button (remote control) pressed	Unlock emergency stop button
	Programme error	Pull the mains plug of the control unit out of the CEE socket and then plug in again after approx. 15 seconds

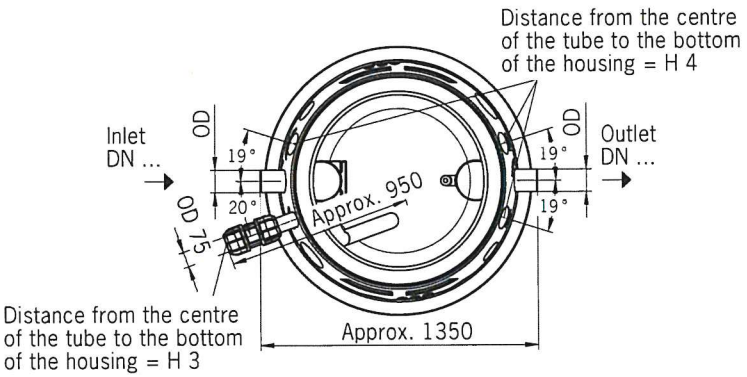
7 Technical Data

7.1 Housing

7.1.1 Dimensions

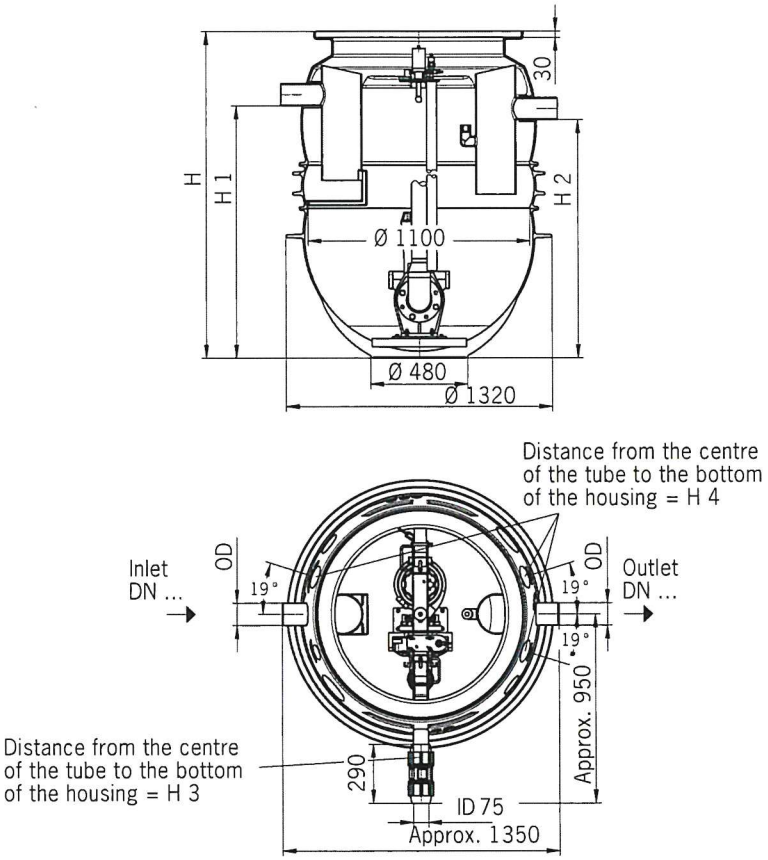
LipuMax-P -B, -D, -DM and -DA





Nominal size NS	SF Type	DN	Dimensions [mm]					
			OD	H	H 1	H 2	H 3	H 4
2	200	100	110	1,375	1,015	945	1,150	1,130
2	400	100	110	1,595	1,235	1,165	1,365	1,345
4	400	100	110	1,595	1,235	1,165	1,365	1,345
4	800	100	110	2,130	1,770	1,700	1,900	1,880
5.5	550	150	160	2,130	1,745	1,675	1,900	1,880
5.5	1,100	150	160	2,610	2,225	2,155	2,380	2,365
7	700	150	160	2,345	1,960	1,890	2,120	2,100
8.5	850	150	160	2,560	2,175	2,105	2,330	2,310
10	1,000	150	160	2,830	2,445	2,375	2,600	2,580

LipuMax-P-DAP



Nominal size NS	SF Type	DN	Dimensions [mm]					
			OD	H	H 1	H 2	H 3	H 4
4	400	100	110	1,595	1,235	1,165	1,285	1,345
5.5	550	150	160	2,130	1,745	1,675	1,810	1,880
7	700	150	160	2,345	1,960	1,890	2,030	2,100
8.5	850	150	160	2,560	2,175	2,105	2,240	2,310
10	1,000	150	160	2,830	2,445	2,375	2,510	2,580

7.1.2 Key data

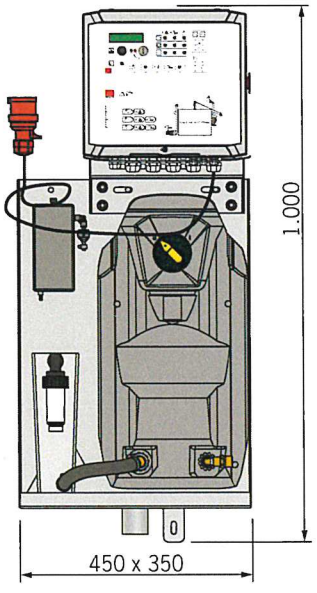
Nominal size	SF	Storage volumes		Content	Weight LipuMax-P				
NS	Type	Sludge	Grease	cpl.	-B	-D	-DM	-DA	-DAP
–	–	[l]	[l]	[l]	[kg]	[kg]	[kg]	[kg]	[kg]
2	200	245	270	720	63	65	65	65	–
2	400	460	270	930	77	80	80	80	–
4	400	460	270	930	79	85	85	85	115
4	800	980	270	1,465	90	95	95	95	–
5.5	550	570	230	1,465	95	100	100	100	130
5.5	1,100	1,065	230	1,960	110	115	115	115	–
7	700	730	285	1,675	116	120	120	120	150
8.5	850	860	360	1,900	120	125	125	125	155
10	1,000	1,005	415	2,170	130	135	135	135	170

7.2 HP - unit with control unit

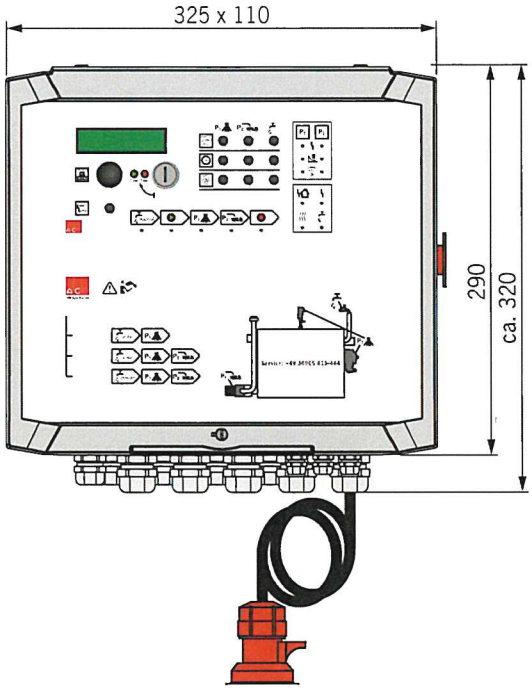
Scope of delivery for LipuMax-P-DA and -DAP (for LipuMax-P-DM instead of controller with switching power supply).

7.2.1 Dimensions

HP unit



Control unit



7.2.2 Key data

High pressure pump

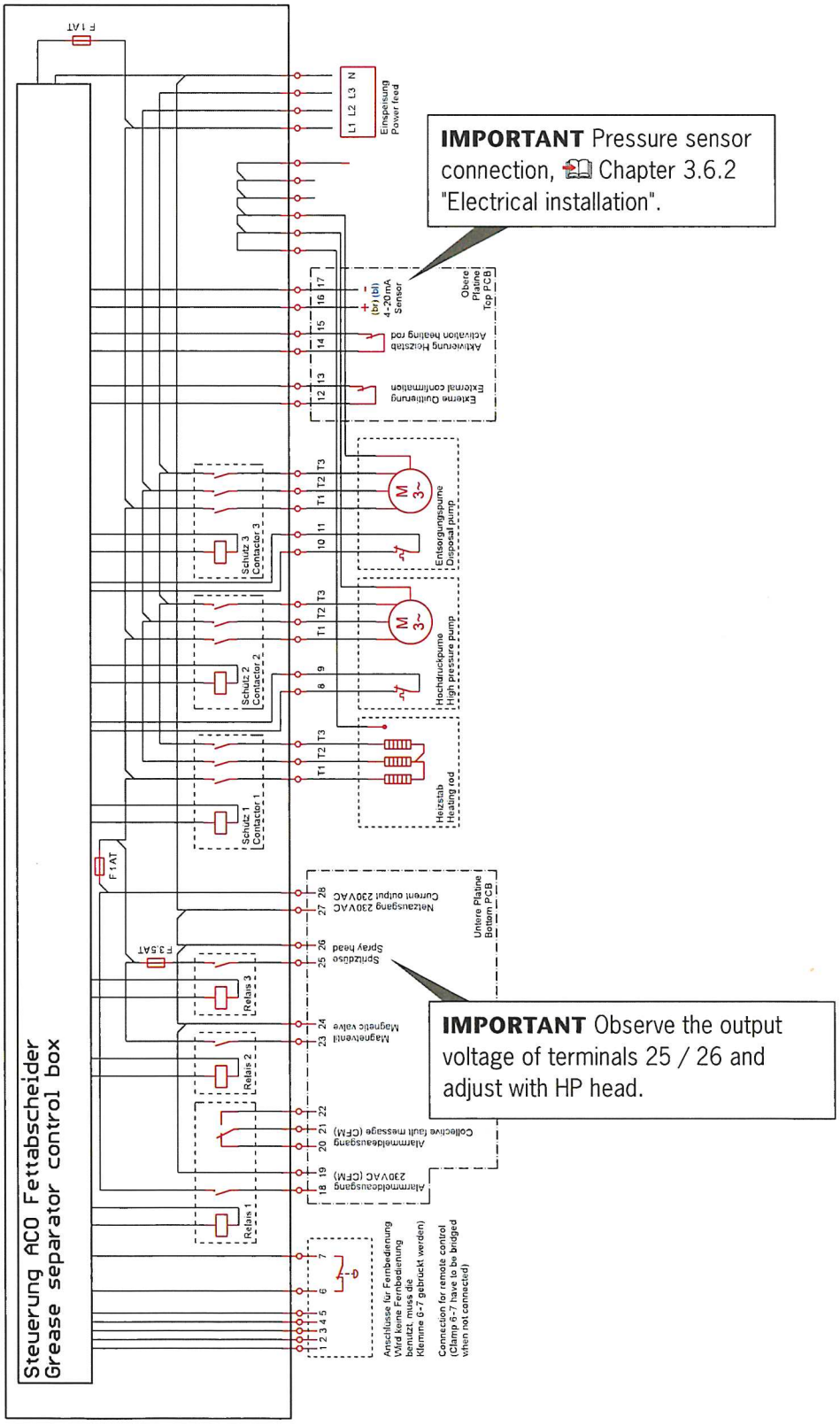
Key data	Values
Delivery rate:	Maximum 700 l/h
Working pressure:	Maximum 170 bar
Pressure:	Maximum 255 bar
Inlet temperature:	Maximal 60 °C
Connected load:	4.2 kW
Weight:	Approx. 23 kg
Dimension:	290 x 300 x 565 mm

Control unit

Key data	Values
Operating voltage:	~ 400 V (L1, L2, L3, N, PE)
Frequency:	50 Hz
Connected load:	4.2 kW (LipuMax - P - DA) and 7.2 kW (LipuMax - P - DAP)
Control voltage:	24 V AC
Control_Degree of protection:	IP 54
Fusing:	Maximum. 3 x 16 A (time lag)
Weight:	Approx. 3.5 kg

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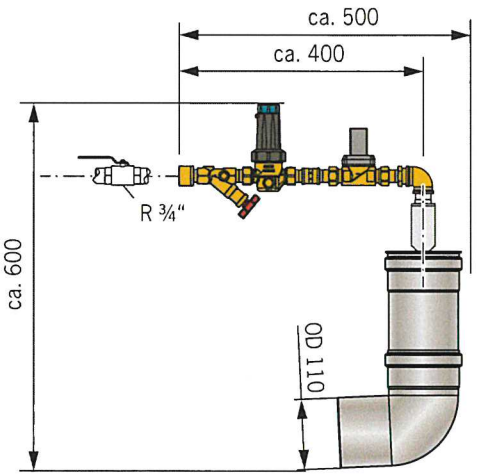
Circuit diagram of the control



7.3 Filling pipe parts

Scope of delivery for LipuMax - P - DA and - DAP (for LipuMax - P - DM instead of magnetic valve with ball valve).

7.3.1 Dimensions



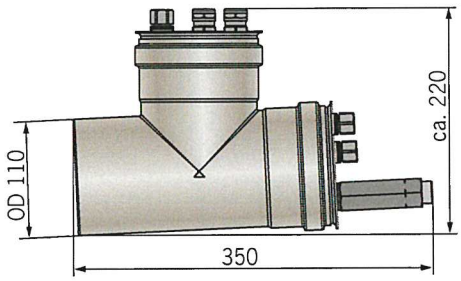
7.3.2 Filling unit Key data

Key data	Values
Protection type:	IP 65
Connection:	Rp ¾"
Minimum flow rate:	13 l/minute
Solenoid valve or ball valve:	G ½"
Pressure reducer:	■ Inlet pressure: Maximum 25 bar ■ Measuring range: 1.5 – 6 bar ■ Operating temperature: Maximum 30 °C (factory setting 4 bar) ■ DVGW-No.: NW-6330AT2061
Weight:	Approx. 2.5 kg

7.4 Pipe components for the supply line

Scope of delivery for LipuMax - P-DM, -DA und -DAP.

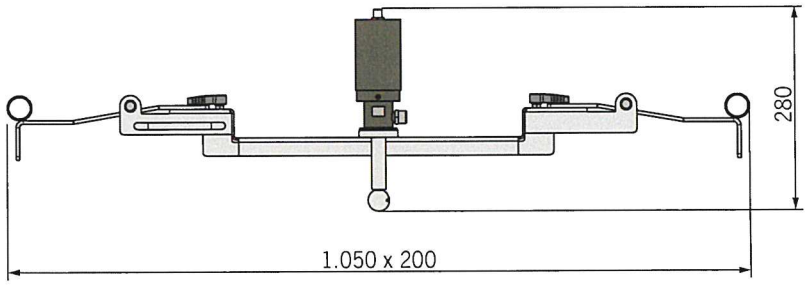
Dimensions



7.5 Bracket with HP head

Scope of delivery for LipuMax - P-DM, -DA und -DAP.

7.5.1 Dimensions



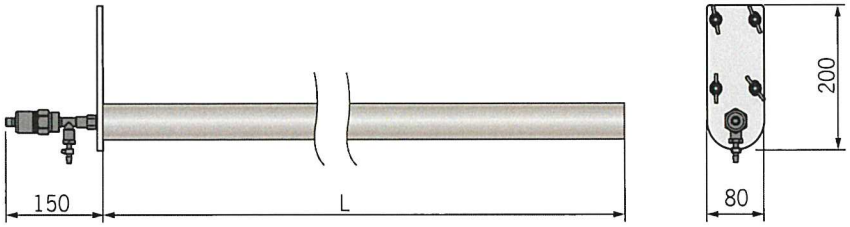
7.5.2 HP head Key data

Key data	Values
Length:	290 mm
Number of nozzles:	1
Diameter of nozzles:	1 mm
Working pressure:	Maximum 250 bar
Voltage:	12 V DC
Current:	Maximum 0.55 A
Protection type:	IP 68
Temperature range:	4 – 95 °C
Weight of HP head / bracket with HP head:	1.2 kg / 7 kg

7.6 Pitot tube with pressure sensor

Scope of delivery for LipuMax - P-DAP.

Dimensions



Nominal size NS	SF Type	Dimensions [mm] L
4	400	930
5.5	550	1,460
7	700	1,680
8.5	850	1,890
10	1,000	2,160

7.7 Pipeline parts for the disposal line

Scope of delivery for LipuMax - P-D, -DM, -DA und -DAP.

Dimensions

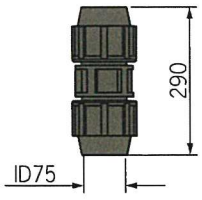


Figure:
Compression fitting

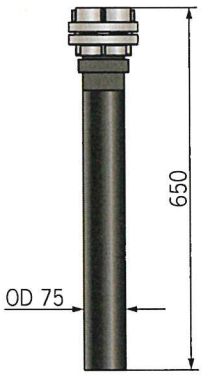


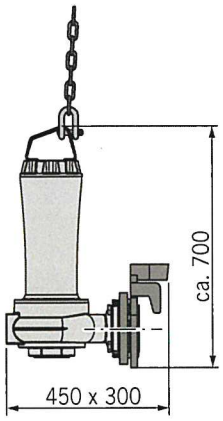
Figure:
Pipe with disposal connection DN 65 (connection coupling) and blind cover

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7.8 Disposal pump

Scope of delivery for LipuMax - P-DAP.

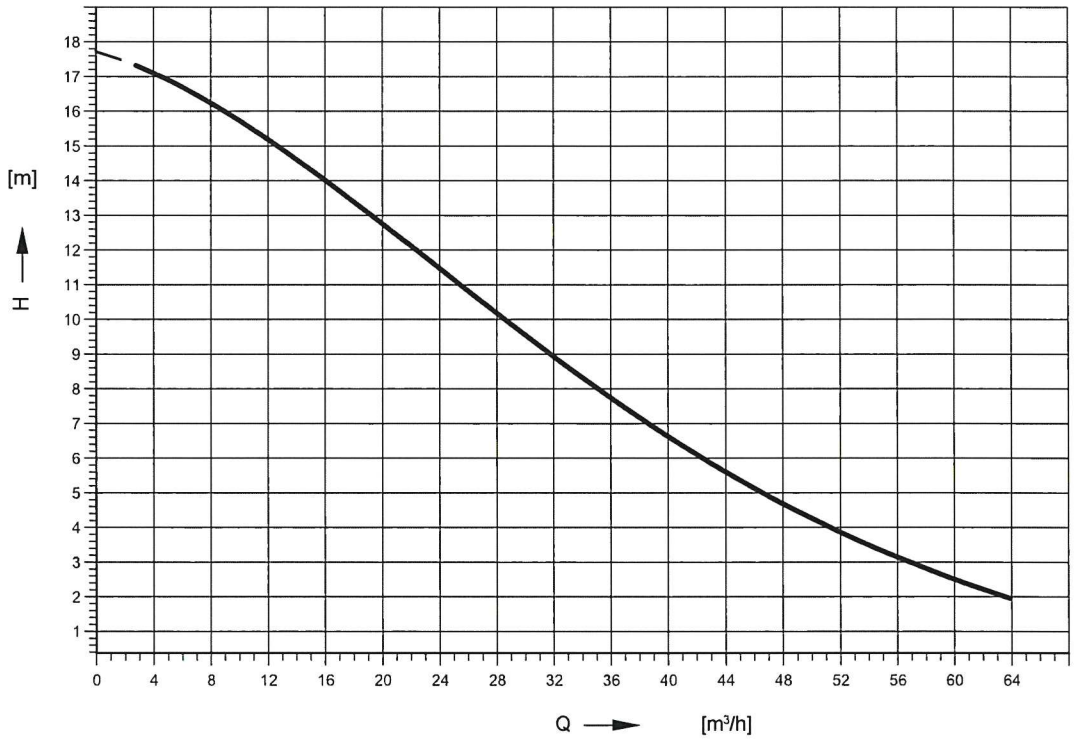
Dimensions



Key data and use limits

Key data	
Type of cable for connection cable:	4G1,5 + 3x1
Pump motor operating voltage [V]:	400
Frequency [Hz]:	50 (60 Hz on request)
Pump motor speed [1/min.]:	2,877
Pump motor power input P1 [kW]:	3.68
Pump motor output P2 [kW]:	3.00
Pump motor nominal current [A]:	6.4
Maximum ball through-flow [mm]:	65
Fluid pH-value:	6 – 14
Weight [kg]:	55

Performance diagram

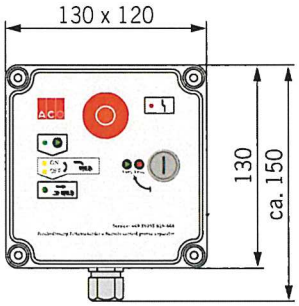


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7.9 Remote control

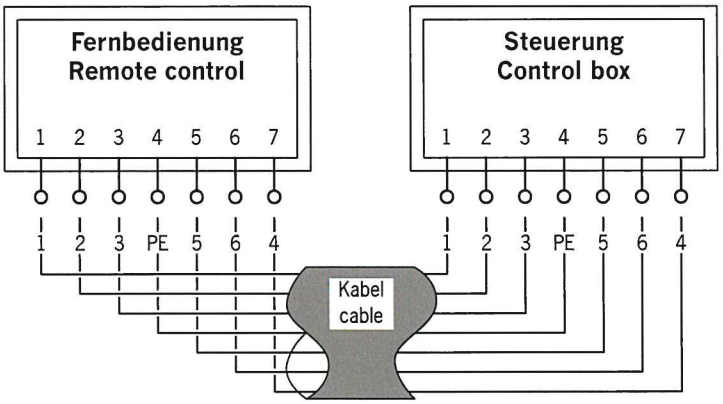
Scope of delivery for LipuMax - P - DA and - DAP. Weight approx. 1 kg

7.9.1 Dimensions



7.9.2 Remote control connection plan

IMPORTANT To reduce coupling effects (especially for longer conduits), the cable configuration must absolutely be carried out as depicted in connection plan.



7.10 Extension systems

Extension systems can be obtained from ACO as optional extras.

7.10.1 Extension system, load class A15 and B125

Minimum installation depth T 1/without extension unit

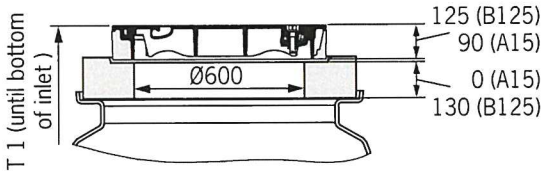


Figure: Extension system, load class A15 and B125 without extension unit

Nominal size NS	SF Type	T 1 [mm]		Weight [kg]	
		A15	B125	A15	B125
2	200	425	600	142	220
2	400	425	600		
4	400	425	600		
4	800	425	600		
5.5	550	450	625		
5.5	1,100	450	625		
7	700	450	625		
8.5	850	450	625		
10	1,000	450	625		

Installation depth T 2/with extension unit 750 mm and/or 1,740 mm high

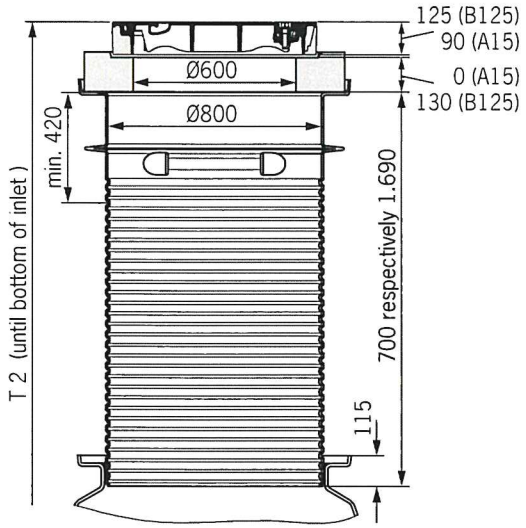


Figure: Extension system, load class A15 and B125 with extension unit

Nominal size NS	SF Type	T 2 [mm] A15 Extension unit height			T 2 [mm] B125 Extension unit height			Weight [kg] A15 Extension unit height		Weight [kg] B125 Extension unit height	
		Minimum	750	1,740	Minimum	750	1,740	750	1,740	750	1,740
2	200	760	1,040	1,985	935	1,215	1,985				
2	400	760	1,040	1,765	935	1,215	1,765				
4	400	760	1,040	1,765	935	1,215	1,765				
4	800	760	1,040	1,830	935	1,215	1,830				
5.5	550	785	1,065	1,855	960	1,240	1,855	170	193	307	330
5.5	1,100	785	1,065	1,375	960	1,240	1,375				
7	700	785	1,065	1,640	960	1,240	1,640				
8.5	850	785	1,065	1,425	960	1,240	1,425				
10	1,000	785	1,065	1,155	960	1,240	1,155				

7.10.2 Extension system, load class D400

Installation depthT 3/with extension unit 1,630 high

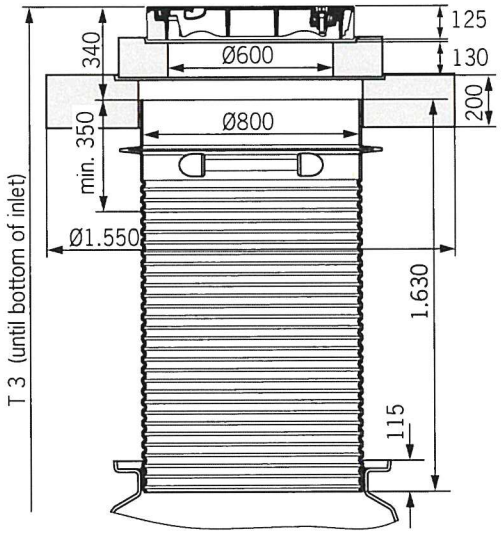


Figure: Extension system, load class D400 with extension unit

Nominal size	SF	T 3 [mm] Extension unit height		Weight
NS	Type	Minimum	1,600	[kg]
2	200	935	1,985	
2	400	935	1,765	
4	400	935	1,765	
4	800	935	1,830	
5.5	550	960	1,855	1,030*
5.5	1,100	960	1,375	
7	700	960	1,640	
8.5	850	960	1,425	
10	1,000	960	1,155	

* without load distribution slab = 330 kg

Notice

Appendix: Commissioning report

Commissioning and instruction of a properly qualified technician takes place in the presence of the authorised acceptance inspection representative and the plant operator company.

Commissioning date: _____

Handover date: _____

Grease separator

Equipment level	Nominal size	Art. No.	Serial No.	Year built

Use location

Building/room: _____

Use: Commercial company ○ ○ ○

Street: _____

Town/city: _____

Responsible persons

	Properly qualified technician	Authorised acceptance rep.	Plant operator company
Name:			
Phone No.:			
Fax No.:			
Email:			
Address:			

Checklist for commissioning (properly qualified technician)

Tests & Inspections (no claim is made that the list is complete)	**OK**	**not OK**
General inspection	○	○
Installation work	○	○
Installation	○	○
Electrical fusing of the plant in accordance with the IEC regulations or national and local regulations	○	○
Control: Operating voltage and frequency	○	○
Control: Functional test	○	○
Remote control: Functional test	○	○
HP pump: Rotational direction of pump motor	○	○
HP pump: Check oil level and oil basin ventilation	○	○
High-pressure inner cleaning: Functional test	○	○
HP head: Functional test	○	○
Filling device: Functional test	○	○
Disposal pump: Rotational direction of pump motor	○	○
Disposal pump: Functional test	○	○
Disposal: Trial run with LipuMax-P -DM, -DA and -DAP	○	○
Fault signalling equipment: LED fault displays, telecommunication equipment (group alarm)	○	○
Water trap in the housing	○	○

Instruction (by installer company)

Instruction	**Remarks**	**yes**	**no**
Instruction:	Functions, control, operating information, troubleshooting, maintenance obligations	○	○
Handover:	Instructions for Use	○	○

Remarks:

Signature of properly qualified technician: _____

Signature of authorised acceptance inspection representative: _____

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