

GENERAL INFORMATION

Enjoy your LILIE water pump for years to come!

For us at LILIE, the most important thing is customer satisfaction.

With this product you have acquired a great pump that we have developed in over 30 years. It is made of special materials which comply with the drinking water ordinance according to DIN 2001-2.

Please use your new pump only corresponding to this manual! If you do so, you will be able to reliably enjoy our products long-term, like the other hundreds of thousands of satisfied customers.

Please note:

Caravanning pumps are developed for application in the dry interior of a motor home. They are not splash-proof or acid-resistant. The pumps have no splashguard according to IP ff. Our Boat pumps are constructed for use in seawater environments. However, that does not mean they can be used standing or submerged in water. No warranty shall be accepted for damage caused by inappropriate or improper use or operation, or faulty installation. This includes continuous operation. These pumps are not suitable for continuous or permanent use but have been specially developed for intermittent operation.

The power-on time and interval lengths of the pump in use depend according to the specifications in our current catalogue. A caravanning-pump, e.g., may run smoothly for up to 20 minutes, after which a longer pause is necessary. (Generally, the fresh-water tank of your motor home would already be empty.)

It is very important to tighten the screws, which may have become loose by cause of vibrations and movements, from time to time. Check the screw fittings regularly; many problems can be solved or avoided this way.

INSTALLING THE PUMP

The aim of the installation is to achieve the most silent pump operation, with efficient conveying behavior, the lowest possible pressure load, and easy access to maintenance work. By following the instructions below, these results can be achieved.

The pump should be installed on a stable surface with sufficient accessibility, for easy access to the coarse filter during maintenance.

- Use suitable flexible pressure-resistant hoses in the input and output of the pump, e.g. our LILIE Native.
- No rigid, plastic or metal piping should be used for the pump input and output, as well as the coarse filter.
- Otherwise, the operating vibrations of the pump can be amplified, which can lead to loud operating noise as well as cavitation, leaks, or even defects on other components.
- Use only original grommets (e.g. LILIE 12mm: #8042, #8044; 10mm: #8040, #8043) without further use of Teflon tape or another sealant. The use of these means, as well as the use of other connections, can lead to leaks or damage to the pump. Such damage is not covered by the warranty of the pump.
- On the input side, the pump should be protected by a suitable coarse filter (50-mesh, mesh size approximately 0.25mm, e.g., LILIE # LS200162) to prevent particles from entering.
- Mount the pump on a stable surface to avoid vibration and noise.
- Hose lines should have an inner diameter of ideally at least 12 mm. We recommend our LILIE Native Drinking Water Hose #88112 or #98112. Smaller pipe diameters can lead to cavitation, increased pressure resistance, reduced flow and an increase in operating noise.
- Please avoid restrictions on the diameter of the plumbing at the inlet and outlet side of the pump as much as possible.
- This also applies to shut-off and drain valves, as well as angle connectors with smaller inner diameter.
- You don't need a pressure compensation tank when using a pump of the **SOFTSERIE®** or **SMARTSERIE™**.
- This pump is designed for intermittent use only. Don't use the pump for a reverse osmosis system. High pressure and non-stop operation shorten the life cycle of the pump. Such use is not covered by the warranty.
- The diameter of the cables should be 1.5mm² at minimum; we recommend 2.5mm² or 4.0mm². (See respective diagram in section "Electrical Connection")
- If your motor home has any control device (such as LILIE article #18501) installed, it has to be designed to meet the pump's maximum power consumption.
- In order to achieve best the possible performance and operational lifetime of the pump, mount it within a distance of maximum 2m from the fresh water tank.
- In order to properly ventilate and protect against overheating, the pump should be mounted at a location with 20l (0.02 m³) or more of free space.
- The pump can be mounted in a vertical or horizontal position. If mounted in a vertical position the pump-head must be pointed downwards.
- The installation site should be easily accessible to facilitate maintenance work such as emptying the coarse filter.

ELECTRICAL CONNECTION

- Ideally, the pump should be connected to its own electric circuit, with a respective circuit breaker and a fuse which meets the requirements specified on the type label.
- A 15-Ampere-switch is recommended, for the (positive current-carrying) wire.
- Adequately sized cables are required for proper operation of the pump. Too small of cable size leads to low voltage and impairment of the pump function.
- SWITCH OFF THE POWER OF THE PUMP WHEN YOU LEAVE THE MOTOR HOME OR WHEN IT IS UNSUPERVISED!

Data concerning wire cross section at 10% voltage drop for connection with 12VDC/ 10 Amps.

The length is the total length from the power source to the pump and to the ground.

Meter	mm ² [AWG]
0-7.5	1.5 [16]
7.5-20.0	2.5 [14]
20.0-30.0	4.0 [12]

Operation

The pumps are designed for intermittent use and operation. The pump usually operates until the preset pressure of the internal bypass. Here, a spring loaded pressure valve opens, whereby the output-side volume flow of the pump is fed back into the input side. This allows the pump to operate very smoothly and evenly, without „stuttering“, across nearly the entire flow range of the pump. When opening a water faucet, the pressure drops, the internal bypass closes, and the maximum flow rate is achieved. This always allows for the best possible flow, even with today's conventional water saving nozzles for shower heads, faucets, as well as shower mixer valves. The flow rate naturally changes depending on the voltage (lower voltage = lower flow rate, higher voltage = higher flow rate). Please be careful and always follow general electrical safety rules. When leaving your motorhome or when it's unattended, we recommend switching off the power supply to the pump.

TUBE SYSTEM AND CONNECTION

- To prevent the intrusion of particles, a suitable coarse filter should be connected to the input side of the pump. Particles can damage the pump. Such damages are not covered by the existing warranty when a suitable coarse filter is not installed.
- In order to minimize vibration and noise, a suitable pressure hose with an inside diameter of at least 12 mm (1/2") and a length of least 50 cm should be used at the inlet and outlet of the pump. To reduce vibrations and their transmission, this tubing should have a support at the junction to rigid tubing. The pump and coarse filter should not be rigidly tubed.

ADJUSTING THE PRESSURE SWITCH

The Pressure switch and Bypass are factory-preset. In general, no adjustment should be required. If your specific operating conditions require this, please proceed as follows:

SOFTSERIE®

BYPASS

The internal bypass is a spring-loaded diaphragm, which opens when the pressure increases, thereby returning a portion of the exit-side flow rate back to the input side. For pump models with a pressure switch value of 2.80 bar [40 psi], the internal bypass is set to start to open at a pressure of approximately 1.75 bar (25 psi) and is completely open at a pressure of approximately 3.1 bar (45 psi). The pressure switch begins to switch off the pump at a pressure of 2.8 bar (40 psi).

For pumps with a lower pressure switch value, the bypass valves are correspondingly lower. The switch-off pressure is dependent on the model of the pump and is set to the value specified on the label. This value lies below the maximum pressure that is reached through the bypass. If the pressure switch is set too high, it may cause it to not switch off.

Turn the screw in the center of the pump head clockwise, to increase the switching value.

To decrease the switch-off point, turn counterclockwise. Turning the screw on the bypass increases the value at which the bypass begins to work. Turning the screw counterclockwise will decrease the pressure range at which the Bypass is operating. The bypass should be set so that the maximum pressure reached is approximately 0.3 bar [5 psi] above the switch-off point of the pressure switch.

If the bypass value is too low, the switch point of the pressure switch can no longer be attained and the pump will not be able to switch off. The bypass/pressure switch combination allows the pump to adapt very well to specific conditions of the installation and no additional pressure compensation vessel is required.

CLASSICSERIE™

PRESSURE SWITCH

The cut-off pressure can be increased or decreased to a limited degree (0.5 bar / 14 psi). Slowly turn the central adjustment screw on the housing switch clockwise (to increase pressure) or counterclockwise (to decrease pressure). Start with minor changes (max 1/2 turn).

Avoid excessive changes (fully screwing it in/out). This can permanently damage the pump.

DESINFECTION AND MAINTENANCE

DISINFECTION

It is recommended to disinfect the entire drinking water system with LILIE-drinking water-disinfectant once a year, more frequently by intensive use. The LILIE-drinking water-disinfectant is approved in Germany according to §11 of the Drinking Water Ordinance for drinking water treatment. We recommend the following method, especially for the determination of the required quantity:

1. Add the appropriate amount of LILIE-drinking water-disinfectant (1 bottle #56200 = 1 liter for 100 liters of water) to the tank and fill up with fresh water.
2. Open all taps.
3. Turn on the pump with the main switch.
4. Close all taps when water is running out of all water taps. The pump shuts off automatically.
5. For sufficient disinfection, the solution should remain in the system / tank for 6 hours
6. After the contact time is up drain the tank by opening the water taps.
7. Refill the system with fresh water and rinse the disinfectant solution from the entire piping system.

NOTE: The disinfection method described here complies with the German Drinking Water Ordinance, in accordance with DIN-2001-2, which is also valid for the entire EU.

MAINTENANCE

Drinking water systems require regular maintenance to ensure a steady flow of drinking water. The following measures should be carried out regularly:

- Checking and cleaning the coarse filter.
- Occasional cleaning / disinfecting of pipes.
- Checking screw and bolt fittings for leaks or cracks.

If there is a risk of frost, the pump and the pipes should be protected against freezing. (i.e., by draining or filling with suitable antifreeze, e.g., LILIE article # 56601 Winter Ban.) Lack of maintenance is one of the most common causes of power loss and premature failure of the pump. Debris on valves and diaphragms can lead to pressure loss or internal leakage over time. (i.e., recognizable by random short startup of the pump, even though no load is active.)

To take relevant measures regarding this matter please refer to your RV or Motorhome manufacturer for more information!

WINTERIZING THE PUMP

If water freezes in the hose- or pipelines, the pump and the pipes can be damaged. Failures of this kind shall release us from any warranty services and/or coverage. The best protection against such frost damage is to make sure to drain the water completely. However, non-toxic antifreeze for fresh water, may also be used (e.g., LILIE article # 56601 winter ban). This is obtainable at any mobile home store or department. Winter break with antifreeze requires special protections, because at temperatures below 0 degrees the water system freezes and is damaged if it still contains water.

1. Open all taps and empty the tank completely.
2. Close all taps.
3. Add at least 10 liters of winter ban/water mixture to the tank.
4. Then open the water taps until colored liquid emerges.
5. Close all water taps and turn off the pump main switch.

CAUTION:

Don't use automotive antifreeze to stabilize drinking water pipelines in winter. These solutions are highly toxic. If such a solution is swallowed, it can lead to injury or death.

Antifreeze Winter Ban 3.78l



Diagram illustrating the application of Antifreeze Winter Ban 3.78l. The left diagram shows a water tank and pipes without Winter Ban, where ice is forming. The right diagram shows the same setup with Winter Ban, where the pipes are clear and no ice is forming.

# 56601	Mixing ratio (3.8l each)			
	Winter Ban	Water	Protection up to	total quantity
Protects against frost damage, corrosion, deposits and algae growth at outdoor temperatures of up to -73°C and also lubricates pumps and valves. For pipes and devices made of brass and plastics. Nontoxic, tasteless and odorless. Market leader in the US, EU-compliant with UBA approval. Trilingual label with detailed instructions.	1 x	4	-10° C	18.9 l
	1 x	2	-20° C	11.3 l
	1 x	1.5	-30° C	9.5 l
	1 x	1	-38° C	7.6 l
	1 x	0.5	-52° C	5.7 l
	1 x	0	-73° C	3.8 l

LILIE-drinking water-disinfectant

56200

- Suitable for containers, hose- and pipe systems
- Easy to dose and to apply.
- works on basis of a stabilized hydrogen peroxide solution and complies with the processing materials approved by the Federal Environment Agency for the disinfection of drinking water and corresponds with the dosage recommendation.
- residue-free and quickly biodegradable
- Protects the used drinking water approved materials
- Colorless, odorless and tasteless.
- The content of 1 liter is enough to disinfect 100 liters of drinking water with a minimum exposure time of 6 hours. For smaller tanks the exposure time can be proportionally reduced, for larger tanks use 2 or more bottles.



Water	LILIE-drinking water-disinfectant	minimum exposure time
100 liters	1 bottle	6 hours
200 liters	1 bottle	12 hours
250 liters	1 bottle	15 hours
100 liters	2 bottles	3 hours

Content: 1000 ml, for 100 liters of drinking water
Stabilized hydrogen peroxide solution 3%, bottle: H240 x W90 x D90 mm, 1040 g

Shocks and vibrations or transportation can loosen the piping system and parts of the pump. Check for loose system components. Various symptoms can be fixed without difficulties through tightening of small parts. Check the following items along with other details of the system.

THE PUMP DOESN'T START / TRIGGERS OVERLOAD SWITCH:

- Check the circuit connections, fuse or overload switch, power switch, and the ground line.
- Is the motor hot? The thermo-switch might have been triggered. It will reset after cooling.
- Is there voltage on the switch? Bypass the pressure switch. Does the pump work?
- Check charging system for correct voltage (+/- 10%) and proper grounding.
- Check for an open or grounded circuit, motor or wires with incorrect thickness.
- Check for blocked or stuck diaphragm/component (ice formation?).

THE PUMP DOESN'T SUCK / STUTTERS:

(No drainage/motor runs)

- Is the screen filter blocked?
- Is the tank filled with water or are there air bubbles enclosed in the continuous-flow water heater?
- Does the inlet tube/the piping system suck up air at the pipe connections (vacuum leak)?
- Is the inlet/outlet pipe constricted significantly or kinked?
- Correct voltage while the pump is operating (+/- 10%).
- Check for solids in the inlet/outlet valves or connecting valves.
- Check the pump housing for cracks or loose screws in the input unit.

PUMP DOESN'T SWITCH OFF / KEEPS RUNNING WITH CLOSED FAUCET:

- Check the pipes on the output side (pressure) for leaks. Also, check for leaky valves and the toilet.
- Check if air bubbles are enclosed in the output side (continuous-flow water heater) or in the pump head.
- Ensure that the voltage (+/-10%) to the pump is correct.
- Check for loose screws in the drive assembly or pump head.
- Are the valves or integrated check valves held in place by solids or is the rubber macerated?
- Confirmation of the pressure switch/wrong setting => refer to the section „Setting the pressure switch“.
- **SOFTSERIES®** / Bypass Pumps: Check bypass / Pressure switch settings.

LOUD OR IRREGULAR OPERATION:

- Check if the hoses and pipeline have become loose.
- Is the pump connected to pipes/wires through which noises could be transmitted?
- Are the noises enhanced by the installation surface (flexible)?
- Check if the mounting feet are compressed too tightly or have become loose.
- Check for loose screws at the connection between the pump head and the motor (3 long screws).
- Does the noise originate from the engine or the pump head? (The engine with pump head taken off).
- Flow-rate in the system is not 100%? Is the pump stuttering? If necessary, use a pressure equalization tank or a pump of the **SOFTSERIE®** or **SMARTSERIE™**.

RAPIDLY SWITCHING ON AND OFF

- Check the settings of the pressure switch.
- Water filter/water purifier should be connected to separate supply lines.
- Check for hoses or pipelines with constrictions. Check the flow restrictor in the faucets and in the shower heads.
- Flow-rate in the system is not 100%? Is the pump stuttering? If necessary, use a pressure equalization tank or a pump of the **SOFTSERIE®** or **SMARTSERIE™**.

LEAKY SPOTS ON PUMP HEAD OR SWITCH

- Check for loose screws on the switch and pump head.
- Switch diaphragm ruptured or pierced?
- Check for ruptured or punctured diaphragm in case there is water inside the drive assembly.

LIMITED WARRANTY

We guarantee that under normal conditions of use, our motorhome and boat pumps are free from defects in materials and manufacturing errors for a period of two years from the date of purchase. This warranty does not cover products which are applied or installed improperly or modified outside the factory.

ACCESSORIES AND CONNECTION PARTS

We guarantee that (under normal use) our accessory parts and connection parts are free from defects in manufacture and material error for a period of 1 year from the date of purchase. This warranty does not cover products that have been improperly used and/or installed.

ALL PRODUCTS

We assume no responsibility for operations necessary for the removal and reinstallation of a pump and/or connection parts and accessory parts. Likewise, we do not reimburse labor costs if it turns out that the pump or the connection parts and accessory parts are defective. Our obligation under this warranty is limited to the replacement or repair of the part (whichever is more appropriate), which will be returned to our factory free of charge and which, after a thorough examination by us, is found to be defective provided under this warranty.

WARRANTY

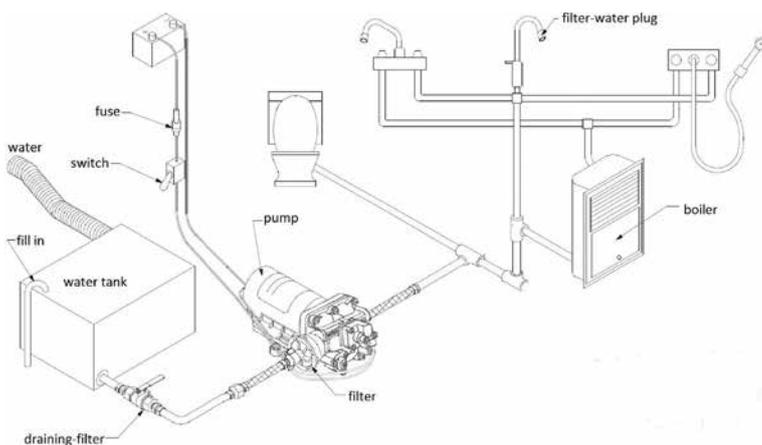
We don't assume any warranty if, for example, a caravanning pump is used outdoors. The pumps do not prove to protect against water according to IP ff. Solely pumps for boats are designed for the application in seawater environments. However, this does not mean that can be used standing vertically or horizontally "in water". We assume no guarantee for defects resulting from an unsuitable or improper application or operation. This accounts especially for dry running and continuous running. The pumps are not suited for continuous operation but were developed specifically for intermittent operation. This means that they can run for 20 minutes straight, and then a longer pause has to follow. Additionally, no warranty shall be accepted for damages due to the following reasons:

Incorrect installation by the purchaser (contract party) or third parties; natural wear and tear; incorrect or negligent handling, particularly frost damages; unsuitable equipment or means of operation; substitute materials; chemical, electro-chemical or electrical influences (provided we are not responsible for them); improper modifications or corrective maintenance work by a purchaser or third parties, carried out without our prior consent.

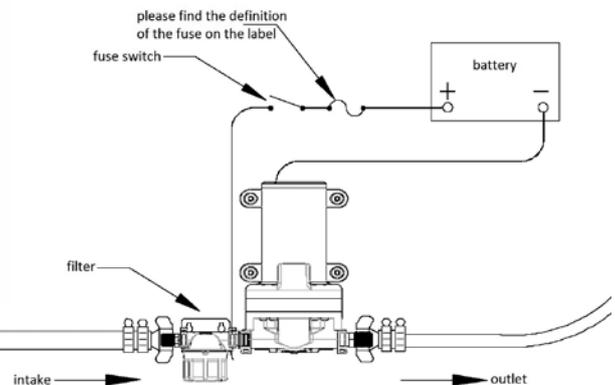
Unfortunately, we cannot accept any warranty for pumps that have been already opened. If you have any complaints please contact your vendor. Returns without our clearance or freight collect returns will not be accepted.

Our goal is that you enjoy our products and solutions for a long time. If you have a request or suggestion, we look forward to hearing it!

Water Pump Installation Diagram at a glance



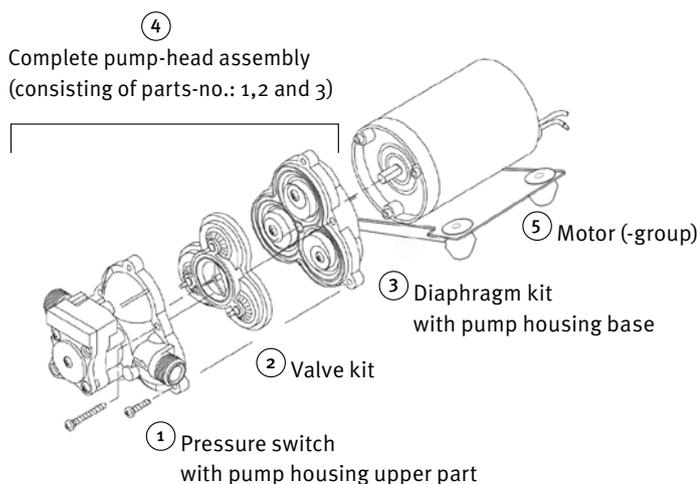
Water Pump Installation Diagram: Detailed view with Upstream Filter



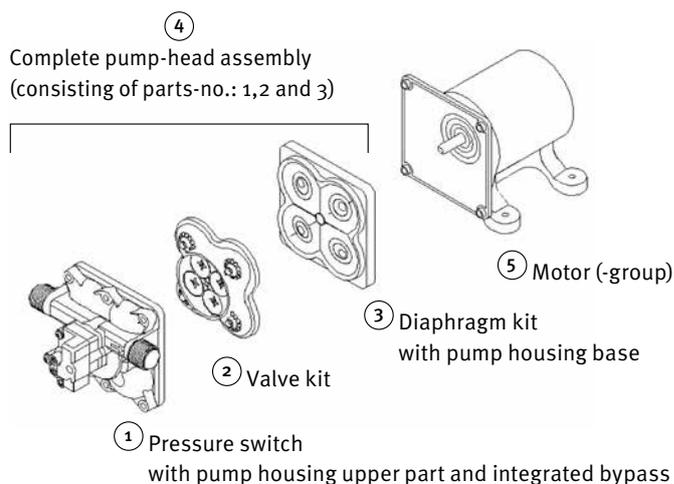
REPLACEMENT PARTS

To ensure that you receive the correct spare parts, please specify the defect component, the complete model number, date of manufacture and the indications on the nameplate, when placing the order. Parts kits contain comprehensive repair instructions.

CLASSICSERIE™:



SOFTSERIE®:



CLASSICSERIE™-Diaphragm kit

③

11105
for LS061, LS204, LS403, LS473, LS512, LS423, LS224, LS573, LS534, LS572

Diaphragm kit complete with pump housing base and motor mount.

LM T101 (PP), LM 105 (TPE)

CLASSICSERIE™-Valve kit

②

11104
for Models LS061, LS204, LS403, LS473 und für LS512, LS573, LS572, LS534, LS423, LS224 up to year of construction 2008.

LM T101 (PP), LM T107 (EPDM)

SOFTSERIE®-Diaphragm kit

③

11205
for LS4121, LS4142, LS4242, LS4144

Diaphragm kit complete with pump housing base and motor mount.

LM T105 (TPE), LM T101 (PP)

SOFTSERIE®-Valve kit

②

11204
for LS4121, LS4142, LS4242, LS4144

LM T107 (EPDM), LM T101 (PP)

CLASSICSERIE™-Pressure Switch

①

11139 for LS204, LS473
11109 for LS061, LS403

Pressure Switch with pump housing upper part. The shut-off pressure is adjustable: #11139 from 1.1 to 2.1 bar, #11109 from 2 to 3.2 bar

LM T101 (PP), LM T105 (TPE)

CLASSICSERIE™-Pump Head complete

④

11131 for LS204, LS473
11121 for LS061
11101 for LS403

Pressure Switch with pump housing upper part, diaphragm kit and valve kit. The shut-off pressure is adjustable: #11131 from 1.1 to 2.1 bar, #11121 from 2.1 to 3.5 bar, #11101 from 2 to 3.2 bar

LM T101 (PP), LM T105 (TPE), LM T107 (EPDM)

SOFTSERIE®-Pressure Switch

①

11239 for LS4121, LS4122
11229 for LS4142, LS4242, LS4143
11209 for LS4144

Pressure Switch with pump housing upper part with integrated bypass. The shut-off pressure is adjustable: #11239 from 1.4 to 2.4 bar, #11229 from 1.7 to 2.8 bar, #11209 from 3.0 to 3.6 bar

LM T101 (PP), LM T105 (TPE)

SOFTSERIE®-Pump Head complete

④

11231 for LS4121
11221 for LS4142, LS4242
11251 for LS4144

Pressure Switch with pump housing upper part and integrated bypass, diaphragm kit and valve kit. The shut-off pressure is adjustable: #11231 from 1.4 to 2.4 bar, #11221 from 1.7 to 2.8 bar, #11251 from 3.0 to 3.6 bar

LM T101 (PP), LM T105 (TPE), LM T107 (EPDM)

CLASSICSERIE™-Motor complete

⑤

11132 for LS204
11142 for LS224
11102 for LS403
11112 for LS473

Ready-to-connect complete motor with 4-point base plate and connection cables + and -.

SOFTSERIE®-Motor complete

⑤

11232 for LS4121, LS4122
11202 for LS4142, LS4143, LS4144
11212 for LS4242

Ready-to-connect complete motor with 4-point base plate and connection cables + and -.