# SPUMAX

Operating Instructions

## Intended Use

The SPUMAX K2 foam generator is used to prepare fine-pored foam in a continuous flow process, as required for the production of porous lightweight concrete. The unit can be connected to a mortar pump for the uninterrupted production and delivery of foamed concrete by means of a corresponding additional equipment.

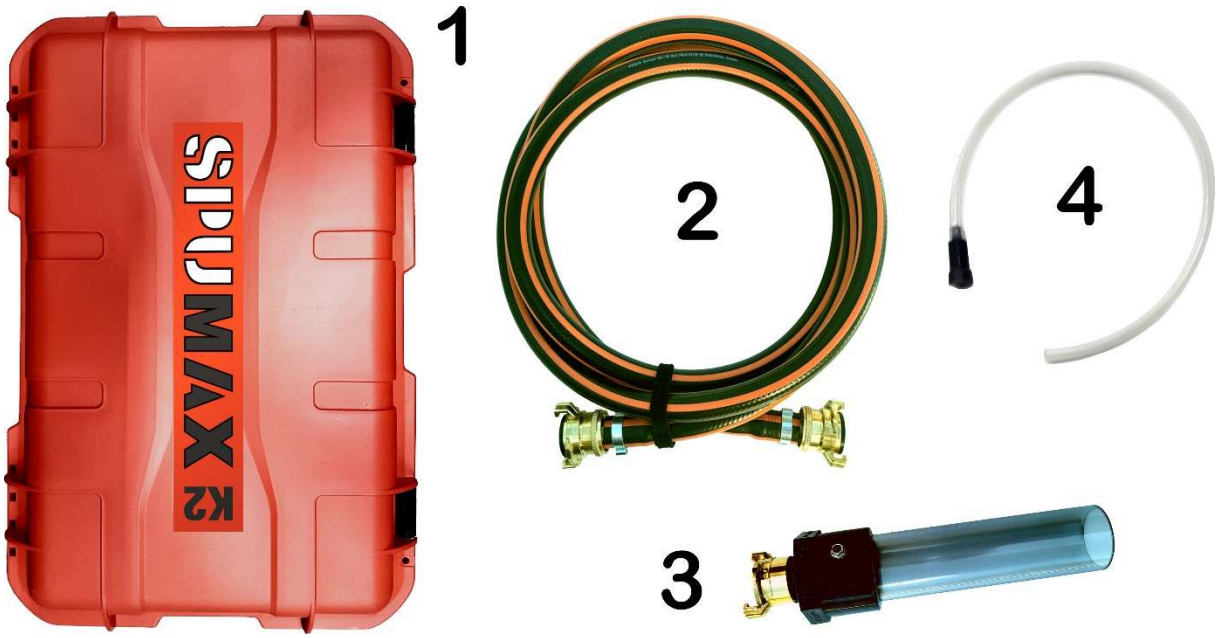
An air compressor is required to operate the unit. The foam quantity produced is up to 240 litres of foam per minute.

Only foam agents intended for the production of porous lightweight concrete may be used. The use of flammable or explosive substances (fire and explosion hazard) and the use of the unit in food areas is not permitted.

The manufacturer accepts no liability for damage resulting from unauthorised modifications to the unit or improper use.

## Scope of Delivery

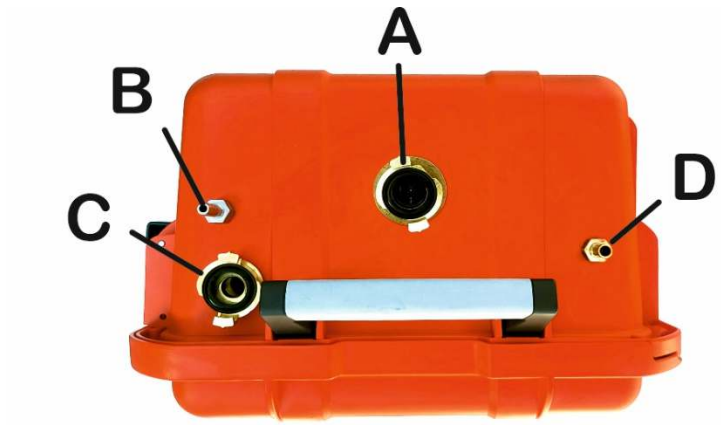
The scope of delivery includes the basic unit (1), the foam hose (2), the foam diffuser (3) and the supply hose for the foam agent (4). The scope of delivery does not include a water hose with GEKA claw coupling for the water supply and an air hose with NW 7.2 mm compressed air coupling for connection to the compressed air supply.

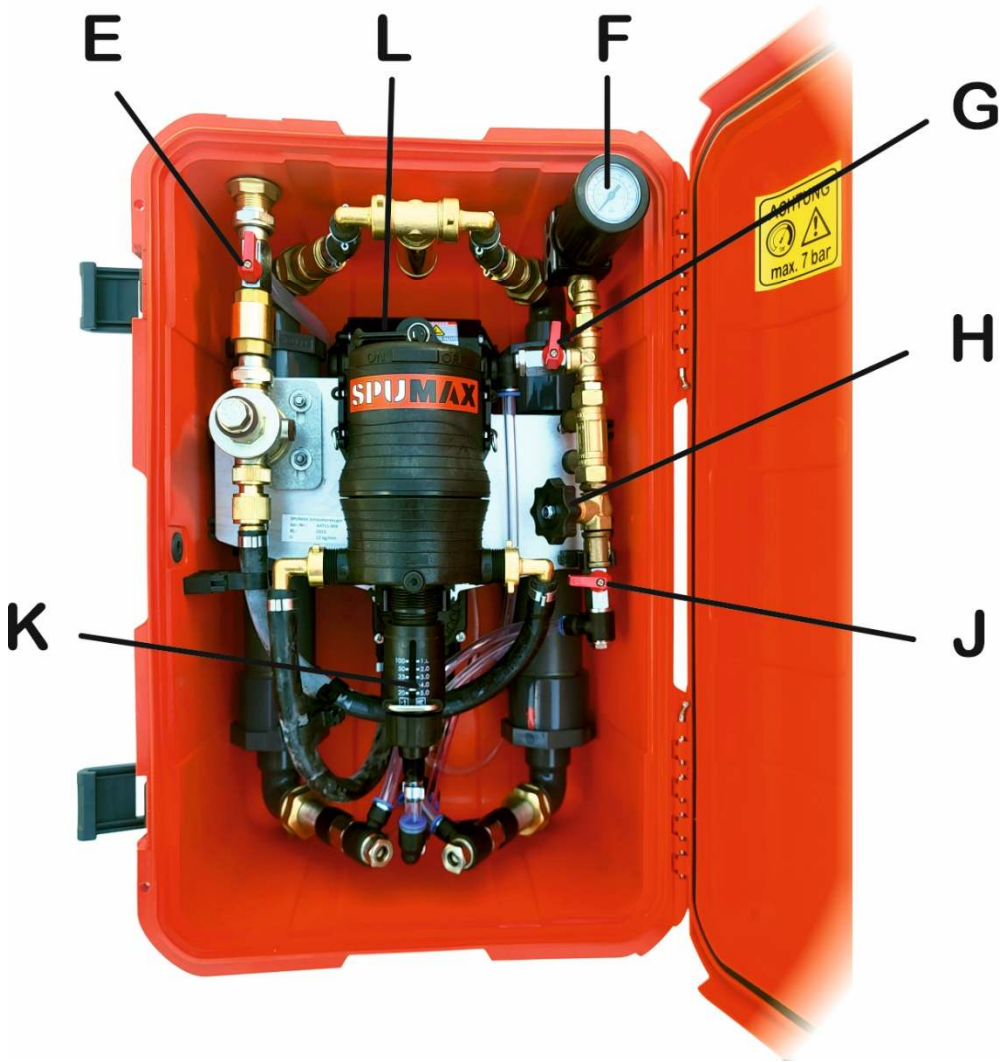



## Initial Commissioning

- ⚠ Carefully read the information in the safety instructions section. Before operating the unit, you must have read these operating instructions and observed and understood all the instructions given.
- Check the unit for any transport damage.
- Make sure that all protective devices of the appliance are present and properly installed and that all safety instructions have been observed.

## Equipment Components

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|---|---|---|---|
| A | Foam outlet | G | Air shut-off valve, secondary line |
| B | Foam agent inlet | H | Foam density adjustment valve |
| C | Water inlet | J | Air shut-off valve, main line |
| D | Compressed air inlet | K | Setting scale for foam agent dosage |
| E | Water shut-off valve | L | Switch lever of the dosing unit |
| F | Pressure reducer with manometer | | |

## Setting up the Machine

- Place the basic unit (1) upright on a firm and level surface so that it cannot tip over and the connections (A) to (D) are facing upwards.
- Open the cover of the unit.
- Set the prescribed dosing quantity for the foam agent used by turning the scale (K). The adjustable range is between 1% and 5% of the water quantity. Never remove the metal bracket on the setting scale.
- Close the ball valve (E) for the water inlet and the ball valves (J) and (G) for the air inlet by turning the levers to a horizontal position.
- Connect the connection (C) to the water supply. The connection is suitable for a water hose with GEKA claw coupling. For trouble-free operation, the unit requires 12 litres of water per minute. In order to ensure a sufficient delivery volume at all times, even in the case of a low-pressure domestic water supply or water supply via a pressureless water tank, it is recommended to use a booster pump.
- Connect the connection (D) to the compressed air supply. The connection is suitable for a standard quick coupling with NW 7.2 mm. The compressor used should deliver an output of at least 300 l/min (at 6 bar).
- Place a canister of foam concentrate next to the unit, connect the silicone hose (4) supplied to the connector (B) and insert the end of the hose with the strainer into the canister.
- Connect the foam hose (2) supplied to the connection (A) and then connect the free end of the hose to the foam diffuser (3). The foam hose is equipped with GEKA high-pressure couplings on both sides. The couplings must be tightened by turning the knurled nut.
- First open the needle valve (H) completely by turning the wheel anticlockwise. By turning the wheel back clockwise, you can later increase the foam density as needed when operating the unit.
- Set a pressure of 5 bar on the pressure gauge (F). To be able to operate the twist handle, it must first be unlocked. This is done by pulling it out a little. Once the pressure has been set, it can be locked again by pushing it in. The setting made here with the compressor pressure applied and the air shut-off valve (F) closed determines the working pressure in the foam unit. A value above 7 bar is not permissible and can lead to malfunctions and damage to the unit.
- Open the ball valve (J) by turning the lever to a vertical position (as shown). When closed, this valve separates the air and water flow in the unit and thus prevents the unwanted backflow of water into the air-driven diaphragm pumps. It is only to be closed when transporting the unit and during longer breaks in work. It must be open when operating the unit.
- Make sure that the switch lever (L) of the dosing unit is turned to the left or towards the ON position (as shown). Only then can the foam concentrate be added to the water.

## Starting the Foam Production

- Now open the ball valve (E) for the water supply and then the ball valves (G) and (J) for the air supply by turning the levers to a vertical position. This pressurises the appliance and foam concentrate is drawn in from the canister. After a short time, the appliance begins to supply foam.
- The foam density (foam weight per unit volume) can be adjusted as required via the needle valve (H).

## Interrupting the Foam Production

- To temporarily interrupt the process, close the ball valves (E), (G) and (J).
- Alternatively, the foam production can also be interrupted by a single large ball valve at the end of the foam hose. Such a valve is not part of the scope of delivery. If it is used, closing the foam outlet will cause the pressure in the appliance to rise until it reaches equilibrium with the supply pressures of water and compressed air. Opening the valve again allows the accumulated pressure to escape and restarts the foam production.

## Finishing the Foam Production and Cleaning the Appliance

- Once the work is complete, close the ball valves (E), (G) and (J).
- Then replace the foam agent canister with a bucket of water with some washing-up liquid in it. Ariel liquid detergent has proved to be a good rinsing agent. The proteases contained in it prevent the residues of even protein-containing foaming agents from sticking in the foam unit's piping system.
- Resume foam production until no more foam is formed and only rinsing liquid and air come out of the appliance.
- Now stop operation by interrupting the water supply and the air supply outside the appliance. This will ensure that the appliance is no longer pressurised after a short time. It takes around 30 to 60 seconds for the pressure to be completely released.
- Remove the hoses for the water and compressed air supply.
- Close the ball valves (J) and (G) by turning the levers to a horizontal position. These valves must always be closed when the foam unit is not in operation. When not in use, they separate the air and water flows in the appliance and thus prevent the unwanted backflow of water into the air-operated diaphragm pumps.
- Remove the silicone hose (4) for the foaming agent and rinse it and the sieve thoroughly inside and out with clear water.
- Then disconnect the foam hose (2) from the foam unit (1) and the foam diffuser (3).
- Finally, the unit can be cleaned from the inside and outside with a light water spray without hesitation.

## Hints for Operation

For a constant foam quality, it is important that the delivery pressures of the connected water and compressed air supply are high enough and as constant as possible over time.

For water, this is most reliably achieved by always connecting a booster pump between the water source and the SPUMAX foam unit. If the existing water pipe is not capable of supplying at least 12 l/min due to lack of supply pressure or pipe cross-sectional area, the required amount of water must be stored in an intermediate tank and tapped from there using the said pump. Otherwise, the pump can also be placed directly between the foam unit and the domestic water supply.

For the air supply, it is sufficient in most cases to use a common air compressor where the cut-in pressure is usually set to 6 bar and the cut-off pressure to 8 bar. With such a compressor, the tank pressure is therefore always at least 6 bar, provided it is powerful enough to maintain the pressure even when the foam unit is in operation. If this is the case, it is necessary to set a working pressure of 5 bar on the pressure gauge (F) of the SPUMAX to ensure fluctuation-free pressure conditions. If the tank pressure of the compressor drops below 6 bar at any time during operation of the foam unit, a more powerful compressor must be procured.

The standard working pressure of 5 bar in the SPUMAX foam unit is high enough to allow any foam density between 50 g/l and 100 g/l, provided there is no increased back pressure at the foam outlet. Increased back pressure is only present if the foam has to be injected under pressure into a further system. This is also possible with the SPUMAX, but then the working pressure may have to be increased, which may require a compressor with a higher cut-in pressure. The maximum permissible working pressure of the SPUMAX is 7 bar.

The adjustment valve (H) is used to set the desired foam density. Turning the handwheel clockwise increases the foam weight per unit volume. Turning it in the other direction decreases it. The value obtained is determined by sampling and weighing a defined quantity of foam.

The SPUMAX foam unit produces a constant mass flow of 12 kg foam per minute. This means that the foam volume produced per minute is directly linked to the foam density. A low foam density causes a high volume flow and vice versa. Thus, at a foam density of 50 g/l, the unit delivers a volume flow of 240 l of foam per minute, and at a foam density of 100 g/l, it delivers 120 l per minute.

In addition to its extreme compactness and high delivery rate, the special features of the SPUMAX foam unit include the ability to feed foam under pressure into downstream systems. For example, a lance can be used to inject foam into fresh concrete during the mixing process. And in combination with a common plastering machine such as the PFT G4, foam concrete can be produced in a continuous process and delivered directly to the construction site via hoses. However, it is very important to make absolutely sure that only operationally safe equipment designed for the purpose is used when connecting to such equipment. Binding information, recommendations and safety instructions on this should be obtained from the respective manufacturer.

## Safety Instructions

- ⚠ Read these instructions carefully and keep them for future use.
- ⚠ Only use the unit for the work listed in the "Intended use" section.
- ⚠ Before each use, carefully check all protective devices for proper intended function and only operate the unit with complete and undamaged protective devices.
- ⚠ Before each use, check that the moving parts function properly and are not jammed and that no parts are missing, damaged or incorrectly fitted.
- ⚠ Replace defective, damaged or worn parts immediately with original spare parts.
- ⚠ Damaged and illegible safety labels must be replaced.
- ⚠ Do not use non-recommended accessories.
- ⚠ Do not make any unauthorised modifications to the unit or parts of the unit.
- ⚠ The unit may only be equipped, used and maintained by persons who are familiar with it and have been informed about the dangers.

- ⚠ Maintenance work as well as repair and replacement of damaged protective devices may only be carried out by a recognised specialist workshop, unless otherwise stated in the operating instructions.
- ⚠ Keep the unit disconnected from the compressed air supply while it is being cleaned, maintained or repaired.
- ⚠ The unit may only be set up and operated on firm, level and non-tilting ground.
- ⚠ Keep the stand free from tripping hazards.
- ⚠ Do not leave the appliance unattended during operation.
- ⚠ Keep children away from the unit.
- ⚠ Observe the local accident prevention regulations and safety regulations in the working area.
- ⚠ Store unused equipment in a dry, locked place out of the reach of children.

## Residual Risks

Even if the unit is used as intended, there may still be residual risks despite compliance with all relevant safety regulations. They can be minimised if the operating instructions, the safety instructions and the intended use are observed.

## Maintenance

Your foam generator is largely maintenance-free. Nevertheless, please observe the following points in order to maintain its value for a long time.

- Check the unit regularly for wear and functional defects and replace worn or damaged parts. During such inspections, pay particular attention to moving parts, screw connections and protective devices.
- The unit must be disconnected from the water and compressed air supply when repair work is required. It must not be put into operation during repair.
- Protective devices removed for repair must be properly refitted.
- Only unmodified original spare parts may be used.

## Storage and Safekeeping

The unit must always be stored frost-free, as it may contain residual water that can cause damage when it freezes. This also applies to the time before the unit is put into operation for the first time, because each unit has already come into contact with water for the first time during the final inspection at the factory.

## Technical Data

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| Air consumption | 300 l/min (at 6 bar) |
| Water consumption | 12 l/min |
| Foam output | 120 to 240 l/min (depending on set foam weight) |
| Operating pressure | max. 7 bar |
| Weight approx. | 15 kg |
| Dimensions LxWxH | 60 cm x 40 cm x 30 cm |

# Warranty

Backstein Engineering GmbH grants a warranty of 24 months from the date of purchase on this device. Please keep the proof of purchase in order to be able to make warranty claims.

Parts subject to wear and tear and damage due to improper use (see section "Intended use") are excluded from the warranty.

During the warranty period, defects due to material and manufacturing faults will be repaired free of charge or the unit will be replaced. In the event of a warranty claim, the term of the original warranty will not be extended.

In the event of a warranty claim, please return the unit together with a copy of the proof of purchase to the address given on the back of this brochure.

Unauthorised intervention by third parties will invalidate the warranty.

# Troubleshooting

| **Störung** | **Was tun?** |
|---|---|
| No foam | No or too little compressed air<br>• Check compressed air supply<br>• Check connection lines for damage/kinks<br>• Open the compressed air valve on the compressor<br>• Open compressed air shut-off valve (G)<br>• Open safety valve (J)<br>No or too little water<br>• Check water supply<br>• Check connection lines for damage/kinks<br>• Check booster pump<br>• Open water shut-off valve (E)<br>No or too little foam concentrate<br>• Check canister level<br>• Check foam concentrate supply hose and strainer.<br>• Move switch lever (L) towards ON position<br>Foam line blocked<br>• Open foam valve<br>• Check connection hose for kinks<br>Back pressure too high (diaphragm pump runs too slowly or stops)<br>• Reduce back pressure (e.g. by using shorter or thicker hoses)<br>• Check downstream systems for blockage |
| Foam too heavy or too light | Adjustment valve incorrectly set<br>• Open or close adjustment valve (H) further<br>Working pressure in the unit incorrectly set<br>• Set the working pressure at the pressure reducer (F) to 5 bar when the unit is at a standstill. A higher working pressure may be required for applications with higher back pressure due to connection to downstream systems. The maximum permissible working pressure in the unit is 7 bar. |

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| Foam disintegrates too quickly | Appliance contaminated<br>• Clean the unit and rinse it with suitable detergent.<br>Compressed air not oil-free<br>• Ensure oil-free compressed air<br>Foaming agent spoiled<br>• Replace foam concentrate canister<br>Incorrect foam concentrate dosage<br>• Check the value set on the dosing scale (K)<br>Back pressure too high<br>• Reduce back pressure (e.g. by using shorter or thicker hoses)<br>• Check downstream systems for blockage |

## EC Declaration of Conformity according to Directive 2006/42/EC

PORALIT GmbH, Werner-von-Siemens-Str. 3, 65520 Bad Camberg, Germany, hereby declares that the product described below complies with the relevant basic safety and health requirements of EC Directive 2006/42/EC due to its design and construction.

Designation of the product: SPUMAX foam generator
Model / Type: K2
Year of manufacture: from 2025

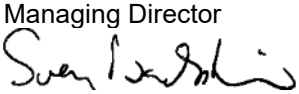
The following harmonised standard was applied: DIN EN ISO 12100:2011 (Safety of machinery - Risk assessment)

The device is not covered by the Pressure Equipment Directive 2014/68/EU, as it falls within the scope of the general safety requirements in accordance with Article 4 (3).

The technical documentation has been prepared and deposited with PORALIT GmbH, Werner-von-Siemens-Str. 3, 65520 Bad Camberg, Germany. The authorised representative for the compilation of the technical documentation is Dr.-Ing. Sven Backstein, Werner-von-Siemens-Str. 3, 65520 Bad Camberg.

This declaration of conformity loses its validity if the product is modified or fitted with non-approved components without the written consent of the manufacturer.

Dr Sven Backstein
Managing Director



Bad Camberg, 1 May 2025

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