

SBS 2000

RESOL®

(en) Translation of the original instructions
Filling and flushing station



Thank you for buying this product.

Please read this manual carefully to get the best performance from this unit. Please keep this manual carefully.

Safety advice

Please pay attention to the following safety advice in order to avoid danger and damage to people and property.

Danger of electric shock:

- It must be possible to disconnect the device from the mains at any time.
- Do not use the device if it is visibly damaged!

The device must not be used by children or persons with reduced physical, sensory or mental abilities or without any experience and knowledge.

Make sure that children do not play with the device!

When using fluids containing glycol, wear appropriate gloves, goggles, and a breathing mask!

Do not leave the station unattended during operation.

Instructions

Attention must be paid to the valid local standards, regulations and directives!

Target group

These instructions are exclusively addressed to authorised skilled personnel. Authorised skilled personnel are persons who have theoretical knowledge and experience with the installation, commissioning, operation, maintenance, etc. of electric/electronic devices and hydraulic systems and who have knowledge of relevant standards and directives.

Information about the product

Proper usage

The filling and flushing station is designed for filling and flushing solar thermal and heating systems in compliance with the technical data specified in this manual.

Improper use excludes all liability claims.

Any use beyond this is considered improper.

Proper usage also includes compliance with the specifications given in this manual.

The SBS filling and flushing station is only suitable for water and water-glycol mixtures for solar and heating systems. The medium temperature must not exceed 65 °C.

EU declaration of conformity

The product complies with the relevant directives and is therefore labelled with the CE mark.



Referenz / Reference	Titel / Title
2014/35/EU	Low Voltage Directive
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2000/14/EC	Noise Directive

Referenz / Reference	Titel / Title
DIN EN 809:2012-10	Pumps and pump units for liquids – Common safety requirements
DIN EN 60335-2-41:2010-11	Household and similar electrical appliances – Safety
DIN EN ISO 3744:2011-02	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure

The Declaration of Conformity is available upon request, please contact the manufacturer.

Scope of delivery

The scope of delivery of this product is indicated on the packaging label.

Cleaning

Clean the product with a dry cloth. Do not use aggressive cleaning fluids.

Disposal

- Dispose of the packaging in an environmentally sound manner.
- Dispose of old appliances in an environmentally sound manner. Upon request we will take back your old appliances bought from us and guarantee an environmentally sound disposal of the devices.

Description of symbols

Warnings are indicated with a warning symbol!

Signal words describe the danger that may occur, when it is not avoided.

WARNING means that injury, possibly life-threatening injury, can occur.



→ It is indicated how to avoid the danger described.

ATTENTION! means that damage to the appliance can occur.



→ It is indicated how to avoid the danger described.



Note

Notes are indicated with an information symbol.

→ Texts marked with an arrow indicate one single instruction step to be carried out.

1. Texts marked with numbers indicate several successive instruction steps to be carried out.

SBS 2000

For solar thermal professionals, filling and flushing heating and solar thermal systems is a day-to-day business. The SBS 2000 is the ideal companion for a professional performance – and the safe, quick and clean way to complete filling and flushing work.

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Overview

- Robust and durable
- Easy handling and cleaning
- Suitable for water and heat transfer fluids
- Ergonomic design and top quality
- Also suitable for heating systems
- Integrated filter at the pump intake

Technical data

Dimensions: H×W×D = 1000×400×530 mm

Weight: 21 kg

Tank: 30 litres, PE, with dirt filter

Delivery flow: 5-47 l/min

Delivery height: 42 m

Pump power: 550 W (230 V~, 50 Hz)

Pump pressure: 4.2 bar

Drain valve: ½"

Hose connections: 3/4" union nut

Medium: Water, water-glycol mixtures

Medium temperature: max. 65 °C

Noise emission: 55 dB



1 General information

The SBS filling and flushing station is only suitable for water and water-glycol mixtures for solar and heating systems. The medium must be free of grit, but may be polluted. Dirt in the system is held back by the filter situated at the pump intake inside the tank.

The user must make sure that the SBS 2000 filling and flushing station is suitable for the fluid in use.

1.1 Notes on operation

WARNING! Risk of fatal injury by explosion or deflagration!



Using the station with substances having a flashing point lower than 55 °C can lead to explosions or deflagrations.

→ **Do not use the station with petrol, solvents or other volatile substances!**

WARNING! Risk of scalding through overheating!



During operation, the pump motor can reach a temperature of up to 70 °C.

→ **Do not touch the heated pump!**

ATTENTION! Pressure surge damage!



If the medium enters strongly heated, empty collectors, pressure surges can occur.

→ **Do not fill or flush the system during times of strong irradiation!**

ATTENTION! Damage through overheating!



Fluid temperatures of more than 65 °C can lead to pump damage.

→ **Make sure that the fluid temperature does not exceed 65 °C.**

ATTENTION! Damage through dry run!



Dry run of the pump can lead to destruction of the pump.

→ **Make sure the pump does not operate in dry run condition!**

Version	DE	UK 230V~	UK 115V~	US
Article no.	280 010 90	280 010 93	280 011 93	280 010 97
Pump	230 V~/50 Hz	230 V~/50 Hz	115 V~/60 Hz	115 V~/60 Hz
Connection	Safety connection	UK plug	UK plug	US plug
Pump pressure	4.2 bar	4.2 bar	4,2 (3') bar	4.2 bar

*when operated at 50 Hz

ATTENTION! **Damage to the device through overheating!**
 During operation, the pump motor can reach a temperature of up to 70 °C.
 → **Make sure the air supply for motor cooling is not blocked!**



1.2 Notes on transport and storage

Store the product at an ambient temperature of 0 ... 40 °C and in dry interior rooms only.

ATTENTION! **Damage through freezing!**
 Freezing can lead to damage of the filling and flushing station!
 → **Make sure the station is stored in a frost-protected place.**
 → **Make the pump does not contain any fluid.**



i Note
 Only transport the filling and flushing station in a horizontal position and when it is empty.

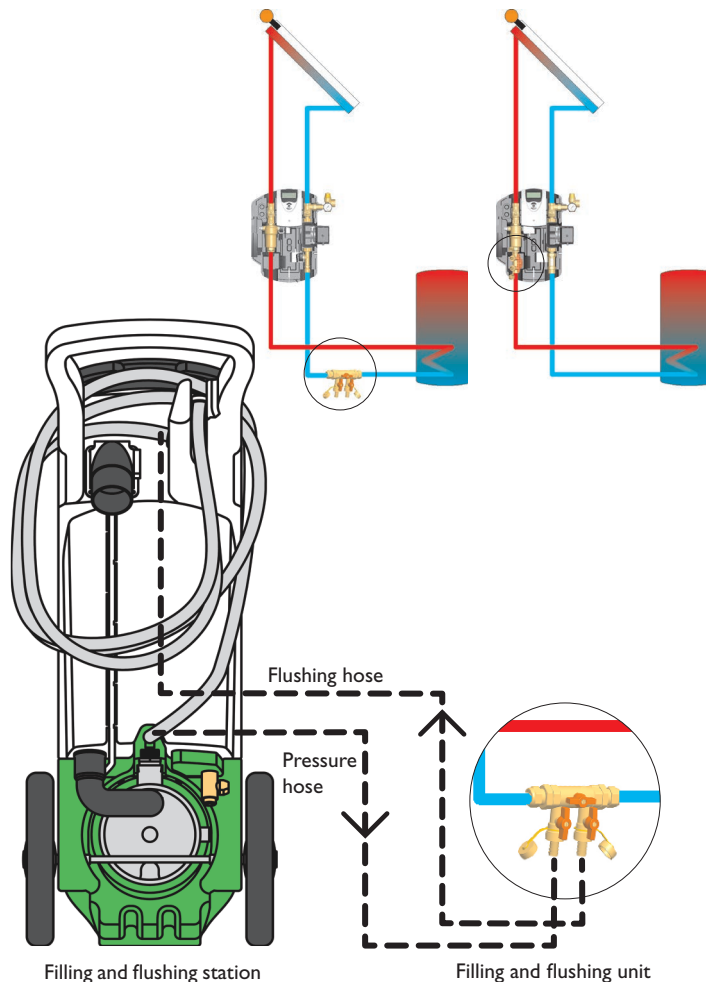
2 Electrical connection

The cross-section of the connection cable must be at least 1.5 mm².

i Note
 For your own safety: only use the filling and flushing station in an electrical circuit fused by a residual current device.



3 Connection examples



4 Operation

WARNING! Risk of injury!



Ball valve leakage can lead to fluid ejection.

- If necessary, take suitable fluid splashing protection measures.
- Close the ball valve of the pressure hose after flushing.
- Remove the pressure hose only after the ball valve has been closed.

WARNING! Risk of injury!



Fluid ejection can lead to injury!

- Wear goggles in order to avoid injury.
- If necessary, take suitable fluid splashing protection measures.

ATTENTION! Risk of damage!



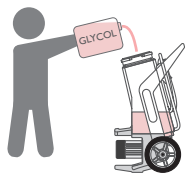
Fluid ejection can lead to damage!

- Do not leave the station unattended during operation.
- If necessary, take suitable fluid splashing protection measures.

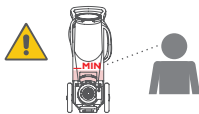
i Note

For optimum and safe operation, use the ball valves for the pressure and flushing hose (see p. 19).

1. Fill the tank of the filling and flushing station with a sufficient amount of fluid.



2. Make sure the tank is filled at least to the MIN marking (5l)



i Note

Make sure the fluid is always above the MIN mark in order to prevent air intake.

Litres	US gallons	Imperial gallons
5	1.32	1.10
7.57	2	1.67
10	2.64	2.20
15	3.96	3.30
15.14	4	3.33
20	5.28	4.40
22.71	6	5.00
25	6.60	5.50
30	7.92	6.60
30.28	8	6.66

Volume conversion table (values in bold are marked on the scale on the device)

5.1 Flushing and filling the solar system

WARNING! Risk of scalding!



If the medium enters strongly heated, empty collectors, pressure surges caused by vaporisation can occur.

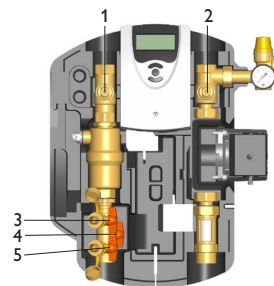
- In order to prevent the medium from boiling in the collectors, do not fill or flush the system during times of strong solar irradiation.

ATTENTION! Damage to the device caused by underpressure!



If the lid is tightly closed, the tank will be depressurised during the filling process.

- Open the tank for the filling process!



Example: Pump station with filling and flushing unit

**Note**

In the following, the filling and flushing process will be described using a filling and flushing unit (see chap. „Accessories and spare parts“ Pagina 19). If the system has no filling and flushing unit, use the filling valve and the drain valve of the system instead.

**Note**

Do not put the solar pump into operation during the flushing and filling process.

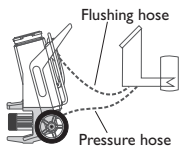
**Note**

For optimum stability, use the filling and flushing station on plane surfaces only.

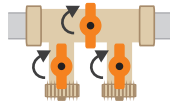
1. Disconnect the expansion vessel from the solar thermal system.

2. Connect the pressure hose of the filling and flushing station to the filling valve (5) of the filling and flushing unit.

3. Connect the flushing hose of the filling and flushing station to the drain valve (3) of the filling and flushing unit.



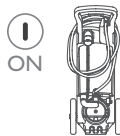
4. Close the ball valve in the middle of the filling and flushing unit.



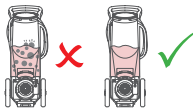
5. Open the non-return-valves in the flow (1) and the return (2).

6. Open the filling valve (5) and the drain valve (3).

7. Switch on the filling pump.

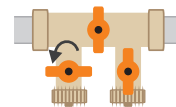


8. Flush the solar thermal system for at least 15 minutes by means of the filling and flushing station until the discharged solar fluid is free of gas bubbles and dirt particles.



9. During flushing, bleed the solar thermal system several times until the discharged solar fluid is free of air bubbles

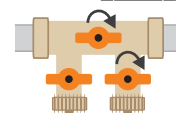
10. Close the drain valve (3) of the filling and flushing unit while the filling pump is running.



11. Increase the system pressure. The system pressure can be read from the manometer.



12. Close the filling valve (5).



13. Switch off the filling pump.

14. Check the manometer to see whether the system pressure decreases (approx. 15 minutes) and eliminate leaks where necessary.



15. Reconnect the expansion vessel to the solar thermal system.

16. Open the filling valve (5) and switch on the filling pump.

17. Set the operating pressure of the solar thermal system (approx. 0.5 bar higher than the inlet pressure of the expansion vessel or the value recommended by the manufacturer).

18. Switch off the filling pump.

19. Close the filling valve (5) and open the ball valve (4).

20. Slowly discharge the heat transfer fluid by means of the drain valve (3) until the operating pressure (see above) is set.

21. Remove the hoses of the filling and flushing station and screw the caps onto the fill and drain valves of the station.

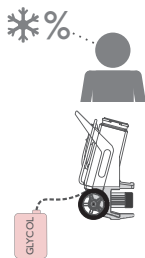
22. Empty the contents of the hoses into the tank of the filling and flushing station by carefully loosening the union nuts.

23. Close the ball valves.

24. Put the non-return valves in flow and return in operating position.

25. Manually start the solar thermal pump at maximum speed (see controller manual) and let the fluid circulate for at least 15 minutes.

26. Bleed the solar thermal system several times until the discharged fluid is free of gas bubbles.
27. Check the antifreeze ratio.
28. Drain the tank of the filling and flushing station.



5.2 Flushing heating systems



Note

Adjust the operating pressure of system.



Note

Depending on the size of the system, the radiators can either be separately opened and closed or all at once.

1. Connect the pressure hose of the flushing and filling station to the filling valve of the system.
2. Connect the flushing hose of the flushing and filling station to the drain valve of the system.
3. Open the ball valves of the filling and flushing station.
4. Open the filling valve and drain valve of the system.
5. Switch on the filling pump.
6. Flush the system by means of the filling and flushing station until the discharged solar fluid is free of gas bubbles and dirt particles.
7. Switch off the filling pump.
8. Close the filling valve and drain valve of the system.
9. Close the ball valves of the filling and flushing station.

10. Disconnect the pressure hose and the flushing hose.

6 Maintenance

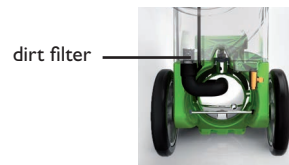
6.1 Cleaning the dirt filter

The dirt filter at the pump intake must be checked for grit at regular intervals. In order to remove and clean the dirt filter, proceed as follows:

1. Drain and open the tank.

The dirt filter is clearly visible at the bottom of the tank.

2. Unscrew and remove the dirt filter.
3. Clean the dirt filter thoroughly under running water.
4. If necessary, remove dirt particles from the bottom of the tank with a soft cloth.
5. Reinstall the dirt filter.

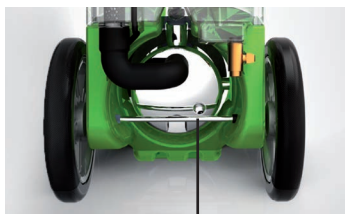


Note

Make sure the fluid is always above the MIN mark in order to prevent air intake.

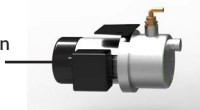
7 Troubleshooting

Problem	Possible causes
Pump does not prime	<ul style="list-style-type: none"> • Pump defective • Flushing hose or dirt filter blocked • Too much air inside the pump In this case, the pump can be vented by means of the screw at its front side (see fig.)
Pump does not build up pressure	<ul style="list-style-type: none"> • Pump defective • Pressure hose blocked
Pump cannot be switched on	<ul style="list-style-type: none"> • Pump overheated (115 V~ version only) The overheat protection (thermistor) has been triggered. Wait until the pump has cooled down, then push in the overheat protection.



vent screw

overheat protection (thermistor)



8 Accessories and spare parts

When ordering spare parts, state the serial number of the SBS2000.

1	Lid	Article no. 28005030
2	2 x Wheel incl. axle	Article no. 28004420
3	Fill/Drain valve Drain valve for the tank	Article no. 28005040
4	Hose set including: 1 x flushing hose, 3,1 m 1 x pressure hose, 2,2 m	Article no. 28005010
5	Ball valve set for pressure and flushing hose	Article no. 28005060
6	Dirt filter	Article no. 28005050
7	Extension cable 5 m, DE version	Article no. 28005070



Distributed by:

RESOL – Elektronische Regelungen GmbH

Heiskampstraße 10
45527 Hattingen / Germany
Tel.: +49 (0) 23 24 / 96 48 - 0
Fax: +49 (0) 23 24 / 96 48 - 755
www.resol.com
info@resol.com

Important note

We took a lot of care with the texts and drawings of this manual and to the best of our knowledge and consent. As faults can never be excluded, please note:

Your own calculations and plans, under consideration of the current standards and directions should only be basis for your projects. We do not offer a guarantee for the completeness of the drawings and texts of this manual - they only represent some examples. They can only be used at your own risk. No liability is assumed for incorrect, incomplete or false information and/or the resulting damages.

Note

The design and the specifications can be changed without notice.
The illustrations may differ from the original product.

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