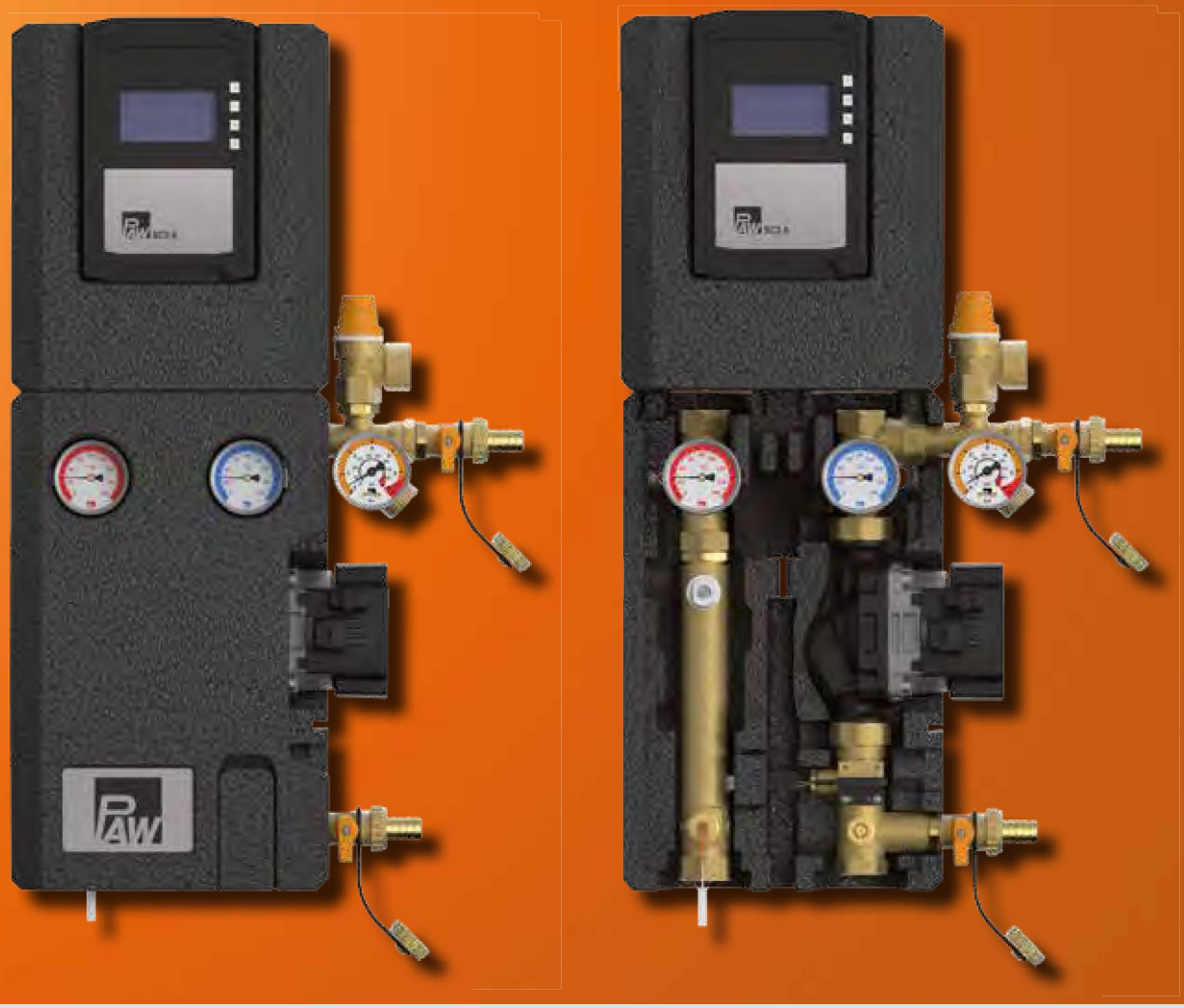

Solar stations DN 20

Catalogue 01/2018

Solar thermal solutions

Valid for the UK

Overview product range SolarBloC®
Solar stations

Performance data	SolarBloC® midi Premium	SolarBloC® maxi Premium	SolarBloC® mega
Nominal diameter	DN 20 (¾")	DN 25 (1")	DN 32 (1¼")
Max. flow rate [l/h]	1200	2500	3500
Max. collector surface [m²] High-flow (30 l/m²h)	40	80	115
Max. collector surface [m²] Low-flow (15 l/m²h)	60	125	175
	See page 246-258	See page 260-267	See page 270-271

Selection table of available product versions: Solar stations - SolarBloC®

	Controller		Pump		Sensors	
			Wilo	Grundfos	Basic	Premium
	without (to be obtained by the customer)	SC3.6	High-efficiency pump	High-efficiency pump	P_{VL} = Pressure gauge $\dot{V}_{RL}$ = Flow meter T = Thermometer	P_{VL} = Digital sensor $\dot{V}$ = Impulse T_{VL} = Digital sensor T_{RL} = Pt1000
1-line Return DN 20	•	–	PWM	PWM	•	–
2-line Basic DN 20	•	•	PWM	PWM	•	–
2-line Premium DN 20	–	•	PWM	PWM	–	•
3-line Basic DN 20	•	–	PWM	PWM	•	–
1-line Return DN 25	•	–	PWM	PWM	•	–
2-line Basic DN 25	•	•	PWM	PWM	•	–
2-line Premium DN 25	–	•	PWM	PWM	–	•
2-line Basic DN 32	•	–	0 - 10 V	PWM	•	–

• = available, – = not available

Application range/collector surface depending on the operation mode (for more details, see page 242)

Flow types in the collector field	SolarBloC midi - DN 20	SolarBloC maxi - DN 25
Low-flow = 0.25 l/minute per m² of collector surface	up to **60 m²** of collector surface	up to **125 m²** of collector surface
High-flow = 0.5 l/minute per m² of collector surface	up to **40 m²** of collector surface	up to **80 m²** of collector surface

Please note:
In order to guarantee a trouble-free function, it is essential to carry out a hydraulic dimensioning/check of the solar installation.

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Function overview controller - SC3.6
Solar thermal systems

Controller SC3.6 for solar stations

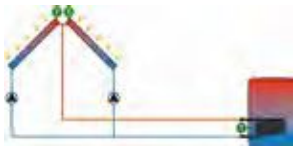
SolarBloC midi Basic/Premium	up to 60 m² of collector surface
SolarBloC maxi Basic/Premium	up to 125 m² of collector surface

The solar controller SC3.6 is completely mounted and preset so that only the collector field sensor and the storage tank sensor must be installed and connected.
The graphically animated LCD display gives a quick and simple overview on the solar installation and the operating conditions. Icons facilitate programming the controller. The controller comprises 11 preset systems and can be used in solar installations with up to two collector fields or up to two domestic hot water or buffer storage tanks. It is possible to use a solar transfer station with an external heat exchanger and a tank for potable water or a buffer tank with two loading areas.
The third relay output and a potential-free switch output for safety extra-low voltage allow additionally individual control and alarm functions.
Not only temperature measurement, but also heat quantity balancing based on flow calculation is possible by means of the sensors.
With demanding requirements, a pulse sensor or PAW FlowRotor can be connected for heat quantity balancing.

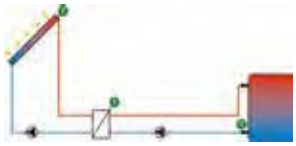
OVERVIEW CONTROLLER FUNCTIONS	
Controller SC3.6	
Display	graphically animated LCD display
Operation	4 (5) push buttons
Relay outputs	3 x 230 V, semiconductor relay 1 x 230 V, switching relay 1 x SELV (max. 24 V), potential-free relay 2 x PWM signal for speed control
Inputs	4 x Pt1000
Flow rate sensors	yes
Heat quantity measurement	yes
Back-up heating	yes
Alarm output	yes
Circulation (depending on time / temperature)	yes
Holiday (storage tank recooling)	yes
Solid fuel boiler	yes
Reduction of stagnation	yes
Active cooling	yes
Quick tank charging	yes
Thermostat function	yes
Interval / tube collector	yes

Preset systems

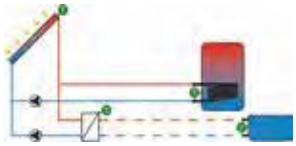
Internal heat exchanger, pump logic



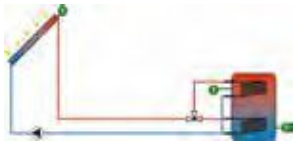
2 collector fields,
internal heat exchanger, pump logic
(1 x E13170 additionally required)



External heat exchanger, pump logic
(1 x E13170 additionally required)

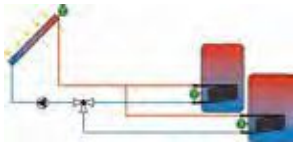


Storage tank and swimming pool,
stand-alone operation of the external heat exchanger, pump logic
(2 x E13170 additionally required)

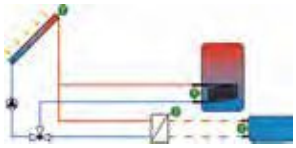


Internal heat exchanger,
zone charging, valve logic
(1 x E13170 additionally required)

Internal heat exchanger, pump logic,
return temperature maintenance
(2 x E13170 additionally required)



2 storage tanks,
internal heat exchanger, valve logic
(1 x E13170 additionally required)



Storage tank and swimming pool,
stand-alone operation of the external heat exchanger, valve logic
(2 x E13170 additionally required)

SolarBloC® midi Premium

SolarBloC® maxi Premium

SolarBloC® mega

Product range SolarBloC®

The PAW SolarBloCs are used to circulate the solar fluid in the solar circuit efficiently. Solutions in the dimensions DN 20 to DN 32, offer a broad application range up to 175 m^2 of collector surface. To obtain a maximum flexibility during system planning, PAW focuses on the two versions Basic and Premium for its SolarBloCs.
The SolarBloC Basic is an inexpensive entry level version with functional features. In contrast, the SolarBloC Premium is fully equipped with additional temperature and flow rate sensors. Individual system requirements, such as heat quantity measurement and the operating modes high-flow and low-flow can be realised with the suitable SolarBloC and the optionally integrated controller.

The SolarBloCs use high-efficiency pumps, which offer an extremely broad adjustment range. Thus, the optional controller adjusts efficiently the pump speed to the required flow rates.
Additionally, high-efficiency pumps save more than 50% of electrical driven energy compared to conventional asynchronous pumps. Furthermore, these pumps meet the energy efficiency guidelines (EuP / ErP READY) of 2015.
The controller is delivered preset, mounted and prewired to guarantee an easy adjustment to the real system.

For a safe and quick commissioning, the solar stations SolarBloC are equipped with pressure relief valves, ball valves as well as with fill and drain valves. The insulation meets the EnEV requirements.

Application range of the solar stations:

Depending on their operating mode, solar thermal systems are divided into high-flow and low-flow systems.
High-flow-systems operate with 25-40 litres per m^2 of collector surface and hour which corresponds to 0.42-0.67 l / (m^2 x min). Low-flow-systems operate with 10-20 litres per m^2 of collector surface and hour which corresponds to 0.17-0.33 l / (m^2 x min).

The flow rate which is circulated in the system depends on the operating mode, on the collector surface as well as on the performance of the heat exchanger (secondary). The dimensioning of the circulation pump depends on the flow rate and the pressure drops which occur in the heat exchanger, in the collector and in the piping system/valves and fittings of the system.

The application ranges/collector surfaces are mentioned in the product description. The mentioned values refer to a pressure drop of about 3.5 m wc and the most powerful pump in the system (assumed pressure drops: 1.5 m wc in the collector, 1.5 m wc in the pipes and 0.5 m wc in the heat exchanger).

A specific flow rate of 0.25 l / (m^2 x min) is assumed for low-flow systems, whereas 0.5 l / (m^2 x min) is assumed for high-flow systems. The values are only a first indication for the dimensioning. It is always essential to carry out a detailed dimensioning of the system!

PAW dimensioning	
Low-Flow 10-20 l / (m^2 x h)	High-Flow 25-40 l / (m^2 x h)
15 l / (m^2 x h) = 0.25 l (m^2 x min)	30 l / (m^2 x h) = 0.5 l (m^2 x min)

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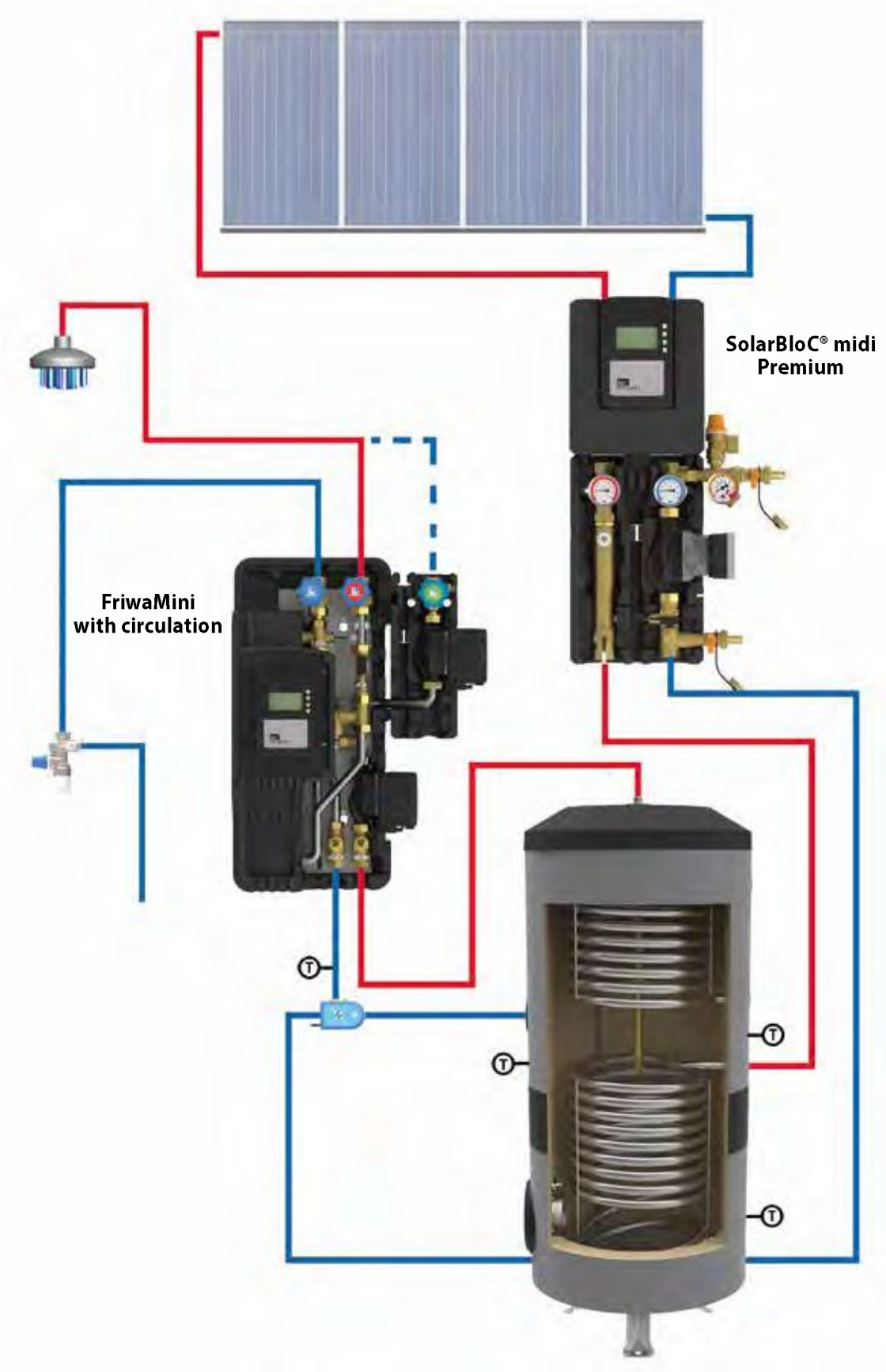
Mounting example SolarBloC® midi
Solar thermal systems



Overview
High-efficiency pumps, solar types

Controlled solar high-efficiency pumps

Nominal diameter	Illustration	Pump type	Power		Control	Display
			Max.	solpump*		
DN 15 / DN 20		Grundfos UPM3 Solar 15-75	45 W	23 W	• PWM solar (5 V) • On/Off (230 V)	5 LEDs for operation mode and error code
		Grundfos UPM3 Solar 15-145	60 W	30 W		
		Wilo Yonos PARA ST 15/7	45 W	23 W	PWM solar (5 V)	LED display for operation and error
		Wilo Yonos PARA ST 15/13	75 W	38 W		
DN 25		Grundfos UPM3 Solar 25-75	45 W	23 W	• PWM solar (5 V) • On/Off (230 V)	5 LEDs for operation mode and error code
		Grundfos UPM3 Solar 25-145	60 W	30 W		
		Grundfos Solar PML 25-145	140 W	70 W	PWM solar (5 V)	no display, no LEDs
		Grundfos UPML 25-105	140 W	70 W	PWM solar (5 V)	no display, no LEDs
		Grundfos UPMXL GEO 25-125	180 W	90 W		
		Wilo Yonos PARA ST 25/7.5	75 W	38 W	PWM solar (5 V)	LED display for operation and error
		Wilo Stratos PARA 25/1-11 T11	140 W	70 W	PWM solar (5 V)	no display, no LEDs
DN 32		Grundfos Solar PML 32-145	140 W	70 W	PWM solar (5 V)	no display, no LEDs
		Wilo Stratos PARA 30/1-12 T2	310 W	155 W	• Solar analogue (0-10 V) • On/Off (230 V)	no display, no LEDs

***solpump = Indication of performance as per European Ecodesign Directive ErP 811/2013 and 812/2013**

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VdZ HEATINGlabel

EuP READY

ErP READY 2015 APPLIES TO EUROPEAN DIRECTIVE FOR ENERGY RELATED PRODUCTS

We are member of the platform VdZ HEIZUNGSlabel (VdZ heating label)

From the 26th of September 2015 on, according to new European guidelines, heat generators, domestic hot water tanks, water heaters and combined systems must carry an energy label. It serves to inform the consumer about the energy efficiency of the labelled products.

On the online platform VdZ HEIZUNGSlabel we provide you all the necessary data for labeling our products. www.heizungslabel.de

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PAW replacement set for solar pumps

The PAW solution for replacing solar pumps and changeover to high-efficiency technology

Since August 2015, within the scope of the European Ecodesign directives for energy related products (811/2013 and 812/2013) to increase the energy efficiency, pumps with asynchronous motors must not be operated any longer in solar thermal installations.
As already for heating technology established, solar installations must also be operated with high-efficiency pumps from now on.
Controllers of old solar installations are usually incompatible with new high-efficiency technology. High-efficiency pumps require always constant mains voltage for operation, the speed control is effected via separate/additional control signals (0-10 V or PWM signal).
Old controllers are not equipped with an appropriate control signal output.

In the case that an existing (asynchronous) pump has to be exchanged without replacing the controller, PAW offers the

PAW replacement set for solar pumps, consisting of:

- High-efficiency pump
- Pump signal converter (PSW)*
- Connection cables
- Gaskets

The following table helps you to find the suitable replacement set for the solar installation.

*The pump signal converter converts the controlled 230 V alternating voltage such as control via pulse packages, phase angle or trailing-edge phase to a PWM or 0-10 V control signal.

How to replace the pump

- Dismount the asynchronous pump and replace it with a high-efficiency pump.
- Connect the PSW to the controller (to the same relay to which the old pump was connected to).
- Connect the PSW to the pump plugs and plug the shock-proof plug into a socket.
- The PSW is correctly preset for the pump.

Thus, complex solar installations can be continuously operated with the existing controller.
Whether to replace a faulty asynchronous pump or to increase the efficiency of a installation: The PAW service team will assist you in the selection of a high-efficiency pump with appropriate characteristic curve.

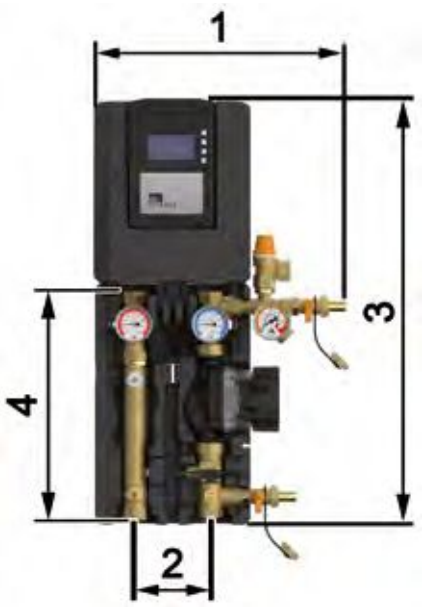
Replacement set for solar pumps in solar installations

DN 20 (¾")	DN 25 (1")	DN 32 (1¼")
Item no. **12187314** Grundfos UPM3 Solar 15-145	Item no. **12187414** Grundfos Solar PML 25-145	Item no. **12187514** Grundfos Solar PML 32-145
-	-	-
		

What is the situation with domestic hot water installations?

PAW domestic hot water modules are equipped with perfectly matched components such as heat exchanger, pumps, sensors and controllers. The pumps are usually designed as high-efficiency pumps.
To ensure the usual temperature stability after replacing a component, please contact our service team and keep the serial number of the station ready. The serial number is placed in the lower right corner of the support sheet of the station.
We will gladly submit you a specific recommendation for replacement.

SolarBloC® midi Premium
up to 60 m² of collector surface



Application range

- Efficient circulation of the solar fluid in the solar circuit

Range of application

- up to **60 m²** of collector surface

For information on design data and the solpump indication of performance, see page 242/244.

Operating data

Max. pressure	6 bars
Max. operating temperature	120 °C
Low-flow = 0.25 l/minute per m² of collector surface	up to **60 m²** of collector surface
High-flow = 0.5 l/minute per m² of collector surface	up to **40 m²** of collector surface

Technical data

Equipment

Airstop	yes
Check valves	2 x 200 mm wc
FlowRotor	0.5-15 l/min
Pressure relief valve	6 bars
Controller	SC3.6
Sensors	2 x Pt1000 (mounted) 3 x Pt1000 (enclosed)
Pressure gauge	0-6 bars, temperature-resistant

Dimensions

Nominal diameter	DN 20 (¾")
Connections	¾" internal thread
(1) Width	334 mm
(2) Centre distance	100 mm
(3) Height	560 mm
(4) Installation length	302 mm
Depth	155 mm

Materials

Valves and fittings	Brass
Gaskets	AFM34 / EPDM
Insulation	EPP
Check valves	Brass

SolarBloC® midi Premium - DN 20 (¾")	Item no.	€ / piece
Wilo-Yonos PARA ST 15/7.0, with controller	7653513WY7	-
Wilo-Yonos PARA ST 15/13, with controller	7653513WH13	-
Grundfos UPM3 Solar 15-75, with controller	7653513GP7	-
Grundfos UPM3 Solar 15-145, with controller	7653513GP14	-

Accessories	Item no.	€ / piece
Temperature sensor Pt1000	Q00146	-

- Measuring range: -50 °C ... +180 °C
- Connection: 1.5 m of silicone cable
- Dimensions: d = 6 mm

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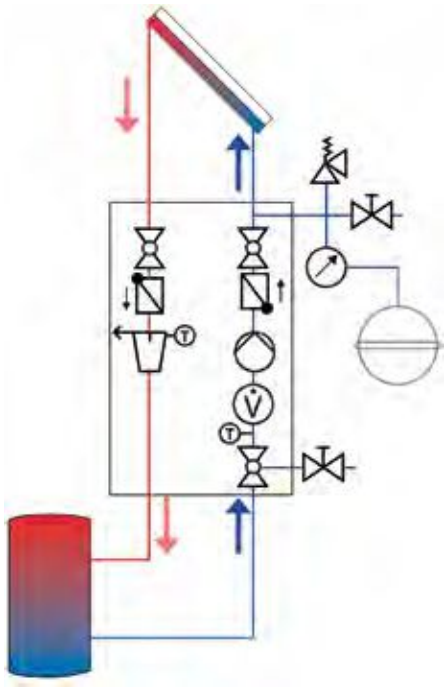
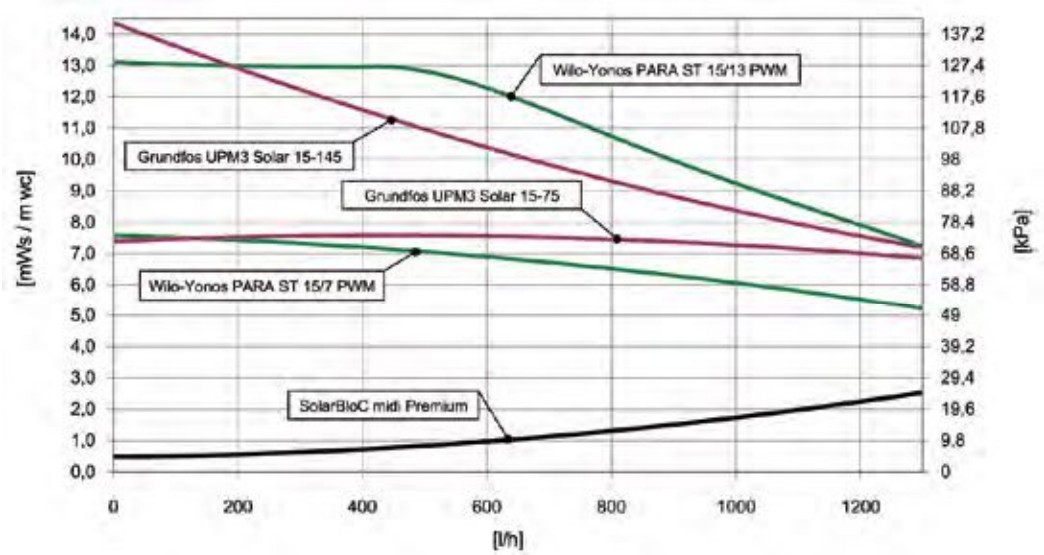
SolarBloC® midi Premium
Mounting example, hydraulic scheme, differential pressure diagram

Mounting example SolarBloC midi Premium
in combination with a FriwaMini with integrated circulation

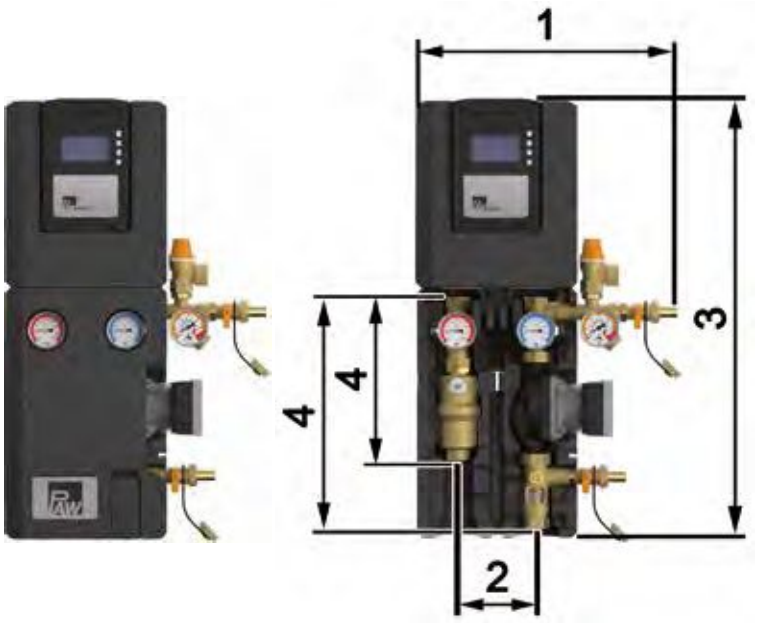


Hydraulic scheme

Differential pressure diagram



SolarBloC® midi Basic
up to 60 m² of collector surface



Application range

- Efficient circulation of the solar fluid in the solar circuit

Range of application

- up to **60 m²** of collector surface

For information on design data and the solpump indication of performance, see page 242/244.

Operating data

Max. pressure	6 bars
Max. operating temperature	120 °C
Low-flow = 0.25 l/minute per m² of collector surface	up to **60 m²** of collector surface
High-flow = 0.5 l/minute per m² of collector surface	up to **40 m²** of collector surface

Technical data

Equipment		Dimensions		Materials	
Airstop	yes	Nominal diameter	DN 20 (¾")	Valves and fittings	Brass
Check valves	2 × 200 mm wc	Connections	¾" internal thread	Gaskets	AFM34 / EPDM
Flowmeter	3-22 l/min	(1) Width	334 mm	Insulation	EPP
Pressure relief valve	6 bars	(2) Centre distance	100 mm	Check valves	Brass
Controller	SC3.6	(3) Height with controller	560 mm		
Sensors	2 x Pt1000 (enclosed, only in stations with controller)	Height	383 mm		
		(4) Installation length	210 mm / 297 mm		
Pressure gauge	0-6 bars, temperature-resistant	Depth	153 mm		

SolarBloC® midi Basic - DN 20 (¾")	Item no.	€ / piece
Wilo-Yonos PARA ST 15/7.0, with controller	**7655213WY7**	-
Wilo-Yonos PARA ST 15/13, with controller	**7655213WH13**	-
Grundfos UPM3 Solar 15-75, with controller	**7655213GP7**	-
Grundfos UPM3 Solar 15-145, with controller	**7655213GP14**	-
Wilo-Yonos PARA ST 15/7.0, controller to be obtained by the customer	**7655210WY7**	-
Wilo-Yonos PARA ST 15/13, controller to be obtained by the customer	**7655210WH13**	-
Grundfos UPM3 Solar 15-75, controller to be obtained by the customer	**7655210GP7**	-
Grundfos UPM3 Solar 15-145, controller to be obtained by the customer	**7655210GP14**	-

Accessories	Item no.	€ / piece
Temperature sensor Pt1000	**Q00146**	-

- Measuring range: -50 °C ... +180 °C
- Connection: 1.5 m of silicone cable
- Dimensions: d = 6 mm

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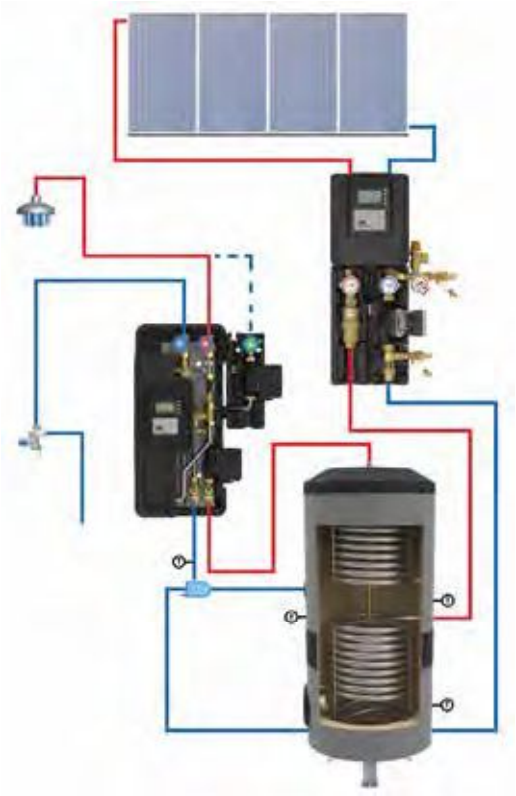
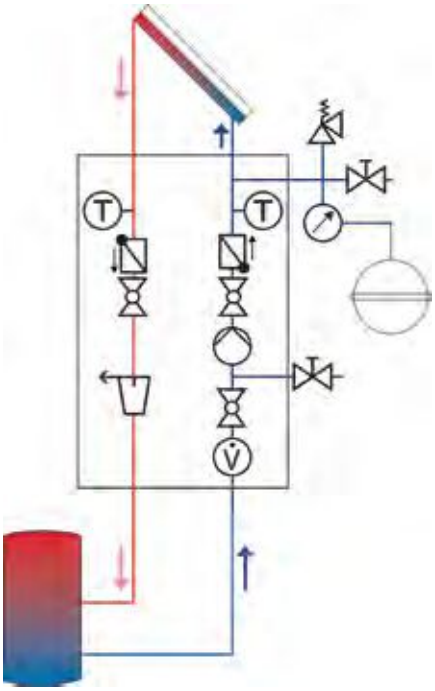
SolarBloC® midi Basic
Mounting example, hydraulic scheme, differential pressure diagram

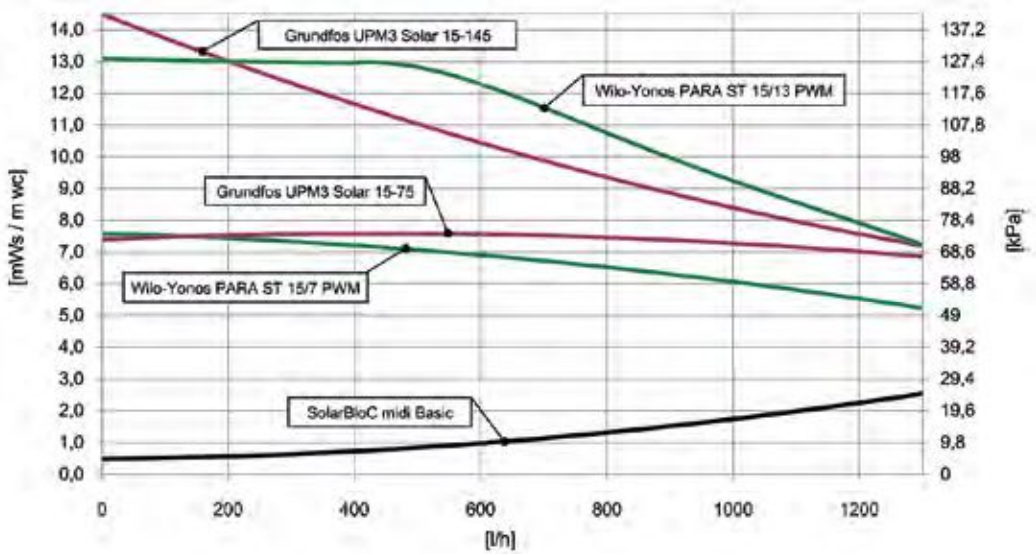


Mounting example SolarBloC midi Basic
in combination with a FriwaMini with integrated circulation

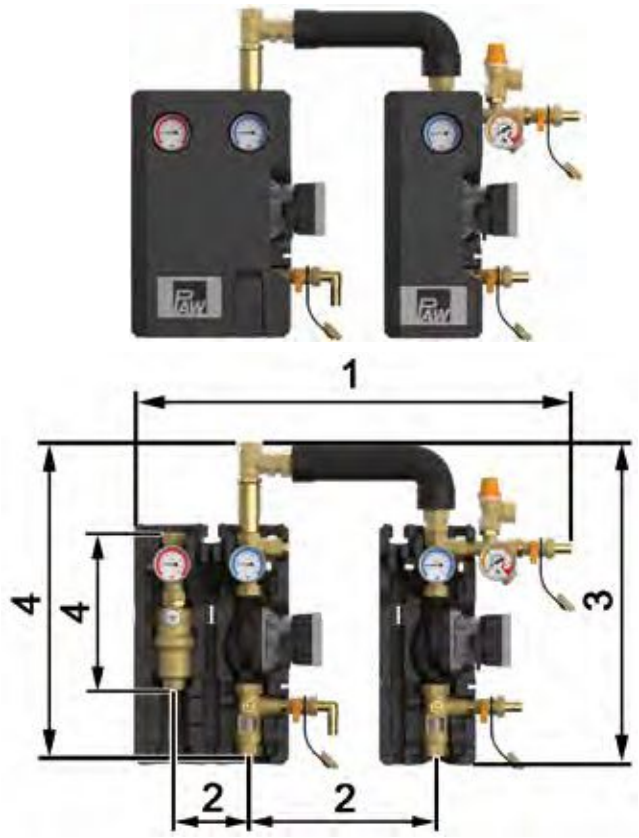


Hydraulic scheme

Differential pressure diagram



SolarBloC® midi 3-line station 2S up to 60 m² of collector surface



Application range

- SolarBloC 3-line stations for installations with 2 tanks

Range of application

- up to **60 m²** of collector surface

For information on design data and the solpump indication of performance, see page 242/244.

Operating data

Max. pressure	6 bars
Max. operating temperature	120 °C
Low-flow = 0.25 l/minute per m² of collector surface	up to **60 m²** of collector surface
High-flow = 0.5 l/minute per m² of collector surface	up to **40 m²** of collector surface

Technical data

Equipment

Airstop	yes
Check valves	3 × 200 mm wc
Flowmeter	3-22 l/min
Pressure relief valve	6 bars
Pressure gauge	0-6 bars, temperature-resistant

Dimensions

Nominal diameter	DN 20 (¾")
Connections	¾" internal thread
(1) Width	584 mm
(2) Centre distance	100 mm / 251 mm
(3) Height	430 mm
(4) Installation length	418 mm
Depth	152 mm

Materials

Valves and fittings	Brass
Gaskets	AFM34 / EPDM
Insulation	EPP
Check valves	Brass

SolarBloC® midi 3-line station 2S - DN 20 (¾")	Item no.	€ / piece
Wilo-Yonos PARA ST 15/7.0	**7655810WY7**	-
Wilo-Yonos PARA ST 15/13	**7655810WH13**	-
Grundfos UPM3 Solar 15-75	**7655810GP7**	-
Grundfos UPM3 Solar 15-145	**7655810GP14**	-

Accessories

	Item no.	€ / piece
Supplementary set for heat quantity balancing	**131910**	-

Supplementary set for heat quantity balancing in 3-line stations.
Consisting of:
- Controller SC3.6 with connection cable and 2 x pump cable, already installed, 5 x temperature sensor Pt1000
- Controller insulation for simple installation onto the solar station
- Flowmeter for installation at the solar station
- T-piece with sensor immersion sleeve for installation at the solar station

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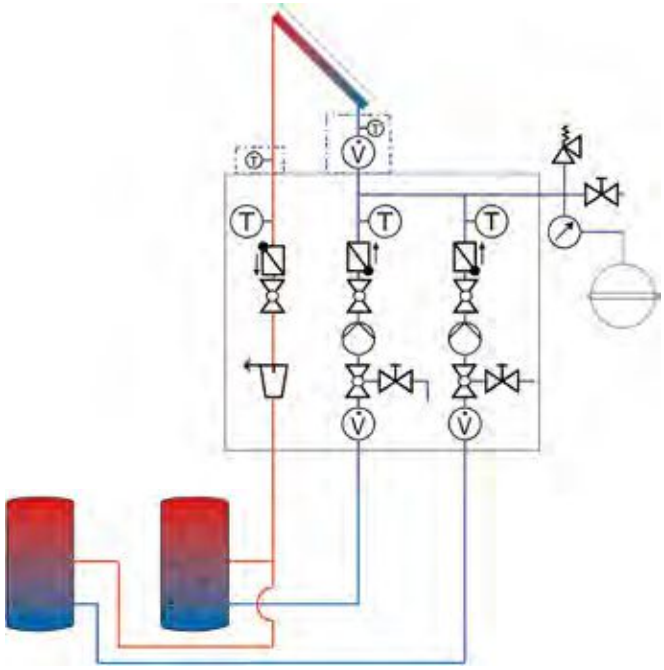
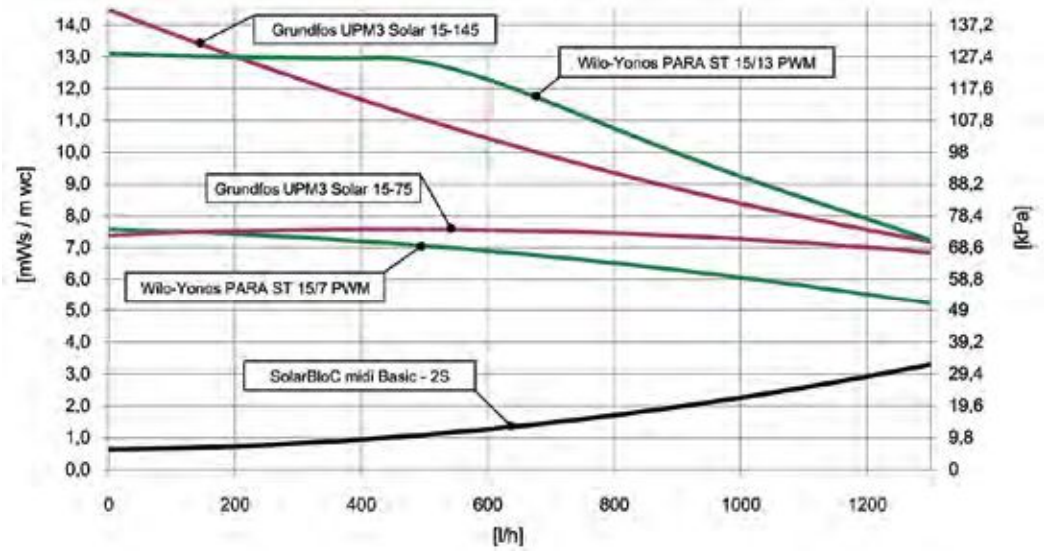
SolarBloC® midi 3-line station 2S
Hydraulic scheme, differential pressure diagram



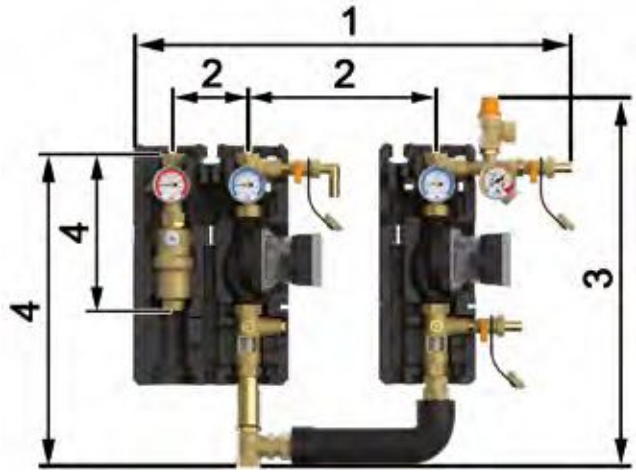
The 3-line station can be used in systems with 2 storage tanks. For switching between the storage tanks, the pumps are switched on or off. This assembly enables a parallel operation of both storage tanks.

Hydraulic scheme

Differential pressure diagram



SolarBloC® midi 3-line station 2D up to 60 m² of collector surface



Application range

- SolarBloC 3-line stations for installations with 2 roofs

Range of application

- up to **60 m²** of collector surface

For information on design data and the solpump indication of performance, see page 242/244.

Operating data

Max. pressure	6 bars
Max. operating temperature	120 °C
Low-flow = 0.25 l/minute per m² of collector surface	up to **60 m²** of collector surface
High-flow = 0.5 l/minute per m² of collector surface	up to **40 m²** of collector surface

Technical data

Equipment		Dimensions		Materials	
Airstop	yes	Nominal diameter	DN 20 (¾")	Valves and fittings	Brass
Check valves	3 × 200 mm wc	Connections	¾" internal thread	Gaskets	AFM34 / EPDM
Flowmeter	3-22 l/min	(1) Width	548 mm	Insulation	EPP
Pressure relief valve	6 bars	(2) Centre distance	100 mm / 251 mm	Check valves	Brass
Pressure gauge	0-6 bars, temperature-resistant	(3) Height	493 mm		
		(4) Installation length	418 mm		
		Depth	152 mm		

SolarBloC® midi 3-line station 2D - DN 20 (¾")	Item no.	€ / piece
Wilo-Yonos PARA ST 15/7.0	**7655910WY7**	-
Wilo-Yonos PARA ST 15/13	**7655910WH13**	-
Grundfos UPM3 Solar 15-75	**7655910GP7**	-
Grundfos UPM3 Solar 15-145	**7655910GP14**	-

Accessories	Item no.	€ / piece
Supplementary set for heat quantity balancing	**131910**	-

Supplementary set for heat quantity balancing in 3-line stations.
Consisting of:
- Controller SC3.6 with connection cable and 2 x pump cable, already installed, 5 x temperature sensor Pt1000
- Controller insulation for simple installation onto the solar station
- Flowmeter for installation at the solar station
- T-piece with sensor immersion sleeve for installation at the solar station

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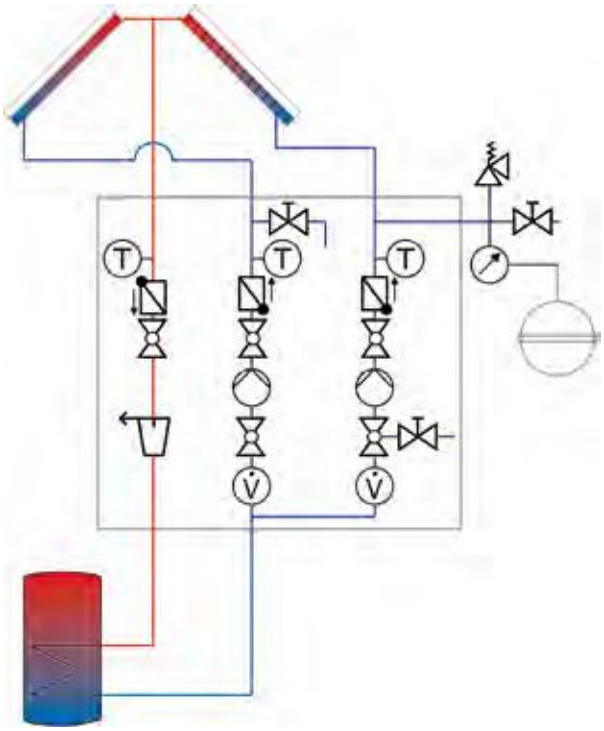
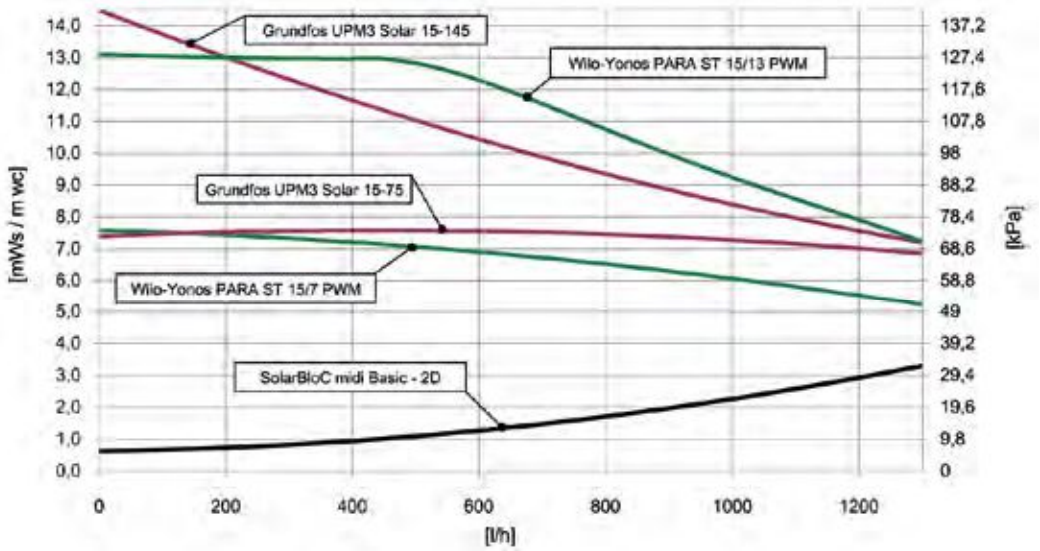
SolarBloC® midi 3-line station 2D
Hydraulic scheme, differential pressure diagram



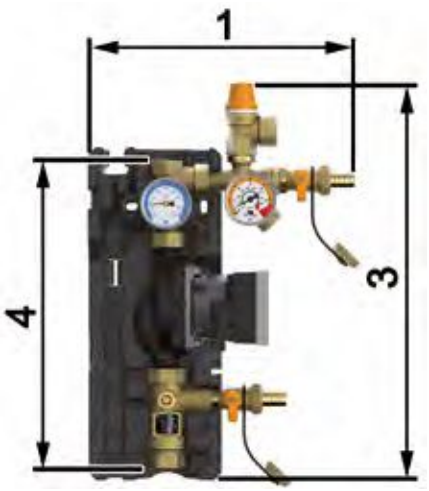
The 3-line station can be used in systems with independently working collector fields (2-roof systems). For circulation in the two collector fields, the controller switches between the pumps. This assembly enables a parallel operation of both collector fields.

Hydraulic scheme

Differential pressure diagram



SolarBloC® midi Basic return station up to 60 m² of collector surface



Application range

- Efficient circulation of the solar fluid in the solar circuit

Range of application

- up to **60 m²** of collector surface

For information on design data and the solpump indication of performance, see page 242/244.

Operating data

Max. pressure	6 bars
Max. operating temperature	120 °C
Low-flow = 0.25 l/minute per m² of collector surface	up to **60 m²** of collector surface
High-flow = 0.5 l/minute per m² of collector surface	up to **40 m²** of collector surface

Technical data

Equipment		Dimensions		Materials	
Airstop	no	Nominal diameter	DN 20 (¾")	Valves and fittings	Brass
Check valves	1 × 200 mm wc	Connections	¾" internal thread	Gaskets	AFM34 / EPDM
Flowmeter	3-22 l/min	(1) Width	256 mm	Insulation	EPP
Pressure relief valve	6 bars	(3) Height	383 mm	Check valves	Brass
Pressure gauge	0-6 bars, temperature-resistant	(4) Installation length	297 mm		
		Depth	150 mm		

SolarBloC® midi Basic return station - DN 20 (¾")	Item no.	€ / piece
Wilo-Yonos PARA ST 15/7.0, controller to be obtained by the customer	**7650210WY7**	-
Wilo-Yonos PARA ST 15/13, controller to be obtained by the customer	**7650210WH13**	-
Grundfos UPM3 Solar 15-75, controller to be obtained by the customer	**7650210GP7**	-
Grundfos UPM3 Solar 15-145, controller to be obtained by the customer	**7650210GP14**	-

Accessories	Item no.	€ / piece
Accessory kit for storage tank installation	**172706201**	-

Flange bracket made of brass with fill and drain valve and insulation for direct assembly of the return station to the storage tank

Solar check valve	**1211**	-

for the solar flow, 200 mm wc, can be opened, resistant up to 150 °C, ¾" internal thread x ¾" internal thread

Dial thermometer with red scale	**21711SOL**	-
Dial thermometer with blue scale	**21721SOL**	-

Measuring range 0-160 °C, immersion shaft 25 mm, with self-sealing immersion sleeve, d = 50 mm

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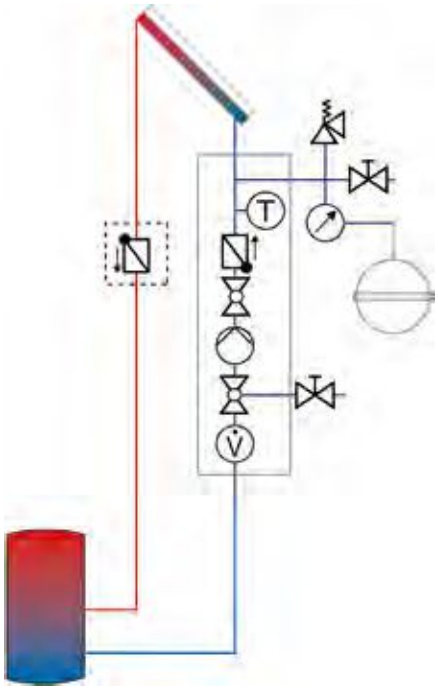
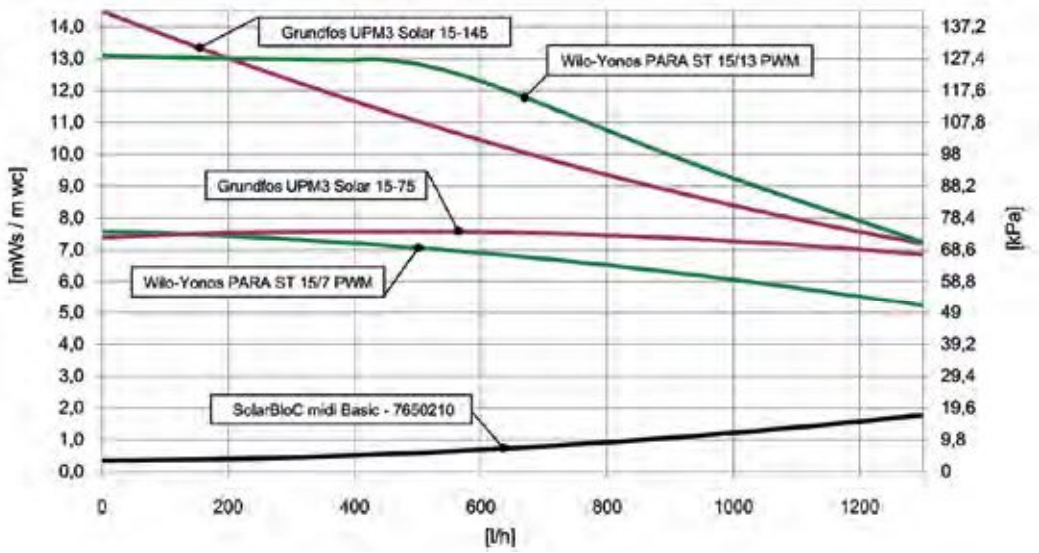
SolarBloC® midi Basic return station
Mounting example, hydraulic scheme, differential pressure diagram

Mounting example



Hydraulic scheme

Differential pressure diagram



Mounting equipment solar stations DN 20

Illustration		Item no.	€ / piece
	**Connection set for diaphragm expansion tank DN 20**	**437509**	-
	Connection set for diaphragm expansion tank DN 20 with cap valve ¾" for connection to the safety set ¾", for tank diameter up to 440 mm, max. 35 kg, with stainless steel corrugated hose ¾" internal thread - internal thread x 500 mm, wall bracket with mounting equipment, solar tank connector ¾"	**437510**	-
	**Maintenance units for solar installations** Maintenance unit for solar installations: with fine filter for solar fluids (stainless steel with 250 µm) to protect the pump, the check valve(s) and the flow meter against dirt particles (for example residues of soldering flux and scale particles). To be mounted in the solar flow line, above the ball valve. Can be completely isolated for maintenance, so that only a small quantity of solar fluid need to be refilled. Connection to the solar station with flat-sealing thread connection ¾", outlet ¾".	**56701**	-
	**Fine filter for solar fluids** To protect the pump and valves and fittings from dirt particles. It is recommended to install it above the group of fittings in the flow line. The fine filter should be completely isolated for cleaning. Connection top: 1" external thread Connection bottom: 1" union nut	**5670**	-
	**Connection piece for immersion sleeves** Connection piece for immersion sleeve with ½" external thread, for a length up to 45 mm 1" union nut with gasket, ¾" internal thread, with sleeve	**5660**	-
	**Immersion sleeve 6 mm x 30 mm**	**566001**	-
	Immersion sleeve 6 mm x 60 mm	**566002**	-
	Immersion sleeve 6 mm x 100 mm	**566003**	-
	Immersion sleeve 6 mm x 150 mm	**566004**	-
	for the installation of temperature sensors (d = 6 mm) in the storage tank, the collector etc. 566001: self sealing, o-ring, polished brass, for sensor with a depth of 30 mm 566002: standard, chromed brass, for sensor with a depth of 60 mm 566003: standard, chromed copper, for sensor with a depth of 100 mm 566004: standard, chromed copper, for sensor with a depth of 150 mm		
	**Flush and drain unit DN 20** Counter T-piece, self-sealing with fill and drain valve for extending the solar station with a flush and drain connection, installation at the lowest point (drain unit).	**31611**	-
	**Solar check valve RSS - DN 20**	**1211**	-
	Solar check valve RSS - DN 20 with brass valve plate, all installation positions possible, opening pressure 200 mm wc, internal thread ¾", length = 50 mm 1211: can be opened, up to 150 °C 12111: without possibility for manual opening, up to 220 °C	**12111**	-
	**Hand filling pump** ½" external thread, 15 mm hose connection, attainable pressure up to approx. 4 bars, length 175 mm	**7061**	-

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Illustration		Item no.	€ / piece
	**Hand filling pump with fill and drain valve** ½" external thread, 15 mm hose connection, attainable pressure up to approx. 4 bars, length 225 mm	**7062**	**-**
	**Hose connector** hose connector for hand filling pump ½" x 15 mm	**70611**	**-**
	**Stainless-steel corrugated hose Solarflex 18 mm - 800 mm**	**840180**	**-**
	Stainless-steel corrugated hose Solarflex 22 mm - 800 mm	**840280**	**-**
	Ideal for the roof part leading to the collector. Two soldered connections for clamping-ring compression fittings, for diameters of 18 mm or 22 mm. Temperature: -30 °C ... + 260 °C Max. admissible pressure: 12 bars Bursting pressure: 120 bars Bending radius: 45 mm Wall width: 0.2 mm Inside diameter: 12 mm or 16 mm Length: 500 mm or 800 mm		
	**Flush and fill unit DN 20**	**56500**	**-**
	Flush and fill unit DN 20 for 12 mm copper pipe	**565121**	**-**
	Flush and fill unit DN 20 for 15 mm copper pipe	**565151**	**-**
	Flush and fill unit DN 20 for 18 mm copper pipe	**565181**	**-**
	Flush and fill unit DN 20 for 22 mm copper pipe	**565221**	**-**
	consisting of: brass ball valve internal thread ¾", with red butterfly handle, with 2 fill and drain valves with hose connector 15 mm 565151, 565181, 565121, 565221: additionally with 2 cutting-ring compression fittings with support sleeve, premounted		
	**Double nipple ¾" external thread x ¾" external thread**	**548310**	**-**
	Double nipple ¾" external thread x 1" external thread	**548340**	**-**
	for assembly of corrugated stainless steel hoses 548310: ¾" external thread, self-sealing with o-ring x outlet ¾" external thread, flat sealing 548340: ¾" external thread, self-sealing with o-ring x outlet 1" external thread, flat sealing		
	**Cutting-ring compression fitting DN 20, d = 12 mm**	**561012**	**-**
	Cutting-ring compression fitting DN 20, d = 15 mm	**561215**	**-**
	Cutting-ring compression fitting DN 20, d = 18 mm	**561218**	**-**
	Cutting-ring compression fitting DN 20, d = 22 mm	**561222**	**-**
	¾" external thread, self-sealing with o-ring, with support sleeve, suitable for soft copper pipes. For temperatures up to 150 °C.		
	**Accessory kit for storage tank installation DN 20**	**172706201**	**-**
	Flange bracket made of brass with fill and drain valve and insulation for direct assembly of the return station to the storage tank		

Illustration		Item no.	€ / piece
	**2-way zone valve - DN 20** can be used in solar and heating systems as a zone valve, which means that single parts of the system can be connected or disconnected. The actuator is equipped with a relay to be energized via a 2-point signal, if needed it can also be manually operated. The 2-way zone valve can be operated in both directions. **Technical Data** Power supply: 230 V / 50 Hz Casing protection type: IP 44, type II Power consumption: 3 VA (standby); 7.5 VA (operation) Setting time for 90°: 30 sec. Ambient temperature: -10 °C ... +60 °C Fluid temperature: 0 °C ... 100 °C, short-term 115 °C Kvs value: full port Equipment: 2 x ¾" internal thread, with 2 m cable 4 x 0.5 mm²	**563532**	**-**
	**3-way zone valve - DN 20** can be used in solar and heating systems to switch between different zones or to disconnect different parts of the system. The actuator is equipped with a relay to be energized via a 2-point signal, if needed it can also be manually operated. The 3-way zone valve can be operated in both directions. **Technical Data** Power supply: 230 V / 50 Hz Casing protection type: IP 44, type II Power consumption: 3 VA (standby); 7.5 VA (operation) Setting time for 90°: 18 sec. Ambient temperature: 0 - 55 °C, non-condensing Fluid temperature: 2 °C - 110 °C, short-term 115 °C Kvs value: 7.0 Equipment: 3 x ¾" internal thread, with 1.8 m cable 4 x 0.5 mm²	**563533**	**-**

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