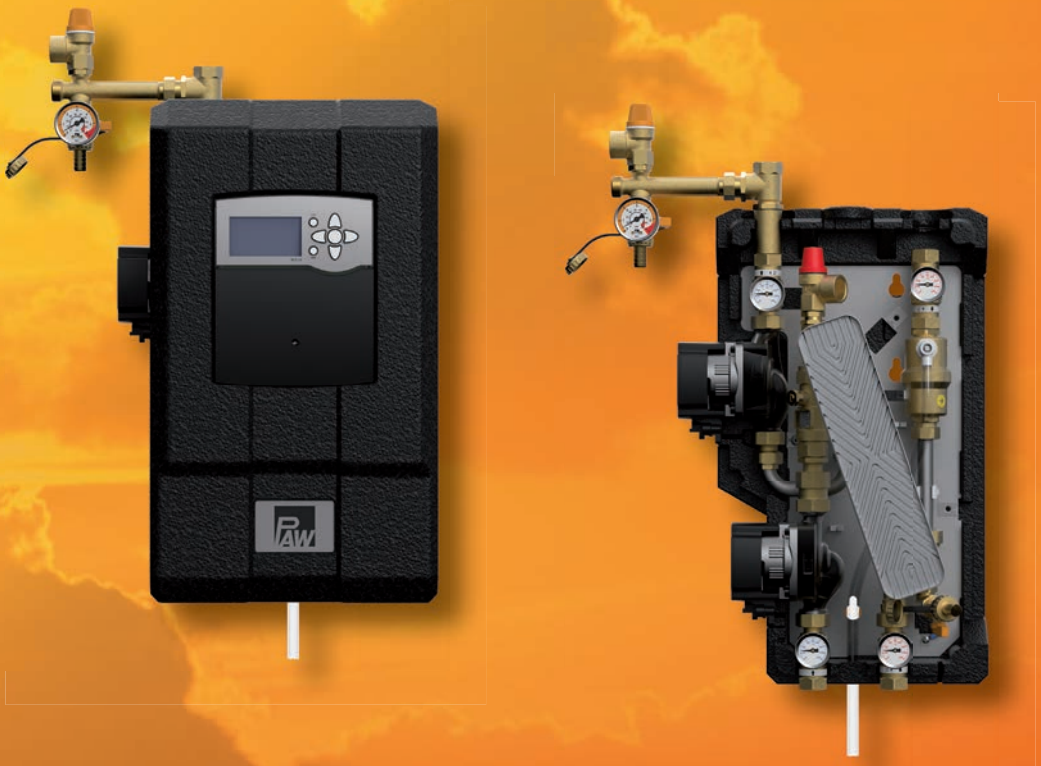
Solex
Solar thermal systems



Solar transfer stations DN 15-50

Catalogue 01/2024

Solutions for solar thermal systems

Valid for the EU

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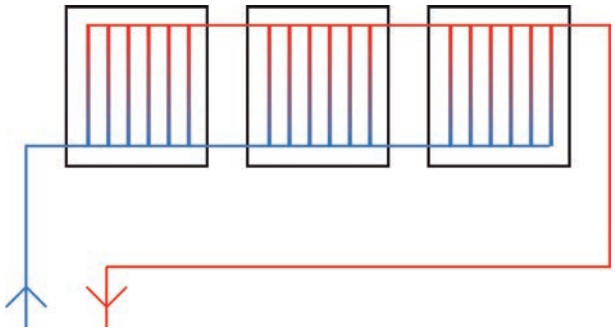
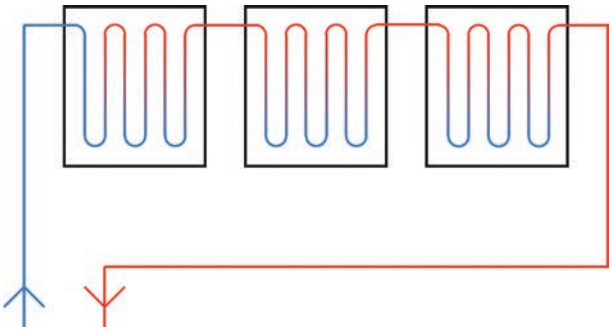
High-Flow system with harp collectors



Low-Flow system with meander collectors



Dimensioning of a Solex module

Different collector types with the same size of collector field need very different flow rates for an effective operation without interruption. The hydraulic connection of the collector field as well as the shape of the collector can also influence the optimal flow of the solar circuit. Corresponding values should be agreed with the manufacturer of the collectors. They can also be found in the technical documents of the collectors.

The solar systems are roughly divided into High-Flow systems and Low-Flow systems. High-Flow systems are operated with a higher flow rate and a smaller temperature difference between collector inlet and collector outlet.
In reality, these systems have less pressure drop than Low-Flow systems. Accordingly, Low-Flow systems work with lower flow rates and a higher temperature difference. The Solex transfer stations can be used for High-Flow solar thermal systems as well as for Low-Flow systems.

The values for the specific flow rate given below refer to the nominal flow rate.
Depending on the control target and the basic conditions, the flow rate in the partial-load range is adapted by the controller and can be much smaller than the calculated nominal flow rate.

High-Flow systems have a flow rate of 25 to 40 litres per square metre of collector surface and hour or 0.42 to 0.67 litre per square metre of collector surface and minute.

Low-Flow systems have a flow rate of 10 to 20 litres per square metre of collector surface and hour or 0.17 to 0.33 litre per square metre of collector surface and minute.

The **total flow rate** in a solar thermal system depends on:
- System operation mode (High-Flow/Low-Flow)
- Collector surface
- Performance of the heat exchanger (secondary)

The **circulation pump dimensioning** depends on:
- Flow rate
- Pressure drop of heat exchanger, collector, piping system

For the selection table of the proper Solex, we assumed a minimum head of ~5 m wc (~50 kPa). If the real collector field (including pipes) has a higher pressure drop, a detailed dimensioning is inevitable.

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Selection table solar transfer stations - Solex

Specific flow rate in l/(m² x h)	Collector surface in m²																
	15	**20**	**25**	**30**	**40**	**50**	**60**	**70**	**80**	**90/ 100**	**120**	**140/ 160**	**180/ 200**	**240**	**280**	**320**	**360/ 400**
15	Mini	Mini	Mini	Mini	Midi	Midi	Midi	Maxi	Maxi	Maxi	Mega	Mega	Mega	2x Mega	2x Mega	2x Mega	2x Mega
20	Mini	Mini	Mini	Mini	Midi	Midi	Maxi	Maxi	Maxi	Maxi	Mega	Mega	Mega	2x Mega	2x Mega	2x Mega	2x Mega
25	Mini	Mini	Mini	Midi	Midi	Maxi	Maxi	Maxi	Maxi	Mega	Mega	Mega	2x Mega	2x Mega	2x Mega	2x Mega	***
30	Mini	Mini	Mini	Midi	Midi	Maxi	Maxi	Maxi	Mega	Mega	Mega	2x Mega	2x Mega	2x Mega	***	/	/
35	Mini	Mini	Midi	Midi	Maxi	Maxi	Maxi	Mega	Mega	Mega	2x Mega	2x Mega	2x Mega	***	/	/	/
40	Mini	Midi	Midi	Midi	Maxi	Maxi	Mega	Mega	Mega	Mega	2x Mega	2x Mega	2x Mega	***	/	/	/

*** precise dimensioning required

We are happy to help you with a detailed calculation of your system and the selection of the individual modules and cascade solutions.

Please contact us!

Replacement set for solar pumps

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

Due to the requirements for the energy efficiency of heating and solar pumps, only high-efficiency pumps may be used in solar thermal systems.

However, the controllers of older solar systems are generally not compatible with the new high-efficiency technology. High-efficiency pumps always require constant mains voltage for operation, the speed control is carried out via separate/additional control signals (0-10 V or PWM signal).
Older 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**
- ✓ **Pumps control signal converter (PSW)***
- ✓ **Connection cables**
- ✓ **Sealing material**

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

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

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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 previous pump was connected to).**
- **Connect the PSW to the pump plugs and plug the safety plug into a socket. The PSW is correctly preset for the pump.**

Complex solar installations can thus be operated with the existing controller.

Whether it is the replacement of a faulty asynchonous pump or the increase of the efficiency of an installation: The PAW service team is happy to assist you in the selection of a high-efficiency pump with an appropriate characteristic curve.

Solar pump replacement set for solar installations				
DN 20 (¾")			**DN 25 (1")**	**DN 32 (1¼")**
Item no.	**12187314**	**12387313**	**12187414**	**12187514**
Pump	Grundfos UPM3 Solar 15-145	Wilo Para ST 15/13	Grundfos Solar PML 25-145	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 at hand. The serial number is placed in the lower right corner of the retaining plate of the station. We will gladly submit you a specific recommendation for replacement.

SolexMini HZ (heating system) up to 36 m² of collector surface

Application range

- for charging buffer storage tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 36 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 3 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	40 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 200 mm wc / secondary: 1 x 200 mm wc
Heat exchanger	E8ASH, 24 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 3 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 3 bar
FlowRotor (primary)	0.5-15 l/min
Flow meter (secondary)	0.5-15 l/min

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

Dimensions

Nominal diameter	DN 15 (½")
Connections	primary: ¾" int. thread secondary: ¾" int. thread
Width	427 mm
Height	664 mm
Installation length	600 mm
Depth	313 mm

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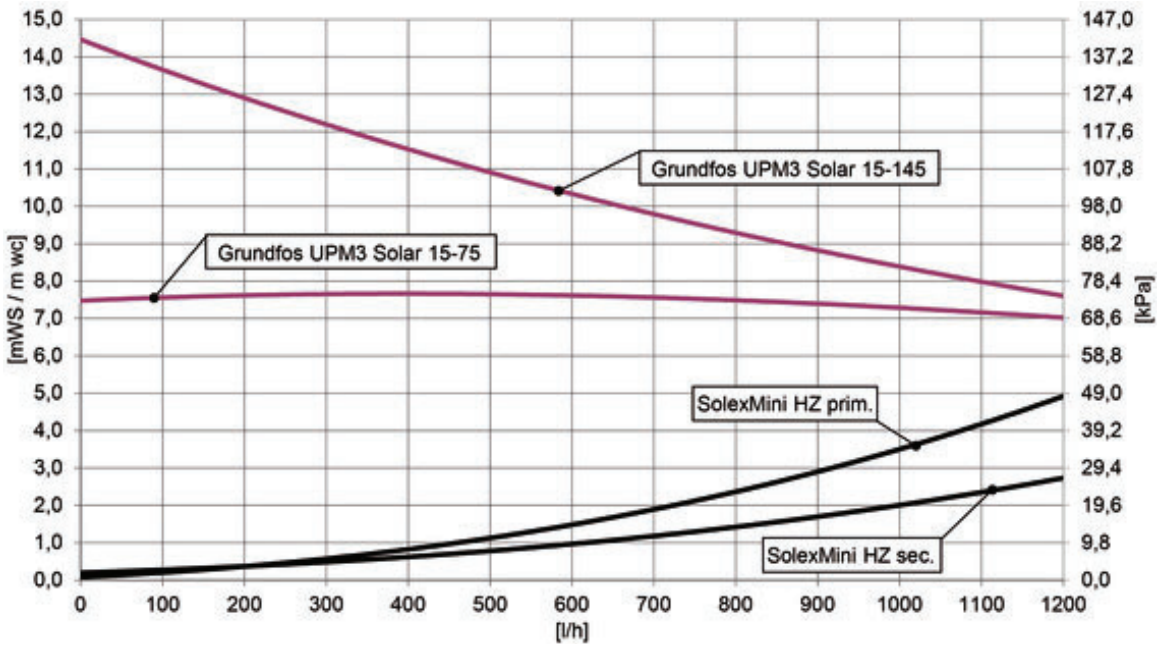
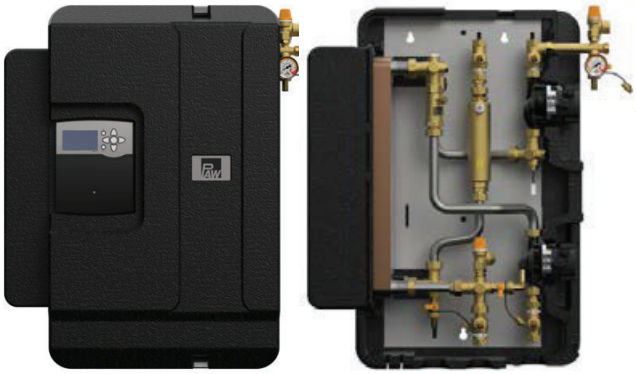
SolexMini HZ (heating system)
up to 36 m² of collector surface



SolexMini HZ - DN 15 (½")		Item no.
	Primary pump **Grundfos UPM3 Solar 15-145** Secondary pump **Grundfos UPM3 Solar 15-75**	**6091410**

SolexMidi HZ (heating system)
up to 60 m² of collector surface



Application range

- for charging buffer storage tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 60 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 6 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	40 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 350 mm wc / secondary: 2 x 200 mm wc
Heat exchanger	B25TH, 30 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 3 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 6 bar
FlowRotor (primary)	2-50 l/min
Flow meter (secondary)	3-22 l/min

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

Dimensions

Nominal diameter	DN 20 (¾")
Connections	primary: ¾" int. thread secondary: ¾" int. thread
Width	674 mm
Height	795 mm
Installation length	670 mm
Depth	298 mm
Centre distance	120 mm

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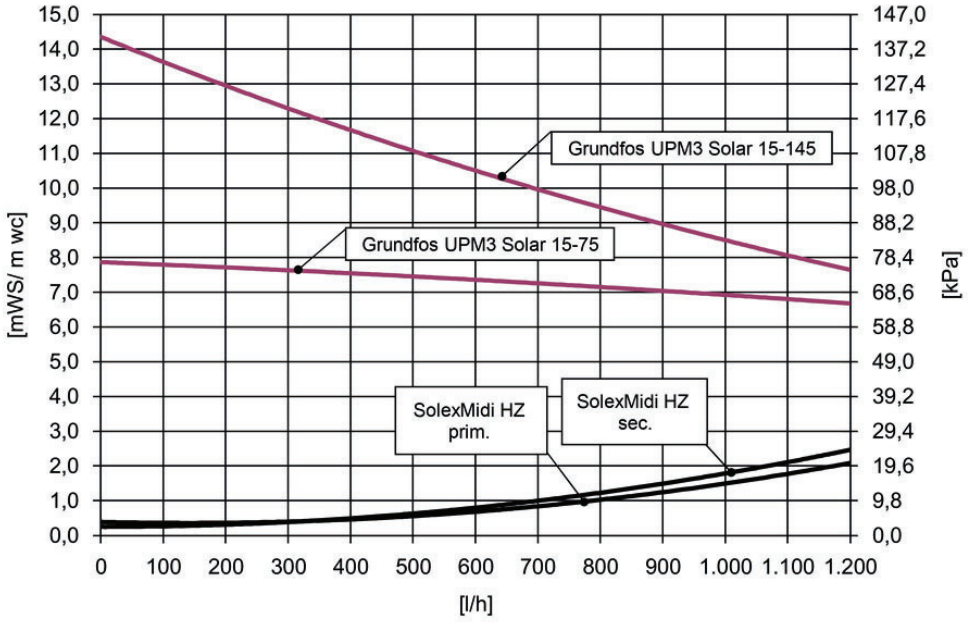
SolexMidi HZ (heating system)
up to 60 m² of collector surface



SolexMidi HZ - DN 20 (¾")		Item no.
	Primary pump **Grundfos UPM3 Solar 15-145** Secondary pump **Grundfos UPM3 Solar 15-75**	**6095430**

SolexMaxi HZ (heating system)
up to 100 m² of collector surface

Application range

- for charging buffer storage tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 100 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 6 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	25 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 200 mm wc / secondary: 1 x 200 mm wc
Heat exchanger	B25TH, 60 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 3 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 6 bar
FlowRotor (primary)	2-50 l/min
Flow meter (secondary)	5-40 l/min

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

Dimensions

Nominal diameter	DN 25 (1")
Connections	primary: 1" int. thread secondary: 1" int. thread
Width	674 mm
Height	828 mm
Installation length	709 mm
Depth	298 mm
Centre distance	120 mm

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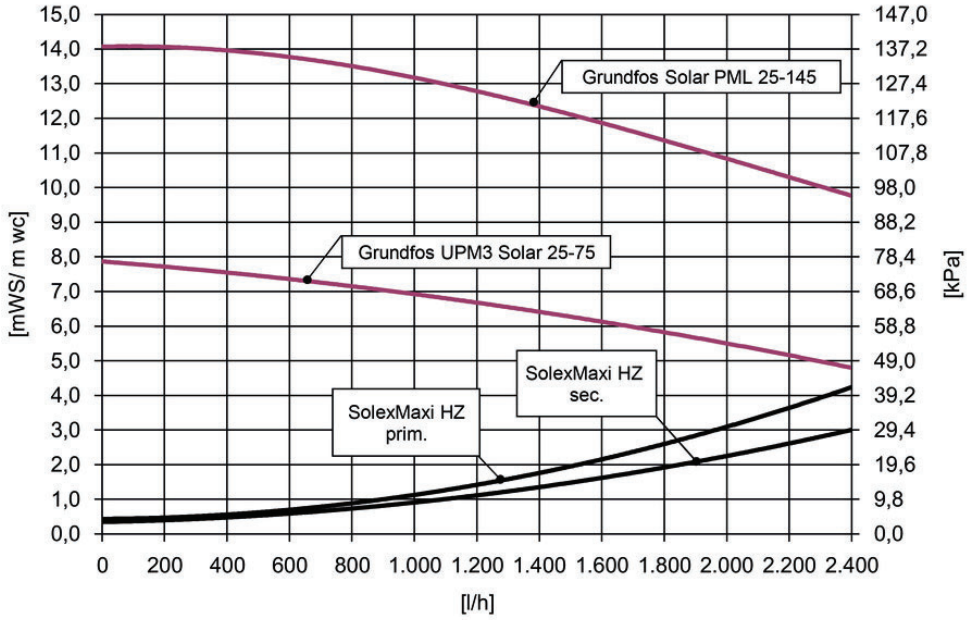
SolexMaxi HZ (heating system)
up to 100 m² of collector surface



SolexMaxi HZ - DN 25 (1")		Item no.
	Primary pump **Grundfos Solar PML 25-145** Secondary pump **Grundfos UPM3 Solar 25-75**	**6096460**

SolexMega HZ (heating system)
up to 200 m² of collector surface

Application range

- for charging buffer storage tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 200 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 6 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	25 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 250 mm wc / secondary: 2 x 250 mm wc
Heat exchanger	XB37M-1, 2x 50 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 6 bar
FlowRotor (primary)	5-100 l/min

Dimensions

Nominal diameter	DN 32 (1¼")
Connections	primary: 1½" int. thread secondary: 1½" int. thread
Width	710 mm
Height	1 654 mm
Installation length	1 205 mm
Depth	920 mm
Centre distance	158 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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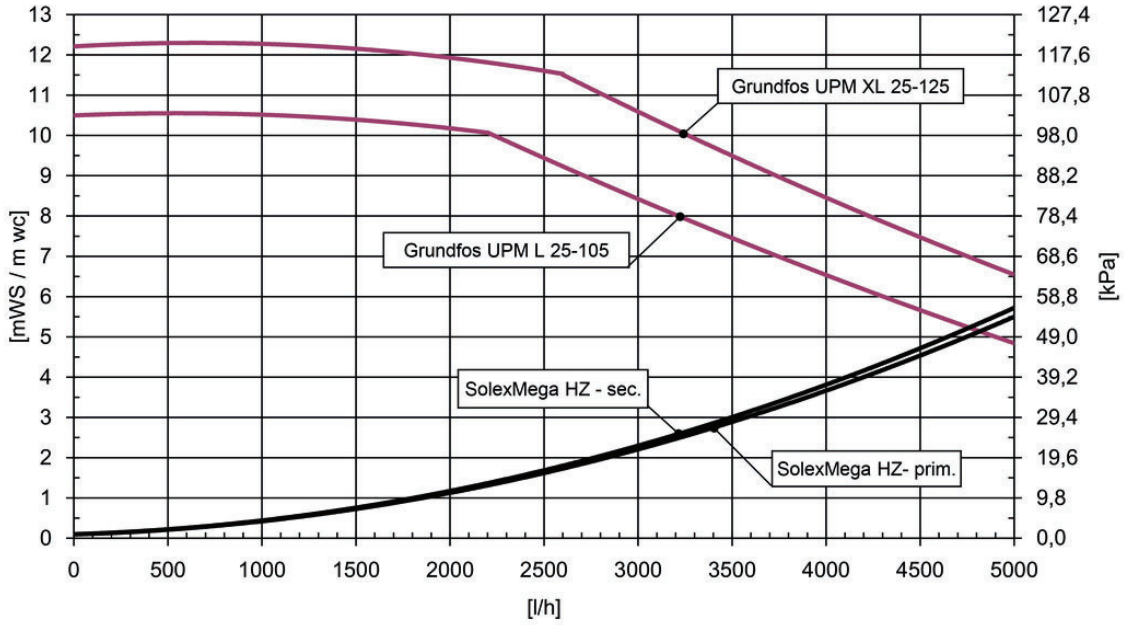
SolexMega HZ (heating system)
up to 200 m² of collector surface



SolexMega HZ - DN 32 (1¼")		Item no.
	Primary pump **Grundfos UPMXL GEO 25-125** Secondary pump **Grundfos UPML 25-105**	**6097460**

SolexMega-Kaskade HZ (heating system) up to 400 m² of collector surface

Application range

- for charging buffer storage tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 400 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 6 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	25 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 4 x 250 mm wc / secondary: 4 x 250 mm wc
Heat exchanger	XB37M-1, 4x 50 plates
Controller	SC5.14
Sensors	4 x Pt1000 (integrated)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 6 bar
FlowRotor (primary)	2 x 5-100 l/min

Dimensions

Nominal diameter	DN 50 (2")
Connections	primary: 2" ext. thread / flange DN 50 secondary: 2" ext. thread / flange DN 50
Width	1 420 mm
Height	1 672 mm
Installation length	1 672 mm
Depth	920 mm
Centre distance	158 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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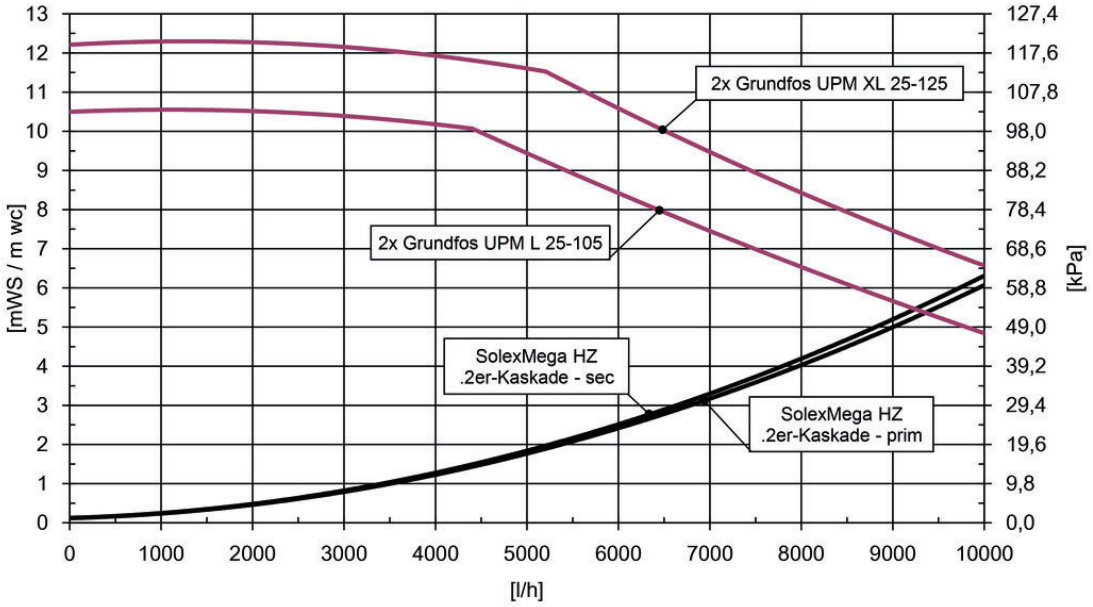
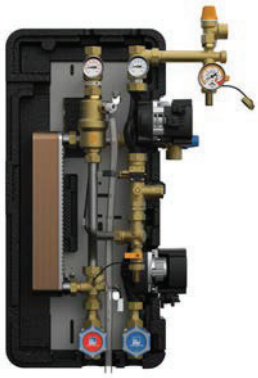
SolexMega-Kaskade HZ (heating system) up to 400 m² of collector surface



SolexMega-Kaskade HZ - DN 50 (2")		Item no.
	Primary pump **Grundfos UPMXL GEO 25-125** Secondary pump **Grundfos UPML 25-105**	**6098460**

SolexMini TW (domestic hot water system) up to 36 m² of collector surface



Application range

- for charging domestic hot water tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 36 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 10 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	25 l/(m²xh)
Operating mode HighFlow	40 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 200 mm wc
Heat exchanger	E8ASH, 24 plates
Controller	SC5.14
Sensors	3 x Pt1000 (integrated) / 2 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 10 bar
FlowRotor (primary)	0.5-15 l/min

Dimensions

Nominal diameter	DN 15 (½")
Connections	primary: ¾" int. thread secondary: ¾" int. thread
Width	417 mm
Height	681 mm
Installation length	686 mm
Depth	249 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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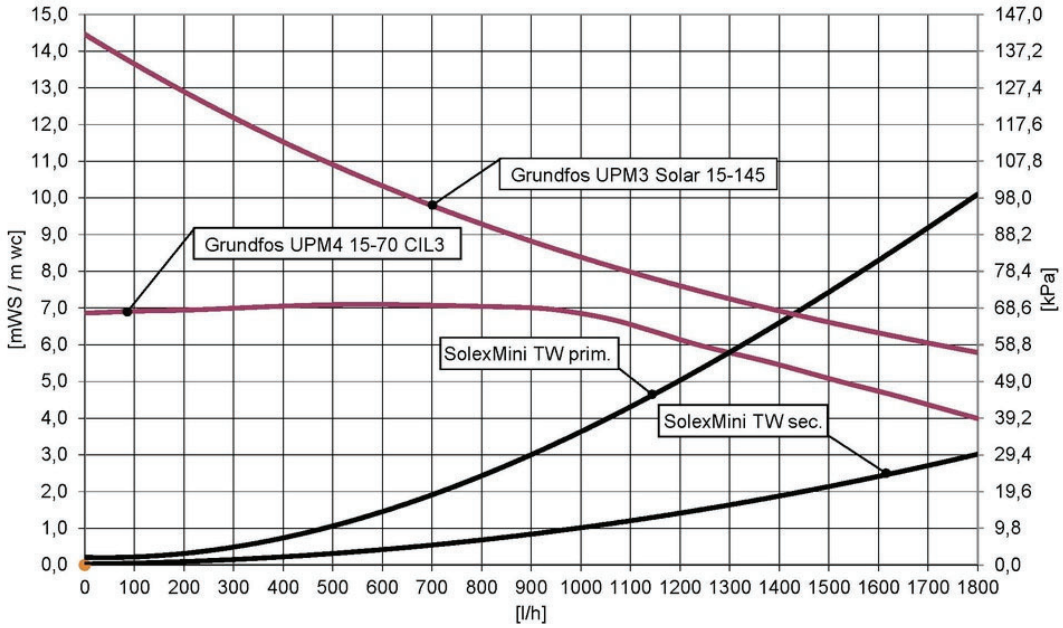
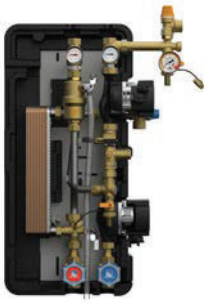
SolexMini TW (domestic hot water system) up to 36 m² of collector surface



SolexMini TW - DN 15 (½")		Item no.
	Primary pump **Grundfos UPM3 Solar 15-145** Secondary pump **Grundfos UPM4 15-70 CIL3**	**6091426**

SolexMidi TW (domestic hot water system) up to 60 m² of collector surface

Application range

- for charging domestic hot water tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 60 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 10 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	40 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 350 mm wc / secondary: 1 x 150 mm wc
Heat exchanger	B25TH, 30 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 2 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 10 bar
FlowRotor (primary)	2-50 l/min

Dimensions

Nominal diameter	DN 20 (¾")
Connections	primary: ¾" int. thread secondary: 1" ext. thread
Width	674 mm
Height	795 mm
Installation length	678 mm
Depth	298 mm
Centre distance	120 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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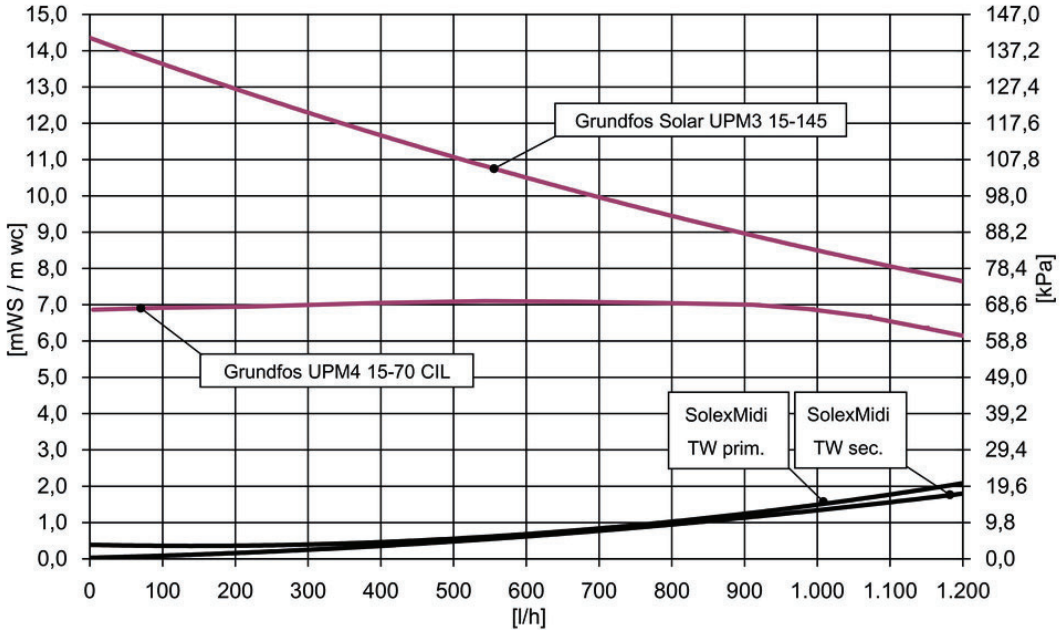
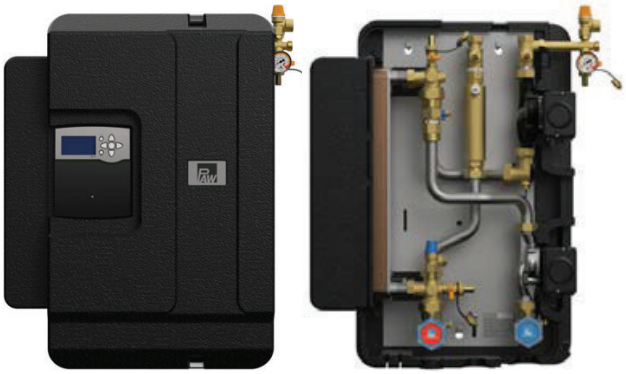
SolexMidi TW (domestic hot water system) up to 60 m² of collector surface



SolexMidi TW - DN 20 (¾")		Item no.
	Primary pump **Grundfos UPM3 Solar 15-145** Secondary pump **Grundfos UPM4 15-70 CIL3**	**6095436**

SolexMaxi TW (domestic hot water system) up to 100 m² of collector surface



Application range

- for charging domestic hot water tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 100 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 10 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	25 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 200 mm wc / secondary: 1 x 150 mm wc
Heat exchanger	B25TH, 60 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 2 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 10 bar
FlowRotor (primary)	2-50 l/min

Dimensions

Nominal diameter	DN 25 (1")
Connections	primary: 1" int. thread secondary: 1 ¼" ext. thread
Width	674 mm
Height	829 mm
Installation length	716 mm
Depth	298 mm
Centre distance	120 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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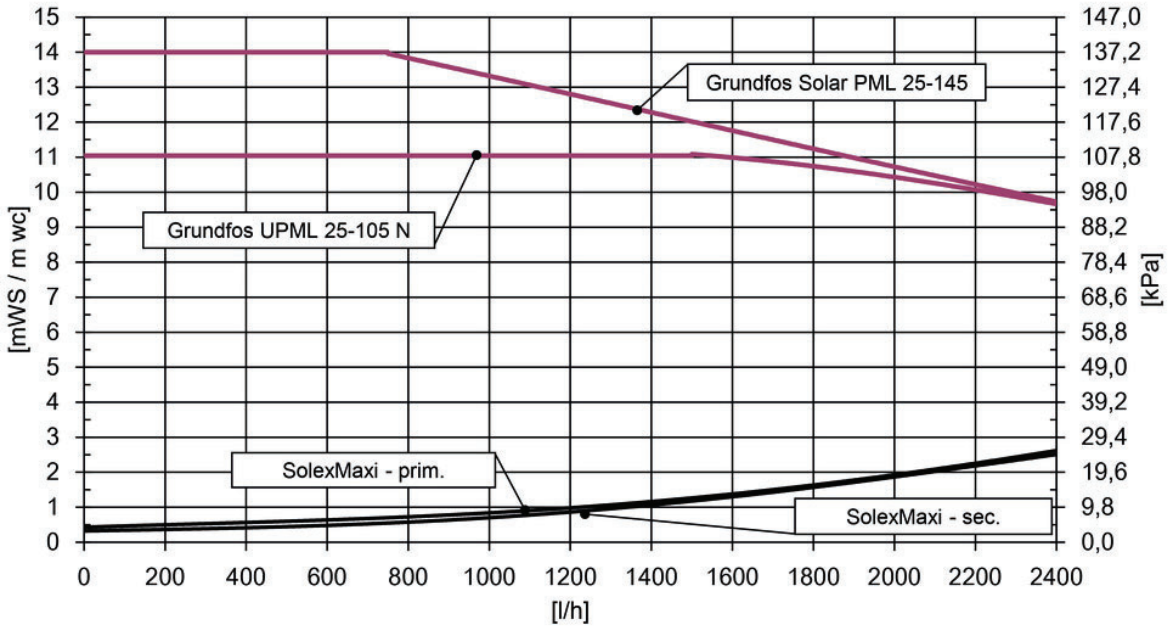
SolexMaxi TW (domestic hot water system) up to 100 m² of collector surface



SolexMaxi TW - DN 25 (1")		Item no.
	Primary pump **Grundfos Solar PML 25-145** Secondary pump **Grundfos UPML 25-105 N**	**6096465**

SolexMega TW (domestic hot water system) up to 200 m² of collector surface

Application range

- for charging domestic hot water tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 200 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 10 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	25 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 2 x 250 mm wc / secondary: 1 x 150 mm wc
Heat exchanger	XB37M-1, 2x 50 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 2 x Pt1000 (enclosed)
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 10 bar
FlowRotor (primary)	5-100 l/min

Dimensions

Nominal diameter	DN 32 (1¼")
Connections	primary: 1½" int. thread secondary: 1½“ ext. thread
Width	710 mm
Height	1 654 mm
Installation length	1 175 mm
Depth	920 mm
Centre distance	158 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	Brass
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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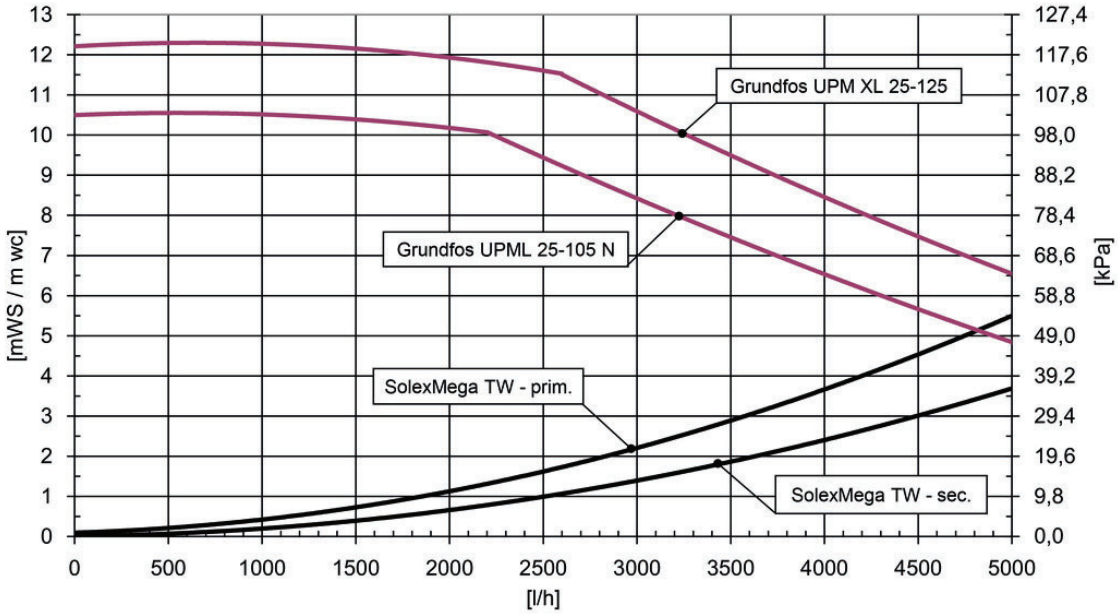
SolexMega TW (domestic hot water system) up to 200 m² of collector surface



SolexMega TW - DN 32 (1¼")		Item no.
	Primary pump **Grundfos UPMXL GEO 25-125** Secondary pump **Grundfos UPML 25-105 N**	**6097465**

SolexMega-Kaskade TW (domestic hot water system) up to 400 m² of collector surface

Application range

- for charging domestic hot water tanks
- incl. heat quantity measurement according to the BAFA promotion directive for solar thermal systems

Application range

- up to 400 m² of collector surface

Operating data

Max. operating pressure	primary: 6 bar secondary: 10 bar
Operating temperature	primary: 120 °C secondary: 95 °C
Operating mode LowFlow	15 l/(m²xh)
Operating mode HighFlow	25 l/(m²xh)

For information on design data, see chapter "Product range Solex"

Technical data

Equipment

Check valves	primary: 4 x 250 mm wc / secondary: 2 x 150 mm wc
Heat exchanger	XB37M-1, 4x 60 plates
Controller	SC5.14
Sensors	2 x Pt1000 (integrated) / 4 x Pt1000 (enclosed))
Pressure gauge	0-6 bar, resistant to high temperatures
Safety valve	primary: 6 bar / secondary: 10 bar
FlowRotor (primary)	2 x 5-100 l/min

Dimensions

Nominal diameter	DN 50 (2")
Connections	primary: 1½" int. thread secondary: 1½“ ext. thread
Width	1 420 mm
Height	1 672 mm
Installation length	1 672 mm
Depth	920 mm
Centre distance	158 mm

Materials

Valves and fittings	Brass
Gaskets	EPDM / AFM34
Insulation	EPP
Check valves	
Heat exchanger	Solder: copper; Plates + connecting pieces: stainless steel

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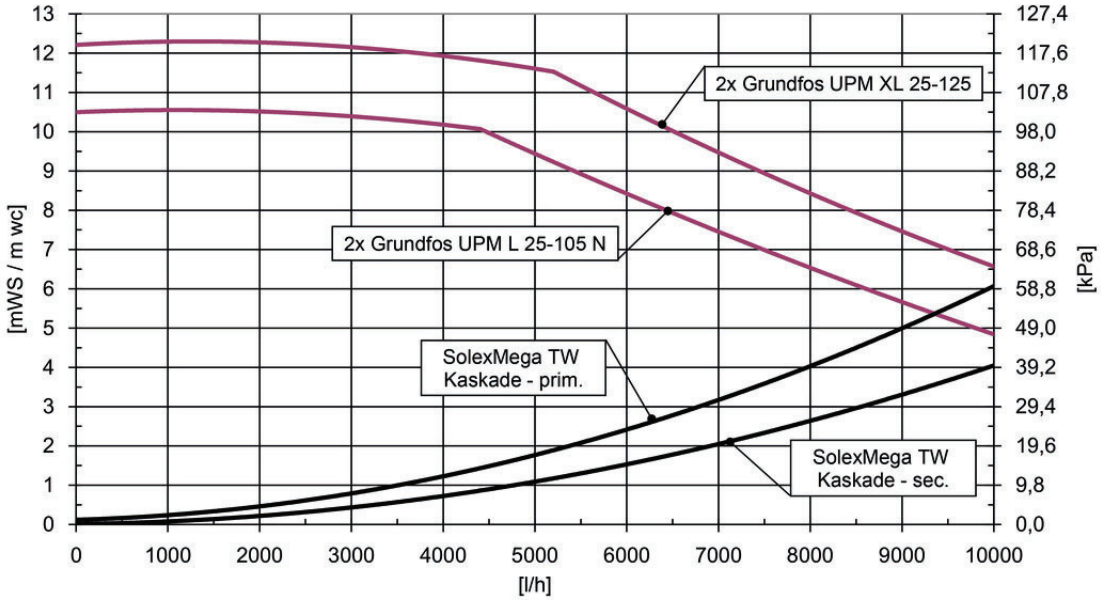
SolexMega-Kaskade TW (domestic hot water system) up to 400 m² of collector surface



SolexMega-Kaskade TW - DN 50 (2")		Item no.
	Primary pump **Grundfos UPMXL GEO 25-125** Secondary pump **Grundfos UPML 25-105 N**	**6098465**