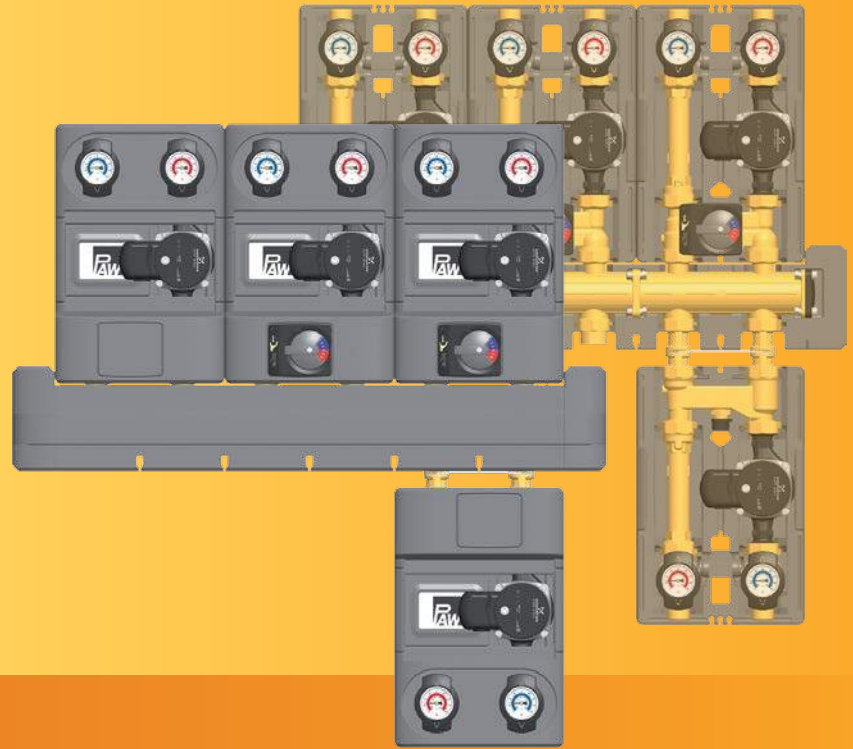




Hydronic Heating

Solar Thermal Technology



Catalog 01/2017

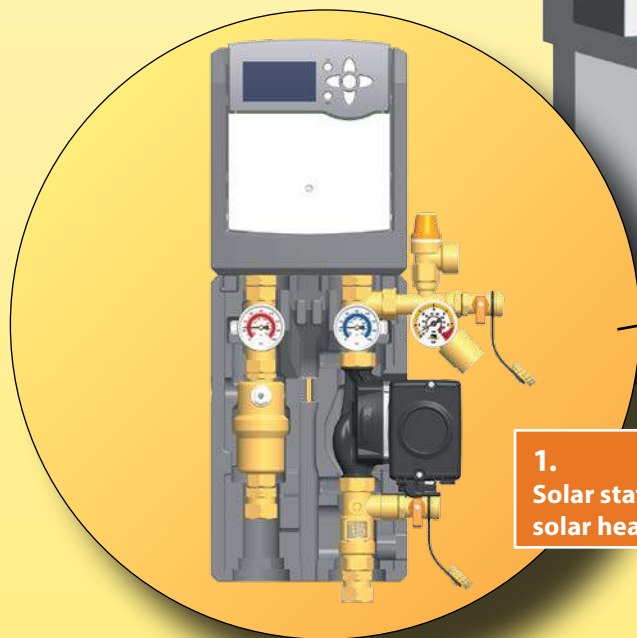
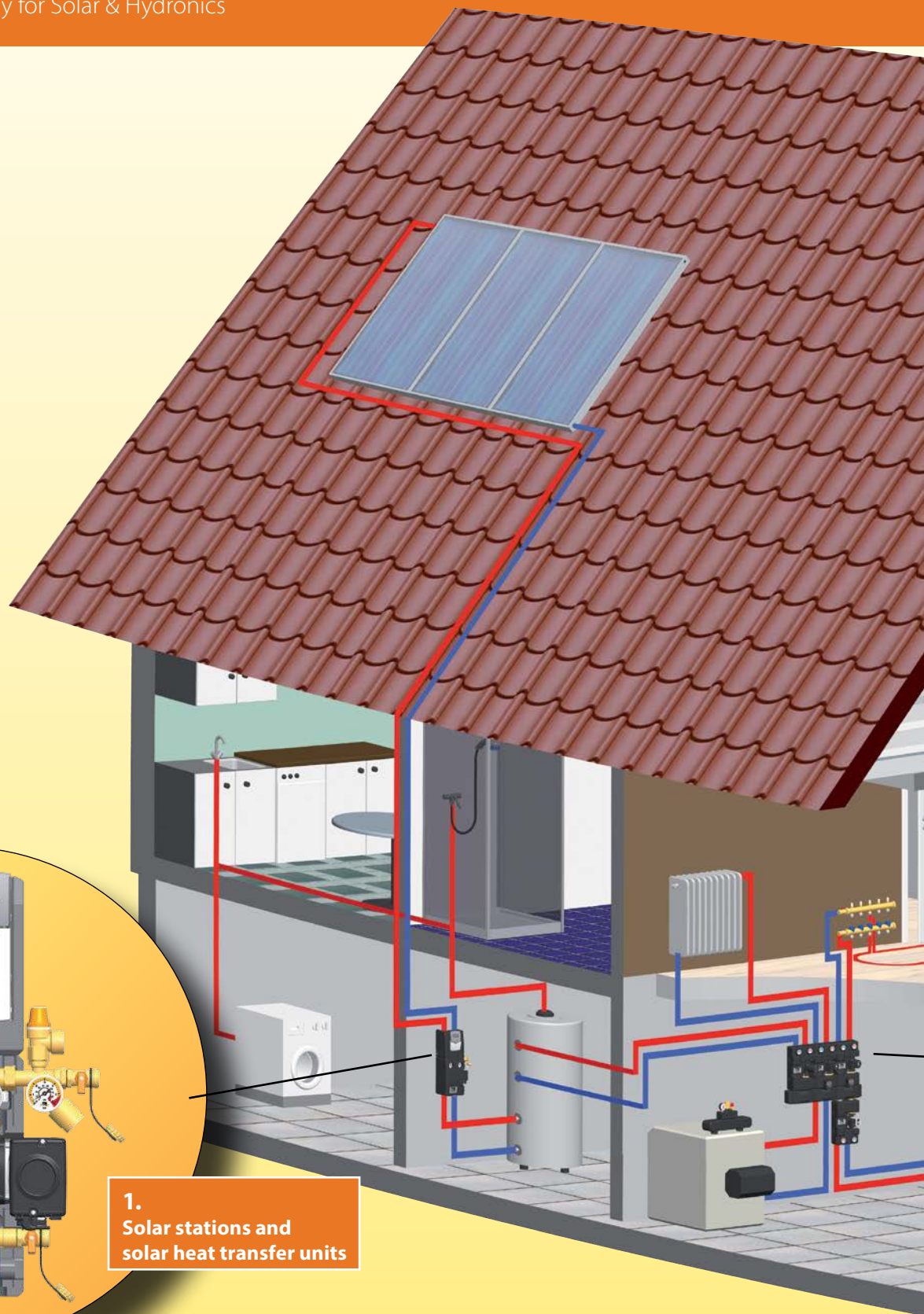
Modular Zone Control System

Innovative System Technology for Solar & Hydronics

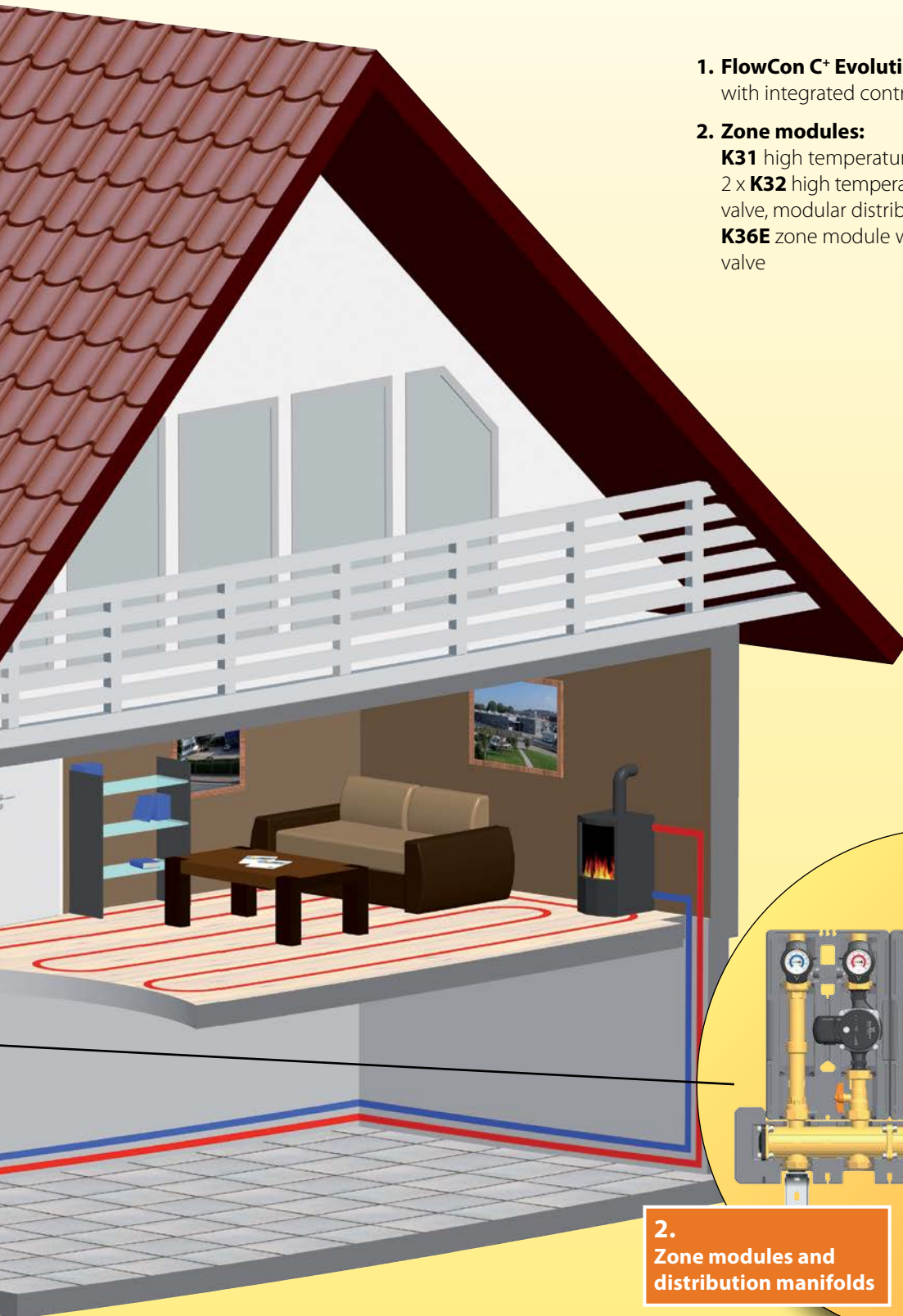


Plug-and-play

Innovative system technology for Solar & Hydronics



1. Solar stations and solar heat transfer units



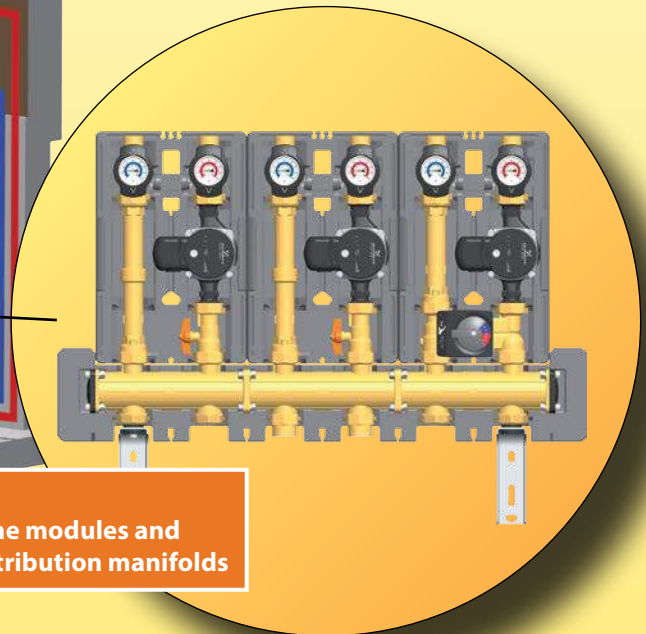
1. FlowCon C+ Evolution II solar station
with integrated controller

2. Zone modules:

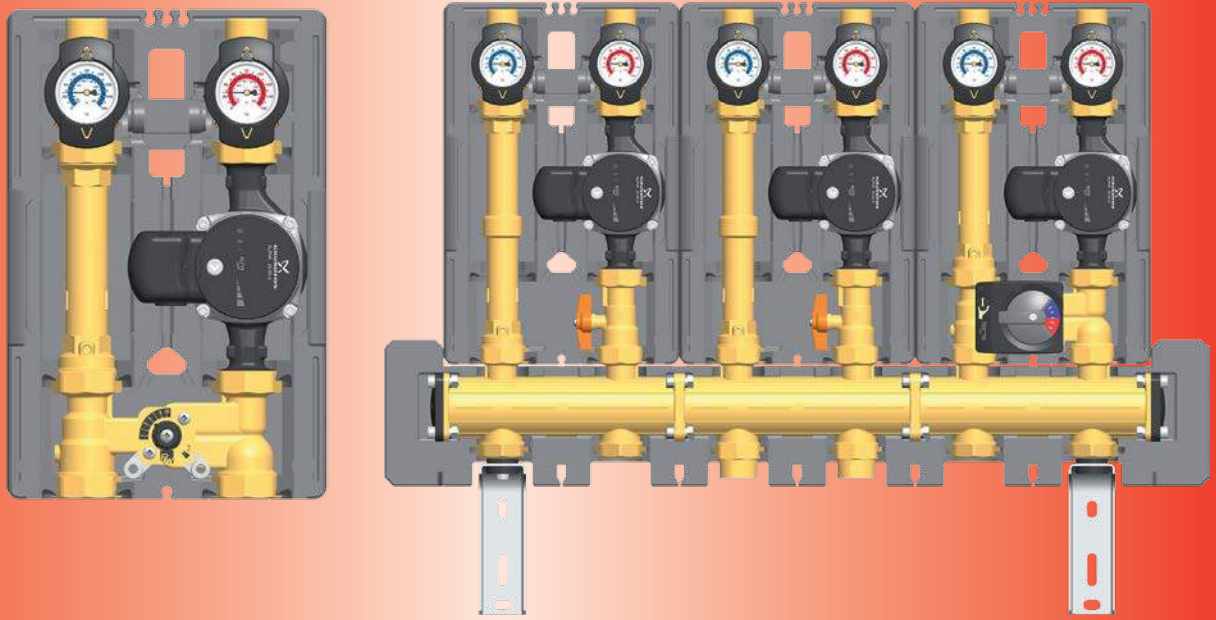
K31 high temperature zone module

2 x **K32** high temperature zone module with 3-way mixing valve, modular distribution manifold

K36E zone module with integrated temperature/flow bypass valve

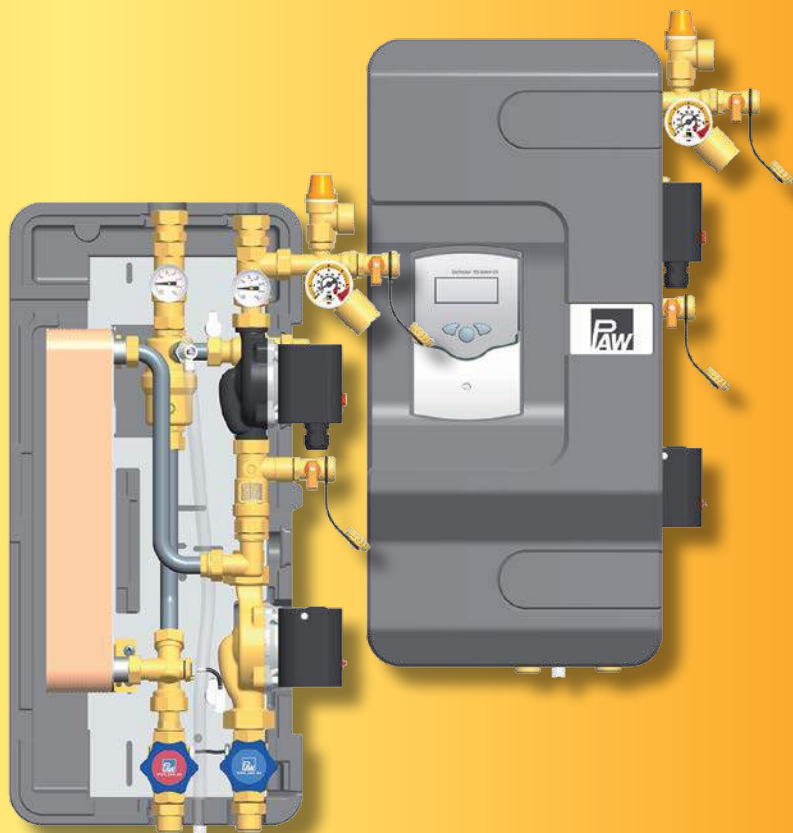


2.
Zone modules and
distribution manifolds



Modern hydronic heating systems

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	K32 - 3-way mixing valve	10
	K33 - thermostatic mixing valve	12
	K34 - 3-way mixing valve and bypass 0-50%	14
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Solar thermal systems

Modular system for solar thermal installations			
Module	Product	Short description	Page
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	Solar station with flowmeter and airstop	FlowCon FA Evolution II	60 - 61
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Application range

Max. output/range of application for $\Delta T = 36\text{ }^{\circ}\text{F}/20\text{ K}$										
Nominal diameter		DN 20 - 3/4"			DN 25 - 1"			DN 32 - 1 1/4"		
				page			page			page
K31	unmixed	102.5 kBTU/h	30.0 kW	8	170.5 kBTU/h	50.0 kW	20	222 kBTU/h	65.0 kW	38
K32	3-way mixing valve	71.5 kBTU/h	21.0 kW	10	114.5 kBTU/h	33.5 kW	22	174 kBTU/h	51.0 kW	40
K33	controlled circuit with constant value	34 kBTU/h	10 kW	12	68.5 kBTU/h	20.0 kW	24			
K34	3-way mixing valve with bypass	71.5 kBTU/h	21.0 kW	14	155.5 kBTU/h	45.5 kW	26	218.5 kBTU/h	64.0 kW	42
K36(E)	boiler charging set				136.5 kBTU/h	40.0 kW	28	205 kBTU/h	60.0 kW	44
K38	4-way mixing valve				112.5 kBTU/h	33.0 kW	30	177.5 kBTU/h	52.0 kW	46
MV	modular distribution manifold	170.5 kBTU/h	50.0 kW	16	273 kBTU/h	80.0 kW	32	512 kBTU/h	150.0 kW	48

Max. output/range of application for $\Delta T = 18\text{ }^{\circ}\text{F}/10\text{ K}$										
Nominal diameter		DN 20 - 3/4"			DN 25 - 1"			DN 32 - 1 1/4"		
				page			page			page
K31	unmixed	51 kBTU/h	15.0 kW	8	85.5 kBTU/h	25.0 kW	20	111 kBTU/h	32.5 kW	38
K32	3-way mixing valve	36 kBTU/h	10.5 kW	10	56.5 kBTU/h	16.5 kW	22	87 kBTU/h	25.5 kW	40
K33	controlled circuit with constant value	17 kBTU/h	5.0 kW	12	34 kBTU/h	10.0 kW	24			
K34	3-way mixing valve with bypass	36 kBTU/h	10.5 kW	14	77 kBTU/h	22.5 kW	26	109.5 kBTU/h	32.0 kW	42
K36(E)	boiler charging set				68.5 kBTU/h	20.0 kW	28	102.5 kBTU/h	30.0 kW	44
K38	4-way mixing valve				56.5 kBTU/h	16.5 kW	30	89 kBTU/h	26.0 kW	46
MV	modular distribution manifold	85.5 kBTU/h	25.0 kW	16	136.5 kBTU/h	40.0 kW	32	256 kBTU/h	75.0 kW	48

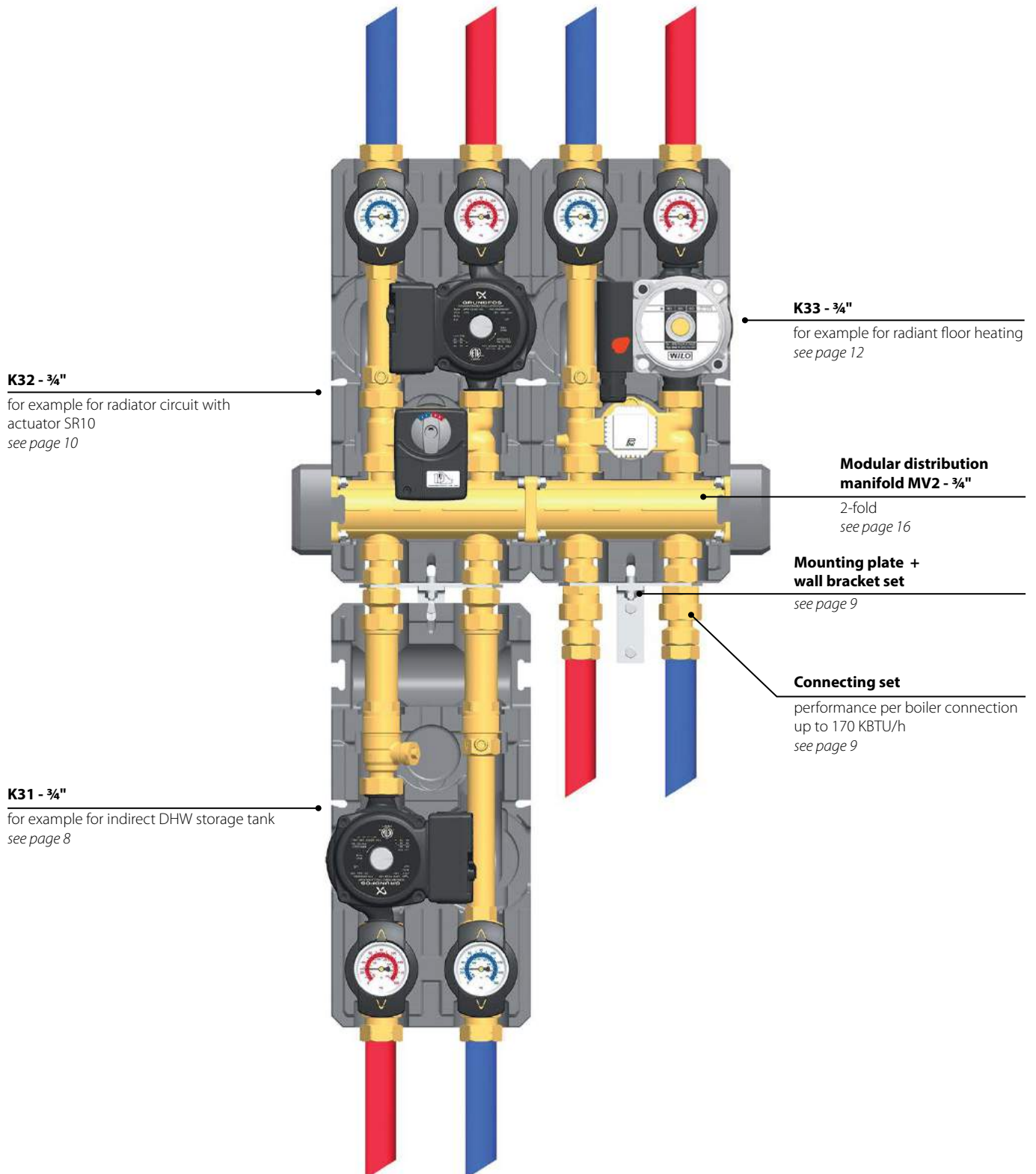
Max. output/range of application for $\Delta T = 13.5\text{ }^{\circ}\text{F}/7.5\text{ K}$										
Nominal diameter		DN 20 - 3/4"			DN 25 - 1"			DN 32 - 1 1/4"		
				page			page			page
K31	unmixed	37.5 kBTU/h	11.0 kW	8	63 kBTU/h	18.5 kW	20	82 kBTU/h	24.0 kW	38
K32	3-way mixing valve	24 kBTU/h	7.0 kW	10	41 kBTU/h	12.0 kW	22	65 kBTU/h	19.0 kW	40
K33	controlled circuit with constant value	12.5 kBTU/h	3.7 kW	12	25.5 kBTU/h	7.5 kW	24			
K34	3-way mixing valve with bypass	25.5 kBTU/h	7.5 kW	14	56.5 kBTU/h	16.5 kW	26	82 kBTU/h	24.0 kW	42
K36(E)	boiler charging set				51 kBTU/h	15.0 kW	28	77 kBTU/h	22.5 kW	44
K38	4-way mixing valve				41 kBTU/h	12.0 kW	30	65 kBTU/h	18.5 kW	46
MV	modular distribution manifold	63 kBTU/h	18.5 kW	16	102.5 kBTU/h	30.0 kW	32	191 kBTU/h	56.0 kW	48

Max. output/range of application for $\Delta T = 9\text{ }^{\circ}\text{F}/5\text{ K}$										
Nominal diameter		DN 20 - 3/4"			DN 25 - 1"			DN 32 - 1 1/4"		
				page			page			page
K31	unmixed	25.5 kBTU/h	7.5 kW	8	42.5 kBTU/h	12.5 kW	20	54.5 kBTU/h	16.0 kW	38
K32	3-way mixing valve	17 kBTU/h	5.0 kW	10	27 kBTU/h	8.0 kW	22	42.5 kBTU/h	12.5 kW	40
K33	controlled circuit with constant value	8.5 kBTU/h	2.5 kW	12	17 kBTU/h	5.0 kW	24			
K34	3-way mixing valve with bypass	17 kBTU/h	5.0 kW	14	37.5 kBTU/h	11.0 kW	26	54.5 kBTU/h	16.0 kW	42
K36(E)	boiler charging set				34 kBTU/h	10.0 kW	28	51 kBTU/h	15.0 kW	44
K38	4-way mixing valve				27.5 kBTU/h	8.0 kW	30	44.5 kBTU/h	13.0 kW	46
MV	modular distribution manifold	42.5 kBTU/h	12.5 kW	16	68.5 kBTU/h	20.0 kW	32	128 kBTU/h	37.5 kW	48



Modular system Mounting example

3/4"/DN 20





High temperature zone module K31; residential series

3/4" / DN 20

For high temperature zone or boiler primary loop

USE High Temperature Zone Modules K31 in closed loop design to supply high temperature zones, such as indirect water heaters, baseboards or fan coil units, or as modules for injection mixing. All supply and return lines are 3/4". Up to 9 high temp modules can be installed on one manifold. Under certain conditions, such as with the use of a condensing boiler, K31 can be connected directly to the heat source, provided the following conditions apply:

- Proper flow is maintained through the heat source.
- Heat source can be set to desired temperature setting (no mixing required).
- No minimum return fluid temperature is required for the heat source.
- All the necessary conditions and piping practices, as outlined by the heat source manufacturer, are properly maintained.

Features:

Full port ball valve

3/4" compression fitting

Function-optimized insulation design

made of durable elastic EPP, **100% insulation of the fittings**, and air duct to cool the pumps.

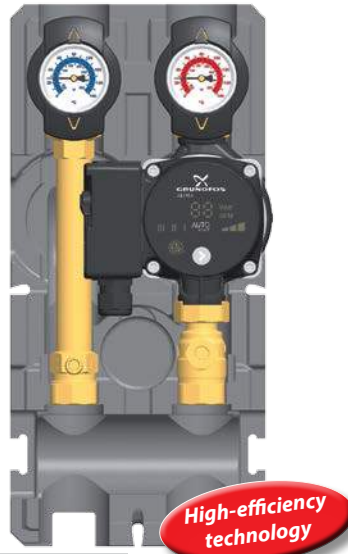
Free access to the pump head by simply pulling off the cover.

Flow check valve in return pipe is noise free,

low pressure drop, manual opener for faster line drain service, spring-actuated - suited for horizontal, vertical or flow-down assembly.

Supply on the right = standard

If required, the supply and return connections can be simply changed on site.



All components (except for the circulator) are manufactured from brass.

Full metal temperature gauges

can be pulled off, brass thermowell is integrated in the ball valve.

Pump can be replaced or serviced

without draining the system.

Fully assembled with flat sealing union connections at most joints

including 1" connection nut for the installation on PAW-distribution manifold.

For **stand alone** assembly, use the conversion kit with wall bracket from the PAW-assembly accessories.

The insulation of the distribution manifold

is integrated in the insulation of the zone module.

TECHNICAL DATA Zone Module K31

Dimension	3/4" - DN 20	
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	4.3
Dimensions	Supply/return line to manifold (flat sealing)	1" male
	Supply/return line to heating zone	3/4" compression fitting
Pipe-centre distance	90 mm/3 1/2"	
	Length	255 mm/10"
	Width insulation	180 mm/7 1/16"
	Height insulation	385 mm/15 1/8"
Recommended application	High/floating temperature zone control up to 51 kBTU/h/15.0 kW at ΔT = 18 °F/10 K	

Pressure drop K31/pump characteristics

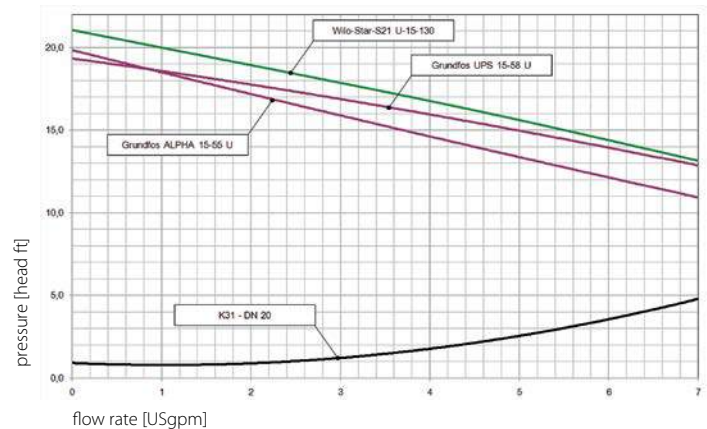


Illustration	Type	Information	PAW pump	Item #
	K31 3/4" DN 20	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 15-55 U	32013GH6NA
			3-speed pump: Grundfos UPS 15-58 U	32013GR6NA



Assembly accessories for K31 zone module

3/4"/DN 20

Pressure bypass valve

With counter-T-pieces and elbow gland, differential settings range: 1.4 up to 8.7 psi (0.1 up to 0.6 bar).

Item # 31301NA

Wall bracket set for 3/4" zone modules

With the wall bracket and the mounting plate there can be installed distances from 55 mm (2.17") up to 115 mm (4.53") (with 15 mm (0.59") spacing) from the wall. Consisting of: mounting plate, wall bracket and fastening material.

Item # 3122SETNA

Adaptor nipple

3/4" - connection self-sealing with O-ring, 3/4" NPT-thread.

Item # 548310NA

Distribution manifold MV DN 20

With patented thermal separation, up to 170 kBTU/h, fully made of brass. Complete specification see page 16-17.

Item # 3112NA	MV 2-fold
Item # 3113NA	MV 3-fold
Item # 3114NA	MV 4-fold
Item # 3115NA	MV 5-fold
Item # 3116NA	MV 6-fold

Compression fitting for copper pipe

3/4" male self-sealing, with O-ring, additionally with support sleeve, **suited for soft and hard copper pipes!** Usable up to 300 °F/150 °C!

Item # 561212NA ø 1/2" copper pipe

Item # 561222NA ø 3/4" copper pipe

Connecting set 3/4" female

- to connect pipes with male thread under the zone modules
- not necessary for mounting in connection with a PAW-manifold

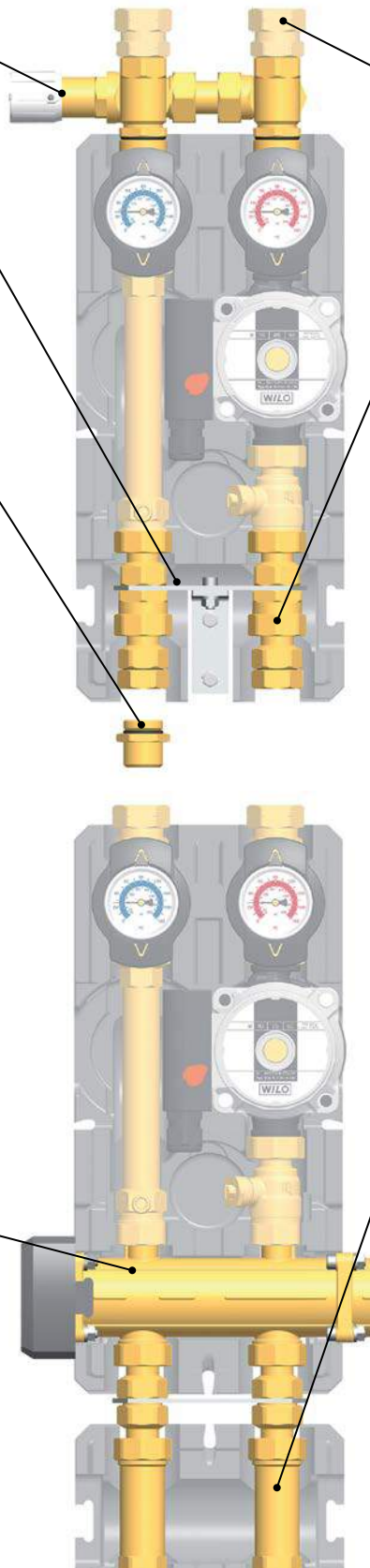
Consists of: 2 flanges, socket 3/4" female with nut 1"

Item # 3131NA

Coupling for flow down assembly 3/4"

For the installation of a heating zone module under a distribution manifold. Please note: If you want to use wall brackets, you will need an additional mounting plate for the installation of a 2-fold distribution manifold MV2 (Item #3125NA).

Item # 31241NA





Low temperature zone module K32; residential series with 3-way mixing valve

3/4" / DN 20

For heating zones controlled by motorized mixing with reset control

USE in closed loop design. Low Temperature Zone Module K32 replaces conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K32 modulates a 3-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds.

Sizing and piping:

The K32 can handle radiant load demands of up to 72,000 BTU's. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K32. Multiple K32 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

Full port ball valve

3/4" compression fitting

Large ball valve handles

for easy grip and visible closing position.

Function-optimized insulation design

made of durable elastic EPP, 100% insulation of the fittings, and air duct to cool the pumps.

Free access to the pump head by simply pulling off the cover.

Flow check valve in return pipe is noise free,

low pressure drop, manual opener for faster line drain service, spring-actuated - suited for horizontal, vertical or flow-down assembly.

Supply on the right = standard

If required, the supply and return connections can be simply changed on site.



High-efficiency technology

All components (except for the circulator) are manufactured from brass.

Full metal temperature gauges

can be pulled off, brass thermowell is integrated in the ball valve.

Pump can be replaced or serviced

without draining the system.

3-way mixing valve

fully made of brass, ideal linear characteristic (prevents swinging of the regulation). The supply line can be isolated, no draining necessary during pump service.

Fully assembled with flat sealing union connections at most joints,

including 1" connection nut for the installation on PAW-distribution manifolds.

For **stand alone** assembly, use the conversion kit with wall bracket from the PAW-assembly accessories.

The insulation of the distribution manifold is integrated in the insulation of the zone module.

TECHNICAL DATA Zone Module K32

Dimension		3/4" - DN 20
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	3.5
Dimensions	Supply/return line to manifold (flat sealing)	1" male
	Supply/return line to heating zone	3/4" compression fitting
Pipe-centre distance	90 mm/3 1/2"	
	Length	255 mm/10"
	Width insulation	180 mm/7 1/16"
	Height insulation	385 mm/15 1/8"
Recommended application	High/floating temperature zone control up to 36 kBTU/h/10.5 kW at ΔT = 18 °F/10 K	

Pressure drop K32/pump characteristics

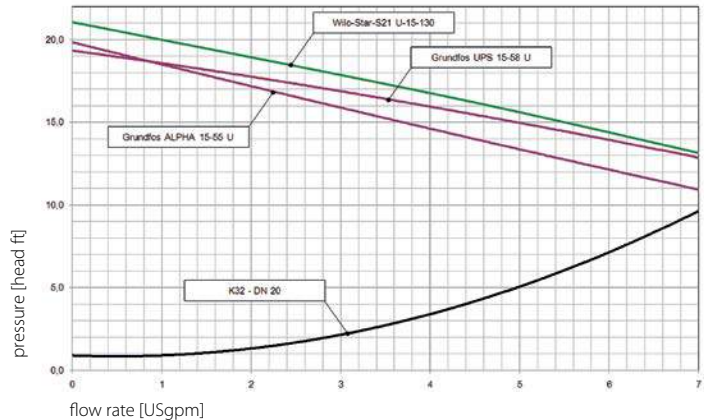


Illustration	Type	Information	PAW pump	Item #
	K32 3/4" DN 20	Advantages PAW pump: <ul style="list-style-type: none"> completely preassembled precisely integrated in the insulation pressure tested 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 15-55 U	32053GH6NA
			3-speed pump: Grundfos UPS 15-58 U	32053GR6NA



Assembly accessories for K32 zone module

3/4"/DN 20

Pressure bypass valve

With counter-T-pieces and elbow gland, differential settings range: 1.4 up to 8.7 psi (0.1 up to 0.6 bar).

Item # 31301NA

Wall bracket set for 3/4" zone modules

With the wall bracket and the mounting plate there can be installed distances from 55 mm (2.17") up to 115 mm (4.53") (with 15 mm (0.59") spacing) from the wall. Consisting of: mounting plate, wall bracket and fastening material.

Item # 3122SETNA

Adaptor nipple

3/4" - connection self-sealing with O-ring, 3/4" NPT-thread.

Item # 548310NA

Compression fitting for copper pipe

3/4" male self-sealing, with O-ring, additionally with support sleeve, **suited for soft and hard copper pipes!** Usable up to 300 °F/150 °C!

Item # 561212NA ø 1/2" copper pipe

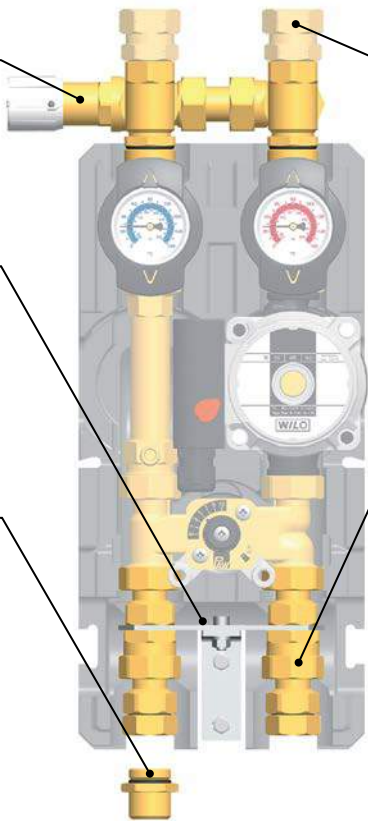
Item # 561222NA ø 3/4" copper pipe

Connecting set 3/4" female

- to connect pipes with male thread under the zone modules
- not necessary for mounting in connection with a PAW-manifold

Consists of: 2 flanges, socket 3/4" female with nut 1"

Item # 3131NA



Distribution manifold MV DN 20

With patented thermal separation, up to 170 kBTU/h, fully made of brass. Complete specification see page 16-17.

Item # 3112NA MV 2-fold

Item # 3113NA MV 3-fold

Item # 3114NA MV 4-fold

Item # 3115NA MV 5-fold

Item # 3116NA MV 6-fold

Actuator SR2-24 V AC/DC

Simple assembly and disassembly thanks to the PAW snap-in-mechanism. Incl. 1.5 m cable and mounting set for assembly on PAW mixing valves. Due to removable scale it is suitable for supply on the right or left side, change-over switch for manual/automatic operation.

Technical data

Electrical connection: 24 V
 Input power: 0.5 W
 Torque: min. 2 Nm
 Setting time: 100 s

Item # 705015NA

Coupling for flow down assembly 3/4"

For the installation of a heating zone module under a distribution manifold. Please note: If you want to use wall brackets, you will need an additional mounting plate for the installation of a 2-fold distribution manifold MV2 (Item #3125NA).

Item # 31241NA





Low temperature zone module K33; residential series

3/4" / DN 20

For low temperature heating zones controlled by 3-way thermostatic mixing

USE in closed loop design. Low Temperature Zone Modules K33 equipped with an adjustable thermostatic actuator. K33 is designed to provide constant supply temperatures to the radiant system. Depending on the geographic location of the installation, periodic adjustments to the temperature may or may not be necessary. Rotating the dial of thermostatic head to a higher number will provide for hotter temperatures.

The designer of the radiant system must ensure the range of temperatures provided by the control is suitable for the installation. The K33 can handle radiant load demands of up to 17,000 BTU's at a 18 °F/10 K differential. The mixing valve closes on temperature rise. Multiple K33 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

Full port ball valve

3/4" compression fitting

Large ball valve handles

for easy grip and visible closing position.

Function-optimized insulation design

made of durable elastic EPP, **100% insulation of the fittings**, and air duct to cool the pumps.

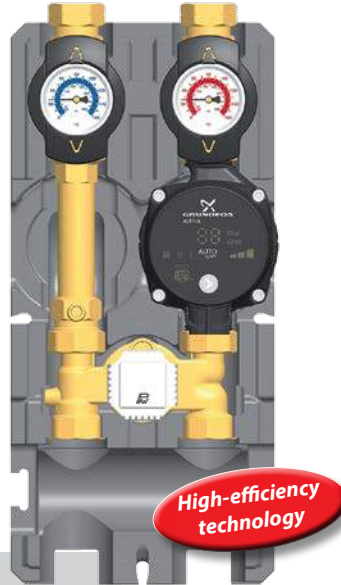
Free access to the pump head by simply pulling off the cover.

Flow check valve in return pipe is noise free,

low pressure drop, manual opener for faster line drain service, spring-actuated - suited for horizontal, vertical or flow-down assembly.

Supply on the right = standard

If required, the supply and return connections can be simply changed on site.



All components (except for the circulator) are manufactured from brass.

Full metal temperature gauges

can be pulled off, brass thermowell is integrated in the ball valve.

Pump can be replaced or serviced

without draining the system.

3-way mixing valve

fully made of brass, regulated by the thermostatic head with remote sensor on supply pipe, manual temperature adjustment.

Fully assembled with flat sealing union connections at most joints,

including 1" connection nut for the installation on PAW-distribution manifolds.

For **stand alone** assembly, use the conversion kit with wall bracket from the PAW-assembly accessories.

The insulation of the distribution manifold is integrated in the insulation of the zone module.

TECHNICAL DATA Zone Module K33

Dimension		3/4" - DN 20
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	1.6
Dimensions	Supply/return line to manifold (flat sealing)	1" male
	Supply/return line to heating zone	3/4" compression fitting
Pipe-centre distance	90 mm/3 1/2 "	
	Length	255 mm/10"
	Width insulation	180 mm/7 1/16"
	Height insulation	385 mm/15 1/8"
Recommended application	Floating action temperature control up to 17 kBtu/h/5 kW at ΔT = 18 °F/10 K	

Pressure drop K33/pump characteristics

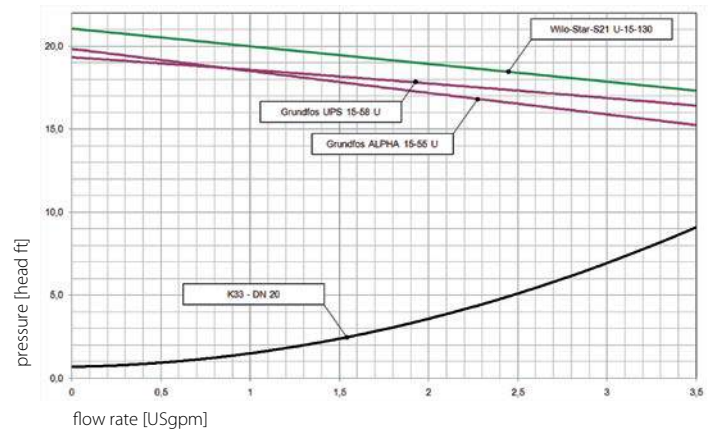


Illustration	Type	Information	PAW pump	Item #
	K33 3/4" DN 20	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 15-55 U	32073GH6NA
			3-speed pump: Grundfos UPS 15-58 U	32073GR6NA



Assembly accessories for K33 zone module

3/4"/DN 20

Pressure bypass valve

With counter-T-pieces and elbow gland, differential settings range: 1.4 up to 8.7 psi (0.1 up to 0.6 bar).

Item # 31301NA

Wall bracket set for 3/4" zone modules

With the wall bracket and the mounting plate there can be installed distances from 55 mm (2.17") up to 115 mm (4.53") (with 15 mm (0.59") spacing) from the wall. Consisting of: mounting plate, wall bracket and fastening material.

Item # 3122SETNA

Adaptor nipple

3/4" - connection self-sealing with O-ring, 3/4" NPT-thread.

Item # 548310NA

Compression fitting for copper pipe

3/4" male self-sealing, with O-ring, additionally with support sleeve, **suited for soft and hard copper pipes!** Usable up to 300 °F/150 °C!

Item # 561212NA ø 1/2" copper pipe

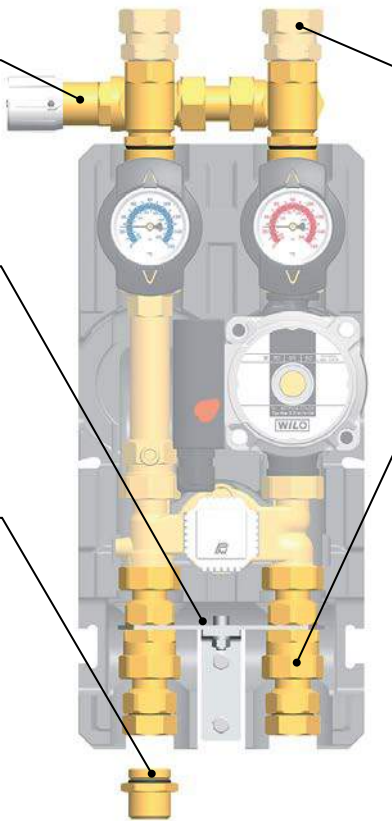
Item # 561222NA ø 3/4" copper pipe

Connecting set 3/4" female

- to connect pipes with male thread under the zone modules
- not necessary for mounting in connection with a PAW-manifold

Consists of: 2 flanges, socket 3/4" female with nut 1"

Item # 3131NA



Distribution manifold MV DN 20

With patented thermal separation, up to 170 kBTU/h, fully made of brass. Complete specification see page 16-17.

Item # 3112NA MV 2-fold

Item # 3113NA MV 3-fold

Item # 3114NA MV 4-fold

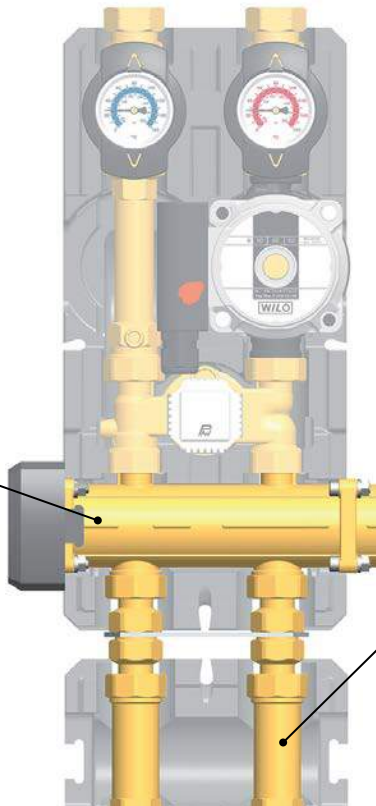
Item # 3115NA MV 5-fold

Item # 3116NA MV 6-fold

Coupling for flow down assembly 3/4"

For the installation of a heating zone module under a distribution manifold. Please note: If you want to use wall brackets, you will need an additional mounting plate for the installation of a 2-fold distribution manifold MV2 (Item #3125NA).

Item # 31241NA





Low temperature zone module K34; residential series with 3-way mixing valve with bypass 0-50%

3/4" / DN 20

For high flow heating zones controlled by motorized mixing with reset control

USE in closed loop design. Low Temperature Zone Module K34 replaces conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K34 modulates a 3-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds. The adjustable bypass diverts up to 50% of additional return water to the system supply and lowers supply temperature to ensure a specific low supply water temperature is maintained and no thermal

shock will occur in the radiant slab.

Sizing and piping: The K34 can handle radiant load demands of up to 72,000 BTU's. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K34. Multiple K34 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

Full port ball valve

3/4" compression fitting

Large ball valve handles

for easy grip and visible closing position.

Function-optimized insulation design

made of durable elastic EPP, **100% insulation of the fittings**, and air duct to cool the pumps.

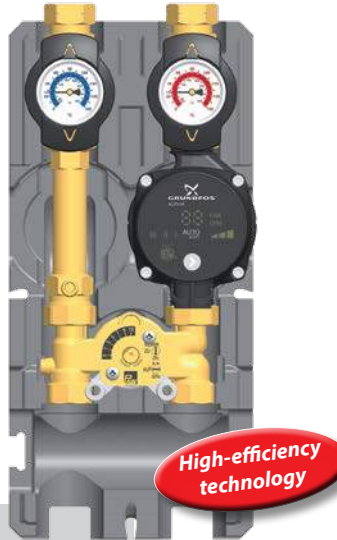
Free access to the pump head by simply pulling off the cover.

Flow check valve in return pipe is noise free,

low pressure drop, manual opener for faster line drain service, spring-actuated - suited for horizontal, vertical or flow-down assembly.

Supply on the right = standard

If required, the supply and return connections can be simply changed on site.



All components (except for the circulator) are manufactured from brass.

Full metal temperature gauges

can be pulled off, brass thermowell is integrated in the ball valve.

Pump can be replaced or serviced

without draining the system.

3-way mixing valve with integrated adjustable bypass

fully made of brass, ideal linear characteristic (prevents swinging of the regulation). The supply line can be isolated, no draining necessary during pump service.

Fully assembled with flat sealing union connections at most joints,

including 1" connection nut for the installation on PAW-distribution manifolds.

For **stand alone** assembly, use the conversion kit with wall bracket from the PAW-assembly accessories.

The insulation of the distribution manifold

is integrated in the insulation of the zone module.

TECHNICAL DATA Zone Module K34

Dimension	3/4" - DN 20	
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	3.5
Dimensions	Supply/return line to manifold (flat sealing)	1" male
	Supply/return line to heating zone	3/4" compression fitting
Pipe-centre distance	90 mm/3 1/2"	
	Length	255 mm/10"
	Width insulation	180 mm/7 1/16"
	Height insulation	385 mm/15 1/8"
Recommended application	Floating action temperature control up to 36 kBTU/h/10.5 kW at ΔT = 18 °F/10 K	

Pressure drop K34/pump characteristics

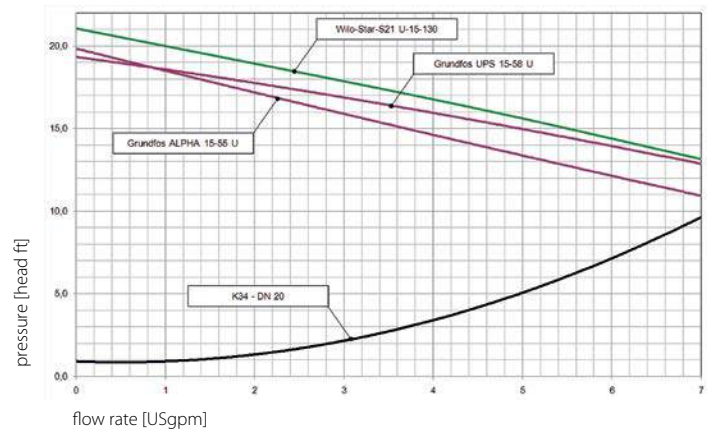


Illustration	Type	Information	PAW pump	Item #
	K34 3/4" DN 20	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 15-55 U	32063GH6NA
			3-speed pump: Grundfos UPS 15-58 U	32063GR6NA



Assembly accessories for K34 zone module

3/4"/DN 20

Pressure bypass valve

With counter-T-pieces and elbow gland, differential settings range: 1.4 up to 8.7 psi (0.1 up to 0.6 bar).

Item # 31301NA

Wall bracket set for 3/4" zone modules

With the wall bracket and the mounting plate there can be installed distances from 55 mm (2.17") up to 115 mm (4.53") (with 15 mm (0.59") spacing) from the wall. Consisting of: mounting plate, wall bracket and fastening material.

Item # 3122SETNA

Adaptor nipple

3/4" - connection self-sealing with O-ring, 3/4" NPT-thread.

Item # 548310NA

Compression fitting for copper pipe

3/4" male self-sealing, with O-ring, additionally with support sleeve, **suited for soft and hard copper pipes!** Usable up to 300 °F/150 °C!

Item # 561212NA ø 1/2" copper pipe

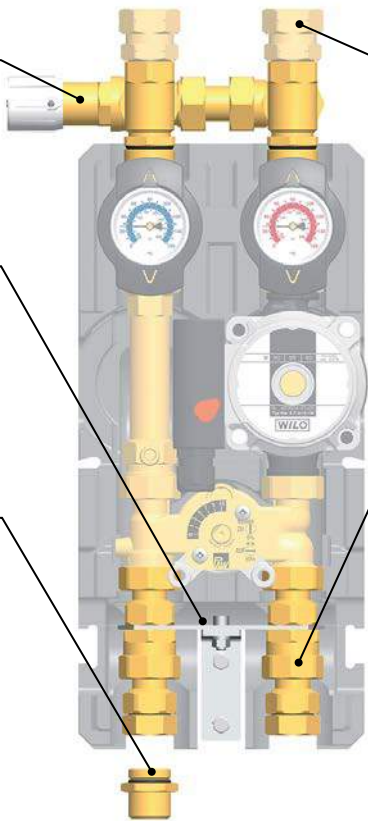
Item # 561222NA ø 3/4" copper pipe

Connecting set 3/4" female

- to connect pipes with male thread under the zone modules
- not necessary for mounting in connection with a PAW-manifold

Consists of: 2 flanges, socket 3/4" female with nut 1"

Item # 3131NA



Distribution manifold MV DN 20

With patented thermal separation, up to 170 kBtu/h, fully made of brass. Complete specification see page 16-17.

Item # 3112NA MV 2-fold

Item # 3113NA MV 3-fold

Item # 3114NA MV 4-fold

Item # 3115NA MV 5-fold

Item # 3116NA MV 6-fold

Actuator SR2-24 V AC/DC

Simple assembly and disassembly thanks to the PAW snap-in-mechanism. Incl. 1.5 m cable and mounting set for assembly on PAW mixing valves. Due to removable scale it is suitable for supply on the right or left side, change-over switch for manual/automatic operation.

Technical data

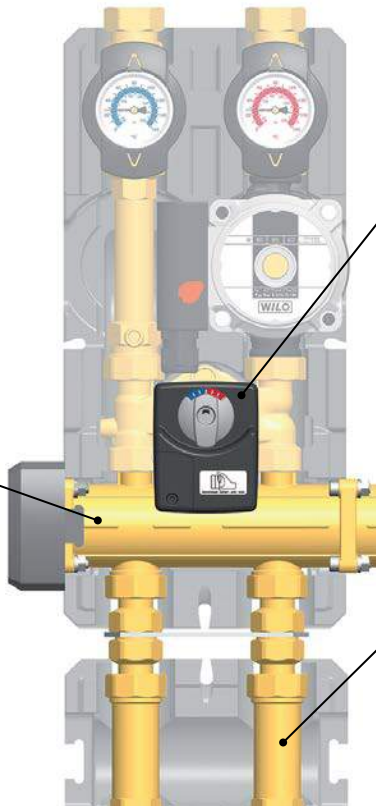
Electrical connection: 24 V
 Input power: 0.5 W
 Torque: min. 2 Nm
 Setting time: 100 s

Item # 705015NA

Coupling for flow down assembly 3/4"

For the installation of a heating zone module under a distribution manifold. Please note: If you want to use wall brackets, you will need an additional mounting plate for the installation of a 2-fold distribution manifold MV2 (Item #3125NA).

Item # 31241NA





Modular distribution manifold residential series for closed loop design only

3/4"/DN 20

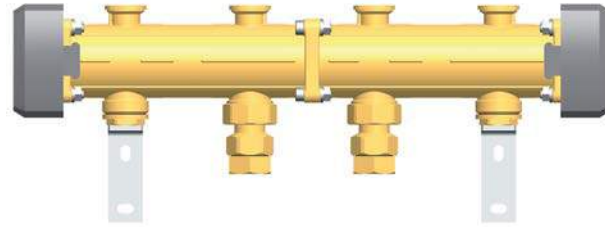
USE in closed loop design. Modular design distribution manifolds allow parallel connection of multiple zone modules in order to customize any installation. Available in 2- to 6-sectional designs, for connection of 2 to 9 heating zones, they simplify installation, extremely shorten assembly time, providing cost and time savings.

Union connections make mounting of zone modules to the manifold fast and easy. Supply and return chambers of the manifold are thermally divided. Extension module allows trouble-free connection of additional zone modules to an existing system. No special piping, just 2 connections and your installation is complete.

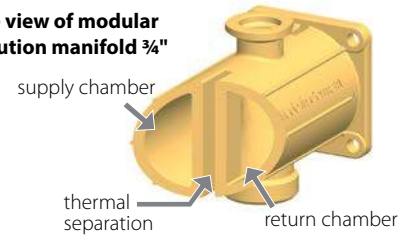
Features:

Distribution manifold - 3/4"/DN 20 modular design, with patented thermal separation of the supply and return chambers, for outputs up to 170 kBTU/h/50 kW (per boiler connection)

- completely made of brass
- completely pre-assembled
- supply and return chambers thermally separated at 95%
- manifolds are delivered with insulating caps; the insulation for the manifolds is integrated in the zone module insulation
- extremely low resistance, free flow diameter = 1"
- up to six pre-assembled manifold modules available
- multiple boiler connections are possible, for higher outputs
- with wall bracket



Inside view of modular distribution manifold 3/4"



TECHNICAL DATA Modular Distribution Manifold 3/4" - DN 20

Dimension	3/4" - DN 20	
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP-shells
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	7.8
Connections	for zone modules	3/4" PAW flange for 1" union
	for boilers	3/4" NPT x 1" male - flat-sealing (bottom), 2 x for boiler connection, (rest plugged)
	on the side	3/4" female, plugged for safety group and expansion tank
Dimensions	Center distance	90 mm/3 11/32"
	Installation height	80 mm/3 1/8"
	Height of insulation	85 mm/3 11/32"
	Width	see item list below
Recommended application	Floating action temperature control up to 85.5 kBTU/h/25.0 kW	at ΔT = 18 °F/10 K

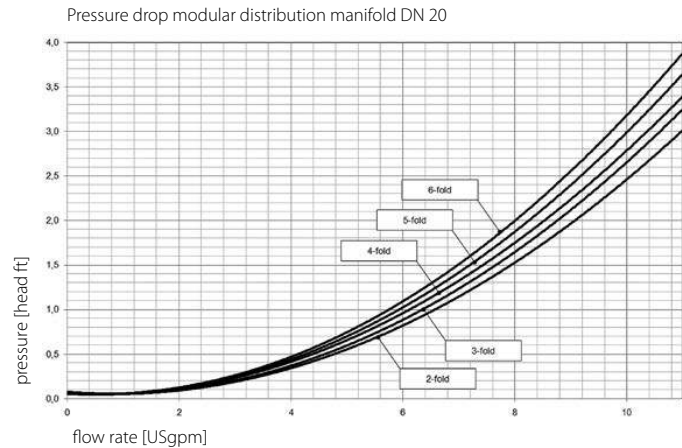
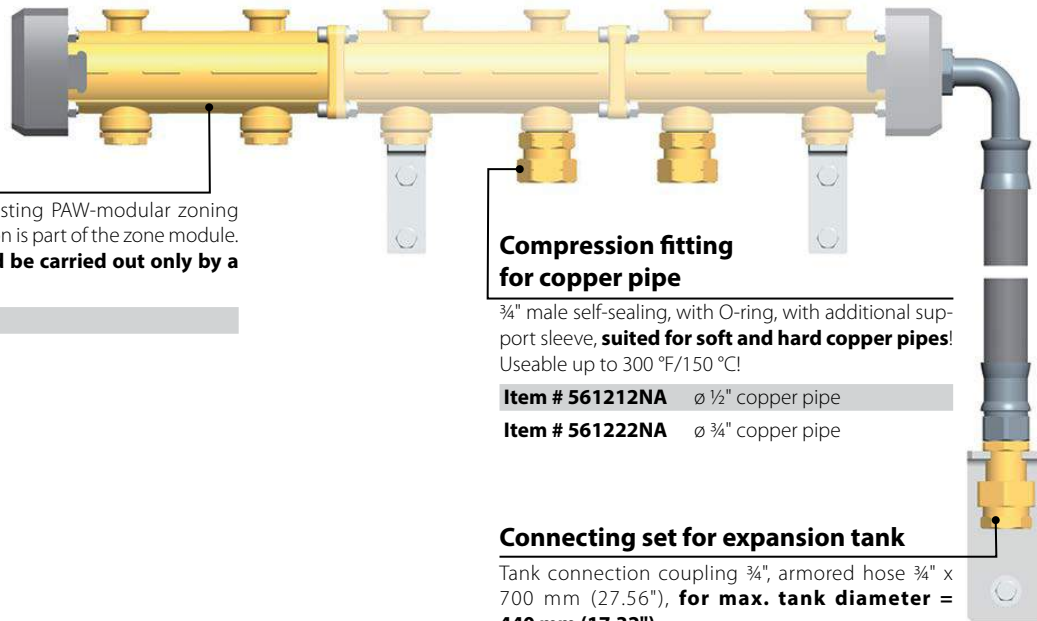


Illustration	Type	Options	Item #
	MV DN 20 3/4"	MV 2 modular distribution manifold 2-fold for connection of up to 3 zone modules Width incl. insulation: L = 440 mm/17 1/8"	3112NA
		MV 3 modular distribution manifold 3-fold for connection of up to 5 zone modules Width incl. insulation: L = 620 mm/24 3/8"	3113NA
		MV 4 modular distribution manifold 4-fold for connection of up to 7 zone modules Width incl. insulation: L = 800 mm/31 1/2"	3114NA
		MV 5 modular distribution manifold 5-fold for connection of up to 9 zone modules Width incl. insulation: L = 980 mm/38 5/8"	3115NA
		MV 6 modular distribution manifold 6-fold for connection of up to 11 zone modules Width incl. insulation: L = 1,160 mm/45 1/3"	3116NA



Assembly accessories for distribution manifold

3/4"/DN 20



Extension module

For the extension of existing PAW-modular zoning systems. The EPP insulation is part of the zone module. **The installation should be carried out only by a trained technician!**

Item # 3111NA

Compression fitting for copper pipe

3/4" male self-sealing, with O-ring, with additional support sleeve, **suited for soft and hard copper pipes!** Useable up to 300 °F/150 °C!

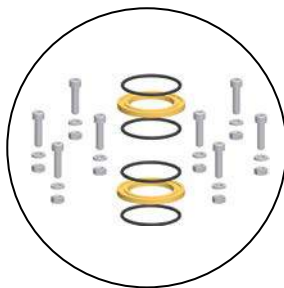
Item # 561212NA ø 1/2" copper pipe

Item # 561222NA ø 3/4" copper pipe

Connecting set for expansion tank

Tank connection coupling 3/4", armored hose 3/4" x 700 mm (27.56"), **for max. tank diameter = 440 mm (17.32")**.

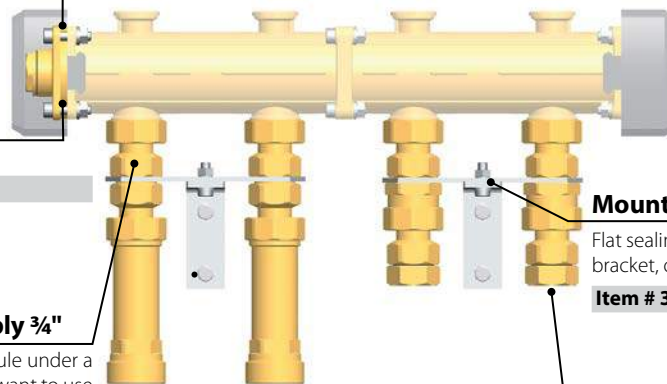
Item # 7507NA



Low-loss conversion kit

For 3/4" manifold.

Item # 3143NA



Coupling for flow down assembly 3/4"

For the installation of a heating zone module under a distribution manifold. **Please note:** If you want to use wall brackets, you will need an additional mounting plate for the installation of a 2-fold distribution manifold MV2 (Item # 3125NA).

Item # 31241NA

Mounting plate

Flat sealing under a modular manifold, for fixing a wall bracket, one side 1" female (nut), other side 1" male.

Item # 3125NA

Connecting set 3/4" NPT female

To connect pipes with NPT male thread under the zone modules. Consisting of: 2 flanged sockets 3/4" NPT female adaptor with nut 1".

Item # 3131NA



MW hydraulic separator for modular systems

3/4"/DN 20

USE in closed loop design. In conjunction with boilers having high resistance (condensing) or when total flow rate of all parallelly running circulators is higher than maximum flow rate of the boiler, the low-loss header provides hydraulic separation, decoupling boiler and system circuits from each other. It is recommended to use the low-loss header in applications in which the total system flow rate exceeds the maximum boiler flow rate. PAW strongly recommends the use of a hydraulic separator in cases where the system head and flow rates are unknown.

Function

When used in conjunction with boilers having a built-in pump, the hydraulic separator acts as hydraulic break, decoupling boiler and system circuits from each other. It is recommended to use the hydraulic separator in applications in which the total system flow rate exceeds the maximum boiler flow rate.

PAW strongly recommends the use of a hydraulic separator in cases where the system head and flow rates are unknown.

Following is an example of three possible situations of hydraulic stability.

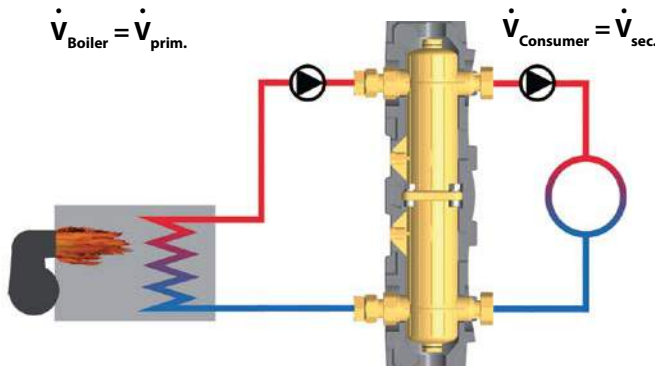
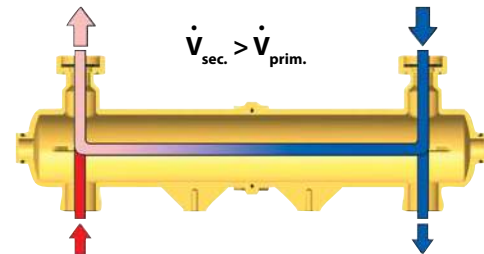
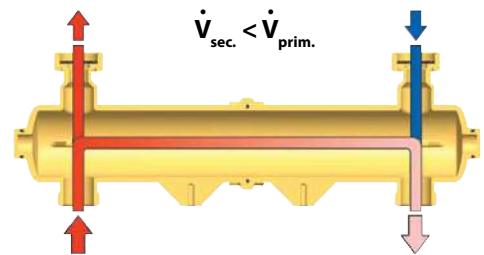
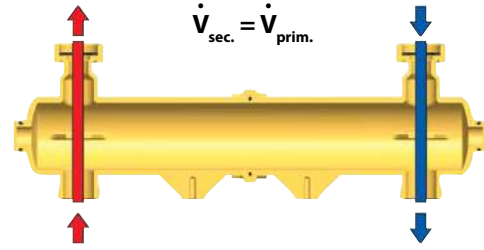


Illustration	Type/Characteristics	Item #
<p>Suitable for vertical or horizontal installation</p>	<p>MW 20 hydraulic separator up to 9.7 USgpm/87.5 kBTU/h/26 kW at $\Delta T = 18^\circ\text{F}/10\text{K}$ Completely made of brass, completely covered by EPP insulation, to be installed under a modular distribution manifold 3/4" or separately (vertically or horizontally) on the wall.</p> <p>Connections: PAW flange with 1" union nut, 1" male / 3/4" female with 3/4" NPT female adaptor, 2 x 1/2" female for sensor well and drain valve. width = $11\frac{13}{16}/300\text{ mm}$, installation height = $3\frac{5}{32}/80\text{ mm}$</p>	
	<p>MW 20 hydraulic separator up to 9.7 USgpm/87.5 kBTU/h/26 kW</p>	<p>31421NA</p>

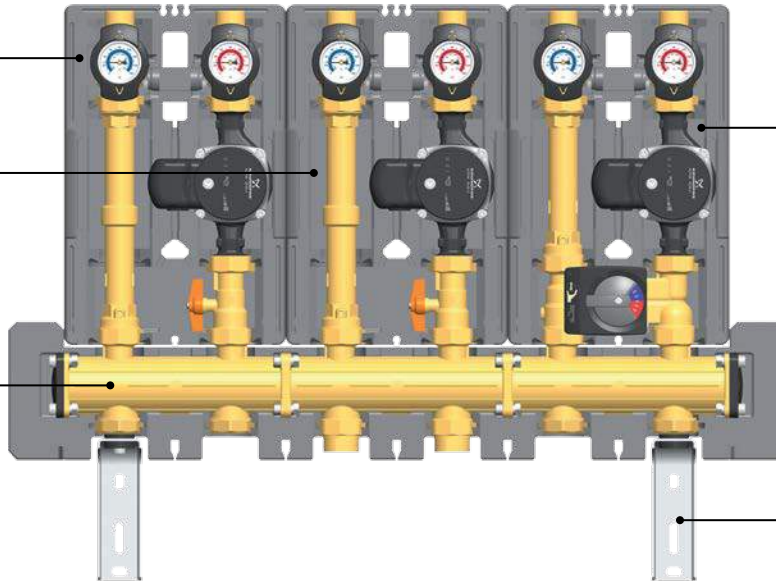
Modular system Mounting examples

1"/DN 25

K31 - 1"
 DHW zone
 see page 20

K31 - 1"
 radiators
 see page 20

MV 3 modular distribution manifold 1"
 3-fold
 see page 32-33



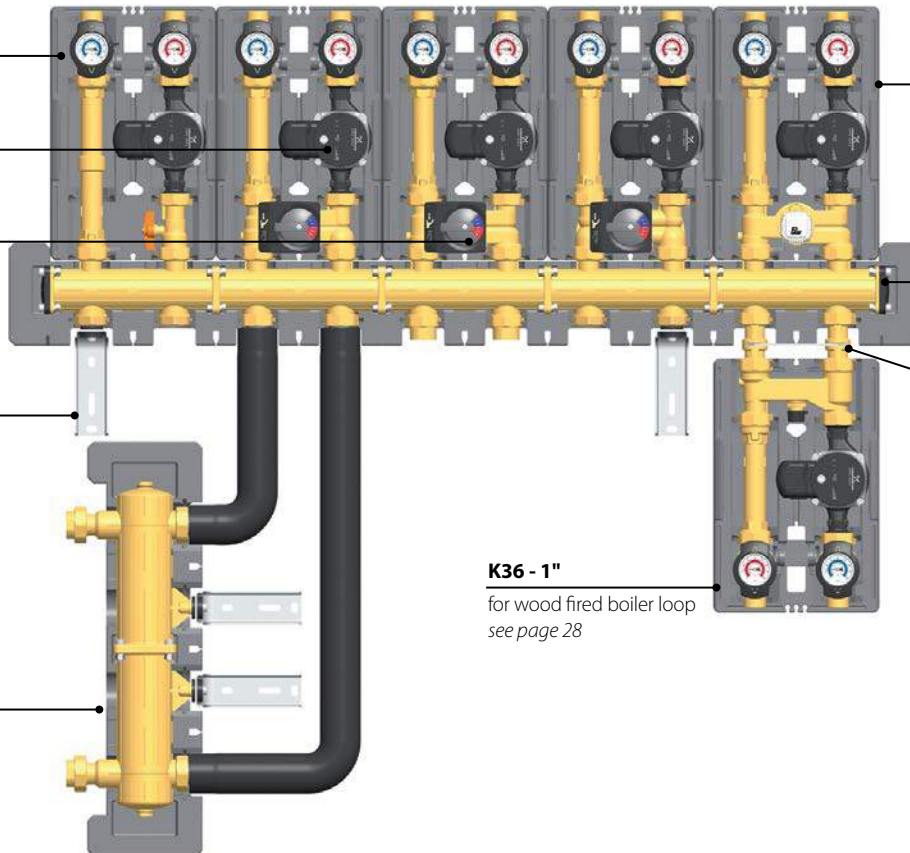
K32 - 1"
 for example RFH, with
 an SR10-24 actuator
 see page 22

Wall bracket set
 see page 21

K31 - 1"
 for example for DHW
 see page 20

K32 - 1"
 for example for radiators
 see page 22

K34 - 1"
 for example for RFH
 see page 26



K33 - 1"
 for example for RFH
 see page 24

MV 5 modular distribution manifold 1"
 5-fold
 see page 32-33

Coupling piece
 for overhead installation
 with wall bracket set
 see page 21

Wall bracket set
 see page 21

K36 - 1"
 for wood fired boiler loop
 see page 28

Hydraulic separator
 see page 34



High temperature zone module K31 unmixed

1"/DN 25

For high temperature zone or boiler primary loop

USE High Temperature Zone Module K31 in closed loop design to supply high temperature zones, such as indirect water heaters, baseboards or fan coil units, or as modules for injection mixing. Up to 9 high temp modules may be installed on one manifold. Under certain conditions, such as with the use of a condensing boiler, K31 can be connected directly to the heat source, provided the following conditions apply:

- Proper flow is maintained through the heat source.
- Heat source can be set to desired temperature setting (no mixing required).
- No minimum return fluid temperature is required for the heat source.
- All necessary conditions and piping practices, as outlined by the heat source manufacturer, are properly maintained.

Features:

1" NPT female connections

Large ball valve handles

Easy handling, visible closing position

Design insulation with optimized function made of durable, elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply on the right = standard

The supply and return line can be changed on site.



High-efficiency technology

All water-carrying parts are made of brass.

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

integrated in the insulation, pressure tested, serial numbered.

Pump can be completely isolated,

enabling replacement or service without draining the system.

Flat sealing 1½" male inlet connections

Incl. 1½" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using the PAW mounting equipment.

TECHNICAL DATA Zone Module K31		
Dimension		1" - DN 25
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	6.3
Dimensions	Zone module inlet	1½" male
	Zone module outlet	1" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	368 mm/14.5"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	383 mm/15"
Recommended application	High/floating temperature zone control up to 85.5 kBTU/h/25.0 kW at ΔT = 18 °F/10 K	

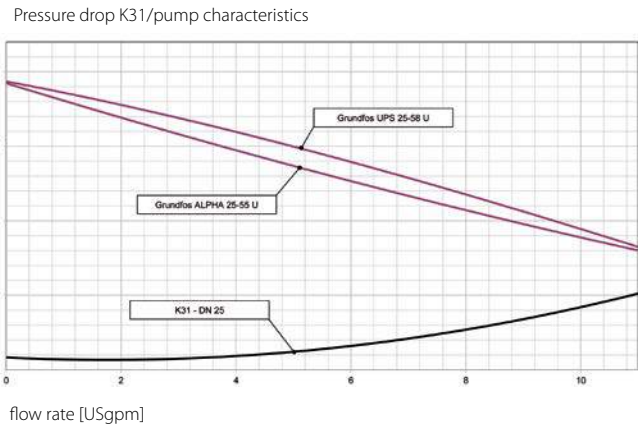


Illustration	Type	Information	PAW pump	Item #
	K31 1" DN 25	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 25-55 U	4736013GH6
			3-speed pump: Grundfos UPS 25-58 U	4736013GR6



Assembly accessories for K31 zone module

1"/DN 25



Connection set 1" female

Consisting of 2 insertion pieces, for connecting pipes with 1" NPT under zone modules.

Item # 3431NA

Wall bracket set

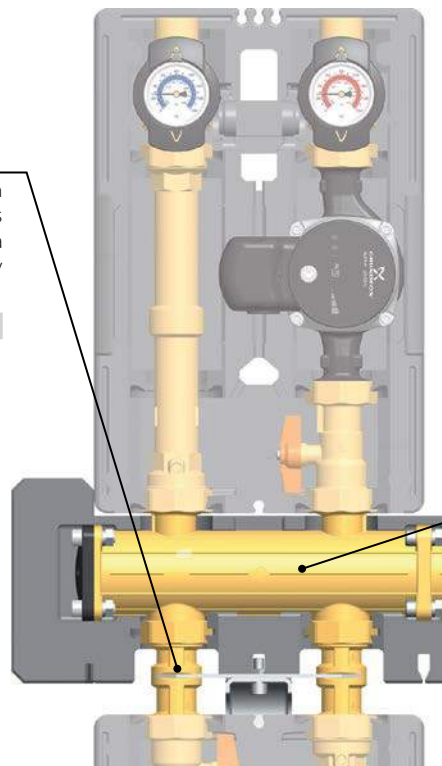
Using the wall bracket and mounting plate distances from 87.5 mm (3.44") up to 162.5 mm (6.4") off the wall are possible.

Item # 3422SETNA

Coupling for flow down assembly 1"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (Item # 3425NA).

Item # 34241NA



Modular distribution manifold 1"

Modular design, up to 27 kBTU/h (80 kW) each boiler connection, completely made of brass. For a detailed description see page 32.

Item # 4734123 2-fold

Item # 4734133 3-fold

Item # 4734143 4-fold

Item # 4734153 5-fold

Item # 4734163 6-fold



Low temperature zone module K32; with 3-way mixing valve

1"/DN 25

For heating zones controlled by motorized mixing with reset control

USE in closed loop design. Low Temperature Zone Modules K32 are replacing conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K32 modulates a 3-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds.

Sizing and piping:

The K32 can handle radiant load demands of up to 114 KBTU/h. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K32. Multiple K32 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1" NPT female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply line on the right or on the left

Supply and return line can be changed on site, the mixing valve can be changed without difficulties.



High-efficiency technology

All water-carrying parts are made of brass

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

3-way mixing valve

completely made of brass, characteristic curve prevents variation in temperature, flow pipe can be shut off, thus the pump can be replaced or serviced without draining the system.

Flat sealing 1½" male inlet connections

Incl. 1½" union nut for the installation on PAW modular distribution manifolds. Using PAW mounting equipment the zone module can be installed with wall brackets.

TECHNICAL DATA Zone Module K32		
Dimension		1" - DN 25
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	4.4
Dimensions	Zone module inlet	1½" male
	Zone module outlet	1" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	368 mm/14.5"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	383 mm/15"
Recommended application	High/floating temperature zone control up to 56.5 kBTU/h/16.5 kW at ΔT = 18 °F/10 K	

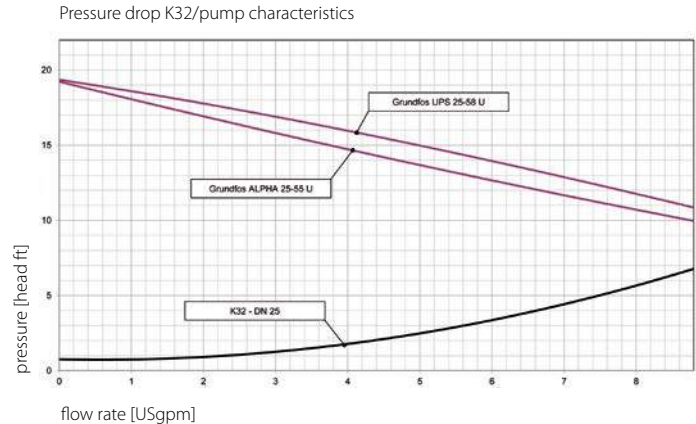
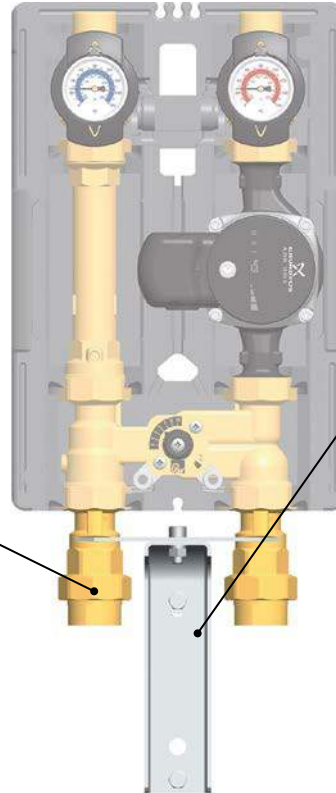


Illustration	Type	Information	PAW pump	Item #
	K32 1" DN 25	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 25-55 U	4736053GH6
			3-speed pump: Grundfos UPS 25-58 U	4736053GR6



Assembly accessories for K32 zone module

1"/DN 25



Connection set 1" female

Consisting of 2 insertion pieces, for connecting pipes with 1" NPT under zone modules.

Item # 3431NA

Wall bracket set

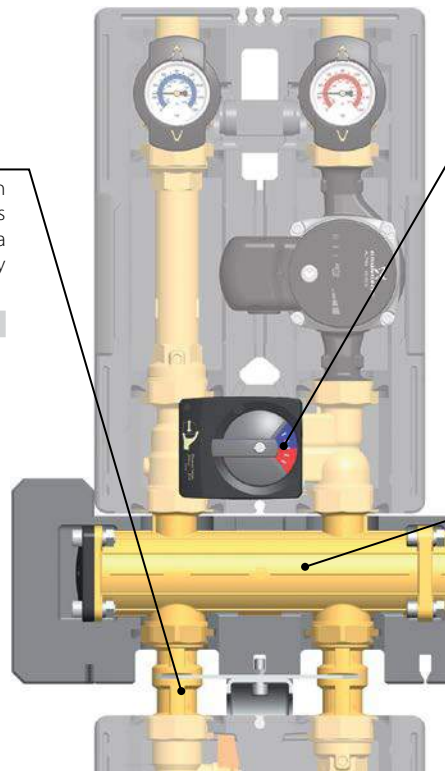
Using the wall bracket and mounting plate distances from 87.5 mm (3.44") up to 162.5 mm (6.4") off the wall are possible.

Item # 3422SETNA

Coupling for flow down assembly 1"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (Item # 3425).

Item # 34241NA



PAW-actuator type SR10-24/3P

For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with **3-wire motor output**.

Technical data:

Electric connection: 24 VAC/DC
 Input power: 3.5 W (SR10)
 Actuation time 90°: 140 s

Item # 7054NA

Modular distribution manifold 1"

Modular design, up to 27 kBTU/h (80 kW) each boiler connection, completely made of brass. For a detailed description see page 32.

Item # 4734123 2-fold

Item # 4734133 3-fold

Item # 4734143 4-fold

Item # 4734153 5-fold

Item # 4734163 6-fold



Low temperature zone module K33 with thermostatic 3-way mixing valve and adjustable bypass 0-50 %

1"/DN 25

For low temperature heating zones controlled by 3-way thermostatic mixing

USE in closed loop design. Low Temperature Zone Modules K33 equipped with adjustable thermostatic actuator. K33 is designed to provide constant supply temperatures to the radiant system. Depending on the geographic location of the installation, periodic adjustments of the temperature may be necessary. Rotating the dial of the thermostatic head to a higher number will provide for hotter temperatures. The designer of the

radiant system must ensure the range of temperatures provided by the control is suitable for the installation. The K33 can handle radiant load demands of up to 34 KBTU/h at 18 °F /10 K differential. Mixing valve closes on temperature rise. Multiple K33 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1" NPT female connections

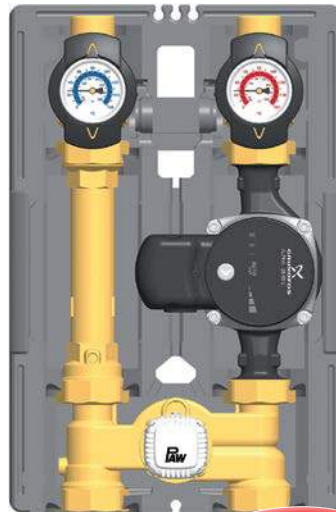
Large ball valve handles
 Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Check valve in return pipe prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply line on the right or on the left
 Supply and return line can be changed on site. **To change the supply line, a mixing valve conversion kit is necessary.**

Check valve integrated in the mixing valve, prevents unwanted circulation.



All water-carrying parts are made of brass

Thermostat - adjustable in the range of 68 °F-140 °F /20-60 °C

When the adjusted temperature is exceeded a switch is activated and switches off the pump.

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded already installed, integrated in the insulation, pressure tested, serial numbered.

3-way mixing valve with bypass 0-50 % and thermostat control

completely made of brass, set by the thermostat and the sensor, the setting is done manually, the bypass can be set at the front.

Flat sealing 1½" male inlet connections

Incl. 1½" union nut for the installation on PAW modular distribution manifolds. Using PAW mounting equipment the zone module can be installed with wall brackets.

TECHNICAL DATA Zone Module K33		
Dimension		1" - DN 25
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	2.6
Dimensions	Zone module inlet	1½" male
	Zone module outlet	1" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	368 mm/14.5"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	383 mm/15"
Recommended application	High/floating temperature zone control up to 34 KBTU/h/10 kW at ΔT = 18 °F/10 K	

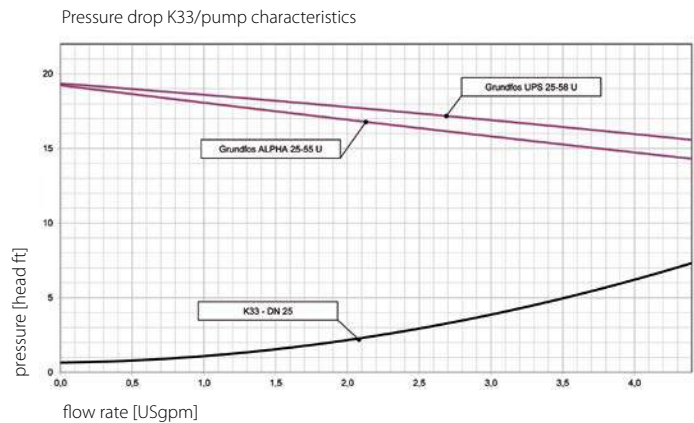


Illustration	Type	Information	PAW pump	Item #
	K33 1" DN 25	Advantages PAW pump: • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump	High efficiency pump: Grundfos ALPHA 25-55 U	4736073GH6
			3-speed pump: Grundfos UPS 25-58 U	4736073GR6



Assembly accessories for K33 zone module

1"/DN 25



Wall bracket set

Using the wall bracket and mounting plate distances from 87.5 mm (3.44") up to 162.5 mm (6.4") off the wall are possible.

Item # 3422SETNA

Connection set 1" female

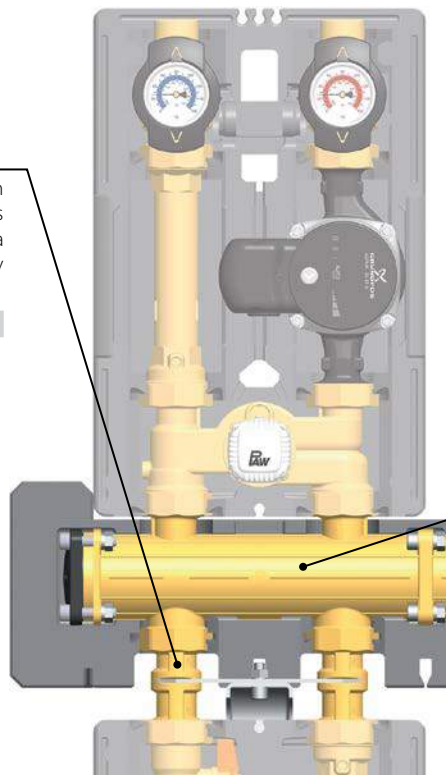
Consisting of 2 insertion pieces, for connecting pipes with 1" NPT under zone modules.

Item # 3431NA

Coupling for flow down assembly 1"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (Item # 3425NA).

Item # 34241NA



Modular distribution manifold 1"

Modular design, up to 27 kBTU/h (80 kW) each boiler connection, completely made of brass. For a detailed description see page 32.

Item # 4734123 2-fold

Item # 4734133 3-fold

Item # 4734143 4-fold

Item # 4734153 5-fold

Item # 4734163 6-fold



Low temperature zone module K34 3-way mixing valve and adjustable bypass 0-50 %

1"/DN 25

For low-temperature heating controlled by a mixing valve

USE in closed loop design. Low Temperature Zone Module K34 replaces conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K34 modulates a 3-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds. Adjustable bypass diverts up to 50% of additional return water to the system supply and lowers supply temperature to ensure a specific low supply water temperature is maintained and

no thermal shock will occur in the radiant slab.

Sizing and piping: The K34 can handle radiant load demands of up to 155 KBTU/h. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K34. Multiple K34 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1" NPT female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply line on the right or on the left

Supply and return line can be changed on site, the mixing valve can be changed without difficulties.

Check valve

Integrated in the mixing valve, prevents unwanted circulation.



All water-carrying parts are made of brass

All-metal thermomometer

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

3-way mixing valve

completely made of brass, characteristic curve prevents variation in temperature. With the bypass valve (adjustable on the front) 0-50% of the water from the return line can be mixed to the flow line.

Flat sealing 1½" male inlet connections

incl. 1½" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using PAW mounting equipment.



TECHNICAL DATA Zone Module K34		
Dimension		1" - DN 25
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	6.0
Dimensions	Zone module inlet	1½" male
	Zone module outlet	1" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	368 mm/14.5"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	383 mm/15"
Recommended application	High/floating temperature zone control up to 77 kBTU/h/22.5 kW at ΔT = 18 °F/10 K	

Pressure drop K34/pump characteristics

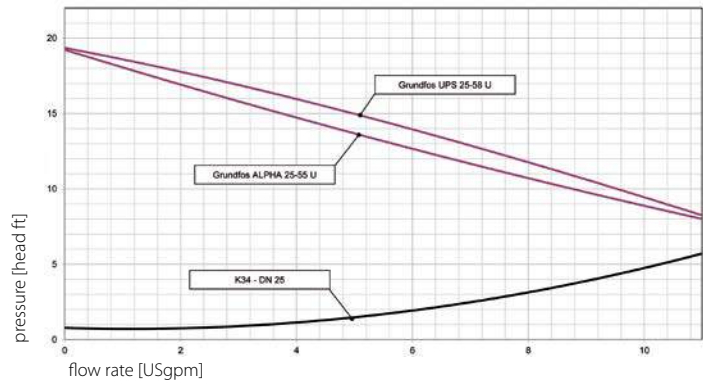
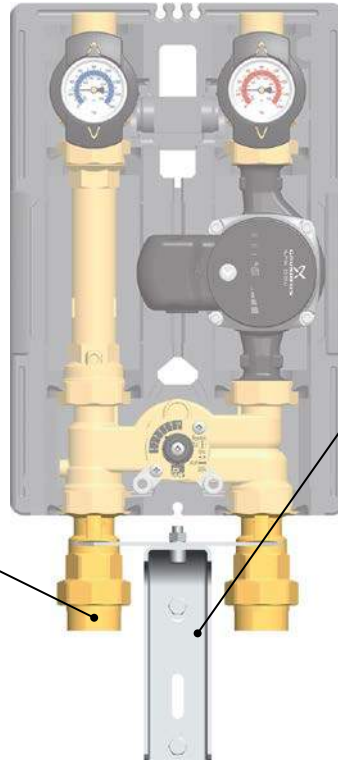


Illustration	Type	Information	PAW pump	Item #
	K34 1" DN 25	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 25-55 U	4736063GH6
			3-speed pump: Grundfos UPS 25-58 U	4736063GR6



Assembly accessories for K34 zone module

1"/DN 25



Connection set 1" female

Consisting of 2 insertion pieces, for connecting pipes with 1" NPT under zone modules.

Item # 3431NA

Wall bracket set

Using the wall bracket and mounting plate distances from 87.5 mm (3.44") up to 162.5 mm (6.4") off the wall are possible.

Item # 3422SETNA

Coupling for flow down assembly 1"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (Item # 3425NA).

Item # 34241NA

PAW-actuator type SR10-24/3P

For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with **3-wire motor output**.

Technical data:

Electric connection: 24 VAC/DC
 Input power: 3.5 W (SR10)
 Actuation time 90°: 140 s

Item # 7054NA

Modular distribution manifold 1"

Modular design, up to 27 kBTU/h (80 kW) each boiler connection, completely made of brass. For a detailed description see page 32.

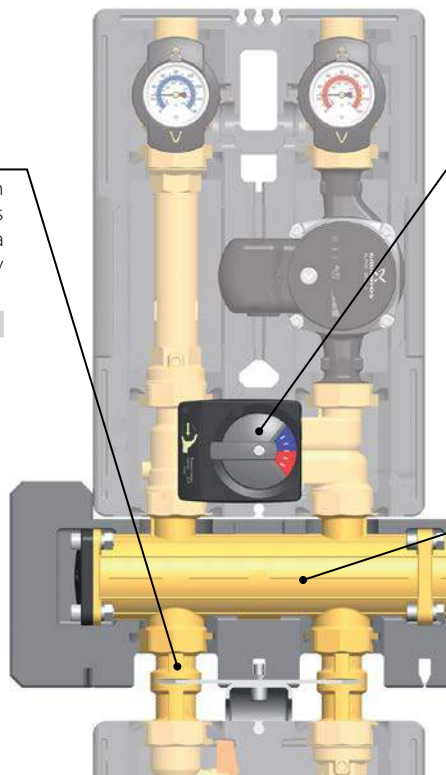
Item # 4734123 2-fold

Item # 4734133 3-fold

Item # 4734143 4-fold

Item # 4734153 5-fold

Item # 4734163 6-fold





K36E zone module with integrated temperature/flow bypass valve

1"/DN 25

With thermal control valve, to compensate temperature differences in solid fuel boilers as well as in wood firing and stove heating systems

Features:

1½" female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply on the right = standard

The supply and return line can be changed on site.

All water-carrying parts are made of brass

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

preinstalled, integrated in the insulation, pressure tested, serial numbered. **For technical reasons electronically controlled pumps are not recommended for the K36E zone module!**

Flat sealing 1½" male inlet connections

Incl. 1½" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using the PAW mounting equipment.

Thermal control valve with automatic flow bypass and integrated pressure bypass valve

ensures that the boiler always keeps a minimum temperature (= opening temperature +/- 5 °F, +/- 3 °C) and prevents the boiler from sooting.

Special feature of the thermal control valve of the K36E zone module is the integrated **pressure bypass valve**. By means of this adjustable valve the K36E can be adjusted optimally to all possible working and mounting conditions:

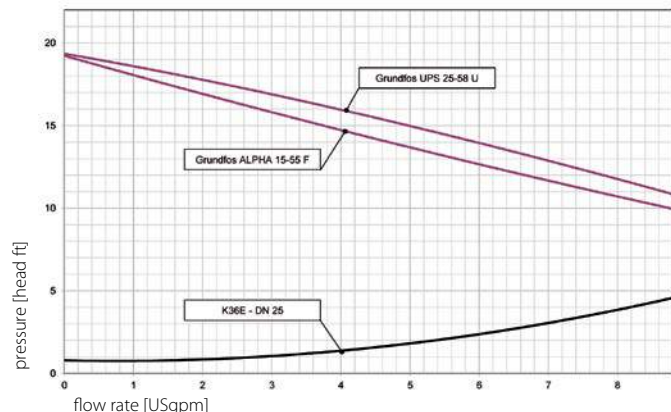
- When mounted to a buffer storage tank or a hydraulic separator the overflow valve must be closed. When the opening temperature in the boiler circuit is achieved, the power of the integrated boiler pump is high enough to load the storage tank/hydraulic separator.
- When mounted to distribution manifolds the pump pressure is reduced by means of the integrated bypass valve. The pump must operate at speed stage II. Unwanted circulation, for example excessive charging of potable water storage tanks, is prevented this way.



TECHNICAL DATA Zone Module K36E

Dimension	1" - DN 25	
Opening temperature	113 °F / 140 °F 45/60 °C	
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	5.5
Dimensions	Zone module inlet	1 ½" female
	Zone module outlet	1" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	368 mm/14.5"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	383 mm/15"
Recommended application	High/floating temperature zone control up to 68.5 kBTU/h/20.0 kW at ΔT = 18 °F/10 K	

Pressure drop K36E/pump characteristics





K36E zone module with integrated temperature/flow bypass valve

1"/DN 25

With thermal control valve, to compensate temperature differences in solid fuel boilers as well as in wood firing and stove heating systems

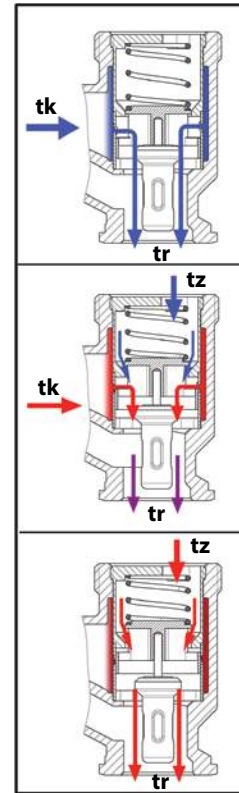
Thermal control valve with bypass and integrated overflow valve

Function:

1. The thermal control valve shuts off the connection to the heating/storage tank (load) as long as the water in the boiler circuit is colder than the opening temperature of the thermal control valve. The pump in the K36E circulates the water in the boiler loop by means of the automatic bypass which is completely open.
2. When the water in the boiler circuit has reached the opening temperature (+/- 5 °F) of the thermal control valve, this valve opens the flow from/to the load. The bypass shuts off to the same extent as the flow to the load is opened. The control valve opens the return line of the load and enables the water to circulate in the circuit depending on the setting of the integrated pressure bypass valve. The cold water from the consumer return line is mixed in the control valve with the hot water from the bypass. Depending on the temperature and the flow rate of the water from the return line, the thermal control valve shuts off the connection to the lead. Thus the return line which leads to the boiler always remains at a certain temperature level.
3. With rising temperature in the boiler supply line or rising temperature in the return line from the load, the thermal control valve opens (the flow connection to the lead). The temperature of the return line of the boiler remains nearly constant (+/- 5 °F, +/- 3 K).

Please notice:

The boiler thermostat setpoint has to be set 36 °F (20 K) higher than the opening temperature of K36E.



Boiler temperature tk is lower than the opening temperature; tr = tk

Boiler temperature tk is higher than the opening temperature. tr is approximately equivalent to the opening temperature.

Return line temperature tz from the consumer is higher than the opening temperature; tr = tz

Illustration	Option	Information	PAW pump	Item #
	K36E Opening temp. 113 °F/45 °C	Advantage PAW pump: • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump	High efficiency pump: Grundfos ALPHA 15-55 F	47360343GH6
			3-speed pump: Grundfos UPS 15-58 F	47360343GR6
	High efficiency pump: Grundfos ALPHA 15-55 F		47360373GH6	
	3-speed pump: Grundfos UPS 15-58 F		47360373GR6	
	Wall bracket set for PAW zone modules Not required for installation in connection with a PAW modular distribution manifold. Using the wall bracket, wall distances from 87.5 mm (3.44") up to 162.5 mm (6.4") are possible. Consists of: steel wall bracket, galvanized, fasteners.			
	Wall bracket for for PAW zone modules 1"			3422NA
	Connection set DN 25 2 x tail piece 1 1/2" male for nut thread 1" NPT, brass			3432NA



Low temperature zone module K38 with 4-way mixing valve

1"/DN 25

For heating mode with minimum temperature set by motorized mixing valve

USE in closed loop design. Low Temperature Zone Modules K38 replace conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K38 modulates a 4-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds.

Sizing and piping:

The K38 can handle radiant load demands of up to 112.5 KBTU/h. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K38. Multiple K38 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1" NPT female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Free access to the pump head by simply pulling off the cover.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply on the right = standard

Supply and return line can be changed on site.



All water-carrying parts are made of brass

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

4-way mixing valve

completely made of brass, suitable for operation with a boiler circuit pump when installing a single zone module, work on primary circuit is possible by closed supply line (a change in the boiler circuit with closed supply line is possible). **When installed on a distribution manifold, the return line of the mixing valve must be equipped with a check valve to prevent unwanted circulation.**

Flat sealing 1½" male inlet connections

incl. 1½" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using PAW mounting equipment.

TECHNICAL DATA Zone Module K38		
Dimension		1" - DN 25
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	116 psi/8 bar
	Max. temperature	230 °F/110 °C
	CV value	4.7
	Dimensions	
	Zone module inlet	1½" male
	Zone module outlet	1" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	368 mm/14.5"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	383 mm/15"
Recommended application	High/floating temperature zone control up to 56.5 KBTU/h/16.5 kW at ΔT = 18 °F/10 K	

Pressure drop K38/pump characteristics

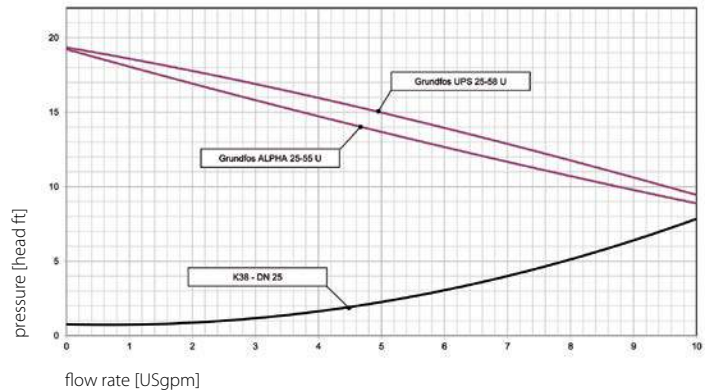


Illustration	Type	Information	PAW pump	Item #
	K38 1" DN 25	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump: Grundfos ALPHA 25-55 U	4736083GH6
			3-speed pump: Grundfos UPS 25-58 U	4736083GR6



Assembly accessories for K38 zone module

1"/DN 25



Connection set 1" female

Consisting of 2 insertion pieces, for connecting pipes with 1" NPT under zone modules.

Item # 3431NA

Wall bracket set

Using the wall bracket and mounting plate distances from 87.5 mm (3.44") up to 162.5 mm (6.4") off the wall are possible.

Item # 3422SETNA

Coupling for flow down assembly 1"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (Item # 3425NA).

Item # 34241NA

PAW-actuator type SR10-24/3P

For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with **3-wire motor output**.

Technical data:

Electric connection: 24 VAC/DC
 Input power: 3.5 W (SR10)
 Actuation time 90°: **140 s**

Item # 7054NA

Modular distribution manifold 1"

Modular design, up to 27 kBTU/h (80 kW) each boiler connection, completely made of brass. For a detailed description see page 32.

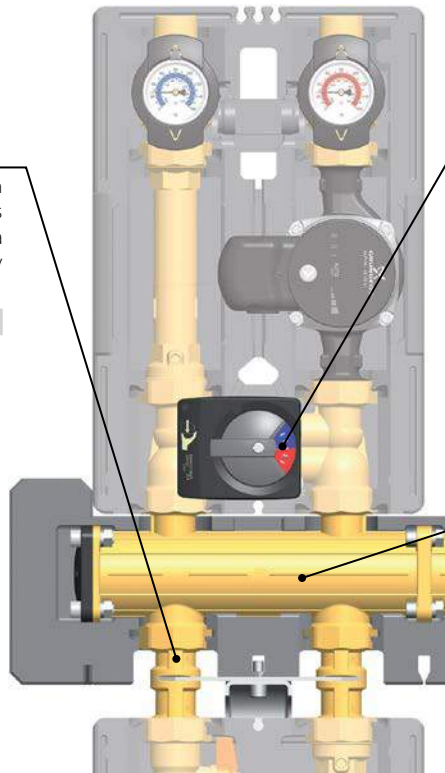
Item # 4734123 2-fold

Item # 4734133 3-fold

Item # 4734143 4-fold

Item # 4734153 5-fold

Item # 4734163 6-fold





Modular distribution manifold for closed loop design only

1"/DN 25

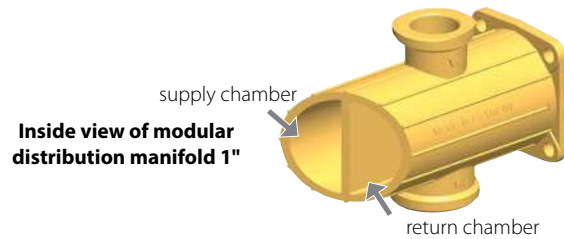
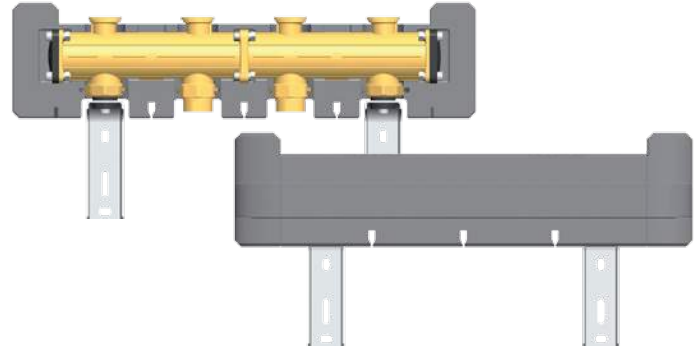
USE in closed loop design. Modular design distribution manifolds allow parallel connection of multiple zone modules in order to customize any installation. Available in 2- to 6-sectional designs, for connection of 2 to 9 heating zones, they simplify installation, extremely shorten assembly time, providing cost and time savings. Union connections make the moun-

ting of zone modules to the manifold fast and easy. Supply and return chambers of the manifold are thermally divided. Extension modules allow trouble-free connection of additional heating circuits to an existing system. No special piping, just 2 connections and your installation is complete.

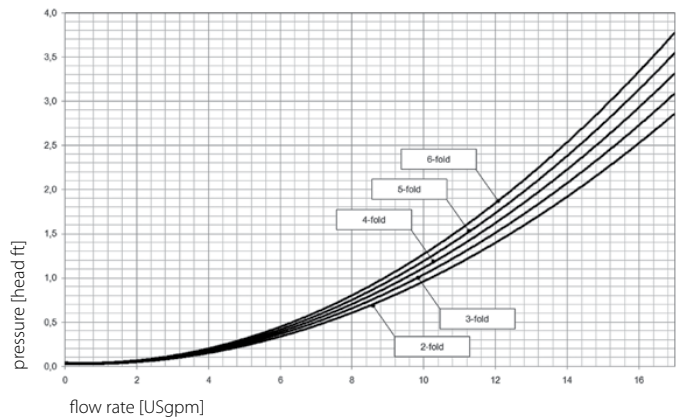
Features:

Heating distribution manifold 1"/DN 25
Modular design, for outputs up to 273 kBTU/h/80 kW per boiler connection

- completely made of brass
- completely pre-assembled
- completely insulated with EPP
- extremely low resistance, free flow diameter = 36 mm/1¹³/₃₂"
- up to six pre-assembled manifold modules available
- multiple connection of the boiler possible, for larger power outputs
- with wall bracket



Pressure drop modular distribution manifold DN 25



TECHNICAL DATA Modular Distribution Manifold 1" - DN 25

Dimension	1" - DN 25	
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	72.5 psi/5 bar
	Max. temperature	230 °F/110 °C
	CV value	12.5
Connections	for zone modules	1" PAW flange for 1½" nut (top)
	for boilers	1" female x 1½" male - flat-sealing (bottom) 2 x for boiler connection, rest plugged
	on the side	¾" female, plugged for safety group and expansion tank
Dimensions	Center distance	125 mm/4 ²⁹ / ₃₂ "
	Installation height	128 mm/5"
	Height of insulation	137 mm/5.4"
	Width	see item list below
Recommended application	Floating action temperature control up to 136.5 kBTU/h/40 kW at ΔT = 18 °F/10 K	

Illustration	Type	Options	Item #
	MV 1" DN 25	MV 2 modular distribution manifold 2-fold for connection of up to 3 zone modules Width incl. insulation: L = 580 mm/22 ²⁷ / ₃₂ "	4734123
		MV 3 modular distribution manifold 3-fold for connection of up to 5 zone modules Width incl. insulation: L = 830 mm/32 ¹¹ / ₁₆ "	4734133
		MV 4 modular distribution manifold 4-fold for connection of up to 7 zone modules Width incl. insulation: L = 1,080 mm/42 ¹⁷ / ₃₂ "	4734143
		MV 5 modular distribution manifold 5-fold for connection of up to 9 zone modules Width incl. insulation: L = 1,330 mm/52 ⁷ / ₈ "	4734153
		MV 6 modular distribution manifold 6-fold for connection of up to 11 zone modules Width incl. insulation: L = 1,580 mm/62 ⁷ / ₃₂ "	4734163



Assembly accessories for distribution manifold

1"/DN 25

Adaptor set for conversion

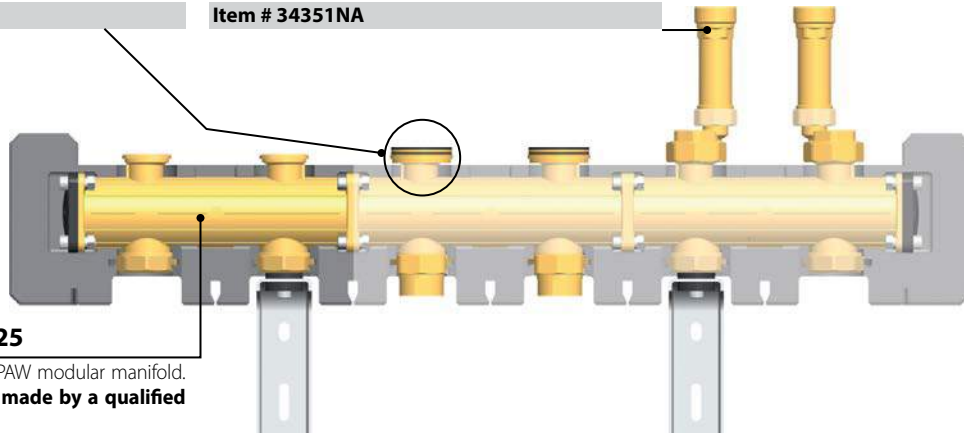
For installation of 1¼" zone modules on a 1" modular distribution manifold, spacer ring set for union nut 2" female on PAW flange, brass, with special seals, flat-sealing.

Item # 3436NA

Reducer set

For installing ¾" zone modules on a 1" modular distribution manifold, adaptor set 1½" male, flat-sealing with nut on ¾" PAW flange, reduction of the center distance from 125 mm/4.92" to 90 mm/3.54", distance pipe 1" female x 1" male flat-sealing, brass, with seals. The required union nuts 1" female have to be taken from the zone module!

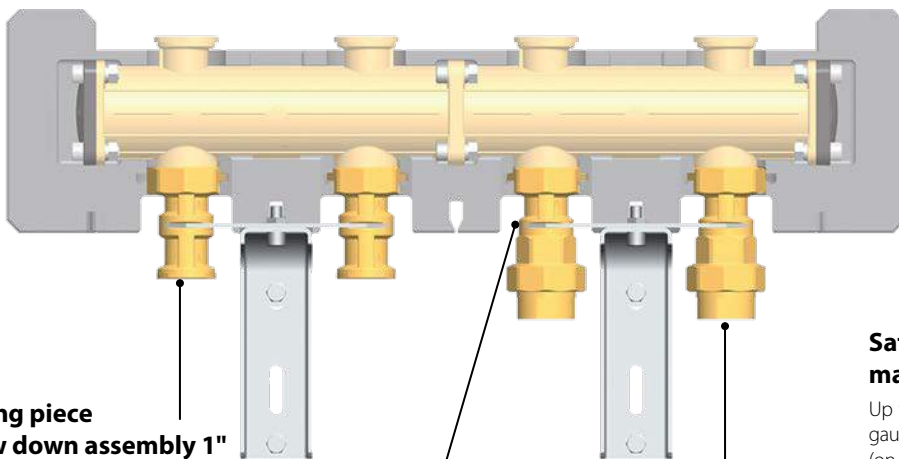
Item # 34351NA



Extension module DN 25

For the extension of an existing PAW modular manifold. **The installation may only be made by a qualified technician!**

Item # 4734113



Coupling piece for flow down assembly 1"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for installing a MV 2-fold modular distribution manifold is necessary (item # 3425NA).

Item # 34241NA

Mounting plate 1"

For installation under a modular distribution manifold and for attaching wall brackets. Necessary when all lower outlet connections are occupied.

Item # 3425NA

Connection set DN 25

Consisting of two inserts, for connection of pipes with 1" external thread below HeadBloCs or for the use of cutting-ring compression fittings and clamping-ring compression fittings.

Item # 3431NA



Safety set for modular distribution manifold DN 25

Up to 50 kW, with safety valve ½" x ¾", 3 bars, pressure gauge 0-4 bars. For mounting on the distribution manifold (on the right) DN 25. ¾" internal thread for connection a diaphragm expansion tank.

Item # 4752543



MW hydraulic separator for modular systems

1"/DN 25

USE in closed loop design. In conjunction with boilers having high resistance (condensing) or when total flow rate of all parallel running circulators is higher than maximum flow rate of the boiler, the low-loss header provides hydraulic separation, decoupling boiler and system circuits from each other. It is recommended to use the low-loss header in applications in which the total system flow rate exceeds the maximum boiler flow rate. PAW strongly recommends the use of a low-loss header in cases where the system head and flow rates are unknown.

Function

When used in conjunction with boilers having a built-in pump, the low-loss header acts as hydraulic break, decoupling boiler and system circuits from each other. It is recommended to use the low-loss header in applications in which the total system flow rate exceeds the maximum boiler flow rate. PAW strongly recommends the use of a low-loss header in cases where the system head and flow rates are unknown. These are typical functional conditions. Following is an example of three possible situations of hydraulic stability.

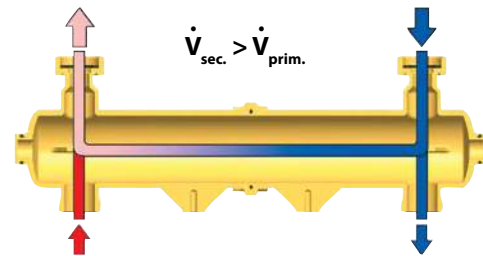
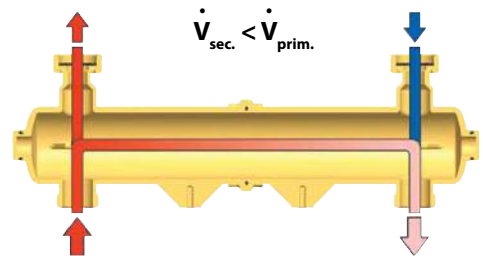
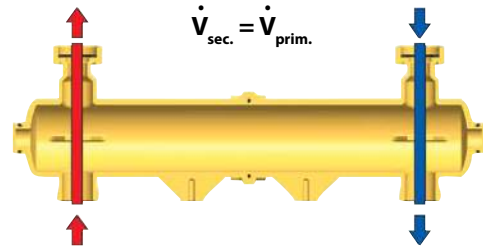
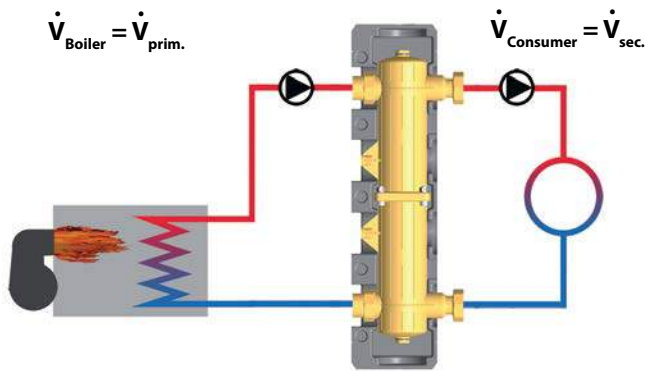
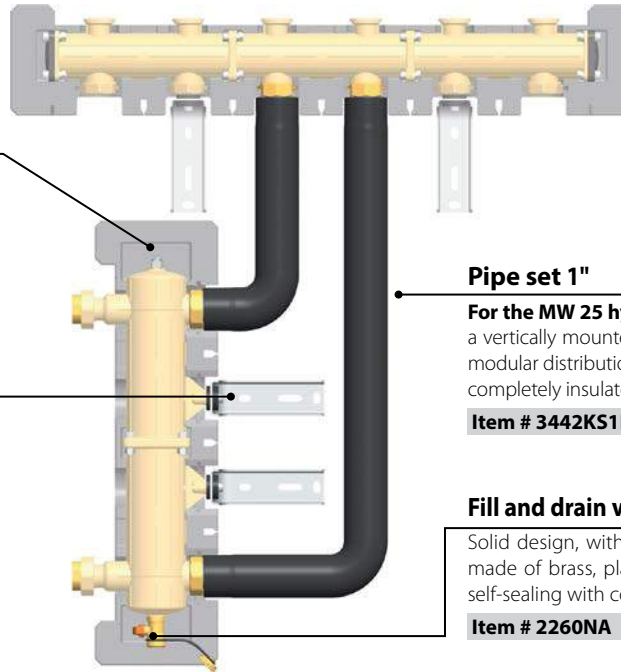


Illustration	Type/Characteristics	Item #
<p>Suitable for vertical or horizontal installation</p>	<p>MW 25 hydraulic separator up to 15.4 USgpm/ 139 kBTU/h/41 kW at $\Delta T = 18^\circ\text{F}/10\text{ K}$ Completely made of brass, completely insulated with EPP insulation, for the installation under a 1" modular distribution manifold or separately (vertically or horizontally) on the wall.</p> <p>Connections: PAW flange with 1 1/2" union nut, 1 1/2" male / 1" female with 1" NPT female adaptor, 2 x 1/2" female for immersion sleeve and fill and drain valve, width of insulation = 600 mm / 23 5/8", installation height = 128 mm/5"</p>	
	<p>MW 25 hydraulic separator up to 15.4 USgpm/139 kBTU/h/41 kW</p>	47344213
	<p>Hydraulic separator 1" up to 7 USgpm/63.5 kBTU/h/19 kW at $\Delta T = 18^\circ\text{F} / 10\text{ K}$ Completely made of brass, with routed supply and return line, for the installation under a single 1" modular distribution manifold. Completely insulated. Can also be installed under a 1" modular distribution manifold (by using the mounting plate item 3425NA) or separately.</p> <p>Connections: 1" PAW flange for 1 1/2" nut (above), 1" female x 1 1/2" male flat-sealing (below) with fitting, 3/4" female closed with plug (on the side), width = 375 mm/14.8", installation height = 128 mm/5", distance between the connections = 125 mm/4 29/32"</p>	
	<p>Hydraulic separator 1" up to 7.0 USgpm/63.5 kBTU/h/19 kW</p>	47344203



Assembly accessories for the MW hydraulic separator

1"/DN 25



Immersion sleeve

For supply line sensor/boiler sensor, connection 1/2" male, for sensor diameter of 6 mm/0.24", depth = 60 mm/2.36", chromed brass.

Item # 566002NA

Wall bracket set for hydraulic separator 1"

Two wall brackets in a set, steel, galvanized, suitable for wall distances of 100 mm/3.94", 125 mm/4.92" or 150 mm/5.9", incl. mounting equipment.

Item # 3421NA

Pipe set 1"

For the MW 25 hydraulic separator, for connecting a vertically mounted hydraulic separator under a PAW modular distribution manifold, flat-sealing connection, completely insulated, outlet on the right or on the left.

Item # 3442KS1NA

Fill and drain valve

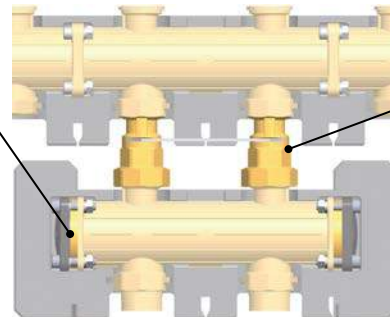
Solid design, with hose nozzle and cap, completely made of brass, plastic handles, connection 1/2" male self-sealing with counter nut.

Item # 2260NA

Conversion kit for the modular distribution manifold 1"

For extending additionally a distribution manifold with an integrated hydraulic separator (**low-loss header**). **Application range: up to 7 USgpm/1600 l/h, max. up to MV 3-fold modular distribution manifold!** Consisting of two distance rings for a resistance-free connection of the supply and return chamber, incl. screws and O-rings.

Item # 4734431



Mounting plate 1"

For installation under a modular distribution manifold and for attaching a 1" hydraulic separator up to 7 USgpm/1600 l/h.

Item # 3425NA

Low-loss headers are used for boilers with an integrated pump.

By means of the conversion kit the modular distribution manifolds have a bypass which connects the supply and return line without causing resistance (low-loss header).

It must be considered that the pump of the boiler circuit must deliver a higher flow rate than the consumer pumps need in total. Otherwise, unwanted circulation occurs on the right or left end of the distribution manifold. In that case a hydraulic separator (item 34421NA or 3442NA) must be installed under a distribution manifold.

Please note: The use of a low-loss header has to be planned carefully. In connection with central heating boilers hydraulic separators must be installed before/under a distribution manifold as the boiler delivers a low flow rate with a high temperature difference (leads to unwanted circulation on low-loss headers).





Recommended application:
 up to 273 kBTU/h/80 kW
 at $\Delta T = 36\text{ }^{\circ}\text{F}/20\text{ K}$

Illustration	Type	Options	Item #
	MVW 1"	MVW 2 low-loss header, 2-fold Up to 3 zone modules can be installed Width incl. insulation : L = 580 mm/22.8"	47344223
		MVW 3 low-loss header, 3-fold Up to 5 zone modules can be installed Width incl. insulation: L = 830 mm/32.7"	47344233



Accessories for modular systems

1"/DN 25

Illustration	Item	Item #
	<p>Conversion kit for PAW mixing valves 1" + ¾" to K34</p> <p>Before: K33 mixing valve (with bypass at the front), 1" After: K34 mixing valve (with bypass at the front), 1" supply line on the right/supply line on the left</p>	<p>37012NA</p>
 	<p>Conversion kit for PAW mixing valves 1" + ¾" to K33</p> <p>Before: K34 mixing valve (with bypass at the front), 1" K33 mixing valve (with bypass at the front), 1", supply line on the left After: K33 mixing valve (with bypass at the front), 1", supply line on the right</p> <p>Before: K34 mixing valve (with bypass at the front), 1" K33 mixing valve (with bypass at the front), 1", supply line on the right After: K33 mixing valve (with bypass at the front), 1", supply line on the left</p>	<p>340711NA</p> <p>340722NA</p>
	<p>PAW-actuator type SR10-24/3P</p> <p>For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with 3-wire motor output.</p> <p>Technical data: Electric connection: 24 VAC/DC Input power: 3.5 W (SR10) Actuation time 90°: 140 s</p>	<p>7054NA</p>



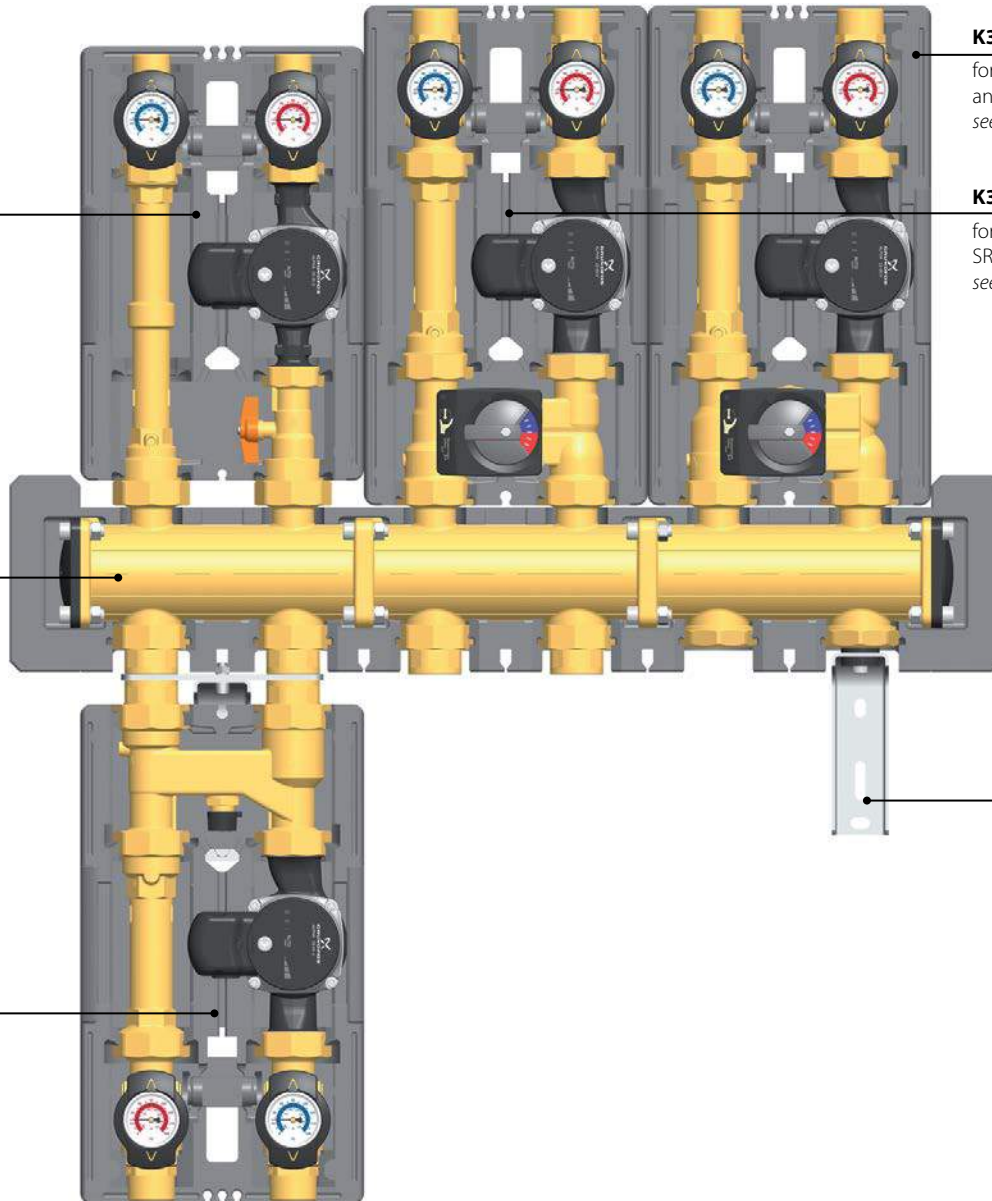
Modular system Mounting examples

1 1/4" / DN 32

K31 - 1"
DHW zone
see page 20

**MV 3 modular
distribution
manifold 1 1/4"**
3-fold
see page 48

K36E - 1 1/4"
for wood-fired
boiler loop
see page 44



K34 - 1 1/4"
for example RFH, with
an SR10-24 actuator
see page 42

K32 - 1 1/4"
for radiator zone, with
SR10-24 actuator
see page 40

Wall bracket set
see page 39



High temperature zone module K31 unmixed

1 1/4" / DN 32

For boiler load or floating heat mode
 For high temperature zone or boiler primary loop

USE High Temperature Zone Modules K31 in closed loop design to supply high temperature zones, such as indirect water heaters, baseboards or fan coil units, or as modules for injection mixing. All supply and return lines are 1 1/4". Up to 9 high temp modules can be installed on one manifold. Under certain conditions, such as with the use of a condensing boiler, a K31 unit can be connected directly to the heat source, provided the following conditions apply:

- Proper flow is maintained through the heat source.
- Heat source can be set to desired temperature setting (no mixing required).
- No minimum return fluid temperature is required for the heat source.
- All necessary conditions and piping practices, as outlined by the heat source manufacturer, are properly maintained.

Features:

1 1/4" NPT female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

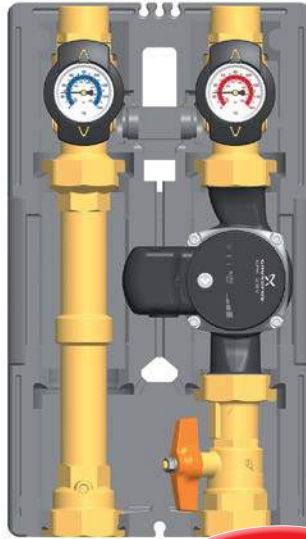
Free access to the pump head by simply pulling off the cover.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply on the right = standard

The supply and return line can be changed on site.



High-efficiency technology

All water-carrying parts are made of brass.

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

integrated in the insulation, pressure tested, serial numbered.

Pump can be shut off completely

can be replaced or serviced without draining the system.

Flat sealing 1 1/2" male connections

Incl. 2" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using the PAW mounting equipment.

TECHNICAL DATA Zone Module K31		
Dimension		1 1/4" - DN 32
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	87 psi/6 bar
	Max. temperature	230 °F/110 °C
	CV value	12.3
	Dimensions	
	Zone module inlet	2" male
	Zone module outlet	1 1/4" NPT F
	Center distance	125 mm/4 7/8"
	Length	431 mm/17"
	Width insulation	250 mm/9 7/8"
	Height insulation	441 mm/17.4"
Recommended application	High/floating temperature zone control up to 111 kBTU/h/32.5 kW at ΔT = 18 °F/10 K	

Pressure drop K31/pump characteristics

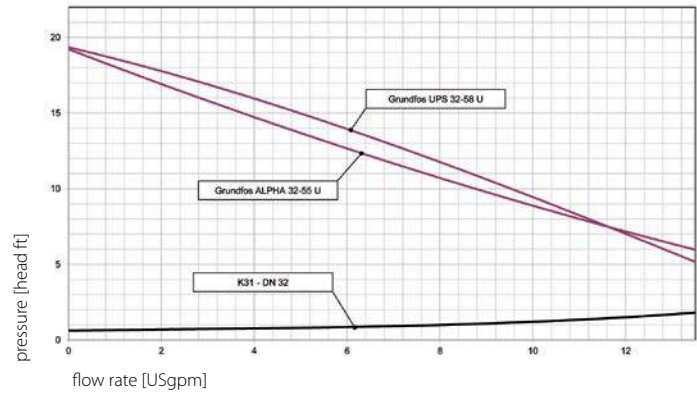
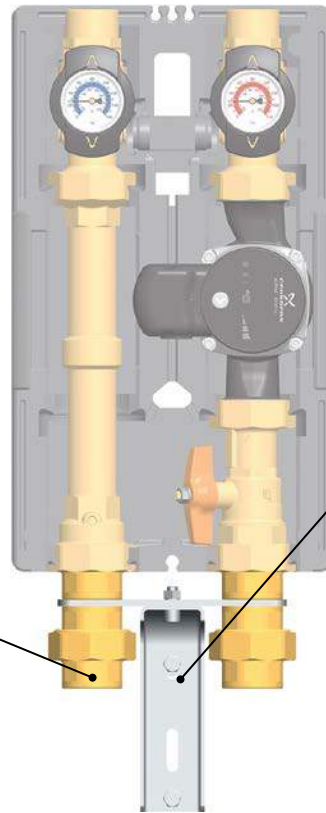


Illustration	Type	Information	PAW pump	Item #
	K31 1 1/4"	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump:	
			Grundfos ALPHA 32-55 U	4739013GH6
			3-speed pump:	
			Grundfos UPS 32-58 U	4739013GR6



Assembly accessories for K31 zone module

1 1/4"/DN 32



Wall bracket set

Using the wall bracket and mounting plate centre distances from 142.5 mm (5.61") up to 167.5 mm (6.59") off the wall are possible.

Item # 3722SETNA

Connection set 1 1/4" female

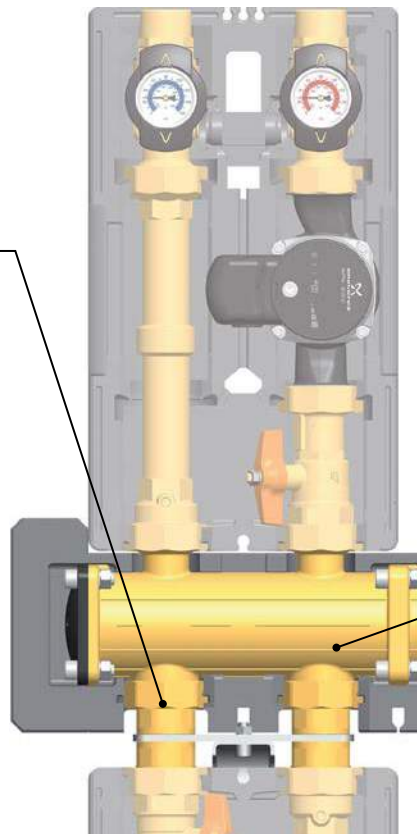
Consisting of 2 insertion pieces, for connecting pipes with 1 1/4" male under zone modules.

Item # 3731NA

Coupling piece for flow down assembly 1 1/4"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (see on the right).

Item # 3724NA



Modular distribution manifold 1 1/4"

Modular design, up to 510 kBTU/h/150 kW each boiler connection, completely made of brass. For a detailed description see page 48.

Item # 4737123 2-fold

Item # 4737133 3-fold

Item # 4737143 4-fold

Item # 4737153 5-fold

Item # 4737163 6-fold



Low temperature zone module K32 with 3-way mixing valve

1 1/4" / DN 32

For heating zones controlled by motorized mixing with reset control

USE in closed loop design. Low Temperature Zone Modules K32 are replacing conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K32 modulates a 3-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds.

Sizing and piping:

The K32 can handle radiant load demands of up to 174 KBTU/h. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K32. Multiple K32 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1 1/4" NPT female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

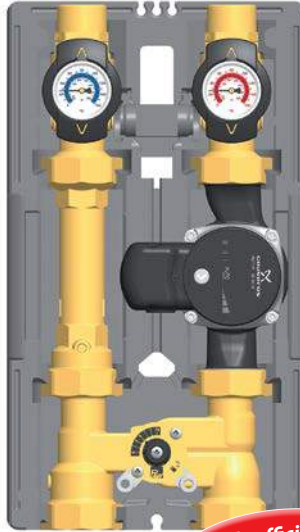
Free access to the pump head by simply pulling off the cover.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply line on the right or on the left

Supply and return line can be changed on site, the mixing valve can be changed without difficulties.



High-efficiency technology

All water-carrying parts are made of brass

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets.

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

3-way mixing valve

completely made of brass, characteristic curve prevents variation in temperature, flow pipe can be shut off, thus the pump can be replaced or serviced without draining the system.

Flat sealing 2" male connections

Incl. 2" union nut for the installation on PAW modular distribution manifolds. Using PAW mounting equipment the zone modules can be installed with wall brackets.

TECHNICAL DATA Zone Module K32		
Dimension		1 1/4" - DN 32
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	87 psi/6 bar
	Max. temperature	230 °F/110 °C
	CV value	6.8
	Dimensions	
	Zone module inlet	2" male
	Zone module outlet	1 1/4" NPT F
	Center distance	125 mm/4 21/32"
	Length	431 mm/17"
	Width insulation	250 mm/9 27/32"
	Height insulation	441 mm/17.4"
Recommended application	High/floating temperature zone control up to 87 kBTU/h/25.5 kW at ΔT = 18 °F/10 K	

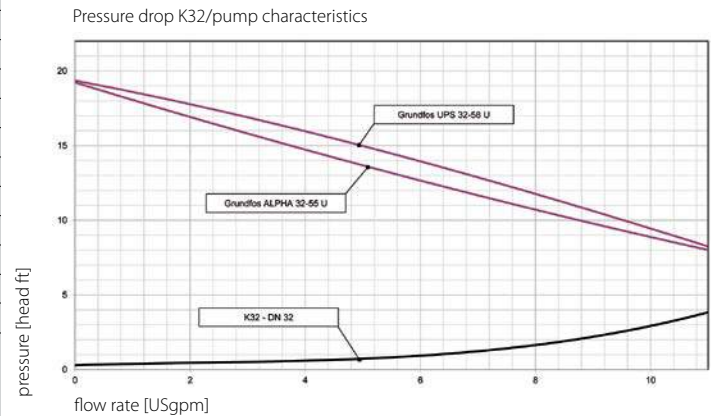
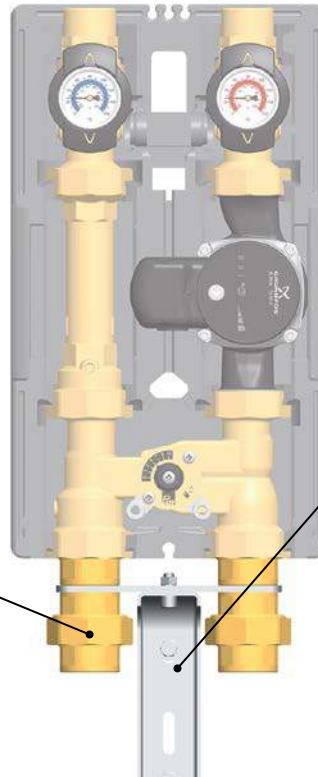


Illustration	Type	Information	PAW pump	Item #
	K32 1 1/4"	Advantages PAW pump: <ul style="list-style-type: none"> completely preassembled precisely integrated in the insulation pressure tested 3-speed or high-efficiency pump 	High efficiency pump:	
			Grundfos ALPHA 32-55 U	4739053GH6
			3-speed pump:	
			Grundfos UPS 32-58 U	4739053GR6



Assembly accessories for K32 zone module

1 1/4"/DN 32



Connection set 1 1/4" female

Consisting of 2 insertion pieces, for connecting pipes with 1 1/4" male under zone modules.

Item # 3731NA

Wall bracket set

Using the wall bracket and mounting plate centre distances from 142.5 mm (5.61") up to 167.5 mm (6.59") off the wall are possible.

Item # 3722SETNA

PAW-actuator type SR10-24/3P

For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with **3-wire motor output**.

Technical data:

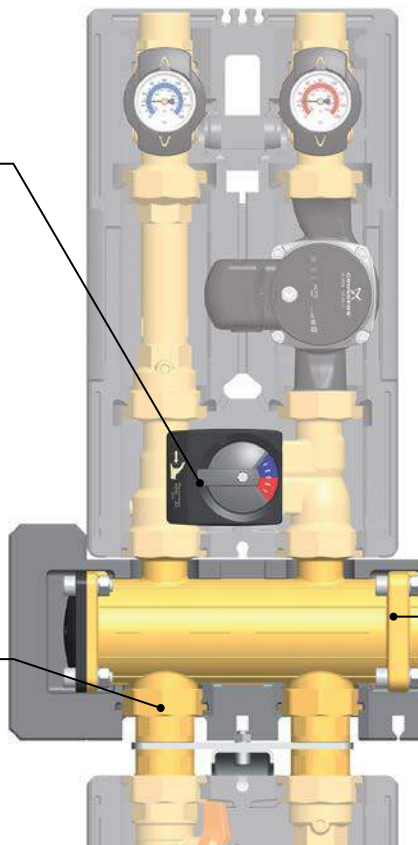
Electric connection: 24 VAC/DC
 Input power: 3.5 W (SR10)
 Actuation time 90°: 140 s

Item # 7054NA

Coupling piece for flow down assembly 1 1/4"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (see on the right).

Item # 3724NA



Modular distribution manifold 1 1/4"

Modular design, up to 510 kBTU/h/150 kW each boiler connection, completely made of brass. For a detailed description see page 48.

Item # 4737123 2-fold

Item # 4737133 3-fold

Item # 4737143 4-fold

Item # 4737153 5-fold

Item # 4737163 6-fold



Low temperature zone module K34

3-way mixing valve and adjustable bypass valve 0-50 %

1 1/4" / DN 32

For low-temperature heating controlled by a mixing valve

USE in closed loop design. Low Temperature Zone Module K34 is replacing conventional injection mixing systems. In conjunction with an electronic reset control and a direct drive actuator, the K34 modulates a 3-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds. Adjustable bypass diverts up to 50% of additional return water to the system supply and lowers supply temperature to ensure a specific low supply water temperature is maintained and

no thermal shock will occur in the radiant slab.

Sizing and piping: The K34 can handle radiant load demands of up to 218 KBTU/h. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K34. Multiple K34 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1 1/4" NPT female connections.

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

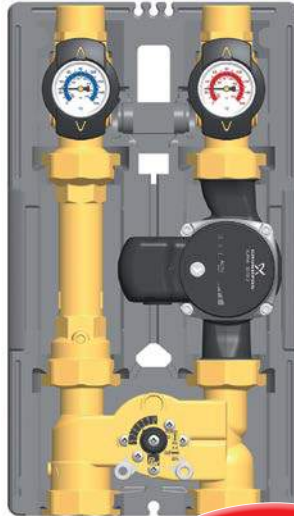
Free access to the pump head by simply pulling off the cover.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply line on the right or on the left

Supply and return line can be changed on site, the mixing valve can be changed without difficulties.



Check valve

Integrated in the mixing valve, prevents unwanted circulation.

All water-carrying parts are made of brass

All-metal temperature gauges can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

3-way mixing valve

completely made of brass, characteristic curve prevents variation in temperature. With the bypass valve (adjustable on the front) 0-50% of the water from the return line can be mixed to the flow line.

Flat sealing 2" male connections

incl. 2" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using PAW mounting equipment.

TECHNICAL DATA Zone Module K34		
Dimension		1 1/4" - DN 32
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	87 psi/6 bar
	Max. temperature	230 °F/110 °C
	CV value	10.8
Dimensions	Zone module inlet	2" male
	Zone module outlet	1 1/4" NPT F
	Center distance	125 mm/4 7/8"
	Length	431 mm/17"
	Width insulation	250 mm/9 7/8"
	Height insulation	441 mm/17.4"
Recommended application	High/floating temperature zone control up to 109.5 kBTU/h/32.0 kW at ΔT = 18 °F/10 K	

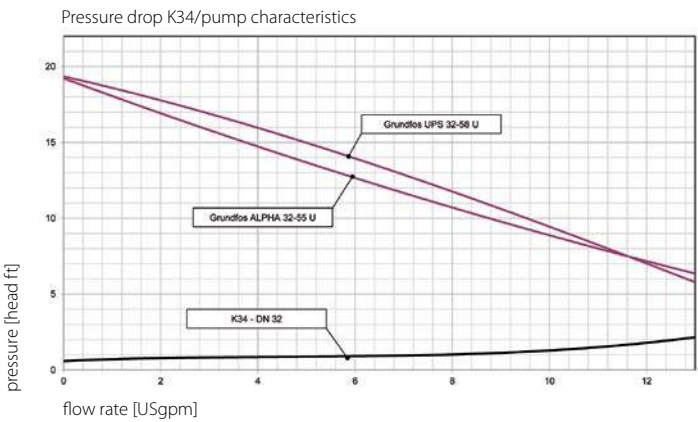
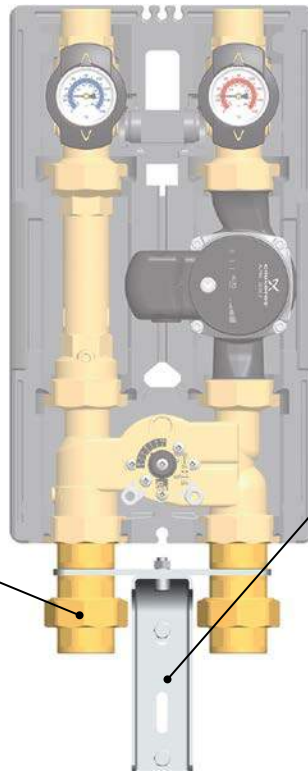


Illustration	Type	Information	PAW pump	Item #
	K34 1 1/4"	Advantages PAW pump: <ul style="list-style-type: none"> completely preassembled precisely integrated in the insulation pressure tested 3-speed or high-efficiency pump 	High efficiency pump:	
			Grundfos ALPHA 32-55 U	4739063GH6
			3-speed pump:	
			Grundfos UPS 32-58 U	4739063GR6



Assembly accessories for K34 zone module

1 1/4"/DN 32



Connection set 1 1/4" female

Consisting of 2 insertion pieces, for connecting pipes with 1 1/4" male under zone modules.

Item # 3731NA

Wall bracket set

Using the wall bracket and mounting plate centre distances from 142.5 mm (5.61") up to 167.5 mm (6.59") off the wall are possible.

Item # 3722SETNA

PAW-actuator type SR10-24/3P

For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with **3-wire motor output**.

Technical data:

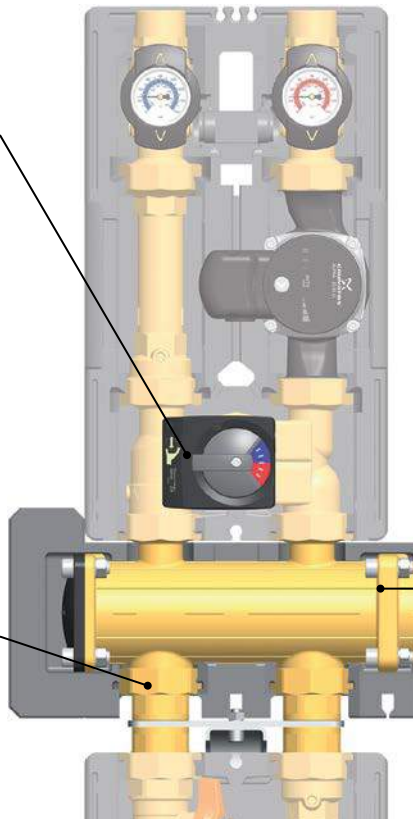
Electric connection: 24 VAC/DC
 Input power: 3.5 W (SR10)
 Actuation time 90°: 140 s

Item # 7054NA

Coupling piece for flow down assembly 1 1/4"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (see on the right).

Item # 3724NA



Modular distribution manifold 1 1/4"

Modular design, up to 510 kBTU/h/150 kW each boiler connection, completely made of brass. For a detailed description see page 48.

Item # 4737123 2-fold

Item # 4737133 3-fold

Item # 4737143 4-fold

Item # 4737153 5-fold

Item # 4737163 6-fold



K36E zone module with integrated temperature/flow bypass valve

1 1/4" / DN 32

With thermal control valve, to compensate temperature differences in solid fuel boilers as well as in wood firing and stove heating systems

Features:

2" female connections

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Free access to the pump head by simply pulling off the cover.

Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply on the right = standard

The supply and return line can be changed on site.

All water-carrying parts are made of brass.

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets.

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

For technical reasons electronically controlled pumps are not recommended in the K36E zone module!

Flat sealing 2" male connections

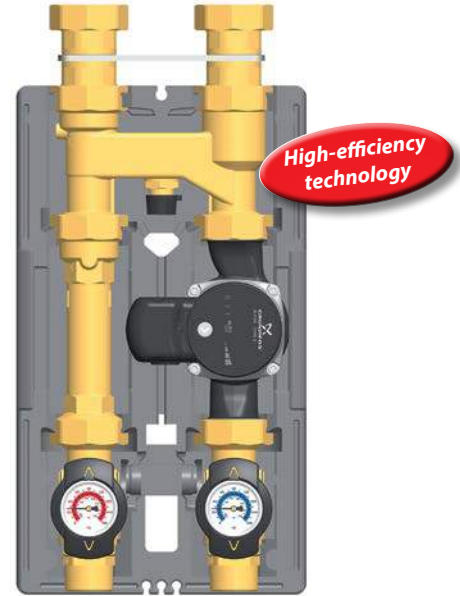
Incl. 1 1/2" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using the PAW mounting equipment.

Thermal control valve with automatic bypass and integrated bypass overflow valve

ensures that the boiler always keeps a minimum temperature (= opening temperature +/- 5 °F, +/- 3 °C) and prevents the boiler from contamination.

The special feature of the thermal control valve of the K36E heating circuit is the integrated **bypass overflow valve**. By means of this adjustable valve the K36E can be adjusted optimally to all possible working and mounting conditions:

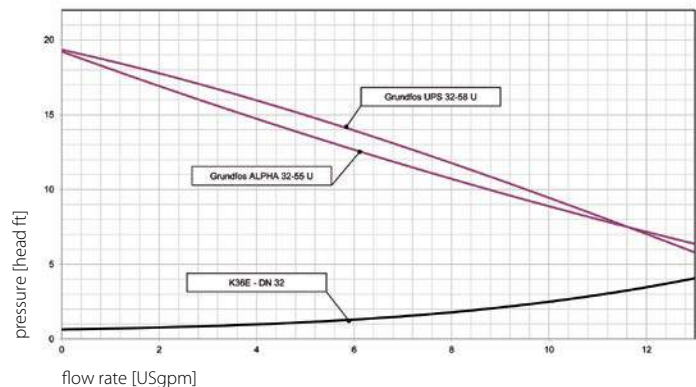
- When mounted to a buffer storage tank or a hydraulic separator the overflow valve must be closed. When the opening temperature in the boiler circuit is achieved, the power of the integrated boiler pump is high enough to load the storage tank/ hydraulic separator.
- When mounted to distribution manifolds the pump pressure is reduced by means of the integrated bypass valve. The pump must operate at speed stage II. Unwanted circulation, for example excessive charging of potable water storage tanks is prevented this way.



TECHNICAL DATA Zone Module K36E

Dimension	1 1/4" - DN 32	
Opening temperature	113 °F/140 °F 45/60 °C	
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	87 psi/6 bar
	Max. temperature	230 °F/110 °C
	CV value	8.3
Dimensions	Zone module inlet	2" female
	Zone module outlet	1 1/4" female
	Center distance	125 mm/4 11/32"
	Length	431 mm/17"
	Width insulation	250 mm/9 27/32"
	Height insulation	441 mm/17.4"
Recommended application	High/floating temperature zone control up to 102.5 kBTU/h/30.0 kW at ΔT = 18 °F/10 K	

Pressure drop K36E/pump characteristics





K36E zone module with integrated pressure bypass valve

1 1/4" / DN 32

With thermal control valve, to compensate temperature differences in solid fuel boilers as well as in wood firing and stove heating systems

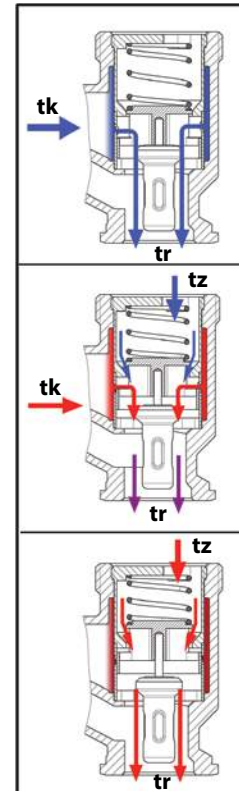
Thermal control valve with bypass and integrated overflow valve

Function:

1. The thermal control valve shuts off the connection to the heating/storage tank (load) as long as the water in the boiler circuit is colder than the opening temperature of the thermal control valve. The pump in the K36E circulates the water in the boiler loop by means of the automatic bypass which is completely open.
2. When the water in the boiler circuit has reached the opening temperature (+/- 5 °F) of the thermal control valve this valve opens the flow from/to the load. The bypass shuts off to the same extent as the flow to the load is opened. The control valve opens the return line of the load and enables the water to circulate in the circuit depending on the setting of the integrated pressure bypass valve. The cold water from the consumer return line is mixed in the control valve with the hot water from the bypass. Depending on the temperature and the flow rate of the water from the return line the thermal control valve shuts off the connection to the lead. Thus the return line which leads to the boiler always remains at a certain temperature level.
3. With rising temperature in the boiler supply line or rising temperature in the return line from the load the thermal control valve opens (the flow connection to the lead). The temperature of the return line of the boiler remains nearly constant (+/- 5 °F, +/- 3 K).

Please notice:

The boiler thermostat setpoint has to be set 36 °F (20 K) higher than the opening temperature of K36E.



Boiler temperature tk is lower than the opening temperature; tr = tk

Boiler temperature tk is higher than the opening temperature. tr is approximately equivalent to the opening temperature.

Return line temperature tz from the consumer is higher than the opening temperature; tr = tz

Illustration	Option	Information	PAW pump	Item #
	K36E Opening temp. 113 °F/45 °C	Advantage PAW pump: • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump	High efficiency pump: Grundfos ALPHA 15-55 F	47390343GH6
			3-speed pump: Grundfos UPS 15-58 F	47390343GR6
	High efficiency pump: Grundfos ALPHA 15-55 F		47390373GH6	
	3-speed pump: Grundfos UPS 15-58 F		47390373GR6	
	Wall bracket set for PAW zone modules Not required for installation in connection with a PAW modular distribution manifold. Using the wall bracket, wall distances from 87.5 mm (3.44") up to 162.5 mm (6.4") are possible. Consists of: steel wall bracket, galvanized, fasteners.			
	Wall bracket for for PAW zone modules 1"			3422NA
	Connection set DN 25			
	2 x tail piece 1 1/2" male for nut thread 1" NPT, brass			3432NA



Low temperature zone module K38 with 4-way mixing valve

1 1/4" / DN 32

For heating mode with minimum temperature set by a mixing valve

USE in closed loop design. Low Temperature Zone Modules K38 are replacing conventional injection mixing system. In conjunction with an electronic reset control and a direct drive actuator, the K38 modulates a 4-way valve, diverts and mixes radiant return water with hot water from the boiler. The constant speed system circulator delivers the required water temperature to the radiant loop manifolds.

Sizing and piping: The K38 can handle radiant load demands of up to 177 KBTU/h. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the K38. Multiple K38 modules can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 2 connections and your installation is complete.

Features:

1 1/4" NPT female connections.

Large ball valve handles

Easy handling, visible closing position.

Design insulation with optimized function made of durable elastic EPP, **100% insulation of the fittings**, ventilation openings to cool the pumps.

Free access to the pump head by simply pulling off the cover.

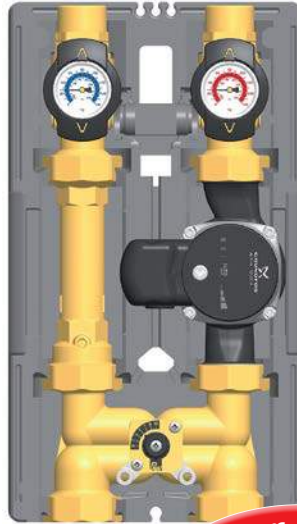
Check valve in return pipe

prevents noise when electronically controlled pumps are used, manual opener, 200 mm water column (7.9" head), spring-operated, thus suitable for horizontal and overhead installation.

Supply on the right = standard

Supply and return line can be changed on site.

All water-carrying parts are made of brass.



High-efficiency technology

All-metal temperature gauges

can be pulled off, integrated in the ball valve with an immersion sleeve.

Fully assembled with flat gaskets

PAW heating circulation pumps - threaded

already installed, integrated in the insulation, pressure tested, serial numbered.

4-way mixing valve

completely made of brass, suitable for operation with a boiler circuit pump when installing a single zone module, work on primary circuit is possible by closed supply line (a change in the boiler circuit with closed supply line is possible). **When installed on a distribution manifold the return line of the mixing valve must be equipped with a check valve to prevent unwanted circulation.**

Flat sealing 2" male connections

incl. 2" union nut for the installation on PAW modular distribution manifolds. Individual installations with wall brackets are possible by using PAW mounting equipment.

TECHNICAL DATA Zone Module K38		
Dimension		1 1/4" - DN 32
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	87 psi/6 bar
	Max. temperature	230 °F/110 °C
	CV value	7.3
Dimensions	Zone module inlet	2" male
	Zone module outlet	1 1/4" NPT F
	Center distance	125 mm/4 ²¹ / ₃₂ "
	Length	431 mm/17"
	Width insulation	250 mm/9 ²⁷ / ₃₂ "
	Height insulation	441 mm/17.4"
Recommended application	High/floating temperature zone control up to 89 kBTU/h/26.0 kW at ΔT = 18 °F/10 K	

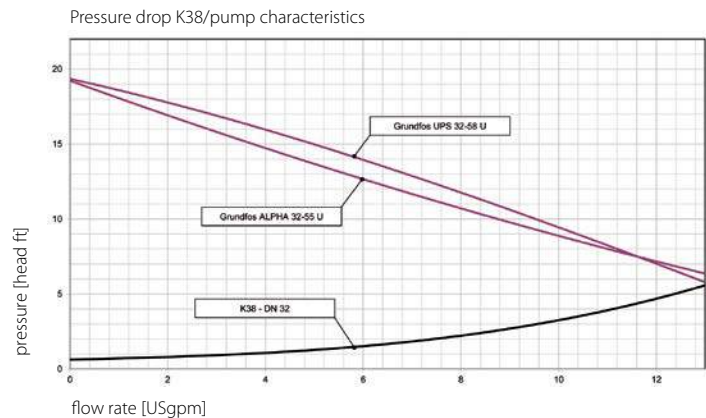
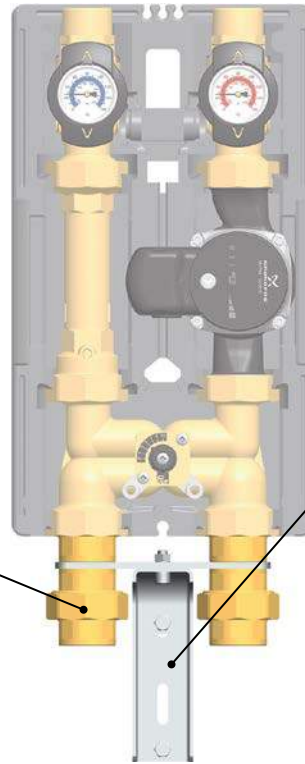


Illustration	Type	Information	PAW pump	Item #
	K38 1 1/4"	Advantages PAW pump: <ul style="list-style-type: none"> • completely preassembled • precisely integrated in the insulation • pressure tested • 3-speed or high-efficiency pump 	High efficiency pump:	
			Grundfos ALPHA 32-55 U	4739083GH6
			3-speed pump:	
			Grundfos UPS 32-58 U	4739083GR6



Assembly accessories for K38 zone module

1 1/4"/DN 32



Connection set 1 1/4" female

Consisting of 2 insertion pieces, for connecting pipes with 1 1/4" male under zone modules.

Item # 3731NA

Wall bracket set

Using the wall bracket and mounting plate centre distances from 142.5 mm (5.61") up to 167.5 mm (6.59") off the wall are possible.

Item # 3722SETNA

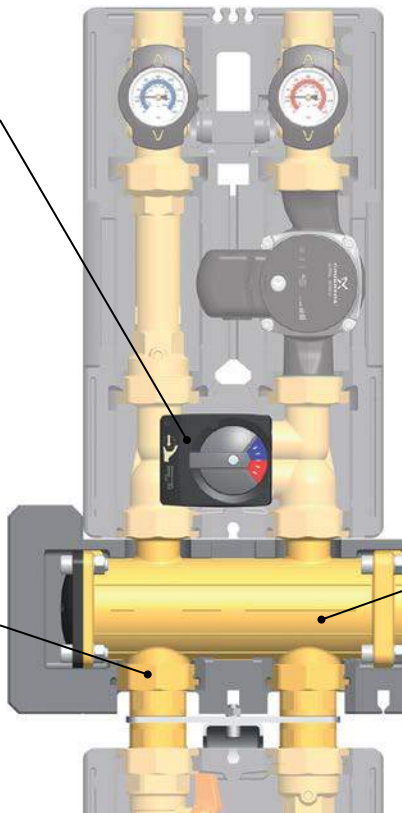
PAW-actuator type SR10-24/3P

For weather-compensated controls. Simple assembly and disassembly thanks to the patented PAW halting technique, with 5 ft cable and mounting set for halting assembly onto the PAW mixing valve. Change-over switch for manual/automatic operation. Thanks to the removable scale it is suitable for flow on the right or left side. For controllers with **3-wire motor output**.

Technical data:

Electric connection: 24 VAC/DC
 Input power: 3.5 W (SR10)
 Actuation time 90°: 140 s

Item # 7054NA



Coupling piece for flow down assembly 1 1/4"

For installing a zone module under a distribution manifold. **Please note:** when using wall brackets an additional mounting plate for the assembly of a 2-fold MV2 modular distribution manifold is necessary (see on the right).

Item # 3724NA

Modular distribution manifold 1 1/4"

Modular design, up to 510 kBTU/h/150 kW each boiler connection, completely made of brass. For a detailed description see page 48.

Item # 4737123 2-fold

Item # 4737133 3-fold

Item # 4737143 4-fold

Item # 4737153 5-fold

Item # 4737163 6-fold



Modular distribution manifold

1 1/4"/DN 32

USE in closed loop design. Modular design distribution manifolds allow parallel connection of multiple zone modules in order to customize any installation. Available in 2- to 6-sectional designs, for the connection of 2 to 9 zone modules, they simplify installation, extremely shorten assembly time, providing cost and time savings.

Union connections make mounting of zone modules to the manifold fast and easy. Supply and return chambers of the manifold are thermally divided. An extension module allows trouble-free connection of additional zone modules to an existing system. No special piping, just 2 connections and your installation is complete.

Features:

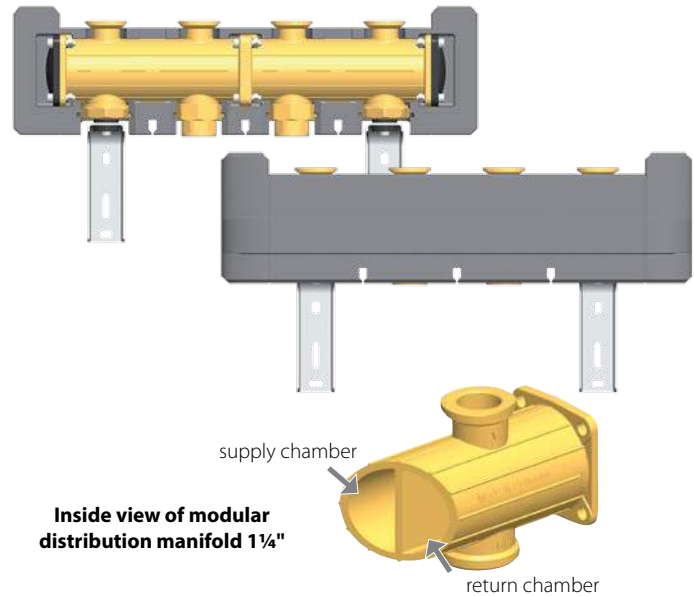
Heating distribution manifold 1 1/4"

Modular design, for outputs up to 512 kBTU/h/150 kW per boiler connection

- completely made of brass
- completely pre-assembled
- completely insulated with EPP
- extremely low resistance, free flow diameter = 50 mm (2")
- up to six pre-assembled manifold modules available
- multiple connection of the boiler possible, for larger power outputs
- with wall bracket

TECHNICAL DATA Modular distribution manifold

Dimension		1 1/4" - DN 32
Materials	Fittings	Brass
	Gaskets	EPDM/NBR
	Insulation	EPP
Technical data	Max. pressure	72.5 psi/5 bar
	Max. temperature	230 °F/110 °C
	CV value	20.6
Connections	for zone modules	1 1/4" PAW flange for 2" nut (top)
	for boilers	1 1/4" female x 2" male - flat-sealing (bottom) 2 x for boiler connection, rest plugged
	on the side	1" female, plugged for safety group and expansion tank
Dimensions	Center distance	125 mm/4 ²⁹ / ₃₂ "
	Installation height	156 mm/6.1"
	Height of insulation	156 mm/6.1"
	Width	see item list below
Recommended application	Floating action temperature control up to 256 kBTU/h/75.0 kW	at ΔT = 18 °F/10 K



Inside view of modular distribution manifold 1 1/4"

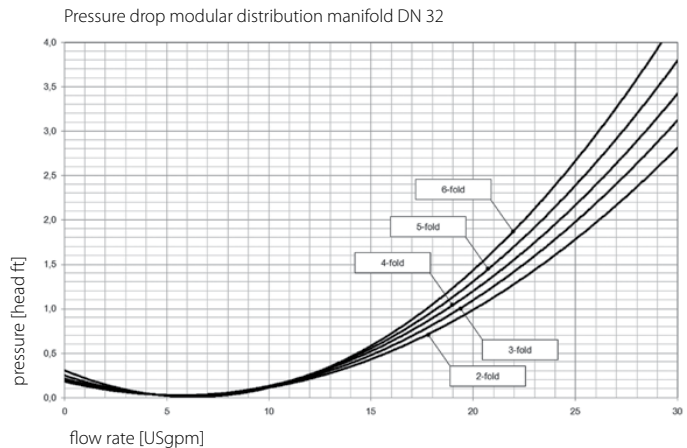


Illustration	Type	Options	Item #
	MV 1 1/4" DN 32	MV 2 modular distribution manifold 2-fold for connection of up to 3 zone modules Width incl. insulation: L = 625 mm/24.6"	4737123
		MV 3 modular distribution manifold 3-fold for connection of up to 5 zone modules Width incl. insulation: L = 875 mm/34.5"	4737133
		MV 4 modular distribution manifold 4-fold for connection of up to 7 zone modules Width incl. insulation: L = 1,125 mm/44.3"	4737143
		MV 5 modular distribution manifold 5-fold for connection of up to 9 zone modules Width incl. insulation: L = 1,375 mm/54.1"	4737153
		MV 6 modular distribution manifold 6-fold for connection of up to 11 zone modules Width incl. insulation: L = 1,625 mm/64"	4737163

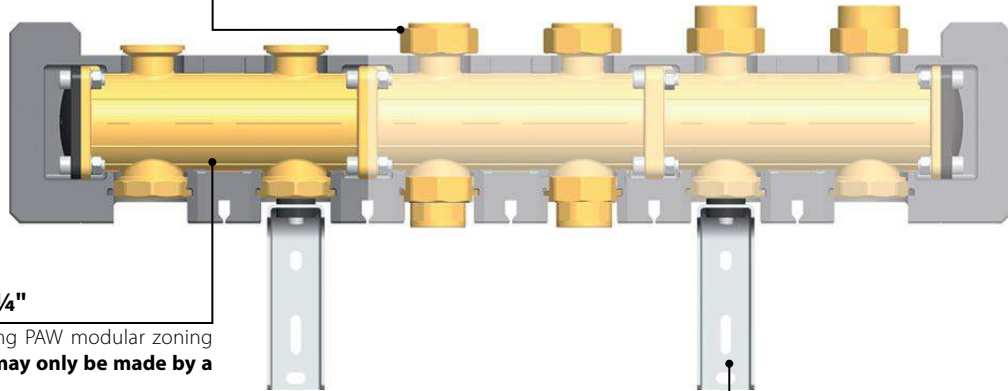
Assembly accessories for the modular distribution manifold

1 1/4"/DN 32

Reducer set

For the installation of 1" zone modules on 1 1/4" modular distribution manifolds, adaptor set 2" male, flat-sealing with nut on 1 1/2" female flat-sealing, brass on 1 1/2" female flat-sealing, brass, with seals. Two types:

Item # 37351NA	Height 11 mm
Item # 3735NA	Height 24 mm



Extension module 1 1/4"

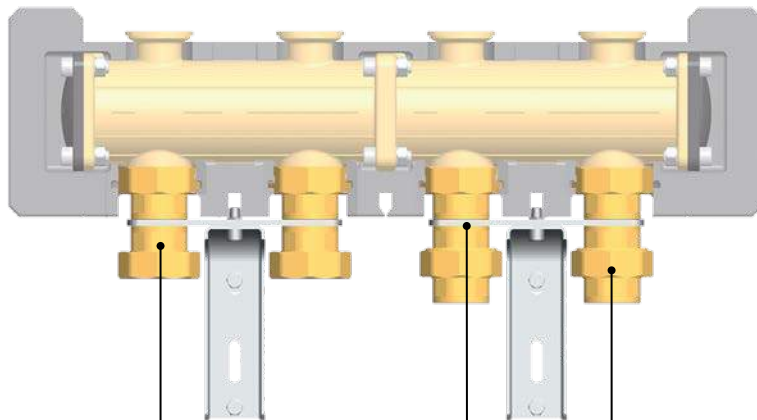
For the extension of existing PAW modular zoning systems. **The installation may only be made by a qualified technician!**

Item # 4737113

Wall bracket set

Two wall brackets in a set, steel, galvanized, suitable for wall distances of 100 mm/3 15/16", 155 mm/6 1/8" or 180 mm/7 3/32", with mounting equipment. For 5-fold and larger MV modular distribution manifolds two wall bracket sets are recommended. Included in the manifold.

Item # 4734721



Coupling piece for flow down assembly 1 1/4"

For installing a zone module under a distribution manifold. **Please note:** When using wall brackets an additional mounting plate for installing a MV 2-fold modular distribution manifold is necessary (see on the right).

Item # 3724NA

Connection set DN 32

Consisting of two inserts, for connection of pipes with 1" external thread below HeatBloCs or for the use of cutting-ring compression fittings and clamping-ring compression fittings.

Item # 3731NA

Mounting plate 1 1/4"

For installation under a modular distribution manifold and for attaching wall brackets. Necessary when all lower outlet connections are occupied.

Item # 3725NA



Safety set for modular distribution manifold DN 32

Up to 100 kW, with safety valve 3/4" x 1", 3 bars, pressure gauge 0-4 bars. For mounting on the distribution manifold on the right DN 32, 1" internal thread for connecting a diaphragm expansion tank.

Item # 4752553

MW hydraulic separator for modular systems

1 1/4" / DN 32

USE in closed loop design. In conjunction with boilers having high resistance (condensing) or when total flow rate of all parallel running circulators is higher than maximum flow rate of the boiler, the low-loss header provides hydraulic separation, decoupling boiler and system circuits from each other. It is recommended to use the low-loss header in applications in which the total system flow rate exceeds the maximum boiler flow rate. PAW strongly recommends the use of a low-loss header in cases where the system head and flow rates are unknown.

Function

When used in conjunction with boilers having a built-in pump, the low-loss header acts as hydraulic break, decoupling boiler and system circuits from each other. It is recommended to use the low-loss header in applications in which the total system flow rate exceeds the maximum boiler flow rate. PAW strongly recommends the use of a low-loss header in cases where the system head and flow rates are unknown. These are typical functional conditions. Following is an example of three possible situations of hydraulic stability.

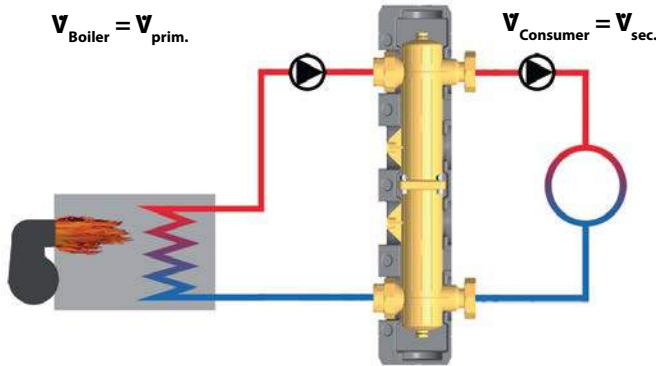
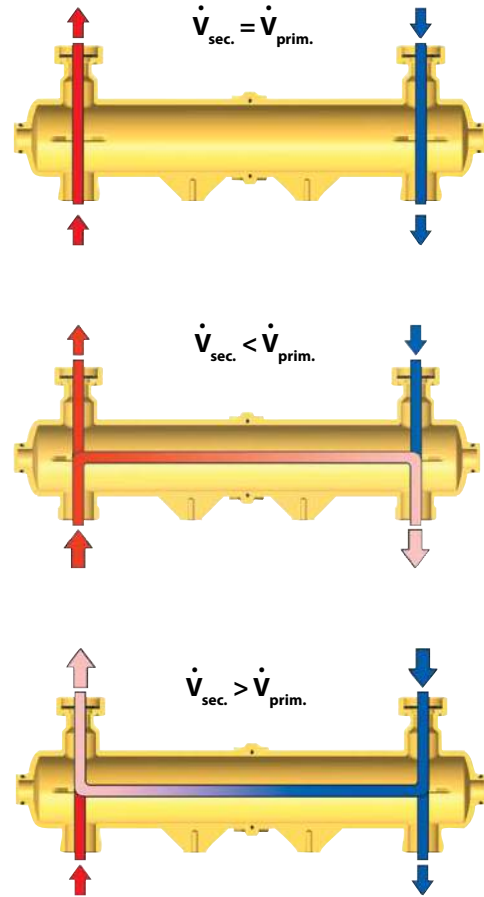
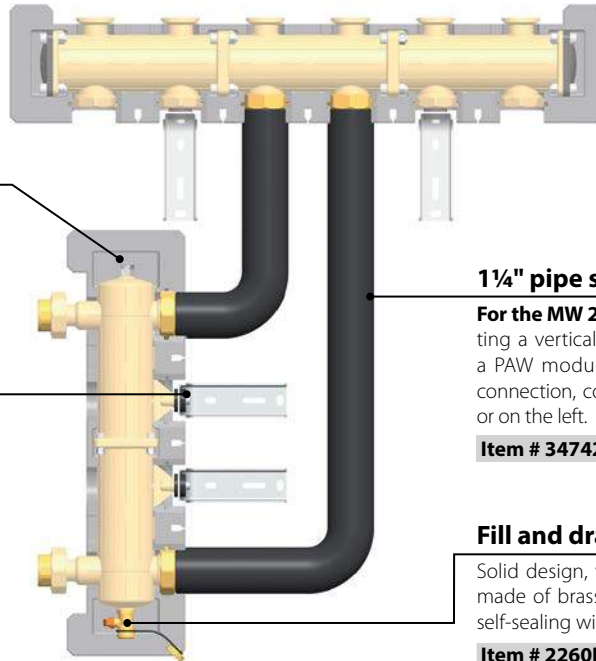


Illustration	Type/Characteristics	Item #
<p>Suitable for vertical or horizontal installation</p>	<p>MW 32 hydraulic separator up to 21.1 USgpm/191 kBTU/h/56 kW at $\Delta T = 18^\circ\text{F}/10\text{ K}$ Completely made of brass, completely insulated with EPP insulation, for the installation under a modular distribution manifold 1" or separately (vertically or horizontally) on the wall.</p> <p>Connections: PAW flange with 2" union nut, 2" male / 1 1/4" female with 1 1/4" NPT female adaptor, 2 x 1/2" female for immersion sleeve and fill and drain valve, width of insulation = 600 mm/23 5/8", installation height = 200 mm/7.7" distance between connections = 375 mm/14.8"</p>	
	<p>MW 32 hydraulic separator up to 21.1 USgpm/191 kBTU/h/56 kW</p>	47374213
	<p>Hydraulic separator 1 1/4" up to 11.5 USgpm/103 kBTU/h/30 kW at $\Delta T = 18^\circ\text{F}/10\text{ K}$ Completely made of brass, with routed supply and return line, for the installation under a single modular distribution manifold 1 1/4". Completely insulated. Can also be installed under a modular distribution manifold 1 1/4" (by using the mounting plate item 3725NA).</p> <p>Connections: 1 1/4" PAW flange for 2" nut (above), 1 1/4" female x 2" male flat-sealing (below) with fitting, 3/4" female closed with plug (on the side), width = 330 mm, installation height = 125 mm, distance between the connections = 125 mm</p>	
	<p>Hydraulic separator 1 1/4" up to 11.5 USgpm/103 kBTU/h/30 kW</p>	47374203



Assembly accessories for the MW hydraulic separator

1 1/4"/DN 32



Immersion sleeve

For supply line sensor/boiler sensor, connection 1/2" male, for sensor diameter of 6 mm/1/4", depth = 60 mm/2 11/32", chromed brass.

Item # 566002NA

Wall bracket set for 1 1/4" hydraulic separator

Two wall brackets in a set, steel, yellow galvanized, suitable for wall distances of 155 mm /6 1/8", or 180 mm/7 3/32", incl. mounting equipment.

Item # 3721NA

1 1/4" pipe set

For the MW 25/32 hydraulic separator, for connecting a vertically mounted hydraulic separator under a PAW modular distribution manifold, flat-sealing connection, completely insulated, outlet on the right or on the left.

Item # 34742KS1NA

Fill and drain valve

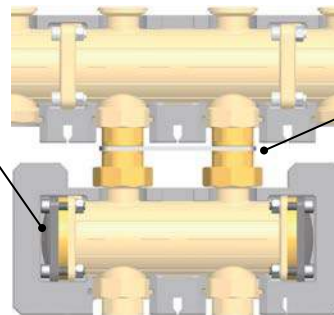
Solid design, with hose nozzle and cap, completely made of brass, plastic handles, connection 1/2" male self-sealing with counter nut.

Item # 2260NA

Conversion kit for the modular distribution manifold 1 1/4"

For extending additionally a distribution manifold with an integrated hydraulic separator (**low-loss header**). **Application range: Up to 11.4 USGpm/2600 l/h, max. up to MV 3-fold modular distribution manifold!** Consisting of two distance rings for a resistance-free connection of the supply and return chamber, incl. screws and O-rings.

Item # 4737431



1 1/4" mounting plate

For installation under a modular distribution manifold and for attaching a 1 1/4" hydraulic separator, up to 11.4 USGpm/2600 l/h.

Item # 3725NA

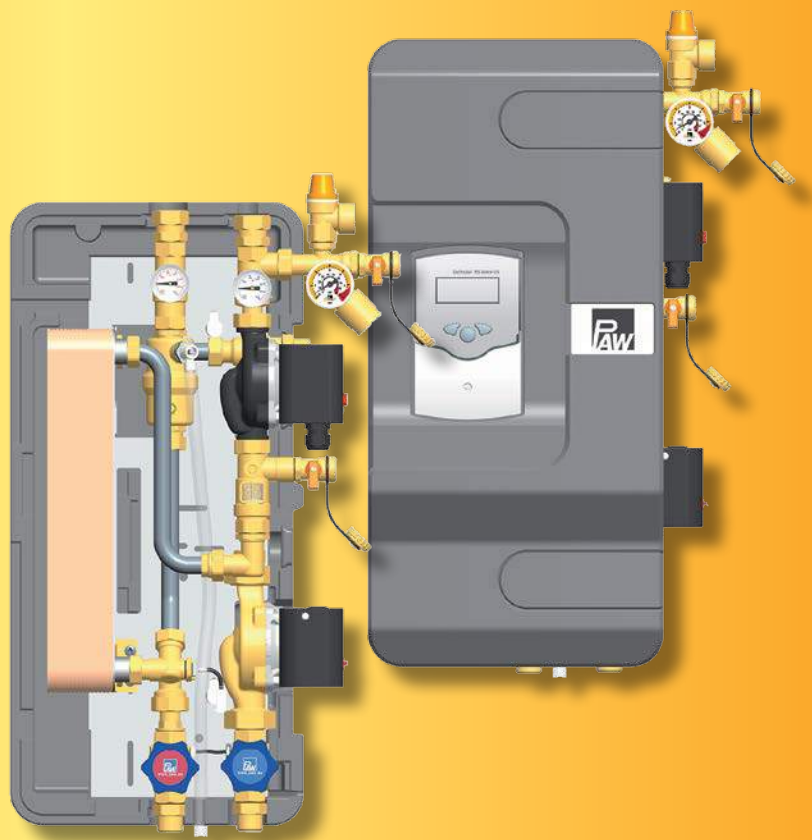
Low-loss headers are used for boilers with an integrated pump. By means of the conversion kit the modular distribution manifolds have a bypass which connects the supply and return line without causing resistance (low-loss header).

It must be considered that the pump of the boiler circuit must deliver a higher flow rate than the consumer pumps need in total. Otherwise, unwanted circulation occurs on the right or left end of the distribution manifold. In that case a hydraulic separator (item 3742NA or 37421NA) must be installed under a distribution manifold.

Please note: If a low-loss header can be used must be checked when the system is planned. In connection with central heating boilers hydraulic separators must be installed before/under a distribution manifold as the boiler delivers a low flow rate with a high temperature difference (leads to unwanted circulation on low-loss headers).

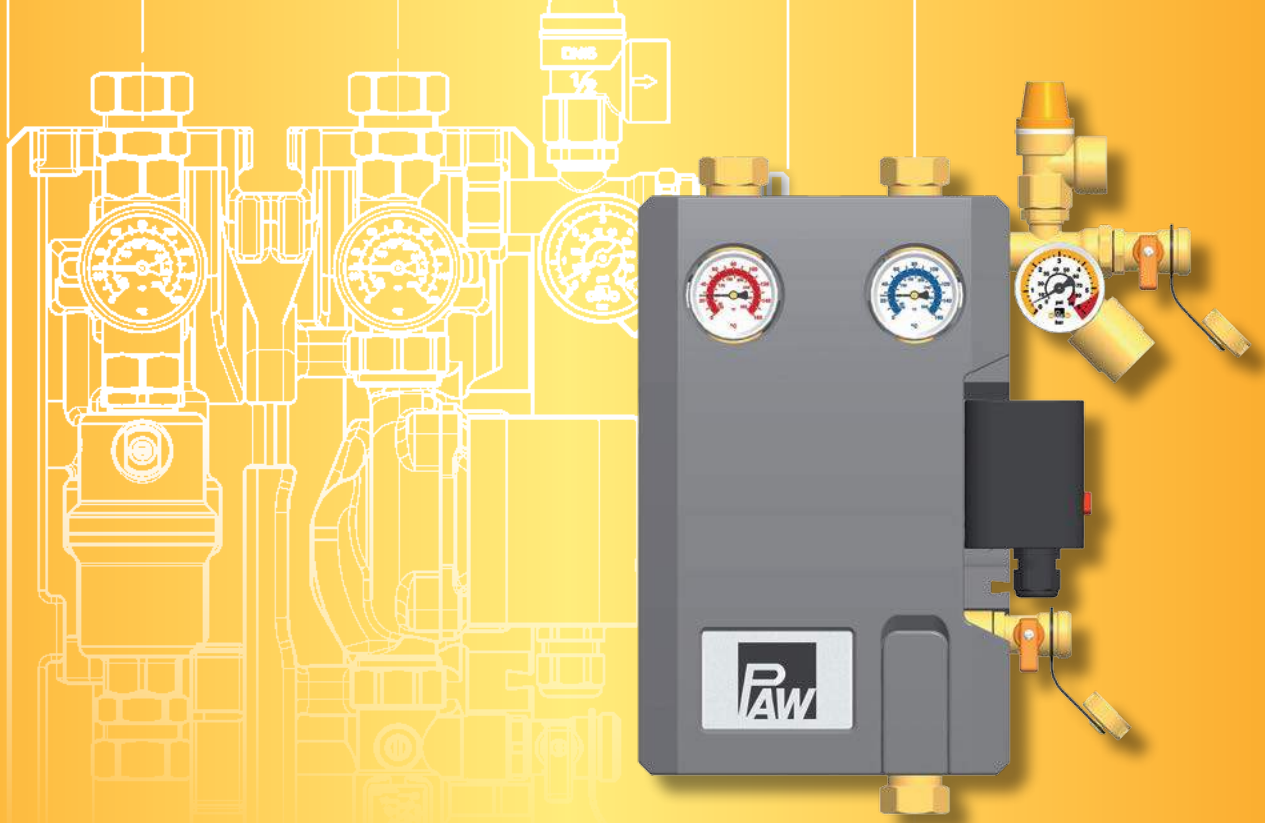
Recommended application:
 up to 512 kBTU/h/150 kW
 at ΔT = 36 °F/20 K

Illustration	Type	Options	Item #
	MVW 1 1/4" DN 32	MVW 2 low loss header, 2-fold Up to 3 zone modules can be installed Width incl. insulation : L = 600 mm/23 5/8"	47374223
		MVW 3 low loss header, 3-fold Up to 5 zone modules can be installed Width incl. insulation: L = 850 mm/33 15/32"	47374233



Solar thermal systems

Modular system for solar thermal installations			
Module	Product	Short description	Page
Solar station FlowCon	Solar station with integrated controller	FlowCon C+ Premium Evolution II	56 - 57
	Solar station with integrated controller	FlowCon C+ Evolution II	58 - 59
	Solar station with flowmeter and airstop	FlowCon FA Evolution II	60 - 61
	Extension kit for systems with 2 collector fields or 2 tanks	FlowCon Extension kit	62 - 63
	Assembly accessories		64 - 65
Solar station FlowCon MAX	Solar station with integrated controller	FlowCon MAX C+ Premium Evolution II	66 - 67
	Solar station with flowmeter and airstop	FlowCon MAX FA Evolution II	68 - 69
Solar heat transfer unit Solex	Solar heat transfer unit solar heat transfer unit	SolexDWHX - ¾" SolexDWHX - 1"	72 - 73
	Solar heat transfer unit	SolexDWHX XL - 1"	74 - 75
General Terms and Conditions			76 - 77
Manufacturer's warranty			78



Solar thermal systems

Product	Solar Stations		Solar heat transfer units			
Performance	FlowCon		SolexDWHX			XL
Diameter	¾"	1"	¾"		1"	1"
Type	FlowCon	FlowCon Max	6094602GS8US 6094602US	6094603GS8US 6094603US	6094604US	6094866WHUS
Max. flow rate	4.4 USgpm 1,000 l/h	6.6 USgpm 1,500 l/h	2.6 USgpm 600 l/h	4.4 USgpm 1,000 l/h	6.6 USgpm 1,500 l/h	13.2 USgpm 3,000 l/h
Max. collector surface low-flow (0.5 G/ft ² h)	540 ft ² 50 m ²	750 ft ² 70 m ²	320 ft ² 30 m ²	540 ft ² 50 m ²	750 ft ² 70 m ²	1,500 ft ² 140 m ²
Max. collector surface high-flow (1 G/ft ² h)	270 ft ² 25 m ²	380 ft ² 35 m ²	160 ft ² 15 m ²	270 ft ² 25 m ²	380 ft ² 35 m ²	750 ft ² 70 m ²
See page	56 - 63	66 - 69	70 - 71		72 - 73	74 - 75



Features of PAW solar stations

PAW solar stations and heat transfer systems are designed for use in closed loop solar thermal systems working with glycol.

- The pump modules offer a lot of functions which make the installation easier, prevent installation mistakes and improve the performance of your solar thermal plant.

Features of every unit:

- All water-carrying parts are made of brass.
- All sealing components are high temperature resistant up to 266 °F/130 °C (320 °F/160 °C - short term)
- Flowmeters are adjustable to set the correct flow rate. High quality bora silicate glass.
- Check valves are integrated in every line in the solar loop. They are made of brass for high pressure and temperature resistance.
- Airstops in the supply line help to deaerate your system easily
- All pumps used in PAW solar pump modules are UL-certified and equipped with 3-speed motors.

Range of application of the solar stations:

Solar thermal systems are divided into "high-flow" and "low-flow" systems depending on their operational mode.

"high-flow" systems are characterized by a flow rate of 0.6-1.0 gals./ft² solar panel surface and hour which corresponds to 0.42-0.67 l/(m² x min).

"low-flow" systems are operated with 0.25-0.5 gals./ft² solar panel surface and hour which corresponds to 0.17-0.33 l/(m² x min).

The flow rate being circulated in the system depends on the operational mode, the solar panel 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 losses which occur in the heat exchanger, the solar panels and inside the fittings of the system.

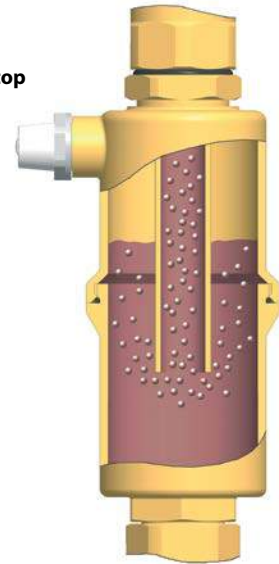
In the description of the products the ranges of application/solar panel surfaces are mentioned.

For low-flow systems a specific flow rate of 0.2 l/(m² x min) was assumed; for high-flow systems we calculated with 0.5 l/(m² x min).

These values can only serve as a first help for the dimensioning.

It is always essential to carry out a complete dimensioning of the system!

PAW Airstop



PAW Flowmeter



PAW high temperature check valve



PAW handle with integrated temperature gauge



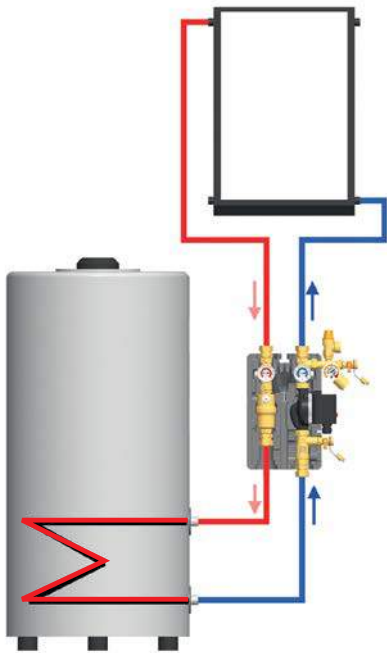
PAW isolation valve



Solar systems with PAW pump modules

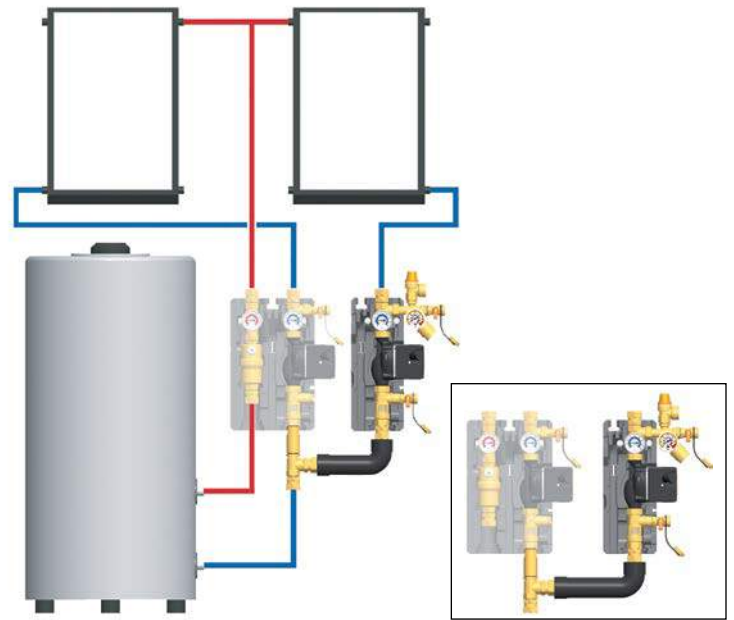
FlowCon Evolution II, FlowCon MAX Evolution II

One solar panel field, single storage tank with integrated heat exchanger



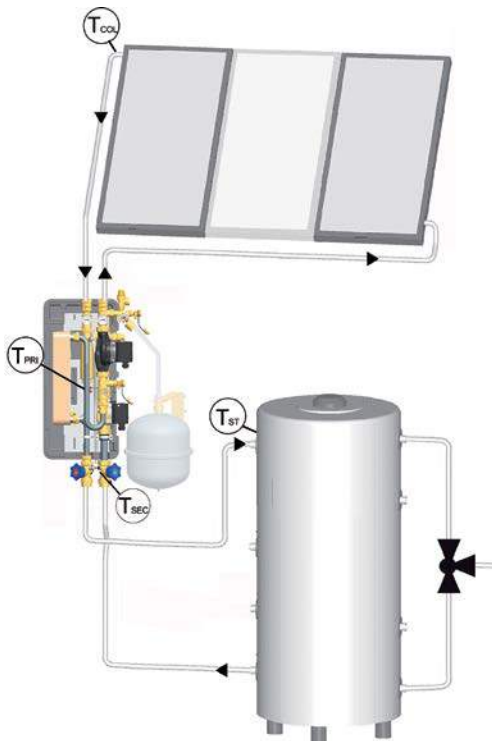
FlowCon extension kit

Two independently operated solar panel fields, one storage tank with integrated heat exchanger



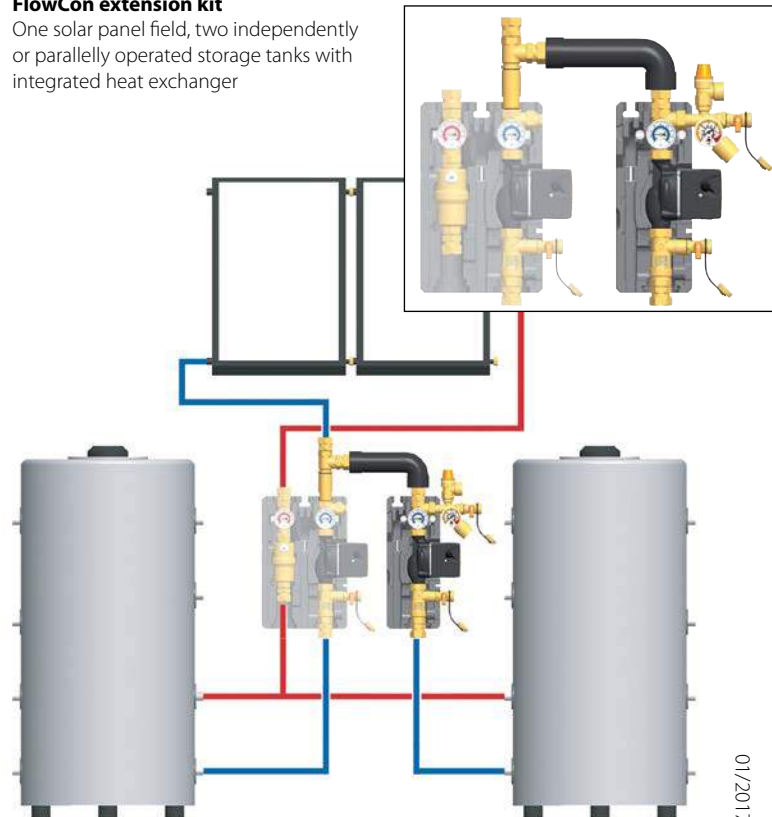
SolexDWHX

One solar panel field, one buffer storage tank without heat exchanger



FlowCon extension kit

One solar panel field, two independently or parallelly operated storage tanks with integrated heat exchanger





Solar station FlowCon C+ Premium Evolution II with integrated controller

3/4"/DN 20

USE in closed loop design only. The circulation unit is used on the primary circuit of solar heating systems to control the temperature in the hot water storage. The pump inside the unit is activated by the signal from the differential temperature controller. In addition, this unit contains the functional and safety devices for optimum circuit control.

Features:

All medium-bearing parts are made of brass.

All connections 3/4" compression fitting.

With pre-assembled steel wall bracket.

Full port ball valve in return pipe.

Check valve inside the supply and return ball valve, manual opener, thanks to 45° position of the ball valve handle, 200 mm wc (7.9" head) each, special design for solar thermal systems, avoids gravity circulation.

Large ball valve handles easy grip and visible closing position.

Airstop in the supply line for a permanent deaeration of the heat transfer medium.

Function-optimized design insulation made of durable elastic EPP; **100% insulation of the fittings** – excellent pump ventilation and cooling.

Solar controller integrated into the insulation, pre-wired and splash-proof.

Solar safety assembly pressure relief valve 87 psi/6 bar, high-temperature pressure gauge 0-87 psi/0-6 bar, with shut off valve, drain valve for flushing and filling, flat sealing connection for expansion tank.

Full metal solar temperature gauges, 32-320°F/0-160 °C can be pulled off, with immersion sleeve integrated in the ball valve.

Fully assembled with flat sealing union connections

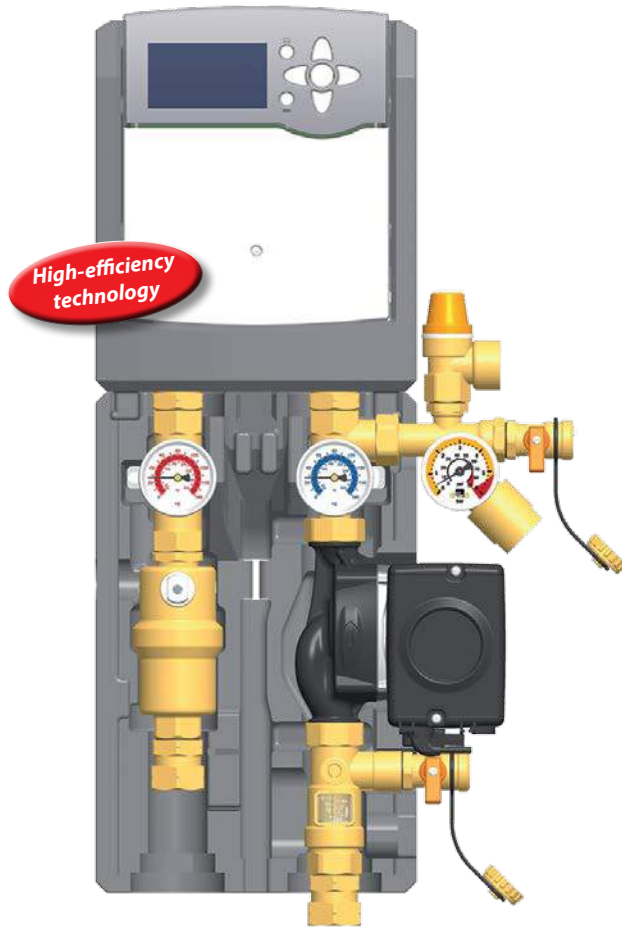
With high-efficiency pump by Grundfos

Pump can be completely isolated, no draining necessary during servicing.

Flowmeter Flow quantity measuring device with adjustable flow quantity gauge and function control device, installed in the (cold) return - up to 266 °F/130 °C heat resistant – two measurement ranges: 0.8-6 USgpm or 3-22 l/min.

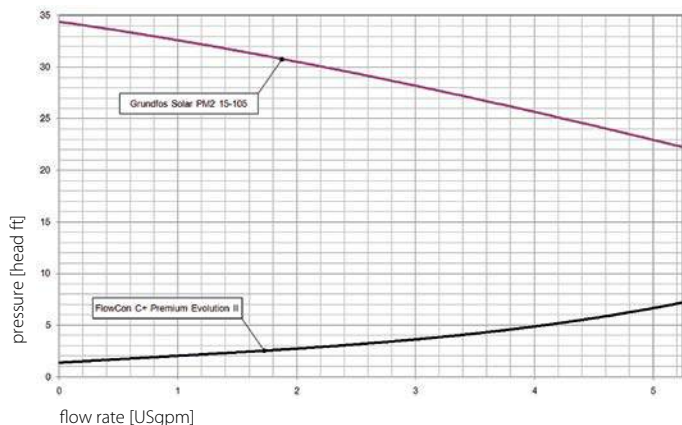
Flushing and filling unit integrated two drain valves (at the flowmeter and at the safety assembly) permit filling and flushing the system.

- The unit components enable:**
- Medium circulation with specific pump
 - Safety against pressure increase
 - Accurate flow rate control
 - Filling/draining the circuit
 - Measuring the supply and return line temperature
 - Separating the air contained in the circuit
 - Shutting off the circuits and anti thermosyphoning
 - Thermal insulation



TECHNICAL DATA FlowCon C+ Premium Evolution II		
Dimension		3/4" - DN 20
Material	fittings	brass
	gaskets	EPDM/NBR
	insulation	EPP
	check valves	brass
Techn. data	max. pressure	145 psi/10 bar
	max. temperature	266 °F/130 °C, temporarily 320 °F/160 °C
	Equipment	
	check valves	2 x 200 mm wc
	flow meter range	0.8-6 USgpm or 3-22 l/min
	pressure relief valve	87 psi/6 bar, f. solar thermal systems
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures
	temperature gauges	32-320 °F/0-160 °C, full metal
Dimensions	connections	3/4" compression fitting
	pipe-center distance	100 mm/3.94"
	width of insulation	334 mm/13.15"
	height of insulation (without controller)	383 mm/15"
	height of insulation (with controller)	560 mm/22"

Pressure drop FlowCon C+ Premium/Pump characteristic





Solar station FlowCon C+ Premium Evolution II with integrated controller

3/4"/DN 20

The **DeltaSol BX solar controller** is designed for the application in various basic systems. Four relay outputs and two PWM outputs enable speed control of high-efficiency pumps.

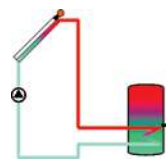
An extra-large display allows a precise visualization of the system status. Pre-defined functions ease the parameterization of the system.

The integrated SD memory card slot enables datalogging to a memory card and a quick transfer of data to a PC.

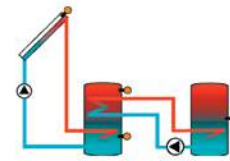
The RESOL VBus® broadens the application range. cTUVus certified!

FUNCTION OVERVIEW

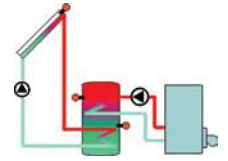
Max. heat sources (collector fields)	2
Max. heat loads (tanks)	2
Display	System-Monitoring illuminated
Sensor inputs (temperature)	5
Relay outputs	4
Standard relay	1
Speed control	✓
Energy metering	✓
Freeze protection function	✓
Tube collector function	✓
Cooling functions	✓
Emergency shutdown functions	✓
VBus®	✓
Celsius/Fahrenheit conversion	✓
Heat dump function	✓
Energy-efficient switch-mode power supply	✓



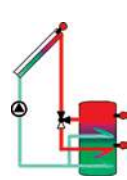
Solar thermal system with 1 storage



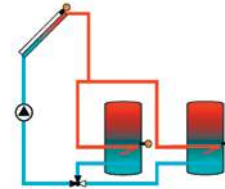
Solar thermal system with 1 storage and heat exchange control



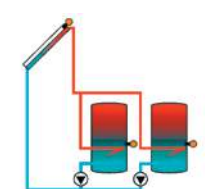
Solar thermal system with 1 storage and backup control



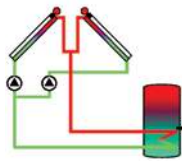
Solar thermal system with stratified storage



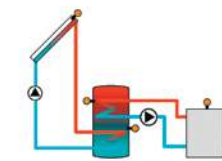
Solar thermal system with 2 storages, valve logic



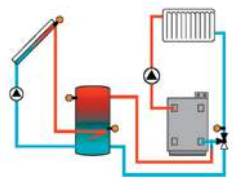
Solar thermal system with 2 storages, pump logic



Solar thermal system with east/west roof and 1 storage



Solar thermal system with 1 storage and a solid fuel boiler



Solar thermal system with temperature offset for heating circuit return

FlowCon C+ Premium Evolution II

FlowCon C+ Premium Evolution II	Operating flow rate in solar loop		Performance	
	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	25 kW	85.3 kBTU/h
	1 G/ft ² collector surface x h	40 l/m ² collector surface x h	12.5 kW	42.7 kBTU/h

Illustration	Options	Pumps	Item #
	FlowCon C+ Premium Evolution II metric Flowmeter 3-22 l/min, temperature gauges in °C	High efficiency pump: Grundfos Solar PM2 15-105U, 3/4" compression fitting	7655218GH10NA
	FlowCon C+ Premium Evolution II imperial Flowmeter 0.8-6.0 USgpm, temperature gauges in °F	High efficiency pump: Grundfos Solar PM2 15-105U, 3/4" compression fitting	7655218GH10US



Solar station FlowCon C+ Evolution II with integrated controller

3/4"/DN 20

USE in closed loop design only. The circulation unit is used on the primary circuit of solar heating systems to control the temperature in the hot water storage. The pump inside the unit is activated by the signal from the differential temperature controller. In addition, this unit contains the functional and safety devices for optimum circuit control.

Features:

All medium-bearing parts are made of brass.

All connections 3/4" compression fitting.

With pre-assembled steel wall bracket.

Full port ball valve in return pipe.

Check valve inside the flow and return ball valve, manual opener, thanks to 45° position of the ball valve handle, 200 mm wc (7.9" head) each, special design for solar thermal systems, avoids gravity circulation.

Large ball valve handles easy grip and visible closing position.

Airstop in the supply line for a permanent deaeration of the heat transfer medium.

Function-optimized design insulation made of durable elastic EPP; **100% insulation of the fittings** – excellent pump ventilation and cooling.

Solar controller integrated into the insulation, pre-wired and splash-proof.

Solar safety assembly pressure relief valve 87 psi/6 bar, high-temperature pressure gauge 0-87 psi/0-6 bar, shut off valve, drain valve for flushing and filling, flat sealing connection for expansion tank.

Full metal solar temperature gauges, 32-320°F/0-160 °C can be pulled off, with immersion sleeve integrated in the ball valve.

Fully assembled with flat sealing union connections

With 3-speed solar circulation pump by Wilo or Grundfos (without wire).

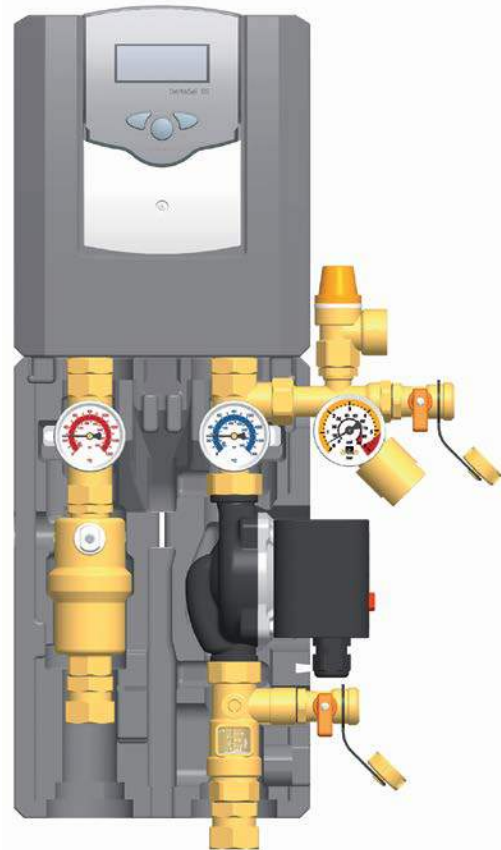
Pump can be completely isolated, no draining necessary during servicing.

Flowmeter Flow quantity measuring device with adjustable flow quantity gauge and function control device, installed in the (cold) return - up to 266 °F/130 °C heat resistant – two measurement ranges: 0.8-6 USgpm or 3-22 l/min.

Flushing and filling unit integrated two drain valves (at the flow meter and at the safety assembly) permit filling and flushing the system.

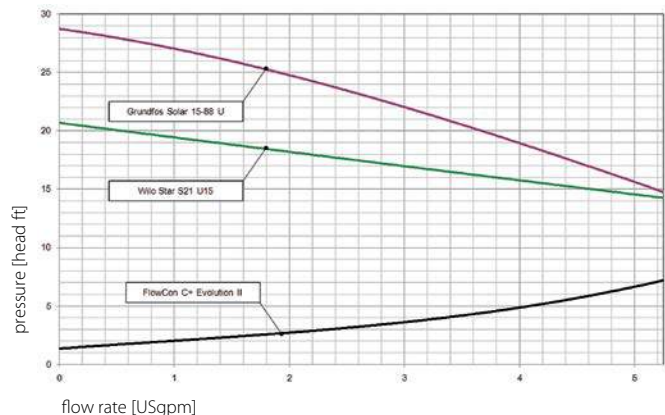
The unit components enable:

- Medium circulation with specific pump
- Safety against pressure increase
- Accurate flow rate control
- Filling/draining the circuit
- Measuring the supply and return line temperature
- Separating the air contained in the circuit
- Shutting off the circuits and anti thermosyphoning
- Thermal insulation



TECHNICAL DATA FlowCon C+		
Dimension		3/4" - DN 20
Material	fittings	brass
	gaskets	EPDM/NBR
	insulation	EPP
	check valves	brass
Techn. data	max. pressure	145 psi/10 bar
	max. temperature	266 °F/130 °C, temporarily 320 °F/160 °C
Equipment	check valves	2 x 200 mm wc
	flow meter range	0.8-6 USgpm or 3-22 l/min
	pressure relief valve	87 psi/6 bar, f. solar thermal systems
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures
	temperature gauges	32-320 °F/0-160 °C, full metal
Dimensions	connections	Type BS plus
	pipe-center distance	3/4" compression fitting
	width of insulation	100 mm/3.94"
	height of insulation (without controller)	334 mm/13.15"
	height of insulation (with controller)	383 mm/15"
		560 mm/22"

Pressure drop FlowCon C+/Pump characteristic

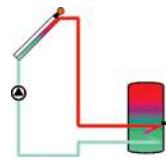




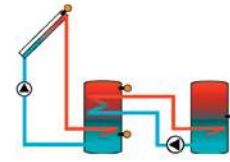
Solar station FlowCon C+ Evolution II with integrated controller

3/4" / DN 20

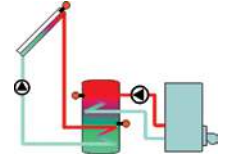
The **controller Type BS Plus** is integrated in the insulation. It is designed for the application in various basic systems. This controller has 2 standard relay outputs and 4 sensor inputs for Pt1000 temperature sensors. The illuminated display with system monitoring (with blinking symbols for a clear allocation of the indicated data) permits a simple and clear appliance and function control. The controller is equipped with a storage temperature limit, an operation hours' count, a thermostat function, a heat metering as well as (selectable) pipe collector functions. V-Bus. UL/CSA certified. Supplied with 4 Pt1000 sensors (Ø6 mm, 1 with silicon wire).



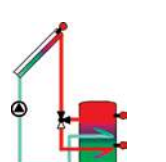
Solar thermal system with 1 storage



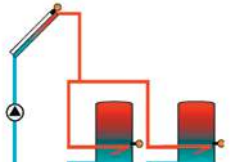
Solar thermal system with 1 storage and heat exchange control



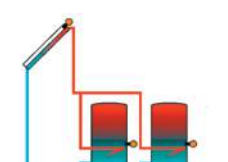
Solar thermal system with 1 storage and backup control



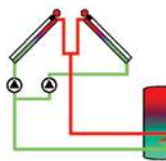
Solar thermal system with stratified storage



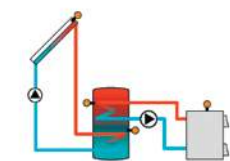
Solar thermal system with 2 storages, valve logic



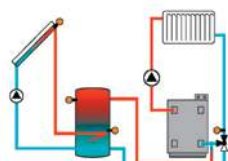
Solar thermal system with 2 storages, pump logic



Solar thermal system with east/west roof and 1 storage



Solar thermal system with 1 storage and a solid fuel boiler



Solar thermal system with temperature offset for heating circuit return

Overview of the functions	Controller type BS Plus
Indication	combined display as system monitor
Appliance	3 press buttons
Relay outputs	2 x standard
Sensor inputs	4, Pt1000
Operation hours' count	yes
Heat quantity count	yes
System choice	9 basic systems
Thermostat function	yes
Emergency shut-down	yes
Recooling function	yes
Solar collector cooling function	yes
Frost protection	yes
Special function for solar pipe collectors	yes

FlowCon C+ Evolution II				
FlowCon C+ Evolution II	Operating flow rate in solar loop		Performance	
	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	25 kW	85.3 kBTU/h
	1 G/ft ² collector surface x h	40 l/m ² collector surface x h	12.5 kW	42.7 kBTU/h

Illustration	Options	Pumps	Item #
	FlowCon C+ Evolution II metric Flowmeter 3-22 l/min, temperature gauges in °C	3-speed pump: Grundfos Solar 15-88 U , 3/4" compression fitting Wilco-Star-S21 U-15-130 , 3/4" compression fitting	7655219GS8NA 7655219WS7NA
	FlowCon C+ Evolution II imperial Flowmeter 0.8-6 USgpm, temperature gauges in °F	3-speed pump: Grundfos Solar 15-88 U , 3/4" compression fitting Wilco-Star-S21 U-15-130 , 3/4" compression fitting	7655219GS8US 7655219WS7US

Solar station FlowCon FA Evolution II

3/4" / DN 20

USE in closed loop design only. The circulation unit is used on the primary circuit of solar heating systems to control the temperature in the hot water storage. The pump inside the unit is activated by the signal from the differential temperature controller (not included in delivery). This unit contains the functional and safety devices for optimum circuit control.

Features:

All medium-bearing parts are made of brass.

All connections 3/4" compression fitting.

With pre-assembled steel wall bracket.

Full port ball valve in return pipe
and connection for temperature sensor.

Check valve inside the supply and return ball valve,
manual opener, 2 x 200 mm wc (7.9" head) each, special design for solar thermal systems, avoid gravity circulation.

Large ball avoids valve handles easy grip and visible closing position.

Airstop in the supply line
for a permanent deaeration of the heat transfer medium.

Function-optimized design insulation made of durable elastic EPP;
100% insulation of the fittings – excellent pump ventilation and cooling.

Solar safety assembly
pressure relief valve 87 psi/6 bar, high-temperature pressure gauge 0-87 psi/0-6 bar, with shut off valve, drain valve for flushing and filling, flat sealing connection for expansion tank.

Full metal solar temperature gauges, 32-320 °F/0-160 °C
can be pulled off, with immersion sleeve integrated in the ball valve.

Fully assembled with flat sealing union connections.

With 3-speed solar circulation pump by Wilo or Grundfos (without wire).

Pump can be completely isolated, no draining necessary during servicing.

Flowmeter

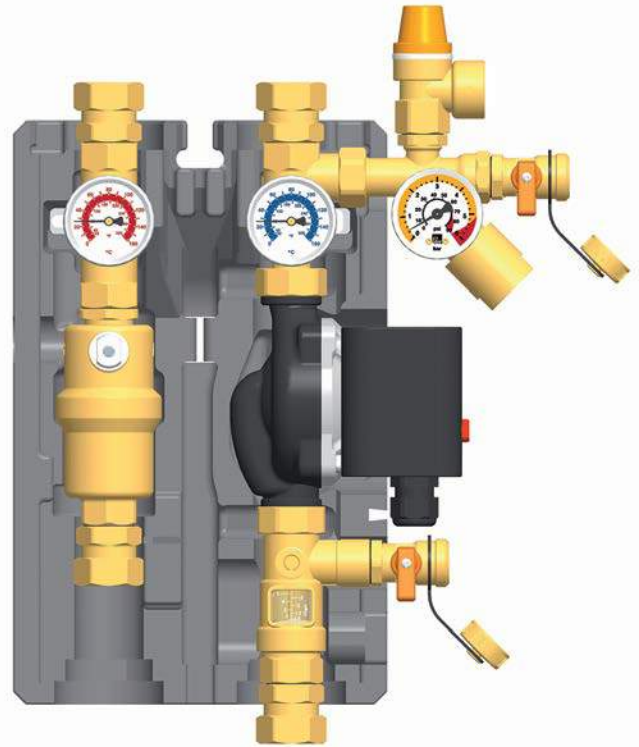
Flow quantity measuring device with adjustable flow quantity gauge and function control device, installed in the (cold) return - up to 266 °F/130 °C heat resistant – two measurement ranges: 0.8-6 USgpm or 3-22 l/min.

Flush and fill unit integrated

two drain valves (at the flow meter and at the safety assembly) permit filling and flushing the system.

The unit components enable:

- Medium circulation with specific pump
- Safety against pressure increase
- Accurate flow rate control
- Filling/draining the circuit
- Measuring the supply and return line temperature
- Separating the air contained in the circuit
- Shutting off the circuits and anti thermosyphoning
- Thermal insulation



TECHNICAL DATA FlowCon FA Evolution II

Dimension		3/4" - DN 20
Material	fittings	brass
	gaskets	EPDM/NBR
	insulation	EPP
Techn. data	check valves	brass
	max. pressure	145 psi/10 bar
	max. temperature	266 °F/130 °C temporarily 320 °F/160 °C
Equipment	check valves	2 x 200 mm wc
	flow meter range	0.8-6 USgpm or 3-22 l/min
	pressure relief valve	87 psi/6 bar, for solar thermal systems
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures
	temperature gauges	32-320 °F/0-160 °C, full metal
Dimensions	connections	3/4" compression fitting
	pipe-center distance	100 mm/3.94"
	width of insulation	334 mm/13.15"
	height of insulation	383 mm/15"



Solar station FlowCon FA Evolution II

3/4"/DN 20

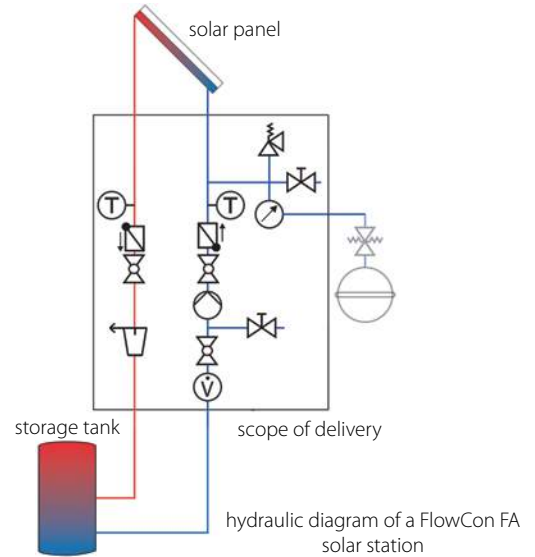
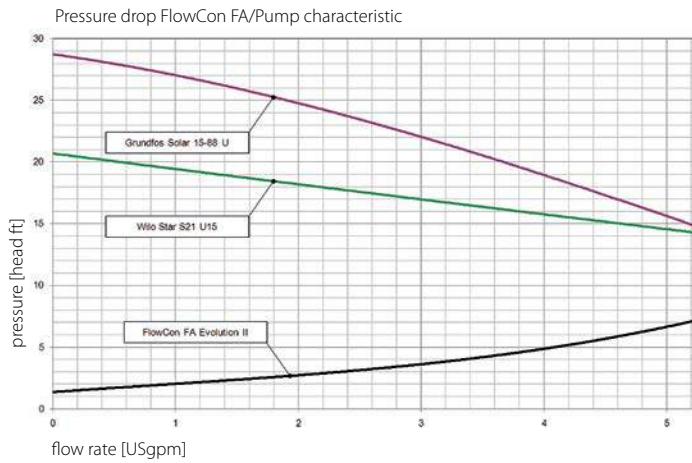


Illustration	Options	Pumps	Item #
	FlowCon FA Evolution II metric Flowmeter 3-22 l/min, Airstop, temperature gauges in °C	3-speed pump: Grundfos Solar 15-88 U , 3/4" compression fitting Wilo-Star-S21 U-15-130 , 3/4" compression fitting	7655210GS8NA 7655210WS7NA
	FlowCon FA Evolution II imperial Flowmeter 0.8-6 USgpm, Airstop, temperature gauges in °F	3-speed pump: Grundfos Solar 15-88 U , 3/4" compression fitting Wilo-Star-S21 U-15-130 , 3/4" compression fitting	7655210GS8US 7655210WS7US
Illustration	Accessories		Item #
	Connecting set 3/4" for expansion tank Stainless steel corrugated hose 3/4" female - female x 2", wall bracket with fastening material, solar tank connecting coupling 3/4", with BSP coupling		437509NA
	As item above, but tank connecting coupling with integrated cap valve 3/4"		437510NA
	Stainless steel corrugated hose 3/4" female - female x 2", wall bracket with fastening material, solar tank connecting coupling 3/4", with NPT coupling		437509US
	Connecting set 3/4" with expansion tank with corrugated hose 3/4" x 500 mm, wall bracket, tank connector and 18 l expansion tank		43750918NA
	Adaptor nipple		
	3/4" male x outlet 3/4" NPT male - flat sealing		548310NA



FlowCon Extension kit for systems with 2 collector fields or 2 tanks

3/4"/DN 20

USE in closed loop design only. The circulation unit is used on the primary circuit of solar heating systems to control the temperature in the hot water storage. Module with pump, in combination with a FlowCon 2-line station it is suitable for two solar storages or two collector fields. In addition, this unit contains the functional devices for optimum circuit control.

The unit components enable:

- Medium circulation with specific pump
- Accurate flow rate control
- Filling/draining the circuit
- Measuring the return line temperature
- Shutting off the circuits and anti thermosyphoning
- Thermal insulation

Features:

All medium-bearing parts are made of brass.

All connections 3/4" compression fitting.

With pre-assembled steel wall bracket.

Check valve inside ball valve,

manual opener, 200 mm wc (7.9" head), special design for solar thermal systems, avoids gravity circulation.

Function-optimized design insulation made of durable elastic EPP; **100% insulation of the fittings** – excellent pump ventilation and cooling.

Full metal solar temperature gauges, 32-320 °F, 0-160 °C, dual scale

can be pulled off, with immersion sleeve integrated in the ball valve.

Fully assembled with flat sealing union connections.

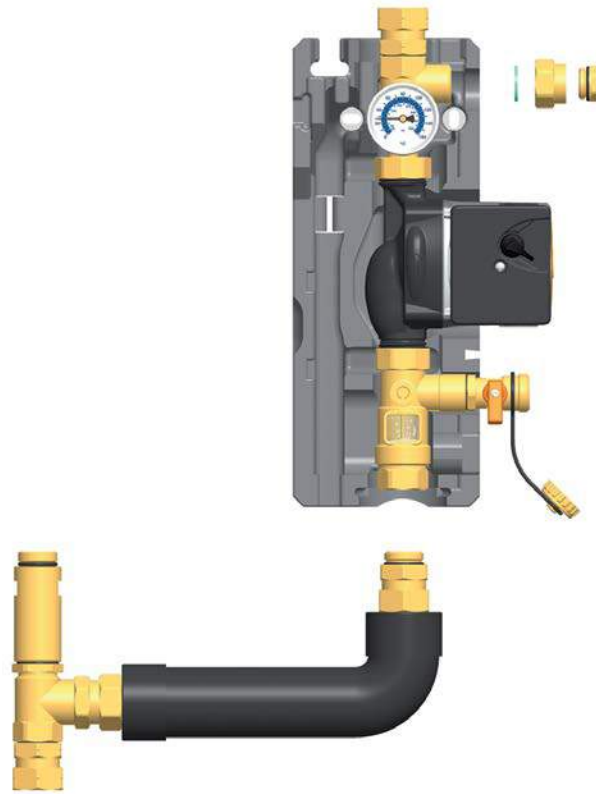
With solar circulation pump by Wilo or Grundfos (without wire).

Pump can be completely isolated, no draining necessary during servicing.

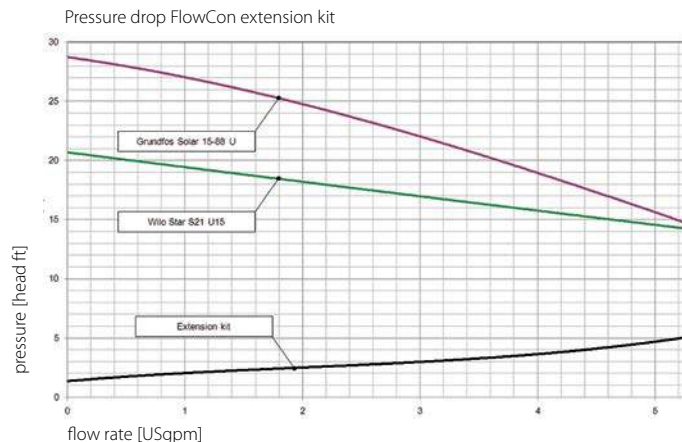
Flowmeter

Flow quantity measuring device with adjustable flow quantity gauge and function control device, installed in the (cold) return - up to 266 °F / 130 °C heat resistant – measurement range: 0.8-6 USgpm or 3–22 l/min.

Drain valve integrated.



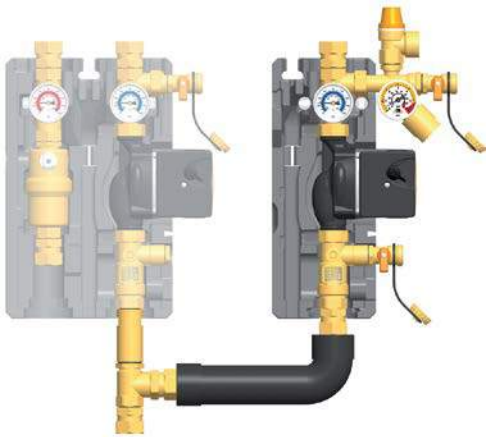
TECHNICAL DATA FLOWCON Extension kit		
Dimension	DN 20 - 3/4"	
Material	fittings	brass
	gaskets	Klingsil / EPDM
	insulation	EPP
	check valves	brass
Techn. data	max. pressure	145 psi/10 bar
	max. temperature	266 °F/130 °C, temp. 320 °F/160 °C
	Equipment	
check valves	200 mm wc	
flow meter range	0.8–6 USGpm or 3-22 l/min	
pressure relief valve	87 psi/6 bar, for solar thermal systems	
pressure gauge	0–90 psi/0–6 bar, resistant to high temperatures	
temperature gauges	32–320 °F/0–160 °C, full metal	
Dimensions	connections	3/4" compression fitting
	pipe-center distance	100 mm / 3.94"
	width of insulation	127 mm / 5"
	height of insulation	320 mm / 12.6"
	width (complete assembly)	513 mm/20.2"
height (complete assembly)	460 mm/18.1"	





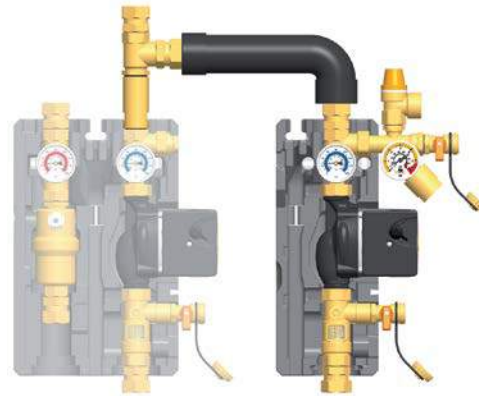
FlowCon Extension kit for systems with 2 collector fields or 2 tanks

3/4"/DN 20



Application

In a system with 2 collector fields, the pumps are connected in order to switch between the fields. This assembly allows a parallel charge from both collector fields.



Application

In a system with 2 storage tanks, the pumps are connected in order to switch between the tanks. This assembly allows a parallel charge of both storage tanks.

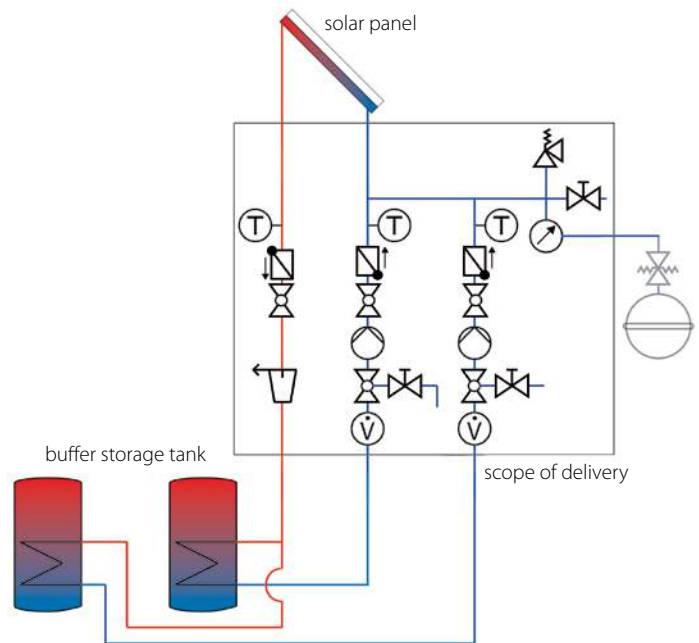
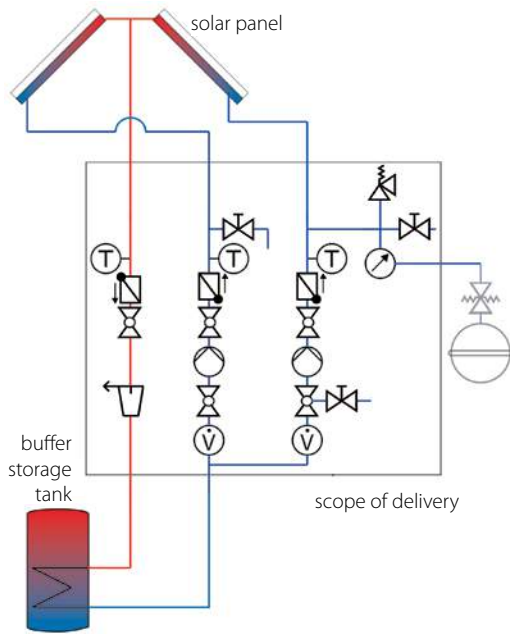


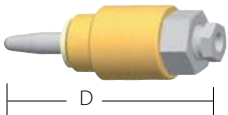



Illustration	Options	Pumps	Item #
	FlowCon Extension kit metric Flowmeter 3–22 l/min	3-speed pump: Grundfos Solar 15-88 U, 3/4" compression fitting Wilo-Star-S21 U-15-130, 3/4" compression fitting	7650290GS8NA 7650290WS7NA
	FlowCon Extension kit imperial Flowmeter 0.8–6.0 USgpm	3-speed pump: Grundfos Solar 15-88 U, 3/4" compression fitting Wilo-Star-S21 U-15-130, 3/4" compression fitting	7650290GS8US 7650290WS7US

Solar station FlowCon Evolution II - assembly accessories



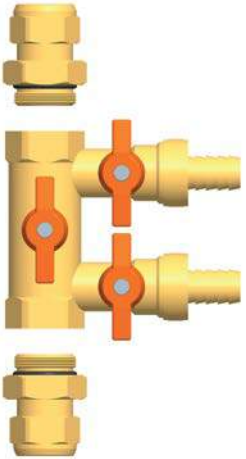

DN 20

Illustration	Description	Item #
	<p>Service unit for solar systems With solar fluid fine filter (250 µm) As protection of the pump, the flow check valve(s) and the flow meter against dirt particles (for example solder residues and scales particles). For assembly inside the solar supply line, above the ball valve. Completely closable for servicing so that only a small amount of solar fluid has to be refilled. Connection to the solar station with self sealing screw connection ¾", outlet ¾" female.</p>	
	<p>Service unit for solar systems</p>	<p>56701NA</p>
	<p>Connecting piece for immersion sleeve For thermowell with ½" male, up to 60 mm length 1" union nut with gasket, ¾" female, bushing ½"</p>	
	<p>Connecting piece for immersion sleeve</p>	<p>5660NA</p>
 <p style="text-align: center;"> ----- D ----- </p>	<p>Immersion sleeve For the assembly of the temperature sensors inside the storage, collector etc.</p>	
	<p>self-sealing with o-ring, brass blank, for sensor Ø 5.5 mm, depth = 30 mm</p>	<p>566001NA</p>
	<p>standard, chromed brass, for sensor Ø 6 mm, depth (D) = 60 mm</p>	<p>566002NA</p>
	<p>standard, chromed brass, for sensor Ø 6 mm, depth (D) = 100 mm</p>	<p>566003NA</p>
	<p>standard, chromed brass, for sensor Ø 6 mm, depth (D) = 150 mm</p>	<p>566004NA</p>
	<p>Flush and drain kit - DN 20 T-piece with counter nut, self-sealing with drain valve, for expanding the solar thermal system with a flush and drain connection, assembly at the lowest point (drain unit). For the assembly of the temperature sensors inside the storage, collector etc.</p>	
	<p>Flush and drain kit - DN 20</p>	<p>31611NA</p>



Solar station FlowCon Evolution II - assembly accessories

DN 20

Illustration	Description	Item #
	<p>Manually operated filling and injection pump Male = 1/2", 1/2"/15 mm hose connection Attainable pressure up to approx. 58 psi/4 bar, length: 6.89"/175 mm</p>	
<p>Manually operated filling and injection pump</p>		<p>7061NA</p>
	<p>Manually operated filling and injection pump Male = 1/2", 1/2"/15 mm hose connection Additional drain valve Attainable pressure up to approx. 58 psi/4 bar, length: 8.86"/225 mm</p>	
<p>Manually operated filling and injection pump</p>		<p>7062NA</p>
	<p>Flush and fill kit - DN 20 Consisting of: Brass ball valve 3/4" female, with red butterfly handle, with 2 drain valves with hose clip 15 mm</p> <p>Additionally with: 2 compression fittings with support sleeves, preassembled</p>	
<p>Flush and fill kit - DN 20</p>		<p>561221NA</p>
	<p>Compression fittings for copper pipes For the connection of 3/4" solar stations – DN 20, self-sealing with o-ring, additionally with support sleeve, also appropriate for soft copper pipes! Applicable up to 302 °F/150 °C!</p>	
<p>3/4" compression fitting x 3/4"/22 mm copper pipe</p>		<p>561222NA</p>



Solar station FlowCon MAX C+ Premium Evolution II with integrated controller

1"/DN 25

USE in closed loop design only. The circulation unit is used on the primary circuit of solar heating systems to control the temperature in the hot water storage. The pump inside the unit is activated by the signal from the differential temperature controller (not included in delivery). This unit contains the functional and safety devices for optimum circuit control.

Features:

All medium-bearing parts are made of brass.

All connections 1" compression fitting,

flat-sealing, for the direct assembly of corrugated stainless steel pipes and solder fittings, prepared for assembly of ferrule compression fittings for copper pipe (with PAW ferrule compression fittings).

Steel wall bracket for the easiest assembly

simply attach the solar station.

Full port ball valves.

Check valve inside the supply and return ball valve,

manual opener, 2 x 200 mm wc (7.9" head) each, special design for solar thermal systems, avoids gravity circulation.

Large ball valve handles

easy handling and visible closing position.

Full metal solar temperature gauges, 32-320 °F/0-160 °C dual scale

can be pulled off, with immersion sleeve integrated in the ball valve.

Airstop in the supply line

for a permanent deaeration of the heat transfer medium.

Function-optimized design insulation made of durable elastic EPP;

100% insulation of the fittings – excellent pump ventilation and cooling.

Solar safety assembly

pressure relief valve 87 psi/6 bar, high-temperature pressure gauge 0-87 psi/0-6 bar with valve, drain valve for flushing and filling, flat sealing connection for expansion tank.

High-efficiency pump by Grundfos.

Pump can be completely isolated, no draining necessary during servicing.

Flushing and filling unit integrated

below the pump, for a clear and simple handling, permits filling and flushing the system.

Flowmeter

Flow quantity measuring device with function control, integrated in the (cold) return - up to 266 °F/130 °C heat resistant – measurement range: 1-10 USgpm or 5-40 l/min.

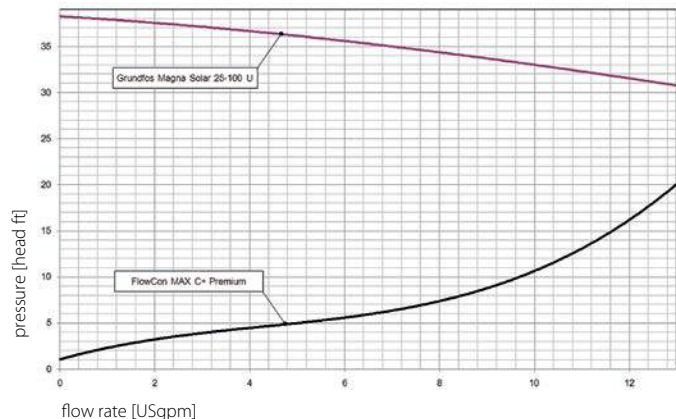
The unit components enable:

- Medium circulation with specific pump
- Safety against pressure increase
- Accurate flow rate control
- Filling/draining the circuit
- Measuring the supply and return line temperature
- Separating the air contained in the circuit
- Shutting off the circuits and anti thermosyphoning
- Thermal insulation



TECHNICAL DATA FlowCon MAX C+ Premium Evolution II		
Dimension	DN 25 - 1"	
Material	fittings	brass
	gaskets	Klingsil/EPDM
	insulation	EPP
	check valves	brass
Techn. data	max. pressure	145 psi/10 bar
	max. temperature	266 °F/130 °C, temporarily 320 °F/160 °C
Equipment	check valves	2 x 200 mm wc
	flow meter range	1-10 USgpm or 5-40 l/min
	pressure relief valve	87 psi/6 bar, solar thermal
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures
	temperature gauges	32-320 °F/0-160 °C, full metal
Dimensions	connections	1" compression fitting
	pipe-center distance	100 mm/3.94"
	width of insulation	308 mm/12.13"
	height of insulation	480 mm/18.66"

Pressure drop FlowCon MAX C+/Pump characteristic





Solar station FlowCon MAX C+ Premium Evolution II with integrated controller

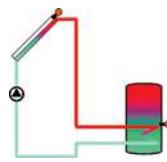
1"/DN 25

The **DeltaSol BX solar controller** is designed for the application in various basic systems. Four relay outputs and two PWM outputs enable speed control of high-efficiency pumps.

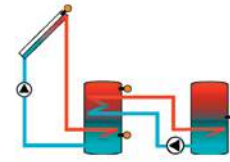
An extra-large display allows a precise visualization of the system status. Pre-defined functions ease the parameterization of the system.

The integrated SD memory card slot enables datalogging to a memory card and a quick transfer of data to a PC.

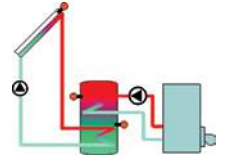
The RESOL VBus® broadens the application range. cTUVus certified!



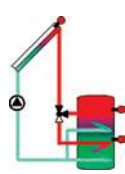
Solar thermal system with 1 storage



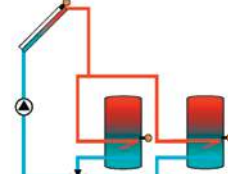
Solar thermal system with 1 storage and heat exchange control



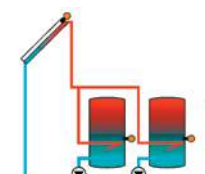
Solar thermal system with 1 storage and backup control



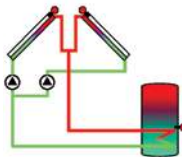
Solar thermal system with stratified storage



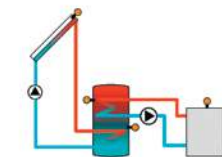
Solar thermal system with 2 storages, valve logic



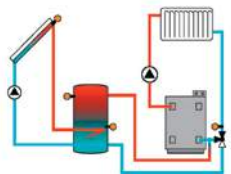
Solar thermal system with 2 storages, pump logic



Solar thermal system with east/west roof and 1 storage



Solar thermal system with 1 storage and a solid fuel boiler



Solar thermal system with temperature offset for heating circuit return

FUNCTION OVERVIEW

Max. heat sources (collector fields)	2
Max. heat loads (tanks)	2
Display	System-Monitoring illuminated
Sensor inputs (temperature)	5
Relay outputs	4
Standard relay	1
Speed control	✓
Energy metering	✓
Freeze protection function	✓
Tube collector function	✓
Cooling functions	✓
Emergency shutdown functions	✓
VBus®	✓
Celsius/Fahrenheit conversion	✓
Heat dump function	✓
Energy-efficient switch-mode power supply	✓

FlowCon MAX C+ Premium Evolution II

FlowCon MAX C+ Premium Evolution II	Operating flow rate in solar loop		Performance	
	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	35 kW	119.4 kBTU/h
	0.74 G/ft ² collector surface x h	40 l/m ² collector surface x h	17,5 kW	59.71 kBTU/h

Illustration	Options	Pumps	Item #
	Flushing and filling unit, Airstop, Flowmeter 5-40 l/min	High-efficiency pump: Grundfos Magna Solar 25-100, 1" compression fitting	7692218GH10NA
	Flushing and filling unit, Airstop, Flowmeter 1-10 USgpm	High-efficiency pump: Grundfos Magna Solar 25-100, 1" compression fitting	7692218GH10US



Solar station FlowCon MAX FA Evolution II

1"/DN 25

USE in closed loop design only. The circulation unit is used on the primary circuit of solar heating systems to control the temperature in the hot water storage. The pump inside the unit is activated by the signal from the differential temperature controller (not included in delivery). This unit contains the functional and safety devices for optimum circuit control.

Features:

All medium-bearing parts are made of brass.

All connections 1" compression fitting, flat-sealing, for the direct assembly of corrugated stainless steel pipes and solder fittings, prepared for assembly of ferrule compression fittings for copper pipe (with PAW ferrule compression fittings).

Steel wall bracket for the easiest assembly simply attach the solar station.

Full port ball valves.

Check valve inside the supply and return ball valve, manual opener, 2 x 200 mm wc (7.9" head) each, special design for solar thermal systems, avoids gravity circulation.

Large ball valve handles easy handling and visible closing position.

Full metal solar temperature gauges, 32-320 °F/0-160 °C dual scale can be pulled off, with immersion sleeve integrated in the ball valve.

Airstop in the supply line for a permanent deaeration of the heat transfer medium.

Function-optimized design insulation made of durable elastic EPP; **100% insulation of the fittings** – excellent pump ventilation and cooling.

Solar safety assembly pressure relief valve 87 psi/6 bar, high-temperature pressure gauge 0-87 psi/0-6 bar with valve, drain valve for flushing and filling, flat sealing connection for expansion tank

Solar circulation 3-speed pump by Wilo or Grundfos.

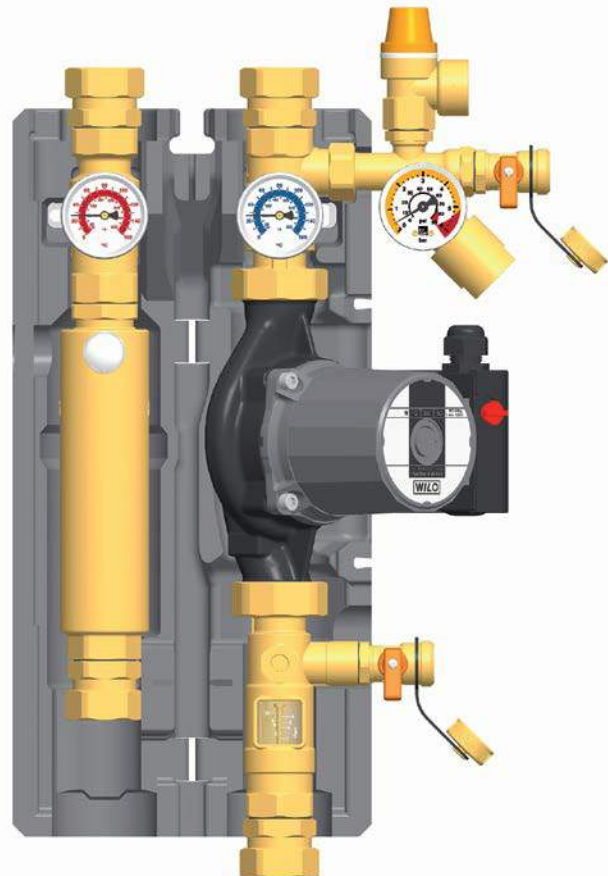
Pump can be completely isolated, no draining necessary during servicing.

Flushing and filling unit integrated below the pump, for a clear and simple handling, permits filling and flushing the system.

Flowmeter Flow quantity measuring device with function control, integrated in the (cold) return - up to 266 °F/130 °C heat resistant – measurement range: 1-10 USgpm or 5-40 l/min.

The unit components enable:

- Medium circulation with specific pump
- Safety against pressure increase
- Accurate flow rate control
- Filling/draining the circuit
- Measuring the supply and return line temperature
- Separating the air contained in the circuit
- Shutting off the circuits and anti thermosyphoning
- Thermal insulation



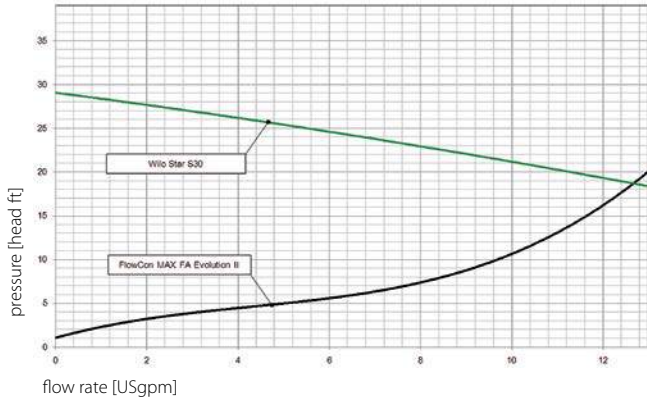
TECHNICAL DATA FlowCon MAX FA Evolution II		
Dimension	DN 25 - 1"	
Material	fittings	brass
	gaskets	Klingsil/EPDM
	insulation	EPP
	check valves	brass
Techn. data	max. pressure	145 psi/10 bar
	max. temperature	266 °F/130 °C, temporarily 320 °F/160 °C
Equipment	check valves	2 x 200 mm wc
	flow meter range	1-10 USgpm or 5-40 l/min
	pressure relief valve	87 psi/6 bar, solar thermal
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures
	temperature gauges	32-320 °F/0-160 °C, full metal
Dimensions	connections	¾" compression fitting
	pipe-center distance	100 mm/3.94"
	width of insulation	308 mm/12.13"
	height of insulation	480 mm/18.66"



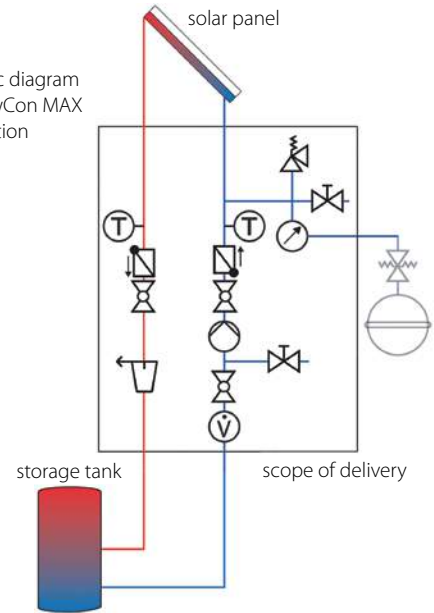
Solar station FlowCon MAX FA Evolution II

1"/DN 25

Pressure drop FlowCon MAX FA/pump characteristic



hydraulic diagram of a FlowCon MAX solar station



FlowCon MAX FA Evolution II				
FlowCon MAX FA Evolution II	Operating flow rate in solar loop		Performance	
	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	35 kW	119.4 kBTU/h
	0.74 G/ft ² collector surface x h	40 l/m ² collector surface x h	17,5 kW	59.71 kBTU/h

Illustration	Options	Pumps	Item #
	Flushing and filling unit, Airstop, Flowmeter 5-40 l/min	3-speed pump: Grundfos UP 26-120 U, 1" compression fitting Wilo-Star-S30 U-25-180, 1" compression fitting	7692210GS12NA 7692210WS8NA
		3-speed pump: Grundfos UP 26-120 U, 1" compression fitting Wilo-Star-S30 U-25-180, 1" compression fitting	7692210GS12US 7692210WS8US
	Flushing and filling unit, Airstop, Flowmeter 1-10 USgpm	3-speed pump: Grundfos UP 26-120 U, 1" compression fitting Wilo-Star-S30 U-25-180, 1" compression fitting	7692210GS12NA 7692210WS8NA
		3-speed pump: Grundfos UP 26-120 U, 1" compression fitting Wilo-Star-S30 U-25-180, 1" compression fitting	7692210GS12US 7692210WS8US



Solar heat transfer unit SolexDWHX

3/4"/DN 20

Solar heat transfer unit

The solar heat transfer station SolexDWHX is a preinstalled and leak-tested unit with integrated double wall heat exchanger for transferring heat from the collector to the storage tank.

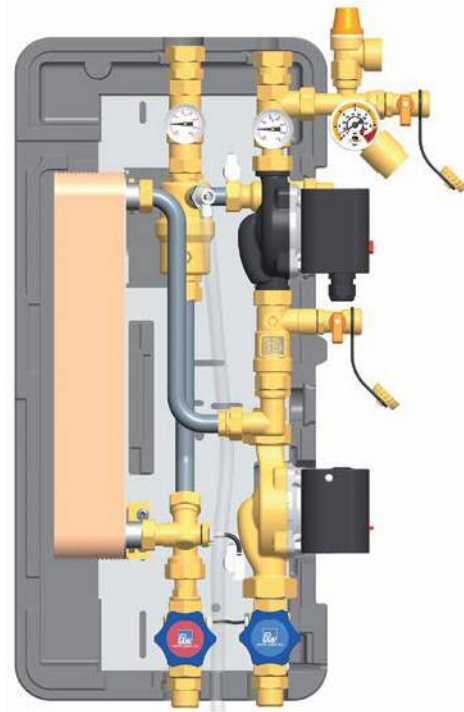
Completely insulated, with generously dimensioned double-wall stainless-steel plate heat exchanger, integrated preset and prewired controller assures a simple and quick installation as well as a safe commissioning.

The unit contains important fittings and safety devices for the operation of the solar thermal system:

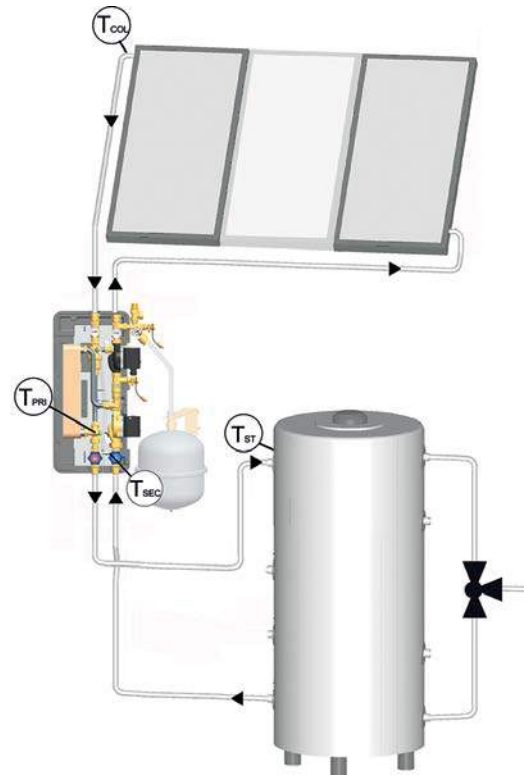
- **Ball valves in supply and return in combination with check valves to prevent gravity and thermo circulation.**
- **Connections for flushing, filling and draining the system.**
- **Air vent for manual bleeding of the heat exchanger.**
- **Flow meter for displaying and setting the flow rate.**
- **Temperature gauges in supply and return for displaying both temperatures.**
- **Pressure gauge for displaying the system pressure.**
- **Pressure relief valve to prevent overpressure.**
- **Three-speed solar pump for wide range of flow rates.**
- **Three-speed bronze pump for the secondary (DHW) loop.**
- **Double wall design heat exchanger with visible leak detection.**

Compact wall hung design of the unit with insulation shell made of durable elastic EPP prevents heat losses and increases overall system efficiency. Integral to the unit are variable speed collector and storage tank circulators, double wall design heat exchanger, and the electronics to drive it all. With only four piping connections needed, the SolexDWHX significantly reduces the time and space required for installation.

The heat exchanger provides complete isolation between fluid on the collector side and domestic hot water.



TECHNICAL DATA SolexDWHX			
Dimension		3/4" - DN 20	
Material	fittings	brass	
	gaskets	Klingsil/EPDM	
	insulation	EPP	
	check valves	brass	
	heat exchanger	plates + connection pieces: 1.4400 solder: 99.99% copper	
Techn. data	max. pressure	87 psi/6 bar	
	max. temperature	248 °F, short-term.: 320 °F	
Equipment	check valves	7.87" wc primary 7.87" wc secondary	
	flow meter	0.3-3.5 USgpm (1-13 l/min)	
	pressure relief valve	87 psi/6 bar, solar thermal	
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures	
	temperature gauges	0-320 °F/0-160 °C, in the solar loop	
	controller	BS Plus	
	Dimensions	connections	primary loop: 3/4" cutting-ring connection secondary loop: 3/4" male thread
		6094602US:	secondary loop: 3/4" male thread
6094603US:		secondary loop: 3/4" male thread	
overall width		390 mm/15.6"	
overall height		650 mm/25.6"	

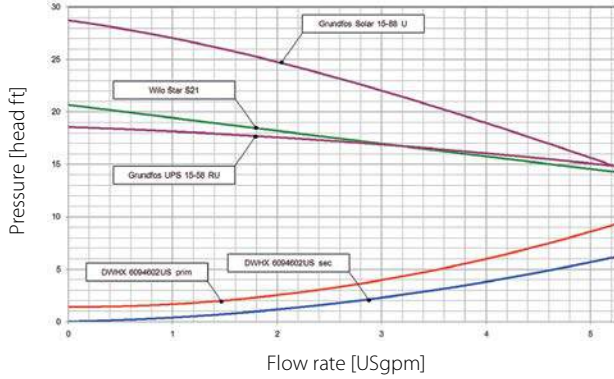




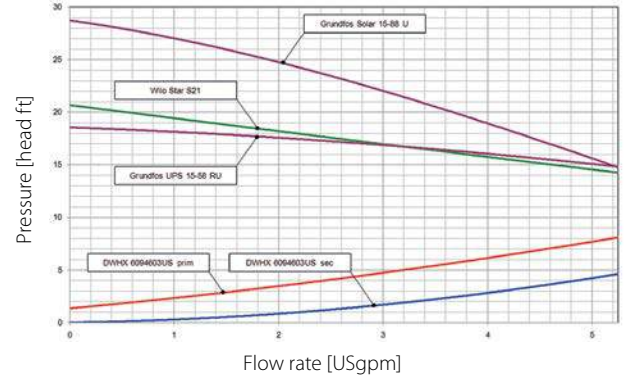
Solar heat transfer unit SolexDWHX

3/4"/DN 20

Pressure drop SolexDWHX **6094602US / 6094602GS8US** pump characteristics



Pressure drop SolexDWHX **6094603US / 6094603GS8US** pump characteristics



SolexDWHX				
	Operating flow rate in solar loop		Performance	
6094602US / 6094602GS8US	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	15 kW	51.2 kBTU/h
	1 G/ft ² collector surface x h	40 l/m ² collector surface x h	7.5 kW	25.6 kBTU/h
6094603US / 6094603GS8US	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	25 kW	85.3 kBTU/h
	1 G/ft ² collector surface x h	40 l/m ² collector surface x h	12.5 kW	42.7 kBTU/h

Item	SolexDWHX	Item #
	SolexDWHX – 3/4"/DN 20: 16 flates heat exchanger	
	3-speed pump:	
	primary: Grundfos Solar 15-88 ; secondary: Grundfos UPS 15-58 RU, 16 pl. heat exch.	6094602GS8US
	primary: Wilo-Star-S21 ; secondary: Wilo-Star-S21 BU, 16 pl. heat exch.	6094602US
	SolexDWHX – 3/4"/DN 20: 30 flates heat exchanger	
	3-speed pump:	
	primary: Grundfos Solar 15-88 ; secondary: Grundfos UPS 15-58 RU, 30 pl. heat exch.	6094603GS8US
	primary: Wilo-Star-S21 ; secondary: Wilo-Star-S21 BU, 30 pl. heat exch.	6094603US



Solar heat transfer unit SolexDWHX MAX

1"/DN 25

Solar heat transfer unit

The solar heat transfer station SolexDWHX MAX is a preinstalled and leak-tested unit with integrated double wall heat exchanger for transferring heat from the collector to the storage tank.

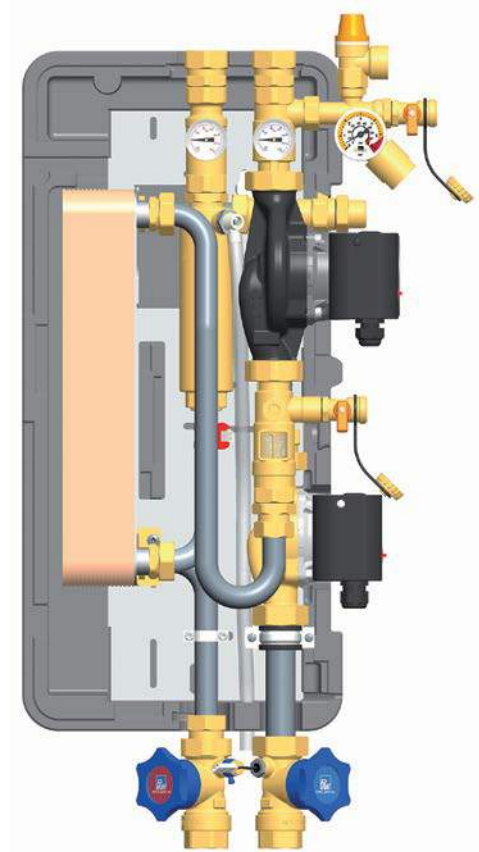
Completely insulated, with generously dimensioned double-wall stainless-steel plate heat exchanger, integrated preset and prewired controller assures a simple and quick installation as well as a safe commissioning.

The unit contains important fittings and safety devices for the operation of the solar thermal system:

- **Ball valves in supply and return in combination with check valves to prevent gravity and thermo circulation.**
- **Connections for flushing, filling and draining the system.**
- **Air vent for manual bleeding of the heat exchanger.**
- **Flow meter for displaying and setting the flow rate.**
- **Temperature gauges in supply and return for displaying both temperatures.**
- **Pressure gauge for displaying the system pressure.**
- **Pressure relief valve to prevent overpressure.**
- **Three-speed solar pump for wide range of flow rates.**
- **Three-speed bronze pump for the secondary (DHW) loop.**
- **Double wall design heat exchanger with visible leak detection.**

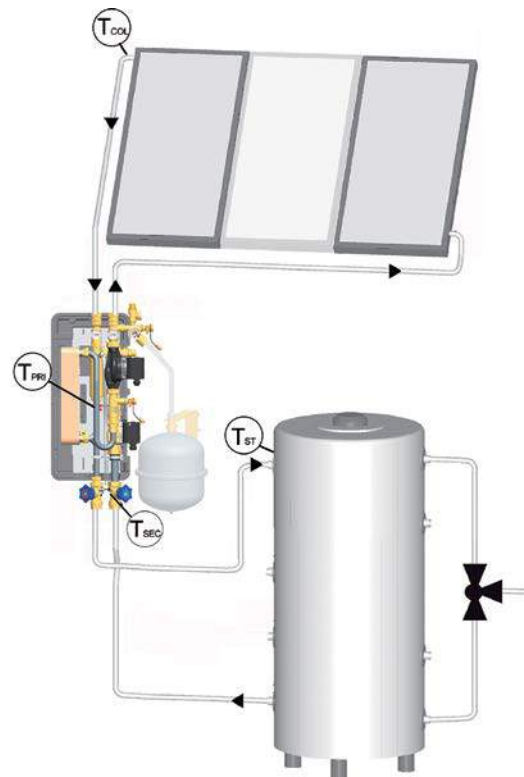
Compact wall hung design of the unit with insulation shell made of durable elastic EPP prevents heat losses and increases overall system efficiency. Integral to the unit are variable speed collector and storage tank circulators, double wall design heat exchanger, and the electronics to drive it all. With only four piping connections needed, the SolexDWHX MAX significantly reduces the time and space required for installation.

The heat exchanger provides complete isolation between fluid on the collector side and domestic hot water.



TECHNICAL DATA SolexDWHX MAX

Dimension	1" - DN 25		
Material	fittings	brass	
	gaskets	Klingsil/EPDM	
	insulation	EPP	
	check valves	brass	
	heat exchanger	plates + connection pieces: 1.4400 solder: 99.99% copper	
Techn. data	max. pressure	87 psi/6 bar	
	max. temperature	248 °F, short-term.: 320 °F	
Equipment	check valves	7.87" wc primary 7.87" wc secondary	
	flow meter	0.3-3.5 USgpm (1-13 l/min)	
	pressure relief valve	87 psi/6 bar, solar thermal	
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures	
	temperature gauges	0-320 °F/0-160 °C, in the solar loop	
	controller	BS Plus	
	Dimensions	connections	primary loop: ¾" cutting-ring connection secondary loop: 1" female thread
		6094604US:	
overall width		390 mm/15.6"	
overall height		650 mm/25.6"	

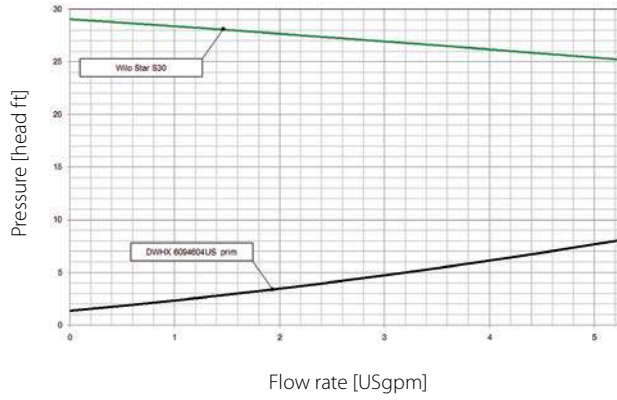




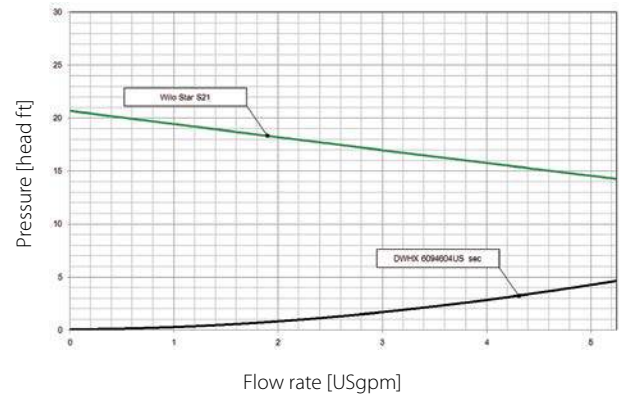
Solar heat transfer unit SolexDWHX MAX

1"/DN 25

Pressure drop SolexDWHX MAX **6094604US**
 primary/pump characteristics



Pressure drop SolexDWHX MAX **6094604US**
 secondary/pump characteristics



SolexDWHX MAX				
	Operating flow rate in solar loop		Performance	
6094604US / 6094604GS11US	0.5 G/ft ² collector surface x h	20 l/m ² collector surface x h	35 kW	119.4 kBTU/h
	1 G/ft ² collector surface x h	40 l/m ² collector surface x h	17.5 kW	59.71 kBTU/h

Item	SolexDWHX MAX	Item #
	SolexDWHX MAX – 1"/DN 25 3-speed pump: primary: Grundfos UP 26-120F ; secondary: Grundfos UPS 15-58 RU, 30 pl. heat exch. primary: Wilo-Star-S30 ; secondary: Wilo-Star-S21 BU, 30 pl. heat exch.	
		6094604GS11US 6094604US



Solar heat transfer unit SolexDWHX XL

1"/DN 25

Solar heat transfer station

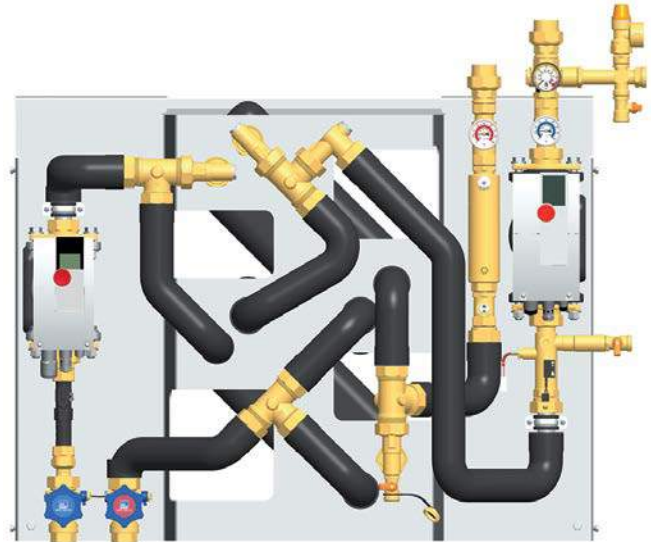
The solar heat transfer station Solex DWHX XL is a preinstalled and pressure-tested unit with 2 integrated double wall heat exchangers for transferring heat from the collector to the storage tank.

With generously dimensioned double wall stainless steel high-efficiency plate heat exchanger, integrated preset and prewired controller assures a simple and quick installation as well as a safe commissioning.

It contains important fittings and safety devices for the operation of the solar thermal system:

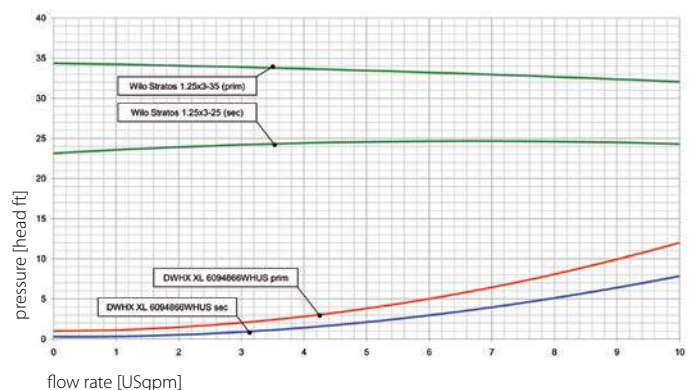
- **Ball valves in supply and return in combination with check valves to prevent gravity and thermo circulation.**
- **Connections for flushing, filling and draining the system.**
- **Air vent for manual bleeding of the heat exchanger.**
- **Temperature gauges in supply and return for displaying both temperatures.**
- **Pressure gauge for displaying the system pressure.**
- **High-efficiency solar pump (0-10 V).**
- **Stainless steel high-efficiency pump (0-10 V) for the secondary (DHW) loop.**
- **Double wall stainless steel high efficiency plate heat exchanger with visible leak detection.**
- **Electronic flow rate measurement of both loops.**
- **Integrated controller DeltaSol MX.**

Compact wall hung design of the unit increases overall system efficiency. Integral to the unit are variable high-efficiency circulators, double wall design heat exchanger, and the electronics to drive it all. With only four piping connections needed, the SolexDWHX XL significantly reduces the time and space required for installation. The heat exchanger provides complete isolation between fluid on the collector side and domestic hot water.



TECHNICAL DATA SolexDWHX XL		
Dimension		1" - DN 25
Material	fittings	brass
	gaskets	Klingsil/EPDM
	insulation	EPP
	check valves	brass
	heat exchanger	plates + connection pieces: 1.4400 solder: 99.99% copper
Techn. data	max. pressure	145 psi/10 bar
	max. temperature	248 °F, short-term.: 320 °F
Equipment	check valves	primary/secondary: 7.9 inch head/200 mm wc
	heat exchanger	2x double-wall, 30 plates
	pressure relief valve	87 psi/6 bar, solar thermal
	pressure gauge	0-87 psi/0-6 bar, resistant to high temperatures
	temperature gauges	0-320 °F/0-160 °C, in the solar loop
	controller	DeltaSol MX
Dimensions	connections	primary loop: 1" female secondary loop: 1" female
	overall width	1074.4 mm/42.3"
	overall height	871.2 mm/34.3"
	depth	299.7 mm/11.8"
	weight	95 kg

Pressure drop SolexDWHX XL/pump characteristic





Solar heat transfer unit SolexDWHX XL

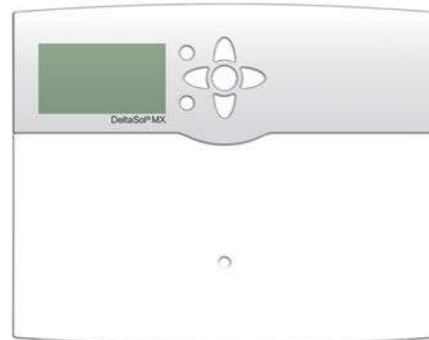
1"/DN 25

DeltaSol MX Solar Controller

The DeltaSol MX is a system controller for solar and heating systems. 14 relay outputs and 4 PWM/0-10V signal outputs enable speed control of standard pumps and high efficiency pumps.

A large full graphic display allows to display balance and progression diagrams. Pre-defined functions ease the parameterization of the system. The integrated SD memory card slot enables datalogging to a memory card and a quick transfer of data to a PC.

The RESOL VBus® interface can connect the system to up to five VBus® interface modules, such as a data logger and/or a BMS connection.



FUNCTION OVERVIEW

Max. heat sources (collector fields)	2
Max. heat loads (tanks)	5
Display	Full graphic display
Sensor inputs (temperature)	15 (19) ¹⁰
Relay outputs	14
Speed control	✓
Energy metering	✓
Freeze protection function	✓
Tube collector function	✓
Cooling functions	✓
Emergency shutdown functions	✓
VBus®	✓
Heat dump function	✓

SolexDWHX XL - for systems up to 1,500 ft²

SolexDWHX XL	Operating flow rate in solar loop		Estimated collector surface	Performance	
	0.5 G/ft ² collector surface x per hour	20 l/m ² collector surface x per hour		1,500 ft ²	238.8 kBtu/h
0.6 G/ft ² collector surface x per hour	25 l/m ² collector surface x per hour	1,200 ft ²	191.1 kBtu/h	56.0 kW	
0.74 G/ft ² collector surface x per hour	30 l/m ² collector surface x per hour	1,000 ft ²	159.3 kBtu/h	46.7 kW	
1.0 G/ft ² collector surface x per hour	40 l/m ² collector surface x per hour	750 ft ²	119.5 kBtu/h	35.0 kW	

Item	SolexDWHX XL	Item no.
	SolexDWHX XL - 1"/DN 25	
	primary: Wilco Stratos 1.25x3-35 ; secondary: Wilco Stratos Z1.25x3-25	6094866WHUS



General Terms and Conditions

Issued: 2014/12

General Terms and Conditions PAW GmbH & Co. KG, Böcklerstr. 11 D-31789 Hameln - Germany (RA_SD/Vers. 12.12.14)

1. Scope

The following General Terms and Conditions (GTC) apply to all goods and services rendered by PAW GmbH & Co. KG (referred to as PAW in the following). Deviations from the GTC are only binding for PAW if explicitly acknowledged by PAW in writing. For foreign business transactions, the definitions of INCOTERMS prevailing at the time of conclusion of the contract apply in addition to the GTC.

2. Conclusion of Contract/Quotes and Acceptance

1. The Customer is bound to orders (quotes) for four weeks upon receipt by PAW. Orders become legally binding only upon written order confirmation by PAW. Agreements, verbal or by telephone, can only form part of the contract if confirmed in writing by PAW. The same applies to orders per Internet or email.

2. Cost estimates with drawings and other documentation given to the Customer by PAW prior to any contractual agreement, remain the property of PAW until signing of the contract and - if a contract is not concluded - must be returned to PAW upon request. PAW retains all copyrights pertaining to the documentation. Duplication and passing thereof to Third Parties requires advance consent by PAW.

3. Prices and Terms of Payment

1. Prices quoted are net „ex works“ including packaging and excluding VAT (sales tax), freight and transport insurance, customs, postage and other transport costs. Deliveries within the EU market (Intra-trade) are exempt from VAT (sales tax) only if the Customer quotes his valid VAT ID number when placing the order with PAW.

2. If delivery periods in excess of three months are agreed upon, PAW is entitled to subsequently increase the prices for material and/or labour which formed the basis of the original cost estimate by an appropriate amount, if the increase in costs was not foreseeable at the time the contract was concluded.

3. Payment is due within 30 days from the date of invoice without any deductions. Bills of exchange and cheques are precluded. Receipt of payment determines on time payment. In case of delayed payment PAW has the right to charge interest on arrears at nine percent above the prevailing base rate.

In the case of several outstanding accounts, PAW is entitled to freely determine the set-off against individual invoices. The Customer is given an appropriate set-off statement.

4. If, following written order confirmation, PAW receives knowledge of a significant deterioration in the assets of the Customer

or if other justified doubts as to the creditworthiness of the Customer arise, PAW is entitled to make deliveries only against appropriate securities or pre-payment.

5. If the Customer is in default of payment, PAW can withhold further deliveries and services until all due receivables are balanced, unless the Customer pays in advance.

4. Delivery, Passing of Risk, Storage Costs

1. The transport of goods occurs at the risk of the Customer - even when the freight order was placed and paid for by PAW. Fixed delivery dates are only legally binding if contractually agreed or confirmed by PAW. Relevant for on time delivery is the time the goods were consigned to the carrier or other company handling the transport/shipment.

2. If a delivery date is exceeded at the Customer's request or other reasons for which PAW is not responsible, the Customer bears the resulting storage costs, commencing 30 days after availability for dispatch. For storage on site, a flat-rate of 0.5% of the net invoice value is payable per month or 1/30th per calendar day respectively.

The Customer is entitled to prove that PAW incurred considerably lower storage costs.

5. Reservation of Proprietary Rights

1. PAW retains the right to all supplied goods until complete payment of all invoices resulting from the business relation with the Customer. This also applies when the purchase price has been paid for certain goods specified by the Customer, as the reserved property acts as security against the overall receivables balance due to PAW.

The processing of goods supplied by PAW - and which are still retained as property of PAW - is always on behalf of PAW, without any commitments resulting therefrom for PAW. If the goods so retained by PAW are mixed or incorporated with/into other goods, the Customer herewith assigns his proprietary or co-proprietary rights on the new article to PAW and will store said articles with due diligence. The Customer may sell goods to which PAW has the proprietary rights under normal business transactions, as long as the Customer is not in arrears with payment.

2. Protective conveyance, pledging or selling of stock „enbloc“ by the Customer to Third Parties is not permissible, in as far as the proprietary rights of PAW are affected.

With conclusion of the purchase contract between the Customer and PAW the Customer assigns, as security, the full amount - not only the pro rata sum - of any claim due against a buyer resulting from a purchase or other legal reasons including all subsidiary rights. The Customer remains entitled to collect these claims as long as he is not in arrears to PAW. If the value of the object supplied under retention of title as a security interest exceeds the total receivables of PAW by more than 20 %, PAW shall



be obliged to release the collateral to which it is entitled upon request by the customer insofar as the realizable value is secured by another collateral of equal value (e.g. bond).

3. If PAW takes back goods from the Customer – without incurring any legal commitment – this does not constitute a cancellation of the contract. In the case of such returns of goods PAW will issue the Customer with a credit note less compensatory handling charge of 20% of the net invoice value, with a minimum charge of €10.00. Freight costs for the return of goods to PAW are to be paid for by the Customer.

The Customer is entitled to prove that PAW incurred significantly lower costs.

6. Warranty

1. The Customer is obliged to inspect goods delivered by PAW immediately upon receipt for visible transport damage and also to inform PAW immediately in writing of any defects/faults found during goods inwards inspection. In case of complaints or when ordering spare parts, specification of the PAW serial number is mandatory. Processing will not be possible without this information. Exceptions: auxiliary material, accessory parts (no electronic components).

If the complaints are justified, PAW is obliged to either rework or replace the faulty goods - according to choice by PAW. If reworking or replacement fail, the Customer may only claim redhibition, any reduction is precluded.

2. Minor changes in the construction, shape and design of the delivered goods are permissible and comply with the contract as long as they do not adversely affect the intended use, quality and functionality. The same applies to spare parts.

3. If the Customer supplies components for a product to be manufactured and supplied by PAW as part of a Customer order, then PAW is exempted from any liability for material defects, in as far as the goods supplied by PAW are faulty due to defects arising from the components supplied by the Customer. PAW is not obliged to test the components supplied by the Customer for defects or functionality prior to processing/assembly. The same applies to components supplied to PAW by Third Parties ordered by and paid for by the Customer.

4. Claims for damages against PAW, regardless of legal provisions, including infringements of pre- and collateral contracts relating to information, reference and due care as well as definite breaches of contract and tortious acts are excluded, in as far as damages are not due to malicious intent or gross negligence. This preceding exemption from liability does not apply if properties are lacking which PAW had explicitly guaranteed or confirmed in writing with the express purpose of protecting the Customer against said damages. Additional claims by the Customer against PAW, such as consequential damages, installation costs and lost profits, are excluded.

5. The liability of PAW for faulty products in accordance with the Law on Product Liability remains untouched by the preceding conditions.

If PAW is made liable for damages by a Third Party in accordance with the Law on Product Liability or other legal liability regulations or if PAW incurs damage for other reasons (i.e. a recall), then the Customer has to exempt PAW against Third Parties if the damage is due to a mistake or fault in the Customer's area of responsibility.

6. The warranty period is defined by statutory regulations (§438 BGB - German Civil Code).

7. Set-off, Right of Retention, Assignment

The customer is only entitled to set-off rights, if his/her counterclaims have been legally established, are undisputed or accepted by PAW. The same applies to the right of retention.

8. Place of Performance, Court of Jurisdiction

Place of performance and court of jurisdiction for all disputes arising from the contractual arrangements between Customer and PAW is the domicile of PAW or – if PAW so chooses – the Customer's domicile. The contractual arrangements between PAW and Customer are subject to German Law (as priority), alternatively to EU Law.

9. Severability Clause

Should individual provisions of this GTC be or become void, the remaining provisions of the GTC will remain unaffected and valid. In place of the void provisions those legal regulations will apply, which economically come closest to the purpose of the void provision(s) in the GTC.

10. GTC Download/Printout

A copy of the prevailing GTC is available on the Internet at www.paw.eu and can be downloaded free of charge.



Manufacturer's warranty



5-years manufacturer's warranty

I.
Due to the high quality of our products, we issue a 5-year warranty – irrespective of the statutory provisions – under the following conditions:

II.
The warranty includes all PAW fittings, except for pumps, controllers and actuators.

The warranty covers the delivered devices with all components, except for such components that are subject to natural use and wear.

The warranty covers the replacement of material but not the costs for mounting and dismounting and other costs that are not costs of the replacement of the material.

Furthermore, the warranty implies that the PAW products have been used according to the generally acknowledged rules of engineering. If maintenance work is necessary, it shall be proven in case of warranty that the maintenance work has been carried out properly and professionally.

III.
The warranty is a 5-year warranty and starts with the date of delivery. The date specified on the delivery note is decisive. The warranty claims shall be submitted at the latest 12 months after the case of warranty. Any warranty claims will be void after this period.

IV.
Should there be any defects of material or manufacture or problems with the performance of the device within the warranty period, the customer shall return the warranty object at his own risk to the warrantor.

V.
The warranty shall not be considered if the warranty object is not operated according to the specifications; if it gets damaged or destroyed due to force majeure or environmental influences (frost, overvoltage, inadmissible media); if it gets damaged due to improper use (in particular, non-observance of the operating or mounting instructions or due to deferred maintenance); if it has been opened or repaired by a company or craftsman not authorized for it; if the warranty object has external mechanical damages of any type.



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