27018649 rev. 00 05\2023

Solar thermal

SC DHW

Heat exchanger

Heat exchangers for domestic hot water

A Carrier Company

RIELLO
Energy For Life

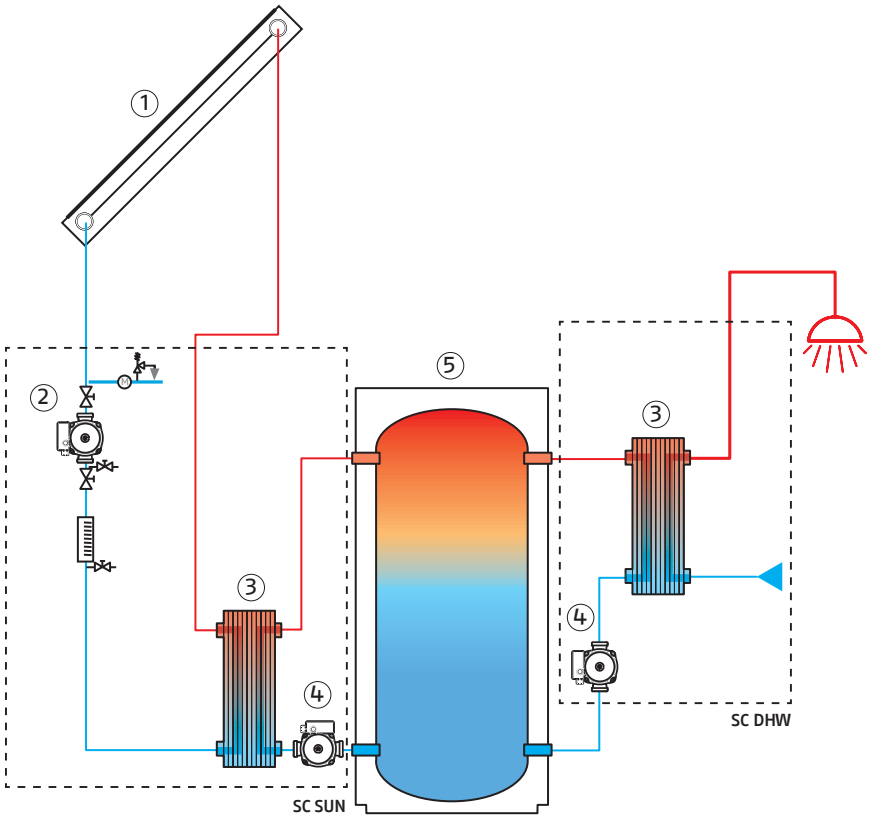
SC DHW

PRODUCT DESCRIPTION

Complete, ready-to-install solutions even when external heat stratification is preferred, by means of heat exchangers for both solar and DHW.

SC DHW is a heat exchanger for instant domestic hot water production for inertia puffers.
The range is offered in 6 sizes: 25, 35, 40, 80, 160 and 220 l/min nominal.
Using instantaneous modules allows for maximum reduction of domestic water stagnation, thus lowering the risk of legionella.

SCHEMATIC DIAGRAM



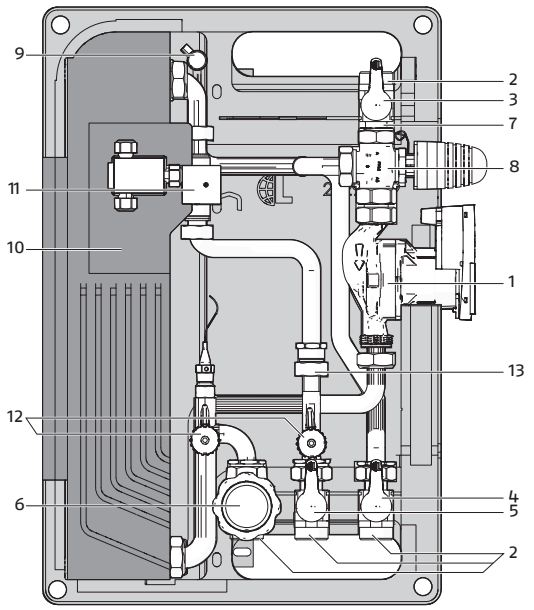
1. Riello solar collector
2. High efficiency solar pump
3. Plate heat exchanger
4. High efficiency pump
5. Riello puffer 7000

NOTE: Example schematic diagram

DHW MODULE SC DHW 25

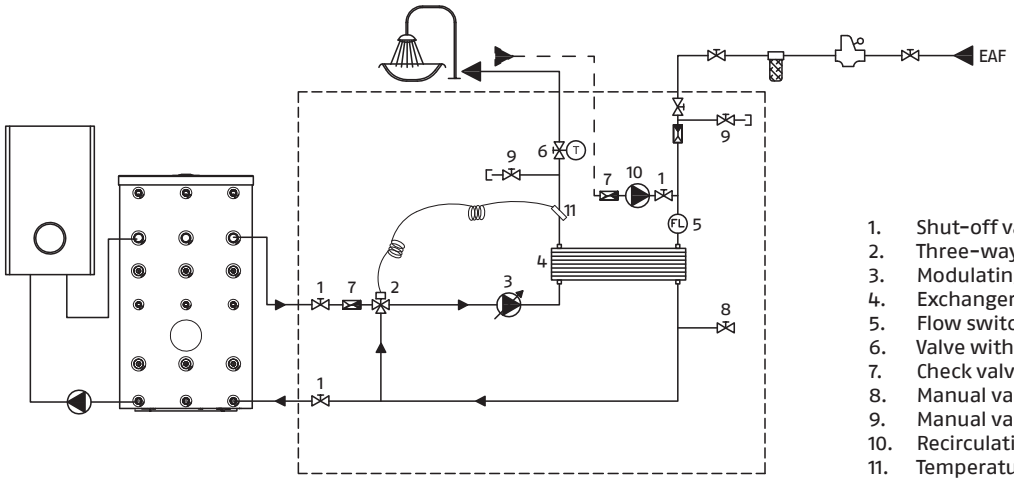
SC DHW 25 is an instant domestic hot water production module that uses a stainless steel braze welded plate heat exchanger, which is used in combination with inertia puffers.
The domestic hot water temperature is adjusted via the thermostatic mixing of the primary circuit fluid.
The primary circuit pump is controlled by a flow switch located on the DHW and electrically connected in series. Two fill/drain valves are installed which enable the exchanger to be washed by closing the shut-off valves.
A domestic hot water recirculation kit is available to achieve maximum comfort.
SC DHW 25 is supplied with an insulated frame.

Structure



1. Pump
2. DN20 1" M - 3/4" F ball valve
3. Red handle primary delivery valve
4. Blue handle primary return valve
5. Blue handle domestic cold water inlet valve
6. Black handle check valve with domestic hot water outlet thermometer
7. Check valve
8. Three-way mixer valve with thermostatic actuator 35 - 65°C
9. 3/8" manual air valve
10. Stainless steel braze welded plate heat exchanger with insulation
11. Flow switch
12. ½" fill-drain valve
13. 3/4" F union for recirculation kit connection

Hydraulic circuit

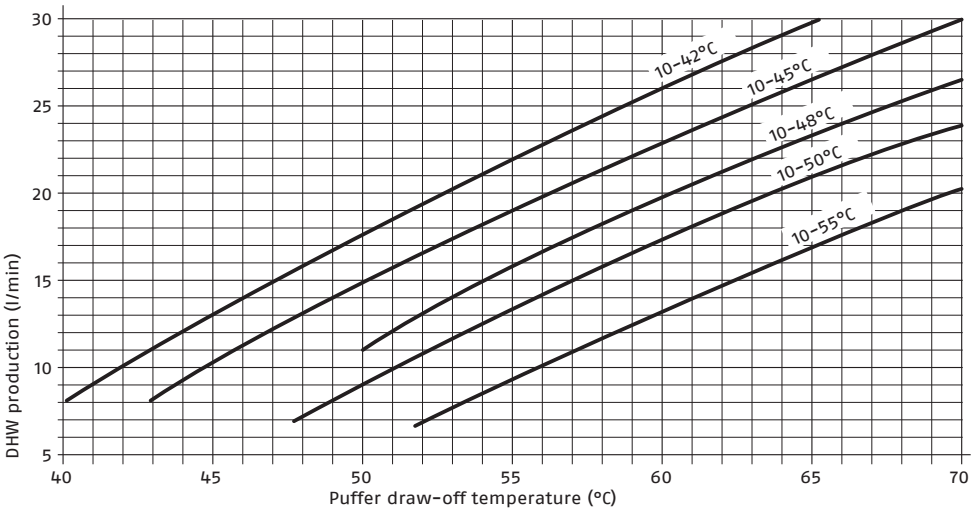


1. Shut-off valve
2. Three-way mixer valve
3. Modulating pump
4. Exchanger
5. Flow switch
6. Valve with temperature sensor
7. Check valve
8. Manual valve with relief
9. Manual valve with drain
10. Recirculation pump (accessory kit)
11. Temperature sensor element

Technical data SC DHW 25

Model	UM	SC DHW 25
Heat input with puffer at 50°C and DHW draw-off at 10-45°C	kW	37
DHW draw-off at 10-45°C with puffer at 50°C	l/min	15
Heat input with puffer at 55°C and DHW draw-off at 10-45°C	kW	46
DHW draw-off at 10-45°C with puffer at 55°C	l/min	19
Heat input with puffer at 60°C and DHW draw-off at 10-40°C	kW	54
DHW draw-off at 10-40°C with puffer at 60°C	l/min	26
Primary maximum flow rate	l/h	1200
Minimum admitted temperature DHW side	°C	2
Maximum operating pressure	°C	90
Maximum operating pressure primary side	bar	10
Primary check valve opening pressure	mbar	28
Secondary check valve opening pressure	mbar	28
Electrical power input	W	45
Power supply voltage	V	230
Power supply frequency	Hz	50-60
Electrical protection rating	IP	54
Net weight	kg	16.1
Water volume	l	5.2
Plate dimensions: Width (W) x Height (H) x Depth (D)	mm	117 x 524 x 47
Number of plates	no.	20
Exchange surface	m^2	1.13
Dimensions: Width (W) x Height (H) x Depth (D)	mm	400 x 600 x 250

Domestic hot water production graph



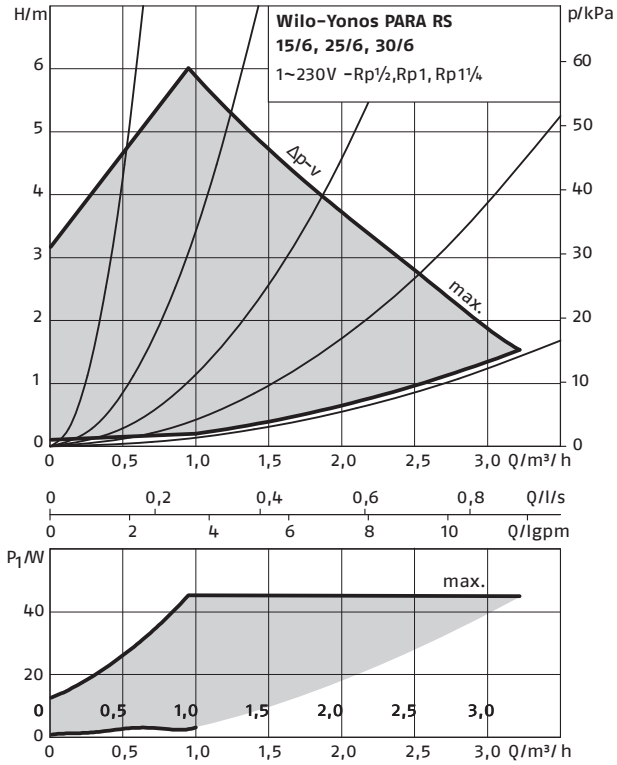
N.B. Proper module operation is guaranteed if the primary delivery temperature is at least 5°C above the set DHW temperature.

Primary pump characteristic curves (head and power consumption)

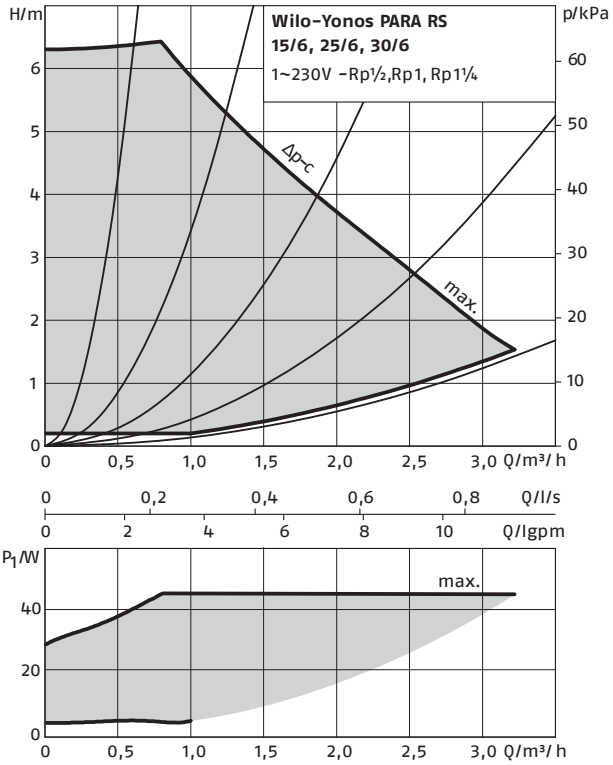
Primary circuit
Type: Wilo Yonos Para RS 15/6

Speed	n	rpm	800 - 4300
Power consumption 1 ~ 230 V	P1	W	3 - 45
Current at 1 ~ 230 V	I	A	0.03 - 0.44
Max. head	H	m	6.2
Max. flow rate	G	l/h	3300

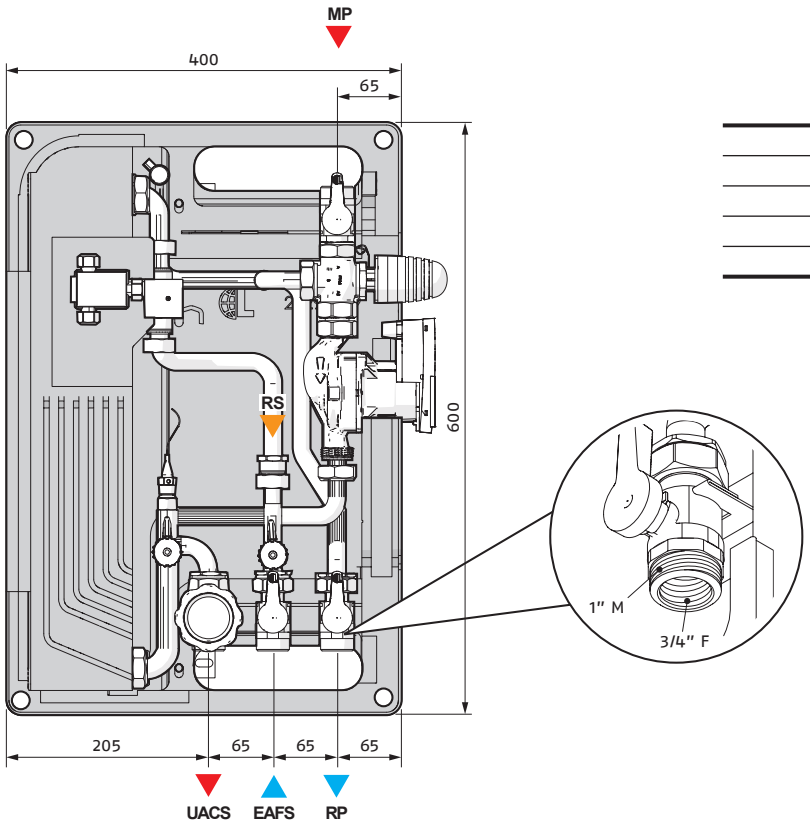
Δp-v (variable)



Δp-c (constant)

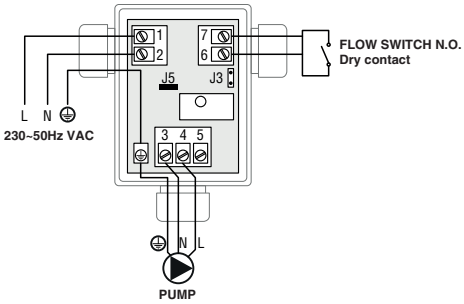


Dimensions and Fittings



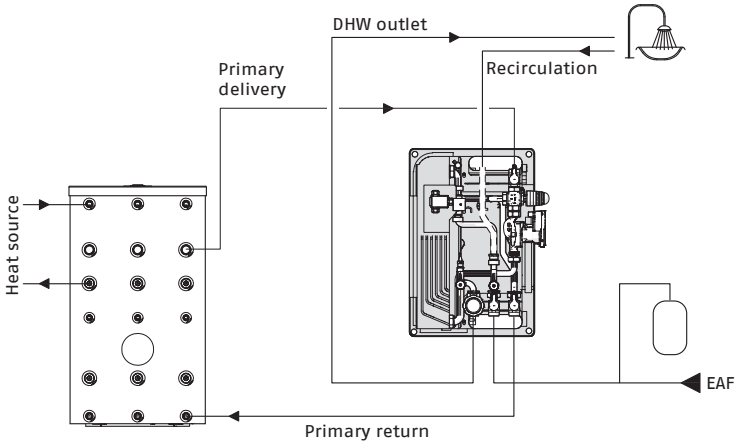
MP – Primary delivery	1" M – 3/4" F
RP – Primary return	1" M – 3/4" F
EAFS – DCW inlet	1" M – 3/4" F
UACS – DHW outlet	1" M – 3/4" F
RS – DHW Recirculation	3/4" F

Wiring diagram



System diagram

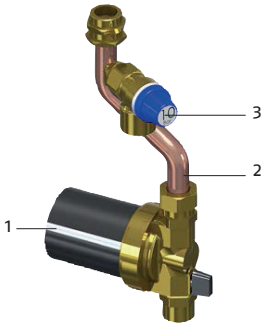
Example of wall installation



DHW RECIRCULATION ACCESSORY

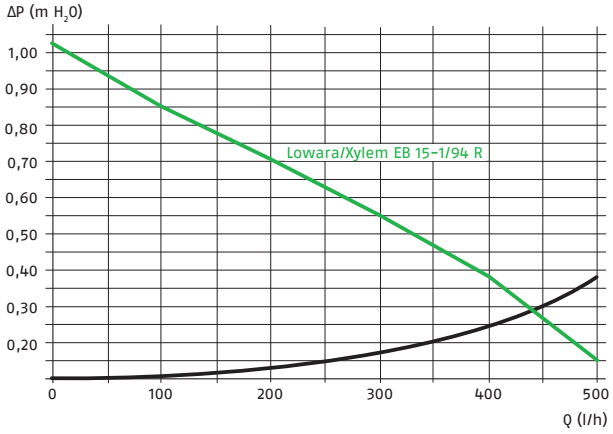
The recirculation KIT for the SC DHW 25/35 modules is supplied separately from the module and comprises a pump complete with check valve and integrated shut-off cock, piping with seals and safety valve.

Structure



1 Pump
2 Pipe with seals
3 Safety valve 6 bar

Pump characteristic curves



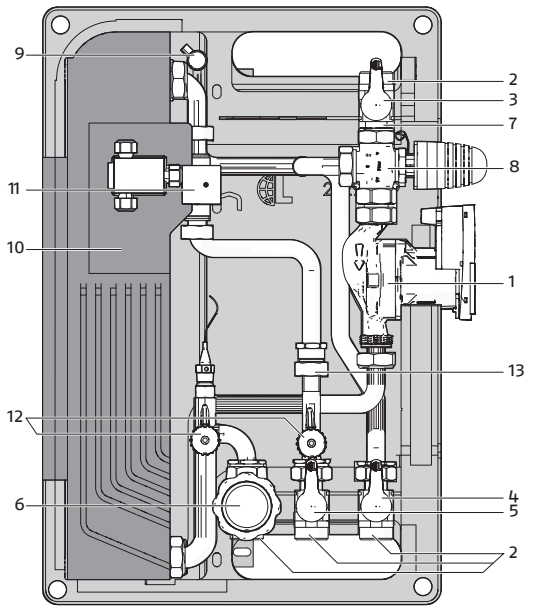
Technical data

Flow rate	m³/h	1
Head	m	3
Pumped liquid temperature	°C	2 - 65
Max. pressure	bar	10
Power supply	V	200-240
Frequency	Hz	50-60
Protection rating	IP	44

DHW MODULE SC DHW 35

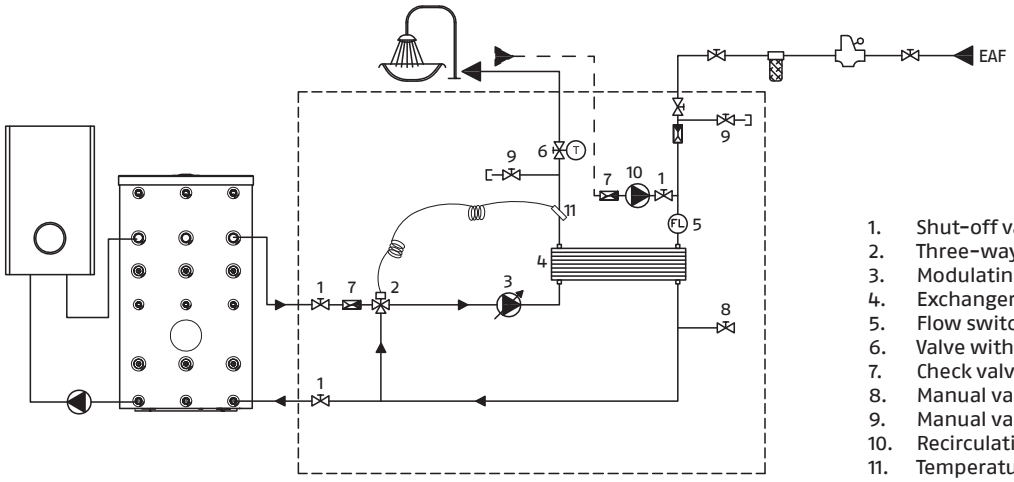
SC DHW 35 is an instant domestic hot water production module that uses a stainless steel braze welded plate heat exchanger, which is used in combination with inertia puffers.
The domestic hot water temperature is adjusted via the thermostatic mixing of the primary circuit fluid.
The primary circuit pump is controlled by a flow switch located on the DHW and electrically connected in series. Two fill/drain valves are installed which enable the exchanger to be washed by closing the shut-off valves.
A domestic hot water recirculation kit is available to achieve maximum comfort.
SC DHW 35 is supplied with an insulated frame.

Structure



1. Pump
2. DN20 1" M - 3/4" F ball valve
3. Red handle primary delivery valve
4. Blue handle primary return valve
5. Blue handle domestic cold water inlet valve
6. Black handle check valve with domestic hot water outlet thermometer
7. Check valve
8. Three-way mixer valve with thermostatic actuator 35 - 65°C
9. 3/8" manual air valve
10. Stainless steel braze welded plate heat exchanger with insulation
11. Flow switch
12. ½" fill-drain valve
13. 3/4" F union for recirculation kit connection

Hydraulic circuit



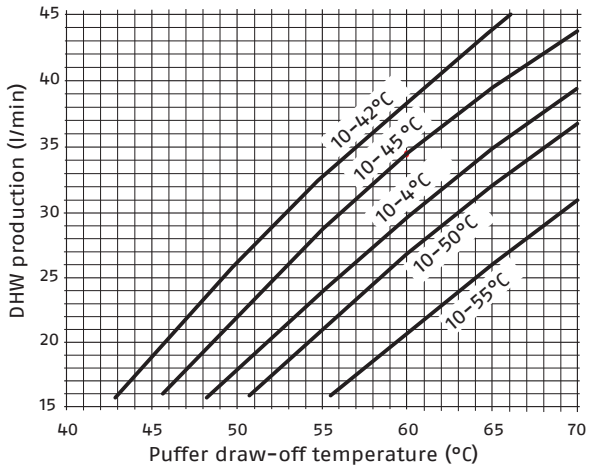
1. Shut-off valve
2. Three-way mixer valve
3. Modulating pump
4. Exchanger
5. Flow switch
6. Valve with temperature sensor
7. Check valve
8. Manual valve with relief
9. Manual valve with drain
10. Recirculation pump (accessory kit)
11. Temperature sensor element

Technical data SC DHW 35

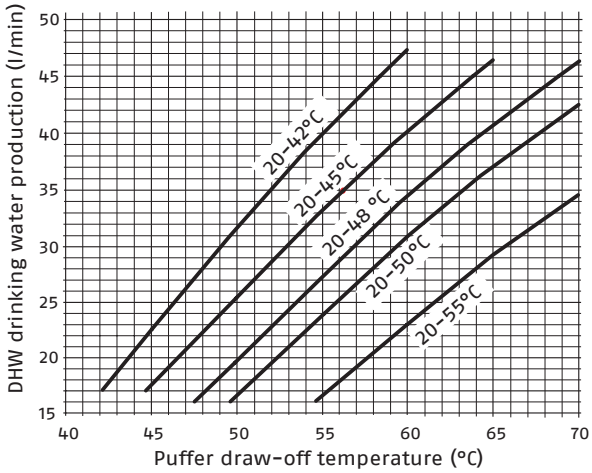
Model	UM	SC DHW 35
Heat input with puffer at 50°C and DHW draw-off at 10-45°C	kW	54
DHW draw-off at 10-45°C with puffer at 50°C	l/min	22
Heat input with puffer at 55°C and DHW draw-off at 10-45°C	kW	68
DHW draw-off at 10-45°C with puffer at 55°C	l/min	28
Heat input with puffer at 60°C and DHW draw-off at 10-40°C	kW	80
DHW draw-off at 10-40°C with puffer at 60°C	l/min	38
Primary maximum flow rate	l/h	1700
Minimum admitted temperature DHW side	°C	2
Maximum operating pressure	°C	90
Maximum operating pressure primary side	bar	10
Primary check valve opening pressure	mbar	28
Secondary check valve opening pressure	mbar	28
Electrical power input	W	45
Power supply voltage	V	230
Power supply frequency	Hz	50-60
Electrical protection rating	IP	54
Net weight	kg	19.1
Water volume	l	6.1
Plate dimensions: Width (W) x Height (H) x Depth (D)	mm	117 x 524 x 70
Number of plates	no.	30
Exchange surface	m^2	1.76
Dimensions: Width (W) x Height (H) x Depth (D)	mm	400 x 600 x 250

Domestic hot water production graph

DCW inlet temperature 10°C



DCW inlet temperature 20°C



N.B. Proper module operation is guaranteed if the primary delivery temperature is at least 5°C above the set DHW temperature.

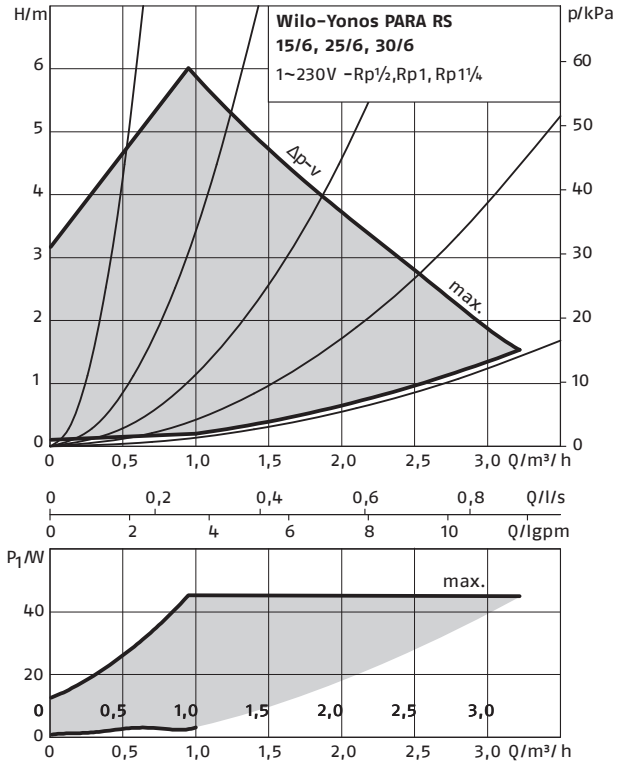
Primary pump characteristic curves (head and power consumption)

Primary circuit

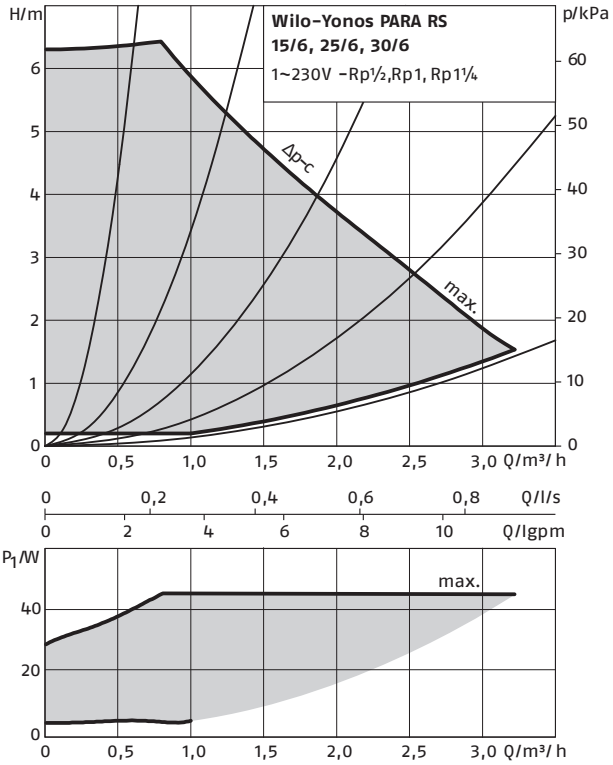
Type: Wilo Yonos Para RS 15/6

Speed	n	rpm	800 - 4300
Power consumption 1 ~ 230 V	P1	W	3 - 45
Current at 1 ~ 230 V	I	A	0.03 - 0.44
Max. head	H	m	6.2
Max. flow rate	G	l/h	3300

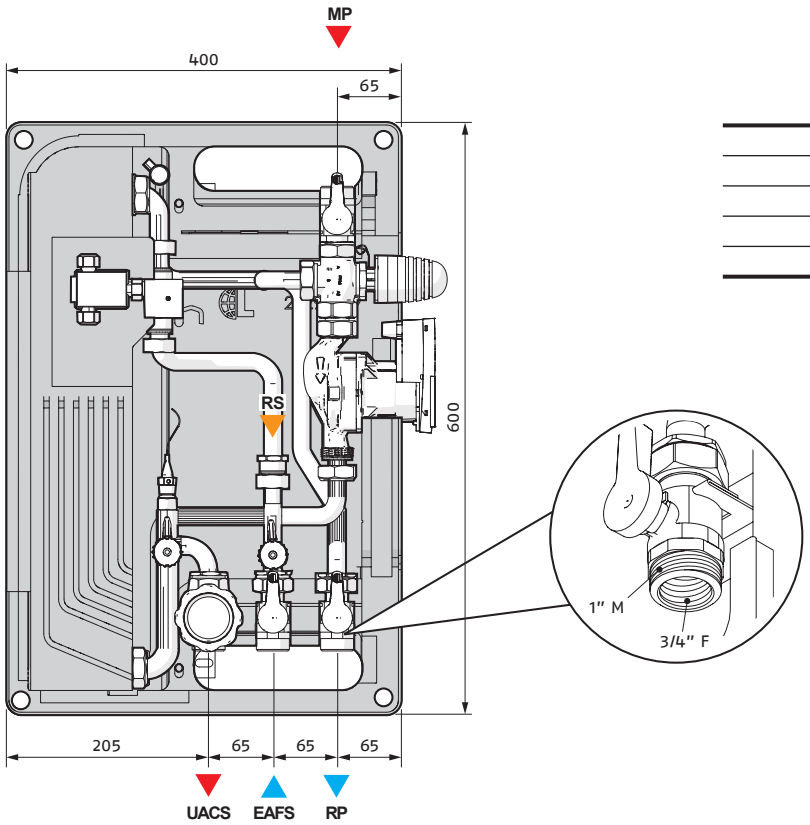
Δp-v (variable)



Δp-c (constant)

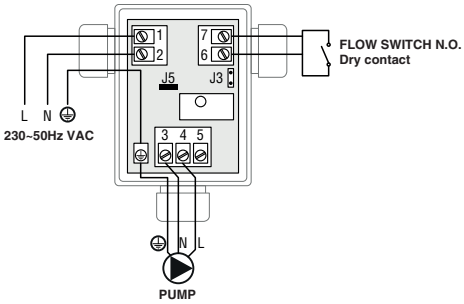


Dimensions and Fittings



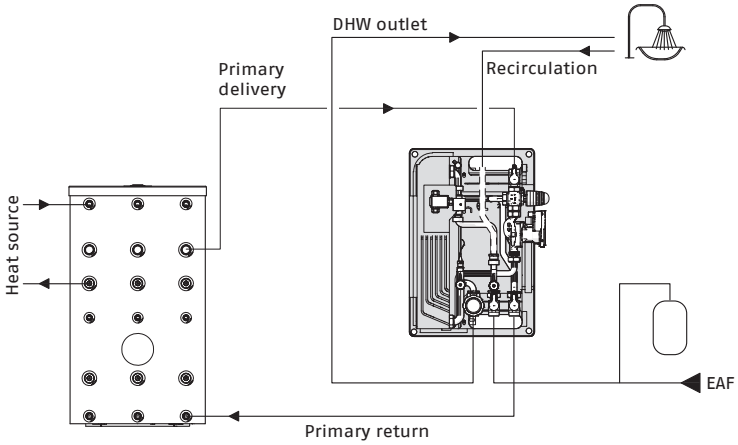
MP – Primary delivery	1" M – 3/4" F
RP – Primary return	1" M – 3/4" F
EAFS – DCW inlet	1" M – 3/4" F
UACS – DHW outlet	1" M – 3/4" F
RS – DHW Recirculation	3/4" F

Wiring diagram



System diagram

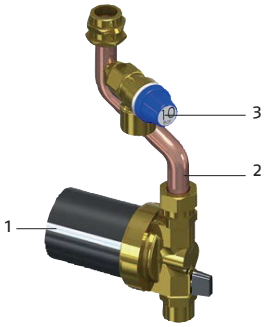
Example of wall installation



DHW RECIRCULATION ACCESSORY

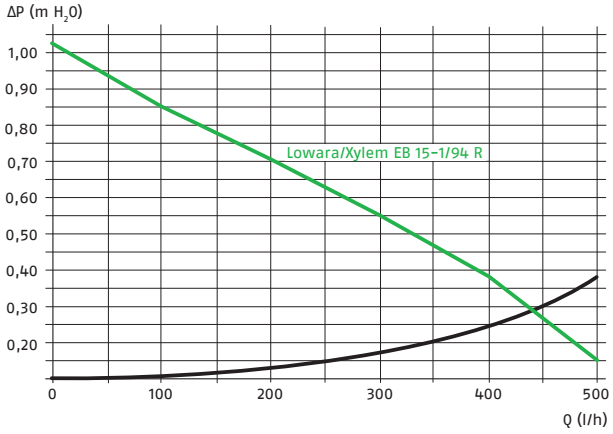
The recirculation KIT for the SC DHW 25/35 modules is supplied separately from the module and comprises a pump complete with check valve and integrated shut-off cock, piping with seals and safety valve.

Structure



1 Pump
2 Pipe with seals
3 Safety valve 6 bar

Pump characteristic curves



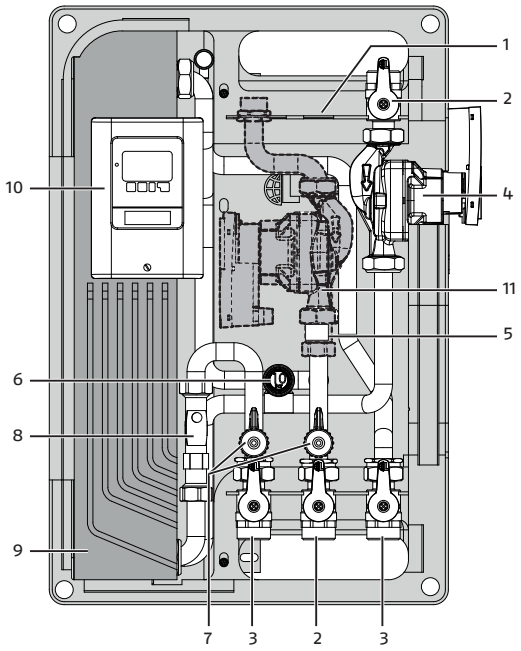
Technical data

Flow rate	m³/h	1
Head	m	3
Pumped liquid temperature	°C	2 - 65
Max. pressure	bar	10
Power supply	V	200-240
Frequency	Hz	50-60
Protection rating	IP	44

DHW MODULE SC DHW 40

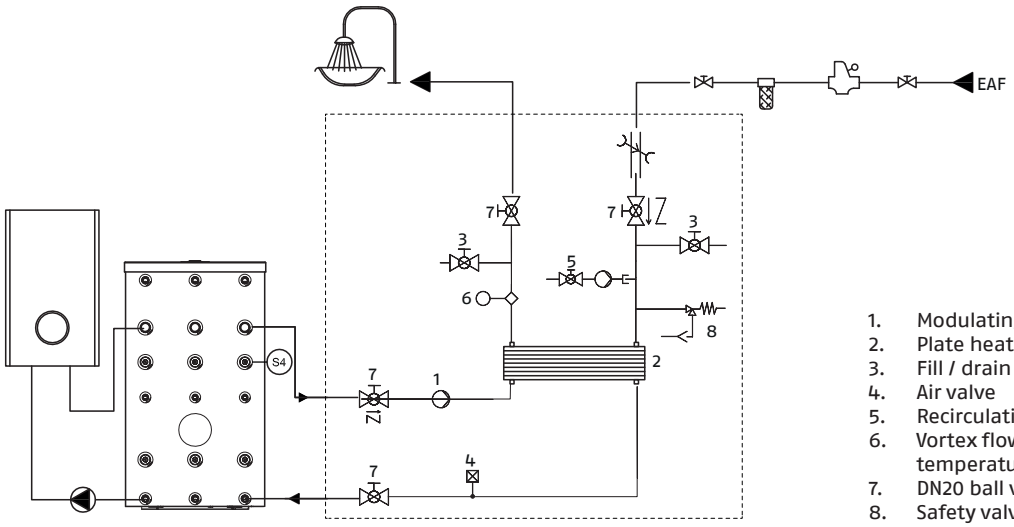
SC DHW 40 is an instant domestic hot water production module with electronically controlled stainless steel braze welded plate heat exchanger.
The system is controlled by an electronic adjustment system to control and manage the operation of the components.
The domestic hot water temperature is adjusted by modulating the flow rate of the primary carrier fluid via a high-efficiency variable-flow pump, controlled by the electronic controller.

Structure



1. Support in insulated galvanised sheet metal
2. DN20 3/4" F - 1" M ball valve (with check)
3. DN20 3/4" F - 1" M ball valve
4. Pump (primary side)
5. Check valve (recirculation circuit)
6. Safety valve 10 bar (secondary side)
7. ½" fill-drain valve
8. Flow rate and temperature sensor (secondary side)
9. Stainless steel braze welded plate heat exchanger
10. Electronic weather compensator
11. Recirculation kit

Hydraulic circuit

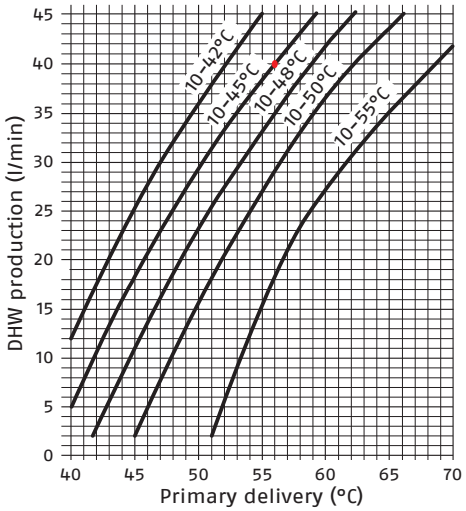


1. Modulating primary pump
2. Plate heat exchanger
3. Fill / drain valve
4. Air valve
5. Recirculation kit
6. Vortex flow sensor with integrated temperature sensor
7. DN20 ball valve
8. Safety valve

Technical data SC DHW 40

Model	UM	SC DHW 40
Heat input with puffer at 50°C and DHW draw-off at 10-45°C	kW	72
DHW production at 10-45°C with puffer at 50°C	l/min	29.5
Heat input with puffer at 55°C and DHW draw-off at 10-45°C	kW	90
DHW production at 10-45°C with puffer at 55°C	l/min	37
Heat input with puffer at 60°C and DHW draw-off at 10-48°C	kW	116.7
DHW production at 10-48°C with puffer at 60°C	l/min	44
Primary maximum flow rate	l/h	1850
Minimum admitted temperature DHW side	°C	5
Maximum operating pressure	°C	90
Maximum operating pressure primary side	bar	10
Primary check valve opening pressure	mbar	28
Secondary check valve opening pressure	mbar	28
Electrical power input	W	48
Power supply voltage	V	230
Power supply frequency	Hz	50-60
Controller protection rating	IP	40
Net weight	kg	19.2
Water volume	l	6.6
Plate dimensions: Width (W) x Height (H) x Depth (D)	mm	117 x 524 x 70
Number of plates	no.	30
Exchange surface	m^2	1.76
Dimensions: Width (W) x Height (H) x Depth (D)	mm	400 x 600 x 250

Domestic hot water production graph



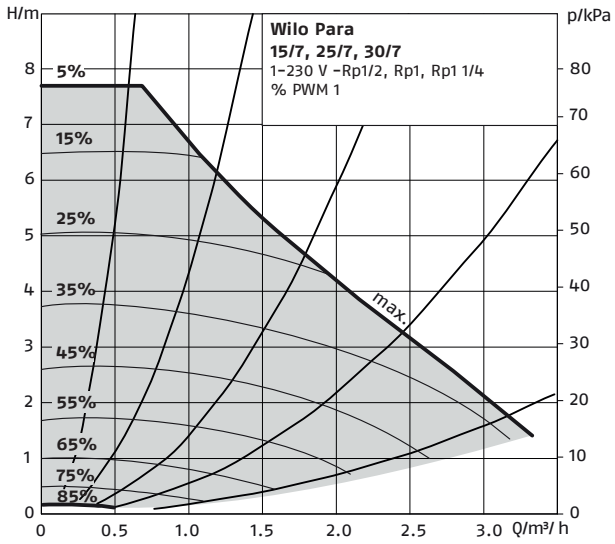
N.B. Proper module operation is guaranteed if the primary delivery temperature is at least 5°C above the set DHW temperature.

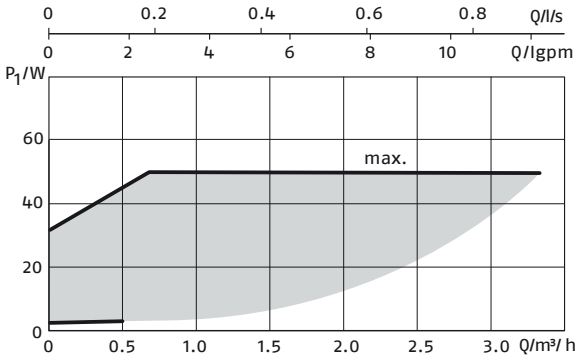
Primary pump characteristic curves (head and power consumption)

Primary circuit
Type: Wilo Yonos Para RS 15/7

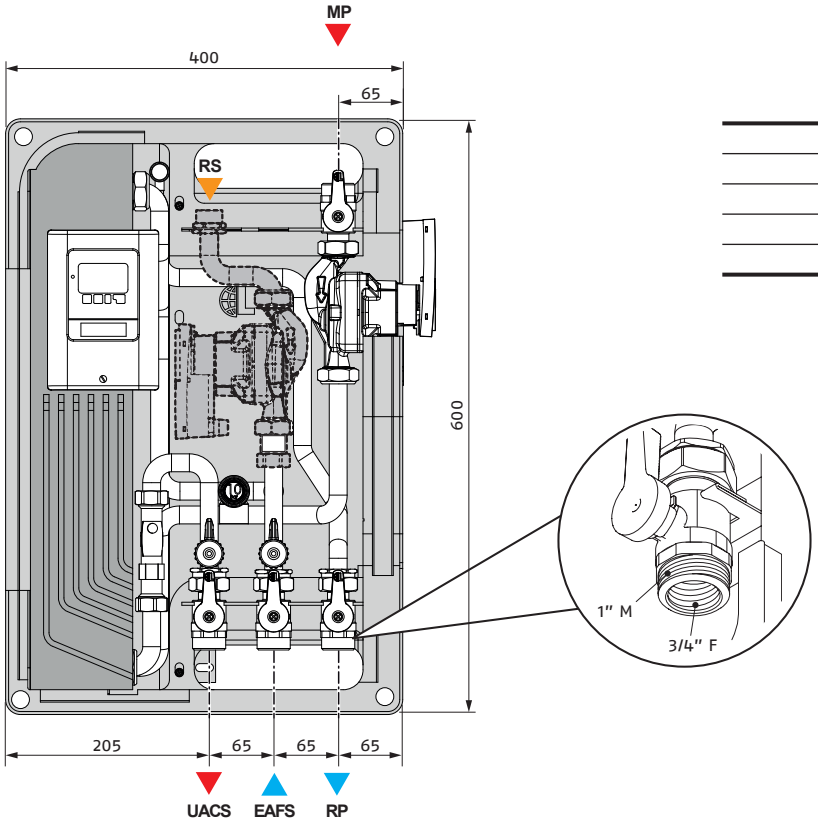
Speed	n	rpm	800 - 4660
Power consumption 1 ~ 230 V	P1	W	3 - 45
Current at 1 ~ 230 V	I	A	0.03 - 0.44
Max. head	H	m	7.6
Max. flow rate	G	l/h	3300

PWM1 adjustment



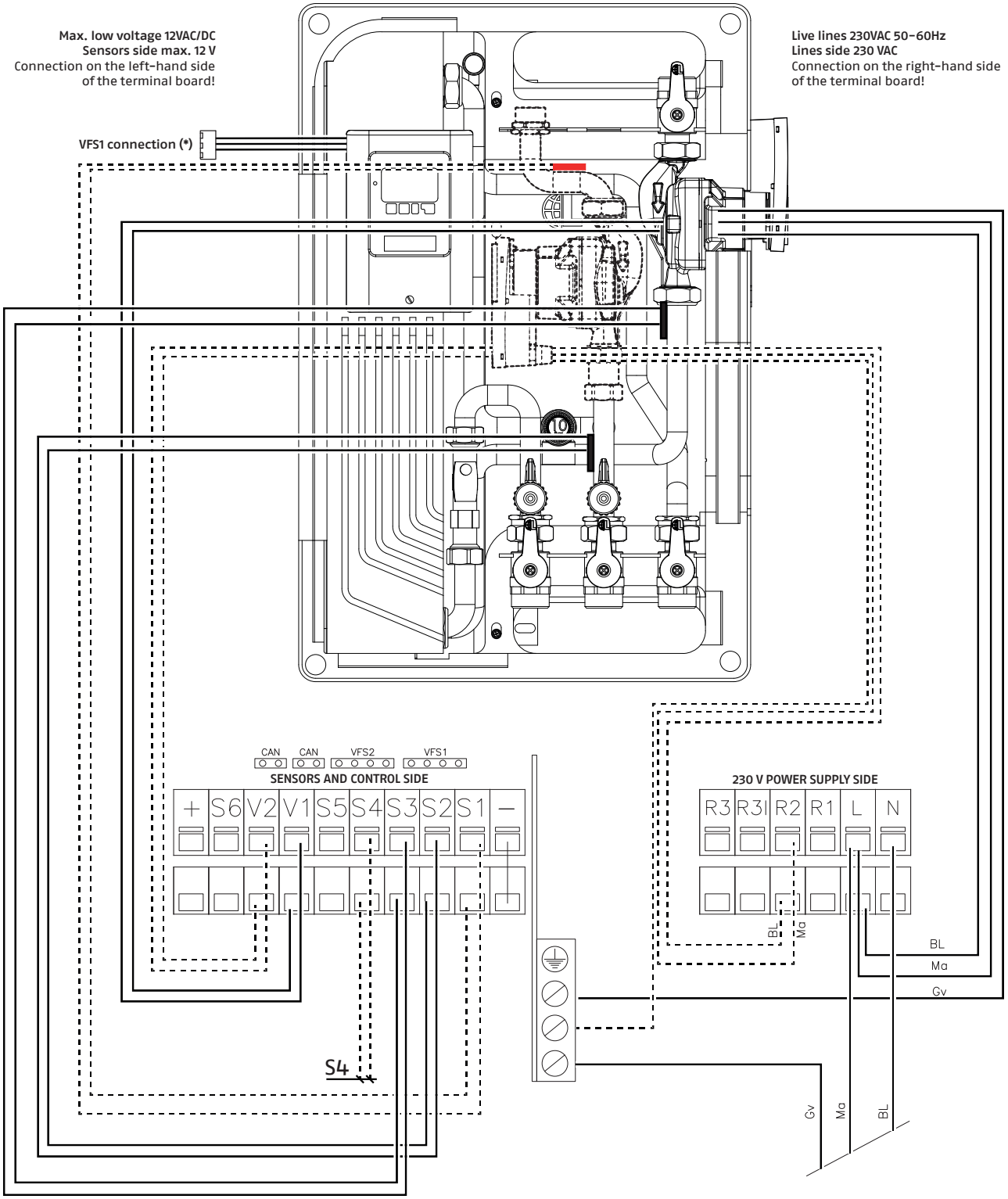


Dimensions and Fittings



MP – Primary delivery	1" M – 3/4" F
RP – Primary return	1" M – 3/4" F
EAFS – DCW inlet	1" M – 3/4" F
UACS – DHW outlet	1" M – 3/4" F
RS – DHW Recirculation	3/4" F

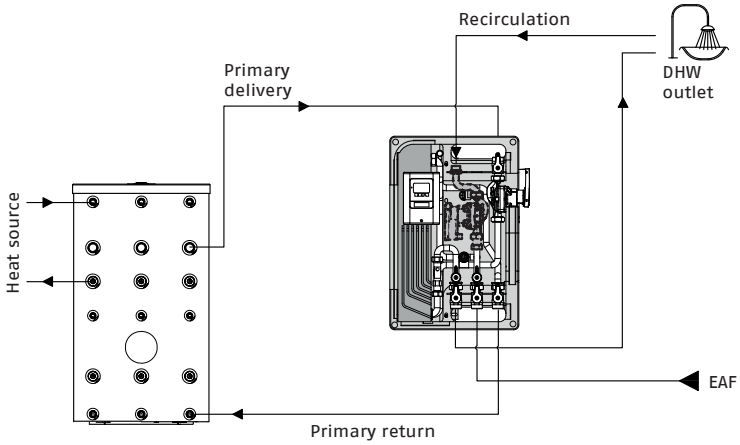
Wiring diagram



V1	Primary pump PWM1
V2	Recirculation pump PWM2
S1	PT1000 recirculation S1 (optional)
S2	PT1000 cold water S2
S3	PT1000 primary S3
S4	PT1000 high puffer S4
S5	Not used
GND	Earth
MA	Main line phase L / primary pump
BL	Main line neutral N / primary pump
(*)	To be routed into controller terminal VFS1

System diagram

Example of wall installation

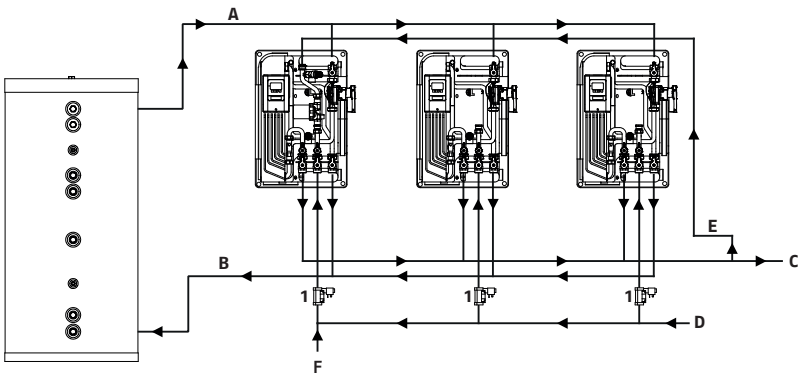


In the case of recirculation, provide a suitably sized expansion vessel to avoid overpressure due to thermal expansion and water hammer.

DHW CASCADE ACCESSORY

The cascade for SC DHW 40 modules is managed electronically through the controller. The modules in the cascade are set to run on a rotational basis to ensure all modules are used evenly. A solenoid valve is inserted in the domestic cold water line at the inlet to each module. Opening each valve allows the individual module in the cascade to start and is managed by the controller according to the settings.

Hydraulic circuit



A Primary delivery
B Primary return
C DHW outlet
D DCW inlet
E Recirculation
F Water mains
1 Solenoid valve

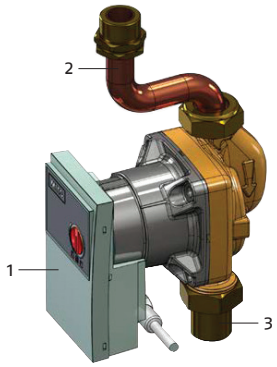
Electrical connection

The cascade for SC DHW 40 modules is managed electronically through the can-bus connection between the controllers. Connect the solenoid valve to the controller's terminal board in connection with relay 3. Using the bus cable provided, connect the controllers by inserting the cable into the dedicated seat in the terminal board (CAN).

DHW RECIRCULATION ACCESSORY

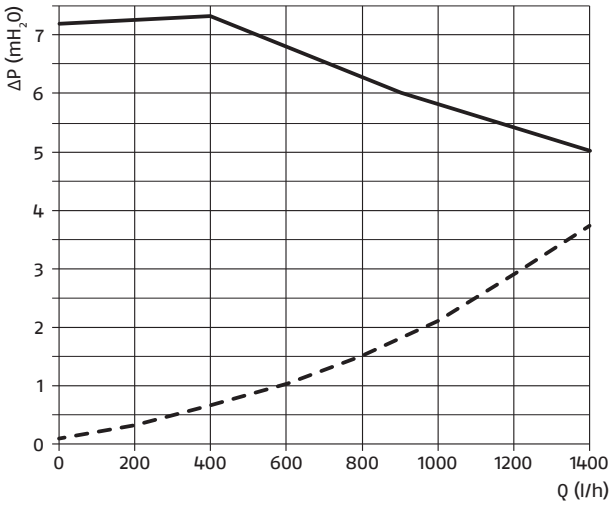
The recirculation KIT for the SC DHW 40 module is supplied separately from the module and comprises a pump, a check valve, a PT1000 sensor and the copper piping kit.

Structure



1 Pump
2 Housing for S1 recirculation probe
3 Check valve

Pump characteristic curves



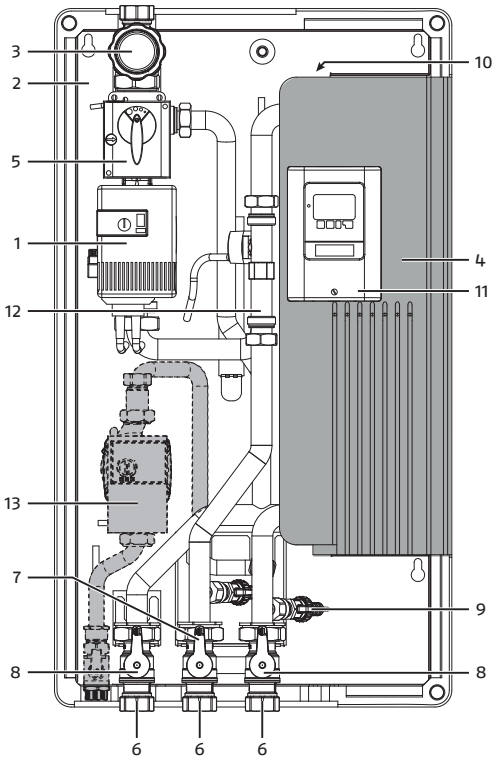
Technical data

Flow rate	m³/h	1.4
Head	m	7.2
Pumped liquid temperature	°C	2 - 65
Max. pressure	bar	10
Power supply	V	200-240
Frequency	Hz	50-60
Protection rating	IP	44

DHW MODULE SC DHW 80

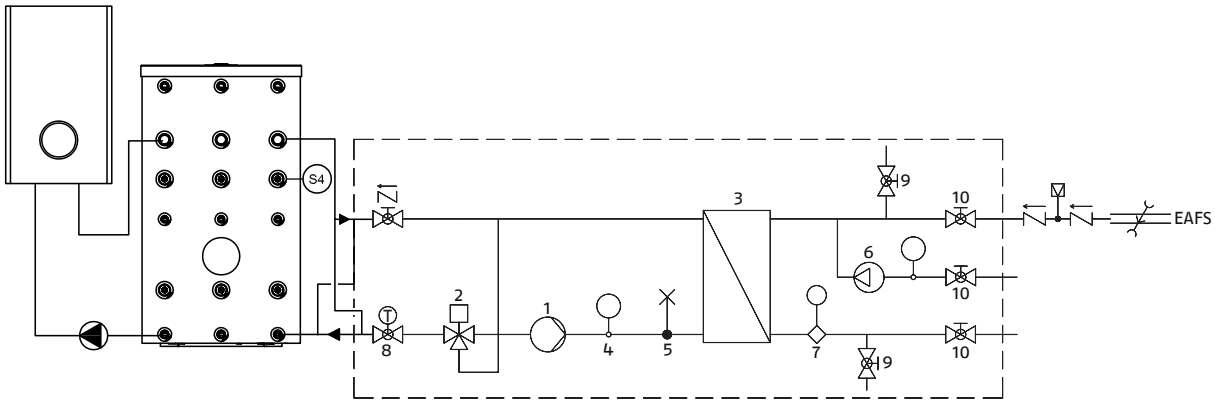
The SC DHW 80 module is an instant domestic hot water production module with electronically controlled stainless steel braze welded plate heat exchanger, which is used in combination with inertia puffers.
The temperature of the domestic hot water (secondary) is adjusted by modulating the flow rate of the primary carrier fluid via a high-efficiency variable-flow pump, controlled by the LFWC electronic controller (PWM control).
Due to the low temperatures required in the primary, the system is excellently suited for use in solar thermal and low-temperature heating systems.
A 3-way mixer valve in the primary circuit stabilises the inlet temperature (ideal for summer when the system is integrated with solar panels).

Structure



1. Primary pump
2. Black painted frame template
3. Black handle with red thermometer (primary circuit)
4. Stainless steel braze welded plate heat exchanger with insulation
5. "TV3" DN25 mixer valve with servomotor NRYC230
6. DN25 1½" ball valve with cap
7. Red handle
8. Blue handle
9. ½" fill-drain valve
10. 3/8" manual air valve
11. Electronic regulator mod. LFWC
12. Vortex flow sensor 5-100 l/min
13. DHW recirculation kit (supplied separately) comprising: Wilo PARA Z 15/7 iPWM2 pump, Molex connector, M-F 3/4" valve, plain shank with check valve, PT1000 immersion sensor and sensor sheath, pipes and accessories

Hydraulic circuit

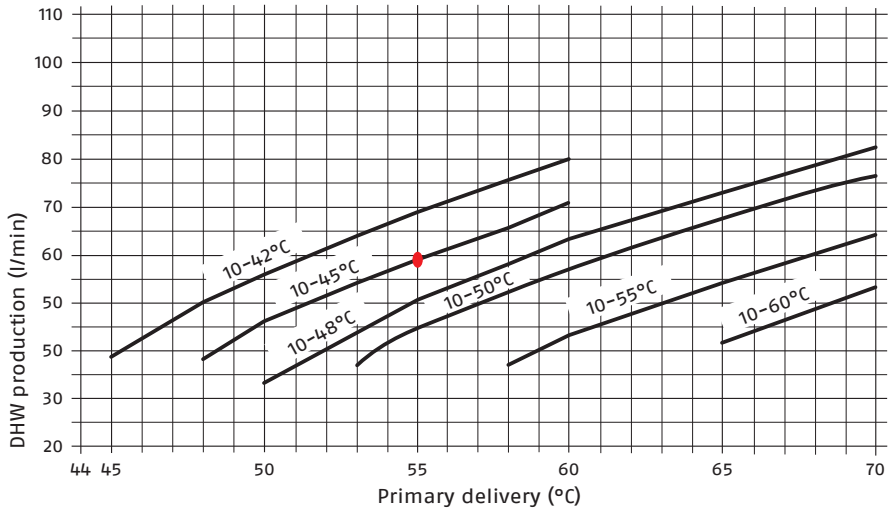


1. Modulating primary pump
2. 3-way mixer valve with servomotor
3. Plate heat exchanger
4. Sensor sheath
5. Manual air valve
6. Recirculation kit
7. Vortex flow sensor with integrated temperature sensor
8. DN25 ball valve with thermometer
9. Fill / drain valve
10. DN25 ball valve

Technical data SC DHW 80

Model	UM	SC DHW 80
Heat input with puffer at 50°C and DHW draw-off at 10-45°C	kW	134
DHW production at 10-45°C with puffer at 50°C	l/min	55
Heat input with puffer at 55°C and DHW draw-off at 10-45°C	kW	146
DHW production at 10-45°C with puffer at 55°C	l/min	60
Heat input with puffer at 60°C and DHW draw-off at 10-48°C	kW	170
DHW production at 10-48°C with puffer at 60°C	l/min	64
Primary maximum flow rate	l/h	3,600
Minimum admitted temperature DHW side	°C	2
Maximum operating pressure	°C	90
Maximum operating pressure primary side	bar	6
Primary check valve opening pressure	mbar	28
Secondary check valve opening pressure	mbar	28
Electrical power input	W	132
Power supply voltage	V	230
Power supply frequency	Hz	50-60
Controller protection rating	IP	40
Net weight	kg	30
Water volume	l	19
Plate dimensions: Width (W) x Height (H) x Depth (D)	mm	117 x 524 x 115
Number of plates	no.	50
Exchange surface	m²	3.02
Dimensions: Width (W) x Height (H) x Depth (D)	mm	475 x 835 x 226

Domestic hot water production graph



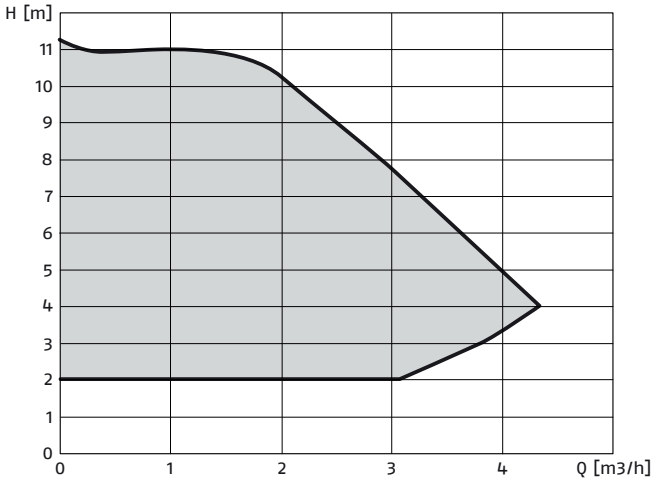
N.B. Proper module operation is guaranteed if the primary delivery temperature is at least 5°C above the set DHW temperature.

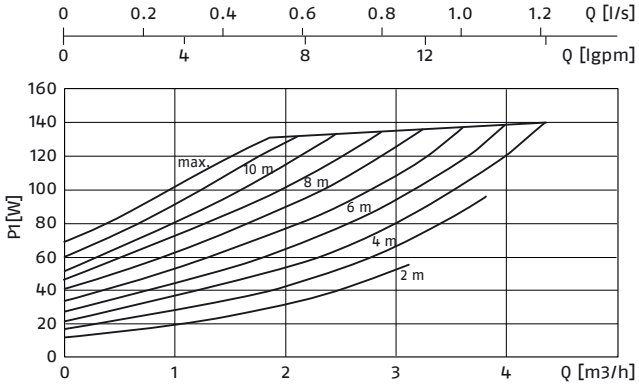
Primary pump characteristic curves (head and power consumption)

Primary circuit
Type: Wilo Stratos Para 25/1-11

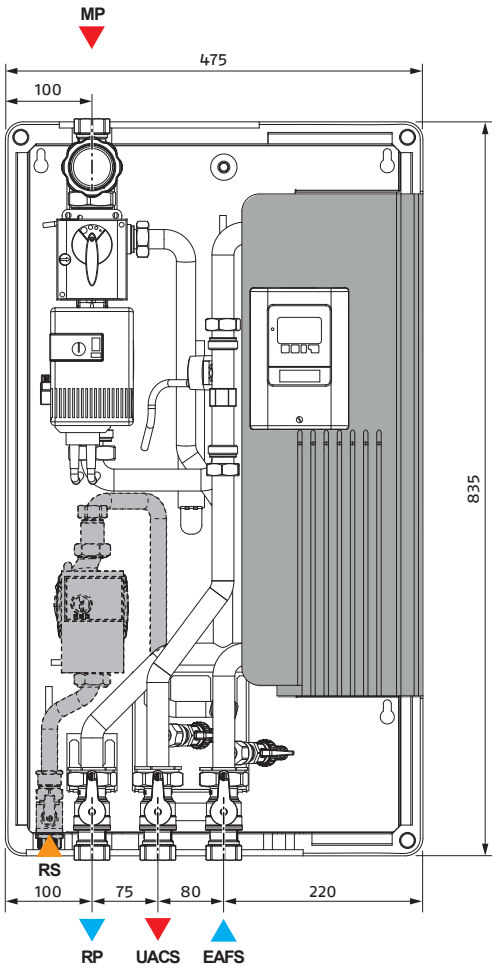
Speed	n	rpm	800 - 4300
Power consumption 1 ~ 230 V	P1	W	10 - 130
Current at 1 ~ 230 V	I	A	0.05 - 0.70
Max. head	H	m	11.0
Max. flow rate	G	l/h	4300

PWM1 adjustment



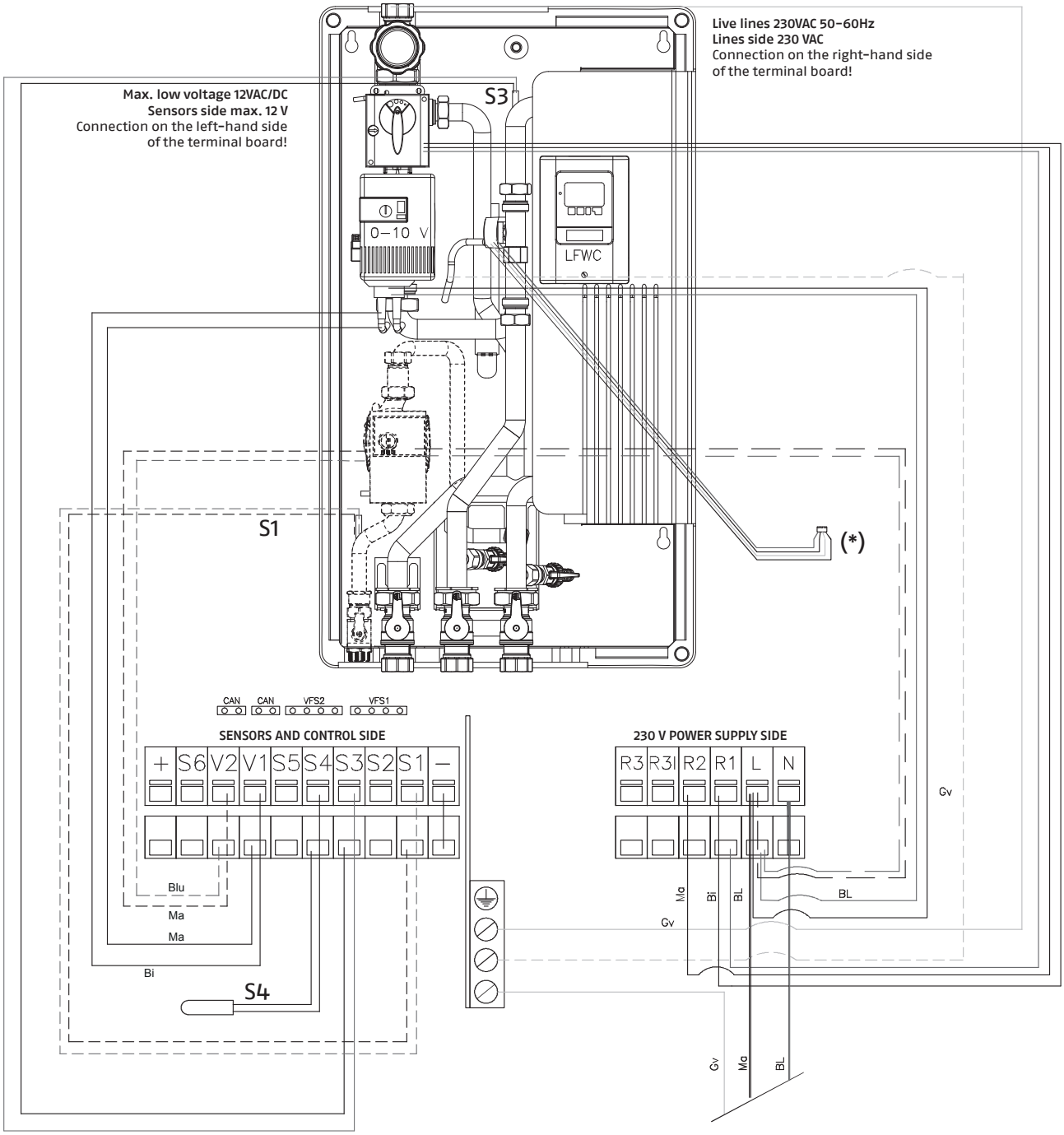


Dimensions and Fittings



MP – Primary delivery	1" F
RP – Primary return	1" F
EAFS – DCW inlet	1" F
UACS – DHW outlet	1" F
RS – DHW Recirculation	3/4" M

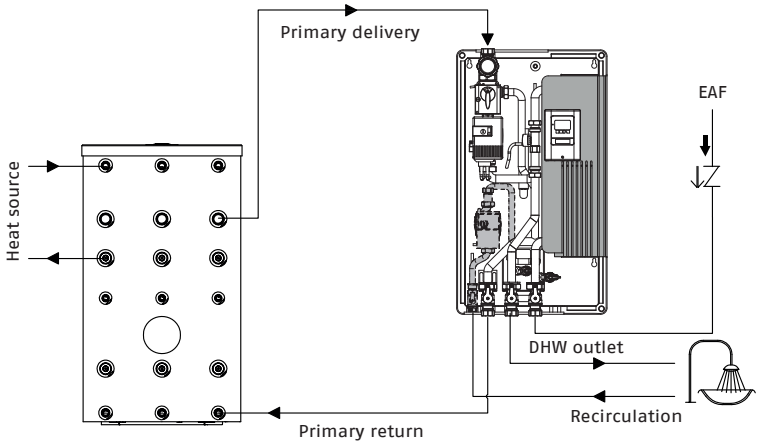
Wiring diagram



V1	Primary pump PWM1
V2	Recirculation pump PWM2
S1	PT1000 recirculation S1 (optional)
S2	Not used
S3	PT1000 primary S3
S4	PT1000 high puffer S4
S5	Not used
GND	Earth
MA	Main line phase L / primary pump
BL	Main line neutral N / primary pump
(*)	To be routed into controller terminal VFS1

System diagram

Example of wall installation

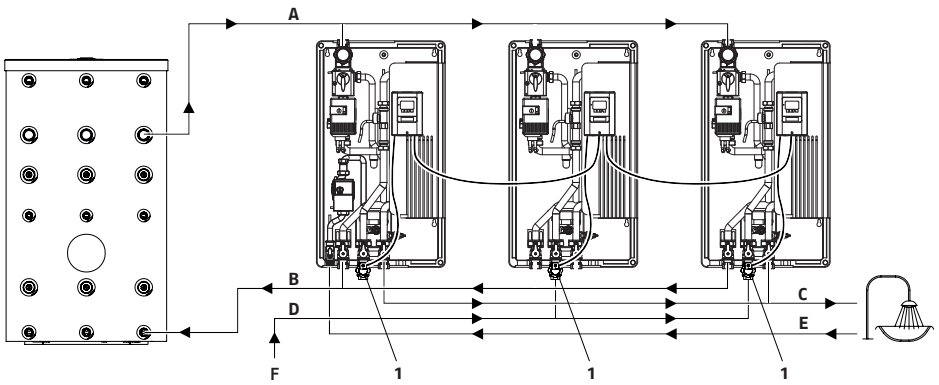


In the case of recirculation, provide a suitably sized expansion vessel to avoid overpressure due to thermal expansion and water hammer.

DHW CASCADE ACCESSORY

The cascade for SC DHW 80 modules is managed electronically through the controller. The modules in the cascade are set to run on a rotational basis to ensure all modules are used evenly. A solenoid valve is inserted in the domestic cold water line at the inlet to each module. Opening each valve allows the individual module in the cascade to start and is managed by the controller according to the settings.

Hydraulic circuit



A Primary delivery
B Primary return
C DHW outlet
D DCW inlet
E Recirculation
F Water mains
1 Solenoid valve

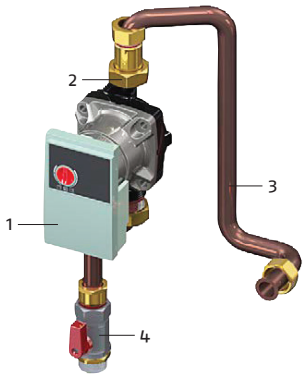
Electrical connection

The cascade for SC DHW 80 modules is managed electronically through the can-bus connection between the controllers. Connect the solenoid valve to the controller's terminal board in connection with relay 3. Using the bus cable provided, connect the controllers by inserting the cable into the dedicated seat in the terminal board (CAN).

DHW RECIRCULATION ACCESSORY

The recirculation KIT for the SC DHW 80 module is supplied separately from the module and comprises a pump, a 3/4" M ball valve, a check valve, a PT1000 sensor and the copper piping kit.

Structure

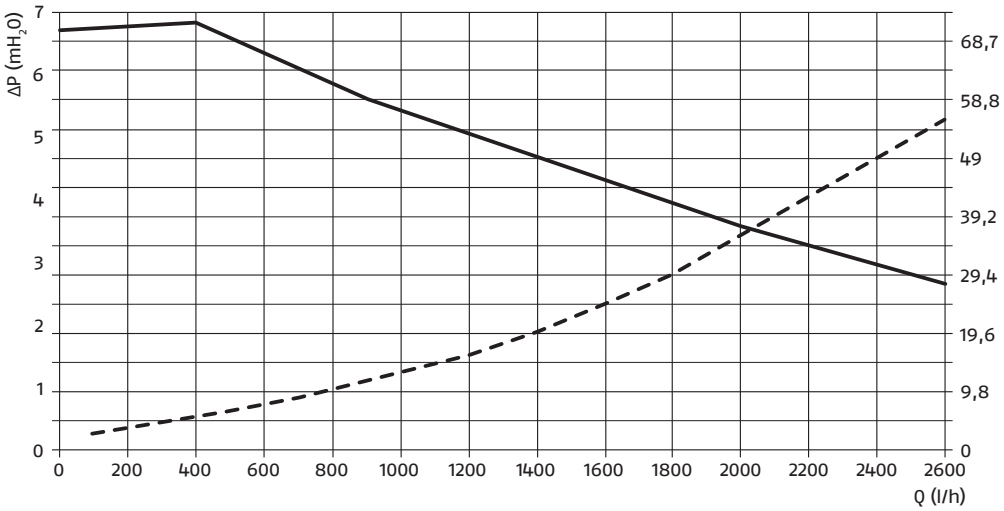


1 Pump
2 Check valve
3 Housing for S1 recirculation probe
4 3/4" M shut-off cock

Technical data

Flow rate	m³/h	2.6
Head	m	6.7
Pumped liquid temperature	°C	2 - 65
Max. pressure	bar	10
Power supply	V	200-240
Frequency	Hz	50-60
Protection rating	IP	44

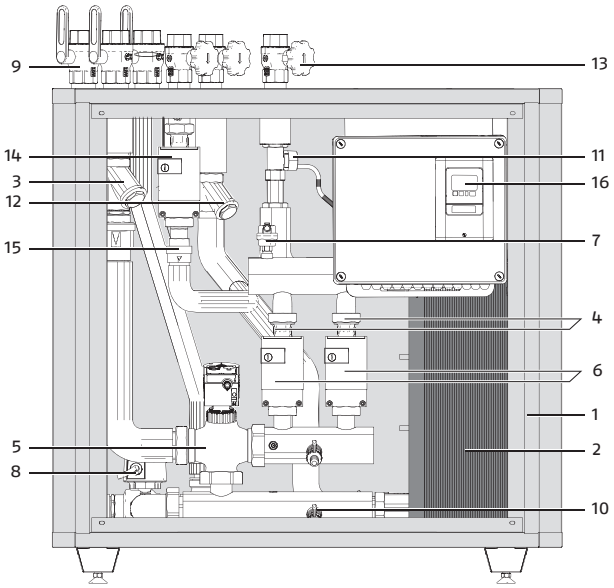
Pump characteristic curves



DHW MODULES SC DHW 160

SC DHW 160 are floor-standing modules for instant domestic hot water production for large users. The task of the modules is to heat domestic water by exchanging energy from a technical water puffer. The advantage of using modules is to obtain domestic hot water in large quantities, with a primary temperature of 48°C (with DHW 45°C). This allows multiple energy resources to be used, such as solar, heat pumps, biomass, etc.
The modules are designed to feature the most advanced hydraulic and electronic control technologies, guaranteeing DHW production up to 160 l/min per module.

Structure



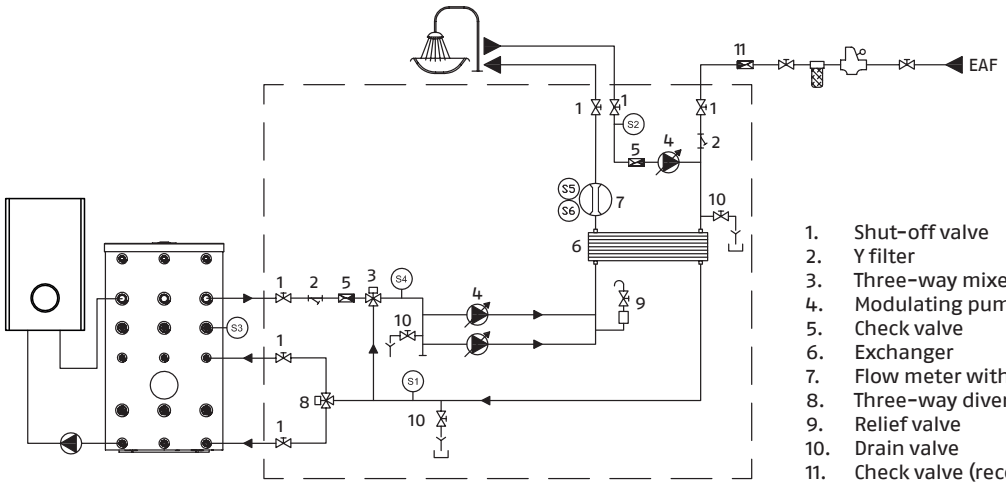
1. Cabinet with painted sheet metal frame, air vents for internal electronic components, accessible on four sides
2. AISI 316 braze welded plate heat exchanger

PRIMARY circuit
3. Impurity filter
4. Check valve
5. Mixer valve on primary circuit with servomotor (220 V AC 3 points)
6. HIGH EFFICIENCY modulating pumps installed in parallel (1) and (2)
7. Automatic air valve
8. Diverter valve for double return
9. Primary circuit shut-off ball valve
10. Fill and drain valve 1/2"M

SECONDARY CIRCUIT
11. Flow rate and temperature digital sensor 5-100 l/min – 10-200 l/min
12. Impurity filter
13. Ball valve against water hammer
14. Pump for recirculation function
15. Check valve

ELECTRICAL PANEL
16. Power switch; controller

Hydraulic circuit

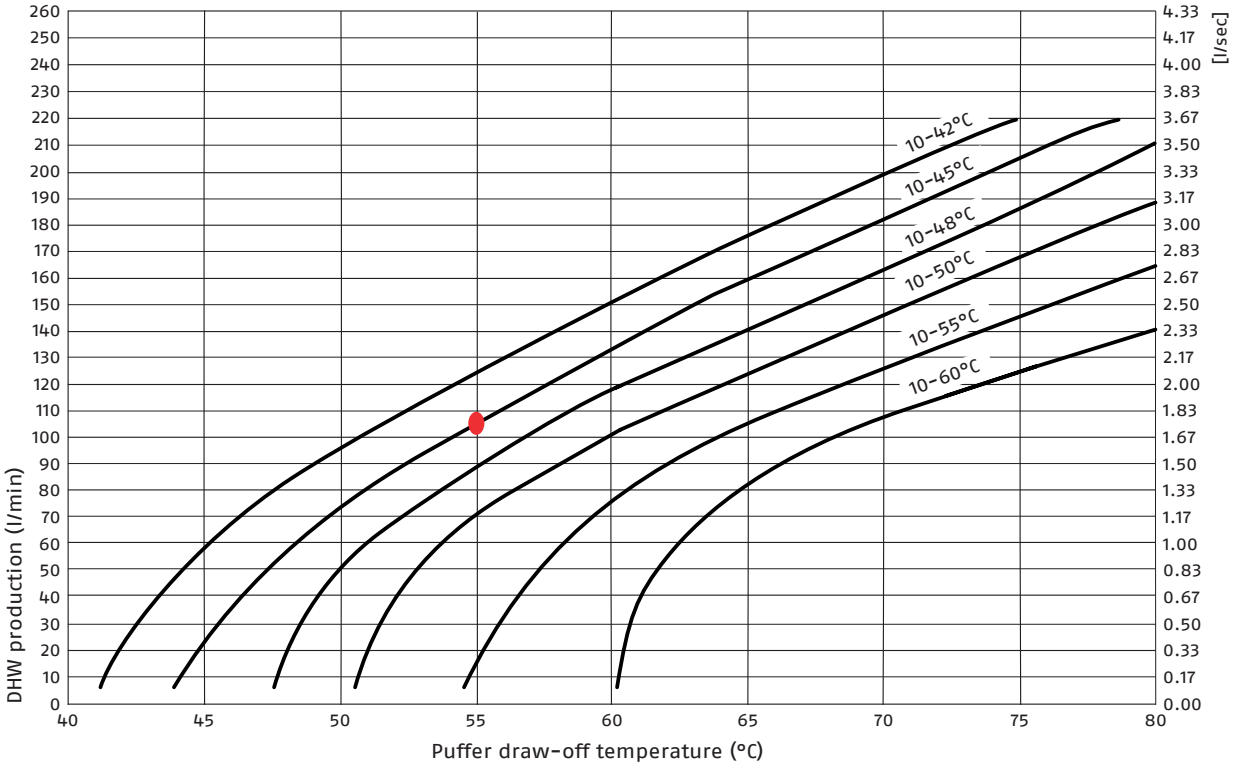


1. Shut-off valve
2. Y filter
3. Three-way mixer valve
4. Modulating pump
5. Check valve
6. Exchanger
7. Flow meter with temperature detection (S5-S6)
8. Three-way diverter valve
9. Relief valve
10. Drain valve
11. Check valve (recommended, not supplied)

Technical data SC DHW 160

Model	UM	SC DHW 160
Heat input with puffer at 55°C and DHW draw-off at 10-45°C	kW	244
DHW production at 10-45°C with puffer at 55°C	l/min	100
Heat input with puffer at 60°C and DHW draw-off at 10-45°C	kW	329
DHW production at 10-45°C with puffer at 60°C	l/min	135
Heat input with puffer at 65°C and DHW draw-off at 10-45°C	kW	403
DHW production at 10-45°C with puffer at 65°C	l/min	165
Primary maximum flow rate	l/h	8000
Minimum admitted temperature DHW side	°C	2
Maximum operating pressure	°C	90
Maximum operating pressure primary side	bar	10
Primary check valve opening pressure	mbar	45
Secondary check valve opening pressure	mbar	40
Electrical power input	W	410
Power supply voltage	V	230
Power supply frequency	Hz	50-60
Controller protection rating	IP	40
Net weight	kg	141
Water volume	l	43
Plate dimensions: Width (W) x Height (H) x Depth (D)	mm	243 x 525 x 125
Number of plates	no.	50
Exchange surface	m²	6.34
Dimensions: Width (W) x Height (H) x Depth (D)	mm	1000 x 1110 x 500

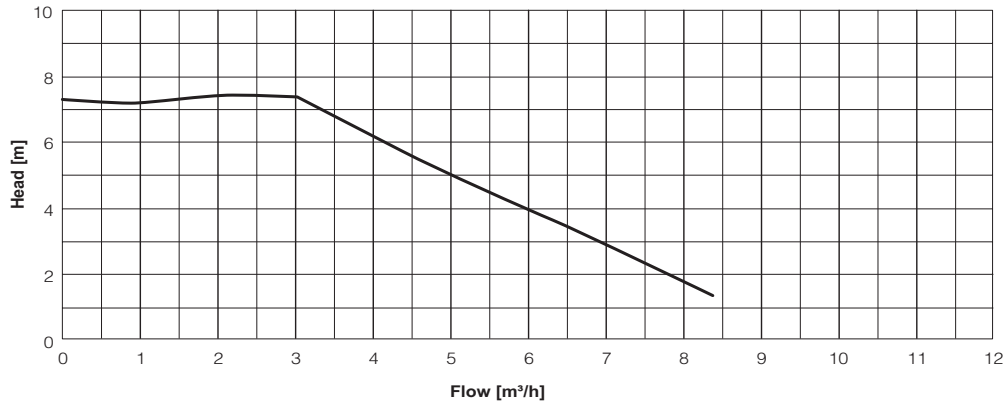
Domestic hot water production graph



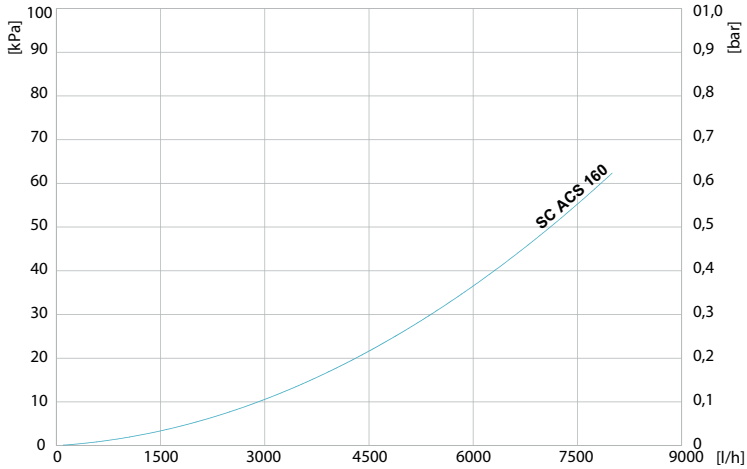
N.B. Proper module operation is guaranteed if the primary delivery temperature is at least 3°C above the set DHW temperature.

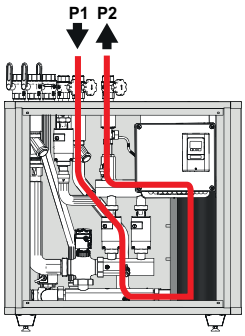
Primary pump characteristic curves (head and power consumption)

Primary circuit
Type: Wilo Stratos Para 25/1-8

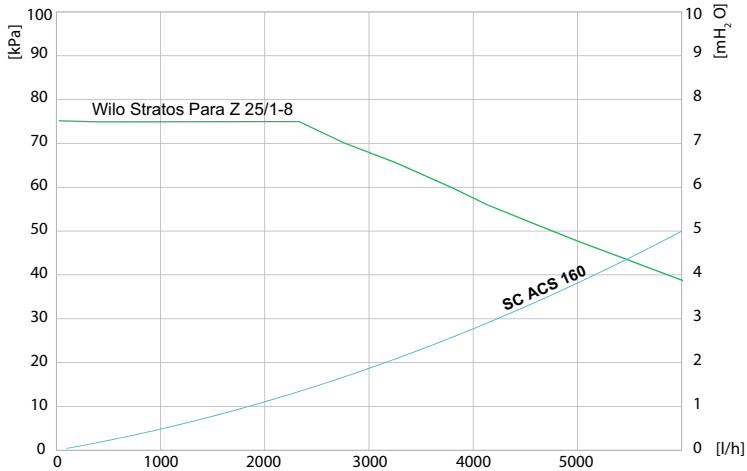


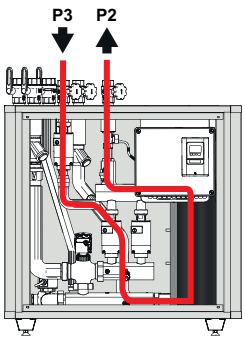
DHW circuit head loss



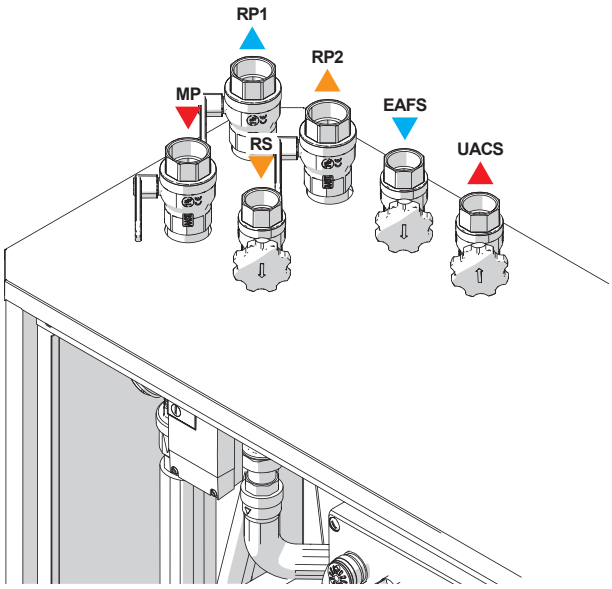


Pump head and recirculation circuit head loss



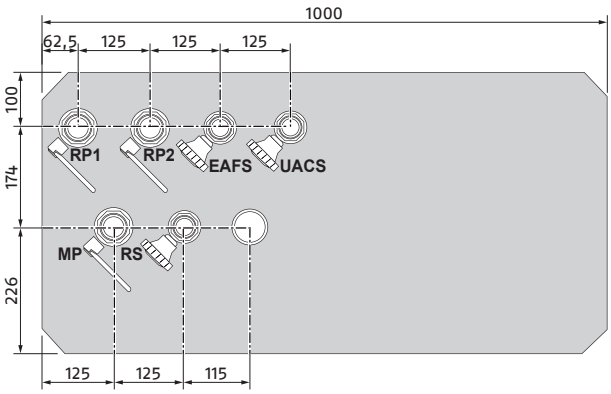


Dimensions and Fittings



RP1 – Primary return 1 (low puffer)	1 1/2"
RP2 – Primary return 2 (mid puffer)	1 1/2"
MP – Primary delivery	1 1/2"
RS – DHW recirculation	1 1/4"
EAFS – Domestic cold water inlet	1 1/4"
UACS – Domestic hot water outlet	1 1/4"

Dimensions:

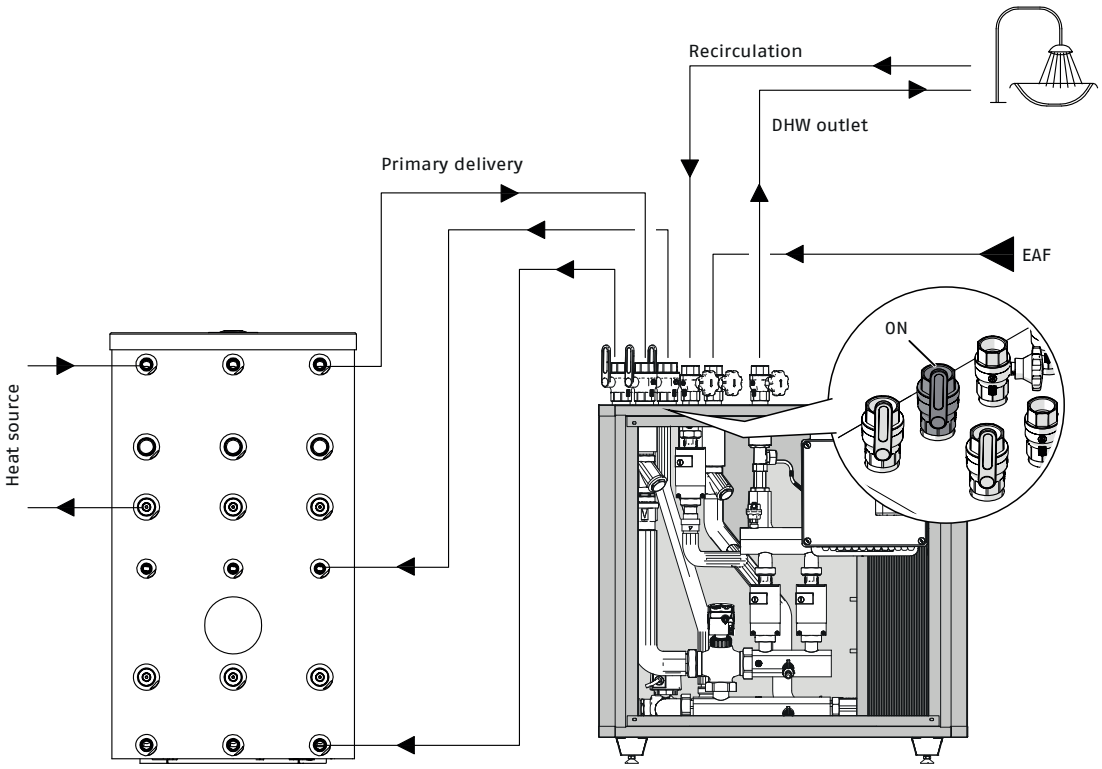


Height	1100 mm (including fittings)
Width	1000 mm
Depth	500 mm

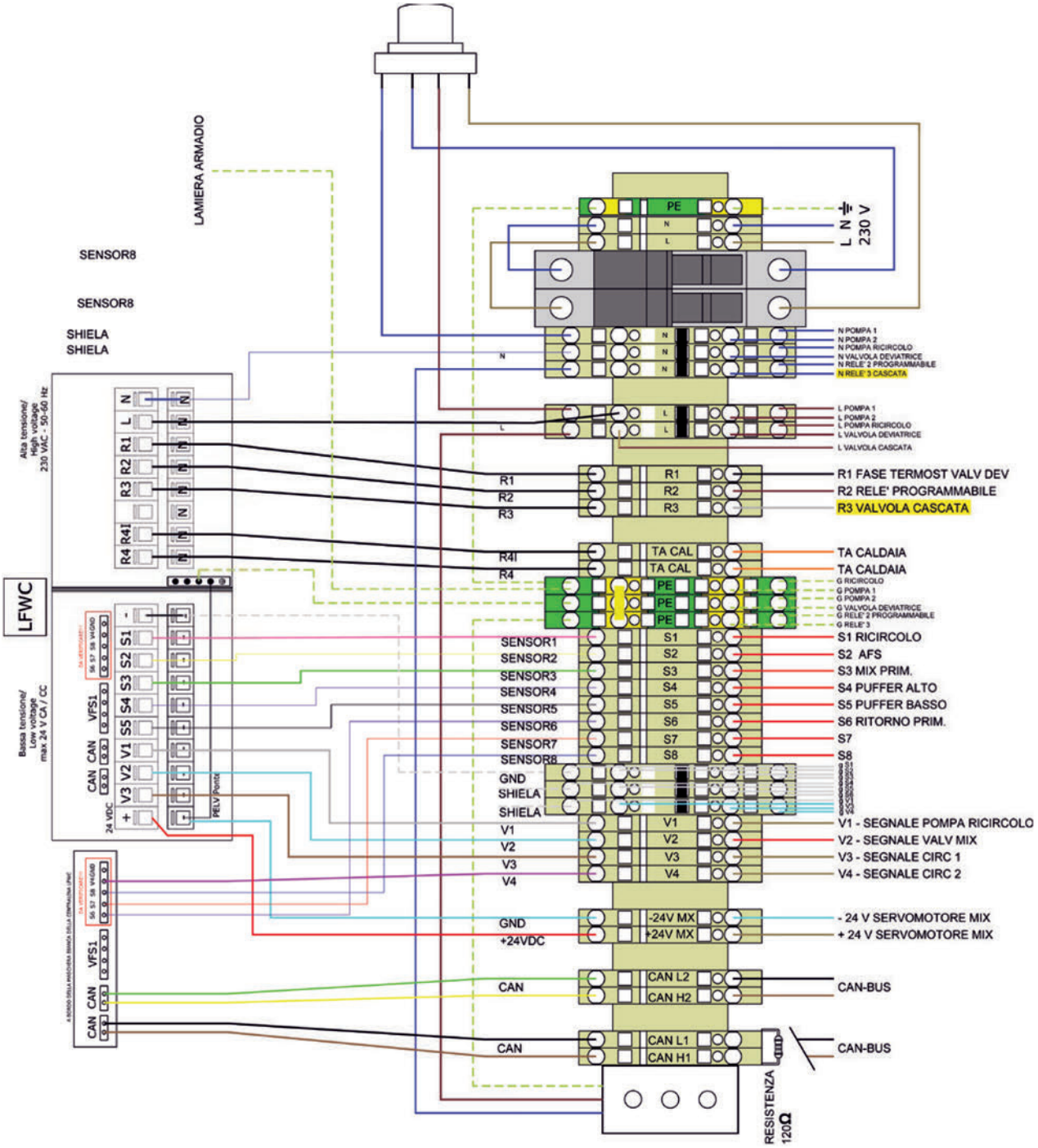
We recommend leaving a clearance of at least 50 cm around the device to allow for inspections and maintenance.

System diagram

Version with double return



Wiring diagram



Legenda	Legend
LAMIERA ARMADIO	CABINET SHEET METAL
N POMPA 1	N PUMP 1
N POMPA 2	N PUMP 2
N POMPA RICIRCOLO	N RECIRCULATION PUMP
N VALVOLA DEVIATRICE	N DIVERTER VALVE
N RELE' 2 PROGRAMMABILE	N RELAY 2 PROGRAMMABLE
N RELE' 3 CASCATA	N RELAY 3 CASCADE
L POMPA 1	L PUMP 1
L POMPA 2	L PUMP 2
L POMPA RICIRCOLO	L RECIRCULATION PUMP
L VALVOLA DEVIATRICE	L DIVERTER VALVE
L VALVOLA CASCATA	L CASCADE VALVE
R1 FASE TERMOST VALV DEV	R1 DIVERTER VALVE THERMOSTAT PHASE

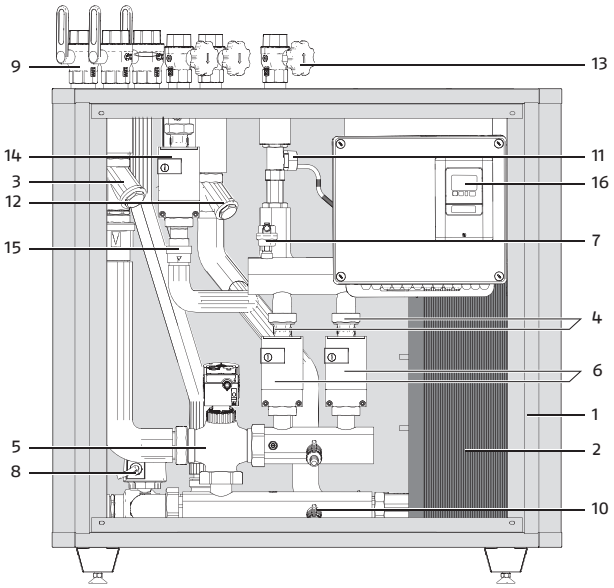
Legenda	Legend
R2 RELE' PROGRAMMABILE	R2 PROGRAMMABLE RELAY
R3 VALVOLA CASCATA	R3 CASCADE VALVE
TA CALDAIA	TA BOILER
TA CALDAIA	TA BOILER
G RICIRCOLO	G RECIRCULAITON
G POMPA 1	G PUMP 1
G POMPA 1	G PUMP 2
G VALVOLA DEVIATRICE	G DIVERTER VALVE
G RELE' 2 PROGRAMMABILE	G PROGRAMMABLE RELAY 2
G RELE' 3	G RELAY 3
S1 RICIRCOLO	S1 RECIRCULATION
S2 AFS	S2 DOMESTIC COLD WATER
S3 MIX PRIM.	S3 MIX. PRIMARY
S4 PUFFER ALTO	S4 HIGH PUFFER

Legenda	Legend
S5 PUFFER BASSO	S5 LOW PUFFER
S6 RITORNO PRIM.	S6 PRIMARY RETURN
V1 - SEGNALE POMPA RICIRCOLO	V1 - RECIRCULATION PUMP SIGNAL
V2 - SEGNALE VALV MIX	V2 - MIXING VALVE SIGNAL
V3 - SEGNALE CIRC 1	V3 - CIRCULATION 1 SIGNAL
V4 - SEGNALE CIRC 2	V4 - CIRCULATION 2 SIGNAL
-24 V SERVOMOTORE MIX	-24 V SERVOMOTOR MIX
+ 24 V SERVOMOTORE MIX	+24 V SERVOMOTOR MIX
CAN-BUS	CAN-BUS
RESISTENZA	ELECTRIC RESISTANCE

DHW MODULES SC DHW 225

SC DHW 225 are floor-standing modules for instant domestic hot water product for large users. The task of the modules is to heat domestic water by exchanging energy from a technical water puffer. The advantage of using modules is to obtain domestic hot water in large quantities, with a primary temperature of 48°C (with DHW 45°C). This allows multiple energy resources to be used, such as solar, heat pumps, biomass, etc.
The modules are designed to feature the most advanced hydraulic and electronic control technologies, guaranteeing DHW production up to 220 l/min per module.

Structure



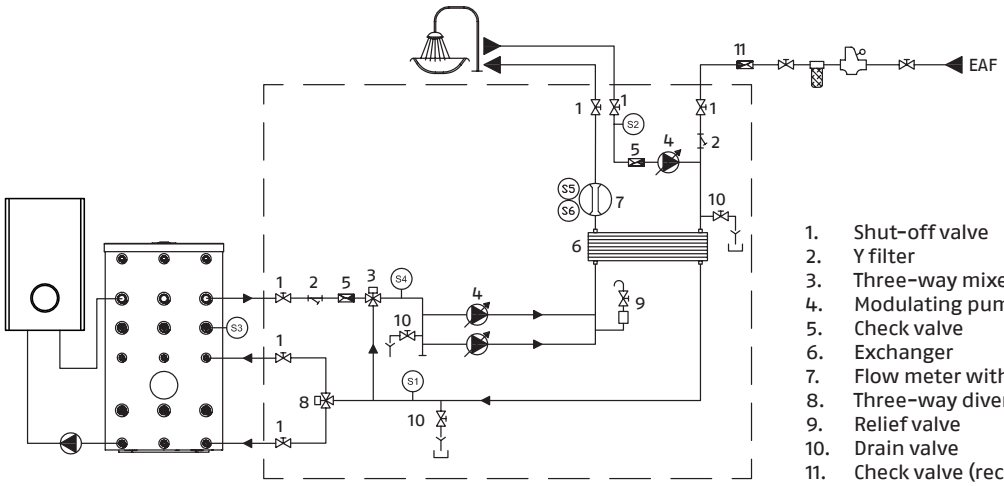
1. Cabinet with painted sheet metal frame, air vents for internal electronic components, accessible on four sides
2. AISI 316 braze welded plate heat exchanger

PRIMARY circuit
3. Impurity filter
4. Check valve
5. Mixer valve on primary circuit with servomotor (220 V AC 3 points)
6. HIGH EFFICIENCY modulating pumps installed in parallel (1) and (2)
7. Automatic air valve
8. Diverter valve for double return
9. Primary circuit shut-off ball valve
10. Fill and drain valve 1/2"M

SECONDARY CIRCUIT
11. Flow rate and temperature digital sensor 5-100 l/min – 10-200 l/min
12. Impurity filter
13. Ball valve against water hammer
14. Pump for recirculation function
15. Check valve

ELECTRICAL PANEL
16. Power switch; controller

Hydraulic circuit

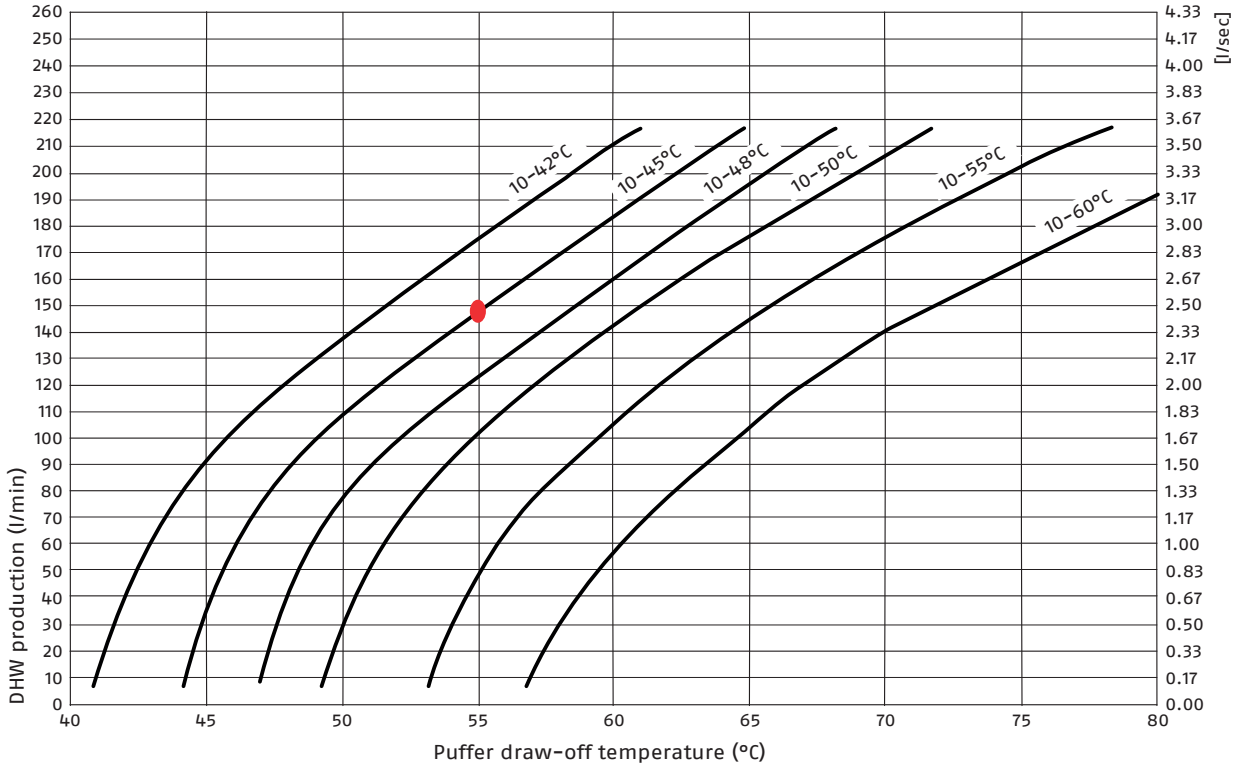


1. Shut-off valve
2. Y filter
3. Three-way mixer valve
4. Modulating pump
5. Check valve
6. Exchanger
7. Flow meter with temperature detection (S5-S6)
8. Three-way diverter valve
9. Relief valve
10. Drain valve
11. Check valve (recommended, not supplied)

Technical data SC DHW 225

Model	UM	SC DHW 225
Heat input with puffer at 55°C and DHW draw-off at 10-45°C	kW	366
DHW production at 10-45°C with puffer at 55°C	l/min	150
Heat input with puffer at 60°C and DHW draw-off at 10-45°C	kW	456
DHW production at 10-45°C with puffer at 60°C	l/min	187
Heat input with puffer at 65°C and DHW draw-off at 10-45°C	kW	537
DHW production at 10-45°C with puffer at 65°C	l/min	220
Primary maximum flow rate	l/h	10500
Minimum admitted temperature DHW side	°C	2
Maximum operating pressure	°C	90
Maximum operating pressure primary side	bar	10
Primary check valve opening pressure	mbar	45
Secondary check valve opening pressure	mbar	40
Electrical power input	W	770
Power supply voltage	V	230
Power supply frequency	Hz	50-60
Controller protection rating	IP	40
Plate dimensions: Width (W) x Height (H) x Depth (D)	mm	243 x 525 x 194
Number of plates	no.	80
Exchange surface	m^2	10.3
Dimensions: Width (W) x Height (H) x Depth (D)	mm	1000 x 1110 x 500

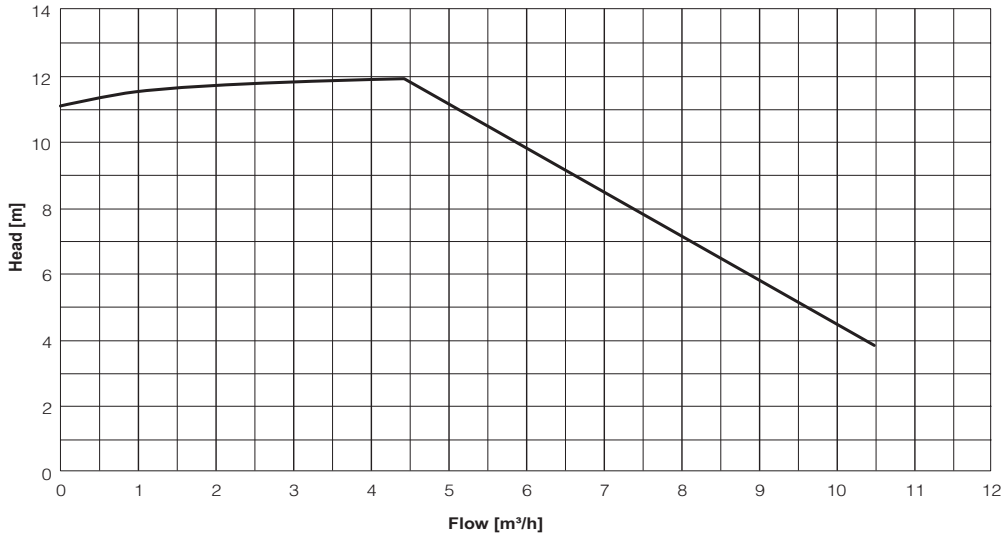
Domestic hot water production graph



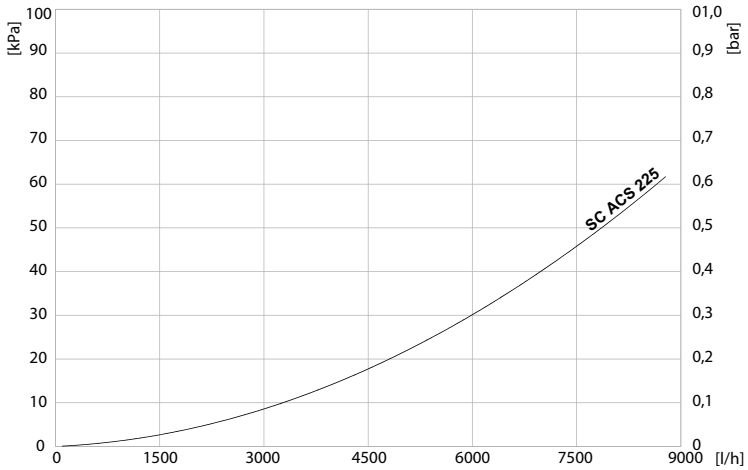
N.B. Proper module operation is guaranteed if the primary delivery temperature is at least 3°C above the set DHW temperature.

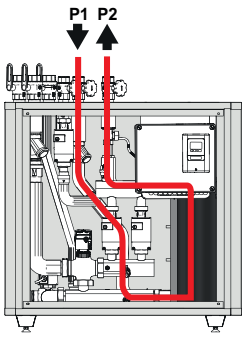
Primary pump characteristic curves (head and power consumption)

Primary circuit
Type: Wilo Stratos Para 25/1–12

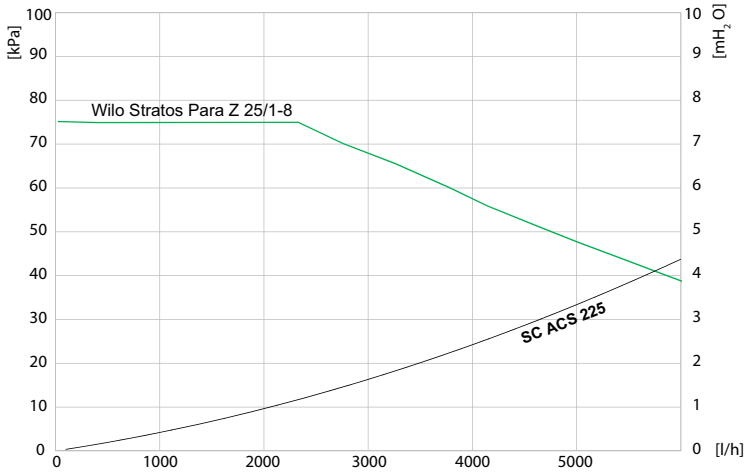


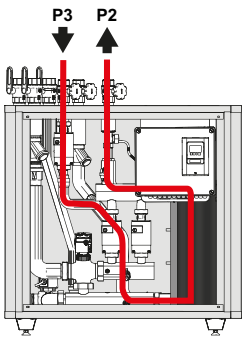
DHW circuit head loss



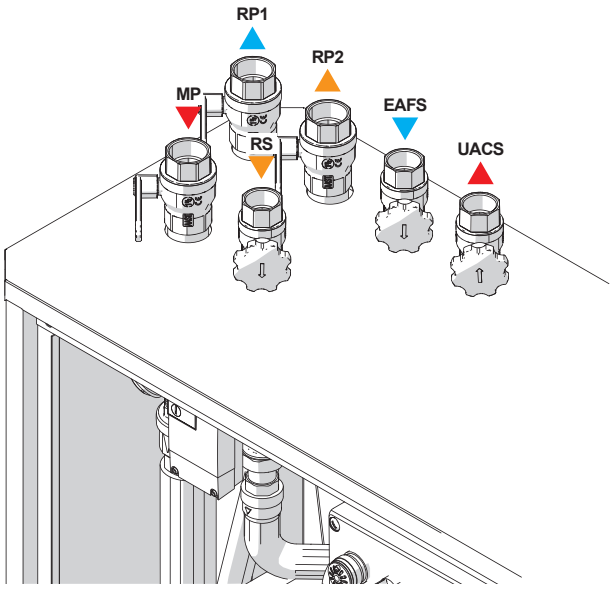


Pump head and recirculation circuit head loss



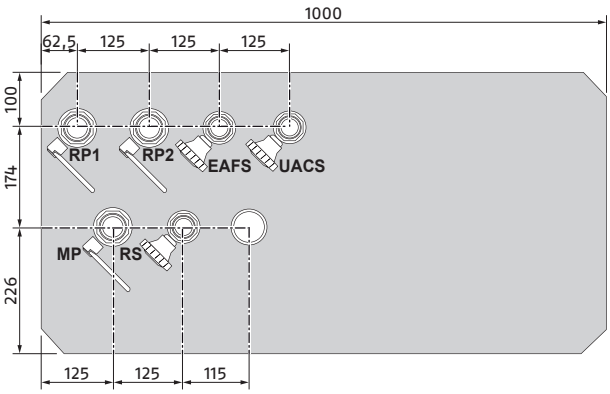


Dimensions and Fittings



RP1 – Primary return 1 (low puffer)	1 1/2"
RP2 – Primary return 2 (mid puffer)	1 1/2"
MP – Primary delivery	1 1/2"
RS – DHW recirculation	1 1/4"
EAFS – Domestic cold water inlet	1 1/4"
UACS – Domestic hot water outlet	1 1/4"

Dimensions:

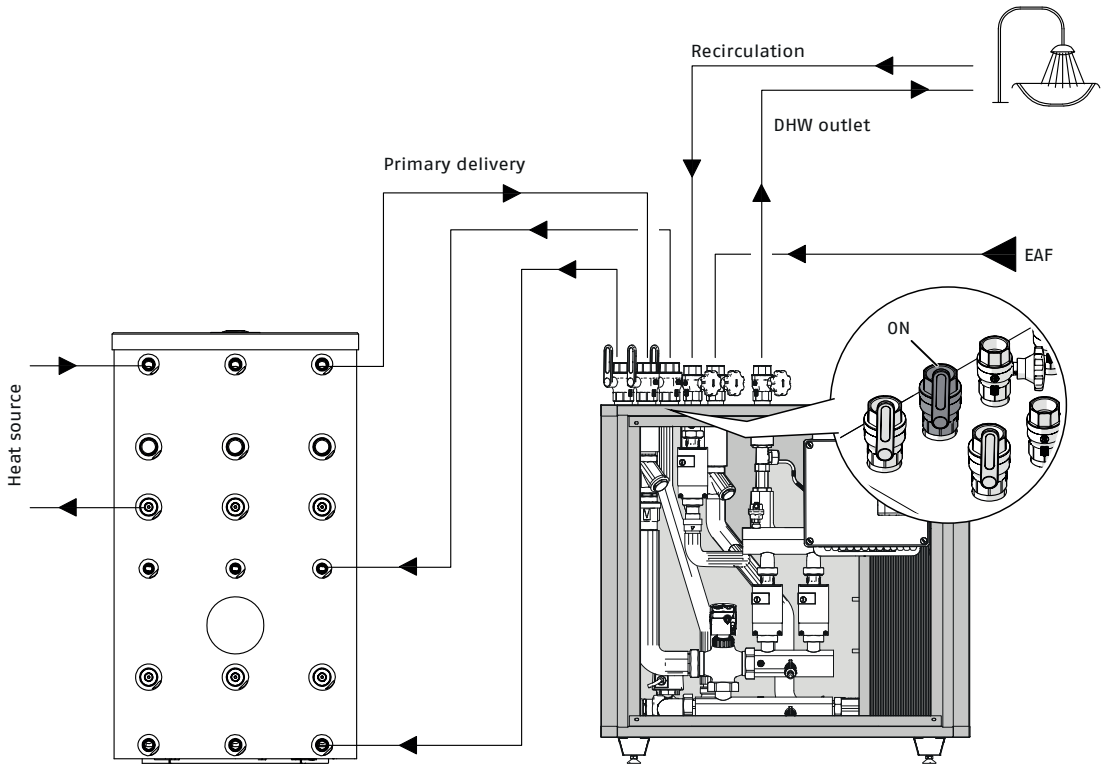


Height	1100 mm (including fittings)
Width	1000 mm
Depth	500 mm

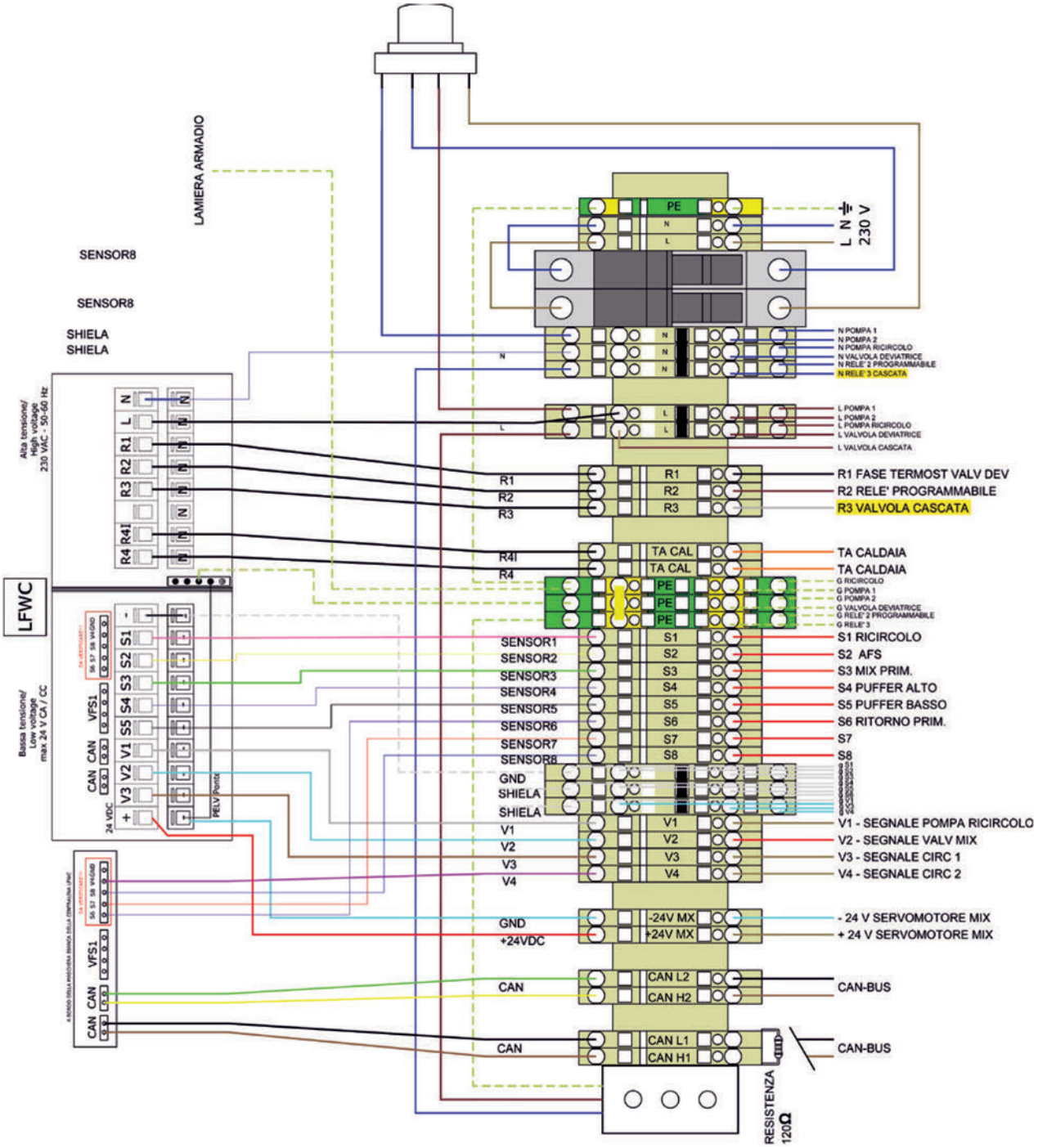
We recommend leaving a clearance of at least 50 cm around the device to allow for inspections and maintenance.

System diagram

Version with double return



Wiring diagram



Legenda	Key
LAMIERA ARMADIO	CABINET SHEET METAL
N POMPA 1	N PUMP 1
N POMPA 2	N PUMP 2
N POMPA RICIRCOLO	N RECIRCULATION PUMP
N VALVOLA DEVIATRICE	N DIVERTER VALVE
N RELE' 2 PROGRAMMABILE	N RELAY 2 PROGRAMMABLE
N RELE' 3 CASCATA	N RELAY 3 CASCADE
L POMPA 1	L PUMP 1
L POMPA 2	L PUMP 2
L POMPA RICIRCOLO	L RECIRCULATION PUMP
L VALVOLA DEVIATRICE	L DIVERTER VALVE
L VALVOLA CASCATA	L CASCADE VALVE
R1 FASE TERMOST VALV DEV	R1 DIVERTER VALVE THERMOSTAT PHASE

Legenda	Key
R2 RELE' PROGRAMMABILE	R2 PROGRAMMABLE RELAY
R3 VALVOLA CASCATA	R3 CASCADE VALVE
TA CALDAIA	TA BOILER
TA CALDAIA	TA BOILER
G RICIRCOLO	G RECIRCULAITON
G POMPA 1	G PUMP 1
G POMPA 1	G PUMP 2
G VALVOLA DEVIATRICE	G DIVERTER VALVE
G RELE' 2 PROGRAMMABILE	G PROGRAMMABLE RELAY 2
G RELE' 3	G RELAY 3
S1 RICIRCOLO	S1 RECIRCULATION
S2 AFS	S2 DOMESTIC COLD WATER
S3 MIX PRIM.	S3 MIX. PRIMARY
S4 PUFFER ALTO	S4 HIGH PUFFER

Legenda	Key
S5 PUFFER BASSO	S5 LOW PUFFER
S6 RITORNO PRIM.	S6 PRIMARY RETURN
V1 - SEGNALE POMPA RICIRCOLO	V1 - RECIRCULATION PUMP SIGNAL
V2 - SEGNALE VALV MIX	V2 - MIXING VALVE SIGNAL
V3 - SEGNALE CIRC 1	V3 - CIRCULATION 1 SIGNAL
V4 - SEGNALE CIRC 2	V4 - CIRCULATION 2 SIGNAL
-24 V SERVOMOTORE MIX	-24 V SERVOMOTOR MIX
+ 24 V SERVOMOTORE MIX	+24 V SERVOMOTOR MIX
CAN-BUS	CAN-BUS
RESISTENZA	ELECTRIC RESISTANCE

SC DHW 25

PRODUCT DESCRIPTION FOR SPECIFICATIONS

Heat exchange module designed to instantly produce domestic hot water for use in conjunction with inertia puffers; the module ensures maximum reduction of water stagnation, thus lowering the risk of legionella.

UNIT SPECIFICATIONS

- Fully insulated AISI 316 stainless steel braze welded plate heat exchanger, 54 kW power exchanged and 26 l/min DHW production (with DHW draw-off 10-40°C and puffer temperature 60°C).
- Black EPP thermal insulation with a density of 40 g/l, which provides complete insulation from the external environment.
- Wall installation template designed for rapid wall-mounting for quicker and easier installation.
- 50/60 Hz operation.
- Maximum operating pressure 10 bar.
- 3-way thermostatic mixer valve (with customisable calibration), which regulates the flow of primary fluid into the exchanger to precisely control the DHW outlet temperature and prevent premature limescale clogging of the plate heat exchanger.
- Flow switch located on the DHW electrically connected in series to the pump.
- Wilo Yonos PARA RS 15/6 primary low-consumption pump (ErP ready 2015).
- Primary circuit equipped with:
  - technical water inlet with DN20 1" M – ¾" F ball valve with red handle
  - check valve
  - mixer valve
  - pump
  - manual relief valve
  - outlet with DN20 1" M – ¾" F ball valve with blue handle.
- DHW circuit equipped with:
  - DCW inlet with DN20 1" M – ¾" F ball valve with blue handle
  - 2 fill/drain valves
  - ¾" F union for recirculation kit connection
  - flow switch
  - DHW outlet with check valve and DN20 1" M – ¾" F ball valve with black handle and thermometer
  - safety valve with 6 bar calibration.
- DHW recirculation kit, available as an optional extra, comprising:
  - Lowara/Xilem EB 15-1/94 R low-consumption pump with integrated thermostat to switch itself off when the return temperature of the network has reached the preset value; this avoids having the pump constantly switched on, thus reducing electricity consumption and, above all, heat loss from the DHW recirculation network
  - check valve
  - shut-off cock
  - piping with seals and safety valve tripping at 6 bar.
- Operating temperature range 2-90°C.
- Electrical protection rating IP54.

SC DHW 35

PRODUCT DESCRIPTION FOR SPECIFICATIONS

Heat exchange module designed to instantly produce domestic hot water for use in conjunction with inertia puffers; the module ensures maximum reduction of water stagnation, thus lowering the risk of legionella.

UNIT SPECIFICATIONS

- Fully insulated AISI 316 stainless steel braze welded plate heat exchanger, 80 kW power exchanged and 38 l/min DHW production (with DHW draw-off 10-40°C and puffer temperature 60°C).
- Black EPP thermal insulation with a density of 40 g/l, which provides complete insulation from the external environment.
- Wall installation template designed for rapid wall-mounting for quicker and easier installation.
- 50/60 Hz operation.
- Maximum operating pressure 10 bar.
- 3-way thermostatic mixer valve (with customisable calibration), which regulates the flow of primary fluid into the exchanger to precisely control the DHW outlet temperature and prevent premature limescale clogging of the plate heat exchanger.
- Flow switch located on the DHW electrically connected in series to the pump.
- Wilo Yonos PARA RS 15/6 primary low-consumption pump (ErP ready 2015).
- Primary circuit equipped with:
  - technical water inlet with DN20 1" M – ¾" F ball valve with red handle
  - check valve
  - mixer valve
  - pump
  - manual relief valve
  - outlet with DN20 1" M – ¾" F ball valve with blue handle.

- DHW circuit equipped with:
  - DCW inlet with DN20 1" M – ¾" F ball valve with blue handle
  - 2 fill/drain valves
  - ¾" F union for recirculation kit connection
  - flow switch
  - DHW outlet with check valve and DN20 1" M – ¾" F ball valve with black handle and thermometer
  - safety valve with 6 bar calibration.
- DHW recirculation kit, available as an optional extra, comprising:
  - Lowara/Xilem EB 15-1/94 R low-consumption pump with integrated thermostat to switch itself off when the return temperature of the network has reached the preset value; this avoids having the pump constantly switched on, thus reducing electricity consumption and, above all, heat loss from the DHW recirculation network
  - check valve
  - shut-off cock
  - piping with seals and safety valve tripping at 6 bar.
- Operating temperature range 2-90°C.
- Electrical protection rating IP54.

SC DHW 40

PRODUCT DESCRIPTION FOR SPECIFICATIONS

Heat exchange module designed to instantly produce domestic hot water with electronic adjustment for use in conjunction with inertia puffers; the module ensures maximum reduction of water stagnation, thus lowering the risk of legionella.

UNIT SPECIFICATIONS

- Fully insulated AISI 316 stainless steel braze welded plate heat exchanger, 116 kW power exchanged and 44 l/min DHW production (with DHW draw-off 10-48°C and puffer temperature 60°C).
- Black EPP thermal insulation with a density of 40 g/l, with the controller thermically insulated from the hydraulic unit to prevent electronic malfunctions.
- Wall installation template designed for rapid wall-mounting for quicker and easier installation.
- 50/60 Hz operation.
- Maximum operating pressure 10 bar.
- Vortex VFS 2-40 l/min flow meter with integrated temperature sensor directly controlled from the standard electronic controller which, combined with the PWM1-controlled electronic pump on the primary, ensures maximum speed and comfort in DHW supply.
- Wilo Yonos PARA RS 15/7 primary low-consumption pump (ErP ready 2015) directly controlled from the on-board electronic controller through PWM1 signal.
- Primary circuit equipped with:
  - technical water inlet with DN20 1" M – ¾" F ball valve with red handle and thermometer
  - pump
  - check valve
  - manual relief valve
  - outlet with DN20 1" M – ¾" F ball valve with blue handle and thermometer
- DHW circuit equipped with:
  - DCW inlet with DN20 1" M – ¾" F ball valve with blue handle
  - 2 fill/drain valves
  - flow rate and temperature sensor VFS
  - DHW outlet with DN20 1" M – ¾" F ball valve with red handle
  - safety valve with 6 bar calibration.
- Electronic weather compensator MFWC complete with:
  - 6 inputs for Pt1000 temperature sensors
  - 2 inputs for Vortex flow sensors (VFS) for calculating quantity of heat exchanged
  - 3 relay outputs
  - PWM and 0-10 V output
  - large user-friendly graphical display
  - simple viewing of the current measured values
  - system analysis and monitoring by means of statistical graphics.
- DHW recirculation kit, available as an optional extra, comprising:
  - Wilo ZRS 15/4-3 pump
  - ¾" M ball valve
  - check valve
  - Pt1000 sensor
  - copper piping kit.
  - Using the electronic controller, you can choose whether to control the pump according to the mains return temperature (until it reaches the preset value) or run it by time slots; this avoids having the pump constantly switched on, thus reducing electricity consumption and, above all, heat loss from the DHW recirculation network.
- DHW cascade accessory kit with solenoid valve and bus cable for auto-recognition of cascade modules, managed electronically from the on-board controller.
- Operating temperature range 2-90°C.
- Electrical protection rating IP40.

SC DHW 80

PRODUCT DESCRIPTION FOR SPECIFICATIONS

Heat exchange module designed to instantly produce domestic hot water with electronic adjustment for use in conjunction with inertia puffers; the module ensures maximum reduction of water stagnation, thus lowering the risk of legionella.

UNIT SPECIFICATIONS

- Fully insulated AISI 316 stainless steel braze welded plate heat exchanger, 170 kW power exchanged and 64 l/min DHW production (with DHW draw-off 10-48°C and puffer temperature 60°C).
- Black EPP thermal insulation with a density of 40 g/l, with the controller thermically insulated from the hydraulic unit to prevent
- electronic malfunctions.
- Wall installation template designed for rapid wall-mounting for quicker and easier installation.
- 50/60 Hz operation.
- Maximum operating pressure 6 bar.
- VFS 5-100 l/min flow meter with integrated temperature sensor directly controlled from the standard electronic controller which, combined with the PWM1-controlled electronic pump on the primary, ensures maximum speed and comfort in DHW supply.
- "TV3" DN25 mixer valve with servomotor NRYC230. A 3-way mixer valve in the primary circuit stabilises the inlet temperature (ideal for summer when the system is integrated with solar panels).
- Primary low-consumption pump (ErP ready 2015) directly controlled from the on-board electronic controller through PWM1 signal.
- Primary circuit equipped with:
  - technical water inlet with DN25 1" M – ¾" F ball valve with red handle and thermometer
  - pump
  - check valve
  - manual relief valve
  - outlet with DN25 1" F ball valve with blue handle and thermometer
- DHW circuit equipped with:
  - DCW inlet with DN25 ball valve with blue handle
  - 2 fill/drain valves
  - flow rate and temperature sensor VFS
  - DHW outlet with DN25 ball valve with red handle
  - safety valve with 6 bar calibration.
- Electronic weather compensator LFWC complete with:
  - 6 inputs for Pt1000 temperature sensors
  - 2 inputs for Vortex flow sensors (VFS) for calculating quantity of heat exchanged
  - 3 relay outputs
  - PWM and 0-10 V output
  - large user-friendly graphical display
  - simple viewing of the current measured values
  - system analysis and monitoring by means of statistical graphics.
- DHW recirculation kit, available as an optional extra, comprising:
  - Wilo YONOS PARA Z 15/7 PWM2 FSM
  - Molex connector
  - valve M-F 3/4"
  - plain shank with check valve
  - PT1000 immersion sensor and sensor sheath
  - pipes and accessories.
  - Using the electronic controller, you can choose whether to control the pump according to the mains return temperature (until it reaches the preset value) or run it by time slots; this avoids having the pump constantly switched on, thus reducing electricity consumption and, above all, heat loss from the DHW recirculation network.
- DHW cascade accessory kit with solenoid valve and bus cable for auto-recognition of cascade modules, managed electronically from the on-board controller.
- Operating temperature range 2-90°C.
- Electrical protection rating IP40.

SC DHW 160

PRODUCT DESCRIPTION FOR SPECIFICATIONS

Floor-standing heat exchange modules designed to produce high volumes of domestic hot water with electronic adjustment for use in conjunction with inertia puffers; the modules ensure maximum reduction of water stagnation, thus lowering the risk of legionella.

UNIT SPECIFICATIONS

- Fully insulated AISI 316 stainless steel braze welded plate heat exchanger, 403 kW power exchanged and 165 l/min DHW production (with DHW draw-off 10-45°C and puffer temperature 65°C).
- Cabinet with painted sheet metal frame, internally insulated, air vents for internal electronic components.
- Floor-standing module for high volumes.
- Fully insulated piping and exchanger.
- 50/60 Hz operation.
- Maximum operating pressure 10 bar.
- Flow meter with dual temperature detection.
- 3-way mixer valve with servomotor (0-10V DC), which regulates the flow of primary fluid into the exchanger to prevent premature limescale clogging of the plate heat exchanger.
- Primary circuit equipped with:
  - technical water inlet with 1½" shut-off ball valve
  - Y impurity filter
  - 3-way mixer valve with servomotor to stabilise the temperature
  - 2 fill/drain valves
  - 2 pumps in parallel (guaranteeing continuity of service)
  - 2 check valves
  - automatic bleed valve
  - diverter valve for double return (for 2 puffers or 2 different heights)
  - outlet with 2 x 1½" shut-off ball valves.
- DHW circuit equipped with:
  - DCW inlet with 1¼" ball valve against water hammer
  - Y impurity filter
  - fill/drain valve
  - flow rate and temperature digital sensor 5-100 l/min – 10-200 l/min
  - DHW outlet with 1¼" ball valve
  - recirculation inlet with 1¼" ball valve
  - pump with recirculation function
  - check valve
  - safety valve with 6 bar calibration.
- WILO STRATOS PARA 25/1-8 high efficiency pumps (ErP ready 2015) for SC DHW 160 primary and recirculation (standard), modulating with PWM control, max. head 8 m, max. flow rate 8000 l/h, max. power input 130 W.
- Electrical panel comprising:
  - power switch and controller. The electronic controller can rely on a support relay board that discharges it of electrical loads in order to extend its service life. If any of the components malfunctions, the SC DHW module can be started manually to ensure continuity of service to the system
  - presence of a dry contact for requesting heat integration in the puffer.
- Motorised diverter valve at exchanger outlet on primary side to ensure better stratification inside the puffer and therefore enable high energy savings and a high performance index of the solar thermal system or heat pump feeding the puffer.
- Electronic weather compensator LFWC complete with:
  - 6 inputs for Pt1000 temperature sensors
  - 2 inputs for Vortex flow sensors (VFS) for calculating quantity of heat exchanged
  - 3 relay outputs
  - PWM and 0-10 V output
  - large user-friendly graphical display
  - simple viewing of the current measured values
  - system analysis and monitoring by means of statistical graphics.
- Operating temperature range 2-90°C.
- Electrical protection rating IP40.
-

SC DHW 225

PRODUCT DESCRIPTION FOR SPECIFICATIONS

Floor-standing heat exchange modules designed to produce high volumes of domestic hot water with electronic adjustment for use in conjunction with inertia puffers; the modules ensure maximum reduction of water stagnation, thus lowering the risk of legionella.

UNIT SPECIFICATIONS

- Fully insulated AISI 316 stainless steel braze welded plate heat exchanger, 537 kW power exchanged and 220 l/min DHW production (with DHW draw-off 10-45°C and puffer temperature 65°C).
- Cabinet with painted sheet metal frame, internally insulated, air vents for internal electronic components.
- Floor-standing module for high volumes.
- Fully insulated piping and exchanger.
- 50/60 Hz operation.
- Maximum operating pressure 10 bar.
- Flow meter with dual temperature detection.
- 3-way mixer valve with servomotor (0-10V DC), which regulates the flow of primary fluid into the exchanger to prevent premature limescale clogging of the plate heat exchanger.
- Primary circuit equipped with:
  - technical water inlet with 1½" shut-off ball valve
  - Y impurity filter
  - 3-way mixer valve with servomotor to stabilise the temperature
  - 2 fill/drain valves
  - 2 pumps in parallel (guaranteeing continuity of service)
  - 2 check valves
  - automatic bleed valve
  - diverter valve for double return (for 2 puffers or 2 different heights)
  - outlet with 2 x 1½" shut-off ball valves.
- DHW circuit equipped with:
  - DCW inlet with 1¼" ball valve against water hammer
  - Y impurity filter
  - fill/drain valve
  - flow rate and temperature digital sensor 5-100 l/min – 10-200 l/min
  - DHW outlet with 1¼" ball valve
  - recirculation inlet with 1¼" ball valve
  - pump with recirculation function
  - check valve
  - safety valve with 6 bar calibration.
- WILO STRATOS PARA 25/1-12 high efficiency pumps (ErP ready 2015) for SC DHW 225 primary and recirculation (standard), modulating with PWM control, max. head 12 m, max. flow rate 10500 l/h, max. power input 230 W.
- Electrical panel comprising:
  - power switch and controller. The electronic controller can rely on a support relay board that discharges it of electrical loads in order to extend its service life. If any of the components malfunctions, the SC DHW module can be started manually to ensure continuity of service to the system
  - presence of a dry contact for requesting heat integration in the puffer.
- Motorised diverter valve at exchanger outlet on primary side to ensure better stratification inside the puffer and therefore enable high energy savings and a high performance index of the solar thermal system or heat pump feeding the puffer.
- Electronic weather compensator LFWC complete with:
  - 6 inputs for Pt1000 temperature sensors
  - 2 inputs for Vortex flow sensors (VFS) for calculating quantity of heat exchanged
  - 3 relay outputs
  - PWM and 0-10 V output
  - large user-friendly graphical display
  - simple viewing of the current measured values
  - system analysis and monitoring by means of statistical graphics.
- Operating temperature range 2-90°C.
- Electrical protection rating IP40.

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