

MODVLS

We regulate and supply clean energy



739

High performance thermostatic mixing valve for heating systems, HDW and solar thermal. Kvs 2,5 and 4,0. Temperature ranges: 20-45°C and 45-70°C. Connections: male pipe union.

[Product file](#)

Welcome to brv.it



2015 • 2016

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Quality, technological development, flexibility, customer's satisfaction: are the foundation of the company policy and the basis of the success of BRV on the international and domestic market.

BRV, in its current company configuration, was established on 1970, thanks to the management talent of two young entrepreneurs, Roberto Villa and Adriano Scovenna, as a conversion of a small family company working from long time, established by Giuseppe Bonetti.

The modern facility, with its working premises made on a human scale, is located among the beautiful hills situated at the foot of the Italian western Alpes, in its production site of Vaduggia employs about 50 people with a total turnover of 15 Millions Euro. 85% of our production is exported to more than 50 Countries and we exhibit at the most important international trade fairs.



On 1997 BRV got the UNI EN ISO 9002 certification. Since 2003 BRV is UNI EN ISO 9001 certified and several products are approved by the various international and national Standard Institutes: such as WRAS, DVGW, CEN, etc.

All the sides of the company quality are daily implemented and achieved according to the ISO 9000 regulations, to monitor the conformity of all the operations: from the planning up to the customer service.

A deep and careful renewal of the company started in 2005 allowed BRV to achieve excellent business results with an average year sales growth of 14%.

The constant innovation and modernization of the production process, the high professional level of the workers and the very efficient activity of the technical and product development department allow BRV to plan, to develop and to manufacture very innovative products that are appreciated on the market.

The considerable success of BRV on the international and technologically advanced markets demonstrates the efficiency of its industrial and business policy. The modern and flexible management methods allow BRV to react in a quick and suitable way to the different requirements of the market.

The quality is our leading goal that is firmly pursued every day.



ModvS

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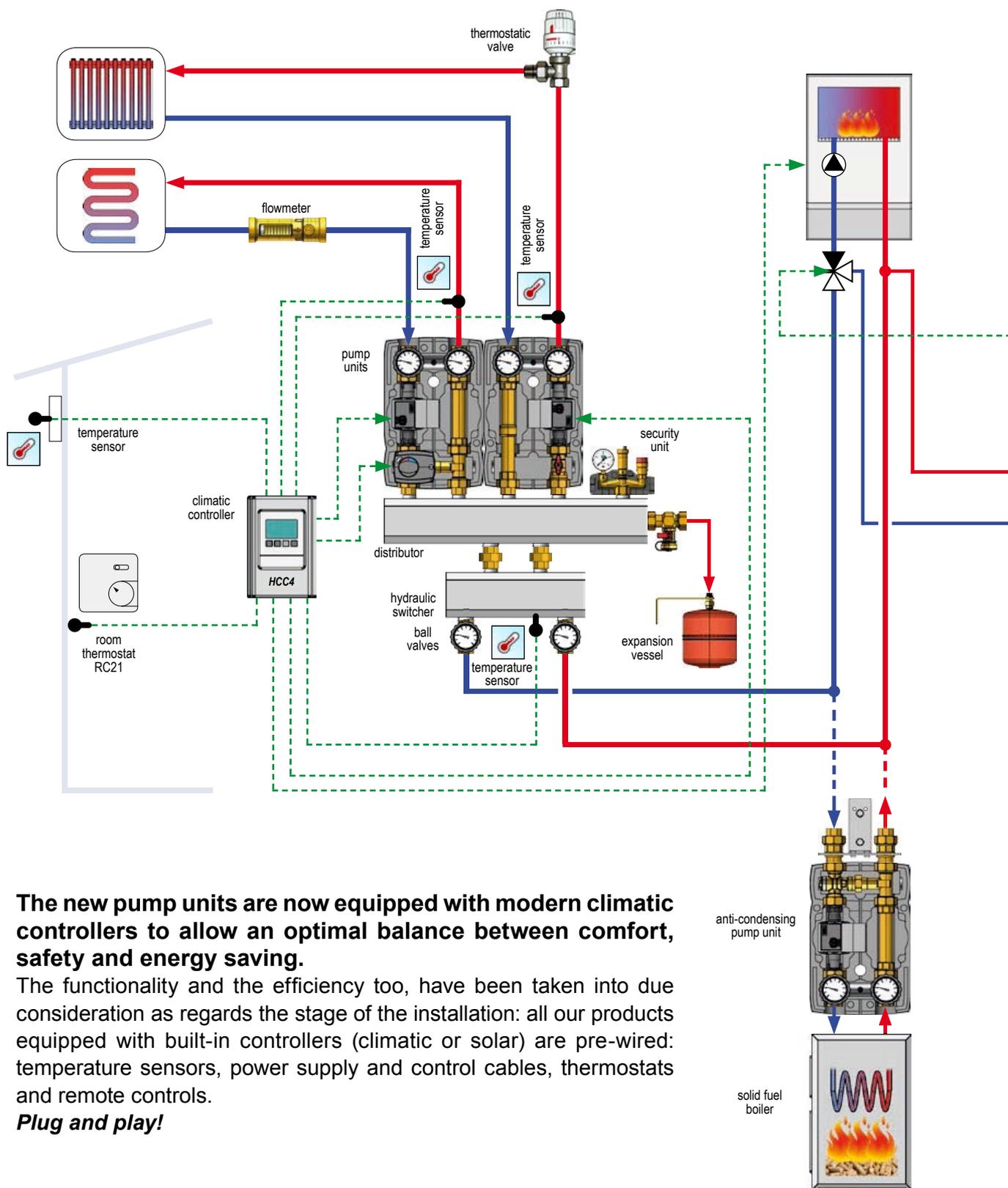
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The growing interest in the protection of the environment and in the energy saving drove the modern technology to look for a better efficiency of the traditional heating systems and to take into consideration the new renewable sources of energy (solar thermal, biomass, geothermal, etc). Therefore from this point of view it is predictable and desirable a spreading of combined heating systems with an integration between the traditional and the alternative installations that allows a considerable energy saving.



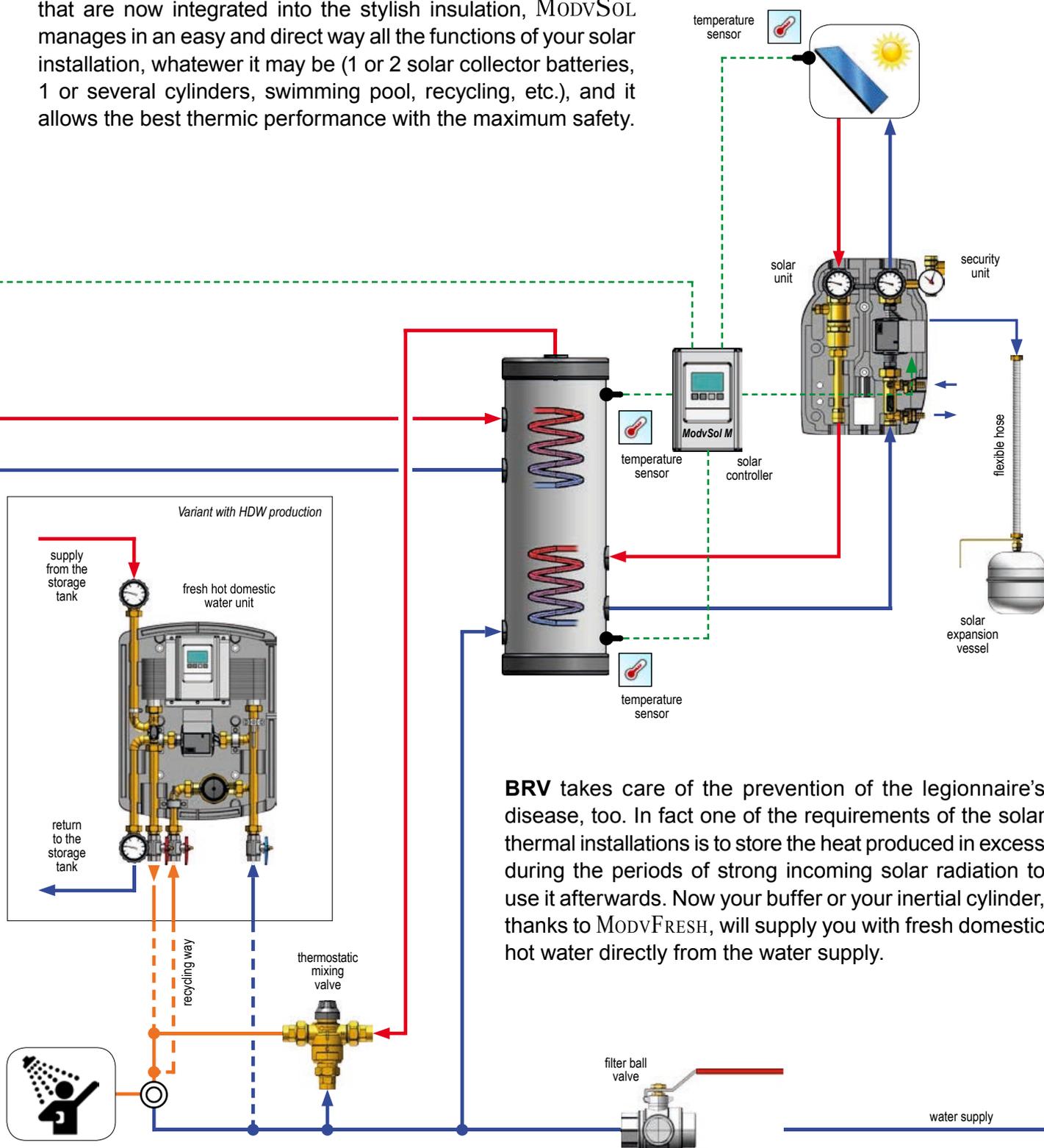
The new pump units are now equipped with modern climatic controllers to allow an optimal balance between comfort, safety and energy saving.

The functionality and the efficiency too, have been taken into due consideration as regards the stage of the installation: all our products equipped with built-in controllers (climatic or solar) are pre-wired: temperature sensors, power supply and control cables, thermostats and remote controls.

Plug and play!

The control of a solar thermal installation and the integration with other energy sources is definitely one of the most important and tricky point of the system. In fact the expected performance of the different components, the system performance, the energetic performance of the installation and sometimes even the safety of the installation can be easily compromised by an insufficient or not completely efficient hydraulic and control system.

Thanks to the **BRV** ten-year experience in the production of solar components and to the introduction of the modern controllers, that are now integrated into the stylish insulation, **MODVSOL** manages in an easy and direct way all the functions of your solar installation, whatever it may be (1 or 2 solar collector batteries, 1 or several cylinders, swimming pool, recycling, etc.), and it allows the best thermic performance with the maximum safety.



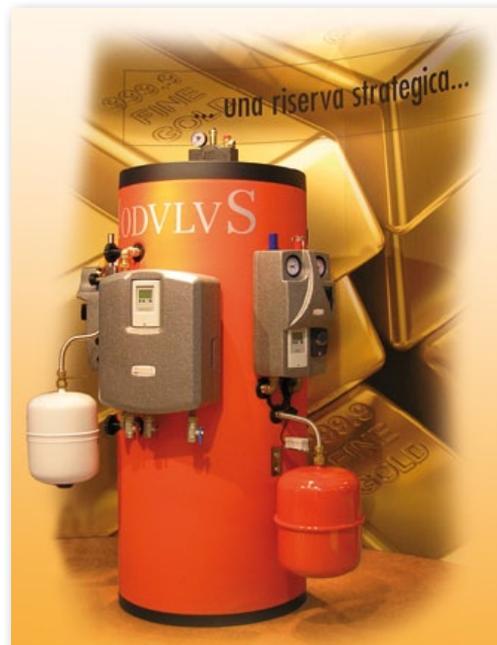
BRV takes care of the prevention of the legionnaire's disease, too. In fact one of the requirements of the solar thermal installations is to store the heat produced in excess during the periods of strong incoming solar radiation to use it afterwards. Now your buffer or your inertial cylinder, thanks to **MODVFRESH**, will supply you with fresh domestic hot water directly from the water supply.

Thanks to BRV now even the plumbing connections to the boilers in a central heating installation are no longer a problem.

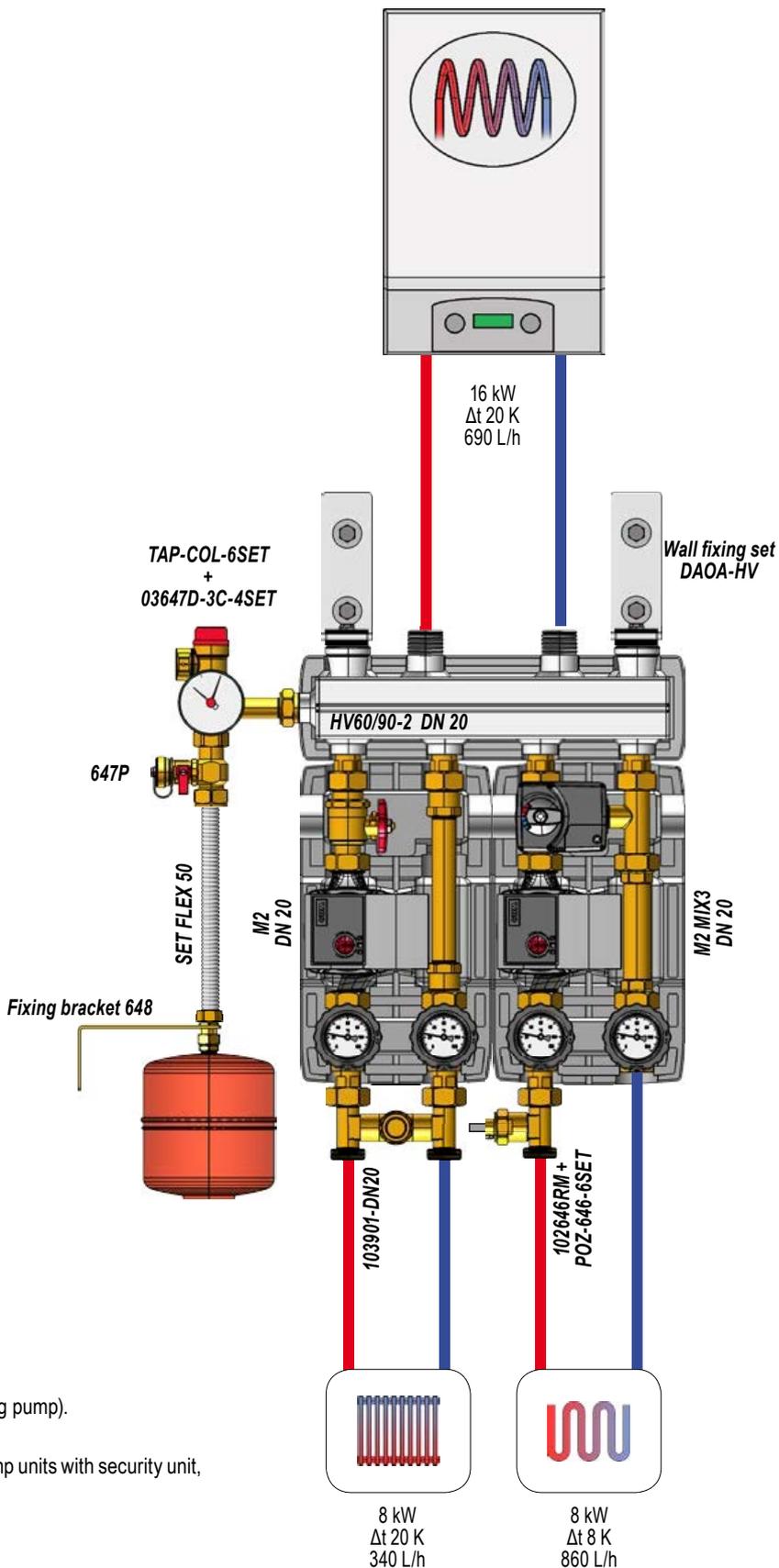
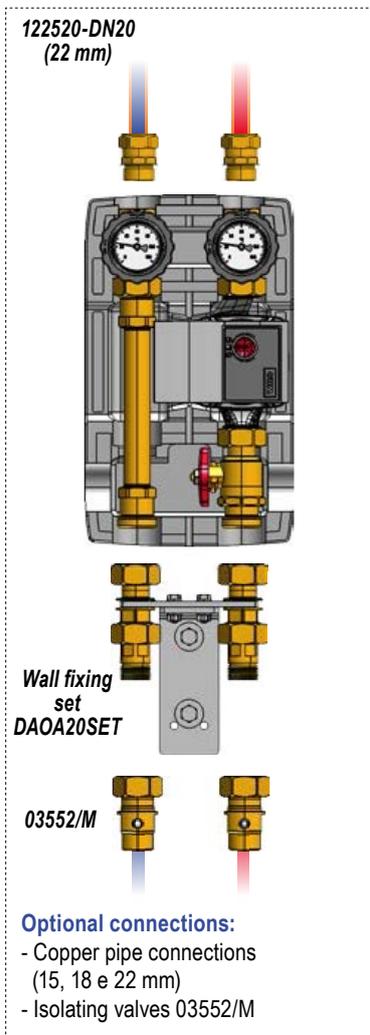
A full range of distributors, pump units (MODVLVS), servomotors, circulating pumps and security units allows a reliable connection with a considerable saving of time and money. The new DN20 range is adding to the two series DN25 and DN32; DN20 range is suitable to manage medium-low powers with a substantial room saving.

MODVLVS

- ✓ **Handy:** it is assembled and ready to be connected to the pipes;
- ✓ **Fast:** it can be connected in less than half an hour;
- ✓ **Reliable:** it is provided with thermometers, flanged ball valves, check valve, by-pass valve, mixing valve, etc. It is suitable for the most of the circulating pumps on the market;
- ✓ **Multipurpose:** the unit is reversible (right or left supply) and it is available in different fittings suitable for underfloor, radiators and solar heating installations;
- ✓ **Stylish:** modern and nice design.



In order to give always a better service to the Customers, all our products are tested and checked at our factory. In the picture you can see some pilot plants that manage several kinds of systems: not only for heating of different powers, but also for solar systems for the production of domestic hot water. The plants are used every day to check the functionality and they are installed in a room at customers' and visitors' disposal together with our technical staff who will show the working features.



Heat source: wall gas boiler (without circulating pump).

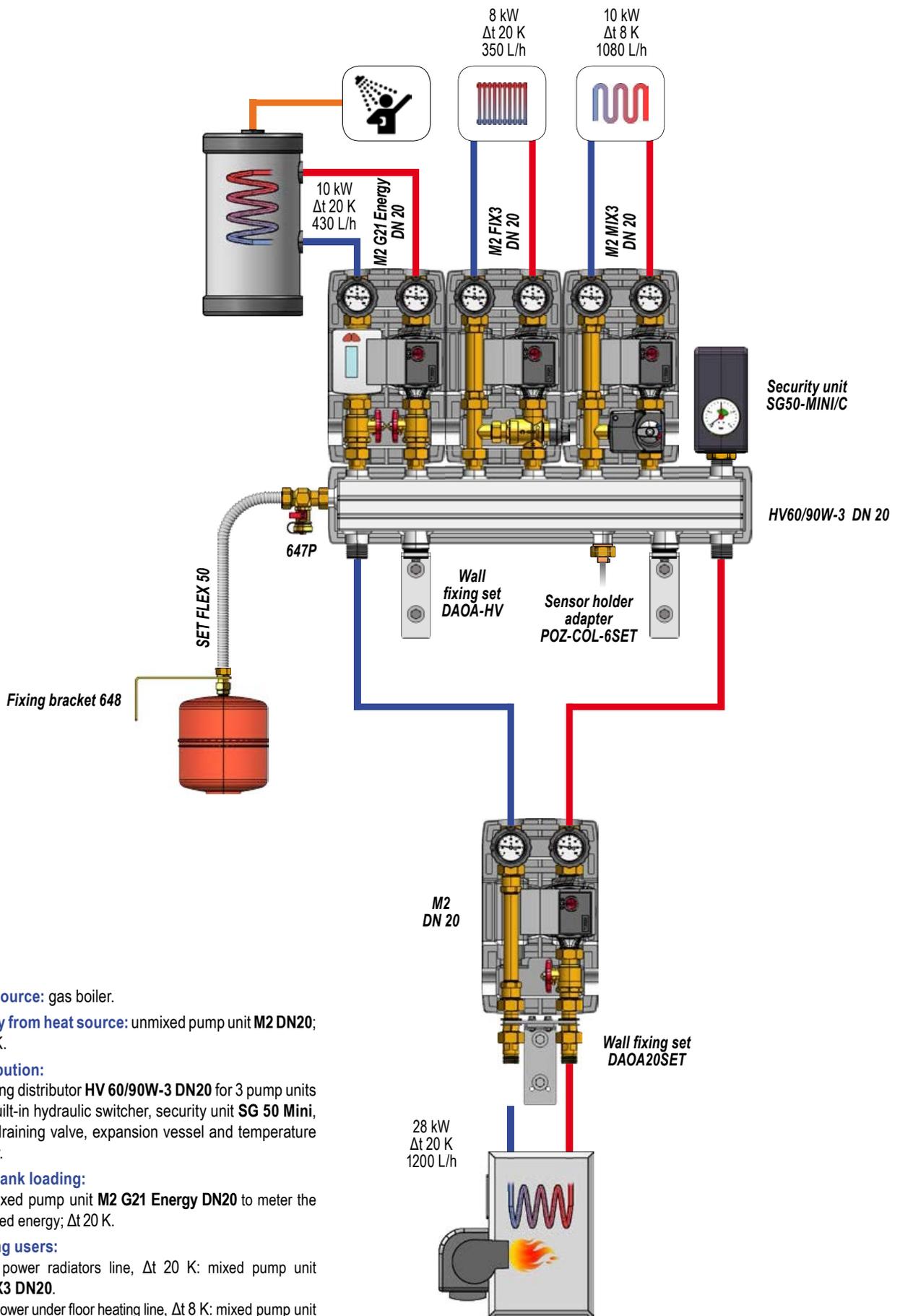
Distribution:

- Heating distributor HV 60/90-2 DN20 for 2 pump units with security unit, filling/draining valve and expansion vessel.

Heating users:

- Low power radiators line, Δt 20 K: unmixed pump unit M2 DN20 and differential bypass valve.

- Low power under floor heating line, Δt 8 K: mixed pump unit M2 MIX3 DN20 and "T" connection with sensor holder.



Heat source: gas boiler.

Supply from heat source: unmixed pump unit M2 DN20; Δt 20 K.

Distribution:

- Heating distributor HV 60/90W-3 DN20 for 3 pump units with built-in hydraulic switcher, security unit SG 50 Mini, filling/draining valve, expansion vessel and temperature sensor.

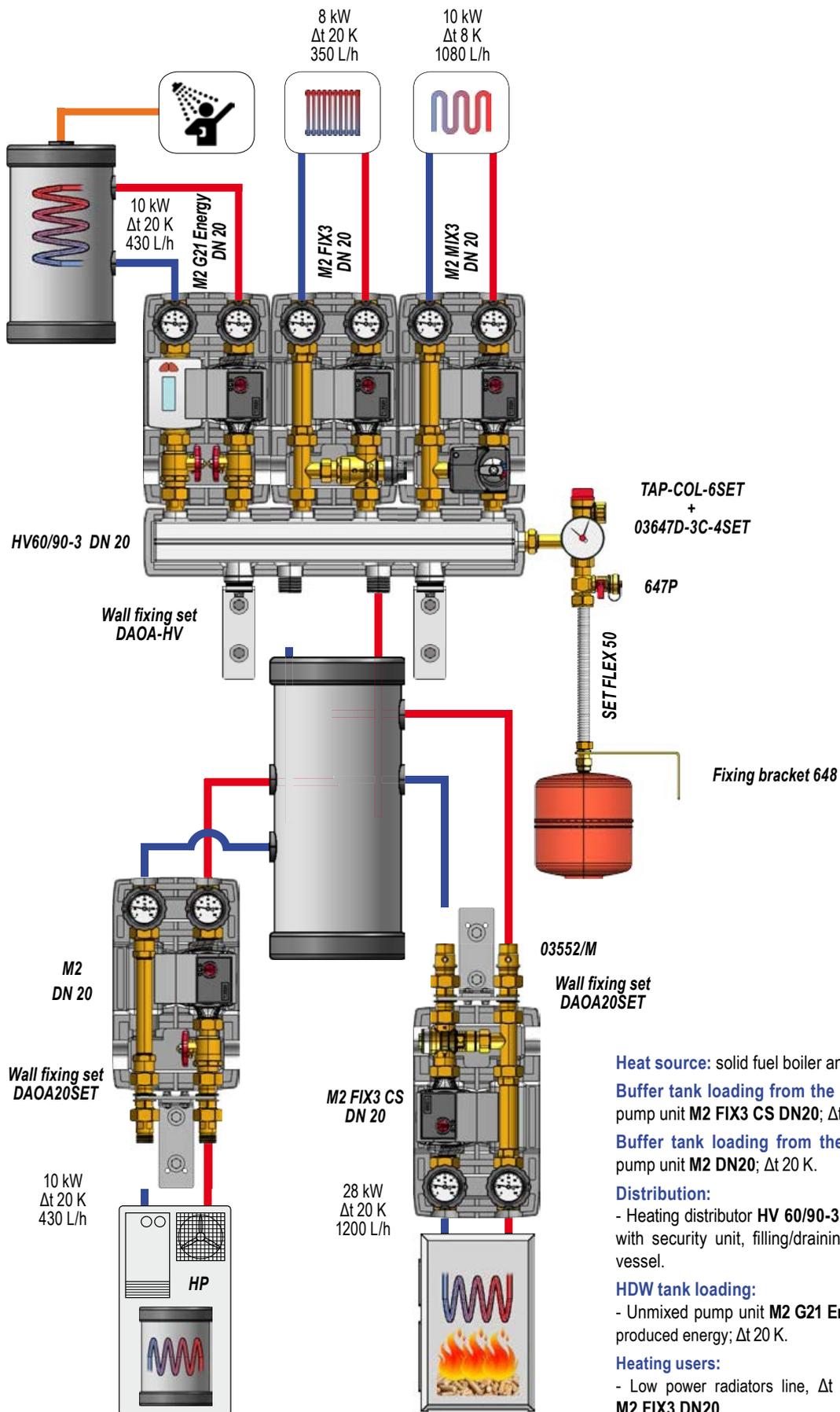
HDW tank loading:

- Unmixed pump unit M2 G21 Energy DN20 to meter the produced energy; Δt 20 K.

Heating users:

- Low power radiators line, Δt 20 K: mixed pump unit M2 FIX3 DN20.
- Low power under floor heating line, Δt 8 K: mixed pump unit M2 MIX3 DN20.

Attention: the representations are to be considered just as an indication and they have no completeness pretension.



Heat source: solid fuel boiler and heat pump.

Buffer tank loading from the boiler: anti-condensing pump unit M2 FIX3 CS DN20; Δt 20 K.

Buffer tank loading from the heat pump: unmixed pump unit M2 DN20; Δt 20 K.

Distribution:

- Heating distributor HV 60/90-3 DN20 for 3 pump units, with security unit, filling/draining valve and expansion vessel.

HDW tank loading:

- Unmixed pump unit M2 G21 Energy DN20 to meter the produced energy; Δt 20 K.

Heating users:

- Low power radiators line, Δt 20 K: mixed pump unit M2 FIX3 DN20.

- Low power under floor heating line, Δt 8 K: mixed pump unit M2 MIX3 DN20.

MODVLVS DN20

Compact and up-to-date, the new MODVLVS series offers functions similar to those of the bigger sizes DN25 and DN32. Especially suitable to manage medium-low powers in small rooms, thanks to its centre distance of only 90 mm.

DN20 pump units can be connected to heating systems with powers up to 35kW, with a very low energy consumption assured by high efficiency synchronous circulating pumps.

The connections to the distribution headers are made in 3/4" thread (male on the distributor side and female on the loop side). The range is supplemented by: distributors, connections, security units, mixers and servomotors.

*New series
Modvlvs
DN20*

CE



M2

2-WAY UNMIXED PUMP UNIT

Code: 20255R - with circulating pump: 20255R-(C6/UL7/C8)

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Flanged ball valve with T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 110°C (unit without pump).

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
3/4" Female to the user.

FIELD OF UTILIZATION:

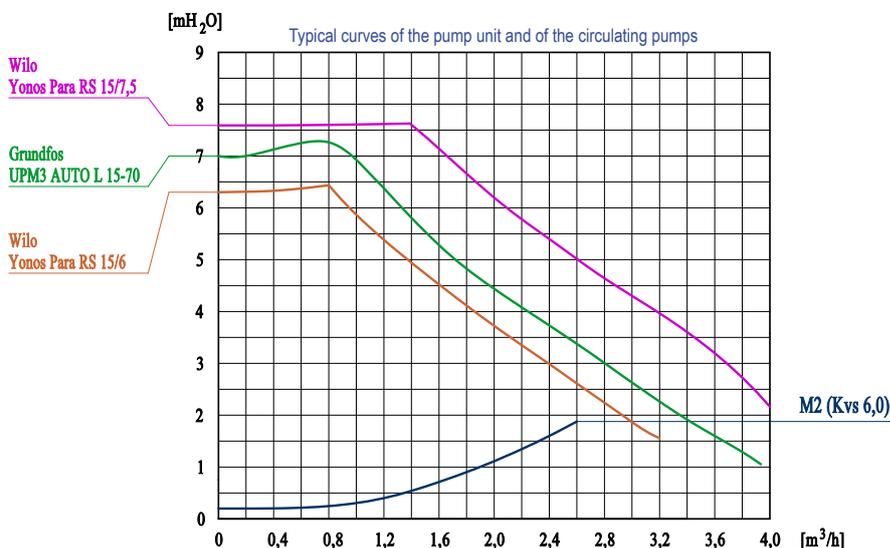
For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h.
Kvs Value: 6,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.
For an accurate measuring or for higher flows, please refer to the curve.



Available circulating pumps:

Wilo Yonos Para RS 15/6 RKC (C6)
Grundfos UPM3 AUTO L 15-70 (UL7)
Wilo Yonos Para RS 15/7,5 RKC (C8)





CE



Servomotor TRM20

M2 MIX3

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code: **20255R-M3** - with circulating pump: **20255R-M3-(C6/UL7/C8)**

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 110°C (unit without pump).

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.

3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 28 kW (with Δt 20 K) and maximum flow 1200 l/h.

Kvs Value: 4,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curve.



Available circulating pumps:

Wilo Yonos Para RS 15/6 RKC (C6)

Grundfos UPM3 AUTO L 15-70 (UL7)

Wilo Yonos Para RS 15/7,5 RKC (C8)

We suggest you to install two isolating valves Art. 552 (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M



MODEL WITH BUILT-IN TRM20 SERVO MOTOR

Code 3/4": **20255R-M3-TRM** - with circulating pump: **20255R-M3-(C6/U7/C8)-TRM**

Servomotor TRM20: 3 points servomotor for mixing valve, bidirectional, reversible.

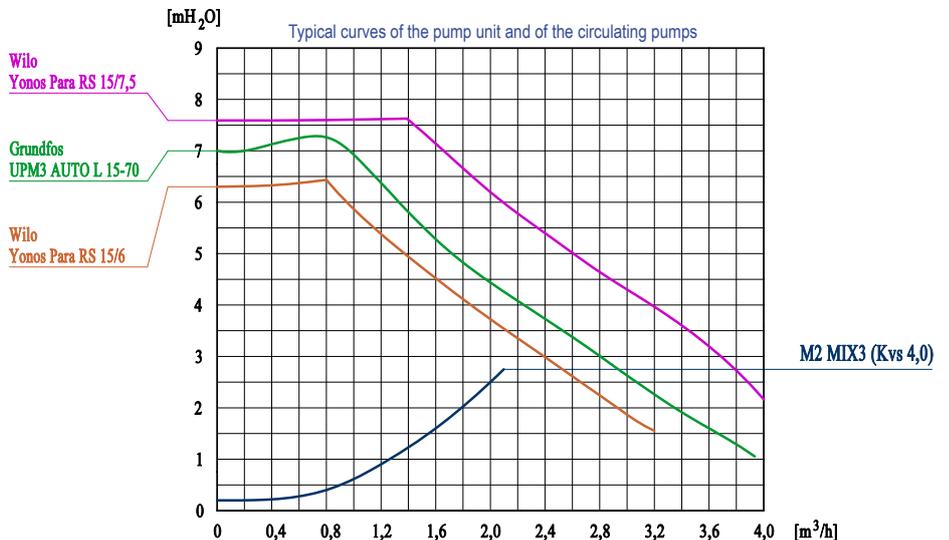
Operating range of 90°, 230V, 105 s., torque 2 Nm. IP40.

Note: in units with pre-assembled pump, the pump Grundfos UPM3 AUTO L 15-70 is identified in the code with U7.

OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 7,2. Max Temperature: 95°C.

Code: **CRKZ20TOT**





M2 MIX33

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE WITH BUILT-IN BY-PASS 0-50%

Code: **20255R-M33** - with circing pump: **20255R-M33-(C6/UL7/C8)**

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve with adjustable by-pass. Through the by-pass (adjustable from the front part) it is possible to mix on the supply line a quantity of water coming back from the return line of the system, from 0 up to 50%.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ VFlanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 110°C (unit without pump).

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 33 kW (con Δt 15 K). Portata massima di 1900 l/h.

Valore Kvs: 5,5.

For an accurate measuring or for higher flows, please refer to the curves shown in the next page.



Available circulating pumps:

Wilo Yonos Para RS 15/6 RKC (C6)
Grundfos UPM3 AUTO L 15-70 (UL7)
Wilo Yonos Para RS 15/7,5 RKC (C8)

We suggest you to install two isolating valves Art. 552 (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M



The By-pass integrated into the 3-way mixing valve ensures a recycling inside the installation, even when the mixing valve is fully open. Through the by-pass, a fixed percent of the mixing (max. 50% of the total flow of the valve) can be set, in the case when the flow through the mixing valve is not sufficient.

Therefore, in case of a bad working of the system causing an increase of the temperature of the installation, the recycling through the by-pass allows a decrease in the temperature of the water in the underfloor installation. This can be done mixing the warm water of the return circuit with the hot water of the supply circuit, reducing possible damages.

Approximate data for applications in low and medium temperature heating systems

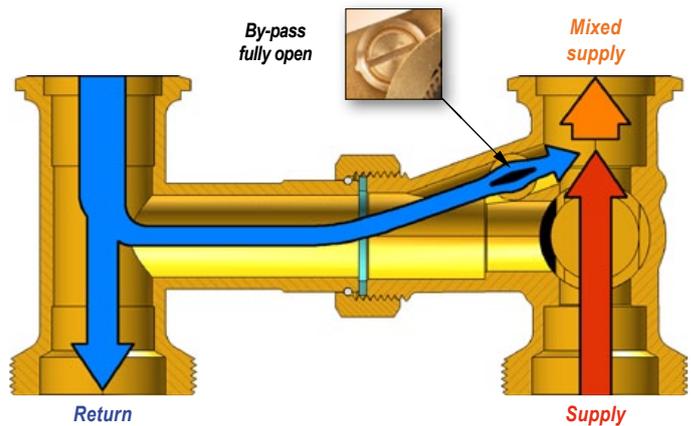
Δt	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
8 K	12 kW - 1300 l/h	Wilo Yonos Para RS 15/6	4,5 mH ₂ O	Up to 100 m ²
8 K	17 kW - 1900 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O	Up to 170 m ²
15 K	23 kW - 1300 l/h	Wilo Yonos Para RS 15/6	4,5 mH ₂ O	-
15 K	33 kW - 1900 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O	-

MODVLVS DN20 Pump Units

NEW!

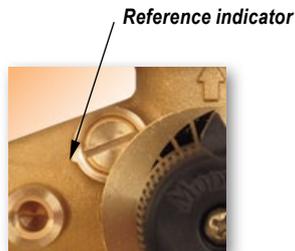
Working principle

During the regular working process, with the mixer completely closed on the recycling for example, a part of the fluid is aspirated from the pump all along the by-pass line. This quantity of fluid (*narrow blue arrow*) represents 50% of the capacity of the mixer (*red arrow*). As a result, one has a very high delivered capacity and a reduced temperature.

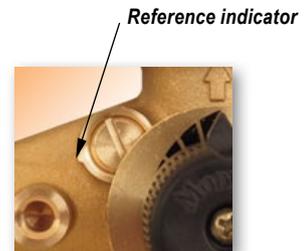


heating and cooling

Adjusting the by-pass



The by-pass is **fully open** and it allows the recycling of the 50% of the total flow.
The screwdriver cut is aligned along the reference indicator.



The by-pass is **fully closed** and there is no recycling.
The screwdriver cut is in an orthogonal position (at 90°) in comparison with the reference indicator.



Servomotor TRM20

MODEL WITH BUILT-IN TRM20 SERVO MOTOR

Code 3/4": **20255R-M33-TRM** - with circulating pump: **20255R-M33-(C6/U7/C8)TRM**

Servomotor TRM20: 3 points servomotor for mixing valve, bidirectional, reversible.
Operating range of 90°, 230V, 105 s., torque 2 Nm. IP40.

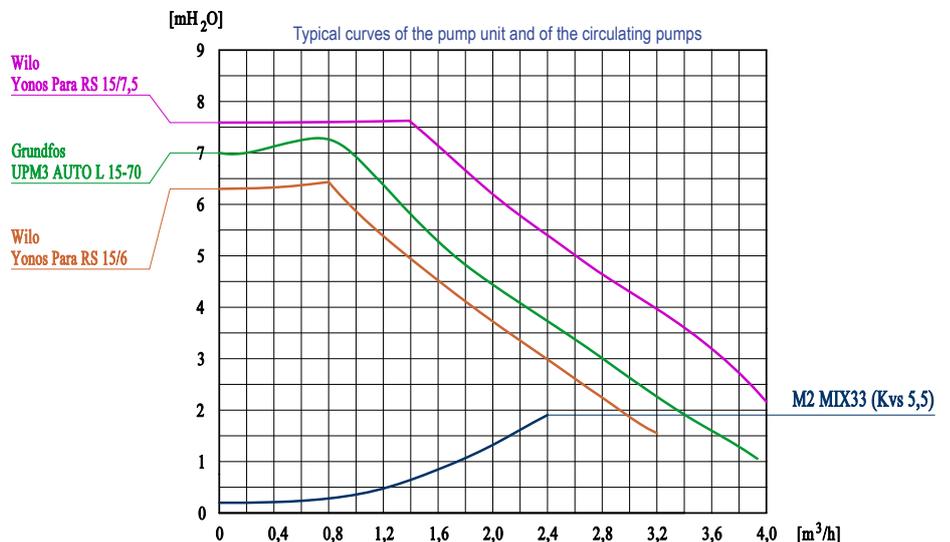
Note: in units with pre-assembled pump, the pump Grundfos UPM3 AUTO L 15-70 is identified in the code with U7.



OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor).
Minimum opening pressure: 20 mbar. Kvs 7,2.
Max Temperature: 95°C.

Code: **CRKZ20TOT**



Standard version: right supply. Left supply version available with extra price: see price list.



M2 FIX3

2-WAY PUMP UNIT WITH FIXED TEMPERATURE MIXING VALVE

Code: 20255R-(F1/F2) - with circulating pump: 20255R-(F1/F2)-(C6/UL7/C8)

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Thermostatic mixing valve with temperature setting range, models F1 and F2.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 110°C (unit without pump).

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.

3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 22 kW (with Δt 20 K) and maximum flow 1000 l/h.

Kvs Value: 2,0.

For an accurate measuring or for higher flows, please refer to the curve.



Available thermostatic mixing valves:

Setting range 20-45°C (F1)
Setting range 45-70°C (F2)



Available circulating pumps:

Wilo Yonos Para RS 15/6 RKC (C6)
Grundfos UPM3 AUTO L 15-70 (UL7)
Wilo Yonos Para RS 15/7,5 RKC (C8)

We suggest you to install two isolating valves Art. 552 (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M



Approximate data for underfloor and radiators heating systems

Model	Field of regulation	Δt	Kvs	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
F1	20-45°C	8 K	2,0	4,5 kW - 500 l/h	Wilo Yonos Para RS 15/6	5 mH ₂ O	Up to a 50 m ²
F2	45-70°C	20 K	2,0	11 kW - 500 l/h	Wilo Yonos Para RS 15/6	5 mH ₂ O	-
F1	20-45°C	8 K	2,0	9 kW - 1000 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O	From 50 m ² to 100 m ²
F2	45-70°C	20 K	2,0	22 kW - 1000 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O	-

Reference temperatures: Models F1: T_H: 55°C ; T_v: 24°C ; T_{MIX}: 32°C - Models F2: T_H: 75°C ; T_v: 40°C ; T_{MIX}: 55°C



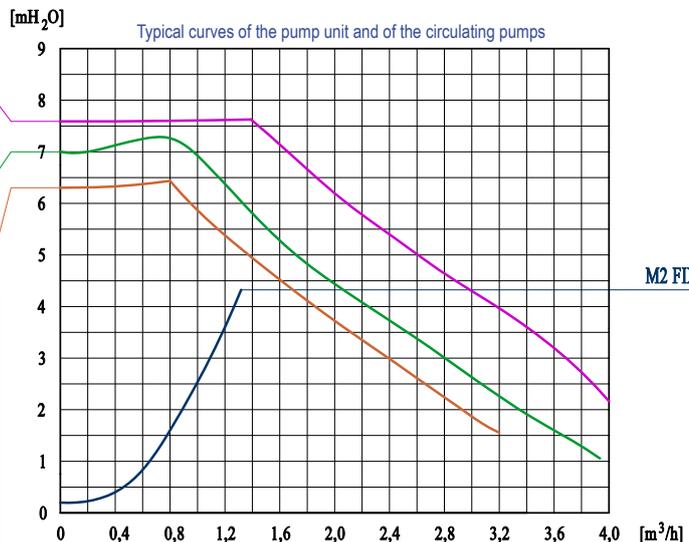
Optional: safety bimetallic thermostat. (see section "Servomotors and Room Thermostats")

Ordered in the group by adding "-T" in the code: f.i.: 20255R-F1-C6-T



OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 7,2. Max Temperature: 95°C. Code: CRKZ20TOT



Standard version: right supply. Left supply version available with extra price: see price list.



CE



Supply isolating valve with built-in pit for the insertion and the lead sealing of the hot water sensor.

M2 Energy

2-WAY DIRECT PUMP UNIT MADE FOR THE FITTING OF AN ENERGY METER

Code **DN15: 202518-15** - with circulating pump: **202518-(C6/UL7/C8)-15**
 Code **DN20: 202518-20** - with circulating pump: **202518-(C6/UL7/C8)-20**

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Flanged ball valve with T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ 3-way flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C). The third way M10x1 allows the dip fitting and the lead sealing of a ø5x45 mm sensor.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Distance piece made in plastic 3/4"x110 mm (DN15) or 1"x130 mm (DN20) that has to be removed, after having cleaned the installation, to fit the energy meter.
- ✓ Flanged ball valve with T-handle.
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 90°C.

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h (*).

Kvs value: 6,0 (*).

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curve.

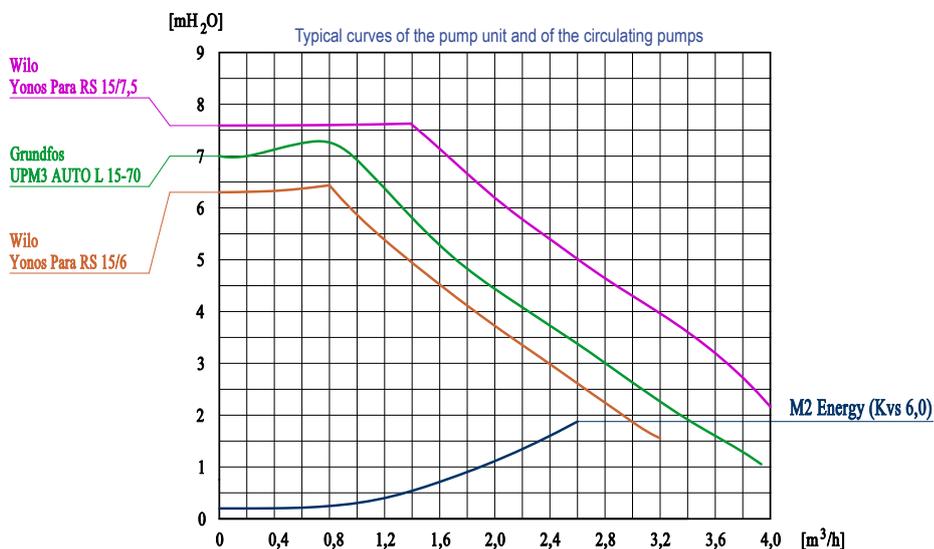
(* **The data are relevant to the pump unit without energy meter installed.**



Available circulating pumps:
 Wilo Yonos Para RS 15/6 RKC (C6)
 Grundfos UPM3 AUTO L 15-70 (UL7)
 Wilo Yonos Para RS 15/7,5 RKC (C8)



Fitting up energy meters:
 DN15 - 3/4" x 110 - Qn 1,5 (15)
 DN20 - 1" x 130 - Qn 2,5 (20)



Remark: The DN to which the identification codes of the units are referred are related to the nominal diameter of the energy counter



M2 G21 Energy

2-WAY DIRECT PUMP UNIT WITH MID APPROVED COMPACT ENERGY METER

Code **DN15: 202518-1.5** - with circulating pump: **202518-(C6/UL7/C8)-1.5**
 Code **DN20: 202518-2.5** - with circulating pump: **202518-(C6/UL7/C8)-2.5**

The unit for 1/2" (130 mm) circulating pumps is the same as the model M2 Energy with the addition of the energy meter G21, included into the packing, available in two versions:

- ✓ DN15, Qn 1,5; 3/4"x110 mm; Kvs 3,0
- ✓ DN20, Qn 2,5; 1"x130 mm; Kvs 5,0

PN 10, max temperature 90°C.

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
 3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 39 kW (with Δt 20 K) and maximum flow 1700 l/h.

Kvs value: **please look to the below table.**

For an accurate measuring please refer to the curve.



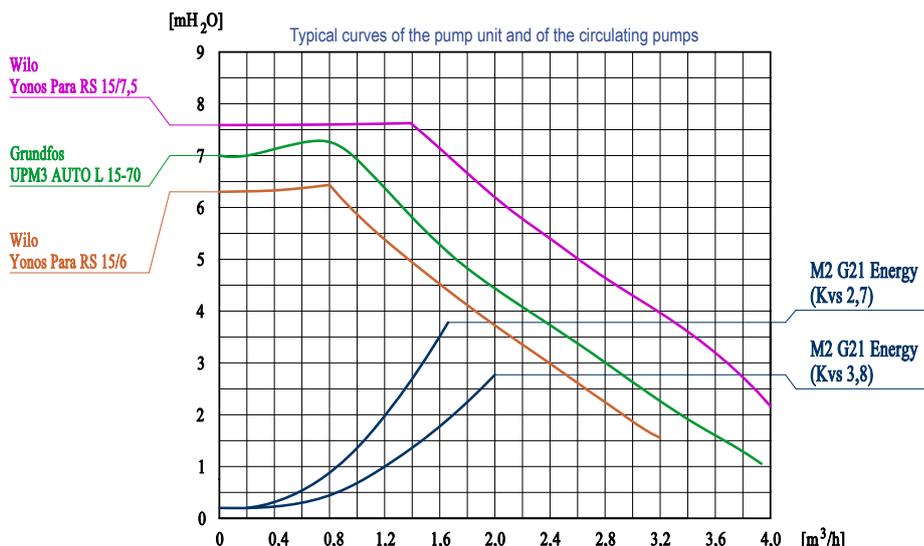
Available circulating pumps:
 Wilo Yonos Para RS 15/6 RKC (C6)
 Grundfos UPM3 AUTO L 15-70 (UL7)
 Wilo Yonos Para RS 15/7,5 RKC (C8)



Available energy meters:
 G21 - DN15 - Qn 1,5 (1.5)
 G21 - DN20 - Qn 2,5 (2.5)



Supply isolating valve with built-in pit for the insertion and the lead sealing of the hot water sensor.



Approximate data to select the appropriate meter						
Model	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 G21	1,5 m ³ /h	20 K	2,7	16 kw - 700 l/h	Wilo Yonos Para RS 15/6	5,5 mH ₂ O
M2 G21	2,5 m ³ /h	20 K	3,8	23 kw - 1000 l/h	Wilo Yonos Para RS 15/6	5 mH ₂ O
M2 G21	2,5 m ³ /h	20 K	3,8	39 kw - 1700 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O

(*) The indicated Kvs concerns the unit including the energy meter installed

Remark: The DN to which the identification codes of the units are referred are related to the nominal diameter of the energy counter.



Supply isolating valve with built-in pit for the insertion and the lead sealing of the hot water sensor.



OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor).
Minimum opening pressure: 20 mbar. Kvs 7,2.
Max Temperature: 95°C.

Code: **CRKZ20TOT**

M2 MIX3 Energy

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE MADE FOR THE FITTING OF AN ENERGY METER

Code **DN15: 202518-M3-15** - with circulating pump: **202518-M3-(C6/UL7/C8)-15**
Code **DN20: 202518-M3-20** - with circulating pump: **202518-M3-(C6/UL7/C8)-20**

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ 3-way flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C). The third way M10x1 allows the dip fitting and the lead sealing of a ø5x45 mm sensor.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Distance piece made in plastic 3/4"x110 mm (DN15) or 1"x130 mm (DN20) that has to be removed, after having cleaned the installation, to fit the energy meter.
- ✓ T-connection for mixing valve.
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 90°C.

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 28 kW (with Δt 20 K) and maximum flow 1200 l/h (*).

Kvs value: 4,0 (*).

Approximate data calculated with a 6 m nominal lifting power circulating pump.
For an accurate measuring or for higher flows, please refer to the curve.

(* The data are relevant to the pump unit without energy meter installed.



Available circulating pumps:

Wilo Yonos Para RS 15/6 RKC (C6)
Grundfos UPM3 AUTO L 15-70 (UL7)
Wilo Yonos Para RS 15/7,5 RKC (C8)

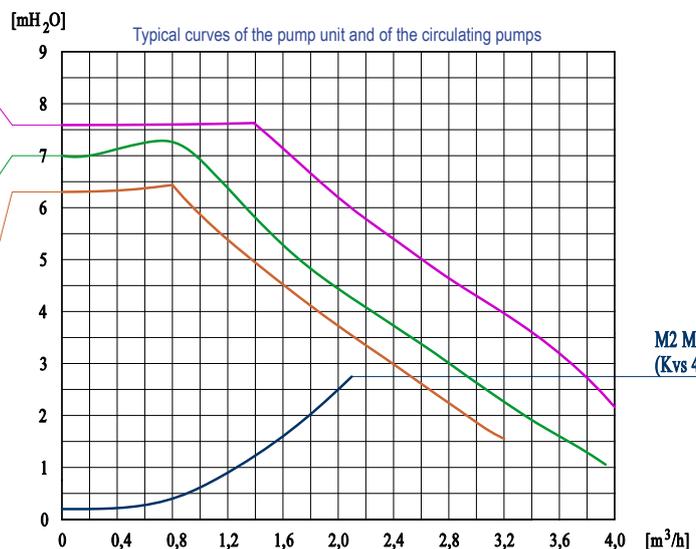


Fitting up energy meters:

DN15 - 3/4" x 110 - Qn 1,5 (15)
DN20 - 1" x 130 - Qn 2,5 (20)

We suggest you to install two isolating valves Art. 552 (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M





Supply isolating valve with built-in pit for the insertion and the lead sealing of the hot water sensor.

M2 MIX3 G21 Energy

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND MID APPROVED COMPACT ENERGY METER

Code **DN15: 202518-M3-1.5** - with circulating pump: **202518-M3-(C6/U7/C8)-1.5**
 Code **DN20: 202518-M3-2.5** - with circulating pump: **202518-M3-(C6/U7/C8)-2.5**

The unit for 1/2" (130 mm) circulating pumps is the same as the model M2 MIX3 Energy with the addition of the energy meter G21, included into the packing, available in two versions:

- ✓ DN15, Qn 1,5; 3/4"x110 mm; Kvs 3,0
- ✓ DN20, Qn 2,5; 1"x130 mm; Kvs 5,0

PN 10, max temperature 90°C.

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
 3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h.

Kvs value: **please look to the below table.**

For an accurate measuring please refer to the curve.



Available circulating pumps:

Wilo Yonos Para RS 15/6 RKC (C6)
 Grundfos UPM3 AUTO L 15-70 (U7)
 Wilo Yonos Para RS 15/7,5 RKC (C8)

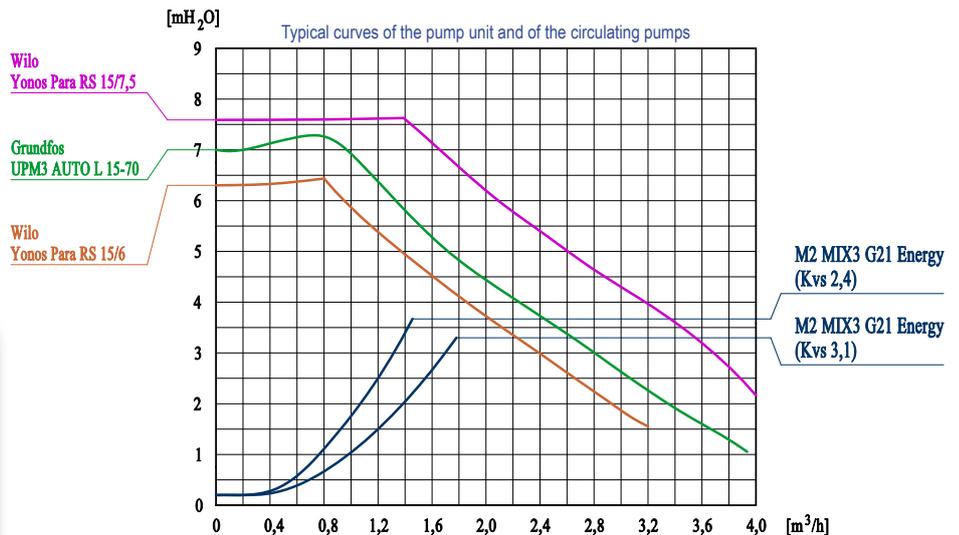


Available energy meters:

G21 - DN15 - Qn 1,5 (1.5)
 G21 - DN20 - Qn 2,5 (2.5)

We suggest you to install two isolating valves Art. 552 (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M





OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 7,2. Max Temperature: 95°C.
 Code: **CRKZ20TOT**

Approximate data to select the appropriate meter						
Model	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 MIX3 G21	1,5 m ³ /h	20 K	2,4	14 kw - 600 l/h	Wilo Yonos Para RS 15/6	5,5 mH ₂ O
M2 MIX3 G21	2,5 m ³ /h	20 K	3,1	21 kw - 900 l/h	Wilo Yonos Para RS 15/6	5 mH ₂ O
M2 MIX3 G21	2,5 m ³ /h	20 K	3,1	35 kw - 1500 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O

(*) The indicated Kvs concerns the unit including the energy meter installed

Remark: The DN to which the identification codes of the units are referred are related to the nominal diameter of the energy counter.



Supply isolating valve with built-in pit for the insertion and the lead sealing of the hot water sensor.



OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor).
Minimum opening pressure: 20 mbar. Kvs 7,2.
Max Temperature: 95°C.

Code: **CRKZ20TOT**

M2 FIX3 Energy

2-WAY PUMP UNIT WITH FIXED TEMPERATURE MIXING VALVE MADE FOR THE FITTING OF AN ENERGY METER

Code **DN15: 202518-(F1/F2)-15** - with circulating pump: **202518-(F1/F2)-(C6/UL7/C8)-15**
Code **DN20: 202518-(F1/F2)-20** - with circulating pump: **202518-(F1/F2)-(C6/UL7/C8)-20**

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Adjustable thermostatic mixing valve, models F1 and F2.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ 3-way flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).
The third way M10x1 allows the dip fitting and the lead sealing of a ø5x45 mm sensor.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Distance piece made in plastic 3/4"x110 mm (DN15) or 1"x130 mm (DN20) that has to be removed, after having cleaned the installation, to fit the energy meter.
- ✓ T-connection for mixing valve.
- ✓ Connection.

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 90°C.

**Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
3/4" Female to the user.**

FIELD OF UTILIZATION:

**For power up to 22 kW (with Δt 20 K) and maximum flow 1000 l/h (*).
Kvs value: 2,0 (*).**

Approximate data calculated with a 6 m nominal lifting power circulating pump.
For an accurate measuring or for higher flows, please refer to the curve.

(* **The data are relevant to the pump unit without energy meter installed.**)



Thermostatic valves:
Range 20-45°C (F1)
Range 45-70°C (F2)



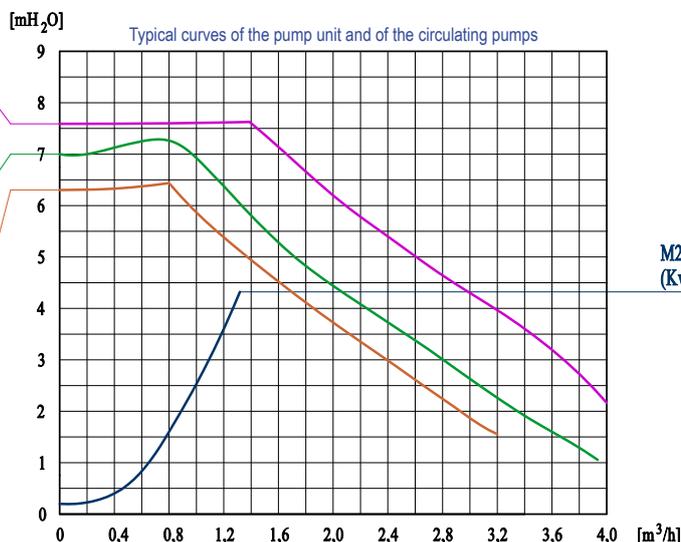
Available circulating pumps:
Wilo Yonos Para RS 15/6 RKC (C6)
Grundfos UPM3 AUTO L 15-70 (UL7)
Wilo Yonos Para RS 15/7,5 RKC (C8)



Fitting up energy meters:
DN15 - 3/4" x 110 - Qn 1,5 (15)
DN20 - 1" x 130 - Qn 2,5 (20)

We suggest you to install two isolating valves **Art. 552** (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: **03552/M**





M2 FIX3 G21 Energy

2-WAY PUMP UNIT WITH FIXED TEMPERATURE MIXING VALVE AND MID APPROVED COMPACT ENERGY METER

Code **DN15**: 202518-(F1/F2)-1.5 - with circulating pump: 202518-(F1/F2)-(C6/U7/C8)-1.5
 Code **DN20**: 202518-(F1/F2)-2.5 - with circulating pump: 202518-(F1/F2)-(C6/U7/C8)-2.5

The unit for 1/2" (130 mm) circulating pumps is the same as the model M2 FIX3 Energy with the addition of the energy meter G21, included into the packing, available in two versions:

- ✓ DN15, Qn 1,5; 3/4"x110 mm; Kvs 3,0
- ✓ DN20, Qn 2,5; 1"x130 mm; Kvs 5,0

PN 10, max temperature 90°C.

Connections: 3/4" Male with swivel tang to the heat source or to the distributor.
 3/4" Female to the user.

FIELD OF UTILIZATION:

For power up to 23 kW (with Δt 20 K) and maximum flow 1000 l/h.

Kvs value: **please look to the below table.**

For an accurate measuring please refer to the curve.



Thermostatic valve:
 Range 20-45°C (F1)
 Range 45-70°C (F2)



Available circulating pumps:
 Wilo Yonos Para RS 15/6 RKC (C6)
 Grundfos UPM3 AUTO L 15-70 (U7)
 Wilo Yonos Para RS 15/7,5 RKC (C8)



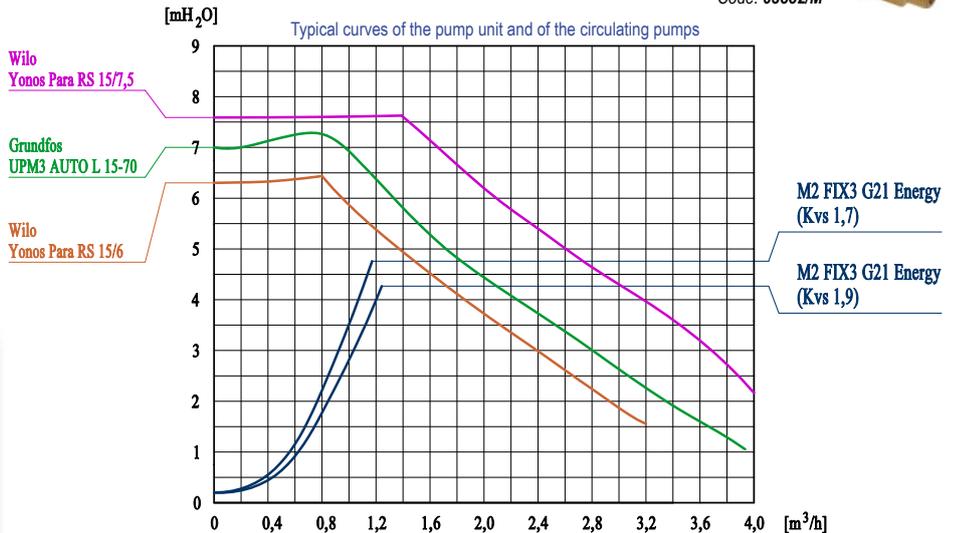
Available energy meters:
 G21 - DN15 - Qn 1,5 (1.5)
 G21 - DN20 - Qn 2,5 (2.5)

We suggest you to install two isolating valves **Art. 552** (see the section "DN20 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M



Supply isolating valve with built-in pit for the insertion and the lead sealing of the hot water sensor.



OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 7,2. Max Temperature: 95°C.

Code: CRKZ20TOT



Approximate data to select the appropriate meter

Model	Field of regulation	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
F1	20-45°C	1,5 m ³ /h	8 K	1,7	4 kw - 400 l/h	Wilo Yonos Para RS 15/6	5,5 mH ₂ O
F2	45-70°C	1,5 m ³ /h	20 K	1,7	9 kw - 400 l/h	Wilo Yonos Para RS 15/6	5,5 mH ₂ O
F1	20-45°C	2,5 m ³ /h	8 K	1,9	9 kw - 1000 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O
F2	45-70°C	2,5 m ³ /h	20 K	1,9	23 kw - 1000 l/h	Wilo Yonos Para RS 15/7,5	5 mH ₂ O

(*) The indicated Kvs concerns the unit including the energy meter installed

Remark: The DN to which the identification codes of the units are referred are related to the nominal diameter of the energy counter.



Art. 901 - Differential valve (By-pass)

Differential by-pass valve to balance the pressure of the heating installation, with connections to mount it directly on DN20 pump units.

Yellow brass finish. Setting range: 0-0,5 bar.

Centre distance 90 mm.

PN 10. Max temperature 110°C.

Kvs value: 5,0.

Size: 3/4" Male union connection x 1" Male

Code: **103901-DN20**



DN20 wall fixing set

Thanks to the wall fixing set and to the bracket plate it is possible to hold the pump unit at a distance of 100 or 150 mm (between the wall and the pipes axis).

Insertion dimension: 48 mm.

Centre distance 90 mm.

Threaded connections 1" Male x 1" swivel nut.

Code: **DAOA20SET**



3/4" Male adapter for copper pipes

The kit consists of 3/4" Male compression union, nut and olive. It allows the connection of 3/4" Female pump units to copper pipes, diameter 15, 18 and 22 mm.

Yellow brass finish.

Code 3/4" Male x 15 mm: **115520-DN20**

Code 3/4" Male x 18 mm: **118520-DN20**

Code 3/4" Male x 22 mm: **122520-DN20**



Set 646R - Connection kit for equipments

"T" connection for DN20 pump units. The kit allows the side mounting of several equipments such as, for instance, sensor holder pit, security units, filling/draining valves. The kit consists of "T" connection, EPDM gasket and Male union connection. Made of brass CW614N. Yellow brass finish.

Size: 3/4" Male union connection x 1" Male.

Code: **102646RM**



Security unit

Security unit provided with a 3 bar security valve CE certified according to Directive 97/23/CE and TÜV. Manometer ø 63 mm 0-4 bar. 3/4" Male connection for the flexible pipe or the draining kit (103647P).

End of drain side: 3/4" F. The connection to the connector is allowed by means of a special seal kit with precharged EPDM OR that does not need any seal paste, hemp or other sealants.

50 kW security valve.

PN 10. Max Temperature 110°C.

Code: **03647D-3C-4SET**



Filling/draining valve

Ball valve suitable to fill/drain the installation. The connection to the connector is allowed by means of a special seal kit with precharged EPDM OR that does not need any seal paste, hemp or other sealants.

End of drain side 3/4" Male.

PN 10. Constant temperature 120°C (short time temperature: 160°C for 20 s).

Code: **01646R-430SCASET**



1/2" adapter with sensor holder pit

Adapter with sensor holder pit $\varnothing 6$ mm. Equipped with a M4 screw to fix the temperature sensor. Thanks to the 1/2" adapter to be sealed to the distributor or to the hydraulic switcher, the seal is allowed by a special sealing system with precharged EPDM OR, that does not need any seal paste, hemp or other sealants.
PN10. Constant temperature 120°C.

Code: **POZ-COL-6SET**



CE

BRC thermostat

Bimetallic unipolar thermostat with contact on interruption or on switching. The fastening of thermostat is made by means of a spring clamp for a constant sealing which guarantees a very good adherence to the pipes. ENEC approval.

- ✓ Setting field: 20+90°C;
- ✓ Differential: 8 ± 3 K (regolabile);
- ✓ Power on contacts: 16 (2,5) A / 250 V AC;
- ✓ Protection IP20.

Code: **BRC**



CE

Servomotor TRM20

3 points servomotor for mixing valve. Bidirectional, reversible. Operating range of 90°, 105 s., torque 2 Nm. Power supply 230V. IP40.

Code: **TRM20**

Proportional servomotor TRM50

Proportional servomotor for mixing valve. Control signal 0-10V. Bidirectional, reversible. Operating range of 90°. 90 s., torque: 2 Nm. Power supply 24V AC. IP40.

Code: **TRM50**



Set nut 1" and EPDM gasket

Yellow brass finish.

Code: **AYHT04SET**



Set nut 1", EPDM gasket and Male adapter 3/4"

Yellow brass finish.

Code: **103629F**



Optional non return valve for mixed pump units

DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor).

Minimum opening pressure: 20 mbar. Kvs 7,2. Max Temperature: 95°C.

Code: **CRKZ20TOT**

*New
DN20
Distributors*

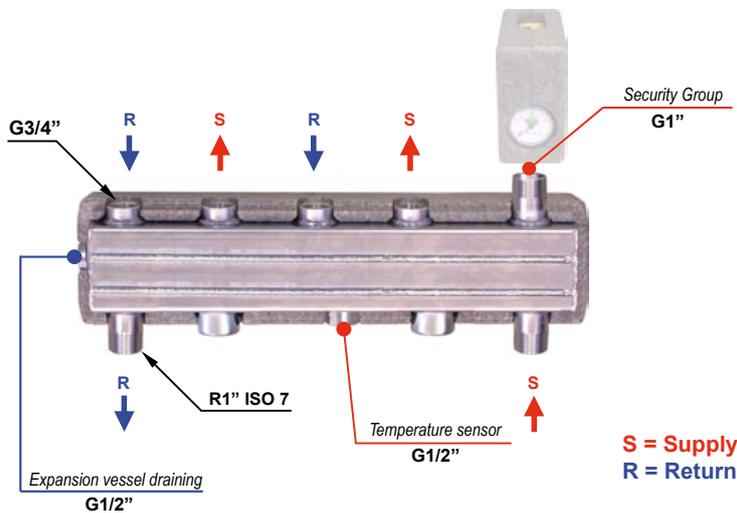


DN20 Distribution headers for heating installations made of electro-welded and galvanized iron pipe suitable for power up to 50 kW.

EPP thermic insulation. Hydraulic test at 12 bar. Modvlvs connection center distance: 90 mm. The range of the distributors is suitable for DN20 3/4" Modvlvs pump units.

heating and cooling

Combi distributor HV 60/90W (2 m³/h - 50 kW)



Distribution header with insulation and built-in hydraulic switcher for power up to 50 kW (rise in temperature $\Delta T=20$ K in the primary circuit). Air vent chamber with 1" flat sealing male connection for security unit SG50-Mini/C.

Connections 1/2" Female for equipments.

Maximum flow rate up to 2 m³/h - Max. 6 bar.

Insulation box section size: 120 x 100 mm.

Connections to the pump units:

3/4" Female, centre distance 90 mm (pitch 180 mm).

Connections to the boiler:

1" Male; centre distance 380 mm (HV60/90W-2) or 560 mm (HV60/90W-3).

Item	Use	Lenght	Code
HV 60/90W-2	For connection to no. 2 DN20 units	470 mm	HV60/90W-2
HV 60/90W-3	For connection to no. 3 DN20 units	650 mm	HV60/90W-3

Security Unit SG 50 Mini

Security unit for closed circuit heating systems as per EN 12828 regulations with power up to 50 kW.

Brass body, pre-assembled end tested, equipped with selfseal valves to allow an easy replacement of the manometer and of the air vent valve. It consists of:

- ✓ Manometer $\varnothing 50$, 0-4 bar, 1/4";
- ✓ 3/8" automatic air vent valve. Nominal pressure: 12 bar;
- ✓ Security valve 3 bar 50 kW. Inlet 1/2", outlet 3/4".

EPP insulation box (Measurements: 140x150x70 mm).

Max Temperature 120°C.

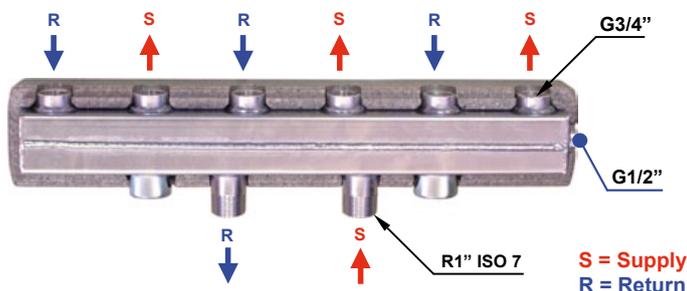
Size: 1" Female.



Code 1" swivel nut: SG50-MINI/C

Code 1" F: SG50-MINI

Distributor HV 60/90 (2 m³/h - 50 kW)



Distribution header with insulation suitable for power up to 50 kW (rise in temperature $\Delta T=20$ K in the primary circuit). 1/2" Female side connection for equipments.

Maximum flow rate up to 2 m³/h - Max. 6 bar.

Insulation box section size: 100 x 100 mm.

Connections to the pump units:

3/4" Female, centre distance 90 mm (pitch 180 mm).

Connection to the hydraulic switcher:

cod. HW60/125-04 with threaded end 1" Male (centre distance 125 mm); for the connection use n. 2 sets cod. 04629SET (1").

Item	Use	Length	Code
HV 60/90-2	For connection to no. 2 DN20 units	360 mm	HV60/90-2
HV 60/90-3	For connection to no. 3 DN20 units	540 mm	HV60/90-3



Wall fixing set for HV 60 distributors

Pair of brackets to fix to the wall the distribution header with the insulation box 100 x 100 mm. Distance between the wall and the centre of the distribution header can be 100 or 150 mm.

Code: **DAOA-HV**



1/2" adapter with plug for equipments

1/2" adapter to be sealed to the distributor, to connect the different equipments (security unit with expansion vessel, filling/draining valve, etc.).

Code: **TAP-COL-6SET**



Art. 552

Isolating ball valve 3/4" Male for 1" swivel nut. Yellow brass finish. Gasket not included. Ends threaded to ISO 228 (DIN 259 BSP 2779). Operating stem with allen screw or allen spanner. PN 6. Max temperature 110°C. DN15.

Code: **03552/M**



Three pieces set for connecting the hydraulic switcher to the distributor header

EPDM gasket.

Yellow brass finish.

To connect the hydraulic switcher to the distributor two sets are necessary.

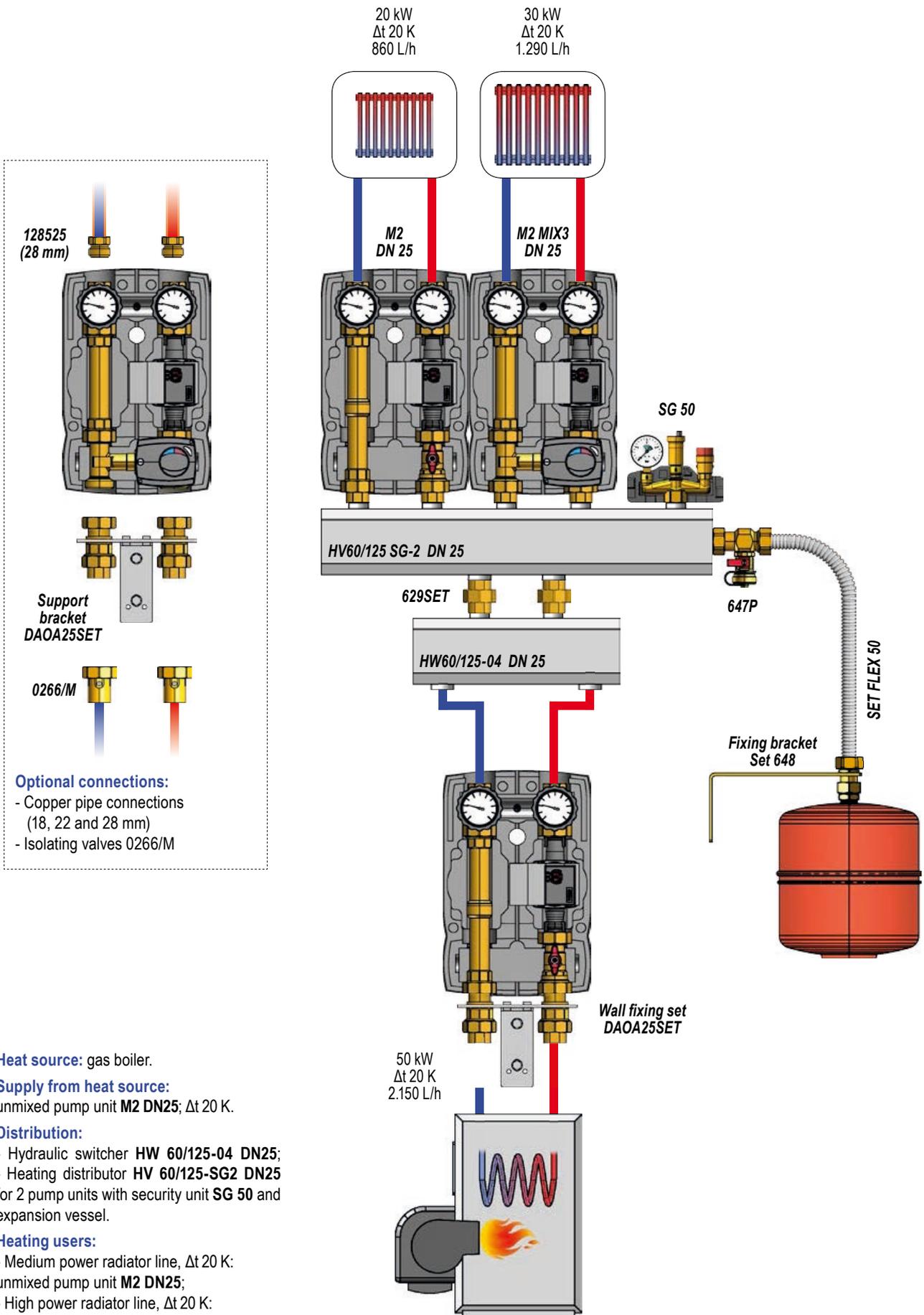
Sizes: 1"F x 1"F

Code 1": **04629SET**

MODVLVS DN25 Installation examples

Modular systems for energy management

heating and cooling



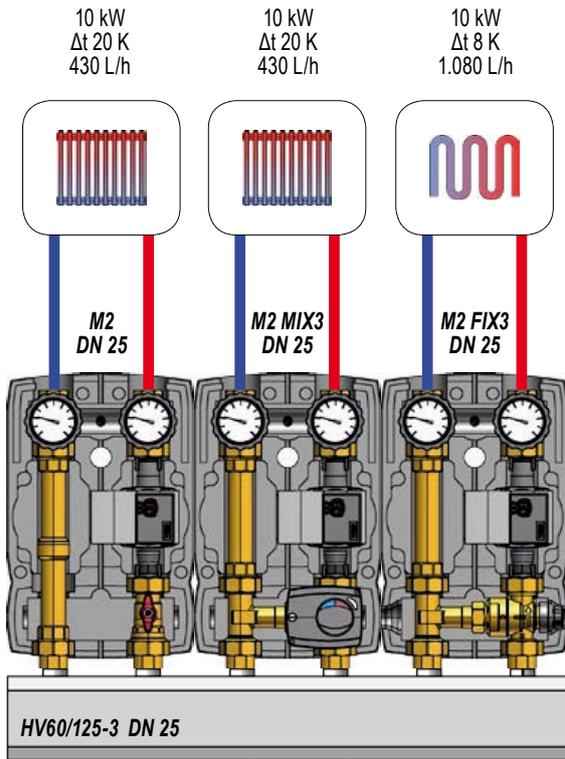
Optional connections:

- Copper pipe connections (18, 22 and 28 mm)
- Isolating valves 0266/M

- Heat source:** gas boiler.
- Supply from heat source:** unmixed pump unit **M2 DN25**; Δt 20 K.
- Distribution:**
- Hydraulic switcher **HW 60/125-04 DN25**;
 - Heating distributor **HV 60/125-SG2 DN25** for 2 pump units with security unit **SG 50** and expansion vessel.
- Heating users:**
- Medium power radiator line, Δt 20 K: unmixed pump unit **M2 DN25**;
 - High power radiator line, Δt 20 K: mixed pump unit **M2 MIX3 DN25**.

Attention: the representations are to be considered just as an indication and they have no completeness pretension.

MODVLVS DN25 Installation examples



Heat source: solid fuel boiler.

Buffer tank loading from the boiler:

Version 1:

employment of anti-condensing pump unit

MCCS DN25; Δt 20 K;

Version 2:

employment of anti-condensing recycling pump unit

M2 FIX3 CS DN25; Δt 20 K;

Distribution:

Heating distributor HV 60/125 DN25 for 3 pump units.

Heating users:

- Low power radiator line, Δt 20 K:

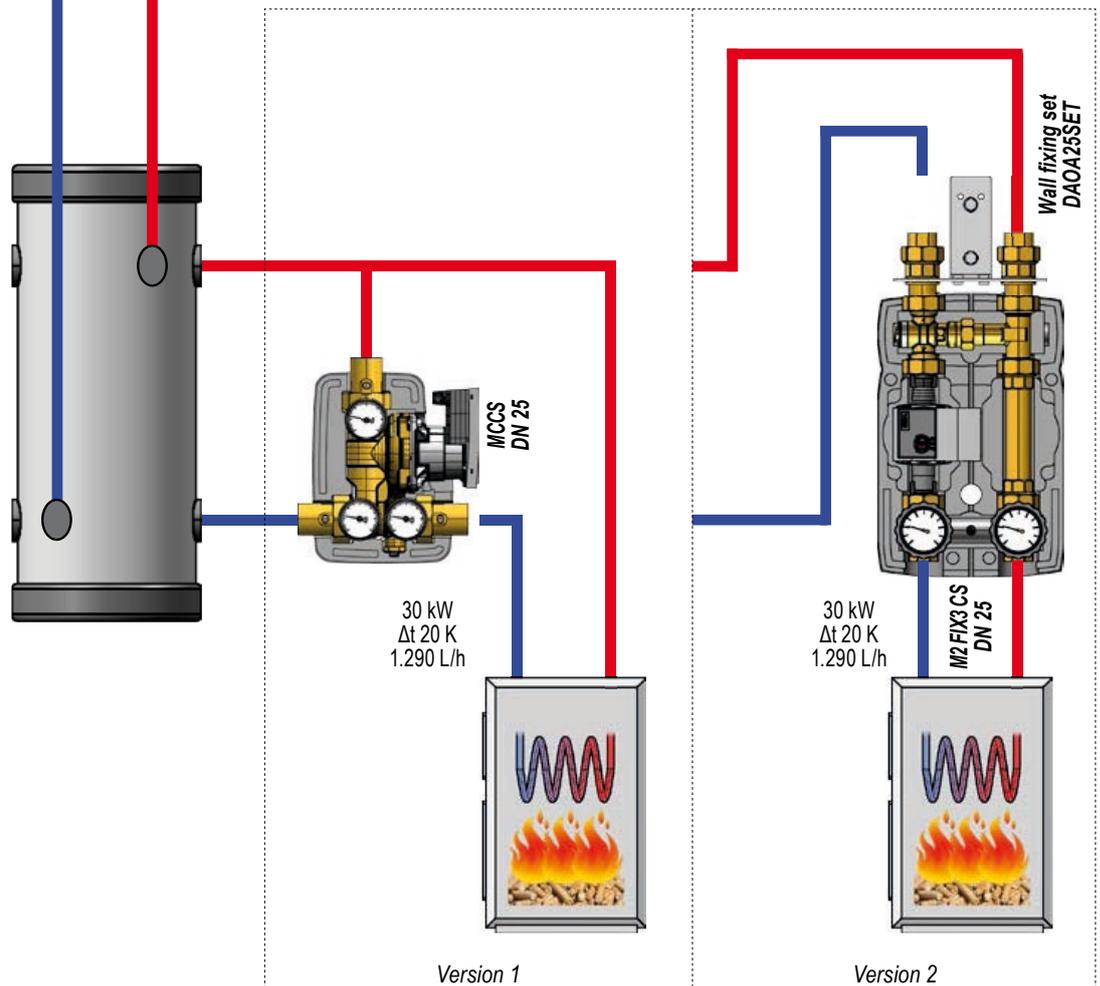
unmixed pump unit **M2 DN25;**

- Low power radiator line, Δt 20 K:

mixed pump unit **M2 MIX3 DN25;**

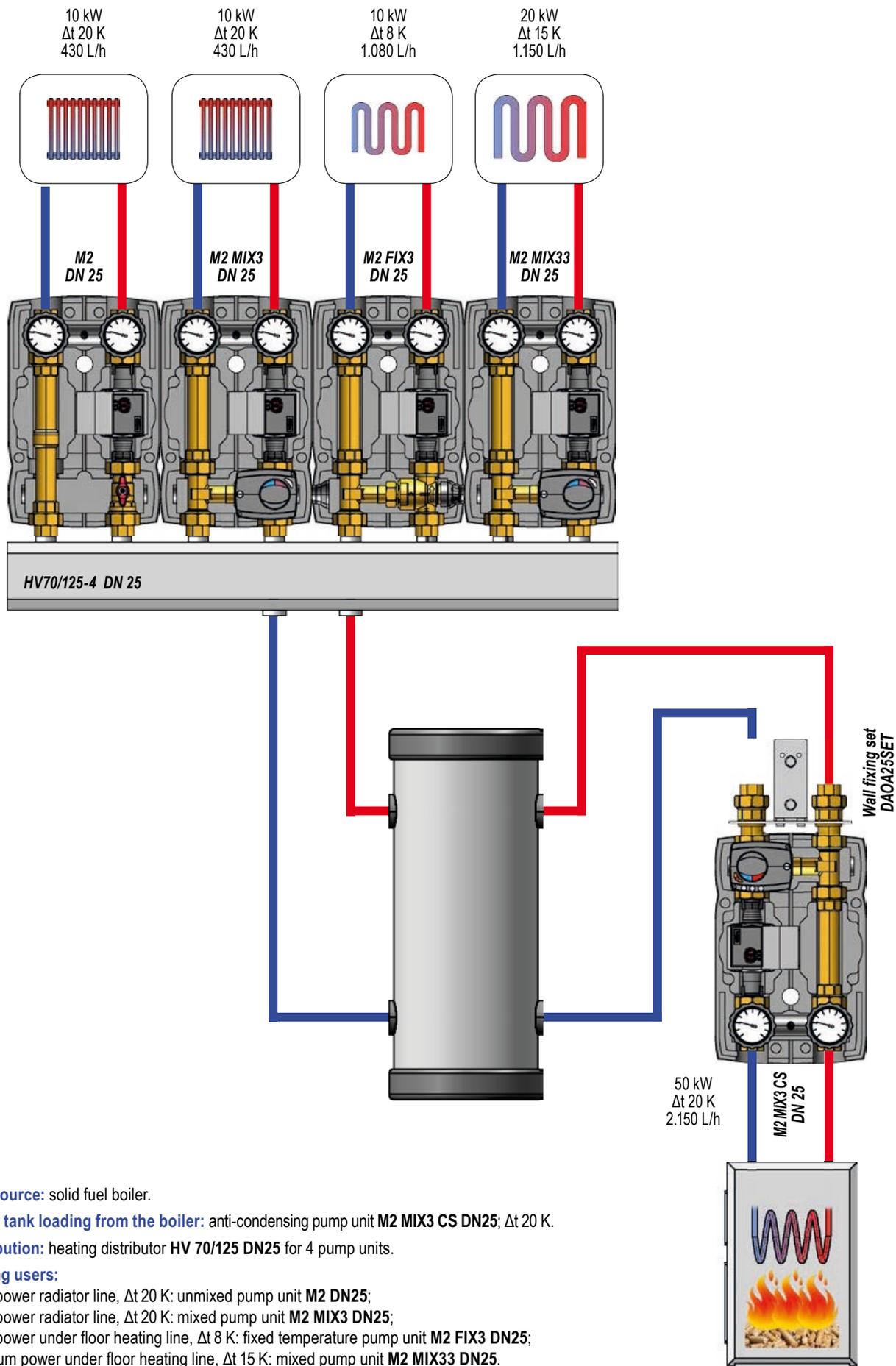
- Low power under floor heating line, Δt 8 K:

fixed temperature pump unit **M2 FIX3 DN25.**



Attention: the representations are to be considered just as an indication and they have no completeness pretension.

MODVLVS DN25 Installation examples



Heat source: solid fuel boiler.

Buffer tank loading from the boiler: anti-condensing pump unit **M2 MIX3 CS DN25**; Δt 20 K.

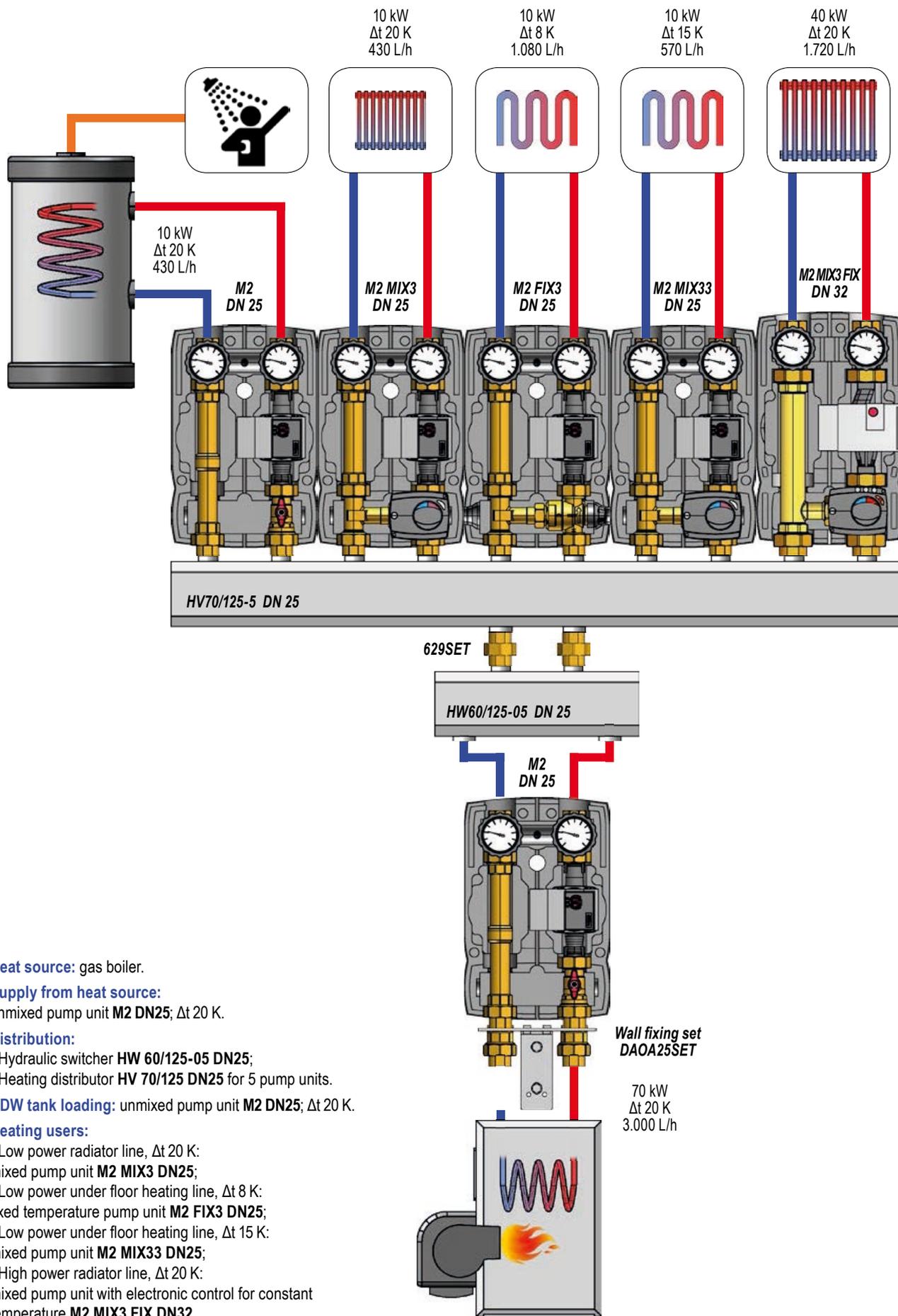
Distribution: heating distributor **HV 70/125 DN25** for 4 pump units.

Heating users:

- Low power radiator line, Δt 20 K: unmixed pump unit **M2 DN25**;
- Low power radiator line, Δt 20 K: mixed pump unit **M2 MIX3 DN25**;
- Low power under floor heating line, Δt 8 K: fixed temperature pump unit **M2 FIX3 DN25**;
- Medium power under floor heating line, Δt 15 K: mixed pump unit **M2 MIX33 DN25**.

Attention: the representations are to be considered just as an indication and they have no completeness pretension.

MODVLVS DN25 Installation examples



Heat source: gas boiler.

Supply from heat source:

unmixed pump unit **M2 DN25**; Δt 20 K.

Distribution:

- Hydraulic switcher **HW 60/125-05 DN25**;
- Heating distributor **HV 70/125 DN25** for 5 pump units.

HDW tank loading: unmixed pump unit **M2 DN25**; Δt 20 K.

Heating users:

- Low power radiator line, Δt 20 K:
mixed pump unit **M2 MIX3 DN25**;
- Low power under floor heating line, Δt 8 K:
fixed temperature pump unit **M2 FIX3 DN25**;
- Low power under floor heating line, Δt 15 K:
mixed pump unit **M2 MIX33 DN25**;
- High power radiator line, Δt 20 K:
mixed pump unit with electronic control for constant temperature **M2 MIX3 FIX DN32**.

**Wall fixing set
DAOA25SET**

70 kW
 Δt 20 K
3.000 L/h

MODVLVS DN25

DN25 MODVLVS DN25 series is a complete range that meets all the installation needs with specific models: middle and low temperature heating systems, need of energy metering, cooling systems; everything with the possibility of a management control by means of climatic controllers even built-in the pump unit.

The DN25 pump units can be connected to heating systems with powers up to 50 kW, with a very low energy consumption assured by high efficiency synchronous circulating pumps.

The connections to the distribution headers are made in 1" or 1"1/4 female thread. Moreover the pump units of M3 version are equipped with a by-pass balancing valve that allows an accurate regulation of the differential pressure of the loop.

The range is supplemented by: distributors, connections, security units, mixers and servomotors.



heating and cooling

Direct

CE



M2

2-WAY UNMIXED PUMP UNIT

Code 1": **20355R** - with circulating pump: **20355R-(Y6/UL7/Y8)**
Code 1"1/4: **20455R** - with circulating pump: **20455R-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Flanged ball valve with T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1" or 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 50 kW (with Δt 20 K) and maximum flow 2150 l/h.

Kvs Value: 8,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
Grundfos UPM3 Auto L 25-70 (UL7)
Wilo Yonos Para RS 25/7,5 (Y8)



M3

3-WAY UNMIXED PUMP UNIT WITH BYPASS

Code 1": **20358R** - with circulating pump: **20358R-(Y6/UL7/Y8)**
Code 1"1/4: **20458R** - with circulating pump: **20458R-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps is the same as the model M2.

It is equipped also of a balancing By-pass valve (0-0,5 bar).



M21



AHC20



CMP25

M2 MIX3

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code 1": **20355R-M3** - with circulating pump: **20355R-M3-(Y6/UL7/Y8)**
 Code 1"1/4: **20455R-M3** - with circulating pump: **20455R-M3-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Mixing valve: 3-way.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1" or 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h.

Kvs Value: 6,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (UL7)
 Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": 0266/M

MODEL WITH BUILT-IN SERVOMOTOR OR CLIMATIC CONTROLLER

Code 1": **20355R-M3-(M21/AHC/CMP)**

Code 1"1/4: **20455R-M3-(M21/AHC/CMP)**

with circulating pump: **20355R-M3-(Y6/U7/Y8)-(M21/AHC/CMP)**

with circulating pump: **20455R-M3-(Y6/U7/Y8)-(M21/AHC/CMP)**

M21: 3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 5 Nm. Power supply 230V. IP42. Several models available: see the section "Servomotors and Room Thermostat".

AHC20 - Basic climatic controller with servomotor and outside sensor:

Servomotor with climatic regulation for mixing valve with electronic control to keep fixed the selected temperature of the room. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

CMP25-2 - Touch screen climatic controller with advanced functions and built-in servomotor:

"touch screen" climatic controller with servomotor for mixing valve, bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 10 Nm. Power supply 230V. IP42.

Note: in units with pre-assembled pump, the pump Grundfos UPM3 AUTO L 25-70 is identified in the code with U7.

Versions available with reduced Kvs (using the special kits, see section "DN25 Equipments and accessories"). In the table below the resulting Kvs of the unit is shown, with the relevant maximum values of power and flowrate:

OPTIONAL NON RETURN VALVE WITH SEAT HOLDER WASHER



Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 8,8. Max Temperature 110°C.

Code: SET10101

Mixing valve Kvs	Pump unit Kvs	Power	Flow rate
10,0 (std.)	6,0 (std.)	35 kW	1500 l/h
6,3	5,0	29 kW	1250 l/h
4,0	3,5	20 kW	850 l/h
2,5	2,4	14 kW	600 l/h



M3 MIX3

3-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code 1": **20358R-M3** - with circulating pump: **20358R-M3-(Y6/UL7/Y8)**
 Code 1"1/4: **20458R-M3** - with circulating pump: **20458R-M3-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps is the same as the model M2 MIX3.

It is equipped also of a balancing By-pass valve (0-0,5 bar).



M2 MIX33

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE WITH BUILT-IN BY-PASS 0-50%

Code 1": **20355R-M33** - with circulating pump: **20355R-M33-(Y6/UL7/Y8)**
 Code 1"1/4: **20455R-M33** - with circulating pump: **20455R-M33-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve with adjustable by-pass. Through the by-pass (adjustable from the front part) it is possible to mix on the supply line a quantity of water coming back from the return line of the system, from 0 up to 50%.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1" or 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 38 kW (with Δt 15 K) and maximum flow 2200 l/h.

Kvs Value: 7,0.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (UL7)
 Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": 0266/M



The By-pass integrated into the 3-way mixing valve ensures a recycling inside the installation, even when the mixing valve is fully open. Through the by-pass, a fixed percent of the mixing (max. 50% of the total flow of the valve) can be set, in the case when the flow through the mixing valve is not sufficient.

Therefore, in case of a bad working of the system causing an increase of the temperature of the installation, the recycling through the by-pass allows a decrease in the temperature of the water in the underfloor installation. This can be done mixing the warm water of the return circuit with the hot water of the supply circuit, reducing possible damages.

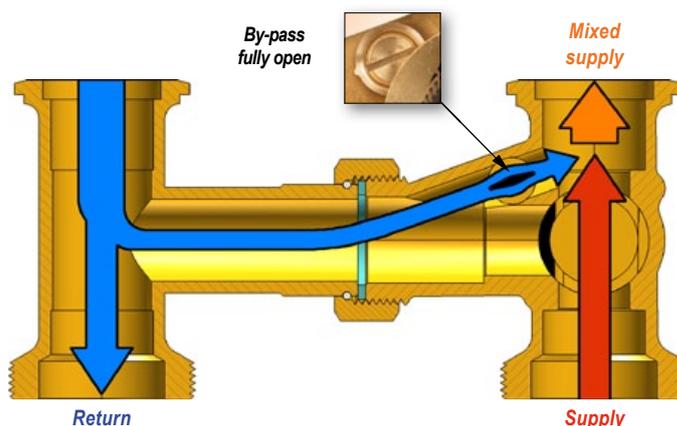
Approximate data for applications in low and medium temperature heating systems

Δt	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
8 K	17 kW - 1800 l/h	Wilo Yonos Para RS 25/6	3 mH ₂ O	Up to 100 m ²
8 K	20 kW - 2200 l/h	Wilo Yonos Para RS 25/7,5	5 mH ₂ O	Up to 200 m ²
15 K	31 kW - 1800 l/h	Wilo Yonos Para RS 25/6	3 mH ₂ O	-
15 K	38 kW - 2200 l/h	Wilo Yonos Para RS 25/7,5	5 mH ₂ O	-

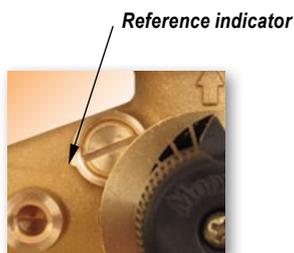
MODVLVS DN25 Pump Units

Working principle

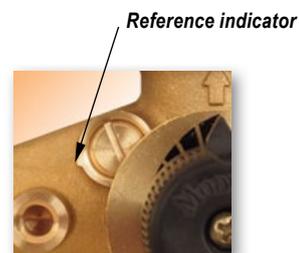
During the regular working process, with the mixer completely closed on the recycling for example, a part of the fluid is aspirated from the pump all along the by-pass line. This quantity of fluid (*narrow blue arrow*) represents 50% of the capacity of the mixer (*red arrow*). As a result, one has a very high delivered capacity and a reduced temperature.



Adjusting the by-pass



The by-pass is **fully open** and it allows the recycling of the 50% of the total flow.
The screwdriver cut is aligned along the reference indicator.



The by-pass is **fully closed** and there is no recycling.
The screwdriver cut is in an orthogonal position (at 90°) in comparison with the reference indicator.



M21



AHC20



CMP25

MODEL WITH BUILT-IN SERVOMOTOR OR CLIMATIC CONTROLLER

Code 1": 20355R-M33-(M21/AHC/CMP)
Code 1"1/4: 20455R-M33-(M21/AHC/CMP)
with circulating pump: 20355R-M33-(Y6/U7/Y8)(M21/AHC/CMP)
with circulating pump: 20455R-M33-(Y6/U7/Y8)(M21/AHC/CMP)

M21: 3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 5 Nm. Power supply 230V. IP42. Several models available: see the section "Servomotors and Room Thermostat".

AHC20 - Basic climatic controller with servomotor and outside sensor:
Servomotor with climatic regulation for mixing valve with electronic control to keep fixed the selected temperature of the room. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

CMP25-2 - Touch screen climatic controller with advanced functions and built-in servomotor:
"touch screen" climatic controller with servomotor for mixing valve, bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 10 Nm. Power supply 230V. IP42.

Note: in units with pre-assembled pump, the pump Grundfos UPM3 AUTO L 25-70 is identified in the code with U7.



OPTIONAL NON RETURN VALVE WITH SEAT HOLDER WASHER

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. differents circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 8,8. Max Temperature 110°C.

Code: SET10101



M3 MIX33

3-WAY PUMP UNIT WITH BYPASS AND 3-WAY MIXING VALVE WITH BUILT-IN BY-PASS 0-50%

Code 1": 20358R-M33 - with circulating pump: 20358R-M33-(Y6/UL7/Y8)
Code 1"1/4: 20458R-M33 - with circulating pump: 20458R-M33-(Y6/UL7/Y8)

The unit for 1" (180 mm) circulating pumps is the same as the model M2 MIX33.
It is equipped also of a balancing By-pass valve (0-0,5 bar).

Standard version: right supply. Left supply version available with extra price: see price list.



M21



AHC20



CMP25

M2 MIX4

2-WAY PUMP UNIT WITH 4-WAY MIXING VALVE

Code 1": **20355R-M4** - with circulating pump: **20355R-M4-(Y6/UL7/Y8)**
 Code 1"1/4: **20455R-M4** - with circulating pump: **20455R-M4-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Mixing valve: 4-way.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).
 External connections: 1" or 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 28 kW (with Δt 20 K) and maximum flow 1200 l/h.

Kvs Value: 5,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available circulating pumps:
 Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (UL7)
 Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": 0266/M

MODEL WITH BUILT-IN SERVOMOTOR OR CLIMATIC CONTROLLER

Code 1": **20355R-M4-(M21/AHC/CMP)**
 Code 1"1/4: **20455R-M4-(M21/AHC/CMP)**
 with circulating pump: **20355R-M4-(Y6/U7/Y8)-(M21/AHC/CMP)**
 with circulating pump: **20455R-M4-(Y6/U7/Y8)-(M21/AHC/CMP)**

M21: 3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 5 Nm. Power supply 230V. IP42. Several models available: see the section "Servomotors and Room Thermostat".

AHC20 - Basic climatic controller with servomotor and outside sensor:

Servomotor with climatic regulation for mixing valve with electronic control to keep fixed the selected temperature of the room. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

CMP25-2 - Touch screen climatic controller with advanced functions and built-in servomotor:

"touch screen" climatic controller with servomotor for mixing valve, bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 10 Nm. Power supply 230V. IP42.

Note: in units with pre-assembled pump, the pump Grundfos UPM3 AUTO L 25-70 is identified in the code with U7.

OPTIONAL NON RETURN VALVE



Non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 8,8. Max Temperature 110°C.

Code: SET10101

M3 MIX4

3-WAY PUMP UNIT WITH BYPASS AND 4-WAY MIXING VALVE

Code 1": **20358R-M4** - with circulating pump: **20358R-M4-(Y6/UL7/Y8)**
 Code 1"1/4: **20458R-M4** - with circulating pump: **20458R-M4-(Y6/UL7/Y8)**

The unit for 1" (180 mm) circulating pumps is the same as the model M2 MIX4.
 It is equipped also of a balancing By-pass valve (0-0,5 bar).



Standard version: right supply. Left supply version available with extra price: see price list.



CE



M2 FIX3

2-WAY PUMP UNIT WITH FIXED TEMPERATURE MIXING VALVE

Code 1": 20355R-(F1/F2/F3/F4) - with circ. pump: 20355R-(F1/F2/F3/F4)-(Y6/UL7/Y8)
 Code 1"1/4: 20455R-(F1/F2/F3/F4) - with circ. pump: 20455R-(F1/F2/F3/F4)-(Y6/UL7/Y8)

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Thermostatic mixing valve with temperature setting range, models F1, F2, F3 and F4.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1" or 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h.

Kvs Value: please refer to the table below.

For an accurate measuring or higher flows, please refer to the curves shown in the technical section.



Available thermostatic mixing valves:
 Setting range: 20-45°C (F1-F3)
 Setting range: 45-70°C (F2-F4)



Available circulating pumps:
 Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (UL7)
 Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": 0266/M

Approximate data for underfloor heating and radiators heating systems

Model	Field of regulation	Δt	Kvs	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
F1 (**)	20-45 °C	8 K	2,2	4,5 kW - 500 l/h	Wilo Yonos Para RS 25/6	5 mH ₂ O	Up to 50 m ²
F2	45-70 °C	20 K	2,2	11 kW - 500 l/h	Wilo Yonos Para RS 25/6	5 mH ₂ O	-
F3 (**)	20-45 °C	8 K	3,3	14 kW - 1500 l/h	Wilo Yonos Para RS 25/7,5	5 mH ₂ O	From 50 to 150 m ²
F4	45-70 °C	20 K	3,3	35 kW - 1500 l/h	Wilo Yonos Para RS 25/7,5	5 mH ₂ O	-

(**) Models compatibles with the application in installations that do the cooling function (adjustment field permitting).

Thanks to **MultiMix** new mixing valve, the pump unit can adjust the temperature even if the difference between the hot water inlet (H) and the mixed water outlet (identified with the arrow) is 0 K.

Reference temperatures: F1 and F3 models: T_H: 55°C; T_C: 24°C; T_{Mix}: 32°C - F2 and F4 models: T_H: 75°C; T_C: 40°C; T_{Mix}: 55°C



OPTIONAL NON RETURN VALVE WITH SEAT HOLDER WASHER

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. differents circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 8,8. Max Temperature 110°C.

Code: SET10101



Optional: safety bimetallic thermostat. (see section "Servomotors and Room Thermostats")

Ordered in the group by adding "-T" in the code:
 f.i.: 20355R-F3-Y6-T



M3 FIX3

3-WAY PUMP UNIT WITH BYPASS AND FIXED TEMPERATURE MIXING VALVE

Code 1": 20358R-(F1/F2/F3/F4) - with circ. pump: 20358R-(F1/F2/F3/F4)-(Y6/UL7/Y8)
 Code 1"1/4: 20458R-(F1/F2/F3/F4) - with circ. pump: 20458R-(F1/F2/F3/F4)-(Y6/UL7/Y8)

The unit for 1" (180 mm) circulating pumps is the same as the model M2 FIX3.

It is equipped also of a balancing By-pass valve (0-0,5 bar).

Standard version: right supply. Left supply version available with extra price: see price list.

Fixed Temperature; High Power



M2 MIX3 FIX

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE WITH ELECTRONIC SERVOMOTOR FOR THE CONSTANT TEMPERATURE. HEATING AND COOLING.

Code 1": **20355R-M3F-CT** - with circulating pump: **20355R-M3F-(Y6/U7/Y8)-CT**
 Code 1"1/4: **20455R-M3F-CT** - with circulating pump: **20455R-M3F-(Y6/U7/Y8)-CT**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve with electronic servomotor.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Temperature sensor.
- ✓ Bimetallic unipolar thermostat, 20+90°C, with contact by interruption or switching.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1" or 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h.

Kvs Value: 6,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (UL7)
 Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": 0266/M

The electronics of servomotor keeps constant the set temperature of the supply way, monitoring it by means of a sensor (included) mounted on the pipe.

Display of the measured temperature and target temperature, on reversible LCD display.

Setting of target temperature adjustable from 0°C up to 99°C. Operating range of 90°.

Power supply 230V, 2 min, torque 6 Nm. IP42



OPTIONAL NON RETURN VALVE WITH SEAT HOLDER WASHER

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 8,8. Max Temperature 110°C.

Code: SET10101



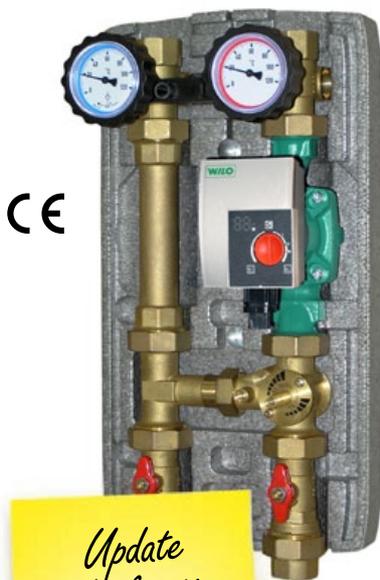
M3 MIX3 FIX

3-WAY PUMP UNIT WITH BYPASS AND 3-WAY MIXING VALVE WITH ELECTRONIC SERVOMOTOR FOR THE CONSTANT TEMPERATURE. HEATING AND COOLING.

Code 1": **20358R-M3F-CT** - with circulating pump: **20358R-M3F-(Y6/U7/Y8)-CT**
 Code 1"1/4: **20458R-M3F-CT** - with circulating pump: **20458R-M3F-(Y6/U7/Y8)-CT**

The unit for 1" (180 mm) circulating pumps is the same as the model M2 MIX3 FIX.

It is equipped also of a balancing By-pass valve (0-0,5 bar).



CE

Update of climatic controller: Clima 3M



CLIMA 3M

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND ELECTRONIC CIRCULATING PUMP.
BUILT-IN CLIMATIC CONTROLLER FOR ONE MIXED HEATING CIRCUIT

Code 1": 20359R-M3-HC3-(P6/P8)

Climatic regulation pump unit for a mixed heating system, control of boiler contact 0-10 V or PWM (heat source) for starting and switching off. Possibility to connect several pump units together by means of CAN-Bus. The pump unit, by acquiring the value of the outside temperature, settles the right supply temperature of the installation on the base of the set climatic curve.

The unit is supplied completely assembled and tested. No wiring operations are needed: the circulating pump, the servomotor of mixing valve and the climatic controller are pre-wired for a practical and effective installation.

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Isolating flanged ball valve with unions.
- ✓ 3-way mixing valve with 3 points servomotor.
- ✓ High efficiency synchronous circulating pump: Wilo Yonos PICO 25/1-6 or Wilo Yonos PICO 25/1-8.
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ "T" connection for mixing valve.
- ✓ Isolating flanged ball valve with unions.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x466x215 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 6, max temperature 110°C.

(max. 40°C ambient temperature and 95°C fluid temperature).

External connections: 1" Female.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h. Kvs Value: 6,0.

Approximate data calculated with a Wilo Yonos PICO 25/1-6 circulating pump (6 m nominal lifting power).

For power up to 20 kW (with Δt 8 K) and maximum flow 2150 l/h. Kvs Value: 6,0.

Approximate data calculated with a Wilo Yonos PICO 25/1-8 circulating pump (8 m nominal lifting power).

For an accurate measuring or higher flow, please refer to the curves of the circulating pumps (constant Δp and variable Δp), which are available in the next page.

Mixing valve with servomotor

3-way mixing valve with bi-directional servomotor with an operating range of 90°; led of activity in opening and closing mode. Selector for manual working by means of the indicator handwheel. A special connector allows to replace the servomotor in case of failure or bad working without having to operate on electric wires.

Kvs value of the mixing valve: 10,0.

Models type M33 are available with built-in by-pass in mixing valve for underfloor heating plants.

Code 1": 20359R-M33-HC(3/4/5/6)P6

Code 1": 20359R-M33-HC(3/4/5/6)P8

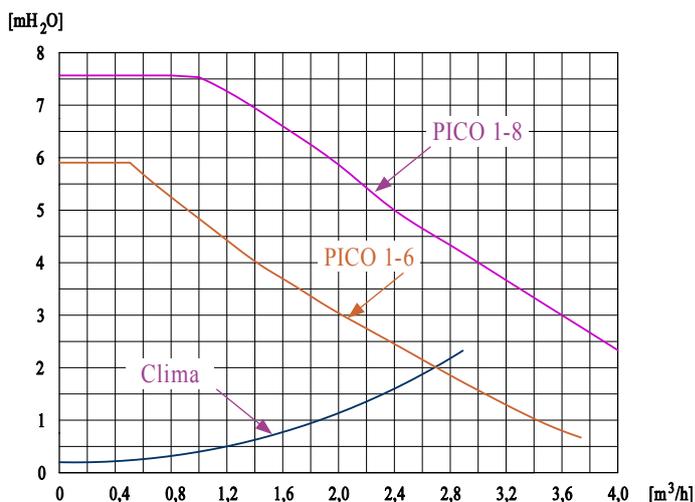


Circulating Pumps

Wilo Yonos PICO 25/1-6 and Wilo Yonos PICO 25/1-8.

High efficiency circulating pumps with electronically commutated motor. Integrated differential pressure control: constant Δp or variable Δp .

- ✓ **Constant Δp :** for heating circuits with a stable pressure drop (f.i. underfloor heating) or plants where the pressure drop of pipes is negligible in comparison with the pressure drop of the thermostatic radiator valves, or where independently from open thermostatic radiator valves, same differential pressure is requested.
- ✓ **Variable Δp :** in order to achieve the max energy saving and noise reduction. It is recommended in plants where the pressure drop of the pipes is higher than the pressure drops of the regulating valves, or more simply, when the requested differential pressure is decreasing when the flow comes down.



In compliance with European Directive 2009/125/CE. Low energy consumption from 4 W to 40 W (Wilo Yonos PICO 25/1-6) and from 4 W to 75 W (Wilo Yonos PICO 25/1-8) at max flow. Automatic air vent program, which allows a quick elimination of air during the first start of the plant. Molex automatic connector, which allows to replace the circulating pump in case of failure or bad working, without having to operate on electric wires.

Climatic Controller Clima 3M

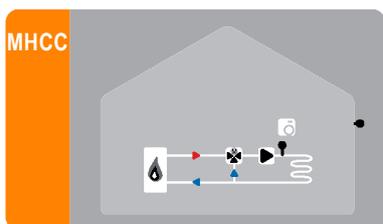
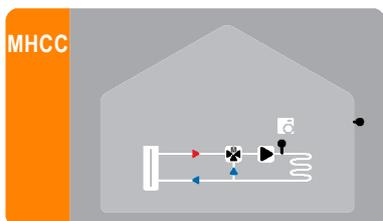
Climatic controller with wide LCD display to manage a mixed heating circuit.

- ✓ Mixed loop pictogram with evidence of the relay activity state: circulating pump and mixing valve in opening or in closing. Request of heat source.
- ✓ CAN-Bus connection to connect several pump units.
- ✓ Possibility of remote control and data backup thanks to the Connect system (the special Datalogger, not included, is necessary).
- ✓ Visualization of temperature of sensors: outside sensor, supply sensor, calculated supply sensor and room sensor (optional). Active modality of working: day or night.
- ✓ Pre-setting of characteristic curve with linear slope or broken and related day-night correctors.
- ✓ Protection function: anti-blockage circulating pump, anti-frost control, min and max supply temperature.
- ✓ Daily up to three time bands can be set up: active heating circuit in day modality or reduction night.
- ✓ Data memory with statistical analysis of the working of the plant (temperatures, working times, error messages, etc).
- ✓ Optional RC21 for remote control of mixed circuit, with activable thermostat function.

*Additional functions:
boiler contact,
Connect,
CAN-Bus*

The controller is supplied with the following sensors (PT1000):

- ✓ power cable with Schuko plug;
- ✓ cable for controlling circulating pump with Molex connector;
- ✓ cable for controlling servomotor with automatic connector PR120;
- ✓ temperature sensor for mixed circuit TR/S1,5;
- ✓ cable with outside "sensor box" to connect outside temperature sensor TA/52 and remote control RC21 (optional);
- ✓ outside temperature sensor TA/52.



(*) Boiler control is 0-10V or PWM.
To change the signal into potential free please use the outside optional relay.

Outside relay



Outside relay 1W6A. It includes the protection box, it must be used when the 0-10V output of the controller has to be transformed into potential free control.

- ✓ Coil voltage 9-12 VDC
- ✓ Maximum commutation voltage: 250 VAC
- ✓ Maximum commutation current: 6A (AC1)
- ✓ Insulation box IP54

Code: **RELE-1W6A**



CAN-Bus cable

Connection CAN-Bus cable 1 metre long, including 2 final resistors to close the circuit.

Code: **CABLE-CAN1**



CLIMA 4

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND ELECTRONIC CIRCULATING PUMP.
BUILT-IN CLIMATIC CONTROLLER FOR ONE MIXED AND ONE DIRECT HEATING CIRCUITS

Code 1": 20359R-M3-HC4-(P6/P8)

Pump unit with climatic controller for two heating circuits: mixed and direct; control of contact with boiler (heat source) for its starting and turning off. The unit, by acquiring the outside temperature, sets the correct supply temperature for both circuits, mixed and direct, on the basis of the set up climatic curves. The unit is supplied completely assembled and tested. No wiring operations are needed: the circulating pump, the servomotor of mixing valve and the climatic controller are pre-wired for a practical and effective installation.

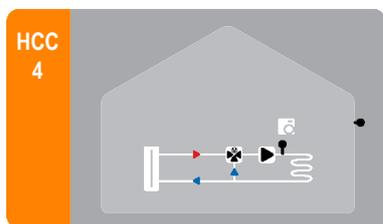
Climatic Controller Clima 4

Climatic controller with wide LCD display to manage two heating circuits: mixed and direct.

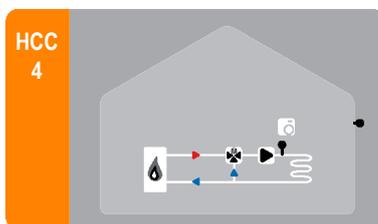
- ✓ Pictogram of mixed circuit with evidence of status of activity of relays: circulating pump and mixing valve in opening or closing position; circulating pump of direct circuit and request of heat source.
- ✓ Visualization of temperature of sensors: outside sensor, supply sensor, calculated supply sensor and room sensor (optional). Supply and calculated supply of direct circuit. Active modality of working: day or night.
- ✓ Separate pre-setting of the two characteristic curves (one for each circuit) with linear slope or broken and related day-night correctors.
- ✓ Protection function: anti-blockage circulating pumps, anti-frost control, min and max supply temperature for the two circuits.
- ✓ Daily up to three time bands can be set up (for each circuit): active heating circuits in day modality or reduction night.
- ✓ Data memory with statistical analysis of the working of the plant (temperatures, working times, error messages, etc).
- ✓ Optional RC21 for remote control of circuits, with activable thermostat function.

The controller is supplied pre-wired with following sensors (PT1000):

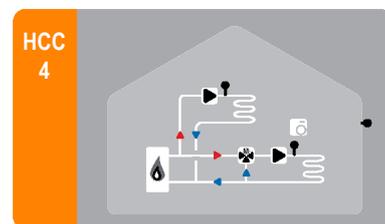
- ✓ power cable with Schuko plug;
- ✓ cable for controlling circulating pump with Molex connector;
- ✓ cable for controlling servomotor with automatic connector PR120;
- ✓ temperature sensor for mixed circuit TR/S1,5;
- ✓ cable with outside "sensor box" to connect: outside temperature sensor TA/52, direct circuit sensor TR/P4 (optional) and dip sensor TT/P4 for storage tank or hydraulic switcher and remote control RC21 (optional);
- ✓ outside temperature sensor TA/52;
- ✓ dip sensor TT/P4 for buffer or hydraulic switcher.



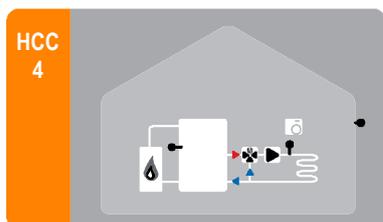
mixed circuit



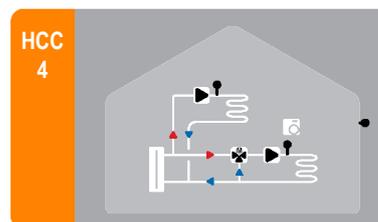
mixed circuit + boiler



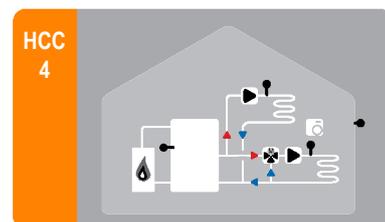
mixed and direct circuit + boiler



mixed circuit + contribution boiler



mixed circuit + direct circuit



mixed and direct circuit + contribution boiler



CLIMA 5

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND ELECTRONIC CIRCULATING PUMP.
BUILT-IN CLIMATIC CONTROLLER FOR A MIXED HEATING CIRCUIT AND HOT DOMESTIC WATER

Code 1": 20359R-M3-HC5-(P6/P8)

Pump unit with climatic controller for one mixed heating circuit and to deliver hot domestic water (HDW); control of contact with boiler (heat source) for its starting and turning off. The unit, by acquiring the outside temperature, sets the correct supply temperature of the plant on the basis of the set up climatic curve. The unit is supplied completely assembled and tested. No wiring operations are needed: the circulating pump, the servomotor of mixing valve and the climatic controller are pre-wired for a practical and effective installation.

heating and cooling

Clima 5: mixed and HDW

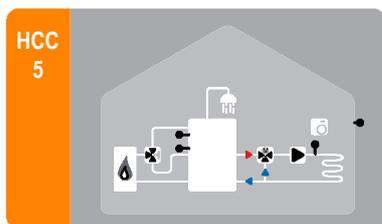
Climatic Controller Clima 5

Climatic controller with wide LCD display to manage one mixed heating circuit and to deliver hot domestic water (HDW).

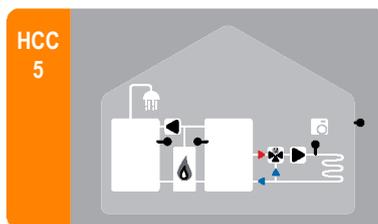
- ✓ Pictogram of mixed circuit with evidence of status of activity of relays: circulating pump and mixing valve in opening or closing position; delivery of hot domestic water and request of heat source.
- ✓ Visualization of temperature of sensors: outside sensor, supply sensor, calculated supply sensor and room sensor (optional). Hot domestic water and storage tank temperature. Active modality of working: day or night.
- ✓ Pre-setting of characteristic curve with linear slope or broken and related day-night correctors.
- ✓ Protection function: anti-blockage circulating pump, anti-frost control, min and max supply temperature.
- ✓ Daily up to three time bands can be set up: active heating circuits in day modality or reduction night.
- ✓ Control of delivery of hot domestic water with time bands and priorities.
- ✓ Data memory with statistical analysis of the working of the plant (temperatures, working times, error messages, etc).
- ✓ Optional RC21 for remote control of mixed circuit, with activable thermostat function.

The controller is supplied pre-wired with following sensors (PT1000):

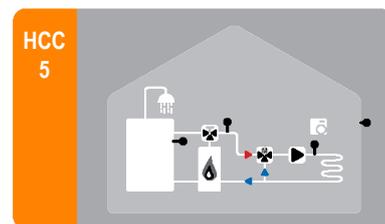
- ✓ power cable (wire) with Schuko plug;
- ✓ cable for controlling circulating pump with Molex connector;
- ✓ cable for controlling servomotor with automatic connector PR120;
- ✓ temperature sensor for mixed circuit TR/S1,5;
- ✓ cable with outside "sensor box" to connect: outside temperature sensor TA/52, dip sensor TT/P4 for domestic storage tank (HDW) and dip sensor TT/P4 for buffer or hydraulic switcher and remote control RC21 (optional).
- ✓ outside temperature sensor TA/52;
- ✓ dip sensor TT/P4 for domestic storage tank;
- ✓ dip sensor TT/P4 for buffer or hydraulic switcher.



mixed circuit
+ combi storage + boiler



mixed circuit + storage tank
+ contribution boiler

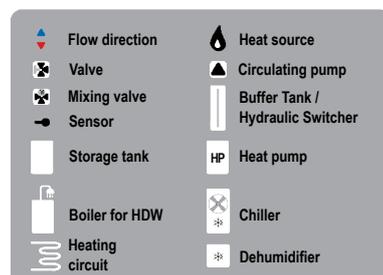


mixed circuit + storage tank
+ boiler



Sensor box

For a fast and easy connection of the temperature sensors you do not have to handle the controller, it is enough to plug the cables in the automatic connectors of the sensor box.





CLIMA 6

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND ELECTRONIC CIRCULATING PUMP. INTEGRATED BUILT-IN CLIMATIC CONTROLLER FOR ONE MIXED HEATING AND COOLING SYSTEM

Code 1": 20359R-M3-HC6-(P6/P8)

Pump unit with climatic controller for a mixed heating and cooling system. The unit, by working in heating mode, acquire the outside temperature and sets the correct supply temperature of the plant on the basis of the set up climatic curve. Vice versa, in cooling mode, the room sensor, by acquiring the temperature and the humidity inside the ambient, sets the correct supply temperature to refresh the room; control of contact with dehumidifier for its starting and turning off.

The unit is supplied completely assembled and tested. No wiring operations are needed: the circulating pump, the servomotor of mixing valve and the climatic controller are pre-wired for a practical and effective installation.

Climatic controller Clima 6

Climatic controller with wide LCD display to manage a mixed heating and cooling system.

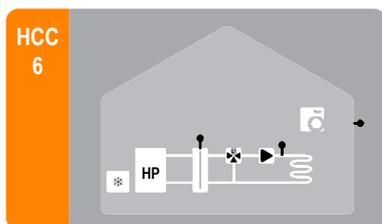
- ✓ Pictogram of mixed circuit with evidence of status of activity of relays: circulating pump and mixing valve in opening or closing position; Working mode: heating or cooling. Request for energy source.
- ✓ Visualization of temperature of sensors: outside sensor, supply sensor, calculated supply sensor; room temperature and humidity. Active modality of working: day or night.
- ✓ Pre-setting of "heating" characteristic curve with linear slope or broken and related day-night correctors.
- ✓ Protection function: anti-blockage circulating pump, anti-frost control, min and max supply temperature.
- ✓ Pre-setting of the room temperature in cooling mode. Maximum and minimum supply temperature adjustable; condensation point corrector.
- ✓ Daily up to three time bands can be set up (separately for heating and cooling). active heating circuit in day modality or reduction night; active cooling circuit in day modality or or turned off in night modality.
- ✓ Dehumidicator control with pre-settable humidity value.
- ✓ Data memory with statistical analysis of the working of the plant (temperatures, working times, error messages, etc).
- ✓ RC22 for remote control of circuit: heating, cooling, off.

The controller is supplied with the following sensors (PT1000):

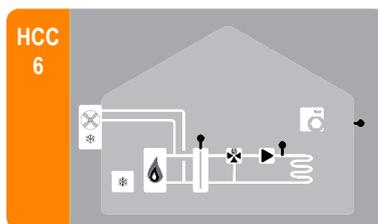
- ✓ power cable with Schuko plug;
- ✓ cable for controlling circulating pump with Molex connector;
- ✓ cable for controlling servomotor with automatic connector PR120;
- ✓ temperature sensor for mixed circuit TR/S1,5;
- ✓ cable with external "sensors" sensor box to connect: sonda temperature sensor TA/52, dip sensor TT/P4 for storage tank or hydraulic switcher and remote control RC22;
- ✓ cable with external "end user" sensor box to connect the energy source;
- ✓ cable with external "dehumidifier" sensor box to connect the dehumidifier (if used);
- ✓ outside temperature sensor TA/52;
- ✓ dip sensor TT/P4 for buffer or hydraulic switcher;
- ✓ room thermostat RC22 (temperature and humidity).



RC22. Remote control (supplied as standard) with temperature and humidity sensors.



mixed circuit with storage tank
heat pump (HP)
dehumidifier



mixed circuit with storage tank
boiler + chiller
dehumidifier



3 Sensor Box to connect: sensors and remote control, sources of energy, dehumidifier.

MODVLVS DN25 Pump Units

Clima: Examples of application



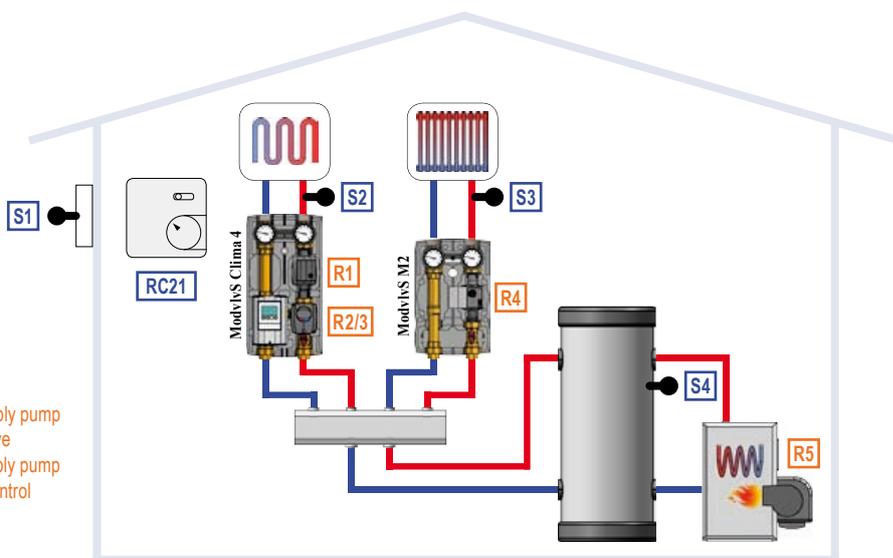
CLIMA 4

IN

- S1: Outside sensor
- S2: Mixed supply sensor
- S3: Direct supply sensor
- S4: Puffer sensor
- RC21: Room sensor (temperature and remote control)

OUT

- R1: Mixed supply pump
- R2/3: Mixing valve
- R4: Direct supply pump
- R5: Heating control



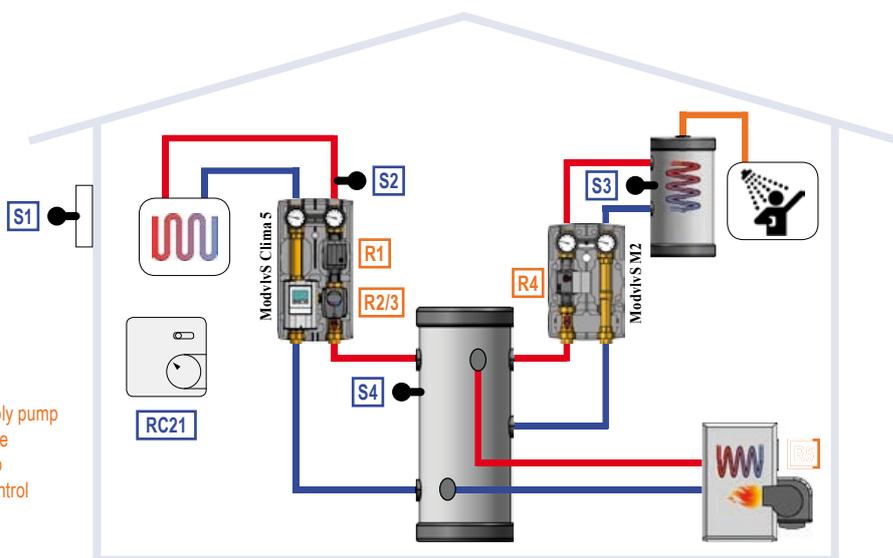
CLIMA 5

IN

- S1: Outside sensor
- S2: Mixed supply sensor
- S3: HDW sensor
- S4: Puffer sensor
- RC21: Room sensor (temperature and remote control)

OUT

- R1: Mixed supply pump
- R2/3: Mixing valve
- R4: HDW pump
- R5: Heating control



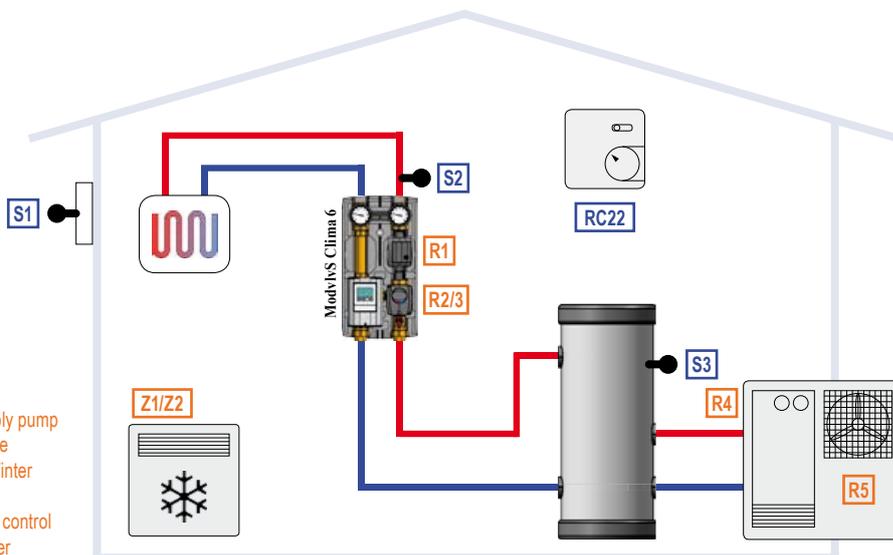
CLIMA 6

IN

- S1: Outside sensor
- S2: Mixed supply sensor
- S3: Puffer sensor
- RC22: Room sensor (temperature, humidity and remote control)

OUT

- R1: Mixed supply pump
- R2/3: Mixing valve
- R4: Summer/Winter switch
- R5: Heat pump control
- Z1/Z2: Dehumidifier control



Attention: the representations are to be considered just as an indication and they have no completeness pretension.

MODVLVS Energy

The pump units MODVLVS Energy are made to meter the energy in centralized heating and cooling installations. These pump units, thanks to two isolating valves on the return way, allow an easy mounting of the energy meter. The second temperature sensor is directly put into isolating valve of the supply way, without any adapter or pit. This special 3-way ball valve, placed after the circulating pump, allows the lead sealing of the sensor and also the replacement of it without draining the installation: it is enough to close the valve to isolate the sensor from the hydraulic circuit.

In this way the placement of the energy meter, after having cleaned and serviced the circuit or replaced it, is very easy.



M2 Energy

2-WAY DIRECT PUMP UNIT MADE FOR THE FITTING OF AN ENERGY METER

Code **DN15**, connection **1"**: **203518-15** - with circ. pump: **203518-(Y6/UL7/Y8)-15**

Code **DN20**, connection **1"**: **203518-20** - with circ. pump: **203518-(Y6/UL7/Y8)-20**

Code **DN15**, connection **1"1/4**: **204518-15** - with circ. pump: **204518-(Y6/UL7/Y8)-15**

Code **DN20**, connection **1"1/4**: **204518-20** - with circ. pump: **204518-(Y6/UL7/Y8)-20**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Flanged ball valve with T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ 3-way flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C). The third way M10x1 allows the dip fitting and the lead sealing of a ø5x45 mm sensor.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Distance piece made in plastic 3/4"x110 mm (DN15) or 1"x130 mm (DN20) that has to be removed, after having cleaned the installation, to fit the energy meter.
- ✓ Flanged ball valve with T-handle.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 90°C.

External connections: 1" Female and 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 50 kW (with Δt 20 K) and maximum flow 2150 l/h (*).

Kvs value: 8,0 (*).

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.

(*) The data are relevant to the pump unit without circulating pump and without energy meter installed.



CE



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)

Grundfos UPM3 Auto L 25-70 (UL7)

Wilo Yonos Para RS 25/7,5 (Y8)

M2 MIX3 Energy

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE MADE FOR THE FITTING OF AN ENERGY METER

- Code **DN15**, connection **1"**: **203518-M3-15** - with circ. pump: **203518-M3-(Y6/UL7/Y8)-15**
- Code **DN20**, connection **1"**: **203518-M3-20** - with circ. pump: **203518-M3-(Y6/UL7/Y8)-20**
- Code **DN15**, connection **1 1/4"**: **204518-M3-15** - with circ. pump: **204518-M3-(Y6/UL7/Y8)-15**
- Code **DN20**, connection **1 1/4"**: **204518-M3-20** - with circ. pump: **204518-M3-(Y6/UL7/Y8)-20**

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Mixing valve: 3-way.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ 3-way flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C). The third way M10x1 allows the dip fitting and the lead sealing of a ø5x45 mm sensor.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Distance piece made in plastic 3/4"x110 mm (DN15) or 1"x130 mm (DN20) that has to be removed, after having cleaned the installation, to fit the energy meter.
- ✓ "T" Connection for mixing valve.
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 90°C.

External connections: 1" Female and 1 1/4" Female.

FIELD OF UTILIZATION:

For power up to 35 kW (with Δt 20 K) and maximum flow 1500 l/h (*).

Kvs value: 6,0 (*).

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.

(*) The data are relevant to the pump unit without circulating pump and without energy meter installed.



Available circulating pumps:

- Wilo Yonos Para RS 25/6 (Y6)
- Grundfos UPM3 Auto L 25-70 (UL7)
- Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves **Art. 552** with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": **0266/M**



OPTIONAL NON RETURN VALVE WITH SEAT HOLDER WASHER

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. differents circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 8,8. Max Temperature 110°C.

Code: **SET10101**

G21

ENERGY METER SUITABLE FOR HEATING AND COOLING

Code **DN15 - 3/4" x 110 mm - Qn 1,5: G21MID-1.5**

Code **DN20 - 1" x 130 mm - Qn 2,5: G21MID-2.5**



Compact conductance scanning energy meter, with storage of 18 monthly remote values, with storage of year consumption starting from the reference day and checknumber. Optical interface for coding and/or reading. The connection of external communication modules is possible. MID approved.

- ✓ Flow metering by means of turbine single jet volumetric system with survey of the number of turns in accordance with the electric conductance principle, so without the use of magnets.
- ✓ IrDA optical interface to set parameters and to read data, using compatible mobile peripherals.
- ✓ Specific optical interface to connect an additional communication module: radio communication, M-Bus or pulse output.
- ✓ PT1000 temperature sensors ø5x45 mm, 1,5 m long.
- ✓ MID approved and lithium buffer battery 10 years life.
- ✓ Available nominal flows: 1,5 m³/h - DN15 - (Kvs 3,0) and 2,5 m³/h - DN20 - (Kvs 5,0).
- ✓ Data reading by means of eight-figure LCD display with button on the front of the device.
- ✓ Supplied data are split into 7 levels: current energy quantity, cumulative volume, flow and temperature instant values, important technical parameters, heating and cooling monthly values, maximum values.

Remark: The DN to which the identification codes of the units are referred are related to the nominal diameter of the energy counter.



M2 G21 Energy

2-WAY DIRECT PUMP UNIT WITH MID APPROVED COMPACT ENERGY METER

Code **DN15**, connection **1"**: **203518-1.5** - with circ. pump: **203518-(Y6/UL7/Y8)-1.5**
 Code **DN20**, connection **1"**: **203518-2.5** - with circ. pump: **203518-(Y6/UL7/Y8)-2.5**
 Code **DN15**, connection **1"1/4**: **204518-1.5** - with circ. pump: **204518-(Y6/UL7/Y8)-1.5**
 Code **DN20**, connection **1"1/4**: **204518-2.5** - with circ. pump: **204518-(Y6/UL7/Y8)-2.5**

The unit for 1" (180 mm) circulating pumps is the same as the model M2 Energy with the addition of the energy meter G21, included into the packing, available in two versions:

- ✓ **DN15**, Qn 1,5; 3/4"x110 mm; Kvs 3,0
- ✓ **DN20**, Qn 2,5; 1"x130 mm; Kvs 5,0

PN 10, max temperature 90°C (unit without pump).
 External connections: 1" Female and 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 43 kW (with Δt 20 K) and maximum flow 1850 l/h.
 Kvs value: **please look to the below table.**

For an accurate measuring please refer to the curves shown in the technical section.



Available circulating pumps:
 Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (UL7)
 Wilo Yonos Para RS 25/7,5 (Y8)



Available energy meters:
 G21 - DN15 - Qn 1,5 (1.5)
 G21 - DN20 - Qn 2,5 (2.5)



M2 MIX3 G21 Energy

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND MID APPROVED COMPACT ENERGY METER

Code **DN15**, connection **1"**: **203518-M3-1.5** - with circ. pump: **203518-M3-(Y6/U7/Y8)-1.5**
 Code **DN20**, connection **1"**: **203518-M3-2.5** - with circ. pump: **203518-M3-(Y6/U7/Y8)-2.5**
 Code **DN15**, connection **1"1/4**: **204518-M3-1.5** - with circ. pump: **204518-M3-(Y6/UL7/Y8)-1.5**
 Code **DN20**, connection **1"1/4**: **204518-M3-2.5** - with circ. pump: **204518-M3-(Y6/UL7/Y8)-2.5**

The unit for 1" (180 mm) circulating pumps is the same as the model M2 MIX3 Energy with the addition of the energy meter G21, included into the packing, available in two versions:

- ✓ **DN15**, Qn 1,5; 3/4"x110 mm; Kvs 3,0
- ✓ **DN20**, Qn 2,5; 1"x130 mm; Kvs 5,0

PN 10, max temperature 90°C (unit without pump).
 External connections: 1" Female and 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 39 kW (with Δt 20 K) and maximum flow 1700 l/h.
 Kvs value: **please look to the below table.**

For an accurate measuring please refer to the curves shown in the technical section.



OPTIONAL NON RETURN VALVE WITH SEAT HOLDER WASHER

Non return valve to be installed into the connection of the mixing valve on the return way.
 See description on previous page.



Available circulating pumps:
 Wilo Yonos Para RS 25/6 (Y6)
 Grundfos UPM3 Auto L 25-70 (U7)
 Wilo Yonos Para RS 25/7,5 (Y8)



Available energy meters:
 G21 - DN15 - Qn 1,5 (1.5)
 G21 - DN20 - Qn 2,5 (2.5)

We suggest you to install two isolating valves **Art. 552** with nut and gasket (see the section "DN25 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.



Code 1": 0266/M

Approximate data to select the appropriate meter

Model	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 G21	1,5 m ³ /h	20 K	2,8	18 kW - 800 l/h	Wilo Yonos Para RS 25/6	5,5 mH ₂ O
M2 G21	2,5 m ³ /h	20 K	4,2	23 kW - 1000 l/h	Wilo Yonos Para RS 25/6	5,5 mH ₂ O
M2 G21	2,5 m ³ /h	20 K	4,2	43 kW - 1850 l/h	Wilo Yonos Para RS 25/7,5	5,0 mH ₂ O
M2 MIX3 G21	1,5 m ³ /h	20 K	2,8	18 kW - 800 l/h	Wilo Yonos Para RS 25/6	5,5 mH ₂ O
M2 MIX3 G21	2,5 m ³ /h	20 K	3,8	23 kW - 1000 l/h	Wilo Yonos Para RS 25/6	5,0 mH ₂ O
M2 MIX3 G21	2,5 m ³ /h	20 K	3,8	39 kW - 1700 l/h	Wilo Yonos Para RS 25/7,5	5,0 mH ₂ O

(*) The indicated Kvs concerns the unit including the energy meter installed.

Remark: The DN to which the identification codes of the units are referred are related to the nominal diameter of the energy counter

Typical curves of Energy pump unit and circulating pumps

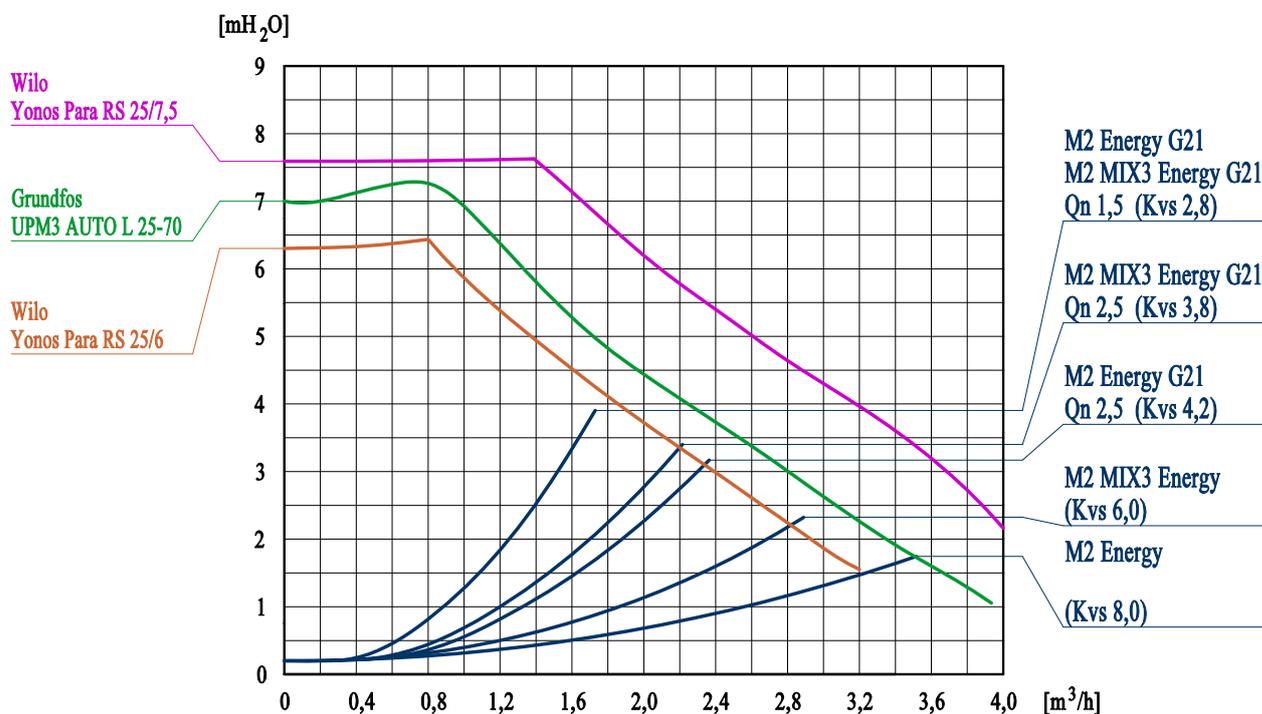


photo: code 102518

Kit 518 - Kit for DN15 (Qn 1,5) energy meters

The set consists of:

- ✓ 1 pce. Full port ball valve 1/2" F/F made in forged brass with connection M10x1 for the ø5x45 mm temperature sensor. Nickel finish.
- ✓ 2 pcs. Full port ball valves 1/2" F x 3/4" nut made in forged brass. Sealable nut. Nickel finish.
- ✓ 1 pce. Distance piece DN15 made in plastic, 3/4" threaded connection, 110 mm length. Ends threaded to ISO 228 (DIN 259 BSP 2779). Fiber gasket.

The ball valves are provided with symmetric sealable T handle.

PN 10. Max Temperature 90°C.

Code: 102518

Model with energy meter (MID certified)

Code: 102518MID1.5



photo: code 103518MID2.5

Kit 518 - Kit for DN20 (Qn 2,5) energy meters

The set consists of:

- ✓ 1 pce. Full port ball valve 3/4" F/F made in forged brass with connection M10x1 for the ø5x45 mm temperature sensor. Nickel finish.
- ✓ 2 pcs. Full port ball valves 3/4" F x 1" nut made in forged brass. Sealable nut. Nickel finish.
- ✓ 1 pce. Distance piece DN20 made in plastic, 1" threaded connection, 130 mm length. Ends threaded to ISO 228 (DIN 259 BSP 2779). Fiber gasket.

The ball valves are provided with symmetric sealable T handle.

PN 10. Max Temperature 90°C.

Code: 103518

Model with energy meter (MID certified)

Code: 103518MID2.5

MODVLVS DN25 Kit



CE

Connection kit, supply only, for 1" circulating pumps

Code 1": 10321-ISO - with circulating pump: 10321-ISO-(Y6/UL7/Y8)
Code 1"1/4: 10323-ISO - with circulating pump: 10323-ISO-(Y6/UL7/Y8)

The connection kit for 1" circulators is composed of:

SUPPLY:

- ✓ Flanged ball valve provided with insulation T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C) and built-in check valve 20 mbar (with air vent device) with external adjustment control.
- ✓ 2 pcs of set 1"1/2 nut and gasket.

PN 10, max temperature 110°C (kit with no pump).

External connections: 1" or 1"1/4 Female.



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
Grundfos UPM3 Auto L 25-70 (UL7)
Wilo Yonos Para RS 25/7,5 (Y8)

Connection kit for 1" circulating pumps

Code 1": 10355-ISO - with circulating pump: 10355-ISO-(Y6/UL7/Y8)
Code 1"1/4: 10455-ISO - with circulating pump: 10455-ISO-(Y6/UL7/Y8)

The connection kit for 1" circulators is composed of:

SUPPLY:

- ✓ Flanged ball valve provided with insulation T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ 2 pcs of set 1"1/2 nut and gasket.

RETURN:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Set 1"1/2 nut, gasket and male x female adapter.

PN 10, max temperature 110°C (kit with no pump).

External connections: 1" or 1"1/4 Female.



CE



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
Grundfos UPM3 Auto L 25-70 (UL7)
Wilo Yonos Para RS 25/7,5 (Y8)

Connection kit for 1" circulating pumps, with bypass

Code 1": 10358-ISO - with circulating pump: 10358-ISO-(Y6/UL7/Y8)
Code 1"1/4: 10458-ISO - with circulating pump: 10458-ISO-(Y6/UL7/Y8)

The connection kit for 1" circulators is composed of:

SUPPLY:

- ✓ Flanged ball valve provided with insulation T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged 3-way ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ 2 pcs of set 1"1/2 nut and gasket.

RETURN:

- ✓ Flanged 4-way ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue; 0°C-120°C).
- ✓ Set 1"1/2 nut, gasket and male x female adapter.
- ✓ Set bypass valve 0-0,5 bar and set compression end 22 mm (centre distance 125 mm).

PN 10, max temperature 110°C (kit with no pump).

External connections: 1" or 1"1/4 Female.



CE



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
Grundfos UPM3 Auto L 25-70 (UL7)
Wilo Yonos Para RS 25/7,5 (Y8)



Art. 550S ISO - Flanged ball valve

Flanged ball valve in hot forged brass for circulating pumps.
Nickel plate finish.

Provided with insulation T-handle.

Coupling flange for 1" circulating pumps.

Female end threaded to ISO 228 (DIN 259 BSP 2779).

PN 30. Max Temperature 120°C.

Dimensions: 1" and 1"1/4.

Code 1": **04550SISO**

Code 1"1/4: **05550SISO**

Model with check-valve - Art. 550S/2 ISO

Check valve 20 mbar (with air vent device) with external adjustment control.

PN 10. Max Temperature 110°C.

Code 1": **04550S/2ISO**

Code 1" 1/4: **05550S/2ISO**



Art. 550S TER - Flanged ball valve with thermometer

Flanged ball valve in hot forged brass for circulating pumps.
Nickel plate finish.

Coupling flange for 1" circulating pumps.

Female end threaded to ISO 228 (DIN 259 BSP 2779).

Supplied with in-handle thermometer, coded red (range 0°C-120°C, TER-R) or coded blue (range 0°C-120°C, TER-B).

PN 10. Max Temperature 110°C.

Dimensions: 1" and 1"1/4.

Code 1": **04550STER-(R/B)**

Code 1"1/4: **05550STER-(R/B)**

Model with check-valve - Art. 550S/2 TER-R

Check valve 20 mbar (with air vent device) with external adjustment control.

PN 10. Max Temperature 110°C.

Code 1": **04550S/2TER-R**

Code 1"1/4: **05550S/2TER-R**



Set 1"1/2 nut and fiber gasket

Nickel plate finish.

Code: **AYHU26SET**

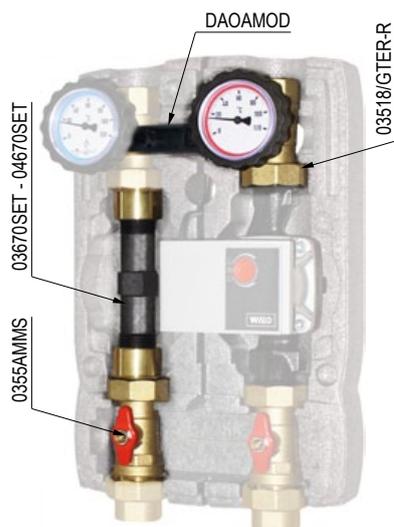


Set 1"1/2 nut, fiber gasket and Male x Female (1" or 1"1/4) adapter

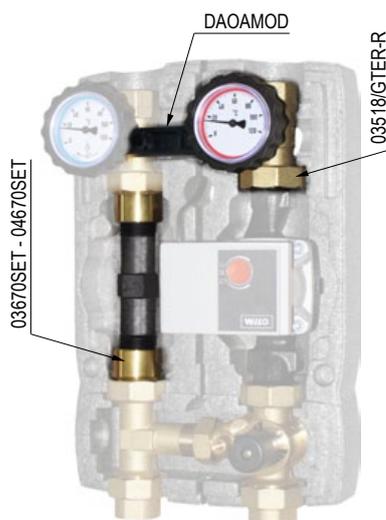
Nickel plate finish.

Code 1": **104629**

Code 1"1/4: **104629-05**



M2



M2 MIX3



Connection kit for energy meters

The components shown here allow the assembly of a energy meter (not included) into the return way of the pump unit M2 and M2 MIX3.

The distance piece made in plastic is used during the installation of the plant, to avoid that impurities go through the meter.

Then it will be removed to be replaced with the meter when the installation is finished. The ball valve of the pump unit M2 allows to cut off the flow in case of replacement or service.



Art. 670 Set - Connection kit for energy meters

Distance piece made in plastic with brass threaded ends 1 1/2", suitable for DN15 or DN20 meters. Fiber gasket.

Code DN15, distance piece 3/4", 110 mm length: 03670SET
Code DN20, distance piece 1", 130 mm length: 04670SET



Art. 55AMMS - Flanged ball valve

Flanged ball valve in hot forged brass for circulating pumps. Yellow brass finish.

Provided with steel T-handle.

Coupling flange for 1" circulating pumps.

Male end threaded to ISO 228 (DIN 259 BSP 2779).

1 1/2" nut and gasket not included.

PN 30. Max Temperature 120°C.

Dimension: 1 1/2" Male x 1 1/2" Nut.

Code: 0355AMMS



Set 1 1/2" nut and EPDM gasket

For more informations see the pages dedicated to Modvlvs Equipments and Accessories.



Art. 518/G TER-R - Ball valve with sensor holder pit

3-way flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C). The third way M10x1 allows the dip placement and the lead sealing of a ø5x45 mm sensor.

PN 30. Max Temperature 120°C.

Dimensions: 1" Female x 1 1/2" swivel nut and 1 1/4" Female x 1 1/2" swivel nut.

Code 1": 03518/GTER-R

Code 1 1/4": 04518/GTER-R



Spacer bracket for handles

Spacer bracket to assure the centre distance between the two ball valves and the mutual lining.

Not usable with the models with by-pass (M3).

Centre distance 125 mm.

Code: DAOAMOD



Art. 901 - Differential bypass valve (By-pass)

Differential bypass valve to balance the pressure of the heating installation. Yellow brass finish. Setting range from 0-0,5 bar.

PN 10. Max Temperature 110°C.

Kvs Value: 5,0.

Dimension: 3/4" Nut x 3/4" Nut.

Code: 03901



Art. 1050 - 3-way mixing valve

3-way mixing valve for pump units. Suitable for motorization and fully reversible (to be placed both on the left and on the right side of the pump unit). Connection to the circulating pump through the flanged side.

Made in Brass CW617N (CW614N). Yellow brass finish. The nuts are not included.

Motor connection: standard Esbe. Working torque: less than 3 Nm.

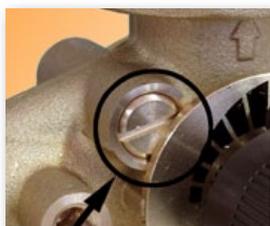
Centre distance 125 mm.

PN 10. Max Temperature 110°C.

Kvs Value: 10,0. Maximum leakrate in % of flow: 0,05.

Dimension: 1"1/2 Male x 1"1/2 Nut (1" circulating pump).

Code: 1041050



Art. 1051 - 3-way mixing valve with by-pass 0-50%

3-way mixing valve with by-pass. The built-in by-pass has an adjustable flow up to 50% of the total flow rate range of the valve (especially suitable for underfloor heating installations).

Kvs value: 15,0; the remaining features are the same as the art. 1050.

Code: 1041051



Kvs reduction kit for 3-way mixing valve

The kit consists of a cap and of an O-ring gasket to join to the art. 1050 to reduce the Kvs of the mixing valve and, consequently, of the pump unit (on the table the model M2 MIX3 is considered) from the standard value to the values indicated in the side column. Yellow brass finish.

Kvs of mixing valve	Kvs of pump unit	Code
10,0 (standard)	6,0 (standard)	-
6,3	5,0	041050SETKVS6.3
4,0	3,5	041050SETKVS4
2,5	2,4	041050SETKVS2.5



Art. 1060 - 4-way mixing valve

4-way mixing valve for pump groups suitable for motorization.

Made in Brass CW617N (CW614N). Yellow brass finish. The nuts are not included.

Motor connection: standard Esbe. Working torque: less than 3 Nm.

Centre distance 125 mm.

PN 10. Max Temperature 110°C.

Kvs Value: 6,3. Maximum leakrate in % of flow: 0,05.

Dimension: 1"1/2 Male x 1"1/2 Nut (1" circulating pumps).

Code: 1041060



Art. 10459AR - Kit to convert a 2-way pump unit into a 3-way

The kit consists of a by-pass + two 3-way valves supplied with in-handle thermometer, coded red, range 0°C-120°C (supply way) and blue, range 0°C-120°C (return way) respectively. Made in Brass CW617N (CW614N). Yellow brass finish.

Nuts and non return valve (code 10101) not included.

Centre distance 125 mm.

PN 10. Max Temperature 110°C.

Dimension: 1" Female x 1"1/2 Nut (1" circulating pumps) and 1"1/4 Female x 1"1/2 Nut (1" circulating pumps)

Code 1": 10459AR
Code 1"1/4: 10559AR



Art. 55AMS TER - Flanged ball valve with thermometer

Flanged ball valve in hot forged brass for circulating pumps.

Yellow brass finish.

Supplied with in-handle thermometer, coded red (range 0°C-120°C, TER-R) or coded blue (range 0°C-120°C, TER-B).

Coupling flange for 1" circulating pumps.

Female end threaded to ISO 228 (DIN 259 BSP 2779).

1"1/2 nut and gasket not included. Art. TER-B provided with non return valve.

PN 30. Max Temperature 120°C.

Dimension: 1" Female x 1"1/2 Nut and 1"1/4 Female x 1"1/2 Nut.

Code 1": 0355AMS-TER-(R/B)
Code 1"1/4: 0455AMS-TER-(R/B)



1" Male adapter for copper pipe

The kit consists of 1" Male compression fitting, nut and olive. It allows to connect the 1" female pump units to copper pipes of 15, 18, 22 and 28 mm diameter.

Yellow brass finish.

Code 1" Male x 15 mm: 115525

Code 1" Male x 18 mm: 118525

Code 1" Male x 22 mm: 122525

Code 1" Male x 28 mm: 128525



Set nut 1"1/2 and EPDM gasket

Yellow brass finish.

Code: AYHT26SET



Set nut 1"1/2, EPDM gasket and female adapter 1" or 1"1/4

Yellow brass finish.

The 1"1/4 Female model allows the placement of DN25 pump units on the DN32 distributors (two kits for each pump unit to be installed are required).

Code 1": 104629F

Code 1"1/4: 104629F-05



DN25 wall fixing set

Thanks to the wall fixing set and to the bracket plate it is possible to hold the pump unit at a distance of 100 or 150 mm (between the wall and the pipes axis).

Insertion dimension: 60 mm.

Centre distance 125 mm.

Threaded connections 1"1/2 Male x 1"1/2 swivel nut.

Code: DAOA25SET



Set 646R

CONNECTION KIT FOR ADDITIONAL COMPONENTS

“T” connection for DN25 pump units. The set allows the side mounting of several additional components such as, for example, sensor holder pit, security units, filling/draining valve.

The kit consists of “T” connection, EPDM gasket and union. Made in brass CW617N (CW614N). Yellow brass finish.

Dimension: 1”Male x 1” F union.

Code: 104646RM

Examples of possible applications



Connection with security unit (code 03647D-3C-4SET)*, to compensate incidental overpressures of the installation. Bottom end 3/4” male to connect flexible or draining kit code 103647P.



Connection with filling/draining ball valve (code 01646R-430SCASET)*, to make easier the filling and draining operations.



Connection with sensor holder pit (POZ-646-6SET)*, for the housing of a dip sensor (“TT” series), if the system is equipped with an electronic controller which requires the supply temperature as input.

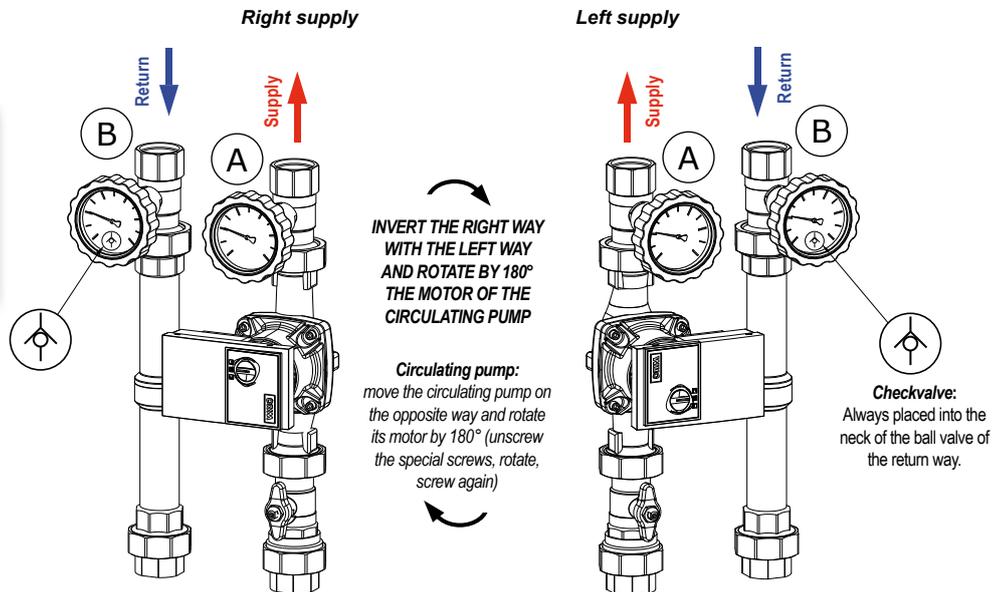
(*) For all the showed devices, the connection with the “T” connector is allowed by means of a special seal kit with pre-charged EPDM OR that does not need any additional sealant like paste, hemp, ecc.

Inversion of the supply

All the pump units are reversible, to get the supply way on the left side. This operation is simple and quick: in the enclosed directions all the steps are described, even in the presence of mixing valves and by-passes. The pump units can be prepared with the left supply from the purchase order receiving (see the price list).

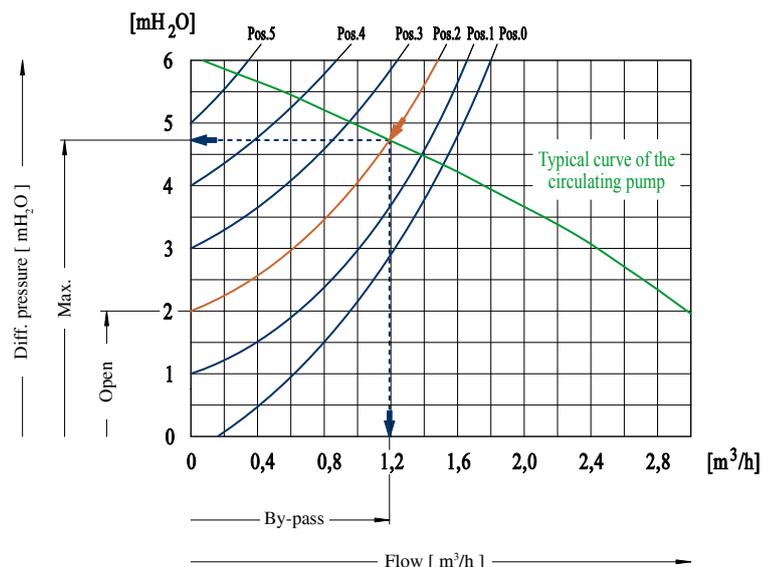
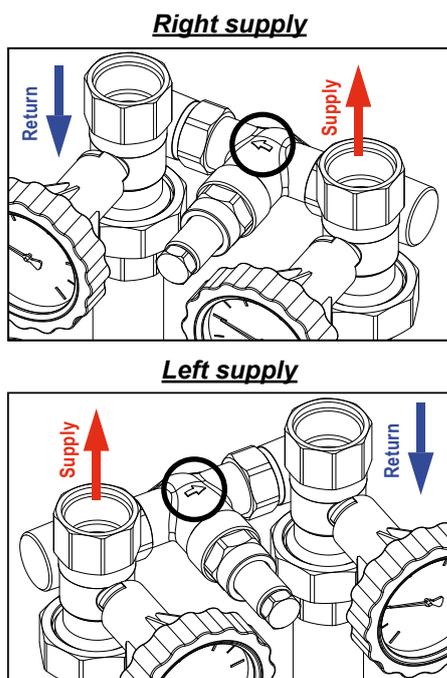


Checkvalve:
Always placed into the neck of the ball valve of the return way. To exclude the check valve, turn the handle by 45° clockwise.



Balancing by-pass valve

The models M3 of the pump units have a by-pass valve mounted into the upper part of the unit, suitable for installations that are working with considerable flow changes, as it happens in the systems that have thermostatic radiator valves or motorized valves. The by-pass enables a flow recycling proportional to the number of valves that close and it reduces the maximum value of the differential pressure made by the circulating pump. The here below diagram shows a situation in which all the adjustment valves of the circuit are closed. The by-pass (in the example of the position 2) reduces the maximum pressure at 4,75 m of water column. The flow showed is the one that is flowing through the by-pass.

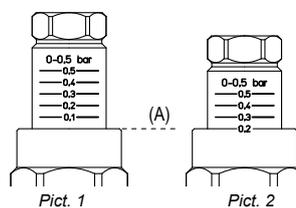


Adjusting of the by-pass

To set the by pass, use the diagram above as a reference.

Pict. 1. The notch reference of the setting is the top of the nut (A).

Pict. 2. Example of the setting at the value of 0,2 bar.



M3 pump units allow a more accurate regulation even in presence of self-regulating electronic pump units.

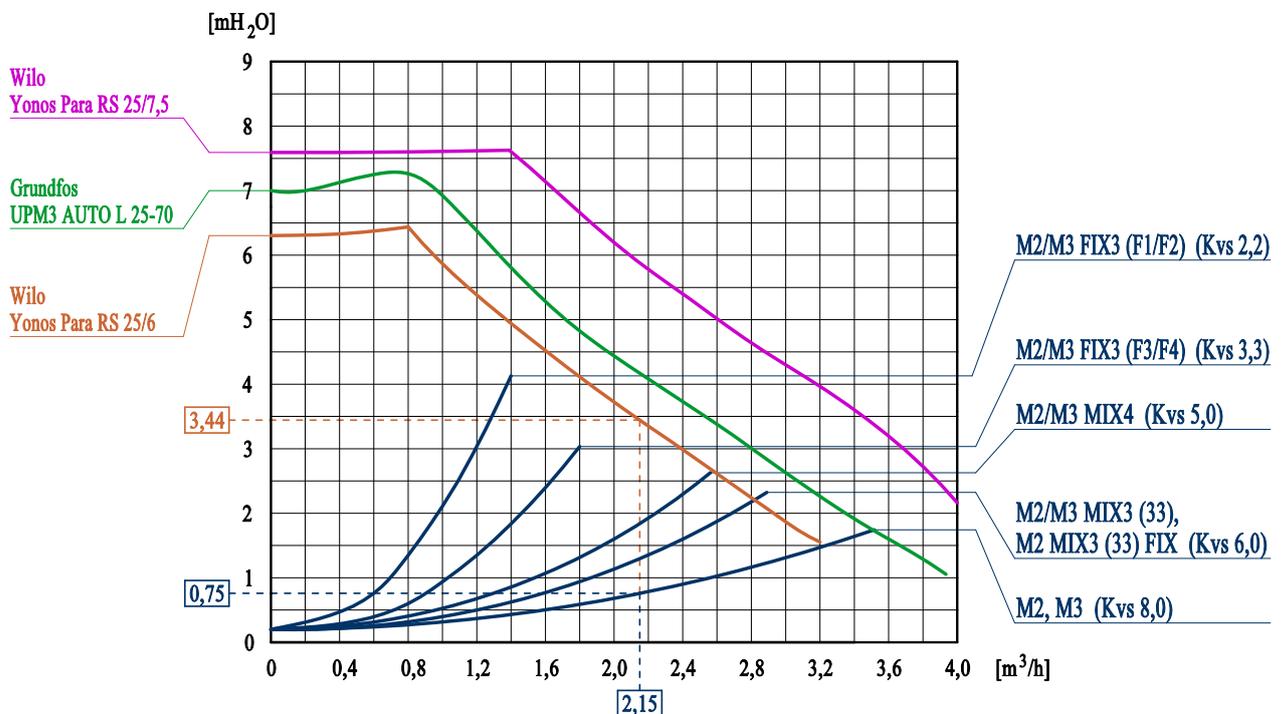
Method to select the circulating pump

The selection of the right circulating pump is determined by the need to provide the installation with a flow suitable to develop the power fixed in the planning stage. Knowing this datum and taking into consideration the temperature difference Δt between the supply and the return, we can calculate the flow in kg/h . It is also important to take into consideration the kind of pump unit that is used, that is known in advance because it has been selected on the basis of the kind of installation to be realized.

EXAMPLE: For an installation with a **M2** pump unit that requires a power $P = 50 kW$ with a temperature difference $\Delta t = 20 K$ the flow is calculated as follows:

$$\frac{50kW \times 860}{20K} = 2150 kg/h$$

Now we have to calculate the total head loss of the installation, to be able to select a circulating pump that is not under-dimensioned. As concerns the pump unit we know the head losses looking to the diagram the curve of the used model. In this case we found that, for the model **M2** with a flow of $2150 kg/h$ ($2,15 m^3/h$) the head loss is $0,75 m$ of water column.



To this head loss we have to add the total head loss of the installation (pipes, connections, radiant elements, etc): this is a datum given by the planner.

As we can see from the diagram the circulating pump **Yonos Para RS 25/6** at a flow of $2,15 m^3/h$ has a lifting power of $3,44 m$: taking into consideration that the pump unit absorbs $0,75 m$ it will left $2,69 m$ (as $3,44 - 0,75 = 2,69 m$) of water column available to compensate the head losses of the installation. Therefore we have to see if this datum is sufficient, in that case we can use the **Yonos Para RS 25/6**, otherwise we have to use another circulating pump provided with a bigger lifting power.

ATTENTION: if necessary it is possible to calculate by a mathematical calculus the pressure drop (at the required flow) produced by the presence of an hydraulic device, if we know its Kvs; therefore, with a good approximation, assuming a standard temperature of $20^\circ C$ and overlooking the effects of viscosity of the fluid, it follows that:

$$Kvs = \frac{Q}{\sqrt{h}}$$

where the flow Q is expressed in m^3/h and h , the pressure difference at the outlets of the device (pressure drop), is expressed in bar. Then, reversing the previous formula, we obtain:

$$h = \left(\frac{Q}{Kvs} \right)^2 \quad \text{in the example above:} \quad \left(\frac{2,15}{8} \right)^2 = 0,072 \text{ bar}$$

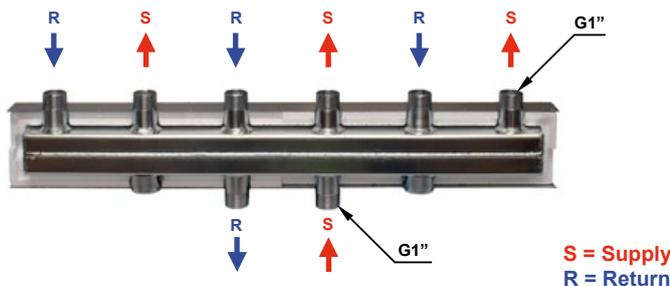
as 1 bar is about 10,198 mH_2O , then the pressure drop is $0,73 mH_2O$, value that, taking into consideration the approximations, corresponds to the value shown in the diagram.

MODVLVS DN25 Distributors



DN25 Distribution headers for heating installations made of electro-welded and galvanized iron pipe suitable for power up to 70 kW. EPS 25 mm thermic insulation according to DIN 4102-B2 and galvanized steel cover 0,55 mm thickness. Hydraulic test at 12 bar. ModvlvS: connection center distance 125 mm. The range of the distributors is suitable for DN25 1" ModvlvS pump units and DN32 1"1/4; for the latter you must use the special adapters.

Distributor HV 60/125 (2 m³/h - 50 kW)



Distribution header with insulation suitable for power up to 50 kW (rise in temperature $\Delta T=20$ K in the primary circuit).

Maximum flow rate up to 2 m³/h - Max. 6 bar.

Insulation box section size: 110 x 110 mm.

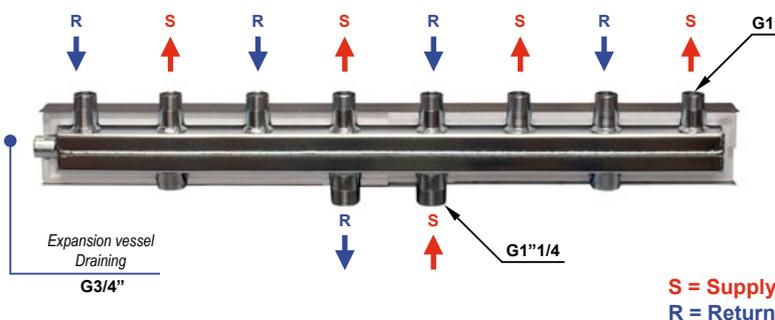
Connections to the pump units: 1" Male, centre distance 125 mm (pitch 250 mm).

Connection to the hydraulic switcher
cod. HW60/125-04 threaded end 1" Male (centre distance 125 mm); for the connection use n. 2 set cod. 04629SET (1").

Item	Use	Length	Code
HV 60/125-2	For connection to no. 2 DN25 units	508 mm	HV60/125-2
HV 60/125-3	For connection to no. 3 DN25 units	758 mm	HV60/125-3
HV 60/125-4	For connection to no. 4 DN25 units (*)	1008 mm	HV60/125-4
HV 60/125-5	For connection to no. 5 DN25 units (*)	1258 mm	HV60/125-5
HV 60/125-6	For connection to no. 6 DN25 units (*)	1508 mm	HV60/125-6

(*) Items available only on demand

Distributor HV 70/125 (3 m³/h - 70 kW)



Distribution header with insulation suitable for power up to 70 kW (rise in temperature $\Delta T=20$ K in the primary circuit). Side connection 3/4" F for the expansion vessel and/or the draining valve.

Maximum flow rate up to 3 m³/h - Max. 6 bar.

Insulation box section size: 110 x 110 mm.

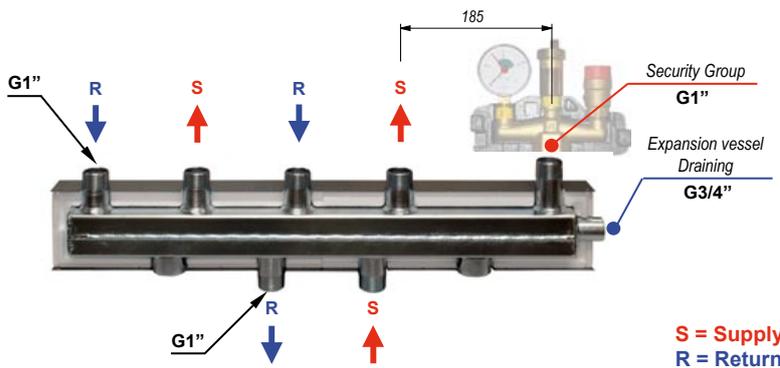
Connections to the pump units: 1" Male, centre distance 125 mm (pitch 250 mm).

Connessione al separatore idraulico
cod. HW60/125-04 threaded end 1"1/4 Male (centre distance 125 mm); for the connection use n. 2 set cod. 05629SET (1"1/4).

Item	Use	Length	Code
HV 70/125-2	For connection to no. 2 DN25 units (*)	508 mm	HV70/125-2
HV 70/125-3	For connection to no. 3 DN25 units (*)	758 mm	HV70/125-3
HV 70/125-4	For connection to no. 4 DN25 units	1008 mm	HV70/125-4
HV 70/125-5	For connection to no. 5 DN25 units	1258 mm	HV70/125-5
HV 70/125-6	For connection to no. 6 DN25 units	1508 mm	HV70/125-6

(*) Items available only on demand

Distributor HV 60/125 SG (2 m³/h - 50 kW)



Distribution header with insulation suitable for power up to 50 kW (rise in temperature $\Delta T=20$ K in the primary circuit). 1" male threaded connection for SG50 security unit. 3/4" female side connection for expansion vessel and/or draining valve.

Maximum flow rate up to 2 m³/h - Max. 6 bar.
Insulation box section size: 110 x 110 mm.

Connections to the pump units: 1" Male, centre distance 125 mm (pitch 250 mm).

Connection to the hydraulic switcher
cod. HW60/125-04 threaded end 1" Male (centre distance 125 mm); for the connection use n. 2 set cod. 04629SET (1").

Item	Use	Length	Code
HV 60/125 SG-2	For connection to no. 2 DN25 units	670 mm	HV60/125SG-2
HV 60/125 SG-3	For connection to no. 3 DN25 units	920 mm	HV60/125SG-3



Art. 695 - Security valve

Membrane security valve for power up to 50 kW. CE marking according to Directive 97/23/CE. TÜV approved. Made to work with water and glycolic fluid. Setting pressure: 3 bar. Working temperature: from -10°C up to +120°C.

Available sizes: 1/2" x 3/4".



Individual packing code: **02695-03**
Multiple packing code: **02695-03OEM**

Security Unit SG 50

Security unit for closed circuit heating systems as per EN 12828 regulations with power up to 50 kW.

Brass body, pre-assembled end tested, equipped with selfseal valves to allow an easy replacement of the manometer and of the air vent valve. It consists of:

- ✓ Manometer $\varnothing 63$, 0-4 bar, 3/8";
- ✓ 3/8" automatic air vent valve. Nominal pressure: 12 bar;
- ✓ Security valve 3 bar 50 kW. Inlet 1/2", outlet 3/4". The PTFE sealing gasket allows the angular repositioning.



EPS insulation box (Measurements: 187x150x60 mm).

Max Temperature 120°C.

Size: 1" Female.

Code: **SG50**

Wall fixing set for HV 60 and HV 70 distributors

Pair of brackets to fix to the wall the distribution header with the insulation box 110 x 110 mm. Distance between the wall and the centre of the distribution header can be 100 or 150 mm.



Code: **DAOA-HV**

Adapter connection kit for DN32 pump units

The kit consists of: 2" nut, EPDM gasket and 1" F connection. It allows the placement of DN32 pump units on the DN25 distributors. Yellow brass finish.

Two kits for each pump unit to be installed are required.



Code: **105629F-04**

Art. 552

Isolating ball valve 1" Female for 1 1/2" swivel nut in hot forged brass. Yellow brass finish. Swivel nut and gasket not included. Ends threaded to ISO 228 (DIN 259 BSP 2779).

Operating stem with allen screw.

PN 6. Max temperature 95°C. DN20.



Code: **0266/M**

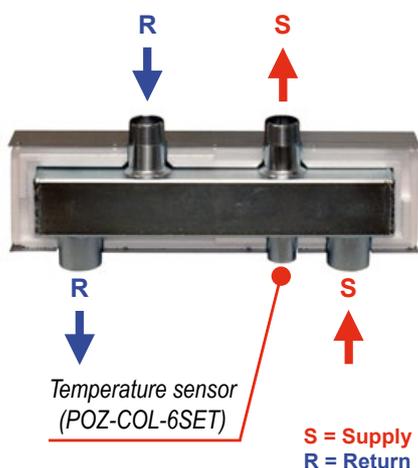
Hydraulic switcher HW 60/125

Hydraulic switcher with insulation to be connected before the distribution header. This device allows to separate hydraulically the primary circuit from the secondary circuit so giving a greater volumetric flow in the distribution header in comparison with the flow of the boiler. It is particularly suitable to be mounted with condensing boilers.

In fact with a right setting of the boiler pump it ensures a low return water temperature (always lower than 57°C, that is the condensing temperature of the steam in the methane gas) so increasing the efficiency of the installation.

Down connection 1/2" F for the boiler sensor.

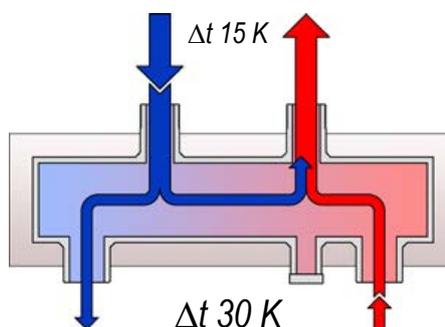
Insulation box section size: 110 x 110 mm.



HW 60/125 1" suitable for flow up to 2 m³/h - Code: HW60/125-04
 Connection to the distribution header: 1" Male, centre distance 125 mm
 Connection to the boiler: 1" Female, centre distance 250 mm

HW 60/125 1 1/4" suitable for flow up to 3 m³/h - Code: HW60/125-05
 Connection to the distribution header: 1 1/4" Male, centre distance 125 mm
 Connection to the boiler: 1 1/4" Female, centre distance 250 mm

Distributor: more circulation



Boiler: less circulation

Hydraulic switcher HW 60/375A suitable for flow up to 4 m³/h

Hydraulic switcher with insulation to be connected before the distribution header. This device allows to separate hydraulically the primary circuit from the secondary circuit so giving a greater volumetric flow in the distribution header in comparison with the flow of the boiler. It is particularly suitable to be mounted with condensing boilers.

In fact with a right setting of the boiler pump it ensures a low return water temperature (always lower than 57°C, that is the condensing temperature of the steam in the methane gas) so increasing the efficiency of the installation.

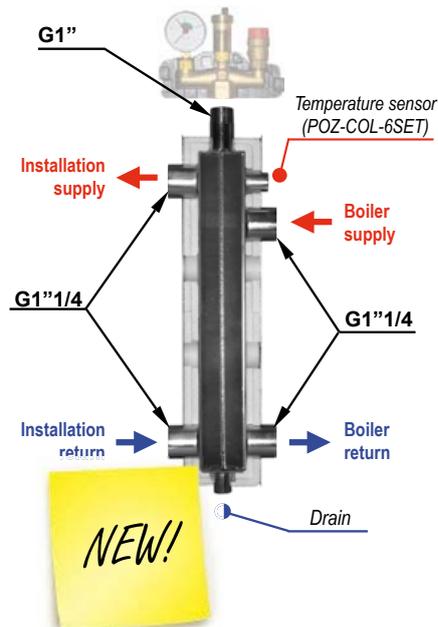
Insulation box section size: 110 x 110 mm.

Connections: 1 1/4" Female

Connection at the top: 1" Male for security unit.

1/2" Female connection for drain (bottom) and temperature sensor (side connection).

Code: HW60/375A



1/2" adapter with sensor holder pit

1/2" adapter and sensor holder pit $\varnothing 6$ mm. Equipped with M4 screw to fix the sensor. Thanks to the 1/2" adapter to be sealed to the distributor or to the hydraulic switcher, the sealing is insured by a special sealing system with precharged EPDM O-ring, that does not need any seal paste, hemp or other sealants.
PN 10. Constant temperature 120°C.

Code: POZ-COL-6SET

Wall fixing set for HW 60 hydraulic switcher

Pair of brackets to fix to the wall the hydraulic switcher with the insulation box 110 x 110 mm.
 Available sizes: 100 and 150 mm (Distance between the wall and the centre of the hydraulic switcher).

100 mm: Code: DAOA100

150 mm: Code: DAOA150

Three pieces set for connecting the hydraulic switcher to the distributor header

EPDM gasket.

Yellow brass finish.

To connect the hydraulic switcher to the distributor two sets are necessary.

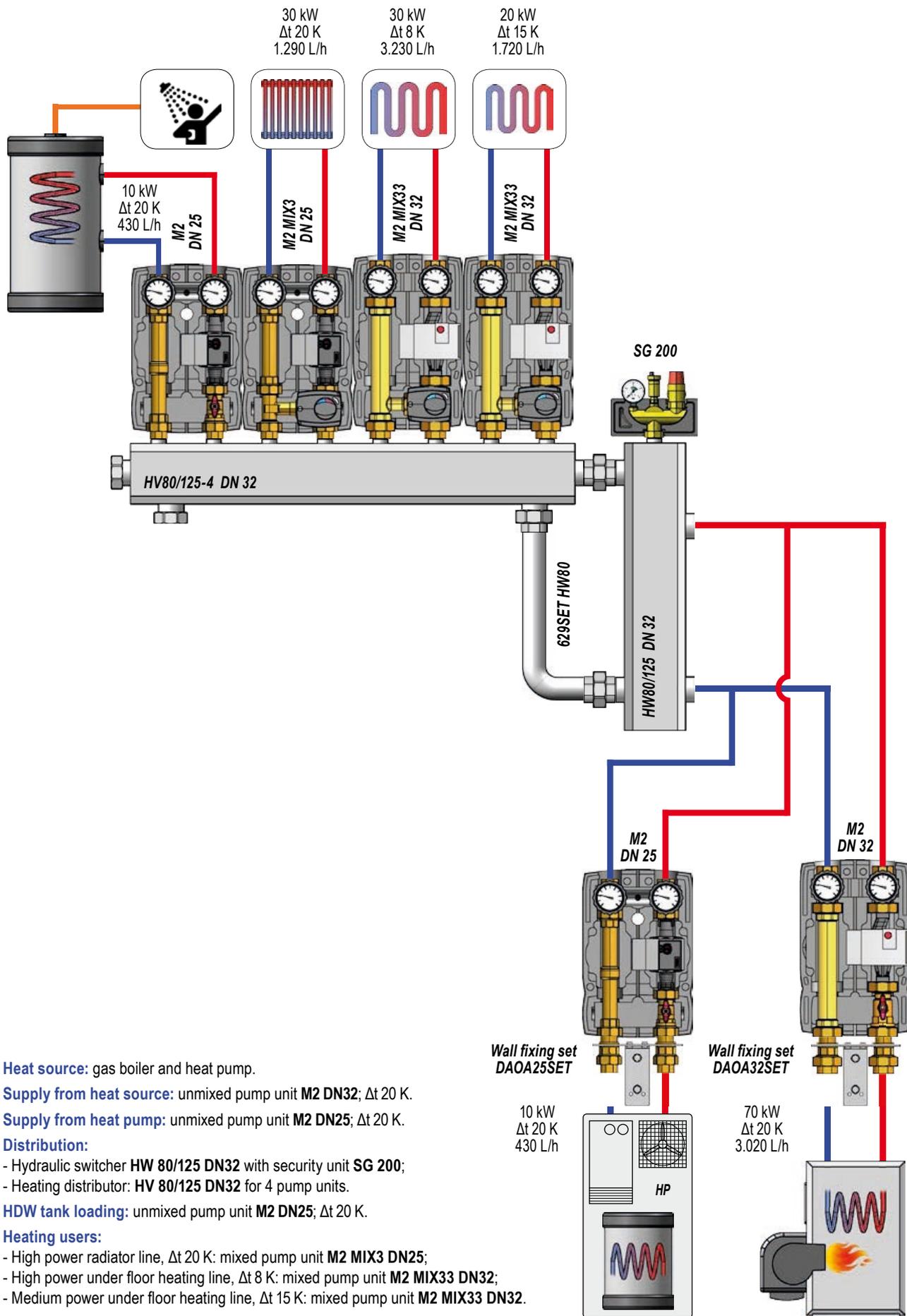
Sizes: 1" F x 1" F; 1 1/4" F x 1 1/4" F.

Code 1": 04629SET

Code 1 1/4": 05629SET

MODVLVS DN32 Installation examples

Modular systems for energy management



Heat source: gas boiler and heat pump.

Supply from heat source: unmixed pump unit M2 DN32; Δt 20 K.

Supply from heat pump: unmixed pump unit M2 DN25; Δt 20 K.

Distribution:

- Hydraulic switcher HW 80/125 DN32 with security unit SG 200;
- Heating distributor: HV 80/125 DN32 for 4 pump units.

HDW tank loading: unmixed pump unit M2 DN25; Δt 20 K.

Heating users:

- High power radiator line, Δt 20 K: mixed pump unit M2 MIX3 DN25;
- High power under floor heating line, Δt 8 K: mixed pump unit M2 MIX33 DN32;
- Medium power under floor heating line, Δt 15 K: mixed pump unit M2 MIX33 DN32.

Attention: the representations are to be considered just as an indication and they have no completeness pretension.

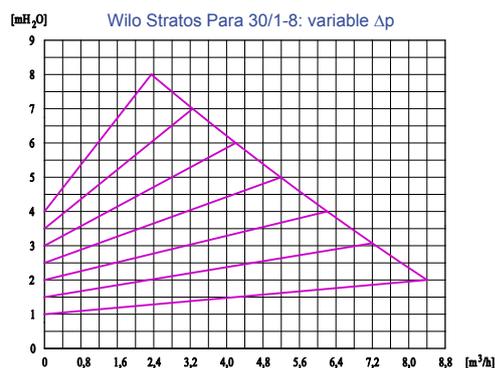
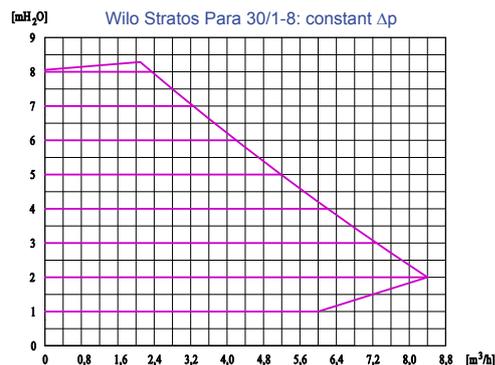
MODVLVS DN32

DN32 pump units, thanks to a very careful measuring of the specific components, have all the force points of MODVLVS range, such as functional capacity, reliability and versatility of installation.

They can be connected to heating systems with powers up to 111 kW, with a very low energy consumption assured by high efficiency synchronous circulating pumps **Wilco Stratos Para** and **Grundfos Alpha 2L**. the connections to the heating loop or to the distributor are made in 1"1/4 female thread.

The overpressure control is given by the self-regulating pump units which, thanks to the integrated control of the differential pressure at **constant Δp** or **variable Δp** , allow to equalize the performances and the efficiency of M3 pump units of DN25 series even in presence of very high flows (up to 4.800 l/h).

In the diagram at side you can see the typical curves of **Wilco Stratos Para 30/1-8** circulating pump in the two available working modes.



CE



M2

2-WAY UNMIXED PUMP UNIT

Code 1"1/4: 20555R - with circulating pump: 20555R-(A6/PA1-7/PA1-8)

The unit for 1"1/4 (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ Flanged ball valve with T-handle.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue; range 0°C-120°C).
- ✓ Connection with 20 mbar non return valve (ball valve side).
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x400x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 111 kW (with Δt 20 K) and maximum flow 4800 l/h.

Kvs Value: 21,0.

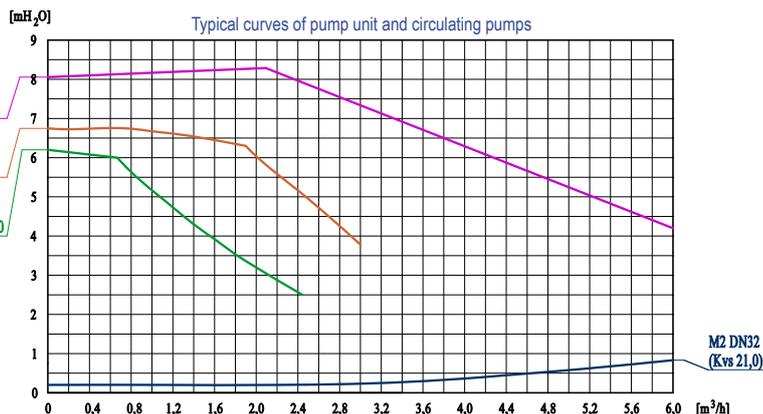
Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilco Stratos Para 30/1-8).

For an accurate measuring or for higher flows, please refer to the diagram.



Available circulating pumps:

- Grundfos Alpha 2L 32-60 (A6)
- Wilco Stratos Para 30/1-7 (PA1-7)
- Wilco Stratos Para 30/1-8 (PA1-8)



Standard version: right supply. Left supply version available with extra price: see price list.

3-way mixed

CE



M21



AHC20



CMP25

M2 MIX3

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code 1"1/4: 20555R-M3 - with circulating pump: 20555R-M3-(A6/PA1-7/PA1-8)

The unit for 1"1/4 (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue; range 0°C-120°C).
- ✓ "T" connection with 20 mbar non return valve (ball valve side).
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x400x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 93 kW (with Δt 20 K) and maximum flow 4000 l/h.

Kvs Value: 13,0.

Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilo Stratos Para 30/1-8).

For an accurate measuring or for higher flows, please refer to the diagram.



Available circulating pumps:

Grundfos Alpha 2L 32-60 (A6)

Wilo Stratos Para 30/1-7 (PA1-7)

Wilo Stratos Para 30/1-8 (PA1-8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN32 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code 1"1/4: 05552/M



BUSH WITH OPTIONAL NON RETURN VALVE

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 25,0. Max Temperature 110°C.

Code: SET10105

MODEL WITH BUILT-IN SERVMOTOR OR CLIMATIC CONTROLLER

Code 1"1/4: 20555R-M3-(M21/AHC/CMP)

with circulating pump: 20555R-M3-(A6/P7/P8)-(M21/AHC/CMP)

M21: 3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 5 Nm. Power supply 230V. IP42. Several models available: see the section "Servomotors and Room Thermostat".

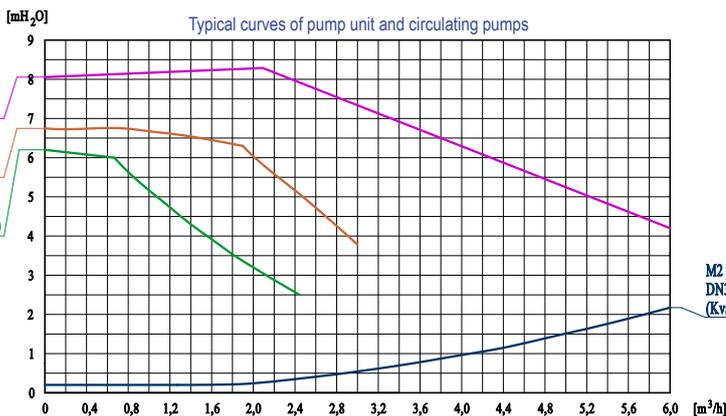
AHC20 - Basic climatic controller with servomotor and outside sensor:

Servomotor with climatic regulation for mixing valve with electronic control to keep fixed the selected temperature of the room. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

CMP25-2 - Touch screen climatic controller with advanced functions and built-in servomotor:

"touch screen" climatic controller with servomotor for mixing valve, bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 10 Nm. Power supply 230V. IP42.

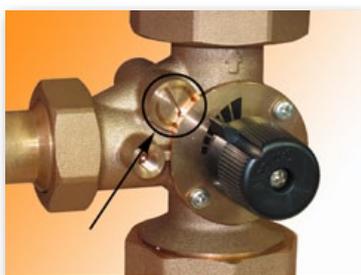
Note: in units with pre-assembled pump, the pumps Wilo Stratos Para 30/1-7 and 30/1-8 are respectively identified in the code with P7 and P8.



Versions available with reduced Kvs (using the special kits, see section "DN32 Equipments and accessories"). In the table below the resulting Kvs of the unit is shown, with the relevant maximum values of power and flowrate.

Mixing valve Kvs	Pump unit Kvs	Power	Flow rate
16,0 (std.)	13,0 (std.)	93 kW	4000 l/h
12,5	11,0	79 kW	3400 l/h
10,0	9,0	64 kW	2750 l/h
6,3	6,0	43 kW	1850 l/h

Standard version: right supply. Left supply version available with extra price: see price list.



M2 MIX33

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE WITH BUILT-IN BY-PASS 0-50%

Code 1"1/4: **20555R-M33** - with circulating pump: **20555R-M33-(A6/PA1-7/PA1-8)**

The unit for 1"1/4 (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve with adjustable by-pass. Through the by-pass (adjustable from the front part) it is possible to mix on the supply line a quantity of water coming back from the return line of the system, from 0 up to 50%.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).

RETURN:

- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue; range 0°C-120°C).
- ✓ "T" connection with 20 mbar non return valve (ball valve side).
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x400x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 76 kW (with Δt 15 K) and maximum flow 4400 l/h.

Kvs Value: 16,0.

Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilo Stratos Para 30/1-8).

For an accurate measuring or for higher flows, please refer to the diagram.



Available circulating pumps:

Grundfos Alpha 2L 32-60 (A6)

Wilo Stratos Para 30/1-7 (PA1-7)

Wilo Stratos Para 30/1-8 (PA1-8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN32 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code 1"1/4: **05552/M**



BUSH WITH OPTIONAL NON RETURN VALVE

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 25,0. Max Temperature 110°C.

Code: **SET10105**

The By-pass integrated into the 3-way mixing valve ensures a recycling inside the installation, even when the mixing valve is fully open. Through the by-pass, a fixed percent of the mixing (max. 50% of the total flow of the valve) can be set, in the case when the flow through the mixing valve is not sufficient.

Therefore, in case of a bad working of the system causing an increase of the temperature of the installation, the recycling through the by-pass allows a decrease in the temperature of the water in the underfloor installation. This can be done mixing the warm water of the return circuit with the hot water of the supply circuit, reducing possible damages.

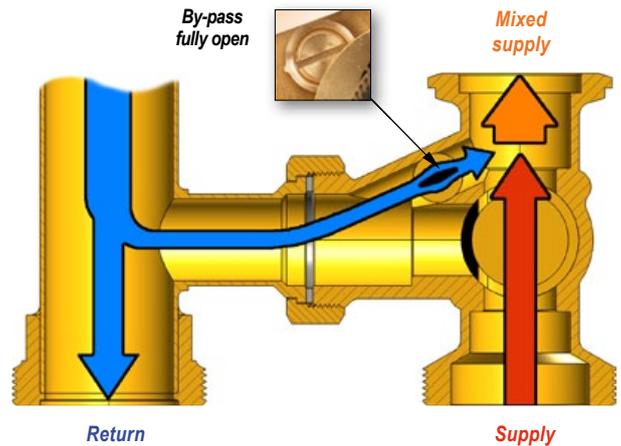
Approximate data for applications in low and medium temperature heating systems

Δt	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
8 K	19 kW - 2000 l/h	Wilo Stratos Para 30/1-7	6 mH ₂ O	Up to 250 m ²
8 K	26 kW - 2800 l/h	Wilo Stratos Para 30/1-8	7 mH ₂ O	Up to 300 m ²
15 K	42 kW - 2400 l/h	Wilo Stratos Para 30/1-7	5 mH ₂ O	-
15 K	76 kW - 4400 l/h	Wilo Stratos Para 30/1-8	5 mH ₂ O	-

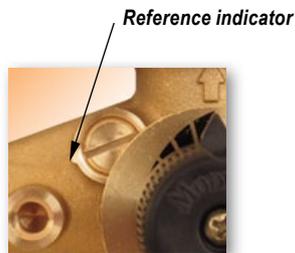
MODVLVS DN32 Pump Units

Working principle

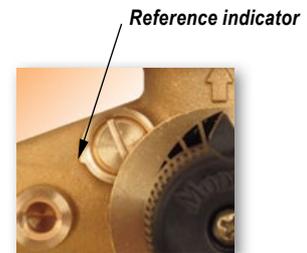
During the regular working process, with the mixer completely closed on the recycling for example, a part of the fluid is aspirated from the pump all along the by-pass line. This quantity of fluid (*narrow blue arrow*) represents 50% of the capacity of the mixer (*red arrow*). As a result, one has a very high delivered capacity and a reduced temperature.



Adjusting the by-pass



The by-pass is **fully open** and it allows the recycling of the 50% of the total flow.
The screwdriver cut is aligned along the reference indicator.



The by-pass is **fully closed** and there is no recycling.
The screwdriver cut is in an orthogonal position (at 90°) in comparison with the reference indicator.



M21



AHC20



CMP25

MODEL WITH BUILT-IN SERVOMOTOR OR CLIMATIC CONTROLLER

Code 1"1/4: 20555R-M33-(M21/AHC/CMP)
with circulating pump: 20555R-M33-(A6/P7/P8)(M21/AHC/CMP)

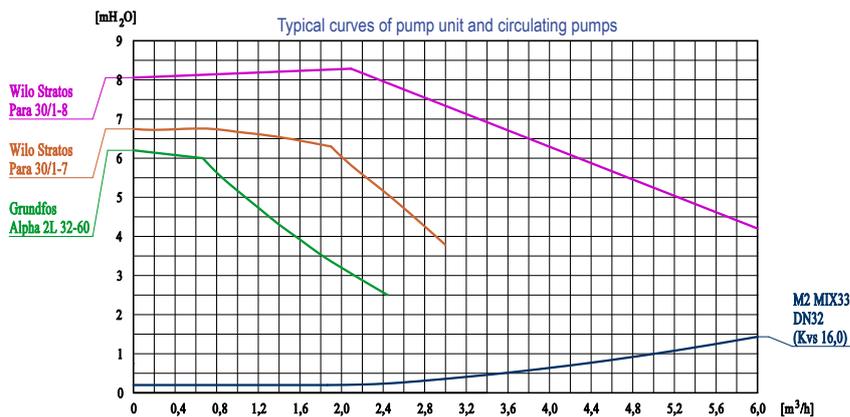
M21: 3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 5 Nm. Power supply 230V. IP42. *Several models available: see the section "Servomotors and Room Thermostat".*

AHC20 - Basic climatic controller with servomotor and outside sensor:

Servomotor with climatic regulation for mixing valve with electronic control to keep fixed the selected temperature of the room. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

CMP25-2 - Touch screen climatic controller with advanced functions and built-in servomotor:
"touch screen" climatic controller with servomotor for mixing valve, bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 10 Nm. Power supply 230V. IP42.

Note: in units with pre-assembled pump, the pumps Wilo Stratos Para 30/1-7 and 30/1-8 are respectively identified in the code with P7 and P8.



Standard version: right supply. Left supply version available with extra price: see price list.



M2 MIX3 FIX

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE WITH ELECTRONIC SERVOMOTOR FOR THE CONSTANT TEMPERATURE. HEATING AND COOLING.

Code 1"1/4: 20555R-M3F-CT - with circulating pump: 20555R-M3F-(A6/P7/P8)-CT

The unit for 1"1/4 (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Connection.
- ✓ 3-way mixing valve with electronic servomotor.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Temperature sensor.

RETURN:

- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue; range 0°C-120°C).
- ✓ "T" Connection for mixing valve with 20 mbar non return valve (ball valve side).
- ✓ Connection.

Centre distance 125 mm. EPP insulation box (Measurements: 250x400x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 93 kW (with Δt 20 K) and maximum flow 4000 l/h.

Kvs Value: 13,0.

Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilo Stratos Para 30/1-8).

For an accurate measuring or for higher flows, please refer to the diagram.



Available circulating pumps:

Grundfos Alpha 2L 32-60 (A6)

Wilo Stratos Para 30/1-7 (P7)

Wilo Stratos Para 30/1-8 (P8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN32 Distributors") before the pump unit to allow an easy service or replacement of the components of the unit.

Code 1"1/4: 05552/M



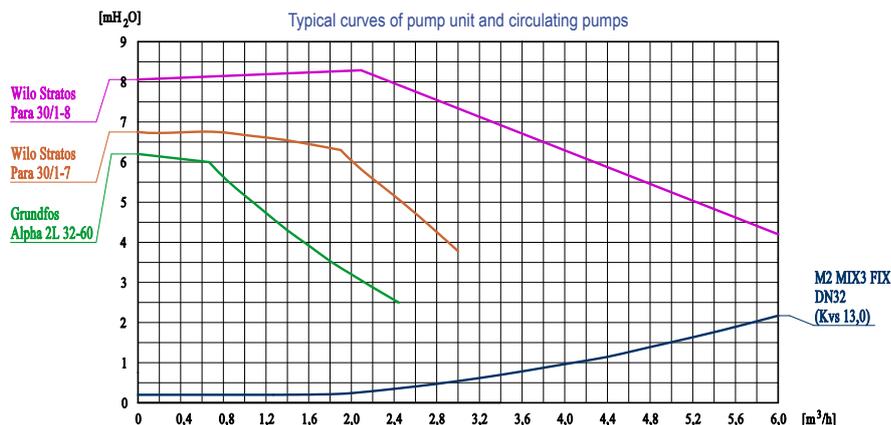
BUSH WITH OPTIONAL NON RETURN VALVE

Non return valve to be installed into the connection of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 25,0. Max Temperature 110°C.

Code: SET10105

The electronics of servomotor keeps constant the set temperature of the supply way, monitoring it by means of a sensor (included) mounted on the pipe. Display of the measured temperature and target temperature, on reversible LCD display.

Adjustment of target temperature adjustable from 0°C up to 99°C. Operating range of 90°. Power supply 230V, 2 min, torque 6 Nm. IP42.



Standard version: right supply. Left supply version available with extra price: see price list.



Art. 1050 - 3-way mixing valve

3-way mixing valve for pump units. Suitable for motorization and fully reversible (to be placed both on the left and on the right side of the pump unit). Connection to the circulating pump through the flanged side. Made in Brass CW617N (CW614N). Yellow brass finish. The nut is not included. Motor connection: standard Esbe. Working torque: less than 3 Nm.

PN 10. Max Temperature 110°C.
Kvs Value: 16,0. Maximum leakrate in % of flow: 0,05.
Dimension: 2" Male x 2" Nut (1"1/4 circulating pump).

Code: 1051050



Art. 1051 - 3-way mixing valve with by-pass 0-50%

3-way mixing valve with by-pass. The built-in by-pass has an adjustable flow up to 50% of the total flow rate range of the valve (especially suitable for underfloor heating installations).

Kvs value: 24,0; the remaining features are the same as the art. 1050.

Code: 1051051

Kvs reduction kit for 3-way mixing valve

The kit consists of a cap and of an O-ring gasket to join to the art. 1050 to reduce the Kvs of the mixing valve and, consequently, of the pump unit (on the table the model M2 MIX3 is considered) from the standard value to the values indicated in the side column.

Yellow brass finish.

Kvs of mixing valve	Kvs of pump unit	Code
16,0 (standard)	13,0 (standard)	-
12,5	11,0	051050SETKVS12.5
10,0	9,0	051050SETKVS10
6,3	6,0	051050SETKVS6.3

Art. 55AMMS - Flanged ball valve

Flanged ball valve in hot forged brass for circulating pumps. Yellow brass finish.

Provided with steel T-handle.

Coupling flange for 1"1/4 circulating pumps.

Male end threaded to ISO 228 (DIN 259 BSP 2779).

2" nut and gasket not included.

PN 30. Max Temperature 120°C.

Dimension: 2" Male x 2" Nut.

Code: 0555AMMS



Set 2" nut and EPDM gasket

Yellow brass finish.

Code: AYHT07SET



Art. 55AMS TER - Flanged ball valve with thermometer

Flanged ball valve in hot forged brass for circulating pumps. Yellow brass finish.

Supplied with in-handle thermometer, coded red (range 0°C-120°C, TER-R) or coded blue (range 0°C-120°C, TER-B). Coupling flange for 1"1/4 circulating pumps.

Female end threaded to ISO 228 (DIN 259 BSP 2779).

2" nut and gasket not included.

PN 30. Max Temperature 120°C.

Dimension: 1"1/4 Female x 2" Nut.

Code: 0555AMS-TER-(R/B)



Set 2" nut, EPDM gasket and female adapter 1"1/4 or 1"

The version 1" female allows to install the DN32 pump units on the DN25 distributors (for the mounting, two kits for each unit are needed).

Yellow brass finish.

Code 1"1/4: 105629F

Code 1": 105629F-04



DN32 wall fixing set

Thanks to the wall fixing set and to the bracket plate it is possible to hold the pump unit at a distance of 160 between the wall and the pipes axis.

Insertion dimension: 62 mm.

Centre distance 125 mm.

Threaded connections 2" Male x 2" swivel nut.

Code: DAOA32SET



Art. 670 Set

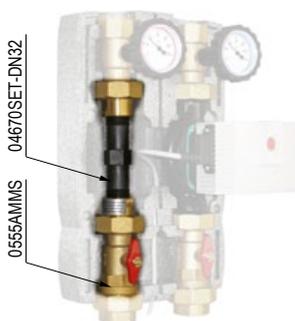
Connection kit for energy meter

The kit allows the housing of an energy meter (not included) into the return way of M2 pump units. Distant piece made in plastic with brass threaded ends 2", suitable for DN20 meters. Check valve housed in the lower connection.



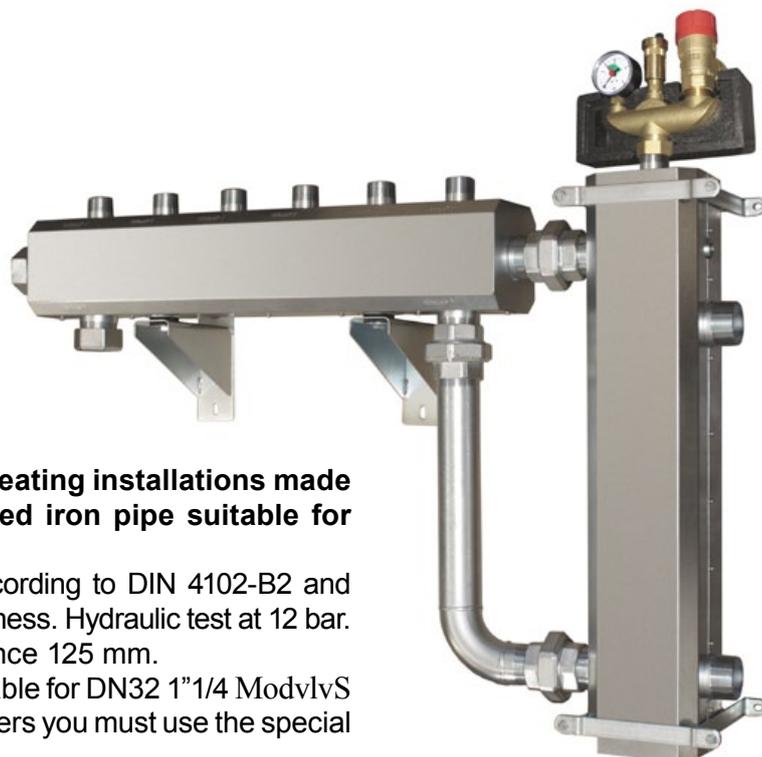
04670SET-DN32

Code DN20, distant piece 1" 130 mm length: 04670SET-DN32



NEW!

MODVLVS DN32 Distributors

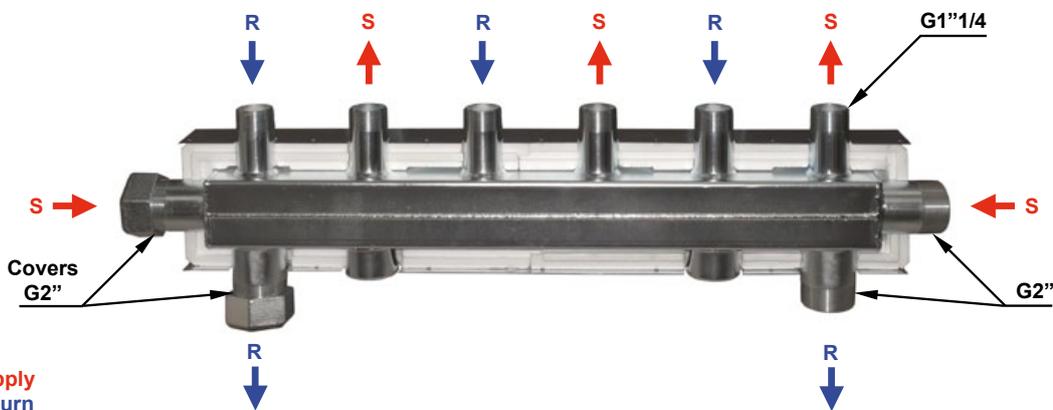


DN32 Distribution headers for heating installations made of electro-welded and galvanized iron pipe suitable for power up to 165 kW.

EPS 35 mm thermic insulation according to DIN 4102-B2 and galvanized steel cover 0,8 mm thickness. Hydraulic test at 12 bar. ModvlvS: connection center distance 125 mm.

The range of the distributors is suitable for DN32 1"1/4 ModvlvS pump units and DN25 1"; for the latter you must use the special adapters.

Distributor HV 80/125 (7,25 m³/h - 165 kW)



Distribution header with insulation suitable for power up to 165 kW (rise in temperature $\Delta T = 20$ K in the primary circuit). The double connection supply/return allows the placement of the hydraulic switcher both on the left and on the right side: in this way you can avoid to rotate the distributor and to reverse the supply and return pipes towards the user.

Moreover the two covers made of galvanized cast iron, 2" female threaded, required to isolate the two unused connections of the distributor are also included.

Maximum flow rate up to 7,25 m³/h - Max. 6 bar.

Insulation box section size: 152x152 mm.

Connections to the pump units: 1"1/4 Male, centre distance 125 mm (pitch 250 mm).

Connection to the hydraulic switcher code HW80/570-07 threaded end 2" Male; to make the connection please use the kit code 07629HW80 (2") that includes the required components.

Model	Use	Length	Code
HV 80/125-2	For connection to no. 2 DN32 units	625 mm	HV80/125-2
HV 80/125-3	For connection to no. 3 DN32 units	875 mm	HV80/125-3
HV 80/125-4	For connection to no. 4 DN32 units	1125 mm	HV80/125-4
HV 80/125-5	For connection to no. 5 DN32 units	1375 mm	HV80/125-5
HV 80/125-6	For connection to no. 6 DN32 units	1625 mm	HV80/125-6



Wall fixing set for HV 80 distributors

Pair of brackets to fix to the wall the distribution header with the insulation box 152x152 mm.
Distance between the wall and the centre of the distribution header: 160 mm.

Code: **DAOA-HV160**

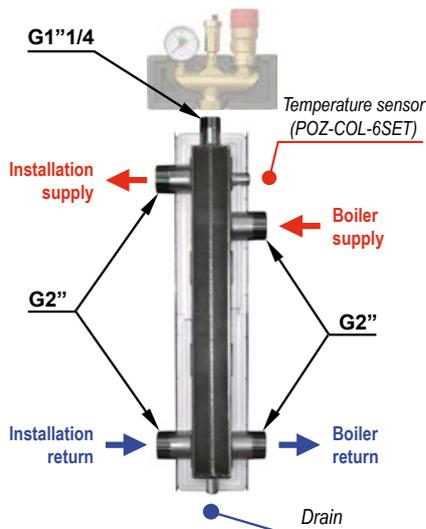


Adapter connection kit for DN25 pump units

The kit consists of a connection 1 1/4 F x 1 1/2 swivel nut and 1 1/2 EPDM gasket.
It allows the placement of DN25 pump units on the DN32 distributors.
Yellow brass finish.

Two kits for each pump unit to be installed are required.

Code: **104629F-05**



Hydraulic switcher HW 80/125

Hydraulic switcher with insulation for power up to 165 kW, to be connected before the HV 80 distribution header. This device allows to separate hydraulically the primary circuit from the secondary circuit so giving a greater volumetric flow in the distribution header in comparison with the flow of the boiler. It is particularly suitable to be mounted with condensing boilers. In fact with a right setting of the boiler pump it ensures a low return water temperature (always lower than 57°C, that is the condensing temperature of the steam in the methane gas) so increasing the efficiency of the installation.

Maximum flow rate up to 7,25 m³/h - Max 6 bar.
Insulation box section size: 152x152 mm.

In the upper part, 1 1/4 male connection for security unit.
1/2 female connection for drain (in the lower part) and temperature sensor (located laterally).

Code: **HW80/570-07**



1/2 adapter with sensor holder pit

For more informations see the pages dedicated to DN25 Distributors.

Code: **POZ-COL-6SET**



Wall fixing set for HW 80 hydraulic switcher

Pair of brackets to fix to the wall the hydraulic switcher with the insulation box 152x152 mm.
Distance between the wall and the centre of the hydraulic switcher: 160 mm.

Code: **DAOA-HW160**



Connection kit 2" between hydraulic switcher and distributor

The kit allows to connect the hydraulic switcher (at the side) to the distributor in a vertical position. It consists of:

- ✓ N° 3 connection kits 2"Fx2"F made of galvanized cast iron (pipe union, nut and connector);
- ✓ Galvanized angular pipe 2" male;

EPS insulation box (Measurements: 110x110x440 mm).

Code 2": **07629SETHW80**

Art. 552

Isolating ball valve 1 1/4 Female for 2" swivel nut in hot forged brass.

Yellow brass finish.

2" swivel nut and gasket not included.

Ends threaded to ISO 228 (DIN 259 BSP 2779).

Operating stem with allen screw.

PN 6. Max temperature 95°C. DN25.

Code: **05552/M**

NEW!



Security Unit SG 200

Security unit for closed circuit heating systems as per EN 12828 regulations with power up to 200 kW. Brass body, pre-assembled end tested, equipped with selfseal valve to allow an easy replacement of the air vent valve. It consists of:

- ✓ Manometer ø63, 0-4 bar, 1/4";
- ✓ 3/8" automatic air vent valve. Nominal pressure: 12 bar;
- ✓ Security valve 3 bar 200 kW. Inlet 1", outlet 1 1/4".

EPP insulation box (Measurements: 230x175x104 mm).

Max Temperature 120°C.

Size: 1 1/4 Female swiveling nut.

Code: **SG200**



MODVLVS Thermostatic mixing valves



In compliance to
the Italian Ministerial
Decree N° 174/2004

PED 97/23/EC, art. 3.3

Art. 739

HIGH PERFORMANCE ANTI-SCALD THERMOSTATIC MIXING VALVE

Code 3/4": 03739-F(1/2)-2.5

Code 3/4": 03739-F(3/4)-4.0

Employments

High performance thermostatic mixing valve for employment in under floor and radiator heating systems, hot domestic water and solar thermal.

The asymmetrical manufacture of the body of the valve, where the mixed outlet is in line with the connection of the hot water, usually allows an easier installation. The very great flow of the model with Kvs 4,0 is assured by the great size of the lock: a manufacture choice that allows to work with a very short stroke with a great benefit to the adjustment accuracy when the supply pressure and temperature change. In particular the model with Kvs 2,5 is specifically suitable for employment in hot domestic water at the user point, as it can assure a constant adjustment within $\pm 1^\circ\text{C}$. Moreover Kvs 2,5 model has very compact size.

The below table allows to determine the most suitable model for the different installations allowed by MultiMix thermostatic mixing valves:

Underfloor or radiator heating	Hot Domestic Water: supply	Hot Domestic Water: user point	Solar Thermal
Kvs 4,0 (F3/F4)	Kvs 4,0 (F4)	/	Kvs 4,0 (F4)
Kvs 2,5 (F1/F2)	/	Kvs 2,5 (F2)	Kvs 2,5 (F2)

F1	20-45°C	Kvs 2,5; DN20
F2	45-70°C	Kvs 2,5; DN20
F3	20-45°C	Kvs 4,0; DN25
F4	45-70°C	Kvs 4,0; DN25

MultiMix



Technical features

Anti-scald thermostatic mixing valve suitable for small and medium uses.

Hot forged brass body with pipe union connections. High temperature check valves and filters, built into fittings, at the inlets of hot and cold water.

Yellow brass finish.

Precise adjustment of the user temperature by means of a graduated knob from 20°C up to 45°C or from 45°C up to 70°C . Possibility of anti-rotation locking of the knob.

- ✓ Maximum static pressure 10 bar (PN 10); dynamic 5 bar.
- ✓ Max ratio between the pressures: 2:1.
- ✓ Maximum inlet temperature: continuous 100°C ; (short time: 120°C for 20 s).
- ✓ Adjustment temperature range: $20\div 45^\circ\text{C}$; $45\div 70^\circ\text{C}$.
- ✓ Adjustment stability: $\pm 2^\circ\text{C}$ (DN25; Kvs 4,0); $\pm 1^\circ\text{C}$ (DN20; Kvs 2,5).
- ✓ It can be used with anti freeze fluids (glycol $\leq 50\%$).

External connections: 3/4" Male pipe unions.

The security anti-scald function automatically stops the hot water flow in case of failure of the cold water way.



Available Kvs:

4.0 (DN25; code F3/F4) = Maximum Kvs 4,0; up to 82 l/min (1,5 bar). Nominal Kv 3,6 (*)
2.5 (DN20; code F1/F2) = Maximum Kvs 2,5; up to 51 l/min (1,5 bar). Nominal Kv 2,4 (**)



Available temperatures:

Adjustable temperature from 20°C to 45°C (code F1/F3)
Adjustable temperature from 45°C to 70°C (code F2/F4)



Layout:
Asymmetric

Tests carried out at our work lab, with a differential pressure of 1 bar (without connection devices):

(*) F3 version (Kvs 4,0; DN25; $20\div 45^\circ\text{C}$): $T_H: 55^\circ\text{C}$ $T_C: 24^\circ\text{C}$ $T_{MIX}: 32^\circ\text{C}$ $\rightarrow 59$ l/min

(**) F2 version (Kvs 2,5; DN20; $45\div 70^\circ\text{C}$): $T_H: 75^\circ\text{C}$ $T_C: 40^\circ\text{C}$ $T_{MIX}: 55^\circ\text{C}$ $\rightarrow 41$ l/min

MODVLVS Thermostatic mixing valves

heating and cooling



In compliance to the Italian Ministerial Decree N° 174/2004



PED 97/23/EC, art. 3.3

Art. 736

Anti scald thermostatic mixer for small and medium uses.
Hot forged brass body. Yellow brass finish.
Precise adjustment of the user temperature by means of a graduated knob from 20°C up to 45°C or from 45°C up to 70°C. Possibility of anti-rotation locking of the knob.

External connection: 1" Male flat seal.

Available technical features and adjustment temperatures are the same as Art. 739.

Code 1": 04736-F(1/2)-2.5

Code 1": 04736-F(3/4)-4.0



In compliance to the Italian Ministerial Decree N° 174/2004



PED 97/23/EC, art. 3.3

Art. 730

Anti scald thermostatic mixer for small and medium uses.
Hot forged brass body. Yellow brass finish.
Precise adjustment of the user temperature by means of a graduated knob from 20°C up to 45°C or from 45°C up to 70°C. Possibility of anti-rotation locking of the knob.

External connection: 3/4" Female.

Available technical features and adjustment temperatures are the same as Art. 739.

Code 3/4": 03730-F(1/2)-2.5

Code 3/4": 03730-F(3/4)-4.0



In compliance to the Italian Ministerial Decree N° 174/2004



PED 97/23/EC, art. 3.3

Art. 731C

Anti scald thermostatic mixer for small and medium uses.
Hot forged brass body. Yellow brass finish.
Precise adjustment of the user temperature by means of a graduated knob from 20°C up to 45°C or from 45°C up to 70°C. Possibility of anti-rotation locking of the knob.
Mixed outlet fitted with 1" or 1 1/2" swivel nut (see picture at side) to be connected directly to the circulating pump.

External connection: 1" Swivel nut x 1" Male and 1 1/2" Swivel nut x 1" Male.

Available technical features and adjustment temperatures are the same as Art. 739.

Code 1" C x 1" M: 04731C-04-F(1/2)-2.5

Code 1" C x 1" M: 04731C-04-F(3/4)-4.0

Code 1 1/2" C x 1" M: 04731C-06-F(1/2)-2.5

Code 1 1/2" C x 1" M: 04731C-06-F(3/4)-4.0

Working and performances of MultiMix range

The thermostatic mixer is an adjustment device that is very sensitive to the variations of feeding temperature of the gates "Hot" and "Cold" and to the loss of pressure balance on the gates.

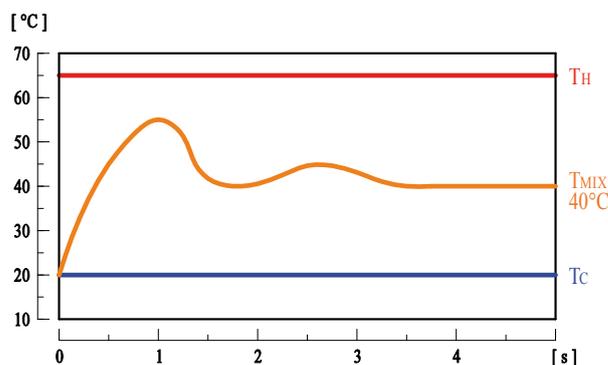
These variations, in some products, change the selected mixing temperature and also the performances of the device in a considerable way. Sometime risking the safety of the user. For instance a consequence is the ineffectiveness of the anti-scald function.

MultiMix thermostatic mixer, thanks to a careful planning and to the adopted technical choices, overcomes these problems assuring, in the different installations, safety, stability and very good performances.

Starting time

Flow request to the user when the valve is cold. The diagram shows how quickly the thermostatic mixer reacts, bringing the temperature of mixed water to the selected value.

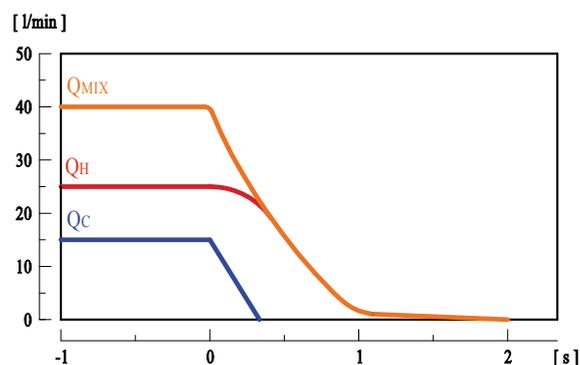
The required time is very short: only 4 s.



Anti-scald function

The test simulates a sudden flow shortage on the cold water inlet, by turning off the "C" feeding of the thermostatic mixer.

The flow to the user stops in a time between 1 and 2 s, so avoiding the scald danger.



Tests carried out at our work lab, with a F1 model at the following test conditions: TH:65°C Tc:20°C Selected Tmix:40°C



On www.br.vi website it is possible to look up the whole range of curves of the carried out tests. A test report is also available on demand.

MODVLVS Thermostatic Mixing Valves

Mixing valve: 35÷60 °C



In compliance to the Italian Ministerial Decree N°174/2004

PED 97/23/EC, art. 3.3

New setting temperature range

Art. 729

ANTI-SCALD THERMOSTATIC MIXING VALVE

Code 3/4": 03729-3560-2.5
Code 3/4": 03729-3560-4.0

Anti-scald thermostatic mixing valve for small and medium applications. Asymmetric layout. Hot forged brass body. Yellow brass finish. Adjustable user temperature by means of a knob from 35°C up to 60°C. Possibility of anti-rotation locking of the knob. Check valves suitable for high temperature and filters, built into fittings, of hot and cold water, at both inlets.

- ✓ Maximum static pressure 10 bar (PN 10); dynamic pressure 5 bar.
- ✓ Maximum ratio between the pressures 2:1.
- ✓ Maximum inlet temperature: 95°C.
- ✓ Setting temperature range: 35÷60°C.
- ✓ Accuracy: ±2°C (DN25 Kvs 4,0); ±1°C (DN20 Kvs 2,5).
- ✓ It can be used with anti freeze fluids (glycol ≤ 50%).

Available external connections: 3/4" Male pipe unions.

The security anti-scald function automatically stops the hot water flow in case of failure of the cold water way.



Available Kvs:

4.0 (DN25) = Maximum Kvs 4,0; up to 82 l/min (1,5 bar). Nominal Kv 3,9 (*)
2.5 (DN20) = Maximum Kvs 2,7; up to 55 l/min (1,5 bar). Nominal Kv 2,6 (**)



Available temperatures:

Adjustable temperature from 35°C to 60°C



Layout:
Asymmetric

Tests carried out at our work lab, with a differential pressure of 1 bar (without connection devices):

(*) DN25 Version (Kvs 4,0): T_H:65°C T_C:15°C T_{MIX}:51°C (pos.3) → 65 l/min
(**) DN20 Version (Kvs 2,5): T_H:65°C T_C:15°C T_{MIX}:51°C (pos.3) → 43 l/min

Art. 726

Anti-scald thermostatic mixing valve for small and medium applications. Asymmetric layout. Hot forged brass body. Yellow brass finish. Adjustable user temperature by means of a knob from 35°C up to 60°C. Possibility of anti-rotation locking of the knob.

Available external connection: 1" Male flat seal.

Available technical features and adjustment temperatures are the same as Art. 729.

Code 1": 04726-3560-2.5
Code 1": 04726-3560-4.0



In compliance to the Italian Ministerial Decree N°174/2004

PED 97/23/EC, art. 3.3

Art. 720

Anti-scald thermostatic mixing valve for small and medium applications. Asymmetric layout. Hot forged brass body. Yellow brass finish. Adjustable user temperature by means of a knob from 35°C up to 60°C. Possibility of anti-rotation locking of the knob.

Available external connection: 3/4" Female.

Available technical features and adjustment temperatures are the same as Art. 729.

Code 3/4": 03720-3560-2.5
Code 3/4": 03720-3560-4.0



In compliance to the Italian Ministerial Decree N°174/2004

PED 97/23/EC, art. 3.3

Art. 721C

Anti-scald thermostatic mixing valve for small and medium applications. Asymmetric layout. Hot forged brass body. Yellow brass finish. Adjustable user temperature by means of a knob from 35°C up to 60°C. Possibility of anti-rotation locking of the knob. Mixed outlet fitted with 1" or 1 1/2 swivel nut (see picture at side) to be connected directly to the circulating pump.

Available external connection: 1" Swivel nut x 1" Male and 1 1/2 Swivel nut x 1" Male.

Available technical features and adjustment temperatures are the same as Art. 729.

Code 1" C x 1" M: 04721C-0435602.5
Code 1" C x 1" M: 04721C-0435604.0
Code 1 1/2 C x 1" M: 04721C-0635602.5
Code 1 1/2 C x 1" M: 04721C-0635604.0



In compliance to the Italian Ministerial Decree N°174/2004

PED 97/23/EC, art. 3.3

MODVLVS Thermostatic mixing valves

Mixing valve: 30÷65 °C

heating and cooling

Art. 796

ANTI-SCALD THERMOSTATIC MIXING VALVE



In compliance to the Italian Ministerial Decree N° 174/2004

PED 97/23/EC, art. 3.3

Code 3/4": 03796 Code 1"1/4: 05796
Code 1": 04796 Code 1"1/2: 06796

Anti-scald thermostatic mixing valve suitable for small and medium applications. DZR brass body for 3/4" and 1" sizes. Chrome plated. Adjustable user temperature from 30°C up to 65°C by means of a knob.

- ✓ Max static pressure 10 bar (PN 10); dynamic 5 bar.
- ✓ Max ratio between the pressures 2:1.
- ✓ Max inlet temperature: 90°C.
- ✓ Setting range: 30÷65°C. Accuracy ± 2°C.

External connections: 3/4", 1", 1"1/4 and 1"1/2 Male flat seal.

The security anti-scald device automatically stops the hot water flow in case of failure of the cold water line.



Available Kvs:

- 1,5 (3/4" code 03796) = Domestic use installations; up to 31 l/min (1,5 bar)
- 2,4 (1" code 04796) = Small water consumption; up to 49 l/min (1,5 bar)
- 4,5 (1"1/4 code 05796) = Middle water consumption; up to 92 l/min (1,5 bar)
- 5,0 (1"1/2 code 06796) = Middle water consumption; up to 102 l/min (1,5 bar)



Available temperatures:

Adjustable temperature from 30°C to 65°C



Layout: Symmetric



In compliance to the Italian Ministerial Decree N° 174/2004

PED 97/23/EC, art. 3.3

Available with male union connections: Art. 799

Anti-scald thermostatic mixing valve for small and medium applications with Male union connections. High temperature check valves and filters, built into fittings, at both inlets of hot and cold water. DZR brass body for 1/2" and 3/4" sizes. Chrome plated.

Same features as art. 796.

External connections: 1/2", 3/4", 1" and 1"1/4 Male union.

Code 1/2": 02799
Code 3/4": 03799
Code 1": 04799
Code 1"1/4: 05799



Available Kvs:

- 1,5 (1/2" code 02799) = Domestic use installations; up to 31 l/min (1,5 bar)
- 2,4 (3/4" code 03799) = Small water consumption; up to 49 l/min (1,5 bar)
- 4,5 (1" code 04799) = Middle water consumption; up to 92 l/min (1,5 bar)
- 5,0 (1"1/4 code 05799) = Middle water consumption; up to 102 l/min (1,5 bar)



Layout: Symmetric

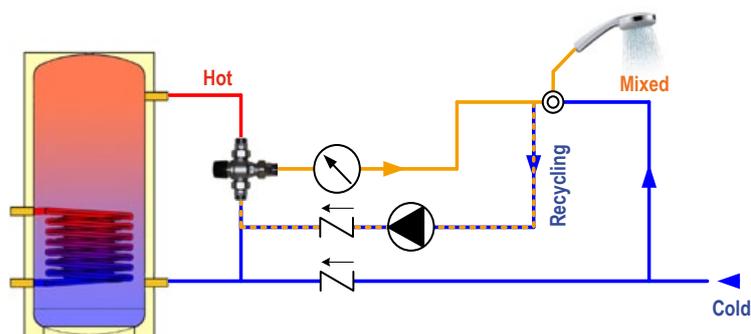
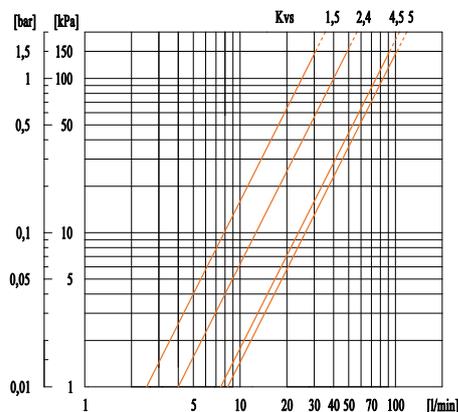
Thermostatic mixing valves with anti-scald protection

The thermostatic mixing valve is used in hot domestic water systems and it controls temperature to preset value. It allows to keep constant mixed water temperature for the end user, regardless of inlet conditions both of hot and cold water.

Knob: reference temperatures

Kvs	MIN	1	2	3	4	5	MAX
1,5 and 2,4	~27°C	30°C	41°C	48°C	56°C	65°C	~70°C
4,5 and 5,0	~29°C	31°C	46°C	53°C	60°C	65°C	~68°C

T_H = 65 °C
T_C = 15 °C
P = 3 bar



The hydraulic scheme is to be considered just an indication

Kvs	Max l/min	Kvs	Max l/min
1,5	31	4,5	92
2,4	49	5,0	102

Max recommended flow rate for a constant flow within ±2 °C.



In compliance to the Italian Ministerial Decree N°174/2004

PED 97/23/EC, art. 3.3



In compliance to the Italian Ministerial Decree N°174/2004

PED 97/23/EC, art. 3.3

Art. 789R

HIGH PERFORMANCE ADJUSTABLE THERMOSTATIC DIVERTING VALVE

Code 3/4": 03789R-3854-3.5

Thermostatic diverting valve with adjustable diverting temperature from 38°C up to 54°C by means of a graduated knob. Possibility of anti-rotation locking of the knob. High temperature check valve and filter, built into the inlet connection. Hot forged brass body. Yellow brass finish. In accordance with the inlet temperature, the valve diverts the water between the outlets 1 and 2 in a proportional and automatic way: at values lower than the setting temperature towards the gate 1, at values higher than the setting temperature towards the gate 2.

- ✓ Maximum static pressure 10 bar (PN 10); dynamic pressure 5 bar.
- ✓ Maximum inlet temperature: continuous 100°C (short time: 120°C for 20 s).
- ✓ Setting temperature range: 38°C+54°C. Commutation field 4K (between 42 and 52°C).
- ✓ It can be used with anti freeze fluids (glycol ≤ 50%).

Available external connections: 3/4" Male pipe unions.



Kvs values:

- 2,5 Towards the gate 1
- 3,5 Towards the gate 2



Diverting temperature:

Adjustable temperature from 38°C up to 54°C



Layout:

Asymmetric

Art. 786R

Thermostatic diverting valve with adjustable diverting temperature from 38°C up to 54°C by means of a graduated knob. Possibility of anti-rotation locking of the knob. Hot forged brass body. Yellow brass finish.

Available external connections: 1" male flat seal.

Technical features and available setting temperatures are the same as the ones of art. 789R.

Code 1": 04786R-3854-3.5



Climatic controllers HCC series

Main features identical for each model:

- ✓ Bright backlight high contrast display with full text notices and graphic mode;
- ✓ Pictograms showing the several available hydraulic schemes;
- ✓ Assistant to the start with step-by-step guided setups;
- ✓ Independent setup with 4 programming keys;
- ✓ Data storage with statistics and graphics diagrams for a long term monitoring of the outside and supply temperature, check function with error storage;
- ✓ Optional time bands, with characteristic curve corrector, for the working of the installation in day, night and comfort mode;
- ✓ Temperature limit, for day and night deactivation of the plant;
- ✓ Setting of characteristic curve, with linear or splitted slope;
- ✓ Weather compenastor working or at fixed temperature or with individually setted temperatures 14 days long;
- ✓ Antifreeze and daily or weekly anti-lock function;
- ✓ Setting of minimum and maximum supply temperature of the plant;
- ✓ Input for optional remote control (RC21, with room sensor) or for zero-potential contact (f.i. room thermostat) to switch on/off the heating circulating pump. For HCC6 model, it is required to use the RC22 room thermostat.
- ✓ Menu lockout against undesired setting changemements;
- ✓ Dimensions: 163 x 110 x 51 mm;
- ✓ IP 40 - protection class II.

HCC4 - Climatic controller with boiler control: mixed circuit and unmixed circuit

- ✓ HCC4 climatic controller with 6 different programs to manage 1 mixed heating circuit (circulating pump contact and contact to open/close a mixing valve), 1 unmixed circuit, 1 heat source with buffer logic.
- ✓ 6 inputs for PT1000 sensors: Outside sensor, Mixed circuit temperature, Unmixed circuit temperature, Boiler temperature (Optional), Room temperature (Optional), Remote control (Optional).
- ✓ 4 output relays 230V: Mixed circuit circulating pump, Open mixing valve, Close mixing valve, Unmixed circuit circulating pump.
- ✓ 1 outputs with zero-potential contact for energy call.
- ✓ 1 outside temperature sensor TA/52 (PT1000).
- ✓ 1 contact sensor for supply pipe TR/P4 (PT1000).
- ✓ 1 dip sensor TP/P4 (PT1000).

Code: **HCC4**

HCC5 - Climatic controller with boiler control: mixed circuit and HDW

- ✓ HCC5 climatic controller with 3 different programs to manage 1 mixed heating circuit (circulating pump contact and contact to open/close a mixing valve), 1 contact for hot domestic water, 1 heat source with buffer logic/water storage tank.
- ✓ 6 inputs for PT1000 sensors: Outside sensor, Mixed circuit temperature, Storage tank hot water temperature, Boiler temperature (Optional), Room temperature (Optional), Remote control (Optional).
- ✓ 4 output relays 230V: Mixed Circuit Circulating Pump, Open Mixing Valve, Close Mixing Valve, Contact for Hot Water.
- ✓ 1 outputs with zero-potential contact for energy call.
- ✓ 1 outside temperature sensor TA/52 (PT1000).
- ✓ 1 contact sensor for supply pipe TR/P4 (PT1000).
- ✓ 2 dip sensors TT/P4 (PT1000).

Code: **HCC5**

HCC6 - Climatic controller with energy source control: heating and cooling

- HCC6 climatic controller with program to manage 1 mixed heating/cooling circuit (circulating pump contact and contact to open/close a mixing valve), 1 heat source with buffer logic, 1 cooling source. The use of RC22 room thermostat is required.
- ✓ 6 inputs for PT1000 sensors: Outside sensor, Mixed circuit temperature, Storage tank hot water temperature or hydraulic switcher temperature, Room temperature (RC22), Humidity (RC22), Remote control (RC22).
 - ✓ 4 output relays 230V: Mixed Circuit Circulating Pump, Open Mixing Valve, Close Mixing Valve, Energy source switching.
 - ✓ 2 outputs with zero-potential contact for energy source and dehumidifier.
 - ✓ 1 outside temperature sensor TA/52 (PT1000).
 - ✓ 1 contact sensor for supply pipe TR/P4 (PT1000).
 - ✓ 1 dip sensor TT/P4 (PT1000).

Code: **HCC6**



RC21 Room thermostat

RC21 optional remote control with room sensor, to adjust the supply temperature according to the room temperature. Mode selector for day/night/automatic/off and knob for manual compensation.

Code: **RC21**



RC22 Room thermostat

Remote control for installation with cooling function, managed by HCC6 climatic controller. Selector for heating/cooling mode. To the features of the model RC21, it adds a remote humidity sensor.

Code: **RC22**



Dip temperature sensor

Temperature sensor PT1000, in PVC, for climatic controllers. 4 m long.

Code: **TT/P4**



Dip temperature contact sensor

Temperature sensor PT1000, in PVC, for supply pipes, for climatic controllers. 4 m long.

Code: **TR/P4**



External temperature sensor

External temperature sensor PT1000 for climatic controller.

Code: **TA/52**

CE



Servomotor M21

3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°. 2 min., torque: 5 Nm. Power supply 230V. IP42.

Code: **M21**

Available model with auxiliary contact. Code: **M21-AUX**

Servomotor M41

3 points servomotor for mixing valve. Bidirectional, reversible with fixed limit switches for an operating range of 90°. 2 min., torque: 5 Nm. Power supply 24V AC. IP42.

Code: **M41**

Proportional servomotor M51

Proportional servomotor for mixing valve. Control signal 0-10V / 2-10V - 0-20 mA / 4-20 mA. Bidirectional, reversible with fixed limit switches for an operating range of 90°. 2 min., torque: 10 Nm. Power supply 24V DC or 24V AC. IP42.

Code: **M51**

CE



Room chronothermostat ST2RDR

Remote control to manage the room temperature of houses, flats and working rooms, even of large dimensions.

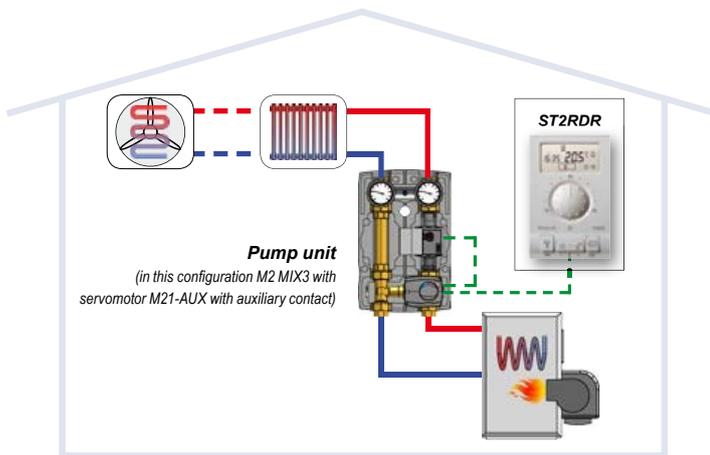
The control, in the default setting, regulates the servomotor and the circulating pump (by means of the auxiliary contact of the servomotor, if present) of a heating mixed system; you can also do other alternative settings suitable for convectors or fan convectors heating, cooling, etc. Not suitable for underfloor heating systems.

Some of the main functions:

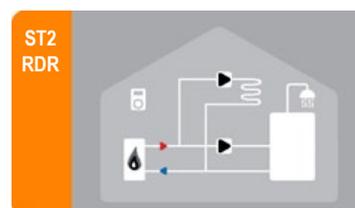
- ✓ 2 outputs relays 230V;
- ✓ Control of heating;
- ✓ Control of 2 and 3 points servomotors;
- ✓ Free programming up to 3 applications (heating, cooling and hot domestic water);
- ✓ Weekly temperature setting, according to daily time bands;
- ✓ Adjustable daytime, night and comfort temperatures from 10 up to 30 °C;
- ✓ Temperature setting by means of the main knob;
- ✓ Party and Eco special functions with adjustable timing;
- ✓ Antifreeze and anti-overheating protection;
- ✓ Button and keyboard locking function;
- ✓ Battery 2 x 1,5V LR03;
- ✓ Dimensions: 72 x 112 x 32 mm.

Code: **ST2RDR**

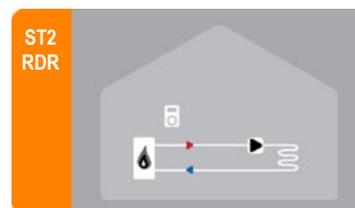
Room chronothermostat default setting:



Schemes of some more possible installations:



Room heating and hot domestic water with control of the two circulating pumps



Room heating with boiler and circulating pump control

TAKE CARE

To make the right hydraulic scheme here at side, if you want to stop the circulating pump with the mixing valve completely closed, we suggest you to mount on the pump unit a M21 servomotor with auxiliary contact (code M21-AUX).

CE



BRC thermostat

The Bimetallic unipolar thermostat with contact on interruption or on switching. Fastening of thermostat is made by means of a spring clamp for a constant sealing which guarantees a very good adherence to the pipes. ENEC approval.

- ✓ Setting field: 20÷90°C;
- ✓ Differential: 8 ± 3 K (adjustable);
- ✓ Power on contacts: 16 (2,5) A / 250 VAC;
- ✓ Protection: IP20.

Code: **BRC**



Fixed temperature servomotor ACC10

Servomotor for mixing valve with electronic control of fluid temperature at fixed temperature. Bidirectional, reversible with switcher, limited operating range 90°; 2 min; torque: 6 Nm. Power supply 230 V. Protection: IP42.

- ✓ Setting range of target temperature: 0 up to 99°C;
- ✓ Visualization of measured temperature and target temperature, on reversible LCD display;
- ✓ Clockwise and anticlockwise direction of rotation in opening/closing by means of touch sensitive keypad. Personalized operative parameters (PID);
- ✓ Heating or cooling working modes;
- ✓ Temperature reading by means of Pt1000 (ø6x50 mm, 1 m length, included) deep sensor or with fixing kit to the pipe.

Code: **ACC10**



Basic climatic controller AHC20 with servomotor and outside sensor

Servomotor with climatic regulation for mixing valve with electronic control to keep fixed the selected temperature of the room.

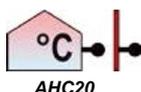
Management and control, by a dedicated relay, of the circulating pump of the system. Provided with outside and supply sensors (both PT1000) it allows a perfect and precise regulation of the mixed circuit, by selecting the climatic curve, so optimizing the energy consumption.

Some of the main functions:

- ✓ Setting range of target temperature: 10 to 30°C;
- ✓ Visualisation of measured temperature and target temperature, on reversible LCD display;
- ✓ Temperature adjustment by means of climatic curves (0,2 + 2,6) with relevant parallel offsets;
- ✓ Heating circuit control with maximum temperature limit (for underfloor heating installations) and minimum;
- ✓ Clockwise and anticlockwise direction of rotation in opening/closing by means of touch sensitive keypad. Personalized operative parameters (PID);
- ✓ Heating and cooling working modes;

Bidirectional servomotor, reversible with an operating range of 90°, 2 min., torque 6 Nm. Power supply 230V. IP42.

Code: **AHC20**



AHC20



AHC21

Basic climatic controller AHC21 with servomotor and room sensor

Provided with room and supply sensors (both PT1000).

Code: **AHC21**



Touch screen climatic controller CMP25-2 with advanced functions and built-in servomotor

Modern climatic "touch screen" controller reversible with built-in servomotor; it is specially made to be assembled to Modvlvs pump units and its mixing valves.

Graphic user interface available in 14 languages. Provided with outside and supply sensors (both PT1000) it allows a perfect and precise regulation of the mixed circuit, by selecting the climatic curve, so optimizing the energy consumption.

Some of the main functions:

- ✓ Selection of several hydraulic schema among the main functions on the touch screen display, by the means of easy pictograms;
- ✓ Temperature adjustment by the means of climatic curves (0,4+2,2);
- ✓ Heating circuit control with maximum temperature limit for underfloor heating installation;
- ✓ Weekly programm with time bands;
- ✓ Summer/winter automatic selection;
- ✓ Antifreeze protection and anti-lock circulating pump function;
- ✓ Optimization of the regulation of the installation by the means of DD2+ room unit (optional);
- ✓ Possibility to connect two room thermostats DD2+ to improve the functions of control and of temperature surveying;
- ✓ Guided diagnostic;
- ✓ Bright backlit display.

Bidirectional servomotor, reversible, with an operating range of 90°, 2 min., torque: 10 Nm. Power supply 230V. IP42.

Code: **CMP25-2**



Room thermostat DD2+

The DD2+ room unit is the remote control of the heating system. It can be connected to the compact weather compensator controller CMP25-2.

Some of the main functions:

- ✓ Room heating control by means of the time planning set on the CMP25-2 controller;
- ✓ Temperature adjustment by the means of the main knob;
- ✓ Party ed Eco functions with adjustable time length;
- ✓ Lockout function of the knob and of the key-board;
- ✓ Automatic pairingn with CMP25-2 climatic controller;
- ✓ Battery 2 x 1,5V LR03;
- ✓ Dimensions: 72 x 112 x 32 mm.

Code: **DD2+**

BRV MODVSOL range, thanks to the versatility of MODVLS, offers a complete range of pump units and accessories for solar systems.

In order to give a better service to our Customers, our products are tested and checked at our factory.



Updating of the range with High Efficiency circulating pumps



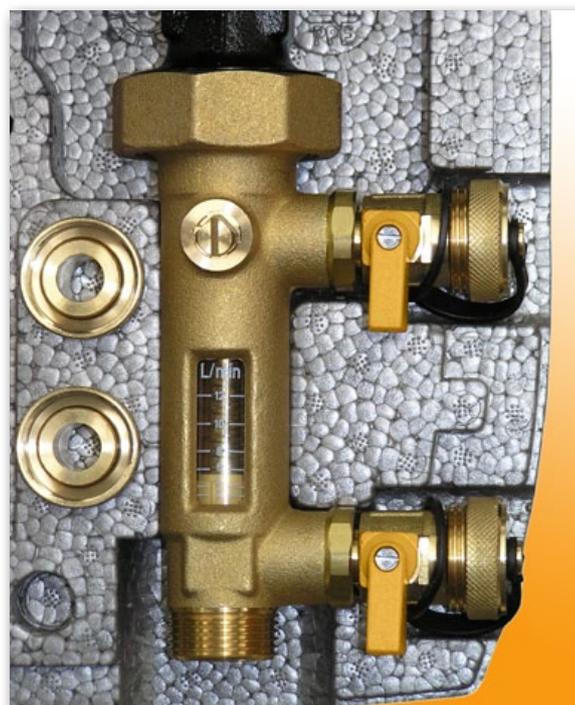
The flow regulator has the filling and draining valves in a very close position; this allows to minimize the residual quantity of air in circulation after the filling operations.

The ball valves before and after the circulating pump allow its easy removal without emptying the installation.

All the sealing joints are glicole resistant. The solar unit has a working temperature of 120°C and 160°C for a short time. Connections of different sizes are available.

The mounting of MODVSOL is easy and quick. The unit has a supply and a return way, it is preassembled and it is housed into a special insulation box. Especial metal back plate allows a fast fitting to the wall or to a solar storage tank.

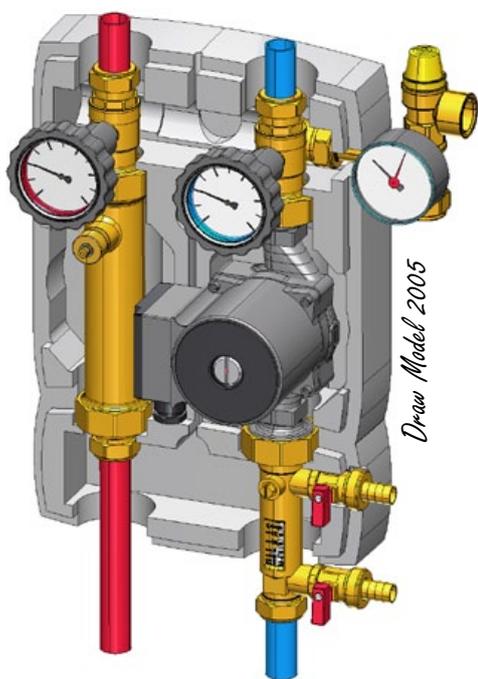
The several models have important advantages, such as a security unit CE and TÜV approved, a manometer specially made for solar installations and a convenient flowmeter that allows an easy starting of the installation.



The picture at side shows a “pilot” installation with low tension circulating pump: the current is supplied by a P.V. collector and the plant is fully independent from the energetic point of view. It is working every day to check its good functioning and it is at customers’ and vistors’ disposal.



Product installed in 2005 and working up to the present.

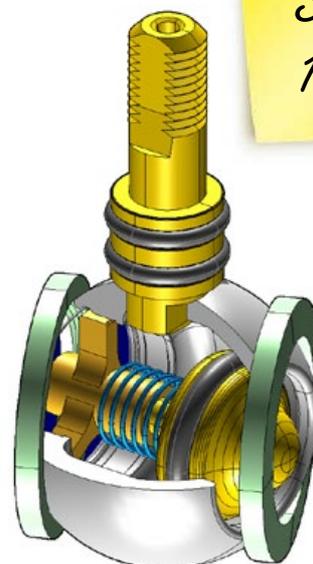


The air vent, current component of many pump units, expels the air bubbles that are in the circuit in a continuous and effective way; in fact when the heat-conducting fluid goes through the air vent, the important difference of diameter between it and the remaining components of the circuit gives rise to a reduction of the speed of the circulation of the fluid, so helping the separation of the air bubbles that go towards the vent valve.



The incessant search for the quality pushed BRV to make a test of the air vent, a report of which is available on request.

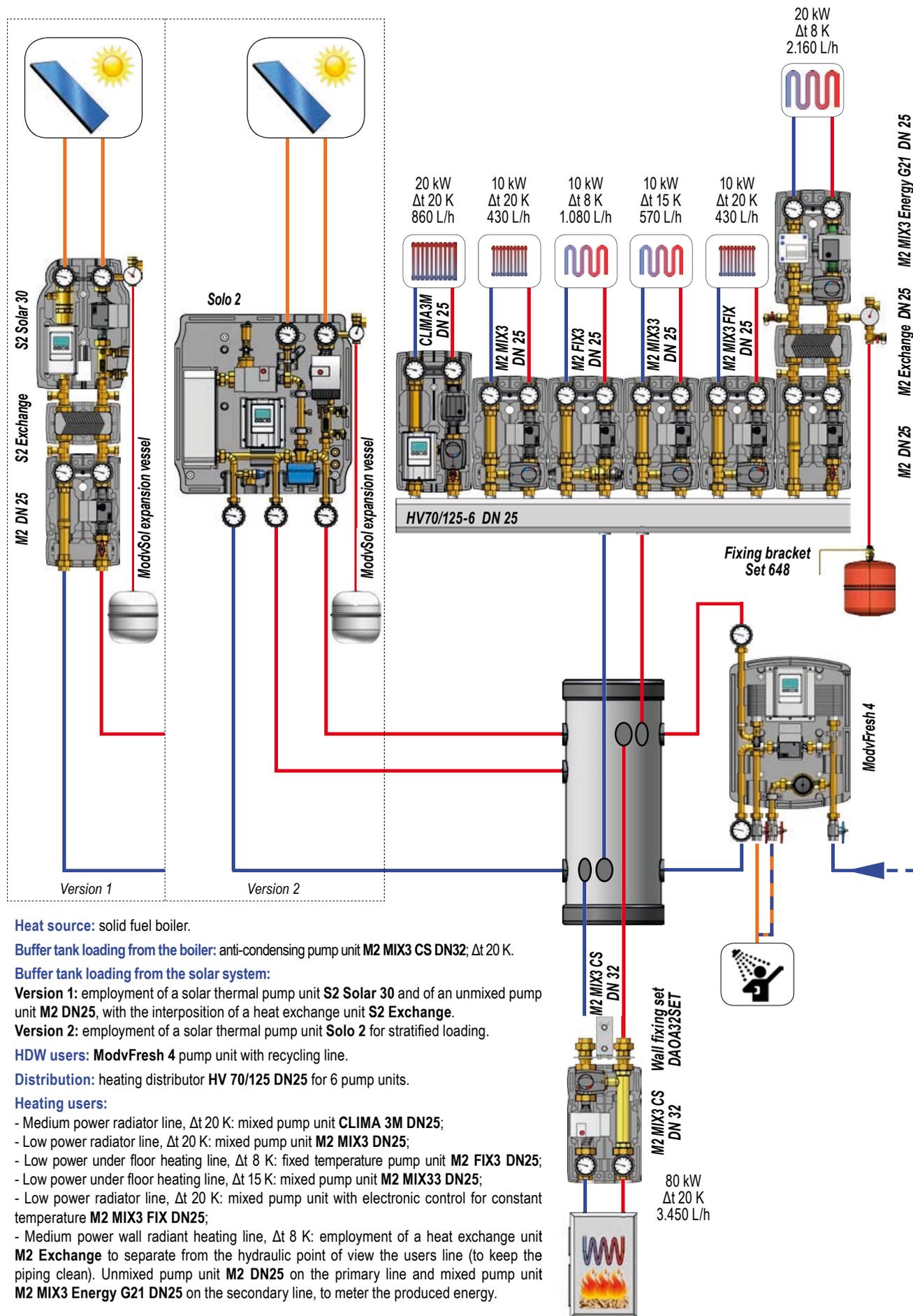
Supplied for the first time by BRV on the european market on 1999, the special “Solar” check valve mounted both in the supply and in the return way, prevents the migration of energy from the water tank to the solar collector in any working condition, together with very low headlosses with an advantage for the efficiency of the system. It is also possible to exclude it in case of service (f.i. to drain the installation) by rotating the thermometer handle by 45°. Now the “Solar” ball, used all over the world by several manufacturers, is an important point of reference for many forced circulation solar thermal systems.



Since 1999

MODVLVS Installation examples

solar thermal



Heat source: solid fuel boiler.

Buffer tank loading from the boiler: anti-condensing pump unit M2 MIX3 CS DN32; Δt 20 K.

Buffer tank loading from the solar system:

Version 1: employment of a solar thermal pump unit S2 Solar 30 and of an unmixed pump unit M2 DN25, with the interposition of a heat exchange unit S2 Exchange.

Version 2: employment of a solar thermal pump unit Solo 2 for stratified loading.

HDW users: ModvFresh 4 pump unit with recycling line.

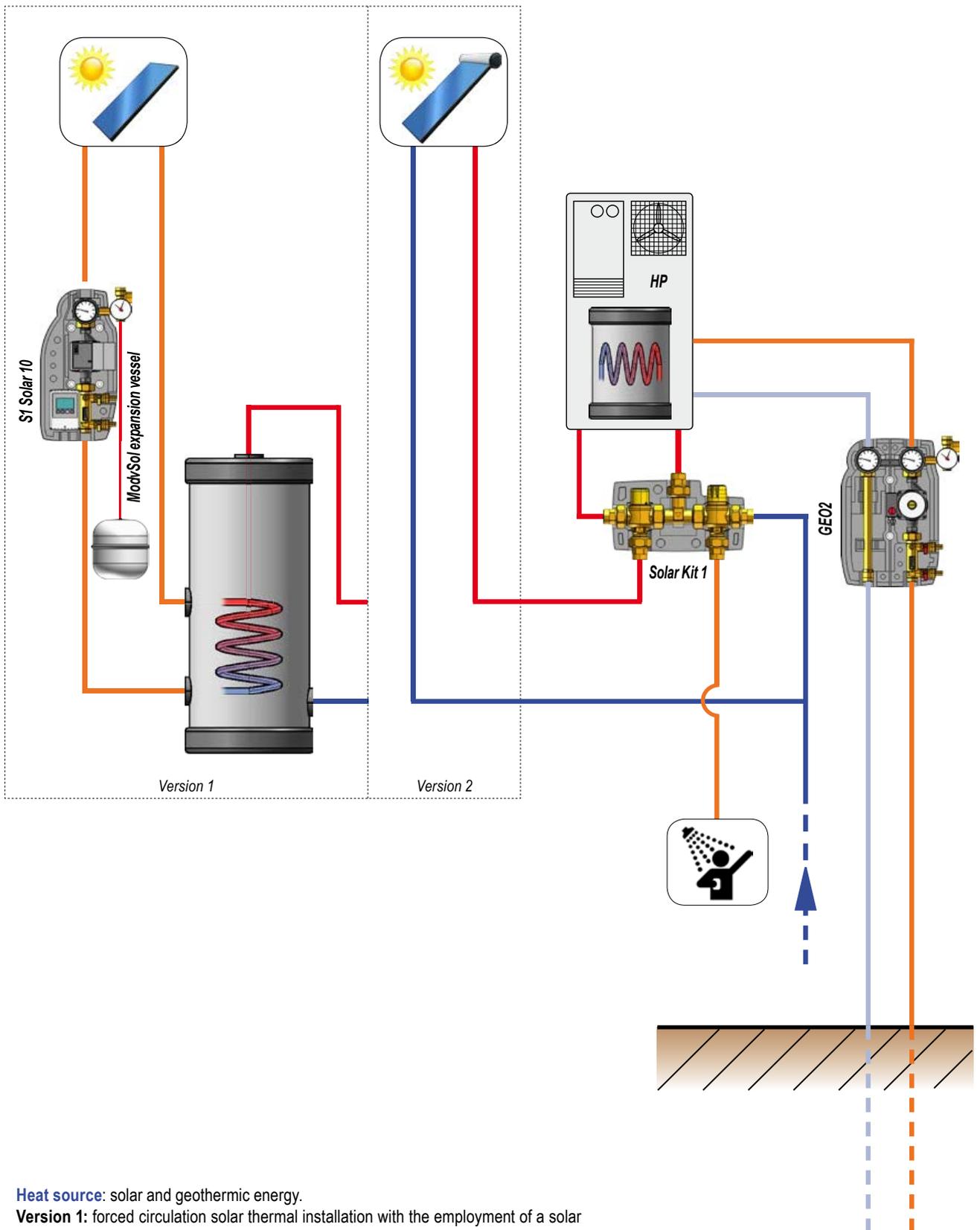
Distribution: heating distributor HV 70/125 DN25 for 6 pump units.

Heating users:

- Medium power radiator line, Δt 20 K: mixed pump unit CLIMA 3M DN25;
- Low power radiator line, Δt 20 K: mixed pump unit M2 MIX3 DN25;
- Low power under floor heating line, Δt 8 K: fixed temperature pump unit M2 FIX3 DN25;
- Low power under floor heating line, Δt 15 K: mixed pump unit M2 MIX33 DN25;
- Low power radiator line, Δt 20 K: mixed pump unit with electronic control for constant temperature M2 MIX3 FIX DN25;
- Medium power wall radiant heating line, Δt 8 K: employment of a heat exchange unit M2 Exchange to separate from the hydraulic point of view the users line (to keep the piping clean). Unmixed pump unit M2 DN25 on the primary line and mixed pump unit M2 MIX3 Energy G21 DN25 on the secondary line, to meter the produced energy.

Attention: the representations are to be considered just as an indication and they have no completeness pretension.

MODVLVS Installation examples



Heat source: solar and geothermic energy.

Version 1: forced circulation solar thermal installation with the employment of a solar pump unit **S1 Solar 10** to load a HDW tank.

Version 2: natural circulation solar installation with the employment of solar collectors with HDW tank included.

Distribution:

Solar Kit 1, solar-boiler connection kit, to mix users' HDW.

MODVSOL Solar Pump Units up to 38 l/min



S1 Solar 1

1-WAY SOLAR PUMP UNIT

Code 22 mm: 122641R-xx-(YST7/YST8/US75)
Code 3/4" Male: 103641R-xx-(YST7/YST8/US75)
Code 1" Male: 104641R-xx-(YST7/YST8/US75)

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump with cables.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

Centre distance 125 mm. EPP insulation box (Measurements: 155x425x150 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).
External connections: 22 mm compression, 3/4" Male or 1" Male.

The model S1 Solar 1 is also available in the left version (put the letter "L" to the code. F.i.: 103647RL-12-WST6).

FIELD OF UTILIZATION:

For power up to 50 kW.

Available flowmeters:
06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min

Available circulating pumps:
Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)

solar thermal

One way



S1 Solar 10

1-WAY SOLAR PUMP UNIT WITH BUILT-IN CONTROLLER

Code 22 mm: 122-xx-(YST7/YST8/US75)-(STDC/SV3T)
Code 3/4" Male: 103-xx-(YST7/YST8/US75)-(STDC/SV3T)
Code 1" Male: 104-xx-(YST7/YST8/US75)-(STDC/SV3T)

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

Solar controller ModvSol S pre-wired including silicone sensors, to control basic systems with only one loop and one storage tank. It offers functions typical of the models from the more complete ModvSol controllers: bright backlight high contrast display with pictograms depicting the several available hydraulic schemes, assistance to the starting, simple heat accounting function and antifreeze.

Controller power cable with Schuko plug. Power cable and PWM control cable for the circulating pump. As regards the technical features of the controller please see the dedicated section.

The V3T version has also the "thermostat" function to control external heating source.

Centre distance 125 mm. EPP insulation box (Measurements: 215x440x150 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).
External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.

Available flowmeters:
06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min

Available circulating pumps:
Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)

Available controllers:
ModvSol S (STDC)
ModvSol S V3T (SV3T)

New solar function
Solar +
thermostat

MODVSOL Solar Pump Units up to 38 l/min

Two ways

CE



S2 Solar 2

2-WAY SOLAR PUMP UNIT

Code 22 mm: 322647AR-xx-(YST7/YST8/US75)
Code 3/4" Male: 303647AR-xx-(YST7/YST8/US75)
Code 1" Male: 304647AR-xx-(YST7/YST8/US75)

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump with cables.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ DN20 Ball valve with compression fittings with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Pipe with end connection.

Centre distance 125 mm. EPP insulation box (Measurements: 277x425x150 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.



Available flowmeters:

06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min



Available circulating pumps:

Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)

solar thermal

CE



S2 Solar 20

2-WAY SOLAR PUMP UNIT WITH BUILT-IN CONTROLLER

Code 22 mm: 322-xx-(YST7/YST8/US75)-M3S
Code 3/4" Male: 303-xx-(YST7/YST8/US75)-M3S
Code 1" Male: 304-xx-(YST7/YST8/US75)-M3S

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ Ball valve with compression fittings with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Pipe with end connection.

Solar controller ModvSol M pre-wired including silicone sensors to control systems with 2 loops and 1 or 2 storage tanks. Controller power cable with Schuko plug. Power cable and PWM control cable for the circulating pump. As regards the technical features of the controller please see the dedicated section.

Centre distance 125 mm. EPP insulation box (Measurements: 308x434x169 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.



Available flowmeters:

06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min



Available circulating pumps:

Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)



Available controllers:

ModvSol M (M3S)

Controller with Connect system



MODVSOL Solar Pump Units up to 38 l/min

Two ways and air vent



CE

S2 Solar 3

2-WAY SOLAR PUMP UNIT WITH AIR VENT

Code 22 mm: 322651AR-xx-(YST7/YST8/US75)
Code 3/4" Male: 303651AR-xx-(YST7/YST8/US75)
Code 1" Male: 304651AR-xx-(YST7/YST8/US75)

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump with cables.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ Flanged ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Air vent provided with manual vent valve.
- ✓ Pipe with end connection.

Centre distance 125 mm. EPP insulation box (Measurements: 277x425x150 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.



Available flowmeters:

06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min



Available circulating pumps:

Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)

S2 Solar 30

2-WAY SOLAR PUMP UNIT WITH AIR VENT AND BUILT-IN CONTROLLER

Code 22 mm: 322D-xx-(YST7/YST8/US75)-M3S
Code 3/4" Male: 303D-xx-(YST7/YST8/US75)-M3S
Code 1" Male: 304D-xx-(YST7/YST8/US75)-M3S

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ Flanged ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Air vent provided with manual vent valve.
- ✓ Pipe with end connection.

Solar controller ModvSol M pre-wired including silicone sensors to control systems with 2 loops and 1 or 2 storage tanks. Controller power cable with Schuko plug. Power cable and PWM control cable for the circulating pump. As regards the technical features of the controller please see the dedicated section.

Centre distance 125 mm. EPP insulation box (Measurements: 308x434x169 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.



Available flowmeters:

06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min



Available circulating pumps:

Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)



Available controllers:

ModvSol M (T33S)

Controller with Connect system



For different controllers



S2 Solar 30

2-WAY SOLAR PUMP UNIT MADE FOR THE FITTING OF THE SOLAR CONTROLLER

Codes: see at the bottom of the page

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump. Control and power cables for the controller.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ Flanged ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0°C-120°C).
- ✓ Brass air vent provided with manual vent valve; also available the model Solar 20 without air vent: for item code take off "D" from the below mentioned code (f.i. 322-12-YST7).
- ✓ Pipe with end connection.

Centre distance 125 mm. EPP insulation box (Measurements: 308x434x169 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.



Available flowmeters:

06 = 1-6 l/min
12 = 2-12 l/min
28 = 8-28 l/min
38 = 8-38 l/min



Available circulating pumps:

Wilo Yonos Para ST 25/7.0 (YST7)
Wilo Yonos Para ST 25/7.5 (YST8)
Grundfos UPM3 Solar 25-75 (US75)

CE



For controllers:
Resol, Seltron, Sorel, Steca

For controllers:
Prozeda, Seitron



Code 22 mm:
322D-xx-(YST7/YST8/US75)
Code 3/4" Male:
303D-xx-(YST7/YST8/US75)
Code 1" Male:
304D-xx-(YST7/YST8/US75)



Code 22 mm:
322D-xx-(YST7/YST8/US75)-P
Code 3/4" Male:
303D-xx-(YST7/YST8/US75)-P
Code 1" Male:
304D-xx-(YST7/YST8/US75)-P

Code composition: the suffix "xx" shows the flow, followed by the circulating pump and by the model of the controller holder (f.i. 304D-28-YST7).

MODVSOL Solar Pump Units up to 40 l/min



S2 Solar 30L

2-WAY SOLAR PUMP UNIT WITH AIR VENT, HIGH EFFICIENCY SOLAR CIRCULATING PUMP AND BUILT-IN CONTROLLER

Code 22 mm: 322D-xx-(YST7/YST8/US75)-L3S
 Code 3/4" Male: 303D-xx-(YST7/YST8/US75)-L3S
 Code 1" Male: 304D-xx-(YST7/YST8/US75)-L3S

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ Flanged ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0°-120°C).
- ✓ Air vent made in brass provided with manual vent valve.
- ✓ Pipe with end connection.

Solar controller ModvSol L pre-wired including silicone sensors, to control complex systems with 3 loops ad 1 up to 3 storage tanks. Controller power cable with Schuko plug. Power cable and PWM control cable for the circulating pump. As regards the technical features of the controller please see the dedicated section.

Center Distance 125 mm. EPP insulation box (Measurements: 308x434x169 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant maximum operating temperature of 120°C with short term operating temperatures (max 20 sec) up to 160°C possible.

External connections: 22 mm compression, 3/4" Male or 1" Male.

FIELD OF UTILIZATION:

For power up to 50 kW.



Available flowmeters:
 06 = 1-6 l/min
 12 = 2-12 l/min
 28 = 8-28 l/min
 38 = 8-38 l/min



Available circulating pumps:
 Wilo Yonos Para ST 25/7.0 (YST7)
 Wilo Yonos Para ST 25/7.5 (YST8)
 Grundfos UPM3 Solar 25-75 (US75)



Available controllers:
 ModvSol L (L3S)



Controller with more advanced functions



S2 Solar 30L VFS

2-WAY SOLAR PUMP UNIT WITH AIR VENT AND BUILT-IN CONTROLLER WITH THE FUNCTION OF ENERGY METERING

Code 22 mm: 322D-40-YST8-L4S
 Code 3/4" Male: 303D-40-YST8-L4S
 Code 1" Male: 304D-40-YST8-L4S

The pump unit, supplied with 1" synchronous solar high efficiency circulating pump (180 mm) fully assembled and tested, is different from the model S2 Solar 30L in the VFS digital sensor (flow 2-40 l/min) suitable to count simultaneously the flow and the return way temperature. These data, together with those supplied by an additional supply contact sensor (TR/S1), allow the ModvSol L controller to count the energy produced by the solar installation and to "certify" the thermic efficiency. In that way it'll be possible to get the government loans and incentives.

PN 10. Constant maximum operating temperature of 120°C with short term operating temperatures (max 20 sec) up to 160°C possible.

Return way: the record of the temperature is made between 0°C and 100°C.

(A short time up to +120°C, during which the VFS is not recording the temperature, is allowed).

External connections: 22 mm compression, 3/4" Male or 1" Male.



Available flowmeters:
 40 = VFS 2-40 l/min



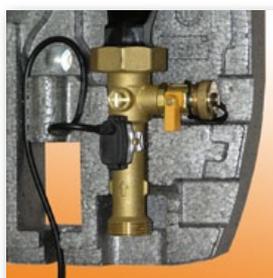
Available circulating pumps:
 Wilo Yonos Para ST 25/7.5 (YST8)



Available controllers:
 ModvSol L (L4S)



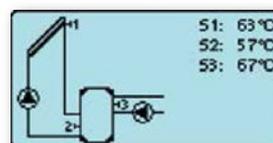
3/4" connection to fit between the flexible hose and the expansion vessel. It is possible to fill the installation trough the side valve.



Display of the solar energy produced by the solar installation:



On demand, a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.



Year	1316 kWh
Month	119 kWh
Week	31 kWh

Code composition: the suffix "xx" shows the flow, followed by the circulating pump and by the controller model (f.i. 303D-28-YST7-L3S).

High Flow



S2 Solar 2

2-WAY SOLAR PUMP UNIT FOR HIGH FLOW SYSTEMS

Code 1" Female: 304F647-xx-PA1-8
 Code 1 1/4" Male: 305647-xx-PA1-8
 Code 1 1/2" Male: 306647-xx-PA1-8

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation 5-42 l/min or 20-70 l/min.
- ✓ Synchronous solar high efficiency circulating pump, 0-10V control.
- ✓ Flanged ball valve with non return valve 18 mbar (the valve can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0-120°C).
- ✓ "T" connection for security unit.
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" male connection to the expansion vessel. End of drain side: 1" F.

SUPPLY:

- ✓ "T" connection with sensor holder pit ø6 mm.
- ✓ Flanged ball valve with non return valve 18 mbar (the valve can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0-120°C).
- ✓ Pipe with end connection.

Centre Distance 125 mm. EPP insulation box (Measurements: 285x500x170 mm).

A special metallic back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar storage tank.

PN 10. Constant temperature 120°C (short time temperature: 160°C for 20 s).

External connections: 1 1/4" Male, 1 1/2" Male or 1" pipe union Female.

FIELD OF UTILIZATION:

For power up to 100 kW.

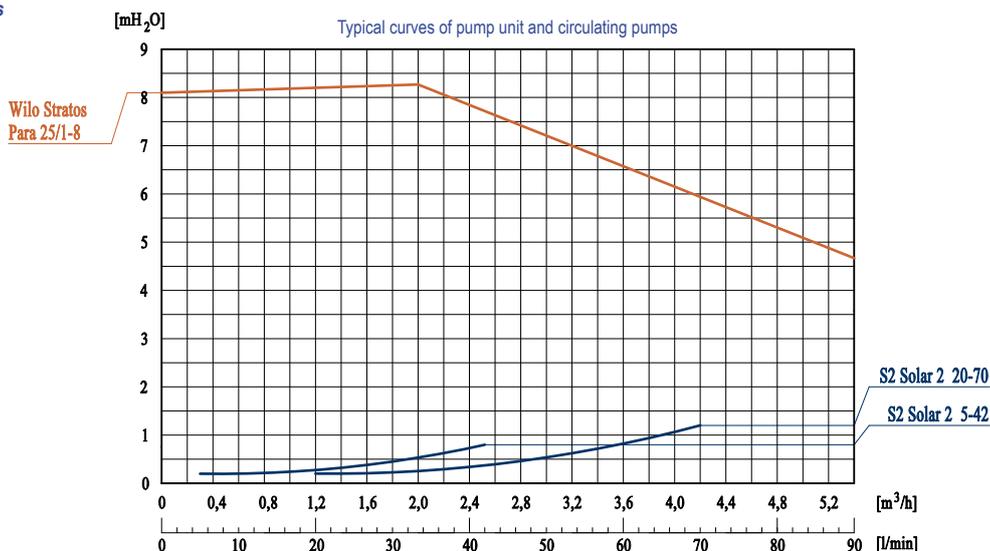


Available flowmeters:
 42 = 5-42 l/min
 70 = 20-70 l/min



Available circulating pumps:
 Wilo Stratos Para 25/1-8 (PA1-8)

The synchronous Stratos Para 25/1-8 circ. pump needs a 0-10V controller.



ATTENTION
 For a correct use of the circ. pump, please read the instruction manual of the pump unit.



Art. 525 ISO

Ball valve in hot forged brass to fill and drain thermal solar systems. For more informations see the pages dedicated to ModvSol "Equipments and accessories".

Code composition: the suffix "xx" shows the flow, followed by the circulating pump (f.i. 306647-42-PA1-8).



S2 Solar 20 Drain-Back

2-WAY SOLAR PUMP UNIT FOR DRAIN-BACK APPLICATIONS WITH BUILT-IN CONTROLLER AND HIGH EFFICIENCY SOLAR CIRCULATING PUMP

Code 22 mm: 422-xx-YST(8/13)-(M3S/L3S)
 Code 3/4" Male: 403-xx-YST(8/13)-(M3S/L3S)
 Code 1" Male: 404-xx-YST(8/13)-(M3S/L3S)

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ Flowmeter with flow regulation with filling and draining valves.
- ✓ Synchronous solar high efficiency circulating pump Wilo Yonos Para ST PWM.
- ✓ Flanged 3-way ball valve with side 3rd port capped (can be used for additional connections), supplied with in-handle thermometer (coded blue, range 0°-120°C).

SUPPLY:

- ✓ Ball valve with compression fittings, supplied with in-handle thermometer (coded red, range 0°-120°C).
- ✓ Pipe with end connection.

Pre-wired ModvSol M or ModvSol L solar controller including silicone sensors. Controller power cable with Schuko plug. Power cable and PWM control cable for the circulating pump. As regards the technical features of the controller please see the dedicated section.

Centre Distance 125 mm. EPP insulation box (Measurements: 308x434x169 mm)

A special metallic back plate holds the unit in the insulation box while allowing fast fitting to either a wall or solar tank mounted system.

PN10. Constant maximum operating temperature of 120°C with short term operating temperatures (max 20 sec) up to 160°C possible.

External connections: 22 mm compression, 3/4" Male or 1" Male.



Available flowmeters:

06 = 1-6 l/min
 12 = 2-12 l/min
 28 = 8-28 l/min



Available circulating pumps:

Wilo Yonos Para ST 25/7.5 (YST8)
 Wilo Yonos Para ST 15/13 (YST13)

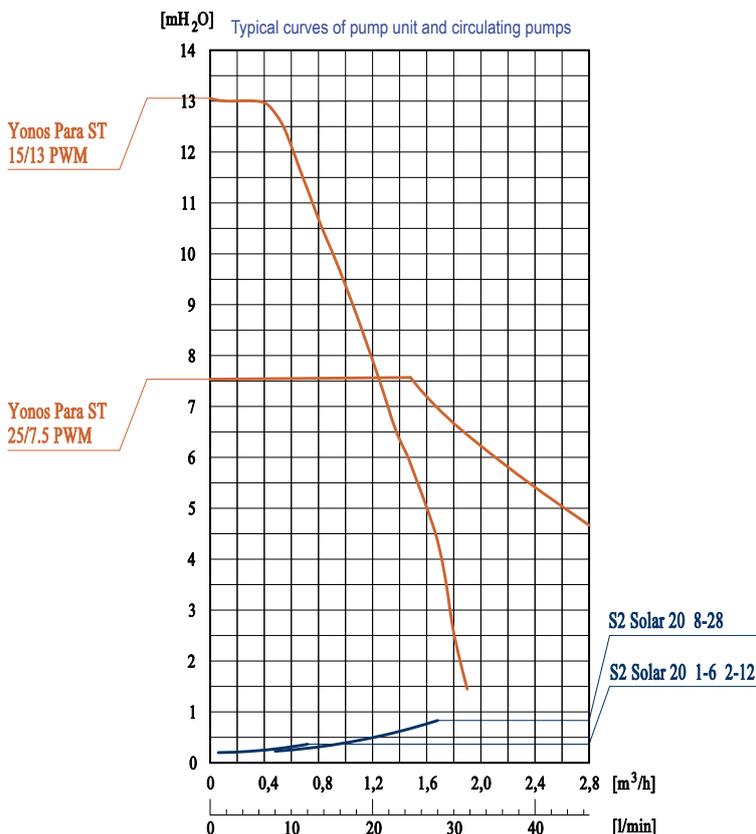


Available controllers:

ModvSol M (M3S)
 ModvSol L (L3S)



Drain-Back



Circulating Pump

High Efficiency: Wilo Yonos Para ST with a permanent magnet motor. The pump uses synchronized electronic communication and it saves on power consumption by matching the output of the pump with the needs of the solar circuit.

Sole circulating pump. Thanks to the high head produced by the Yonos Para ST 15/13, just a single circulating pump is enough to carry out the functions of filling the circuit and flowing the fluid through the solar panels. The ModvSol L controller fills the system quickly by exploiting the pump's high head and the circuit's low flow rates. In cases where an initial high head is not required but the overall system requires the head also at higher flow rates then it is recommended to use the Yonos Para ST 25/7.5 pump instead. It is important that the size of pump is accurately assessed in combination with the overall solar thermal system.



Code composition: the suffix "xx" shows the flow, followed by the circulating pump and the controller (f.i. 403-12-YST8-L3S).

Working

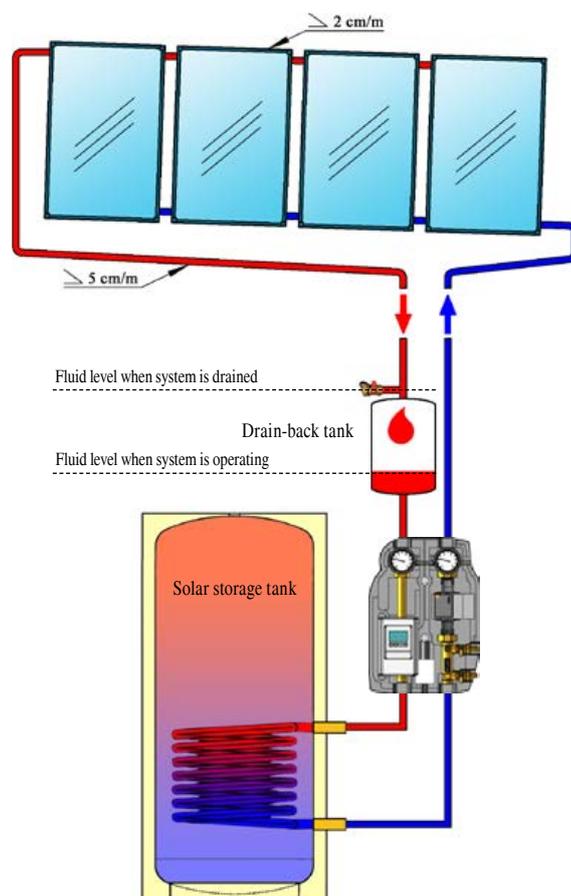
Once there is enough solar radiation and the storage tank is able to get additional heat, the controller first switches on the circulating pump. The first phase lasts a number of minutes, (this time can be set depending on features of the plant), where the controller uses the high head of the pump to fill the circuit by pushing water directly into the solar panels. The second phase, following a short transition period, sees the controller using the pump as it would a pump in any standard pressurized solar thermal system. However, thanks to the high efficiency of the pump, the electricity consumption is much lower than a standard system. The system works in an unpressurized state and as a result the following components are not required – pressure relief valve, solar pressure gauge, expansion vessel, check valves and manual air vent. When the target temperature is reached, or in the case of there not being enough solar radiation, the controller stops fluid circulation and the circuit empties back to the drain-back tank.

Suggestions for a correct working

To enable correct draining of the system, suitably designed solar panels must be installed with a minimum slope of 2 cm/m towards the panel return pipe that is located in the bottom part of the solar collectors. In addition, all pipes must have a minimum slope of 5 cm/m towards the drain-back tank. The drain-back tank must have an air volume of at least 1,5 times the part of the air volume of loop overlooking the tank (including solar panels); it must be positioned at a height that is lower than the height of the solar panels to ensure complete draining of the circuit.



ATTENTION: The drain-back tank must have an air volume of at least 1,5 times the part of the air volume of loop overlooking the tank (including solar panels). The solar pump must be positioned at a height that is always lower than the drain-back tank so as to prevent pump starvation.

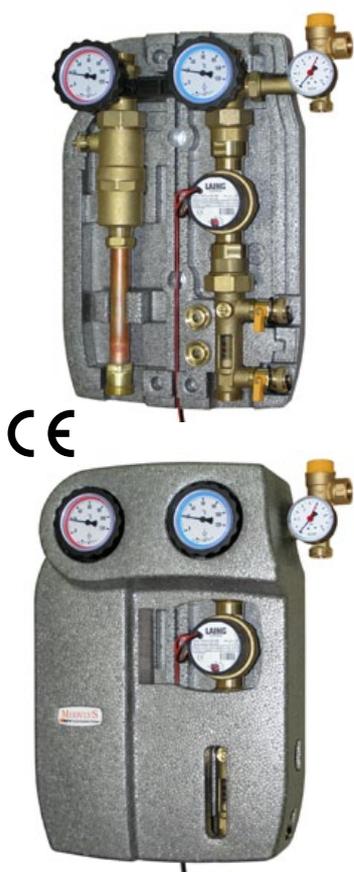


ModvSol M and Modvsol L controllers

The ModvSol differential temperature controllers have, as current specification, all the functions necessary to manage a high efficiency circulating pump in a drain-back installation.

- ✓ Regulation of pump operation using synchronized PWM signal;
- ✓ User setting of solar loop filling time;
- ✓ User setting of complete cycle period;
- ✓ User setting of target temperatures.

The ModvSol L controller has more additional functions than the version ModvSol M: for more information please go to the section "Differential solar controllers".



S2 Solar 35

2-WAY SOLAR PUMP UNIT WITH AIR VENT AND LOW VOLTAGE CIRCULATING PUMP FOR PHOTOVOLTAIC SOLAR COLLECTORS

Code 22 mm: 322651AR-12-D5
Code 3/4" Male: 303651AR-12-D5
Code 1" Male: 304651AR-12-D5

The unit with 1" (180 mm) solar circulating pump, fully assembled and tested, consists of:

RETURN:

- ✓ 2-12 l/min flowmeter with flow regulation with filling and draining valves.
- ✓ Solar circulating pump specially made for the connection to the photovoltaic solar collectors. Power supply DC 8-24V, 0,25-1,5A. max. 22W. IP42.
- ✓ Flanged 3-way ball valve with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Security unit 6 bar with manometer ø50 mm 0-10 bar with 3/4" Male connection to the expansion vessel. End of drain side: 3/4" F.

SUPPLY:

- ✓ Flanged ball with non return valve 10 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red, range 0-120°C).
- ✓ Air vent provided with manual vent valve.
- ✓ Pipe with end connection.

Centre distance 125 mm. EPP insulation box (Measurements: 277x425x150 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder.

PN 10. Constant temperature on the supply way 120°C; (short time temperature: 160°C for 20 s).

Max. temperature on the return way: 95°C.

In the case of flow more than 8 l/min please check carefully the headlosses and compare them with the curve of the circulating pump.

External connections: 22 mm compression, 3/4" Male or 1" Male.

Temperature sensors and cables for high efficiency circulating pumps

PT1000 temperature sensors

Temperature sensors with PT1000 sensor elements with guaranteed accuracy of detection, according to DIN EN60751 (IEC751); they ensure a precise acquisition of the temperature and an excellent exploitation of the energy.



TT/S2 - Dip temperature sensor with silicone cable 2 m long, 180°C.

Code: TT/S2

TT/T2,5 - Deep temperature sensor with special Teflon cable 2,5 m long, 220°C (short time 300°C).

Code: TT/T2.5

Power supply and PWM control cables for solar circulating pumps:

Wilco Yonos Para ST



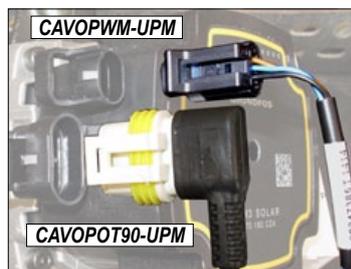
Power supply cable for Wilco Yonos Para ST circulating pumps. Length: 1 m.

Code: CAVOCIRC-A

PWM control cable for Wilco Yonos Para ST circulating pumps. Length: 1 m.

Codice: PR71B

Grundfos UPM3 Solar



Power supply cable for Grundfos UPM3 Solar circulating pump. Length: 1 m.

Code: CAVOPOT90-UPM

PWM control cable for Grundfos UPM3 Solar circulating pump. Length: 1 m.

Code: CAVOPWM-UPM

ModvSol Controllers

New generation solar **ModvSol** controllers: versatile, pre-wired and user-friendly. Thanks to the user-friendly menu and to the pictograms depicting the several available hydraulic schemes it is possible to manage any kind of solar installation in a simple way, from the smaller to the more complex.

- ✓ Bright backlight high contrast display with full text notices and graphic mode;
- ✓ Up to 20 different languages available;
- ✓ Real time clock (RTC) with battery backup;
- ✓ Assistance to the starting, with step-by-step guided setups.

All the **ModvSol** controllers have hydraulic schemes that can be selected and that, according to the different models, are suitable for simple solar installations up to more complex schemes with two fields of collectors and three storage tanks.

ModvSol M and **ModvSol L** versions support the Connect system:

- ✓ Data logging for data storage on MicroSD card by means of a special external device, that allows data analysis using a direct or remote connection of a PC;
- ✓ Connection to local network by means of CAN-Bus or Ethernet and possibility of remote management by a dedicated software for PC.

ModvSol L version has other specific functions:

- ✓ Starting of additional functions by means of free relays;
- ✓ Flow or pressure measurement by means of VFS and RPS sensors with energy metering.



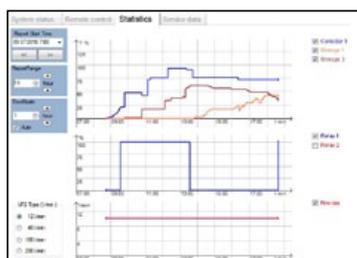
Datalogger Connect

Connect is the new network conception that allows to put several controllers in connection between themselves, by CAN-Bus, so combining them in the overall management of the installation. *It can be used with ModvSol L and ModvFresh 4 controllers.*

Data logging is done on MicroSD memory card, that stores system data for many years. By means of datalogger, that includes an Ethernet interface, the installation can also be monitored at a distance by internet. Thanks to the new connecting system *Nabto*, it is no longer necessary to face complicated network configurations: by means of few easy operations the connection is always effective and usable by personal computer, tablet and smartphone connected to internet.

The MicroSD card can be used even to update the firmware of the controller or to save and to load personalized system configurations.

Code: **DATALOG.SET1**



Connect software upgrade for remote control

The remote control function allows the user to set all the parameters of the controller in real time. To enable these functions it is necessary to extend the standard *Connect* software use license by this license upgrade.

Code: **available upon request**

Can-Bus cable

Cable to connect two devices on series by means of the Can-Bus connection of Connect system. It is equipped with terminals. Length: 1 m.



Code: **CABLE-CAN1**

MODVSOL Differential Solar Controllers

CE

Version V3T:
Solar +
Thermostat



ModvSol S controller (pre-wired)

Compact differential temperature controller to control basic solar systems with only one loop and 1 storage tank.

✓ 9 hydraulic schemes

Connections:

- ✓ 3 inputs for PT 1000 temperature sensors;
- ✓ 1 relé di uscita 230V;
- ✓ 1 PWM-10V output for high efficiency circulating pumps.

Supplied pre-wired with the solar pump unit in this configuration:

- ✓ 2 Pt1000 silicone temperature sensors;
- ✓ 2 control cables for circulating pump: power supply and PWM signal;
- ✓ power supply cable with Schuko plug.

VT3 version has also the "thermostat function" (2 relays and 3 PT1000 sensors).



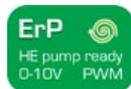
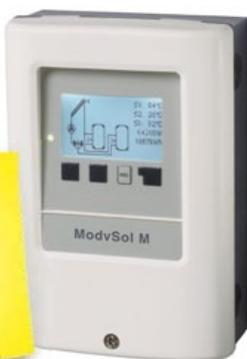
Outlets (Out):
1 relay 230V
1 PWM / 0-10V output



Inputs (In):
3 Pt1000 sensors

CE

PWM
or 0-10 V
Connect
Function



ModvSol M controller

Differential temperature controller to manage solar systems with 3 loops and 1 or 2 storage tanks. Possibility to increase the preset schemes, with the activation of additional functions, by means of free unemployed relays.

Connect system: data logging on MicroSD card for data backup and analysis, connection to local network by means of CAN-Bus or Ethernet (Data logger Connect is required). Possibility of remote management by the upgrade software Connect for remote control.

✓ More than 25 hydraulic schemes

Connections:

- ✓ 4 inputs for PT1000 sensors;
- ✓ 2 outputs relays 230 V;
- ✓ 1 PWM-10V output for high efficiency circulating pumps;
- ✓ External connection by means of CAN-Bus or Ethernet.

Supplied pre-wired with the solar pump unit in this configuration:

- ✓ 3 PT1000 silicone temperature sensors;
- ✓ 2 control cables for circulating pump: power supply and PWM signal;
- ✓ Power supply cable with Schuko plug.

Supplied into an individual packing that includes:

- ✓ 3 PT1000 silicone temperature sensors (TT/S2).

Code: **MTDC.SET3**

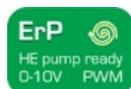
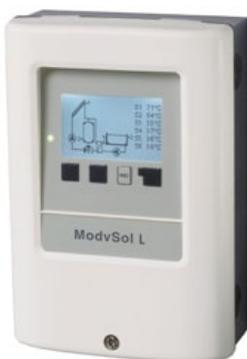


Outlets (Out):
2 relays 230V
1 PWM / 0-10V output



Inputs (In):
4 Pt1000 sensors

CE



ModvSol L controller

Differential temperature controller to manage complex solar systems with 3 loops and 1 up to 3 storage tanks. Possibility to increase the preset schemes, with the activation of additional functions, by means of free unemployed relays. Monitoring of flow and pressure by means of VFS and RPS sensors.

Connect system: data logging on MicroSD card for data backup and analysis, connection to local network by means of CAN-Bus or Ethernet (Data logger Connect is required). Possibility of remote management by the upgrade software Connect for remote control.

✓ More than 41 hydraulic schemes

Connections:

- ✓ 6 inputs for PT1000 temperature sensors;
- ✓ 2 inputs for VFS and RPS sensors;
- ✓ 3 outputs relays 230V;
- ✓ 2 PWM-10V outputs for high efficiency circulating pumps;
- ✓ External connection by means of CAN-Bus or Ethernet.

Supplied pre-wired with the solar pump unit in this configuration:

- ✓ 3 PT1000 silicone temperature sensors: 4 PT1000 silicone temperature sensors in the version with VFS;
- ✓ 2 control cables for circulating pump: power supply and PWM signal;
- ✓ Power supply cable with Schuko plug.

Supplied into an individual packing that includes:

- ✓ 4 PT1000 silicone temperature sensors (TT/S2).

Code: **LTDC.SET4**

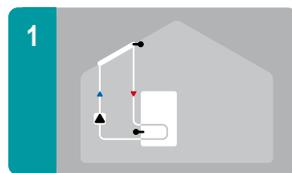


Outlets (Out):
3 relays 230V
2 PWM / 0-10V outputs

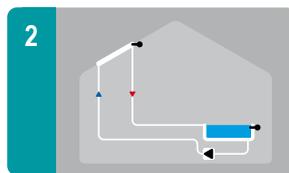


Inputs (In):
6 Pt1000 sensors
2 VFS o RPS sensors

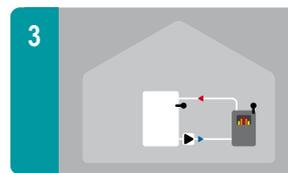
Different hydraulic schemes ModvSol S, ModvSol M and ModvSol L



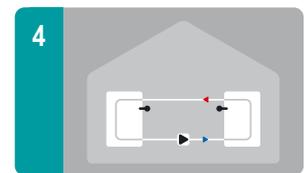
Solar + storage tank



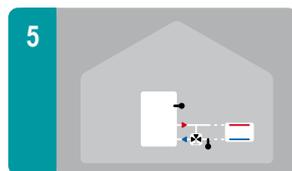
Solar + swimming pool



Solid fuel boiler + storage tank



Storage tank loading



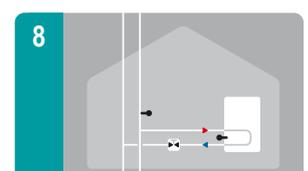
Return temperature increase



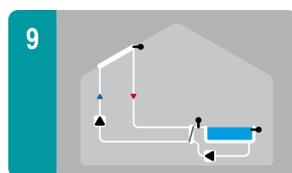
Thermostat function



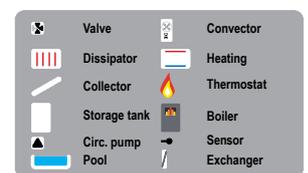
Universal ΔT



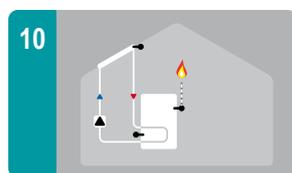
Shutting valve



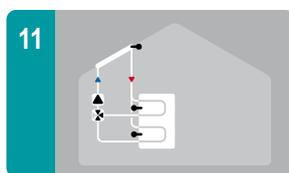
Solar + heat exchanger
(sensor on secondary) + swimming pool



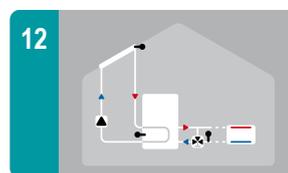
Different hydraulic schemes ModvSol M and ModvSol L



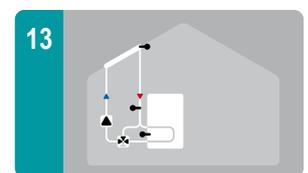
Solar + thermostat
(supplementary heating)



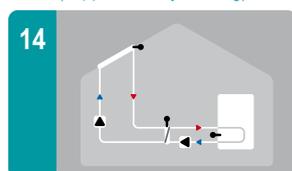
Solar + 2 levels storage tank



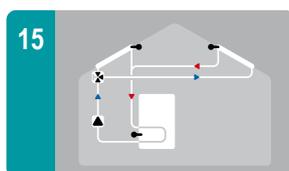
Solar + heating system



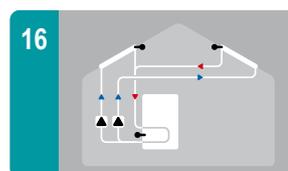
Solar + by-pass



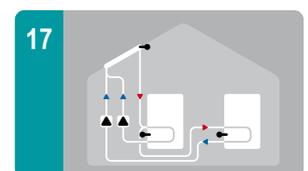
Solar + heat exchanger



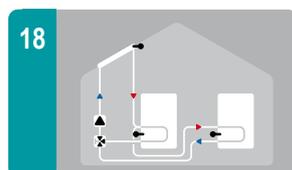
Solar + 2 collectors



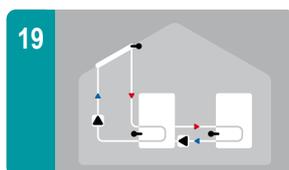
Solar + 2 collectors and 2 pumps



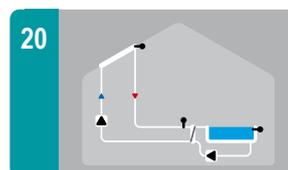
Solar + 2 storage tanks and 2 pumps



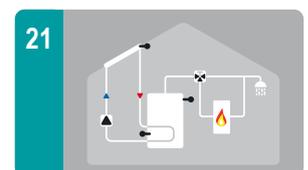
Solar + 2 storage tanks and valve



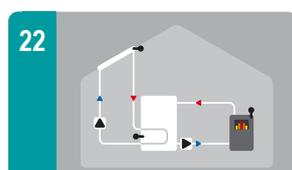
Solar + storage tank loading



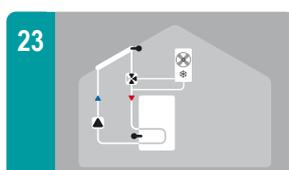
Solar + swimming pool
and heat exchanger



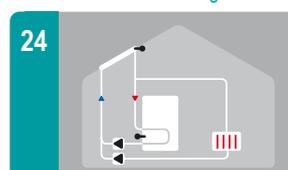
Solar + thermostat and valve



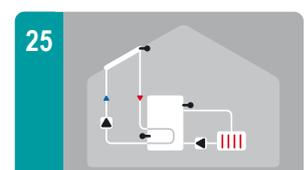
Solar + solid fuel boiler



Solar + cooling 1 (collector cooling)

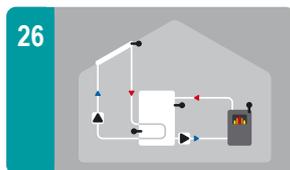


Solar + cooling 2 (collector cooling)

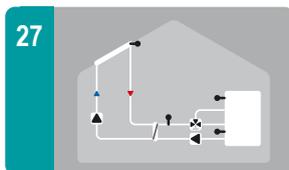


Solar + cooling 3 (collector cooling)

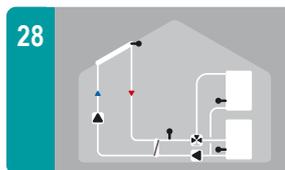
Different hydraulic schemes ModvSol L



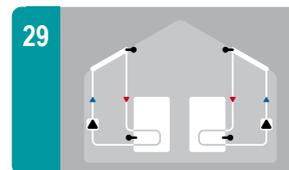
26 Solar + storage tank and solid fuel boiler



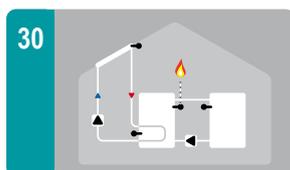
27 Solar + heat exchanger and zone valve



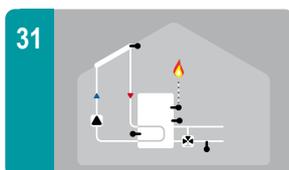
28 Solar + heat exchanger and 2 storage tanks



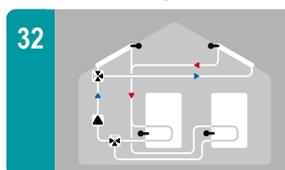
29 2x solar



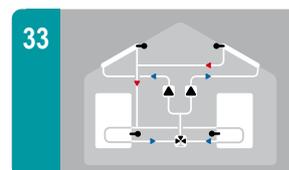
30 Solar + thermostat and storage tank loading



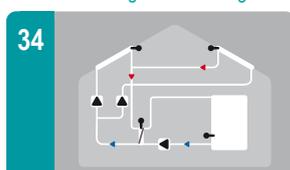
31 Solar + thermostat and return temperature increase



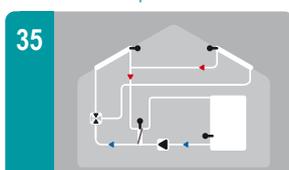
32 Solar + 2 collectors, 2 storage tanks, 2 valves



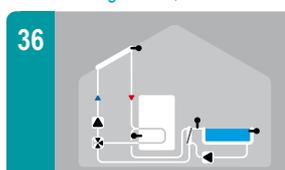
33 Solar + 2 collectors, 2 storage tanks, 2 pumps



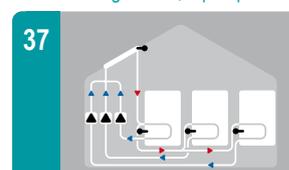
34 2x Solar with storage, heat exchanger and 3 pumps



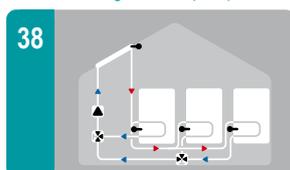
35 2x Solar with storage, heat exchanger and valve



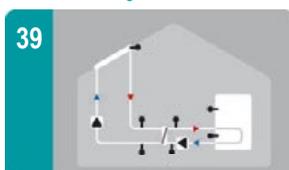
36 Solar + swimming pool, storage tank, heat exchanger and valve



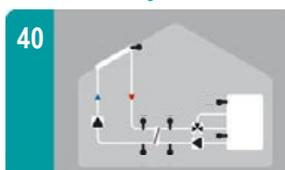
37 Solar + 3 storage tanks and 3 pumps



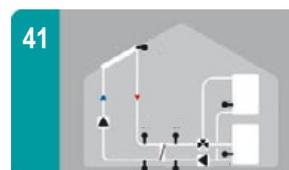
38 Solar + 3 storage tanks and 2 valves



39 Solar with storage and heat exchanger for large systems



40 Solar with storage, heat exchanger and valve for large systems



41 Solar with 2 storages, heat exchanger and valve for large systems

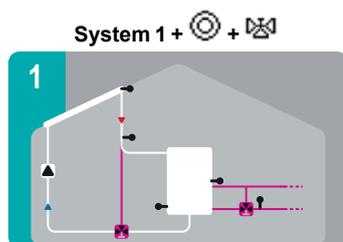
The preset hydraulic schemes of **ModvSol M** and **ModvSol L** controllers can be increased in a flexible and easy way, by means of free contacts. If the controller has several free outputs in comparison with the necessary schemes, the remaining free relays can be used to activate different additional functions. User is guided step by step to set the correspondent parameters. Complementary functions can be managed by the same relay. The sensors too can be used for several complementary functions. In this way user can set up its own system in an easy and fast way.

Functions that can be managed by free relays:

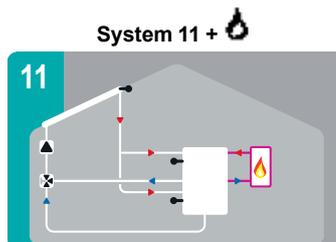
- Differential temp.
- Heating system
- Heat transfer
- Error message
- Additional heating

- Always on
- Cooling system
- Solid fuel boiler
- Parallel working with R1 or R2
- Pressure control

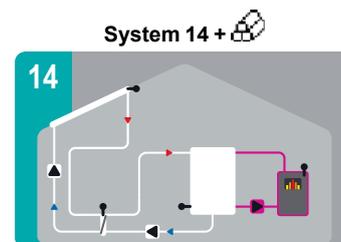
- Anti legionnaire's disease
- Return temp. increase
- Booster pump
- Solar by-pass
- Collector field cooling



1 Solar + storage tank with additional Solar By-pass function and return temperature increase.



11 Solar + 2 levels storage tank and diverting valve with additional thermostat function.



14 Solar + heat exchanger with additional solid fuel boiler function.



Art. 520 Solar

F/F ball valve in hot forged brass for solar installations. Yellow finish.
Ends threaded to ISO 228 (DIN 259 BSP 2779).
Provided with steel handle yellow PVC covered.

PN 10. Constant temperature 120°C; (short time temperature 160°C for 20 sec).
Available sizes: 3/4", 1" e 1 1/4".

Code 3/4": 03520SOL
Code 1": 04520SOL
Code 1 1/4": 05520SOL

The valves 620 series, specially made to be used in the solar installations, have inside the renowned "Solar" ball, distinguishing component of the MODVSOL pump groups. The ball is appreciated into the market thanks to its careful design that allows a perfect seal and low headlosses. The special outline of the lock allows to stop the NRV in the open position for draining or service operations.



Art. 620 ISO - Valve with "Solar" ball

F/F ball valve in hot forged brass for solar installations. Yellow finish.
Ends threaded to ISO 228 (DIN 259 BSP 2779).
Provided with insulation T-handle with flow direction indication.

The non return valve can be excluded by rotating the handle by 45°.

PN 10. Constant temperature 120°C; (short time temperature 160°C for 20 sec).
Available sizes: 3/4" and 1".

Code 3/4": 03620ISO
Code 1": 04620ISO



Art. 620 TER - Valve with "Solar" ball and thermometer

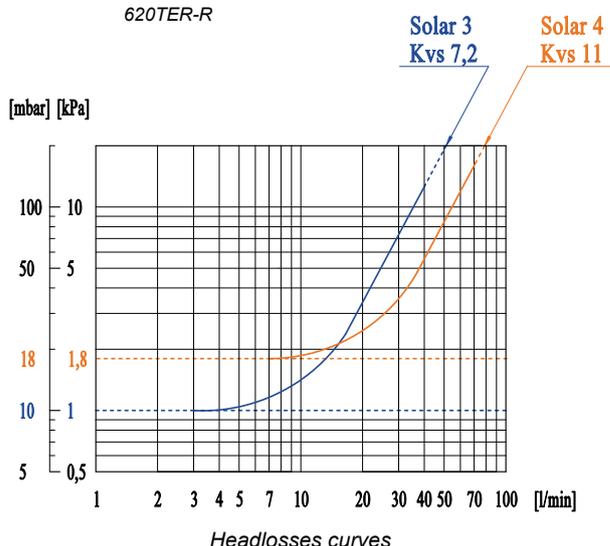
F/F ball valve in hot forged brass for solar installations. Yellow finish.
Ends threaded to ISO 228 (DIN 259 BSP 2779).

Supplied with in-handle thermometer, coded red (range 0°C-120°C, TER-R) and coded blue (range 0°C-120°C, TER-B) with flow direction indication.

The non return valve can be excluded by rotating the handle by 45°.

PN 10. Constant temperature 120°C; (short time temperature 160°C for 20 sec).
Available sizes: 3/4" and 1".

Code 3/4": 03620TER-(R/B)
Code 1": 04620TER-(R/B)



Solar 3 ball

3/4" - DN20
Kvs: 7,2

Minimum NRV
opening pressure:
10 mbar

Solar 4 ball

1" - DN25
Kvs: 11

Minimum NRV
opening pressure:
18 mbar



Art. 68RS TER-R - Valve with "Solar" ball and thermometer

Ball valve in hot forged brass for solar installations. Yellow finish.
 Outlet: 22 mm compression.
 Ends threaded to ISO 228 (DIN 259 BSP 2779).
 Supplied with in-handle thermometer, coded red (range 0°C-120°C) with flow direction indication.
 The non return valve can be excluded by rotating the handle by 45°.

PN 10. Constant temperature 120°C; (short time temperature 160°C for 20 sec).
Available connections: 22 mm compression, 3/4" and 1".

Code 22 mm: 0368RS22/G/TER-R
 Code 3/4": 0368RS03/G/TER-R
 Code 1": 0368RS04/G/TER-R



Art. 65R TER-R - Valve with "Solar" ball and thermometer

Flanged ball valve in hot forged brass for solar installations. Yellow finish.
 1" coupling flange for 1 1/2" nut (1 1/2" nut and gasket not included).
 Ends threaded to ISO 228 (DIN 259 BSP 2779).
 Supplied with in-handle thermometer, coded red (range 0°C-120°C) with flow direction indication.
 The non return valve can be excluded by rotating the handle by 45°.

PN 10. Constant temperature 120°C; (short time temperature 160°C for 20 sec).
Available connections: 22 mm compression, 3/4" and 1".

Code 22 mm: 0365R22/G/TER-R
 Code 3/4": 0365R03/G/TER-R
 Code 1": 0365R04/G/TER-R



Art. 68M TER-B - Valve with "Solar" ball and thermometer

3-way flanged ball valve in hot forged brass for solar installations. Yellow finish.
 1" coupling flange for 1 1/2" nut (1" circulating pump). (1 1/2" nut and gasket not included).
 Side connection for ModvSol safety group.
 Ends threaded to ISO 228 (DIN 259 BSP 2779).
 Supplied with in-handle thermometer, coded blue (range 0°C-120°C) with flow direction indication.
 The non return valve can be excluded by rotating the handle by 45°.

PN 10. Constant temperature 120°C; (short time temperature 160°C for 20 sec).
Available connections: 22 mm compression, 3/4" and 1".

Code 22 mm: 0368M22/G/TER-B
 Code 3/4": 0368M18/G/TER-B
 Code 1": 0368M04/G/TER-B



Art. 641 - Flow regulator / Flowmeter

Flow regulator and flowmeter with two valves to fill and drain the installation specifically sized for solar systems. Direct reading of the flowrate through the graduated scale. Ball valve for flow adjustment. Connection end to the circulating pump with flange for the 1 1/2" nut (1" circulating pump). 3/4" side connection for filling and draining hose unions.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections:

✓ DN15: 22 mm compression, 3/4" Male or 1" Male.

Code 22 mm: MP45/xxxx430/A
 Code 3/4" Male: MP03M/xxxx430/A
 Code 1" Male: MP04M/xxxx430/A



Flow rate ranges

1-06 = 1-6 l/min 2-12 = 2-12 l/min
 8-28 = 8-28 l/min 8-38 = 8-38 l/min

"xxxx" means the flow rate range.
 Fi.: Art 641, 22 mm range 2-12: MP45/2-12430/A



Art. 690 - Solar security valve

Membrane security valve for solar collectors installations, for power up to 50 kW. CE marking according to Directive 97/23/CE. TÜV approved. Made to work at high temperature with glycolic fluid (max. 50%). Setting pressure: 6 bar. Working temperature: from -20°C up to +160°C.

Available sizes: 1/2" x 3/4".



Individual packing code: 02690-03
 Multiple packing code: 02690-03OEM



Art. 525 ISO - Filling/draining valve

Ball valve in hot forged brass to fill and drain thermal solar systems. One-piece-body provided with two side 3/4" hose union valves with plug. DN20, flow rate up to 70 l/min. End thread 1" Female to ISO 228 (DIN 259 BSP 2779).
Supplied with insulating T handle.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).
External connections: 1" Female x 1" Female, 15 mm, 18 mm, 22 mm and 28 mm for copper pipe with adapters.
Kvs Value: 17,0.

Code 15 mm: 15525ISO
Code 18 mm: 18525ISO
Code 22 mm: 22525ISO
Code 28 mm: 28525ISO
Code 1": 04525ISO



Adapters Art. 654 for capillary welding

The kit consists of 3/4" nut, welding connection for copper pipe 15 mm and fiber plain gasket.

Code for pipe 15 mm: 03654SET

The kit consists of 1" nut, welding connection for copper pipe 22 mm and fiber plain gasket.

Code for pipe 22 mm: 04654SET



Reduction adapter kit for copper pipe

The kit consists of 4 nuts and 4 adapter connections for the reduction from 22 mm to 18 mm or 15 mm compression.

Code 15 mm: AJCA43SET
Code 18 mm: AJCA44SET



Adapter kit from 3/4" to 1"

The kit consists of 4 adapters 3/4" F x 1" M and 4 fiber gaskets.
Yellow brass finish.

Code: CYNV04SET



Set nut 1"1/2 and EPDM gasket

Special gasket specific for solar installations.
Yellow brass finish.

Code: AYHT26SET



Air vent

Air vent made of brass to be used in forced circulation solar thermal installations. The air separator divides the air into the thermo-conveyer fluid and then it can be purged by the means of an automatic vent valve to be connected to the 3/8" female threaded end. It is suitable for the wall fastening by the means of a threaded plug M8.

PN 6. Constant temperature 150°C.
Available connections: 22 mm compression and 3/4" Male.

Code 22 mm: 2277851
Code 3/4" Male: 0377851



Air vent valve

Automatic air vent valve provided with isolating valve suitable for forced circulation solar thermal installations.

Body made of brass. The plastic components are high temperature resistant (PPSU). 3/8" male connection provided with EPDM o-ring gasket.

The automatic air vent valve, once operations to fill the system have been completed, must be isolated from the circuit, by closing the ball valve.

PN 6. Constant temperature 150°C.
Connection: 3/8" Male.

Code: 0177996



Connecting set of the expansion vessel

Connection set of the expansion vessel to the system. thanks to the two check valves it is possible to disconnect without emptying the installation and the expansion vessel.

Code: **03648SET**



Flexible kit for the expansion vessel

DN15 AISI 304 stainless steel flexible hose (0,3 mm tickness) to connect the expansion vessel to the security unit.

Ends threaded 3/4" nut x 3/4" nut.

The kit includes: flexible pipe and fiber sealing joint.

Available lengths: **50 cm and 100 cm.**

Code Flexible kit 3/4" x 3/4" - 50 cm: **FLEX0350SETB**

Code Flexible kit 3/4" x 3/4" - 100 cm: **FLEX03100SETB**



Fixing bracket for the expansion vessel with connector

"L" bracket to fix the expansion vessel to the wall.

The 3/4"M x 3/4"F connector is provided with a double check valve made of brass to replace the expansion vessel without draining the installation.

The wall plugs and the packing are also included.

Code: **DAOASOLVE**



CE

Kit ModvSol pressure expansion vessel with fixing bracket

Pressure expansion vessel suitable for solar systems, in compliance with the European Directive 97/23/CE about pressure devices (PED). Provided with special antiscaling SBR rubber bladder, which separates the "air" side from the "liquid" side.

Formed in inox steel, with anticorrosive treatment of the internal surface of the "liquid" side. The set is composed by:

- ✓ ModvSol pressure expansion vessel, capacity 8 L, 18 L o 24 L, with water inlet connection situated into the upper part and turned towards the height;
- ✓ "L" bracket to fix the expansion vessel to the wall;
- ✓ 3/4"M x 3/4"F connector provided with a double check valve made of brass to replace the expansion vessel without draining the installation;
- ✓ Wall plugs and packing.

Maximum pressure 8 bar, 3 bar precharged.

Working temperature: from -10°C up to 110°C.

Maximum constant temperature for the membrane: 100°C.

Code Capacity 8 L: **SETVEMODVSOL8**

Code Capacity 18 L: **SETVEMODVSOL18**

Code Capacity 24 L: **SETVEMODVSOL24**



Controller holder

Controller holder for S2 Solar 30 pump units, in PPE, available to hold several models of controller:

- ✓ Resol, Seltron, Sorel, Steca (suffix **SO** in the code);
- ✓ Prozeda, Seitron (suffix **PR** in the code).

Code: **ISOL-EG651(SO/PR)**



CE

Art. 1090 - 3-way zone valve

Motorized 3-way zone valve with spring return for closed hydraulic systems. Suitable for: heating, conditioning and solar thermal (glycol max 50%).

- ✓ Power supply: 230 VAC, 50 Hz. Absorbed power 6 W;
- ✓ Protection: IP22;
- ✓ Nominal pressure: PN 10;
- ✓ Room temperature: Max. 60°C;
- ✓ Fluid temperature: 5÷120°C; short time: 150°C;
- ✓ Nominal opening time: 20 s. Springclosing: 6 s.

Available external connections: 1" Male flat sealing.

Code: **041090**



Kvs: 12,6

Differential pressure: max. 0,63 bar



Without power:
AB → B



1" copper pipe kit for double return

In the case of installations where high flows are required, the two relays inside the controller MODVSOL L allow the contemporary management of two circulating pumps in parallel on the return way. In this case, by the means of the kit specially designed, it is possible to split the circuit, combining two pumping stations. In this way we get better performances in comparison with those obtainable by a single return system that requires anyway a high power circulating pump.

Thanks to the built-in flowmeters with flow regulation it is possible to balance the flow of the two return ways; this operation is highly recommended to get an optimal performance of the installation.

Flow on single unit	Circulating pump	Total maximum flow
8-28 l/min	Wilo Yonos Para ST 25/7.0	50 l/min (*)
8-38 l/min	Wilo Yonos Para ST 25/7.5	70 l/min (*)

(*) Please check the power of the installation. If it is more than 50 kW replace the security unit with a suitable model (f.i. 100 kW).

The kit for 1" Male units, connecting two ways of solar installation (we recommend the coupling of a "single way" with one a "two way" solar station), allows to get the below indicated hydraulic schemes in a safe and quick way.

The kit consists of:

- ✓ Copper pipe with 1" swivel nuts and 1" male connection;
- ✓ Sealing washer and cover to remove the security unit of the two way solar station;
- ✓ EPDM gaskets suitable for solar systems.

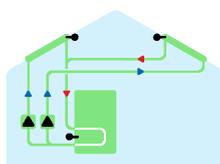
In the application "Solar with duple return" 2 kits are needed.

Centre distance 185 mm.

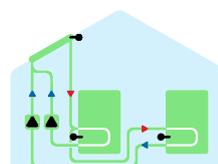
Code 1": **CFHG04DRM**

The pump units with 3/4" ends must be provided with the adapter kit code **CYNV04SET**.

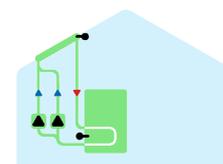
The double return kit is not suitable for pump units with 22 mm connections.



solar east/west



solar + storage tank loading
circulating pump

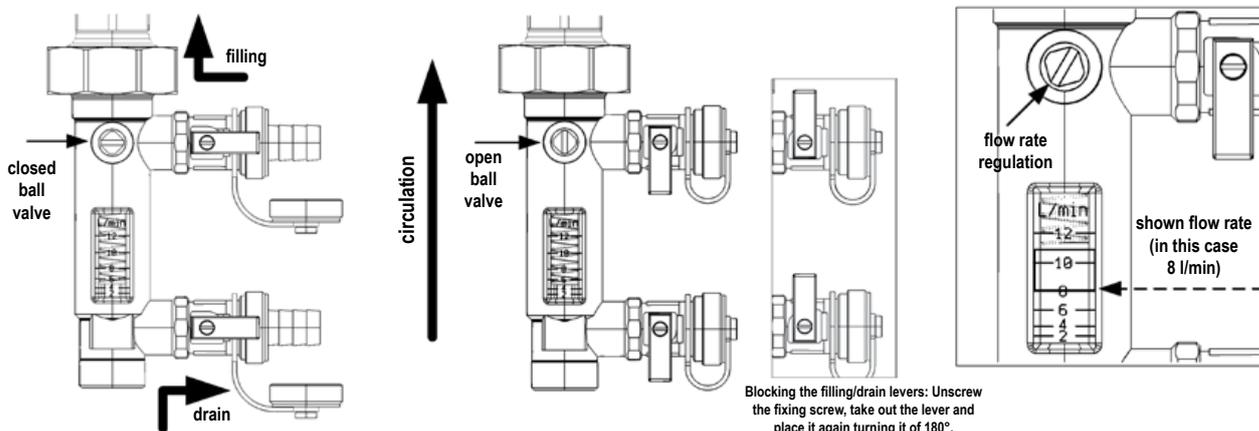


Solar with duple return

Main components and working

Flowmeter: it allows to fit the flow to the requirements of the installation, by a 3-way ball valve. If the valve is in the closed position the flow is cut off, and it is possible to use the side tap to fill the plant. There is also another side tap, to drain the plant.

The proximity of the two taps helps these operations minimizing the distance between the filling and the draining. The flow rate is measured and shown by the special sliding cursor: the measurement is immediate thanks to the proximity to the regulation valve.



(1) - Filling the installation: Remove the plugs from the side valves and connect the hose unions. Close the ball valve and open the side filling and draining valves.

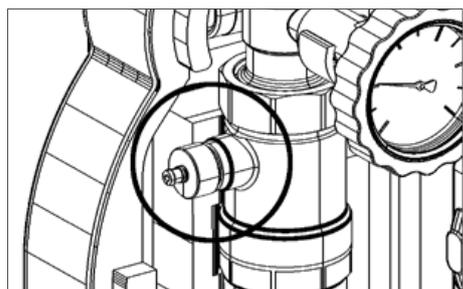
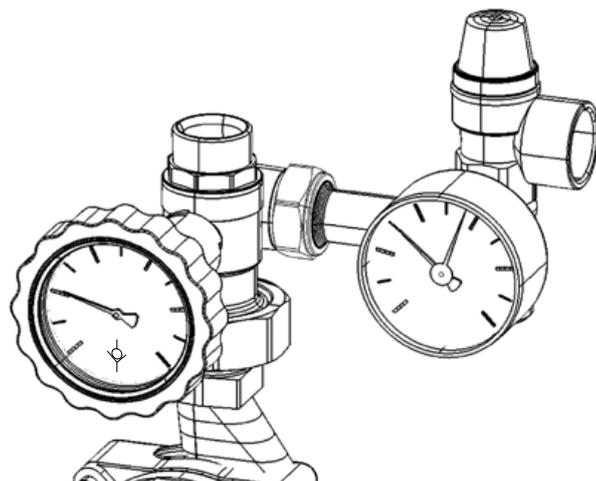
(2) - Starting the installation working: Open the ball valve and close the side filling and draining valves. Remove the hose unions and screw the plugs. To avoid any casual opening of the side valves, it is better to stop the levers in the close position, as shown here aside.

(3) - Regulate the flow rate using the regulation rod until the right flow rate is shown.

N.B. The flow rate is shown taking as reference the lower edge of the sliding cursor (see picture).

“Solar” checkball: It is included into the ball valve. It ensures the seal and low head losses. To exclude the checkball valve, for instance in case of emptying, rotate the handle by 45° clockwise.

Security unit: The security unit, CE and TÜV approved, protects the installation from the overpressures. It is calibrated at 6 bar, over this pressure the security unit starts. It is also provided with a manometer and with a connection to the expansion vessel by a 3/4” flexible kit.



The incessant search for the quality pushed BRV to make a test of the air vent a report of which is available on request.



TAKE CARE!

To avoid any leakage of the fluid, taking into consideration the very high working temperature, we recommend to fasten a pipe to the end of the drain.

A careful planning allowed to reduce the headlosses of the air vent, getting a Kvs value 14.

The planning of a solar thermal installation

The size of a solar installation is fundamentally different from the size of a traditional heating installation. The sun does not supply the whole necessary energy: only a part of it.

A proper energy storage will make up for the lacking of irradiation during the short periods, while during the long periods it will be necessary to turn to an auxiliary heat source.

It is important to know which part of the thermic requirement the solar installation is able to satisfy. The part of the usable energy collected depends on several parameters, first of all on the efficiency of the solar collectors.

This efficiency is related to the features of the collector (optical properties, insulation), to the temperature of utilization, to the inclination and the orientation of the collector, to the incoming solar radiation, to the outside temperature, to the speed of the wind. The efficiency of the solar collector is determined as the ratio between the usable energy collected Fr and the solar radiation cutting on the plane I_{β} .

The usable energy can be calculated as the difference between the absorbed and the lost energy, taking into consideration the product transmissibility-absorption $\tau\alpha$ and the coefficient of thermic leakage Uc .

In conclusion the instantaneous efficiency of a solar collector can be couched in that way:

$$\eta = Fr (\tau\alpha) - \frac{Fr (T_i - T_a)}{I_{\beta}}$$

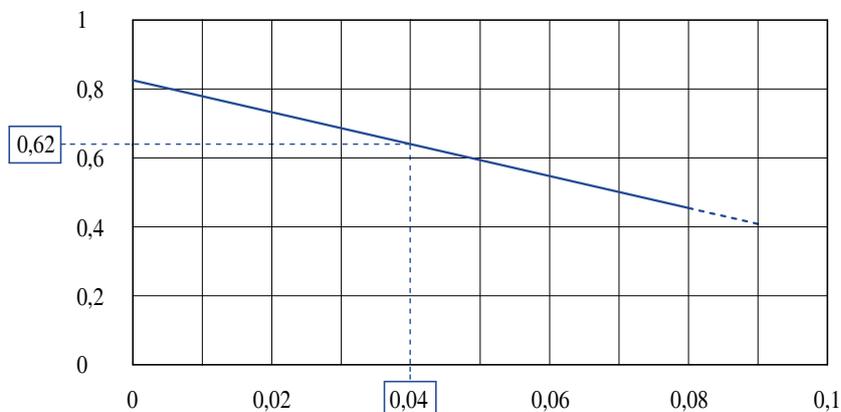
where T_i is the inlet fluid temperature and T_a is the ambient temperature.

All the collectors are tested under working conditions and the testing points are transferred on the diagram:

$$\left(\frac{T_i - T_a}{I_{\beta}} ; \eta \right)$$

By connecting the points we obtain the instantaneous efficiency straight line (Draw. 1)

Draw. 1 - Efficiency straight line of the distributor



$$\frac{T_i - T_a}{I_{\beta}} \left[\frac{m^2 K}{W} \right]$$

The incoming solar radiation on the collector directed towards the equator and inclined of a β angle can be calculated as 800 W/m^2 (* see notes). From the diagram it is clear that, T_a being equal (f.i. 10°C) and T_i being low (f.i. 26°C), the efficiency is:

$$\frac{26 - 10}{800} = 0,02 \longrightarrow \eta = 0,75$$

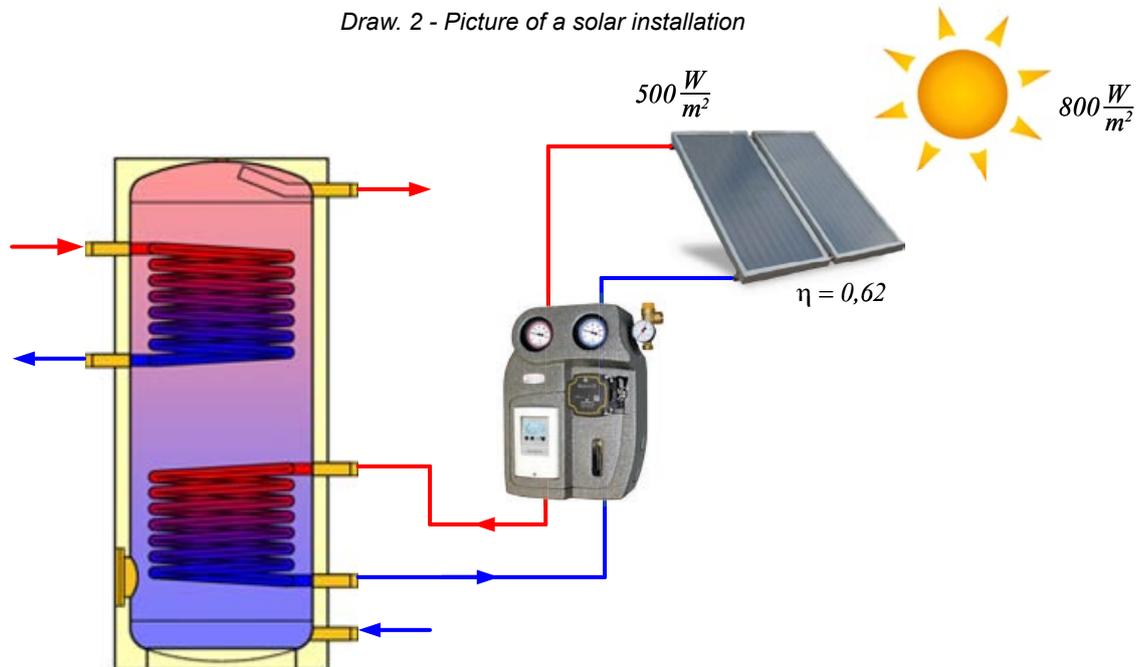
otherwise, being the T_i high (f.i. 80°C) $\eta \cong 0,4$.

(*) **Note:** The density of the average power of the solar radiation outside the earth's atmosphere is about 1367 W/m^2 . On the earth's surface the maximum power is hardly ever more than 1100 W/m^2 , owing to the filter effect of the atmospheric components (gas, vapour, atmospheric dust) that absorb and disperse a part of the energy.

More realistically, in the sizings, it is usual to assume from an average limit radiation of 800 W/m^2 up to a maximum limit radiation of 1000 W/m^2 , taking into consideration several pejorative factors that can reduce the radiation absorbed by the solar collector.

Obviously there are two working points with very different efficiencies. For this reason it is necessary to take into consideration an intermediate working point (by convention $0,04 \rightarrow \eta \cong 0,62$ as shown in *draw. 1*). According to these remarks the energy, that is really tapped from the fluid and brought to the installation, is only the 62% (*draw. 2*).

Draw. 2 - Picture of a solar installation



Therefore the solar collector must provide a thermic capacity qa of above 500 W every m^2 of tapping surface. It is advisable that, at the outlet of the collector the temperature T_u is not 6-9 K more than the inlet temperature. If we consider that the specific heat of the fluid is equal to $c=4000 \text{ J/kg K}$ the flow rate of the collector is:

$$qm = \frac{qa \times 60}{c \times \Delta t} = \frac{400 \times 60}{4000 \times 9} \cong 0,7 \text{ l/min} \cdot m^2$$

Our solar pump units are provided with six different models of flowmeter: for small size installations 1÷6 l/min and 2÷12 l/min (0,36 m^3/h and 0,72 m^3/h); for medium size installations 8÷28 l/min and 8÷38 l/min (1,7 m^3/h and 2,3 m^3/h); for high flow installations 5÷42 l/min and 20÷70 l/min (2,5 m^3/h and 4,2 m^3/h). To make an example, in the first case it is possible to install up to 8,5 m^2 of solar collectors, in the second case up to 17 m^2 , etc.

Planning a solar installation it is very important to calculate the headlosses caused by the friction resistance of the fluid. It is necessary to know the headlosses of all the components of the installation. More than the solar pumping station we must take into consideration the heat exchanger inside the storage tank, the solar collectors and the pipe fittings. The headlosses are connected to the flow rate.

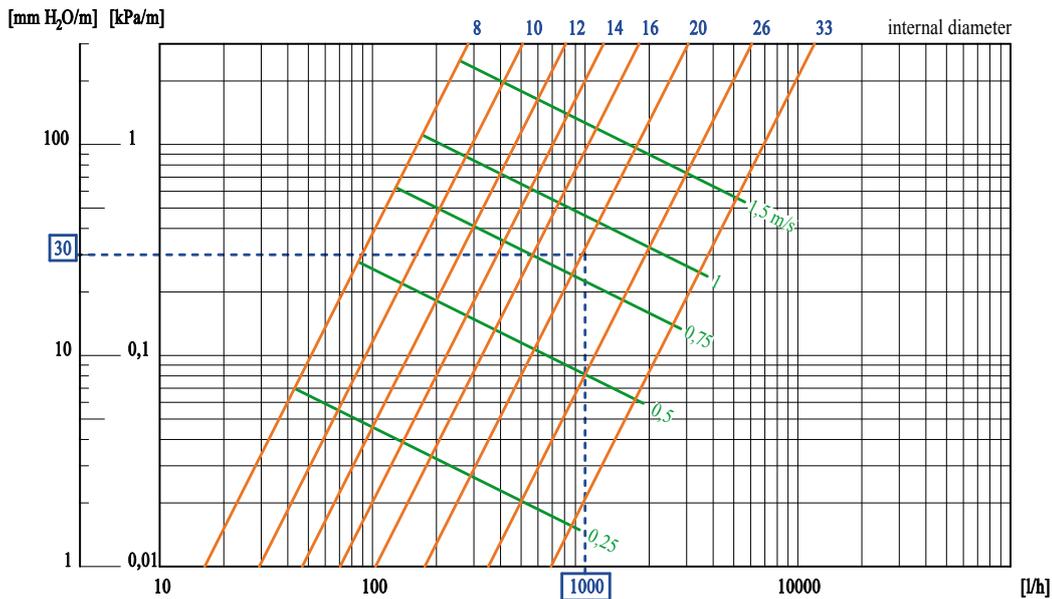
If for example we consider an installation of 22,5 m^2 . Therefore qt is: $qt = 16 \text{ l/min} \cong 1000 \text{ kg/h}$. Considering this datum the headlosses will be the following.

As concerns the headlosses of the heat exchanger, the manufacturer should give this value. In the absence of definite data, taking into consideration a coil of proper size (section and length) we can consider the following $\Delta ps = 200 \text{ mm H}_2\text{O}$.

The same for the solar collectors: even for them we consider a headloss of about 75 mm/m^2 . Therefore: $\Delta pc = 75 \times 22,5 = 1600 \text{ mm H}_2\text{O}$.

The headlosses due to the pipe fittings, if for instance there is a copper pipe 22×1 on two lengths of 20 m each, are easily calculable by using the diagram of the Draw. 3, taking into consideration an increase of 25%, due to localized headlosses (bends and all kinds of pipe fittings).

Draw. 3 - Headlosses of the copper pipes



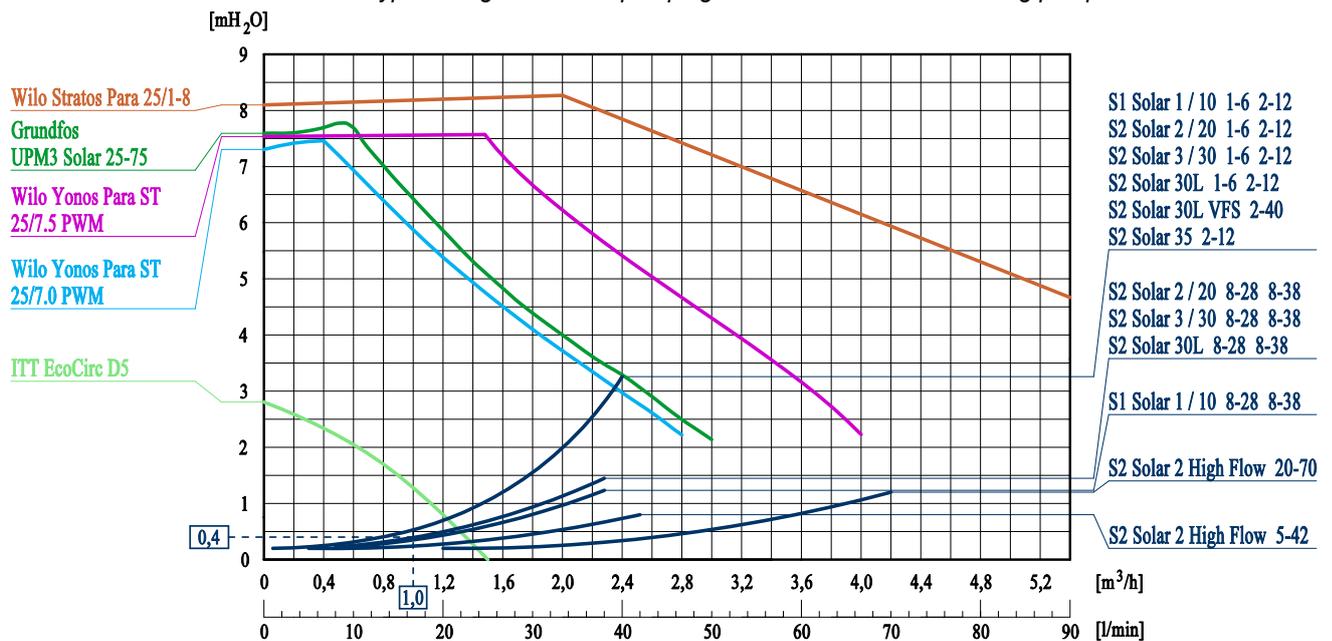
$$\Delta p_{pt} = (40 \times 30) + 25\% = 1500 \text{ mm H}_2\text{O}$$

The total headloss up to here calculated brings to the following value:

$$\Delta p = \Delta p_s + \Delta p_{pc} + \Delta p_{pt} = 200 + 1600 + 1500 = 3300 \text{ mm H}_2\text{O}$$

At this point it is necessary to consider the presence of the solar station, to define the appropriate model of circulating pump which has to be used. Taking into consideration a *qt* always 1000 l/h and using, for example, a S2 Solar 3 8-28 l/min (480-1680 l/h) solar station, its total headloss is $\cong 400 \text{ mm H}_2\text{O} \cong 0,4 \text{ m H}_2\text{O}$ (Draw. 4). Altogether the headloss is $\cong 3700 \text{ mm H}_2\text{O} \cong 3,7 \text{ m H}_2\text{O}$.

Draw. 4 - Typical diagrams of the pumping stations and of the circulating pumps



The model of circulating pump to be used is determined by the typical curve that is getting the closest to the calculated working point by excess; therefore the choice is for a circulating pump with a maximum nominal lifting of 6 m. So there is a margin to adjust its performance to the features of the installation. Operating the speed switch of the circulating pump (f.i. from III to II) or the flow regulator, it is possible to take the working back to the flow value previously determined: $1000 \text{ kg/h} \cong 16 \text{ l/min}$.

The reliability of a solar thermal installation depends on the quality and on the life of the components and of the used materials. Of course you must be sure that all the materials conform with the plan and with the prescriptions of the manufacturer. Of course you must be sure that all the materials conform with the plan and with the prescriptions of the manufacturer. It is also better to verify the accuracy of the course of the pipes as concerns the balance of the installation; on this purpose a test of the compensation of the circuit must be done.

Then it is necessary to pay attention to the regulation of the plant, by checking that the collector sensor is correctly connected, the storage tank sensor is sufficiently dipped, the controller has been installed following the instructions. The working tests usually foresee a circulation test of the fluid and a wet seal test. The late regulations concerning the energy saving and the obligatoriness of the use of the alternative energy establish the check of the installation even in the case of a solar plant.

The thermic check of a solar installation is made to see the efficiency and the quantity of energy transferable to the users. The data to be taken into consideration for this check are the following:

- ✓ *The inlet and the outlet fluid temperature of the solar collectors;*
- ✓ *The inlet and the outlet fluid temperature of the heat exchanger, filling side (domestic and heating);*
- ✓ *The fluid flow in the solar circuit and in the filling circuit.*

The average efficiency of the solar installation η_m can be calculated as follows:

$$\eta_m = \frac{Qu}{H \times Ac}$$

where $Qu = qm \times c \times \Delta t$ is the power expressed in [kW]; H is the solar energy incident on the solar collector during the determined time [$\text{kJ/m}^2 \cdot \text{period}$]; Ac is the area of the tapping surface

Some remarks on the “High Flow” and “Low Flow” systems

According to the working conditions the solar installations can be fundamentally classified in two kinds: *high flow* and *low flow*; the element that decides the belongings to one or another category is the specific flow that is circulating into the solar collectors. In the first case it is about $0,5 \div 0,85 \text{ l}/(\text{min} \times \text{m}^2)$, while in the second case it is about $0,25 \div 0,35 \text{ l}/(\text{min} \times \text{m}^2)$.

To do a general sizing like the one of the previous example, it is necessary to take into consideration that, starting from the available tapping surface (therefore from the real power supplied by the collectors) the choice of one or another technology brings to get a big ΔT difference in the exchanger: the *high flow* installations are working with a maximum 10 K meanwhile in the *low flow* installations the ΔT is up to 25 K.

Starting from the above considerations and taking as exemplifying values of specific flow respectively $0,7 \text{ l}/(\text{min} \times \text{m}^2)$ and $0,3 \text{ l}/(\text{min} \times \text{m}^2)$ for the two system technologies, the table at side shows the maximum transferable powers according to the different “sizes” of the installation.

The sizing described in the previous pages is pertinent to a *high flow* installation. If, on the contrary, it had opted for a *low flow* system, it would have been necessary to reconsider also all the section of the calculation concerning the estimation of the headlosses and the consequent selection of the circulating pump.

The *high flow* systems are mainly used, meanwhile *low flow* technology, thanks to the high ΔT peculiar of this system, it is possible to get good results in case they want to push significantly the stratification of the water tank.

Maximum transferable heating power*		
Flow of the solar installation	Low Flow system $Q = 0,3 \text{ l}/(\text{min} \times \text{m}^2)$ $\Delta T = 25 \text{ K}$	High Flow system $Q = 0,7 \text{ l}/(\text{min} \times \text{m}^2)$ $\Delta T = 10 \text{ K}$
1-6 l/min	20 kW	8,5 kW
2-12 l/min	40 kW	17 kW
8-28 l/min	93 kW	40 kW
8-38 l/min	127 kW	54 kW
5-42 l/min	140 kW	60 kW
20-70 l/min	233 kW	99 kW

* **ATTENTION:** during the sizing, please check that the heat exchanger is compatible with the requested power and/or subdivide the storage tanks.

Mixing valve: 30÷65°C



In compliance to the Italian Ministerial Decree N° 174/2004



PED 97/23/EC, art. 3.3

Art. 776

SOLAR ANTI-SCALD THERMOSTATIC MIXING VALVE

Code 3/4": 03776-1.5-S
Code 1": 04776-1.7-S
Code 1 1/2": 04776-2.4-S

Anti-scald thermostatic mixing valve with 1" Male connection for solar applications. DZR brass body. Adjustable user temperature from 30°C up to 65°C by means of a knob.

- ✓ Max static pressure 10 bar (PN 10); dynamic 5 bar.
- ✓ Max ratio between the pressures 2:1.
- ✓ Max inlet temperature: constant 100°C; (short time: 120°C for 20 s).
- ✓ Setting range: 30÷65°C. Accuracy ± 2°C.

External connections: 3/4" or 1" Male flat seal.

The security anti-scald device automatically stops the hot water flow in case of failure of the cold water line.



Available Kvs:

- 1,5 (3/4" cod. 03776-1.5-S) = Fino a 31 l/min (1,5 bar)
- 1,7 (1" cod. 04776-1.7-S) = Fino a 35 l/min (1,5 bar)
- 2,4 (1 1/2" cod. 04776-2.4-S) = Fino a 49 l/min (1,5 bar)



Available temperatures:

Adjustable temperature from 30°C to 65°C



Layout:
Symmetric



In compliance to the Italian Ministerial Decree N° 174/2004



PED 97/23/EC, art. 3.3

Available with male union connections: Art. 779

Anti-scald thermostatic mixing valve for solar applications with 3/4" Male union connections. High temperature check valves and filters, built into fittings, at both inlets of hot and cold water. DZR brass body and connections.

Same features as art. 776.



Available Kvs:

- 1,5 (1/2" code 02779-1.5-S) = Up to 31 l/min (1,5 bar)
- 1,7 (3/4" code 03779-1.7-S) = Up to 35 l/min (1,5 bar)
- 2,4 (3/4" code 03779-2.4-S) = Up to 49 l/min (1,5 bar)



Layout:
Symmetric

Code 1/2": 02779-1.5-S
Code 3/4": 03779-1.7-S
Code 3/4": 03779-2.4-S



In compliance to the Italian Ministerial Decree N° 174/2004



PED 97/23/EC, art. 3.3

Art. 776C - Solar anti-scald thermostatic mixing valve for OEM

Anti-scald thermostatic mixing valve with male connection for solar installations. DZR brass body. Adjustable user temperature from 30°C up to 65°C by means of a cartridge.

- ✓ Max static pressure 10 bar (PN 10); dynamic 5 bar.
- ✓ Max ratio between the pressures 2:1.
- ✓ Max inlet temperature: constant 100°C; (short time: 120°C for 20 s).
- ✓ Setting range: 30÷65°C. Accuracy ± 2°C.
- ✓ Supplied calibrated at the temperature of 48°C and stopped by special nut.
- ✓ Protection cap.
- ✓ Supplied on blister pack (multiple packaging).

External connections: 3/4" or 1" Male flat seal.

Code 3/4": 03776C-OEM-1.5-S
Code 1": 04776C-OEM-1.7-S

The security anti-scald device automatically stops the hot water flow in case of failure of the cold water line.



Available Kvs:

- 1,5 (3/4" code 03776C-OEM-1.5-S) = Up to 31 l/min (1,5 bar)
- 1,7 (1" code 04776C-OEM-1.7-S) = Up to 35 l/min (1,5 bar)



Layout:
Symmetric



In compliance to the Italian Ministerial Decree N° 174/2004

PED 97/23/EC, art. 3.3



Art. 786

SOLAR THERMOSTATIC DIVERTING VALVE

Code 1": 04786-1.7-S
Code 1": 04786-2.4-S

Thermostatic diverting valve with 1" Male connection for solar applications with pre-setting temperature at 48°C. DZR brass body.

The valve proportionally and automatically diverts water between outlets 1 and 2 marked on the body, depending upon inlet temperature: temperatures less than 48°C are diverted to outlet 1, higher temperatures to outlet 2.

- ✓ Max static pressure 10 bar (PN 10); dynamic 5 bar.
- ✓ Max ratio between the pressures 2:1.
- ✓ Max inlet temperature: constant 100°C (short time: 120°C for 20 s).
- ✓ Presetting shop temperature: 48°C ± 2°C (not adjustable).

External connections: 1" Male flat seal.



Available Kvs:

1,7 (1" cod. 04786-1.7-S) = Up to 35 l/min (1,5 bar)
2,4 (1" cod. 04786-2.4-S) = Up to 49 l/min (1,5 bar)



Diverting temperature:

Temperature 48°C (not adjustable)



Layout: Symmetric



In compliance to the Italian Ministerial Decree N° 174/2004

PED 97/23/EC, art. 3.3



Available with 3/4" Male union connections: Art. 789

Thermostatic diverting valve for solar applications with 3/4" Male union connections. High temperature check valve and filter, built into hot water inlet fitting coming from solar line. DZR brass body and connections.

Same features as art. 786.

Code 3/4": 03789-1.7-S
Code 3/4": 03789-2.4-S



Available Kvs:

1,7 (3/4" cod. 03789-1.7-S) = Up to 35 l/min (1,5 bar)
2,4 (3/4" cod. 03789-2.4-S) = Up to 49 l/min (1,5 bar)



Layout: Symmetric



780R Series
HIGH PERFORMANCE ADJUSTABLE THERMOSTATIC DIVERTING VALVES
Thermostatic diverting valves with adjustable diverting temperature from 38°C up to 54°C by means of a graduated knob. Kvs 3.5.
Available external connections: 3/4" Male pipe unions and 1" male flat seal.
See the section "Thermostatic Diverting Valves"



Layout: Asymmetric

Check valve union connection kit

Kit composed by nut, high temperature resistant gasket and solar male union.

- ✓ Built-in check valve 20 mbar special for solar installations.
- ✓ Built-in filter.
- ✓ Max temperature: 120°C.

Available dimensions: 1/2" x 3/4" Nut or 3/4" x 1" Nut.

Code 1/2" x 3/4" Nut: DBOI02/SET
Code 3/4" x 1" Nut: DBOI03/SET



Take care: as the check valve is inside the union, it can be fitted only to the inlet connections indicated below:

- ✓ **Mixing valves Art. 776 and 776C:** hot water inlet (H) and cold water inlet (C).
- ✓ **Diverting valves Art. 786:** water inlet, marked with an arrow.

Union connection kit

Kit composed by nut, high temperature resistant gasket and solar male union

Available dimensions: 1/2" x 3/4" Nut or 3/4" x 1" Nut.

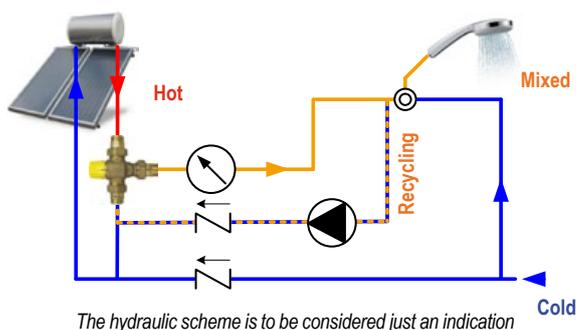
Code 1/2" x 3/4" Nut: DBOI02/SET
Code 3/4" x 1" Nut: DBOI03/SET



Technical part

Solar thermostatic mixing valves

The thermostatic mixing valve is used in thermal solar systems for delivering hot domestic water and it controls temperature to preset value. It allows to keep constant mixed water temperature for the end user, regardless of inlet conditions both of hot and cold water.



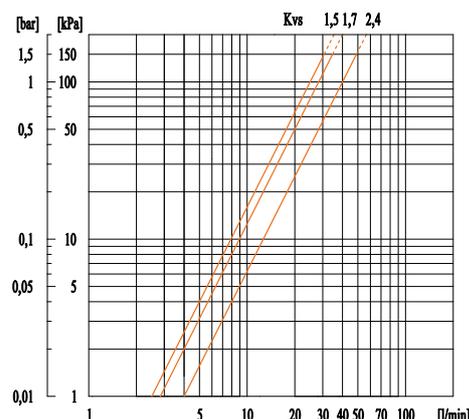
The hydraulic scheme is to be considered just an indication

Knob: reference temperatures

MIN	1	2	3	4	5	MAX
~25°C	30°C	40°C	49°C	57°C	65°C	~70°C

Not applicable for art. 776C

$T_H = 65\text{ °C}$
 $T_C = 15\text{ °C}$
 $P = 3\text{ bar}$

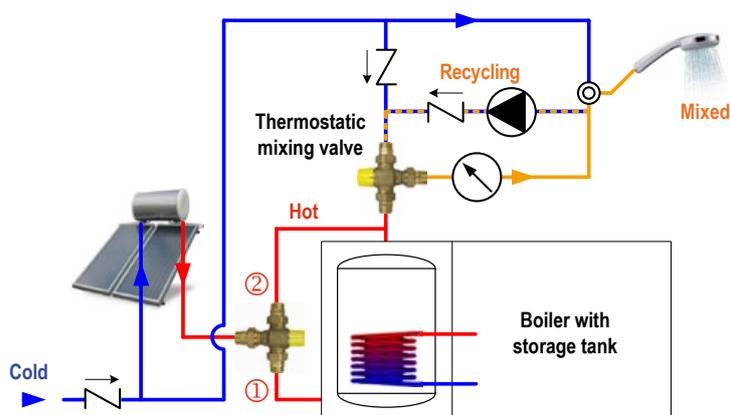


Max recommended flow rate for a constant flow within $\pm 2\text{ °C}$.

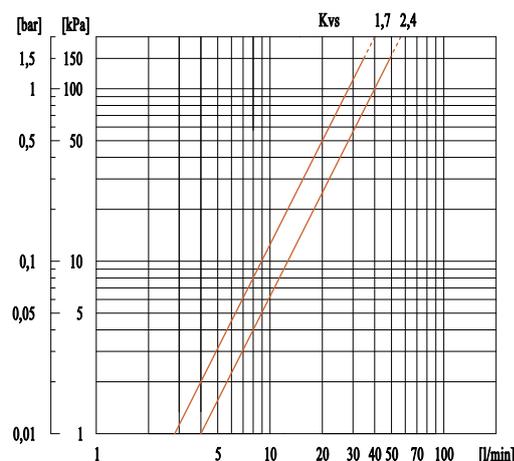
Kvs	Max l/min
1,5	31
1,7	35
2,4	49

Solar thermostatic diverting valves

The function of the valve is to divert hot water, coming from the solar storage tank, into the boiler storage tank, when the temperature of the solar storage tank is less than 48°C (presetting shop temperature). On the contrary if, as it happens during the summer, the temperature is over 48°C, hot water is directly sent to the thermostatic mixer. Thanks to the diverting valve the working time of the boiler is reduced to the minimum, avoiding intermittent startings.



The hydraulic scheme is to be considered just an indication



DANGER OF SCALDS: Adjustment temperatures of the mixed water at the user more than 55°C can cause scalds in short time, particularly to the kids. In this case we recommend to install a security anti-scald device before the outlets considered dangerous (showers, etc.).

Fix temperature diverting valve: 48°C



In compliance to the Italian Ministerial Decree N° 174/2004

PED 97/23/EC, art. 3.3

Solar Kit 1

SOLAR-BOILER THERMOSTATIC CONNECTION KIT

Code 3/4" Kvs 1,2: 103685-1.2

Code 3/4" Kvs 1,7: 103685-1.7

The kit, fully assembled and tested, consists of:

INLET:

- ✓ Thermostatic diverting valve 1" Male with fixed setting temperature at 48°C. Body made in DZR brass.
- ✓ Solar check valve and filter built in the connection pipe to the solar storage tank.
- ✓ T-shaped swivel connection to the boiler with storage tank.

OUTLET:

- ✓ Anti-scald thermostatic mixing valve 1" Male. Body made in DZR brass. Control of the user temperature adjustable by means of a knob from 30°C up to 65°C.
- ✓ Solar check valve and filter built in the connection pipe to the cold water.

Centre Distance 136 mm. EPP insulation box (Measurements: 234x128x100 mm).

T-shaped central connection with adjustable angular position of the connections.

In some positions it'll be necessary to remove the insulation box.

Maximum static pressure 10 bar (PN 10); dynamic 5 bar.

Maximum ratio between the pressures 2:1.

Inlet maximum temperature: constant temperature 100°C;

(short time temperature: 120°C for 20 s).

Temperature adjustment field: 30÷65°C. Accuracy ± 2°C.

External connections: 3/4" Male (swivel connection).

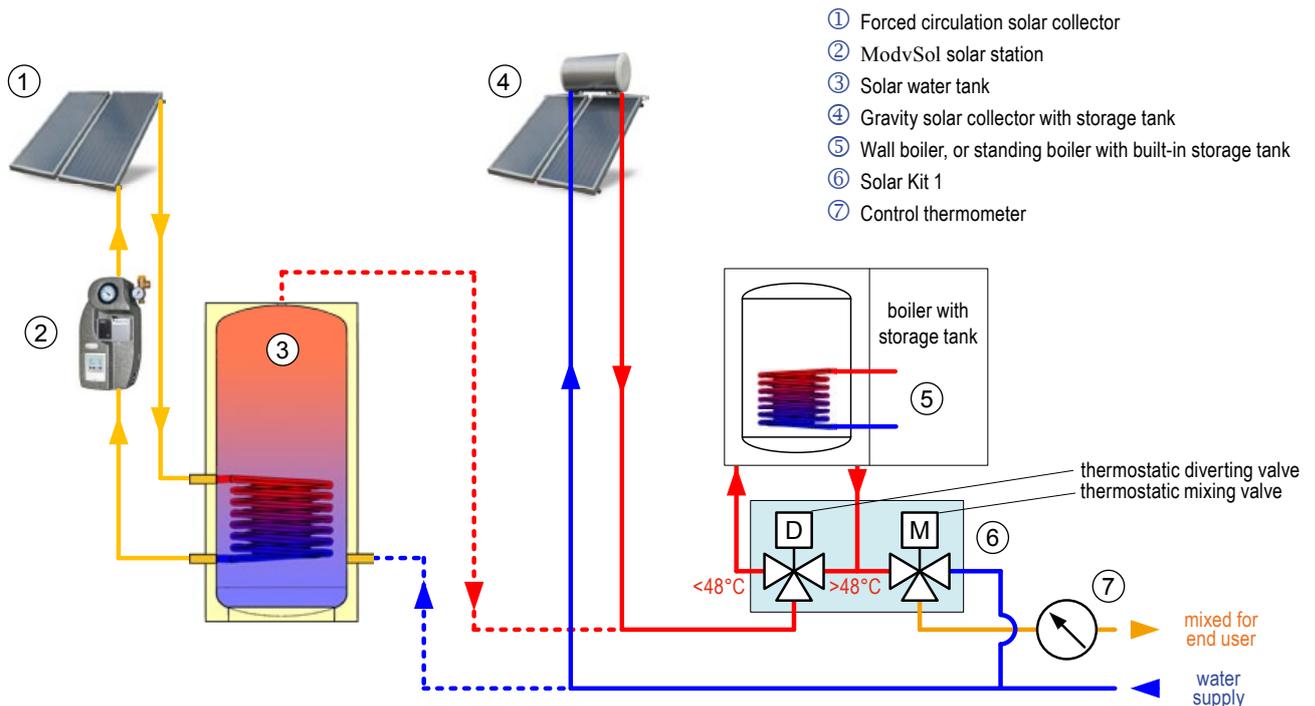


Available Kvs:

1.2 = Small water consumption; max. 35 l/min (3 bar)

1.7 = Middle water consumption; max. 49 l/min (3 bar)

Scheme of a thermal solar system, gravity or forced circulation



Working

The solar kit for boiler allows to manage automatically and to exploit at its best the thermal energy delivered by a thermal solar system during any time of the year and to supply hot domestic water for end user, at a controlled temperature.

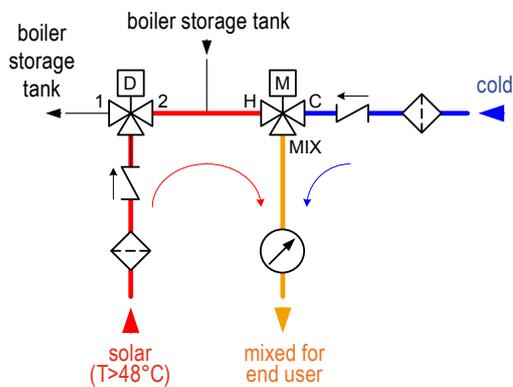
The kit, supplied in a suitable and smart EPP insulating box, works in two ways:

In case temperature of water coming from solar storage tank, either a gravity or a forced loop with glycol, is high enough, for example in summer, the first device of the kit, a diverting valve, diverts fluids towards the mixing valve (see *scheme 1*). Then the mixing valve mixes the fluid with cold water from mains, up to presetted temperature.

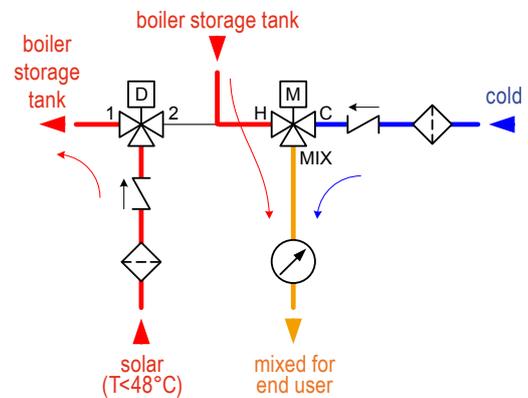
Whereas, as it happens in winter, temperature of water in solar water tank is low (less than 48°C; note: diverting valve is pre-setted on shop to divert from 48°C), diverting valve proportionally diverts pre-heated fluid towards the boiler storage tank. In this case the solar energy is full exploited and time-work for boiler to increase temperature is reduced to minimal, (see *scheme 2*). The anti-scald mixing valve checks and regulates the temperature of the water to the end user.

The anti-scald function automatically stops the hot water flow in case of failure in the cold water line.

Scheme 1: working conditions with water temperature in solar storage tank higher than 48°C



Scheme 2: working conditions with water temperature in solar storage tank lower than 48°C



Diverting valve with fixed pre-setting: exit towards outlet 1 with temperature < 48°C; towards outlet 2 with temperature > 48°C.



Anti scald thermostatic mixing valve, adjustable from 30°C to 65°C;
H inlet hot water from the brass fitting; C inlet cold water from mains;
MIX exit mixed hot water towards end user.



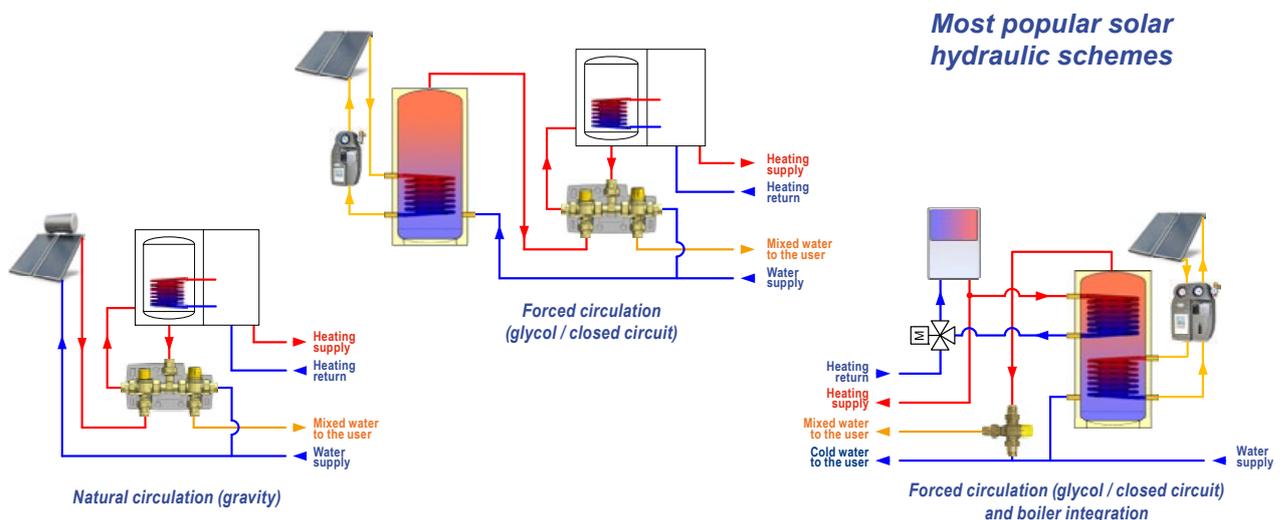
Solar check valve
it is built-in in the 3/4" male fitting



Filter
it is built-in in the 3/4" male fitting



DANGER OF SCALDS: Adjustment temperatures of the thermostatic mixing valve more than 55°C can cause scalds in short time, particularly to the kids. In this case we recommend to install the security anti-scald device before the outlets considered dangerous (showers, etc.).



Adjustable Diverting Valve 38÷54°C



Solar Kit 2

SOLAR-BOILER THERMOSTATIC CONNECTION KIT WITH ADJUSTABLE DIVERTING TEMPERATURE

Code 3/4" Kvs 1,7: 103736-1.7

The kit, fully assembled and tested, consists of:

INLET:

- ✓ Thermostatic diverting valve 1" Male with adjustable diverting temperature from 38°C up to 54°C, by means of a graduated knob - Kvs 3.5.
- ✓ Solar check valve and filter built in the connection pipe to the solar storage tank.
- ✓ T-shaped swivel connection to the boiler with storage tank.

OUTLET:

- ✓ Anti scald thermostatic mixing valve 1" Male - Kvs 2.5. Control of the user temperature adjustable by means of a knob from 35°C up to 60°C.
- ✓ Solar check valve and filter built in the connection pipe to the cold water.

Centre distance 163 mm (95 mm boiler). EPP insulation box (Measurements: 255x125x100 mm). T-shaped central connection with adjustable angular position of the connections. In some positions it'll be necessary to remove the insulation box.

Maximum static pressure 10 bar (PN 10); dynamic 5 bar. Maximum ratio between the pressures 2:1.

Inlet maximum temperature: constant temperature 100°C; (short time temperature: 120°C for 20 s).

Diverting valve temperature setting field: 38°÷54°. Commutating field 4K (between 42 and 52°C) Users temperature setting field: 35÷60°C. Accuracy ±1°C.

External connections: 3/4" Male (swivel connection).



Available Kvs:

1.7 = Middle water consumption; max. 49 l/min (3 bar)

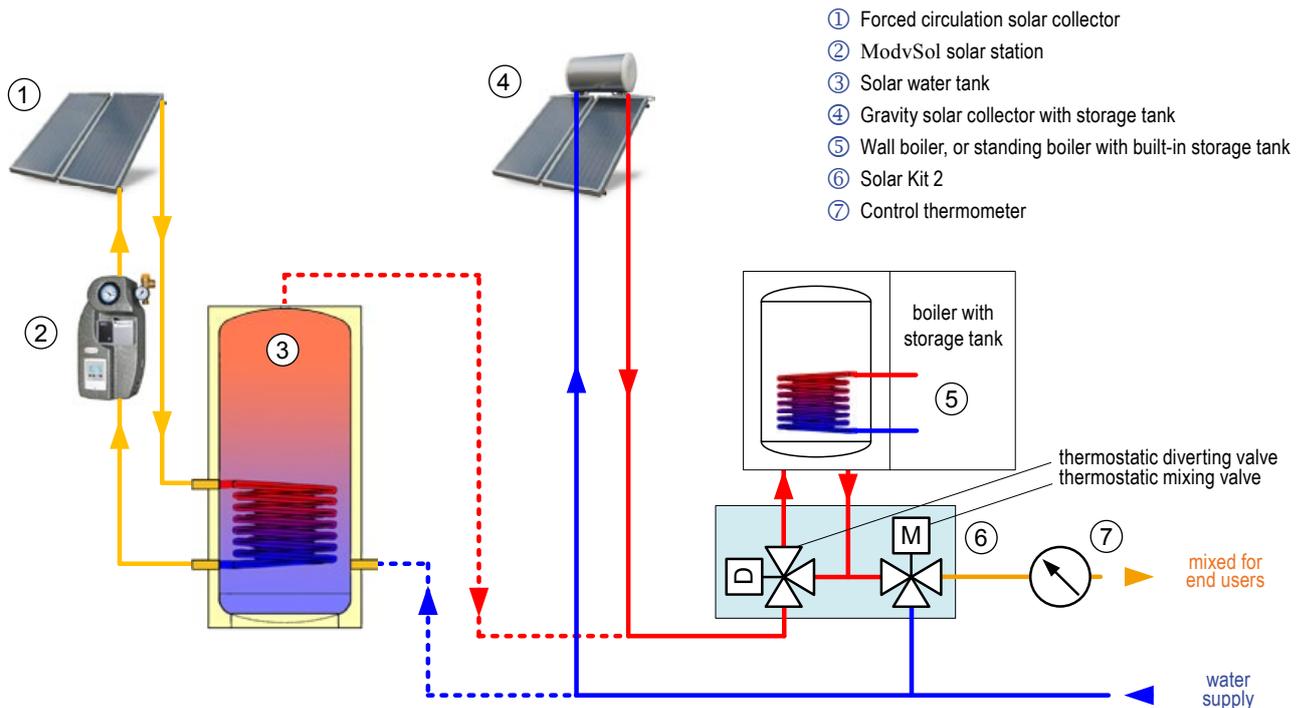
Diverting temperature:

Adjustable from 38°C up to 54°C

In compliance to the Italian Ministerial Decree N° 174/2004

PED 97/23/EC, art. 3.3

Scheme of a thermal solar system, gravity or forced circulation



Working

The adjustable solar kit for boiler allows to manage automatically and to exploit at its best the thermal energy delivered by a thermal solar system and to supply hot domestic water for end user, at a controlled temperature.

The adjustable diverting valve allows to maximize the exploitation because the diverting temperature can be fitted on the installation features, on its geographic location and on users practice.

It also possible to change the diverting temperature in accordance with the seasons of the year: lower temperature in summer time of higher temperature in winter time.

The kit, supplied in a suitable and smart EPP insulating box, works in two ways:

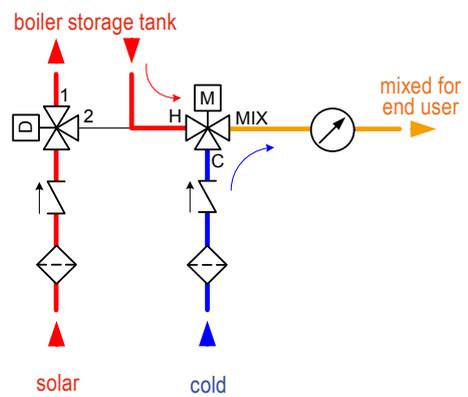
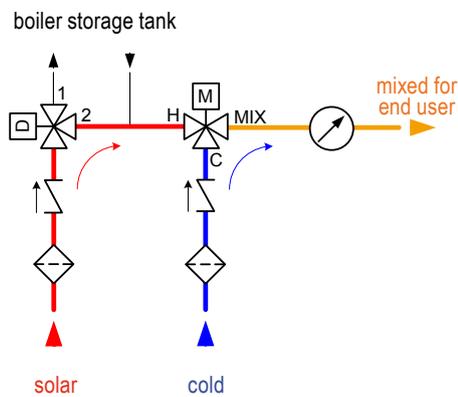
In case temperature of water coming from solar storage tank, either a gravity or a forced loop with glycol, is high enough, for example in summer, the first device of the kit, the adjustable thermostatic diverting valve, at the selected temperature, diverts the fluid towards the thermostatic mixing valve, so avoiding ineffective boiler startings (scheme 1). Then the mixing valve mixes the fluid with cold water from mains, up to presettled temperature.

Whereas, as it happens in winter, temperature of water in solar water tank is low (lower then the selected temperature) the first valve diverts in a proportional way the pre heated fluid towards the boiler storage tank, so exploiting to the maximum its energy and reducing to the minimum the boiler working time (scheme 2). The anti-scald thermostatic mixing valve, placed at the outlet of the kit, always controls and restricts the water temperature to the users.

The anti-scald function automatically stops the hot water flow in case of failure in the cold water line.

Scheme 1: working conditions at a diverting temperature of 42°C (summer time setting)

Scheme 2: working conditions at a diverting temperature of 48°C (winter time setting)



Adjustable thermostatic diverting valve: outlet towards the gate 1 if the temperature is lower than the selected temperature; outlet towards the gate 2 if it is higher than the selected value.



Anti scald thermostatic mixing valve, adjustable from 35°C to 60°C; H inlet hot water from the brass fitting; C inlet cold water from mains; MIX exit mixed hot water towards end user.



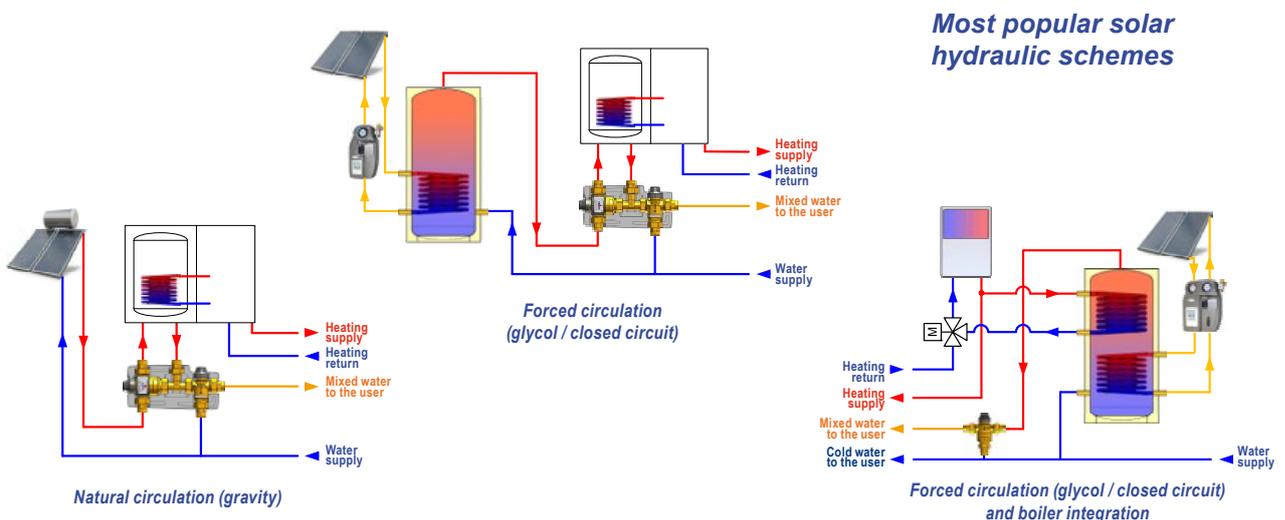
Solar check valve
it is built-in in the 3/4" male fitting

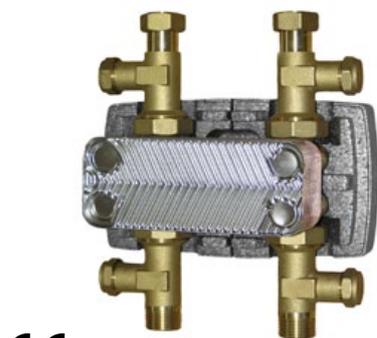


Filter
it is built-in in the 3/4" male fitting



DANGER OF SCALDS: Adjustment temperatures of the thermostatic mixing valve more than 55°C can cause scalds in short time, particularly to the kids. In this case we recommend to install the security anti-scald device before the outlets considered dangerous (showers, etc.).





CE



S2 Exchange

HEAT EXCHANGE SOLAR UNIT

Code 16 plates: 304646-E16

Code 26 plates: 304646-E26

Code 40 plates: 304646-E40

Heat exchange unit for solar installations with insulation box, made of hot forged brass. By means of this unit it is possible to connect a solar plant without using a special storage tank (double coil) or to connect it directly to the storage tank.

Weld-braised plates heat exchanger made of stainless steel AISI 316. Prepared for the direct connection to the 2-way 1" solar pumping stations by the means of a swivel nut.

It is also possible to connect several fittings to the "T" connectors; a ø6 mm sensor holder pit is provided on the supply way of the solar circuit (primary).

Centre distance 125 mm. EPP insulation box (Measurements: 250x143x218 mm).

PN 10. Constant temperature 120°C (short time temperature: 160°C for 20 s).

External connections: 1" nut (solar primary circuit) x 1" Male (storage tank secondary circuit).

Security unit



CE



Security unit for the storage tank circuit (secondary) provided with CE and TÜV certified 3 bar security valve and a manometer ø50 mm 0-4 bar. 3/4" Male connection for the flexible pipe or the draining kit (103647P). End of drain side: 3/4" F. The connection to the "T" connector is allowed by means of a special seal kit with precharged EPDM OR that does not need any seal paste, hemp or other sealants.

50 kW security valve.

PN 10. Max Temperature 110°C.

Code: 03647D-3C-4SET

Filling/draining valve



Ball valve suitable for solar or heating use made of brass, to fill/drain the installation. The connection to the "T" connector is allowed by means of a special seal kit with precharged EPDM OR that does not need any seal paste, hemp or other sealants.

End of drain side 3/4" Male.

PN 10. Constant temperature 120°C (short time temperature: 160°C for 20 s).

Code: 01646R-430SCASET

Draining kit for security unit



Hot forged brass connection with ball valve to fill/drain the installation.

3/4" Nut for the connection to the security unit.

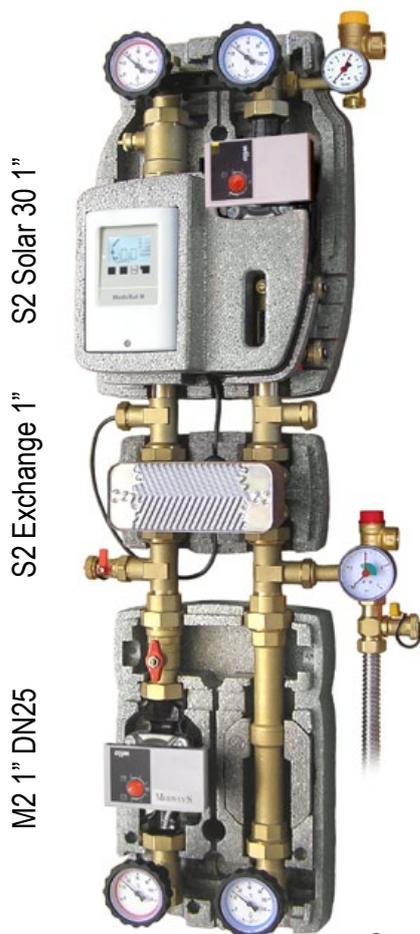
3/4" Male for the connection to the expansion vessel.

End of drain side 3/4" Male.

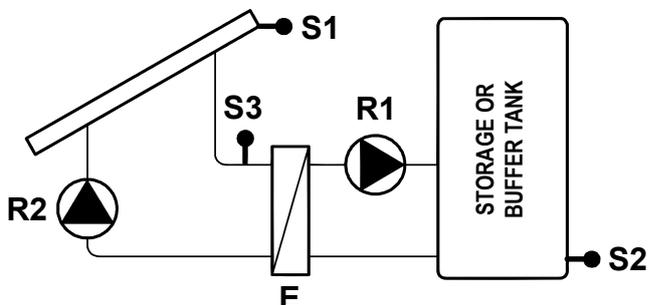
PN 10. Constant temperature 120°C (short time temperature: 160°C for 20 s).

Code: 103647P

MODVSOL Heat Exchange Solar Unit



Standard scheme



- ✓ S1: Collector temperature sensor.
- ✓ S2: Water storage temperature sensor.
- ✓ S3: Supply solar way temperature sensor.
- ✓ R1: Variable speed high efficiency circulating pump for the storage tank (secondary). So the temperature difference between S3 and S2 is guaranteed.
- ✓ R2: Solar high efficiency circulating pump (primary). The flow is adjusted and set by the flowmeter.
- ✓ E: Plates heat exchanger.

Standard installation operated by the solar controller MODVSOL M

Field of utilization

For power up to:	3,5 kW	5 kW	10 kW	14 kW
Collector surface (max.):	7,5 m ²	10 m ²	20 m ²	27,5 m ²
Exchanger number of plates:	16	16	26	40
Flowmeter:	1-6 l/min	2-12 l/min	8-28 l/min	8-38 l/min
Solar circuit flow (max.): "High Flow" technology	5 l/min	7 l/min	15 l/min	20 l/min
Solar pump unit headloss (primary) * (max.):	0,06 mH ₂ O	0,2 mH ₂ O	0,4 mH ₂ O	0,9 mH ₂ O
Exchanger headloss * (max.):	0,04 mH ₂ O	0,07 mH ₂ O	0,12 mH ₂ O	0,13 mH ₂ O
Total headloss of the solar circuit (primary). Pump unit + exchanger * (max.):	0,10 mH ₂ O	0,27 mH ₂ O	0,52 mH ₂ O	1,03 mH ₂ O
Lifting power set for solar loop circulating pump (primary)/ secondary (Storage tank):	4 / 4	6 / 4	7 / 4	8 / 4
Residual lifting power of the solar circuit (primary) in meters:	4,2	4,9	4,7	4,6

* : Headloss related to the maximum flow of the solar circuit (primary).

NB: These data must be considered just as an indication. They are based on the considerations made in the section "The planning of a solar thermal installation" of the MODVLS, in conformity with the "High Flow" technology, catalogue and on the average performances of the circulating pumps, the data must be checked taking into consideration the specifications of the installation that is to be carried out.



pump unit assembled with optional ball valves kit



Solo 1

PUMP UNIT TO LOAD ONE BUFFER TANK

Codes: see next page

Compact fully assembled pump unit to supply the heat produced by a solar thermal installation with High Flow or Low Flow operating mode. Suitable to be used with 1 buffer storage tank.

It is supplied fully insulated and pre-wired, with pre-programmed controller and it allows a fast and easy mounting.

The unit consists of:

Primary solar circuit:

- ✓ Flowmeter with flow regulation with filling and draining valves. Alternatively a digital flowmeter is also available.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ 3-way return ball valve with check valve 10 mbar supplied with in-handle thermometer.
- ✓ Security unit 6 bar with manometer $\varnothing 50$ mm 0-10 bar with 3/4" male connection to the expansion vessel. End of drain side: 3/4" F.
- ✓ Supply ball valve with check valve 10 mbar supplied with in-handle thermometer.
- ✓ Air vent made of brass with automatic vent valve and isolating valve.

Heat exchanger:

- ✓ Weld-braised plates heat exchanger made of stainless steel AISI 316 suitable for several powers.

Secondary circuit:

- ✓ TÜV security valve 3 bar, 50 kW. End of drain side: 3/4" F
- ✓ High efficiency synchronous circulating pump.

EPP insulation box (Measurements: 576x585x190 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall.

PN 10. Constant temperature on the solar circuit 120°C; (short time: 160°C for 20 s). Maximum temperature on the secondary circuit 110°C.

Available external connections:

- ✓ 1" Male for solar circuit.
- ✓ 3/4" Male pipe union for the secondary circuit.

FIELD OF UTILIZATION:

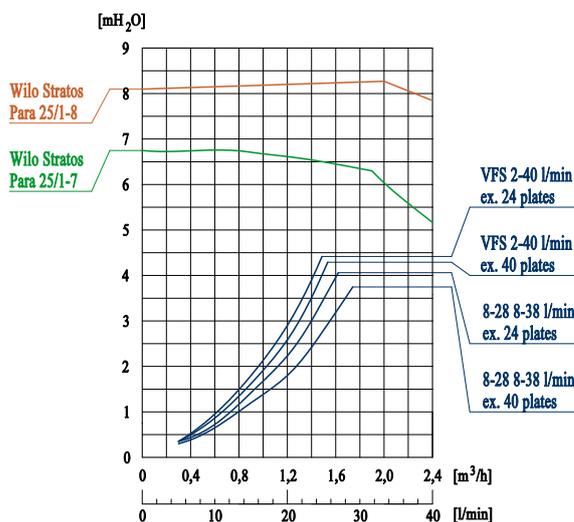
For power up to 35 kW. One buffer storage tank.
Kvs value: see the diagram here below.



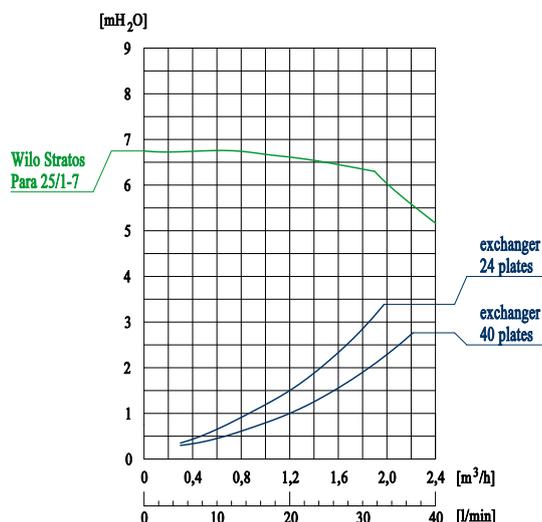
A special ball valves kit, available upon request (to be ordered) completes the unit.

Code: 031200SET

Typical curves of solar circuit



Typical curves of secondary circuit



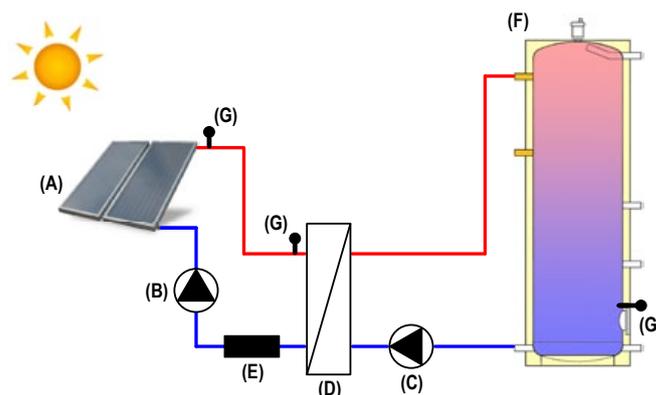
MODVSOL SOLO up to 70 m²

ModvSol Solo 1

**Heat supply pump unit to load one buffer tank.
Suitable for a solar collectors surface up to 70 m².**

The pump unit, as shown in the illustrative scheme at side, gets the heat from the primary circuit (solar) and brings it to the heat exchanger. Then the thermic energy is transferred to the secondary circuit, and in the specific case of **ModvSol Solo 1**, the loading of the buffer tank is done in only one point, because the pump unit cannot manage the control of the stratification.

To do the loading in stratification, use the pump unit ModvSol Solo 2.



- (A) - Solar collectors
- (B) - Circ. pump of primary circuit
- (C) - Circ. pump of secondary circuit
- (D) - Heat exchanger
- (E) - Mechanical flowmeter or digital VFS sensor
- (F) - Buffer tank
- (G) - Temperature sensors

NOTE: The schemes are incomplete and to be considered just as an indication.

Solo 1 High Flow

Article code	Tapping surface of solar collectors	Delivered thermic power	Δt	Primary circuit circulating pump	Secondary circuit circulating pump
Solo 1					
031200-24-(28/40)-LT	30 m ²	15 kW	10 K	Wilo Stratos Para 25/1-7	Wilo Stratos Para 25/1-7
031200-40-(38/40)-LT	46 m ²	23 kW	10 K	Wilo Stratos Para 25/1-8	Wilo Stratos Para 25/1-7

Solo 1 Low Flow

Article code	Tapping surface of solar collectors	Delivered thermic power	Δt	Primary circuit circulating pump	Secondary circuit circulating pump
Solo 1					
031200-24-(28/40)-LT	50 m ²	25 kW	25 K	Wilo Stratos Para 25/1-7	Wilo Stratos Para 25/1-7
031200-40-(38/40)-LT	70 m ²	35 kW	25 K	Wilo Stratos Para 25/1-8	Wilo Stratos Para 25/1-7

It is possible to select two versions for each model indicated in the above table: one with mechanical flowmeter, another with digital VFS sensor.

- **Models with mechanical flowmeter:** the flowmeter has a measuring range of 8-28 or 8-38 l/m, default value according to the specific model selected. Product codes of these models have respectively the options 28 or 38. For instance: Solo 1, High Flow, with an exchanged power of 23 kW: code 031200-40-38-LT.
- **Models with digital VFS sensor:** all these models have the VFS sensor with a measuring range of 2-40 l/min. Product code of these models have the option 40. For instance: Solo 1, High Flow, with an exchanged power of 23 kW: code 031200-40-40-LT.

pump unit assembled with optional ball valves kit



Solo 1 ACS

PUMP UNIT TO LOAD ONE HDW BUFFER TANK

Codes: see next page

Compact fully assembled pump unit to supply the heat produced by a solar thermal installation with High Flow or Low Flow operating mode. Suitable to be used with 1 buffer storage tank for HDW.

It is supplied fully insulated and pre-wired, with pre-programmed controller and it allows a fast and easy mounting.

The unit consists of:

Primary solar circuit:

- ✓ Flow meter with flow regulation with filling and draining valves. Alternatively a digital flowmeter is also available.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ 3-way return ball valve with check valve 10 mbar supplied with in-handle thermometer.
- ✓ Security unit 6 bar with manometer \varnothing 50 mm 0-10 bar with 3/4" male connection to the expansion vessel. End of drain side: 3/4" F.
- ✓ Supply ball valve with check valve 10 mbar supplied with in-handle thermometer.
- ✓ Air vent made of brass with automatic vent valve and isolating valve.

Heat exchanger:

- ✓ Weld-braised plates heat exchanger made of stainless steel AISI 316 suitable for several powers.

Secondary circuit (INOX AISI 316 pipes):

- ✓ TÜV security valve 6 bar 50 kW, for drinking water. End of drain side: 3/4" F. Other pressures available on demand.
- ✓ Asynchronous circulating pump for HDW.

EPP insulation box (Measurements: 576x585x190 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall.

PN 10. Constant temperature on the solar circuit 120°C; (short time: 160°C for 20 s). Maximum temperature on the secondary circuit 110°C.

Available external connections:

- ✓ 1" Male for solar circuit.
- ✓ 3/4" Male pipe union for the secondary circuit.

FIELD OF UTILIZATION:

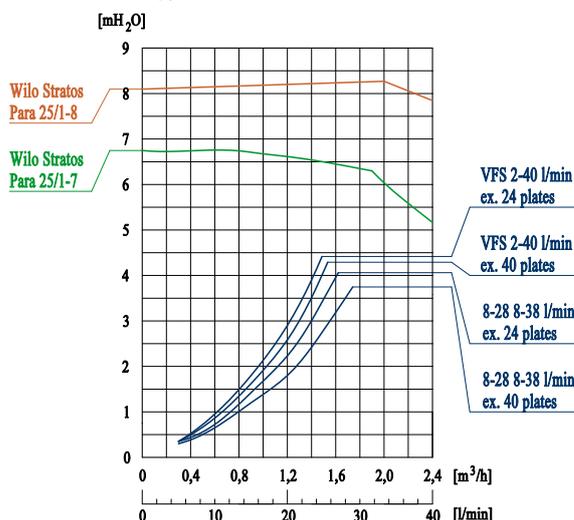
For power up to 35 kW. One buffer storage tank for HDW.
Kvs value: see the diagram here below.



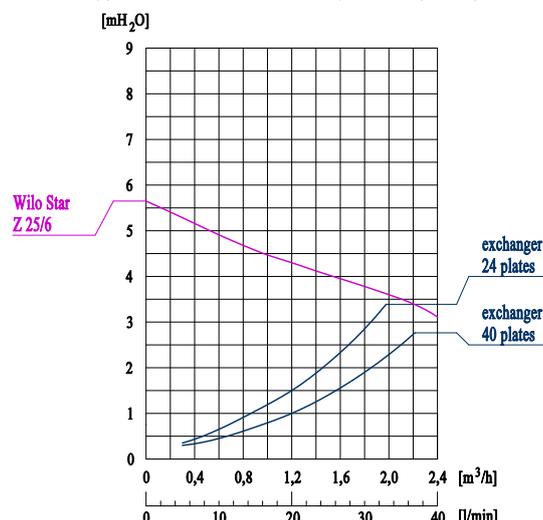
A special ball valves kit, available upon request (to be ordered) completes the unit.

Code: 031200SET

Typical curves of solar circuit



Typical curves of secondary circuit (HDW)

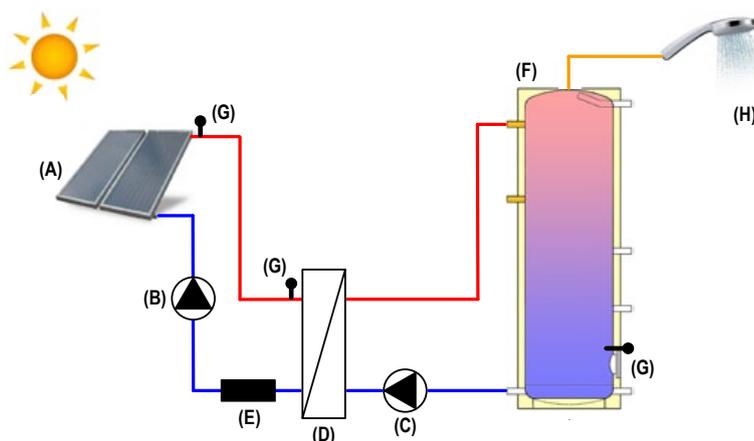


MODVSOL SOLO up to 70 m²

ModvSol Solo 1 ACS

Heat supply pump unit to load one hot domestic water HDW buffer tank. Suitable for a solar collectors surface up to 70 m².

The pump unit, as shown in the illustrative scheme at side, gets the heat from the primary circuit (solar) and brings it to the heat exchanger. Then the thermic energy is transferred to the secondary circuit, and in the specific case of **ModvSol Solo 1 ACS**, it feeds directly only the hot domestic water tank.



- (A) - Solar collectors
- (B) - Circ. pump of primary circuit
- (C) - Circ. pump of secondary circuit
- (D) - Heat exchanger
- (E) - Mechanical flowmeter or digital VFS sensor
- (F) - HDW tank
- (G) - Temperature sensors
- (H) - Users' HDW

NOTE: The schemes are incomplete and to be considered just as an indication.

Solo 1 ACS High Flow

Article code	Tapping surface of solar collectors	Delivered thermic power	Δt	Primary circuit circulating pump	Secondary circuit circulating pump
Solo 1 ACS					
031230-24-(28/40)-LT	30 m ²	15 kW	10 K	Wilco Stratos Para 25/1-7	Wilco Star Z 25/6
031230-40-(38/40)-LT	46 m ²	23 kW	10 K	Wilco Stratos Para 25/1-8	Wilco Star Z 25/6

Solo 1 ACS Low Flow

Article code	Tapping surface of solar collectors	Delivered thermic power	Δt	Primary circuit circulating pump	Secondary circuit circulating pump
Solo 1 ACS					
031230-24-(28/40)-LT	50 m ²	25 kW	25 K	Wilco Stratos Para 25/1-7	Wilco Star Z 25/6
031230-40-(38/40)-LT	70 m ²	35 kW	25 K	Wilco Stratos Para 25/1-8	Wilco Star Z 25/6

It is possible to select two versions for each model indicated in the above table: one with mechanical flowmeter, another with digital VFS sensor.

- **Models with mechanical flowmeter:** the flowmeter has a measuring range of 8-28 or 8-38 l/m, default value according to the specific model selected. Product codes of these models have respectively the options 28 or 38. Esemplio: For instance: Solo 1 ACS, High Flow, with an exchanged power of 23kW: code 031230-40-38-LT.
- **Models with digital VFS sensor:** all these models have the VFS sensor with a measuring range of 2-40 l/min. Product code of these models have the option 40. For instance: Solo 1 ACS, High Flow, with an exchanged power of 23 kW: code 031230-40-40-LT.



CE



pump unit assembled with optional ball valves kit



Solo 2

PUMP UNIT FOR STRATIFIED LOADING

Codes: see next page

Compact fully assembled pump unit to supply the heat produced by a solar thermal installation with High Flow or Low Flow operating mode. Equipped with diverting valve operated by controller and placed on the supply way of secondary circuit.

It is supplied fully insulated and pre-wired, with pre-programmed controller and it allows a fast and easy mounting.

The unit consists of:

Primary solar circuit:

- ✓ Flow meter with flow regulation with filling and draining valves. Alternatively a digital flowmeter is also available.
- ✓ Synchronous solar high efficiency circulating pump.
- ✓ 3-way return ball valve with check valve 10 mbar supplied with in-handle thermometer.
- ✓ Security unit 6 bar with manometer $\varnothing 50$ mm 0-10 bar with 3/4" male connection to the expansion vessel. End of drain side: 3/4" F.
- ✓ Supply ball valve with check valve 10 mbar supplied with in-handle thermometer.
- ✓ Air vent made of brass with automatic vent valve and isolating valve.

Heat exchanger:

- ✓ Weld-braised plates heat exchanger made of stainless steel AISI 316 suitable for several powers.

Secondary circuit:

- ✓ Diverting valve.
- ✓ TÜV security valve 3 bar, 50 kW. End of drain side: 3/4" F.
- ✓ High efficiency synchronous circulating pump.

EPP insulation box (Measurements: 576x585x190 mm).

A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall.

PN 10. Constant temperature on the solar circuit 120°C; (short time: 160°C for 20 s). Maximum temperature on the secondary circuit 110°C.

Available external connections:

- ✓ 1" Male for solar circuit.
- ✓ 3/4" Male pipe union for the secondary circuit.

FIELD OF UTILIZATION:

For power up to 35 kW. Stratified loading.

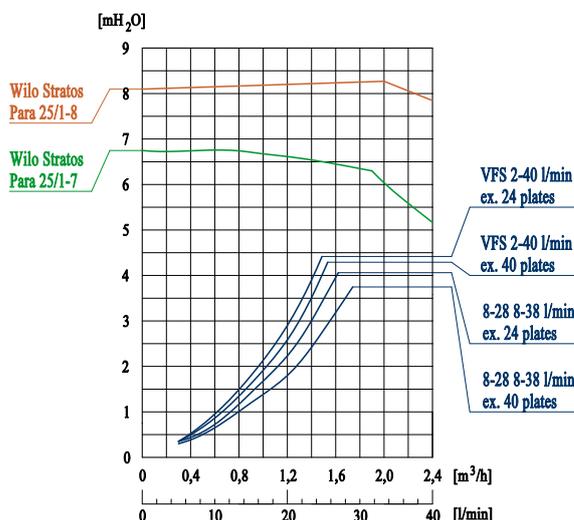
Kvs value: see the diagram here below.



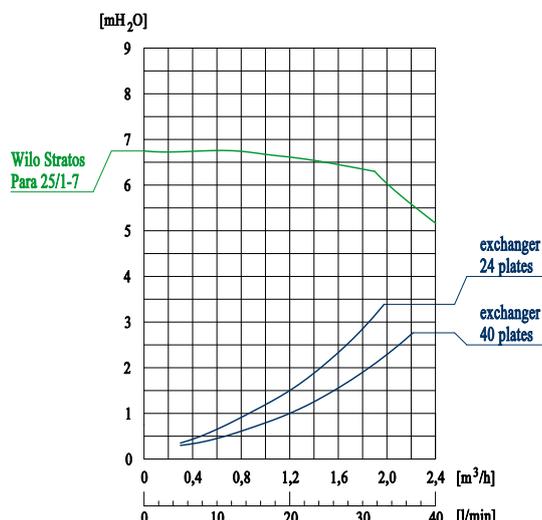
A special ball valves kit, available upon request (to be ordered) completes the unit.

Code: 031250SET

Typical curves of solar circuit



Typical curves of secondary circuit

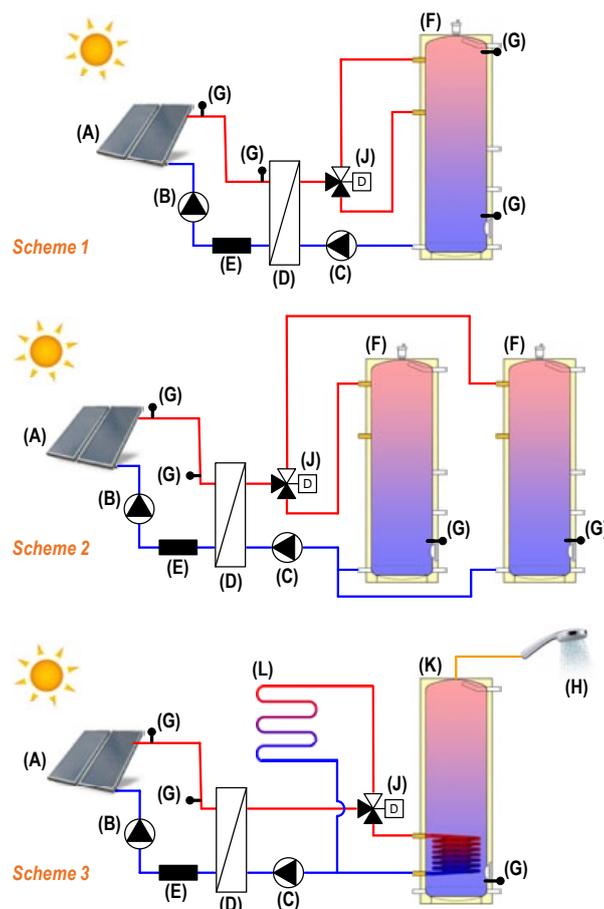


ModvSol Solo 2

Heat supply pump unit to load in stratification one buffer tank or to load two buffer tanks. Suitable for a solar collectors surface up to 70 m².

The pump unit, as shown in the illustrative schemes at side, gets the heat from the primary circuit (solar) and brings it to the heat exchanger. Then the thermic energy is transferred to the secondary circuit in which a diverting valve is present.

In this way it is possible to make several system configurations: mainly the management of one buffer tank loaded in stratification (scheme 1), of two buffer tanks (scheme 2) or heating and hot domestic water production installations put together (scheme 3).



- (A) - Solar collectors
- (B) - Circ. pump of primary circuit
- (C) - Circ. pump of secondary circuit
- (D) - Heat exchanger
- (E) - Mechanical flowmeter or digital VFS sensor
- (F) - Puffer
- (G) - Temperature sensors
- (H) - Users' HDW
- (J) - Diverting valve
- (K) - HDW puffer
- (L) - Heating circuit

NOTE: The schemes are incomplete and to be considered just as an indication.

Solo 2 High Flow

Article code	Tapping surface of solar collectors	Delivered thermic power	Δt	Primary circuit circulating pump	Secondary circuit circulating pump
Solo 2					
031250-24-(28/40)-LT	24 m ²	12 kW	10 K	Wilco Stratos Para 1/7	Wilco Stratos Para 1/7
031250-40-(38/40)-LT	30 m ²	15 kW	10 K	Wilco Stratos Para 1/8	Wilco Stratos Para 1/7

Solo 2 Low Flow

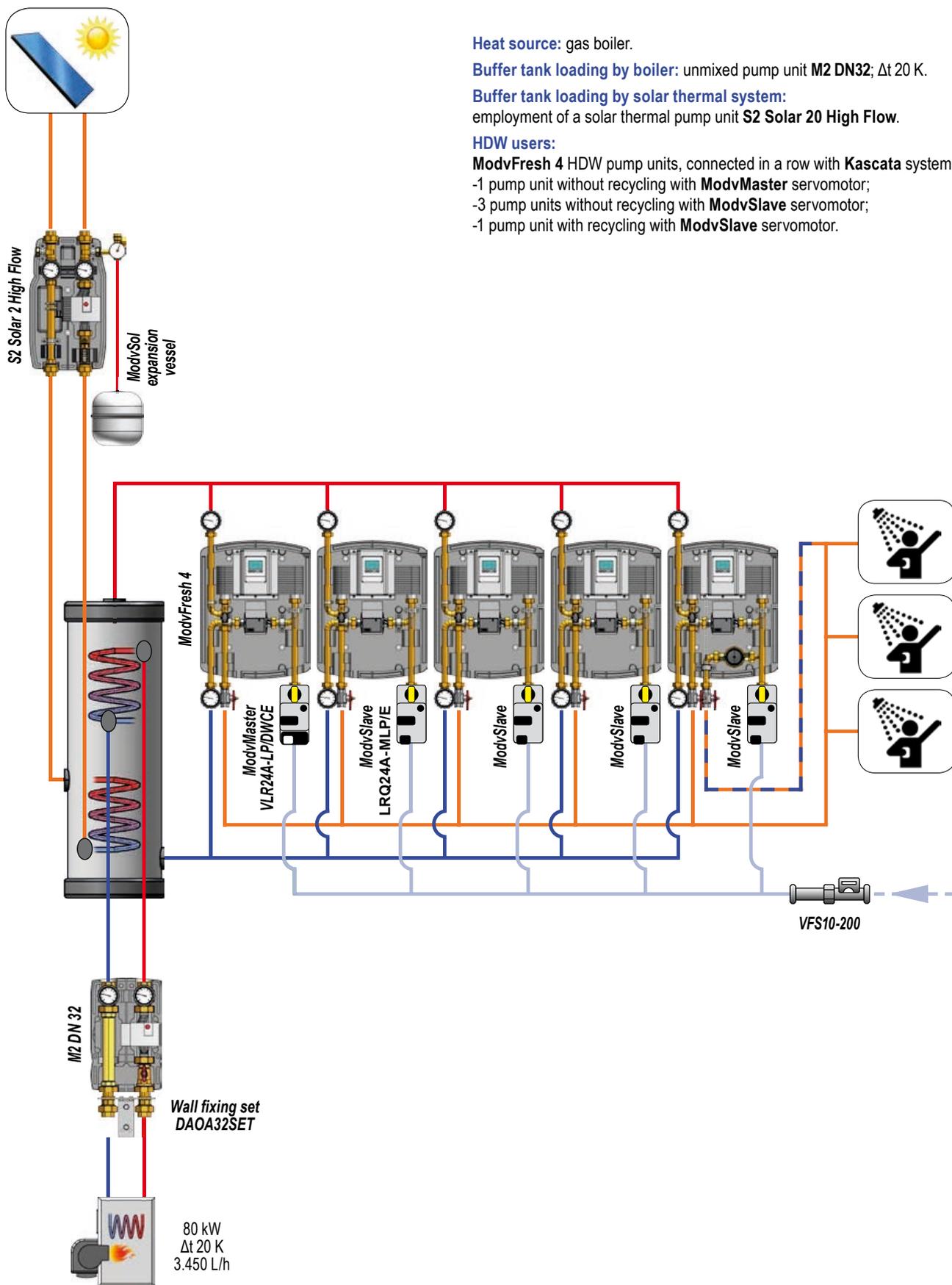
Article code	Tapping surface of solar collectors	Delivered thermic power	Δt	Primary circuit circulating pump	Secondary circuit circulating pump
Solo 2					
031250-24-(28/40)-LT	50 m ²	25 kW	25 K	Wilco Stratos Para 1/7	Wilco Stratos Para 1/7
031250-40-(38/40)-LT	70 m ²	35 kW	25 K	Wilco Stratos Para 1/8	Wilco Stratos Para 1/7

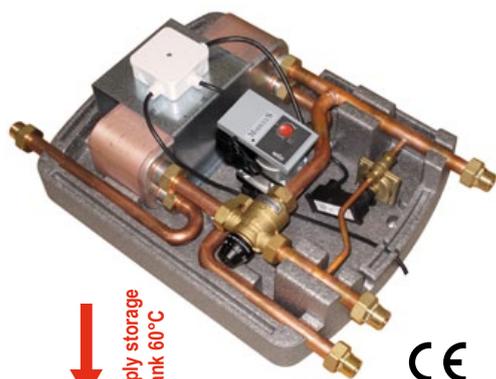
It is possible to select two versions for each model indicated in the above table: one with mechanical flowmeter, another with digital VFS sensor.

- **Models with mechanical flowmeter:** the flowmeter has a measuring range of 8-28 or 8-38 l/m, default value according to the specific model selected. Product codes of these models have respectively the options 28 or 38. For instance: Solo 2, High flow, with an exchanged power of 15 kW: code 031250-40-38-LT.
- **Models with digital VFS sensor:** all these models have the VFS sensor with a measuring range of 2-40 l/min. Product code of these models have the option 40. For instance: Solo 2, High flow, with an exchanged power of 15 kW: code 031250-40-40-LT.

Modular systems for HDW management

Control of HDW





ModvFresh 1

PUMP UNIT TO DELIVER FRESH HOT DOMESTIC WATER (HDW) WITH THERMOSTATIC CONTROL AND HIGH EFFICIENCY PUMP

Code 50 kW, 3/4": 031100-50-20
Code 100 kW, 3/4": 031100-100-40

Employment: on the inertial cylinders or similar, connected to solar thermal installations, wood, pellets, biomass boilers etc. when the stratification is not a primary requirement.

It provides fresh hot domestic water, avoiding phenomena of bacterial pollution, such as the legionnaire's disease etc., made by the stagnation of the hot water. **ModvFresh 1** is provided with a weld-braised plate heat exchanger made in stainless steel AISI 316 and with a thermostatic mixer adjustable from 45 up to 70 °C.

Two models are available, fully assembled and pre-wired:

- ✓ 50 kW, with variable flow up to 20 l/min, for domestic use installations;
- ✓ 100 kW, with variable flow up to 40 l/min, for small commercial installations;

with the followings specifications:

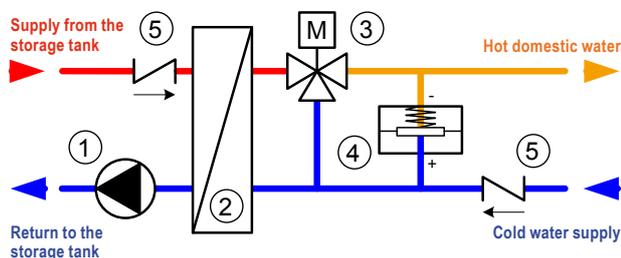
- ✓ Very low headlosses. The circulating pump starts to run at flows less than 1 l/min thanks to a differential manostat;
- ✓ No electric wirings are requested: the unit is pre-wired and shop tested;
- ✓ Easy temperature adjustment, by means of the graduated knob of the MultiMix thermostatic mixer;
- ✓ The heat exchanger can be easily removed in case of maintenance and/ of cleaning;
- ✓ PPE insulation box (398 x 500 x 207 mm). A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder;
- ✓ The pump unit is supplied with 3/4" Male connections (pipe-union).



A special ball valves kit, on request (to be ordered), completes the installation.

Code 3/4": 031000SET

Hydraulic scheme



- ① Circulating pump
- ② Plate heat exchanger
- ③ Thermostatic mixing valve
- ④ Differential manostat
- ⑤ Check valve

Technical features of ModvFresh 1

Max allowed pressure:	6 bar
Working temperature:	2 ÷ 95 °C
Setting accuracy of Multimix Mixing Valve (model 50 kW):	±1 °C (Kvs 2,5)
Setting accuracy of Multimix Mixing Valve (model 100 kW):	±2 °C (Kvs 4,0)
Headloss in the secondary circuit at the flow of 20 l/min (model 50 kW):	3 mH ₂ O
Headloss in the secondary circuit at the flow of 40 l/min (model 100 kW):	9 mH ₂ O
Minimum diameter size of the pipes: DN20 (Cu 22x1).	

FIELD OF UTILIZATION *ModvFresh 1*:

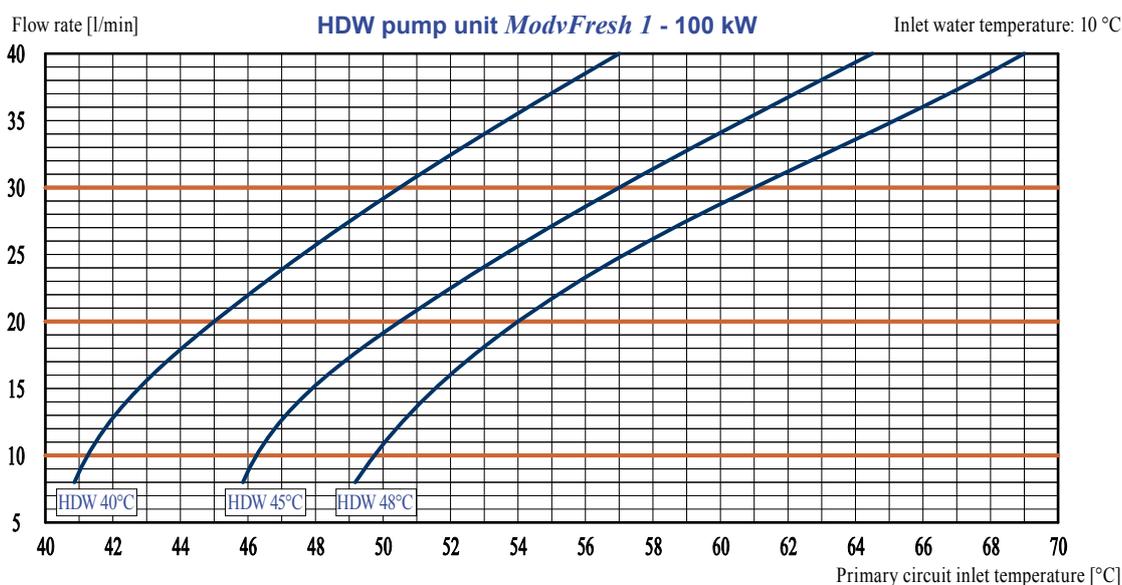
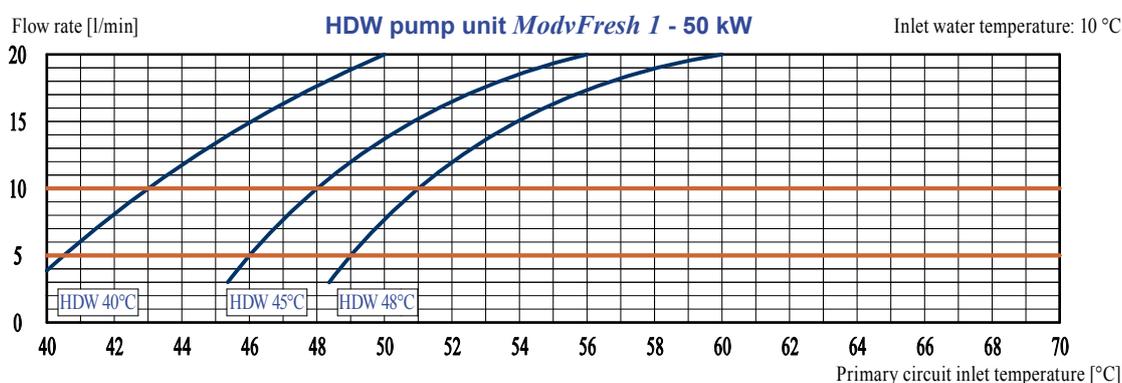
For a maximum power of 100 kW and flow up to 40 l/min.
 Nominal supply temperature of the storage tank: 60 °C.
 Nominal temperature of the water supply: 10 °C.
 Nominal temperature of HDW production 45 °C, adjustable up to 70 °C.



Performances calculation
 From the website www.modvvs.com
 it is possible to download an Excel
 file suitable for the calculation of the
 performances of ModvFresh
 pump units.

Diagrams of the pump unit performances

The following diagrams relate the user's flow rate and the supply temperature to the buffer storage tank, according to the requested temperature of HDW. This allows to identify the minimum supply temperature needed to supply HDW at a required temperature and flow. Vice versa it is also possible to fix which is the maximum usable flow at the selected HDW temperature, at the available supply temperature.



The buffer temperature must be almost 10 K higher than the desired temperature of the domestic water. Bigger temperature differences allow to extend the tapping time.

Curves with different inlet temperatures of cold water are available on the website www.brvi.it.



DANGER OF SCALDS

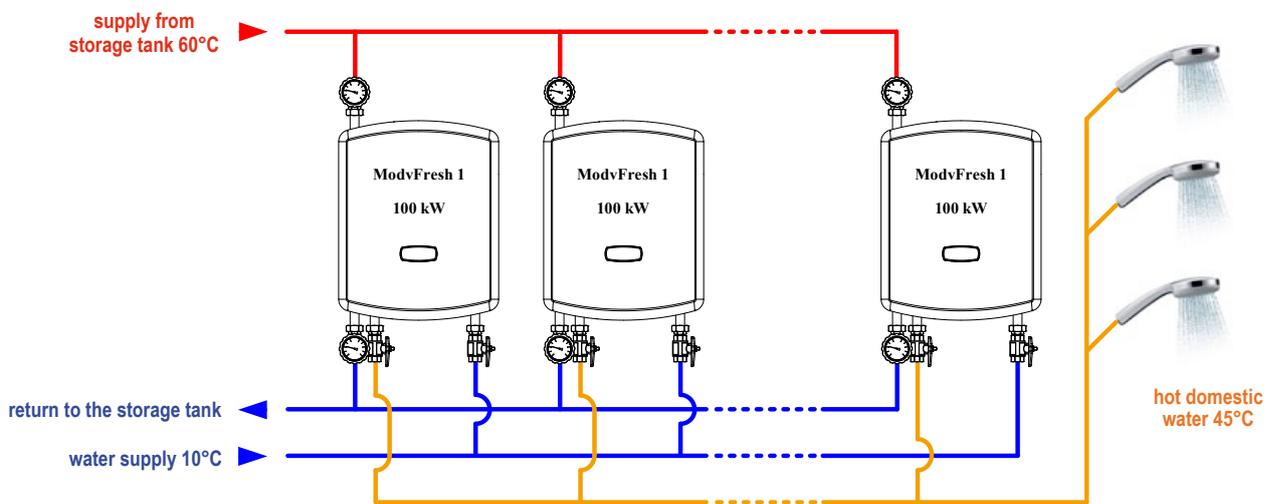
To avoid scalds to the users, the temperature of hot water supplied must never be more than 60°C.
 This temperature limits is preselected into the controller, anyway it can be reduced.

Return temperature to the storage tank

The return temperature to the storage tank is variable and it depends on the temperature and flow conditions. For instance if the supply temperature of the storage tank is high, the return temperature, after the thermic exchange into the heat exchanger, will be consequently and proportionally high. This fact is enlarged with small user's flows (small heat exchange) and it decreases with big user flows (high heat exchange). Therefore, if you do not want to destroy the stratification of the storage tank, we suggest to install a thermic valve on the return line to the storage tank to "charge" the tank at different levels at the requested temperature.

MODVFRESH 1 parallel connection

If high flows and powers are requested it is possible to make a parallel connection of up to five **ModvFresh 1** (100 kW model) to supply up to 200 l/min and a nominal power of 500 kW without installing any other device such as electronic controllers, motorized valves, flow sensors, etc.



The connecting scheme is particularly suitable for installations where the request of flow from the user is nearly constant, this to optimize the power consumption of the circulating pumps that are all activated at a very small flow; the control of the temperature is anyway assured during the whole use of the flow.

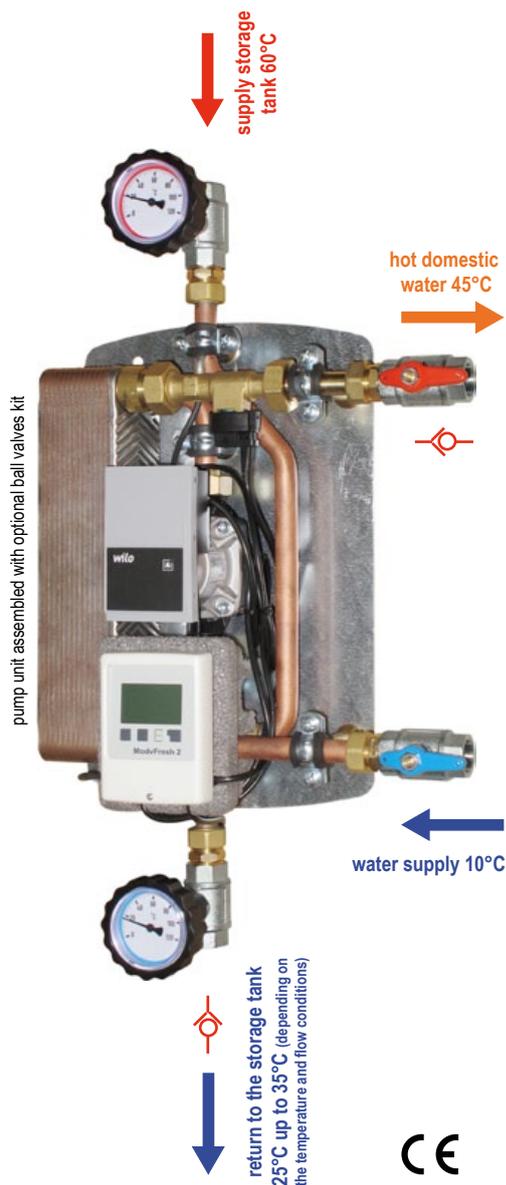
In the following schedules the main working parameters of the **ModvFresh 1** on parallel connection are shown (the data have been obtained at a cold water inlet temperature of 10 °C). For an accurate measuring, please contact our Technical Department.

MODVFRESH 1 100 kW pump unit to deliver HDW: installation on parallel connection					
Requested flow [l/min]	Number of ModvFresh 1, 100 kW	Hot water selected temperature [°C]	Supply required temp. (storage tank) [°C]	Supplied power [kW]	Minimum diameter of the pipes [mm]
80	2	50	70	224	28 x 1,5
120	3	50	70	336	35 x 1,5
160	4	50	70	448	35 x 1,5
200	5	50	70	560	42 x 1,5

FIELD OF UTILIZATION:

For a maximum nominal power of 500 kW and flow up to 200 l/min.
Nominal supply temperature of the storage tank: 60 °C.
Nominal temperature of the water supply: 10 °C.

Nominal temperature of HDW production 45 °C, adjustable up to 65 °C.
Temperature stability ± 4 °C.
Return temperature to the storage tank: see "ModvFresh 1"



pump unit assembled with optional ball valves kit



Compact ModvFresh with recycling control

ModvFresh 2

PUMP UNIT TO DELIVER FRESH HOT DOMESTIC WATER (HDW) WITH ELECTRONIC CONTROL AND HIGH EFFICIENCY PUMP

Units without recycling control: Code 50 kW, 3/4": 031300-50-20

Code 70 kW, 3/4": 031300-70-30

Units with recycling control: Code 50 kW, 3/4": 031310-50-20

Code 70 kW, 3/4": 031310-70-30

Employment: on inertial cylinders (buffer tanks) connected to standard thermal heating systems, heat pumps, thermal solar and biomass systems. It provides fresh hot domestic water, avoiding phenomena of bacterial pollution, such as the legionnaire's disease, due to the stagnation of the hot water. The compact size allows an easy installation even on small cylinders.

The unit, by a special electronics, modulates the speed of the primary high efficiency circulating pump, from a minimum speed of 10% up to 100%, in order to provide always a precise temperature of exploitation (f.i. 45°C). The variation of the requested flow is suddenly recorded by a digital sensor that gives the inputs of flow and temperature.

Two models are available, fully assembled and pre-wired:

- ✓ 50 kW, with flow up to 20 l/min, for domestic use installations;
- ✓ 70 kW, with flow up to 30 l/min, for heat pumps up to 18 l/min;

Selection chart to deliver HDW at 45°C with cold water at 10°C:

Heat source	Buffer tank temperature	Flow	Return temperature	Sample code
Heat pump	52 °C	15 l/min	33 °C	031300-70-30
	55 °C	18 l/min	31 °C	031300-70-30
Gas, biomass, boiler, thermal	60 °C	20 l/min	33 °C	031300-50-20
	68 °C	30 l/min	29 °C	031300-70-30

Features:

- ✓ High Efficiency circulating pump;
- ✓ Delivered hot water temperature: 45°C with supply water temperature at 10°C. The HDW temperature is adjustable every single degree from 30°C up to 70°C;
- ✓ A big surface heat exchanger weld-braised made of stainless steel AISI 316 guarantees a remarkable thermal exchange that allows a water return to the buffer tank at a temperature up to 25°C;
- ✓ The heat exchanger can be easily removed in case of maintenance and/or cleaning;
- ✓ Counting of used energy by means of the digital sensor (cold water temperature fixed at 10°C);
- ✓ PPE insulation box (277 x 417 x 137 mm). A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the cylinder;
- ✓ The pump unit is supplied with 3/4" Male connections (pipe-union).
- ✓ **Version with electronics made for the control of the recycling line: pre-wired external box with electric wirings for the control of the circulating pump and the relevant contact temperature sensor.**



A special ball valves kit, on request (to be ordered), completes the installation.

Code 3/4": 031000SET

Kit for the recycling loop with EcoCirc Pro 15-3/65 circulating pump and connections to check valve and to isolating valve.

Code 1": 031000SET



On demand, a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.

Technical features of ModvFresh 2

Maximum allowed pressure (without water hammer):	6 bar
Working temperature:	2 ÷ 95°C
Headloss in the secondary circuit at the flow of 20 l/min (50 kW model):	3 mH ₂ O
Headloss in the secondary circuit at the flow of 30 l/min (70 kW model):	6,5 mH ₂ O

Connections size: min. DN20 (Cu 22x1) near the cylinder.

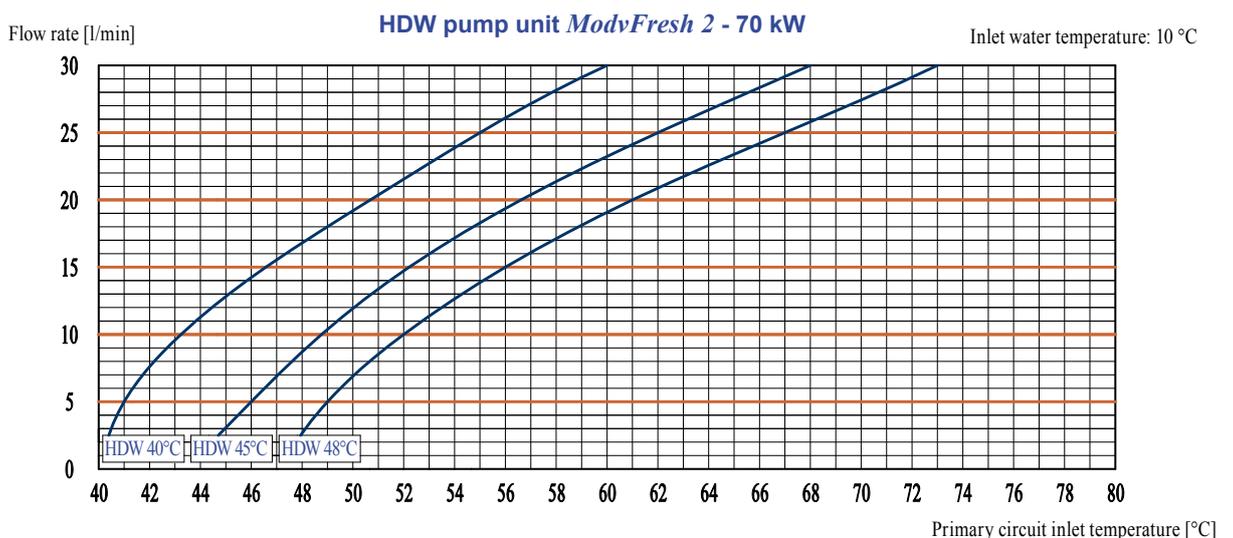
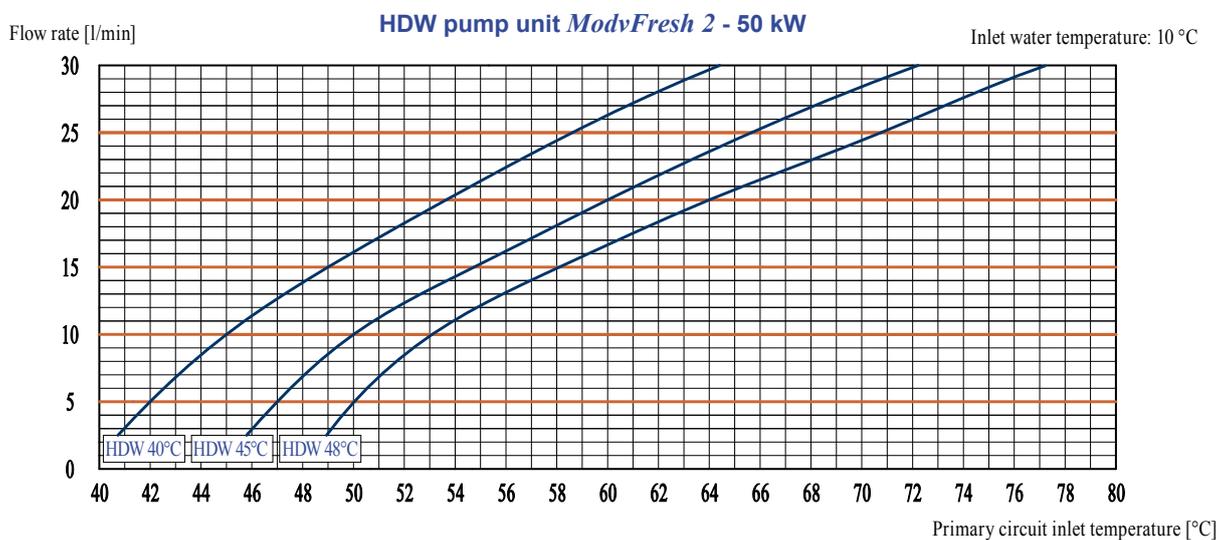
FIELD OF UTILIZATION ModvFresh 2:

For a maximum power of 70 kW and flow up to 30 l/min.
 Nominal supply temperature of the storage tank: 60°C.
 Nominal temperature of the water supply: 10°C.
 Nominal temperature of HDW production: 45°C, adjustable from 30°C up to 70°C.



Diagrams of the pump unit performances

The following diagrams relate the user's flow rate and the supply temperature to the buffer storage tank, according to the requested temperature of HDW. This allows to identify the minimum supply temperature needed to supply HDW at a required temperature and flow. Vice versa it is also possible to fix which is the maximum usable flow at the selected HDW temperature, at the available supply temperature.



The buffer temperature must be almost 5 K higher than the desired temperature of the domestic water. Bigger temperature differences allow to extend the tapping time.

Curves with different inlet temperatures of cold water are available on the website www.brvi.it.



To avoid scalds to the users, the temperature of hot water supplied must never be more than 60°C. This temperature limits is preselected into the controller, anyway it can be reduced.

Available
until
2015/07/31



ModvFresh 3

PUMP UNIT TO DELIVER FRESH HOT DOMESTIC WATER (HDW) WITH ELECTRONIC CONTROL

Units without recycling:	Code 50 kW, 3/4":	031000-50-20
	Code 100 kW, 3/4":	031000-100-40
Units with recycling:	Code 50 kW, 3/4":	031010-50-20
	Code 100 kW, 3/4":	031010-100-40

Employment: on the inertial cylinders or similar, connected to solar thermal installations, wood, pellets, biomass boilers etc. It provides fresh hot domestic water, avoiding phenomena of bacterial pollution, such as the legionnaire's disease etc., made by the stagnation of the hot water.

This unit, by a special electronic controller, modulates the speed of the primary circulating pump, from a minimum speed of 12% up to the maximum selected speed, in order to provide always a precise temperature of the exploitation of the water (f.i. 45°C). The variation of the requested flow is suddenly recorded by a digital sensor that gives the inputs of the flow and the temperature to the electronic controller, modulating the speed of the circulating pump accordingly.

Two models are available, fully assembled and pre-wired:

- ✓ 50 kW, with variable flow from 1 up to 20 l/min, for domestic use installations;
- ✓ 100 kW, with variable flow from 2 up to 40 l/min, for small commercial installations;

with the followings specifications:

- ✓ Delivered water temperature: 45°C with a supply water temperature of 10°C. Consequently the power is about 98 kW at the flow of 40 l/min and of 49 kW for the model for domestic use (20 l/min). Anyway the temperature of the HDW is adjustable every single degree until 70°C;
- ✓ The minimum requested inlet temperature to the heat exchanger is 60°C in order to guarantee the declared performances to the maximum flow (with 35 K thermal Δt);
- ✓ A big surface heat exchanger weld-braised plate made in stainless steel AISI 316 guarantees a remarkable thermal exchange that allows a water return to the puffer with a temperature until 20°C. This favours a perfect heating power from the solar or heating pump contribution;
- ✓ Available with our without recycling circulating pump (functioning "on request" or "by time bands"; adjustable temperature until 40°C);
- ✓ The heat exchanger can be easily removed in case of maintenance and/of cleaning;
- ✓ A digital sensor allows an accurate power recording (total, yearly, monthly, weekly and daily);
- ✓ PPE insulation box (398 x 500 x 207 mm). A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder;
- ✓ The pump unit is supplied with 3/4" Male connections (pipe-union).

A special ball valves kit, on request (to be ordered), completes the installation.

For units without recycling:
Code 3/4": 031000SET

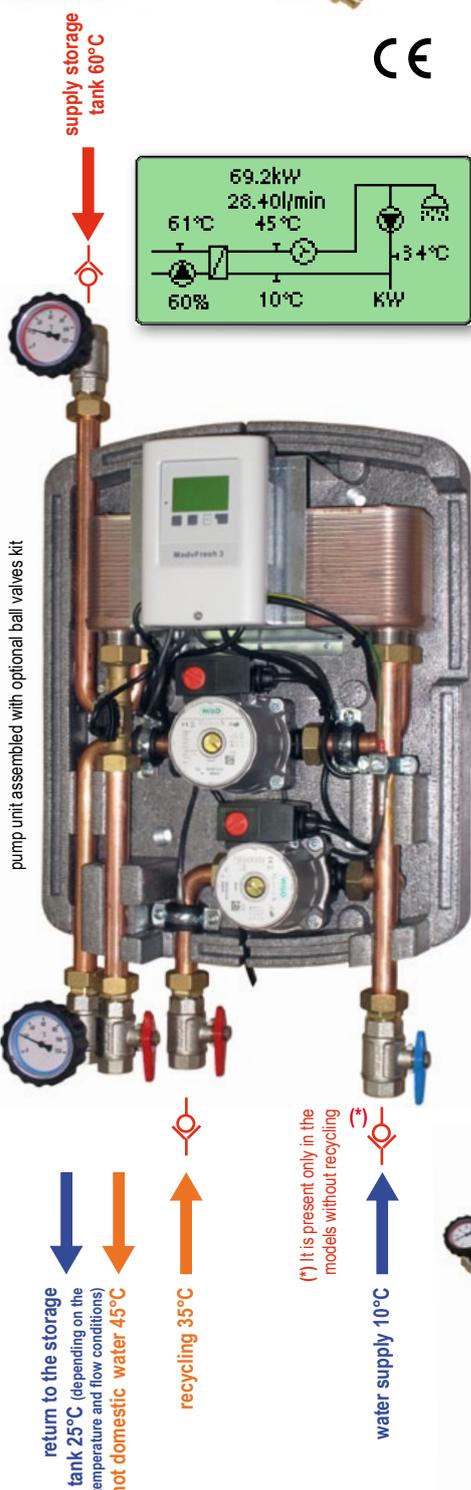
For units with recycling:
Code 3/4": 031010SET



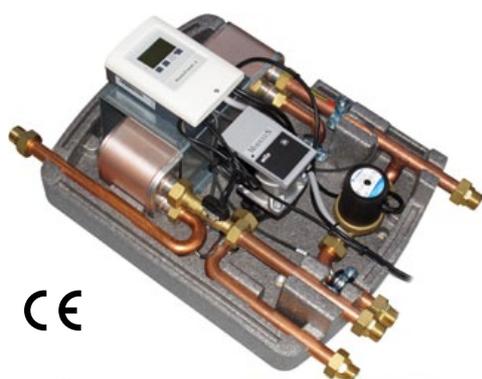
On demand, a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.

Electronic Control

Control of HDW



High efficiency and additional functions



CE

supply storage tank 60°C



High Efficiency circulating pumps return control and thermostat function



pump unit assembled with optional ball valves kit

return to the storage tank 25°C (depending on the temperature and flow conditions)
hot domestic water 45°C

recycling 35°C

(*) It is present only in the models without recycling

water supply 10°C

ModvFresh 4

PUMP UNIT TO DELIVER FRESH HOT DOMESTIC WATER (HDW) WITH ELECTRONIC CONTROL. HIGH EFFICIENCY PUMPS AND CONTROL OF RETURN TEMPERATURE OF PRIMARY LOOP. THERMOSTAT FUNCTION.

Units without recycling:	Code 50 kW, 3/4":	031400-50-20
	Code 100 kW, 3/4":	031400-100-40
Units with recycling:	Code 50 kW, 3/4":	031415-50-20
	Code 100 kW, 3/4":	031415-100-40

Employment: on the inertial cylinders or similar, connected to solar thermal installations, wood, pellets, biomass boilers etc. It provides fresh hot domestic water, avoiding phenomena of bacterial pollution, such as the legionnaire's disease etc., made by the stagnation of the water tank in order to maintain the water temperature at the lowest necessary level. **Control and management of the integration source of the water tank in order to maintain the water temperature at the lowest necessary level. Optimization of control of return temperature to storage tank thanks to the control for diverting valve (the valve is optional).**

This unit, by a special electronic controller, modulates the speed of the primary circulating pump, from a minimum speed of 10% up to 100%, in order to provide always a precise temperature of the exploitation of the water (f.i. 45°C). The variation of the requested flow is suddenly recorded by a digital sensor that gives the inputs of the flow and the temperature to the electronic controller, modulating the speed of the circulating pump accordingly.

Two models available, fully pre-assembled and pre-wired:

- ✓ 50 kW, with variable flow from 1 up to 20 l/min, suitable for domestic use installations;
- ✓ 100 kW, with variable flow from 2 up to 40 l/min, suitable for small commercial installations;

with the followings specifications:

- ✓ High efficiency circulating pump and control of return temperature of primary loop by a diverting valve (optional);
- ✓ Function of thermostat integration of the storage tank: it activates the energy source in case water temperature of the storage tank does not comply with set up timetables;
- ✓ External sensor boxes to connect easily external sensors and relays.
- ✓ Delivered water temperature: 45°C with a supply water temperature of 10°C. Consequently the power is about 98 kW at the flow of 40 l/min. Anyway the temperature of the HDW is adjustable every single degree up to 70°C;
- ✓ The minimum requested inlet temperature to the heat exchanger is 60°C in order to guarantee the declared performances to the maximum flow (with 35 K thermal Δt);
- ✓ A big surface heat exchanger weld-braised plate made in stainless steel AISI 316 guarantees a remarkable thermal exchange that allows a water return to the puffer with a temperature until 20°C. This favours a perfect heating power from the solar or heating pump contribution;
- ✓ Available with our without recycling circulating pump (functioning "on request" or "by time bands"; adjustable temperature until 40°C);
- ✓ Synchronous high efficiency recycling way circulating pump (in the models where it is present);
- ✓ The heat exchanger can be easily removed in case of maintenance and/of cleaning;
- ✓ A digital sensor allows an accurate power recording (total, yearly, monthly, weekly and daily);
- ✓ PPE insulation box (398 x 500 x 207 mm). A special back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the solar cylinder;
- ✓ The pump unit is supplied with 3/4" Male connections (pipe-union).

A special ball valves kit, on request (to be ordered), completes the installation.

For units without recycling:
Code 3/4": 031000SET

For units with recycling:
Code 3/4": 031010SET

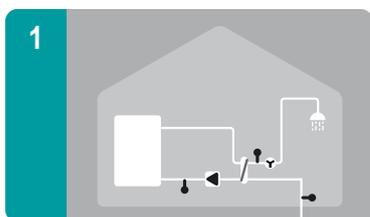


On demand, a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.

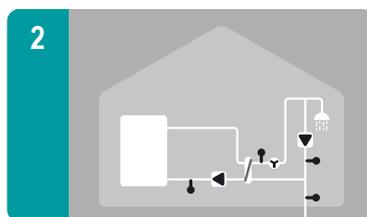
Control of HDW

MODVFRESH Delivery of HDW

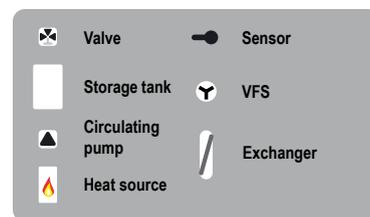
ModvFresh 4 different hydraulic schemes



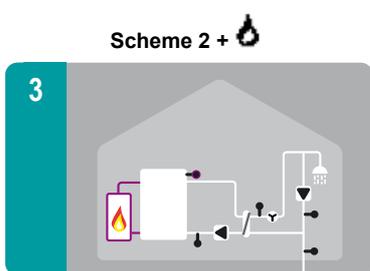
Delivery of HDW



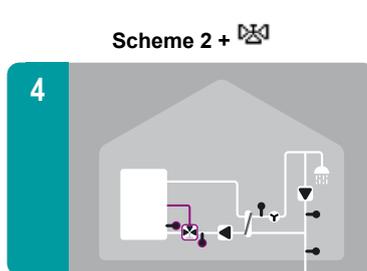
Delivery of HDW with recycling



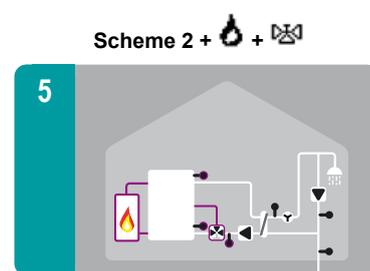
Preset schemes of **ModvFresh 4** controller can be enriched in an easy and flexible way by two additional functions: additional heating with thermostat function and/or control of return temperature to storage tank by a diverting valve (optional). To make it easy, hereafter scheme shows the model with active recycling, however it is also possible to configure the same scheme without recycling.



Delivery of HDW with recycling and additional thermostat function



Delivery of HDW with recycling and control of return temperature



Delivery of HDW with recycling, additional thermostat function and control of return temperature (*)

(*) **Please note:** in scheme 5, the controller considers 25°C as fixed temperature inside the storage tank to manage the deviation. In case you would need to read the temperature and process the value in the controllers, it is necessary to order separately a TT/S2 sensor and to wire it to sensor box.



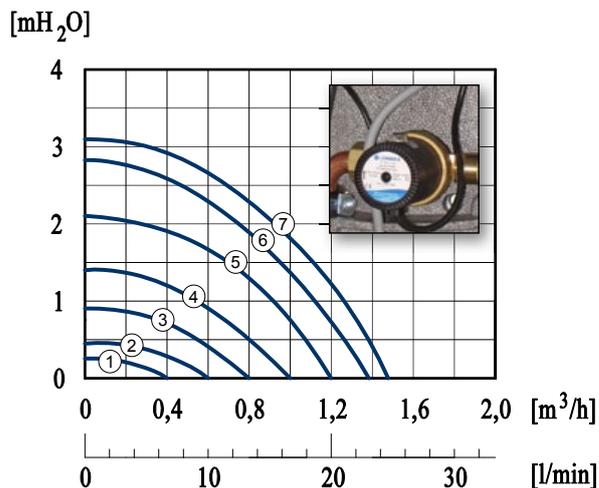
Relay Box

Sensor box

For a fast and easy connection of the temperature sensors, vannes or circulating pumps you do not have to handle the controller, it is enough to plug the cables in the automatic connectors of the sensor box.



Sensor box



Peculiar diagram of the recycling circulating pumps (if present)

High efficiency synchronous circulating pump. The speed control is always variable by means of the selector; you can find the speeds corresponding to the 7 reference marks along the selector scale.

Technical features of ModvFresh 3 and 4

Maximum allowed pressure (without water hammer):	6 bar
Working temperature:	2 ± 95°C
Headloss in the secondary circuit at the flow of 20 l/min (ModvFresh 3; model 50 kW):	4 mH₂O
Headloss in the secondary circuit at the flow of 40 l/min (ModvFresh 3 and 4; model 100 kW):	5 mH₂O
Headloss in the recycling circuit (at the flow of 5 l/min):	0,3 mH₂O

Min. diameter size of the pipes: DN20 (Cu 22x1); DN15 for the recycling line.

FIELD OF UTILIZATION ModvFresh 3 AND 4:

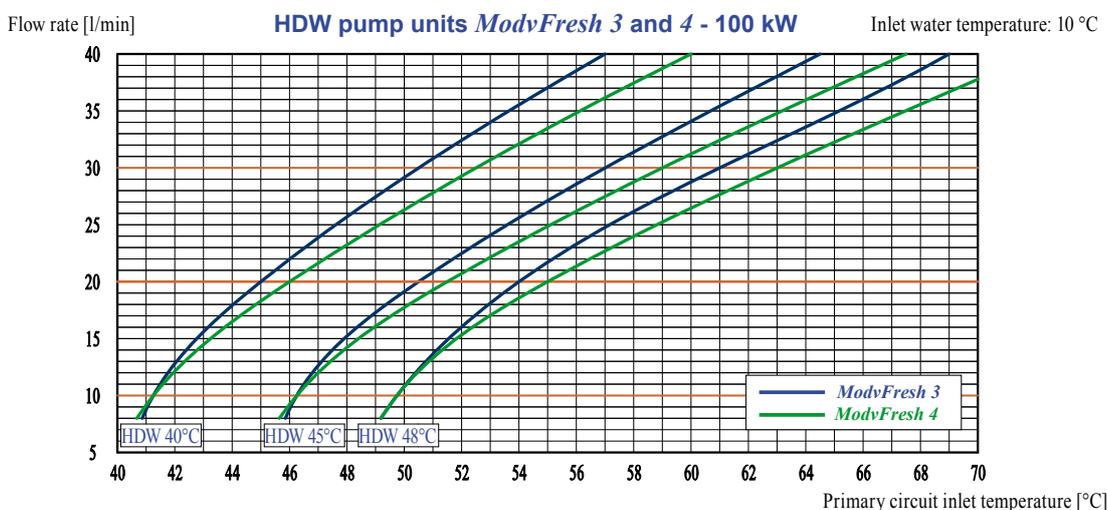
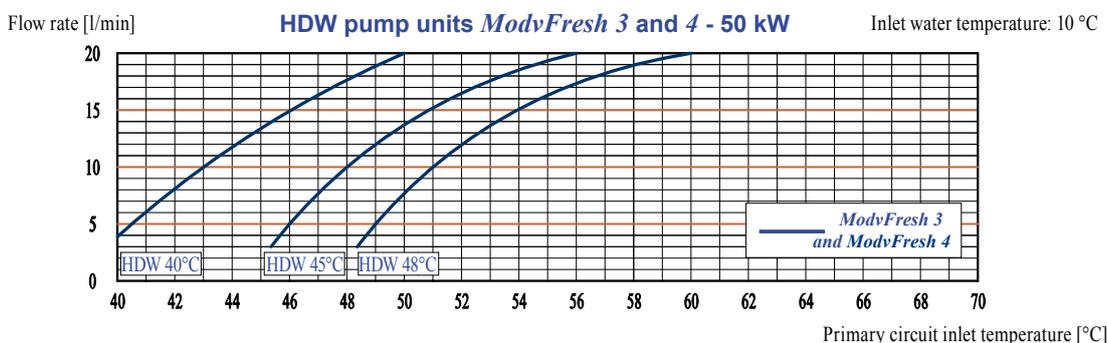
For a maximum power of 100 kW and flow up to 40 l/min.
 Nominal supply temperature of the storage tank: 60°C.
 Nominal temperature of the water supply: 10°C.
 Nominal temperature of HDW: 45°C, adjustable from 30°C to 70°C.
 Recycling line temperature adjustable from 10°C up to 40°C.



To avoid scalds to the user the supplied water must never be over 60°C. This temperature limit is preselected into the controller, anyway it can be reduced.

Diagrams of the pump unit performances

The following diagrams relate the user's flow rate and the supply temperature to the buffer storage tank, according to the requested temperature of HDW. This allows to identify the minimum supply temperature needed to supply HDW at a required temperature and flow. Vice versa it is also possible to fix which is the maximum usable flow at the selected HDW temperature, at the available supply temperature.



The buffer temperature must be almost 5 K higher than the desired temperature of the domestic water. Bigger temperature differences allow to extend the tapping time.

Curves with different inlet temperatures of cold water are available on the website www.br.vi.it.

Performances calculation
 From the website www.modvivi.com it is possible to download an Excel file suitable for the calculation of the performances of ModvFresh pump units.

DANGER OF SCALDS

The controller of the sole product **ModvFresh** with recycling line, in order to avoid the bacterial pollution in the HDW circuit, is equipped with a specific disinfection program that rises significantly the temperature in the recycling line, killing the eventual bacteria inside. Consequently, during this operation, also the hot water to the user reaches very high temperatures, causing the risk of instantaneous scalds. Therefore, it is recommended to set the start of the disinfection's program in a time when the water request from the user is low (f.i. during the night) and, however, to install a security anti-scald device in the outlets considered dangerous.



Art. 1090 - 3-way zone valve

Motorized 3-way zone valve with spring return for closed hydraulic systems. Employment: heating, conditioning and solar thermal (glycol max. 50%).

Available external connections: 1" Male flat seal.

For further info please look up product description within "ModvSol - Equipments and accessories" section.



TT/S2 temperature sensor

PT1000 dip temperature sensor with guaranteed accuracy of detection, according to DIN EN60751 (IEC751); they ensure a precise acquisition of the temperature and an excellent exploitation of the energy. With silicone cable 2 m long, 180°C.

For further info please look up product description within "ModvSol - Differential Solar Controllers" section.

ModvFresh Kascata

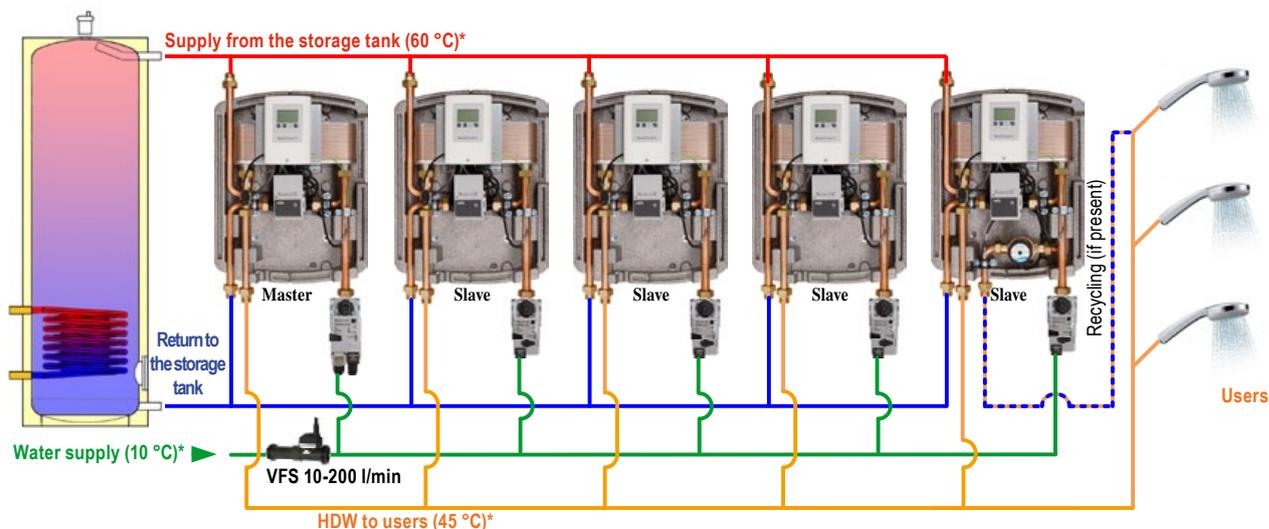
SYSTEM TO CONNECT ON CASCADE SEVERAL HDW PUMP UNITS MODvFRESH FOR INSTALLATIONS REQUIRING HIGH POWER AND FLOW



ModvFresh Kascata is an innovative management logic that allows to connect on cascade up to five standard ModvFresh pump units to deliver fresh hot domestic water, getting a maximum water flow of 200 l/min and a supplied thermic power of nominal 500 kW.

This system is suitable for inertial water tanks of big installations connected to solar thermal plants, to wood or pellet or biomass boilers etc. It provides the instantaneous production of hot domestic water avoiding phenomena of bacterial pollution (such as the legionnaire's disease) caused by hot water stagnation.

The installation is managed via bus by a *master* servomotor (**ModvMaster**, connected to the first **ModvFresh** unit) that, acquiring the value of the water flow delivered by the domestic water plant, consequently activates the other HDW units, controlling the pertinent fast actuation *slaves* servomotors (**ModvSlave**). The requested water flow is registered by a VFS sensor 10-200 l/min placed on the main cold water distributor. The **Kascata** system is very flexible and it can be planned and carried out with a modular approach, depending on the specific requirements of the installation.



Remark: temperature values marked with an asterisk (*) have to be considered as *nominal*.
For more information, please refer to the section "field of utilization"

Main technical specifications

- ✓ Possibility to connect 2 up to 5 **ModvFresh 3** or **ModvFresh 4** units, to get up to 200 l/min and 500 nominal kW;
- ✓ Control of the return temperature to the water tank optimized by every working unit, thanks to the function of speed modulation of the primary circulating pump. This adjustment allows to decrease the return water temperature to the buffer tank down to 15°C: for this reason no devices for the control of the stratified return are needed;
- ✓ Wide field of utilization: suitable for commercial installation, hotels, sport halls etc;
- ✓ "Routine" function that starts up uniformly every HDW unit, on the base of the worked time, allowing a working load equally distributed on the installed units;
- ✓ Possibility to enlarge the system (later on) with additional units, in case of increase of power and flow request;
- ✓ Progressive working of the system without water hammers, thanks to the use of **ModvSlave** technology to control the starting valves. The unit is started up or switched off in only 5 seconds;
- ✓ Possibility to manage a recycling line using, as last element of the system, a **ModvFresh** unit with recycling. Recycling timetables, temperature, flow can be set directly on each device;
- ✓ Metering of the heat quantity produced by every unit of HDW system.

List of components of control system of the installation



CE

ModvMaster

Primary servomotor (*master*) 24 volt AC/DC 35 seconds working time. **ModvMaster** is placed on the ball valve of the cold water inlet of the first **ModvFresh** and, thanks to the bus line, it controls every **ModvSlave** servomotor installed in the system. Its logic control is also enabled to get flow information read by the VFS digital sensor. The identification number assigned directly at factory to **ModvMaster** is no. 1.

Code: VLR24A-LP/DWCE



CE

ModvSlave

Secondary servomotor (*slave*) with fast actuation time of 5 seconds. **ModvSlave** is identified at factory on the base of the number of elements which constitute the cascade system (f.i. no.2, no.3, etc.) and necessarily it must be placed on the ball valve of the cold water inlet of the corresponding HDW unit **ModvFresh** (f.i. no. 2, no. 3, etc.).

Code: LRQ24A-MLP/E



Ball valve

2-ways On-Off ball valve suitable for drinking water. Bronze body. Yellow finish. Ends threaded ISO 228 (DIN 259 BSP 2779).

Equipped with housing system for **ModvMaster** and **ModvSlave** servomotors.

Kvs value: 12,0.

Dimension: 1" Male connections.

Code: R415D



CE

VFS Sensor

Flow sensor VFS 10-200 l/min. Composite material body. Power supply 5 VDC.

Dimension: connections 1"1/4 Male.

Code: VFS10-200



CE

Power Supplier

Signal converter for VFS sensor. Its function is to provide the power supply to the sensor VFS 10-200 l/min and to send the flow inputs to the servomotor **ModvMaster**. Power supply 230 VAC. IP 20.

It can be placed on 35 mm DIN guide.

Code: SI010

General information concerning the selection of components

Please read the here below list as a reference to select the components necessary to carry out your **ModvFresh Kascata** system. In particular, according to the specific power and flow requirements, please find here after the number of pieces of every individual component necessary to build the plant.

HDW MODVFRESH KASCATA system up to 500 nominal kW					
Components list	Codes	Units necessary according to the requested powers and flows			
		200 kW 80 l/min	300 kW 120 l/min	400 kW 160 l/min	500 kW 200 l/min
Standard ModvFresh units	031000-100-40 (ModvFresh 3) 031400-100-40 (ModvFresh 4)	2 pcs	3 pcs	4 pcs	5 pcs
ModvMaster	VLR24A-LP/DWCE	1 pc	1 pc	1 pc	1 pc
ModvSlave	LRQ24A-MPL/E	1 pc	2 pcs	3 pcs	4 pcs
Ball valves	R415D	2 pcs	3 pcs	4 pcs	5 pcs
VFS sensor	VFS10-200	1 pc	1 pc	1 pc	1 pc
VFS feeder	SI010	1 pc	1 pc	1 pc	1 pc
Kascata with recycling (*)	031010-100-40 (ModvFresh 3) 031415-100-40 (ModvFresh 4)	1 pc	1 pc	1 pc	1 pc

(*) If the cascade system requires a recycling line, during the stage of selection of components, it will be necessary to replace one of the standard **ModvFresh** units with the model provided with the recycling function. See the table reported above for the choice of the model.

As an example, assuming to make a 4 units installation (400kW – 160 l/min) with recycling, it would be necessary to foresee the installation of three **ModvFresh 3** standard units (Code 031000-100-40) and one **ModvFresh 3** unit with recycling (Code 031010-100-40). In total 4 units, as shown on the above list. To make the installation easier we suggest to set up the recycling unit always as the last element of the cascade.

Technical and dimensional specifications

FIELD OF UTILIZATION:

For a maximum nominal power of 500 kW and flow up to 200 l/min.
 Nominal supply temperature of the storage tank: 60°C.
 Nominal temperature of the water supply: 10°C.
 Nominal temperature of HDW production: 45°C, adjustable from 30°C to 70°C.
 Recycling line temperature adjustable from 10°C up to 40°C.



DANGER SCALDS

To avoid scalds to the user the supplied water must never be over 60°C. This temperature limit is preselected into the controller, anyway it can be reduced.



DANGER SCALDS

The controller of the product ModvFresh with recycling line, in order to avoid the bacterial pollution in the HDW circuit, is equipped with a specific disinfection program that rises significantly the temperature in the recycling line, killing the eventual bacteria inside. Consequently, during this operation, also the hot water to the user reaches very high temperatures, causing the risk of instantaneous scalds. Therefore, it is recommended to set the start of the disinfection's program in a time when the water request from the user is low (f.i. during the night) and, however, to install a security anti-scald device in the outlets considered dangerous.

Minimum pipings diameters

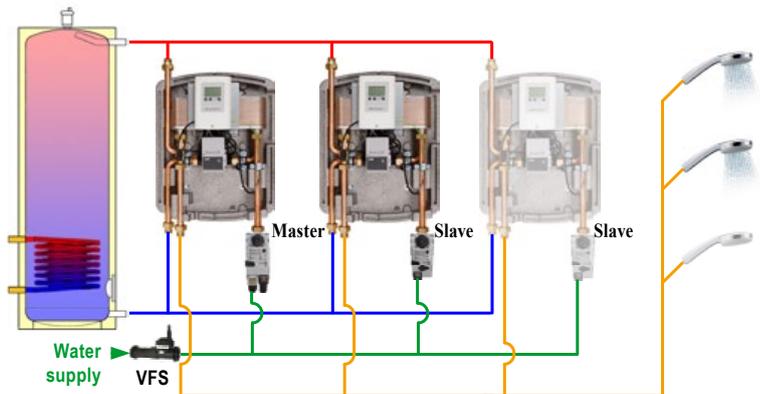
No. of MODVFRESH pump units, 100 kW	Installation pipings [mm]	Recycling line pipings (if present)
2 pcs	DN25 (Cu 28x1,5)	DN15
3 pcs	DN32 (Cu 35x1,5)	DN15
4 pcs	DN32 (Cu 35x1,5)	DN20
5 pcs	DN40 (Cu 42x1,5)	DN20

Main working methods of the installation

ModvFresh Kascata has several working methods, according to the user's requirements (for example a 3 units installation is schematized).

Starting of the installation and selective activation of the units

In the starting configuration, without any user's requirement, the first **ModvFresh (master)** is in effectiveness condition (to be more precise it is in stand-by) because the isolating valve managed by **ModvMaster** is usually open. After the request of the first user, the **ModvFresh** number 1 is activated and it starts to produce hot domestic sanitary water. Then, according to the increase of users and, consequently, of the requested flow, the VFS sensor progressively registers this increase and sends this input to **ModvMaster** that controls the opening of the isolating valves placed on the cold water inlet of every unit and, consequently, the starting of the slave units necessary to allow the requested mixed water flow (in the scheme at side the requested flow is given by units 1 and 2). Therefore, in this working mode, every individual unit is activated or deactivated according to the variation of the request of hot water.

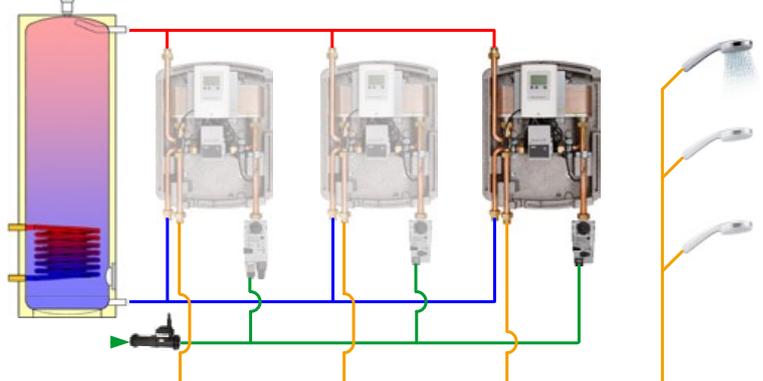


Stop of the installation and routine function

Once the user's request stops, **ModvMaster** operates the closing of all the isolating valves except the one of the priority unit. It is important to say that it does not coincide necessarily with the unit number 1 (on which **ModvMaster** is placed), because it is the routine function that determines, time by time and according to the worked hours of every unit, which one has to be kept in stand-by.

When a new user's request is coming, the unit which, in that particular moment, is considered primary will start up giving again the flow and, if necessary, **ModvMaster** will operate on the insulating valves of other units, bringing back the system into the condition of scheme 1.

The importance of the routine function is fundamental, in fact it allows a balanced load on all the units of the system.

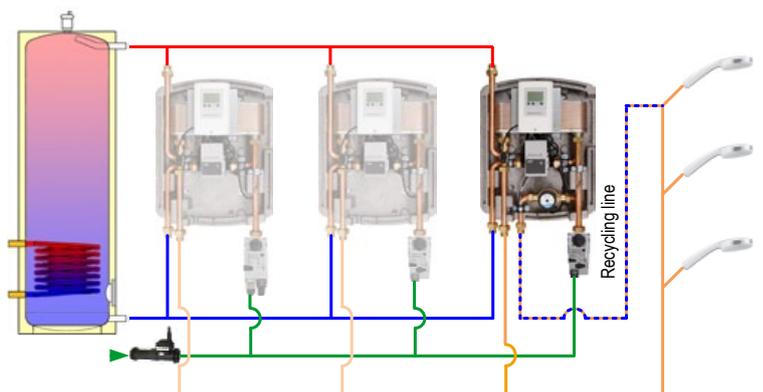


Control of HDW

Recycling line

If the planning of the installation requires a recycling line, it is possible to manage this function by installing, as the last element of the cascade (to simplify the hydraulic connections), a **ModvFresh** unit with recycling.

The starting time bands and the recycling line temperature can be set directly on the built-in controller of the special unit.



DomvS Circ 1

HOT DOMESTIC WATER (HDW) RECYCLING KIT FOR STORAGE TANK WITH COILS

Code: **103729-(2.5/4.0)** - with circulating pump: **103729-(2.5/4.0)-(R/RU)**



PED 97/23/EC, art. 3.3

For instantaneous storage tank with coils

The kit allows to connect the recycling way of the hot domestic water to an instantaneous storage tank with coils in a very simple way. The pre-assembled kit, by means of a stainless steel flexible pipe, makes a counter-current circulation that warms the water along the recycling way.

Two models are available:

- ✓ Kvs 2,5 for small use.
- ✓ Kvs 4,0 for medium use.

Working features:

- ✓ Anti scald thermostatic-mixer.
- ✓ Adjustable control of the temperature to the user by means of a knob from 35°C up to 60°C.
- ✓ Possibility to lock the rotation of the knob.
- ✓ Check valve built into the inlet fitting of cold water.
- ✓ High efficiency circulating pump (in the model that include it) for the recycling way equipped with temperature sensor to restrict its working, keeping the water inside the pipe at the selected temperature. The pump automatically stops when the water temperature gets to the value set on the body of the motor (between 20 and 70°C).
- ✓ High efficiency circulating pump (in the model that include it) equipped with temperature sensor and timer for a better energy saving.

Technical features

- ✓ Maximum static pressure 10 bar (PN 10); dynamic 5 bar.
- ✓ Maximum ratio between the pressures: 2:1.
- ✓ Maximum inlet temperature: 95°C.
- ✓ Setting temperature range: 35-60°C.
- ✓ Setting stability: ±2°C (Kvs 4,0); ±1°C (Kvs 2,5).

Connections: 3/4" Union Male
1" Male to the storage tank
1/2" Male to the recycling



Available Kvs:

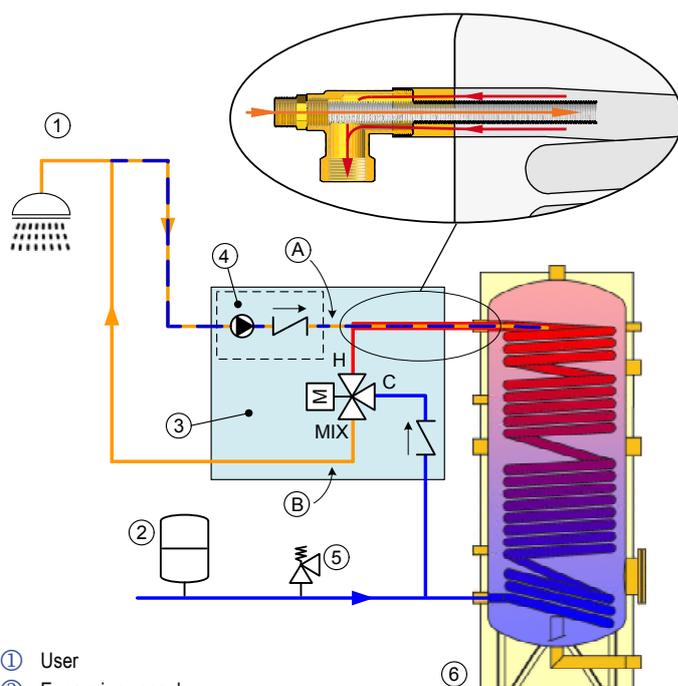
2.5 = Maximum Kvs 2,7; up to 55 l/min (1,5 bar).
 4.0 = Maximum Kvs 4,0; up to 82 l/min (1,5 bar).



Available circulating pumps:

With temperature sensor (R)
 With temperature sensor and timer (RU)

Hydraulic scheme

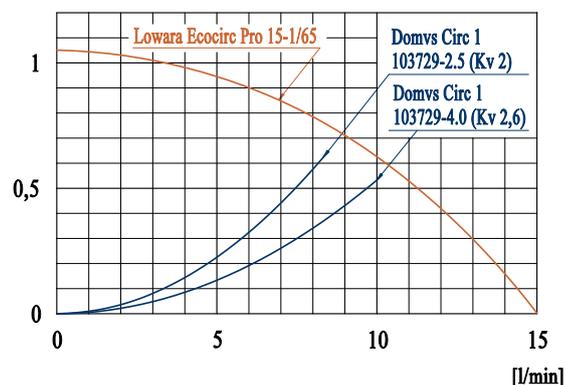


- ① User
- ② Expansion vessel
- ③ DomvS Circ 1
- ④ Circulating pump and check valve (included only in the models R and RU)
- ⑤ Security valve
- ⑥ Storage tank
- A and B Measuring points to determine the headlosses

Recycling working way

When the circulating pump starts, the cold water into the recycling loop, flowing through the flexible pipe, comes back warmed towards the gate H of the mixer; the gate C of the mixer is usually closed until when the temperature of the recycling loop is approaching to the one selected on the mixer (this condition is unlikely to be happened). The recycling circulation into the recycling loop is working until the circulating pump sensor or timer are satisfied.

[mH₂O]



Lowara Ecocirc Pro 15-1/65 circulating pump.

The headloss of the DomvS Circ 1 kit is measured between the points A and B of the hydraulic scheme.

DomvS Circ 2

HOT DOMESTIC WATER RECLYNG KIT FOR STORAGE TANK

Code: 203726-4.0-(R/RU)



CE

PED 97/23/EC, art. 3.3

NEW!
For storage tank



Particular of the circulating pump provided with thermostat and timer

The kit allows to make easily the connections between the installation of circulation of hot domestic water and a storage tank. The kit is pre-assembled and insulated and, by means of an anti-scald thermostatic mixer, it allows to set the user's hot water temperature from 35 up to 60°C. The recycling way temperature is adjusted in an independent way by a special thermostat placed on the high efficiency circulating pump, meanwhile a special metal back plate allows an easy fitting to either a wall or to the storage tank. Suitable for medium powers up to 82 l/min. (1,5 bar).

Features:

- ✓ Anti scald thermostatic mixer.
- ✓ Control of user's temperature adjustable by means of a knob from 35°C up to 60°C.
- ✓ Possibility to lock the rotation of the handle of the thermostatic mixer.
- ✓ The check valves and the isolating valves in the kit do not require the installation of any other hydraulic control component.
- ✓ Thermometers with scale 0=120°C display the temperature of the storage tank water, mixed towards the user and towards the recycling.
- ✓ High efficiency circulating pump for the recycling way with temperature sensor to restrict the working time, keeping the water into the piping at the requested temperature. The pump automatically stops when the water temperature reaches the set value on the body of the motor (between 20 and 70°C).
- ✓ Version with circulating pump equipped with thermostat and timer for a better energy saving.
- ✓ Back plate to fit the kit to the wall or to the storage tank.

Technical features

- ✓ Maximum static pressure 10 bar (PN10); dynamic 5 bar.
- ✓ Maximum ratio between the pressures 2:1.
- ✓ Maximum inlet temperature of the thermostatic mixer: 95°C.
- ✓ User's setting temperature range: 35÷60°C.
- ✓ Setting stability: ±2°C.

Connections: 3/4" Female.



Available Kvs:

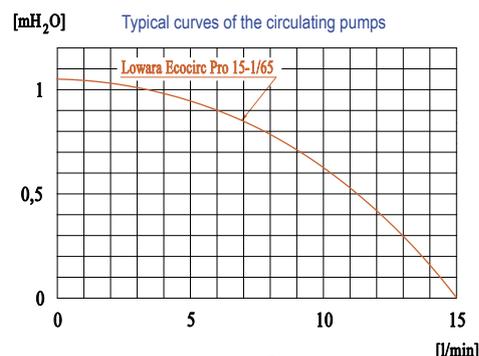
4.0 = Maximum Kvs 4,0; up to 82 l/min (1,5 bar).



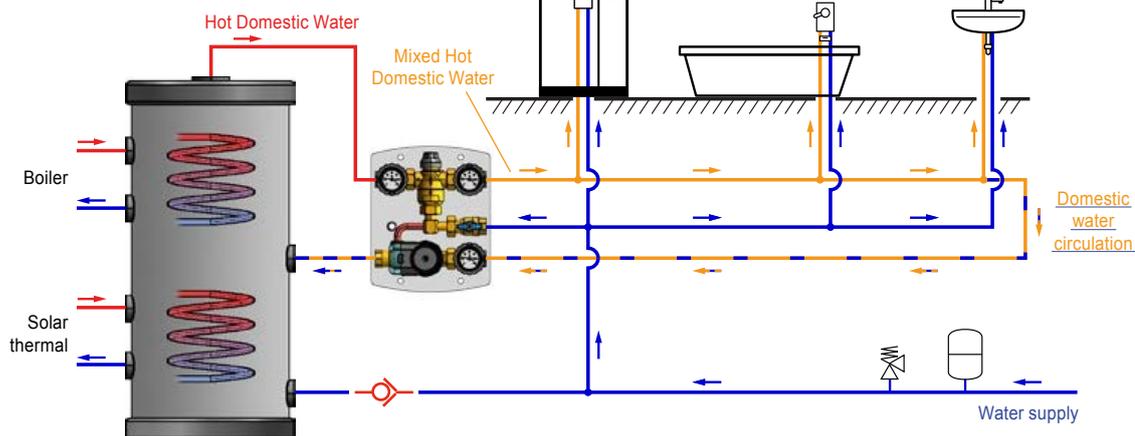
Available circulating pumps:

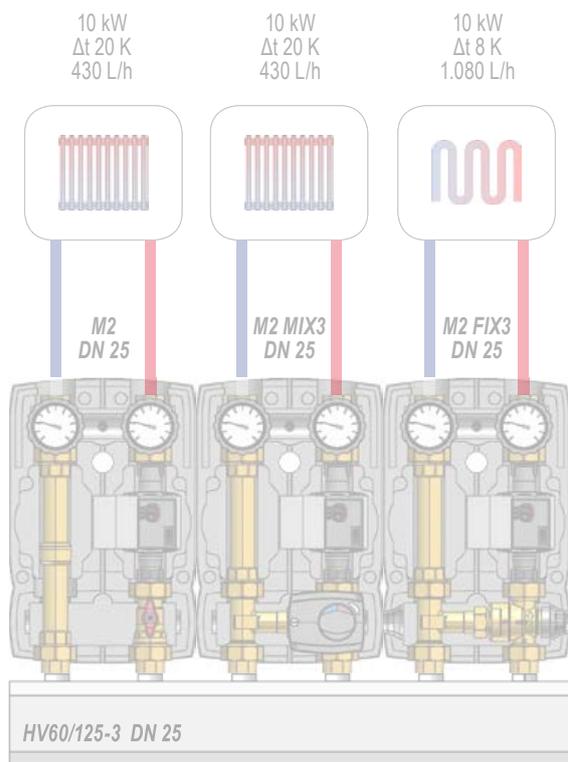
With temperature sensor (R)
With temperature sensor and timer (RU)

Thermostatic mixing valve: test carried out at our laboratory at a differential pressure of 1 bar
Kvs 4,0: $T_H:65^\circ\text{C}$ $T_C:15^\circ\text{C}$ $T_{MIX}:51^\circ\text{C}$ (knob in position 3) → 65 l/min



Hydraulic scheme





Heat source: solid fuel boiler.

Buffer tank loading from the boiler:

Version 1:

employment of anti-condensing pump unit

MCCS DN25; Δt 20 K;

Version 2:

employment of anti-condensing recycling pump unit

M2 FIX3 CS DN25; Δt 20 K;

Distribution:

Heating distributor HV 60/125 DN25 for 3 pump units.

Heating users:

- Low power radiator line, Δt 20 K:

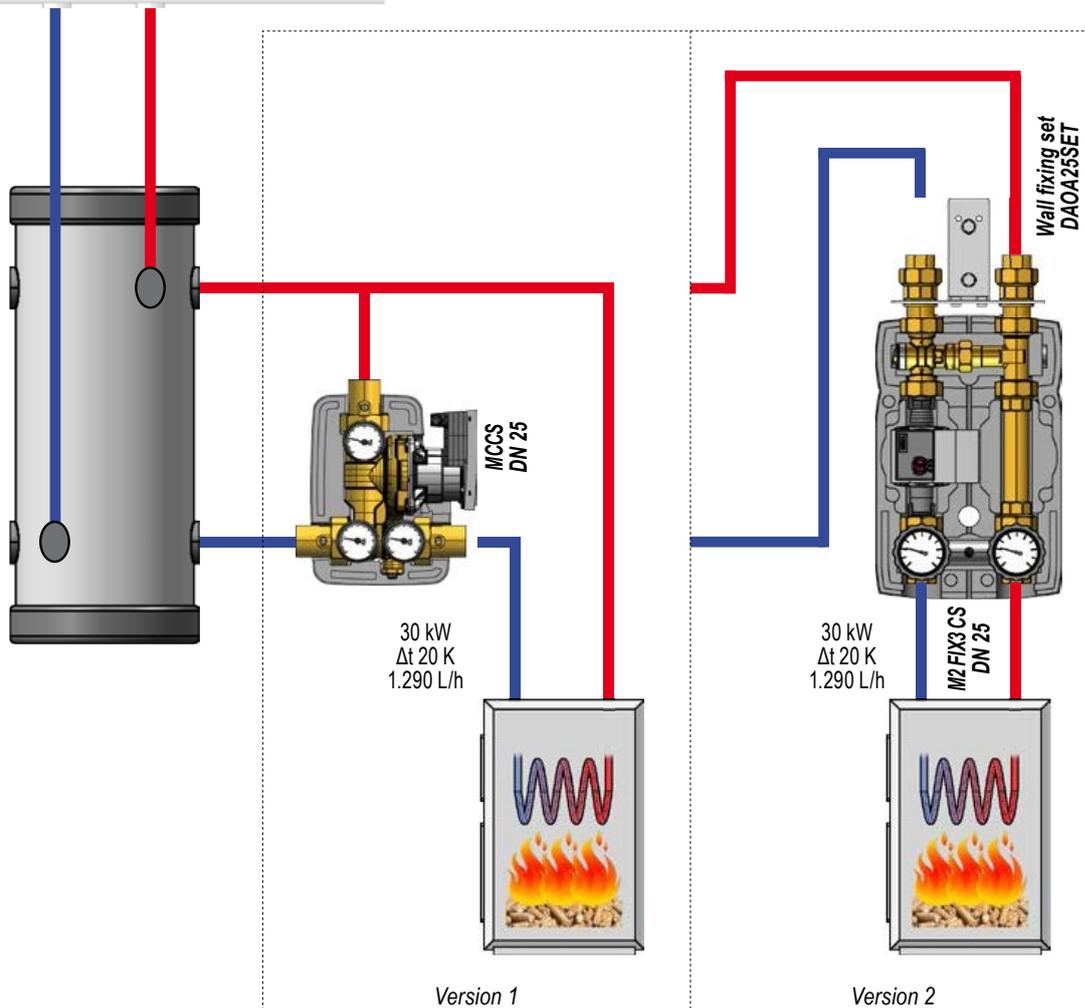
unmixed pump unit **M2 DN25;**

- Low power radiator line, Δt 20 K:

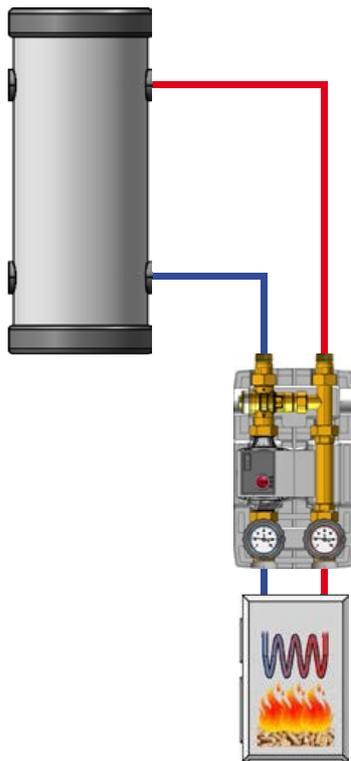
mixed pump unit **M2 MIX3 DN25;**

- Low power under floor heating line, Δt 8 K:

fixed temperature pump unit **M2 FIX3 DN25.**



With recycling thermic valve



M2 FIX3 CS

2-WAY PUMP UNIT WITH RECYCLING THERMIC VALVE FOR SOLID FUEL BOILERS

Code: **20255R-F(3/4/5)CS** - with circulating pump: **20255R-F(3/4/5)CS-(C6/UL7/C8)**

The unit for 1/2" (130 mm) circulating pumps consists of:

SUPPLY:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red; 0°C-120°C).
- ✓ "T" connection for thermic valve.
- ✓ Connection.

RETURN:

- ✓ Connection.
- ✓ Recycling thermic valve with the sensor dipped into the fluid. Start opening temperature: 60°C (F3), 45°C (F4) and 55°C (F5).
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue, range 0°C-120°C).

Centre distance 90 mm. EPP insulation box (Measurements: 180x302x142 mm).

PN 10, max temperature 100°C (unit without pump).

Connections: 3/4" Female to the heat source.

3/4" Male with swivel tang to the user.

FIELD OF UTILIZATION:

For power up to 28 kW (with Δt 20 K) and maximum flow 1200 l/h.

Kvs Value: 2,8.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curve.



Available recycling thermic valves:

Temp. of opening start 60°C (F3)

Temp. of opening start 45°C (F4)

Temp. of opening start 55°C (F5)



Available circulating pumps:

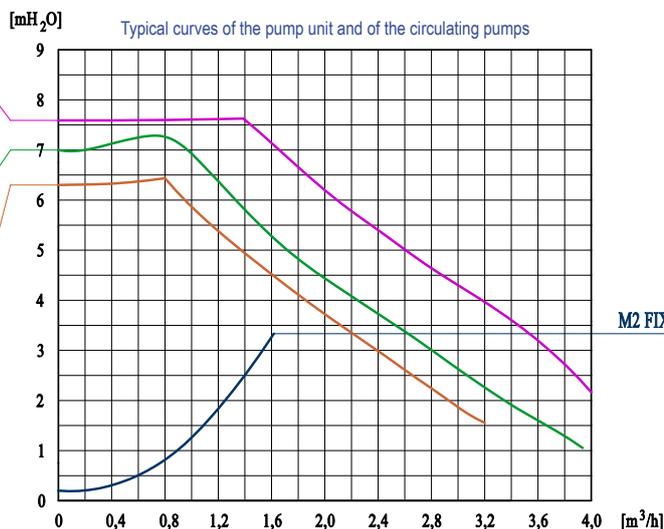
Wilo Yonos Para RS 15/6 RKC (C6)

Grundfos UPM3 AUTO L 15-70 (UL7)

Wilo Yonos Para RS 15/7,5 RKC (C8)

We suggest you to install two isolating valves Art. 552 (see the section "Distributors") after the pump unit to allow an easy service or replacement of the components of the unit.

Code: 03552/M



Installation:

We recommend to install the DN20 pump unit as supply unit of the buffer tank. If directly connected to the hydraulic switcher and to the distributor, please check the compatibility of the headlosses of the pump unit in comparison to the requested flows.

Standard version: right supply. Left supply version available with extra price: see price list.

MODVLVS DN25 Anti-condensing Pump Units

The pump units for solid fuel boilers (wood, pellets, etc.) allow the connection of the heating system or of the inertial water tank to heat source. By means of a 3-way recycling thermic valve (M2 FIX3 CS), or by means of a 3-way mixing valve managed by a servomotor with electronic control (M2 MIX3 CS), the return temperature is kept always at a level upper than the condensation one, preventing deposits both into the boiler and into the chimney flue, so improving the efficiency and the life.



M2 FIX3 CS

M2 MIX3 CS

With recycling thermic valve



M2 FIX3 CS

2 WAY PUMP UNIT WITH RECYCLING THERMIC VALVE FOR MEDIUM POWER SOLID FUEL BOILERS

Code 1": 20355R-F(3/4/5)CS - with circulating pump: 20355R-F(3/4/5)CS-(Y6/U7/Y8)
Code 1"1/4: 20455R-F(3/4/5)CS - with circulating pump: 20455R-F(3/4/5)CS-(Y6/U7/Y8)

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red: 0°C-120°C).
- ✓ "T" connection for thermic valve.
- ✓ Connection.

RETURN:

- ✓ Connection.
- ✓ Recycling thermic valve with the sensor dipped into the fluid.
Start opening temperature: 60°C (F3), 45°C (F4) and 55°C (F5).
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue, range 0°C-120°C).

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 100°C (unit without pump).

External connections: 1" Female and 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 32 kW (with Δt 20 K) and maximum flow 1400 l/h.

Kvs Value: 3,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available recycling thermic valves:
Temp. of opening start: 60°C (F3)
Temp. of opening start: 45°C (F4)
Temp. of opening start: 55°C (F5)



Synchronous circ. pumps:
Wilo Yonos Para RS 25/6 (Y6)
Grundfos UPM3 Auto L 25-70 (U7)
Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") after the pump unit to allow an easy service or replacement of the components of the unit.

Code 1": 0266/M

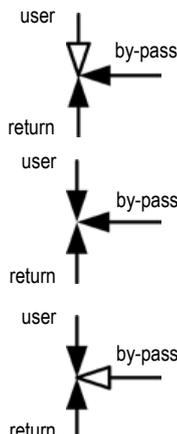


Operation of the recycling thermic valve: (f.i. model F5 - 55°C)

(1) - When the boiler starts, the thermic valve is closed towards the user until when the fluid of the circuit of the generator is getting the opening temperature of the thermic valve (55°C). During this stage the fluid is recycling through the by-pass.

(2) - When the temperature gets the opening level of the thermic valve (55°C), the way to the user is proportionally opening and the by-pass is proportionally closing.

(3) - In that way the supply temperature is increasing in a progressive way up to the total opening of the thermic valve and up to the total closing of the by-pass. This happens when the temperature is about 10 K more than the start opening value (in our example about 65°C). Now the installation is running and the temperature of the supply fluid can increase up to the set up temperature.



Standard version: right supply. Left supply version available with extra price: see price list.

With mixing valve and servomotor



M2 MIX3 CS

2-WAY PUMP UNIT FOR HIGH POWER SOLID FUEL BOILERS WITH ELECTRONIC SERVMOTOR FOR THE CONTROL OF THE RETURN TEMPERATURE

Code 1": 20355R-M3C-CT - with circulating pump: 20355R-M3C-(Y6/U7/Y8)-CT
Code 1"1/4": 20455R-M3C-CT - with circulating pump: 20455R-M3C-(Y6/U7/Y8)-CT

The unit for 1" (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Flanged ball valve with non return valve 20 mbar (which can be excluded by rotating the handle by 45°) supplied with in-handle thermometer (coded red; 0°C-120°C).
- ✓ "T" connection for mixing valve and swivel nut.
- ✓ Connection.

RETURN:

- ✓ Connection.
- ✓ 3-way mixing valve with electronic servomotor.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Temperature sensor.

Centre distance 125 mm. EPP insulation box (Measurements: 250x380x170 mm).

PN 10, max temperature 110°C (unit without pump).
External connections: 1" Female and 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 50 kW (with Δt 20 K) and maximum flow 2150 l/h.
Kvs Value: 6,0.

Approximate data calculated with a 6 m nominal lifting power circulating pump.

For an accurate measuring or for higher flows, please refer to the curves shown in the technical section.



Available circulating pumps:

Wilo Yonos Para RS 25/6 (Y6)
Grundfos UPM3 Auto L 25-70 (U7)
Wilo Yonos Para RS 25/7,5 (Y8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN25 Distributors") after the pump unit to allow an easy service or replacement of the components of the unit.

Code 1": 0266/M

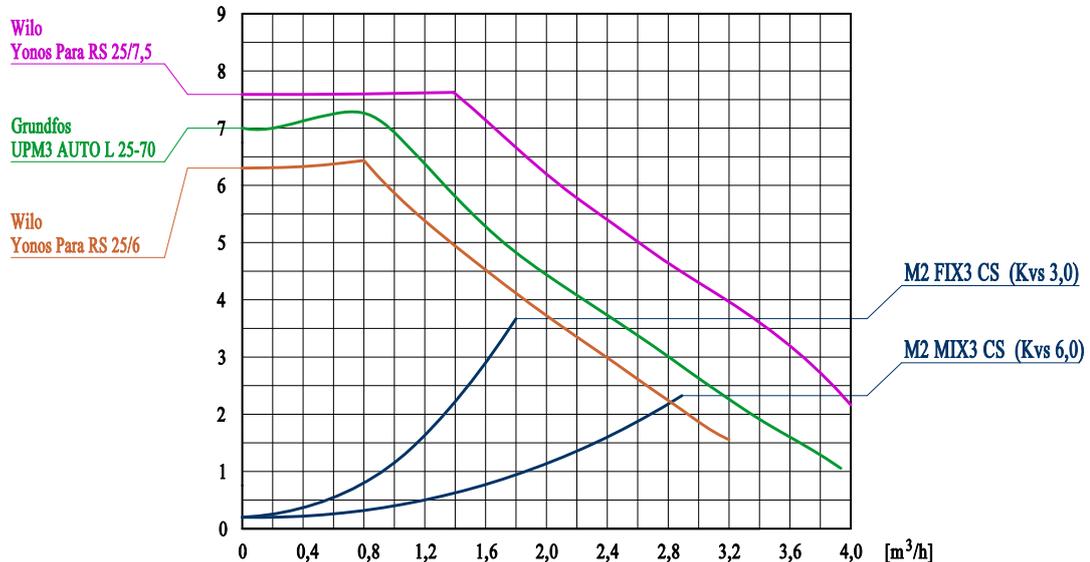


The electronics of servomotor keeps constant the set temperature of the return way, monitoring it by means of a sensor (included) mounted on the pipe. Display of the measured temperature and target temperature, on reversible LCD display.

Adjustment of target temperature adjustable from 0°C up to 99°C.
Operating range of 90°.

Power supply 230V, 2 min, torque 6 Nm. IP42.

[mH₂O] Typical curves of anti-condensing pump units and circulating pumps



Standard version: right supply. Left supply version available with extra price: see price list.



CE



M2 Exchange

HEAT EXCHANGE UNIT

Code 16 plates: 203646-E16

Code 26 plates: 203646-E26

Code 40 plates: 203646-E40

Heat exchange unit for hydraulic installations with insulation box, made of hot forged brass. By means of this unit it is possible to divide hydraulically the primary circuit fed by a wood, pellet boiler etc. from the secondary circuit (f.i. underfloor heating system) in the installations where it is not allowed to use the same vector fluid in all the circuit.

Weld-braised plates heat exchanger made of stainless steel AISI 316. Prepared for the direct connection to the anti-condensing pump unit of the primary circuit and to the mixed pump unit of the secondary circuit by the means of 1" Male connections. It is also possible to connect several fittings to the "T" connectors.

A 3 bar security unit with the manometer $\varnothing 50$ mm (0-4 bar) and a draining valve already are provided in the "heating" circuit (secondary).

Centre distance 125 mm. EPP insulation box (Measurements: 250x143x218).

50 kW security valve.

PN 10. Constant temperature 100°C.

External connections: 1" Male.

Draining kit for security unit

Hot forged brass connection with ball valve to fill/drain the installation.

3/4" Nut for the connection to the security unit.

3/4" Male for the connection to the expansion vessel.

End of drain side 3/4" Male.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

Code: 103647P



Sensor holder pit

Sensor holder pit $\varnothing 6$ mm for TT series sensors. Equipped with a M4 screw to fix the temperature sensor.

The connection to the "T" connector is allowed by the means of a special seal kit with precharged EPDM OR that does not need any seal paste, hemp or other sealants.

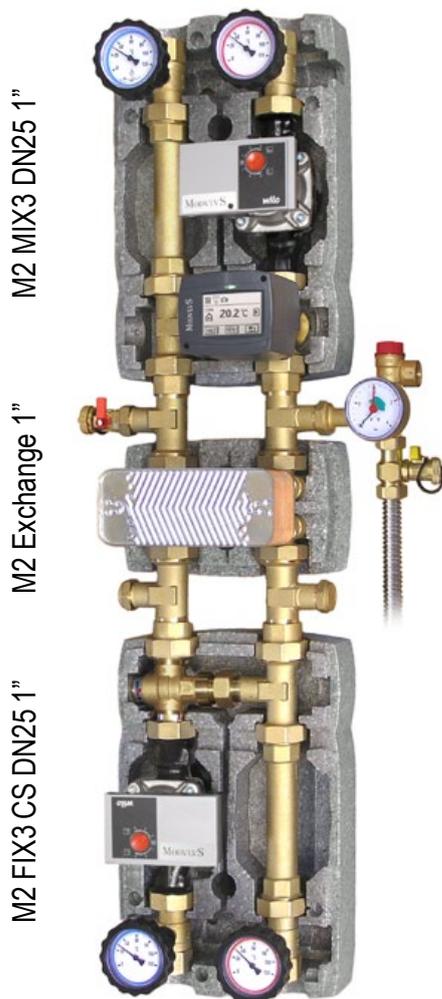
PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

Code: POZ-646-6SET

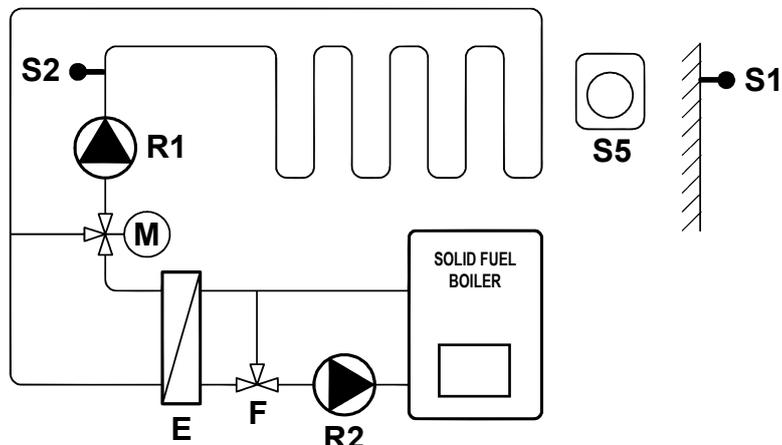


Heat Exchange

MODVLVS DN25 Heat Exchange Unit



Standard schema



- ✓ S1: External temperature sensor.
- ✓ S2: Supply temperature sensor.
- ✓ S5: Ambient temperature sensor DD2+ (option).
- ✓ R1: Mixed high efficiency circulating pump (secondary).
- ✓ M: 3-way motorized mixing valve of the mixed circuit (secondary) with built-in climatic controller.
- ✓ F: Thermic valve of the boiler circuit (primary).
- ✓ R2: Boiler circuit high efficiency circulating pump (primary).
- ✓ E: Plates heat exchanger.

Standard installation operated by touch screen climatic controller CMP25-2

Field of utilization

For power up to:	16 kW	20 kW	24 kW
Exchanger number of plates:	16	26	40
Mixed circuit flow (secondary) * (max.):	1,4 m ³ /h	1,7 m ³ /h	1,9 m ³ /h
Headloss of the mixed circuit (secondary) * (max.):	0,5 mH ₂ O	0,8 mH ₂ O	1 mH ₂ O
Exchanger headloss * (max.):	1,7 mH ₂ O	1,1 mH ₂ O	0,9 mH ₂ O
Total headloss of the mixed circuit (secondary). Pump unit + exchanger * (max.):	2,2 mH ₂ O Kvs=3,0	1,9 mH ₂ O Kvs=3,9	1,9 mH ₂ O Kvs=4,4
Lifting power set for solar loop circulating pump (primary)/ secondary (Storage tank):	4 / 6	6 / 7	6 / 7
Residual lifting power of the mixed circuit (secondary) in meters:	4	5,4	5,3

* : Headloss related to the maximum flow of the mixed circuit (secondary).

NB: These data must be considered just as an indication. They are based on a ΔT of 10 K between the supply and the return (in both the circuits) and on the average performances of the circulating pumps, the data must be checked taking into consideration the specifications of the installation that is to be carried out.

With recycling thermic valve



M2 FIX3 CS

2 WAY PUMP UNIT WITH RECYCLING THERMIC VALVE FOR SOLID FUEL BOILERS

Code 1"1/4: 20555R-F(3/4/5)CS - with circulating pump: 20555R-F(3/4/5)CS-(A6/P7/P8)

The unit for 1"1/4 (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Flanged ball valve supplied with in-handle thermometer (coded red; 0°C-120°C).
- ✓ "T" Connection for thermic valve with 20 mbar non return valve (ball valve side).
- ✓ Connection.

RETURN:

- ✓ Connection.
- ✓ Recycling thermic valve with the sensor dipped into the fluid.
Start opening temperature: 60°C (F3), 45°C (F4) and 55°C (F5).
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue, range 0°C-120°C).

Centre distance 125 mm. EPP insulation box (Measurements: 250x400x170 mm).

PN 10, max temperature 100°C (unit without pump).

External connections: 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 93 kW (with Δt 20 K) and maximum flow 4000 l/h.

Kvs Value: 7,0.

Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilo Stratos Para 30/1-8).

For an accurate measuring or for higher flows, please refer to the diagram.



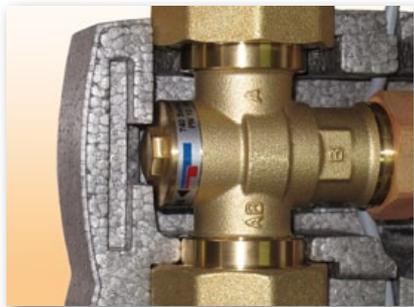
Available recycling thermic valves:
Temp. of opening start: 60°C (F3)
Temp. of opening start: 45°C (F4)
Temp. of opening start: 55°C (F5)



Synchronous circ. pumps:
Grundfos Alpha 2L 32-60 (A6)
Wilo Stratos Para 30/1-7 (P7)
Wilo Stratos Para 30/1-8 (P8)

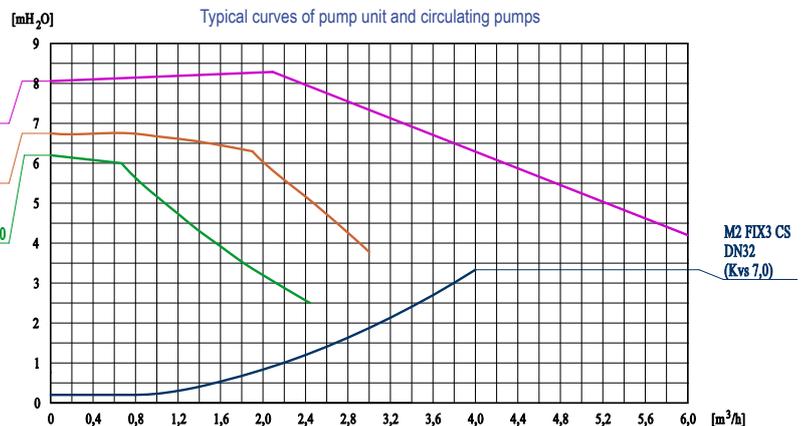
We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN32 Distributors") after the pump unit to allow an easy service or replacement of the components of the unit.

Code 1"1/4: 05552/M



Installation:

The DN32 anti-condensing pump unit, thanks to the plentiful dimensions of the thermic valve, can feed directly the distribution unit (hydraulic switcher and distributor) without going through the buffer tank. In fact the very low headlosses of the pump unit allow a high flow in the primary circuit up to 4.000 l/h.



Standard version: right supply. Left supply version available with extra price: see price list.

With mixing valve and servomotor



M2 MIX3 CS

2-WAY PUMP UNIT FOR SOLID FUEL BOILERS WITH ELECTRONIC SERVMOTOR FOR THE CONTROL OF THE RETURN TEMPERATURE

Code 1"1/4: 20555R-M3C-CT - with circulating pump: 20555R-M3C-(A6/P7/P8)-CT

The unit for 1"1/4 (180 mm) circulating pumps consists of:

SUPPLY:

- ✓ Flanged ball valve supplied with in-handle thermometer (coded red; 0°C-120°C).
- ✓ "T" Connection for mixing valve with 20 mbar non return valve (ball valve side).
- ✓ Connection.

RETURN:

- ✓ Connection.
- ✓ 3-way mixing valve with electronic servomotor.
- ✓ High efficiency synchronous pre-wired circulating pump (for the models that include it).
- ✓ Flanged ball valve supplied with in-handle thermometer (coded blue, range 0°C-120°C).
- ✓ Temperature sensor.

Centre distance 125 mm. EPP insulation box (Measurements: 250x400x170 mm).

PN 10, max temperature 110°C (unit without pump).

External connections: 1"1/4 Female.

FIELD OF UTILIZATION:

For power up to 111 kW (with Δt 20 K) and maximum flow 4800 l/h.

Kvs Value: 13,0.

Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilo Stratos Para 30/1-8).

For an accurate measuring or for higher flows, please refer to the diagram.



Available circulating pumps:

- Grundfos Alpha 2L 32-60 (A6)
- Wilo Stratos Para 30/1-7 (P7)
- Wilo Stratos Para 30/1-8 (P8)

We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN32 Distributors") after the pump unit to allow an easy service or replacement of the components of the unit.

Code 1"1/4: 05552/M

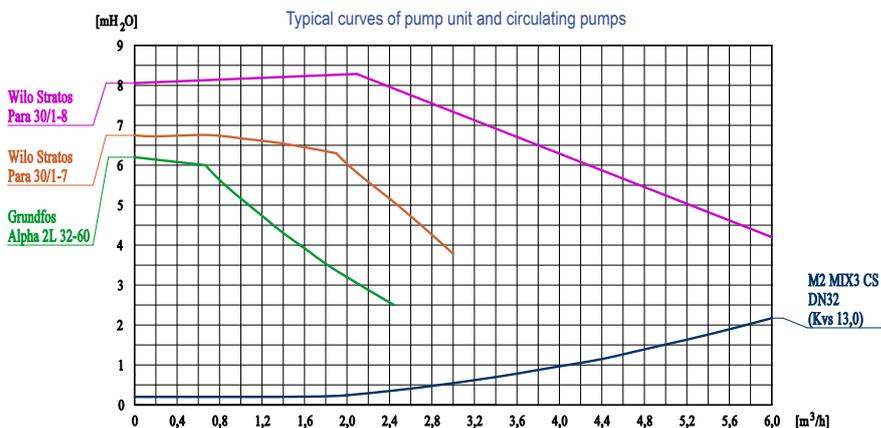


The electronics of servomotor keeps constant the set temperature of the return way, monitoring it by means of a sensor (included) mounted on the pipe. Display of the measured temperature and target temperature, on reversible LCD display.

Adjustment of target temperature adjustable from 0°C up to 99°C.

Operating range of 90°.

Power supply 230V, 2 min, torque 6 Nm. IP42.



Standard version: right supply. Left supply version available with extra price: see price list.



PED 97/23/EC, art. 3.3



Art. 749

ANTI-CONDENSING VALVE WITH THERMOSTATIC CONTROL

Code 3/4": 03749-xx

Working:

The anti-condensing thermic valve optimizes the connection of the solid fuel heating source to the heating system or to the buffer tank, by adjusting automatically the return water temperature to the heating source at the thermostat setting value.

The device keeps the heating source at high temperature (always higher than the condensing temperature) in any working condition, preventing deposits both into the boiler and into the chimney flue, so improving the efficiency and the life. Therefore also corrosion problems of the heating source or dangerous fires of the chimney flues are avoided.

Technical features:

Anti-condensing thermic valve with thermostatic control of the return temperature to solid fuel heating sources.

Hot forged brass body with pipe union connections. Yellow brass finish.

- ✓ Maximum working pressure: 10 bar.
- ✓ Maximum temperature: 100°C.
- ✓ Setting temperatures: 45°C, 55°C and 60°C; (70°C and 80°C on demand).
- ✓ Seal: watertight between the A-AB gates; 3% leak rate of Kvs between B-AB gates.
- ✓ Easy service or replacement of the sensor to change the calibration without removing the valve from the installation.

PN 10. A-AB kvs value: 3,5. B-AB kvs value: 2,3.

Nominal opening temperature: setting temperature + 10 K.

Available external connections: 3/4" Male pipe union.

FIELD OF UTILIZATION:

For a maximum power that can be managed up to 32 kW (with Δt 20 K) and maximum flow 1400 l/h.



Available calibration temperatures:

45 = 45 °C
55 = 55 °C
60 = 60 °C



Calibration temperatures available on demand:

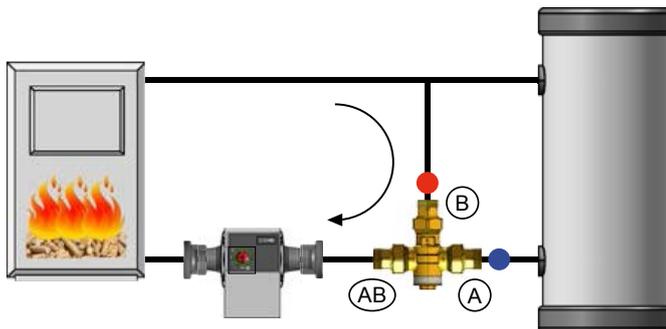
70 = 70 °C
80 = 80 °C

Mounting:

The valve can be mounted on both sides of the heating source, in vertical or horizontal position:

- ✓ On the return pipe to the boiler (setting at 45°C, 55°C or 60°C), in mixing mode;
- ✓ On the supply pipe to the buffer tank (setting at 70°C or 80°C), in diverting mode with installation control function.

To optimize the anti-condensing control, we advise to mount the device on the return to the boiler (scheme 1).

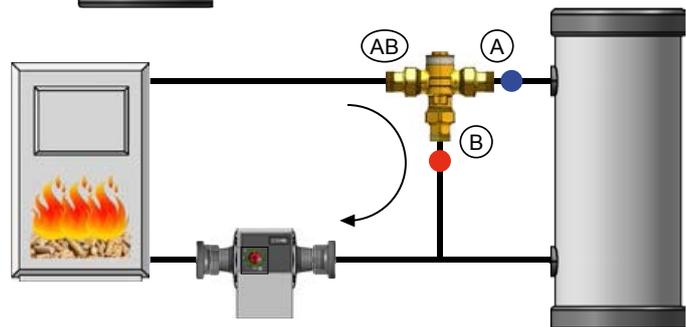


Scheme 1:

Mounting in mixing mode with anti-condensing function.
Max. Δp : 100 kPa

Scheme 2:

Mounting in diverting mode with installation control function.
Max. Δp : 30 kPa

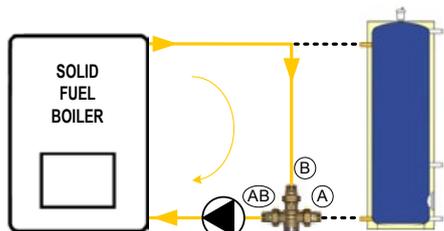


MODVLVS DN25 Anti-condensing Valves

Way of working

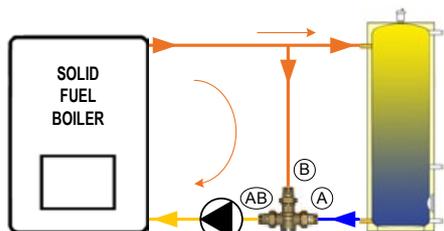
The hydraulic schemes shown here after are related to the use of the thermic valve in *mixing mode* that, as previously said, allows the optimization of anti-condensing control.

Attention: the following representations are to be considered just as an indication and they have no completeness pretension.



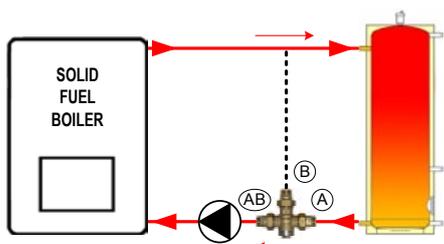
① Start of the system (heating of the boiler)

After the starting of the boiler, the thermic valve is fully closed towards the user (**gate A**) and this condition remains until the fluid, warmed up by the heating source, gets the opening temperature of the thermic valve (corresponding to the calibration value, f.i. 55°C). During this step the fluid sent by the boiler fully recycles through the by-pass (**gate B**) and the boiler temperature rises very quickly.



② Loading of the system (heating of the tank)

At the achievement of the opening temperature (f.i. 55°C), the way to users (**gate A**) proportionally starts to open meanwhile, the by-pass (**gate B**) is going to be closed. The boiler temperature slowly rises, giving energy to the user but, in any case, the return temperature will not decrease any more below the calibration temperature (f.i. 55°C).



③ Working system

Starting from the condition of point 2, the supply temperature progressively rises up to the full opening of the thermic valve (**gate A**) and up to the corresponding shutting of by-pass (**gate B**). This happens at about 10 K more than the calibration or opening temperature (therefore, in the example in hand at about 65°C). Now the installation is on working and the supply fluid temperature can rise up to the set value.



PED 97/23/EC, art. 3.3

Art. 746

Anti-condensing thermic valve with thermostatic control of the return temperature to the heat solid fuel sources.

Hot forged brass body. Yellow brass finish.

External connection: 1" Male flat seal.

Technical features and calibration temperatures remain the same as those listed for the art. 749.

Code: **04746-xx**



PED 97/23/EC, art. 3.3

Art. 740

Anti-condensing thermic valve with thermostatic control of the return temperature to the heat solid fuel sources.

Hot forged brass body. Yellow brass finish.

External connection: 3/4" Female.

Technical features and calibration temperatures remain the same as those listed for the art. 749.

Code: **03740-xx**



PED 97/23/EC, art. 3.3

Art. 741C

Anti-condensing thermic valve with thermostatic control of the return temperature to the heat solid fuel sources.

Hot forged brass body. Yellow brass finish.

Outlet on AB swivel nut 1" or 1 1/2" gate (see picture at side) to be connected directly to the circulating pump.

External connection: 1" Swivel nut x 1" Male and 1 1/2 Swivel nut x 1" Male.

Technical features and calibration temperatures remain the same as those listed for the art. 749.

Code **1" Nut x 1" M: 04741C-04-xx**
Code **1 1/2 Nut x 1" M: 04741C-06-xx**

Code composition: the suffix "xx" shows the setting temperature of the thermic valve; f.i.: 04741C-04-60 (calibration at 60°C)



PED 97/23/EC, art. 3.3



Art. 749

ANTI-CONDENSING VALVE WITH THERMOSTATIC CONTROL

Code 1": 04749-xx

Working:

The anti-condensing thermic valve optimizes the connection of the solid fuel heating source to the heating system or to the buffer tank, by adjusting automatically the return water temperature to the heating source at the thermostat setting value.

The device keeps the heating source at high temperature (always higher than the condensing temperature) in any working condition, preventing deposits both into the boiler and into the chimney flue, so improving the efficiency and the life. Therefore also corrosion problems of the heating source or dangerous fires of the chimney flues are avoided.

Technical features:

Anti-condensing thermic valve with thermostatic control of the return temperature to solid fuel heating sources.

Hot forged brass body with pipe union connections. Yellow brass finish.

- ✓ Maximum working pressure: 10 bar.
- ✓ Maximum temperature: 100°C.
- ✓ Setting temperatures: 45°C, 55°C, 60°C and 72°C.
- ✓ Seal: watertight between the A-AB gates; 3% leak rate of Kvs between B-AB gates.
- ✓ Easy service or replacement of the sensor to change the calibration without removing the valve from the installation.

PN 10. A-AB kvs value: 7,2. B-AB kvs value: 4,8.

Nominal opening temperature: setting temperature + 10 K.

Available external connections: 1" Male pipe union.

FIELD OF UTILIZATION:

For a maximum power that can be managed up to 65 kW (with Δt 20 K) and maximum flow 2800 l/h.



Available calibration temperatures:

45 = 45 °C	60 = 60 °C
55 = 55 °C	72 = 72 °C



PED 97/23/EC, art. 3.3

Art. 746

Anti-condensing thermic valve with thermostatic control of the return temperature to the heat solid fuel sources.

Hot forged brass body. Yellow brass finish.

External connection: 1"1/4 Male flat seal.

Technical features and calibration temperatures remain the same as those listed for the art. 749.

Code 1"1/4: 05746-xx



PED 97/23/EC, art. 3.3

Art. 740

Anti-condensing thermic valve with thermostatic control of the return temperature to the heat solid fuel sources.

Hot forged brass body. Yellow brass finish.

External connection: 1" Female.

Technical features and calibration temperatures remain the same as those listed for the art. 749.

Code 1": 04740-xx



PED 97/23/EC, art. 3.3

Art. 741C

Anti-condensing thermic valve with thermostatic control of the return temperature to the heat solid fuel sources.

Hot forged brass body. Yellow brass finish.

Outlet on AB swivel nut 1"1/4 (see picture at side) or 2" to be connected directly to the circulating pump.

External connection: 1"1/4 Swivel nut x 1"1/4 Male and 2" Swivel nut x 1"1/4 Male.

Technical features and calibration temperatures remain the same as those listed for the art. 749.

Code 1"1/4 Nut x 1"1/4 M: 05741C-05-xx

Code 2" Nut x 1"1/4 M: 05741C-07-xx



PED 97/23/EC, art. 3.3



Art. 745

ANTI-CONDENSING RECYCLING PUMP UNIT WITH THERMOSTATIC CONTROL

Code 1": 204MCCS-xx-(W7/C7)
Code 1 1/4": 205MCCS-xx-(W7/C7)
Code 28 mm: 228MCCS-xx-(W7/C7)

Employment:

The anti-condensing pump unit allows to connect directly the solid fuel heating source to the heating system or to the buffer tank without any additional device. As a matter of fact the pump unit includes into a compact and nice insulation box the circulating pump, the anti-condensing thermostatic valve, the on/off natural circulation clapet valve, the isolating valves and thermometers. It automatically adjusts the return water temperature to the heating source to the selected setting value of the thermostat.

The device keeps the heating source at a high temperature level (always higher than the condensation one) in every possible condition of use, so avoiding deposits both into the boiler and into the chimney flue, in this way improving the efficiency and the life of it. Therefore also corrosion problems of the heating source or dangerous fires of the chimney are avoided.

Technical features:

Anti-condensing recycling and distribution pump unit with thermostatic control of the return temperature to the solid fuel heating sources.

Cast brass body CB753S. Yellow brass execution.

- ✓ Asynchronous *Wilco Star RS/7* circulating pump or synchronous high efficiency *Wilco Yonos Para RS/7-RKC* circulating pump with progressive speed control.
- ✓ Maximum working pressure: 10 bar with *Wilco Star RS/7* circulating pump or 6 bar with *Wilco Yonos Para RS/7-RKC* circulating pump.
- ✓ Maximum temperature: 100°C.
- ✓ Setting temperature: 45°C, 55°C, 60°C and 72°C.
- ✓ Natural circulation clapet valve: with external control, it can be set on or off according to the type of installation.
- ✓ Temperature thermometers: 0-120°C.

Nominal opening temperature: setting temperature + 10 K.

Available external connections: 1" and 1 1/4" female, 28 mm for copper pipe.

FIELD OF UTILIZATION:

For a maximum usable power up to:

100 kW (at Δt 30 K) with asynchronous circulating pump *Wilco Star RS/7*.

80 kW (at Δt 30 K) with synchronous circulating pump *Wilco Yonos RS/7-RKC*.



Available calibration temperatures:
45 = 45 °C
55 = 55 °C
60 = 60 °C
72 = 72 °C



Asynchronous circulating pumps:
Wilco Star RS/7 (W7)



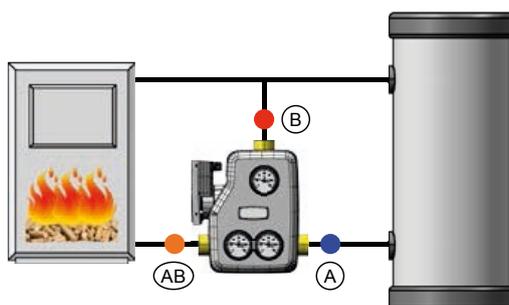
Synchronous circulating pumps:
Wilco Yonos Para RS/7-RKC (C7)

Installation

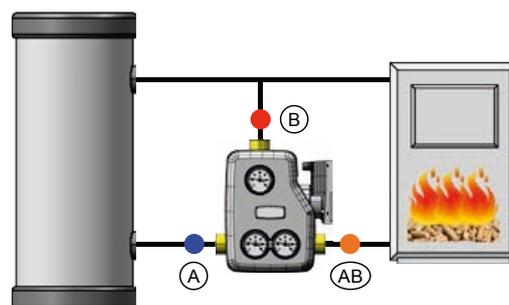
The anti-condensing recycling pump unit can be placed on both sides of the heating source, following these directions:

- ✓ On the return pipe to the boiler in mixing mode, following the flow directions shown on the body.
- ✓ In vertical position (horizontal circulating pump axis) to allow the hydraulic working of the natural circulation clapet valve.

In order to optimize the anti-condensing control, we recommend the installation of the component on the return way to the boiler.



Installation placed on the right of the heating source.



Installation placed on the left of the heating source.

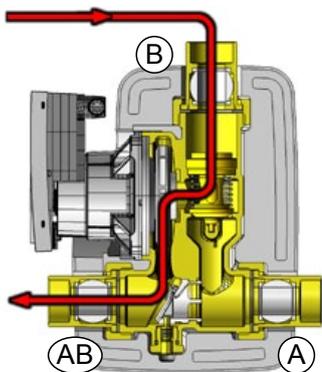
Code composition: the suffix "xx" shows the setting temperature of the thermic valve; example: 204MCCS-55-W7 (setting temperature 55°C)

MODVLVS Anti-condensing Recycling Pump Unit

Working mode

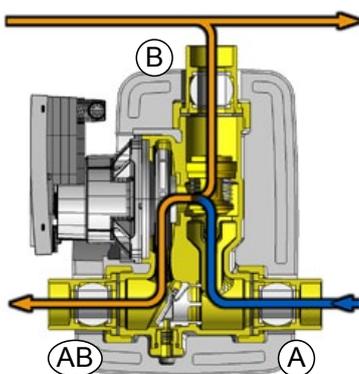
The schemes shown below represent the different working phases of the anti-condensing pump unit.

Please note that: the pictures have to be considered just as an indication and they have no completeness pretention.



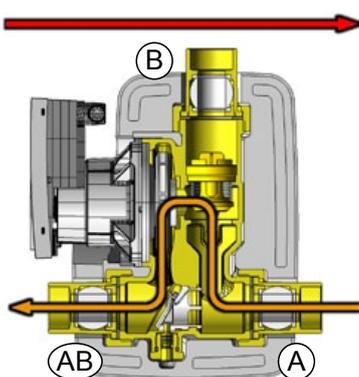
① Starting of the installation (boiler warming up)

After the starting of the boiler, the thermic valve is fully closed towards the user's return (**gate A**) and this condition remains until the fluid, warmed up by the heating source, gets the opening temperature of the thermic valve (corresponding to the setting value, f.i. 55°C). During this step the fluid sent by the boiler fully recycles through the by-pass (**gate B**) and the boiler temperature rises very quickly.



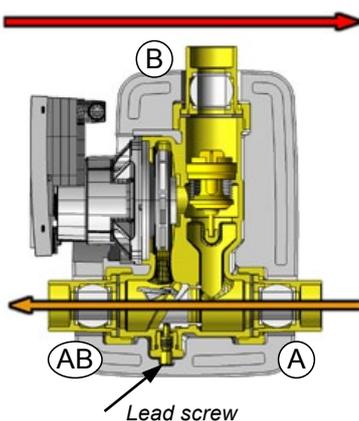
② Loading of the installation (tank warming up)

At the achievement of the opening temperature (f.i. 55°C) the users' return way (**gate A**) proportionally starts to open, meanwhile the by-pass (**gate B**) is going to be closed. The boiler temperature slowly rises giving energy to the user, but in any case the return temperature will not decrease anymore below the setting temperature (f.i. 55°C).



③ Working installation

Starting from the condition of point 2, the supply temperature progressively rises up to the full opening of the thermic valve (**gate A**) and up to the corresponding shutting of by-pass (**gate B**). This happens at about 10 K more than the opening or setting temperature (therefore in the example in hand, at about 65°C). Now the installation is on working and the supply fluid temperature can rise up to the set value.



④ Natural circulation

The natural circulation of fluid through the clapet valve starts as soon as the circulating pump stops and the remaining energy of the heating source is transferred to the water tank.

This function starts as a security device, when the pump stops due to blackout or failure, so avoiding that the temperature of the heating source can reach high levels of danger.

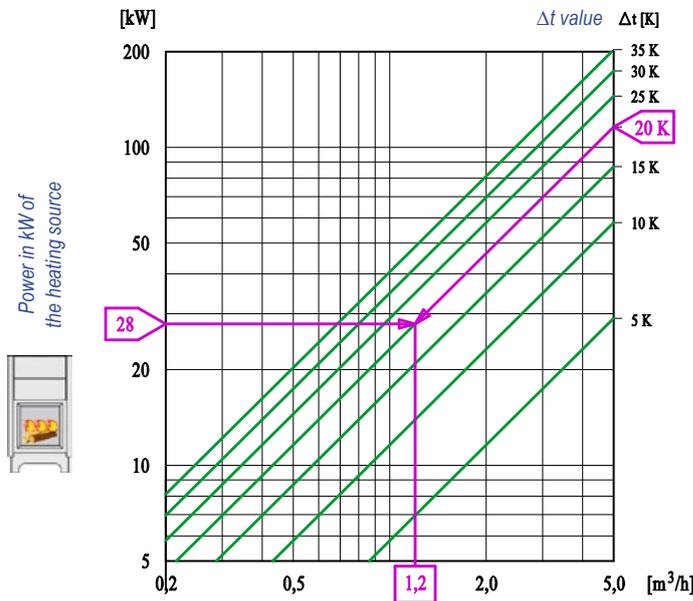
To turn on the natural circulation function please turn the control screw anti-clockwise.

You can lock the clapet valve any time, turning the screw clockwise (this operation has to be done when the pump is working).

MODVLVS Anti-condensing Recycling Pump Unit

Example of selection of the most suitable circulating pump

The following example shows the method to select the circulating pump more suitable to the installation et its performances.



In order to select the pump more suitable to the installation requirements you must take into account the project features: power of the heating source and Δt value.

To show a realistic example, we take into account the following starting values:

- Heating source power: **28 kW**
- Δt value: **20 K**
- Preferential use of **Yonos Para RS/7** circulating pump

The side diagram shows that the flow rate of **1,2 m³/h** is a consequence of these choices.

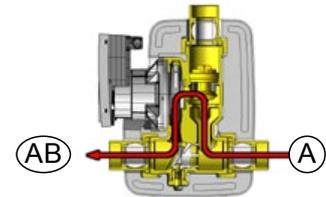
In the diagram of the circulating pumps, at the bottom of the page, it is possible to cross geometrically this flow rate value with the curve of the sected speed. In correspondence with this crossing it is possible to read on the scale on the left side the lifting power developed by the pump in these conditions. The Yonos Para RS/7 pump develops a 4,8 mH₂O lifting power.

In the specific case of our example, if this lifting power is not enough for the installation needs, a higher speed of the same pump should be selected or a Star RS/7 pump should be used (up to 5,7 mH₂O in this example).

Hydraulic performances

The hydraulic performances of the pump unit (A towards AB) have been tested at Wilo laboratories on final sample made of STL.

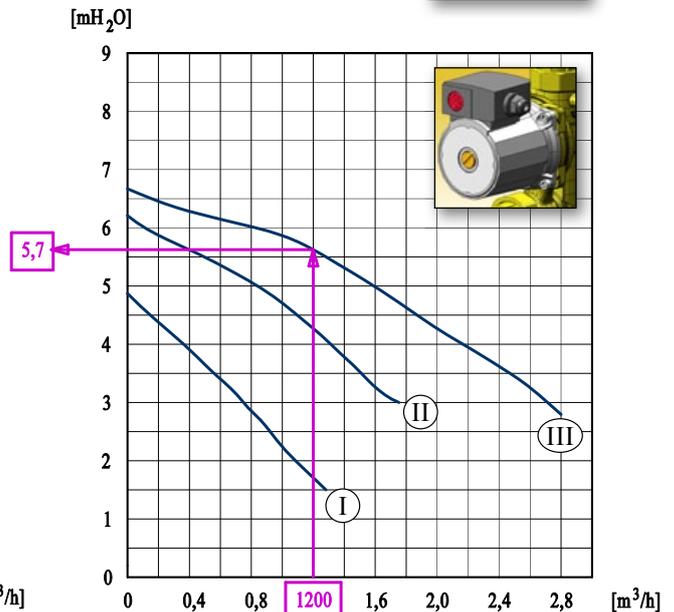
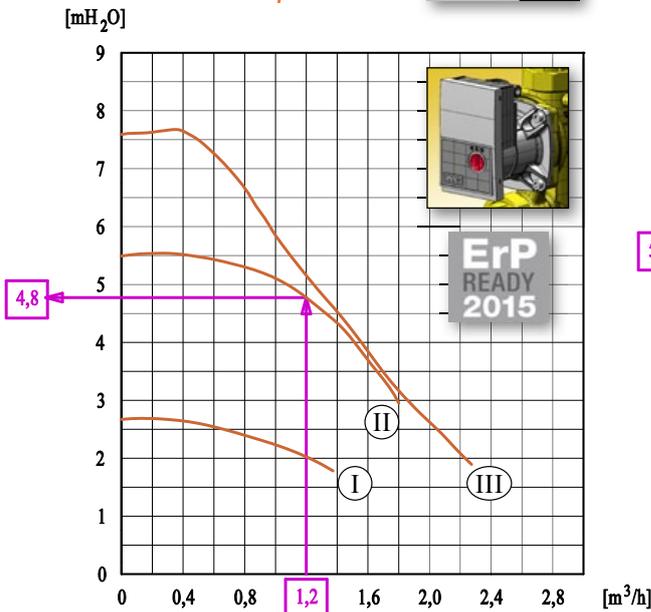
- | | |
|--------------------------|----------------|
| Wilo Yonos Para RS/7-RKC | Wilo Star RS/7 |
| Maximum speed | Maximum speed |
| Medium speed | Medium speed |
| Minimum speed | Minimum speed |



Synchronous circulating pump:
Wilo Yonos Para RS/7-RKC
Consumption: 3-45 W
Progressive setting of the speed.



Asynchronous circulating pump:
Wilo Star RS/7
Consumption: 62-132 W
Three speeds setting.



These performances are substantially the same even in case of recycling flow (B towards AB).

MODVLVS Anti-condensing Recycling Pump Unit

Art. 745-3

ANTI-CONDENSING PUMP UNIT WITH ELECTRONIC CONTROL

Code 1": 204MCCS-(W7/C7)-(ACC/M21)
 Code 1"1/4: 205MCCS-(W7/C7)-(ACC/M21)
 Code 28 mm: 228MCCS-(W7/C7)-(ACC/M21)



MCCS 3:
 New anti-condensing pump unit with fixed temperature mixing



Employment:

The anti-condensing pump unit allows to connect directly the solid fuel heating source to the heating system or to the buffer tank without any additional device. As a matter of fact the pump unit includes into a compact and nice insulation box the circulating pump, the mixing valve operated by electronic control, the on/off natural circulation clapet valve, the isolating valves and thermometers. It automatically adjusts the return water temperature to the heating source at the temperature set on the servomotor.

The device keeps the heating source at a high temperature level (always higher than the condensation one) in every possible condition of use, so avoiding deposits both into the boiler and into the chimney flue, in this way improving the efficiency and the life of it. Therefore also corrosion problems of the heating source or dangerous fires of the chimney are avoided.

Technical features:

Anti-condensing recycling and distribution pump unit with electronic control of the return temperature to the solid fuel heating sources.

Cast brass body CB753S. Yellow brass execution.

- ✓ Asynchronous *Wilo Star RS/7* circulating pump or synchronous high efficiency *Wilo Yonos Para RS/7-RKC* circulating pump with progressive speed control.
- ✓ Maximum working pressure: 10 bar with *Wilo Star RS/7* circulating pump or 6 bar with *Wilos Yonos Para RS/7-RKC* circulating pump.
- ✓ Maximum temperature: 100°C.
- ✓ Mixing valve with fixed temperature servomotor.
- ✓ Adjustable diverting temperature from 0 up to 99°C.
- ✓ PT1000 contact temperature sensor with fixing kit to be mounted on the pipe.
- ✓ Natural circulation clapet valve: with external control, it can be set on or off according to the type of installation.
- ✓ Temperature thermometers: 0-120°C.

Diverting temperature: adjustable from 0 up to 99°C.

Available external connections: 1" and 1"1/4 female, 28 mm for copper pipe.

FIELD OF UTILIZATION:

For a maximum usable power up to:

100 kW (at Δt 30 K) with asynchronous circulating pump *Wilos Star RS/7*.

80 kW (at Δt 30 K) with synchronous circulating pump *Wilos Yonos RS/7-RKC*.



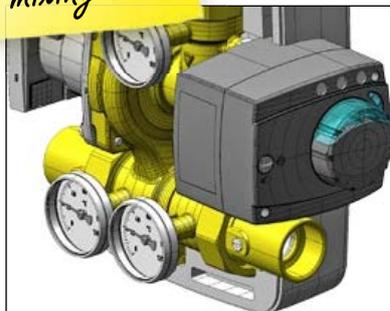
Diverting temperature: adjustable from 0 up to 99°C.



Asynchronous circulating pumps: *Wilos Star RS/7 (W7)*



Synchronous circulating pumps: *Wilos Yonos Para RS/7-RKC (C7)*



PED 97/23/EC, art. 3.3

A version with 3 points servomotor is also available (code with final part ...-M21). In this case an electronic external controller is required.

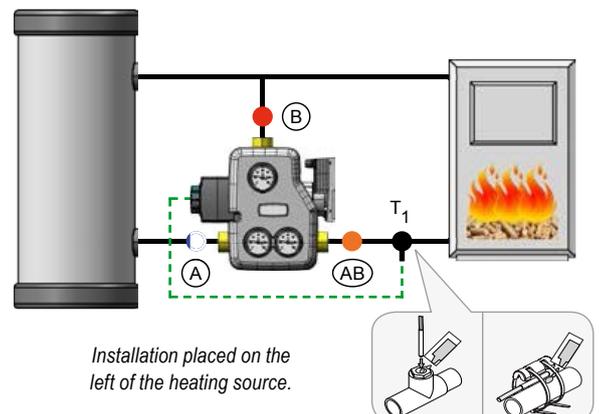
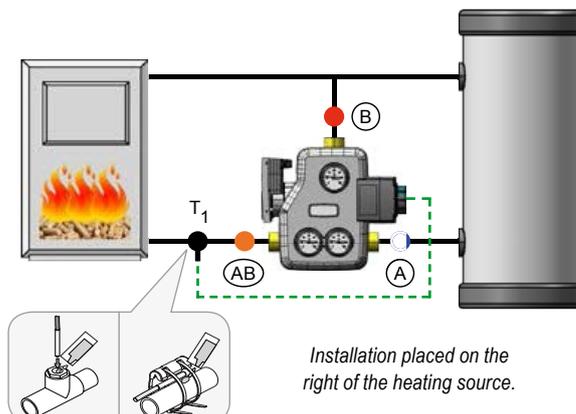
MCCS 3

Installation

The anti-condensing recycling pump unit can be placed on both sides of the heating source, following these directions:

- ✓ On the return pipe to the boiler in mixing mode, following the flow directions shown on the body.
- ✓ In vertical position (horizontal circulating pump axis) to allow the hydraulic working of the natural circulation clapet valve.

In order to optimize the anti-condensing control, we recommend the installation of the component on the return way to the boiler.

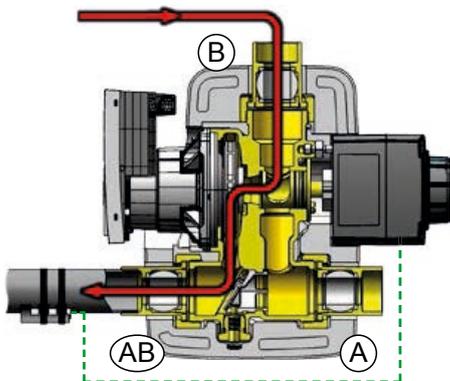


MODVLVS Anti-condensing Recycling Pump Unit

Working mode

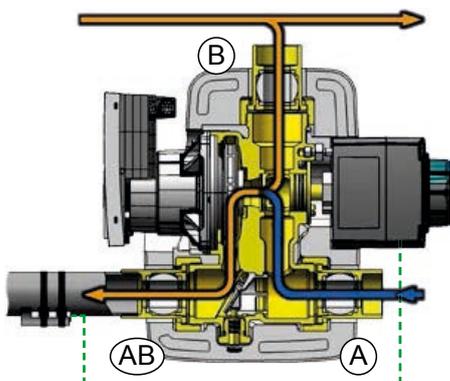
The schemes shown below represent the different working phases of the anti-condensing pump unit.

Please note that: the pictures have to be considered just as an indication and they have no completeness pretention.



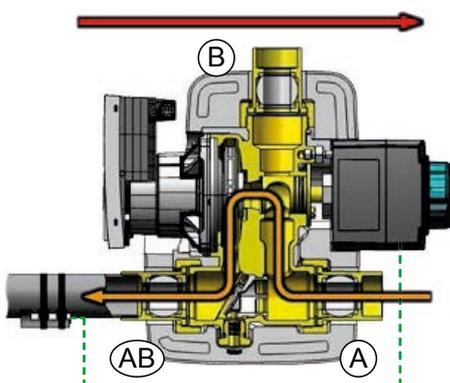
① Starting of the installation (boiler warming up)

After the starting of the boiler, the mixing valve is fully closed towards the user's return (**gate A**) and this condition remains until the fluid, warmed up by the heating source, gets the temperature set on the servomotor. During this step the fluid sent by the boiler fully recycles through the by-pass (**gate B**) and the boiler temperature rises very quickly.



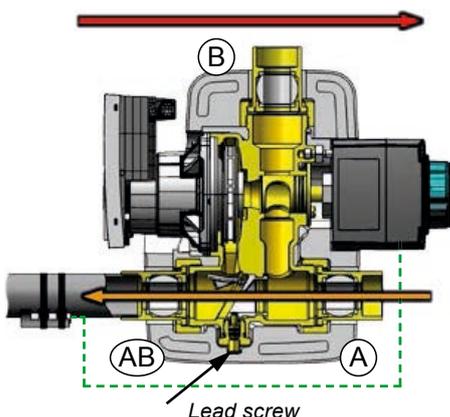
② Loading of the installation (tank warming up)

At the achievement of the diverting temperature (f.i. 60°C) the users' return way (**gate A**) proportionally starts to open, meanwhile the by-pass (**gate B**) is going to be closed. The boiler temperature slowly rises giving energy to the user, but in any case the return temperature will not decrease anymore below the diverting temperature (f.i. 60°C).



③ Working installation

Starting from the condition of point 2, the supply temperature progressively rises up to the full opening of the mixing valve (**gate A**) and up to the corresponding shutting of by-pass (**gate B**). It is possible to change the parameters of the servomotor to make more or less reactive the shift from closed to open mixing valve, according to the features of the installation and to the power of the heating source. Now the installation is on working and the supply fluid temperature can rise up to the set value.



④ Natural circulation

The natural circulation of fluid through the clapet valve starts as soon as the circulating pump stops and the remaining energy of the heating source is transferred to the water tank.

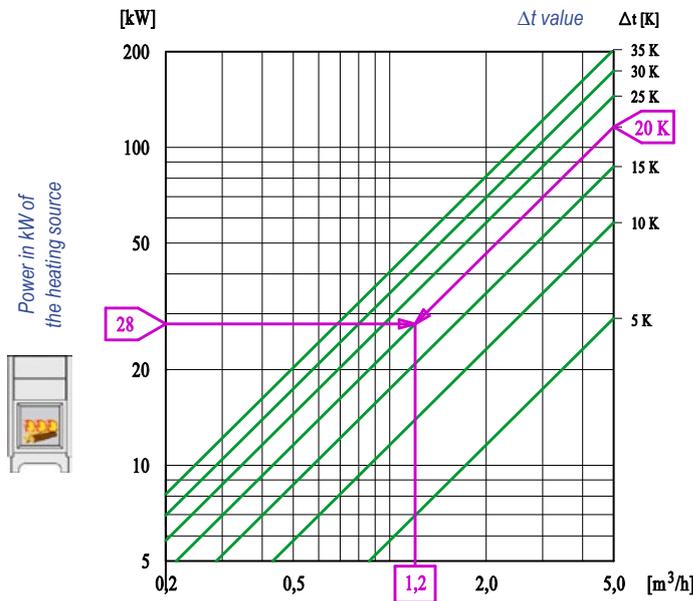
This function starts as a security device, when the pump stops due to blackout or failure, so avoiding that the temperature of the heating source can reach high levels of danger.

To turn on the natural circulation function please turn the control screw anti-clockwise. You can lock the clapet valve any time, turning the screw clockwise (this operation has to be done when the pump is working).

MODVLVS Anti-condensing Recycling Pump Unit

Example of selection of the most suitable circulating pump

The following example shows the method to select the circulating pump more suitable to the installation et its performances.



In order to select the pump more suitable to the installation requirements you must take into account the project features: *power of the heating source* and *Δt value*.

To show a realistic example, we take into account the following starting values:

- Heating source power: **28 kW**
- Δt value: **20 K**
- Preferential use of **Yonos Para RS/7** circulating pump

The side diagram shows that the flow rate of **1,2 m³/h** is a consequence of these choices.

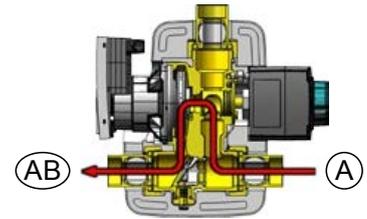
In the diagram of the circulating pumps, at the bottom of the page, it is possible to cross geometrically this flow rate value with the curve of the selected speed. In correspondence with this crossing it is possible to read on the scale on the left side the lifting power developed by the pump in these conditions. The Yonos Para RS/7 pump develops a 4,7 mH₂O lifting power.

In the specific case of our example, if this lifting power is not enough for the installation needs, a higher speed of the same pump should be selected or a Star RS/7 pump should be used (up to 5,3 mH₂O in this example).

Hydraulic performances

The hydraulic performances of the pump unit (A towards AB) have been tested at Wilo laboratories on final sample made of STL.

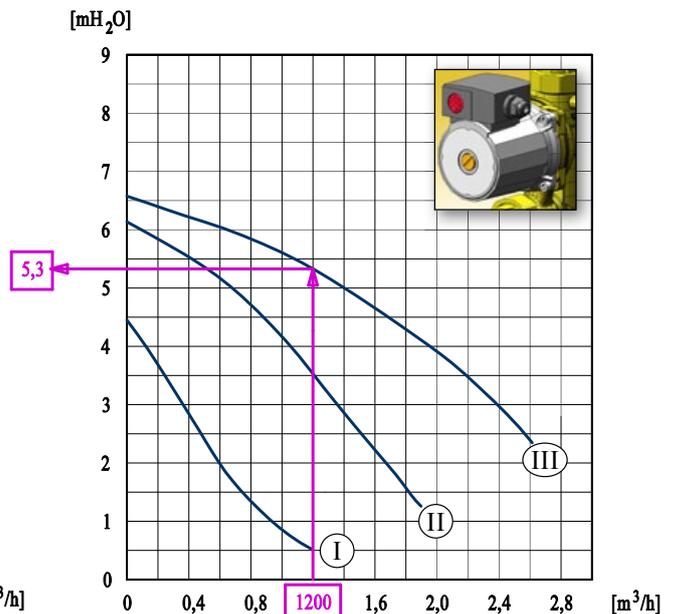
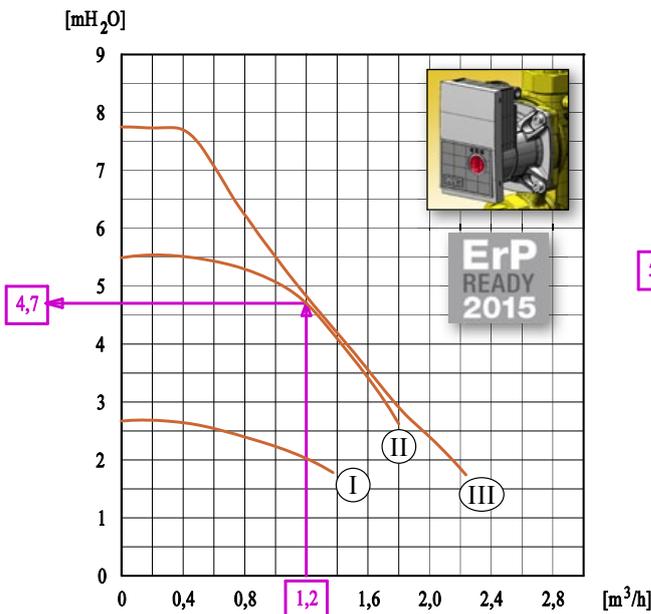
- | | |
|--------------------------|----------------|
| Wilo Yonos Para RS/7-RKC | Wilo Star RS/7 |
| Maximum speed | Maximum speed |
| Medium speed | Medium speed |
| Minimum speed | Minimum speed |



Synchronous circulating pump:
Wilo Yonos Para RS/7-RKC
 Absorbed power: 3-45 W
 Progressive setting of the speed.



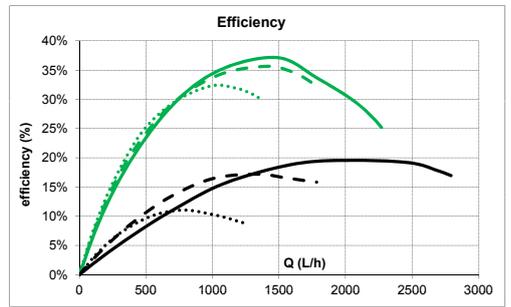
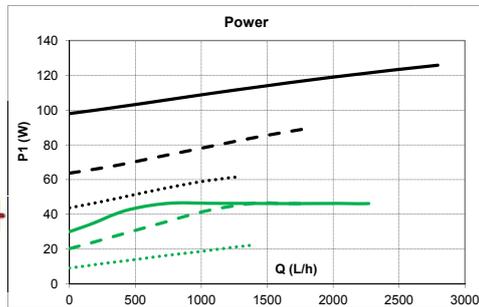
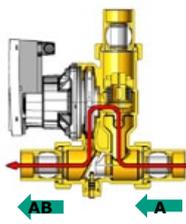
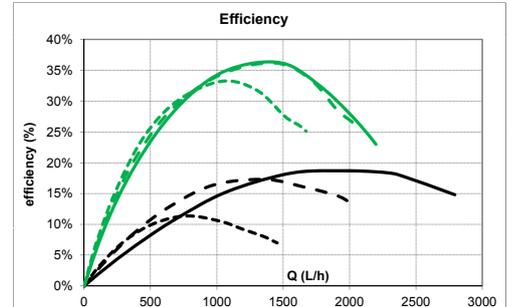
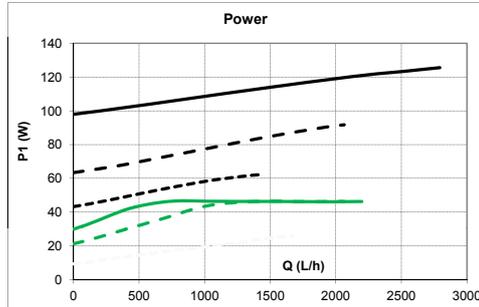
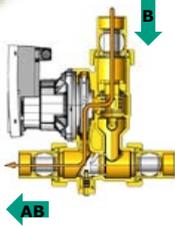
Asynchronous circulating pump:
Wilo Star RS/7
 Absorbed power: 62-132 W
 Three speeds setting.



These performances are substantially the same even in case of recycling flow (B towards AB).

Test report
MCCS

Consumption and Efficiency



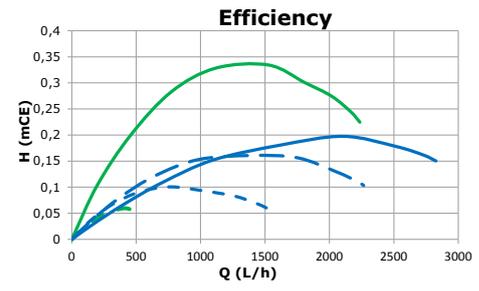
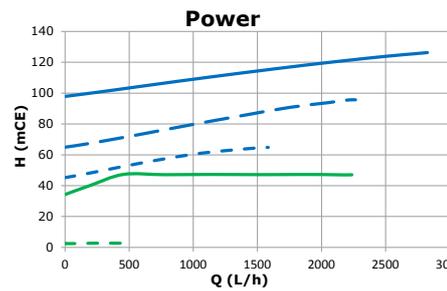
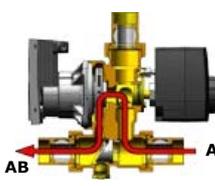
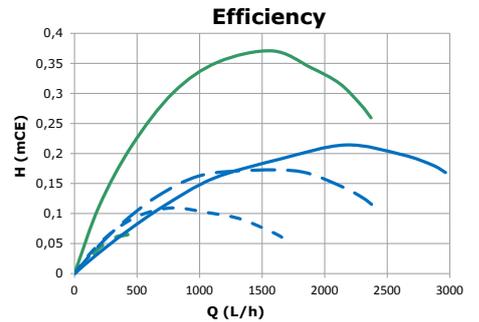
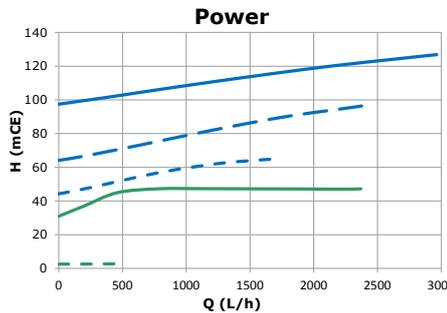
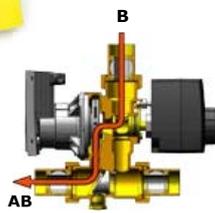
7 BRV 151012 test order 120531 **WILLO**



On demand or in download from the website www.brv.it test reports of the results of performances of both the models MCCS and MCCS 3 made directly at Wilo laboratory are available. The two pages here reproduced are a part of the complete documentation, that summarizes the measurements done on head losses and efficiency of the two models under the circulation condition A-AB and the recycling B-AB. A test report stating the low noisiness of the two products in all the working conditions is also available.

Test report
MCCS 3

Consumption and Efficiency



biomass



PED 97/23/EC, art. 3.3



Flow rate ranges for DN15
 06 = 1-6 l/min 12 = 2-12 l/min
 28 = 8-28 l/min 38 = 8-38 l/min



Flow rate ranges for DN20
 42 = 5-42 l/min
 70 = 20-70 l/min

Art. 654 - Flow regulator / Flowmeter

Straight flow regulator and flowmeter, male threaded on both ends, from 3/4" to 1 1/2", for solar, heating and hydronic applications. Direct reading of the flowrate through the graduated scale. Ball valve for flow adjustment.

A careful sizing of the article provides very little headlosses.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections:

- ✓ DN15: 22 mm compression, 3/4" and 1".
- ✓ DN20: 1", 1 1/4" and 1 1/2".

Code 22 mm: 22654DN15-xx
 Code 3/4" Male: 03654DN15-xx
 Code 1" Male: 04654DN(15/20)-xx
 Code 1 1/4" Male: 05654DN20-xx
 Code 1 1/2" Male: 06654DN20-xx



PED 97/23/EC, art. 3.3



Flow rate ranges for DN15
 06 = 1-6 l/min 12 = 2-12 l/min
 28 = 8-28 l/min 38 = 8-38 l/min



Flow rate ranges for DN20
 42 = 5-42 l/min
 70 = 20-70 l/min

Art. 654P - Flow regulator / Flowmeter

Straight flow regulator and flowmeter, male threaded on one end and with swivel nut on the other, from 3/4" to 1 1/2", for solar, heating and hydronic applications.

Direct reading of the flowrate through the graduated scale. Ball valve for flow adjustment.

A careful sizing of the article provides very little headlosses.

PN 10. Constant temperature 120°C; (short time temperature: 160°C for 20 s).

External connections:

- ✓ DN15: 3/4" and 1".
- ✓ DN20: 1 1/4" and 1 1/2".

Code 3/4" Male: 03654DN15P-xx
 Code 1" Male: 04654DN15P-xx
 Code 1 1/4" Male: 05654DN20P-xx
 Code 1 1/2" Male: 06654DN20P-xx



Adapters Art. 654 for capillary welding

Copper pipe adapter kits: adapter 15 mm for 3/4" connection and 22 mm for 1" connection.

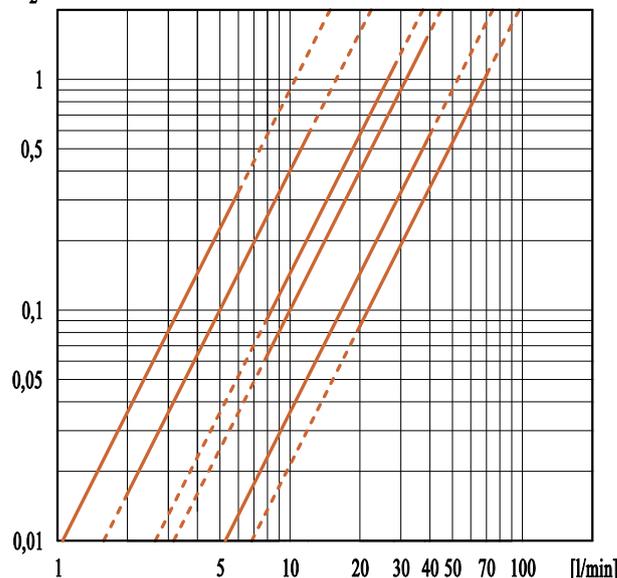
For more informations see the pages dedicated to ModvSol Equipments and Accessories.



To have the real flow with the use of low temperature glycol solutions, it is necessary to multiply the value indicated by the flowmeter by a corrective factor, that is:

- ✓ 0,9 for concentrations of 20-30%
- ✓ 0,8 for concentrations of 40-50%

[mH₂O]



Code composition: "xx" means the flow rate range to be read/set on the component.



Adjustment:

The reading of the flow is done at the lower part of the mobile indicator.



Opening



Closing

The valve can be mounted in horizontal or vertical position with any sense of flow. For an accurate and stable reading please provide a straight pipe with an overall length of at least 5 times the diameter of the pipe.

Art. 654 GPM - Flow regulator/ Flowmeter gpm



Straight flow regulator and flowmeter, male threaded on both ends to ISO 228, for solar, heating and hydronic applications, special for the north-american market. Thanks to use of dedicated brass adapters (which can be purchased separately) it is possible the capillary welding connection with pipes in compliance with ASTM specifications.

Direct reading of the flowrate through the graduated scale. Ball valve for flow adjustment. A careful sizing of the article provides very little headlosses.

PN 10 (150 psi). Constant temperature 120°C (250°F).

Short time temperature: 160°C (320°F) for 20 s.

Available external connections:

✓ DN15: 3/4" and 1" ISO 228.

Code 3/4" Male: 03654DN15GPM-x

Code 1" Male: 04654DN15GPM-x

PED 97/23/EC, art. 3.3



Flow rate ranges for DN15

3 = 0,5-3 US gpm (gallons per minute)
8 = 2-8 US gpm (gallons per minute)



1 x

Art. 654 adapters for capillary welding

The kit consists of 3/4" nut, welding connection for 1/2 in. pipe and fiber plain gasket. In compliance with ASTM specifications.

Code for 1/2 in. pipe: 03654ASTMSET

The kit consists of 1" nut, welding connection for 3/4 in. pipe and fiber plain gasket. In compliance with ASTM specifications.

Code for 3/4 in. pipe: 04654ASTMSET



1 x

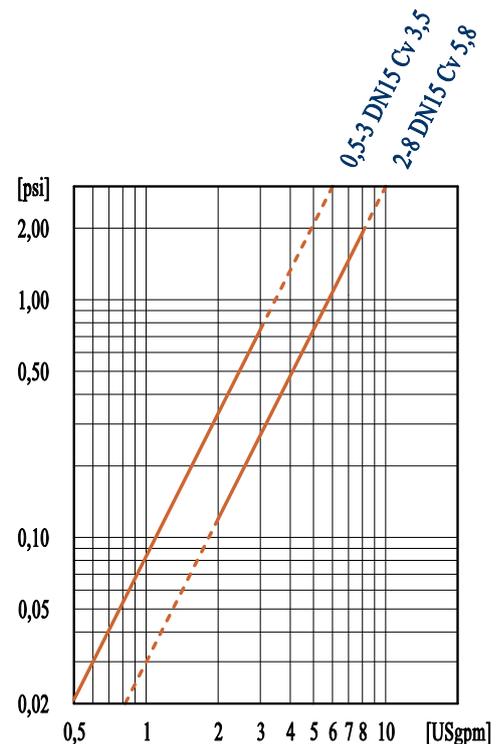
NPT to GAS adapter

The kit consist of F/F connection and fiber plain gasket.

Available dimensions: 3/4" NPT x 3/4" G and 1" NPT x 1" G.

Code 3/4": 03641NPTSET

Code 1": 04641NPTSET



Code composition: "x" means the flow rate range to be read/set on the component.



Art. 510 - 51F

F/F full port ball valve in hot forged brass.
Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 30. Max Temperature 150°C.

Art. 510: Provided with steel handle PVC covered. **Dimensions: from 1/4" up to 4"**.

Art. 51F: Provided with steel T-handle. **Dimensions: from 1/4" up to 1"1/4.**

Codes for series **510: xx510** (from 00510 up to 0A510)

Codes for series **51F: xx51F** (from 0051F up to 0551F)

For the sizes corresponding to "xx" see notes



Art. 520 - 52F - "Heavy line"

F/F "heavy body" full port ball valve in hot forged brass.
Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 40. Max Temperature 150°C.

Art. 520: Provided with steel handle PVC covered. **Dimensions: from 1/2" up to 2"**.

Art. 52F: Provided with steel T-handle. **Dimensions: from 1/2" up to 1"1/4.**

Codes for series **520: xx520** (from 02520 up to 07520)

Codes for series **52F: xx52F** (from 0252F up to 0552F)

For the sizes corresponding to "xx" see notes



Art. 560 - 56F

M/F full port ball valve in hot forged brass.
Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 30. Max Temperature 150°C.

Art. 560: Provided with steel handle PVC covered. **Dimensions: from 1/4" up to 2"**.

Art. 56F: Provided with steel T-handle. **Dimensions: from 1/4" up to 1"1/4.**

Codes for series **560: xx560** (from 00560 up to 07560)

Codes for series **56F: xx56F** (from 0056F up to 0556F)

For the sizes corresponding to "xx" see notes



Art. 566 - 566F

M/M full port ball valve in hot forged brass.
Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 30. Max Temperature 150°C.

Art. 566: Provided with steel handle PVC covered. **Dimensions: 1/2", 3/4" and 1"**.

Art. 566F: Provided with steel T-handle. **Dimensions: 1/2", 3/4" and 1"**.

Codes for series **566: xx566** (from 02566 up to 04566)

Codes for series **566F: xx566F** (from 02566F up to 04566F)

For the sizes corresponding to "xx" see notes



Art. 569 - 569F

Full port ball valve with union in hot forged brass.
Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 16. Max Temperature 95°C.

Art. 569: Provided with steel handle PVC covered. **Dimensions: 1/2", 3/4" e 1"**.

Art. 569F: Provided with steel T-handle. **Dimensions: 1/2", 3/4" e 1"**.

Codes for series **569: xx569** (from 02569 up to 04569)

Codes for series **569F: xx569F** (from 02569F up to 04569F)

For the sizes corresponding to "xx" see notes

NOTES: The prefix "xx" means the size of the article, with the following correlations:

1/4": xx = 00	3/4": xx = 03	1"1/2: xx = 06	3": xx = 09
3/8": xx = 01	1": xx = 04	2": xx = 07	4": xx = 0A
1/2": xx = 02	1"1/4: xx = 05	2"1/2: xx = 08	

“Checkball” series with integrated non return valve



Art. 620 - 62F

F/F ball valve in hot forged brass with non return valve built into the ball that can be excluded by rotating the handle by 45°. Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 16. Max Temperature 95°C.

Art. 620: Provided with steel handle PVC covered.

Art. 62F: Provided with steel T-handle.

Dimensions: 1/2", 3/4" and 1".

Codes for series **620:** **xx620** (da 02620 a 04620)

Codes for series **62F:** **xx62F** (da 0262F a 0462F)

For the sizes corresponding to "xx" see notes



Art. 660 - 66F

M/F ball valve in hot forged brass with non return valve built into the ball that can be excluded by rotating the handle by 45°. Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779).

PN 16. Max Temperature 95°C.

Art. 660: Provided with steel handle PVC covered.

Art. 66F: Provided with steel T-handle.

Dimensions: 1/2", 3/4" and 1".

Codes for series **660:** **xx660** (da 02660 a 04660)

Codes for series **66F:** **xx66F** (da 0266F a 0466F)

For the sizes corresponding to "xx" see notes

Ball valves for meters and energy meters



Art. 557

Ball valve in hot forged brass for DN15 water meters (Qn 1,5). Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779). Sealable coupling nut.

Provided with steel T-handle.

PN 30. Max Temperature 150°C.

Sole dimension: 1/2" x 3/4" Coupling nut.

Code 1/2": **0328**



Art. 553

Ball valve in hot forged brass for DN25 water meters (Qn 2,5). Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779). Sealable coupling nut.

Provided with steel T-handle.

PN 30. Max Temperature 150°C.

Sole dimension: 3/4" x 1" Coupling nut.

Code 3/4": **0319**



Art. 518

F/F ball valve in hot forged brass with sealable M10x1 connection for ø5 mm temperature sensor. Nickel plated. Ends threaded to ISO 228 (DIN 259 BSP 2779). Provided with steel T-handle.

PN 30. Max Temperature 150°C.

Dimensions:

1/2" (for DN15 energy meters; Qn 1,5)

3/4" (for DN20 energy meters; Qn 2,5)

Code 1/2": **02518**

Code 3/4": **03518**

Standard Products Ball Valves



Art. 520 ISO - Ball valve

F/F full port ball valve in hot forged brass.
Nickel plate finish.
Ends threaded to ISO 228 (DIN 259 BSP 2779).
Provided with insulation T-handle.
Individual package.

PN 40. Max Temperature 120°C.
Dimensions: from 1/2" up to 1"1/4.

Code 1/2": 02520ISO
Code 3/4": 03520ISO
Code 1": 04520ISO
Code 1"1/4: 05520ISO



Art. 520 TER - Ball valve with thermometer

F/F full port ball valve in hot forged brass.
Nickel plate finish.
Ends threaded to ISO 228 (DIN 259 BSP 2779).
Supplied with in-handle thermometer, coded red (range 0°C-120°C, TER-R) or coded blue (range 0°C-120°C, TER-B).
Individual package.

PN 40. Max Temperature 120°C.
Dimensions: from 1/2" up to 1"1/4.

Code 1/2": 02520TER-(R/B)
Code 3/4": 03520TER-(R/B)
Code 1": 04520TER-(R/B)
Code 1"1/4: 05520TER-(R/B)



Art. 514 - Filter ball valve

F/F Ball valve with filter in hot forged brass.
To fill the installation. Nickel plated.
End threaded to ISO 228 (DIN 259 BSP 2779).
Provided with steel handle, PVC covered.
Individual or multiple package.

Stainless steel filtering mesh: 0,5 mm.
PN 16. Max Temperature 120°C.
Dimensions: 1/2", 3/4", 1", 1"1/4.

Kvs values:

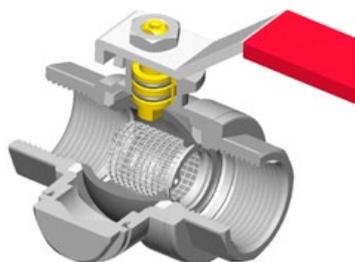
- ✓ 1/2" : 5,3
- ✓ 3/4" : 5,6
- ✓ 1" : 12,0
- ✓ 1"1/4 : 20,0

Individual package

- Code 1/2": 02514/A
- Code 3/4": 03514/A
- Code 1": 04514/A
- Code 1"1/4: 05514/A

Multiple package

- Code 1/2": 02514
- Code 3/4": 03514
- Code 1": 04514
- Code 1"1/4: 05514



The stainless steel filter placed inside the ball can be easily removed, to be cleaned and inspected, while the valve is in closed position.

The ball valve can be installed either with or without the filter (in this case the filter can be used for a limited time only, for example to clean the system).

To see the large of the available valves in addition to the above mentioned ones, visit the web site:

<http://www.brvi.it>

SIGILBLOCK

SIGILBLOCK is a special security device patented by BRV. It can be put on the valves provided with the lever handles and with the "T" handles and it allows to lock the valve in the fully closed or open position, according to the requested operating conditions.

SIGILBLOCK, if compared to other locking systems, is a very flexible and good value device: it can be mounted on any standard BRV ball valve, both on the old models and on the new. Thanks to the compact size, it is room saving.

To mount it, it's necessary to replace the nut of the standard handle with the special nut of the locking device and then to put the cap; once it is fitted, it can be removed only by authorized personnel, thanks to the special key.

Special security device that allows to lock the valve in open or closed position. It consists of a special nut and of the *Sigilblock* cap.

Chrome finish. *It is possible to put it both on the lever handles and on the "T" handles.*

Dimensions:

✓ for valves from 1/4" to 3/4" (from DN10 to DN20)

Code 1st size: **DJRW03SET**

✓ for valves 1" and 1 1/4" (DN25 and DN32)

Code 2nd size: **DJRW05SET**

✓ for valves 1 1/2" and 2" (DN40 and DN50)

Code 3rd size: **DJRW07SET**

Exception: as concerns the filter ball valves (Art. 514, 514P, 564P) the size to be used is the 2nd. For the art. 514 1 1/4" the size to be used is the 3rd.

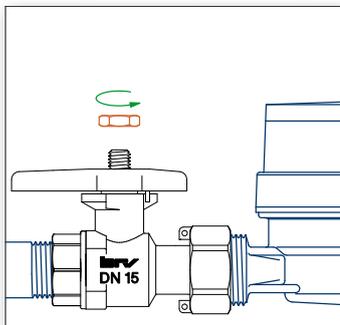
A special unlocking key is required to remove the lock (separately supplied).

Key code: **DRUCSET**

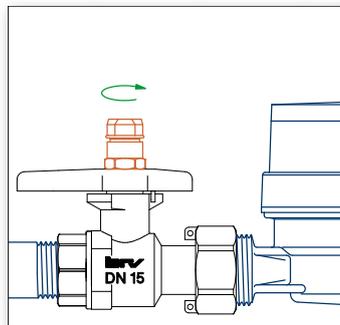
Patented



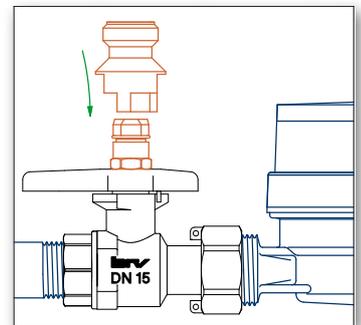
How to apply Sigilblock device for locking a valve



Remove the handle's nut.

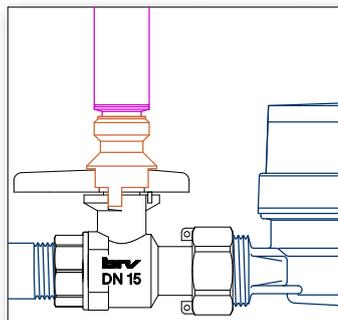


Screw the special nut and turn the handle to fully open or closed position.

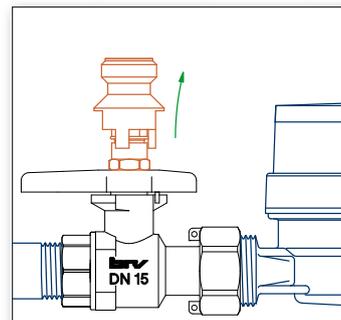


Insert the Sigilblock cap up to the click.

How to remove Sigilblock cap to operate on the valve:



Insert the special Sigilblock key and, keeping it pressed, pull the cap to the click.

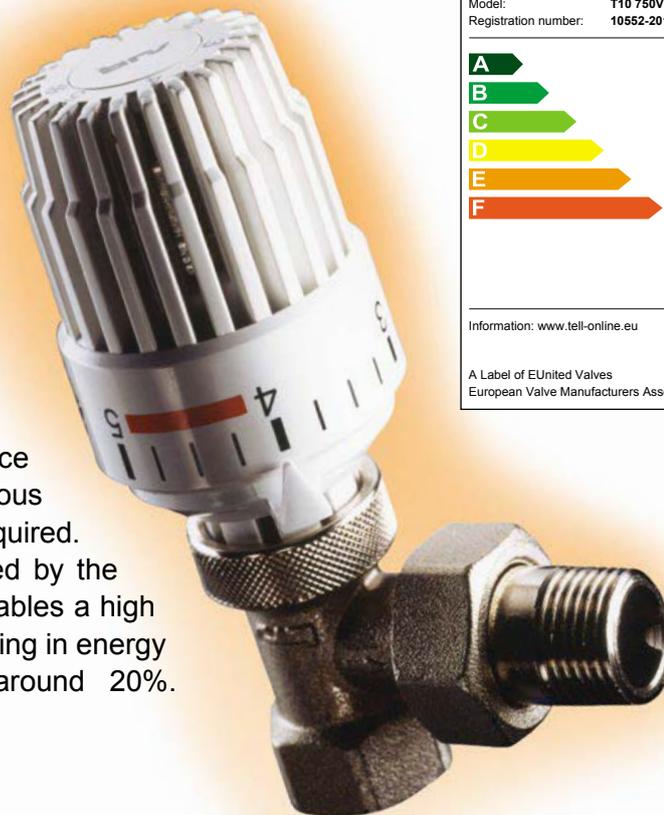


Take off the key and pull out the cap. Now you can operate on the ball valve.

The thermostatic radiator valve TERMOSTAR is a device that allows the independent adjustment of each heating element in full autonomy and in this way it keeps constant the temperature of the room where it is installed.

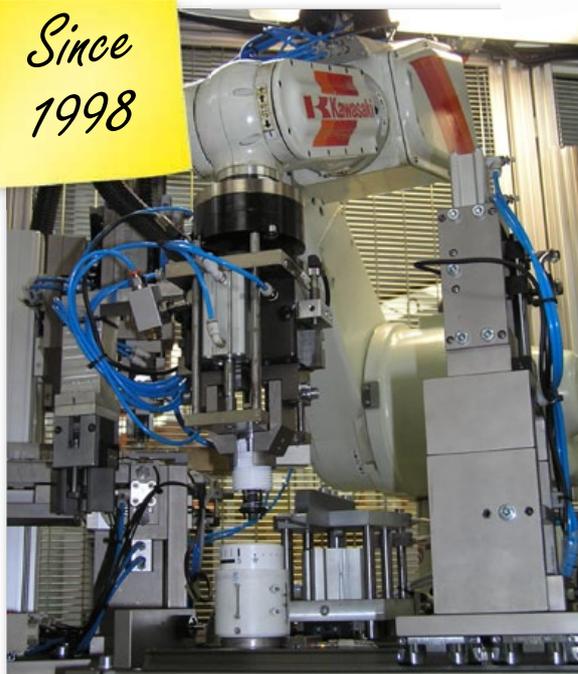
✓ Benefits

TERMOSTAR allows the maintenance of different temperatures in the various rooms of the lodging, as often it is required. By self-adjusting the power delivered by the heating body, in the same time it enables a high level comfort and a considerable saving in energy consumption, that is quantified around 20%.



TELL Thermostatic Efficiency Label	
Manufacturer:	BRV
Model:	T10 750VF
Registration number:	10552-20140325
A	A
B	
C	
D	
E	
F	
Information: www.tell-online.eu	
A Label of EUnited Valves European Valve Manufacturers Association	

Since
1998



Robotized assembly shop to mount and to set the thermostatic heads.

✓ Working

The first operation made by the TERMOSTAR valve is to detect the room temperature.

A sensor inside the handle, by proportionally dilating on temperature increase or reduction even if the variation is the lowest, appropriately controls the operations of the valve by closing or opening the valve disc.

This system allows to fully exploit not only the heat produced free of charge by other sources, same as the solar energy but also the heat produced, for instance, by electrical appliances, lights and people that are in the room. The "TERMOSTAR" assures the constancy of the selected temperature.



Art. 750 - Thermostatic convertible radiator angle type valve

Thermostatic convertible radiator valve, body in hot forged and sand-blasted brass. Nickel plated finish. Angle model for steel pipe. End threaded to ISO 228 (DIN 259 BSP 2779). Radiator connection threaded to ISO 7/1 (DIN 2999 BS 21).

Available versions:

- ✓ Fixed Kvs-value (white cap)- Art. 750 VF
- ✓ Adjustable Kvs-value (black cap) - Art. 750 VR

EN 215 approved for size 1/2" fixed nut.

PN 10. Max Temperature 120°C.
Dimensions: 3/8" e 1/2".

Code 750 VF: 3/8": 5001 - 1/2": 5002

Code 750 VR: 3/8": 5011 - 1/2": 5012



Art. 755 - Thermostatic convertible radiator straight type valve

Thermostatic convertible radiator valve, body in hot forged and sand-blasted brass. Nickel plated finish. Straight model for steel pipe. End threaded to ISO 228 (DIN 259 BSP 2779). Radiator connection threaded to ISO 7/1 (DIN 2999 BS 21).

Available versions:

- ✓ Fixed Kvs-value (white cap)- Art. 755 VF
- ✓ Adjustable Kvs-value (black cap) - Art. 755 VR

EN 215 approved for size 1/2" fixed nut.

PN 10. Max Temperature 120°C.
Dimensions: 3/8" e 1/2".

Code 755 VF: 3/8": 5051 - 1/2": 5052

Code 755 VR: 3/8": 5061 - 1/2": 5062



Art. T10 - Thermostatic control head

Thermostatic control head with liquid gas sensor. Ambient temperature setting range from 6°C (frost protection) up to 28°C. Clips to limit the temperature and to lock the knob.

- ✓ thermic hysteresis 0,5 K.

EN215 Approval and TELL Certification (Thermostatic Efficiency Label) that qualifies the product in A Energetic Class.

Code: 5100

TELL
Certification
A Class

Art. T10H - Thermostatic control head

Thermostatic control head T10 (EN215 Approval and TELL Certification that qualifies the product in A Energetic Class) and adapter for Heimeier thermostatic valve. Ambient temperature setting range from 6°C (frost protection) up to 28°C. Clips to limit the temperature and to lock the knob.

Liquid gas sensor (thermic hysteresis 0,5 K).

Code: 5100BH



Nut for valve cartridge replacement set

Nut and seal O-Ring gasket for the rod of the cartridge. In accordance with the EN 215, in case of leakage or leak through the cartridge rod, it is possible to restore the seal without draining the system.

Code: on request

To see the large of the available valves in addition to the above mentioned ones, visit the web site:

<http://www.br.v.it>

Custom Made Products

Since the beginning BRV has always been active and innovative. The BRV's mission has always been the full customer satisfaction.

During the last ten years we devoted ourselves hard to the custom made products for which we have invested in new highly flexible machinery. That has also enabled BRV to work in close cooperation with the customers to develop new products.

Thanks to our highly qualified staff we can make a working prototype in less than one week, starting from the initial 3D design (Rapid prototyping of prototypes stereolithography made or CAM milling made with automatic working machine).



A video showing the steps to make a prototype by means our numerical control working center is available upon request.

Today the planning and the execution of the new products benefit from the exploitation of the modern CAD/CAM systems.

In fact, thanks to these systems, the time to make end-products through all the planning steps is considerably reduced.

Moreover the production processes can be simulated to assure the feasibility and the efficiency; in that way a better organization of the production is also achieved.

Custom Made Products



The increasing request to integrate the hydraulic components inside the heat pumps carried BRV to plan very compact components that, with the appropriate changes, can be easily put into the chassis of the machine.

By the means of special copper pipes, isolating ball valves with or without non return valves, 3-way or 4-way mixing valves, servomotors and compact circulating pumps made in composite, all the points of the hydraulic circuit are connected in a functional, effective and ergonomic way. Also the logic of the electronic regulation can be customized, by using climatic controllers for one or more direct or mixed circuits, equipped with outside sensors, room sensors or remote controls. Our technical department can give you the better solution for your requirements.





Guarantee

BRV guarantees its MODVLVS pump units from manufacturing defects: 5 years for taps, 2 years for other components (or what is granted by the manufacturer of the components).

The guarantee provides the replacing of the defected item: the way of handling the returns, due to assessed or presumed faultiness, must be in accordance with the procedure written in the special section "Warranty → Claims" of the official website www.brv.it. Claims have to reach BRV within the maximum terms in compliance with the regulations in force. Charges, expenses, damages or indemnities are excluded. The manufacturer's responsibility is limited to defects found out in conditions of normal use and correct use of the product. In case of any dispute rising from the use of BRV products, it will be regulated by the Italian Law in force and the sole Court of Vercelli will be competent.

The performances of the MODVLVS pump units are tested and guaranteed only if all the "accessory" devices are supplied by BRV (circulating pumps, servomotors, controllers etc.). This because BRV cannot know and test all these "accessories" produced by the worldwide manufacturers.

Anyway it is a mission of BRV to test all the most known devices within a reasonable period of time and eventually to update the MODVLVS systems accordingly.

Declaration of conformity

The MODVLVS products are properly manufactured, by completely fulfilling procedures stated in Company Certified Quality System to UNI EN ISO 9001:2008. In addition, all the used components correspond to EC directive regarding: materials, pressure devices, low-voltage components, electromagnetic compatibility, RoHS, etc.



Available on request, the PDF document of the declaration of conformity.

Sales conditions

Minimum purchase order amount: Euro 250,00. A sum of Euro 30,00 will be charged on purchase orders of lower amount to cover their operating costs (spare parts and sample purchase orders are excluded). As regards other sales conditions please contact our sales department.

BRV reserves the right to amend the design and the specifications of the products, as well as to carry out improvements and technical developments, without prior notice. All illustrations, numerical data, etc., are not binding.

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