

# 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](#)

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## Products catalogue

*edition n. 10*

**Bonetti Rubinetterie Valduggia S.r.l.**

Loc. Molino Rastelli, 2 • 13018 Valduggia (VC) - Italy • Tel. +39 0163 48062 • Fax +39 0163 48188

<http://www.brv.it> • e-mail: [info@brv.it](mailto:info@brv.it) • ISO 9001:2015 Cert. No. 0853/6



*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 Alps, in its production site of Vaduggia employs about 50 people with a total turnover of 17 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 corporate renewal started in 2005 has allowed the BRV to achieve excellent commercial results with an average annual growth rate (CAGR) of 9.5% in the 2005-2018 period.

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.**



## ModvlvS

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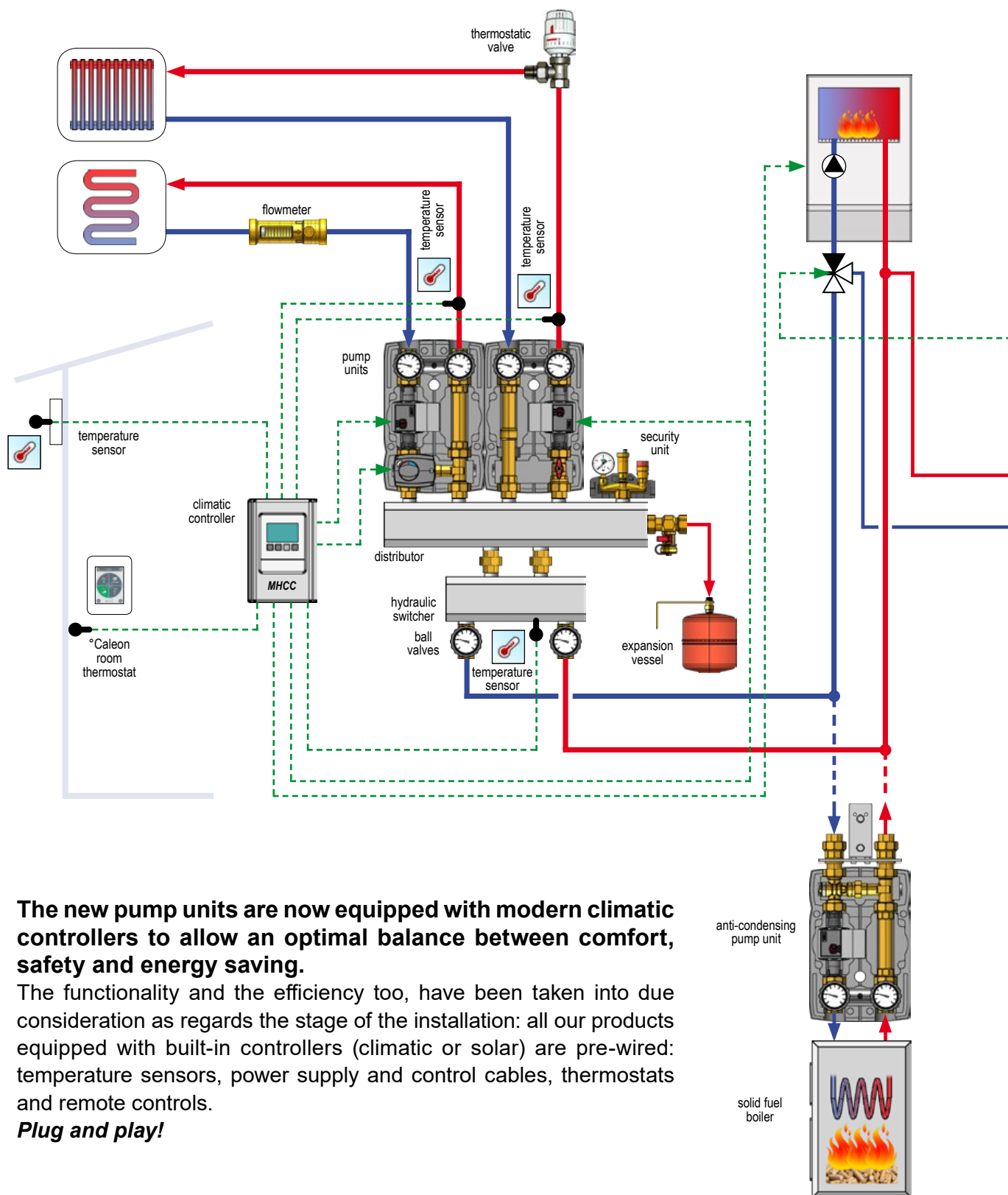
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The growing interest in the protection of the environment and in the energy saving drove the modern technology to look for a better efficiency of the traditional heating systems and to take into consideration the new renewable sources of energy (solar 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.**

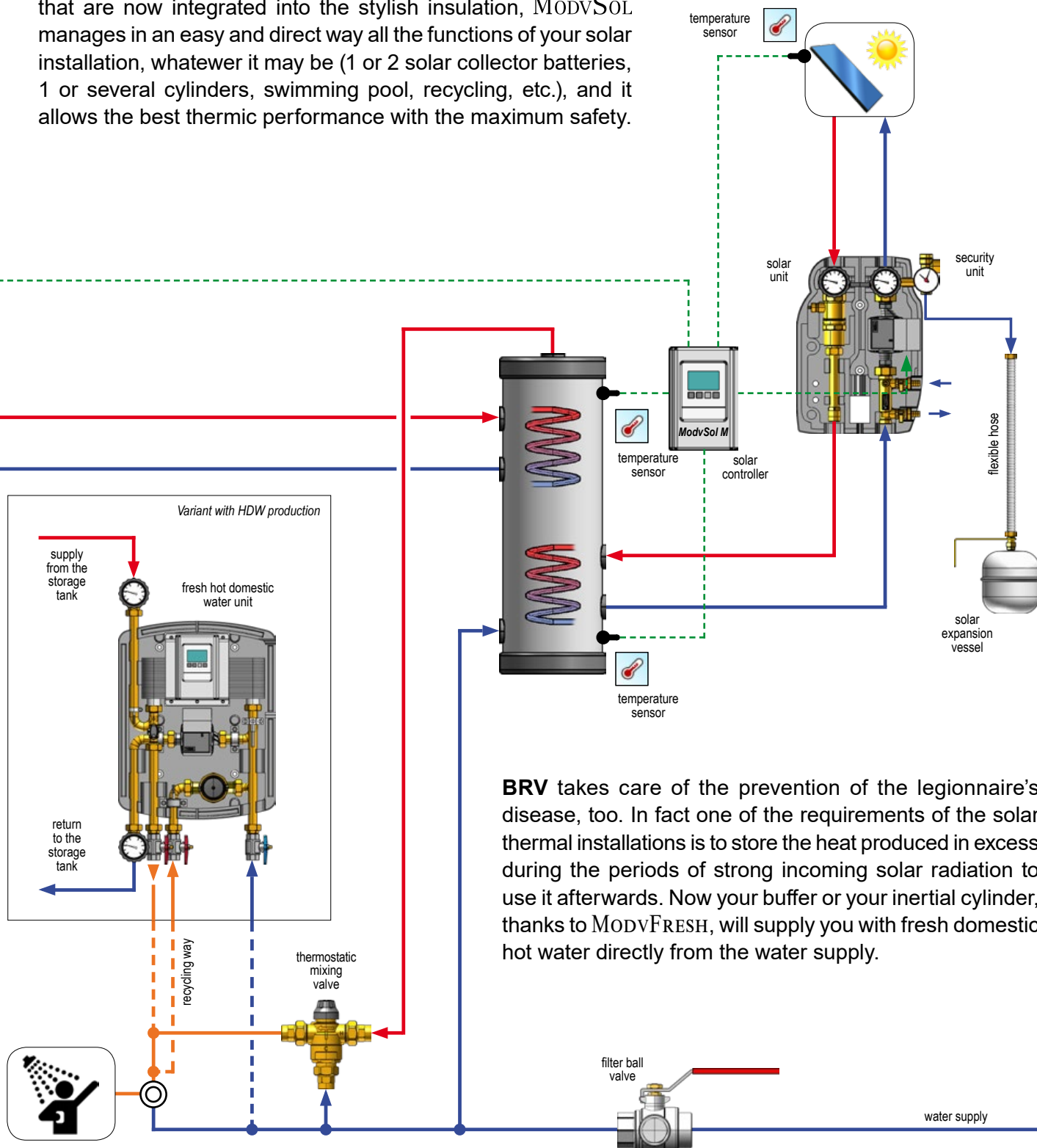
The functionality and the efficiency too, have been taken into due consideration as regards the stage of the installation: all our products equipped with built-in controllers (climatic or solar) are pre-wired: temperature sensors, power supply and control cables, thermostats and remote controls.

**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.

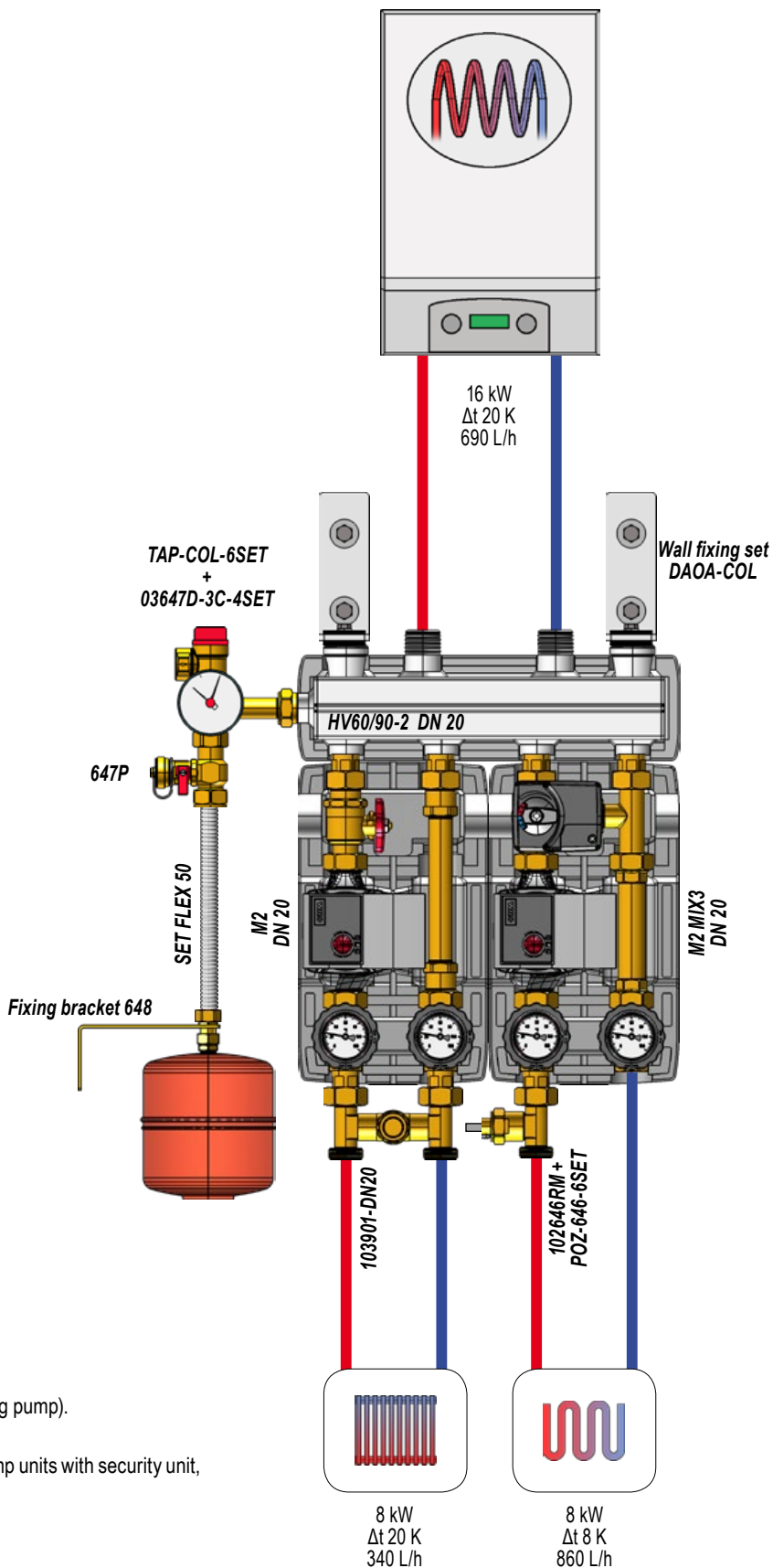
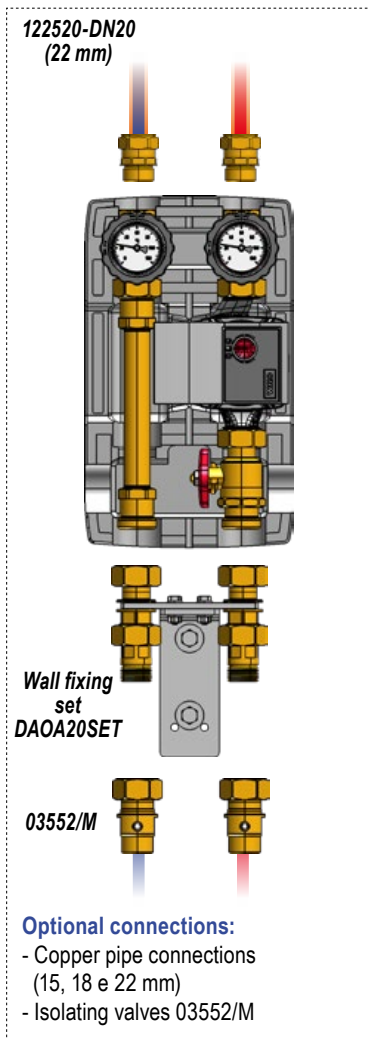
A full range of distributors, pump units, servomotors, circulating pumps and security units allows a reliable connection with a considerable saving of time and money. The new DN20 range is adding to the two series DN25 and DN32; DN20 range is suitable to manage medium-low powers with a substantial room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

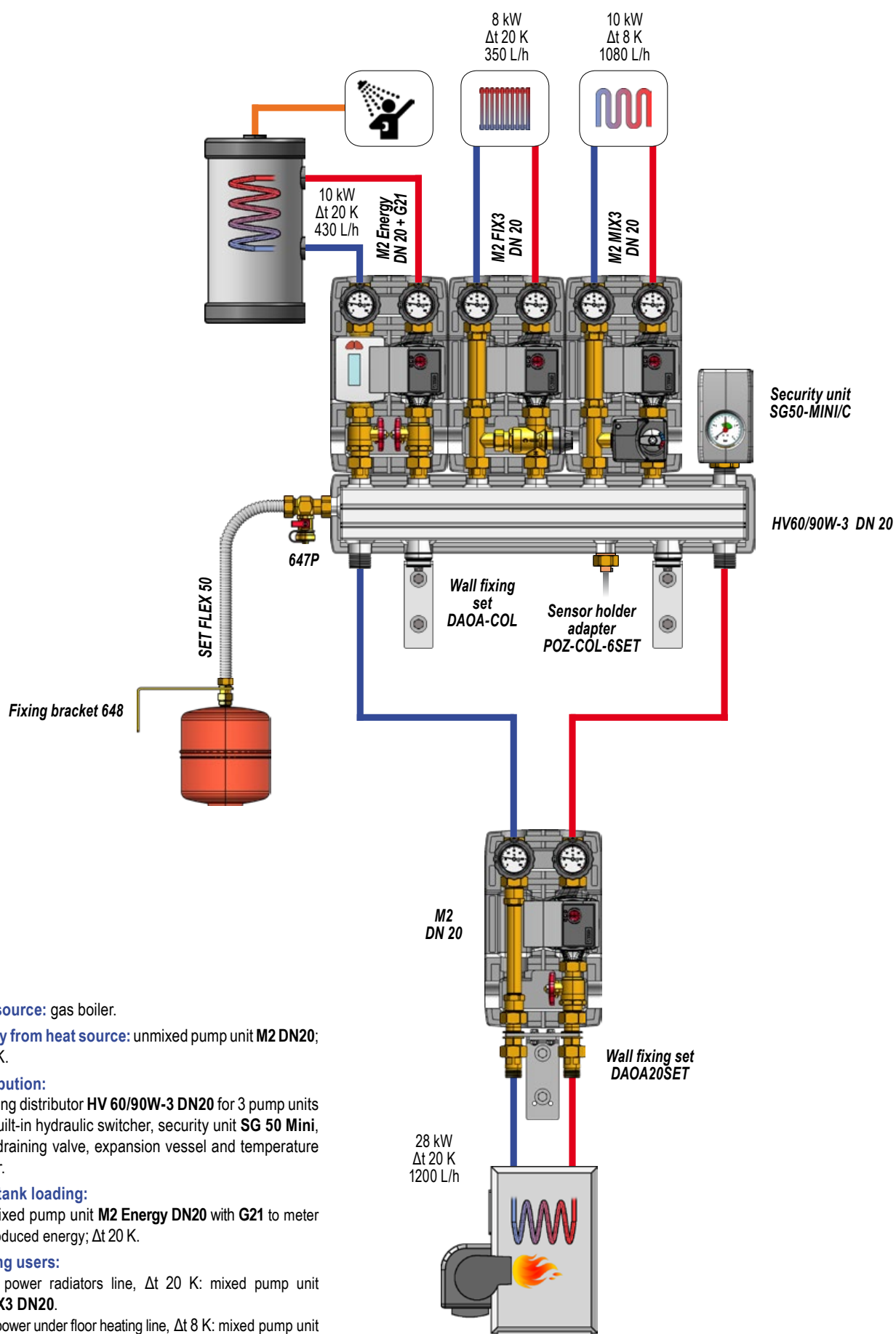
- Heating distributor HV 60/90-2 DN20 for 2 pump units with security unit, filling/draining valve and expansion vessel.

**Heating users:**

- Low power radiators line,  $\Delta t$  20 K:  
unmixed pump unit M2 DN20 and differential bypass valve.

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

# MODVLVS DN20 Installation examples



**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 Energy DN20 with G21 to meter the produced energy; Δt 20 K.

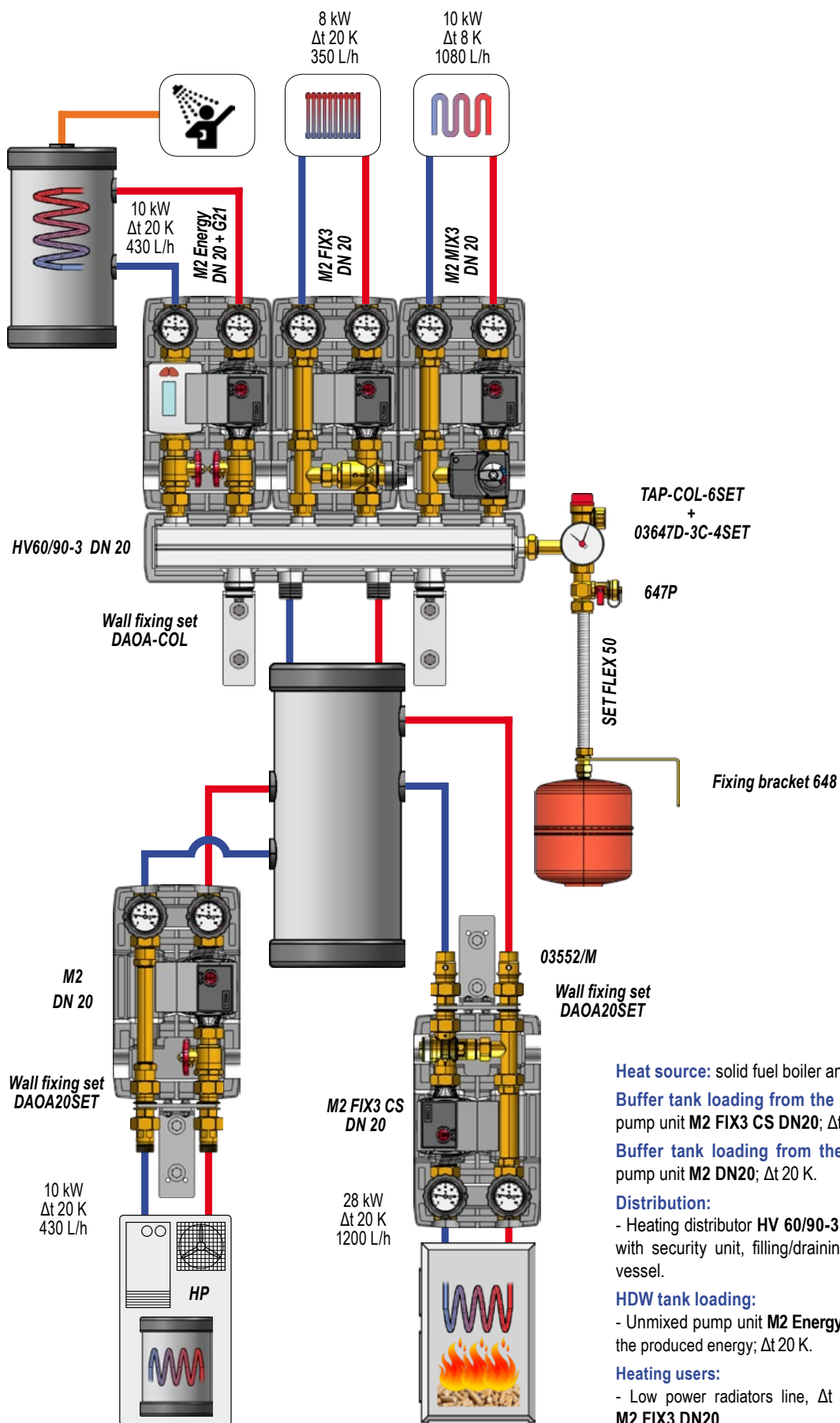
**Heating users:**

- 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.*



# MODVLVS DN20 Installation examples



**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 Energy DN20 with G21 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.*

## MODVLVS DN20

Compact and up-to-date, the new MODVLVS DN20 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 circulating pumps  
Wilco Para SC  
6 m and 8 m*



CE



### M2

#### 2-WAY UNMIXED PUMP UNIT

Code: 20255R - with circulating pump: 20255R-(P6/UL7/P8)

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:

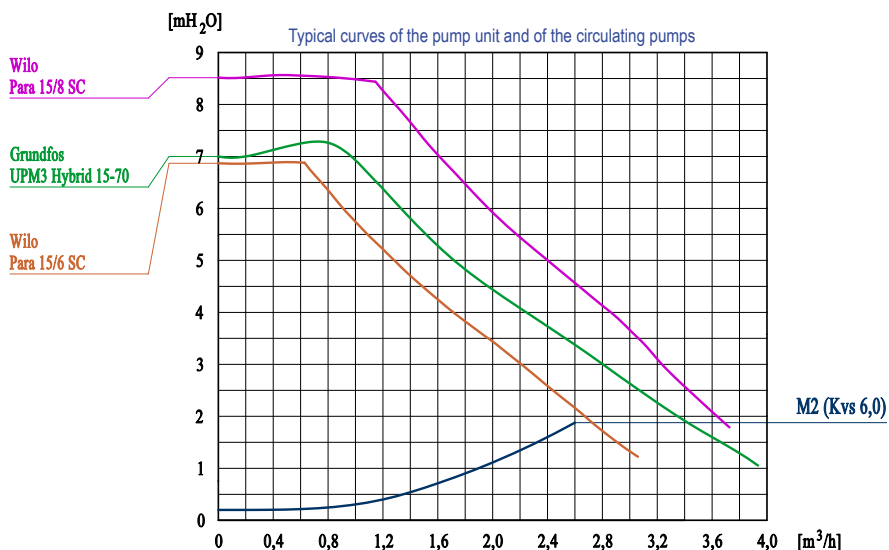
For power up to 35 kW (with  $\Delta t$  20 K) and maximum flow 1500 l/h.  
Kvs Value: 6,0.

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:

Wilco Para 15/6 SC (P6)  
Grundfos UPM3 Hybrid 15-70 (UL7)  
Wilco Para 15/8 SC (P8)



# MODVLVS DN20 Pump Units

3-way mixed

CE



Servomotor TRM20



**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

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code: **20255R-M3** - with circulating pump: **20255R-M3-(P6/UL7/P8)**

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  $\Delta t$  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 Para 15/6 SC (P6)
- Grundfos UPM3 Hybrid 15-70 (UL7)
- Wilo Para 15/8 SC (P8)

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

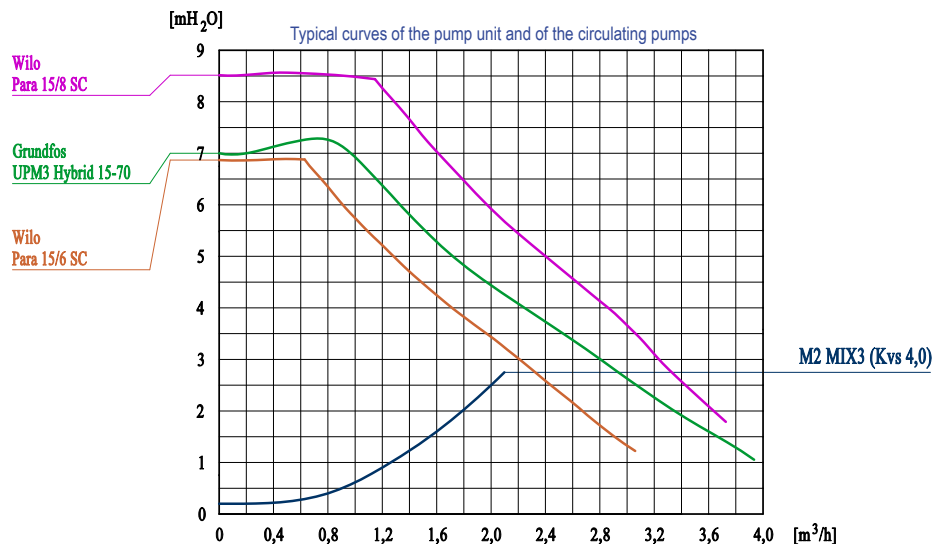


### MODEL WITH BUILT-IN TRM20 SERVOMOTOR

Code 3/4": **20255R-M3-TRM** - with circulating pump: **20255R-M3-(P6/U7/P8)-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 Hybrid 15-70 is identified in the code with U7.



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

Code: **20255R-M33** - with circulating pump: **20255R-M33-(P6/UL7/P8)**

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.
- ✓ 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  $\Delta t$  15 K) and maximum flow 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 Para 15/6 SC (P6)  
Grundfos UPM3 Hybrid 15-70 (UL7)  
Wilo Para 15/8 SC (P8)

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 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.

M2 MIX33 pump units are supplied with the recycling by-pass fully open.

Approximate data for applications in low and medium temperature heating systems

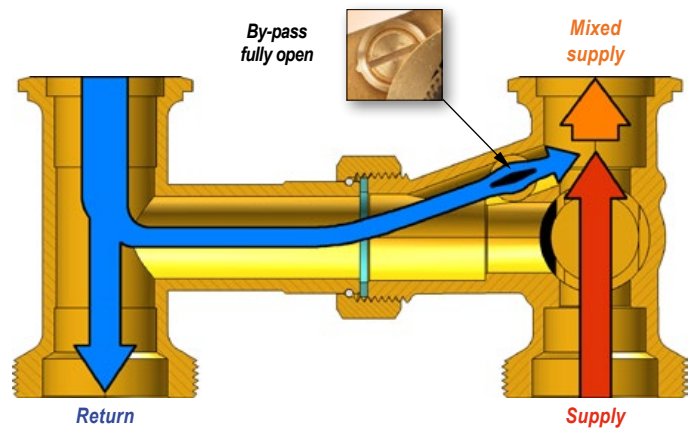
$\Delta t$	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
8 K	12 kW - 1300 l/h	Wilo Para 15/6 SC	4,5 mH <sub>2</sub> O	Up to 100 m <sup>2</sup>
8 K	17 kW - 1900 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O	Up to 170 m <sup>2</sup>
15 K	23 kW - 1300 l/h	Wilo Para 15/6 SC	4,5 mH <sub>2</sub> O	-
15 K	33 kW - 1900 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O	-



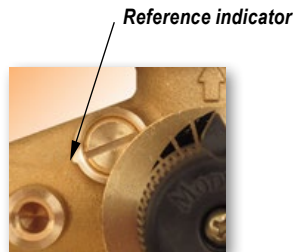
# MODVLVS DN20 Pump Units

## Working principle

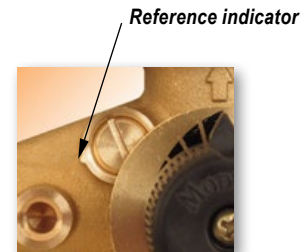
During the regular working process, with the mixer completely closed on the recycling for example, a part of the fluid is aspirated from the pump all along the by-pass line. As a result, one has a very high delivered capacity and a reduced temperature.



## Adjusting the by-pass



The by-pass is **fully open** and it allows the maximum recycling.  
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-(P6/U7/P8)TRM**

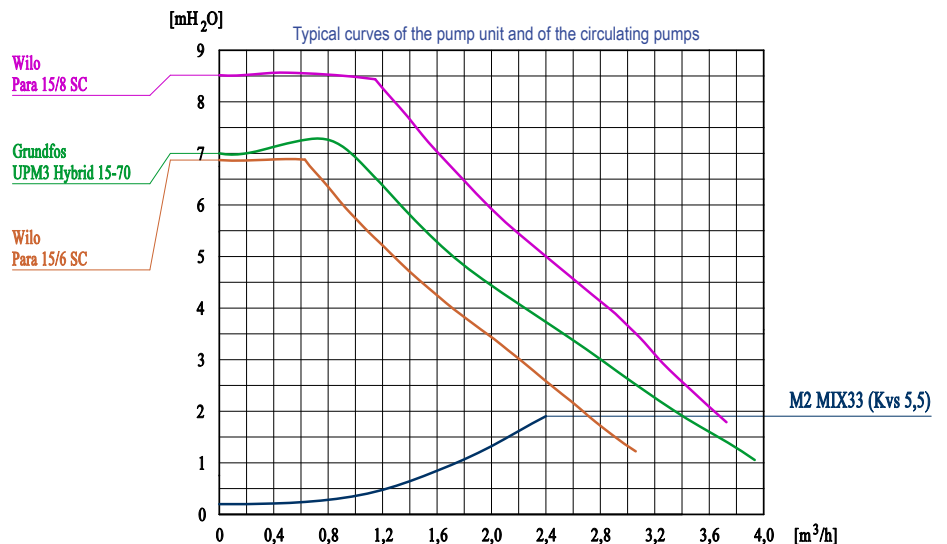
**Servomotor TRM20:** 3 points servomotor for mixing valve, bidirectional, reversible.  
Operating range of 90°, 230V, 105 s., torque 2 Nm. IP40.

*Note: in units with pre-assembled pump, the pump Grundfos UPM3 Hybrid 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.

heating and cooling

# MODVLVS DN20 Pump Units



## M2 FIX3

2-WAY PUMP UNIT WITH FIXED TEMPERATURE MIXING VALVE

Code: 20255R-(F1/F2) - with circulating pump: 20255R-(F1/F2)-(P6/UL7/P8)

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  $\Delta t$  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 Para 15/6 SC (P6)  
Grundfos UPM3 Hybrid 15-70 (UL7)  
Wilo Para 15/8 SC (P8)

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	$\Delta t$	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 Para 15/6 SC	5 mH <sub>2</sub> O	Up to a 50 m <sup>2</sup>
F2	45-70°C	20 K	2,0	11 kW - 500 l/h	Wilo Para 15/6 SC	5 mH <sub>2</sub> O	-
F1	20-45°C	8 K	2,0	9 kW - 1000 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O	From 50 m <sup>2</sup> to 100 m <sup>2</sup>
F2	45-70°C	20 K	2,0	22 kW - 1000 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O	-

Thanks to the new **Multimix** thermostatic mixer the pump unit can give the maximum supply temperature, the same as the one of the inlet hot water. If lower temperatures are requested, to allow a regular and continuous mixing, it is necessary that the inlet hot water temperature is 3÷5 K higher than the requested value of the outlet mixed temperature. Reference temperatures: Models F1: T<sub>H</sub>: 55°C; T<sub>v</sub>: 24°C; T<sub>Mix</sub>: 32°C - Models F2: T<sub>H</sub>: 75°C; T<sub>v</sub>: 40°C; T<sub>Mix</sub>: 55°C



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

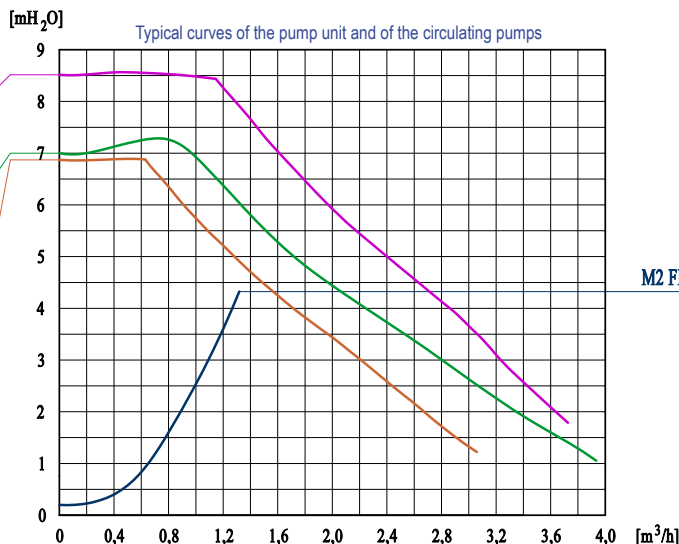
Ordered in the group by adding "-T" in the code:  
f.i.: 20255R-F1-P6-T



### OPTIONAL NON RETURN VALVE FOR MIXED PUMP UNITS

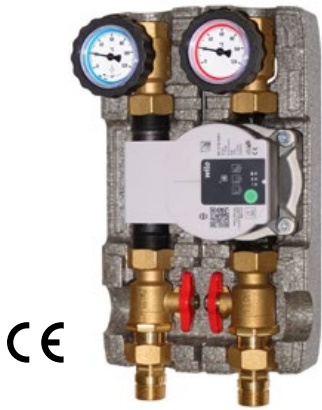
DN 20 non return valve to be installed into the body of the mixing valve on the return way. It prevents back flow of energy in presence of complex installations (f.i. different circulating pumps and/or several mixing valves on the distributor). Minimum opening pressure: 20 mbar. Kvs 7,2. Max Temperature: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

Code: CRKZ20TOT



M2 FIX3 (Kvs 2,0)

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



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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

**RUNNING OUT** Code **DN15: 202518-15** - with circulating pump: **202518-(P6/UL7/P8)-15**  
Code **DN20: 202518-20** - with circulating pump: **202518-(P6/UL7/P8)-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.

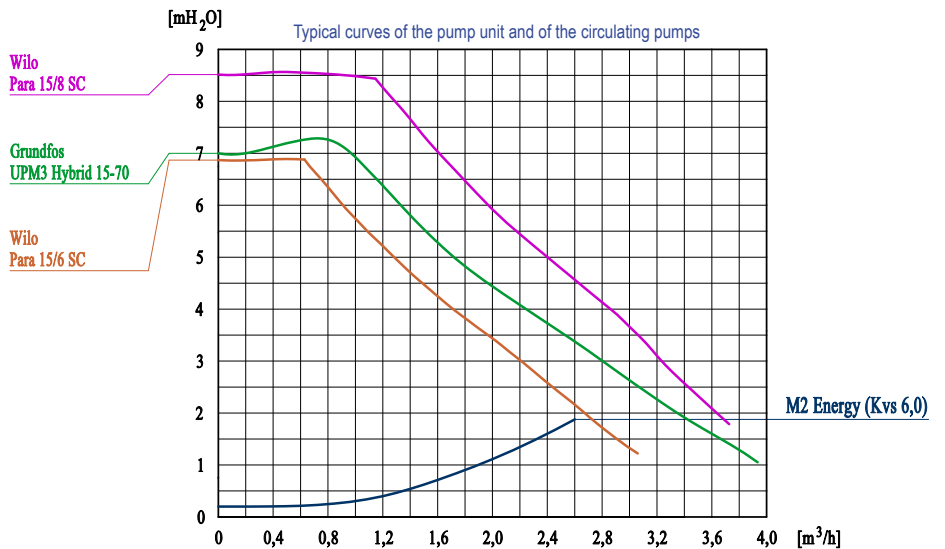
**(\*) The data are relevant to the pump unit without energy meter installed.**



**Available circulating pumps:**  
Wilo Para 15/6 SC (P6)  
Grundfos UPM3 Hybrid 15-70 (UL7)  
Wilo Para 15/8 SC (P8)



**Fitting up energy meters:**  
DN15 - 3/4" x 110 - Qn 1.5 (15)  
DN20 - 1" x 130 - Qn 2.5 (20)



Approximate data of the Energy pump unit with the energy meter installed						
Model	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 + G21	2,5 m <sup>3</sup> /h	20 K	3,8	23 kw - 1000 l/h	Wilo Para 15/6 SC	5 mH <sub>2</sub> O
M2 + G21	2,5 m <sup>3</sup> /h	20 K	3,8	39 kw - 1700 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O

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

Remark: The DN to which the identification codes of the units 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

**RUNNING OUT** Code **DN15: 202518-M3-15** - with circulating pump: **202518-M3-(P6/UL7/P8)-15**  
Code **DN20: 202518-M3-20** - with circulating pump: **202518-M3-(P6/UL7/P8)-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 Para 15/6 SC (P6)  
Grundfos UPM3 Hybrid 15-70 (UL7)  
Wilo Para 15/8 SC (P8)

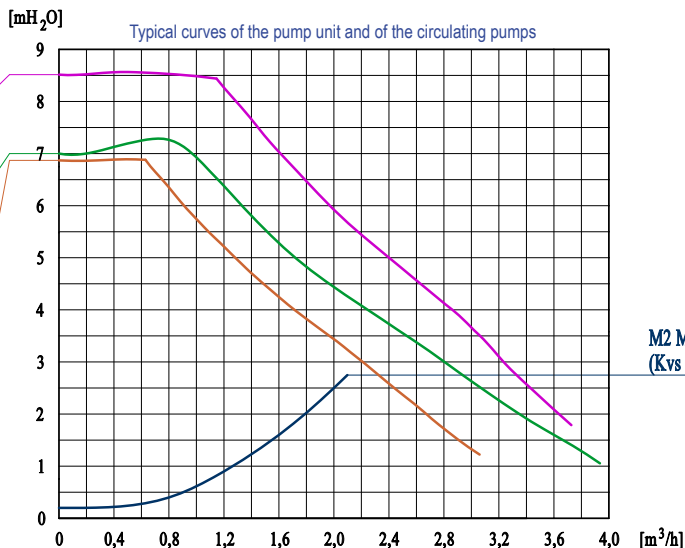


#### Fitting up energy meters:

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**



Wilo  
Para 15/8 SC

Grundfos  
UPM3 Hybrid 15-70

Wilo  
Para 15/6 SC

M2 MIX3 Energy  
(Kvs 4,0)

#### Approximate data of the Energy pump unit with the energy meter installed

Model	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 MIX3 + G21	2,5 m³/h	20 K	3,1	21 kw - 900 l/h	Wilo Para 15/6 SC	5 mH <sub>2</sub> O
M2 MIX3 + G21	2,5 m³/h	20 K	3,1	35 kw - 1500 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O

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

Remark: The DN to which the identification codes of the units 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

**RUNNING OUT** Code **DN15: 202518-(F1/F2)-15** - with circulating pump: **202518-(F1/F2)-(P6/UL7/P8)-15**  
Code **DN20: 202518-(F1/F2)-20** - with circulating pump: **202518-(F1/F2)-(P6/UL7/P8)-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)



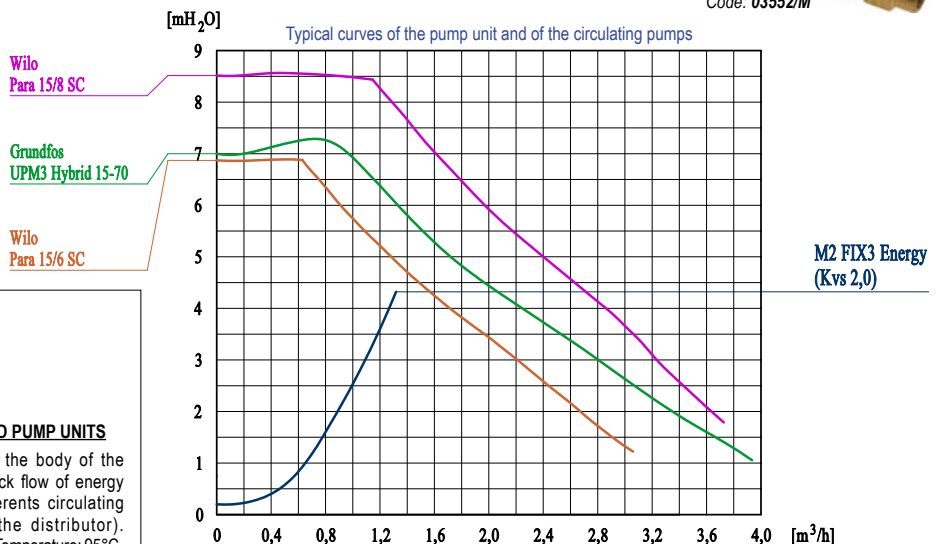
**Available circulating pumps:**  
Wilo Para 15/6 SC (P6)  
Grundfos UPM3 Hybrid 15-70 (UL7)  
Wilo Para 15/8 SC (P8)



**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



#### Approximate data of the Energy pump unit with the energy meter installed

Model	Field of regulation	Energy meter	Δt	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 FIX3 F1 + G21	20-45°C	2,5 m <sup>3</sup> /h	8 K	1,9	9 kw - 1000 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O
M2 FIX3 F2 + G21	45-70°C	2,5 m <sup>3</sup> /h	20 K	1,9	23 kw - 1000 l/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O

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

Remark: The DN to which the identification codes of the units 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 AC/DC 24V. 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**

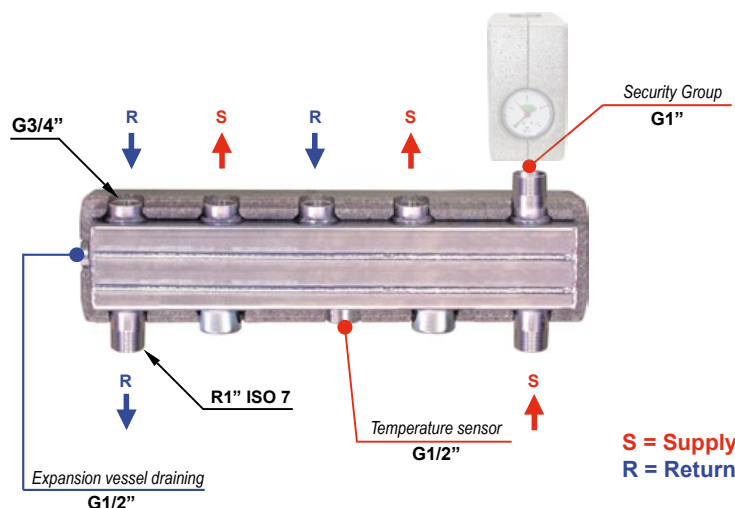
# MODVLVS DN20 Distributors



**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.

## Combi distributor HV 60/90W (2 m<sup>3</sup>/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 m<sup>3</sup>/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).

**S = Supply**  
**R = Return**

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



### 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: 150x140x82 mm).*

**Max Temperature 120°C.**

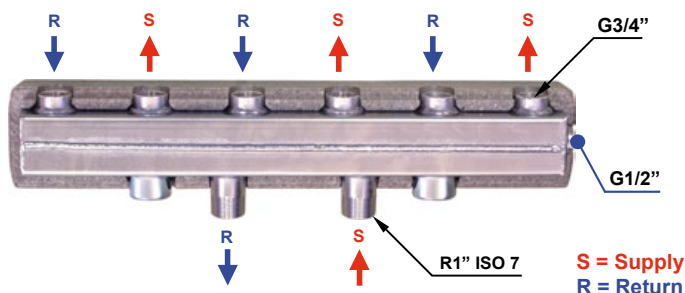
**Size: 1" Female.**

**Code 1" swivel nut: SG50-MINI/C**

**Code 1" F: SG50-MINI**



## Distributor HV 60/90 (2 m<sup>3</sup>/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 m<sup>3</sup>/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	<b>HV60/90-2</b>
HV 60/90-3	For connection to no. 3 DN20 units	540 mm	<b>HV60/90-3</b>



### Wall fixing set for DN20 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-COL**



### 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

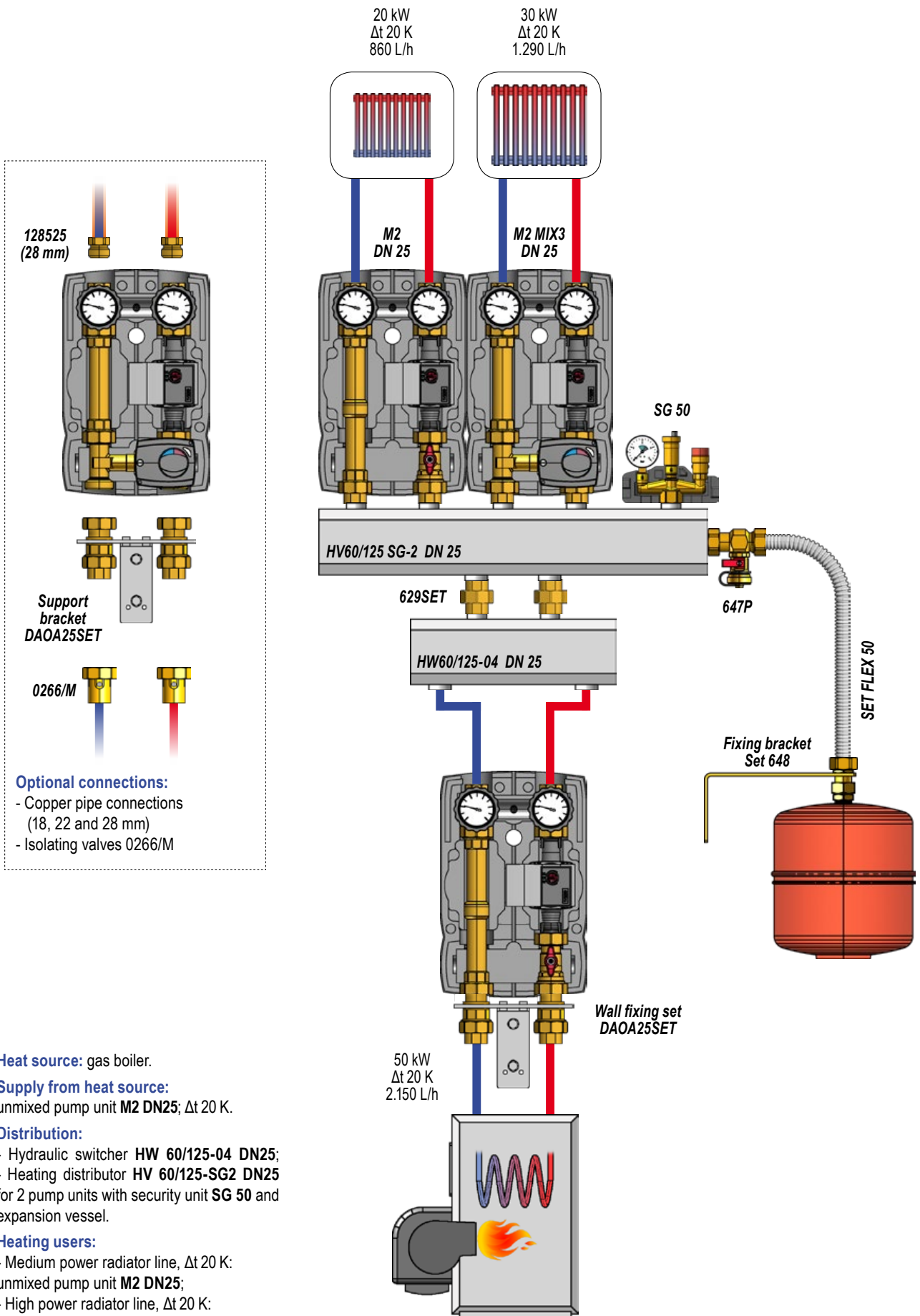
EPDM gasket.

Yellow brass finish.

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

Sizes: 1" F x 1" F

Code 1": **04629SET**



**Heat source:** gas boiler.

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

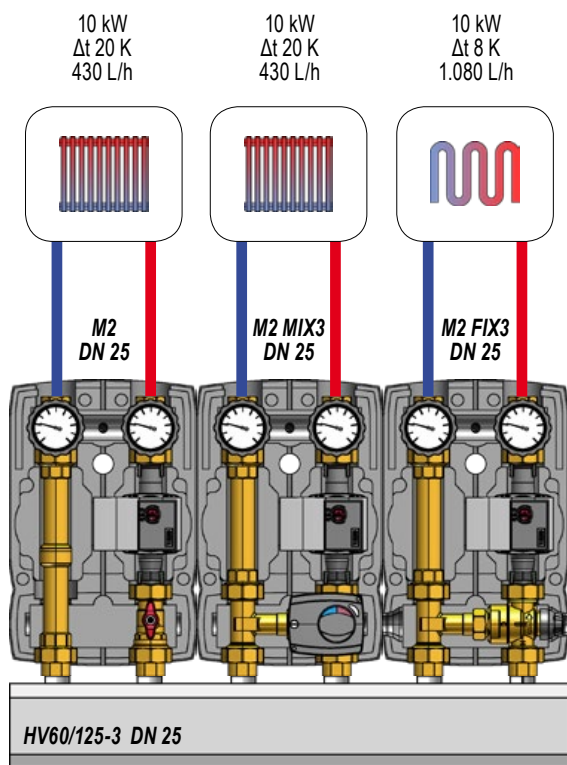
**Distribution:**

- 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**.

# 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:

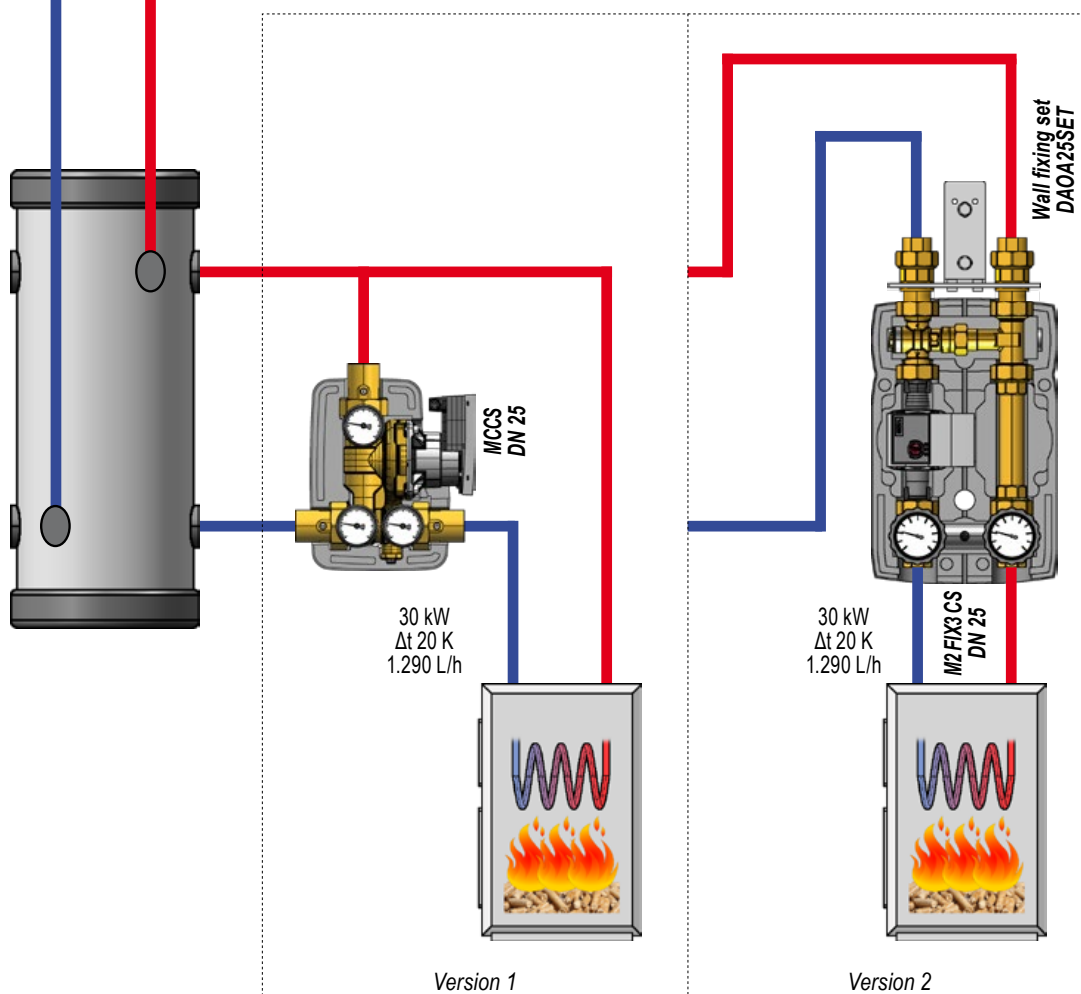
unmixed pump unit **M2 DN25;**

- Low power radiator line, Δt 20 K:

mixed pump unit **M2 MIX3 DN25;**

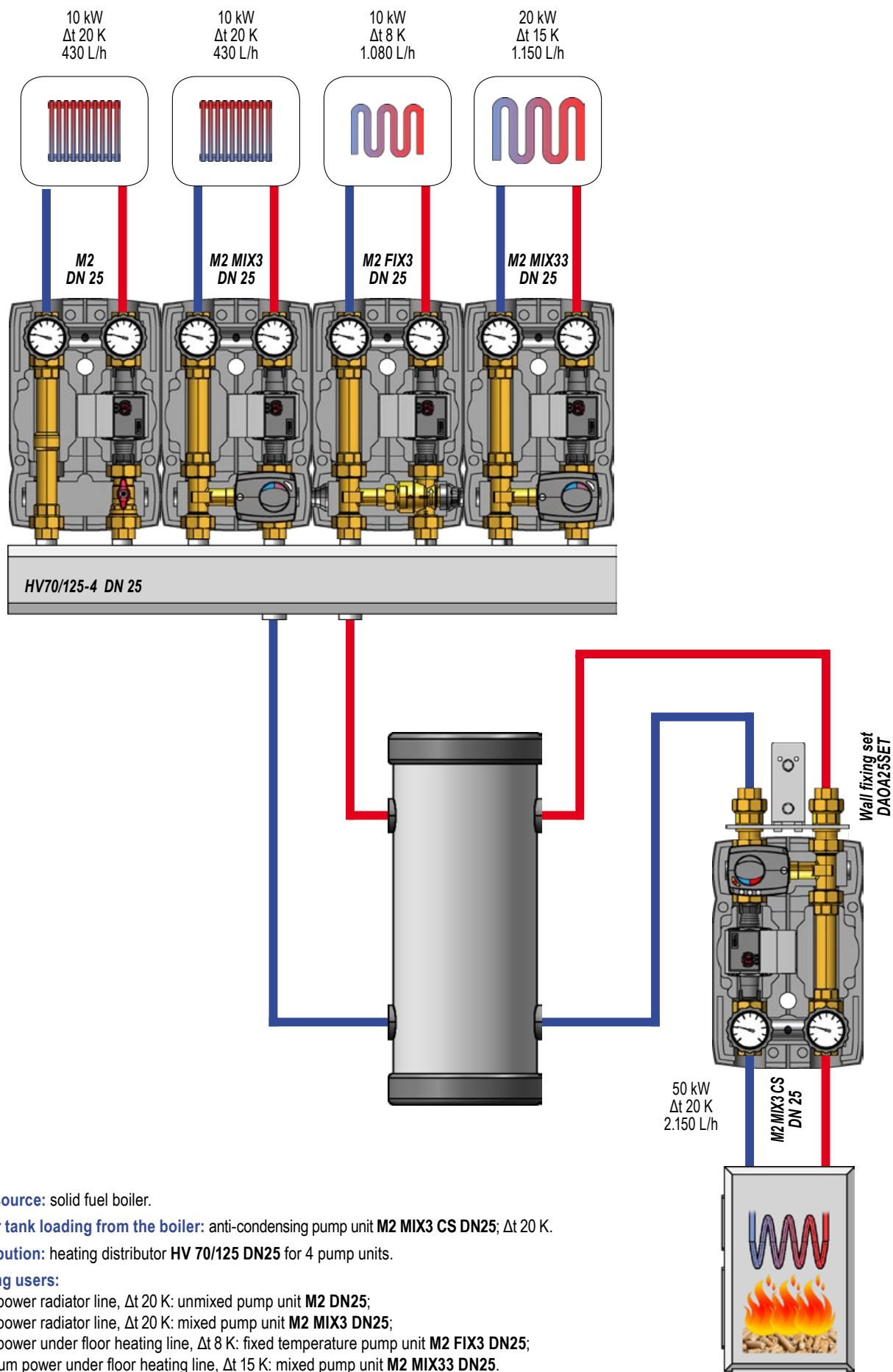
- Low power under floor heating line, Δt 8 K:

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**;  $\Delta t$  20 K.

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

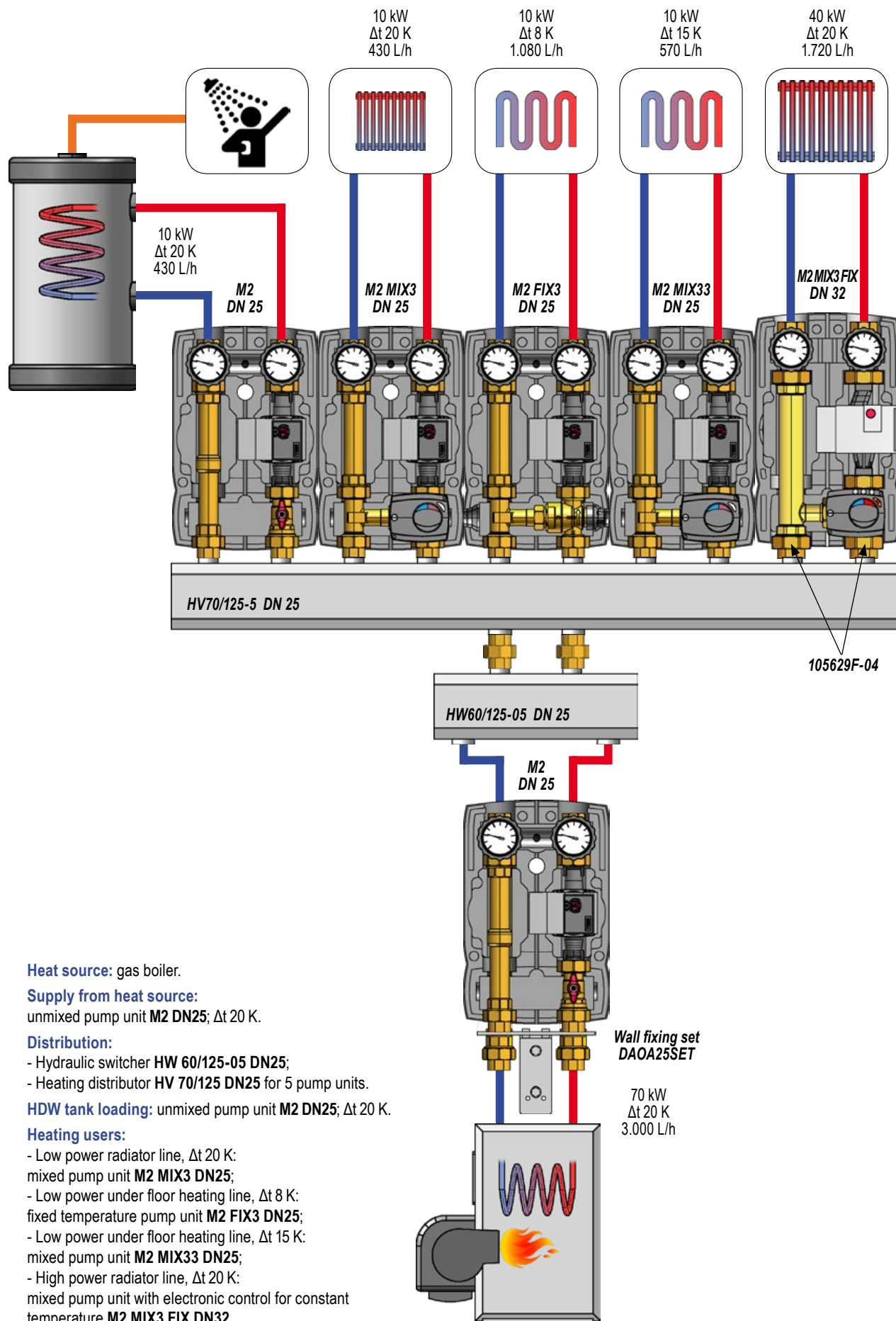
**Heating users:**

- Low power radiator line,  $\Delta t$  20 K: unmixed pump unit **M2 DN25**;
- Low power radiator line,  $\Delta t$  20 K: mixed pump unit **M2 MIX3 DN25**;
- Low power under floor heating line,  $\Delta t$  8 K: fixed temperature pump unit **M2 FIX3 DN25**;
- Medium power under floor heating line,  $\Delta t$  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**;  $\Delta t$  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**;  $\Delta t$  20 K.

**Heating users:**

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

**Wall fixing set**  
**DAOA25SET**

70 kW  
 $\Delta t$  20 K  
3.000 L/h

## MODVLVS DN25

The 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" 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.



New circulating pumps  
Wilo Para SC  
6 m and 8 m



### M2

#### 2-WAY UNMIXED PUMP UNIT

Code 1": 20355R - with circulating pump: 20355R-(P6/UL7/P8)

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" Female.

#### FIELD OF UTILIZATION:

For power up to 50 kW (with  $\Delta t$  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 Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (UL7)  
Wilo Para 25/8 SC (P8)

CE



### M3

#### 3-WAY UNMIXED PUMP UNIT WITH BYPASS

Code 1": 20358R - with circulating pump: 20358R-(P6/UL7/P8)

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).

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



Dire



CE



3-way mixed



M21



AHC40

NEW

## M2 MIX3

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code 1": 20355R-M3 - with circulating pump: 20355R-M3-(P6/UL7/P8)

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" Female.

### FIELD OF UTILIZATION:

For power up to 35 kW (with  $\Delta t$  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 Para 25/6 SC (P6)
- Grundfos UPM3 Hybrid 25-70 (UL7)
- Wilo Para 25/8 SC (P8)

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)

with circulating pump: 20355R-M3-(P6/U7/P8)-(M21/AHC)

**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.

**AHC40:** Servomotor with climatic controller and outside sensor. Optional room sensor. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

Note: in units with pre-assembled pump, the pump Grundfos UPM3 Hybrid 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:

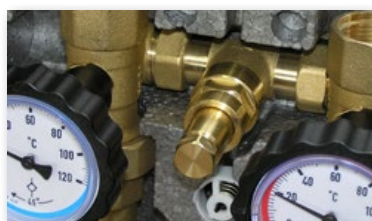
Mixing valve Kvs	Pump unit Kvs	Power	Flow rate
10,0 (std.)	6,0 (std.)	35 kW	1500 l/h
6,3	5,0	29 kW	1250 l/h
4,0	3,5	20 kW	850 l/h
2,5	2,4	14 kW	600 l/h



### 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

3-WAY PUMP UNIT WITH 3-WAY MIXING VALVE

Code 1": 20358R-M3 - with circulating pump: 20358R-M3-(P6/UL7/P8)

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).

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

Code 1": 20355R-M33 - with circulating pump: 20355R-M33-(P6/UL7/P8)

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.
- ✓ 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" Female.

### FIELD OF UTILIZATION:

For power up to 38 kW (with  $\Delta t$  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 Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (UL7)  
Wilo Para 25/8 SC (P8)

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 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.

M2 MIX33 pump units are supplied with the recycling by-pass fully open.

Approximate data for applications in low and medium temperature heating systems

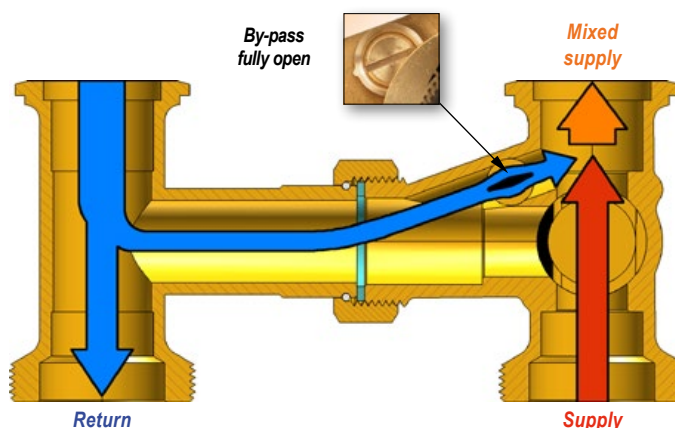
$\Delta t$	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power	Approximate surface of the underfloor heating system
8 K	17 kW - 1800 l/h	Wilo Para 25/6 SC	3 mH <sub>2</sub> O	Up to 100 m <sup>2</sup>
8 K	20 kW - 2200 l/h	Wilo Para 25/8 SC	5 mH <sub>2</sub> O	Up to 200 m <sup>2</sup>
15 K	31 kW - 1800 l/h	Wilo Para 25/6 SC	3 mH <sub>2</sub> O	-
15 K	38 kW - 2200 l/h	Wilo Para 25/8 SC	5 mH <sub>2</sub> O	-



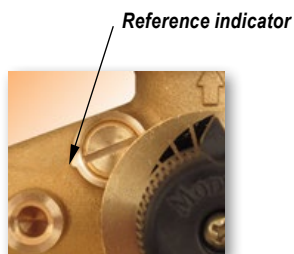
# MODVLVS DN25 Pump Units

## Working principle

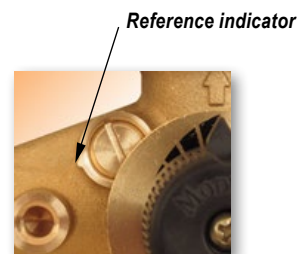
During the regular working process, with the mixer completely closed on the recycling for example, a part of the fluid is aspirated from the pump all along the by-pass line. As a result, one has a very high delivered capacity and a reduced temperature.



## Adjusting the by-pass



The by-pass is **fully open** and it allows the maximum recycling.  
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



AHC40

**NEW**

## MODEL WITH BUILT-IN SERVOMOTOR OR CLIMATIC CONTROLLER

Code 1": **20355R-M33-(M21/AHC)**  
with circulating pump: **20355R-M33-(P6/U7/P8)(M21/AHC)**

**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.

**AHC40:** Servomotor with climatic controller and outside sensor. Optional room sensor. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

*Note: in units with pre-assembled pump, the pump Grundfos UPM3 Hybrid 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. 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 MIX33

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

Code 1": **20358R-M33** - with circulating pump: **20358R-M33-(P6/UL7/P8)**

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



AHC40

**NEW**

## M2 MIX4

2-WAY PUMP UNIT WITH 4-WAY MIXING VALVE

Code 1": 20355R-M4 - with circulating pump: 20355R-M4-(P6/UL7/P8)

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" Female.

### FIELD OF UTILIZATION:

For power up to 28 kW (with  $\Delta t$  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 Para 25/6 SC (P6)
- Grundfos UPM3 Hybrid 25-70 (UL7)
- Wilo Para 25/8 SC (P8)

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 SERVMOTOR OR CLIMATIC CONTROLLER

Code 1": 20355R-M4-(M21/AHC)

with circulating pump: 20355R-M4-(P6/U7/P8)-(M21/AHC)

**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.

**AHC40:** Servomotor with climatic controller and outside sensor. Optional room sensor. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 Nm. Power supply 230V. IP42.

Note: in units with pre-assembled pump, the pump Grundfos UPM3 Hybrid 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: 10101



## M3 MIX4

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

Code 1": 20358R-M4 - with circulating pump: 20358R-M4-(P6/UL7/P8)

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).

# MODVLVS DN25 Pump Units



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)-(P6/UL7/P8)

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" Female.

### FIELD OF UTILIZATION:

For power up to 35 kW (with  $\Delta t$  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 Para 25/6 SC (P6)

Grundfos UPM3 Hybrid 25-70 (UL7)

Wilo Para 25/8 SC (P8)



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	$\Delta t$	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 Para 25/6 SC	5 mH <sub>2</sub> O	Up to 50 m <sup>2</sup>
F2	45-70 °C	20 K	2,2	11 kW - 500 l/h	Wilo Para 25/6 SC	5 mH <sub>2</sub> O	-
F3 (**)	20-45 °C	8 K	3,3	14 kW - 1500 l/h	Wilo Para 25/8 SC	5 mH <sub>2</sub> O	From 50 to 150 m <sup>2</sup>
F4	45-70 °C	20 K	3,3	35 kW - 1500 l/h	Wilo Para 25/8 SC	5 mH <sub>2</sub> O	-

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

Thanks to the new **Multimix** thermostatic mixer the pump unit can give the maximum supply temperature, the same as the one of the inlet hot water. If lower temperatures are requested, to allow a regular and continuous mixing, it is necessary that the inlet hot water temperature is 3+5 K higher than the requested value of the outlet mixed temperature. Reference temperatures: F1 and F3 models: T<sub>H</sub>: 55°C; T<sub>C</sub>: 24°C; T<sub>Mix</sub>: 32°C - F2 and F4 models: T<sub>H</sub>: 75°C; T<sub>C</sub>: 40°C; T<sub>Mix</sub>: 55°C



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

Ordered in the group by adding "-T" in the code: f.i.: 20355R-F3-P6-T



#### 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 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)-(P6/UL7/P8)

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





## 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-(P6/U7/P8)-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" 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 Para 25/6 SC (P6)
- Grundfos UPM3 Hybrid 25-70 (UL7)
- Wilo Para 25/8 SC (P8)

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 5°C up to 95°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-(P6/U7/P8)-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).





Clima M: for a mixed system



New climatic controller: Clima M 24VDC



## CLIMA M

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-MHC-(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. It is possible to connect one each other several hydraulic modules via CAN-Bus and to connect the new °Caleon room thermostat. 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  $\Delta t$  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  $\Delta t$  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  $\Delta p$  and variable  $\Delta p$ ), 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-MHCP6

Code 1": 20359R-M33-MHCP8

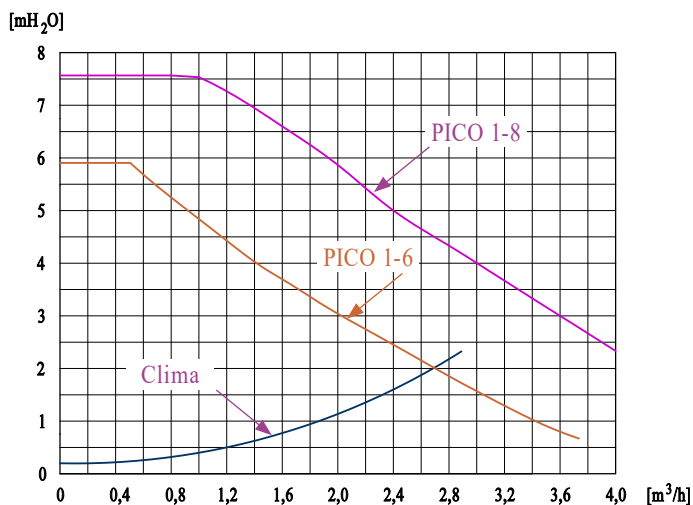


## Circulating Pumps

### 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  $\Delta p$  or variable  $\Delta p$ .

- ✓ **Costant  $\Delta p$ :** 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  $\Delta p$ :** 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.

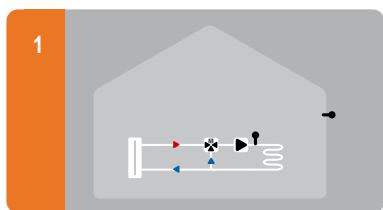


In compliance with European Directive 2009/125/CE. Low energy consumption from 4 W to 40 W (Wilo Yonos PICO 25/1-6) and from 4 W to 75 W (Wilo Yonos PICO 25/1-8) at max flow. Automatic air vent program, which allows a quick elimination of air during the first start of the plant. Molex automatic connector,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

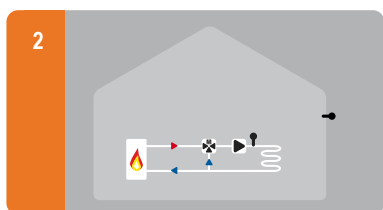
## Climatic Controller Clima M

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

*It is possible to connect the room thermostat Caleon*



mixed circuit



mixed circuit + boiler (\*)

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

- ✓ 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).
- ✓ Room thermostat °Caleon (optional). Elegant climatic control unit equipped with a touch-screen color display. It allows an easy remote management of the heating system. Operation modality: Normal, Turbo, Eco and Off with specific temperature set-point. Holiday program. 8 Selectable daily heating time slot.

### 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 "sensor box" for: external probe TA/55, room thermostat °Caleon (optional), 0-10V boiler contact, 24 VDC supply (output).
- ✓ outside temperature sensor TA/55.

### 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 L: for complex installations

CE



New climatic controller: Clima L 24VDC



## CLIMA L

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE AND ELECTRONIC CIRCULATING PUMP.  
BUILT-IN CLIMATIC CONTROLLER FOR COMPLEX INSTALLATIONS

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

Climatic regulation pump unit for control of 1 or 2 circuits and request for energy (heat source), DHW production or solar circuit management, cooling system management. It is possible to connect one each other several hydraulic modules via CAN-Bus and to connect the new °Caleon room thermostat. 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  $\Delta t$  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  $\Delta t$  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  $\Delta p$  and variable  $\Delta p$ ), 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-LHCP6

Code 1": 20359R-M33-LHCP8



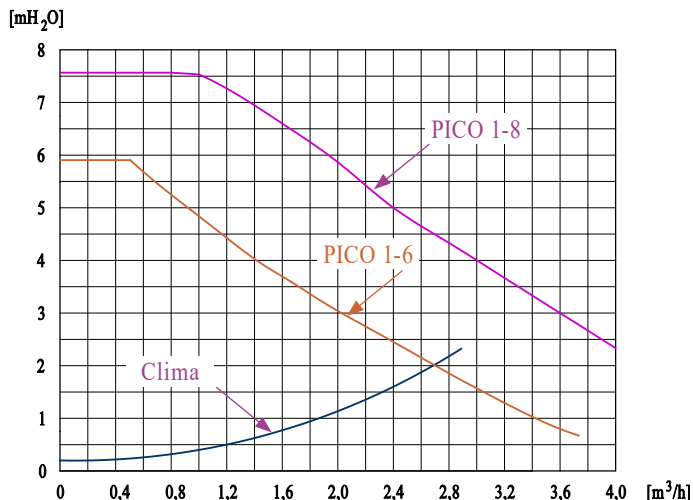


## Circulating Pumps

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

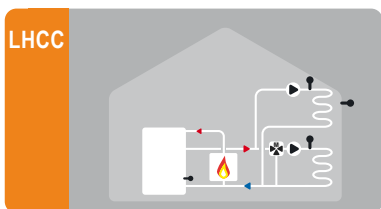
High efficiency circulating pumps with electronically commutated motor. Integrated differential pressure control: constant  $\Delta p$  or variable  $\Delta p$ .

- ✓ **Constant  $\Delta p$ :** 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  $\Delta p$ :** 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.

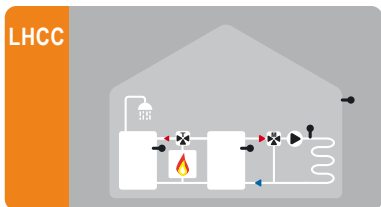


In compliance with European Directive 2009/125/CE. Low energy consumption from 4 W to 40 W (Wilo Yonos PICO 25/1-6) and from 4 W to 75 W (Wilo Yonos PICO 25/1-8) at max flow. Automatic air vent program, which allows a quick elimination of air during the first start of the plant. Molex automatic connector,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

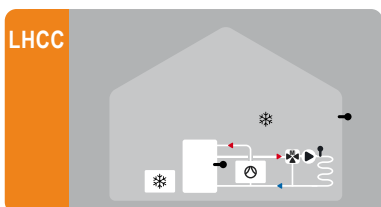
Some examples of hydraulic diagrams controlled by the Clima L



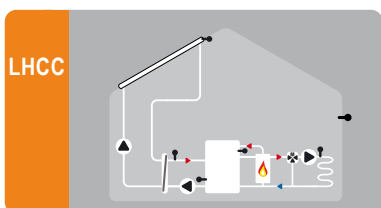
Mixed heating circuit, direct circuit and boiler or heat pump



Mixed heating circuit, boiler, diverting valve and DHW tank



Mixed heating circuit, heat pump with cooling function; dehumidifier



Mixed heating circuit, solar circuit with exchanger, boiler or heat pump

## Climatic Controller Clima L

**Climatic controller with wide LCD display to manage complex installations.**

- ✓ Pictogram of selected hydraulic circuit with indication of the relays activity status: circulators, valves (mixing or diverting) and request of energy 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. Active modality of working: day or night.
- ✓ Pre-setting of characteristic curves (1 or 2 circuits) 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 circuit in day modality or reduction night.
- ✓ Data memory with statistical analysis of the working of the plant (temperatures, working times, error messages, etc).
- ✓ Room thermostat °Caleon (optional). Elegant climatic control unit equipped with a touch-screen color display. It allows an easy remote management of the heating system. Operation modality: Normal, Turbo, Eco and Off with specific temperature set-point. Holiday program. 8 Selectable daily heating time slot;
- ✓ Cooling mode with thermostat °Caleon Clima.

**The controller is supplied pre-cabled and 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;
- ✓ pre-wired power box for the relay R4 management;
- ✓ pre-wired sensor box for connecting the 5 sensors of the system, the room thermostat °Caleon (1 or 2 depending on the hydraulic diagram selected) and the 2 additional 0/10V free outputs. One of these outputs can be transformed into open or closed contact thanks to a relay built in the sensor box (up to 6A). All cabling is thus eased without having to access the control unit;
- ✓ outside temperature sensor TA/55.



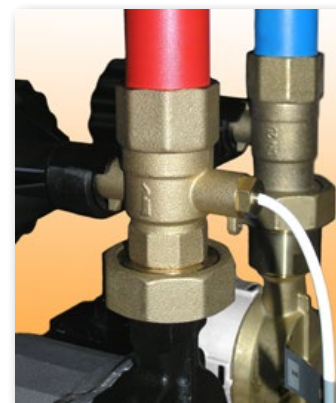
It is possible to connect the room thermostat Caleon



## 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.



heating and cooling

Energy metering



## M2 Energy

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

**RUNNING OUT** Code **DN15**, connection 1": **203518-15** - with circ. pump: **203518-(P6/UL7/P8)-15**  
Code **DN20**, connection 1": **203518-20** - with circ. pump: **203518-(P6/UL7/P8)-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.**

### FIELD OF UTILIZATION:

**For power up to 50 kW (with  $\Delta t$  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.**



**Available circulating pumps:**

Wilo Para 25/6 SC (P6)

Grundfos UPM3 Hybrid 25-70 (UL7)

Wilo Para 25/8 SC (P8)



## M2 MIX3 Energy

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

**RUNNING OUT** Code **DN15**, connection 1": **203518-M3-15** - with circ. pump: **203518-M3-(P6/UL7/P8)-15**  
Code **DN20**, connection 1": **203518-M3-20** - with circ. pump: **203518-M3-(P6/UL7/P8)-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.

### 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 Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (UL7)  
Wilo Para 25/8 SC (P8)

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. 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

## G21

ENERGY METER SUITABLE FOR HEATING AND COOLING

**RUNNING OUT** 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**

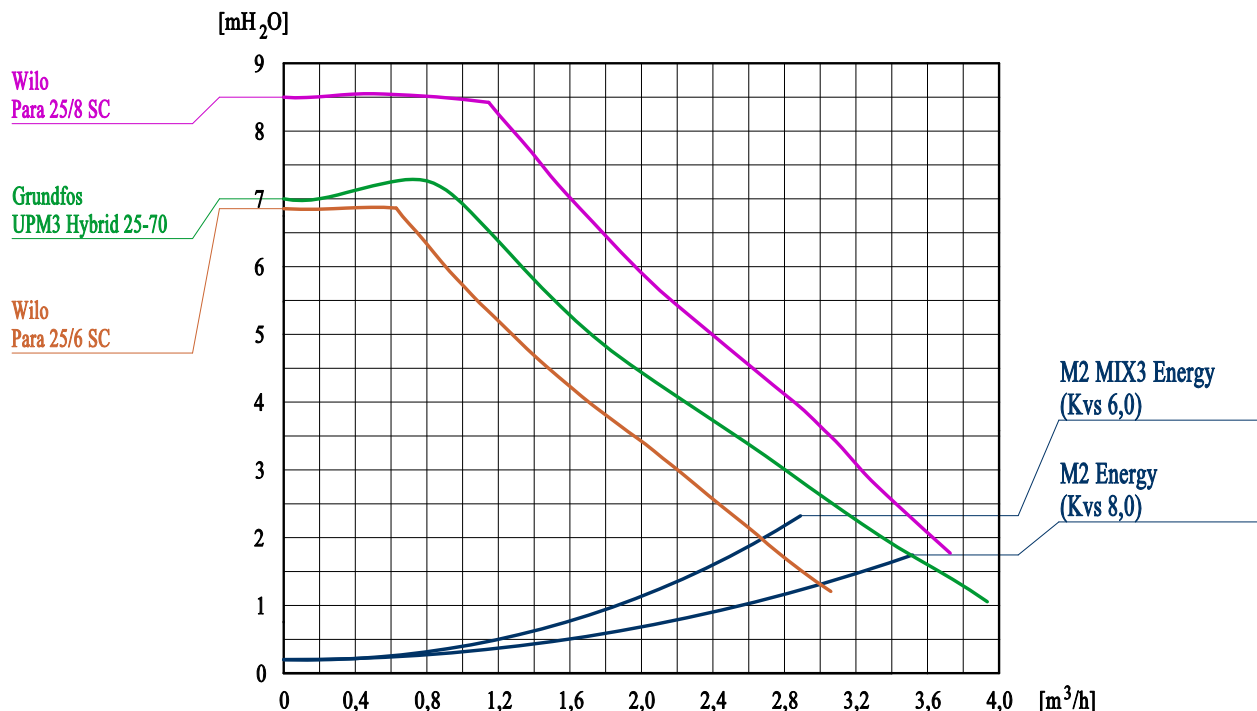


Compact conductance scanning energy meter, with storage of 18 monthly remote values, with storage of year consumption starting from the reference day and checknumber. Optical interface for coding and/or reading. The connection of external communication modules is possible. MID approved.

- ✓ 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 sensor for supply way 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 related to the nominal diameter of the energy counter.

Typical curves of Energy pump unit and circulating pumps



Approximate data of the Energy pump unit with the energy meter installed

Model	Energy meter	$\Delta t$	Kvs of the unit (*)	Approximate power and flow of the installation	Recommended circulating pump	Residual lifting power
M2 + G21	2,5 m <sup>3</sup> /h	20 K	4,2	23 kW - 1000 l/h	Wilo Para 25/6 SC	5,5 mH <sub>2</sub> O
M2 + G21	2,5 m <sup>3</sup> /h	20 K	4,2	43 kW - 1850 l/h	Wilo Para 25/8 SC	5,0 mH <sub>2</sub> O
M2 MIX3 + G21	2,5 m <sup>3</sup> /h	20 K	3,8	23 kW - 1000 l/h	Wilo Para 25/6 SC	5,0 mH <sub>2</sub> O
M2 MIX3 + G21	2,5 m <sup>3</sup> /h	20 K	3,8	39 kW - 1700 l/h	Wilo Para 25/8 SC	5,0 mH <sub>2</sub> O

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



### 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



### 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

# MODVLVS DN25 Kit



## Connection kit, supply only, for 1" circulating pumps

Code 1": **10321-ISO** - with circulating pump: **10321-ISO-(P6/UL7/P8)**  
Code 1"1/4": **10323-ISO** - with circulating pump: **10323-ISO-(P6/UL7/P8)**

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 Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (UL7)  
Wilo Para 25/8 SC (P8)

## Connection kit for 1" circulating pumps

Code 1": **10355-ISO** - with circulating pump: **10355-ISO-(P6/UL7/P8)**  
Code 1"1/4": **10455-ISO** - with circulating pump: **10455-ISO-(P6/UL7/P8)**

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.**



### Available circulating pumps:

Wilo Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (UL7)  
Wilo Para 25/8 SC (P8)

## Connection kit for 1" circulating pumps, with bypass

Code 1": **10358-ISO** - with circulating pump: **10358-ISO-(P6/UL7/P8)**  
Code 1"1/4": **10458-ISO** - with circulating pump: **10458-ISO-(P6/UL7/P8)**

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.**



### Available circulating pumps:

Wilo Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (UL7)  
Wilo Para 25/8 SC (P8)





### 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)**

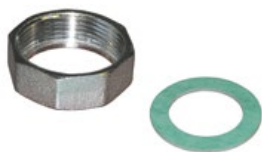
### Model with check-valve - Art. 550S/2 TER-R

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

**PN 10. Max Temperature 110°C.**

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

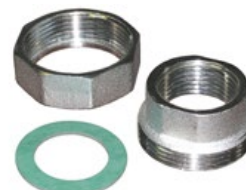
Code 1"1/4: **05550S/2TER-R**



### Set 1"1/2 nut and fiber gasket

Nickel plate finish.

Code: **AYHU26SET**

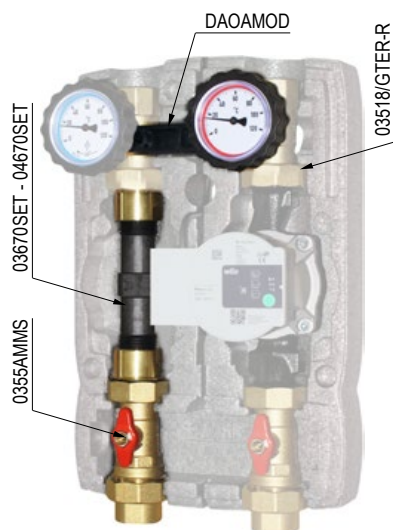


### Set 1"1/2 nut, fiber gasket and Male x Female (1" or 1"1/4) adapter

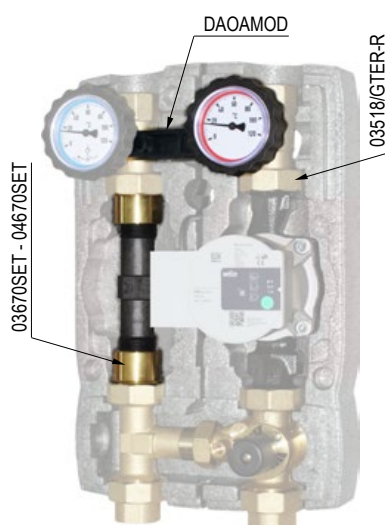
Nickel plate finish.

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 DN20 meters. Fiber gasket.

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.

Code 1": 03518/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.

It can be motorized by ModvlvS servomotors or by others on the market.

Working torque: less than 3 Nm.

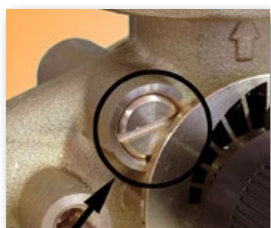
**Centre distance 125 mm.**

**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

3-way mixing valve with by-pass. The built-in by-pass has an adjustable flow up (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	<b>041050SETKVS6.3</b>
4,0	3,5	<b>041050SETKVS4</b>
2,5	2,4	<b>041050SETKVS2.5</b>



### 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.

It can be motorized by ModvlvS servomotors or by others on the market.

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)**

Code 1": 10459AR



### 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)

**RUNNING OUT** 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.

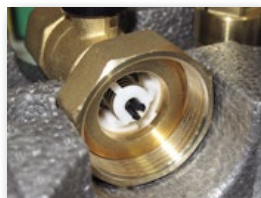


Connection with sensor holder pit (POZ-646-6SET)\*, for the housing of a dip sensor (“TT” series), if the system is equipped with an electronic controller which requires the supply temperature as input.

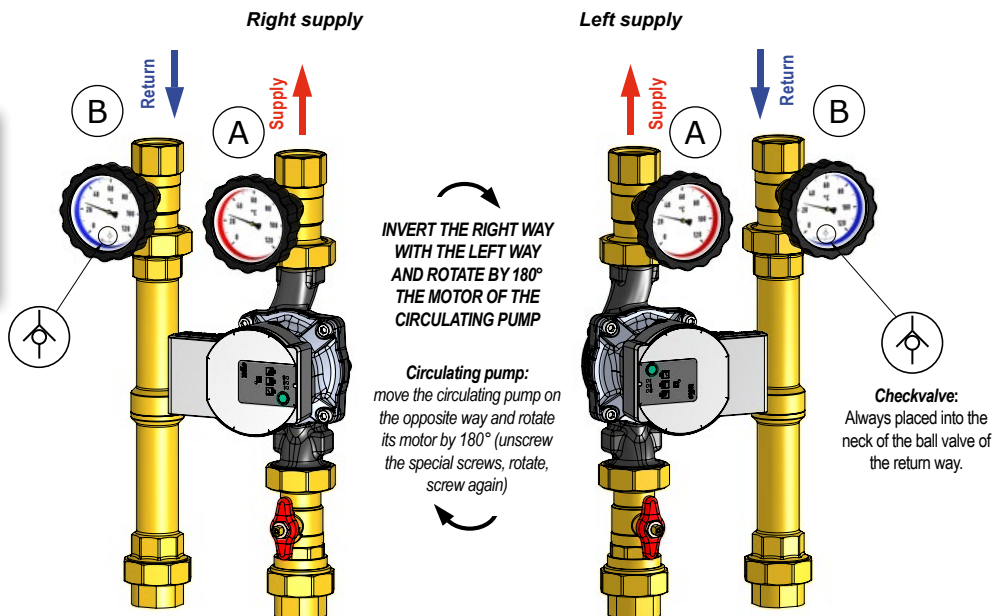
(\*) For all the showed devices, the connection with the “T” connector is allowed by means of a special seal kit with pre-charged EPDM OR that does not need any additional sealant like paste, hemp, ecc.

## Inversion of the supply

All the pump units can be inverted, 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).

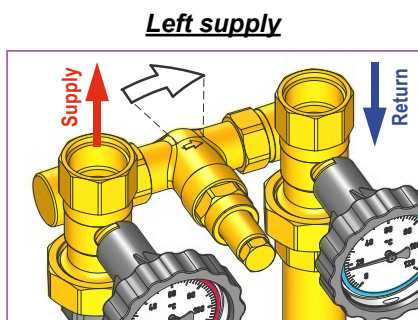
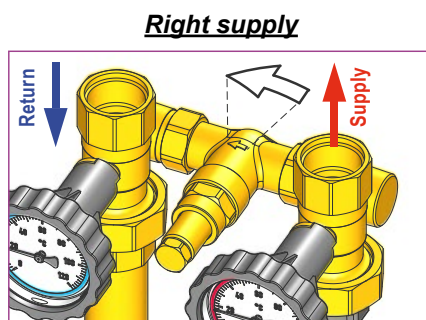


**Check valve:**  
Always placed into the neck of the ball valve of the return way. To exclude the check valve, turn the handle by 45° clockwise.

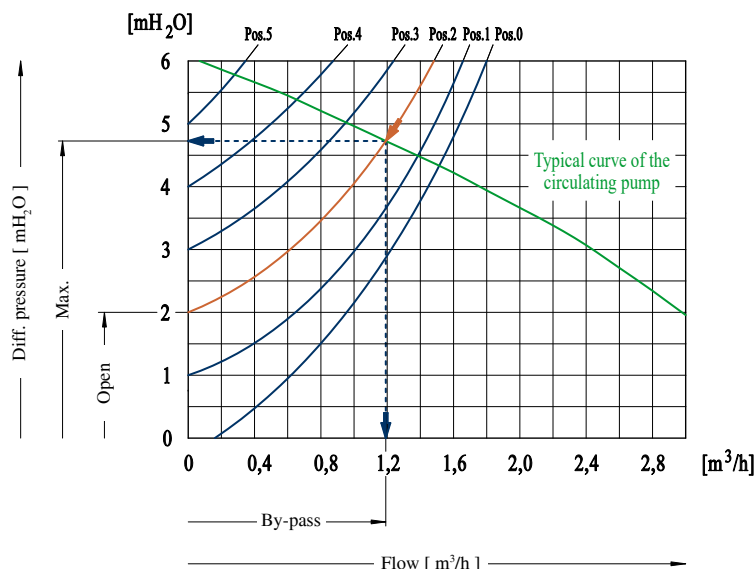


## Balancing by-pass valve

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.



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

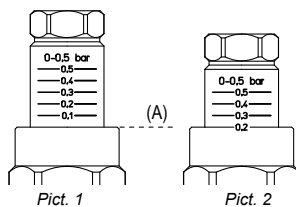


### Adjusting of the by-pass

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.



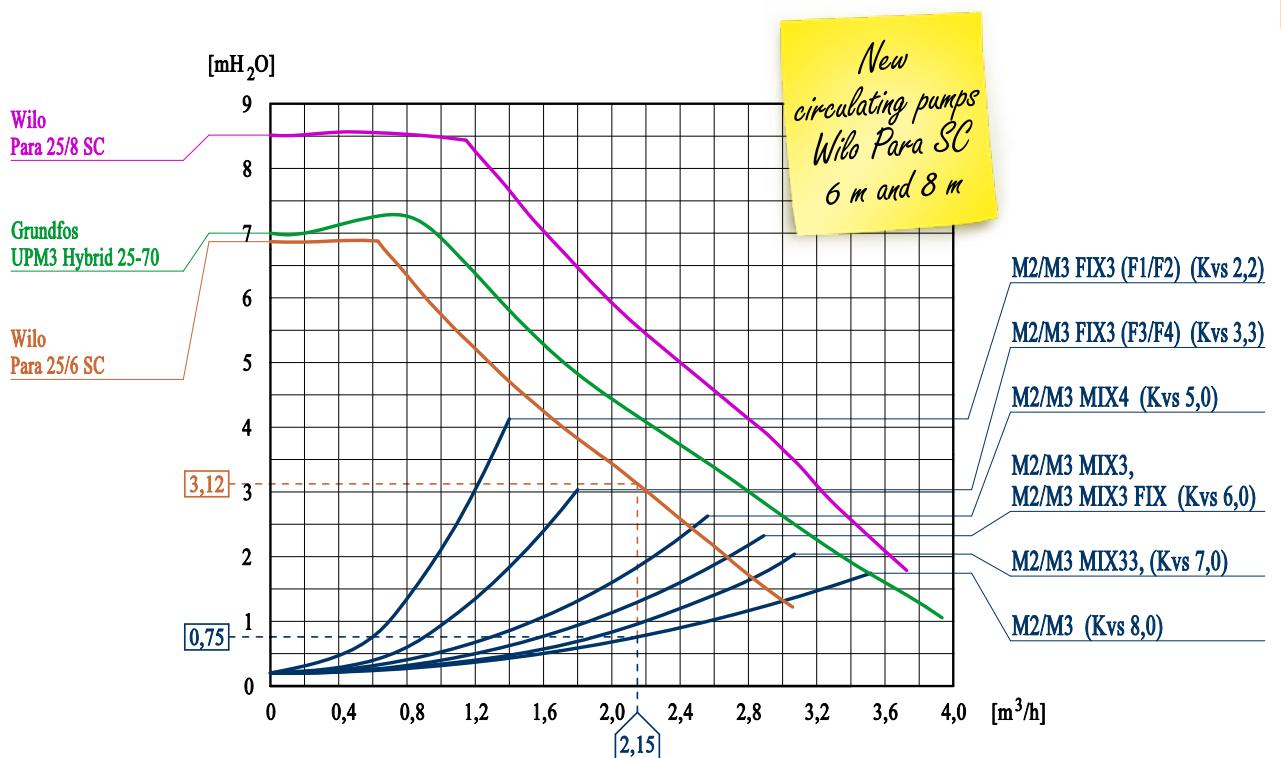
## Method to select the circulating pump

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  $\Delta t$  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 **Wilo Para 25/6 SC** at a flow of  $2,15 m^3/h$  has a lifting power of  $3,12 m$ : taking into consideration that the pump unit absorbs  $0,75 m$  it will left  $2,37 m$  (as  $3,12 - 0,75 = 2,37 m$ ) 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 **Wilo Para 25/6 SC**, 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:

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

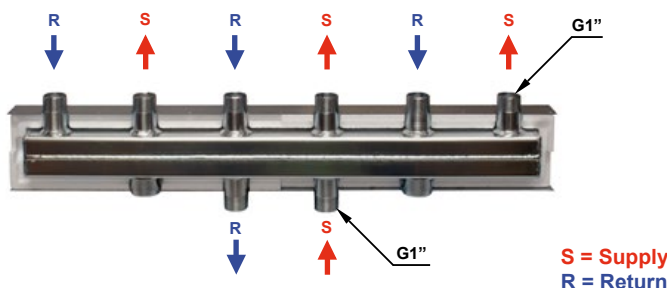
as 1 bar is about 10,198  $mH_2O$ , then the pressure drop is  $0,73 mH_2O$ , value that, taking into consideration the approximations, corresponds to the value shown in the diagram.

# 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 m<sup>3</sup>/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 m<sup>3</sup>/h - Max. 6 bar.**

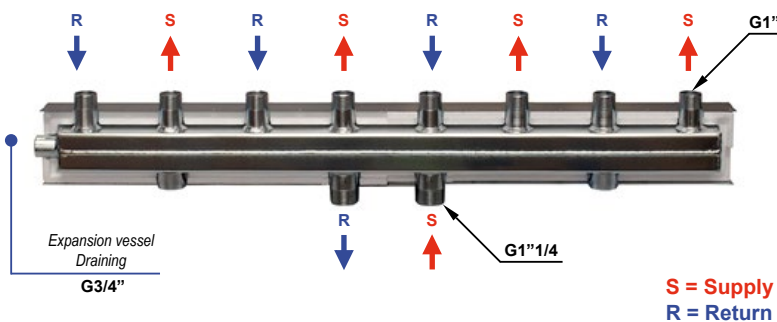
Insulation box section size: 110 x 110 mm.

**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	Lenght	Code
HV 60/125-2	For connection to no. 2 DN25 units	508 mm	<b>HV60/125-2</b>
HV 60/125-3	For connection to no. 3 DN25 units	758 mm	<b>HV60/125-3</b>

## Distributor HV 70/125 (3 m<sup>3</sup>/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 m<sup>3</sup>/h - Max. 6 bar.**

Insulation box section size: 110 x 110 mm.

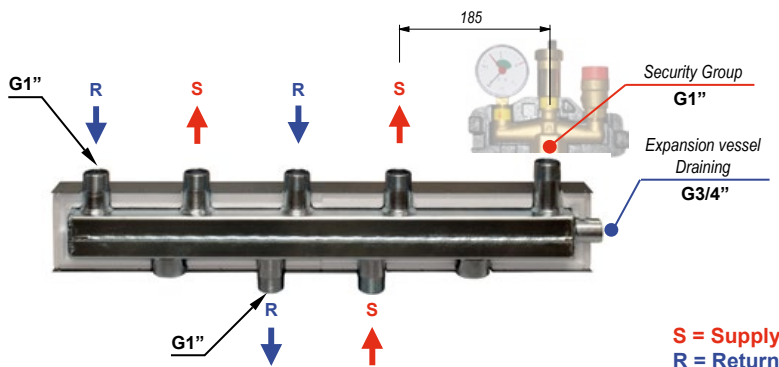
**Connections to the pump units:** 1" Male, centre distance 125 mm (pitch 250 mm).

**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	Lenght	Code
HV 70/125-4	For connection to no. 4 DN25 units	1008 mm	<b>HV70/125-4</b>
HV 70/125-5	For connection to no. 5 DN25 units	1258 mm	<b>HV70/125-5</b>
HV 70/125-6	For connection to no. 6 DN25 units	1508 mm	<b>HV70/125-6</b>



## Distributor HV 60/125 SG (2 m<sup>3</sup>/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 m<sup>3</sup>/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	<b>HV60/125SG-2</b>
HV 60/125 SG-3	For connection to no. 3 DN25 units	920 mm	<b>HV60/125SG-3</b>



### 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 DN20 and DN25 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-COL**



### 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).

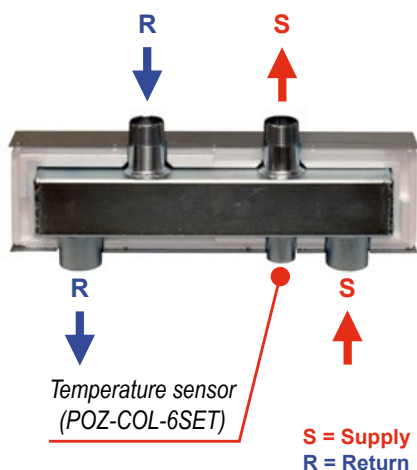
*Operating stem with allen screw.*

**PN 6. Max temperature 95°C. DN20.**

Code: **0266/M**

## Hydraulic switcher HW 60/125

Hydraulic switcher with insulation for power up to 70 kW (rise in temperature  $\Delta T=20$  K in the primary circuit) 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  $57^{\circ}\text{C}$ , 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" - Code: HW60/125-04**

**suitable for flow up to 2 m<sup>3</sup>/h and power up to 50 kW ( $\Delta T=20$  K)**

Connection to the distribution header: 1" Male, centre distance 125 mm

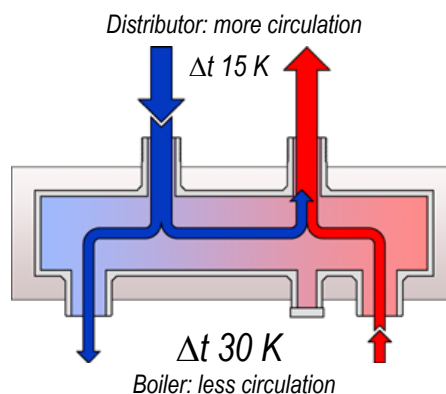
Connection to the boiler: 1" Female, centre distance 250 mm

**HW 60/125 1"1/4 - Code: HW60/125-05**

**suitable for flow up to 3 m<sup>3</sup>/hand power up to 70 kW ( $\Delta T=20$  K)**

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



### 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  $120^{\circ}\text{C}$ .**

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"1/4F x 1"1/4F.

Code 1": **04629SET**

Code 1"1/4: **05629SET**



Direct and mixed circuits, production of DHW



CE



Direct circuit  
Mixed circuit  
+  
Domestic  
Hot Water



CE

## Logico

COMPACT HYDRAULIC MODULE FOR THE MANAGEMENT OF A DIRECT CIRCUIT, A MIXED CIRCUIT AND THE PRODUCTION OF DOMESTIC HOT WATER (DHW)

Code: 2031052ACS-P6-LH  
Without DHW Code: 2031052-P6-LH

"Logico" is an innovative hydraulic module that allows to manage a direct heating circuit and mixed heating circuit as well as the production of domestic hot water. The particular circulation of the hydraulic fluid inside the module ensures its return to the source of energy at very low temperatures: "Logico", combined with a condensing boiler, heat pump or solar thermal system, ensures in a simple way the immediate maximum energy efficiency of the complete system.

Logico is easy to install: it is fully assembled and the control unit is already pre-wired. A connecting box facilitates the electrical connections of the external components to the module. The functions of each circuit can be set-up from the room, using a stylish programmable room thermostat (optional) equipped with a capacitive touchscreen.

The heat generator is directly connected to "Logico" neither the distribution manifold nor the hydraulic separators or additional circulators is necessary. "Logico" works with a single circulating pump.

### Further benefits:

- ✓ Specific isolating valve between primary and secondary allows an easy maintenance for all the components of the group without having to empty the circuit;
- ✓ Overpressure balancing valve integrated in the direct circuit;
- ✓ High efficiency circulating pump with variable  $\Delta p$  and constant  $\Delta p$  to control the differential pressure or control for the constant speed;
- ✓ Logico is installed vertically with hydraulic fluid circulation from bottom to top or vice versa; in this case, the control unit can be rotated by 180°.

Centre distance: 90 mm to the circuits; 125 mm to the generator.

EPP insulation box (Dimensions: 400x516x180 mm).  
A special back plate allows a quick fitting to the wall.

PN 10, max temperature 95°C.  
External connections: 1" Female.

### FIELD OF UTILIZATION:

Maximum total power: 35 kW.

#### Direct circuit:

Maximum power of 35 kW (with  $\Delta t$  20 K) and a maximum flow of 1510 l/h. Kvs value: 5,0

#### Mixed circuit:

Maximum power of 12 kW (with  $\Delta t$  8 K) and a maximum flow of 1300 l/h. Kvs value: 4,0

#### DHW circuit:

Maximum power of 35 kW (with  $\Delta t$  15 K) and a maximum flow of 2010 l/h. Kvs value: 10,0

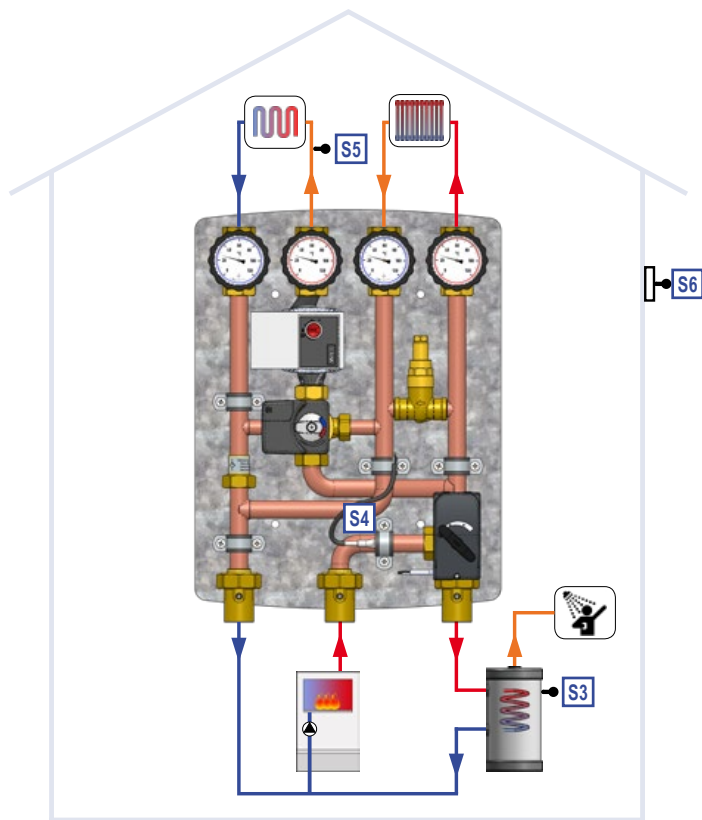
### °Caleon room thermostat (optional)

Optional room unit °Caleon (for one or two circuits). Stylish TFT capacitive touch panel for easy remote control of the heating system. Normal, Turbo, Eco and Off operation modes with specific temperature setpoint. Holiday program. Up to 8 adjustable daily heating time slot.

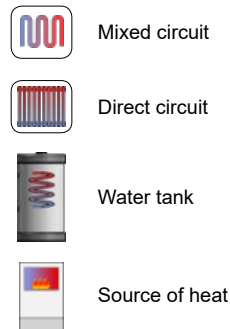
Code: RC30

# MODVLVS Multifunctional compact hydraulic module





## Hydraulic scheme and components



**Requirements:** the source of heat must be equipped with circulating pump. Otherwise, the "Logico" controller can manage an external circulator, with the support of an additional sensor.



### Sensors:

-  S3 Water tank sensor
-  S4 Supply (direct circuit) sensor
-  S5 Mixed circuit sensor
-  S6 Outdoor sensor

## Mixing valve with servomotor

### 3-way mixing valve with double admission, "Logico" type

#### Main advantages:

- ✓ Efficient use of return energy from the direct circuit (first admission) or, when needed, directly from the power source (second admission);
- ✓ Linear mixing over the entire adjustment range;
- ✓ Internal by-pass;
- ✓ Very small pressure loss: Kvs 7,0;

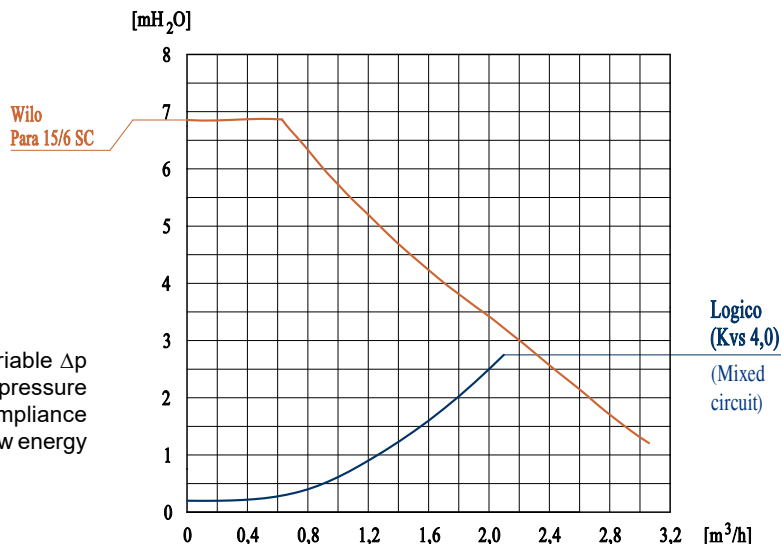
Proportional actuator with 90° working angle. Manual operation selector. A special connector allows the servomotor to be replaced in the case of failure or malfunction, without work on the electrical wiring.



## Circulating pump

### Wilo Para 15/6 SC

High efficiency circulating pump with variable  $\Delta p$  and constant  $\Delta p$  to control the differential pressure or control for the constant speed. In compliance with European Directive 2009/125/CE. Low energy consumption from 3 W to 43 W.

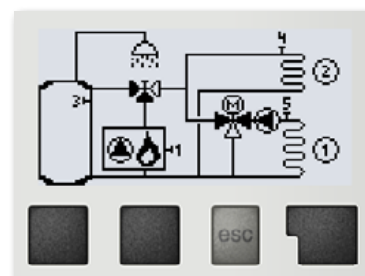




## "Logico" Climatic Controller

**Climate control with a large LCD screen to manage the selected hydraulic system.**

- ✓ Pictogram of the selected hydraulic system with proof of the state of the relay's activities: circulating pump, mixing valve in opening or closing, diverting valve for the DHW and energy demand at source. Two selectable hydraulic systems: with or without DHW management;
- ✓ Display sensor temperatures: external, supply calculated and detected for each circuit, room temperature (when °Caleon optional room units are installed). Day or night operation;
- ✓ Possibility of controlling a circulator, if not available in the heat generator (with an additional sensor, not included: Code TT/P4);
- ✓ Adjustment of the temperature curve with a linear or broken slope and related day-night correctors for each circuit;
- ✓ Protective function: anti-lock for the circulator, anti-freeze control, and minimum or maximum temperature of the supply;
- ✓ Up to 3 slots can be set on a daily basis: active heating circuit in day mode or night reduction;
- ✓ Optional room unit °Caleon (for one or two circuits)



Hydraulic scheme with DHW

HC1	Day	HC2	Day
Tg	32.5°C	Tg	61.5°C
Flow	32.0°C	Flow	62.0°C
Room	20.1°C	Room	20.2°C
Outdoor	4.5°C		
DHW	51.0°C		

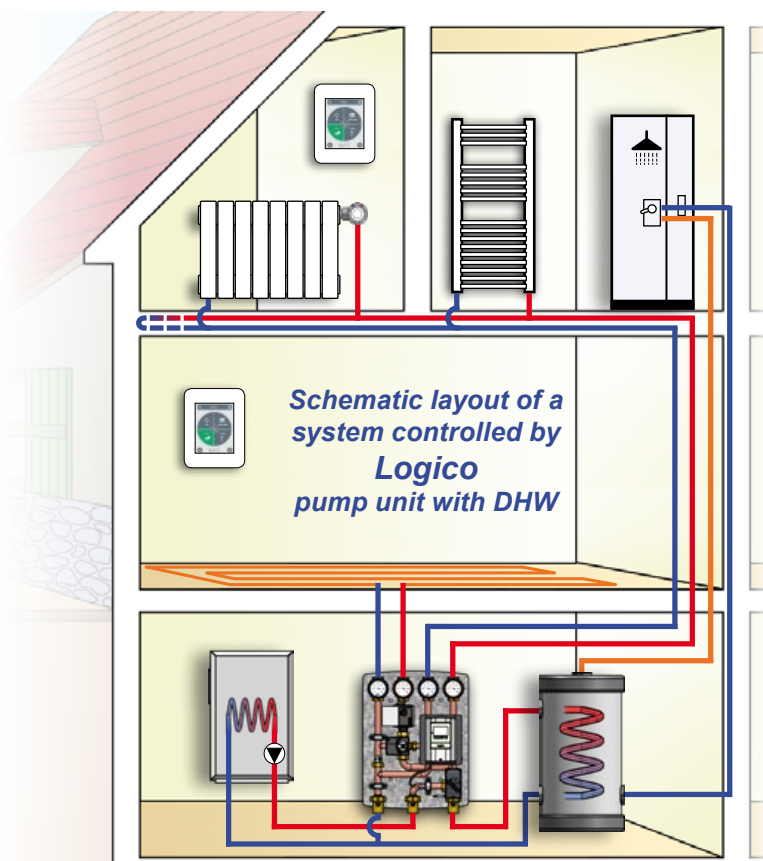
Below the table are four buttons: a black square, a black square, a button labeled 'ESC', and a black square.

Displaying the temperature of the sensors

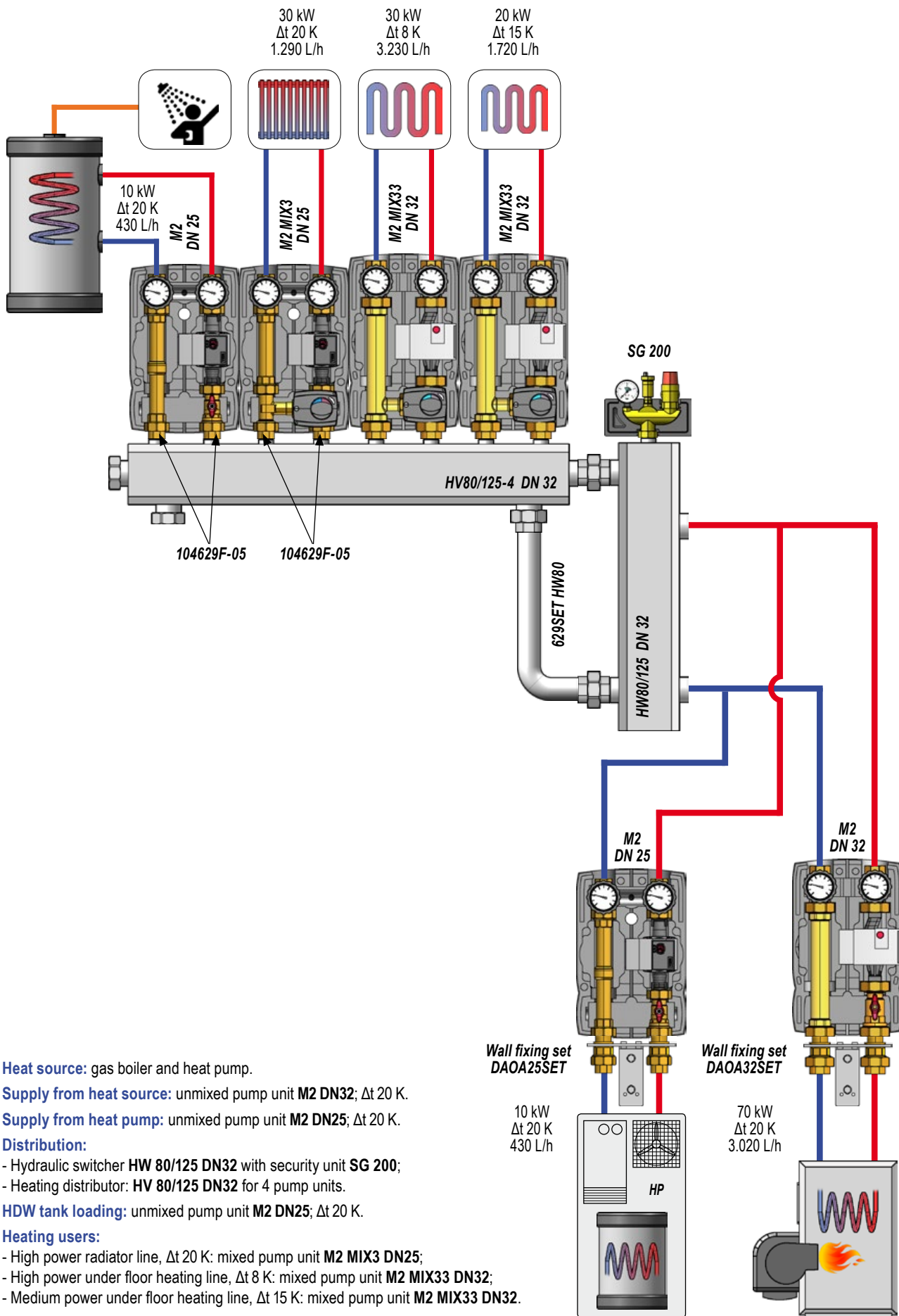


**The control unit is supplied pre-wired with the following sensors (Pt1000):**

- ✓ Power supply with Schuko plug;
- ✓ Circulator control cable with Molex connector;
- ✓ Servo motor control cables with automat connectors;
- ✓ Supply and mixed circuit temperature sensor TR/S0,5;
- ✓ Cable with external connecting box for: outside sensor TA/55, DHW water tank sensor TT/P4, boiler contact 0-10V or dry contact;
- ✓ °Caleon room unit (optional), power supply 24 VDC (output).



# MODVLVS DN32 Installation examples



**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**.

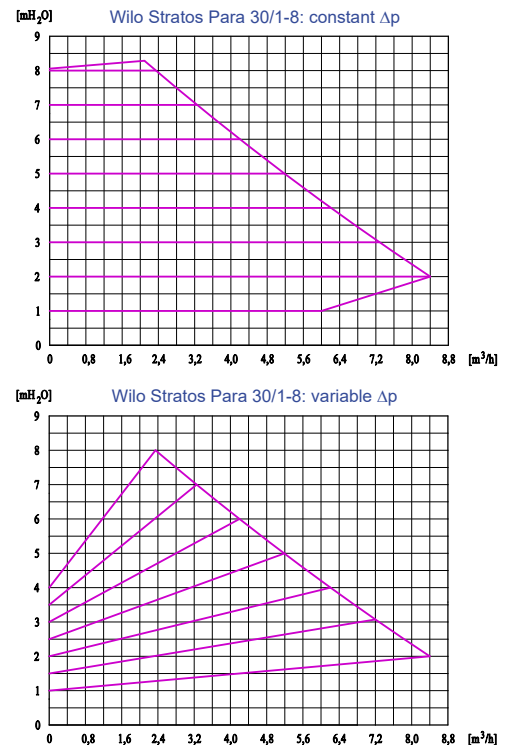
## MODVLVS DN32

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 **Wilo Stratos Para** and **Grundfos Alpha 1**. 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  $\Delta p$**  or **variable  $\Delta p$** , 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 **Wilo Stratos Para 30/1-8** circulating pump in the two available working modes.



Direct

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  $\Delta t$  20 K) and maximum flow 4800 l/h.**

**Kvs Value: 21,0.**

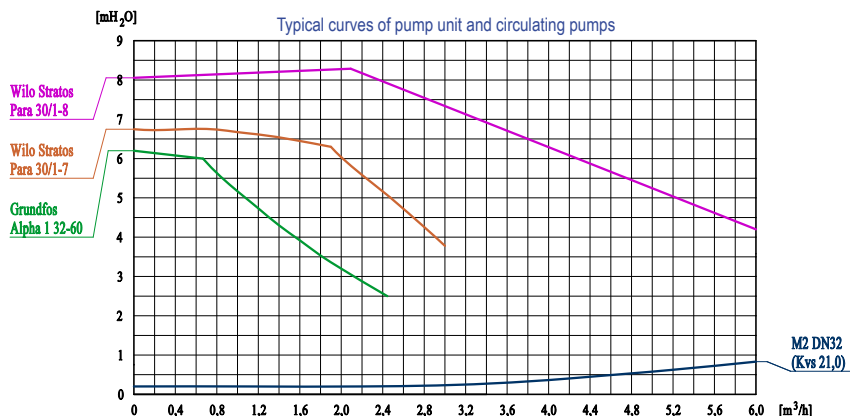
Approximate data calculated with a 8 m nominal lifting power circulating pump (Wilo Stratos Para 30/1-8).

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



#### Available circulating pumps:

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



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



M21



AHC40

NEW

## 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  $\Delta t$  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 1 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 (i.e. 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

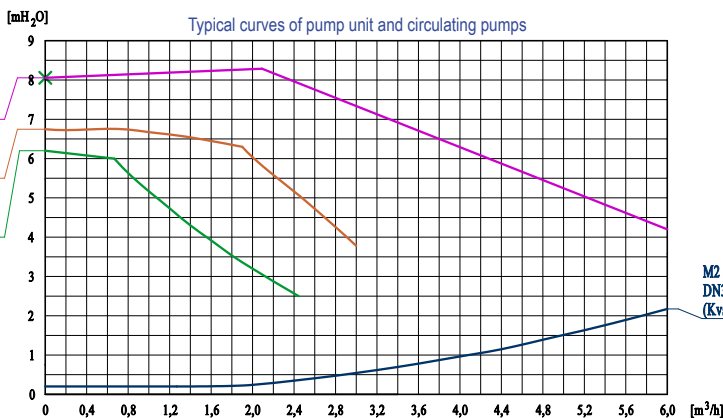
Code 1"1/4: 20555R-M3-(M21/AHC)

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

**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.

**AHC40:** Servomotor with climatic controller and outside sensor. Optional room sensor. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 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.



3-way mixed; Low Temperature



## M2 MIX33

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

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.
- ✓ 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  $\Delta t$  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 1 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 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.

M2 MIX33 pump units are supplied with the recycling by-pass fully open.

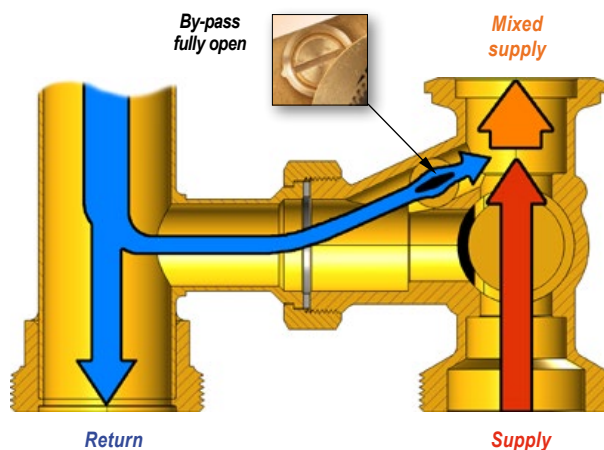
Approximate data for applications in low and medium temperature heating systems

$\Delta t$	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 <sub>2</sub> O	Up to 250 m <sup>2</sup>
8 K	26 kW - 2800 l/h	Wilo Stratos Para 30/1-8	7 mH <sub>2</sub> O	Up to 300 m <sup>2</sup>
15 K	42 kW - 2400 l/h	Wilo Stratos Para 30/1-7	5 mH <sub>2</sub> O	-
15 K	76 kW - 4400 l/h	Wilo Stratos Para 30/1-8	5 mH <sub>2</sub> O	-

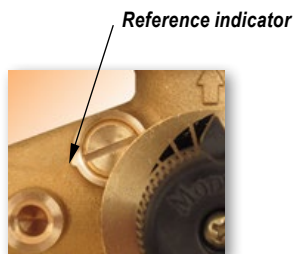
# MODVLVS DN32 Pump Units

## Working principle

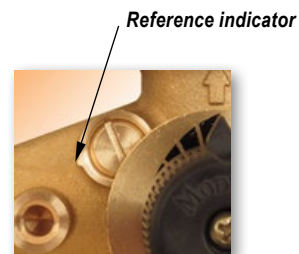
During the regular working process, with the mixer completely closed on the recycling for example, a part of the fluid is aspirated from the pump all along the by-pass line. As a result, one has a very high delivered capacity and a reduced temperature.



## Adjusting the by-pass



The by-pass is **fully open** and it allows the maximum recycling. 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



AHC40

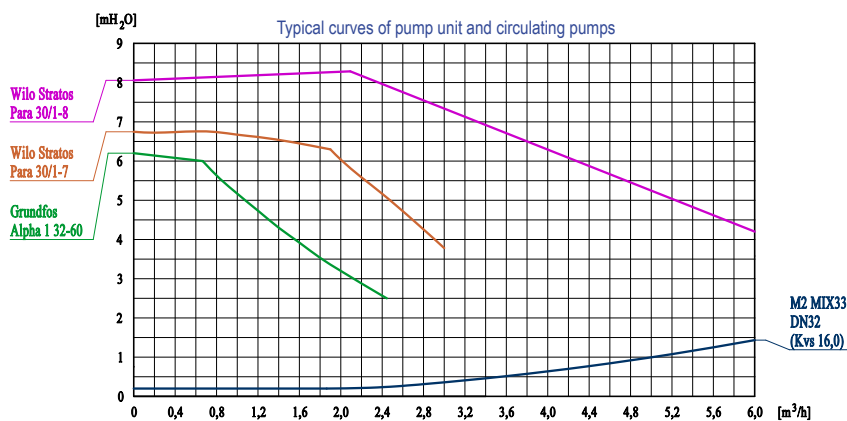
## MODEL WITH BUILT-IN SERVO MOTOR OR CLIMATIC CONTROLLER

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

**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.

**AHC40:** Servomotor with climatic controller and outside sensor. Optional room sensor. Bidirectional, reversible with fixed limit switches for an operating range of 90°, 2 min., torque: 6 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.

Fixed Temperature; High Power



New servomotor  
Greater simplicity of setting

## M2 MIX3 FIX

2-WAY PUMP UNIT WITH 3-WAY MIXING VALVE WITH ELECTRONIC SERVO MOTOR 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  $\Delta t$  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 1 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



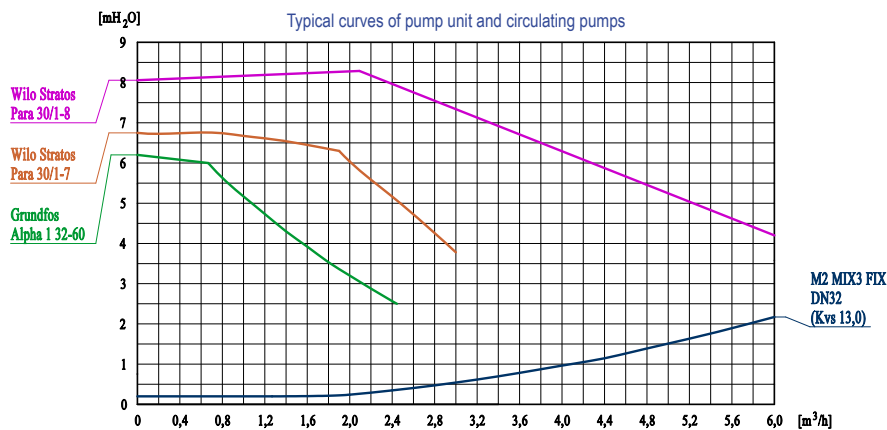
### BUSH WITH OPTIONAL NON RETURN VALVE

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 5°C up to 95°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.



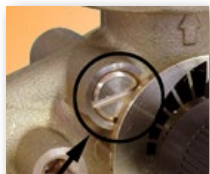


### Art. 1050 - 3-way mixing valve

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. It can be motorized by Modvlvs servomotors or by others on the market. 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 (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

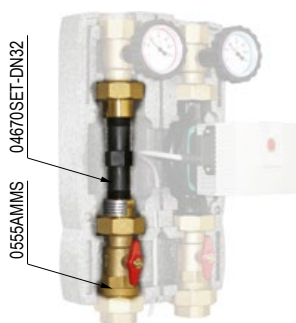
#### Connection kit for energy meter

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 lenght: 04670SET-DN32

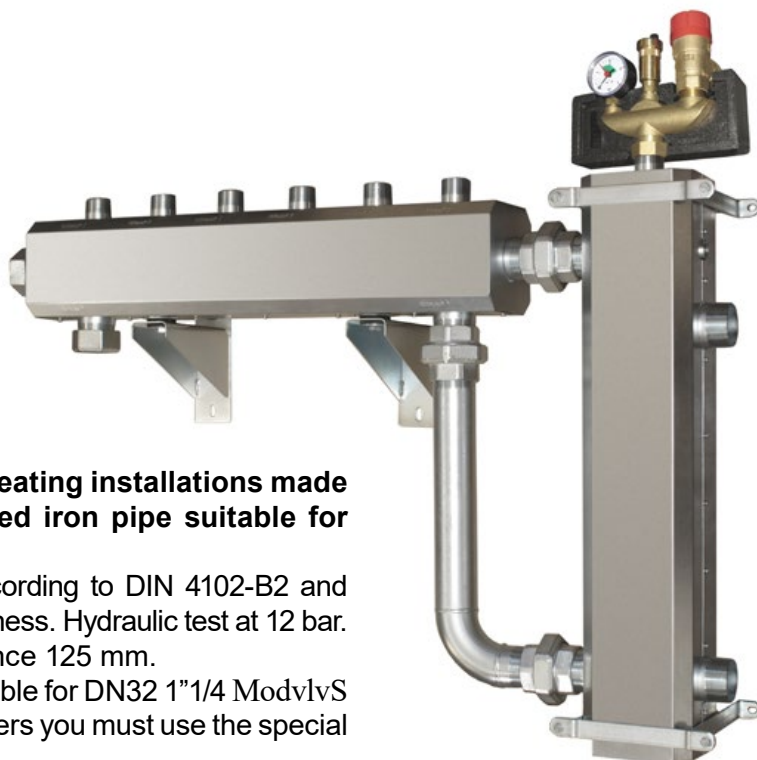


04670SET-DN32

0555AMMS



# MODVLVS DN32 Distributors



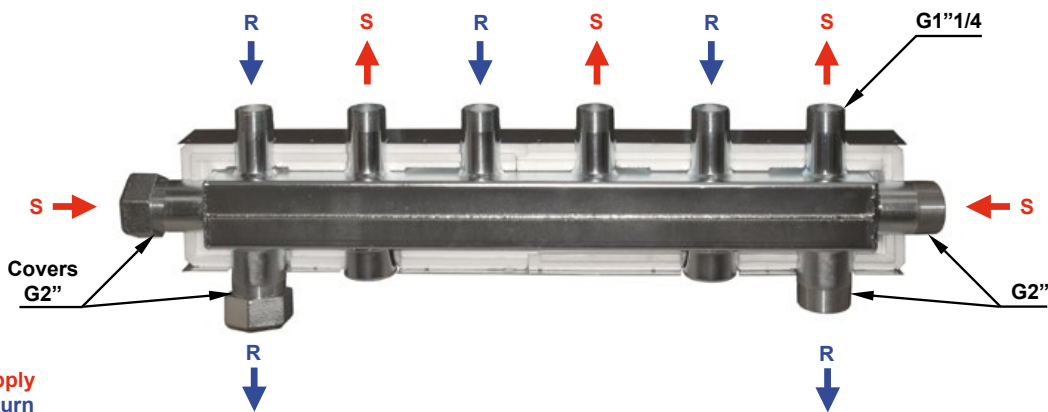
heating and cooling

**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 m<sup>3</sup>/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 m<sup>3</sup>/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	Lenght	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 DN32 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**

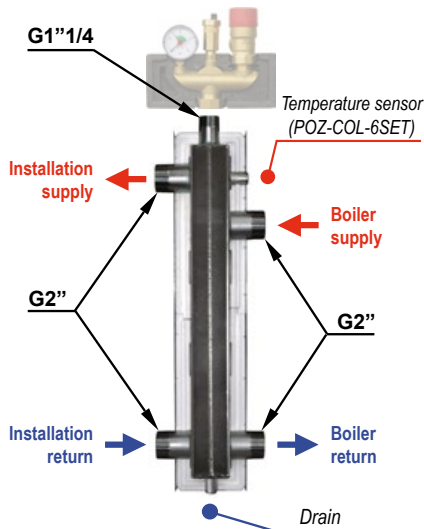


### Adapter connection kit for DN25 pump units

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 (rise in temperature  $\Delta T=20$  K in the primary circuit), 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 m<sup>3</sup>/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**



### 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  $\varnothing 63$ , 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**

## 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



PED 2014/68/EU 4.3

### 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:

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

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)

### 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  $20^\circ\text{C}$  up to  $45^\circ\text{C}$  or from  $45^\circ\text{C}$  up to  $70^\circ\text{C}$ . 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  $100^\circ\text{C}$ ; (short time:  $120^\circ\text{C}$  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  $20^\circ\text{C}$  to  $45^\circ\text{C}$  (code F1/F3)  
Adjustable temperature from  $45^\circ\text{C}$  to  $70^\circ\text{C}$  (code F2/F4)



Layout:  
Asymmetric



In compliance to  
the Italian Ministerial  
Decree N° 174/2004

Following specific laboratory tests, the mixing valve, art 739, has been verified to comply with D.M. 174/2004. The other articles of the same family of thermostatic mixing valves are similar to the verified model, having the same components and equal contact surface.

# MODVLVS Thermostatic mixing valves



PED 2014/68/EU 4.3

## 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



PED 2014/68/EU 4.3

## 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



PED 2014/68/EU 4.3

## 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.

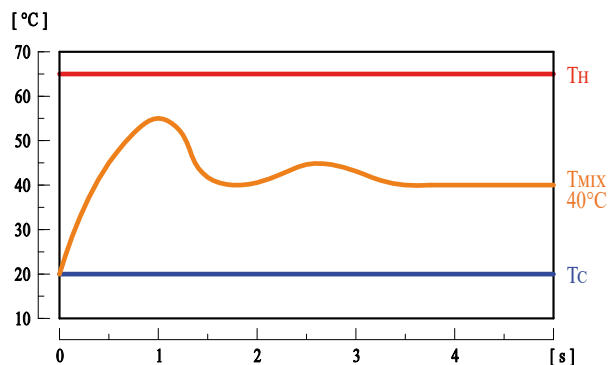
These variations, in some products, change the selected mixing temperature and also the performances of the device in a considerable way. Sometime risking the safety of the user. For instance a consequence is the ineffectiveness of the anti-scald function.

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.

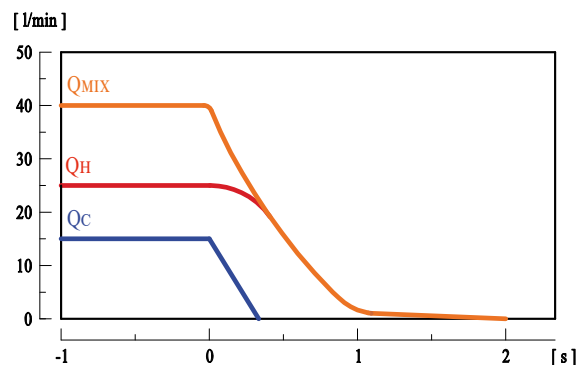
The required time is very short: only 4 s.



### 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:  $T_H:65^\circ\text{C}$   $T_C:20^\circ\text{C}$  Selected  $T_{MIX}:40^\circ\text{C}$



On [www.br.vi.it](http://www.br.vi.it) 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.



Mixing valve: 35÷60°C



PED 2014/68/EU 4.3

## 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): TH:65°C Tc:15°C TMix:51°C (pos.3) → 65 l/min  
(\*\*) DN20 Version (Kvs 2,5): TH:65°C Tc:15°C TMix:51°C (pos.3) → 43 l/min



PED 2014/68/EU 4.3

## 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



PED 2014/68/EU 4.3

## 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



PED 2014/68/EU 4.3

## 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

Following specific laboratory tests, the mixing valve, art 729, has been verified to comply with D.M. 174/2004. The other articles of the same family of thermostatic mixing valves are similar to the verified model, having the same components and equal contact surface.

# MODVLVS DN15 Thermostatic Mixing Valves

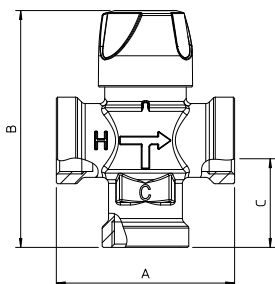
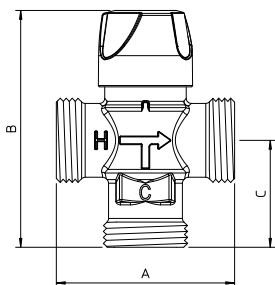


PED 2014/68/EU 4.3

For small applications, compact size



PED 2014/68/EU 4.3



## Art. 726 DN15

ANTI-SCALD THERMOSTATIC MIXING VALVE. MALE THREADED

Code 3/4": 03726-3560-1.5

Code 1": 04726-3560-1.8

Anti-scald thermostatic mixing valve for small 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.

- ✓ 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.
- ✓ It can be used with anti freeze fluids (glycol ≤ 50%).

**Available external connection: 3/4" and 1" Male flat seal.**

The security anti-scald function automatically stops the hot water flow in case of failure of the cold water way.



**Available Kvs:**

1.5 (3/4") = Maximum Kvs 1,55; up to 32 l/min (1,5 bar). Nominal Kv 1,52 (\*)

1.8 (1") = Maximum Kvs 1,8; up to 37 l/min (1,5 bar). Nominal Kv 1,77 (\*\*)



**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:

(\*) DN15 Version (Kvs 1,55): Th:65°C Tc:15°C TMIX:50°C (pos.3) → 25,3 l/min

(\*\*) DN15 Version (Kvs 1,8): Th:65°C Tc:15°C TMIX:50°C (pos.3) → 29,5 l/min

## Art. 720 DN15

ANTI-SCALD THERMOSTATIC MIXING VALVE. FEMALE THREADED

Code 1/2": 02720-3560-1.5

Code 3/4": 03720-3560-1.8

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.

**Available external connection: 1/2" (Kvs 1,55) and 3/4" (Kvs 1,8) Female.**

Available technical features and adjustment temperatures are the same as Art. 726 DN15.

### Art. 726 DN15, Male threaded

Code	Temp. (°C)	Kvs	Conn.	A	B	C
03726-3560-1.5	35+60°C	1,55	G 3/4"	70	96	42
04726-3560-1.8	35+60°C	1,8	G 1"	70	96	42

### Art. 720 DN15, female threaded

Code	Temp. (°C)	Kvs	Conn.	A	B	C
02720-3560-1.5	35+60°C	1,55	G 1/2"	70	96	42
03720-3560-1.8	35+60°C	1,8	G 3/4"	70	96	42



In compliance to the Italian Ministerial Decree N° 174/2004

Following specific laboratory tests, the mixing valve, art 726, has been verified to comply with D.M. 174/2004. The other articles of the same family of thermostatic mixing valves are similar to the verified model, having the same components and equal contact surface.

# MODVLVS Thermostatic mixing valves



## Art. 796

ANTI-SCALD THERMOSTATIC MIXING VALVE

Code 3/4": 03796      Code 1"1/4: 05796  
Code 1": 04796      Code 1"1/2: 06796



PED 2014/68/EU 4.3

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

### 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 1": 04799  
Code 3/4": 03799      Code 1"1/4: 05799



PED 2014/68/EU 4.3



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

Mixing valve: 30÷65 °C

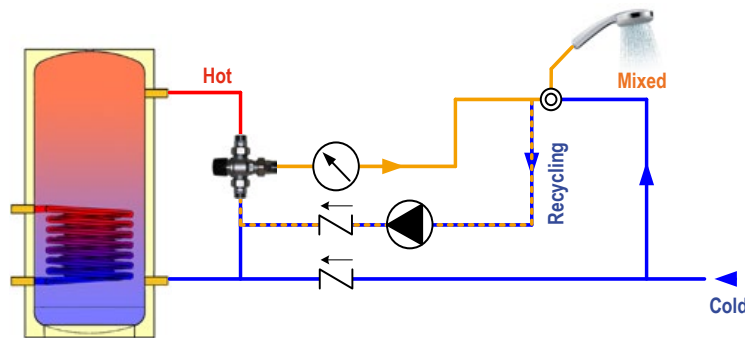
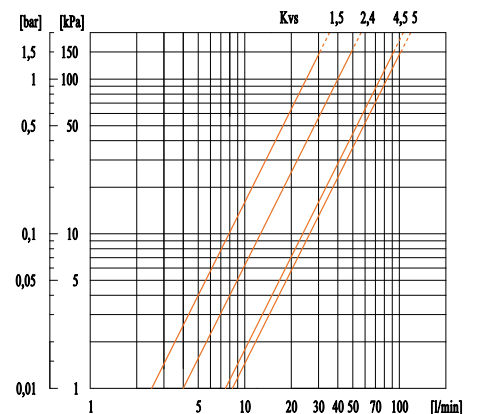
### Thermostatic mixing valves with anti-scald protection

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<sub>H</sub> = 65 °C  
T<sub>C</sub> = 15 °C  
P = 3 bar



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

Following specific laboratory tests, the mixing valve, art 799, has been verified to comply with D.M. 174/2004. The other articles of the same family of thermostatic mixing valves are similar to the verified model, having the same components and equal contact surface.



PED 2014/68/EU 4.3

Adjustable diverting temperature



PED 2014/68/EU 4.3

## 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



In compliance to the Italian Ministerial Decree N° 174/2004

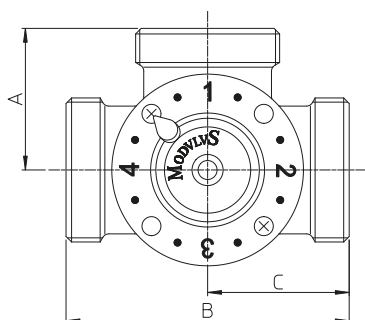
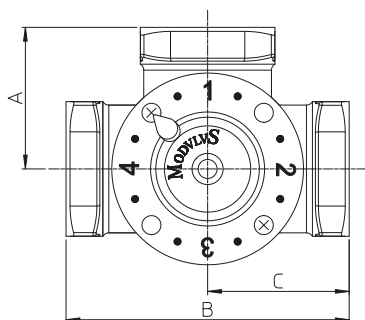
Following specific laboratory tests, the diverting 789R valve has been verified to comply with D.M. 174/2004. The article 786R is similar to the verified model, having the same components and equal contact surface.



# MODVLVS Rotating Mixing Valves



PED 2014/68/EU 4.3



## Art. 1055 / 1056

3-WAY ROTATING MIXING VALVE

Codes: see the chart here below

Rotating mixing valve made of forged brass suitable for heating and cooling installations. Yellow finish. The valve can be motorized with a servomotor of the ModvlvS range or with another one on sale.

The special proportional shape of the adjustment vane makes linear the working of the valve and it allows installations always symmetric.

An easy numbering on the upper part of the valve helps to understand correctly the connection schemes indicated in the instruction sheet, without any possibility of mistake. As concerns the manual working an additional stained indicator fixes the working field and the working direction in an univocal way.

- ✓ PN 10. Maximum temperature 110°C (short time: 160°C for 20 s.)
- ✓ Maximum leakrate in % of flow: 0,05
- ✓ Working torque: < 3 Nm
- ✓ It works as a mixing or a diverting valve
- ✓ Suitable for heating, cooling and solar thermal installations
- ✓ Suitable to be used with antifreeze fluids (glycol ≤ 50%)

Available external connections: Male threads flat seal and Female.



Available Kvs:  
From 2,5 up to 25



Working:  
Mixing, diverting

The kit of rotating mixing valve and 3-point servomotor is available:

Bidirectional, reversible, operating range of 90°, 140 s

Torque 5 Nm. 230V, IP40.

Please add the suffix -NR to the code of the valve.

### Art. 1055, Female thread

Code	Item	DN	Kvs	Conn.	A	B	C
021055-2.5(-NR)	1055	15	2,5	G 1/2"	36	72	36
021055-4.0(-NR)	1055	15	4,0	G 1/2"	36	72	36
031055-4.0(-NR)	1055	20	4,0	G 3/4"	36	72	36
031055-6.3(-NR)	1055	20	6,3	G 3/4"	36	72	36
031055-10(-NR)	1055	20	10,0	G 3/4"	36	72	36
041055-10(-NR)	1055	25	10,0	G 1"	41	82	41
041055-16(-NR)	1055	25	16,0	G 1"	41	82	41
051055-16(-NR)	1055	32	16,0	G 1 1/4"	47	94	47
061055-25(-NR)	1055	40	25,0	G 1 1/2"	53	106	53

### Art. 1056, Male thread

Code	Item	DN	Kvs	Conn.	A	B	C
031056-2.5(-NR)	1056	15	2,5	G 3/4"	36	72	36
031056-4.0(-NR)	1056	15	4,0	G 3/4"	36	72	36
041056-4.0(-NR)	1056	20	4,0	G 1"	36	72	36
041056-6.3(-NR)	1056	20	6,3	G 1"	36	72	36
041056-10(-NR)	1056	20	10,0	G 1"	36	72	36
051056-10(-NR)	1056	25	10,0	G 1 1/4"	41	82	41
051056-16(-NR)	1056	25	16,0	G 1 1/4"	41	82	41
061056-16(-NR)	1056	32	16,0	G 1 1/2"	47	94	47
071056-25(-NR)	1056	40	25,0	G 2"	53	106	53

Rotating Mixing Valves

heating and cooling

# MODVLVS Rotating Mixing Valves



PED 2014/68/EU 4.3



## Art. 1065 / 1066

4-WAY ROTATING MIXING VALVE

Codes: see the chart here below

Rotating mixing valve made of forged brass suitable for heating and cooling installations. Yellow finish. The valve can be motorized with a servomotor of the Modvlvs range or with another one on sale.

An easy numbering on the upper part of the valve helps to understand correctly the connection schemes indicated in the instruction sheet, without any possibility of mistake. As concerns the manual working an additional stained indicator fixes the working field and the working direction in an univocal way.

- ✓ PN 10. Maximum temperature 110°C (short time: 160°C for 20 s.)
- ✓ Maximum leakrate in % of flow: 0,05
- ✓ Working torque: < 3 Nm
- ✓ Suitable for heating, cooling and solar thermal installations
- ✓ Suitable to be used with antifreeze fluids (glycol ≤ 50%)

Available external connections: Male threads flat seal and Female.



Available Kvs:  
From 2,5 up to 25



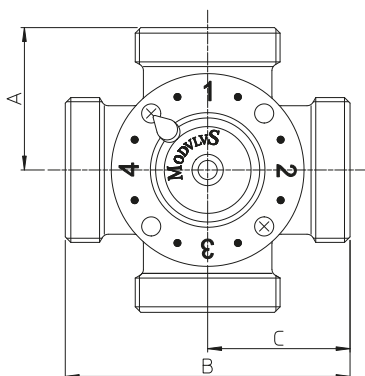
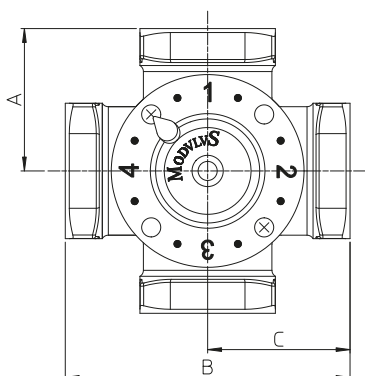
Working:  
Mixing

The kit of rotating mixing valve and 3-point servomotor is available:

Bidirectional, reversible, operating range of 90°, 140 s  
Torque 5 Nm. 230V, IP40.

Please add the suffix **-NR** to the code of the valve.

Rotating Mixing Valves



### Art. 1065, Female thread

Code	Item	DN	Kvs	Conn.	A	B	C
021065-2.5(-NR)	1065	15	2,5	G 1/2"	36	72	36
021065-4.0(-NR)	1065	15	4,0	G 1/2"	36	72	36
031065-4.0(-NR)	1065	20	4,0	G 3/4"	36	72	36
031065-6.3(-NR)	1065	20	6,3	G 3/4"	36	72	36
041065-10(-NR)	1065	25	10,0	G 1"	41	82	41
041065-14(-NR)	1065	25	14,0	G 1"	41	82	41
051065-16(-NR)	1065	32	16,0	G 1"1/4	47	94	47
061065-25(-NR)	1065	40	25,0	G 1"1/2	53	106	53

### Art. 1066, Male thread

Code	Item	DN	Kvs	Conn.	A	B	C
031066-2.5(-NR)	1066	15	2,5	G 3/4"	36	72	36
031066-4.0(-NR)	1066	15	4,0	G 3/4"	36	72	36
041066-4.0(-NR)	1066	20	4,0	G 1"	36	72	36
041066-6.3(-NR)	1066	20	6,3	G 1"	36	72	36
051066-10(-NR)	1066	25	10,0	G 1"1/4	41	82	41
051066-14(-NR)	1066	25	14,0	G 1"1/4	41	82	41
061066-16(-NR)	1066	32	16,0	G 1"1/2	47	94	47
071066-25(-NR)	1066	40	25,0	G 2"	53	106	53



Compact motorized mixing valve

PED 2014/68/EU 4.3



Art.1031C motorized with ModvlvS TRM20 servomotor.



PED 2014/68/EU 4.3

## Art. 1031C

3-WAY ROTATING MIXING VALVE FOR DISTRIBUTION BOXES

Code 1" Swivel nut: 041031C-04

### Employments

**Compact 3-way rotating mixing valve, expressly designed for satellite heating units or distribution boxes for underfloor installations.**

It can be motorized with a standard 3 points, a proportional, a fixed temperature servomotor or with an integrated climatic controller. The special mixing chamber allows very high hydraulic performances with very low head losses.

*The external size and the connections make the valve interchangeable with the thermostatic mixing valve Art. 731C DN25.*

### Technical features

3-way rotating mixing valve for medium and large surfaces.  
Body made of hot pressed brass. Yellow brass finish.

- ✓ PN10. Maximum temperature 110°C;
- ✓ Kvs value: 6,8: Maximum leak rate in % of flow: 0,05;
- ✓ It can be motorized with the ModvlvS range servomotors or with the other trade servomotors;
- ✓ Working torque: less than 3 Nm;
- ✓ Interchangeable with the thermostatic mixing valve Art. 731C DN25.

**Available external connections: 1" Male x 1" Swivel Nut (mixed outlet).**



Layout: Asymmetric

### FIELD OF UTILIZATION:

For power up to 40 kW, with  $\Delta t$  20 k, or up to 16 kW with  $\Delta t$  8 K.

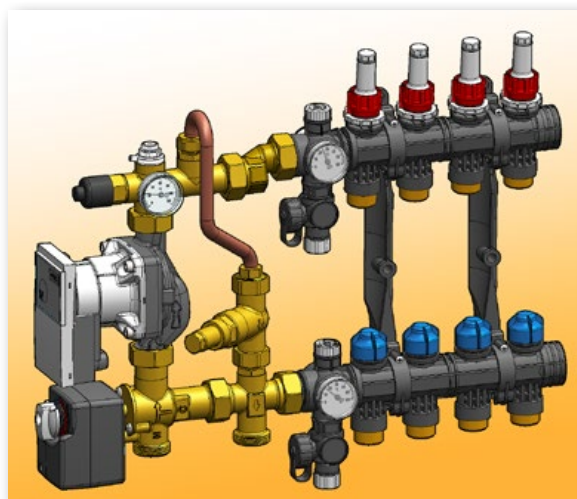
Maximum flow 1700 l/h.

Kvs value: 6,8

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

*Test made at our laboratory, with a pressure drop of 0,5 mH<sub>2</sub>O:*

*T<sub>H</sub>:55°C T<sub>c</sub>:24°C T<sub>MIX</sub>:32°C → 18,6 l/min (Kv 5)*



### Example of use for underfloor manifold:

*in this case the mixing valve has been motorized and it is a part of the kit ModvlvS Art.687 MIX equipped with Wilo circulation pump and Differential bypass valve.*

## Art. 1036

Compact 3-way rotating mixing valve, expressly designed for satellite heating units or distribution boxes for underfloor installations.

It can be motorized with a standard 3 points, a proportional, a fixed temperature servomotor or with an integrated climatic controller. *The external size and the connections make the valve interchangeable with the thermostatic mixing valve Art. 736 DN25.*

**Available external connections: 1" Male flat gasket seal.**

*The technical features are the same indicated for the Art. 1031C.*

Code 1": 041036

# MODVLVS Built-in Adjustment Unit



PED 2014/68/EU 4.3

*Changeable centre distance connection to the manifold  
Ready for the by-pass valve kit*

## 687 FIX

FIXED TEMPERATURE KIT

Code: See table below

The adjustment kit Art. 687 FIX, thanks to the very small size, can be set up straight into the distribution box of radiant heating installations. The manufacture allows the mounting on the right side or on the left side of the manifold.

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

- ✓ 3-way thermostatic mixer with high hydraulic performances (Kvs 4,0) and adjustable temperature 20÷45°C (F3) or 35÷60°C (F5);
- ✓ Pre-wired high efficiency synchronous circulating pump (for the models that include it);
- ✓ Thermometer 0÷60°C;
- ✓ Air vent valve;
- ✓ Safety thermometer pit with fixed setting temperature 55°C (it can be ordered separately);
- ✓ Ready for the addition of differential bypass valve (it can be ordered separately);
- ✓ Direct connection to the manifold or by means of an eccentric piece 15 or 30 mm (manifold misalignment between the supply and the return).

Centre distance 210 mm

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

Connections: to the manifold 1" Male swivel connection or 1" swivel nut; to the circuit 1" Male with 96 mm centre distance.

### FIELD OF UTILIZATION:

For power up to 9 kW (with  $\Delta t$  8 K) and maximum flow 1000 l/h.

Kvs value: 3,4

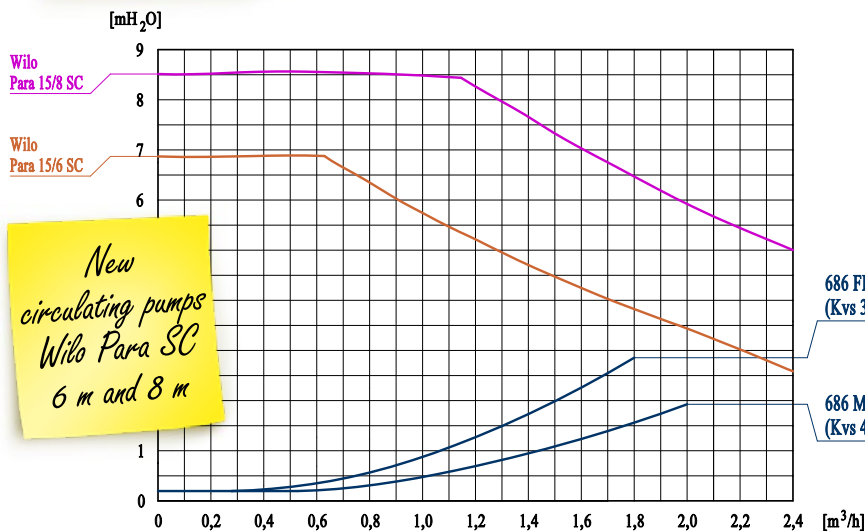
Approximate data calculated with a 6 m nominal lifting power circulating pump. For an accurate measuring or for higher flows, please refer to the curve.



Available thermostatic mixing valves:  
Setting range 20-45°C (F3)  
Setting range 35-60°C (F5)



Available circulating pumps:  
Wilco Para 15/6 SC (P6)  
Wilco Para 15/8 SC (P8)



### Safety thermostat

Safety thermostat with fixed setting temperature 55°C. Connection 1/2" Male. NC. 10(1)A/250 VAC. Maximum temperature: 120°C, Maximum pressure 80 bar.

Code: BRC-55

687 FIX: Approximate data for radiant heating installations: codes of the version with 1" swivel nut

Field of regulation	$\Delta t$	Approximate power and flow of the installation	Circulating pump	Residual lifting power	Approximate surface of the radiant installation	Eccentric piece	Code
20÷45°C	8 K	9 kW 1000 L/h	Wilco Para 15/6 SC	5 mH <sub>2</sub> O	Up to 100 m <sup>2</sup>	-	104687C-F3-P6
						15 mm	104687C-F3-15-P6
						30 mm	104687C-F3-30-P6
		15 kW 1600 L/h	Wilco Para 15/8 SC	5 mH <sub>2</sub> O	Up to 150 m <sup>2</sup>	-	104687C-F3-P8
						15 mm	104687C-F3-15-P8
						30 mm	104687C-F3-30-P8



687 FIX: Approximate data for radiant heating installations: codes of the version with 1" swivel nut							
Field of regulation	$\Delta t$	Approximate power and flow of the installation	Circulating pump	Residual lifting power	Approximate surface of the radiant installation	Eccentric piece	Code
35÷60°C	8 K	9 kW 1000 L/h	Wilo Para 15/6 SC	5 mH <sub>2</sub> O	Up to 100 m <sup>2</sup>	-	104687C-F5-P6
						15 mm	104687C-F5-15-P6
						30 mm	104687C-F5-30-P6
		15 kW 1600 L/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O	Up to 150 m <sup>2</sup>	-	104687C-F5-P8
						15 mm	104687C-F5-15-P8
						30 mm	104687C-F5-30-P8

**Attention. Codes variance.** For the version 1" Male please replace the letter "C" after the article with "G".

For the versions without the circulating pump please skip the identification code of the pump "-P6" / "-P8".

For example: 1" male with swivel connection kit, 20÷45°C without circulating pump with eccentric piece 15 mm: code 104687G-F3-15

The models with 1" male, not swiveling connection, f.i. 104687-F3-15 are **RUNNING OUT**

## 687 MIX

### 3-WAY ROTATING MIXING VALVE KIT

Code: See table below



PED 2014/68/EU 4.3

The adjustment kit Art. 687 MIX, thanks to the very small size, can be set up straight into the distribution box of radiant heating installations. The manufacture allows the mounting on the right side or on the left side of the manifold.

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

- ✓ Compact 3-way rotating mixing valve with very high hydraulic performances (Kvs 6,8). It can be motorized with the ModvlvS range servomotors or with the other trade servomotors;
- ✓ Pre-wired high efficiency synchronous circulating pump (for the models that include it);
- ✓ Thermometer 0÷60°C;
- ✓ Air vent valve;
- ✓ Safety thermometer pit with fixed setting temperature 55°C (it can be ordered separately);
- ✓ Ready for the addition of differential bypass valve (it can be ordered separately);
- ✓ Direct connection to the manifold or by means of an eccentric piece 15 or 30 mm (manifold misalignment between the supply and the return).

Centre distance 210 mm

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

Connections: to the manifold 1" Male swivel connection or 1" Swivel nut; to the circuit 1" Male with 96 mm centre distance.

**FIELD OF UTILIZATION:**

For power up to 11 kW (with  $\Delta t$  8 K) and maximum flow 1200 l/h.

Kvs value: 4,6

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 Para 15/6 SC (P6)

Wilo Para 15/8 SC (P8)

687 MIX: Approximate data for radiant heating installations: codes of the version with 1" swivel nut						
$\Delta t$	Approximate power and flow of the installation	Circulating pump	Residual lifting power	Approximate surface of the radiant installation	Eccentric piece	Code
8 K	11 kW 1200 L/h	Wilo Para 15/6 SC	5 mH <sub>2</sub> O	Up to 120 m <sup>2</sup>	-	104687C-M3-P6
					15 mm	104687C-M3-15-P6
					30 mm	104687C-M3-30-P6
	17 kW 1800 L/h	Wilo Para 15/8 SC	5 mH <sub>2</sub> O	Up to 200 m <sup>2</sup>	-	104687C-M3-P8
					15 mm	104687C-M3-15-P8
					30 mm	104687C-M3-30-P8

**Attention. Codes variance.** For the version 1" Male please replace the letter "C" after the article with "G".

For the versions without the circulating pump please skip the identification code of the pump "-P6" / "-P8".

For example: 1" male with swivel connection kit, without circulating pump with eccentric piece 15 mm: code 104687G-M3-15

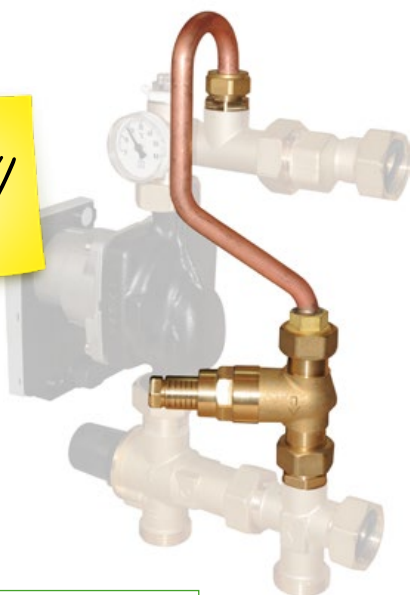
The models with 1" male, not swiveling connection, f.i. 104687-M3-15 are **RUNNING OUT**

It is possible to see an example of use of the kit 687 MIX in the file product of the mixing valve Art. 1031C.

In this case the mixing valve has been motorized with the ModvlvS servomotor TRM20

# MODVLVS Built-in Adjustment Unit

NEW!



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

Differential by-pass valve for the pressure balancing of the heating system, equipped with fittings for the direct mounting on the control unit of the radiant panels.

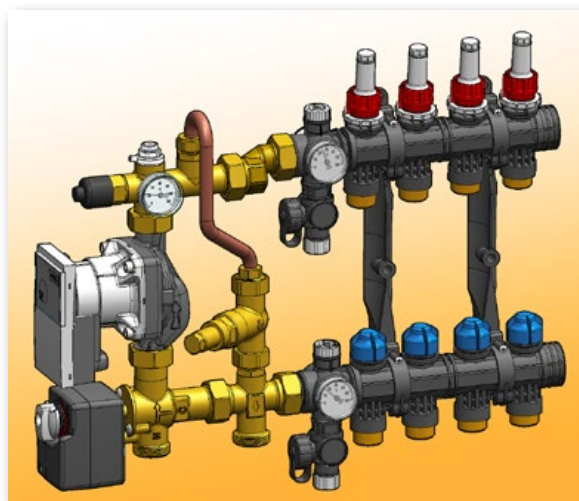
Yellow brass finish. Setting range: 0÷0,5 bar.

Centre distance 210 mm.

Kvs value: 5,0

Code: 103901-687

PED 2014/68/EU 4.3



### Example of use for underfloor manifold:

in this case the mixing valve has been motorized and it is a part of the kit ModvlvS Art.687 MIX equipped with Wilo circulation pump and Differential bypass valve.



**NEW!**



## Climatic controllers

### Main features common to both models:

- ✓ Bright backlight high contrast display with full text notices and graphic mode;
- ✓ Pictograms showing the chosen hydraulic scheme highlighting the status of activity of the relays;
- ✓ Assistant to the start with step-by-step guided setups;
- ✓ Data storage with statistics and graphics diagrams for a long term monitoring of the outside and supply temperature, check function with error storage;
- ✓ CAN-BUS connection for connecting multiple hydraulic modules;
- ✓ Possibility of remote management and data storage with Connect system (the specific Datalogger is required, not included);
- ✓ 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;
- ✓ Antifreeze and daily or weekly anti-lock function;
- ✓ Setting of minimum and maximum supply temperature of the plant;
- ✓ Comfort function for quick heating;
- ✓ °Caleon room thermostat (non included);
- ✓ Menu lockout against undesired setting changes;
- ✓ 24 VDC outputs for external devices (e.g. °Caleon or actuators)
- ✓ Dimensions: 163 x 110 x 51 mm;
- ✓ IP 40 - protection class II.

### MHCC - Climatic controller

#### Control of a mixed circuit with heat request

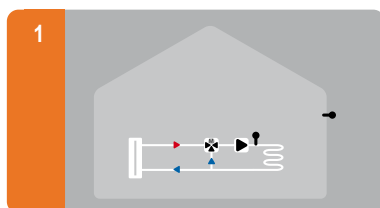
- ✓ 2 application schemes
- ✓ 3 inputs for PT1000 sensors;
- ✓ 1 input for remote control;
- ✓ 1 output 0-10 V / PWM;
- ✓ 3 output relays 230V;
- ✓ 1 output 24 VDC, up to 2 W

#### It includes:

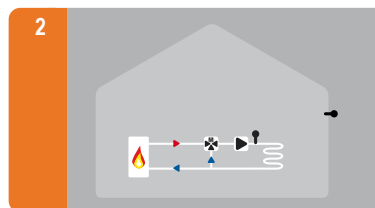
- ✓ 1 silicone temperature sensor TT/S4 PT1000;
- ✓ 1 outside temperature sensor TA/55 (PT1000);
- ✓ 1 contact sensor for supply pipe TR/S2 (PT1000).

Code: **MHCC-24**

### MHCC Hydraulic Variants



Mixed circuit



Mixed circuit + boiler (\*)

(\*) Boiler control is 0-10V or PWM.

To change the signal into potential free please use the outside optional relay.

### LHCC - Climatic controller

#### Control of various heating and cooling systems, DHW with anti-legionella function

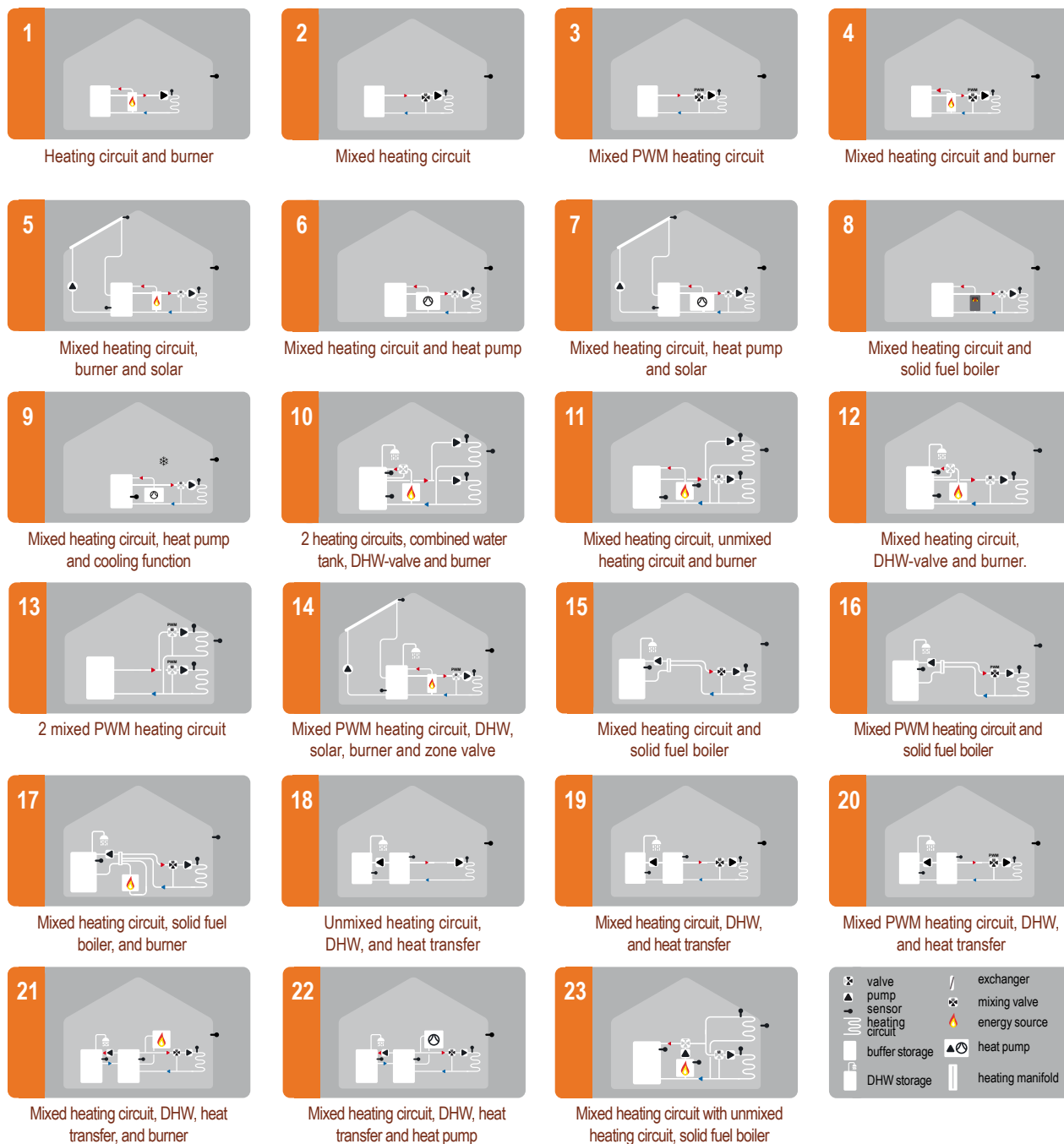
- ✓ More than 22 application schemes, extensible with additional selectable functions
- ✓ 6 inputs for PT1000 sensors;
- ✓ 1 input for remote control;
- ✓ 2 inputs for temperature direct sensors;
- ✓ 2 inputs for flow direct sensors;
- ✓ 2 output 0-10 V / PWM;
- ✓ 4 output relays 230V
- ✓ 2 output with zero-potential contact;
- ✓ 1 output 24 DC, up to 6 W

#### It includes:

- ✓ 1 silicone temperature sensor TT/S4 PT1000;
- ✓ 1 outside temperature sensor TA/55 (PT1000);
- ✓ 1 contact sensor for supply pipe TR/S2 (PT1000).

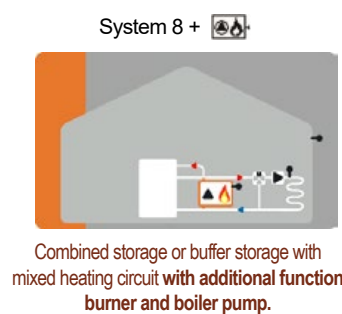
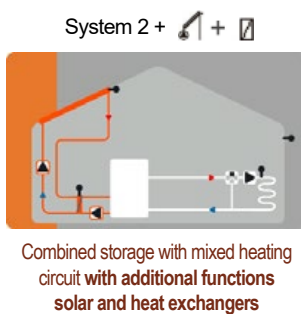
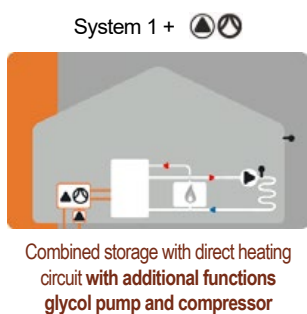
Code: **LHCC-24**

## LHCC Hydraulic variants



### LHCC: additional functions to expand preset schemes

The preset hydraulic schemes 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. Some examples of the functions that can be managed by free relays:





# MODVLVS Servomotors and Room Thermostat



**NEW!**



## °Caleon room thermostat

Stylish TFT capacitive touch panel for easy remote control of the heating system. Normal, Turbo, Eco and Off operation modes with specific temperature setpoint. Holiday program. Up to 8 adjustable daily heating time slot. CAN Bus connection for the system Connect. Data logging on MicroSD Card via data logger Connect.

### Main features:

- ✓ For Weather-Compensated Heating Controllers 24VDC: MHCC and LHCC
- ✓ Room temperature sensor 0+60 °C, accuracy 0.1 °C
- ✓ Relative humidity sensor 0+100%, accuracy 0.1%
- ✓ Daily heating time slot: 8 for each room /area
- ✓ CAN Bus connection for the Connect system
- ✓ TFT Color display 2.8" with Glass front and Capacitive touch panel.
- ✓ Dimensions: 75 x 95 x 19 mm;
- ✓ Power consumption: 0,5-1,0 W;
- ✓ IP 20.

Code: **RC30**

## Caleon Clima version with cooling system management (combined with LHCC controller).

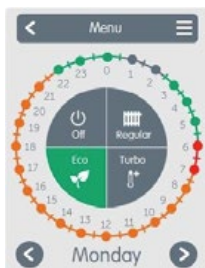
### Supplementary Features:

- ✓ Cooling Mode
- ✓ Output: 2x 0-10V

Code: **RC35**



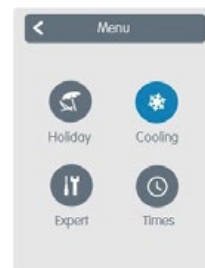
Info screen



Intuitive time switch for week program



Energy-saving operation with reduced Temperature



Heating and cooling (°Caleon Clima)



## °Caleon Cable

Bus cable copper shielded for the connection of °Caleon room thermostat to the controller. 6 wire twisted pair: 3 x 2 x 0.22 mm<sup>2</sup>.

Available in lengths per meters.

Code: **CABLE-CALEON**



## Dip temperature sensor

Temperature sensor PT1000, in PVC, for climatic controllers. 4 m long.

Code: **TT/P4**



## External temperature sensor

External temperature sensor PT1000 for climatic controller.

Code: **TA/55**



## Dip temperature contact sensor

Temperature sensor PT1000, in PVC, for supply pipes, for climatic controllers. 4 m long.

Code: **TR/P4**



## 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**

## 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: 5 Nm. Power supply 24V DC or 24V AC. IP42.

Code: **M51-05**



**NEW!**

CE



## ACC30 - Fixed temperature servomotor

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: 5 up to 95°C;
- ✓ Setup wizard on first start with a multilingual interface;
- ✓ 4 selectable hydraulic schemes;
- ✓ Reversible OLED display with visualization of hydraulic scheme and main information;
- ✓ Touch sensitive keypad;
- ✓ Selectable clockwise or anticlockwise direction of rotation in opening/closing;
- ✓ Personalized operative parameters;
- ✓ Heating or cooling working modes;
- ✓ Junction box for easy connection of the sensors;
- ✓ Temperature reading by means of Pt1000 deep sensor (ø4x40 mm, 1 m length, included) or with fixing kit to the pipe.

Code: **ACC30**



**NEW!**

CE



## AHC40 - Advanced climatic controller with built-in servomotor

Modern climatic controller with built-in servomotor, designed specifically for Modvlvs pump units and theirs mixing valves. It allows, through the choice of the desired climatic curve, an accurate regulation of the mixed circuit, optimizing the energy consumption..

Bidirectional, reversible with switcher servomotor, limited operating range 90°, 2 min, torque 6 Nm. Power supply 230 V. Protection: IP42.

### Some of the main functions:

- ✓ Setup wizard on first start with a multilingual interface;
- ✓ 2 selectable hydraulic schemes;
- ✓ Reversible OLED display with visualization of hydraulic scheme and main information;
- ✓ Heating or cooling working modes;
- ✓ Junction box for easy connection of the sensors;
- ✓ Weekly program with time bands, Party functions, Eco and Holiday mode;
- ✓ Summer/winter automatic selection;
- ✓ Temperature adjustment by means of climatic curves (0,2+2,6);
- ✓ Heating circuit control with maximum temperature limit for underfloor heating systems;
- ✓ Antifreeze protection and anti-lock circulating pump function;
- ✓ Optimization of the regulation of system by means of RCD2 (optional);
- ✓ 2 Pt1000 deep sensor (ø4x40 mm, 1 m length, included) or with fixing kit to the pipe;
- ✓ Outside temperature sensor included..

Code: **AHC40**



**NEW!**

CE



## Remote control RCD2

The RCD2 room unit is the remote control of the heating system, designed to select the room temperature and the operating mode of the climatic controller AHC40 and CMP25-2 (software version 3.2 or later) in an easy and comfortable way. The best placing is in the centre of the house, where there are the most significant climatic conditions of the building.

The wide backlit display shows information about the temperatures and the operating mode. Moreover it is possible to select personalized functions such as Party, Eco, HDW heating.

### Some of the main functions:

- ✓ Room heating control by means of the time planning set on the climatic controller;
- ✓ Setting of the daily temperature and night temperature reduction;
- ✓ Party and Eco functions with adjustable time length;
- ✓ Notice of the user's request of intervention and of damages signal;
- ✓ Automatic pairing with climatic controller;
- ✓ Power supply through the bus connection to climatic controller;
- ✓ Dimensions: 82,7 x 125,7 x 17 mm.
- ✓ Power consumption: I = 8 mA; P = 0,1 W;
- ✓ IP 30.

Code: **RCD2**

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**



CE



## 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.

**RUNNING OUT** Code: **CMP25-2**



CE

## 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 and 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.

**RUNNING OUT** Code: **DD2+**



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.

**RUNNING OUT** Code: **ST2RDR**



CE



## 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. Bidirectional servomotor, reversible with an operating range of 90°, 2 min., torque 6 Nm. Power supply 230V. IP42.

**RUNNING OUT** Code: **AHC20**



**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.**



**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 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.

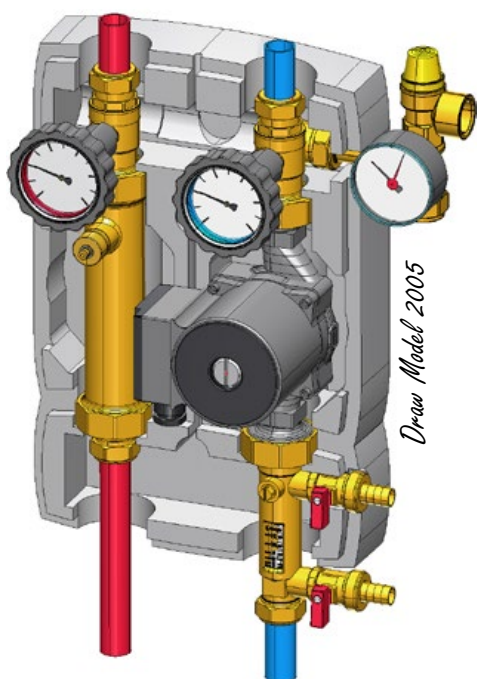




The picture at side shows a “pilot” installation with low tension circulating pump: the current is supplied by a P.V. collector and the plant is fully independent from the energetic point of view. It is working every day to check its good functioning and it is at customers’ and vistors’ disposal.



Product installed in 2005 and working up to the present.



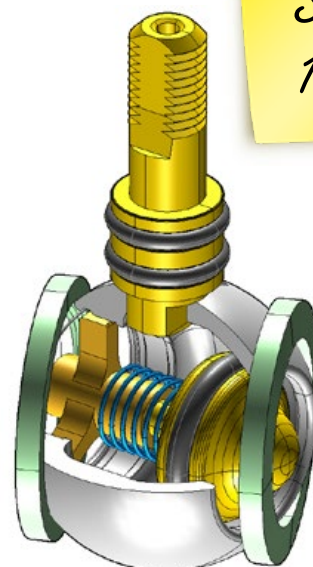
The air vent, current component of many pump units, expels the air bubbles that are in the circuit in a continuous and effective way; in fact when the heat-conducting fluid goes through the air vent, the important difference of diameter between it and the remaining components of the circuit gives rise 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.

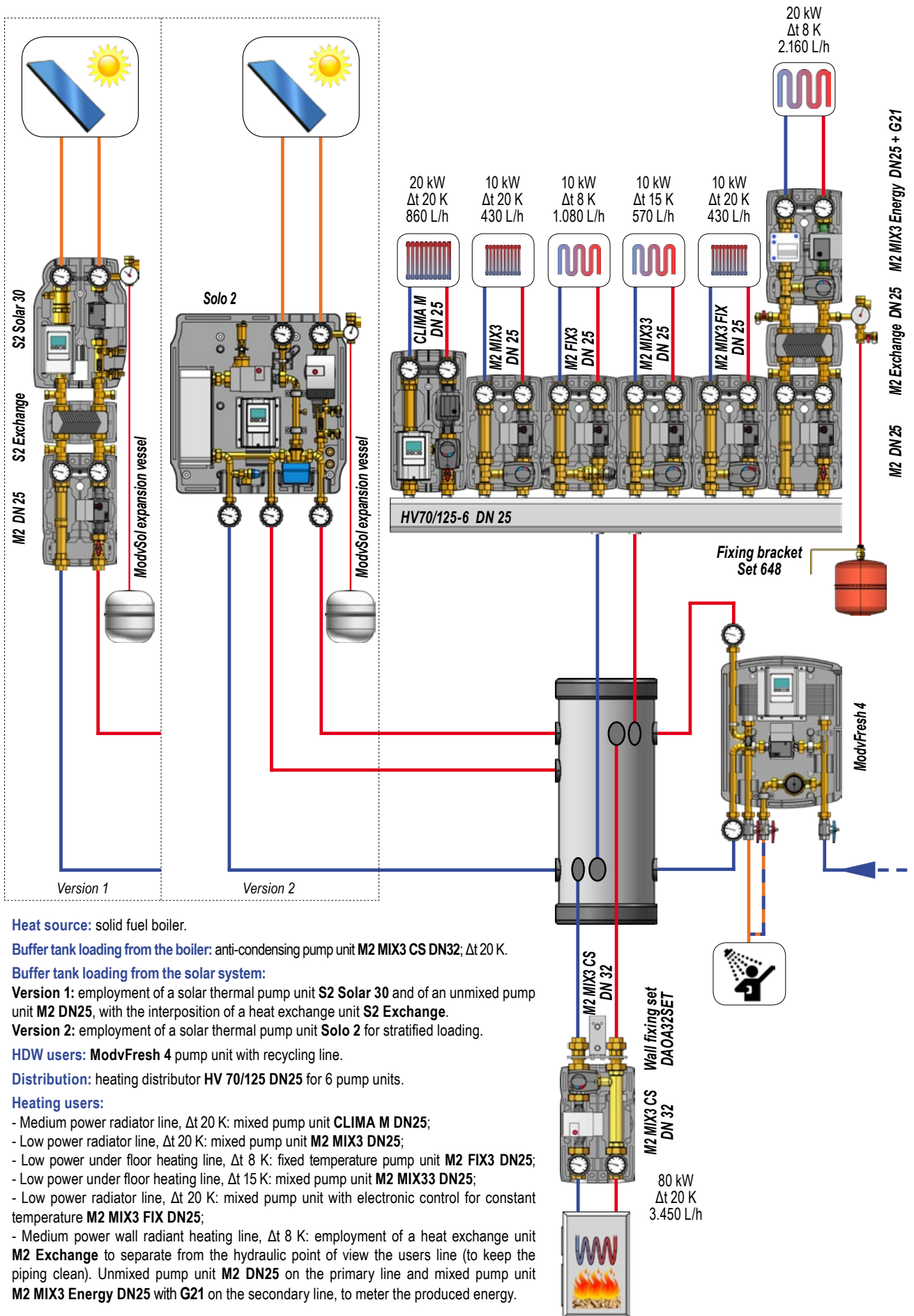
Supplied for the first time by BRV on the european market on 1999, the special “Solar” check valve mounted both in the supply and in the return way, prevents the migration of energy from the water tank to the solar collector in any working condition, together with very low headlosses with an advantage 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



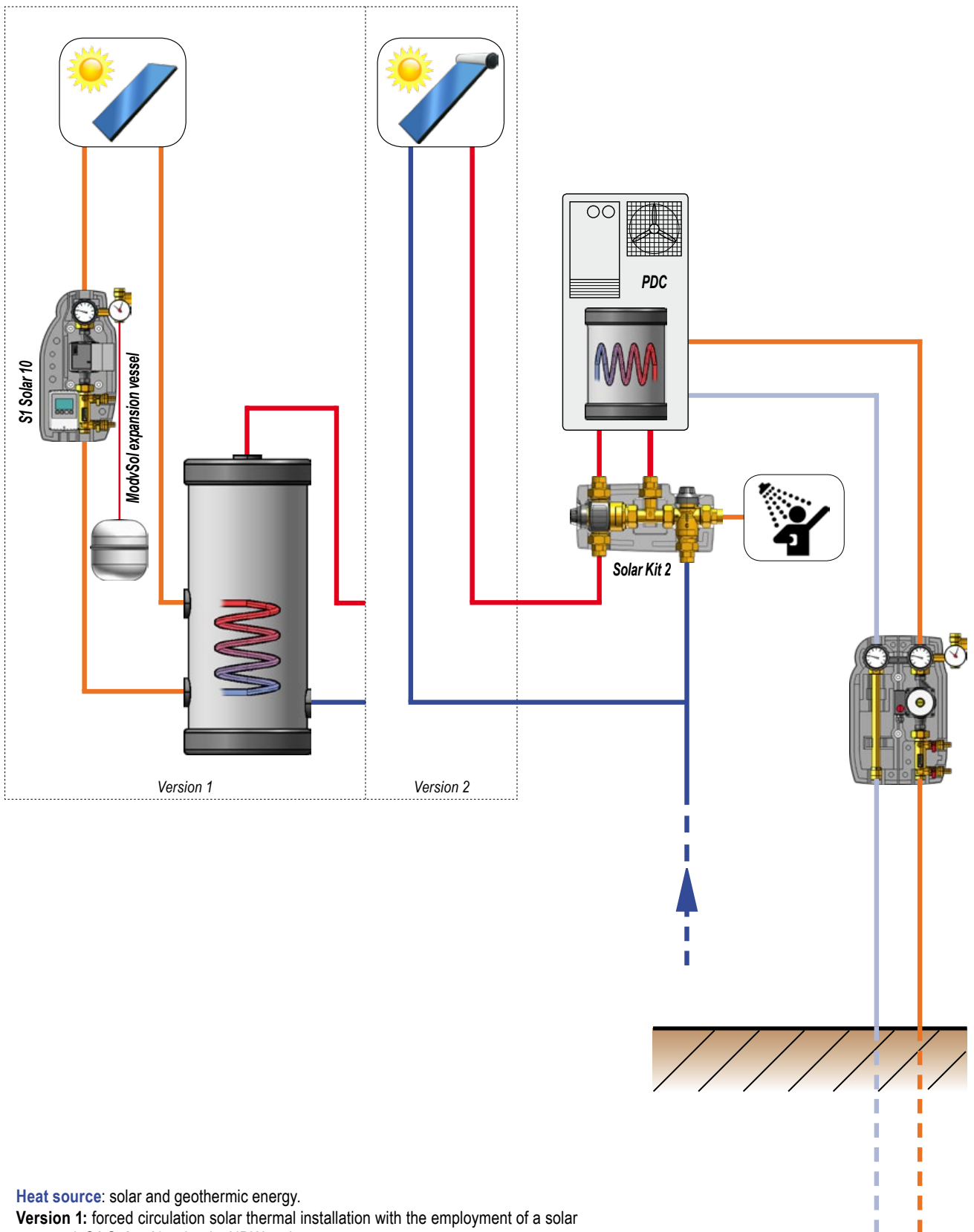
solar thermal

# MODVLVS Installation examples



**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.

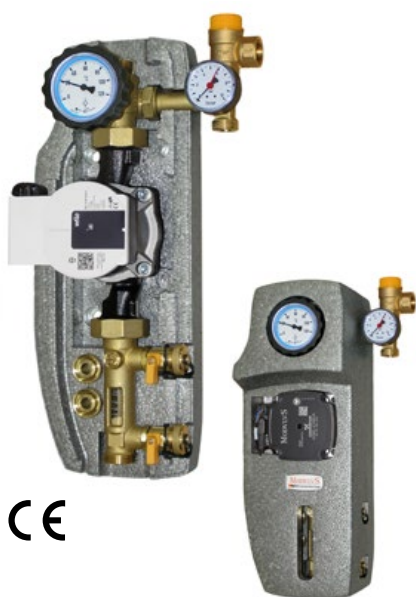
**Version 2:** natural circulation solar installation with the employment of solar collectors with HDW tank included.

**Distribution:**

**Solar Kit 1,** solar-boiler connection kit, to mix users' HDW.



# MODVSOL Solar Pump Units up to 38 l/min



CE

## S1 Solar 1

1-WAY SOLAR PUMP UNIT

Code 22 mm: 122641R-xx-(PST6/PST8/US75)  
Code 3/4" Male: 103641R-xx-(PST6/PST8/US75)  
Code 1" Male: 104641R-xx-(PST6/PST8/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.

### 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 Para ST 25/6 iPWM (PST6)  
Wilo Para ST 25/8 iPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)

One way



CE



## S1 Solar 10

1-WAY SOLAR PUMP UNIT WITH BUILT-IN CONTROLLER

Code 22 mm: 122-xx-(PST6/PST8/US75)-STDC  
Code 3/4" Male: 103-xx-(PST6/PST8/US75)-STDC  
Code 1" Male: 104-xx-(PST6/PST8/US75)-STDC

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 2 silicone sensors, to control basic systems with only one loop and one storage tank. 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: 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:

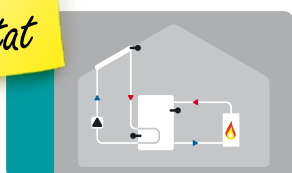
Wilo Para ST 25/6 iPWM (PST6)  
Wilo Para ST 25/8 iPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)



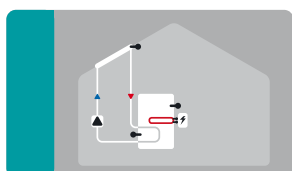
#### Available controllers:

ModvSol S (STDC)  
ModvSol S+T (S+T)

New solar function  
Solar + thermostat



Solar with supplement  
(boiler or pump/valve)



Solar with electrical supplement

## S1 Solar 10 T

Code 22 mm: 122-xx-PST(6/8)-S+T  
Code 3/4" Male: 103-xx-PST(6/8)-S+T  
Code 1" Male: 104-xx-PST(6/8)-S+T

1-WAY SOLAR PUMP UNIT WITH BUILT-IN CONTROLLER AND THERMOSTAT FUNCTION

Solar controller ModvSol S+T pre-wired including 3 silicone sensors, for the managing of solar installation, with supplement to the tank, thanks to the thermostat function. Pre-wired control unit with external power box designed for powering the control unit and connection to the relay managing the supplement (boiler, pump or valve, electric resistance max. 3 kW)

The remaining features are identical to the article S1 Solar 10.

Code composition: the suffix "xx" shows the flow, followed by the circulating pump (f.i. 122641R-12-PST6) and, where present, by the controller model.



Two ways

CE



## S2 Solar 2

2-WAY SOLAR PUMP UNIT

Code 22 mm: 322647AR-xx-(PST6/PST8/US75)  
Code 3/4" Male: 303647AR-xx-(PST6/PST8/US75)  
Code 1" Male: 304647AR-xx-(PST6/PST8/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 Para ST 25/6 iPWM (PST6)  
Wilo Para ST 25/8 iPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)

solar thermal

CE



## S2 Solar 20

2-WAY SOLAR PUMP UNIT WITH BUILT-IN CONTROLLER

Code 22 mm: 322-xx-(PST6/PST8/US75)-M3S  
Code 3/4" Male: 303-xx-(PST6/PST8/US75)-M3S  
Code 1" Male: 304-xx-(PST6/PST8/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 3 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 Para ST 25/6 iPWM (PST6)  
Wilo Para ST 25/8 iPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)



Available controllers:  
ModvSol M (M3S)

Controller with Connect system



# MODVSOL Solar Pump Units up to 38 l/min

Two ways and air vent



Controller with Connect system



## S2 Solar 3

2-WAY SOLAR PUMP UNIT WITH AIR VENT

Code 22 mm: 322651AR-xx-(PST6/PST8/US75)  
Code 3/4" Male: 303651AR-xx-(PST6/PST8/US75)  
Code 1" Male: 304651AR-xx-(PST6/PST8/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 Para ST 25/6 iPWM (PST6)  
Wilo Para ST 25/8 iPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)

## S2 Solar 30

2-WAY SOLAR PUMP UNIT WITH AIR VENT AND BUILT-IN CONTROLLER

Code 22 mm: 322D-xx-(PST6/PST8/US75)-M3S  
Code 3/4" Male: 303D-xx-(PST6/PST8/US75)-M3S  
Code 1" Male: 304D-xx-(PST6/PST8/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 3 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 Para ST 25/6 iPWM (PST6)  
Wilo Para ST 25/8 iPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)



#### Available controllers:

ModvSol M (T33S)



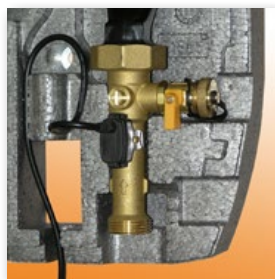
# MODVSOL Solar Pump Units up to 40 l/min



*Controller with more advanced functions*



3/4" connection to fit between the flexible hose and the expansion vessel. It is possible to fill the installation trough the side valve.



## S2 Solar 30L

2-WAY SOLAR PUMP UNIT WITH AIR VENT AND BUILT-IN CONTROLLER WITH ADVANCED FUNCTIONS

Code 22 mm: 322D-xx-(PST6/PST8/US75)-L3S  
Code 3/4" Male: 303D-xx-(PST6/PST8/US75)-L3S  
Code 1" Male: 304D-xx-(PST6/PST8/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 3 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 Para ST 25/6 IPWM (PST6)  
Wilo Para ST 25/8 IPWM (PST8)  
Grundfos UPM3 Hybrid 25-70 (US75)



Available controllers:  
ModvSol L (L3S)

## S2 Solar 30L VFS

2-WAY SOLAR PUMP UNIT WITH AIR VENT AND BUILT-IN CONTROLLER WITH ADVANCED FUNCTIONS AND ENERGY METERING

Code 22 mm: 322D-40-PST8-L4S  
Code 3/4" Male: 303D-40-PST8-L4S  
Code 1" Male: 304D-40-PST8-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 Para ST 25/8 IPWM (PST8)

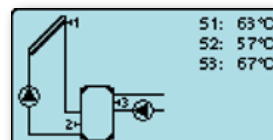


Available controllers:  
ModvSol L (L4S)

Display of the solar energy produced by the solar installation:

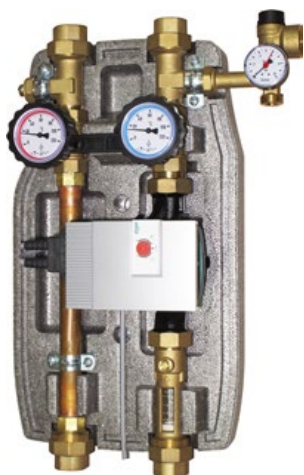


On demand, a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.



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-PST6-L3S).



## 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

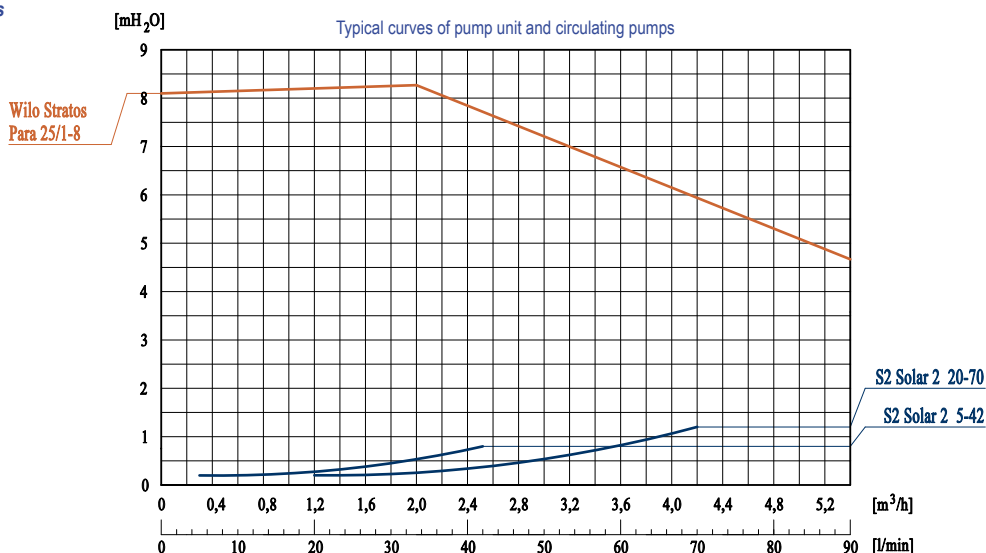


Available circulating pumps:  
 Wilo Stratos Para 25/1-8 (PA1-8)

The synchronous Stratos Para 25/1-8 circ. pump needs a 0-10V controller.

High Flow

solar thermal



### 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.





## 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 3<sup>rd</sup> 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 3 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)

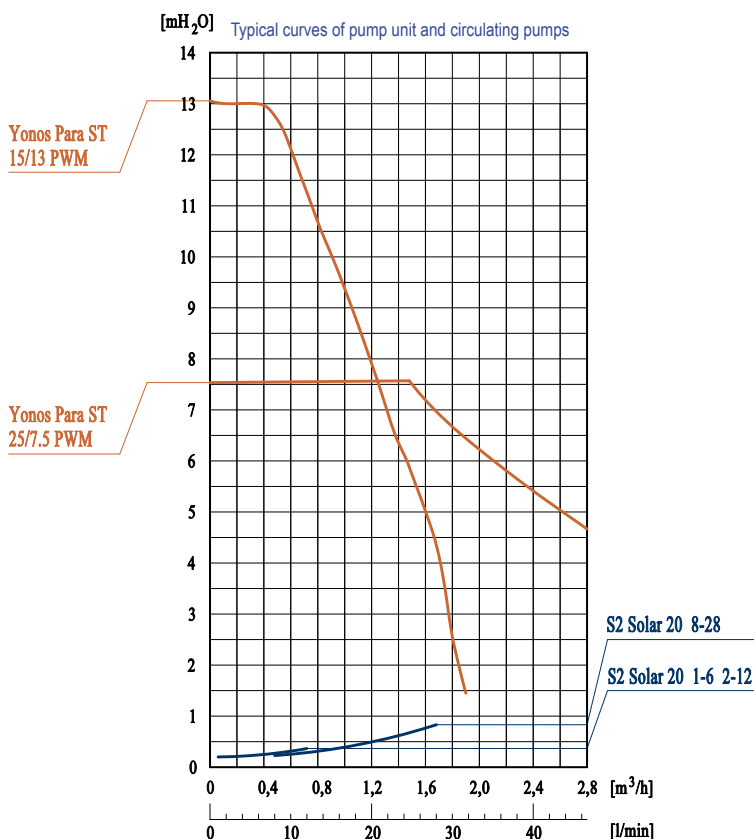


#### Available controllers:

ModvSol M (M3S)  
 ModvSol L (L3S)



[mH<sub>2</sub>O] Typical curves of pump unit and circulating pumps



## 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.



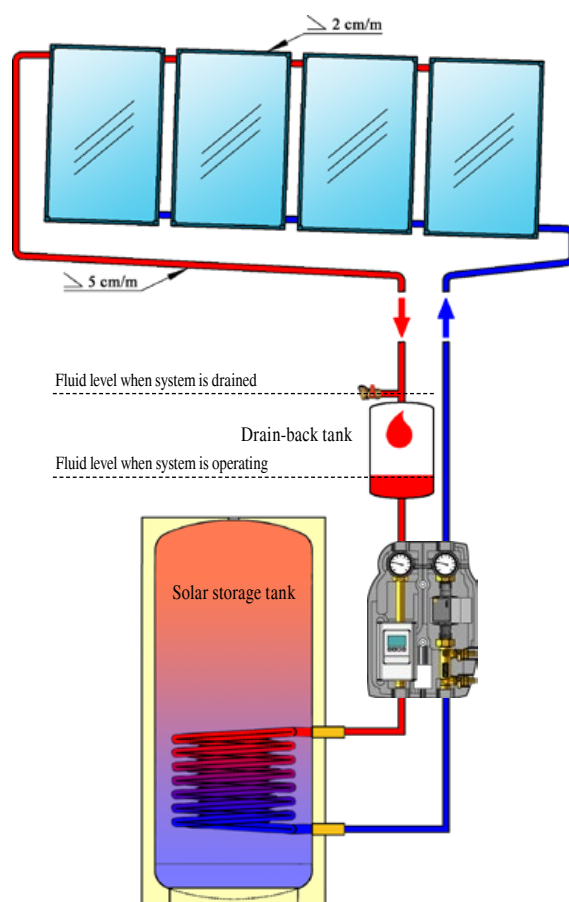
Code composition: the suffix "xx" shows the flow, followed by the circulating pump and the controller (f.i. 403-12-YST8-L3S).

## 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 - Deep 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:

#### Wilo Para



**NEW**

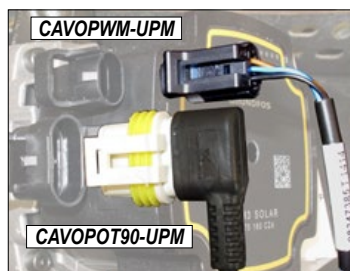
Power supply cable for Wilo Para circulating pumps. Length: 1 m.

Code: CAVOCIRC-A

PWM control cable for Wilo Para circulating pumps. Length: 1 m.

Codice: PRESAPR71B

#### Grundfos UPM3



Power supply cable for Grundfos UPM3 circulating pump. Length: 1 m.

Code: CAVOPOT90-UPM

PWM control cable for Grundfos UPM3 circulating pump. Length: 1 m.

Code: CAVOPWM-UPM

# MODVSOL Differential Solar Controllers

CE

Version S+T:  
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 outputs relay 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 (TT/S2) 2 m lenght;
- ✓ 2 control cables for circulating pump: power supply and PWM signal;
- ✓ power supply cable with Schuko plug.

**S+T version has also the “thermostat function” (2 relays and 3 PT1000 sensors).**



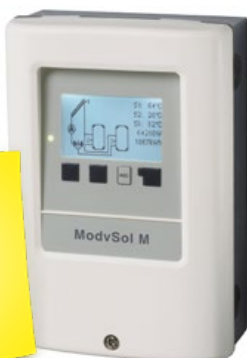
**Outlets (Out):**  
1 relay 230V  
1 PWM / 0-10V output



**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).

### ✓ 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 into an individual packing that includes:

- ✓ 3 PT1000 silicone temperature sensors (TT/S2) 2 m lenght.

Code: **MTDC.SET3**

Supplied pre-wired with the solar pump unit in this configuration:

- ✓ 3 PT1000 silicone temperature sensors (TT/S2) 2 m lenght;
- ✓ 2 control cables for circulating pump: power supply and PWM signal;
- ✓ Power supply cable with Schuko plug.



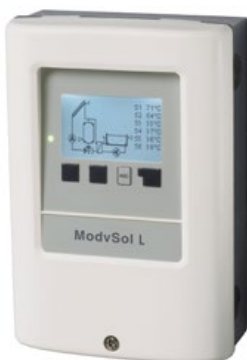
**Outlets (Out):**  
2 relays 230V  
1 PWM / 0-10V output



**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).

### ✓ 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 into an individual packing that includes:

- ✓ 4 PT1000 silicone temperature sensors (TT/S2) 2 m lenght.

Code: **LTDC.SET4**

Supplied pre-wired with the solar pump unit in this configuration:

- ✓ 3 PT1000 silicone temperature sensors (TT/S2) 2 m lenght: 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.



**Outlets (Out):**  
3 relays 230V  
2 PWM / 0-10V outputs

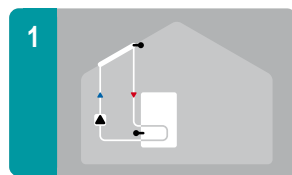


**Inputs (In):**  
6 Pt1000 sensors  
2 VFS o RPS sensors

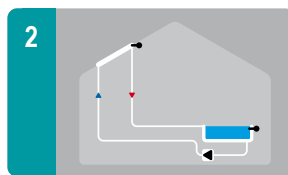




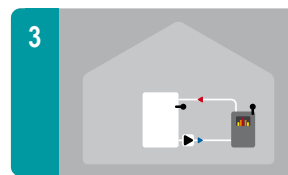
## Different hydraulic schemes *ModvSol S, ModvSol M and ModvSol L*



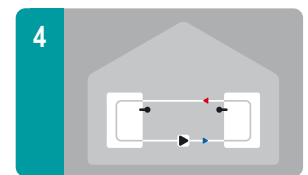
Solar + storage tank



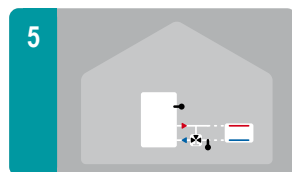
Solar + swimming pool



Solid fuel boiler + storage tank



Storage tank loading



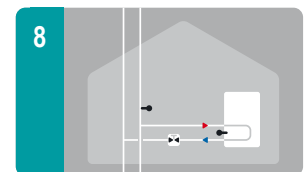
Return temperature increase



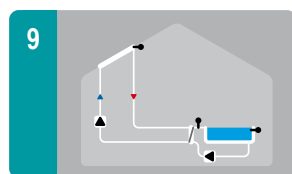
Thermostat function



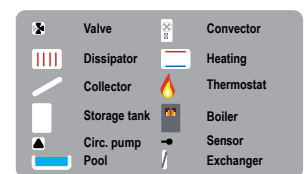
Universal  $\Delta T$



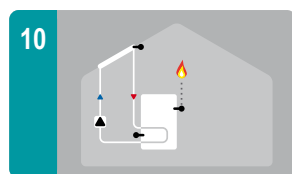
Shutting valve



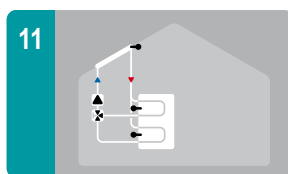
Solar + heat exchanger  
(sensor on secondary) + swimming pool



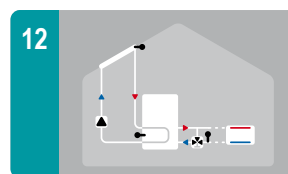
## Different hydraulic schemes *ModvSol M and ModvSol L*



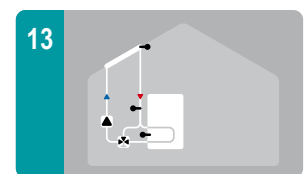
Solar + thermostat  
(supplementary heating)



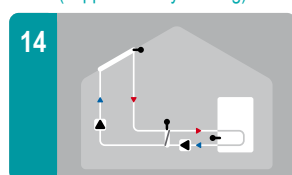
Solar + 2 levels storage tank



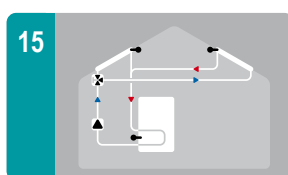
Solar + heating system



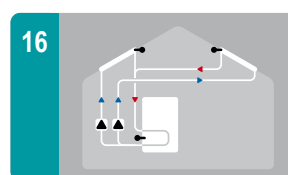
Solar + by-pass



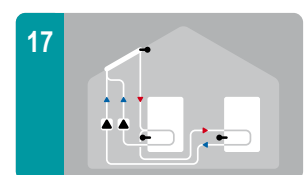
Solar + heat exchanger



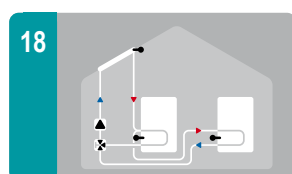
Solar + 2 collectors



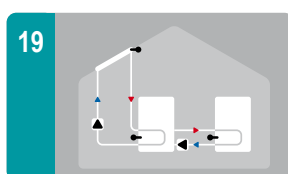
Solar + 2 collectors and 2 pumps



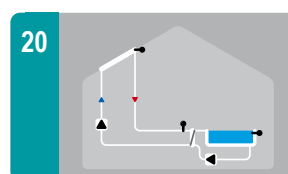
Solar + 2 storage tanks and 2 pumps



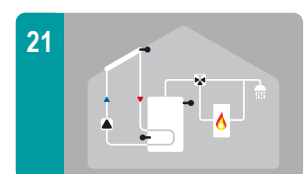
Solar + 2 storage tanks and valve



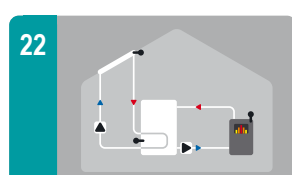
Solar + storage tank loading



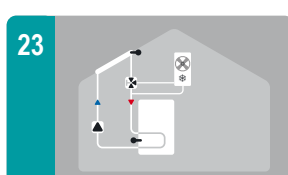
Solar + swimming pool  
and heat exchanger



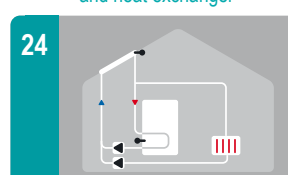
Solar + thermostat and valve



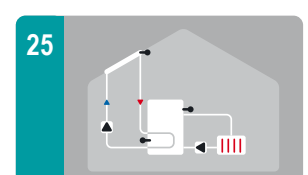
Solar + solid fuel boiler



Solar + cooling 1 (collector cooling)



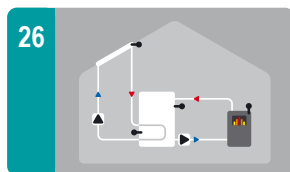
Solar + cooling 2 (collector cooling)



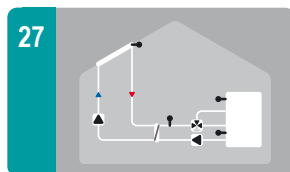
Solar + cooling 3 (collector cooling)

solar thermal

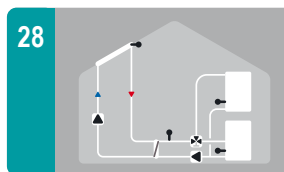
## Different hydraulic schemes ModvSol L



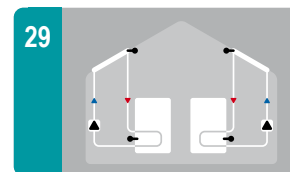
Solar + storage tank and solid fuel boiler



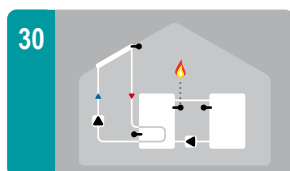
Solar + heat exchanger and zone valve



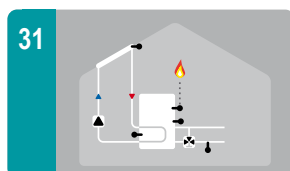
Solar + heat exchanger and 2 storage tanks



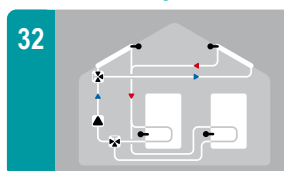
2x solar



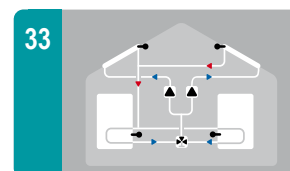
Solar + thermostat and storage tank loading



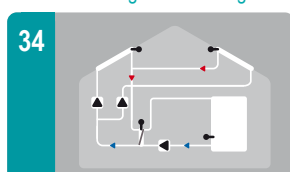
Solar + thermostat and return temperature increase



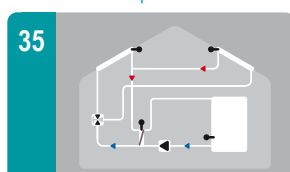
Solar + 2 collectors, 2 storage tanks, 2 valves



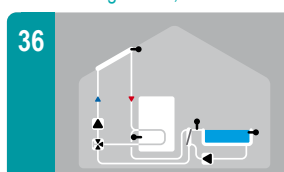
Solar + 2 collectors, 2 storage tanks, 2 pumps



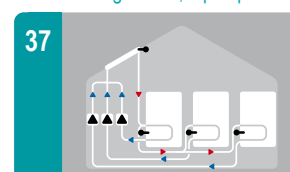
2x Solar with storage, heat exchanger and 3 pumps



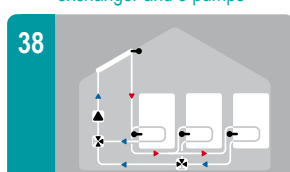
2x Solar with storage, heat exchanger and valve



Solar + swimming pool, storage tank, heat exchanger and valve



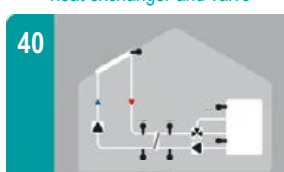
Solar + 3 storage tanks and 3 pumps



Solar + 3 storage tanks and 2 valves



Solar with storage and heat exchanger for large systems



Solar with storage, heat exchanger and valve for large systems



Solar with 2 storages, heat exchanger and valve for large systems

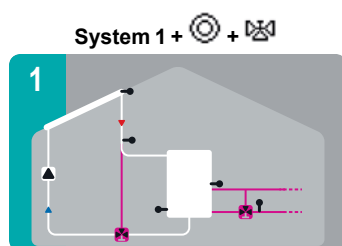
The preset hydraulic schemes of **ModvSol M** and **ModvSol L** controllers can be increased in a flexible and easy way, by means of free contacts. If the controller has several free outputs in comparison with the necessary schemes, the remaining free relays can be used to activate different additional 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:

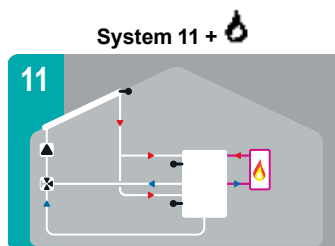
- Differential temp.
- Heating system
- Heat transfer
- Error message
- Additional heating

- Always on
- Cooling system
- Solid fuel boiler
- Parallel working with R1 or R2
- Pressure control

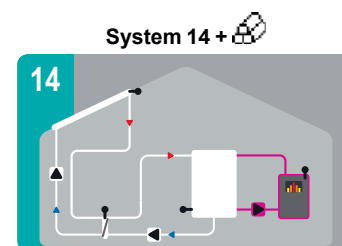
- Anti legionnaire's disease
- Return temp. increase
- Booster pump
- Solar by-pass
- Collector field cooling



Solar + storage tank with additional Solar By-pass function and return temperature increase.



Solar + 2 levels storage tank and diverting valve with additional thermostat function.



Solar + heat exchanger with additional solid fuel boiler function.



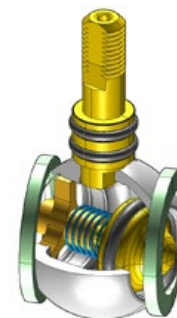
### Art. 520 Solar

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

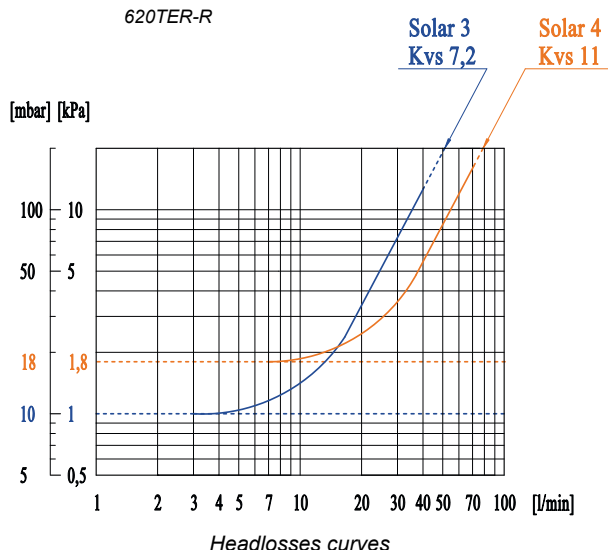
F/F ball valve in hot forged brass for solar installations. Yellow finish.  
Ends threaded to ISO 228 (DIN 259 BSP 2779).

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 glicole 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



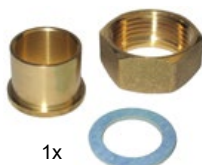


## Art. 525 ISO - Filling/draining valve

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

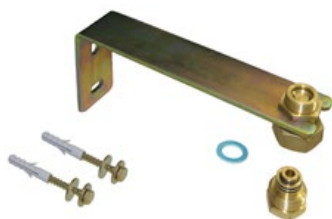
DN15 AISI 304 stainless steel flexible hose (0,3 mm tickness) to connect the expansion vessel to the security unit.

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)**



## 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*

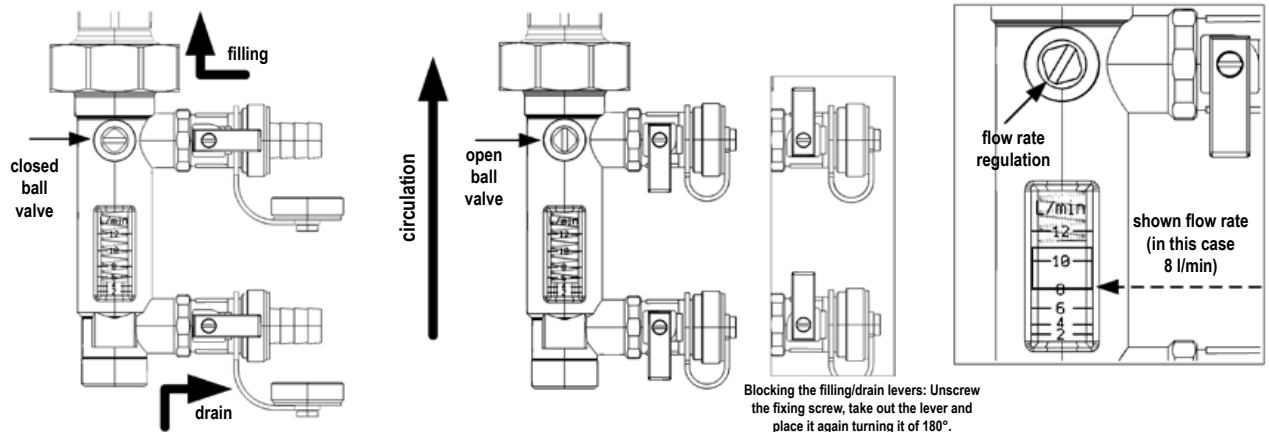


*Without power:  
AB → B*

## 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.

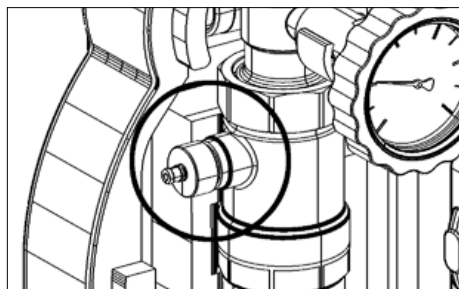
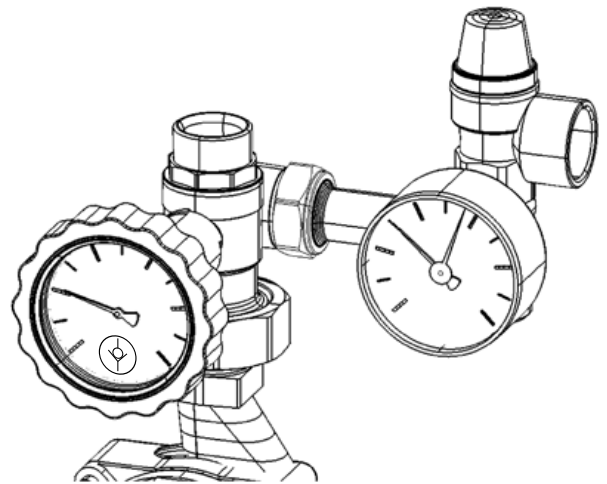
(2) - Starting the installation working: Open the ball valve and close the side filling and draining valves. Remove the hose unions and screw the plugs. To avoid any casual opening of the side valves, it is better to stop the levers in the close position, as shown here aside.

(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.



**Model with the air vent:** The air vent is a device that divides continually the air that can be in circulation together with the fluid. The air goes to the upper part of the air vent and it can be eliminated through the special drain while the installation is working. Unscrew the knurled metal ring lock for not more than half turn. This operation has to be done at intervals.



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  $I_{\beta}$ .

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:

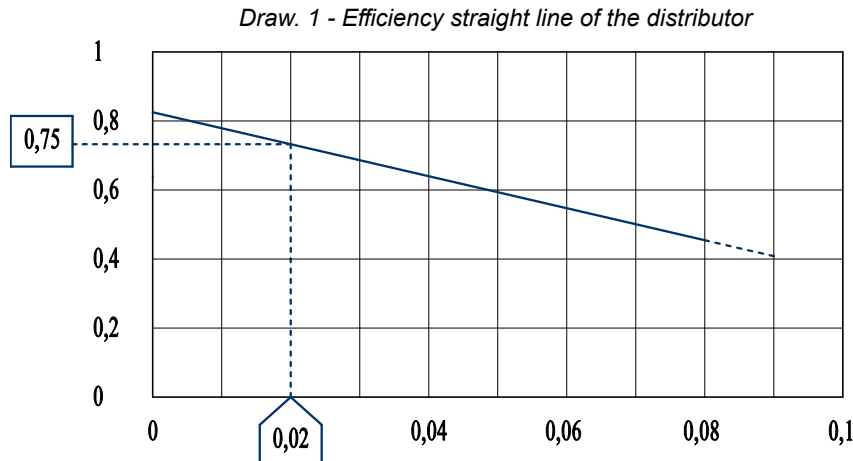
$$\eta = Fr (\tau\alpha) - \frac{Fr (T_i - T_a)}{I_{\beta}}$$

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)



$$\frac{T_i - T_a}{I_{\beta}} \left[ \frac{m^2 K}{W} \right]$$

The incoming solar radiation on the collector directed towards the equator and inclined of a  $\beta$  angle can be calculated as  $800 \text{ W/m}^2$  (\* see notes). From the diagram it is clear that,  $T_a$  being equal (f.i.  $10^\circ\text{C}$ ) and  $T_i$  being low (f.i.  $26^\circ\text{C}$ ), the efficiency is:

$$\frac{26 - 10}{800} = 0,02 \longrightarrow \eta = 0,75$$

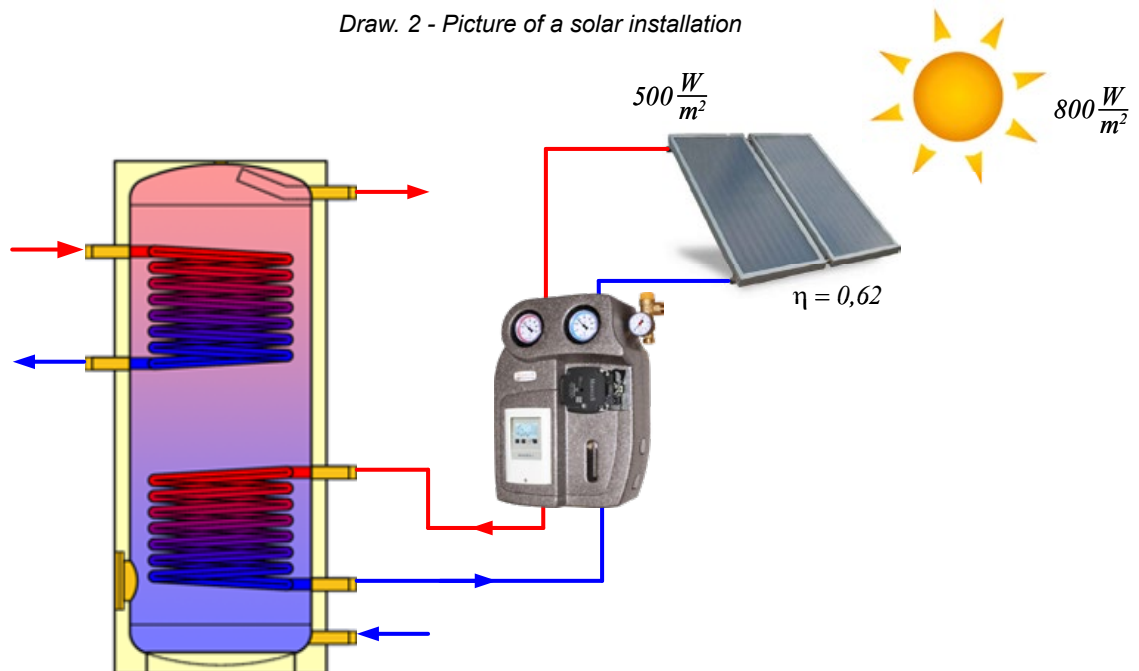
otherwise, being the  $T_i$  high (f.i.  $80^\circ\text{C}$ )  $\eta \cong 0,4$ .

(\* **Note:** The density of the average power of the solar radiation outside the earth's atmosphere is about  $1367 \text{ W/m}^2$ . On the earth's surface the maximum power is hardly ever more than  $1100 \text{ W/m}^2$ , 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  $800 \text{ W/m}^2$  up to a maximum limit radiation of  $1000 \text{ W/m}^2$ , 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.

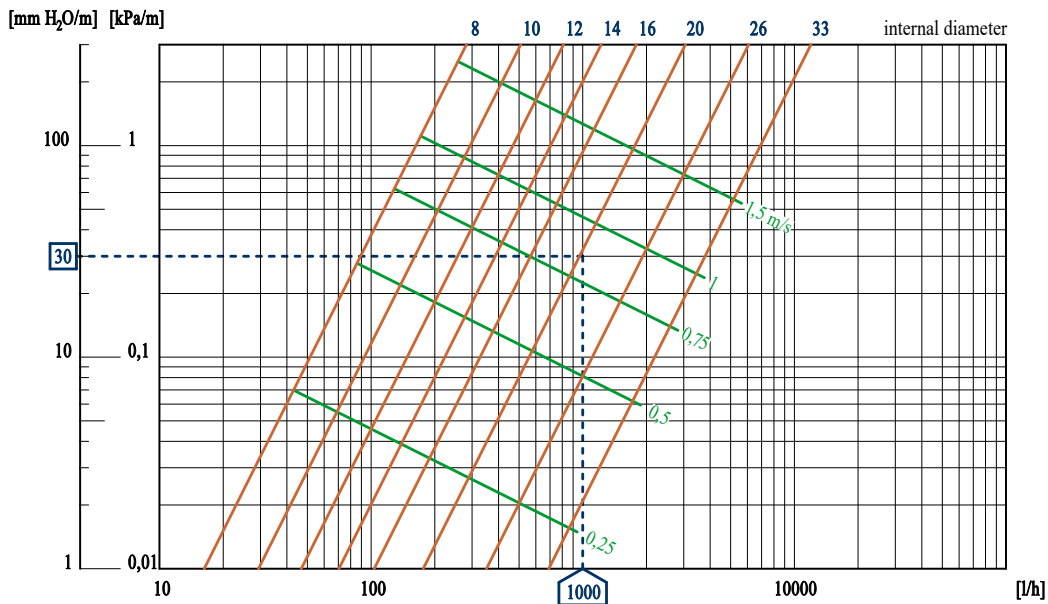
If for example we consider an installation of 22,5  $m^2$ . Therefore  $qt$  is:  $qt = 16 \text{ l/min} \cong 1000 \text{ kg/h}$ . Considering this datum the headlosses will be the following.

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



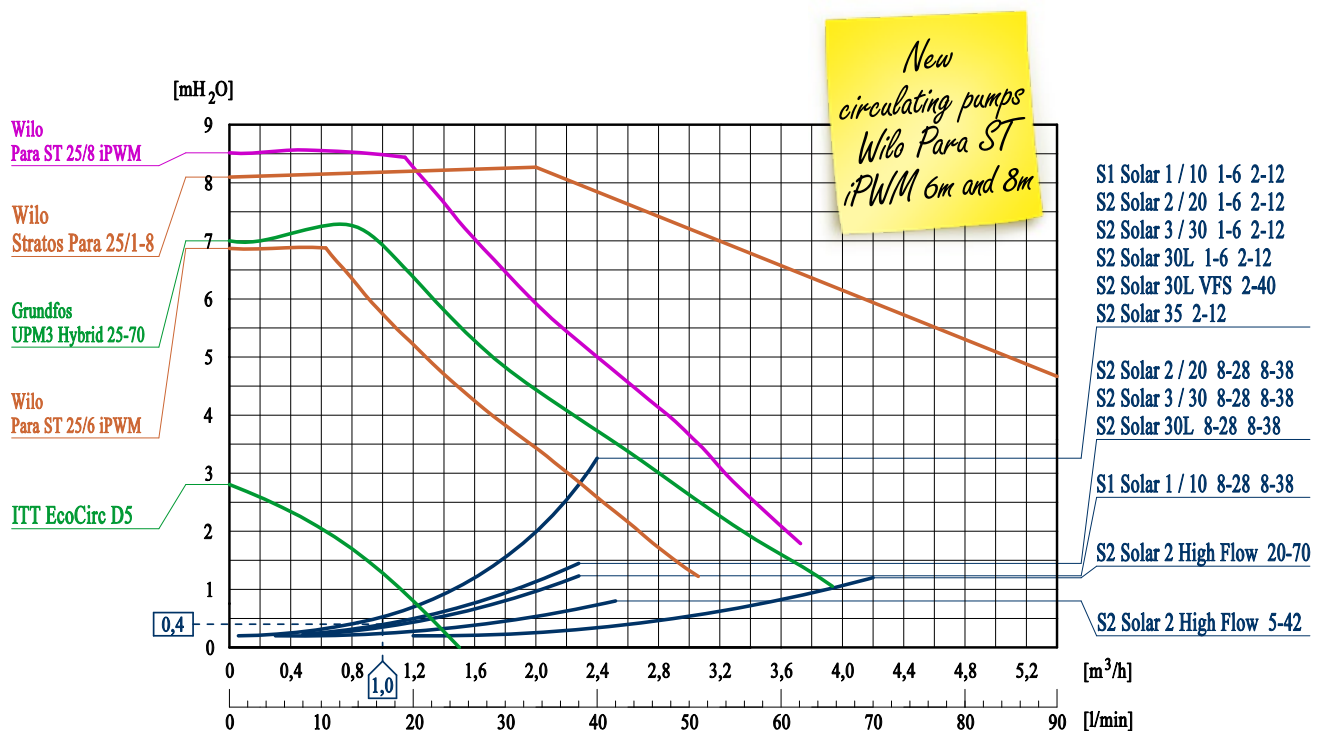
$$\Delta p_t = (40 \times 30) + 25\% = 1500 \text{ mm H}_2\text{O}$$

The total headloss up to here calculated brings to the following value:

$$\Delta p = \Delta p_s + \Delta p_{pc} + \Delta p_t = 200 + 1600 + 1500 = 3300 \text{ mm H}_2\text{O}$$

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  $\eta_m$  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  $\Delta T$  difference in the exchanger: the *high flow* installations are working with a maximum 10 K meanwhile in the *low flow* installations the  $\Delta T$  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  $\Delta T$  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



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## 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



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### 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



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### 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

Following specific laboratory tests, the mixing valve, art 779, has been verified to comply with D.M. 174/2004. The other articles of the same family of thermostatic mixing valves are similar to the verified model, having the same components and equal contact surface.



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## 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



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### 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.



**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

Code 3/4": 03789-1.7-S  
Code 3/4": 03789-2.4-S



## 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: DBOI02S/SET  
Code 3/4" x 1" Nut: DBOI03S/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



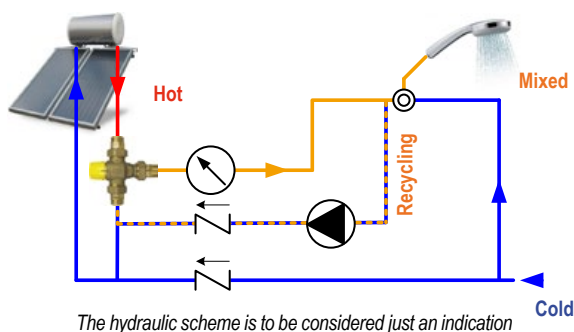
In compliance to the Italian Ministerial Decree N° 174/2004

Following specific laboratory tests, the diverting valve art 789, has been verified to comply with D.M. 174/2004. The other articles of the same family of thermostatic diverting valves are similar to the verified model, having the same components and equal contact surface.

## 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.



Knob: reference temperatures

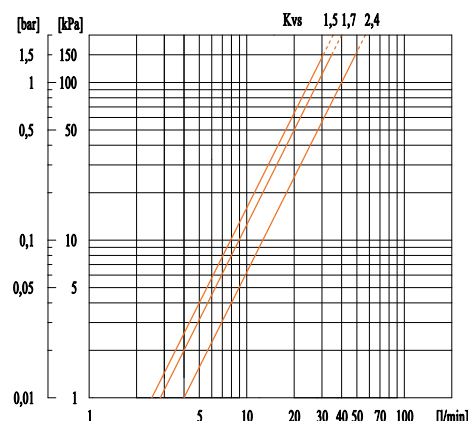
MIN	1	2	3	4	5	MAX
~25°C	30°C	40°C	49°C	57°C	65°C	~70°C

Not applicable for art. 776C

$T_H = 65\text{ }^\circ\text{C}$

$T_C = 15\text{ }^\circ\text{C}$

$P = 3\text{ bar}$

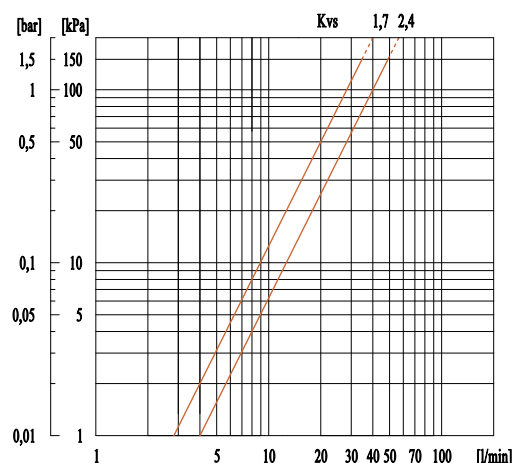
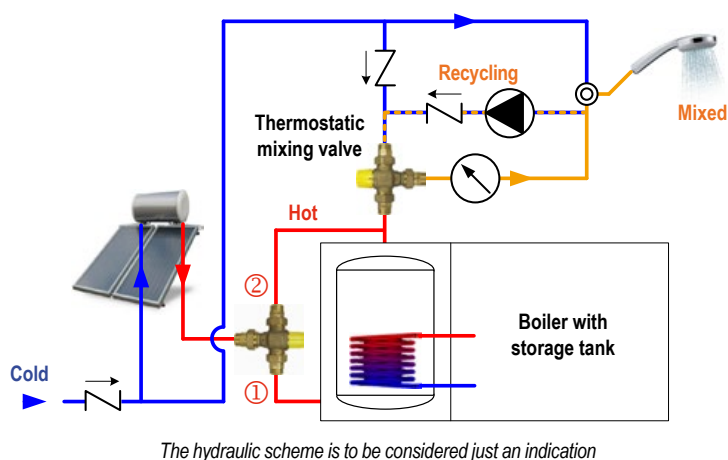


Max recommended flow rate for a constant flow within  $\pm 2\text{ }^\circ\text{C}$ .

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  $48\text{ }^\circ\text{C}$  (presetting shop temperature). On the contrary if, as it happens during the summer, the temperature is over  $48\text{ }^\circ\text{C}$ , 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.



**DANGER OF SCALDS:** Adjustment temperatures of the mixed water at the user more than  $55\text{ }^\circ\text{C}$  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 2014/68/EU 4.3

## 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.

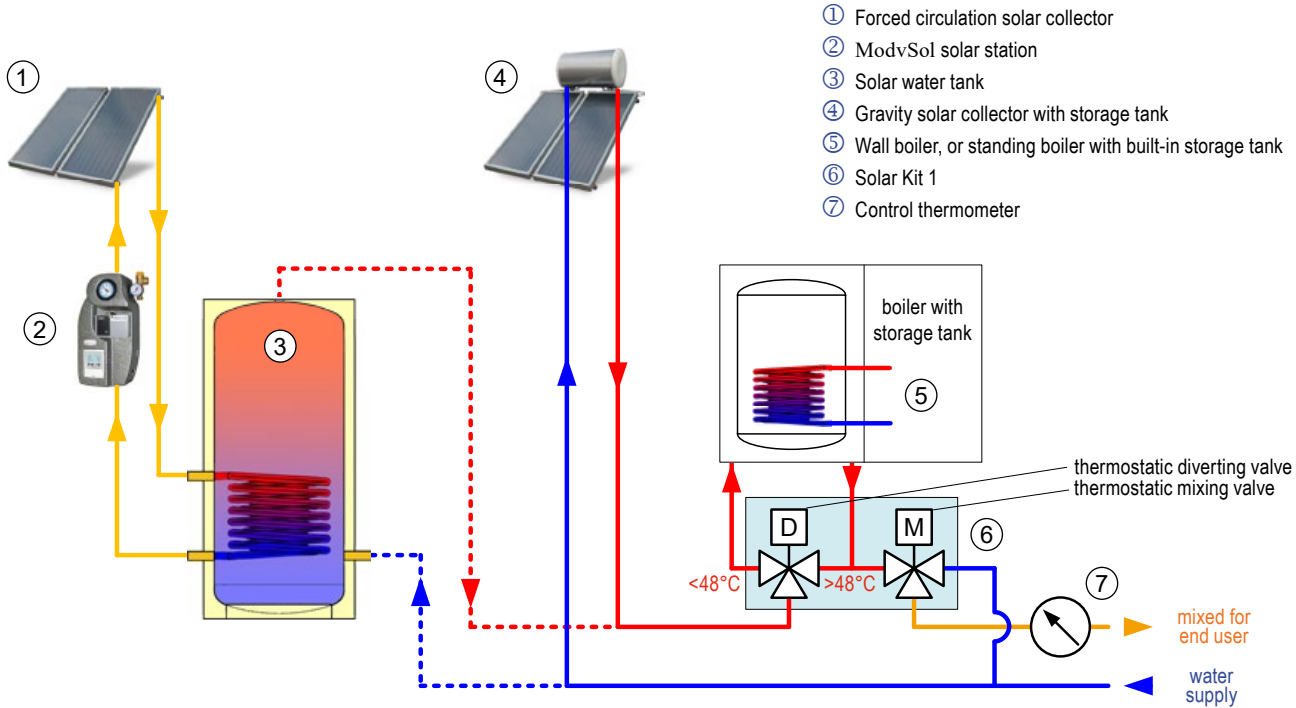
**Maximum static pressure 10 bar (PN 10); dynamic 5 bar.**  
**Maximum ratio between the pressures 2:1.**  
**Inlet maximum temperature: constant temperature 100°C;**  
**(short time temperature: 120°C for 20 s).**  
**Temperature adjustment field: 30÷65°C. Accuracy ± 2°C.**

**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.

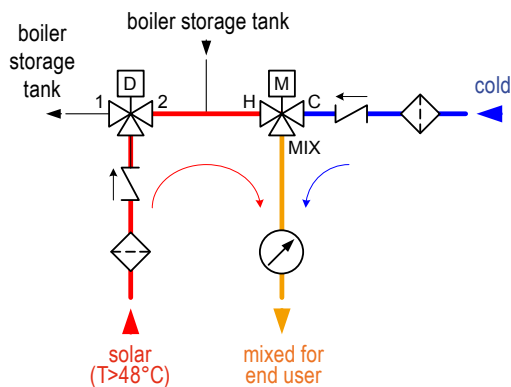
The kit, supplied in a suitable and smart EPP insulating box, works in two ways:

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.

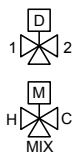
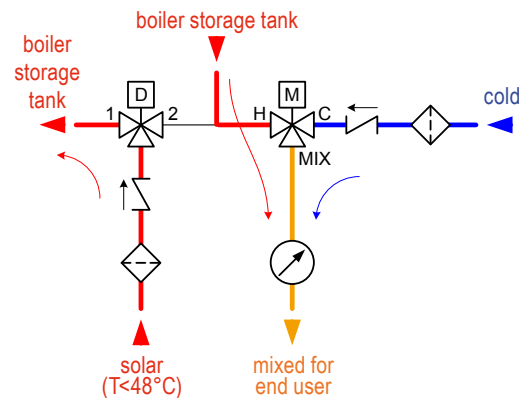
Whereas, as it happens in winter, temperature of water in solar water tank is low (less than 48°C; note: diverting valve is pre-setted on shop to divert from 48°C), diverting valve proportionally diverts pre-heated fluid towards the boiler storage tank. In this case the solar energy is full exploited 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.



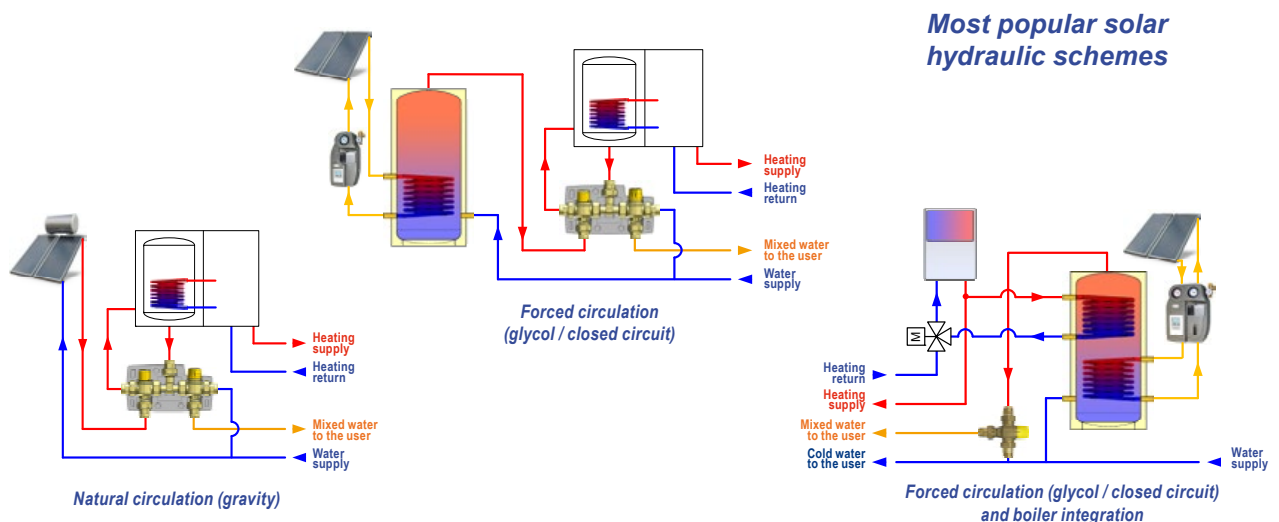
**Solar check valve**  
 it is built-in in the 3/4" male fitting



**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)

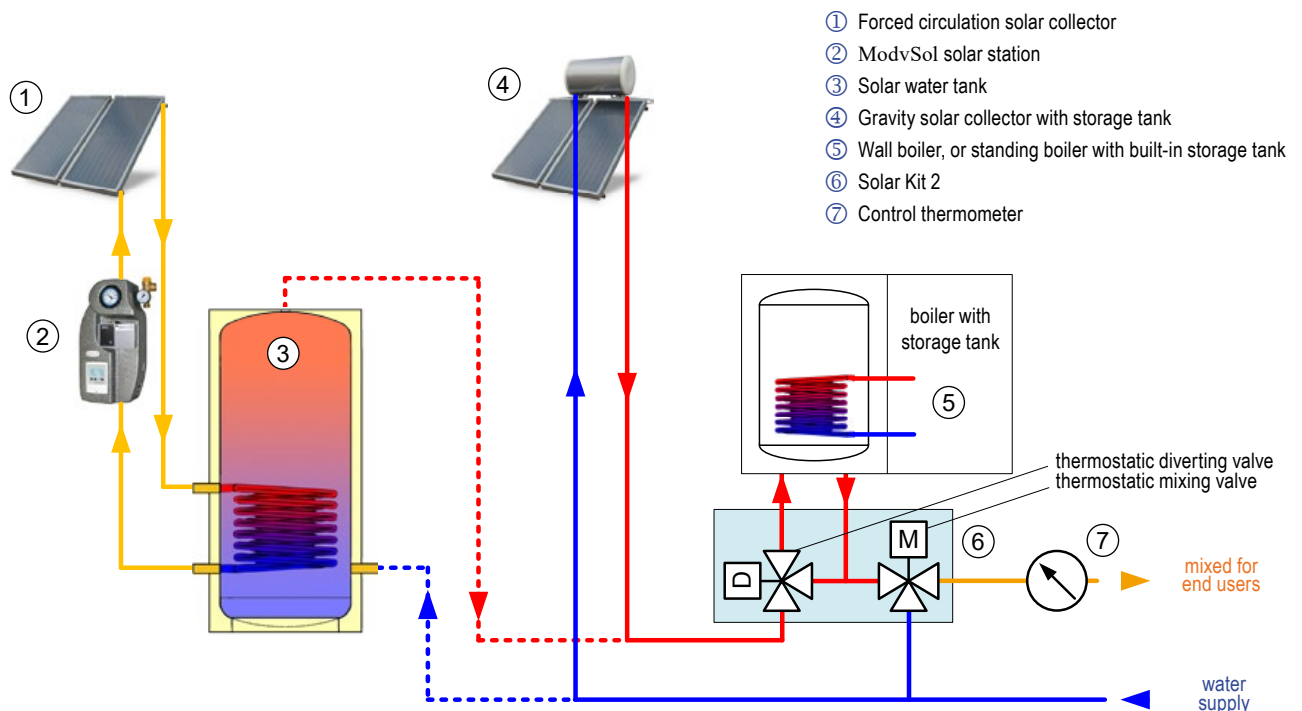
**Diverting temperature:**

Adjustable from 38°C up to 54°C

In compliance to the Italian Ministerial Decree N° 174/2004

PED 2014/68/EU 4.3

### 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:

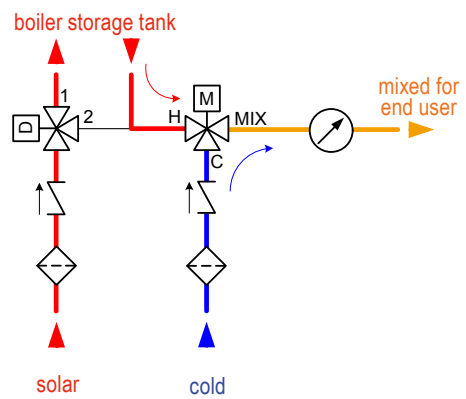
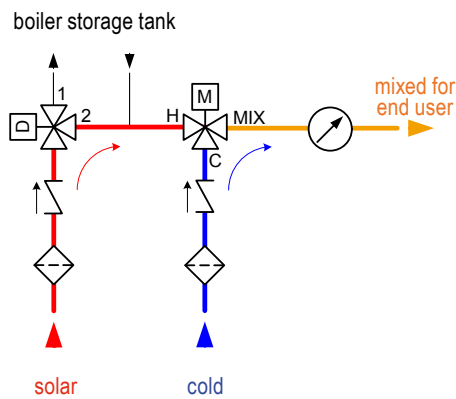
In case temperature of water coming from solar storage tank, either a gravity or a forced loop with glycol, is high enough, for example in summer, the first device of the kit, the adjustable thermostatic diverting valve, at the selected temperature, diverts the fluid towards the thermostatic mixing valve, 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.



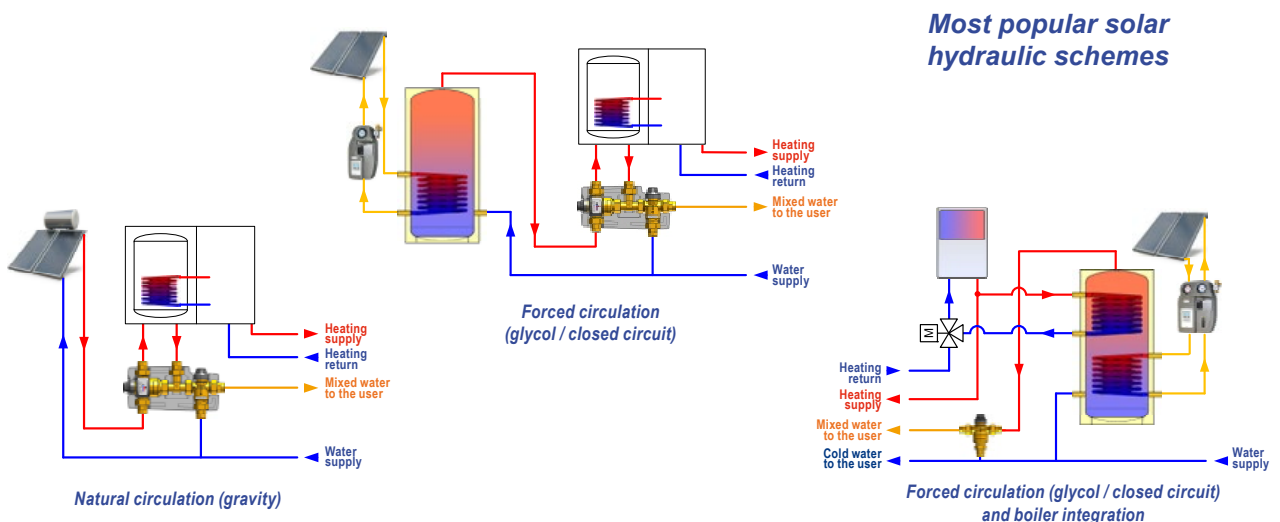
**Solar check valve**  
it is built-in in the 3/4" male fitting



**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.).



# MODVLVS S2 Heat Exchange Solar Unit



CE

## S2 Exchange

HEAT EXCHANGE SOLAR UNIT

Code: see below table

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.

Asymmetric 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.

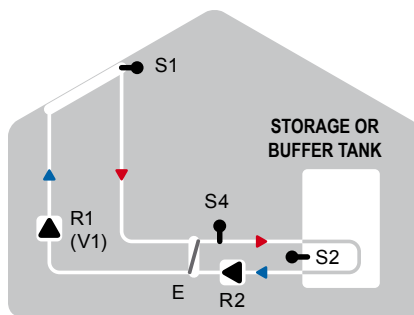
It is also possible to connect several fittings to the "T" connectors; a ø6 mm sensor holder pit is provided on the supply way of the solar circuit (primary).

**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).**

Better performances and more possibilities of use



### Standard scheme

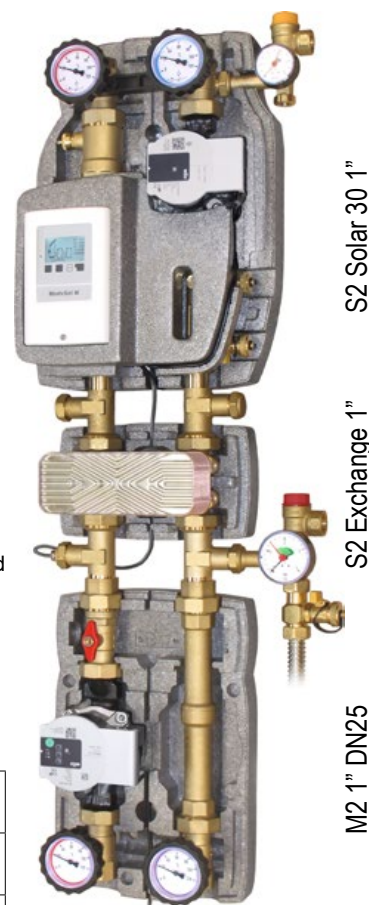
- ✓ S1: Collector temperature sensor.
- ✓ S2: Water storage temperature sensor.
- ✓ S4: Temperature sensor on supply way to storage.
- ✓ R1(V1): Solar high efficiency circulating pump (primary). The flow is adjusted and setted by the flowmeter.
- ✓ R2: Variable speed high efficiency circulating pump for the storage tank (secondary).
- ✓ E: Plates heat exchanger.

### Field of utilization

For power up to:	3,5 kW	5 kW	10 kW	20 kW
Collector surface (max.):	7,5 m <sup>2</sup>	10 m <sup>2</sup>	20 m <sup>2</sup>	40 m <sup>2</sup>
Solar circuit flow (max.): "High Flow" technology	5 l/min	7 l/min	15 l/min	28 l/min
Solar side head loss (primary) * :	0,1 mH <sub>2</sub> O	0,2 mH <sub>2</sub> O	0,3 mH <sub>2</sub> O	0,5 mH <sub>2</sub> O
Secondary side flow:	400 l/h	690 l/h	1.460 l/h	2.720 l/h
Secondary side head loss * :	0,4 mH <sub>2</sub> O	1,2 mH <sub>2</sub> O	1,6 mH <sub>2</sub> O	2,3 mH <sub>2</sub> O
Code:	304646-5KW	304646-5KW	304646-10KW	304646-20KW

\* : Head loss of the heat exchanger alone at the maximum flow, with reference to the corresponding loop.

**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 ModvLVS catalogue, in conformity with the "High Flow" technology 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.



S2 Solar 30 1"

S2 Exchange 1"

M2 1" DN25

Standard installation operated by the ModvSol M solar controller





## Security unit

Security unit for the storage tank circuit (secondary) provided with CE and TÜV certified 3 bar security valve and a manometer  $\varnothing 50$  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**



## 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**



# MODVSOL SOLO up to 70 m<sup>2</sup>



CE



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 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 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:

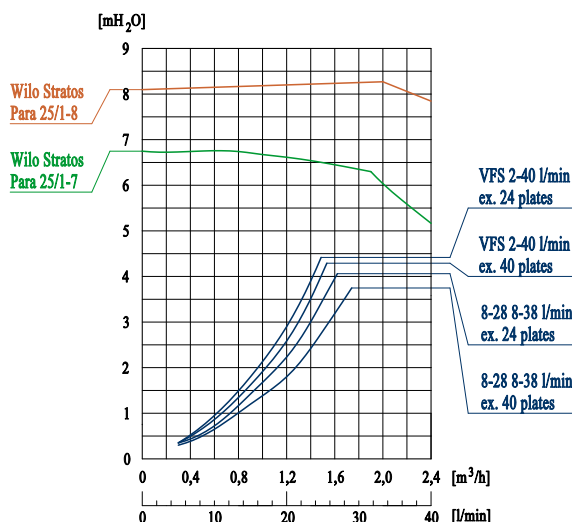
For power up to 35 kW. One buffer storage tank.  
Kvs value: see the diagram here below.



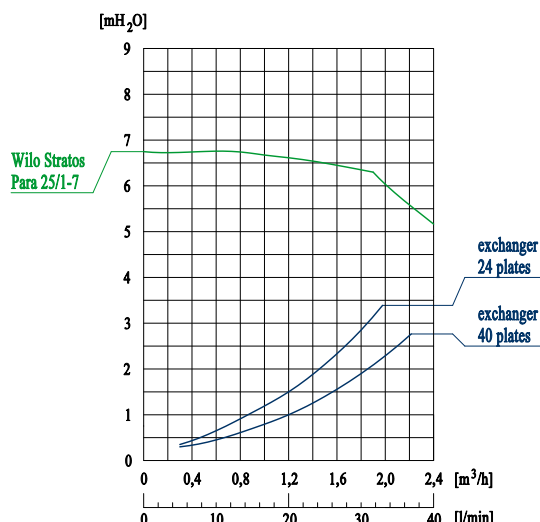
A special ball valves kit, available upon request (to be ordered) completes the unit.

Code: 031200SET

Typical curves of solar circuit



Typical curves of secondary circuit



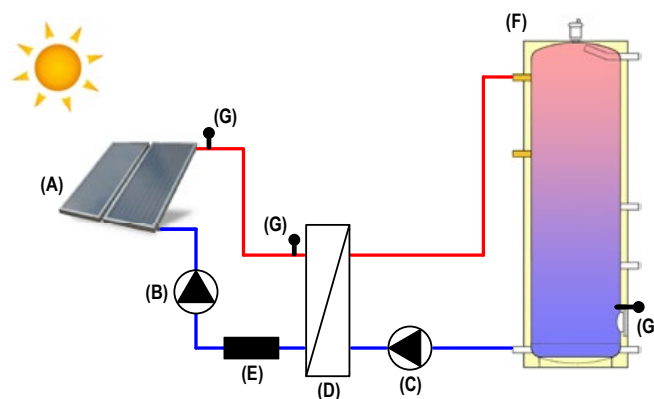
# MODVSOL SOLO up to 70 m<sup>2</sup>

## ModvSol Solo 1

**Heat supply pump unit to load one buffer tank.  
Suitable for a solar collectors surface up to 70 m<sup>2</sup>.**

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	$\Delta t$	Primary circuit circulating pump	Secondary circuit circulating pump
<b>Solo 1</b>					
031200-24-(28/40)-LT	30 m <sup>2</sup>	15 kW	10 K	Wilo Stratos Para 25/1-7	Wilo Stratos Para 25/1-7
031200-40-(38/40)-LT	46 m <sup>2</sup>	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	$\Delta t$	Primary circuit circulating pump	Secondary circuit circulating pump
<b>Solo 1</b>					
031200-24-(28/40)-LT	50 m <sup>2</sup>	25 kW	25 K	Wilo Stratos Para 25/1-7	Wilo Stratos Para 25/1-7
031200-40-(38/40)-LT	70 m <sup>2</sup>	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.



CE



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:

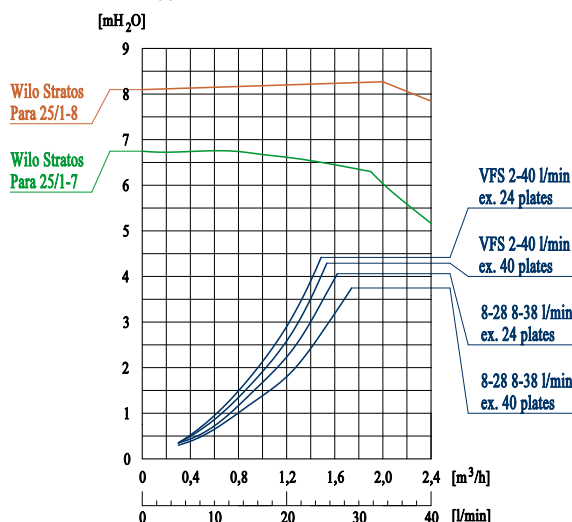
For power up to 35 kW. One buffer storage tank for HDW.  
Kvs value: see the diagram here below.



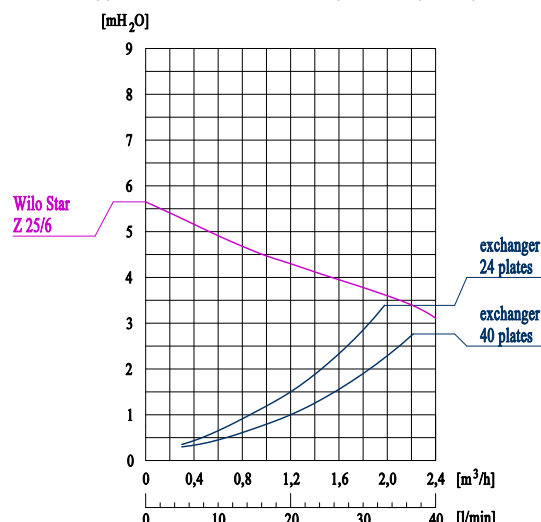
A special ball valves kit, available upon request (to be ordered) completes the unit.

Code: 031200SET

Typical curves of solar circuit



Typical curves of secondary circuit (HDW)



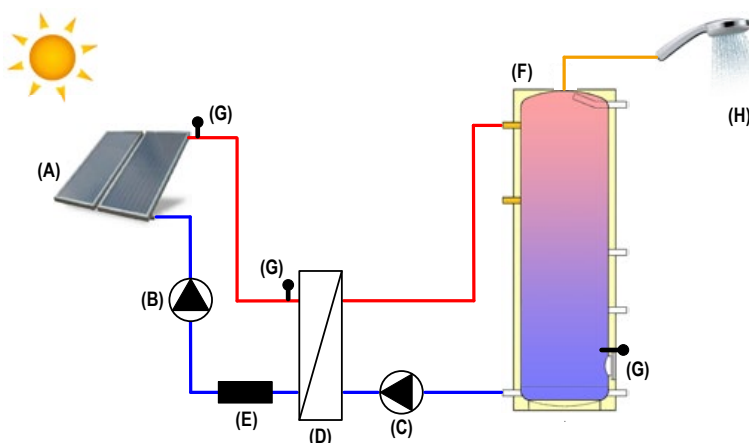


# MODVSOL SOLO up to 70 m<sup>2</sup>

## 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 m<sup>2</sup>.**

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	$\Delta t$	Primary circuit circulating pump	Secondary circuit circulating pump
<b>Solo 1 ACS</b>					
031230-24-(28/40)-LT	30 m <sup>2</sup>	15 kW	10 K	Wilco Stratos Para 25/1-7	Wilco Star Z 25/6
031230-40-(38/40)-LT	46 m <sup>2</sup>	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	$\Delta t$	Primary circuit circulating pump	Secondary circuit circulating pump
<b>Solo 1 ACS</b>					
031230-24-(28/40)-LT	50 m <sup>2</sup>	25 kW	25 K	Wilco Stratos Para 25/1-7	Wilco Star Z 25/6
031230-40-(38/40)-LT	70 m <sup>2</sup>	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.

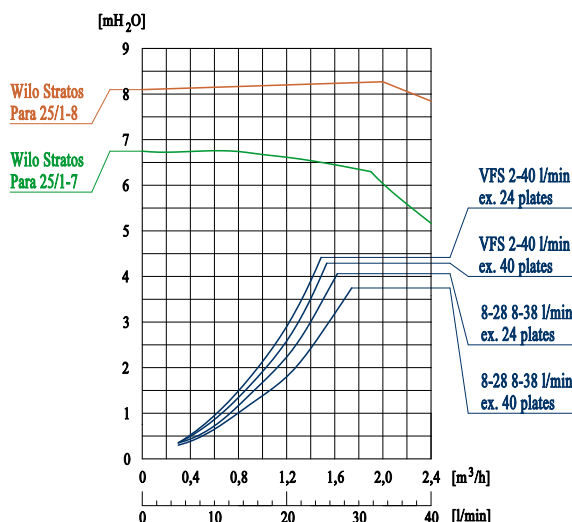
Kvs value: see the diagram here below.



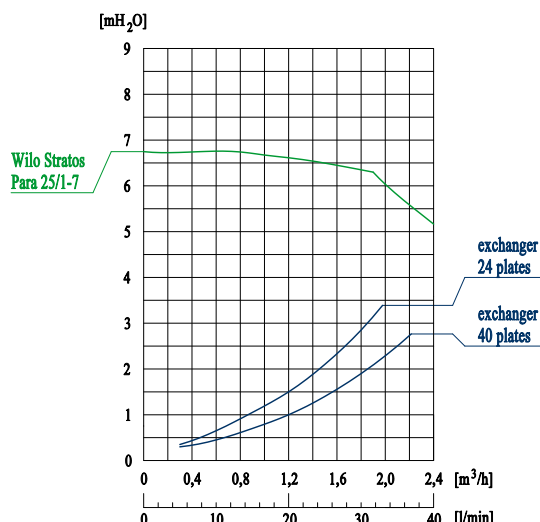
A special ball valves kit, available upon request (to be ordered) completes the unit.

Code: 031250SET

Typical curves of solar circuit



Typical curves of secondary circuit

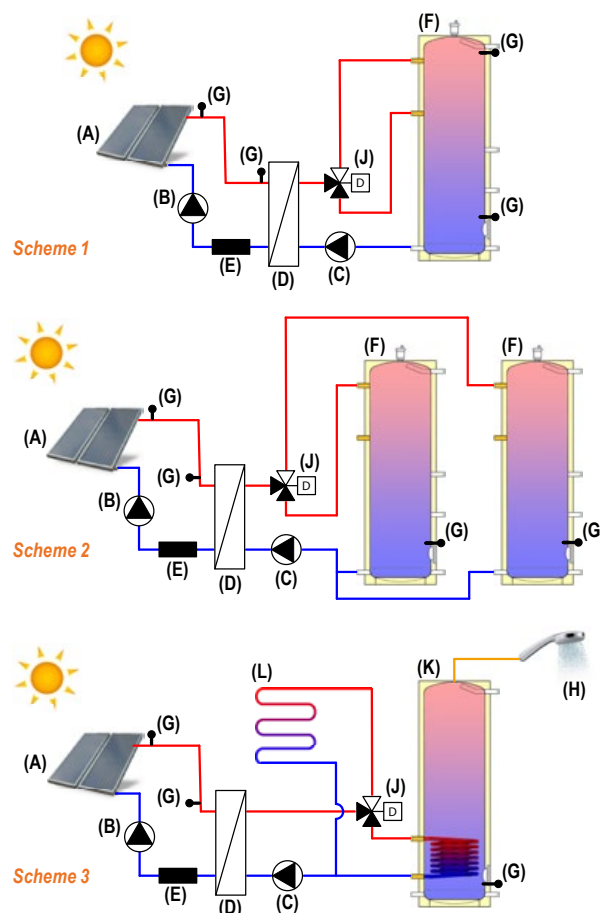


## ModvSol Solo 2

**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 m<sup>2</sup>.**

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	$\Delta t$	Primary circuit circulating pump	Secondary circuit circulating pump
<b>Solo 2</b>					
031250-24-(28/40)-LT	24 m <sup>2</sup>	12 kW	10 K	Wilco Stratos Para 1/7	Wilco Stratos Para 1/7
031250-40-(38/40)-LT	30 m <sup>2</sup>	15 kW	10 K	Wilco Stratos Para 1/8	Wilco Stratos Para 1/7

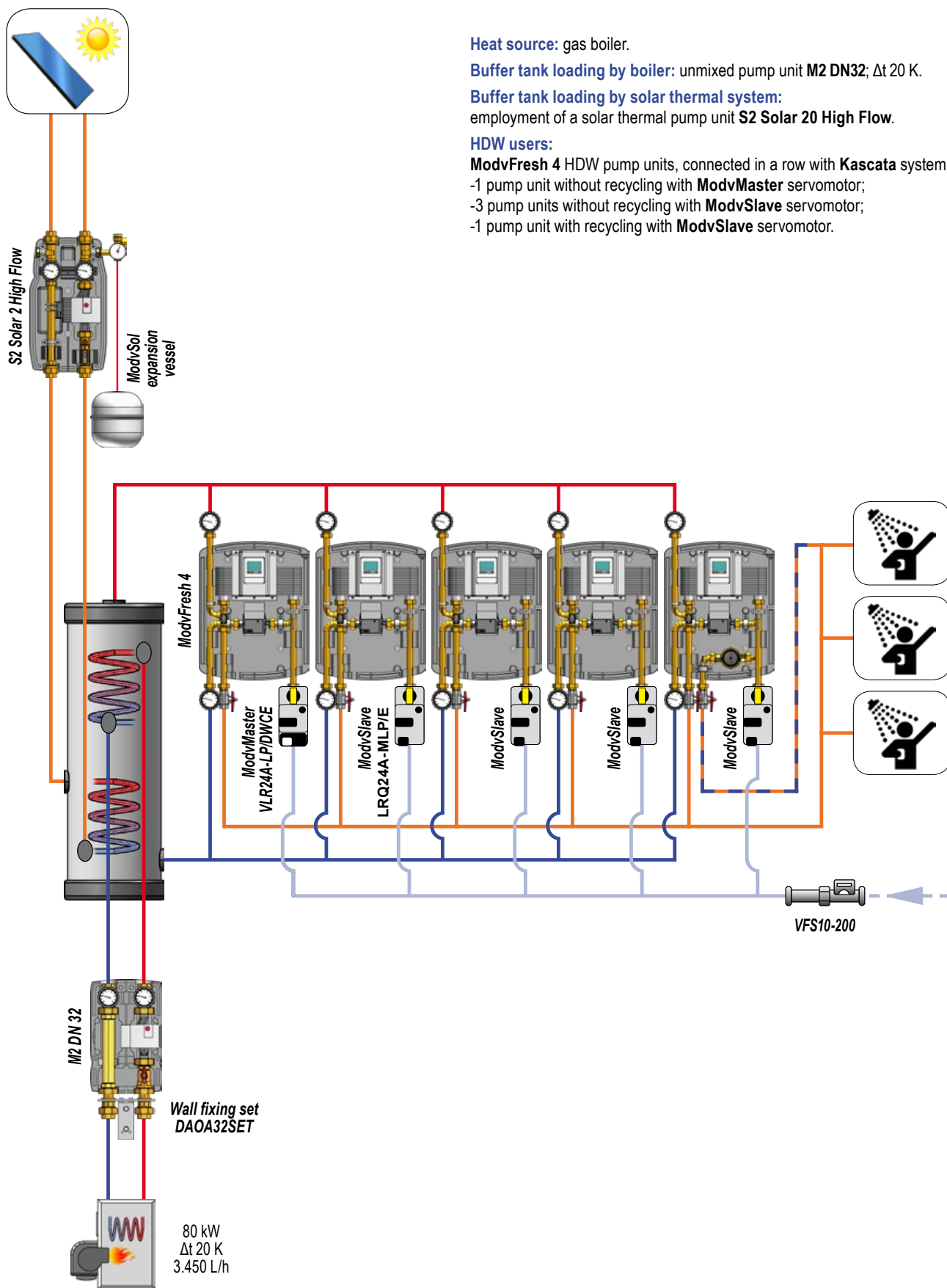
### Solo 2 Low Flow

Article code	Tapping surface of solar collectors	Delivered thermic power	$\Delta t$	Primary circuit circulating pump	Secondary circuit circulating pump
<b>Solo 2</b>					
031250-24-(28/40)-LT	50 m <sup>2</sup>	25 kW	25 K	Wilco Stratos Para 1/7	Wilco Stratos Para 1/7
031250-40-(38/40)-LT	70 m <sup>2</sup>	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

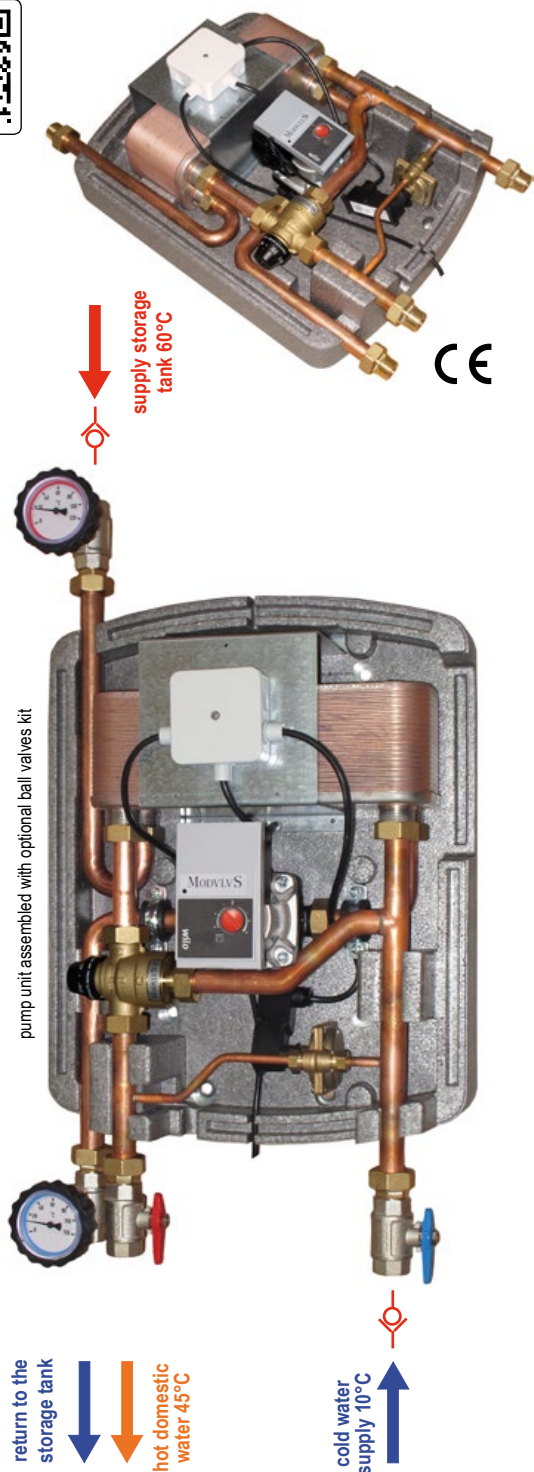


Control of HDW





Thermostatic Control



## 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:

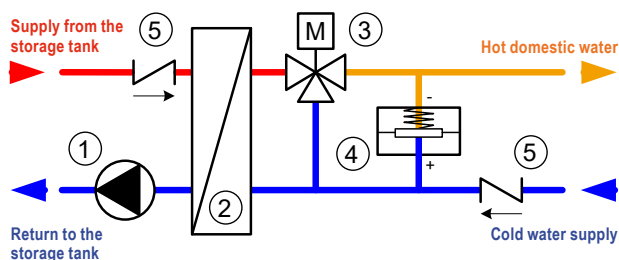
- ✓ Very low headlosses. The circulating pump starts to run at flows less than 1 l/min thanks to a differential manostat;
- ✓ No electric wirings are requested: the unit is pre-wired and shop tested;
- ✓ Easy temperature adjustment, by means of the graduated knob of the MultiMix thermostatic mixer;
- ✓ 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 <sub>2</sub> O
Headloss in the secondary circuit at the flow of 40 l/min (model 100 kW):	9 mH <sub>2</sub> O
<b>Minimum diameter size of the pipes: DN20 (Cu 22x1).</b>	

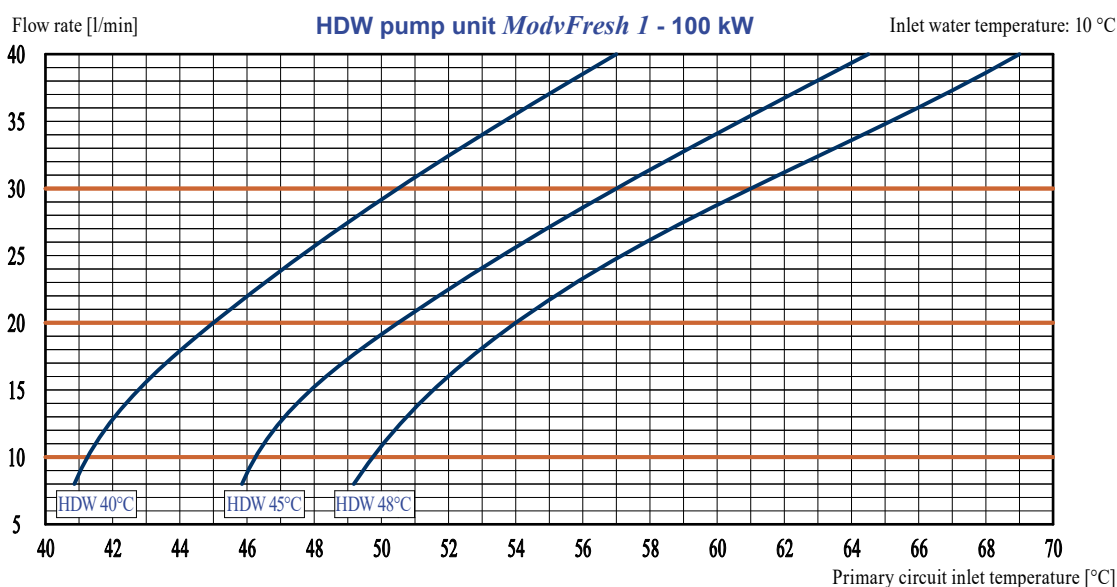
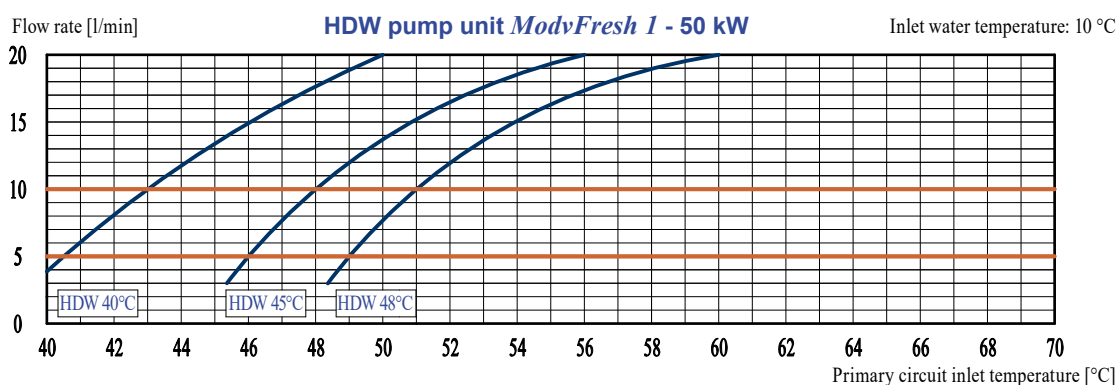
## FIELD OF UTILIZATION *ModvFresh 1*:

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.modvivs.com](http://www.modvivs.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](http://www.brvi.it).

**DANGER OF SCALDS**

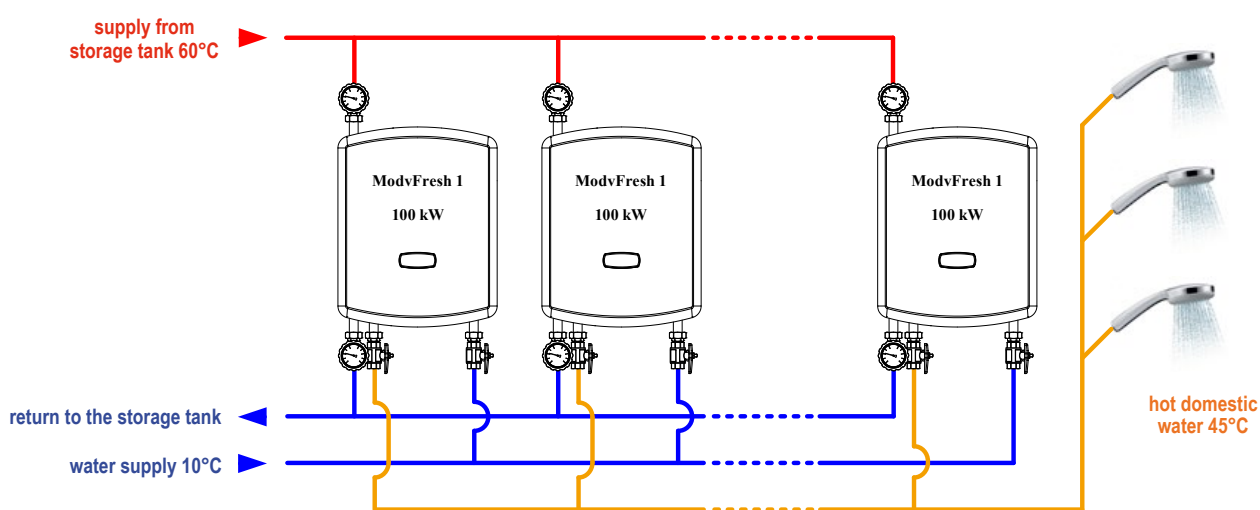
To avoid scalds to the users, the temperature of hot water supplied must never be more than 60°C. This temperature limits is preselected into the controller, anyway it can be reduced.

## 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:

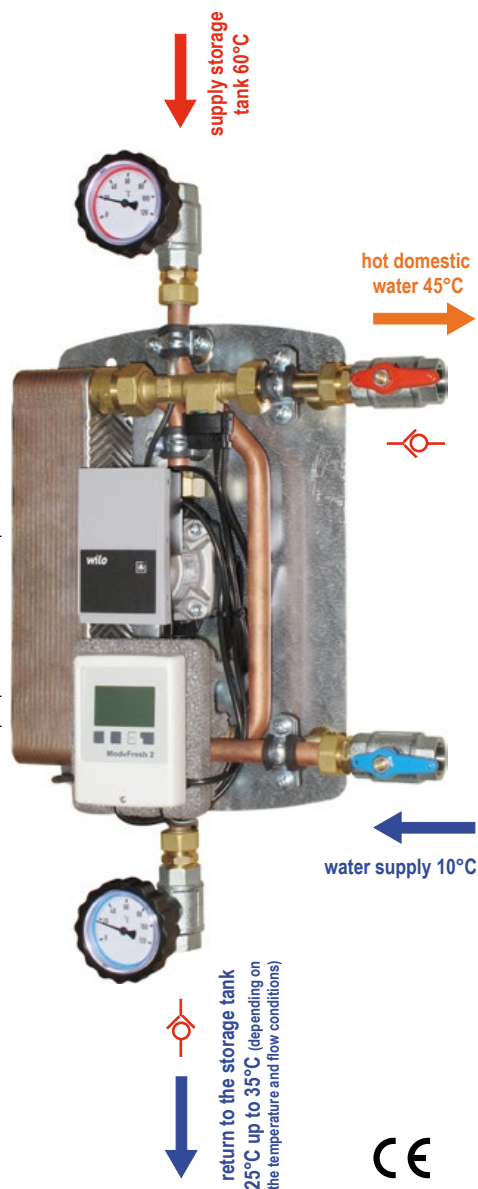
For a maximum nominal power of 500 kW and flow up to 200 l/min.  
Nominal supply temperature of the storage tank: 60 °C.  
Nominal temperature of the water supply: 10 °C.

Nominal temperature of HDW production 45 °C, adjustable up to 65 °C.  
Temperature stability  $\pm 4$  °C.  
Return temperature to the storage tank: see "ModvFresh 1"



Electronic Control

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": 031300-CIRC



**On demand,** a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.



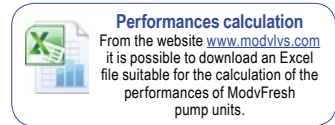
## Technical features of ModvFresh 2

Maximum allowed pressure (without water hammer):	<b>6 bar</b>
Working temperature:	<b>2 ÷ 95°C</b>
Headloss in the secondary circuit at the flow of 20 l/min (50 kW model):	<b>3 mH<sub>2</sub>O</b>
Headloss in the secondary circuit at the flow of 30 l/min (70 kW model):	<b>6,5 mH<sub>2</sub>O</b>

Connections size: min. DN20 (Cu 22x1) near the cylinder.

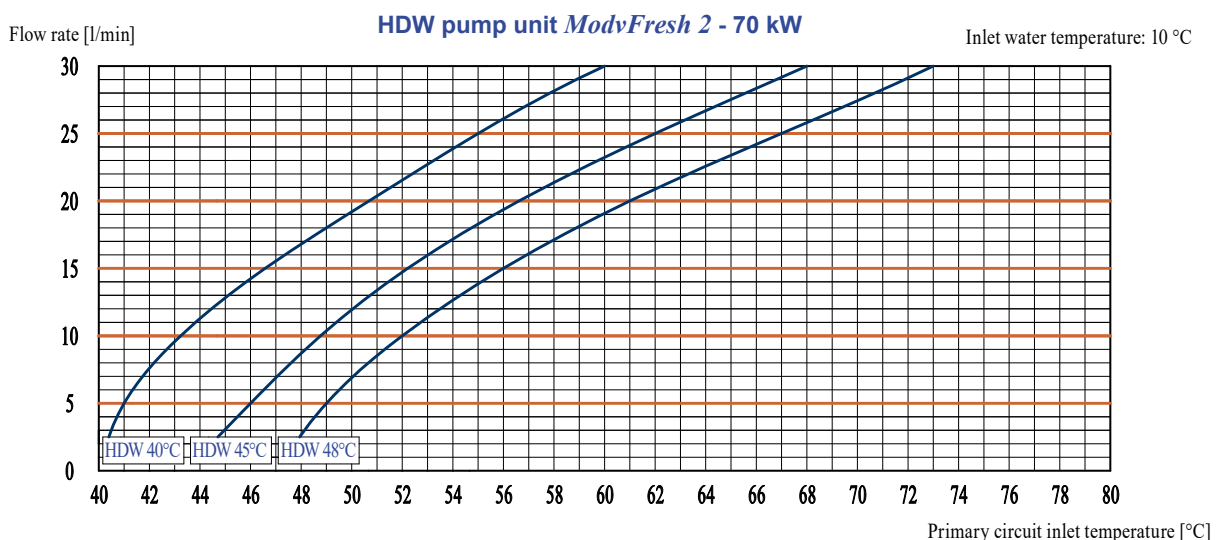
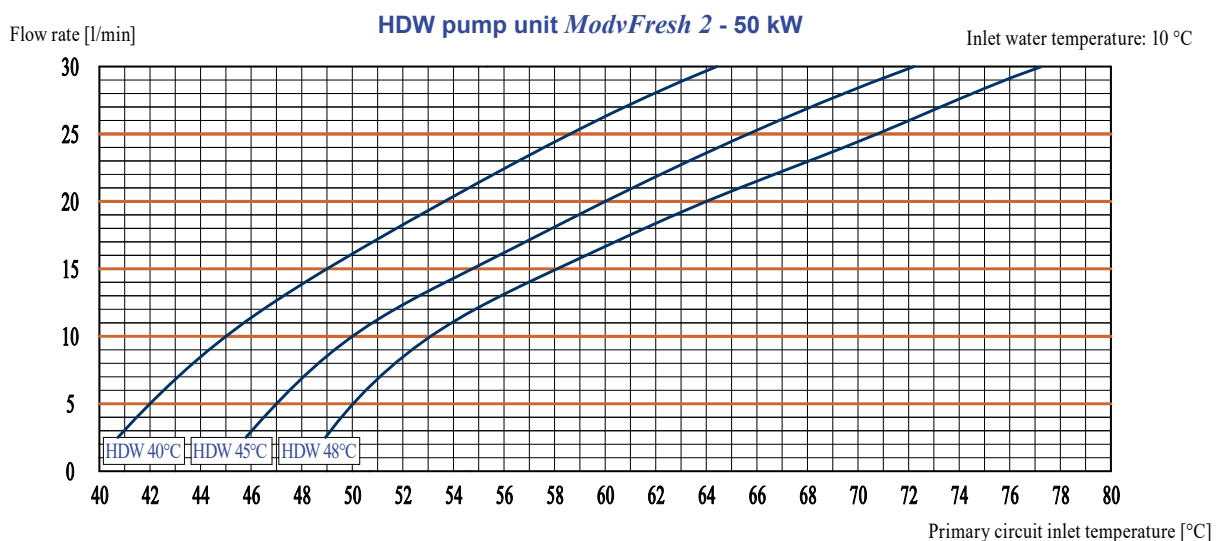
## FIELD OF UTILIZATION ModvFresh 2:

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.briv.it](http://www.briv.it).

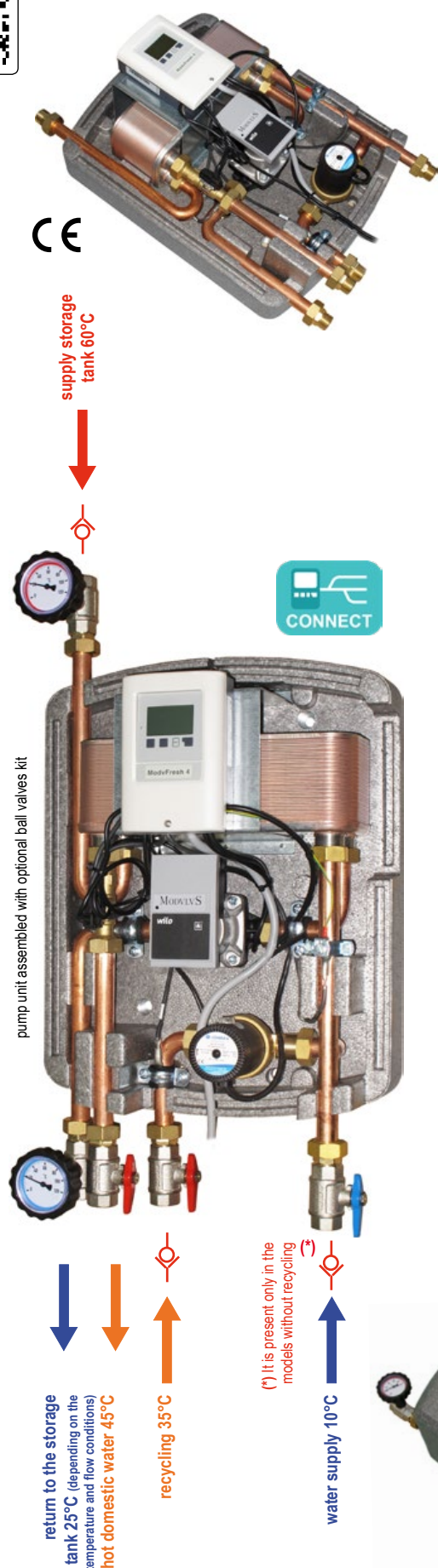


To avoid scalds to the users, the temperature of hot water supplied must never be more than 60°C. This temperature limits is preselected into the controller, anyway it can be reduced.



High efficiency and additional functions

Control of HDW



## 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  $\Delta t$ );
- ✓ 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

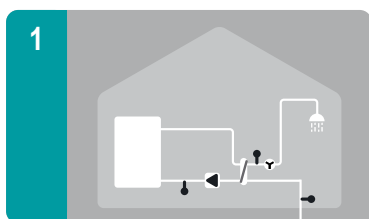
For units with recycling:

Code 3/4": 031010SET

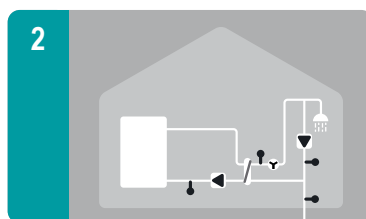


**On demand,** a test report of the VFS is available. It shows the result of the tests made directly in the Grundfos Lab.

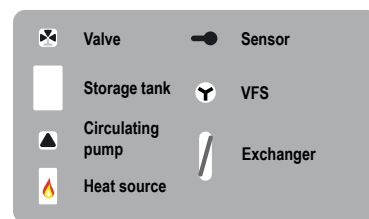
## ModvFresh 4 different hydraulic schemes



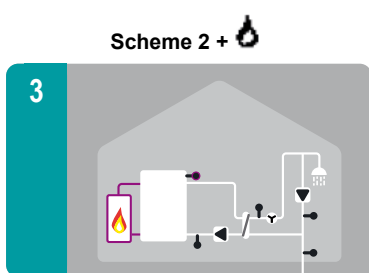
Delivery of HDW



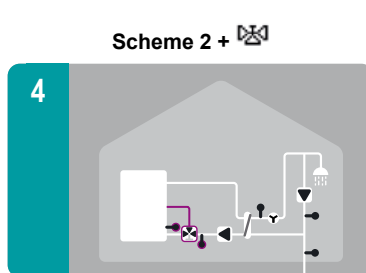
Delivery of HDW with recycling



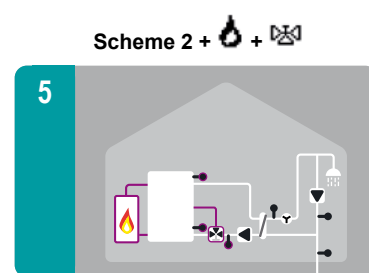
Preset schemes of **ModvFresh 4** controller can be enriched in an easy and flexible way by two additional functions: additional heating with thermostat function and/or control of return temperature to storage tank by a diverting valve (optional). To make it easy, hereafter scheme shows the model with 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

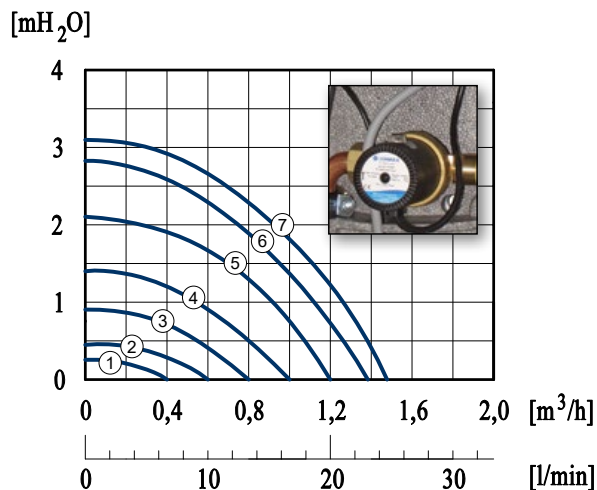
### Sensor box

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

Control of HDW



### 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 mH <sub>2</sub> O
Headloss in the secondary circuit at the flow of 40 l/min (ModvFresh 3 and 4; model 100 kW):	5 mH <sub>2</sub> O
Headloss in the recycling circuit (at the flow of 5 l/min):	0,3 mH <sub>2</sub> O

Min. diameter size of the pipes: DN20 (Cu 22x1); DN15 for the recycling line.

## FIELD OF UTILIZATION ModvFresh 3 AND 4:

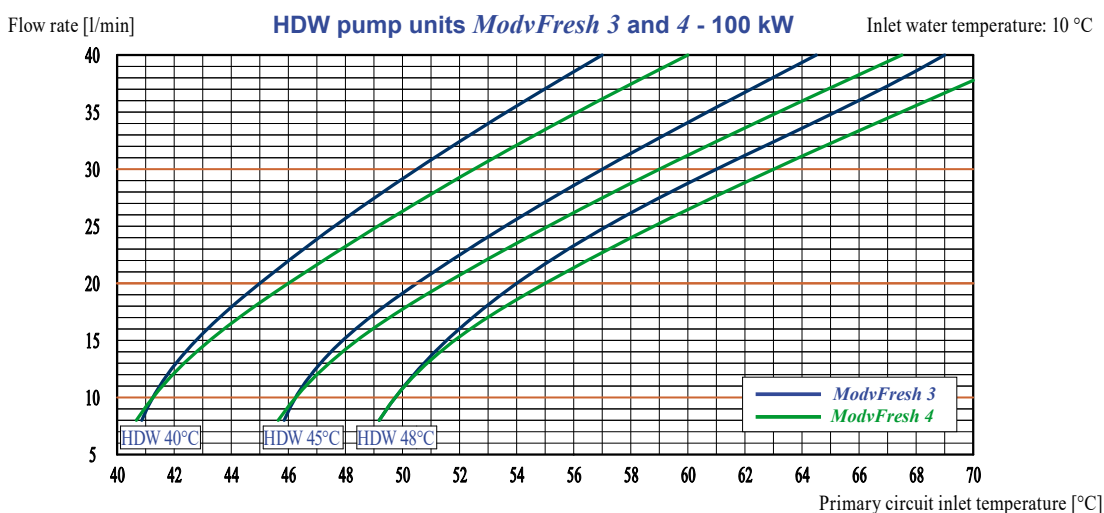
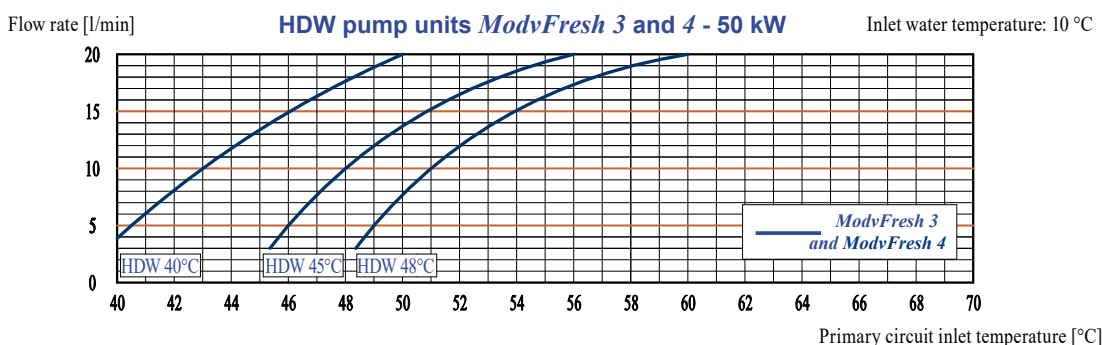
For a maximum power of 100 kW and flow up to 40 l/min.  
 Nominal supply temperature of the storage tank: 60°C.  
 Nominal temperature of the water supply: 10°C.  
 Nominal temperature of HDW: 45°C, adjustable from 30°C to 70°C.  
 Recycling line temperature adjustable from 10°C up to 40°C.



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.brvi.it](http://www.brvi.it).**

**Performances calculation**  
 From the website [www.modvvs.com](http://www.modvvs.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.





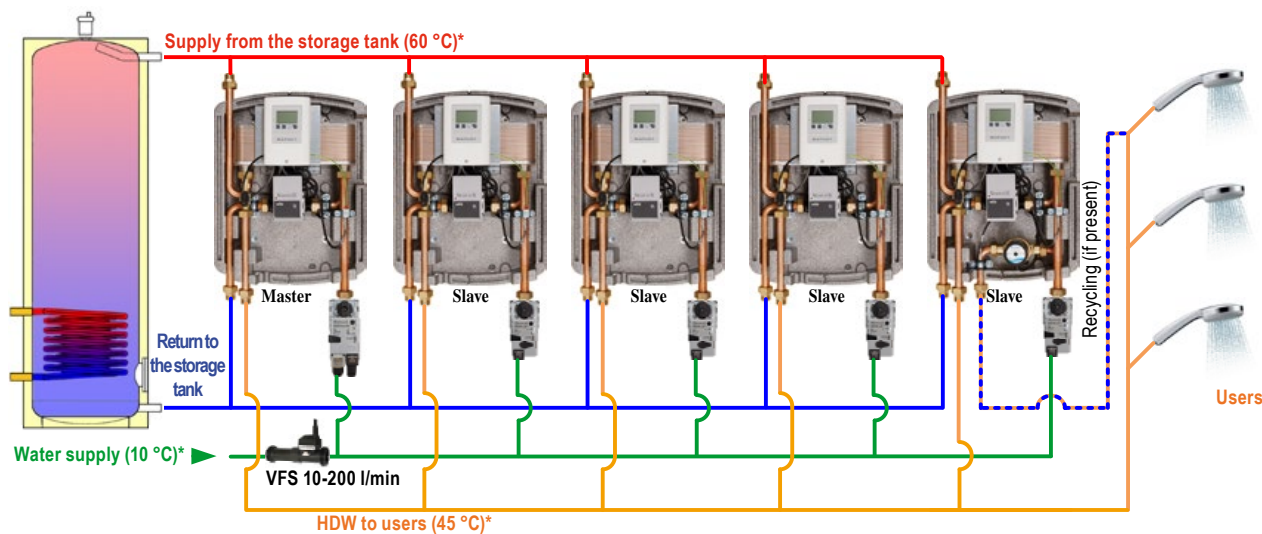
## ModvFresh Kascata

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

### **Signal converter for VFS sensor**

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.

<b>HDW MODvFRESH KASCATA system up to 500 nominal kW</b>					
<b>Components list</b>	<b>Codes</b>	<b>Units necessary according to the requested powers and flows</b>			
		<b>200 kW 80 l/min</b>	<b>300 kW 120 l/min</b>	<b>400 kW 160 l/min</b>	<b>500 kW 200 l/min</b>
<b>Standard ModvFresh units</b>	<b>031000-100-40 (ModvFresh 3) 031400-100-40 (ModvFresh 4)</b>	<b>2 pcs</b>	<b>3 pcs</b>	<b>4 pcs</b>	<b>5 pcs</b>
<b>ModvMaster</b>	<b>VLR24A-LP/DWCE</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>
<b>ModvSlave</b>	<b>LRQ24A-MPL/E</b>	<b>1 pc</b>	<b>2 pcs</b>	<b>3 pcs</b>	<b>4 pcs</b>
<b>Ball valves</b>	<b>R415D</b>	<b>2 pcs</b>	<b>3 pcs</b>	<b>4 pcs</b>	<b>5 pcs</b>
<b>VFS sensor</b>	<b>VFS10-200</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>
<b>Signal converter for VFS</b>	<b>SI010</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>
<b>Kascata with recycling (*)</b>	<b>031010-100-40 (ModvFresh 3) 031415-100-40 (ModvFresh 4)</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>
<b>Servomotors power supply (Feeder) 24V AC/DC, 100VA, 50 W</b>	<b>Feeder not included in the supply</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>	<b>1 pc</b>


(\*) 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 4** standard units (Code 031400-100-40) and one **ModvFresh 4** unit with recycling (Code 031415-100-40). 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.



*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**

<b>Minimum pipings diameters</b>		
<b>No. of MODvFRESH pump units, 100 kW</b>	<b>Installation pipings [mm]</b>	<b>Recycling line pipings (if present)</b>
<b>2 pcs</b>	<b>DN25 (Cu 28x1,5)</b>	<b>DN15</b>
<b>3 pcs</b>	<b>DN32 (Cu 35x1,5)</b>	<b>DN15</b>
<b>4 pcs</b>	<b>DN32 (Cu 35x1,5)</b>	<b>DN20</b>
<b>5 pcs</b>	<b>DN40 (Cu 42x1,5)</b>	<b>DN20</b>



*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 instal a security anti-scald device in the outlets considered dangerous.*

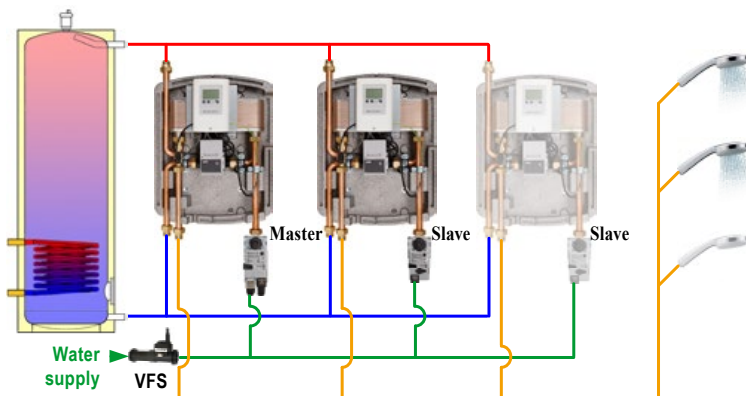
**DANGER SCALDS**

## 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.

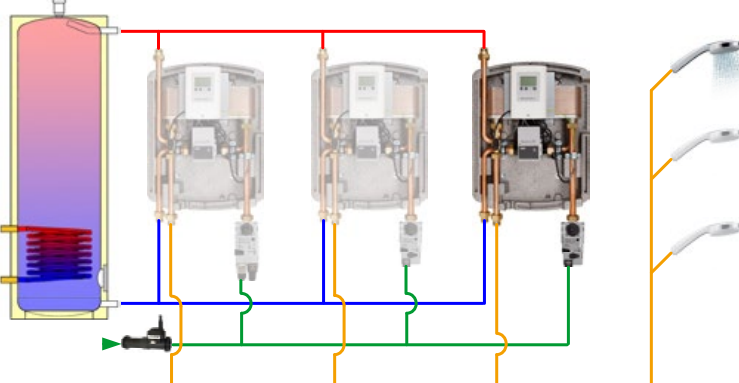


### Stop of the installation and routine function

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.

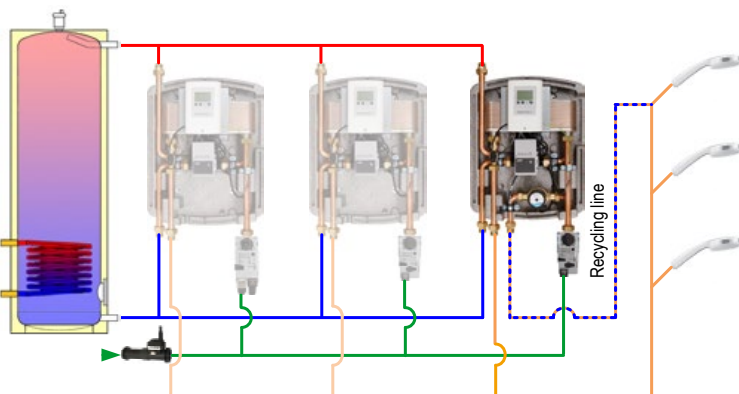
**The importance of the routine function is fundamental, in fact it allows a balanced load on all the units of the system.**



### 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.







HDW recycling kit



CE

PED 2014/68/EU 4.3

For instantaneous storage tank with coils

## 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)

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:

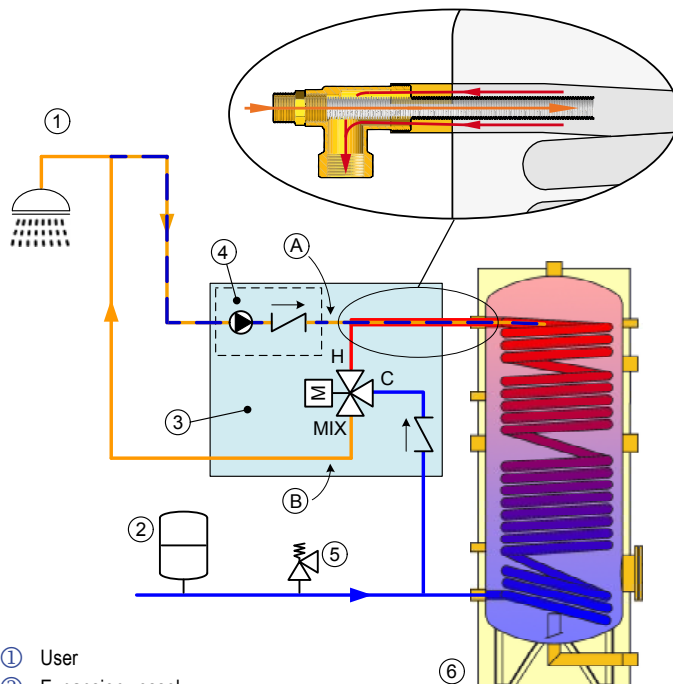
2.5 = Maximum Kvs 2,7; up to 55 l/min (1,5 bar).  
 4.0 = Maximum Kvs 4,0; up to 82 l/min (1,5 bar).



#### Available circulating pumps:

With temperature sensor (R)  
 With temperature sensor and timer (RU)

### Hydraulic scheme

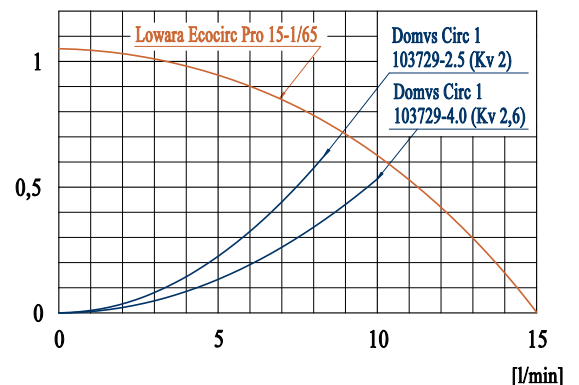


- ① User
- ② Expansion vessel
- ③ DomvS Circ 1
- ④ Circulating pump and check valve (included only in the models R and RU)
- ⑤ Security valve
- ⑥ Storage tank
- A and B Measuring points to determine the headlosses

### 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.

[mH<sub>2</sub>O]



### 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.



CE

PED 2014/68/EU 4.3

For storage tank



## DomvS Circ 2

HOT DOMESTIC WATER RECYLING KIT FOR STORAGE TANK

Code: 203726-4.0-(R/RU)

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:

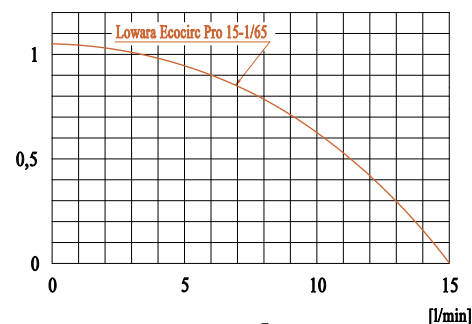
With temperature sensor (R)  
With temperature sensor and timer (RU)

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

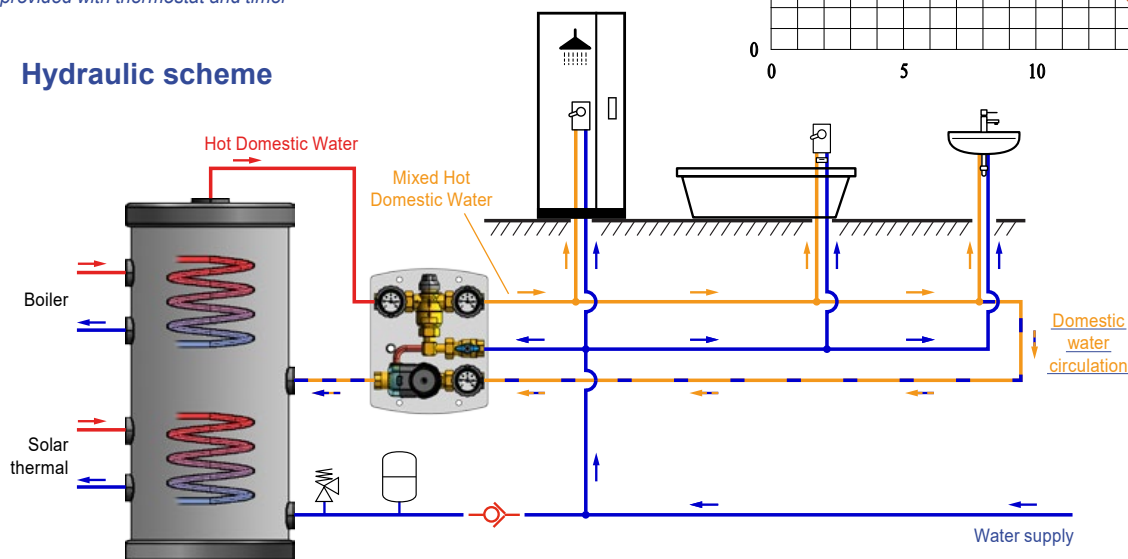


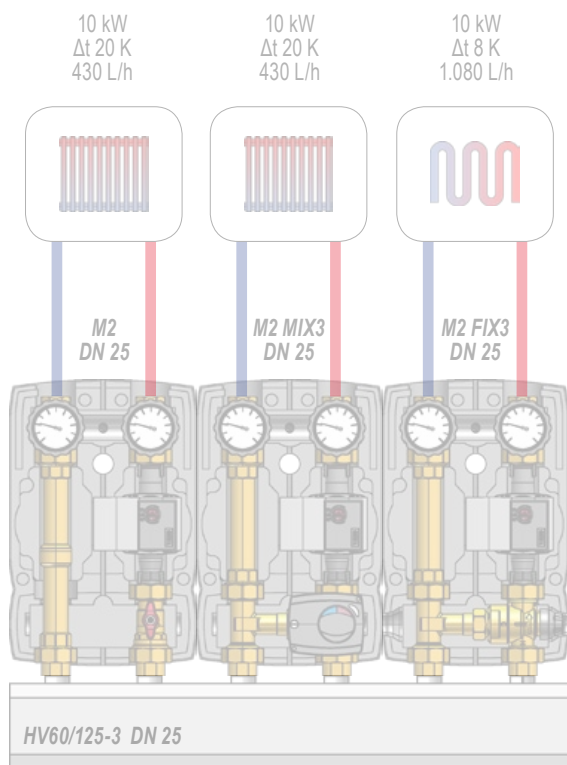
Particular of the circulating pump provided with thermostat and timer

[mH<sub>2</sub>O] Typical curves of the circulating pumps



### 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:

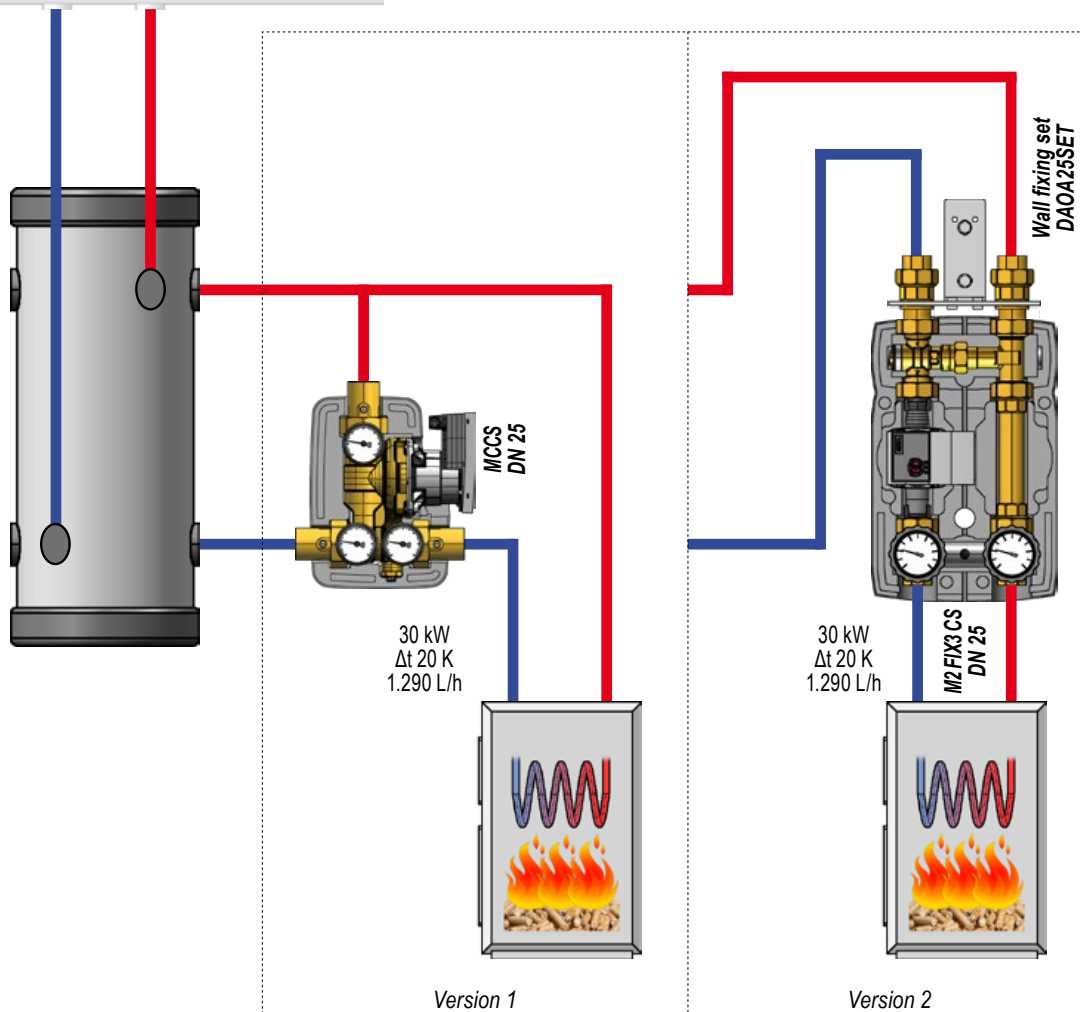
unmixed pump unit **M2 DN25;**

- Low power radiator line, Δt 20 K:

mixed pump unit **M2 MIX3 DN25;**

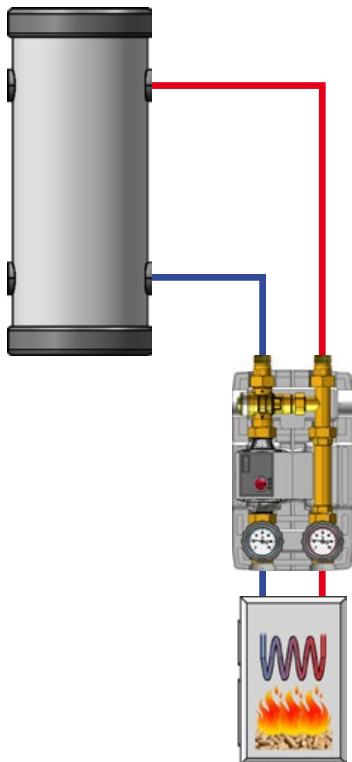
- Low power under floor heating line, Δt 8 K:

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



# MODVLVS DN20 Anti-condensing Pump Units

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-(P6/UL7/P8)**

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  $\Delta t$  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:

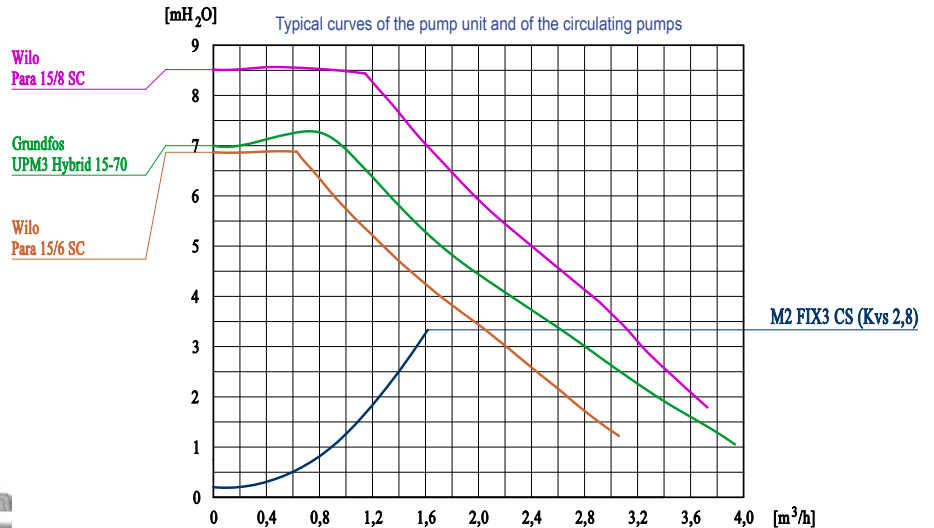
Wilo Para 15/6 SC (P6)

Grundfos UPM3 Hybrid 15-70 (UL7)

Wilo Para 15/8 SC (P8)

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-(P6/U7/P8)

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.

### FIELD OF UTILIZATION:

For power up to 32 kW (with  $\Delta t$  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 Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (U7)  
Wilo Para 25/8 SC (P8)

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



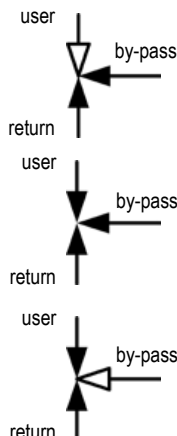
biomass

### 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.

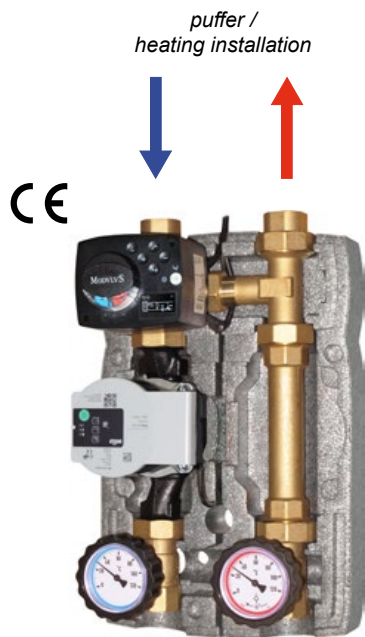
(3) - In that way the supply temperature is increasing in a progressive way up to the total opening of the thermic valve and up to the total closing of the by-pass. This happens when the temperature is about 10 K more than the start opening value (in our example about 65°C). Now the installation is running 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.

# MODVLVS DN25 Anti-condensing Pump Units

With mixing valve and servomotor



A version with 3 points servomotor is also available (code with final part ...M21). In this case an electronic external controller is required.

## 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-(P6/U7/P8)-CT  
Code 1": 20355R-M3C-M21 - with circulating pump: 20355R-M3C-(P6/U7/P8)M21

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.

### FIELD OF UTILIZATION:

For power up to 50 kW (with  $\Delta t$  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 Para 25/6 SC (P6)  
Grundfos UPM3 Hybrid 25-70 (U7)  
Wilo Para 25/8 SC (P8)

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.

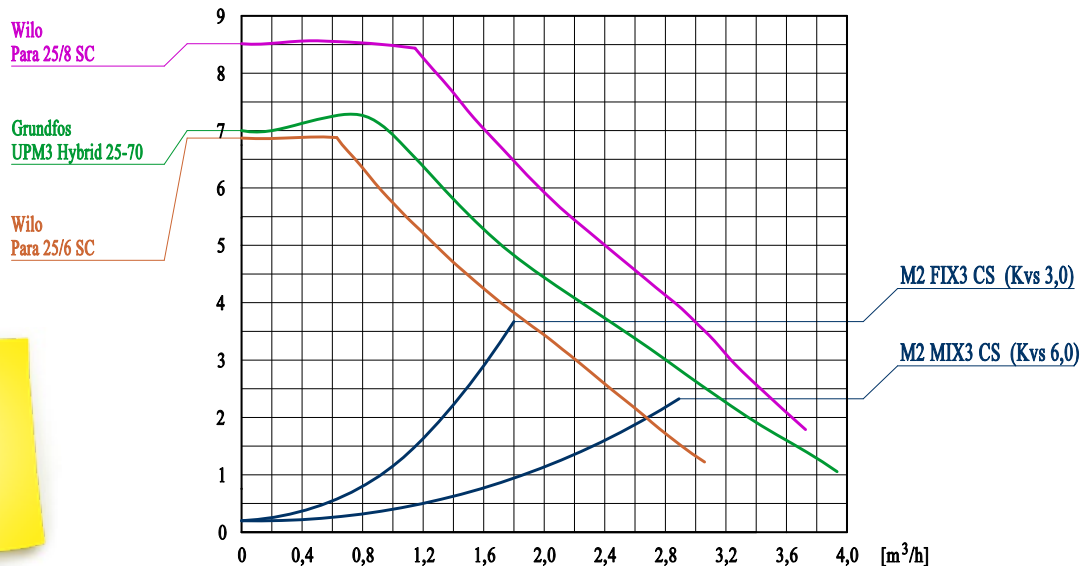
Code 1": 0266/M



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 5°C up to 95°C. Operating range of 90°. Power supply 230V, 2 min, torque 6 Nm. IP42.

[mH<sub>2</sub>O] Typical curves of anti-condensing pump units and circulating pumps



New servomotor  
Greater simplicity of setting

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



## M2 Exchange

HEAT EXCHANGE UNIT

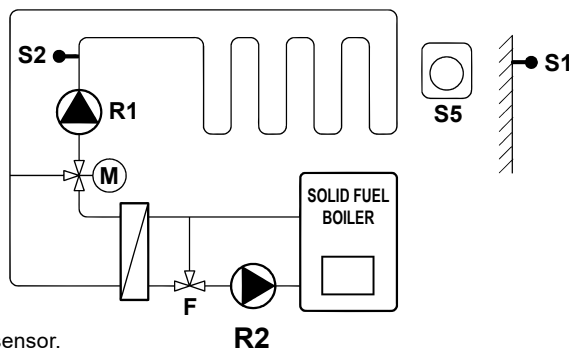
Code: see below table

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. Asymmetric 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.

Better performances and more possibilities of use



### Standard scheme

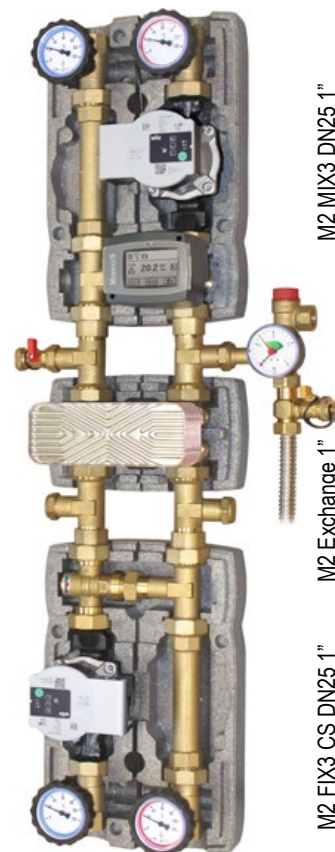
- ✓ S1: External temperature sensor.
- ✓ S2: Supply temperature sensor.
- ✓ S5: Ambient temperature sensor DD2+ (option).
- ✓ R1: Mixed high efficiency circulating pump (secondary).
- ✓ M: 3-way motorized mixing valve of the mixed circuit (secondary) with built-in climatic controller.
- ✓ F: Thermic valve of the boiler circuit (primary).
- ✓ R2: Boiler circuit high efficiency circulating pump (primary).
- ✓ E: Asymmetric plates heat exchanger.

### Field of utilization

For power up to:	12 kW	16 kW	20 kW	30 kW
Boiler side flow (max.):	1.030 l/h	1.370 l/h	1.720 l/h	2.570 l/h
Boiler side head loss (primary) *:	2,5 mH <sub>2</sub> O	2,5 mH <sub>2</sub> O	2,2 mH <sub>2</sub> O	2,1 mH <sub>2</sub> O
Secondary side flow:	980 l/h	1.260 l/h	1.480 l/h	2.050 l/h
Secondary side head loss *:	0,8 mH <sub>2</sub> O	0,9 mH <sub>2</sub> O	0,8 mH <sub>2</sub> O	0,8 mH <sub>2</sub> O
Code:	203646-12KW	203646-16KW	203646-20KW	203646-30KW

\* : Head loss of the heat exchanger alone at the maximum flow, with reference to the corresponding loop.

**NB:** These data must be considered just as an indication. They are based on a  $\Delta T$  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.



Standard installation operated by touch screen climatic CMP25-2 controller



With recycling thermic valve

CE

puffer / heating installation



solid fuel boiler

## 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  $\Delta t$  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.



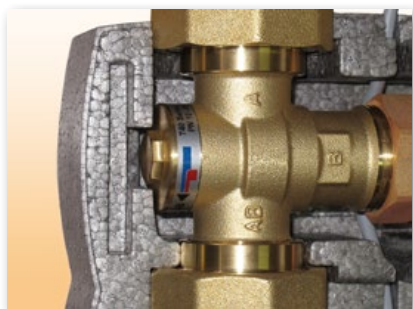
Available recycling thermic valves:  
Temp. of opening start: 60°C (F3)  
Temp. of opening start: 45°C (F4)  
Temp. of opening start: 55°C (F5)



Synchronous circ. pumps:  
Grundfos Alpha 1 32-60 (A6)  
Wilo Stratos Para 30/1-7 (P7)  
Wilo Stratos Para 30/1-8 (P8)

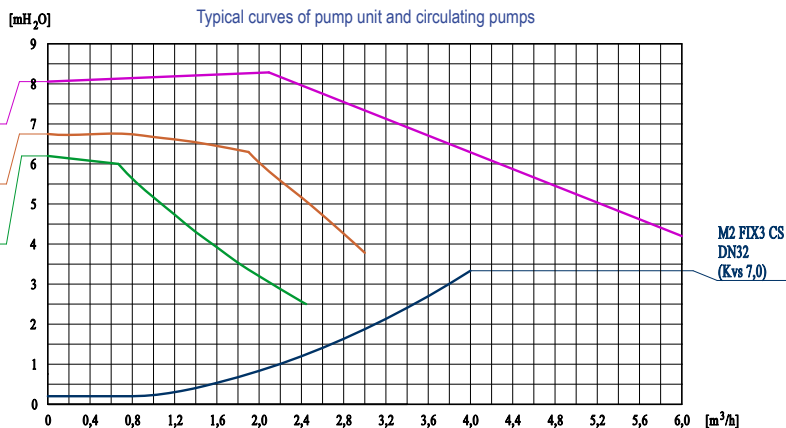
We suggest you to install two isolating valves Art. 552 with nut and gasket (see the section "DN32 Distributors") after the pump unit to allow an easy service or replacement of the components of the unit.

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



A version with 3 points servomotor is also available (code with final part ...M21). In this case an electronic external controller is required.

## 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**  
 Code 1"1/4: **20555R-M3C-M21** - with circulating pump: **20555R-M3C-(A6/P7/P8)M21**

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  $\Delta t$  20 K) and maximum flow 4800 l/h.

Kvs Value: 13,0.

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

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



### Available circulating pumps:

- Grundfos Alpha 1 32-60 (A6)
- Wilos Stratos Para 30/1-7 (P7)
- Wilos 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

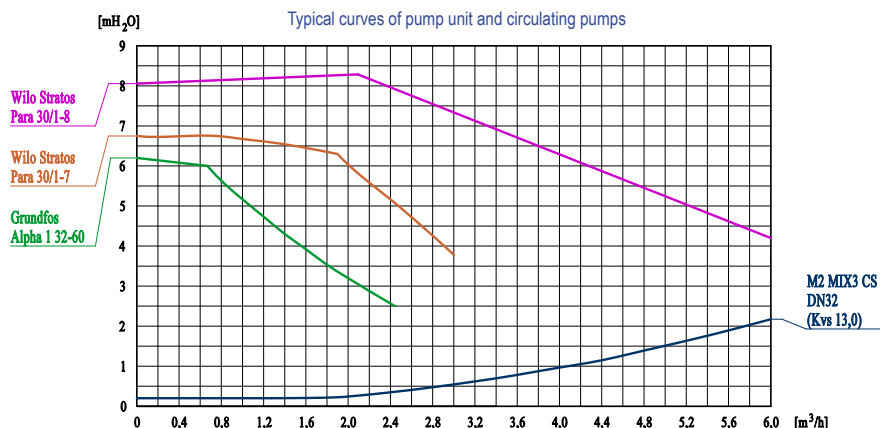


The electronics of servomotor keeps constant the set temperature of the return way, monitoring it by means of a sensor (included) mounted on the pipe. Display of the measured temperature and target temperature, on reversible LCD display.

Adjustment of target temperature adjustable from 5°C up to 95°C. Operating range of 90°. Power supply 230V, 2 min, torque 6 Nm. IP42.



New servomotor  
Greater simplicity of setting



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



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## 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  $\Delta t$  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:

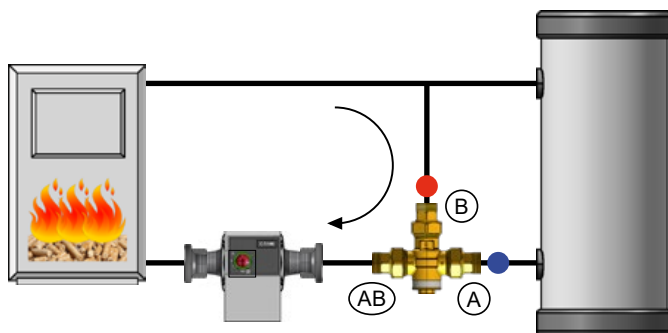
70 = 70 °C  
80 = 80 °C

### 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).

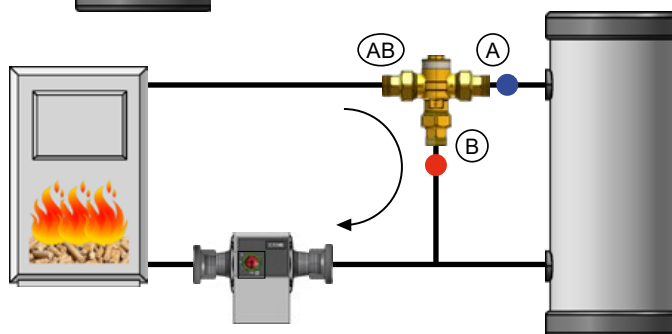


Scheme 1:

Mounting in mixing mode with anti-condensing function.  
Max.  $\Delta p$ : 100 kPa

Scheme 2:

Mounting in diverting mode with installation control function.  
Max.  $\Delta p$ : 30 kPa

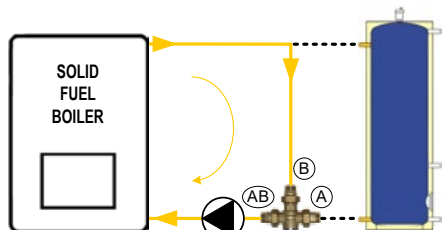


# MODVLVS DN25 Anti-condensing Valves

## Way of working

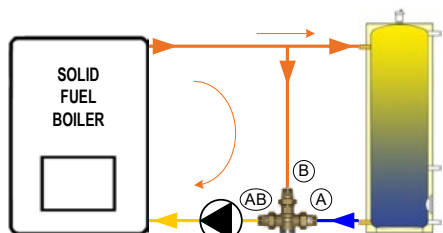
The hydraulic schemes shown here after are related to the use of the thermic valve in *mixing mode* that, as previously said, allows the optimization of anti-condensing control.

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



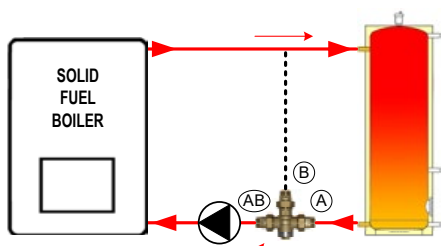
### ① Start of the system (heating of the boiler)

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.



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### 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 2014/68/EU 4.3

### 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**



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### 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)*



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## 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  $\Delta t$  20 K) and maximum flow 2800 l/h.



Available calibration temperatures:

45 = 45 °C	60 = 60 °C
55 = 55 °C	72 = 72 °C



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## 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



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## 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



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## 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

Code composition: the suffix "xx" shows the setting temperature of the thermic valve; f.i.: 04749-55 (calibration at 55°C)



# MODVLVS Anti-condensing Recycling Pump Unit



## Art. 745

ANTI-CONDENSING RECYCLING PUMP UNIT WITH THERMOSTATIC CONTROL

Code 1": 204MCCS-xx-P8  
Code 1 1/4": 205MCCS-xx-P8  
Code 28 mm: 228MCCS-xx-P8



PED 2014/68/EU 4.3



New circulating pump  
Wilo  
Para SC 8 m

### 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.

- ✓ Synchronous high efficiency Wilo Para SC/8.
- ✓ Maximum working pressure: 10 bar.
- ✓ 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 power up to 90 kW (with  $\Delta t$  30 K) and maximum flow 2600 l/h.

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



Available calibration temperatures:  
45 = 45 °C  
55 = 55 °C  
60 = 60 °C  
72 = 72 °C



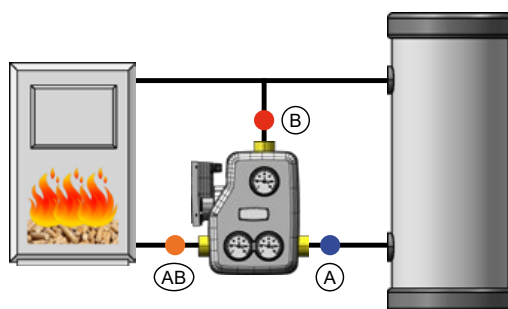
Synchronous circulating pump:  
Wilo Para SC/8 (P8)

### Installation

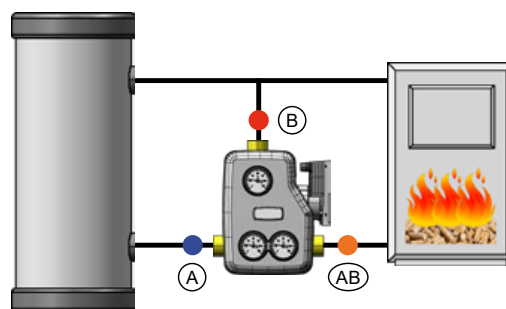
The anti-condensing recycling pump unit can be placed on both sides of the heating source, following these directions:

- ✓ 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.



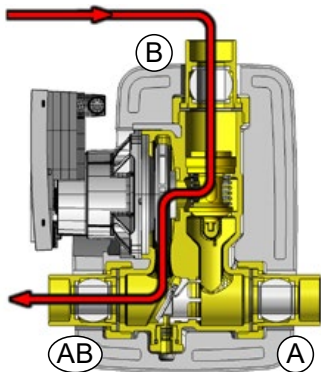
Installation placed on the left of the heating source.

Code composition: the suffix "xx" shows the setting temperature of the thermic valve; example: 204MCCS-55-P8 (setting temperature 55°C)

## Working mode

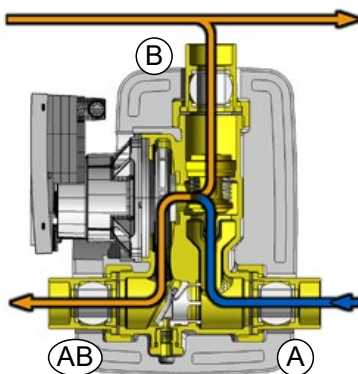
The schemes shown below represent the different working phases of the anti-condensing pump unit.

Please note that: the pictures have to be considered just as an indication and they have no completeness pretention.



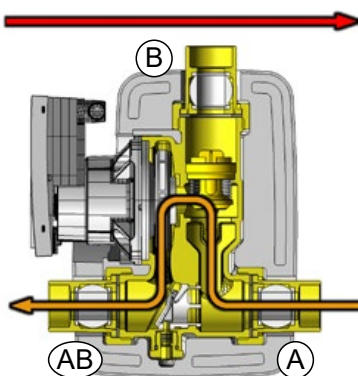
### ① Starting of the installation (boiler warming up)

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.



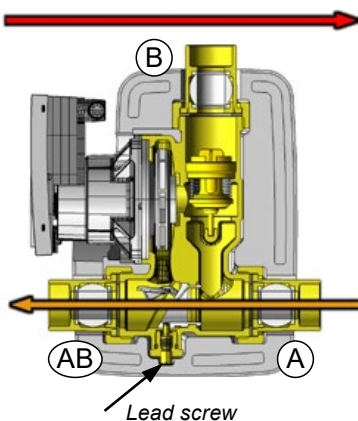
### ② Loading of the installation (tank warming up)

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).



## Art. 745-3

ANTI-CONDENSING PUMP UNIT WITH ELECTRONIC CONTROL

Code 1": 204MCCS-P8-(ACC/M21)  
 Code 1"1/4: 205MCCS-P8-(ACC/M21)  
 Code 28 mm: 228MCCS-P8-(ACC/M21)



New circulating pump  
 Wilo  
 Para SC 8 m



PED 2014/68/EU 4.3

### 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.

- ✓ Synchronous high efficiency Wilo Para SC/8.
- ✓ Maximum working pressure: 10 bar.
- ✓ Maximum temperature: 100°C.
- ✓ Mixing valve with fixed temperature servomotor.
- ✓ Adjustable diverting temperature from 5 up to 95°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 5 up to 95°C.

Available external connections: 1" and 1"1/4 female, 28 mm for copper pipe.

### FIELD OF UTILIZATION:

For power up to 90 kW (with  $\Delta t$  30 K) and maximum flow 2600 l/h.

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

A version with 3 points servomotor is also available (code with final part ...-M21). In this case an electronic external controller is required.



Diverting temperature: adjustable from 5 up to 95°C.



Synchronous circulating pump: Wilo Para SC/8 (P8)

MCCS 3



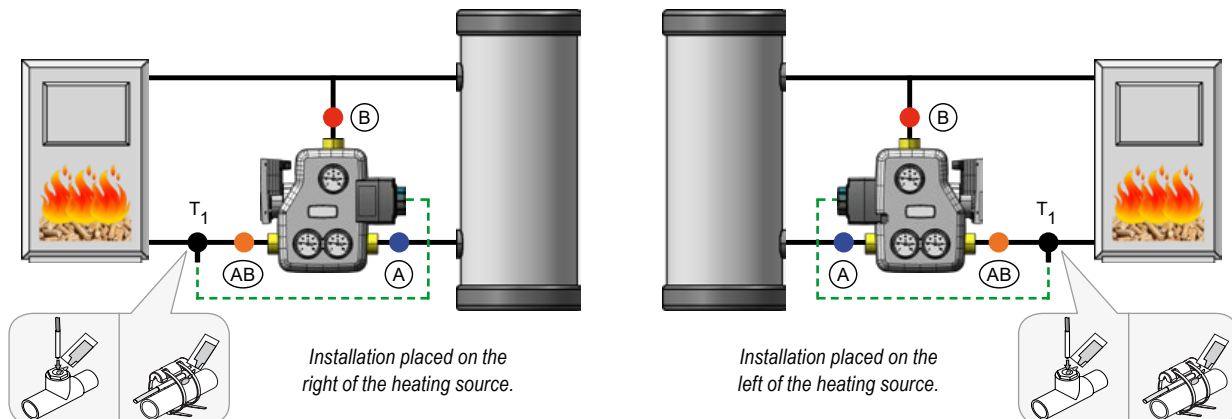
New servomotor  
 Greater simplicity of setting

### 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.

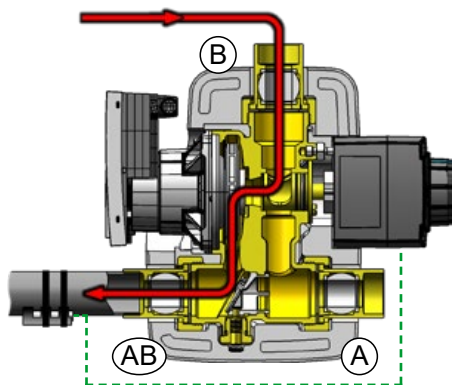


# MODVLVS Anti-condensing Recycling Pump Unit

## Working mode

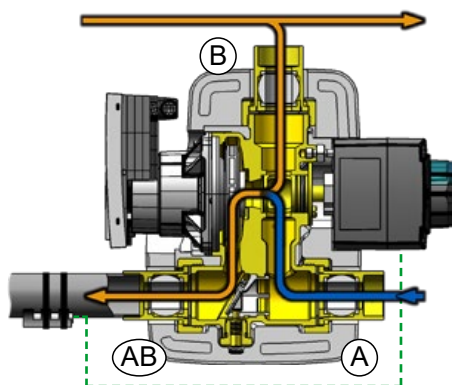
The schemes shown below represent the different working phases of the anti-condensing pump unit.

Please note that: the pictures have to be considered just as an indication and they have no completeness pretention.



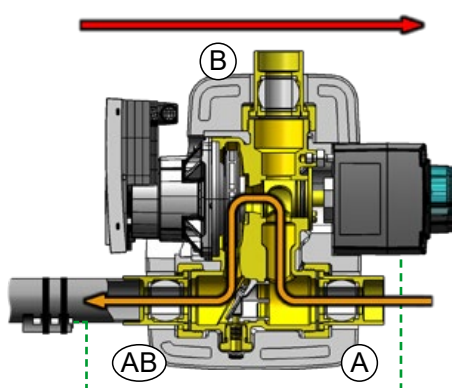
### ① Starting of the installation (boiler warming up)

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.



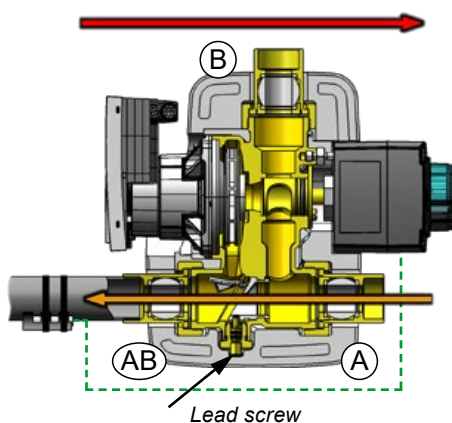
### ② Loading of the installation (tank warming up)

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.

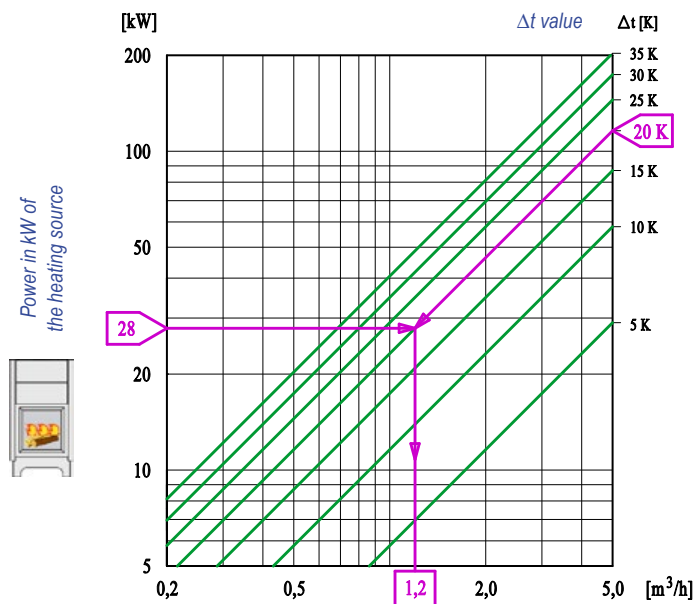
This function starts as a security device, when the pump stops due to blackout or failure, so avoiding that the temperature of the heating source can reach high levels of danger.

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

## Art. 745 and Art. 745-3: Checking of working conditions



To show a realistic example, we take into account the following starting values:

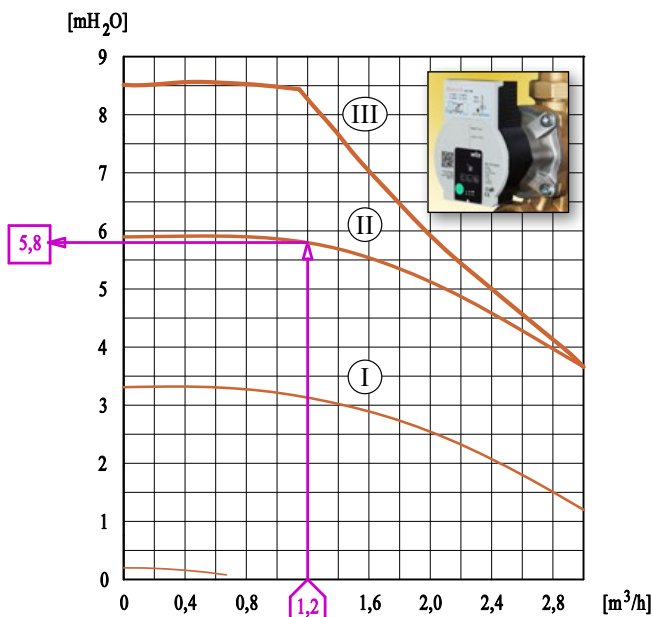
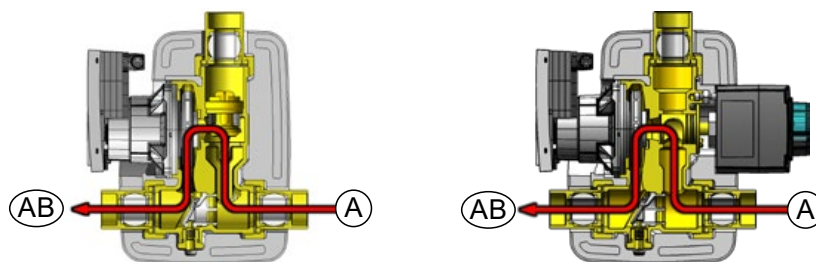
- Heating source power: **28 kW**
- Δt value: **20 K**

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 pump, 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 Para SC/8 pump develops a **5,8 mH<sub>2</sub>O** lifting power in correspondence of curve II.

In the specific case of our example, if this lifting power is not enough for the installation needs, a higher speed of the pump should be selected: Curve III.

## Hydraulic performances of the pump units (A towards AB)



**Synchronous circulating pump**  
**Wilo Para SC/8**  
 Consumption: 8-75 W  
**Recommended operating mode:**  
**Constant speed**

- Maximum speed (III)
- Medium speed (II)
- Minimum speed (I)



## Field of utilization

- Direct supply to the distributor: up to 45 kW (with Δt 20 K) and maximum flow rate of 1950 l/h. Lifting power: 4 mH<sub>2</sub>O
- With buffer tank: fino a 90 kW (con Δt 30 K) and maximum flow rate of 2600 l/h. Lifting power: 2 mH<sub>2</sub>O

These performances are substantially the same even in case of recycling flow (B towards AB).



PED 2014/68/EU 4.3



**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 2014/68/EU 4.3



**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



1 x  
**Adapters Art. 654 for capillary welding**

Copper pipe adapter kits: adapter 15 mm for 3/4" connection and 22 mm for 1" connection.

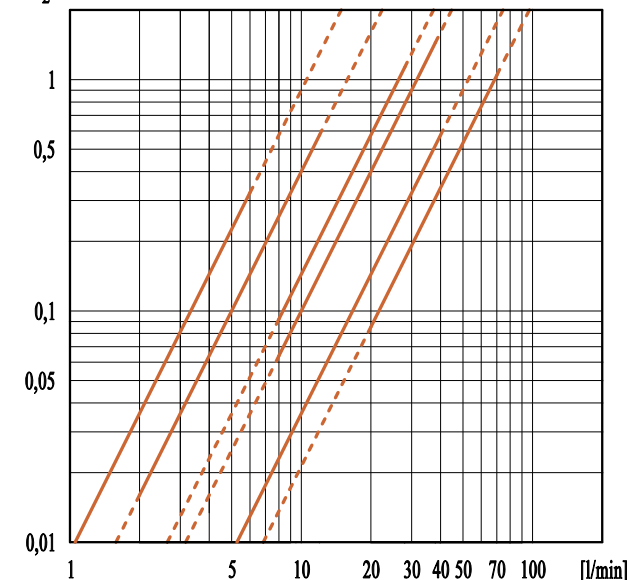
For more informations see the pages dedicated to ModvSol Equipments and Accessories.



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%

[mH<sub>2</sub>O]



Code composition: "xx" means the flow rate range to be read/set on the component.

# MODVLVS Flowmeters



### 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 2014/68/EU 4.3



### Flow rate ranges for DN15

3 = 0,5-3 US gpm (gallons per minute)  
8 = 2-8 US gpm (gallonis 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

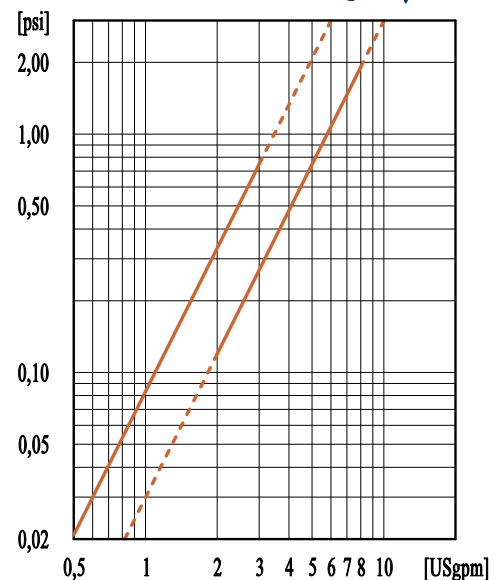
### NPT to GAS adapter

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 (PN 25 for 2"1/2, 3" and 4"). 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.**

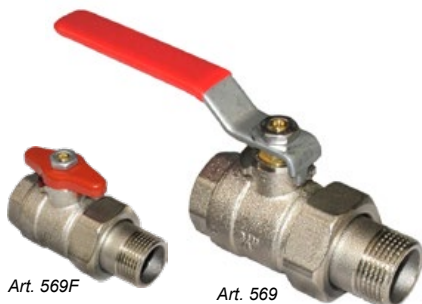
**Art. 566:** Provided with steel handle PVC covered. **Dimensions: 1/2", 3/4" and 1".**

**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:

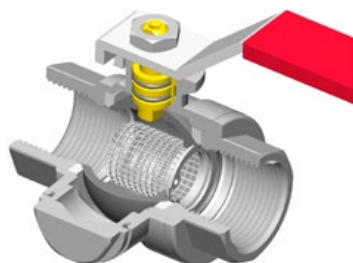
- ✓ 1/2" : 5,3
- ✓ 3/4" : 5,6
- ✓ 1" : 12,0
- ✓ 1"1/4 : 20,0

### 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)
- ✓ for valves 1" and 1 1/4" (DN25 and DN32)
- ✓ for valves 1 1/2" and 2" (DN40 and DN50)

Code 1<sup>st</sup> size: **DJRW03SET**

Code 2<sup>nd</sup> size: **DJRW05SET**

Code 3<sup>rd</sup> size: **DJRW07SET**

**Exception:** as concerns the filter ball valves (Art. 514, 514P, 564P) the size to be used is the 2<sup>nd</sup>. For the art. 514 1 1/4 the size to be used is the 3<sup>rd</sup>.

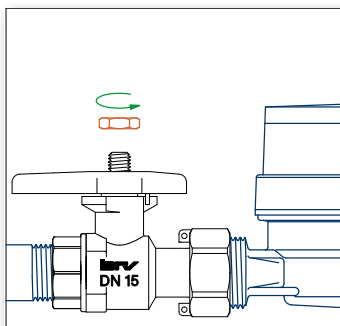
A special unlocking key is required to remove the lock (separately supplied).

Key code: **DRUCSET**

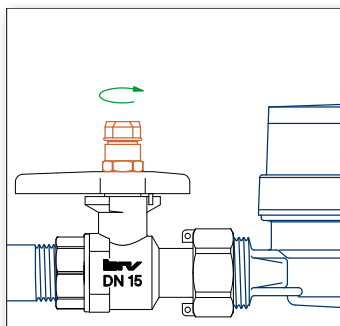
Patented



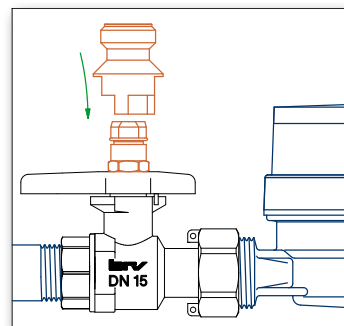
### How to apply Sigilblock device for locking a valve



Remove the handle's nut.

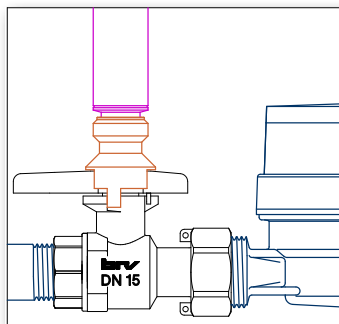


Screw the special nut and turn the handle to fully open or closed position.

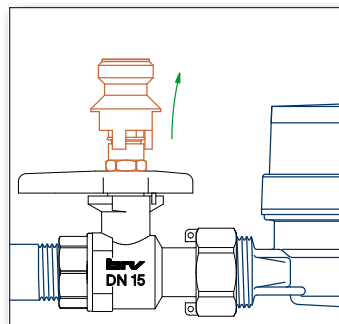


Insert the Sigilblock cap up to the click.

### 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.

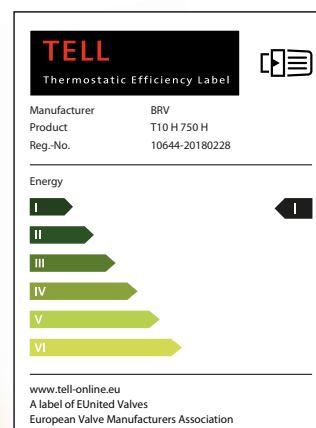


Take off the key and pull out the cap. Now you can operate on the ball valve.

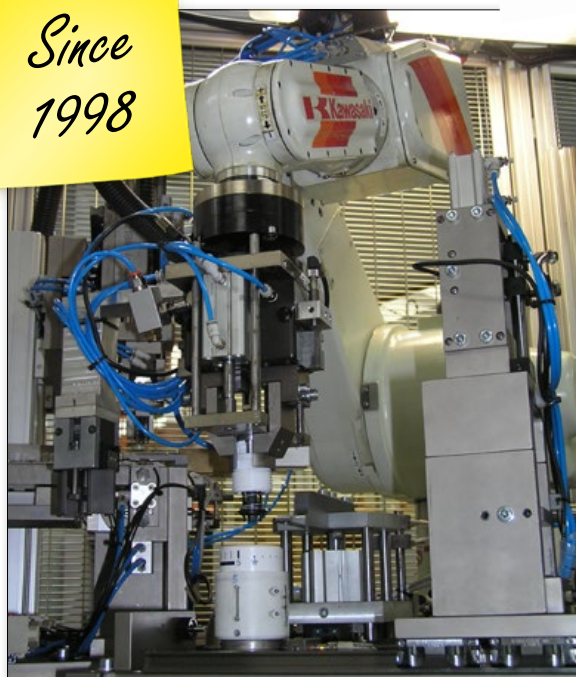
The thermostatic radiator valve **TERMOSTAR** is a device that allows the independent adjustment of each heating element in full autonomy and in this way it keeps constant the temperature of the room where it is installed.

## ✓ 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%.



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.





M30x1,5  
compatible

### Art. 750H - Thermostatic convertible radiator angle type valve

Thermostatic convertible radiator valve, M30x1,5 compatible.  
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).

- ✓ Fixed Kvs-value
- ✓ EN215 approved
- ✓ Thermostatic head code 5100H is required

PN 10. Max Temperature 120°C.  
Dimensions: 3/8" and 1/2".

Code 750H: 3/8": 5001H - 1/2": 5002H



### Art. 755H - Thermostatic convertible radiator straight type valve

Thermostatic convertible radiator valve, M30x1,5 compatible.  
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).

- ✓ Fixed Kvs-value
- ✓ EN215 approved
- ✓ Thermostatic head code 5100H is required

PN 10. Max Temperature 120°C.  
Dimensions: 3/8" and 1/2".

Code 755H: 3/8": 5051H - 1/2": 5052H



M30x1,5  
TELL  
certification

### Art. T10H - Thermostatic control head

Thermostatic control head with liquid gas sensor. M30x1,5 compatible.  
**EN215 Approval and TELL (Thermostatic Efficiency Label) certification that qualifies the product in I Energetic Class.**  
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 0,34 K
- ✓ "Variation Temporelle" calculated coefficient: 0,29 K.

Code: 5100H

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.**

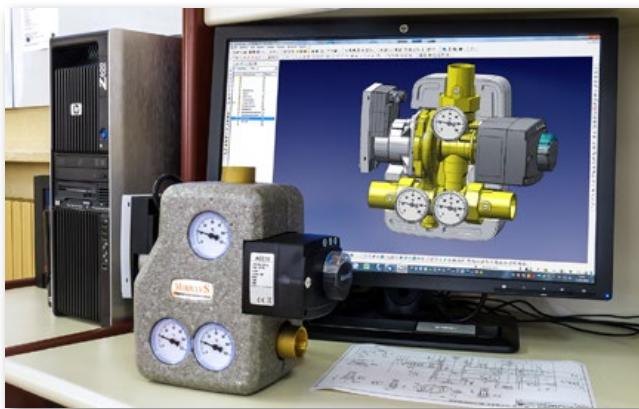
During the last years we devoted ourselves hard to the custom made products for which we have invested in new highly flexible machinery. That has also enabled BRV to work in close cooperation with the customers to develop new products.

**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).**

**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.



**Precise and detailed prototype making thanks to the multi axis CNC milling.**

The precise dimensions and the aesthetic look of the samples and prototypes have a very high standard, thanks to the versatility of the CAD/CAM systems that allow to get parts that are exactly the same to those that will be made by the mass-production.

**The sophisticated test laboratory, located inside the factory, can validate the performances of the new plans even during the step of prototype making.**

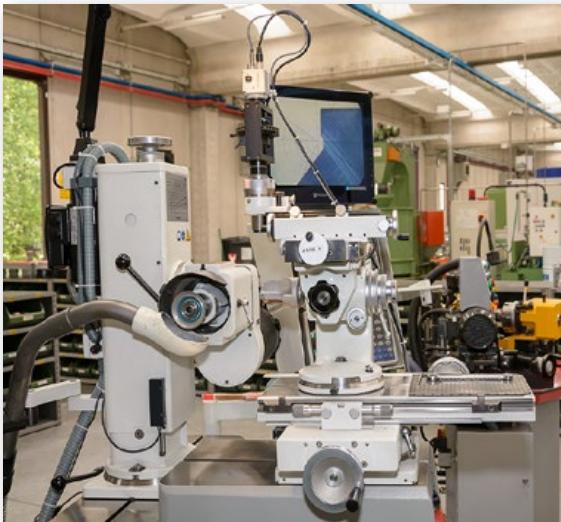


*A video showing the steps to make a prototype by means our numerical control working center is available upon request.*





# Custom Made Products



**Modern production facilities assisted by robotized loading systems and equipped with optical identification allow a high flexibility and efficiency, particularly as concerns the highly diversified components as it is for the custom made products.**

Different types of production machines allow to face any working requirement in the best way, without any compromise, with the best advantage for the customer.

**Thanks to the modern milling technologies of the latest CAM systems the independence of the carrying out of the working tooling has been achieved even as concerns the most complicated.**

Clamps to take the parts, pliers for robotized loading and unloading of the parts, stands for production lines, everything is made inside the factory.

**Therefore the whole design cycle of the custom made products and of the following mass production are managed with the highest versatility.**



custom  
made







## 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 “Customer Service” of the official website [www.brv.it](http://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 9001:2015. 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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