

# **General Catalogue**

***Components and Systems for heating,  
air conditioning and sanitary applications***



A Division of Watts Water Technologies Inc.

## OUR WEBSITE



### Discover Watts Industries on the Internet

**Communication, sharing, information.**

**Watts Industries** webs site wants to be a functional tool, a place to visit periodically to find useful information, download technical documents and certifications, where customers can find help for a more direct and profitable relationship with the company.



In the right side of the page is located, always in the first plan, the information section.

This allows you to navigate through many pages that show strategy and philosophy of the group, the company's news and exhibitions agenda.

Moreover by clicking on the menu Local Companies it is possible to visit the dedicated pages to the companies comprising the Watts Industries Group.

In the left side of the page is located, always in the first plan, the products section.

The products are grouped by type application in four families.

- Room heating & cooling-Sanitary
- water quality and distribution
- Drainage and piping systems
- Other Applications (pressure gauges, thermometers, etc.).

Browsing the structure you will get the page dedicated to each product.



The product page is the equivalent of the catalog page with picture, description and full range of each product.

In addition, by clicking on the icons of file attachments, you can download the product documentation:

- data sheets
- user manuals
- declaration of Conformity
- tender text
- dimension drawings.

# The strength of Watts Industries

1



**Heating**

**“A tradition of quality and reliability, technology for the future”**

The history of Watts Industries, dated back to 1874 in the United States, was always distinguished for its important and continuous contribute to the technological development of the market through the research and development of valves and related products that became a milestone in water and HVAC installations.



**Cooling**

Our product range promotes the comfort and safety of people and the quality, conservation and control of water used in commercial, residential, industrial and municipal applications.

Watts Industries does not limit to design products technologically advanced with premium quality.



**Sanitary**

Watts Industries implement a wide program of research and development, strictly integrated to market demand analysis and world development policies.

This results in our research centers continuous effort to develop more efficient products and integrated solutions oriented to energy saving.

Watts Industries has been chosen to supply the technological leading companies operating in the market as OEM (Original Equipment Manufacturer) and as ODM (Original Design Manufacturer).



**Ecoenergies**

WATTS Industries, a synergic partner for the HVAC application development since 1874.

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## INSTRUMENTS FOR CONSULTATION

**Icons, frames and magnifying glass:**  
three different instruments for a fast consultation

### Icons

**AIR VENTS**

**Float Air Vents for Solar Systems**

**MV-SOL**  
Automatic air vent valve for solar systems with ultra-thin design for inspection.  
Body and cover of brass EN12194-21/22-55 Polystyrene fuel.  
Seal between separator and cover with O-ring. Connection ND 3/8" - 1/2" DN - ISO 228/1  
Suitable size (ND 204) vacuum breaker (only for ND 5/8")  
Max. operating pressure: 12 bar. Max. operating temperature: 185 °C

Type	Part Number	Size	MV-SOL	Price
MV-SOL	0249110	3/8"	50	19,99
MV-SOL	0249110	1/2"	50	19,99

**RIA/MV-SOL**  
Automatic shut-off valve. Blocks the air vent valves MV-SOL to be removed without having to empty the system. The RIA/MV-SOL shut-off valve is fitted with a device for quick flow emptying of the water from this valve. Body: Brass EN12194-21/22-55  
Prog. Polymer high insulation. Spring: Stainless steel.  
Connections MP 3/8" and 1/2" DN - ISO 228/1. Sealing: Elastomer high resistance

Type	Part Number	Size	RIA/MV-SOL	Price
RIA/MV-SOL	0250110	3/8" x 1/2"	10	3,29
RIA/MV-SOL	0250110	1/2" x 1/2"	10	6,99

**HIGHLIGHTS**

**Components for Solar systems**

The increasingly greater use of systems exploiting renewable solar energy entail development of a specific line of products for expelling air from the circuits.

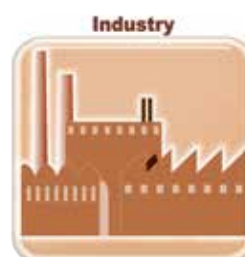
The materials of construction used for the MV-SOL and RIA/MV-SOL valves are designed to withstand high temperatures and particular operating conditions.



Products for the energetic efficiency of the systems.



Suitable products for buildings and systems refurbishing



Products for industrial applications too

### Frames

We have three different tools that help in product choose with technical information, rules and standards and application samples

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**HIGHLIGHTS**

**Components for Solar systems**

Domestic water circuit

Manifold circuit

The increasingly greater use of systems exploiting renewable solar energy entail development of a specific line of products for expelling air from the circuits.

The materials of construction used for the MV-SOL and RIA/MV-SOL valves are designed to withstand high temperatures and particular operating conditions.

### Magnifying glass

It shows pages, chapters and other documents where it is possible to find more information of the products.

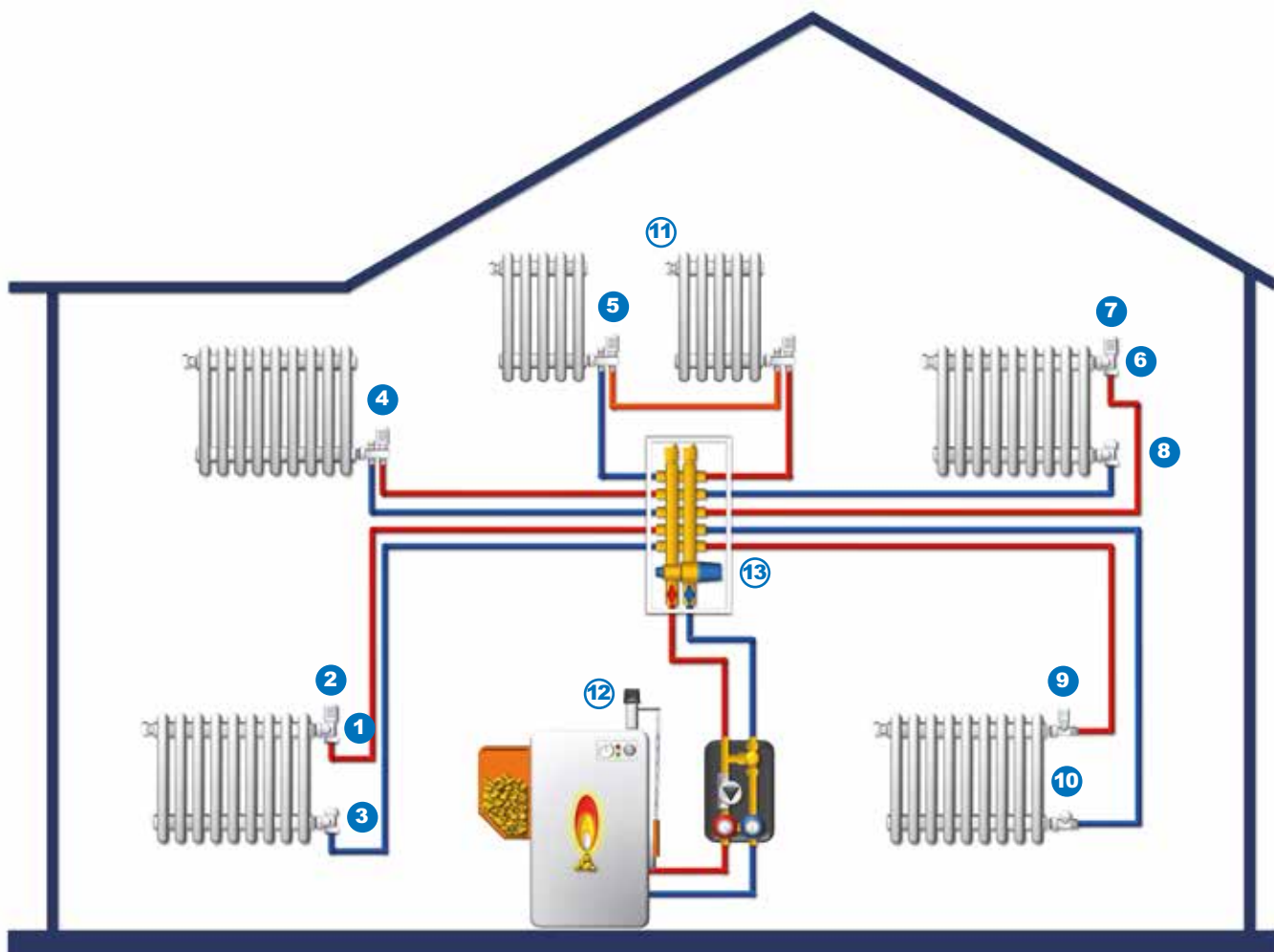


## Radiator valves for heat elements
















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## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

- |   |  |   |  |   |
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## THERMOSTAT ADAPTABLE AND LOCKSHIELD VALVES, CONNECTION FOR COPPER PIPE

### 1178UM



Nickel-plated thermostat adaptable valve. Angle body. Connection for copper or plastic pipe, size 1/2"M. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no. WII	Size	Size Tube	Kvs
1178UM	1178UMSN38X	3/8"	1/2"	2,6
1178UM	1178UMSN12	1/2"	1/2"	2,6

### 1188UM



Nickel-plated thermostat adaptable valve **with presetting**. Angle body. Connection for copper or plastic pipe, size 1/2"M. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no. WII	Part no. WID	Size	Size Tube	Kvs
1188UM	1188UMSN38X	-	3/8"	1/2"	2,6
1188UM	1188UMSN12	10001645	1/2"	1/2"	2,6

### 1195UM

Nickel-plated balancing lockshield valve. Angle body. Connection for copper or plastic pipe, size 1/2"M. Standard tailpiece. With **O-ring sealed** straight tailpiece. ABS cap.

Type	Part no. WII	Size	Size Tube	Kvs
1195UM	1195UMSN38X	3/8"	1/2"	2,3
1195UM	1195UMSN12	1/2"	1/2"	2,3

## SELECTION GUIDE

### For an efficient and reliable system

In order to produce or transform a plain radiator valve into an instrument for controlling and regulating environmental comfort combined with appreciable energy saving, our product range includes valves with presetting of flow (Part No. 1188UM) and Class A (TELL) thermostatic actuators with low thermal inertia approved to UNI EN 215 with the CEN mark (Part No. 148 and 148A).

In order to make the terminal unit (radiator) efficient and to solve problems caused by presence of air in the mains, it is suggested, for example, to install automatic air vent valves (Part. No. 228C).

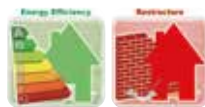
For ensuring long-term and reliable water tightness, also in the presence of thermal shocks, among the many solutions available it is recommended to use of Rafit+ one-piece fittings.

The declarations of conformity of the product are available on our website :

[www.wattsindustries.com](http://www.wattsindustries.com)



## THERMOSTAT ADAPTABLE AND LOCKSHIELD VALVES, CONNECTION FOR COPPER PIPE

**1179UM**

Nickel-plated thermostat adaptable valve. Straight body. Connection for copper or plastic pipe, size 1/2"M. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no. WII	Part no. WID	Size	Size Tube	Kvs
1179UM	1179UMSN38X	-	3/8"	1/2"	1,8
1179UM	1179UMSN12	10001634	1/2"	1/2"	1,8

**1189UM**

Nickel-plated thermostat adaptable valve **with presetting**. Straight body. Connection for copper or plastic pipe, size 1/2"M. With **O-ring sealed** straight tailpiece.

ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no. WII	Part no. WID	Size	Size Tube	Kvs
1189UM	1189UMSN38X	-	3/8"	1/2"	1,8
1189UM	1189UMSN12	10001649	1/2"	1/2"	1,8

**1196UM**

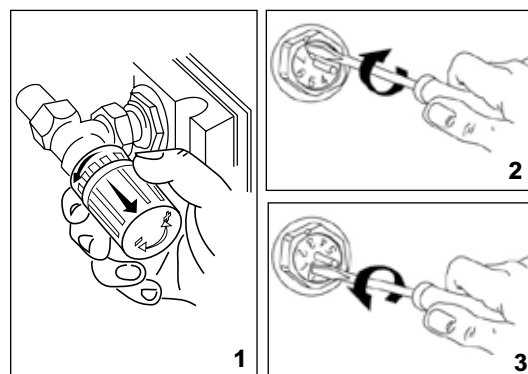
Nickel-plated balancing lockshield valve. Straight body. Connection for copper or plastic pipe, size 1/2"M. With **O-ring sealed** straight tailpiece. ABS cap.

Type	Part no. WII	Size	Size Tube	Kvs
1196UM	1196UMSN38X	3/8"	1/2"	1,5
1196UM	1196UMSN12	1/2"	1/2"	1,5

**TECHNICAL NOTE****Presetting**

Thermostat adaptable valves series 188UM-1188UM-189UM-1189UM-130UM-1130UM-131UM-1131UM allow fixing a well defined maximum flow rate by controlling any unbalances in the circuits as follows : the presetting device is with plug stroke limiting and each setting position is obtained by adjusting the ring nut under the handwheel. The hydraulic flow rate and pressure drop characteristics can be deduced from the special charts: as regards the thermostatic function, they assume the characteristics of such device.

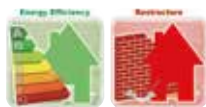
- 1 Pull out the handwheel.
- 2 Fully close the presetting ring nut.
- 3 Open to the required position as specified by design or selected on the specific chart by making the number coincide with the reference notch. Refit the handwheel.



## THERMOSTAT ADAPTABLE AND LOCKSHIELD VALVES, CONNECTION FOR IRON PIPE



### 178UM



Nickel-plated thermostat adaptable valve. Angle body. Connection for iron pipe. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

**CEN approved EN 215 compliant.**

Type	Part no.WII	Part no.WID	Size	Kvs
178UM	178UMSN38		3/8"	2,1
178UM	178UMSN12		1/2"	2,6
178UM	178UMSN34	10025871	3/4"	3,3



### 188UM



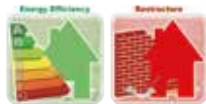
Nickel-plated thermostat adaptable valve **with presetting**. Angle body. Connection for iron pipe. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

**CEN approved EN 215 compliant.**

Type	Part no.WII	Part no.WID	Size	Kvs
188UM	188UMSN38	10001644	3/8"	2,1
188UM	188UMSN12	-	1/2"	2,6
188UM	188UMSN34	-	3/4"	3,3



### 130UM



Thermostatic valve with easily removable protective cap to allow and with presetting installation of thermal commands series 148, 148A and electrothermic actuators 22C and 26LC.

With **O-ring sealed** straight tailpiece. **CEN approved, EN 215 compliant.**

Type	Part no.WII	Part no.WID	Size	Kvs
130UM	130UMSN38	-	3/8"	2,1
130UM	130UMSN12	10004119	1/2"	2,6
130UM	130UMSN34	-	3/4"	3,3



### TVE



Nickel-plated thermostatic valve, angle body, **with presetting**. Connection with female thread. Suitable for the SE148 thermostatic head. Valve adjustment: Heimeier M30 x 1,5.

Type	Part no.WII	Part no.WID	Size	Kvs
TVE	178D12WM	10001592	1/2"	2,6
TVE	178D34WM	10001593	3/4"	3,3



### 195UM

Nickel-plated balancing lockshield valve. Angle body. Connection for iron pipe. With **O-ring sealed** straight tailpiece. ABS cap.

Type	Part no. WII	Size	Kvs
195UM	195UMSN38	3/8"	1,8
195UM	195UMSN12	1/2"	2,3
195UM	195UMSN34	3/4"	4,6

## THERMOSTAT ADAPTABLE AND LOCKSHIELD VALVES, CONNECTION FOR IRON PIPE

**179UM**

Nickel-plated thermostat adaptable valve. Straight body. Connection for iron pipe. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

**CEN approved EN 215 compliant.**

Type	Part no.WII	Part no.WID	Size	Kvs
179UM	179UMSN38	-	3/8"	1,1
179UM	179UMSN12	10001868	1/2"	1,8
179UM	179UMSN34	10001652	3/4"	2,6

**189UM**

Nickel-plated thermostat adaptable valve **with presetting**. Straight body. Connection for iron pipe. With **O-ring sealed** straight tailpiece. ABS handwheel with movable stem. Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

**CEN approved EN 215 compliant.**

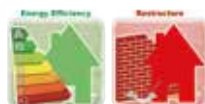
Type	Part no.WII	Part no.WID	Size	Kvs
189UM	189UMSN38	10001648	3/8"	1,1
189UM	189UMSN12	-	1/2"	1,8
189UM	189UMSN34	-	3/4"	2,6

**131UM**

Thermostatic valve like 179SN but with easily removable protective cap to allow installation of thermal commands series 148, 148A and electrothermic actuators 22C and 26LC.

With **O-ring sealed** straight tailpiece. **CEN approved EN 215 compliant.**

Type	Part no.WII	Part no.WID	Size	Kvs
131UM	131UMSN38	-	3/8"	1,1
131UM	131UMSN12	10001607	1/2"	1,8
131UM	131UMSN34	-	3/4"	2,6

**TVD**

Nickel-plated thermostatic valve, straight-way type, **with presetting**. Connection with female thread. Suitable for the SE148 thermostatic head. Valve adjustment: Heimeier M30 x 1,5.

Type	Part no.WII	Part no.WID	Size	Kvs
TVD	179D38WM	10001606	3/8"	1,1
TVD	179D12WM	10001604	1/2"	1,8
TVD	179D34WM	10001605	3/4"	2,6

**196UM**

Nickel-plated balancing lockshield valve. Straight body. Connection for iron pipe. With **O-ring sealed** straight tailpiece. ABS cap.

Type	Part no.WII	Part no.WID	Size	Kvs
196UM	196UMSN38	-	3/8"	1,1
196UM	196UMSN12	-	1/2"	1,5
196UM	196UMSN34	10001650	3/4"	3,5



## THERMOSTAT ADAPTABLE AND LOCKSHIELD VALVES, CONNECTION FOR IRON PIPE

### 134M



Nickel-plated thermostatic adaptable valve. **with presetting**. Reverse body. Connection for iron pipe, size 1/2" M with **O-ring sealed** straight tailpiece. Suitable with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no. WII	Size	Size Tube	Kvs
134M	134M12	1/2"	1/2"	1,4

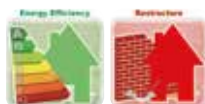
### TVE-S



Nickel-plated thermostatic valve **with presetting**. Reverse body. Suitable for the SE148 thermostatic head. Valve adjustment : Heimeier M30 x 1,5.

Type	Part no. WII	Part no. WID	Size	Size Tube	Kvs
TVE-S	134M12WM	10001610	1/2"	1/2"	1,4

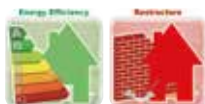
### 1134M



Nickel-plated thermostat adaptable valve **with presetting**. Reverse body. Connection for copper or polyethylene pipe, size 1/2" M with **O-ring sealed** straight tailpiece. Suitable with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no. WII	Size	Size Tube	Kvs
1134M	1134M12	1/2"	1/2"	1,4

### TVE-SC



Nickel-plated thermostatic valve **with presetting**. Reverse body, screw connection for CU pipe 15 x 1,0 mm. Suitable for the SE148 thermostatic head. Valve adjustment : Heimeier M30 x 1,5.

Type	Part no. WII	Part no. WID	Size	Size Tube	Kvs
TVE-SC	1134M1215WM	10001611	1/2"	1/2"	1,4

## 4-WAY THERMOSTAT ADAPTABLE VALVES FOR ONE-PIPE AND TWO-PIPES SYSTEMS

**120B**

4-way nickel-plated thermostat adaptable valve for **two-pipe systems. With presetting.** Built-in lockshield valve. Connection for copper or plastic pipe.

**O-ring sealed** straight tailpiece, complete with flow separation probe. ABS handwheel.

Differential pressure (item 148): 1.5 bar.

Kvn coefficient with 2K proportional band :

- ND 1/2" = 0.58

- ND 3/4" = 0.62.

Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no.WII	Part no.WID	Size	Size Tube	Kvs
120B	120B12AM12	10001674	1/2"	1/2"	0,82
120B	120B12AM34	10001675	3/4"	1/2"	0,93

**102M**

4-way nickel-plated thermostat adaptable valve for **one-pipe systems with fixed by-pass. With presetting.** Built-in lockshield valve. Connection for copper or plastic pipe.

**O-ring sealed** straight tailpiece, complete with flow separation probe. ABS handwheel.

Differential pressure (item 148) : 1.5 bar.

Kvn coefficient with 2K proportional band :

- ND 1/2" = 1.76

- ND 3/4" = 1.84

Flow rate to radiator : 50%.

Compatible with thermostatic actuators series 148, 148A and electrothermic actuators 22C and 26LC.

Type	Part no.WII	Part no.WID	Size	Size Tube	Kvs
102M	102M12AM12	10001676	1/2"	1/2"	2
102M	102M12AM34	10001677	3/4"	1/2"	2,15

**TECHNICAL NOTE****4-way thermostat adaptable valves**

The 4-way valves incorporate, in just one piece, the different valve and lockshield functions. For the thermostat function, connect the delivery port to the connection under the head.

**For two-pipe systems**

Valves type 120B (without by-pass) allow building two-pipe heating systems where, for reasons of style or installation, it is preferable to keep just one connection point (at the bottom) to the radiator with consequent less masonry work and quicker installation.

**For one-pipe systems**

Valves Type 102M allow distribution of the water flow calculated for the entire ring into a part reserved for the heat exchange and into a part leading towards the next radiator. The permanently open by-pass allows constant recirculation of the heat carrier fluid when the valve is closed.



## SINGLE-PIPE SYSTEM MANUAL VALVES

### 119SX

Nickel-plated 4-way valve for one-pipe systems. Connection for copper or plastic pipe. Straight tailpiece complete with flow separation probe. Flow rate to radiator : 100%. ABS handwheel. 1/2" S Models suitable with ø18 mm pipes.



Type	Part no. WII	Part no. WID	Size	Size Tube	Kvs
119SX	119S1212X	10001678	1/2"	1/2"	1,6
119SX	119S3412X	10001679	3/4"	1/2"	2
119SX	119SS1212SX	10001658	1/2"	1/2"S	1,6
119SX	119SS3412SX	-	3/4"	1/2"S	2

## THERMOSTATIC ACTUATORS

### 148



Thermostatic actuator with oil-filled sensitive element. Temperature limiting and locking device. ABS handwheel. Graduated scale from 0 to 5. Setting range : 0°C - 28°C. Anti-freeze position : 8°C. Max. differential pressure: 1.5 bar.

**CEN approved EN 215 compliant. TELL Certified Class A**

Type	Part no. WII	Part no. WID
148	148	10025869
SE148*	-	10001583

\* for TVE, TVD, TVE-S and TVE-SC series.

### 148A



Thermostatic actuator **new design** with oil-filled sensitive element. Temperature limiting and locking device. ABS handwheel. Graduated scale from 0 to 5. Setting range : 0°C - 28°C. Anti-freeze position : 8°C. Max. differential pressure: 1.5 bar.

**CEN Approved EN215 compliant. TELL Certified Class A**

Type	Part no. WII
148A	148A

### 147



Thermostatic actuator chrome-plated version with oil-filled sensitive element. Other characteristics as per Item 148

Type	Part no. WII	Part no. WID
147	147CR	10022425

## HIGHLIGHTS

### Thermostatic actuators Class A

The increased consumer awareness regarding energy saving, is everyday increasing the need for clear and reliable information for a purchase decision consciously. The introduction of the European classification system **TELL (Thermostatic Efficiency Label)** for the energy efficiency of radiator valves allows to immediately identify the products of a higher category.

The Watts Industries thermostatic actuators series **148** and **148A** have been certified TELL, **in the efficiency Class A**. The TELL certification criteria are:

- Water temperature;
- Hysteresis;
- Response time in function of temperature variation;
- Differential pressure

The details of the classification are listed on the website [www.tell-online.eu](http://www.tell-online.eu)



## THERMOSTATIC ACTUATORS

**148SD**

Thermostatic actuator with remote sensor. 2 m capillary tube. Other characteristics as per Item

Type	Part no. WII	Part no. WID
148SD	148SD	10001584

**148GA**

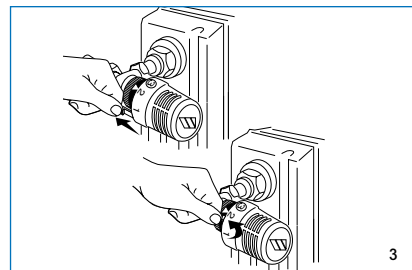
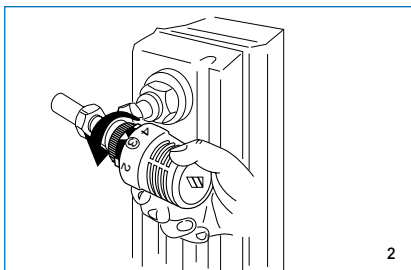
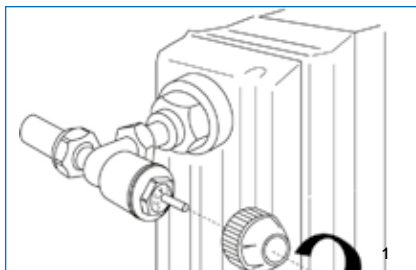
Tamper-proof cover for thermostatic actuators series 148 and 148A. Provision for limiting and locking temperature range on rivettable closing position. Complete with standard mounting screws and break-stem rivets.


Type	Part no. WII	Part no. WID
148GA	148GA	10001586

**TECHNICAL NOTE****Installation of thermostatic actuators series 148**

- 1) Remove the manual handwheel (Pic. 1)
- 2) Turn the thermostatic actuator fully open (position 5)
- 3) Approach the actuator to the valve body with the reference pointer clearly visible, then fully screw in the nickel-plated ring unit (Pic. 2)

Avoid vertical positions of the actuator; use the two setting blocks and position them to coincide with the required min./max. values (Pic. 3).



0		1	2	3	4	5
Closed	8 °C Anti-freeze	12 °C	16 °C	20 °C	24 °C	28 °C

**Radial slots**  
high sensitivity in ambient temperature measurement

**Adjustment riders**  
Provision for adjusting or blocking the preset temperature range



**5 temperature levels**  
Quick and easy setting of the required temperature

**Threaded ring nut**  
Practical and quick in installation operations



In order to know which thermostatic valves Watts Industries are UNI EN 215 approved, please connect to our website [www.wattsindustries.com](http://www.wattsindustries.com) where you will find all data useful.



**MANUAL VALVES AND LOCKSHIELDS, CONNECTION FOR COPPER PIPE**
**1163R**


Nickel-plated manual valve. Angle body. Plug with soft seal.  
Connection for copper or plastic pipe, size 1/2" M.  
Taper tailpiece knurled to facilitate the hemp sealing operations.  
ABS handwheel.

Type	Part no. WII	Part no. WID	Size	Size Tube
1163R	1163SN38XR	-	3/8"	1/2"
1163R	1163SN12R	10022346	1/2"	1/2"

**1193R**


Nickel-plated lockshield valve. Angle body. Plug with soft seal.  
Connection for copper or plastic pipe, size 1/2" M.  
Taper tailpiece knurled to facilitate the hemp sealing operations.

Type	Part no. WII	Part no. WID	Size	Size Tube
1193R	1193SN38XR	-	3/8"	1/2"
1193R	1193SN12R	10025554	1/2"	1/2"

**1164R**


Nickel-plated manual valve. Straight body. Plug with soft seal.  
Connection for copper or plastic pipe, size 1/2" M.  
Taper tailpiece knurled to facilitate the hemp sealing operations.  
ABS handwheel.

Type	Part no. WII	Part no. WID	Size	Size Tube
1164R	1164SN38XR	-	3/8"	1/2"
1164R	1164SN12R	10026301	1/2"	1/2"

**1194R**


Nickel-plated lockshield valve. Straight body. Plug with soft seal.  
Connection for copper or plastic pipe, size 1/2" M.  
Taper tailpiece knurled to facilitate the hemp sealing operations.

Type	Part no. WII	Part no. WID	Size	Size Tube
1194R	1194SN38XR	-	3/8"	1/2"
1194R	1194SN12R	10026300	1/2"	1/2"

## MANUAL VALVES AND LOCKSHIELDS, CONNECTION FOR IRON PIPE

**163R**

Nickel-plated manual valve. Angle body. Plug with soft seal.  
Connection for iron pipe.  
Taper tailpiece knurled to facilitate the hemp sealing operations.  
ABS handwheel.

Type	Part no.WII	Part no.WID	Size
163R	163SN38R	10001562	3/8"
163R	163SN12R	10001560	1/2"

**193R**

Nickel-plated lockshield valve. Angle body. Plug with soft seal.  
Connection for iron pipe.  
Taper tailpiece knurled to facilitate the hemp sealing operations.

Type	Part no.WII	Part no.WID	Size
193R	193SN38R	10001667	3/8"
193R	193SN12R	10001665	1/2"

**164R**

Nickel-plated manual valve. Straight body. Plug with soft seal.  
Connection for iron pipe.  
Taper tailpiece knurled to facilitate the hemp sealing operations.  
ABS cap.

Type	Part no.WII	Part no.WID	Size
164R	164SN38R	10001563	3/8"
164R	164SN12R	10001561	1/2"

**194R**

Nickel-plated lockshield valve. Straight body. Plug with soft seal.  
Connection for iron pipe.  
Taper tailpiece knurled to facilitate the hemp sealing operations.

Type	Part no.WII	Part no.WID	Size
194R	194SN38R	10001668	3/8"
194R	194SN12R	10001663	1/2"

**190**

Nickel-plated manual valve. Angle body. Connection for iron pipe.  
Taper tailpiece knurled to facilitate the hemp sealing operations.  
Polypropylene handwheel.

Type	Part no. WII	Size	Kvs
190	190SN1	1"	9,5

## MANUAL VALVES AND LOCKSHIELDS, CONNECTION FOR IRON PIPE



### 195S



Nickel-plated balancing lockshield valve. Angle body. Connection for iron pipe. Taper tailpiece knurled to facilitate the hemp sealing operations. ABS cap.

Type	Part no. WII	Part no. WID	Size	Kvs
195S	195SN1	10001656	1"	8,9



### DG



Double-block set, without bypass, straight body. Valve for compact radiators with 3/4" M x 3/4" swivel, double-pipe system, 50 mm distance, 2 connection nipples 1/2" x 3/4", self-sealing, 3/4" connection for compression fitting, 2 plastic adapters for 3/4" Eurocone connection. Brass, nickel-plated.

Type	Part no. WID
DG	10001885



### ECK



Double-block set, without bypass, angle body. Valve for compact radiators with 3/4" M x 3/4" swivel, double-pipe system, 50 mm distance, 2 connection nipples 1/2" x 3/4", self-sealing, 3/4" connection for compression fitting, 2 plastic adapters for 3/4" Eurocone connection. Brass, nickel-plated.

Type	Part no. WID
ECK	10001886

## ACCESSORIES AND SPARE PARTS



### 225-RP130

Tool for replacing the insert RP130 of the thermostatic and thermostat adaptable valves without emptying the system. Suitable with valves series 1178UM, 1179UM, 1188UM, 1189UM, 178UM, 188UM, 130UM, TVE, 179UM, 189UM, 131UM, TVD, 134M, 1134M, TVE-S, TVE-SC, 120B, 102M.

Type	Part no. WII	Part no. WID
225-RP130	225-RP130	10001691



### 224

Resetting wrench for thermostat adaptable valves and manifolds series 822M.

Type	Part no. WII	Part no. WID
224	224	10001690

## ACCESSORIES AND SPARE PARTS

**808D**

White plastic single-hole rose.



Type	Part no. WII	Size
808D	808D10W	10 mm
808D	808D12W	12 mm
808D	808D14W	14 mm
808D	808D15W	15 mm
808D	808D16W	16 mm
808D	808D18W	18 mm
808D	808D22W	22 mm
808D	808D28W	28 mm

**128**

White plastic double-hole rose.



Type	Part no. WII	Part no. WID	Size
128	12812W	-	12 mm
128	12814W	-	14 mm
128	12816W	-	16 mm
128	12818W	10022421	18 mm

**234**

Straight tailpiece with nickel-plated nut for valves and lockshields of UM series, with soft seal on radiator side and valve side.



Type	Part no. WII	Size
234	234USN38X	3/8" (5/8")
234	234USN38	3/8"
234	234SN12	1/2"
234	234SN34	3/4"

**HIGHLIGHTS**
**Fittings for thermostatic valves Series 1000**
**Copper pipe**

One-piece soft seal fitting RAFIT+ type 872M



One-piece soft seal compact fitting VELOFIT type 873M



3-pieces compression union type 820R

**Pex pipe**

3-pieces compression union type 817M



Euro-cone compression union type ECP

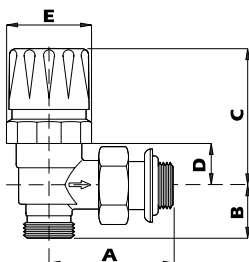
**Multi-layer pipe**

3-pieces compression union type 817MS

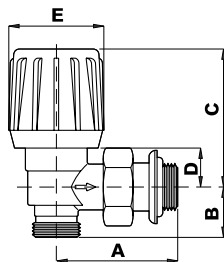


Eurocone compression union type ECM

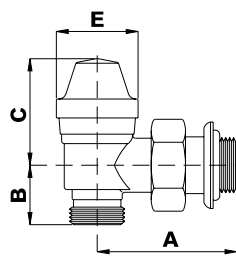


**OVERALL DIMENSIONS**
**1178UM**


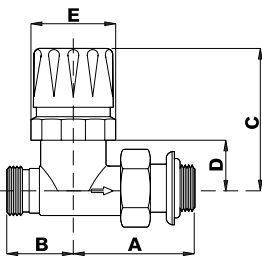
DN	A	B	C	D	E
1/2" x 3/8"	49	20,5	56	18	35
1/2" x 1/2"	53	20,5	56	18	35

**1188UM**


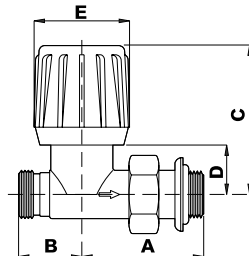
DN	A	B	C	D	E
1/2" x 3/8"	49	20,5	62	18	40
1/2" x 1/2"	53	20,5	62	18	40

**1195UM**


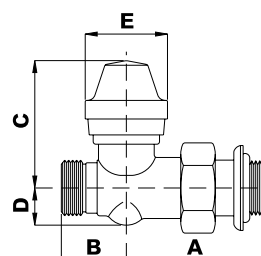
DN	A	B	C	D	E
1/2" x 3/8"	48	19	36	31	
1/2" x 1/2"	52	19	40	31	

**1179UM**


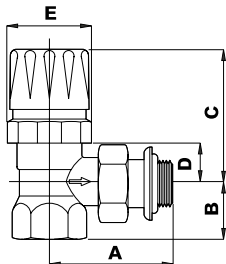
DN	A	B	C	D	E
1/2" x 3/8"	49	26	62	24,5	35
1/2" x 1/2"	53	26	62	24,5	35

**1189UM**


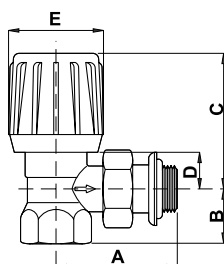
DN	A	B	C	D	E
1/2" x 3/8"	49	26	68	24,5	40
1/2" x 1/2"	53	26	68	24,5	40

**1196UM**


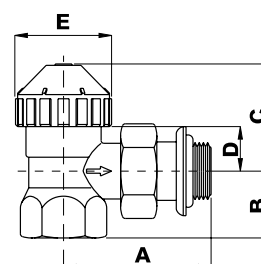
DN	A	B	C	D	E
1/2" x 3/8"	48	23	42	11	31
1/2" x 1/2"	52	23	45	13	31

**178UM**


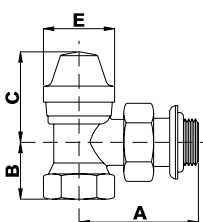
DN	A	B	C	D	E
3/8"	49	20	56	18	35
1/2"	53	23	56	18	35
3/4"	61	28	56	18	35

**188UM**


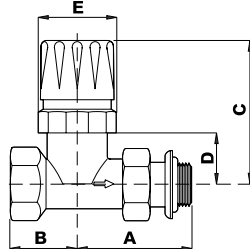
DN	A	B	C	D	E
3/8"	49	20	62	18	40
1/2"	53	23	62	18	40
3/4"	61	28	62	18	40

**130UM**


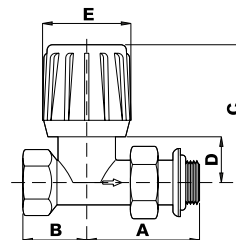
DN	A	B	C	D	E
3/8"	49	20	40	18	35
1/2"	53	23	40	18	35
3/4"	61	28	40	18	35

**195UM**


DN	A	B	C	D	E
3/8"	48	21	36	31	
1/2"	52	25	40	31	
3/4"	60	29	50	41	

**179UM**


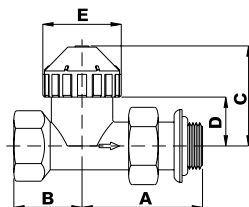
DN	A	B	C	D	E
3/8"	49	26	62	24,5	35
1/2"	53	29	62	24,5	35
3/4"	61	34	62	24,5	35

**189UM**


DN	A	B	C	D	E
3/8"	49	26	68	24,5	40
1/2"	53	29	68	24,5	40
3/4"	61	34	68	24,5	40

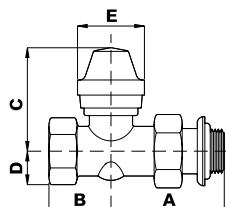
## OVERALL DIMENSIONS

131UM



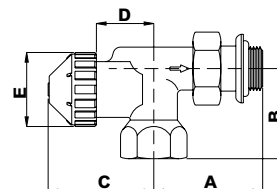
DN	A	B	C	D	E
3/8"	49	26	46.5	24.5	35
1/2"	53	29	46.5	24.5	35
3/4"	61	34	46.5	24.5	35

196UM



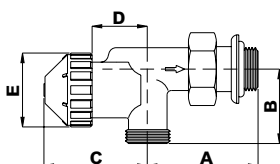
DN	A	B	C	D	E
3/8"	48	25	42	12	31
1/2"	52	28	45	14	31
3/4"	60	33	60	18	41

134M



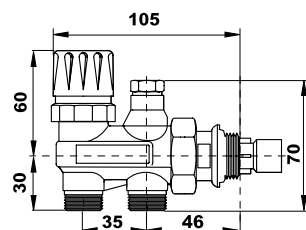
DN	A	B	C	D	E
1/2"	53	37	50	31	35

1134M

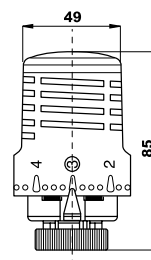


DN	A	B	C	D	E
1/2"	53	34	50	31	35

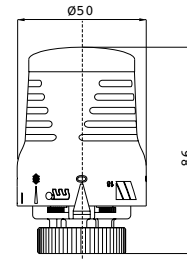
120B/102M



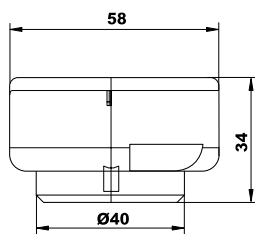
147/148



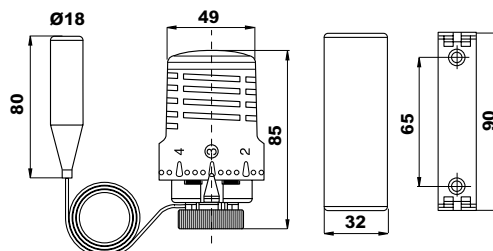
148A



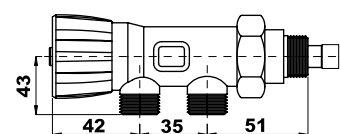
148GA



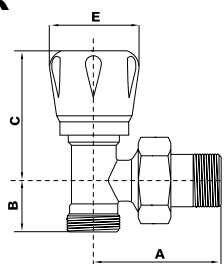
148SD



119SX

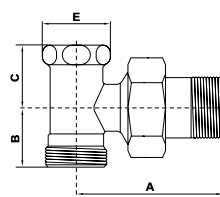


1163R



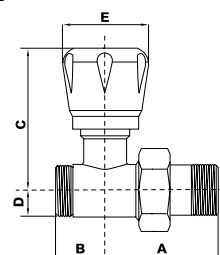
DN	A	B	C	D	E
3/8"	47.5	20	48.5	34.1	
1/2"	51	20	48.5	34.1	

1193R

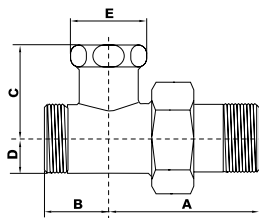


DN	A	B	C	D	E
3/8"	48	20	21	23	
1/2"	50.5	20	21	23	

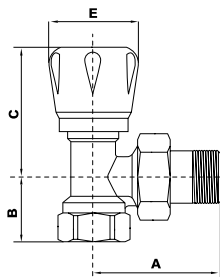
1164R



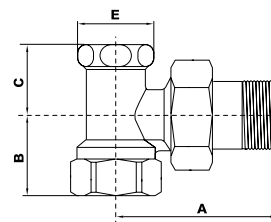
DN	A	B	C	D	E
3/8"	44	22	56	10.4	34.1
1/2"	46	20	56	10.4	34.1

**OVERALL DIMENSIONS**
**1194R**


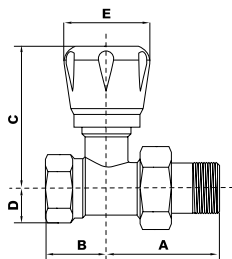
DN	A	B	C	D	E
3/8"	44	22	29	10.4	23
1/2"	46	20	29	10.4	23

**163R**


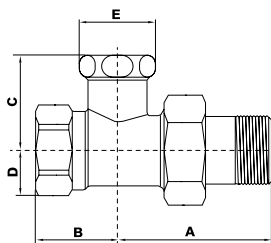
DN	A	B	C	E
3/8"	47.5	22	48.5	34.1
1/2"	51	25	48.5	34.1

**193R**


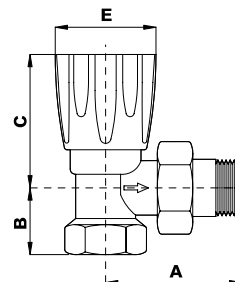
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3/8"	48	22	21	23
1/2"	50.5	25	21	23

**164R**


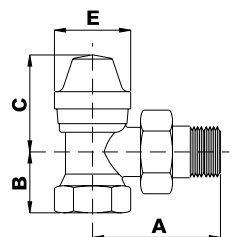
DN	A	B	C	D	E
3/8"	44	22	56	11	34.1
1/2"	46	25	56	14	34.1

**194R**


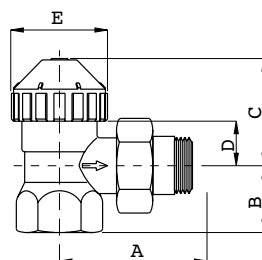
DN	A	B	C	D	E
3/8"	44	22	29	11	23
1/2"	46	25	29	14	23

**190**


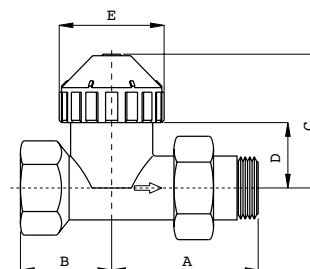
DN	A	B	C	E
1"	70	30	62	50

**195S**


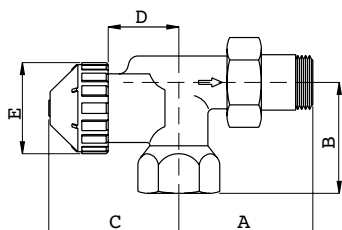
DN	A	B	C	E
1"	70	29	57	46

**TVE**


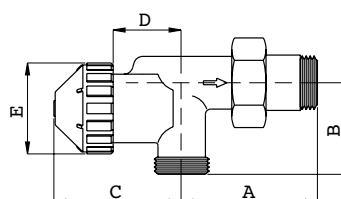
DN	A	B	C	D	E
1/2"	53	23	40	18	35
3/4"	61	28	40	18	35

**TVD**


DN	A	B	C	D	E
3/8"	49	26	46.5	24.5	35
1/2"	53	29	46.5	24.5	35
3/4"	61	34	46.5	24.5	35

**TVE-S**


DN	A	B	C	D	E
1/2"	53	37	50	31	35

**TVE-SC**


DN	A	B	C	D	E
1/2"	53	34	50	31	35

## 22



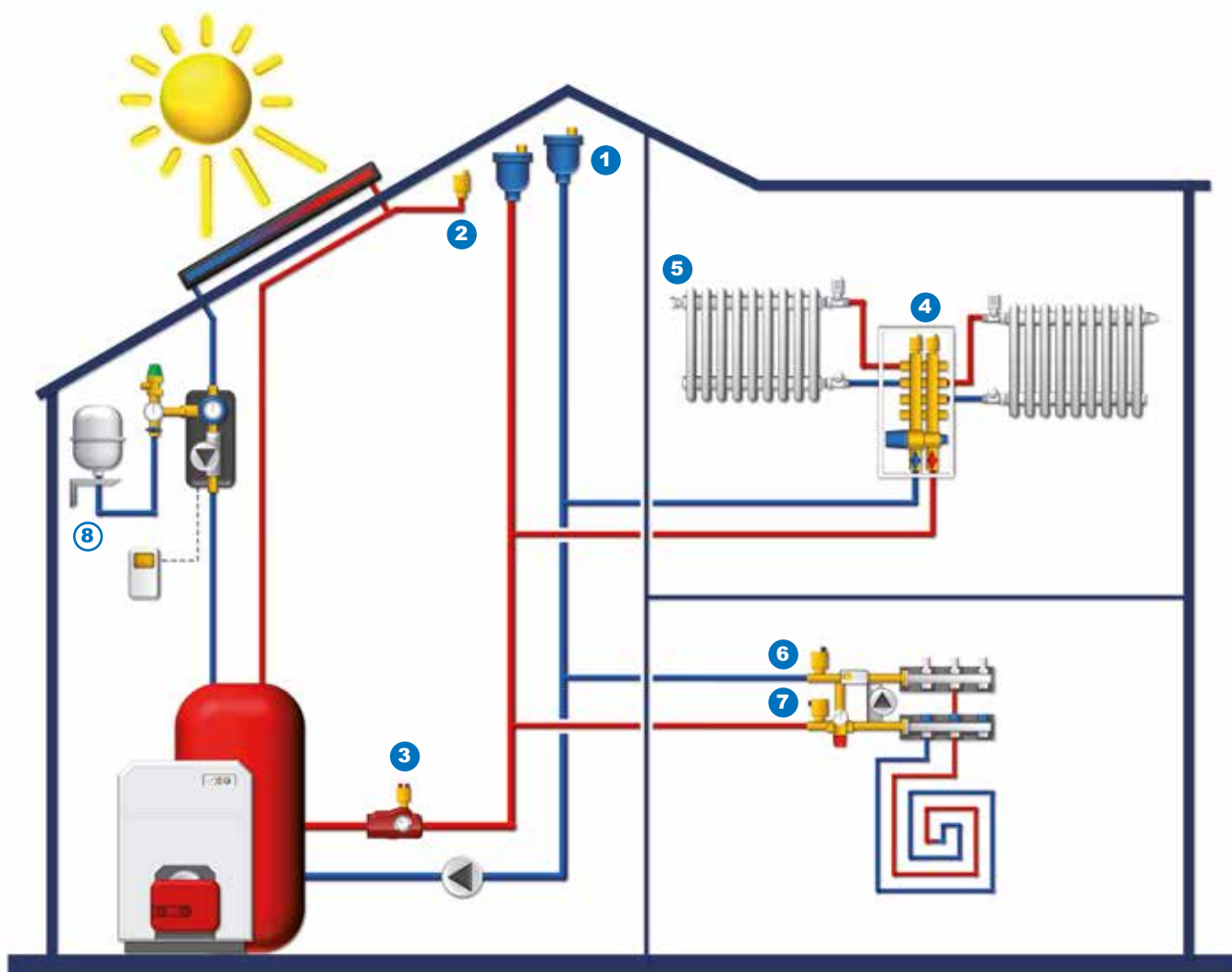


## Air vents









Automatic, manual and with adjustable discharge air vent valves .....	pag. 25
Float air vents .....	pag. 28
Float air vents for solar systems .....	pag. 31
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Overall dimensions .....	pag. 32

EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

- |   |   |  |   |  |
|---|---|--|---|--|
| <p><b>1</b></p>  <p><b>MXV</b><br/>pag. 30</p> <p>MAXIVENT - Automatic high capacity air separator</p> | <p><b>2</b></p>  <p><b>MV-SOL</b><br/>pag. 31</p> <p>Automatic air vent valve for solar system</p> | <p><b>3</b></p>  <p><b>MVD</b><br/>pag. 28</p> <p>DUOVENT - Automatic and manual air vent valve</p> | <p><b>4</b></p>  <p><b>2161C</b><br/>pag. 29</p> <p>FLOATVENT Automatic air vent valve</p> | <p><b>5</b></p>  <p><b>228C</b><br/>pag. 25</p> <p>HYGROVENT Automatic air vent valve</p> |
| <p><b>6</b></p>  <p><b>MV</b><br/>pag. 28</p> <p>MINIVENT Automatic air vent valve</p>                 | <p><b>7</b></p>  <p><b>MKL</b><br/>pag. 29</p> <p>MINIVENT Automatic side air vent valve.</p>      | <p><b>8</b></p>  <p><b>Chapter L.1</b><br/>pag. 183</p> <p>Components for solar heating systems</p> |   |  |

**AUTOMATIC, MANUAL AND WITH ADJUSTABLE DISCHARGE AIR VENT VALVES**
**228C**

HYGROVENT

**Automatic** air vent valve, with check device and discharge nozzle.

Nickel-plated brass body CW617N. Max. pressure: 6 bar.



Type	Part no. WII	Part no. WID	Size
228C	2280C18X	-	1/8"
228C	2281C14X	10001468	1/4"
228C	2282C38X	10001467	3/8"

**238C**

Manual air vent valve, with discharge nozzle. Nickel-plated brass body CW617N.

Max. pressure: 10 bar.



Type	Part no. WII	Size
238C	2381C18X	1/8"
238C	2382C14X	1/4"
238C	2383C38X	3/8"

**231C**

"Super" manual air vent valve, with discharge nozzle. Nickel-plated brass body CW617N.

Max. pressure: 10 bar.



Type	Part no. WII	Size
231C	231C18SNX	1/8"
231C	231C14SNX	1/4"
231C	231C38SNX	3/8"

**SELECTION GUIDE**
**How to tackle the presence of air in the systems**

For optimization of thermal performance of the individual terminal units, elimination of noise caused by air circulation, reduction of rust and corrosion as well as ensuring correct flow of the heat carrier fluid it is necessary to install an appropriate number of air vent devices along the network.

The following devices are available for the various points where air pockets are easier to form:

- air vent valves with automatic operation for heat emitters (Type 228C) or for manifold units (Type MVD)
- high capacity air separators (Type MXV) to be placed at the top of the vertical columns
- air separators (Type ERD) for sections in the boiler room

The declarations of conformity of the product are available on our website :

[www.wattsindustries.com](http://www.wattsindustries.com)



**AUTOMATIC, MANUAL AND WITH ADJUSTABLE DISCHARGE AIR VENT VALVES**

26

B

**VMM**


Manual air vent valve for radiators, with **adjustable discharge** nozzle. Manual discharge opening through screw driver, coin. Nickel-plated brass body CW617N. Glass fibre reinforced nylon handwheel and discharge nozzle body.  
**Sealed on radiator through O-ring.** Max. operating pressure: 10 bar.

Type	Part no. WII	Part no. WID	Size
VMM	0256206	-	1/8"
VMM	0256208	-	1/4"
VMM	0256210	10005044	3/8"

**RDT/K**


Manual air vent valve. Rotating plastic nose, brass body nickel-plated, self-sealing.

Type	Part no. WII	Part no. WID	Size
RDT/K	1203106	10001503	1/8"
RDT/K	1203108	10001504	1/4"
RDT/K	1203110	10001505	3/8"
RDT/K	1203115	10001506	1/2"

**RDT**


Manual air vent valve. Rotating nose, brass body nickel-plated, self-sealing through O-ring, can be operated via key SS/RDT or coin.

Type	Part no. WII	Part no. WID	Size
RDT	1200006	10001463	1/8"
RDT	1200008	10001464	1/4"
RDT	1200010	10001465	3/8"
RDT	1200015	10001466	1/2"


**RDT/METALL**

Metal Key, for manual air vent valves RDT and RDT/K.

Type	Part no. WII	Part no. WID	Size
RDT/METALL	1200501	10001470	3/8" - 1/2"


**SS/RDT**

Plastic Key, for manual air vent valves RDT and RDT/K.

Type	Part no. WII	Part no. WID	Size
SS/RDT	1200500	10009977	3/8" - 1/2"

**AUTOMATIC, MANUAL AND WITH ADJUSTABLE DISCHARGE AIR VENT VALVES**

**RTL**

Blind plug. Self-sealing thread with O-ring.

Type	Part no. WII	Part no. WID	Size
RTL	1202008	10001483	1/4"
RTL	1202010	10001485	3/8"
RTL	1202015	10001486	1/2"


**ELV**

Drain valve. Brass body nickel-plated, rotating plastic head, self-sealing.

Type	Part no. WII	Part no. WID	Size
ELV10	1206010	10001521	3/8"
ELV15	1206015	10001522	1/2"


**LS**

Air vent screw. Brass body nickel-plated with knurl.

Type	Part no. WII	Part no. WID	Size
LS	1204006	10001511	1/8"
LS	1204008	10001512	1/4"
LS	1204010	10001513	3/8"


**PR**

Reducing socket. Self-sealing thread with O-ring.

Type	Part no. WII	Part no. WID	Size
PR	1201100	10001473	3/8"
PR	1201200	10001478	1/2"



## FLOAT AIR VENTS

**MVD**

## DUOVENT

Automatic and manual air vent valve with unscrewable cover for inspection.  
Body and cover of brass CW617N. Corrosion-resistant polyethylene float.  
Nominal pressure : 12 bar. Max. operating pressure: 8 bar. Max. temperature : 115° C.  
Automatic venting capacity at 3 bar : 17.9 litres/min. Manual venting capacity at 3 bar: 139.5 litres/min.  
Also suitable for water containing additive (glycol up to 30%).

Type	Part no. WII	Part no. WID	Size
MVD	0250610	10004958	3/8"
MVD	0250615	-	1/2"

**MVDR**

## DUOVENT

Like MVD but complete with automatic shut-off valve RIA.

Type	Part no. WII	Part no. WID	Size
MVDR	0250710	10004960	3/8"
MVDR	0250715	10004962	1/2"

**MV**

## MINIVENT

Automatic air vent valve with unscrewable cover for inspection.  
Body and cover of brass CW617N. Corrosion-resistant polyethylene float.  
Max. pressure : 12 bar. Max. temperature : 115° C.  
Also suitable for water containing additive (glycol up to 30%)

Type	Part no. WII	Part no. WID	Size
MV	0250008	10004916	1/4"
MV	0250010	10004917	3/8"
MV	0250215	10004919	1/2"

**MVR**

## MINIVENT

Automatic air vent valve like MVD but complete with automatic shut-off valve RIA.

Type	Part no. WII	Part no. WID	Size
MVR	0250110	10004932	3/8"
MVR	0250115	10004937	1/2"

**MKV**

## MICROVENT

Automatic vertical air vent valve. Body and cover of brass CW617N. Sealed with O-Ring  
Max. pressure : 10 bar. Max. temperature : 110° C.  
Also suitable for water containing additive (glycol up to 30%).

Type	Part no. WII	Part no. WID	Size
MKV	0251210	10004980	3/8"

**FLOAT AIR VENTS**

**MKVR**
**MICROVENT**

Automatic vertical air vent valve like MVD but complete with automatic **sealed** shut-off valve RIA.

Type	Part no. WII	Part no. WID	Size
MKVR	0251310	10004983	3/8"
MKVR	0251410	10004984	1/2"


**MKL**
**MICROVENT**

Automatic side air vent valve. Body and cover of brass CW617N. Sealed with O-Ring  
Max. pressure : 10 bar. Max. temperature : 110° C.  
Also suitable for water containing additive (glycol up to 30%).

Type	Part no. WII	Part no. WID	Size
MKL	0252210	10004991	3/8"


**MKLR**
**MICROVENT**

Automatic side air vent valve like MVD but complete with automatic **sealed** shut-off valve RIA.

Type	Part no. WII	Part no. WID	Size
MKLR	0252310	10004992	3/8"


**RIA**

Automatic shut-off valve for automatic air vent valves series MVD, MV, MKV, MKL.  
Complete with device for quick and total drainage of water from the valve.

Type	Part no. WII	Part no. WID	Size
RIA	0259008	10005115	1/8"
RIA	0259010	10005116	3/8"
RIA	0259015	10005118	1/2"
RIA	0259016	10005119	3/8" x 1/2"


**2161C**
**FLOATVENT.**

Automatic vertical air vent valve. Sealed with O-ring. Designed for installation on head connections of flush manifolds. Brass CW617N body. Max. pressure: 10 bar.  
Max. temperature: 110°C

Type	Part no. WII	Part no. WID	Size
2161C	2161C38	10004145	3/8"
2161C	2161C12	-	1/2"
2161C	2161C34	10004953	3/4"
2161C	2161C1	-	1"

## FLOAT AIR VENTS

**2311C**

CHECKVENT.

Sealed check valve for automatic vertical air vent valve 2161C38.

Type	Part no. WII	Size
2311C	2311C38	3/8"

**IV**

INTERVENT

Automatic air vent with plastic floater, body and cover of brass CW617N, O-ring cover seal. Max. system pressure 12 bar, max. operating temperature 110 °C, glycol resistant up to 50% mixing ratio.

Type	Part no. WII	Part no. WID	Size
IV	0252010	10004987	3/8"

**IVR**

INTERVENT

Automatic air vent with plastic floater, body and cover of brass CW617N, O-ring cover seal. Max. system pressure 12 bar, max. operating temperature 110 °C, glycol resistant up to 50% mixing ratio. Complete with automatic **sealed** shut-off valve RIA.

Type	Part no. WII	Part no. WID	Size
IVR	0252110	10004988	3/8"
IVR	0252115	10004989	1/2"

**AV15**

AIRVENT

Automatic air vent with plastic floater, elbow model, body and cover of brass CW617N nickel-plated, O-ring cover seal, connection R 1/2", max. system pressure 10 bar. Max. operating temperature 110 °C, glycol resistant up to 50 % mixing ratio.

Type	Part no. WII	Part no. WID	Size
AV15	0254015	10005005	1/2"

**MXV**

MAXIVENT.

Automatic high capacity deaerator provided with manual air vent valve. Cast iron body and cover with epoxy finish. Max. operating pressure : 12 bar. Max. operating temperature : 115° C. Female air outlet connection : 3/8".

Type	Part no. WII	Part no. WID	Size
MXV	0253020	-	3/4"
MXV	0253025	10025852	1"
MXV	0253032	-	1.1/4"

**FLOAT AIR VENTS FOR SOLAR SYSTEMS**

31

B



Solar

**MV-SOL**

**MINIVENT**

Automatic air vent valve for solar systems with unscrewable cover for inspection.

Body and cover of brass CW617N, 1265-99. Polyethylene float.

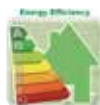
Seal between reservoir and cover with O-ring. Connection ND 3/8" - 1/2" DIN - ISO 228/1 Stainless steel (AISI 304) vacuum breaker (only for ND 3/8")

Max. operating pressure : 12 bar. Max. operating temperature : 160 °C.

Type	Part no. WII	Part no. WID	Size
MV-SOL	0249110	10004914	3/8"
MV-SOL	0249115	10004915	1/2"



Solar

**RIA/MV-SOL**

Automatic shut-off valve. Allows the air vent valves (**MV-SOL**) to be removed without having to empty the system. The **RIA/MV-SOL** shut-off valve is fitted with a device for quick total emptying of the water from the valve. Body: Brass EN12164-01 CW614N.

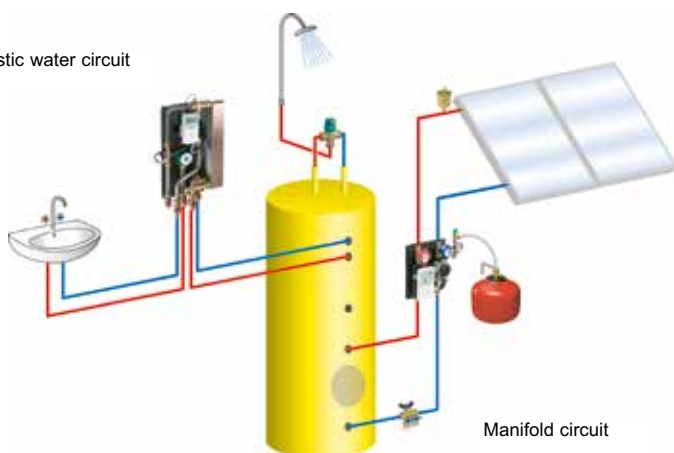
Plug: Polymer high resistance. Spring: Stainless steel.

Connections MF 3/8" and 1/2" DIN - ISO 228/1. Sealing Elastomer high resistance.

Type	Part no. WII	Part no. WID	Size
RIA/MV-SOL	0259310	10005122	3/8" x 3/8"
RIA/MV-SOL	0259315	10005124	1/2" x 1/2"

**HIGHLIGHTS**
**Components for solar heating systems**

Domestic water circuit



Manifold circuit



The increasingly greater use of systems exploiting renewable solar energy entail development of a specific line of products for expelling air from the circuits.

The materials of construction used for the MV-SOL and RIA/MV SOL valves are designed to withstand high temperatures and particular operating conditions.

**AIR SEPARATORS**
**ERD**
**EUROVENT**

Automatic /manual double deaerator with expansion vessel. Tropicalized sheet steel body.

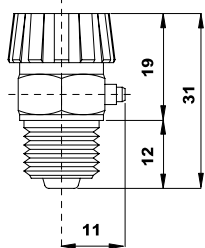
Max. pressure : 8 bar. Max. temperature : 115° C



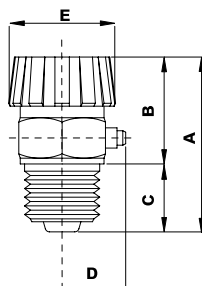
Type	Part no. WII	Part no. WID	Size
ERD	0253625	10004994	1"
ERD	0253640	10004995	1.1/2"

OVERALL DIMENSIONS

**228C**

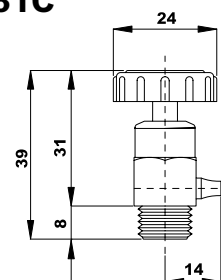


**238C**

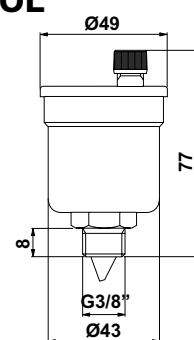


DN	A	B	C	D	E
1/8"	29	17	12	11	17
1/4"	29	17	12	11	17
3/8"	29	19	10	11	17

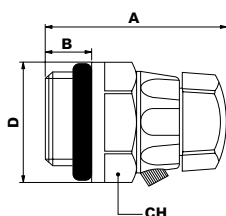
**231C**



**MV-SOL**

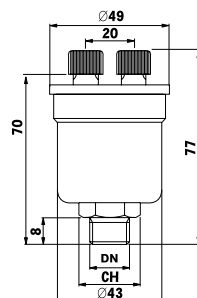


**VMM**



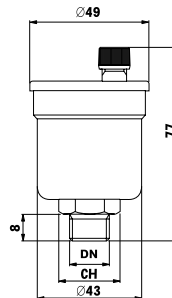
DN	A	B	CH
1/8"	24	5.5	14
1/4"	24	6	14
3/8"	26	7	17

**MVD**



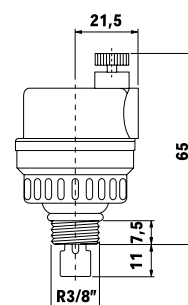
DN	CH
3/8"	19
1/2"	22

**MV**

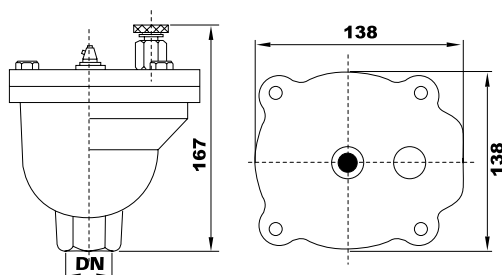


DN	CH
3/8"	19
1/2"	22

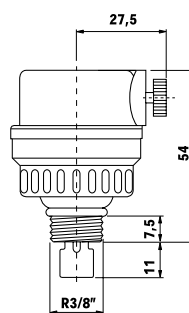
**MKV**



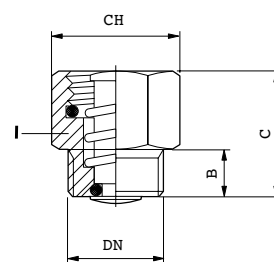
**MXV - 3/4" - 1" - 1.1/4"**



**MKL**

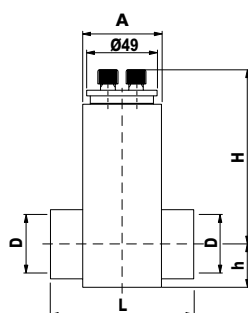


**RIA**



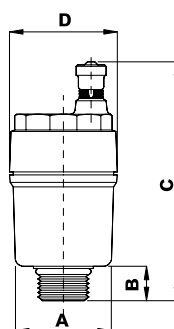
DN	B	C	CH
3/8"	8	11	19
1/2"	8	11	24

**ERD**



DN	A	L	H	h
1"	60x50	94	153	26
1.1/2"	60x60	104	191	32

**2161C**



DN	A	B	C	D
3/8"	30	10	77	36
1/2"	30	10	77	36
3/4"	32	12	79	36
1"	37	12	79	36



## Regulation, controls and Modul distribution



Regulation and control.....	pag. 35
Modul distribution .....	pag. 49



## C.1 Regulation and control

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Wired room mechanical thermostats, WFHT-range	pag. 37
Wired room mechanical thermostats	pag. 41
Room thermostat for electric floor heating	pag. 41
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Climatic control .....	pag. 46
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## C.2 Modul distribution

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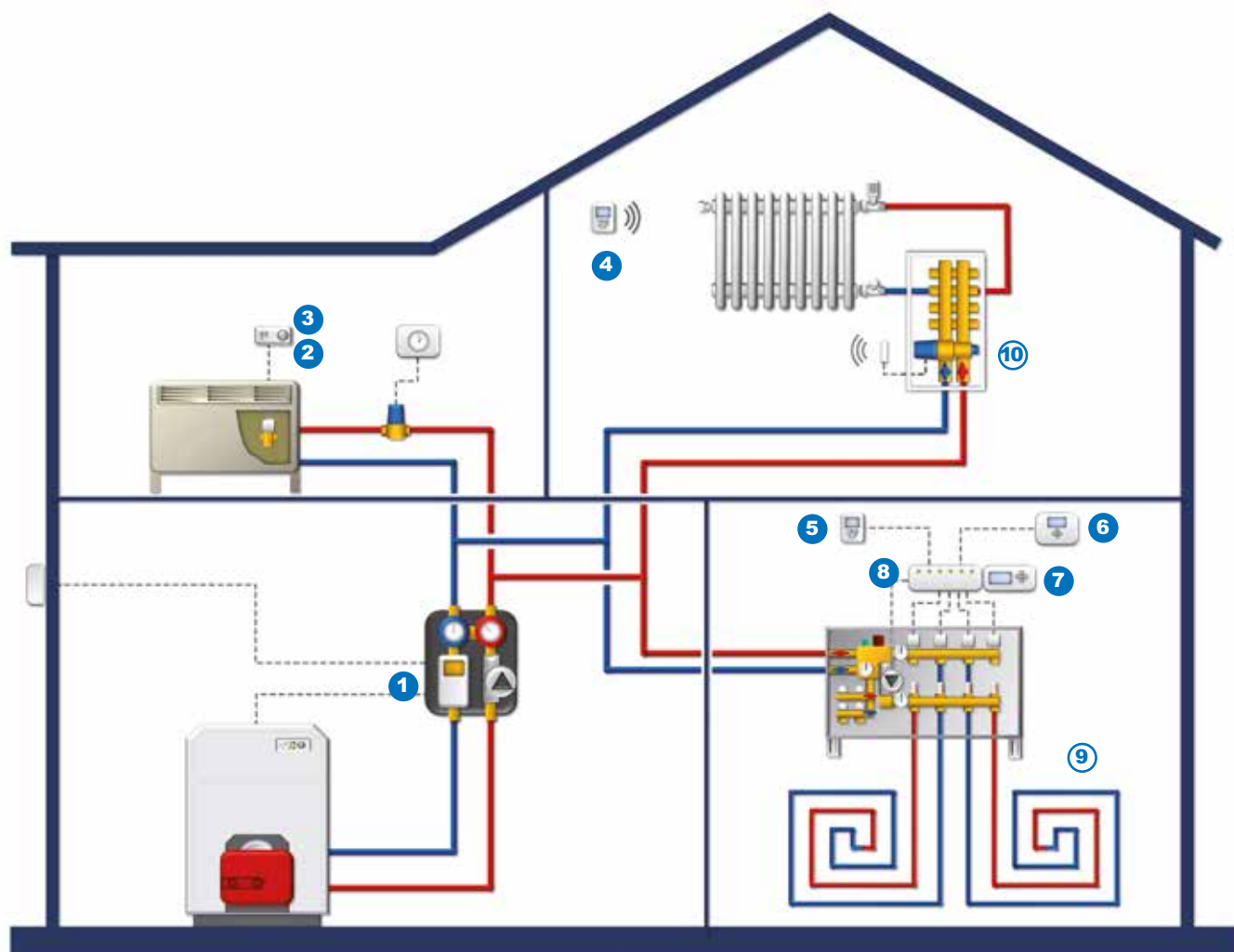
# Regulation and control

35

C.1



## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

**1 CLIMATIC CONTROL**  
pag. 46



DGT Climatic control

**2 FAN OPEN**  
pag. 42



Mechanical thermostat for fan-coil

**3 FAN COMFORT 2T**  
pag. 42



Electronic thermostat for fan-coil 2 pipe type

**4 BTDP-RF**  
pag. 45



Electronic room radio thermostat

**5 BTD**  
pag. 40



Electronic room thermostat

**6 MILUX**  
pag. 38



Digital electronic room timing chrono thermostat with daily/weekly programming

**7 WFHC-TIMER**  
pag. 39



Weekly timer programmer

**8 WFHC (MASTER)**  
pag. 38



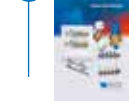
Connecting box 4/6 zones

**9 Chapter D**  
pag. 67



Components for underfloor heating systems, pex pipe

**10 Chapter C.2**  
pag. 49



Modul distribution

**WIRED ROOM THERMOSTATS, WFHT-RANGE**
**WFHT**


Electronic room thermostat for radiant panel heating systems. Can be connected directly to electrothermal actuators Series 22C, 26LC or through modules WFHC. Temperature setting range: 5 - 30°C. Temperature differential 0.5 K. Temperature sensor: NTC. Contact: Triac. Exit power: max 15W.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Actuator	Protection
WFHT	P2060	10021092	24 VAC	N.O.	IP30
WFHT	P2061	10021093	24 VAC	N.C.	IP30
WFHT	P2062	10021094	230 VAC	N.O.	IP30
WFHT	P2063	10021095	230 VAC	N.C.	IP30

**WFHT1**


Electronic room thermostat for radiant panel heating systems. Can be connected directly to electrothermal actuators series 22C, 26LC or through modules WFHC. Adjustment range 5 - 30 °C, differential gap 0,5K, operating temperature 0 - 50 °C, noiseless triac contact, NTC temperature sensor, output 15/75 W, IP 30. Mode selection normal, reduced or pilot wire (clock timer).

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Actuator	Protection
WFHT1	P2064	10021097	24 VAC	N.O.	IP30
WFHT1	P2065	10021098	24 VAC	N.C.	IP30
WFHT1	P2066	10021099	230 VAC	N.O.	IP30
WFHT1	P2067	10021100	230 VAC	N.C.	IP30

**WFHT2**


Electronic room thermostat for radiant panel heating systems. Can be connected directly to electrothermal actuators series 22C, 26LC or through modules WFHC. Adjustment range 5 - 30 °C, differential gap 0,5K, operating temperature 0 - 50 °C, noiseless triac contact, NTC temperature sensor, output 15/75 W. Internal switch for NC/NO-actuators. Mode selection normal, reduced or pilot wire (clock timer). Floor sensor with adjustable temperature limitation 10 - 40 °C, 3 m sensor cable.

3 control modes:

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Actuator	Protection
WFHT2	P2068	10021101	24 VAC	N.O.- N.C.	IP30
WFHT2	P2070	10021102	230 VAC	N.O.- N.C.	IP30

**WFHT3**


Like WFHT2 but particularly suitable for installation in public environments. Settings inside the casing.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WID	Power supply	Description
WFHT3-PUBLIC	10021103	24 VAC, 15W, N.O.- N.C.	with floor sensor
WFHT3-PUBLIC	10021106	230 VAC, 75W, N.O.- N.C.	with floor sensor



## WIRED ROOM THERMOSTATS, WFHT-RANGE

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**WFHT-LCD**

Electronic room thermostat **with LCD display** mode for radiant panel heating systems. Can be connected directly to electrothermal actuators Series 22C, 26LC or through modules WFHC. Three functioning modes : comfort, night reduction, external clock. Adjustment range 5 - 30 °C, differential gap 0,5 K, operating temperature 0-50°C, noiseless triac contact, NTC temperature sensor, output 15/75 W. Internal switch for NC/NO-actuators. Mode selection normal, reduced or pilot wire (clock timer). Floor sensor with adjustable temperature limitation 10-40°C, 3 m sensor cable. 3 control modes :

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Actuator	Protection
WFHT-LCD	P2076	10021109	24 VAC	N.O. - N.C.	IP30
WFHT-LCD	P2077	10021111	230 VAC	N.O. - N.C.	IP30
WFHT-LCD	-	10021108	24 VAC with external sensor		
WFHT-LCD	-	10021110	230 VAC with external sensor		

**MILUX**

Digital electronic room timing chrono thermostat with day/week programming.

**9 preset and 4 customizable programs available.** Constant room temperature, time and status display. White casing with removable front panel for access to the batteries and connections. Easy wiring: two-wire connection (3-position connector) for heating and air conditioning systems.

Complete with 3 alkaline batteries LR6 (AAA) 1.5V: **Autonomy 2 years.**

Battery replacement without loss of programming. Temperature setting range: 5 - 35°C.

(comfort and night energy saving programmes). Anti-freeze (0,5 - 10 °C).

Load capacity of 3 contacts : 8A - 250 VAC.

Automatic or manual operation. Special functions :

- Reset, locking of keys (to prevent accidental modification of the preset parameters)
- Temporary suspension (holidays) of the operation during periods of absences.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
MILUX	P185800 (Daily)	10013382	3 batteries 1,5V	IP30
MILUX	P185900 (Weekly)	10013384	3 batteries 1,5V	IP30

**WFHC (MASTER)**

Connecting box, master for 4 or 6 zone for connection of thermostats (e.g. WFHT-LCD, Milux, BT-D) with actuators (22C, 26LC), pump relay (output 8 A), IP 20, modular design.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Description	Power
WFHC (MASTER)	P2085	10021112	4 ZONES N.O.	24 VAC
WFHC (MASTER)	P2086	10021113	4 ZONES N.C.	24 VAC
WFHC (MASTER)	P2093	10021120	4 ZONES N.O.	230 VAC
WFHC (MASTER)	P2094	10021121	4 ZONES N.C.	230 VAC
WFHC (MASTER)	P2081	10021114	6 ZONES N.O.	24 VAC
WFHC (MASTER)	P2082	10021115	6 ZONES N.C.	24 VAC
WFHC (MASTER)	P2089	10021122	6 ZONES N.O.	230 VAC
WFHC (MASTER)	P2090	10021123	6 ZONES N.C.	230 VAC

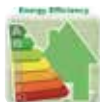


**WIRED ROOM THERMOSTATS, WFHT-RANGE**
**WFHC (SLAVE)**

Extension (slave) module for 4 or 6 zones with plug-in connector for coupling to Master unit.



Type	Part no. WII	Part no. WID	Description	Power
WFHC (SLAVE)	P2087	10021116	4 ZONES N.O.	24 VAC
WFHC (SLAVE)	P2088	10021117	4 ZONES N.C.	24 VAC
WFHC (SLAVE)	P2095	10021124	4 ZONES N.O.	230 VAC
WFHC (SLAVE)	P2096	10021125	4 ZONES N.C.	230 VAC
WFHC (SLAVE)	P2083	10021118	6 ZONES N.O.	24 VAC
WFHC (SLAVE)	P2084	10021119	6 ZONES N.C.	24 VAC
WFHC (SLAVE)	P2091	10021126	6 ZONES N.O.	230 VAC
WFHC (SLAVE)	P2092	10021127	6 ZONES N.C.	230 VAC

**WFHC-TIMER**


Weekly timer programmer for 2 heating zones (day/night) suitable for radiant panel heating systems. Can be coupled directly to the modular boxes series WFHC-4 and WFHC-6. Provided with 9 preset and 4 customizable programs available. Degree of protection IP30.



Type	Part no. WII	Part no. WID	Power supply
WFHC-TIMER	P2101	10021129	24 - 230 VAC

**WFHC-TRANSFORMER**

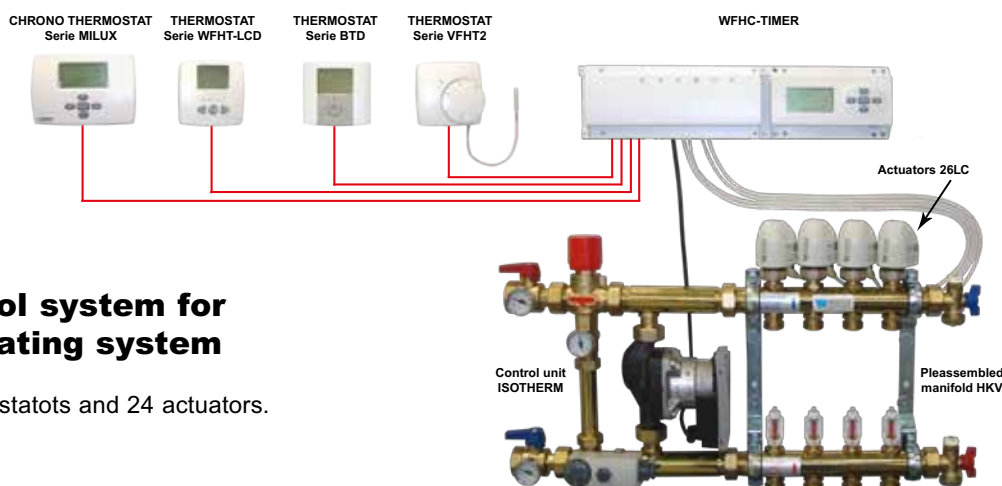
Transformer 60 VA designed for the modular boxes and actuators 24 VAC. Output power suitable for up to a max. of 18 actuators. Degree of protection IP30.



Type	Part no. WII	Part no. WID	Power supply
WFHC-TRANSFORMER	P2080	10021128	230 VAC

**HIGHLIGHTS**
**Integrated control system for radiant panel heating system**

Up to 12 zones, 12 thermostats and 24 actuators.



## WIRED ROOM THERMOSTATS, WFHT-RANGE

**BT-A**

Electronic analogical room thermostat specially designed to control different type of heating systems. Can be connected to electrothermal actuators Series 22C, 26LC through modules WFHC. Working mode: normal. Temperature setting range: 5 - 35°C. Temperature differential 0.5 K. Regulation on the integrated temperature sensor: NTC. Option: possibility to regulate on external sensor (NTC 10K).

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WID	Power supply	Protection
BT-A	10025810	2 batteries 1,5 V	IP30

**BT-D**

Electronic room thermostat with LCD-display specially designed to control different type of heating systems. Can be connected to electrothermal actuators Series 22C, 26LC through modules WFHC. Working mode: normal, reduced, antifreeze, timer. Display with backlight, key lock function. Temperature setting range: 5 - 35°C. Temperature differential 0.5 K or proportional band (PWM). Regulation on the integrated temperature sensor: NTC.

Option: possibility to regulate on external sensor (NTC 10K).

3 control modes :

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
BT-D	P04542	10025806	2 batteries 1,5 V	IP30

**BT-DP**

Programmable electronic room thermostat with LCD-display specially designed to control different type of heating systems. Can be connected to electrothermal actuators Series 22C, 26LC through modules WFHC. Working mode: normal, reduced, antifreeze, automatic, timer, holiday. Display with backlight, key lock function. Temperature setting range: 5 - 35°C. 9 preset and 4 customizable programs available. Temperature differential 0.5 K or proportional band (PWM). Regulation on the integrated temperature sensor: NTC. Option: possibility to regulate on external sensor (NTC 10K).

3 control modes :

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
BT-DP	P04543	10025807	2 batteries 1,5 V	IP30

**WIRED ROOM MECHANICAL THERMOSTATS**
**BELUXTI**


Room thermostat with heat sensitive element of steam expansion diaphragm type, **with 3 contacts**. Stainless steel diaphragm. Temperature locking device at back of knob. Setting range: 5 - 30°C. Differential at 20°C: 0.8K. Contact load rating: 10 (2.5) A/250V. **Silver contacts 1000/1000.**

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
BELUXTI	0403202	10013363	230 VAC	IP30

**BELUX Digital**


Digital room thermostat, with NTC element. The two buttons under the LCD display serve for displaying room temperature, operating mode (heating/air conditioning), operating status (on/off), battery charge. Complete with 2 alkaline batteries LR03 (AAA) 1.5V. Temperature setting range: 5 - 35°C. Differential at 20°C: 0.5K. Contact Load rating: 8 A-250VAC. On/Off function Easy connection via two wires

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
BELUX Digital	185000	10013373	230 VAC	IP30

**BELUX EFH-AP**


Electronic room thermostat, adjustment range 5 - 30 °C, differential gap 0,5 K, output 15 A-230 V, protection class IP 30, ON/OFF switch, connection of external sensor possible.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WID	Power supply	Protection
BELUX EFH-AP	10013371	230 VAC	IP30

**ROOM THERMOSTATS FOR ELECTRIC FLOOR HEATING**
**EFHT-BASIC**


Flush mounting thermostat designed for electrical floor heating. Also suitable for water floor heating systems. Adjustment range 5 - 35 °C in steps of 0,5 K. Output 250 VAC / 10 A, protection class IP 21, ON/OFF switch, LED-Indicator. External sensor 10 K, 3 m cable. Pilot wire input for reduced temperature (4 K). Front frame round and square type fits to installation system ELKO RS/B&J JUSSI and ELJO TREND.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WID	Power supply	Protection
EFHT-BASIC	10013393	230 VAC	IP21

**EFHT-LCD**


Flush mounting thermostat with LCD display with back-light. Specially designed for electrical floor heating. Also suitable for water floor heating systems. Adjustment range 5 - 37 °C in steps of 0,5 K. Output 250 VAC / 10 A, protection class IP 21, ON/OFF switch, LED-Indicator. External sensor 10 K, 3 m cable. Pilot wire input for reduced temperature (4 K). Front frame round and square type fits to installation system ELKO RS/B&J JUSSI and ELJO TREND.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WID	Power supply	Protection
EFHT-LCD	10013391	230 VAC	IP21
EFHT-LCD	10013392 (Weekly)	230 VAC	IP21

## ROOM THERMOSTATS FOR ELECTRIC FLOOR HEATING

**WATTSTEMP**

Thermostat with LCD display with back-light. Specially designed for electrical floor heating. Also suitable for water floor heating systems. Adjustment range 5 - 37 °C in steps of 0,5 K. Output 250 VAC / 16 A, protection class IP 21. Working modes: comfort, reduced, boost, automatic. 3 control modes :

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

According to 2006/95/CE - 2004/108/CE.

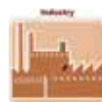
Type	Part no. WID	Description
WATTSTEMP 850D	10025812	not programmable
WATTSTEMP 850DP	10025813	programmable

**SENSOR 10K**

External sensor / floor sensor. Sensor class II to be used with all our BT, BT-RF, WFHT and EFHT thermostats for floor regulation or floor limitation. R25 : 10 K.

Type	Part no. WID
SENSOR 10K	10013372

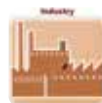
## THERMOSTATS FOR FAN-COILS

**FAN OPEN**

Mechanical thermostat for fan-coils. ON/OFF switch (excludes thermostat). 3-position switch for setting fan speed. Temperature locking device at back of knob. Setting range: 5 - 30°C. Temperature differential: 0.6°C. Contact load rating: 6 (2) A/250V.

According to 2006/95/CE - 2004/108/CE.

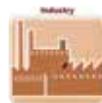
Type	Part no. WII	Part no. WID	Power supply	Protection
FAN OPEN	0407605	10013536	230V	IP30

**FAN COMFORT2T**

Electronic thermostat for fan-coils. ON/OFF switch (excludes thermostat). 3-position switch for setting fan speed. Summer/Winter switch. Setting range: 5 - 35°C. Temperature differential: 0.6°C. Temperature locking device at back of knob. Contact power rating: 6 (2) A/250V. **1 output for control of one valve.**

According to 2006/95/CE - 2004/108/CE.

Type	Part no. WII	Part no. WID	Power supply	Protection
FAN COMFORT2T	P2374	10013532	230V	IP30

**FAN COMFORT4T**

**Electronic** thermostat for fan-coils **4-pipe** type. ON/OFF switch (excludes thermostat). 3-position switch for setting fan speed. Summer/Winter switch. Setting range: 5 - 30°C. Temperature differential: 0.2°C. Contact power rating: 6 (2) A/250V. Dead zone adjustment from 1°C to 10°C. 2 independent outputs for control of valve governing hot/cold. Connection for external probe. Led's : Red = hot - Green = cold

According to 2006/95/CE - 2004/108/CE.

Type	Part no. WII	Part no. WID	Power supply	Protection
FANCOMFORT4T	0407614	10013533	230V	IP30



**CHRONO-THERMOSTATS, THERMOSTATS AND TIMER SWITCHES**
**WFHT1-RF**


Electronic room thermostat with RF control **with night reduction mode fixed (set-point - 4K) and temperature level selector switch (comfort-save) and signal from timing switch.**

Temperature setting range: 5 - 30°C. Temperature differential 0,3 K.

Supply: 2 lithium batteries, autonomy 3 years.

Frequency 433,92 Mhz and 868Mhz - Distance 100m with free range of action.

Degree of protection IP 30.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	Power supply	MHz
WFHT1-RF	P1857	10021130	2 batteries	433,92
WFHT1-RF	-	10021131	2 batteries	868

**WFHT-LCD-RF**


Digital RF thermostat designed for communication with the modular boxes of the RF series. Display showing the room temperature measured and operating mode (comfort, save, timer OFF-mode). On/Off switch. Differential: 0.3 K.

Power supply: 2 lithium batteries, life 1 year. Setting range: 5 – 30°C.

Frequency 433.92 and 868 MHz. Range of action: in open field: 100 m, in close field 30m.

Degree of protection: IP30. Distance 100 m with free range of action.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	Power supply	MHz
WFHT-LCD-RF	P2079	10021132	2 batteries	433,92
WFHT-LCD-RF	-	10021133	2 batteries	868

**MILUX-RF**


Digital electronic room timing chrono thermostat with RF control (not requiring electrical connections) complete with 3 alkaline batteries LR6 (AAA) 1.5V: **autonomy 3 years.** For other characteristics: see MILUX. Compatible receiving unit : **Receiver unit provided with antenna** compatible with electronic timing thermostat Series MILUX-RF.

Power supply 230 VAC. Contacts 10A / 250 Vac. Two-wire (2.5 mm<sup>2</sup>) connection.

N° 3 led's indicating operating status :

- Green led (ready in RF), - Red led (operative), - Black led (configuration)

On/Off switch. Distance: 50 m with free range of action. Output relay: 16A.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	Description	MHz
MILUX-RF PACK	P2054	10013386	Chrono-thermostat + RF receiver	433,92
MILUX-RF	P2231	10013387	Only Chrono-thermostat	433,92
MILUX-RF	-	10013388	Only Chrono-thermostat	868

**RF RECEIVER FOR 1 ZONE**


Receiver for WFHT/MILUX RF-Thermostats. Using one RF-Thermostat as transmitter, multiple receivers can be operated. Switch for automatic/manual mode and radio configuration. Output 12 A, protection class IP 44. Distance 100 m with free range of action.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	Description	MHz
RF RECEIVER 1 ZONE	P2232	10013389	Only RF control	433,92
RF RECEIVER 1 ZONE	-	10013390	Only RF control	868

## CHRONO-THERMOSTATS, THERMOSTATS AND TIMER SWITCHES

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### PACK-RF (WFHC-RF)

Control system **through 4 or 6 zones radio control** consisting of:

- Main modular box (Master) with electric pump control relay, for connection to up to 4 or 6 zones and 4 thermostats; each thermostat can command up to 4 actuators (N.O/N.C. selecting by display). Degree of protection IP30.
- Receiver unit with weekly timer programmer for 2 heating zones (day/night). Provided with 4 free programs and 9 fixed ones. Degree of protection IP30.
- Antenna, reception in open field up to 100 metres, frequency 433,92 or 868 MHz



Type	Part no. WII	Part no. WID	Description	Power supply	MHz
PACK-4-RF	P244300	10021138	4 ZONES (Master)	230 VAC	433,92
PACK-4-RF	P209800	10021136	4 ZONES (Master)	24 VAC	433,92
PACK-4-RF	-	10021139	4 ZONES (Master)	230 VAC	868
PACK-4-RF	-	10021137	4 ZONES (Master)	24 VAC	868
PACK-6-RF	P244200	10021142	6 ZONES (Master)	230 VAC	433,92
PACK-6-RF	P234700	10021140	6 ZONES (Master)	24 VAC	433,92
PACK-6-RF	-	10021143	6 ZONES (Master)	230 VAC	868
PACK-6-RF	-	10021141	6 ZONES (Master)	24 VAC	868

### WFHC-RF EXT

Extension module 4 and 6 zones with plug-in connector for coupling to PACK-RF unit. Operating temperature 0 - 50 °C, IP 30, for normally open (NO) or normally closed (NC) actuators. Operation only when used with RF-Connecting box. Suitable frequency 433,92 or 868 MHz.



According to 2006/95/CE - 2004/108/CE - 1999/5/CE.

Type	Part no. WID	Description	Power
WFHC-RF EXT	10021134	4 ZONES (Slave)	24/230 VAC
WFHC-RF EXT	10021135	6 ZONES (Slave)	24/230 VAC

### HIGHLIGHTS

#### Integrated control system for radiant panel heating systems with wireless controls

Up to 12 zones, 12 thermostats and 24 actuators.

CHRONO THERMOSTAT  
Serie MILUX-RF



THERMOSTAT  
Serie WFHT-LCD



THERMOSTAT  
Serie VFHT1-RF



WFHC-TIMER



Actuators 26LC



**RADIO THERMOSTATS BT-RANGE**
**BT-A-RF**


Electronic analogical room radio thermostat 868 MHz specially designed to control different typeS of heating systems. Working mode: normal. Temperature setting range: 5 - 35°C. Proportional band. Regulation on the integrated temperature sensor: NTC. Option: possibility to regulate on external sensor (NTC 10K). Range of action: in open field: 100 m, in close field 30m. Degree of protection: IP30.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WID	Power supply	MHz
BT-A-RF	10025811	2 AAA LR03 1.5V batteries	868

**BTD-RF**


Electronic room radio thermostat 868 MHz with LCD-display specially designed to control different types of heating systems. Working mode: normal, reduced, antifreeze, timer. Display with backlight, key lock function. Temperature setting range: 5 - 35°C. Temperature differential 0.5 K or proportional band (PWM). Regulation on the integrated temperature sensor: NTC. Option: possibility to regulate on external sensor (NTC 10K). Degree of protection: IP30.

3 control modes :

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	Power supply	MHz
BTD-RF	P04879	10025809	2 AAA LR03 1.5V batteries	868

**BTDP-RF**


Programmable electronic room radio thermostat 868 MHz with LCD-display specially designed to control different type of heating systems.. Working mode: normal, reduced, antifreeze, automatic, timer, holiday. Display with backlight, key lock function. Temperature setting range: 5 - 35°C. 9 preset and 4 customizable programs available. Temperature differential 0.5 K or proportional band (PWM). Regulation on the integrated temperature sensor: NTC.

Option: possibility to regulate on external sensor (NTC 10K). Degree of protection: IP30.

3 control modes :

- 1) via internal room sensor.
- 2) via external room sensor (floor sensor).
- 3) via internal room sensor and floor temperature limitation.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	Power supply	MHz
BTDP-RF	P04880	10025808	2 AAA LR03 1.5V batteries	868

**BTR-RF RECEIVER FOR 1 ZONE**


Receiver for all BT-RF Thermostats. Using one RF-Thermostat as transmitter, multiple receivers can be operated. Switch for automatic/manual mode and radio configuration. Output 12 A, protection class IP 44. RF distance within buildings approx. 40 m.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID	MHz
BTR-RF	P04891	10025817	868



**CLIMATIC CONTROL**

**MILUX-HY**

Radio frequency room chrono-thermo-hygrostat with week programming for heating cooling systems. **9 preset and 12 customizable programs available.**

**LCD display visualizing room temperature and humidity or hour.** White body with frontal panel removable to change batteries. Radio frequency 433 MHz.

Complete of 3 alkaline batteries 1,5V AA (LR6). Autonomy 2 years

Temperature setting range 5÷37 °C. two temperature levels: comfort and night (energy saving) automatic or manual operation. Anti-freeze (0,5÷10 °C).

Special functions:

- max. desired humidity settable
- Locking of the keys to prevent accidental modification of the parameters.
- Temporary suspension of the operation during periods of absence like holidays.

To be used with climatic control series RCL-H and RCL-HC.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID
MILUX-HY	P04367	10021274

**OS-RF**

Wireless outside temperature sensor for climatic control series RCL-H and RCL-HC.

Working temperature -10÷55 °C. Electric protection IP45.

Power supply: 2 alkaline batteries 1,5V AAA (LR03) – autonomy 5 years.

One sensor can be used with several climatic controls.

**According to 2006/95/CE - 2004/108/CE - 1999/5/CE.**

Type	Part no. WII	Part no. WID
OS-RF	P04644	10027169

**AN433**

Antenna for climatic control series RCL-H and RCL-HC for receiving 433 MHz signals. It allows the climatic controls to connect the chrono-thermo- hygrostats MILUX-HY, the outside temperature sensor OS-RF and the others RF thermostats 433 MHz.

Cable length 3m. Dimensions 2x39x1,5 cm with adhesive base.

Type	Part no. WII	Part no. WID
AN433	P04510	10021537

**CR-GSM**

Remote control unit with SMS messages. Possibility to transmit SMS control messages to power ON/OFF an heating system (or other devices).

Possibility to receive SMS messages on any mobile phone (GSM) with indication of the external temperature, room temperature, or the status of the unit connected in two configurations:

- Automatically according to the settings and the signal coming from the connected device.
- In answering sending a command signal via an sms message.

Complete with integrated temperature sensor for room temperature check and external temperature sensor with 2m cable CTN10.

Power supply: 230Vac 50Hz, 2 auxiliary input slots (alarms or device status), 1 relay in output (contacts 5A, 250Vac), 1 integrated acoustic signal, LED signal, auto/manual configuration mode. Kit complete with: GSM control unit, temperature sensor, power supply plug 230Vac.

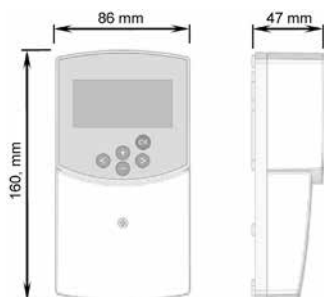
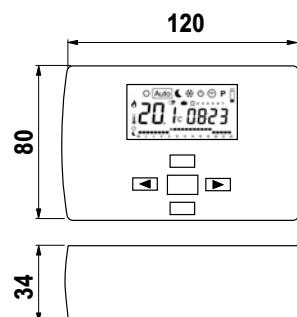
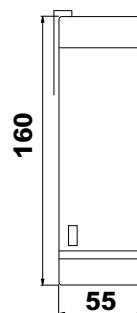
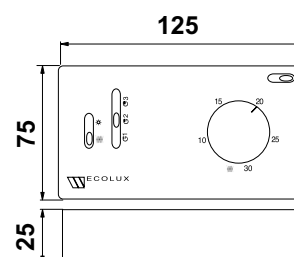
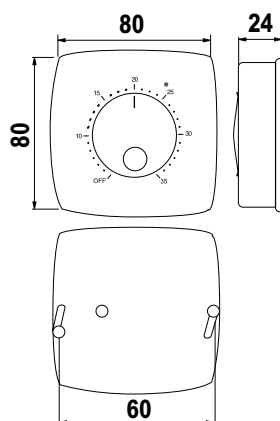
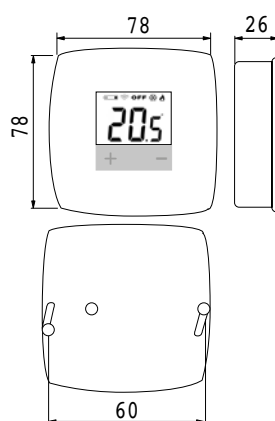
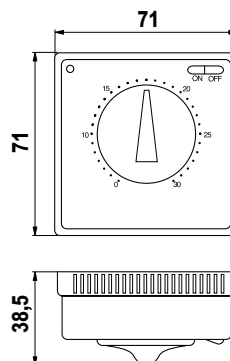
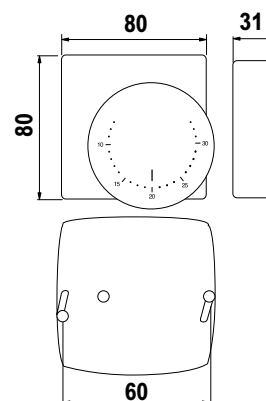
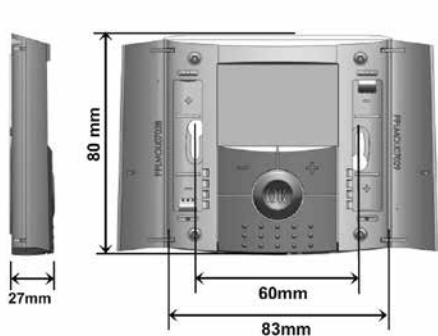
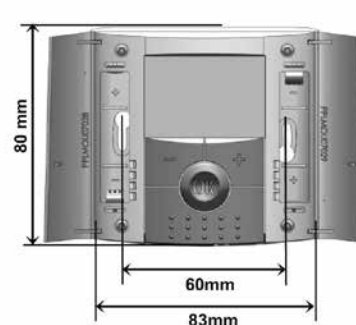
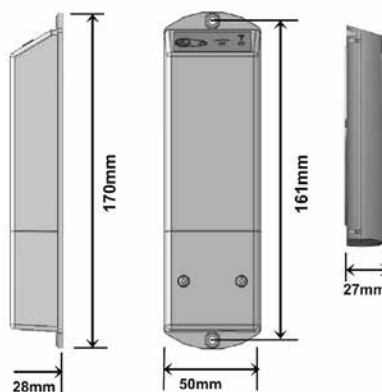
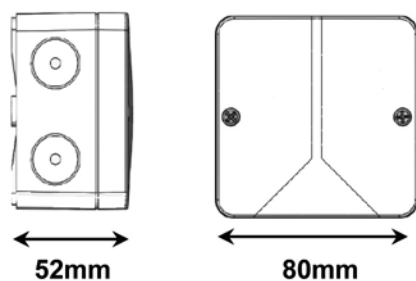
To have the unit working is necessary to add a SIM card. NOT INCLUDED.

**MOBILE PHONE IN THE PICTURE IS NOT INCLUDED.**

Type	Part no. WII	Part no. WID	Power supply
CR-GSM	P04960	10026013	230 VAC



## OVERALL DIMENSIONS

**RCL-H/RCL-HC****MILUX/MILUX-RF****RF/CR-GSM****FAN OPEN  
FAN COMFORT 2T  
FAN COMFORT 4T****BELUX-RF****BELUX Digital****BELUXTI****WFHT/1/2/3/LCD/RF****BTD / BTDP****BTD-RF / BTDP-RF****OS-RF**



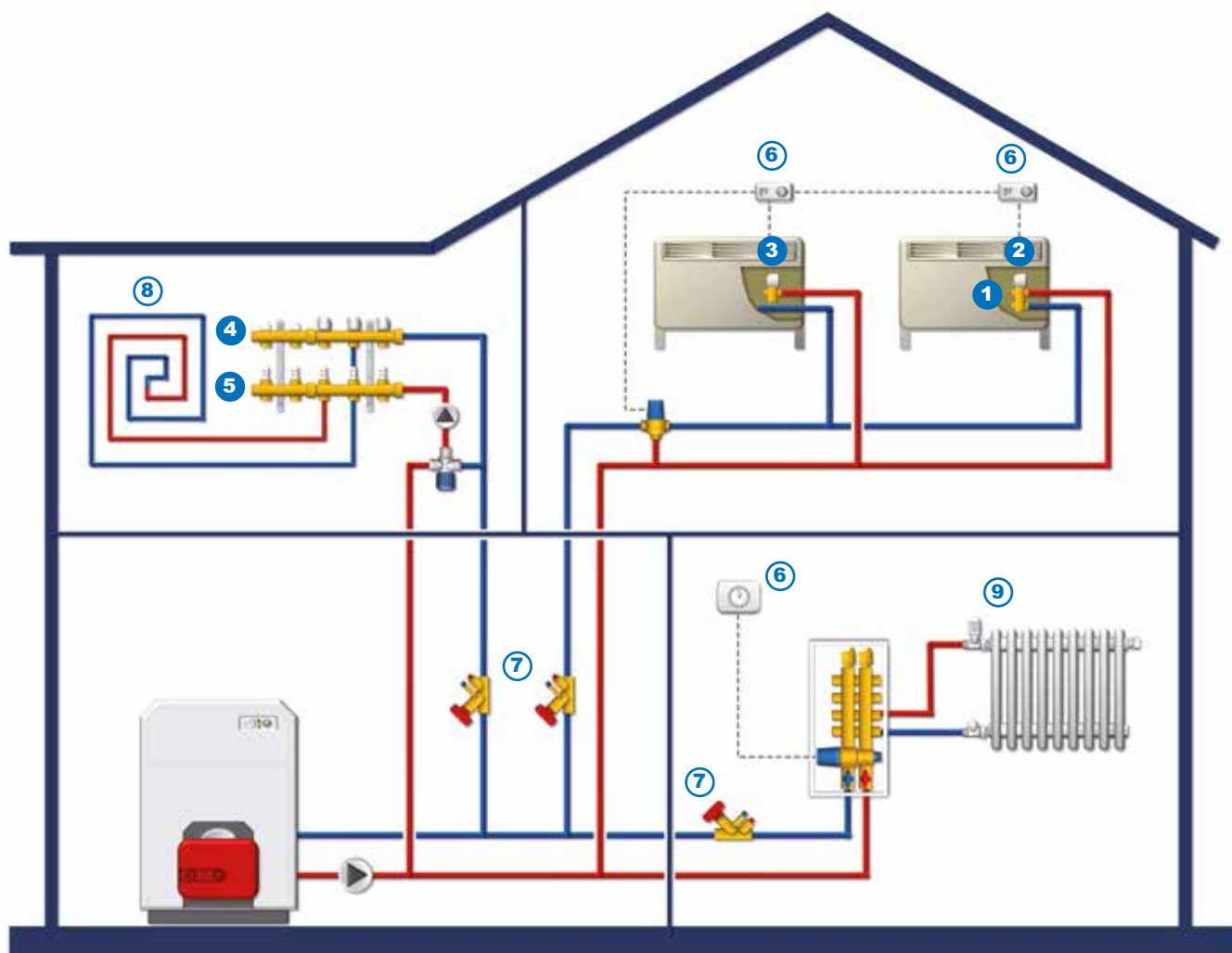
# Modul distribution

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C.2



EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

- |   |   |  |   |  |
|---|---|--|---|--|
| <p><b>1</b></p>  <p><b>4131</b><br/>pag. 51</p> <p>Tree-way brass valve with 4 connections</p> | <p><b>2</b></p>  <p><b>22C</b><br/>pag. 52</p> <p>Electrothermic actuator</p>                                | <p><b>3</b></p>  <p><b>26LC</b><br/>pag. 52</p> <p>Electrothermic actuator</p>                                  | <p><b>4</b></p>  <p><b>822MM</b><br/>pag. 54</p> <p>Single modular brass return manifold</p> | <p><b>5</b></p>  <p><b>FLMR</b><br/>pag. 54</p> <p>Single modular brass delivery manifold</p> |
| <p><b>6</b></p>  <p><b>Chapter C.1</b><br/>pag. 35</p> <p>Regulation and control</p>           | <p><b>7</b></p>  <p><b>Chapter F</b><br/>pag. 89</p> <p>Balancing devices for water distribution network</p> | <p><b>8</b></p>  <p><b>Chapter D</b><br/>pag. 67</p> <p>Components for underfloor heating systems, pex pipe</p> | <p><b>9</b></p>  <p><b>Chapter A</b><br/>pag. 5</p> <p>Radiator valves for heat elements</p> |  |

**FAN-COIL VALVES**
**2131**


Two-way brass valve for fan-coils.

Max. operating temperature: 100°C. Disc stroke: 2.5 mm. Nominal pressure: 16 bar.

Compatible with actuators series 22C, 26LC and EMUJC

Type	Part no. WII	Part no. WID	Size	Kvs
2131	213112	10004128	1/2" MM	1,7
2131	213134	10001544	3/4" MM	2,8
2131	21311	10001545	1" MM	4,5

**3131**


Three-way brass valve for fan-coils. Compatible with actuators series 22C, 26LC and EMUJC. Max. operating temperature: 100°C. Disc stroke: 2.5 mm. Can be used both as mixing and diverting valve.

Nominal pressure: 16 bar.

*The Kvs and by-pass Kvs values given in the table alongside refer to the valve used for diverting service.*

Type	Part no. WII	Part no. WID	Size	Kvs	Kvs By-pass
3131	313112	10001546	1/2" MM	1,7	1,3
3131	313134	10001547	3/4" MM	2,8	1,8
3131	31311	10001549	1" MM	4,5	3,1

**VU**


Tee fitting for creating by-pass in valves series 3131 (Dn 1").

Type	Part no. WII	Part no. WID	Size
VU	VU311	10026056	1" MM

**4131**


Three-way brass valve with 4 connections for fan-coils. Compatible with actuators series 22C, 26LC and EMUJC. Max. operating temperature: 100°C. Disc stroke: 2.5 mm.

Can be used both as mixing and diverting valve. Nominal pressure: 16 bar.

*The Kvs and by-pass Kvs values given in the table alongside refer to the valve used for diverting service.*

Type	Part no. WII	Part no. WID	Size	Kvs	Kvs By-pass
4131	413112	10001557	1/2" MM	1,7	1,3
4131	413134	10001558	3/4" MM	2,8	1,8

**840**


Soft sealed union with nut for zone valves serie 2131, 3131, 4131.

Type	Part no. WII	Part no. WID	Size
840	8401212GAS	10004136	1/2" x 1/2"
840	8403434GAS	10004137	3/4" x 3/4"
840	84011GAS	10004138	1" x 1"


## ELECTRONIC, ELECTROTHERMIC AND ELECTRO-MECHANICS ACTUATORS

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**22C**

Electrothermic actuator compact design with on/off action, compatible with thermostat adaptable radiator valves, valve for fan-coils and manifolds Series 822MM. Cap made of flame retardant plastic. Chrome-plated brass threaded ring nut M30 x 1.5. Normally Closed (N.C.). Normally Open (N.O.). Stroke : 3.5mm. Power cable : 1 m dia. 7.2 mm. \* With power cable : dia. 5.5 mm Exempt from ENEC marking. Opening time : Version 230V 90 sec (start) - 3 Min (end) - Version 24V 3 Min (start) - 5 Min (end) Plug thrust : 100N (NC version) - 80N (NO version). Power consumption : 2,5W Inalterability range: 0°C / +50°C. 4-wire version (NO4 - NC4) complete with auxiliary Microswitch. Auxiliary contact load capacity : 700mA. Available with cable length 2m.

According to 2006/95/CE - 2004/108/CE.

 **ENEC 03 marking.**

Type	Part no. WII	Part no. WID	Power supply	Protection
22C	22C230NC2	10004362	230V	IP44
22C	22C24NC2	10022652	24V	IP44
22C	22C230NC4	10004378	230V	IP44
22C	22C24NC4	-	24V	IP44
22C	22C230NA2	10022653	230V	IP44
22C	22C24NA2	10022654	24V	IP44
22C	22C230NA4	10004373	230V	IP44
22C	22C24NA4	-	24V	IP44
*22C	22C230NC2-5	10004363	230V	IP44
*22C	22C24NC2-5	10004364	24V	IP44
*22C	22C230NA2-5	10004370	230V	IP44
*22C	22C24NA2-5	10004371	24V	IP44

**26LC**

Electrothermic actuator compact design with on/off action, compatible with thermostat adaptable radiator valves, valve for fan-coils and manifolds Series 822MM. Normally Closed (NC) 24V a.c and 230V a.c Low consumption. Easily removable electrical cable with safety latch connector. LED check for the status (ON/OFF) of the actuator. 4 poles cable version (NC4) complete of auxiliary Microswitch (NO contacts). Cap made of flame retardant plastic. Nickel-plated brass threaded ring nut M30 x 1.5.

Interchangeable with Watts Industries Actuators Series 20C and 22C (NC models).

According to 2006/95/CE - 2004/108/CE.

TUV Sud approved.

Type	Part no. WII	Part no. WID	Power supply
26LC	26LC230NC2	10025872	230V a.c.
26LC	26LC24NC2	-	24V a.c.
26LC	26LC230NC4	-	230V a.c. + microswitch
26LC	26LC24NC4	-	24V a.c. + microswitch

**EMUJC**

Electronic modulating actuator with signal 3 points (floating) or proportional 0-10 V (0-5V and 5-10V). Compact size. Easily coupling with fan coil valves series 2131, 3131 and 4131 with threaded ring nut M30x1,5. Provided with LED that shows the function status (ON-OFF, end of stroke). Nominal force 120N. Working temperature 0 ÷ 50 °C. Electrical protection IP43. Cable length 2 m.

According to 2006/95/CE - 2004/108/CE.

Type	Part no. WII	Part no. WID	Command signal	P. supply	Power
EMUJC	EMUJC-230	-	3 points	230V	6,5VA
EMUJC	EMUJC-24	10025240	3 points	24V	2,5VA
EMUJC	EMUJC-010	10004123	Proportional 0-10V (2-10V)	24V	2,5VA

**ELECTRONIC, ELECTROTHERMIC AND ELECTRO-MECHANICS ACTUATORS**

**ETE**


ON/OFF electrothermic actuator for zone valve series VU. Auxiliary normally open (NO) microswitch for supplementary commands (e.g. pump, metering). Bayonet coupling for fastening to valve body. Manual control device. Power consumption: 18W. Stroke: 4 mm. Plug thrust: 250N. Positioning time: 4 min.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
ETE	ETE24BO	10004120	24V	IP20
ETE	ETE220BO	10001693	230V	IP20

**ETM**


Modulating electrothermic actuator with device for manual control.  
Power rating : 18W. Power consumption in operation : 3 W.

ETM24-12 to be coupled with regulators running on 24 Vac; supplied complete with cable 4 x 0.75 sq.mm, L 1 mt.

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
ETM	ETM24-12	10001695	24V	IP44



## SINGLE MODUL MANIFOLDS

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## 822MM



Single modular brass **return** manifold with prefitted seal and lock nut. Built in control valves, thermostat adaptable with electrothermic actuators series 22C and 26LC.

Side outlet connections: 1/2" M - 3/4" M. Male/female head connections: 1" - 1.1/4".

Differential pressure: 1.5 bar. Kvs of outlets: 2.28.

Type	Part no. WII	Part no. WID	Size	Outlets	Center Distance
822MM	822MM1TMN2	10025996	1"	MF	2-1/2" M
822MM	822MM1TMN3	10050297	1"	MF	3-1/2" M
822MM	822MM1TMN4	-	1"	MF	4-1/2" M
822MM	822MM1TM2	10025994	1"	MF	2-3/4" M
822MM	822MM1TM3	10025995	1"	MF	3-3/4" M
822MM	822MM1TM4	-	1"	MF	4-3/4" M
822MM	822MM54TMN3	-	1.1/4"	MF	3-1/2" M
822MM	822MM54TMN4	-	1.1/4"	MF	4-1/2" M
822MM	822MM54TM3	-	1.1/4"	MF	3-3/4" M
822MM	822MM54TM4	-	1.1/4"	MF	4-3/4" M

## 822MR



Single modular brass **delivery** manifold with prefitted seal and lock nut, built-in brass balancer register lockshield. Side outlet connections: 1/2" M - 3/4" M.

Male/female head connections: 1" - 1.1/4". Kvs of outlets: 2.61.

Type	Part no. WII	Size	Outlets	Center Distance
822MR	822MR1TMN2	1" MF	2-1/2" M	50 mm
822MR	822MR1TMN3	1" MF	3-1/2" M	50 mm
822MR	822MR1TMN4	1" MF	4-1/2" M	50 mm
822MR	822MR1TM2	1" MF	2-3/4" M	50 mm
822MR	822MR1TM3	1" MF	3-3/4" M	50 mm
822MR	822MR1TM4	1" MF	4-3/4" M	50 mm
822MR	822MR54TMN3	1.1/4" MF	3-1/2" M	50 mm
822MR	822MR54TMN4	1.1/4" MF	4-1/2" M	50 mm
822MR	822MR54TM3	1.1/4" MF	3-3/4" M	50 mm
822MR	822MR54TM4	1.1/4" MF	4-3/4" M	50 mm

## FLMR



Single modular brass manifold complete with flow meter series FLMR for control and measurement of flow in the circuits, with prefitted seal and lock nut as well as built-in brass balancer register lockshields. Male/female head connections: 1" - 1.1/4".

Differential pressure: 1,0 bar. Kvs of outlets: 1,8. Centre distance: 50mm.

Type	Part no. WII	Size	Outlets
FLMR	FLMR1TM2	1"	2-3/4"
FLMR	FLMR1TM3	1"	3-3/4"
FLMR	FLMR1TM4	1"	4-3/4"
FLMR	FLMR54TM3	1.1/4"	3-3/4"
FLMR	FLMR54TM4	1.1/4"	4-3/4"

## 822MME



Single modular brass with prefitted seal and lock nut. Built in control valves, thermostat adaptable with electrothermic actuators series 22C. Side outlet connections : 3/4" M . Male/female head connections : 1" - 1.1/4". Differential pressure : 1.5 bar. Kvs of outlets : 2.28.

Type	Part no. WII	Size	Outlets
822MME	822MM1TME2	1"	2-3/4"
822MME	822MM1TME3	1"	3-3/4"
822MME	822MM1TME4	1"	4-3/4"
822MME	822MM54TME3	1.1/4"	3-3/4"
822MME	822MM54TME4	1.1/4"	4-3/4"



**SINGLE MODUL MANIFOLDS**
**822MRE**


Single modular brass **delivery manifold** with prefitted seal and lock nut, built-in brass balancer register lockshield. Side outlet connections: 3/4" M **EURO-CONE**.

Male/female head connections: 1" - 1.1/4". Kvs of outlets: 2.61.

Type	Part no. WII	Size	Outlets
822MRE	822MR1TME2	1"	2-3/4"
822MRE	822MR1TME3	1"	3-3/4"
822MRE	822MR1TME4	1"	4-3/4"
822MRE	822MR54TME3	1.1/4"	3-3/4"
822MRE	822MR54TME4	1.1/4"	4-3/4"

**FLMRE**


Single modular brass **delivery manifold**, complete with flowmeter serie FLMR for control and measuring of flow in the circuits, with prefitted seal and lock nut.

Male/female head connections : 1" - 1.1/4". Side outlet connections: 3/4" M **EURO-CONE**.

Differential pressure : 1,0 bar. Setting : 0 ÷ 6 l/mim. Kvs outlets : 1,8.

Type	Part no. WII	Size	Outlets
FLMRE	FLMR1TME2	1"	2-3/4" 1
FLMRE	FLMR1TME3	1"	3-3/4" 1
FLMRE	FLMR1TME4	1"	4-3/4" 1
FLMRE	FLMR54TME3	1.1/4"	3-3/4" 1
FLMRE	FLMR54TME4	1.1/4"	4-3/4" 1

**FL**


Device for controlling and measuring flow in the individual circuits for manifolds series FLMR.

Type	Part no. WII	Part no. WID	Description
FL	FLMR	10026006	Flow meter
FL	226	10015823	Control cap

**BY-PASS KIT 822**


Differential pressure by-pass kit for differential pressure compensation between supply and return lines of 1" manifold . Adjustable pressure range 0,03 - 0,5 bar.

Complete of filling/drain valve (hose coupling) and automatic air vent valve

Type	Part no. WII	Part no. WID
BY-PASS KIT 822	UFH-822-1	-

**210**


Ball shut-off valve with union for manifold head connections.

Max. operating pressure:

- 25 bar up to 95°C.

- 16 bar up to 120°C.

Type	Part no. WII	Part no. WID	Size
210	2101212	10026032	1/2" MF
210	2103434	10026033	3/4" MF
210	21011	10026031	1" MF
210	210114114	-	1.1/4" MF

## PREASSEMBLED MANIFOLDS

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**FWR**

Constant supply temperature module. Ready-to-mount, compact control unit for floor heating. Suitable for 8 - 10 kW heat capacity. Supply temperature setting range 20 - 50 °C. The thermometer displays current supply temperature. Pump and temperature limiter cabling ex works. All joints are 1" flat sealing. For installation of left or right side of manifolds.

Type	Part no. WID	Temperature range	Pump
FWR	10026389	20 - 50 °C	Wilo Yonos PARA 15/6
FWR	10026721	20 - 50 °C	Grundfos Alpha2L 25-60

**FRG 3005F**

Ready-to-mount, compact control unit to control the supply temperature for small heating surfaces of up to approx. 50m<sup>2</sup> and 5 kW heat capacity demand. Can be expanded with 3 - 4 heating circuits of identical length, adjustment range of supply temperature 20 - 70 °C with maximum limitation, pump cabling ex works, wall brackets included.

Type	Part no. WID	Temperature range	Pump
FRG3005F	10026287	20 - 70 °C	Wilo Yonos PARA 15/6
* FRG3005F	10014993	20 - 70 °C	Wilo RS 15/4-3
* FRG3005F	10014995	20 - 70 °C	Grundfos UPS 15-40

\* Low efficiency pump

**FRG 3015F**

Ready-to-mount and compact control unit for constant supply temperature control for radiant panel heating. Suitable for heat output requirements up to approx. 14 kW. Supply temperature range 20 - 70°C. Thermometer displays actual supply temperature. Pump and temperature limiter cabling ex-works. Mounting either on the left or right side of the manifold. Fits to all Watts Industries manifolds 1". All connections with flat seals throughout. Pressure-tested, packed in a box.

Type	Part no. WID	Temperature range	Pump
FRG3015F	10026286	20 - 70 °C	Wilo Yonos PARA 15/6
* FRG3015F	10015001	20 - 70 °C	Wilo RS 15/4-3

\* Low efficiency pump

**FRG 3015W2**

Ready-to-mount compact unit suited for variable water temperature control in conjunction with the outside temperature for panel heating with a heat capacity demand of about 14 kW. Flat-sealing installation on the left or right side of the manifold with 1" male thread. Pump, valve drive, temperature limiter 20 - 90 °C and heating controller with water sensor pre-mounted and wired ex-works. Outside temperature sensor. Heating controller Climatic Control with 7-day-program, frost protection and screed warming function. Pressure-tested, packed in a box.

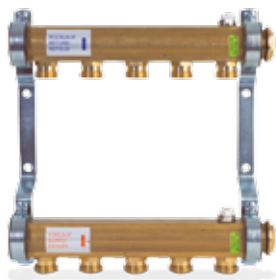
Type	Part no. WID	Pump
FRG3015W2	10015028	Grundfos Alpha 2L 15-60

**ISOTHERM**

Ready-to-mount, compact control unit for panel heatings with a maximum heat capacity demand up to 15 kW. Flat-sealing installation on the left or right side of the manifold with 1" male thread. Set-point value for supply temperature can be adjusted via thermostatic injection valve. Pump and temperature limiters 20 - 90 °C, cabling ex works. Pressure-tested. Packed in a box.

Type	Part no. WII	Part no. WID	Temperature range	Pump
* ISOTHERM	4402070	10023372	30 - 50 °C	Wilo RS 25/6-3
ISOTHERM	-	10026289	30 - 50 °C	Wilo Yonos PARA 15/6
ISOTHERM	-	10026439	45 - 60 °C	Grundfos Alpha 2L 15-60
ISOTHERM	-	10026869	45 - 60 °C	Wilo Yonos PARA 15/6

\* Low efficiency pump

**PREASSEMBLED MANIFOLDS**

**HKV/A**

Brass heating circuit hollow bar manifold for radiator heating and sanitary applications. Flat sealing connections 1" F. Low installation depth. Connection nipple G 3/4" with Eurocone, distance 50 mm. 2 integrated air VENT valves and 2 endcaps. Function and pressure tested.

Type	Part no.WII	Part no.WID	Outlets
HKV/A	10004538	10004538	2
HKV/A	10004540	10004540	3
HKV/A	10004542	10004542	4
HKV/A	10004544	10004544	5
HKV/A	10004546	10004546	6
HKV/A	10004548	10004548	7
HKV/A	10004550	10004550	8
HKV/A	10004552	10004552	9
HKV/A	10004554	10004554	10
HKV/A	10004556	10004556	11
HKV/A	10004558	10004558	12


**HLV**

Stainless steel round pipe manifold for radiator heating and sanitary applications. Flat sealing connections 1" M. Connection nipple G3/4" with Eurocone, distance 50 mm. Function and pressure tested.

Type	Part no.WII	Part no.WID	Outlets
HLV	10013154	10013154	2
HLV	10013155	10013155	3
HLV	10013156	10013156	4
HLV	10013157	10013157	5
HLV	10013158	10013158	6
HLV	10013159	10013159	7
HLV	10013160	10013160	8
HLV	10013161	10013161	9
HLV	10013162	10013162	10
HLV	10013163	10013163	11
HLV	10004656	10004656	12


**HKV**

Brass heating circuit hollow bar manifold according to EN 1264-4. Flat sealing connections 1" F. Connection nipple G3/4" with Eurocone, 50 mm distance. Function and pressure tested. SUPPLY: Fine-control and shut-off valve.

RETURN: Control and shut-off valve with adaption M30x1,5.

Type	Part no.WII	Part no.WID	Outlets
HKV	10004172	10004172	2
HKV	10004174	10004174	3
HKV	10004176	10004176	4
HKV	10004178	10004178	5
HKV	10004180	10004180	6
HKV	10004182	10004182	7
HKV	10004184	10004184	8
HKV	10004186	10004186	9
HKV	10004188	10004188	10
HKV	10004190	10004190	11
HKV	10004192	10004192	12

## PREASSEMBLED MANIFOLDS

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**HKV 2010-VA**

Stainless steel round pipe heating circuit manifold according to EN 1264-4. Flat sealing connections 1" M. Low installation depth. Connection nipple G3/4" with Eurocone, 55 mm distance, off-set position. Function and pressure tested.

SUPPLY: Fine-control and shut-off valve.

RETURN: Control and shut-off valve with adaption M30 x 1,5.

Type	Part no. WII	Part no. WID	Outlets
HKV2010-VA	10012355	10012355	2
HKV2010-VA	10012356	10012356	3
HKV2010-VA	10012357	10012357	4
HKV2010-VA	10012358	10012358	5
HKV2010-VA	10012359	10012359	6
HKV2010-VA	10012360	10012360	7
HKV2010-VA	10012361	10012361	8
HKV2010-VA	10012362	10012362	9
HKV2010-VA	10012363	10012363	10
HKV2010-VA	10012364	10012364	11
HKV2010-VA	10012365	10012365	12

**HKV/T**

Brass hollow bar circuit heating manifold according to EN 1264-4. Flat sealing connections 1" F. Low installation depth. Connection nipple G 3/4" with Eurocone, 50 mm distance, off-set position. Function and pressure tested.

SUPPLY: Flowmeter 0 - 6 l/min with low pressure drop and shut-off function.

RETURN: Control and shut-off valve with adaption M30 x 1,5.

Type	Part no. WII	Part no. WID	Outlets
HKV/T	10004194	10004194	2
HKV/T	10004196	10004196	3
HKV/T	10004198	10004198	4
HKV/T	10004199	10004199	5
HKV/T	10004200	10004200	6
HKV/T	10004201	10004201	7
HKV/T	10004202	10004202	8
HKV/T	10004203	10004203	9
HKV/T	10004204	10004204	10
HKV/T	10004205	10004205	11
HKV/T	10004206	10004206	12

**HKV 2013A MS**

Brass round pipe heating circuit manifold according to EN 1264-4. Flat sealing connections 1" M. Low installation depth. Connection nipple G3/4" with Eurocone, 55 mm distance, off-set position. Function and pressure tested.

SUPPLY: Flowmeter 0 - 6 l/min with low pressure drop and shut-off function.

RETURN: Control and shut-off valve with adaption M30 x 1,5.

Type	Part no. WII	Part no. WID	Outlets
HKV2013A MS02	10012366	10012366	2
HKV2013A MS03	10012367	10012367	3
HKV2013A MS04	10012368	10012368	4
HKV2013A MS05	10012369	10012369	5
HKV2013A MS06	10012370	10012370	6
HKV2013A MS07	10012371	10012371	7
HKV2013A MS08	10012372	10012372	8
HKV2013A MS09	10012373	10012373	9
HKV2013A MS10	10012374	10012374	10
HKV2013A MS11	10012375	10012375	11
HKV2013A MS12	10012376	10012376	12

**PREASSEMBLED MANIFOLDS**

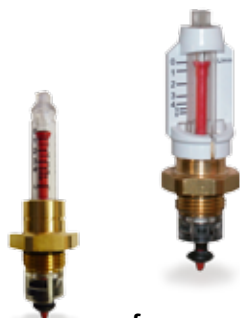
**HKV 2013A-VA**

Stainless steel round pipe heating circuit manifold according to EN 1264-4. Flat sealing connections 1" M. Low installation depth. Connection nipple G 3/4" with Eurocone, 55 mm distance, off-set position. Function and pressure tested.

SUPPLY: Flowmeter 0 - 6 l/min with low pressure drop and shut-off function.

RETURN: Control and shut-off valve with adaption M30 x 1,5.

Type	Part no. WII	Part no. WID	Outlets
HKV2013A-VA	10012379	10012379	2
HKV2013A-VA	10012380	10012380	3
HKV2013A-VA	10012381	10012381	4
HKV2013A-VA	10012382	10012382	5
HKV2013A-VA	10012383	10012383	6
HKV2013A-VA	10012384	10012384	7
HKV2013A-VA	10012385	10012385	8
HKV2013A-VA	10012386	10012386	9
HKV2013A-VA	10012387	10012387	10
HKV2013A-VA	10012388	10012388	11
HKV2013A-VA	10012389	10012389	12



for  
HKV/T

**DFM38-A**

Flow meters for manifolds, 0-6l/min.

Type	Part no. WID	Description	Manifold
DFM38-A	10010892	0-6l/min 3/8"	HKV/T
DFM38-A	10010891	0-6l/min 3/8"	HKV2013-MS
DFM38-A	10010893	0-6l/min 3/8"	HKV2013-VA

**ACCESSORIES**
**AS**

Manifold connection set for HKV and HKV/T.



Type	Part no. WII	Part no. WID	Size
AS-20	10004254	10004254	3/4" x 1"
AS-25	10012763	10012763	1" x 1"

**KH**

Ball valve set brass body 1", with union nut and gaskets.

Product 10022871 is nickel plated.



Type	Part no. WII	Part no. WID	Manifold	Size
KH	10007137	10007137	HKV2010-MS, HKV2013-MS	1" x 1"
KH	10022871	10022871	HKV2010-VA, HKV2013-VA	1" x 1"



## ACCESSORIES

**ES-QS**

Brass body, with union and gaskets. Ball valve with handle for easy filling, rinsing and draining. 1"G. For HKV2010 and HKV 2013A.

Product 3036120N/10022835 is nickel plated.

Type	Part no. WII	Part no. WID	Manifold	Description
ES-QS	3036115	10006114	HKV2010-MS, HKV2013-MS	Manual air vent
ES-QS	3036120N	10022835	HKV2010-VA, HKV2013-VA	Manual air vent

**CAP**

Made of brass with gasket.

\*nickel plated.

Type	Part no. WII	Part no. WID	Size
CAP MS	2160700	10004697	3/4"
CAP MS	060364	10018326	1"
CAP Ni *	063064N	10022148	1"

**AS-MSP**

For flat sealing connection of control units and accessories for pipe manifolds to hollow bar manifolds with 1" female thread.

Type	Part no. WII	Part no. WID
AS-MSP	5261426	10016710

**HKV-ISO****Manifold insulation**

Snap-fit EPP heat insulation for manifolds with 1" male thread and 55 mm distance of connection nipples, suitable for manifolds with 6 zones. Excess modules can be cut off when used for smaller manifolds. Use 2 insulations for larger manifolds. Delivery includes one insulation each for supply and return pipe as well as a knife to adapt the insulation to different manifold sizes.

Type	Part no. WII	Part no. WID	Size
HKV-ISO	5250371	10016550	20xx-55-1"

**USVSET**

Ready-to-mount, compact design, differential pressure overflow valve for differential pressure compensation between supply and return manifold HKV1" series. Union nut for flat-sealing connection with the manifold pipe including seal, pressure-tested, packed in a box, suitable for manifold with 1"M thread. Adjustment range 0,03 - 0,5 bar.

Type	Part no. WII	Part no. WID
USVSET	4402050	10014970



**ACCESSORIES**

**RVC-C**

Clamping screw 3/4". Soft-sealing, for copper and mild steel pipes, DN 15 also suitable for stainless steel pipes, with nickel-plated coupling nut 3/4". Packed in pairs.

Type	Part no. WID	Size
RVC-C	10001004	12 x 1
RVC-C	10001005	15 x 1
RVC-C	10001006	18 x 1


**RVP-C**

Clamping screw 3/4". With **Eurocone**, for PE-X pipes and multilayer composite pipes. DVGW-tested in dimensions 16 x 2 and 20 x 2. Suitable for Manifolds HKV/T, HKV, HKV-A, radiator elbow connectors, bodies for screw connections, comprising: nickel-plated coupling nut 3/4", support sleeve with O-ring, with molded Eurocone, with separator plate for galvanic separation. Packed in pairs.

Type	Part no. WID	Pipe diameter
RVP-C	10000984	12 x 2
RVP-C	10000985	14 x 2
RVP-C	10000986	16 x 2
RVP-C	10000987	17 x 2
RVP-C	10000988	18 x 2
RVP-C	10000989	20 x 2


**238**

Drain valve with stuffing box and hose fitting.

Type	Part no. WII	Size
238	23814	1/4"
238	23838	3/8"


**290**

Drain valve for boilers, with hose fitting, plug and chain.

Type	Part no. WII	Size
290	29038	3/8"
290	29012	1/2"
290	29034	3/4"


**KFE15SD**

1/2" self-sealing fill and drain-cock. Brass, full bore, PN 16, red handle, with threaded hose coupling. Connection 1/2" - DN 15, max. operating temperature 110 °C. Product 10017310 is nickel plated.

Type	Part no. WID	
KFE15SD	10017306	
KFE15SD	10017310	
KFE15SD BOX	10017307	20 pcs of KFE15-SD

## INSPECTION BOXES

**839M**

Galvanized metal inspection box complete with snap-close cover, painted white only external and lockable. Height adjustable on site. Designed for housing distribution units consisting of modular manifolds **series 822MM-822MR-FLMR-805M** and preassembled manifolds CPRFL and **series HLV and HKV**. Complete with bracket mounting screws (840M-844M not included) on universal guides.

Type	Part no. WII	l x h x w (mm)
839M	839M4075NV	400 x 720/820 x 110/140
839M	839M6075NV	600 x 720/820 x 110/140
839M	839M8075NV	800 x 720/820 x 110/140
839M	839M10075NV	1000 x 720/820 x 110/140

**VSU**

Heating circuit manifold unit, in-wall design. Stable housing made from electro-galvanized steel, height and depth adjustment, removable frame and front door, pre-punched inlets in the sides, wall anchor, C-rails for securing the manifold, frame and door painted white. Height: 665 mm, feet 80 mm telescoping Depth: 115 / 170 mm.

Type	Part no. WID	l x h (mm)
VSU-1	10004267	445 x 500
VSU-2	10004268	545 x 600
VSU-3	10004269	695 x 750
VSU-4	10004270	845 x 900
VSU-5	10004271	1045 x 1100
VSU-6	10004272	1145 x 1200

**VSA**

Heating circuit manifold unit, on-wall design. Stable housing made from electro-galvanized steel, removable front door, reinforced front section, securing of the heating circuit manifold on C-rails.

The unit is painted white. Height: 665 mm, depth: 130 mm

Type	Part no. WID	l x h (mm)
VSA-1	10004327	400
VSA-2	10017160	600
VSA-3	10004329	750
VSA-4	10004330	900
VSA-5	10004331	1100
VSA-6	10004332	1200

**C-SCHIENE**

Securing rail. C-rail, accessory for manifold unit for installation and securing of control manifolds.

Type	Part no. WID
C-SCHIENE	10004334

**TELESCOPIC TYPE BRACKETS**
**840MR**

**Telescopic type brackets** for manifold groups 822MM, 822MR, FLMR series with DN 3/4" up to 1.1/4".

The kit is provided with two spacers per type in different color and dimension to be mounted to the brackets to provide the correct fixing for each manifold group with overall dims in height from min. 23 mm up to max 45 mm.

See the below table for a correct selection of the spacer according to the manifold type.

This specific design allows to:

- Have a **different center distance between the supply and return manifold**, from min 170mm to a max of 270mm
- **Easy and quick installation** of the manifold group **inside the inspection box**.
- Easy connection for copper, PEX or multilayer pipe thanks to the different angle between the supply and return manifold fixing points.
- **Fixing the brackets directly to the wall or to the inspection box** by using the 4 black plastic spacers. (see figure 1 below). Those spacers should not be used with an inspection box complete with support beams.

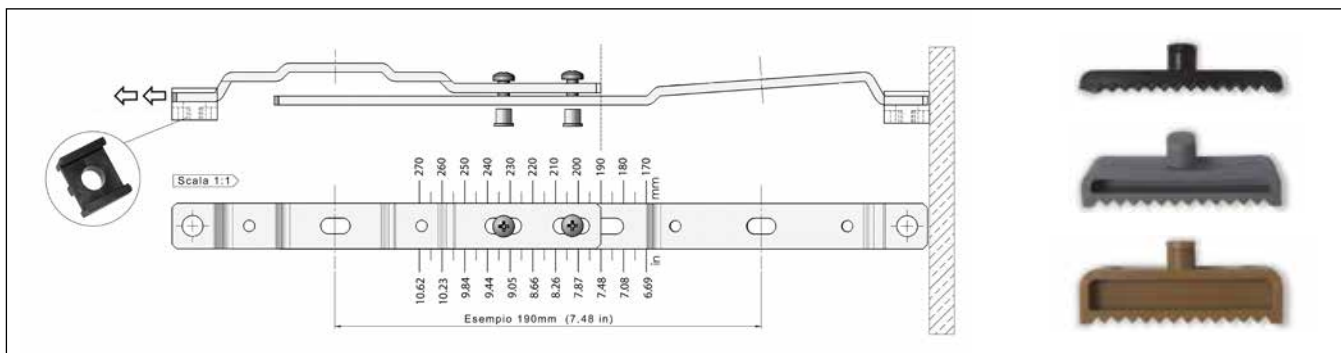
The kit is complete with fixing screws :

N°4 M6 x 14

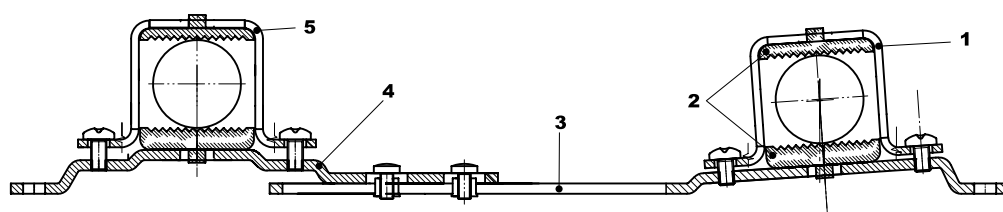
N°4 M6 x 16

N°4 M6 x 20

Type	Part no. WII	Part no. WID
840MR	840MR80	10025999


**Legend :**

1. Fixing "U" bracket
2. Spacers
3. Lower bracket
4. Upper bracket
5. Fixing "U" bracket



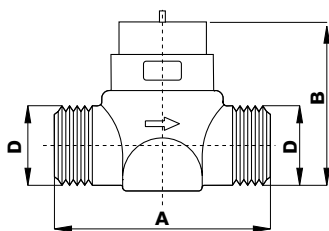
**Use of the different spacers:**  
**Black, Grey and Brown**

**Spacer selection table according to the Watts Industries manifold model.**

Model	Size	Center distance	Overall	Slabs
822MM	1"	50	39	BLACK/GREY
822MR	1"	50	39	BLACK/GREY
FLMR	1"	50	39	BLACK/GREY
822MM	1.1/4"	50	45	BLACK/GREY
822MR	1.1/4"	50	45	BLACK/GREY
FLMR	1.1/4"	50	45	BLACK/GREY

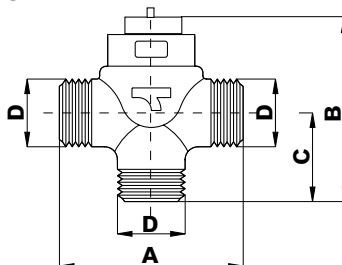
## OVERALL DIMENSIONS

## 2131



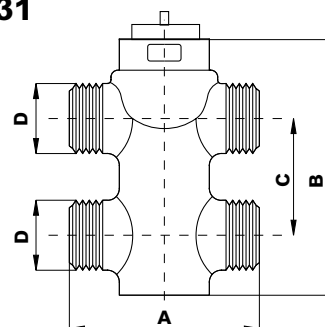
DN	A	B
1/2"	52	43
3/4"	56	43
1"	83	70

## 3131



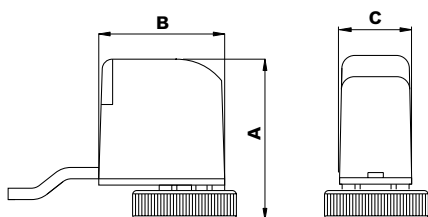
DN	A	B	C
1/2"	52	56	25
3/4"	56	58	34
1"	82	93	41

## 4131



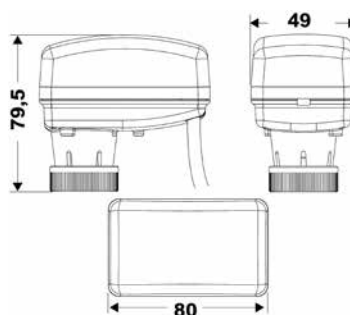
DN	A	B	C
1/2"	52	83	35
3/4"	56	96	50

## 22C

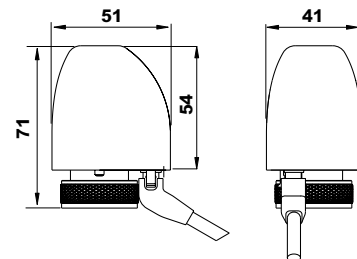


A	B	C
51	50	38

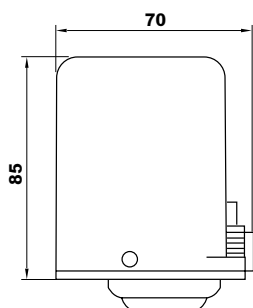
## EMUJC



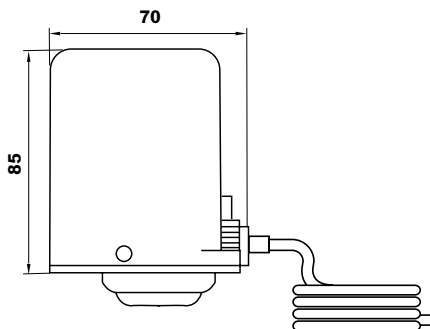
## 26LC



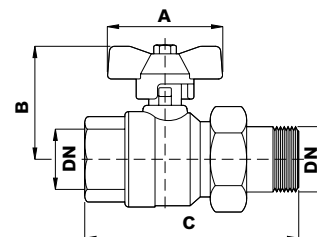
## ETE



## ETM

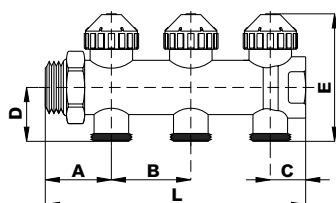


## 210



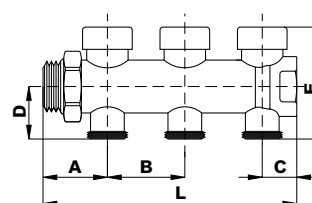
DN	A	B	C
1/2"	46	50	76
3/4"	46	53	94
1"	66	65	109
1.1/4"	66	70	128

## 822MM / 822MME

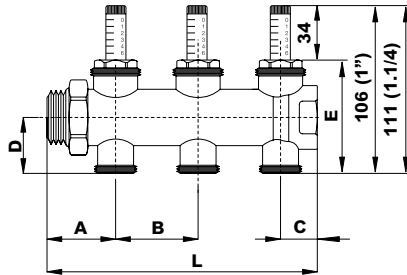


DN	L	A	B	C	D	E
	2 Outlets	3 Outlets	4 Outlets			
1"	115	169	215	40	50	24.5
1.1/4"	-	169	219	41	50	24.5

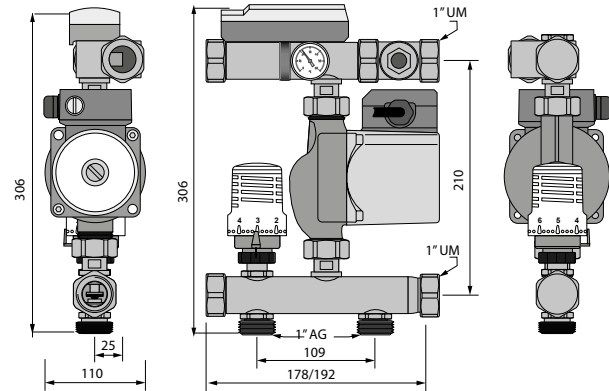
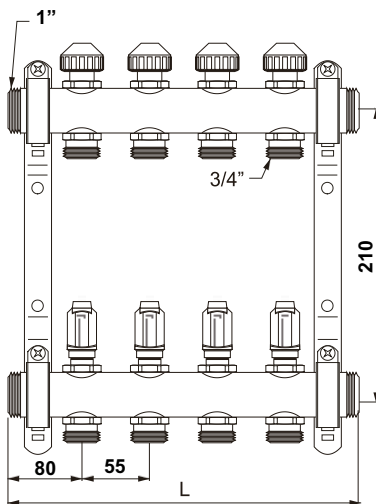
## 822MR / 822MRE



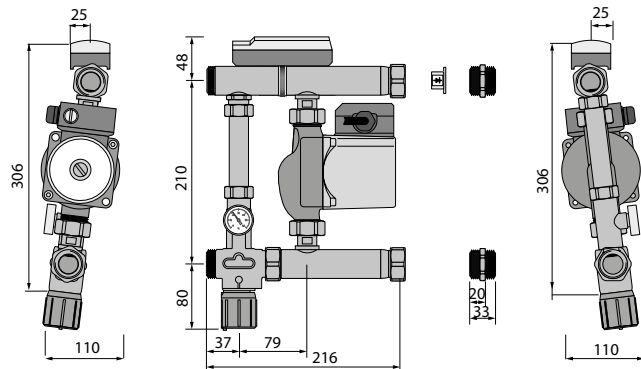
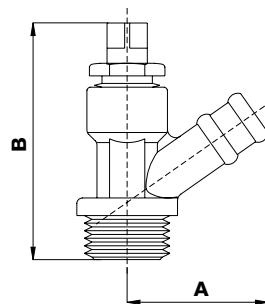
DN	L	A	B	C	D	E
	2 Outlets	3 Outlets	4 Outlets			
1"	115	169	215	40	50	24.5
1.1/4"	-	169	219	41	50	27.5

**OVERALL DIMENSIONS**
**FLMR/FLMRE/FL**


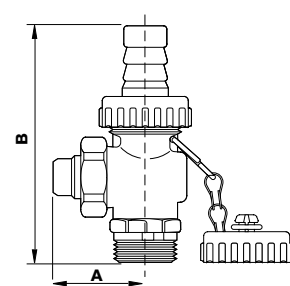
DN	L	A	B	C	D	E
2 Outlets						
1"	114	164	214	40	50	24.5
1.1/4"	-	168	218	41	50	27.5

**FRG 3015F**

**HKV 2010 Steel/Brass**  
**HKV 2013A Steel/Brass**


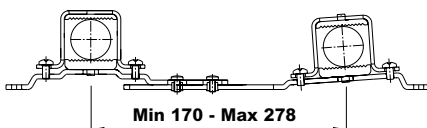
N. Outlets	L
2	190
3	245
4	300
5	355
6	410
7	465
8	520
9	575
10	630
11	685
12	740

**ISOTHERM**

**238**


DN	A	B
1/4"	28	47
3/8"	28	47

**290**


DN	A	B
1/8"	25	60
1/2"	30	75
3/4"	40	90

**840MR**




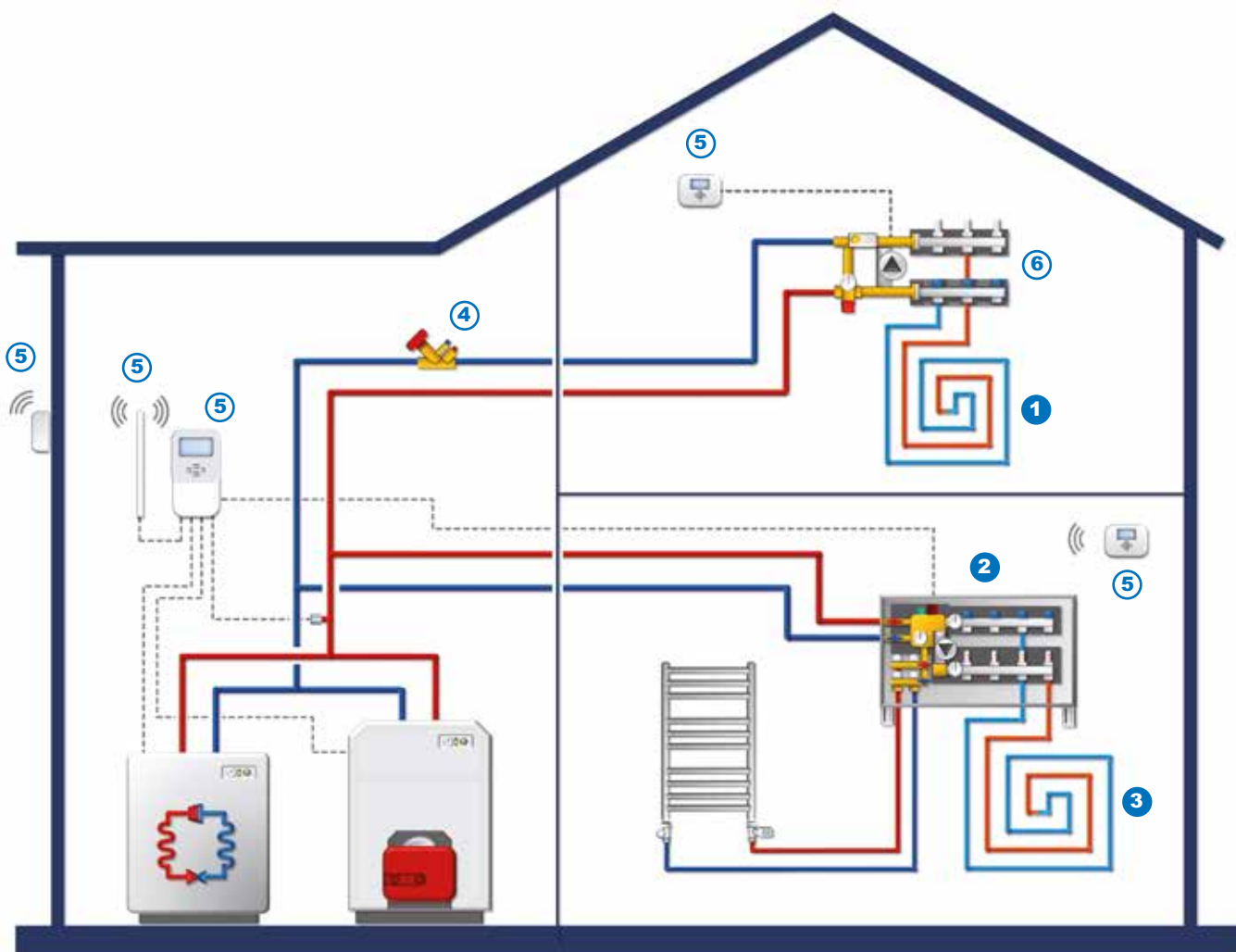


## Components for underfloor heating systems, pex pipe



Preassembled fixed-point control modules Domoradiant.....	pag. 69
Thermostat mixing valve for underfloor heating systems.....	pag. 75
Polyethylene pipes for underfloor heating systems.....	pag. 75
Cross-linked polyethylene pipes for heating and sanitary.....	pag. 76
Overall dimensions .....	pag. 78

## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

**1** **PE-XB DD**  
pag. 75



INTERSOL  
Cross linked polyethylene  
pipe, with ianti-oxidant  
barrier

**2** **FHLT-R**  
pag. 69



DOMORADIANT  
Preassembled moduling  
control

**3** **PE-RT-DD**  
pag. 76



INTERSOL  
Polyethylene pipe,  
increased resistance

**4** **Chapter F**  
pag. 89



Balancing devices  
for water distribution  
network

**5** **Chapter C.1**  
pag. 35

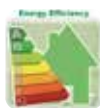


Regulation and control

**6** **Chapter C.2**  
pag. 49



Modul distribution

**PREASSEMBLED FIXED-POINT CONTROL MODULES DOMORADIANT**
**FHLT**


Preassembled **modulating** control, distribution and fluid (low temperature or cold) pumping unit for radiant panel heating or cooling systems. Complete of safety thermostat and thermal insulation contact. The system allows supplying and controlling the individual radiant panel circuits with fluid at lower temperature.

**6-way multi-function valve** equipped with:

- 3-way mixing valve and intrinsic safety (**max. primary flow ratio 0.65**) through differential Kv;
- electric actuator (**Series EMUJC-230**) supplied with 230V 3 points command signal;
- integrated hydraulic equalization system;- calibrated flow meter for setting and displaying the flow rate (2-16 l/min);
- auxiliary connections for integration and/or dehumidification terminal units;
- thermometer for reading primary temperature (0-80°C);
- shut-off valves;
- brass Y strainer.

**Pumping unit consisting of:**

- 3-speed electrically-driven pump Grundfos type 25/60 and pipe fittings for connection to the manifold.

**Distribution unit consisting of:**

- stainless steel DN 1" manifolds Series HKV2013 with side outlets 3/4"M Eurocone, complete with flow meter on delivery pipe and control valves on return pipe;
- pipe fitting for manifolds complete with thermometer, float type air vent valve, water drain.

**Integrated control system (optional and supplied separately) consisting of:**

- ON/OFF electrothermic actuators (Series 22C and 26LC);
- modular control box 4/6 zones (Series WFHC), which can be coupled to a weekly timer programmer for 2 heating zones;
- electronic room thermostats (Series WFHT) also available in wireless version;
- climatic control RCL-H (for heating system) or RCL-HC (for heating and cooling system);
- external temperature probe;
- temperature probe for delivery fluid.

Sheet metal enclosure box, frame and door, white finish and of adequate size.

	Type	Part. no. WII	Outlets circuits	Size panel manifold
*	FHLT	FHLT0600	N°6 – 3/4" EUROCONE	1.1/4"
*	FHLT	FHLT0700	N°7 – 3/4" EUROCONE	1.1/4"
*	FHLT	FHLT0800	N°8 – 3/4" EUROCONE	1.1/4"
*	FHLT	FHLT0900	N°9 – 3/4" EUROCONE	1.1/4"
*	FHLT	FHLT1000	N°10 – 3/4" EUROCONE	1.1/4"
*	FHLT	FHLT1100	N°11 – 3/4" EUROCONE	1.1/4"
*	FHLT	FHLT1200	N°12 – 3/4" EUROCONE	1.1/4"

\* Low efficiency pump

**FHLT-R**


Like FHLT but complete of manifolds for supplying high temperature towel-rail radiators (n° 3 outlets Dn 3/4").

	Type	Part. no. WII	Outlets circuits	Size panel manifold
*	FHLT-R	FHLTR0630	N°6 – 3/4" EUROCONE	1.1/4"
*	FHLT-R	FHLTR0730	N°7 – 3/4" EUROCONE	1.1/4"
*	FHLT-R	FHLTR0830	N°8 – 3/4" EUROCONE	1.1/4"
*	FHLT-R	FHLTR0930	N°9 – 3/4" EUROCONE	1.1/4"
*	FHLT-R	FHLTR1030	N°10 – 3/4" EUROCONE	1.1/4"
*	FHLT-R	FHLTR1130	N°11 – 3/4" EUROCONE	1.1/4"
*	FHLT-R	FHLTR1230	N°12 – 3/4" EUROCONE	1.1/4"

\* Low efficiency pump

## PREASSEMBLED FIXED-POINT CONTROL MODULES DOMORADIANT

**FHLT-G**

Preassembled modulating control, distribution and fluid (low temperature or cold) pumping unit for radiant panel heating or cooling systems. Complete of safety thermostat and thermal insulation contact.

The system allows supplying and controlling the individual radiant panel circuits with fluid at lower temperature.

6-way multi-function valve equipped with:

- 3-way mixing valve and intrinsic safety (max. primary flow ratio 0.65) through differential Kv;
- electric actuator (Series EMUJC-230) supplied with 230V 3 points command signal;
- integrated hydraulic equalization system;
- calibrated flow meter for setting and displaying the flow rate (2-16 l/min);
- auxiliary connections for integration and/or dehumidification terminal units;
- thermometer for reading primary temperature (0-80°C);
- shut-off valves;
- brass Y strainer.

Pumping unit consisting of:

- 3-speed electrically-driven pump Grundfos type 25/60 and pipe fittings for connection to the manifold.

Type	Part. no. WII	Description
* FHLT-G	FHLT-G	Only model

- \* Low efficiency pump

**FHLT-GR**

Like FHLT-G but complete of manifolds for supplying high temperature towel-rail radiators (n° 3 outlets Dn 3/4").

Type	Part. no. WII	Description
* FHLT-GR	FHLT-GR	Only model

- \* Low efficiency pump

**PREASSEMBLED FIXED-POINT CONTROL MODULES DOMORADIANT**
**FH01**


DOMORADIANT, preassembled **fixed-point** control, distribution and fluid pumping unit for radiant panel heating systems (low temperature). The system allows supplying and controlling the individual radiant panel circuits with fluid at **lower temperature**.

**6-way multi-function valve** equipped with :

- 3-way mixing valve and intrinsic safety (max 55 °C) through differential Kv
- Thermostatic actuator with remote sensor (20÷55°C)
- Integrated hydraulic equalization system
- Calibrated flow meter for setting and displaying the flow rate (2÷16 l/min)
- Auxiliary connections for towel-rail radiators
- Thermometer for reading primary circuit temperature (0÷80°C)
- Shut-off/switching valves
- Filter

**Pumping unit consisting of:**

- a 3-speed electrically-driven pump Grundfos type 25/60 and pipe fittings for connection to the manifold

**Distribution unit consisting of:**

- Brass manifolds DN 1.1/4" F , Series 822MM (delivery) and Series FLMR (return) for radiant panel circuits
- Side outlets 3/4" M Eurocone
- Pipe fitting for manifolds complete of thermometer, float type air vent valve, and water drain.

**Integrated control system (optional and supplied separately) consisting of:**

- ON/OFF electrothermic actuators Series 22C and 26LC
- Modular control box 4/6 zones (Series WFHC), which can be coupled to a weekly timer programmer for 2 heating zones
- Electronic room thermostats (Series WFHT) also available in wireless version.

Sheet metal enclosure box, frame and door, white finish and of adequate size.

**Optional extra:** by-pass kit for checking differential pressure.

	Type	Part. no. WII	Outlets circuits	Size panel manifold
*	FH01	FH010600	n° 6 - 3/4" EUROCONC	1.1/4"
*	FH01	FH010700	n° 7 - 3/4" EUROCONC	1.1/4"
*	FH01	FH010800	n° 8 - 3/4" EUROCONC	1.1/4"
*	FH01	FH010900	n° 9 - 3/4" EUROCONC	1.1/4"
*	FH01	FH011000	n° 10 - 3/4" EUROCONC	1.1/4"
*	FH01	FH011100	n° 11 - 3/4" EUROCONC	1.1/4"
*	FH01	FH011200	n° 12 - 3/4" EUROCONC	1.1/4"

\* Low efficiency pump


**FH01-R**

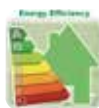

Like FH01 but complete of manifolds for supplying high temperature towel-rail radiators (n° 3 outlets Dn 3/4").

	Type	Part. no. WII	Outlets circuits	Size panel manifold
*	FH01-R	FH01R0630	n° 6 - 3/4" EUROCONC	1.1/4"
*	FH01-R	FH01R0730	n° 7 - 3/4" EUROCONC	1.1/4"
*	FH01-R	FH01R0830	n° 8 - 3/4" EUROCONC	1.1/4"
*	FH01-R	FH01R0930	n° 9 - 3/4" EUROCONC	1.1/4"
*	FH01-R	FH01R1030	n° 10 - 3/4" EUROCONC	1.1/4"
*	FH01-R	FH01R1130	n° 11 - 3/4" EUROCONC	1.1/4"
*	FH01-R	FH01R1230	n° 12 - 3/4" EUROCONC	1.1/4"

\* Low efficiency pump



## PREASSEMBLED FIXED-POINT CONTROL MODULES DOMORADIANT

**FH01-G**

DOMORADIANT, preassembled **fixed-point** control, distribution and fluid pumping unit for radiant panel heating systems (low temperature). The system allows supplying and controlling the individual radiant panel circuits with fluid at lower temperature.

**6-way multi-function valve** equipped with :

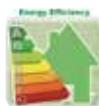
- 3-way mixing valve and intrinsic safety (max 55 °C) through differential Kv
- Thermostatic actuator with remote sensor (20÷55°C)
- Integrated hydraulic equalization system
- Calibrated flow meter for setting and displaying the flow rate (2÷16 l/min)
- Auxiliary connections for towel-rail radiators
- Thermometer for reading primary circuit temperature (0÷80°C)
- Shut-off/switching valves
- Filter

**Pumping unit consisting of:**

- a 3-speed electrically-driven pump Grundfos type 25/60 and pipe fittings for connection to the manifold

Type	Part. no. WII	Description
* FH01-G	FH01-GR	Only model

- \* Low efficiency pump

**FH01-GR**

Like FH01-G but complete of manifolds for supplying high temperature towel-rail radiators (n° 3 outlets Dn 3/4")

Type	Part. no. WII	Radiator side outlets	Description
* FH01-GR	FH01-GR	n° 3 - 3/4" EUROCONO	Only model

- \* Low efficiency pump

**PREASSEMBLED FIXED-POINT CONTROL MODULES DOMORADIANT**
**TECHNICAL NOTE**
**Heating and cooling with radiant panels**

The heating of places by using heat radiant floors is a technique that if well done ensures maximum comfort combined with low energy consumption.

This system is used both in new buildings that in existing ones when they are energetically requalified. The radiating system, well dimensioned for heating, if supplied by cold fluid, is also able to neutralize most of the sensitive heat loads of the summer. It can be so used as the unique solution for winter heating and summer cooling.

The reduction of the energy needs (natural consequence of improved performance of the building) allows to use one radiating system supplied both with an **high temperature fluid**, mixed for its use in the circuits panels, and with low temperature fluid or chilled water produced by systems using heat pumps evenpowered by renewable energy.

Watts Industries with DOMORADIANT, for these different applications, offers industrialized and innovative preassembled units, able to control, pump and distribute the carrier fluid to the individual circuits (series FH01 and FHLT) or preassembled groups mixing and pumping (series FH01-G, FHLT-G) to be combined with pre-assembled manifolds installed in separate box.

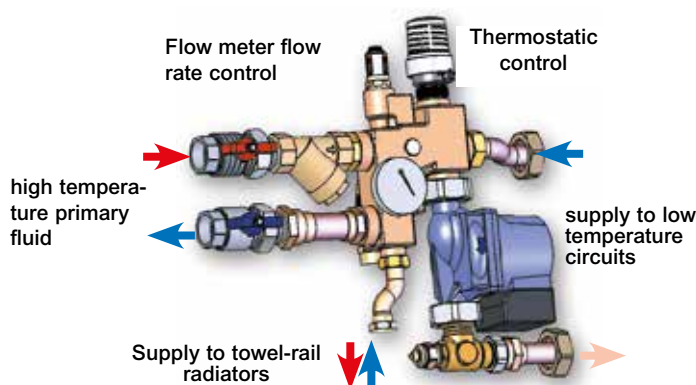


Fig. 1 - DOMORADIANT fix point control

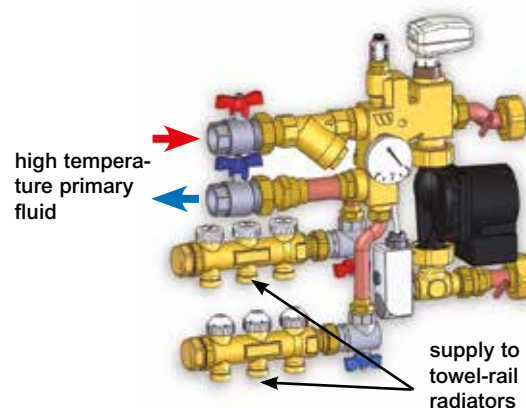


Fig. 2 - DOMORADIANT with modulating control

In the **6-way multi-function valve**, available in all versions of the unit, there are the functions of hydraulic equalization, mixing and temperature control:

the heat/cool fluid from the boiler /chiller is controlled and distributed to the hydraulic circuits of the panels by means of a three-way mixing valve actuated in models fixed point by a thermostatic actuator with remote sensor, and an electronic actuator on models with modulating control or directly diverted to the power supply circuits of the towel-rail radiators.

The particular shape of the internal passages determine the hydraulic characteristics (Kv) in 3-way mixing valve: the maximum flow rate bled from the primary circuit is always equal to **25%** in modules with fixed point adjustment (feature that ensures a positive intrinsically safety) and up to **65%** in modules with modulating control.

The manifold unit can power up to 12 radiant circuits and up to 3 towel-rail radiators (series FH01-R and FHLT-R). Each outlet of return manifold is suitable for the installation of electrothermal actuators (series 22C and 26LC), to control the temperature of each room.

During the start-up operations the installer can regulate the individual flows thanks to the presence of calibrated flowmeters (scale 0-6 l / min) on delivery manifolds and he can control the operating conditions by bimetal thermometers (range 0-80 ° C).

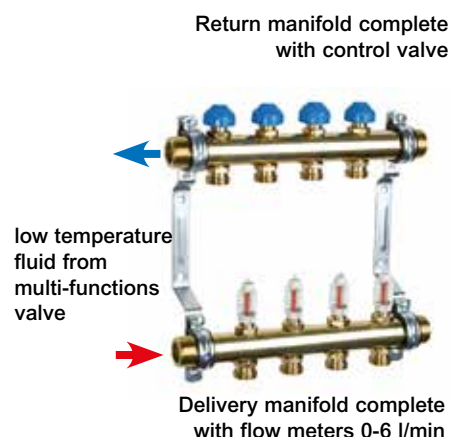
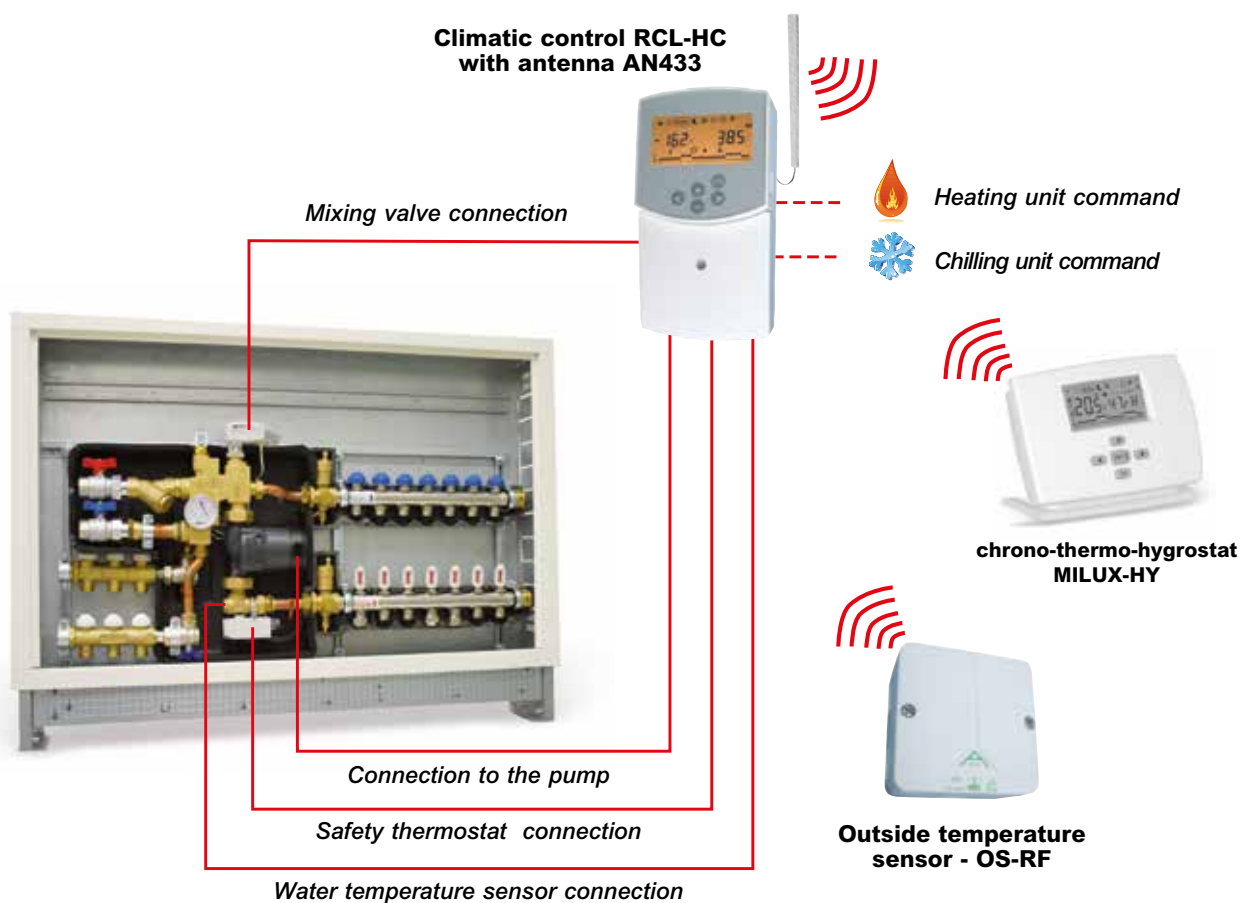


Fig. 3 - Preassembled manifold for distribution of low temperature fluid

## PREASSEMBLED FIXED-POINT CONTROL MODULES DOMORADIANT

**HIGHLIGHTS****Climatic control RCL-H**

Climatic regulation for radiant panels heating/cooling system



**THERMOSTAT MIXING VALVE FOR UNDERFLOOR HEATING SYSTEMS**

75

D


**63C**

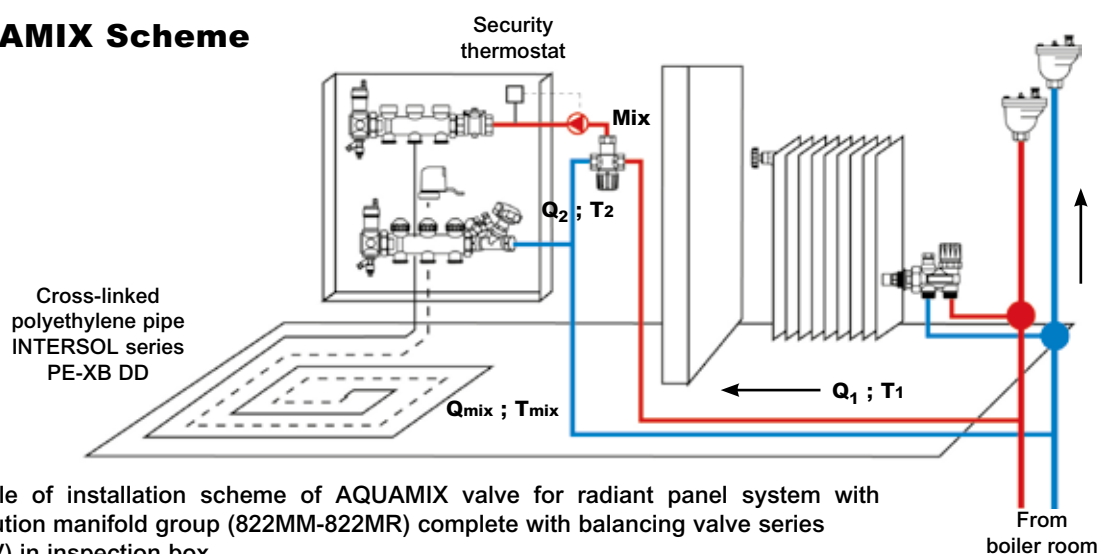
AQUAMIX.

Thermostatic mixing valve **for radiant panel systems.**

With 10 setting positions and fixed by-pass against over temperature.

Setting range: 25°C / 50°C. Max. differential pressure: 2 bar.

Type	Part no. WII	Part no. WID	Size
63C	6310C34	10017420	3/4" FF
63C	6311C1	10017421	1" FF

**TECHNICAL NOTE**
**AQUAMIX Scheme**

**POLYETHYLENE PIPES FOR UNDERFLOOR HEATING SYSTEMS**
**PE-XB DD**

Cross-linked polyethylene pipe with **anti-oxidant barrier** (Evoh) to prevent oxygen in the air from penetrating inside the water circuit. **Suitable for installation of radiant panel systems.** Other characteristics like PE-XB.

Other size on request.

**According to UNI EN ISO 15875-2, DIN 4726,  
Approved SKZ.**


Type	Part no. WII	Part no. WID	Dimensions	Roll
PE-XB DD	1001146	10000017	12 x 2,0	200 m
PE-XB DD	1001148	10000018	14 x 2,0	600 m
PE-XB DD	1001165	10000021	16 x 2,0	120 m
PE-XB DD	1001166	10000022	16 x 2,0	200 m
PE-XB DD	1001175	10000026	17 x 2,0	120 m
PE-XB DD	1001176	10000027	17 x 2,0	200 m
PE-XB DD	1001267	10000038	17 x 2,0	600 m
PE-XB DD	1001185	-	18 x 2,0	120 m
PE-XB DD	1001186	10000032	18 x 2,0	200 m
PE-XB DD	1001205	10000035	20 x 2,0	120 m
PE-XB DD	1001206	10000036	20 x 2,0	200 m
pe-XB dd	1001225	-	25 x 2,3	120 m

## POLYETHYLENE PIPES FOR UNDERFLOOR HEATING SYSTEMS

**PE-RT-DD**

**Polyethylene** pipe, increased resistance, obtained without use of sylanic, **with anti-oxidant barrier** (Evoh). **Suitable for installation of underfloor heating systems.**  
**According to IIP UNI 206, EN ISO 22391.**

Type	Part no.WII	Part no.WID	Dimensions	Roll
PE-RT-DD	4001165	10023279	16 X 2,0	120 m
PE-RT-DD	4001166	10013248	16 X 2,0	200 m
PE-RT-DD	4001168	10023280	16 X 2,0	600 m
PE-RT-DD	4001175	10023281	17 X 2,0	120 m
PE-RT-DD	4001176	10023282	17 X 2,0	200 m
PE-RT-DD	4001267	10023286	17 X 2,0	600 m
PE-RT-DD	4001185	-	18 X 2,0	120 m
PE-RT-DD	4001186	10026131	18 X 2,0	200 m
PE-RT-DD	4001205	10023283	20 X 2,0	120 m
PE-RT-DD	4001206	10023284	20 X 2,0	200 m
PE-RT-DD	4001210	10023285	20 X 2,0	500 m

**PE-RT**

**Polyethylene** pipe, increased resistance.  
Suitable for installation of underfloor heating systems.  
**According to UNI EN ISO 22391. Approved IIP UNI 206**

Type	Part no. WII	Dimensions	Roll
PE-RT	4001112	12 X 2,0	100 m
PE-RT	4001115	15 X 2,5	100 m
PE-RT	4001118	18 X 2,5	100 m
PE-RT	4001120	20 X 2,0	100 m
PE-RT	4001122	22 X 3,0	100 m
PE-RT	4001128	28 X 3,0	50 m
PE-RT	4001132	32 X 3,0	50 m

## CROSS-LINKED POLYETHYLENE PIPES FOR HEATING AND SANITARY

**PE-XB**

Cross-linked polyethylene pipe. Can be used instead of conventional piping (copper - steel - iron). **Suitable for heating and sanitary systems** as it is non toxic. Easy to install. Low pressure drops. Age and corrosion resistant.  
Max. temperature: 95°C (as per EN 15875 tests).

*Other size on request.*

**According to UNI EN ISO 15875-2, IIP UNI 20.**  
**Approved SKZ.**

Type	Part no. WII	Part no. WID	Dimensions	Roll
PE-XB	1001160	-	16 x 2,0	120 m
PE-XB	1001161	10000020	16 x 2,0	200 m
PE-XB	1001170	-	17 x 2,0	120 m
PE-XB	1001171	-	17 x 2,0	200 m
PE-XB	1001180	-	18 x 2,0	120 m
PE-XB	1001181	-	18 x 2,0	200 m
PE-XB	1001200	-	20 x 2,0	120 m
PE-XB	1001201	-	20 x 2,0	200 m
PE-XB	1001112	-	12 x 2,0	100 m
PE-XB	1001115	-	15 x 2,5	100 m
PE-XB	1001118	-	18 x 2,5	100 m
PE-XB	1001120	-	20 x 2,0	120 m
PE-XB	1001202	-	20 x 2,0	400 m
PE-XB	1001122	-	22 x 3,0	100 m
PE-XB	1001128	-	28 x 3,0	50 m
PE-XB	1001132	-	32 x 3,0	50 m



**CROSS-LINKED POLYETHYLENE PIPES FOR HEATING AND SANITARY**
**VPESR**

Cross-linked polyethylene pipe enclosed in corrugated polyethylene sheath. Characteristics like Pe-xb. Black sheath.

*Other size on request.*

**According to UNI en iso 15875-2, IIP UNI 206 but only pipe, does not comprehend the corrugate.**

Type	Part no. WII	Dimensions	Ø Sheath	Roll
VPESR	1001905	15 x 2,5	19 mm	50 m
VPESR	1001909	18 x 2,5	23 mm	50 m


**TPRUV**

Cross-linked polyethylene pipe resistant to ageing action of UV rays. Characteristics like Pe-xb, but suitable above all for outdoor sections exposed to sunlight.

*Other size on request.*

**According to UNI EN ISO 15875-2**

Type	Part no. WII	Dimensions	Roll
TPRUV	1001512	12 x 2,0	100 m
TPRUV	1001515	15 x 2,5	100 m
TPRUV	1001518	18 x 2,5	100 m
TPRUV	1001522	22 x 3,0	100 m
TPRUV	1001528	28 x 3,0	50 m
TPRUV	1001532	32 x 3,0	50 m


**CALC**

Composite pipe type: CALC. Plastic-metal composite pipe with PE-RT liner. The (blunt-welded longitudinally) aluminum pipe is between 0,2 and 0,5 mm thick, depending on its dimensions and wall thickness. This aluminum insert ensures that the pipe is 100% oxygen-tight. External pipe made from UV-resistant HDPE. The pipe is DVGW/SVGW/ÖVGW-tested and certified, max. operating pressure: 10 bar, max. operating temperature: 95 °C, min. bending radius with inner spring: 3xd.

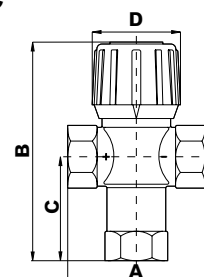
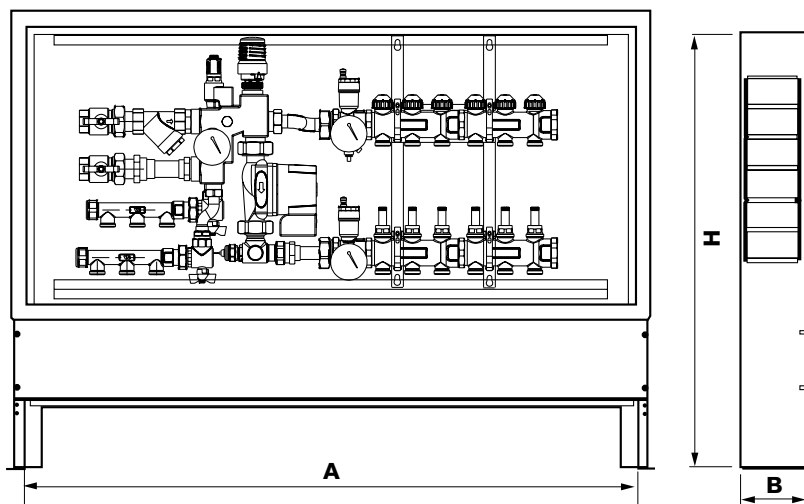
Type	Part no. WID	Dimensions	Roll
CALC	10005250	16 x 2,0	100 m
CALC	10005253	20 x 2,0	100 m
CALC	10005258	26 x 2,0	50 m
CALC	10005254	20 x 2,0	5 m
CALC	10005257	26 x 2,0	5 m
CALC	10005259	32 x 2,0	5 m



## OVERALL DIMENSIONS

## DOMORADIANT - FHLT / FHLT-R - FH01 / FH01-R

63C

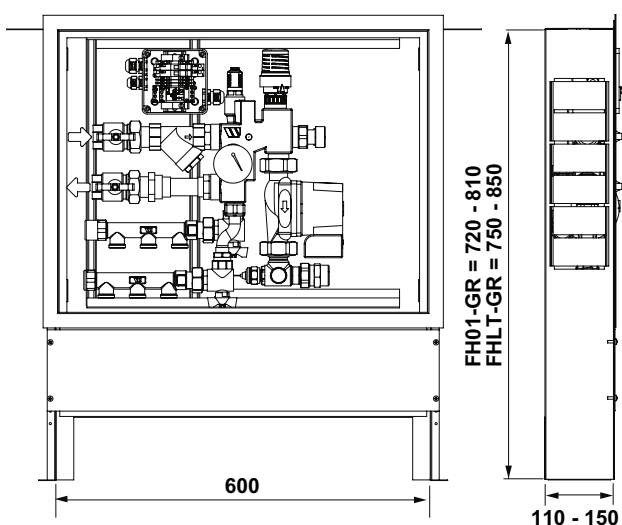


DN	A	B	C	D
3/4"	70	107	52	45
1"	80	110	55	45

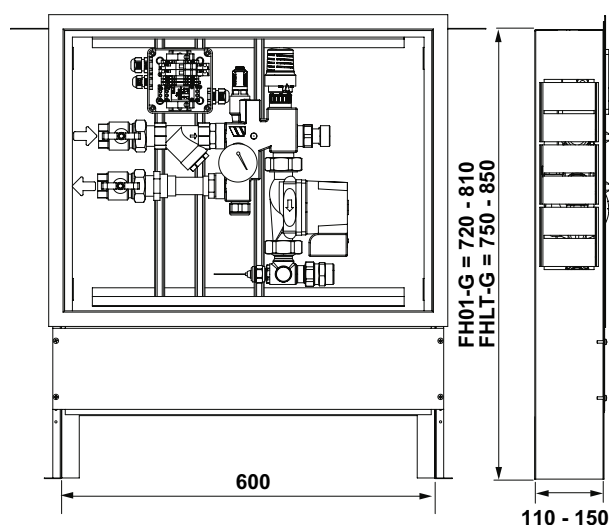
No. of outlets (circuits)	A (mm)	* B (mm)	* H (mm) per series FH01	* H (mm) per series FHLT
6	1000	110/150	720/810	750/850
7	1000	110/150	720/810	750/850
8	1000	110/150	720/810	750/850
9	1200	110/150	720/810	750/850
10	1200	110/150	720/810	750/850
11	1200	110/150	720/810	750/850
12	1200	110/150	720/810	750/850

The inspection box height and depth can be adjusted on site by regulating the feet and the frame.

## FHLT-GR / FH01-GR



## FHLT-G / FH01-G

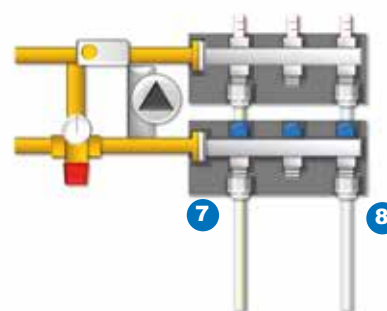
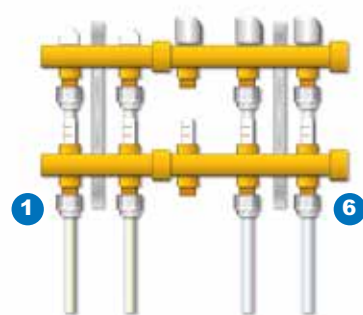
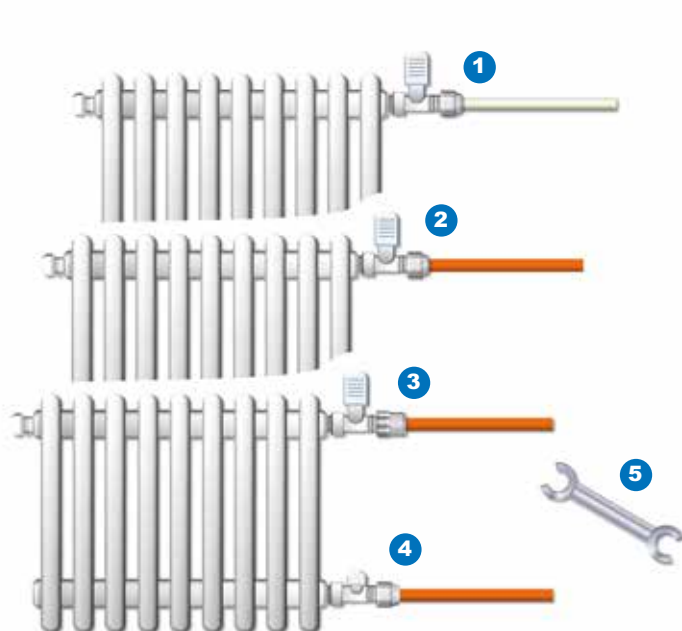


# Fittings



Fittings for copper pipes .....	pag. 81
Fittings for polyethylene and multi-layer pipes .....	pag. 83
Nipples, elbows, tee unions .....	pag. 85
Overall Dimensions .....	pag. 87

EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*



Fitting for multi-layer pipe.



VELOFIT  
One piece fittings  
for copper



RAFIT+  
One piece fittings  
for copper



Unions for copper  
series 820R



Steel wrench for  
tightening  
RAFIT+



Fitting for cross-linked  
polyethylene pipe.



3/4" EURO-CONE  
compression unions  
for PEX pipe.



3/4" EURO-CONE  
compression unions  
for multilayer pipe.

**FITTINGS FOR COPPER PIPES**
**872M**

RAFIT+.

**One-piece soft seal fitting**, patented, for quick copper pipe connections.

Tightening torque with good unthreading resistance (tearing resistant):

**DN 3/8" = 15-18 Nm - DN 1/2" = 20-25 Nm**

\* 1/2"S M24 x 1,5 (ONLY FOR 102M AND 119SX VALVES SIZE 1/2"S)

Type	Part no. WII	Part no. WID	Size	Ø Tube
872M	872M3810	-	3/8"	10
872M	872M3812	-	3/8"	12
872M	872M1210	-	1/2"	10
872M	872M1212	10000991	1/2"	12
872M	872M1214	-	1/2"	14
872M	872M1215	-	1/2"	15
872M	872M1216	-	1/2"	16
872M	* 872M12S18	-	1/2"S	18

**873M**

VELOFIT.

**One-piece compact soft seal fitting**, patented, for quick copper pipe connections.

Tightening torque :

**DN 3/8" = 15-20 Nm - DN 1/2" = 20-25 Nm - DN 3/4" = 30-35 Nm**

**DN 1" = 35-40 Nm**

\* 1/2"S M24x 1,5 (ONLY FOR 102M AND 119SX VALVES SIZE 1/2"S)

\*\* ONLY FOR VALVES

Type	Part no. WII	Part no. WID	Size	Ø Tube
873M	873M3810	-	3/8"	10
873M	873M3812	-	3/8"	12
873M	873M1210	-	1/2"	10
873M	873M1212	-	1/2"	12
873M	873M1214	10001683	1/2"	14
873M	873M1215	10001684	1/2"	15
873M	873M1216	-	1/2"	16
873M	* 873M12S18	-	1/2"S	18
873M	** 873M3418	-	3/4"	18
873M	** 873M122	10001685	1"	22

**829M**

Steel wrench for tightening RAFIT+.

Type	Part no. WII	Part no. WID	Size
829M	829M2025	-	3/8" - 1/2"
829M	829M2527	10001001	1/2" - 1/2"S

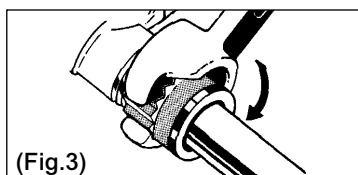
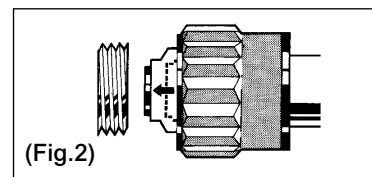
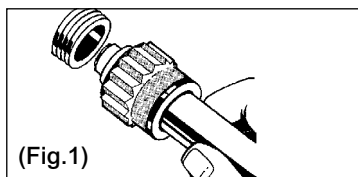

**TECHNICAL NOTE**
**Installation of quick one-piece fittings RAFIT**

**1** - When cutting the pipe, be careful to deburr the pipe ends if necessary.

**2** - Insert the pipe in the fitting pushing it until butting against the end stop (fig. 1), then keep it still in this position while tightening; hence the seal will be thrust outwards from the fitting body (fig. 2).

**3** - Approach the fitting to the threaded end piece until the head of the taper ferrule is engaged inside. Then tighten by hand.

**4** - Fully tighten with respective wrench (item 829M) in accordance with recommended tightening torque (fig. 3).



## FITTINGS FOR COPPER PIPES

**820R**

Compression union for copper pipe. Metal seal.



Type	Part no. WII	Part no. WID	Size	Ø Tube
820R	820R3808	-	3/8"	8
820R	820R3810	-	3/8"	10
820R	820R3812	-	3/8"	12
820R	820R1210	10000997	1/2"	10
820R	820R1212	-	1/2"	12
820R	820R1214	-	1/2"	14
820R	820R1215	10001642	1/2"	15
820R	820R1216	-	1/2"	16
820R	* 820R12S18	10001000	1/2"S	18
820R	820R3418	-	3/4"	18
820R	820R3422	-	3/4"	22

\* 1/2"S M24x 1,5 (ONLY FOR 102M AND 119SX VALVES SIZE 1/2")

**197**

Nickel-plated reducer for metal seal for connection of copper pipe (1mm wall thickness) to valves and lockshields with female connections.



Type	Part no. WII	Size	Ø Tube
197	197SN3810	3/8"	10
197	197SN3812	3/8"	12
197	197SN1214	1/2"	14
197	197SN1215	1/2"	15
197	197SN1216	1/2"	16
197	197SN3418	3/4"	18

**TECHNICAL NOTE****Installation of fittings with metal seal**

The series 197 adapter allows connection of copper pipes to all valves and lockshields with female connections of the iron series.



Shot-blasted brass biconical ring



Nickel-plated brass threaded ring nut



Fitting series 820R is used for connecting copper pipes to valves and lockshields with male connections. Coupling is by compressing an annealed brass olive between the threaded part and the pipe, which is determined by tightening of the nut. The pipe end should be reinforced by a mandrel in order to avoid squashing the pipe during tightening. The use of the olive prevents the pipe from slipping out but it also allows very easy disassembly.



Olive

Insert

Pipe tightening nut



**FITTINGS FOR POLYETHYLENE AND MULTI-LAYER PIPES**
**817M**

Nickel-plated compression union for cross-linked polyethylene pipe to **UNI 9338 standard**. EPDM O-ring.



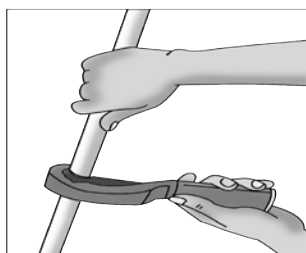
Type	Part no. WII	Part no. WID	Size	Ø Tube
817M	817MC12142	-	1/2"	14 x 2,0
817M	817MC1215	-	1/2"	15 x 2,5
817M	817MC121612	-	1/2"	16 x 2,0
817M	817MC1216	-	1/2"	16 x 2,2
817M	817MC12S18	-	1/2"S	18 x 2,5
817M	817MC341612	-	3/4"	16 x 2,0
817M	817MC341713	10001003	3/4"	17 x 2,0
817M	817MC341814	-	3/4"	18 x 2,0
817M	817MC341813	-	3/4"	18 x 2,5
817M	817MC342016	-	3/4"	20 x 2,0

**817MS**

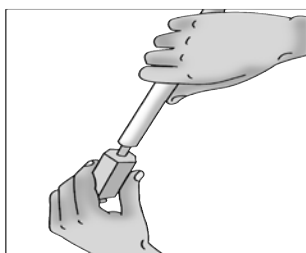
Compression unit for **multi-layer** pipe. Hose fitting with O-ring. Teflon washer to protect against stray currents.



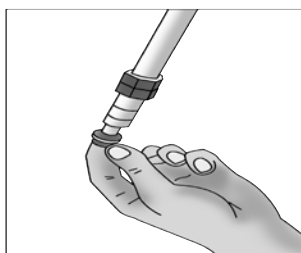
Type	Part no. WII	Part no. WID	Size	Ø Tube
817MS	817MSC121420	-	1/2"	14 x 2,0
817MS	817MSC121620	-	1/2"	16 x 2,0
817MS	817MSC1216225	-	1/2"	16 x 2,25
817MS	817MSC341820	-	3/4"	18 x 2,0
817MS	817MSC341620	10001688	3/4"	16 x 2,0
817MS	817MSC3416225	-	3/4"	16 x 2,25
817MS	817MSC342020	-	3/4"	20 x 2,0
817MS	817MSC342025	-	3/4"	20 x 2,5
817MS	817MSC121626R	-	1/2"	16,2 x 2,6
817MS	817MSC342029R	-	3/4"	20 x 2,9

**TECHNICAL NOTE**
**Installation series 817MS for multi-layer pipe**


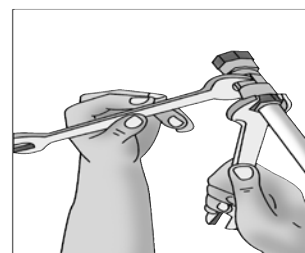
Make an accurate, burr-free, right-angled cut using a special tube cutter.



Leave the pipe with its original cylindrical shape for easier insertion of the hose fitting.



Make sure that there are no traces of burrs inside the pipe. Then mount the fitting.



Tighten fully with the aid of a spanner.

## FITTINGS FOR POLYETHYLENE AND MULTI-LAYER PIPES

**ECP**

**3/4" EURO-CONE** compression unions **for PEX pipe**, designed for connections of valves and manifolds.



Type	Part no. WII	Part no. WID	Size	Ø Tube
ECP	ECP1620	10023974	3/4" EURO-CONE	16 x 2,0
ECP	ECP1720	-	3/4" EURO-CONE	17 x 2,0
ECP	ECP1820	-	3/4" EURO-CONE	18 x 2,0
ECP	ECP2020	-	3/4" EURO-CONE	20 x 2,0

**ECM**

**3/4" EURO-CONE** compression unions **for multilayer pipe**, designed for connections of valves and manifolds.



Type	Part no. WII	Size	Ø Tube
ECM	ECM1620	3/4" EURO-CONE	16 x 2,0
ECM	ECM16225	3/4" EURO-CONE	16 x 2,25
ECM	ECM2020	3/4" EURO-CONE	20 x 2,0

**NIPPLES, ELBOWS, TEE UNIONS**
**220**

Nikel-plated three pieces union elbow.



Type	Part no. WII	Part no. WID	Size
220	220SN38	10022419	3/8"
220	220SN12	10001725	1/2"
220	220SN34	10022420	3/4"
220	220SN1	-	1"

**221**

Nikel-plated three pieces straight connector.



Type	Part no. WII	Part no. WID	Size
221	221SN38	10001728	3/8"
221	221SN12	10001729	1/2"
221	221SN34	10001730	3/4"
221	221SN1	10001731	1"

**893GL**

Brass nipple with threaded male/female connections (brass extensions).



Type	Part no. WII	Size
893GL	893GL38	3/8" MF
893GL	893GL12	1/2" MF
893GL	893GL34	3/4" MF

**892GL**

Brass nipple with threaded male connections.



Type	Part no. WII	Size
892GL	892GL38	3/8" MM
892GL	892GL12	1/2" MM
892GL	892GL34	3/4" MM

**891GL**

Brass tee fitting with threaded male connections.



Type	Part no. WII	Size
891GL	891GL12	1/2" MM

## NIPPLES, ELBOWS, TEE UNIONS

**E890GL**

Brass elbow, male/female connections

Type	Part no. WII	Part no. WID	Size
E890GL	E890GL12MF	-	1/2"

**833M**

Brass reducer, male/male.

Type	Part no. WII	Size
833M	833M3812	3/8" - 1/2"
833M	833M3834	3/8" - 3/4"
833M	833M1234	1/2" - 3/4"
833M	833M121	1/2" - 1"
833M	833M341	3/4" - 1"

**821M**

Brass reducer, male/female.

Type	Part no. WII	Part no. WID	Size
821M	821M38M12F	-	3/8" M x 1/2" F
821M	821M12M38F	-	1/2" M x 3/8" F
821M	821M12M34F	-	1/2" M x 3/4" F
821M	821M12F34M	-	1/2" F x 3/4" M
821M	821M12M1F	-	1/2" M x 1" F
821M	821M12F12SM	-	1/2" SM x 1/2" F
821M	821M34M38F	10001007	3/4" M x 3/8" F
821M	821M34M1F	-	3/4" M x 1" F

**841M**

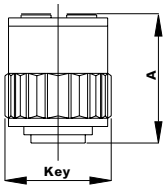
Brass male plugs with o-ring sealed.

Type	Part no. WII	Part no. WID	Size
841M	841M38M	-	3/8"
841M	841M12M	-	1/2"
841M	841M34M	10001008	3/4"
841M	841M1M	-	1"

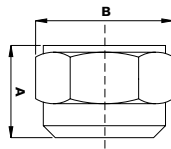
**834M**

Brass female plugs.

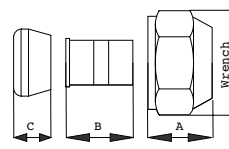
Type	Part no. WII	Size
834M	834M38	3/8"
834M	834M12	1/2"
834M	834M34	3/4"
834M	834M1	1"

**OVERALL DIMENSIONS**
**872M**


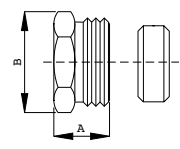
DN	A	Rafit Key
3/8"	25	20
1/2"	27	25
1/2"S	29	27

**873M**


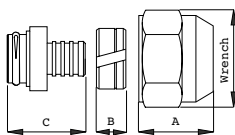
DN	A	B	Exagon key
3/8" x 10	17.5	24	21
3/8" x 12	17	24	21
1/2" x 12	18.5	28	25
1/2" x 14	18.5	28	25
1/2" x 15	18.5	28	25
1/2" x 16	18	30	27
1/2"S x 18	17.5	30	27
3/4" x 18	18	30	--

**820R**


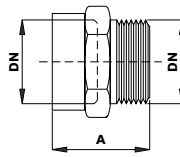
DN	A	B	C	Wrench
3/8"	17	24	9	20
1/2"	19	24	10	25
1/2"S	20	24	11	25
3/4"	20	24	11	32

**197**


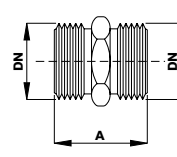
DN	A	B
3/8"	11	20
1/2"	14	24
3/4"	18	31

**817M - 817MS**


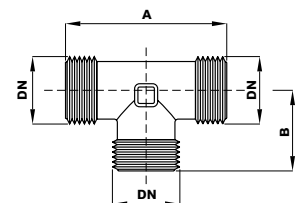
DN	A	B	C	Wrench
1/2"	23	8	21	20
1/2"S	26	8	22	25
3/4"	24	8	22	32

**893GL**


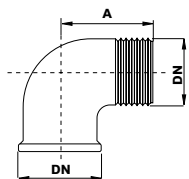
DN	A
3/8"	20
1/2"	23
3/4"	32

**892GL**


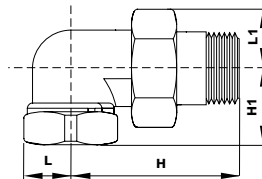
DN	A
3/8"	22
1/2"	25
3/4"	28

**891GL**


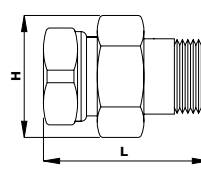
DN	A	B
1/2"	51	25,5

**E890GL**


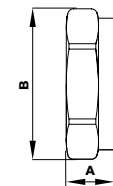
DN	A
1/2"	28

**220**


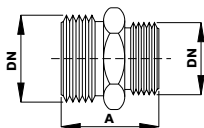
DN	H	H1	L	L1
3/8"MF	47	27	14	14
1/2"MF	53	34	16	18
3/4"MF	60	37	19	21
1"MF	77	46	23	27

**221**


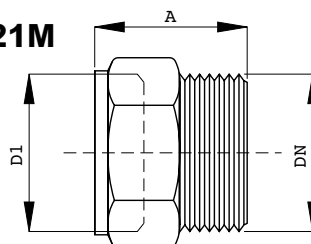
DN	H	L
3/8"MF	28	43
1/2"MF	35	51
3/4"MF	42	58
1"MF	54	62

**834M**


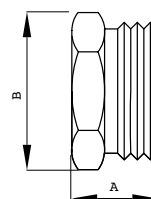
DN	A	B
3/8"	7	19
1/2"	9	25
3/4"	18	32
1"	18	38

**833M**


DN	A	DN	A
3/8" x 1/2"	24	1/2" x 1"	34
3/8" x 3/4"	28	3/4" x 1"	35
1/2" x 3/4"	30		

**821M**


DN	D1	A	DN	D1	A
3/8"M	1/2"F	21	1/2"M	1"F	21
1/2"M	3/8"F	22	3/4"M	1"F	21
1/2"SM	1/2"F	24	1"M	3/8"F	24
1/2"M	3/4"F	25			

**841M**


DN	A	B
3/8"	13	21
1/2"	15	27
3/4"	16	30
1"	22	37

NOTES

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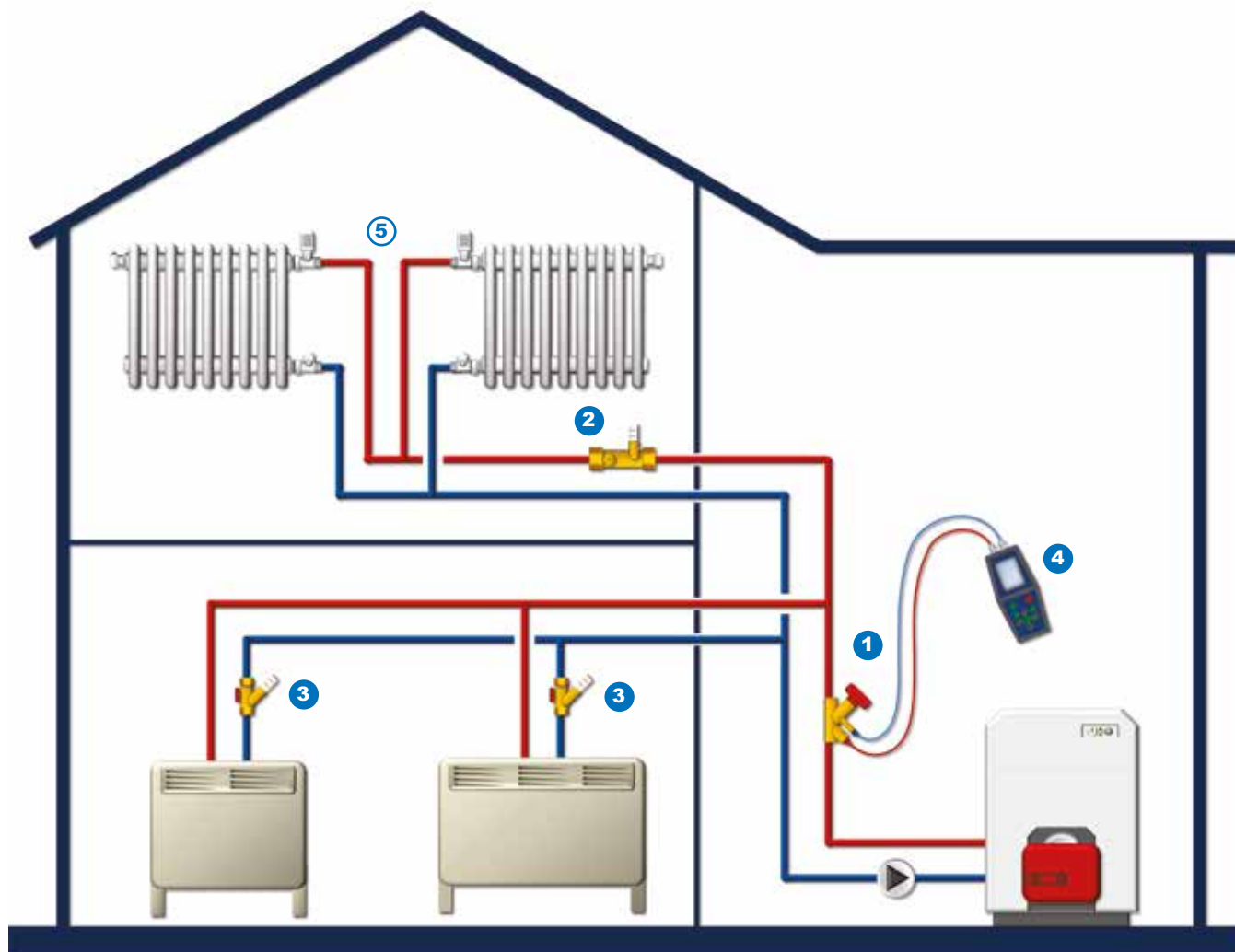


## Balancing devices for water distribution network



Balancing valves..... pag. 89

## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*



Balancing valve FO-VB

**FO-BV**  
pag. 92



Balancing valve  
WattFlow BP

**SRV-IG**  
pag.91



Balancing valve  
WattFlow OL

**SRVOL-AG**  
pag. 93



Balancing and metering  
instrument

**BVT-SET**  
pag. 93



Radiator valves  
for heat elements

**Chapter A**  
pag. 5

**BALANCING VALVES**
**SRV-AG**


Balancing valve WattFlow BP. Precise adjustment of the flow rate through Y-valve. Indication of the actual flow value. Large measurement range. No diagrams and measurement computers necessary. Any installation position. Short installation length. Brass body, sight glass made of impact resistant plastic. No correction factors for water/glycol mixtures required.

Type	Part no. WID	Size	Flow rate	Kvs
SRV-AG	10010138	1"	2-16 l/min	3.0
SRV-AG	10010140	1"	4-36 l/min	3.5
SRV-AG	10010152	1.1/4"	5-50 l/min	5.5
SRV-AG	10010154	1.1/2"	10-80 l/min	9.0

**SRV-IG**


Balancing valve WattFlow BP. Precise adjustment of the flow rate through Y-valve. Indication of the actual flow value. Large measurement range. No diagrams and measurement computers necessary. Any installation position. Short installation length. Brass body, sight glass made of impact resistant plastic. No correction factors for water/glycol mixtures required. Includes memostop to fix pre-settings through double spindle.

Type	Part no. WID	Size	Flow rate	Kvs
SRV-IG	10010156	1"	5-50 l/min	5.5
SRV-IG	10010159	1.1/4"	10-80 l/min	9.0
SRV-IG	10010160	1.1/2"	15-120 l/min	13.0
SRV-IG	10010162	2"	20-200 l/min	18.0

**SRV-KVSR**


Balancing valve WattFlow BP. Body with double-sided compression fitting. Precise adjustment of the flow rate through Y-valve. Indication of the actual flow value. Large measurement range. No diagrams and measurement computers necessary. Any installation position. Short installation length. sight glass made of impact resistant plastic. No correction factors for water/glycol mixtures required.

Type	Part no. WID	Size	Flow rate	Kvs
SRV-KVSR	10010142	1/2" 15 mm	0.5-7 l/min	1.3
SRV-KVSR	10010143	1/2" 15 mm	2-16 l/min	3.0
SRV-KVSR	10010145	3/4" 15 mm	4-36 l/min	3.5
SRV-KVSR	10010146	1/2" 22 mm	0.5-7 l/min	1.3
SRV-KVSR	10010148	1/2" 22 mm	2-16 l/min	3.0
SRV-KVSR	10010150	3/4" 22 mm	4-36 l/min	3.5
SRV-KVSR	10010131	1/2" 15-22 mm	0.5-7 l/min	1.3
SRV-KVSR	10010133	1/2" 15-22 mm	2-16 l/min	3.0
SRV-KVSR	10010135	3/4" 15-22 mm	4-36 l/min	3.5

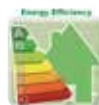
**INBUS 6X8**


Dual wrench allen key 6 x 8.  
To shut-off and adjust WattFlow BP balancing valves with MemoStop.

Type	Part no. WID
INBUS 6 X 8	10013474

## BALANCING VALVES

## SRVOL-AG / SRVOL-IG



Balancing valve WattFlow OL. Precise adjustment of the flow rate through Y-valve. Indication of the actual flow value. Large measurement range. No diagrams and measurement computers necessary. Any installation position. Short installation length. Brass body, sight glass made of impact resistant plastic.

Type	Part no. WID	Size	Flow rate	Kvs
SRVOL-AG	10010098	1/2"M	1-8 l/min	1.7
SRVOL-IG	10010101	1/2"F	1-8 l/min	1.7
SRVOL-AG	10010106	3/4"M	2-16 l/min	2.0
SRVOL-IG	10010108	3/4"F	2-16 l/min	2.0

## SRVOL-KSVR



Balancing valve WattFlow OL. Brass Body with double-sided compression fitting. Precise adjustment of the flow rate through inclined seat valve. Indication of the actual flow value. Large measurement range. No diagrams and measurement computers necessary. Any installation position. Short installation length. Sight glass made of impact resistant plastic.

Type	Part no. WID	Size	Flow rate	Kvs
SRV-IG	10010103	1/2"M 15 mm	1-8 l/min	1.7
SRV-IG	10010104	1/2"F 22 mm	1-8 l/min	1.7
SRV-IG	10010110	3/4"M 15 mm	2-16 l/min	2.0
SRV-IG	10010112	3/4"F 22 mm	2-16 l/min	2.0

## FO-BV



Fixed orifice balancing valve with threaded connections and pressure sockets for heating and cooling (water added with glycol, brine) systems, domestic hot and cold water distribution systems. Suitable for shut-off, pre-setting and measurement of flow rate and differential pressure with balancing computer BVT-SET connected to the two piezometric sockets.

Design according to BS7350

Valve body made of DZR brass

Threaded F/F (ISO 228/1 for DN015/20, ISO 7/1 Rp above)

Tolerance on nominal Kvs  $\pm 3\%$  (test according to BS7350)

Water temperature  $-10^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$  (below  $0^{\circ}\text{C}$  only for water with added antifreeze fluids over  $100^{\circ}\text{C}$  only for water with added anti-boiling fluids)

PN25 (Max 25 bar up to  $100^{\circ}\text{C}$ , max 20 bar at  $130^{\circ}\text{C}$ ).

Type	Part no. WII	DN	Flow rate	
FO-BV	FO-BV015	1/2"	3,7 - 8,9	l/min
FO-BV	FO-BV020	3/4"	8,3 - 19,5	l/min
FO-BV	FO-BV025	1"	15,5 - 36,2	l/min
FO-BV	FO-BV032	1.1/4"	32,4 - 75,0	l/min
FO-BV	FO-BV040	1.1/2"	48,6 - 112,8	l/min
FO-BV	FO-BV050	2"	91,2 - 210,6	l/min

**BALANCING VALVES**
**VO-BV**


Variable orifice balancing valve with flanged connections and pressure sockets for heating and cooling (water added with glycol, brine) systems, domestic hot and cold water distribution systems. Suitable for shut-off, pre-setting and measurement of flow rate and differential pressure with balancing computer BVT-SET connected to the two piezometric sockets.

Valve body made of cast iron

Flanged PN16 according to EN1092-2

Tolerance on nominal Kvs  $\pm 5\%$

Water temperature:  $-10^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$  (below  $0^{\circ}\text{C}$  only for water with added antifreeze fluids over  $100^{\circ}\text{C}$  only for water with added anti-boiling fluids)

PN16.

Type	Part no. WII	DN	Flow rate	
VO-BV	VO-BV065	65	10,9 ÷ 25,0	l/min
VO-BV	VO-BV080	80	23,0 ÷ 55,3	l/min
VO-BV	VO-BV100	100	39,1 ÷ 93,7	l/min
VO-BV	VO-BV125	125	60,7 ÷ 143,1	l/min
VO-BV	VO-BV150	150	85,4 ÷ 204,9	l/min
VO-BV	VO-BV200	200	150,7 ÷ 361,7	l/min
VO-BV	VO-BV250	250	239,7 ÷ 564,4	l/min
VO-BV	VO-BV300	300	339,0 ÷ 921,6	l/min

**BVT-SET**


Balancing instrument for measuring and recording of differential pressure, and flow rate in hydronic systems.

- 2,2" LED color display.

- 1200 predefined valves

- up to 20000 records

- charging/communication by USB connector

Nominal pressure range: 1000 or 2000 kPa.

Working temperature:  $-5 \div +50^{\circ}\text{C}$ .

Liquid temperature:  $-5 \div +90^{\circ}\text{C}$ .

Type	Part no. WII
BVT-SET	BVT-SET

## 94

F

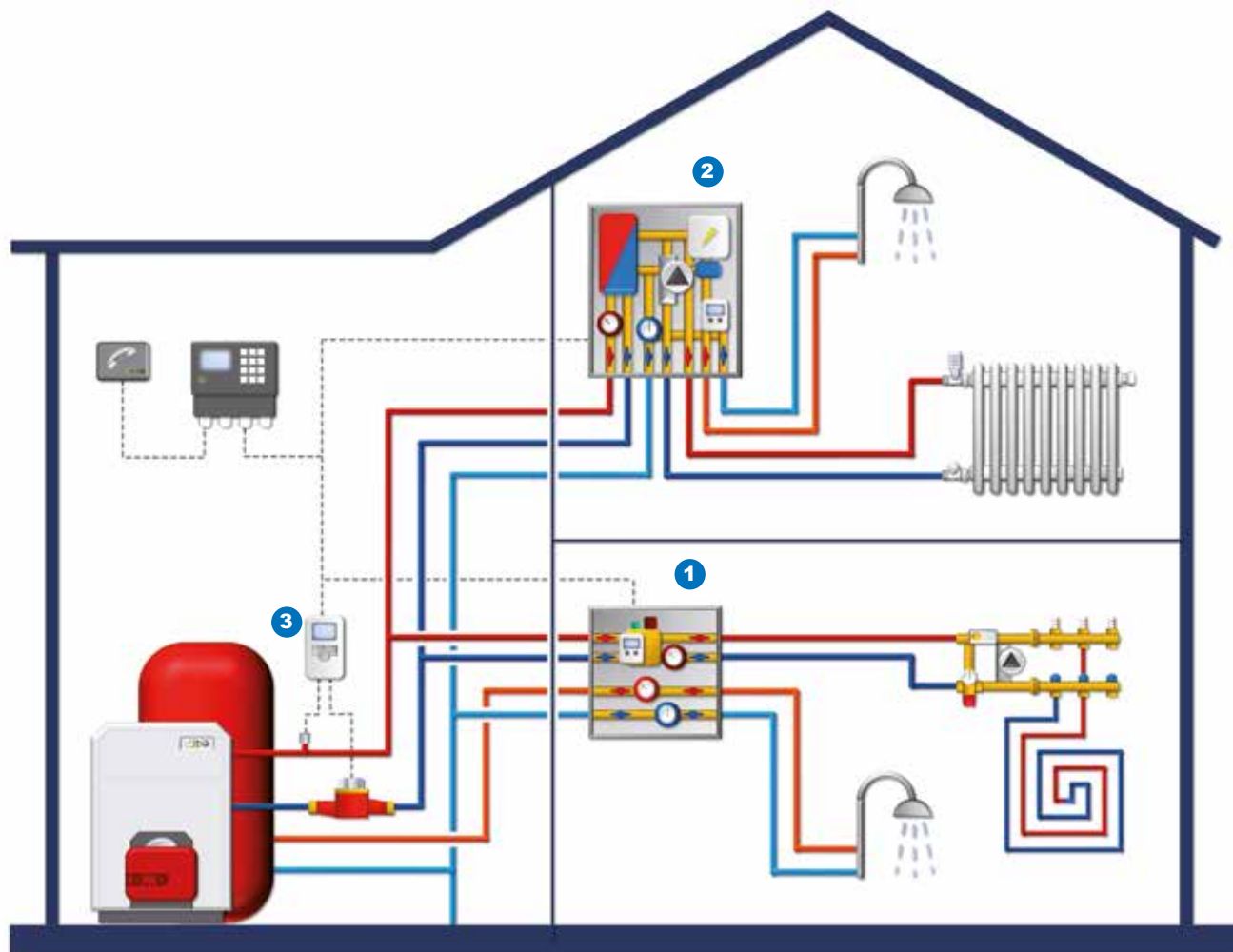


# Thermal energy metering



Preassembled unit for heating regulation and energy metering Domocompact.....	pag. 98
Thermal energy metering for central heating system Domocal.....	pag. 99
Energy metering .....	pag. 100

## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

**1** **DOMOCOMPACT**  
pag. 98



Heat metering and  
temperature control unit

**2** **DOMOCAL**  
pag. 99



Remote thermal unit for  
centralized heating systems

**3** **CAM2**  
pag. 100



CAMICAL -  
M-bus energy meter

**PREASSEMBLED UNIT FOR HEATING REGULATION AND ENERGY METERING**

## Domosolutions

### Systems designed for maximum room comfort and cost allocation




The most popular heating system in pluri-residential buildings is no longer based on individual apartment wall hanging boilers. It is now a high-performance centralized system characterized by **highly efficiency with units connecting the main circuit to each apartment**. Compared to the traditional system, this solution responds better to the needs of the user in terms of comfort, independence and safety, and ensures lower operating costs.

The use of heat metering systems allows consumers living in each apartment connected to a central heating system to play an active role in managing their comfort and to be able to count on a plentiful DHW (domestic hot water) supply, knowing that they **are only paying for what they actually consume**.

**Watts Industries** Integrated direct heat metering products and systems :

- **DOMOCOMPACT** series preassembled units equipped with a direct heat metering system (room heating, domestic hot and cold water) and zone control functions
- **DOMOCAL** series external heating units equipped with a direct heat metering system, domestic hot and cold water production and zone control functions (heating/air conditioning)

The heat metering and temperature control units in the Series **DOMOCOMPACT** are available in a wide range capable to satisfy all design, installation and maintenance requirements. The range can be divided up according to plant engineering needs, on the basis of the flow rate required. For all products, the unit can be assembled as a finished product or in separate phases (installation of the support frame and then the functional components).

Two-pipe systems without manifolds	DOMOCOMPACT <i>My Home</i>	DOMOCOMPACT <i>Family</i>	DOMOCOMPACT <i>Suite</i>
			
	<b>Qn &lt;800 [l/h] DN15-20</b>	<b>800 [l/h] &lt;Qn&lt;2000[l/h] DN25</b>	<b>2000 [l/h] &lt;Qn&lt;2800[l/h] DN32</b>
<b>Flow rate Qn - Nominal diameter DN</b>			

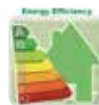
The modular **DOMOCAL** range enables you to choose the unit that best satisfies your needs. The unit can be mounted on a wall or flush to it, in an open configuration or closed with a metal cover. If required, domestic cold water can also be managed and metered (balancing devices and water hammer arrestors are available on demand).

There are versions equipped with **pump that guarantee the supply of hot/cold water even when the pressure on the primary water distribution network is low** and versions designed for **DIRECT DISTRICT HEATING, that can regulate the primary fluid coming directly from a district heating station**.

Type	Description	Type of installation		Standard pump		Modulating control		Domestic cold water outlet	
		Wall	Flush	Yes	No	Yes	No	Yes	No
DOMOCAL	Model for standard boilers	•	•	•	•	•	•	•	•
DOMOCAL	Model for condensing boilers	•	•	•		•	•	•	•
DOMOCAL	Model for indirect district heating system (low temperature)	•	•	•	•	•	•	•	•
DOMOCAL	Model for direct district heating system (high temperature)	•		•	•			•	•
DOMOCAL	Basic model for hot/cold distribution	•		•				•	•
DOMOCAL	Model with motor-driven pump for hot/cold distribution	•		•	•			•	•

**PREASSEMBLED UNIT FOR HEATING REGULATION AND ENERGY METERING DOMOCOMPACT**

**Directive  
MID**

**DOMOCOMPACT** *My Home*


Pre-assembled regulation and energy metering module for single user with low water flow (<800 l/h) and DHW (DCW) metering. Energy metering performed by using:

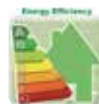
- electronic panel type CAM2 battery powered with 2 temperature sensors type Pt500;
- water flow turbine single jet metering unit (Series WMT).

Compliant to Dir. MID 2004/22/CE.

All meters are already equipped to work in network according to the M-Bus EN 1434 protocol. Domestic Hot Water (DHW) or Domestic Cold Water (DCW) flow metering (kvs =4.0) by using a Water flow turbine single jet unit (Series WMT). The module can be used for horizontal/vertical installations and it is equipped with insulation jacket on the heating/cooling section.

Available in two version: **open frame** and **closed frame** with all elements installed in a metal box with white front door.


**Directive  
MID**

**DOMOCOMPACT** *Family*


Temperature control and thermal energy meter unit for a single user with billing of domestic hot and cold water consumption. The unit can be adapted to receive the main inlets from the column mounted on any of the four sides. Observe the direction of flow requested by the volumetric flow meter.

The temperature control and setting functions are incorporated in a bronze multi-function patented valve consisting of :

- 3-way zone valve, complete with electrothermic actuator 24Vac or 230Vac (Series ETE) coupled to the by-pass setting valve;
- setting and balancing device;
- provision for piezometric connections.

Thermal energy metering function based on:

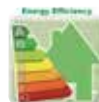
- electronic panel CAM2, battery-powered with two temperature probes Pt 500;
- single-jet turbine flow meter (Series WMT);
- all sections are mounted in a closed frame.

Compliant to Dir. MID 2004/22/CE.

All meters are already equipped to work in network according to the M-Bus EN 1434 protocol. Flow meter and protection function, hot or cold domestic water circuits (Kvs=4.0) performed by a single-jet turbine flow meter (Series WMT) and built-in check valve. As option, domestic water sections can be supplied with a water hammer arrestor.

Available in two version: **open frame** and **closed frame** with all elements installed in a metal box with white front door.


**Directive  
MID**

**DOMOCOMPACT** *Suite*


Temperature control/thermal energy meter unit for user with high flow requirements (> 2800 l/h) and metering of domestic hot and cold water.

The temperature control and setting functions are incorporated in a bronze multi-function patented valve consisting of:

- 3-way zone valve, complete with electrothermic actuator 24Vac or 230Vac (Series ETE) coupled to the by-pass setting valve;
- setting and balancing device;
- provision for piezometric connections.

Thermal energy metering function based on:

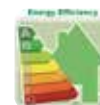
- electronic panel CAM2, battery-powered, with n° 2 temperature probes Pt 500;
- single-jet turbine flow meter (Art. WMT);
- all sections are mounted in a closed frame. Compliance with Dir. MID 2004/22/CE.

Meters are designed for centralized energy reading via M-Bus EN 1434, Flow metering function, hot or cold domestic water circuits (Kvs=4.0) performed by a single-jet turbine flow meter (Art. WMT). The unit is designed for installation only in horizontal position (inlets from left side). Available in two version: **open frame** and **closed frame** with all elements installed in a metal box with white front door.



**PREASSEMBLED UNIT FOR HEATING REGULATION AND ENERGY METERING DOMOCAL**

 Directive  
MID

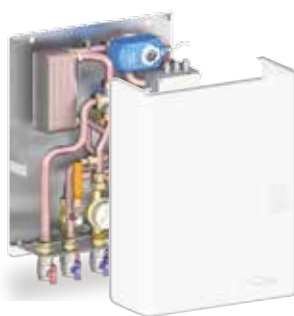
**DOMOCAL (Flush-mounting)**


Multifunction thermal unit that acts as a hydraulic and thermal interface between centralized heat production and the independent supply of heating (room comfort) and domestic hot water. The unit is inserted in a metal frame that can be flush-mounted. Temperature control and cost allocation functions for each individual user through an MID-certified direct (hot/cold) heat metering system that enables costs to be allocated fairly on the basis of the energy actually consumed.

Device based on WEB system electronic logic (zero consumption in thermal off-line mode). Possibility of gathering, transmitting and processing consumption readings.

Domestic cold water management and cost allocation (MID).

Multi-function valve that acts as a hydraulic equalization device, primary flow balancing device and, on request, ensures modulating control of the supply temperature by mixing the primary supply and return flow from the user. There are also models equipped with a motor-driven pump and an up-rated heat exchanger, suitable for use with condensing boilers and when there is a large demand for DHW. The range is completed by versions designed for district heating.

 Directive  
MID

**DOMOCAL (Wall-mounting closed frame)**


Multifunction thermal unit that acts as a hydraulic and thermal interface between centralized heat production and the independent supply of heating (room comfort) and domestic hot water. The unit is mounted onto a metal frame that can be wall-mounted.

Temperature control and cost allocation functions for each individual user through an MID-certified direct (hot/cold) heat metering system that enables costs to be allocated fairly on the basis of the energy actually consumed.

Device based on WEB system electronic logic (zero consumption in thermal off-line mode). Possibility of gathering, transmitting and processing consumption readings.

Domestic cold water management and cost allocation (MID).

Multi-function valve that acts as a hydraulic equalization device, primary flow balancing device and, on request, ensures modulating control of the supply temperature by mixing the primary supply and return flow from the user.

There are also models equipped with a motor-driven pump and an up-rated heat exchanger, suitable for use with condensing boilers and when there is a large demand for DHW. The range is completed by versions designed for district heating.

 Directive  
MID

**DOMOCAL (Wall-mounting open frame)**


Multifunction thermal unit that acts as a hydraulic and thermal interface between centralized heat production and the independent supply of heating (room comfort) and domestic hot water. The unit is mounted on to a metal frame that can be wall-mounted. Temperature control and cost allocation functions for each individual user through an MID-certified direct (hot/cold) heat metering system that enables costs to be allocated fairly on the basis of the energy actually consumed.

Device based on WEB system electronic logic (zero consumption in thermal off-line mode). Possibility of gathering, transmitting and processing consumption readings. Domestic cold water management and cost allocation (MID). Multi-function valve that acts as a hydraulic equalization device, primary flow balancing device and, on request, ensures modulating control of the supply temperature by mixing the primary supply and return flow from the user.

There are also models equipped with a motor-driven pump and an up-rated heat exchanger, suitable for use with condensing boilers and when there is a large demand for DHW. The range is completed by versions designed for district heating.

## ENERGY METERING


 Directive  
MID
**CAM2**

CAMICAL

M-Bus thermal energy meter for heating systems complete with temperature probes:

- multi-function display (total thermal energy, instant flow rate, delivery and return temperature, test signals, etc.) for reading of consumptions and operating instantaneous parameters;
- weekly consumption recording;
- data transmission using the M-Bus protocol in conformity with European Standard EN1434-4 3;
- complete with pulse input for reading of 3 external flow meters (e.g. hot water, cold water, rain water);
- powered by battery (10 years);
- 2 temperature probes Pt500, PN25, threaded M10 x1.

**According to directive EMC 2004/108/CE, MID 2004/22/CE.**

 Directive  
MID
**CAM2-HC**

CAMICAL

M-Bus thermal energy meter for heating and cooling systems complete with temperature probes:

- multi-function display (total thermal energy, instant flow rate, delivery and return temperature, test signals, etc.) for reading of consumptions and operating instantaneous parameters;
- weekly consumption recording;
- data transmission using the M-Bus protocol in conformity with European Standard EN1434-4 3;
- complete with pulse input for reading of 3 external flow meters (e.g. hot water, cold water, rain water);
- powered by battery (10 years);
- 2 temperature probes Pt500, PN25, threaded M10 x1.

**According to directive EMC 2004/108/CE, MID 2004/22/CE.**



## Boiler room components



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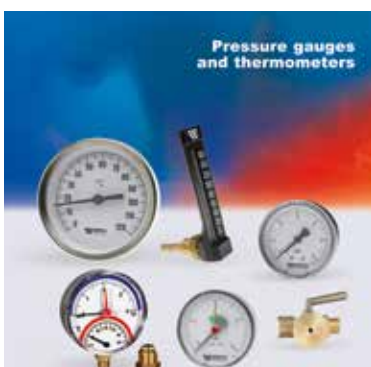
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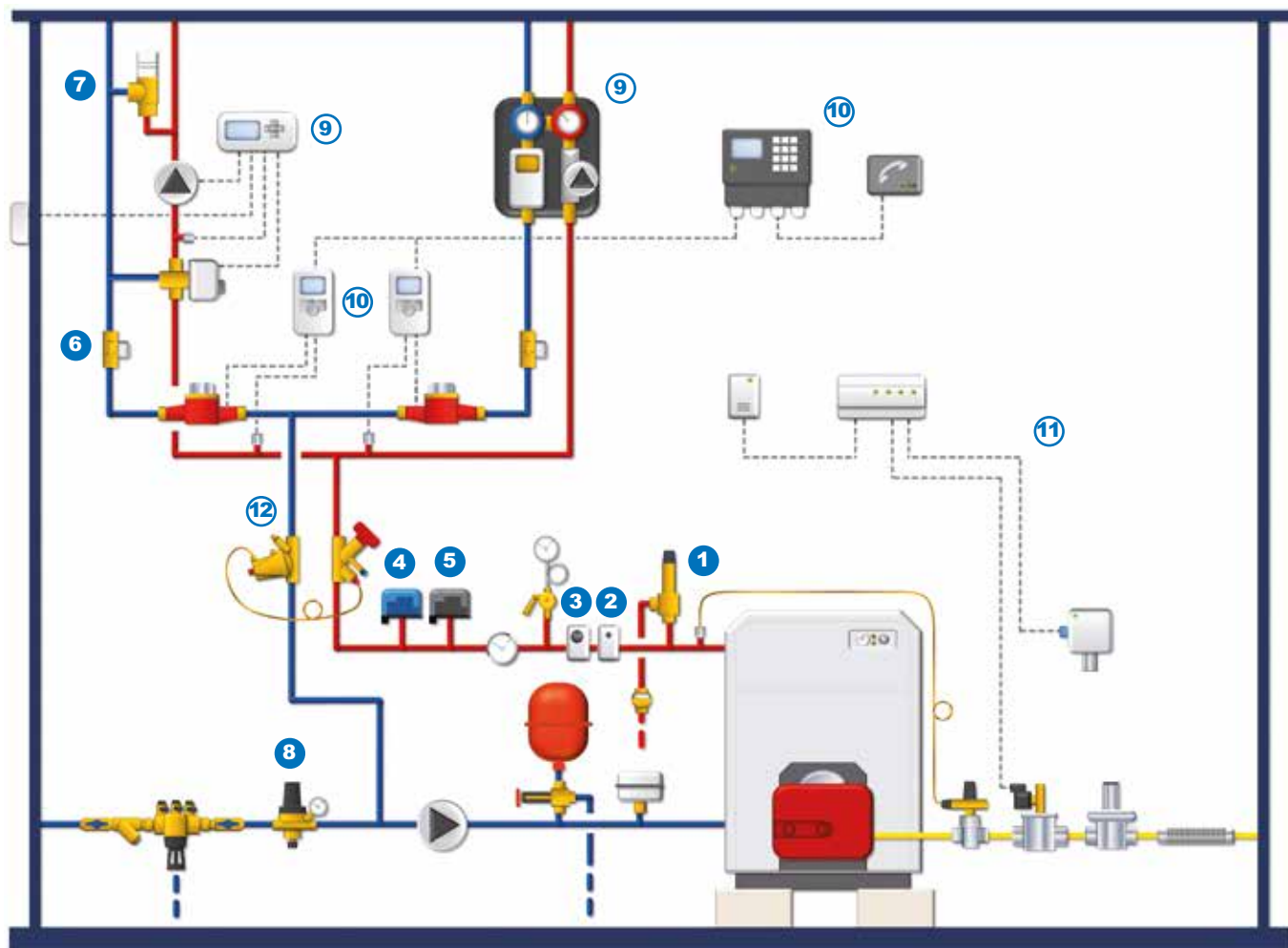
# Safety, control and accessories

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H.1

## EXAMPLE OF APPLICATION



Simplified scheme aimed at the product presentation in chapter

- |  |  |  |   |   |
|--|--|--|---|---|
| <b>1</b><br><br><b>VST</b><br>pag. 105<br>Safety valve                     | <b>2</b><br><br><b>TC</b><br>pag. 113<br>Immersion thermostat              | <b>3</b><br><br><b>TRB100</b><br>pag. 113<br>Immersion thermostat                                  | <b>4</b><br><br><b>PRM</b><br>pag. 112<br>Pressure switch   | <b>5</b><br><br><b>PRMIN</b><br>pag. 112<br>Low pressure switch |
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| <b>9</b><br><br><b>Chapter C.1</b><br>pag. 35<br>Regulation and<br>control | <b>10</b><br><br><b>Capther G</b><br>pag. 95<br>Thermal energy<br>metering | <b>11</b><br><br><b>Capther H.3</b><br>pag. 123<br>Components for gas<br>installation              | <b>12</b><br><br><b>Capther F</b><br>pag. 89<br>Balancing devices for water<br>distribution network |   |

**SAFETY VALVES**
**VST**

Diaphragm safety valve, fixed setting. Body and cap of brass CW617N.

Nominal pressure : PN10. Overpressure : 10%. Blowdown : 20% Max. temperature : 120° C.

Female connections with oversized outlet.

**INAIL approved and calibrated. According to Directive PED 97/23/CE.**

**Identification number CE1115.**



Type	Part no.WII	Part no.WID	Size	bar
VST	0212122	-	1/2" x 3/4"	2,25
VST	0212125	-	1/2" x 3/4"	2,5
VST	0212127	-	1/2" x 3/4"	2,7
VST	0212130	-	1/2" x 3/4"	3
VST	0212135	-	1/2" x 3/4"	3,5
VST	0212140	-	1/2" x 3/4"	4
VST	0212145	-	1/2" x 3/4"	4,5
VST	0212150	-	1/2" x 3/4"	5
VST	0212154	-	1/2" x 3/4"	5,4
VST	0212160	-	1/2" x 3/4"	6
VST	0213122	-	3/4" x 1"	2,25
VST	0213125	-	3/4" x 1"	2,5
VST	0213127	-	3/4" x 1"	2,7
VST	0213130	10004595	3/4" x 1"	3
VST	0213135	-	3/4" x 1"	3,5
VST	0213140	10004597	3/4" x 1"	4
VST	0213145	-	3/4" x 1"	4,5
VST	0213150	-	3/4" x 1"	5
VST	0213154	-	3/4" x 1"	5,4
VST	0213160	-	3/4" x 1"	6
VST	0214122	-	1" x 1.1/4"	2,25
VST	0214125	-	1" x 1.1/4"	2,5
VST	0214127	-	1" x 1.1/4"	2,7
VST	0214130	10004616	1" x 1.1/4"	3
VST	0214135	-	1" x 1.1/4"	3,5
VST	0214140	-	1" x 1.1/4"	4
VST	0214145	-	1" x 1.1/4"	4,5
VST	0214150	-	1" x 1.1/4"	5
VST	0214154	-	1" x 1.1/4"	5,4
VST	0214160	--	1" x 1.1/4"	6

**Technical data and discharge flow rates for valves series VST**

Model	Pressure of (bar)			Orifice Ø mm	Orifice Section cm²	Flow coefficient K	Potential	
	Setting	Discharge	Closing				Steam discharge Capacity Kg/h	Boiler kW
1/2"x3/4"	2,25	2,475	1,80				205,67	119,29
	2,50	2,75	2,00				221,40	128,41
	2,70	2,97	2,16				233,78	135,59
	3,00	3,30	2,40				253,74	147,17
	3,50	3,85	2,80	15	1,7671	0,71	284,07	164,76
	4,00	4,40	3,20				318,07	184,76
	4,50	4,95	3,60				344,78	199,97
	5,00	5,50	4,00				376,39	218,30
	5,40	5,94	4,32				399,70	231,24
	6,00	6,60	4,80				442,81	256,83

Model	Pressure of (bar)			Orifice Ø mm	Orifice Section cm²	Flow coefficient K	Potential	
	Setting	Discharge	Closing				Steam discharge Capacity Kg/h	Boiler kW
3/4"x1"	2,25	2,475	1,80				412,01	238,96
	2,50	2,75	2,00				443,52	257,24
	2,70	2,97	2,16				468,31	271,62
	3,00	3,30	2,40				508,30	294,81
	3,50	3,85	2,80	20	3,1416	0,80	569,04	330,04
	4,00	4,40	3,20				637,17	369,55
	4,50	4,95	3,60				690,67	400,58
	5,00	5,50	4,00				753,98	437,31
	5,40	5,94	4,32				804,25	466,50
	6,00	6,60	4,80				887,04	514,48

Model	Pressure of (bar)			Orifice Ø mm	Orifice Section cm²	Flow coefficient K	Potential	
	Setting	Discharge	Closing				Steam discharge Capacity Kg/h	Boiler kW
1"x1.1/4"	2,25	2,475	1,80				571,37	331,37
	2,50	2,75	2,00				615,03	356,71
	2,70	2,97	2,16				649,41	376,65
	3,00	3,30	2,40				704,86	408,82
	3,50	3,85	2,80	25	4,9087	0,71	789,09	457,67
	4,00	4,40	3,20				883,56	512,46
	4,50	4,95	3,60				957,75	555,49
	5,00	5,50	4,00				1045,55	606,42
	5,40	5,94	4,32				1120,24	649,79
	6,00	6,60	4,80				1230,06	713,43



## SAFETY VALVES

**MSL**

Diaphragm safety valve.  
Brass CW617N body.  
Plastic knob for discharge test.  
Ni-Cr steel spring.  
Operating temperature : -10°C ÷ 110°C  
Suitable for water with glycol up to 50%.  
1/2" M/F connections.

**According to Directive PED 97/23/CE. Identification number CE1115.**

Type	Part no.WII	Part no.WID	Size	bar
MSL	0206115	10004383	1/2"	1,5
MSL	0206525	10004393	1/2"	2,5
MSL	0206530	10004384	1/2"	3
MSL	0206540	10004395	1/2"	4
MSL	0206150	-	1/2"	5
MSL	0206160	10004385	1/2"	6
MSL	0206170	-	1/2"	7
MSL	0206180	-	1/2"	8
MSL	0206190	-	1/2"	9
MSL	0206199	10004386	1/2"	10

**MSV**

Like MSL but with 1/2" female connections.

Type	Part no.WII	Part no.WID	Size	bar
MSV	0207110	10004706	1/2"	1
MSV	0207115	10004474	1/2"	1,5
MSV	0207525	10004476	1/2"	2,5
MSV	0207530	10004477	1/2"	3
MSV	0207540	-	1/2"	4
MSV	0207150	-	1/2"	5
MSV	0207160	10004478	1/2"	6
MSV	0207170	10004473	1/2"	7
MSV	0207180	-	1/2"	8
MSV	0207190	-	1/2"	9
MSV	0207199	10026078	1/2"	10

**SVE-SOL**

Diaphragm safety valve for solar systems.  
Plastic knob for discharge test.  
Elastomeric diaphragm. Discharge pressure factory set and with sealed knob.  
Suitable for water, also water mixtures (glycol up to 50%) as according to DIN 4757 Part 1.  
Max operating temperature : 160 °C

**TÜV SOLAR certified. According to Directive PED 97/23/CEE.**  
**Identification number CE1115.**

Type	Part no.WII	Part no.WID	Size	bar
SVE-SOL	0215825	-	1/2" x 3/4"	2,5
SVE-SOL	0215830	10004653	1/2" x 3/4"	3
SVE-SOL	0215835	10004654	1/2" x 3/4"	3,5
SVE-SOL	0215840	10004655	1/2" x 3/4"	4
SVE-SOL	0215860	10013164	1/2" x 3/4"	6
SVE-SOL	0215880	10004659	1/2" x 3/4"	8
SVE-SOL	0215899	10004661	1/2" x 3/4"	10



**SAFETY VALVES**

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**SV**

Diaphragm safety valve.  
Brass CW617N body. Plastic knob for discharge test.  
Ni-Cr steel spring. Operating temperature: -10÷110°C.  
Female connections with reinforced outlet.

SVH models (red knob) for heating applications.  
SVW models (blue knob) for domestic water applications.

**According to Directive PED 97/23/CE. Identification number CE1115.**  
**Models DN 15, 20, 25, 32 with setting pressure 2.5, 3.0, 4.0, 6.0, 8.0, and 10.0 bar are according to TRD721, VdT V Merkblatt Sicherheitsventil 100.**

Type	Part no. WII	Part no. WID	Size	bar
SVH	0216115	10004636	1/2" x 3/4"	1,5
SVH	0215125	10004638	1/2" x 3/4"	2,5
SVH	0215130	10004639	1/2" x 3/4"	3
SVW	0215104	10004701	1/2" x 3/4"	4
SVW	0216105	10004702	1/2" x 3/4"	5
SVW	0216106	10004703	1/2" x 3/4"	6
SVW	0216108	10004704	1/2" x 3/4"	8
SVW	0216110	10004705	1/2" x 3/4"	10
SVH	0217215	10004730	3/4" x 1"	1,5
SVH	0217625	10004739	3/4" x 1"	2,5
SVH	0217630	10004740	3/4" x 1"	3
SVW	0217604	10004722	3/4" x 1"	4
SVW	0217205	10004723	3/4" x 1"	5
SVW	0217206	10004724	3/4" x 1"	6
SVW	0217208	10004726	3/4" x 1"	8
SVW	0217210	10004727	3/4" x 1"	10
SVH	0218615	10004754	1" x 1.1/4"	1,5
SVH	0218625	10004757	1" x 1.1/4"	2,5
SVH	0218630	10004760	1" x 1.1/4"	3
SVH	0218604	10004748	1" x 1.1/4"	4
SVW	0218606	10004749	1" x 1.1/4"	6
SVW	0218608	10004751	1" x 1.1/4"	8
SVW	0218610	10004752	1" x 1.1/4"	10
SVH	0219615	10004772	1.1/4" x 1.1/2"	1,5
SVH	0219625	10004774	1.1/4" x 1.1/2"	2,5
SVH	0219630	10004775	1.1/4" x 1.1/2"	3
SVW	0219604	10004766	1.1/4" x 1.1/2"	4
SVW	0219405	10004767	1.1/4" x 1.1/2"	5
SVW	0219606	10004768	1.1/4" x 1.1/2"	6
SVW	0219608	10004769	1.1/4" x 1.1/2"	8
SVW	0219610	10004770	1.1/4" x 1.1/2"	10

**SVM**


Approved diaphragm safety relief valve for closed heating installations in accordance with DIN EN 12828, with pressure gauge 1/4", 0 - 4 bar, glycol resistant up to 50 % mixing ratio.

Type	Part no. WII	Part no. WID	Size	bar
SVM	0215725	10004647	1/2"	2.5
SVM	0215730	10004648	1/2"	3.0

H.1

## SAFETY VALVES

**PT-684**

Combined temperature, pressure and relief valve to protection tank build-up

Nominal temperature  $92 \pm 3^\circ\text{C}$

Nominal pressure 10 bar

Models with threaded male/female connections or male/fitting connection for copper pipes.

Body: CW617N.

Spring: stainless steel.

Diaphragm EPDM; suitable for plumbing water.

Designed for vertical and horizontal installation (only with bottom discharge).

**Conforme EN 1490. According to Directive PED 97/23/CE**

Type	Part no.WII	Part no.WID	Size	bar
PT-684	68403	10027171	1/2"MF	7
PT-684	68404	-	1/2"MF	10
PT-684	68450	-	3/4"MF	3
PT-684	68451	-	3/4"MF	4
PT-684	68452	10025984	3/4"MF	6
PT-684	68453	10027172	3/4"MF	7
PT-684	68455	10025985	3/4"MF	10

## BOILER SAFETY GROUPS

**KSG-MS**

Assembly unit for closed heating installations in accordance with DIN EN 12828 up to 50 kW. Brass body, 1" female thread connection, ready for use with automatic air vent MKV 10 R, pressure gauge MHR 63/4 - 3/8" with automatic shut-off valve, safety relief valve 3,0 bar.

Type	Part no.WII	Part no. WID
KSG-MS/VM1530/ISO	0273330	10005311

**KSG 30**

Assembly unit for closed heating installations in accordance with DIN EN 12828.

Galvanized steel body, 1" female thread connection, ready for use with automatic air vent MV 10 R, pressure gauge MHR 63/4 - 3/8" with automatic shut-off valve and safety relief valve 3,0 bar.

Type	Part no.WII	Part no. WID	Description
KSG 30	0270130	10005198	SV 1/2", 50 KW

**KSG 30/ISO**

Assembly unit for closed heating installations in accordance with DIN EN 12828.

Galvanized steel body, 1" female thread connection, ready for use with automatic air vent MV 10 R, pressure gauge MHR 63/4 - 3/8" with automatic shut-off valve and safety relief valve 3,0 bar. With insulation in accordance with DIN 4102-B2 (fire protection class 2), CFC-free.

Type	Part no.WII	Part no. WID	T.max	Description
KSG 30/ISO 2	0271130	10005227	60° C	SV 1/2", 50 KW
KSG 30/20M-ISO	0270136	10005204	60° C	SV 3/4", 100 KW
KSG 30/25M-ISO80	0270142	-	90° C	SV 1", 200 KW

**BOILER SAFETY GROUPS**

**KSG 30 N**

Compact installation unit for closed heating installations in accordance with DIN EN 12828 up to 50 kW. Brass body, 1" connection. Integrated air vent and safety relief valve 3,0 bar, pressure gauge MHA 63/4 - 1/4", CFC-free insulation, fire protection class 2.

Type	Part no.WII	Part no. WID
KSG 30 N	0272030	10005232


**KSG 30 G**

Assembly unit for closed heating installations in accordance with DIN EN 12828 up to 50 kW. 1" female thread connection, ready for use with automatic air vent MKV 10 R, pressure gauge MHR 63/4 - 3/8" with automatic shut-off valve, safety relief valve 1/2" 3,0 bar.

Type	Part no.WII	Part no. WID
KSG 30 G	0270230	10005216


**KSG30G/ISO1**

Similar to KSG 30/G with insulation. Fire protection class 1.

Type	Part no.WID
KSG30G/ISO1	10005229


**ISO 1**

Insulation box for KSG/G and KSG. PU, CFC-free foam system. Fire protection class B1.

Type	Part no. WID
ISO1	10005221


**ISO 2**

Insulation box for KSG30. PS, CFC-free foam system. Fire protection class B2.

Type	Part no. WID
ISO 2	10005222

## AUTOMATIC FILLING VALVE

### AL

ALIMAT.

Automatic filling valve complete with check valve, manual shut-off, stainless steel filter, vent screw. Brass CW617N body. High impact plastic cap. Pressure gauge connection 1/4" F. Max. upstream pressure: 10 bar. Adjustable downstream pressure: 0.3 to 4 bar.

Type	Part no. WII	Part no. WID	Size
AL	0240100	10004866	1/2" MF

### ALM

Like AL but with pressure gauge MHR (50 mm dial, bottom entry, 0 - 4 bar).

Type	Part no. WII	Part no. WID	Description	Size
ALM	0240200	10025851	-	1/2" MF
MHR	0312104	-	Spare part manometer	1/2"

### ALD

Filling unit to fill closed heating installations in combination with backflow preventer according to EN 1717. Brass body, plastic cap, with integrated check and shut-off valve, pressure gauge connection 1/4", hose nozzle, adjustment range 0,3 - 4,0 bar, connection 1/2".

DeType	Part no. WII	Part no. WID	Description	Size
ALD	0240105	10004877	Without manometer	3/4" F
ALMD	0240205	10004889	With manometer	3/4" F

### ALOD

Filling unit to fill closed heating installations in combination with backflow preventer according to EN 1717. Brass body and spring cap, with integrated check and shut-off valve, pressure gauge connection 1/4", hose nozzle, adjustment range 0,3 - 4,0 bar, connection 1/2".

Type	Part no. WII	Part no. WID	Size
ALOD	0240115	10004884	3/8"
ALOMD	0240215	10004890	1/2"

### 3110C

FILLMATIC

Automatic filling valve complete with 0-6 bar pressure gauge self-cleaning check valve, manual shut-off, sintered bronze filter. Brass CW617N body. Max. upstream pressure : 10 bar. Adjustable downstream pressure : 0.3 to 4 bar. Set pressure : 1 bar. Setting ratio : 1 rev. = 0.4 m w.g.

Type	Part no. WII	Size
3110C	3110C12	1/2" MF

## TECHNICAL NOTE

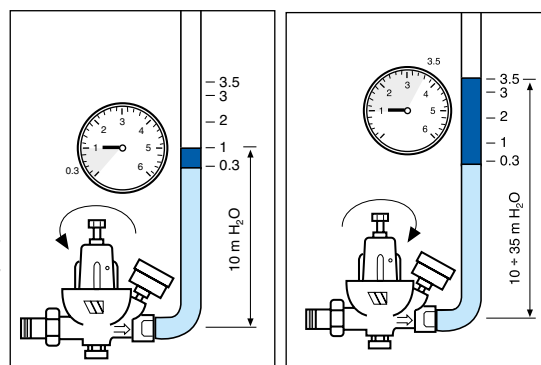
### Filling valves

#### Pressure setting

The filling valve is factory set at a pressure of 1 bar. To adjust for pressures other than the factory setting, merely turn the screw clockwise to increase the pressure (max. 4 bar) or anti-clockwise to decrease it (min. 0.3 bar).

#### Installation

Install the valve according to the direction of the arrow stamped on the valve body. For quicker filling, make sure the regulating valve is fully open, even if it is advisable to introduce the water at a sufficiently low speed in order to avoid formation of water pockets which are difficult to expel. When filling, the device ensures that all water supplied from the mains is filtered.



**RELIEF VALVE**

**466**

THERMATIC.

Relief valve for systems with automatic or manual shut-off elements on the radiators (thermostatic valves, two-way zone valves).

Brass CW617N body and ABS cap.

Nominal pressure : PN 10. Overpressure : 10 - 15%. Max operating temperature : 110°C.

Type	Part no. WII	Size	bar
466	4660C12	1/2" FF	0,05 - 0,7
466	4661C34	3/4" FF	0,05 - 0,7
466	4662C1	1" FF	0,05 - 0,7


**USVR 16**

Differential pressure overflow valve. With adjustable scale, low overall height, max. operating pressure 10 bar, max. temperature 110° C, adjustment range 0,06 - 0,36 bar, glycol resistant up to 50% mixing ratio.

Type	Part no. WII	Part no. WID	Size
USVR 16	0265216	10005171	3/4"


**USVR**

Relief valve for systems with automatic or manual shut-off elements on the radiators (thermostatic valves, two-way zone valves). Female inlet connections, Male union outlet. Body and cap of brass CW617N.

Adjustment : Position "0" = Fully open - Position "7" = Close to closing  $\Delta p = 0.5$  bar

Plastic knob. Max operating pressure : 6 bar.

Overpressure : 10 - 15%. Max operating temperature : 110°C.

Type	Part no. WII	Part no. WID	Size	bar
USVR	0265220	10005172	3/4" FM	0,03 - 0,50
USVR	0265225	10005174	1" FM	0,03 - 0,55
USVR	0265232	10005175	1.1/4" FM	0,06 - 0,46


**RDF**

Check valve with manual stop for systems with thermostat-controlled recirculating pump.

Brass CW617N body. High impact plastic knob. Max. pressure : 10 bar.

Opening pressure : 25 - 26 mbar. Operating temperature : 105°C. Max. temperature : 130°C.

Type	Part no. WII	Size
RDF	0262125	1" FF
RDF	0262132	1.1/4" FF

**TECHNICAL NOTE**
**Relief valves**
**Selection**

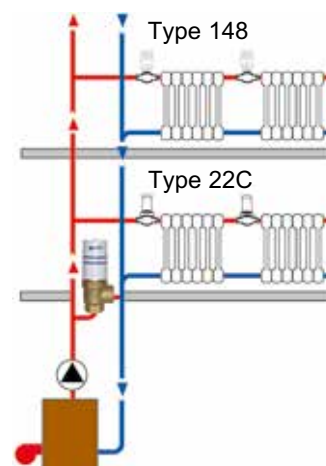
Valve selection is normally based on a by-pass flow rate equal to 25-30% of the total flow rate of the mains water to be protected and at an overpressure of 10-15% of the head expected at that point (check curve of the motor-driven pump if necessary).

To select the right model, if there are no precise data, it has to consider the TOTAL capacity of the circuit that has to be protected referring the following values:

Till 1750 l/h	DN 1/2"
3500 l/h	DN 3/4"
7000 l/h	DN 1"
Till 12000 l/h	DN 1.1/4"

**Installation**

Install the relief valve downstream to the pump pressure port, connecting the delivery piping to the return piping. Observe the direction of flow indicated on the valve body.





## FLOW AND PRESSURE SWITCHES

**FLU**

Flow switch for piping DN 1" to DN 8". Aluminium body. Brass pipe fitting. 3-contact microswitch : 20 (8) A-250V. Max. fluid operating pressure : 10 bar. Max. fluid operating temperature : 110°C. Max. room temperature : 60°C.

**According to 2006/95/EC**

Type	Part no. WII	Part no. WID	Size	Protection
FLU	0401125	10022079	1"	IP64
FLU	0401123	-	1"	IP67

**PRM**

Pressure switch with manual resetting for heating systems. Setting range: 1- 5 bar. Contact rating : 16A (10) -250V. Protection class : IP40. Max. fluid temperature : 90°C.

**INAIL approved. According to Directive PED 97/23.**

**Identification number CE0100. According to 2006/95/EC, 2004/108/EC.**

Type	Part no. WII	Part no. WID	Size	Protection
PRM	0402101	10013335	1/4" F	3

**PRMIN**

Pressure switch with manual resetting for heating systems. Setting range: 1- 5 bar. Contact rating : 16A (10) -250V. Protection class : IP44. Max. fluid temperature : 110°C.

**INAIL approved. According to Directive PED 97/23.**

**Identification number CE0100. According to 2006/95/CE - 2004/10/CE.**

Type	Part no. WII	Size	bar
PRMIN	0402103	1/4" F	5

**WTC**

Compact contact thermostat with spring for holding on pipes up to 2". Setting range: 30 - 90°C. Differential temperature: 5K. Contact load rating: 16 (4) A/250V. Spring clip L = 230mm

**According to 2006/95/CE - 2004/108/CE.**

Type	Part no. WII	Part no. WID	Power supply	Protection
WTC-ES	P04075	10013409	250V	IP30
WTC-IS	-	10013410	250V	IP30



**REGULATING AND BLOCKING THERMOSTATS AND ACCESSORIES**
**TC**


Immersion thermostat. Automatic temperature control of boilers and hot water tanks, change-over switch 16 A - 250 V, immersion sleeve 1/2" nickel-plated. Temperature range 30 - 90 °C, differential gap 6 K, protection class IP 30.

Type	Part no. WII	Part no. WID	Description
TC100/IN	-	10013479	Internal setting, immersion sleeve 100 mm
TC100/AN	0405101TU	10013482	External setting, immersion sleeve 100 mm
TC150/AN	-	10013483	External setting, immersion sleeve 150 mm
TC200/IN	-	10013484	Internal setting, immersion sleeve 200 mm
TC200/AN	-	10013485	External setting, immersion sleeve 200 mm
TS TU	0405101TU	-	Fix setting 97°C, immersion sleeve 100 mm

**TH/TC**


Remote thermometer Installation thermometer, mounted with detents, 0 - 120°C.

Type	Part no. WID	Description
TH/TC	10013520	100 mm
TH/TC	10013521	150 mm
TH/TC	10013522	200 mm
TH/TRB	10013523	100 mm
TH/TRB	10013524	150 mm

**TRB100**


Boiler double thermostat. Temperature adjustment 30 - 90 °C, change-over switch 16 A - 250V, safety temperature limiter 100 °C, nickel-plated immersion sleeve 1/2", differential gap 6 K, protection class IP 30.

Type	Part no. WII	Part no. WID
TRB100	0405301TU	10013509
TRB150	-	10013511

**TRR100**


Boiler double thermostat. 2 controllers, external adjustment 30 - 90 °C, internal adjustment 30 - 100 °C, immersion sleeve 1/2" nickel-plated, change-over switch 16 A - 250 V. Differential gap 6 K, IP 30.

Type	Part no. WID
TRR100	10013512

## EXPANSIONS VESSEL CONNECTIONS

**KAV**

Cap valve in accordance with DIN EN 12828 (DIN 4751). To test diaphragm type expansion vessels without draining of the system or disassembly of the vessel, brass MS 58, with draining valve and lead seal, nominal pressure PN 10, max. operating temperature 130 °C.

Type	Part no. WII	Part no. WID	Size
KAV	0608120	10017947	DN20
KAV	0608125	10017948	DN25

**FIXFLEX SK20**

Automatic quick coupling 3/4". To test and replace expansion vessels without draining of the system.

Type	Part no. WII	Part no. WID
FIXFLEX SK20	0608100	10017945

**GAG/KAV**

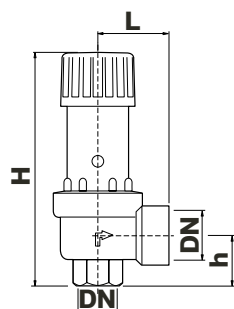
Vessel connection set with cap valve. Identical to type GAG/MR 20 except: Cap valve KAV 20 to maintain the expansion vessel without draining the system or disassembling the vessel.

Type	Part no. WII	Part no. WID
GAG/KAV	0606210	10017890

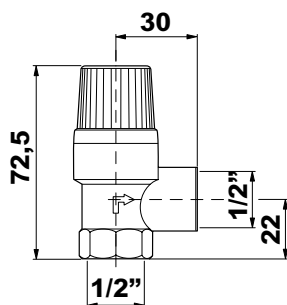
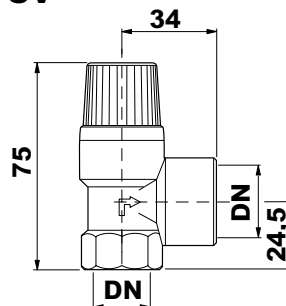
**GAG/MR20**

Installation unit to connect expansion vessels for closed heating installations, ready for use with automatic air vent MV 10 R, safety relief valve 3 bar, pressure gauge MHR 63/4 - 3/8" with automatic shut-off valve. With automatic quick coupling Fixflex SK 20.

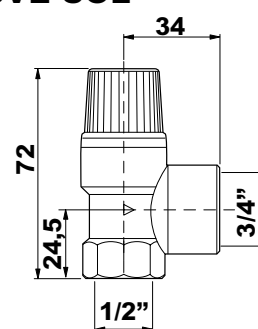
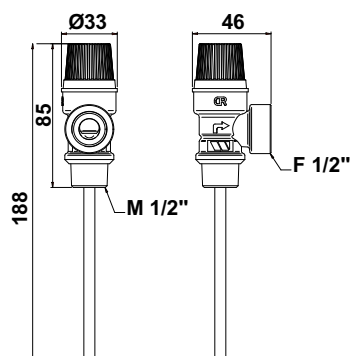
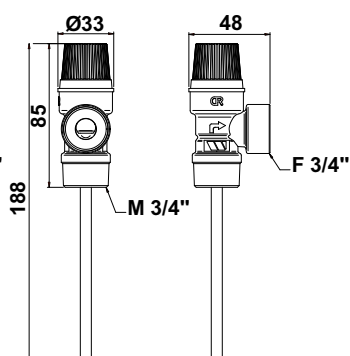
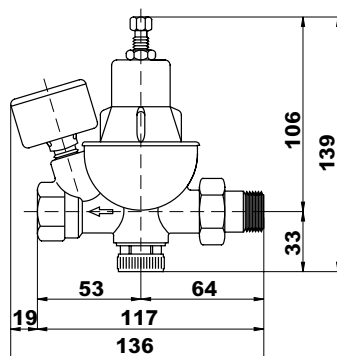
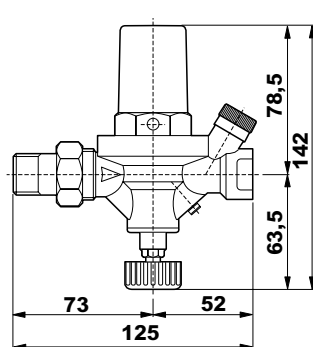
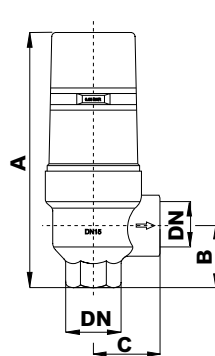
Type	Part no. WII	Part no. WID
GAG/MR20	0606112	10017885

**OVERALL DIMENSIONS**
**VST**


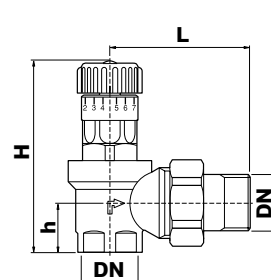
DN	L	H	h
1/2" x 3/4"	37	119	25
3/4" x 1"	48	165	29
1" x 1.1/4"	54	173	34.5

**MSL/MSV**

**SV**


DN	L	H	h
1/2" x 3/4"	34	75	24.5
3/4" x 1"	37	86.5	34
1" x 1.1/4"	55	189	40
1" x 1.1/4"	60	204	43

**SVE-SOL**

**PT-684**
**68403**

**68450-68451-68452-68453-68455**

**3110C**

**AL-ALM**

**466**


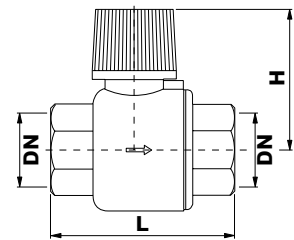
DN	A	B	C
1/2" x 1/2"	135	32	36
3/4" x 3/4"	141	35	41
1" x 1"	195	41	46

**USVR**


DN	L	H	h
3/4"	70	120	26
1"	83.5	138	33
1.1/4"	100	148	39

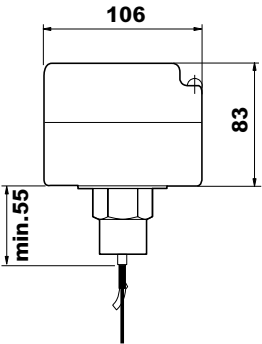
OVERALL DIMENSIONS

RDF

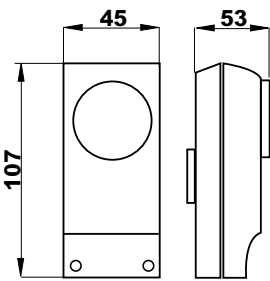


DN	L	H
1"	83.5	59
1.1/4"	83.5	59

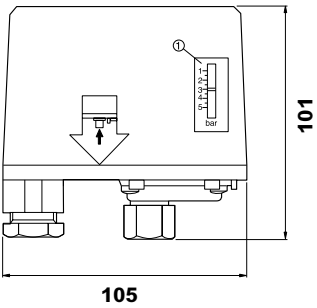
FLU



WTC



PRM/PRMIN

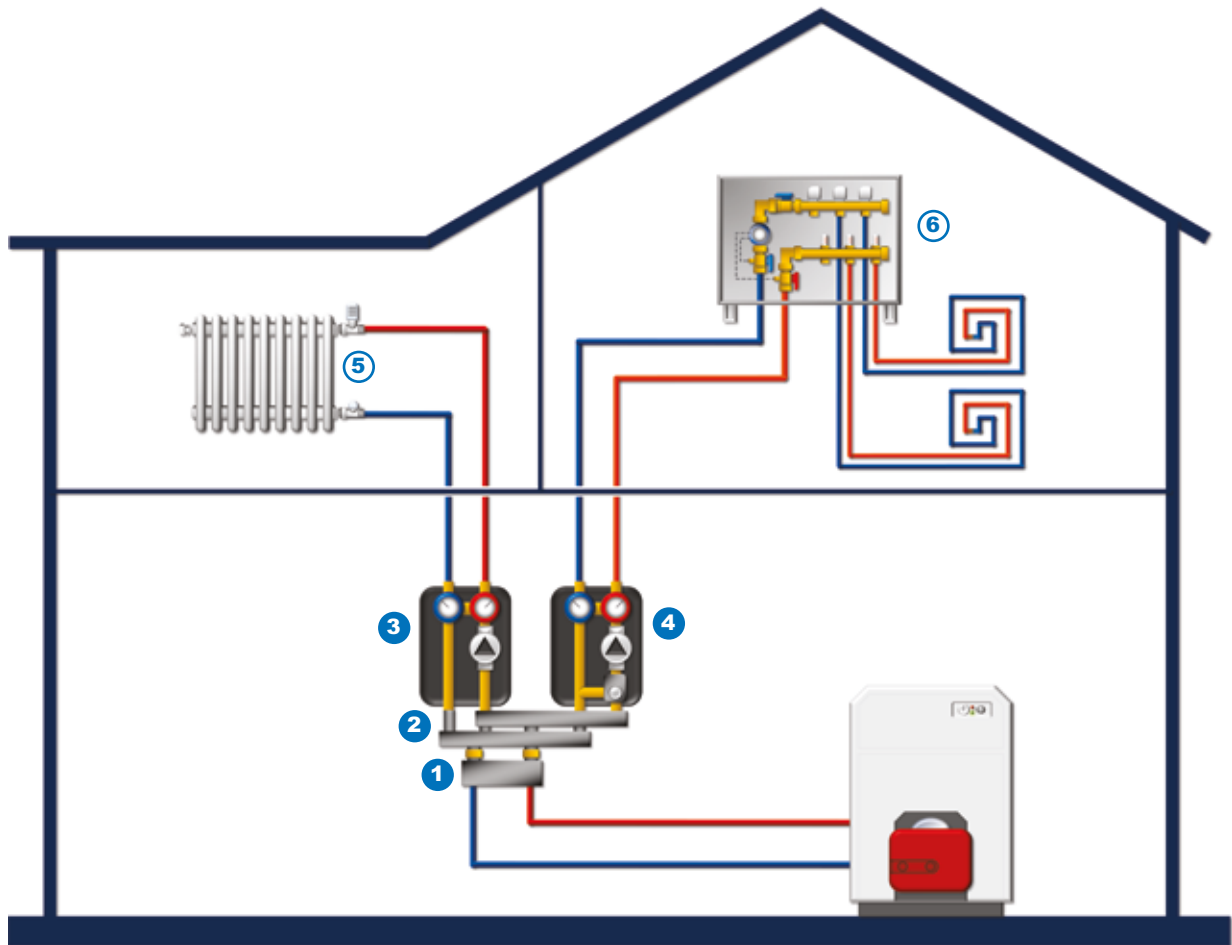


# Pump groups

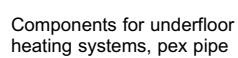
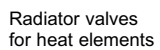
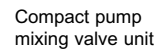
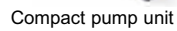
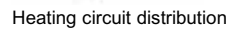
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H.2



## H.2





**PUMP GROUPS**
**PAS**

Ready-to-mount, compact pump unit. Isolating valves with thermometer, gravity flow stop. Pump cabling ex works. EPP heat insulation box. Connection fittings, wall mounting brackets. Pressure tested, packed in a box.

Type	Part no. WID	DN	Description
PAS25	10026264	25	Grundfos ALPHA2L 25-60
PAS25	10026265	25	Wilo Yonos PARA 25/6
PAS25	10026450	25	Without pump
PAS25-KH	10026635	25	Without pump, two ball valves on the supply
* PAS25	10026634	25	Grundfos UPS25-60
* PAS25-KH	10026637	25	Grundfos UPS25-60, two ball valves on the supply
PAS32	10026879	32	Wilo Yonos PARA30/6
PAS32	10026880	32	Grundfos Alpha2L32-60
PAS32	10026881	32	Without pump

\* Low efficiency pump

**PASM**

Ready-to-mount, compact pump mixing valve unit. Isolating valves with thermometer, gravity flow stop. Pump and 3-way mixing valve with valve drive cabling ex works. EPP heat insulation box. Connection fittings, wall mounting brackets. Pressure tested, packed in a box. Mixing valve Kvs 6,3. Other Kvs values are available on request.

Type	Part no. WID	DN	Description
PASM25	10026263	25	Wilo Yonos PARA 25/6, Kvs 6,3, valve drive
PASM25	10026266	25	Grundfos ALPHA2L 25-60, Kvs 6,3, valve drive
PASM25	10026451	25	Without pump, Kvs 6,3, with valve drive
* PASM25	10026636	25	Grundfos UPS 25-60, Kvs 6,3, without valve drive
* PASM25	10026633	25	Grundfos UPS 25-60, Kvs 6,3, valve drive
PASM32	10026884	32	Wilo Yonos PARA30/6, Kvs 18, valve drive
PASM32	10026882	32	Grundfos Alpha2L32-60, Kvs 18, valve drive
PASM32	10026883	32	Without pump, Kvs 18, with valve drive

\* Low efficiency pump

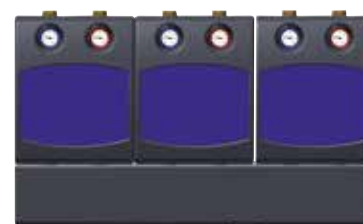
**VB32**

Heating circuit distributor DN25..DN32 with thermal barrier. Ready-to-mount, compact design, flat sealing connections with union nut towards pump mixing valve units series PAS/PASM as well as 6000 and 8000, boiler-sided with male thread, EPP heat insulation with intermediate insulation layer between supply and return header.

Type	Part no. WID	Description
VB32-2	10025900	For 2 pump units/heating circuits
VB32-3	10025901	For 3 pump units/heating circuits
VB32-4	10026672	For 4 pump units/heating circuits
VB32-5	10026931	For 5 pump units/heating circuits
WH-VB32	10026388	Wall bracket set

**TECHNICAL NOTE**
**PAS, PASM Product features**

- Ready-to-mount compact hydraulic control units
- Pump Unit e.g. for radiator heating, air heaters or boiler charging
- Pump Mixing Valve Unit e.g. for radiant heating systems
- For heat output requirements up to 50 kW
- Easy installation and start-up due to pre-mounted and pre-wired components ex-works
- Easy left / right conversion of flow and return branch
- All connections with flat seals throughout
- High efficiency pumps meet the requirements of ErP Directive
- Patented three-part heat insulation box made of EPP
  - meets the requirements of EnEV
  - ensures optimum ventilation of the pump electronics



## PUMP GROUPS

**HK40, HK50**

Ready-to-mount, compact pump unit DN40 and DN50. Ball valve 2" IG with thermometer, gravity flow stop in the supply line. Pump cabling ex works. Flat sealing connections. Up to 280 kW heat output requirements per heating circuit. EPP heat insulation.

Type	Part no. WID	Description
HK40	10026523	Stratos PARA 40/8
HK50	10026524	Stratos PARA 50/9
HK40	10026871	Magna3 40-100F
HK50	10026872	Magna3 50-100F

**HKM40, HKM50**

Ready-to-mount, compact pump unit DN40 and DN50. Ball valve 2" IG with thermometer, gravity flow stop in the supply line. Pump cabling ex works. Flat sealing connections. Up to 280 kW heat output requirements per heating circuit. EPP heat insulation.

Type	Part no. WID	Description
HKM40	10026525	Stratos PARA 40/8
HKM50	10026526	Stratos PARA 50/9
HKM40	10026873	Magna3 40-100F
HKM50	10026874	Magna3 50-100F

**HKV50****HEATING CIRCUIT DISTRIBUTOR**

Ready-to-mount, compact design. Connections to HK/HKM DN40/DN50 via union nut 2". Modular design. EPP heat insulation. Combination with HK/HKM DN20 to DN32 via reduction set. Angle-connectors as well as pedestals for safety mounting available as accessories. For boiler or boiler cascades up to 460 kW (flange DN80). Lateral blank flange

Type	Part no. WID	Description
HKV50-2	10011282	2 heating circuits. Flange DN80-PN6
HKV50-3	10011283	3 heating circuits. Flange DN80-PN6

**VB50/80-ECK****ANGLE-CONNECTOR SET**

Consists of 2 insulated elbow pieces for corner installation of the heating circuit distributor VB50 (HKV50). With pipe insulation.

Type	Part no. WID	Description
VB50/80-ECK	10011284	Flange DN80-PN6

**HKV-FUSS****PEDESTAL SET**

Set consists of 2 pedestals, 8 bolts and nuts for connection with heating circuit distributor VB50/80 (HKV50).

Type	Part no. WID	Description
HKV-FUSS	10011285	Set contains 2 Pedestals

**PUMP GROUPS**

121

**REDU**


REDUCER DN40/50 TO DN20/25/32

For connection of heating circuit pump control units PAS and PASM DN20 to DN32 to heating circuit distributor VB50/80 (HKV50). EPP heat insulation

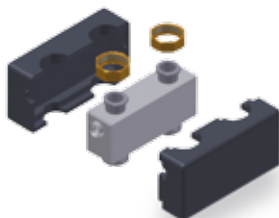
Type	Part no. WID
REDU50/32	10011286

**HW**


HYDRAULIC SWITCH

Ready-to-mount, compact unit consisting of: Welded steel switch, fill and drain-cock, immersion sleeve 1/2" – Di=6,5 mm, manual air-vent, screw connections, wall bracket, EPP heat insulation.

Type	Part no. WII	Part no. WID	Description
HW80/120	3499600	10010376	4m³/h, 44 kW ( $\Delta t = 10$ K)
HW140/140	3499835	10010419	10m³/h, 114 kW ( $\Delta t = 10$ K)

**HW-Q60/80**


HYDRAULIC SWITCH

Ready-to-mount, compact unit, compatible with HK, HKM, HKV 2/3. Includes immersion sleeve 1/2", screw connections, EPP heat insulation. Flat sealing connection via union nut in horizontal position underneath the HKV distribution manifold or PAS, PASM control unit.

Type	Part no. WII	Part no. WID	Description
HW-Q60/80	3499890	10010424	1,5m³/h, 17 kW ( $\Delta T = 10$ K)

**TECHNICAL NOTE**

Connection of HW80/120 from the left side



Connection of HW80/120 from the right side



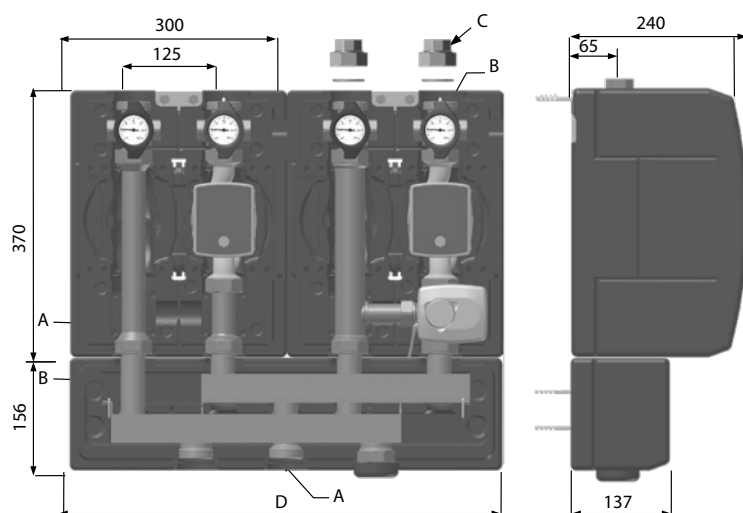
Connection of HW-Q60/80 from the left side



Connection of HW-Q60/80 from the right side


**H.2**

## OVERALL DIMENSIONS



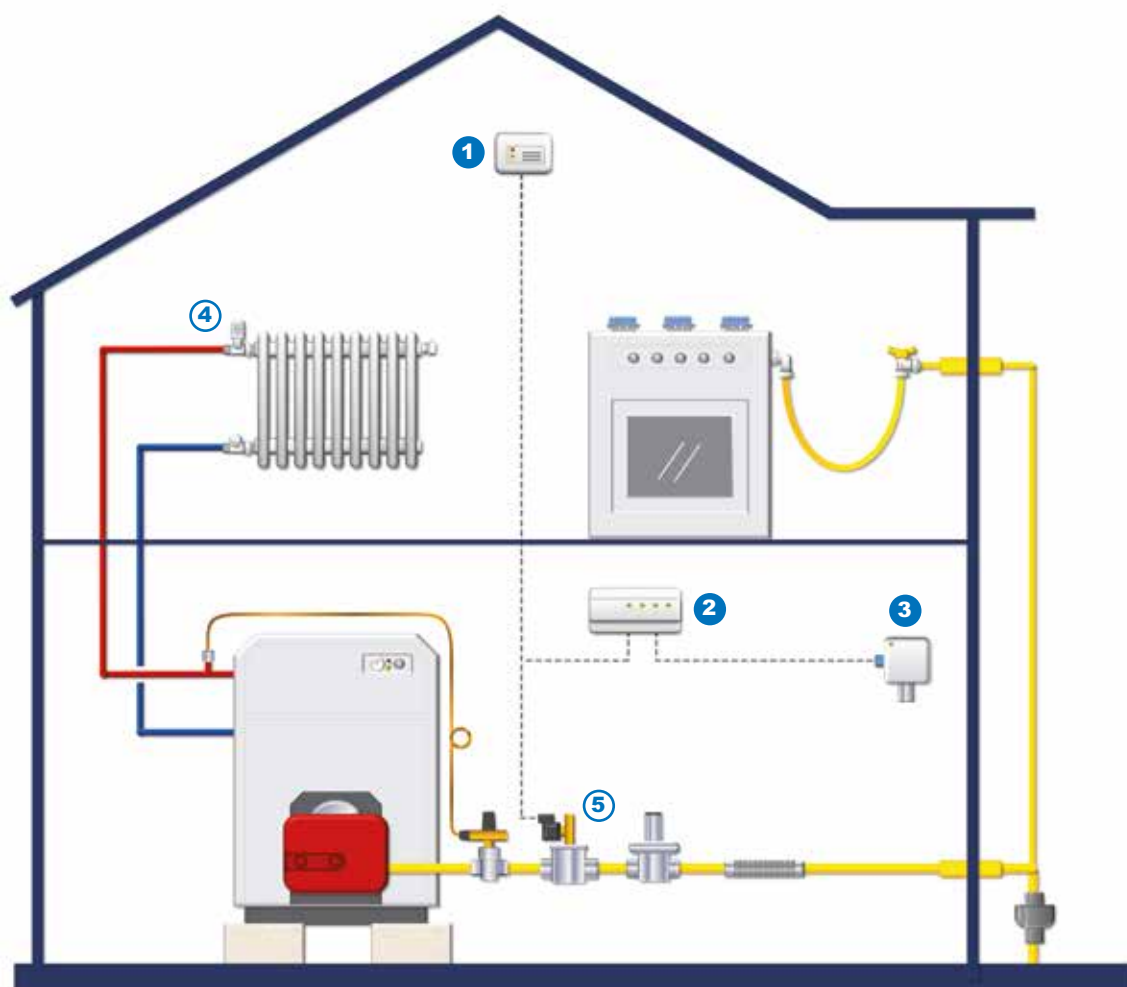
Type	DN	A	B	C	D
PAS25, PASM25	DN25	1.1/2"M	1.1/2"M	1.1/2"UN / 1" F	
PAS32, PASM32	DN32	1.1/2"M	2"M	2"UN / 1.1/4" F	
VB32-2		1.1/2"M	1.1/2"UN		600
VB32-3		1.1/2"M	1.1/2"UN		900
VB32-4		1.1/2"M	1.1/2"UN		1000
VB32-5		1.1/2"M	1.1/2"UN		1500

# Components for gas installation



H.3

## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

1



Gas leak detector  
for domestic application

**GSX**  
pag. 126

2



Central unit of  
gas detection

**CIVIC4**  
pag. 127

3



Gas detectors

**UR20S**  
pag. 127

4



Radiator valves  
for heat elements

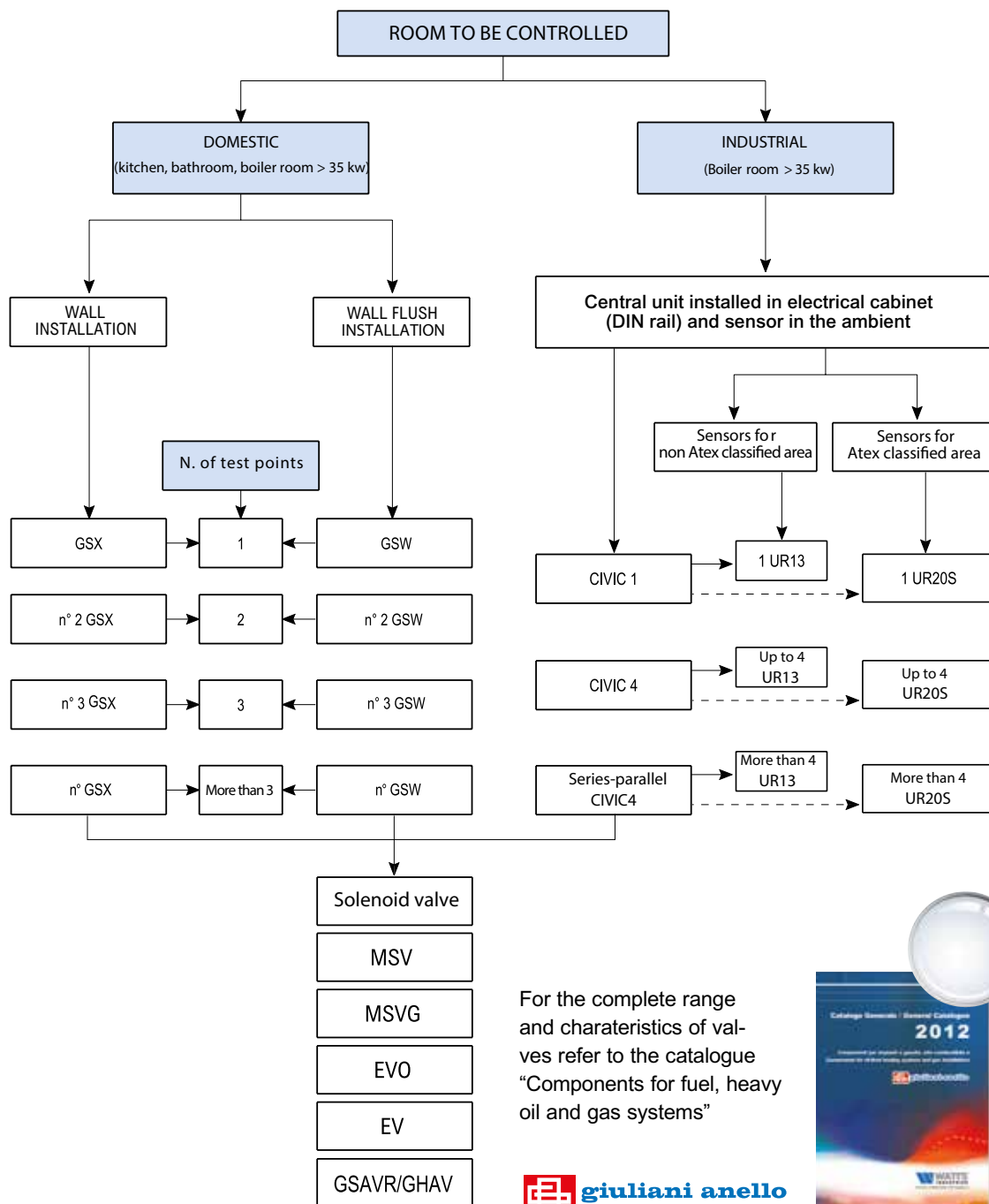
**Chapter A**  
pag. 5

5



Components for fuel, heavy  
oil and gas system



**FLOW CHART**
**SELECTION GUIDE**


	GSX	GSW	CIVIC 1	CIVIC 4	UR13	UR20S
<b>Electrical protection</b>	IP42	IP42	IP20	IP20	IP44	IP55, Atex
<b>Installation</b>	Wall mounted	Wall flush mounted	DIN rail mounting 35 mm	DIN rail mounting 35 mm	Wall mounted	Wall flush mounted

## GAS LEAK DETECTOR DEVICES

**GSX**

## GAS SENTINEL

Gas leak detector, for domestic applications, **for wall mounting**, controlled electronically via microprocessor, with audible and visual alarm, to be connected to one or more **solenoid valves, either normally closed (GSAVR, GHAV, EV, EVO) or normally open (MSVG, MSVO)**. Automatic resets the normal operating conditions when the gas concentration drops below the alarm level. Power supply: 230V - 50Hz. Power consumption: max 3W  
Relay contact load capacity: 5A - 250V

Gas (MET version) methane, natural gas (LPG version) propane, butane, LPG

Alarm threshold: 10% LEL (Low Explosion Limit).

Operating temperature: -10°C to 40°C. Environmental temperature: -20°C to +50°C

Relative humidity for usage and storage: 30 to 90% (non condensing)

Insulation: Class II □ Degree of protection: IP 42

Overall dimensions: 125 x 82 x 47 mm.

**According to 2006/95/EC, 2004/108/EC.**

**Approved IMQ - compliant to EN 50194.**



Type	Part no.WII	Part no.WID	Description	Version	Color
GSX	0941030	10026502	Methane and natural gas	Wall	White
GSX	0941530	-	LPG, propane, butane	Wall	White

**GSW**

## GAS SENTINEL

Characteristics like GSX but **for flush mounting**. Compatible with the more frequent commercially available plates and electrical boxes to DIN standards.

Overall dimensions : 115 x 66 x 62 mm.

**According to 2006/95/EC, 2004/108/EC**

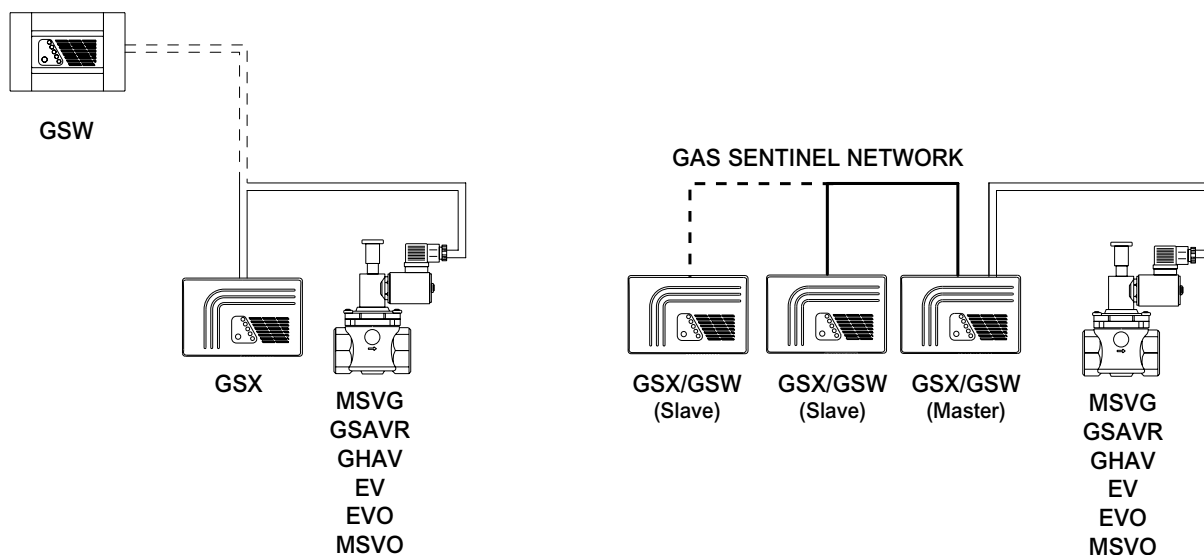
**Approved IMQ - compliant to CEI 216-8.**



Type	Part no. WII	Description	Version	Color
GSW	0941040	Methane and natural gas	Flush	White
GSW	0941540	LPG, propane, butane	Flush	White

**TECHNICAL NOTE**

### Basic wiring diagram with normally open or normally closed solenoid valve and gas leak detectors network



**GAS LEAK DETECTOR DEVICES**
**CIVIC1**


Gas leak detection central unit for connection with one sensor Series UR13 or UR 20S with LED optical (power supply, failure, gas alarm) and acoustic interface through internal buzzer. Control output connection for gas alarm and Open Collector (OC) output connection for fault signal. Self-extinguishing plastic casing for DIN rail mounting.

Output connection:

- 1 relay with one contact SPDT 8A 250Vac
- 1 open collector for fault signal.

Protection class: IP20 (IP40 when correctly installed in electric cabinet)

**According to directive LVD 2006/95/CE, EMC 2004/108/CE.**

Type	Part no. WII	Power supply
CIVIC1	0940501	12V ac/dc

**CIVIC4**


Gas leak detection central unit for connection with four sensors Series UR13 or UR 20S with LED optical (power supply, failure, gas alarm) and acoustic interface through internal buzzer. Control output connection for gas alarm and Open Collector (OC) output connection for fault signal. Self-extinguishing plastic casing for DIN rail mounting.

Output connection:

- 1 relay with one contact SPDT 8A 250Vac
- 1 relay with one contact SPDT 8A 250Vac

Protection class: IP20 (IP40 when correctly installed in electric panel)

**According to directive LVD 2006/95/CE, EMC 2004/108/CE.**

Type	Part no. WII	Power supply
CIVIC4	0940504	12V ac/dc

**UR13**


Gas detector for central units CIVIC1 and CIVIC4 available in three versions for Methane, LPG and carbon monoxide CO.

**According to directive LVD 2006/95/CE, EMC 2004/108/CE**

Type	Part no. WII	Gas	Protection
UR13	0940561	Methane	IP 44
UR13	0940562	LPG	IP 44
UR13	0940563	CO	IP 44

**UR20S**


Gas detectors Series UR20S are used to detect the presence of flammable or toxic gases in thermal power plant and industrial areas. All models can be used with central units series CIVIC1 (one detector) or CIVIC4 (four detectors) or with other central units with inlet signal a 4 ÷ 20 mA signal (usually central units that combine functions of fire and anti-theft).

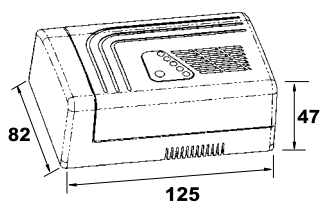
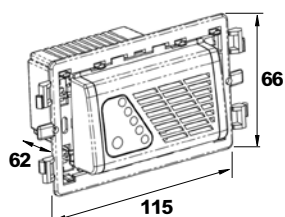
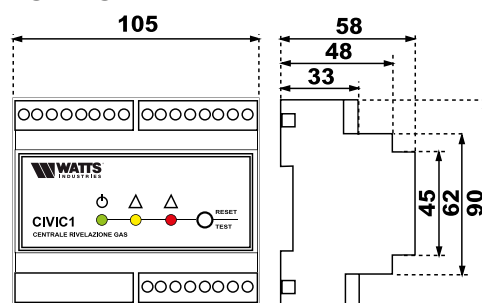
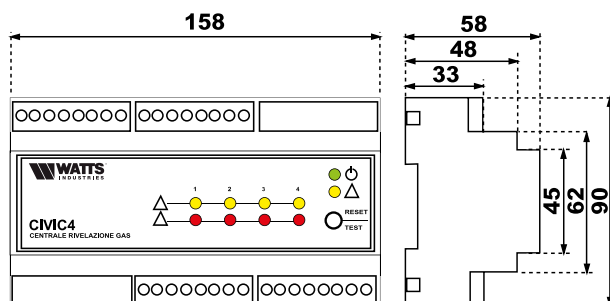
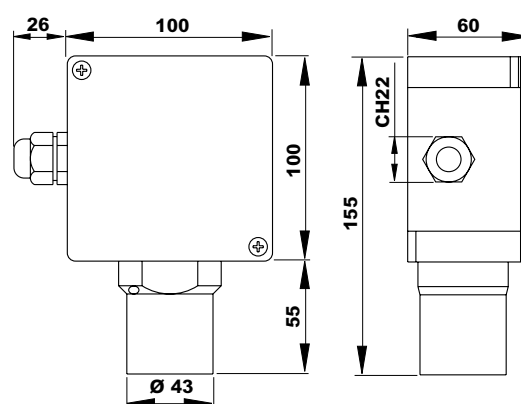
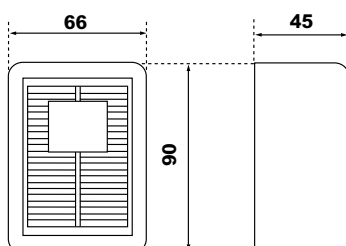
**According to directive EMC 2004/108/CE, ATEX 94/9/CE.**

**CE Ex II 3G, Ex nA IIC T6.**

Available on demand also in explosion proof version II 2G, Ex d IIC T6.

Type	Part no.WII	Gas	Protection
UR20S	0940571	Methane	IP 55
UR20S	0940572	LPG	IP 55
UR20S	0940573	CO	IP 55

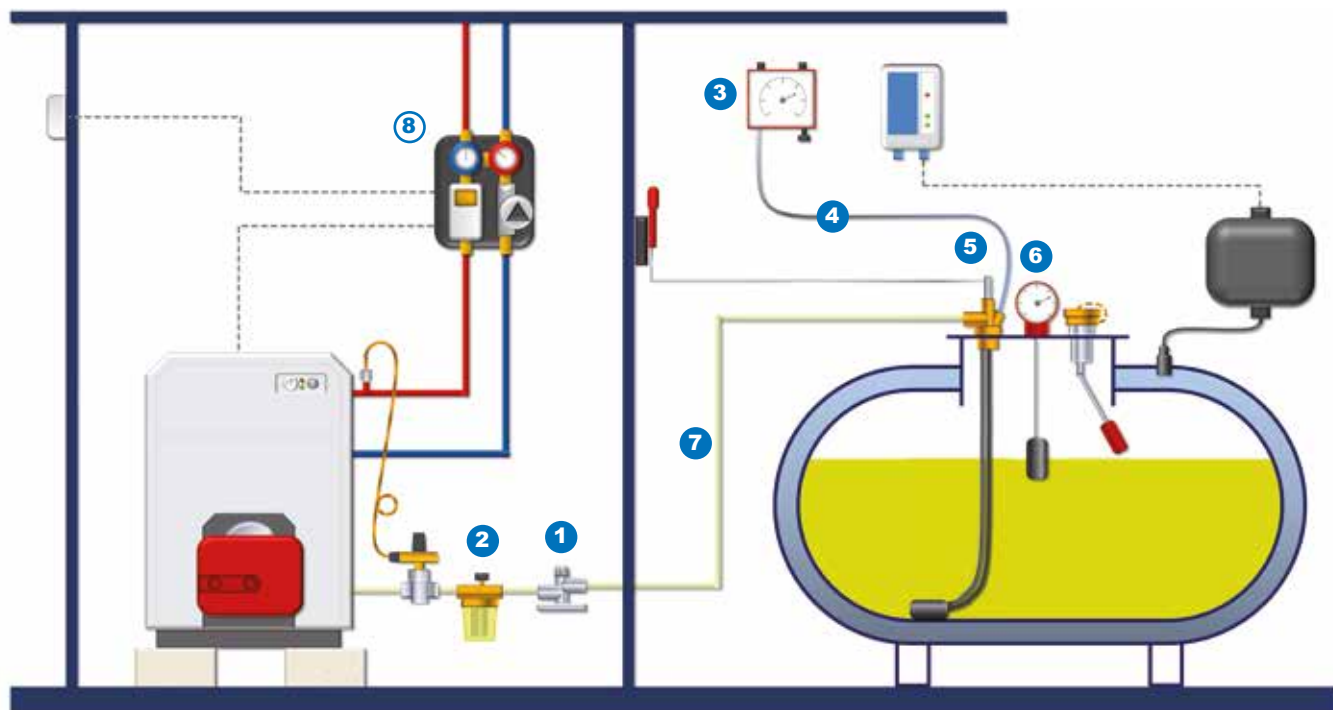
## OVERALL DIMENSIONS

**GSX****GSW****CIVIC1****CIVIC4****UR20S****UR13**









## Components for oil-fired heating systems



## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

- |  |  |   |   |  |
|--|--|---|---|--|
| <p><b>1</b></p>  <p><b>SIC10</b><br/>pag. 136</p> <p>Diaphragm valve for automatic shut-off</p> | <p><b>2</b></p>  <p><b>RG</b><br/>pag. 135</p> <p>Filter</p>  | <p><b>3</b></p>  <p><b>TLM</b><br/>pag. 131</p> <p>Pneumatic level indicator</p>     | <p><b>4</b></p>  <p><b>PE50</b><br/>pag. 131</p> <p>Flexible polyethylene tube for connection TLM</p> | <p><b>5</b></p>  <p><b>MB</b><br/>pag. 133</p> <p>Multi-function dip unit</p> |
| <p><b>6</b></p>  <p><b>MECAV</b><br/>pag. 132</p> <p>Level indicator</p>                        | <p><b>7</b></p>  <p><b>TECAL</b><br/>pag. 133</p> <p>Connecting pipe between the fuel tank and burner</p> | <p><b>8</b></p>  <p><b>Chapter C.1</b><br/>pag. 35</p> <p>Regulation and control</p> |   |  |



**LEVEL INDICATORS, PROBES AND ACCESSORIES**

**TLM**

TELEVAR.

Remote pneumatic level indicator for tanks of any shape and height between 900 and 3000 mm (item ...103), or between 3000 and 5000 mm (for item ...105).

Basic dial in percentage volume for cylindrical tanks.

Tank connection suitable for pipe with  $\varnothing$  6 mm. Case with 3 external mounting slots.

Type	Part no. WII	Part no. WID	Tank
TLM	0101103	10000286	h max = 3 m
TLM	0101105	10000287	h from 3 to 5 m


**PE50**

Flexible polyethylene hose for connection of the TELEVAR level indicator to fuel oil probe series G20 or MULTIBLOC dip units MB and MKF200.

Lay the polyethylene hose carefully to ensure correct level reading (avoid kinks and holes). Hose  $\varnothing$  4 x 6 mm.

Length of roll: 50 metres.

Type	Part no. WII	Part no. WID
PE50	0105150	10000825


**G20**

Fuel oil probe. Mounted on tank for connection to the TELEVAR level indicator.

1" metal fitting with pipe connection  $\varnothing$  6 mm.

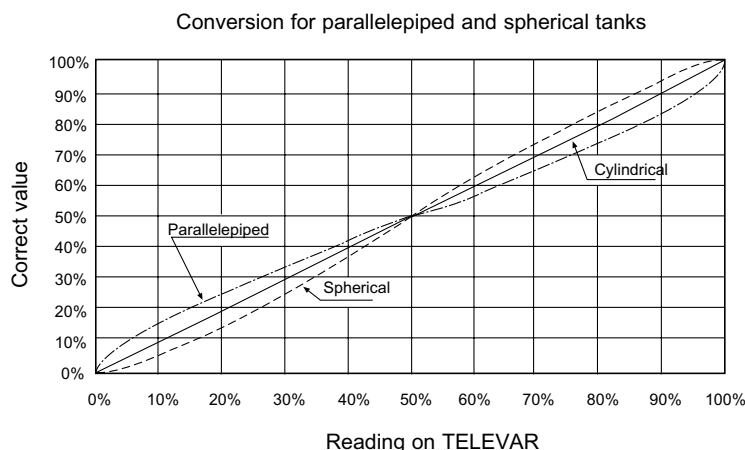
Perbunan dip element with bottom spacer.

Type	Part no. WII	Part no. WID	Size	Dip unit
TELE-SET 220	0104010	10000393	1"	L = 220 cm
G20	0104130	-	1"	L = 320 cm
G20	0104150	-	1"	L = 520 cm

The products whose non metal parts are in direct contact with the fuel are not suitable for installation in systems with "VEGETABLE FUEL OIL" or "BIODIESEL" of vegetable origin.

**TECHNICAL NOTE**
**Televar**
**Calculation of contents for tanks of various shapes**

It is possible to deduce from the graph to which percentage volume of the parallelepiped and spherical tanks does the value indicated on the standard unit (cylindrical tank) correspond.



## LEVEL INDICATORS, PROBES AND ACCESSORIES

**MECAV**

Mechanical level indicator, vertical reading, complete with seal for tight tank connection.  
Very easy to set through external screw.  
High impact plastic case and cover.  
Measuring range: 0 - 2000 mm.

Type	Part no. WII	Part no. WID	Size
MECAV	0103100	10000372	1.1/2"

**MECAH**

Like MECAV but with horizontal reading.

Type	Part no. WII	Size
MECAH	0103200	1.1/2"

**RDA**

Double angle fitting for tanks, complete with kit of fittings for connection to pipe  
dia. 6 x 8, 8 x 10, 10 x 12 mm. Brass CW617N body.  
1" male tank connection.  
3/8" female suction/return fitting.

Type	Part no. WII	Size
RDA	0120120	1" M x 3/8" F

**VRU**

Check valve for fuel oil piping, complete with kit of fittings for connection to pipe  
dia. 6 x 8, 8 x 10, 10 x 12 mm. Brass CW617N body.  
Pressure drop at 50 litres/h: 11 mbar.  
Pressure drop at 100 litres/h: 18 mbar.

Type	Part no. WII	Size
VRU	0120140	3/8" F

**VFU**

Foot valve for fuel oil tanks, complete with kit of fittings for connection to pipe  
dia. 6 x 8, 8 x 10, 10 x 12 mm.  
Brass CW617N body.  
Plastic bottom spacer.

Type	Part no. WII	Part no. WID	Size
VFU	0120160	10001480	3/8" F

**DIP UNITS**

133


**MB**

MULTIBLOC.

Multi-function dip unit with counterweight for connection between the fuel tank and burner. Combines 5 functions: burner suction and return, check valve, quick shut-off lever and connection for remote level indicator TELEVAR, complete with kit of fittings.

Brass body CW617N. Perbunan dip elements.

1" male tank connection.

3/8" female suction and return connections.

TELEVAR level indicator, pipe dia. 4 x 6 mm.

**TO AVOID CLOGGING OF THE BURNER OWING TO IMPURITIES IN THE FUEL OIL DRAWN FROM THE BOTTOM OF THE TANK.**

Type	Part no. WII	Part no. WID	Size	Dip unit
MB 220	0108100	10001025	1"M x 3/8"F	L = 220 cm
MBO 220	0108301	10001027	1"M x 3/8"F	L = 220 cm Without holding wire
MB 320	0108500	10001029	1"M x 3/8"F	L = 320 cm


**MKF200**

MULTIBLOC.

Multi-function dip unit like MB but with overlapping 3/8" male connections and metal bushes for pipe 8 x 10 mm. The body is provided with an extra 3/8" male connection of suction from a second bank-mounted tank. The return pipe from the burner is conveyed to the tank bottom.

Type	Part no. WII	Part no. WID	Size	Dip unit
MKF200	0115110	10001422	1"	L = 200 cm

H.4


**TECAL**

PVC clad aluminium pipe. Finds application above all as connecting pipe between the fuel tank (fuel oil) and burner. The cladding serves to protect the pipe from chemicals and humidity of the outdoor environment. Seal test at 30 bar (before cladding with the PVC sheath). PVC cladding (0.75 mm thick).

Type	Part no. WII	Part no. WID	Internal Ø	External Ø	Roll
TECAL	0701210	10019601	8	10	50 m
TECAL	0701212	-	10	12	50 m

**FITTINGS****DM**

Straight male connector - double taper. Complete with cap and teflon ferrule.  
Brass body and cap. Double taper teflon seal ferrule.  
Max. pressure: 10 bar. Max. temperature: 110°C.



Type	Part no. WII	Size
DM	0702210	3/8" x 10
DM	0702212	3/8" x 12
DM	0702310	1/2" x 10
DM	0702312	1/2" x 12

**DI**

Straight bulkhead fitting, double taper-double taper.  
Complete with 2 caps and 2 teflon ferrules. Characteristics like fitting DM.



Type	Part no. WII	Size
DI	0703010	10 x 10
DI	0703012	12 x 12

**DF**

Straight female connector, double taper.  
Complete with cap and teflon ferrule. Characteristics like fitting DM.



Type	Part no. WII	Size
DF	0704210	3/8" x 10
DF	0704212	3/8" x 12
DF	0704310	1/2" x 10
DF	0704312	1/2" x 12

**FILTERS**

135

**RG**

Two-line filter. With universal cutting ring connection 8 and 10 mm, male thread 3/8", female thread 3/8".



Type	Part no. WII	Part no. WID	Description	Size
RG N	0130151	10001930	-	3/8"
RG NF	0130221	10001938	with felt filter	3/8"
RG N-S	0130152	10001931	with sinterized cartridge	3/8"

**RV2**

Two-way line filter for fuel oil, with screw valve on delivery side and check valve on return, complete with mounting bracket. Brass CW617N body and ring nut. Transparent plastic bowl. 3/8" female connections with pipe bushes dia. 6 x 8, 8 x 10, 10 x 12 mm. Connections, burner side: 3/8" female. Degree of filtration: 200 micron.



Type	Part no. WII	Size
RV2	0133100	3/8" F

**RV1**

One-way line filter for fuel oil, with screw valve and mounting bracket. Brass CW617N body. Transparent plastic bowl. 3/8" female connections on burner side, with pipe bushes dia. 6 x 8, 8 x 10, 10 x 12 mm. 3/8" female connections, tank side. Degree of filtration: 140 micron.



Type	Part no. WII	Part no. WID	Description	Size
RV 1	0135100	0135101	both female	3/8" F
RV 1N	-	0135151	inlet-/male	3/8" F

**V1**

One-way line filter for fuel oil like RV1 but without shut-off valve.



Type	Part no. WII	Size
V1	0138100	3/8" F

H.4

## SAFETY DEVICES

**SIC10**

SICUREX.

Diaphragm valve for automatic shut-off of fuel oil in the supply piping of the burners.

Replaces solenoid valve M10M15. Die-cast aluminium body.

3/8" female connections, with pipe bushes dia. 6 x 8, 8 x 10, 10 x 12 mm.

Opening negative pressure: 50 mbar.

Type	Part no. WII	Part no. WID
SIC10	0150110	10002203

**RIS**

Fuel oil shut-off with pull-out lever remotely controlled by cable and fire-fighting lever LAC, complete with kit of fittings for pipe dia. 6 x 8, 8 x 10, 10 x 12 mm.

Brass CW617N body.

Pressure drop at 50 litres/h: 3 mbar.

Pressure drop at 100 litres/h: 8,5 mbar.

Type	Part no. WII	Size
RIS	0120100	3/8" F

**LACPT**

Fire-fighting lever for cable-operation of shut-off valves (MULTIBLOC, RIS), also includes 10 m of PVC cladded flexible steel cable, 3 intermediate slots and 3 cable clamps for connection of ends. Complete with transparent protective cover.

Base plate and red lever of special plastic.

Box containing 4 screws and wall mounting plugs.

Type	Part no.
LACPT	0153130

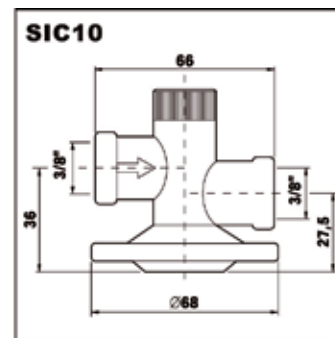
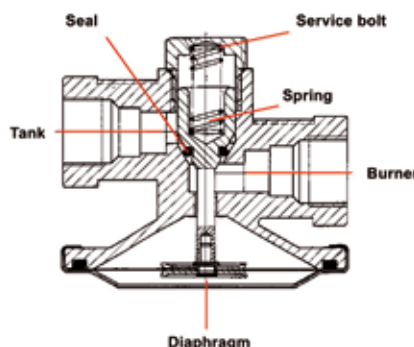
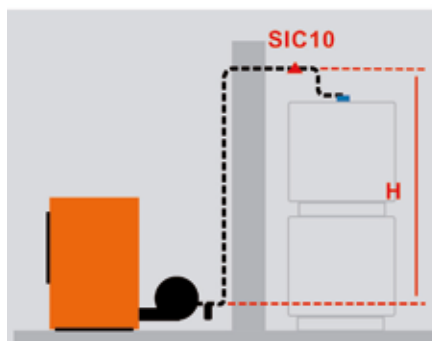
**TECHNICAL NOTE****Function**

The SIC10 is a diaphragm controlled valve, which is closed by a spring in non-operated mode. The valve opens, if a negative pressure produced by the burner pump develops.

With leakages of the pipe or stop of the burner pump the valve closes automatically.

**Installation**

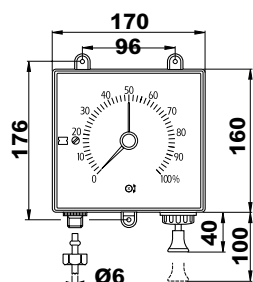
The SIC10 is to be installed at the highest point of the supply pipe in direct proximity of the tank. The SIC10 can be installed in arbitrary position, considering the flow direction. For the venting of the SIC10 with start-up the valve seat can be raised by means of a pin which is accessible through an aperture on the cover.



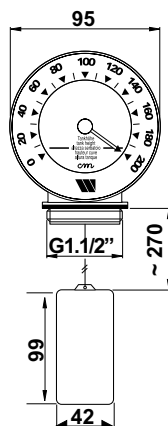


OVERALL DIMENSIONS

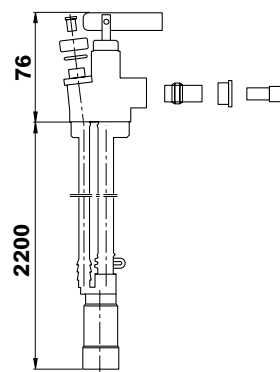
**TLM**



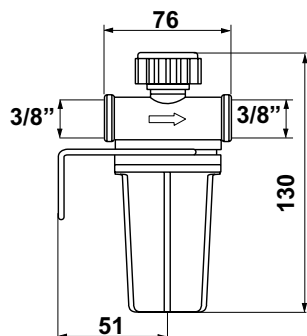
**MECAV - MECAH**



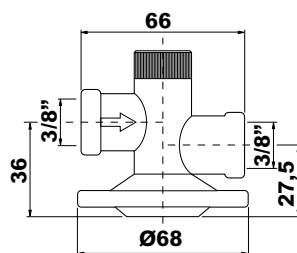
**MB**



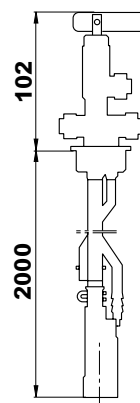
**RV2/RV1**



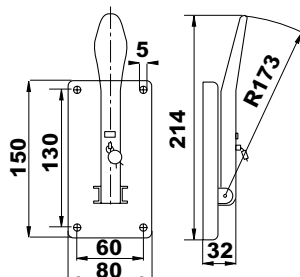
**SIC10**



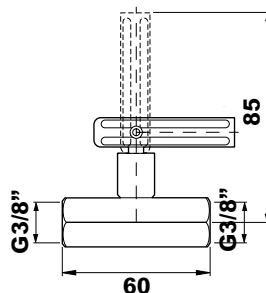
**MKF200**



**LACPT**



**RIS**





## Pressure gauges and thermometers



## H.5

## THERMOMETERS

**F+R801 OR**

Bimetal dial indicator thermometer. Zinc-plated steel case with chrome-plated bezel center back entry. Screwed socket R1/2". Accuracy class 2. Stem: zinc-plated steel Ø 9mm.



Type	Part no. WID	DN	Dial	Pocket stem	Packaging
F+R801 OR	10005807	63 mm	-50 - +50°C	50 mm	50
F+R801 OR	10005800	63 mm	0-120°C	50 mm	50
F+R801 OR	10005809	63 mm	0-120°C	75 mm	50
F+R801 OR	10005811	63 mm	0-120°C	100 mm	50
F+R801 OR	10005806	63 mm	0-160°C	50 mm	50
F+R801 OR	10005810	63 mm	0-160°C	75 mm	50
F+R801 OR	10005951	63 mm	0-160°C	100 mm	50
F+R801 OR	10005931	80 mm	0-120°C	50 mm	50
F+R801 OR	10005944	80 mm	0-120°C	75 mm	50
F+R801 OR	10005950	80 mm	0-120°C	100 mm	50
F+R801 OR	10005942	80 mm	0-160°C	50 mm	50
F+R801 OR	10005945	80 mm	0-160°C	75 mm	50
F+R801 OR	10005951	80 mm	0-160°C	100 mm	50
F+R801 OR	10006066	100 mm	0-120°C	50 mm	32
F+R801 OR	10006071	100 mm	0-120°C	75 mm	32
F+R801 OR	10006076	100 mm	0-120°C	100 mm	32
F+R801 OR	10006084	100 mm	0-120°C	150 mm	32
F+R801 OR	10006079	100 mm	0-160°C	100 mm	32
F+R801 S	10005804	63 mm	0-120°C	50 mm	50
F+R801 S	10005939	80 mm	0-120°C	50 mm	50

F+R801 S = Stem with set screw

**F+R801 SD**

Bimetal dial indicator thermometer, self-sealing. Dial 0 - 120 °C.

Metal design, screwed socket R 1/2", self-sealing, sensor length 50 mm, class 2,0.



Type	Part no. WID	DN	Dial	Pocket stem	Packaging
F+R801 SD	10005802	63 mm	0-120°C	50 mm	50
F+R801 SD	10005935	80 mm	0-120°C	50 mm	50
F+R801 SD	10005936	80 mm	0-150°C	50 mm	50
F+R801 SD	10006067	100 mm	0-120°C	50 mm	32
F+R801 SD	10006068	100 mm	0-150°C	50 mm	32

**TH (F+R998)**

Immersion sleeves. Brass. Outside Ø 12 mm, internal Ø 9 mm.



Type	Part no. WID	Length	Packaging
TH (F+R998)	10006130	50 mm	20
TH (F+R998)	10006134	75 mm	20
TH (F+R998)	10006135	100 mm	20
TH (F+R998)	10006139	150 mm	20
TH (F+R998)	10006145	200 mm	15
TH (F+R998)	10006148	250 mm	1

**F+R810 TCM**

Bimetal contact thermometer. Attached to the pipe via tension spring.

Suited for pipes from 1" to 2", class 2,0.



Type	Part no. WID	DN	Dial	Packaging
F+R810 TCM	10006445	63 mm	0-60°C	100
F+R810 TCM	10006476	80 mm	0-60°C	50
F+R810 TCM	10006504	63 mm	0-120°C	100
F+R810 TCM	10006505	80 mm	0-120°C	50

**THERMOMETERS**

**MTG**

Machine thermometer. Straight design, dial 0 - 160 °C, V-shape, NG 150 x 36. Connection G 1/2", accuracy  $\pm 2$  °C.

Type	Part no. WID	Length	Packaging
MTG	10006414	50	5
MTG	10006416	63	5
MTG	10022068	100	5
MTG	10006431	160	5


**MTW**

Machine thermometer. Elbow design 90°, dial 0 - 160 °C, V-shape. NG 150 x 36 connection G 1/2", accuracy  $\pm 2$  °C.

Type	Part no. WID	Length	Packaging
MTW	10006432	50	5
MTW	10006433	63	5
MTW	10006437	100	5
MTW	10006442	160	5


**F+R804 (TV)**

Straight glass thermometer Temperature element: xylene-filled bulb. Accuracy class 2.

Type	Part no. WID	Dial	Length	Packaging
F+R804	10006405	0-120°C	200 mm	10
F+R804	10006407	0-120°C	250 mm	10
F+R804	10006406	0-150°C	250 mm	10


**T-OT**

Straight case with pocket for glass thermometer F+R804 (TV).

Type	Part no. WID	Length	Connection	Packaging
T-200 OT	10006408	200 mm	G 1/2"	100
T-250 OT	10006409	250 mm	G 1/2"	100

**COMBINED THERMOMETERS AND PRESSURE GAUGES**

**F+R818**

Combined thermometer pressure gauge. Plastic case center back entry with automatic shut-off valve. Red mark pointer. Connection G1/2". Accuracy class: 2.5 (pressure), 2 (temperature).

Type	Part no. WID	DN	Temperature	Pressure	Packaging
F+R818	10015503	63	0-120°C	0-4 bar	50
F+R818	10018666	63	0-120°C	0-6 bar	50
F+R818	10022728	80	0-120°C	0-2,5bar	50
F+R818	10009464	80	0-120°C	0-4 bar	50
F+R818	10018742	80	0-120°C	0-6 bar	50
F+R818	10009465	80	0-120°C	0-10 bar	50
F+R818	10009461	80	0-120°C	0-40 MWS	50

## COMBINED THERMOMETERS AND PRESSURE GAUGES

**F+R828**

Combined thermometer pressure gauge. Plastic case center bottom entry with automatic shut-off valve. Red mark pointer. Connection G1/2". Accuracy class: 2.5 (pressure), 2 (temperature).

Type	Part no. WID	DN	Temperature	Pressure	Packaging
F+R828*	10009472	80 mm	0-120°C	0-2,5 bar	50
F+R828	10025526	80 mm	0-120°C	0-4 bar	50
F+R828	10018749	80 mm	0-120°C	0-6 bar	50
F+R828	10025525	80 mm	0-120°C	0-10 bar	50
F+R828	10009462	80 mm	0-120°C	0-40 MWS	50

\* Neutral dial

## PRESSURE GAUGES

**F+R100**

Pressure gauge for closed heating installations, plastic body, back central entry. Accuracy class 2,5 (1,6 on request).

Type	Part no. WID	DN	Pressure	Connection	Packaging
F+R100	10008092	50 mm	0-6 bar	G1/4"	100
F+R100	10008093	50 mm	0-10 bar	G1/4"	100
F+R100	10008094	50 mm	0-16 bar	G1/4"	100
F+R100	10008095	63 mm	0-6 bar	G1/4"	100
F+R100	10008096	63 mm	0-10 bar	G1/4"	100
F+R100	10008097	63 mm	0-16 bar	G1/4"	100

**F+R101**

Pressure gauge for closed heating installations with green sector and red reference pointer. Plastic body, back central entry. Accuracy class 2,5 (1,6 on request).

Type	Part no. WID	DN	Pressure	Connection	Packaging
F+R101	10008089	50 mm	0-4 bar	G1/4"	100
F+R101	10008090	63 mm	0-4 bar	G1/4"	100
F+R101	10008091	63 mm	0-4 bar	G3/8"	100

**F+R150**

Pressure gauge for closed heating installations, black steel body, back central entry. Accuracy class 2,5 (1,6 on request).

Type	Part no. WID	DN	Pressure	Connection	Packaging
*F+R150	10008022	80 mm	0-4 bar	G1/4"	50
F+R150	10008023	80 mm	0-6 bar	G1/4"	50
F+R150	10008024	80 mm	0-10 bar	G1/4"	50
F+R150	10008029	80 mm	0-16 bar	G1/4"	50

\* Green sector and red reference pointer

**F+R150 (MSOL)**

Pressure gauge for Solar systems. Self sealing PTFE connection. Working temperature up to 120°C.

Type	Part no. WID	DN	Pressure	Connection	Packaging
F+R150	10016072	50 mm	0-10 bar	G1/4"	100
F+R150	10016074	50 mm	0-10 bar	G3/8"	100



**PRESSURE GAUGES**
**F+R200**

Pressure gauge for closed heating installations, plastic body, bottom central entry. Accuracy class 2,5 (1,6 on request).



Type	Part no. WID	DN	Pressure	Connection	Packaging
F+R200	10007378	50	0-6 bar	G1/4"	100
F+R200	10007380	50	0-10 bar	G1/4"	100
F+R200	10007384	50	0-16 bar, KI 1,6%	G1/4"	100
F+R200	10007723	63	0-6 bar	G1/4"	100
F+R200	10007724	63	0-10 bar	G1/4"	100
F+R200	10007725	63	0-16 bar	G1/4"	100
F+R200	10007726	63	0-25 bar	G1/4"	100
F+R200	10007790	80	0-6 bar	G1/2"	50
F+R200	10007793	80	0-10 bar	G1/2"	50
F+R200	10007794	80	0-16 bar	G1/2"	50
F+R200	10007795	80	0-25 bar	G1/2"	50

**F+R201**

Pressure gauge for closed heating installations with green sector and red reference pointer. Plastic body, bottom central entry. Accuracy class 2,5 (1,6 on request).



Type	Part no. WID	DN	Pressure	Connection	Packaging
F+R201	10007375	50	0-4 bar	G1/4"	100
F+R201	10007722	63	0-4 bar	G1/4"	100
F+R201	10007736	63	0-4 bar	G3/8"	100

**F+R250**

Pressure gauge for closed heating installations, black steel body, bottom central entry. Accuracy class 2,5 (1,6 on request).



Type	Part no. WID	DN	Pressure	Connection	Packaging
*F+R250	10008076	100	0-4 bar	G1/2"	30
F+R250	10008086	100	0-6 bar	G1/2"	30
F+R250	10008078	100	0-10 bar	G1/2"	30
*F+R250	10008087	100	0-10 bar, 1,6%KI.	G1/2"	30
*F+R250	10008088	100	0-16 bar, 1,6%KI.	G1/2"	30

\* Green sector, red pointer

**MC50/6**

Capillary pressure gauge



Type	Part no. WID	Description
MC 50/6	10009425	52 mm, 0-6 bar, capillary 1000mm
ASV1/20	10009426	Check valve 1/20

**PRESSURE GAUGE****F+R260**

Pressure gauge for gas applications. Bottom entry connection. Case in chrome plated steel. Accuracy class 2,5 (1,6 on request).



Type	Part no. WID	DN	Pressure	Connection	Packaging
F+R260	10021605	63 mm	0-60 mbar/mm H <sub>2</sub> O	G1/4"	1
F+R260	10021606	63 mm	0-100 mbar/mm H <sub>2</sub> O	G1/4"	1
F+R260	10021607	63 mm	0-250 mbar/mm H <sub>2</sub> O	G1/4"	1
*F+R260	10021623	80 mm	0-60 mbar/mm H <sub>2</sub> O	G3/8"	1
*F+R260	10021624	80 mm	0-100 mbar/mm H <sub>2</sub> O	G3/8"	1
*F+R260	10021625	80 mm	0-250 mbar/mm H <sub>2</sub> O	G3/8"	1
F+R260	10022247	100 mm	0-60 mbar/mm H <sub>2</sub> O	G1/2"	1
F+R260	10022248	100 mm	0-100 mbar/mm H <sub>2</sub> O	G1/2"	1
F+R260	10021651	100 mm	0-250 mbar/mm H <sub>2</sub> O	G1/2"	1

\* FIMET Logo

**ACCESSORIES FOR PRESSURE GAUGES****REM**

Check valve for pressure gauges.



Type	Part no. WID	Packaging
REM 8	10009431	10
REM 10	10009432	10
REM 15	10009433	10
REM 8/15	10009434	10

**RMD 15**

Pressure gauge pushbutton stopcock. Nickel-plated brass, DIN-DVGW-tested for gas, PN 25, connection male thread 1/2".



Type	Part no. WID
RMD 15	10009493

**RMD 15 P-MM**

Pressure gauge stopcock with testing flange 60 x 25, three-way valve, made from brass, with gland, PN 25, operating temperature - 10 °C to + 50 °C, operating position is engraved on the plug, plastic handle, connection: Sleeve-sleeve.



Type	Part no. WID
RMD 15 P-MM	10009481

## ACCESSORIES FOR PRESSURE GAUGES

### RM 15

Pressure gauge stopcock, made of brass, with gland DN15, operating position is engraved on the plug, plastic handle.



Type	Part no. WID	Description	PN	Options temperature
F+R 998	10009488	2-WAY M-F	5	MAX 40°
RM 15	10009491	3-WAY FF	25	-10 + 50°

### 403R

Pressure gauge holder cock with control flange. Stuffing box packed. Nominal pressure: 16 bar.

According to INAIL.



Type	Part no. WII	Part no. WID	Size
403R	403R14	10021872	1/4"
403R	403R38	10021873	3/8"
403R	403R12	10021874	1/2"

### 407D

Copper insulation loop for water gauges, pressure gauges and pressure switches.



Type	Part no. WII	Part no. WID	Size
407D	407D14	10021886	1/4"
407D	407D38	10021887	3/8"
407D	407D12	10026040	1/2"

## SELECTION GUIDE

Ask for Watts Industries catalogue about of pressure gauges, thermometers, combined temperature and pressure gauges for Heating systems, Underfloor systems, Industrial and Air-conditioning systems.



**NOTES**

## Components for sanitary and water distribution network



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## ***I.1 Sanitary system devices***

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## ***I.2 Antipollution devices***

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## ***I.3 Waterworks distribution, regulation and control***

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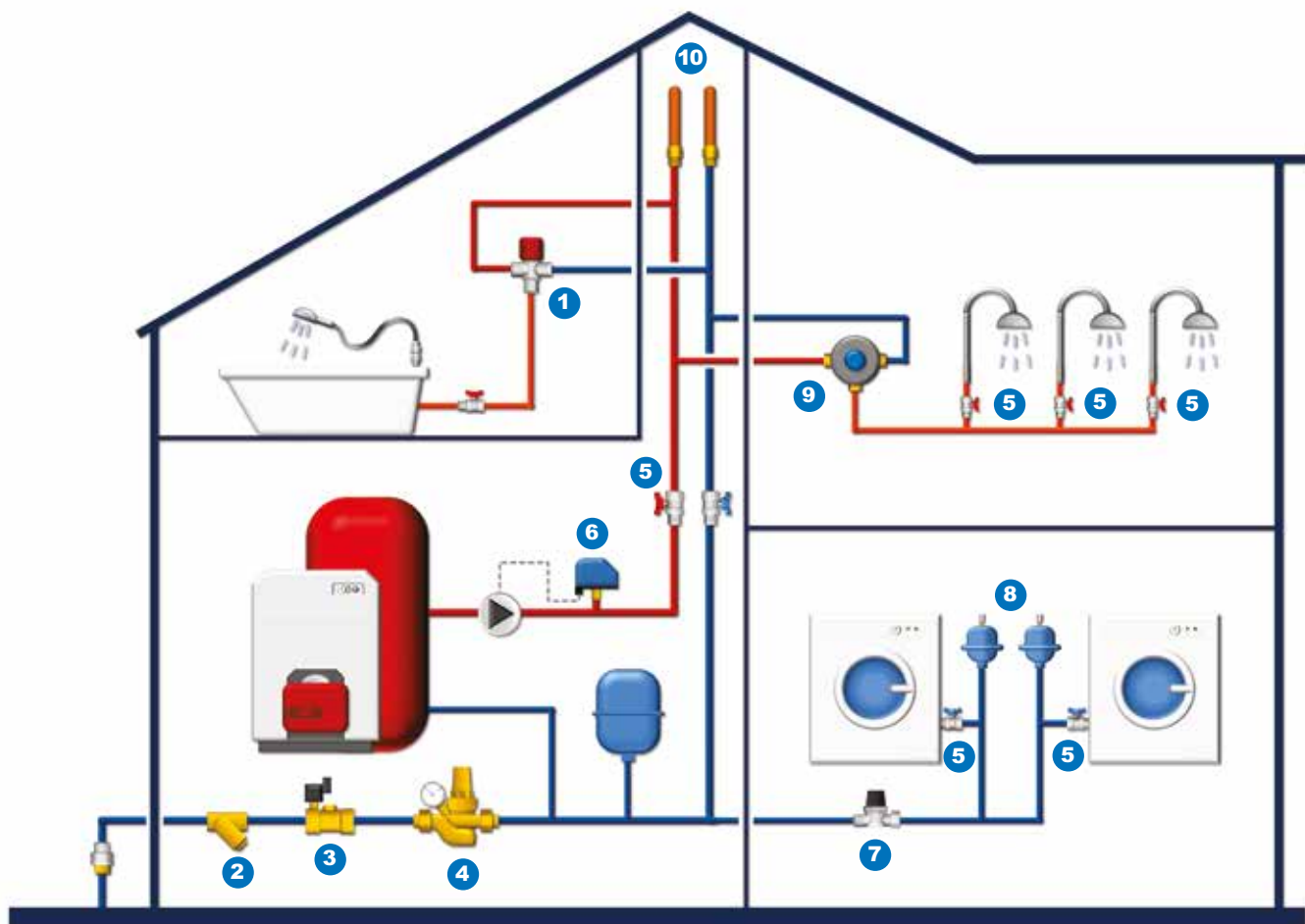
# Sanitary system devices

149

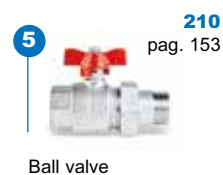


I.1

EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*



**PRESSURE REDUCING VALVES**

**REDUBAR**

Compact adjustable pressure reducing valve in brass nickel plated. Max inlet pressure: 15 bar. Adjustable outlet pressure: 1,5 to 4 bar (factory preset  $3 \pm 0,5$ ).

Max. working temperature: 70 °C.

Available in two versions:

- double threaded connections 1/2" F x 3/4" M on both sides
- connections 3/4" M x swivel nut 3/4" F.

**Approved A.C.S (F).**

Type	Part no. WII	Connections
REDUBAR	82500	3/4" M X dado gir. 3/4" F
REDUBAR	82501	1/2" F / 3/4" M X 1/2" F / 3/4" M


**REDUBLOC**

Compact three functions brass pressure reducing valve:

- pressure reduction
- non return valve (according to NF)
- on-off valve

Max inlet pressure: 15 bar.

Adjustable outlet pressure: 1,5 to 4 bar (factory preset  $3 \pm 0,5$ ).

Max. working temperature: 70 °C

Connections 3/4" M x swivel nut 3/4" F

Type	Part no. WII	Connections
REDUBLOC	82900	1/2" F / 3/4" M X Dado gir. 3/4" F


**DRV**

Diaphragm pressure reducing valve with compensated seat and complete with unions. Brass CW617N body and cap. Stainless steel strainer. 1/2" - 3/4" - 1" = 600µm. 1.1/4" - 1.1/2" - 2" = 750µm. Plastic valve seat. Interchangeable filter-regulator unit. Max. inlet pressure: 25 bar. Adjustable downstream pressure: 1.5 - 6 bar. Can be used for water, air and neutral gases up to 30°C. Pressure drops less than 1.3 bar at characteristic flow rate DIN. Noise < 20 dB - **Class 1 in Germany**.

**According to DVGW, SVGW, TIN, NF (only for ND 1/2" and 3/4").**

Type	Part no. WII	Part no. WID	Size
DRV	0501115	10015740	1/2" MM
DRV	0501120	10015741	3/4" MM
DRV	0501125	10015742	1" MM
DRV	0501132	10015743	1.1/4" MM
DRV	0501140	10015744	1.1/2" MM
DRV	0501150	10015745	2" MM


**DRVM**

Like DRV, but with pressure gauge M1-ABS50 (Scale 0 – 6 bar).

Type	Part no. WII	Size
DRVM	0501315	1/2" MM
DRVM	0501320	3/4" MM
DRVM	0501325	1" MM
DRVM	0501332	1.1/4" MM
DRVM	0501340	1.1/2" MM
DRVM	0501350	2" MM

## PRESSURE REDUCING VALVES

## DRVN



**Patented** diaphragm pressure reducing valve with compensated seat, outlet pressure adjusting knob and external graduated scale for easy reading of set pressure.

Complete with unions. Body and cap of shot-blasted stamped brass CW617N.

Stainless steel filter cartridge. Pressure gauge connection on both sides: 1/4".

Materials in contact with fluids KTW certified. Max. inlet pressure: 25 bar.

Adjustable downstream pressure: 1.5 and 6 bar. Max. operating temperature: 30°C.

Can be used for water, air and neutral gases. Noise < 20 dB - **Class 1 in Germany**.

**According to DVGW.**

Type	Part no. WII	Part no. WID	Size
DRVN	0502515	10015770	1/2" MM
DRVN	0502520	10015771	3/4" MM
DRVN	0502525	10015772	1" MM
DRVN	0502532	10015773	1.1/4" MM
DRVN	0502540	10015774	1.1/2" MM
DRVN	0502550	10015775	2" MM

## DRVMN



Like DRVN but with pressure gauge M3A-ABS50 (Scale 0 - 6 bar).

Type	Part no. WII	Part no. WID	Size
DRVMN	0502615	10015776	1/2" MM
DRVMN	0502620	10015777	3/4" MM
DRVMN	0502625	10015778	1" MM
DRVMN	0502632	-	1.1/4" MM
DRVMN	0502640	-	1.1/2" MM

## WACOPUMP2



Electronic system for pumps. The electronic controller WACOPUMP 2 orders the automatic start and stop of the water pump when opening and closing any tap or valve of installation.

When the water pump starts, it keeps functioning till when there is any opened tap in the system, giving a constant flow and pressure to the network. Max water flow temperature : 60°C.

Max working pressure : 10 bar. Max flow rate : 10.000l/h. Starting pressure : 1,5 - 2,5 bar.

Supply voltage : 220/240Vca. Frequency : 50/60 Hz. Max intensity : 10(6) A.

Protection : IP65. Max power of pump : 1,5CV (1100 W). Inlet male : 1".

Outlet male : 1". Pressure gauge. Manual reset switch (RESET). Power on led (POWER).

Pump-working led (ON). Security system led (FAILURE). Installing : vertical position.

**According to 2006/95/EC, 2004/108/EC**

Type	Part no. WII	Power supply
WACOPUMP2	0605226	220/240 Vca
RSW	RSW10378	Electronic board

## TECHNICAL NOTE

## Cavitation diagram for pressure reducing valves series DRV

The cavitation diagram shows three operating zones of the pressure reducing valve plotted against the upstream and downstream pressures, namely:

**Zone C:** normal duty, no cavitation

**Zone B:** medium duty, risk of cavitation

**Zone A:** heavy duty, the pressure reducing valve shows cavitation.

Continuous operation in the red cavitation zone could cause rapid damage of the internal parts.

## SIZING

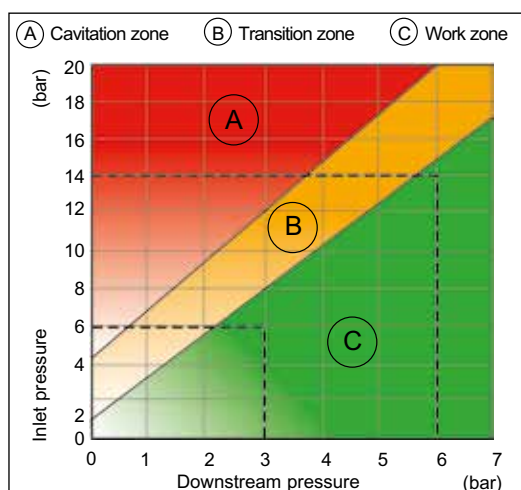
## Example 1 (cavitation)

Pressure reducing valve with: - Inlet pressure P1 = 14 bar- Outlet pressure P2 = 3 bar.

From the cavitation diagram it can be seen that the pressure reducing valve is constantly working in the red zone. To avoid rapid deterioration, two pressure reducing valves could be used, one connected upstream to the other.

Upstream pressure reducing valve: pressure drop from 14 to 6 bar (green zone).

Downstream pressure reducing valve: pressure drop from 6 to 3 bar (green zone).



**BALL VALVES, SHUT-OFF VALVES AND SOLENOID VALVES**
**210**


Ball shut-off valve with union for manifold head connections.

Max. operating pressure : 25 bar up to 95°C. 16 bar up to 120°C.

Type	Part no. WII	Part no. WID	Size
210	2101212	10026032	1/2" MF
210	2103434	10026033	3/4" MF
210	21011	10026031	1" MF
210	210114114	-	1.1/4"

**AKH**


Drain ball valve. Heavy design, full bore, hot-pressed brass CW 617N, nickel-plated, angled drain, threaded hose coupling, steel handle, PN 20, max. temperature 110 °C.

Type	Part no. WID	Size
AKH	10017282	1/2"
AKH	10017283	3/4"
AKH	10017284	1"

**KHE**


Ball valve with drain. Full bore, brass CW 617N, PN 25, max. temperature 110 °C.

Type	Part no. WID	Size
KHE	10017342	3/8"
KHE	10017343	1/2"
KHE	10017344	3/4"
KHE	10017345	1"
KHE	10017346	1.1/4"
KHE	10017347	1.1/2"

**KHR**


Ball valve. Heavy design, full bore, hot-pressed brass CW 617N, hard-chrome plated ball, Teflon® ball seals, double spindle seal, red handle, PN 20, max. temperature 110 °C, for water, oils, fuels and compressed air, double-sided female thread.

Type	Part no. WID	Size
KHR	10017018	3/8"
KHR	10017019	1/2"
KHR	10017020	3/4"
KHR	10017022	1"
KHR	10017023	1.1/4"
KHR	10017024	1.1/2"
KHR	10017025	2"



**BALL VALVES, SHUT-OFF VALVES AND SOLENOID VALVES**
**850T**

Solenoid valve for water. Operating temperature: - 10°C / +90°C.  
Max. pressure: 25 bar. Normally closed (NC). Normally open (NO).



Type	Part no. WII	Part no. WID	Size	Power supply
850T	850T38W220	-	3/8"	230V NC
850T	850T38W24	-	3/8"	24V NC
850T	850T12W220	10023639	1/2"	230V NC
850T	850T12W24	10026147	1/2"	24V NC
850T	850T34W220	10023642	3/4"	230V NC
850T	850T34W24	-	3/4"	24V NC
850T	850T1W220	10023640	1"	230V NC
850T	850T1W24	-	1"	24V NC
850T	850T114W220	10027191	1.1/4"	230V NC
850T	850T112W220	10027190	1.1/2"	230V NC

850T	850T38W220NA	-	3/8"	230V NO
850T	850T38W24NA	-	3/8"	24V NO
850T	850T12W220NA	-	1/2"	230V NO
850T	850T12W24NA	-	1/2"	24V NO
850T	850T34W220NA	10023643	3/4"	230V NO
850T	850T34W24NA	-	3/4"	24V NO
850T	850T1W220NA	10023641	1"	230V NO
850T	850T1W24NA	-	1"	24V NO
850T	850T114W220NA	10023638	1.1/4"	230V NO
850T	850T112W220NA	-	1.1/2"	230V NO

PG9	P99035	-	Electric plug
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Attention: the connector must be ordered together the valves.

**RB850T**

Spare coil for solenoid valves series 850T.



Type	Part no. WII	Power supply
RB850T	RB850T230V	230 V
RB850T	RB850T24VCA	24 Vca
RB850T	RB850T24VCC	24 Vcc
RB850T	RB850T12VCA	12 Vca
RB850T	RB850T12VCC	12 Vcc



**WATER HAMMER ARRESTORS**

**15M2**

Water hammer arrestor with double sealed piston (O-ring and EPDM).  
Can be installed in any positions. It does not require maintenance.  
Suitable for washing machines, dish washers, sinks, sanitary systems, etc.  
Copper body, polypropylene piston, brass connection, EPDM seals and O-rings.  
Precharging pressure: 4 bar. Operating pressure: 10,3 bar. Peak pressure 14,5 bar.  
Operating temperature: 0,5 ÷ 82 °C.

Type	Part no. WII	Part no. WID	DN	Protection
15M2	471015002	10026028	1/2" M	A
15M2	471020002	10026029	3/4" M	B
15M2	471025002	-	1" M	C
15M2	471032002	-	1.1/4" M	D
15M2	471040002	-	1.1/2" M	E
15M2	471050002	-	2" M	F


**WAM**

Water hammer arrestor designed for washing machines, dish washers, sinks, sanitary systems, etc. Can be installed in any position. Painted stainless steel body.  
Elastomeric diaphragm. Max. temperature: 90°C Precharging pressure: 3 bar.  
Peak pressure: 13 bar. Capacity: 0.16 litres.

Type	Part no. WII	Size	Protection
WAM	1505400	1/2" M	A

**TECHNICAL NOTE**
**Selection of water hammer arrestors series 15M2**

UNI 9182 standard cites: "All hot and cold water distribution systems must be provided with water hammer arrestors of hydropneumatic type (with permanent or resettable air cushions)."

Each model of the 15M2 series is able to offer a certain cushioning action (table 1); hence for facilitating the choice we have given a table (table 2) with the unit load values assigned to each shut-off component (or units) normally installed in plumbing and hot water systems.

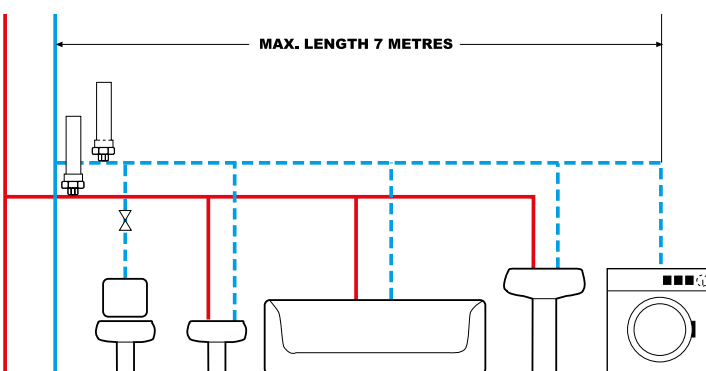
**N.B.** Install the water hammer arrestor as close as possible to the shut-off component causing the water hammer.

**Table 1**

SELECTION OF WATER HAMMER ARRESTOR ACCORDING TO THE UNIT LOAD NUMBER			
MODEL	Size	Protection	Unit load
15M2 - WAM	1/2" M	A	1 - 11
15M2	3/4" M	B	12 - 32
15M2	1" M	C	33 - 60
15M2	1.1/4" M	D	61 - 113
15M2	1.1/2" M	E	114 - 154
15M2	2" M	F	155 - 330

**Table 2**

APPLIANCE	UNIT LOAD
Quick flushing WC	6
Float WC	3
Wash basins	1
Bath-tub	2
Bidet	1
Shower	1
Washing machine/dish washer	2
Sink	2
Bath suite complete with quick flushing WC	8
Bath suite complete with float WC	6

**BATH SUITE complete with quick flushing = 8 load units  
1 15M2 or WAM 1/2"**


N.B. Use half the values indicated for the hot water circuit.

## BOILERS SAFETY UNITS

### SFR-NA



The hydraulic safety groups are used in domestic water systems to protect hot water storage heaters. They combine different components with the following functions :

- Safety function to prevent the pressure of the water in the storage heaters reaching dangerous levels.
- Backflow prevention to prevent hot water return into the cold water mains supply the check-valve can be controlled with a special gauge port,
- A shut-off function to isolate the main supply for maintenance or inspection of the heater system,

For hot water storage heaters of small capacities (generally from 10 to 50 Litres) with a Male threading in G1/2" (15x21), usually installed on the top of the sink or under sink below the draining board, the safety group NA53 is particularly adapted with this type of configuration. Body Brass CW617N, Diaphragm EPDM 70Sh, Max. working temperature: 120°C  
Max. working pressure: 10 bar Safety relief valve opening pressure: 7 bar  
Max. output of the water heater (1/2"): 4 kW.

Type	Part no. WII	Part no. WID	Size
SFR-NA	54310	10025479	1/2"

### SFR-D



Safety unit with straight body for water heater, complete with safety valve, shut-off valve (to isolate the water heater from the supply line), inspectable check valve (to prevent return of contaminated water in the supply line), lever for manual discharge via the safety valve. Safety valve setting : 7 bar. Discharge connection: 1" M.

**NF approved : D 36401 and P 43008. According to EN 1487.**

Type	Part no. WII	Part no. WID	Size
SFR-D	52550	10004611	3/4" MF

### SIF



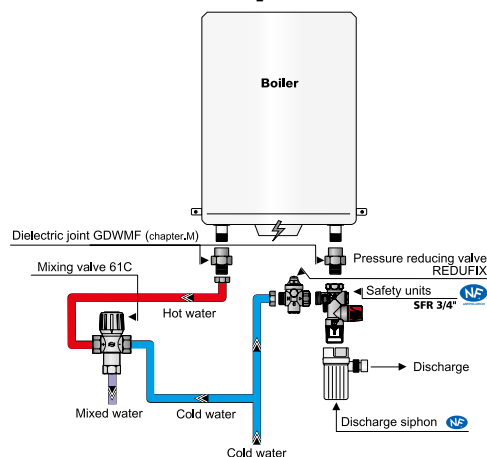
Discharge siphon for safety units SFR. White polypropylene body.

**NF approved.**

Type	Part no. WII	Part no. WID	Size
SIF	7092315	10025236	1" F

## TECHNICAL NOTE

### Installation exemple



### Characteristics of safety units series SFR

The special seat arrangement facilitates removal of any impurities present under the valve diaphragm.



Safety unit with ball valve  
Flat connection, cold water side, with specific machining (pipe up to 16/18) for quick connection, snap-on type.

**THERMOSTATIC MIXING VALVES**

157


**61C**

AQUAMIX.

Thermostatic mixing valve with 4 set positions. Anti-scald protection. Setting range: 32°C ÷ 50°C. Max. differential pressure: 2 bar. Female connections. Without internal check valves.

Type	Part no. WII	Part no. WID	Size
61C	6109C12	10017424	1/2" F
61C	6110C34	10017418	3/4" F
61C	6111C1	10017423	1" F


**61CM**

AQUAMIX.

Thermostatic mixing valve with 4 set positions. Anti-scald protection. Setting range: 32°C ÷ 50°C. Max. differential pressure: 2 bar. Connections with male tailpieces. Without internal check valves.

Type	Part no. WII	Part no. WID	Size
61CM	61CM12	-	1/2" M
61CM	61CM34	10023554	3/4" M
61CM	61CM1	10023553	1" M


**MMV-C**

Thermostatic mixing valve. For drinking water installations. With two integrated check valves (DVGW), adjustment range 30 - 65 °C, factory setting 38 °C, serves as scalding protection, brass body, max. hot water supply 85 °C, flow rate 57 l/min at 3 bar. Connections with 1" M tailpieces.

Type	Part no. WII	Part no. WID	Size
MMV-C	97133	10017427	1/2" x 1/2"
MMV-C	97135	10017428	3/4" x 3/4"


**62C**

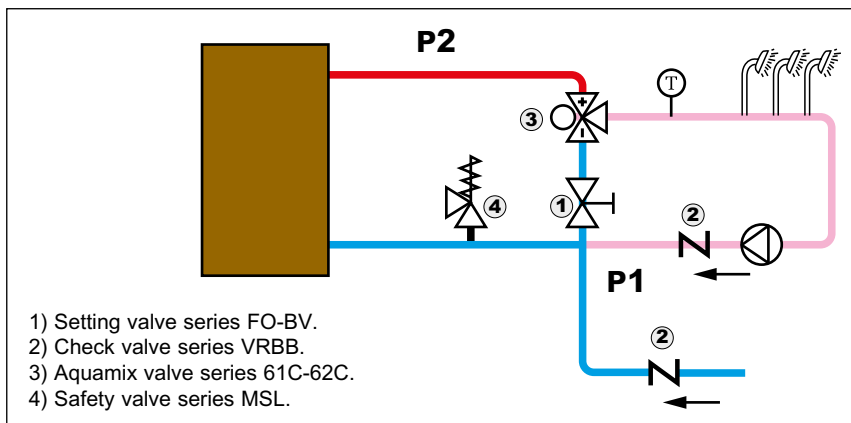
AQUAMIX

Thermostatic mixing valve with 4 set positions. Anti-scald protection. Setting range: 42°C ÷ 60°C. Max. differential pressure: 2 bar. Female connections. Without internal check valves.

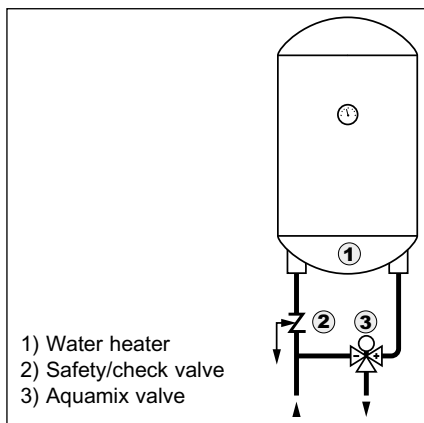
Type	Part no. WII	Part no. WID	Size
62C	6209C12	10022122	1/2" F
62C	6210C34	10017419	3/4" F
62C	6211C1	10017422	1" F

**TECHNICAL NOTE**
**Aquamix valve installation diagrams**

Sanitary systems with recirculation



Domestic hot water



I.1

## THERMOSTATIC MIXING VALVES FOR COMMUNITIES

**TX90****ULTRAMIX.**

Visible thermostatic mixer for community installations such as swimming pools, sports centres, schools, factories, camping sites, hospitals, spas, etc. which allow controlling and holding of the mixed water temperature at a constant level also in the presence of variations in pressure (max. 1.5 bar). Brass body.

Cover with grey epoxy finish and blue graduated knob (Type E).

Chrome-plated cover with white graduated knob (Type C).

Anti-seize mechanism with filters and check valves. Bimetal steel strip coated with rilsan to protect against scale formation.

**Available with two temperature setting range: 10÷50°C or 30÷70 °C** with provision or locking. **Anti-scald protection** : water shut off in less than 2 seconds in the event of cold water missing. Max. operating pressure : 10 bar. Max. hot water temperature : 85°C.

Flow rates guaranteed with upstream dynamic pressure : 3 bar

Hot water inlet provided on the left, mixed water outlet at the top.

Min. difference in inlet/outlet temperature : 5°C

\*As a guide consider the simultaneity coefficient.



Type	Part no. WII	Part no. WID	Size		N° of users	T °C	Flow rate l/min
TX90	TX91E	10002504	3/4"	M	1-7	10-50°	3-56 *
TX90	TX91C	-	3/4"	M	1-7	10-50°	3-56 *
TX90	TX92E	10002505	3/4"	M	1-10	10-50°	3-80 *
TX90	TX92C	-	3/4"	M	1-10	10-50°	3-80 *
TX90	TX93E	10002503	1"	M	1-15	10-50°	3-120 *
TX90	TX93C	-	1"	M	1-15	10-50°	3-120 *
TX90	TX94E	10002494	1.1/4"	M	1-21	10-50°	5-175 *
TX90	TX94C	-	1.1/4"	M	1-21	10-50°	5-175 *
TX90	TX95E	10002493	1.1/2"	M	1-32	10-50°	5-260 *
TX90	TX95C	-	1.1/2"	M	1-32	10-50°	5-260 *
TX90	TX96E	10002506	2"	M	1-50	10-50°	6-400 *
TX90	TX96C	-	2"	M	1-50	10-50°	6-400 *
TX90	TX91E37	10002495	3/4"	M	1-7	30-70°	3-56 *
TX90	TX91C37	-	3/4"	M	1-7	30-70°	3-56 *
TX90	TX92E37	10002496	3/4"	M	1-10	30-70°	3-80 *
TX90	TX92C37	10002497	3/4"	M	1-10	30-70°	3-80 *
TX90	TX93E37	10002498	1"	M	1-15	30-70°	3-120 *
TX90	TX93C37	10002499	1"	M	1-15	30-70°	3-120 *
TX90	TX94E37	10002500	1.1/4"	M	1-21	30-70°	5-175 *
TX90	TX94C37	10002501	1.1/4"	M	1-21	30-70°	5-175 *
TX90	TX95E37	-	1.1/2"	M	1-32	30-70°	5-260 *
TX90	TX95C37	-	1.1/2"	M	1-32	30-70°	5-260 *
TX90	TX96E37	10002492	2"	M	1-50	30-70°	6-400 *
TX90	TX96C37	-	2"	M	1-50	30-70°	6-400 *

**CAR-TX90**

Spare cartridge for community mixers series TX90 ULTRAMIX.



Type	Part no. WII	Part no. WID	For model	T °C	Flow rate l/min
CAR-TX90	TX1	10002523	TX91E, TX91C	10-50°	3-56
CAR-TX90	TX2	10002522	TX92E, TX92C	10-50°	3-80
CAR-TX90	TX3	10002521	TX93E, TX93C	10-50°	3-120
CAR-TX90	TX4	10002518	TX94E, TX94C	10-50°	5-175
CAR-TX90	TX5	10002519	TX95E, TX95C	10-50°	5-260
CAR-TX90	TX6	10002520	TX96E, TX96C	10-50°	6-400
CAR-TX90	TX137	-	TX93E, TX93C	30-70°	3-120
CAR-TX90	TX237	-	TX94E, TX94C	30-70°	5-175
CAR-TX90	TX337	-	TX95E, TX95C	30-70°	5-260
CAR-TX90	TX437	-	TX96E, TX96C	30-70°	6-400
CAR-TX90	TX537	10002488	TX95E, TX95C	30-70°	5-260
CAR-TX90	TX637	-	TX96E, TX96C	30-70°	6-400

**THERMOSTATIC MIXING VALVES FOR COMMUNITIES**
**T70**


Thermostatic mixing valve for central domestic hot water systems, with high flow rates: apartment blocks, industries, hotels, hospitals, schools, etc.

Cast iron body and bronze/brass internal parts. Flanged series NP 16.

Adjustment range: 10 to 50 °C. (On request 30 to 70 °C).

Max. pressure : 10 bar. Max. temperature: 85 °C.

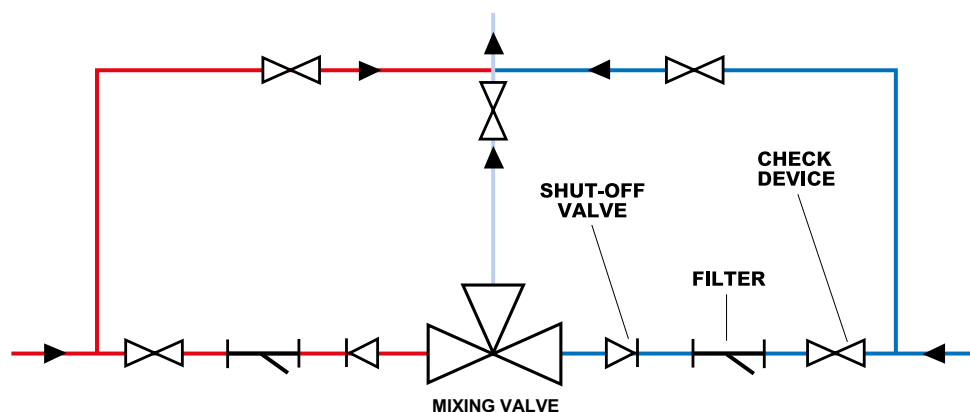
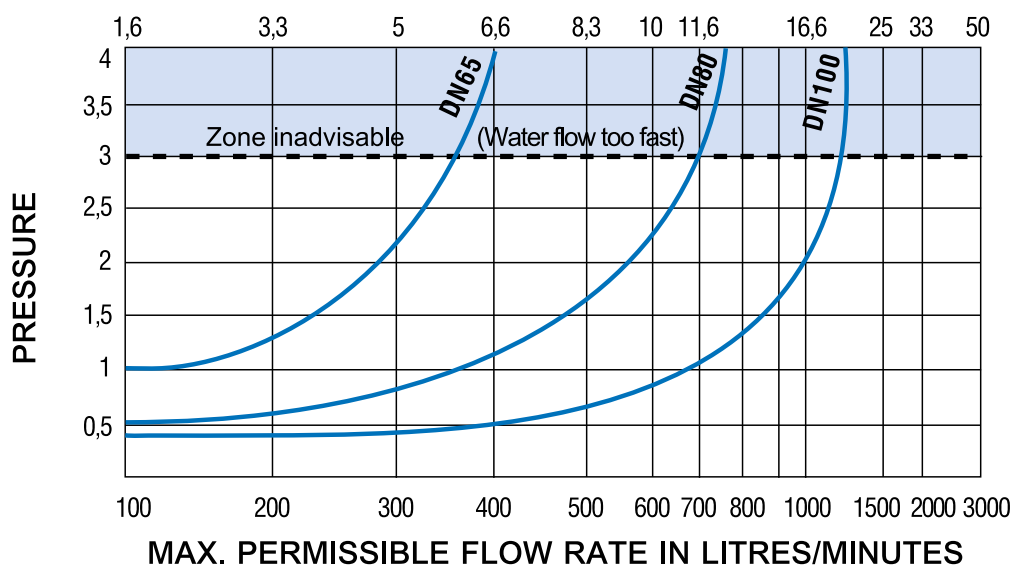
Flow rates with upstream pressures: 3 bar. Max. dynamic pressure : 6 bar.

Hot water inlet provided on the left and cold water inlet on the right; mixed water outlet at the top. A filter and check valve should be installed at the hot/cold water inlets.

Adoption of this unit discharges obligation under Italian Act governing domestic hot water production (DPR 412/93).

\* as a guide consider the simultaneity coefficient.

Type	Part no. WII	Size	N° of users	Flow rate l/min
T70	T70065	65	1-36	10-360*
T70	T70080	80	1-70	12-700*
T70	T70100	100	2-120	14-1200*

**TECHNICAL NOTE**
**MAX. PERMISSIBLE FLOW RATE IN LITRES/SECOND**

**T70**



**FILTERS****F21NOR/SMY**

Brass Y strainer with removable stainless steel (AISI 304) mesh. O-ring sealed plug. Threaded connections FF ISO 228 (equivalent to DIN 259 and BS2779)

Type	Part no. WII	Part no. WID	Size	Kvs	Filtration capacity
F21NOR/SMY	F21NOR10	10017595	3/8"	4.48	500 µm
F21NOR/SMY	F21NOR15	10017596	1/2"	4.48	500 µm
F21NOR/SMY	F21NOR20	10017599	3/4"	7.86	500 µm
F21NOR/SMY	F21NOR25	10017601	1"	11	500 µm
F21NOR/SMY	F21NOR32	10017603	1.1/4"	16	500 µm
F21NOR/SMY	F21NOR40	10017605	1.1/2"	22	500 µm
F21NOR/SMY	F21NOR50	10017607	2"	35	500 µm
F21NOR/SMY	F21NOR65F	10017609	2.1/2"	60	800 µm
F21NOR/SMY	F21NOR80F	10017610	3"	83	800 µm
F21NOR/SMY	F21NOR100F	10017611	4"	100	800 µm

**F21N**

Cast iron (GG25) Y strainer with removable stainless steel (AISI 304) mesh. Drilled flange UNI 2222/67 PN16.

Type	Part no. WII	Size	Kvs	Filtration capacity
F21N	F21N-65	65	180	800 µm
F21N	F21N-80	80	258	800 µm
F21N	F21N-100	100	365	1000 µm
F21N	F21N-125	125	567	1000 µm
F21N	F21N-150	150	788	1000 µm
F21N	F21N-200	200	1258	1000 µm
F21N	F21N-250	250	1432	1600 µm

**EXPANSION VESSELS AND ACCESSORIES****PA5**

Pressure switch for pumps and autoclaves. Setting range: 1 - 5 bar. Factory setting: 1.4 bar (contacts close), 2.8 bar (contacts open). Differential from 0.5 to 2.5 bar. Contact load rating: 16A (10) Max. fluid temperature: 90°C. Max. room temperature: 55°C. Degree of protection: IP44.

**TÜV approved (only 0402202). According to VDE 0660 CEI 61-1. According to 2004/108/EC, 2006/95/EC.**

Type	Part no. WII	Part no. WID	Size	Power supply
PA5	0402202	10013340	1/4"	250V - Single-phase
PA5	0402105	-	1/4"	500V - Three-phase

**PA12**

Pressure switch for pumps and autoclaves. Setting range: 2 - 12 bar. Factory setting: 5 bar (contacts close), 7 bar (contacts open). Differential from 1.5 to 4 bar. Other characteristics like PA5.

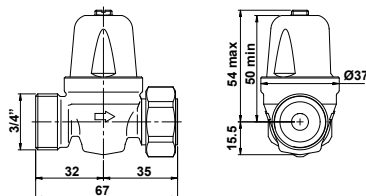
**According to 2004/108/EC, 2006/95/EC.**

Type	Part no. WII	Part no. WID	Size	Power supply
PA12	0402206	10013342	1/4"	250V - Single-phase
PA12	0402205	10013341	1/4"	500V - Three-phase

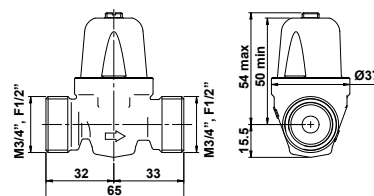
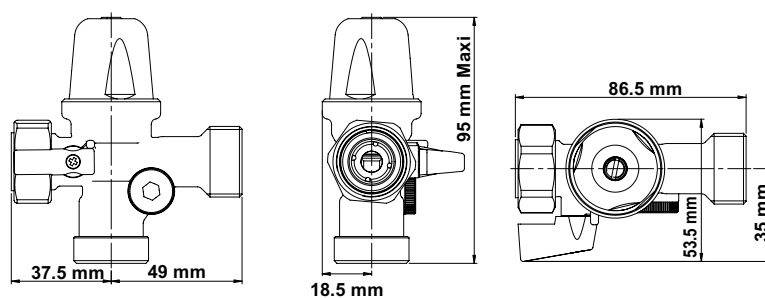
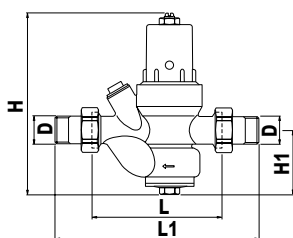


**OVERALL DIMENSIONS**
**REDUBAR**

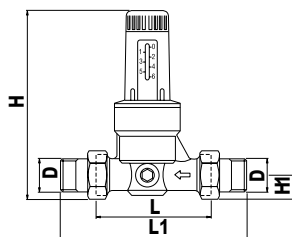
part no. 82500



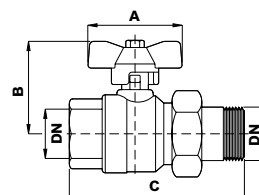
part no. 82501


**REDUBLOC**

**DRV/DRVM**


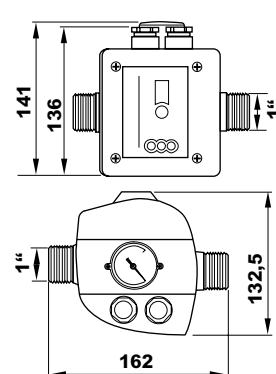
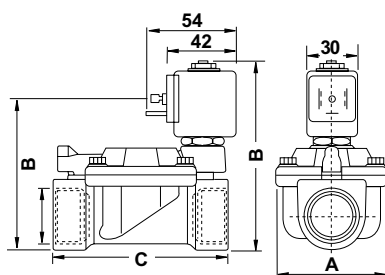
DN	L	L1	H	H1
1/2"	97	152	135	48
3/4"	110	171	155	58
1"	120	191	182	66
1.1/4"	140	211	227	75
1.1/2"	160	246	255	82
2"	175	261	262	88

**DRVN/DRVMN**


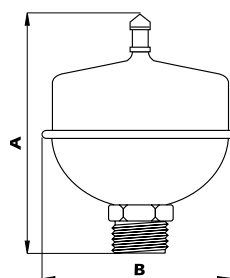
DN	L	L1	H	H1
1/2"	84	135	113	16,5
3/4"	94	151	133	20,5
1"	104	161	140	26
1.1/4"	109	175	192	29,5
1.1/2"	134	214	200	36
2"	144	224	205	42

**210**


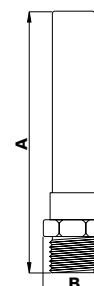
DN	A	B	C
1/2"	45	50	76
3/4"	46	53	94
1"	66	65	109
1.1/4"	66	70	128

**WACOPUMP2**

**850T**


DN	A	B	C
3/8"	40	103	72
1/2"	40	103	72
3/4"	65	105	104
1"	65	112	104

**WAM**


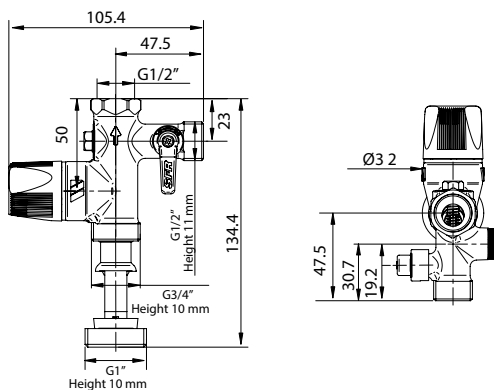
DN	A	B
1/2"	110	87

**15M2**


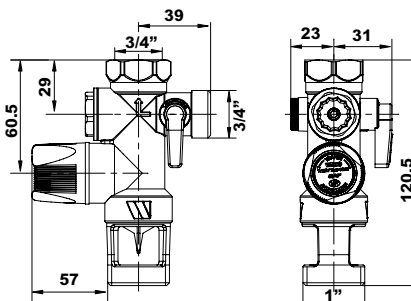
DN	A	B
1/2"	152	29
3/4"	291	29
1"	229	35
1.1/4"	264	42
1.1/2"	283	54
2"	330	67

## OVERALL DIMENSIONS

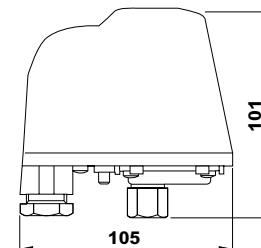
## SFR-NA



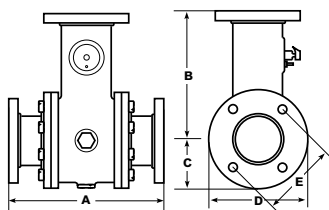
## SFR-D



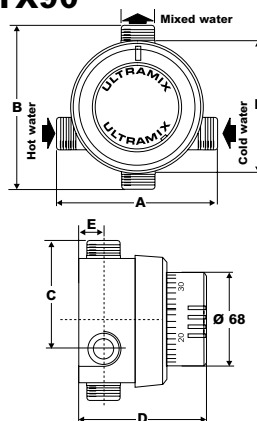
## PA5/PA12



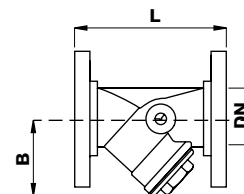
## T70



## TX90



## F21N

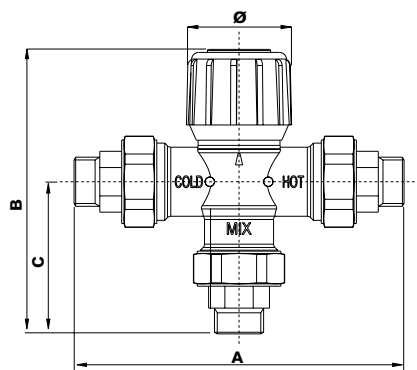


DN	A	B	C	D	E	F
3/4"M	117	120	81	93	18	98
1"M	144	142	95	101	23	116
1.1/4"M	182	166	107	116	24	145
1.1/2"M	218	199	129	127	32	175
2"M	242	224	144	141	36	198

DN	A	B	C	D	E
2.1/2"	294	215	90	185	145
3"	336	270	105	200	160
4"	404	270	125	220	180

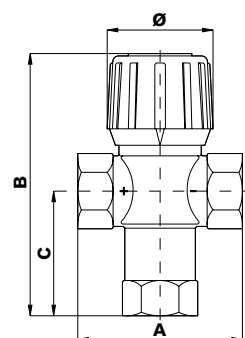
DN	L	B
2.1/2"-65	290	193
3"-80	310	205
4"-100	350	245
5"-125	400	295
6"-150	480	325
8"-200	600	390
10"-250	730	460

## 61CM



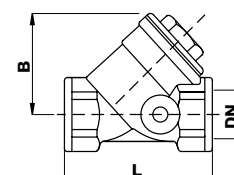
DN	A	B	C	Ø
1/2"	136	122	65	45
3/4"	140	124	67	45
1"	154	131	74	45

## 61C/62C



DN	A	B	C	Ø
1/2"	70	107	52	45
3/4"	70	107	52	45
1"	80	110	52	45

## F21NOR/SMY



DN	L	B
1/2"	58	40
3/4"	70	50
1"	87	60
1.1/4"	96	68
1.1/2"	105	75
2"M	126	90
2.1/2"M	150	107
3"M	169	120
4"M	219	161

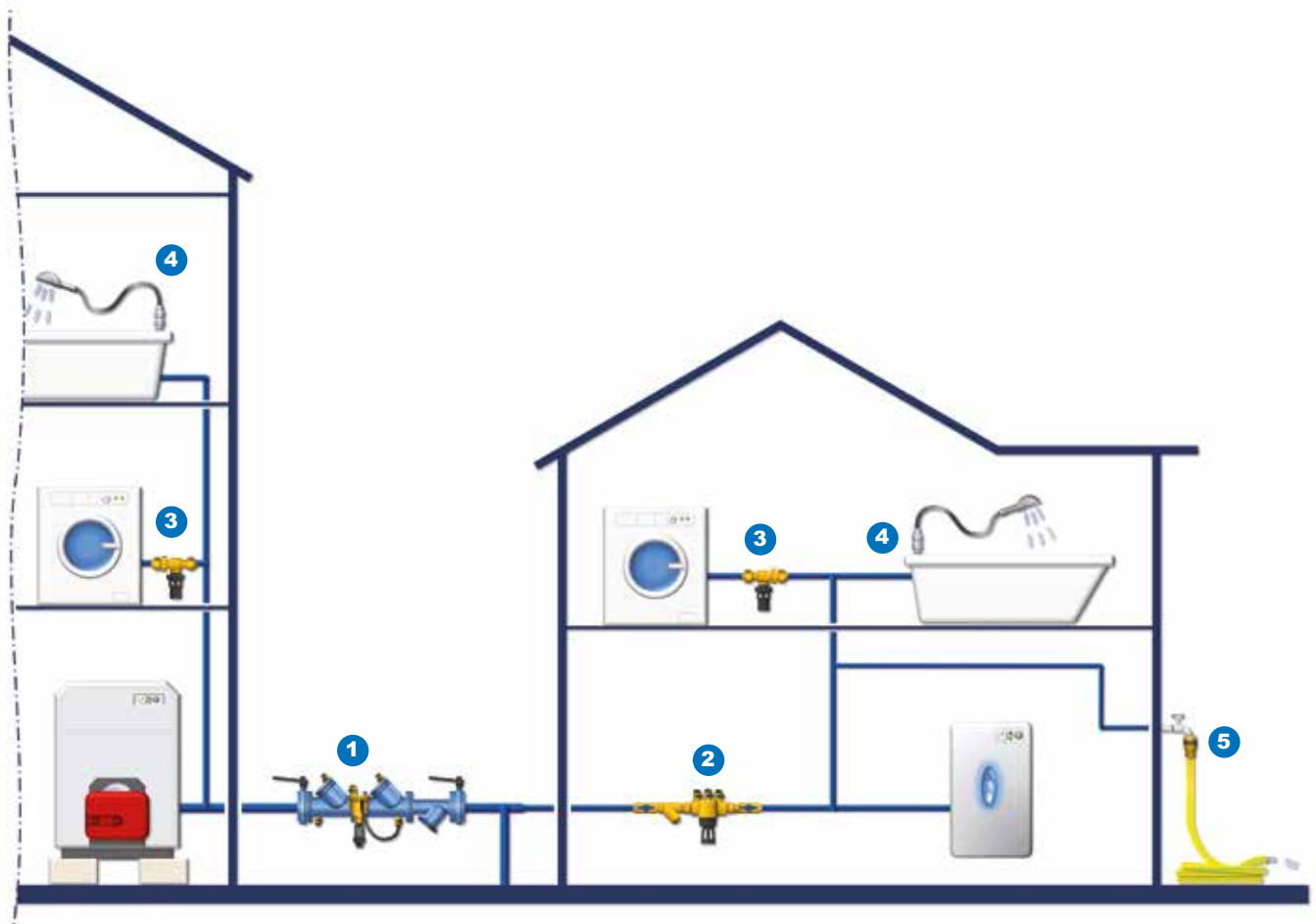
## Antipollution devices

163



I.2

## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

**1** **BA909**  
pag. 166



Backflow preventer with  
regulated reduced  
pressure zone

**2** **BA BM**  
pag. 165



Compact threaded  
backflow preventer

**3** **CA9C**  
pag. 167



Back flow preventer  
compact type

**4** **DAWN**  
pag. 167



Anti-siphon vacuum  
breaker device for  
flexible hose

**5** **DAWNF**  
pag. 167



Anti-siphon vacuum  
breaker device

**CONTROLLABLE BACKFLOW PREVENTERS WITH REDUCED PRESSURE ZONE (EN 12729)**

**BA BS**

Compact flanged backflow preventer, with regulated reduced pressure zone, to EN 1717 and EN 12729 9157 standards. Max. operating temperature: 65 °C (top max 90°C per hour/day)  
Max. operating pressure: 10 bar. Body brass DZR CW602N.  
It is compulsory put upstream Y strainer model F21NOR.

**Protection BA - compliant EN.**

**Approved SIET, Kiwa, WRAS, NF, Belgacqua, SITAC, SVGV.**

Type	Part no. WII	Part no. WID	Size
BA BS	405006011	10002324	6
BA BS	405008011	10002325	8
BA BS	405010020	10002326	10


**BA BM**

Compact flanged backflow preventer, with regulated reduced pressure zone, to EN 1717 and EN 12729 9157 standards. Max. operating temperature: 65 °C (top max 90°C per hour/day)  
Max. operating pressure: 10 bar. Body brass DZR CW602N.  
It is compulsory put upstream Y strainer model F21NOR.

**Protection BA - compliant EN 12729:2003**

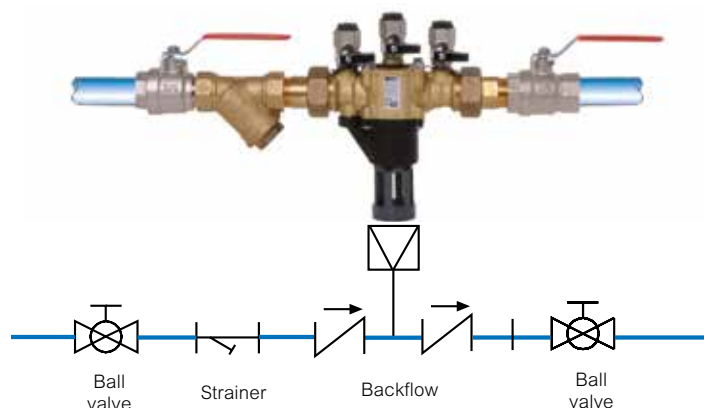
**Approved SIET, Kiwa, WRAS, NF, Belgacqua, SITAC, SVGV.**

Type	Part no. WII	Part no. WID	Size
BA BM	405015310	10002343	15
BA BM	405020310	10002344	20
BA BM	405025310	10002345	25
BA BM	405032310	10002346	32
BA BM	405040310	10002347	40
BA BM	405050310	10002348	50

**TECHNICAL NOTE**
**Advantages :**

- More compact and light.
- Easy to install and for maintenance (no diaphragm is present).
- Available from DN06.

**Example of installation with the hydraulic scheme as for UNI EN 1717**



**CONTROLLABLE BACKFLOW PREVENTERS WITH REDUCED PRESSURE ZONE (EN 12729)**

**BA009**

**Compact** flanged backflow preventer, with regulated reduced pressure zone, to UNI 9157 standards. Cast iron body lined on inside and outside with 2 coats of epoxy resin.

Stainless steel springs.

**Complete with inspection system and stainless steel connection to discharge pipe.**

Max. operating temperature: 60°C. Max. operating pressure: 10 bar.

Flanged fittings: DIN 2532.

**Protection BA - Compliant EN 12729:2003**

**Approved SIET and NF.**

Type	Part no. WII	Size
BA009	1505165	65
BA009	1505180	80


**BA909**

Flanged backflow preventer, with regulated reduced pressure zone, to UNI 9157 standards.

**WATTS patented high protection series "AIR IN - WATER OUT".**

Cast iron body lined on inside and outside with 2 coats of epoxy resin.

Stainless steel discharge valve guides and springs. Max. operating temperature: 60°C.

Max. operating pressure: 10 bar. Flanged fittings: NP 10.

Complete with inspection system and stainless steel connection to discharge pipe for ND 65 and 80.

With drain funnel from ND 100 to ND 250.

**Protection BA - Compliant EN 12729:2003**

**Approved SIET and NF.**

Type	Part no. WII	Size
BA909	1505006	65
BA909	1505008	80
BA909	1505010	100
BA909	1505015	150
BA909	1505020	200
BA909	1505025	250

**ISD**

Funnel for connection between the drain valve of the backflow preventer and drain pipe.

**compliant to EN 1717, EN 12729.**



Type	Part no. WII	Description
ISD	416015201	BA009 DN 1/2"
ISD	416020201	BA009/909 DN 3/4" - 1"
ISD	416032201	BA009/909 DN 1.1/4" - 80
ISD	416100201	BA909 DN 100 - 250

**TK99E**

Differential pressure gauge for monitoring differential pressures and checking for correct operation of back flow preventers Series BABS BABM BA909 and BA009 during normal yearly maintenance. Compact and practical device, easy to use.

Maximum accuracy in measurement ( $\pm 1\%$  of full scale)

Max. pressure: 13,7 bar. Max. temperature: 93°C.

Complete with brass fittings and adapters.

Three flexible hoses (1800 mm length) in different colors and female-threaded swivel couplings. Supplied in a durable carrying case.



Type	Part no. WII
TK99E	1597023



**BACKFLOW PREVENTER, ANTI-SIPHON DEVICES AND CHECK VALVES**

**CA9C**

Backflow preventer, compact type, used to prevent the reverse flow of polluted/contaminated water (fluid class 3). The valve offers protection with regard to back-siphonage as well as backflow, and was especially developed for smaller connections to the water supply system, such as with water softeners and central heating boilers > 45 KW.

Connection F 1/2", 3/4". Working pressure PN 10. Max. temperature 65 °C.

Connection tundish Ø 40. Body Brass (DZR).

Spring Stainless steel. Sealing Rubber. Funnel Plastic.

**Protection CA - Compliant EN 14367**

**Approved Belgaqua, Kiwa, NF, WRAS.**

Type	Part no. WII	Part no. WID	Size
CA9C	407015290	10002427	1/2" FF
CA9C	407020290	10002428	3/4" FF

**DAWS**


Anti-siphon vacuum breaker device for sanitary appliances.

Recommended whenever there is risk of flowback when immersing a flexible hose in a bath or sink. Chrome-plated brass body. Stainless steel spring.

Max. temperature: 60°C. Max. pressure: 10 bar.

**Protection : HA.**

**According to ASSE, CSA, ANSI.**

Type	Part no. WII	Size
DAWS	1505315	1/2" MF

**DAWNF**


Anti-siphon vacuum breaker device for washing and watering taps outside the home.

Installed between the tap and flexible hose.

Provided with anti-freeze device to allow emptying the valve. Brass body.

Stainless steel spring. Max. temperature: 60°C. Max. pressure: 10 bar.

**Protection : HA.**

**According to ASSE, CSA, ANSI.**

Type	Part no. WII	Size
DAWNF	1505320	3/4" MF

**DAWN**


Anti-siphon vacuum breaker device for constant pressure applications. To be installed on the tap end-piece at the water outlet. As it is provided with direct safety drain it is installed above the service pipework. Brass body (item ...330 is chrome-plated). Stainless steel inside parts.

Max. pressure: 10 bar. Max. temperature: 60°C.

**Protection : HA.**

**According to ASSE, CSA, ANSI.**

Type	Part no. WII	Size
DAWN	1505329	3/8" FF
DAWN	1505330	3/8" FF

## BACKFLOW PREVENTER, ANTI-SIPHON DEVICES AND CHECK VALVES

### RV-CO



Plastic check valve. Designed for easy assembly into faucets, fittings, pumps, filtration equipment, and other type of water handling or processing equipment.

Same as type IN but with reduced dimensions. and without "snap-in-cams"

Can be used where the IO series and IN series cannot be. Body: POM polymer.

Seat: SBR Buna-S. O-ring: NBR Buna-N. Spring: Stainless steel. Working pressure: 10 bar.

Max working pressure: 16 bar. Max working temperature: 90°C.

**Approvals: KIWA, BELGAQUA, DVGW,NF, WRAS, ETA, SITAC, NSF, ABP.**

Type	Part no. WII	Part no. WID	DN
RV-CO10	1514210	10002736	10
RV-CO13	1514213	10002738	13
RV-CO14	1514214	10002739	14
RV-CO15	1514215	10002740	15

### RV-IN



Plastic check valve. Designed for easy assembly into faucets, fittings, pumps, filtration equipment, and other type of water handling or processing equipment. Simple assembly.

Short overall length. Low opening pressure. Low pressure loss. Body: POM polymer.

Seat: SBR Buna-S. O-ring: NBR Buna-N. Spring: Stainless steel. Working pressure: 10 bar.

Max working pressure: 16 bar. Max working temperature: 90°C

**Approvals : KIWA, DVGW,NF, WRAS, ETA, SITAC, NSF, ABP.**

Type	Part no. WII	Part no. WID	DN
RV-IN 15	1515015	10002694	15
RV-IN 20	1515020	10002695	20
RV-IN 25	1515025	10002696	25
RV-IN 32	1515032	10002697	32
RV-IN 40	1515040	10002698	40
RV-IN 50	1515050	10002699	50

### RV-IO



Plastic check valve. Designed for easy assembly into faucets, fittings, pumps, filtration equipment, and other type of water handling or processing equipment.

Simple assembly. Short overall length. Low opening pressure. Low pressure loss.

Body: POM polymer. Seat: SBR Buna-S. O-ring: NBR Buna-N. Spring: Stainless steel

Working pressure: 10 bar. Max working pressure: 16 bar. Max working temperature: 90°C

**Approvals: KIWA, ABP, DVGW, NF, WRAS, ETA, SITAC, NSF, SVGW.**

Type	Part no. WII	Part no. WID	DN
RV-IO 15	1515115	10002707	15
RV-IO 20	1515120	10002710	20
RV-IO 25	1515125	10002712	25
RV-IO 32	1515132	10002714	32
RV-IO 40	1515140	10002716	40
RV-IO 50	1515150	10002717	50

### RV-WM



Plastic check valve. Designed for easy assembly into faucets, fittings, pumps, filtration equipment, and other type of water handling or processing equipment. Low opening pressure.

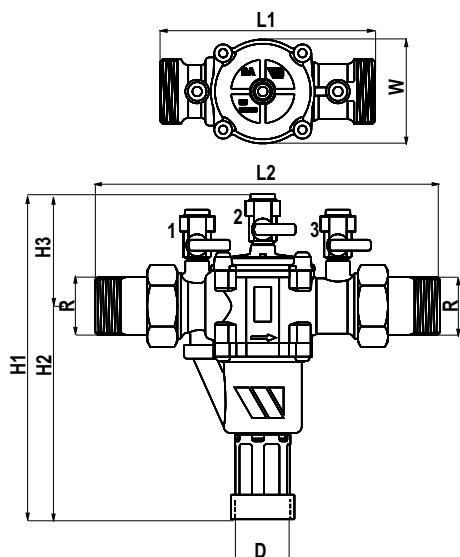
Low pressure loss. For use in water meter boxes. For use in German type water meter

Body: POM polymer. Seat: SBR Buna-S. O-ring: NBR Buna-N. Spring: Stainless steel.

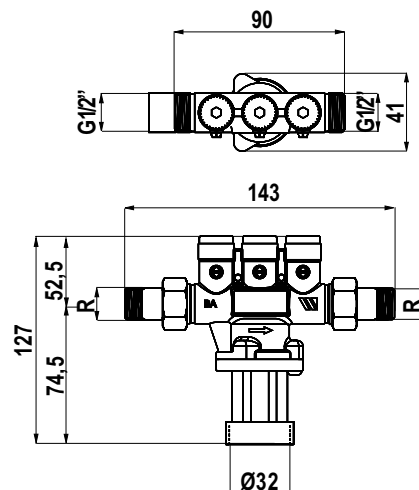
Working pressure: 10 bar. Max working pressure: 16 bar. Max working temperature: 90°C.

**Approvals: KIWA, ABP, DVGW, NF, WRAS, ETA, SITAC.**

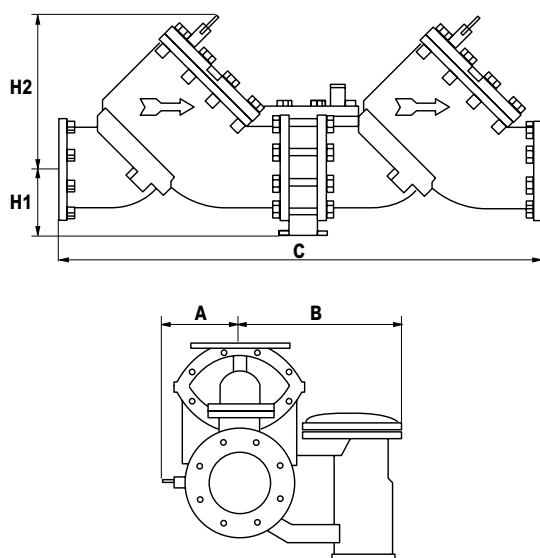
Type	Part no. WII	Part no. WID	DN
RV-WM 15	1515215	10002681	15
RV-WM20	1515220	10002682	20
RV-WM25	1515225	10002683	25
RV-WM 32	1515232	10002684	32
RV-WM 40	1515240	10002685	40
RV-WM 50	-	10002686	50

**OVERALL DIMENSIONS**
**BA BM**


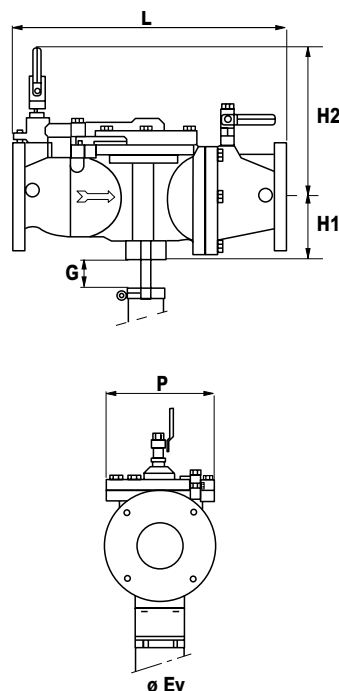
DN	R	D	L1	L2	H1	H2	H3	W	L
15	1/2"	32	122	201	168.5	103	65.5	53	1,2
20	3/4"	32	122	201	168.5	103	65.5	53	1,2
25	1"	40	157	252	238	156	82	76	2,7
32	1.1/4"	40	157	252	238	156	82	76	2,7
40	1.1/2"	50	220	336	303.5	202.5	101	115	6,5
50	2"	50	220	336	303.5	202.5	101	115	6,5

**BA BS**


DN	R
6	1/8"
8	1/4"
10	3/8"

**BA909**


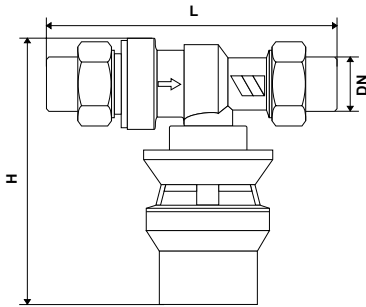
DN	A	B	C	H1	H2
65	102	229	664	133	178
80	127	229	664	133	178
100	152	346	940	152	241
150	241	346	1130	152	368
200	267	470	1403	248	470
250	298	470	1715	248	546

**BA009**


DN	L	H1	H2	P	G	øEv
65	460	151	270	202	37	90-100
80	460	151	270	202	37	90-100

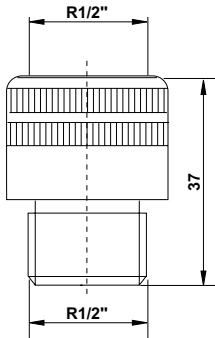
OVERALL DIMENSIONS

CA9C

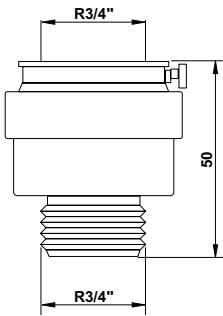


DN	L	H
1/2"	122	129
3/4"	153	129

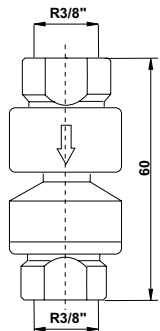
DAWS



DAWNF



DAWN



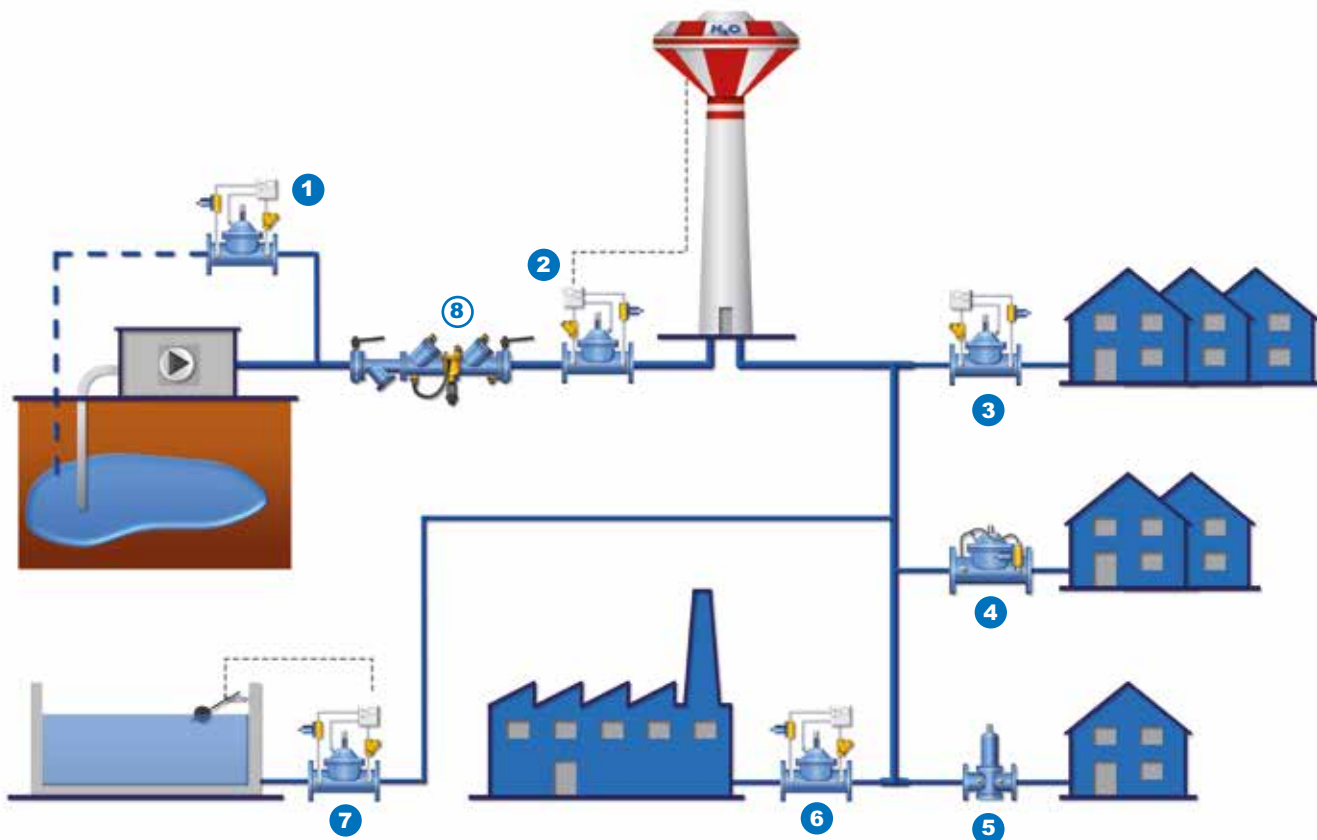
# Waterworks distribution, regulation and control

171



I.3

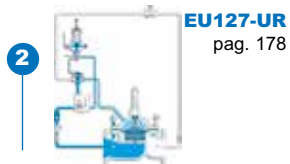
EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*



Automatic control valve  
upstream pressure control



Automatic control valve  
piezometric level of tank  
control



Automatic control valve  
downstream pressure  
control



Pressure reducing valve  
pilot operated



Pressure reducing  
valve



Automatic control valve  
flow rate control



Automatic control valve  
float type level control



Antipollution devices

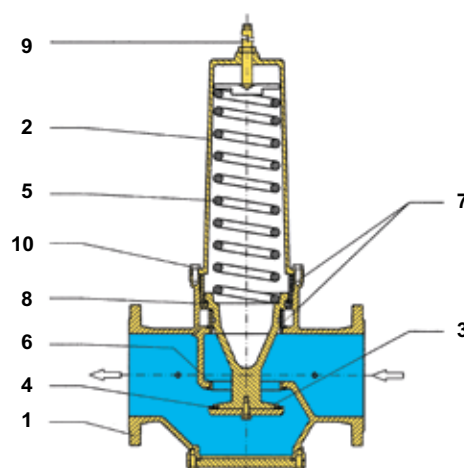
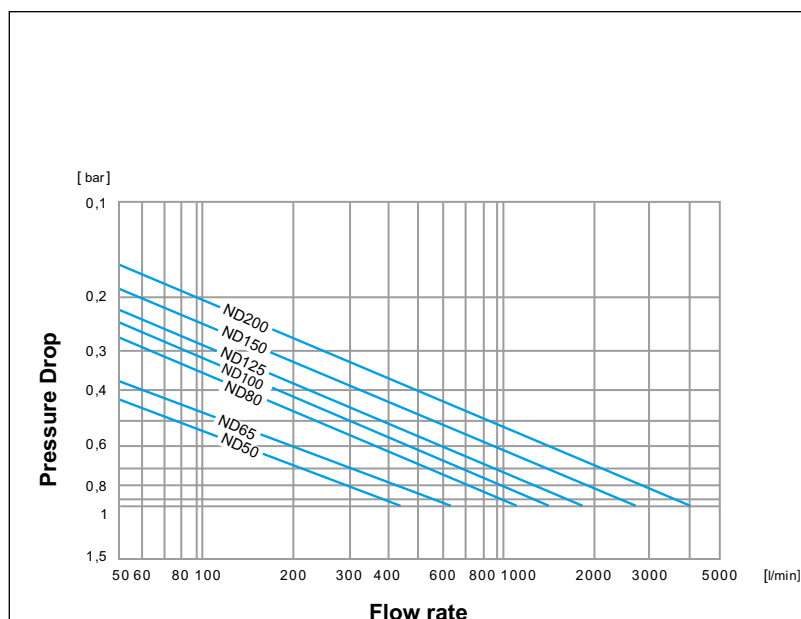


**PRESSURE REDUCING VALVES**

**DRVD16**

Flanged pressure reducing valve with single spring-compensated seat, pressure gauge connections upstream and downstream 1/4" (ND 50 - 65) and 3/8" (ND 80 - 200).  
Cast iron body, cap and flanges with epoxy finish. Max. inlet pressure: 16 bar.  
Adjustable downstream pressures: 1,5 ÷ 6 bar / 2 ÷ 8 bar / 4 ÷ 12 bar.  
Optional version: 2 - 8 bar / 4 - 12 bar.  
Can be used for water, air and neutral gases up to 80°C. Flanged connections UNI 2223.  
Available on request PN 25 and PN 40.

Type	Part no. WII	Part no. WID	Size	bar
DRVD16	0504053	-	50	1,5 - 6
DRVD16	0504068	-	65	1,5 - 6
DRVD16	0504083	10022108	80	1,5 - 6
DRVD16	0504103	10022109	100	1,5 - 6
DRVD16	0504128	-	125	1,5 - 6
DRVD16	0504153	-	150	1,5 - 6
DRVD16	0504203	-	200	1,5 - 6
DRVD16	0504054	-	50	2 - 8
DRVD16	0504069	-	65	2 - 8
DRVD16	0504084	-	80	2 - 8
DRVD16	0504104	-	100	2 - 8
DRVD16	0504129	-	125	2 - 8
DRVD16	0504154	-	150	2 - 8
DRVD16	0504204	-	200	2 - 8
DRVD16	0504055	-	50	4 - 12
DRVD16	0504070	-	65	4 - 12
DRVD16	0504085	-	80	4 - 12
DRVD16	0504105	-	100	4 - 12
DRVD16	0504130	-	125	4 - 12
DRVD16	0504155	-	150	4 - 12
DRVD16	0504205	-	200	4 - 12

**TECHNICAL NOTE**
**Pressure reducing valves series DRVD**
**FLOW RATE - PRESSURE DROP CHART**

**Legend :**

- 1 Body
- 2 Cap
- 3 Plug
- 4 Packing
- 5 Spring
- 6 Seal ring
- 7 Guide bushings
- 8 Lip seal
- 9 Setting screw
- 10 Cap mounting screws

# AUTOMATIC CONTROL VALVES

## PR500

Pressure reducing valve pilot operated. Designed to reduce a higher upstream pressure to a constant lower downstream pressure.

Easy to install and adjustable outlet pressure.

Body: Ductil Iron GGG40. Epoxy finish: internal and external. Diaphragm: NBR.

Max working temperature : + 70°C.

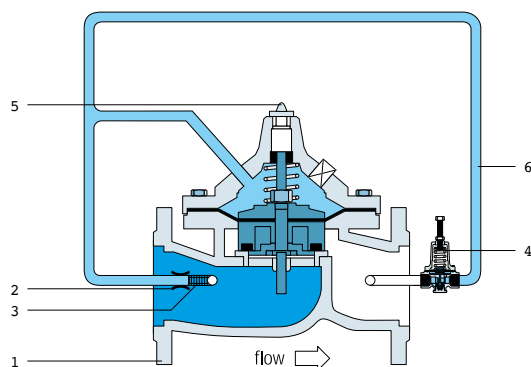
Nominal Pressure: PN 16, 25. Adjustment range of pilot: STANDARD: 1,4 - 12 bar.

On request: 0,1 - 2 bar, 7 - 21 bar. Fluid: water.



Type	Part no. WII	Part no. WID	Size	Pn
PR 500	500050548	10023388	50	16
PR 500	500065548	-	65	16
PR 500	500080548	10023390	80	16
PR 500	500100548	10023391	100	16
PR 500	500125548	-	125	16
PR 500	500150548	10023392	150	16
PR 500	503050548	-	50	25
PR 500	503065548	-	65	25
PR 500	503080548	-	80	25
PR 500	503100548	-	100	25
PR 500	503125548	-	125	25
PR 500	503150548	-	150	25

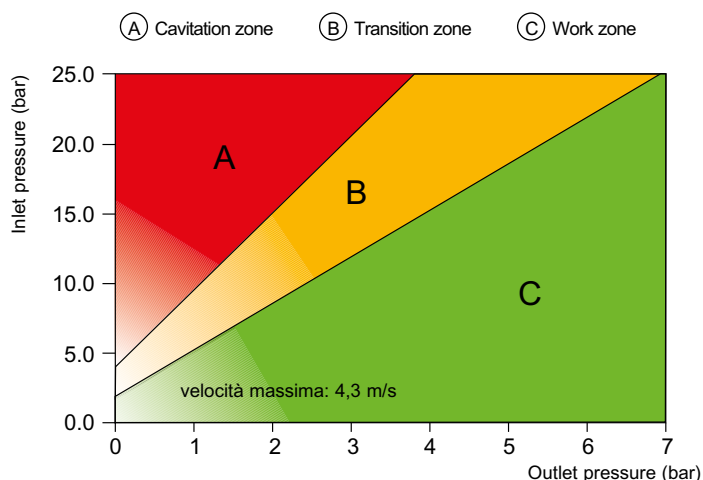
## TECHNICAL NOTE



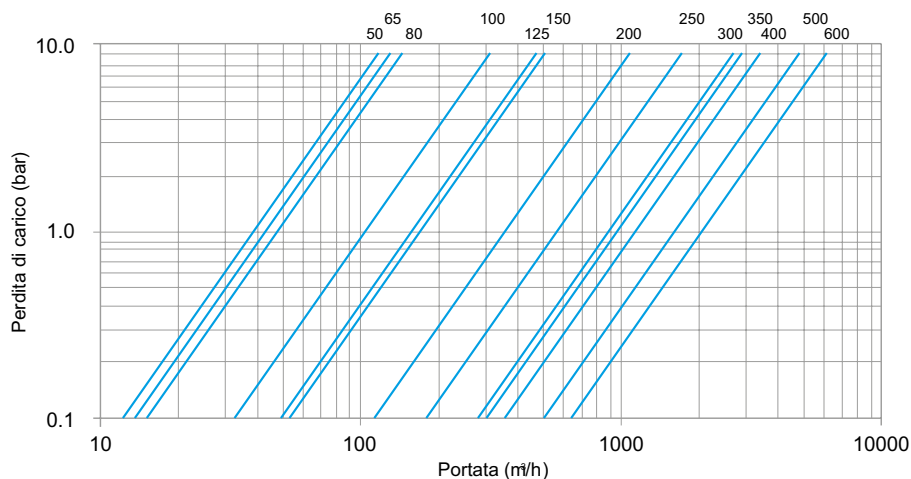
### PR500

- 1 Body/Main valve
- 2 Fixed orifice
- 3 Flow stainer

- 4 Pilot valve
- 5 Air vent
- 6 Flexible tubing



## Pressure Loss Curve



**AUTOMATIC CONTROL VALVES**
**SERIE EU100**


Automatic self-acting control valves designed for regulating water flow in water pipelines, such as: Waterworks, irrigation, fire-fighting, process plants, etc.

The main functions performed by the valve (also valve combinations) are as follows:

- Shut-off - check - reduction, stabilization of the pressure - relief, overpressure
- pressure support - level control - flow control.

The more advanced models are equipped with a central control unit (EU900), of AISI 303 stainless steel construction, which allows the regulating action to be performed as required by setting the flow opening and closing speeds as well as the response gradient to the deviations. The pilot device determines the type of function and the set-point of the parameter under control. All valves are provided with visual indication of the valve plug stem position.

**Technical characteristics common to all models**

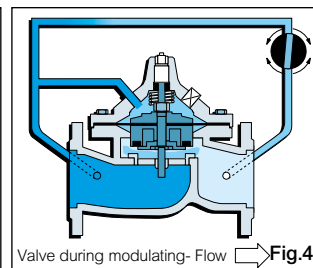
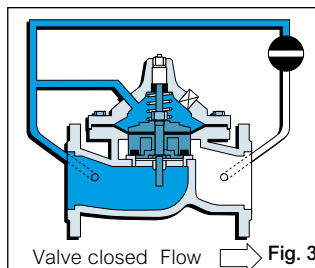
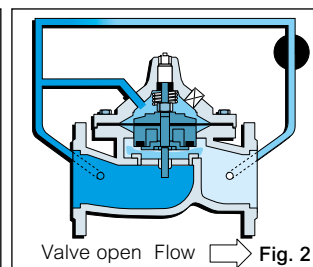
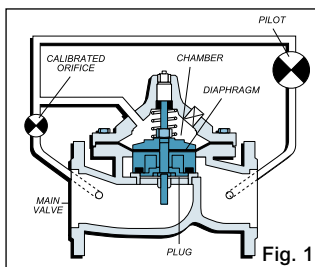
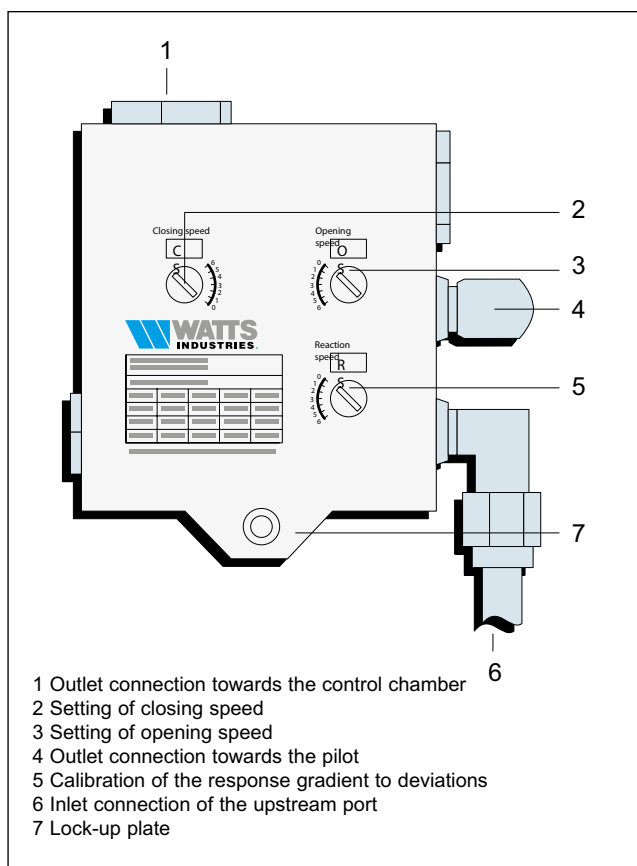
Valve Body/Cover	Ductile iron GGG 40, inside and outside epoxy
Diaphragm plates	Coating min. thickness 150 m
Cover bearing	Stainless steel
Seat/Valve	Stainless steel
Valve stem/Stem nut	Stainless steel
Spring	Stainless steel
Studs/Nut	Stainless steel
Seal disc	NBR nitrile rubber
Diaphragm	NBR nitrile runner with nylon inlay according to FDA and European approvals. DN 50 - DN 150 : single layer-thickness 1.3 mm DN 200 - DN 600 : double layer-thickness 3.2 mm
Minimum operating	0.25 bar (standard spring)
Differential pressure	0.50 bar (reinforced spring)
Max. operating temperature	70 °C
Control pilot : Body/Cover	Bronze /SS/nickel-plated
Control pilot : Seat	Stainless steel
Control pilot : Rubber part	NBR
Fittings, tubing etc.	Nicke-plated brass/SS/brass
Strainer	Nicke-plated brass
Control unit	Stainless steel

**FUNCTIONING**

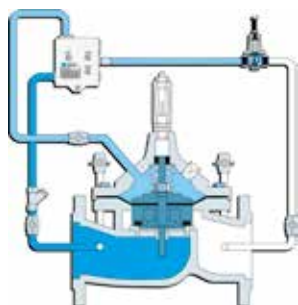
The self-acting valves Series EU100 consist of a main two-way body of globe type Fig 1, whose flow section is controlled by a shaped plug actuated by the energy supplied by the flow under control through a diaphragm inserted between the body and cover to form the operating chamber. When a small quantity of fluid flows through the water control circuit, this circuit places the following ports in communication with each other :

- upstream port with pressure generally higher
- downstream port with pressure generally lower
- port of the operating chamber with regulated intermediate pressure.

An adjustable throttle is installed at the outlet of the upstream port, and before communication with the operating chamber. The pilot device is installed at the inlet of the downstream port. When the pilot device is fully open Fig 2 it allows direct discharge of the operating fluid coming from the upstream port; this causes a drop in pressure due to the throttling and determines a low level of pressure in the operating chamber and discharge of the latter. The valve plug is raised to full opening position, thrust by the fluid under control. The fully closed pilot device Fig 3 causes the same high pressure present on upstream side to be present in the operating chamber (throttling with zero flow does not cause drops) and determines the fluid under control to be shut-off. When the pilot device is in intermediate position Fig 4 it allows partial discharge of the operating fluid coming from the upstream port; this produces a proportional drop in pressure due to the throttling and determines, in the operating chamber, an intermediate level of pressure and volume. Hence the valve plug modulates the lifting of the valve plug (in opening or in closing) thus ensuring that the required levels of flow or pressure are reached.



## AUTOMATIC CONTROL VALVES



### EU115-UR

Self-actuating diaphragm valve **with regulator unit EU900**, serving to **reduce and stabilize the downstream pressure**. The higher upstream pressure is re-adjusted downstream to a lower and constant value also in the presence of upstream overpressure and/or variations in the flow rate. **Version with needle valves.**

Range available 50 - 600 = (From Dn 50 - 150 : Pn 10/16) (From Dn 200 - 600 : Pn 16)

Adjustment range of pilot device : STANDARD : 1.4 - 12.0 bar.

On request : 0.1 - 2.0 bar or 7.0 - 21.0 bar (stainless steel version)

On request the additional non-return function is available (EU115-3).

Type	Part no. WII	Size	Pn	Kvs
EU115-UR	0527050	50	10/16	47
EU115-UR	0527065	65	10/16	52
EU115-UR	0527080	80	10/16	58
EU115-UR	0527100	100	10/16	120
EU115-UR	0527125	125	10/16	215
EU115-UR	0527150	150	10/16	228
EU115-UR	0527200	200	10	456
EU115-UR	0527201	200	16	456
EU115-UR	0527250	250	10	847
EU115-UR	0527251	250	16	847
EU115-UR	0527300	300	10	1370
EU115-UR	0527301	300	16	1370
EU115-UR	0527350	350	10	1450
EU115-UR	0527351	350	16	1450
EU115-UR	0527400	400	10	1767
EU115-UR	0527401	400	16	1767
EU115-UR	0527500	500	10	2480
EU115-UR	0527501	500	16	2480
EU115-UR	0527600	600	10	3205
EU115-UR	0527601	600	16	3205



### EU116-UR

Self-actuating diaphragm valve **with regulator unit EU900**, serving to **hold the upstream pressure at a constant and adjustable value**. When the preset upstream pressure tends to decrease, it is sustained by gradually reducing the flow rate; when the upstream pressure tends to rise, it is limited by gradually increasing the flow rate at the outlet (**overflow or overpressure function**). **Version with needle valves.**

Range available 50 - 600 = (From Dn 50 - 150 : Pn 10/16) (From Dn 200 - 600 : Pn 16)

Adjustment range of the pilot device : STANDARD : 1.4 - 12.0 bar.

On request : 0.1 - 2.0 bar or 7.0 - 21.0 bar. On request the additional non-return function is available (EU116-3).

Type	Part no. WII	Size	Pn	Kvs
EU116-UR	0528050	50	10/16	47
EU116-UR	0528065	65	10/16	52
EU116-UR	0528080	80	10/16	58
EU116-UR	0528100	100	10/16	120
EU116-UR	0528125	125	10/16	215
EU116-UR	0528150	150	10/16	228
EU116-UR	0528200	200	10	456
EU116-UR	0528201	200	16	456
EU116-UR	0528250	250	10	847
EU116-UR	0528251	250	16	847
EU116-UR	0528300	300	10	1370
EU116-UR	0528301	300	16	1370
EU116-UR	0528350	350	10	1450
EU116-UR	0528351	350	16	1450
EU116-UR	0528400	400	10	1767
EU116-UR	0528401	400	16	1767
EU116-UR	0528500	500	10	2480
EU116-UR	0528501	500	16	2480
EU116-UR	0528600	600	10	3205
EU116-UR	0528601	600	16	3205

**AUTOMATIC CONTROL VALVES**
**EU114-UR**


Self-actuating diaphragm valve **with regulator unit EU900**, serving **to adjust the flow rate passing** through the valve to a constant and settable value. Normally the max. acceptable draw-off value is set. The flow rate is measured continuously by a calibrated flange installed upstream of the valve whose piezometric taps are connected to a special pilot device which also allows setting with a differential pressure gauge.

**Version with needle valves. Obviously the range of available flow rates (see table below) depends on the DN and the calibrated flange; it should be stated when placing the order.**

Range available 50 - 600 = (From Dn 50 - 150 : Pn 10/16) (From Dn 200 - 600 : Pn 16)

Differential pressure adjustment range of the pilot device : STANDARD : 0.2 - 1 bar.

Type	Part no. WII	Size	Pn	Kvs
EU114-UR	0526050	50	10/16	47
EU114-UR	0526065	65	10/16	52
EU114-UR	0526080	80	10/16	58
EU114-UR	0526100	100	10/16	120
EU114-UR	0526125	125	10/16	215
EU114-UR	0526150	150	10/16	228
EU114-UR	0526200	200	10	456
EU114-UR	0526201	200	16	456
EU114-UR	0526250	250	10	847
EU114-UR	0526251	250	16	847
EU114-UR	0526300	300	10	1370
EU114-UR	0526301	300	16	1370
EU114-UR	0526350	350	10	1450
EU114-UR	0526351	350	16	1450
EU114-UR	0526400	400	10	1767
EU114-UR	0526401	400	16	1767
EU114-UR	0526500	500	10	2480
EU114-UR	0526501	500	16	2480
EU114-UR	0526600	600	10	3205
EU114-UR	0526601	600	16	3205

**Calibrated flange table**

<b>EU114-UR</b>	
<b>DN</b>	<b>Flow rate m³/h</b>
50	4 - 10
	10 - 25
	25 - 35
65	12 - 37
	15 - 45
80	10 - 25
	20 - 40
	30 - 50
	35 - 55
	45 - 75

**Calibrated flange table**

<b>EU114-UR</b>	
<b>DN</b>	<b>Flow rate m³/h</b>
100	30 - 45
	30 - 80
125	35 - 120
150	35 - 120
	60 - 200
200	110 - 280
Other models on request	



## AUTOMATIC CONTROL VALVES



### EU127-UR

Self-acting diaphragm valve **with regulator unit EU900**, with function of **piezometric level control for tanks** (piezometric towers). The valve closes the flow when max. level is reached, then it is reopened proportionally with a variable proportional band from 0.3 to 1.0 m w.g. depending on the adjustment range chosen. The piezometric pilot device is fastened to the main valve located at the bottom of the tank and is connected to the latter with piezometric tubes (not included in the box).

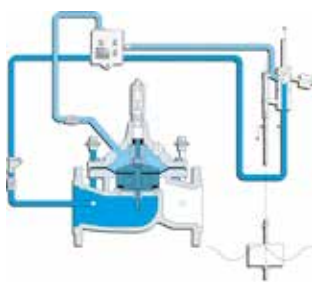
#### Version with needle valves.

Range available 50 - 600 = (From Dn 50 - 150 : Pn 10/16) (From Dn 200 - 600 : Pn 16)

Adjustment range of pilot device: STANDARD: 3 - 20 m w.g.

On request : 1 - 6 m w.g. or 15-65 m w.g.

Type	Part no. WII	Size	Pn	Kvs
EU127-UR	0529050	50	10/16	47
EU127-UR	0529065	65	10/16	52
EU127-UR	0529080	80	10/16	58
EU127-UR	0529100	100	10/16	120
EU127-UR	0529125	125	10/16	215
EU127-UR	0529150	150	10/16	228
EU127-UR	0529200	200	10	456
EU127-UR	0529201	200	16	456
EU127-UR	0529250	250	10	847
EU127-UR	0529251	250	16	847
EU127-UR	0529300	300	10	1370
EU127-UR	0529301	300	16	1370
EU127-UR	0529350	350	10	1450
EU127-UR	0529351	350	16	1450
EU127-UR	0529400	400	10	1767
EU127-UR	0529401	400	16	1767
EU127-UR	0529500	500	10	2480
EU127-UR	0529501	500	16	2480
EU127-UR	0529600	600	10	3205
EU127-UR	0529601	600	16	3205



### EU110-14-UR

Self-acting diaphragm valve **with regulator unit EU900**, with function of **float type level control** for storage tanks in general. The valve closes the flow when max. level is reached, and reopens it at minimum level. **Version with needle valves.**

The float pilot device is normally placed inside the tank while the main valve is at bottom of the tank. The float operating rod allows setting the differential between max. and min. levels between 0.5 and 2.0 metres.

Standard rod length 2 metres.

Range available 50 - 600 = (From Dn 50 -150 : Pn 10/16) (From Dn 200 - 600 : Pn 16).

Type	Part no. WII	Size	Pn	Kvs
EU110-14-UR	0522061	50	10/16	47
EU110-14-UR	0522062	65	10/16	52
EU110-14-UR	0522063	80	10/16	58
EU110-14-UR	0522064	100	10/16	120
EU110-14-UR	0522065	125	10/16	215
EU110-14-UR	0522066	150	10/16	228
EU110-14-UR	0522068	200	16	456
EU110-14-UR	0522070	250	16	847
EU110-14-UR	0522072	300	16	1370
EU110-14-UR	0522074	350	16	1450
EU110-14-UR	0522076	400	16	1767
EU110-14-UR	0522078	500	16	2480
EU110-14-UR	0522080	600	16	3205



**AUTOMATIC CONTROL VALVES**
**EU110-10-UR**


Like series EU 110-14 but with reverse operation: it opens the flow at max. level and closes it at min. level (**overflow version**). **Version with needle valves.**

Range available 50 - 600 = (From Dn 50 -150 : Pn 10/16) (From Dn 200 - 600 : Pn 16).

Type	Part no. WII	Size	Pn	Kvs
EU110-10-UR	0522021	50	10/16	47
EU110-10-UR	0522022	65	10/16	52
EU110-10-UR	0522023	80	10/16	58
EU110-10-UR	0522024	100	10/16	120
EU110-10-UR	0522025	125	10/16	215
EU110-10-UR	0522026	150	10/16	228
EU110-10-UR	0522028	200	16	456
EU110-10-UR	0522030	250	16	847
EU110-10-UR	0522032	300	16	1370
EU110-10-UR	0522034	350	16	1450
EU110-10-UR	0522036	400	16	1767
EU110-10-UR	0522038	500	16	2480
EU110-10-UR	0522040	600	16	3205

**EU113-UR**


Self-acting diaphragm valve **with regulator unit EU900**, serving **to shut off the flow rate through the valve via a remote electrical control.**

The pilot circuit is provided with a solenoid valve, whose function must be stated whether as normally open (NO) or normally closed (NC).

**Version with needle valves.**

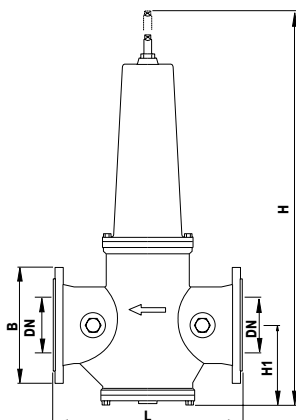
Range available 50 - 600 = (From Dn 50 -150 : Pn 10/16) (From Dn 200 - 600 : Pn 16)

*The additional non-return function is available on request.*

Type	Part no. WII	Size	Pn	Kvs
EU113-UR	0525050	50	10/16	47
EU113-UR	0525065	65	10/16	52
EU113-UR	0525080	80	10/16	58
EU113-UR	0525100	100	10/16	120
EU113-UR	0525125	125	10/16	215
EU113-UR	0525150	150	10/16	228
EU113-UR	0525200	200	10	456
EU113-UR	0525201	200	16	456
EU113-UR	0525250	250	10	847
EU113-UR	0525251	250	16	847
EU113-UR	0525300	300	10	1370
EU113-UR	0525301	300	16	1370
EU113-UR	0525350	350	10	1450
EU113-UR	0525351	350	16	1450
EU113-UR	0525400	400	10	1767
EU113-UR	0525401	400	16	1767
EU113-UR	0525500	500	10	2480
EU113-UR	0525501	500	16	2480
EU113-UR	0525600	600	10	3205
EU113-UR	0525601	600	16	3205

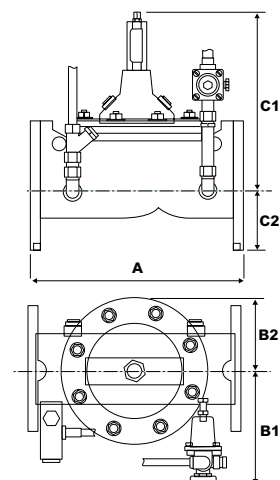
## OVERALL DIMENSIONS

## DRVD16



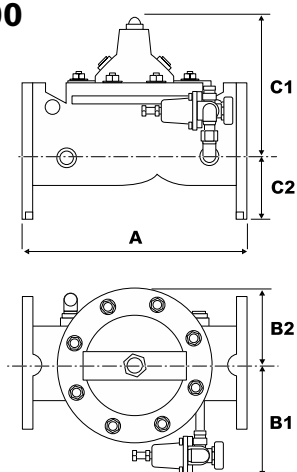
DN	L	H	H1	B (PN16)	B (PN25)	B (PN40)
50	230	383	83	165	165	165
65	290	440	90	185	185	185
80	310	490	100	200	200	200
100	350	561	121	220	235	235
125	400	712	152	250	270	270
150	450	839	169	285	300	300
200	550	1684	234	340	360	--

## EU100



DN	NP	A	B1	B2	C1	C2
50	10/16	230	160	85	265	85
60	10/16	290	170	85	265	95
65	10/16	290	170	85	265	95
80	10/16	310	175	85	265	100
100	10/16	350	190	120	310	110
125	10/16	400	200	150	385	125
150	10/16	480	210	150	385	145
200	10/16	600	235	200	460	170
250	10/16	730	280	255	570	200
300	10/16	850	305	300	650	230
350	10	980	330	300	650	255
350	16	980	330	300	650	260
400	10	1100	355	360	800	285
400	16	1100	355	360	800	290
500	10	1250	405	420	900	335
500	16	1250	405	420	900	360
600	10	1450	455	460	950	390
600	16	1450	455	460	950	420

## PR500



DN	NP	A	B1	B2	C1	C2
50	10/16/25	230	160	85	165	85
65/80	10/16/25	290	170	85	165	95
80	10/16/25	310	175	85	265	100
100	10/16	350	190	120	210	110
100	25	350	190	120	210	120
125	10/16	400	200	150	285	125
125	25	400	200	150	285	135
150	10/16	480	210	150	285	145
150	25	480	210	150	285	150
200	10	600	235	200	360	170
200	16	600	235	200	360	170
200	25	600	235	200	360	180
250	10	730	280	255	475	200
250	16	730	280	255	475	200
250	25	730	280	255	475	215

# Components and accessories for renewable energy systems



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Components for biomass and geothermal heating systems ..... pag. 197

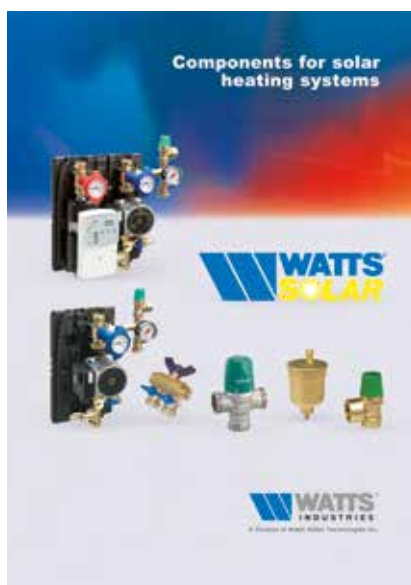
**WATTS**  
**SOLAR**

**WATTS**  
**BIOMASS**

**WATTS**  
**GEOTHERMAL**

**WATTS**  
**INDUSTRIES**

A Division of Watts Water Technologies Inc.



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## **L2 Components for biomass and geothermal heating systems**

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Components and accessories for biomass.....	pag. 201
Control units and manifold for geothermal .....	pag. 202

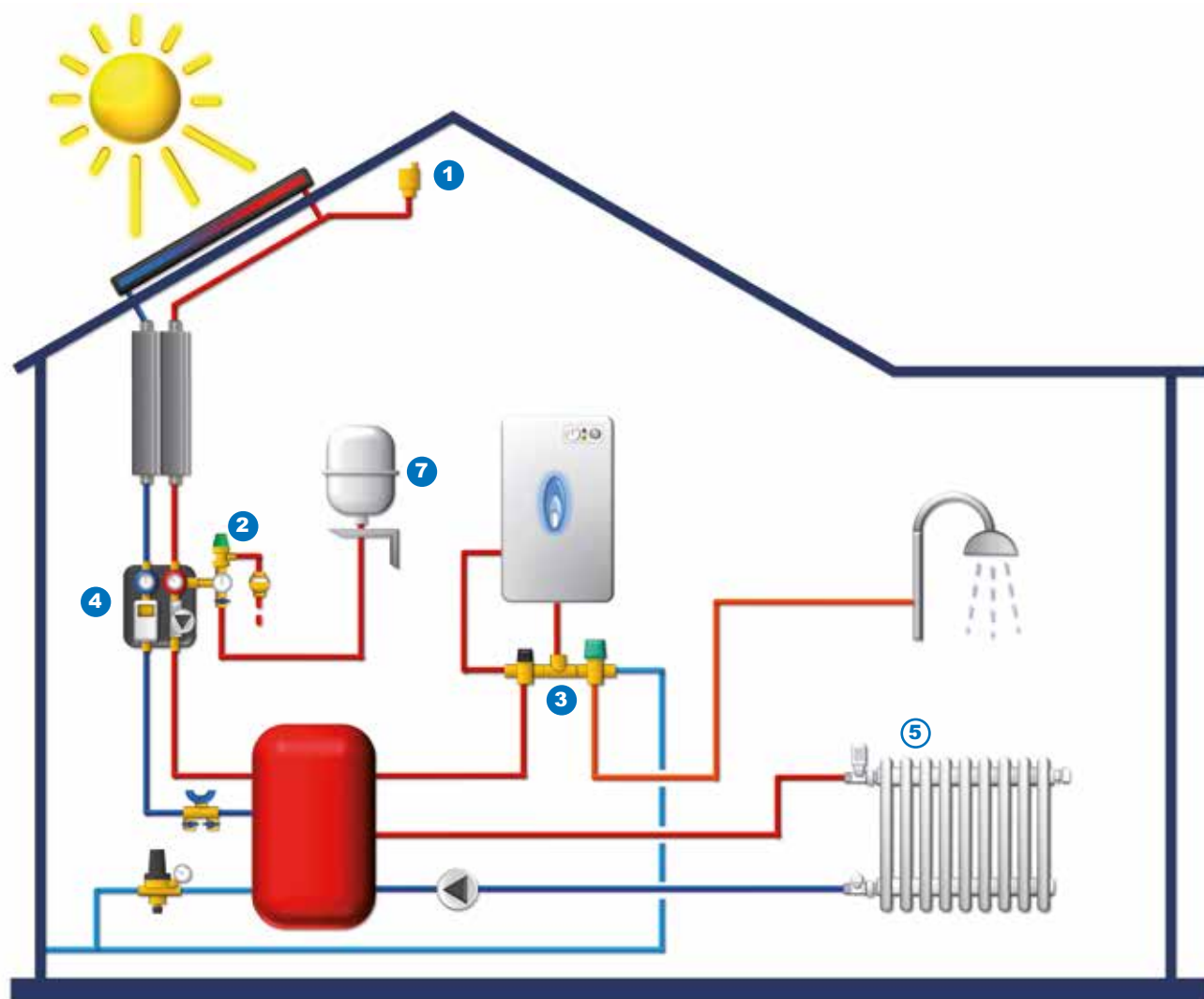
# Components for solar heating systems



A Division of Watts Water Technologies Inc.



## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*

**1** **MV-SOL**  
pag. 194



Automatic air vent valve

**2** **SVE-SOL**  
pag. 194



Diaphragm safety valve

**3** **SOLARKIT**  
pag. 193



integration boiler kit

**4** **FBS8010**  
pag. 186



FLOWBOX  
Compact solar control unit

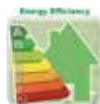
**5** **Chapter A**  
pag. 5



Radiator valve for  
heat elements



## Components for solar heating systems



Solar heating is a technology offering great cost-effective advantages. In fact solar energy is a specially convenient, clean and unlimited energy, with zero impact on the environment. Moreover it is subject locally to installation obligations or incentives by regulatory provisions.



The sun constantly provides a power of approx. 1000W per square metre so one could naturally presume that the conversion of this energy would interest and meet the electrical and heating requirements of a domestic user, above all in times

when there is constant increase in the exploitation of fossil fuels and their consequent rapid depletion.

The most simple use of solar energy is for the production of domestic hot water, and in specific cases, also its ability to

integrate space heating systems.

Exploitation of thermal solar energy includes those systems which collect and use energy from the sun by utilizing suitable energy concentration and storage devices (solar collectors), but also a series of just as essential devices such as: control and pumping units, control units, air vent and safety valves, mixing valves and expansion vessels.

The energy received from the fluid in the solar collectors is transferred via a control unit (FlowBox Series) directly to the user or more often it is stored in tanks and transferred via heat exchangers to other process fluids. The storage system, consisting of tanks for water solar heating systems, is normally essential as the demand for energy by the user is not in step with the energy production of the system.

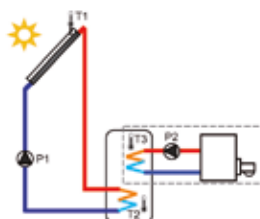
Hence good temperature control of the solar system is of vital importance for increasing its energy efficiency and for achieving optimum reliability in operation even on days when solar radiation is particularly intense.



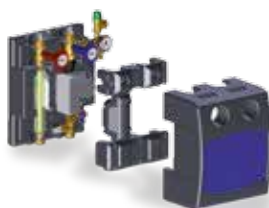
Electronic control units of the **BASIC, ADVANCED, PLUS Series** allow, thanks to the presence of a graphic diagram on the display, monitoring the system status via LEDs and LCD display, namely: temperature of the fluid in the storage tank, temperature difference between the solar collector and system circuit, temperature of the solar collector, temperature of the fluid at the bottom of the tank, pump operation status.

When the solar collector reaches, thanks to solar radiation, a temperature higher than that in the water heater, the electronic control actuates the circulation pump built into the units of the FlowBox Series.

A thermostatic mixing valve (**MMV-S Series**) allows supplying the user with the heated fluid accumulated in the tank at a temperature settable between 30-65°C.



## PUMPING AND CONTROL UNITS

**SOL DUO**

Ready-to-mount, compact solar control unit. New 3 part isolation provides thermal separation of electronic and hydraulic components. Pump installation length 180 mm - wired ex works, balancing valve WattFlow with fill and drain-cook, safety unit with pressure gauge, solar safety relief valve 6 bar and fill and drain-cook, wall bracket including corrugated tube to connect with the expansion vessel, arrangeable metal gravity flow stop.

EPP heat insulation. Venting pipe. Compression fitting connection 22mm.

Type	Part no. WII	Part no. WID	Description
SOL-DUO	10025902	10025902	2-16 l/min Wilo ST 25/6
SOL-DUO	10026407	10026407	4-36 l/min Wilo ST25/6
SOL-DUO	10026404	10026404	2-16 l/min Grundfos Solar 25-65
SOL-DUO	10026406	10026406	4-36 l/min Grundfos Solar 25-65
SOL-DUO	10026405	10026405	2-16 l/min Wilo TEC-ST 25/7
SOL-DUO	10026403	10026403	2-16 l/min Grundfos Solar PM 25-105

**FBS 8010-E**

Ready-to-mount, compact solar control unit. Pump installation length 130 mm - wired ex works, balancing valve WattFlow with fill and drain-cook, safety unit with pressure gauge, solar safety relief valve 6bar and fill and drain-cook, wall bracket including corrugated tube to connect with the expansion vessel with, arrangeable metal gravity flow stop.

EPP heat insulation. Venting pipe. Compression fitting connection 22 mm.

On request: Flow sensor 1-12 or 2-40 l/min, pressure sensor solar safety relief valve with set pressure 2,5 / 3 / 4 / 8 / 10 bar. Integration of high- efficiency pumps of all known manufacturers.

Type	Part no.WII	Part no.WID	Description
FBS 8010-E	3435305	10009978	0,5- 6 l/min, WILO ST 15/6 ECO
FBS 8010-E	3435315	10009980	0,5- 6 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-E	3435320	10009981	2 -16 l/min, WILO ST 15/6 ECO
FBS 8010-E	3435325	10009983	2 -16 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-E	3435330	10009985	4 -36 l/min, WILO ST 15/8 ECO
FBS 8010-E	3435335	10009986	4 -36 l/min, GRUNDFOS SOLAR 15-80

**FBS 8010-E-SENSOR**

Similar to FBS 8010-E with flow and temperature sensor.

Type	Part no.WII	Part no.WID	Description
FBS 8010-E-SENSOR	3435345	10009989	1-12 l/min WILO ST 15/6 ECO
FBS 8010-E-SENSOR	3435355	10009991	1-12 l/min GRUNDFOS SOLAR 15/65

**FBS 8010-C-LED**

Ready-to-mount, compact solar control unit. Pump wired ex works, balancing valve WattFlow with fill and drain-cock, safety unit with pressure gauge, solar safety relief valve 6 bar and fill and drain-cock, wall bracket including corrugated tube to connect with the expansion vessel, adjustable metal gravity flow stop. EPP heat insulation. Solar Controller.

LED Basic with 2 outputs and 3 inputs.

On request: High-efficiency pumps, solar safety relief valve with set pressure 4/8/10 bar, compression fitting connection 12/15/18 mm via 3/4" Eurocone or 15/18/22 mm via M28 x 1,5.

Type	Part no. WII	Part no. WID	Description
FBS 8010-C-LED	3435405	10009994	0,5- 6 l/min, WILO ST 15/6 ECO
FBS 8010-C-LED	3435415	10009996	0,5- 6 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-C-LED	3435420	10009997	2 -16 l/min, WILO ST 15/6 ECO
FBS 8010-C-LED	3435425	10009998	2 -16 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-C-LED	3435430	10009999	4 -36 l/min, WILO ST 15/8 ECO
FBS 8010-C-LED	3435435	10010000	4 -36 l/min, GRUNDFOS SOLAR 15-80

**PUMPING AND CONTROL UNITS**

**FBS 8010-CE-LED**

Similar to type FBS 8010-C-LED, except: With venting pipe with RDT manual air vent in the supply.

Type	Part no. WII	Part no. WID	Description
FBS 8010-CE-LED	3435905	10010055	0,5- 6 l/min, WILO ST 15/6 ECO
FBS 8010-CE-LED	3435915	10010057	0,5- 6 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-CE-LED	3435920	10010058	2 -16 l/min, WILO ST 15/6 ECO
FBS 8010-CE-LED	3435925	10010059	2 -16 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-CE-LED	3435930	10010061	4 -36 l/min, WILO ST 15/8 ECO
FBS 8010-CE-LED	3435935	10010062	4 -36 l/min, GRUNDFOS SOLAR 15-80


**FBS 8010-C-LCD ADVANCED**

Ready-to-mount, compact solar control unit. Pump installation length 130 mm- wired ex works, balancing valve WattFlow with fill and drain-cook, safety unit with pressure gauge, solar safety relief valve 6 bar and fill and drain-cook, wall bracket including corrugated tube to connect with the expansion vessel with, arrangeable metal gravity flow stop. EPP heat insulation. Venting pipe. Compression fitting connection 22 mm. LCD advanced solar controller. On request: solar safety relief valve with set pressure 2,5 / 3 / 4 / 8 / 10 bar.

Type	Part no. WII	Part no. WID	Description
FBS 8010-CE-LCD-ADV	3435955	10010066	0,5- 6 l/min, WILO ST 15/6 ECO
FBS 8010-CE-LCD-ADV	3435965	10010068	0,5- 6 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-CE-LCD-ADV	3435970	10010069	2 -16 l/min, WILO ST 15/6 ECO
FBS 8010-CE-LCD-ADV	3435975	10010070	2 -16 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-CE-LCD-ADV	3435980	10010071	4 -36 l/min, WILO ST 15/8 ECO
FBS 8010-CE-LCD-ADV	3435985	10023054	4 -36 l/min, GRUNDFOS SOLAR 15-80


**FBS 8010-C-LCD-SENSOR PLUS**

Ready-to-mount, compact solar control unit. Pump installation length 130 mm - wired ex works, flow sensor with fill and drain-cook, safety unit with pressure gauge, solar safety relief valve 6 bar and fill and drain-cook, wall bracket including corrugated tube to connect with the expansion vessel with, arrangeable metal gravity flow stop. EPP heat insulation. CE with venting pipe. Compression fitting connection 22 mm. LCD Plus solar controller. On request: Flow sensor 2-40 l/min, pressure sensor, balancing valve WattFlow, solar safety relief valve with set pressure 2,5 / 3 / 4 / 8 / 10 bar. Integration of High-efficiency pumps of all known manufacturers.

Type	Part no. WII	Part no. WID	Description
FBS 8010-C-LCD-SEN-PLUS	3435855	10010050	1-12 l/min WILO ST 15/6 ECO
FBS 8010-C-LCD-SEN-PLUS	3435865	10010052	1-12 l/min GRUNDFOS SOLAR 15/65
FBS 8010-C-LCD-SEN-PLUS	3435870	10010053	1-12 l/min GRUNDFOS SOLAR 15/80
FBS 8010-C-LCD-SEN-PLUS	3436005	10023056	-
FBS 8010-C-LCD-SEN-PLUS	3436015	10023058	-
FBS 8010-C-LCD-SEN-PLUS	3436020	10023059	-


**FBS 8010-S**

Ready-to-mount, compact solar return line. Pump wired ex works, balancing valve WattFlow with fill and drain-cock, safety unit with pressure gauge, solar safety relief valve 6 bar and fill and drain-cock, wall bracket including corrugated tube to connect with the expansion vessel, adjustable metal gravity flow stop. EPP heat insulation. On request: High-efficiency pumps. Solar safety relief valve with set pressure 4/8/10 bar. Compression fitting connection 12/15/18 mm via 3/4" Eurocone or 15/18/22 mm via M28x1,5.

Type	Part no. WII	Part no. WID	Description
FBS 8010-S	3436060	-	0,5- 6 l/min, WILO ST 15/6 ECO
FBS 8010-S	3436070	-	0,5- 6 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-S	3436075	-	2 -16 l/min, WILO ST 15/6 ECO
FBS 8010-S	3436080	-	2 -16 l/min, GRUNDFOS SOLAR 15-65
FBS 8010-S	3436085	-	4 -36 l/min, WILO ST 15/8 ECO
FBS 8010-S	3436090	-	4 -36 l/min, GRUNDFOS SOLAR 15-80

## PUMPING AND CONTROL UNITS

**FBS 8010-S-SENSOR**

Ready-to-mount, compact solar return line with flow and temperature sensor. Pump wired ex works, balancing valve WattFlow with fill and drain-cock, safety unit with pressure gauge, solar safety relief valve 6 bar and fill and drain-cock, wall bracket including corrugated tube to connect with the expansion vessel, adjustable metal gravity flow stop. EPP heat insulation.

*On request: High-efficiency pumps. Solar safety relief valve with set pressure 4/8/10 bar. Compression fitting connection 12/15/18 mm via 3/4" Eurocone or 15/18/22 mm via M28x 1,5.*

Type	Part no.WII	Part no.WID	Description
FBS 8010-S-SENSOR	3436100	10010088	1 -12 l/min WILO ST 15/6 ECO
FBS 8010-S-SENSOR	3436110	10010090	1 -12 l/min GRUNDFOS SOLAR 15/65
FBS 8010-S-SENSOR	3436115	10010091	1 -12 l/min GRUNDFOS SOLAR 15/80

**KVSr - RED STK**

Connection accessories for solar units.

Type	Part no.WII	Part no.WID	Description
KVSr	10016200	10016200	1 x screw nut M28 x 1,5; 1 x clamp ring 22 mm
KVSr	10009695	10009695	clamp ring reduction 22 x 18 mm without screw nut
KVSr	10009693	10009693	clamp ring reduction 22 x 15 mm without screw nut
RED-STK	10007425	10007425	reduction 1"x Ø22 m without screwings
RED-STK	10007437	10007437	reduction G3/4"x Ø22 m without screwings

## ELECTRONIC CONTROL UNITS

### LED BASIC



Solar controller for solar installations with one collector field, one tank and one pump. Graphic installation layout on the controller contains one LED for the pump and one for each temperature sensor. Inclusive sensors, 2 x PT1000/SF3 and 1 x PT1000/KS1,5 Power supply 230 V. IP42

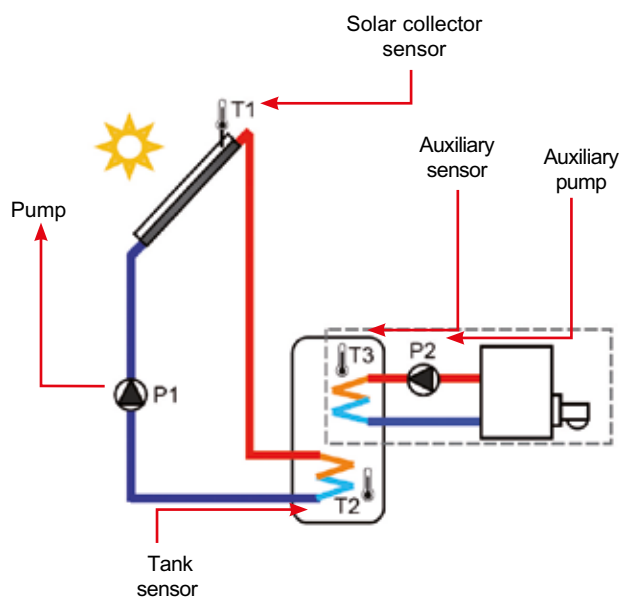
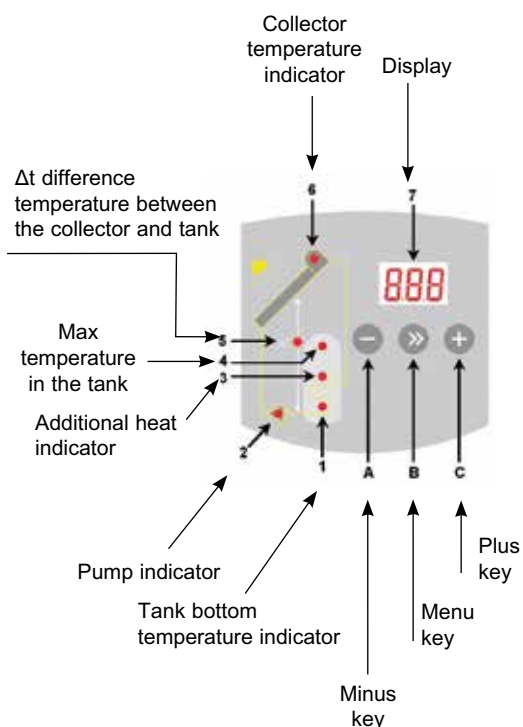
- 3 Temperature sensor inputs (PT1000)
- 2 Pump outputs
- One LED for the pump and one for each temperature sensor.

Type	Part no. WII	Part no. WID	Sensor no.
LED BASIC	P03752	10021158	3 (two L = 3 m + one L = 1,5 m)

### TECHNICAL NOTE

#### LED BASIC controller

- 1 Tank bottom temperature indicator (the display "7" shows the measured temperature)
  - 2 Pump indicator (blinks when operating)
  - 3 Additional heat indicator (blinks when operating)
  - 4 Max temperature in the tank (setting level)
  - 5  $\Delta t$  difference temperature between the collector "6" and tank "1" (setting level)
  - 6 Collector temperature indicator (the display "7" shows the measured temperature)
  - 7 Display (red)
- A Minus key (to decrease the current value)  
 B Menu key (to change the displayed value and parameter number)  
 C Plus key (to increase the current value)





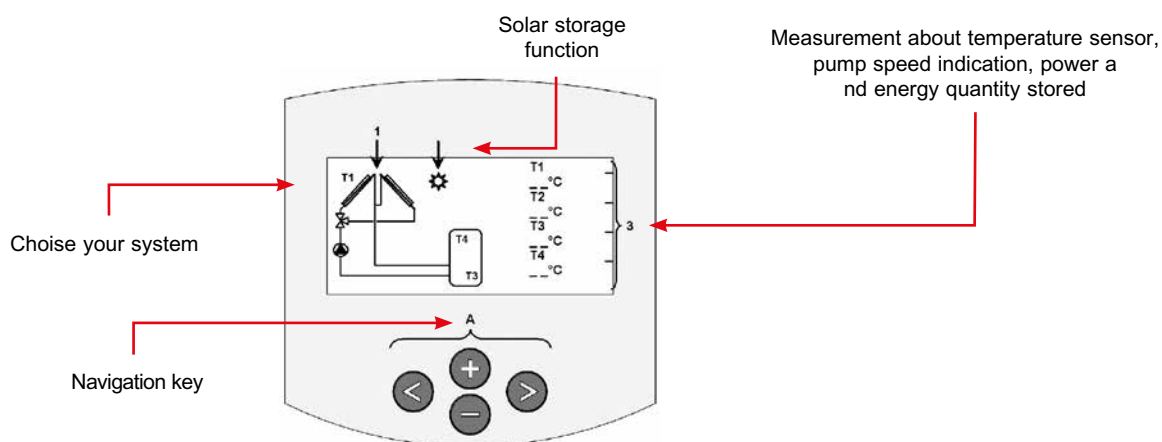
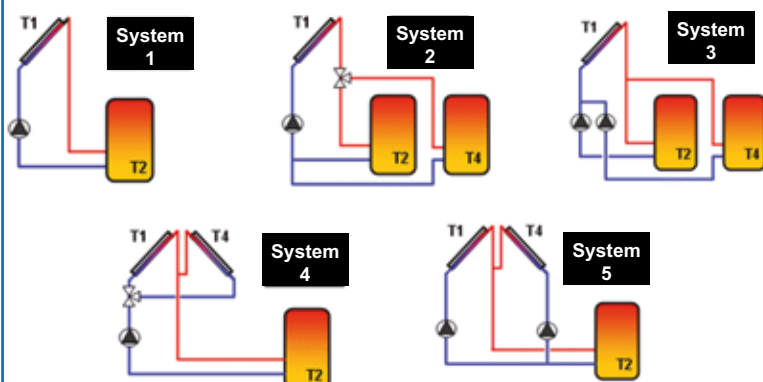
## ELECTRONIC CONTROL UNITS

**LCD ADVANCED**

Solar controller for solar installations with one or two collector fields, tanks and pumps. Graphic display with backlight. Collector protection (Freeze and over heat) Inclusive sensors, 2 x PT1000/SF3 and 1 x PT1000/KS1,5. Power supply 230 V. IP42

- 5 Temperature sensor inputs (PT1000)
- 1 Impulse flow meter input
- 2 Pump outputs standard for pump speed control
- 1 Extra output for valve control or additional pump
- 5 working systems programmed.

Type	Part no. WII	Part no. WID	Sensor no.
LCD ADVANCED	P03491	10021160	3 (two L = 3 m + one L = 1,5 m)

**TECHNICAL NOTE****LCD ADVANCED controller****Systems with possibility to add extra function**

System 1
1 Solar collector (T1)
1 Tank (T2)
1 Pump

System 2
1 Solar collector (T1)
1 Pump
1 Valve
2 Tanks (T2/T4)

System 3
1 Solar collector
2 Pumps
2 Tanks (T2/T4)

System 4
2 collettori solari (T1/T4)
1 Pump
1 Valve
1 Tank (T2)

System 5
2 Solar collector (T1/T4)
2 Pumps
1 Tanks (T2)



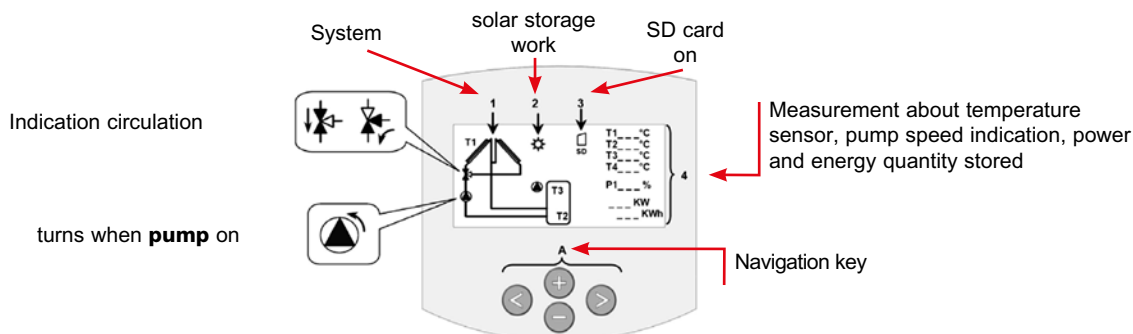
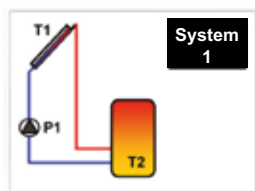
**ELECTRONIC CONTROL UNITS**
**LCD PLUS**


Solar controller for solar installations with one or two collector fields, tanks and pumps. Graphic display with backlight. Collector protection (Freeze and over heat) Energy measuring with SD card interface to save the recorded statistics. Inclusive sensors, 2 x PT1000/SF3 and 1 x PT1000/KS1,5. Power supply 230 V. IP42

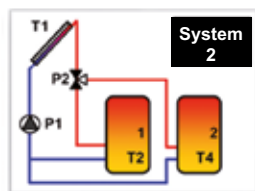
- 5 Temperature sensor inputs (PT1000)
- 1 Impulse flow meter input
- 2 Analogue inputs for Grundfos sensors (Flow, pressure and temperature)
- 2 Pump outputs for pump speed control standard or PWM.
- 1 Extra output for valve control or additional pump
- 8 working systems programmed

Data logging set in connection with the solar controller LCD plus composed of a SD card, Software CD and a USB SD card reader.

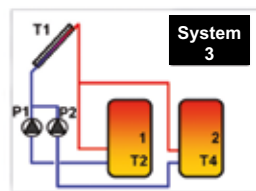
Type	Part no. WII	Part no. WID	Sensor no.
LCD PLUS	P04456	10021165	3 (two L = 3M + one L = 1,5M)
DLS for LCD PLUS	-	10020761	

**TECHNICAL NOTE**
**Display PLUS controller**

**Systems with possibility to add extra function**


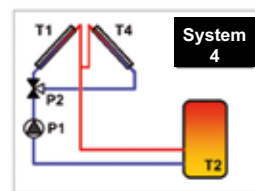
**System 1**  
1 Solar collector (T1)  
1 Pump (P1)  
1 Tank (T2)



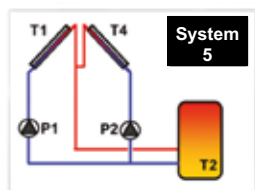
**System 2**  
1 Solar collector (T1)  
1 Pump (P1)  
2 Tanks (T2/T4)  
1 Valve (P2)



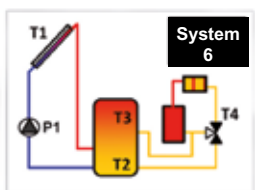
**System 3**  
1 Solar collector (T1)  
2 Pumps (P1/P2)  
2 Tanks (T2/T4)



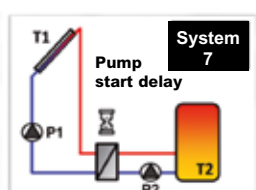
**System 4**  
2 Solar collector (T1/T4)  
1 Pump (P1)  
1 Tank (T2)  
1 Valve (P2)



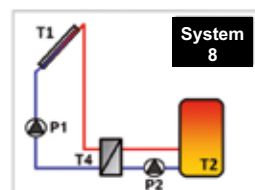
**System 5**  
2 Solar collectors (T1/T4)  
2 Pumps (P1/P2)  
1 Tank (T2)



**System 6**  
1 Solar collector (T1)  
1 Pump (P1)  
1 Tank (T2/T3)  
1 Valve (T4)



**System 7**  
1 Solar collector (T1)  
2 Pumps (P1/P2)  
1 Tank (T2)  
delay activation  
between the two pumps



**System 8**  
1 Solar collector (T1)  
2 Pumps (P1/P2)  
1 Tank (T2)  
Return temperature  
solar circuit (T4)

## ACCESSORIES

**ST**

Temperature sensorst PT1000  
 -tank sensor up to 105°C, 3 m cable  
 -collector sensor up to 180°C, 1,5 m cable  
 -collector sensor up to 180°C, 5,0 m cable

Type	Part no. WII	Part no. WID	Description
ST	PPELE00060	10021176	L=3,0 m, 105°C
ST	PPELE00061	10021177	L=1,5 m, 180°C
ST	-	10021175	L=5,0 m, 180°C

**SP1**

Overload protection for the collector sensor

Type	Part no. WII	Part no. WID
SP1	-	10020785

**SES**

Solar gain set for solar systems to controll the pump speed and for gain measuring in connection with a solar controller for example the Watts Solarcontroller LCD or LCD plus. Composed of a volume flow meter QN 1,5 m³/h 3/4". Impulse number: 1 impuls per litre flow volume. Incl. temperature pipe contact sensor with mounting parts.

Type	Part no. WII	Part no. WID
SES	-	10021156

**MMV-S**

Thermostatic mixing valve solar.  
 For drinking water installations.  
 Adjustment range 30 - 65 °C, factory setting 50 °C, serves as scalding protection, brass body, max. hot water supply 110 °C, flow rate 63 l/min at 3 bar.  
 Any installation position.

**In accordance with EN 1111 and EN 1287.**

Type	Part no. WII	Part no. WID	Size	Finishing
MMV-S	97500	10017432	1" with fitting 1/2" M	Brass
MMV-S	97501	10017433	1" with fitting 3/4" M	Brass
MMV-S	-	10017434	1" with fitting 1" M	Brass
MMV-S	97560	10017435	Threaded 1" M	Brass
MMV-S	97530	-	1" with fitting 1/2" M	Nickel-plated
MMV-S	97531	-	1" with fitting 3/4" M	Nickel-plated
MMV-S	97561	-	Threaded 1" M	Nickel-plated

**ACCESSORIES**

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**SOLARKIT**


Thermostatic kit to connect a solar panel to the boiler for thermal integration.  
DZR Brass body CW602N.

5 different temperature setting points for mixed water:  $30 \div 65\text{ }^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Flow rate at 3 bar: 63 l/min – minimum flow rate 5 l/min.

Max. static pressure: 10 bar – Working pressure:  $0,2 \div 5\text{ bar}$ .

Hot water temperature range, mixing valve side:  $52 \div 100\text{ }^{\circ}\text{C}$ .

Cold water temperature range, mixing valve side:  $5 \div 20\text{ }^{\circ}\text{C}$ .

Opening temperature of diverting valve:  $45\text{ }^{\circ}\text{C}$ .

Type	Part no. WII	Part no. WID
KIT-SOL	97590	10026390

**QUICKFILL**


Easy filling and rinsing of heating, solar or heat pump circuits.

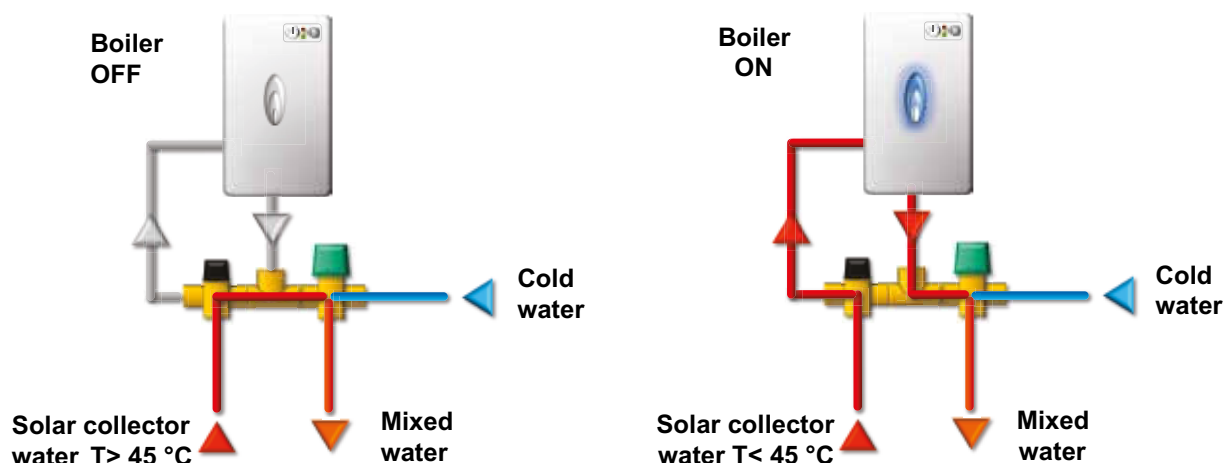
Brass body, short installation length, any installation position.

Type	Part no. WII	Part no. WID	Description
QUICKFILL	3499615	10010379	15 mm
QUICKFILL	3499620	10010380	18 mm
QUICKFILL	3499635	10010385	22 mm
QUICKFILL	3499625	10010381	3/4" M eurocone
QUICKFILL	3499630	10010383	1" M flat sealing

**TECHNICAL NOTE**
**Working principle SOLARKIT**

The thermostatic kit SOLARKIT to connect a solar panel to the boiler for thermal integration is a totally automatic device for the control of solar system for the domestic hot water production.

Without any external power supply, only using thermostatic elements, the SOLARKIT diverts the water to a thermal integration boiler when the solar energy it's not enough to obtain the needed domestic hot water temperature.



L.1

## ACCESSORIES

**SVE-SOL**

Diaphragm safety valve for solar systems. Body and cap of brass CW617N, EN 12165-99. Elastomeric diaphragm. Discharge pressure factory set and with sealed knob. Suitable for water, also water mixtures (glycol up to 50%) as according to DIN 4757 Part 1. Max operating temperature : 160 °C

**TÜV SOLAR certified. According to Directive PED 97/23/CEE.**  
**Identification number CE1115.**

Type	Part no. WII	Part no. WID	Size	bar
SVE-SOL	0215825	-	1/2" x 3/4"	2,5
SVE-SOL	0215830	10004653	1/2" x 3/4"	3
SVE-SOL	0215835	10004654	1/2" x 3/4"	3,5
SVE-SOL	0215840	10004655	1/2" x 3/4"	4
SVE-SOL	0215860	10013164	1/2" x 3/4"	6
SVE-SOL	0215880	10004659	1/2" x 3/4"	8
SVE-SOL	0215899	10004661	1/2" x 3/4"	10

**MV-SOL****MINIVENT**

Automatic air vent valve for solar systems with unscrewable cover for inspection. Body and cover of brass CW617N, 1265-99. Polyethylene float. Seal between reservoir and cover with O-ring. Connection ND 3/8" - 1/2" DIN - ISO 228/1. Stainless steel (AISI 304) vacuum breaker (only for ND 3/8")  
Max. operating pressure : 12 bar. Max. operating temperature : 160 °C.

Type	Part no. WII	Part no. WID	Size
MV-SOL	0249110	10004914	3/8"
MV-SOL	0249115	10004915	1/2"

**RIA/MV-SOL**

Automatic shut-off valve. Allows the air vent valves (**MV-SOL**) to be removed without having to empty the system. The **RIA/MV-SOL** shut-off valve is fitted with a device for quick total emptying of the water from the valve. Body: Brass EN12164-01 CW614N. Plug: Polymer high resistance. Spring: Stainless steel. Connections MF 3/8" and 1/2" DIN - ISO 228/1. Sealing Elastomer high resistance.

Type	Part no. WII	Part no. WID	Size
RIA/MV-SOL	0259310	10005122	3/8" x 3/8"
RIA/MV-SOL	0259315	10005124	1/2" x 1/2"

**KFE**

Solar ball valve. Universal use for sanitary, solar and heating installations, self-sealing connection 1/2", full bore, PN 10, hot-pressed brass with threaded hose coupling, with KTW-tested seals, can be used up to a maximum of 160 °C.

Type	Part no. WID	Size
KFE	10017317	1/2"

**ACCESSORIES**

**SK-SOL**

SOLAR quick coupling. To test and replace expansion vessels without draining of the system, for solar heating systems, temperature range up to a maximum of 160 °C.

Type	Part no. WII	Part no. WID
SK-SOL	0608102	10005114

**WH-MAG**

Wall bracket with quick coupling for expansion vessel.



Type	Part no. WID	Description
WH-MAG	10001220	for vessel <18 l
WH-MAG	10014054	for vessel > 24 l


**FRIWA**

Domestic hot water unit for providing hot water according to the continuous heating principle, various power levels available, thermally controlled.

Type 8022: Max. tapping volume 19l/min;

Type 8023: Max. tapping volume 25l/min;

Type 8024: Max. tapping volume 35l/min;

Flow monitor for automatic pump switch-on. Maintenance-free, 3-way thermostatic valve for constant hot water temperature, resulting in virtually zero limescale. EPP heat insulation.

Type	Part no. WII	Part no. WID	Description
FRIWA 8022	10015390	10015390	19 l/min
FRIWA 8023	10015392	10015392	25 l/min
FRIWA 8024	10015394	10015394	35 l/min
FRIWA 8022 HE	on request	on request	19 l/min
FRIWA 8023 HE	on request	on request	25 l/min
FRIWA 8024 HE	on request	on request	35 l/min

HE with high efficiency pump


**FLOWBOX CIRCU**

Ready-to-mount compact domestic hot water circulation unit for use in domestic hot water system with continuously high temperatures.

Inclusive: Thermostatic mixing valve MMV for scald protection, check valves, backflow preventers, insulation box made of EPP, domestic hot water circulation pump.

Type	Part no. WII	Part no. WID	Description
FB CIRCU	10010094	10010094	Laing E1-15/700 BR



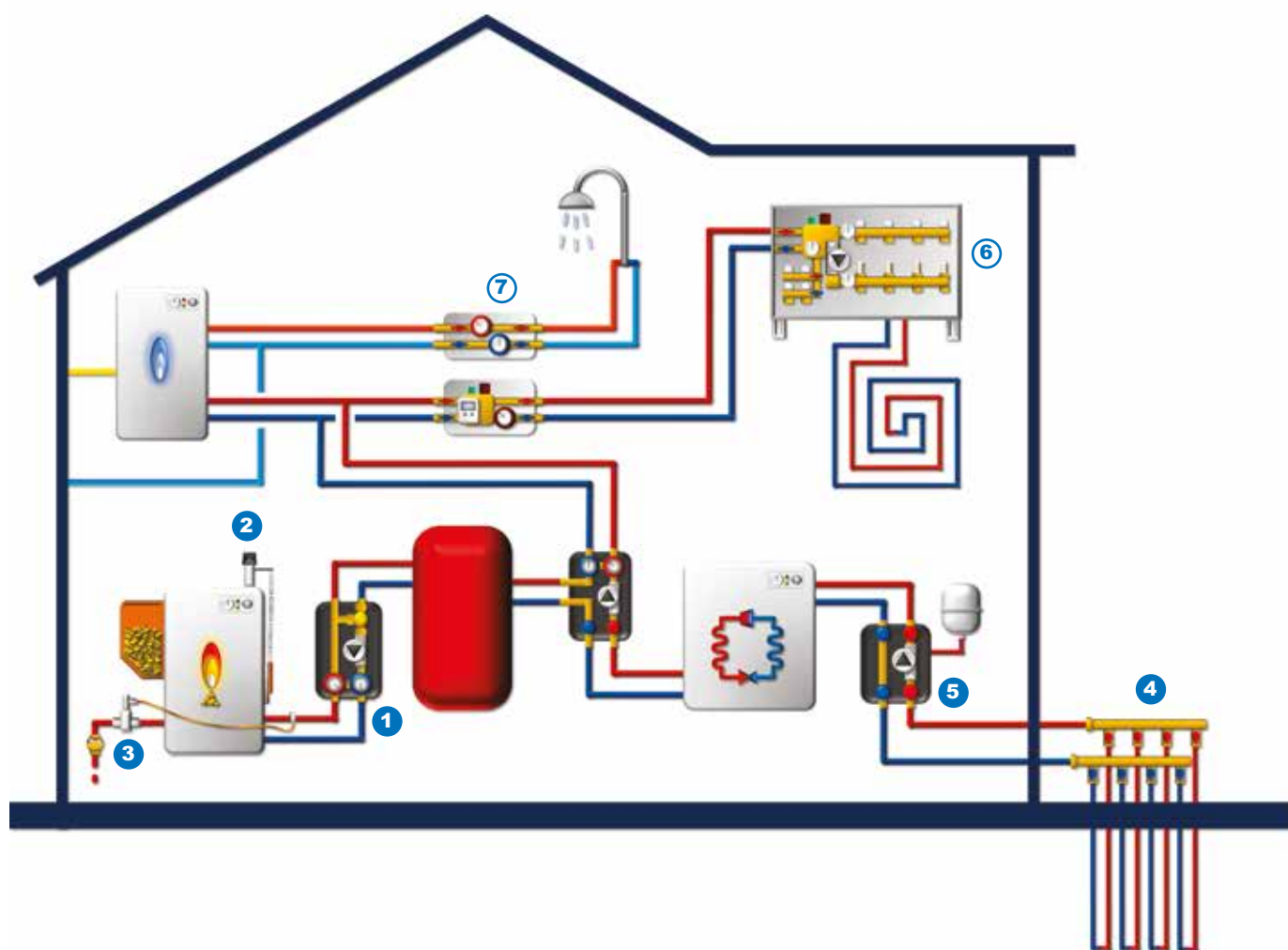


## Components for biomass and geothermal heating systems



A Division of Watts Water Technologies Inc.

## EXAMPLE OF APPLICATION



*Simplified scheme aimed at the product presentation in chapter*



**1** **KLS**  
pag. 200

Compact biomass  
control unit



**2** **RT**  
pag. 201

Draught regulator



**3** **STS**  
pag. 201

Thermal safety drain valve



**4** **INDU2054-M**  
pag. 202

Brine manifold



**5** **SOLEBOX**  
pag. 202

Compact brine control unit



**6** **Chapter D**  
pag. 67

Components for  
underfloor heating  
systems, pex pipe



**7** **Chapter G**  
pag. 95

Thermal energy metering

## Biomass heating systems



Biomass which can be used for energy purposes, consists in all those organic materials, mainly of vegetable origin (wood fuel, residues from cultivations or forests) which can be transformed in solid, liquid or gaseous fuels through appropriate processes involving structural transformation of the organic part.

Depending on the type and composition it can be burnt to supply heat, converted into fuel (methane, ethanol, biodiesel, etc.) or used for generation of electrical energy.

The advantages gained by using biomasses are clear to see:

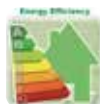
- they can be considered as renewable resources (provided they are used at a rate not exceeding the biological renewal);

- they are free from sulphur and therefore do not produce sulphur oxides during combustion, these being toxic agents responsible for acid rains;

- they do not cause an increase of CO<sub>2</sub> in the atmosphere because the quantity of gas emitted during their combustion is equal to the quantity absorbed by photosynthesis.

Watts Industries is a reputable partner for the supply of components in systems using solid biomass boilers (wood boilers - log, pellet and chip) such as: preassembled compact pumping units, suitably insulated, of the FlowBox KLS Series which connect the heating/water heater system to the generator; thermal safety valves of the STS Series with immersion probe; Airstop draught regulators Series RT; thermostatic mixing valves MMV-C Series (operating range 30-65°C); electronic control and adjustment units.

## Geothermal heating systems



This form of energy is to be found dispersed in the earth's crust and is partially extractable via natural or artificial circulation of fluids.



The geothermal source is present in all regions of the planet although in variable quantities.

Various factors regulate the temperature trend underground: down to a depth of 30 m temperature is influenced by surface meteorological and seasonal effects, while at greater depths the temperature increases on the average by 1°C for every 30 m.

Hence the geothermal gradient is 3.3 °C every 100 m.

Obviously the presence of this gradient depends on the reference locality.

For the purpose of obtaining heat from the ground, use is made of heat pumps coupled to depth geothermal probes or to pipe networks installed horizontally at

about 1.5 m under ground level over free areas of vast extension.

The use of this endogenous heat source represents an appreciable share in electrical power production; however its use is also spreading to heating applications, which differ according to the fluid temperature available (space heating, heating of swimming pools, thermal baths, greenhouses, for supplying district heating, cooling environments with absorption chillers, heat process for industry).

In geothermal heating systems, the heat pump extracts heat from the ground and sends it to the heating circuit; in the summer, the process is the reverse i.e. the heat is extracted from indoor environments and released in the ground.

## BOILERS CONTROL UNITS FOR BIOMASS



### KLS

Ready-to-mount, compact unit to rapidly achieve the necessary operating temperature of solid-fuel fired boilers. With thermostatic mixing valve. Dynamic bypass closes reciprocally in proportion to the increasing charging temperature. Thermometer integrated into the multifunctional shut-off valve. Arrange able gravity breaks. Circulating pump 180 mm. Thermostatic mixing valve temperature pre-set to 58 °C, not changeable. Up to 50 KW heat output possible. EPP-heat insulation.

Type	Part no. WII	Part no. WID	Description
KLS	10026341	10026341	KLS8180 YonPARA25/6
KLS	10026343	10026343	KLS8180 Alpha2L25-60



### KLE 50

Ready-to-mount, compact unit to rapidly achieve the necessary operating temperature of solid-fuel fired boilers. Dynamic bypass closes reciprocally in proportion to the increasing charging temperature. Thermometer integrated into the multifunctional shut-off valve. Arrange able gravity breaks Circulating pump 180 mm; different types and brands. Thermostatic mixing valve temperature setting range 48 – 54 °C / 55 – 62 °C. Wall bracket. Up to 50 KW heat output.

Type	Part no.	Description
KLE	On request	KLE 50 Wilo Yonos Para 25/6
KLE	On request	KLE 50 Grundfos Alpha2L 25-60



### KLE-MC

Electronically controlled. To rapidly achieve the necessary operating temperature of solid-fuel fired boilers. Inclusive three-way mixing valve and actuator with integrated controller for a constant flow temperature pre-set to 70°C. Thermometer integrated into the multifunctional shut-off valve. Arrangeable gravity break.

Type	Part no.	Description
KLE-MC	On request	DN 25
KLE-MC	On request	DN 32, Alpha 2 32-60, Mixing valve Kvs 18

**COMPONENTS AND ACCESSORIES FOR BIOMASS**
**STS**

**SECURFLUX**

Thermal safety drain for non atomized, solid fuel boilers with double safety.  
Nickel-plated brass CW617N body. Immersion probe with 145 mm sheath and 1/2" M connection.  
Max. drain capacity: 6500 litres/h at 8 bar. Max. operating pressure: 10 bar.  
Set temperature : 97°C. Max. drain capacity temperature : 107°C

**According to TÜV/SGW.**

**According to Directive PED 97/23/CE. Identification number CE1115.**

Type	Part no. WII	Part no. WID	Size	Capillary
STS	0232120	10004842	3/4" F	1300 mm
STS	0232220	10004849	3/4" F	2000 mm

**STSR**

**SECURFLUX**

Like STS but with just one compact sensitive element.  
Immersion probe with 108 mm sheath and 3/8" M connection.  
Max. drain capacity : 3000 litres/h.

Type	Part no. WII	Size	Capillary
STSR	0232520	3/4" F	1300 mm

**TH**


Spare sheath for valves SECURFLUX series.

- Item 0299014 for STS
- Item 0299016 for STSR.

Type	Part no. WII	Part no. WID	Size
TH	0299016	-	3/8"
TH	0299014	10005460	1/2"

**RT**
**AIRSTOP**


Draught regulator for boilers running on non atomized fuels, with single safety (Item 0234200) or double safety (Item 0234100).  
Setting range : 40°C to 100°C. Connection DN 3/4". Wax heat sensitive element.

Type	Part no. WII	Part no. WID	Stroke	Chain lenght
RT	0234100	10004852	60 mm	125 cm
RT	0234200	10004855	80 mm	125 cm



## CONTROL UNITS AND MANIFOLDS FOR GEOTHERMAL

**SOLEBOX**

Circulating unit with diffusion resistant insulation. The brine pump unit transports the heat which was won from the soil to be transferred into the refrigeration circuit of the heat pump. Versions/Advantages: Diffusion resistant insulation, pump group DN 25/32, brine pump 1.1/2" or 2" - 180 mm, various types and brands, fill, drain and flush possibility, brine safety unit, brine expansion vessel.

Type	Part no. WID	Size
SOLEBOX	on request	25

**INDU2054-M**

Brass round pipe manifold. Modular design with flat sealing male thread 2" on one end and 2" union nut on the opposite. SUPPLY: Shut-off ball valve.

RETURN: Control valve with pre-setting.

Connection either G 3/4" male thread with Eurocone or KVSr 25 x 2,3 for PEX-pipes. 80 mm distance.

Type	Part no. WII	Part no. WID	Outlets
INDU2054-M	3421302	10009827	2 - 3/4" EUROCONE
INDU2054-M	3421303	10009829	3 - 3/4" EUROCONE
INDU2054-M	3421304	10009830	4 - 3/4" EUROCONE
INDU2054-M	3421305	10009832	5 - 3/4" EUROCONE
INDU2054-M	3421306	10009833	6 - 3/4" EUROCONE



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148 Thermostatic actuator	13	20	1194R Straight lockshield for copper and plastic	15	21
190 Angle manual valve for iron, 1"	16	21	1195UM Angle lockshield for copper or plastic	7	19
197 Adapter for radiator valves iron connectionl	82	87	1196UM Straight lockshield for copper or plastic	8	19
210 Ball shut-off valve	55-153	64-161	119SX One-pipe manual valve for copper and plastic	13	20
220 Nickel-plated union elbow	85	87	120B 2-pipe thermostat adapt. valve for copper & plastic	12	20
221 Nickel-plated straight connector	85	87	130UM Thermostat adapt. angle valve for iron with cap	9	19
224 Resetting wrench for thermostat adaptable valves	17	-	131UM Thermostatic straight valve for iron with removable cap	10	20
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3131 3-way brass valve for fan-coils	51	64	164R Straight manual valve for iron	16	21
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1134M Reverse body thermostatic valve for copper & plastic	11	20	188UM Thermostat adaptable angle valve for iron with pre-set	9	19
1163R Angle manual valve for copper and plastic	15	20	189UM Thermostatic straight valve for iron with pre-set	10	19
1164R Straight manual valve for copper and plastic	15	20	193R Angle lockshield for iron	16	21
1178UM Thermostat adaptable angle valve for copper & plastic	7	19	194R Straight lockshield for iron	16	21
1179UM Thermostat adapt. straight valve for copper & plastic	8	19	195S Angle lockshield for iron, 1"	17	21
1188UM Thermostat adapt. angle valve for copper & plastic	7	19	195UM Angle lockshield for iron	9	19

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225-RP130 Tool for replacing the insert RP130	17	-	833M Brass reducer, male/male	86	87
228C Automatic air vent	25	32	834M Brass female plugs	86	87
22C ON/OFF compact electrothermic actuator	52	64	839M Metal inspection box with adjustable height	62	-
2311C Check valve for 2161C air vent	30	-	840MR Telescopic brackets	63	65
231C Super manual air vent	25	32	841M Brass male plugs	86	87
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3110C Automatic filling valve with pressure gauge	110	115	873M One piece compact soft seal fitting	81	87
403R Pressure gauge stopcock with round testing flange	145	-	891GL Tee fitting male connections	85	87
407D Copper insulation loop for pressure gauges	145	-	892GL M/M threaded nipple	85	87
61C Thermostatic mixing valve F 32°C ÷ 50°C	157	162	893GL Nipple male/female connections	85	87
61CM Thermostatic mixing valve M 32°C ÷ 50°C	157	162	AKH Angle ball valve with hose connection	153	-
62C Thermostatic mixing valve F 42°C ÷ 60°C	157	162	AL Automatic filling valve inox filter	110	115
63C Thermostat mixing valve for radiant panel systems	75	78	ALD Filling unit, hose nozzle connection	110	-
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817M Compression unit for polyethylene pipes	83	87	ALOD Filling unit, hose nozzle connection with manometer	110	-
817MS Compression unit for multi-layer pipe	83	87	AN433 RF antenna for climatic controls	47	-
820R Compression union for copper pipe	82	87	AS Manifold connection set for HKV and HKV/T	59	-
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BTDP-RF RF programmable electronic LCD room thermostat	45	48	DI Straight bulkhead union	134	-
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