

Radiator valves with thermostatic option with dynamic flow balancing



R401DB
IRON PIPE CONNECTION



R402DB
IRON PIPE CONNECTION



R415DB
IRON PIPE CONNECTION



R411DB
ADAPTOR CONNECTION



R412DB
ADAPTOR CONNECTION



R415DB
ADAPTOR CONNECTION



DB radiator valves with thermostatic option are equipped with an integrated cartridge to control and limit the flow rate through preset values.

The preset flow rate is never exceeded, even in case of load variations within the system when other valves close or during start up. This operation is completely independent from the differential pressure when the valve is included between a minimum and maximum range.

The required flow rate is set directly on the cartridge with a regulation key, so complicated calculations for pressure losses and balancing are no longer required and commissioning times are reduced.

These characteristics are crucial in new systems and even more so in renovation works where planners and installers are often unaware of important parameters.

The maximum differential pressure is an additional important characteristic as DB valves are designed to work up to 150 kPa, making them suitable for a wide range of applications.

Thanks to the 150kPa maximum differential pressure, the valve can be used to replace existing ones without installing a differential pressure controller upstream of the distribution line.

➤ Versions and product codes

SERIES	PRODUCT CODE	CONNECTIONS	TYPE
R401DB	R401DBX032	3/8" x 3/8"	Angle
	R401DBX033	1/2" x 1/2"	
	R401DBX004	3/4" x 3/4" *	
R402DB	R402DBX032	3/8" x 3/8"	Straight
	R402DBX033	1/2" x 1/2"	
	R402DBX004	3/4" x 3/4" *	
R415DB	R415DBX033	1/2" x 1/2"	Reverse angle
R411DB	R411DBX033	1/2" x 16	Angle
R412DB	R412DBX033	1/2" x 16	Adaptor connection for copper, plastic or multilayer pipe
R415DB	R415DBX042	1/2" x 16	Reverse angle

* Tail piece without self-sealing

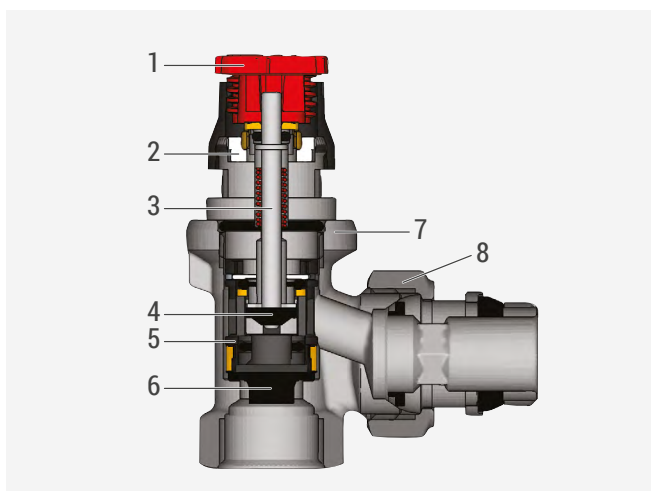
Accessories

- R73PY010: regulation key for presetting
- R400DBX001: kit for bonnet replacement
- R460, R468, R470: thermostatic heads with Clip Clap quick-connection

Spare parts

- P12ADBX002: bonnet with dynamic balancing

➤ Components



- | | |
|---|--|
| 1 | Worksite protection cover |
| 2 | Indicator ring |
| 3 | Command stem |
| 4 | Stopper |
| 5 | Regulation sleeves |
| 6 | Balancing membrane with controlled deformation |
| 7 | Valve body |
| 8 | Tail piece and nut |

Technical data

Performance

- Fluids: water and glycol-based solutions (max. 30 %)
- Temperature range: 5+95 °C
- Max. working pressure:
 - 16 bar with worksite protection cover
 - 10 bar in combination with thermostatic heads
- Max. differential pressure with thermostatic heads:
 - 1,5 bar (150 kPa)

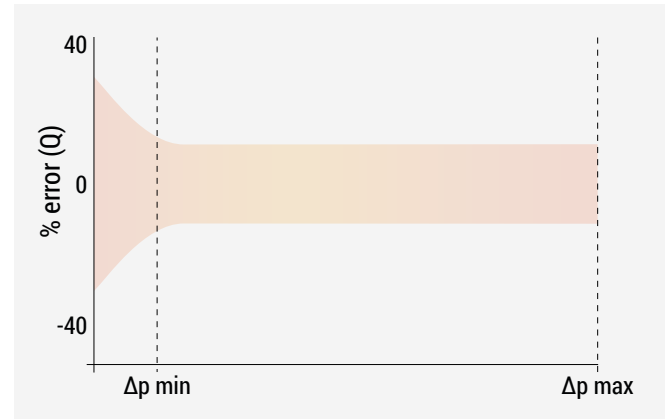
Materials

- Body and main parts:
 - chrome-plated brass UNI EN 12165 CW617N
- Seals: EPDM
- Worksite protection cover: PP-H
- Internal bonnet:
 - monoblock stem: stainless steel
 - bonnet body: brass UNI EN 12164 CW617N
 - sleeve: plastic
 - membrane: EPDM
 - O-Ring: EPDM

⚠ WARNINGS.

- DB valves are suitable for closed-loop systems for use with non-aggressive fluids (water, glycol-based water complying with VDI 2035/ONORM 5195).
- Mineral oils or mineral oil-based lubricants contained in the heat transfer fluid may cause swelling and damaging of the EPDM gaskets.
- When using ethylene glycol-based anti-freeze and anti-rust products not containing nitrites, refer to the manufacturer's instructions, especially those concerning concentrations and specific additives.
- In case of muddy water or water containing impurities, we recommend carrying out a chemical flushing before installing the valves with thermostatic option.

Adjustment accuracy



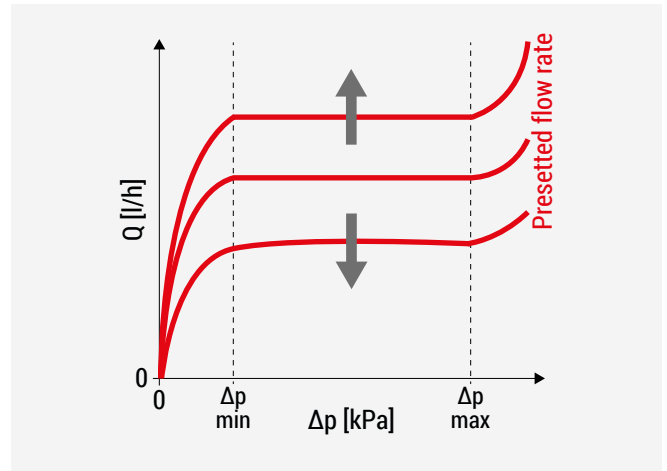
Operation

The desired flow rate is preset directly on the radiator valve with the special regulation key R73PY010 (see paragraph "Flow rate presetting").

If, for example, the flow rate tends to increase when other thermostatic valves close, the cartridge membrane will reduce the opening surface so that the flow rate is automatically limited to a preset value.

On the contrary, if the flow rate tends to decrease below the preset value, the cartridge membrane will extend the opening surface and the flow rate will return to the preset value.

The diagram shows the typical pressure drop of a DB radiator valve: the curve slopes down when reducing the preset flow rate and slopes up when increasing it.



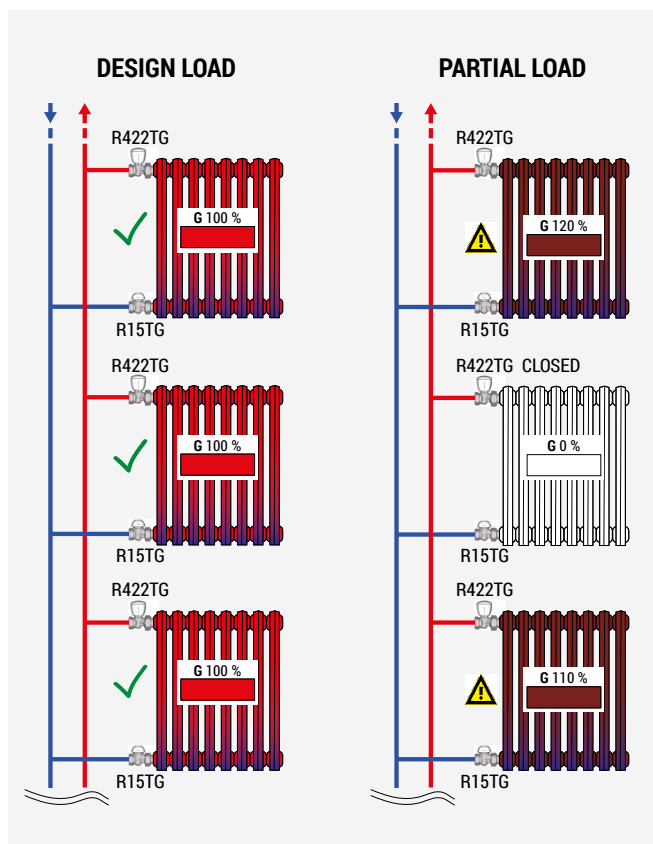
DB radiator valves are used in rising twin-pipe heating systems.

The valves control the flow rate through the radiators independently from the variations of the differential pressure, as long as this value is included between a minimum and maximum range.

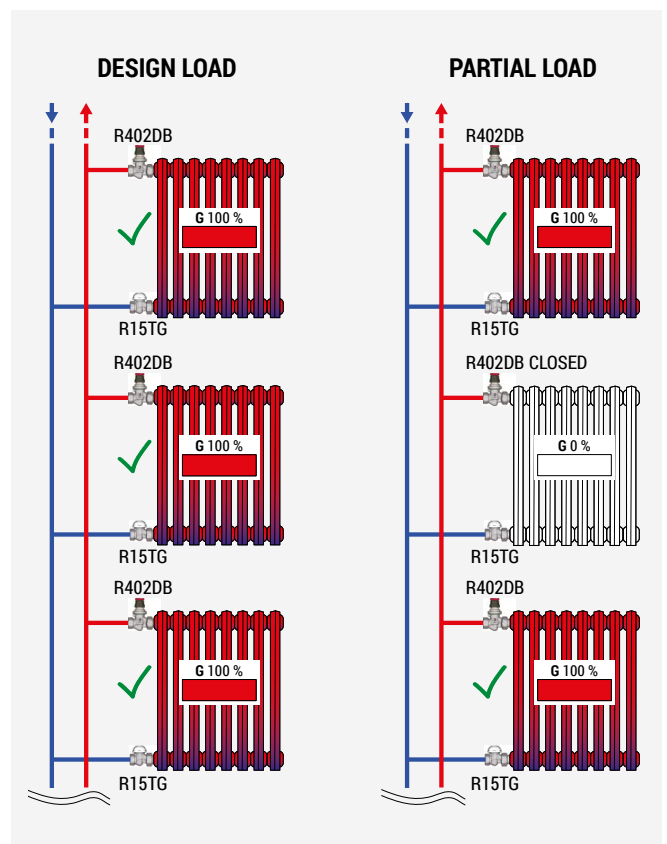
The minimum differential pressure must be controlled with the most disadvantaged valve while the most advantaged one controls the maximum value.

As shown in the application diagrams below, DB valves keep the flow rate constantly balanced in every radiator of the system. The TG and DB series valves can be equipped with thermostatic heads that work independently of the flow rate regulated by the valve with thermostatic option.

Rising pipe system with traditional TG valves and static flow rate balancing



Rising pipe system with DB valves and dynamic flow rate balancing

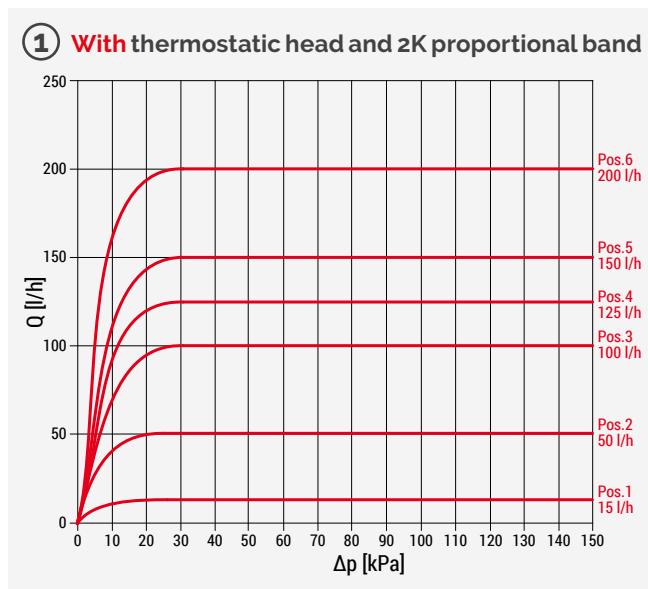
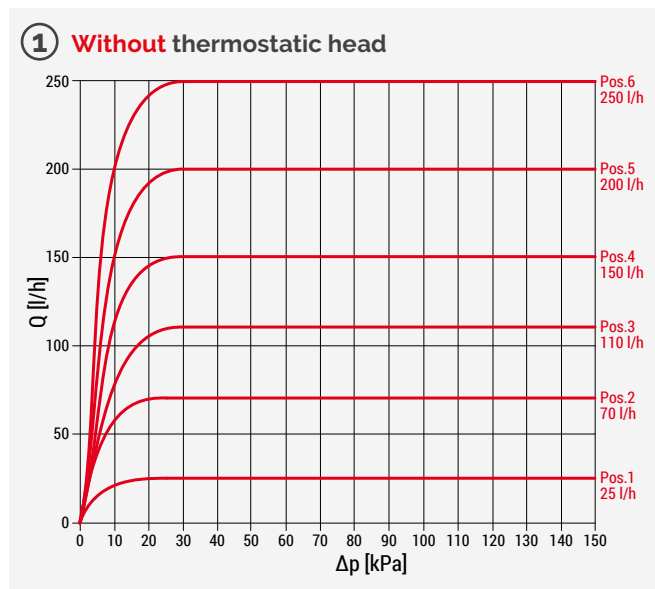


➤ Flow rate presetting

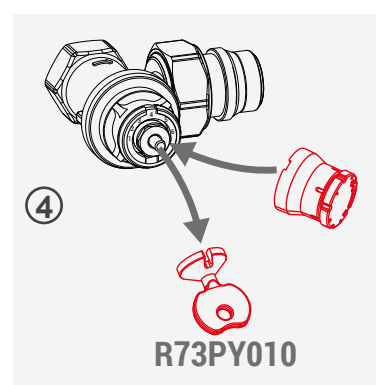
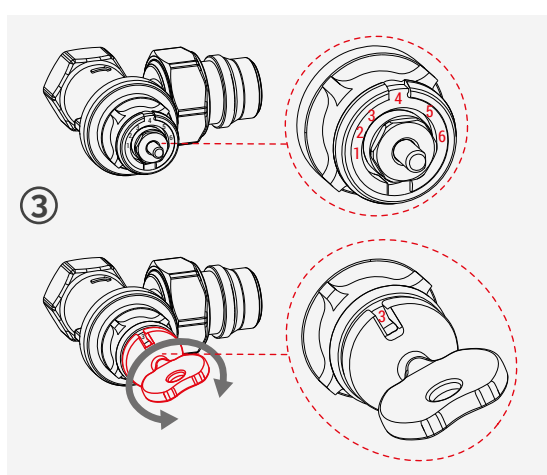
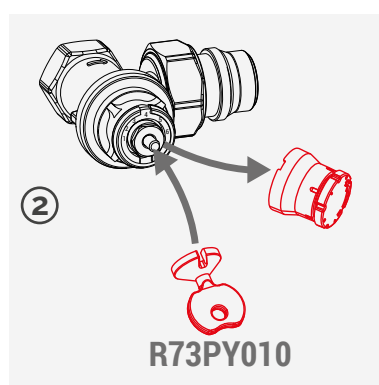
The flow rates of the valve may be preset with the R73PY010 regulation key (to be ordered separately) within a setting range from 1 to 6, indicated on the cartridge of the bonnet.

To preset the flow rates proceed as follow:

- 1) identify the cartridge position corresponding to the desired flow rate using the flow rate presetting diagrams or tables;
- 2) remove the worksite protection cover or the thermostatic head from the bonnet and fit the regulation key onto the cartridge;
- 3) turn the regulation key till the desired position appears in the key slot;
- 4) remove the regulation key and refit the worksite protection cover or the thermostatic head.



Presetting position	1	2	3	4 (factory setting)	5	6
Flow rate without thermostatic head [l/h]	25	70	110	150	200	250
Flow rate with thermostatic head [l/h]	15	50	100	125	150	200
Δp min [kPa]	25	25	30	30	30	30
Δp max [kPa]				150		

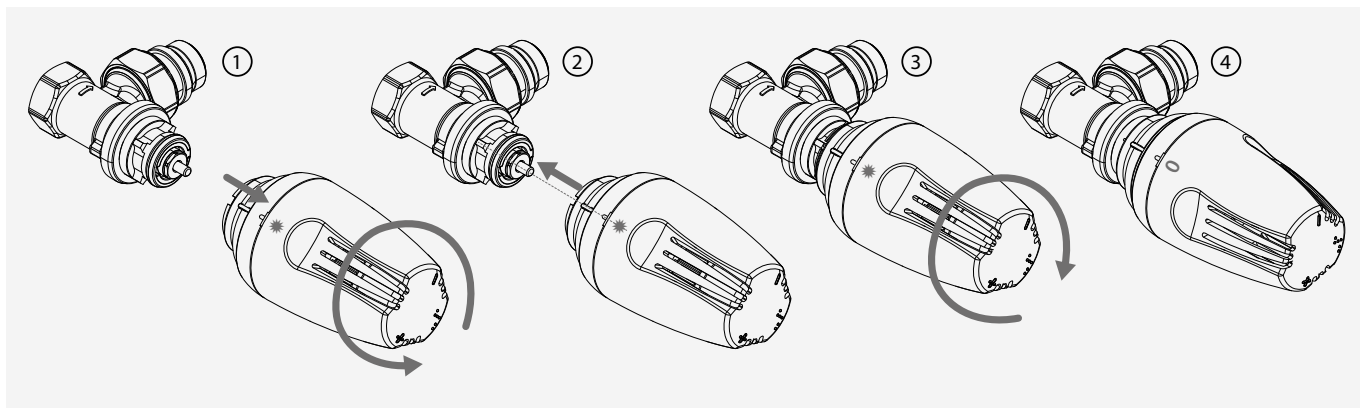


➤ Thermostatic heads installation

- Install the thermostatic heads horizontally.
- For correct reading of the temperature, do not install the thermostatic heads in niches, shutter boxes, behind curtains and do not expose to direct sunlight.
In such cases, we recommend using versions with remote sensors (R462/R463).
- R460, R468 and R470 thermostatic heads with Clip Clap quick connection can be installed directly on the valve body after removing the worksite protection cover.
- To remove the worksite protection cover, turn the upper cap in anti-clockwise direction and disconnect the lower base prying with a screwdriver.

To install thermostatic heads with Clip Clap connection on the valve body, follow the steps below:

- 1)** Fully open the thermostatic head moving the handle on position Pull the Clip Clap ring towards the handle.
- 2)** Snap the thermostatic head on the valve, making sure the valve pins, the thermostatic head slots and the Clip Clap ring notch are aligned.
- 3)** Fully close the thermostatic head by turning the handle all the way through (set the handle on "0").
- 4)** Now the thermostatic head is connected to the valve and can be set to the desired position by turning the handle.



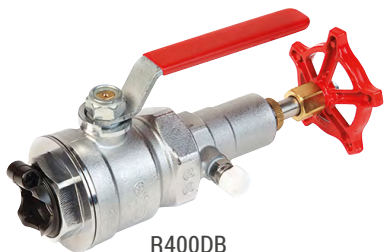
To remove the thermostatic heads from the valve body: fully open the thermostatic head by turning the handle on position Pull the Clip Clap ring towards the handle. Disconnect the head from the valve.

⚠ With thermostatic head installed on the valve body, to avoid excessive loads on the seal gasket of the thermostatic bonnet (with the resulting risk of jamming and locking) during the summer, it is recommended to place the handwheel of the thermostatic head in the fully open position, marked by the symbol .

⚠ Installation and removal of thermostatic heads may vary based on the head code (R460, R468, R470). The pictures above show the installation steps of thermostatic head R468. For additional installation details for other types of thermostatic heads, refer to the specific technical sheets.

ⓘ In case of malfunction of the bonnet is possible to replace it, using the appropriate kit R400DB.

➤ Bonnet replacement with R400DB kit

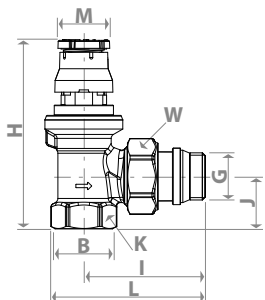


R400DB

- ⓘ** The bonnet of the DB SERIES dynamic balancing valves is not compatible with the other Giacomini valves with thermostatic option.
- ⓘ** The replacement of the radiator valve bonnet can be done with the system running, using the R400DB replacement kit.
- ⓘ** Refer to the operating instructions of the R400DB replacement kit for the replacement procedure of the bonnet.

➤ Dimensions

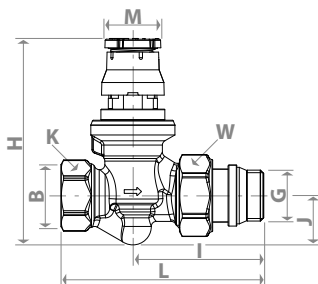
R401DB



PRODUCT CODE	G x B	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	W [mm]
R401DBX032	3/8" x 3/8"	79	51	20	22	68	23	27
R401DBX033	1/2" x 1/2"	83	53	23	26	71	23	30
R401DBX004	3/4" x 3/4" *	86	60	25	32	78	23	38

* Tail piece without self-sealing

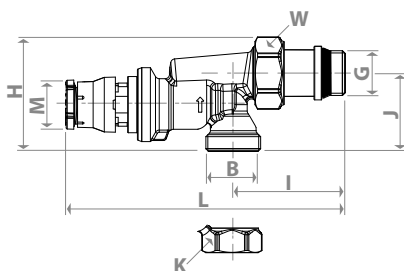
R402DB



PRODUCT CODE	G x B	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	W [mm]
R402DBX032	3/8" x 3/8"	83	54	16	22	76	23	27
R402DBX033	1/2" x 1/2"	84	53	20	26	82	23	30
R402DBX004	3/4" x 3/4" *	87	56	21	32	81	23	38

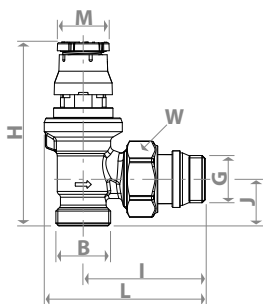
* Tail piece without self-sealing

R415DB



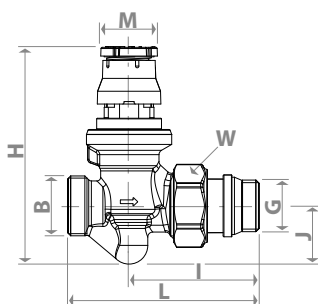
PRODUCT CODE	G x B	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	W [mm]
R415DBX033	1/2" x 1/2"	53	53	36	25	129	23	30
R415DBX042	1/2" x 16	53	45	36	-	122	23	30

R411DB



PRODUCT CODE	G x B	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	W [mm]
R411DBX033	1/2" x 16	80	53	21	-	71	23	30

R412DB



PRODUCT CODE	G x B	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	W [mm]
R412DBX033	1/2" x 16	87	52	23	-	77	23	30

➤ Product specifications

R401DB

Angle chrome-plated valve with thermostatic option with flow rate dynamic balancing and iron pipe connection. Body made with chrome-plated brass UNI EN 12165 CW617N. PP-H worksite protection cover. Stainless steel monoblock stem. Seal on control stem with EPDM O-Ring. Temperature range 5-95 °C. Max. working pressure 16 bar (with thermostatic head 10 bar). Δp min 25+30 kPa; Δp max 150 kPa. Flow rate presetting with 6 positions corresponding to 25, 70, 110, 150, 200, 250 L/h without thermostatic head installed. Flow rate presetting with 6 positions corresponding to 15, 50, 100, 125, 150, 200 L/h with thermostatic head installed and 2K proportional band.

R402DB

Straight chrome-plated valve with thermostatic option with flow rate dynamic balancing and iron pipe connection. Body made with chrome-plated brass UNI EN 12165 CW617N. PP-H worksite protection cover. Stainless steel monoblock stem. Seal on control stem with EPDM O-Ring. Temperature range 5-95 °C. Max. working pressure 16 bar (with thermostatic head 10 bar). Δp min 25+30 kPa; Δp max 150 kPa. Flow rate presetting with 6 positions corresponding to 25, 70, 110, 150, 200, 250 L/h without thermostatic head installed. Flow rate presetting with 6 positions corresponding to 15, 50, 100, 125, 150, 200 L/h with thermostatic head installed and 2K proportional band.

R415DB

Reverse angle chrome-plated with thermostatic option with flow rate dynamic balancing; iron pipe connection or adaptor connection for copper, plastic or multilayer pipe. Body made with chrome-plated brass UNI EN 12165 CW617N. PP-H worksite protection cover. Stainless steel monoblock stem. Seal on control stem with EPDM O-Ring. Temperature range 5-95 °C. Max. working pressure 16 bar (with thermostatic head 10 bar). Δp min 25+30 kPa; Δp max 150 kPa. Flow rate presetting with 6 positions corresponding to 25, 70, 110, 150, 200, 250 L/h without thermostatic head installed. Flow rate presetting with 6 positions corresponding to 15, 50, 100, 125, 150, 200 L/h with thermostatic head installed and 2K proportional band.

R411DB

Angle chrome-plated valve with thermostatic option with flow rate dynamic balancing and adaptor connection for copper, plastic or multilayer pipe. Body made with chrome-plated brass UNI EN 12165 CW617N. PP-H worksite protection cover. Stainless steel monoblock stem. Seal on control stem with EPDM O-Ring. Temperature range 5-95 °C. Max. working pressure 16 bar (with thermostatic head 10 bar). Δp min 25+30 kPa; Δp max 150 kPa. Flow rate presetting with 6 positions corresponding to 25, 70, 110, 150, 200, 250 L/h without thermostatic head installed. Flow rate presetting with 6 positions corresponding to 15, 50, 100, 125, 150, 200 L/h with thermostatic head installed and 2K proportional band.

R412DB

Straight chrome-plated valve with thermostatic option with flow rate dynamic balancing and adaptor connection for copper, plastic or multilayer pipe. Body made with chrome-plated brass UNI EN 12165 CW617N. PP-H worksite protection cover. Stainless steel monoblock stem. Seal on control stem with EPDM O-Ring. Temperature range 5-95 °C. Max. working pressure 16 bar (with thermostatic head 10 bar). Δp min 25+30 kPa; Δp max 150 kPa. Flow rate presetting with 6 positions corresponding to 25, 70, 110, 150, 200, 250 L/h without thermostatic head installed. Flow rate presetting with 6 positions corresponding to 15, 50, 100, 125, 150, 200 L/h with thermostatic head installed and 2K proportional band.

⚠ Safety Warning. Installation, commissioning and periodical maintenance of the product must be carried out by qualified operators in compliance with national regulations and/or local standards. A qualified installer must take all required measures, including use of Individual Protection Devices, for his and others' safety. An improper installation may damage people, animals or objects towards which Giacomini S.p.A. may not be held liable.

♻ Package Disposal. Carton boxes: paper recycling. Plastic bags and bubble wrap: plastic recycling.

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♻ Product Disposal. Do not dispose of product as municipal waste at the end of its life cycle. Dispose of product at a special recycling platform managed by local authorities or at retailers providing this type of service.