



Rev. 11/2024

TL1

THERMOSTATIC HEAD

TL1 THERMOSTATIC HEAD

+ Design by Piero Lissoni
EN 215 KEYMARK certified
High energy efficiency



LICENCE FOR USE OF TRADEMARK NO. 43



PRODUCTION RANGE

THERMOSTATIC HEAD			
Model (series)	Code	Sensor	Sensor cable length
TL1	3937.00.00	Liquid expansion	(incorporated)

DESCRIPTION

The **TL1 thermostatic head** is a control device for valves with thermostatic option.

The thermostatic head mainly consists of a container underneath the hand wheel, containing the thermostatic liquid, sensitive to room temperature variations.

The thermostatic liquid tends to vary its volume upon room temperature increase or decrease, causing the valve's shutter connected to

it, to move, in this way adjusting the liquid flow towards the heating body.

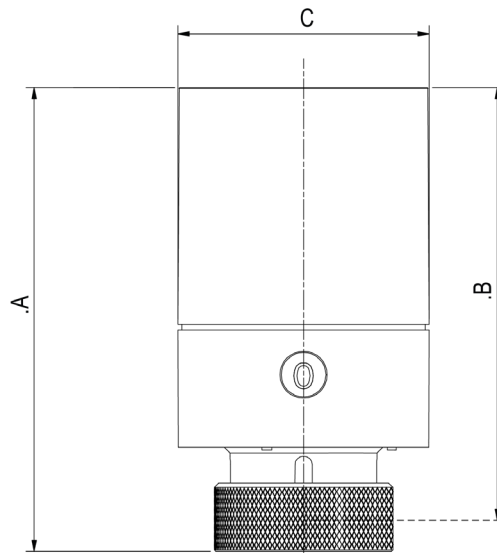
Said movements maintain the temperature set from the thermostatic head hand wheel throughout time.

The thermostatic head components are made of polymer materials, therefore the heat dispersed by the heating body does not affect the thermostatic head's mechanism.

CONSTRUCTION FEATURES

Body:	TechnoPolymer
Bulb liquid:	Thermostatic ethyl acetate
Type TL1:	With liquid expansion, incorporated sensor

DIMENSIONAL FEATURES



Code	Dimensions		
	A [mm]	B [mm]	C [mm]
3937.00.00	83.2	77.6	45

VALVES WITH THERMOSTATIC OPTION



PRODUCTION RANGE

VALVES WITH THERMOSTATIC OPTION - IRON PIPE

Model	Size	Connection on system side	Code		End connection	Code		End connection
			Polymer Cap	Brass Cap		Polymer Cap	Brass Cap	
ANGLE	3/8"	G 3/8" F	31.03.00*	2494.03.00	G 3/8" M RFS	31.03.90*	2494.03.90	G 3/8" M
ANGLE	1/2"	G 1/2" F	31.04.00*	2494.04.00	G 1/2" M RFS	31.04.90	2494.04.90	G 1/2" M
ANGLE	3/4"	G 3/4" F	-	-	G 3/4" M RFS	31.05.00	-	G 3/4" M
STRAIGHT	3/8"	G 3/8" F	32.03.00*	2495.03.00	G 3/8" M RFS	32.03.90*	2495.03.90	G 3/8" M
STRAIGHT	1/2"	G 1/2" F	32.04.00*	2495.04.00	G 1/2" M RFS	32.04.90*	2495.04.90	G 1/2" M
STRAIGHT	3/4"	G 3/4" F	-	-	G 3/4" M RFS	32.05.00	-	G 3/4" M
INVERSE	3/8"	G 3/8" F	179.03.00	-	G 3/8" M RFS	-	-	G 3/8" M
INVERSE	1/2"	G 1/2" F	179.04.00	-	G 1/2" M RFS	-	-	G 1/2" M

" The certificate according to EN 215 refers to the combination of head + valves marked with * "

VALVES WITH THERMOSTATIC OPTION - COPPER, POLYETHYLENE, MULTILAYER PIPE

Model	Size	Connection on system side	Code		End connection	Code		End connection
			Polymer Cap	Brass Cap		Polymer Cap	Brass Cap	
ANGLE	3/8"	Standard RBM	48.03.00*	2496.03.00	G 3/8" M RFS	48.03.90*	2496.03.90	G 3/8" M
ANGLE	1/2"	Standard RBM	48.04.00*	2496.04.00	G 1/2" M RFS	48.04.90*	2496.04.90	G 1/2" M
STRAIGHT	3/8"	Standard RBM	49.03.00*	2497.03.00	G 3/8" M RFS	48.03.90*	2497.03.90	G 3/8" M
STRAIGHT	1/2"	Standard RBM	49.04.00*	2497.04.00	G 1/2" M RFS	48.04.90*	2497.04.90	G 1/2" M
INVERSE	3/8"	Standard RBM	180.03.00	-	G 3/8" M RFS	-	-	G 3/8" M
INVERSE	1/2"	Standard RBM	180.04.00	-	G 1/2" M RFS	-	-	G 1/2" M

" The certificate according to EN 215 refers to the combination of head + valves marked with * "

DESCRIPTION

USE

The **RBM thermostatic valves or with thermostatic option** are used as shut-off and adjustment parts for heating bodies (radiators, fan coils, radiating panels, etc...) in heating and air conditioning systems.

PRODUCTION RANGE

The valves are produced in straight, angle and reverse versions and allow, on the system side, connection to different types of piping.

- The system side, gas threading valves are set-up for connection with steel pipe.
- The system side, RBM Standard thread valves are set-up for connection with copper pipe, polyethylene pipe and multilayer polyethylene pipe for which specific fittings are prepared.

On radiator side, the range is fitted with "RFS" mechanical hermetic

junction system for quick connection with the heating body. The hermetic junction system consists of a PTFE gasket with fastening nut.

OPERATION

The **RBM thermostatic valves or with thermostatic option** must be installed in the system **respecting the flow direction that must enter from system connection and exit towards the heating body**.

The hydraulic features and head losses of the RBM valves are found on the technical sheet's diagrams, under the "Fluid dynamics features" section.

CONSTRUCTION FEATURES

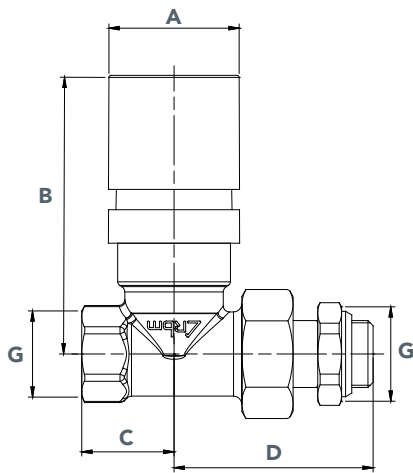
Body:	Brass
Adjustment cap:	Polymer or Brass
Seals:	EPDM PEROX
Hand wheel:	Shockproof ABS
Connection to end:	RFS connection
RFS Connection:	M UNI EN ISO 228 with PTFE ogive (3/8" and 1/2" size only)
Surface finish :	Frosted and Nickel-plated

TECHNICAL FEATURES

T_{max} operating:	110°C
P_{max} operating:	10 bar (1000 kPa)
Fluid:	Water and Water + Glycol at 50%

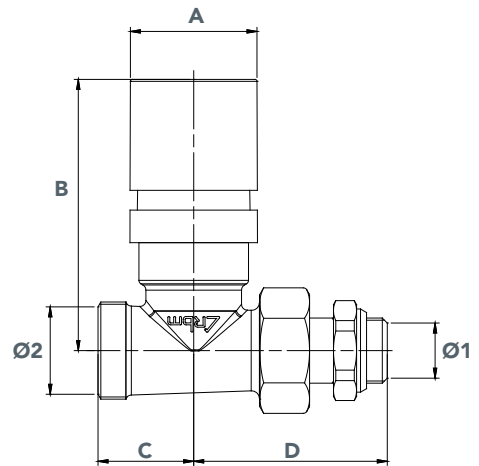
DIMENSIONAL FEATURES (OVERALL DIMENSIONS)

**STRAIGHT VALVE
for iron pipe**



Code	Size G	A [ø]	B [mm]	C [mm]	D [mm]
32.03.X0	3/8"	32	68	22.5	48.5
32.04.X0	1/2"	32	68	24.5	50
32.05.00	3/4"	32	68	31.5	57

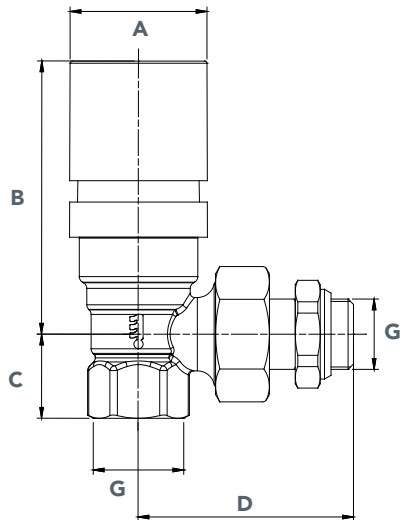
**STRAIGHT VALVE
for multilayer, polyethylene, copper pipe**



Code	Ø1	Ø2 *	A [ø]	B [mm]	C [mm]	D [mm]
49.03.X0	3/8"	RBM	32	68	23.5	48.5
49.04.X0	1/2"	RBM	32	68	23.5	50

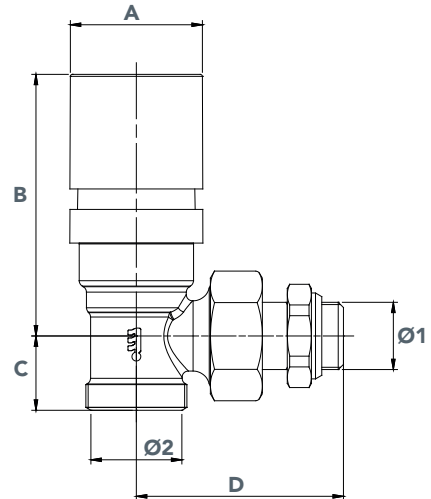
* Standard thread RBM W24,5x19F

**ANGLE VALVE
for iron pipe**



Code	Size G	A [ø]	B [mm]	C [mm]	D [mm]
31.03.X0	3/8"	32	64	19.5	50
31.04.X0	1/2"	32	64	22.5	51.5
31.05.00	3/4"	32	64	28	62.5

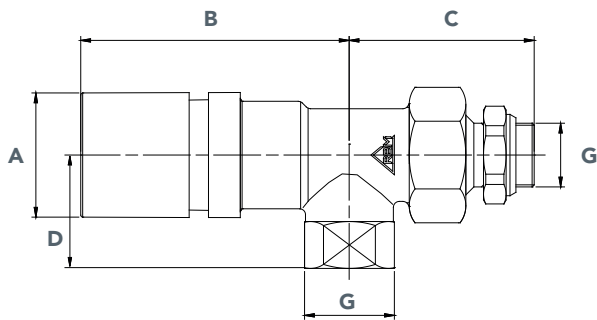
**ANGLE VALVE
for multilayer, polyethylene, copper pipe**



Code	Ø1	Ø2 *	A [ø]	B [mm]	C [mm]	D [mm]
48.03.X0	3/8"	RBM	32	64	18	50
48.04.X0	1/2"	RBM	32	64	18	51.5

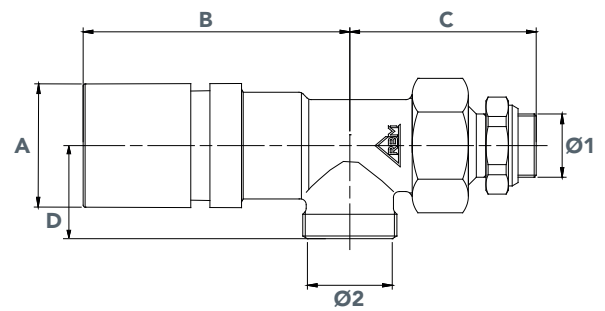
*RMB Standard Thread W24.5x19F

**INVERSE VALVE
for iron pipe**



Code	Size G	A [ø]	B [mm]	C [mm]	D [mm]
179.03.X0	3/8"	32	69	47.5	29
179.04.X0	1/2"	32	69	51.5	30.5

**INVERSE VALVE
for multilayer, polyethylene, copper pipe**



Code	Ø1	Ø2 *	A [ø]	B [mm]	C [mm]	D [mm]
180.03.X0	3/8"	RBM	32	69	49	24
180.04.X0	1/2"	RBM	32	69	52.5	24

RBM VALVE WITH THERMOSTATIC OPTION AND THERMOSTATIC HEAD TECHNICAL FEATURES

Properties	Unit of measurement	Declared values
Minimum adjustment calibration (anti-freeze position)	t_s min	7 °C (*)
Maximum adjustment calibration (position)	t_s max	30 °C (5)
Saving condition (position)		20 °C (3)
Maximum working pressure	PN	10 bar (1000 kPa)
Maximum differential pressure (in flow direction)	ΔP	1 bar (100 kPa)
Maximum differential pressure (in return direction)	ΔP	0.6 bar (60 kPa)
Nominal flow rate "qm N" (DP = 10 KPa) angle-straight	qm N	220 Kg/h
Maximum working temperature		110°C
Maximum storage temperature		50 °C
Hysteresis	C	0.3 K
Authority	a	0.9
Response time	Z	25 min
Differential pressure influence	D	0.2
Water temperature influence		
Declared value in combination with polymer cap valves	W	0.57 K
The thermostatic valve is fitted with manual adjustment hand wheel (rotation)		60° = 1K
Control accuracy according to EN 215 - for valves with polymer cap	CA	0.2 K

The valves' certification by **Siet** in accordance with Standard UNI EN 215, is the RBM valve and thermostatic head combination.

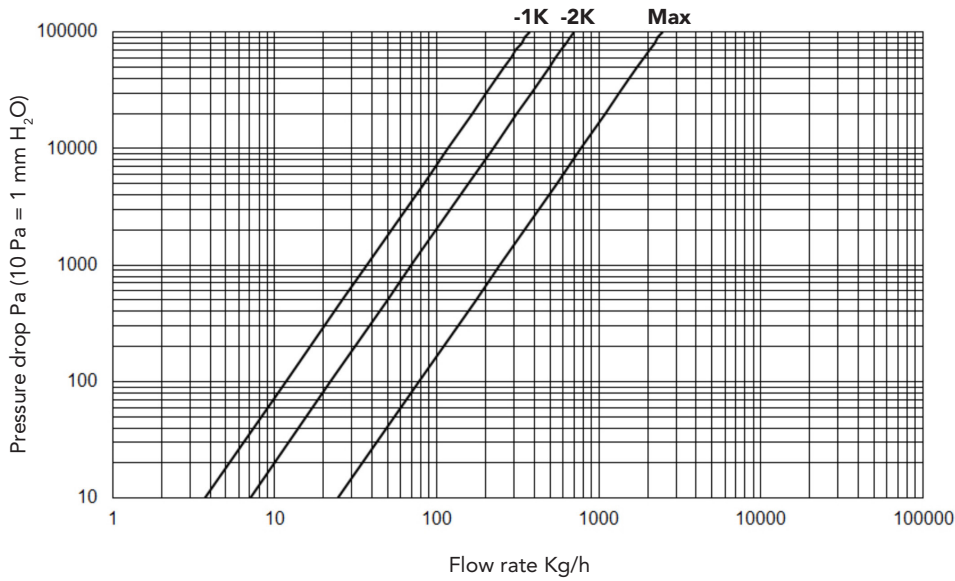
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VALVE FLUID DYNAMIC FEATURES

1/2" ANGLE VALVE

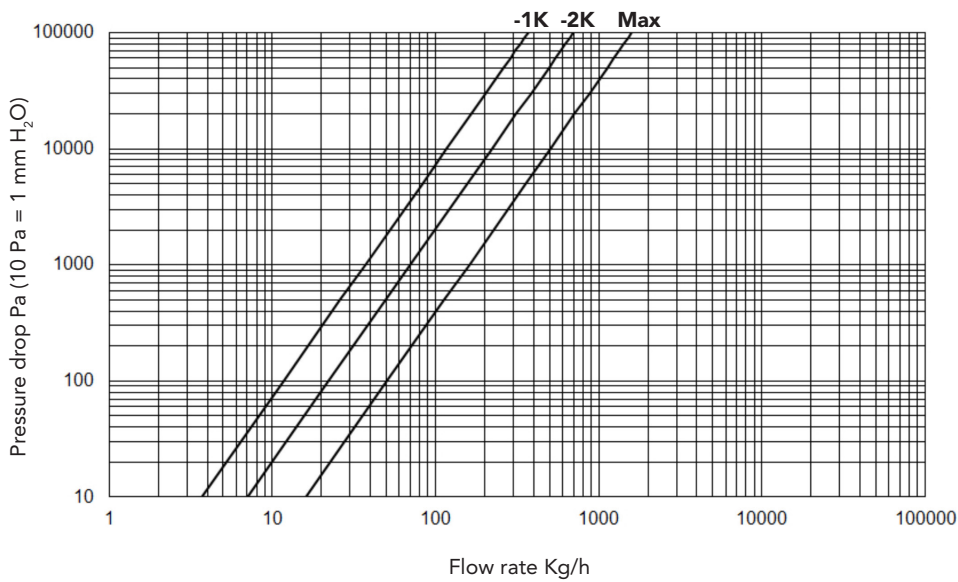
3/8" ANGLE VALVE



Value	Kv [Kg/h]
-1K	370
-2K	700
Max	2450

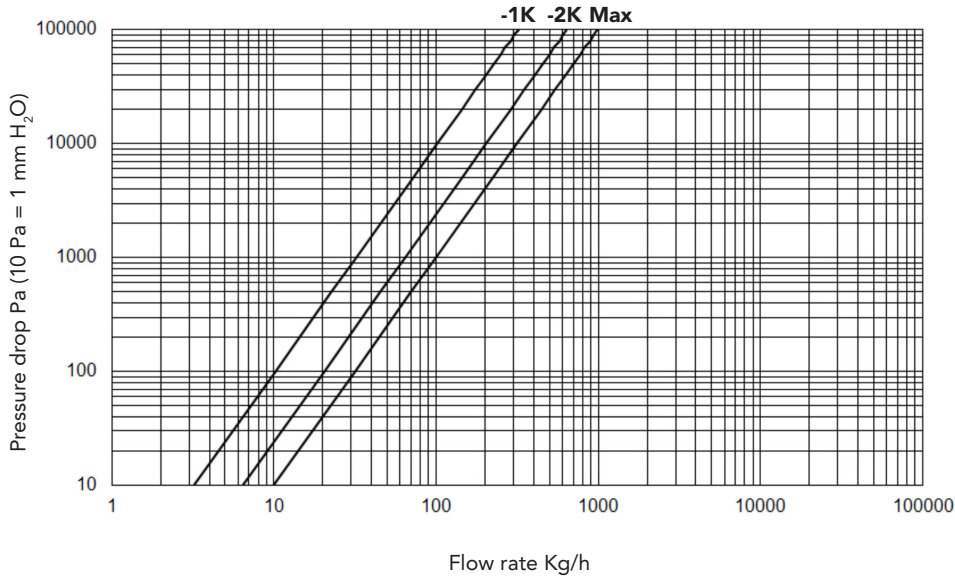
3/8" STRAIGHT VALVE

1/2" STRAIGHT VALVE



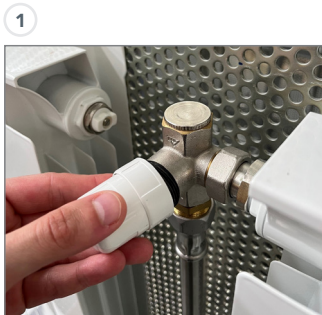
Value	Kv [Kg/h]
-1K	370
-2K	700
Max	1600

3/8" INVERSE VALVE
1/2" INVERSE VALVE

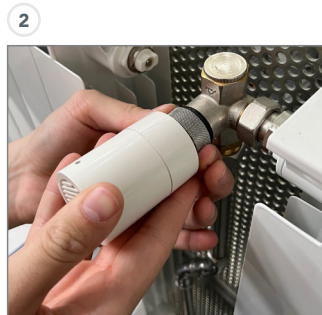


Value	Kv [Kg/h]
-1K	320
-2K	640
Max	990

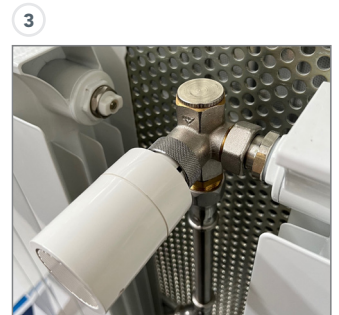
INSTALLATION OF THERMOSTATIC HEAD TL1 ON VALVE WITH THERMOSTATIC OPTION



1. Remove the manual adjustment hand wheel by loosening it anti-clockwise.



2. Position the thermostatic head onto the valve's body by centring the cap's hexagon and leaving the adjustment reference window upwards (in visible position).



3. Tighten the knurled metal ring nut of the thermostatic head on the valve's body until blocked. Once the head is assembled, turn the numbered knob a few times from **position "5"** to **position "**"**, for the parts to adjust.

TEMPERATURE ADJUSTMENT

Adjust by turning the numbered knob so the symbol corresponding to the desired temperature is positioned in the window of reference. (Approximate values)

Symbol	0	*	1	2	3	4	5
Value	2	7	10	15	20	25	30

(*)It indicates the anti-freeze position where the valve only opens when the room temperature drops below 7 °C. It is recommended during long absence in wintertime or when wanting to ventilate the room.

TEMPERATURE LIMIT

We recommend blocking the knob at the temperature or limit its field of intervention, once temperature is adjusted.

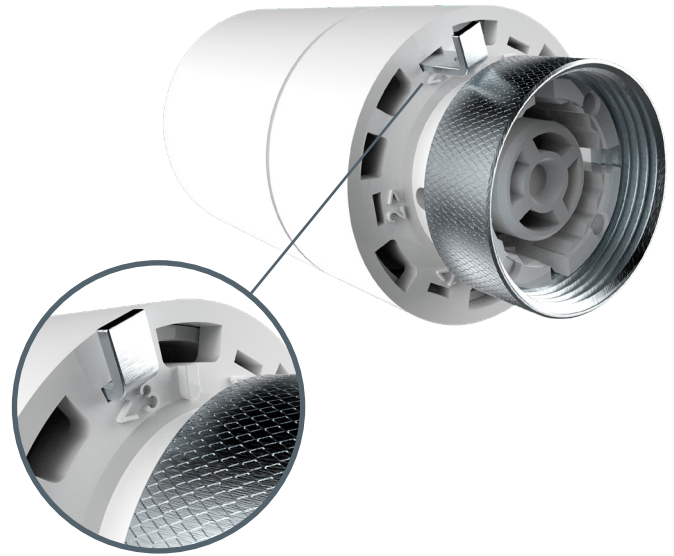
Example of hand wheel blocking on position: **"3" (20 °C)**.

- Highlight no. 3 in the symbols' display window;
- The knob is set-up with numbers referring to the temperature adjusted by the thermostatic head;
- Introduce the specific inserts in the compartments in the slot <3;
- The knob will remain locked on the position of the **"3"** symbol, the adjustment can then range **from 0 to max. 3**.

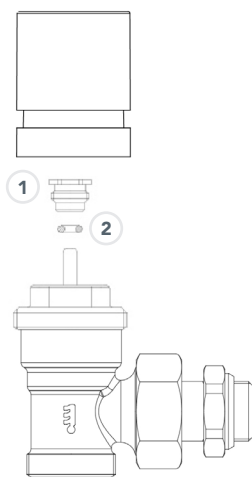
Move the inserts to wanted positions, if wanting to limit adjustment to a higher value.

To block or limit movement, use the appropriate **inserts with code 4196.00.00** available as accessory.

- Full closure inhibitor, reduced flow.
- 1 > Can range from 1 to 5 (prevent the valve from being closed).
- 2 > Can range from 2 to 5.
- 3 < 3 Can range from 0 to 3.
- 4 < 4 Can range from 0 to 4.



MAINTENANCE INTERVENTIONS



Maintenance interventions can be carried out on all RBM thermostatic valves and with thermostatic option.

In fact, the valve's OR can be replaced with the system running.

Follow the indications below:

- Loosen the valve's hand wheel anti-clockwise. Remove the hand wheel, uncover the stuffing box housing an OR gasket to be replaced.
- Using specific CH 10 wrench, loosen the stuffing box and replace the OR with RBM OR (code **5001.045**).
- Appropriately dispose of the replaced OR.
- Using the specific wrench, tighten the stuffing box in its seat to end stroke and then the valve's hand wheel.

- 1 Stuffing box
- 2 OR gasket

VANDAL PROOF COLLAR

The **RBM TL1 thermostatic head** can be fitted with **vandal proof collar** (code **316.00.10** - **fig.1**), which when mounted, prevents its removal. Only by using the supplied specific key (code **2151.005** - **fig.2**), is it possible to remove it.

(Kit 1+2 code **316.00.00**).



COMBINED FITTINGS

POLYETHYLENE PIPES

Type of fitting	Number of threaded connections	Type of threaded connection	Piping	Code
COMPRESSION FITTING	1	Standard RBM Nut	POLYETHYLENE	71.12...20.X0 122.12...20.00

MULTILAYER POLYETHYLENE PIPES

Type of fitting	Number of threaded connections	Type of threaded connection	Piping	Code
COMPRESSION FITTING	1	Standard RBM Nut	MULTILAYER POLYETHYLENE	70.10...20.X0 1216.14...16.00

Type of fitting	Number of threaded connections	Press fittings	Piping	Code
PRESS FITTING	1 Standard RBM	1	MULTILAYER POLYETHYLENE	826.14...20.X0

COPPER PIPES

Type of fitting	Number of threaded connections	Type of threaded connection	Piping	Code
COMPRESSION FITTING	1	Standard RBM Nut	COPPER	602.10...16.00 41.10...16.20 41.18.20* (Pipe Ø18 only)

* Install a reduction, code 57.18.00, for fitting connection for copper pipe Ø18

WARNING

It is preferable to install the thermostatic head **horizontally**.




The sensitive element of the thermostatic valves must not be positioned in: niches, boxes, behind curtains, or directly exposed to sunlight. If installed differently from that indicated, the sensor detections may be distorted.

It is a good rule to **remove the head from the valve during the summer, when the heating system is inactive**, to protect the RBM thermostatic head's good operation.

STORAGE

Product storage: -25°C to +50°C in original packaging

ACCESSORIES

Product	Code	Description
	316.00.10	Vandal proof collar
	2151.005	Specific tool for assembling the vandal proof collar
	4196.00.00	Pair of temperature limitation inserts for RBM thermostatic head

SPECIFICATIONS

SERIES 3937

Thermostatic control for valves with thermostatic option. Internal sensitive element with liquid expansion. Prearranged for temperature limitation and anti-tampering blockage. Max. ambient temperature 50 °C. Anti-freeze triggering (*) 7 °C. Calibration field (1-5) 10...30 °C. Hysteresis 0.3 °C. Max differential pressure (head mounted on valve) 1 bar. Thermostatic ethyl-acetate bulb liquid

SERIES 31

Angle valve with thermostatic option for iron pipe, complying with standard UNI-EN 215 (only diameters 3/8" and 1/2"). Nickel-plated brass body. Shutter with double seal. EPDM PEROX seals. Shockproof ABS hand wheel. Threaded square connection F UNI-EN-ISO 228 for iron pipe. Connection to threaded terminal M UNI-EN-ISO 228 with pre-gasket ogive in PTFE (only diameters 3/8" and 1/2"). Max temperature 110 °C. Max operating pressure 10 bar. Available sizes 3/8" - 3/4".

SERIES 32

Straight valve with thermostatic option for iron pipe, complying with standard UNI-EN 215 (only diameters 3/8" and 1/2"). Nickel-plated brass body. Shutter with double seal. EPDM PEROX seals. Shockproof ABS hand wheel. Straight threaded connection F UNI-EN-ISO 228 for iron pipe. Connection to threaded terminal M UNI-EN-ISO 228 with pre-gasket ogive in PTFE (only diameters 3/8" and 1/2"). Max temperature 110 °C. Max operating pressure 10 bar. Available sizes 3/8" - 3/4".

SERIES 48

Angle valve with thermostatic option for copper, polyethylene and multilayer pipe, complying with standard UNI-EN 215. Nickel-plated brass body. Shutter with double seal. EPDM PEROX seals. Shockproof ABS hand wheel. RBM Standard threaded square connection for copper, polyethylene and multilayer pipe. M UNI-EN-ISO 228 threaded terminal connection with PTFE pre-gasket ogive. Max temperature 110 °C. Max operating pressure 10 bar. Available sizes 3/8" and 1/2".

SERIES 49

Straight valve with thermostatic option for copper, polyethylene and multilayer pipe, complying with standard UNI-EN 215. Nickel-plated brass body. Shutter with double seal. EPDM PEROX seals. Shockproof ABS hand wheel. RBM Standard threaded straight connection for copper, polyethylene and multilayer pipe. M UNI-EN-ISO 228 threaded terminal connection with PTFE pre-gasket ogive. Max temperature 110 °C. Max operating pressure 10 bar. Available sizes 3/8" and 1/2".

SERIES 179

Inverse valve with thermostatic option for copper pipe. Nickel-plated brass body. Shutter with double seal. EPDM PEROX seals. Shockproof ABS hand wheel. Threaded square connection F UNI-EN-ISO 228 for iron pipe. M UNI-EN-ISO 228 threaded terminal connection with PTFE pre-gasket ogive. Max temperature 110 °C. Max operating pressure 10 bar. Available sizes 3/8" and 1/2".

SERIES 180

Inverse valve with thermostatic option for copper, polyethylene and multilayer pipe. Nickel-plated brass body. Shutter with double seal. EPDM PEROX seals. Shockproof ABS hand wheel. RBM Standard threaded square connection for copper, polyethylene and multilayer pipe. M UNI-EN-ISO 228 threaded terminal connection with PTFE pre-gasket ogive. Max temperature 110 °C. Max operating pressure 10 bar. Available sizes 3/8" and 1/2".

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