Thermostatic valves and control heads

204 series

01242/20 EN
replaces dp 01242/19 GB

028

Function

Thermostatic valves are typically used for regulating the fluid flow to the radiators of central heating systems.
They are provided with a regulating element which automatically controls the opening of the valve to keep the ambient temperature of the room where they are installed constant at the set value. This prevents unwanted temperature rises and achieves considerable energy savings.

Technical specification of control heads

Scale of adjustment:	❄–5
Setting temperature range:	7–28 °C
Frost protection cut-in:	7 °C
Storage temperature:	-10–50 ° C

Caleffi valves 220, 221 (sizes 3/8", 1/2", 3/4"); 224, 225 series (sizes 3/8", 1/2"), 222, 223, 226, 227 series (size 1/2") in combination with control heads 204 series, are approved to standard EN 215.
Caleffi valves 222, 223 (sizes 3/8") are not approved to standard EN 215.

Technical specification of valve bodies

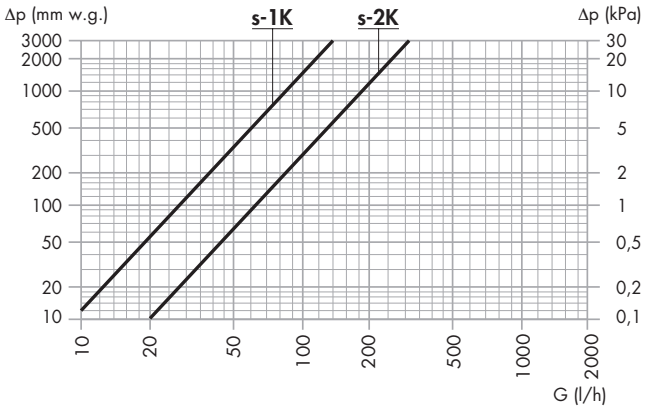
Medium:	water, glycol solutions
Max percentage of glycol:	30%
Max differential pressure with control fitted:	1 bar
Max working pressure:	10 bar
Temperature range:	5–100 °C

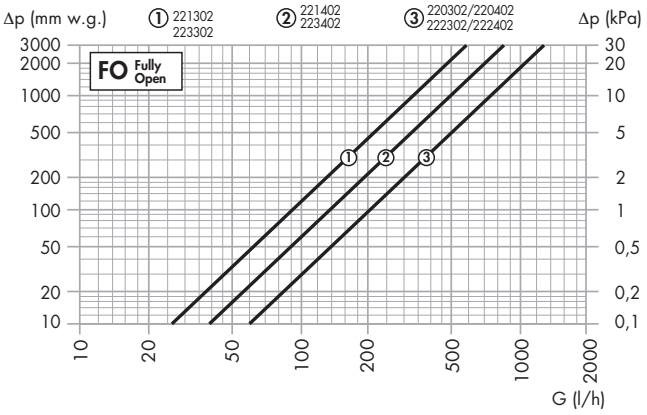
Code	Hysteresis	Differential pressure influence	Water temperature influence	Response time	Control accuracy - CA value
	[C]	[D]	[W]	[Z]	[CA]
204000	0,4 K	0,5 K	1 K	23 minuti	0,6 k
204100	0,4 K	0,5 K	0,5 K	18 minuti	0,2 k

Flow curves

The head loss diagrams are obtained with the thermostatic control head in position 3 and a difference between the ambient temperature and the set temperature of 1K and 2K (curves s-1K and s-2K respectively) as well as with the thermostatic control head fully open, corresponding to the maximum opening of the valve. The diagrams can be used for straight, angled, double angled and reverse valves. For thermotechnical calculations, the pressure loss can be considered equal with optimal approximation.

220 - 221 - 222 - 223 (3/8" - 1/2")

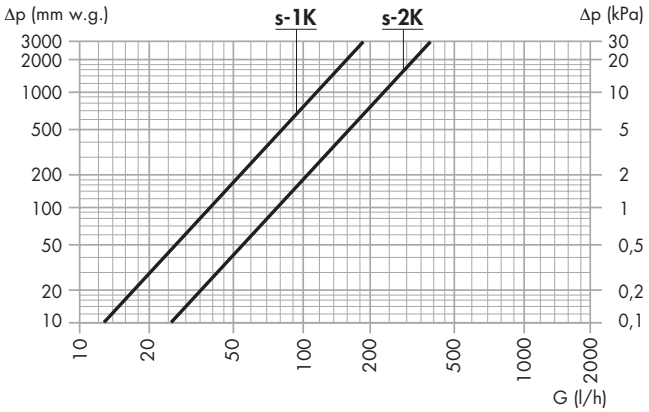


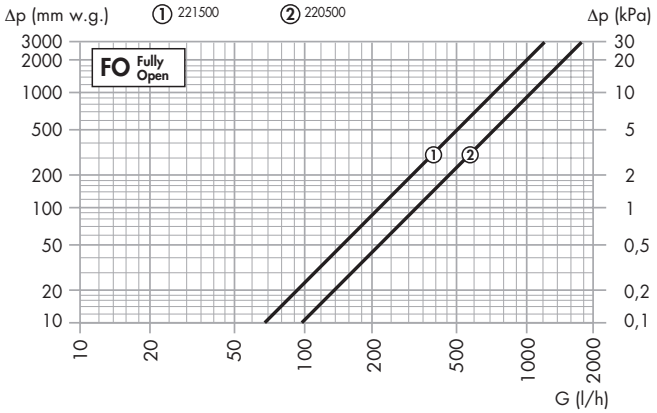


Valves series and size	Nominal flow rate (l/h)	Obturator authority	Kv (m^3/h) s-1K	Kv (m^3/h) s-2K	Kv (m^3/h) FO	Valve description
220 *(3/8")* - **222** *(3/8" - 23 p.1,5)*	180	0,92	0,32	0,57	2,29	Angled connection
220 *(1/2")* - **222** *(1/2" - 23 p.1,5)*	180 (170*)	0,92	0,32	0,57/0,54	2,39	Angled connection
221 *(3/8")* - **223** *(3/8" - 23 p.1,5)*	180	0,60	0,32	0,57	1,05	Straight connection
221 *(1/2")* - **223** *(1/2" - 23 p.1,5)*	180/200	0,60	0,32	0,57/0,63	1,52	Straight connection

** With control head code 204100*

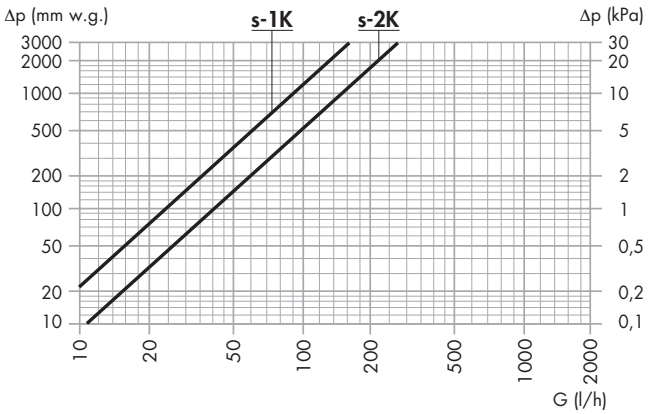
220 - 221 (3/4")

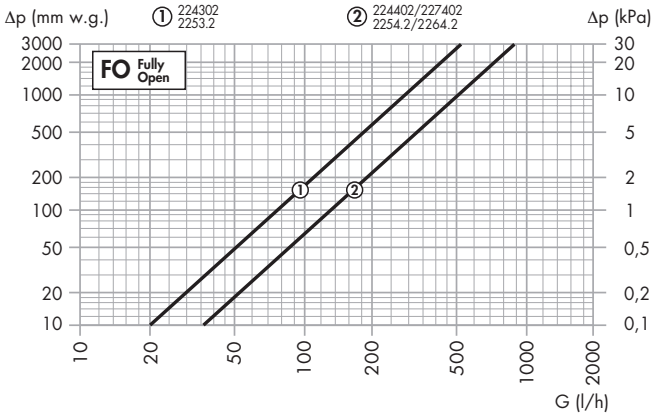




Valves series and size	Nominal flow rate (l/h)	Obturator authority	Kv (m^3/h) s-1K	Kv (m^3/h) s-2K	Kv (m^3/h) FO	Valve description
220 *(3/4")*	240	0,93	0,40	0,76	3,19	Angled connection
221 *(3/4")*	240	0,86	0,40	0,76	2,20	Straight connection

224 (3/8" - 1/2") - 225 (3/8" - 1/2") - 226 (1/2") - 227 (1/2")





Valves series and size	Nominal flow rate (l/h)	Obturator authority	Kv (m^3/h) s-1K	Kv (m^3/h) s-2K	Kv (m^3/h) FO	Valve description
224 *(3/8")*	170	0,65	0,36	0,54	0,93	Reverse connection
224 *(1/2")* - **227** *(1/2" - 23 p.1,5)*	180	0,93	0,36	0,57	1,39	Reverse connection
225 *(3/8")*	180	0,60	0,36	0,57	0,96	Double angled connection
225 *(1/2")*	180	0,80	0,36	0,57	1,40	Double angled connection
226 *(1/2" - 23 p.1,5)*	180	0,80	0,36	0,57	1,40	Double angled connection

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Convertible radiator valves
Thermostatic control heads

338 - 401 - 200 series

01009/21 EN
replaces 01009/10 GB

Function

The following series of convertible radiator valves are typically used shutting off the medium on the terminals of HVAC systems.
These particular valves can be converted from manual to thermostatic by simply replacing the control knob with a thermostatic control head. In this way, it is possible to automatically keep the ambient temperature of the room in which they are installed constant at the set value.

The 202 series thermostatic control head enables regulating the ambient temperature and viewing its actual value on the front display of the control itself.

These valves are equipped with a special tailpiece with hydraulic rubber seal which allows quick and safe connection to the radiator without the aid of any other means of sealing.

Product range

VALVES:

For copper, simple plastic and multi-layer pipes:

338 series	Angled convertible radiator valve	sizes 3/8", 1/2" radiator x 23 p.1.5 pipe size 1/2" radiator x 3/4" pipe
339 series	Straight convertible radiator valve	sizes 3/8", 1/2" radiator x 23 p.1.5 pipe size 1/2" radiator x 3/4" pipe
342 series	Angled lockshield valve for radiator	sizes 3/8", 1/2" radiator x 23 p.1.5 pipe size 1/2" radiator x 3/4" pipe
343 series	Straight lockshield valve for radiator	sizes 3/8", 1/2" radiator x 23 p.1.5 pipe size 1/2" radiator x 3/4" pipe

For steel pipes:

401 series	Angled convertible radiator valve	sizes 3/8", 1/2", 3/4", 1" (*)
402 series	Straight convertible radiator valve	sizes 3/8", 1/2", 3/4", 1" (*)
431 series	Angled lockshield valve for radiator	sizes 3/8", 1/2", 3/4", 1" (*)
432 series	Straight lockshield valve for radiator	sizes 3/8", 1/2", 3/4", 1" (*)

THERMOSTATIC CONTROL HEADS

Code 199000 CNT	Thermostatic control head with built-in sensor with liquid-filled element	adjustment scale ❄–5 corresponding to 7–28 °C
Code 199100	Thermostatic control head with remote sensor with liquid-filled element	adjustment scale ❄–5 corresponding to 7–28 °C
200 series	Thermostatic control head with built-in sensor with liquid-filled element	adjustment scale ❄–5 corresponding to 7–28 °C
201 series	Thermostatic control head with remote sensor with liquid-filled element	adjustment scale ❄–5 corresponding to 7–28 °C
202 series	Thermostatic control head with built-in sensor with temperature indicator	adjustment scale ❄–5 corresponding to 7–28 °C
203 series	Thermostatic control head with contact probe for medium temperature restriction	graduated scale 20–50 °C, 40–90 °C
Code 209000	Tamper-proof and anti-theft cap for public installations	
Code 209001	Special wrench for tightening tamperproof antitheft cap	

* *3/4" and 1" with tailpiece without rubber seal*

Technical specifications of valves and lockshield valves

Material

Body:	brass EN 12165 CW617N, chrome-plated
Obturator control stem:	stainless steel
Hydraulic seals:	EPDM
Control knob and protective cap:	ABS (RAL 9010)

Performance

Medium:	water, glycol solutions
Max percentage of glycol:	30 %
Max differential pressure with control fitted:	1 bar
Maximum working pressure:	10 bar
Medium working temperature range:	5–100 °C

Adjustment range of 199/200/201/202 series thermostatic control heads

0	❄	1	2 · · · · 3 · · · · 4	5
5 °C	7 °C	12 °C	16 °C 20 °C 24 °C	28 °C

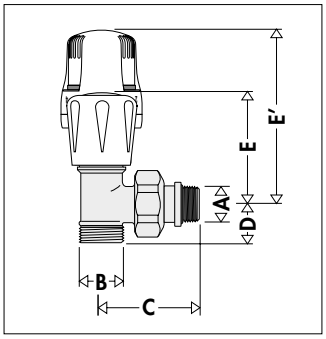
Technical specifications of 199/200/201/202 series thermostatic control heads

Adjustment scale:	❄–5
Adjustment temperature range:	7–28 °C
Frost protection cut-in:	7 °C
Max. ambient temperature:	50 °C
Length of capillary pipe 201 series and code 199000:	2 m
Room temperature indicator 202 series:	16–26 °C

Technical specifications of 203 series thermo-electric actuators

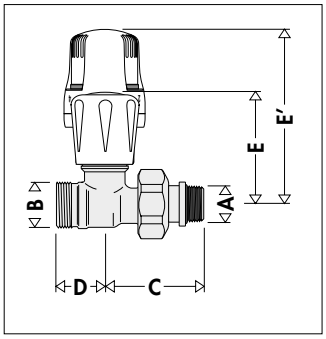
Adjustment scale:	- code 203502	20–50 °C
	- code 203702	40–90 °C
Maximum temperature of sensor:		100 °C
Maximum pressure of pocket:		10 bar
Length of capillary pipe:		2 m

Dimensions



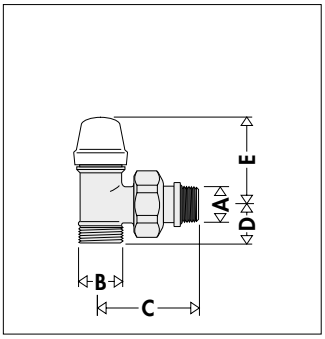
Code	A	B	C
338302	3/8"	23 p.1,5	47,5
338402	1/2"	23 p.1,5	53,5
338452	1/2"	3/4"	53,5

Code	D	E	E'	Mass (kg)
338302	20,5	51,5	100	0,178
338402	20,5	51,5	100	0,210
338452	22,5	51,5	100	0,220



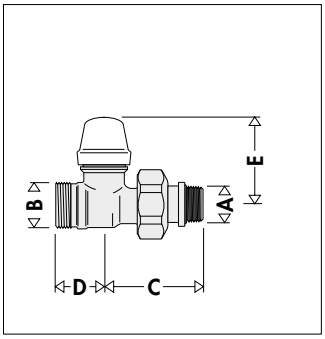
Code	A	B	C
339302	3/8"	23 p.1,5	47,5
339402	1/2"	23 p.1,5	53,5
339452	1/2"	3/4"	53,5

Code	D	E	E'	Mass (kg)
339302	24	55	103	0,178
339402	24	55	103	0,210
339452	24,5	55	103	0,220



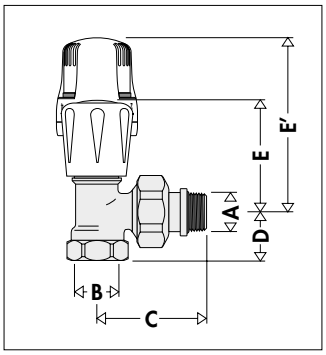
Code	A	B	C
342302	3/8"	23 p.1,5	47,5
342402	1/2"	23 p.1,5	53,5
342452	1/2"	3/4"	53,5

Code	D	E	Mass (kg)
342302	21,5	39	0,167
342402	21,5	39	0,225
342452	23,5	39	0,205



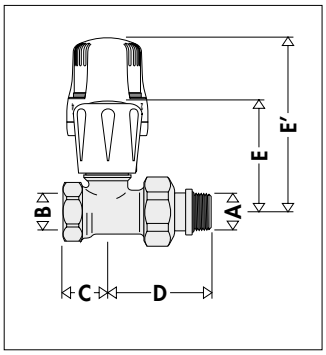
Code	A	B	C
343302	3/8"	23 p.1,5	47,5
343402	1/2"	23 p.1,5	53,5
343452	1/2"	3/4"	53,5

Code	D	E	Mass (kg)
343302	24	44,5	0,184
343402	24	44,5	0,228
343452	24,5	44,5	0,205



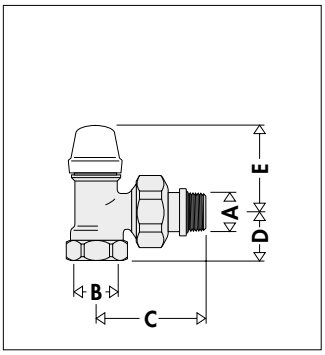
Code	A	B	C
401302	3/8"	3/8"	47,5
401402	1/2"	1/2"	53,5
401500	3/4"	3/4"	62,5
401603	1"	1"	70,5

Code	D	E	E'	Mass (kg)
401302	20	51,5	100	0,188
401402	23	51,5	100	0,242
401500	25	60,5	108	0,190
401603	30,5	77,5	125	0,590



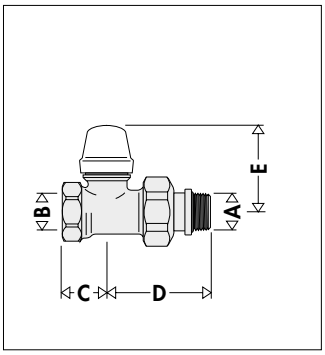
Code	A	B	C
402302	3/8"	3/8"	21
402402	1/2"	1/2"	22
402500	3/4"	3/4"	30
402603	1"	1"	38

Code	D	E	E'	Mass (kg)
402302	46,5	55	103	0,188
402402	52	55	103	0,242
402500	59,5	66	112	0,190
402603	63,5	81,5	127,5	0,640



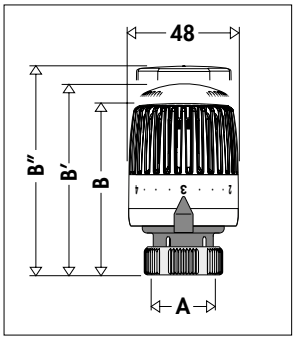
Code	A	B	C
431302	3/8"	3/8"	47,5
431402	1/2"	1/2"	53,5
431503	3/4"	3/4"	62,5
431603	1"	1"	70,5

Code	D	E	Mass (kg)
431302	20	38	0,182
431402	23	38	0,237
431503	25	47	0,360
431603	30,5	47,5	0,590

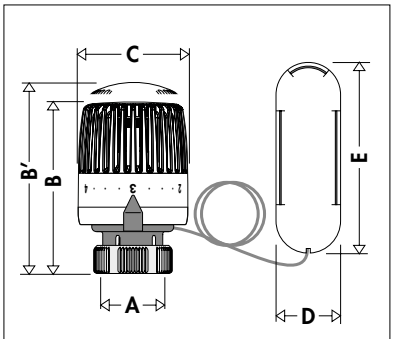


Code	A	B	C
432302	3/8"	3/8"	21
432402	1/2"	1/2"	22
432503	3/4"	3/4"	30
432603	1"	1"	38

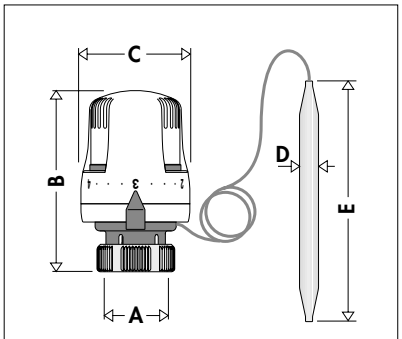
Code	D	E	Mass (kg)
432302	46,5	44,5	0,192
432402	52	44,5	0,242
432503	59,5	49,5	0,190
432603	63,5	51,5	0,560



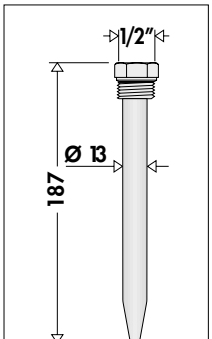
Code	A	B	B'	B''	Mass (kg)
199000	30 p.1,5	74	–	–	0,165
200000	30 p.1,5	–	80	–	0,165
202000	30 p.1,5	–	–	85	0,168



Code	A	B	B	C	D	E	Mass (kg)
199100	30 p.1,5	74	–	48	33	95	0,340
201000	30 p.1,5	–	80	48	33	95	0,340



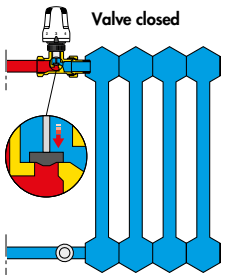
Code	A	B	C	D	E	Mass (kg)
203502	30 p.1,5	80	48	Ø 11	158	0,300
203702	30 p.1,5	80	48	Ø 9,5	134	0,300

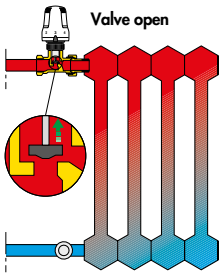


Code	pocket for code
475002	203502
475003	203702

Operating principle of thermostatic control head

The control device of the thermostatic radiator valve is a proportional temperature regulator, composed of a bellows containing a specific thermostatic fluid. As the temperature increases, the liquid increases in volume and causes the bellows to expand. As the temperature decreases, the inverse process occurs: the bellows contracts due to the thrust of the counter-spring. The axial movements of the sensitive element are transmitted to the valve actuator by means of the connecting stem, thereby adjusting the flow of medium in the heat emitter.



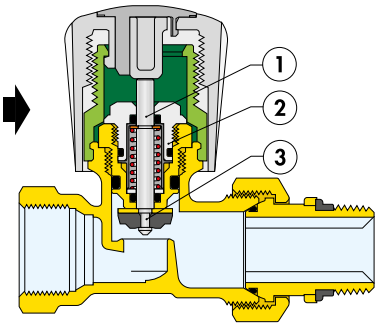


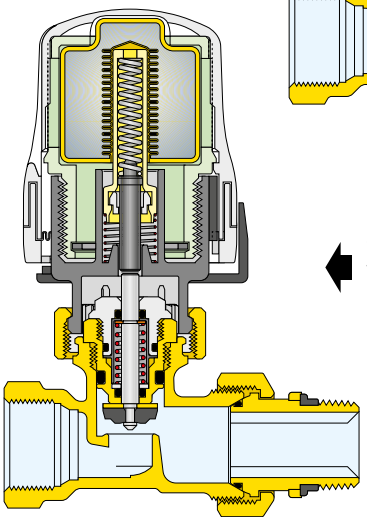
Construction details

Valve

The stainless steel control stem (1) has a double EPDM O-Ring seal. In this way the upper portion of the headwork (2) can be replaced even with the system running.
If necessary, the entire headwork can be replaced with the special kit for convertible radiator valves and thermostatic valves, code 387200.
The obturator (3) is shaped so as to optimise the hydraulic characteristics of the valve during the progressive action of opening or closing in thermostatic operation. The wide passage between the seat and obturator causes reduced head losses in manual operation.

Convertible radiator valve with manual actuator

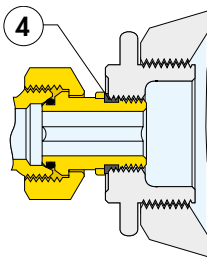




Convertible radiator valve with thermostatic control head

Tailpiece with rubber seal

The radiator connection thread union is equipped with a special shaped rubber ring (4). This system ensures a hydraulic seal without using additional sealing materials such as hemp or PTFE tape.



202 series thermostatic control head with temperature indicator

Ambient temperature indicator

The ambient temperature indicator, whose thermostatic control head is mounted on the front, is of the LCD type. It highlights the actual room temperature reading in green, to enable precise regulation of the temperature to the desired value.

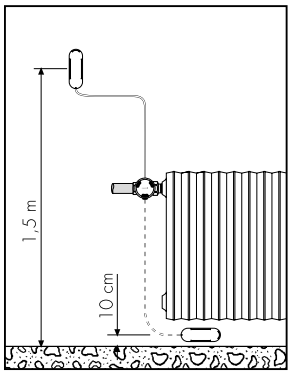
Visible in sufficient light levels

Rocker system

The indicator is equipped with a special rocker which keeps it in a vertical position at all times, for ease of reading.

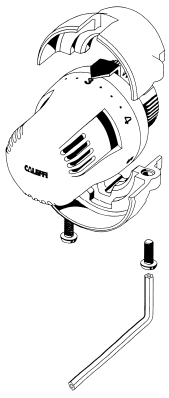
201 series remote probe control

To use the thermostatic control head with remote sensor, it is necessary to install it in accordance with all the measures specified in the diagram.



Tamper-proof and anti-theft cap

The tamper-proof and anti-theft version of the thermostatic control head is obtained by fitting on the knob the specific cap code 209000 as shown alongside. It is secured with two screws equipped with a special head that can only be tightened by using the special wrench code 209001.
For thermostatic control heads in series 200, 202 and code 199000 CNT.



Hydraulic characteristics

Convertible radiator valves with angled connections, 338 and 401 series with thermostatic adjustment, 2K proportional band

$Kv_{0,01}$ **3/8"** = 56 l/h, **1/2"** = 56 l/h, **3/4"** = 70 l/h, **1"** = 78 l/h

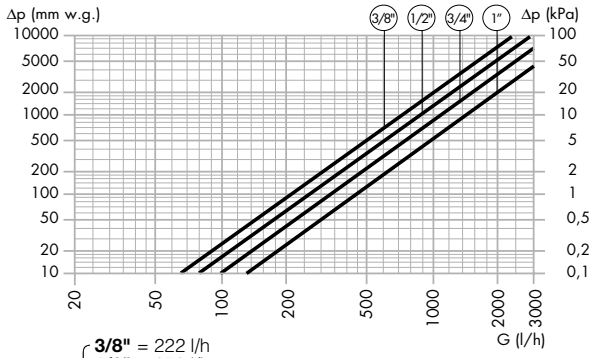
Maximum differential pressure: **3/8"** = 1 bar, **1/2"** = 1 bar, **3/4"** = 1 bar, **1"** = 0,6 bar

Convertible radiator valves with straight connections, 339 and 402 series with thermostatic adjustment, 2K proportional band

$Kv_{0,01}$ **3/8"** = 52 l/h, **1/2"** = 56 l/h, **3/4"** = 65 l/h, **1"** = 77 l/h

Maximum differential pressure: **3/8"** = 1 bar, **1/2"** = 1 bar, **3/4"** = 1 bar, **1"** = 0,6 bar

Convertible radiator valves with angled connections, 338 and 401 series with manual adjustment

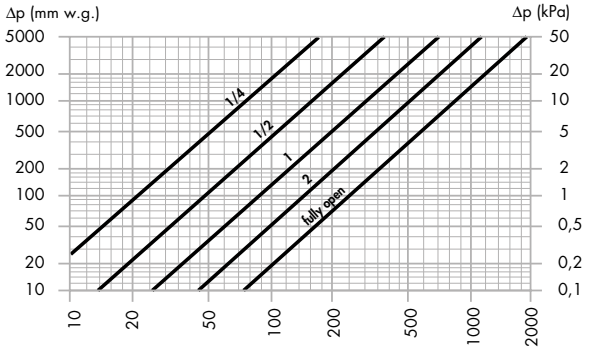


$Kv_{0,01}$ **3/8"** = 222 l/h, **1/2"** = 270 l/h, **3/4"** = 336 l/h, **1"** = 447 l/h

Convertible radiator valves with straight connections, 339 and 402 series with manual adjustment

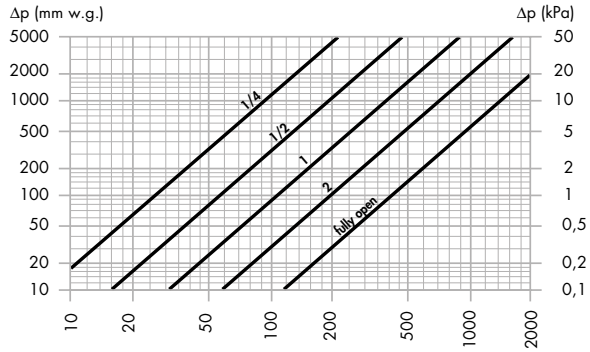
$Kv_{0,01}$ **3/8"** = 135 l/h, **1/2"** = 179 l/h, **3/4"** = 258 l/h, **1"** = 443 l/h

Angled connections lockshield 3/8", 342 and 431 series



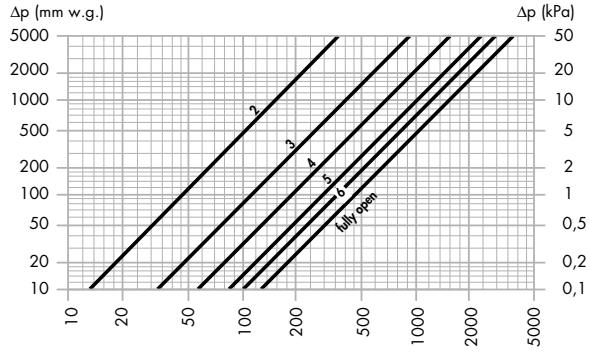
3/8" $Kv_{0,01}$ = 242 l/h

Angled connections lockshield 1/2", 342 and 431 series



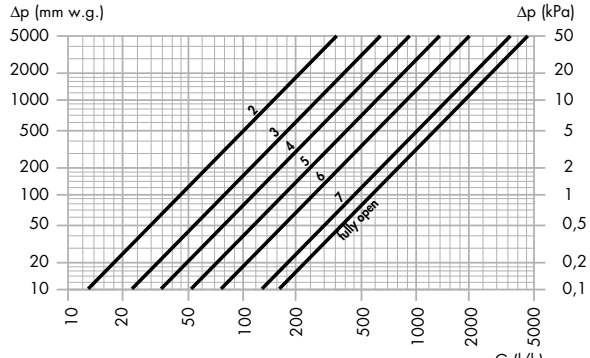
1/2" $Kv_{0,01}$ = 399 l/h

Angled connections lockshield 3/4", 431 series



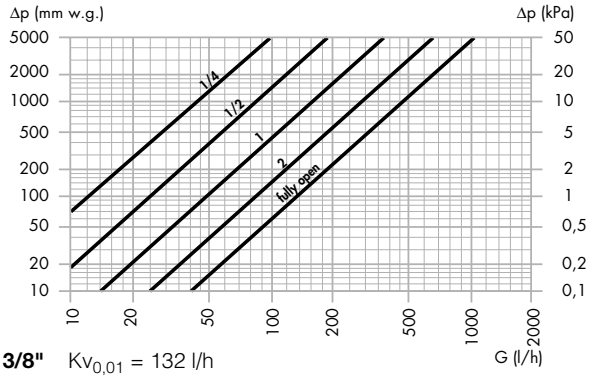
3/4" $Kv_{0,01}$ = 452 l/h

Angled connections lockshield 1", 431 series



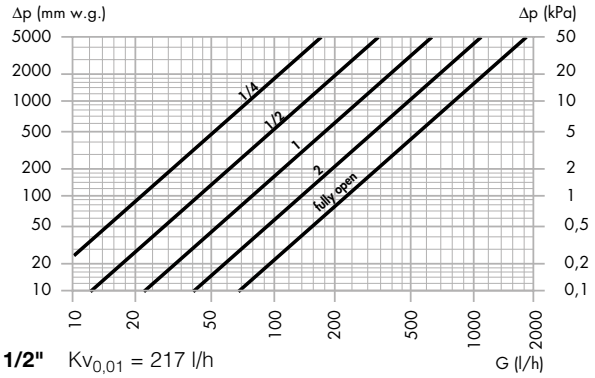
1" $Kv_{0,01}$ = 564 l/h

Straight connections lockshield 3/8", 343 and 432 series



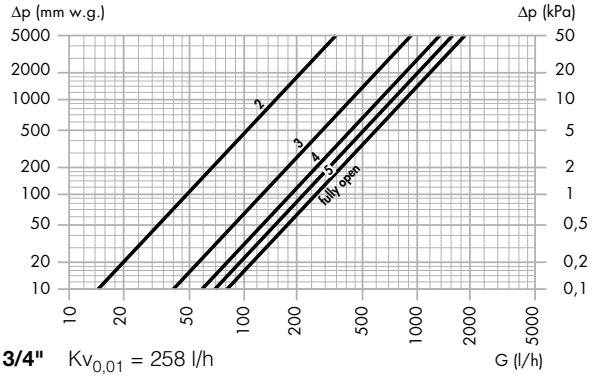
3/8" $Kv_{0,01}$ = 132 l/h

Straight connections lockshield 1/2", 343 and 432 series



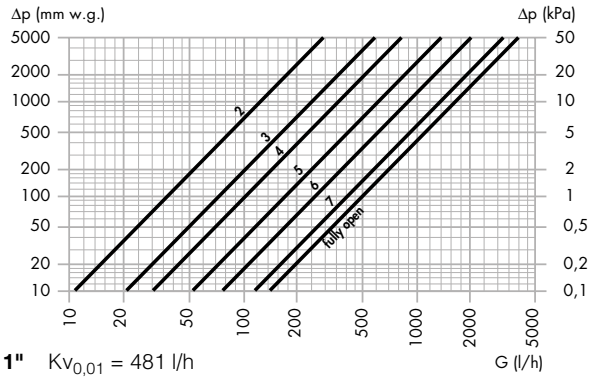
1/2" $Kv_{0,01}$ = 217 l/h

Straight connections lockshield 3/4", 432 series



3/4" $Kv_{0,01}$ = 258 l/h

Straight connections lockshield 1", 432 series



1" $Kv_{0,01}$ = 481 l/h

Nominal flow rates and equivalent lengths values

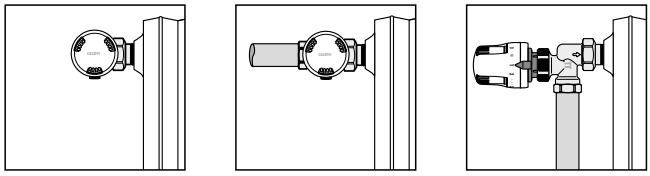
COPPER PIPES							
TYPE	connection Rad.	connection Pipe	Øint/ext pipe (mm)	STRAIGHT		ANGLED	
				$Kv_{0.01}$ (l/h)	le (m)	$Kv_{0.01}$ (l/h)	le (m)
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	8/10	135	0,8	222	0,3
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	10/12	135	2,5	222	0,9
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	12/14	135	6,6	222	2,4
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	13/15	135	10,1	222	3,7
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	14/16	135	14,8	222	5,5
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	16/18	135	29.9	222	11,1
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	8/10	179	0,5	270	0,2
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	10/12	179	1,4	270	0,6
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	12/14	179	3,7	270	1,6
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	13/15	179	5,7	270	2,5
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	14/16	179	8,4	270	3,7
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	16/18	179	17,0	270	7,5

IRON PIPES							
TYPE	connection Rad.	connection Pipe	Øint/ext pipe (mm)	STRAIGHT		ANGLED	
				$Kv_{0.01}$ (l/h)	le (m)	$Kv_{0.01}$ (l/h)	le (m)
Convertible radiator valves with manual adjustment	3/8"	3/8"	12.7/16.7	135	7,2	222	2,7
Convertible radiator valves with manual adjustment	1/2"	1/2"	16.3/21.0	179	15,3	270	6,7
Convertible radiator valves with manual adjustment	3/4"	3/4"	21.7/26.4	258	33,2	336	19,6
Convertible radiator valves with manual adjustment	1"	1"	27.4/33.2	443	38.5	447	37,8

PLASTIC PIPES							
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	8/12	135	0,8	222	0,3
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	10/15	135	2,5	222	0,9
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	12/16	135	6,6	222	2,4
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	13/18	135	10,1	222	3,7
Convertible radiator valves with manual adjustment	3/8"	23 p. 1,5	14/18	135	14,8	222	5,5
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	8/12	179	0,5	270	0,2
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	10/15	179	1,4	270	0,6
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	12/16	179	3,7	270	1,6
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	13/18	179	5,7	270	2,5
Convertible radiator valves with manual adjustment	1/2"	23 p. 1,5	14/18	179	8,4	270	3,7
Convertible radiator valves with manual adjustment	1/2"	3/4"	20 est	179	8,4	270	3,7

Installation

The thermostatic control heads should be installed in a horizontal position, in accordance with the direction of flow indicated by the arrow on the valve body.

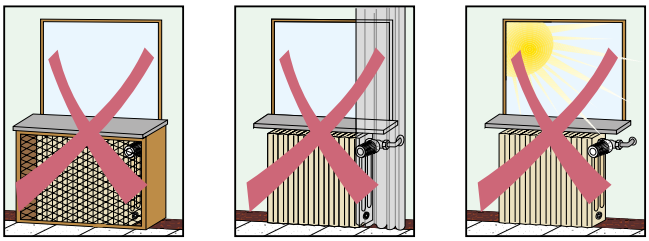


Warnings: In the event of incorrect installation of the valve complete with thermostatic control head, two possible problems may arise in the system:

1) Vibration similar to a hammer is due to the fact that the medium passes through the valve in the opposite direction to that indicated by the arrow on the body. To overcome this drawback it will be sufficient to restore the correct direction of flow.

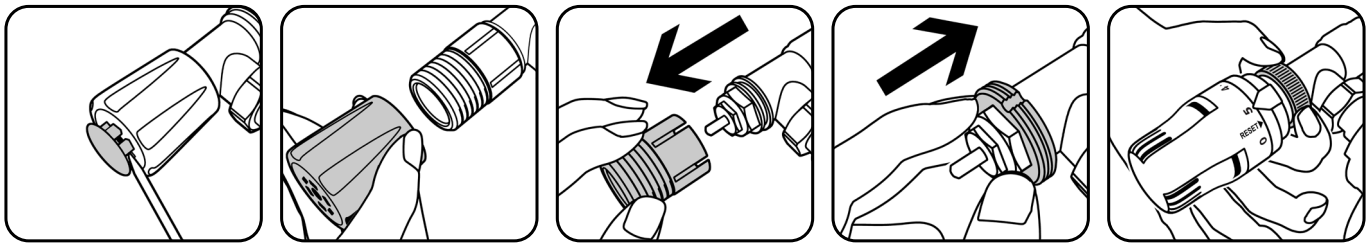
2) A sound or hissing noise during modulation is due to the fact that the valve is subjected to an excessive head. To overcome this drawback it will be sufficient to keep the plant pressure under control by making provision for devices such as variable speed pumps combined with differential pressure regulators, or using differential by-pass valves.

The sensitive element of the thermostatic control heads must never be installed in niches, radiator cabinets, behind curtains or exposed to direct sunlight, otherwise it may produce false readings.



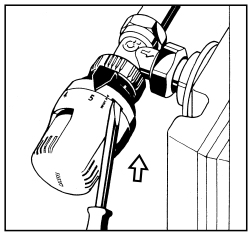
Valve conversion from manual to thermostatic

Before installing the thermostatic control head, set the knob to No. 5

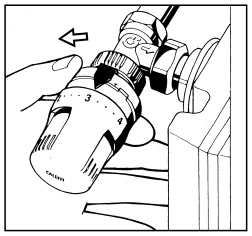


Thermostatic control head temperature restriction and locking

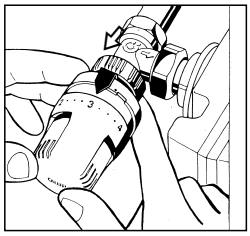
Temperature restriction



1. Turn the knob to the fully-open position (Pos. 5).
With the aid of a screwdriver, unhook the locking nut by pushing it towards the valve body fully.

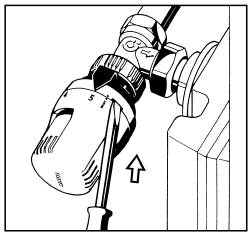


2. Turn the knob to the new desired fully open position (example pos. 3). Turn the locking nut fully **counter-clockwise.**

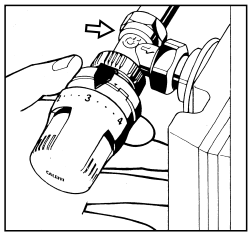


3. Hook back on the locking nut. At this point the valve will have a restriction to the working temperature range from 0 to the set value.

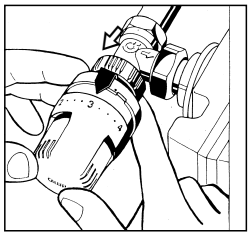
Locking the temperature



1. Turn the knob to the fully-open position (Pos. 5).
With the aid of a screwdriver, unhook the locking nut by pushing it towards the valve body fully.

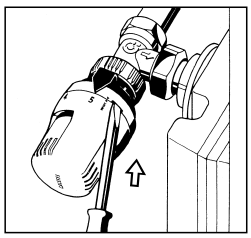


2. Position the valve at the desired temperature and turn the locking nut **clockwise** fully.

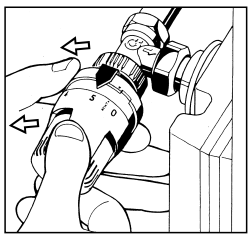


3. Hook back on the locking nut. At this point the valve will be locked on the new temperature setting.

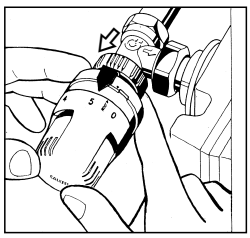
Resetting the restriction and temperature locking



1. With the aid of a screwdriver, unhook the ring nut by pushing it towards the valve body fully.



2. Turn the knob to the new maximum aperture position, and the locking nut **counter-clockwise**, until it is snug.
The RESET arrows will match.



3. Hook back on the locking nut. At this point the valve will no longer have a restriction or locking.

SPECIFICATION SUMMARIES

338 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Angled connections for copper, single-layer or multi-layer plastic pipes. Connections of pipe 23 p.1.5 and 3/4" M. Connection to radiator 3/8" and 1/2" M with tailpiece equipped with EPDM sealing gasket. Brass body. Chrome plated. Handwheel in ABS white RAL 9010, for manual control. Stainless steel control stem. Double seal on control stem with EPDM O-Ring. Temperature range 5–100 °C. Maximum working pressure 10 bar.

339 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Straight connections for copper, single-layer or multi-layer plastic pipes. Connections of pipe 23 p.1.5 and 3/4" M. Connection to radiator 3/8" and 1/2" M with tailpiece equipped with EPDM sealing gasket. Brass body. Chrome plated. Handwheel in ABS white RAL 9010, for manual control. Stainless steel control stem. Double seal on control stem with EPDM O-Ring. Temperature range 5–100 °C. Maximum working pressure 10 bar.

342 series
Lockshield valve. Angled connections for copper, single-layer or multi-layer plastic pipes. Connections of pipe 23 p.1.5 and 3/4" M. Connection to radiator 3/8" or 1/2" M with tailpiece equipped with EPDM sealing gasket. Brass body. Chrome plated. ABS white RAL 9010 protective cap. Outward seal consisting of EPDM O-rings on the control stem. Temperature range 5–100 °C. Maximum working pressure 10 bar.

343 series
Lockshield valve. Straight connections for copper, single-layer or multi-layer plastic pipes. Connections of pipe 23 p.1.5 and 3/4" M. Connection to radiator 3/8" or 1/2" M with tailpiece equipped with EPDM sealing gasket. Brass body. Chrome plated. ABS white RAL 9010 protective cap. Outward seal consisting of EPDM O-rings on the control stem. Temperature range 5–100 °C. Maximum working pressure 10 bar.

401 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Angled connections, for iron pipe 3/8", 1/2", 3/4" or 1" F. Connection to radiator 3/8" or 1/2" M with tailpiece supplied with EPDM sealing gasket, 3/4" and 1" M with tailpiece without rubber seal. Brass body. Chrome plated. Handwheel in ABS white RAL 9010, for manual control. Stainless steel control stem. Double seal on control stem with EPDM O-Ring. Temperature range 5–100 °C. Maximum working pressure 10 bar. Maximum differential pressure with thermostatic control head fitted 1 bar.

402 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Straight connections, for iron pipe 3/8", 1/2", 3/4" or 1" F. Connection to radiator 3/8" or 1/2" M with tailpiece supplied with EPDM sealing gasket, 3/4" and 1" M with tailpiece without rubber seal. Brass body. Chrome plated. Handwheel in ABS white RAL 9010, for manual control. Stainless steel control stem. Double seal on control stem with EPDM O-Ring. Temperature range 5–100 °C. Maximum working pressure 10 bar. Maximum differential pressure with thermostatic control head fitted 1 bar.

431 series
Lockshield valve. Angled connections, for iron pipe 3/8", 1/2", 3/4" or 1" F. Connection to radiator 3/8" or 1/2" M with tailpiece supplied with EPDM sealing gasket, 3/4" and 1" M with tailpiece without rubber seal. Brass body. Chrome plated. ABS white RAL 9010 protective cap. Outward seal consisting of EPDM O-rings on the control stem. Temperature range 5–100 °C. Maximum working pressure 10 bar.

432 series
Lockshield valve. Straight connections, for iron pipe 3/8", 1/2", 3/4" or 1" F. Connection to radiator 3/8" or 1/2" M with tailpiece supplied with EPDM sealing gasket, 3/4" and 1" M with tailpiece without rubber seal. Brass body. Chrome plated. White protective cap RAL 9010 made of ABS. Outward seal consisting of EPDM O-rings on the control stem. Temperature range 5–100 °C. Maximum working pressure 10 bar.

Code 199000 CNT
Thermostatic control head for convertible radiator valves and thermostatic valves. Built-in sensor with liquid-filled element. Maximum ambient temperature 50 °C. Graduated scale from ❄ to 5 corresponding to a working temperature range of 7 to 28 °C, with the possibility of locking and restricting the temperature. Frost protection cut-in 7 °C.

Code 199100
Thermostatic control head for convertible radiator valves and thermostatic valves. Remote sensor with liquid-filled element. Length of capillary pipe 2 m. Maximum ambient temperature 50 °C. Graduated scale from ❄ to 5 corresponding to a working temperature range of 7 to 28 °C, with the possibility of locking and restricting the temperature. Frost protection cut-in 7 °C.

200 series
Thermostatic control head for convertible radiator valves and thermostatic valves. Built-in sensor with liquid-filled element. Maximum ambient temperature 50 °C. Graduated scale from ❄ to 5, corresponding to a working temperature range of 7 to 28 °C, with the possibility of locking and restricting the temperature. Frost protection cut-in 7 °C.

201 series
Thermostatic control head for convertible radiator valves and thermostatic valves. Remote sensor with liquid-filled element. Length of capillary pipe 2 m. Maximum ambient temperature 50 °C. Graduated scale from ❄ to 5 corresponding to a working temperature range of 7 to 28 °C, with the possibility of locking and restricting the temperature. Frost protection cut-in 7 °C.

202 series
Thermostatic control head for convertible radiator valves and thermostatic valves. Built-in sensor with liquid-filled element, with digital liquid crystal ambient temperature indicator. Maximum ambient temperature 50 °C. Graduated scale from ❄ to 5, corresponding to a working temperature range of 7 to 28 °C, with the possibility of locking and restricting the temperature. Frost protection cut-in 7 °C. Ambient temperature indicator from 16 °C to 26 °C. PATENT.

203 series
Thermostatic control head for convertible radiator valves and thermostatic valves with contact probe, for restricting the fluid temperature. Adjustment temperature range 20–50 °C (40–90 °C). Maximum temperature of sensor 100 °C. Numbered scale, with the possibility of locking and restricting the temperature. Capillary length 2 m.

Code 209000
Tamper-proof and anti-theft cap for thermostatic control head, for public installations.

Code 209001
Special wrench for tightening tamperproof antitheft cap.

CALEFFI Hydronic Solutions

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info@caleffi.com · www.caleffi.com

Radiator and lockshield valves

series 340 - 411 - 415

01030/01 GB

Function

The following series of manual and lockshield valves are typically used for controlling and regulating the fluid flow in heat emitters of central heating systems.

They are supplied with a special tailpiece with rubber hydraulic seal, permitting quick, safe connection to the radiator without the use of additional sealing materials.

Product range

For copper and plastic piping: LINEA 3

Series 340	Elbow manual radiator valve	Sizes 3/8”, 1/2” radiator x 23 p.1,5 piping
Series 341	Straight manual radiator valve	Sizes 3/8”, 1/2” radiator x 23 p.1,5 piping
Series 342	Elbow radiator lockshield valve	Sizes 3/8”, 1/2” radiator x 23 p.1,5 piping
Series 343	Straight radiator lockshield valve	Sizes 3/8”, 1/2” radiator x 23 p.1,5 piping

For steel piping:

Series 411	Elbow manual radiator valve	Sizes 3/8”, 1/2”, (3/4” use code 401500)
Series 412	Straight manual radiator valve	Sizes 3/8”, 1/2”, (3/4” use code 402500)
Series 431	Elbow radiator lockshield valve	Sizes 3/8”, 1/2”, 3/4” (*)
Series 432	Straight radiator lockshield valve	Sizes 3/8”, 1/2”, 3/4” (*)

For copper and plastic piping (with tailpiece without rubber seal):

Series 415	Elbow manual radiator valve	Sizes 3/8” x 3/8” and 1/2” radiator x 23 p.1,5 piping
Series 416	Straight manual radiator valve	Sizes 3/8” x 3/8” and 1/2” radiator x 23 p.1,5 piping
Series 435	Elbow radiator lockshield valve	Sizes 3/8” x 3/8” and 1/2” radiator x 23 p.1,5 piping
Series 436	Straight radiator lockshield valve	Sizes 3/8” x 3/8” and 1/2” radiator x 23 p.1,5 piping

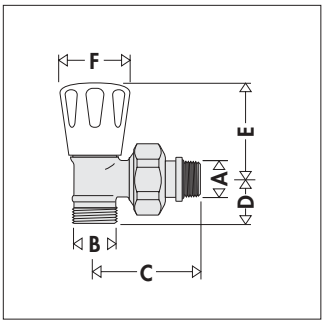
* *3/4” with tailpiece without rubber seal*

Technical specification

- Material:	- Body:	brass UNI EN 12165 CW617N, chrome plated
	- Obturator:	brass UNI EN 12164 CW614N
	- Hydraulic seals:	EPDM
	- Gland:	PTFE
	- Control knob and cap:	ABS (RAL 9010)

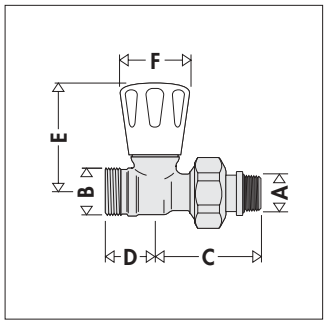
Fluid:	water, glycol solutions
Max percentage of glycol:	30%
Max working pressure:	10 bar
Temperature range:	5÷100°C

Dimensions



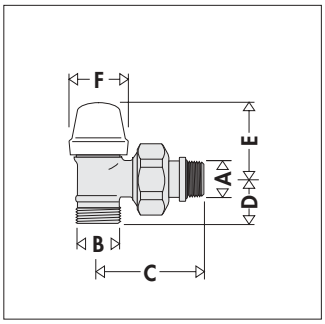
Code	A	B	C
340302	3/8"	23 p.1,5	47,5
340402	1/2"	23 p.1,5	53,5

Code	D	E	F
340302	21,5	48,5	Ø 37,5
340402	21,5	48,5	Ø 37,5



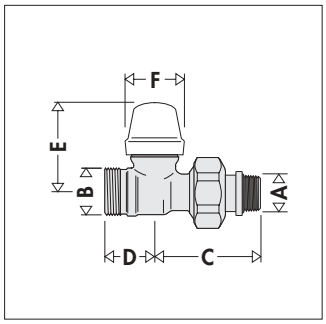
Code	A	B	C
341302	3/8"	23 p.1,5	47,5
341402	1/2"	23 p.1,5	53,5

Code	D	E	F
341302	24	57	Ø 37,5
341402	24	57	Ø 37,5



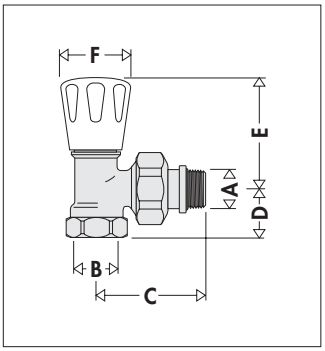
Code	A	B	C
342302	3/8"	23 p.1,5	47,5
342402	1/2"	23 p.1,5	53,5

Code	D	E	F
342302	21,5	39	Ø 28,5
342402	21,5	39	Ø 28,5



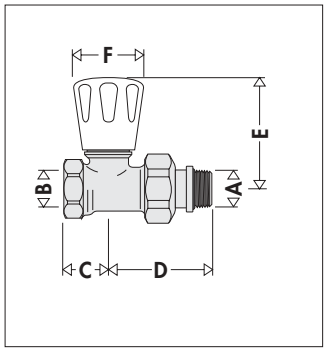
Code	A	B	C
343302	3/8"	23 p.1,5	47,5
343402	1/2"	23 p.1,5	53,5

Code	D	E	F
343302	24	44,5	Ø 28,5
343402	24	44,5	Ø 28,5



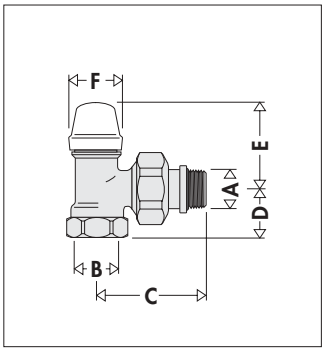
Code	A	B	C
411302	3/8"	3/8"	48
411402	1/2"	1/2"	54

Code	D	E	F
411302	20	48	Ø 37,5
411402	23	48	Ø 37,5



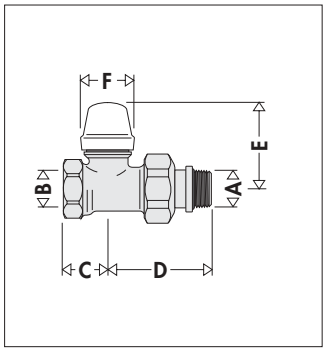
Code	A	B	C
412302	3/8"	3/8"	21
412402	1/2"	1/2"	22

Code	D	E	F
412302	46,5	55	Ø 37,5
412402	52	55	Ø 37,5



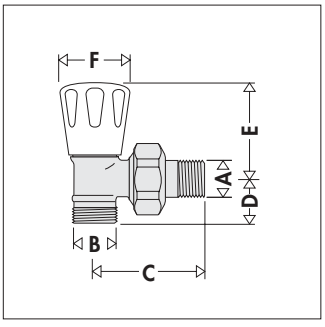
Code	A	B	C
431302	3/8"	3/8"	47,5
431402	1/2"	1/2"	53,5
431500	3/4"	3/4"	62,5

Code	D	E	F
431302	20	38	Ø 28,5
431402	23	38	Ø 28,5
431500	25	47	Ø 28,5



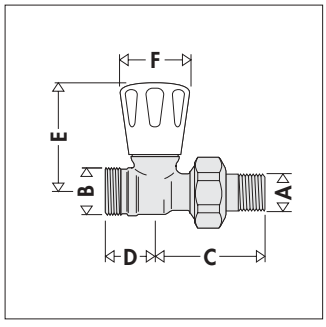
Code	A	B	C
432302	3/8"	3/8"	21
432402	1/2"	1/2"	22
432500	3/4"	3/4"	30

Code	D	E	F
432302	46,5	44,5	Ø 28,5
432402	52	44,5	Ø 28,5
432500	59,5	49,5	Ø 28,5



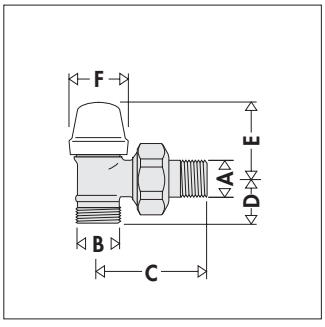
Code	A	B	C
415303	3/8"	3/8"	47
415403	1/2"	23 p.1,5	51

Code	D	E	F
415303	21,5	48	Ø 37,5
415403	21,5	48	Ø 37,5



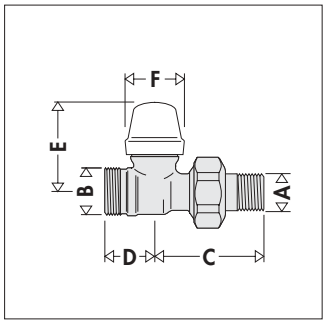
Code	A	B	C
416303	3/8"	3/8"	46,5
416403	1/2"	23 p.1,5	50

Code	D	E	F
416303	23,5	55	Ø 37,5
416403	24	55	Ø 37,5



Code	A	B	C
435303	3/8"	23 p.1,5	47
435403	1/2"	23 p.1,5	51

Code	D	E	F
435303	21,5	38	Ø 28,5
435403	21,5	38	Ø 28,5



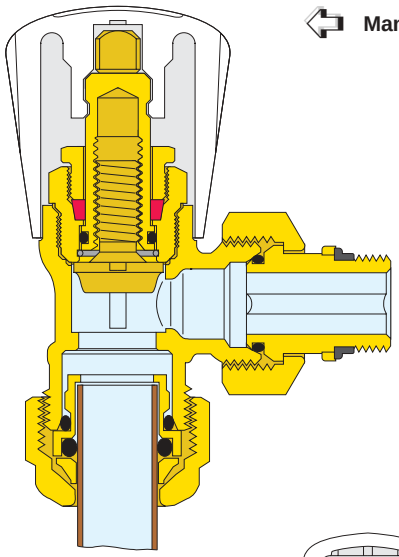
Code	A	B	C
436303	3/8"	3/8"	46,5
436403	1/2"	23 p.1,5	50

Code	D	E	F
436303	23,5	44,5	Ø 28,5
436403	24	44,5	Ø 28,5

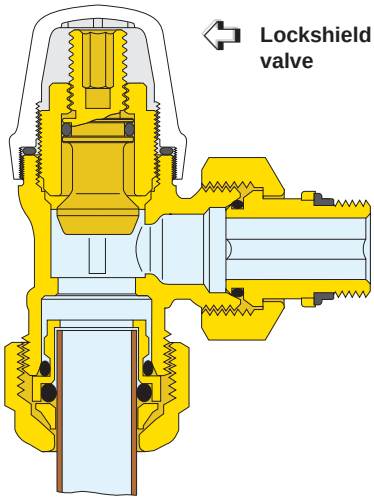
Construction characteristics

Valve
The hydraulic seal on the control spindle is guaranteed by a PTFE gland nut and an EPDM O-Ring.

Control knob
The knob is push-located on the control spindle by means of simple manual pressure, without any fixing screws. Dismantling for any operations on the gland or for replacement is very easy.



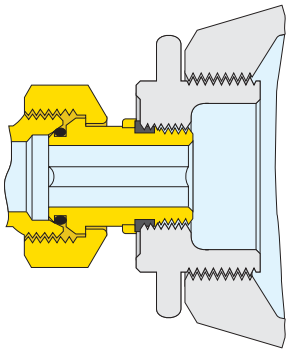
Manual valve



Lockshield valve

Tailpiece with rubber seal

The coupling union to the radiator connection thread has a specially shaped rubber ring.
This system guarantees the hydraulic seal with no need for further sealing materials, such as PTFE tapes etc.



Hydraulic characteristics

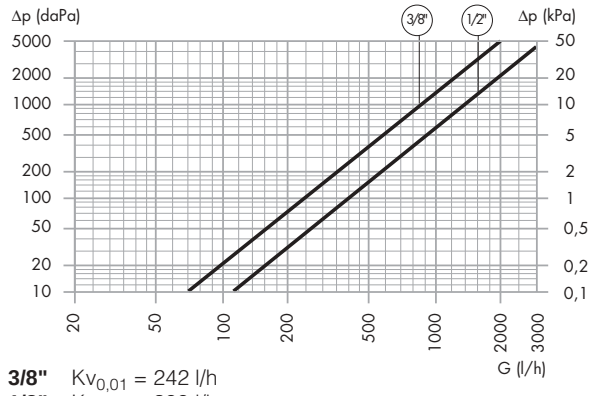
Values of nominal flow and equivalent length

COPPER PIPING							
TYPE	Rad. con.	Pipe con.	Int/ext pipe Ø (mm)	STRAIGHT		ELBOW	
				$Kv_{0,01}$ (l/h)	e.l. (m)	$Kv_{0,01}$ (l/h)	e.l. (m)
Radiator or lockshield valve	3/8"	23 p.1,5	6/8	132	0,2	242	0,1
Radiator or lockshield valve	3/8"	3/8" 23 p.1,5	8/10	132	0,8	242	0,2
Radiator or lockshield valve	3/8"	3/8" 23 p.1,5	10/12	132	2,7	242	0,8
Radiator or lockshield valve	3/8"	23 p.1,5	12/14	132	6,9	242	2,1
Radiator or lockshield valve	3/8"	23 p.1,5	13/15	132	10,6	242	3,1
Radiator or lockshield valve	3/8"	23 p.1,5	14/16	132	15,5	242	4,6
Radiator or lockshield valve	3/8"	23 p.1,5	16/18	132	31,3	242	9,3
Radiator or lockshield valve	1/2"	23 p.1,5	8/10	217	0,3	399	0,1
Radiator or lockshield valve	1/2"	23 p.1,5	10/12	217	1,0	399	0,3
Radiator or lockshield valve	1/2"	23 p.1,5	12/14	217	2,6	399	0,8
Radiator or lockshield valve	1/2"	23 p.1,5	13/15	217	3,9	399	1,2
Radiator or lockshield valve	1/2"	23 p.1,5	14/16	217	5,7	399	1,7
Radiator or lockshield valve	1/2"	23 p.1,5	16/18	217	11,6	399	3,4

STEEL PIPING							
TYPE	Rad. con.	Pipe con.	Int/ext pipe Ø (mm)	STRAIGHT		ELBOW	
				$Kv_{0,01}$ (l/h)	e.l. (m)	$Kv_{0,01}$ (l/h)	e.l. (m)
Radiator or lockshield valve	3/8"	3/8"	12,7/17,2	132	7,5	242	2,2
Radiator or lockshield valve	1/2"	1/2"	16,3/21,3	217	10,4	399	3,1
Lockshield valve	3/4"	3/4"	21,7/26,4	258	33,2	452	11

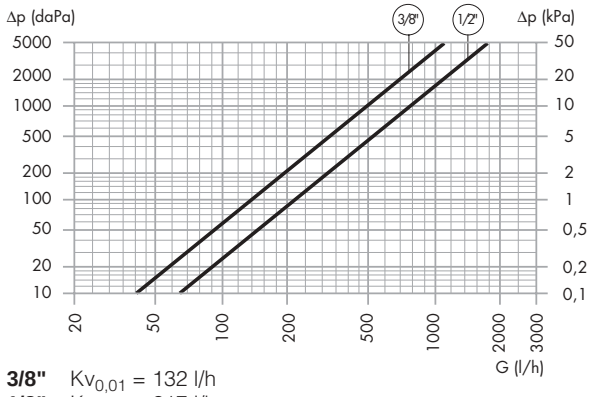
PLASTIC PIPING							
TYPE	Rad con.	Pipe con.	Int/ext pipe Ø (mm)	STRAIGHT		ELBOW	
				$Kv_{0,01}$ (l/h)	e.l. (m)	$Kv_{0,01}$ (l/h)	e.l. (m)
Radiator or lockshield valve	3/8"	3/8" 23 p.1,5	8/12	132	0,8	242	0,2
Radiator or lockshield valve	3/8"	23 p.1,5	10/15	132	2,7	242	0,8
Radiator or lockshield valve	3/8"	23 p.1,5	12/16	132	6,9	242	2,1
Radiator or lockshield valve	3/8"	23 p.1,5	13/18	132	10,6	242	3,1
Radiator or lockshield valve	3/8"	23 p.1,5	14/18	132	15,5	242	4,6
Radiator or lockshield valve	1/2"	23 p.1,5	8/12	217	0,3	399	0,1
Radiator or lockshield valve	1/2"	23 p.1,5	10/15	217	1,0	399	0,3
Radiator or lockshield valve	1/2"	23 p.1,5	12/16	217	2,6	399	0,8
Radiator or lockshield valve	1/2"	23 p.1,5	13/18	217	3,9	399	1,2
Radiator or lockshield valve	1/2"	23 p.1,5	14/18	217	5,7	399	1,7

Manual regulating valves, elbow connections, series 340, series 411 and series 415



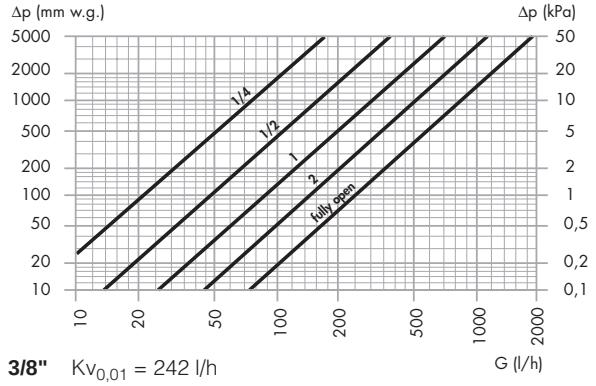
3/8" $Kv_{0,01}$ = 242 l/h
1/2" $Kv_{0,01}$ = 399 l/h

Manual regulating valves, straight connections, series 341, series 412 and series 416



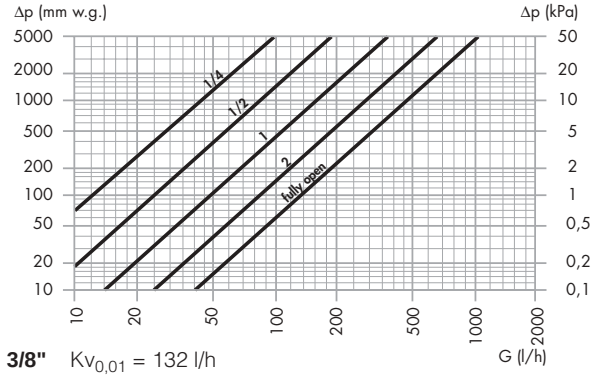
3/8" $Kv_{0,01}$ = 132 l/h
1/2" $Kv_{0,01}$ = 217 l/h

Lockshield valves, 3/8" elbow connections, series 342, series 431 and series 435



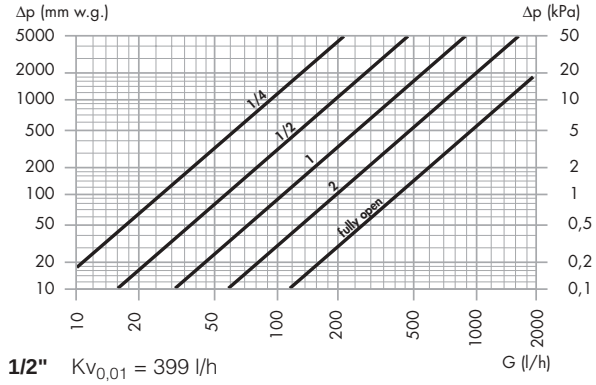
3/8" $Kv_{0,01}$ = 242 l/h

Lockshield valves, 3/8" straight connections, series 343, series 432 and series 436



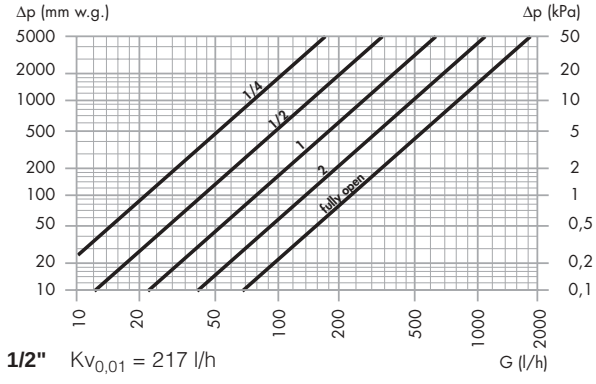
3/8" $Kv_{0,01}$ = 132 l/h

Lockshield valves, 1/2" elbow connections, series 342, series 431 and series 435



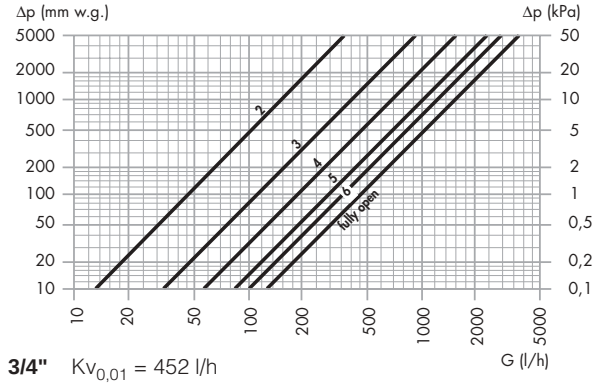
1/2" $Kv_{0,01}$ = 399 l/h

Lockshield valves, 1/2" straight connections, series 343, series 432 and series 436



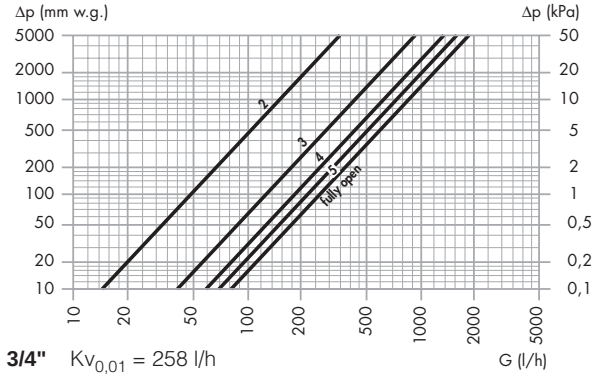
1/2" $Kv_{0,01}$ = 217 l/h

Lockshield valves, 3/4" elbow connections, series 431



3/4" $Kv_{0,01}$ = 452 l/h

Lockshield valves 3/4", straight connections, series 432



3/4" $Kv_{0,01}$ = 258 l/h

Choice of connections

Piping connections

3/8”

4383

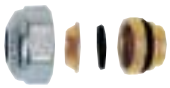
Compression connection **for copper pipes**, with PTFE seal.

Code			Con. Ø
438310	3/8”	- Ø 10	12
438312	3/8”	- Ø 12	12

LINEA 3

Piping connections

23 p.1,5



4370

Compression connection **for copper pipes**, with O-Ring seal.

Code		Con. Ø
437010	23 p.1,5 - Ø 10	18
437012	23 p.1,5 - Ø 12	18
437014	23 p.1,5 - Ø 14	18
437015	23 p.1,5 - Ø 15	18
437016	23 p.1,5 - Ø 16	18

4380

Compression connection, **for copper pipes**, with PTFE seal.

Code		Con. Ø
438010	23 p.1,5 - Ø 10	18
438012	23 p.1,5 - Ø 12	18
438014	23 p.1,5 - Ø 14	18
438015	23 p.1,5 - Ø 15	18
438016	23 p.1,5 - Ø 16	18
438018	23 p.1,5 - Ø 18	18

6810 DARCAL

Auto-adaptable diameter connection **for single and multilayer plastic pipes**.

Code		$Ø_{Int.}$	$Ø_{Ext.}$	Con. Ø
681000	23 p.1,5	7,5- 8	12-14	18
681002	23 p.1,5	9 - 9,5	14-16	18
681001	23 p.1,5	9,5-10	12-14	18
681006	23 p.1,5	9,5-10	14-16	18
681015	23 p.1,5	10,5-11	14-16	18
681017	23 p.1,5	10,5-11	16-18	18
681024	23 p.1,5	11,5-12	14-16	18
681026	23 p.1,5	11,5-12	16-18	18
681035	23 p.1,5	12,5-13	16-18	18
681044	23 p.1,5	13,5-14	16-18	18

Accessories

COLORSET

FOR COLOURED RADIATORS

3680

Coloured lockshield valve caps and valve control knobs.
Available in a range of 11 colours.

Available in colours:

purple	RAL 3003	brown	RAL 8017
ivory	RAL 1013	black	RAL 9005
blue	RAL 5015	red	RAL 3000
yellow	RAL 1021	green	RAL 6024
grey	RAL 7035	chrome plated	

382

Connection with adjustable nut Ø 23 p.1,5.
Chrome plated.

Code	
382000	23 p.1,5

3870

Hex. nut spanner 25 and 26 mm.

Code
387000

3871

Hex. nut spanner 26 and 30 mm.
For DARCAL connections 23 p.1,5 and 3/4”.

Code
387100

3871

Multi-purpose tool.
Can be used for unions from 3/8” to 1”.

Code
387127

SPECIFICATION SUMMARIES

Series 340
Manual radiator valve. Elbow connections for copper and single and multilayer plastic pipe 23 p.1,5 for piping from 10 to 18 mm. Connection to radiator 3/8" or 1/2" M with tailpiece supplied with seal in EPDM. Brass body. Chrome plated. Control knob white RAL 9010 in ABS. Double seal consisting of EPDM O-Ring on control spindle and gland in PTFE. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 341
Manual radiator valve. Straight connections for copper and single and multilayer plastic pipe 23 p.1,5 for piping from 10 to 18 mm. Connection to radiator 3/8" or 1/2" M with tailpiece supplied with seal in EPDM. Brass body. Chrome plated. Control knob white RAL 9010 in ABS. Double seal consisting of EPDM O-Ring on control spindle and gland in PTFE. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 342
Lockshield valve. Elbow connections for copper and single and multilayer plastic pipe 23 p.1,5 for piping from 10 to 18 mm. Radiator connection 3/8" or 1/2" M with tailpiece provided with EPDM seal. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-Ring on control spindle. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 343
Lockshield valve. Straight connections for copper and single and multilayer plastic pipe 23 p.1,5 for piping from 10 to 18 mm. Radiator connection 3/8" or 1/2" M with tailpiece provided with EPDM seal. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-Ring on control spindle. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 411
Manual radiator valve. Elbow connections for steel pipe, 3/8" or 1/2". Connection to radiator 3/8" or 1/2" M with tailpiece supplied with seal in EPDM. Brass body. Chrome plated. Control knob white RAL 9010 in ABS. Double seal consisting of EPDM O-Ring on control spindle and gland in PTFE. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 412
Manual radiator valve. Straight connections for steel pipe, 3/8" or 1/2". Connection to radiator 3/8" or 1/2" M with tailpiece supplied with seal in EPDM. Brass body. Chrome plated. Control knob white RAL 9010 in ABS. Double seal consisting of EPDM O-Ring on control spindle and gland in PTFE. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 415
Manual radiator valve. Elbow connections for copper and single and multilayer plastic pipe, 3/8" or 23 p.1,5. Connection to radiator 3/8" or 1/2" M with tailpiece. Brass body. Chrome plated. Control knob white RAL 9010 in ABS. Double seal consisting of EPDM O-Ring on control spindle and gland in PTFE. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 416
Manual radiator valve. Straight connections for copper and single and multilayer plastic pipe, 3/8" or 23 p.1,5. Connection to radiator 3/8" or 1/2" M with tailpiece. Brass body. Chrome plated. Control knob white RAL 9010 in ABS. Double seal consisting of EPDM O-Ring on control spindle and gland in PTFE. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 431
Lockshield valve. Elbow connections for steel pipes 3/8", 1/2" or 3/4". Radiator connection 3/8" or 1/2" M with tailpiece provided with EPDM seal, 3/4" with tailpiece without seal. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-Ring on control spindle. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 432
Lockshield valve. Straight connections for steel pipes 3/8", 1/2" or 3/4". Radiator connection 3/8" or 1/2" M with tailpiece provided with EPDM seal, 3/4" with tailpiece without seal. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-Ring on control spindle. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 435
Lockshield valve. Elbow connections for copper and single and multilayer plastic pipe 3/8" or 23 p.1,5. Radiator connection 3/8" or 1/2" M with tailpiece. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-Ring on control spindle. Maximum working temperature 100°C. Maximum working pressure 10 bar.

Series 436
Lockshield valve. Straight connections for copper and single and multilayer plastic pipe 3/8" or 23 p.1,5. Radiator connection 3/8" or 1/2" M with tailpiece. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-Ring on control spindle. Maximum working temperature 100°C. Maximum working pressure 10 bar.

CALEFFI
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