Convertible radiator valves 338 – 401 series
Thermostatic control heads 200 series

01009/10 GB
replaces dp 01009/01GB

ISO 9001 FM 21654 ISO 9001 No. 0003

Function

The following series of convertible radiator valves are typically used for controlling the fluid in the emitters of heating systems.
These special valves can be converted from manual to thermostatic operation by simple replacement of the adjusting knob with a thermostatic control head. This means that the ambient temperature of any room in which they are installed can be constantly maintained at the set value.

The innovative 202 series thermostatic control head enables the room temperature to be controlled, showing the actual room temperature on the indicator on the front of the control head.

These valves have a special tailpiece with rubber hydraulic seal, permitting quick, safe connection to the radiator without the use of additional sealing materials.

Patent application No. MI2007U000405 (202 series)

Product range

VALVES:

For copper and plastic pipe:

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

For iron pipe:

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 radiator lockshield valve	sizes 3/8", 1/2", 3/4", 1" (*)
432 series	Straight radiator lockshield valve	sizes 3/8", 1/2", 3/4", 1" (*)

THERMOSTATIC CONTROL HEADS

200 series	Thermostatic control head with built-in liquid-filled sensor	adjustment scale from 0 to 5 corresponding to 0–28°C
201 series	Thermostatic control head with remote liquid-filled sensor	adjustment scale from 0 to 5 corresponding to 0–28°C
202 series	Thermostatic control with temperature indicator	adjustment scale from 0 to 5 corresponding to 0–28°C
203 series	Thermostatic control head with contact sensor for fluid temperature limitation	graduated scale 20-50°C, 40–90°C
209 series	Tamper-proof / anti-theft cap for use in public places	for 200 series control head

* *3/4" and 1" have tailpieces without rubber seals*

Technical specifications of valves and lockshields

Material

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

Performance

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

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

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

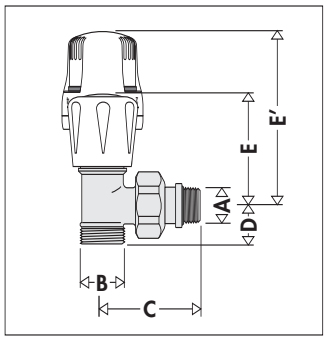
Technical specification of 200/201/202 series thermostatic control heads

Adjustment scale:	0–5
Control temperature range:	0–28°C
Frost protection cut-in:	7°C
Max. ambient temperature:	50°C
Length of capillary pipe (201 series):	2 m
Room temperature indicator (202 series):	16–26°C

Technical specifications of 203 series thermostatic control heads

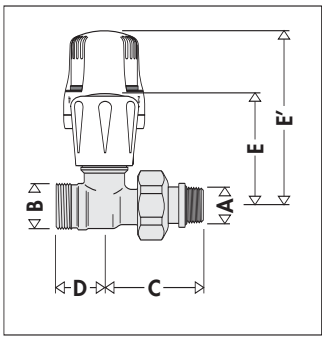
Adjustment scale:	- code 203502	20–50°C
	- code 203702	40–90°C
Max sensor temperature:		100°C
Max pocket pressure:		10 bar
Length of capillary pipe:		2 m

Dimensions



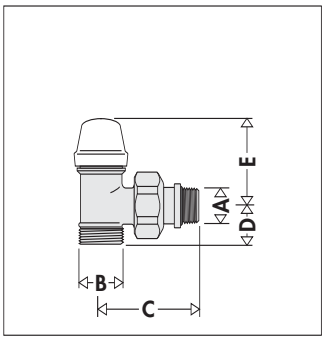
Code	A	B	C
338302	3/8″	23 p.1,5	47,5
338402	1/2″	23 p.1,5	53,5
338452	1/2″	3/4″	53,5

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



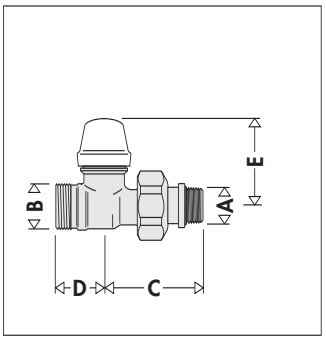
Code	A	B	C
339302	3/8″	23 p.1,5	47,5
339402	1/2″	23 p.1,5	53,5
339452	1/2″	3/4″	53,5

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



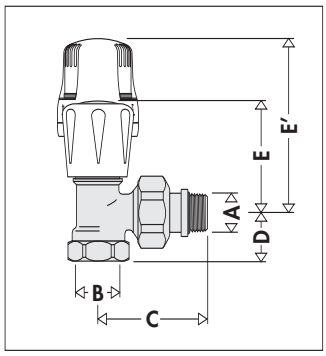
Code	A	B	C
342302	3/8″	23 p.1,5	47,5
342402	1/2″	23 p.1,5	53,5
342452	1/2″	3/4″	53,5

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



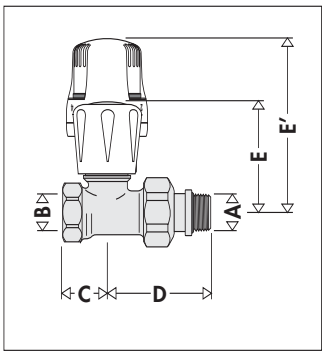
Code	A	B	C
343302	3/8″	23 p.1,5	47,5
343402	1/2″	23 p.1,5	53,5
343452	1/2″	3/4″	53,5

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



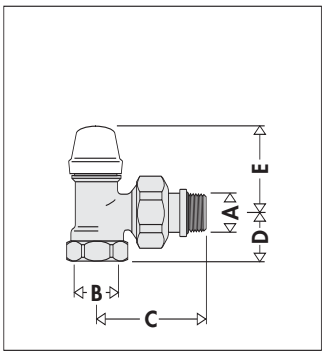
Code	A	B	C
401302	3/8″	3/8″	47,5
401402	1/2″	1/2″	53,5
401500	3/4″	3/4″	62,5
401603	1″	1″	70,5

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



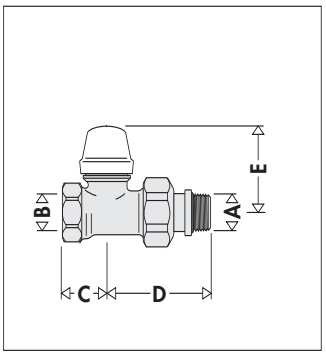
Code	A	B	C
402302	3/8″	3/8″	21
402402	1/2″	1/2″	22
402500	3/4″	3/4″	30
402603	1″	1″	38

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



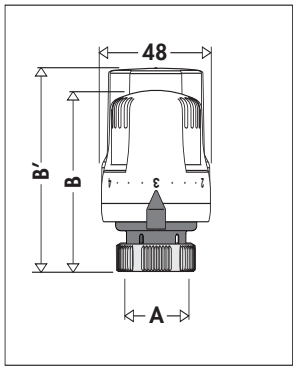
Code	A	B	C
431302	3/8″	3/8″	47,5
431402	1/2″	1/2″	53,5
431503	3/4″	3/4″	62,5
431603	1″	1″	70,5

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

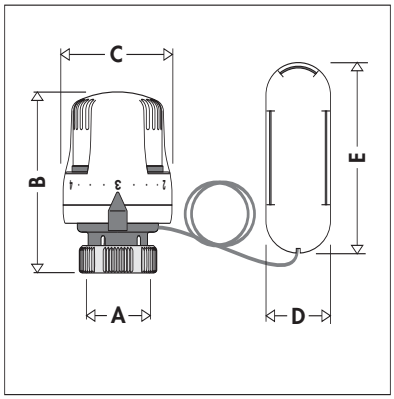


Code	A	B	C
432302	3/8″	3/8″	21
432402	1/2″	1/2″	22
432503	3/4″	3/4″	30
432603	1″	1″	38

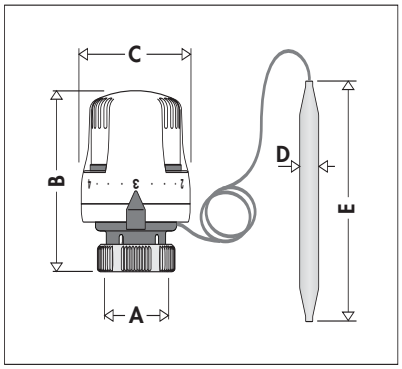
Code	D	E	Mass (kg)
432302	46,5	44,5	0,192
432402	52	44,5	0,242
432503	59,5	49,5	0,190
432603	63,5	51,5	0,560



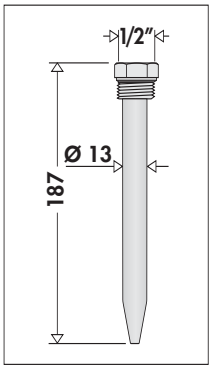
Code	A	B	B'	Mass (kg)
200000	30 p.1,5	80	–	0,165
202000	30 p.1,5	–	85	0,168



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



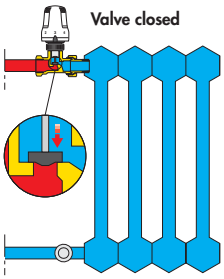
Code	A	B	C	D	E	Mass (kg)
203502	30 p.1,5	80	48	Ø 11	158	0,300
203702	30 p.1,5	80	48	Ø 9,5	134	0,300

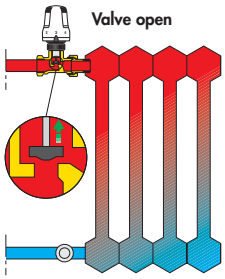


Code	pocket for code
475002	203502
475003	203702

Operating principle of thermostatic control head

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



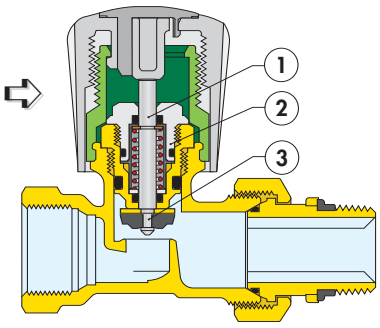


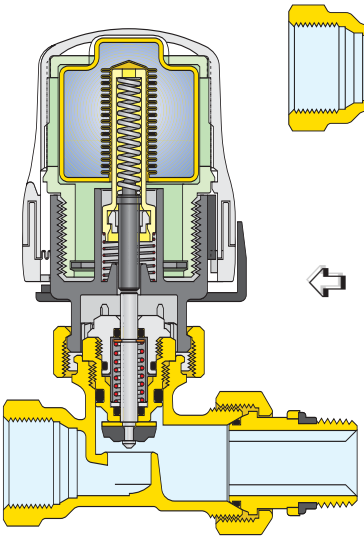
Construction details

Valve

The stainless steel control stem (1) has an EPDM double seal O-ring. In this way the upper portion of the headwork (2) can be replaced even with the system running.
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 valve with manual control

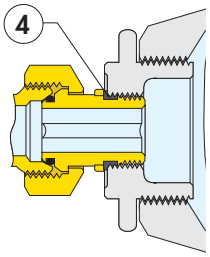




Convertible valve with thermostatic control head

Tailpiece with rubber seal

The radiator connection thread coupling 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.



Thermostatic control head with temperature indicator, 202 series

Room temperature indicator

The room temperature indicator, mounted on the front of the thermostatic control, 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.

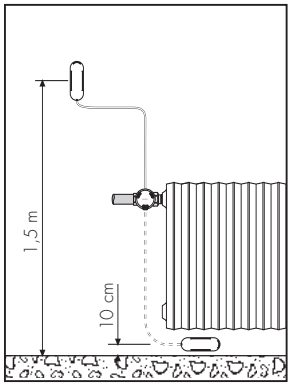
Visibility with sufficient lighting

Pivoting system

A particular pivoting system keeps the indicator always vertical thus allowing its optimal visualization.

Thermostatic control head with remote sensor, 201 series

The use of the thermostatic head with remote sensor requires installation of the latter in accordance with the dimensions shown in the diagram.

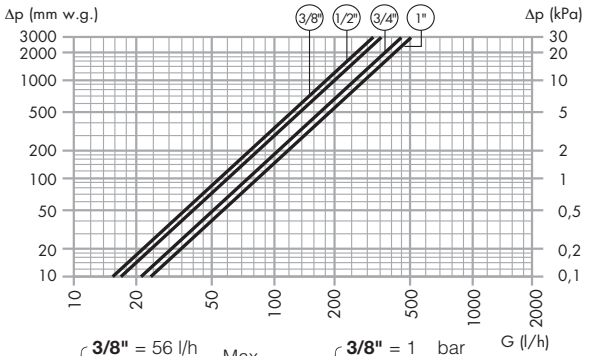


Tamper-proof / anti-theft cap

The tamper-proof and anti-theft version of the thermostatic control head is obtained by fitting the cap code 209000 on the control knob as shown at side. It is secured with two screws equipped with a special head that can only be tightened using the special allen key code 209001.

Hydraulic characteristics

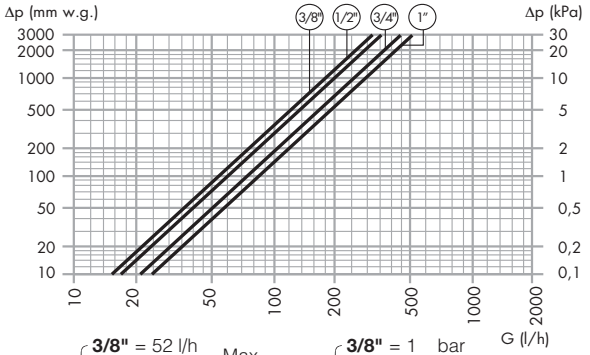
Convertible radiator valves with angled connections, 338 series and 401 series with thermostatic regulation, proportional band 2K



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

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

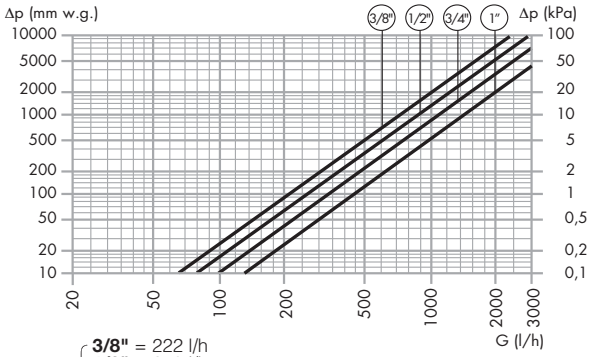
Convertible radiator valves with straight connections, 339 series and 402 series with thermostatic regulation, proportional band 2K



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

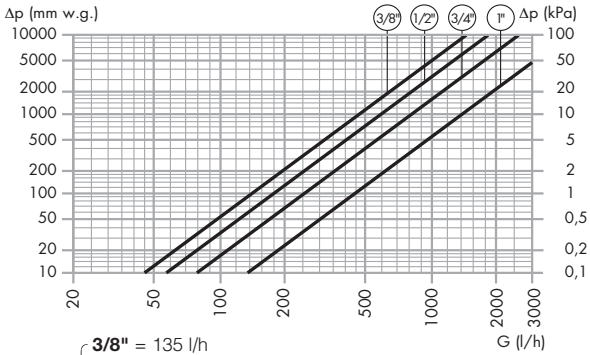
Max differential pressure: **3/8"** = 1 bar, **1/2"** = 1 bar, **3/4"** = 1 bar, **1"** = 0,6 bar

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



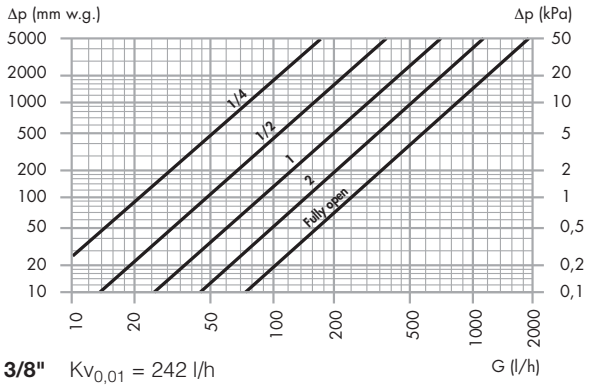
$Kv_{0,01}$ **3/8"** = 222 l/h, **1/2"** = 270 l/h, **3/4"** = 336 l/h, **1"** = 447 l/h

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



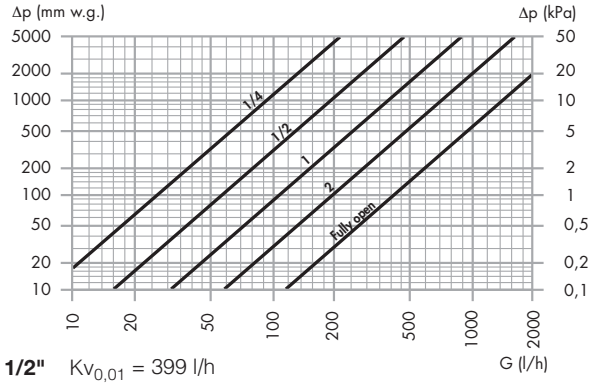
$Kv_{0,01}$ **3/8"** = 135 l/h, **1/2"** = 179 l/h, **3/4"** = 258 l/h, **1"** = 443 l/h

Lockshield valves with angled connections 3/8", 342 and 431 series



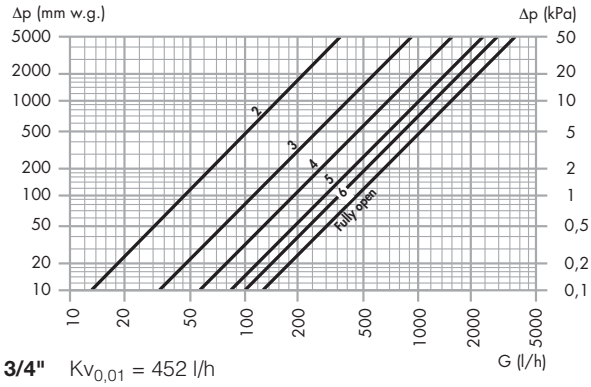
3/8" $Kv_{0,01}$ = 242 l/h

Lockshield valves with angled connections 1/2", 342 and 431 series



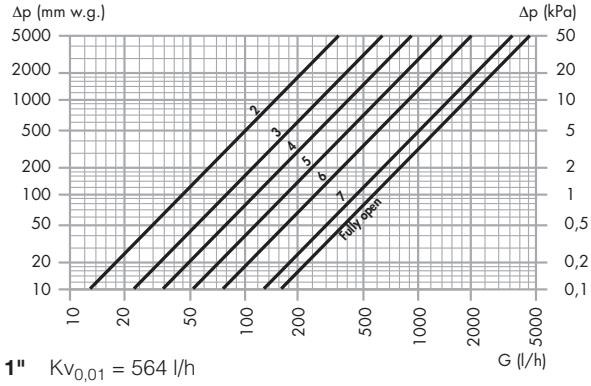
1/2" $Kv_{0,01}$ = 399 l/h

Lockshield valves with angled connections 3/4", 431



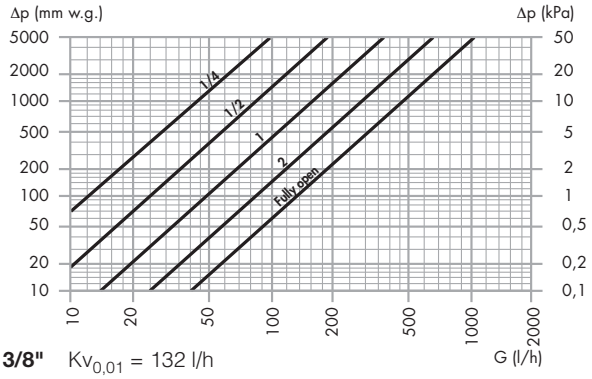
3/4" $Kv_{0,01}$ = 452 l/h

Lockshield valves with angled connections 1", 431 series



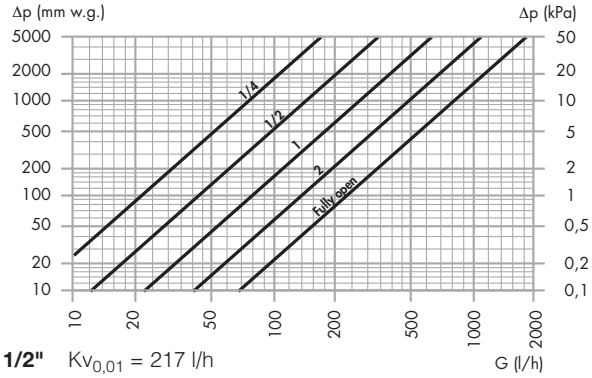
1" $Kv_{0,01}$ = 564 l/h

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



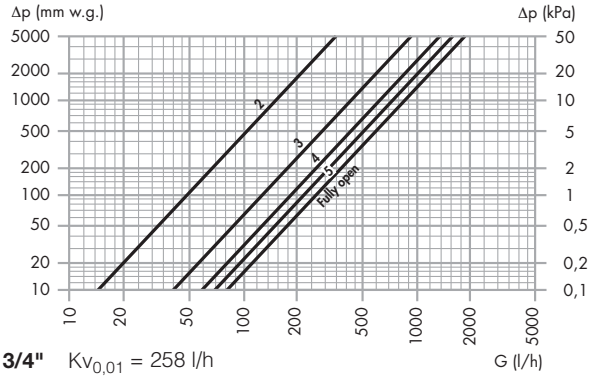
3/8" $Kv_{0,01}$ = 132 l/h

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



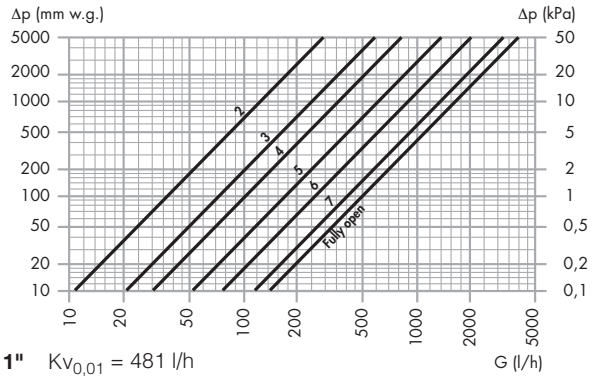
1/2" $Kv_{0,01}$ = 217 l/h

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



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

Lockshield valves with straight connections 1", 432 series



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

Values of nominal flow rate and equivalent lengths

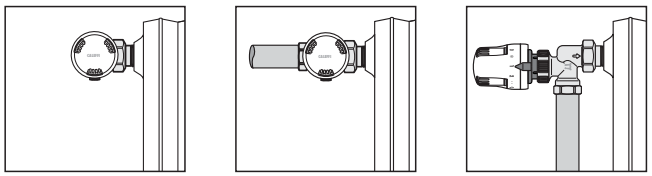
COPPER PIPE							
TYPE	Rad. conn.	Pipe conn.	Ø int/ext pipe (mm)	STRAIGHT $Kv_{0,01}$ (l/h)	STRAIGHT le (m)	ANGLED $Kv_{0,01}$ (l/h)	ANGLED le (m)
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	8/10	135	0,8	222	0,3
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	10/12	135	2,5	222	0,9
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	12/14	135	6,6	222	2,4
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	13/15	135	10,1	222	3,7
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	14/16	135	14,8	222	5,5
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	16/18	135	29,9	222	11,1
Convertible radiator valve with manual adjustment	1/2"	23 p. 1,5	8/10	179	0,5	270	0,2
Convertible radiator valve with manual adjustment	1/2"	23 p. 1,5	10/12	179	1,4	270	0,6
Convertible radiator valve with manual adjustment	1/2"	23 p. 1,5	12/14	179	3,7	270	1,6
Convertible radiator valve with manual adjustment	1/2"	23 p. 1,5	13/15	179	5,7	270	2,5
Convertible radiator valve with manual adjustment	1/2"	23 p. 1,5	14/16	179	8,4	270	3,7
Convertible radiator valve with manual adjustment	1/2"	23 p. 1,5	16/18	179	17,0	270	7,5

STEEL PIPE							
TYPE	Rad. conn.	Pipe conn.	Ø int/ext pipe (mm)	STRAIGHT $Kv_{0,01}$ (l/h)	STRAIGHT le (m)	ANGLED $Kv_{0,01}$ (l/h)	ANGLED le (m)
Convertible radiator valve with manual adjustment	3/8"	3/8"	12,7/16,7	135	7,2	222	2,7
Convertible radiator valve with manual adjustment	1/2"	1/2"	16,3/21,0	179	15,3	270	6,7
Convertible radiator valve with manual adjustment	3/4"	3/4"	21,7/26,4	258	33,2	336	19,6
Convertible radiator valve with manual adjustment	1"	1"	27,4/33,2	443	38,5	447	37,8

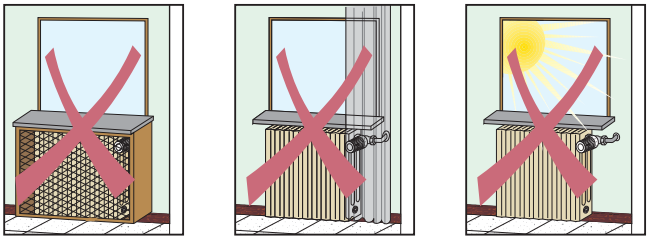
PLASTIC PIPE							
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	8/12	135	0,8	222	0,3
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	10/15	135	2,5	222	0,9
Convertible radiator valve with manual adjustment	3/8"	23 p. 1,5	12/16	135	6,6	222	2,4
Convertible radiator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

Installation

The thermostatic control heads must be installed in horizontal position.

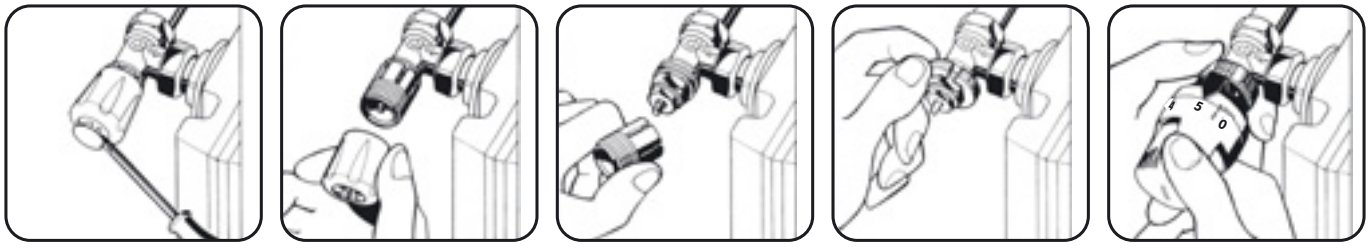


The sensible element of thermostatic control heads must never be installed in: niches, radiator cabinets, behind curtains or exposed to direct sunlight, otherwise false readings may occur.



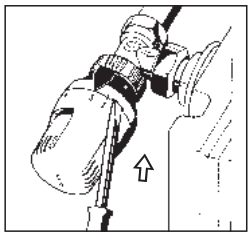
Converting valves from manual to thermostatic control

Before installing the thermostatic control head, turn the knob to position no. 5

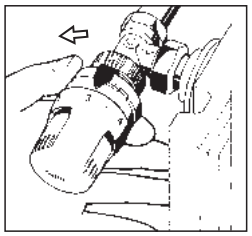


Locking and restricting the thermostat control temperature

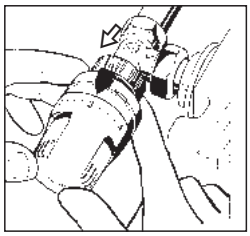
Temperature restriction



1. Turn the knob to the fully open position (Pos. 5). Using a screw-driver, unlock the ring, pressing it fully towards the valve body.

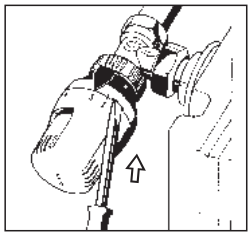


2. Turn the knob to the new maximum open position required (e.g. Pos. 3). Turn the ring **anti-clockwise** up to the stop.

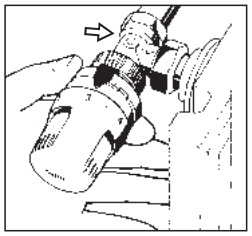


3. Re-lock the ring. The valve will now have a temperature range restriction from 0 to the set value.

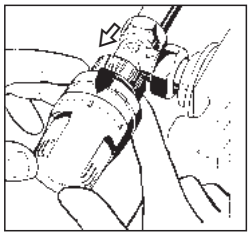
Locking the temperature



1. Turn the knob to the fully open position (Pos. 5). Using a screw-driver, unlock the ring, pressing it fully towards the valve body.

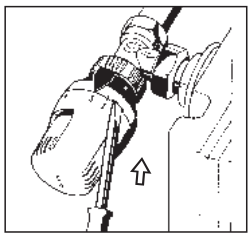


2. Position the valve at the required temperature and turn the ring **clockwise** up to the stop.

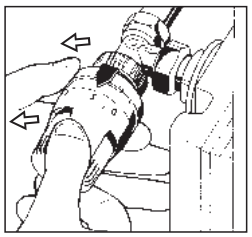


3. Re-lock the ring. The valve will now be locked at the set temperature.

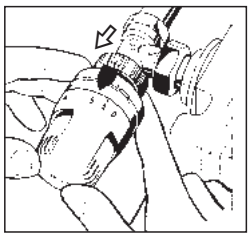
Resetting the temperature restriction and temperature lock



1. Using a screw-driver, unlock the ring, pressing it fully towards the valve body.



2. Turn the knob to the fully open position and the ring **anti-clockwise**, up to the stop. The RESET arrows will match up.



3. Re-lock the ring. The valve will now no longer have any temperature restriction or lock.

SPECIFICATION SUMMARY

338 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Angled connections for copper and single and multilayer plastic pipes 23 p.1,5 for pipes from 10 to 18 mm, 3/4" for Ø 20 mm plastic pipes. Radiator connection 3/8" and 1/2" M with tailpiece equipped with EPDM pre-seal. Brass body. Chrome plated. Control knob white RAL 9010, for manual control, in ABS. Stainless steel control stem. Double seal on control stem with EPDM O-rings. Maximum working temperature 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 and single and multilayer plastic pipes 23 p.1,5 for pipes from 10 to 18 mm, 3/4" for Ø 20 mm plastic pipes. Radiator connection 3/8" and 1/2" M with tailpiece equipped with EPDM pre-seal. Brass body. Chrome plated. Control knob white RAL 9010, for manual control, in ABS. Stainless steel control stem. Double seal on control stem with EPDM O-rings. Maximum working temperature 100°C. Maximum working pressure 10 bar.

342 series
Lockshield valve. Angled connections for copper and single and multilayer plastic pipes 23 p.1,5 for pipes from 10 to 18 mm, 3/4" for Ø 20 mm plastic pipes. Radiator connection 3/8" or 1/2" M with tailpiece equipped with EPDM pre-seal. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-ring on control stem. Maximum working temperature 100°C. Maximum working pressure 10 bar.

343 series
Lockshield valve. Straight connections for copper and single and multilayer plastic pipes 23 p.1,5 for pipes from 10 to 18 mm, 3/4" for Ø 20 mm plastic pipes. Radiator connection 3/8" or 1/2" M with tailpiece equipped with EPDM pre-seal. Brass body. Chrome plated. Cap white RAL 9010 in ABS. Outward seal consisting of EPDM O-ring on control stem. Maximum working temperature 100°C. Maximum working pressure 10 bar.

401 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Angled connections for steel pipes 3/8", 1/2", 3/4" or 1" F. Radiator connection 3/8" or 1/2" M with tailpiece equipped with EPDM pre-seal, 3/4" and 1" M with tailpiece without seal. Brass body. Chrome plated. Control knob white RAL 9010, for manual control, in ABS. Stainless steel control stem. Double seal on control stem with EPDM O-rings. Maximum working temperature 100°C. Maximum working pressure 10 bar.

402 series
Convertible radiator valve fitted for thermostatic control heads and thermo-electric actuators. Straight connections for steel pipes 3/8", 1/2", 3/4" or 1" F. Radiator connection 3/8" or 1/2" M with tailpiece equipped with EPDM pre-seal, 3/4" and 1" M with tailpiece without pre-seal. Brass body. Chrome plated. Control knob white RAL 9010, for manual control, in ABS. Stainless steel control stem. Double seal on control stem with EPDM O-rings. Maximum working temperature 100°C. Maximum working pressure 10 bar.

431 series
Lockshield valve. Angled connections for iron pipes 3/8", 1/2", 3/4" or 1" F. Radiator connection 3/8" or 1/2" M with tailpiece equipped with EPDM pre-seal, 3/4" and 1" M with tailpiece without seal. Brass body. Chrome plated. White cap RAL 9010 in ABS. Outward seal consisting of EPDM O-ring on control stem. Maximum working temperature 100°C. Maximum working pressure 10 bar.

432 series
Lockshield valve. Straight connections for iron pipes 3/8", 1/2", 3/4" or 1" F. Radiator connection 3/8" or 1/2" M with tailpiece equipped with EPDM pre-seal, 3/4" and 1" M with tailpiece without seal. Brass body. Chrome plated. White cap RAL 9010 in ABS. Outward seal consisting of EPDM O-ring on control stem. Maximum working temperature 100°C. Maximum working pressure 10 bar.

200 series
Thermostatic control head for thermostatic and convertible radiator valves. Built-in sensor with liquid-filled element. Maximum ambient temperature 50°C. Graduated scale from 0 to 5 corresponding to a temperature adjustment range from 0 to 28°C, with the possibility of locking and limiting the temperature. Frost protection cut-in at 7°C.

201 series
Thermostatic control head for thermostatic and convertible radiator valves. Remote sensor with liquid-filled element. Maximum ambient temperature 50°C. Graduated scale from 0 to 5 corresponding to a temperature adjustment range from 0 to 28°C, with the possibility of locking and limiting the temperature. Frost protection cut-in at 7°C.

202 series
Thermostatic control head for thermostatic and convertible radiator valves. Built-in sensor with liquid-filled element, with digital LCD room temperature indicator. Maximum ambient temperature 50°C. Graduated scale from 0 to 5 corresponding to a temperature adjustment range from 0 to 28°C, with the possibility of locking and limiting the temperature. Frost protection cut-in at 7°C. Room temperature display range from 16°C to 26°C.

203 series
Thermostatic control head with contact sensor, for fluid temperature limitation. Control temperature range 20–50°C (40–90°C). Maximum sensor temperature 100°C. Numbered scale, with possibility of locking and limiting the temperature. Capillary length 2 m.

209 series
Tamper-proof / anti-theft cap for thermostatic control head, for use in public places.

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