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Radiator Valve Program

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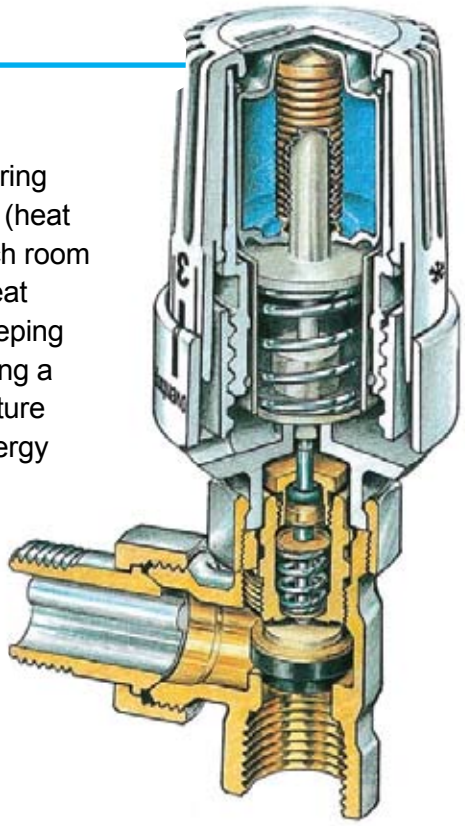
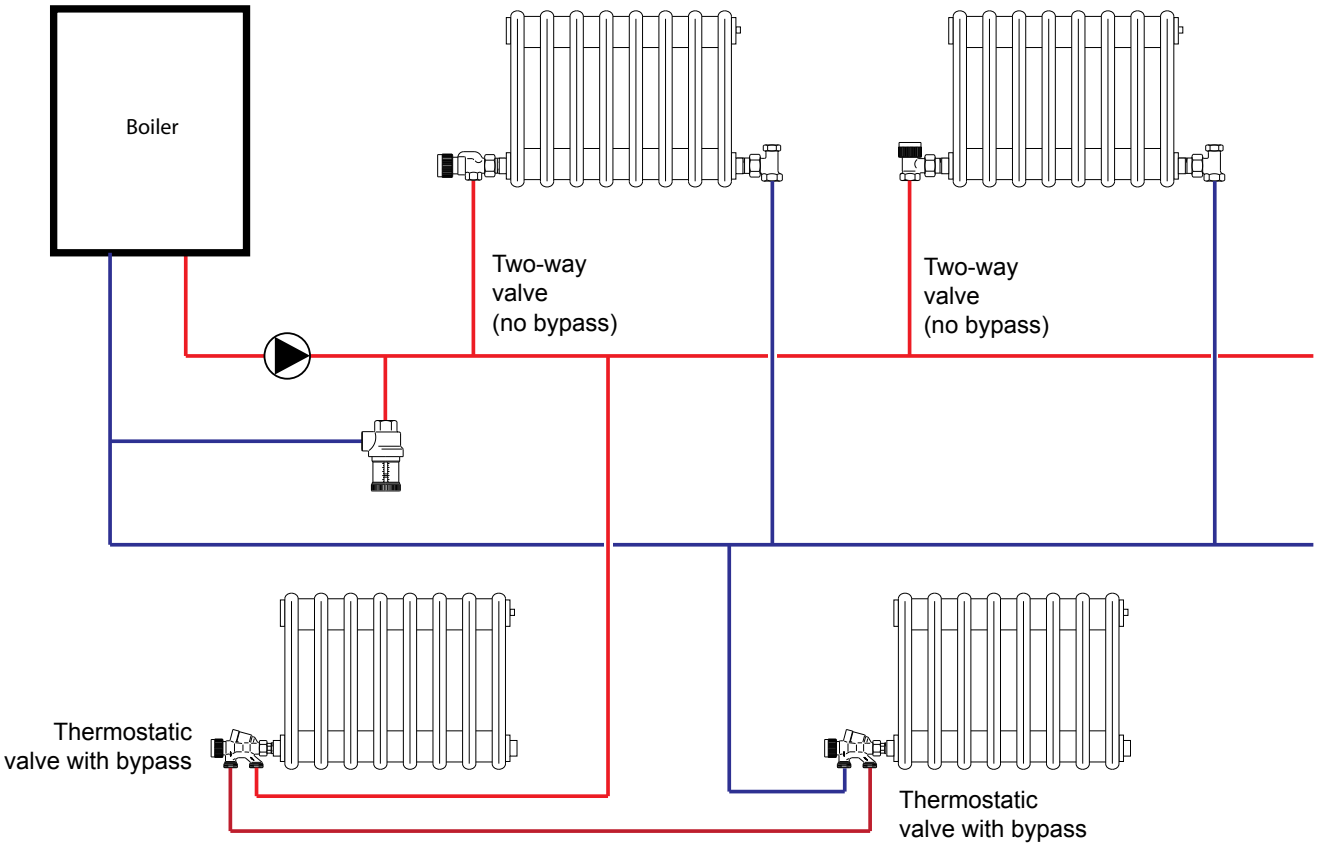


Heat seeks cold faster when the temperature difference is greater. Lowering the temperature of a room reduces the amount of heat leaving the room (heat loss). Installing thermostats in every room allows the temperature of each room to be set individually. As an example, bathrooms tend to have a small heat loss; whereas living rooms tend to have a large heat loss. Therefore, keeping a bathroom warmer has less impact on overall energy usage than keeping a living room warmer. Similarly, bedrooms can be kept at a lower temperature than living areas. By varying the temperatures in a home, the overall energy consumption is reduced while a more comfortable indoor environment is created.

Thermostatic radiator valves (TRV) are a simple and effective way to locate a thermostat in each room. With the TRV installed, each radiator becomes its own heating zone.

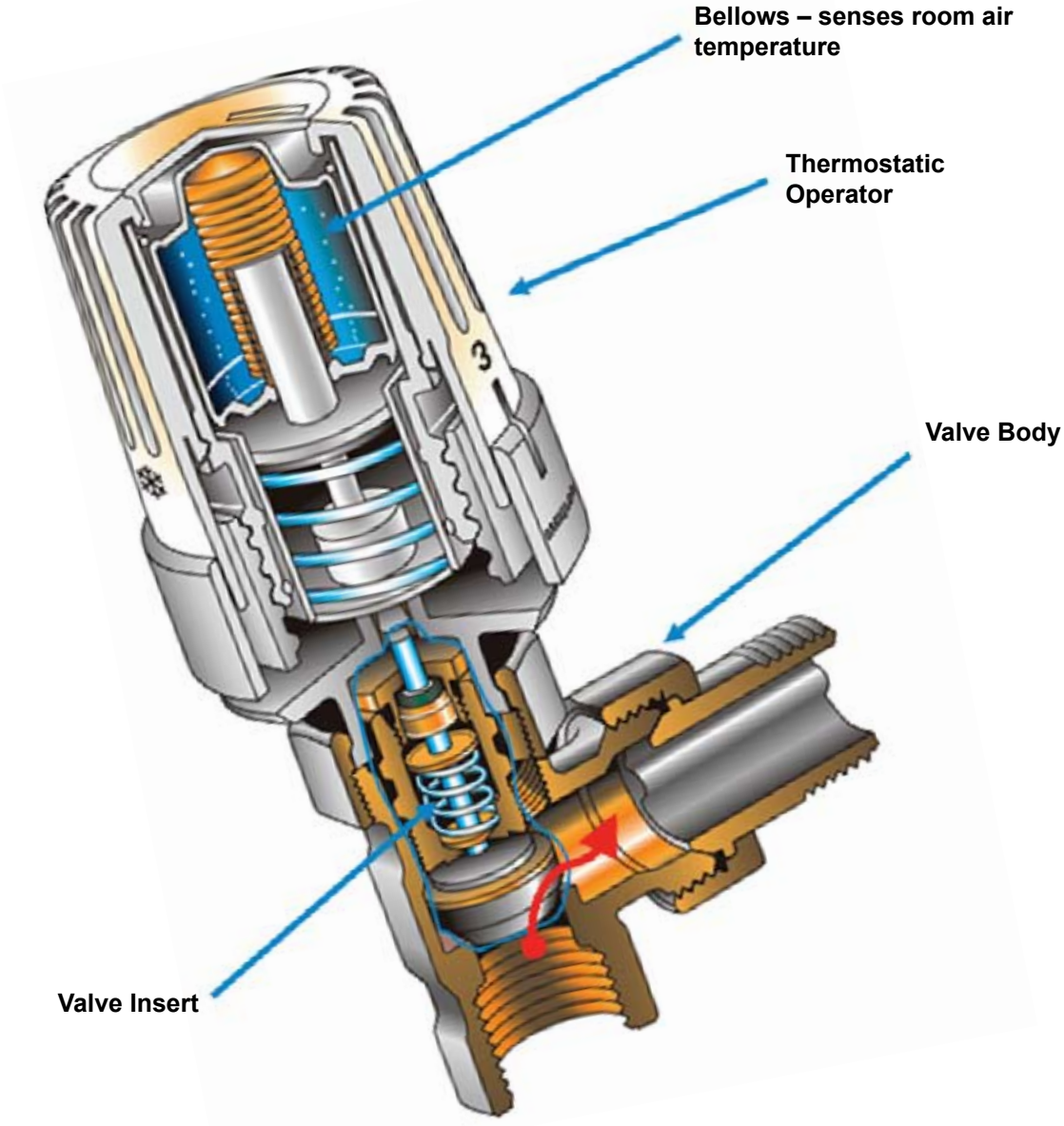


Radiator valve

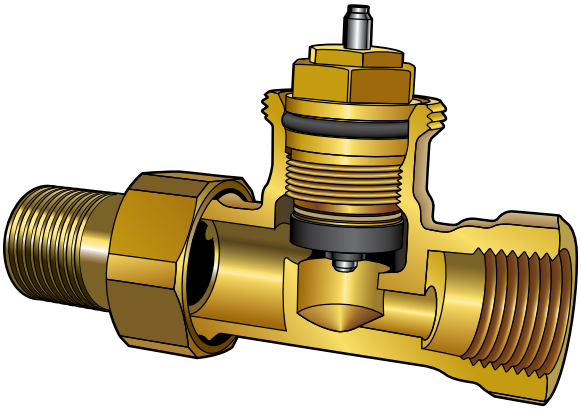
- Radiator tailpiece (spud)
  - Nickel-plated brass
- Valve body
  - Nickel-plated brass
  - Fluid should always flow from female to male connection
- Union nut
  - Nickel-plated brass
- Valve insert
  - Working mechanism of the valve
  - Replaceable moving part of the valve
  - Removable with “Demo-Bloc” tool while the system is in operation
  - Brass body with stainless steel stem

Thermostatic operator

- Setting dial
  - Settings from 0 to 5
  - Freeze protection setting
- Bellows
  - Fluid inside expands with increasing temperature
  - Fluid inside contracts with decreasing temperature
- Actuator
  - Bellows pushes the plunger down to close the valve



Hot water valve



AZ insert for hot water systems

Temperatures:

Maximum operating: 248 ºF continuous
(266 ºF for short periods)

Minimum operating: 36 ºF continuous

Pressures:

Maximum operating: 145 psi

Maximum differential: 14.5 psi

Materials:

Seat: Brass

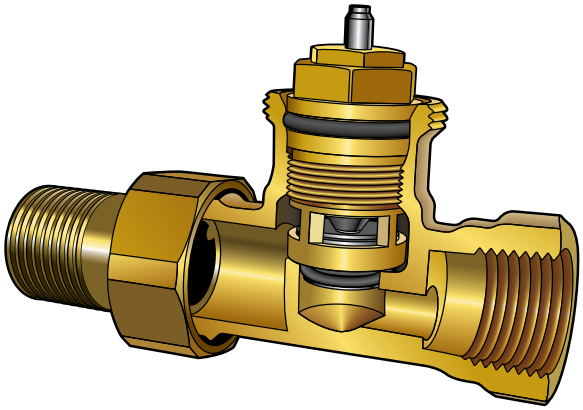
Disc: EPDM

Stem: Stainless steel

Body: Brass

O-Ring: EPDM

Steam valve



Special insert for low pressure steam systems

Temperatures:

Maximum operating: 230 ºF

Pressures:

Maximum operating: 15 psi (for low pressure steam)

Materials:

Seat: Stainless steel

Disc: Stainless steel

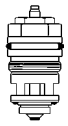
Stem Stainless steel

Body: Brass

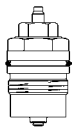
O-Ring: EPDM

Other inserts:

Special uses



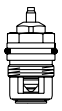
KT insert – opens on rising temperature for cooling applications



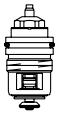
TM insert – 40 psi maximum differential pressure allows for high flow applications, such as commercial baseboard

Special insert – allows the valve to operate with the flow reversed

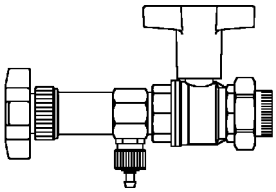
Settable



AV 6 insert – six flow settings allow the valve to operate as both balancer and regulator



ADV 6 insert – six flow settings allow the valve to operate as both balancer and regulator. In addition, the valve will default to 5% flow if the thermostat is removed



“Demo-Bloc” tool – for in-service replacement of radiator valve inserts

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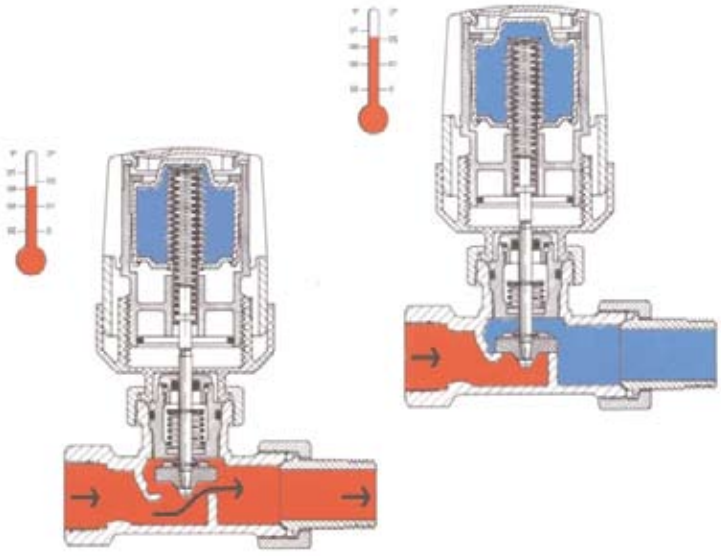
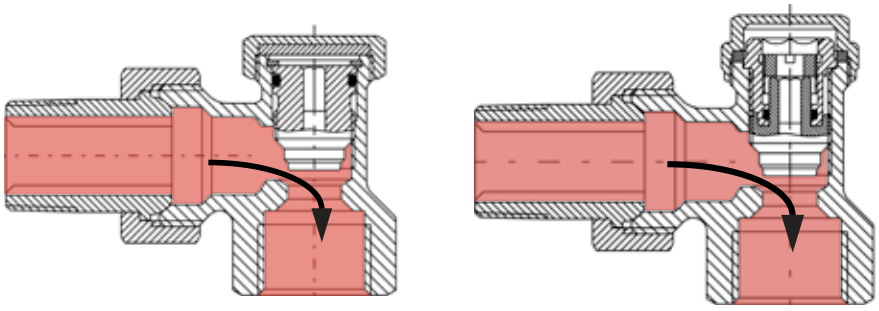
The TRV and lockshield valve work together to create the ideal flow of heat to the radiator. In combination, these valves also allow the radiator to be shut off completely for servicing.

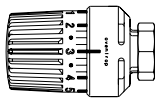
When the room air is cold, the fluid in the thermostat takes up a small volume. This leaves the valve open, allowing heat into the room through the radiator.

As the room temperature rises, the fluid in the thermostat expands and closes the valve, preventing the room from overheating.

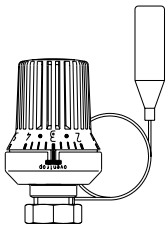


Lockshield valves, or radiator balancing valves, are installed to ensure the proper flow through the radiator and shut off the radiator when servicing.

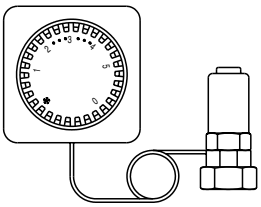




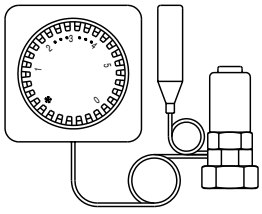
Direct – sensor in thermostat



Direct with remote sensor



Remote mounted thermostat – sensor in control dial



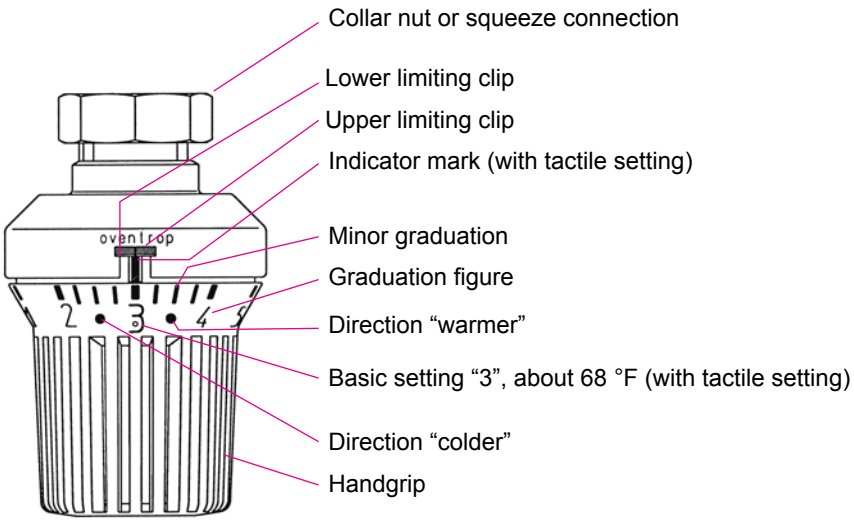
Remote mounted thermostat with remote sensor

Two types of non-electric thermostat

1. Direct Mounted
– Direct mounted thermostats have the operator dial packaged with the actuator at the valve.

2. Remote Mounted
– Remote mounted thermostats have the operator dial separated by a capilary tube from the actuator at the valve.

Figures and symbols on the thermostat



Temperature settings

0 – Isolation of the radiator

❄ – Frost protection symbol (in this position the valve opens automatically when room temperature drops below 44°F.)

1 – about 54 °F
2 – about 61 °F
3 – about 68 °F
4 – about 75 °F
5 – about 82 °F

The minor graduations between figures 2 – 4 represent a change of room temperature of about 2°F.

Thermostat setting applications

0 – isolation of the radiator

❄ – frost protection

1 – basement/garage

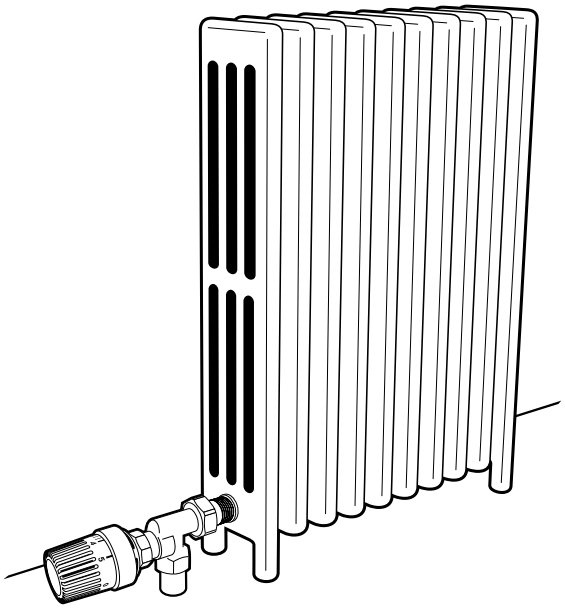
2 – bedroom, hallway

3 – basic setting “3”: living room, kitchen, children’s room

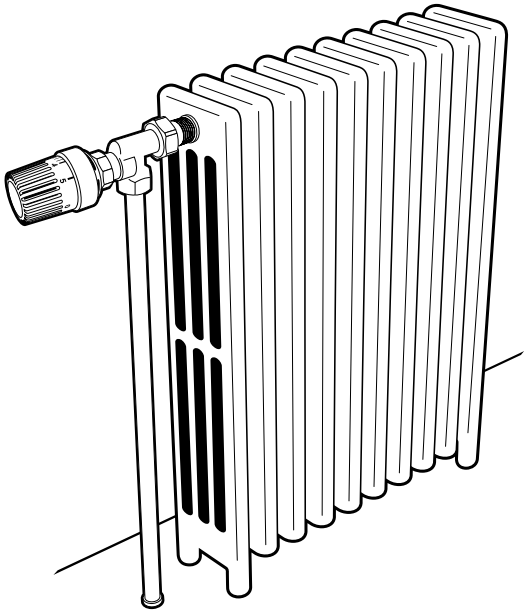
4 – bathroom

5 – high temperature application, between 75 and 82 degrees Fahrenheit (selecting the setting between 4 and 5 is not recommended in residential applications)

Standard installation



By installing the thermostat horizontally, air is allowed to flow freely through the grill and around the bellows. This airflow allows the sensor to adjust more accurately to the room air temperature.

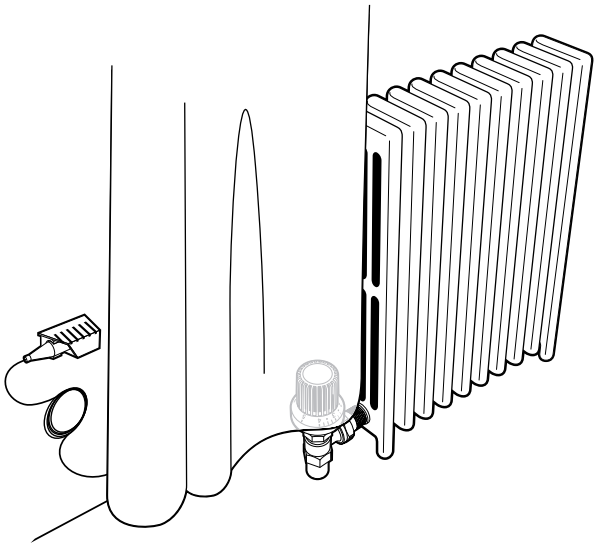


The thermostat is pointed away from the radiator to reduce the influence of the heat from the radiator on the sensor. This helps the sensor to adjust more accurately to the room temperature.

Covered thermostat

The greatly reduced air flow in this arrangement creates a hot or cold pocket of isolated air around the thermostat.

To solve this problem, a remote sensor is added outside the curtain.

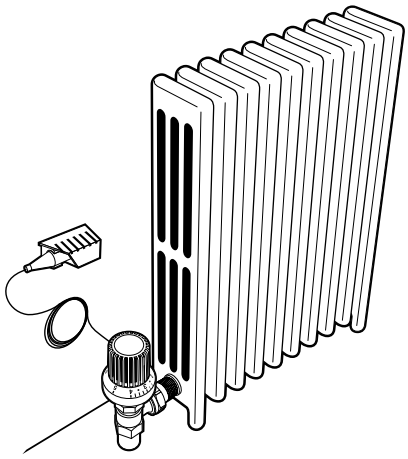


Vertical thermostat

Sensor is exposed to the radiator, causing it to falsely read the room temperature.

A vertical thermostat reduces its ability to detect changes in room air temperature due to less air flow across the bellows.

To solve this problem, a remote sensor is installed, horizontally, away from the radiator.

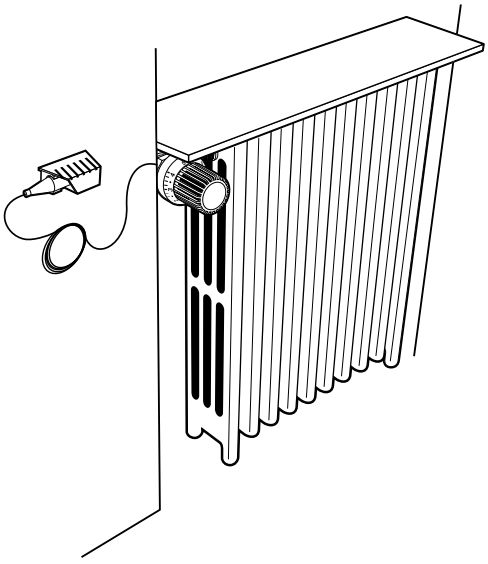


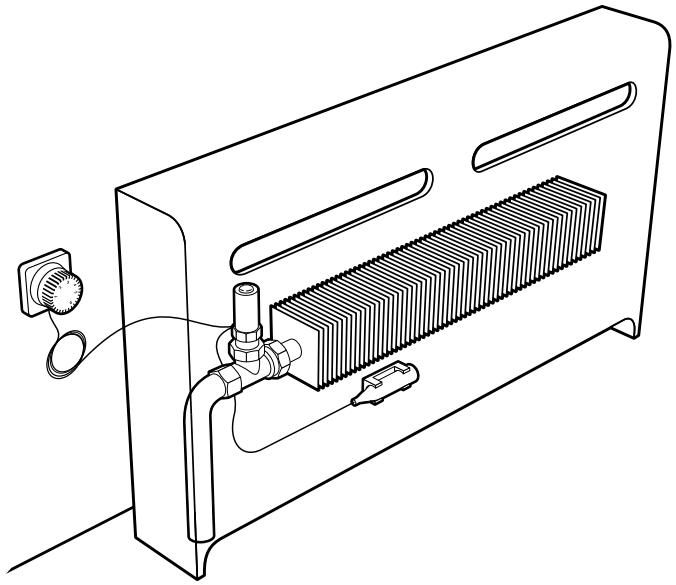
Sheltered thermostat

Sensor is exposed to the radiator, causing it to falsely read the room temperature.

The blocked air flow caused by the shelf creates a hot pocket of isolated air around the thermostat.

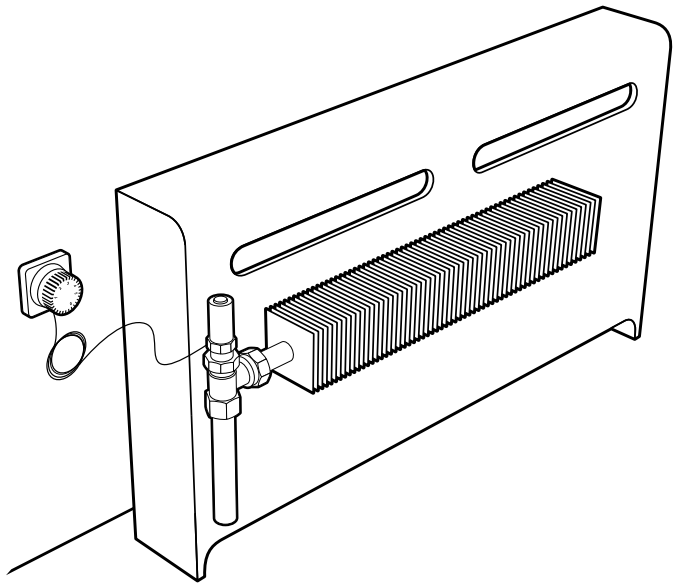
To solve this problem, a remote sensor is installed, horizontally, outside of the shelf.





Convector – high air flow

This configuration is preferred when the remote sensor bulb cannot be placed in the room and the remote-mounted thermostat cannot be placed on an interior wall. The thermostat dial, sensor valve, and the actuator and radiator valve can be placed in three different locations.

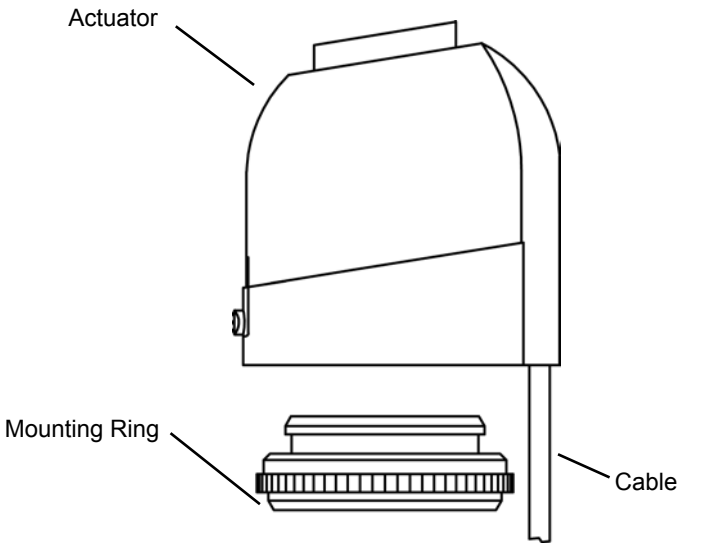


Baseboard – low air flow

Covered radiator – concealed valve

Use when the remote-mounted thermostat can be located in the proper location for sensing, and the valve is not easily accessible or exposed to the room air. The remote-mounted thermostat and the actuator and radiator valve can be in two different locations.

On/off control for radiator valves



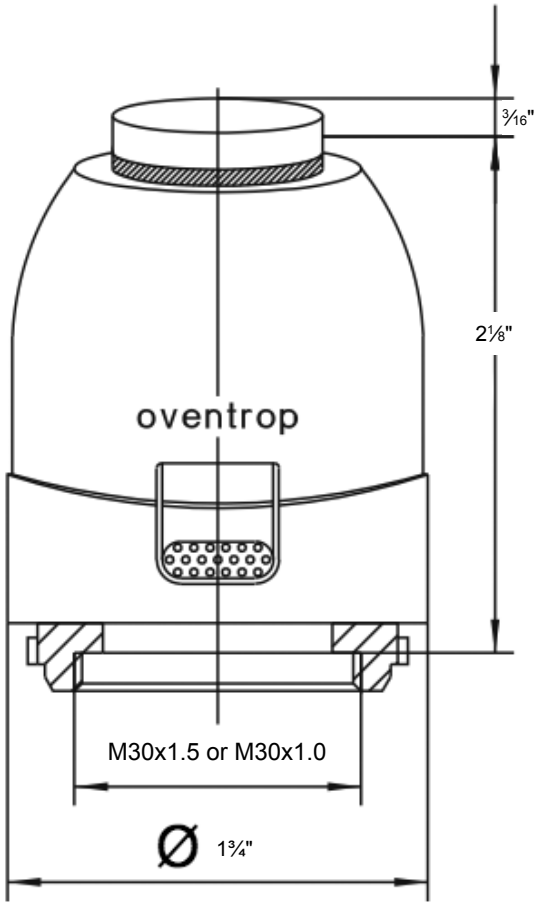
When combined with Oventrop radiator valves and room thermostats, two-point electrothermal actuators allow for individual room temperature control. With this arrangement, it is possible to control a number of radiators with one control. The working element of the Oventrop actuators is of a semi-solid type which expands when electrically heated. It is silent in operation with low current consumption.

Oventrop electrothermal actuators have small dimensions and do not require any tools for installation to the valve.

The valves are shipped with mounting rings for M30x1.5 valves.

Mounting rings for M30x1.0 valves can be ordered separately—(Item Number 101 28 90.)

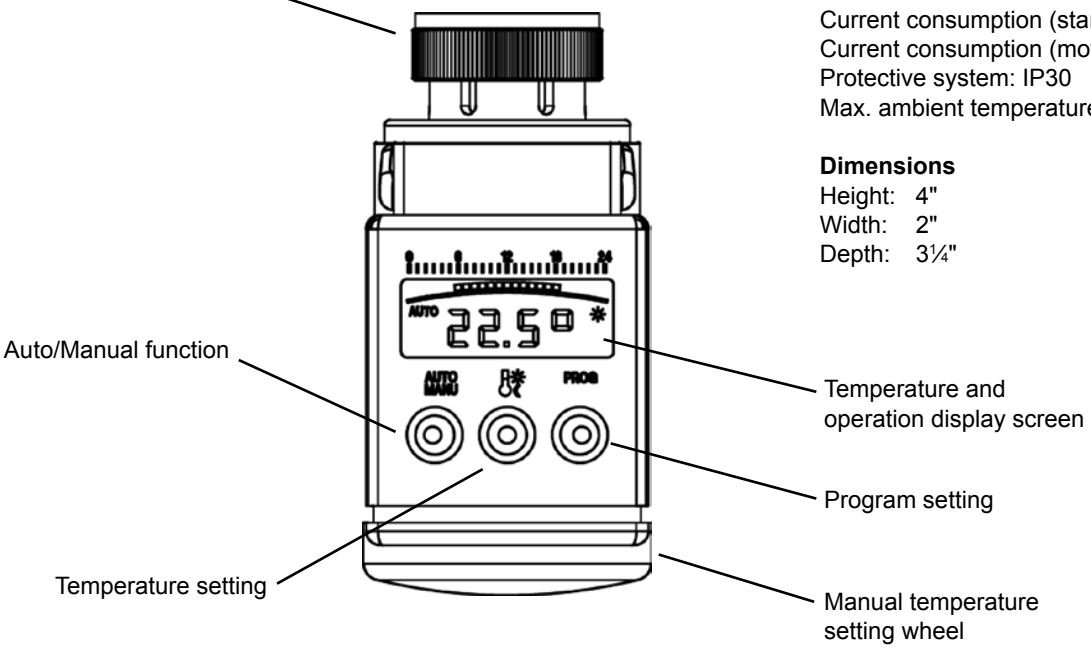
The actuators are available with normally open or normally closed operation and the normally closed actuators are available with or without an end switch.



Actuators			
Item number	**101 24 96**	**101 28 16**	**101 28 26**
Model	electrothermal, N.C., with end switch	electrothermal, N.C.	electrothermal, N.O.
Operating current	24 V		
Operating behavior (control signal)	2 point (On/Off)		
Power consumption	2 watts		
Medium floating time	~ 4.5 minutes		
Minimum fluid temperature [F]	32		
Maximum fluid temperature [F]	212		
Permissible installation position	any		

The electronic radiator controller “R-Tronic” allows an exact and yet energy-saving control of your radiator according to your requirements.

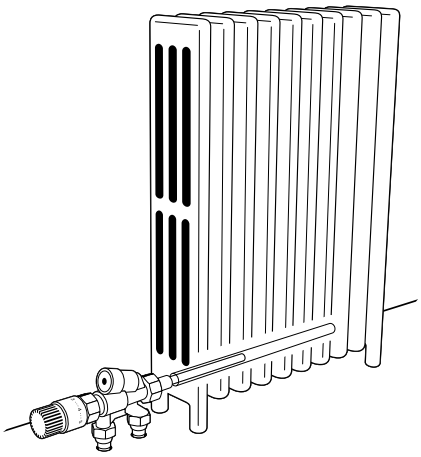
- The “R-Tronic” works according to a self-learning control algorithm (fuzzy logic).
- The operating device of the “R-Tronic” can easily be removed for programming and battery replacement.
- Four freely adjustable switching times per day and two different temperature settings allow an individual heating program for every day of the week.
- Self-monitoring features offer protection against calcification and frost, help to save energy, and display when the batteries must be replaced.
- The “R-Tronic” recognizes if a window is open and closes the valve automatically.
- The timed program of the “R-Tronic” can be secured (child-proof lock).
- The “R-Tronic” can be directly mounted onto any standard radiator valve. Adapters for other valves are available.
- The radiator controller can be easily installed without causing dirt or water stains.
- After installation, the “R-Tronic” works according to the factory setting and does not require any further setting.
- The radiator can also be operated without operating device, e.g. if the batteries are empty (see 11.2).



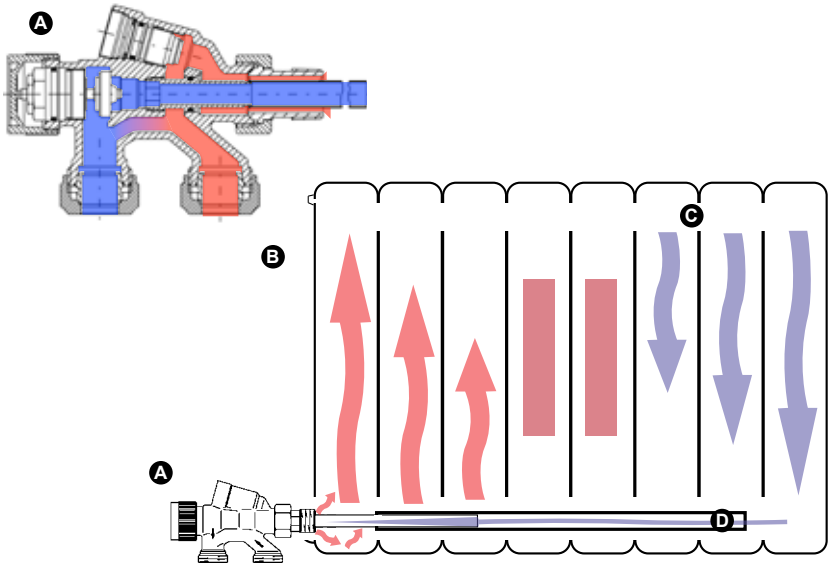
Technical data
Current consumption (standby): 0.3 mW
Current consumption (motor running): 75 mW
Protective system: IP30
Max. ambient temperature: 122 °F (50 °C)

Dimensions
Height: 4"
Width: 2"
Depth: 3¼"

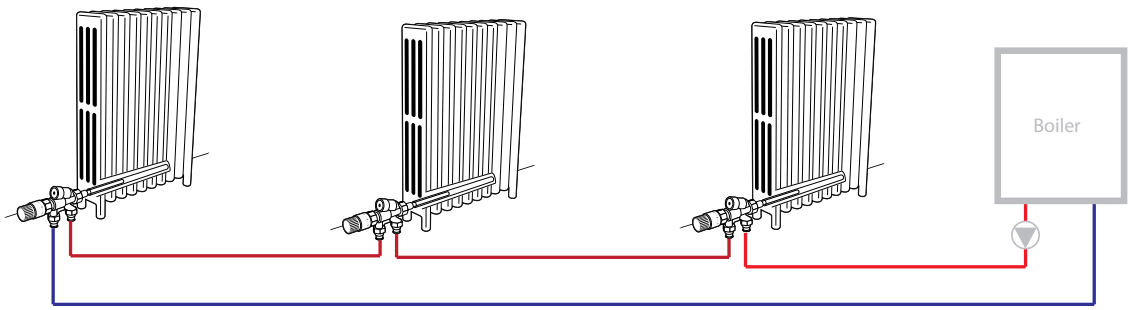
With the steam radiator conversion valve, existing one-pipe steam radiators can be reused in a hot water heating system. Oventrop steam radiator conversion valves are compatible with either PEX or copper system connections.

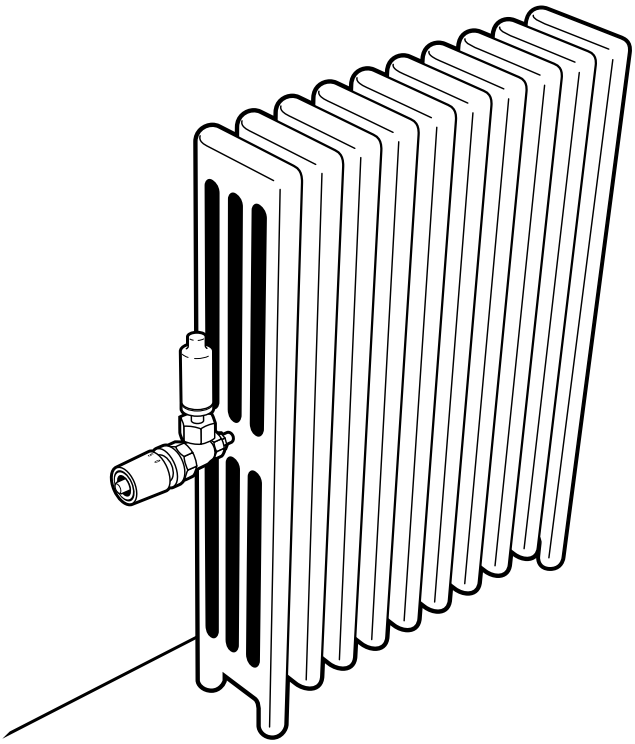


The Oventrop steam radiator conversion valve enables the use of existing one-pipe steam radiators in two-pipe hot water systems. The heating water enters the side closest to the valve Ⓐ and convects up to the top of the radiator Ⓑ. Once at the top, the water begins to cool Ⓒ and travel back to the end of the insertion tube Ⓓ on the far side of the radiator. At this point it reenters the valve and is sent to the other radiators in the series.



The valve has a permanent 35% flow bypass which can be adjusted up to 100% bypass for radiator isolation. This bypass allows multiple radiators to be installed in series which lessens the amount of pipe required to retrofit the system.

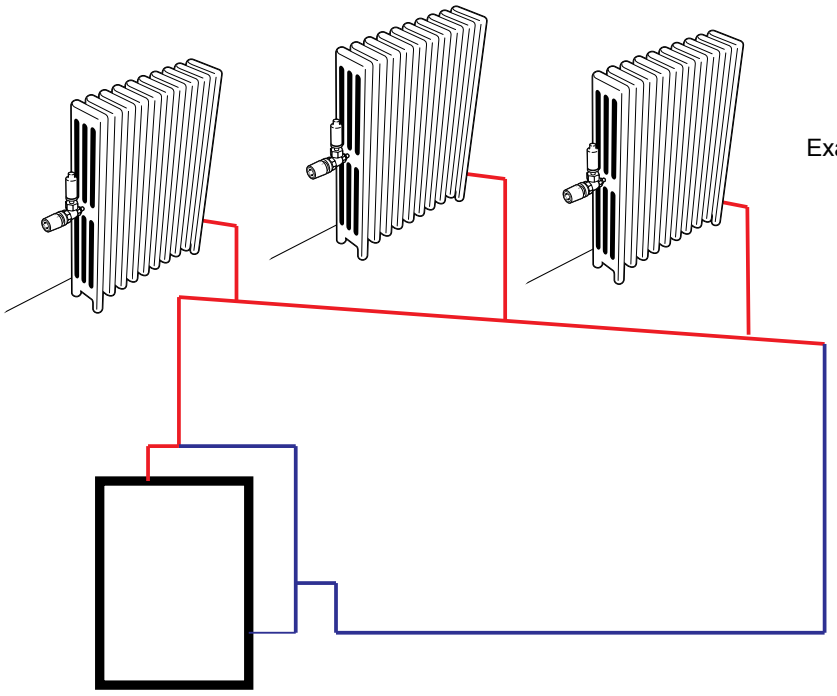




The “Uni DH” thermostat is coupled with the one-pipe steam valve because of its small size and better reaction with steam heating.

The one-pipe steam radiator valve is ideal for retrofit applications because of its simple four-step installation procedure. When installing the thermostatic valve, no decomissioning or system changes are required.

Installation procedure
1. Remove old air vent.
2. Attach thermostat to valve.
3. Attach thermostat and valve assembly to radiator.
4. Attach new air vent to radiator valve.



Example of a one-pipe steam system.

Straight 188 91 04K

Package: 188 91 04K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Straight pattern thermostatic valve	1/2" female NPT by 1/2" male NPT	188 91 04
Straight pattern lockshield balancing valve	1/2" female NPT by 1/2" male NPT	109 11 82

101 30 66

188 91 04

109 11 82

Angle 188 90 04K

Package: 188 90 04K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Angle pattern thermostatic valve	1/2" female NPT by 1/2" male NPT	188 90 04
Angle pattern lockshield balancing valve	1/2" female NPT by 1/2" male NPT	109 10 82

101 30 66

188 90 04

109 10 82

Reversed 188 92 04K

Package: 188 92 04K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Reversed angle pattern thermostatic valve	1/2" female NPT by 1/2" male NPT	188 92 04
Angle pattern lockshield balancing valve	1/2" female NPT by 1/2" male NPT	109 10 82

101 30 66

188 92 04

109 10 82

Straight 169 44 14K

Package: 169 44 14K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Straight pattern thermostatic valve	1/2" female solder by 1/2" female solder	169 44 14
Straight pattern lockshield balancing valve	1/2" female solder by 1/2" female solder	109 11 92

101 30 66

169 44 14

109 11 92

Angle 169 44 04K

Package:169 44 04K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Angle pattern thermostatic valve	1/2" female solder by 1/2" female solder	169 44 04
Angle pattern lockshield balancing valve	1/2" female solder by 1/2" female solder	109 10 92

101 30 6

169 44 04

109 10 92

Reversed 169 44 24K

Package:169 44 24K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Reversed angle pattern thermostatic valve	1/2" female solder by 1/2" female solder	169 44 24
Angle pattern lockshield balancing valve	1/2" female solder by 1/2" female solder	109 10 92

101 30 66

169 44 24

109 10 92

Straight 169 66 14K

Package: 169 66 14K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Straight pattern thermostatic valve	1/2" PEX by 1/2" NPT	169 66 14
Straight pattern lockshield balancing valve	1/2" NPT by 1/2" PEX	109 11 52

101 30 66

169 66 14

109 11 52

Angle 169 66 04K

Package: 169 66 04K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Angle pattern thermostatic valve	1/2" PEX by 1/2" NPT	169 66 04
Angle pattern lockshield balancing valve	1/2" NPT by 1/2" PEX	109 10 52

101 30 66

169 66 04

109 10 52

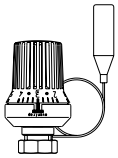
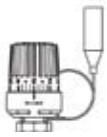
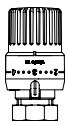
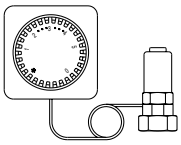
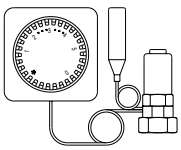
Reversed 169 66 24K

Package: 169 66 24K		
Component Item	**Connection [In by Out]**	**Item number**
“Vindo” direct mount thermostat	M30x1.5	101 30 66
Reversed angle pattern thermostatic valve	1/2" PEX by 1/2" NPT	169 66 24
Angle pattern lockshield balancing valve	1/2" NPT by 1/2" PEX	109 10 52

101 30 66

169 66 24

109 10 52

Thermostat "Uni XH" with liquid sensor				
	White model	M 30x1.5	101 13 65	These actuators provide a simple means of controlling space temperature by adjusting the flow rate through the heater. Modulating (not on-off) control that enables automatic matching of heat loss.
Thermostat "Uni XH" with remote sensor				
	Capillary 6½ feet	M 30 x 1.5	101 15 65	Temperature setting may be limited or locked. – Memory disc to mark favorite setpoint – "0" setting = positive "off" – "X" setting = freeze protection – Temperature range 42 – 84°F – Markings on the dial 0X 1–5
	Capillary 16 feet	M 30 x 1.5	101 15 66	
Thermostat "Uni LH" with liquid sensor				
	White model	M 30 x 1.5	101 14 65	Temperature setting may be limited or locked. – Memory disc to mark favorite setpoint – "0" setting = positive "off" – "X" setting = freeze protection – Temperature range 42 – 84°F
	Chrome model	M 30 x 1.5	101 14 69	
	White model capillary 6½"	M 30 x 1.5	101 16 65	"Uni LH" has tamper-proof setting stops for limiting or locking the thermostat setting.
Thermostat "Vindo"				
	With liquid sensor	M 30 x 1.5	101 30 66	
Thermostat "Uni DH" with wax sensor compact model				
	White model With remote sensor capillary 6½ feet	M 30 x 1.5 M 30 x 1.5	101 10 65 101 11 65	Temperature setting may be limited or locked. – "0" setting = positive "off" – "X" setting = freeze protection – Temperature range 42 – 84°F No "positive off" setting
Thermostat with remote control "Uni LH"				
	White model capillary 6½ feet	M 30x1.5	101 22 95	Wall mounted remote control (for radiators, baseboard, floor heating).
	Capillary 16 feet	M 30x1.5	101 22 96	Temperature setting may be limited or locked by means of hidden set tabs. - "0" setting = positive "off" - "X" setting = freeze protection - Temperature range 42 – 84 °F
	Capillary 33 feet	M 30x1.5	101 22 97	
	White model with additional remote sensor			Same features as above, plus a remote sensor.
	Capillary 6½ feet	M 30x1.5	101 23 95	
	Capillary 16 feet	M 30x1.5	101 23 96	

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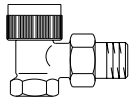
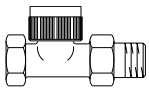
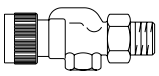
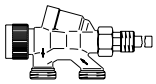
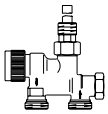
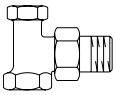
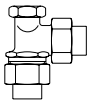
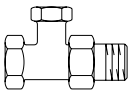
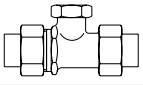
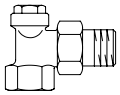
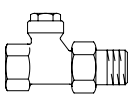
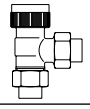
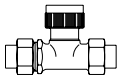
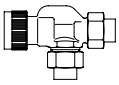
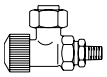
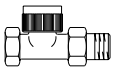
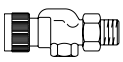
Zone/radiator valves with M 30 x 1.5 threaded actuator connection, brass, nickel plated			
	"Series AZ" (for hot water)		These valves can be used with four types of actuators: 1. Manual adjuster (included) 2. Thermostatic (non-electric) 3. Thermostatic remote capillary (non-electric) 4. 24 V electric for on/off control All valve inserts are replaceable under working conditions by means of the special tool "Demo-Bloc." System does not need to be drained.
	Angle pattern valve	NPT/NPT	
	1/2"	188 90 04	
	3/4"	188 90 06	
	1"	188 90 08	
	1¼"	188 90 10	
	Straight pattern valve	NPT/NPT	
	1/2"	188 91 04	
	3/4"	188 91 06	
	1"	188 91 08	
	1¼"	188 91 10	
	Reversed angle pattern valve	NPT/NPT	
	1/2"	188 92 04	
	3/4"	188 92 06	
One-pipe radiator injection valves			
	with horizontal insertion tube	118 35 61	The constant bypass of the one-pipe radiator injection valves is adjusted to a radiator flow share of 35%. The insertion tube is 6" long, has a diameter of 7⁄16" and the distance between pipe centres is 50 mm. The one-pipe radiator injection valve with vertical insertion tube is especially suitable for towel radiators. (The technical instructions of the radiator manufacturers need to be observed.) With constant bypass and shut off Connections 1/2" to radiator 3/4" (R20) to system
	with vertical insertion tube	118 35 71	
Service valve - nickel plated "Combi 2" – balancing, shut-off			
	Angle pattern 1/2"	NPT inlet/NPT tailpiece 109 10 82	Used on the return side of radiators, baseboard or floor heat to provide balancing and shut-off capability. Use 5/32" (4 mm) Allen key. Includes (2) unions and sweat tails. Includes (2) unions and sweat tails.
	Angle pattern 1/2"	Sweat/sweat 109 10 92	
	Straight pattern	NPT inlet / NPT tailpiece	
	1/2"	109 11 82	
	3/4"	109 11 83	
	Straight pattern	Sweat/sweat	
	1/2"	109 11 92	
"Combi 4" – balancing with memory position, shut-off, filling and draining			
	Angle pattern	NPT inlet / NPT tailpiece	
	1/2"	109 06 82	
	3/4"	109 06 83	
	Straight pattern	NPT inlet / NPT tailpiece	
	1/2"	109 07 82	
	3/4"	109 07 83	

Zone/radiator valves with M 30 x 1.5 threaded actuator connection, brass, nickel plated, standard AZ insert			
	Angle pattern valve	Sweat/sweat	Includes (2) unions and sweat tails. These valves can be used with four types of actuators: 1. Manual adjuster (included) 2. Thermostatic (non-electric) 3. Thermostatic remote capillary (non-electric) 4. 24 V electric for on/off control All valve inserts are replaceable under working conditions by means of the special tool “Demo-Bloc.” System does not need to be drained.
	1/2"	169 44 04	
	3/4"	169 44 06	
	Straight pattern valve	Sweat/sweat	
	1/2"	169 44 14	
	3/4"	169 44 16	
	Reversed angle pattern valve	Sweat/sweat	
	1/2"	169 44 24	
	3/4"	169 44 26	
Steam Radiator Valve			
	One-pipe steam radiator valve	NPT/NPT	These valves can be used with four types of actuators: 1. Manual adjuster (included) 2. Thermostatic (non-electric) 3. Thermostatic remote capillary (non-electric) 4. 24 V electric for on/off control All valve inserts are replaceable under working conditions by means of the special tool “Demo-Bloc.” System does not need to be drained.
	1/8"	188 85 51	
	Angle pattern valve	NPT/NPT	
	1/2"	189 90 04	
	3/4"	189 90 06	
	1"	189 90 08	
	1¼"	189 90 10	
	Straight pattern valve	NPT/NPT	
	1/2"	189 91 04	
	3/4"	189 91 06	
	1"	189 91 08	
	1¼"	189 91 10	
	Reversed angle pattern valve	NPT/NPT	
	1/2"	189 92 04	
	3/4"	189 92 06	

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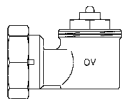
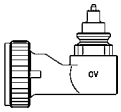
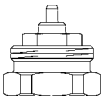
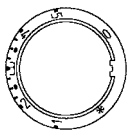
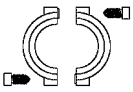
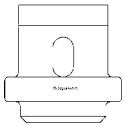
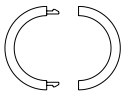
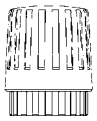
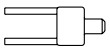
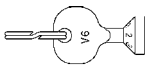
Radiator valve accessories and tools

	Right angle adapter threaded connection	101 14 50	For Oventrop radiator valves with connection M 30 x 1.5.
	Same with squeeze connection	101 14 52	For Danfoss radiator valves series RA.
	Thread adapter from M 30 x 1.0 to M 30 x 1.5	101 14 45	
	”Uni-Clip” vertical reading adapter ring for ”Uni XH” and ”Uni XD”		Transposes setting numbers from horizontal to vertical reading.
	Thermostat mounted right side	101 13 96	
	Thermostat mounted left side	101 13 97	
	Vandal Guard		
	For thermostat ”Uni XH” white model	101 17 66	Prevents unauthorized removal of thermostat. Includes Allen key. Minimum order quantity = 5
	For thermostat ”Uni DH” white model	101 19 11	
	Two piece trim ring to hide nickel plated lock nut of ”Uni XH”	101 13 93	Minimum order quantity = 5
	Manual temperature adjuster for all valves with M 30 x 1.5 thread	101 25 65	
	Tool to loosen the graduation cap and clips Bag of 5 pieces	198 91 00	
	Key for flow rate setting on AV 6 / ADV 6 inserts	118 39 61	

Direct mount thermostat “Uni XH” with remote sensor

“Uni SH” thermostat with exclusive radiator valve

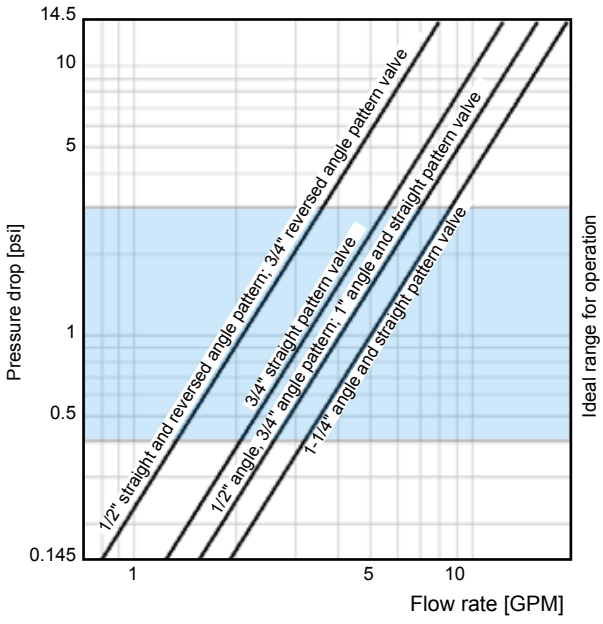
“Vindo TH” compact thermostat

“Uni LH” remote mounted thermostat

Direct mount thermostat “Uni XH” with angle pattern radiator valve

“Uni DH” thermostat with one-pipe steam valve

Flow rate chart for standard hot water valve



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