Drayton

by Schneider Electric

TRV4 two pipe thermostatic radiator valves with integral or remote sensor

Installation and operating instructions

Approved to EN215: All Drayton Thermostatic Radiator Valves are approved to the new approved to the new European Standard EN215, which supersedes BS.6284 1983.

Quality standards: All Drayton Thermostatic Radiator Valves are manufactured in factories assessed and certified to BS EN ISO 9001.

General description

The Drayton TRV is a self-operating thermostatic radiator valve for controlling the temperature in a room by regulating the flow of hot water to a radiator. Operating over a temperature range of 10°C to 27°C it has a range limiting feature which allows the valve to operate over a restricted temperature range and a frost protection setting marked *.

Description of operation

The thermostatic sensor contains a liquid fill which reacts to changes in temperature and by varying the flow of hot water through its associated valve, controls the temperature in the room.

Installation

IMPORTANT: Read all instructions before commencing work. All work should be carried out by competent person.The TRV4 Thermostatic Sensor IS NOT suitable for use with the TRV3 range of bodies. A conversion head is available:

Code No. 07 94 012 TRV4 Sensing Head to suit TRV3 Valve.

Screw the manual cap provided to the valve body and then fit the body at the radiator inlet as for a normal radiator valve.

The 8, 10 and 15mm angle pattern valve is now 'reverse flow' and can be fitted on the flow or return, in either a vertical or horizontal attitude. However, on other body types, the direction of flow arrow must be observed if a thermostatic head is to be fitted to the valve. All Drayton/EB two pipe valves can now be converted to wheel head/lockshield valve use by fitting the white wheel head cap, part number 07 35 123. If this is done to replace the lockshield, ensure the wheel head is left fully open after the system has been balanced. If the valve is being used for this purpose disregard the flow direction arrows.

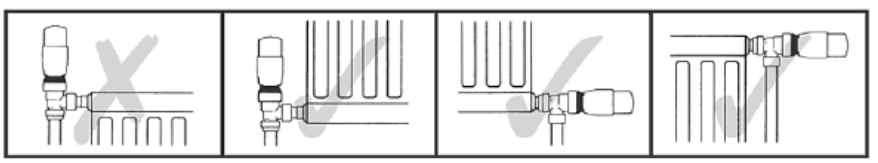
Following installation of the TRV4 the heating system should be thoroughly flushed in accordance with BS7593 code of practice to remove any traces of mineral oil. Formulations containing mineral oil MUST NOT subsequently be added to the heating system.

Mounting

When using jointing compound, care must be taken to avoid any excess being tranferred to the valve seat, as this could cause malfunction of the valve.

DO NOT FIT CAPILLARY FITTINGS near to these valves as excessive heat from a blowtorch may damage the internal valve components. The maximum temperature of the thermostatic head is 50°C.

Integral TRVs



Commissioning

All Drayton/EB two pipe valve bodies now come with presetting as standard, making system balancing far simpler and more accurate.

General description

$$Kv = \sqrt{\frac{Q}{\Delta p}}$$

Q = m^3/h

Δp = bar

In order to achieve efficient flow distribution in the heating circuit, it is important that the valve is 'sized' correctly and the appropriate valve with the correct Kv is installed.
Kv is flowrate in M^3/h at a differential pressure of 1 bar.

Adjustment

Adjustment of the Kv, and therefore balancing, is carried out on the valve body using the adjusting key and the table opposite as follows (spare adjusting keys are available in packs of two, (Part no. 07 35 162).

1. Select the appropriate presetting number to give the required Kv from the table.
2. Loosen the locking ring.

WARNING: DO NOT LOOSEN MORE THAN A QUARTER TURN (90°), using the end of the adjusting key with the four pegs (see diagram). Ensure correct adjusting key is used, part no. 07 35 162.

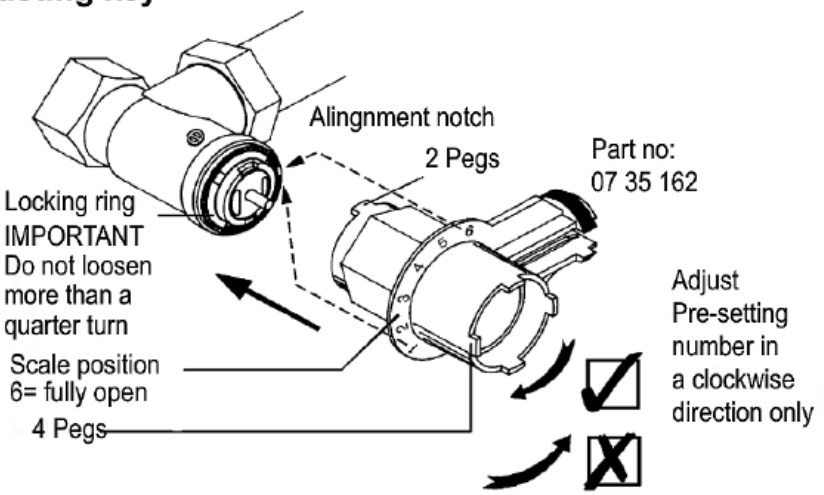
3. The valve insert can now be rotated using the end of the adjusting key with the two unequal width pegs. **IMPORTANT: Adjust in a clockwise direction only.**

NOTE: The numbers on the key correspond with those on the top rim of the valve insert.

4. Line up required setting number with the semi-circular notch on the top of the valve body and then retighten the locking ring. **DO NOT OVER TIGHTEN.**

IMPORTANT: Ensure the scale number lines up with the notch in the TRV body. DO NOT SET in between numbers or at half numbers.

Adjusting key



5. If the radiator is balanced by using the presetting facility on the Drayton body, leave the lockshield, or Drayton body with wheel head cap, fully open.

NOTE: Even if the required flowrates etc. are unknown, the radiator can still be balanced by using the presetting facility. Instead of reducing the flow (increasing temperature drop) through the radiator by closing down the lockshield, simply reduce the number setting on the presetting facility, until the required temperature drop across the radiator is achieved, as outlined in 'adjustment' above. Allow approximately 1 hour for radiator temperatures to stabilise when checking temperature drops. For full details on commissioning and balancing systems with TRVs fitted see Data Sheet D34, available on request.

The valve can be set to control over a range of temperatures from 10°C. to 27°C. which are denoted by numbers 1 to 5 and 'MAX' on the setting scale.

When selecting a number, wait at least an hour before checking the result of the change in terms of room comfort and when the ideal number has been found, the sensor should always be left at that number.

CAUTION: When removing the radiator, always first unscrew the thermostatic sensor and close the valve using the manual cap supplied. The maximum Static Pressure against which the manual cap will seal is 6 BAR (88 psi, 204 Ft. Head).
Never use the thermostatic sensor to close the valve for radiator removal.

Kv values

$$Kv = \frac{Q}{\sqrt{\Delta p}} \quad Q = m^3/h \quad \Delta p = bar$$

	Pre-setting Nr.	Kv (1K)	Kv (2K)	Kvs (max)	Max. Δp	a (2K)
EB 3/8	1	0.10	0.10	0.10	0.6 bar	–
	2	0.14	0.14	0.14	0.6 bar	–
	3	0.19	0.22	0.22	0.6 bar	–
	4	0.25	0.35	0.38	0.6 bar	0.16
	5	0.28	0.47	0.66	0.6 bar	0.48
	6	0.28	0.47	0.79	0.6 bar	0.64
EB 15 & 1/3	1	0.10	0.10	0.10	0.6 bar	–
	2	0.14	0.14	0.14	0.6 bar	–
	3	0.19	0.22	0.22	0.6 bar	–
	4	0.25	0.35	0.38	0.6 bar	0.16
	5	0.28	0.47	0.66	0.6 bar	0.48
	6	0.32	0.57	1.01	0.6 bar	0.68
EB 3/4	1	0.10	0.10	0.10	0.6 bar	–
	2	0.14	0.14	0.14	0.6 bar	–
	3	0.19	0.22	0.22	0.6 bar	–
	4	0.25	0.35	0.38	0.6 bar	0.16
	5	0.28	0.47	0.66	0.6 bar	0.48
	6	0.35	0.66	1.50	0.6 bar	0.80
EB 1	–	–	1.40	5.00	0.5 bar	0.92

Assembly of thermostatic sensor to valve body

1. Turn the setting adjuster to "MAX".
2. Screw the ring nut onto the valve body, making sure that the raised ridges (serrations) on the body section engage with the ridges in the sensor section.
3. Before fully tightening the ring nut, rotate the sensor so that the setting number is in view. Then tighten the ring nut by hand whilst holding the sensor in that position.

DO NOT OVERTIGHTEN. MAXIMUM TIGHTENING TORQUE 30 Nm.

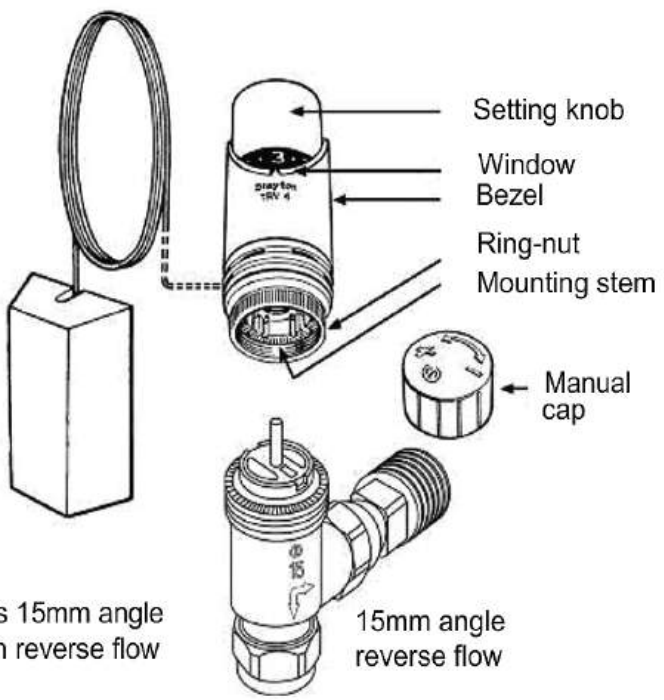
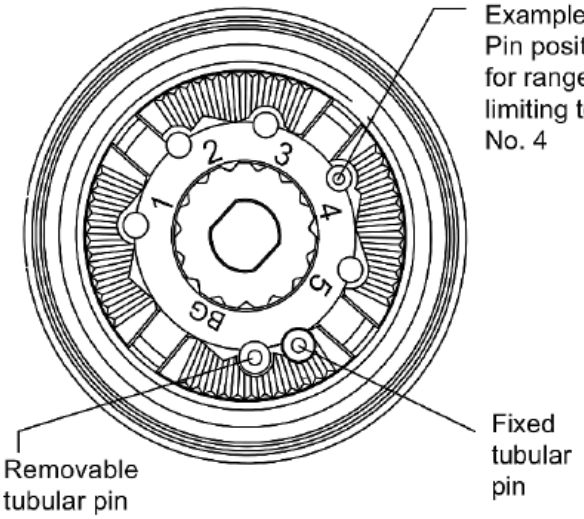


Illustration shows 15mm angle pattern body with reverse flow

Range limiting with an integral sensor

If it is required to limit the range, proceed as follows:

1. Remove the Sensor from the valve body by unscrewing the ring nut.
2. Set the Sensor to Frost *.
3. Re-position the removable tubular pin (see diagram) to the hole corresponding to the desired scale number e.g. To limit the range to setting number 4, insert the tubular pin in hole number 4.

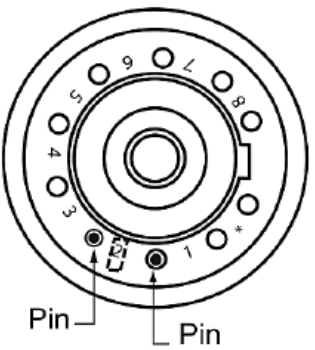


Range limiting with a remote sensor

If it is required to limit the range of settings or to lock the valve at one setting, proceed as follows:

1. Turn setting knob to symbol 'MAX'. Slacken the bezel retaining screw sufficiently for the bezel to be lifted as far as it will move. Unscrew the setting knob and bezel as one unit, ensuring the capillary is sliding in its slot and NOT rotating with the bezel and knob. The plastic component with its main thread will be left attached to the valve body.
2. Slide the head away from the bezel, taking care not to over-bend the capillary. Two tubular pins will be seen inside the bezel, and these may be repositioned as required for range limiting or locking. Each number on the external setting scale has a corresponding number on the inside of the bezel to assist.

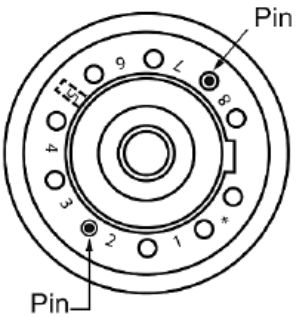
Lock setting: Reposition the tubular pins on either side of the number at which you wish to lock the valve. Refit bezel with lug between the pins.



Numbers indicate indexing positions corresponding to external scale.

Diagram shows head lock set on number 2.

Range Limiting: Reposition the pins in the holes outside the minimum and maximum setting numbers required. Refit bezel with lug between the pins.



Numbers indicate indexing positions corresponding to external scale.

Diagram shows head range set between numbers 3 and 7.

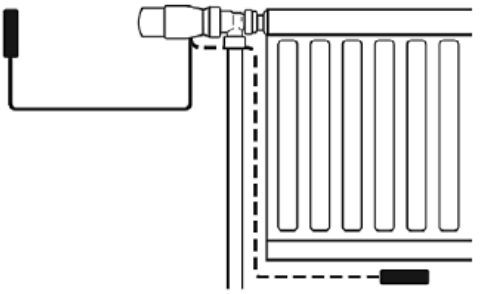
IMPORTANT: Reposition white plastic bezel, ensuring that the two tubular pins are outside the protruding lug on the sensing head

Remote sensor

The remote sensor should be fixed on the wall away from the radiator and about 1.5 metres above the floor. The sensor must be able to measure the room air properly and should not therefore, be fitted behind curtains, panelling or the like. If it is impossible for the sensor to be fitted on the wall, it can alternatively be mounted below the radiator. In the case of convectors or ventilation systems, the sensor is fitted preferably in the air intake.

The capillary tubing joining the valve to the sensor must be free to move vertically up and down in the slot in the valve head, and therefore must not be clipped, with the fittings provided, closer than 150mm from the valve. This is important for correct operation.

Care should be taken when handling the capillary, to particularly avoid kinking or re-bending a number of times. It should not be cut.



Frost protection

Frost protection can be obtained by setting the sensor to the symbol *. The valve will then automatically open when the space temperature falls below approx. 8°C.

Operational checks

If you feel you are not getting the control you should expect, test as follows:

1. If room temperature is deficient:

Open valve fully by turning setting to 'MAX' and allow time for radiator to fully heat the room. If heat is still not sufficient, slacken the ring nut and remove the head completely. This allows the valve to open fully. If the room still fails to warm sufficiently, the deficiency is not due to the thermostatic radiator valve and further investigation of the system is needed.

2. If room temperature is excessive:

Turn to setting symbol * leaving time for the room heat to dissipate. If the radiator fails to go cold, the excessive condition could indicate some scale or obstruction on the valve seat, preventing it from closing fully. In this case, consult your heating engineer.

Servicing

In the unlikely event of water leaking from the valve body, service kits are available from your stockist:

1. Thermostatic Sensor, complete (Part no. 07 25 006)
2. Body seal kit

IMPORTANT – DO NOT DISPOSE OF THERMOSTATIC SENSING HEADS IN FIRE.

Maximum test pressure: Bodies with compression fittings or BSP iron fittings: 20 bar / 294 psi.

Maximum static pressure: Bodies with compression fittings:
10 bar / 147 psi at 65°C
6.0 bar / 88 psi at 110°C
Bodies with BSP iron fittings:
10 bar / 147 psi.

Maximum flow temperature: 110°C

NOTE: Drayton cannot be held responsible for any injury or damage resulting from non-compliance with these instructions. Drayton continuosly seek to improve products and reseve the right to make changes without notice.

Drayton

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