Tender specification:

Oventrop fitting “Multiblock TQ-RTL” with “Q-Tech” for the combination of radiator and surface temperature regulation for room temperature control and limitation of the return temperature of the heated surface. With integrated differential pressure independent thermostatic valve with infinitely adjustable presetting for automatic flow control of the radiator (automatic hydronic balancing).
Body made of nickel plated brass, stem of the valve insert made of stainless steel with O-ring seal.
Technical data as thermostatic valves “AQ”. The valve insert is replaceable using the special tool “Demo-Bloc”.
Plastic design covers in white or chrome plated are available as accessories.

Model:	**Item no.:**
“Multiblock TQ-RTL” for radiators with:	
G ½ female thread	1184076

Technical data:

Operating temperature t_s:	2 °C up to 70 °C
Max. operating pressure p_s:	1000 kPa (10 bar)
Flow range, fitting:	k_v = 0.28 - 0.70m³/h
Control range thermostatic valve:	10 – 170 l/h

The set values can be read off the handwheel (P-deviation 2 K).

Control range thermostatic valve:	
Δp max.:	150 kPa (1.5 bar)
Δp min. (10-130 l/h):	10 kPa (0.1 bar)
Δp min. (>130-170 l/h):	15 kPa (0.15 bar)

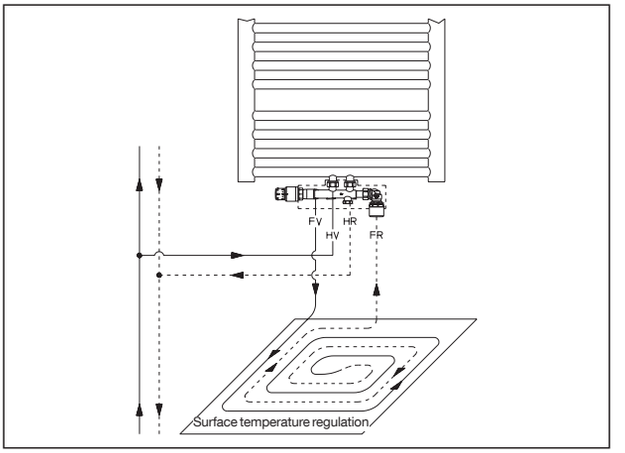
A normal thermostatic valve function is given below Δp min., i.e. the set flow rate is undercut depending on the differential pressure.

Permissible differential pressure return temperature limiter:	
Δp max.:	30 kPa (0.3 bar) (including pipework)
Fluid:	Water or suitable ethylene/ propylene glycol water mixtures according to VDI 2035 / ÖNORM 5195 (max. glycol proportion 50 %, ph value 6.5-10). Not suitable for steam, oily, polluted and aggressive fluids.
Control range return temperature:	10 °C up to 40 °C
Pipework connections:	G ¾ male thread according to DIN EN 16313 (cone “Euro”)
Distance between pipe centres:	50 mm

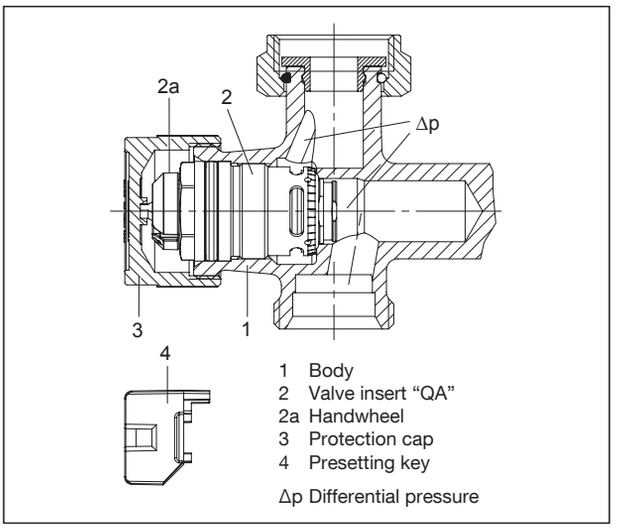
Function:

The fitting “Multiblock TQ-RTL” is a combination consisting of a differential pressure independent thermostatic valve with infinitely adjustable presetting, an isolating fitting and a return temperature limiter (RTL). Room temperature control is carried out by the thermostatic valve with mounted thermostat in combination with a radiator.
The thermostatic valve maintains the differential pressure at a constant value via the presetting and regulating cross section of the valve. Even where high differential pressure variations occur, for instance if sections of the system are activated or inactivated, the flow rate is kept at a constant level within the regulating tolerances. This way, the valve authority of the thermostatic valve amounts to 100 % (a = 1). Even during part load operation with steady control (for instance in combination with thermostats for room temperature control), the valve authority of the thermostatic valve amounts to 100 % (a = 1) within the effective valve lift.
The maximum flow rate can be set with the help of the presetting key.
For additional room temperature control, thermostats or actuators with connection thread M 30 x 1.5 can be screwed onto the thermostatic valve.
Surface temperature regulation is carried out independent of the thermostatic valve by limiting the return temperature via the integrated return temperature limiter.
During design it must be observed that the pressure loss of the pipework and the return temperature limiter does not exceed a sum of 30 kPa (300 mbar).

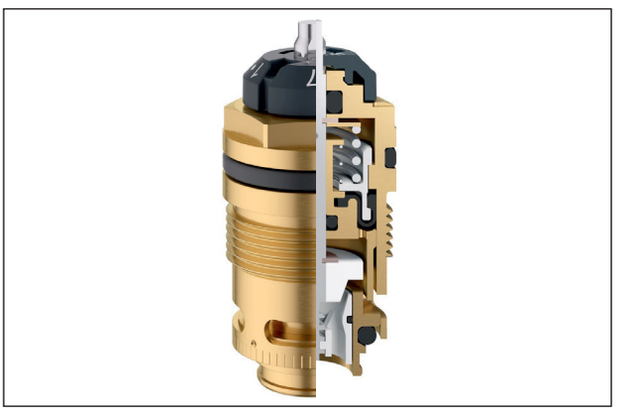
Fitting “Multiblock TQ-RTL”



System illustration



Construction thermostatic valve



Simplified illustration of the valve insert “QA”

Application:

The fitting “Multiblock TQ-RTL” is used in combination with a thermostat or actuator in central heating systems (two pipe operation) with closed circuits and circulation pump for room temperature control, automatic flow control (hydronic balancing) and for limitation of the return temperature of the surface heating. For use at radiators with supply and return pipe connection with a distance of 50 mm between the pipe centres.

Installation can be carried out with any standard pipe material. Oventrop offers suitable compression fittings for copper, stainless steel, and plastic pipes as well as the composition pipe “Copipe”.

The corresponding installation instructions are to be observed.

Installation:

Preparations:

The position of the radiator and fitting has to be determined with due consideration of the specifications of the radiator manufacturer. The direction of flow must conform to the arrow on the valve body.

The fitting must only be installed in a clean pipework system and must only be operated with a clean unpolluted fluid.

In new buildings, the pipework for the supply and return pipe connection of the heating circuit (middle connections of the fitting) is laid during the construction phase.

The connection pipes laid into the wall have to be insulated according to the Germany Energy Saving Directive (EnEV). This will also facilitate the connection of the fitting.

Suitable wall channels for the heating circuit and the surface temperature regulation have to be created for this purpose (see illustr. “Illustrated section - Heating circuit connection” and “Wall view - Heating circuit connection”). Screw the mounting aid precisely onto the unplastered wall (screws are not included in the delivery). When installing the pipework, please make sure that the pipes run in parallel. The protruding pipes have to be fixed in the mounting aid with the enclosed diaphragm tailpipes.

Laying of the connection pipes for surface temperature regulation is only carried out after wall plastering has been completed.

Installation of the fitting and the radiator:

The radiator is mounted with due consideration of the installations dimensions and the designed wall construction (e.g. tiles).

Screw the “Multiblock TQ-RTL” to the radiator free from tension (torque 20-30 Nm) and connect it to the pipework of the heating circuit by use of compression fittings. Supply to connection “HV” and return to connection “HR” (see illustr. “Wall view - Heating circuit connection”).

The fitting is supplied with self-sealing nipples for radiators with G ½ female thread.

When used with radiators with G ¾ male thread according to DIN EN 16313 (cone “Euro”), corresponding inserts (item no. 1661100, to be ordered separately) are to be used.

Connection of the pipework to the male threads G ¾ according to DIN EN 16313 (cone “Euro”) by use of compression fittings.

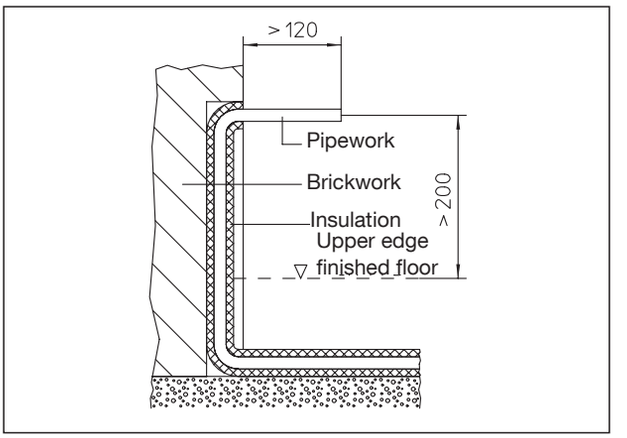
Installation of the surface temperature regulation circuit:

When designing the floor as a heated surface, the construction regarding thermal and sound insulation, has to comply with the valid rules, standards and regulations.

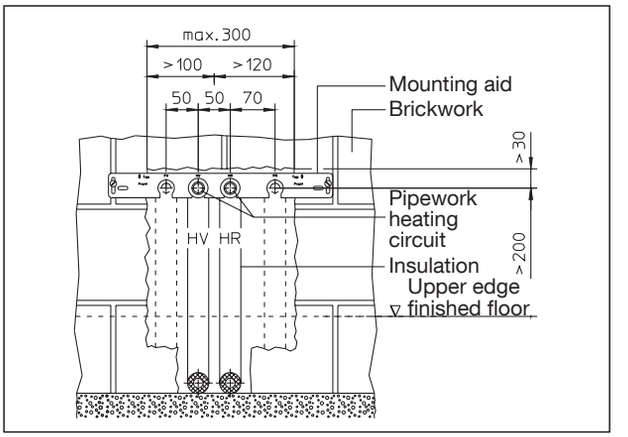
Once the insulation has been applied, the supply pipe of the surface temperature regulation circuit is connected to the connection “FV” and the return pipe to the connection “FR” of the “Multiblock TQ-RTL” (see illustr. “Wall view - Surface temperature regulation”). The surface temperature regulation circuit has to be laid in a spiral pattern in order to achieve a constant temperature distribution.

Heating up of concrete and anhydrite screed has to be carried out according to EN 1264-4. The installation and operating instructions must be observed.

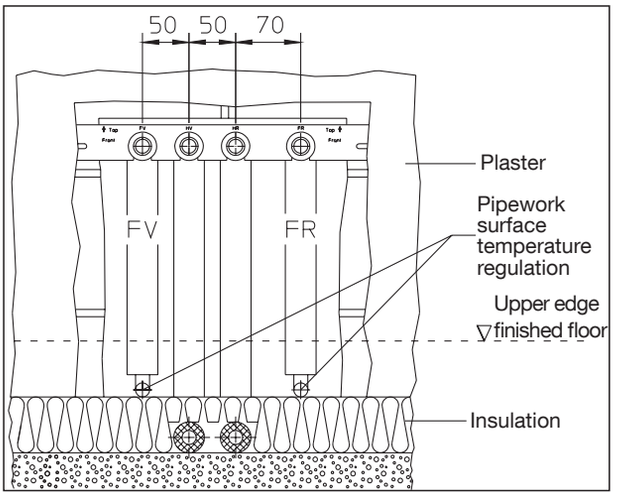
Installation of the surface temperature regulation circuit can be carried out with any standard pipe material. Oventrop offers suitable compression fittings. The corresponding installation instructions are to be observed.



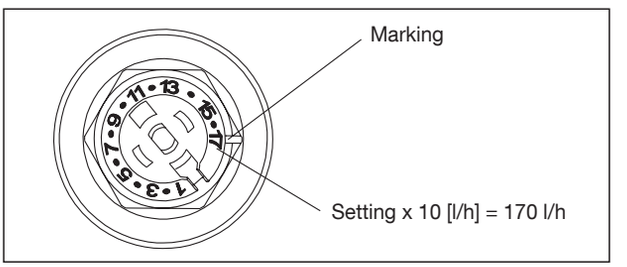
Illustrated section - Heating circuit connection



Wall view - Heating circuit connection



Wall view - Surface temperature regulation circuit connection



Setting of the flow rate - Thermostatic valve

Setting of the flow rate:

Set the flow rate to the required value by use of the presetting key (see illustr. “Construction thermostatic valve” on page 1). Setting can only be carried out with the help of the enclosed presetting key which is fitted to the handwheel. This will prevent unauthorised tampering.

The required setting must be in line with the marking (see illust. “Setting of the flow rate - Thermostatic valve on page 2). The setting is infinitely adjustable and can be modified whilst the system is in operation; water will not escape.

The maximum required flow rate (full load operation) of the valve is set with the help of the handwheel. It cannot be exceeded. During part load operation, regulation of the flow rate up to the set maximum value can be carried out with the help of a thermostat or actuator which is screwed onto the fitting.

Nominal value setting of the return temperature limiter:

Set the handwheel of the return temperature limiter RTL (see illustr. “Dimensions of the fitting” on the right hand side) to the determined nominal value (factory setting: 3 ≈ about 30 °C). The temperature of the heated surface can be modified by turning the handwheel.

Differential pressure measurement:

The available differential pressure can be measured with the help of the OV measuring system “OV-DMC 3” together with the “Demo-Bloc” (item no. 1188051) and the differential pressure measuring stem (item no. 1188093). This will confirm if the differential pressure is high enough for an automatic flow control of the valve. The pump setting may also be optimised by measuring the differential pressure.
For this purpose the pump head is reduced until just the minimum required differential pressure is available at the hydraulically most underprivileged valves.
With a measuring gauge connected, the differential pressure at the thermostatic valve body is measured. To do so, the valve insert is unscrewed with the help of the “Demo-Bloc” and the differential pressure is measured using the differential pressure measuring stem. As soon as the measured differential pressure has reached or exceeded the differential pressure Δp min., the differential pressure is high enough for an automatic flow control of the valve.
Screw the valve insert into the valve body again and check all installation points for leaks.

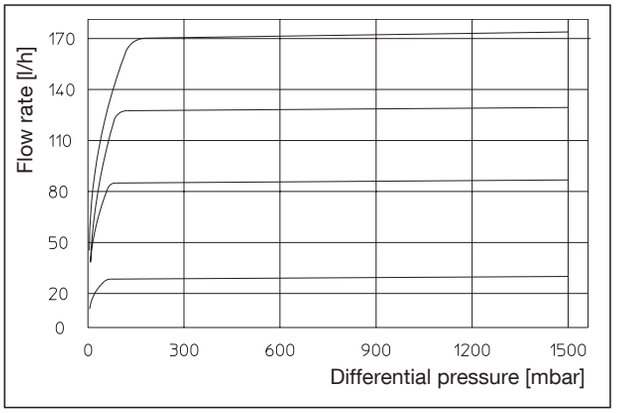
Noise behaviour:

For a silent operation in combination with an installation which is sensitive to noise (e.g. radiators), the maximum differential pressure across the valve should not exceed **300** mbar.

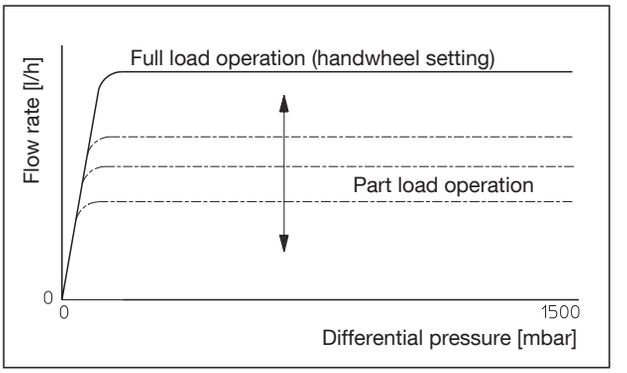
Maintenance:

The fitting is maintenance-free. The fitting has to be serviced if it malfunctions. The fitting must be easily accessible.
Tightness and function of the fitting and its connection points have to be checked regularly during maintenance.
The valve insert can be replaced with the help of the “Demo-Bloc” without draining the system.

Characteristic lines:



Thermostatic valve characteristic lines for different handwheel settings during full load operation

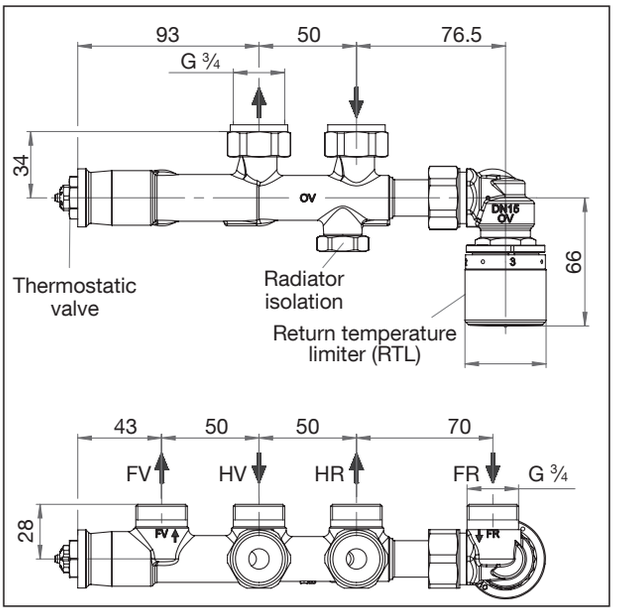


Thermostatic valve characteristic lines during part load operation

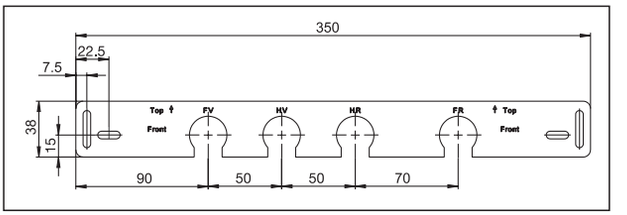
Handwheel graduation:

0	=	Valve closed
1	=	about 10 °C
2	=	about 20 °C
3	=	about 30 °C (factory setting)
4	=	about 40 °C
max.	=	about 43 °C

Nominal value setting of the return temperature limiter



Dimensions of the fitting



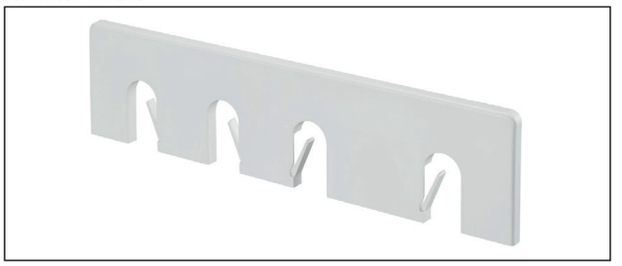
Dimensions of the mounting aid

Accessories:

Design cover for panelling

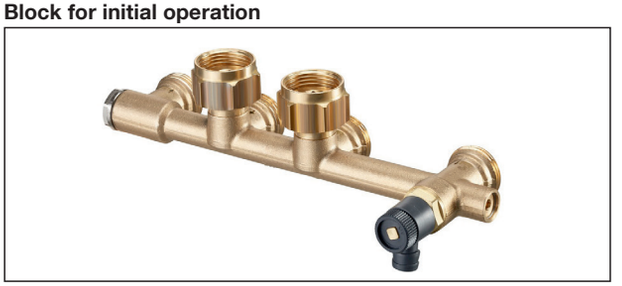
	Item no.:
chrome plated	1184077
white	1184087

Rosette cover



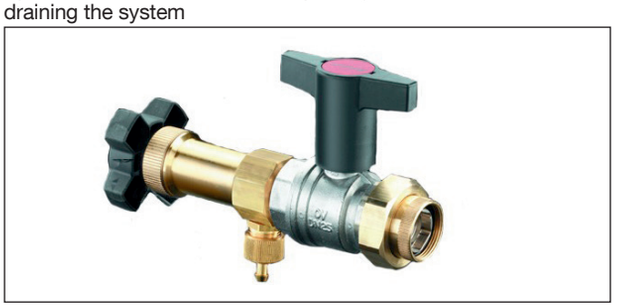
	Item no.:
chrome plated	1189077
white	1189087

Block for initial operation



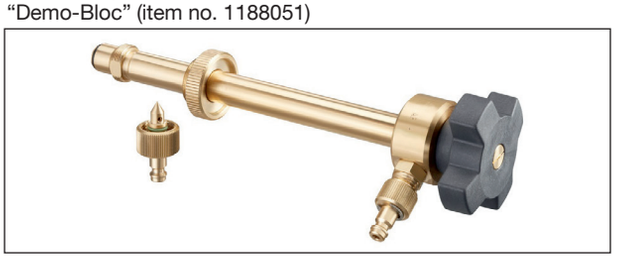
Item no. 1184094

Special tool **“Demo-Bloc”** for replacing the valve inserts without draining the system

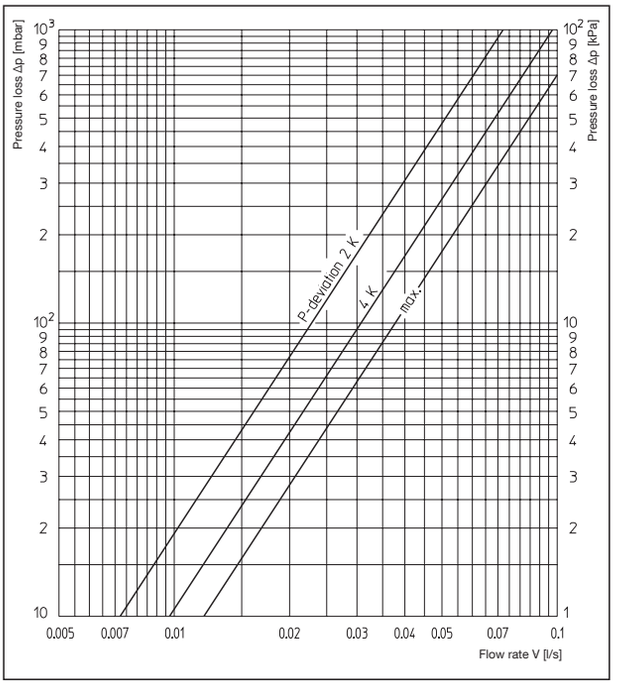


Item no. 1188051

Differential pressure measuring stem for measuring the differential pressure across the valve set in combination with the “Demo-Bloc” (item no. 1188051)

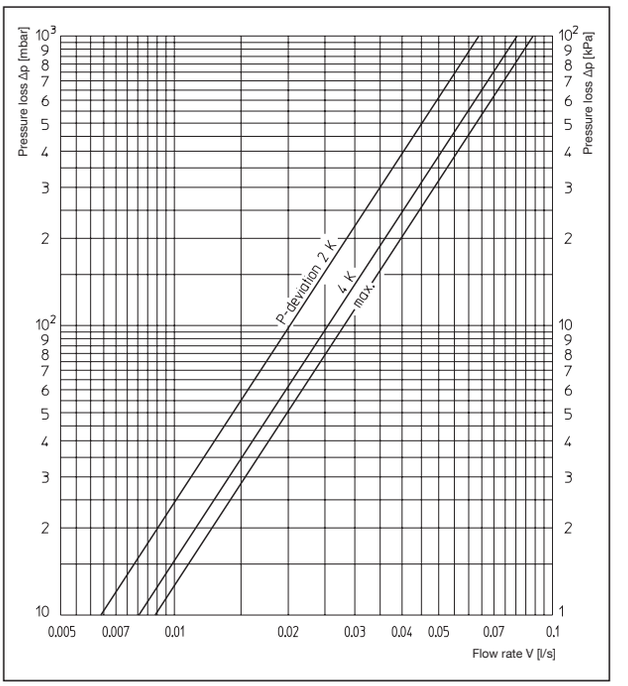


Item no. 1188093



Pressure loss chart, return temperature limiter (RTL) (surface temperature regulation circuit)

Thermostatic valve at 2 K P-deviation
Pipework length: Surface temperature regulation circuit 33 m
Pipe material: Composition pipe “Copipe” 16 x 2 mm



Pressure loss chart, return temperature limiter (RTL) (surface temperature regulation circuit)

Thermostatic valve at 2 K P-deviation
Pipework length: Surface regulation circuit circuit 100 m
Pipe material: Composition pipe “Copipe” 16 x 2 mm

Subject to technical modifications without notice.

Product range 1
ti 364-EN/20/MW
Edition 2020