EN

Thermostatic valve AQH

Content

1. General information

The original operating instructions were drafted in German.
The operating instructions in other languages were translated from German.

1.1 Validity of the operating instructions

These operating instructions are valid for the thermostatic valves with Q-Tech function.

1.2 Extent of supply

Please check the delivery for any damages caused during transit and for completeness.
Extent of supply:

- Thermostatic valve AQH or valve insert QAH
- Presetting key
- Operating instructions

1.3 Contact

Address

OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1
59939 Olsberg
GERMANY
www.oventrop.com

Technical service

Phone: +49 (0) 29 62 82-234

1.4 Declaration of conformity

Oventrop GmbH & Co. KG hereby declares that this product complies with the basic requirements and the other relevant provisions of the EU Directives concerned.

1.5 Symbols used

	Important information and further explanations.
▶	Action required
•	Enumeration
1. 2.	Fixed order. Steps 1 to X.
▷	Result of action

2. Safety-related information

2.1 Correct use

Safety in operation is only guaranteed if the product is used correctly.
The thermostatic valve is used in central heating and cooling systems with closed circuits for automatic flow control (hydronic balancing) at terminal units, such as radiators and surface heating and cooling systems.
Any other use of the product will be considered incorrect use.
Claims of any kind against the manufacturer and/or its authorised representatives due to damage caused by incorrect use will not be accepted.
Observance of the operating instructions is part of compliance with correct use.

2.2 Warnings

Each warning contains the following elements:

Warning symbol **SIGNAL WORD**	
	Type and source of danger Possible consequences if the danger occurs or the warning is ignored. ► Ways to avoid the danger.

The signal words identify the severity of the danger arising from a situation.

⚠ **WARNING**	
	Indicates a possible danger with moderate risk. The situation may lead to death or serious injury if not avoided.

NOTICE	
	Indicates a situation that may lead to damage to property if not avoided.

2.3 Safety notes

We have developed this product in accordance with current safety requirements.
Please observe the following notes concerning safe use.

2.3.1 Danger caused by inadequately qualified personnel

Any work on this product must only be carried out by qualified tradespeople. As a result of their professional training and experience as well as their

knowledge of the relevant legal regulations, qualified tradespeople are able to carry out any work on the described product professionally.

User

The user must be informed how to operate the product by qualified tradespeople.

2.3.2 Risk of burns due to hot components and surfaces

- ▶ Allow the product to cool down before working on it.
- ▶ Wear suitable protective clothing to avoid unprotected contact with hot system components and fittings.

2.3.3 Risk of injury in case of improper work

Angular components, protrusions and edges both inside and outside the product may cause injuries.

- ▶ Before starting work, make sure that there is enough space.
- ▶ Handle open and hard-edged components with care.
- ▶ Make sure that the work place is tidy and clean to avoid accidents.

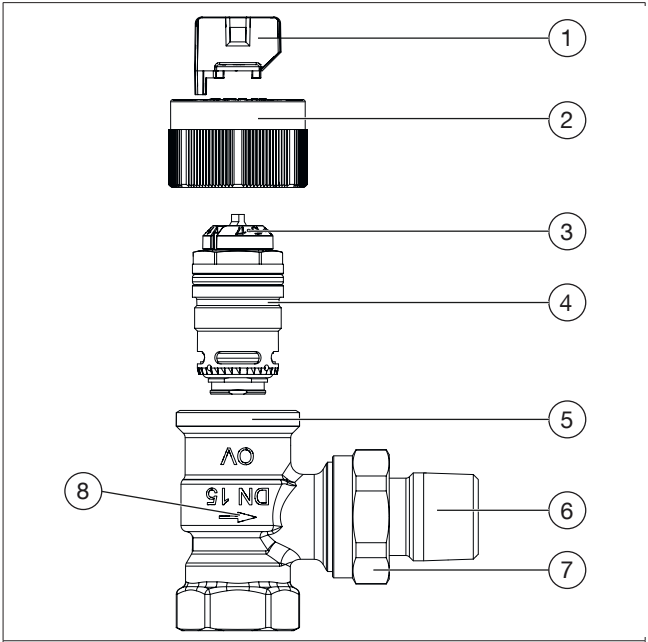
2.3.4 Availability of the operating instructions

Any person working on the product has to read and apply these operating instructions and all other valid documents (e.g. accessory manuals).
The operating instructions must be available at the installation location of the product.

- ▶ Hand these operating instructions and all other relevant documents (e.g. accessory manuals) over to the user.

3. Technical description

3.1 Construction



Illust. 1: Construction of the thermostatic valve

(1)	Presetting key
(2)	Protection cap
(3)	Handwheel
(4)	Valve insert
(5)	Body

(6)	Tailpipe
(7)	Collar nut
(8)	Flow direction

3.2 Functional description

The presettable thermostatic valve AQH maintains the differential pressure at a constant value via the presetting cross-section and the regulating cross-section of the valve. The valve authority amounts to 100% (a=1).
You can set the maximum volume flow with the help of the enclosed presetting key.
For room temperature control, you can screw a thermostat or an actuator onto the thermostatic valve.

3.3 Technical data

General information	
Max. operating temperature t_s	+110 °C
Min. operating temperature t_s	+2 °C
Max. operating pressure p_s	1000 kPa (10 bar)
Control range	35 - 420 l/h (the set values are visible from outside; without table)
Fluid	Water or suitable ethylene/propylene glycol water mixtures according to VDI 2035 (max. glycol proportion 50 %, ph value 6.5-10). Not suitable for steam, oily, polluted and aggressive fluids.
Valve authority	100% (a=1)
	 During part load operation with steady control (e.g. in combination with thermostats for room temperature control), the valve authority of the thermostatic valve AQH amounts to 100 % (a = 1) within the effective valve stroke.

Control range	
Δp max.	150 kPa (1.5 bar)
Δp min. (35-170 l/h)	15 kPa (0,15 bar)
Δp min. (>170-300 l/h)	20 kPa (0.20 bar)
Δp min. (>300-420 l/h)	25 kPa (0.25 bar)
Actuator connection	
Connection thread	M30 x 1.5
Valve stroke	1.1 mm
Closing dimension	11.8 mm
Closing force (actuator)	90 – 150 N
Material	
Body	Brass, nickel plated
Seals	EPDM
Valve stem	Stainless steel

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

4. Accessories and spare parts

Spare parts and accessories are available from specialist stores. The following items are available as accessories:

Designation	Item no.
Accessories	
Actuator	e. g. 1012415, 1012418, ...
Thermostat	e. g. 1011365, 1011464, ...
Demo-Bloc	1188051
Differential pressure measuring stem	1188093

OV-DMC 3	1069278
Spare parts	
Valve insert	1187095

You can find further accessories in our catalogue and on our website.

5. Transport and storage

Transport the product in its original packaging.
Store the product under the following conditions:

Temperature range	-20°C to +60°C
Relative humidity of air	Max. 95%
Particles	Dry and free from dust
Mechanical influences	Protected from mechanical agitation
Radiation	Protected from UV-rays and direct sunlight
Chemical influences	Do not store together with solvents, chemicals, acids, fuels and similar

6. Installation

⚠ WARNING

Risk of injury from pressurised components
Fluids escaping under pressure may lead to injuries.

- ▶ Make sure that the max. operating pressures and the max. and min. operating temperatures are not exceeded or undercut, for instance by installing a safety valve.

NOTICE	
	Risk of damage to property due to foreign bodies (e.g. shavings, dirt), sealants and lubricants Valves can be damaged and their function be impaired by foreign bodies, greasing agents or oil. ▶ Do not use any greasing agents or oil for the installation. ▶ Flush any dirt particles or grease or oil residues out of the pipework before installing the product. ▶ Consider the latest technical status (e.g. VDI 2035) when choosing the operating fluid. ▶ Install a strainer in the supply pipe to avoid contaminated operating fluids (VDI 2035).

6.1 Protection cap

The thermostatic valve is supplied with a plastic protection cap. It protects the valve stem and can be used for setting of the flow rate during the construction period.

▶ Turn the protection cap clockwise to close the valve.

▶ Turn the protection cap anticlockwise to open the valve.

NOTICE	
	Risk of damage to the valve Do not use the protection cap for permanent shut-off of the thermostatic valve against system pressure. The restoring force of the valve stem may cause damage to the protection cap and water may escape. ▶ Protect the valve outlet with a metal cap.

6.2 Installation

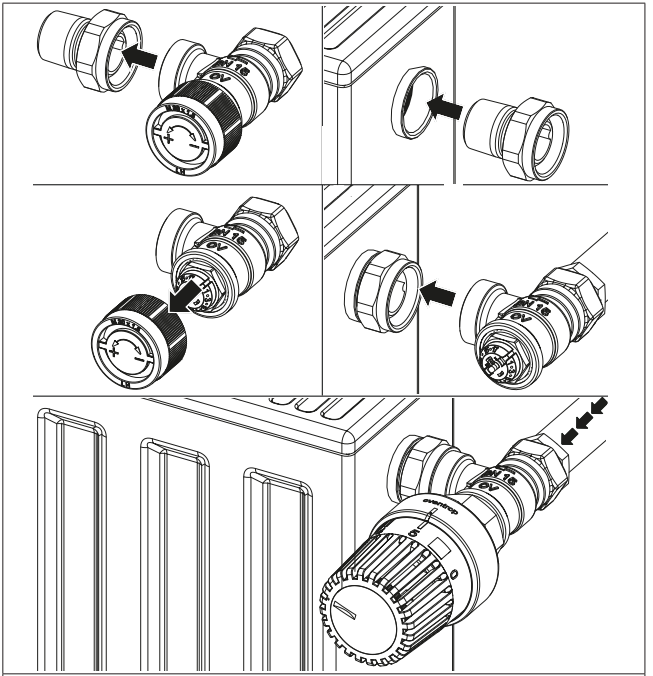
1. If required, cut the pipe to the required length at a right angle to the tubular axle.
2. If required, use a fitting for the connection to the pipe end.

	You can connect threaded steel pipes directly to the thermostatic valve.
	Insert a reinforcing sleeve into the pipe end when using thin walled pipes.

3. Screw the valve onto the pipework and the supply pipe of the radiator.

For room temperature control, you can screw a thermostat or an actuator onto the thermostatic valve. To do so, remove the protection cap of the thermostatic valve.

4. Carry out a leakage test.



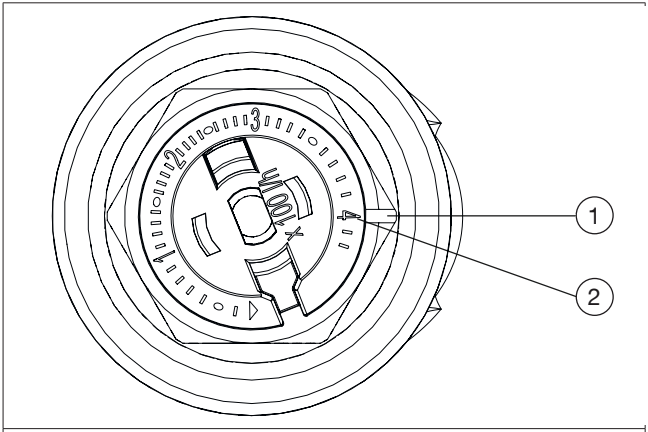
Illust. 2: Installation example

7. Commissioning

For a silent operation in an installation which is sensitive to noise (e.g. radiators), the max. differential pressure across the valve should not exceed 600 mbar.

7.1 Setting of the flow rate

Set the desired flow rate with the help of the presetting key. To do so, fit the presetting key to the handwheel.
The valve is infinitely adjustable. The setting can be modified whilst the system is in operation.



Illust. 3: Setting of the flow rate

(1)	Indicator mark
(2)	Set value x100 [l/h] (400 l/h in the example)

Observe the correction factors of the manufacturers of the antifreeze liquids when setting the flow rate.

Presetting values, Δp = 150 mbar - 1500 mbar			
			Δt = 20 K
Presetting	qm [kg/h]	$\dot{V}$ [l/s]	Heat output
0.5	50	0.0139	1200 W
1.0	100	0.0278	2300 W
1.5	150	0.0417	3500 W
2.0	200	0.0556	4650 W
2.5	250	0.0694	5800 W
3.0	300	0.0833	7000 W
3.5	350	0.0972	8150 W
4.0	400	0.1111	9300 W
4.2	420	0.1167	9800 W

7.2 Differential pressure measurement

To find out whether the differential pressure is high enough for an automatic flow control of the thermostatic valve AQH, you measure the differential pressure with the help of the Oventrop measuring system OV-DMC 3, the differential pressure measuring stem and the Demo-Bloc (see section 4 auf Seite 23).

Proceed as follows:

1. Unscrew the valve insert with the help of the Demo-Bloc.

For further information please refer to the operating instructions supplied with the Demo-Bloc.

2. Measure the differential pressure with the help of the differential pressure measuring stem. The differential pressure must reach or exceed the differential pressure Δp min. (see section 3.3 auf Seite 22).
3. Refit the valve insert. The torque amounts to 15 Nm.
4. Carry out a leakage test.

7.3 Replacement of the valve insert

7.3.1 Replacement of the valve insert without system pressure

1. Depressurise the pipework.
2. Drain off the pipework.
3. Replace the valve insert (torque of 15 Nm, 19 mm spanner).

7.3.2 Replacement of the valve insert under system pressure

Replace the valve insert under system pressure with the help of the Demo-Bloc (see section 4 auf Seite 23; torque of 15 Nm, 19 mm spanner).

For further information please refer to the operating instructions supplied with the Demo-Bloc.

8. Removal and disposal

NOTICE	
	Risk of environmental pollution Incorrect disposal (for instance with domestic waste) may lead to environmental damage. ► Dispose of the components appropriately.

If no return or disposal agreement has been made, dispose of the product yourself.

- ► Separate all components according to their material.
- ► If possible, recycle the components.
- ► Dispose of components which cannot be recycled according to local regulations. Disposal with domestic waste is not permitted.

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