

R470 THERMOSTATIC HEAD WITH LIQUID SENSOR



Description

In modern radiator heating systems, it's not enough to intervene exclusively on water temperature in order to handle energy correctly: temperatures can vary a lot in the several rooms of a building. Just think at the differences between the first and the last floor of a block of flats or between rooms faced north and south. Not only: during the day thermal charges of a room vary for reasons such as a variation of outside temperature, solar radiation through glass doors and windows and free energy contributions due to the presence of people, or heat loss due to the functioning of appliances or electric equipment. In order to use heating energy only where and when really necessary, the simplest, cheapest and most reliable independent thermoregulation solution is to equip each radiator with a combination of Giacomini valves and thermostatic heads. R470 thermostatic heads enables temperature setting with very high precision. This allows to obtain different temperatures in the rooms, accordingly to one's own needs and habits.

Functioning

Temperature variation in a room causes volume variation of the liquid in the sensor of the head. This volume variation entails the transfer of an internal mechanism with consequent closure or opening of the valve and thus with modulation of water flow entering the heating body. When the required temperature is going to be reached in the room, the head closes the valve progressively and let the smallest quantity of water pass in order to keep room temperature constant, with consequent energy saving.

Use

The Legislative Decree 192/05, implementation of the 2002/91/CE Directive concerning the energy performance in buildings (and subsequent integration with the Lgs. Decree 311/06), annex I article 12, confirmed by the D.P.R. no. 59/2009 (Art.4, paragraph 6-c), prescribes for all new or restored buildings and thermal systems, the installation of devices for the automatic regulation of the room temperature into single rooms or single zones having uniform use characteristic and exposure, in order to not cause over-heating because of the sun contributions and the free internal contributions.

Technical data

- Max working temperature 110 °C
- Max working pressure 1 MPa (10 bar)
- Max differential pressure
 - 1,4 bar (3/8", 1/2")
 - 0,7 bar (3/4")
- Min calibration with thermostatic heads 8 °C in position *
- Max calibration with thermostatic heads 32 °C in posizione

Valve measure	Nominal Flow qmNH	Shutter authority	Z (min)	W (K)
3/8"	150 kg/h	0,858	26	1,42
1/2"	150 kg/h	0,858		
3/4" (R401D-R401F)	250 kg/h	0,950	26	1,42
3/4" (R402D-R402F)	250 kg/h	0,912		
1/2"(R415)	180 kg/h	0,796		

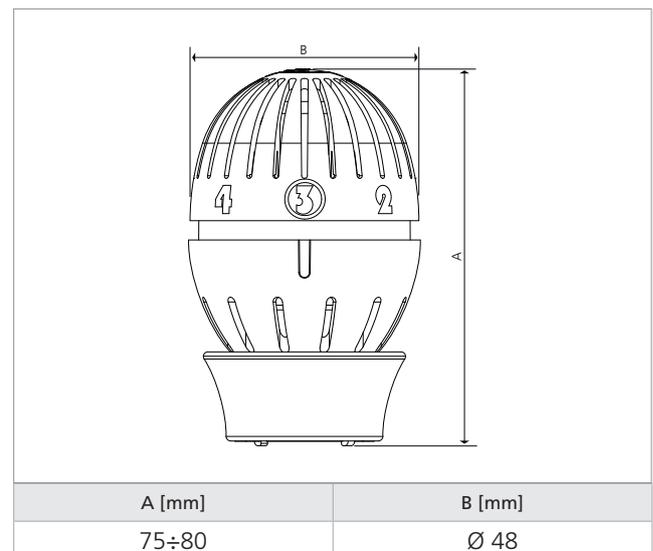
Hysteresis declared value: 0,4 K

D – declared influence of differential pressure: 0,85K

Z – declared response times: see table

W – declared influence of water temperature: see table

Sizes



Installation

Do the following operations to install the thermostatic head:



1. Open the head completely turning to this position 



2. Fasten the thermostatic head to the valve aligning the half moon shaped gaps at the base of the head with the protruding lugs on the valve.



3. Close the head completely turning to this position



4. Now the head is fastened to the valve and can be positioned at the desired setting.



Head regulation

In order to obtain the right setting position of R470, please refer to the table that combines the numeration reported on the handle to the corresponding room temperatures carried out in a thermostatic room with a heating body in optimal functioning conditions. When a radiator is installed in positions where air stagnation or cold draughts are present, calibration temperature does not correspond to middle room temperature because the sensor of the head is influenced by local temperature, and thus it closes the valve earlier or it does not close it at all. In these cases it is necessary to proceed with successive adjustments of the handle position placing a mercury thermometer in the middle of the room.

E.g.: if the head is in position 3 and room temperature is under 20 °C, foreseen with the setting system, this is due to a premature closing of the valve caused by localised activity. In this case it is necessary to slightly rotate the handle to the intermediate position between numbers 3 and 4. Vice versa, when the head is in position 3 and the temperature is higher than 20 °C, the sensor is affected by a cold draught and consequently the valve remains open. In this case the handle must be rotated to the intermediate position between number 2 and 3. If the room where the thermostatic head is installed is not used, the highest energy saving can be obtained by rotating the handle in the position *, corresponding to anti-freeze protection temperature, which is .



During summer time it is recommended to position the handle in the max. opening position in order to avoid excessive pressure on the gasket of the thermostatic valve and consequently avoid the risk of lock.

Position	*	1	2	3	4	5	
Regulated temperature [°C]	8	10	15	20	25	30	32

Opening limitation and handle lock



1. Turn the handle to the desired setting position and take it off by pulling it forward. Do not tamper with the position of the thermostatic sensor for any reason, not to lose the calibration of the thermostatic head.



2. Use one of the limiter included in the box to adjust opening or closing of the thermostatic head; using both limiters, it is possible to fix the ends of the regulation field, up to block the thermostatic head in the desired adjustment position.



3. Partial opening of the thermostatic head is carried out by inserting the limiter in the cams on the right of the number indicating the max. desired opening (bigger than the initial setting).



4. Partial closing of the thermostatic head is carried out by inserting the limiter in the cams on the left of the number indicating the min. desired closing (smaller than the initial setting).



5. In order to fix the ends of the regulation field, up to lock the thermostatic head in the desired setting position, it is necessary to position a limiter on the right of the number indicating the max. desired opening and a limiter on the left of the number indicating the min. desired closing.

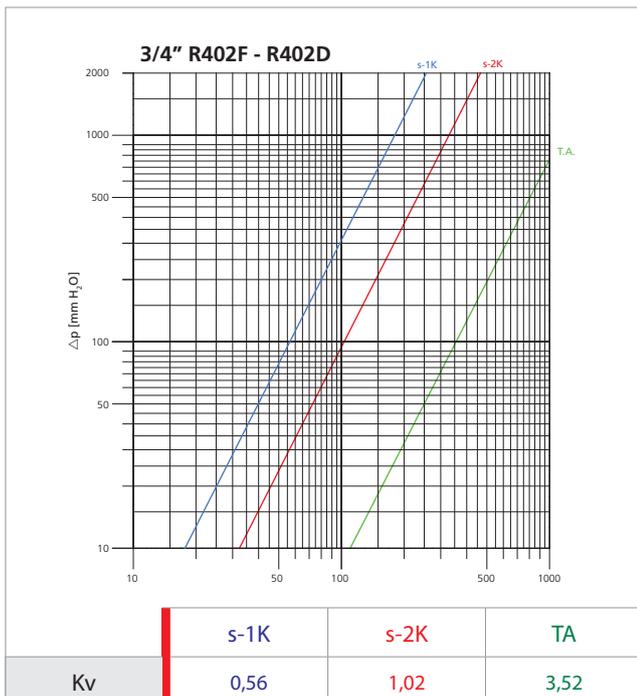
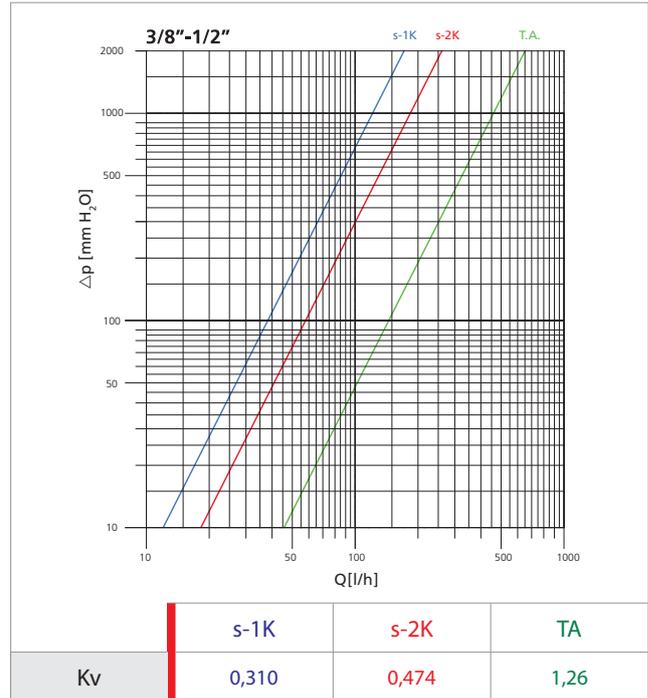
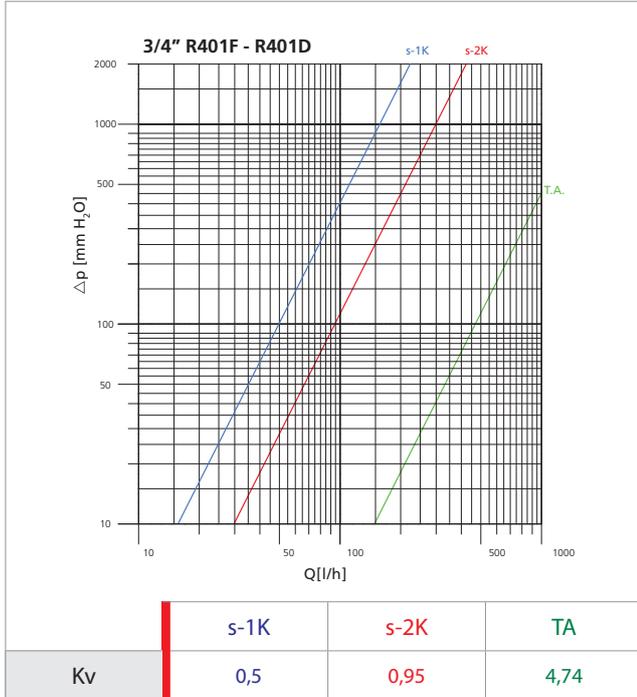


6. After positioning limiter, fasten again the handle in the initial setting position, exerting enough pressure.

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Diagrams

Loss of pressure diagrams are obtained with the thermostatic head in position 3, with the difference between room temperature and set temperature equal to 1K and 2K (curves s-1K and s-2K) and with the thermostatic head in position corresponding to the maximum opening of the valve. The diagrams can be used for both straight and angle valves since, for thermo-technical calculations, loss of pressure is approximately equal.



Technical specifications

Thermostatic head with liquid sensor. 3/8" (DN10), 1/2" (DN15), 3/4" (DN20) connections.

- Min. calibration (anti-freezing protection position): 8 °C.
- Max. calibration : 32 °C.
- Max. water temperature: 110 °C.
- Max. system pressure: 10 bar.
- In compliance with law EN215.

Additional information

For additional information please check the Giacomini website at the following address: www.giacomini.com

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