

**THERMOSTATIC HEAD WITH LIQUID SENSOR
R470**



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

- Temperature range in combination with body valve: 5÷110 °C
- Max. working pressure in combination with body valve: 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 <i>a</i>	Z (min)	W (K)
3/8"	150 kg/h	0,892	26	1,20
1/2"	150 kg/h	0,926		
1/2" (R415TG, R435TG)	150 kg/h	0,849		
3/4" (R401D, R401F, R421F)	240 kg/h	0,873		
3/4" (R402D, R402F, R422F)	240 kg/h	0,897		

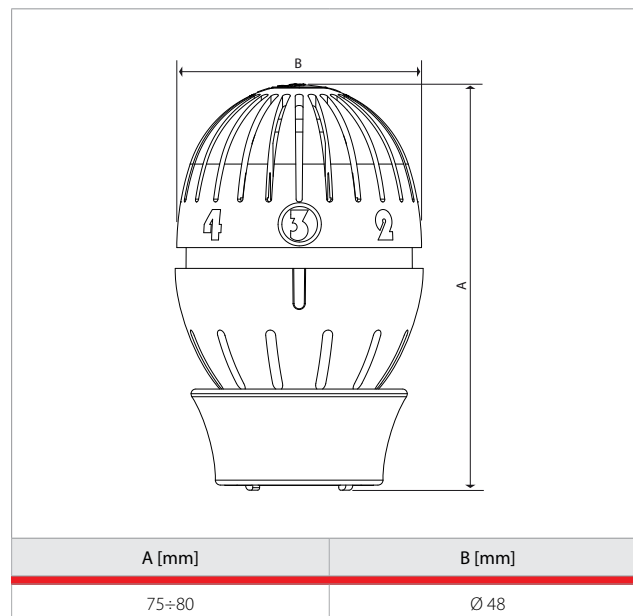
Hysteresis declared value: 0,4 K

D – declared influence of differential pressure: 0,55K

Z – declared response times: see table

W – declared influence of water temperature: see table

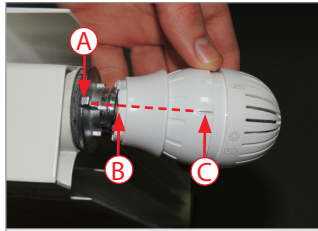
Dimensions



Installation



1. Open the head completely, by taking the handle in position *. Subsequently pull the "CLIP CLAP" connection towards the handle.



2. Connect the thermostatic head to the valve, by verifying that the hitch pin of the valve (A), the small slit of the thermostatic head (B), the indicating notch of the thermostatic head (C) are aligned.



The correct slit for the installation is the small one. Don't try to install using the bigger one.



3. Close the head deeply by rotating the handle. Bring the handle in position *.



4. Now the head is connected to the valve, and it can be brought in the wished regulation position.

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.

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.

Position	*	1	2	3	4	5	*
Set temperat. [°C]	8	10	15	20	25	30	32



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.

The values reported in the table refer to the optimal conditions obtenues in climatic room. In ambient, they could undergo changes connected to the installation type, the climatic conditions, the insulaition degree of the building and to the features of the heat source.

Opening limitation and handle lock

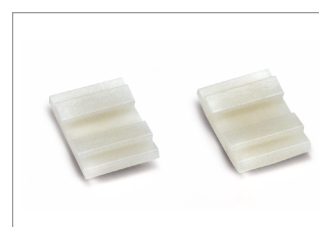
The operations of limitation and locking of the handle, have to be effected with head mounted on the valve body.



1. Bring the handle in position (3), and unhook it by pulling it forward.



Do not tamper the bulb position for any reasons, so as to avoid loosing the calibration of the thermostatic head.



2. Use one of the limiters included into the packaging, in order to limit the opening or the closing of the thermostatic head. By using both limiters, it is possible fixing the extremes of the regulation range, up to the locking of the thermostatic head on the wished regulation position.

3a. The opening limitation of the thermostatic head is effected by introducing the limiter into the proper cam (looking at the photos):



- On the **right** of the number corresponding to the maximum wished opening (example: fix the limiter on the right of number 3. This way, you can fully close the head, or open it at the utmost to 3).



- On the **left** of the number corresponding to the minimum wished closing (example: fix the limiter on the left of number 3. This way, you can open completely the head, or close it at the utmost to 3).



3b. In order to lock the regulation range: Position a limiter on the right of the number corresponding to the maximum wished opening and a limiter on the left of the number corresponding to the minimum wished closing (this way you cannot open, neither close the head).

4. After the positioning of the limiters, hook up again the handle in the initial regulation position (3) exerting a sufficient pressure.



Looking inside the head, near the bulb, you will see a black mark. Verify that such mark is always in line with the notch on the separator.

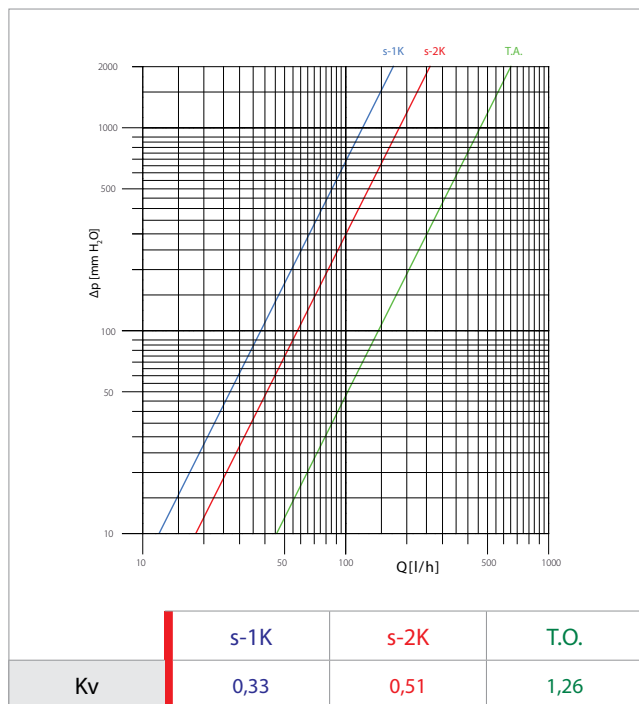


THERMOSTATIC HEAD WITH LIQUID SENSOR R470

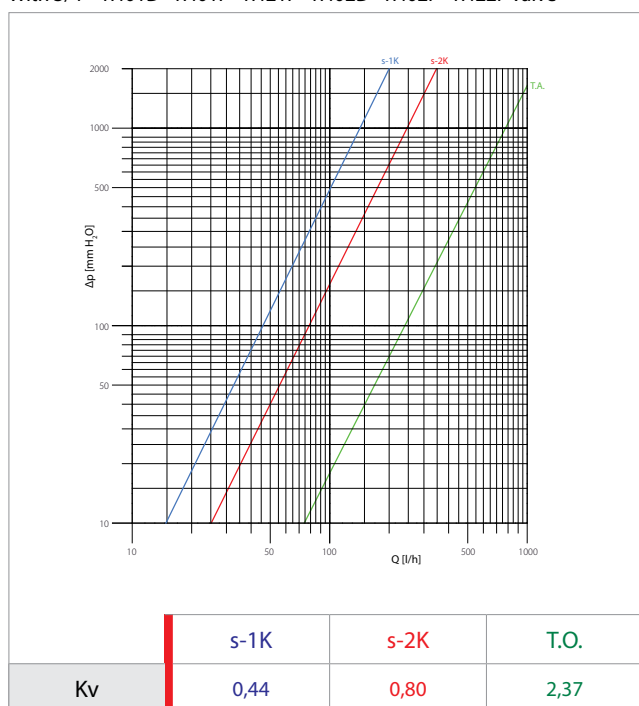
Losses of pressure

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.

With 3/8" - 1/2" valve



With 3/4" - R401D - R401F - R421F - R402D - R402F - R422F valve



Additional information

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

☎ +39 0322 923 372

☎ +39 0322 923 255

✉ consulenza.prodotti@giacomini.com

This pamphlet is merely for information purposes. Giacomini S.p.A. retains the right to make modifications for technical or commercial reasons, without prior notice, to the items described in this pamphlet. The information described in this technical pamphlet does not exempt the user from following carefully the existing regulations and norms on good workmanship.

Giacomini S.p.A. Via per Alzo 39, I-28017 San Maurizio d'Opaglio (NO) Italy