Thermostatic actuators
Series 148 - 148A - 148SD - 148GA

Main features

With liquid-filled sensitive elements and temperature locking

- Available in the versions:
  • Standard
  • With Remote Sensor
- Provision for using them with tamper-proof cover.
- Compact size and reduced weights
- When associated with valves of Series 130UM and 131UM, it is CEN certified in accordance with UNI EN 215.
- **Thermostatic valve configurator**
  On web site www.wattsindustries.it, it's available the software to select the valves certified EN 215 according to their characteristics and to correctly combine them in with certified thermostatic actuators.

WATTS INDUSTRIES

A Division of Watts Water Technologies Inc.

Description

Thermostatic actuators **Series 148, 148A, 148SD** are devices for automatic room temperature control, by acting directly on the radiator of radiator-type heating systems. The actuators, which are installed on the thermostat adaptable radiator valves, automate the valve plug movement through the presence of an element, inside the knob, which is sensitive to variations in room temperature.

Application

These devices, when coupled with thermostat adaptable valves, adapt the amount of heat emitted by the radiators to the required temperature and ensure high comfort levels with consistent energy saving thanks to naturally occurring heat sources in the room.

148

Thermostatic actuator with oil-filled sensitive element. Temperature limiting and locking device. ABS handwheel. Graduated scale from 0 to 5.
Setting range : 0°C - 28°C. Anti-freeze position : 8°C.
Max. differential pressure: 1.5 bar.

UNI EN 215 Certified
TELL Class A (associated with valve 130D)

Type	Part number	Weight (g)
148	148	150

148A

Thermostatic actuator new design with oil-filled sensitive element. Temperature limiting and locking device. ABS handwheel. Graduated scale from 0 to 5.
Setting range : 0°C - 28°C. Anti-freeze position : 8°C.
Max. differential pressure: 1.5 bar.

UNI EN 215 Certified
TELL Class A (associated with valve 130D)

Type	Part number	Weight (g)
148A	148A	150

148SD

Thermostatic actuator with remote sensor. 2 m capillary tube.
Other characteristics as per Item 148.

Type	Part number	Weight (g)
148SD	148SD	250

148GA

Tamper-proof cover for thermostatic actuators series 148.
Provision for limiting and locking temperature range on rivettable closing position.
Complete with standard mounting screws and break-stem rivets.

Type	Part number	Weight (g)
148GA	148GA	30

Thermostatic actuators Class A

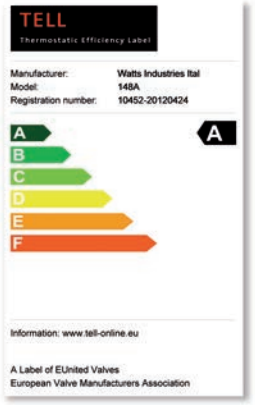
The increased consumer awareness regarding energy saving, is everyday increasing the need for clear and reliable information for a purchase decision consciously.

The introduction of the European classification system **TELL (Thermostatic Efficiency Label)** for the energy efficiency of radiator valves allows to immediately identify the products of a higher category.

The Watts Industries thermostatic actuators series **148** and **148A** have been certified TELL, in **the efficiency Class A**.

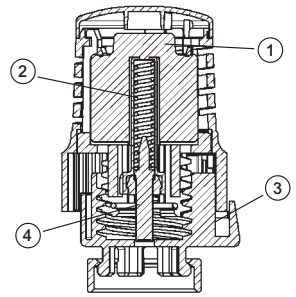
The **TELL** certification criteria are:
- Water temperature;
- Hysteresis;
- Response time in function of temperature variation;
- Differential pressure

The details of the classification are listed on the website ***www.tell-online.eu***



Operation

The device is operated by a liquid-filled sensitive element incorporated in the knob, which, upon expanding or contracting, acts on the valve plug rod in relation to the deviation between set-point and actual room temperature.
When the room temperature exceeds the required level, the sensitive element determines the gradual closing of the valve plug and therefore it appropriately reduces the hot water flow feeding the radiator; when, instead, the room temperature drops, the actuator causes the valve plug to open thus producing an increase in the circulation of hot water in the radiator, so that the temperature set in each single room is held at a constant level.



Features
1) Liquid-filled sensitive element
2) Compensation mechanism
3) Adjustment range locking/limiting system
4) Valve plug thrust rod

Technical Characteristics with the valve 130D	
Range of adjustment	8 ÷ 28° C
Range of inalterability of thermostatic element	-15 ÷ 60° C
Hysteresis max	0.45 K (0.6 K)
Proportional band	2 K
Time constant	22 min
Effect of fluid temperature	1,0 K (1,4 K)
Max effect of differential pressure for 148 and 148A	0,35 K (0,5 K)
Max effect of differential pressure for 148SD	0,65 K
Length of capillary (Art. 148SD)	2 m

Values between () refer to the matching among actuator and valves 130 and 131

Design features	
Sensitive element capsule	Liquid filled
Springs	Stainless steel
Handwheel	ABS

Setting

The required temperature is set by turning the handwheel until the indicator coincides the table with the chosen value:
The numbers and symbols given are associated with the temperatures indicated the table.

⓪	❄	1	2	③	4	5
Closed	8 °C Antifreeze	12 °C	16 °C	20 °C	24 °C	28 °C

The anti-freeze position ensures minimum temperature conditions (8 °C) thus protecting the intactness of the system, if regularly in operation, against intense cold.

Temperature locking

For quick setting and finding the ideal adjustment for each single room, the actuator is provided with temperature locks, degree-by-degree, which allow above all:

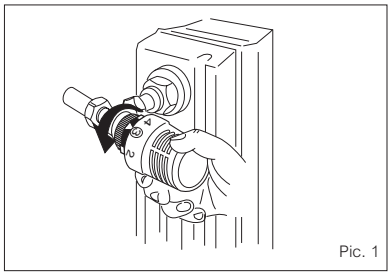
- Limiting the temperature adjustment range
- Selecting a set value
- Limiting the valve closing set-point

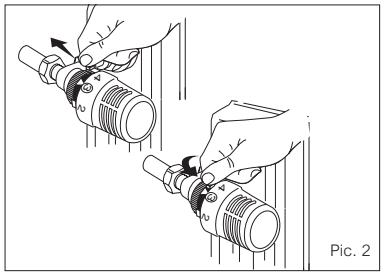
To fix a range of adjustment 16 to 20 °C proceed as follows:

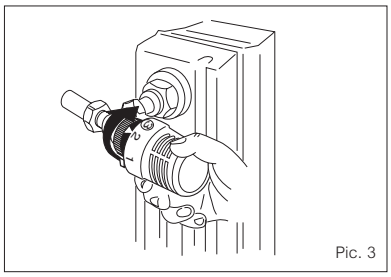
Pic. 1 - Turn the actuator knob so that the indicator corresponds to the required max. value. See Pic. 1: Pos. 3 = 20°C.

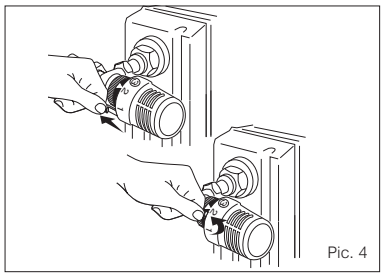
Pic. 2 - Lift out the first lock on the right and place it immediately alongside the indicator. Hence the **upper** limit of the adjustment range is fixed (Pos. 3).

Pic. 3 - Turn the actuator knob until the indicator points to the required minimum value. See Pic. 3: Pos. 2 = 16°C.


Pic. 1


Pic. 2


Pic. 3


Pic. 4

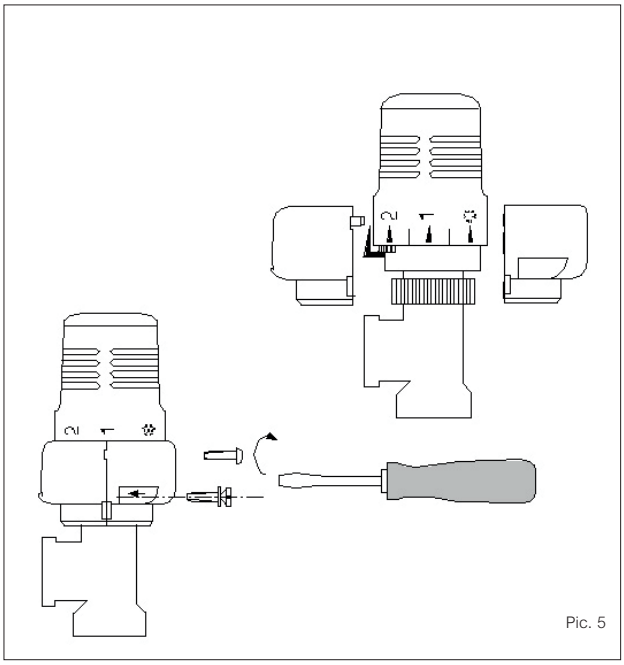
Pic. 4 - Lift out the lock on the left and place it immediately alongside the indicator. Hence the lower limit of the adjustment range is fixed (Pos. 2).

Therefore the setting can easily be readjusted in relation to the various daily requirements thanks to this "memory" system.

Installation

Never allow the actuator to be affected by factors which could falsify measurement of room temperature (e.g. behind curtains, direct exposure to the sun's rays, radiator placed in a recess, etc...) and allow access to the adjustment handwheel (e.g. shielding of the radiator). When this is not possible, it is advisable to adopt versions with remote sensor **Pic. 10 (Art. 148SD)**.

These models differ in that the sensor, detached from the transducer element through a liquid-filled capillary, may be placed in the most suitable point and hence measure the exact temperature existing in the room.
Above all, **model 148CD** allows having both remote sensor and remote control; it is used when the valve position is such as to make manual adjustment difficult. The use of tamper-proof cover **Art. 148GA** is highly recommended to protect the actuator against accidental tampering and/or vandalism in public places (schools, hospitals, etc). Its installation is shown in **Pic.5**.


Pic. 5

The installation, which does not require any plumbing work, may **also be carried out with the systems running** and involves the following steps:

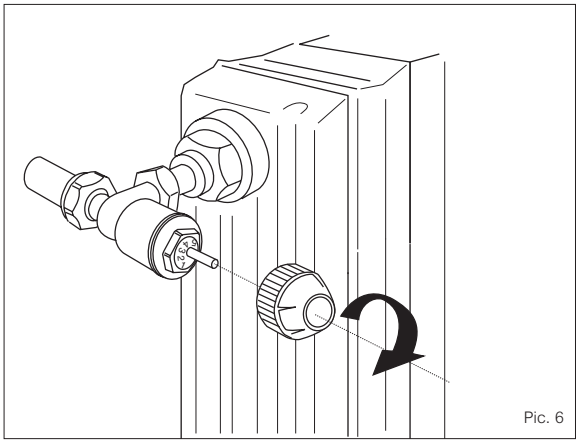
1) Remove the cap or handwheel from the valve body **(Pic. 6)**.

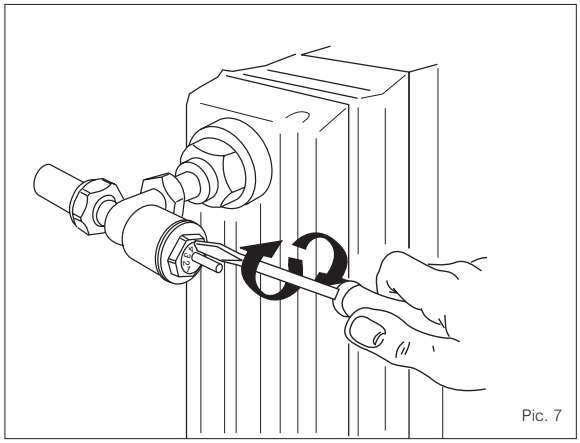
2) Make the presetting if necessary by following the design instructions or selecting the position from the appropriate charts **(Pic. 7)**.

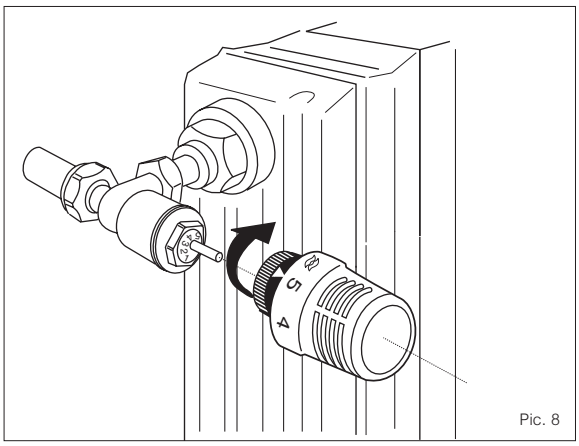
3) Approach the thermostatic actuator in fully open position (Pos. 5) to the valve body, with the reference indicator clearly visible **(Pic. 8)**.

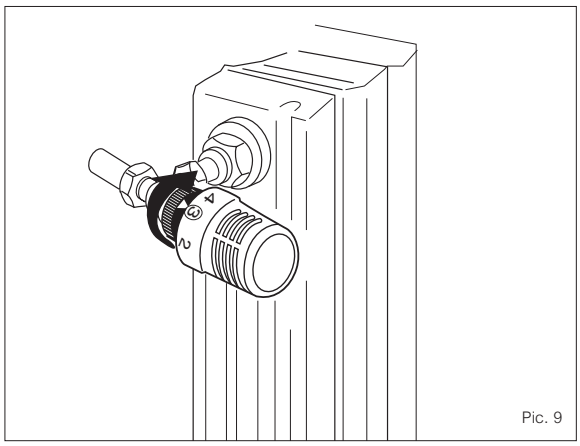
4) Tighten the nickel-plated ring nut by hand until fully home **(Pic. 9)**.

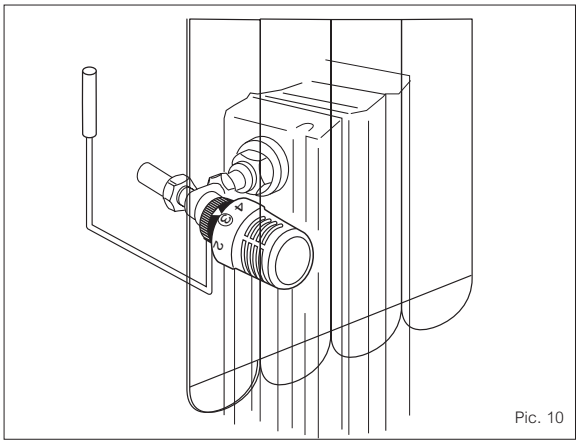
It is recommended to avoid vertical positions of the actuator during installation.


Pic. 6


Pic. 7


Pic. 8


Pic. 9

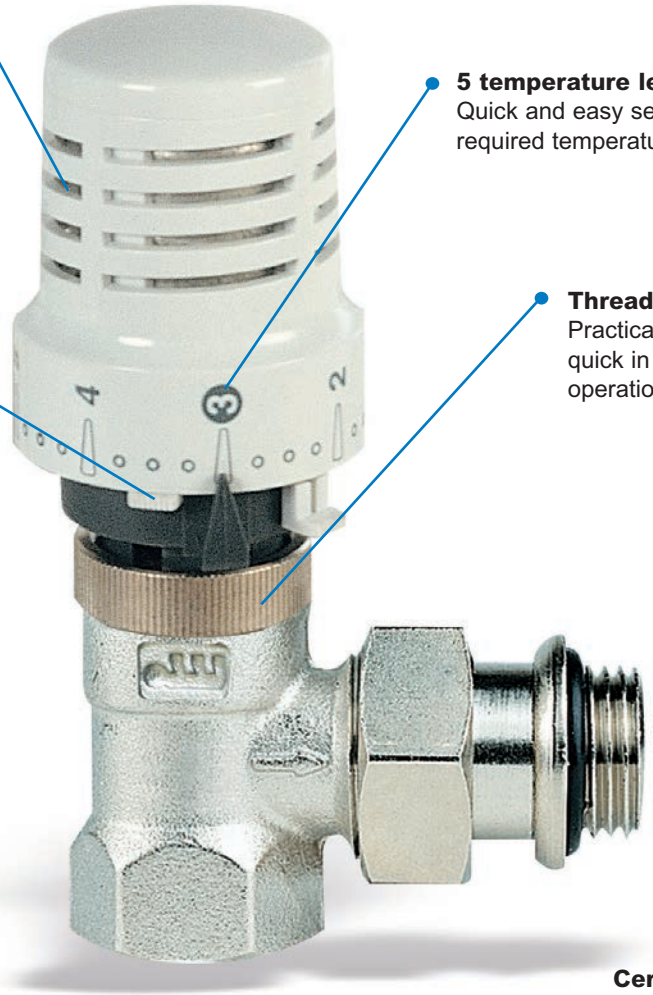

Pic. 10

Radial slots
high sensitivity in ambient temperature measurement

5 temperature levels
Quick and easy setting of the required temperature

Threaded ring nut
Practical and quick in installation operations

Adjustment riders
Provision for adjusting or blocking the preset temperature range



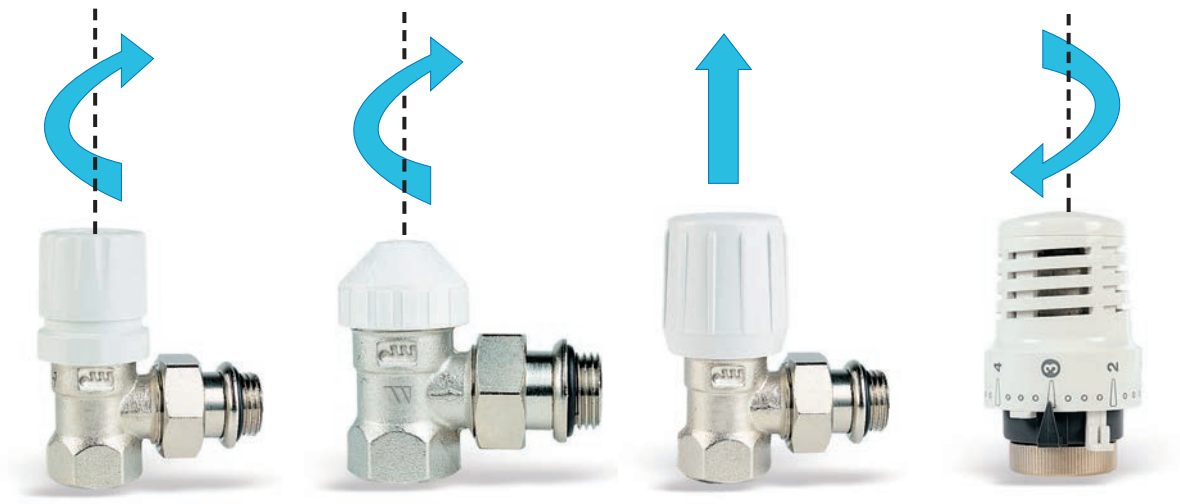
Modern design
adaptable to any type of furnishing

Certificd 028 **EN215-1**

UNSCREW

LIFT OUT

SCREW-IN THE RING NUT OF THE THERMOSTATIC ACTUATOR



Flow rate/pressure drop charts

The charts show the hydraulic flow rate and pressure drop characteristics for the valve body-actuator combination: in the thermostatic function they assume their own particular characteristics represented by straight lines -1K, -2K.
The nominal flow rate qmN is the one corresponding to -2K when the presetting device is not operative.
The straight line marked max represents the flow rate when the valve is fully opened.
The diagrams are valid when a presetting is not made on the valve body.

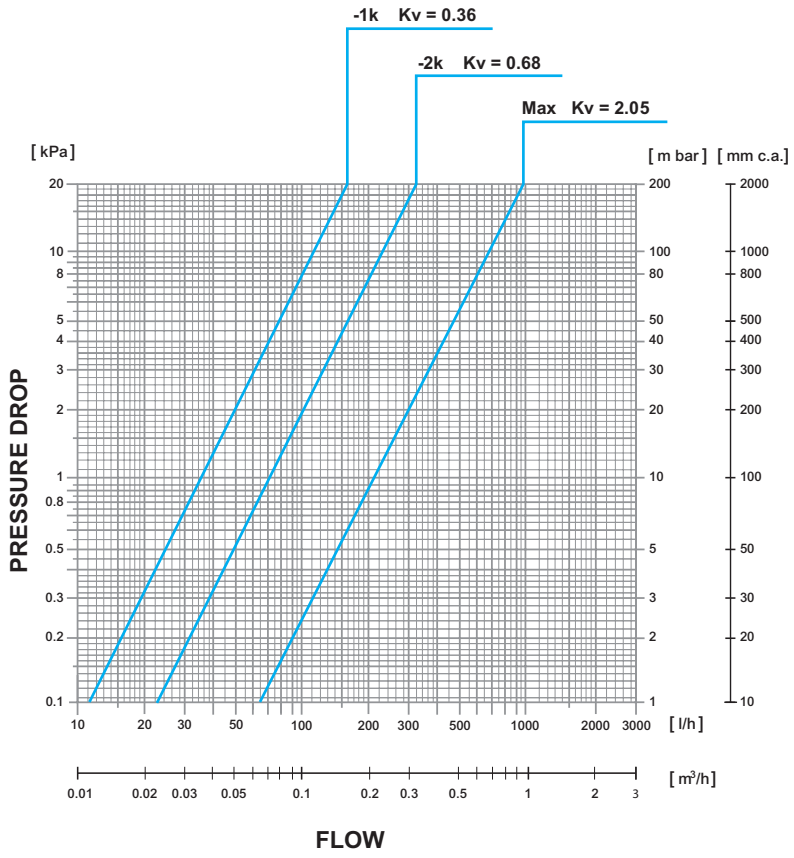
Use of the tamper-proof cover
Thermostat adaptable valve bodies **Series 130UM, 131UM**, are fitted with a tamper-proof cover which protects the valve rod and threading before the preliminary mounting on the thermostatic head. It can be used for setting different flow rates by rotating either clockwise (to close valve plug) or anti-clockwise (to open valve plug), passing from full shut-off to full opening according to the indications stamped on the handwheel.

Thermostatic valve certified EN215-1

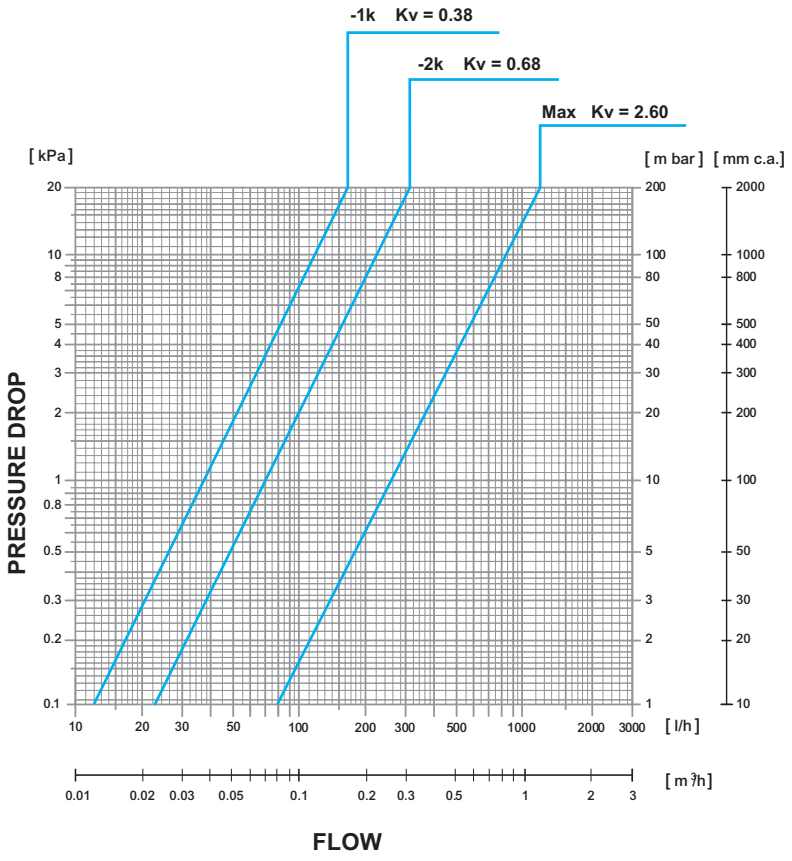
Coupled with thermostatic actuator Series 148 and 148A.

Tipo	DN	Kvn	qmN (l/h)
130UM + actuator	3/8”	0,68	215
130UM + actuator	1/2”	0,68	215
130UM + actuator	3/4”	0,73	230

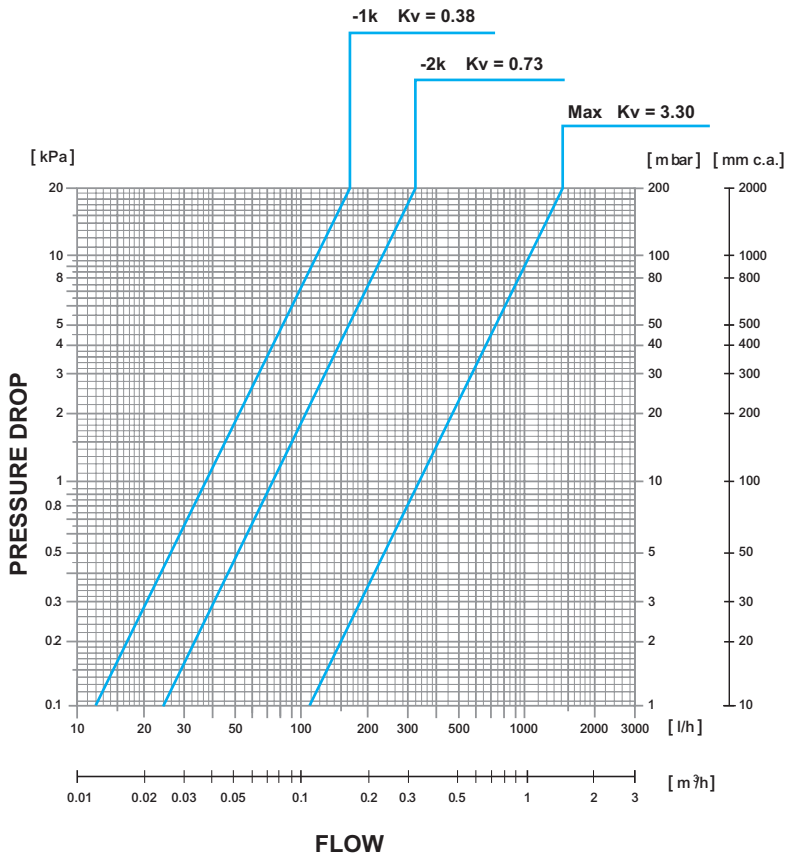
Angle body with actuator 148, 148A and 148SD **130UM - 1130UM - DN 3/8”**



Angle body with actuator 148, 148A and 148SD — 130UM - 1130UM - DN 1/2"



Angle body with actuator 148, 148A and 148SD — 130UM - DN 3/4"



Example
When it is preferred to use an analytical method to know the pressure drop Dp (kPa), given the flow rate (litres/h) and the Kvn, adopt the following relation:

$$Dp = \left(\frac{0.01 * q}{Kvn} \right)^2$$

Determine the pressure drop of the thermostat adaptable valve Art. 131UM + 148 Nd 3/8” with a flow rate of 80 litres

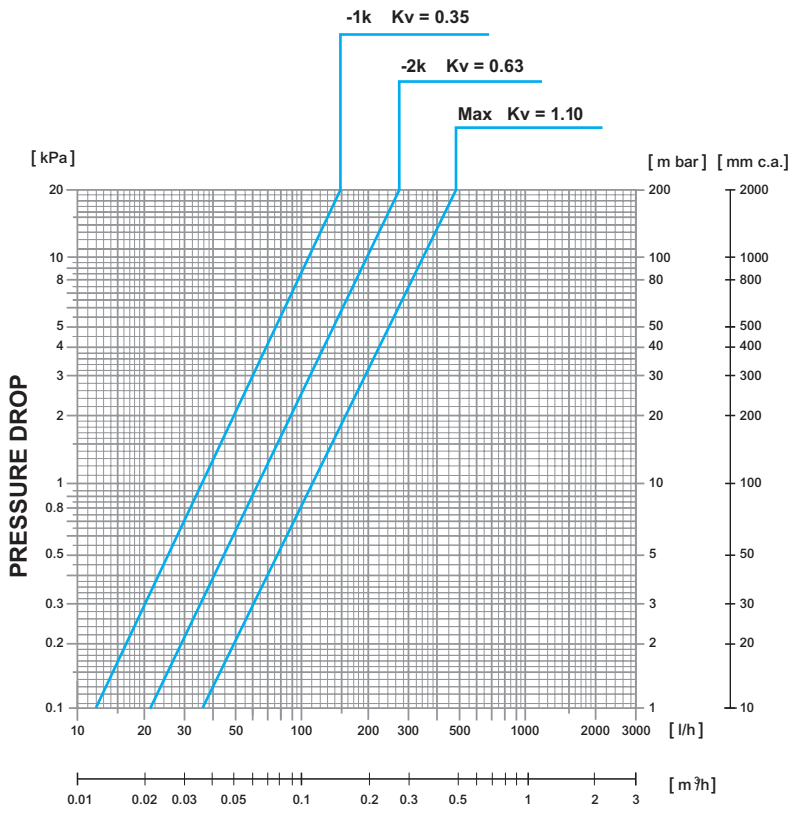
$$Dp = \left(\frac{0.01 * 80}{0,63} \right)^2 = 1,61 \text{ kPa}$$

Thermostatic valve certified EN215

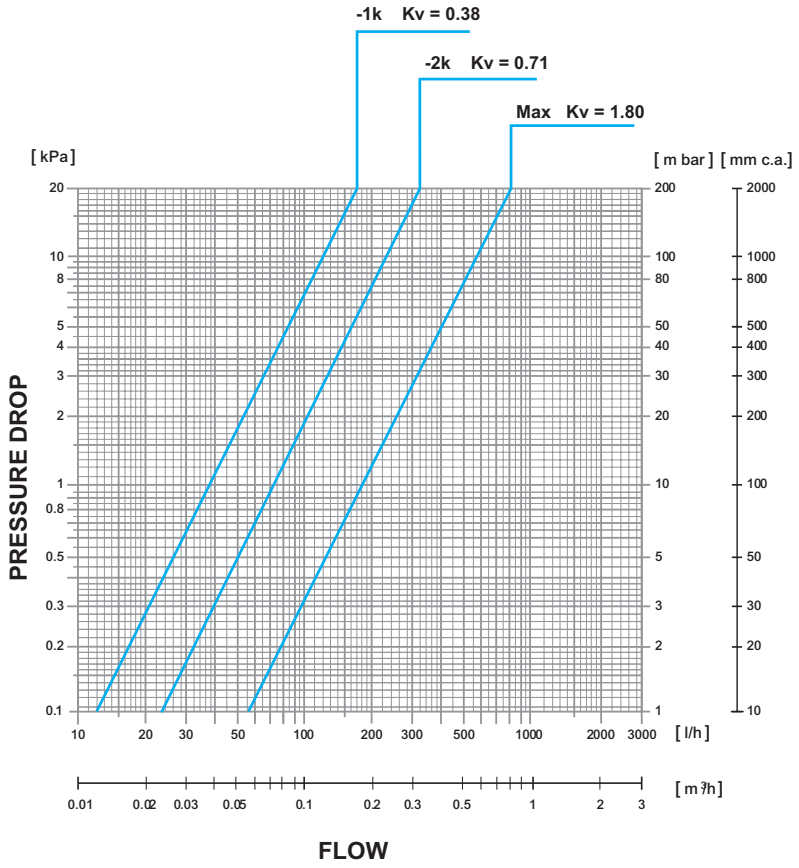
Coupled with thermostatic actuator Series 148 and 148A.

Tipo	DN	Kvn	qmN (l/h)
131UM + actuator	3/8”	0,63	200
131UM + actuator	1/2”	0,71	225
131UM + actuator	3/4”	0,76	240

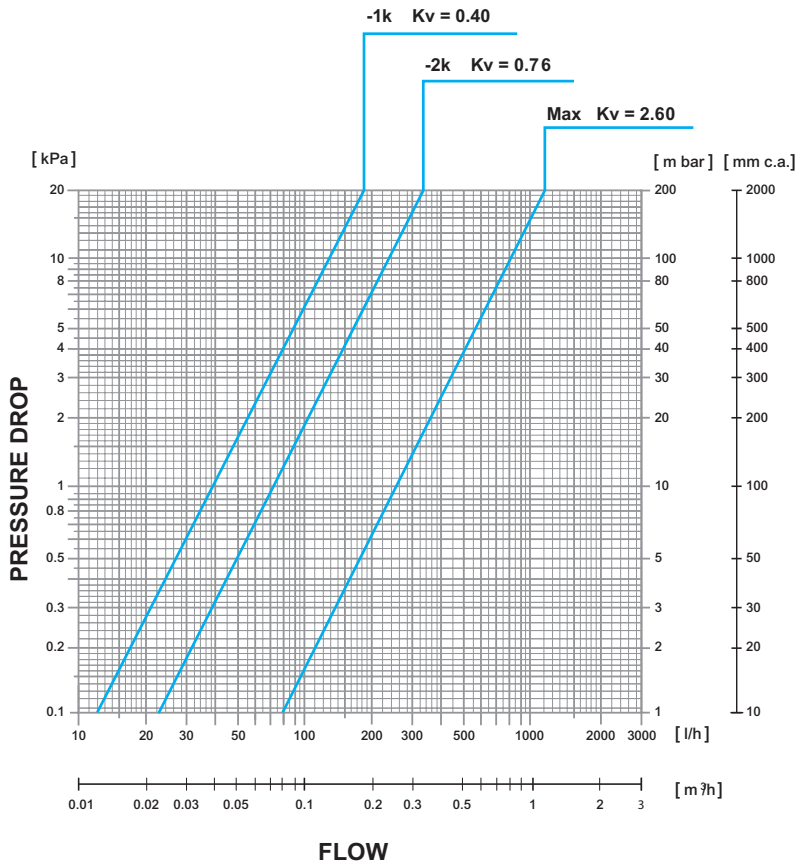
Straight body with actuator 148, 148A and 148SD **131UM - 1131UM - DN 3/8”**



Straight body with actuator 148, 148A and 148SD — 131UM - 1131UM - DN 1/2”

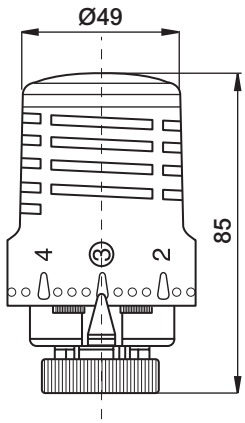


Straight body with actuator 148, 148A and 148SD — 131UM - DN 3/4”

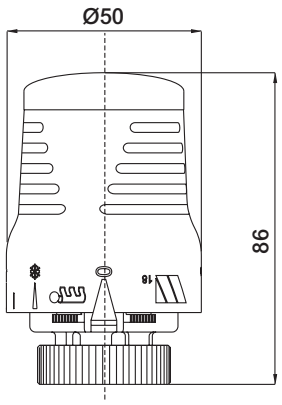


Overall dimensions (mm)

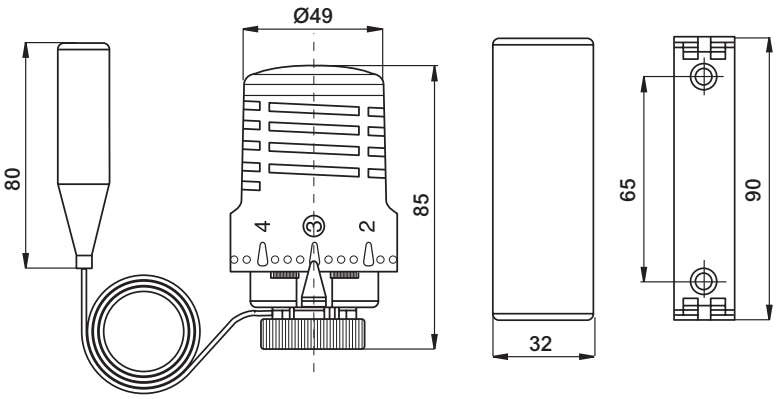
148



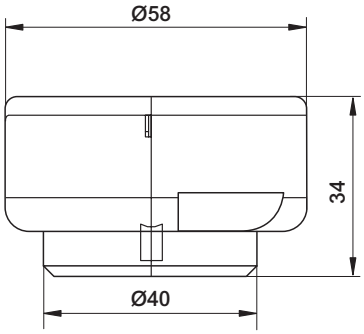
148A



148SD



148GA



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