

FUNCTION

Thermostatic expansion valves are used to regulate and cut-off the flow of the heat transfer fluid that circulates inside air-conditioning system terminals (radiators, fan coils, etc.).

Thermostat control devices are used in combination with the thermostatic expansion valves to automatically regulate ambient temperature wherever they are installed, keeping the temperature at a pre-set value. This avoids the needless wasting of heat and provides a considerable saving of energy.

THERMOSTATIC VALVES



970-972-966



971-973-967



974



975

THERMOSTAT CONTROL DEVICE KEYMARK CERTIFIED



1100



*ICMA IDENTIFICATION
NUMBER 87

PRODUCT RANGE

THERMOSTATIC EXPANSION VALVES – COPPER, MULTI-LAYER, POLYETHYLENE PIPE

Angled

970 Angled thermostatic expansion valve for multi-layer, polyethylene and copper pipe

972 Angled thermostatic expansion valve for multi-layer, polyethylene and copper pipe

966 Angled thermostatic expansion valve for multi-layer, polyethylene and copper pipe

Straight

971 Straight thermostatic expansion valve for multi-layer, polyethylene and copper pipe

973 Straight thermostatic expansion valve for multi-layer, polyethylene and copper pipe

967 Straight thermostatic expansion valve for multi-layer, polyethylene and copper pipe

Pipe fitting

M24x1.5

G1/2"

G3/4"

Radiator

G1/2" – G3/8"

G1/2" – G3/8"

G1/2"

THERMOSTATIC EXPANSION VALVES – IRON PIPE

Angled

974 Angled thermostatic expansion valve for iron pipe

Straight

975 Straight thermostatic expansion valve for iron pipe

Pipe fitting and Radiator

G3/8" - G1/2"* - G3/4"

G3/8" - G1/2"* - G3/4"

THERMOSTAT CONTROL DEVICE

Item

1100 Thermostat control device **KEYMARK** certified

Code

821100AC20*

Connection

M28x1.5

MATCHING FITTINGS

For heating systems with copper, polyethylene or multi-layer polyethylene pipes, use the following fittings to connect ICMA thermostatic expansion valves to the heating system:

Item

90 Patented SICURBLOC fitting for copper pipe

93 EUROCONUS O-Ring leak-proof fitting for copper pipe

98 Fitting for multi-layer, polyethylene pipe

100 Fitting for multi-layer, polyethylene pipe

101 Fitting for multi-layer and polyethylene pipe

119 Fitting for multi-layer and polyethylene pipe

Fitting Thread

G1/2" – M24x1.5

G3/4"

G1/2"

M24x1.5

G3/4"

G3/4"

THERMOSTATIC EXPANSION VALVES

ICMA thermostat control devices can be installed on all thermostatic expansion valves of this line to convert heating systems with manual operating mode to automatic operating mode.

To install the thermostat control device, simply replace the thermostatic expansion valve knob with an ICMA thermostat control device. This is done with a few easy operations. These are described in detail in the paragraph "Thermostat Control Device Installation and Regulation".

The valves come in "straight" and "angled" versions so that they can be connected to two different types of pipes, at the side of the heating system:

- The valves with GAS thread (side of heating system) are designed for connection to a steel pipe.
- The valves with standard ICMA thread (side of heating system) are designed for connection to a copper pipe, a polyethylene pipe and a multi-layer polyethylene pipe, for which specific pipe fittings are provided.

The valves are also equipped with a rubber, water-sealed socket. This allows the valve to be connected to the radiator easily and safely without the use of a sealant.

Pressure loss can be detected by following the indications provided in the diagrams shown in the paragraph "Fluid Dynamic Characteristics".

TECHNICAL SPECIFICATIONS

Performance

Fluids used:	Water and glycol solutions
Maximum percentage of glycol:	50%
Maximum operating pressure:	10 Bar
Maximum differential pressure:	1 Bar (with control device mounted)
Temperature of heat transfer fluid:	5 to 120°C
Valve obturator travel:	3.5 mm
Connection with thermostat control devices:	M28x1.5

Materials

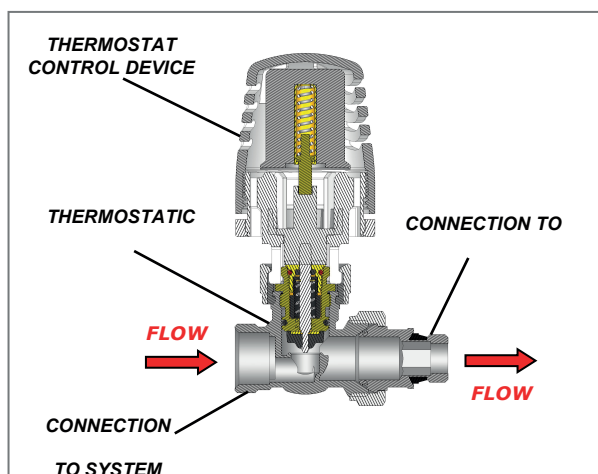
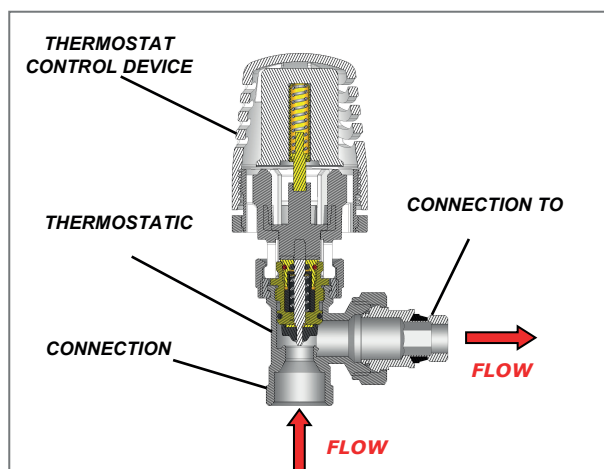
Body, cap and socket union:	CW617N Brass - UNI 12165 – Nickel-plated
Large screw:	CW617N Brass - UNI 12164
Spring and obturator control rod:	Stainless steel
Liquid sealings:	Peroxy EPDM
Control knob:	RAL 9010 ABS White

VALVE INSTALLATION

Install ICMA thermostatic expansion valves on the heating system making sure to observe the direction of flow. The fluid must enter from the side on which the valve is connected to the system and go out toward the heating body.

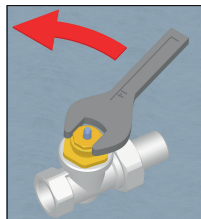
The following problems can occur if the valve is installed incorrectly:

- A noise similar to a continuous sound of heavy hammering is due to the passage of fluid through the valve in the wrong direction. This problem can only be solved by inverting the valve with holder on radiators that have this problem, thus restoring the correct direction of flow of the fluid inside the valve.
- A noise similar to a sound of heavy whistling during the succession of specified on and off times is due to an excessive flow inside the valve. This problem can be solved by keeping the system pressure under control, and equipping the system with variable rotation pumps along with differential pressure regulators, or by making use of differential by-pass valves.

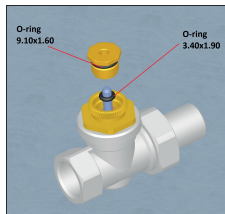


MAINTENANCE (REPLACEMENT OF THE GLAND O-RING SEALS)

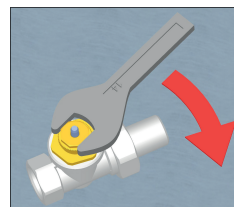
In accordance with EN215 regulations, O-Ring seals can be replaced on all ICMA thermostatic valves even while the system is running without causing water leaks. To do this operation follow the instructions below:



Remove the gland using a 14mm wrench as shown in the picture.



The O-Ring seals can now be replaced
O-RING
CODES:
P10002043
P10002243



Screw the gland back into the valve using a 14mm wrench.

THERMOSTATIC CONTROL DEVICE

Thermostat control devices are used to regulate ambient temperatures automatically wherever they are installed so that the temperature is kept at a preset value.

Residential and working environments often contain other sources of heat, such as electrical appliances, stove-top cookers, computers, servers, and simple sunlight. Combined with the heating system, these additional heat sources cause a needless, uncontrolled increase in ambient temperature and the wasting of heat. Thermostat control devices detect variations in ambient temperature in the environments in which they are installed making it possible to keep the heat supplied by the heating system at optimal temperatures and to provide a considerable saving of energy.

The ICMA, 1100, thermostat control device can be installed on all thermostatic expansion valves of this line.

ICMA valves are supplied with the current manual control knob (for manual operation). The valves can be converted into thermostatic valves that function completely automatically by installing a thermostat control device.

To install the thermostat control device, simply remove the thermostatic expansion valve control knob and replace it with the 1100 thermostat control device. This is done with just a few easy operations. These are described in detail in the paragraph "Thermostat Control Device Installation and Regulation".



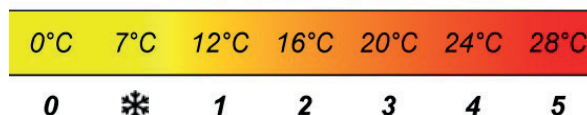
1100

ADJUSTMENT SCALE

Adjustment Scale: $\star \div 5$
Temperature adjustment range: $7 \div 28^{\circ}\text{C}$

The asterisk \star indicates the freezing protection position, which corresponds to 7°C .

ADJUSTMENT SCALE



TECHNICAL SPECIFICATIONS

Performance

Minimum adjustment calibration (anti-freeze position):	ts min	7 °C *
Maximum adjustment calibration (position):	ts max	28 °C (5)
Saving condition (position):		20 °C (3)
Maximum working pressure:	PN	1000 KPa
Maximum differential pressure:	Δp	100 KPa
Nominal capacity "qm N" (DP=10 KPa) angle-straight:	qm N	190 Kg/h
Maximum working temperature:		110 °C
Maximum storage temperature:		50 °C
Hysteresis:	C	0.19 K
Authority:	a	0,9
Response time:	Z	20 min
Differential pressure influence:	D	0,25 K
Water temperature influence:	W	0,7 K
Control Accuracy:	CA	0,2 K
Connection to thermostatic expansion valves:		M28x1,5

Thermostat control device conform with Standard: EN215

The thermostatic valve is fitted with manual adjustment handwheel (rotation)

Materials

Knob and stop ring:	RAL 9010 ABS White
Body and transmitter:	RAL 9010 PA6 30% F.V.
Sensor liquid:	Thermostatic ethyl-acetate
Connection ring:	CW617N Brass - UNI 12164 - Nickel-plated
Compensation pin:	CW617N Brass - UNI 12164
Compensation pin spring:	SH steel for springs - Phosphated

OPERATIONS

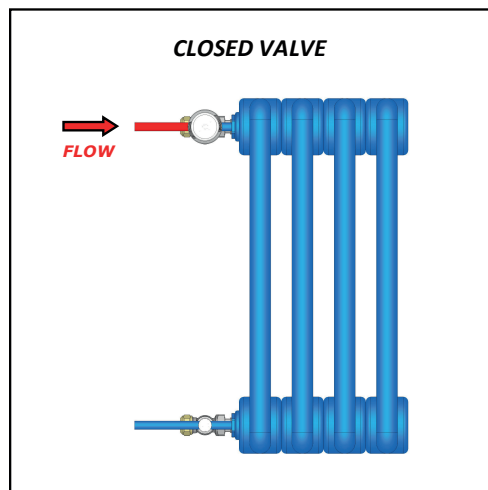
The thermostat head is made of a series of plastic parts containing a thermostatic component that is sensitive to temperature variations.

Operation of the thermostatic component is based on the expansion of the thermostatic liquid contained inside it:

- when the ambient temperature rises, the thermostatic liquid increases in volume, resulting in the lengthening of the component;
- when the ambient temperature drops, the thermostatic liquid decreases in volume, resulting in the shortening of the component.

The variations in length of the thermostatic component are transmitted to the expansion valve obturator by a small steel rod. These movements constantly regulate the flow of the heat transfer fluid to the heating component so that the temperature set on the thermostat control device remains constant over time.

The thermostat control device components are specially made of plastic materials to prevent the valve heat and that irradiated by the heating component from being transmitted to the thermostatic component by contact or induction. This prevents possible malfunctions in the control device.

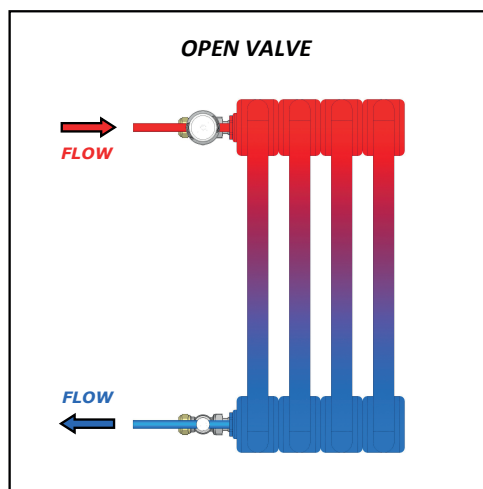


The thermostat control device temperature is regulated by turning the numbered knob and bringing the corresponding symbol to the desired temperature close to the head indicator (see the following paragraph for more details).

- Position 3 on the adjustment scale corresponds to an ambient temperature of 20°C. This is the recommended temperature for ensuring a comfortable environment and reduced heat consumption and costs.

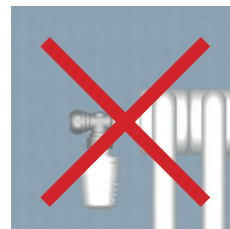
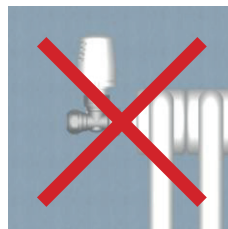
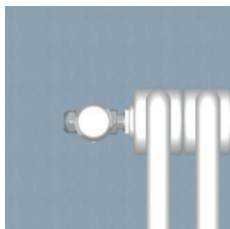
- The asterisk "*" indicates the freezing protection position. When the thermostat control device is set to this position, the valve turns on only if the ambient temperature drops below 6°C.

This setting is recommended when one is absent for long period of time during the winter months, or when one wishes to aerate the premises when outside temperatures are very low.



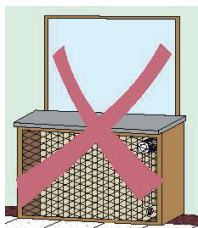
DIRECTION OF THERMOSTAT CONTROL DEVICE

The ICMA thermostat control devices should be installed in the horizontal position. Any other position could compromise their correct functioning.



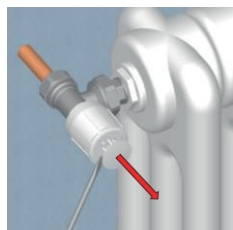
POSITIONING OF RADIATORS

The thermostat control devices should never be placed inside niches or radiator boxes, behind curtains or exposed to direct sunlight. These conditions could result in incorrect detection of the actual ambient temperature and compromise the proper functioning of the device.

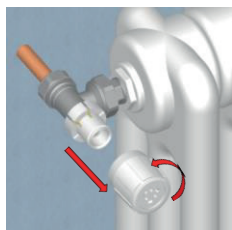


THERMOSTAT CONTROL DEVICE INSTALLATION AND REGULATION

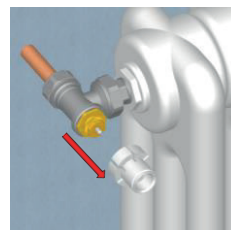
CONVERSION OF MANUAL VALVES TO THERMOSTATIC VALVES



Remove the protective cover from the knob using a small screwdriver.

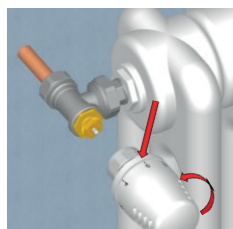


Turn the knob in the counter clockwise direction to remove it completely from the valve.

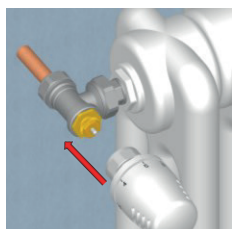


Unfasten the white adapter from the valve body by simultaneously pulling and bending it.

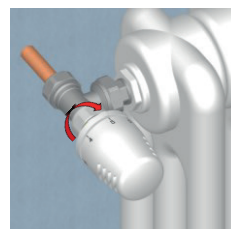
INSTALLATION OF THERMOSTAT CONTROL DEVICE



To facilitate installation of the thermostat control device, turn the knob counter clockwise and bring it to the number 5.

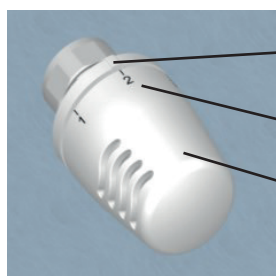


Install the thermostat control device on the valve body keeping the indicator turned upward so that it is clearly visible.



Screw the thermostat control device ring on the valve body blocking it. Turn the knob a few times to adjust the components.

REGOLAZIONE DELLA TEMPERATURA



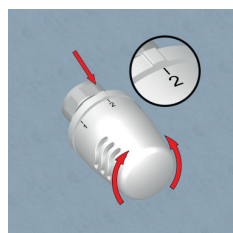
INDICATOR
ADJUSTMENT
SCALE
KNOB

The knob indicates the numbers from 0 to 5, which correspond to specific temperatures (see the adjustment scale shown at side). Set the desired temperature simply by turning the knob to the corresponding number close to the indicator.

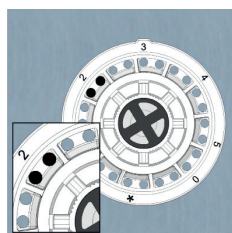
ADJUSTMENT SCALE

0°C	7°C	12°C	16°C	20°C	24°C	28°C
0	*	1	2	3	4	5

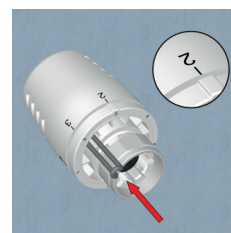
TEMPERATURE ADJUSTMENT



Turn the thermostat control device knob to one of the setting numbers from 0 to 5 shown on the knob. Setting example on the n°2.

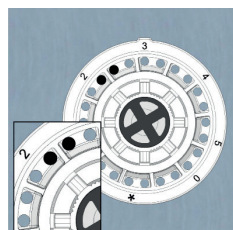


The same numbering is also indicated on the lower part of the device. Identify the hole before and the hole after the number set.

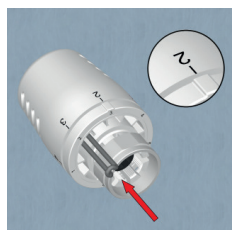


Insert the forked pin inside these two holes and push until completely inserted. The knob is now blocked at the desired setting.

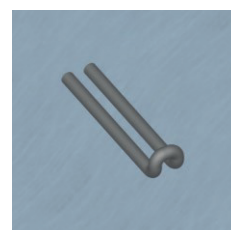
BLOCKING OF TEMPERATURE



In order to limit the temperature, simply identify the two holes located right after the number set.



Insert the forked pin inside these two holes and push until completely inserted. The knob can now be moved from 0 to the number set.



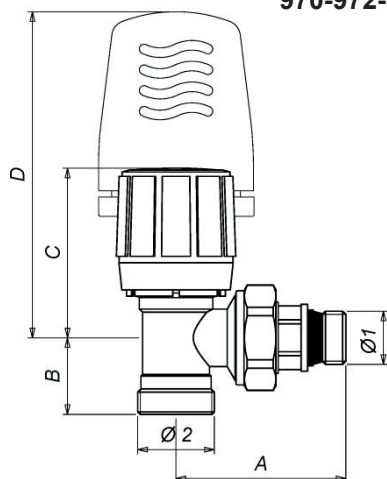
The forked pin is sold separately from the control device.

FORKED PIN
CODE:
111100AC06

DIMENSIONS AND CODES ARTICLES

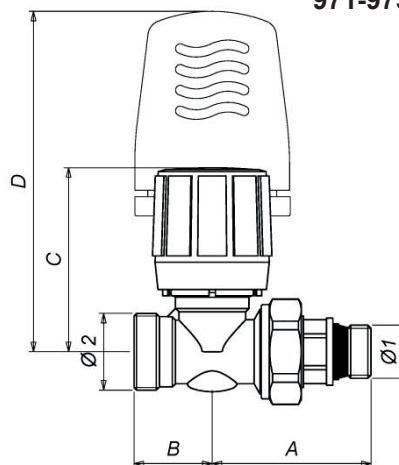
THERMOSTATIC EXPANSION VALVES – COPPER, MULTI-LAYER, PE-X PIPE

970-972-966



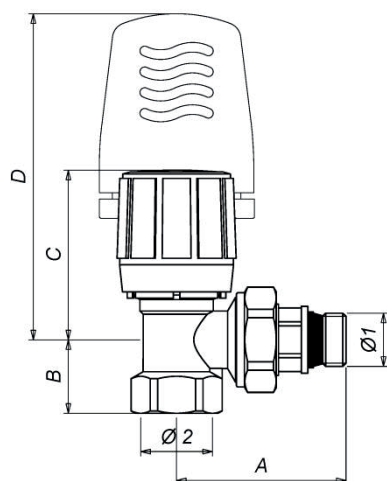
CODE	Ø1	Ø2	A	B	C	D
82970AC06	G3/8"	M24X1.5	53	24	53	102
82970AD06	G1/2"	M24X1.5	55	24	53	102
82972AC06	G3/8"	G1/2"	53	24	53	102
82972AD06	G1/2"	G1/2"	55	24	53	102
82966AD06	G1/2"	G3/4"	55	24	53	102

971-973-967

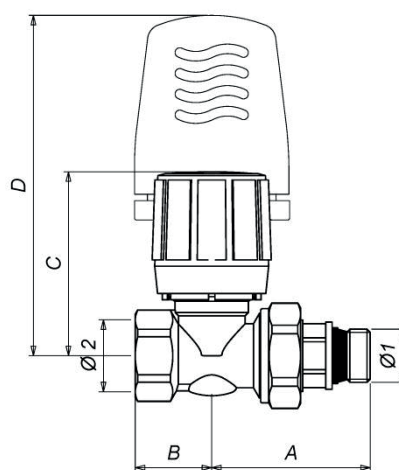


CODE	Ø1	Ø2	A	B	C	D
82971AC06	G3/8"	M24X1.5	50	24	58	107
82971AD06	G1/2"	M24X1.5	51	24	58	107
82973AC06	G3/8"	G1/2"	50	24	58	107
82973AD06	G1/2"	G1/2"	51	24	58	107
82967AD06	G1/2"	G3/4"	51	24	58	107

THERMOSTATIC VALVES - IRON PIPE



CODE	Ø1	Ø2	A	B	C	D
82974AC06	G3/8"	G3/8"	53	23	53	102
82974AD06*	G1/2"	G1/2"	55	23	53	102
82974AE06	G3/4"	G3/4"	57	25	53	102



CODE	Ø1	Ø2	A	B	C	D
82975AC06	G3/8"	G3/8"	50	23	58	107
82975AD06*	G1/2"	G1/2"	51	24	58	107
82975AE06	G3/4"	G3/4"	53	25	58	108



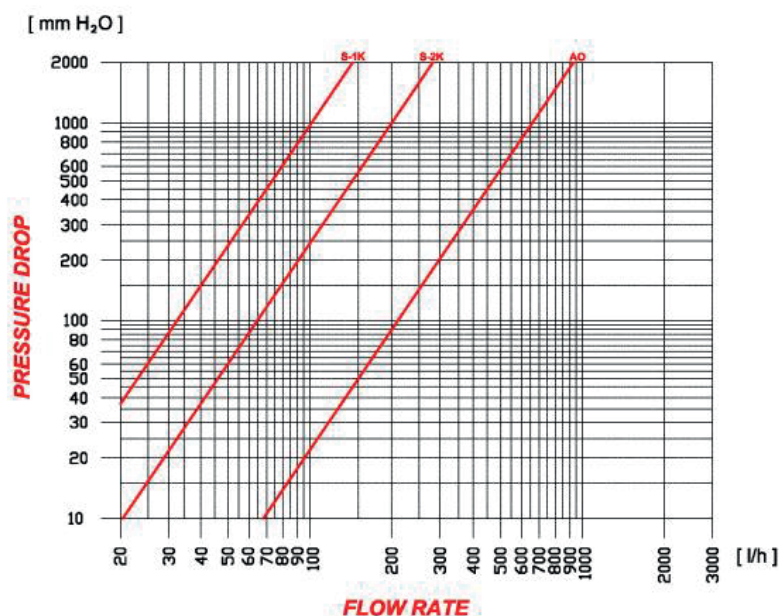
* ICMA IDENTIFICATION NUMBER 87

HYDRAULIC CHARACTERISTICS

ANGLED THERMOSTATIC EXPANSION VALVES

Angled thermostatic expansion valves G3/8" - Art. 970-972-974

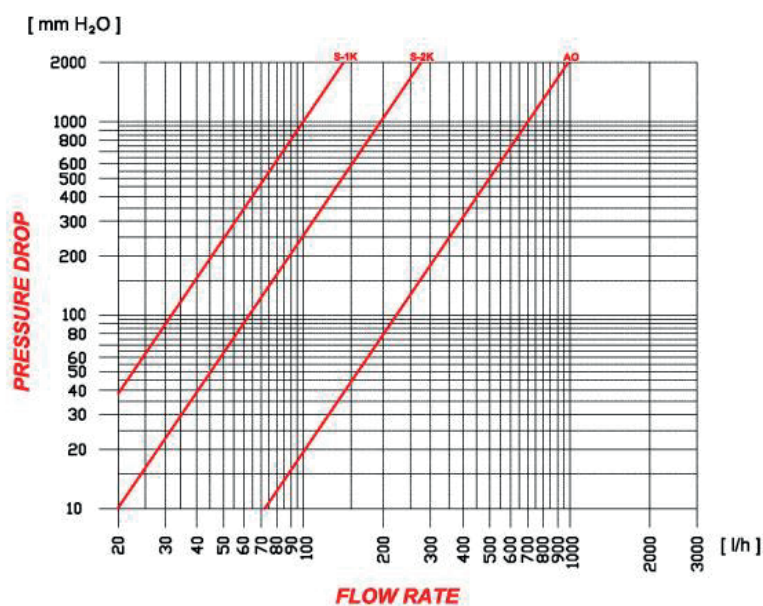
PRESSURE DROP DIAGRAM



Kv [m ³ /h]	
AO	2,11
S-2K	0,60
S-1K	0,33

Angled thermostatic expansion valves G1/2" - Art. 970-972-974-966

PRESSURE DROP DIAGRAM

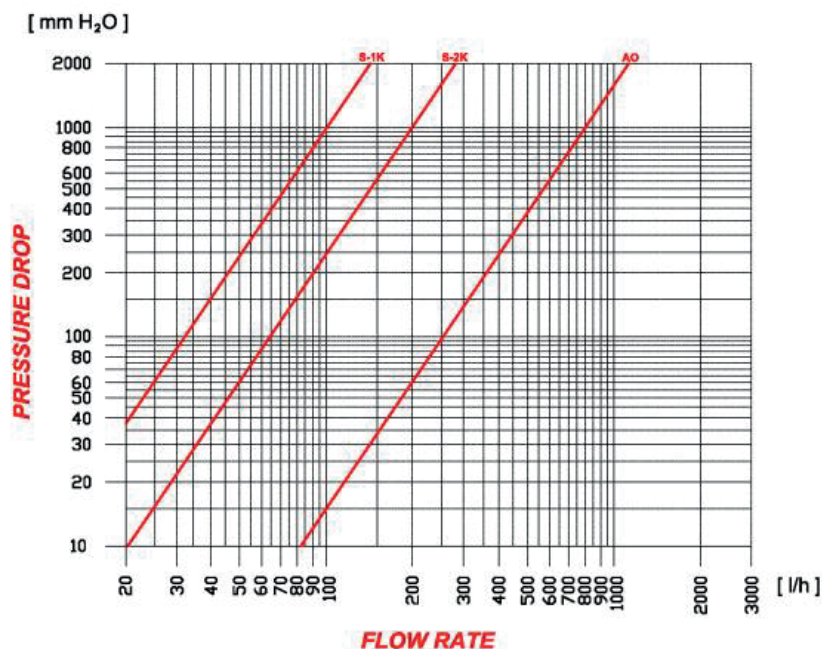


Kv [m ³ /h]	
AO	2,21
S-2K	0,60
S-1K	0,33

HYDRAULIC CHARACTERISTICS

Angled thermostatic expansion valves G3/4" - Art. 974

PRESSURE DROP DIAGRAM

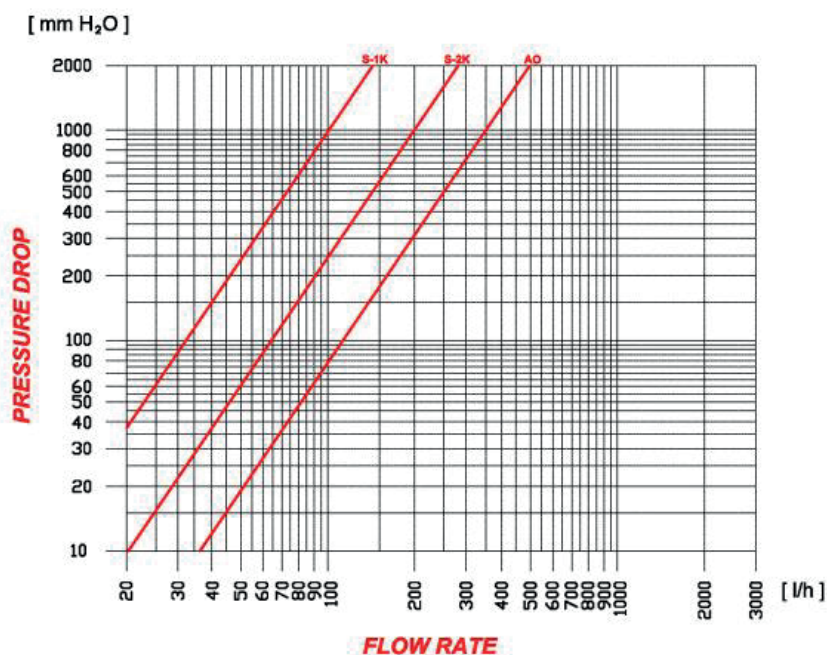


Kv [m³/h]	
AO	2,53
S-2K	0,60
S-1K	0,33

STRAIGHT THERMOSTATIC EXPANSION VALVES

Straight thermostatic expansion valves G3/8" - Art. 971-973-975

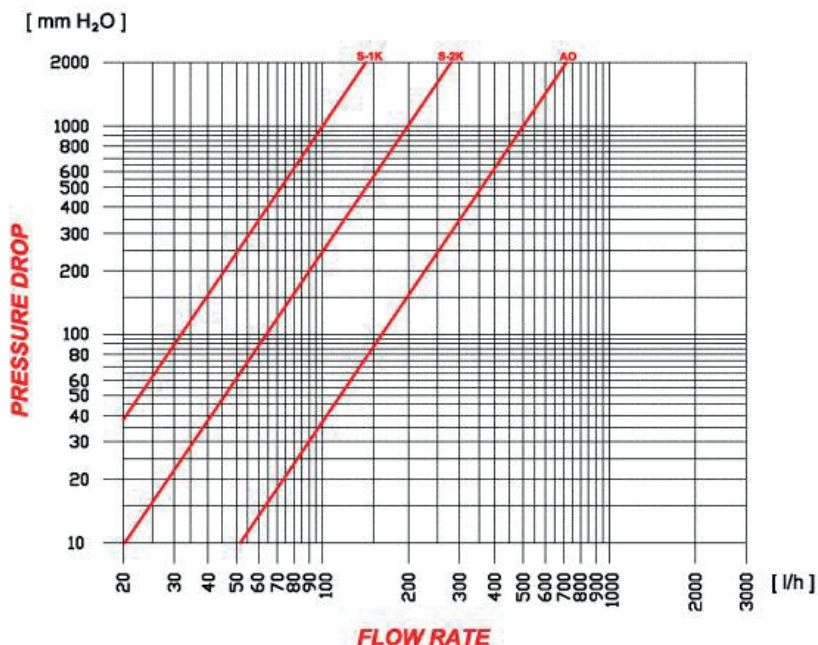
PRESSURE DROP DIAGRAM



Kv [m³/h]	
AO	1,12
S-2K	0,60
S-1K	0,33

Straight thermostatic expansion valves G1/2" - Art. 971-973-975-967

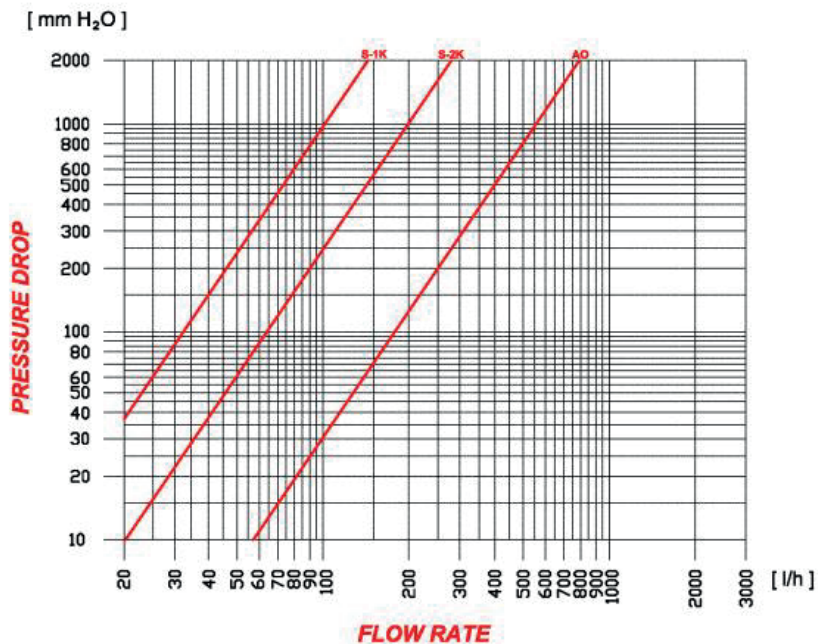
PRESSURE DROP DIAGRAM



Kv [m³/h]	
AO	1,58
S-2K	0,60
S-1K	0,33

Straight thermostatic expansion valves G3/4" - Art. 975

PRESSURE DROP DIAGRAM



Kv [m³/h]	
AO	1,77
S-2K	0,60
S-1K	0,33