

Installation, use and maintenance instructions for 1" and 1"1/4 pre-assembled stainless steel manifold kits

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1. FUNCTION

The ICMA stainless steel pre-assembled manifold kits are designed to improve heat transfer fluid distribution in heating systems, improving the control of thermal emission in each area of the system.

The kits are supplied with all the necessary accessories for the installation, filling and management of heating systems.

They also guarantee simple and precise adjustment of the flow rate of the heat transfer fluid in each ring of the circuit and additionally offer the possibility of individual interceptions.

Their particular configuration, due to the shape of the fixing brackets, facilitates connection with the branch pipes during installation, ensuring reduced dimensions especially in terms of depth and allowing their installation even in very confined spaces.

2. PERFORMANCE

Use fluids:	Water and glycolate solutions
Max glycol percentage:	30%
Max. operating pressure at 20°C (68 °F) with water:	0.6 MPa (6 bar, 87psi) if flow meters are present 1 MPa (10 bar, 145 psi), if flow meters are not present
Minimum working fluid temperature:	5°C (41 °F)
Maximum working fluid temperature:	80 °C (176 °F) if the ICMA CG1168AE06- CG1169AE06- CG1180AE06 flowmeters are installed
	70 °C (158 °F) if the TACONOVA C06179AD05 flowmeter is installed
	90°C (194 °F) if flow meters are not present.
Thermometer scale:	0÷60°C (32-140 °F)
Manifold bar sizes:	G 1" / G 1" 1/4

2.2. Kv and Cv values

Stainless steel bar Kv and Cv values - Version 1"

Outputs	Average Kv	Average Cv
2-15	7.36	8.56

Stainless steel bar Kv and Cv values - Version 1"1/4

Outputs	Average Kv	Average Cv
1-15	3.89	4.52

Kv and Cv value of the flow meter item CG1168AE06 for 1" manifolds and item CG1180AE06 for 1"1/4 manifolds.

No.of revolutions	Kv	Cv
0.25	0.05	0.06
0.5	0.3	0.35
0.75	0.62	0.72
1	0.88	1.02
1.5	1.05	1.22
2	1.12	1.30
2.5	1.16	1.35
Fully open	1.21	1.41

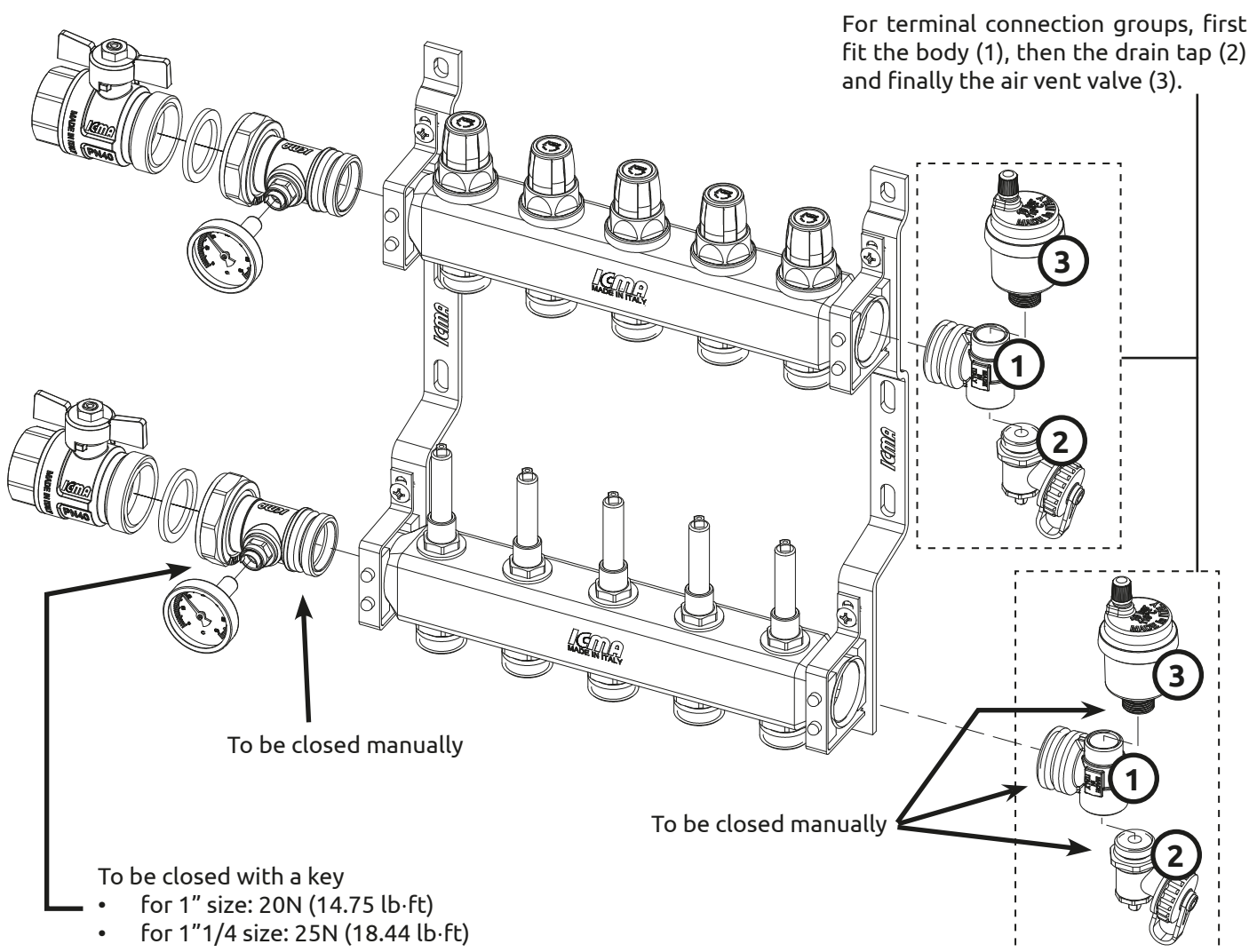
Kv and Cv value of valve item CG120AE01

No.of revolutions	Kv	Cv
1	0.85	0.99
2	1.75	2.03
3	2.25	2.62
Fully open	2.9	3.37

Kv and Cv value of the calibration holder item CG0121AE01

No.of revolutions	Kv	Cv
Fully open	2.59	

3. SUPPLY SCHEME OF THE COLLECTOR KIT

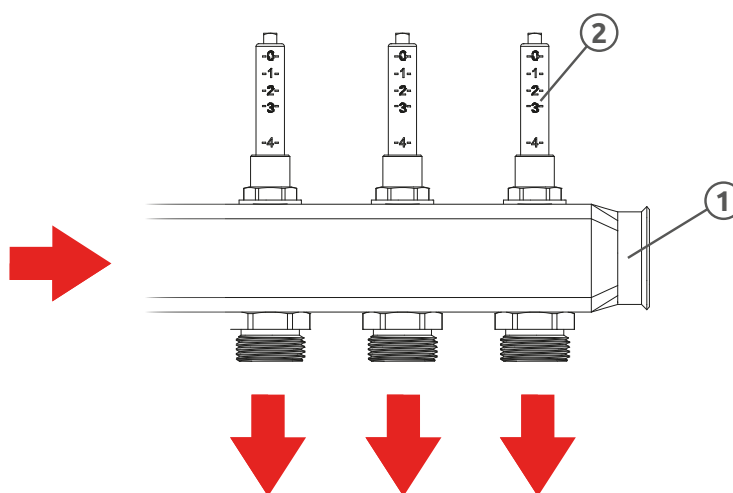


Components to be assembled by the end user according to the Icma Instruction sheet.

4 INSTALLATION

4.1. Use of flow meters with built-in control valve

The delivery manifold, as described above, consists of a perforated drawn bar (1) on which flow meters with built-in flow control valve (2) are assembled. The flow meters have the function of indicating the flow value of each individual ring of the system in real time while the built-in regulation valves allow its calibration simply and precisely which greatly simplifies and speeds up the calibration operation of the entire circuit.



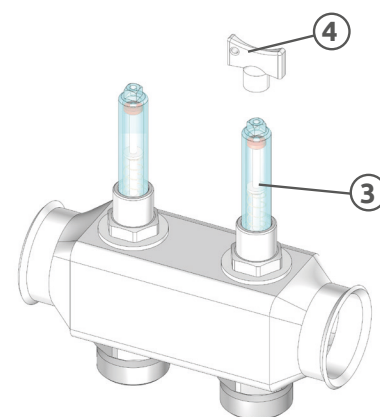
4.2. Flow rate adjustment

To adjust the flow rate, simply rotate the clear tubular structure (3) located at the top of the meter.

To facilitate this operation, a dedicated key (4) is provided that must be inserted on the panel in the upper part of the tubular structure.

- **By screwing the tubular structure (turning clockwise) the flow rate decreases**
- **By unscrewing the tubular structure (turning anti-clockwise) the flow rate increases**

By completely closing the control valve, it is possible to intercept each individual ring, excluding it from the system.



4.3. Assembly of the TACONOVA C06179AD06 flowmeter

The TACONOVA C06179AD05 flowmeter is usually installed in the flow pipe bar of the manifold. It can be installed in a horizontal or vertical position.

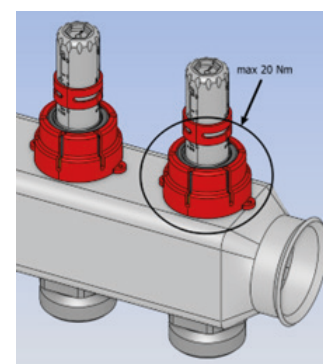
The manifold must be adapted to the manufacturer's standards to ensure correct operation.

During assembly on the manifold, the tightening torque must not exceed 20 Nm (14.75 lb·ft).

The indicator can be removed for maintenance. If this is carried out whilst the manifold is installed and connected to the system, the manifold must be shut off before proceeding with removal.

Tampering can be prevented by the use of a lead seal.

The regulating valve can be closed.



4.4. Flow rate reading

The clear tubular structure shows a graduated scale while inside there is a white rod with an orange plate (5). These two elements rise and fall inside the tubular structure according to the variations in the flow rate of the fluid flowing inside the meter.

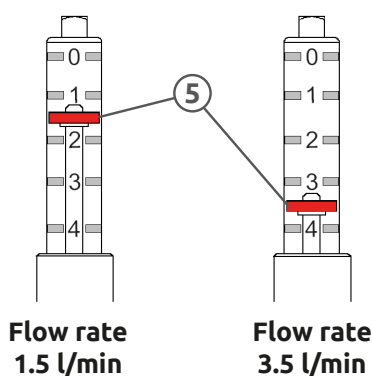
The position of the orange plate, shown on the graduated scale of the tubular structure, indicates the actual value of the flow rate of the fluid that is passing into the meter and consequently into the relative ring of the floor system. The reading range of the meters is as follows:

0÷4 l/min (0÷1 US gal/min) for G1" section manifolds

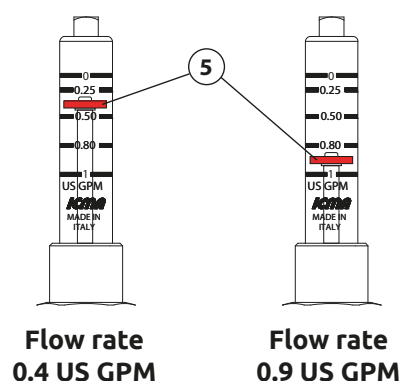
0÷5 l/min (0÷1.3 US gal/min) for G1" section manifolds with TACONOVA C06179AD06 flowmeter

0÷8 l/min (0÷2 US gal/min) for G1" ¼ manifolds.

Reading examples

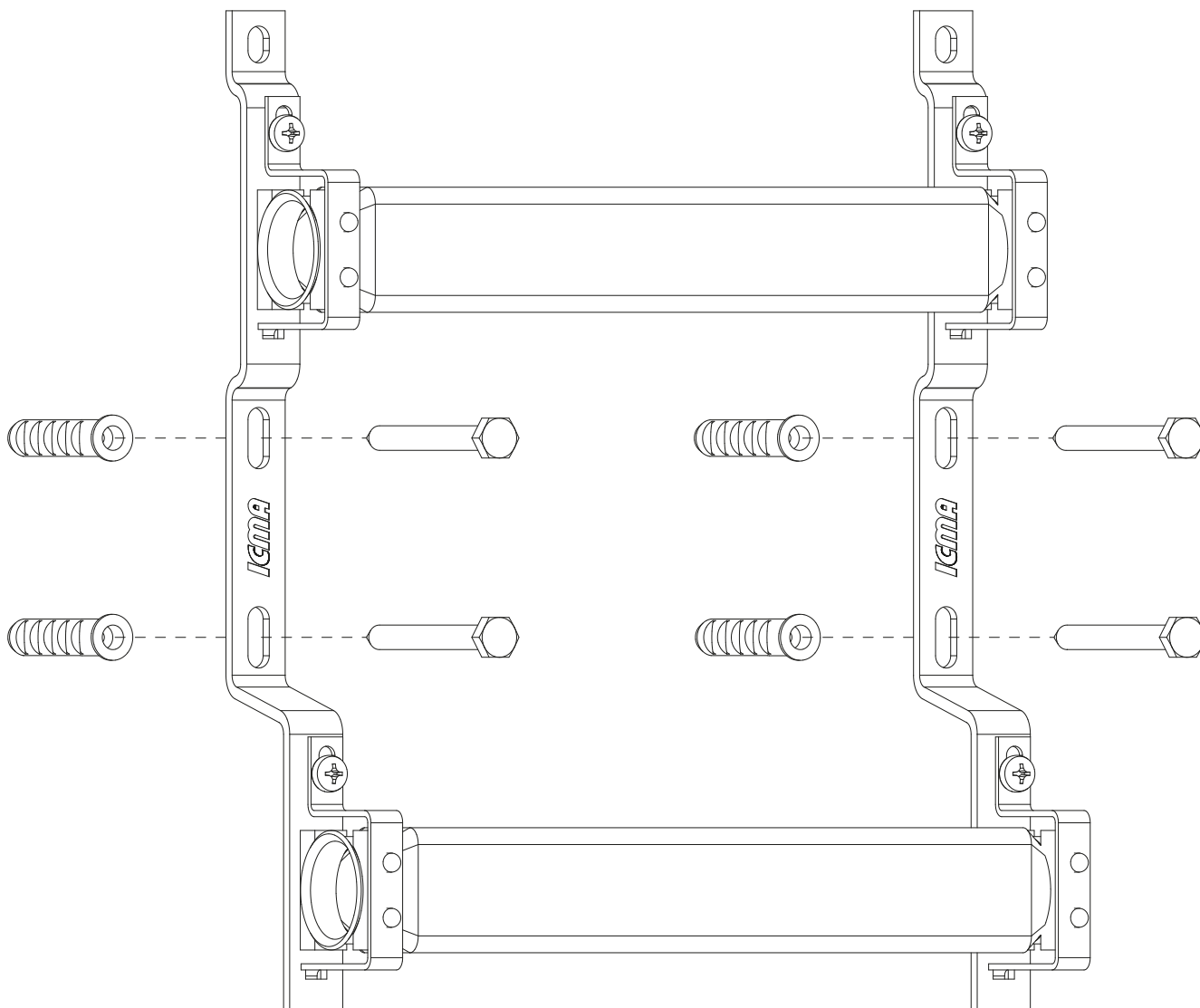


Reading examples for the North American market



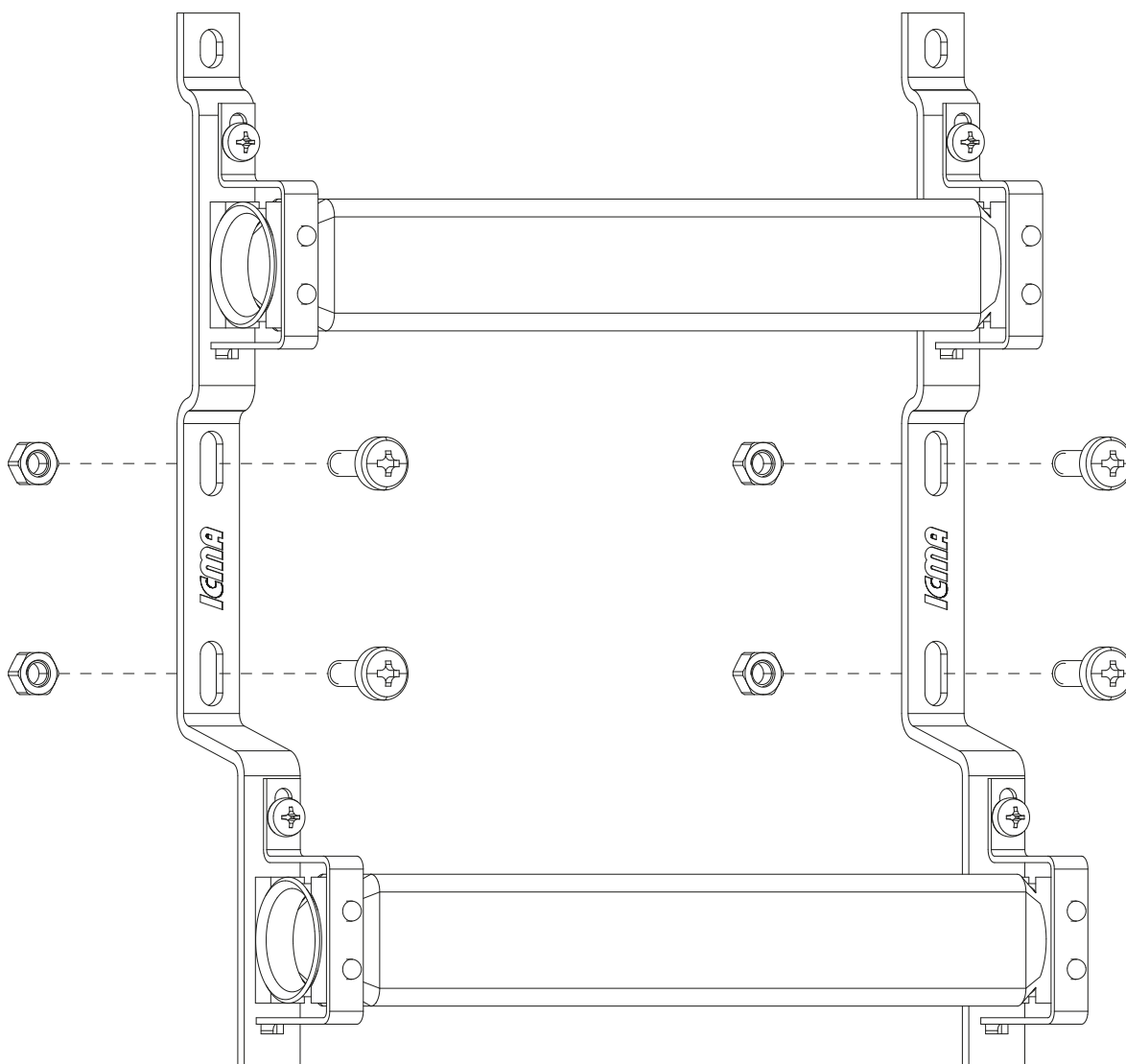
4.5 Wall installation

The pair of fixing brackets can be used in 196,197 series box or directly on the wall.



N.B. Wall plugs and screws not included.

4.6 Installation in box



N.B. Wall plugs and screws not included.

SAFETY

The collector must be installed by a qualified installer in accordance with national regulations and/or relevant local requirements. If the collectors are not properly installed, commissioned and maintained according to the instructions in this manual, they may malfunction and put the user in danger.

Ensure that all connecting fittings are hydraulically tight.

When making hydraulic connections, take care not to mechanically overtighten the threads. Over time, cracks with hydraulic leaks can occur, causing damage to property and/or persons. Water temperatures above 122°F (50°C) can cause severe burns.

During installation, commissioning and maintenance of the collectors, take the necessary precautions so that these temperatures do not endanger people.

LEAVE THIS MANUAL FOR THE USE AND SERVICE OF THE USER

4.7 Warning HEAD DOWN APPLICATION



The installation of ICMA manifold sets in an upside-down position is not recommended.

Although the flow meters may continue to operate correctly, suspended particles and impurities present in the system water may accumulate at the lower end of the flow meter due to gravity. Over time, this accumulation can interfere with the internal moving components, potentially resulting in inaccurate readings or malfunction.

In cases where an inverted installation cannot be avoided, a high-efficiency filtration device shall be installed upstream of the manifold to prevent the circulation of impurities and reduce the risk of obstruction within the flow meters. The filter shall provide a filtration grade suitable for retaining fine particles present in the hydraulic system.

Under no circumstances shall the manifold assembly be installed upside-down when equipped with ICMA electrothermal actuators. An inverted mounting position may adversely affect the operation of the actuators and can lead to improper performance or malfunction during service.

5. MAINTENANCE

Seals check:

check the condition of the seals and replace them if they show signs of wear or deterioration.

Make sure the seals are well lubricated and properly installed to prevent leakage.

Checking connections:

periodically check that the connections are secure and tight.

Use a torque wrench to make sure the fittings are tightened according to the manufacturer's specifications.

Circulation system maintenance:

monitor the system pressure and ensure that it is within the recommended operating limits.

Corrosion prevention:

regularly check that the pH of the heating fluid is within the recommended range to prevent internal corrosion, especially for all the non-stainless steel components.

- The ICMA stainless steel manifolds are suitable for use in closed circuit systems, for operation with non-aggressive fluids (water, glycolated water in accordance with the VDI 2035/ONORM 5195). At the first start-up, ensure the quality of the feed water and periodically check the quality of the water in the system.
- Mineral oils or lubricants based on mineral oils contained in the heat transfer fluid can cause swelling phenomena, resulting in damage to the EPDM seals.
- In antifreeze and anti-rust products based on ethylene glycol are used, but nitrite-free, pay attention to the indications provided in the manufacturer's documentation, in particular those on the concentration and on the specific additives.
- In the presence of system water rich in sludge and impurities, it is advisable to perform a chemical wash before installing the manifolds and to periodically check the quality of the water in the system.

A water analysis is recommended for every installation site. For warranty claims a water analysis is mandatory

 	READ THIS MANUAL BEFORE USING THIS EQUIPMENT. Not following the safety and usage instructions may result in death, serious injury, property damage, or equipment malfunction. Keep this manual for future reference.
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6. SPARE PARTS

Contact your sales representative if necessary.

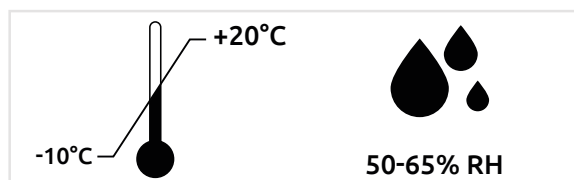
7. TRANSPORTATION, HANDLING AND STORAGE

The storage room must be cool, dry, dust-free and moderately ventilated. The temperature must be maintained between -10°C (14 °F) and +20°C (68 °F).

Failure to observe these limit temperatures may cause a reduction in the life span of the valve.

If the warehouse is heated, the radiators and ducts must be shielded; the distance between radiators and goods/products must be at least 1 m.

The relative humidity must be between 50% and 65%.



At the time of use, monitor as far as possible the succession of deliveries, in order to ensure the rotation of stocks.

8. FAULT DETECTION/TROUBLESHOOTING AND REPAIR

MALFUNCTION	POSSIBLE CAUSES	SOLUTION
THE SYSTEM IS NOISY	THE REGULATING VALVES COULD CAUSE NOISE DUE TO VIBRATIONS.	CHECK THAT THE WATER FLOW IS NOT REVERSED CHECK THAT THERE IS NO AIR IN THE SYSTEM
	CAVITATION	MAKE SURE THERE ARE NO AIR BUBBLES IN THE SYSTEM
	PRESSURE FLUCTUATIONS	INSTALL A STORAGE TANK TO STABILISE THE PRESSURE
	NARROW OR CURVED PIPES	USE LARGER DIAMETER PIPES OR REDUCE THE NUMBER OF BENDS
	LOOSE CONNECTIONS	CHECK AND TIGHTEN ALL CONNECTIONS
	LIMESCALE DEPOSITS	CLEAN THE PIPES REGULARLY TO REMOVE DEPOSITS
	MECHANICAL VIBRATIONS	USE VIBRATION ISOLATORS TO REDUCE NOISE TRANSMISSION
FLOW METER BLOCKED	SEDIMENT OR CORROSION	THOROUGH CLEANING OF THE FLOW METER
THE FLOW METERS DO NOT INDICATE THE FLOW RATE	INCORRECT INSTALLATION OF THE MANIFOLD IN THE SYSTEM	CHECK THAT THE WATER FLOW IS NOT REVERSED. THE MANIFOLD MUST BE INSTALLED ON THE SYSTEM DELIVERY
FLOW METER NOT RESPONDING	MECHANICAL PROBLEM	CHECK CONNECTIONS TO THE FLOW METER. REPLACE THE FLOW METER IF NECESSARY
THE FLOW METERS REGULATE INCORRECTLY	INCORRECT CALIBRATION	DISASSEMBLE AND CLEAN THE FLOW METERS, ADJUST THE SYSTEM WITH THE VALVE ON THE RETURN FULLY OPEN (IT IS IMPORTANT THAT ADJUSTMENTS ARE MADE FOR EACH FLOW METER UNTIL THE FLOW RATE VALUES IN L/MIN ESTABLISHED BY THE PROJECT ARE ACTUALLY REACHED)

Art. K069-K071-K072-K073-K074-K075-K077-K079-K081-K086-K088



THE FLOW METERS REGULATE INCORRECTLY	WORN OR DAMAGED PARTS	DISASSEMBLE AND CHECK FOR USE OR DAMAGE
INCORRECT READING	INDICATOR MALFUNCTION	CHECK THE CALIBRATION. REPLACE THE FLOW METER
THE FLOW METER DOES NOT FILL AFTER CLEANING	INCORRECT ASSEMBLY	CHECK THE ASSEMBLY AND RELOCATION OF THE FLOW METER
ELECTROTHERMAL ACTUATOR NOT WORKING	ELECTRICAL OR MECHANICAL PROBLEM	CHECK THE ELECTRICAL CONNECTIONS. REPLACE THE ACTUATOR IF NECESSARY
THE ELECTROTHERMAL ACTUATOR DOES NOT CLOSE	INCORRECT ASSEMBLY	CHECK THAT THE PLASTIC ADAPTER IS TIGHTLY SCREWED ONTO THE VALVE BODY
SLOW OPENING/CLOSING OF THE ELECTROTHERMAL ACTUATOR	ROOM CHRONOTHERMOSTAT MALFUNCTION	CONTACT A SPECIALIST TECHNICIAN
NOISE DURING OPERATION OF THE ELECTROTHERMAL ACTUATOR	VIBRATIONS AND/OR INCORRECT ASSEMBLY	ENSURE THE ACTUATOR IS SECURELY ASSEMBLED AND USE VIBRATION ISOLATORS IF NECESSARY
LOSS OF PRECISION DURING OPENING/CLOSING OF THE ELECTROTHERMAL ACTUATOR	WEAR OF INTERNAL PARTS	REPLACE THE ELECTROTHERMAL ACTUATOR
ELECTROTHERMAL ACTUATOR OVERHEATING	WEAR OF INTERNAL PARTS	IF IT PERSISTS REPLACE THE ELECTROTHERMAL ACTUATOR
MANIFOLD BAR LEAKS	WORN SEALS	CHECK AND REPLACE THE SEALS
MANIFOLD BAR LEAKS	DEFECTIVE WELDS	CHECK THE WELDS OF THE MANIFOLD AND LOOK FOR POSSIBLE HOLES OR MICROPOROSITY. EVALUATE WHETHER TO REPLACE THE BAR
MANIFOLD BUS BLOCKAGE	ACCUMULATION OF SEDIMENT OR LIMESCALE	CLEAN THE BARS REGULARLY AND USE UPSTREAM FILTERS TO PREVENT SEDIMENT ACCUMULATION
INACCURATE THERMOMETER READING	INCORRECT POSITIONING OR THERMAL FLUCTUATIONS	CHECK THE INSTALLATION OF THERMOMETERS AND VERIFY THAT THERE ARE NO SIGNIFICANT THERMAL FLUCTUATIONS
MECHANICAL DAMAGE TO THE THERMOMETER	ACCIDENTAL IMPACTS OR EXCESSIVE PRESSURE	THERMOMETER REPLACEMENT
AIR/WATER RELIEF VALVE DOES NOT OPEN	MECHANICAL DEBRIS ACCUMULATION BLOCK	CLEANING OF THE VALVE (CLOSING THE SYSTEM)
AIR/WATER RELIEF VALVE DOES NOT CLOSE	INTERNAL OBSTRUCTIONS	CLEANING OF THE VALVE (CLOSING THE SYSTEM)
AIR/WATER RELIEF VALVE LEAKAGE	DAMAGED AND/OR WORN SEALS	SEALS REPLACEMENT (CLOSING THE SYSTEM)

9. DISASSEMBLY, DEACTIVATION AND SCRAPPING

At the end of the life of the manifolds, before disposing of them permanently, think about whether they can be used for other purposes.

If it is necessary to dispose of them, disassemble them when the system is stopped using the keys indicated in the installation chapter.

Demolition and disposal of the manifolds are the sole responsibility of the owner who must act in compliance with the laws in force in their country regarding safety, respect and protection of the environment. At the end of its useful life, the product must not be disposed of together with municipal waste. It can be delivered to the appropriate separate collection centres set up by the municipal administrations or to specific retailers that provide this service.

Disposing of the product in a differentiated manner prevents possible negative consequences for the environment and health, resulting from its inadequate disposal, and facilitates recovery of the materials of which it is composed in order to obtain important saving of energy and resources.

We reserve the right to make improvements and changes to the described products and related technical data at any time and without notice. The information contained in this technical communication does not exempt the user from strictly following the existing regulations and standards of good technique.

ICMA SpA declines all responsibility in the event of faults and/or accidents if the installation has not been performed in accordance with the technical and scientific standards in force and referring to the manuals, catalogues and/or related technical provisions indicated by ICMA SpA.