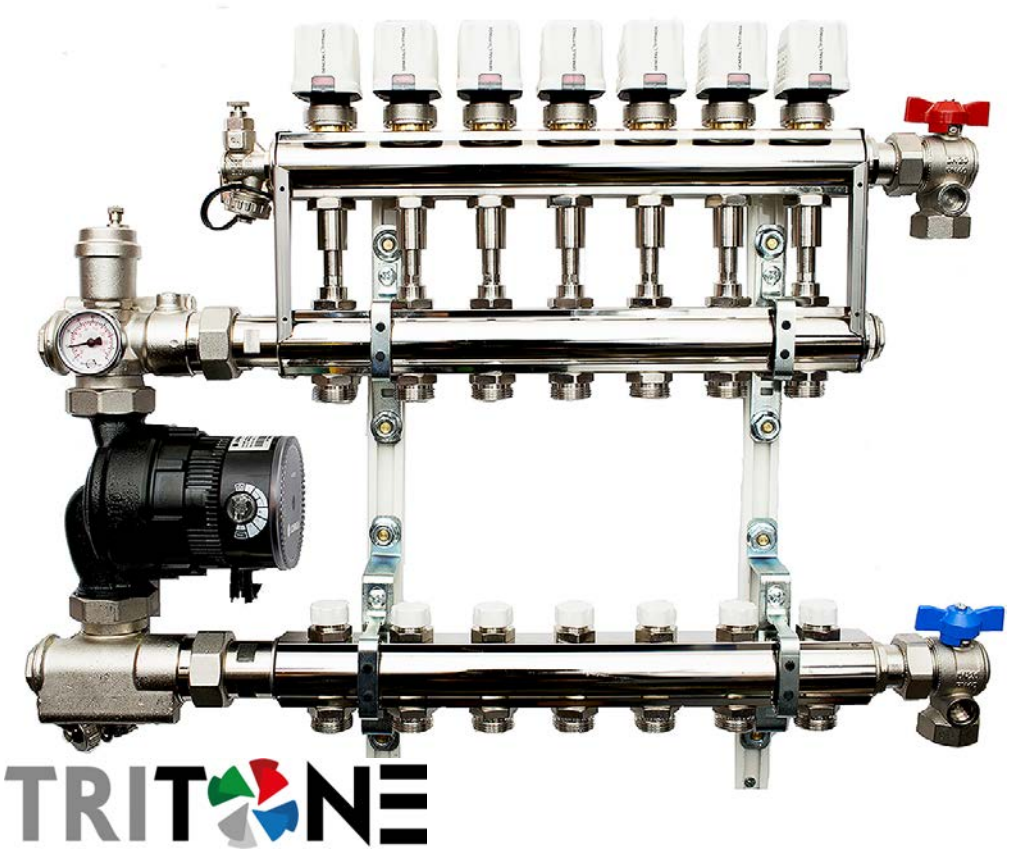
Manifolds for heating and cooling



TRITONE

Datasheet Tritone Varmo

Mixing unit

GENERAL FITTINGS
YOUNIQUE · ITALIAN

Contents

Mixing unit

TRITONE

DESCRIPTION

TRITONE is an all in one compact injectionmixing control unit for the distribution of waterat high and low temperature, for heating andcooling system.
Compatible with all high and low temperaturegenerators.
In order to give a real answer to the marketrequirements, TRITONE has been developedand created by GENERAL FITTINGS to ease thejob of architects, engineers and installers in therealization of the systems.
TRITONE is a mixing control unit with constant flow and adjustable temperature for each single circuit independently.

ADVANTAGES

- Patented
- Ideal for all types of systems and heat generators
- It is possible to manage different temperatures in each room
- Unique manifold for low as well as for high temperature heating systems.
- Freedom of floor covering selection (even after installation)
- Compatible with integrated domotic systems
- Silent
- Adjustable circuit temperature + constant flow rate = greater comfort
- Slower room cooling
- Less starts of the heat generator = greater comfort
- It works both with heating and cooling systems

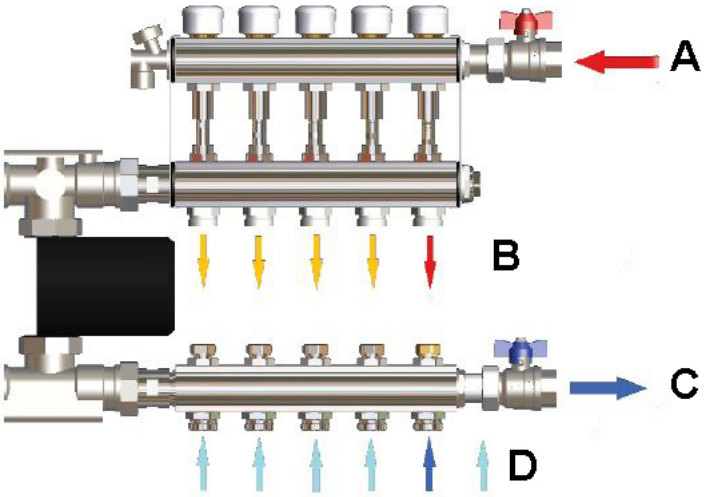
FIELDS OF APPLICATION

APPLICATIONS		T. max	Max. pressure
	low temperature heating (floor)	+80°C	7 bar
	low temperature heating (wall)	+80°C	7 bar
	low temperature heating (ceiling)	+80°C	7 bar
	heating	+80°C	7 bar
	cooling	+80°C	7 bar

DIFFERENT TEMPERATURES FOR EACH ROOM

TRITONE overcomes the distinction between advantaged and disadvantaged position rooms.
You can set the circuit temperature of the rooms in a very few easy steps.
The flow rate supplied by the generator is kept constant in all the rooms.

GENERATORS TO CONNECT TRITONE TO



LEGEND	DESCRIPTION
A	ENTRY FLOW FROM HEAT GENERATOR (PRIMARY)
C	RETURN TO HEAT GENERATOR (PRIMARY)
B	ENTRY FLOW TO LOOPS AND HEATED TOWEL RACKS (SECONDARY)
D	RETURN FLOW FROM LOOPS AND HEATED TOWEL RACKS (SECONDARY)

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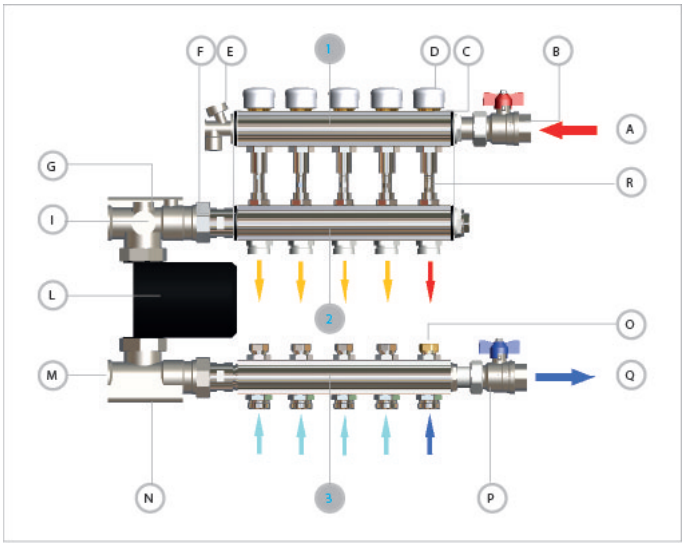
The TRITONE injection control unit can be fed by any heat generator which produces low temperature water (30 °C-45 °C) or high temperature water, to a maximum of 80 °C (suggested temperature:max 70 °C).
The most common types of hot watergenerators are:
- Sealed chamber boiler
- Condensation boiler
- Biomass/fireplace boilers
- Heat pumps
- Geo-heat exchangers
- All heat generators that guarantee a constant flow rate to the manifold

NOISE LEVEL

TRITONE is equipped with an extremely silentlatest generation pump. This allows the mixingcontrol unit to be installed in any room, even thosemore sensitive to heat (for example bedrooms).The noise level is 22.8 dB.

HYDRAULIC DIAGRAM



LEGEND	ELEMENT	LEGEND	ELEMENT
A	Hot water from generator	I	Thermometer
B	Entry flow primary circuit shut-off valve	L	Pump
C	Mechanical actuator	M	Pump connection
D	Protective cap	N	Exhaust valve
E	Filling valve / venting valve	O	Lockshield
F	Check valve	P	Return primary circuit shut-off valve
G	Pump connection	Q	Return water to generator
1-2-3	Bar manifolds	R	Injector

FUNCTIONING

The liquid (A) comes from the heat generator and enters the TRITONE manifold (1) through the ball valve (B). The liquid is thrust by the pump of the heat generator into the injectors (R) that send it to the loops of the secondary circuits or to the high temperature utilities.
The return liquid of the loops of the secondary circuit enters the manifold (3):
•if mixed it is partially recalled by the pump of the control unit (L)
• if coming from the high temperature loops (heated towel rack or radiators), it is recalled by the pump of the heat generator (Q) passing through the valve (P).
The high temperature return circuit must be positioned in the closest connection to the return in the heat generator (valve P).The low temperature return circuit transits from the valve unit (M) recalled by the pump (L), then from the unit (G) from the check valve (F) entering the manifold (2) where it mixes with the high temperature liquid through the injectors (R) coming from the heat generator (A) again entering in circulation.
The return manifold (3) can be supplied with mechanical memory lockshield (O) which is always fully open, or with flow meters (on demand) also in the fully open maximum flow position.
The control unit is completed by the filler valve (E) upon which a venting valve and an exhaust valve (N) are fitted.

The circulator complies with the ERP regulations on energy saving.

CONFIGURATION

SUPPLIED INSTRUMENTS	
1” and 1”1/4 brass bar	CW603N
M30x1.5 connection spindle	Brass CW617N
Shutoff valves with ¾” connection	Brass CW617N
Venting valve	Brass CW617N
2 to 13 way shunt	Eurocone
Injectors	Brass CW617N
PUMP	
Pump	Variable flow rate pump
energy-saving (ERP)	
Electric supply	230Vac/50Hz
Pump connections	1”1/2 centre distance 130mm
Protection class	IP44
MISCELLANEOUS	
Knob	ABS
Thermometer	0...80°C

OPTIONAL INSTRUMENTS	
Euroconus Adapters	Brass CW617N
Return flow meter	1 - 4 lt
1” fitting	Brass CW617N
1” 1/4 fitting	Brass CW617N
DRAWER	
Recessed drawer	Coated iron, RAL 9010
Support brackets	Coated iron, RAL 9010
Screws and bolts	Galvanised iron
MISCELLANEOUS	
Circuit thermometers	4.8 x 1.2 cm
Electrothermal head	230Vac with 4 wires
Room thermostat	ON/OFF, wireless chronothermostat-thermostat
Control unit	8 relay 230Vac module
Antenna	Active antenna

TEMPERATURE ADJUSTMENT FOR SECONDARY LOOPS LIQUID

TRITONE was designed so that each injector corresponds to a secondary distribution loop. Each injector can be tuned independently from the others.
The adjustment of the liquid temperature (secondary balancing) must be carried out after the electrical connection of electrotemic heads and thermostats (or equivalent).

TEMPERATURE OF HEAT GENERATOR LIQUID

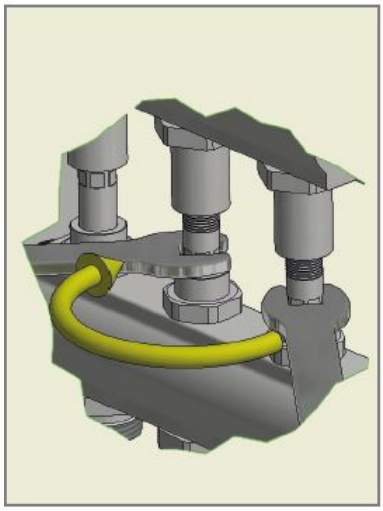
We propose two cases:
1. Environments with high temperature device (for example heated towel rack or radiator) and low temperature (for example radiant floor system).
The liquid temperature of the primary circuit must be the same as the device which requires high temperatures.
2. Environments with only low temperature device (for example radiating panel heating).
The temperature of the liquid of the high temperature flow (primary) must be at least 10° higher than the highest temperature requested by the system flow (secondary), anyhow never lower than 40-45 °C. We recommend 50 °C.
According to standard UNI EN 1264-4 (Water based surface embedded heating and cooling systems), the temperature of the floor should be lower than 29 °C, aside from rare cases in areas closed to the external walls or to windows.

ADJUSTMENT OF THE LIQUID TEMPERATURE IN THE LOOP

TRITONE injectors are tuned with the default setted points. The liquid temperature of the loops therefore varies depending on the liquid temperature of the heat generator.
The liquid temperature of the loops connected to TRITONE can be modified at any time in a simply and quick way.
The temperature of each loop can be increased or decreased by simply adjusting the injectors according to the project or environment confort.
After calibrating the injector, the appropriate controls must be carried out. The temperature variation of the loop can be checked and tuned quickly with contact thermometers pointed on the secondary loops pipes.

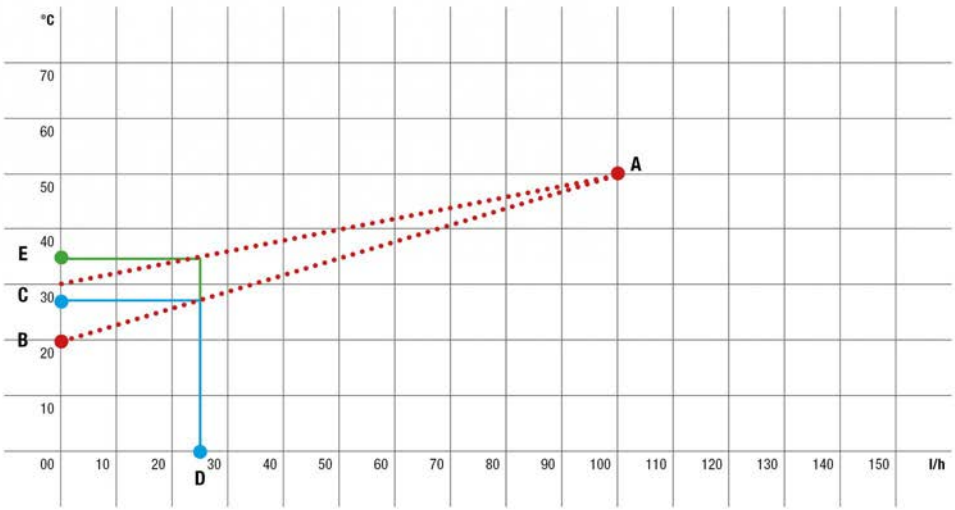
OPERATION OF THE TUNING OF SECONDARY LOOPS LIQUID TEMPERATURE

Temperature is controlled by turning the injectors with a simple 11mm spanner.
- Turn the injector clockwise to raise the temperature of the circuit to the maximum temperature set in the heat generator
- Turn the injector anticlockwise to obtain the desired temperature by mixing of the delivery and return liquids.
Use contact thermometers to check the temperature.



CALCULATION OF THE SYSTEM FLOW RATE

Since TRITONE is a mixing unit with constant flow and adjustable temperature, to calculate the flow rate of the system and verify its correct functionality it is necessary to set up a simple graph in which:
A. is the point of intersection between the value of the flow temperature from the heat generator (e.g. 50 °C) and that of the overall flow rate of the circuit as per project (e.g. 100l / h)
B. indicates the average return temperature that can be displayed on the thermometer placed above the circulator (e.g. 20 °C)
C. is the delivery temperature of the secondary circuit (in example 27.5 °C)
D. is the consequent flow rate of the secondary circuit that can be calculated from the intersection of the value of C with the AB axis (in example 25l / h)
For example, when the average return temperature is 30 °C, the flow temperature will be 35 °C (point E).

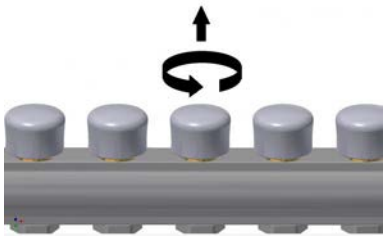


ELECTROTHERMAL HEADS OR ELECTROMECHANICAL ACTUATORS

The electrothermal head is an electromechanical actuator which controls opening and closing (ON/OFF) of TRITONE's mechanical shutter.
General Fittings supplies electrothermal heads with 4-wire 230Vac power supply, with auxiliary control to switch off the pump.

ELECTROTHERMAL HEAD ASSEMBLY

General Fittings heads are fitted on the thermostatic spindles/shutters of the manifolds with a M30x1.5 thread.
The installation procedure is as follows:
- remove the protective cap
- place the thermostatic head on the spindle/shutter
- screw the metal ring nut by hand
- perform the electrical connections as per diagram.



BALANCING THE LOOPS

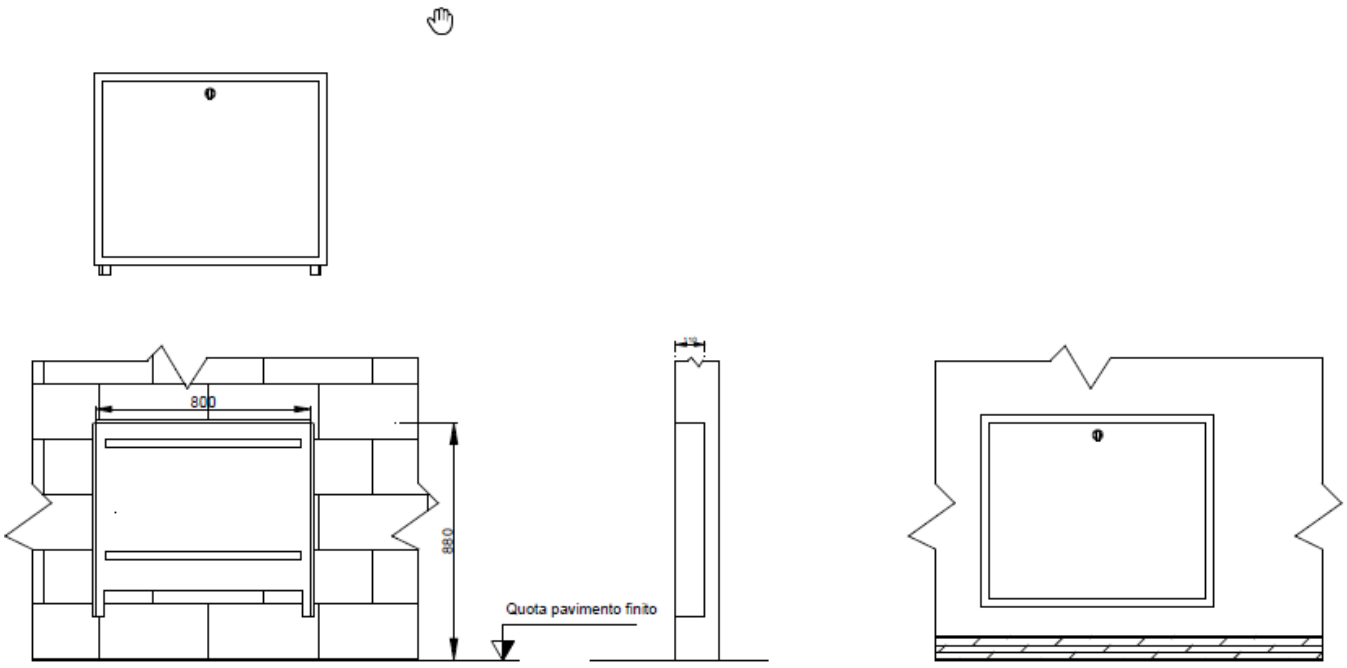
TRITONE does not require balancing the flow rate of the circuits, as it is a constant flow rate control unit. It is however possible to adjust the temperature of each individual circuit.
Whether TRITONE is supplied with mechanical lockshield memory or with flow meter on the return of the secondary circuit, their adjustments must never be modified without consulting our technical department.
TRITONE is equipped with lockshields or flow meters on demand at the complete opening position.

FILLING THE SYSTEM

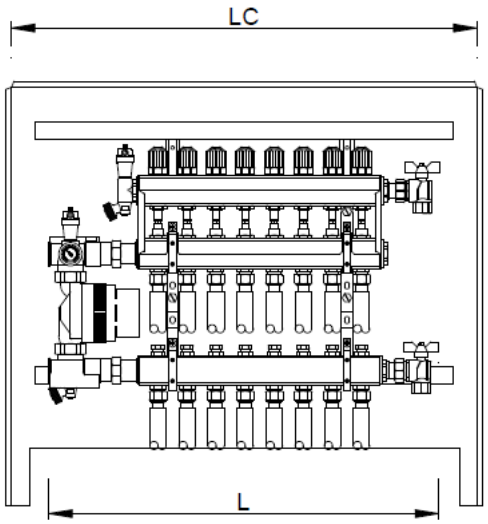
Filling the system is a delicate operation which must be performed by skilled personnel.
It is aimed having the minimum amount of air possible inside the pipes which in certain situations could determine malfunctioning.
Close both the entry flow ball valve (B) and the return flow ball valve (P).
2. Connect the liquid flow to the filler valve (E) applied to the manifold (1).
3. Close all the connections (D) of the loop on the manifold (1), except the first closest to the filler valve(E): it is closed by turning the supplied plastic caps mounted on the thermostatic spindles clockwise.
4. Close all the lockshields/flow meters (O) applied to the manifold (3), except the one on the connections left open
5. Open the water flow on the filler valve (E).
6. Open the exhaust valve N on the manifold (3), making sure there is absolutely no air.
7. Close the exhaust valve (N).
8. Close the connection just filled (D) and the respective lockshield (O).
9. Open the connection after the one just closed (D)

TYPE OF CASE AND POSITIONING

TRITONE is supplied in basic configuration coupled to a case (optional), the size of which is indicated below.
It can also be used with third-party recessed metal cases, with the size indicated below.



CASE DIMENSIONS



MIXING UNIT	L	LC
2 connections	370 mm	720 x 700 mm
3 connections	420 mm	720 x 700 mm
4 connections	470 mm	720 x 700 mm
5 connections	520 mm	720 x 700 mm
6 connections	570 mm	720 x 700 mm
7 connections	620 mm	720 x 700 mm
8 connections	670 mm	720 x 900 mm
9 connections	720 mm	720 x 900 mm
10 connections	770 mm	720 x 900 mm
11 connections	820 mm	720 x 1000 mm
12 connections	870 mm	720 x 1000 mm
12x3/8"x12	920 mm	720 x 1000 mm

CERTIFICATIONS

COUNTRY	CERTIFICATION	COUNTRY	CERTIFICATION

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ASSEMBLY INSTRUCTIONS

1. Open the box

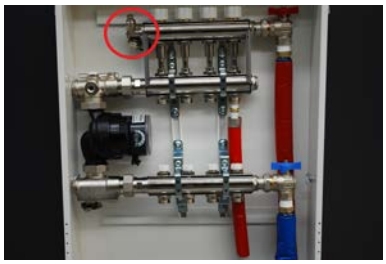
2. Remove the TRITONE mixing control unit.

3. Install the control unit in the specific case, first releasing it from the top brackets and then from the bottom ones.

4. Connection of entry/return flow primary circuits from heat generator.

5. Connection and tightening of entry/return flow secondary circuit from high temperature and low temperature system.

6. Hydraulic connection from which to fill the system.



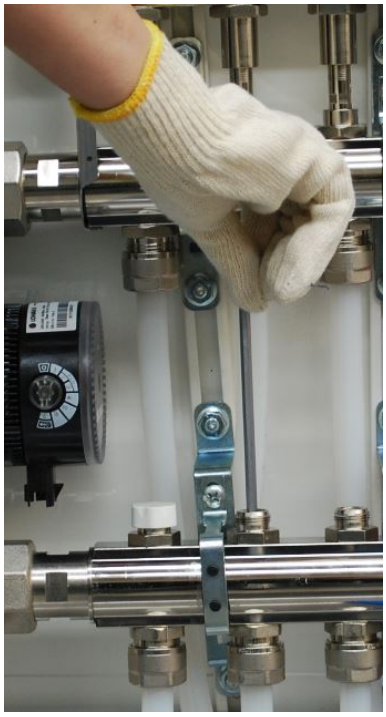
7. Filling the system: close the entry/return valves of the primary circuit (red and blue);open manually the first thermostatic shutter and turn the specific knob anticlockwise.

STEPS 7-10 MUST BE REPEATED FOR AS MANY TRITONE CONFIGURATION CHOSEN CONNECTIONS.

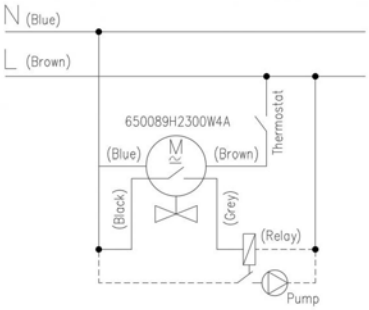
8. Filling the system: close the following shutters by turning the specific knobs clockwise.

9. Filling the system: open the first lockshield by turning the Allen wrench anticlockwise.

10. Filling the system: close the following lockshields by turning the Allen wrench clockwise.



11. Electrical connection.



12. Liquid temperature adjustment of secondary circuits with 11 mm spanner.

GENERAL FITTINGS SPA
Via Golgi 73/75, 25064 Gussago (BS) - ITALY
te. +39 030 3739017
www.generalfittings.it