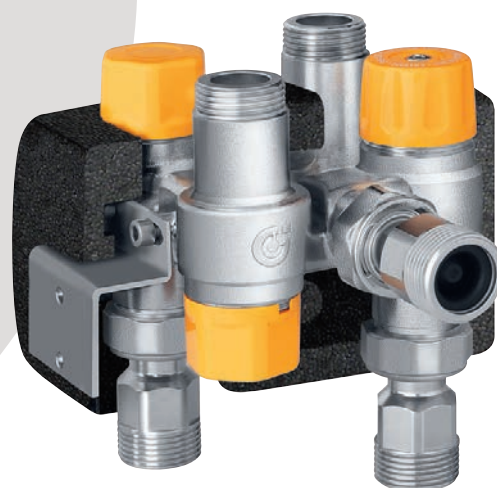
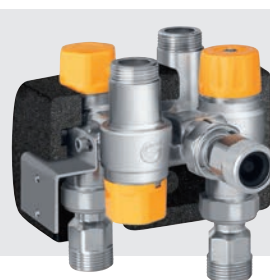


262 and 263 solar

thermostatic connection kit



262 and 263 solar thermostatic connection kit



263



262

Application

The Altecnic solar storage-to-boiler connection kits automatically control and optimise the thermal energy contained in the solar water storage, ensuring that domestic hot water is distributed throughout the system at a controlled optimum temperature.

They ensure that users always receive domestic hot water at the set temperature and switch the boiler on if the temperature of the water coming from the solar storage falls below the set point.

The kits are available in two versions, depending upon the type of boiler and whether domestic hot water is stored or instantaneous.

Depending upon the kit, they are supplied complete with a thermostatic diverter valve, special thermostatic control device designed to prevent boiler hunting and anti-scald thermostatic mixing valve.

These compact kits are designed for quick and easy installation in both new and existing systems.

They come complete with a pre-formed shell protective cover.

Patent application No. MI2008A001813.

Product Range

Product Code	Description
262350	solar thermostatic connection kit for systems with stored hot water.
263320	solar thermostatic connection kit to an instantaneous boiler - compression ends.
263350	solar thermostatic connection kit to an instantaneous boiler -male threaded ends.

Technical Specification

Material

Thermostatic mixing valve

Body:	262	dezincification resistant alloy BS EN 12165 CW602N, chrome plated
	263	dezincification resistant alloy BS EN 1982 CB752S, chrome plated
Obturator:		PSU
Springs:		stainless steel
Seals:		EPDM
Knob:		ABS

Connections

Inlet and outlet:	262350 & 263350	¾" M with union
Boiler:	262350	¾" M with union
Boiler:	263350	¾" M
Inlet and outlet:	263320	22mm compression
Boiler:	263320	22mm compression

Technical Specification

Material

Diverter valve and thermostatic control device

Body:	262	brass BS EN 12165 CW617N, chrome plated
	263	dezincification resistant alloy BS EN 1982 CB752S, chrome plated
Obturator:		PSU
Springs:		stainless steel
Seals:		EPDM
Cover:		ABS
Union seals:		non-asbestos fibre

Pre formed insulation shell

262	Material:	PVC
	Thickness:	7 mm
	Density:	1.29 kg/dm ³
	Working temperature range:	-5 to 110°C
	Reaction to fire (BS EN 13501-1):	class B
263	Material:	EPP
	Thickness:	15 mm
	Thermal conductivity:	0.037 W/(m·K) at 10°C
	Density:	0.045 kg/dm ³
	Working temperature range:	-5 to 120°C
	Reaction to fire (UL 94):	class HBF

Performance

Thermostatic mixing valve

Medium:	drinking water
Max.	working pressure: 10 bar (static); 5 bar (dynamic)
Max. inlet temperature:	100°C
Adjustment temperature range:	35 to 55°C
Factory set:	43°C
Accuracy:	±2°C
Max. inlet pressure ratio (H/C or C/H):	2:1
Min. temperature difference between inlet hot water and the outlet mixed water to ensure anti-scald performance:	10°C
Min. flow rate for stable operation:	4 l/min
Performance to standards:	NF 079 doc. 8, EN 15092, EN 1111, EN 1287

Thermostatic diverter valve

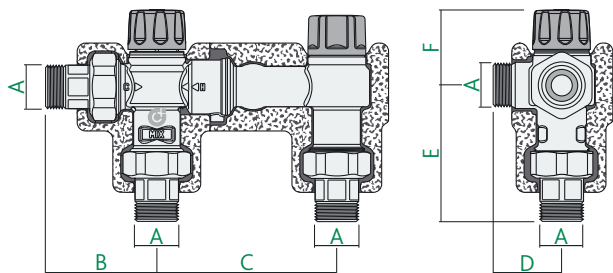
Max. working pressure:	10 bar
Max. differential pressure:	5 bar
Max. inlet temperature:	100°C
Factory set:	45°C
Accuracy:	±2°C

Thermostatic control device

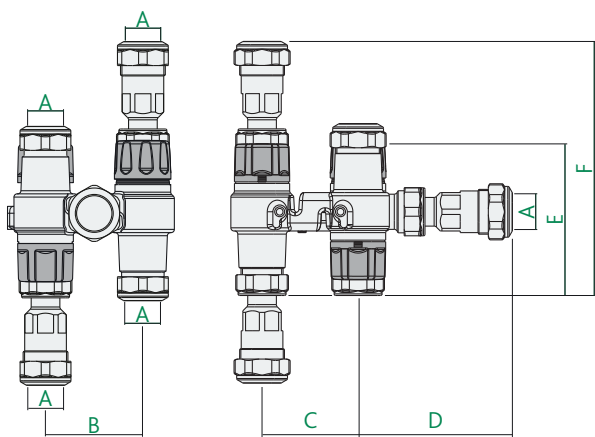
Max. inlet temperature:	85°C
Factory set:	30°C
Accuracy:	±2°C

262 and 263 solar thermostatic connection kit

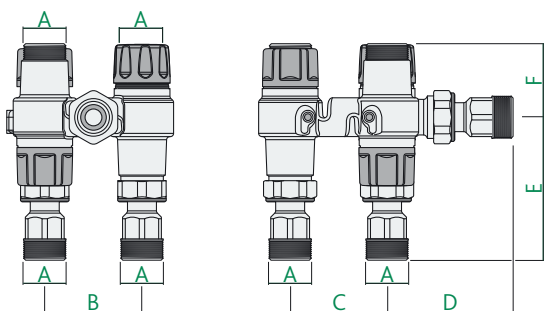
Dimensions



Code	A	B	C	D	E	F	kg
262350	G $\frac{3}{4}$ B	66.5	108.5	40	81	42.5	1.75



Code	A	B	C	D	E	F	kg
263320	Ø22	60	60	95.5	98	161	1.90



Code	A	B	C	D	E	F	kg
263350	G $\frac{3}{4}$ B	60	60	78	88.5	45.5	1.85

High Temperature and Solar Systems

In solar thermal systems with natural circulation in the primary circuit and a water storage cylinder with insulating jacket, the temperature of the domestic hot water in the cylinder can vary considerably depending upon the degree of solar radiation and can reach very high temperatures over long periods.

In summer, and if there is little water usage, the hot water in the cylinder can actually reach temperatures around 98°C before the temperature and pressure safety relief valves are actuated.

At these temperatures, the hot water cannot be used directly, because of the danger of scalding for the user.

Water temperatures over 50°C can cause burns very quickly. For example, at 55°C partial burn occurs in about 30 seconds, whereas at 60°C partial burn occurs in about 5 seconds.

High Temperature and Solar Systems

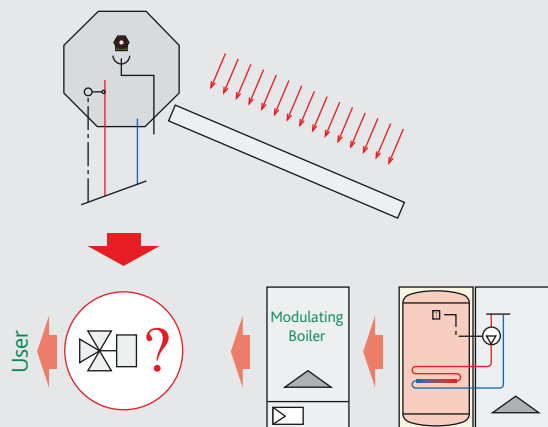
It is therefore necessary to use a thermostatic mixing valve able to:

- Reduce the temperature of the water distributed throughout the domestic water system to a value lower than that in the storage and suitable for the end user. For reasons of safety, it is recommended to set the temperature of the mixed water distributed to the users to values no higher than 50°C.
- Keep mixed water temperature constant despite variations in inlet temperature and pressure.
- Continuous monitoring without any loss in performance or problems due to the continuously high temperature of the incoming water (primary side of cylinder).
- Enable the high temperature water in the cylinder to last as long as possible, by distributing it to the user circuit at a reduced temperature.
- Have an anti-scald safety device in case of failure of the cold water supply.

Exposure Time to Cause Partial Burns

Temperature	Adults	Children 0 to 5 Years
70°C	1 s	-
65°C	2 s	0.5 s
60°C	5 s	1 s
55°C	30 s	10 s
50°C	5 min	2.5 min

Integration with the Boiler



Solar domestic water storage cylinders are normally installed in conjunction with a boiler or water heater. In this way the boiler or water heater can be switched on to produce domestic hot water when solar radiation is insufficient to raise the water to the required temperature.

The following actions are necessary to control this type of system automatically and ensure the correct distribution of domestic hot water:

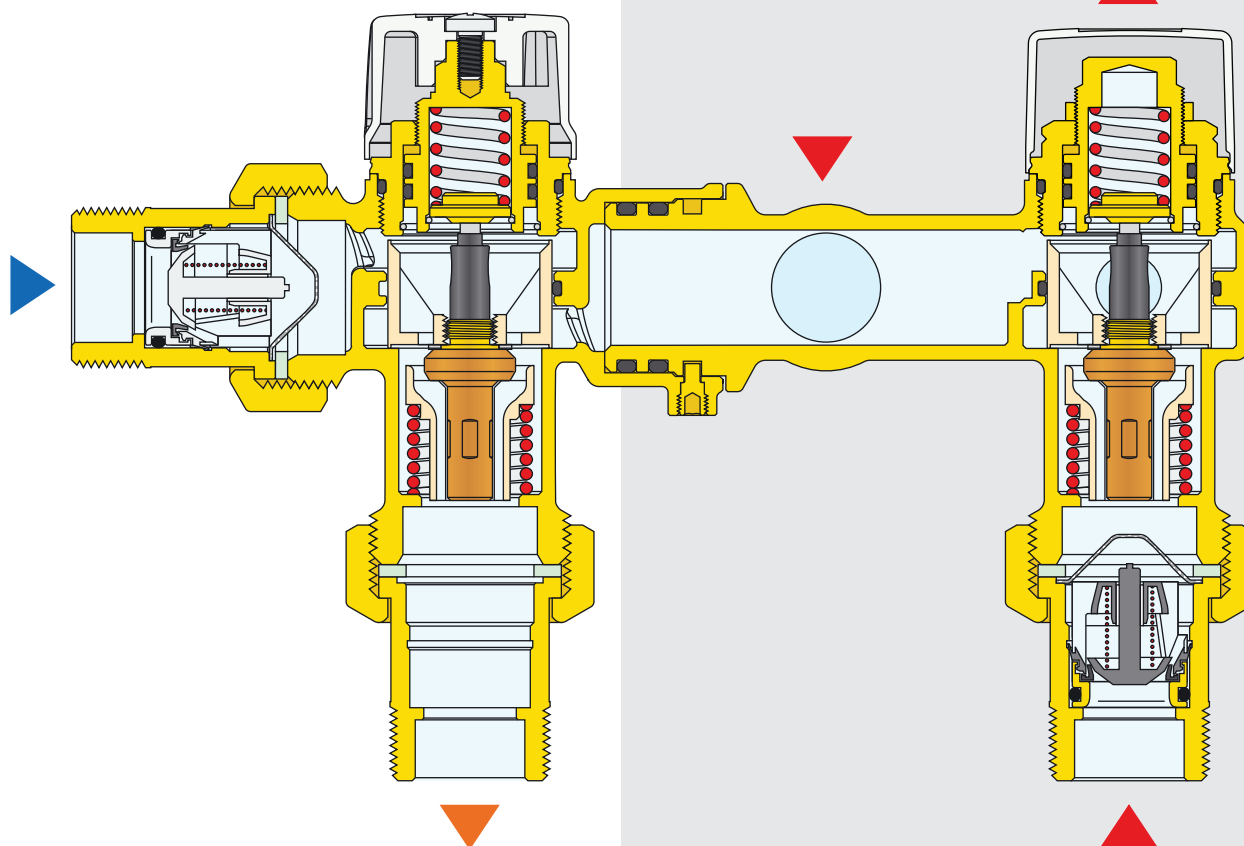
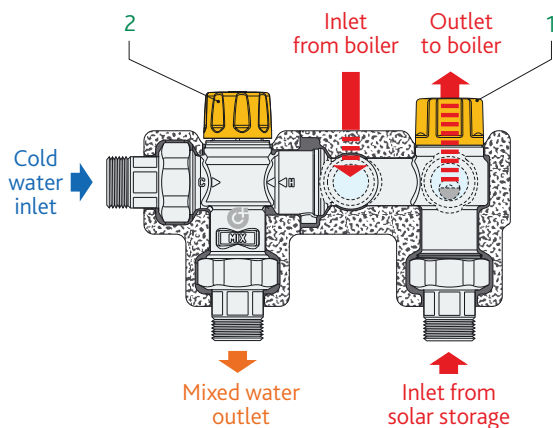
- Install a suitable thermostatic diverter valve between the solar circuit and the boiler or water heater, to divert hot water automatically in accordance with its temperature.
- Switch the boiler or water heater on if the temperature of the solar hot water is insufficient.
- Connect the solar hot water circuit to the boiler or water heater according to the functioning mode, which can be instant modulating or equipped with its own storage.

262 and 263 solar thermostatic connection kit

262 Kit

Components

- 1 Thermostatic diverter valve
- 2 Anti-scald thermostatic mixing valve



The joint between the thermostatic diverter valve and the anti-scald thermostatic mixing valve can rotate through 360° to satisfy all possible installation requirements.

Operating Principle

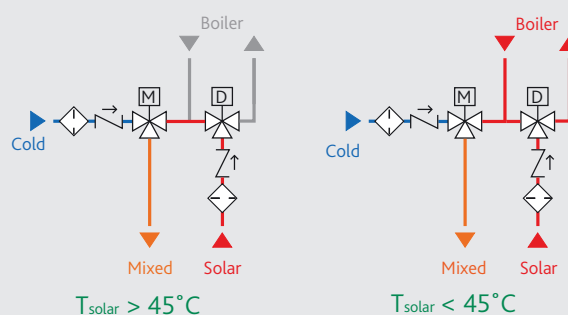
A thermostatic diverter valve (1), receives hot water coming from the solar water storage cylinder.

Depending on the set temperature (factory set at 45°C), the valve diverts the water automatically and in a proportional manner towards the user circuit or the boiler with storage circuit, with thermal integration.

The valve modulates the flow rates to optimise the energy contained in the solar storage cylinder and reduce boiler operation times to a minimum.

A thermostatic anti-scald mixing valve (2), constantly controls the water temperature sent to the user.

Schematic Diagram

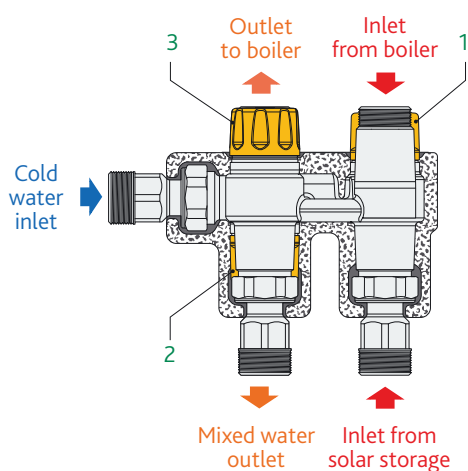


262 and 263 solar thermostatic connection kit

263 Kit

Components

- 1 Thermostatic diverter valve
- 2 Thermostatic control device
- 3 Anti-scald thermostatic mixing valve



Operating Principle

A thermostatic diverter valve (1), receives hot water from the solar water storage cylinder.

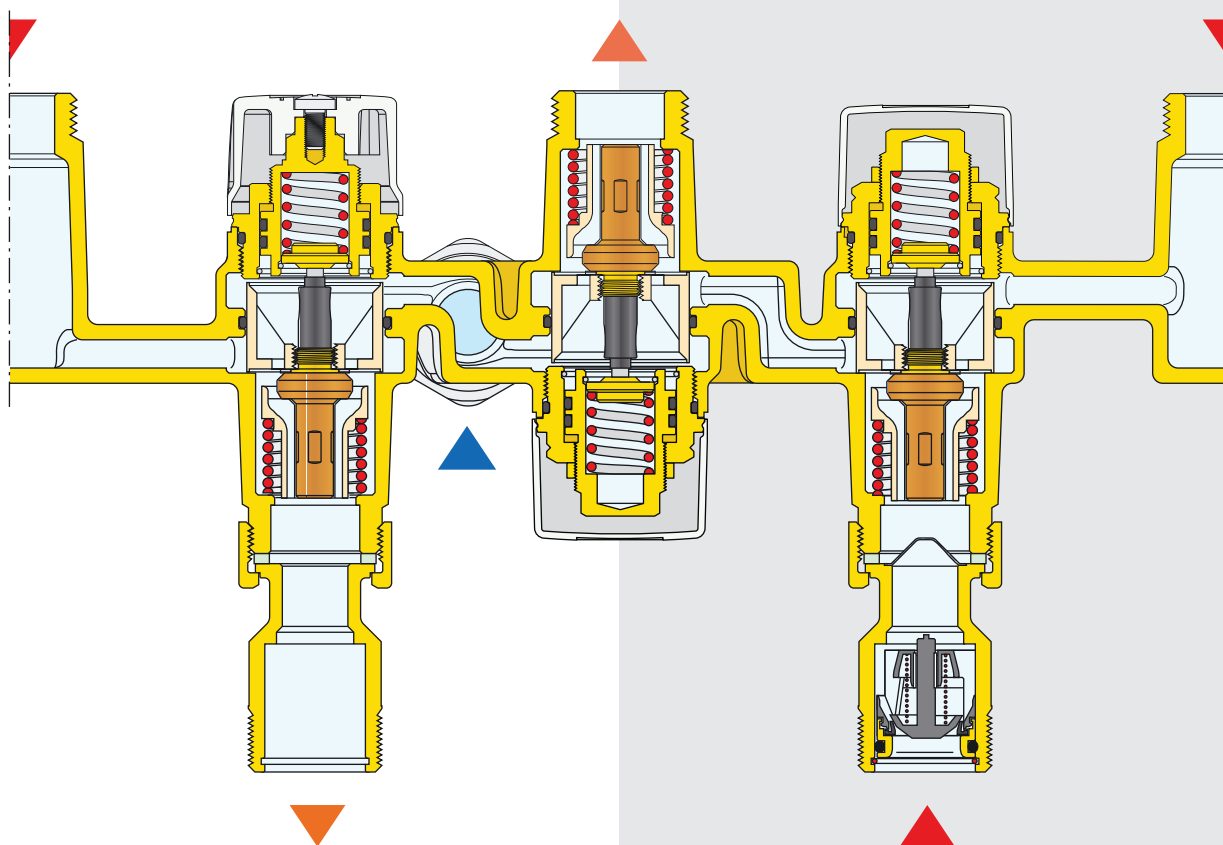
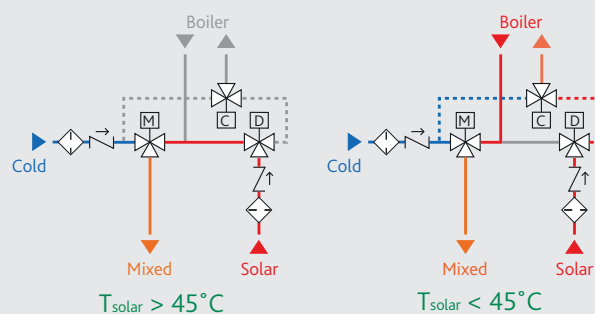
Depending on the set temperature (factory set at 45°C), the valve diverts the water automatically and in a proportional manner towards the user circuit or the boiler with storage circuit, with thermal integration.

The valve modulates the flow rates to optimise the energy contained in the solar storage cylinder and reduce boiler operation times to a minimum.

A specific thermostatic control device (2) limits the boiler inlet temperature to prevent it being switched on and off too often, which leads to hunting and irregular operation.

An anti-scald thermostatic mixing valve (3), constantly controls the water temperature sent to the user.

Schematic Diagram



262 and 263 solar thermostatic connection kit

263 Construction Details

Operational flexibility

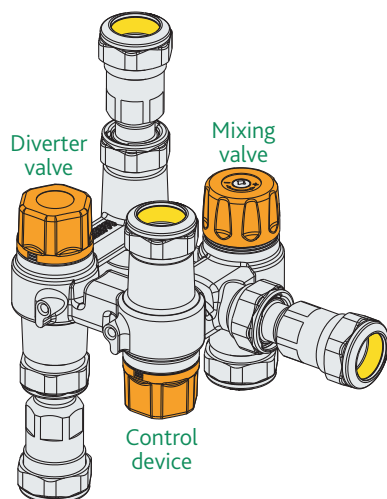
The kit is made using a single casting to minimise the overall size and make installation easier. It is designed for direct connection to the circuit without the need for sections of pipe or fittings between the various valves.

High resistance to temperature

The internal control components of the diverter valve and the mixing valve are designed to maintain constant performance with inlet hot water temperatures up to 100°C, in continuous operation.

Anti-scale materials

The materials used in the kits are selected to eliminate seizing due to limescale deposits. All functional parts are made using a special anti-scale material with a low friction coefficient, which ensures over time performance.



Diverter valve

The thermostatic diverter valve at the kit inlet features a built-in sensor, which is immersed directly in the flow of hot water coming from the solar storage cylinder.

Through the action of the thermostat controlling obturator movement, the flow rate is adjusted proportionally and automatically, without the need for external energy sources.

This means there is no need for other temperature probes in the circuit and electrical wiring.

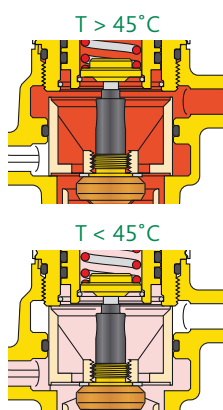
Thermostatic control device

If used in conjunction with an instantaneous boiler, the water temperature at the boiler inlet may be sufficiently higher enough ($T > 35^{\circ}\text{C}$) to prevent the boiler from modulating and transferring heat to the water in domestic cylinder.

Low flow rates may lead to the boiler being switched on and off too often, with consequent hunting that prevents the boiler from operating efficiently.

The thermostatic control device in the 263 series limits the occurrence of this phenomenon, as it keeps the water temperature at the boiler inlet at a constant low value ($T = 30^{\circ}\text{C}$) by mixing the solar hot water coming from the diverter valve with the cold water at the inlet.

This means the boiler always operates with a suitable thermal difference between the inlet and the outlet, resulting in optimal management of the energy produced.

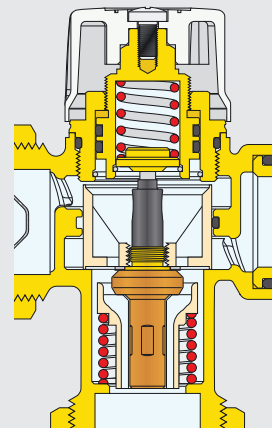


263 Construction Details

Thermostatic mixing valve

A special anti-scald thermostatic mixing valve offering high thermal performance is positioned at the kit outlet in order to control the temperature and protect the user.

The mixing valve keeps the temperature of the hot water at the kit outlet, supplied to the user, at a constant level, even in the event of variations in temperature and pressure at the inlet.



Anti-scald safety function

As a safety measure, in case of failure of the cold water supply, the valve immediately shuts off the flow of the hot water. This prevents dangerous burns.

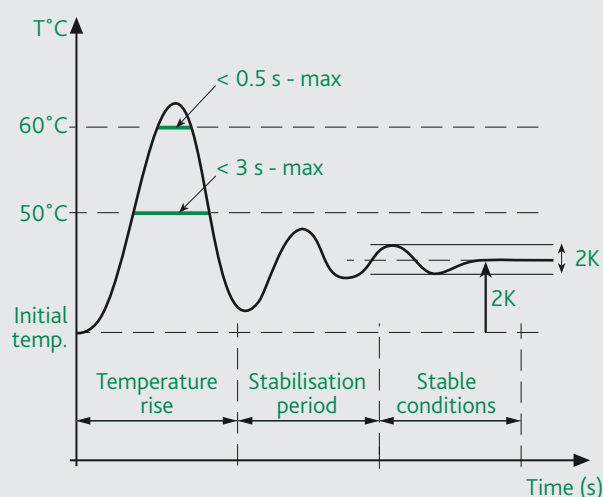
This performance is guaranteed if there is a minimum temperature difference between the inlet hot water and the outlet mixed water of 10°C.

Also in case of failure of the hot water supply, the valve shuts off the cold water port and thus the outlet mixed water to prevent dangerous thermal shocks to the user.

Thermal transient

During transient, following rapid changes in pressure, temperature or flow rate, the outlet mixed water temperature increases with respect to the initial set point and this increase must be of limited duration to guarantee safety.

The anti-scald mixing valve always ensures that these conditions are respected.



262 and 263 solar thermostatic connection kit

Application

Solar storage-to-boiler connection kits are generally installed near the boiler, on the pipe hot water pipe coming from the solar storage, to ensure a constant temperature of mixed water supplied to the user.

Given their flow rate characteristics, they can be installed to control the water temperature both for single user points (e.g. washbasins, bidets, showers) and for multiple users.

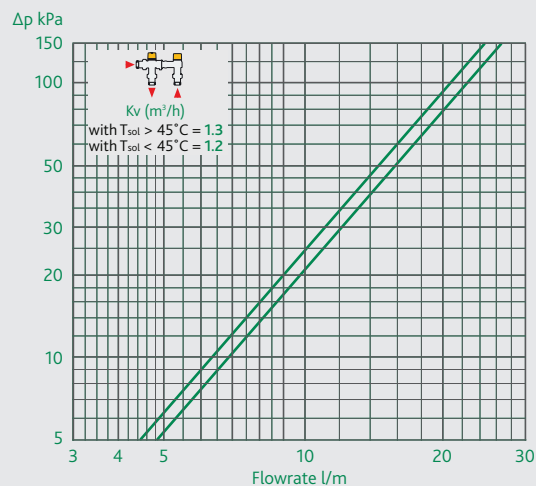
To ensure the mixed water is supplied at the set temperature, a minimum flow rate of 4 l/min is required to the thermostatic mixing valve.

Checking the head loss in the kit

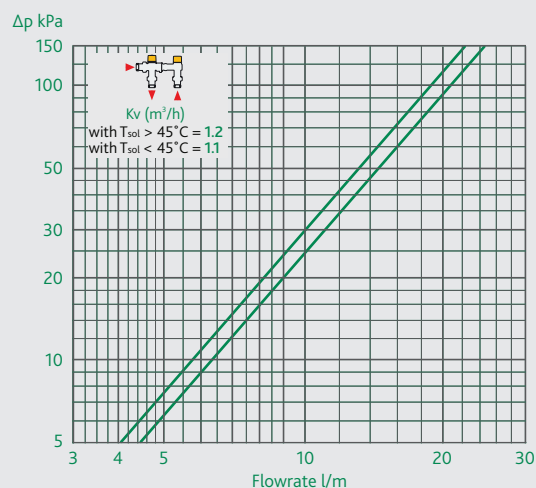
If the design flow rate is known and taking into account the simultaneous use of water outlets, the head loss produced by the kit can be checked using the diagram.

It is necessary to check the available pressure, downstream of the kit and the residual pressure to guaranteed water flow to the user.

262 Hydraulic Characteristic Kv values

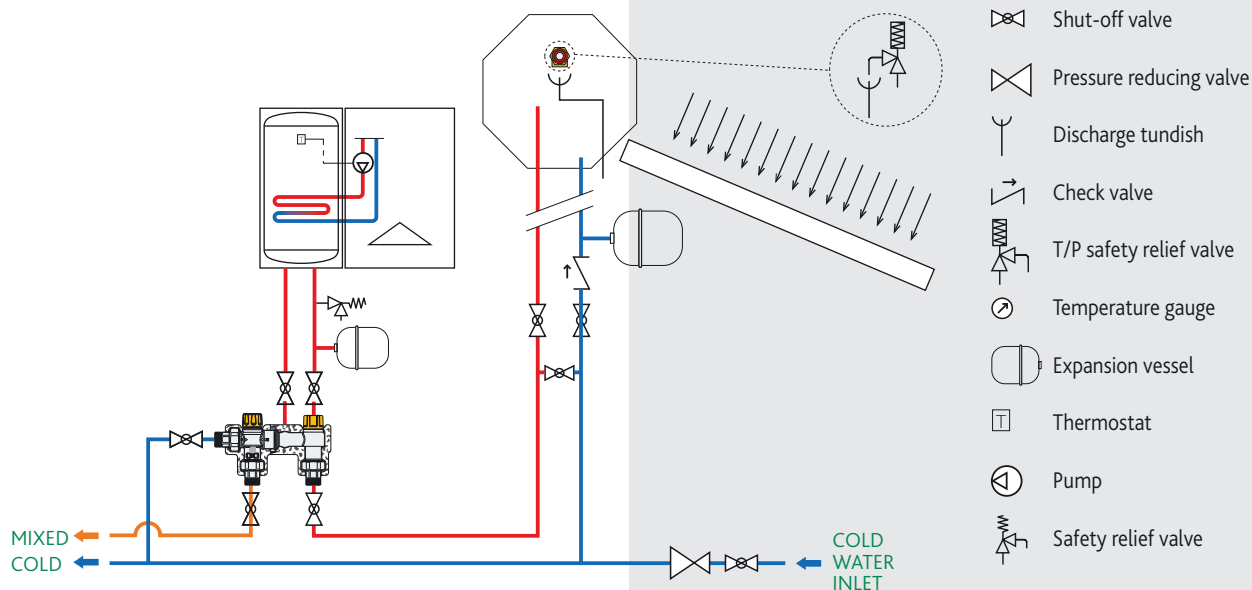


263 Hydraulic Characteristic Kv values



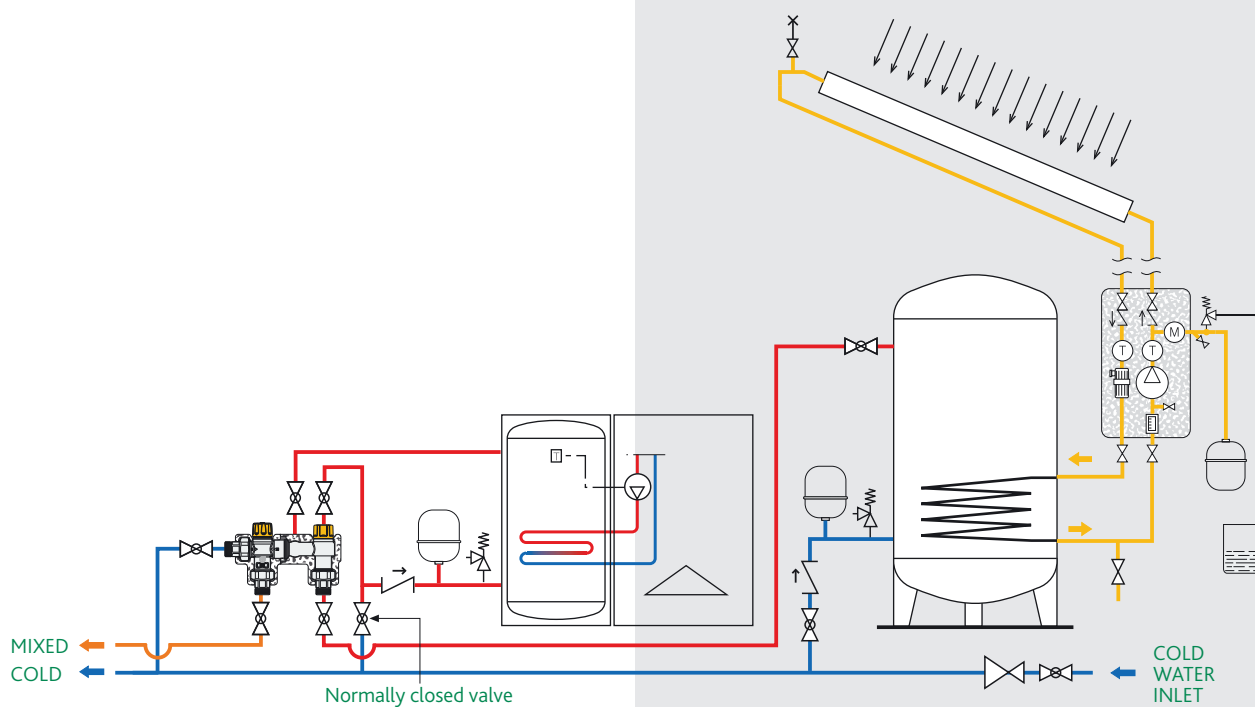
Typical Applications

262 - natural circulation solar system

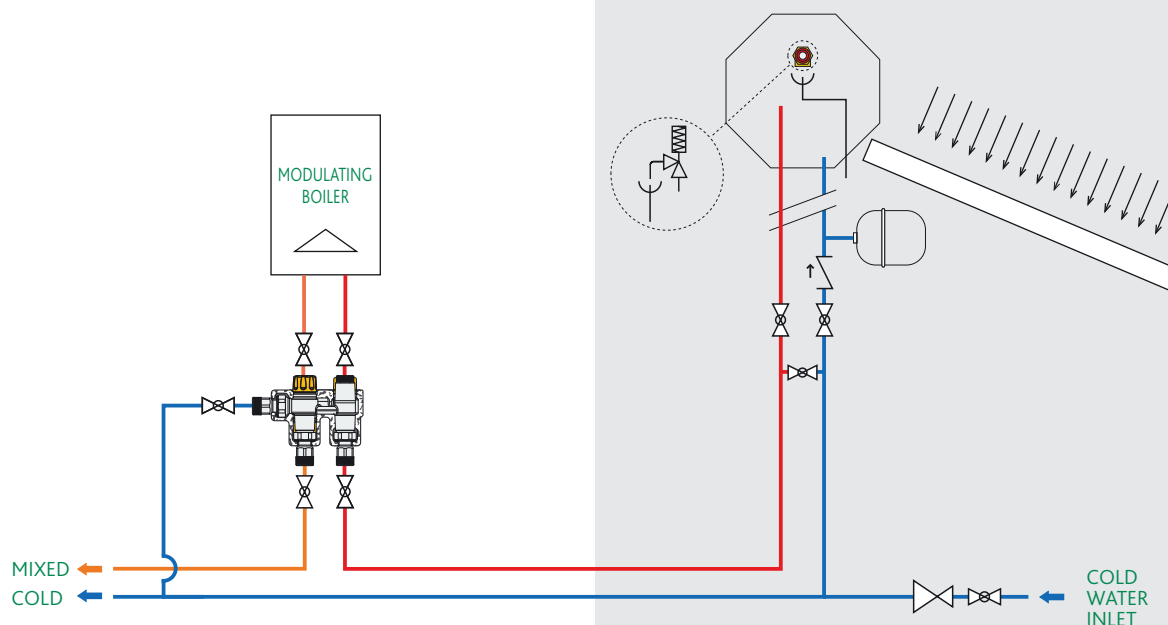


262 and 263 solar thermostatic connection kit

262 - pumped circulation solar system



263 - natural circulation solar system



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