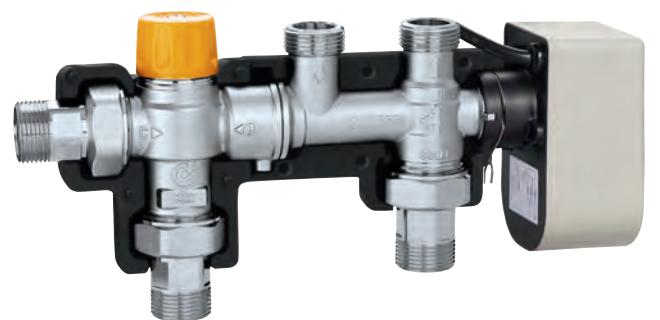


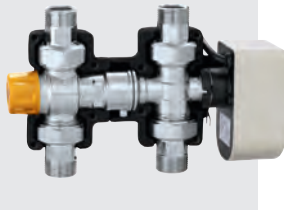
# 264 and 265 solar

thermostatic connection kit



altecnic

# 264 and 265 solar thermostatic connection kit



264



265

## 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 an anti-scald thermostatic mixing valve, motorised diverter valve and thermostat with temperature probe for the solar water storage.

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. MI2007A000936.

## Product Range

Product Code	Description
264352	solar thermostatic connection kit to an instantaneous boiler.
265352	solar thermostatic connection kit for systems with stored hot water.

## Technical Specification

### Material

#### Thermostatic mixing valve

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

#### Diverter valve

Body:	brass BS EN 12165 CW617N, chrome plated
Ball:	brass BS EN 12165 CW614N, chrome plated
Ball seal:	PTFE with EPDM 'O' ring
Controls stem seal:	2 EPDM 'O' rings
Union seals:	non-asbestos fibre

#### Actuator

Protective shell:	self extinguishing polycarbonate
Colour:	grey RAL 9002

## Technical Specification

### Material

#### Pre formed insulation shell

Material:	PVC
Thickness:	7 mm
Density:	1.29 kg/dm <sup>3</sup>
Working temperature range:	-5 to 110°C
Reaction to fire (BS EN 13501-1):	class B

### Connections

Inlet and outlet:	¾" M with union
Boiler connection 265:	¾" M

### Performance

#### Diverter valve

Max. working pressure:	10 bar
Max. differential pressure:	10 bar
Working temperature range:	-5 to 110°C

#### Thermostatic mixing valve

Max.	working pressure: 10 bar (static); 5 bar (dynamic)
Adjustment range:	35 to 55°C
Factory set:	43°C
Accuracy:	±2°C
Max. inlet temperature:	100°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

#### Actuator - three contact type

Electric supply:	230 V
Power Consumption:	8 VA
Auxiliary microswitch contact rating:	0.8 A (230 V)
Protection class:	IP 44 (control stem in vertical position) IP 40 (control stem in horizontal position)
Operating time:	10 s
Ambient temperature range:	0 to 55°C
Dynamic torque:	6 Nm
Length of supply cable:	1 m

#### Thermostat

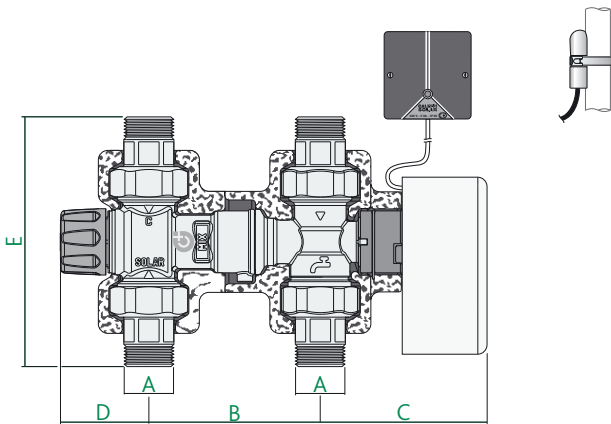
Electric supply:	230 V
Power Consumption:	10 (2+8) VA
Adjustable temperature range:	30 to 50°C
Factory set:	45°C
Box protection class:	IP 65

#### Temperature probe

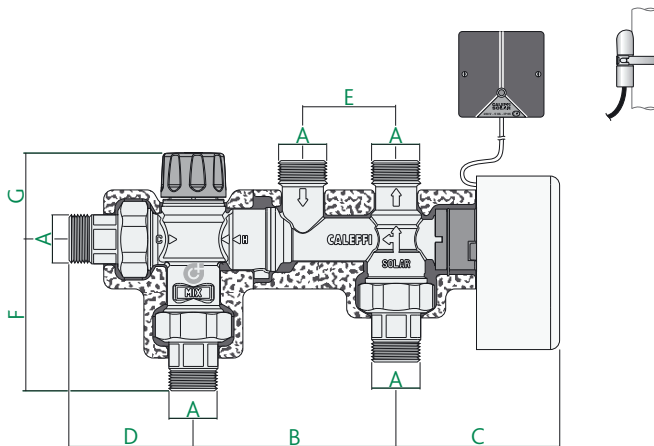
Working range:	-25 to 110°C
Time constant:	1 minute
Response:	100kΩ at 25°C
Two wire cable with Ø4.5 mm probe:	L = 2 m
Maximum distance:	10 m with 2 x 0.25 mm <sup>2</sup> cable 100mm with 2 x 0.5 mm <sup>2</sup> cable

# 264 and 265 solar thermostatic connection kit

## Dimensions



Code	A	B	C	D	E	kg
264352	G $\frac{3}{4}$ B	90	87.5	45	131	2.3



Code	A	B	C	D	E	F	G	kg
265352	G $\frac{3}{4}$ B	108.5	87.5	66.5	50	81	45	2.3

## 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.

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.

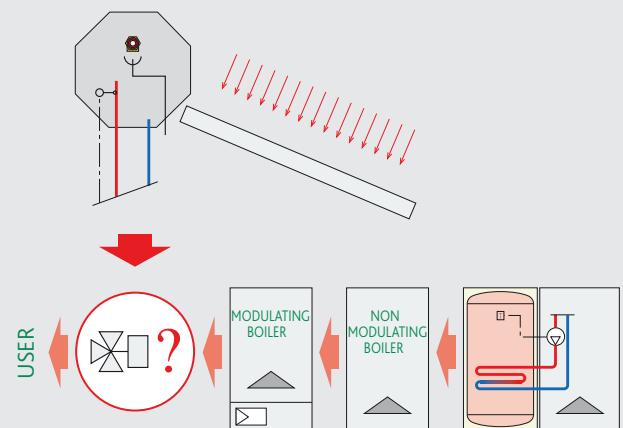
## High Temperature and Solar Systems

- 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:

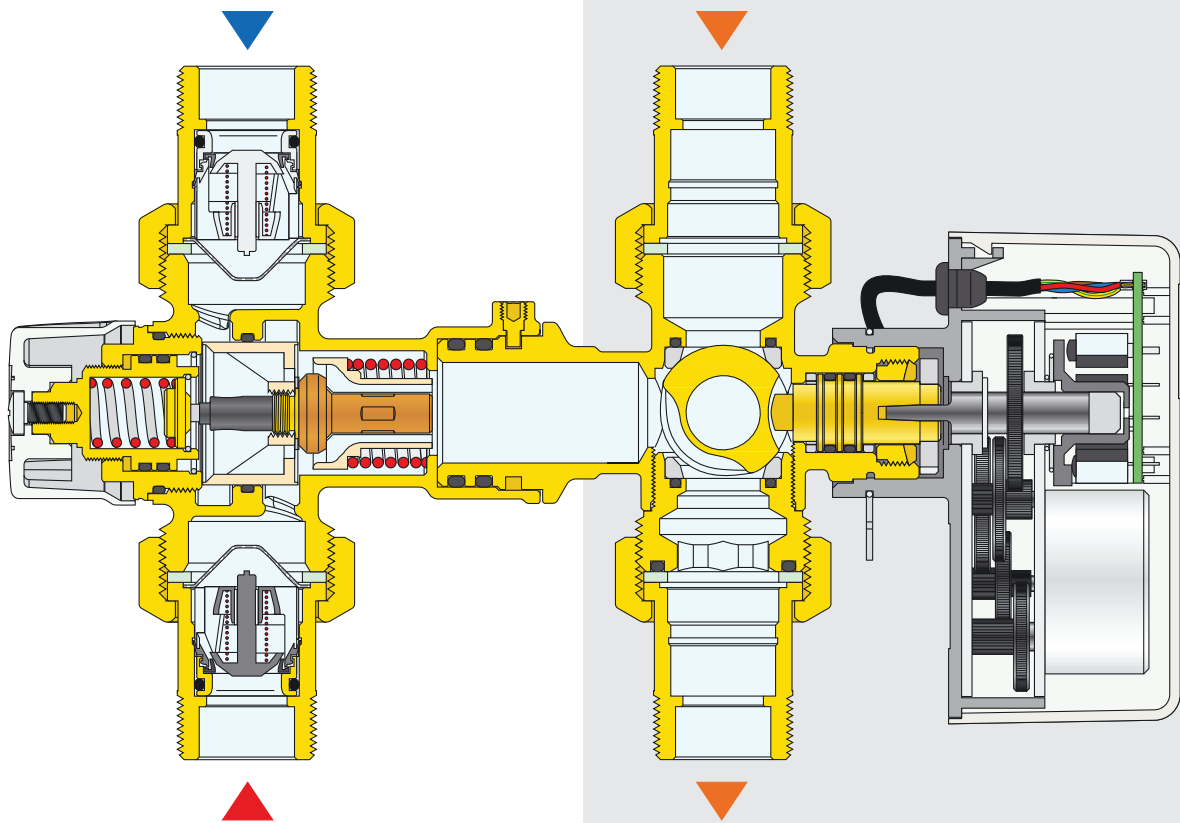
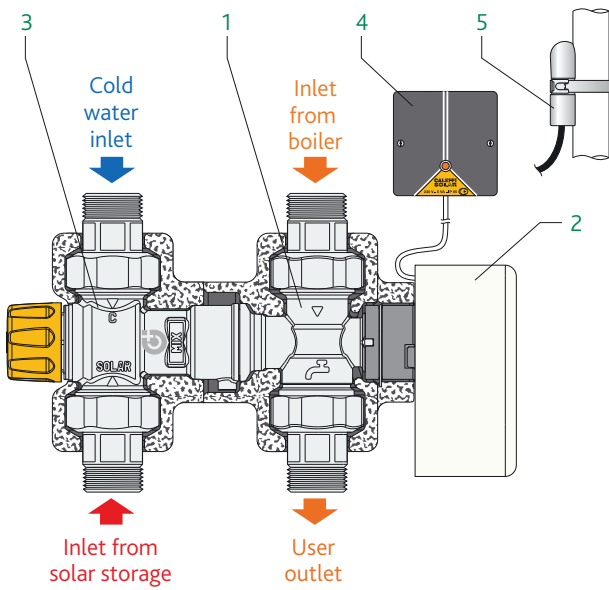
- Install a motorised diverter valve between the solar circuit and the boiler or water heater,
- Install a thermostat with temperature probe positioned in the solar water circuit, to operate the diverter valve depending upon the water temperature.
- Switch the boiler or water heater on if the temperature 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.

# 264 and 265 solar thermostatic connection kit

## 264 Kit

### Components

- 1 Diverter valve
- 2 Diverter valve actuator
- 3 Thermostatic mixing valve
- 4 Diverter valve control thermostat
- 5 Solar water storage temperature probe



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

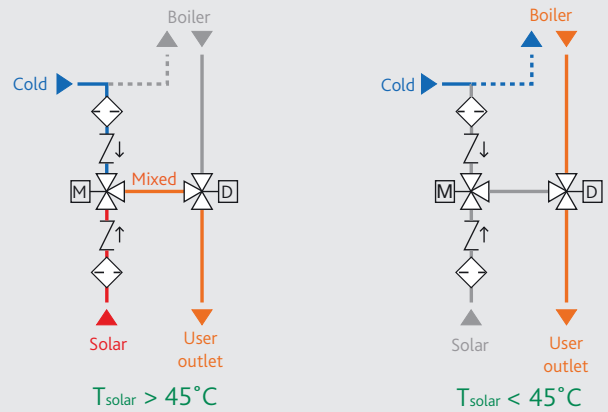
## Operating Principle

A thermostatic anti-scald mixing valve on the inlet controls the temperature of the water coming from the solar water storage v

The thermostat, by means of the probe positioned on the hot water flow from the solar storage, controls the diverter valve on the outlet.

Depending on the set temperature, the valve diverts water towards the user circuit or activates the boiler circuit, **without thermal integration.**

## Schematic Diagram





# 264 and 265 solar thermostatic connection kit

## Construction Details

### Mixing valve

#### 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

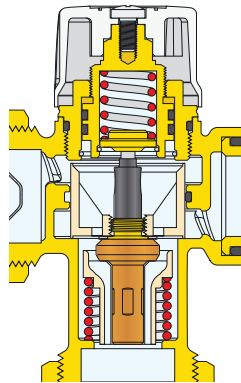
The materials used in the kits are selected to eliminate seizing due to limescale deposits. All functional parts are made using a special anti-scale material with a low friction coefficient, which ensures over time performance.

#### 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.



### Diverter valve

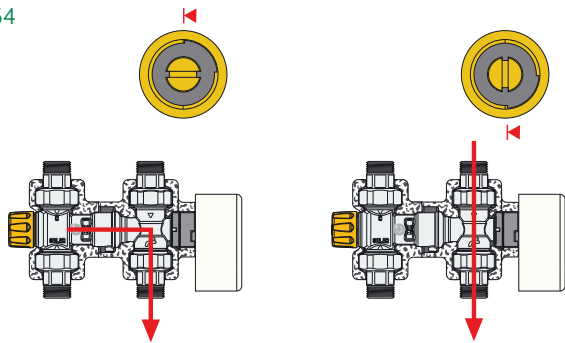
#### Direction of flow and position indicator

Removing the actuator reveals a slot at the top of the control stem on which the shaft of the actuator acts.

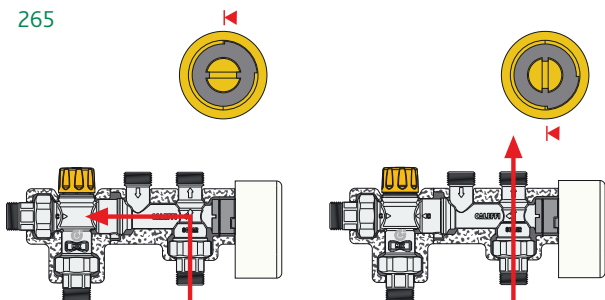
- this slot allows the valve to be opened and closed manually with a screwdriver.
- the slot position indicates the flow direction depending on the ball position. This is extremely useful during system commissioning and confirming flow paths if problems should occur during commissioning

Two diagrams follow here regarding the two valves types. As visible, the slot position shows the flow direction.

264



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## Construction Details

### Actuator

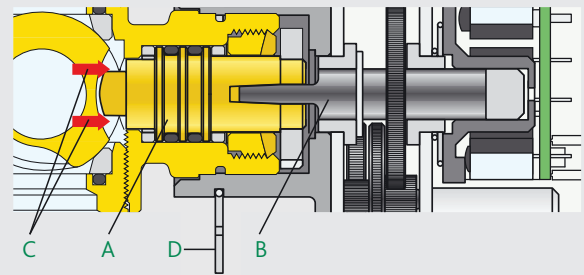
#### Drive transmission

A taper coupling allows a constant connection between the valve control stem (A) and the output shaft of the gear actuator (B).

This provides automatic compensation for the mechanical slack thanks to the thrust (C) of the fluid pressure on the control stem.

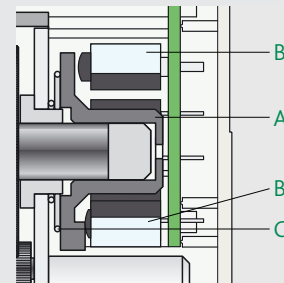
#### Valve-actuator coupling

An elastic steel fastener (D) allows the valve to be coupled to the actuator quickly and easily, by a simple clutch operation with automatic locking.



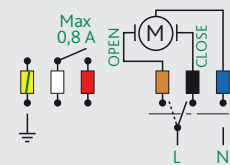
### Cam and stop limit microswitches

A cam (A) operates the stop limit microswitches (B). This cam, which can move vertically, is supported by a tapered spring (C). This keeps the cam in constant contact with the microswitches and compensates A cam (A) operates the stop limit



### Auxiliary microswitches

The auxiliary microswitch closes at an average valve aperture of 80%.



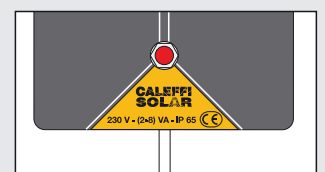
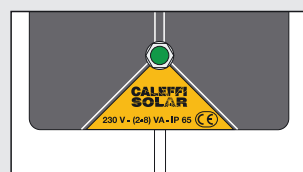
### Valve Position Indicator

The thermostat is equipped with a LED indicating the diverter valve position, showing whether it is connected to the solar circuit or the boiler.

The LED is a two colour type:

Green: solar circuit active

RED: boiler circuit active



# 264 and 265 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.

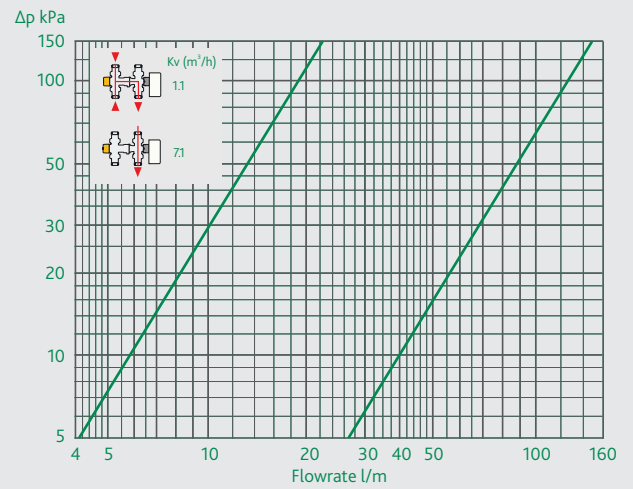
To ensure the mixed water is supplied at the set temperature, a minimum flow rate of 4 l/min is required to the thermostatic mixing valve.

## Checking the head loss in the kit

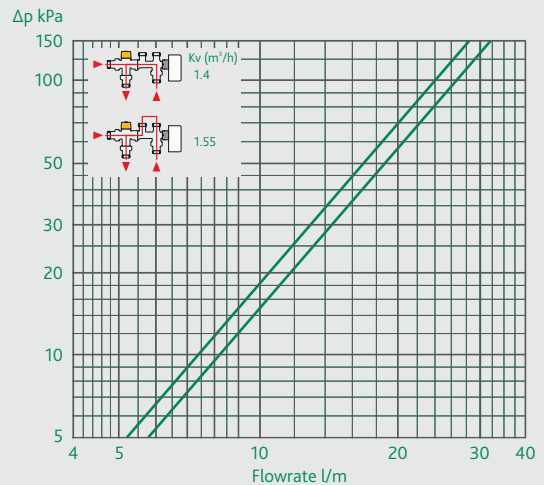
If the design flow rate is known and taking into account the simultaneous use of water outlets, the head loss produced by the kit can be checked using the diagram.

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

## 264 Hydraulic Characteristic Kv values

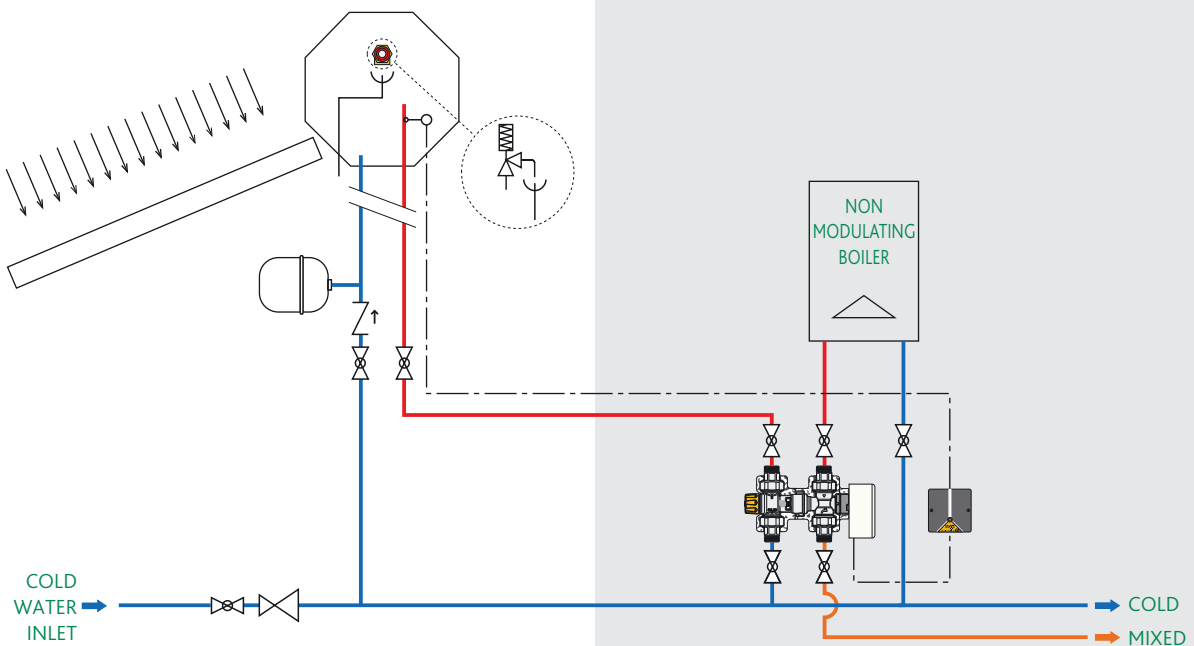


## 265 Hydraulic Characteristic Kv values



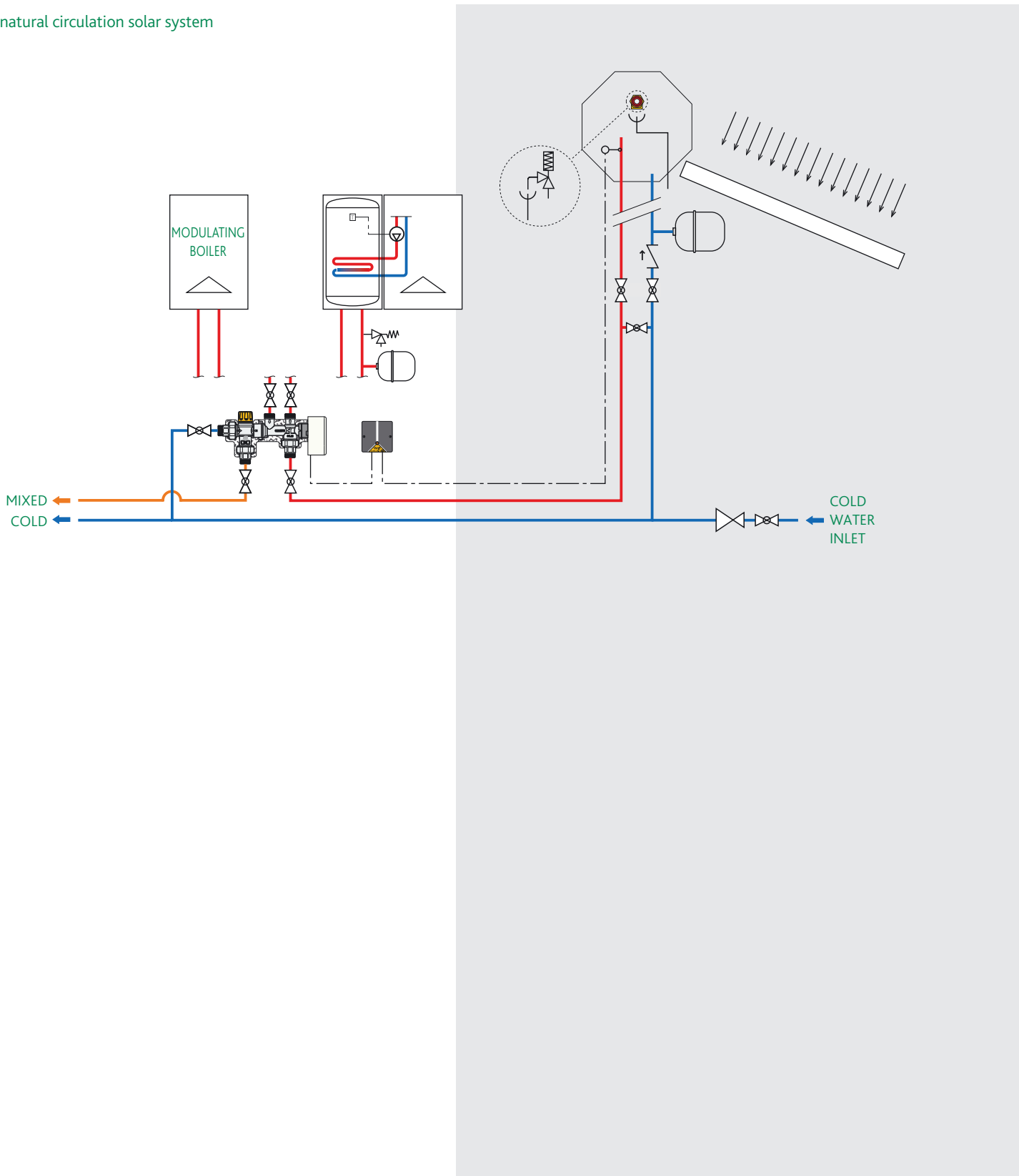
## Typical Applications

### 264 - natural circulation solar system



# 264 and 265 solar thermostatic connection kit

265 - natural circulation solar system



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AL 210 30-09-14

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