

280

anti-condensation valve



altecnic

280 anti-condensation valve



Function

The Altecnic anti-condensation valve connects between a biomass burning boiler and a direct or indirect heating system or domestic hot water system.

It automatically controls the return temperature to the boiler to avoid condensation, by means of an integral thermostatic sensor.

Keeping the boiler at a high temperature prevents condensation forming from the water vapour contained in the flue gases.

It can be used on central biomass boilers or residential biomass burners such as fireplace heating systems and solid fuel stoves and cookers

The anti-condensation valve gives the boiler a longer life and ensures greater efficiency.

Design

Multi-functional Body

The compact brass single body casting houses the thermostatic sensor and temperature gauge pockets enables immediate installation of the unit, either on the right or left of the biomass boiler, respecting the flow directions as shown.

The brass body prevents the formation of ferrous residues in the system, thereby helping to prolong the life of the boiler.

Anti-condensation valve

Anti-condensation valve incorporates a thermostatic sensor to control the temperature of water returning to the boiler, preventing the formation of condensation.

The sensor has been specifically designed to be removed from the valve body for maintenance, re-setting or replacement if necessary.

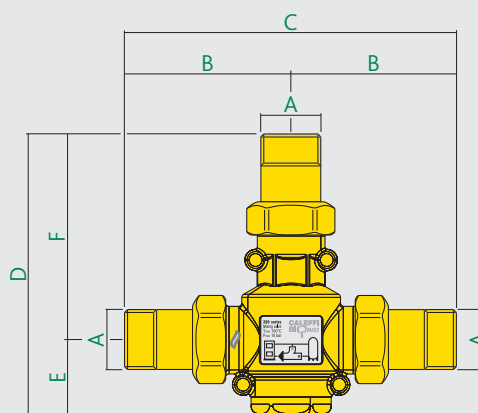
Pockets for Temperature Gauges

The body of the anti-condensation valve in sizes DN25 (1") and DN32 (1¼") have pockets for temperature gauges on the front and rear sides.

The pockets allow the installation of suitable temperatures gauges for measuring the three water temperatures and re-setting the thermostat if required.



Dimensions



Code	DN	A	B	C	D	E	F	kg
28005•	20	R¾	67.5	135	105.5	29	76.5	0.75
28026•	20	R1	67.5	135	105.5	29	76.5	0.83
28006•	25	R1	88.5	177	153.5	42	111.5	1.65
28007•	32	R1¼	97	194	157	40	117	2.05

Code 6th Digit

Setting	45°C	55°C	60°C	70°C
•	4	5	6	7

Technical Specification

Component	Material	Specification
Body:	DN20 DN25 & DN32	Brass Brass
Cap:	Brass	BS EN 12165 CW617N BS EN 1982 CB753S
Obturator:	PSU	BS EN 12164 CW614N Polymer
Spring:	Stainless steel	
Swing check valve:	PPS	Polymer
Sealing elements:	EPDM	
Union sealing washers:	Non-asbestos fibre	
Wax thermostatic sensor		

Performance

Medium:	water glycol solution
Max. glycol percentage:	50%
Max. working pressure:	10 bar
Max. operating temperature:	5°C to 100°C

Connections

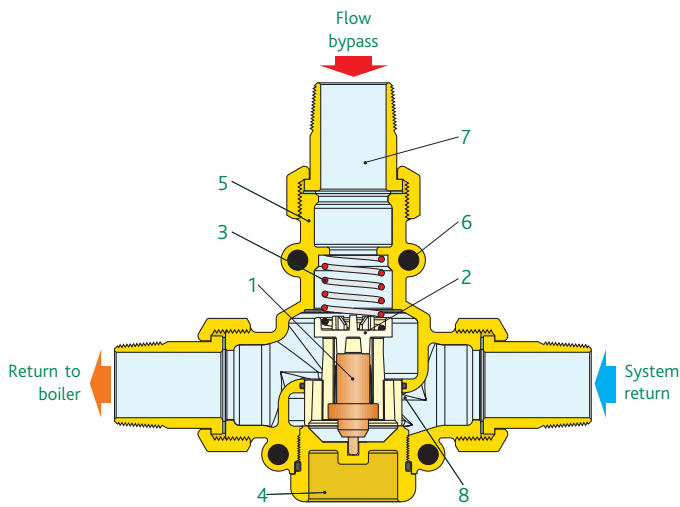
Pipe connections:	male taper with union BS EN 10226
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Anti-condensation valve

Setting temperature:	45°C, 55°C, 60°C & 70°C
Setting accuracy:	±2°C
Bypass complete closing temperature:	T _{set} + 10°C

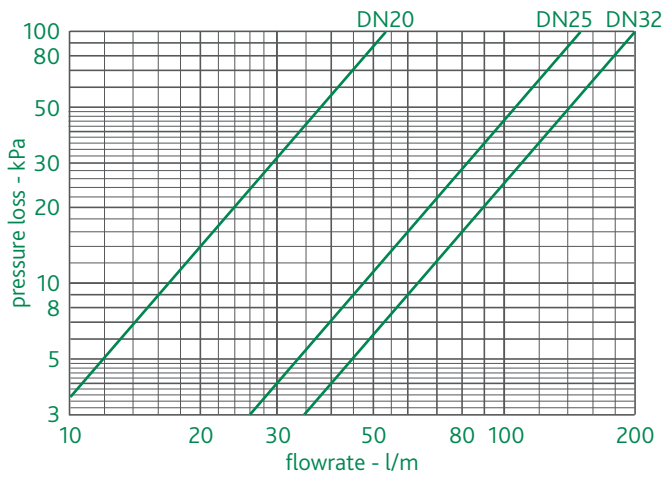
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Components



- 1 Anti- condensation thermostatic sensor
- 2 Obturator
- 3 Spring
- 4 Cap
- 5 Valve body
- 6 Temperature gauge pocket

Kv Values and Flowrates



Size	DN20	DN20	DN25	DN32
Connection	¾"	1"	1"	1¼"
Kv m³/h	3.2	3.2	9	12

The Wooden biomass and condensation build-up

Wooden solid fuel contains a variable moisture percentage depending on the type (logs, pellets, woodchips etc.) and seasoning.

Water vapour is released during the solid fuel drying phase inside the combustion chamber.

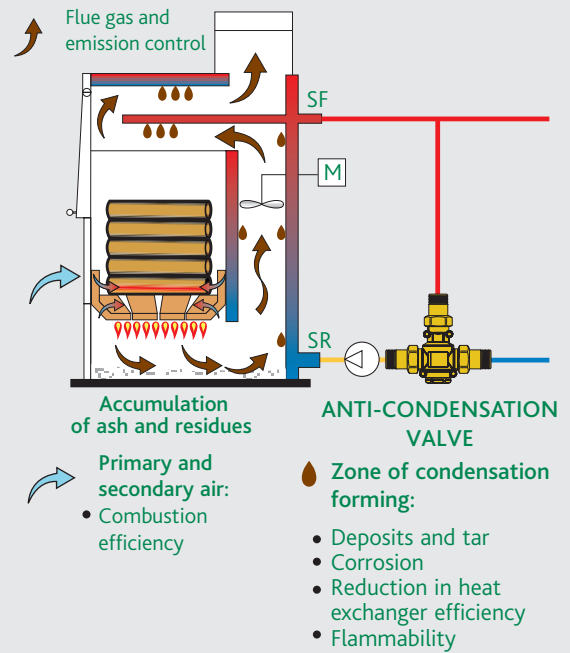
The presence of cold zones in the boiler or flue gas chimney can lower the temperature of the flue gas down to the dew point, causing condensation to occur.

Water vapour condenses onto the boiler surfaces, together with soot and part of the unburnt hydrocarbons contained in the flue gas, producing deposits and tar.

These substances stick to the walls of the boiler, covering most of the inner surfaces.

In addition to being dangerous due to its flammability, tar is damaging to the integrity of the boiler and limits the efficiency of the flue gas-system water exchanger.

By keeping the boiler walls at the highest possible temperature, the anti-condensation recirculation unit limits the formation of these substances, thereby increasing the combustion efficiency, controlling the emissions into the environment and prolonging the life of the boiler.



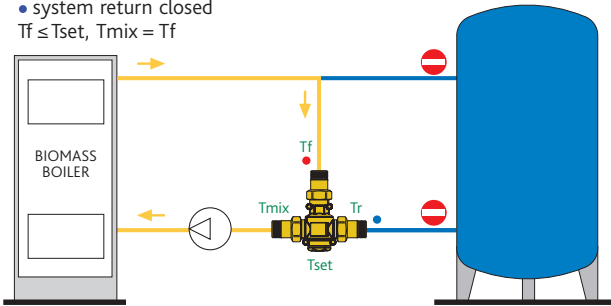
Operating Principle

The thermostat (1), which is completely immersed in the medium, controls the obturator (2) that regulates the flow through the bypass port (7) and back towards boiler.

As the boiler starts up from cold the anti-condensation valve re-circulates the water so that it brings the boiler up to temperature as quickly as possible.

$T_f \leq T_{set}$ SYSTEM START UP TRANSIENT

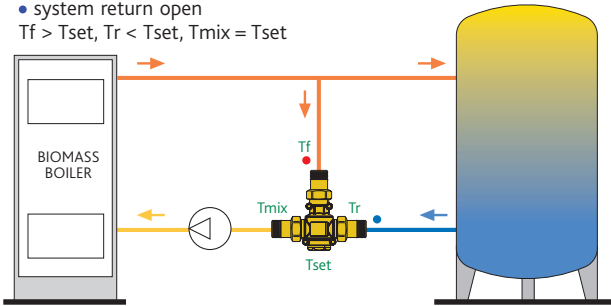
- by-pass open
- system return closed
- $T_f \leq T_{set}$, $T_{mix} = T_f$



When the flow temperature T_f exceeds the set temperature of the anti-condensation valve T_{set} , the units cold port (8) starts to open to produce mixed water T_{mix} , in this phase the system loading begins.

$T_f > T_{set}$ START OF SYSTEM LOADING

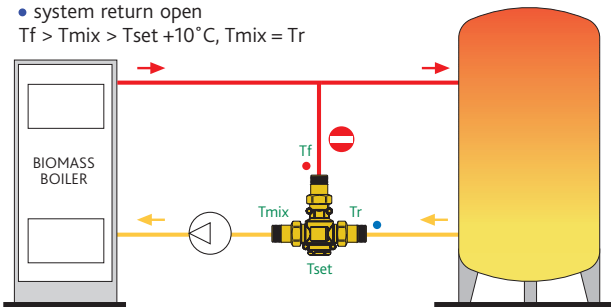
- by-pass open
- system return open
- $T_f > T_{set}$, $T_r < T_{set}$, $T_{mix} = T_{set}$



When the return temperature to the boiler T_{mix} is greater than the set temperature of the anti-condensation valve by 10°C , the bypass port (7) closes and water returns to the boiler at the same temperature as the water returning from the storage cylinder.

$T_f > T_{set} + 10^\circ\text{C}$ SYSTEM LOADING

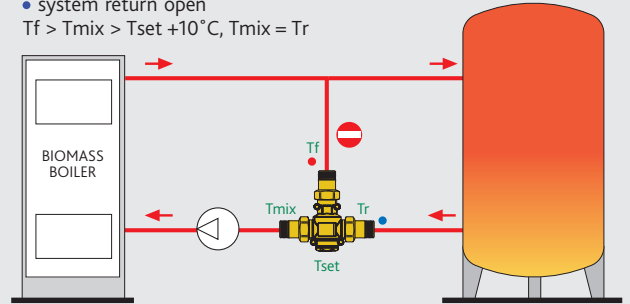
- by-pass open
- system return open
- $T_f > T_{mix} > T_{set} + 10^\circ\text{C}$, $T_{mix} = T_r$



Operating Principle Continued

$T_f > T_{set} + 10^\circ\text{C}$ SYSTEM LOADING

- by-pass closed
- system return open
- $T_f > T_{mix} > T_{set} + 10^\circ\text{C}$, $T_{mix} = T_r$



T_{mix} = Mixed water temperature returning to boiler

T_r = Return water temperature from storage cylinder

T_f = Flow temperature

T_{set} = Anti-condensation set temperature

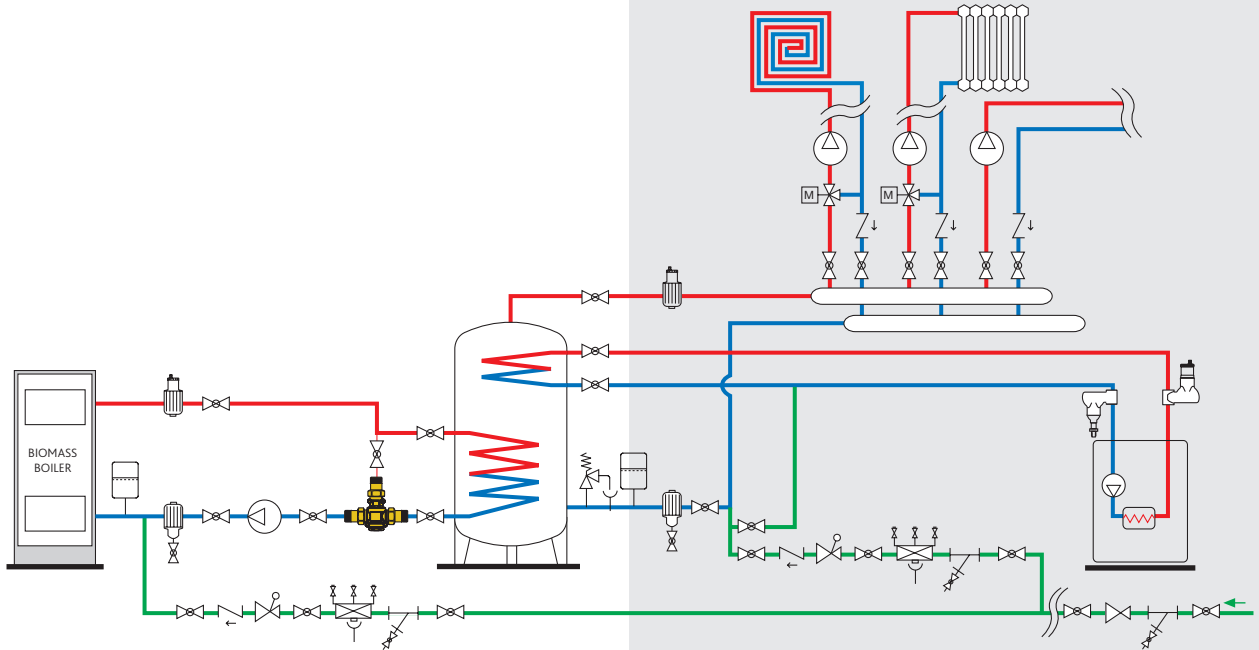
Schematic Symbols

- Deaerator
- Dirt separator
- Pump
- Shut-off valve
- Expansion vessel
- Check valve
- Motorised mixing valve
- Pressure reducing valve
- Filling unit
- Backflow preventer
- Safety relief valve
- Dirt separator for vertical pipes
- Deaerator for vertical pipes
- Y-strainer

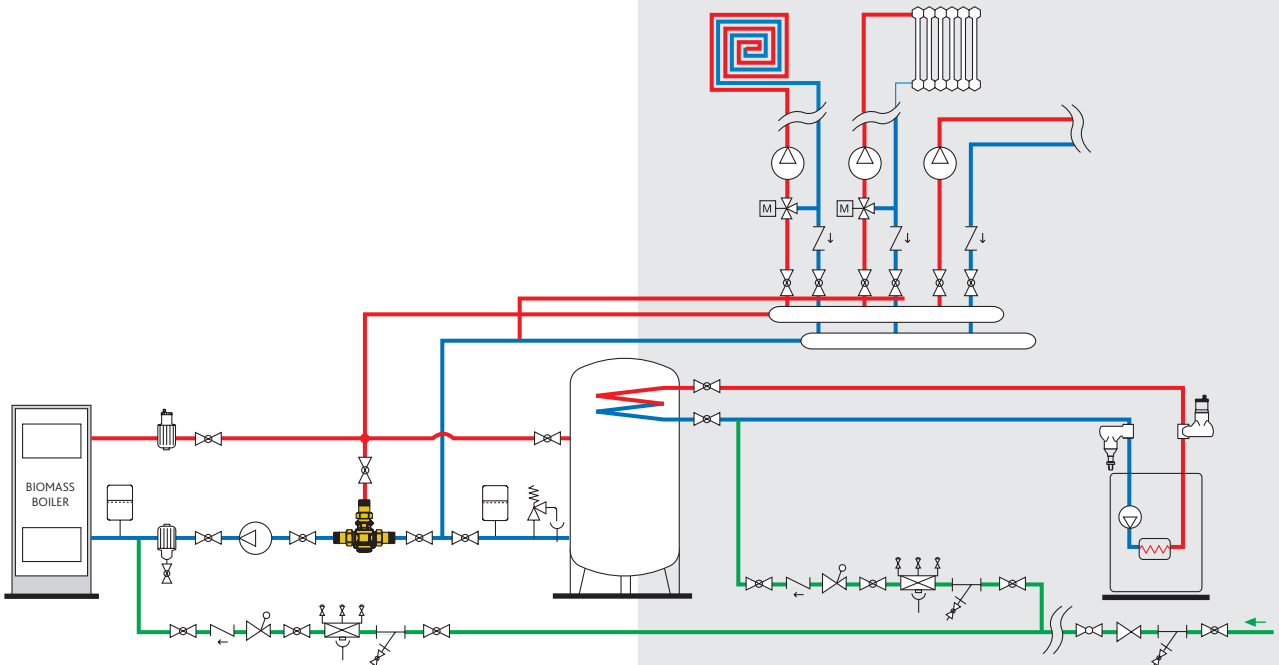
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Typical Applications

Biomass Boiler with Calorifier for Indirect Heating



Biomass Boiler with Direct Heating and Calorifier



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