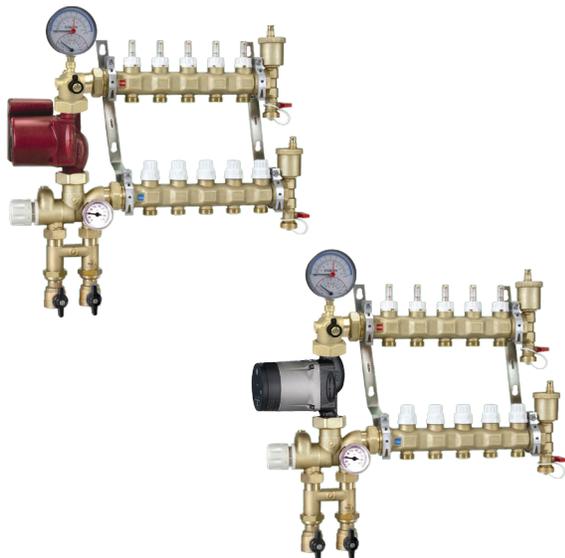


Manifold mixing stations thermostatic fixed point mixing

172 series



01155/14 NA



Function

The 172 series manifold mixing station is designed for use in manifold-based hydronic distribution systems.

The manifold mixing station incorporates a thermostatic actuator with built-in sensor which keeps the flow temperature at a constant set value for use in low temperature systems such as floor radiant panels.

A removable primary circuit hydraulic separator with check valve is also supplied. The hydraulic separator is essential when there is a primary circuit circulation pump and when radiator circuits or fan coils are controlled by thermostatic or thermo-electric valves. When connecting to a Caleffi HYDROLINK™ or hydraulic separator without a primary pump, the hydraulic separator can be removed and the manifold mixing station can be connected directly.

The 172 station, like the TWISTFLOW™ Series 668S1 distribution manifolds, can be configured with 3 to 13 circuit outlets offering similar benefits with built-in sight flow meters/adjustable balancing valves and optional TWISTOP™ thermo-electric zone actuators.

Product range

Series 172 Pre-assembled Manifold Mixing Station with flow gauges and thermostatic fixed point mixing
- size 1 1/4" manifold, 3 to 13 outlets 3/4" male, 3/4" supply and return connections

Technical specifications

Materials

Three-way mixing valve unit:

Body:	brass
Bonnet:	brass
Shutter:	PSU
Seals:	EPDM

Top elbow with supply temperature gage: brass

Primary circuit hydraulic separator:

Body:	brass
Check valve:	POM
Spring:	stainless steel

Shut-off valves:

Body:	brass
Ball:	brass, chrome plated

Supply and Return Manifolds:

Body:	brass
Springs:	stainless steel
Seals:	EPDM
End fittings:	brass
Automatic air vent:	brass
Drain valve:	brass

Performance

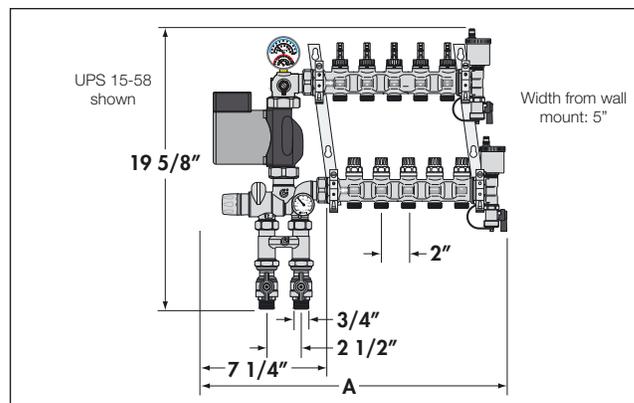
Suitable fluids:	water, glycol solutions
Max. percentage of glycol:	30%
Control temperature range:	80–130°F (25–55°C)
Accuracy:	±4°F (±2°C)
Primary inlet max. temperature:	195°F (90°C)
Max. working pressure:	150 psi (10 bar)
Min. opening pressure for primary circuit check valve:	1.5 psi (10 kPa)

Connections: - primary circuit:	3/4" NPT Male
- to mixing valve unit:	1" Female with nut
- manifold circuit outlets:	3/4" Male
- outlet center distance:	2" (50 mm)

Pump

Three-speed pump ±:	Grundfos model UPS 15-58
Material: Body:	cast iron
Electric supply:	115 V - 60 Hz
Max. ambient temperature:	105°F (40°C)
Protection class:	IP 44
Pump center distance:	6 1/2" (165 mm)
Pump connections:	1 1/2"

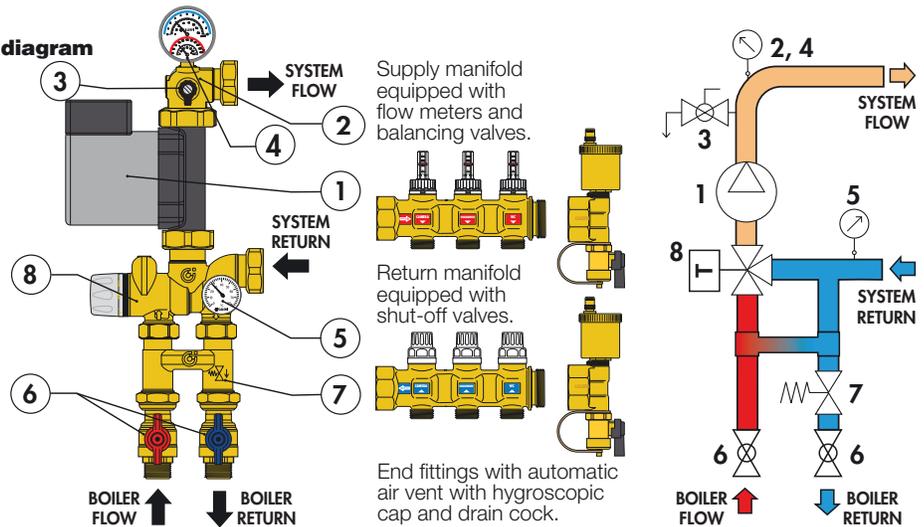
± Wilo Star S 21 or Alpha 25-55U pump available upon request.



Outlets	3	4	5	6	7	8
A	17"	19"	21"	23"	25"	27"
Outlets	9	10	11	12	13	
A	30"	32"	34"	36"	38"	

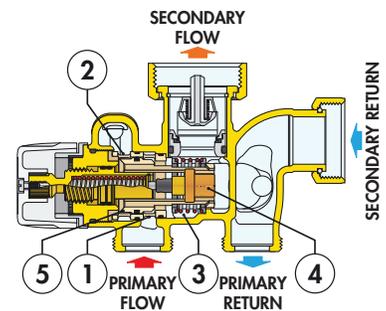
Characteristic components / hydraulic diagram

Item	Description	Symbol
1	Circulation pump UPS 15-58 pictured	
2	Top elbow with supply temperature and pressure gauge	
3	Purge valve	
4	Supply temperature and pressure gage	
5	Return temperature gauge	
6	Primary circuit shut-off valves	
7	Primary circuit hydraulic separator with check valve	
8	Thermostatic three-way mixing valve with built-in sensor	



Operating Principle

The fluid temperature is controlled by a thermostatic three-way mixing valve regulated by a thermostatic sensor (4) located in the mixed water outlet chamber (3) of the valve. By expanding and contracting, it continuously ensures a correct proportioning of hot water coming from the boiler, and water returning from the manifold circuit. The water intake is regulated by an internal cartridge, consisting of a piston (5) that slides inside a cylinder, located between the hot water flow (1) and the water returning from the circuit (2). Even if the secondary circuit thermal load or the inlet temperature from the boiler changes, the mixing valve automatically adjusts the flow rates until it obtains the set secondary flow temperature.



Construction details

Three-way mixing valve unit

The three-way mixing valve unit, containing the piston (5), is constructed of a single casting with connections to the primary and secondary circuits. Internal channels carry the system return fluid from the primary return port to the mixing chamber (3), allowing for the unit to be small and easy to connect.

Reduced head losses

The three-way mixing valve is equipped with a specially designed shutter with calibrated water orifices. This ensures a high flow rate and a reduced size, while maintaining accurate temperature control with no swings due to sudden changes in thermal load.

Removable/replaceable cartridge

The three-way mixing valve is designed so that all fluid regulating components are contained in a removable internal cartridge. This allows for easy inspection, cleaning or replacement if required, without the need to disconnect any piping to the valve body.

Non-sticking materials

The materials used in constructing the mixing valve eliminate potential sticking due to scale. All functional parts are constructed using a low friction coefficient material, which ensures performance over time.

Low inertia thermostat sensor

The temperature-sensitive element, the "engine" of the thermostatic three-way valve has low thermal inertia. Therefore, it can quickly react to changes in the conditions of inlet pressure and temperature, shortening the valve response time as the thermal load changes.

Top elbow

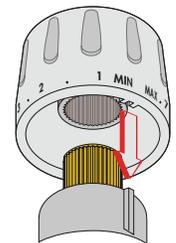
The top elbow is constructed of a single casting with ports to connect the temperature and pressure gauge, purge valve and supply manifold connection.

Temperature adjustment and locking

The control knob is used to adjust temperature in a full turn (360°) between min. and max. It also has tamper protection for locking the temperature at the set value.

Adjustment locking

Turn the knob to the required number. Unscrew the upper screw and remove the knob. Place the knob back on so that the internal slot mates with the key on the valve body. Reinstall the upper screw.



Hydraulic separator with check valve

The hydraulic separator permits hydraulic separation between the primary and secondary circuits, preventing flow in one circuit from interfering with flow in the other. It can be removed if connecting directly to a HYDROLINK or hydraulic separator without a primary pump.

