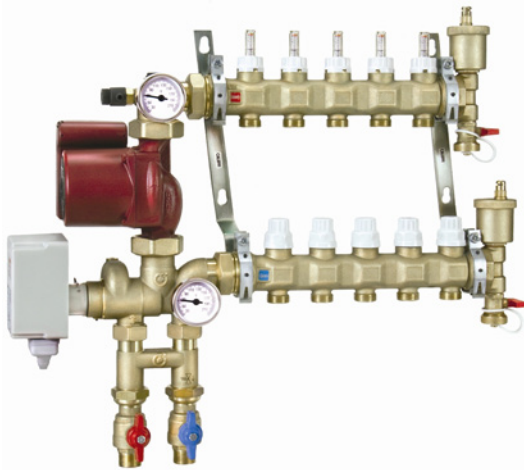


Manifold mixing stations motorized temperature mixing series 171



Product range

Series 171 Pre-assembled Manifold Mixing Station with flow gages, floating actuator for use with outdoor reset controller
- 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:	stainless steel
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:	70–170°F (20–78°C)
Primary inlet temperature:	40–210°F (5–100°C)
Max. working pressure:	150 psi (10 bar)
Min. opening pressure for primary circuit check valve:	1.5 psi (10 kPa)

Temperature gage scale: 30 - 210°F

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)

Function

The 171 series manifold mixing station is designed for use in manifold-based hydronic distribution systems.

The manifold mixing station incorporates a modulating three-point floating actuator to regulate the temperature of the fluid sent to the system flow manifold according to the actual thermal load, in response to a separately-sourced outdoor reset controller.

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 171 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.

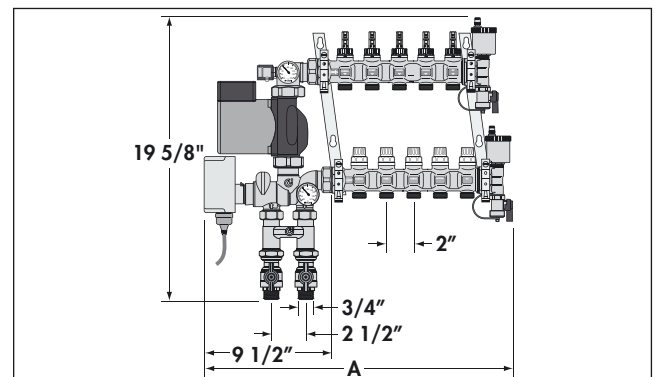
Actuator (three-point floating type)

Supply voltage:	24 VAC
Full stroke time:	50 s (rotation 120°)
Power consumption:	8 VA
Current draw:	0.335 A
Auxiliary switch capacity:	0.8 A, 24 V
Protection class:	IP 44
Max. ambient temperature:	130°F (55°C)
Protective cover:	self-extinguishing VO

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"

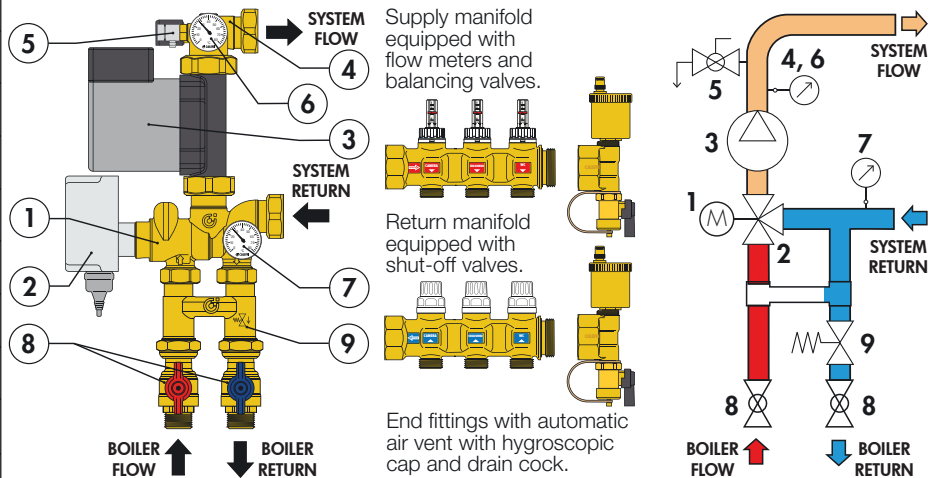
‡ Wilo Star S 21 pump available upon request.



Outlets	3	4	5	6	7	8
A	19"	21"	23"	25"	27"	29"
Outlets	9	10	11	12	13	
A	32"	34"	36"	38"	40"	

Characteristic components / hydraulic diagram

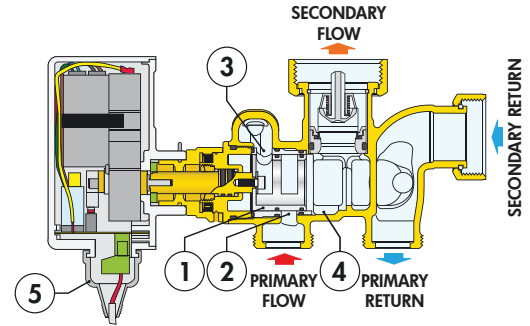
Item	Description	Symbol
1	Three-way mixing valve	
2	Three-point floating actuator	
3	Three-speed circulation pump UPS 15-58	
4	Top elbow with supply temperature and pressure gage	
5	Purge valve	
6	Supply temperature and pressure gage	
7	Return temperature gage	
8	Primary circuit shut-off valves	
9	Primary circuit hydraulic separator with check valve	



Operating Principle

The fluid temperature is controlled by a three-way mixing valve, operating on a control signal from an outdoor reset controller sensing mixed secondary circuit supply temperature and hot boiler flow temperature to the mixing valve hot inlet port. The flow in the valve is regulated by a shutter (1) that opens and closes the hot water flow port (2) and the water return port from the manifold circuits (3) to adjust the desired system flow temperature.

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 regulating shutter (1), 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 (4), allowing for the unit to be small and easy to connect.

The internal regulating components are constructed of stainless steel to minimize wear and ensure performance over time.

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.

Actuator

The three-point floating actuator is easily combined with the most widely used temperature controllers. It comes equipped with an auxiliary microswitch that can be used to shut down the boiler or chiller unit when the valve is closed. The microswitch contacts are closed when the valve is approximately 20% open. The actuator can be installed on the valve body vertically up or down and fastened with a stainless steel clip.

The actuator is electrically connected by an external plug and socket design with a protective rubber cap (5). This design does not require opening the actuator cover to connect the cables.

Top elbow

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

Manually opening (and closing the valve)

With the actuator removed, the valve can be opened and closed manually by using a screwdriver.



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.

