



TI-P157-06
 ST Issue 9

Steam / Water Mixing Stations - MkII Valve

Description

The MkII Spirax Sarco steam/water mixing station is designed to provide hot water economically by blending steam and cold water quickly to the required user temperature. The temperature can be changed by turning the adjustment knob. As the valve is not thermostatically controlled, in order to maintain a fixed hot water temperature the cold water pressure and flowrate must be constant. The installer must ensure that the Local Water Board Regulations are adhered to, with regard to direct use of mains water supply. MkII valves are supplied from 2002 onwards.

Operation

The mixing valve employs a piston to lift and open the steam valve. The piston is lifted by the cold water supply. If the cold water supply stops the piston will fall, closing the steam valve. To sustain this design integrity the piston must move freely. Scale build-up will prevent movement and regular maintenance must be carried out to ensure the valves safe operation.

The TCO1 temperature cut-out valve activates at a temperature of 95°C to limit the discharge of steam in the event of a system fault.

Range

Each steam/water mixing station is supplied with isolation valves, pressure gauges, syphons and cocks, steam traps, check valves, union joints, strainers, thermometer and TCO1 temperature cut-out valve.

½" and ¾" stations can be supplied with an optional high quality hose, hose rack and gun for hosedown purposes, see TI-P157-05 and TI-P157-22. High capacity 1" and 1½" stations are intended for fixed installation such as periodic filling of tanks and therefore no hoses or guns are available.

Optional equipment

Hosedown gun, hose and hose rack (for ½" and ¾" valves only) refer to TI-P157-05.

Hose reel (for ½" and ¾" valves only) refer to TI-P157-22.

Sizes and pipe connections

½", ¾", 1" and 1½" screwed BSP (inlet and outlet)

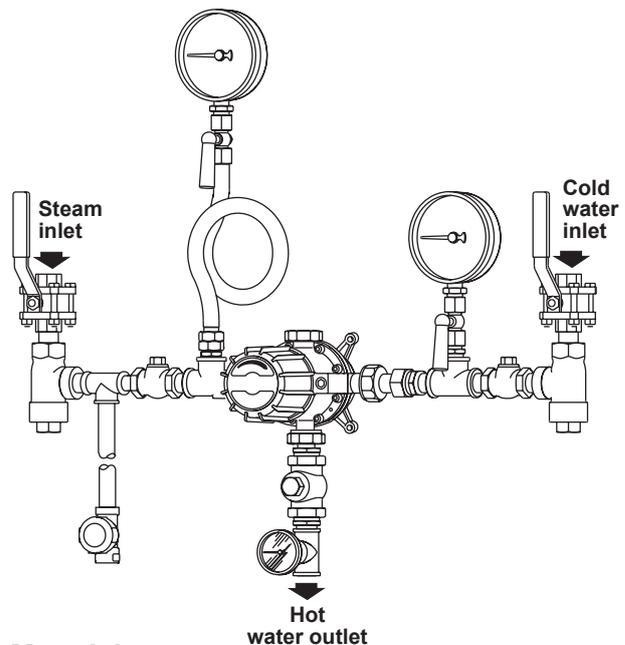
Available types

Size	Range °C Hot water outlet	Flow l/min Minimum to Maximum
½"	40 to 90	2.2 to 108
¾"	40 to 90	6.8 to 200
1"	40 to 90	27.3 to 375
1½"	40 to 90	54.4 to 550

Technical data

Size	Spring	Steam inlet Pressure bar g	Minimum cold waterflow l/min to open steam valve
½"	Yellow	7.00 to 10.3	4.5
	Green	3.50 to 7.0	2.7
	Black	0.35 to 3.5	2.2
¾"	Red	7.00 to 10.3	8.1
	White	0.35 to 3.5	6.8
	Red	7.00 to 10.3	36.3
1"	Blue	3.50 to 7.0	31.8
	White	0.35 to 3.5	27.2
	Red	7.00 to 10.3	54.4
1½"	Blue	3.50 to 7.0	54.4
	White	0.35 to 3.5	54.4

Note: Valves are supplied with the intermediate pressure range spring fitted.



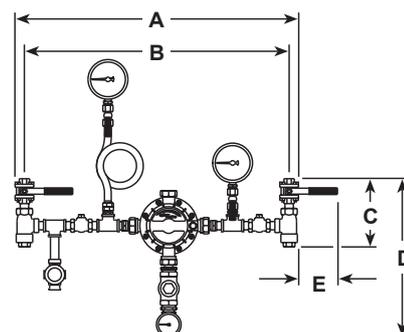
Materials

Mixing valve See TI-P157-08	Check valve	Bronze	See TI-P029-01
	Ball valve	Carbon steel	See TI-P133-06
	Strainer	Brass	See TI-P164-01
Pipeline fittings	Dial thermometer	Stainless steel/Brass	
	Pipe fittings	Brass/Bronze	
	Temperature cut-out valve	Bronze	See TI-P157-18
	Pressure gauge	Mild steel	See TI-P027-01
	Steam trap	Brass	See TI-P122-01

Typical dimensions / weights - as installed

(approximate) in mm and kg

Size	A	B	C	D	E	Weight
½"	655	613	120	295	96	13.7
¾"	713	671	130	440	94	15.9
1"	932	867	190	530	125	23.8
1½"	1 214	1 154	400	800	148	45.5



How to order

Example: 1 off ½" Spirax Sarco MkII steam/water mixing station.

Steam consumption

Steam usage is shown in kg/h with the maximum water flow. If the water flow reduces then the steam usage will also decrease.

Steam flow kg/h (with maximum water flow)

Pressure bar	Valve type			
	½"	¾"	1"	1½"
0.5	45	100	180	185
1	60	125	300	245
2	90	175	380	440
3	135	270	450	565
4	160	310	520	715
5	175	335	580	820
6	180	380	600	950
7	210	445	665	1 070
8	225	515	735	1 165
9	245	550	830	1 240
10	260	570	905	1 290

Sizes and capacities

The graphs indicate the maximum flow of hot water at various temperatures for a given steam supply pressure. The bold lines show the maximum cold water flow for a given water supply pressure. When sizing the valve, ascertain the hot water temperature and quantity required, and the cold water and steam pressures available. Plot the cold water supply pressure and read off from the bold line the maximum flow of cold water. Plot the steam supply pressure against the hot water temperature required and read off the maximum flow of heated water. For sizing purposes always select the lowest of the two values because depending on the supply pressures, there can be an imbalance in the amount of either water or steam heat available. The effect of selecting different supply pressures or different sizes of valve can easily be compared.

Example

For a cold water supply pressure of 3 bar g the maximum flow of cold water is 40 l/min. For a steam supply pressure of 6 bar g the maximum flow of hot water at 50°C is 46 l/min.

Safety information

Pressure

Before attempting any maintenance of any component of the steam/water mixing station consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain any component e.g. mixing valve, hose etc. This is easily achieved by fitting Spirax Sarco depressurisation valves type DV (see separate literature for details). Discharge content of hose and station by pulling the gun trigger and eliminate the pressure until the water flow stops. Do not assume that the system is depressurised even when the pressure gauges indicate zero.

Temperature

Allow time for temperature to normalise after isolation to avoid the danger of burns. For personal protection wear protective clothing, especially heavy duty gloves and safety glasses.

Disposal

This product is recyclable. No ecological hazard is anticipated with the disposal of this product providing due care is taken.

Maintenance

See the Installation and Maintenance Instructions (IM-P157-03) supplied with each system before commencing with any maintenance.

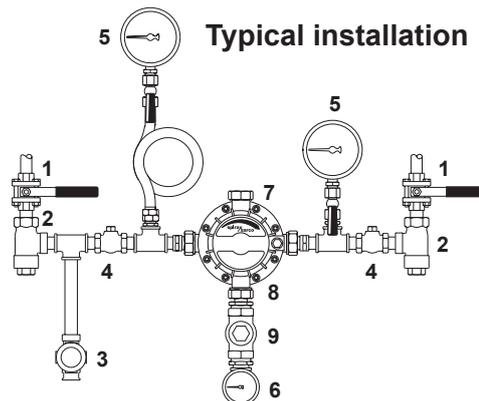
Installation

Full details are given in the Installation and Maintenance Instructions (IM-P157-03) supplied with each system. A typical installation is shown below. Supply pipework should be sized according to standard practice. The steam inlet should be sized on the steam flowrate (from the steam consumption chart) at the supply pressure and a steam velocity of between 15 to 25 m/s. Cold water pipework should take into account pressure, length of pipe and acceptable pressure drop.

Spares

See Installation and Maintenance Instructions IM-P157-03 for details.

- 1 Ball valve
- 2 Strainer
- 3 Steam trap
- 4 Check valve
- 5 Pressure gauge, syphon and cock
- 6 Temperature gauge
- 7 Mixing valve
- 8 Mixed water outlet
- 9 TCO1 temperature cut-out valve



Capacities

