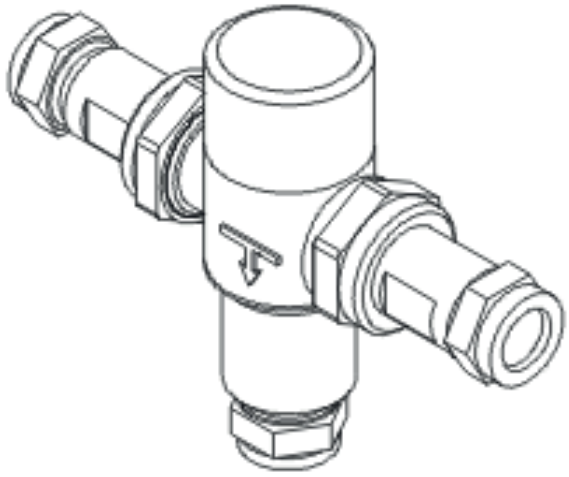
BRISTAN

Installation Instructions and User Guide

Temperature Stabilised Thermostatic Mixing Valves Complying with N.H.S Estates Model Engineering Specification D08



Certified to NSF TMV2

Certified to NSF TMV3

WRAS APPROVED PRODUCT

Models covered: MT503CP, MT503CP-22, MT503CP-ISO, MT503CP-ISOELB

Please keep this booklet for future Reference.

Installer, when you have read these instructions please ensure you leave them with the user.

Contents

Thank you for choosing Bristan, the UK's leading taps and showers expert. We have designed this product with your enjoyment in mind. To ensure that it works to its full potential, it needs to be fitted correctly. These fitting instructions have been created to give you all of the information you need and, if you need any further help, please do not hesitate to give us a call on 0844 701 6273.

Introduction

It has been recognised that users of hot water in care establishments are at risk from scalding.

This risk has been reduced by the use of thermostatic mixing valves.

In order to assure the performance of thermostatic mixing valves N.H.S. Estates Model

Engineering Specification D08 was written. The valve listed in the following pages has been tested and approved to this standard by a third party as part of the Build Cert scheme for use within their designated applications.

This Thermostatic mixing valve has also been tested to the TMV2 scheme which works to the tests found in the BS EN 1287 (LP) and BS EN 1111 (HP)

The following abbreviated designation codes are used throughout this booklet. Detailed descriptions are given below:-

HP High pressure	LP Low pressure
W Washbasin	S Shower
T46 Bath with fill temperature of 46°C max	T44 Bath with fill temperature of 44°C max
SE Shower with economy flow rate	WE Washbasin with economy flow rate

Sirrus MT503CP APPROVED FOR USE IN THE FOLLOWING DESIGNATIONS

CODE	OPERATING PRESSURE	APPLICATION
HP-S	HIGH PRESSURE	SHOWER
HP-W	HIGH PRESSURE	WASH BASIN
LP-S	LOW PRESSURE	SHOWER
LP-W	LOW PRESSURE	WASH BASIN
HP-T44	HIGH PRESSURE	BATH FILL WITH TEMPERATURE UP TO 44ºc

For full installation instructions and method of temperature adjustment see General Assembly and Servicing Guide

Specifications

Minimum pressure drop through fitting for correct mixing	0.1 bar (1 Metre head)
Maximum dynamic pressure across mixer should not exceed	2.5 bar (25 Metre head)
Maximum static pressure to be applied to fitting	10.0 bar (100 Metre head)
Maximum pressure loss ratio	20:1 either supply
Temperature stability with normal variation of supply temperatures and pressures	± 2°C from set temperature
Factory set standard blend temperature	43°C
Maximum hot supply temperature	80°C

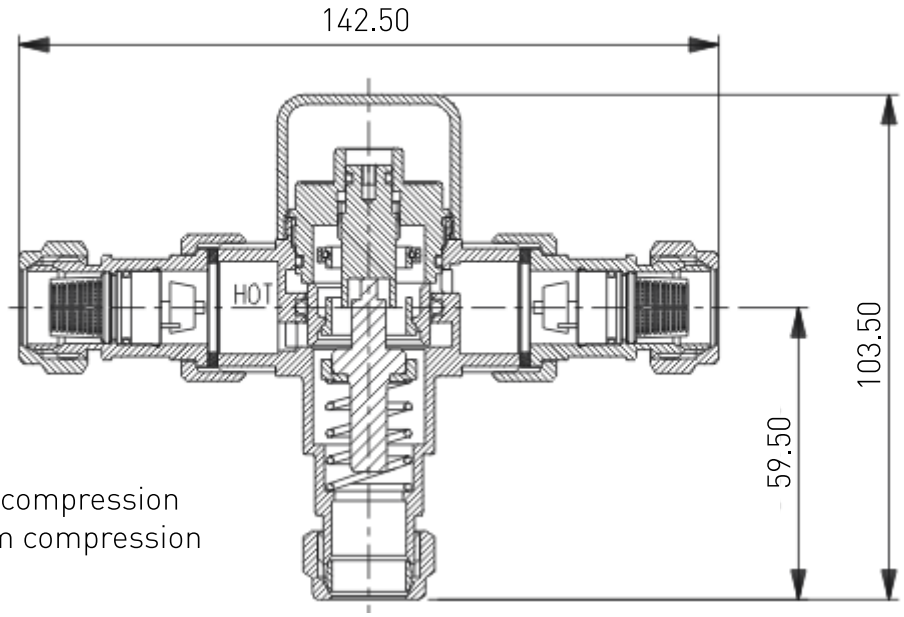
The sensitive wax capsule will shut down the operation of the valve if either the hot or cold water supply fails, provided a minimum differential of 10°C exists between the mixed water temperature and the remaining supply.

Performance

Pressure Drop (Bar)	0.1	0.2	0.4	0.6	0.8	1	1.5	2.5	3	4	5
Flow Rate (Litres / Min)	5.9	9.8	14.7	18.2	21.3	23.8	30.5	35.0	--	--	--

Flow rates are in litres per minute at an open outlet with equal pressure drops, fitted with check valves and filters as supplied.

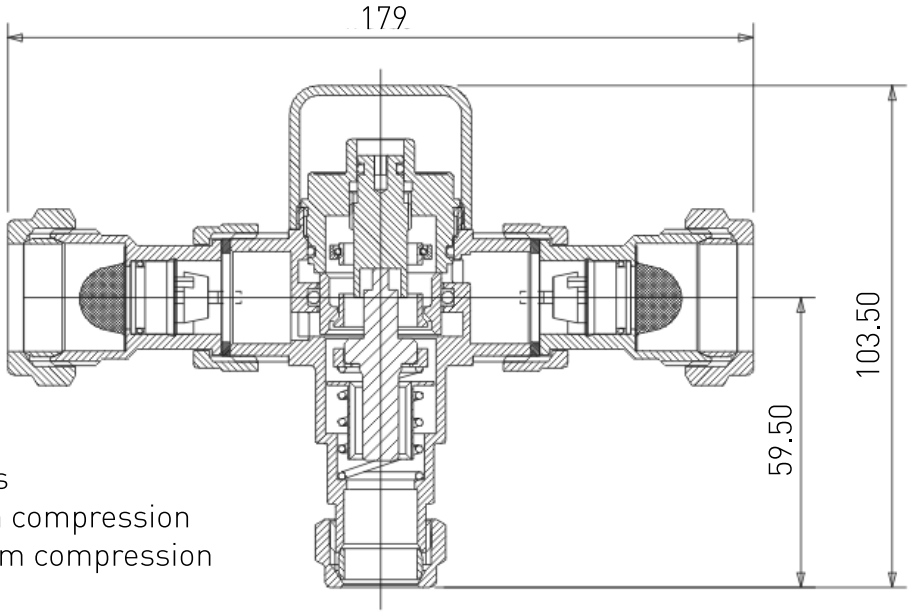
MT503CP



Connections
Inlet: 15mm compression
Outlet: 15mm compression

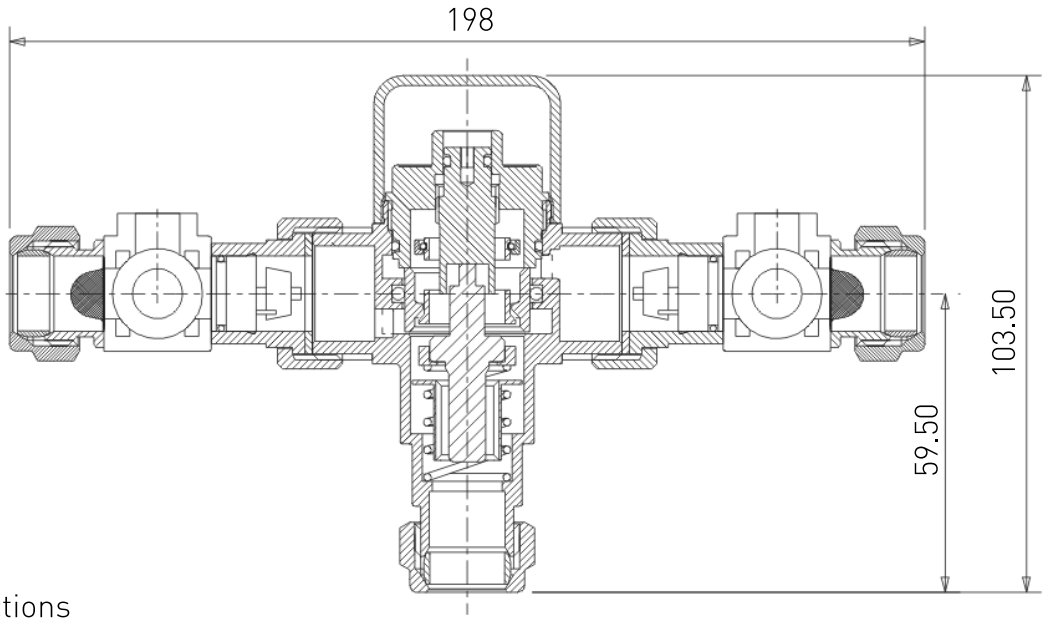
Specifications cont.

MT503CP-22



Connections
Inlet: 22mm compression
Outlet: 15mm compression

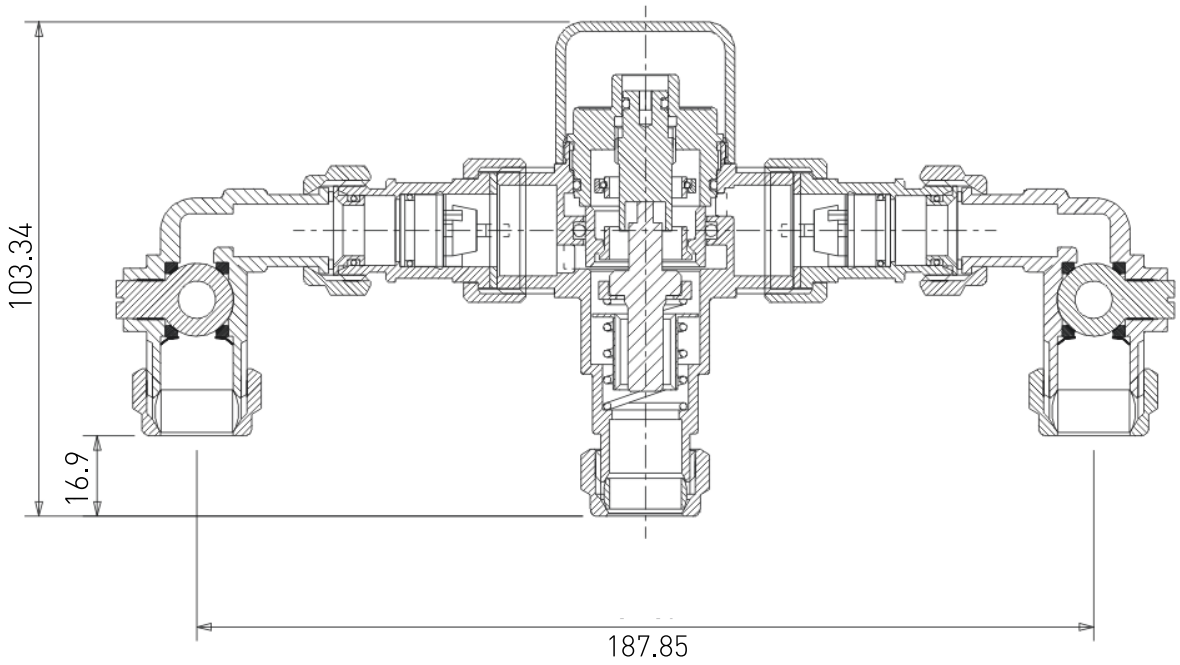
MT503CP-ISO



Connections
Inlet: 15mm compression
Outlet: 15mm compression

Specifications cont.

MT503CP-ISOELB



Connections
Inlet: 15mm compression
Outlet: 15mm compression

Conditions for Use for Type 2 Valves

	High Pressure	Low Pressure
Maximum Static Pressure (Bar)	10	10
Flow Pressure, Hot & Cold (Bar)	0.1 to 2.0	0.1 to 2.0
Hot Supply Temperature (°C)	55 to 65	55 to 65
Cold Supply Temperature (°C)	Equal to or Less than 25	Equal to or Less than 25

Note: Valves operating outside these conditions cannot be guaranteed by the Scheme to operate as Type 2 valves.

The valves designation of use, LP if testes against BS EN 1287, HP if tested against BS EN 1111 and HP & LP if tested against both standards.

If a water supply is fed by gravity then the supply pressure should be verified to ensure the conditions of use are appropriate for the valve.

Minimum supply pressure for LP Tub application is 0.2 bar.

Recommended outlet temperatures

The BuildCert TMV scheme recommends the following set maximum mixed water outlet temperatures for use in all premises:

44°C Bath fill but see notes below
41°C for Showers.
41°C for Washbasins

The mixed water temperatures must never exceed 46°C.
The maximum mixed water temperature can be 2°C above the recommended maximum set outlet temperatures.

Note: 46°C is the maximum mixed water temperature from the bath tap. The maximum temperature takes account of the allowable temperature tolerances inherent in thermostatic mixing valves and temperature losses in metal baths.

Warning: It is not a safe bathing temperature for adults or children!

Conditions for Use for Type 2 cont.

The British Burns Association recommends 37 to 37.5˚C as a comfortable bathing temperature for children. In premises covered by the Care Standards Act 2000, the maximum mixed water outlet temperature is 43˚C.

The thermostatic mixing valve (TMV) will be installed in such a position that maintenance of the TMV and its valves and the commissioning and testing of the TMV can be undertaken.

The fitting of isolation valves is required as close as is practical to the water supply inlets of the thermostatic mixing valve.
The fitting of strainers is recommended as close as is practicable to the water supply inlets of the thermostatic mixing valve.

Commissioning

Commissioning notes for Thermostatic Mixing Valves

The first step in commissioning a thermostatic mixing valve is to check the following:

1. The designation of the thermostatic mixing valve matches the application.
2. The supply pressures are within the valves operating range.
3. The supply temperatures are within the valves operating range.
4. Isolating valves (and strainers preferred) are provided.

If all these conditions are met, proceed to set the temperature as stipulated in the maintenance section.

The mixed water temperature at the terminal fitting must never exceed 46°C.

It is a requirement that all TMV2 approved valves shall be verified against the original set temperature results once a year. When commissioning / testing is due the following performance checks shall be carried out:

• Measure the mixed water temperature at the outlet.

• Carry out the cold water supply isolation test by isolating the cold water supply to the TMV, wait for five seconds, if water is still flowing check that the temperature is below 46°C.

If there is no significant change to the set outlet temperature (±2°C or less change from the original settings) and the fail-safe shut off is functioning, then the valve is working correctly and no further service work is required.

Notes: If there is a residual flow during the commissioning or the annual verification (cold water supply isolation test), then this is acceptable providing the temperature of the water seeping from the valve is no more than 2°C above the designated maximum mixed water outlet temperature setting of the valve.

Temperature readings should be taken at the normal flow rate after allowing for the system to stabilise.

The sensing part of the thermometer probe must be fully submerged in the water that is to be tested.

Any TMV that has been adjusted or serviced must be re-commissioned and re-tested in accordance with the instructions in the Maintenance section.

The installation of thermostatic mixing valves must comply with the requirements of the Water Supply (Water Fittings) Regulations 1999.

In-Service Testing

Purpose

The purpose of in service tests is to regularly monitor and record the performance of the thermostatic mixing valve. Deterioration in performance can indicate the need for service work on the valve and / or water supplies.

Procedure

Using the same measuring equipment or equipment to the same specification as used in the commissioning section, adjust the temperature of the mixed water in accordance with the manufactures instructions and the requirement of the application, Carry out the following sequence.

a) Record the temperature of the hot and cold water supplies.
b) Record the temperature of the mixed water at the largest draw-off flow rate.
c) Record the temperature of the mixed water at a smaller draw-off flow rate, which shall be measured.

If the mixed water temperature has changed significantly from the previous test results (e.g. >1K), record the change and before re-adjusting the mixed water temperature check:

a) That any in-line or integral strainers are clean.
b) Any in-line or integral check valves or other anti-back siphonage devices are in good working order.
c) Any isolating valves are fully open.

With an acceptable mixed water temperature, complete the following procedure:

a) Record the temperature of the hot and cold water supplies.
b) Record the temperature of the mixed water at the largest draw-off flow rate.
c) Record the temperature of the mixed water at a smaller draw-off flow rate, which shall be measured.
d) Isolate the cold water supply to the mixing valve and monitor the mixed water temperature.
e) Record the maximum temperature achieved as a result of (d) and the final stabilised temperature.
f) Record the equipment, thermometer etc. used for the measurements.

If at step **(e)** the final mixed water temperature is greater than 41ºC and / or the maximum temperature exceeds the corresponding value from the previous results by more than about 2K, the need for service work is indicated.

Note: In-service tests should be carried out with a frequency, which identifies a need for service work before an unsafe water temperature can result. In the absence of any other instruction or guidance, the procedure described in Annex F of D 08 may be used.

In-Service Testing cont.

Annex F of D 08 (informative)

Frequency of In-service tests

General

In the absence of any other instruction or guidance on the means of determining the appropriate frequency of in-service testing, the following procedure may be used:

a) 6 to 8 weeks after commissioning carry out the tests in 'In-Service Tests'.
b) 12 to 15 weeks after commissioning carry out the tests detailed in 'In-Service Tests'.

Depending on the results of the above tests, several possibilities exist:

a) If no significant changes (e.g. <1K) in mixed water temperatures are recorded between commissioning and 6 to 8 week testing, or between commissioning and 12 to 15 week testing the next in-service test can be deferred to 24 to 28 weeks after commissioning.

b) If small changes (e.g. 1 to 2K) in mixed water temperatures are recorded in only one of these periods, necessitating adjustment of the mixed water temperature, then the next in-service test can be deferred to 24 to 28 weeks after commissioning.

c) If small changes (e.g. 1 to 2K) in mixed water temperatures are recorded in both these periods, necessitating adjustment of the mixed water temperature, then the next in-service test should be carried out at 18 to 21 weeks after commissioning.

d) If significant changes (e.g. > 2K) in mixed water temperatures are recorded in either of these periods, necessitating service work, then the next in-service test should be carried out at 18 to 21 weeks after commissioning.

Conditions of Use for Type 3 Valves

In order to give compliance with N.H.S. specification D08 the table below lists the conditions for normal use. These valves will perform adequately outside these parameters, however they cannot be guaranteed by the scheme to operate as Type 3 valves. If they are required to work with other supply conditions an engineer must carry out a risk assessment and satisfy themselves that the valves are suitable for use.

Table 1: Normal Conditions of Type 3 valves

	High Pressure	Low Pressure
Maximum Static Pressure (Bar)	10	10
Flow Pressure, Hot & Cold (Bar)	1.0 to 5.0	0.2 to 1.0
Hot Supply Temperature (°C)	52 to 65	52 to 65
Cold Supply Temperature (°C)	5-20	5-20
Minimum Temperature Differential (°C)	10°C	10°C

Table 2: Mixed Water Temperature

Application	Mixed Temperature (at point of discharge) °C
Shower	41
Washbasin	41
Bath (44°C fill)	44
Bath (46°C fill)	46

Note 1: For wash basins, washing under running water is assumed.

Note 2: Bath fill temperatures of more than 44°C should only be available when the bather is always under the supervision of a competent person (e.g. Nurse or Care Assistant.

Note 3: A thermostatic mixing valve having multiple designations (i.e it is capable of satisfying the requirements of this specification for more than one application) should be re-set on site to suit its other designations.

Commissioning

Commissioning notes for Thermostatic Mixing Valves

The first step in commissioning a thermostatic mixing valve is to check the following:

1. The designation of the thermostatic mixing valve matches the application.
2. The supply pressures are within the valves operating range.
3. The supply temperatures are within the valves operating range.
4. Isolating valves (and strainers preferred) are provided.

If all these conditions are met, proceed to set the temperature as stipulated in the maintenance section.

The mixed water temperature at the terminal fitting must never exceed 46˚C.

It is a requirement that all TMV2 approved valves shall be verified against the original set temperature results once a year. When commissioning / testing is due the following performance checks shall be carried out:

• Measure the mixed water temperature at the outlet.

• Carry out the cold water supply isolation test by isolating the cold water supply to the TMV, wait for five seconds, if water is still flowing check that the temperature is below 46˚C.
If there is no significant change to the set outlet temperature (/-2˚C or less change from the original settings) and the fail-safe shut off is functioning, then the valve is working correctly and no further service work is required.

Notes: If there is a residual flow during the commissioning or the annual verification (cold water supply isolation test), then this is acceptable providing the temperature of the water seeping from the valve is no more than 2˚C above the designated maximum mixed water outlet temperature setting of the valve.

Temperature readings should be taken at the normal flow rate after allowing for the system to stabilise.

The sensing part of the thermometer probe must be fully submerged in the water that is to be tested.

Any TMV that has been adjusted or serviced must be re-commissioned and re-tested in accordance with the instructions in the Maintenance section.

The installation of thermostatic mixing valves must comply with the requirements of the Water Supply (Water Fittings) Regulations 1999.

In-Service Testing

Purpose

The purpose of in service tests is to regularly monitor and record the performance of the thermostatic mixing valve.
Deterioration in performance can indicate the need for service work on the valve and / or water supplies.

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If the mixed water temperature has changed significantly from the previous test results (e.g. >1K), record the change and before re-adjusting the mixed water temperature check:

a) That any in-line or integral strainers are clean.
b) Any in-line or integral check valves or other anti-back siphonage devices are in good working order.
c) Any isolating valves are fully open.

With an acceptable mixed water temperature, complete the following procedure:

a) Record the temperature of the hot and cold water supplies.
b) Record the temperature of the mixed water at the largest draw-off flow rate.
c) Record the temperature of the mixed water at a smaller draw-off flow rate, which shall be measured.
d) Isolate the cold water supply to the mixing valve and monitor the mixed water temperature.
e) Record the maximum temperature achieved as a result of (d) and the final stabilised temperature.
Note: The final stabilised mixed water temperature should not exceed the values in Table 17
f) Record the equipment, thermometer etc. used for the measurements.

In-Service Testing

Application	Mixed Water Temperature °C
Shower	43
Washbasin	43
Bath (44°C fill)	46
Bath (46°C fill)	48

Table 17: Guide to maximum stablised temperatures recorded during site tests

If at step (e) the final mixed water temperature is greater than 41°C and / or the maximum temperature exceeds the corresponding value from the previous results by more than about 2K, the need for service work is indicated.

Note: In-service tests should be carried out with a frequency, which identifies a need for service work before an unsafe water temperature can result. In the absence of any other instruction or guidance, the procedure described in Annex F of D 08 may be used.

Annex F of D 08 (informative)

Frequency of In-service tests

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c) If small changes (e.g. 1 to 2K) in mixed water temperatures are recorded in both these periods, necessitating adjustment of the mixed water temperature, then the next in-service test should

d) If significant changes (e.g. > 2K) in mixed water temperatures are recorded in either of these periods, necessitating service work, then the next in-service test should be carried out at 18 to 21 weeks after commissioning.

General Assembly & Servicing Guide

1. Isolate hot and cold supplies. Remove Head Cover.
2. Unscrew Head from Body.
3. Remove Adjusting screw from Head (N.B. Note approximate position of Adjusting screw in Head before removing.
   Replacement of Adjusting screw in same position upon re-assembly ensures virtual restoration of original temperature).
4. Remove Thermostat, Piston assembly / Thermostat housing and Return spring.

TO CLEAN

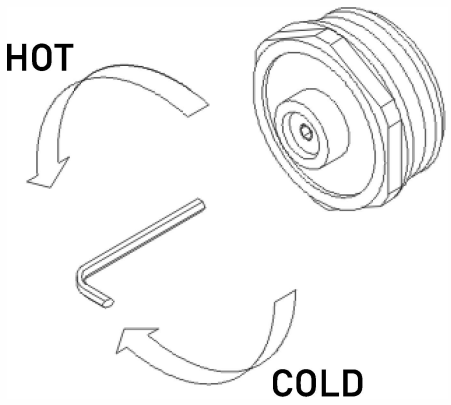
1. Soak all metal parts in de-scalent, wash off in clean water.
2. Lightly grease all metal parts with silicone grease.
3. Replace worn and damaged 'O'rings.

RE-ASSEMBLY

1. Replace Return spring and Piston assembly / Thermostat housing and Thermostat.
2. Re-assemble Adjusting screw to Head to original setting.
3. Screw Head into Body. Continue until it reaches a dead stop.
4. Slight temperature adjustment may be necessary upon re-introduction of supply.

TEMPERATURE SETTING

1. Turn Adjustment screw clockwise for cooler temperature, anti-clockwise for warmer temperature. Replace Head Cover.

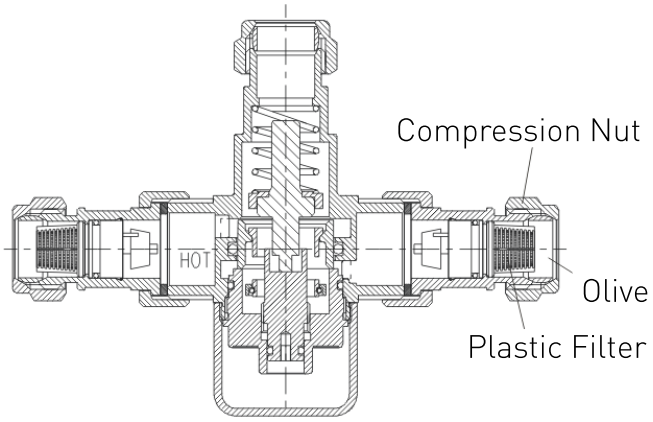


NOTE :- All installation and maintenance procedures should be carried out in accordance with these guidelines. Please read these guidelines before commencing any new installation or servicing of existing units.

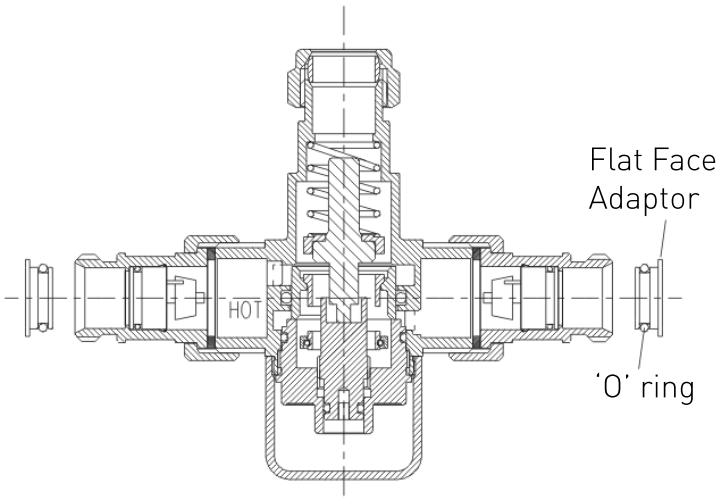
NOTE :- Do not use any jointing compound on the product.

MT503CP to MT503CP-ISOELB

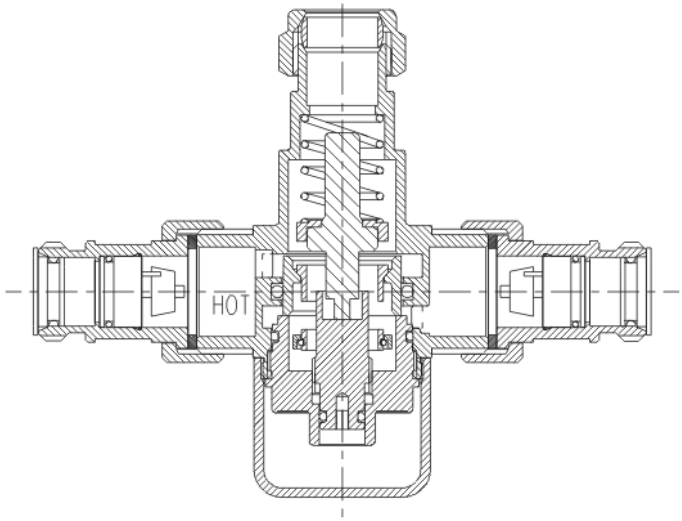
1. Remove the compression nuts, olives and plastic filters from the standard MT503CP inlet ports.



2. Place the 'O' ring provided in this kit onto the flat face adaptor.

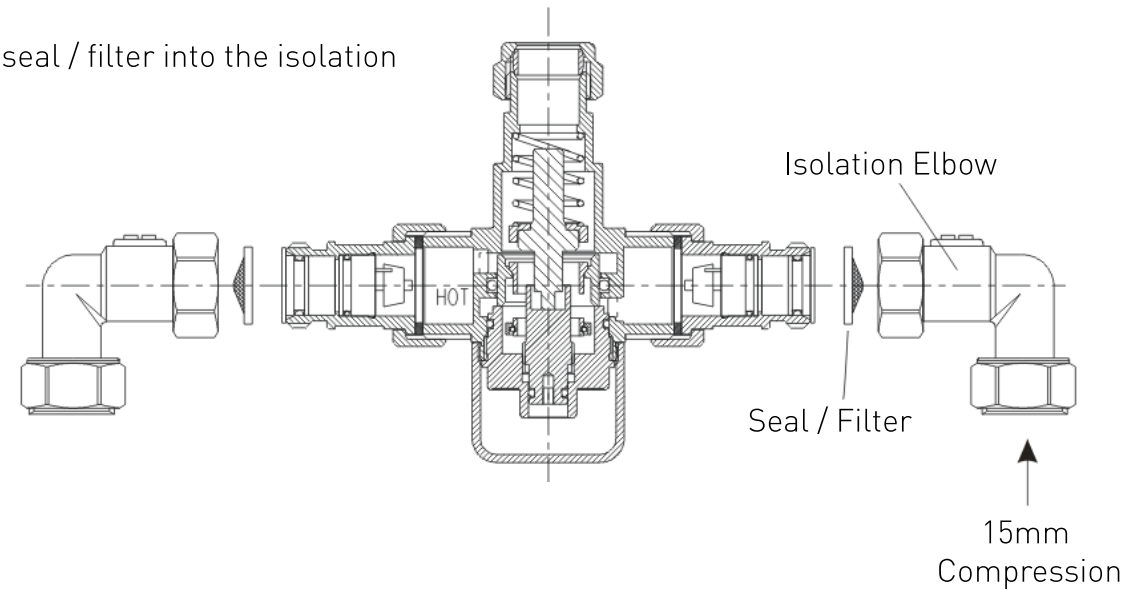


3. Insert the flat face adaptor assembly into the hot and cold inlet ports.

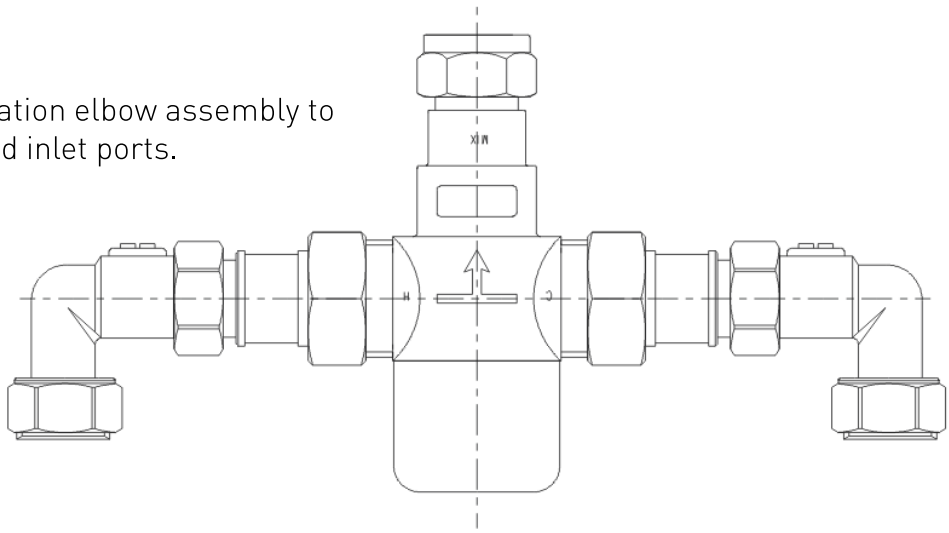


MT503CP to MT503CP-ISOELB

4. Push the seal / filter into the isolation elbow.



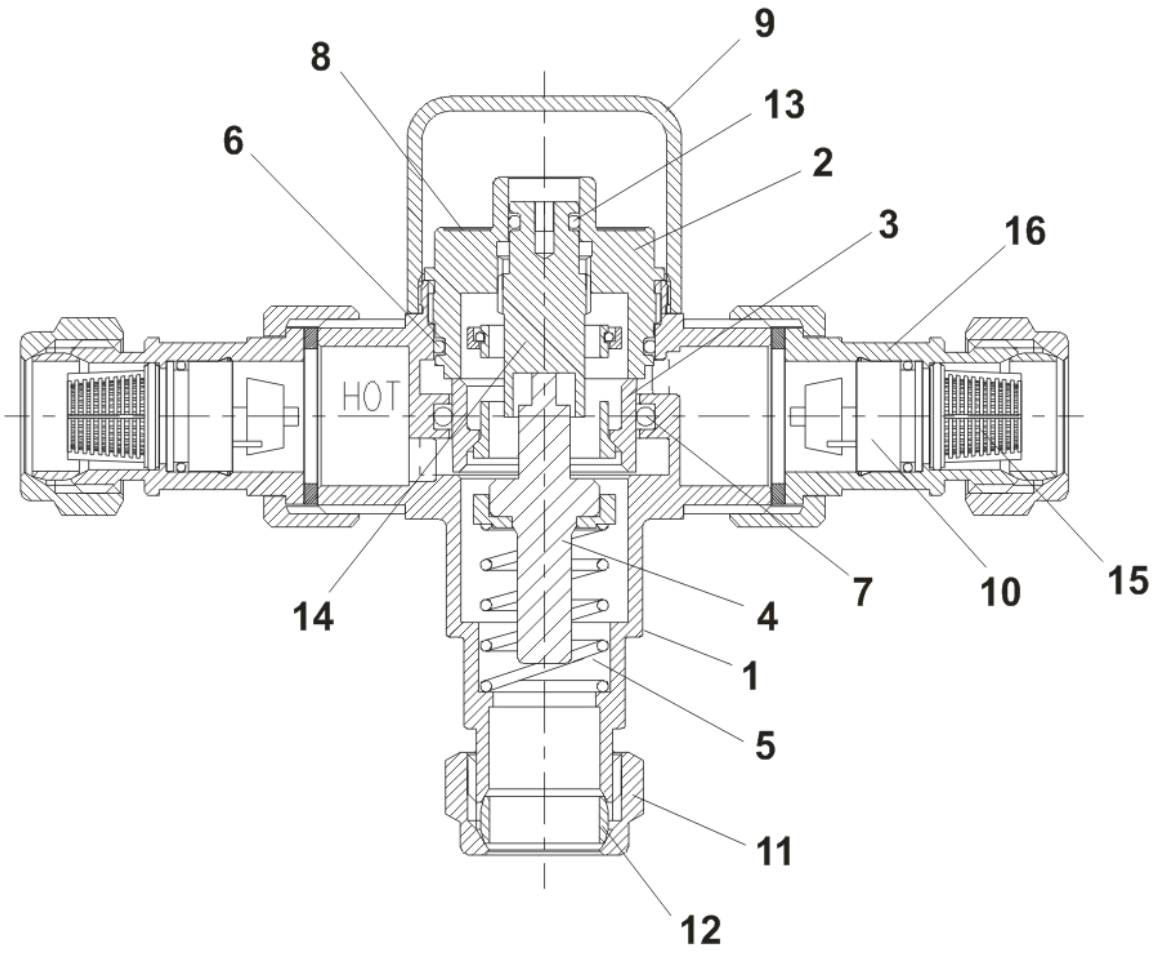
5. Attach the isolation elbow assembly to the hot and cold inlet ports.



Note: Check all joints and connections are sealed from leakage.

Parts Diagram

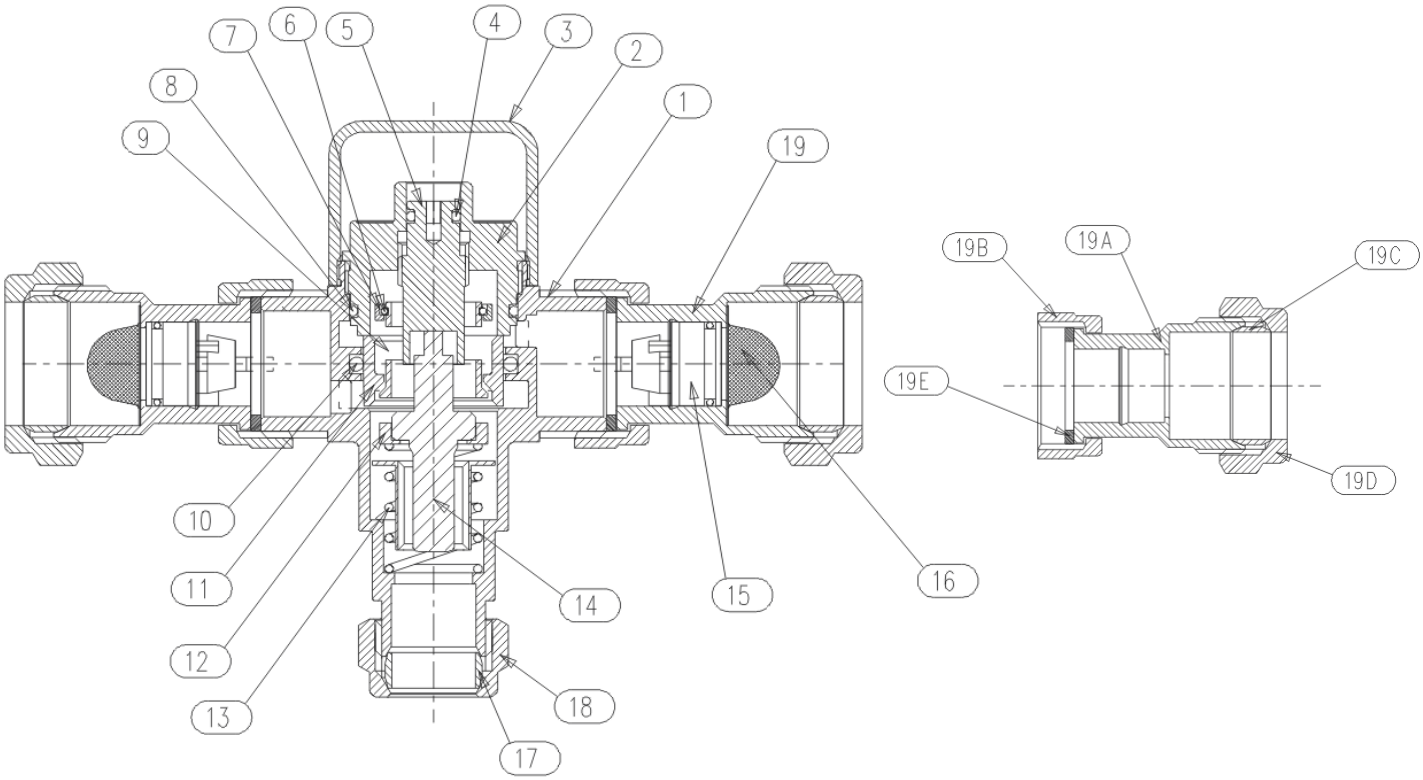
MT503CP



1	Valve Body	9	Head Cover
2	Valve Head	10	Check Valve
3	Piston Assembly	11	Compression Nut
4	Thermostat Element	12	Compression Ring
5	Return Spring	13	'O' Ring
6	'O' Ring	14	Temperature Adjusting Screw
7	'O' Ring	15	Filter
8	27mm Dia Head Label	16	Inlet Adapter

Parts Diagram cont.

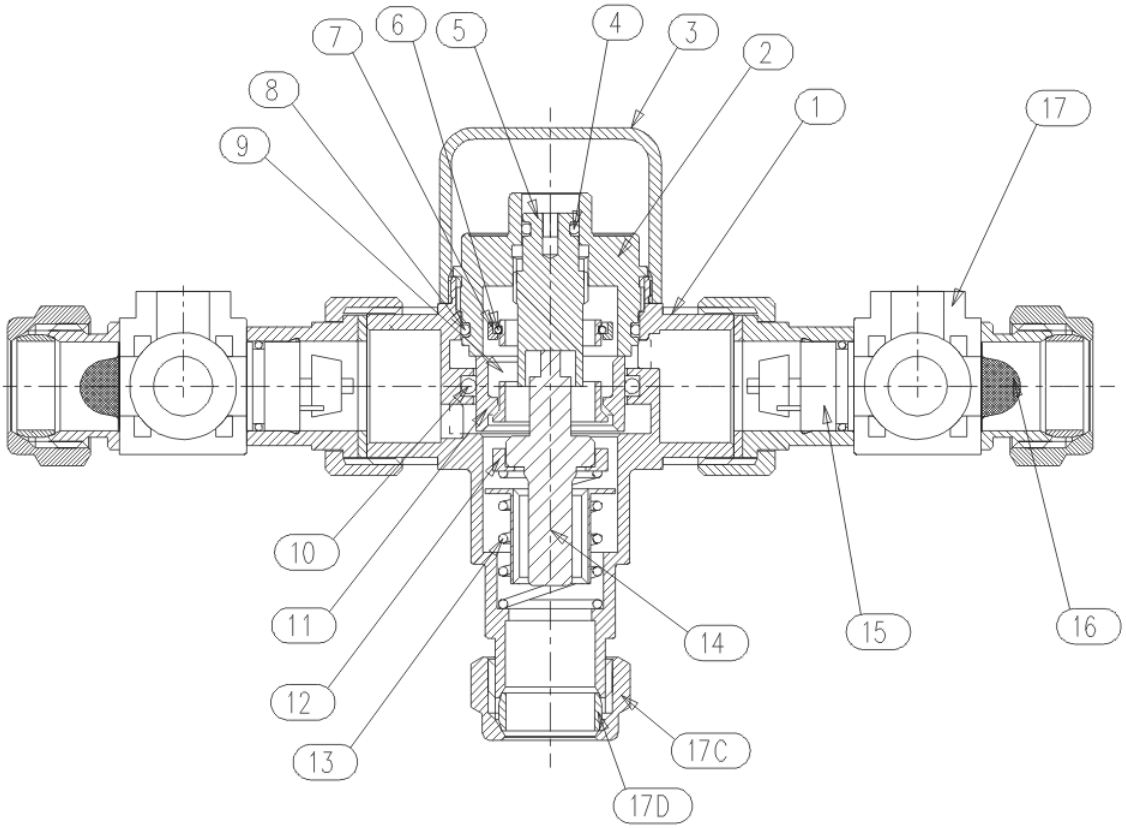
MT503CP-22

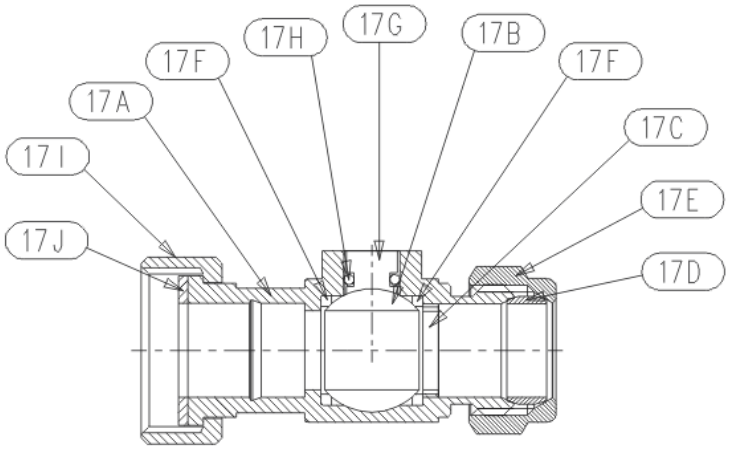


1	Valve Body	13	Return Spring
2	Valve Head	14	Thermostat Element
3	Head Cover	15	Check Valve
4	BS010 'O' Ring	16	22mm Wire Mesh Filter
5	Temperature Adjusting Screw	17	15mm Compression Ring
6	Plain Ring	18	15mm Compression Nut
7	Clamp Ring	19	22mm Adaptor Assembly
8	BS023 'O' Ring	19A	Check Valve Body
9	Overtravel Spring	19B	¾" Connecting Nut
10	'O' Ring 80 SH EP11/8/3	19C	22mm Annealed Copper Olive
11	Piston	19D	22mm Compression Nut
12	Extended Thermostat Housing	24E	WRC approved fibre washer for ¾ BSP flat face connection

Parts Diagram cont.

MT503CP-ISO





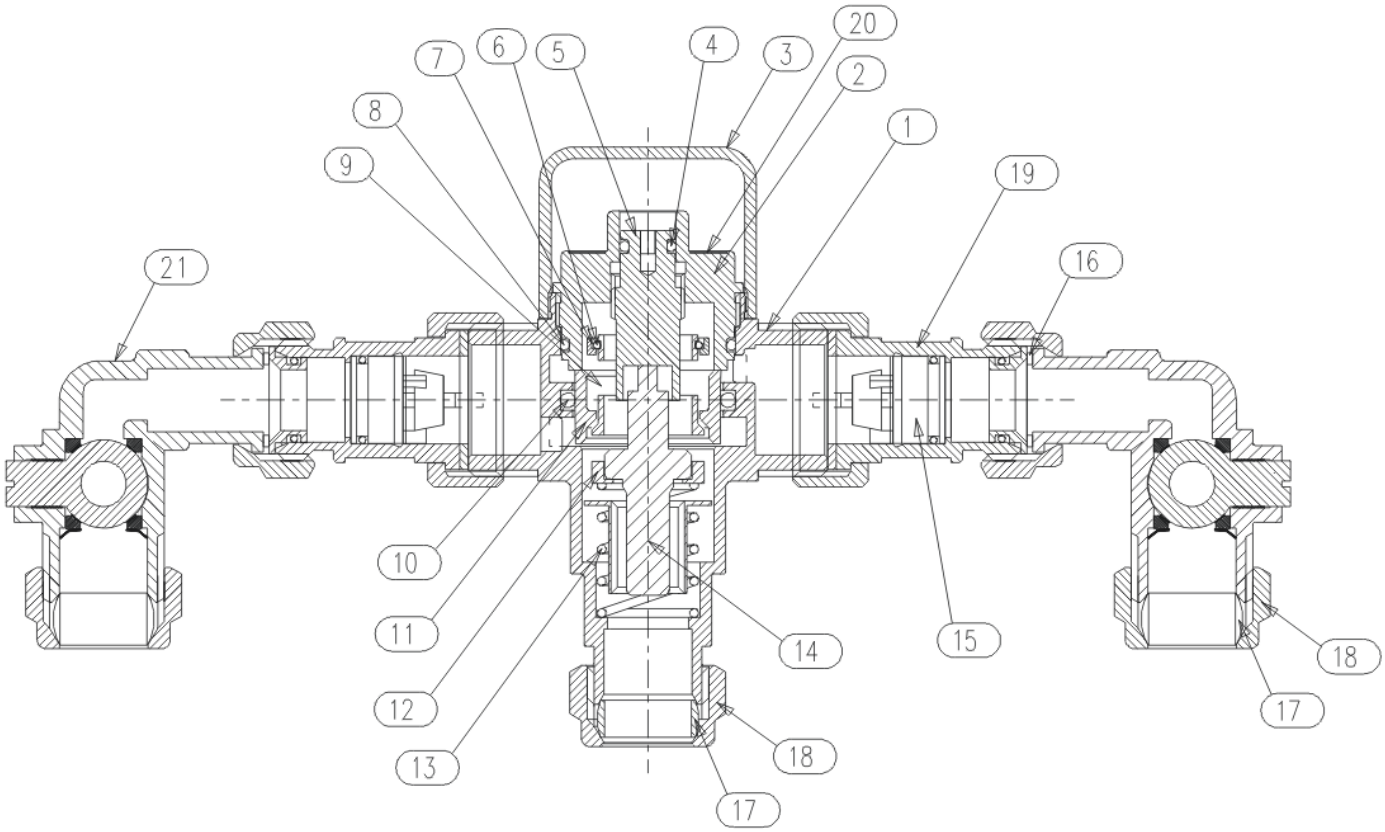
Parts Diagram cont.

MT503CP-ISO cont.

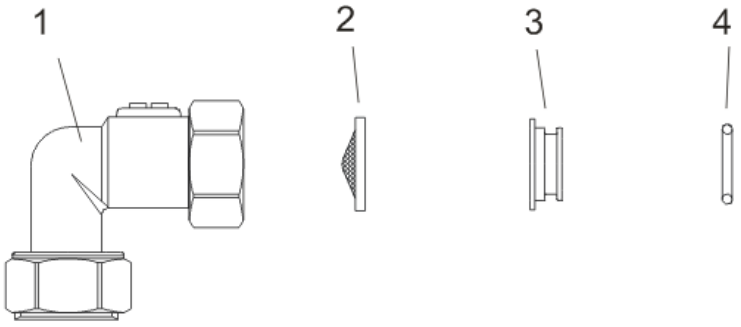
1	Valve Body	15	Check Valve
2	Valve Head	16	Mesh Filter
3	Head Cover	17	Isolating Adaptor Assembly
4	BS010 'O' Ring	17A	15mm Body
5	Temperature Adjusting Screw	17B	Plated Brass Ball
6	Plain Ring	17C	Brass Nut
7	Clamp Ring	17D	15mm Annealed Copper Olive
8	BS023 'O' Ring	17E	15mm Compression Nut
9	Overtravel Spring	17F	PTFE Seat
10	'O' Ring 80 SH EP11/8/3	17G	Brass Actuating Stem
11	Piston	17H	70 Shore EPDM 'O' Ring
12	Extended Thermostat Housing	17I	¾" Connecting Nut
13	Return Spring	17J	WRC Approved Fibre Washer for ¾ BSP Flat Face Connection
14	Thermostat Element		

Parts Diagram cont.

MT503CP-ISOELB



Isolation Elbow Kit for MT503CP



Parts Diagram cont.

MT503CP-ISOELB cont.

1	Valve Body	12	Extended Thermostat Housing
2	Valve Head	13	Return Spring
3	Head Cover	14	Thermostat Element
4	BS010 'O' Ring	15	Check Valve
5	Temperature Adjusting Screw	16	Rubber Seal and Filter
6	Plain Ring	17	15mm Compression Ring
7	Clamp Ring	18	15mm Compression Nut
8	BS023 'O' Ring	19	Adaptor Assembly
9	Overtravel Spring	20	Label
10	'O' Ring 80 SH EP11/8/3	21	Elbow Isolation
11	Piston		

Isolation Elbow Kit for MT503CP Parts List

Item Nº	Part Ref	Description	Quantity
1	780494FC	Isolation Elbow	2
2	760305	Seal / Filter	2
3	780259	Flat Face Adaptor	2
4	480206	'O' Ring	2

Guarantee

At Bristan, we want to make things as easy as possible for our customers. That's why we offer solid guarantees on all our products, effective from the fate of purchase, to give you peace of mind.

To start your free guarantee simply scan the QR code and register your product. Alternatively visit www.bristan.com/register.

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Notes

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Part Number: 800516G
Issue: MT503CP Range

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