

Installation and maintenance instructions for thermostatic mixing valves

Introduction



The following information is provided to ensure that users gain the maximum benefit from their chosen Proflow Suremix Thermostatic Mixing Valve. Please read these installation and operating instructions carefully before proceeding on to the detailed commissioning instructions found in individual product sections.

Section A

This section refers to the Proflow Suremix HCX - a Type 3 thermostatic mixing valve which conforms to the NHS Model Engineering Specification D08 and is approved under TMV 3 Scheme.

Section B

This section refers to the Suremix UB and Suremix C - Type 2 thermostatic mixing valves which have been manufactured in accordance with the requirements of BS EN 1111 and BS EN 1287.

For information

The Health Guidance Note (HGN) dealing with safe hot water temperatures makes reference to three types of valve, as follows:

Type 1

A mechanical mixing valve with maximum temperature stop (including single lever taps).

Type 2

A thermostatic mixing valve conforming to BS EN 1111 and BS EN 1287 (formerly BS 1415 Part 2).

Type 3

A thermostatic mixing valve with enhanced thermal performance complying with NHS Estates requirements.

The TMV scheme Certification relates to Type 2 and 3 valves.

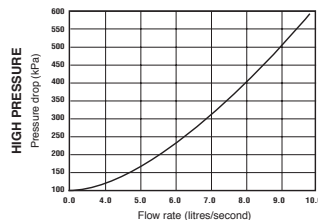
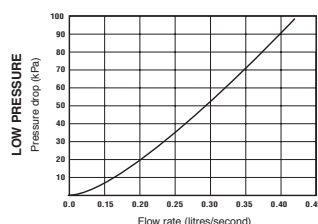
Section A - Proflow Suremix HCX

This section refers to the Proflow Suremix HCX - a Type 3 Thermostatic Mixing Valve which conforms to NHS Estates Model Engineering Specification D08, and is approved under the TMV 3 Scheme.

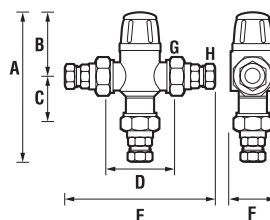
Type 3 Thermostatic Mixing Valves are suitable for use when the hot and cold water supplies to the valves are normally within the limits specified in the table below (conditions for normal use) for each operating range, and where the mixed water temperature is set on commissioning of the valves for each purpose. Only thermostatic mixing valves with no user-accessible adjustment of the mixed water temperature should be used where more than one outlet may discharge simultaneously when operated by more than one user at the same time.

Type 3 Thermostatic Mixing Valves with user-accessible adjustment may not be used for supply to different maximum mixed water temperatures, e.g. Showers / bath mixers, unless the movement of the diverter mechanism or some other device will automatically adjust the temperatures to the maximum mixed water temperature allowed for that mixed water outlet.

Flow characteristics

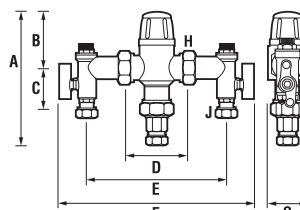


Dimensions for Proflow Suremix HCX



		15mm	22mm
A	Overall height	155mm	155mm
B	Centre line to top cover	50mm	50mm
C	Centre line to bottom face	50mm	50mm
D	Face to face	78mm	78mm
E	Overall width	160mm	160mm
F	Depth	40mm	40mm
G	Flat face union	1" BSP	1" BSP
H	Compression nut	15mm	22mm

Dimensions for Proflow Suremix HCX with right angled QTBV



		15mm	22mm
A	Overall height	155mm	155mm
B	Centre line to top cover	50mm	50mm
C	Centre line to bottom face	50mm	50mm
D	Face to face	78mm	78mm
E	Centre line between QTBV	157mm	157mm
F	Overall width	220mm	220mm
G	Depth	40mm	40mm
H	Flat face union	1" BSP	1" BSP
J	Compression nut	15mm	22mm

Conditions for normal use

	High pressure	Low pressure
Operating pressure range		
Maximum static pressure - bar	10	10
Flow pressure, hot and cold - bar	1 to 5	0.2 to 1
Hot supply temperature - °C	52 to 65	52 to 65
Cold supply temperature - °C	5 to 20	5 to 20

Note

Valves operated outside these conditions cannot be guaranteed to operate as Type 3 valves.

UKWFB acceptance number 002078

Specification data

Factory temperature setting (nominal)	38°C
Temperature setting range	35°C - 48°C
Maximum pressure loss ratio	10:1
Flow rate, minimum (15 and 22mm)	0.07 litres/sec
Flow rate at 1 bar pressure loss (15mm)	0.48 litres/sec
Flow rate at 1 bar pressure loss (22mm)	0.5 litres/sec
Shut-off on cold supply failure	1.0 - 1.5 sec
(60°C hot 38°C mix. 0.5 bar equal pressures)	

Approved applications

LP-W, HP-W - Wash basin, low and high pressure - maximum set temperature 41°C
 LP-S, HP-S - Shower, low and high pressure - maximum set temperature 41°C
 HP-T44 Bath fill to 44°C, high pressure - maximum set temperature 44°C
 HP-T46 Bath fill to 46°C, high pressure - maximum set temperature 46°C
 LP-B, HP-B - Bidet, low and high pressure - maximum set temperature 38°C
 Approval Number (15mm and 22mm HCX valves) - ETC/177/0602

Installation instructions for Proflow Suremix HCX

Before installing Proflow Suremix HCX valves, it is essential that users check that the designation of the valve matches the application flow rate, temperature and dynamic pressures to all the terminal fittings to be served. Isolating valves must be fitted in an accessible position prior to the Proflow Suremix HCX in order to facilitate servicing.

For optimum performance it is recommended that the supply pressures are as close to equal as possible and where necessary a pressure reducing valve, such as the E2000, should be installed in the appropriate higher pressure supply. Check that supply temperatures are within the permitted range for each valve chosen and comply with guidance information on the prevention of Legionella.

Take care when connecting the supply pipes. Hot and Cold water supplies must be connected to the appropriate ports as indicated using the supplied union adaptors, complete with check valves and inlet strainers. Mixed supply is provided through the MIX port.

Prior to the installation of the Proflow Suremix HCX, remove the strainers and check valves provided within the inlet fittings and ensure pipework supplying valves is thoroughly flushed free of dirt and debris. Refit strainers and check valves including the 'O' rings when flushing is complete and system is clean. Commissioning of the valve may only take place after the system has been thoroughly cleaned. *Continued over leaf*

Quick installation guide

This quick reference guide is a summary of the complete installation procedure. It serves as a reminder once the general installation instructions have been read and understood.

The general installation instructions must be followed in full to ensure correct operation of the valves.

1. Check correct valve has been chosen against system conditions.
2. Flush installation thoroughly BEFORE fitting chosen Proflow Suremix valve.

3. Install valve using the fittings provided including check valves and strainers.
4. Set to the required temperature.
5. Operate valve until completely satisfied it is functioning correctly.
6. Perform fail-safe shut-off test.
7. Record set temperature and test results for future reference.
8. Install partner clip for additional anti-tamper protection.

Proflow Suremix mark I type strainer



Proflow Suremix mark II type strainer



Section A – Proflow Suremix HCX

Continued. Alternatively installers may fit the Proflow Suremix HCX dummy valve which simplifies flushing of the pipework before installation of the Proflow Suremix HCX, the inlet strainers and check valves.

The integral strainers provided are designed to protect the check valve and thus prevent cross flow. Additional Y pattern strainers should be fitted where high levels of water particles or other contamination exists. This will help to ensure satisfactory performance and, when used with the strainers provided, serve to protect the valve.

Proflow Suremix HCX valves contain temperature sensitive parts. During installation ensure that valves are not exposed to extreme hot or cold temperatures - where BS EN 1254 capillary fittings are used remove the valve from pipework prior to applying heat.

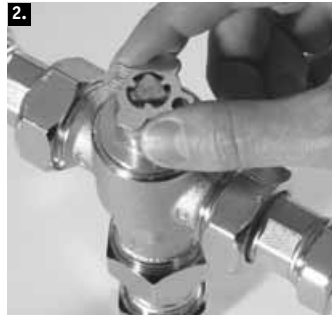
The Proflow Suremix HCX thermostatic mixing valve is fully serviceable in line and should be checked periodically. Isolating valves must be fitted in an accessible position prior to the Proflow Suremix HCX in order to facilitate servicing - installers should bear this in mind when choosing the location for valves.

Proflow Suremix HCX valves are supplied with WRAS listed check valve cartridges, for both hot and cold supplies to the valve. These are sufficient to meet back flow prevention requirements providing the terminal fittings comply with Water Byelaws. If Proflow Suremix HCX valves are supplying submerged outlets additional protection may be required - please consult your local Water Byelaws office for clarification.

Setting and commissioning instructions

The Proflow Suremix HCX is supplied factory set at 38°C. Please ensure that commissioning of the valve is undertaken under normal operating conditions. If the initial valve outlet temperature is substantially different to this, check supply pressure and temperatures to ensure they are not outside the valves' specified limits. Then proceed as follows:

1. Remove the securing white cap.
2. With both hot and cold supplies turned full on, and the terminal fitting fully open, adjust the temperature to the required setting with the adjustment key provided for this purpose - clockwise to decrease and anti-clockwise to increase. We recommend a hand held digital thermometer be used to correctly measure the outlet temperature.



3. Once satisfied that the correct temperature has been achieved, the valve mechanism should be exercised a minimum of three times by alternately isolating the hot and cold supplies. Re-check the set temperature of the valve. If the set temperature has drifted then the setting and the exercising procedure should be repeated.

Once the valve has been exercised and the temperature is stable, a fail-safe shut-off performance check should be undertaken as follows:

1. Isolate the cold water supply - the flow from the terminal fitting should fall to no more than a trickle within a few seconds depending on site conditions. Restore the cold supply and let the temperature stabilise.
2. Carry out a similar test for the hot supply.

If either fail-safe function does not operate satisfactorily ensure supply pressure and temperatures under normal flow conditions are within the valve's operating parameters. In addition check that the hot supply temperature is more than 10°C above the valve set temperature (i.e. hot to mix temperature differential > 10°C). If the hot supply is less than 10°C above the valve set temperature the boiler thermostat setting may have to be increased. Also check that there is not a long dead leg on the hot supply to the valve, and that no cross flow is taking place effectively reducing the supply temperature.

For optimum performance it is recommended that the dynamic supply pressures be as close to equal as possible. Should the dynamic supply pressures be outside a 10:1 imbalance ratio, pressure reducing valves should be installed in the appropriate higher-pressure supply, or the lower pressure supply should be boosted.

When the Proflow Suremix HCX has been set and tested refit the white cap and finally snap on the partner clip.

A record of the results should be kept for future maintenance checks.

1. Record temperatures of hot and cold supplies.
2. Record temperature of mixed water at the largest draw-off rate.
3. Record temperature of mixed water at the smaller draw-off rate (record this flow rate).
4. Isolate the cold supply to the Proflow Suremix HCX and monitor the mixed water temperature. This should not exceed the set temperature by more than 2°C.
5. Re-establish the cold supply and ensure that the set temperature is re-established.
6. Finally, detail the test equipment used.

This section refers to the Proflow Suremix UB and C - thermostatic mixing valves which have been manufactured in accordance with BS EN 1111 and BS EN 1287.

Installation instructions for Proflow Suremix UB and Proflow Suremix C

Before installing Proflow Suremix UB and Proflow Suremix C valves, it is essential that users check that the designation of the valve matches the application, flow rates, temperatures and dynamic pressures to all the terminal fittings to be served. It is recommended that isolating valves are fitted in an accessible position prior to Proflow Suremix UB and Proflow Suremix C valves in order to facilitate servicing.

For optimum performance it is recommended that the supply pressures are as close to equal as possible and where necessary pressure reducing valves should be installed in the appropriate higher pressure supply. Check that supply temperatures are within the permitted range for each valve chosen and comply with guidance information on the prevention of Legionella.

Take care when connecting the supply pipes. Hot and Cold water supplies must be connected to the appropriate ports as indicated using the supplied union adaptors, complete with check valves and inlet strainers. Mixed supply is provided through the MIX port.

Prior to installation of Proflow Suremix UB and Proflow Suremix C valves remove strainers and check valves provided within the inlet fittings and ensure pipe work supplying valves is thoroughly flushed free of dirt and debris. Refit strainers and check valves, including the 'O' rings when flushing is complete and the system is clean. Commissioning of the valve may only take place after the system has been thoroughly cleaned. Alternatively installers may fit the Proflow Suremix C dummy valve which simplifies flushing of the pipework before installation of the Proflow Suremix C, the inlet strainers and check valves.

The integral strainers provided are designed to protect Proflow Suremix UB and Proflow Suremix C valves. Additional Y pattern strainers should be fitted where high levels of water particles or other contamination exists. This will help to ensure satisfactory performance and, when used with the strainers provided, serve to protect the valve.

Proflow Suremix UB and Proflow Suremix C valves contain temperature sensitive parts. During installation ensure that valves are not exposed to extreme hot or cold temperatures - where BS EN 1254 capillary fittings are used remove the valve from pipework prior to applying heat.

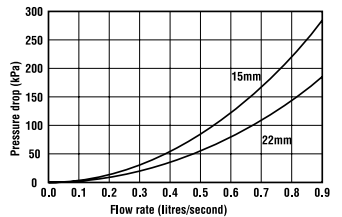
Proflow Suremix UB and Proflow Suremix C thermostatic mixing valves are fully serviceable in line and should be checked periodically (dependent on the product). Isolating valves must be fitted in an accessible position prior to the Proflow Suremix UB and Proflow Suremix C in order to facilitate servicing - installers should bear this in mind when choosing the location for valves.

Proflow S

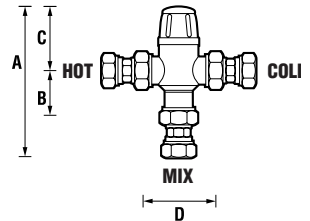
Working temperatures	
Factory temperature setting	43°C
Temperature setting range	35 – 60°C
Temperature of hot supply	60°C – 85°C
Temperature of cold supply	5°C – 25°C
Minimum temperature differential, hot to mix	15°C
Temperature stability (under normal supply variations)	± 2°C

Working pressures	
Working pressure, static	10 bar max
Working pressure, dynamic	6 bar max
Maximum pressure loss ratio (either supply)	0.2 bar min 10:1
Note: optimum performance is achieved with equal pressures	

Flow characteristics



Dimensions for Proflow Suremix C



		15mm	22mm
A	Overall height	150mm	150mm
B	Centre line to bottom face	52mm	52mm
C	Centre line to top cover	58mm	58mm
D	Face to face	77mm	77mm
E	Overall width	160mm	170mm

UKWFB listing number 9704080

Setting and commissioning instructions – Proflow Suremix C

The Proflow Suremix C is supplied factory set at 43°C. If the initial valve outlet temperature is substantially different to this check supply pressures and temperatures to ensure they are not outside the valves' specification, then proceed as follows:

1. Remove the securing screw the white head and the locking ring.
2. Refit the head to the spindle. With both hot and cold supplies turned full on, and the terminal fitting fully open, adjust the outlet temperature to the required setting by turning the head clockwise to decrease and anti-clockwise to increase the temperature. We recommend a hand held digital thermometer be used to correctly measure the outlet temperature.
3. Once satisfied that the correct temperature has been achieved, the valve mechanism should be exercised a minimum of three times by alternately isolating the hot and cold supplies. Re-check the set temperature of the valve. If the set temperature has drifted then the setting and exercising procedure should be repeated.

Once the valve has been exercised and the temperature is stable, a fail-safe shut off performance check should be undertaken as follows:

Section B – Proflow Suremix C and Proflow Suremix UB

Suremix C

1. Isolate the Cold water supply - the flow from the terminal fitting should be no more than a trickle within a few seconds. NB hot supply temperature must be at least 60°C. Restore the cold supply and let the temperature stabilise.

2. Carry out a similar test for the hot supply.

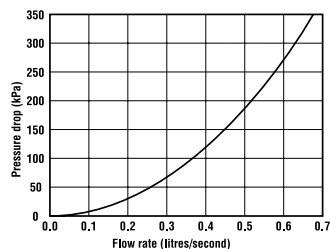
If either fail-safe function does not operate satisfactorily ensure supply pressure and temperatures under normal flow conditions are within the valves operating parameters. For optimum performance it is recommended that the supply pressures be as close to equal as possible. Where necessary, pressure reducing valves should be installed in the appropriate higher pressure supply.

When the Proflow Suremix C has been set and tested, remove the white head and refit the white locking ring. Replace the head making sure to locate the tab on the locking ring in the slot on the inner face of the white head. NB It may be necessary to reposition the white locking ring to allow fitting of the white head. Secure the head in place with the allen screw and finally snap on partner clip.

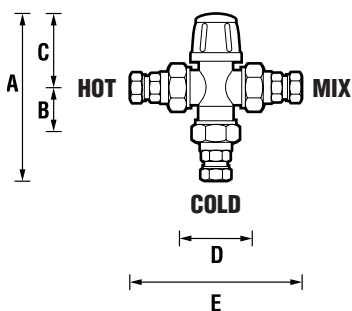
Working temperatures	
Factory temperature setting	43°C
Temperature setting range	35 – 55°C
Temperature of hot supply	60°C – 85°C
Temperature of cold supply	5°C – 25°C
Minimum temperature differential, hot to mix	15°C
Temperature stability (under normal supply variations)	± 2°C

Working pressures	
Working pressure, static	10 bar max
Working pressure, dynamic	4 bar max
Maximum pressure loss ratio (either supply)	0.2 bar min
	5:1
Note: optimum performance is achieved with equal pressures	

Flow characteristics



Dimensions for Proflow Suremix UB



		15mm
A	Overall height	148mm
B	Centre line to bottom face	35mm
C	Centre line to top cover	60mm
D	Face to face	77mm
E	Overall width	150mm

UKWFB listing number 9704080

Additional installation instructions

In addition to the general installation instructions already provided opposite, the following additional instructions must be followed when installing Proflow Suremix UB.

1. Flow regulator (adaptor identified with blue cap) MUST be fitted to the cold inlet on ALL installations where cold supply pressure is greater than hot supply pressure. Flow regulator may also be left in place for installations with higher hot water pressures.
2. The union adaptor which only contains the check valve must be fitted to the hot supply inlet.
3. The remaining union adaptor is fitted to the mix supply.

Setting and commissioning instructions – Proflow Suremix UB

The Proflow Suremix UB is supplied factory set at 43°C. If the initial valve outlet temperature is substantially different to this check supply pressures and temperatures to ensure they are not outside the valves specification, then proceed as follows:

Proflow Suremix UB



1. Remove the securing screw and the white head.

2. Refit head to spindle at approximately 180° from original position. With both hot and cold supplies turned full on and the terminal fitting fully open, adjust the temperature to the required setting by turning the spindle clockwise to decrease and anti-clockwise to increase. We recommend a hand held digital thermometer be used to correctly measure the outlet temperature.

3. Once satisfied that the correct temperature has been achieved, the valve mechanism should be exercised a minimum of three times, by alternately isolating the hot and cold supplies. Re-check the set temperature of the valve. If set temperature has drifted then the setting and exercising procedure should be repeated.

Once the valve has been exercised and the temperature is stable, a fail-safe shut off performance check should be undertaken as follows:

1. Isolate the Cold water supply – the flow from the terminal fitting should be no more than a trickle within a few seconds. NB Hot supply temperature must be at least 60°C. Restore the cold supply and let the temperature stabilise.
2. Carry out a similar test for the hot supply.

If either fail-safe function does not operate satisfactorily ensure supply pressure and temperatures under normal flow conditions are within the valves operating parameters. For optimum performance it is recommended that the supply pressures be as near to equal as possible. Where necessary pressure reducing valves should be installed in the appropriate higher pressure supply.

When the Proflow Suremix UB has been set and tested, refit the white head making sure the locking slot on the head interconnects with the body tab. Secure head in place with the allen screw and snap on partner clip.

General trouble shooting

Should the supply pressure be outside imbalance ratio permitted (see specific product for details) an E2000 pressure reducing valve should be installed in the appropriate higher-pressure supply.

Cross flow

Cross flow can be simply identified by running water from the terminal fitting until the hot inlet is hot and the cold inlet cold. Turn the tap off and monitor the inlet pipe temperatures. If cross-flow is taking place there will be rapid change in temperature on one of the inlet pipes. If it is thought that cross-flow is occurring check valves should be removed, cleaned and then replaced. Take care when testing the hot supply and ensure a suitable vessel is available to collect any water.

Connecting the supply pipes

Hot and Cold water supplies must be connected to the appropriate ports as

indicated using the supplied union adaptors. Complete with check valves and inlet strainers. Mixed supply is provided through the MIX port. Where water through the mixed port is either fully Hot or fully Cold, or valves appear unable to adjust, re-check installation.

All Proflow Suremix valves are supplied with WRAS listed check valve cartridges for both hot and cold supplies to the valve. These are sufficient to meet back flow prevention requirements providing terminal fittings comply with Water Byelaws. If Proflow Suremix valves are supplying submerged outlets additional protection may be required – please consult your local Water Byelaws office for clarification.

Accessories

A comprehensive selection of spares and accessories is available to ensure users gain the maximum benefit from their chosen

Proflow Suremix valve. Please contact your local Yorkshire Fittings sales office or plumbers' merchant for details.

Proflow Suremix dummy valves

Proflow Suremix dummy valves should be installed prior to commissioning of the system to facilitate flushing out. The use of Proflow Suremix dummy valve reduces the likelihood of operational problems caused by foreign matter which, if present within the system, may impair performance or damage the valves.

Service kits

All Proflow Suremix valves are fully serviceable – a complete list of spare and replacement parts is available from Yorkshire Fittings.

Fault finding

If after installation you find the valve does not work, please check the following points:

1. Has the water been turned on?
2. Are the recommended pressures correct and set?
3. Have full bore control valves been installed, and not service valves with restricted bore?
4. Is the hot water set at the right temperature?
5. Are hot and cold pipes connected to the right ports?
6. Have the check valves been installed in the correct way and in the correct position?
7. Are the filters in the correct location and in the correct orientation?
8. Are the filters clean?
9. Has the system been flushed using the dummy valve prior to installing the Proflow Suremix valve?

Maintenance instructions

Proflow Suremix HCX

The Proflow Suremix HCX should be checked periodically against the original installation performance results. Carry out the performance tests 6-8 weeks after the initial installation and then again after 12-15 weeks. If there are no changes a 6 monthly test plan can be implemented. If significant changes are noticed then the service period should be reduced.

The local quality of the water will also influence the maintenance frequency. For installation in hard water areas users should consider installing a water softener.

Performance tests

1. Check the set temperature of the valve, we recommend a hand held digital thermometer be used to correctly measure the outlet temperature.
2. Perform the shut-off fail-safe test (exercise the valve a minimum of three times prior to undertaking the shut-off test).
3. If there is no change in either the set temperature or the shut-off time the valve is functioning correctly and requires no further maintenance at this time.

However, if the set temperature has altered by more than 2°C service work is required. Check to see if any external factors have altered.

Temperature

1. The Proflow Suremix HCX will perform sluggishly if the set temperature is near to the supply temperature.
2. Hot water supply temperature must be at least 10°C higher than the set temperature.
3. Check both the hot supply temperature and the valves set temperature and adjust accordingly.

Pressure

1. Lower flow rates may indicate a reduced supply pressure. Check the supply pressure.
2. Lower flow rates may also be a result of blocked inlet strainers. Inlet strainers

should be checked and cleaned as required.

3. Any upstream line strainers should be inspected and cleaned as necessary as partially blocked strainers will reduce flow and impair performance.

If having carried out the above procedures performance is still unsatisfactory it is possible that a build up of lime scale is present within the valve or it is possible that there has been a deterioration of the seals.

To clean the valve:

1. Isolate the hot and cold supply and remove the valve body. (Before proceeding further, make note of the orientation of all parts so that they may be re-assembled in the correct manner).
2. Remove headwork and retain for re-assembly, then by carefully unscrewing the large nut slide out the thermostat carrier and working components.
3. Clean with a weak solution of a non-toxic WRAS approved scale remover.
4. Fit a new seal service kit. The internal 'O' rings should be greased; using a WRAS approved silicone based grease, and placed to ensure smooth movement of the piston within its housing. When re-assembling care must be taken not to damage the 'O' rings, observe the 'O' ring on insertion via the cold inlet port. Do not force the valve.

After cleaning, re-assemble the Proflow Suremix HCX. Exercise, reset and test the valve in accordance with the instructions laid out in the Setting and Commissioning section. A record of the results should be kept for future maintenance checks.

If after cleaning and replacing 'O' ring seals the valve is still not functioning correctly it may be necessary to replace the thermal element or other components. Please contact Yorkshire Fittings for details and advice.

Proflow Suremix UB and C

The Proflow Suremix UB and Proflow Suremix C valves do not require routine maintenance but it is recommended that the performance is checked at least annually against the original installation performance results. If there have been significant changes then the service period should be reduced, if the results are nominally the same the annual test plan can remain in place.

The quality of the water will also influence the maintenance frequency. For installations in hard water areas, users should consider installing a water softener.

If in doubt carry out the following performance tests after initial installation and then again after a further 12 – 15 weeks.

Performance tests

1. Check the set temperature of the valve, we recommend a hand held digital thermometer be used to correctly measure the outlet temperature.
2. Perform the shut off fail-safe test (exercise the valve a minimum of three times prior to undertaking the shut off tests).
3. If there is no change in either the set temperature or the shut off time the valve is functioning correctly and requires no further maintenance at this time.

However, if the set temperature has altered by more than 2°C service work is required. First check to see if any external factors have altered.

Temperature

1. The Proflow Suremix C will perform sluggishly if the set temperature is near to the supply temperature. Hot water must be at least 15°C greater than the set temperature e.g. valve set at 45°C then hot water supply temperature must be minimum 60°C.
2. Check both the hot supply temperature and the valves set temperature and adjust accordingly.

Pressure

1. Check the supply pressure. The lower the supply pressure the lower the flow. Inlet strainers should be removed and cleaned. Partially blocked strainers will reduce flow and impair performance.
2. Any upstream line strainers should be inspected and cleaned as necessary, partially blocked strainers will reduce flow and impair performance.

If, having carried out the above procedures performance is still unsatisfactory it is possible that a build up of lime scale is present within the valve or that there has been a deterioration of the seals. Cleaning instructions can be found in the Proflow Suremix HCX section.

For more information please contact your regional sales office:

Technical Help: Free Phone 0800 156 0050

Technical Help: Free Fax 0808 156 1012

www.pegleryorkshire.co.uk