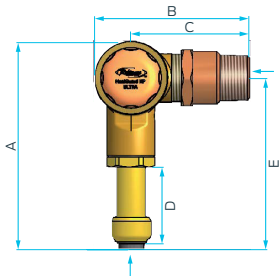


Dimensions

A	121mm
B	90mm
C	69mm
D	45mm
E	100mm



Troubleshooting

If desired mixed water temperature cannot be obtained or valve is difficult to set:

Possible Cause	Solution
Inlet temperatures are not within specified limits.	Ensure inlet temperatures are within the specified limits for the valve.
Valve contains debris.	Flush water through valve and clean non-returns and strainers.
Strainers contain debris.	Clean strainers, ensuring debris is removed.

If the mix temperature is unstable or changing over time:

Possible Cause	Solution
Fluctuating supply pressures.	Install pressure reducing valves.
Strainers contain debris.	Clean strainers, ensuring debris is removed.
Inlet temperatures may have altered due to seasonal temperature variations.	Reset valve.

If either full hot or full cold water is flowing from outlet fixture:

Possible Cause	Solution
Hot/Cold water has migrated to other inlet. Refer also to point 1.	Check non-return valve is not fouled. Clean if necessary.

If there is no flow from the valve outlet:

Possible Cause	Solution
Hot or cold water supply failure.	Restore inlet supplies and check mix temperature.
Strainers are blocked by debris.	Clean strainers and non-returns, ensuring all debris is removed. Flush valve.

If the flow rate is reduced or fluctuating:

Possible Cause	Solution
Inlets fouled by debris.	Check valve and inlet fittings for blockages. Clean or flush as necessary.
Fluctuating supply pressures.	Install pressure reducing valves.

If hot water flows into the cold water system or vice versa:

Possible Cause	Solution
Non-return valves fouled by debris.	Clean non-returns and strainers, ensuring all debris is removed. Flush valve.

If the valve is noisy:

Possible Cause	Solution
Water velocity above velocity requirements of AS/NZS 3500.1.	Reduce water velocity (best achieved by fitting a pressure reducing valve).

Valve Specifications

Cold water supply temperature	5°C – 30°C
Hot water supply temperature	60°C – 99°C ¹
Optimum outlet temperature range	40°C – 50°C ²
Set temperature	Must be commissioned on site to achieve desired outlet temperature
Accuracy of outlet temperature	±3°C - tested to AS 4032.2 between 40°C and 50°C
Minimum temperature differential (between hot supply and outlet temperature)	10°C ³
Static supply pressure	1600kPa maximum
Maximum permitted pressure variation in either supply, in order to control outlet temperature to ±3°C (from supply pressure at commissioning)	±15% maximum ^{5,6}
Minimum flow rate	4 L/min

Notes:

- AS/NZS 3500.4 Clause 1.9.1 requires the minimum hot water storage temperature to be 60°C.
- For applications outside the requirements of AS/NZS 3500 and AS 4032.2, it is possible to set the valve as high as 55°C or as low as 35°C, depending on site conditions
- This is the minimum difference required to ensure shut-off of outlet flow in the event of cold supply failure in accordance with AS 4032.2, providing the valve is set between 40°C and 50°C.
- The maximum permitted ratio of supply pressures, under dynamic (flow) conditions. For optimum performance it is recommended that the hot and cold pressures at commissioning are as close as possible to equal.
- The maximum permitted variation in either supply pressure from the pressure at commissioning in order to control the outlet temperature to ±3°C.
- Note that rapid changes in supply pressure can result in a spike in the outlet temperature beyond ±3°C. Following a rapid change in supply pressure it may take a number of seconds for the temperature to return to within a ±3°C limit. Steps should be taken on-site to eliminate any cause of rapid supply pressure variation.

Warranty

Reliance Worldwide Corporation reserves the right to modify designs and specifications and to withdraw and introduce products at any time without notice.

Installation is subject to the requirements of the applicable regulatory authority, the National Construction Code Volume Three – Plumbing Code of Australia, associated reference standards as applicable at the time and AS/NZS 3500. This product is compliant to the Lead Free requirements of the National Construction Code Volume Three. For further Scope of Use, please visit www.rmc.com.au/resources.

Reliance Worldwide Corporation (Aust.) Pty. Ltd. (RWC) will either replace or repair any defective goods where the defect arose as a result of manufacture for two (2) years (see website for more details). You may contact RWC at the phone number, address or e-mail shown and will be required to return the goods for evaluation. Should the defect be found to be one of our manufacture we will send you a replacement product to your stated address at our expense. Our goods come with guarantees that cannot be excluded under Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and failure does not amount to a major failure.

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Part No. IS3147 | MKT-000204 | Rev. - | AU-RMC-IS3147_2024-v1 | June 2024

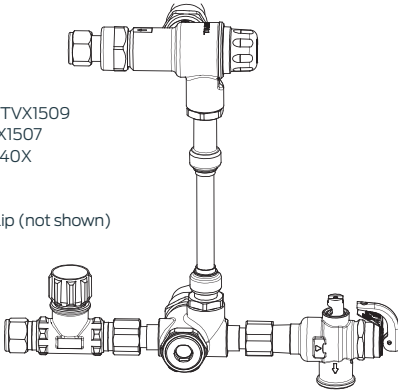


Installation Instructions
MIX12015I – Slick Combo Ultra Set

Orange Cap 15mm (1/2")
Valve Installation Kit High Performance Solar

Content List

- 1 x Right-Angled Tempering Valve TVX1509
- 1 x Non-Return Isolating Valve NVX1507
- 1 x Connecting Solar Manifold VCI40X
- 2 x Face Washers
- ¾" FI x ½" MI Union
- SharkBite® DN15 Disconnection Clip (not shown)



Visit rmc.com.au for full instructions in our HeatGuard® Installation Manual.
Do not use on steam-supplied systems.
Failure to comply with all aspects of these instructions may result in unsafe performance. All installations must comply with AS/NZS 3500 and any State or Local Authority requirements.

Slick Combo Connecting Manifold

The Slick Combo Connecting Manifold provided in this kit is intended to simplify the installation of inlet control and tempering valves to a hot water system. The Manifold and Right-Angled Tempering Valve included in this kit use a combination of face seals, copper olive compression and SharkBite® connections to facilitate quick and efficient installation. To ensure a good installation, please follow the procedures in this instruction sheet.

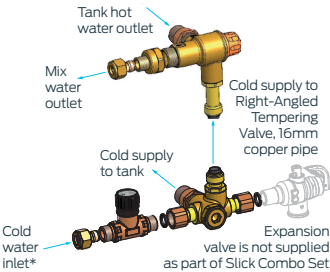
Installing the Slick Combo Set

- General installation configuration shown in **Diagram 1**.
- Install the Manifold only to the cold water inlet of the hot water system.
- A radius of 70mm around the tank inlet as shown in **Diagram 2** is required to provide sufficient space to attach the Manifold. This may require the Manifold to be installed to the hot water system before positioning the hot water system.
- Install the supplied Non-Return Isolating Valve to the inlet of the Manifold using the face seal provided as directed in **Diagram 1**.
- Install a Cold Water Expansion Valve (not supplied) with a pressure rating appropriate to the hot water system to the Manifold as directed in **Diagram 1**.
- Install the supplied Solar Right-Angled Tempering Valve to the hot water system outlet. (Refer to section **How to Install the Right-Angled Tempering Valve**).

Installing the Slick Combo Set (continued)

- Loosely attach and align the Right-Angled Tempering Valve cold water inlet and the Manifold cold water outlet SharkBite® connections. Do NOT tighten the Right-Angled Tempering Valve to final position yet.
- Measure the distance between the aligned SharkBite® connections (shown as A in **Diagram 2**). Add 50mm to this length and cut the copper pipe to this size (Refer to section **How to Install SharkBite® Copper Joints**). Mark the copper pipe at both ends with the correct insertion depth (24mm). This is to ensure the pipe is fully inserted at both ends once the joint is complete.
- Important:** Tighten the Right-Angled Tempering Valve to approximately 30° off final position BEFORE inserting pipe to ensure the Manifold end of the pipe remains scratch free.
- Insert the copper pipe fully into the Right-Angled Tempering Valve inlet fitting and tighten such that the copper pipe is aligned with the Manifold inlet.
- Using a SharkBite® Disassembly Clip (provided) or SharkBite® Disassembly Tongs (available separately), release the pipe from the Right-Angled Tempering Valve inlet SharkBite® fitting and slide copper pipe towards Manifold, and insert fully into the Manifold SharkBite® fitting. Ensure both ends of pipe are engaged such that the ends of the SharkBite® fittings are aligned with the depth marks.

Diagram 1 – Installation Configuration



* Installing a pressure reducing valve at the boundary is recommended to regulate downstream pressure and is mandated in some states. Consult local water authorities for further information.

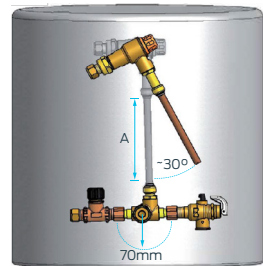
How to Install SharkBite® Copper Joints

- To make the perfect SharkBite® joint, check that fittings and tubing are clean, in good condition and are free from damage and foreign objects. Do not use any additional lubricant or sealing compounds. To ensure fittings stay clean and the O-Ring is protected from damage, fittings must be kept in their original packaging until immediately prior to installation.
- Do not apply excessive force to insert the pipe into the fitting. Need for excessive force may indicate damage to the end of the pipe. If pipe is to be refitted to a SharkBite® fitting, it is important to trim the pipe before making the joint.
- Do not apply direct heat to any part of SharkBite® fittings (except brazing adaptors).
- Ensure the pipe is free of scoring, cuts and abrasion. If the pipe has been engaged with the fitting and then requires removal, it is important that the pipe be trimmed prior to re-engaging.
- Always refer to AS/NZS 3500 when installing any plumbing system and ensure any installation is performed in accordance to the requirements of the standard. Installations of a SharkBite® plumbing system must comply with AS/NZS 3500.
- Use SharkBite® Copper or SharkBite® PEX pipe only for hot and cold water distribution.
- Install SharkBite® Copper or SharkBite® PEX plumbing systems to the appropriate local plumbing codes.
- Only use pipe, fittings and accessories that have been tested and approved for the SharkBite® Copper or SharkBite® PEX plumbing system.
- Pressure test the system on completion (AS/NZS 3500 16.3.1 requires 1500kPa for at least 30 minutes).

Step 1 – Cut

- Using a rotary pipe cutter, cut the copper pipe to the desired length and deburr the internal end of the pipe. Hacksaws should NOT BE used.

Diagram 2 – Installing Cold Supply From Manifold to Tempering Valve



- Take care to ensure the pipe is cut squarely and that there is no ovality in the pipe end (particularly with annealed pipe) as the SharkBite® fitting requires perfectly round pipe.

Step 2 – Deburr

- All burrs and sharp edges must be removed from the outside end of the pipe using a suitable tool or the SharkBite® Copper Deburrer and Depth Gauge, part number F702.

Step 3 – Mark

- Using the SharkBite® deburrer, mark the pipe with the safe seal depth which indicates when the pipe is seated to the correct depth in the fitting. If you don't have the SharkBite® depth gauge ensure the depth of engagement is 24mm for DN15 ½" copper.
- Note:** Australian standards require all copper pipe to have the standards mark stamped into the pipe at 600mm intervals. A SharkBite® connection can't be made at these points.

Step 4 – Connect

- Insert the pipe by pushing firmly with a positive 'click'. Ensure the mark corresponds with the mouth of the fitting.
- Note:** Copper pipe can be easily inserted into the fitting by hand. Damaged pipe will require excessive force to push the pipe into the fitting. If the pipe will not insert easily remove it and check it for damage prior to proceeding.

Step 5 – Disconnection Procedure

- Place the SharkBite® Disassembly Tongs or Disassembly Clip around the fitting assembly and apply pressure to the release collar. With your free hand remove the pipe.

Solar Right-Angled Tempering Valve

Checking Site Parameters

Check site parameters against the specifications of the chosen valve. If the site conditions are outside those specified for the valve, they must be rectified prior to installing the valve.

How to Install the Right-Angled Tempering Valve

The valve is designed to be installed directly into the hot water system. There must be a minimum one (1) metre pipe run between the valve and the first outlet fixture.

Step 1 – Flush the system thoroughly before fitting the valve. It is CRITICAL that all debris is flushed from the pipework prior to installing the valve. Not flushing the system properly is the most common cause of difficulties.

Step 2 – If the water supply is of poor quality so that the valve's strainers will continue to block, fit an additional filter or strainer to the system.

Step 3 – Install the valve in accordance with the installation diagrams in this booklet. Do not use excess thread sealant as this may cause the valve to fail.

Step 4 – Set the valve at the desired temperature by following the instructions below.

Step 5 – Enter installation details on sticker provided, and affix near system.

Valve MUST NOT be subjected to heat during installation as this may damage valve internals.

About Supply Pressures

Tempering valves provide optimum performance when installed with hot and cold supplies of equal dynamic pressure, i.e. pressure under flow conditions. (The static supply pressures often give NO indication of the dynamic supply pressures). It is recommended that the hot and cold supplies to each tempering valve be delivered via pressure control valves. In most domestic installations it should be possible to fit one control valve at the property boundary to control pressure to the whole site.

How to Set the Desired Temperature

- The valve is to be commissioned on-site to ensure correct delivery of the desired mixed water temperature, as installation conditions can vary from site to site.
- Prior to commissioning the valve the hot water system must be switched on and delivering hot water at a minimum of 60°C.

Step 1 – Locate the nearest outlet being supplied by the valve.

Step 2 – Open the outlet to allow a flow rate of at least four (4) litres/minute.

Step 3 – Allow the water to run for at least one minute to ensure the mixed water temperature has settled.

Step 4 – Using a thermometer, check the mixed water temperature. Is desired temperature achieved?

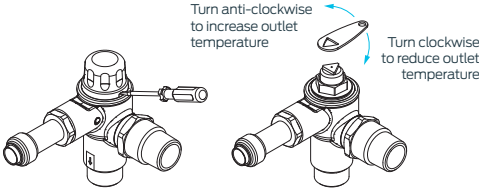
- » Yes? – go to Step 7.
- » No? – go to Step 5.

Step 5 – Adjust the valve as shown in **Diagram 3** until desired mixed outlet temperature is achieved.

Step 6 – Repeat Steps 1 to 4.

Step 7 – Replace the cap.

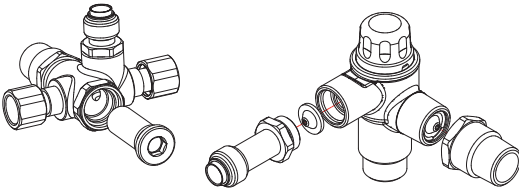
Diagram 3 – Temperature Adjustment



Maintenance

- It is recommended the valve is checked annually by a qualified plumber as per AS 4032.3 to ensure its continued function. For installations with poor or unknown water quality, or other adverse supply conditions, it may be necessary to check the valve more frequently.
- The temperature should be checked at the same outlet that was used for commissioning in the first instance (refer to the installation sticker). If the temperature is more than 2°C from the commissioning temperature or outside the requirements of AS/NZS 3500.4.2, refer to section **Troubleshooting**.
- The strainers in both the Manifold and the Right-Angled Tempering Valve can be accessed for cleaning as shown in **Diagram 4**.
- The valve itself cannot be serviced. If the valve fails it must be replaced. Do not disassemble the valve other than to remove the snap-on cap, strainers and non-return valves as shown.

Diagram 4 – Strainer Access



Insulation

To ensure conformance with AS 1357.1, any insulation used on this valve must conform to the following:

- Cover the maximum surface area of the valve without impeding the operation of the easing gear, connection to the valve inlet or outlet or obstruct the operation of, or discharge from the auxiliary pressure relief device.
- Have an R-value of 0.2. Typically this can be achieved using 9mm of closed cell polymer foam (ref AS/NZS 3500.4 AMDT No 1. Nov 2005, Section 8.2.2). This R-value corresponds to insulation covering approximately 70% of the valve body (excluding inlet and outlet connections).
- In exposed areas, insulation shall be of weather-resistant type or surrounded by a weather resistant enclosure that adheres to point 1 above.
- Be attached to the valve such that it will not be readily removed due to environmental considerations.