



Temp Setter Thermostatic Balance Valve

CSA certified for NSF / ANSI 61

1 Introduction and Safety

1.1 Introduction

Purpose of this manual

The purpose of this manual is to provide necessary information for:

- Installation
- Operation
- Maintenance



CAUTION:

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

NOTICE:

Save this manual for future reference, and keep it readily available at the location of the unit.

1.2 Safety



WARNING:

- The operator must be aware of safety precautions to prevent physical injury.
- Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment. This includes any modification to the equipment or use of parts not provided by Xylem. If there is a question regarding the intended use of the equipment, please contact a Xylem representative before proceeding.
- Do not change the service application without the approval of an authorized Xylem representative.



CAUTION:

You must observe the instructions contained in this manual. Failure to do so could result in physical injury, damage, or delays.

1.2.1 Safety message levels

About safety messages

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product. They are published to help prevent these hazards:

- Personal accidents and health problems
- Damage to the product
- Product malfunction

Definitions

Safety message level	Indication
 DANGER:	A hazardous situation which, if not avoided, will result in death or serious injury
 WARNING:	A hazardous situation which, if not avoided, could result in death or serious injury
 CAUTION:	A hazardous situation which, if not avoided, could result in minor or moderate injury
 Electrical Hazard:	The possibility of electrical risks if instructions are not followed in a proper manner
NOTICE:	• A potential situation which, if not avoided, could result in undesirable conditions • A practice not related to personal injury

1.3 Protecting the environment

Emissions and waste disposal

Observe the local regulations and codes regarding:

- Reporting of emissions to the appropriate authorities
- Sorting, recycling and disposal of solid or liquid waste
- Clean-up of spills

Exceptional sites



CAUTION: Radiation Hazard

Do NOT send the product to Xylem if it has been exposed to nuclear radiation, unless Xylem has been informed and appropriate actions have been agreed upon.

Recycling guidelines

Always follow local laws and regulations regarding recycling.

2 Transportation and Storage

2.1 Examine the delivery

2.1.1 Examine the package

- 1. Examine the package for damaged or missing items upon delivery.
- 2. Record any damaged or missing items on the receipt and freight bill.
- 3. If anything is out of order, then file a claim with the shipping company.
If the product has been picked up at a distributor, make a claim directly to the distributor.

Parts included in package

- Temp Setter valve
- Insulation block
- Hook & loop retaining strips
- IOM

2.1.2 Examine the unit

- 1. Remove packing materials from the product.
Dispose of all packing materials in accordance with local regulations.
- 2. To determine whether any parts have been damaged or are missing, examine the product.
- 3. If applicable, unfasten the product by removing any screws, bolts, or straps.
Use care around nails and straps.
- 4. If there is any issue, then contact a sales representative.

3 Product Description

3.1 General description

The valve is a precision engineered thermostatic balance valve designed for use in domestic hot water recirculation systems.



WARNING:
Extreme temperature hazard. Water temperature above 125°F (51°C) can cause severe burns or scalding instantly.



WARNING:
This product can expose you to chemicals including lead, which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov

Features

- The internal wax element expands and contracts as system fluid temperature fluctuates to maintain a constant temperature at point of use.
- The valve is also available with manual or actuated thermal bypass, which allows high temperature water that would normally be restricted to pass through the valve. With this functionality the valve can be used for thermal disinfection of bacteria, including Legionella.
- Each valve also comes standard with an insulation block to reduce heat loss and improve energy efficiency.

Required device

A safety isolating transformer must always be used.

Rule-of-Thumb Formula:

$P_{\text{Transformer}} = 6 \text{ W} \times n$

n = Number of Valve Actuators

3.1.1 Operational limits

Valve	Temperature	Maximum working pressure
Temp Setter	98°F (37°C) to 149°F (65°C)	145 PSI (1000 kPa)

Valve	Temperature	Maximum working pressure
Temp Setter with Bypass	98°F (37°C) to 176°F (80°C)	145 PSI (1000 kPa)

4 Installation

4.1 Installation precautions



WARNING:
Installation and maintenance must be performed by a qualified professional.



WARNING:
The heating of water and other fluids causes volumetric expansion. The associated forces can cause the failure of system components and the release of high-temperature fluids. In order to prevent this, install properly sized and located compression tanks and pressure-relief valves. Failure to follow these instructions can result in serious personal injury or death, or property damage.

Safety rules

- Service should not be performed on any component in an active plumbing system.
- Before attempting to make any required adjustments, properly shut-off the water supply and water heater, drain the lines, and allow the system to reach a safe handling temperature (below 100° F [38° C]) and zero pressure condition.
- Use proper safety equipment including gloves, goggles, or similar tools to avoid contact with system fluids and common hazards.
- Failure to follow these instructions could result in personal injury, death, and property damage.

4.2 Installation guidelines

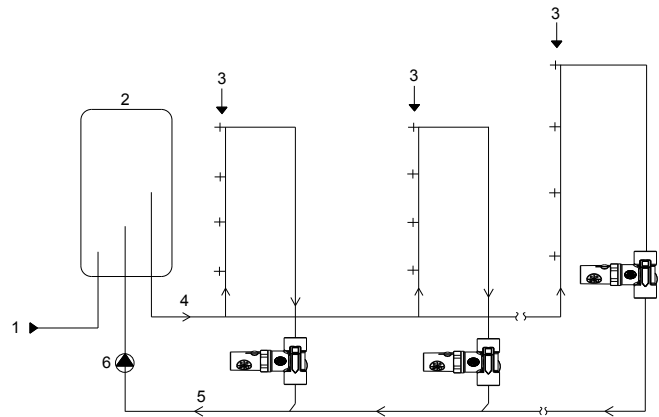
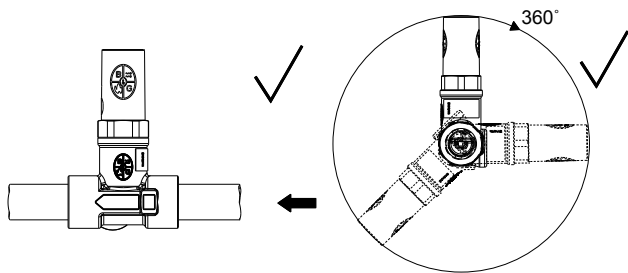
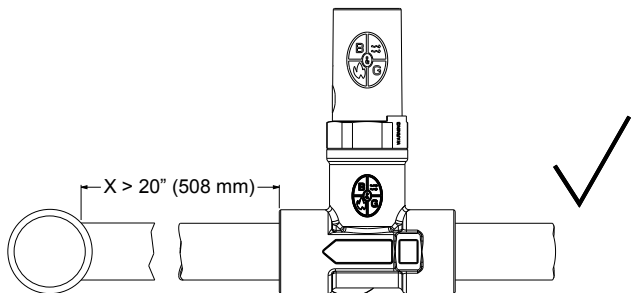


Figure 1: Installation Schematic

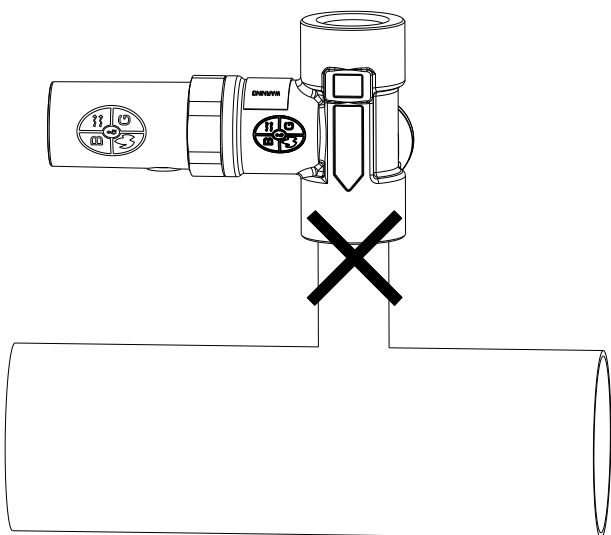
- 1. Domestic water source
- 2. Hot water source
- 3. Draw-off taps
- 4. Domestic hot water
- 5. Recirculation return pipe
- 6. Recirculation pump
- The valves are uni-directional and can be installed in most attitudes; however they should be installed in a position to facilitate the ease of balancing the system. The valves should be installed in the return pipe of a domestic hot water recirculation system, noting the arrow on the side of the valve body corresponding to the direction of flow.



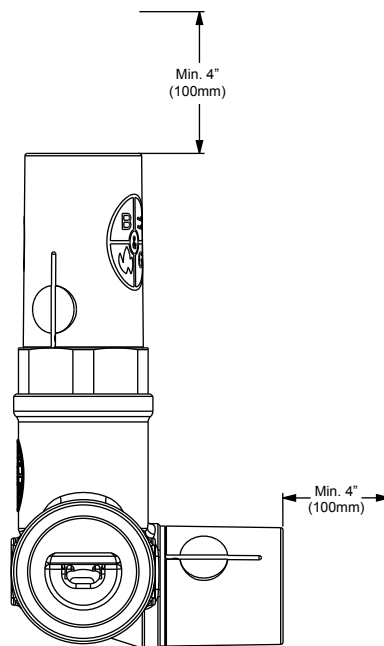
- The valve should be installed at least 20" (500 mm) away from the main hot water return pipe.



- If possible, do not assemble the valve vertically above the main pipe, as heat from the main pipe can adversely influence the regulation of the valve.



- Allow a minimum of 4" (100 mm) clearance around the valve after installation.



4.3 Pipe hanging installations

Be aware of water weight in the valve and connected piping when installing your system.

NOTICE:

Never use the valve as a form of piping support. Support the valves and piping according to the local building code. Failure to follow these instructions may result in property damage.

4.4 Install NPT connection

1. Apply pipe compound conservatively to male connecting fittings only.

NOTICE:

- The use of PTFE impregnated pipe compound or PTFE tape on threads provides lubricity. Care should be taken to prevent over-tightening of the connections. Cracks may develop in the valve.

2. Check connections for leaks.

4.5 Install actuator bypass

1. Remove the cover from the bypass dial by carefully inserting a screwdriver into the protective cap covering the bypass dial, twist carefully, and pull it off.



2. Carefully remove the manual adjustment dial. Use a 20 mm (0.79") wrench.

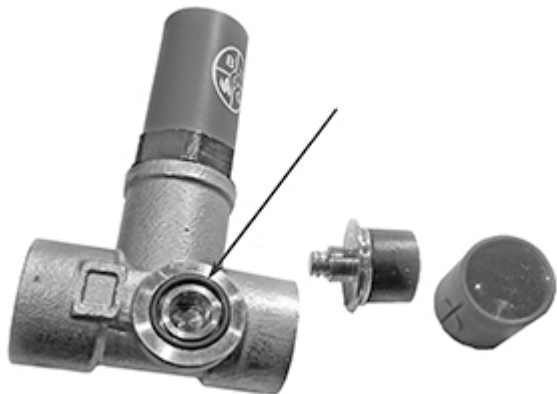


6. Thread the adapter housing assembly to the valve until hand tight against the valve. Torque the assembly to 5.9 ft.-lb. (8 Nm) to 8.9 ft.-lb. (12 Nm). Use a 22 mm (0.87") wrench.

NOTICE:

Do not use any thread sealant or lubricant when assembling the adapter housing to the valve as it may prevent O-ring from sealing properly. Care should be taken to prevent over tightening which may damage the adapter or valve body.

3. To make sure that no leakage occurs, examine the O-ring face seal on the valve body before assembling the actuator adapter. Replace the O-ring with the one included in the actuator adapter kit (P/N: 117686) if necessary. Make sure that the O-ring groove is clean and free of dirt and debris.



7. Make sure that the connections between the valve and piping have been securely fastened.

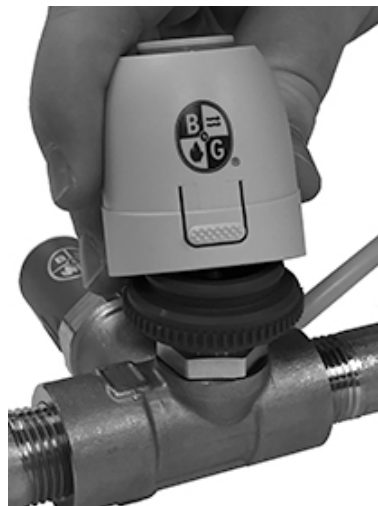
4. Make sure that the adapter pin and adapter housing are also clean and free of dirt and debris.



8. Thread the actuator adapter onto the valve body until it is hand tight.



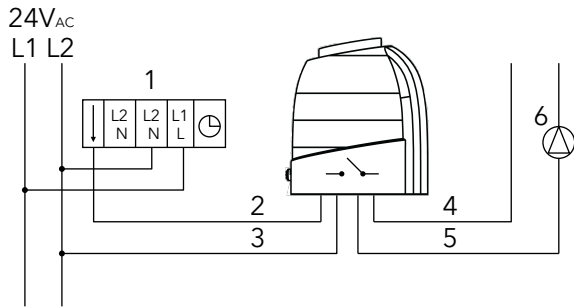
9. Press the actuator onto the valve and adapter until it snaps into position. When assembled, the actuator can be rotated 360° to aid in positioning of the terminal wires.



5. Insert the adapter pin into the adapter housing as shown with the narrow end of the pin inserted into the narrow end of the housing.



4.6 Wiring diagram



1. Thermostat
2. Brown
3. Blue
4. Black
5. Gray
6. 24V maximum, 3A ohm resistive load, 1A inductive load

4.7 Attach insulation

To maximize energy savings, the valve includes insulation to attach to the valve after the system has been balanced. Use the included hook and loop straps to secure the insulation blocks to the valve.

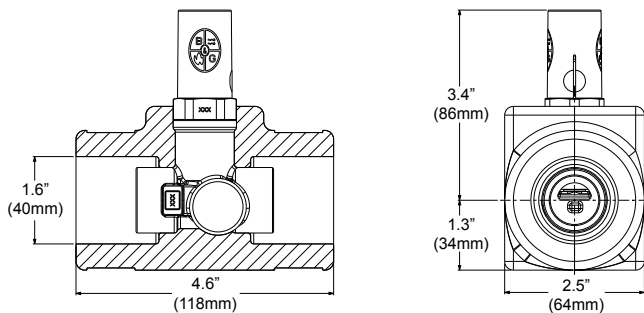


Figure 2: Valve

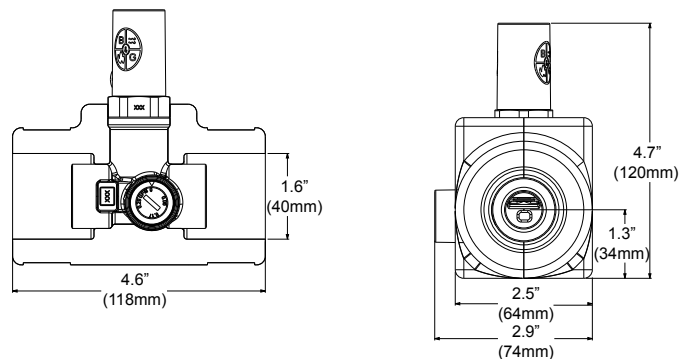


Figure 3: Valve with Bypass

For systems with valves utilizing actuated bypass, do not insulate the valve actuator itself.

5 Operation

5.1 Set the temperature

5.1.1 Valve

1. Remove the cap protecting the temperature setting dial. Carefully insert a screwdriver that fits into the slot on the side of the cap, twist gently, and pull off.



2. Once the cap is removed, use a screwdriver to set the desired water temperature. When the temperature is set, snap the protective cap back into place.



Determine system flow rate based on the following equation:

$$Q = P / (\Delta T * CP_{\text{WATER}})$$

Q = Flow Rate (Gal. / Minute)

P = Thermal Loss (BTU / Minute)

ΔT = Desired Temperature Differential Between Hot Water Source and Temp Setter Valve (°F)

CP_{WATER} = Specific Heat Capacity of Water = 8.33 (BTU / Gal. °F)

5.1.2 Valve with manual bypass

For Temp Setter valves with manual bypass, set the desired water temperature as indicated above.

Carefully insert a flat head screwdriver into the protective cap covering the bypass dial, twist gently, and pull it off. Use a screwdriver to set the desired bypass flow rate, and snap the cap back into place when finished.



During the course of normal operation, the system will undergo a thermal bacterial eradication cycle, elevating the water temperature to a maximum of 176° F [80° C]. The previously set bypass flow rate will allow the higher temperature water to flow through the valve and complete the eradication cycle.



Upon completion of the thermal eradication cycle, repeat the above process to set the bypass flow rate back to zero.

5.1.3 Valve with actuator controlled bypass

For Temp Setter valves with actuator controlled bypass, set the desired water temperature as indicated above.

As with the Temp Setter valve with manual bypass, the system will undergo a thermal bacterial eradication cycle, elevating the water temperature to a maximum of 176° F [80° C]. The building management system will power on the valve actuator allowing the higher temperature water to flow through the valve and complete the eradication cycle.

6 Maintenance

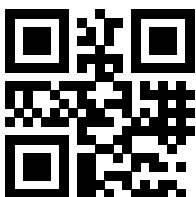
6.1 Valve inspection

Periodically inspect the valve for signs of leakage or corrosion.



WARNING:

Risk for property damage, serious personal injury or death. You must replace the valve if corrosion or leakage is found.



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