

**TEMPERING VALVE**

PART NO: TTV20C

**FEATURES**

- Cast DR brass body
- Advanced polymers for greater resistance to calcium deposits
- Integral 60 mesh stainless steel line strainers
- Integral non return valves
- Stainless steel springs
- O-ring seal union connectors
- Tamper proof adjustment
- Special adjusting tool supplied
- Seasonal adjustments not required
- StandardsMark Certification – License No. 2729

**SPECIFICATIONS****CONNECTIONS**

Inlets:	20mm (3/4" BSPT) Male Compression
Outlet:	20mm (3/4" BSP) Male Compression
Length:	165mm
Height:	125mm

**TEMPERATURE RANGE**

Recommended outlet temperature range:	40°C - 50°C *See note 2
Depending on site conditions:	35°C - 58°C *See note 2
Nominal factory setting:	50°C
Accuracy of mix:	±3°C *See note 3
Cold water supply:	5°C - 25°C

**SPECIFICATIONS**

Hot water supply:	55°C - 90°C *See notes 1 & 3
Hot water supply / outlet differential:	15°C
<b>PRESSURE</b>	
Max supply pressure (static):	1600kPa
Max supply pressure (dynamic):	500kPa
Pressure supply differential:	3:1 max *See note 4
Pressure supply variation:	± 10% maximum *See notes 5 & 6
Minimum flow rate (commissioning):	4 litres/min
<b>STANDARDS</b>	
Conforms to these standards:	AS1357.1 AS/NZS 4020

*Continued next page...***NEFA NOW OFFERS A...****NEFA, LEADING WATER VALVE TECHNOLOGY**



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PART NO: TTV20C

### NOTES

1. The minimum hot water storage temperature stated in AS3500.4.2 Clause 1.6 shall be not less than 60° C to inhibit the growth of legionella bacteria.
2. The valve can be set as low as 35°C or as high as 58°C, depending on site conditions. These temperatures are outside the optimum working range of the valve and the requirements of AS4032.2 and AS3500.
3. This is the minimum temperature differential required between the hot inlet water temperature and the mixed outlet of the valve, to achieve outlet isolation in accordance with AS4032.2 in the event of cold water supply failure, providing the valve is set between the specified adjustable temperature range 40°C to 50° C.
4. The maximum ratio permitted between supply pressures, under dynamic flow operation. It is recommended at time of commissioning that hot and cold pressures be as equal as possible.
5. The maximum permitted pressure variation in either supply from commissioning pressures in order to maintain the outlet temperature to  $\pm 3^{\circ}\text{C}$ .
6. Note: Steps should be taken to eliminate any causes of rapid changes in supply pressures, as this may result in an outlet temperature spike greater than  $\pm 3^{\circ}\text{C}$  from commissioned temperature. If a spike occurs it may take a few seconds for the temperature to stabilize back to within  $\pm 3^{\circ}\text{C}$ .

### PRODUCT INFORMATION

#### CHECKS

- Be sure to check site installation parameters (temperature, pressure etc.) against the working specifications of the valve. If these parameters are outside of the stated specifications, they must be rectified prior to installation.
- Never expose valves to a torch-flame or heat. Heat will destroy the seals and sealing parts.
- Never expose valves to freezing conditions. If installed where freezing conditions may occur, then suitable insulation must be used to prevent damage to the valve.

### PRODUCTION INFORMATION

#### CHECKS

- Not to be used on steam-supplied systems.
- Not to be used on low pressure systems.
- Ensure that sealing materials, e.g. thread tape or thread sealing paste, do not intrude into flow passages as this could cause obstruction to flow and failure of the valve.
- A copy of these instructions should be left with the householder for future reference. The Installation details sticker, should be completed by the installer and attached to the water heater or other prominent position near the valve or as specified by the Local Authority requirements.

#### OPERATION

- The NEFA TTV is designed to accurately provide safe, controlled temperature water for outlets primarily used for personal hygiene. The TTV will maintain the outlet mixed temperature to  $\pm 3^{\circ}\text{C}$  from set temperature in accordance with AS4032.2.
- Note: AS/NZS3500.4.2 requires hot water to be stored at 60°C minimum to inhibit legionella bacteria growth.
- If the cold water supply to the valve fails then the valve will automatically shut off the hot water supply preventing scalding. 15°C differential between the hot inlet water temperature and outlet set temperature is required to ensure effective hot water shut off in accordance with AS4032.2.
- For installations outside the requirements of AS4032.2 and AS/NZS3500.4.2, the valve can be set to 35°C - 58°C. This will depend on site conditions.
- Strainers are integral to prevent debris entering the TTV that could prevent it working effectively. Installations with poor quality water that could cause the strainers to continually block should have separate line strainers fitted.

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## NEFA, LEADING WATER VALVE TECHNOLOGY

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## TEMPERING VALVE

PART NO: TTV20C

### PRODUCTION INFORMATION

#### FEATURES

- Non return valves are integral to prevent cross feeding of unbalanced supply pressures. These non return valves are crucial for the complete hot water system to function effectively and **MUST** be fitted to both inlets.
- All working components and critical shut-off faces of the TTV are manufactured from high spec engineering polymers to resist scale build-up. Deposits to similar metal components would cause them to seize preventing effective and safe operation.

#### SYSTEMS SUPPLY PRESSURES

- Optimum performance of the valve is obtained when hot and cold dynamic (flowing) supply pressures are equal.
- Static supply pressures (non-flowing) will not give a true indication of dynamic pressures.
- In commercial installations it is recommended that separate NEFA pressure limiting valves be fitted to both inlets of the NEFA TTV for optimum performance.
- In a domestic installation it is recommended that one NEFA pressure limiting valve is used at the property boundary to limit pressure to the whole site.
- It is recommended that both hot and cold supplies to the valve should be controlled with their own pressure limiting valves.

### PRODUCTION INFORMATION

#### INSTALLATION

- **NEFA Valves shall always be installed by a licensed plumber, in accordance with the NEFA installation instructions, and the National Plumbing and Drainage Code AS/NZS 3500.4.2.**
- The installation must also comply with any Local Authority requirements.
- Before fitting a TTV ensure all debris is thoroughly flushed from the pipe-work prior to installing. Contaminants and debris are the most common causes of system difficulties.
- A separate un-tempered hot water line to the kitchen and laundry is recommended.
- Do not install a TTV directly onto a hot water cylinder. It is recommended that the valve be installed as close to the hot water source as possible for optimum performance.
- The TTV shall be installed where it can be easily accessed for strainer checking and cleaning, or temperature adjustment.
- The valve must be installed in accordance with the installation diagrams. See Technical Drawings and Images.
- If installed at a sanitary outlet, 1m of pipe must be installed between the TTV and the outlet.
- Ensure both hot and cold water supplies are connected to the correct sides of the TTV as marked on the valve body.
- Before setting the valve ensure the hot water source is switched on and supplying water within the specified hot water temperature limits. It is recommended the water heater, if controlled by an adjustable thermostat, should be set to the required 15°C differential temperature necessary for thermal shut-off. (See Note.3 of valve specifications).
- Allow the water to flow 1-2 minutes to ensure the mixed water temperature has stabilized.
- A thermometer must be used to test the hot water at the nearest downstream outlet to the installed valve to ensure the correct mixed water temperature is supplied. Test at a flow rate of not less than 4 litres/ minute.

*Continued next page...***NEFA NOW OFFERS A...**

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### PRODUCTION INFORMATION

#### INSTALLATION

- To adjust the set temperature of the valve you must remove the cap allowing access to the adjusting spindle.
- Using the adjusting tool supplied, simply rotate the spindle (shown in Technical Drawings and Images) in the direction (H) hot or (C) cold as indicated on the tool until the required set temperature is achieved.
- Once the set temperature has been reached and tested with a thermometer the cap must be snapped back onto the valve to protect the spindle from accidental adjustment, damage or debris.

**AFTER INSTALLATION IS COMPLETED, EVERY VALVE MUST BE COMMISSIONED BY ADJUSTING THE VALVE AND MEASURING THE MIXED WATER TEMPERATURE AT THE CLOSEST, DOWNSTREAM OUTLET FROM THE TTV. A THERMOMETER MUST BE USED.**

**REFER TO TECHNICAL DRAWINGS AND IMAGES FOR TYPICAL INSTALLATION DIAGRAMS.**

### SERVICING

#### SERVICING AND CHECKING REQUIREMENTS

- It is recommended the NEFA TTV be checked annually by a certified plumber to ensure correct functionality of the valve. Space has been provided on the commissioning sticker to record the date & set temperature of the valve.
- Where the water supply is of poor quality or any other supply variations are likely, it may be necessary to check the NEFA TTV at more frequent intervals.

### SERVICING

#### SERVICING AND CHECKING REQUIREMENTS

**ANY TEMPERATURE CHECKS SHOULD BE PERFORMED AT THE SAME OUTLET AT WHICH THE VALVE WAS FIRST COMMISSIONED. (SEE INSTALLATION STICKER DETAILS).**

- If the temperature varies more than 3°C from the commissioned temperature stated on the installation sticker or is outside of the requirements of AS3500.4.2, refer to the NEFA Trouble shooting guide (refer to Technical Drawings and Images).
- Line strainers and non-return valves are easily accessible through the union connectors for quick cleaning.
- Where the line strainers continue to block it may be necessary to fit an additional filter or line strainer into the system.
- This valve is a safety valve and cannot be serviced. If the valve fails to operate it is to be replaced. No attempt should be made to dismantle the valve. Any attempt to dismantle the valve (other than union connectors and adjustment cap) will void all warranties.

#### **IMPORTANT: Information on scalds from hot water (Informative)**

- The following aims to provide information on the risk of hot water scalds at different water temperatures and contact times. The seriousness of a hot water scald burn is directly dependent on the temperature of the liquid and the length of contact time.
- Medical research has demonstrated that there is a significant difference in the time that it takes to get a serious, third degree scald, at different temperatures. A third degree burn is one that goes through the full thickness of skin and is likely to require surgery.

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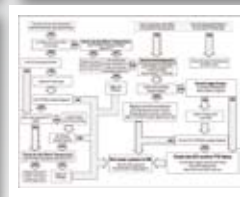
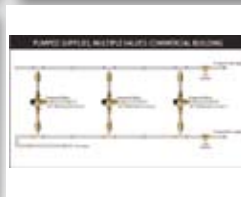
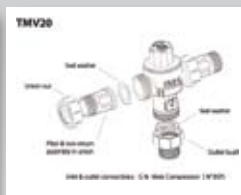
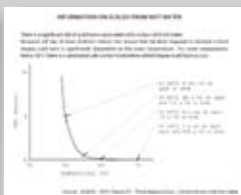
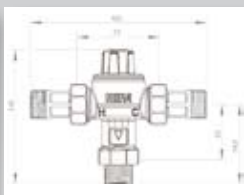
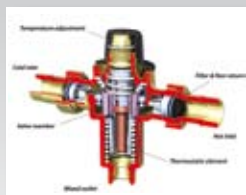
PART NO: TTV20C

### SERVICING

#### SERVICING AND CHECKING REQUIREMENTS

- For water temperatures less than 50°C, there is a substantial safe contact time before third degree burns occur. At 50°C the safe contact time for an adult and a child is 5 min. At higher temperatures, the safe contact time, particularly for children and the elderly, is substantially reduced as shown in Figure E1. (Please refer to chart in Technical Drawings and Images)
- Children and elderly people are more likely to suffer injury than other age groups because their skin tends to be softer, they are also more susceptible to falls and are less likely to be able to protect themselves. These reasons contribute to their high rates of scald injury.

### TECHNICAL DRAWINGS AND DIAGRAMS



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