Thermostatic Mixing Valves

- Applications guide.
- Installation diagram: the « multi-levels » approach.
- Recommended product solutions.
- Legionnaire’s disease and scalding by hot sanitary water in institutions and domestic applications.
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WHY A THERMOSTATIC MIXING VALVE?

The principle of automatic control of hot and cold fluids ensures you of efficient management of hot water:
no water and energy are wasted through trial and error when adjusting the temperature; reduction of in-line heat
losses; temporary interruption of the controlled temperature water flow as often as required.

- The thermostatic mixing valve assists in ensuring that the system components such as tap heads, seats and
solenoid valves are less encrusted with scale, thus ensuring a longer service life of all the equipment and piping.

- It significantly increases the output capacity of the accumulator.

- The interchangeable mixing valve mechanism **EUROTHERM** also contributes to savings, while making it
possible to renovate a mixing valve at a limited cost.

- It is commonly accepted that a thermostatic mixing valve provides energy savings of 30% compared to a simple
mixing valve. For private individuals, the equipment is soon amortized.

HOW TO PREVENT THERMAL SHOCK AND SCALDING INJURIES?

Hot water burns like fire. The tender skin of very young children and the slow reaction
time of the elderly and the handicapped make them most vulnerable to serious hot water
burns.

Scalding injuries are tremendously painful, and the effects can last for years.

Scalding occurs for a variety of reasons. In some cases, water heater thermostats are faulty,
or set too high. In others, temperature regulating valves at the domestic hot water source are either malfunctioning or missing
altogether.

Water heaters are normally set to temperatures above 55°C to prevent development of harmful bacteria, such as
Legionella, in the water supply. Water at temperatures above 43°C are painful.
At a temperature of 55°C, a child can be scalded in less than 4 seconds.
80 per cent of thermal injuries to children happened at home.

According to the new European standard EN1717 (protection against pollution of potable water in water
installations and general requirements of devices to prevent pollution by backflow), thermostatic mixing valves
must be equipped with approved check valves.

FUNCTION

A thermostatic mixing valve mixes cold and hot water, generally with a temperatures differential of at least 7°C,
in order to obtain mixed water at a stabilized temperature.
Therefore, it must compensate for pressure variations (frequent or abrupt), and temperature variations (slower).
A real thermostatic mixing valve regulates both on the hot and cold water inlet, and compensates for the
pressure variations.
It operates through automatic management of the admission of the hot and cold water, depending on a set point
displayed on the handle.
This automatic control is carried out entirely by the internal thermostat.
The original, superior feature of the thermostatic valve over all the other principles is the mixing chamber,
with automatic reaction and automatic preservation of temperature.
If the pressure varies, the temperature in the mixing chamber varies, and correction is carried out in less than 2
seconds (this is equally true if the flowrate or temperature varies).
2 TYPES OF TECHNOLOGY: WAX ELEMENT AND BIMETALLIC STRIP

PRODUCTS WITH WAX ELEMENT:
MMV, TL117, T9107, T9715, MINIMIXING + inset mixing valves T8175, T8147

The technique of these models is that of automatic regulation via a cylindrical “slide valve”, activated by a wax capsule up to flowrates of approximately 40 l/min. It is quite standard and competitive, but quickly reaches its limits beyond 40 l/min. The hot and cold water inlets are located on other side of this “slide valve”. When the water is too cold as regards the set point (upon opening), a spring pushes the “slide valve” and thus opens the hot side completely.

As soon as the hot water comes in, the capsule expands and draws the “slide valve” to the hot side and reaches the proper mixing temperature. All these operations are carried out in less than 2 seconds. Should the pressure vary, the same operation will be repeated.

PRODUCTS WITH BIMETALLIC STRIP:
ULTRAMIX TX91, TX92, TX93, TX94, TX95, TX96, OMDA, FNC,
Flanged Mixing valves (DN65, DN80 and DN100) + inset mixing valves TX8256, TX8280, TX83, TX84, TX85, TX86, TX824056, TX824080, TX824456, TX824480

Trubert is the inventor of the Bimetallic strip concept.
Trubert is one of the most well-known names in thermostatic control and is our original brand name for thermostatic items. The TRUBERT Eurotherm technique uses the principle of double control through indirect action of a bimetallic strip. This receives temperature information corresponding to the set point and will react instantaneously (+/- 1 sec.). The double control will take place as follows: the bimetallic strip acts on a pre-mixing valve with a very small flowrate, also called the distributor, this will regulate the flow of water in two slave valves with membranes, causing an amplification of the signal, but ensuring the same mixture proportion and thus the same temperature. The slightest variation in use conditions will be passed along to the same operating chain: first the distributor and then the large water passages.

This technology is the basis of the WATTS INDUSTRIES FRANCE success, since it combines substantial regulation and scale-resistance qualities (a decisive element for safety).
**LEGIONELLA : FAQ (FREQUENTLY ASKED QUESTIONS)**

**What is legionnaires’ disease?**
Legionnaires’ disease is a bacterial disease which may cause pneumonia. The majority of cases are reported as single (isolated) cases but outbreaks can occur.

**Why is it called legionnaires’ disease?**
An outbreak of this disease in Philadelphia in 1976, among people attending a state convention of the American Legion and led to naming the disease after this group. Subsequently, the bacterium causing the illness was identified and named *Legionella pneumophila*.

**Is this a new disease?**
No. While the bacterium was only recently identified, cases have been confirmed as far back as 1947 and some probably occurred before then.

**How widespread is the disease?**
Cases have been reported from all industrialised countries. Around 200 cases are reported each year in England.

**Where are legionella organisms found?**
Legionellas are widely distributed in the environment. They have been found in ponds, hot and cold water systems, and water in air conditioning cooling systems.

**How is legionnaires’ disease spread?**
The disease is spread through the air from a water source. Person to person transmission does not occur. Breathing in aerosols from a contaminated water system is the most likely route of transmission.

**Who gets legionnaires’ disease?**
All ages can be affected but it mainly affects people over 50 years of age, and generally men more than women.

**What are the symptoms?**
The early symptoms of legionnaire’s disease include a ‘flu-like’ illness with muscle aches, tiredness, headaches, dry cough and fever. Sometimes diarrhoea occurs and confusion may develop. These symptoms frequently lead on to pneumonia. Deaths occur in 10-15% of otherwise healthy individuals and may be higher in some groups of patients.

**How soon do symptoms occur?**
The incubation period ranges from 2 to 10 days but is usually 3 to 6 days. In rare cases some people may develop symptoms as late as three weeks after exposure.

**What is the treatment?**
Antibiotics are effective in treating the disease.

**How is it diagnosed?**
A rapid diagnosis can be made by testing an urine sample from the patient, once the relevant symptoms have occurred.
THE « MULTI-LEVELS » APPROACH
THE RIGHT TEMPERATURE FOR EACH APPLICATION

Key points of the regulation:
- Increased hot temperature from the heater
  (use water heaters with minimal or no storage)
- Use of recirculation systems: circulating loop and balancing valves
- Ensure that the target temperature is achieved throughout all levels of the loop.
- Circulating loop should be designed to return the mixed water to the storage not less than 55°C.
- Thermostatic mixing valves must be as close as possible to the point of use.
- Thermostatic mixing valves must have integrated check-valves.
- Thermostatic mixing valves must allow easy cleaning and disinfection operation.
- Disassemble and clean hoses, taps, showerheads and thermostatic mixing valves minimum once a year.
- Hot and cold water distribution pipes must be insulated sufficiently (never together).
- To maintain cool water in lower part of 20°C.
- According to National Regulation

Flow diagram for a «multi-levels» complete mixed water circuit

VM : micrometer valves to stabilize circuit temperature.
VM1 A : Open between 70 and 90%.
VM1 B : Open between 30 and 10%.
Remarks: If there is a connection point on the boiler (R), the return circuit should be connected here (A).

How to adjust a thermostatic mixing valve onto a mixed water loop: WATTS INDUSTRIES recommends to minima, the installation of a thermometer of control of the temperature on the mixed water piping and one on the return of loop, and that this temperature is checked at least once a month under the normal conditions of operation. This thermometer must be installed at a distance from at least 1 meter of the thermostatic mixing valve.

Step 1 : Mixed water temperature adjustment: this adjustment is done autonomously without the loop circulation pump.
1. Stop the loop circulation pump.
2. Close the pump isolation valves.
3. Open sufficient points of use on the mixed water circuit to obtain the minimum flow of the thermostatic mixing valve.
4. Turn the thermostatic mixing valve axis control shaft to reduce or increase the flow.
5. Once the required temperature is obtained, replace the control knob (according to the model).

Step 2 : Mixed water loop temperature adjustment:
1. Open the pump isolation valves.
2. Start the circulation pump.
3. Now proceed with the balancing: the ∆T° difference between the mixed water outlet and the return should be 5°C.

To achieve this, manually adjust the VM1A balance valve (between 70 and 90 % of its total opening) and the VM1B valve (between 30 and 10 % of its total opening).

NOTE: Leave the circuit sufficient time to stabilise before making another adjustment. Check the stability of the mixed water temperature on the monitoring thermometer. If necessary, re-index the temperature knob so that its graduation is in phase with the mixed water temperature (operation referred to as “calibration” in the installation instructions).

Table 1 Development of legionella according to water temperature

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Lethargic state</th>
<th>Growth (no multiplication from 47°C on)</th>
<th>90% of bacteria will die in a period of 2 hours</th>
<th>90% of bacteria will die in 2 minutes</th>
<th>90% of bacteria will die in less of 1 minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20°C / 68°F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-46°C / 68-115°F</td>
<td>Growth</td>
<td>60°C / 140°F</td>
<td>80°C / 178°F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50°C / 122°F</td>
<td>90% of bacteria will die in 2 minutes</td>
<td>90% of bacteria will die in 2 minutes</td>
<td>90% of bacteria will die in less of 1 minute</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 Relation between the canalization's capacity and its length

<table>
<thead>
<tr>
<th>Material</th>
<th>Dimensions of the pipe</th>
<th>Length in meters leading to a capacity of 3 litres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>15 x 1</td>
<td>22 m</td>
</tr>
<tr>
<td></td>
<td>18 x 1</td>
<td>15 m</td>
</tr>
<tr>
<td></td>
<td>22 x 1</td>
<td>9 m</td>
</tr>
<tr>
<td>Galvanized steel</td>
<td>DN 15</td>
<td>15 m</td>
</tr>
<tr>
<td></td>
<td>DN 20</td>
<td>8 m</td>
</tr>
<tr>
<td>Plastic pipe PEX/PER</td>
<td>15 x 2.5</td>
<td>39 m</td>
</tr>
<tr>
<td></td>
<td>18 x 2.5</td>
<td>23 m</td>
</tr>
<tr>
<td>Plastic PP</td>
<td>20 x 1.9</td>
<td>14 m</td>
</tr>
<tr>
<td></td>
<td>25 x 1.9</td>
<td>9 m</td>
</tr>
</tbody>
</table>

*Source: CSTC Belgium Nov. 2002. The canalization’s capacity is the inner section multiplied by the length.
How is a capacity of 3 litres ensured?

To respect the volume of 3 litres between the distribution point and the furthest drawing point, you must calculate the length of the pipe that contains a capacity of 3 litres. This length varies considerably depending on the inside diameter of the tube used.

As a practical rule, you can use the formula opposite to calculate the length of the pipe $L$ in millimetres (mm) according to the inside diameter of the tube.

$$\frac{12,000,000}{3,14 \times D_{int}^2} = L \text{ in mm}$$

**Example for a 14x16 copper tube:**

$$\frac{12,000,000}{3,14 \times 196} = \frac{12,000,000}{615,44} = 19,498,25 \text{ mm} = 19.49 \text{ meters}$$

**Example for a 13x16 PEX tube:**

$$\frac{12,000,000}{3,14 \times 169} = \frac{12,000,000}{530,66} = 22,613,35 \text{ mm} = 22.61 \text{ meters}$$
# THERMOSTATIC MIXING VALVES

## Applications guide

To select the most suitable products, follow the applications below:

The thermostatic mixing valve market is segmented by Applications and Environments:

### - Control of the point of use, in a aesthetic environment.

**Bathroom, Hotels, Restaurants, Commercial Centers, etc. ...**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMIXing</td>
<td>Point of use, top-of-the-line or stylish</td>
<td>5 to 28 l/min.</td>
</tr>
<tr>
<td>TL117</td>
<td>Point of use, top-of-the-line or stylish</td>
<td>5 to 42 l/min.</td>
</tr>
</tbody>
</table>

### - Control of the point of use, without any aesthetic requirement.

**Installation in a technical duct, a lowered ceiling, highway services, etc. ...**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMV-C</td>
<td>Point of use standard or not visible</td>
<td>5 to 57 l/min.</td>
</tr>
<tr>
<td>INSTAmix®</td>
<td>Hot water production control: Control domestic or small communities.</td>
<td>5 to 40 l/min.</td>
</tr>
<tr>
<td>MMV-S (SOLAR)</td>
<td>Hot water production control: for solar systems with continuous high temperatures</td>
<td>5 to 63 l/min.</td>
</tr>
</tbody>
</table>

### - Group facility (collective), small number of points of use (1 to 5 outlets).

**Showers, sinks, etc. ...**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>T9715 - T9107</td>
<td>Low flow utilization in sanitary facilities.</td>
<td>3 to 42 l/min.</td>
</tr>
<tr>
<td>ULTRAMIX Standard (10/50°C or 30/70°C)</td>
<td>Low flow utilization in sanitary facilities.</td>
<td>3 to 80 l/min.</td>
</tr>
</tbody>
</table>

### - Group facility (collective), large number of points of use (1 to 50 outlets).

**Applications where the mixed water temperature must be kept precise and constant, and can be modified as desired.**

- Great variations between the minimum and maximum flow rates: collective showers for sports installations, camping, pools, schools, factories, barracks, hospitals, hotels, hairdressing salons, houses, boats.
- Stringent safety conditions (burns): Child day care centers - Maternity wards - Health care facilities - Psychiatric hospitals.
- Severe operation.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULTRAMIX Standard</td>
<td>High protection Anti-vandalism and tamper-proof.</td>
<td>3 to 400 l/min.</td>
</tr>
<tr>
<td>ULTRAMIX HP (10/50°C)</td>
<td>Special shower or emergency eye wash.</td>
<td>3 to 400 l/min.</td>
</tr>
<tr>
<td>ULTRAMIX FNC (10/50°C)</td>
<td>Special hydrotherapy, spa balneo, medicalized applications</td>
<td>3 to 120 l/min.</td>
</tr>
</tbody>
</table>

### - High flow group facility in sanitary or industrial applications, (1 to 120 outlets).

**Sanitary or industrial facilities with very high flow rates where the mixed water temperature must be kept precise and constant, and can be modified as desired.**

- Conditions where the water is used at a specified stable temperature: Chemical industries - Slaughter houses - Breweries...
- Sanitary water control: Houses - Hotels - Hospital - Schools - Barracks - etc.
- Collective showers in large facilities: Factories - Schools - Hospitals - etc.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>T70 with flanges</td>
<td>Flanged thermostatic mixing valves, very high flow rate</td>
<td>10 to 1200 l/min.</td>
</tr>
</tbody>
</table>

- Mixing valves conforming to the directives of France’s Department of Health (DGS) with removable, modular cartidges than can be disinfected and interchanged. Models equipped with approved check valves (DVGW, NF, KIWA, WRAS ...).
CONTROL OF THE POINT OF USE:

**Purpose**
Specific thermostatic mixing valve for point of use control.
Designed to supply sinks, hand wash-basins or electronic faucets with immediate tempered water not exceeding a temperature set.
MINIMUM provides high security level against scalding and Legionella bacteria.
Ideal for multi-facility applications: hospitals, nursing homes, hotels, schools, restaurants, laboratories, motorway services ... anywhere needing an excellent temperature management, particularly on start up of flow.

**Features and Benefits**
- Extra compact size,
- Aesthetic design with brass body chrome polished,
- Easily installed directly on isolating tap under basin or fixed on the wall with a plate provided in the box,
- Temperature set secured by hexagonal socket screw (Allen key),
- Easy to replace modular adjustment mechanism (cartridge),
- Reducing maintenance service cost,
- No setting scale: temperature can be set only by installer or operator, not by user,
- Fitted with 2 approved check valves (KIWA, WRC, DVGW, BELGAQUA, NF...),
- Outstanding reliability,
- Compliance with standard EN1111.

**Technical Features**
- Max working pressure: 10 bar.
- Max. inlet hot water: 85°C.
- Flow rate (3 bar): 28 l/min.
- Temperature setting range: 30 to 70°C.

<table>
<thead>
<tr>
<th>Ø</th>
<th>connection hot water</th>
<th>connection cold water</th>
<th>connection mixed water</th>
<th>art. number</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>Female free nut</td>
<td>Male flat sealing</td>
<td>Male flat sealing</td>
<td>2297320</td>
<td>0.8 kg</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Male flat sealing</td>
<td>Male flat sealing</td>
<td>Male flat sealing</td>
<td>2297321</td>
<td>0.8 kg</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>Female free nut</td>
<td>Compression fitting 12mm</td>
<td>Compression fitting 12mm</td>
<td>2297322</td>
<td>0.8 kg</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Compression fitting 15mm</td>
<td>Compression fitting 15mm</td>
<td>Compression fitting 15mm</td>
<td>2297323</td>
<td>0.8 kg</td>
</tr>
<tr>
<td>Complete kit chrome plated assembly</td>
<td>2297392K</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cartridge of replacement</td>
<td>type: MINCP6</td>
<td>22TCP6</td>
<td>0.23 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8&quot; Swivel nut installation kit</td>
<td>2297390K</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cartridge extractor</td>
<td>22TB120014</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**THERMOSTATIC MIXING VALVES**

**High end or aesthetic: TL117**

**PURPOSE**
Thermostatic mixing valve designed to supply sinks and wash-basins with tempered water not exceeding a set temperature (up to 5 basins depending on flow rate of tap connections).

**APPLICATIONS**
Ideal for multi-facility applications: schools, restaurants, laboratories, companies... anywhere needing a supply of water at a temperature pre-set on site.

**DESCRIPTION**
- Weight 0.95 kg. Easy-to-replace modular adjustment mechanism.
- Brass body. Polypropylene protective cover secured by a hexagonal socket screw, making the adjustment section tamper-resistant.
- No setting scale: temperature pre-set by installer or operator.
- Fitted with 2 approved check valves (KIWA, DVGW, NF, BELGAQUA, WRC).
- Hot and cold water inlets: F 1/2".
- 1 top-mounted tempered water outlet: F1/2".
- Baseplate drilled for wall mounting.
- Temperature cannot be adjusted by user.
- BSP threaded: code TL117
- NPT threaded: code TL117NPT
- TL117 is guaranteed 2 years.

**CHARACTERISTICS**
- Maximum pressure: 10 bar.
- Maximum temperature: 85°C.
- Adjustment range: 15 to 50°C.
- Maximum flow rate: 42 l/min. at 3 bar.

**Protection against legionella:**
- Cartridge can be removed and replaced (for easier scale removal and disinfecting).
- Integral approved check-valves avoid connection risk between cold and hot water (withstanding temperatures above 90°C).
- Thermal shock: simply remove the protective cover with the Allen key and turn the cartridge to set the temperature maximum hot position to allow hot water to circulate (kills bacteria above 60°C).

**Standard range or not visible range: INSTAmix® (domestic or small community)**

**DESTINATION**
Thermostatic mixing valve for mixed water distribution. Adjustable temperature from 30°C to 60°C, lockable by the installer.

**APPLICATIONS**
Upstream of any valve requiring mixed water supply (sinks, showers, bathtubs and bidets in communities or home use). Fitted with 2 approved check valves.

**CARACTÉRISTIQUES**
- Hot and cold water inlets: M 1/2" or 3/4".
- Mixed water outlet: M 1/2" or 3/4".
- Maximum static pressure: 10 bar.
- Maximum temperature: 85°C.
- Accuracy of ± 1.5°C between 35 and 45°C. (with balanced dynamic pressures).
- Identical flow rates for 1/2" and 3/4": flow rate at 1 bar: 25 l/min.
- Flow rate at 3 bar: 40 l/min.

<table>
<thead>
<tr>
<th>diameter</th>
<th>flow rate</th>
<th>setting range</th>
<th>type</th>
<th>art. number</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/F/F 1/2&quot;(15x21)</td>
<td>42 l/min. at 3 bar</td>
<td>15 to 50°C</td>
<td>L117</td>
<td>22TL117</td>
</tr>
<tr>
<td>Cartridge of replacement for TL117</td>
<td>CP7-42 l/min.</td>
<td></td>
<td>22TCP7</td>
<td>22TB120014</td>
</tr>
</tbody>
</table>

**Protection against legionella:**
- Preventive and permanent: in parallel with the maintaining the sanitary hot water at a temperature above 50°C anywhere in the installation, thermostatic mixing valves must be placed nearest the points of use.
- Integral approved check-valves (withstanding temperatures above 90°C).
CONTROL OF THE POINT OF USE:

Standard range or not visible range: MMV-C "MMV-Compact" (domestic or small community)

Hot water production control, hot water heaters or boilers

APPLICATIONS

• Compact thermostatic mixing valve designed to supply general purpose applications with mixed water not exceeding a set temperature.
• Ideal for multi-facility applications: Domestic homes, schools, restaurants, laboratories, motorway services, commercial buildings... Anywhere needing a supply of water at a temperature pre-set on site.
• Rapid fail safe on either hot or cold water supply failure, comply with EN1111 and EN1287.
• On inlets and outlets male union threaded 1/2” or 3/4”, compression fitting 15 or 22 mm, male threaded 3/4” or 1”, female threaded 3/4” or 1”.
• MMV-C direct setting models, with a direct setting temperature 30/50°C or 35/60°C by the red handwheel.

Scald protection:

Rapid fail safe on either hot or cold water supply failure comply with EN1111 and EN1287.
THERMOSTATIC MIXING VALVES

FEATURES

• Easily installed Compact thermostatic mixing valves.
• Handwheel with set positions (graduated scale Min to Max - 5 setting positions - Fig. A).
• Handwheel “MMV-C direct setting”, with a temperature direct setting 30/50°C or 35/60°C.
• Locking cap preventing the end user from adjusting the temperature.
• Outstanding reliability.
• Brass DZR body (all models).
• Compliance with standard EN1111 and EN1287.
• Compression fitting 22 mm and 15 mm TMV2 approved n°BC789/0211 (art. no. 2297140, 2297142).
• Fitted with 2 check valves (with exception of models F/F/F 3/4" and 1").
• Can be installed in any position.
• 2 Finishing : nickel plated or self colour brass.
• Maximum static pressure: 10 bar.
• Operating pressure: 0.2 to 5 bar.
• Hot temperature supply: 52° - 85°C, *differential minimum hot/mix temperature must be 10°C.
• Cold temperature supply: 5 - 20°C.
• Temperature setting range: 30 to 65°C (except direct setting models).
• Accuracy of ± 1.5°C between 35 and 45°C.
• Factory temperature setting: 38°C.
• Flow rate at 3 bar : 57 l/min.
• Flow mini : 5 l/min.
• Body strength : 25 bar.

Range MMV-C - nickel plated finish

<table>
<thead>
<tr>
<th>diameter</th>
<th>connection</th>
<th>cap / handwheel 30 to 65°C</th>
<th>finish</th>
<th>art. number</th>
</tr>
</thead>
<tbody>
<tr>
<td>body 1&quot;</td>
<td>G 1/2&quot; male union threaded</td>
<td>graduated scale</td>
<td>nickel plated</td>
<td>2297134</td>
</tr>
<tr>
<td>body 1&quot;</td>
<td>G 3/4&quot; male union threaded</td>
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</tr>
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Range MMV-C - self colour brass finish

<table>
<thead>
<tr>
<th>diameter</th>
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<th>cap / handwheel 30 to 65°C</th>
<th>finish</th>
<th>art. number</th>
</tr>
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<tbody>
<tr>
<td>body 1&quot;</td>
<td>G 1/2&quot; male union threaded</td>
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</tr>
<tr>
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Range MMV-C - direct setting

<table>
<thead>
<tr>
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<td>body 1&quot;</td>
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<td>35 to 60°C</td>
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<td>2297181</td>
</tr>
</tbody>
</table>
**Solar system: MMV-Solar (MMV-S)**

**APPLICATIONS**
Thermostatic mixing valve are used in solar systems for the production of domestic hot water. In these systems the temperature of the water in the storage tank can vary considerably depending on the season and the degree of solar radiation, and can reach very high temperatures over long periods. Especially in summer, and if there is little water usage, the hot water at the storage tank outlet can reach temperatures around 95°C before the safety valve or the pressure and temperature safety valve are actuated.

At these temperatures, the hot water cannot be used directly, because of the scalding risk.

**FEATURES**
- Designed specifically for SOLAR systems with continuous high temperatures.
- Internal coating to prevent scale deposit.
- Locking cap preventing the end user from adjusting the temperature.
- Temperature range: 30 to 65°C.
- Wax thermostat technology for high temperature up to 110°C.
- Excellent temperature stability.
- Handwheel with set position (graduated scale Min to Max - 5 setting positions).
- Robust and low complexity construction providing superior reliability, longevity and safety.
- Body strength: 25 bar.

<table>
<thead>
<tr>
<th>diameter</th>
<th>connection</th>
<th>cap / handwheel 30 to 65°C</th>
<th>finish</th>
<th>art. number</th>
</tr>
</thead>
<tbody>
<tr>
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<td>self colour brass</td>
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<tr>
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<td>self colour brass</td>
<td>2297560</td>
</tr>
<tr>
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<td>nickel plated</td>
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</tr>
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<td>nickel plated</td>
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<td>DN 25 male threaded</td>
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<td>nickel plated</td>
<td>2297561</td>
</tr>
</tbody>
</table>

**Healthcare Mixing Valve: HMV3**

TMV3 approved for the following designations:
HP-B (High Pressure Bidet), HP-S (High Pressure Shower), HP-W (High Pressure Washbasin), HP-T44 (High Pressure bath with fill temperature up to 44°C), LP-B (Low Pressure Bidet), LP-S (Low Pressure Shower), LP-W (Low Pressure Washbasin).

Ideal to protect vulnerable people from scalding: retirement homes, hospitals, nursing homes...

**PRODUCT RANGE**
HMV3 are available in 22 mm compression with 15 mm reducing sets supplied and 15 mm with union or 22 mm with union.

**FEATURES**
- Ensures high temperature stability.
- Easily installed thermostatic mixing valve.
- Prevent the end user from adjusting the temperature.
- Outstanding reliability.
- DZR Brass body. Nickel plated finish.
- Stainless steel strainers in the Hot and Cold inlets: SS 1.4310 - mesh 350µ.
- Compliance with standard, NHS D08, TMV3 approved (BC 530 1209), WRAS certificate (1003002).
- Can be installed in any position.
- Temperature setting range: 30 to 50°C.
- Flow rate at 3 bar: 33 l/min. - Flow rate at 1 bar: 18 l/min. - Flow mini: 5 l/min.
- Body strength: 25 bar.

<table>
<thead>
<tr>
<th>diameter</th>
<th>connection</th>
<th>finish</th>
<th>art. number</th>
</tr>
</thead>
<tbody>
<tr>
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<td>direct fittings</td>
<td>nickel plated</td>
<td>2297159</td>
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<tr>
<td>HMV3 - 15 mm</td>
<td>union fittings</td>
<td>nickel plated</td>
<td>2297166</td>
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<tr>
<td>HMV3 - 22 mm</td>
<td>union fittings</td>
<td>nickel plated</td>
<td>2297167</td>
</tr>
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</table>
GROUP INSTALLATION (COLLECTIVE):

**Group installation:** T9715 and T9107 small number of points of use (1 to 5), flow up to 42 l/min.

T9715 – 1/2" B (white body) or C (chromed). T9107 – 3/4" B (white body) or C (chromed).

- **Comfort:** the water temperature obtained is accurate to within one degree. Individually checked in the factory, Trubert mixing valves must be calibrated before first use. An exclusive knob mounting system makes this calibration easy. Temperature regulation and stability are excellent, regardless of variations in pressure (max. 1.5 bar), mixing valve inlet temperature and flow rate.
- **Extremely simplified installation:** no special tools are required; the hot water inlet is fitted on the left, with the mixed water outlet in vertical position.
- **Very easy maintenance:** the durability and scale resistance of Trubert mixing valves ensure that maintenance is virtually nil. The cartridge can be easily replaced without dismantling the mixing valve.

**Protection against legionella:**
- Cartridge can be removed and replaced (for easier scale removal and disinfecting).
- Integral approved check-valves avoid connection risk between cold and hot water (withstanding temperatures above 90°C).
- Thermal shock possibilities: use in the 40/80°C range or remove the temperature knob and turn the cartridge to the maximum hot position allowing the water to flow at a hot temperature. (kills bacteria above 60°C).

**Scald protection:**
the hot water is rapidly cut if the cold water supply is interrupted.

**Range:**

- Diameter M 1/2" (15x21).
- Diameter M 3/4" (20x27).

<table>
<thead>
<tr>
<th>flow rate (l/min)</th>
<th>diameter</th>
<th>points of use</th>
<th>adjustment range</th>
<th>finish</th>
<th>art. number</th>
<th>weight</th>
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</thead>
<tbody>
<tr>
<td>mini 3 - maxi 42</td>
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<td>1 to 5</td>
<td>15/50°C</td>
<td>white</td>
<td>22T9715B</td>
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<td>mini 3 - maxi 42</td>
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<td>1 to 5</td>
<td>40/80°C</td>
<td>white</td>
<td>22T9715B48</td>
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<td>1 to 5</td>
<td>5/40°C</td>
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<td>1 to 5</td>
<td>15/50°C</td>
<td>chromed</td>
<td>22T9715C</td>
<td>1.00 kg</td>
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<td>mini 3 - maxi 42</td>
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<table>
<thead>
<tr>
<th>flow rate (l/min)</th>
<th>diameter</th>
<th>points of use</th>
<th>adjustment range</th>
<th>finish</th>
<th>art. number</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>mini 3 - maxi 42</td>
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<td>1 to 5</td>
<td>15/50°C</td>
<td>white</td>
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<td>1.02 kg</td>
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<td>M 3/4&quot; 20x27</td>
<td>1 to 5</td>
<td>40/80°C</td>
<td>white</td>
<td>22T97107B48</td>
<td>1.02 kg</td>
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<tr>
<td>mini 3 - maxi 42</td>
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<td>1 to 5</td>
<td>5/40°C</td>
<td>white</td>
<td>22T97107B04</td>
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<tr>
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<td>1 to 5</td>
<td>15/50°C</td>
<td>chromed</td>
<td>22T97107C</td>
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<td>40/80°C</td>
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<td>5/40°C</td>
<td>chromed</td>
<td>22T97107C04</td>
<td>1.02 kg</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.

**Options**

Designed to adapt to all specific demands for water at a precise temperature, even at very low flow rate.

Several setting ranges: 15/50°C or 40/80°C or 5/40°C.

**Protection**

- § Cartridge can be removed and replaced (for easier scale removal and disinfecting).
- § Integral approved check-valves avoid connection risk between cold and hot water (withstanding temperatures above 90°C).
- § Thermal shock possibilities: use in the 40/80°C range or remove the temperature knob and turn the cartridge to the maximum hot position allowing the water to flow at a hot temperature. (kills bacteria above 60°C).

**Simple to install. Economical to use.**

**Purposes**

Apparent device recommended for all applications where the mixed water temperature must be kept exact and constant, and adjusted at any time.

Bathroom applications with low flow rate: showers, basins... Electronic tap - Industrial uses - Chilled water applications.

**Replacement cartridges and cartridge extractor:**

<table>
<thead>
<tr>
<th>model</th>
<th>adjustment range</th>
<th>art. number</th>
</tr>
</thead>
<tbody>
<tr>
<td>T9715B, T9715C, T9107B, T9107C</td>
<td>15/50°C</td>
<td>22TCP7</td>
</tr>
<tr>
<td>T9715, T9107 (04 serie)</td>
<td>5/40°C</td>
<td>22TCP704</td>
</tr>
<tr>
<td>T9715, T9107 (48 serie)</td>
<td>40/80°C</td>
<td>22TCP748</td>
</tr>
<tr>
<td>Cartridge extractor</td>
<td></td>
<td>22TB120014</td>
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</table>
GROUP INSTALLATION (COLLECTIVE):

**Group installation: ULTRAMIX 1 to 50 points of use, flow rate until 400 l/min.**

Thermostatic mixing valves with a double regulation functioning according to a principle of servo-motor.

Water mixing is obtained by two independent valves, one for hot water, one for cold water – which operate like two hydraulic relays.

These two valves are controlled by a bimetallic strip that records output water temperature. Its position can also be adjusted by means of the thermostatic mixing valve’s control knob.

### FEATURES AND BENEFITS

Recommended device for all applications where the mixed water temperature must be kept exact and constant, and adjusted at any time.

**Standards temperature range:** 10/50°C or 30/70°C (on request and for no extra charge: 5/40°C).

**Thermostatic mechanism:** A guarantee of safety and proven reliability for over forty years, the ULTRAMIX thermostatic mixing valve mechanism is the same as that used in the former range. It is directly integral with the thermostatic mixing valve cover.

**Approved check-valves NF:** Superior level hydraulic features, due to the valve closure member’s overall design.

**Filtering:** Strainer anchored on watertight elastomer support.

**Perfect accessibility, disassembly without tools, easy cleaning requiring no special qualification.**

### PROTECTION AGAINST LEGIONELLA:

There are only 2 methods recommended to fight the Legionella bacteria:

- **DGS* regulation**
  - 1. Yes at 100%
  - 2. Yes at 100%

- **The ULTRAMIX Answer**
  - raise the temperature up to 70°C (thermal shock)
  - disinfect (chemical shock)

### AGAINST LEGIONELLA ANSWER:

- You can with the thermostatic mixing valve such as it is (with 30/70°C cartridge):
  - adjust the temperature up to 55°C in the primary loop (recommended temperature).
  - adjust the temperature to 39°C (until 50°C - according to uses) in the secondary loop.
  - proceed to a thermal “shock”: simply by freeing the control knob and position it a 70°C (without dismantling the thermostatic mixing valve, cartridge or control knob).

- You also can by putting the cartridge in position “rinsing” i.e. turned over cartridge, fixed at back, (see simple procedure and the rincing kit delivered with the thermostatic mixing valve):
  - rinse the thermostatic mixing valve and the drains (important before activation).
  - inject a disinfectant (chlorine) into the water supply system without danger of damaging the thermostatic mechanism, because is not any more in contact with water.
  - proceed to a thermal “shock” with more 70°C, without risk to damage the thermostatic mechanism prematurely, because is not any more in contact with water.

### RINSING KIT

**Exclusive advantage for preventive or curative treatment** (delivered with all ULTRAMIX)

- Take off the knob, cover, and screw.
- Remove the cover/cartridge from its casing.
- Place the flat washer (included in package) on the device’s neck.
- Place the cover/cartridge unit upside down on the device and flat washers.
- Tighten the temporary screws (included the package). The valves act now as a “by-pass”.

---

* DGS : General health service - France
THERMOSTATIC MIXING VALVES

Adjustment range 10/50°C: to supply from 1 to 50 sanitary points of use.

<table>
<thead>
<tr>
<th>flow rate (l/min.)</th>
<th>diameter</th>
<th>points of use*</th>
<th>finish</th>
<th>art. number</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>mini 3 - maxi 56</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 to 7</td>
<td>grey epoxy</td>
<td>22TX91E</td>
</tr>
<tr>
<td>mini 3 - maxi 56</td>
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<td>1 to 7</td>
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<td>1 to 10</td>
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</tr>
<tr>
<td>mini 3 - maxi 80</td>
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<td>1 to 10</td>
<td>chrome plated</td>
<td>22TX92C</td>
</tr>
<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 to 15</td>
<td>grey epoxy</td>
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</tr>
<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 to 15</td>
<td>chrome plated</td>
<td>22TX93C</td>
</tr>
<tr>
<td>mini 5 - maxi 175</td>
<td>M 1&quot;1/4</td>
<td>33x42</td>
<td>1 to 21</td>
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<td>mini 5 - maxi 175</td>
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<td>33x42</td>
<td>1 to 21</td>
<td>chrome plated</td>
<td>22TX94C</td>
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<td>mini 5 - maxi 260</td>
<td>M 1&quot;1/2</td>
<td>40x49</td>
<td>1 to 32</td>
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<tr>
<td>mini 5 - maxi 260</td>
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<td>22TX95C</td>
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<tr>
<td>mini 6 - maxi 400</td>
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<td>chrome plated</td>
<td>22TX96C</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.

Adjustment range 30/70°C: to supply sanitary hot water loop at 55°C or more.

<table>
<thead>
<tr>
<th>flow rate (l/min.)</th>
<th>diameter</th>
<th>points of use*</th>
<th>finish</th>
<th>art. number</th>
<th>weight</th>
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<tbody>
<tr>
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<tr>
<td>mini 3 - maxi 80</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 to 10</td>
<td>chrome plated</td>
<td>22TX92C37</td>
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<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 to 15</td>
<td>grey epoxy</td>
<td>22TX93E37</td>
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<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 to 15</td>
<td>chrome plated</td>
<td>22TX93C37</td>
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<tr>
<td>mini 5 - maxi 175</td>
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<td>33x42</td>
<td>1 to 21</td>
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<tr>
<td>mini 5 - maxi 175</td>
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<td>33x42</td>
<td>1 to 21</td>
<td>chrome plated</td>
<td>22TX94C37</td>
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<tr>
<td>mini 5 - maxi 260</td>
<td>M 1&quot;1/2</td>
<td>40x49</td>
<td>1 to 32</td>
<td>grey epoxy</td>
<td>22TX95E37</td>
</tr>
<tr>
<td>mini 5 - maxi 260</td>
<td>M 1&quot;1/2</td>
<td>40x49</td>
<td>1 to 32</td>
<td>chrome plated</td>
<td>22TX95C37</td>
</tr>
<tr>
<td>mini 6 - maxi 400</td>
<td>M 2&quot;</td>
<td>50x60</td>
<td>1 to 50</td>
<td>grey epoxy</td>
<td>22TX96E37</td>
</tr>
<tr>
<td>mini 6 - maxi 400</td>
<td>M 2&quot;</td>
<td>50x60</td>
<td>1 to 50</td>
<td>chrome plated</td>
<td>22TX96C37</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.

How to adjust a thermostatic mixing valve onto a mixed water loop:

**WATTS INDUSTRIES** recommends to minima, the installation of a thermometer of control of the temperature on the mixed water piping and one on the return of loop, and that this temperature is checked at least once a month under the normal conditions of operation. This thermometer must be installed at a distance from at least 1 meter of the thermostatic mixing valve.

**Step 1**: Mixed water temperature adjustment: this adjustment is done autonomously without the loop circulation pump.
1. Stop the loop circulation pump.
2. Close the pump isolation valves.
3. Open sufficient points of use on the mixed water circuit to obtain the minimum flow of the thermostatic mixing valve.
4. Turn the thermostatic mixing valve axis control shaft to reduce or increase the mixed water temperature.
5. Once the required temperature is obtained, replace the control knob (according to the model).

**Step 2**: Mixed water loop temperature adjustment:
1. Open the pump isolation valves.
2. Start the circulation pump.
3. Now proceed with the balancing: the ∆T° difference between the mixed water outlet and the return should be 5°C.
   To achieve this, manually adjust the VM1A balance valve (between 70 and 90 % of its total opening) and the VM1B valve (between 30 and 10 % of its total opening).
   NOTE: Leave the circuit sufficient time to stabilise before making another adjustment. Check the stability of the mixed water temperature on the monitoring thermometer. If necessary, re-index the temperature knob so that its graduation is in phase with the mixed water temperature (operation referred to as “calibration” in the installation instructions).
### ULTRAMIX High Protection thermostatic mixing valve anti-vandalism and inviolability

The thermostatic mixing valve ULTRAMIX "HP" has the same characteristics than the ULTRAMIX, but it is equipped with anti-vandalism safety device.

Mixing valve specifically conceived for the collective applications where the risks of deterioration are high.

The mechanism and its adjustment are protected by a metal frontage made inviolable by a specific high protection lock , chrome plated finish.

Anti-scalding feature and comfort : if there is not enough cold or hot water the mixing valve shuts off automatically and instantaneously.

Dismountable thermostatic mechanism equipped with filters and check valves NF.

Adjustment range : 10/50°C, for thermal disinfection : 30/70°C (on request).

Rinsing kit included. Replacement cartridges below.

<table>
<thead>
<tr>
<th>flow rate (l/min.)</th>
<th>diameter</th>
<th>points of use*</th>
<th>range 10/50°C</th>
<th>art. number</th>
<th>weight</th>
<th>art. no. replacement cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>mini 3 - maxi 56</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 to 7</td>
<td>22T/X91CHP</td>
<td>2,6 kg</td>
<td>22TX1 or 22TX137 (30/70°C)</td>
</tr>
<tr>
<td>mini 3 - maxi 80</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 to 10</td>
<td>22T/X92CHP</td>
<td>2,6 kg</td>
<td>22TX2 or 22TX237 (30/70°C)</td>
</tr>
<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 to 15</td>
<td>22T/X93CHP</td>
<td>3,7 kg</td>
<td>22TX3 or 22TX337 (30/70°C)</td>
</tr>
<tr>
<td>mini 5 - maxi 175</td>
<td>M 1&quot;1/4</td>
<td>33x42</td>
<td>1 to 21</td>
<td>22T/X94CHP</td>
<td>5,3 kg</td>
<td>22TX4 or 22TX437 (30/70°C)</td>
</tr>
<tr>
<td>mini 5 - maxi 260</td>
<td>M 1&quot;1/2</td>
<td>40x49</td>
<td>1 to 32</td>
<td>22T/X95CHP</td>
<td>8,7 kg</td>
<td>22TX5 or 22TX537 (30/70°C)</td>
</tr>
<tr>
<td>mini 6 - maxi 400</td>
<td>M 2&quot;</td>
<td>50x60</td>
<td>1 to 50</td>
<td>22T/X96CHP</td>
<td>10,8 kg</td>
<td>22TX6 or 22TX637 (30/70°C)</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.

### ULTRAMIX FNC special security mixing valve

The thermostatic mixing valve ULTRAMIX "FNC" has the same characteristics than the ULTRAMIX, but it integrates a safety device and allows drawing even in the case of a hot water cut.

Special model for the installations with safety showers or emergency eye-washer.

Anti-scalding feature : if there is not enough cold water the mixing valve shuts off automatically and instantaneously.

Dismountable thermostatic mechanism equipped with filters and check valves NF.

Adjustment range : 10/50°C. Its setpoint temperature is not sensitive to flow rate variations in the installation, whether at minimum or maximum.

Rinsing kit included. Replacement cartridges below.

<table>
<thead>
<tr>
<th>flow rate (l/min.)</th>
<th>diameter</th>
<th>points of use*</th>
<th>range 10/50°C</th>
<th>art. number</th>
<th>weight</th>
<th>art. no. replacement cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>mini 3 - maxi 56</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 to 7</td>
<td>22TX91FNC</td>
<td>2,3 kg</td>
<td>22TX1FNC</td>
</tr>
<tr>
<td>mini 3 - maxi 80</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 to 10</td>
<td>22TX92FNC</td>
<td>2,3 kg</td>
<td>22TX2FNC</td>
</tr>
<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 to 15</td>
<td>22TX93FNC</td>
<td>3,5 kg</td>
<td>22TX3FNC</td>
</tr>
<tr>
<td>mini 5 - maxi 175</td>
<td>M 1&quot;1/4</td>
<td>33x42</td>
<td>1 to 21</td>
<td>22TX94FNC</td>
<td>5,0 kg</td>
<td>22TX4FNC</td>
</tr>
<tr>
<td>mini 5 - maxi 260</td>
<td>M 1&quot;1/2</td>
<td>40x49</td>
<td>1 to 32</td>
<td>22TX95FNC</td>
<td>8,6 kg</td>
<td>22TX5FNC</td>
</tr>
<tr>
<td>mini 6 - maxi 400</td>
<td>M 2&quot;</td>
<td>50x60</td>
<td>1 to 50</td>
<td>22TX96FNC</td>
<td>11,1 kg</td>
<td>22TX6FNC</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.

### ULTRAMIX OMDA thermostatic mixing valve for hydrotherapy, balneo, or medical applications

The thermostatic mixing valve ULTRAMIX "OMDA" has the same characteristics than the ULTRAMIX, but it is equipped a RILSAN protection kilned at 250°C protects the mixing valve body at the place of the seats and hot and cold water supply pipes.

Special model specifically conceived to withstand seawater, softened water and distilled water.

Mixing valve cartridge: screws, jets of diaphragm and hoppers made in stainless steel.

Anti-scalding feature and comfort : if there is not enough cold or hot water the mixing valve shuts off automatically and instantaneously.

Dismountable thermostatic mechanism equipped with filters and check valves NF.

Adjustment range : 10/50°C. Its setpoint temperature is not sensitive to flow rate variations in the installation, whether at minimum or maximum.

Apparent mixing valves or inset mixing valves: (22T/X8256OMDA - 22T/X8280OMDA - 22T/X83OMDA). Rinsing kit included. Replacement cartridges below.

<table>
<thead>
<tr>
<th>flow rate (l/min.)</th>
<th>diameter</th>
<th>points of use*</th>
<th>range 10/50°C</th>
<th>art. number</th>
<th>weight</th>
<th>art. no. replacement cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>mini 3 - maxi 56</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 à 7</td>
<td>22TX91OMDA</td>
<td>2,3 kg</td>
<td>22TX1OMDA</td>
</tr>
<tr>
<td>mini 3 - maxi 80</td>
<td>M 3/4&quot;</td>
<td>20x27</td>
<td>1 à 10</td>
<td>22TX92OMDA</td>
<td>2,3 kg</td>
<td>22TX2OMDA</td>
</tr>
<tr>
<td>mini 3 - maxi 120</td>
<td>M 1&quot;</td>
<td>26x34</td>
<td>1 à 15</td>
<td>22TX93OMDA</td>
<td>3,5 kg</td>
<td>22TX3OMDA</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.
**THERMOSTATIC MIXING VALVES**

**GROUP INSTALLATION (COLLECTIVE):**

*Group installation high flow, sanitary or industrial application flanged T70 DN65, DN80, DN100 (1 to 120 points of use) flow up until 1200 l/min.*

A range of thermostatic mixing valves specifically designed for high flow installations where hot temperature control is provided to multiple outlets (up to 1200 l/min.).

**Standard graduations 10/50°C or 30/70°C.**

**Suited for Sanitary or Industrial applications.**

- Regulation of sanitary water, collective showers of important installations.
- Scald protection: the mixed water is rapidly cut if the cold or hot water supply is interrupted.
- Comfort: no cold shower, in case of the hot water supply stop, the mixing valve is stopped instantaneously.
- The T70 mixing valve ensures comfort and safety at high flow installations.
- Considerable savings, waste of hot water being eliminated and the heat losses in very small pipes.
- Possibility of transformation of the T70 mixing valve 10/50°C in 30/70°C.

The mixing valve is delivered with a stainless steel strainer into each inlet flange, and can be delivered with round flanges, threaded, bored, PN 16, in steel forged; bolts and seals.

- The constituent materials are resistant to corrosion and scaling:
  - Body in cast iron, interior parts in bronze or brass, graduated handwheel 10/50°C or 30/70°C.
  - No interchangeble cartridge and check valve.
  - Flange connection (PN 16).
  - Possibility of reversing hot / cold water, on request.

- Installation: must provide check valves and by-pass valves (one at hot water inlet and one at cold water inlet).

- It is essential to have a pressure to the minimum flow of 0.8 bar for the sizes G and H and 0.5 bar for size J, for the hot water and cold water inlets; and, if the pressure of one of the two waters is less than 1.5 bar, it is necessary that the other be substantially equal.

- Maximum operating pressure: 10 bar.
- Maximum dynamic pressure: 6 bar.
- Maximum hot water temperature: 85°C.
- Warranty: mixing valves and cartridges guaranteed 2 years.

**High Protection Kit**

Allows to transform the Ultramix thermostatic mixing valves (all temperature setting, chrome plated, epoxy) and old range series 9000 into a high protection thermostatic mixing valve.

The kit includes: chrome plated metal frontage, high protection lock and key for dito.

<table>
<thead>
<tr>
<th>High protection kit for thermostatic mixing valve type</th>
<th>art. number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX91, TX92, old range 9200</td>
<td>22TB120007</td>
</tr>
<tr>
<td>TX93, old range 9300</td>
<td>22TB120008</td>
</tr>
<tr>
<td>TX94, old range 9400</td>
<td>22TB120009</td>
</tr>
<tr>
<td>TX95, old range 9500</td>
<td>22TB120010</td>
</tr>
<tr>
<td>TX96, old range 9600</td>
<td>22TB120011</td>
</tr>
</tbody>
</table>

**Adjustment range 10/50°C.**

<table>
<thead>
<tr>
<th>type</th>
<th>DN</th>
<th>flow rate (l/min.)</th>
<th>points of use*</th>
<th>adjustment range</th>
<th>art. number</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>2”1/2, 65 mm</td>
<td>10 to 360</td>
<td>1 to 36</td>
<td>10/50°C</td>
<td>22T70065</td>
<td>36 kg</td>
</tr>
<tr>
<td>H</td>
<td>3&quot;, 80 mm</td>
<td>12 to 700</td>
<td>1 to 70</td>
<td>10/50°C</td>
<td>22T70080</td>
<td>49 kg</td>
</tr>
<tr>
<td>J</td>
<td>4&quot;, 100 mm</td>
<td>14 to 1200</td>
<td>2 to 120</td>
<td>10/50°C</td>
<td>22T70100</td>
<td>69 kg</td>
</tr>
</tbody>
</table>

**Adjustment range 30/70°C.**

<table>
<thead>
<tr>
<th>type</th>
<th>DN</th>
<th>flow rate (l/min.)</th>
<th>points of use*</th>
<th>adjustment range</th>
<th>art. number</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>2”1/2, 65 mm</td>
<td>10 to 360</td>
<td>1 to 36</td>
<td>30/70°C</td>
<td>22T7006537</td>
<td>36 kg</td>
</tr>
<tr>
<td>H</td>
<td>3&quot;, 80 mm</td>
<td>12 to 700</td>
<td>1 to 70</td>
<td>30/70°C</td>
<td>22T7008037</td>
<td>49 kg</td>
</tr>
<tr>
<td>J</td>
<td>4&quot;, 100 mm</td>
<td>14 to 1200</td>
<td>2 to 120</td>
<td>30/70°C</td>
<td>22T7010037</td>
<td>69 kg</td>
</tr>
</tbody>
</table>

* For information only. Take the coefficient of combined flow into consideration.
**RIGHT OR LEFT CONNECTIONS?**

All our mixing valves for public installations (T9107, T9715, ULTRAMIX and flange models) are designed for being supplied with HOT water at the LEFT and the COLD water supply at the RIGHT. On special request, when this arrangement is impossible, some mixing valves can be fitted the other way round with a special cartridge of “IN” (inverse) type.

**LEGIONNAIRE’S DISEASE AND SCALDING BY SANITARY HOT WATER FOR MULTIPLE SHOWERS AND DOMESTIC APPLICATIONS**

**The problem**
Legionella, responsible for legionnaire’s disease, is a bacterium naturally present in water and is found in water pipes. Its spread represents a very serious danger for public health.

Contamination occurs by inhaling contaminated air. The most frequent reasons for a dangerous spread of the bacterium are:
- hot water temperature too low,
- stagnation of this water in the systems,
- sedimentation and scaling in pipes.

Destroying the bacteria requires raising the temperature at 60°C - 140°F (Legionella will die in +/- 30 minutes).

On the other hand, the increased temperature of hot sanitary water systems multiplies the risks of serious scalding of users at a point of use.

**The analysis and know-how of WATTS INDUSTRIES**

The worldwide expertise and know-how of WATTS Industries leads to better prevention with a complete solution for temperature control in hot sanitary water systems: from the ULTRAMIX constant temperature mixed water loop through to MINIMIXing point of use protection, the "multi-level" approach guarantees the right water temperature for each type of use.

Hot water production should provide water at a constant 65°C, or even higher to carry out thermal disinfecting. The principle of the loop is essential. The first distribution loop, for washbasins and kitchens, is kept constant with a return to production at 50/55°C minimum.

With ULTRAMIX, the thermostatic mixing valve for multi-point applications, the loop ensures that all points of the loop are supplied with water mixed to a temperature that is constant to within one degree, regardless of the flow rate, pressure and temperature variations of the installation.

When the temperature has been raised as a preventive or curative measure, the mixing valve allows the temperature in the loop to be re-established immediately so that operation can quickly resume.
A second "level" of the loop, intended for high-risk areas such as showers, is fitted with a mixing valve calibrated to 40°C. This shorter system, with a lower volume of water, avoids any risks due to stagnation.

The thermostatic mixing valve, in addition to providing protection against scalding, also reduces scaling on equipment and pipes, extending the operating life of the complete system and minimizing a bacterium development factor.

The principle of automatic fluid control ensures good management of hot water: no wastage of water and heat through trial and error adjustment of the temperature, reduction of heat loss along the line, turning the warm water on and off as often as required.

In multi-point applications, it is essential to combine usefulness, robustness and ease of use with cost savings.

Distribution of hot sanitary water imposes obligations on operators who must reduce their control costs but also provide systems that are very reliable for users. Comfort and safety of users must also be guaranteed.

The "multi-level" approach is a perfect response to these specific requirements. The wide possibilities of use, easy maintenance and compatibility with sanitary requirements make it an ideal solution.

Both ULTRAMIX, and the new MINIMIXing mixing valve, are available with temperature ranges from 30 to 70°C, they are fitted with approved check valves withstanding temperatures higher than 90°C and the mechanisms can be easily removed for replacement or descaling and disinfecting.

They allow preventive and curative operations against legionnaire’s disease to be carried out: thermal and/or chemical shocks essential for killing the bacterium. But their most important quality is their minimum flow rate guaranteeing perfect operation even with only one shower in use, this is not the case with all multi-point mixing valves, which often require a higher flow rate to operate correctly.

This safety aspects must not be overlooked: imagine the risks for the late-arriving child who is last in the shower after the match!
Points requiring special attention for all Thermostatic Mixing Valves:

The precision, sensitivity, flow rate and durability of the mixing valve can be ensured only insofar as it is looked after, and before all else, correctly chosen.

To define the size of the most suitable mixing valve for a determined use, the following elements must be known: The total instant flow rate and dynamic pressure available at the outflow for the hot water, and for the cold water, the mixing valve’s supply pipes.

It can be measured or calculated, if necessary by using the DARIES abacus or the WATTS calculation programme (available on the site WWW.WATTSINDUSTRIES.COM) designed to check the manually done calculation to choose the right mixing valve (depending on the pressures and pipe diameters, the desired flow rate and number of drawing points).

This tool can also be used to make sure the water speed is not excessive. Never admit a static pressure of more than 10 bars.

Product solutions

> MINIMIXing plays its role in the complete "multi-level" solution deploying the ULTRAMIX multi-point mixing valve, by providing safe point of uses at the first temperature level of the distribution loop (temperature above 55°C):
- prevention of legionella
- temperature control of the hot sanitary water system  (up to the point of use)
- removing the risks of scalding by excessively hot water.

The MINIMIXing is a very compact, modern-design (polished, chromium-plated body) thermostatic mixing valve that is easily installed on a wall-mounted isolating valve or on the wall-mounted plate supplied.

The protected temperature setting is preset by the installer and the mechanism is remarkably fast-acting. MINIMIXing complies with European standard EN 1111 and EN 1287.

MINIMIXing’s features for preventing the spread of legionella include:

- 2 check valves and stainless steel filters to prevent any contact between hot and cold water (allowing the bacterium to move from one system to the other : from the hot water to the cold for example),

- Possibility of carrying out a thermal shock:
By opening the cover of the MINIMIXing and turning the cartridge to the maximum hot position (killing the bacterium from 60°C). This operation is carried out annually or after each period of inactivity (easily achieved on the MINIMIXing by means of its thermostatic cartridge allowing temperatures up to 70°C).

Note : During thermal shocks, raising the temperature can break the seal on the check valves and counteract the required effect since the bacteria in the hot water will be in the cold water (or vice versa) and will contaminate both parts of the system.

On MINIMIXing and ULTRAMIX, the approved check valves withstand thermal shocks because they are able to resist temperatures up to 90°C.

RINSING KIT

- Possibility of carrying out a chemical shock : Using the rinsing kit supplied, it is very easy to carry out a flush with a disinfecting solution.
When the mixing valve at the point of use is installed in a technical duct or is “non-visible”, MINIMixing may be replaced by the MMV-C thermostatic mixing valve or the RLTM2 which are specially designed appliances for installation in technical ducts. However, the anti-scald safety device of these two appliances includes a residual flow rate (comply to standard EN1287). These appliances are not recommended for a medical context (nursing homes, hospitals, maternity clinics or psychiatric wards, etc.).

> MMV-C, the mixed water outlet is underneath the mixing valve (T-pattern).

> RLTM2 (thermostatic blending valve), the mixed outlet is on the side (L-pattern).

Case of domestic installations:

Wall heater

Example: collective shower distribution

Example: distribution with collectors

nickel plated finish  self colour brass finish

Male 3/4“  Female 1/2”

1 MMV-C mixing valve
2 mixed water outlet
3 safety valve
4 shut-off tap
5 controllable anti-pollution check valve
6 pressure reducing valve
7 filter
11 thermometer
12 hot water
13 cold water supply
15 water heater
Application diagram (example)

Hot water storage heater

1. The Safety group:
   (EN 1487 standard).

Main safety device,
its installation is mandatory

This appliance performs 4 functions:

- **Protecting** the hot water storage heater from excess pressure: as the water temperature increases, the pressure also increases inside the hot water storage heater (dilation of the water).

For safety reasons, this pressure must be restricted to a value lower than the tank’s safety pressure.

This function is carried out by the pressure reducing valve which is set at 7 bars.

- **Isolating** the hot water storage heater from the cold water supply:

This function is carried out by the stop valve (also part of the Safety group).

- **Preventing** a backflow of cold water into the cold water supply system:

A check valve prevents any backflow of hot water (which is under pressure in the hot water storage heater) into the cold water supply system, as soon as the pressure in the hot water storage heater becomes higher than that of the cold water supply.

- **Draining** the hot water storage heater:

The hot water storage heater is drained using the safety valve which can be activated manually, and once opened, the water held under pressure in the tank is drained out.

(Caution: make sure that the electrical connection of the electric hot water storage heater has been previously disconnected.

In addition, take precautions against burns during hot water drainage).

The drainage outlet on the Safety group, which comprises an air gap preventing any backflow of the drained water, should be connected to the drainage system.

**Pressure reducing valves**:

This reduces the pressure of the water that crosses it and provides an outlet pre-set and constant value.

The REDUFIX model protects, in particular, the electric hot water storage heater and it is factory pre-set.

During the night, when the pressure of the water distribution system increases (at night the pressure of the water distribution system increases with the reduction in the number of water consumers).

The pressure reducing valve protects the hot water storage heater against excess pressure, as well as prevents the opening of the Safety group valve.

**Dielectric insulating connection**:

Two different metals, copper and steel (for example), coming in contact in an equipment results in corrosion risk.

Copper and its alloys (such as brass) are cathodic, which associated with other metals foster “battery” phenomena and, as a result, cause faster corrosion and circulation of stray currents.

The dielectric insulating connections provide connection of cold water tubulature (made of steel) of the Safety group tank (made of brass) without creating a “battery” phenomenon.

This union fitting is removable, which facilitates installation.

We also recommend that the hot water outlet of the hot water storage heater is protected with a dielectric insulating connection.

The Watts Industries dielectric insulating connection meet the requirements of the D.T.U. in the framework of the implementation of protection against the corrosion of some pipes including steel and copper components; in particular, this is the D.T.U 60.1 regarding sanitary plumbing in buildings.

**Trap funnel kit**:

As indicated by its name this part works as a trap: the screwing part is placed directly under the Safety group at the threaded male discharge in 1” (26x34).

The smooth part, to be glued, is connected to the drainage.

This trap complies with the requirements of the NF standard, with a sufficiently sized air gap and water gap, protecting the bad odours from evaporation.

**Thermostatic mixing valves MMV-C**:

This unit automatically mixes the hot water in the tank with the cold water in the water supply system.

It provides several functions:

- **Safety**: it automatically provides and stabilizes mixed water at the selected temperature.

  (from 30 to 65°C).

- **Saves hot water**: the hot water pipe lines are only filled with mixed water.

  A large supply of hot water is still available. The pipes and taps are highly protected against lime scale.

**Compliance with regulations**:

It satisfies the obligations imposed by the Ministry decree of 30th November 2005, applicable as from 15th December 2006, prohibiting any water distribution at a temperature over 50°C at the point of use in bathrooms.

Adjusting the appliance (to be done only once at the time of installation) is facilitated by the handle button:

Lowering of the temperature by turning clockwise, increase of the temperature by turning anti-clockwise.

The appliance is fitted with built-in non return valves.
DIMENSIONING OF MIXING VALVES IN GROUP MIXING

The precision, sensitivity, flow rate and durability of the mixing valve can be ensured only insofar as it is looked after, and before all else, correctly chosen.

To define the size of the most suitable mixing valve for a determined use, the following elements must be known: the total instant flow rate (see paragraph below) and dynamic pressure available at the outflow for the hot water, and for the cold water, the mixing valve’s supply pipes. It can be measured or calculated, by using the DARIES abacus. This abacus can also be used to make sure the water speed is not excessive. Never admit a static pressure of more than 10 bar.

CASE OF ULTRAMIX THERMOSTATIC MIXING VALVES

Calculation method:

1 - Define the Cumulated Flow rate of mixed water by multiplying the quantity of appliances to be supplied by the usual unit flow rates (table below). (Consult us for any other application as necessary).

<table>
<thead>
<tr>
<th>CASE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature displayed on the mixing valve</td>
<td>38°C</td>
<td>38°C</td>
<td>45°C</td>
<td>45°C</td>
<td>50°C</td>
<td>50°C</td>
</tr>
<tr>
<td>Type of tap on the sanitary appliances</td>
<td>outlet</td>
<td>flow control</td>
<td>mixing valve tap</td>
<td>flow control</td>
<td>mixing valve tap</td>
<td>flow control</td>
</tr>
<tr>
<td>Wash basin</td>
<td>12 L</td>
<td>6 L</td>
<td>10 L</td>
<td>6 L</td>
<td>8,4 L</td>
<td>6 L</td>
</tr>
<tr>
<td>Shower</td>
<td>12 L</td>
<td>8,4 L</td>
<td>10 L</td>
<td>7 L</td>
<td>8,4 L</td>
<td>6 L</td>
</tr>
<tr>
<td>Kitchen sink</td>
<td>12 L</td>
<td>8,4 L</td>
<td>10 L</td>
<td>7 L</td>
<td>8,4 L</td>
<td>6 L</td>
</tr>
<tr>
<td>Bathtub</td>
<td>20 L</td>
<td>-</td>
<td>16 L</td>
<td>-</td>
<td>14 L</td>
<td>-</td>
</tr>
<tr>
<td>Bidet</td>
<td>12 L</td>
<td>8,4 L</td>
<td>10 L</td>
<td>7 L</td>
<td>8,4 L</td>
<td>6 L</td>
</tr>
<tr>
<td>Sink for washing up/pot and other applications</td>
<td>20 L</td>
<td>14 L</td>
<td>16 L</td>
<td>11 L</td>
<td>14 L</td>
<td>10 L</td>
</tr>
</tbody>
</table>

2 - Calculating the total instant flow rate to be supplied by the mixing valve. Depending in the nature of the work, choose the decrease ratio of the flow rates corresponding with the quantity of appliances to be supplied (table below). Multiply this ratio by the cumulated flow rate to obtain the instant flow rate.

<table>
<thead>
<tr>
<th>Quantity of appliances</th>
<th>1/2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residences</td>
<td>1</td>
<td>0,70</td>
<td>0,60</td>
<td>0,50</td>
<td>0,33</td>
<td>0,27</td>
<td>0,23</td>
<td>0,21</td>
<td>0,19</td>
<td>0,17</td>
<td>0,16</td>
<td>0,14</td>
<td>0,13</td>
<td>0,12</td>
</tr>
<tr>
<td>Guest houses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>campsites-hospitals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spa installations</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0,82</td>
<td>0,67</td>
<td>0,57</td>
<td>0,52</td>
<td>0,47</td>
<td>0,42</td>
<td>0,40</td>
<td>0,35</td>
<td>0,32</td>
<td>0,30</td>
</tr>
<tr>
<td>Stadiums and gymnns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>factory-school</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0,86</td>
<td>0,76</td>
<td>0,68</td>
<td>0,57</td>
<td>0,49</td>
<td>0,42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>swimming pool-barracks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity of appliances</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
<td>190</td>
<td>200</td>
<td>&gt; 200</td>
</tr>
<tr>
<td>Residences</td>
<td>0,11</td>
<td>0,105</td>
<td>0,10</td>
<td>0,097</td>
<td>0,093</td>
<td>0,087</td>
<td>0,083</td>
<td>0,08</td>
<td>0,078</td>
<td>0,076</td>
<td>0,074</td>
<td>0,072</td>
<td>0,07</td>
<td>0,07</td>
</tr>
<tr>
<td>Guest houses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>campsites-hospitals</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spa installations</td>
<td>0,27</td>
<td>0,26</td>
<td>0,25</td>
<td>0,242</td>
<td>0,232</td>
<td>0,217</td>
<td>0,207</td>
<td>0,20</td>
<td>0,195</td>
<td>0,19</td>
<td>0,185</td>
<td>0,18</td>
<td>0,175</td>
<td>0,175</td>
</tr>
<tr>
<td>Stadiums and gymnns</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>factory-school</td>
<td>0,38</td>
<td>0,35</td>
<td>0,32</td>
<td>0,30</td>
<td>0,28</td>
<td>0,26</td>
<td>0,24</td>
<td>0,22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>swimming pool-barracks</td>
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</tr>
</tbody>
</table>
SIMULTANEITY COEFFICIENT (K) depends on the type of work and the number of taps to be supplied.

We consider 3 types of work:
- stadiums – gymnasiums – factories – schools – swimming pools – army barracks
- guest houses – campsites – hospitals – spa installations
- accomodations

3 - Choose the thermostatic mixing valve that will ensure regulation at this instant flow rate, under the available dynamic pressure (b. = bar) for its operation (table below).

### 3 - Table of maximum working flow rates

<table>
<thead>
<tr>
<th>Model</th>
<th>T9715</th>
<th>T9107</th>
<th>TX91</th>
<th>TX92</th>
<th>TX93</th>
<th>TX94</th>
<th>TX95</th>
<th>TX96</th>
<th>T70</th>
<th>T70</th>
<th>T70</th>
</tr>
</thead>
<tbody>
<tr>
<td>size G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>T70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. working flow rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in l/min. under 3 bar</td>
<td>42</td>
<td>42</td>
<td>56</td>
<td>80</td>
<td>120</td>
<td>175</td>
<td>260</td>
<td>400</td>
<td>360</td>
<td>700</td>
<td>1200</td>
</tr>
<tr>
<td>in l/sec. under 3 bar</td>
<td>0,70</td>
<td>0,70</td>
<td>0,93</td>
<td>1,33</td>
<td>2,00</td>
<td>2,92</td>
<td>4,33</td>
<td>6,67</td>
<td>6,00</td>
<td>11,67</td>
<td>20,00</td>
</tr>
</tbody>
</table>

| Pipe diameter corresponding with the size of the mixing valve: |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| in mm | 15 | 20 | 20 | 20 | 26 | 33 | 40 | 50 | 66 | 80 | 102 |
| in inches | 1/2” | 3/4” | 3/4” | 3/4” | 1” | 1”1/4 | 1”1/2 | 2” | 2”1/2 | 3” | 4” |

| Number of points of use for example (see simultaneity coefficient): |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| from | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| to | 5 | 5 | 7 | 10 | 15 | 21 | 32 | 50 | 36 | 70 | 120 |

| Minimum flow rate: |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| in l/min. | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 6 | 10 | 12 | 14 |
| in l/sec. | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,08 | 0,08 | 0,10 | 0,17 | 0,20 | 0,23 |

**Cartridge**

With WATTS INDUSTRIES the thermostatic mechanisms are independent of the other parts of the mixing valves.
This modular system, extremely simple and practical, facilitates the first actuation and later maintenance (possibility of exchange of cartridge).

Any defect of installation is immediately detected and a rapid put in conformity allows.
All the «cartridges» Eurotherm of collective thermostatic mixing valves ULTRAMIX have STAINLESS STEEL filters and approved check valves NF.

**Maintenance**

With WATTS Eurotherm, one meets a very low number of installations with problem, the mixing valves being seldom blamed. The principle of compact mechanism in the form of interchangeable cartridge allows a handing-over under operation of the mixing valves in record time.
This great simplicity of maintenance makes it possible to utilize a person without particular qualification and not to immobilize an installation more few minutes, so much the exchange of the mechanism is fast.
Moreover, the body of the mixing valve is never dismounted of the installation.
CALCULATION SOFTWARE

The WATTS INDUSTRIES software is designed to validate the calculation carried out manually in order to choose the right thermostatic mixing valve (according to pressures, pipe diameters, desired flowrate and number of points of use).

To access the calculation software on our web site, enter this URL: [http://www.wattsindustries.com](http://www.wattsindustries.com)

On the first page, click on Local companies and on France - Watts Industries France (Porquet - Gripp)

Calculation method:

1 - The software defines the Accumulated Flowrate of mixed water by multiplying the number of equipment items to be supplied by the usual unit flows.

2 - It calculates the Total Instantaneous Flowrate to be provided by the thermostatic mixing valve. Depending on the type of worksite (3 types), it chooses the reduction coefficient of flows corresponding to the quantity of equipment items to be supplied. It multiplies this coefficient by the accumulated flowrate in order to obtain the instantaneous flowrate.

3 - Then the software chooses the thermostatic mixing valve which will ensure the regulation at this instantaneous flowrate under the dynamic pressure \( b. = \text{bar} \) available for its operation.

Why choose a WATTS thermostatic mixing valve?

Easy to install, simple to maintain, attractively designed, WATTS INDUSTRIES thermostatic mixing valves are the basic element for genuine comfort in all plumbing facilities.

An installation fitted with a WATTS INDUSTRIES appliance has the guarantee of a brand that has been specialised in this technology for more than 50 years. Its manufacturer is one of the world’s oldest specialists. Eurotherm, a real reference for pros!

The working simplicity of Eurotherm mixing valves results from their ease of operation and the incomparable quality of results.

- Outstanding customer Service: product widely distributed across Europe.
- Guarantee: mixing valve and cartridge guaranteed for 2 years.
- Manufacturer: WATTS INDUSTRIES FRANCE has ISO 9001 certification through the BVQI.
- Market background and know-how: present since 1947.

Mixing cold and hot water in order to obtain water which is mixed at a stabilized temperature within one degree: this is the important part.

A thermostatic mixing valve means substantially reduced water consumption, absolute safety – no water which is suddenly uncomfortably hot or cold – guaranteed regulation of flowrates, from the very lowest to the highest, piping and valves protected from limestone deposits, a larger reserve of mixed water at the desired temperature.

WATTS INDUSTRIES:
the most complete range in thermostatic mixing valves

PRODUCT INFORMATIONS & TECHNICAL ASSISTANCE:
please contact EXPORT and O.E.M. department at Hautvillers Ouville
Phone +33 (0)3.22.24.70.11 - info@wattsindustries.fr - Fax +33 (0)3.22.23.16.83
OEM APPLICATIONS

WATTS INDUSTRIES is the first European specialist in sanitary thermostatics since 1947. Hereafter some examples of our OEM customers.

**Customers’ problems :**

- **Sanitary taps manufacturer**
  - Integrating an efficient thermostatic mechanism, in compliance with the EN1111 standard, easy to assemble and to disassemble, at a competitive price.

- **Shower panel manufacturer**
  - Providing a concealed thermostatic mixing valve, light and simple to industrialize, with a control shaft of a very short movement, which can receive all standard handles already used by the integrator.

- **Luxury tap manufacturer**
  - Fitting out a complete range of luxurious sanitary taps, ready to be inset and allowing various combinations of outlets, with or without flow rate regulator.

- **Bath manufacturer for balneotherapy**
  - Integrating a thermostatic mixing valve with an excellent response time, compact enough to require a small space to be installed, resistant for to special water applications like sea water and thermal water.

- **Boilers manufacturer**
  - In order to follow the market evolution, fitting out the range of sanitary boilers with a very economic temperature regulation, but with very high flow rate, with or without anti-scald security.

- **Machines for food-industry manufacturer**
  - Getting a constant and very precise water temperature quickly and easily with a mechanism including food quality class materials, easy to maintain.

**WATTS INDUSTRIES thermostatic answers :**

- **A standard thermostatic cartridge, made in polymer :**
  - Interchangeable and easy to dismantle, this cartridge has many advantages:
    - No risk of blockage due to scale
    - Excellent response time
    - Anti-scald security
    - Competitive price
    - Enables the production of taps which meet the requirements of the European EN 1111
    - Flow-rate of 15 l/min. since a pressure of 0.5 bar

- **A monobloc body + cartridge assembly ready to operate :**
  - Designed for direct incorporation into shower booths and sanitary panels
  - Supplied with graduated dial and security stop index (0 to 40°C or 32 to 104°F)
  - Control shaft which can receive all standard handles already used by the integrator on others series
  - Order axle can be locked longitudinally, providing a small and constant clearance between the graduated handle and the wall (low risks of dirtying)
  - High flow-rates allowing the feed of a main shower head and side shower outlets
  - Comfort of a constant temperature to the degree and no-burn safety

- **A range of concealed thermostatic mixing valves providing various combinations and made-to-measure trimming :**
  - Extremely simplified installation, no particular tools are necessary
  - Very important flow-rates (up to 400 l/min.) allowing the use of cascades and other accessories
  - Easy to maintain
  - Optimal comfort for the final user with a very precise and constant temperature
  - Safety : all risks of burning are avoided, if cold water supply stops, hot water is automatically cut off

- **A range of thermostatic mixing valves compact and efficient which can be inset into all kinds of medical baths :**
  - Possibility of special appliances with thermal water and sea water
  - Excellent regulation and stability of the temperature, under any conditions of pressure and flow rate
  - Several temperature ranges available : from 0 up to 90°C max.

- **A complete range of thermostatic mixing valve at a very competitive price :**
  - Important flow rate : more comfort for the final user
  - Small dimensions allowing integration on the existing frame
  - Lots of different fittings : male, female, union, compression, 1/2", 3/4", 1"
  - Very easy to adapt to existing installations
  - Non return check valve integrated and locking device for the chosen temperature
  - Compliance with several agreements (WRC, ASSE 1016...)

- **A range of apparent thermostatic mixing valves with flow rates from 3 to 400 l/min. :**
  - Almost no maintenance thanks to their longevity and scale resistance
  - Interchangeable cartridges without dismantling or returning to the factory
  - Easy reading of the temperature (over dimensioned handle)
  - Wide choice of graduations in degrees : 5 to 40°C, 15 to 50°C and 40 to 80°C
  - Food quality class materials and metallic coating in accordance with the official requirements
Product range Watts Industries

- System disconnectors
- Backflow protection devices
- Check valves
- Safety units
- Safety relief valves
- Pressure reducing valves
- Automatic control valves
- Butterfly valves
- Shut off valves
- Measuring gauges
- Temperature control
- Expansion vessels
- Process switches
- Fuel products
- Gas products
- Electronic controls
- Installation protection products
- Radiator valves
- System products
- Manifolds and fittings