

Technical Solution Sheet 5.06

5: Cold Water Plumbing

Duplicate Solution of 6.05 (Hot Water Plumbing)

Maximum Outlet Pressure within Building's Water Supply Flow Rates

AIM

The aim of this technical solution is to inform practitioners about regulations relating to the maximum pressure for cold and heated water plumbing, and requirements for water efficient tapware.

PLUMBING REGULATIONS 2008

The *Plumbing Code of Australia (PCA)* is adopted by and forms part of the *Plumbing Regulations 2008*. Part B1 of the PCA specifies the objectives and performance requirements related to the installation of cold water services. *AS/NZS 3500.1: Plumbing and drainage Part 1: Water services*, is a "deemed to satisfy" document listed in Part B1 of the PCA and contains a section on "Sizing of water services".

Part B2 of the PCA specifies the objectives and performance requirements related to the installation of heated water services. *AS/NZS 3500.4: Plumbing and drainage Part 4: Heated water services*, is a "deemed to satisfy" document listed in Part B2 of the PCA and contains a section on "Water and energy efficiency". An objective of the PCA is conservation of water and energy.

BACKGROUND

Two elements of the Regulations that influence water and energy conservation are:

1. Maximum outlet pressure within buildings

The maximum static pressure at any outlet, other than a fire service outlet, within a building

must not exceed 500 kPa. This applies to all new plumbing work.

2. Water supply Flow rates

It is a requirement of *AS/NZS 3500.1* and *AS/NZS 3500.4* that the maximum flow rate from an outlet for a shower, basin, kitchen sink or laundry trough must not exceed 9 L/min. Plumbers and builders play an important role in encouraging Australians to use water more efficiently.

Plumbers and builders need to ensure that they comply with the regulations relating to the maximum water supply flow rates for both hot and cold water. Generally, this will involve installing appropriate approved *Water Efficiency Labelling and Standards (WELS)* products.

1. MAXIMUM PRESSURE WITHIN BUILDINGS

How do I know what the available pressure is?

The best method is to connect a correctly calibrated pressure gauge to the meter outlet at the property boundary. The static pressure that is available from the water authority will be shown. If this reading exceeds 500kPa you will need to install a pressure regulating device.

What type of pressure regulating device can I use?

You may use any currently approved pressure limiting valve or adjustable pressure reducing valve.

Technical Solution Sheet 5.06

Where can the valve be installed?

The regulations require that provision be made to ensure that the maximum static pressure at any outlet (other than a fire service outlet) including heated water within a building not exceed 500kPa. The valve can be installed anywhere in an accessible location on the cold water line provided this requirement is met. E.g. If full mains pressure is required at a point/s outside the building, install the valve downstream of those points.

Will this regulation make any difference to the sizing of the water service?

The water service must still be sized to the requirements of [AS/NZS 3500.1](#). The only difference is that if the regulating valve is installed at the meter the available pressure for sizing purposes is 500kPa (see Technical Solution 5.01 Cold Water Pipe Sizing)

2. WATER SUPPLY FLOW RATES

The maximum flow rate from an outlet for a shower is 9 litres per minute for all new plumbing work.

Q: How is the flow rate measured?

A: The intent of the regulation is to ensure that under all operating conditions the flow rate will not exceed 9 litres per minute, so the flow rate is measured at the shower head when both hot and cold taps are both in the fully open position.

Q: How do I comply with this?

A: The regulations are not prescriptive on how flow rates are achieved (see Figure 1).

The maximum flow rate for basins, kitchen sinks and laundry troughs is 9 litres per minute.

Q: How are these flow rates measured?

A: The flow rates for basins, kitchen sinks and laundry troughs are measured as follows:

- Separate hot and cold pillar or hob mounted taps shall each be measured at the outlet in the fully open position.

- Mixer taps and tap sets shall be measured at the outlet in either of the following ways depending on the method used to restrict the flow rate:

1. The individual flow from the cold tap in the fully open position. The individual flow from the hot tap in the fully open position
2. The mixed flow from the outlet with both hot and cold taps simultaneously in the fully open position.

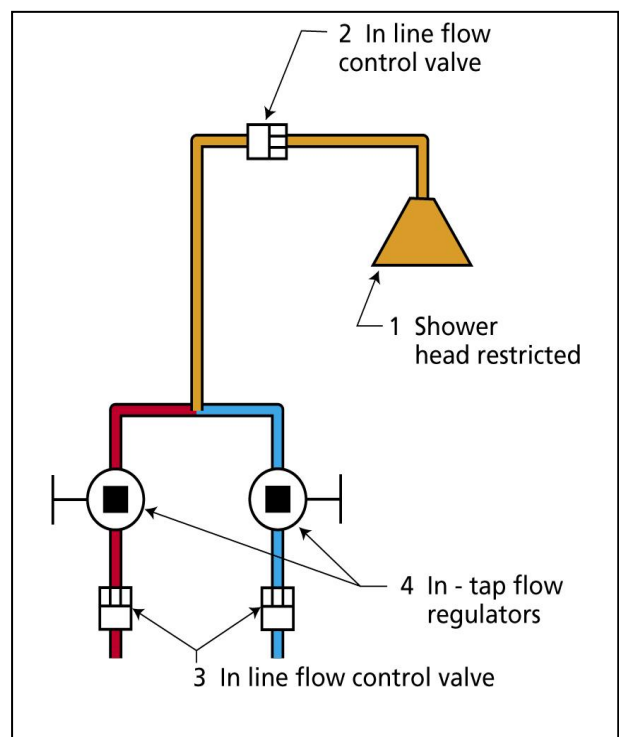
There are several types of taps applicable for these fixtures.

Q: How can I comply with the flow rates with these different tapware types?

A: In general, for these fixtures, there are three main types of tap controls:

1. Separate hot and cold pillar or hob mounted taps (see Figure 2).
2. A tap set incorporating hot and cold taps with a common outlet (see Figure 3).
3. A mixer tap with a single lever control and common outlet (see Figure 4).

FIGURE 1 - IN LINE FLOW CONTROL VALVES



Technical Solution Sheet 5.06

FIGURE 2 - IN LINE FLOW CONTROL VALVES AND IN TAP FLOW REGULATORS

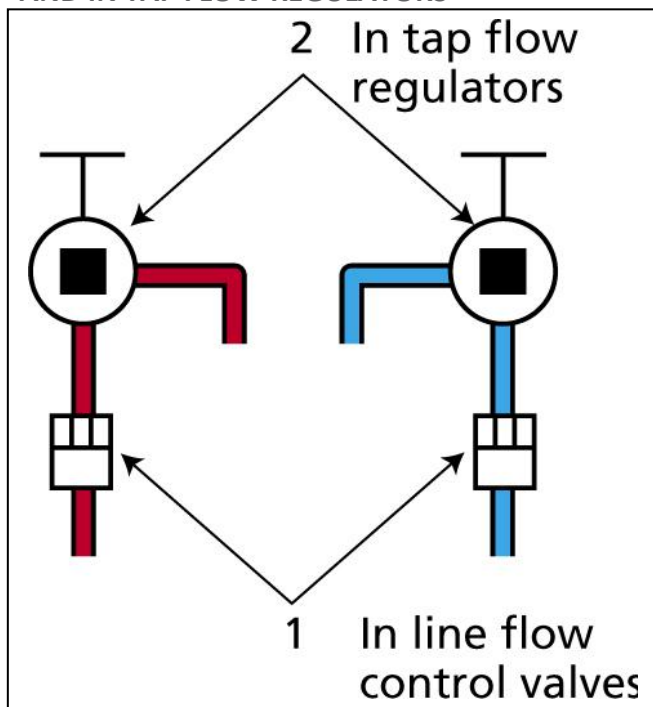
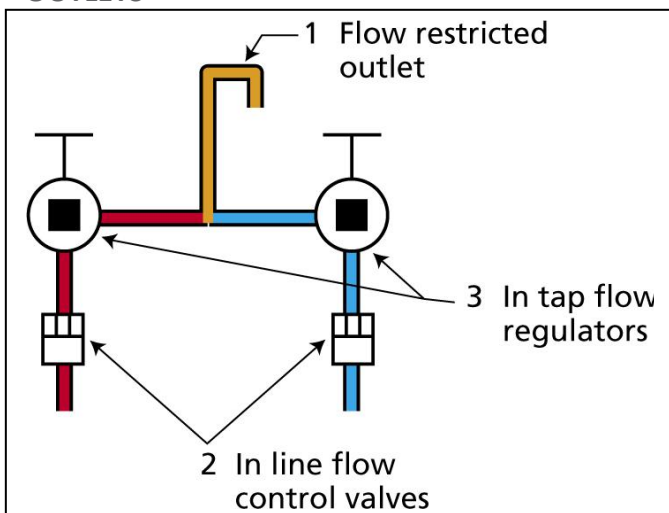


FIGURE 3 - IN LINE FLOW CONTROL VALVES, IN TAP FLOW REGULATORS OR RESTRICTED OUTLETS



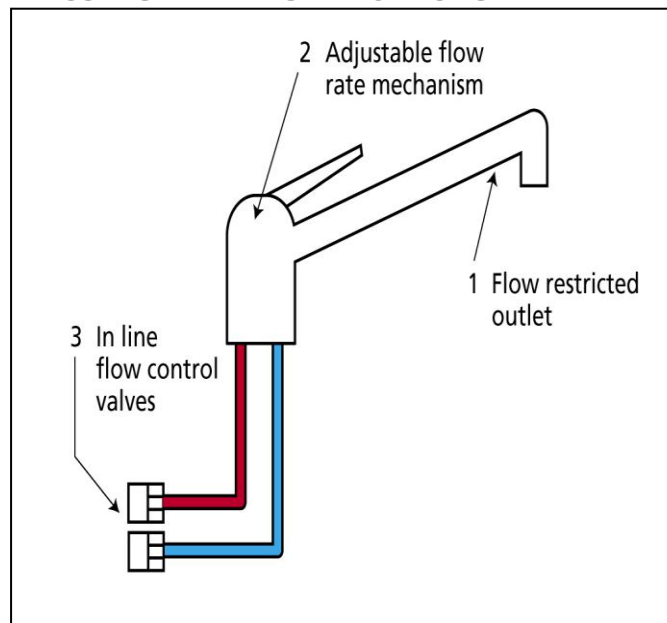
Notes for Figures 2 & 3:

1. WELS compliant tapware
2. Approved in-line flow control valves can be used to the hot and cold supply to the taps
3. In-tap flow regulators may also be used.

Note:

In some cases, it may be necessary to consult with the tap manufacturer to establish the best way to comply with the flow rate regulations.

FIGURE 4 - SINGLE LEVER MIXER WITH INCORPORATED FLOW RESTRICTION



Notes for Figure 4:

1. A single lever mixer tap may have the flow restriction incorporated in the outlet by the manufacturer who will label the tap set as complying with WELS.
2. Some manufacturers may provide an adjustable flow rate mechanism within the tap body which can be set on site by the plumber.
3. Approved in-line flow control valves may be used to the hot and cold supply to the tap.

How will I know what tapware complies?

The Water Efficiency Labelling and Standards (WELS) Scheme provides for mandatory water efficiency labelling and minimum water efficiency standards for specified water-using products (see Figure 5).

Technical Solution Sheet 5.06

The WELS Scheme applies to:

- Showers
- Tap equipment
- Flow controllers (not mandatory)
- Toilet (lavatory) equipment
- Urinal equipment
- Clothes washing machines
- Dishwashers

The scheme does not apply to any tap or tap outlet that is solely for use over a bath. Plumbing practitioners are bound by law to ensure that they are supplying or installing WELS rated products.

FIGURE 5 - WELS RATING LABEL



They need to ensure that any WELS products they supply or install are:

- WELS registered and labelled and the labels are clearly visible to the customer when offered for supply.

Tips:

- Showerheads rated at three stars or more will comply.
- Taps rated at three stars or more will comply.
- In some cases such as in buildings with low- or unequal pressure, or for certain types of hot water systems, it may be necessary to use Zero Star Rated products to achieve a satisfactory flow rate.

You can search for registered products on the WELS product search database at

www.environment.gov.au/welspublicsearchPublic.do

The mandatory labelling scheme for water efficient products ensures that manufacturers label their products, and this gives practitioners confidence that the products comply.

Note:

In relation to the above fixtures and appliances: Under the Water Efficiency Labelling and Standards Act 2005, it is an offence to supply a WELS product that does not comply with any registration, minimum water efficiency or minimum general performance requirements.