

Pressure reducing valves

Installation, commissioning and servicing instructions

Function

Pressure reducing valves are installed in residential water systems to reduce and stabilise inlet pressure from the water mains supply which is generally too high and variable for domestic appliances to function properly.

These valves can also be used to control inlet pressure to domestic hot water storage.

The Tomson PRV series have been specifically designed and manufactured to meet the requirements of "AS1357.2:2005 Valves primarily for use in warm and hot water systems - P. 2: Control valves".



Product range



Straight

Pressure reducing valve
DN 15 (1/2"), DN 20 (3/4") and DN 25 (1")
Female connections (ISO 7/1)



Right-angle

Pressure reducing valve
DN 20 (3/4")
Female connections (ISO 7/1)

Technical specifications

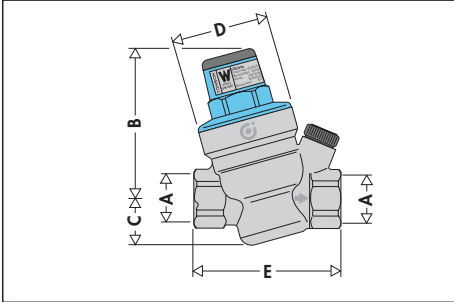
Materials:

Body:	- Straight:	dezincification resistant alloy CR EN 12165 CW602N, chrome plated
	- Right-angle:	dezincification resistant alloy CR EN 12165 CW602N
Cover:		PA6G30
Control spindle:		stainless steel
Cartridge:		PPS-PSU
Components:		brass EN 12165 CW617N
Diaphragm:		EPDM
Seals:		EPDM
Strainer:		stainless steel

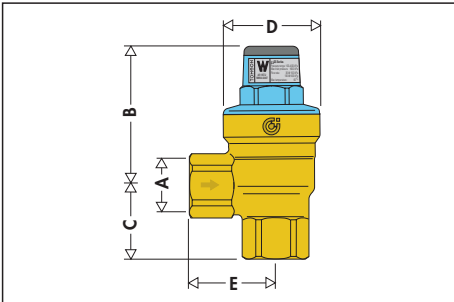
Performance:

Pressure setting range:	100÷600 kPa (Straight); 500 kPa (Right-angle)
Factory setting:	350 and 500 kPa
Max. inlet pressure:	2000 kPa
Max. working temperature:	80°C
Medium:	water
Complies with:	AS 1357.2

Dimensions



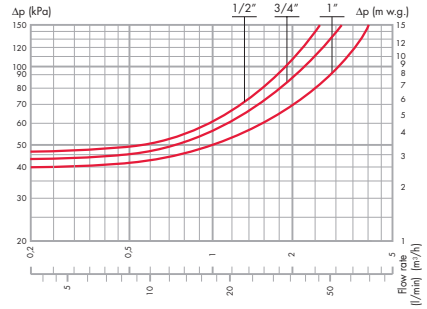
Prod. code	Ref. code	Set (kPa)	DN	A	B	C	D	E	Mass (kg)
9505197	533544H TMS	350	15	1/2"	74,5	22	∅46	79	0,45
9504090	533545H TMS	500	20	3/4"	74,5	22	∅46	84,5	0,46
9505198	533554H TMS	350	25	1"	74,5	23	∅46	95	0,54
9505199	533564H TMS	500	25	1"	74,5	23	∅46	95	0,54



Prod. code	Ref. code	Set (kPa)	DN	A	B	C	D	E	Mass (kg)
9504093	533551H TMS	500	20	3/4"	67	46	∅46	43	0,49

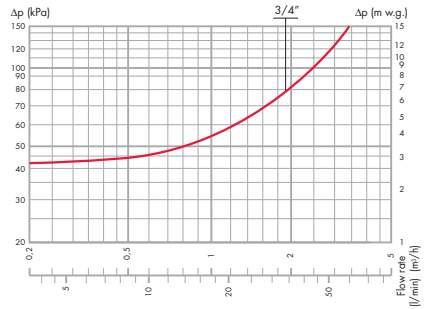
Pressure drop diagram

Under following conditions: - Inlet pressure: 800 kPa
- Outlet set pressure: 500 kPa



Flow rate (AS 1357.2):

DN 15	DN 20	DN 25	
20 l/min	30 l/min	50 l/min	@ 100 kPa
60 l/min	110 l/min	130 l/min	@ 350 kPa
70 l/min	120 l/min	140 l/min	@ 500 kPa
75 l/min	125 l/min	145 l/min	@ 600 kPa



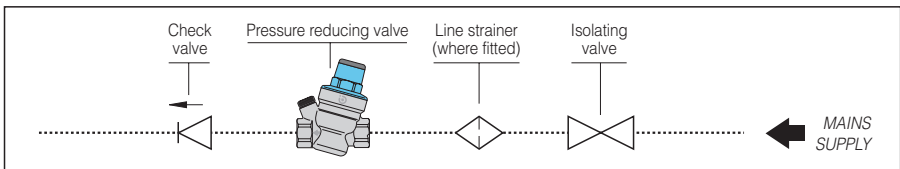
Flow rate (AS 1357.2):

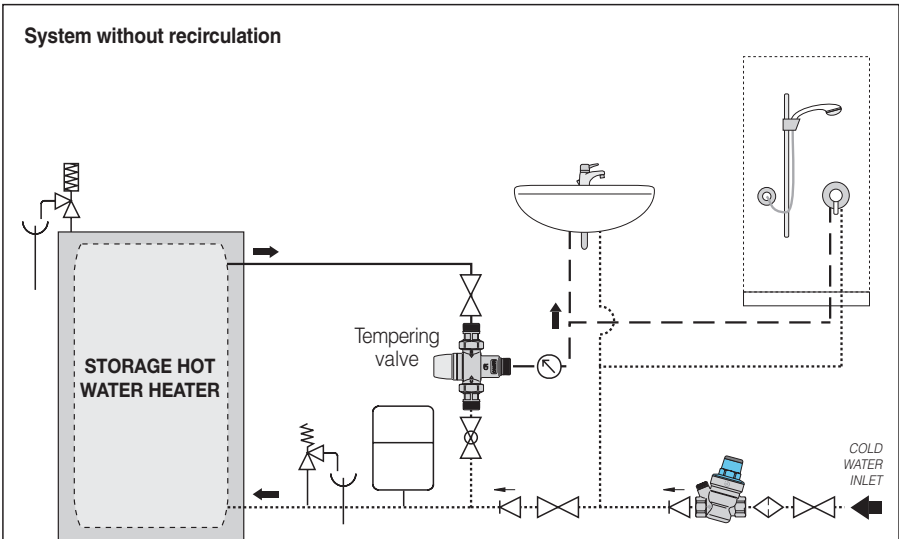
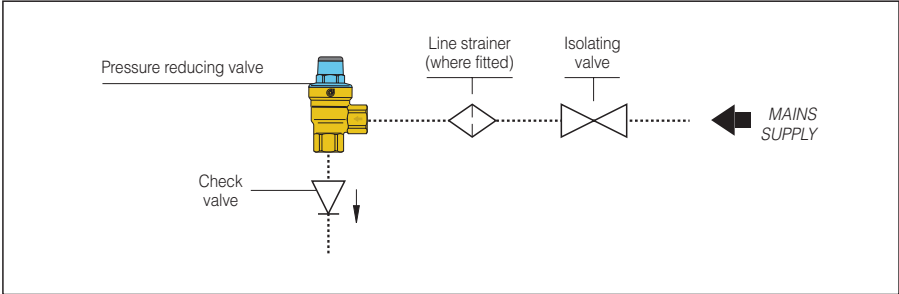
DN 20	
130 l/min	@ 500 kPa

Installation

The pressure reducing valve must be installed by a licensed plumber and in accordance with AS/NZS 3500, relevant local requirements and following these instructions.

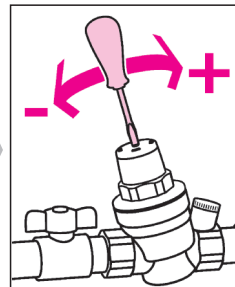
Installation diagram



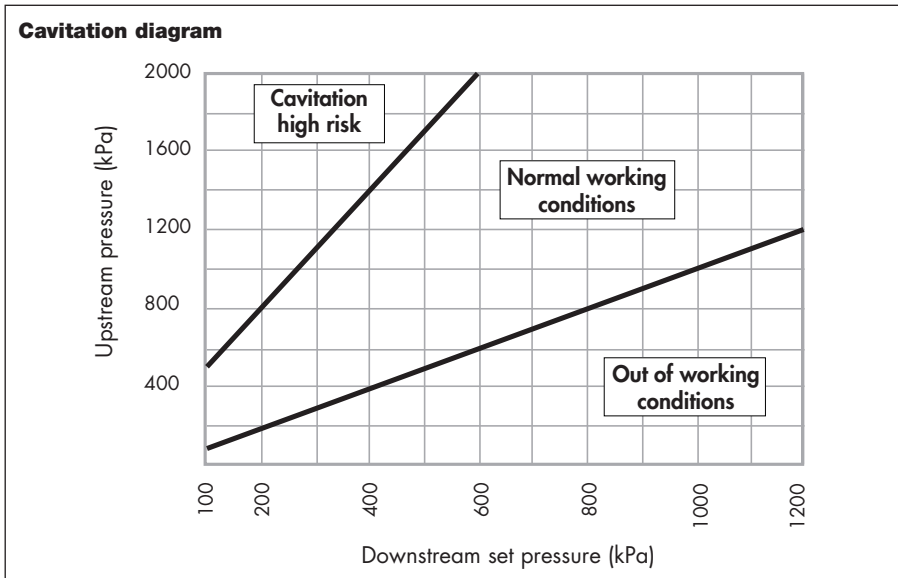


1. Flush the system.
2. Install the pressure reducing valve in any position either vertically or horizontally, not upside down, paying attention to the "direction of flow" indicator on the body of the valve.
3. Tomson PRV series pressure reducing valves are factory set at 350 kPa or 500 kPa.
4. If required, reset the pressure by turning the screw on the top of the plastic cover. Turn it clockwise to increase the pressure and anticlockwise to decrease it.

Note: Right-angle valve has fixed setting, not adjustable.



Recommendation for installation conditions



To minimize the risk of cavitation within the valve that may result in malfunctioning with erosion of valve sealing area, vibrations and noise, it is highly recommended to refer to the working conditions represented in the above diagram.

Due to the numerous factors and variable conditions experienced such as system pressure, water temperature, air presence, flow rate and velocity, which may affect the behavior of the pressure reducing valve, it is advisable that the pressure ratio between the upstream pressure and the downstream set pressure is kept ideally to a value 2:1 and no greater than a value of 3:1. (For example, upstream 1000 kPa, set pressure 500 kPa, the pressure ratio = $1000/500 = 2:1$). In these conditions, the possible risk of cavitation and malfunctioning is minimised, however this does not exclude the possible effects of the many other variables within the system under operating conditions.

If the pressure ratio exceeds the indicated limit, the system design pressure or use of 1st stage pressure reducing valves shall be reviewed. (For example, 1st stage reducing pressure from 1600 to 800 kPa and then 2nd stage from 800 to 400 kPa).

Pipework upstream and downstream of the pressure reducing valve shall be supported in accordance with the manufacturer's instructions, AS/NZS 3500 along with any other local authority requirements, to avoid the creation and transfer of vibration and/or noise into the installation.

The inlet strainer of the pressure reducing valve shall be periodically checked and cleaned, to minimize any partial or complete blockage which may limit the flow rate from the valve and/or create noise.

System flushing, cleaning and disinfection of the pipework to which the valve is installed shall be performed by suitably qualified persons in accordance with the system component manufacturer's instructions, AS/NZS 3500 along with any other applicable local authority requirements. Exceeding the maximum stated chemical concentrations and/or duration of exposure may negatively impact on the performance of the system and/or components installed such as the pressure reducing valve. Chemical dosed products must be chemically compatible with materials used for the construction of the pressure reducing valve, specified in its technical documentation.

Installation below ground

If installing the Tomson PRV series valve underground, please ensure that steps are taken to protect the valve from becoming frozen in frost-prone areas or at risk of being submerged by raising water. Please allow yourself sufficient space to remove the cartridge should maintenance be required. The reading of a gauge for setting purposes may be difficult and an alternate means of checking downstream pressure may be necessary.

Water hammering

This is one of the main problems which may affect pressure reducing valves. It is best to fit special devices to absorb water hammering when fitting pressure reducing valves in systems at risk.

WARNING:

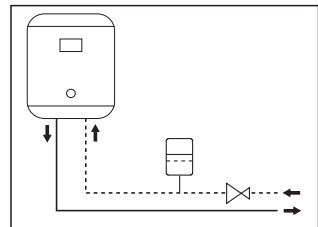


If it is **critical** to maintain the downstream pressure setting to protect equipment, as a safety measure, we recommend that a pressure, or safety, relief valve is installed downstream of the pressure reducing valve.

Trouble-shooting

1. Increased downstream pressure near a water heater

This problem is due to the water being heated by the water heater. There is no relief of the pressure because the reducing valve is correctly closed. The solution is to install an expansion vessel (between the heater and the reducer) to “absorb” the pressure increase.



2. The pressure reducing valve does not maintain its set pressure

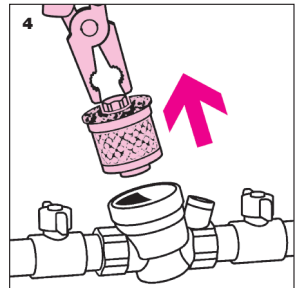
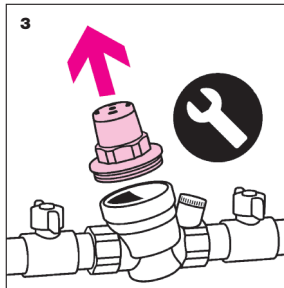
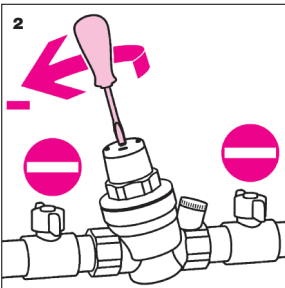
In most cases this is the result of impurities that deposit on the valve seat causing leakage with a resulting increase in pressure downstream. The solution is to fit a filter upstream from the reducer and subsequently to maintain and clean the cartridge (see *Maintenance*).

Maintenance

The pressure reducing valve is a device that controls the hydraulic circuit and its functioning needs to be checked at least every 12 months.

Proceed as follows for periodic cleaning of the strainer and inspection of the cartridge:

- 1 Turn off upstream water supply to the pressure reducing valve and open an outlet downstream to relief pressure
- 2 Unscrew (anticlockwise) the setting screw to decompress the spring inside.
- 3 Unscrew the cover.
- 4 Extract the cartridge with the aid of pincers to grip the head of the screw.
- 5 After inspection and cleaning, refit the cartridge or, alternatively, fit a replacement cartridge (cover tightening torque: 20–25 N·m).
- 6 Reset the valve (see *Installation*).



Safety



If the pressure reducing valve is not installed, commissioned and maintained properly in accordance with the instructions contained in this manual, it may not operate correctly, and may cause damage to objects and/or persons.

Make sure that all the connections are water-tight.

When installing the pressure reducing valve, make sure not to over-tighten the connections to the valve as, over time, a failure can occur with subsequent water leakage causing damage.

Water temperatures higher than 50°C may cause severe burns. When installing, commissioning and maintaining the device, take the necessary precautions so that these temperatures will not endanger people.

In the case of highly aggressive water, arrangements must be made to treat the water before it enters the pressure reducing valve, in accordance with current legislation. Otherwise, the pressure reducing valve may be damaged and not function correctly.

Leave this operating manual with the user

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