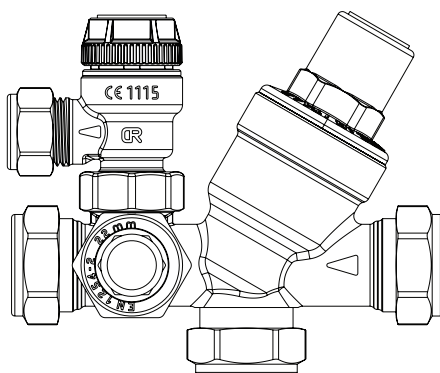


Unvented Group Set

UVGS21822260.1 UVGS21822210.1

UVGS21822220.1 UVGS21822200.1

Installation and Maintenance Instructions



Introduction

The Inta unvented group sets are a combination fitting combining a non return valve, pre-set pressure reducing valve, a strainer and a safety relief valve.

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

For installers on a competent persons scheme, they need only notify their scheme provider who will in turn notify the local Building Control office.

These instructions cover the installation, operation and maintenance. Please read the enclosed instructions before commencing the installation of this product, please note;

We recommend that the installation of any Inta product is carried out by an approved installer.

It is recommended, especially in hard water areas, that a water softener such as the ActivFlo or ActivFlo lite be fitted to reduce the risk of calcium deposits forming.

Products

Unvented Group Set, 22mm connection, without expansion vessel connection and SRV 6 bar	UVGS21822260.1
Unvented Group Set, 22mm connection, with ¾" expansion vessel connection and SRV 6 bar	UVGS21822210.1
Unvented Group Set, 22mm connection, with 22mm expansion vessel connection and SRV 6 bar	UVGS21822220.1
Unvented Group Set, 22mm connection, with 22mm expansion vessel connection and SRV 4.75 bar	UVGS21822200.1

Technical Specification

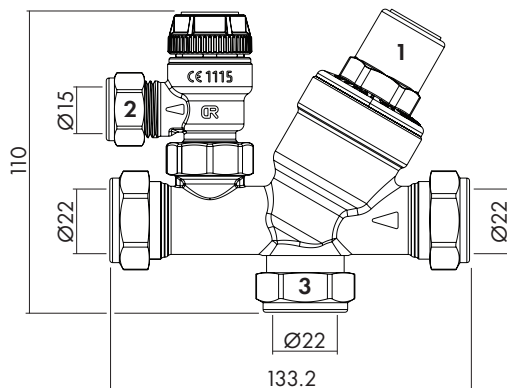
Max. working pressure:	16 bar
Max. operating temperature:	30 °C and 80 °C
Min. operating temperature:	4 °C
Complies with:	BS EN 1567
Medium:	Water
SRV discharge pressure:	6 or 4.75 bar
Max. closing differential of SRV:	20%
PRV factory setting:	3 bar
Compression connection:	BS EN 1254-2
WRAS approved product:	

PRV = Pressure Reducing Valve

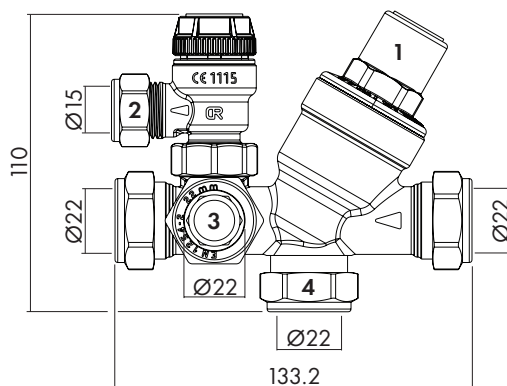
SRV = Safety Relief Valve

Dimensions

UVGS21822260.1

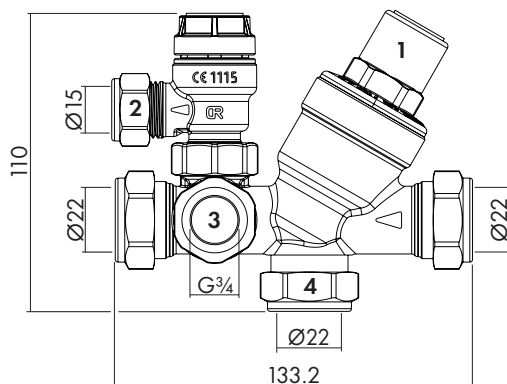


UVGS21822220.1



UVGS21822210.1

UVGS21822200.1



Components

- 1 Pressure reducing valve
- 2 Safety relief valve
- 3 22mm balanced take-off
- 4 Connection for expansion vessel

Material

Body	Brass	BS EN CW602N
Strainer	Stainless steel	AISI 304 - 300 µ mesh
Cover	Polymer	PA66 + 30% FV
PRV internal components	Brass	BS EN CW602N
SRV cartridge	Polymer	POM

Advantages of Fitting an Unvented Group Set

- Ease of installation with just 4 compression connections.
- Cost saving - the installation takes less time than a traditional system and the equipment is maintenance free, apart from occasional operational checks.
- No feed / expansion tank helps avoid over pumping and the risk of freezing.
- Combines a PRV, SRV, check valve and filter into one fitting.
- Controls inlet pressure to unvented hot water systems.
- Longer life - corrosion issues are virtually eliminated.

Installation

Carefully follow these instructions and ensure that the installation conforms to the Water Regulations.

It is recommended that isolating valves are installed upstream and downstream to facilitate any future maintenance.

It is recommended that a pressure gauge is installed downstream of the unvented group set to establish and check the pressure from the pressure reducing valve.

Ensure that sufficient water pressure and flow rate are available.

Flush the system thoroughly and expel any air remaining in the pipes.

Install the unvented group set with the integral arrow on the body pointing in the direction of flow.

The compression joints should be tightened with a torque of 45 Nm.

Connection (3) on the body may be used as a balanced cold water supply.

Connection (4) on the manifold is a plugged connection which may be used for direct mounting to an expansion vessel if required. This plug is plastic and has an 'O' ring seal therefore excessive force should not be used for its removal or replacement.

Safety Relief Valve

The safety (pressure) relief valve is free to rotate to the required position.

The safety relief valve **MUST NOT** be fitted with the cap pointing downwards and the discharge pointing in an upward gradient.

The SRV should be sited in the locations prescribed or separate of the kit in accordance with local Bylaws and best practice.

There must be no restriction or obstruction between the system and the unvented group set.

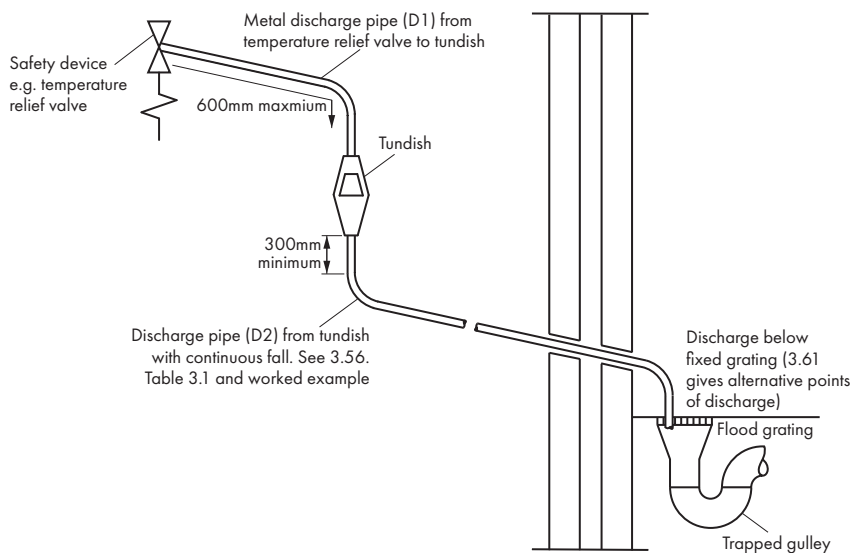
Discharge Pipe

The Ø15 copper discharge pipe from the safety valve must be fixed in such away that there are no mechanical stresses on the safety valve and the drain pipe must convey into a tundish in accordance with BS EN 1717

The discharge pipework must be sited in accordance with water bylaws, paying particular attention to siting of tundish and sizing and routing of discharge pipework. **NEVER** block the discharge port of the relief valve.

Discharge Pipe Continued

Valve Outlet Size	Min Size of Discharge Pipework (D1)	Min size of Discharge Pipework from Tundish (D2)	Max Resistance allowed expressed as a length of pipe(i.e. no elbows and bends)	Resistance created by each elbow or bend
G $\frac{1}{2}$	15mm	22mm	Up to 9m	0.8
		28mm	Up to 18m	1.0
		35mm	Up to 27m	1.4
G $\frac{3}{4}$	22mm	28mm	Up to 9m	1.0
		35mm	Up to 18m	1.4
		42mm	Up to 27m	1.7
G1	28mm	35mm	Up to 9m	1.4
		42mm	Up to 18m	1.7
		54mm	Up to 27m	2.3



Problem Solving

By reading these installation notes and adhering to their guidance, system faults should be minimal.

However, the following faults (while not an exhaustive list) are among the most common.

Fault: SRV discharges when system is cold

- Pressure reducing valve failure
- Blocked seat of safety relief valve

Fault: SRV discharges when system is hot

- Expansion vessel sized incorrectly.
- Expansion vessel pre-charge set to incorrect value.
- Expansion vessel diaphragm ruptured.
- Safety relief valve incorrectly sized.
- System pressure too high.

Fault: Poor flow at hot water outlets

- In line strainer blocked
- Non return valve blocked
- Incorrectly sized hot feed pipework to outlets
- Incorrectly sized cold feed pipework to cylinder
- Poor mains pressure in the initial instance

Fault: Vessel discharges liquid when air pressure is checked

- Membrane is ruptured and requires replacement.

Maintenance

Check the pressure gauge when the system is cold to identify any pressure loss below the set point.

A loss of pressure either indicates air venting or a system leak. Re-pressurise as needed and continue to observe.

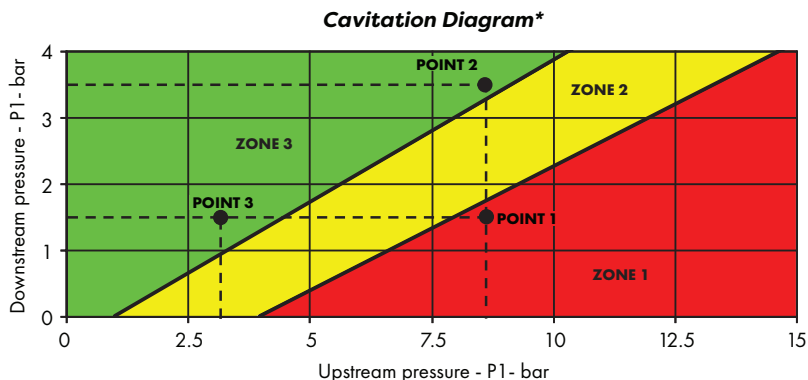
An inspection of the Schrader valve should be made at least every 12 months to ensure the compressed air cushion is still intact.

Cavitation

The unvented group set includes a pressure reducing valve which must work within certain inlet and outlet pressures to work efficiently and prevent cavitation occurring.

Cavitation Diagram

In order to prevent cavitation, which can cause excessive noise, vibration and damage to the valve and downstream pipe, in certain pressure situations with high inlet pressures and low outlet pressures (high pressure loss) then a number of pressure reducing valves may be required. The cavitation diagram shows three areas of operation depending upon the upstream and downstream (outlet) pressures.



- **ZONE 1:** Damage and Noise - The characteristics of cavitation are clearly audible and visible inside the pressure reducing valve and pipework. The valve should not be used under these conditions.
- **ZONE 2:** Critical Zone - Highlights the possibility of cavitation of occurring inside the pressure reducing valve or pipework. Using the valve under these conditions should be avoided and is not recommended.
- **ZONE 3:** Operating Zone - The pressure reducing valve works under its optimum conditions. The valve can safely be used under these conditions.

In order to avoid cavitation occurring the ratio between the maximum upstream pressure and the outlet pressure should not exceed a value of 2.5.

Example

If the pressure reducing valve is used under the following conditions;

- Upstream pressure: $P_m = 8.5$ bar
- Outlet pressure: $P_v = 1.5$ bar

On the Cavitation Diagram these pressures correspond to **POINT 1** in **ZONE 1**.

Ratio $P_m/P_v = 8.5/1.5 = 5.67$.

* **NOTE:** The cavitation diagram has the sole purpose of supplying the technician with a quick reference for the system conditions to determine if cavitation will be present and the likely level.

A second external PRV, in addition to the unvented group set, may be required to step down the upstream pressure and pressure loss avoiding cavitation.

Cavitation Diagram Continued

Solution

Use 2 pressure reducing valves in series.

First valve using the following conditions;

- Upstream pressure: $P_m = 8.5$ bar
- Outlet pressure: $P_v = 3.5$ bar

Pressure ration $8.5/3.5 = 2.42 < 2.5$

On the Cavitation Diagram these pressures correspond to **POINT 2** in **ZONE 3**.

Second valve using the following conditions;

- Upstream pressure: $P_m = 3.5$ bar
- Outlet pressure: $P_v = 1.5$ bar

Pressure ration $3.5/1.5 = 2.33 < 2.5$

On the Cavitation Diagram these pressures correspond to **POINT 3** in **ZONE 3**.

NOTE: The outlet pressure of the pressure reducing valve **MUST NEVER** be higher than the maximum pressure of components and outlets (tap and showers) downstream of the valve.

Please leave this Manual for the User

To activate your product warranty please visit

www.intatec.co.uk

and click on Product Registration

inta

Intatec Ltd

Airfield Industrial Estate

Hixon

Staffordshire

ST18 0PF

Tel: **01889 272 180**

Fax: **01889 272 181**

email: **sales@intatec.co.uk**

web: **www.intatec.co.uk**