

Installation, Operating & Maintenance Instructions, Including Residual Hazard Information, for Seetru Safety Relief Valves

1. Introduction

Proper handling, storage, installation, operation and maintenance are essential to the safe and reliable functioning of Seetru Safety Valves.

Seetru Safety Valves must only be used for the purpose and manner for which they have been designed, that is to protect systems from over pressurisation. Potential hazards exist with the selection, installation design, fitting, operation and maintenance of safety valves. Hazards can include catastrophic failure of the protected pressurised system resulting in death or serious injury or the emission of pressure medium, which may be noisy, hot, poisonous or aggressive.

Inappropriate handling may present a risk of injury due to weight or sharp edges. Rough handling may cause damage to the valve and may affect its performance / safe operation. The manufacturer draws your attention to your responsibility to ensure that all statutory national regulations concerning the operation of pressurised systems and Health and Safety, including the Pressure Equipment Directive 2014/68/EU, are not contravened by incorrect installation, commissioning or servicing. Refer also to, for example, ISO 4126 or contact your supplier if you require further information regarding the use of safety valves.

2. Marking & Labelling

The valve you have been supplied with is marked with the minimum following information:-

- Year of manufacture
- Product ID
- Serial or batch number (please quote in case of query)
- Maximum and minimum allowable limits (temperature)
- Set Pressure (Pressure Setting)
- Where appropriate, the CE mark and ID number of the notified body involved with the Quality Management System, UV Stamp, etc.
- Manufacturer's identification mark

3. Selection of Safety Valves

It is imperative that safety valves are sized correctly for the required duty. The certified discharge capacity, as stamped on the safety valve body, must be greater than the cause of over pressurisation within the protected system, so that no further pressure rise can occur. Refer to capacity charts on safety valve technical data sheets. Factors including fluid phase, density and viscosity, temperature and pressure influence rate of flow and should be taken into consideration.

The set pressure of the safety valve must be greater than the normal operating pressure of the protected system and at a pressure no higher than the Maximum Allowable Working Pressure, except if stated in the governing standard. The closer the operating pressure is to the set pressure, the more likely it is that medium will escape.

Our defined standard for seat leakage rates is API 527 (API Standard 527 "Seat Tightness of Pressure Relief Valves") which states an allowable seat leakage rate at 90% of set pressure, therefore a normal operating pressure higher than 90% of set point may be problematic, leading to reduced operating life and loss of medium.

Blowdown is in accordance with the relevant standard, e.g. ISO4126-1.

Safety valve materials of construction must be compatible with the pressure medium, temperature and operating environment.

4. Installation Design Requirements

Under normal circumstances safety valves should not be fitted with devices that will risk isolation or partial isolation of the valve inlet or outlet from the system pressure.

The safety valve should be mounted in a vertical position. The safety valve must not be subjected to excessive static, dynamic or thermal stresses. These can be caused by, for instance:

- installation under tension;
- reaction forces when relieving;
- vibration, e.g. from machinery or pressure pulsation;
- thermal expansion.

Due care must be taken if painting or coating the valve, as ingress into moving parts may impair operation of the valve.

Valves supplied with a manual lifting device featuring an exposed rising stem (spindle) must have sufficient headroom above the device to allow full lift to be achieved, this should be no less than 50% of the inlet bore (DN) as an absolute minimum.

Due care must be exercised to ensure that no load is placed on loadable lifting devices which may prevent the valve from lifting.

5. Fitting

During the factory acceptance test, the following have been completed:

- Material identification
- Dimensional check
- Visual inspection
- Hydrostatic testing of appropriate elements, before valve assembly
- Set pressure adjustment
- Functional test
- Valve seat tightness test
- Back-pressure seal tightness test
- Marking

Seetru safety valves are thus supplied fully tested, and have been sealed so as to ensure that no changes have been made and that the valve has not been tampered with. The seal and marking are the assurance that the valve has been manufactured and tested in accordance with the applicable Codes and Standards and are the physical evidence of our warranty. No further on-site inspection is required.

Safety valves should be stored in dry, clean conditions at ambient temperature.

Installation work must be carried out by competent personnel and in accordance with sound engineering practice.

Ensure system pressure is vented to atmospheric pressure before attempting to install or remove a safety valve.

Valves should be protected from damage during transport and protected from ingress of foreign matter, for instance with caps. Remove protective caps only immediately prior to installation.

Abrasive material or detritus entering the valve, for instance in the pressurised medium, may damage the sealing surfaces during discharge and may catch in the seal when the valve opens causing the valve to leak.

The pressure system to which the safety valve is connected must be clean to prevent the ingress of dirt or other detritus that might damage the safety valve.

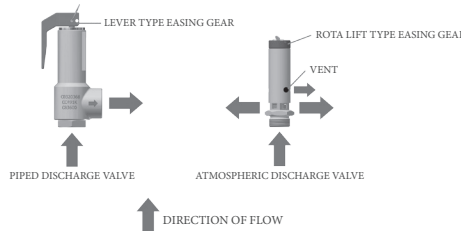
Observe due care and attention when using PTFE tape or liquid thread lock to seal threads as both may enter the valve and be detrimental to operation, and, in the worst case, may cause the valve to fail to operate.

Valves should only be fitted using correct and suitable tools in line with accepted best engineering practice. During installation of threaded valves, only integrated flats are to be utilised to tighten the valve - and not the valve body. Recommended torque values for threaded valves shall be observed.

Thread Size	G 1/4	G 3/8	G 1/2 or Greater
Max Torque Nm	14	30	50

6. Valve Inlet

The direction of flow is embossed on the body of the safety valve (piped discharge versions).



Inlet pipe-work must have a bore greater than or equal to the safety valve inlet bore (DN) and should be as short and straight as possible.

The inlet pipe-work should be designed such that the pressure drop is not greater than 3% when subject to flow at the full rated capacity of the safety valve.

7. Valve Outlet

The outlet of the discharge holes or pipe-work must not terminate in a position where discharged fluid will cause a hazard; noise hazard must also be considered.

Due consideration must be given to the outlet pipe-work and its effect on the function of the valve, e.g. build-up of liquid, blockage, etc.

Outlet pipe-work diameter shall be equal to, or greater than, the discharge bore of the safety valve and shall be supported to prevent mechanical loading of the safety valve.

Outlet pipe-work should be as short and as straight as possible, and, for Conventional Safety Relief Valves, a variable back-pressure of no greater than 10% of the set pressure shall be allowed to build up during discharge. Superimposed back-pressures, not detailed by a cold differential set pressure as stamped on the safety valve, shall not be allowed.

8. Operation & Maintenance

Only trained and technically competent personnel should overhaul, re-set or test safety valves. The safety valve is supplied with either a lead security seal or crimped cover to deter unauthorised access to the pressure regulation device. Breaking the seal or opening the crimp will void any warranty and / or approval.

Under no circumstances should the set pressure of the safety valve be altered to a different pressure than that stamped on the valve without the permission of Seetru and the installation designer.

Springs and other components are designed for specific pressure ranges, when changing the set pressure the user must check whether the spring and other components are suitable for the pressure. If the set pressure must be altered then use only correct parts supplied by the manufacturer and in accordance with the instructions available for the valve type; the new set pressure must be permanently marked on the safety valve.

Safety valves must be frequently tested and regularly maintained.

The set pressure should be periodically checked for accuracy.

The definition of set point or set pressure shall be clearly established before testing; for compressible media this is normally first audible discharge; for liquids, the definition depends upon the applicable Standard. Seek guidance from Seetru.

Safety valves are manufactured with high precision; above all the sealing surfaces are prepared very carefully. It is important to note that testing of metal-to-metal sealing valves and valves with high set pressure may be detrimental to the sealing surfaces, leading to leaks and / or reduction in set pressure. Before considering testing particular care must be taken - consult Seetru for further guidance. In consideration of testing, care must also be taken in regard to the use of compressible and / or dirty test media

In respect of set pressure tests, once set pressure is achieved no further pressure increase is allowed. Testing valves using low flow provides insufficient force to keep the valve open, combined with no damping from the testing fluid there is potential for high impact closing forces which may damage the sealing surfaces. This will void the manufacturer's warranty.

Surfactants (leak detection fluids) may lead to an indication of a false set pressure and therefore should be avoided as a method of measuring set point. Surfactants must not be placed on the sealing surfaces.

When fitted, the lifting device should be operated at pressures not less than 75% of the set pressure to ensure free and easy movement of internal parts.

Back-pressure testing: valves with a secondary pressure zone (closed bonnet) shall be subject to a leak test, by gas at a pressure of 2.0 bar and with no visible sign of leakage per the requirements of ASME VIII-1 UG-136 (d)(3).

The frequencies of Inspection, Test and Maintenance are influenced by factors such as the severity of the operating environment and aggressiveness of the pressurised medium.

Inspection and maintenance intervals cannot be specified by the manufacturer as they depend on the duty and the environment. Intervals must be agreed between the operator and the inspector.

Due care should be given to avoid detritus or particulates entering the valve.

As a minimum, seals and gaskets should be replaced as part of the maintenance procedure; metal-to-metal seated valves should be lapped.

Only original manufacturer spares shall be used and valves shall not be modified in any way.

Additional care must be exercised in handling valves used with hazardous media as this may be retained within the valve.

The service life of a safety valve depends on the application and the environment. Aggressive and arduous applications or hostile environments are not conducive to longevity, it is therefore difficult to provide a definitive declaration of life-time. We can advise however, if regularly and adequately maintained by competent technicians, safety valves can offer many years of protection.

9. Control of Substances Hazardous to Health (COSHH) Data

A small quantity of synthetic rubber / plastic components may be present in the safety valve. Synthetic rubber / plastic represent a hazard to health when subject to elevated temperatures / combustion. They will show physical signs such as charring or black sticky deposits, toxic and or corrosive fumes will also be given off; air supply respirators and acid resistant gloves must be worn if the above conditions occur.

The applicable Material Safety Data Sheet can be made available upon request; the product part number or batch number must be supplied to ensure correct information is provided.

Ensure due consideration is given to environmental protection legislation when disposing of residue.

No Asbestos is present within any Seetru design.

10. End of Life Disposal of Safety Valves

A small quantity of synthetic rubber / plastic components may be present in the safety valve: under certain circumstances these represent a hazard to health and must not be incinerated, see Control of Substances Hazardous to Health information above.

Metallic components may be re-cycled.

Care must be exercised in handling valves used with hazardous media as this may be retained within the valve.