

Consolidated* **11000 Series**

Safety Relief Valve

Maintenance Manual
(Rev. A)



THESE INSTRUCTIONS PROVIDE THE CUSTOMER/OPERATOR WITH IMPORTANT PROJECT-SPECIFIC REFERENCE INFORMATION IN ADDITION TO THE CUSTOMER/OPERATOR'S NORMAL OPERATION AND MAINTENANCE PROCEDURES. SINCE OPERATION AND MAINTENANCE PHILOSOPHIES VARY, GE (GENERAL ELECTRIC COMPANY AND ITS SUBSIDIARIES AND AFFILIATES) DOES NOT ATTEMPT TO DICTATE SPECIFIC PROCEDURES, BUT TO PROVIDE BASIC LIMITATIONS AND REQUIREMENTS CREATED BY THE TYPE OF EQUIPMENT PROVIDED.

THESE INSTRUCTIONS ASSUME THAT OPERATORS ALREADY HAVE A GENERAL UNDERSTANDING OF THE REQUIREMENTS FOR SAFE OPERATION OF MECHANICAL AND ELECTRICAL EQUIPMENT IN POTENTIALLY HAZARDOUS ENVIRONMENTS. THEREFORE, THESE INSTRUCTIONS SHOULD BE INTERPRETED AND APPLIED IN CONJUNCTION WITH THE SAFETY RULES AND REGULATIONS APPLICABLE AT THE SITE AND THE PARTICULAR REQUIREMENTS FOR OPERATION OF OTHER EQUIPMENT AT THE SITE.

THESE INSTRUCTIONS DO NOT PURPORT TO COVER ALL DETAILS OR VARIATIONS IN EQUIPMENT NOR TO PROVIDE FOR EVERY POSSIBLE CONTINGENCY TO BE MET IN CONNECTION WITH INSTALLATION, OPERATION OR MAINTENANCE. SHOULD FURTHER INFORMATION BE DESIRED OR SHOULD PARTICULAR PROBLEMS ARISE WHICH ARE NOT COVERED SUFFICIENTLY FOR THE CUSTOMER/OPERATOR'S PURPOSES THE MATTER SHOULD BE REFERRED TO GE.

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THESE INSTRUCTIONS ARE FURNISHED TO THE CUSTOMER/OPERATOR SOLELY TO ASSIST IN THE INSTALLATION, TESTING, OPERATION, AND/OR MAINTENANCE OF THE EQUIPMENT DESCRIBED. THIS DOCUMENT SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN APPROVAL OF GE.

Conversion Table

All the United States Customary System (USCS) values are converted to metric values using the following conversion factors:		
USCS Unit	Conversion Factor	Metric Unit
in.	25.4	mm
lb.	0.4535924	kg
in ²	6.4516	cm ²
ft ³ /min	0.02831685	m ³ /min
gal/min	3.785412	L/min
lb/hr	0.4535924	kg/hr
psig	0.06894757	barg
ft lb	1.3558181	Nm
°F	5/9 (°F-32)	°C

Note: Multiply USCS value with conversion factor to get metric value.

NOTICE

For valve configurations not listed in this manual, please contact your local Consolidated Green Tag* Center for assistance.

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I. Product Safety Sign and Label System

If and when required, appropriate safety labels have been included in the rectangular margin blocks throughout this manual. Safety labels are vertically oriented rectangles as shown in the *representative examples* (below), consisting of three panels encircled by a narrow border. The panels can contain four messages which communicate:

- The level of hazard seriousness
- The nature of the hazard
- The consequence of human, or product, interaction with the hazard
- The instructions, if necessary, on how to avoid the hazard

The top panel of the format contains a signal word (DANGER, WARNING, CAUTION or ATTENTION) which communicates the level of hazard seriousness.

The center panel contains a pictorial which communicates the nature of the hazard, and the possible consequence of human or product interaction with the hazard. In some instances of human hazards the pictorial may, instead, depict what preventive measures to take, such as wearing personal protective equipment.

The bottom panel may contain an instruction message on how to avoid the hazard. In the case of human hazard, this message may also contain a more precise definition of the hazard, and the consequences of human interaction with the hazard, than can be communicated solely by the pictorial.

①

DANGER — Immediate hazards which **WILL** result in severe personal injury or death.

②

WARNING — Hazards or unsafe practices which **COULD** result in severe personal injury or death.

③

CAUTION — Hazards or unsafe practices which **COULD** result in minor personal injury.

④

ATTENTION — Hazards or unsafe practices which **COULD** result in product or property damage



II. Safety Alerts

Read - Understand - Practice

Danger Alerts

A DANGER alert describes actions that may cause severe personal injury or death. In addition, it may provide preventive measures to avoid severe personal injury or death.

DANGER alerts are not all-inclusive. GE cannot know all conceivable service methods nor evaluate all potential hazards. Dangers include:

- High temperature/pressure can cause injury. Ensure all system pressure is absent before repairing or removing valves.
- Do not stand in front of a valve outlet when discharging. STAND CLEAR OF VALVE to avoid exposure to trapped, corrosive media.
- Exercise extreme caution when inspecting a pressure relief valve for leakage.
- Allow the system to cool to room temperature before cleaning, servicing, or repairing. Hot components or fluids can cause severe personal injury or death.
- Always read and comply with safety labels on all containers. Do not remove or deface container labels. Improper handling or misuse could result in severe personal injury or death.
- Never use pressurized fluids/gas/air to clean clothing or body parts. Never use body parts to check for leaks, flow rates, or areas. Pressurized fluids/gas/air injected into or near the body can cause severe personal injury or death.
- It is the owner's responsibility to specify and provide personal protective wear to protect persons from pressurized or heated parts. Contact with pressurized or heated parts can result in severe personal injury or death.

- Do not work or allow anyone under the influence of intoxicants or narcotics to work on or around pressurized systems. Workers under the influence of intoxicants or narcotics are a hazard to themselves and other employees. Actions taken by an intoxicated employee can result in severe personal injury or death to themselves or others.
- Always perform correct service and repair. Incorrect service and repair can result in product or property damage or severe personal injury or death.
- Always use the correct tool for a job. The misuse of a tool or the use of an improper tool can result in personal injury, damage to product or property.
- Ensure the proper "health physics" procedures are followed, if applicable, before starting operation in a radioactive environment.

Caution Alerts

A CAUTION alert describes actions that may result in a personal injury. In addition, they may describe preventive measures that must be taken to avoid personal injury. Cautions include:

- Heed all service manual warnings. Read installation instructions before installing valve(s).
- Wear hearing protection when testing or operating valves.
- Wear appropriate eye and clothing protection.
- Wear protective breathing apparatus to protect against toxic materials.

III. Safety Notice



Proper installation and start-up is essential to the safe and reliable operation of all valve products. The relevant procedures recommended by GE, and described in these instructions, are effective methods of performing the required tasks.

It is important to note that these instructions contain various “safety messages” which should be carefully read in order to minimize the risk of personal injury, or the possibility that improper procedures will be followed which may damage the involved GE product, or render it unsafe. It is also important to understand that these “safety messages” are not exhaustive. GE cannot possibly know, evaluate, and advise any customer of all of the conceivable ways in which tasks might be performed, or of the possible hazardous consequences of each way. Consequently, GE has not undertaken any such broad evaluation and, thus, anyone who uses a procedure and/or tool, which is not recommended by GE, or deviates from GE recommendations, must be thoroughly satisfied that neither personal safety, nor valve safety, will be jeopardized by the method and/or tools selected. Contact GE at (318) 640-6055 if there are any questions relative to tools/ methods.

The installation and start-up of valves and/or valve products may involve proximity to fluids at extremely high pressure and/or temperature. Consequently, every precaution should be taken to prevent injury to personnel during the performance of any procedure. These precautions should consist of, but are not limited to, ear drum protection, eye protection, and the use of protective clothing, (i.e., gloves, etc.) when personnel are in, or around, a valve work area. Due to the various circumstances and conditions in which these operations may be performed on GE products, and the possible hazardous consequences of each way, GE cannot possibly evaluate all conditions that might injure personnel or equipment. Nevertheless, GE does offer certain Safety Alerts, listed in Section II, for customer information only.

It is the responsibility of the purchaser or user of Consolidated* valves/ equipment to adequately train all personnel who will be working with the involved valves/equipment. For more information on training schedules, call 318/640-6054. Further, prior to working with the involved valves/ equipment, personnel who are to perform such work should become thoroughly familiar with the contents of these instructions. Electronic copies of these instructions can be downloaded from the GE Oil & Gas document library web page at <https://www.geoilandgas.com/file-download-search>.

IV. Warranty Information

Warranty Statement: GE warrants that its products and work will meet all applicable specifications and other specific product and work requirements (including those of performance), if any, and will be free from defects in material and workmanship.

CAUTION: Defective and nonconforming items must be held for GE's inspection and returned to the manufacturer upon request.

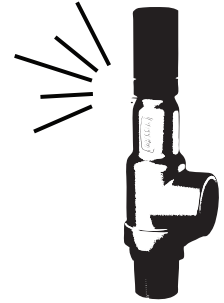
Incorrect Selection or Misapplication of Products: GE cannot be responsible for customers' incorrect selection or misapplication of our products.

Unauthorized Repair work: GE has not authorized any non-GE-affiliated repair companies, contractors or individuals to perform warranty repair service on new products or field repaired products of its manufacture. Therefore, customers contracting such repair services from unauthorized sources do so at their own risk.

Unauthorized Removal of Seals: All new valves and valves repaired in the field by GE Consolidated Field Service are sealed to assure the customer of our guarantee against defective workmanship. Unauthorized removal and/or breakage of this seal will negate our warranty.

NOTE: Refer to GE's Standard Terms of Sale for complete details on warranty and limitation of remedy and liability.

⚠ CAUTION



Defective and nonconforming items must be inspected by GE

⚠ CAUTION



Removal and/or breaking the seal will negate warranty.

V. Terminology for Safety Relief Valves (SRV)

1. Accumulation

The pressure increase over the maximum allowable working pressure of the vessel during discharge through the SRV, expressed as a percentage of that pressure or in actual pressure units.

2. Backpressure

The pressure on the discharge side of the SRV:

- Built-up Backpressure - the pressure that develops at the valve outlet, after the SRV has been opened, as a result of flow.
- Superimposed Backpressure - the pressure in the discharge header before the SRV is opened.

3. Constant Backpressure

The superimposed backpressure that is constant with time.

4. Variable Backpressure

The superimposed backpressure that varies with time.

5. Blowdown

The difference between set pressure and re-seating pressure of the SRV, expressed as a percentage of the set pressure or in actual pressure units.

6. Cold Differential Set Pressure

The pressure at which the valve is adjusted to open on the test stand. This pressure includes the corrections for backpressure

and/or temperature service conditions.

Differential Between Operating and Set Pressures Valves- in installed process services will generally give best results if the operating pressure does not exceed 90 percent of the set pressure. However, on pump and compressor discharge lines, the differential required between the operating and set pressures may be greater because of pressure pulsations coming from a reciprocating piston. The valve should be set as far above the operating pressure as possible.

7. Lift

The actual travel of the disc away from the closed position when a valve is relieving.

8. Maximum Allowable Working Pressure -

The maximum gauge pressure permissible in a vessel at a designated temperature. A vessel may not be operated above this pressure, or its equivalent, at any metal temperature other than that used in its design. Consequently, for that metal temperature, it is the highest pressure at which the primary pressure SRV is set to open.

9. Operating Pressure

The gauge pressure to which the vessel is normally subjected in service. A suitable margin is provided between operating pressure

V. Terminology for Safety Relief Valves (Contd.)

and maximum allowable working pressure. For assured safe operation, the operating pressure should be at least 10 percent under the maximum allowable working pressure or 5 psi (.34 bar), whichever is greater.

10. Overpressure

A pressure increase over the set pressure of the primary relieving device. Overpressure is similar to accumulation when the relieving device is set at the maximum allowable working pressure of the vessel. Normally, overpressure is expressed as a percentage of set pressure.

11. Rated Capacity

The percentage of measured flow at an authorized percent overpressure permitted by the applicable code. Rated capacity is generally expressed in pounds per hour (lb/hr) for vapors, standard cubic feet per minute (SCFM) or m³/min for gases, and in gallons per minute (GPM) for liquids.

12. Relief Valve

An automatic pressure-relieving device, actuated by static pressure upstream from the valve. A relief valve is used primarily for liquid service.

13. Safety Relief Valve (SRV)

An automatic pressure-relieving device used as either a safety or relief valve, depending upon application. The SRV is used to protect personnel and equipment by preventing excessive overpressure.

14. Safety Valve

An automatic pressure-relieving device actuated by the static pressure upstream of the valve, and characterized by a rapid opening or "pop" action. It is used for steam, gas, or vapor service.

15. Set Pressure

The gauge pressure at the valve inlet for which the relief valve has been adjusted to open under service conditions. In liquid service, the inlet pressure at which the valve starts to discharge determines set pressure. In gas or vapor service, the inlet pressure at which the valve pops determines the set pressure.

16. Simmer

The audible passage of a gas or vapor across the seating surfaces just before "pop." The difference between this start-to-open pressure and the set pressure is called "simmer." Simmer is generally expressed as a percentage of set pressure.

VI. Handling and Storage

Handling

Valves should not be transported with the inlet down. Valves should be kept in their factory packaging until installation.

ATTENTION!

Never lift the valve by the lifting lever.

ATTENTION!

Handle carefully. Do not drop or strike the valve.

Do not subject SRVs, either crated or uncrated, to sharp impact. Ensure that the valve is not bumped or dropped during loading or unloading from a truck. While hoisting the valve, take care to prevent bumping the valve against steel structures and other objects.

ATTENTION!

Prevent dust and debris from entering inlet or outlet of the valve.

Storage

Store SRVs in a dry environment and protect them from the weather. Do not remove the valve from the skids or crates until immediately before installation.

Do not remove flange protectors and seating plugs until the valve is ready to be bolted into place during the installation.

Screwed/portable valves should be kept in their factory packaging until installation to avoid damage to external inlet threads.

VII. Pre-Installation and Installation Instructions

When the SRV is unpacked and sealing plugs are removed, exercise meticulous care to prevent dirt and other foreign materials from entering the inlet and outlet ports while bolting the valve in place.

VIII. Product Introduction

GE's Consolidated 11000 Series Safety Relief Valve is designed to protect pressurized vessels, lines or systems during an overpressure event. The recommendations below are general, and it is the responsibility of the user to assure that installation and maintenance

are in accordance with the applicable ASME Codes and local requirements. Neither GE Oil & Gas nor its channel partners assume any liability for valves improperly installed or maintained.

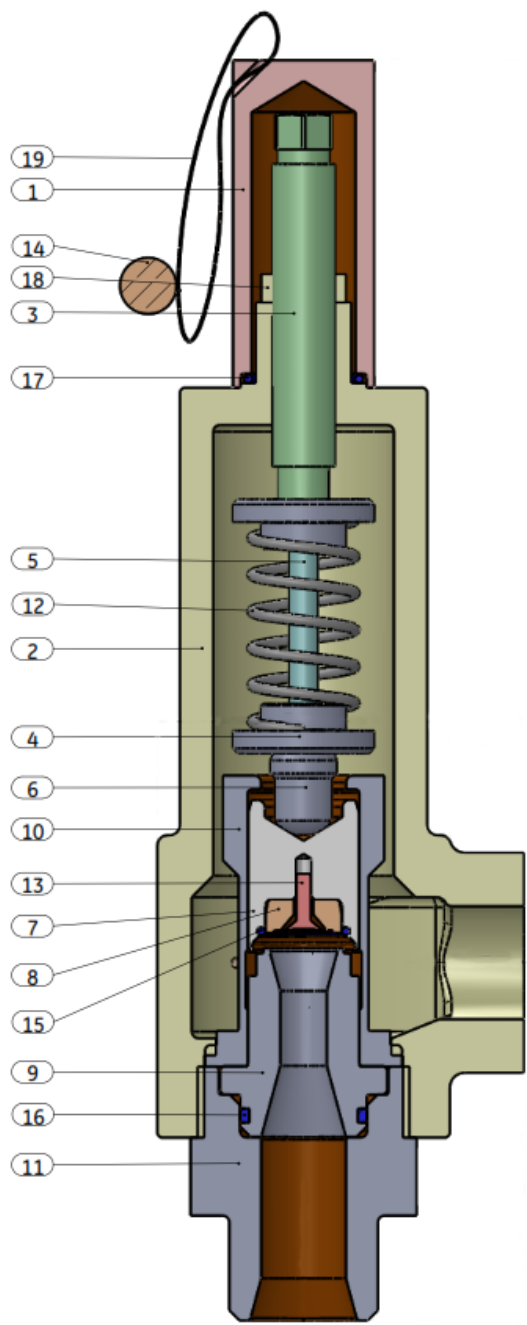


Figure 1

Item No.	Part Description
1	Cap 11132/246
2	Bonnet 11132/246
3	Adjusting screw 11132/246
4	Spring washer 11132/246
5	Spindle stem 11132/246
6	Spindle nose 11132/246
7	Disc 11132/246
8	Retainer 11132/246
9	Nozzle 1" 11132/246
10	Guide 11132/246
11	Base 11132/246
12	Spring
13	Retainer Screw 11132/246
14	Aluminum Seal
15	Seat, Size 017
16	Inlet Seal, Size 119
17	Cap Seal, Size 212
18	Adjusting Screw Lock Nut 11132/246
19	Sealing wire

Note:
The seat seal utilizes an X-Ring.
The Inlet Seal and Cap Seal both utilize an O-Ring.

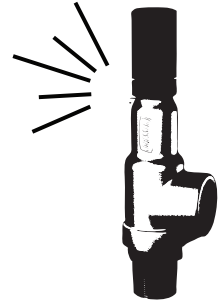
IX. General Recommendations

It is solely the responsibility of the system designer and the user to select products and materials suitable for their specific application requirements (including but not limited to set pressure/temperature and fluid service) and to ensure proper installation, operation, and maintenance of these products.

See Product Brochure and Technical Specifications Sheet for the applicable pressure & temperature limits.

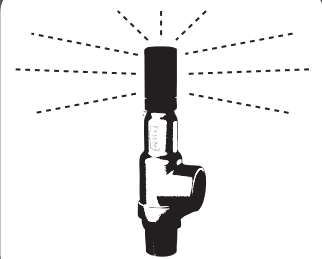
Assistance shall be afforded with the selection of the materials based on the technical information supplied to GE or its channel partners. Applicable codes, material compatibility, product ratings and application details should be considered in the selection and application.

WARNING



If SRV is intended for an application other than originally specified, the system designer and/or user must reconfirm the selection is suitable for the new operating conditions.

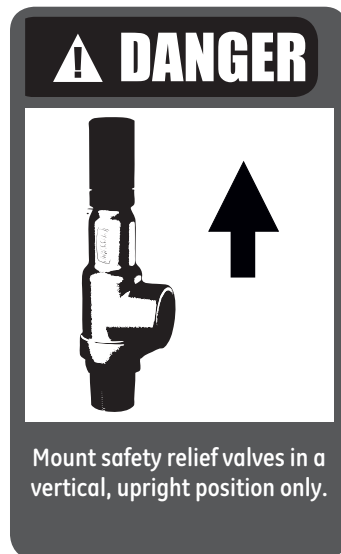
WARNING



Improper selection, application or use of an SRV could cause personal injury or property damage.

X. Recommended Installation Practices

A. Mounting Position



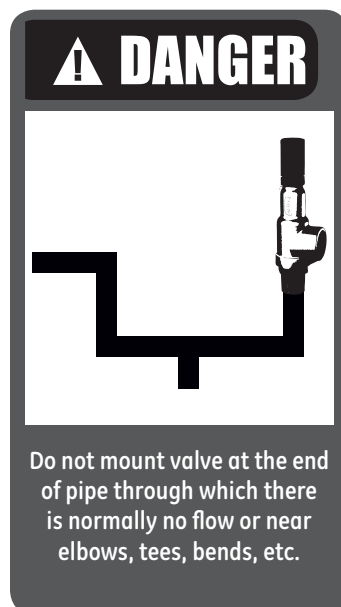
Mount SRVs in a vertical (upright) position (in accordance with API RP 530). Installing a safety relief valve in any position other than vertical (± 1 degree) will adversely affect its operation as a result of the induced misalignment of moving parts.

A stop valve may be placed between the pressure vessel and its relief valve only as permitted by code regulations. If a stop valve is located between the pressure vessel and SRV, the stop valve port area should equal or exceed the nominal internal area associated with the pipe size of the SRV inlet. The pressure drop from the vessel to the SRV shall not exceed three (3) percent of the valve's set pressure, when flowing at full capacity.

The threaded inlet and outlet ports and sealing faces of the valve and all connecting piping must be free from dirt, sediment and scale.

In the case of screwed/portable valves, use caution to avoid unscrewing bonnet from the base; if a pipe wrench is used to install or remove the base, ensure that the wrench is placed on the flats of the base and not on the bonnet. If the bonnet/ base joint is broken, the valve should be retested to ensure proper set pressure and function of the valve.

Position SRVs for easy access and/or removal so that servicing can be properly performed. Ensure sufficient working space is provided around and above the valve.



B. Inlet Piping

The inlet piping (see Figure 7) to the valve should be short and directly from the vessel or equipment being protected. The radius of the connection to the vessel should permit smooth flow to the valve. Avoid sharp corners. If this is not practical, then the inlet should be at least one additional pipe diameter larger.

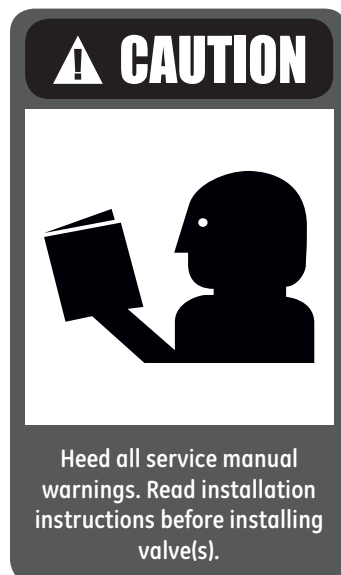
The pressure drop from the vessel to the valve shall not exceed three (3) percent of valve set pressure when the valve is allowing full capacity flow. The inlet piping should never be smaller in diameter than the inlet connection of the valve. Excessive pressure drop in gas, vapor, or flashing-liquid service at the inlet of the SRV will cause the extremely rapid opening and closing of the valve, which is known as "chattering." Chattering will result in lowered capacity and damage to the seating surfaces. The most desirable installation is that in which the nominal size of the inlet piping is the same as, or greater than, the nominal size of the valve inlet flange and in which the length does not exceed the face-to-face dimensions of a standard tee of the required pressure class.

Do not locate SRV inlets where excessive turbulence is present, such as near elbows, tees, bends, orifice plates or throttling valves.

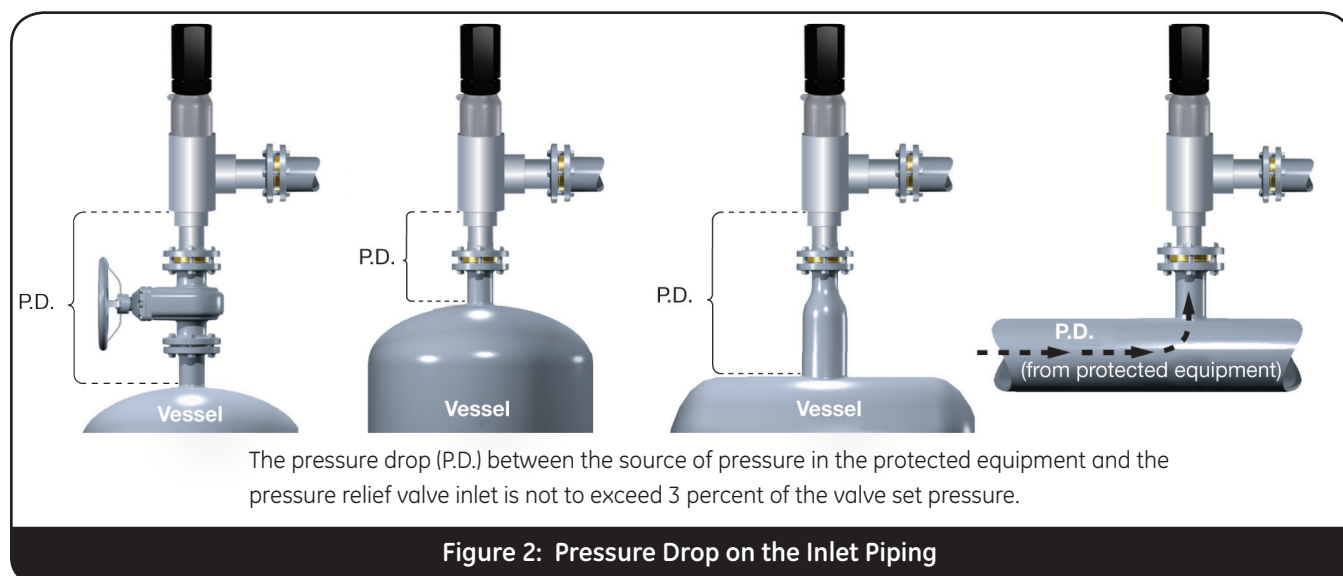
Section VIII of the ASME Boiler and Pressure Vessel Code requires the inlet connection design to consider stress conditions during valve operation, caused by external loading, vibration, and loads due to thermal expansion of the discharge piping.

The determination of reaction forces during valve discharge is the responsibility of the vessel and/or piping designer. GE publishes certain technical information about reaction forces under various fluid flow conditions, but assumes no liability for the calculations and design of the inlet piping.

External loading, by poorly designed discharge piping and support systems, and forced alignment of discharge piping can cause excessive stresses and distortions in the valve as well as the inlet piping. The stresses in the valve may cause a malfunction or leak. Therefore, discharge piping must be independently supported and carefully aligned.



X. Recommended Installation Practices (Contd.)



Vibrations in the inlet piping systems may cause valve seat leakage and/or fatigue failure. These vibrations may cause the disc seat to slide back and forth across the base seat and may result in damage to the seating surfaces. Also, vibration may cause separation of the seating surfaces and premature wear to valve parts. High-frequency vibrations are more detrimental to SRV tightness than low-frequency vibrations. This effect can be minimized by providing a larger difference between the operating pressure of the system and the set pressure of the valve, particularly under high frequency conditions.

Temperature changes in the discharge piping may be caused by fluid flow in from the discharge of the valve or by prolonged exposure to the sun or heat radiated from nearby equipment. A change in the discharge piping temperature will cause a change in the length of the piping, which may cause stresses to be transmitted to the SRV and its inlet piping. Proper support, anchoring or provision for flexibility of the discharge piping can prevent stresses caused by thermal changes. Do not use fixed supports.

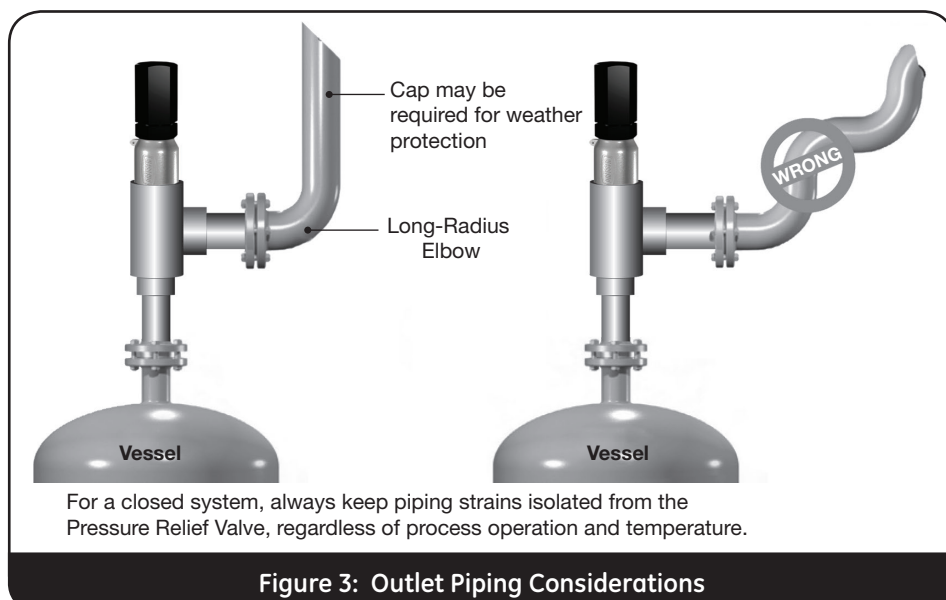
C. Outlet Piping

Alignment of the internal parts of the SRV is important to ensure proper operation (see Figure 8). Although the valve body

will withstand a considerable mechanical load, unsupported discharge piping consisting of more than a companion flange long-radius elbow, and a short vertical pipe is not recommended. Use spring supports to connect outlet piping to prevent thermal expansion from creating strains on the valve. The discharge piping should be designed to allow for vessel expansion as well as expansion of the discharge pipe itself. This is particularly important on long distance lines.

A continual oscillation of the discharge piping (wind loads) may induce stress distortion in the valve body. The resultant movement of the valve's internal parts may cause leakage.

Where possible, use properly supported drainage piping to prevent the collection of water or corrosive liquid in the valve body.



X. Recommended Installation Practices (Contd.)

When two or more valves are piped to discharge into a common header, the built-up backpressure resulting from the opening of one (or more) valve(s) may cause a superimposed backpressure in the remaining valves. Under these conditions, the use of the 19096-DA-BP model is recommended.

In every case, the nominal discharge pipe size should be at least as large as the nominal size of the SRV outlet flange. In the case

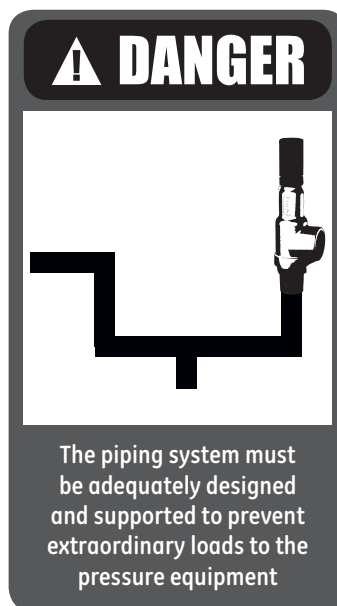
of long discharge piping, the nominal discharge pipe size must sometimes be much larger.

As a final point, the discharge piping size is never less than the size of the valve outlet, nor heavier than schedule 40 pipe size. In addition, the discharge piping must be designed to limit the total backpressure to a maximum of 10 percent of the valve set pressure, or 400 psig (27.58 barg), whichever is smaller.

XI. Installation Instructions

1. Qualified service personnel must perform installation only.
2. Valves should be installed in an upright vertical position, as close to the vessel being protected as possible. See the Figure to the right.
3. The connection to the vessel should be provided with a radius for smooth flow to the valve.
4. Do not place any block valves or check valves between pressure vessel and safety relief valve unless permitted by code regulations.
5. Make sure the system is clean and free of any debris on the valve seat.
6. The opening through all pipe and fittings between the pressure vessel and the valve must be at least the same area as the relief valve inlet.
7. Discharge piping shall be at least the same size as the pressure relief valve outlet. Never smaller.
8. Discharge piping should be as short as possible. The discharge piping should be supported to prevent any swaying or vibration while the valve is discharging.
9. For threaded valves, use a minimum amount of thread lubricant. These are NPT tapered threads, so sealant or tape should not be required. Tighten valve using the proper wrench on the hex flats of the valve base. Do not use excessive force during tightening.

For flanged valves, make sure that the flange bolts are tightened properly, & the gaskets installed properly, not interfering on the pipe ID.



XII. Operation

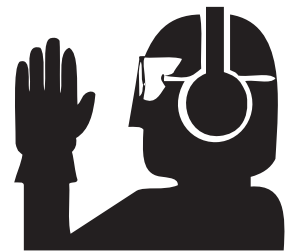
1. The valves are designed to automatically open at the designated Set Pressure, on the Nameplate.
2. The valves will close and seal off when the system pressure has dropped to less than 80% of the Set Pressure.
3. If the system pressure is greater than 80% of the Set Pressure, some leakage may occur.
4. The valves are designed to fully lift with 10% overpressure.



XIII. Inspection and Maintenance

1. Valves are set and sealed to prevent tampering.
If the wire seal is broken, the valve is unsafe and should not be used. If the lockwire has been cut, then the valve may have been tampered with, and the Set Pressure may not be correct. The valve may then have to be reset.
The Factory Warranty is void if the seal is broken.
2. The valves should be checked periodically to see that they are not clogged or seized due to dirt or other foreign matter and that they will operate satisfactorily.
3. Testing at least once per year is suggested for non-extreme conditions. If excess heat or corrosive fluids exist, then more frequent test intervals should occur.
4. Visual inspection should be performed, checking for leaks, & looking for any obvious outer damage, loose bolts, cut lockwire, etc.
5. Only original, unmodified GE Consolidated parts should be used to assure safe and proper operation.

CAUTION



Wear necessary protective equipment to prevent possible injury

DANGER



Before disassembling the valve, ensure there is no media pressure in the vessel.

XIV. Seat Leakage

The air-leakage test shall be performed with all connections and openings in the body and bonnet pressure-tight. The cap, with the Sealing ring which covers the adjusting screw, must be installed. Test the valve for leakage using an API test fixture. The API leakage test procedure is described below:

- a. Per API Standard 527 (ANSI B147.1-72), a standard test fixture consists of a piece of tubing of .313" (7.94 mm) x .035" (0.89 mm) wall, one end of which is joined to an adapter on the valve outlet and the other end of which is immersed .05" (12.7 mm) below the surface of a reservoir of water.
- b. The leakage rate, in bubbles per minutes, shall be determined with the pressure at the safety relief valve inlet held at 90

percent of the set pressure. The test pressure shall be applied for at least one minute.

- c. The Tightness Standard is the leakage rate in bubbles per minute. A valve with a soft seat shall show no leakage at pressures less than those indicated in Table 1 when the test medium is either air or water.

Table 1: Seat Valve Leakage Rate		
Set Pressure		
psig	barg	Min. Leak Point (% of set pressure)
75 to 2000	5.17 to 137.89	90%

XV. Test Gag (as applicable)

The test gag is used to prevent the safety valve from lifting, used normally when hydrostatic testing the system, during system startup/commissioning.

After testing, the Test Gag must be removed and replaced with the sealing Bolt before normal operation may resume.

CAUTION: If the proper procedures are not followed, equipment damage or bodily harm may occur.

Installation:

1. Remove any pressure in the system, below the valve.
2. Unscrew the Sealing Bolt and Gasket from the Cap.
3. Thread the Test Gag into the top of the Cap until it stops.
4. The valve should now be 'gagged' and not able to open.
5. Proceed cautiously with system test procedures.

Removal:

1. Once all testing is complete, remove any pressure in the system, below the valve.
2. Unscrew the Test Gag from the Cap
3. Thread the Seal Bolt and Gasket back into the top of the Cap.
4. Tighten down the Seal Bolt.
5. The valve should now be ready for normal operation.

XVI. Field Service, Training and Repair Program

A. Field Service

GE provides safe, reliable valve services through our Green Tag certified valve assemblers and repair centers. The first valve repair network of its kind and today's industry leader, our authorized Green Tag Centers have successfully served the valve market for more than 25 years. Our services include:

Valve Survey:

- Comprehensive, accurate record of all PRVs.
- Interchangeability identified.
- Identify forgotten or overlooked valves.
- Product upgrades to reduce cost and improve performance.

Inspection of the Valve and Installation

- Visual evaluation of the installation for compliance to codes and regulations
- Written evaluation covering compliance issues and discrepancies
- Recommendations and corrective actions

Testing

- On-site and in-place testing using the GE's EVT testing device
- Total computer-based valve management system
- Free interchange of information
- Historical data and permanent record of traceability
- Maintenance scheduling and planning
- Repair intervals validated by each valves' maintenance history
- Code compliance
- Accessible via secure password-protected internet connection.
- Downloadable and printable reports.
- Base line history established.

Repair

- GE Audited Facility
- Using GE's Inspection Criteria and Critical Dimensions
- By fully trained and certified pressure relief valve technicians
- Using original manufactured parts

Inventory Control

- Global access to spare parts inventories with your local Green Tag* Center / GE's authorized sales representative
- Parts interchangeability
- Obsolete and excess inventory identified
- Recommend cost effective inventories

ValvKeep*

- Total computer-based valve management system
- Free interchange of information
- Historical data and permanent record of traceability
- Maintenance scheduling and planning
- Repair intervals validated by each valves' maintenance history
- Code compliance
- Accessible via secure password-protected internet connection.
- Downloadable and printable reports

B. Factory Repair Facilities

GE's Consolidated factory maintains a complete Consolidated products repair center. The Repair Department, in conjunction with the manufacturing facilities, is equipped to perform specialized repairs and product modifications (e.g. butt-welding, code welding, and pilor replacement).

C. SRV Maintenance Training

The rising costs of maintenance and repair in the utility and process industries indicate the need for trained maintenance personnel. GE conducts service seminars that help your maintenance and engineering personnel reduce these costs.

Seminars, conducted either at your site or ours, provide participants with an introduction to the basics of preventative maintenance necessary to minimize downtime, reduce unplanned repairs, and increase valve safety. While these seminars do not create "instant experts," they do provide the participants with hands-on experience with Consolidated valves. The seminar also includes valve terminology and nomenclature, component inspection, troubleshooting, setting, and testing with emphasis on the ASME Boiler and Pressure Vessel Code.

For further information, please contact your local Green Tag Center or GE's Consolidated Training Manager at +1 (281) 542-3646

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