



Consolidated* 2900 MPV Series

Pilot-Operated Safety Relief Valve

Overview

The 2900 series pilot-operated safety relief valve is another innovative Consolidated product line offering from GE, a world leader in pressure relief valve technology. The 2900 series valve is a blend of GE's Consolidated type 1900 safety relief valve and GE's Consolidated type 3900 pilot-operated safety relief valve. These GE products have a proven track record for performance, versatility and ease of maintenance.

Features and Benefits

GE's Consolidated pilot valve has a unique design that combines top performance, capabilities and features within an economical, modular assembly. This is based on the successful design of an optimized safety "system" that offers versatility of application, yet provides cost-effective standardization. Here are the key characteristics of the 2900 series valve:

- Remote sensing can eliminate problems caused when an inlet pressure drop to the SRV exceeds 3 percent.
- Retrofit kits easily and economically convert an existing Consolidated 1900 SRV to the new 2900 POSRV design.
- Replacing and/or upgrading the existing population of safety relief valves with the 2900 series valve eliminates costly piping changes.
- Process temperatures that range from -450°F (-267 .8°C) to 1200°F (648 .9°C) can be met by using the heat exchanger option..
- The Dirty Service option ensures operation in dirty, precipitating and viscous fluids.
- Bonnet is now standard for all pilot valves.
- 39MV22 [751 - 3750 psig (51 .78 - 258 .55 barg)] The 39MV22 modulator, which replaces the 39MV37, is built internally into the pilot valve. This design reduces product cost, improves modulating performance and increases energized seal life.
- 39MV72 [3751 - 6250 psig (258 .62 - 430 .92 barg)] Based on the same design as the 39MV22, this pilot allows the Consolidated product line to expand into the 2500# class pressure range.
- Pilot Gag
This prevents the pilot-operated relief valve from opening while equipment is being subjected to an operational hydrostatic test.
- 2900 series POSRV Backflow Preventer.
When the 2900 pilot-operated relief valve initially was released, a backflow preventer was required for high back pressure conditions. During additional testing, it was discovered that a backflow preventer is not required for non-bellows valves equipped with a standard piston O-ring. Valves equipped with a Teflon® energized seal still will require a backflow preventer.
- The 2900 pilot valve enables enhanced performance with a variety of solutions.
- Through its improved seat tightness to 98 percent of set pressure, and adjustable blowdown to 2 percent of set pressure, the 2900 series valve allows higher system pressures that can increase the yield of the process.



Conventional Type Main Valve - Double Seal Soft Seat

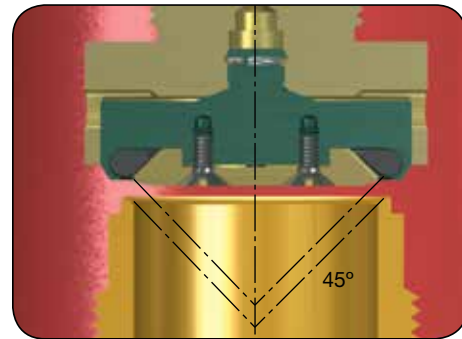
The double seal design incorporates the merits of both a soft seat and a metal seat design valve. The 45° metal seat provides the load bearing surface to transmit piston pressure force, while the slotted O-ring retainer allows the O-ring to be pressurized and accomplish the primary sealing function.

GE's O-ring seat seal valves are bubble tight at 98 percent. They provide positive closure for continuous, troublefree service and complete valve tightness after numerous "pops".

How the Double Seal Works

Two unique features distinguish the Consolidated O-ring seat seal safety valve from other designs. These are the 45° metal-to-metal load-bearing seats and the slotted O-ring retainer.

Double Seal



Three Essentials to a Tighter and More Secure Seal

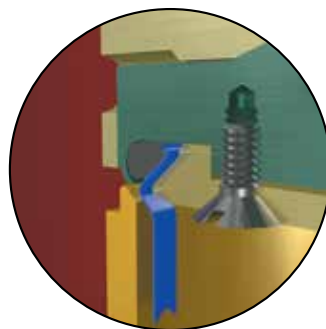
1. Concentric Alignment

The nozzle bore and O-ring retainer are both machined to an angle of 45°. This ensures that as the valve disc opens and closes, the O-ring is aligned concentrically against the lip of the nozzle. Close tolerance between the nozzle and the body, or the body and the disc guide and disc holder, also help to ensure a tight seal when the valve is closed. Accurate alignment, coupled with the load-bearing function of the O-ring retainer, virtually eliminates O-ring abrasion from valve action.



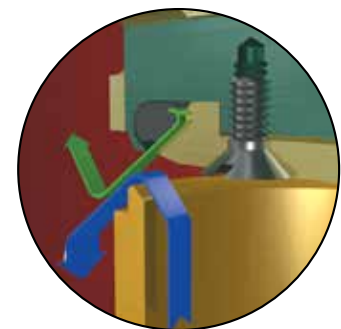
2. Maximum Sealing Force

On the back side of the O-ring retainer there are two small slots. When the valve is closed, process media enters between the machined seat of the nozzle and the O-ring retainer and proceeds up the slots behind the O-ring. This pressure forces the O-ring against the lip of the nozzle and the curved recess of the disc holder. As the pressure within the valve rises to set point, the O-ring is pressed tightly against the nozzle to maintain maximum sealing force until break-away pressure is reached.



3. O-ring Retention

When the valve opens, the pressure behind the O-ring escapes from the same two slots on the O-ring retainer. This prevents the O-ring from being ejected. Additionally, the O-ring encapsulating retainer prevents the O-ring from being pulled from its setting by the high-velocity, low-pressure discharge inside the upper valve body.



2900 Series Steam Trim (TD) Valves

The Consolidated 2900 Series Valve Steam Trim (TD) option is specifically designed for steam service and organic heat transfer media and is certified to ASME Code Section VIII.

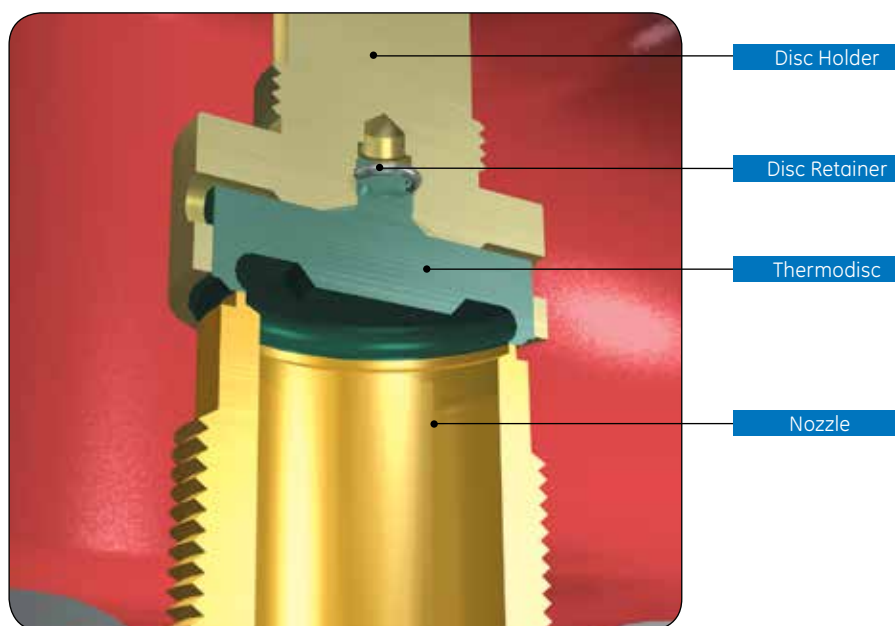
For consistent performance on these medias, specify the "TD" design which utilizes the exclusive Thermodisc™ design.

Designed for use on high-temperature fluids, Thermodisc has more than 40 years of field-proven performance.

A Thermodisc is required for steam service.

The martensitic stainless steel disc construction allows for high strength and toughness. As the set point of the valve is approached, the pressure sealing effect of the Thermodisc helps to tighten the seat, as does the rapid thermal equalization that occurs due to the thin sealing section.

Steam Trim Valve Internals



2900 Flanged Series Valves

The Consolidated 2900 series pilot-operated safety relief valve is supplied with the same non-flowing pilot valve used on the 3900 series POSRV. This single-pilot design is suitable for both incompressible and compressible applications and performs

equally well on liquid, vapor or two-phase flow services. The set pressure will not require adjustment if the service condition changes. A metal seat on the main valve is standard, and an O-ring option is available.

Product types

| Product Type | Pilot Type | Service | Description |
|--------------|------------|------------|--------------------------|
| 2900 | 39PV | gas/liquid | pop action - non flowing |
| 2900 | 39MV | gas/liquid | modulating - non flowing |
| 2900 | 39PVSS | steam | pop action - non flowing |
| 2900 | 39MVSS | steam | modulating - non flowing |

Specifications

| | |
|--------------------|---|
| INLET SIZES | 1" (25.4 mm) through 12" (304.8 mm) |
| INLET RATINGS | ANSI Class 150 through 2500 |
| OUTLET SIZES | 2" (50.8 mm) through 16" (406.4 mm) |
| OUTLET RATINGS | ANSI Class 150 and 300 |
| ORIFICE SIZES | Seventeen sizes: D through W |
| SET PRESSURE RANGE | 15 psig (1.03 barg) to 250 psig (430.92 barg) |
| TEMPERATURE RANGE | -450°F (-268°C) to 1200°F (649°C) when properly equipped with a heat exchanger. |
| MATERIALS: | |
| MAIN VALVE (Std.) | Carbon steel base and 316 stainless steel internal components. |
| PILOT VALVE (Std.) | 316 stainless steel base and internal components. |
| CERTIFICATIONS | ASME B & PVC, Section VIII, Division I NACE MR0175 D.O.T. Subchapter D Parts 192 & 195 ISO 41 26-4 API 520, API 526, and API 527 ANSI B16.34 |



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