Consolidated*
2900 MPV Series
Pilot-Operated Safety Relief Valve

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

Specifications

| INLET SIZES  | 1" (25 mm) through 12" (305 mm) |
| INLET RATINGS | ASME Class 150 through 2500 |
| OUTLET SIZES  | 2" (50 mm) through 16" (406 mm) |
| OUTLET RATINGS | ASME Class 150 and 300 |
| ORIFICE SIZES | Seventeen sizes: D through W |
| SET PRESSURE RANGE | 15 psig (1.03 barg) to 6,250 psig (431 barg) |
| TEMPERATURE RANGE | -400°F (-240°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

Note: Optional materials available
Note: Centerline to face dimensions match that of API 526 spring loaded valves for easy replacement

Features and Benefits
BHGE’s Consolidated pilot valve has a unique design that combines top features and capabilities within an economical, modular assembly. This is based on the successful design of an optimized safety “device” that offers versatility of application, yet provides cost-effective standardization. Additional features and benefits of the 2900 series valve include:
- 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
- Pop action and modulating pilots allow for application versatility
- Pilot seat design allows for self-cleaning operation and is tolerant to icing and dirty conditions
- Remote actuation and sensing can eliminate problems caused when then inlet pressure drop exceeds 3 percent
- The metal seat option incorporates proven technology from the 1900 series safety relief valve seat design
- Retrofit kits easily and economically convert an existing Consolidated 1900 SRV to the 2900 POSRV design
- Replacing and/or upgrading existing API 526 spring-loaded safety relief valves with the 2900 series valve eliminates costly piping changes
- Process temperatures that range from -400°F (-240°C) to 1200°F (649°C) can be met using the heat exchanger option
- The Dirty Service option ensures operation in dirty, precipitating and viscous fluids
- Certified for ASME B and PVC, Section I Liquid economizers and thermal fluid heaters

* BHGE's Consolidated product line
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.

BHGE’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.

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. 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 half a century 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.
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 gas, liquid and steam 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. Both pop action and modulating action pilots are available.

Standards and Regulation Compliance

<table>
<thead>
<tr>
<th>Standard/Regulation</th>
<th>Authority</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9001</td>
<td>International Organization for Standardization (ISO)</td>
<td>Standard</td>
</tr>
<tr>
<td>ISO 14001</td>
<td>International Organization for Standardization (ISO)</td>
<td>Standard</td>
</tr>
<tr>
<td>ASME B and PVC, Section I (Liquid Service)</td>
<td>American Society of Mechanical Engineers</td>
<td>As Required</td>
</tr>
<tr>
<td>ASME B and PVC, Section VIII (Gas, Liquid &amp; Steam Service)</td>
<td>American Society of Mechanical Engineers</td>
<td>Standard</td>
</tr>
<tr>
<td>ASME B16.34</td>
<td>American Society of Mechanical Engineers</td>
<td>Standard</td>
</tr>
<tr>
<td>ASME B16.5</td>
<td>American Society of Mechanical Engineers</td>
<td>Standard</td>
</tr>
<tr>
<td>API 520, 521, 527</td>
<td>American Petroleum Institute</td>
<td>Standard</td>
</tr>
<tr>
<td>CRN</td>
<td>Canada</td>
<td>As Required</td>
</tr>
<tr>
<td>NACE MR0175</td>
<td>Nace International Institute</td>
<td>As Required</td>
</tr>
<tr>
<td>NACE MR0103</td>
<td>Nace International Institute</td>
<td>As Required</td>
</tr>
<tr>
<td>PED 97/23/EC</td>
<td>European Union</td>
<td>As Required</td>
</tr>
<tr>
<td>ISO 4126-4</td>
<td>International Organization for Standardization (ISO)</td>
<td>As Required</td>
</tr>
<tr>
<td>Indian Boiler Regulations (IBR)</td>
<td>India Boiler Act - Section 28 &amp; 29</td>
<td>As Required</td>
</tr>
<tr>
<td>Customs Union Technical Regulation (CU TR)</td>
<td>Customs Union</td>
<td>As Required</td>
</tr>
<tr>
<td>AQSIQ - China Manufacturing License</td>
<td>State Council of the People's Republic of China</td>
<td>As Required</td>
</tr>
<tr>
<td>Australian Standards</td>
<td>Council of Standards Australia</td>
<td>As Required</td>
</tr>
<tr>
<td>NORSOK</td>
<td>Norwegian Petroleum Industry</td>
<td>As Required</td>
</tr>
<tr>
<td>49 CFR 192.199</td>
<td>U.S. Department of Transportation (D.O.T.)</td>
<td>Standard</td>
</tr>
<tr>
<td>Korean High Pressure Gas Safety Control Act</td>
<td>Korea</td>
<td>Standard</td>
</tr>
</tbody>
</table>
DIRECT SALES OFFICE LOCATIONS

AUSTRALIA
Brisbane:
Phone: +61-7-3001-4519
Fax: +61-7-3001-4399
Perth:
Phone: +61-8-6595-7018
Fax: +61-8-6595-7299
Melbourne:
Phone: +61-3-8807-6002
Fax: +61-3-8807-6577

BELGIUM
Phone: +32-2-344-0970
Fax: +32-2-344-1123

BRAZIL
Phone: +55-19-2104-6900

CHINA
Phone: +86-10-5738-8888
Fax: +86-10-5918-9707

FRANCE
Courbevoie
Phone: +33-1-4904-9000
Fax: +33-1-4904-9010

GERMANY
Ratingen
Phone: +49-2102-108-0
Fax: +49-2102-108-111

INDIA
Mumbai
Phone: +91-22-8354790
Fax: +91-22-8354791
New Delhi
Phone: +91-11-2-6164175
Fax: +91-11-5-1659635

ITALY
Phone: +39-081-7892-111
Fax: +39-081-7892-208

JAPAN
Tokyo
Phone: +81-3-6871-9008
Fax: +81-3-6890-4620

KOREA
Phone: +82-2-2274-0748
Fax: +82-2-2274-0794

MALAYSIA
Phone: +60-3-2161-0322
Fax: +60-3-2163-6312

MEXICO
Phone: +52-55-3640-5060

THE NETHERLANDS
Phone: +31-15-3808666

RUSSIA
Veliky Novgorod
Phone: +7-8162-55-7898
Fax: +7-8162-55-7921

SAUDI ARABIA
Phone: +966-3-341-0278
Fax: +966-3-341-7624

SINGAPORE
Phone: +65-6861-6100
Fax: +65-6861-7172

SOUTH AFRICA
Phone: +27-11-452-1550
Fax: +27-11-452-6542

SOUTH & CENTRAL AMERICA AND THE CARIBBEAN
Phone: +55-12-2134-1201
Fax: +55-12-2134-1238

SPAIN
Phone: +34-93-652-6430
Fax: +34-93-652-6444

UNITED ARAB EMIRATES
Phone: +971-4-8991-777
Fax: +971-4-8991-778

UNITED KINGDOM
Bracknell
Phone: +44-1-904-570-3409

UNITED STATES
Jacksonville
Phone: +1-281-884-1000
Fax: +1-281-884-1010

valves.bhge.com

*Denotes a trademark of Baker Hughes, a GE company LLC.

Other company names and product names used in this document are the registered trademarks or trademarks of their respective owners.

© 2019 Baker Hughes, a GE company LLC - All rights reserved.

Baker Hughes reserves the right to make changes in specifications and features shown herein, or discontinue the product described at any time without notice or obligation. Contact your BHGE representative for the most current information. The Baker Hughes logo is a trademark of Baker Hughes, a GE company. The GE Monogram is a trademark of the General Electric Company.