

Replacement of API 526 Direct Spring-Loaded Valves with Consolidated 2900 Series Gen II Pilot Operated Safety Relief Valves

In the pressure relief valve industry by far the most common valve type installed is API 526 compliant direct spring-loaded safety relief valves (SRVs). While direct spring-loaded SRVs have a place throughout the industry, certain limitations exist that could result in equipment failures, performance issues, and increased emissions.

Utilizing a pilot-operated safety relief valve (POSRV) can eliminate many of the issues which a typical direct spring-loaded SRV will face. The **Consolidated™ 2900 Series Gen II POSRV** is the only pilot valve solution in the market that can replace any manufacturer's API 526 Direct Spring-Loaded SRV without piping modification caused by center-to-face dimensional differences.



Easily Upgrade Your Direct Spring PRV



Common Issues

- **Process Changes** – When upgrading systems, it is quite common for process conditions to be modified which can result in changes outside the capabilities of a direct spring-loaded SRV. Additionally, derating pressure vessels' maximum allowable working pressure (MAWP) can lead to restraints on existing equipment; for example, direct-spring SRVs have a lower operating pressure ratio when compared to POSRVs.
- **Equipment Failure** – A common issue occurring with direct spring-loaded SRVs is back pressure conditions exceeding expected levels which can result in a bellows failure. Consistent bellows failures result in unplanned outages and increased repair costs. Using a 2900 Series POSRV allows for up to 97% back pressure with no hinderance of valve performance and without the use of a bellows.
- **High Inlet Line Losses** – When piping systems are re-evaluated, a common result is increased inlet line losses. Remote sense configuration eliminates rapid cycling valve chatter in applications with >3% inlet line loss, enabling Consolidated POSRVs to open and relieve pressure stably and efficiently. The modulating style opens proportionally to the overpressure pilot, ensuring a smooth opening cycle and relieving only the required capacity, keeping your operation safe, efficient, and reliable.

Pilot Operated Safety Relief Valve Benefits

- **Emission Improvements** – Consolidated pilot valves offer industry-leading performance with both main valve and pilot seat tightness up to 98% of set pressure. This advanced design ensures zero leakage during normal operating conditions for even the most demanding high-pressure applications.

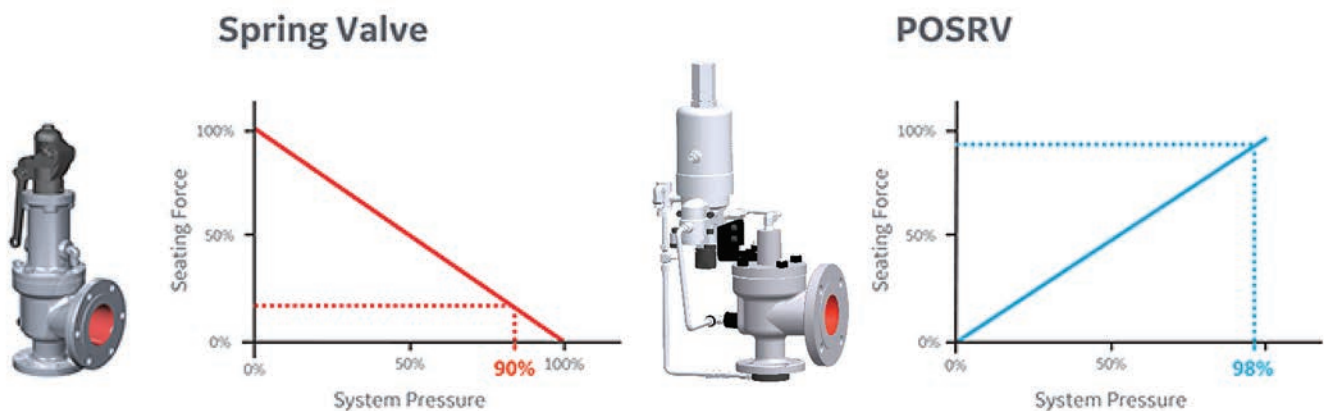


Figure 1

- **Higher Operating Pressures** – Consolidated POSRVs’ greater seating force shown in Figure 1 make them the ideal solution for higher operating pressure gaps as compared to direct spring-loaded SRVs. Operating closer to MAWP will help keep the system running optimally.
- **Modulating Action** – The 2900 Series POSRV offers modulating lift characteristics for all fluid types which means stable and efficient operating cycles during relief events.
- **In-Service Testing** – There is no need to shut down your process to send your PRV to a service shop; conduct a standard set pressure test in the field while your process is running with the Consolidated Field Test Connection accessory. It comes standard with every Consolidated pilot valve and allows you to conduct your set pressure test while the valve is live in service and continuously protecting your pressure vessel.

Integral Sense Installation

The 2900 Series Gen II with standard integral sensing ring is delivered complete with tubing that is disconnected from the main valve inlet to prevent damage during shipment and handling. There is one location for a tubing connection point. The tubing union location is illustrated in Figure 2.

Install the integral sensing ring and gaskets on the inlet flange before lifting the valve into place for installation and reconnect the tubing before the final tightening of the flange bolting. Every 2900 Series Gen II with integral sense will have an installation warning tag wired at the 1/4” to 3/8” tubing union (as shown in Figure 3).

Detach the tubing union connection before lifting the valve off the inlet piping to prevent damage to the tubing.

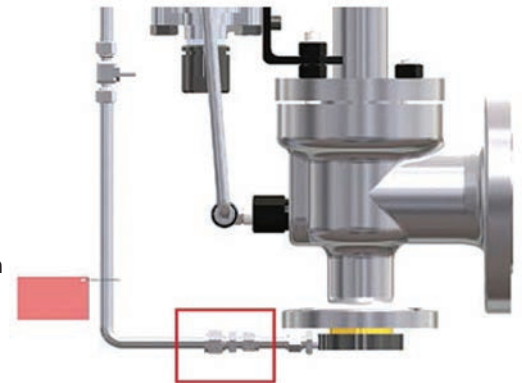


Figure 2



Figure 3

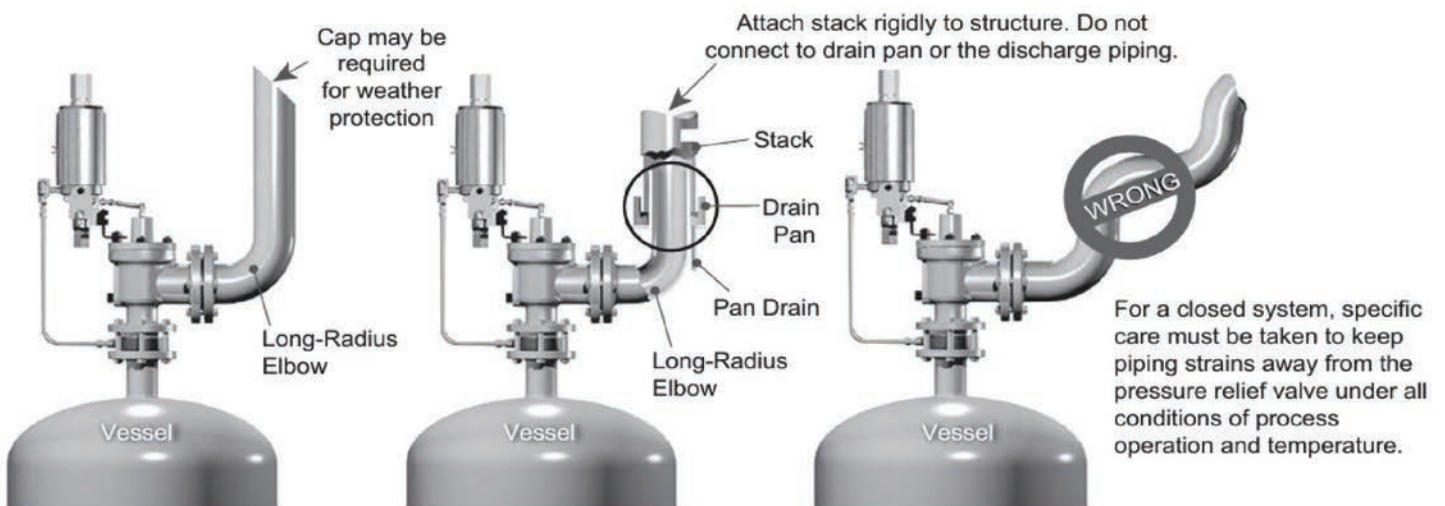


Figure 4

Frequently Asked Questions

1	Question	Are any piping modifications required when converting an API 526 direct spring-loaded valve with the Consolidated 2900 Series Gen II POSRV?
	Answer	No. The 2900 Series Gen II POSRV is a bolt-in replacement for all API 526 direct spring-loaded valves and no piping modifications are required.
2	Question	Is the 2900 Series POSRV acceptable when inlet line losses exceed 3%?
	Answer	Yes. The remote sense configuration eliminates rapid cycling valve chatter in applications with >3% inlet line loss.
3	Question	Are all the sizes, pressure classes, and flange ratings available for API 526 direct spring-loaded valves available for the 2900 Series POSRV?
	Answer	Yes.
4	Question	Is the 2900 Series POSRV available in the same material selection as API 526 direct spring-loaded valve?
	Answer	Yes. In addition to being able to match body material, the 2900 Series features a full nozzle design which allows for the process media to be isolated from the body material in the standard operating positions.
5	Question	Does the proposed offering cause any changes to the piping and instrumentation diagram (P&ID)?
	Answer	No.
6	Question	Does the proposed change how the existing plant is operated?
	Answer	No changes are required due to this switch. However, a 2900 Series will allow for increased operating pressure and decreased emissions.
7	Question	Does this change have any effect on ASME B&PVC certifications?
	Answer	No. The 2900 Series POSRV is fully ASME certified and will be provided with a UV or V code stamp, as applicable.
8	Question	Is the 2900 Series limited to Section VIII service?
	Answer	No. The 2900 Series is certified and available for both Sections I and VIII service.
9	Question	Do I have to remote sense in order to meet API 526 direct spring-loaded dimensions?
	Answer	No. The 2900 Gen II POSRV offers a patented integral sense option for simple retrofitting.
10	Question	I have a Consolidated 1900 Series Safety Relief Valve , is it possible to convert to a 2900 Series Gen II POSRV?
	Answer	Yes. There are conversion kits available for easy change out. Contact your local Baker Hughes representative or Green Tag™ Center (GTC).
11	Question	Is the 2900 Series available with 2.5 inch flanges that were API standard prior to the 1995 change?
	Answer	Yes.
12	Question	Is the 2900 Series suitable for high temperature applications?
	Answer	Yes. The 2900 Series has an available heat exchanger option which allows for use in high temperature applications.