2900 MPV™

Pilot Operated Safety Relief Valve

Consolidated®

2900 Pilot Operated Relief Valve

Consolidated® offers a unique pilot valve design that combines top performance, capabilities and features within an economical, modular assembly. Consolidated has accomplished this feat by successfully designing an optimized safety "system" that offers versatility of application, yet provides cost effective standardization.

New Features

This product update of Consolidated's 2900 POSRV covers the following changes and/or additions:

- Bonnet is now standard for all pilot valves.
- 39MV22 (751 – 3750 psig) – replaces the 39MV37

  The 39MV22 modulator is built internally into the pilot valve. This design reduces product cost, improves modulating performance and increases energized seal life.
- 39MV72 (3751 – 6250 psig)

  Based on the same design as the 39MV22, this pilot allows Consolidated to expand its product offering into the 2500# Class pressure range.
- Pilot Gag – prevents the pilot operated relief valve from opening while equipment is being subjected to an operational hydrostatic test.
- 2900 POSRV Backflow Preventer

  When the 2900 Pilot Operated Relief Valve was initially released, a backflow preventer was required for high back pressure conditions. During additional testing at Dresser's Research and Development Lab, it was discovered that a backflow preventer is not required for non-bellows valves equipped with standard piston o-ring. Valves equipped with Teflon® energized seal will still require a backflow preventer

  Please refer to the following tables for Pressure – Temperature Ratings, Dimensions and Weights, and capacity charts for air and water.

2900

ASME Pressure - Temperature Rating Charts - SA216 WCC Carbon Steel

PRESSURE CLASS	Maximum Allowable Pressure (PSIG) Temperature (°F)									
	-20 to 100	200	300	400	500	600	700	800	900	1000
2905	290	260	230	200	170	140	110	80	50	20
2910	750	750	730	705	665	605	570	410	170	50
2912	1500	1500	1455	1410	1330	1210	1135	825	345	105
2914	2250	2250	2185	2115	1995	1815	1705	1235	515	155
2916	3750	3750	3640	3530	3325	3025	2840	2060	860	260
2918	6250	6250	6070	5880	5540	5040	4730	3430	1430	430

For temperatures between 1000°F and 1200°F, please contact the factory.

ASME Pressure - Temperature Rating Charts - SA351 Cf8M Stainless Steel

PRESSURE CLASS	Maximum Allowable Pressure (PSIG) Temperature (°F)									
	-20 to 100	200	300	400	500	600	700	800	900	1000
2905	275	235	215	195	170	140	110	80	50	20
2910	720	620	560	515	480	450	430	420	415	350
2912	1440	1240	1120	1025	955	900	870	845	830	700
2914	2160	1860	1680	1540	1435	1355	1305	1265	1245	1050
2916	3600	3095	2795	2570	2390	2255	2170	2110	2075	1750
2918	6000	5160	4660	4280	3980	3760	3620	3520	3460	2915

For temperatures between 1000°F and 1200°F, please contact the factory.

2918 Series - Dimensions & Weights
2500# Inlet, Single Outlet, Standard Bore

Valve Size (in.) & Type	Inlet Flange Size (in.) & Class	Outlet Flange Size (in.) & Class	A in. (mm)	B in. (mm)	C[1] STD in. (mm)	C[1] BELLOWS in. (mm)	F in. (mm)	Weight lb. (kg)
1-1/2 – 2918D	1-1/2 – 2500	3 – 300	5-1/2 (139.7)	7 (177.8)	24-5/8 (625.5)	25-5/8 (650.9)	10-15/32 (265.9)	150 (68.0)
1-1/2 – 2918E	1-1/2 – 2500	3 – 300	5-1/2 (139.7)	7 (177.8)	24-5/8 (625.5)	25-5/8 (650.9)	10-15/32 (265.9)	150 (68.0)
1-1/2 – 2918F	1-1/2 – 2500	3 – 300	5-1/2 (139.7)	7 (177.8)	24-3/4 (628.7)	25-3/4 (654.1)	10-15/32 (265.9)	150 (68.0)
2 – 2918G	2 – 2500	3 – 300	6-1/8 (155.6)	6-3/4 (171.5)	25-3/16 (639.8)	26-7/16 (671.5)	10 (254.0)	110 (49.9)

NOTE 1: When dirty service option is selected, add 7/8" to "C" dimension.

Air Capacity Chart - 2918 Series Type MV Pilots - Capacity in Standard Cubic Feet per Minute (SCFM)				
SET PRESSURE PSIG	D 0.1279	E 0.2279	F 0.3568	G 0.5849
4000	8861	15789	24719	40522
4250	9413	16772	26259	43046
4500	9965	17756	27799	45571
4750	10516	18739	29339	48095
5000	11068	19723	30878	50619
5250	11620	20706	32418	53143
5500	12172	21690	33958	55667
5750	12724	22673	35498	58192
6000	13276	23657	37038	60716
6250	13828	24641	38578	63240

Water Capacity Chart - 2918 Series Type MV Pilots - Capacity in Gallons of Water per Minute (GPM)				
SET PRESSURE PSIG	D 0.1279	E 0.2279	F 0.3568	G 0.5849
4000	216	384	602	987
4250	222	396	621	1018
4500	229	408	639	1047
4750	235	419	656	1076
5000	241	430	673	1104
5250	247	440	690	1131
5500	253	451	706	1158
5750	258	461	722	1184
6000	264	471	737	1209
6250	270	481	753	1234

2900 MPV™

Pilot Operated Safety Relief Valve

Consolidated®

Table of Contents

2900 MPV

2900 Flanged Valves comply with:

- ASME B & PVC, Section VIII, Division I
- NACE MR0175
- D.O.T. Subchapter D Parts 192 and 195
- ISO 4126-4
- API 520, API 526, and API 527
- ANSI B16.34
- ANSI B16.5

Consolidated, the world leader in pressure relief valve technology, introduces the new and innovative 2900 series pilot operated safety relief valve. The technology used is a blend of two current products, the 1900 SRV (Safety Relief Valve) and the 3900 POSRV (Pilot Operated Safety Relief Valve). Both products have a proven track record for performance, versatility and ease of maintenance.

Performance Through Solutions

- Through its improved seat tightness to 98% of set pressure, and adjustable blowdown to 2% of set pressure, the 2900 allows higher system pressures that can increase the Yield of the Process.
- Remote Sensing can eliminate problems caused when an inlet pressure drop to the SRV exceeds 3%.
- Retrofit Kits easily and economically convert an existing **Consolidated** 1900 SRV to the new 2900 POSRV design.
- Eliminate costly piping changes when replacing and/or upgrading the existing population of Safety Relief Valves.
- With the use of the Heat Exchanger Option, process temperatures that range from -450°F to 1200°F can be met.
- Ensure operation in dirty, precipitating and viscous fluids with the Dirty Service Option.

2900 Flanged Series Overview

The **Consolidated** 2900 series pilot operated safety relief valve is supplied with the same non-flowing pilot valve used on the 3900 series pilot operated safety relief valve. 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. An O-Ring option is available.

Product types covered in subsequent pages are noted below.

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

Because of its modular design, the 39PV (pop pilot) can be converted to a 39MV (modulator pilot). With the addition of a heat exchanger the temperature limit of the 2900 can be expanded to meet high and low temperature requirements. This makes the **Consolidated** 2900 Series pilot operated safety relief valve the most versatile pilot operated safety relief valve on the market. The scope of the 2900 Series is outlined in this section.

2900 & 2900-30 Inlet x Outlet Size Combinations (Inches) - Orifice Area (Sq. In.)[1 & 2]

ASME API ORIFICE	0.1279 0.110 D	0.2279 0.196 E	0.3568 0.307 F	0.5849 0.503 G	0.9127 0.785 H	1.496 1.287 J	2.138 1.838 K	3.317 2.853 L
2905	1 -150 x 2 - 150	1 - 150 x 2 - 150	1-1/2 - 150 x 2 - 150	1-1/2 - 150 x 3 - 150	1-1/2 - 150 x 3 - 150	2 - 150 x 3 - 150	3 - 150 x 4 - 150	3 - 150 x 4 - 150
2906	1 - 300 x 2 - 150	1 - 300 x 2 - 150	1-1/2 - 300 x 2 - 150	1-1/2 - 300 x 3 - 150	1-1/2 - 300 x 3 - 150	2 - 300 x 3 - 150	3 - 300 x 4 - 150	3 - 300 x 4 - 150
2910	1 - 300 x 2 - 150	1 - 300 x 2 - 150	1-1/2 - 300 x 2 - 150	1-1/2 - 300 x 3 - 150	2 - 300 x 3 - 150	3 - 300 x 4 - 150	3 - 300 x 4 - 150	4 - 300 x 6 - 150
2912	1 - 600 x 2 - 150	1 - 600 x 2 - 150	1-1/2 - 600 x 2 - 150	1-1/2 - 600 x 3 - 150	2 - 600 x 3 - 150	3 - 600 x 4 - 150	3 - 600 x 4 - 150	4 - 600 x 6 - 150
2914	1-1/2 - 900 x 2 - 300	1-1/2 - 900 x 2 - 300	1-1/2 - 900 x 3 - 300	1-1/2 - 900 x 3 - 300	2 - 900 x 3 - 150	3 - 900 x 4 - 150	3 - 900 x 6 - 150	4 - 900 x 6 - 150
2916	1-1/2 - 1500 x 2 - 300	1-1/2 - 1500 x 2 - 300	1-1/2 - 1500 x 3 - 300	2 - 1500 x 3 - 300	2 - 1500 x 3 - 300	3 - 1500 x 4 - 300	3 - 1500 x 6 - 300	4 - 1500 x 6 - 150
2918	1-1/2 - 2500 x 3 - 300	1-1/2 - 2500 x 3 - 300	1-1/2 - 2500 x 3 - 300	2 - 2500 x 3 - 300	—	—	—	—
2920	1 - 300 x 2 - 150	1 - 300 x 2 - 150	1-1/2 - 300 x 2 - 150	1-1/2 - 300 x 3 - 150	2 - 300 x 3 - 150	3 - 300 x 4 - 150	3 - 300 x 4 - 150	4 - 300 x 6 - 150
2922	1 - 600 x 2 - 150	1 - 600 x 2 - 150	1-1/2 - 600 x 2 - 150	1-1/2 - 600 x 3 - 150	2 - 600 x 3 - 150	3 - 600 x 4 - 150	3 - 600 x 4 - 150	4 - 600 x 6 - 150
2923	—	—	—	—	—	—	—	—
2924	1-1/2 - 900 x 2 - 300	1-1/2 - 900 x 2 - 300	1-1/2 - 900 x 3 - 300	1-1/2 - 900 x 3 - 300	2 - 900 x 3 - 150	3 - 900 x 4 - 150	3 - 900 x 6 - 150	4 - 900 x 6 - 150
2926	1-1/2 - 1500 x 2 - 300	1-1/2 - 1500 x 2 - 300	1-1/2 - 1500 x 3 - 300	2 - 1500 x 3 - 300	2 - 1500 x 3 - 300	3 - 1500 x 4 - 300	3 - 1500 x 6 - 300	4 - 1500 x 6 - 150
2928	1-1/2 - 2500 x 3 - 300	1-1/2 - 2500 x 3 - 300	1-1/2 - 2500 x 3 - 300	2 - 2500 x 3 - 300	—	—	—	—

2900 & 2900-30 Inlet x Outlet Size Combinations (Inches) - Orifice Area (Sq. In.)[1 & 2]

ASME API ORIFICE	4.186 3.60 M	5.047 4.34 N	7.417 6.38 P	12.85 11.05 Q	18.60 16.00 R	30.21 26.00 T	50.26 N/A V	78.996 N/A W
2905	4 - 150 x 6 - 150	4 - 150 x 6 - 150	4 - 150 x 6 - 150	6 - 150 x 8 - 150	6 - 150 x 8 - 150	8 - 150 x 10 - 150	10 - 150 x 14 - 150	12 - 150 x 16 - 150
2906	4 - 300 x 6 - 150	4 - 300 x 6 - 150	4 - 300 x 6 - 150	6 - 300 x 8 - 150	6 - 300 x 8 - 150	8 - 300 x 10 - 150	10 - 300 x 14 - 150	12 - 300 x 16 - 150
2910	4 - 300 x 6 - 150	4 - 300 x 6 - 150	4 - 300 x 6 - 150	6 - 300 x 8 - 150	6 - 300 x 10 - 150	8 - 300 x 10 - 150	10 - 300 x 14 - 150	12 - 300 x 16 - 150
2912	4 - 600 x 6 - 150	4 - 600 x 6 - 150	4 - 600 x 6 - 150	6 - 600 x 8 - 150	6 - 600 x 10 - 150	8 - 600 x 10 - 150	—	—
2914	4 - 900 x 6 - 150	4 - 900 x 6 - 150	4 - 900 x 6 - 150	—	—	—	—	—
2916	—	—	—	—	—	—	—	—
2918	—	—	—	—	—	—	—	—
2920	4 - 300 x 6 - 150	4 - 300 x 6 - 150	4 - 300 x 6 - 150	6 - 300 x 8 - 150	6 - 300 x 8 - 150	8 - 300 x 10 - 150	10 - 300 x 14 - 150	12 - 300 x 16 - 150
2922	4 - 600 x 6 - 150	4 - 600 x 6 - 150	—	6 - 600 x 8 - 150	6 - 600 x 10 - 150	8 - 600 x 10 - 150	—	—
2923	—	—	4 - 600 x 6 - 150	—	—	—	—	—
2924	4 - 900 x 6 - 150	4 - 900 x 6 - 150	4 - 900 x 6 - 150	—	—	—	—	—
2926	—	—	—	—	—	—	—	—
2928	—	—	—	—	—	—	—	—

NOTES: 1 The center to face dimensions and the Inlet/Outlet combinations of the 2900 meet API Standard 526-1995 for Spring Loaded Valves.

2 In 1995 API was changed and the 2-1/2" Inlet/Outlet connections were eliminated. The 2-1/2" connections are available on application, for replacement valves.

2900 Flanged Series Overview

Pressure Limits[1, 2 & 5]

Product Type	Pilot Type	Minimum (psig)	Maximum (psig)	Service
2900	39PV	15	3750	gas/liquid
2900	39MV	15	3750	gas/liquid
2900 w/ heat exchanger	39PV	15	3750	gas/liquid
2900 w/ heat exchanger	39MV	15	3750	gas/liquid
2900	39PVSS	15	750	steam
2900	39MVSS	15	750	steam
2900 w/ heat exchanger	39PVSS	15	2903	steam
2900 w/ heat exchanger	39MVSS	15	2903	steam

Temperature Limits[1, 2 & 5]

Product Type	Pilot Type	Minimum (°F)	Maximum (°F)	Service
2900	39PV	-40	505	gas/liquid
2900	39MV	-40	505	gas/liquid
2900 w/ heat exchanger	39PV	-450	1200	gas/liquid
2900 w/ heat exchanger	39MV	-450	1200	gas/liquid
2900	39PVSS	212	505	steam
2900	39MVSS	212	505	steam
2900 w/ heat exchanger	39PVSS	212	1200	steam
2900 w/ heat exchanger	39MVSS	212	1200	steam

Soft Goods Guide[3, 4 & 5]

Service	Material	Pilot Valve and Modulator		Main Valve	
		Temperature Range (°F)	Pressure Range (psig)	Temperature Range (°F)	Pressure Range (psig)
liquid/gas	Nitrile (Buna N)	-40 to 250	15 to 3750	-40 to 250	15 to 2000
liquid/gas	Fluorocarbon (Viton®)	-15 to 400	15 to 3750	-15 to 400	15 to 2000
liquid/gas	Ethylene Propylene	-40 to 400	15 to 3750	-70 to 500	15 to 2000
liquid/gas	Kalrez®	-40 to 400	15 to 3750	-58 to 601	15 to 2000
liquid/gas	Teflon®	212 to 505	50 to 3750	-300 to 505	50 to 3750
liquid/gas	Neoprene	N/A	N/A	-45 to 300	15 to 800
liquid/gas	Silicone	N/A	N/A	-65 to 437	15 to 400
liquid/gas	Chemraz®	N/A	N/A	-20 to 450	-20 to 450
steam	Ethylene Propylene	212 to 500	15 to 49	212 to 500	15 to 49
steam	Teflon®	212 to 505	50 to 3750	212 to 505	50 to 3750

NOTES: 1 The above table is general in nature and is to be used as a guideline only.

2 Refer to the Pressure/Temperature Tables beginning on page 2900.72 for actual pressure limits at a given temperature by orifice and materials of construction.

3 Refer to the Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.

4 When the pressure temperature limits of the soft goods in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range. A standard metal seat is used on the main base with the heat exchanger.

5 Sizing of the heat exchanger is required and may not be suitable for all applications.

2900 Flanged Series Overview

Options

Options	Pilot Type	
	39PV	39MV
Backflow Preventer	Yes	Yes
Bonnet (vented)[2]	Yes	Yes
Dirty Service	Yes	Yes
Dual Filters	Yes	Yes
Dual Pilots	Yes	Yes
Heat Exchanger[3]	Yes	Yes
High Capacity Line Filter (with flush valve)	Yes	Yes
Optional Sensing Line Filter (standard for steam service)	Yes	Yes
Pilot Discharge to Body Bowl	Yes	Yes
Pressure Differential Switch	Yes	Yes
Remote Actuated Blowdown	Yes	Yes
Remote Pilot Mounting	Yes	Yes
Remote Sense (Standard)[1]	Yes	Yes
Sensing Ring	Yes	Yes

NOTES: 1 The standard product is supplied with the remote sense connection. It must be piped to the system pressure or the sensing ring option must be used.

2 When vented bonnet option is selected for steam service, an Inconel X750 spring is supplied.

3 Use of a Heat Exchanger is subject to sizing and may not be suitable for all applications.

Applications

Applications		Pilot Type	
		39PV	39MV
Type			
Pop Action - Non Flowing		Yes	No
Modulating - Non Flowing		No	Yes
Media			
Air, Gas		Yes	Yes
Vapor		Yes	Yes
Dirty Vapor (filter required)		Yes	Yes
Steam		Yes	Yes
Liquid		Yes	Yes
Operational Conditions			
Icing		Yes	Yes
Pulsations		Yes	Yes
Reduces Water Hammer (when valve closes)		Yes	Yes
Operational Performance[1,2, 4]			
Pressure Range:	15-3750 (Gas/Liquid/Steam)	Yes	Yes
Blowdown:	2% to 7% adjustable	Yes	Yes
Main Valve Seat Tightness (% of set pressure):			
	Metal Seat - Per API 527	98%	98%
	Soft Seat - Bubble Tight	98%	98%
Back Pressure (with pilot vented to body bowl):[5]			
	Variable - % of Set Pressure	15%	65%
	Constant - % of Set Pressure	65%[3]	65%
Back Pressure (with pilot vented to atmosphere):[5]			
	Variable - % of Set Pressure	97%	97%
	Constant - % of Set Pressure	97%	97%
Temperature:	Without Heat Exchanger	-40°F to 505°F	-40°F to 505°F
	With Heat Exchanger[4]	-450° F to 1200°F	-450°F to 1200°F

NOTES: 1 Review Pressure/Temperature tables.

2 Review Outlet Flange Ratings and Capacity Correction Factor.

3 A Cold Differential Test Pressure (CDTP) must be applied for a 39PV when the constant back pressure is over 15% of set pressure.

4 Use of a Heat Exchanger is subject to sizing and may not be suitable for all applications.

5 If backflow preventer is installed, total backpressure is limited to 65%.

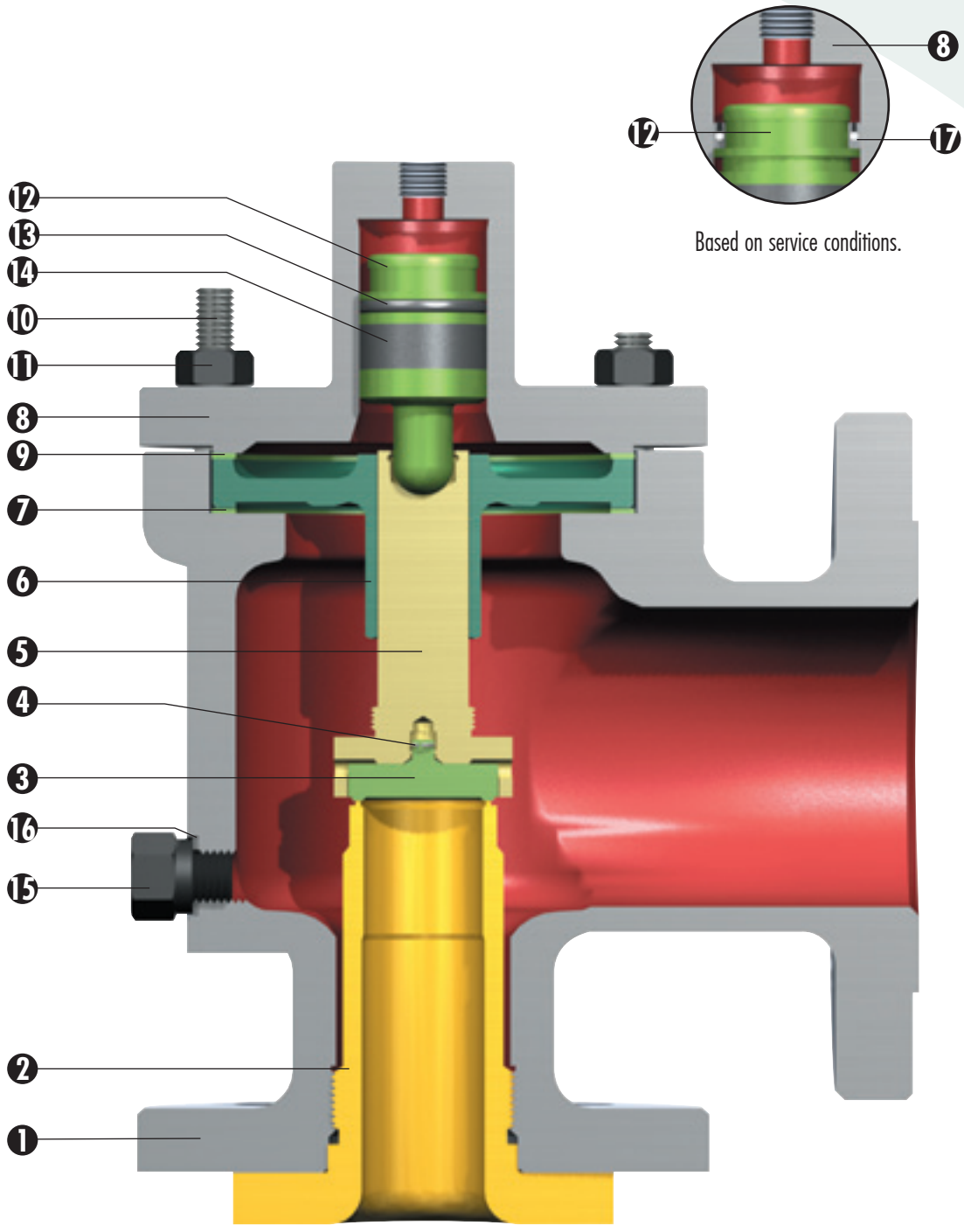
2900 Conventional Type Main Valve

Standard Material for 2900 Conventional Type Main Valve

	Part	Material
1	Base: Types 2905 Thru 2918	SA216 Grade WCC Carbon Steel
	Base: Types 2920 Thru 2928	SA217 Grade WC6 Alloy Steel
1A	Base Plug: Types 2905 Thru 2918 (not shown)	Carbon Steel
	Base Plug: Types 2920 Thru 2928 (not shown)	316 Stainless Steel
2	Nozzle	316 Stainless Steel
3	Disc	316 Stainless Steel
	Thermodisc (option)	616 Stainless Steel
4	Disc Retainer	Inconel® X750
5	Disc Holder	316 Stainless Steel
6	Guide	316 Stainless Steel
7	Guide Gasket	Soft Iron
8	Cover Plate	SA351 Grade CF8M Stainless Steel
9	Cover Plate Gasket	Soft Iron
10	Base Stud	B7 Alloy Steel
11	Base Stud Nut	2H Carbon Steel
12	Piston	316 Stainless Steel
13	Piston O-Ring (when used)	Select
14	Guide Ring	Teflon®
15	Plug/Adaptor	316 Stainless Steel
16	Plug/Adaptor Gasket	Soft Iron
17	Piston Seal (when used)	Teflon® Energized
	Bracket (not shown)	Carbon Steel
	Sensing Ring (option)	316 Stainless Steel
	Sensing Tube (option)	316 Stainless Steel
	Heat Exchanger (option)	316 Stainless Steel
	39PV or 39MV Pilot	Material Option CC

NOTE: The energized seal has a spring except for set pressures below 50 psig on the D, E, F, G, H, J, K, L, M, N, and P valve sizes.

2900 Conventional Type Main Valve



Based on service conditions.

Main Valve Materials

Bellows Option

A bellows option is available on the 2900 MPV™. It's primary use is to isolate and protect the guiding surfaces between the disc holder and guide from particulate or a corrosive media. It can also be used when the temperature on superimposed or built-up backpressure is less than -40°F or greater than 505°F. In this event, a factory engineer should be consulted to review the application to determine if the bellows option is a suitable solution.

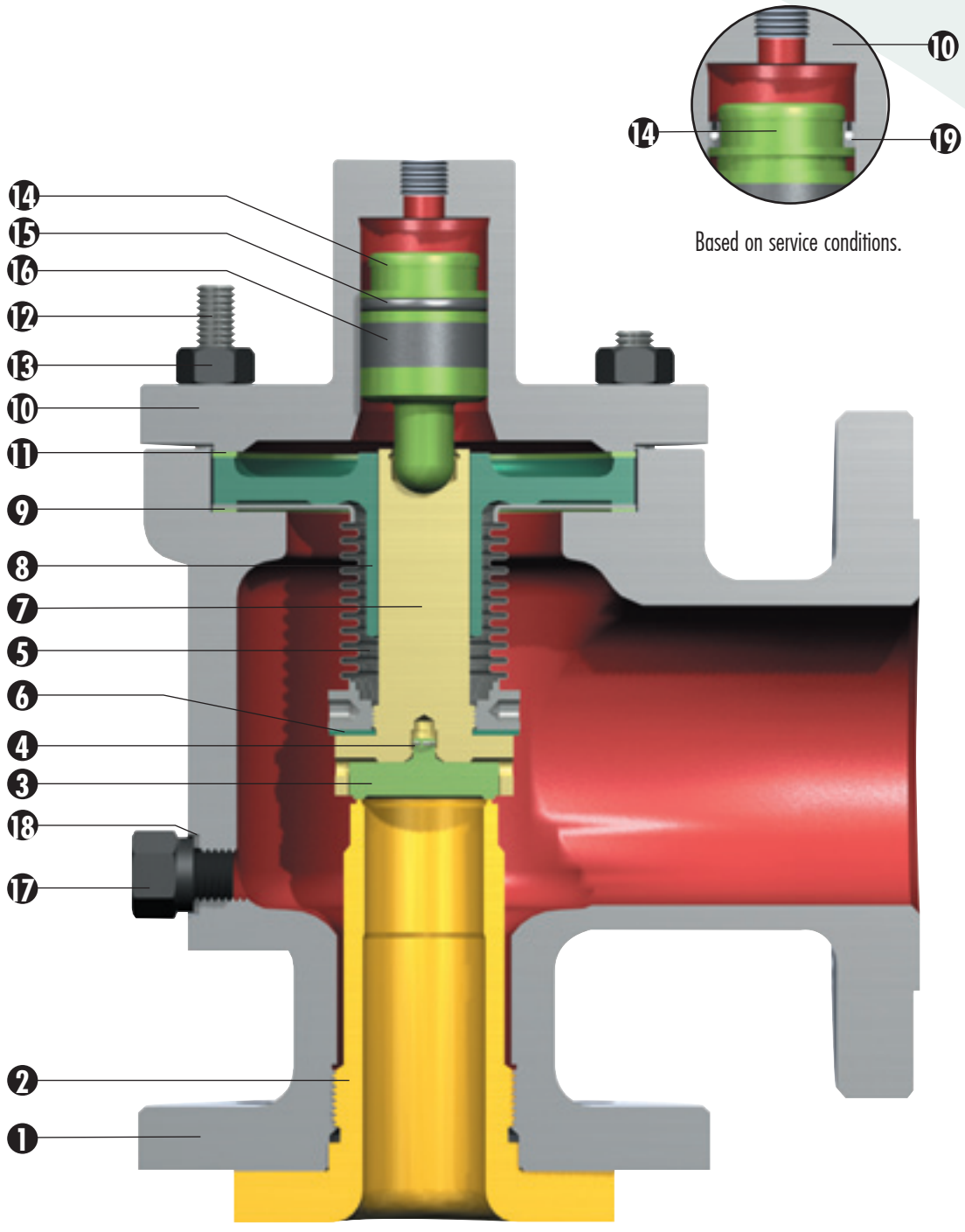
The bellows is not required for variable or built-up backpressure on a 2900 MPV™ as it is on a 1900 safety relief valve. For backpressure operational performance, review the Applications Table on page 2900.4.

Standard Material for 2900-30 Bellows Type Main Valve

	Part	Material
1	Base: Types 2905 Thru 2918	SA216 Grade WCC Carbon Steel
	Base: Types 2920 Thru 2928	SA217 Grade WC6 Alloy Steel
1A	Base Plug: Types 2905 Thru 2918 (not shown)	Carbon Steel
	Base Plug: Types 2920 Thru 2928 (not shown)	316 Stainless Steel
2	Nozzle	316 Stainless Steel
3	Disc	316 Stainless Steel
	Thermodisc (option)	616 Stainless Steel
4	Disc Retainer	Inconel® X750
5	Bellows Assembly	
	Bellows	Inconel® 625 LCF
	Bellows Ring and Bellows Flange	316L Stainless Steel
6	Bellows Gasket	Soft Iron
7	Disc Holder	316 Stainless Steel
8	Guide	316 Stainless Steel
9	Guide Gasket	Soft Iron
10	Cover Plate	SA351 Grade CF8M Stainless Steel
11	Cover Plate Gasket	Soft Iron
12	Base Stud	B7 Alloy Steel
13	Base Stud Nut	2H Carbon Steel
14	Piston	316 Stainless Steel
15	Piston O-Ring (when used)	Select
16	Guide Ring	Teflon®
17	Plug/Adaptor	316 Stainless Steel
18	Plug/Adaptor Gasket	Soft Iron
19	Piston Seal (when used)	Teflon®- Energized
	Bracket (not shown)	Carbon Steel
	Sensing Ring (option)	316 Stainless Steel
	Sensing Tube (option)	316 Stainless Steel
	Heat Exchanger (option)	316 Stainless Steel
	39PV or 39MV Pilot	Material Option CC

NOTE: The energized seal has a spring except for set pressures below 50 psig on the D, E, F, G, H, J, K, L, M, N, and P valve sizes.

2900-30 Bellows Type Main Valve



2900 Soft Seats (DA)

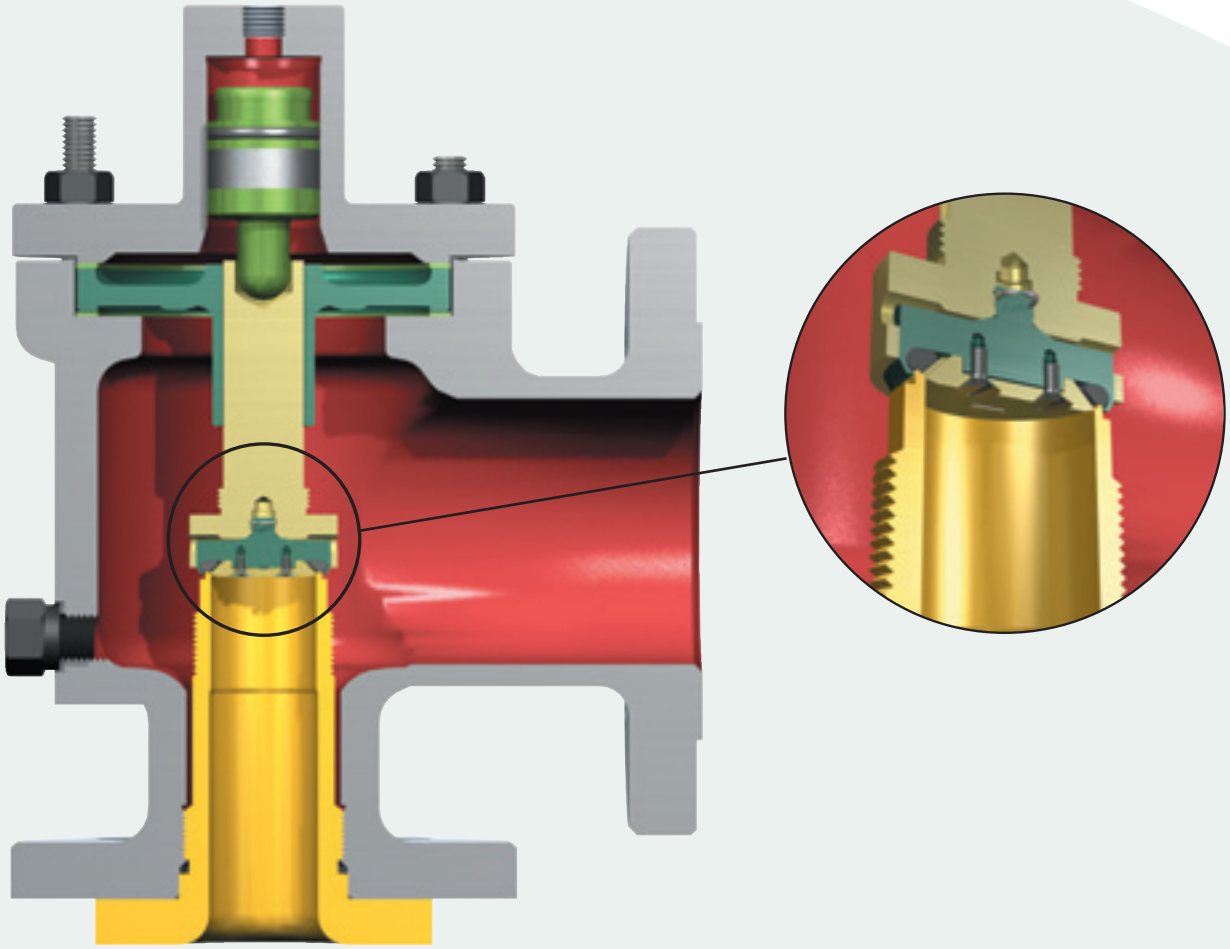
The Double Seal Soft Seat

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, the slotted O-Ring retainer allows the O-Ring to be pressurized and accomplish the primary sealing function. For pressure/temperature ratings of the seal, refer to Soft Goods Selection beginning on page 2900.23.

Tightness: CONSOLIDATED O-Ring seat seal valves are bubble tight at 98%.

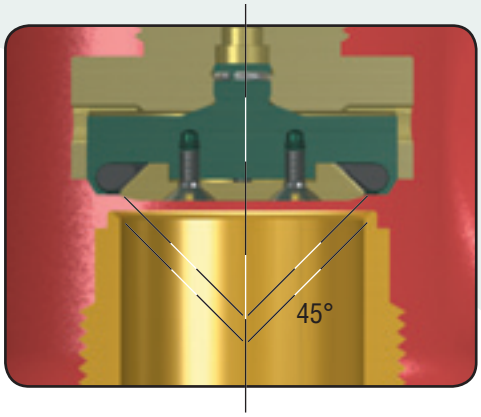
CONSOLIDATED O-Ring seat seals provide positive closure . . . assuring continuous, trouble-free service, and complete valve tightness after numerous "pops".

NOTE: The CONSOLIDATED 2900 O-Ring design features a secondary metal-to-metal seat which becomes effective if O-Ring integrity is lost due to external fire or other causes. The retainer is lapped to the nozzle at assembly assuring seat tightness.

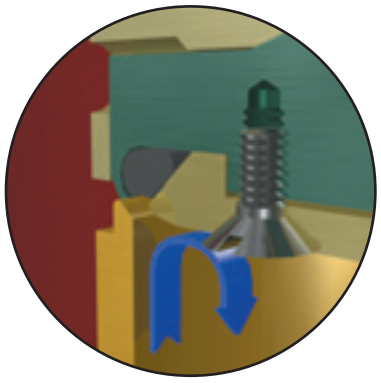


How the Double Seal Works

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.

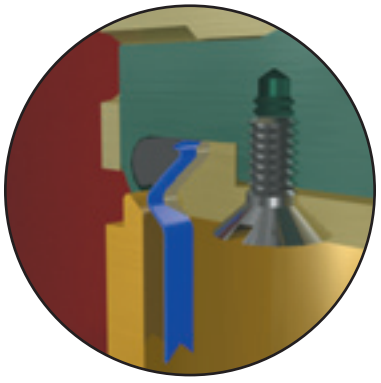


Three Essentials to a Tighter and More Secure Seal:



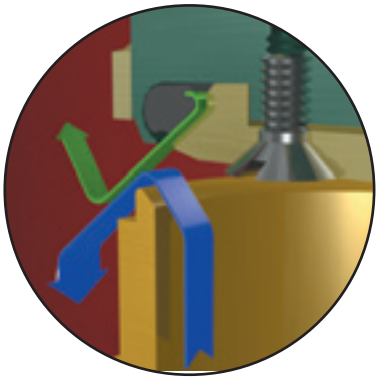
1) Concentric Alignment

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

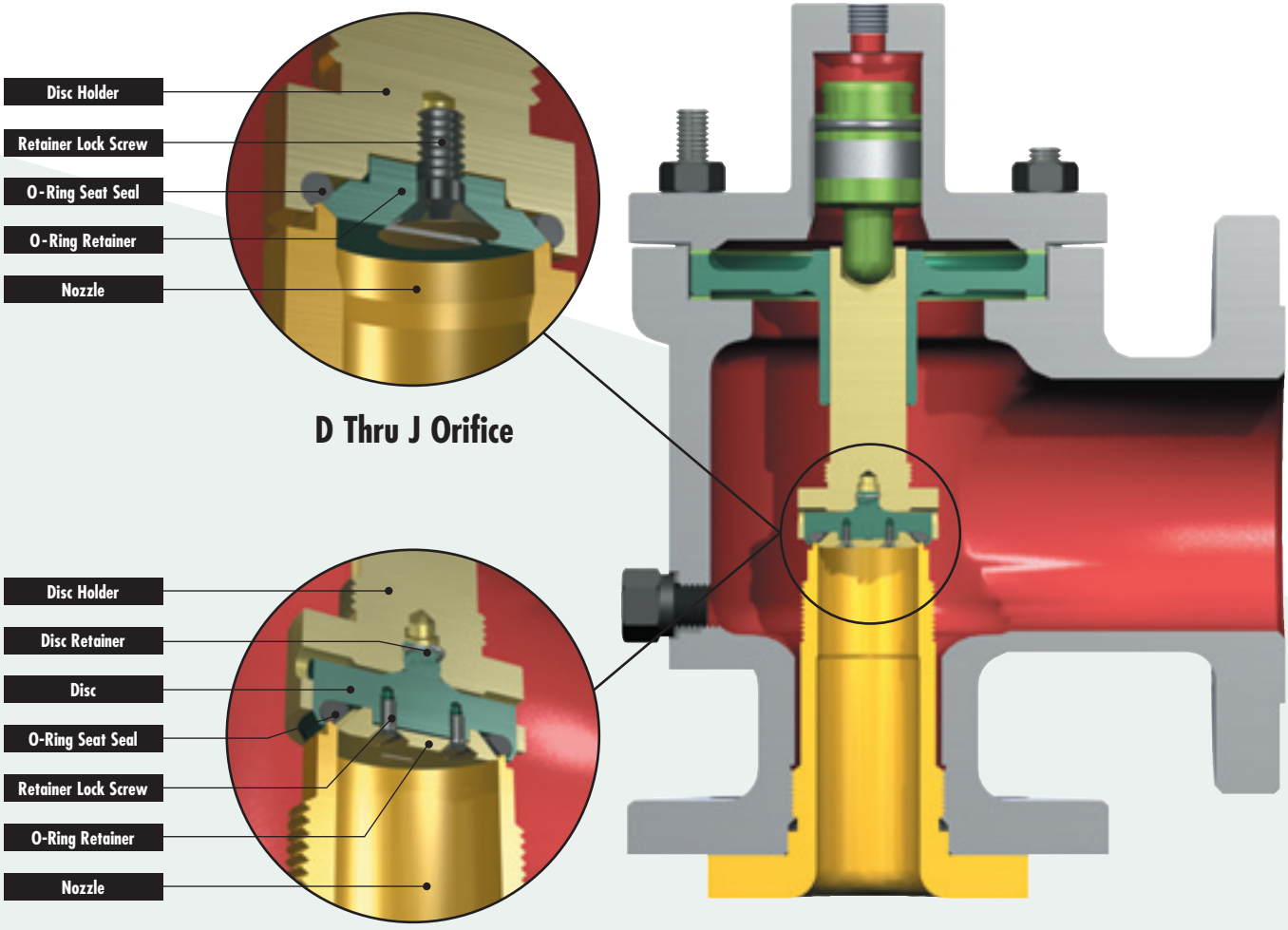
On the back side of the O-Ring retainer there are two small slots. When the valve is closed, process media enters between the machined seat of the nozzle and the O-Ring retainer and proceeds up the slots behind the O-Ring. This pressure forces the O-Ring against the lip of the nozzle and the curved recess 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.

Soft Seat (DA) Materials



Soft Seat Materials

Part Name	Materials
Nozzle	316 Stainless Steel
Disc	316 Stainless Steel
Disc Holder	316 Stainless Steel
Disc Retainer	Inconel® X750
O-Ring Retainer	316 Stainless Steel
Retainer Lock Screws	316 Stainless Steel
O-Ring Seat Seal	Select

2900 Steam Trim (TD) Valves

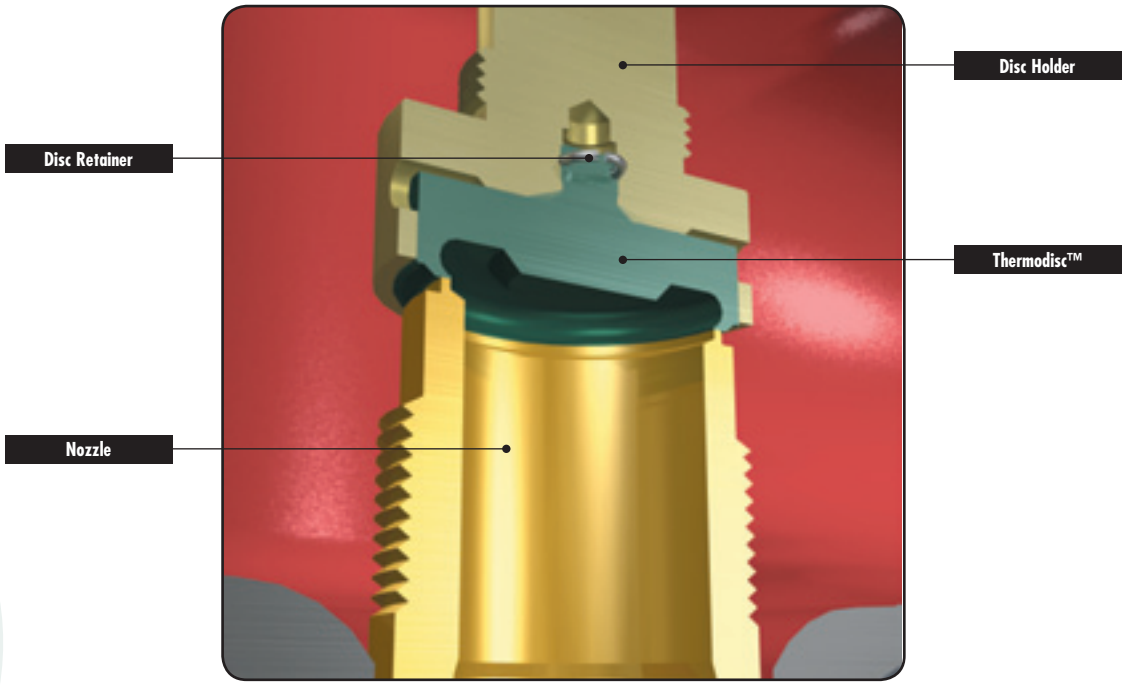
The 2900 TD option is specifically designed for steam service and organic heat transfer media and is certified to ASME Code Section VIII.

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

Thermodisc™ is a specifically designed disc for use on high temperature fluids. This concept has more than 40 years of field proven performance that ensures the tightest valves in the world.

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™ assists in the tightness of the seat, as does the rapid thermal equalization that occurs due to the thin sealing section.



2900 Steam Trim Internals

2900 Special Material Options

The 2900 series requires various material options to satisfy customer needs and API standards. The most common options are listed in this section. For options not listed here, contact the factory. Specify the material construction classification using the construction variations, such as: S2, H4, etc.

Options included are:

Many other special options are available not necessarily of a material nature. These include, but are not limited to, special facings on connections or special connections. Contact the factory for special requirements.

Alloy 20

Corrosive Service, Alloy Materials[1, 2]

Component	Construction Variation		
	A1	A2	A4
Common Components			
Base: Types 2905 thru 2918	SA216 Grade WCC Carbon Steel	SA216 Grade WCC Carbon Steel	SA351 Grade CN7M Alloy Steel
Base: Types 2920 thru 2928	SA217 Grade WC6 Alloy Steel	SA217 Grade WC6 Alloy Steel	SA351 Grade CN7M Alloy Steel
Base Plug: Types 2905 thru 2918	Carbon Steel	Carbon Steel	Alloy 20
Base Plug: Types 2920 thru 2928	316 Stainless Steel	316 Stainless Steel	Alloy 20
Nozzle	Alloy 20	Alloy 20	Alloy 20
Disc	Alloy 20	Alloy 20	Alloy 20
Thermodisc™ (option)	Inconel® X750	Inconel® X750	Inconel® X750
Disc Retainer	Inconel® X750	Inconel® X750	Inconel® X750
Plug / Adaptor	316 Stainless Steel	Alloy 20	Alloy 20
Disc Holder	316 Stainless Steel	Alloy 20	Alloy 20
Cover Plate	SA351 Grade CN7M Alloy Steel	SA351 Grade CN7M Alloy Steel	SA351 Grade CN7M Alloy Steel
Base Stud	B7 Alloy Steel	B7 Alloy Steel	Alloy 20
Base Stud Nut	2H Carbon Steel	2H Carbon Steel	Alloy 20
Guide Ring	Teflon	Teflon®	Teflon®
Piston O-Ring (when used)	Select	Select	Select
Piston Seal (when used)	Teflon® Energized	Teflon® Energized	Teflon® Energized
Guide Gasket	Soft Iron	Monel	Monel®
Plug / Adaptor Gasket	Soft Iron	Monel	Monel®
Bracket	Carbon Steel	Carbon Steel	Alloy 20
Sensing Ring (option)	Alloy 20	Alloy 20	Alloy 20
Sensing Tube (option)	Alloy 20	Alloy 20	Alloy 20
Heat Exchanger (option)	Alloy 20	Alloy 20	Alloy 20
39PV or 39MV Pilot	Material Option A1	Material Option A1	Material Option A4
Non-Bellows Components			
Guide	316 Stainless Steel	Alloy 20	Alloy 20
Piston	Alloy 20	Alloy 20	Alloy 20
Cover Plate Gasket	Soft Iron	Monel®	Monel®
Bellows Components			
Guide	316 Stainless Steel	316 Stainless Steel	Alloy 20
Piston	Alloy 20	Alloy 20	Alloy 20
Cover Plate Gasket	Soft Iron	Soft Iron	Monel®
Bellows Assembly	—	—	—
- Bellows	Inconel® 625 LCF	Alloy 20	Alloy 20
- Bellows Ring and Flange	316L Stainless Steel	Alloy 20	Alloy 20
Bellows Gasket	Soft Iron	Monel®	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type, 2910L/A4 or 2910-30L/A4.

Low Temperatures

Special Materials for Low Ambient Temperatures (to -50° F)[1, 2]

Component	Construction Variation LCC Carbon Steel C1[3]
Common Components	
Base	SA352 Grade LCC Carbon Steel
Base Plug	316 Stainless Steel
Nozzle	316 Stainless Steel
Disc	316 Stainless Steel
Thermodisc™ (option)	616 Stainless Steel
Disc Retainer	Inconel® X750
Plug / Adaptor	316 Stainless Steel
Disc Holder	316 Stainless Steel
Cover Plate	SA351 Grade CF8M Stainless Steel
Base Stud	B8M Stainless Steel
Base Stud Nut	8M Stainless Steel
Guide Ring	Teflon®
Piston O-Ring (when used)	Select
Piston Seal (when used)	Teflon® Energized
Guide Gasket	Soft Iron
Plug / Adaptor Gasket	Soft Iron
Bracket	316 Stainless Steel
Sensing Ring (option)	316 Stainless Steel
Sensing Tube (option)	316 Stainless Steel
Heat Exchanger (option)	316 Stainless Steel
39PV or 39MV Pilot	Material Option CC
Non-Bellows Valve Components	
Guide	316 Stainless Steel
Piston	316 Stainless Steel
Cover Plate Gasket	Soft Iron
Bellows Valve Components	
Guide	316 Stainless Steel
Piston	316 Stainless Steel
Cover Plate Gasket	Soft Iron
Bellows Assembly	—
- Bellows	Inconel® 625 LCF
- Bellows Ring and Flange	316L Stainless Steel
Bellows Gasket	Soft Iron

NOTES: 1 The materials in red denote variation from standard material construction.
2 Media temperature may impact valve temperature. Consult factory for assistance.
3 To specify valves, add material designation to the valve type, 2910L/C1 or 2910-30L/C1.

Duplex

Corrosive Service, Duplex Materials[1, 2]

Component	Construction Variation		
	D1	D2	D4
Common Components			
Base: Types 2905 thru 2918	SA216 Grade WCC Carbon Steel	SA216 Grade WCC Carbon Steel	SA351 Grade CK-3MCUN Duplex
Base: Types 2920 thru 2928	SA217 Grade WC6 Alloy Steel	SA217 Grade WC6 Alloy Steel	SA351 Grade CK-3MCUN Duplex
Base Plug: Types 2905 thru 2918	Carbon Steel	Carbon Steel	Duplex
Base Plug: Types 2920 thru 2928	316 Stainless Steel	316 Stainless Steel	Duplex
Nozzle	Duplex	Duplex	Duplex
Disc	Duplex	Duplex	Duplex
Thermodisc™ (option)	Inconel® X750	Inconel® X750	Inconel® X750
Disc Retainer	Inconel® X750	Inconel® X750	Inconel® X750
Plug / Adaptor	316 Stainless Steel	Duplex	Duplex
Disc Holder	316 Stainless Steel	Duplex	Duplex
Cover Plate	SA351 Grade CK-3MCUN Duplex	SA351 Grade CK-3MCUN Duplex	SA351 Grade CK-3MCUN Duplex
Base Stud	B7 Alloy Steel	B7 Alloy Steel	Duplex
Base Stud Nut	2H Carbon Steel	2H Carbon Steel	Duplex
Guide Ring	Teflon®	Teflon®	Teflon®
Piston O-Ring (when used)	Select	Select	Select
Piston Seal (when used)	Teflon® Energized	Teflon® Energized	Teflon® Energized
Guide Gasket	Soft Iron	Monel®	Monel
Plug / Adaptor Gasket	Soft Iron	Monel®	Monel
Bracket	Carbon Steel	Carbon Steel	Duplex
Sensing Ring (option)	Duplex	Duplex	Duplex
Sensing Tube (option)	Duplex	Duplex	Duplex
Heat Exchanger (option)	Duplex	Duplex	Duplex
39PV or 39MV Pilot	Material Option D1	Material Option D1	Material Option D4
Non-Bellows Components			
Guide	316 Stainless Steel	Duplex	Duplex
Piston	Duplex	Duplex	Duplex
Cover Plate Gasket	Soft Iron	Monel®	Monel®
Bellows Components			
Guide	316 Stainless Steel	316 Stainless Steel	Duplex
Piston	Duplex	Duplex	Duplex
Cover Plate Gasket	Soft Iron	Soft Iron	Monel®
Bellows Assembly	-	-	-
- Bellows	Inconel® 625 LCF	Duplex	Duplex
- Bellows Ring and Flange	316L Stainless Steel	Duplex	Duplex
Bellows Gasket	Soft Iron	Monel®	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.

2 To specify valves, add material designation to the valve type, 2910L/D4 or 2910-30L/D4.

Hastelloy® C

Corrosive Service, Hastelloy Materials[1, 2]

Component	Construction Variation		
	H1	H2	H4
Common Components			
Base: Types 2905 thru 2918	SA216 Grade WCC Carbon Steel	SA216 Grade WCC Carbon Steel	SA494 CW12MW Nickel Alloy
Base: Types 2920 thru 2928	SA217 Grade WC6 Alloy Steel	SA217 Grade WC6 Alloy Steel	SA494 CW12MW Nickel Alloy
Base Plug: Types 2905 thru 2918	Carbon Steel	Carbon Steel	Hastelloy® C
Base Plug: Types 2920 thru 2928	316 Stainless Steel	316 Stainless Steel	Hastelloy® C
Nozzle	Hastelloy® C	Hastelloy® C	Hastelloy® C
Disc	Hastelloy® C	Hastelloy® C	Hastelloy® C
Thermodisc™ (option)	Inconel® X750	Inconel® X750	Inconel® X750
Disc Retainer	Inconel® X750	Inconel® X750	Inconel® X750
Plug / Adaptor	316 Stainless Steel	Hastelloy® C	Hastelloy® C
Disc Holder	316 Stainless Steel	Hastelloy® C	Hastelloy® C
Cover Plate	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
Base Stud	B7 Alloy Steel	B7 Alloy Steel	Hastelloy® C
Base Stud Nut	2H Carbon Steel	2H Carbon Steel	Hastelloy® C
Guide Ring	Teflon®	Teflon®	Teflon®
Piston O-Ring (when used)	Select	Select	Select
Piston Seal (when used)	Teflon® Energized	Teflon® Energized	Teflon® Energized
Guide Gasket	Soft Iron	Monel®	Monel®
Plug / Adaptor Gasket	Soft Iron	Monel®	Monel®
Bracket	Carbon Steel	Carbon Steel	Hastelloy® C
Sensing Ring (option)	Hastelloy® C	Hastelloy® C	Hastelloy® C
Sensing Tube (option)	Hastelloy® C	Hastelloy® C	Hastelloy® C
Heat Exchanger (option)	Hastelloy® C	Hastelloy® C	Hastelloy® C
39PV or 39MV Pilot	Material Option H1	Material Option H1	Material Option H4
Non-Bellows Components			
Guide	316 Stainless Steel	Hastelloy® C	Hastelloy® C
Piston	Hastelloy® C	Hastelloy® C	Hastelloy® C
Cover Plate Gasket	Soft Iron	Monel®	Monel®
Bellows Components			
Guide	316 Stainless Steel	316 Stainless Steel	Hastelloy® C
Piston	Hastelloy® C	Hastelloy® C	Hastelloy® C
Cover Plate Gasket	Soft Iron	Soft Iron	Monel®
Bellows Assembly	—	—	—
- Bellows	Inconel® 625 LCF	Hastelloy® C	Hastelloy® C
- Bellows Ring and Flange	316L Stainless Steel	Hastelloy® C	Hastelloy® C
Bellows Gasket	Soft Iron	Monel®	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type, 2910L/H4 or 2910-30L/H4.

Low Temperatures

Special Materials for Low Process Fluid Temperature[1, 2]

Component	Construction Variation - Low Temperature Service		
	-21°F to -75°F	-76°F to -150°F	-151°F to -450°F
	L1[3]	L2	L3
Common Components			
Base: Types 2905 thru 2918	SA351 Grade CF8M Stainless Steel	SA351 Grade CF8M Stainless Steel	SA351 Grade CF8M Stainless Steel
Base Plug	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Nozzle	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Disc	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Thermodisc (option)	Inconel® X750	Inconel® X750	Inconel® X750
Disc Retainer	Inconel® X750	Inconel® X750	Inconel® X750
Plug / Adaptor	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Disc Holder	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Cover Plate	SA351 Grade CF8M Stainless Steel	SA351 Grade CF8M Stainless Steel	SA351 Grade CF8M Stainless Steel
Base Stud	B8M Stainless Steel	B8M Stainless Steel	B8M Stainless Steel
Base Stud Nut	8M Stainless Steel	8M Stainless Steel	8M Stainless Steel
Guide Ring	Teflon®	Teflon®	Teflon®
Piston O-Ring (when used)	Select	Select	Select
Piston Seal (when used)	Teflon® Energized	Teflon® Energized	Teflon® Energized
Guide Gasket	Monel®	Monel®	Monel®
Plug / Adaptor Gasket	Monel®	Monel®	Monel®
Bracket	Carbon Steel	Carbon Steel	316 Stainless Steel
Sensing Ring (option)	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Sensing Tube (option)	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Heat Exchanger[4]	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
39PV or 39MV Pilot	Material Option CC	Material Option CC	Material Option CC
Non-Bellows Components			
Guide	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Piston	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Cover Plate Gasket	Monel®	Monel®	Monel®
Bellows Components			
Guide	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Piston	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
Cover Plate Gasket	Monel®	Monel®	Monel®
Bellows Assembly	—	—	—
- Bellows	Inconel® 625 LCF	Inconel® 625	316L Stainless Steel
- Bellows Ring and Flange	316L Stainless Steel	316L Stainless Steel	316L Stainless Steel
Bellows Gasket	Monel®	Monel®	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type, 2910L/L3 or 2910-30L/L3.
3 SA352 Grade LCC material can be utilized down to -50°F for bases.
4 For temperatures -40°F and below a heat exchanger must be specified.

Monel®

Corrosive Service, Monel® Materials[1, 2]

Component	Construction Variation			
	M1	MB	M2	M4
Common Components				
Base: Types 2905 thru 2918	SA216 Grade WCC Carbon Steel	SA216 Grade WCC Carbon Steel	SA216 Grade WCC Carbon Steel	SA494 Gr. M35-1 Nickel Copper Alloy
Base: Types 2920 thru 2928	SA217 Grade WC6 Alloy Steel	SA217 Grade WC6 Alloy Steel	SA217 Grade WC6 Alloy Steel	SA494 Gr. M35-1 Nickel Copper Alloy
Base Plug: Types 2905 thru 2918	Carbon Steel	Carbon Steel	Carbon Steel	Monel®
Base Plug: Types 2920 thru 2928	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	Monel®
Nozzle	Monel®	Monel®	Monel®	Monel®
Disc	Monel®	Monel®	Monel®	Monel®
Thermodisc™ (option)	Inconel® X750	Inconel® X750	Inconel® X750	Inconel® X750
Disc Retainer	Inconel® X750	Inconel® X750	Inconel® X750	Inconel® X750
Plug / Adaptor	316 Stainless Steel	316 Stainless Steel	Monel®	Monel®
Disc Holder	316 Stainless Steel	Monel®	Monel®	Monel®
Cover Plate	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
Base Stud	B7 Alloy Steel	B7 Alloy Steel	B7 Alloy Steel	Monel K500
Base Stud Nut	2H Carbon Steel	2H Carbon Steel	2H Carbon Steel	Monel K500
Guide Ring	Teflon®	Teflon®	Teflon®	Teflon®
Piston O-Ring (when used)	Select	Select	Select	Select
Piston Seal (when used)	Teflon® Energized	Teflon® Energized	Teflon® Energized	Teflon® Energized
Guide Gasket	Soft Iron	Monel®	Monel®	Monel®
Plug / Adaptor Gasket	Soft Iron	Monel®	Monel®	Monel®
Bracket	Carbon Steel	Carbon Steel	Carbon Steel	Monel®
Sensing Ring (option)	Monel®	Monel®	Monel®	Monel®
Sensing Tube (option)	Monel®	Monel®	Monel®	Monel®
Heat Exchanger (option)	Monel®	Monel®	Monel®	Monel®
39PV or 39MV Pilot	Material Option M1	Material Option M1	Material Option M1	Material Option M4
Non-Bellows Components				
Guide	316 Stainless Steel	316 Stainless Steel	Monel®	Monel®
Piston	Monel®	Monel®	Monel®	Monel®
Cover Plate Gasket	Soft Iron	Monel®	Monel®	Monel®
Bellows Components				
Guide	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	Monel®
Piston	Monel®	Monel®	Monel®	Monel®
Cover Plate Gasket	Soft Iron	Soft Iron	Soft Iron	Monel®
Bellows Assembly	—	—	—	—
- Bellows	Inconel® 625 LCF	Inconel® 625 LCF	Monel®	Monel®
- Bellows Ring and Flange	316L Stainless Steel	316L Stainless Steel	Monel®	Monel®
Bellows Gasket	Soft Iron	Monel®	Monel®	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.

2 To specify valves, add material designation to the valve type, 2910L/M4 or 2910-30L/M4.

Stainless Steel

Corrosive Service, Stainless Steel Materials[1, 2]

Component	Construction Variation	
	S2	S4
Common Components		
Base: Types 2905 thru 2918	SA216 Grade WCC Carbon Steel	SA351 Grade CF8M Stainless Steel
Base: Types 2920 thru 2928	SA217 Grade WC6 Alloy Steel	SA351 Grade CF8M Stainless Steel
Base Plug: Types 2905 thru 2918	Carbon Steel	316 Stainless Steel
Base Plug: Types 2920 thru 2928	316 Stainless Steel	316 Stainless Steel
Nozzle	316 Stainless Steel	316 Stainless Steel
Disc	316 Stainless Steel	316 Stainless Steel
Thermodisc™ (option)	616 Stainless Steel	616 Stainless Steel
Disc Retainer	Inconel® X750	Inconel® X750
Plug / Adaptor	316 Stainless Steel	316 Stainless Steel
Disc Holder	316 Stainless Steel	316 Stainless Steel
Guide	316 Stainless Steel	316 Stainless Steel
Cover Plate	SA351 Grade CF8M Stainless Steel	SA351 Grade CF8M Stainless Steel
Base Stud	B7 Alloy Steel	B8M Stainless Steel
Base Stud Nut	2H Carbon Steel	8M Stainless Steel
Piston	316 Stainless Steel	316 Stainless Steel
Guide Ring	Teflon®	Teflon®
Piston O-Ring (when used)	Select	Select
Piston Seal (when used)	Teflon Energized	Teflon® Energized
Guide Gasket	Monel®	Monel®
Plug / Adaptor Gasket	Monel®	Monel®
Bracket	Carbon Steel	316 Stainless Steel
Sensing Ring (option)	316 Stainless Steel	316 Stainless Steel
Sensing Tube (option)	316 Stainless Steel	316 Stainless Steel
Heat Exchanger (option)	316 Stainless Steel	316 Stainless Steel
39PV or 39MV Pilot	Material Option CC	Material Option CC
Non-Bellows Components		
Cover Plate Gasket	Monel®	Monel®
Bellows Components		
Cover Plate Gasket	Soft Iron	Monel®
Bellows Assembly	—	—
- Bellows	Inconel® 625 LCF	Inconel® 625 LCF
- Bellows Ring and Flange	316L Stainless Steel	316L Stainless Steel
Bellows Gasket	Monel®	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type, 2910L/S4 or 2910-30L/S4.

2900 Sour Gas Trim (SG)

Material requirements of NACE Standard MR-01-75 are applicable to systems handling sour gas if the total operating pressure of the system is 65 psia or greater and if the partial pressure of H_2S in the gas is 0.05 psia or greater.

The 2900 Standard Material of Construction is satisfactory for applications in which the valve secondary pressure (outlet side) does not exceed 65 psia (50 psig). Under valve relieving conditions 50 psig secondary pressure would not normally be exceeded until the valve set pressure exceeds 450 psig.

The SG (Non-Bellows) and SG (Bellows) material selections comply with NACE MR-01-75.

Specific applications may be referred to the factory for recommendations.

Special Materials for Sour Gas Service[1, 2]

Component	Construction Variation
	SG
Component	**Material**
Base: Types 2905 thru 2918	SA216 Grade WCC Carbon Steel
Base: Types 2920 thru 2928	SA217 Grade WC6 Alloy Steel
Base Plug: Types 2905 thru 2918	Carbon Steel
Base Plug: Types 2920 thru 2928	316 Stainless Steel
Nozzle	316 Stainless Steel
Disc	316 Stainless Steel
Thermodisc™ (option)	Inconel® X750
Disc Retainer	Inconel® X750
Plug / Adaptor	316 Stainless Steel
Disc Holder	316 Stainless Steel
Cover Plate	SA351 Grade CF8M Stainless Steel
Base Stud	B7 Alloy Steel
Base Stud Nut	2H Carbon Steel
Guide Ring	Teflon®
Piston O-Ring (when used)	Select
Piston Seal (when used)	Teflon® Energized
Guide Gasket	Soft Iron
Plug / Adaptor Gasket	Soft Iron
Bracket	316 Stainless Steel
Sensing Ring (option)	316 Stainless Steel
Sensing Tube (option)	316 Stainless Steel
Heat Exchanger (option)	316 Stainless Steel
39PV or 39MV Pilot	Material Option SG
Non-Bellows Valve Components	
Guide	316 Stainless Steel
Piston	316 Stainless Steel
Cover Plate Gasket	Soft Iron
Bellows Valve Components	
Guide	316 Stainless Steel
Piston	316 Stainless Steel
Cover Plate Gasket	Soft Iron
Bellows Assembly	—
- Bellows	Inconel® 625 LCF
- Bellows Ring and Flange	316L Stainless Steel
Bellows Gasket	Soft Iron

NOTE: 1 The materials in red denote variation from standard material construction.

2 To specify valves, add material designation to the valve type, 2910L/SG or 2910-30L/SG.

High Temperatures

Special Materials for High Temperature Service (1001°F to 1200°F)

Component	Construction Variation
	T1[1, 2]
Common Components	
Base	SA351 Grade CF8M Stainless Steel
Base Plug	316 Stainless Steel
Nozzle	316 Stainless Steel
Disc	316 Stainless Steel
Thermodisc (option)	Inconel® X750
Disc Retainer	Inconel® X750
Plug / Adaptor	316 Stainless Steel
Disc Holder	316 Stainless Steel /Glide-Aloy Treated
Cover Plate	SA351 Grade CF8M Stainless Steel
Base Stud	B8M Stainless Steel
Base Stud Nut	8M Stainless Steel
Guide Ring	Teflon®
Piston O-Ring (when used)	Select
Piston Seal (when used)	Teflon® Energized
Guide Gasket	Monel®
Plug / Adaptor Gasket	Monel®
Bracket	Carbon Steel
Sensing Ring (option)	316 Stainless Steel
Sensing Tube (option)	316 Stainless Steel
Heat Exchanger[3]	316 Stainless Steel
39PV or 39MV Pilot	Material Option CC
Non-Bellows Valve Components	
Guide	316 Stainless Steel
Piston	316 Stainless Steel
Cover Plate Gasket	Monel®
Bellows Valve Components	
Guide	316 Stainless Steel
Piston	316 Stainless Steel
Cover Plate Gasket	Monel®
Bellows Assembly	—
- Bellows	Inconel® 625 LCF
- Bellows Ring and Flange	Inconel® 625
Bellows Gasket	Monel®

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type, 2910L/T1 or 2910-30L/T1.
3 For temperatures 505°F and above, a heat exchanger must be specified.

Soft Goods Selection Chart

2900 Soft Goods Selection Chart[4]

Component	Description	Service		
		Liquid/Gas[3]	Steam	
		15 to 3750 psig	15 to 49 psig	50 to 3750 psig
Main Valve[1, 2]	Seat O-Ring Option	SELECT	ethylene/propylene 90	Teflon®
	or { Piston Spring Seal	Teflon®	N/A	Teflon®
	or { O-Ring	SELECT	ethylene/propylene 90	N/A
	Piston Guide Ring	Teflon®	Teflon®	Teflon®
Pilot Valve	Adjuster Bottom O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Adjuster Top O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Insert O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Base O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Piston Spring Seal	Teflon®	Teflon®	Teflon®
	Adjuster Top Spring Seal	Teflon®	Teflon®	Teflon®
	Insert Spring Seal	Teflon®	Teflon®	Teflon®
Modulator	Base O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Stop O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Seat O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Piston Bottom O-Ring	SELECT	ethylene/propylene 90	Teflon®
	Piston Bottom Spring Seal	Teflon®	Teflon®	Teflon®
	Piston Top Spring Seal	Teflon®	Teflon®	Teflon®

NOTES: 1 When main valve is equipped with O-Ring seat, O-Rings for seat and piston shall be of the same material and durometer.
2 When Teflon® material is selected, piston shall be equipped with a Teflon®Z energized seal instead of an O-Ring.
3 Select soft good using charts for fluid, pressure and temperature. See selection instructions below.
4 When a Heat Exchanger is required, use the exit temperature of the Heat Exchanger to select the soft goods. (A standard metal seat is used on the main base with the heat exchanger.)

Soft Goods selection for liquid and gas service is accomplished as follows:

A) Material Selection

- Refer to Technical Information Section, O-Ring Selection beginning on page TI.22.
- Locate valve fluid and read the applicable O-Ring material.
- For fluids not listed, the customer must specify the O-Ring material.

B) Main Valve Pressure Limits

- Refer to Table 1 on page 2900.24.
- Locate the valve orifice and select the durometer for the required set pressure.

C) Main Valve Temperature Limits

- Refer to Table 2 on page 2900.24.
- Locate the material and durometer and verify the temperature limits.
- If temperature limits are exceeded, repeat Steps A & B.
- If an O-Ring cannot be selected, contact the application engineer.

D) Pilot Valve Pressure and Temperature Limits

- Refer to Table 3 on page 2900.24.
- Locate the service and review the pressure and temperature ranges, then select the material and durometer.

Pressure and Temperature Limits

Main Valve and Pilot Valve/Modulator

Table 1 - Main Valve Pressure Limits (psig)

Orifice	Durometer[2]						Teflon[3]			
	50		70-75[1]		90		(-300°F to 200°F)		(201°F to 505°F)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
2900 D	N/A	N/A	15	800	265	2000	2000	3750	50	3750
E	N/A	N/A	15	800	265	2000	2000	3750	50	3750
F	N/A	N/A	15	800	265	2000	2000	3750	50	3750
G	N/A	N/A	15	780	375	1900	1900	3705	50	3705
H	N/A	N/A	15	780	330	1900	1900	2750	50	2750
J	N/A	N/A	15	780	150	1900	1900	2700	50	2700
K	N/A	N/A	15	580	255	1400	1400	2220	50	2220
L	N/A	N/A	15	580	155	1400	1400	1500	50	1500
M	N/A	N/A	15	580	140	1100	-	-	50	1100
N	N/A	N/A	15	580	90	1000	-	-	50	1000
P	N/A	N/A	15	500	75	1000	-	-	50	1000
Q	N/A	N/A	15	420	80	600	-	-	50	600
R	N/A	N/A	15	300	60	300	-	-	50	300
T	N/A	N/A	15	200	30	300	-	-	50	300
V	N/A	N/A	15	300	15	300	-	-	50	300
W	N/A	N/A	15	300	15	300	-	-	50	300

NOTES: 1 Maximum set pressure for silicone compounds is 1/2 of the maximum value.
2 When main valve is equipped with O-Ring seat, O-Rings for seat and piston shall be of the same material and durometer.
3 When Teflon® material is selected, piston shall be equipped with a Teflon® energized seal instead of an O-Ring.

Table 2 - Main Valve Temperature Limits (°F)

Material	Durometer	NOTES	Temperature Limits		Material	Durometer	NOTES	Temperature Limits	
			Min.	Max.				Min.	Max.
Nitrile (Buna-N)	70	2	-40	250	Silicone®	70		-65	437
	90		-40	250	Teflon®	N/A		-300	505
Ethylene/Propylene	70		-65	212	Kalrez®	82	1	-42	550
	90		-70	500		75	1	-58	601
Fluorocarbon (Viton)	75		-15	400		91	1	-35	601
	90		-15	400	Chemraz®	75	1	-20	450
Neoprene®	70		-45	300		90	1	-20	450

NOTES: 1 Consult application engineer before selecting.
2 Standard O-Ring Material.

Table 3 - Pilot Valve and Modulator Pressure/Temperature Limits[2]

Service	O-Ring Material	Durometer	Temperature Limit (°F)		Pressure Limit (psig)	
			Min.	Max.	Min.	Max.
LS/GS	Nitrile (Buna-N)[3]	70	-40	250	15	3750
LS/GS	Fluorocarbon (Viton)	75	-15	400	15	3750
LS/GS	Ethylene Propylene	70	-40	400	15	3750
LS/GS	Kalrez®	1	-40	400	15	3750
LS/GS	Teflon®	N/A	212	505	50	3750
SS	Ethylene Propylene	90	212	500	15	49
SS	Teflon®	N/A	212	505	50	3750

NOTES: 1 Consult application engineer before selecting.
2 Other materials are on application. Consult applications engineer.
3 Standard O-Ring Material.

2900 Pilot Designs

Introduction

CONSOLIDATED'S pilot valve is a unique modular design capable of being supplied for applications that require a pop or a modulating action. The modular design concept allows the pop pilot to be used for modulation by simply adding a small compact modulator to the pop pilot. By removing the modulator the pilot valve is returned to a pop pilot. End users can modify their pilot valve population to meet the ever-changing requirements at a minimum of expense.

A pilot design is selected primarily on the following:

1) Need for either "pop" action or "modulating" action which describes the operating motion of the disc.
2) Set pressure limits
3) Temperature limits
4) The service application

This section describes the following pilot designs:

- 39PV Pop Action - Non-Flowing
- 39MV Modulating Action - Non-Flowing

Remote Sensing at the Source of System Pressure

On the standard product, the sensing line is not connected directly at the main valve inlet. The system pressure is sensed remotely or at the pressure vessel and equipment being protected.

If the pressure drop from the equipment being protected to the relief valve inlet exceeds 3%, remote sensing can provide a solution. Remote sensing minimizes the effects of excessive inlet pressure loss and eliminates the resulting valve chatter. The modulator is suggested when the POSRV could relieve at various capacity levels.

The 2900 with remote sensing is ideal for upgrading current 1900 safety relief valves and competitors safety relief valves to the new 2900 pilot operated safety relief valve, because the center to face dimensions on both the inlet and outlet are the same.

The length, size, and maximum change in height of the remote sensing line should be verified through analysis, taking into account the requirement to recharge the dome through the pilot valve. On request, Dresser will assist in the analysis to determine the appropriate length, size, and maximum change in height for the sensing line and to determine the correct capacity of the pressure relief valve. The customer needs to provide the information in the form below.

Remote Sensing Line Sizing - Input Form

Date: _____

Customer: _____

For Valve Model Number: _____

Gas & Liquid Input Required

P_1	=	Set Pressure (psig)	_____	psig
ρ	=	Fluid density of the media in the condensed state	_____	lbs/ft^3

Installation Input Required

Total length of the sensing line in feet			_____	feet
The change in vertical height from the point of sensing to the pilot valve inlet in feet (+ or -)				
Plus (+)	=	pilot above sensing point	_____	feet
Minus (-)	=	pilot below sensing point		
Elbows				
Quantity used:				
Type used:				
Size used:				
Valves				
Quantity used:				
Type used:				
Size used:				

2900 Series
Non-Flowing Pilot Operated Safety Relief Valves

2900 with
39PV **Pop Action**

- Remote Sensing
- Vented to Atmosphere

Pipe to system pressure.

2900 with
39MV **Modulating Action**

- Remote Sensing
- Vented to Body Bowl

Pipe to system pressure.

2900 Series Type 39PV Pilot

Pop Action, Non-Flowing
For Set Pressures 15 psig to 3750 psig

Pipe to system pressure.

2900 with

39PV Pop Action

	Part	Material
1	Main Base	SA351 Grade CF8M Stainless Steel
2	Adjuster Cap	316 Stainless Steel
3	Adjuster Top	316 Stainless Steel
4	Adjuster Bottom	316 Stainless Steel
5	Adjuster Lock Nut	316 Stainless Steel
6	Compression Screw	316 Stainless Steel
7	Compression Screw Lock Nut	316 Stainless Steel
8	Spring Washer	316 Stainless Steel
9	Spring[1]	Chrome Steel (Phosphated)
10	Insert Top	316 Stainless Steel
11	Insert Bottom	316 Stainless Steel
12	Main Piston	316 Stainless Steel
13	Compression Screw Cap	316 Stainless Steel
14	Yoke Cap Screw	316 Stainless Steel
15	Adjuster Bottom O-Ring	Select
16	Adjuster Top O-Ring	Select
17	Insert O-Ring	Select
18	Main Base O-Ring	Select
19	Yoke	SA351 Grade CF8M Stainless Steel
20	Main Piston Spring Seal	Teflon®
21	Adjuster Top Spring Seal	Teflon®
22	Insert Spring Seal	Teflon®
23	Field Test Connector	-
	- Ball	316 Stainless Steel
	- Seat O-Ring	Select
	- Plug O-Ring	Select
	- Base	316 Stainless Steel
	- Plug	316 Stainless Steel
	- Tube Filter	316 Stainless Steel
24	Vent Assembly/Bug Screen	-
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
25	Vent Assembly	-
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
26	Pipe Plug	316 Stainless Steel
36	Spring Cover	Peek (Polyetheretherketone)
47	Vent Assembly	-
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
48	Top Plate	316 Stainless Steel
49	Set Screw	316 Stainless Steel
50	Bonnet	SA351 Grade CF8M Stainless Steel

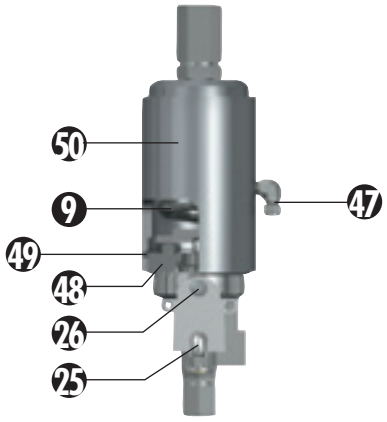
NOTE: 1 When vented bonnet option is selected for steam service, an Inconel® X750 spring is supplied.

Description

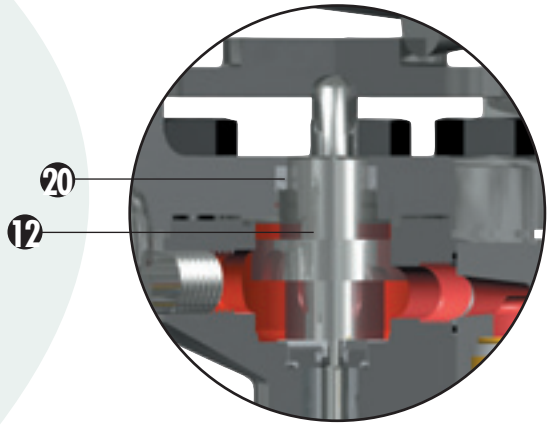
The **Consolidated** 39PV pop action non-flowing pilot provides excellent performance with full lift at set pressure with minimal blowdown. Buna N O-Rings and 316 stainless steel construction throughout are standard.

The pilot is non-flowing at full open, improving its capabilities to handle dirty conditions and reduce icing problems. There are two unique features of the 39PV. It has the ability to be used on liquid, gas or steam service without any adjustments. The 39PV pop action pilot may be converted to the 39MV modulating pilot by simply installing the Modulator Assembly. This simple, modular design allows for easier maintenance and fewer spare parts.

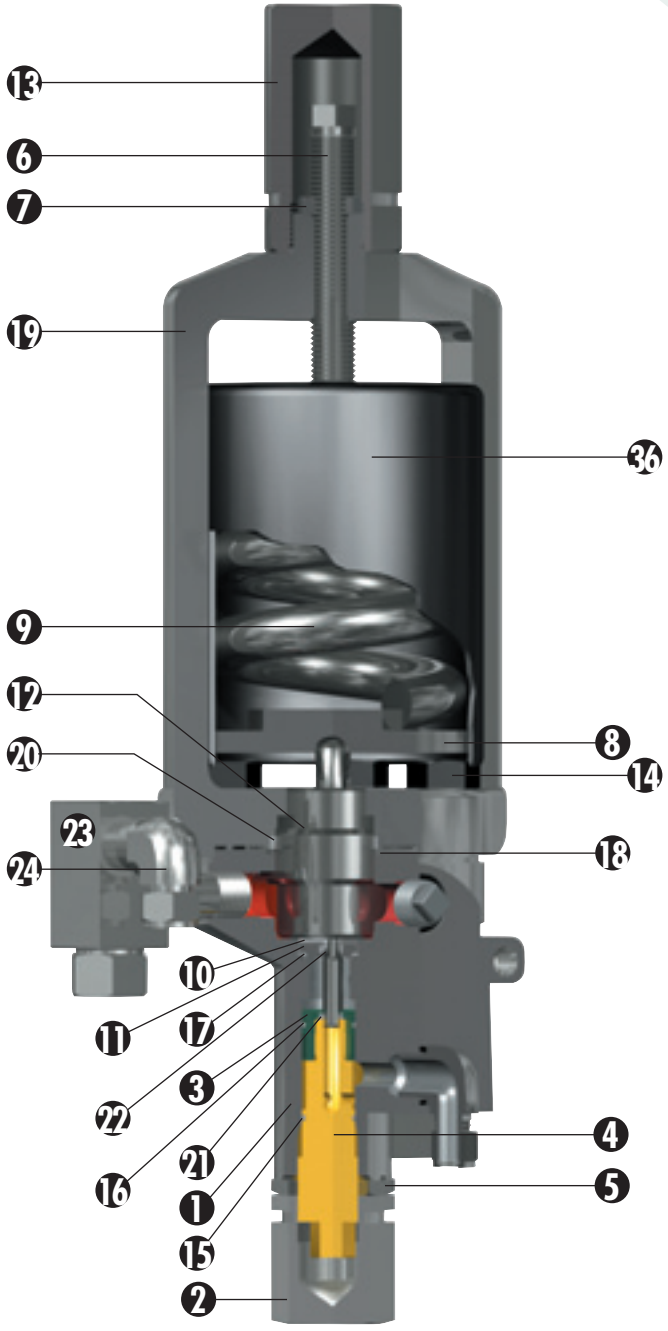
Set pressures are field adjustable, and testing is easily performed using the standard field test connection. Manual blowdown, sensing line filter, backflow preventer, and remote sensing are available as options.



BONNET OPTION



HIGH PRESSURE
(751 - 3750 psig)



LOW PRESSURE
(15 - 750 psig)

2900 Series Type 39PV Pilot
Special Materials - Alloy 20

Corrosive Service - Alloy Materials[1, 2]

	Component	Construction Variation	
		A1	A4
1	Main Base	Alloy 20	Alloy 20
2	Adjuster Cap	316 Stainless Steel	Alloy 20
3	Adjuster Top	Alloy 20	Alloy 20
4	Adjuster Bottom	Alloy 20	Alloy 20
5	Adjuster Lock Nut	316 Stainless Steel	Alloy 20
6	Compression Screw	316 Stainless Steel	Alloy 20
7	Compression Screw Lock Nut	316 Stainless Steel	Alloy 20
8	Spring Washer	316 Stainless Steel	Alloy 20
9	Spring	Chrome Steel	Inconel® X750
10	Insert Top	Alloy 20	Alloy 20
11	Insert Bottom	Alloy 20	Alloy 20
12	Main Piston	Alloy 20	Alloy 20
13	Compression Screw Cap	316 Stainless Steel	Alloy 20
14	Yoke Cap Screw	316 Stainless Steel	Alloy 20
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	Alloy 20	Alloy 20
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector		
	- Ball	Alloy 20	Alloy 20
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Alloy 20	Alloy 20
	- Plug	Alloy 20	Alloy 20
	- Tube Filter	Alloy 20	Alloy 20
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Alloy 20
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Alloy 20
	- Screen	304 Stainless Steel	304 Stainless Steel
26	Pipe Plug	Alloy 20	Alloy 20
36	Spring Cover	Peek (Polyethretheketone)	Peek (Polyethretheketone)
47	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Alloy 20
	- Screen	304 Stainless Steel	304 Stainless Steel
48	Top Plate	Alloy 20	Alloy 20
49	Set Screw	316 Stainless Steel	Alloy 20
50	Bonnet	SA351 Grade CF8M Stainless Steel	Alloy 20

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type 39PV/A4.

2900 Series Type 39PV Pilot

Special Materials - Duplex

Corrosive Service - Duplex Materials[1, 2]

	Component	Construction Variation	
		D1	D4
1	Main Base	Duplex	Duplex
2	Adjuster Cap	316 Stainless Steel	Duplex
3	Adjuster Top	Duplex	Duplex
4	Adjuster Bottom	Duplex	Duplex
5	Adjuster Lock Nut	316 Stainless Steel	Duplex
6	Compression Screw	316 Stainless Steel	Duplex
7	Compression Screw Lock Nut	316 Stainless Steel	Duplex
8	Spring Washer	316 Stainless Steel	Duplex
9	Spring	Chrome Steel	Inconel® X750
10	Insert Top	Duplex	Duplex
11	Insert Bottom	Duplex	Duplex
12	Main Piston	Duplex	Duplex
13	Compression Screw Cap	316 Stainless Steel	Duplex
14	Yoke Cap Screw	316 Stainless Steel	Duplex
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	Duplex	Duplex
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector		
	- Ball	Duplex	Duplex
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Duplex	Duplex
	- Plug	Duplex	Duplex
	- Tube Filter	Duplex	Duplex
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Duplex
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Duplex
	- Screen	304 Stainless Steel	304 Stainless Steel
26	Pipe Plug	Duplex	Duplex
36	Spring Cover	Peek (Polyethretheketone)	Peek (Polyethretheketone)
47	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Duplex
	- Screen	304 Stainless Steel	304 Stainless Steel
48	Top Plate	Duplex	Duplex
49	Set Screw	316 Stainless Steel	Duplex
50	Bonnet	SA351 Grade CF8M Stainless Steel	Duplex

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type 39PV/D4.

2900 Series Type 39PV Pilot

Special Materials - Hastelloy®

Corrosive Service - Hastelloy® Materials[1, 2]

	Component	Construction Variation	
		H1	H4
1	Main Base	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
2	Adjuster Cap	316 Stainless Steel	Hastelloy®
3	Adjuster Top	Hastelloy®	Hastelloy®
4	Adjuster Bottom	Hastelloy®	Hastelloy®
5	Adjuster Lock Nut	316 Stainless Steel	Hastelloy®
6	Compression Screw	316 Stainless Steel	Hastelloy®
7	Compression Screw Lock Nut	316 Stainless Steel	Hastelloy®
8	Spring Washer	316 Stainless Steel	Hastelloy®
9	Spring	Chrome Steel	Inconel® X750
10	Insert Top	Hastelloy®	Hastelloy®
11	Insert Bottom	Hastelloy®	Hastelloy®
12	Main Piston	Hastelloy®	Hastelloy®
13	Compression Screw Cap	316 Stainless Steel	Hastelloy®
14	Yoke Cap Screw	316 Stainless Steel	Hastelloy®
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector		
	- Ball	Hastelloy®	Hastelloy®
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Hastelloy®	Hastelloy®
	- Plug	Hastelloy®	Hastelloy®
	- Tube Filter	Hastelloy®	Hastelloy®
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Hastelloy®
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Hastelloy®
	- Screen	304 Stainless Steel	304 Stainless Steel
26	Pipe Plug	Hastelloy®	Hastelloy®
36	Spring Cover	Peek (Polyethretheketone)	Peek (Polyethretheketone)
47	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Hastelloy®
	- Screen	304 Stainless Steel	304 Stainless Steel
48	Top Plate	Hastelloy®	Hastelloy®
49	Set Screw	316 Stainless Steel	Hastelloy®
50	Bonnet	SA351 Grade CF8M Stainless Steel	Hastelloy®

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type 39PV/H4.

2900 Series Type 39PV Pilot

Special Materials - Monel®

Corrosive Service - Monel® Materials[1, 2]

	Component	Construction Variation	
		M1	M4
1	Main Base	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
2	Adjuster Cap	316 Stainless Steel	Monel
3	Adjuster Top	Monel®	Monel®
4	Adjuster Bottom	Monel®	Monel®
5	Adjuster Lock Nut	316 Stainless Steel	Monel®
6	Compression Screw	316 Stainless Steel	Monel®
7	Compression Screw Lock Nut	316 Stainless Steel	Monel®
8	Spring Washer	316 Stainless Steel	Monel®
9	Spring	Chrome Steel	Inconel® X750
10	Insert Top	Monel®	Monel®
11	Insert Bottom	Monel®	Monel®
12	Main Piston	Monel®	Monel®
13	Compression Screw Cap	316 Stainless Steel	Monel®
14	Yoke Cap Screw	316 Stainless Steel	Monel®
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector		
	- Ball	Monel®	Monel®
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Monel®	Monel®
	- Plug	Monel®	Monel®
	- Tube Filter	Monel®	Monel®
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Monel®
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Monel®
	- Screen	304 Stainless Steel	304 Stainless Steel
26	Pipe Plug	Monel®	Monel®
36	Spring Cover	Peek (Polyethretheketone)	Peek (Polyethretheketone)
47	Vent Assembly		
	- Male Elbow	316 Stainless Steel	Monel®
	- Screen	304 Stainless Steel	304 Stainless Steel
48	Top Plate	Monel®	Monel®
49	Set Screw	316 Stainless Steel	Monel®
50	Bonnet	SA351 Grade CF8M Stainless Steel	SA494 Gr. M35-1 Nickel Copper Alloy

NOTES: 1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type 39PV/M4.

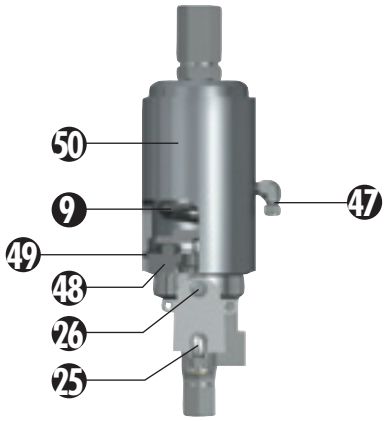
2900 Series Type 39PV Pilot

Special Materials - Sour Gas Trim (SG)

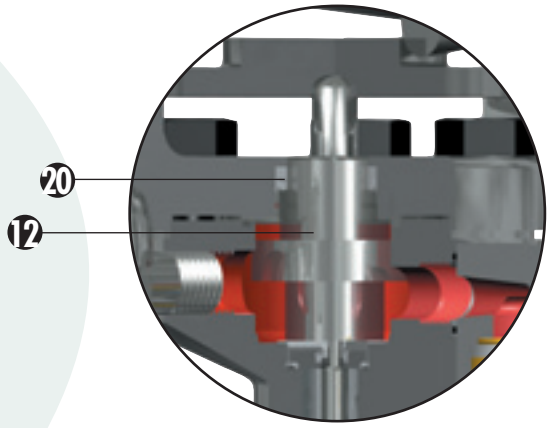
	Materials for Sour Gas Service[1, 2]	
	Component	Construction Variation SG
1	Main Base	SA351 Grade CF8M Stainless Steel
2	Adjuster Cap	316 Stainless Steel
3	Adjuster Top	316 Stainless Steel
4	Adjuster Bottom	316 Stainless Steel
5	Adjuster Lock Nut	316 Stainless Steel
6	Compression Screw	316 Stainless Steel
7	Compression Screw Lock Nut	316 Stainless Steel
8	Spring Washer	316 Stainless Steel
9	Spring	Inconel® X750
10	Insert Top	316 Stainless Steel
11	Insert Bottom	316 Stainless Steel
12	Main Piston	316 Stainless Steel
13	Compression Screw Cap	316 Stainless Steel
14	Yoke Cap Screw	316 Stainless Steel
15	Adjuster Bottom O-Ring	Select
16	Adjuster Top O-Ring	Select
17	Insert O-Ring	Select
18	Main Base O-Ring	Select
19	Yoke	SA351 Grade CF8M Stainless Steel
20	Main Piston Spring Seal	Teflon®
21	Adjuster Top Spring Seal	Teflon®
22	Insert Spring Seal	Teflon®
23	Field Test Connector	-
	- Ball	316 Stainless Steel
	- Seat O-Ring	Select
	- Plug O-Ring	Select
	- Base	316 Stainless Steel
	- Plug	316 Stainless Steel
	- Tube Filter	316 Stainless Steel
24	Vent Assembly/Bug Screen	
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
25	Vent Assembly	-
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
26	Pipe Plug	316 Stainless Steel
36	Spring Cover	Peek (Polyetheretherketone)
47	Vent Assembly	-
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
48	Top Plate	316 Stainless Steel
49	Set Screw	316 Stainless Steel
50	Bonnet	SA351 Grade CF8M Stainless Steel

NOTES: 1 The materials in red denote variation from standard material construction.

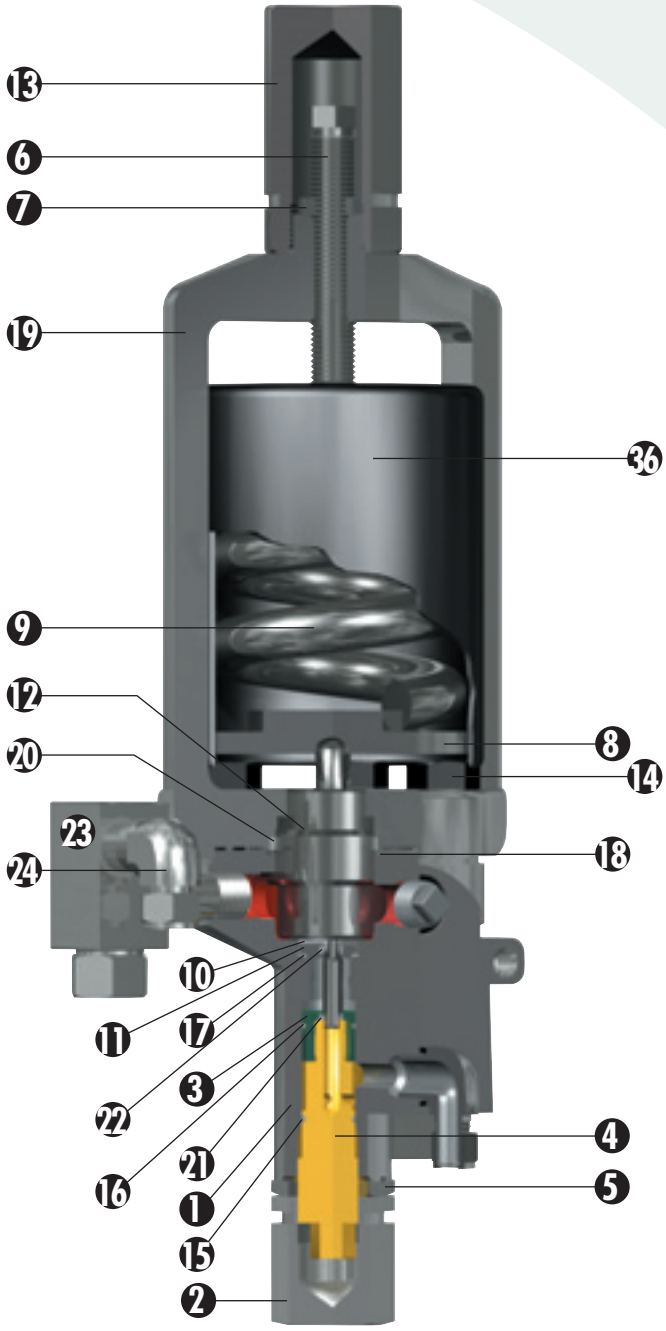
2 To specify valves, add material designation to the valve type 39PV/SG.



BONNET OPTION



HIGH PRESSURE
(751 - 3750 psig)



LOW PRESSURE
(15 - 750 psig)

2900 Series Type 39MV Pilot

Modulating Action, Non-Flowing
For Set Pressures 15 psig to 3750 psig

Pipe to system pressure.

2900 with

39MV Modulating Action

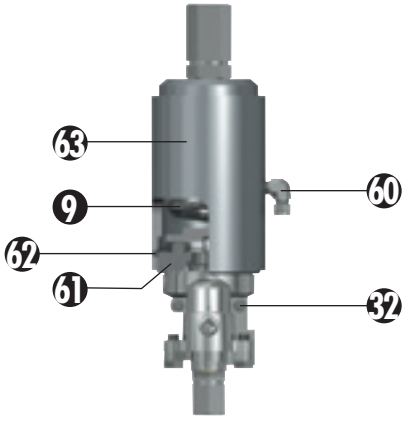
	Part	Material
1	Main Base	SA351 Grade CF8M Stainless Steel
2	Adjuster Cap	316 Stainless Steel
3	Adjuster Top	316 Stainless Steel
4	Adjuster Bottom	316 Stainless Steel
5	Adjuster Lock Nut	316 Stainless Steel
6	Compression Screw	316 Stainless Steel
7	Compression Screw Lock Nut	316 Stainless Steel
8	Spring Washer	316 Stainless Steel
9	Spring[1]	Chrome Steel (Phosphated)
10	Insert Top	316 Stainless Steel
11	Insert Bottom	316 Stainless Steel
12	Main Piston	316 Stainless Steel
13	Compression Screw Cap	316 Stainless Steel
14	Yoke Cap Screw	316 Stainless Steel
15	Adjuster Bottom O-Ring	Select
16	Adjuster Top O-Ring	Select
17	Insert O-Ring	Select
18	Main Base O-Ring	Select
19	Yoke	SA351 Grade CF8M Stainless Steel
20	Main Piston Spring Seal	Teflon®
21	Adjuster Top Spring Seal	Teflon®
22	Insert Spring Seal	Teflon®
23	Field Test Connector	-
	- Ball	316 Stainless Steel
	- Seat O-Ring	Select
	- Plug O-Ring	Select
	- Base	316 Stainless Steel
	- Plug	316 Stainless Steel
	- Tube Filter	316 Stainless Steel
24	Vent Assembly/Bug Screen	
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
25	Modulator Base	SA351 Grade CF8M Stainless Steel
26	Modulator Stop	SA351 Grade CF8M Stainless Steel
27	Modulator Piston Top	316 Stainless Steel
28	Modulator Piston Bottom	316 Stainless Steel
29	O-Ring Retainer	316 Stainless Steel
30	Retainer Lock Screw	316 Stainless Steel
31	Modulator Cap Screw	316 Stainless Steel
32	Socket Head Cap Screw	316 Stainless Steel
33	Modulator Base O-Ring	Select
34	Modulator Stop O-Ring	Select
35	Modulator Seat O-Ring	Select
36	Modulator Piston Bottom O-Ring	Select
37	Piston Bottom Spring Seal	Teflon®
38	Piston Top Spring Seal	Teflon®
49	Spring Cover	Peek (Polyetheretherketone)
60	Vent Assembly	-
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
61	Top Plate	316 Stainless Steel
62	Set Screw	316 Stainless Steel
63	Bonnet	SA351 Grade CF8M Stainless Steel

NOTE: 1 When vented bonnet option is selected for steam service, an Inconel X750® spring is supplied.

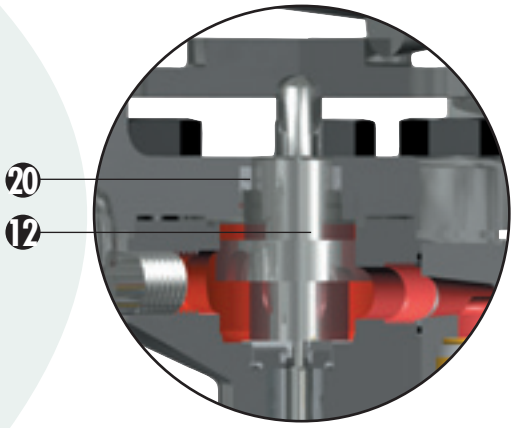
Description

The **Consolidated** 39MV Pilot Operated Safety Relief Valve is a non-flowing modulating pilot valve that provides exceptional performance and stable operation. The 39MV design controls the attached main valve so as to relieve only enough system pressure to control the system upset, thereby minimizing the media lost. This patented technology is the latest advancement in pilot design within the pressure range of 15 psig to 3750 psig for vapor, liquid and steam service. The 39MV design is the only non-flowing modulating valve of its kind available with adjustable blowdown.

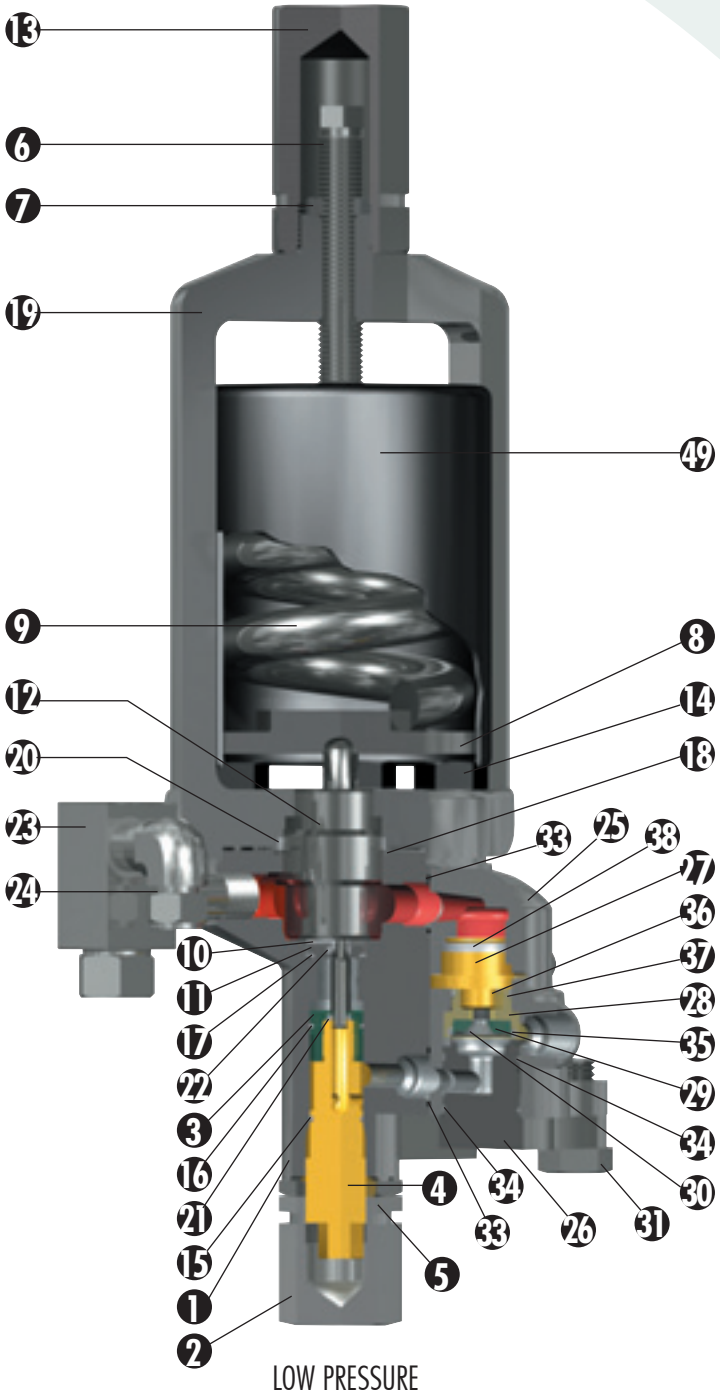
This unique modulator is a simple addition to the 39PV pop action design. The simplicity of design allows for easier maintenance and for lower spare parts inventory.



BONNET OPTION



HIGH PRESSURE
(751 - 3750 psig)



LOW PRESSURE
(15 - 750 psig)

2900 Series Type 39MV Pilot

Special Materials - Alloy 20

Corrosive Service - Alloy Materials[1, 2]

	Component	Construction Variation	
		A1	A4
1	Main Base	Alloy 20	Alloy 20
2	Adjuster Cap	316 Stainless Steel	Alloy 20
3	Adjuster Top	Alloy 20	Alloy 20
4	Adjuster Bottom	Alloy 20	Alloy 20
5	Adjuster Lock Nut	316 Stainless Steel	Alloy 20
6	Compression Screw	316 Stainless Steel	Alloy 20
7	Compression Screw Lock Nut	316 Stainless Steel	Alloy 20
8	Spring Washer	316 Stainless Steel	Alloy 20
9	Spring	Chrome Steel (Phosphated)	Inconel® X750
10	Insert Top	Alloy 20	Alloy 20
11	Insert Bottom	Alloy 20	Alloy 20
12	Main Piston	Alloy 20	Alloy 20
13	Compression Screw Cap	316 Stainless Steel	Alloy 20
14	Yoke Cap Screw	316 Stainless Steel	Alloy 20
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	Alloy 20	Alloy 20
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector	—	—
	- Ball	Alloy 20	Alloy 20
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Alloy 20	Alloy 20
	- Plug	Alloy 20	Alloy 20
	- Tube Filter	Alloy 20	Alloy 20
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Alloy 20
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Modulator Base	Alloy 20	Alloy 20
26	Modulator Stop	Alloy 20	Alloy 20
27	Modulator Piston Top	Alloy 20	Alloy 20
28	Modulator Piston Bottom	Alloy 20	Alloy 20
29	O-Ring Retainer	Alloy 20	Alloy 20
30	Retainer Lock Screw	Alloy 20	Alloy 20
31	Modulator Cap Screw	316 Stainless Steel	Alloy 20
32	Socket Head Cap Screw (not shown)	316 Stainless Steel	Alloy 20
33	Modulator Base O-Ring	Select	Select
34	Modulator Stop O-Ring	Select	Select
35	Modulator Seat O-Ring	Select	Select
36	Modulator Piston Bottom O-Ring	Select	Select
37	Piston Bottom Spring Seal	Teflon®	Teflon®
38	Piston Top Spring Seal	Teflon®	Teflon®
49	Spring Cover	Peek (Polyetheretherketone)	Peek (Polyetheretherketone)
60	Vent Assembly	—	—
	- Male Elbow	316 Stainless Steel	Alloy 20
	- Screen	304 Stainless Steel	304 Stainless Steel
61	Top Plate	Alloy 20	Alloy 20
62	Set Screw	316 Stainless Steel	Alloy 20
63	Bonnet	316 Stainless Steel	Alloy 20

NOTES:

1. The materials in red denote variation from standard material construction.
2. To specify valves, add material designation to the valve type 39MV/A4.

2900 Series Type 39MV Pilot

Special Materials - Duplex

Corrosive Service - Duplex Materials[1, 2]

	Component	Construction Variation	
		D1	D4
1	Main Base	Duplex	Duplex
2	Adjuster Cap	316 Stainless Steel	Duplex
3	Adjuster Top	Duplex	Duplex
4	Adjuster Bottom	Duplex	Duplex
5	Adjuster Lock Nut	316 Stainless Steel	Duplex
6	Compression Screw	316 Stainless Steel	Duplex
7	Compression Screw Lock Nut	316 Stainless Steel	Duplex
8	Spring Washer	316 Stainless Steel	Duplex
9	Spring	Chrome Steel (Phosphated)	Inconel® X750
10	Insert Top	Duplex	Duplex
11	Insert Bottom	Duplex	Duplex
12	Main Piston	Duplex	Duplex
13	Compression Screw Cap	316 Stainless Steel	Duplex
14	Yoke Cap Screw	316 Stainless Steel	Duplex
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	Duplex	Duplex
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector	—	—
	- Ball	Duplex	Duplex
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Duplex	Duplex
	- Plug	Duplex	Duplex
	- Tube Filter	Duplex	Duplex
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Duplex
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Modulator Base	Duplex	Duplex
26	Modulator Stop	Duplex	Duplex
27	Modulator Piston Top	Duplex	Duplex
28	Modulator Piston Bottom	Duplex	Duplex
29	O-Ring Retainer	Duplex	Duplex
30	Retainer Lock Screw	Duplex	Duplex
31	Modulator Cap Screw	316 Stainless Steel	Duplex
32	Socket Head Cap Screw	316 Stainless Steel	Duplex
33	Modulator Base O-Ring	Select	Select
34	Modulator Stop O-Ring	Select	Select
35	Modulator Seat O-Ring	Select	Select
36	Modulator Piston Bottom O-Ring	Select	Select
37	Piston Bottom Spring Seal	Teflon®	Teflon®
38	Piston Top Spring Seal	Teflon®	Teflon®
49	Spring Cover	Peek (Polyetheretherketone)	Peek (Polyetheretherketone)
60	Vent Assembly	—	—
	- Male Elbow	316 Stainless Steel	Duplex
	- Screen	304 Stainless Steel	304 Stainless Steel
61	Top Plate	Duplex	Duplex
62	Set Screw	316 Stainless Steel	Duplex
63	Bonnet	316 Stainless Steel	Duplex

NOTES:

1. The materials in red denote variation from standard material construction.
2. To specify valves, add material designation to the valve type 39MV/D4.

2900 Series Type 39MV Pilot

Special Materials - Hastelloy®

Corrosive Service - Hastelloy® Materials[1, 2]

	Component	Construction Variation	
		H1	H4
1	Main Base	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
2	Adjuster Cap	316 Stainless Steel	Hastelloy®
3	Adjuster Top	Hastelloy®	Hastelloy®
4	Adjuster Bottom	Hastelloy®	Hastelloy®
5	Adjuster Lock Nut	316 Stainless Steel	Hastelloy®
6	Compression Screw	316 Stainless Steel	Hastelloy®
7	Compression Screw Lock Nut	316 Stainless Steel	Hastelloy®
8	Spring Washer	316 Stainless Steel	Hastelloy®
9	Spring	Chrome Steel (Phosphated)	Inconel® X750
10	Insert Top	Hastelloy®	Hastelloy®
11	Insert Bottom	Hastelloy®	Hastelloy®
12	Main Piston	Hastelloy®	Hastelloy®
13	Compression Screw Cap	316 Stainless Steel	Hastelloy®
14	Yoke Cap Screw	316 Stainless Steel	Hastelloy®
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector	—	—
	- Ball	Hastelloy®	Hastelloy®
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Hastelloy®	Hastelloy®
	- Plug	Hastelloy®	Hastelloy®
	- Tube Filter	Hastelloy®	Hastelloy®
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Hastelloy®
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Modulator Base	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
26	Modulator Stop	SA494 CW12MW Nickel Alloy	SA494 CW12MW Nickel Alloy
27	Modulator Piston Top	Hastelloy®	Hastelloy®
28	Modulator Piston Bottom	Hastelloy®	Hastelloy®
29	O-Ring Retainer	Hastelloy®	Hastelloy®
30	Retainer Lock Screw	Hastelloy®	Hastelloy®
31	Modulator Cap Screw	316 Stainless Steel	Hastelloy®
32	Socket Head Cap Screw	316 Stainless Steel	Hastelloy®
33	Modulator Base O-Ring	Select	Select
34	Modulator Stop O-Ring	Select	Select
35	Modulator Seat O-Ring	Select	Select
36	Modulator Piston Bottom O-Ring	Select	Select
37	Piston Bottom Spring Seal	Teflon®	Teflon®
38	Piston Top Spring Seal	Teflon®	Teflon®
49	Spring Cover	Peek (Polyetheretherketone)	Peek (Polyetheretherketone)
60	Vent Assembly	—	—
	- Male Elbow	316 Stainless Steel	Hastelloy®
	- Screen	304 Stainless Steel	304 Stainless Steel
61	Top Plate	Hastelloy®	Hastelloy®
62	Set Screw	316 Stainless Steel	Hastelloy®
63	Bonnet	316 Stainless Steel	Hastelloy®

NOTES:

1 The materials in red denote variation from standard material construction.

2 To specify valves, add material designation to the valve type 39MV/H4.

2900 Series Type 39MV Pilot

Special Materials - Monel®

Corrosive Service - Monel® Materials[1, 2]

	Component	Construction Variation	
		M1	M4
1	Main Base	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
2	Adjuster Cap	316 Stainless Steel	Monel®
3	Adjuster Top	Monel®	Monel®
4	Adjuster Bottom	Monel®	Monel®
5	Adjuster Lock Nut	316 Stainless Steel	Monel®
6	Compression Screw	316 Stainless Steel	Monel®
7	Compression Screw Lock Nut	316 Stainless Steel	Monel®
8	Spring Washer	316 Stainless Steel	Monel®v
9	Spring	Chrome Steel (Phosphated)	Inconel® X750
10	Insert Top	Monel®	Monel®
11	Insert Bottom	Monel®	Monel®
12	Main Piston	Monel®	Monel®
13	Compression Screw Cap	316 Stainless Steel	Monel®
14	Yoke Cap Screw	316 Stainless Steel	Monel®
15	Adjuster Bottom O-Ring	Select	Select
16	Adjuster Top O-Ring	Select	Select
17	Insert O-Ring	Select	Select
18	Main Base O-Ring	Select	Select
19	Yoke	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
20	Main Piston Spring Seal	Teflon®	Teflon®
21	Adjuster Top Spring Seal	Teflon®	Teflon®
22	Insert Spring Seal	Teflon®	Teflon®
23	Field Test Connector	—	—
	- Ball	Monel®	Monel®
	- Seat O-Ring	Select	Select
	- Plug O-Ring	Select	Select
	- Base	Monel®	Monel®
	- Plug	Monel®	Monel®
	- Tube Filter	Monel®	Monel®
24	Vent Assembly/Bug Screen		
	- Male Elbow	316 Stainless Steel	Monel®
	- Screen	304 Stainless Steel	304 Stainless Steel
25	Modulator Base	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
26	Modulator Stop	SA494 Gr. M35-1 Nickel Copper Alloy	SA494 Gr. M35-1 Nickel Copper Alloy
27	Modulator Piston Top	Monel®v	Monel®
28	Modulator Piston Bottom	Monel®	Monel®
29	O-Ring Retainer	Monel®	Monel®
30	Retainer Lock Screw	Monel®	Monel®
31	Modulator Cap Screw	316 Stainless Steel	Monel®
32	Socket Head Cap Screw	316 Stainless Steel	Monel®
33	Modulator Base O-Ring	Select	Select
34	Modulator Stop O-Ring	Select	Select
35	Modulator Seat O-Ring	Select	Select
36	Modulator Piston Bottom O-Ring	Select	Select
37	Piston Bottom Spring Seal	Teflon®	Teflon®
38	Piston Top Spring Seal	Teflon®	Teflon®
49	Spring Cover	Peek (Polyetheretherketone)	Peek (Polyetheretherketone)
60	Vent Assembly	—	—
	- Male Elbow	316 Stainless Steel	Monel®
	- Screen	304 Stainless Steel	304 Stainless Steel
61	Top Plate	Monel®	Monel®
62	Set Screw	316 Stainless Steel	Monel®
63	Bonnet	316 Stainless Steel	Monel®

NOTES:

1 The materials in red denote variation from standard material construction.

2 To specify valves, add material designation to the valve type 39MV/M4.

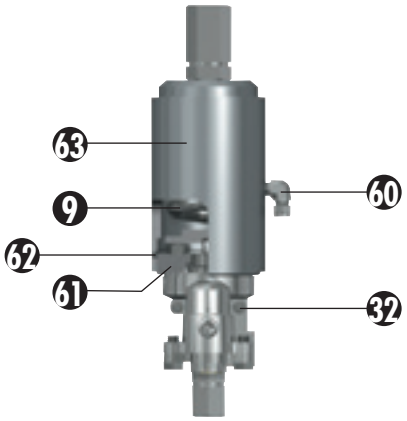
2900 Series Type 39MV Pilot

Special Materials - Sour Gas Trim (SG)

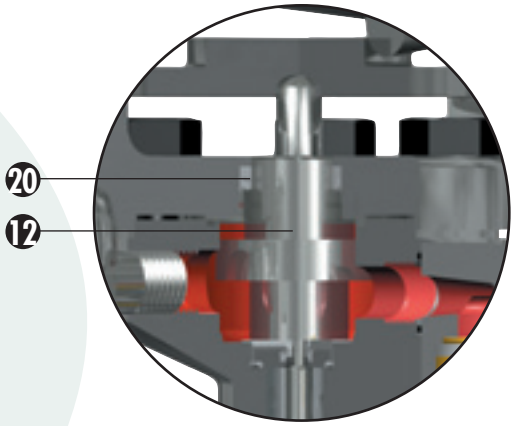
Materials for Sour Gas Service[1, 2]

	Component	Construction Variation SG
1	Main Base	SA351 Grade CF8M Stainless Steel
2	Adjuster Cap	316 Stainless Steel
3	Adjuster Top	316 Stainless Steel
4	Adjuster Bottom	316 Stainless Steel
5	Adjuster Lock Nut	316 Stainless Steel
6	Compression Screw	316 Stainless Steel
7	Compression Screw Lock Nut	316 Stainless Steel
8	Spring Washer	316 Stainless Steel
9	Spring	Inconel® X750
10	Insert Top	316 Stainless Steel
11	Insert Bottom	316 Stainless Steel
12	Main Piston	316 Stainless Steel
13	Compression Screw Cap	316 Stainless Steel
14	Yoke Cap Screw	316 Stainless Steel
15	Adjuster Bottom O-Ring	Select
16	Adjuster Top O-Ring	Select
17	Insert O-Ring	Select
18	Main Base O-Ring	Select
19	Yoke	SA351 Grade CF8M Stainless Steel
20	Main Piston Spring Seal	Teflon®
21	Adjuster Top Spring Seal	Teflon®
22	Insert Spring Seal	Teflon®
23	Field Test Connector	—
	- Ball	316 Stainless Steel
	- Seat O-Ring	Select
	- Plug O-Ring	Select
	- Base	316 Stainless Steel
	- Plug	316 Stainless Steel
	- Tube Filter	316 Stainless Steel
24	Vent Assembly/Bug Screen	
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
25	Modulator Base	SA351 Grade CF8M Stainless Steel
26	Modulator Stop	SA351 Grade CF8M Stainless Steel
27	Modulator Piston Top	316 Stainless Steel
28	Modulator Piston Bottom	316 Stainless Steel
29	O-Ring Retainer	316 Stainless Steel
30	Retainer Lock Screw	316 Stainless Steel
31	Modulator Cap Screw	316 Stainless Steel
32	Socket Head Cap Screw	316 Stainless Steel
33	Modulator Base O-Ring	Select
34	Modulator Stop O-Ring	Select
35	Modulator Seat O-Ring	Select
36	Modulator Piston Bottom O-Ring	Select
37	Piston Bottom Spring Seal	Teflon®
38	Piston Top Spring Seal	Teflon®
49	Spring Cover	Peek (Polyetheretherketone)
60	Vent Assembly	—
	- Male Elbow	316 Stainless Steel
	- Screen	304 Stainless Steel
61	Top Plate	316 Stainless Steel
62	Set Screw	316 Stainless Steel
63	Bonnet	SA351 Grade CF8M Stainless Steel

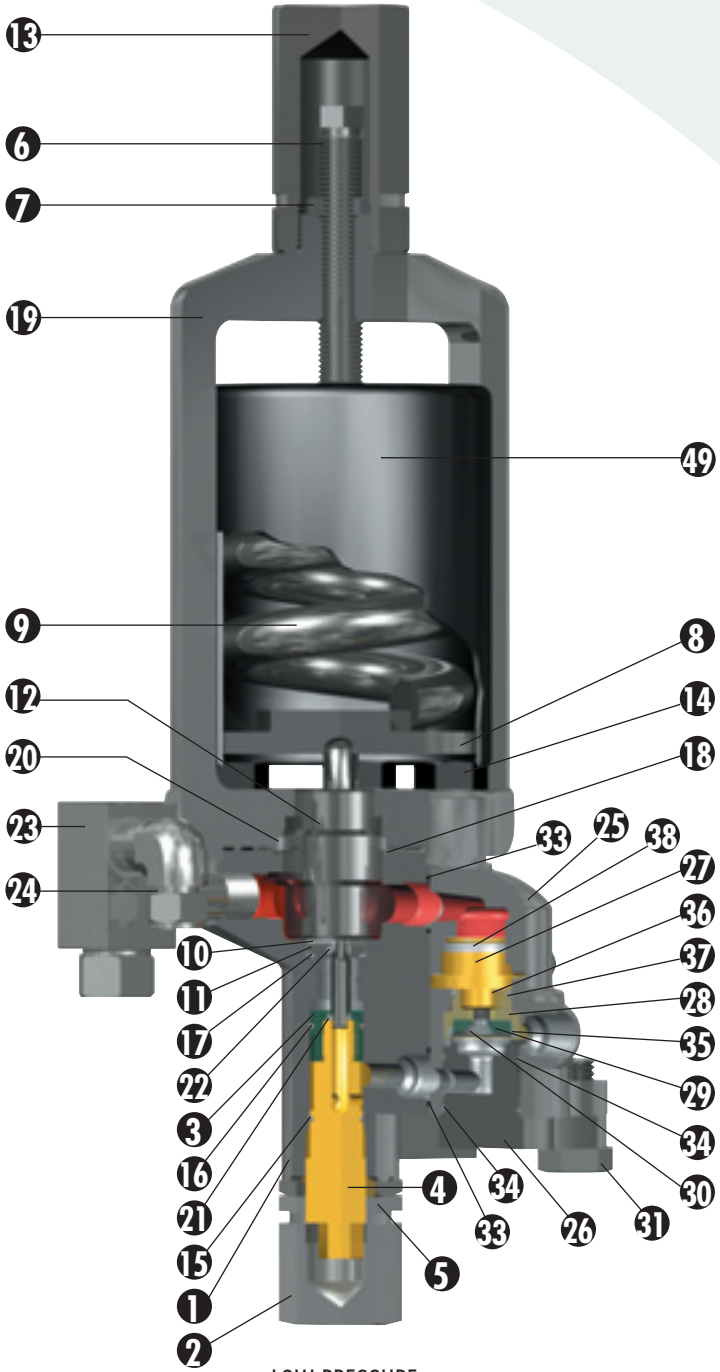
NOTES:
1 The materials in red denote variation from standard material construction.
2 To specify valves, add material designation to the valve type 39MV/SG.



BONNET OPTION



HIGH PRESSURE
(751 - 3750 psig)



LOW PRESSURE
(15 - 750 psig)

Options and Accessories

Manual Blowdown Valve

An optional manual blowdown valve is available for relieving the pilot operated safety relief valve. Consult factory for applications requiring a pneumatic or electrical solenoid blowdown valve which may be connected to a distant location, such as an operator station, for remote actuation. The blowdown valve is ported directly to the main dome area, so that the media in the dome is vented when the blowdown valve is actuated, thus allowing the main valve to open.

For all applications on air, water over 140°F, or steam service, ASME Section VIII - Division 1 requires each pressure relief valve to have a lifting device such as a blowdown valve or a means of connecting or applying pressure to the pilot to verify that the moving parts essential to good operation are free to move. (Reference UG 136(a)(3)).

The lifting lever or blowdown valve may be omitted under Code Case 2203. However, Dresser requires that all orders for pressure relief valves without levers or blowdown valves for steam, air and water over 140°F state specifically that the valves are being purchased per Code Case 2203. The purchaser is responsible for obtaining jurisdictional authorization for use of Code Case 2203.

Field Test Connection

A 1/4" FNPT field test connection is standard on all pilot valve types. This allows the stroking of the valve with an auxiliary media, e.g. air or nitrogen. An internal check valve is present in the field test connection isolating the inlet media from the test media and at the same time, allowing the valve to open normally in the event of a system overpressurization during a field test.

Filters

Filter options are available for dirty applications. These filters are installed in the pilot inlet sensing line.

For the 39PV and 39MV, an optional sensing line filter is available. This filter has a 316 stainless steel body, Teflon® seals, and a 40-50 micron stainless steel filter element. This filter is standard for steam service.

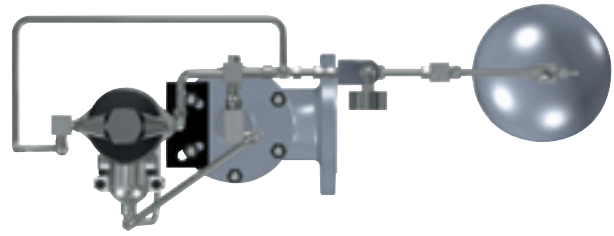
Other high capacity filter options include: (1) a carbon steel cadmium coated filter body with a 35 micron stainless steel element, (2) a stainless steel filter body, and (3) an entirely stainless steel filter arrangement. The O-Ring in the filters for steam service will be Teflon®. These filters may be equipped with a manually operated needle valve which allows for purging the filtered material while the valve is in operation.

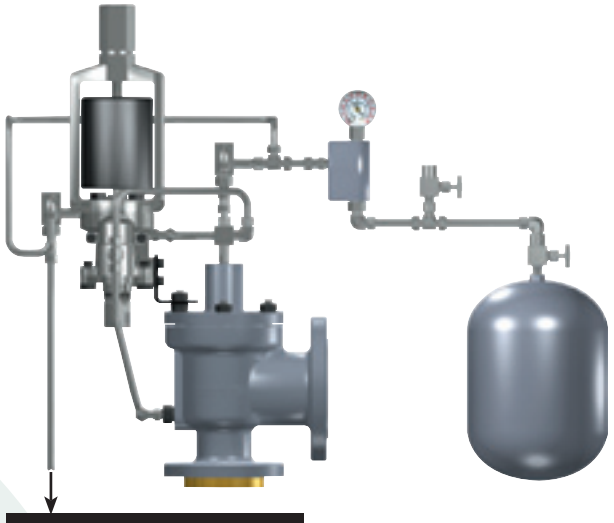
All filter elements are stainless steel, and all filters, including carbon steel, conform to NACE Standard MR0175.

A dual filter arrangement is available for applications in which the customer is unsure of the filter maintenance requirements. In these cases, a preventive maintenance program may be developed by monitoring the filters, without taking the valve off line.

Backflow Preventer

When the pilot operated safety relief valve is not vented directly to atmosphere, it is possible to build up back pressure in the discharge line. This is typical in situations where several valves manifold into a common discharge header. Should the discharge line pressure exceed the valve inlet pressure, it could cause the piston to lift and allow reverse flow through the main valve. This situation can be eliminated through the use of the Backflow Preventer.





Pipe to system pressure.

Spring Cover (optional)

Pilot Valve Tester

The pilot valve test indicator is available for the modulating and pop action pilot valves. The valve test indicator measures the set pressure of the pilot, while maintaining pressure on the main valve dome area; thereby, allowing only the pilot to actuate. The system shown below is available for remote or local testing.

Spring Cover

An optional metal spring cover that fits over the yoke arms.

Bonnet

A vented Bonnet that replaces the Yoke provides protection of personnel. The bonnet will protect the spring from external debris and weather conditions (See page 2900.28 or 2900.36).

Pressure Differential Switch

Electrical: A pressure differential switch is available which may be wired to an operator station or some other remote location. The switch will provide a signal that indicates when the main valve is opening. The standard pressure differential switch is a single pole, double throw, rate at 5 amps and 30 volts DC with a NEMA 4 enclosure. (For other configurations, consult the factory.)

Pneumatic: For applications that do not permit an electrical differential switch, an option is available to provide pneumatic signal to indicate when the main valve opens.

Remote Pilot Mounting

The 39PV and 39MV pilots can be mounted separately from the main valve. Remote pilot mounting will allow heating or cooling the pilot in case ambient conditions are outside the scope of the pilot. It will also enable the user to group several pilots together for control of ambient conditions in a smaller space. In addition, this promotes easier maintenance.

Dual Pilots

A dual pilot arrangement is available for applications in which the pilot valve O-Rings require monitoring and/or maintenance more often than the main valve. In this installation, the pilot valves may be alternated for maintenance, without bringing the system down.

NOTE: For all option and accessory material variations, contact the factory.

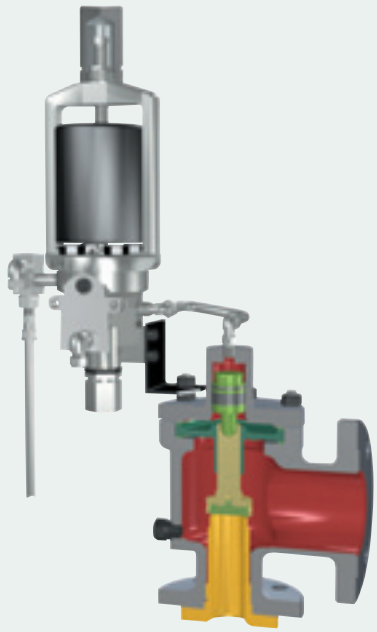
Sensing Ring Option

Remote sensing is the standard pressure connection to the pilot valve used on the 2900 pilot operated relief valve. However, with the sensing ring option, the pilot valve pressure can be picked up through a sensing ring located just before the inlet of the main valve.

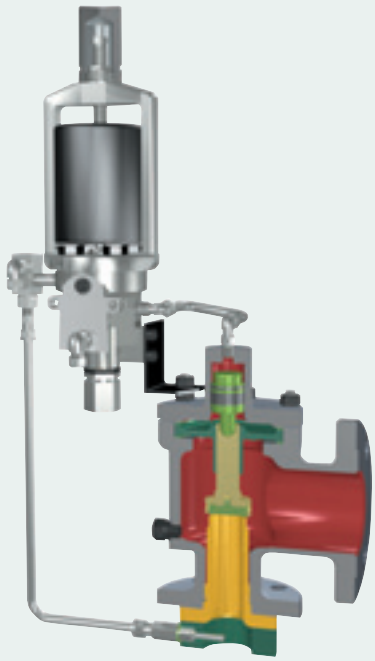
This is required because the base, unlike the 3900 series pilot operated safety relief valve, utilizes a through or full nozzle design. As a result of using the through nozzle design, all metal wetted parts in the closed position for the 2900 series pilot operated safety relief valve are made of 316SS material. These parts consist of the sensing ring, nozzle, disc, dome coverplate, dome piston, tubing, and pilot valve. By simply upgrading the base material to 316SS, the valve would become an all 316SS design.

The center to face dimensions for a 1900 valve being replaced or converted should be reviewed. The 2900 *Center to Outlet* dimension remains the same as a 1900 valve. However, the *Center to Inlet* dimension increases by 1-1/2" due to the test ring requirement. In addition, the thicknesses of two inlet gaskets need to be added. The two gaskets are supplied by the customer and go in between the inlet nozzle flange and the sensing ring and also in between the sensing ring and the system flange.

NOTE: For closed systems where the *Takeout* dimensions cannot be changed, remote sensing should be used.



2900 Pilot Valve with Remote Sensing (Standard)



2900 Pilot Valve with Inlet Sensing through the Sensing Ring

Heat Exchanger Option

Pilot valves are traditionally limited to the service ranges on its elastomers and Teflon® products.

The 2900 series pilot valve, metal seat design, is able to operate at a design temperature above 505°F and below -40°F with the use of an air-cooled or air-warmed Heat Exchanger. For temperatures from 506°F to 1200°F, or temperatures from -41°F to -450°F, consult factory. The Heat Exchanger is located upstream of the pilot valve in order to condition the temperature of the process fluid to within the acceptable temperature range of the pilot and soft goods(see illustrations below). It is sized to maintain seal integrity, proper valve function and performance.

The Heat Exchanger is sized and selected to meet the service conditions for each application and valve size. The following information is needed to properly size a Heat Exchanger by a Factory Engineer.

Heat Exchanger Sizing - Input Form

Date: _____

Customer: _____

For Valve Model Number: _____

Steam Input Required

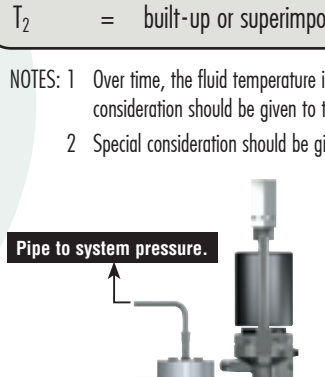
P_1	=	Set Pressure (psig)		psig
Ta max.	=	Maximum temperature of ambient air °F [1]		°F
Ta min.	=	Minimum temperature of ambient air °F [1]		°F
T_1	=	media temperature before it enters the heat exchanger °F		°F
T_2	=	built-up or superimposed backpressure temperature °F if applicable [2]		°F

Gas and Liquid Input Required

P_1	=	Set Pressure (psig)		psig
p	=	density of media at inlet conditions lbm/ft^3		lbm/ft^3
Cp	=	specific heat of media at inlet conditions (btu/lbm*°R)		btu/lbm*°R
Ta max.	=	Maximum temperature of ambient air °F [1]		°F
Ta min.	=	Minimum temperature of ambient air °F [1]		°F
T_1	=	media temperature before it enters the heat exchanger °F		°F
T_2	=	built-up or superimposed backpressure temperature °F if applicable [2]		°F

NOTES: 1 Over time, the fluid temperature in a Heat Exchanger may approach the ambient temperature. Special consideration should be given to the freezing point of a condensed fluid.

2 Special consideration should be given to back pressure temperature to determine if the application can be met.



Heat Exchanger with Remote Sensing (Standard)
(Picture shows High Temperature Configuration)

Heat Exchanger Flow and Convection with Sensing Ring
(Picture shows High Temperature Configuration)

Dirty Service Option

Severe dirty service, precipitation and viscous fluid problems can be solved using the dirty service option offered on the 2900 POSRV. A dirty service option can be added to the standard pilot valve. The kit contains a 316 SS chamber, an isolation seal and an extended pilot piston. The module is positioned at the top of the pilot valve body and below the pilot valve yoke. Crucial valve components such as the modulator, dome assembly, vent, and inlet seals never come in contact with the dirty system media. The process media pressure still controls the set pressure and blowdown of the POSRV.

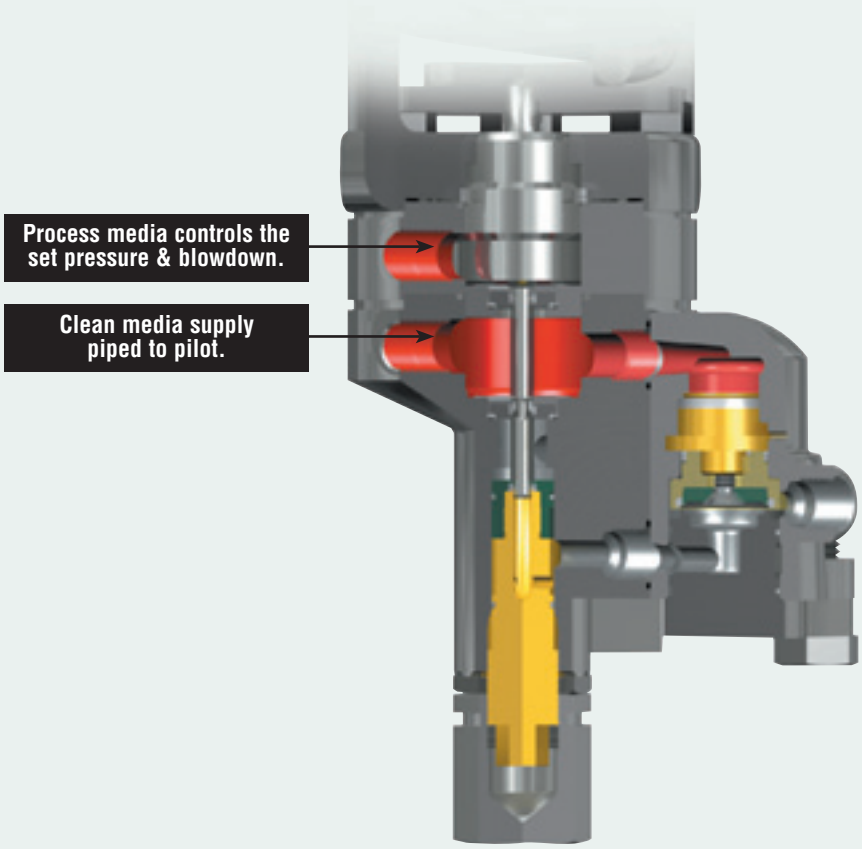
For applications requiring the main valve to relieve the dirty fluid, an alternate clean media supply is piped to the pilot. The alternate clean media must be set at the same pressure as the set pressure of the pilot valve, but cannot exceed 3750 psig, which is the design limit of the pilot valve. In the event that the alternate clean media supply is lost, the main valve will fail in the open position.

For applications requiring the main valve to relieve clean fluid upstream of the dirty process in order to maintain the dirty process pressure at safe levels, the dirty process pressure is supplied to the dirty service module. The sensing line from the main valve and the connection to the main valve dome is connected to the pilot in the normal manner. The pilot is set to operate at the design pressure of the dirty process. When the dirty process pressure reaches the set to open pressure of the pilot, the pilot is stroked by the increase in the dirty process pressure and the pilot performs the block and bleed operations to effect opening of the main valve. When the dirty process pressure reaches the set to close pressure of the pilot, the pilot is stroked by the reduction in the dirty process pressure and the pilot performs the block and bleed operations to effect the closing of the main valve.

The dirty service module is a closed chamber. The flow of dirty process media to the pilot valve is only that volume required to stroke the pilot in response to increasing dirty process pressure. The limited volume of flowing dirty media entering the pilot makes plugging of the module an unlikely possibility. However, if plugging of the module is a concern, the module can be filled with a compatible clean liquid and a siphon tube can be fitted in the connection line between the pilot module and the dirty process.

The dirty service option can provide some cost savings in material selection for corrosive service. It is possible that only the material of construction for the dirty service option will need to be upgraded. The remaining parts in contact with clean media could use standard materials of construction.

NOTE: For special material options on the dirty service option consult the factory.



MPV Dirty Service Pilot

Alternate Piping Arrangements

39PV with Pilot Valve Vented to Atmosphere

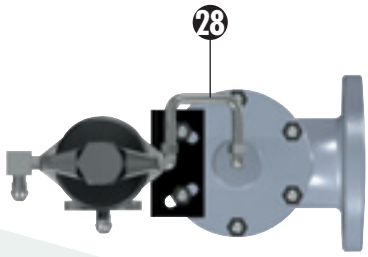
39MV with Pilot Valve Vented to Atmosphere

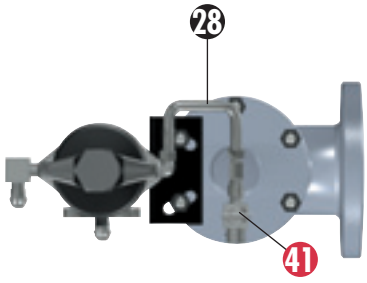
39 PV with Pilot Valve Vented to Body Bowl

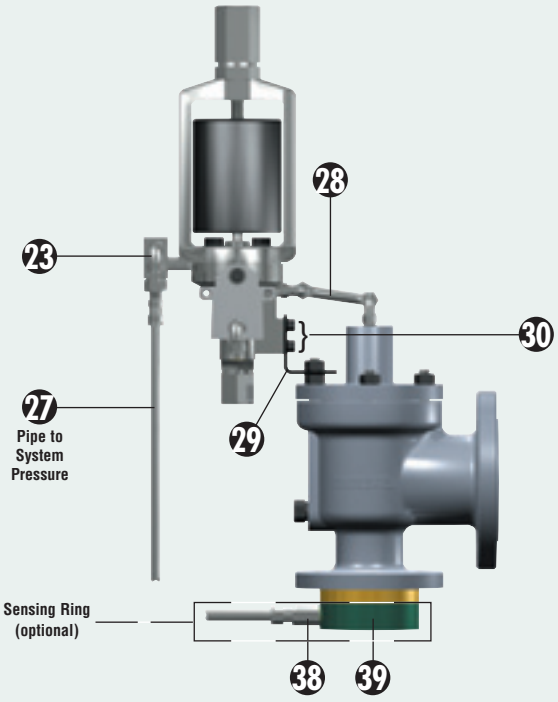
39 MV with Pilot Valve Vented to Body Bowl

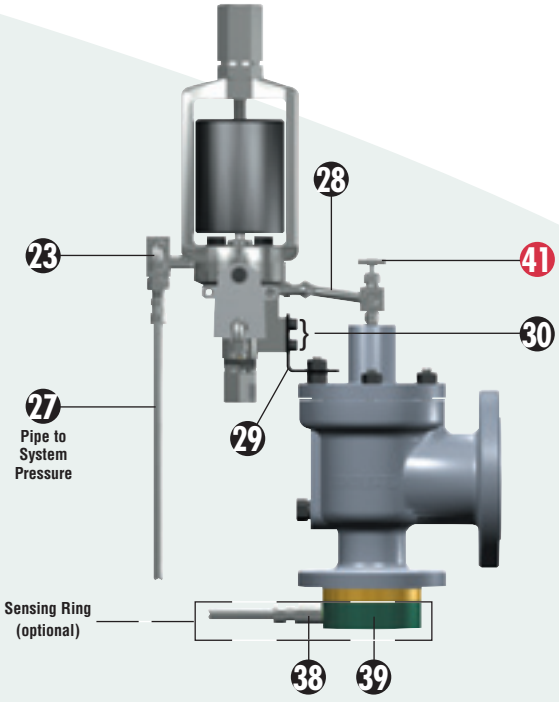
2900 Series Type 39PV Pop Pilot

(Vented to Atmosphere)









Pilot Valve w/ Standard Field Test Connection
(Standard For All Media Applications)

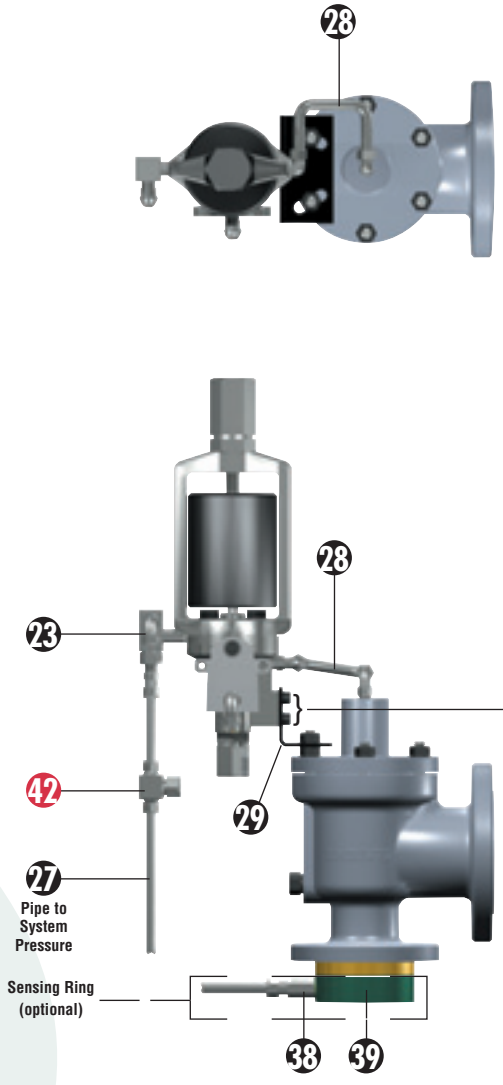
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel

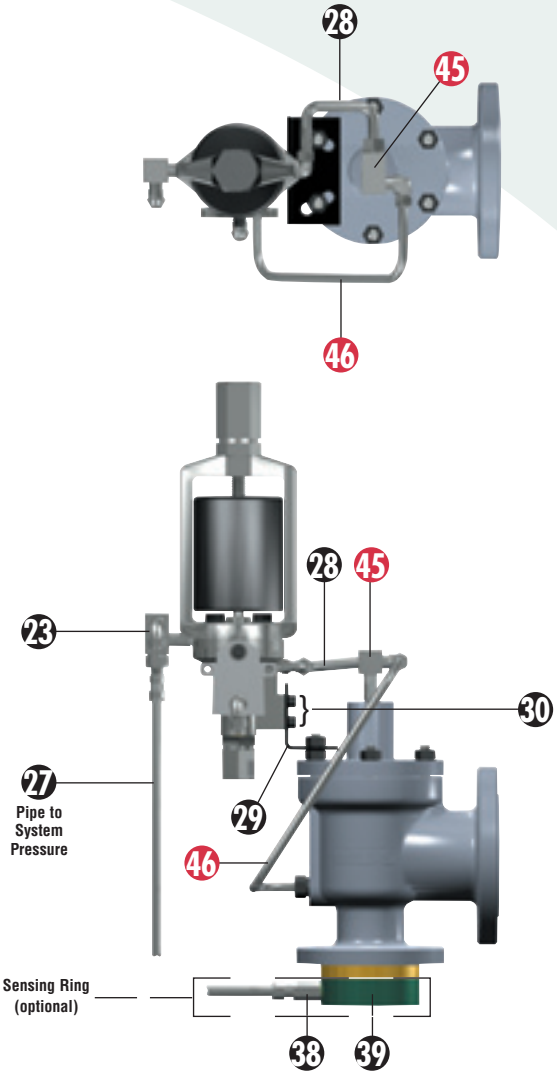
Pilot Valve w/ Manual Blowdown
(Optional For All Media Applications)

	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
41	Needle Valve (Manual Blowdown)	316 Stainless Steel

2900 Series Type 39PV Pop Pilot

(Vented to Atmosphere)





Pilot Valve w/ Pilot Supply Filter
(Optional For All Media Applications)

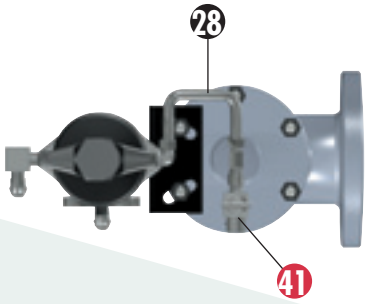
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
42	Pilot Supply Filter	316 Stainless Steel

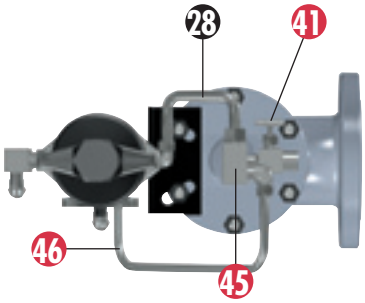
Pilot Valve w/ Backflow Preventer
(Optional For Liquid & Gas Applications)

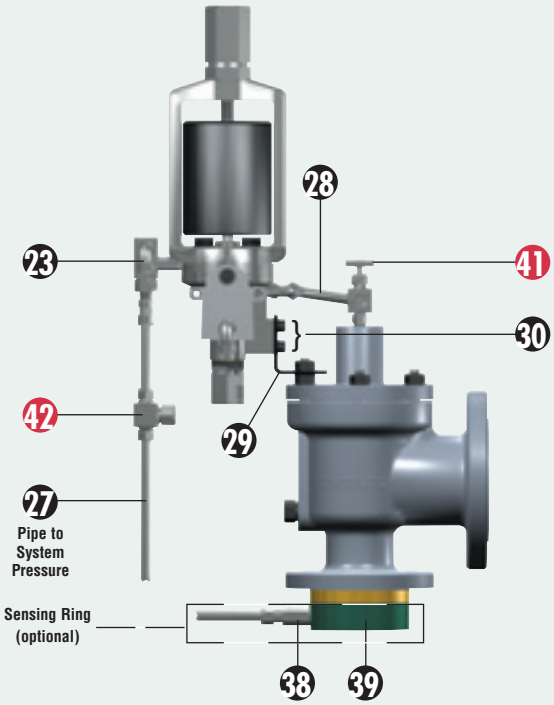
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
45	Backflow Preventer	316 Stainless Steel
46	Backflow Preventer Line	316 Stainless Steel

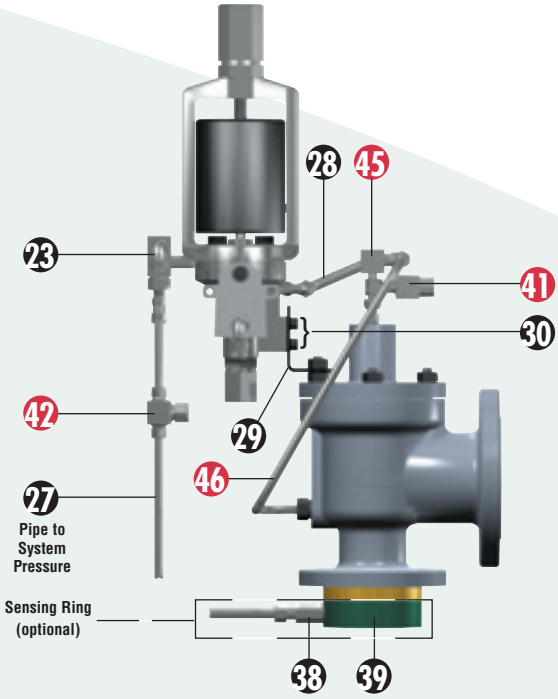
2900 Series Type 39PV Pop Pilot

(Vented to Atmosphere)









Pilot Valve w/ Manual Blowdown & Pilot Supply Filter
(Standard for Steam Applications)
(Optional for Liquid & Gas Applications)

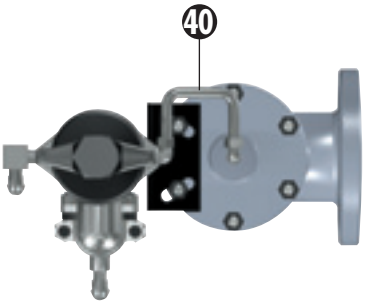
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
41	Needle Valve (Manual Blowdown)	316 Stainless Steel
42	Pilot Supply Filter	316 Stainless Steel

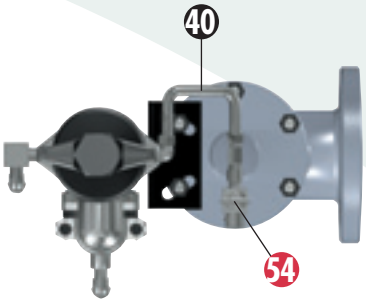
Pilot Valve w/ Backflow Preventer,
Manual Blowdown and Pilot Supply Filter
(Optional For Steam Applications)

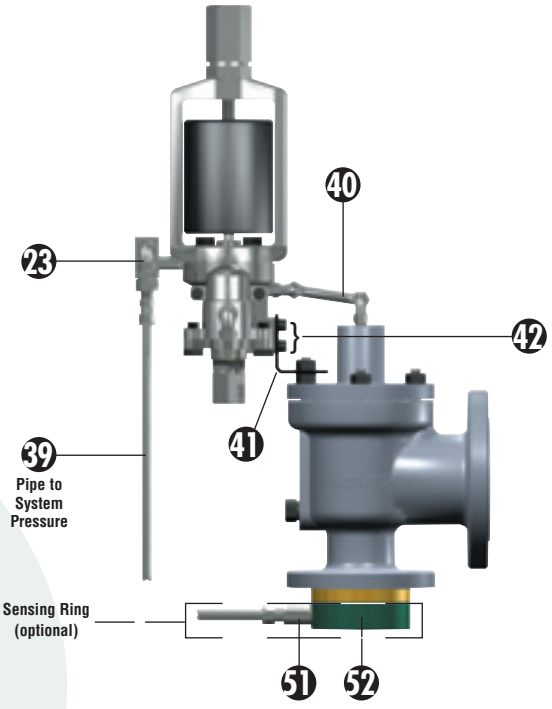
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
41	Needle Valve (Manual Blowdown)	316 Stainless Steel
42	Pilot Supply Filter	316 Stainless Steel
45	Backflow Preventer	316 Stainless Steel
46	Backflow Preventer Line	316 Stainless Steel

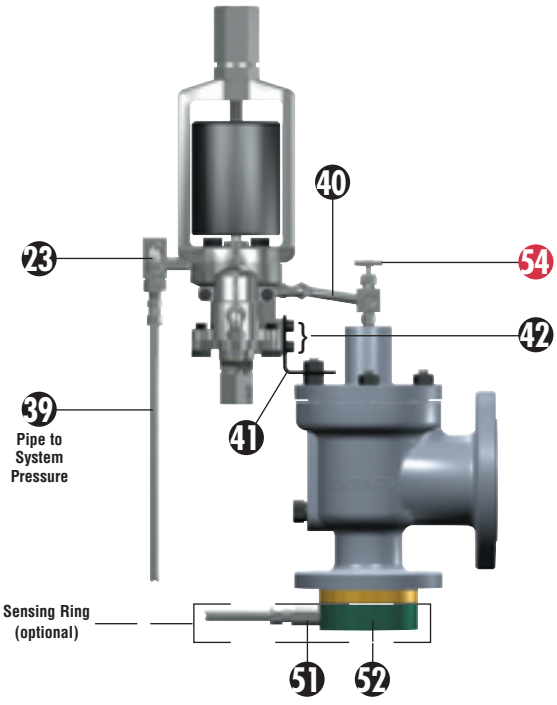
2900 Series Type 39MV Modulating Pilot

(Vented to Atmosphere)









Pilot Valve w/ Standard Field Test Connection
(Standard for All Media Applications)

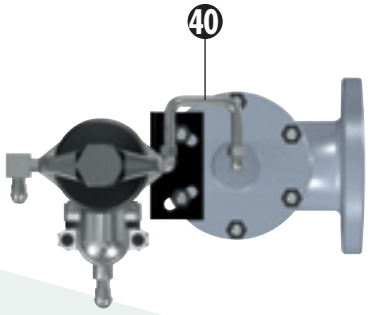
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel

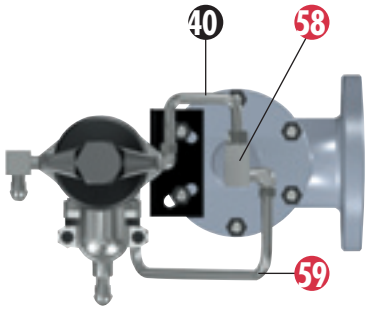
Pilot Valve w/ Manual Blowdown
(Optional for All Media Applications)

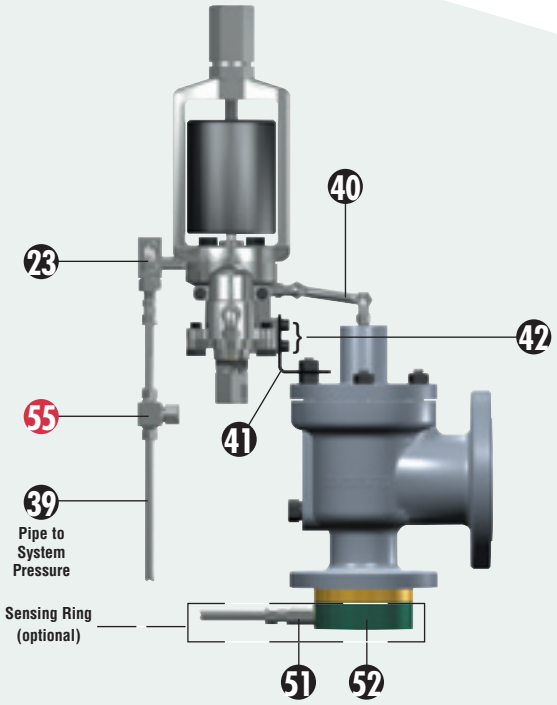
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
54	Needle Valve (Manual Blowdown)	316 Stainless Steel

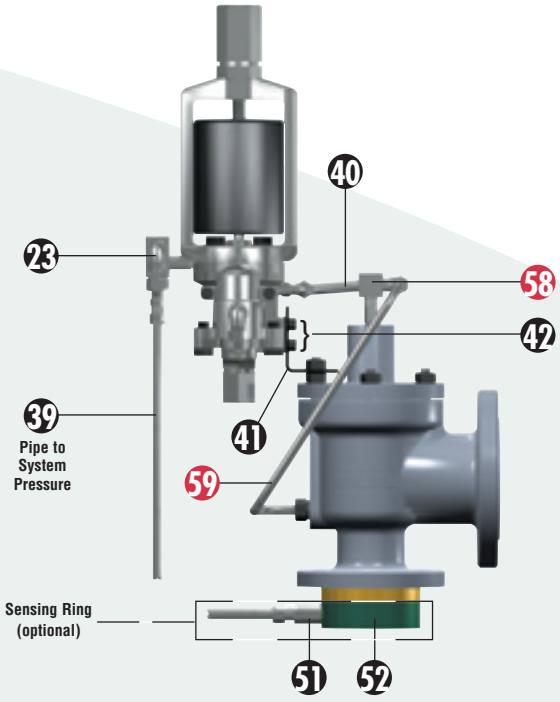
2900 Series Type 39MV Modulating Pilot

(Vented to Atmosphere)









Pilot Valve w/ Pilot Supply Filter
(Optional for All Media Applications)

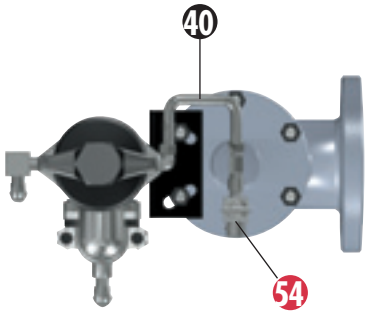
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
55	Pilot Supply Filter	316 Stainless Steel

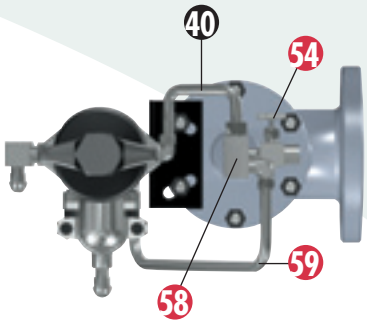
Pilot Valve w/ Backflow Preventer
(Optional for Liquid & Gas Applications)

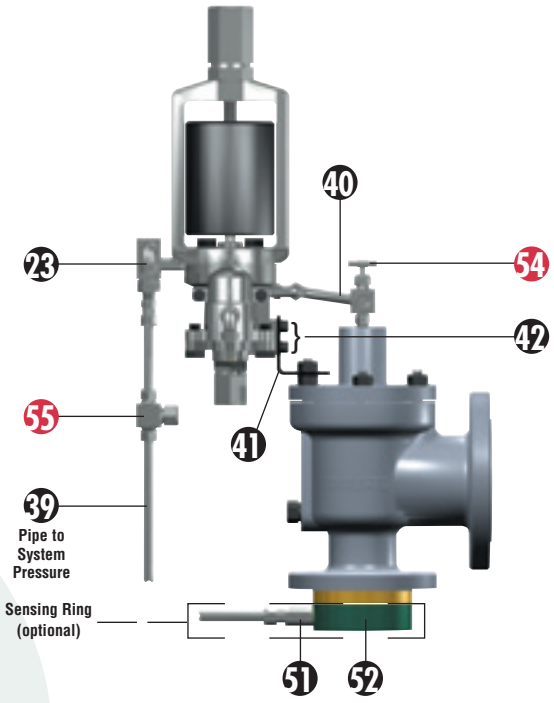
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
58	Backflow Preventer	316 Stainless Steel
59	Backflow Preventer Line	316 Stainless Steel

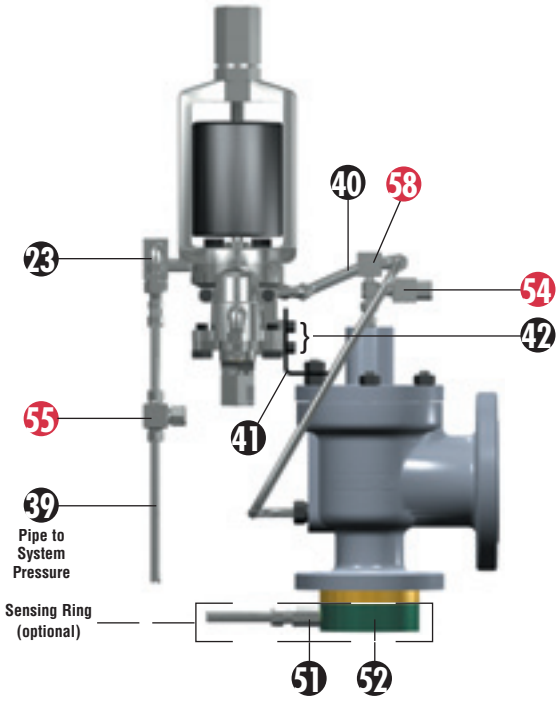
2900 Series Type 39MV Modulating Pilot

(Vented to Atmosphere)









Pilot Valve w/ Manual Blowdown & Pilot Supply Filter
(Standard for Steam Applications)
(Optional for Liquid & Gas Applications)

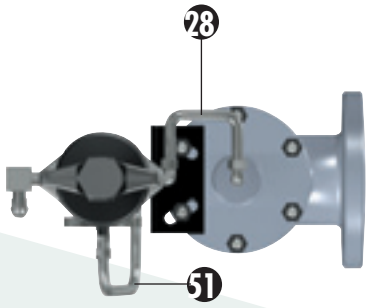
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
54	Needle Valve (Manual Blowdown)	316 Stainless Steel
55	Pilot Supply Filter	316 Stainless Steel

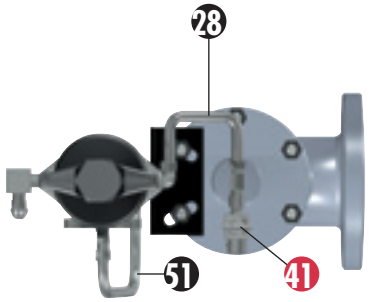
Pilot Valve w/ Backflow Preventer,
Manual Blowdown and Pilot Supply Filter
(Optional for Steam Applications)

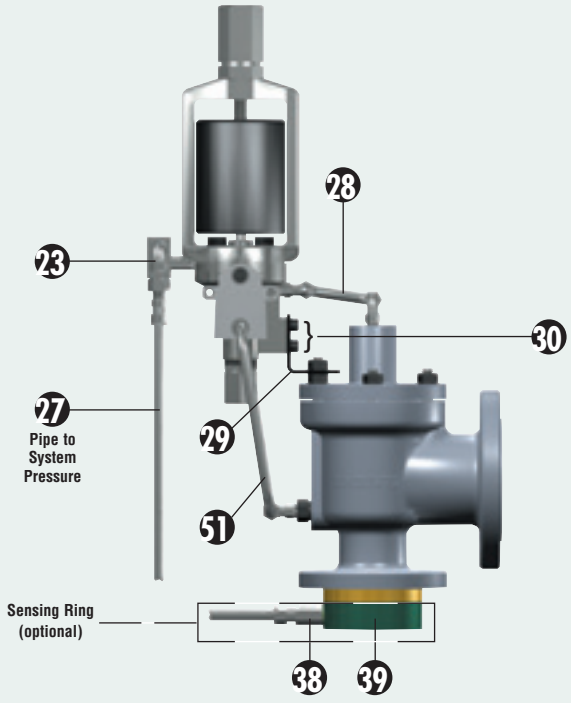
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
54	Needle Valve (Manual Blowdown)	316 Stainless Steel
55	Pilot Supply Filter	316 Stainless Steel
58	Backflow Preventer	316 Stainless Steel
59	Backflow Preventer Line	316 Stainless Steel

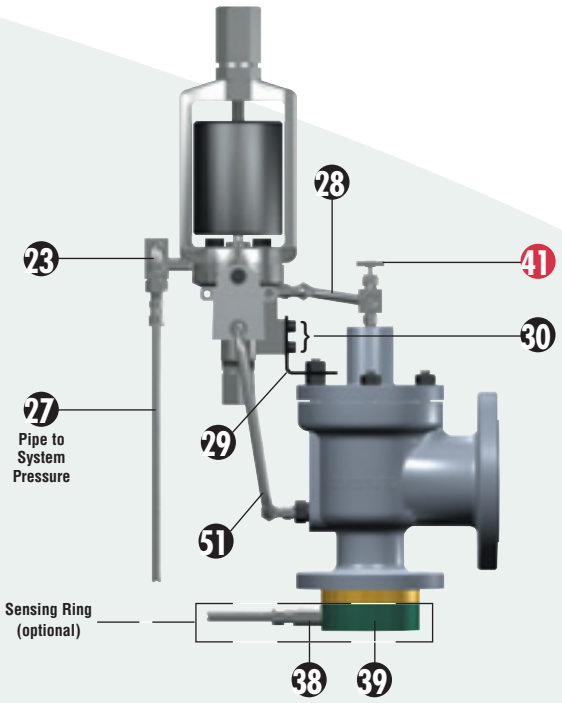
2900 Series Type 39PV Pop Pilot

(Vented to Body Bowl)









Pilot Valve w/ Standard Field Test Connection
(Standard For All Media Applications)

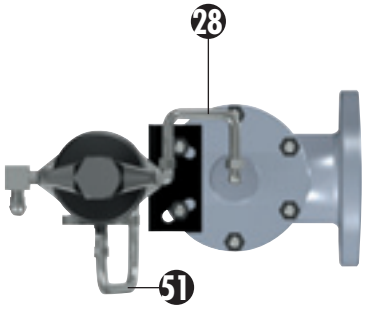
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
51	Discharge Line	316 Stainless Steel

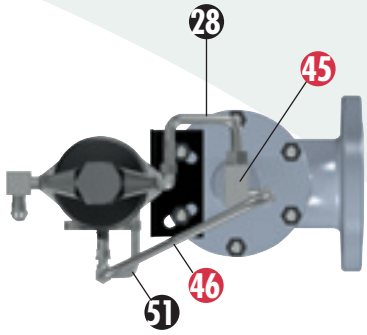
Pilot Valve w/ Manual Blowdown
(Optional For All Media Applications)

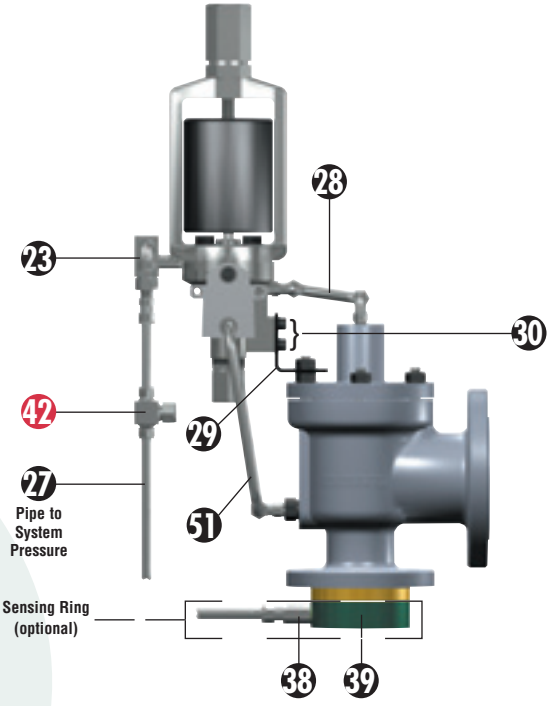
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
41	Needle Valve (Manual Blowdown)	316 Stainless Steel
51	Discharge Line	316 Stainless Steel

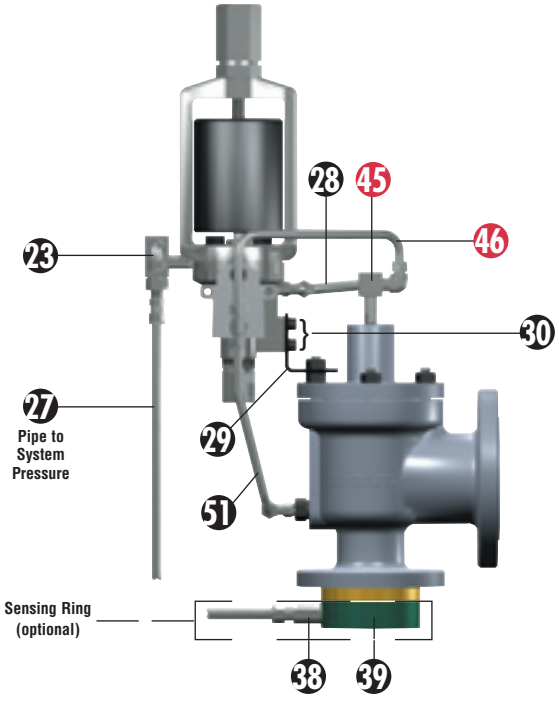
2900 Series Type 39PV Pop Pilot

(Vented to Body Bowl)









Pilot Valve w/ Pilot Supply Filter
(Optional For All Media Applications)

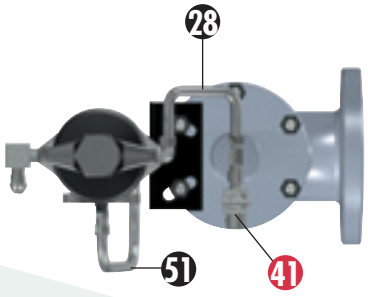
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
42	Pilot Supply Filter	316 Stainless Steel
51	Discharge Line	316 Stainless Steel

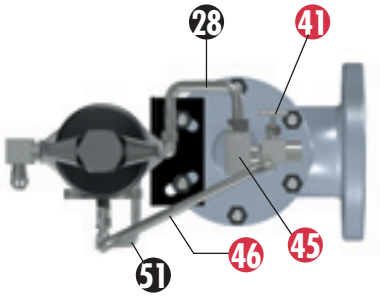
Pilot Valve w/ Backflow Preventer
(Optional For Liquid and Gas Applications)

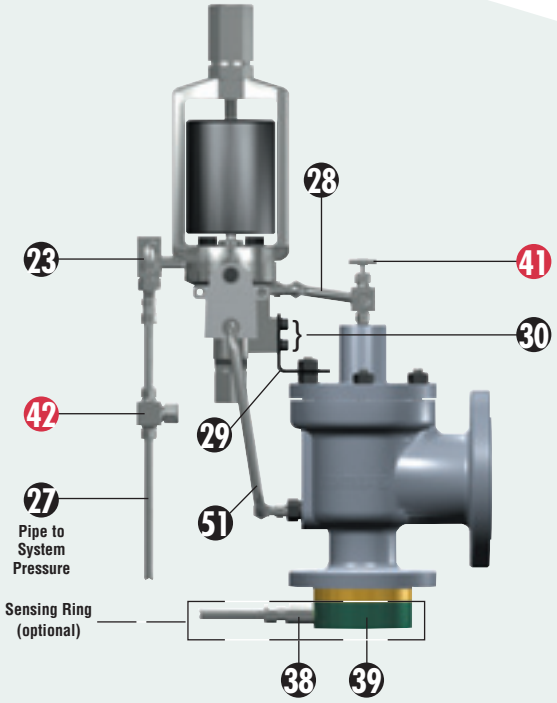
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
45	Backflow Preventer	316 Stainless Steel
46	Backflow Preventer Line	316 Stainless Steel
51	Discharge Line	316 Stainless Steel

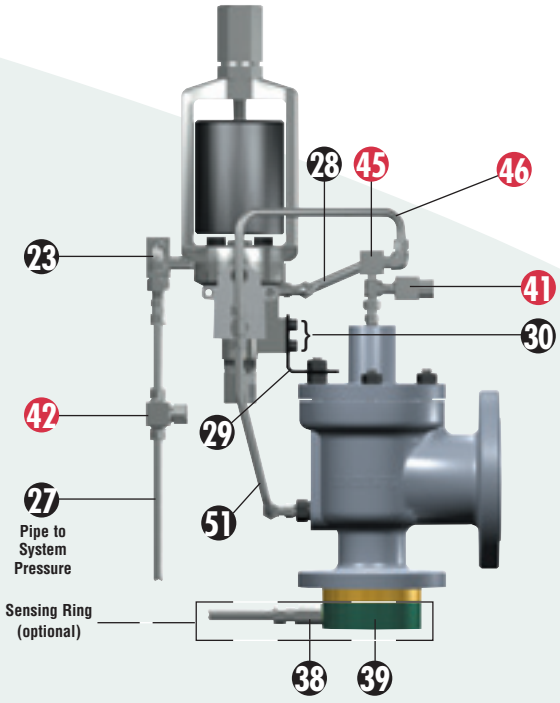
2900 Series Type 39PV Pop Pilot

(Vented to Body Bowl)









Pilot Valve w/ Manual Blowdown & Pilot Supply Filter
(Standard for Steam Applications)
(Optional for Liquid & Gas Applications)

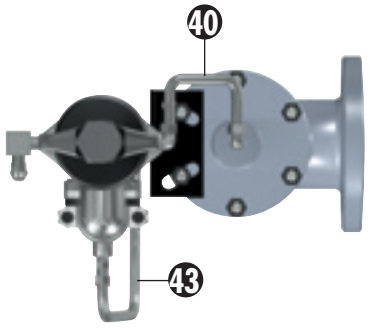
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
41	Needle Valve (Manual Blowdown)	316 Stainless Steel
42	Pilot Supply Filter	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
51	Discharge Line	316 Stainless Steel

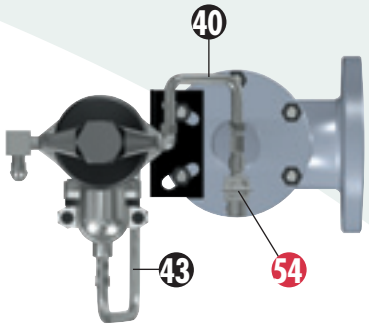
Pilot Valve w/ Backflow Preventer,
Manual Blowdown and Pilot Supply Filter
(Optional For Steam Applications)

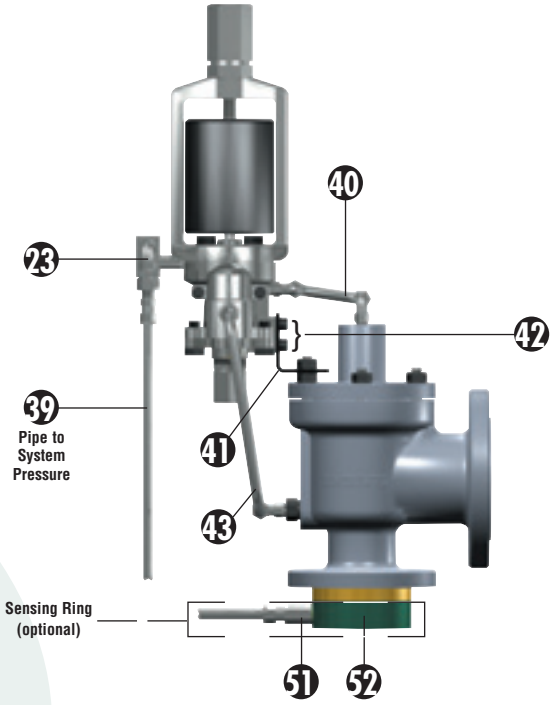
	Part	Material
23	Field Test Connection	316 Stainless Steel
27	Sensing Line	316 Stainless Steel
28	Dome Line	316 Stainless Steel
29	Bracket	Carbon Steel
30	Bracket Cap Screw	316 Stainless Steel
41	Needle Valve (Manual Blowdown)	316 Stainless Steel
42	Pilot Supply Filter	316 Stainless Steel
38	Sensing Tube	316 Stainless Steel
39	Sensing Ring	316 Stainless Steel
45	Backflow Preventer	316 Stainless Steel
46	Backflow Preventer Line	316 Stainless Steel
51	Discharge Line	316 Stainless Steel

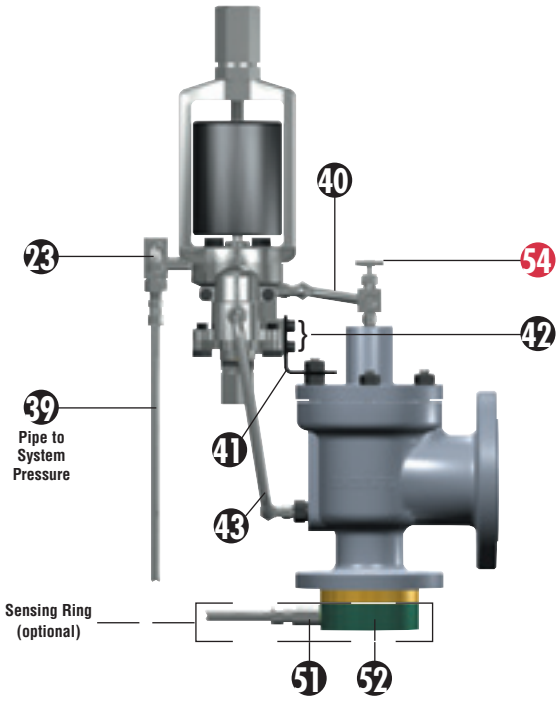
2900 Series Type 39MV Modulating Pilot

(Vented to Body Bowl)









Pilot Valve w/ Standard Field Test Connection
(Standard for All Media Applications)

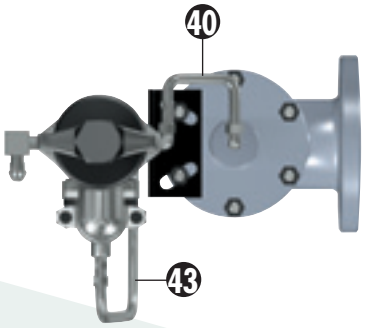
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel

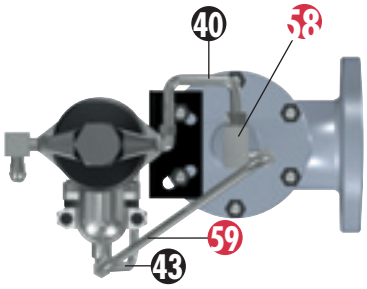
Pilot Valve w/ Manual Blowdown
(Optional for All Media Applications)

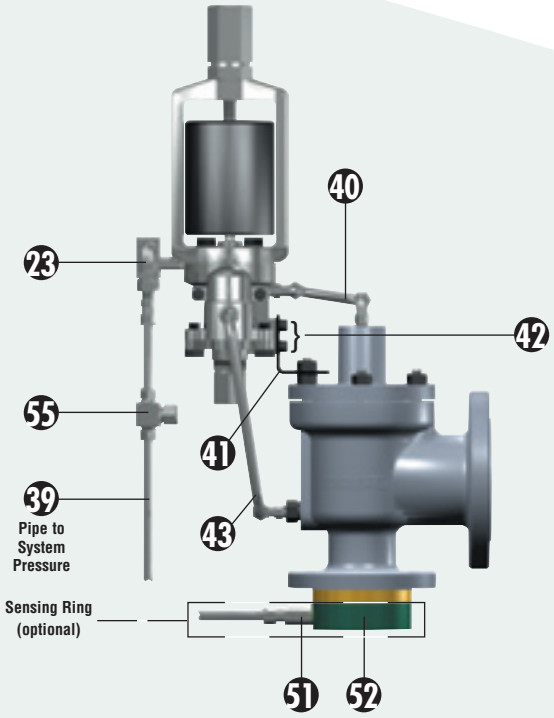
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
54	Needle Valve (Manual Blowdown)	316 Stainless Steel

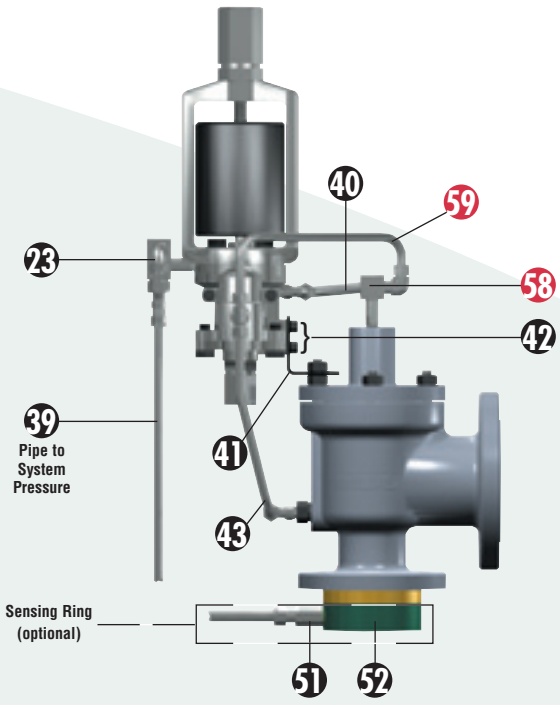
2900 Series Type 39MV Modulating Pilot

(Vented to Body Bowl)









Pilot Valve w/ Pilot Supply Filter
(Optional for All Media Applications)

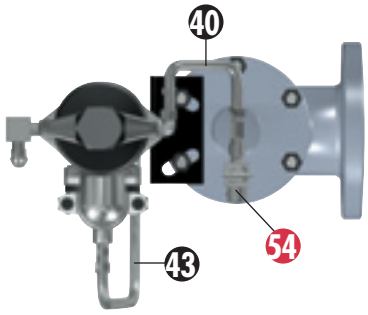
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
55	Pilot Supply Filter	316 Stainless Steel

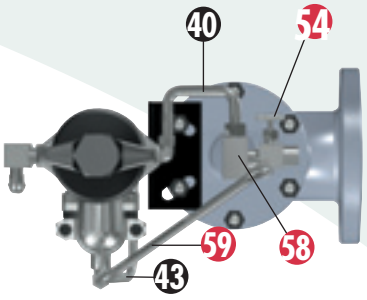
Pilot Valve w/ Backflow Preventer
(Optional for Liquid & Gas Applications)

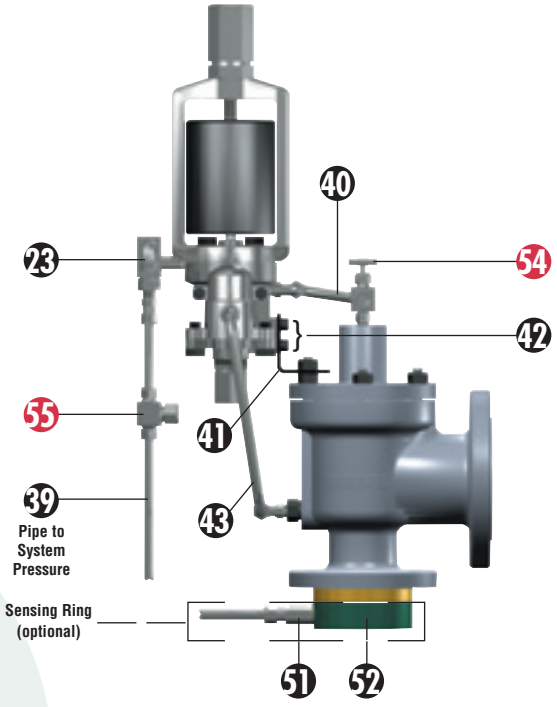
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
58	Backflow Preventer	316 Stainless Steel
59	Backflow Preventer Line	316 Stainless Steel

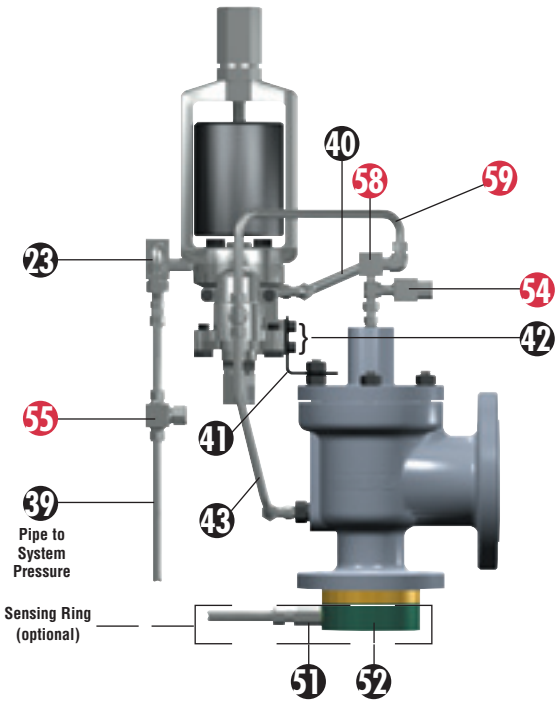
2900 Series Type 39MV Modulating Pilot

(Vented to Body Bowl)









Pilot Valve w/ Manual Blowdown and Pilot Supply Filter (Standard for Steam Applications) (Optional for Liquid and Gas Applications)

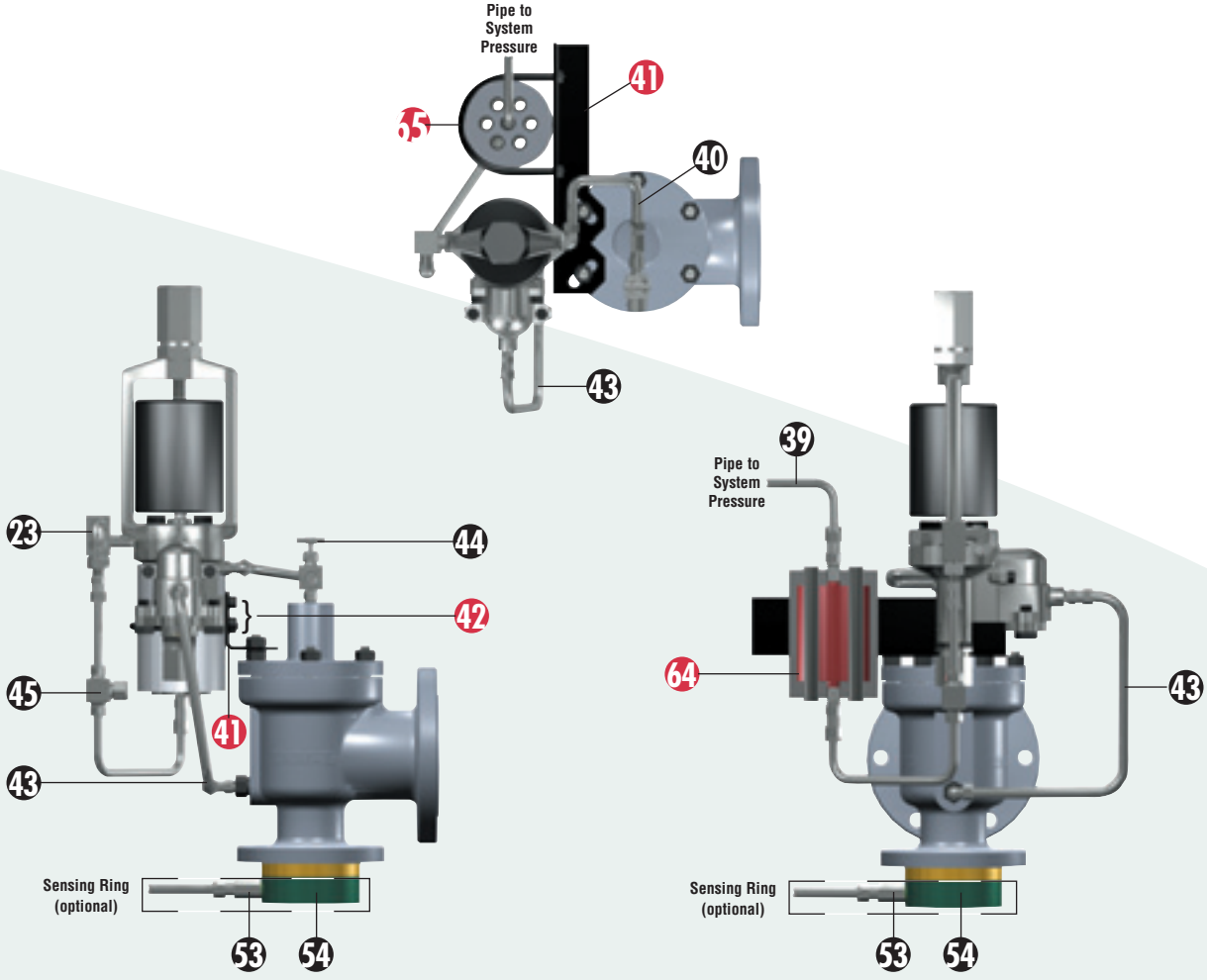
	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
54	Needle Valve (Manual Blowdown)	316 Stainless Steel
55	Pilot Supply Filter	316 Stainless Steel

Pilot Valve w/ Backflow Preventer, Manual Blowdown and Pilot Supply Filter (Optional for Steam Applications)

	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
51	Sensing Tube	316 Stainless Steel
52	Sensing Ring	316 Stainless Steel
54	Needle Valve (Manual Blowdown)	316 Stainless Steel
55	Pilot Supply Filter	316 Stainless Steel
58	Backflow Preventer	316 Stainless Steel
59	Backflow Preventer Line	316 Stainless Steel

Alternate Piping Arrangements

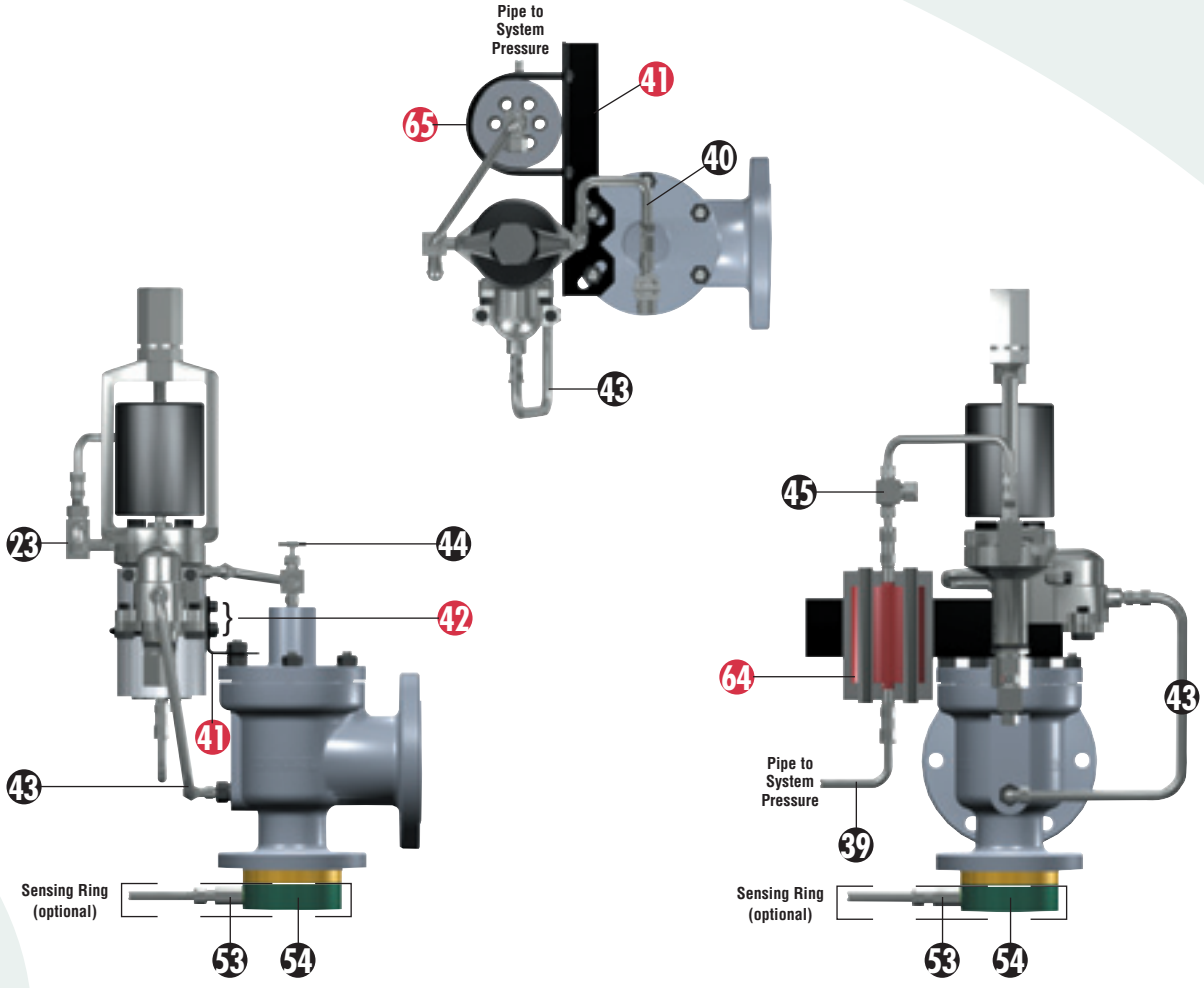
2900 Series Type 39MV Modulating Pilot with Heat Exchanger Hot Service (Also available with Pop Pilot)



Pilot Valve w/ Manual Blowdown, Pilot Supply Filter and Heat Exchanger High Temp. (Media above 505°F)

	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
44	Needle Valve (Manual Blowdown)	316 Stainless Steel
45	Pilot Supply Filter	316 Stainless Steel
53	Sensing Tube	316 Stainless Steel
54	Sensing Ring	316 Stainless Steel
64	Heat Exchanger	316 Stainless Steel
65	Heat Exchanger U-Bolt	316 Stainless Steel

2900 Series Type 39MV Modulating Pilot with Heat Exchanger Cold Service (Also available with Pop Pilot)



Pilot Valve w/ Manual Blowdown, Pilot Supply Filter and Heat Exchanger Low Temp. (Media below -40°F)

	Part	Material
23	Field Test Connection	316 Stainless Steel
39	Sensing Line	316 Stainless Steel
40	Dome Line	316 Stainless Steel
41	Bracket	Carbon Steel
42	Bracket Cap Screw	316 Stainless Steel
43	Discharge Line	316 Stainless Steel
44	Needle Valve (Manual Blowdown)	316 Stainless Steel
45	Pilot Supply Filter	316 Stainless Steel
53	Sensing Tube	316 Stainless Steel
54	Sensing Ring	316 Stainless Steel
64	Heat Exchanger	316 Stainless Steel
65	Heat Exchanger U-Bolt	316 Stainless Steel

Valve Installation

Valve Connections

The **Consolidated** 2900 Series flanged valves are equipped with ANSI B16.5 flanges. For other standards, contact Dresser for your needs.

The facing on raised flanges is a spiral finish, 125 to 250 micro inch roughness (Ra).

All flanged drilling straddle the centerlines of the valve.

Handling and Storage

Safety relief valves should be handled carefully. The internal parts of a pilot operated safety relief valve are precision machined and fitted together to maintain perfect alignment. Rough handling may damage the external tubing, pilot, and main valve seats or may cause misalignment sufficient to incur leakage or erratic operation. Safety relief valves are shipped with a protective covering over the inlet and the outlet. This is to prevent damage to the flanged surfaces and to prevent entry of foreign material into the valve. If the valves are to be stored before installation, the protective covering should be left intact until installation. A clean, dry storage area is recommended. Valves should always be protected with a suitable covering to prevent entry of foreign material.

Inlet Piping

Pilot operated safety relief valves must be installed in a vertical upright position. The inlet piping to the valve should be short and direct from the vessel or equipment being protected. The connection to the vessel should be provided with a radius to permit smooth flow to the valve. Sharp corners should be avoided. Should this not be practical, then the inlet should be swaged out at least one additional pipe diameter.

In any event, the pressure drop from the vessel to the valve should not exceed 3% of set pressure when the valve is flowing full capacity. In no event should the inlet piping be smaller in diameter than the inlet connection of the valve.

Outlet Piping

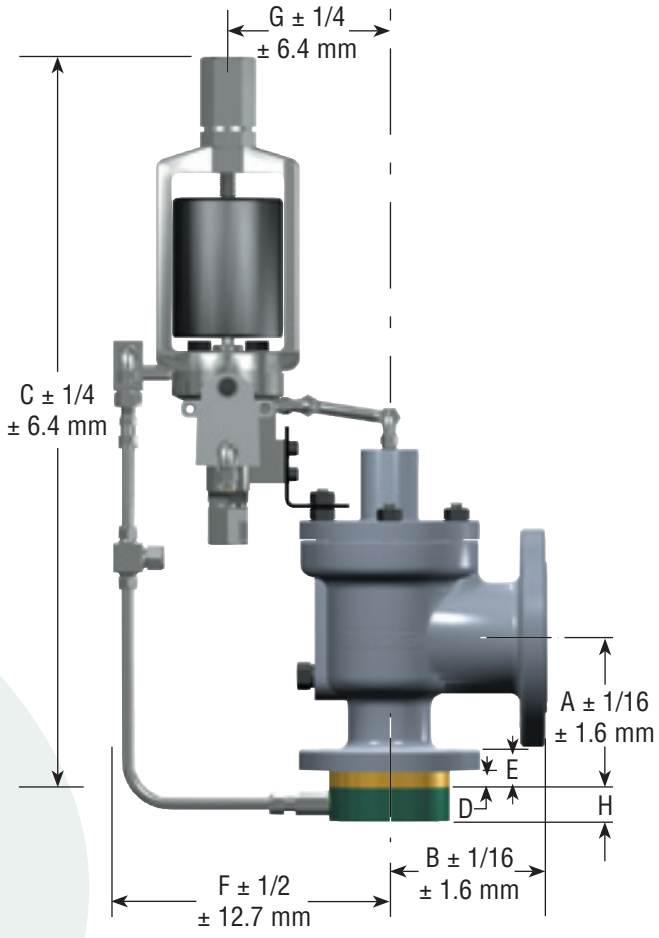
Alignment of the internal parts of a pilot operated safety relief valve is important to ensure proper operation. Although the valve body will withstand a considerable mechanical load, unsupported discharge piping should not impose loads any higher than that stated in the Technical Information Section of this catalog, consisting of more than a companion flange, long radius elbow and a short vertical pipe. Care should be taken to ensure thermal expansion of piping and supports does not produce strains in a valve. Spring supports are recommended where necessary to avoid this condition. 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 discharge lines.

Consideration should be given to discharge pipe movement resulting from wind loads. Any oscillation of the discharge piping introduces stress distortion in the valve body, and the resultant movement of the internal parts may cause leakage.

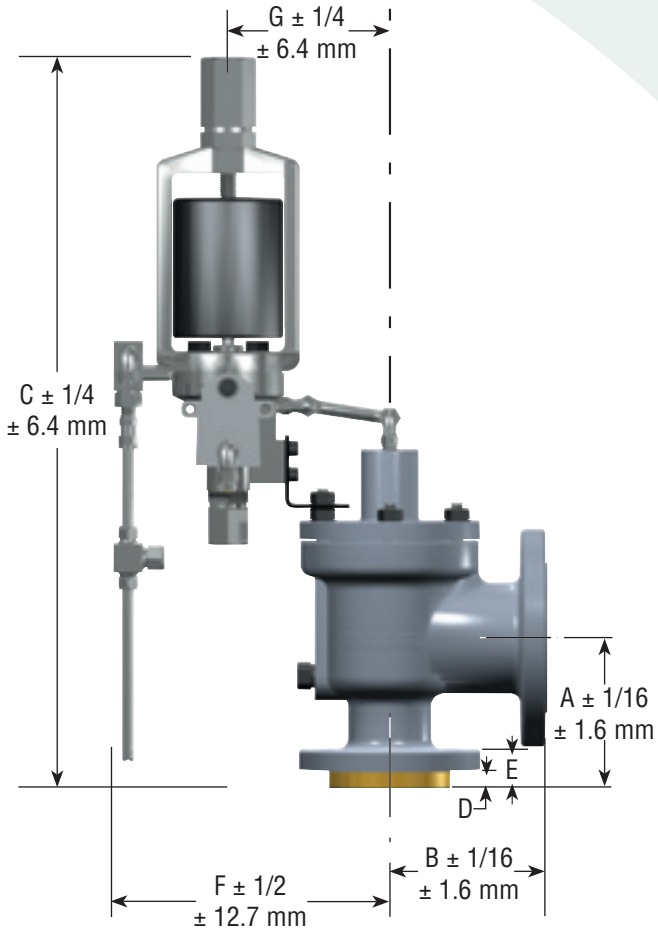
NOTE: In no event should the outlet piping be smaller in diameter than the outlet connection of the valve.

2900 Series Type 39PV Pop Pilot

(Pilot Vented to Atmosphere)



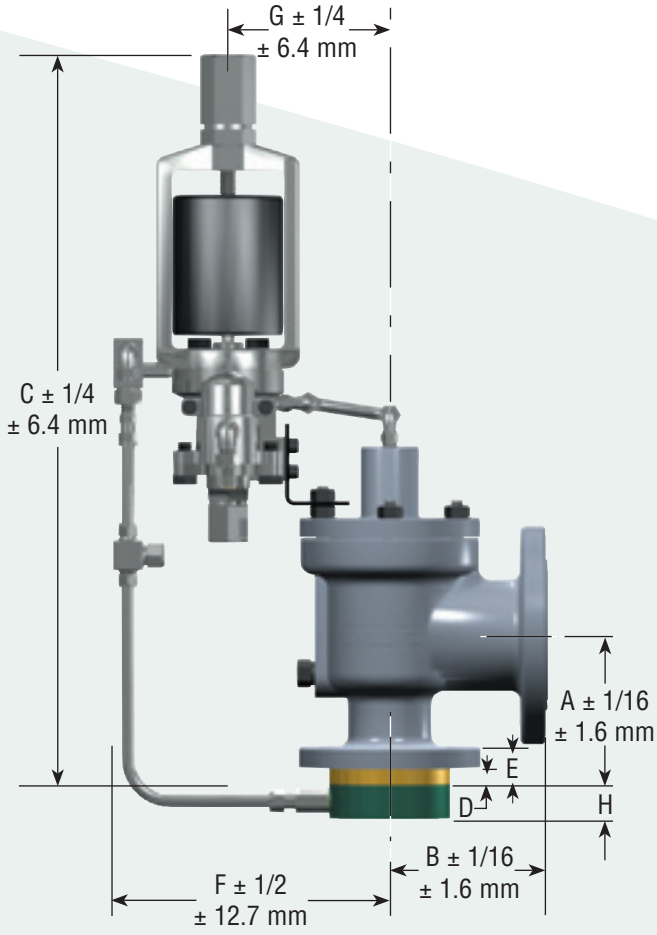
With Sensing Ring Option



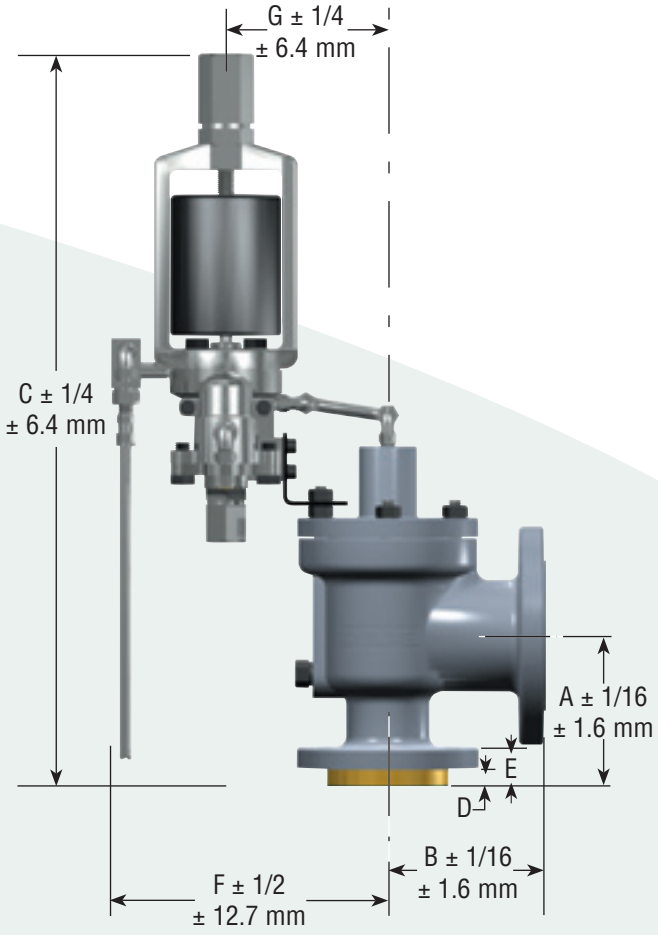
With Standard Remote Sensing

2900 Series Type 39MV Modulating Pilot

(Pilot Vented to Atmosphere)



With Sensing Ring Option



-----With Standard Remote Sensing

2900 Series with Type 39PV & 39MV Pilot Valve
USCS Dimensions (in.) and Weights (lbs.)

Size and Class	Type	A	B	C[2]		D	E	F	G	H[1]	Approx. Weight
				STD	Bellows						
1 - 150# x 2 - 150#	2905D	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-1/8	8-1/4	4-7/8	1-1/2	40
1 - 150# x 2 - 150#	2905E	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-1/8	8-1/4	4-7/8	1-1/2	40
1-1/2 - 150# x 2 - 150#	2905F	4-7/8	4-3/4	23-1/4	24-1/4	11/16	1-1/4	8-1/4	4-7/8	1-1/2	45
1-1/2 - 150# x 3 - 150#	2905G	4-7/8	4-3/4	23-1/4	24-1/4	11/16	1-1/4	8-1/4	4-7/8	1-1/2	55
1-1/2 - 150# x 3 - 150#	2905H	5-1/8	4-7/8	24-9/16	24-9/16	11/16	1-1/4	8-1/4	4-7/8	1-1/2	60
2 - 150# x 3 - 150#	2905J	5-3/8	4-7/8	25-11/32	25-11/32	11/16	1-5/16	9-1/4	5-7/8	1-1/2	75
3 - 150# x 4 - 150#	2905K	6-1/8	6-3/8	25-7/8	25-7/8	11/16	1-7/16	9-3/8	6	1-1/2	110
3 - 150# x 4 - 150#	2905L	6-1/8	6-1/2	26-7/8	26-7/8	11/16	1-7/16	10-1/4	6-7/8	1-1/2	140
4 - 150# x 6 - 150#	2905M	7	7-1/4	27-7/8	27-7/8	11/16	1-5/8	10-7/16	7-1/16	1-1/2	185
4 - 150# x 6 - 150#	2905N	7-3/4	8-1/4	29-1/16	29-1/16	11/16	1-5/8	10-5/8	7-1/4	1-1/2	220
4 - 150# x 6 - 150#	2905P	7-1/8	9	30-1/4	30-1/4	11/16	1-5/8	10-7/8	7-1/2	1-1/2	260
6 - 150# x 8 - 150#	2905Q	9-7/16	9-1/2	32-1/2	32-1/2	13/16	1-13/16	12-5/8	9-1/4	1-1/2	430
6 - 150# x 8 - 150#	2905R	9-7/16	9-1/2	34-5/8	34-5/8	13/16	1-13/16	12-15/16	9-9/16	1-1/2	495
8 - 150# x 10 - 150#	2905T	10-7/8	11	35	35	13/16	1-15/16	13-3/4	10-3/8	1-1/2	620
10 - 150# x 14 - 150#	2905V	12	16	43-1/2	43-1/2	13/16	2	16-15/16	13-1/4	1-1/2	1600
12 - 150# x 16 - 150#	2905W	14	16	49-1/4	49-1/4	13/16	2-13/16	17-15/16	14-1/4	1-1/2	2800
1 - 300# x 2 - 150#	2906D	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4-7/8	1-1/2	40
1 - 300# x 2 - 150#	2906E	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4-7/8	1-1/2	40
1-1/2 - 300# x 2 - 150#	2906F	4-7/8	4-3/4	23-1/4	24-1/4	11/16	1-1/2	8-1/4	4-7/8	1-1/2	45
1-1/2 - 300# x 3 - 150#	2906G	4-7/8	4-3/4	23-1/4	24-1/4	11/16	1-1/2	8-1/4	4-7/8	1-1/2	55
1-1/2 - 300# x 3 - 150#	2906H	5-1/8	4-7/8	24-9/16	24-9/16	11/16	1-9/16	8-1/4	4-7/8	1-1/2	60
2 - 300# x 3 - 150#	2906J	5-3/8	4-7/8	25-11/32	25-11/32	11/16	1-9/16	9-1/4	5-7/8	1-1/2	75
3 - 300# x 4 - 150#	2906K	6-1/8	6-3/8	25-7/8	25-7/8	11/16	1-13/16	9-3/8	6	1-1/2	115
3 - 300# x 4 - 150#	2906L	6-1/8	6-1/2	26-7/8	26-7/8	11/16	1-13/16	10-1/4	6-7/8	1-1/2	145
4 - 300# x 6 - 150#	2906M	7	7-1/4	27-7/8	27-7/8	11/16	1-15/16	10-7/16	7-1/16	1-1/2	190
4 - 300# x 6 - 150#	2906N	7-3/4	8-1/4	29-1/16	29-1/16	11/16	1-15/16	10-5/8	7-1/4	1-1/2	225
4 - 300# x 6 - 150#	2906P	7-1/8	9	30-1/4	30-1/4	11/16	1-15/16	10-7/8	7-1/2	1-1/2	270
6 - 300# x 8 - 150#	2906Q	9-7/16	9-1/2	32-1/2	32-1/2	13/16	2-1/4	12-5/8	9-1/4	1-1/2	445
6 - 300# x 8 - 150#	2906R	9-7/16	9-1/2	34-5/8	34-5/8	13/16	2-1/4	12-15/16	9-9/16	1-1/2	510
8 - 300# x 10 - 150#	2906T	10-7/8	11	35	35	13/16	2-7/16	13-3/4	10-3/8	1-1/2	640
10 - 300# x 14 - 150#	2906V	12	16	43-1/2	43-1/2	13/16	2-11/16	16-15/16	13-1/4	1-1/2	1700
12 - 300# x 16 - 150#	2906W	14	16	49-1/4	49-1/4	13/16	2-15/16	17-15/16	14-1/4	1-1/2	2860
1 - 300# x 2 - 150#	2910D	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4 7/8	1-1/2	50
1 - 300# x 2 - 150#	2910E	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4 7/8	1-1/2	50
1-1/2 - 300# x 2 - 150#	2910F	4-7/8	6	23-1/4	24-1/4	11/16	1-9/16	8-1/4	4 7/8	1-1/2	50
1-1/2 - 300# x 3 - 150#	2910G	4-7/8	6	23-1/4	24-1/2	11/16	1-9/16	8-1/4	4 7/8	1-1/2	60
2 - 300# x 3 - 150#	2910H	5-1/8	4-7/8	24-9/16	24-9/16	11/16	1-11/16	9-3/16	5 13/16	1-1/2	65
3 - 300# x 4 - 150#	2910J	7-1/4	7-1/8	25-3/32	25-3/32	11/16	1-13/16	9-3/8	6	1-1/2	100
3 - 300# x 4 - 150#	2910K	6-1/8	6-3/8	26-1/16	26-1/16	11/16	1-15/16	10	6 5/8	1-1/2	140
4 - 300# x 6 - 150#	2910L	7-1/16	7-1/8	28-3/16	28-3/16	11/16	1-15/16	10-5/8	7 1/4	1-1/2	220
4 - 300# x 6 - 150#	2910M	7	7-1/4	28-1/8	28-1/8	11/16	1-15/16	10-7/16	7 1/16	1-1/2	230
4 - 300# x 6 - 150#	2910N	7-3/4	8-1/4	29-7/16	29-7/16	11/16	1-15/16	10-15/16	7 9/16	1-1/2	260
4 - 300# x 6 - 150#	2910P	8-7/8	10	32-7/16	32-7/16	11/16	1-15/16	11-3/16	7 13/16	1-1/2	350
6 - 300# x 8 - 150#	2910Q	9-7/16	9-1/2	33-1/8	33-1/8	13/16	2-1/4	12-7/8	9 1/2	1-1/2	530
6 - 300# x 10 - 150#	2910R	9-7/16	10-1/2	34-5/8	34-5/8	13/16	2-1/4	12-15/16	9 9/16	1-1/2	550
8 - 300# x 10 - 150#	2910T	10-7/8	11	35-1/4	35-1/4	13/16	2-7/16	13-3/4	10 3/8	1-1/2	840
10 - 300# x 14 - 150#	2910V	12	16	46-3/8	46-3/8	13/16	2-11/16	17-15/16	14-1/4	1-1/2	2000
12 - 300# x 16 - 150#	2910W	14	16	49-1/4	49-1/4	13/16	2-15/16	17-15/16	14-1/4	1-1/2	2860

NOTES: 1 Does not include thickness of two gaskets required.
2 When dirty service option is selected, add 7/8" to C dimension.

2900 Series with Type 39PV & 39MV Pilot Valve
USCS Dimensions (in.) and Weights (lbs.)

Size and Class	Type	A	B	C[2]		D	E	F	G	H[1]	Approx. Weight
				STD	Bellows						
1 - 600# x 2 - 150#	2912D	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	9-5/32	5-3/4	1-1/2	50
1 - 600# x 2 - 150#	2912E	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	9-5/32	5-3/4	1-1/2	50
1-1/2 - 600# x 2 - 150#	2912F	4-7/8	6	23-1/4	24-1/4	11/16	1-9/16	9-5/32	5-3/4	1-1/2	60
1-1/2 - 600# x 3 - 150#	2912G	4-7/8	6	23-1/4	24-1/2	11/16	1-9/16	9-5/32	5-3/4	1-1/2	65
2 - 600# x 3 - 150#	2912H	6-1/16	6-3/8	25-5/8	25-5/8	11/16	1-11/16	9-1/4	5-7/8	1-1/2	85
3 - 600# x 4 - 150#	2912J	7-1/4	7-1/8	27-13/16	27-13/16	11/16	1-13/16	10-1/2	7-1/8	1-1/2	170
3 - 600# x 4 - 150#	2912K	7-1/4	7-1/8	27-3/16	27-3/16	11/16	1-15/16	10	6-5/8	1-1/2	150
4 - 600# x 6 - 150#	2912L	7-1/16	8	28-3/16	28-3/16	11/16	2-3/16	10-5/8	7-1/4	1-1/2	230
4 - 600# x 6 - 150#	2912M	7	8	28-11/16	28-11/16	11/16	2-3/16	11-3/4	8-3/8	1-1/2	300
4 - 600# x 6 - 150#	2912N	7-3/4	8-3/4	29-15/16	29-15/16	11/16	2-3/16	12-1/8	8-3/4	1-1/2	360
4 - 600# x 6 - 150#	2912P	8-7/8	10	32-15/16	32-15/16	11/16	2-3/16	12-3/4	9-3/8	1-1/2	530
6 - 600# x 8 - 150#	2912Q	9-7/16	91/2	33-3/4	33-3/4	13/16	2-11/16	12-15/16	9-9/16	1-1/2	645
6 - 600# x 10 - 150#	2912R	9-7/16	10-1/2	34-7/8	34-7/8	13/16	2-11/16	13-1/4	9-7/8	1-1/2	675
8 - 600# x 10 - 150#	2912T	10-7/8	11	35-1/4	35-1/4	13/16	3	13-3/4	10-3/8	1-1/2	925
1-1/2 - 900# x 2 - 300#	2914D	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 900# x 2 - 300#	2914E	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 900# x 3 - 300#	2914F	4-7/8	6-1/2	23-15/16	24-15/16	11/16	1-15/16	10	6-5/8	1-1/2	100
1-1/2 - 900# x 3 - 300#	2914G	4-7/8	6-1/2	23-15/16	25-3/16	11/16	1-15/16	10	6-5/8	1-1/2	95
2 - 900# x 3 - 150#	2914H	6-1/16	6-3/8	26-1/8	26-1/8	11/16	2-3/16	10-5/16	6-15/16	1-1/2	130
3 - 900 x 4 - 150#	2914J	7-1/4	7-1/8	27-13/16	27-13/16	11/16	2-3/16	10-1/2	7-1/8	1-1/2	195
3 - 900# x 6 - 150#	2914K	7-13/16	8-1/2	28-9/16	28-9/16	11/16	2-3/16	10-7/8	7-1/2	1-1/2	300
4 - 900# x 6 - 150#	2914L	7-3/4	8-3/4	29-1/2	29-1/2	11/16	2-7/16	12-3/16	8-13/16	1-1/2	360
4 - 900# x 6 - 150#	2914M	7-3/4	8-3/4	29-7/16	29-7/16	11/16	2-7/16	11-3/4	8-3/8	1-1/2	340
4 - 900# x 6 - 150#	2914N	7-3/4	8-3/4	29-15/16	29-15/16	11/16	2-7/16	12-1/8	8-3/4	1-1/2	380
4 - 900# x 6 - 150#	2914P	8-7/8	10	32-15/16	32-15/16	11/16	2-7/16	12-3/4	9-3/8	1-1/2	545
1-1/2 - 1500# x 2 - 300#	2916D	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 1500# x 2 - 300#	2916E	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 1500# x 3 - 300#	2916F	4-7/8	6-1/2	23-15/16	24-15/16	11/16	1-15/16	10	6-5/8	1-1/2	100
2 - 1500# x 3 - 300#	2916G	6-1/8	6-3/4	25-3/16	26-7/16	11/16	2-3/16	10	6-5/8	1-1/2	100
2 - 1500# x 3 - 300#	2916H	6-1/16	6-3/8	26-1/8	26-1/8	11/16	2-3/16	10-5/16	6-15/16	1-1/2	140
3 - 1500# x 4 - 300#	2916J	7-1/4	7-1/8	27-13/16	27-13/16	11/16	2-9/16	10-1/2	7-1/8	1-1/2	220
3 - 1500# x 6 - 300#	2916K	7-3/4	8-1/2	28-1/2	28-1/2	11/16	2-9/16	10-7/8	7-1/2	1-1/2	320
4 - 1500# x 6 - 150#	2916L	7-3/4	8-3/4	29-1/2	29-1/2	11/16	2-13/16	12-3/16	8-13/16	1-1/2	370
1-1/2 - 2500# x 3 - 300#	2918D	5-1/2	7	24-5/8	25-5/8	11/16	2-7/16	10-15/32	7-3/32	1-1/2	150
1-1/2 - 2500# x 3 - 300#	2918E	5-1/2	7	24-5/8	25-5/8	11/16	2-7/16	10-15/32	7-3/32	1-1/2	150
1-1/2 - 2500# x 3 - 300#	2918F	5-1/2	7	24-3/4	25-3/4	11/16	2-7/16	10-15/32	7-3/32	1-1/2	150
2 - 2500# x 3 - 300#	2918G	6-1/8	6-3/4	25-3/16	26-7/16	11/16	2-11/16	10	6-5/8	1-1/2	110

NOTES: 1 Does not include thickness of two gaskets required.
2 When dirty service option is selected, add 7/8" to C dimension.

2900 Series with Type 39PV & 39MV Pilot Valve
USCS Dimensions (in.) and Weights (lbs.)

Size and Class	Type	A	B	C[2]		D	E	F	G	H[1]	Approx. Weight
				STD	Bellows						
1 - 300# x 2 - 150#	2920D	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4-7/8	1-1/2	50
1 - 300# x 2 - 150#	2920E	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4-7/8	1-1/2	50
1-1/2 - 300# x 2 - 150#	2920F	4-7/8	6	23-1/4	24-1/4	11/16	1-9/16	8-1/4	4-7/8	1-1/2	50
1-1/2 - 300# x 3 - 150#	2920G	4-7/8	6	23-1/4	24-1/2	11/16	1-9/16	8-1/4	4-7/8	1-1/2	60
2 - 300# x 3 - 150#	2920H	5-1/8	4-7/8	24-9/16	24-9/16	11/16	1-11/16	9-3/16	5-13/16	1-1/2	65
3 - 300# x 4 - 150#	2920J	7-1/4	7-1/8	25-3/32	25-3/32	11/16	1-13/16	9-3/8	6	1-1/2	100
3 - 300# x 4 - 150#	2920K	6-1/8	6-3/8	26-3/16	26-3/16	11/16	1-15/16	10	6-5/8	1-1/2	140
4 - 300# x 6 - 150#	2920L	7-1/16	7-1/8	28-3/16	28-3/16	11/16	1-15/16	10-5/8	7-1/4	1-1/2	220
4 - 300# x 6 - 150#	2920M	7	7-1/4	28-1/8	28-1/8	11/16	1-15/16	10-7/16	7-1/16	1-1/2	230
4 - 300# x 6 - 150#	2920N	7-3/4	8-1/4	29-7/16	29-7/16	11/16	1-15/16	10-15/16	7-9/16	1-1/2	260
4 - 300# x 6 - 150#	2920P	8-7/8	10	32-7/16	32-7/16	11/16	1-15/16	11-3/16	7-13/16	1-1/2	350
6 - 300# x 8 - 150#	2920Q	9-7/16	9-1/2	32-1/4	32-1/4	13/16	2-1/4	12-5/8	9-1/4	1-1/2	445
6 - 300# x 8 - 150#	2920R	9-7/16	9-1/2	34-5/8	34-5/8	13/16	2-1/4	12-15/16	9-9/16	1-1/2	510
8 - 300# x 10 - 150#	2920T	10-7/8	11	35-1/4	35-1/4	13/16	2-7/16	13-3/4	10-3/8	1-1/2	840
10 - 300# x 14 - 150#	2920V	12	16	46-3/8	46-3/8	13/16	2-11/16	17-15/16	14-1/4	1-1/2	2000
12 - 300# x 16 - 150#	2920W	14	16	49-1/4	49-1/4	13/16	2-15-16	17-15-16	14-1/4	1-1/2	2860
1 - 600# x 2 - 150#	2922D	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4-7/8	1-1/2	50
1 - 600# x 2 - 150#	2922E	4-1/8	4-1/2	22-5/8	23-5/8	11/16	1-3/8	8-1/4	4-7/8	1-1/2	50
1-1/2 - 600# x 2 - 150#	2922F	4-7/8	6	23-1/4	24-1/4	11/16	1-9/16	8-1/4	4-7/8	1-1/2	50
1-1/2 - 600# x 3 - 150#	2922G	4-7/8	6	23-1/4	24-1/2	11/16	1-9/16	9-5/32	5-3/4	1-1/2	65
2 - 600# x 3 - 150#	2922H	5-1/8	4-7/8	24-9/16	24-9/16	11/16	1-11/16	9-3/16	5-13/16	1-1/2	65
3 - 600# x 4 - 150#	2922J	7-1/4	7-1/8	27-11/16	27-11/16	11/16	1-13/16	10-1/2	7-1/8	1-1/2	100
3 - 600# x 4 - 150#	2922K	6-1/8	6-3/8	26-3/16	26-3/16	11/16	1-15/16	10	6-5/8	1-1/2	140
4 - 600# x 6 - 150#	2922L	7-1/8	8	28-3/16	28-3/16	11/16	2-3/16	10-5/8	7-1/4	1-1/2	230
4 - 600# x 6 - 150#	2922M	7	8	28-11/16	28-11/16	11/16	2-3/16	10-7/16	7-1/16	1-1/2	300
4 - 600# x 6 - 150#	2922N	7-3/4	8-3/4	29-15/16	29-15/16	11/16	2-3/16	12-1/8	8-3/4	1-1/2	360
6 - 600# x 8 - 150#	2922Q	9-7/16	9-1/2	33-3/4	33-3/4	13/16	2-11/16	12-15/16	9-9/16	1-1/2	645
6 - 600# x 10 - 150#	2922R	9-7/16	10-1/2	34-7/8	34-7/8	13/16	2-11/16	13-1/4	9-7/8	1-1/2	675
8 - 600# x 10 - 150#	2922T	10-7/8	11	35-1/4	35-1/4	13/16	3	13-3/4	10-3/8	1-1/2	925
4 - 600# x 6 - 150#	2923P	8-7/8	10	32-15/16	32-15/16	11/16	2-3/16	12-3/4	9-3/8	1-1/2	530
1-1/2 - 900# x 2 - 300#	2924D	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 900# x 2 - 300#	2924E	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 900# x 3 - 300#	2924F	4-7/8	6-1/2	23-15/16	24-15/16	11/16	1-15/16	10	6-5/8	1-1/2	100
1-1/2 - 900# x 3 - 300#	2924G	4-7/8	6-1/2	23-15/16	25-3/16	11/16	1-15/16	10	6-5/8	1-1/2	95
2 - 900# x 3 - 150#	2924H	6-1/16	6-3/8	25-11/16	25-11/16	11/16	2-3/16	9-1/4	5-7/8	1-1/2	90
3 - 900# x 4 - 150#	2924J	7-1/4	7-1/8	27-13/16	27-13/16	11/16	2-3/16	10-1/2	7-1/8	1-1/2	180
3 - 900# x 6 - 150#	2924K	7-13/16	8-1/2	28-9/16	28-9/16	11/16	2-3/16	10-7/8	7-1/2	1-1/2	300
4 - 900# x 6 - 150#	2924L	7-3/4	8-3/4	29-1/2	29-1/2	11/16	2-7/16	12-3/16	8-13/16	1-1/2	360
4 - 900# x 6 - 150#	2924M	7-3/4	8-3/4	29-7/16	29-7/16	11/16	2-7/16	11-3/4	8-3/4	1-1/2	340
4 - 900# x 6 - 150#	2924N	7-3/4	8-3/4	29-15/16	29-15/16	11/16	2-7/16	12-1/8	8-3/4	1-1/2	380
4 - 900# x 6 - 150#	2924P	8-7/8	10	32-15/16	32-15/16	11/16	2-7/16	12-3/4	9-3/8	1-1/2	545
1-1/2 - 1500# x 2 - 300#	2926D	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 1500# x 2 - 300#	2926E	4-1/8	5-1/2	23-1/4	24-1/4	11/16	1-15/16	10	6-5/8	1-1/2	70
1-1/2 - 1500# x 3 - 300#	2926F	4-7/8	6-1/2	23-15/16	24-15/16	11/16	1-15/16	10	6-5/8	1-1/2	100
2 - 1500# x 3 - 300#	2926G	6-1/8	6-3/4	25-3/16	26-7/16	11/16	2-3/16	10	6-5/8	1-1/2	100
2 - 1500# x 3 - 300#	2926H	6-1/16	6-3/8	26-1/8	26-1/8	11/16	2-3/16	10-5/16	6-15/16	1-1/2	140
3 - 1500# x 4 - 300#	2926J	7-1/4	7-1/8	27-13/16	27-13/16	11/16	2-9/16	10-1/2	7-1/8	1-1/2	220
3 - 1500# x 6 - 300#	2926K	7-3/4	8-1/2	28-1/2	28-1/2	11/16	2-9/16	10-7/8	7-1/2	1-1/2	320
4 - 1500# x 6 - 150#	2926L	7-3/4	8-3/4	29-1/2	29-1/2	11/16	2-13/16	12-3/16	8-13/16	1-1/2	370
1-1/2 - 2500# x 3 - 300#	2928D	5-1/2	7	24-5/8	25-5/8	11/16	2-7/16	10-15/32	7-3/32	1-1/2	150
1-1/2 - 2500# x 3 - 300#	2928E	5-1/2	7	24-5/8	25-5/8	11/16	2-7/16	10-15/32	7-3/32	1-1/2	150
1-1/2 - 2500# x 3 - 300#	2928F	5-1/2	7	24-3/4	25-3/4	11/16	2-7/16	10-15/32	7-3/32	1-1/2	150
2 - 2500# x 3 - 300#	2928G	6-1/8	6-3/4	25-3/16	26-7/16	11/16	2-11/16	10	6-5/8	1-1/2	110

NOTES: 1 Does not include thickness of two gaskets required.

2 When dirty service option is selected, add 7/8" to C dimension.

2900 Series with Type 39PV & 39MV Pilot Valve
Metric Dimensions (mm) and Weights (kg)

Size and Class	Type	A	B	C[2]		D	E	F	G	H[1]	Approx. Weight
				STD	Bellows						
1 - 150# x 2 - 150#	2905D	104.8	114.3	574.7	600.1	17.5	28.6	209.6	123.8	38.1	18.1
1 - 150# x 2 - 150#	2905E	104.8	114.3	574.7	600.1	17.5	28.6	209.6	123.8	38.1	18.1
1-1/2 - 150# x 2 - 150#	2905F	123.8	120.7	590.6	616.0	17.5	31.8	209.6	123.8	38.1	20.4
1-1/2 - 150# x 3 - 150#	2905G	123.8	120.7	590.6	616.0	17.5	31.8	209.6	123.8	38.1	24.9
1-1/2 - 150# x 3 - 150#	2905H	130.2	123.8	623.9	623.9	17.5	31.8	209.6	123.8	38.1	27.2
2 - 150# x 3 - 150#	2905J	136.5	123.8	643.7	643.7	17.5	33.3	235.0	149.2	38.1	34.0
3 - 150# x 4 - 150#	2905K	155.6	161.9	657.2	657.2	17.5	36.5	238.1	152.4	38.1	49.9
3 - 150# x 4 - 150#	2905L	155.6	165.1	682.6	682.6	17.5	36.5	260.4	174.6	38.1	63.5
4 - 150# x 6 - 150#	2905M	177.8	184.2	708.0	708.0	17.5	41.3	265.1	179.4	38.1	83.9
4 - 150# x 6 - 150#	2905N	196.9	209.6	738.2	738.2	17.5	41.3	269.9	184.2	38.1	99.8
4 - 150# x 6 - 150#	2905P	181.0	228.6	768.4	768.4	17.5	41.3	276.2	190.5	38.1	117.9
6 - 150# x 8 - 150#	2905Q	239.7	241.3	825.5	825.5	20.6	46.0	320.7	235.0	38.1	195.0
6 - 150# x 8 - 150#	2905R	239.7	241.3	879.5	879.5	20.6	46.0	328.6	242.9	38.1	224.5
8 - 150# x 10 - 150#	2905T	276.2	279.4	889.0	889.0	20.6	49.2	349.3	263.5	38.1	281.2
10 - 150# x 14 - 150#	2905V	304.8	406.4	1104.9	1104.9	20.6	50.8	430.2	336.6	38.1	725.8
12 - 150# x 16 - 150#	2905W	355.6	406.4	1251.0	1251.0	20.6	71.4	455.6	362.0	38.1	1270.1
1 - 300# x 2 - 150#	2906D	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	18.1
1 - 300# x 2 - 150#	2906E	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	18.1
1-1/2 - 300# x 2 - 150#	2906F	123.8	120.7	590.6	616.0	17.5	38.1	209.6	123.8	38.1	20.4
1-1/2 - 300# x 3 - 150#	2906G	123.8	120.7	590.6	616.0	17.5	38.1	209.6	123.8	38.1	24.9
1-1/2 - 300# x 3 - 150#	2906H	130.2	123.8	623.9	623.9	17.5	39.7	209.6	123.8	38.1	27.2
2 - 300# x 3 - 150#	2906J	136.5	123.8	643.7	643.7	17.5	39.7	235.0	149.2	38.1	34.0
3 - 300# x 4 - 150#	2906K	155.6	161.9	657.2	657.2	17.5	46.0	238.1	152.4	38.1	52.2
3 - 300# x 4 - 150#	2906L	155.6	165.1	682.6	682.6	17.5	46.0	260.4	174.6	38.1	65.8
4 - 300# x 6 - 150#	2906M	177.8	184.2	708.0	708.0	17.5	49.2	265.1	179.4	38.1	86.2
4 - 300# x 6 - 150#	2906N	196.9	209.6	738.2	738.2	17.5	49.2	269.9	184.2	38.1	102.1
4 - 300# x 6 - 150#	2906P	181.0	228.6	768.4	768.4	17.5	49.2	276.2	190.5	38.1	122.5
6 - 300# x 8 - 150#	2906Q	239.7	241.3	825.5	825.5	20.6	57.2	320.7	235.0	38.1	201.9
6 - 300# x 8 - 150#	2906R	239.7	241.3	879.5	879.5	20.6	57.2	328.6	242.9	38.1	231.3
8 - 300# x 10 - 150#	2906T	276.2	279.4	889.0	889.0	20.6	61.9	349.3	263.5	38.1	290.3
10 - 300# x 14 - 150#	2906V	304.8	406.4	1104.9	1104.9	20.6	68.3	430.2	336.6	38.1	771.1
12 - 300# x 16 - 150#	2906W	355.6	406.4	1251.0	1251.0	20.6	74.6	455.6	362.0	38.1	1297.3
1 - 300# x 2 - 150#	2910D	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	22.7
1 - 300# x 2 - 150#	2910E	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	22.7
1-1/2 - 300# x 2 - 150#	2910F	123.8	152.4	590.6	616.0	17.5	39.7	209.6	123.8	38.1	22.7
1-1/2 - 300# x 3 - 150#	2910G	123.8	152.4	590.6	616.0	17.5	39.7	209.6	123.8	38.1	27.2
2 - 300# x 3 - 150#	2910H	130.2	123.8	623.9	623.9	17.5	42.8	233.4	147.6	38.1	29.5
3 - 300# x 4 - 150#	2910J	184.2	181.0	637.4	637.4	17.5	46.0	238.1	152.4	38.1	45.4
3 - 300# x 4 - 150#	2910K	155.6	161.9	662.0	662.0	17.5	49.2	254.0	168.3	38.1	63.5
4 - 300# x 6 - 150#	2910L	179.4	181.0	716.0	716.0	17.5	49.2	269.9	184.2	38.1	99.8
4 - 300# x 6 - 150#	2910M	177.8	184.2	714.4	714.4	17.5	49.2	265.1	179.4	38.1	104.3
4 - 300# x 6 - 150#	2910N	196.9	209.6	747.7	747.7	17.5	49.2	277.8	192.1	38.1	117.9
4 - 300# x 6 - 150#	2910P	225.4	254.0	823.9	823.9	17.5	49.2	284.2	198.4	38.1	158.8
6 - 300# x 8 - 150#	2910Q	239.7	241.3	841.4	841.4	20.6	57.2	327.0	241.3	38.1	240.4
6 - 300# x 10 - 150#	2910R	239.7	266.7	879.5	879.5	20.6	57.2	328.6	242.9	38.1	249.5
8 - 300# x 10 - 150#	2910T	276.2	279.4	895.4	895.4	20.6	61.9	349.3	263.5	38.1	381.0
10 - 300# x 14 - 150#	2910V	304.8	406.4	1177.9	1177.9	20.6	68.3	455.6	362.0	38.1	907.2
12 - 300# x 16 - 150#	2910W	355.6	406.4	1251.0	1251.0	20.6	74.6	455.6	362.0	38.1	1297.3

NOTES: 1 Does not include thickness of two gaskets required.
2 When dirty service option is selected, add 22.2 mm to C dimension.

2900 Series with Type 39PV & 39MV Pilot Valve
Metric Dimensions (mm) and Weights (kg)

Size and Class	Type	A	B	C[2]		D	E	F	G	H[1]	Approx. Weight
				STD	Bellows						
1 - 600# x 2 - 150#	2912D	104.8	114.3	574.7	600.1	17.5	34.9	232.6	146.1	38.1	22.7
1 - 600# x 2 - 150#	2912E	104.8	114.3	574.7	600.1	17.5	34.9	232.6	146.1	38.1	22.7
1-1/2 - 600# x 2 - 150#	2912F	123.8	152.4	590.6	616.0	17.5	39.7	232.6	146.1	38.1	27.2
1-1/2 - 600# x 3 - 150#	2912G	123.8	152.4	590.6	622.3	17.5	39.7	232.6	146.1	38.1	29.5
2 - 600# x 3 - 150#	2912H	154.0	161.9	650.9	650.9	17.5	42.8	235.0	149.2	38.1	38.6
3 - 600# x 4 - 150#	2912J	184.2	181.0	706.4	706.4	17.5	46.0	266.7	181.0	38.1	77.1
3 - 600# x 4 - 150#	2912K	184.2	181.0	690.6	690.6	17.5	49.2	254.0	168.3	38.1	68.0
4 - 600# x 6 - 150#	2912L	179.4	203.2	716.0	716.0	17.5	55.6	269.9	184.2	38.1	104.3
4 - 600# x 6 - 150#	2912M	177.8	203.2	728.7	728.7	17.5	55.6	298.5	212.7	38.1	136.1
4 - 600# x 6 - 150#	2912N	196.9	222.3	760.4	760.4	17.5	55.6	308.0	222.3	38.1	163.3
4 - 600# x 6 - 150#	2912P	225.4	254.0	836.6	836.6	17.5	55.6	323.9	238.1	38.1	240.4
6 - 600# x 8 - 150#	2912Q	239.7	241.3	857.3	857.3	20.6	68.3	328.6	242.9	38.1	292.6
6 - 600# x 10 - 150#	2912R	239.7	266.7	885.8	885.8	20.6	68.3	336.6	250.8	38.1	306.2
8 - 600# x 10 - 150#	2912T	276.2	279.4	895.4	895.4	20.6	76.2	349.3	263.5	38.1	419.6
1-1/2 - 900# x 2 - 300#	2914D	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 900# x 2 - 300#	2914E	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 900# x 3 - 300#	2914F	123.8	165.1	608.0	633.4	17.5	49.2	254.0	168.3	38.1	45.4
1-1/2 - 900# x 3 - 300#	2914G	123.8	165.1	608.0	639.8	17.5	49.2	254.0	168.3	38.1	43.1
2 - 900# x 3 - 150#	2914H	154.0	161.9	663.6	663.6	17.5	55.6	261.9	176.2	38.1	59.0
3 - 900 x 4 - 150#	2914J	184.2	181.0	706.4	706.4	17.5	55.6	266.7	181.0	38.1	88.5
3 - 900# x 6 - 150#	2914K	198.4	215.9	725.5	725.5	17.5	55.6	276.2	190.5	38.1	136.1
4 - 900# x 6 - 150#	2914L	196.9	222.3	749.3	749.3	17.5	61.9	309.6	223.8	38.1	163.3
4 - 900# x 6 - 150#	2914M	196.9	222.3	747.7	747.7	17.5	61.9	298.5	212.7	38.1	154.2
4 - 900# x 6 - 150#	2914N	196.9	222.3	760.4	760.4	17.5	61.9	308.0	222.3	38.1	172.4
4 - 900# x 6 - 150#	2914P	225.4	254.0	836.6	836.6	17.5	61.9	323.9	238.1	38.1	247.2
1-1/2 - 1500# x 2 - 300#	2916D	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 1500# x 2 - 300#	2916E	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 1500# x 3 - 300#	2916F	123.8	165.1	608.0	633.4	17.5	49.2	254.0	168.3	38.1	45.4
2 - 1500# x 3 - 300#	2916G	155.6	171.5	639.8	671.5	17.5	55.6	254.0	168.3	38.1	45.4
2 - 1500# x 3 - 300#	2916H	154.0	161.9	663.6	663.6	17.5	55.6	261.9	176.2	38.1	63.5
3 - 1500# x 4 - 300#	2916J	184.2	181.0	706.4	706.4	17.5	65.1	266.7	181.0	38.1	99.8
3 - 1500# x 6 - 300#	2916K	196.9	215.9	723.9	723.9	17.5	65.1	276.2	190.5	38.1	145.2
4 - 1500# x 6 - 150#	2916L	196.9	222.3	749.3	749.3	17.5	71.4	309.6	223.8	38.1	167.8
1-1/2 - 2500# x 3 - 300#	2918D	139.7	177.8	625.5	650.9	17.5	61.9	265.9	180.2	38.1	68.0
1-1/2 - 2500# x 3 - 300#	2918E	139.7	177.8	625.5	650.9	17.5	61.9	265.9	180.2	38.1	68.0
1-1/2 - 2500# x 3 - 300#	2918F	139.7	177.8	628.7	654.1	17.5	61.9	265.9	180.2	38.1	68.0
2 - 2500# x 3 - 300#	2918G	155.6	171.5	639.8	671.5	17.5	68.3	254.0	168.3	38.1	49.9

NOTES: 1 Does not include thickness of two gaskets required.
2 When dirty service option is selected, add 22.2 mm to C dimension.

2900 Series with Type 39PV & 39MV Pilot Valve
Metric Dimensions (mm) and Weights (kg)

Size and Class	Type	A	B	C[2]		D	E	F	G	H[1]	Approx. Weight
				STD	Bellows						
1 - 300# x 2 - 150#	2920D	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	22.7
1 - 300# x 2 - 150#	2920E	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	22.7
1-1/2 - 300# x 2 - 150#	2920F	123.8	152.4	590.6	616.0	17.5	39.7	209.6	123.8	38.1	22.7
1-1/2 - 300# x 3 - 150#	2920G	123.8	152.4	590.6	622.3	17.5	39.7	209.6	123.8	38.1	27.2
2 - 300# x 3 - 150#	2920H	130.2	123.8	623.9	623.9	17.5	42.9	233.4	147.6	38.1	29.5
3 - 300# x 4 - 150#	2920J	184.2	181.0	637.4	637.4	17.5	46.0	238.1	152.4	38.1	45.4
3 - 300# x 4 - 150#	2920K	155.6	161.9	665.2	665.2	17.5	49.2	254.0	168.3	38.1	63.5
4 - 300# x 6 - 150#	2920L	179.4	181.0	716.0	716.0	17.5	49.2	269.9	184.2	38.1	99.8
4 - 300# x 6 - 150#	2920M	177.8	184.2	714.4	714.4	17.5	49.2	265.1	179.4	38.1	104.3
4 - 300# x 6 - 150#	2920N	196.9	209.6	747.7	747.7	17.5	49.2	277.8	192.1	38.1	117.9
4 - 300# x 6 - 150#	2920P	225.4	254.0	823.9	823.9	17.5	49.2	284.2	198.4	38.1	158.8
6 - 300# x 8 - 150#	2920Q	239.7	241.3	819.2	819.2	20.6	57.2	320.7	235.0	38.1	201.9
6 - 300# x 8 - 150#	2920R	239.7	241.3	879.5	879.5	20.6	57.2	328.6	242.9	38.1	231.3
8 - 300# x 10 - 150#	2920T	276.2	279.4	895.4	895.4	20.6	61.9	349.3	263.5	38.1	381.0
10 - 300# x 14 - 150#	2920V	304.8	406.4	1177.9	1177.9	20.6	68.3	455.6	362.0	38.1	907.2
12 - 300# x 16 - 150#	2920W	355.6	406.4	1251.0	1251.0	20.6	74.6	455.6	362.0	38.1	1297.3
1 - 600# x 2 - 150#	2922D	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	22.7
1 - 600# x 2 - 150#	2922E	104.8	114.3	574.7	600.1	17.5	34.9	209.6	123.8	38.1	22.7
1-1/2 - 600# x 2 - 150#	2922F	123.8	152.4	590.6	616.0	17.5	39.7	209.6	123.8	38.1	22.7
1-1/2 - 600# x 3 - 150#	2922G	123.8	152.4	590.6	622.3	17.5	39.7	232.6	146.1	38.1	29.5
2 - 600# x 3 - 150#	2922H	130.2	123.8	623.9	623.9	17.5	42.9	233.4	147.6	38.1	29.5
3 - 600# x 4 - 150#	2922J	184.2	181.0	703.3	703.3	17.5	46.0	266.7	181.0	38.1	45.4
3 - 600# x 4 - 150#	2922K	155.6	161.9	665.2	665.2	17.5	49.2	254.0	168.3	38.1	63.5
4 - 600# x 6 - 150#	2922L	181.0	203.2	716.0	716.0	17.5	55.6	269.9	184.2	38.1	104.3
4 - 600# x 6 - 150#	2922M	177.8	203.2	728.7	728.7	17.5	55.6	265.1	179.4	38.1	136.1
4 - 600# x 6 - 150#	2922N	196.9	222.3	760.4	760.4	17.5	55.6	308.0	222.3	38.1	163.3
6 - 600# x 8 - 150#	2922Q	239.7	241.3	857.3	857.3	20.6	68.3	328.6	242.9	38.1	292.6
6 - 600# x 10 - 150#	2922R	239.7	266.7	885.8	885.8	20.6	68.3	336.6	250.8	38.1	306.2
8 - 600# x 10 - 150#	2922T	276.2	279.4	895.4	895.4	20.6	76.2	349.3	263.5	38.1	419.6
4 - 600# x 6 - 150#	2923P	225.4	254.0	836.6	836.6	17.5	55.6	323.9	238.1	38.1	240.4
1-1/2 - 900# x 2 - 300#	2924D	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 900# x 2 - 300#	2924E	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 900# x 3 - 300#	2924F	123.8	165.1	608.0	633.4	17.5	49.2	254.0	168.3	38.1	45.4
1-1/2 - 900# x 3 - 300#	2924G	123.8	165.1	608.0	639.8	17.5	49.2	254.0	168.3	38.1	43.1
2 - 900# x 3 - 150#	2924H	154.0	161.9	652.5	652.5	17.5	55.6	235.0	149.2	38.1	40.8
3 - 900# x 4 - 150#	2924J	184.2	181.0	706.4	706.4	17.5	55.6	266.7	181.0	38.1	81.6
3 - 900# x 6 - 150#	2924K	198.4	215.9	725.5	725.5	17.5	55.6	276.2	190.5	38.1	136.1
4 - 900# x 6 - 150#	2924L	196.9	222.3	749.3	749.3	17.5	61.9	309.6	223.8	38.1	163.3
4 - 900# x 6 - 150#	2924M	196.9	222.3	747.7	747.7	17.5	61.9	298.5	222.3	38.1	154.2
4 - 900# x 6 - 150#	2924N	196.9	222.3	760.4	760.4	17.5	61.9	308.0	222.3	38.1	172.4
4 - 900# x 6 - 150#	2924P	225.4	254.0	836.6	836.6	17.5	61.9	323.9	238.1	38.1	247.2
1-1/2 - 1500# x 2 - 300#	2926D	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 1500# x 2 - 300#	2926E	104.8	139.7	590.6	616.0	17.5	49.2	254.0	168.3	38.1	31.8
1-1/2 - 1500# x 3 - 300#	2926F	123.8	165.1	608.0	633.4	17.5	49.2	254.0	168.3	38.1	45.4
2 - 1500# x 3 - 300#	2926G	155.6	171.5	639.8	671.5	17.5	55.6	254.0	168.3	38.1	45.4
2 - 1500# x 3 - 300#	2926H	154.0	161.9	663.6	663.6	17.5	55.6	261.9	176.2	38.1	63.5
3 - 1500# x 4 - 300#	2926J	184.2	181.0	706.4	706.4	17.5	65.1	266.7	181.0	38.1	99.8
3 - 1500# x 6 - 300#	2926K	196.9	215.9	723.9	723.9	17.5	65.1	276.2	190.5	38.1	145.2
4 - 1500# x 6 - 150#	2926L	196.9	222.3	749.3	749.3	17.5	71.4	309.6	223.8	38.1	167.8
1-1/2 - 2500# x 3 - 300#	2928D	139.7	177.8	625.5	650.9	17.5	61.9	265.9	180.2	38.1	68.0
1-1/2 - 2500# x 3 - 300#	2928E	139.7	177.8	625.5	650.9	17.5	61.9	265.9	180.2	38.1	68.0
1-1/2 - 2500# x 3 - 300#	2928F	139.7	177.8	628.7	654.1	17.5	61.9	265.9	180.2	38.1	68.0
2 - 2500# x 3 - 300#	2928G	155.6	171.5	639.8	671.5	17.5	68.3	254.0	168.3	38.1	49.9

NOTES: 1 Does not include thickness of two gaskets required.

2 When dirty service option is selected, add 22.2 mm to C dimension.

Pressure/Temperature Tables

How To Use Rating Tables

The Pressure/Temperature limitations of the 2900 series valves are based on the ASME B16.5, 1996 Edition, the design limit of the pilot (3750 psig) and by the base coverplate bolting material. The following tables give the ratings for standard valves. For valves made from special materials, the maximum pressure may exceed the pressure stated in the following tables, but may be limited to the pressure ratings given in ANSI B16.5.

The included tables specify important data about the valve sizes, flange ratings, pressure and temperature limits, back pressure ratings, and materials with allowable temperature ranges.

After determining valve size from the Valve Sizing section, or capacity tables in this section, select the proper set of tables and graphs (in the following pages) for the size valve. Enter the pressure/temperature graphs and determine valve type. Review the table of data for that size valve to get other pertinent information.

NOTE: All information stated here for the 2900 valve is based on ASME Section VIII Code and ANSI B16.5.

NOTE: When soft seats are used, they may govern the valve pressure/temperature rating.

NOTE: Not every application is suitable for using a heat exchanger. The heat exchanger must be sized to meet the service conditions for each application.

Example	
Valve Set Pressure	500 psig
Back Pressure	50 psig
Temperature	100° F
Valve	"J"

Procedure

Enter the graph on page 2900.84 for the "J" size, select set pressure on the bottom scale at 500 psig, follow this line vertically upward until it intersects the 100°F (38°C) line. The selection is a 2910J valve.

Results

Referring to the table on page 2900.83, the valve is 3"-300 x 4"-150 without a Heat Exchanger. The back pressure limit is satisfactory for 50 psig back pressure.

Heat Exchanger

For temperatures below -40°F and above 505°F, a Heat Exchanger must be used.

Important Information

The lowest temperature for valves with Inconel® 625 LCF Bellows is -400°F. In 1995, API made a change in the centerline dimensions for safety relief valves eliminating the 2-1/2" connections. Wherever Consolidated Safety Relief Valves specifies 2-1/2" inlets or outlets, these have been changed to 3". The 2-1/2" connections specified in API 526 Third Edition, February 1984 are available on special order for replacement of existing valves. In these cases the pressure/temperature limits are the same for either size.

Selection Table for Vapors, Gases and Liquids

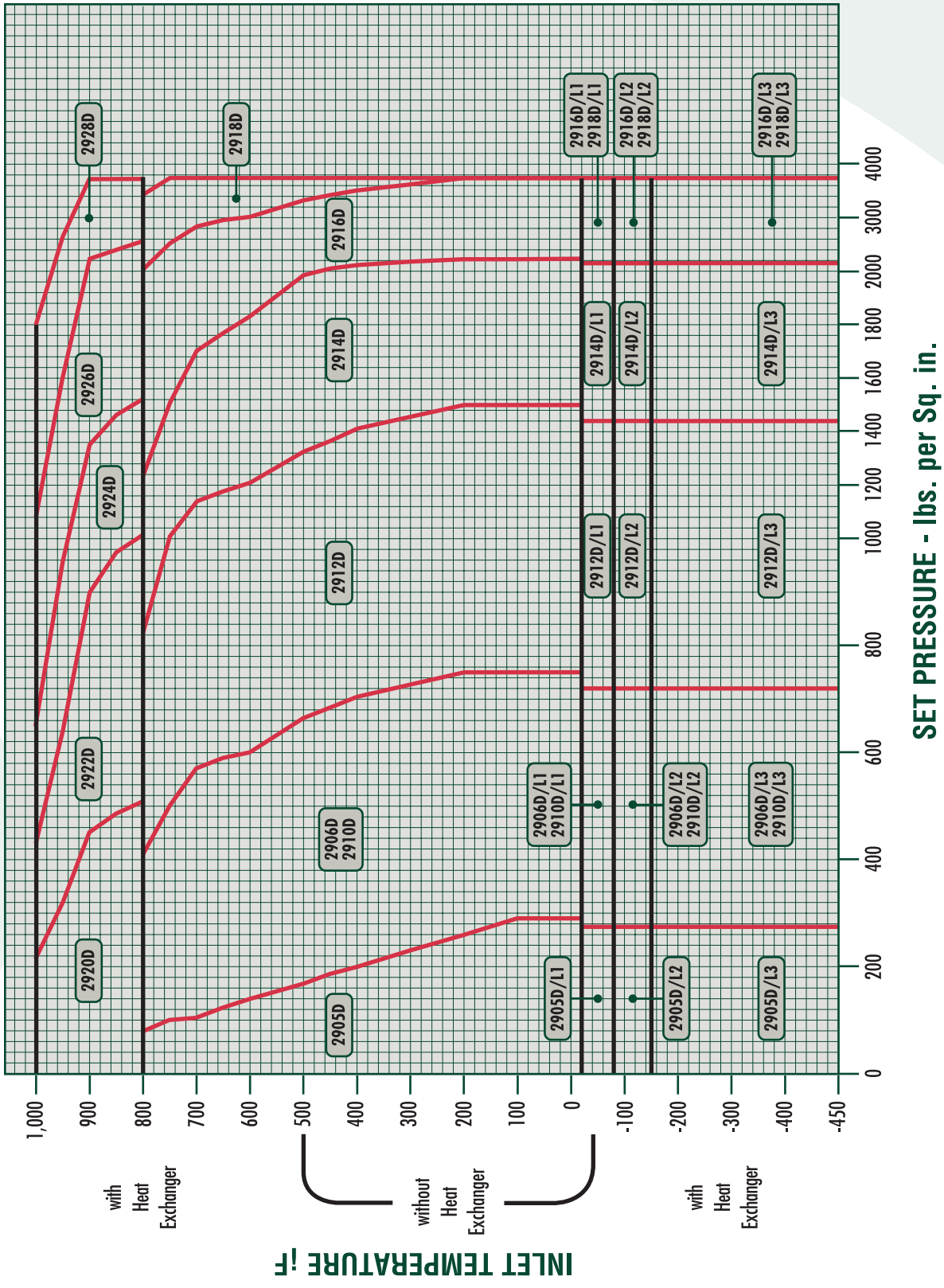
2900 Series, D Orifice - ASME Area: 0.1279 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905D	2905-30D	1 x 2	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906D	2906-30D	1 x 2	300	150	-	-	-	750	685	410	-	290	290	
2910D	2910-30D	1 x 2	300	150	-	-	-	750	685	410	-	290	290	
2912D	2912-30D	1 x 2	600	150	-	-	-	1500	1370	825	-	290	290	
2914D	2914-30D	1-1/2 x 2	900	300	-	-	-	2250	2055	1235	-	750	750	
2916D	2916-30D	1-1/2 x 2	1500	300	-	-	-	3750	3425	2060	-	750	750	
2918D	2918-30D	1-1/2 x 3	2500	300	-	-	-	3750	3750	3430	-	750	750	
2920D	2920-30D	1 x 2	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922D	2922-30D	1 x 2	600	150	-	-	-	-	-	1015	430	290	290	
2924D	2924-30D	1-1/2 x 2	900	300	-	-	-	-	-	1525	650	750	750	
2926D	2926-30D	1-1/2 x 2	1500	300	-	-	-	-	-	2540	1080	750	750	
2928D	2928-30D	1-1/2 x 3	2500	300	-	-	-	-	-	3750	1800	750	750	
2905D/L1	2905-30D/L1	1 x 2	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906D/L1	2906-30D/L1	1 x 2	300	150	-	-	720	-	-	-	-	275	275	
2910D/L1	2910-30D/L1	1 x 2	300	150	-	-	720	-	-	-	-	275	275	
2912D/L1	2912-30D/L1	1 x 2	600	150	-	-	1440	-	-	-	-	275	275	
2914D/L1	2914-30D/L1	1-1/2 x 2	900	300	-	-	2160	-	-	-	-	720	720	
2916D/L1	2916-30D/L1	1-1/2 x 2	1500	300	-	-	3600	-	-	-	-	720	720	
2918D/L1	2918-30D/L1	1-1/2 x 3	2500	300	-	-	3750	-	-	-	-	720	720	
2905D/L2	2905-30D/L2	1 x 2	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906D/L2	2906-30D/L2	1 x 2	300	150	-	720	-	-	-	-	-	275	275	
2910D/L2	2910-30D/L2	1 x 2	300	150	-	720	-	-	-	-	-	275	275	
2912D/L2	2912-30D/L2	1 x 2	600	150	-	1440	-	-	-	-	-	275	275	
2914D/L2	2914-30D/L2	1-1/2 x 2	900	300	-	2160	-	-	-	-	-	720	720	
2916D/L2	2916-30D/L2	1-1/2 x 2	1500	300	-	3600	-	-	-	-	-	720	720	
2918D/L2	2918-30D/L2	1-1/2 x 3	2500	300	-	3750	-	-	-	-	-	720	720	
2905D/L3	2905-30D/L3	1 x 2	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906D/L3	2906-30D/L3	1 x 2	300	150	720	-	-	-	-	-	-	275	275	
2910D/L3	2910-30D/L3	1 x 2	300	150	720	-	-	-	-	-	-	275	275	
2912D/L3	2912-30D/L3	1 x 2	600	150	1440	-	-	-	-	-	-	275	275	
2914D/L3	2914-30D/L3	1-1/2 x 2	900	300	2160	-	-	-	-	-	-	720	720	
2916D/L3	2916-30D/L3	1-1/2 x 2	1500	300	3600	-	-	-	-	-	-	720	720	
2918D/L3	2918-30D/L3	1-1/2 x 3	2500	300	3750	-	-	-	-	-	-	720	720	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range. A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, D Orifice - ASME Area: 0.1279 Sq. in.



Selection Table for Vapors, Gases and Liquids

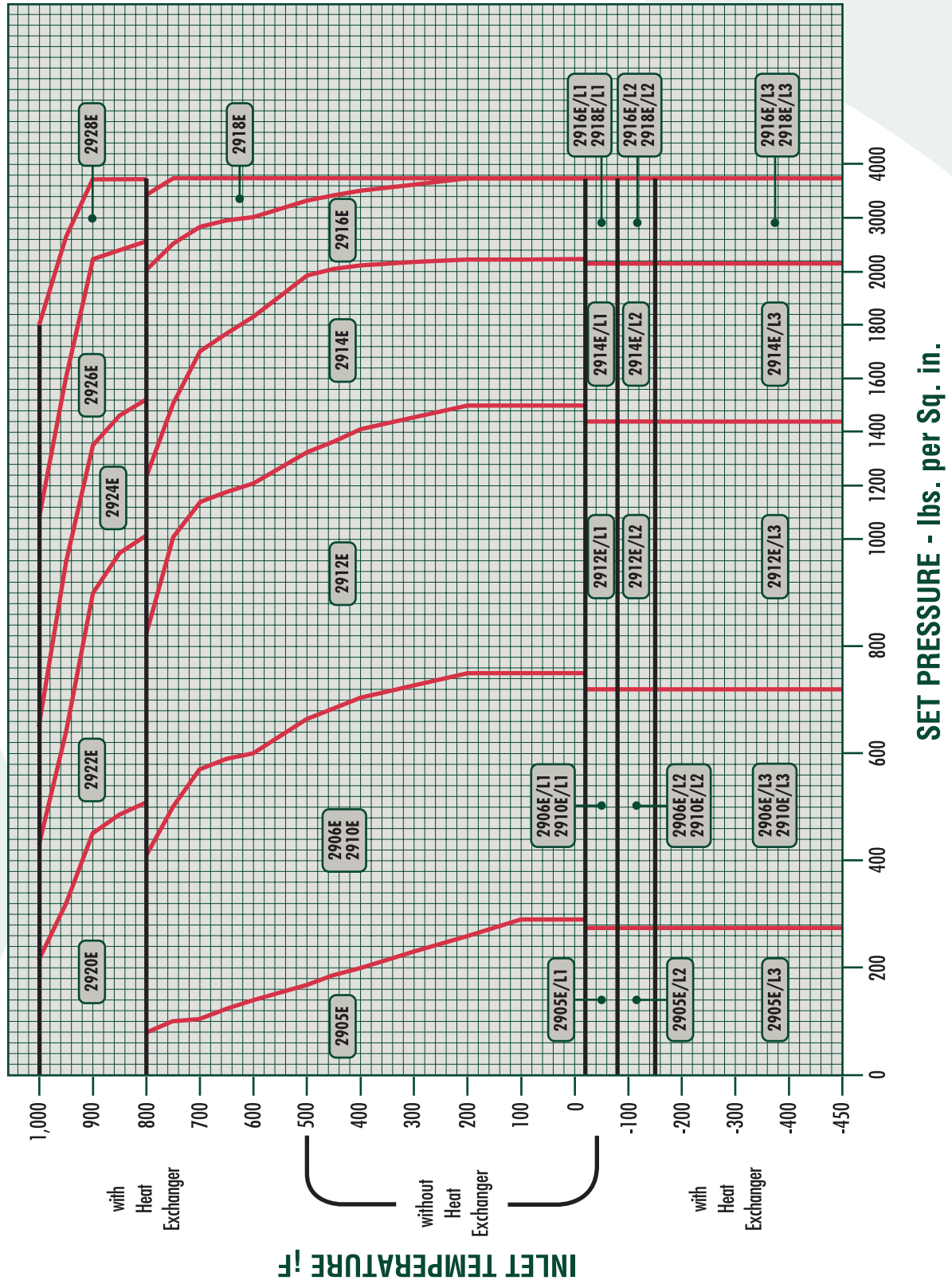
2900 Series, E Orifice - ASME Area: 0.2279 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905E	2905-30E	1 x 2	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906E	2906-30E	1 x 2	300	150	-	-	-	750	685	410	-	290	290	
2910E	2910-30E	1 x 2	300	150	-	-	-	750	685	410	-	290	290	
2912E	2912-30E	1 x 2	600	150	-	-	-	1500	1370	825	-	290	290	
2914E	2914-30E	1-1/2 x 2	900	300	-	-	-	2250	2055	1235	-	750	750	
2916E	2916-30E	1-1/2 x 2	1500	300	-	-	-	3750	3425	2060	-	750	750	
2918E	2918-30E	1-1/2 x 3	2500	300	-	-	-	3750	3750	3430	-	750	750	
2920E	2920-30E	1 x 2	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922E	2922-30E	1 x 2	600	150	-	-	-	-	-	1015	430	290	290	
2924E	2924-30E	1-1/2 x 2	900	300	-	-	-	-	-	1525	650	750	750	
2926E	2926-30E	1-1/2 x 2	1500	300	-	-	-	-	-	2540	1080	750	750	
2928E	2928-30E	1-1/2 x 3	2500	300	-	-	-	-	-	3750	1800	750	750	
2905E/L1	2905-30E/L1	1 x 2	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906E/L1	2906-30E/L1	1 x 2	300	150	-	-	720	-	-	-	-	275	275	
2910E/L1	2910-30E/L1	1 x 2	300	150	-	-	720	-	-	-	-	275	275	
2912E/L1	2912-30E/L1	1 x 2	600	150	-	-	1440	-	-	-	-	275	275	
2914E/L1	2914-30E/L1	1-1/2 x 2	900	300	-	-	2160	-	-	-	-	720	720	
2916E/L1	2916-30E/L1	1-1/2 x 2	1500	300	-	-	3600	-	-	-	-	720	720	
2918E/L1	2918-30E/L1	1-1/2 x 3	2500	300	-	-	3750	-	-	-	-	720	720	
2905E/L2	2905-30E/L2	1 x 2	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906E/L2	2906-30E/L2	1 x 2	300	150	-	720	-	-	-	-	-	275	275	
2910E/L2	2910-30E/L2	1 x 2	300	150	-	720	-	-	-	-	-	275	275	
2912E/L2	2912-30E/L2	1 x 2	600	150	-	1440	-	-	-	-	-	275	275	
2914E/L2	2914-30E/L2	1-1/2 x 2	900	300	-	2160	-	-	-	-	-	720	720	
2916E/L2	2916-30E/L2	1-1/2 x 2	1500	300	-	2600	-	-	-	-	-	720	720	
2918E/L2	2918-30E/L2	1-1/2 x 3	2500	300	-	3750	-	-	-	-	-	720	720	
2905E/L3	2905-30E/L3	1 x 2	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906E/L3	2906-30E/L3	1 x 2	300	150	720	-	-	-	-	-	-	275	275	
2910E/L3	2910-30E/L3	1 x 2	300	150	720	-	-	-	-	-	-	275	275	
2912E/L3	2912-30E/L3	1 x 2	600	150	1440	-	-	-	-	-	-	275	275	
2914E/L3	2914-30E/L3	1-1/2 x 2	900	300	2160	-	-	-	-	-	-	720	720	
2916E/L3	2916-30E/L3	1-1/2 x 2	1500	300	3600	-	-	-	-	-	-	720	720	
2918E/L3	2918-30E/L3	1-1/2 x 3	2500	300	3750	-	-	-	-	-	-	720	720	

NOTES: Refer to the 'Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, E Orifice - ASME Area: 0.2279 Sq. in.



Selection Table for Vapors, Gases and Liquids

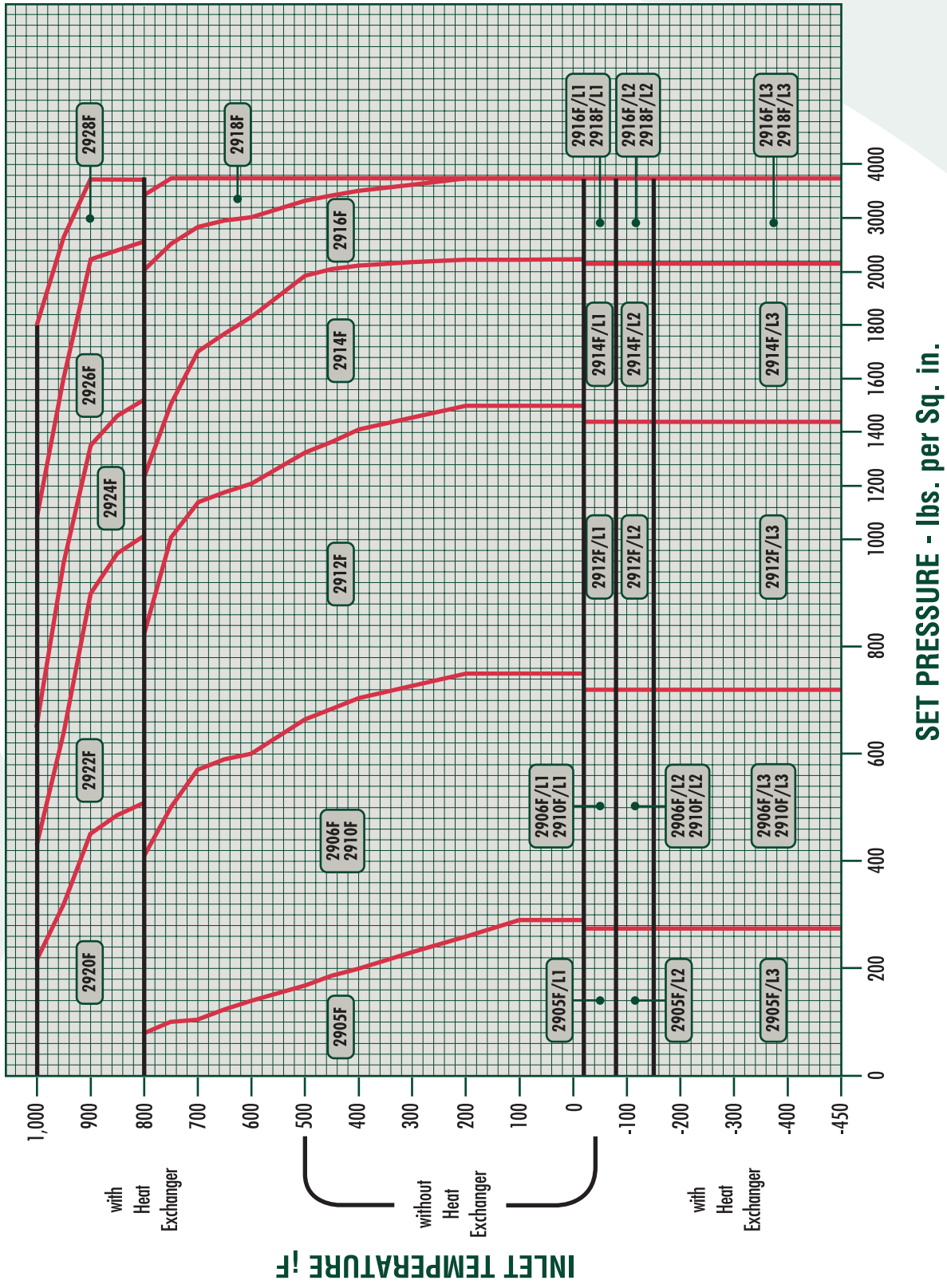
2900 Series, F Orifice - ASME Area: 0.3568 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905F	2905-30F	1-1/2 x 2	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906F	2906-30F	1-1/2 x 2	300	150	-	-	-	750	685	410	-	290	290	
2910F	2910-30F	1-1/2 x 2	300	150	-	-	-	750	685	410	-	290	290	
2912F	2912-30F	1-1/2 x 2	600	150	-	-	-	1500	1370	825	-	290	290	
2914F	2914-30F	1-1/2 x 3	900	300	-	-	-	2250	2055	1235	-	750	750	
2916F	2916-30F	1-1/2 x 3	1500	300	-	-	-	3750	3425	2060	-	750	750	
2918F	2918-30F	1-1/2 x 3	2500	300	-	-	-	3750	3750	3430	-	750	750	
2920F	2920-30F	1-1/2 x 2	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922F	2922-30F	1-1/2 x 2	600	150	-	-	-	-	-	1015	430	290	290	
2924F	2924-30F	1-1/2 x 3	900	300	-	-	-	-	-	1525	650	750	750	
2926F	2926-30F	1-1/2 x 3	1500	300	-	-	-	-	-	2540	1080	750	750	
2928F	2928-30F	1-1/2 x 3	2500	300	-	-	-	-	-	3750	1800	750	750	
2905F/L1	2905-30F/L1	1-1/2 x 2	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906F/L1	2906-30F/L1	1-1/2 x 2	300	150	-	-	720	-	-	-	-	275	275	
2910F/L1	2910-30F/L1	1-1/2 x 2	300	150	-	-	720	-	-	-	-	275	275	
2912F/L1	2912-30F/L1	1-1/2 x 2	600	150	-	-	1440	-	-	-	-	275	275	
2914F/L1	2914-30F/L1	1-1/2 x 3	900	300	-	-	2160	-	-	-	-	720	720	
2916F/L1	2916-30F/L1	1-1/2 x 3	1500	300	-	-	3600	-	-	-	-	720	720	
2918F/L1	2918-30F/L1	1-1/2 x 3	2500	300	-	-	3750	-	-	-	-	720	720	
2905F/L2	2905-30F/L2	1-1/2 x 2	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906F/L2	2906-30F/L2	1-1/2 x 2	300	150	-	720	-	-	-	-	-	275	275	
2910F/L2	2910-30F/L2	1-1/2 x 2	300	150	-	720	-	-	-	-	-	275	275	
2912F/L2	2912-30F/L2	1-1/2 x 2	600	150	-	1440	-	-	-	-	-	275	275	
2914F/L2	2914-30F/L2	1-1/2 x 3	900	300	-	2160	-	-	-	-	-	720	720	
2916F/L2	2916-30F/L2	1-1/2 x 3	1500	300	-	2200	-	-	-	-	-	720	720	
2918F/L2	2918-30F/L2	1-1/2 x 3	2500	300	-	3400	-	-	-	-	-	720	720	
2905F/L3	2905-30F/L3	1-1/2 x 2	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906F/L3	2906-30F/L3	1-1/2 x 2	300	150	720	-	-	-	-	-	-	275	275	
2910F/L3	2910-30F/L3	1-1/2 x 2	300	150	720	-	-	-	-	-	-	275	275	
2912F/L3	2912-30F/L3	1-1/2 x 2	600	150	1440	-	-	-	-	-	-	275	275	
2914F/L3	2914-30F/L3	1-1/2 x 3	900	300	2160	-	-	-	-	-	-	720	720	
2916F/L3	2916-30F/L3	1-1/2 x 3	1500	300	3600	-	-	-	-	-	-	720	720	
2918F/L3	2918-30F/L3	1-1/2 x 3	2500	300	3400	-	-	-	-	-	-	720	720	

NOTES: Refer to the 'Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, F Orifice - ASME Area: 0.3568 Sq. in.



Selection Table for Vapors, Gases and Liquids

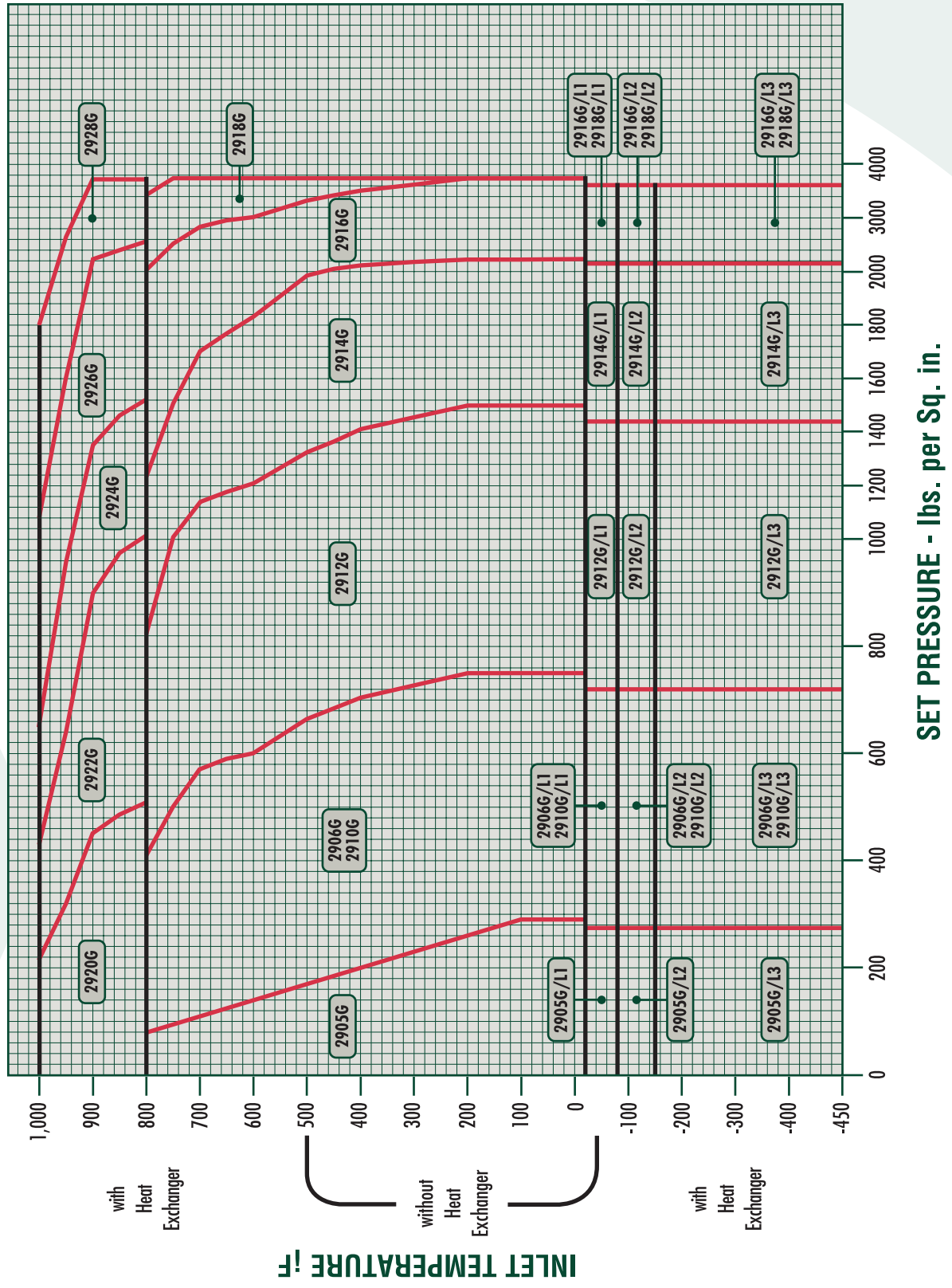
2900 Series, G Orifice - ASME Area: 0.5849 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F							Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
29056	2905-30G	1-1/2 x 3	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
29066	2906-30G	1-1/2 x 3	300	150	-	-	-	750	685	410	-	290	290	
29106	2910-30G	1-1/2 x 3	300	150	-	-	-	750	685	410	-	290	290	
29126	2912-30G	1-1/2 x 3	600	150	-	-	-	1500	1370	825	-	290	290	
29146	2914-30G	1-1/2 x 3	900	300	-	-	-	2250	2055	1235	-	750	750	
29166	2916-30G	2 x 3	1500	300	-	-	-	3750	3425	2060	-	750	750	
29186	2918-30G	2 x 3	2500	300	-	-	-	3750	3750	3430	-	750	750	
29206	2920-30G	1-1/2 x 3	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
29226	2922-30G	1-1/2 x 3	600	150	-	-	-	-	-	1015	430	290	290	
29246	2924-30G	1-1/2 x 3	900	300	-	-	-	-	-	1525	650	750	750	
29266	2926-30G	2 x 3	1500	300	-	-	-	-	-	2540	1080	750	750	
29286	2928-30G	2 x 3	2500	300	-	-	-	-	-	3750	1800	750	750	
29056/L1	2905-30G/L1	1-1/2 x 3	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
29066/L1	2906-30G/L1	1-1/2 x 3	300	150	-	-	720	-	-	-	-	275	275	
29106/L1	2910-30G/L1	1-1/2 x 3	300	150	-	-	720	-	-	-	-	275	275	
29126/L1	2912-30G/L1	1-1/2 x 3	600	150	-	-	1440	-	-	-	-	275	275	
29146/L1	2914-30G/L1	1-1/2 x 3	900	300	-	-	2160	-	-	-	-	720	720	
29166/L1	2916-30G/L1	2 x 3	1500	300	-	-	3600	-	-	-	-	720	720	
29186/L1	2918-30G/L1	2 x 3	2500	300	-	-	3750	-	-	-	-	720	720	
29056/L2	2905-30G/L2	1-1/2 x 3	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
29066/L2	2906-30G/L2	1-1/2 x 3	300	150	-	720	-	-	-	-	-	275	275	
29106/L2	2910-30G/L2	1-1/2 x 3	300	150	-	720	-	-	-	-	-	275	275	
29126/L2	2912-30G/L2	1-1/2 x 3	600	150	-	1440	-	-	-	-	-	275	275	
29146/L2	2914-30G/L2	1-1/2 x 3	900	300	-	2160	-	-	-	-	-	720	720	
29166/L2	2916-30G/L2	2 x 3	1500	300	-	3600	-	-	-	-	-	720	720	
29186/L2	2918-30G/L2	2 x 3	2500	300	-	3750	-	-	-	-	-	720	720	
29056/L3	2905-30G/L3	1-1/2 x 3	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
29066/L3	2906-30G/L3	1-1/2 x 3	300	150	720	-	-	-	-	-	-	275	275	
29106/L3	2910-30G/L3	1-1/2 x 3	300	150	720	-	-	-	-	-	-	275	275	
29126/L3	2912-30G/L3	1-1/2 x 3	600	150	1440	-	-	-	-	-	-	275	275	
29146/L3	2914-30G/L3	1-1/2 x 3	900	300	2160	-	-	-	-	-	-	720	720	
29166/L3	2916-30G/L3	2 x 3	1500	300	3600	-	-	-	-	-	-	720	720	
29186/L3	2918-30G/L3	2 x 3	2500	300	3750	-	-	-	-	-	-	720	720	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, G Orifice - ASME Area: 0.5849 Sq. in.



Selection Table for Vapors, Gases and Liquids

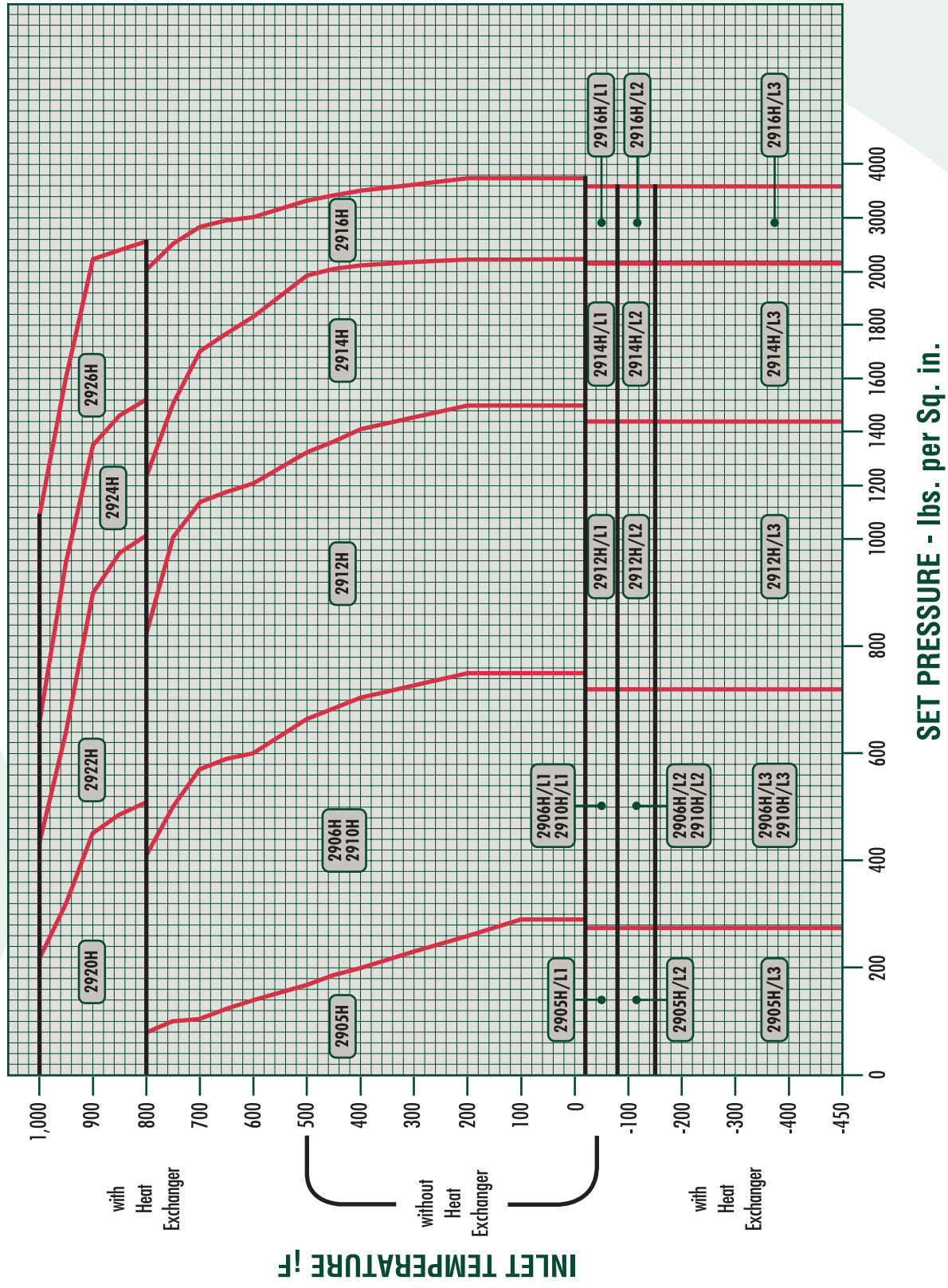
2900 Series, H Orifice - ASME Area: 0.9127 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F							Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905H	2905-30H	1-1/2 x 3	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906H	2906-30H	1-1/2 x 3	300	150	-	-	-	750	685	410	-	290	290	
2910H	2910-30H	2 x 3	300	150	-	-	-	750	685	410	-	290	290	
2912H	2912-30H	2 x 3	600	150	-	-	-	1500	1370	825	-	290	290	
2914H	2914-30H	2 x 3	900	150	-	-	-	2250	2055	1235	-	290	290	
2916H	2916-30H	2 x 3	1500	300	-	-	-	3750	3425	2060	-	750	750	
2920H	2920-30H	2 x 3	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922H	2922-30H	2 x 3	600	150	-	-	-	-	-	1015	430	290	290	
2924H	2924-30H	2 x 3	900	150	-	-	-	-	-	1525	650	290	290	
2926H	2926-30H	2 x 3	1500	300	-	-	-	-	-	2540	1080	750	750	
2905H/L1	2905-30H/L1	1-1/2 x 3	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906H/L1	2906-30H/L1	1-1/2 x 3	300	150	-	-	720	-	-	-	-	275	275	
2910H/L1	2910-30H/L1	2 x 3	300	150	-	-	720	-	-	-	-	275	275	
2912H/L1	2912-30H/L1	2 x 3	600	150	-	-	1440	-	-	-	-	275	275	
2914H/L1	2914-30H/L1	2 x 3	900	150	-	-	2160	-	-	-	-	275	275	
2916H/L1	2916-30H/L1	2 x 3	1500	300	-	-	3600	-	-	-	-	720	720	
2905H/L2	2905-30H/L2	1-1/2 x 3	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906H/L2	2906-30H/L2	1-1/2 x 3	300	150	-	720	-	-	-	-	-	275	275	
2910H/L2	2910-30H/L2	2 x 3	300	150	-	720	-	-	-	-	-	275	275	
2912H/L2	2912-30H/L2	2 x 3	600	150	-	1440	-	-	-	-	-	275	275	
2914H/L2	2914-30H/L2	2 x 3	900	150	-	2160	-	-	-	-	-	275	275	
2916H/L2	2916-30H/L2	2 x 3	1500	300	-	3600	-	-	-	-	-	720	720	
2905H/L3	2905-30H/L3	1-1/2 x 3	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906H/L3	2906-30H/L3	1-1/2 x 3	300	150	720	-	-	-	-	-	-	275	275	
2910H/L3	2910-30H/L3	2 x 3	300	150	720	-	-	-	-	-	-	275	275	
2912H/L3	2912-30H/L3	2 x 3	600	150	1440	-	-	-	-	-	-	275	275	
2914H/L3	2914-30H/L3	2 x 3	900	150	2160	-	-	-	-	-	-	275	275	
2916H/L3	2916-30H/L3	2 x 3	1500	300	3600	-	-	-	-	-	-	720	720	

NOTES: Refer to the 'Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range. A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, H Orifice - ASME Area: 0.9127 Sq. in.



Selection Table for Vapors, Gases and Liquids

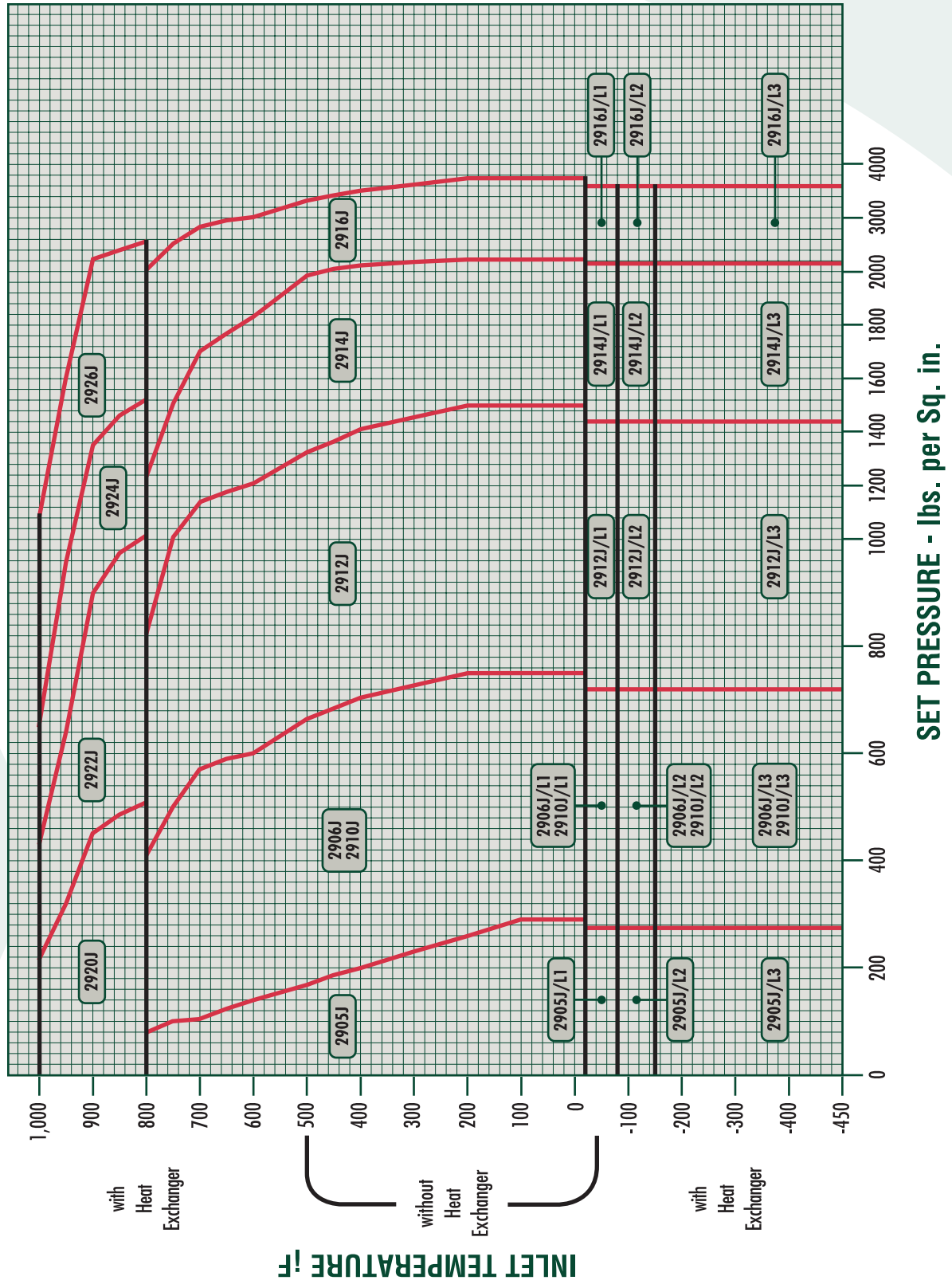
2900 Series, J Orifice - ASME Area: 1.496 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905J	2905-30J	2 x 3	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906J	2906-30J	2 x 3	300	150	-	-	-	750	685	410	-	290	290	
2910J	2910-30J	3 x 4	300	150	-	-	-	750	685	410	-	290	290	
2912J	2912-30J	3 x 4	600	150	-	-	-	1500	1370	825	-	290	290	
2914J	2914-30J	3 x 4	900	150	-	-	-	2250	2055	1235	-	290	290	
2916J	2916-30J	3 x 4	1500	300	-	-	-	3750	3425	2060	-	750	635	
2920J	2920-30J	3 x 4	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922J	2922-30J	3 x 4	600	150	-	-	-	-	-	1015	430	290	290	
2924J	2924-30J	3 x 4	900	150	-	-	-	-	-	1525	650	290	290	
2926J	2926-30J	3 x 4	1500	300	-	-	-	-	-	2540	1080	750	635	
2905J/12	2905-30J/L1	2 x 3	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906J/L1	2906-30J/L1	2 x 3	300	150	-	-	720	-	-	-	-	275	275	
2910J/L1	2910-30J/L1	3 x 4	300	150	-	-	720	-	-	-	-	275	275	
2912J/L1	2912-30J/L1	3 x 4	600	150	-	-	1440	-	-	-	-	275	275	
2914J/L1	2914-30J/L1	3 x 4	900	150	-	-	2160	-	-	-	-	275	275	
2916J/L1	2916-30J/L1	3 x 4	1500	300	-	-	3600	-	-	-	-	720	635	
2905J/12	2905-30J/12	2 x 3	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906J/12	2906-30J/12	2 x 3	300	150	-	720	-	-	-	-	-	275	275	
2910J/12	2910-30J/12	3 x 4	300	150	-	720	-	-	-	-	-	275	275	
2912J/12	2912-30J/12	3 x 4	600	150	-	1440	-	-	-	-	-	275	275	
2914J/12	2914-30J/12	3 x 4	900	150	-	2160	-	-	-	-	-	275	275	
2916J/12	2916-30J/12	3 x 4	1500	300	-	3600	-	-	-	-	-	720	635	
2905J/13	2905-30J/13	2 x 3	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906J/13	2906-30J/13	2 x 3	300	150	720	-	-	-	-	-	-	275	275	
2910J/13	2910-30J/13	3 x 4	300	150	720	-	-	-	-	-	-	275	275	
2912J/13	2912-30J/13	3 x 4	600	150	1440	-	-	-	-	-	-	275	275	
2914J/13	2914-30J/13	3 x 4	900	150	2160	-	-	-	-	-	-	275	275	
2916J/13	2916-30J/13	3 x 4	1500	300	3600	-	-	-	-	-	-	720	635	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, J Orifice - ASME Area: 1.496 Sq. in.



Selection Table for Vapors, Gases and Liquids

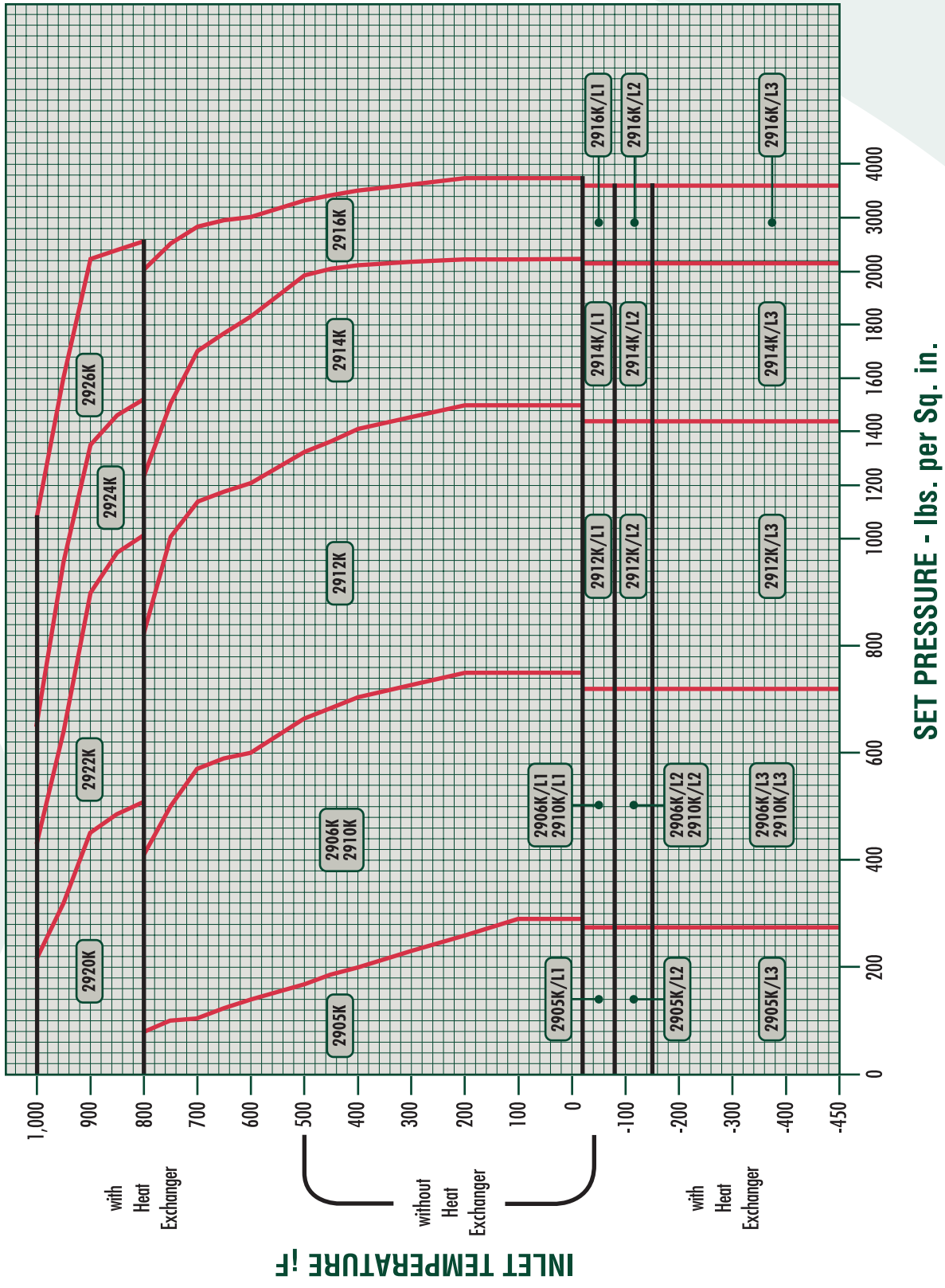
2900 Series, K Orifice - ASME Area: 2.136 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905K	2905-30K	3 x 4	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906K	2906-30K	3 x 4	300	150	-	-	-	750	685	410	-	290	290	
2910K	2910-30K	3 x 4	300	150	-	-	-	750	685	410	-	290	290	
2912K	2912-30K	3 x 4	600	150	-	-	-	1500	1370	825	-	290	290	
2914K	2914-30K	3 x 6	900	150	-	-	-	2250	2055	1235	-	290	290	
2916K	2916-30K	3 x 6	1500	300	-	-	-	3750	3425	2060	-	750	535	
2920K	2920-30K	3 x 4	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922K	2922-30K	3 x 4	600	150	-	-	-	-	-	1015	430	290	290	
2924K	2924-30K	3 x 6	900	150	-	-	-	-	-	1525	650	290	290	
2926K	2926-30K	3 x 6	1500	300	-	-	-	-	-	2540	1080	750	535	
2905K/L1	2905-30K/L1	3 x 4	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906K/L1	2906-30K/L1	3 x 4	300	150	-	-	720	-	-	-	-	275	275	
2910K/L1	2910-30K/L1	3 x 4	300	150	-	-	720	-	-	-	-	275	275	
2912K/L1	2912-30K/L1	3 x 4	600	150	-	-	1440	-	-	-	-	275	275	
2914K/L1	2914-30K/L1	3 x 6	900	150	-	-	2160	-	-	-	-	275	275	
2916K/L1	2916-30K/L1	3 x 6	1500	300	-	-	3600	-	-	-	-	720	535	
2905K/L2	2905-30K/L2	3 x 4	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906K/L2	2906-30K/L2	3 x 4	300	150	-	720	-	-	-	-	-	275	275	
2910K/L2	2910-30K/L2	3 x 4	300	150	-	720	-	-	-	-	-	275	275	
2912K/L2	2912-30K/L2	3 x 4	600	150	-	1440	-	-	-	-	-	275	275	
2914K/L2	2914-30K/L2	3 x 6	900	150	-	2160	-	-	-	-	-	275	275	
2916K/L2	2916-30K/L2	3 x 6	1500	300	-	3600	-	-	-	-	-	720	535	
2905K/L3	2905-30K/L3	3 x 4	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906K/L3	2906-30K/L3	3 x 4	300	150	720	-	-	-	-	-	-	275	275	
2910K/L3	2910-30K/L3	3 x 4	300	150	720	-	-	-	-	-	-	275	275	
2912K/L3	2912-30K/L3	3 x 4	600	150	1440	-	-	-	-	-	-	275	275	
2914K/L3	2914-30K/L3	3 x 6	900	150	2160	-	-	-	-	-	-	275	275	
2916K/L3	2916-30K/L3	3 x 6	1500	300	3600	-	-	-	-	-	-	720	535	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, K Orifice - ASME Area: 2.136 Sq. in.



Selection Table for Vapors, Gases and Liquids

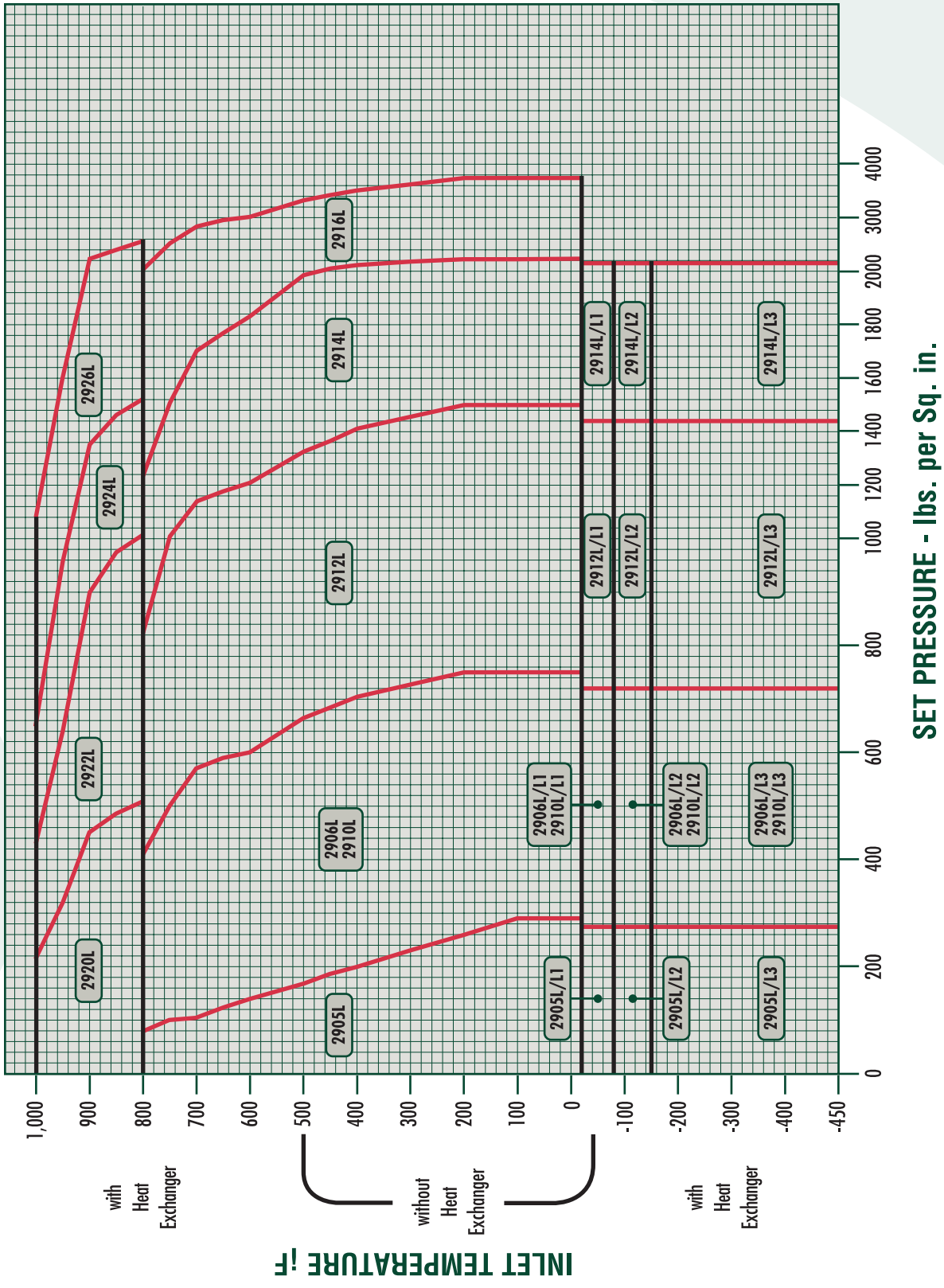
2900 Series, L Orifice - ASME Area: 3.317 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F							Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905L	2905-30L	3 x 4	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906L	2906-30L	3 x 4	300	150	-	-	-	750	685	410	-	290	290	
2910L	2910-30L	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2912L	2912-30L	4 x 6	600	150	-	-	-	1500	1370	825	-	290	290	
2914L	2914-30L	4 x 6	900	150	-	-	-	2250	2055	1235	-	290	290	
2916L	2916-30L	4 x 6	1500	150	-	-	-	3750	3425	2060	-	290	290	
2920L	2920-30L	4 x 6	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922L	2922-30L	4 x 6	600	150	-	-	-	-	-	1015	430	290	290	
2924L	2924-30L	4 x 6	900	150	-	-	-	-	-	1525	650	290	290	
2926L	2926-30L	4 x 6	1500	150	-	-	-	-	-	2540	1080	290	290	
2905L/L1	2905-30L/L1	3 x 4	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906L/L1	2906-30L/L1	3 x 4	300	150	-	-	720	-	-	-	-	275	275	
2910L/L1	2910-30L/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2912L/L1	2912-30L/L1	4 x 6	600	150	-	-	1440	-	-	-	-	275	275	
2914L/L1	2914-30L/L1	4 x 6	900	150	-	-	2160	-	-	-	-	275	275	
2905L/L2	2905-30L/L2	3 x 4	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906L/L2	2906-30L/L2	3 x 4	300	150	-	720	-	-	-	-	-	275	275	
2910L/L2	2910-30L/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2912L/L2	2912-30L/L2	4 x 6	600	150	-	1440	-	-	-	-	-	275	275	
2914L/L2	2914-30L/L2	4 x 6	900	150	-	2160	-	-	-	-	-	275	275	
2905L/L3	2905-30L/L3	3 x 4	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906L/L3	2906-30L/L3	3 x 4	300	150	720	-	-	-	-	-	-	275	275	
2910L/L3	2910-30L/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2912L/L3	2912-30L/L3	4 x 6	600	150	1440	-	-	-	-	-	-	275	275	
2914L/L3	2914-30L/L3	4 x 6	900	150	2160	-	-	-	-	-	-	275	275	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range. A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, L Orifice - ASME Area: 3.317 Sq. in.



Selection Table for Vapors, Gases and Liquids

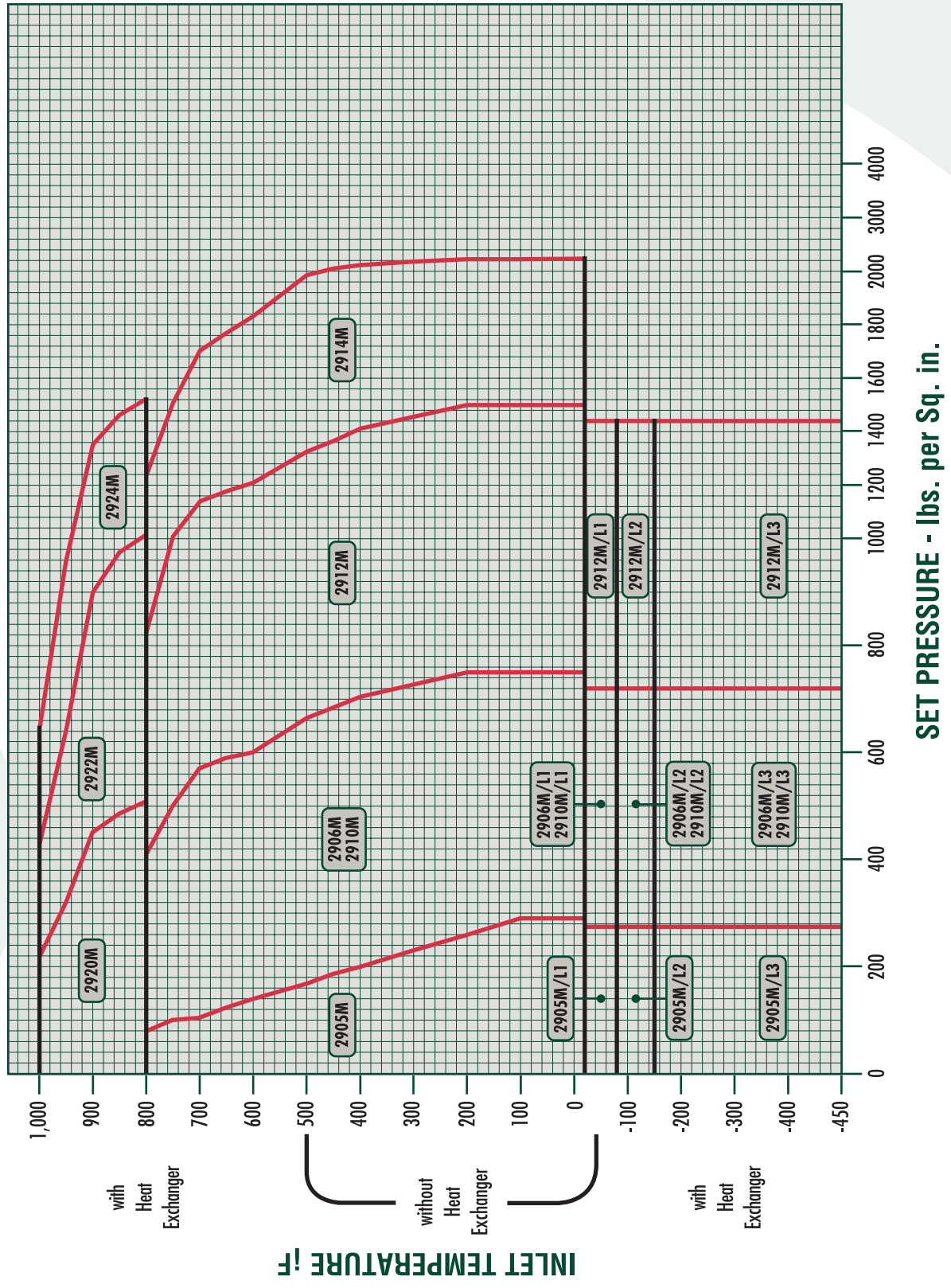
2900 Series, M Orifice - ASME Area: 4.186 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905M	2905-30M	4 x 6	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906M	2906-30M	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2910M	2910-30M	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2912M	2912-30M	4 x 6	600	150	-	-	-	1500	1370	825	-	290	290	
2914M	2914-30M	4 x 6	900	150	-	-	-	2250	2055	1235	-	290	290	
2920M	2920-30M	4 x 6	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922M	2922-30M	4 x 6	600	150	-	-	-	-	-	1015	430	290	290	
2924M	2924-30M	4 x 6	900	150	-	-	-	-	-	1525	650	290	290	
2905M/L1	2905-30M/L1	4 x 6	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906M/L1	2906-30M/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2910M/L1	2910-30M/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2912M/L1	2912-30M/L1	4 x 6	600	150	-	-	1440	-	-	-	-	275	275	
2905M/L2	2905-30M/L2	4 x 6	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906M/L2	2906-30M/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2910M/L2	2910-30M/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2912M/L2	2912-30M/L2	4 x 6	600	150	-	1440	-	-	-	-	-	275	275	
2905M/L3	2905-30M/L3	4 x 6	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906M/L3	2906-30M/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2910M/L3	2910-30M/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2912M/L3	2912-30M/L3	4 x 6	600	150	1440	-	-	-	-	-	-	275	275	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range. A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, M Orifice - ASME Area: 4.186 Sq. in.



Selection Table for Vapors, Gases and Liquids

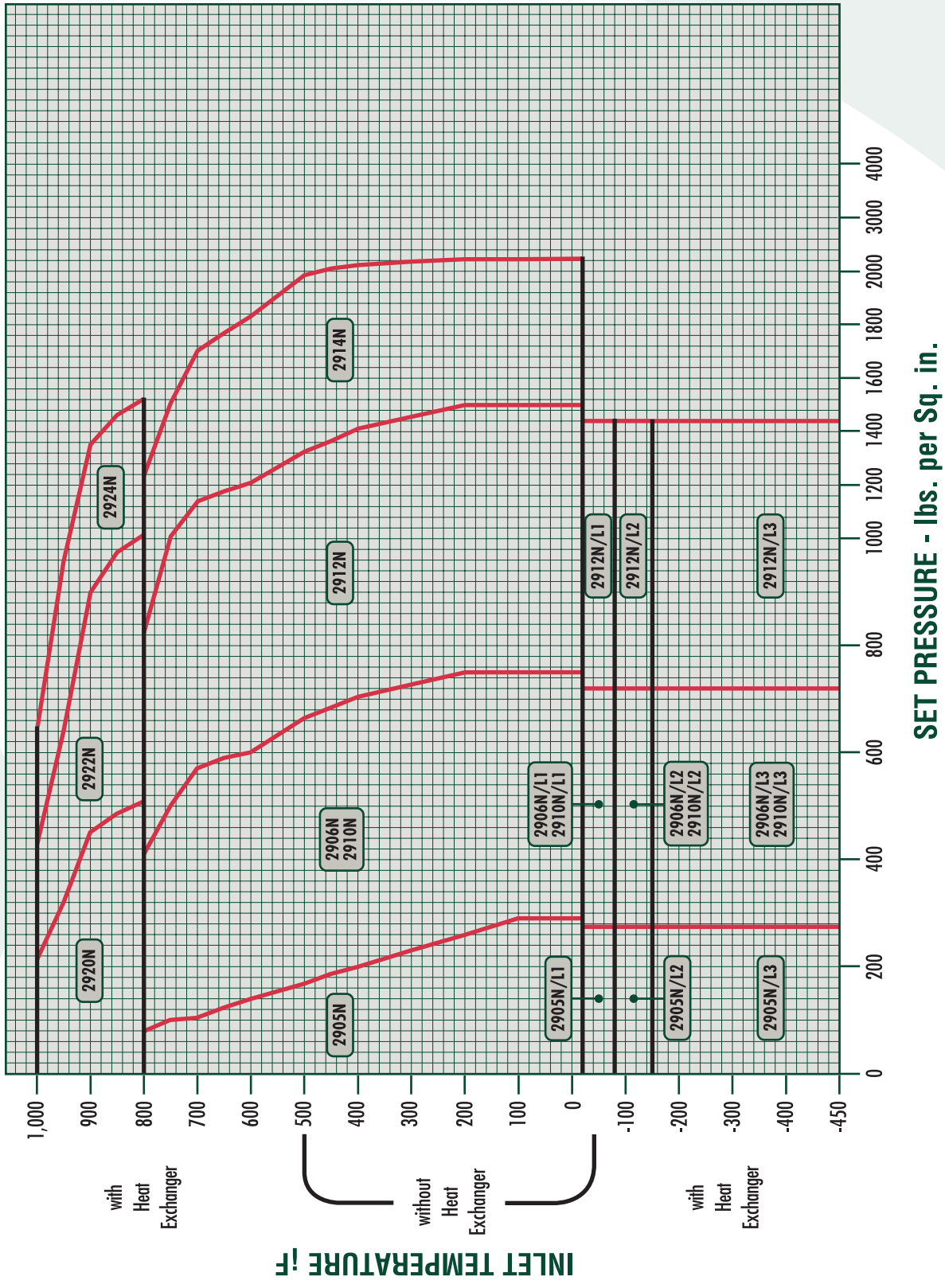
2900 Series, N Orifice - ASME Area: 5.047 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905N	2905-30N	4 x 6	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906N	2906-30N	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2910N	2910-30N	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2912N	2912-30N	4 x 6	600	150	-	-	-	1500	1370	825	-	290	290	
2914N	2914-30N	4 x 6	900	150	-	-	-	2250	2055	1235	-	290	290	
2920N	2920-30N	4 x 6	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2922N	2922-30N	4 x 6	600	150	-	-	-	-	-	1015	430	290	290	
2924N	2924-30N	4 x 6	900	150	-	-	-	-	-	1525	650	290	290	
2905N/L1	2905-30N/L1	4 x 6	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906N/L1	2906-30N/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2910N/L1	2910-30N/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2912N/L1	2912-30N/L1	4 x 6	600	150	-	-	1440	-	-	-	-	275	275	
2905N/L2	2905-30N/L2	4 x 6	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906N/L2	2906-30N/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2910N/L2	2910-30N/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2912N/L2	2912-30N/L2	4 x 6	600	150	-	1440	-	-	-	-	-	275	275	
2905N/L3	2905-30N/L3	4 x 6	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906N/L3	2906-30N/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2910N/L3	2910-30N/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2912N/L3	2912-30N/L3	4 x 6	600	150	1440	-	-	-	-	-	-	275	275	

NOTES: Refer to the 'Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, N Orifice - ASME Area: 5.047 Sq. in.



Selection Table for Vapors, Gases and Liquids

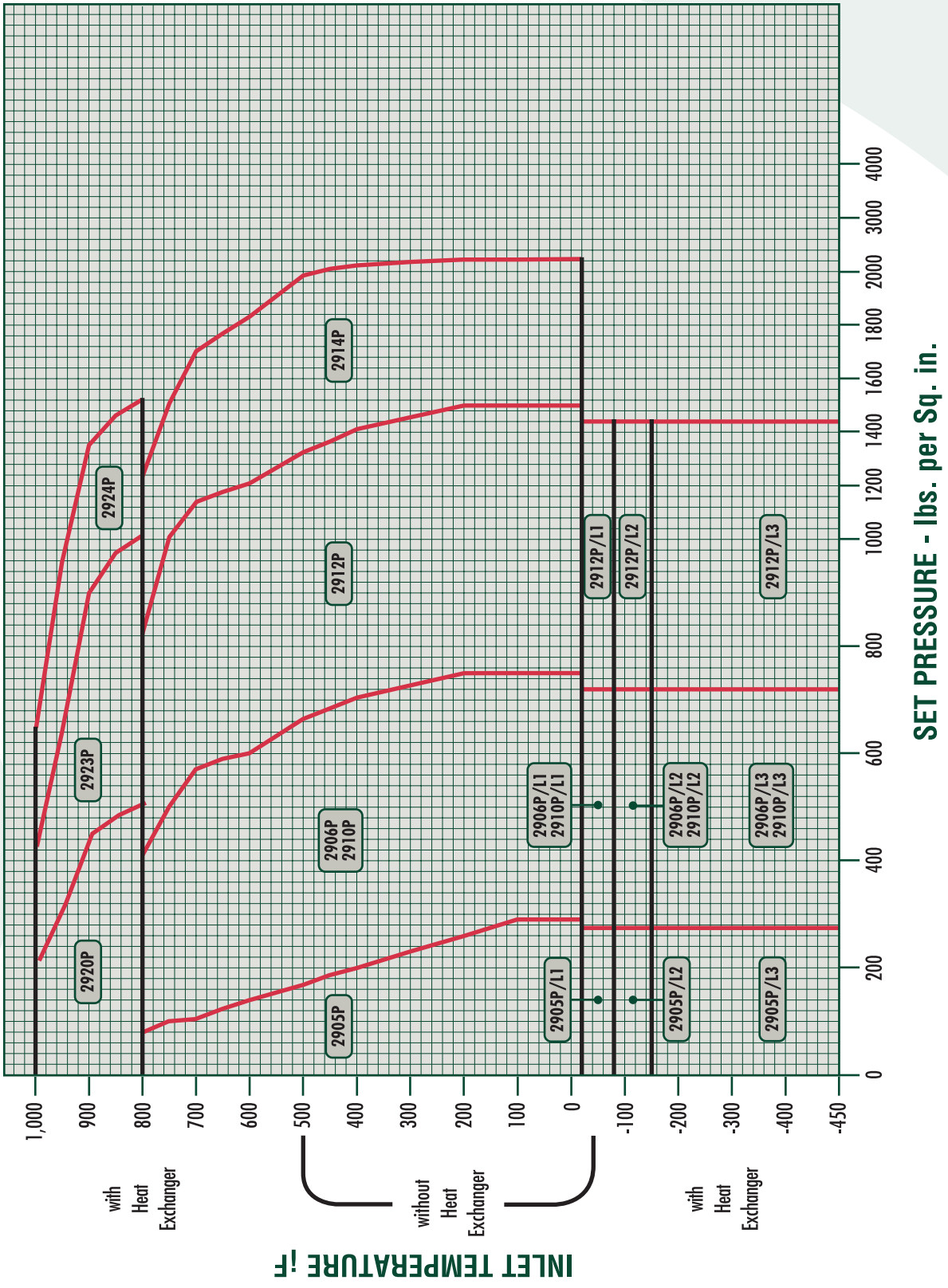
2900 Series, P Orifice - ASME Area: 7.417 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905P	2905-30P	4 x 6	150	150	-	-	-	290	185	80	-	280	280	-20 to 800
2906P	2906-30P	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2910P	2910-30P	4 x 6	300	150	-	-	-	750	685	410	-	290	290	
2912P	2912-30P	4 x 6	600	150	-	-	-	1500	1370	1370	-	290	290	
2914P	2914-30P	4 x 6	900	150	-	-	-	2250	2055	2055	-	290	290	
2920P	2920-30P	4 x 6	300	150	-	-	-	-	-	510	215	290	290	801 to 1000
2923P	2923-30P	4 x 6	600	150	-	-	-	-	-	1015	430	290	290	
2924P	2924-30P	4 x 6	900	150	-	-	-	-	-	1525	650	290	290	
2905P/L1	2905-30P/L1	4 x 6	150	150	-	-	275	-	-	-	-	265	265	-21 to -75
2906P/L1	2906-30P/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2910P/L1	2910-30P/L1	4 x 6	300	150	-	-	720	-	-	-	-	275	275	
2912P/L1	2912-30P/L1	4 x 6	600	150	-	-	1440	-	-	-	-	275	275	
2905P/L2	2905-30P/L2	4 x 6	150	150	-	275	-	-	-	-	-	265	265	-76 to -150
2906P/L2	2906-30P/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2910P/L2	2910-30P/L2	4 x 6	300	150	-	720	-	-	-	-	-	275	275	
2912P/L2	2912-30P/L2	4 x 6	600	150	-	1440	-	-	-	-	-	275	275	
2905P/L3	2905-30P/L3	4 x 6	150	150	275	-	-	-	-	-	-	265	265	-151 to -450
2906P/L3	2906-30P/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2910P/L3	2910-30P/L3	4 x 6	300	150	720	-	-	-	-	-	-	275	275	
2912P/L3	2912-30P/L3	4 x 6	600	150	1440	-	-	-	-	-	-	275	275	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, P Orifice - ASME Area: 7.417 Sq. in.



Selection Table for Vapors, Gases and Liquids

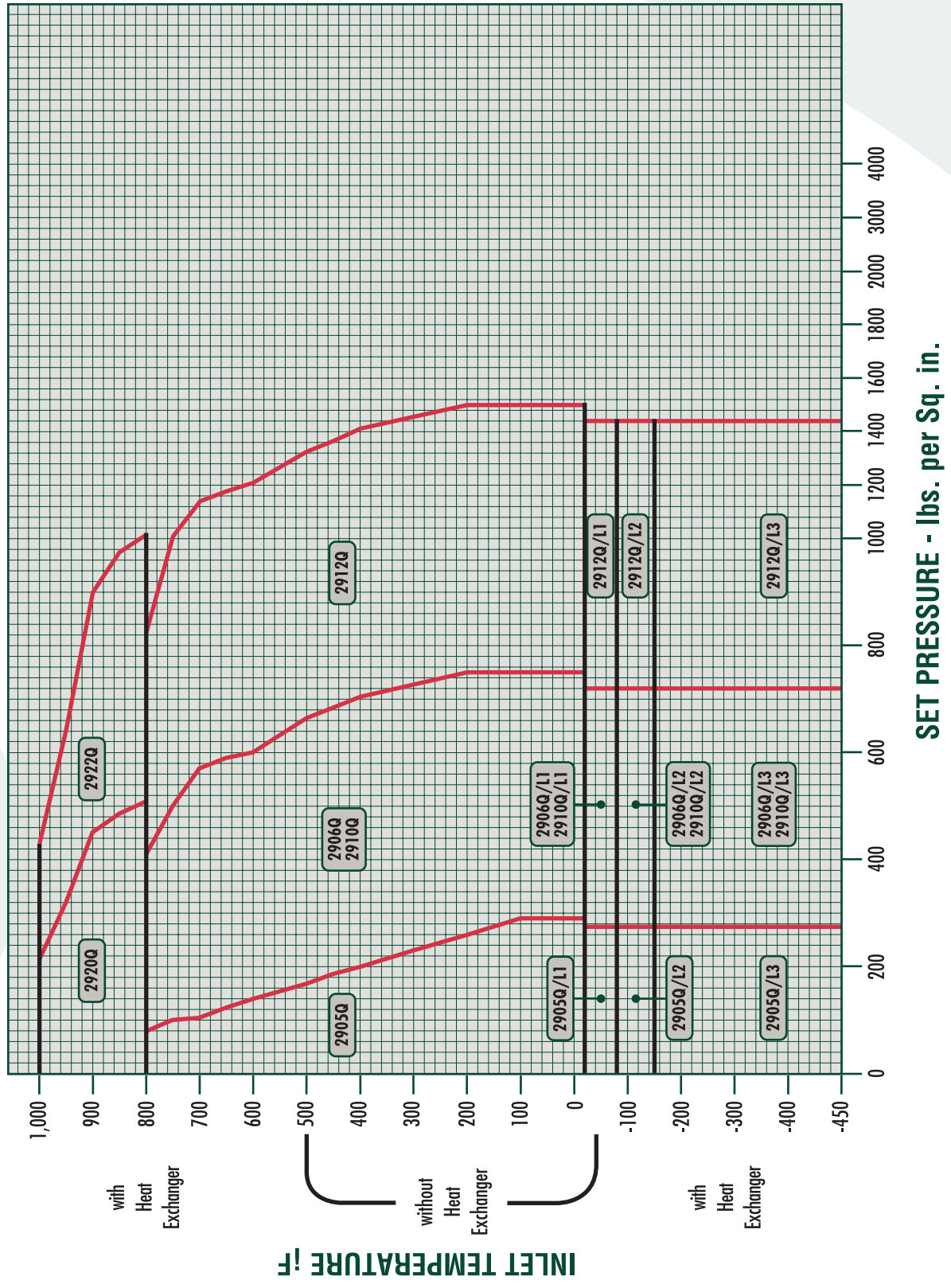
2900 Series, Q Orifice - ASME Area: 12.85 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905Q	2905-30Q	6 x 8	150	150	-	-	-	290	185	80	-	280	205	-20
2906Q	2906-30Q	6 x 8	300	150	-	-	-	750	685	410	-	290	205	to
2910Q	2910-30Q	6 x 8	300	150	-	-	-	750	685	410	-	290	205	800
2912Q	2912-30Q	6 x 8	600	150	-	-	-	1500	1370	825	-	290	205	
2920Q	2920-30Q	6 x 8	300	150	-	-	-	-	-	510	215	290	205	801
2922Q	2922-30Q	6 x 8	600	150	-	-	-	-	-	1015	430	290	205	to 1000
2905Q/L1	2905-30Q/L1	6 x 8	150	150	-	-	275	-	-	-	-	265	205	-21
2906Q/L1	2906-30Q/L1	6 x 8	300	150	-	-	720	-	-	-	-	275	205	to
2910Q/L1	2910-30Q/L1	6 x 8	300	150	-	-	720	-	-	-	-	275	205	-75
2912Q/L1	2912-30Q/L1	6 x 8	600	150	-	-	1440	-	-	-	-	275	205	
2905Q/L2	2905-30Q/L2	6 x 8	150	150	-	275	-	-	-	-	-	265	205	-76
2906Q/L2	2906-30Q/L2	6 x 8	300	150	-	720	-	-	-	-	-	275	205	to
2910Q/L2	2910-30Q/L2	6 x 8	300	150	-	720	-	-	-	-	-	275	205	-150
2912Q/L2	2912-30Q/L2	6 x 8	600	150	-	1440	-	-	-	-	-	275	205	
2905Q/L3	2905-30Q/L3	6 x 8	150	150	275	-	-	-	-	-	-	265	205	-151
2906Q/L3	2906-30Q/L3	6 x 8	300	150	720	-	-	-	-	-	-	275	205	to
2910Q/L3	2910-30Q/L3	6 x 8	300	150	720	-	-	-	-	-	-	275	205	-450
2912Q/L3	2912-30Q/L3	6 x 8	600	150	1440	-	-	-	-	-	-	275	205	

NOTES: Refer to the 'Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, Q Orifice - ASME Area: 12.85 Sq. in.



Selection Table for Vapors, Gases and Liquids

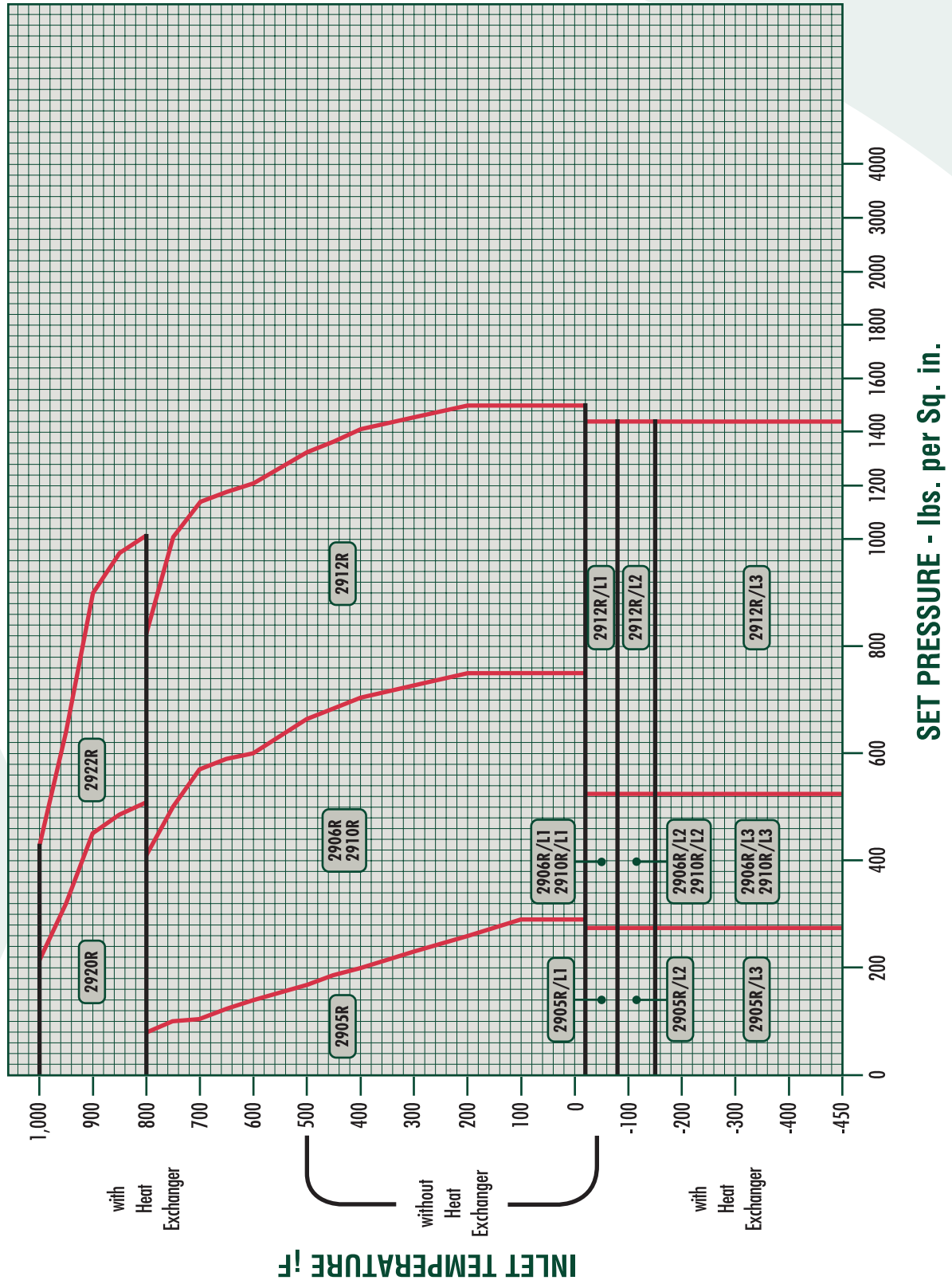
2900 Series, R Orifice - ASME Area: 18.60 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905R	2905-30R	6 x 8	150	150	-	-	-	290	185	80	-	280	145	-20
2906R	2906-30R	6 x 8	300	150	-	-	-	750	685	410	-	290	145	to
2910R	2910-30R	6 x 10	300	150	-	-	-	750	685	410	-	290	145	800
2912R	2912-30R	6 x 10	600	150	-	-	-	1500	1370	825	-	290	145	
2920R	2920-30R	6 x 8	300	150	-	-	-	-	-	510	215	290	145	801
2922R	2922-30R	6 x 10	600	150	-	-	-	-	-	1015	430	290	145	to 1000
2905R/L1	2905-30R/L1	6 x 8	150	150	-	-	275	-	-	-	-	265	145	-21
2906R/L1	2906-30R/L1	6 x 8	300	150	-	-	525	-	-	-	-	275	145	to
2910R/L1	2910-30R/L1	6 x 10	300	150	-	-	525	-	-	-	-	275	145	-75
2912R/L1	2912-30R/L1	6 x 10	600	150	-	-	1440	-	-	-	-	275	145	
2905R/L2	2905-30R/L2	6 x 8	150	150	-	275	-	-	-	-	-	265	145	-76
2906R/L2	2906-30R/L2	6 x 8	300	150	-	525	-	-	-	-	-	275	145	to
2910R/L2	2910-30R/L2	6 x 10	300	150	-	525	-	-	-	-	-	275	145	-150
2912R/L2	2912-30R/L2	6 x 10	600	150	-	1440	-	-	-	-	-	275	145	
2905R/L3	2905-30R/L3	6 x 8	150	150	275	-	-	-	-	-	-	265	145	-151
2906R/L3	2906-30R/L3	6 x 8	300	150	525	-	-	-	-	-	-	275	145	to
2910R/L3	2910-30R/L3	6 x 10	300	150	525	-	-	-	-	-	-	275	145	-450
2912R/L3	2912-30R/L3	6 x 10	600	150	1440	-	-	-	-	-	-	275	145	

NOTES: Refer to the 'Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, R Orifice - ASME Area: 18.60 Sq. in.



Selection Table for Vapors, Gases and Liquids

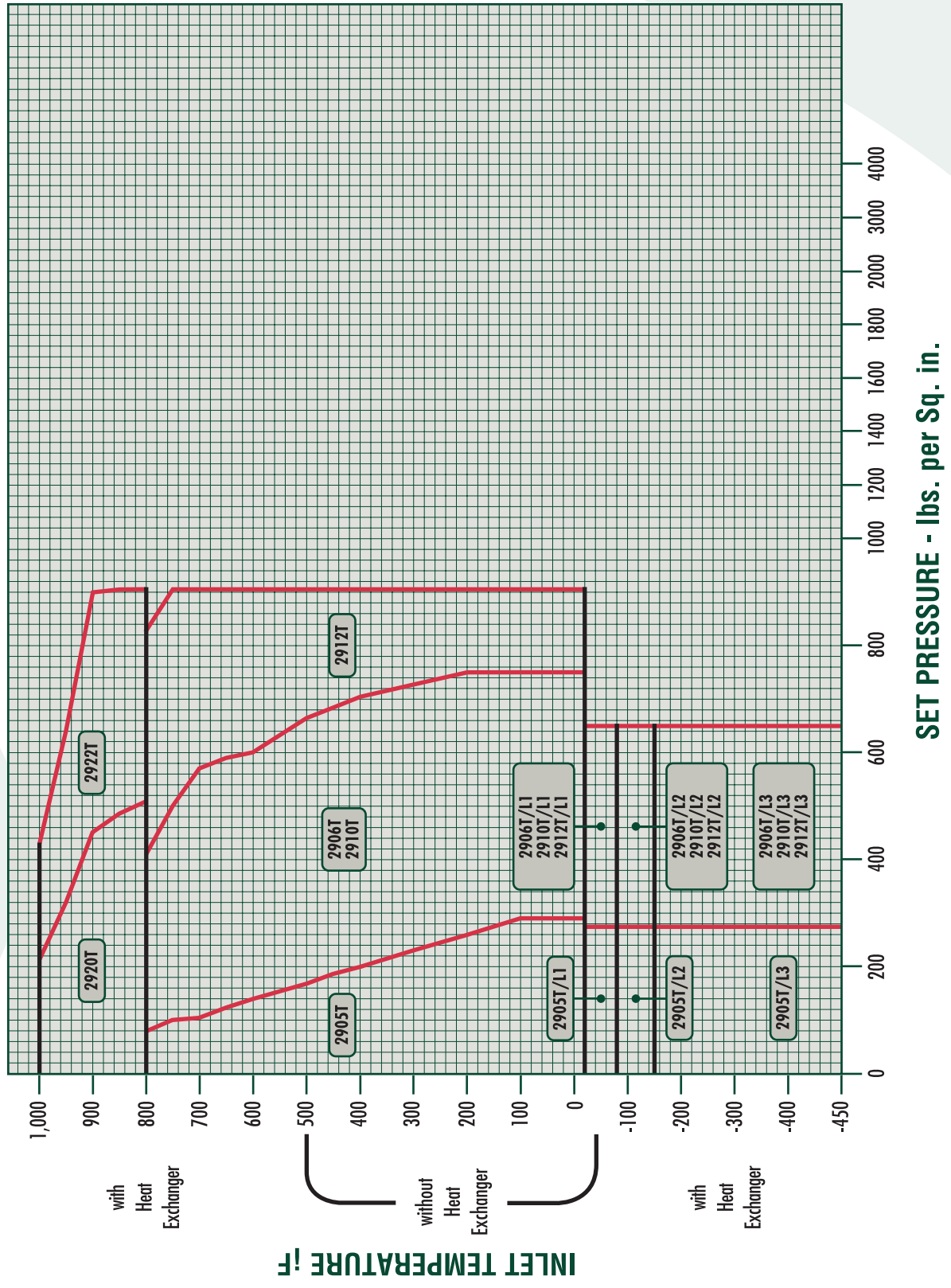
2900 Series, T Orifice - ASME Area: 30.21 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F						Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905T	2905-30T	8 x 10	150	150	-	-	-	290	185	80	-	280	145	-20
2906T	2906-30T	8 x 10	300	150	-	-	-	750	685	410	-	290	145	to
2910T	2910-30T	8 x 10	300	150	-	-	-	750	685	410	-	290	145	800
2912T	2912-30T	8 x 10	600	150	-	-	-	905	905	825	-	290	145	
2920T	2920-30T	8 x 10	300	150	-	-	-	-	-	510	215	290	145	801 to
2922T	2922-30T	8 x 10	600	150	-	-	-	-	-	905	430	290	145	1000
2905T/L1	2905-30T/L1	8 x 10	150	150	-	-	275	-	-	-	-	265	145	-21
2906T/L1	2906-30T/L1	8 x 10	300	150	-	-	650	-	-	-	-	275	145	to
2910T/L1	2910-30T/L1	8 x 10	300	150	-	-	655	-	-	-	-	275	145	-75
2912T/L1	2912-30T/L1	8 x 10	600	150	-	-	655	-	-	-	-	275	145	
2905T/L2	2905-30T/L2	8 x 10	150	150	-	275	-	-	-	-	-	265	145	-76
2906T/L2	2906-30T/L2	8 x 10	300	150	-	650	-	-	-	-	-	275	145	to
2910T/L2	2910-30T/L2	8 x 10	300	150	-	655	-	-	-	-	-	275	145	-150
2912T/L2	2912-30T/L2	8 x 10	600	150	-	655	-	-	-	-	-	275	145	
2905T/L3	2905-30T/L3	8 x 10	150	150	275	-	-	-	-	-	-	265	145	-151
2906T/L3	2906-30T/L3	8 x 10	300	150	650	-	-	-	-	-	-	275	145	to
2910T/L3	2910-30T/L3	8 x 10	300	150	655	-	-	-	-	-	-	275	145	-450
2912T/L3	2912T-30/L3	8 x 10	600		655	-	-	-	-	-	-	275	145	

NOTES: Refer to the "Soft Goods Selection Table on page 2900.23 for material selection for a given pressure, temperature, fluid type, durometer hardness and orifice size.
When the pressure temperature limits of the software in the pilot valve and main valve are exceeded, the heat exchanger must be used to condition the media to within an acceptable range.
A standard metal seat is used on the main base with the heat exchanger. Sizing of the heat exchanger is required and may not be suitable for all applications.

Selection Chart for Vapors, Gases and Liquids

2900 Series, T Orifice - ASME Area: 30.21 Sq. in.



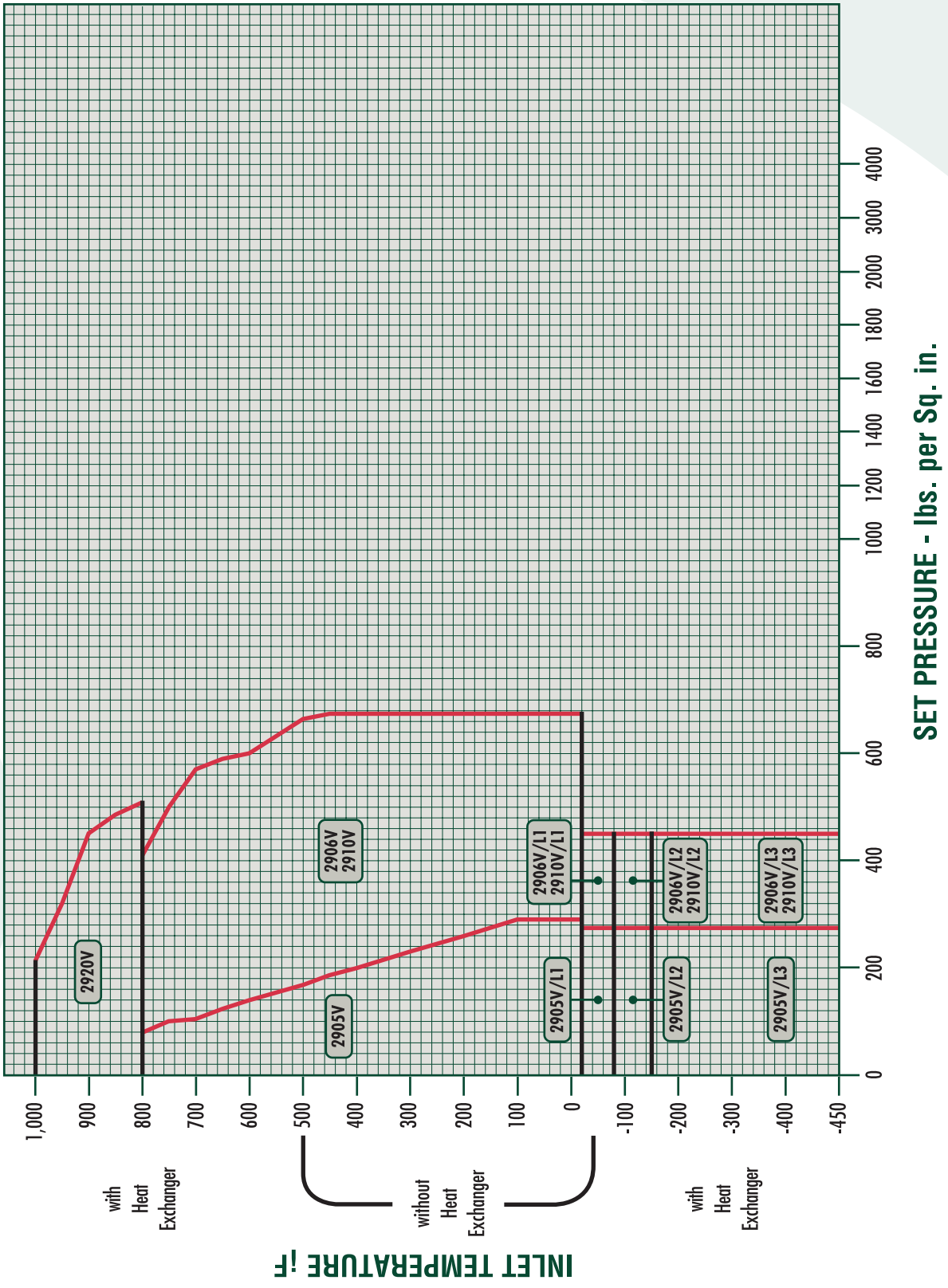
Selection Table for Vapors, Gases and Liquids

2900 Series, V Orifice - ASME Area: 50.26 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F							Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905V	2905-30V	10 x 14	150	150	-	-	-	290	185	80	-	280	70	-20 to 800
2906V	2906-30V	10 x 14	300	150	-	-	-	675	675	410	-	290	70	
2910V	2910-30V	10 x 14	300	150	-	-	-	675	675	410	-	290	70	
2920V	2920-30V	10 x 14	300	150	-	-	-	-	-	-	215	290	70	
2905V/L1	2905V-30/L1	10 x 14	150	150	-	-	275	-	-	-	-	265	70	801 to 1000
2906V/L1	2906V-30/L1	10 x 14	300	150	-	-	450	-	-	-	-	275	70	
2910V/L1	2910V-30/L1	10 x 14	300	150	-	-	450	-	-	-	-	275	70	
2905V/L2	2905V-30/L2	10 x 14	150	150	-	275	-	-	-	-	-	265	70	-21 to -75
2906V/L2	2906V-30/L2	10 x 14	300	150	-	450	-	-	-	-	-	275	70	
2910V/L2	2910V-30/L2	10 x 14	300	150	-	450	-	-	-	-	-	275	70	
2905V/L3	2905V-30/L3	10 x 14	150	150	275	-	-	-	-	-	-	265	70	-76 to -150
2906V/L3	2906V-30/L3	10 x 14	300	150	450	-	-	-	-	-	-	275	70	
2910V/L3	2910V-30/L3	10 x 14	300	150	450	-	-	-	-	-	-	275	70	

Selection Chart for Vapors, Gases and Liquids

2900 Series, V Orifice - ASME Area: 50.26 Sq. in.



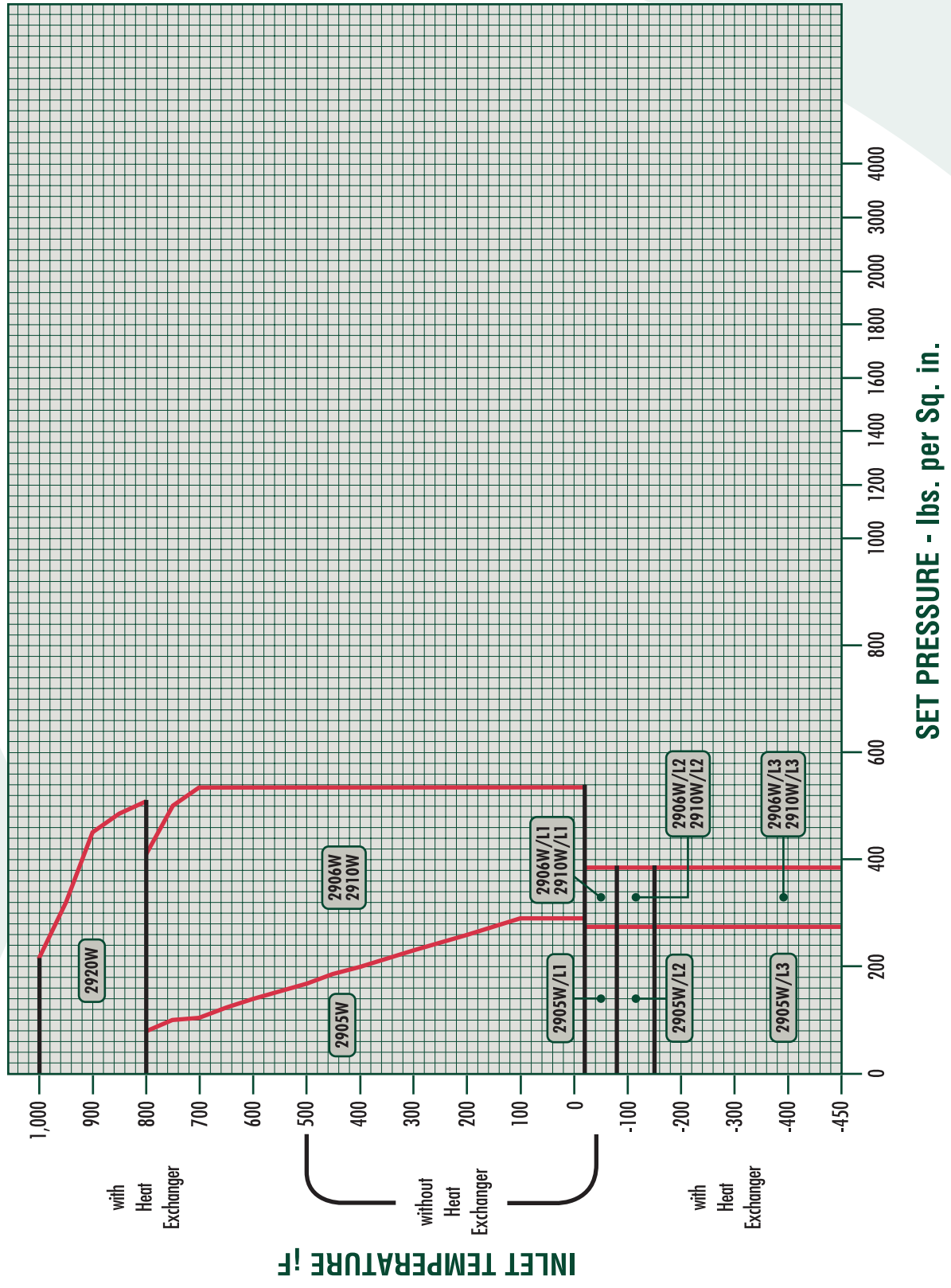
Selection Table for Vapors, Gases and Liquids

2900 Series, W Orifice - ASME Area: 78.996 Sq. in.

Valve Type Number		Valve Size	ANSI Flanged Ratings		Inlet Pressure (psig) & Temperature Limits - °F							Back Pressure Limits at 100°F		Inlet Temp. Range (°F)
Standard	Bellows	Inlet x Outlet	Inlet R.F. or R.J.	Outlet R.F.	-450 -151	-150 -76	-75 -21	-20 +100	+450	+800	+1000	Standard	Bellows	
2905W	2905-30W	12 X 16	150	150	-	-	-	290	185	80	-	280	70	-20 to 800
2906W	2906-30W	12 X 16	300	150	-	-	-	535	535	410	-	290	70	
2910W	2910-30W	12 X 16	300	150	-	-	-	535	535	410	-	290	70	
2920W	2920-30W	12 X 16	300	150	-	-	-	-	-	510	215	290	70	
2905W/L1	2905W-30/L1	12 X 16	150	150	-	-	275	-	-	-	-	265	70	801 to 1000
2906W/L1	2906W-30/L1	12 X 16	300	150	-	-	385	-	-	-	-	275	70	
2910W/L1	2910W-30/L1	12 X 16	300	150	-	-	385	-	-	-	-	275	70	
2905W/L2	2905W-30/L2	12 X 16	150	150	-	275	-	-	-	-	-	265	70	-21 to -75
2906W/L2	2906W-30/L2	12 X 16	300	150	-	385	-	-	-	-	-	275	70	
2910W/L2	2910W-30/L2	12 X 16	300	150	-	385	-	-	-	-	-	275	70	
2905W/L3	2905W-30/L3	12 X 16	150	150	275	-	-	-	-	-	-	265	70	-76 to -150
2906W/L3	2906W-30/L3	12 X 16	300	150	385	-	-	-	-	-	-	275	70	
2910W/L3	2910W-30/L3	12 X 16	300	150	385	-	-	-	-	-	-	275	70	

Selection Chart for Vapors, Gases and Liquids

2900 Series, W Orifice - ASME Area: 78.996 Sq. in.



2900 Orifice Capacities for Air (USCS Units)
ASME B & PVC, Section VIII

Capacities Based on Set Pressure plus 10% overpressure or 3 psig, whichever is greater. Capacities in standard feet of air per minute @ 60°F.

Set Press. (psig)	Orifice Designation															
	D 0.1279	E 0.2279	F 0.3568	G 0.5849	H 0.9127	J 1.496	K 2.138	L 3.317	M 4.186	N 5.047	P 7.417	Q 12.85	R 18.6	T 30.21	V 50.26	W 78.996
15	65	116	183	300	468	767	1097	1702	2148	2589	3806	6594	9545	15502	25792	40538
20	75	134	211	346	539	885	1264	1962	2476	2986	4388	7602	11004	17873	29735	46737
30	95	170	267	437	683	1119	1600	2483	3133	3778	5552	9619	13923	22614	37623	59134
40	117	209	328	538	840	1378	1969	3055	3856	4649	6832	11837	17134	27829	46299	72771
50	139	249	390	639	998	1636	2338	3628	4578	5520	8112	14055	20345	33044	54975	86407
60	161	288	451	740	1155	1894	2707	4200	5301	6391	9393	16273	23556	38259	63651	100044
70	184	327	513	841	1313	2152	3076	4773	6023	7263	10673	18492	26766	43474	72328	113681
80	206	367	575	942	1471	2411	3445	5346	6746	8134	11954	20710	29977	48689	81004	127318
90	228	406	636	1043	1628	2669	3814	5918	7469	9005	13234	22928	33188	53904	89680	140955
100	250	445	698	1144	1786	2927	4183	6491	8191	9876	14514	25146	36399	59119	98356	154592
120	294	524	821	1346	2101	3444	4922	7636	9637	11619	17075	29583	42821	69549	115709	181865
140	338	603	944	1548	2416	3960	5660	8781	11082	13361	19636	34019	49242	79980	133061	209139
160	382	682	1067	1750	2731	4477	6398	9926	12527	15104	22197	38456	55664	90410	150414	236413
180	426	760	1190	1952	3046	4993	7136	11072	13972	16846	24757	42892	62086	100840	167766	263686
200	471	839	1314	2154	3361	5510	7874	12217	15418	18589	27318	47329	68508	111270	185119	290960
220	515	918	1437	2356	3676	6026	8612	13362	16863	20331	29879	51766	74929	121700	202471	318234
240	559	996	1560	2558	3991	6543	9351	14507	18308	22074	32440	56202	81351	132130	219824	345507
260	603	1075	1683	2760	4307	7059	10089	15652	19753	23816	35000	60639	87773	142560	237176	372781
280	647	1154	1806	2962	4622	7576	10827	16798	21198	25559	37561	65075	94194	152990	254528	400055
300	691	1232	1930	3164	4937	8092	11565	17943	22644	27301	40122	69512	100616	163420	271881	427328
320	736	1311	2053	3365	5252	8609	12303	19088	24089	29044	42683	73948	107038	173851	289233	454602
340	780	1390	2176	3567	5567	9125	13041	20233	25534	30786	45243	78385	113460	184281	306586	481876
360	824	1468	2299	3769	5882	9642	13779	21378	26979	32529	47804	82821	119881	194711	323938	509149
380	868	1547	2422	3971	6197	10158	14518	22524	28425	34271	50365	87258	126303	205141	341291	536423
400	912	1626	2546	4173	6512	10675	15256	23669	29870	36014	52925	91694	132725	215571	358643	563697
420	956	1704	2669	4375	6827	11191	15994	24814	31315	37756	55486	96131	139147	226001	375996	590970
440	1000	1783	2792	4577	7143	11708	16732	25959	32760	39499	58047	100567	145568	236431	393348	618244
460	1045	1862	2915	4779	7458	12224	17470	27104	34206	41241	60608	105004	151990	246861	410701	645518
480	1089	1940	3038	4981	7773	12741	18208	28250	35651	42984	63168	109440	158412	257292	428053	672791
500	1133	2019	3161	5183	8088	13257	18947	29395	37096	44726	65729	113877	164833	267722	445405	700065
600	1354	2413	3777	6193	9663	15840	22637	35121	44322	53439	78533	136059	196942	319872	532168	836433
700	1575	2806	4393	7202	11239	18422	26328	40847	51548	62151	91337	158242	229051	372023	618930	—
800	1795	3199	5009	8212	12815	21005	30019	46573	58774	70864	104140	180424	261159	424173	—	—
900	2016	3593	5625	9222	14390	23587	33710	52299	66001	79576	116944	202607	293268	476324	—	—
1000	2237	3986	6241	10231	15966	26170	37400	58025	73227	88289	129748	224789	325376	528475	—	—
1100	2458	4380	6857	11241	17541	28752	41091	63751	80453	97001	142552	246972	357485	—	—	—
1200	2678	4773	7473	12251	19117	31335	44782	69477	87679	105714	155355	269155	389594	—	—	—
1300	2899	5166	8089	13260	20692	33917	48473	75203	94905	114426	168159	291337	421702	—	—	—
1400	3120	5560	8705	14270	22268	36500	52163	80929	102131	123139	180963	313520	453811	—	—	—
1500	3341	5953	9321	15280	23844	39082	55854	86655	109358	131851	193767	335702	485919	—	—	—
2000	4445	7920	12400	20328	31721	51995	74308	115285	145488	175413	257785	—	—	—	—	—
2500	5549	9887	15480	25377	39599	64907	92762	143916	181619	218976	321804	—	—	—	—	—
3000	6653	11855	18560	3042	47477	77820	111216	172546	—	—	—	—	—	—	—	—
4000	8861	15789	24719	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES: Relieving capacities indicated are 90% of average capacity in accordance with the latest ASME Code requirements. For temperatures other than 60°F and specific gravities other than air use formula sizing method.

Maximum pressure is 3750. 4000 is shown for interpolation purposes only.

For maximum allowable set pressure at a given temperature, review Pressure/Temperature Tables.

2900 Orifice Capacities for Steam (USCS Units)
ASME B & PVC, Section VIII

Capacities Based on Set Pressure plus 10% overpressure or 3 psig, whichever is greater.
Capacities in lbs. per hour of saturated steam

Set Press. (psig)	Orifice Designation															
	D 0.1279	E 0.2279	F 0.3568	G 0.5849	H 0.9127	J 1.496	K 2.138	L 3.317	M 4.186	N 5.047	P 7.417	Q 12.85	R 18.6	T 30.21	V 50.26	W 78.996
15	184	328	513	842	1314	2154	3078	4776	6027	7266	10679	18502	26781	43498	72367	113743
20	212	378	592	970	1515	2483	3549	5506	6948	8378	12312	21331	30876	50149	83432	131135
30	268	478	749	1228	1916	3142	4490	6966	8792	10600	15578	26989	39066	63451	105563	165919
40	330	589	922	1511	2359	3866	5526	8573	10819	13045	19170	33213	48075	78084	129907	204181
50	392	699	1095	1795	2801	4591	6561	10180	12487	15489	22763	39437	57084	92716	154251	242443
60	454	809	1267	2078	3243	5315	7597	11786	14874	17934	26355	45661	66093	107348	178595	280706
70	516	920	1440	2361	3685	6040	8632	13393	16902	20378	29948	51885	75102	121981	202938	318968
80	578	1030	1613	2644	4127	6765	9668	14999	18929	22823	33540	58109	84111	136613	227282	357230
90	640	1140	1786	2928	4569	7489	10703	16606	20957	25267	37133	64333	93120	151246	251626	395493
100	702	1251	1959	3211	5011	8214	11739	18213	22984	27712	40725	70557	102129	165878	275970	433755
120	826	1472	2304	3778	5895	9663	13810	21426	27039	32601	47910	83005	120147	195143	324657	510280
140	950	1692	2650	4344	6779	11112	15881	24639	31094	37490	55095	95453	138166	224408	373345	586804
160	1073	1913	2996	4911	7663	12561	17952	27852	35149	42379	62280	107901	156184	253673	422033	663329
180	1197	2134	3341	5478	8548	14011	20023	31066	39204	47268	69465	120349	174202	282938	470720	739853
200	1321	2355	3687	6044	9432	15460	22095	34279	43259	52157	76650	132797	192220	312203	519408	816378
220	1445	2575	4032	6611	10316	16909	24166	37492	47314	57046	83835	145245	210238	341467	568095	892903
240	1569	2796	4378	7177	11200	18358	26237	40705	51369	61936	91020	157693	228256	370732	616783	969427
260	1693	3017	4724	7744	12084	19807	28308	43918	55425	66825	98205	170141	246274	399997	665471	1045952
280	1817	3238	5069	8311	12968	21257	30379	47132	59480	71714	105390	182589	264292	429262	714158	1122476
300	1941	3459	5415	8877	13852	22706	32450	50345	63535	76603	112575	195037	282310	458527	762846	1199001
320	2065	3679	5761	9444	14737	24155	34521	53558	67590	81492	119760	207485	300328	487792	811534	1275526
340	2189	3900	6106	10010	15621	25604	36592	56771	71645	86381	126945	219933	318347	517057	860221	1352050
360	2312	4121	6452	10577	16505	27053	38663	59985	75700	91270	134130	232381	336365	546322	908909	1428575
380	2436	4342	6798	11144	17389	28503	40735	63198	79755	96159	141315	244829	354383	575586	957596	1505099
400	2560	4562	7143	11710	18273	29952	42806	66411	83810	101048	148500	257277	372401	604851	1006284	1581624
420	2684	4783	7489	12277	19157	31401	44877	69624	87865	105938	155685	269725	390419	634116	1054972	1658149
440	2808	5004	7834	12843	20041	32850	46948	72838	91920	110827	162869	282173	408437	663381	1103659	1734673
460	2932	5225	8180	13410	20926	34299	49019	76051	95975	115716	170054	294621	426455	692646	1152347	1811198
480	3056	5445	8526	13977	21810	35749	51090	79264	100030	120605	177239	307069	444473	721911	1201034	1887722
500	3180	5666	8871	14543	22694	37198	53161	82477	104085	125494	184424	319517	462491	751176	1249722	1964247
600	3799	6770	10600	17376	27115	44444	63517	98543	124360	149939	220349	381757	552582	897500	1493160	2346870
700	4419	7874	12328	20209	31535	51690	73872	114609	144365	174385	256274	443997	642672	1043825	1736598	—
800	5038	8978	14056	23042	35956	58936	84228	130676	164911	198830	292199	506237	732763	1190149	—	—
900	5658	10082	15784	25875	40377	66182	94583	146742	185186	223276	328124	568476	822853	1336473	—	—
1000	6277	11186	17512	28708	44798	73428	104939	162808	205461	247722	364048	630716	912944	1482798	—	—
1100	6897	12289	19241	31541	49218	80674	115295	178874	225736	272167	399973	692956	1003034	—	—	—
1200	7516	13393	20969	34374	53639	87920	125650	194940	246011	296613	435898	755196	1093125	—	—	—
1300	8136	14497	22697	37207	58060	95166	136006	211006	266287	321058	471823	817436	1183215	—	—	—
1400	8743	15579	24391	39984	62393	102268	146156	226754	286160	345019	507035	878442	1271519	—	—	—
1423	8898	15855	24822	40691	63496	104076	148740	230764	291220	351120	516001	893976	1294004	—	—	—
1500	9420	16785	26279	43079	67222	110183	157468	244304	308308	371723	546279	946432	1369933	—	—	—
2000	13024	23207	36334	59562	92943	152343	217721	337783	426276	513956	755302	—	—	—	—	—
2500	17235	30711	48082	78821	122995	201601	288117	447000	564107	680136	999518	—	—	—	—	—
2910	18110	33269	50521	82819	129234	211826	302730	469671	—	—	—	—	—	—	—	—

NOTES: Relieving capacities indicated are 90% of average capacity in accordance with the latest ASME Code requirements.
Maximum permissible set pressure on steam is 2903 psig. 3000 psig capacities are included for interpolation purposes only.

For superheat correction factors, refer to Technical Information Section.

For maximum allowable set pressure at a given temperature, review Pressure/Temperature Tables.

2900 Orifice Capacities for Water (USCS Units)
ASME B & PVC, Section VIII

Capacities based on Set Pressure plus 10% overpressure or 3 psig, whichever is greater, 0 psig back pressure. Capacities in gallons of water per minute at 70°F, 90% of average capacity.

Set Press. (psig)	Orifice Designation															
	D 0.1279	E 0.2279	F 0.3568	G 0.5849	H 0.9127	J 1.496	K 2.138	L 3.317	M 4.186	N 5.047	P 7.417	Q 12.85	R 18.6	T 30.21	V 50.26	W 78.996
15	13	24	38	63	98	161	230	358	452	545	801	1387	2009	3263	5428	8532
20	15	27	43	71	111	182	261	404	511	616	905	1568	2271	3688	6136	9645
30	18	33	52	85	133	218	312	485	612	738	1084	1879	2720	4418	7350	11553
40	21	38	60	98	154	252	361	560	706	852	1252	2170	3141	5101	8487	13340
50	24	43	67	110	172	282	403	626	790	952	1400	2426	3511	5703	9489	14915
60	26	47	73	120	188	309	442	686	865	1043	1534	2657	3847	6248	10395	16338
70	28	50	79	130	203	334	477	741	935	1127	1656	2870	4155	6749	11228	17648
80	30	54	85	139	217	357	510	792	999	1205	1771	3068	4442	7215	12003	18866
90	32	57	90	148	231	378	541	840	1060	1278	1878	3255	4711	7652	12731	20010
100	34	60	95	156	243	399	570	885	1117	1347	1980	3431	4966	8066	13420	21093
120	37	66	104	171	266	437	625	970	1224	1476	2169	3758	5440	8836	14701	23106
140	40	72	112	184	288	472	675	1047	1322	1594	2343	4059	5876	9544	15879	24958
160	43	76	120	197	308	505	722	1120	1413	1704	2505	4340	6282	10203	16975	26681
180	45	81	127	209	326	535	765	1188	1499	1808	2657	4603	6663	10822	18005	28299
200	48	86	134	220	344	564	807	1252	1580	1905	2800	4852	7023	11407	18979	29830
220	50	90	141	231	361	592	846	1313	1657	1998	2937	5089	7366	11964	19905	31286
240	52	94	147	241	377	618	884	1372	1731	2087	3068	5315	7694	12496	20790	32677
260	55	98	153	251	392	644	920	1428	1802	2173	3193	5532	8008	13007	21639	34012
280	57	101	159	261	407	668	955	1482	1870	2255	3313	5741	8310	13498	22456	35296
300	59	105	165	270	422	691	988	1534	1935	2334	3430	5942	8602	13971	23244	36534
320	61	108	170	279	435	714	1021	1584	1999	2410	3542	6137	8884	14430	24007	37733
340	62	112	175	287	449	736	1052	1633	2061	2484	3651	6326	9157	14874	24745	38894
360	64	115	180	296	462	757	1083	1680	2120	2556	3757	6510	9423	15305	25463	40021
380	66	118	185	304	475	778	1112	1726	2178	2627	3860	6688	9681	15724	26161	41118
400	68	121	190	312	487	798	1141	1771	2235	2695	3960	6862	9933	16133	26840	42186
420	69	124	195	320	499	818	1169	1815	2290	2761	4058	7031	10178	16531	27503	43228
440	71	127	199	327	511	837	1197	1857	2344	2826	4154	7197	10417	16920	28150	44245
460	73	130	204	334	522	856	1224	1899	2397	2890	4247	7359	10652	17300	28783	45240
480	74	133	208	342	533	875	1250	1940	2448	2952	4339	7517	10881	17673	29402	46213
500	76	136	213	349	544	893	1276	1980	2499	3013	4428	7672	11105	18037	30008	47166
600	83	149	233	382	596	978	1398	2169	2737	3301	4851	8404	12165	19759	32873	51668
700	90	161	252	413	644	1056	1510	2343	2957	3565	5239	9078	13140	21342	35506	—
800	96	172	269	441	689	1129	1614	2505	3161	3811	5601	9704	14047	22815	—	—
900	102	182	285	468	731	1198	1712	2657	3353	4042	5941	10293	14899	24199	—	—
1000	107	192	301	493	770	1263	1805	2800	3534	4261	6262	10850	15705	25508	—	—
1100	113	201	315	517	808	1324	1893	2937	3707	4469	6568	11379	16472	—	—	—
1200	118	210	330	541	844	1383	1977	3068	3871	4668	6860	11885	17204	—	—	—
1300	123	219	343	563	878	1440	2058	3193	4030	4858	7140	12371	17907	—	—	—
1400	127	227	356	584	911	1494	2136	3313	4182	5042	7410	12838	18583	—	—	—
1500	132	235	368	604	943	1547	2211	3430	4328	5219	7670	13288	19235	—	—	—
2000	152	272	426	698	1089	1786	2553	3960	4998	6026	8856	—	—	—	—	—
2500	170	304	476	780	1218	1997	2854	4428	5588	6738	9902	—	—	—	—	—
3000	187	333	521	855	1334	2187	3126	4851	—	—	—	—	—	—	—	—
4000	215	384	602	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES: Relieving capacities indicated are 90% of average capacity in accordance with the latest ASME Code requirements.
Maximum pressure is 3750. 4000 is shown for interpolation purposes only.
For maximum allowable set pressure at a given temperature, review Pressure/Temperature Tables.