



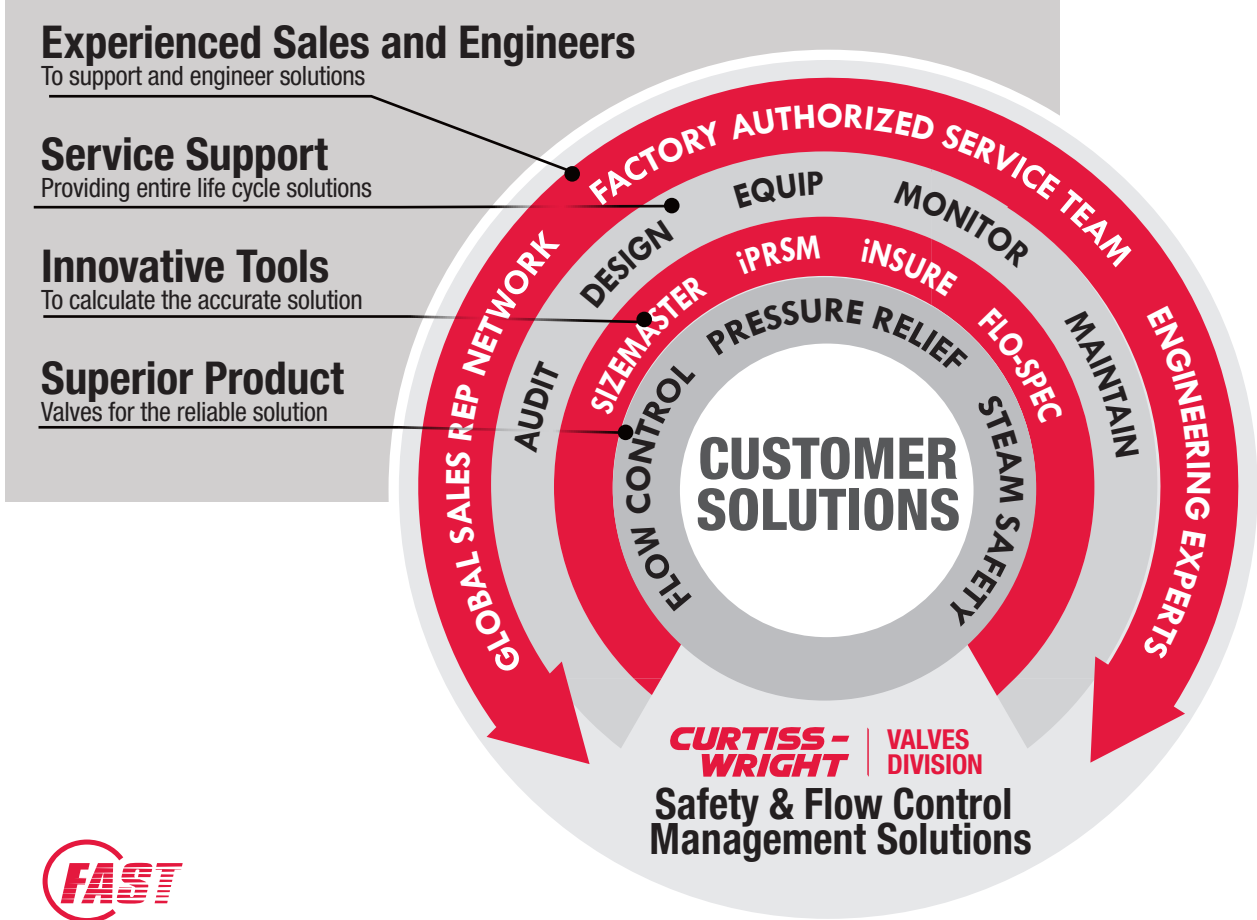
2700 SERIES

Pressure Relief Valve Catalog

Focused On Customer Solutions

Our Commitment; Provide customers with total pressure and flow control management solutions transforming and ensuring plant function and safety.

Experienced Engineers • Solution Management • Superior Products



Factory Authorized Service Team

Sales Representative Network

- Factory trained technicians in OEM specifications
- Local service and in-line testing reducing maintenance cost.
- Capability to track and manage relief valve maintenance and repair history
- Access to sales network, and keeping global inventory local

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Solutions Management and Innovative Tools



SOFTWARE MANAGEMENT TOOL FOR PRESSURE RELIEF SYSTEMS

Software Capabilities

- Overpressure analysis with relief load calculations
- Inlet and outlet piping hydraulic calculations
- Header blowdown and knockout drum calculations
- Acoustic induced vibration analysis

VALVE SIZING AND SELECTION SOFTWARE



- Provides sizing for vapor, liquid, steam and two-phase flow
- Capable of multi scenario sizing. Multi-valve algorithm to easily size from multiple valves

- Built-in catalog selector ensures the proper product appropriate based on pressure and temperature
- Compliant with ASME and API



- Capable of multi scenario sizing. Multi-valve algorithm to easily size from multiple valves
- Develop, dimensional drawings

- Maintain project data
- Generate orders to be sent direct to production



Product Training and Seminars

We offer technical training courses learning about valve management and industry scenarios.

SOME AVAILABLE CLASSES

- Pressure relief valve functionality
- Sizing requirements
- Material selection
- Sizing software training
- Maintenance and repair
- Mitigating overpressure scenarios

CONTACT: Your Sales Rep For More Information

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Introduction

Designed to provide customers with the widest selection of sizes, orifices and construction materials, Series 2700 meets the exacting demands of the process industry.

Superior Design

- A single design handles air, steam, vapor and liquid services.
- Maximum interchangeability of parts affords easy maintenance and lower costs.
- Fixed blowdown design simplifies testing and repair. Maximum blowdown of 5% to 15% regardless of service.¹
- A built-in lift stop ensures stable performance.
- Balanced design in “C” and “D” orifices nullifies the effects of back pressure on set point.

ASME Code Certification

- Manufactured in conformance to Section VIII and XIII of the ASME Boiler and Pressure Vessel Code for air, steam, and water service.
- Capacities certified by The National Board of Boiler and Pressure Vessel Inspectors.

Optional O-Ring Seat Design

- O-ring seat design available for maximum seat tightness.
- PTFE available at higher pressures to provide the same zero bubbles per minute leakage as elastomer O-ring seats.

Comprehensive Product Line

- Set pressures from 15 psig to 6500 psig with orifice areas from 0.068 to 0.573 sq. in.
- Standard valves have MNPT inlet x FNPT outlet. Optional female inlet thread, flanged, socket weld, welding nipple, and sanitary connections available.

Maximum Selection of Materials

- Standard construction includes 316 stainless steel body, trim and spring, with carbon steel bonnet.
- Optional materials include Monel®, Hastelloy C®, Duplex, Super Duplex and materials suitable for NACE service. Consult the factory for other materials.

General Notes:

1. Blowdown on liquid service may slightly exceed 15% in certain applications.

Monel is a registered trademark of Inco Alloys International Inc.
Hastelloy and Hastelloy C are registered trademarks of Haynes International Inc.

Model Numbering System

Selecting and specifying Farris pressure relief valves is simple using the numbering system that follows.

Each digit of the type number has a distinct significance. The digits describe the basic valve series, orifice, seat design, inlet temperature range, body, bonnet and spring material, inlet type and pressure rating.

27	D	A	2	3	H-	M	2	0	/S4
Series Number	Orifice Area	Seat Construction	Inlet Size	Outlet Size	Special Variations	Inlet Connections ²	Cap Construction	Test Gag	Special Materials
27	US Customary Units Sq. In. C 0.068 D 0.125 E 0.223 F 0.350 G 0.573 Metric mm² C 43.87 D 80.65 E 143.87 F 225.81 G 369.68	A Metal Seat C Soft Seat ¹ T PTFE Seat	1 1/2" 2 3/4" 3 1" 4 1-1/2"	3 1" 4 1-1/2" 5 2" 6 2-1/2"	H High pressure variations of standard types B Balanced design (Soft Seat Only) D Heat transfer fluid standard pressure E Heat transfer fluid high pressure	M MNPT F FNPT 1 Flanged-150RF 2 Flanged-300RF 3 Flanged-600RF 4 Flanged-900RF 5 Flanged-1500RF 6 Flanged-2500RF 0 Special S Socket Weld T Sanitary Inlet U Sanitary Inlet/Outlet V VCR Inlet W Welding Nipple X Special Hub Connections	2 Plain 4 Packed Lever 7 Open Lever	0 No Gag 1 Test Gag	S4 Complete 316 St. St. N1 NACE Trim: Standard N4 NACE Trim: All St. St. M1 Monel Body & Disc M2 Monel Internals M4 Complete Monel H1 Hastelloy C Body & Disc H2 Hastelloy C Internals H4 Complete Hastelloy C D4 Complete Duplex D8 Complete Super Duplex *Add "N" for NACE e.g. M4N, H4N, etc

Ordering Information

Please specify the following so that we may process your order as quickly as possible.

- Quantity.*
- Inlet and outlet sizes.
- Farris type number.*
- Inlet and outlet connections: MNPT, FNPT, flanged, socket weld, sanitary inlet or welding nipple.
- Materials of construction if other than standard.
- O-ring seat pressure seal material, if required.
- Set pressure.*
- Operating and relieving temperatures.*
- Allowable overpressure.*
- Fluid and fluid state.*
- Backpressure, superimposed constant and/or variable, and built-up.*
- Required capacity.*
- Accessories: open or packed lever if required; test gag.
- Code requirements, if any.

*As a customer service, we verify your selection and sizing. In order to do this, we must have this information.

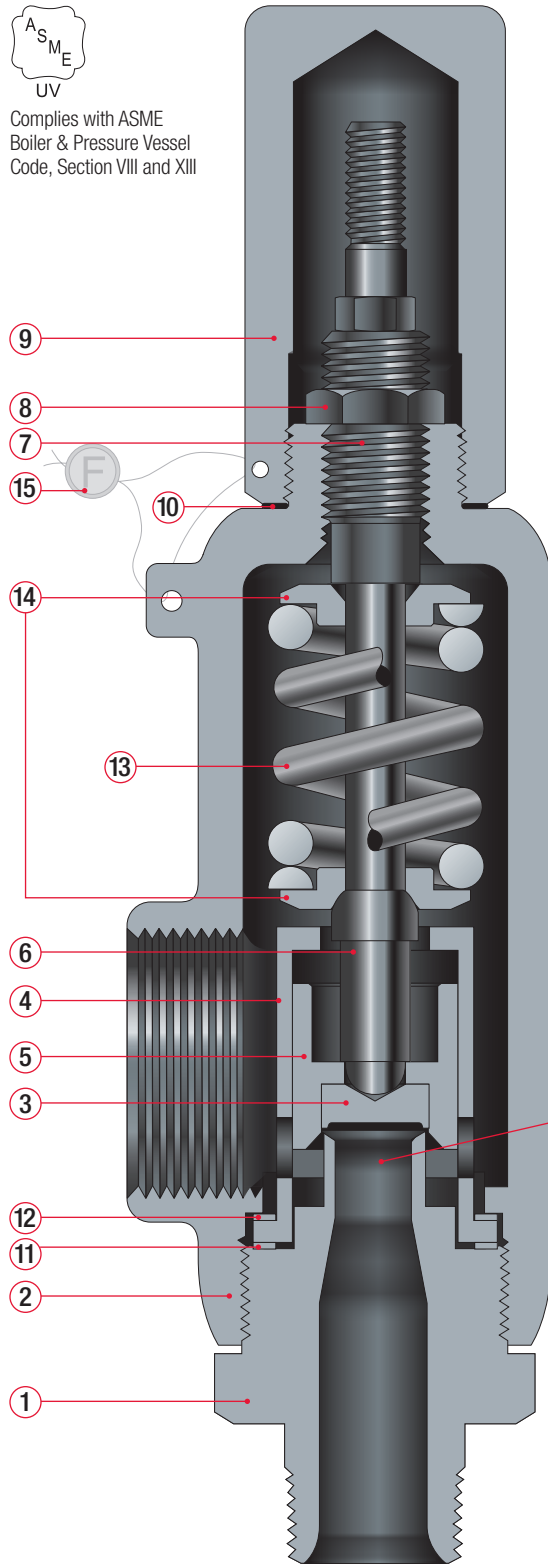
General Notes:

- Selection of proper soft good material is customer's responsibility.
- Ring joint and lens joint inlets available on application. Add "/SP" to the standard flanged valve type number.

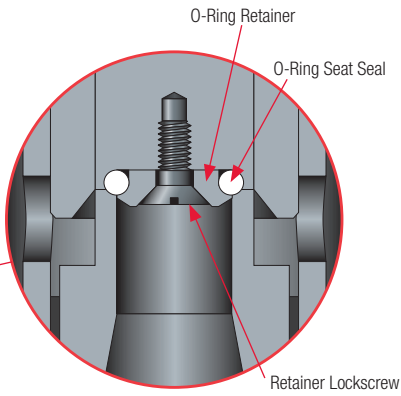
2700 Series – Conventional



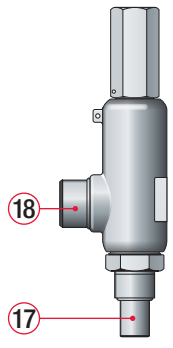
Complies with ASME Boiler & Pressure Vessel Code, Section VIII and XIII



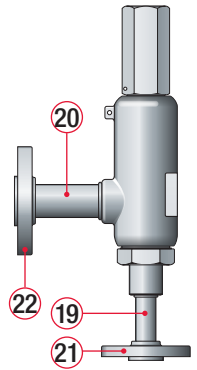
Bill of Materials – Conventional		
Item	Part Name	Standard Material
1	Body	SA-351 Gr. CF8M St. St. or SA-479 Type 316 St. St.
2	Bonnet	SA-216 Gr. WCB, Carb. St.
3	Disc	316 St. St.
4	Guide	316 St. St.
5	Disc Holder	316 St. St.
6	Stem	316 St. St.
7	Spring Adj. Screw	316 St. St.
8	Jam Nut	316 St. St.
9	Cap, Plain Screwed	Carbon Steel
10	Cap Gasket	316 St. St.
11	Body Gasket	316 St. St.
12	Guide Gasket	316 St. St.
13	Spring	Stainless Steel
14	Spring Buttons	316 St. St.
15	Wire Seal	St. St. Wire / Lead Seal
16	Nameplate (Not Shown)	Stainless Steel
17	Welding Nipple (Inlet)	316 St. St.
18	Welding Nipple (Outlet)	Carbon Steel
19	Lap Joint Stub End (Inlet)	316 St. St.
20	Lap Joint Stub End (Outlet)	Carbon Steel
21	Lap Joint Flange (Inlet)	Carbon Steel
22	Lap Joint Flange (Outlet)	Carbon Steel



O-Ring Design (Optional)



Welded End Design (Optional)

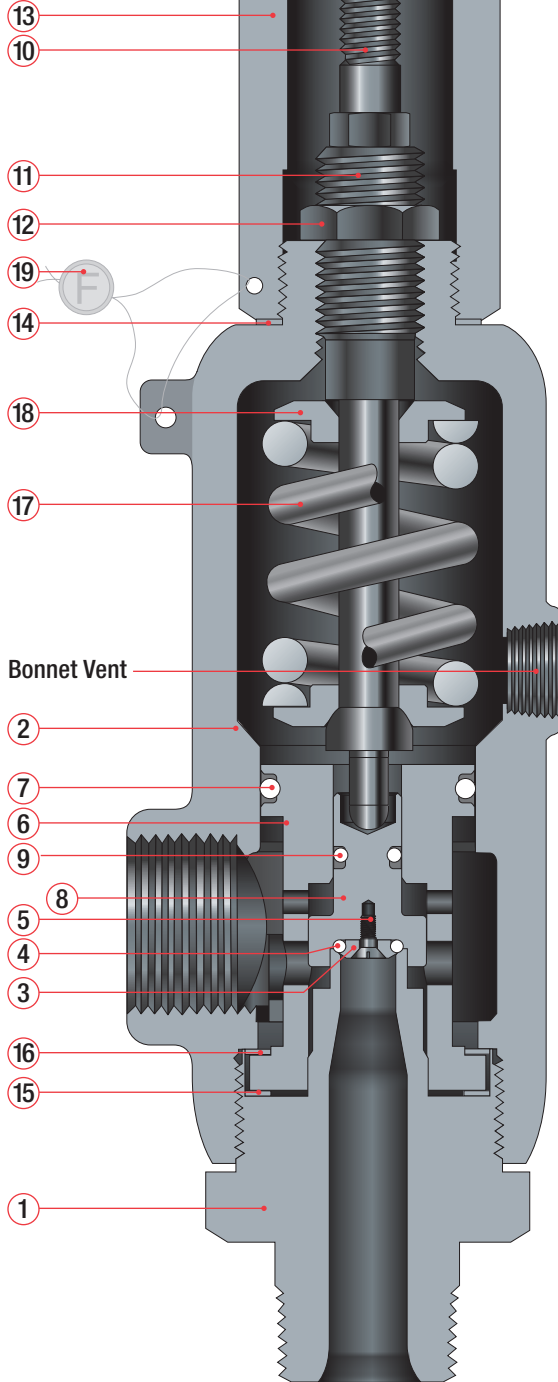


Flanged Design (Optional)

2700 Series – Balanced Design



Complies with ASME Boiler & Pressure Vessel Code, Section VIII and XIII



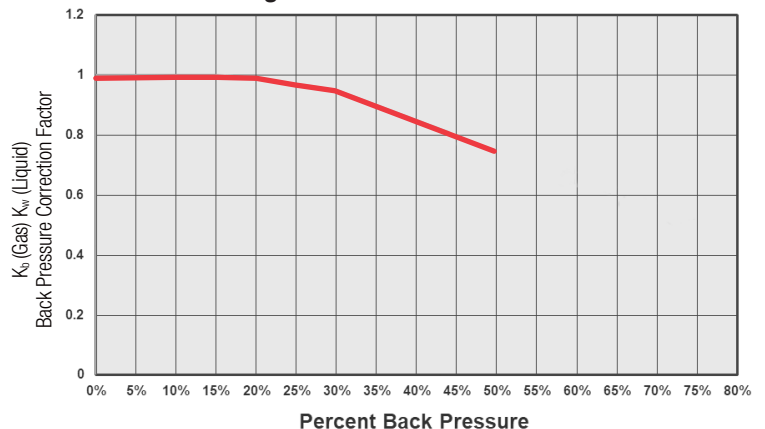
Do you have variable back pressure? Can't use a balanced bellows design? Farris has the solution with the Series 2700 Balanced Design pressure relief valve. The balanced effect is achieved by isolating the upper valve chamber and eliminating any back pressure build-up in the bonnet affecting valve set pressure.

These valves are available in 1/2", 3/4" and 1" inlet sizes with a 1" outlet and two orifice areas. Pressure ranges from 15 to 1480 psig, standard soft seat design. PTFE seats available for higher pressures. Flanged and welded inlet and outlet connections are available with the same material options as the standard design.

Bill of Materials – Balanced Design

Item	Part Name	Standard Material
1	Body	SA-351 Gr. CF8M St. St. or SA-479 Type 316 St. St.
2	Bonnet	SA-216 Gr. WCB, Carb. St.
3	O-ring Retainer	316 St. St.
4	O-ring Seat Seal	FKM
5	Retainer Lock Screw	304 St. St.
6	Guide	316 St. St.
7	Guide Seal	FKM
8	Disc Holder	316 St. St.
9	Disc Holder Seal	FKM
10	Stem	316 St. St.
11	Spring Adj. Screw	316 St. St.
12	Jam Nut	316 St. St.
13	Cap, Plain Screwed	Carbon Steel
14	Cap Gasket	316 St. St.
15	Body Gasket	316 St. St.
16	Guide Gasket	316 St. St.
17	Spring	Stainless Steel
18	Spring Buttons	316 St. St.
19	Wire Seal	St. St. Wire/Lead Seal
20	Nameplate (Not Shown)	Stainless Steel

Series 2700 Back Pressure Correction Factor, Balanced Design



General Notes:

1. Other O-ring materials available. Consult the factory.
2. Flanged, socket weld, welding nipple and female inlet threaded designs available.
3. Temperature for balanced or O-ring design is limited by the elastomer selected. See page 7

O-Ring Selection

The 2700 Series is available with an optional O-ring seat which minimizes fugitive emissions and costly product loss. This optional seat construction provides zero bubbles per minute leakage at 90% of set pressure per API Standard 527. The tables below list the set pressure and temperature range for both the elastomer and PTFE seat options.

Because of the wide variety of fluids and process conditions used, it is the customer's responsibility to select the proper soft goods material for each specific application. If a specific soft good compound or material is required, please contact your local sales representative.

Material Availability		
Material	Temperature Range ²	
	°F	°C
FKM (Viton™)	-15° to +400°	-26° to +204°
NBR (Nitrile)	-30° to +250°	-34° to +121°
EPDM	-70° to +300°	-57° to +149°
Silicone	-65° to +450°	-54° to +232°
Kalrez®	-20° to +500°	-29° to +260°
PTFE	-320° to +500°	-195° to +260°

O-Ring Seat Valve Pressure & Temperature Limits				
Orifice	Pressure Range, psig ¹		Pressure Range, barg ¹	
	Elastomer Seat	PTFE Seat	Elastomer Seat	PTFE Seat
C High Pressure	15 to 1480 —	800 to 2500 2501 to 5000	1.0 to 102 —	55.1 to 172 172.1 to 345
D High Pressure	15 to 1480 —	800 to 1600 1601 to 5000	1.0 to 102 —	55.1 to 110 110.1 to 345
E	15 to 1480	600 to 2500	1.0 to 102	41.3 to 172
F	15 to 1480	600 to 1600	1.0 to 102	41.3 to 110
G	15 to 1000	200 to 1000	1.0 to 69	14 to 69

General Notes:

1. Maximum O-ring set pressure limit cannot exceed the pressure limit for a given type number and size as indicated in the metal seat selection tables.
2. Temperature range may vary depending on service fluid.
3. EPDM is suitable for steam service up to 300°F, PTFE up to 500°F.
4. Consult the Farris factory for other materials.
5. We reserve the right to substitute comparable fluorocarbon materials from other manufacturers.

Selection Table – Conventional Design

Threaded Connections

MNPT x FNPT, U.S. Customary Units						
Orifice Area Sq. In.	Valve Size Inlet x Outlet	Type Number	Maximum Set Pressure, psig	Max. Back Pressure psig at 100°F	Materials	
			-20°F to 750°F		Body / Bonnet	Spring
0.068	1/2 x 1	27CA13-M20	1600	400	316 St. St./ Carb. St.	Stainless Steel
	3/4 x 1	27CA23-M20	2500			
	3/4 x 1	27CA23H-M20	5000			
	1 x 1	27CA33-M20	2500			
	1 x 1	27CA33H-M20	6500			
0.125	1/2 x 1	27DA13-M20	1600	400	316 St. St./ Carb. St.	Stainless Steel
	3/4 x 1	27DA23-M20	1600			
	3/4 x 1	27DA23H-M20	5000			
	1 x 1	27DA33-M20	1600			
	1 x 1	27DA33H-M20	5000			
0.223	1 x 1-1/2	27EA34-M20	2500	400	316 St. St./ Carb. St.	Stainless Steel
0.350	1-1/2 x 2	27FA45-M20	1600	400	316 St. St./ Carb. St.	Stainless Steel
0.573	1-1/2 x 2-1/2	27GA46-M20	1000	400	316 St. St./ Carb. St.	Stainless Steel

Selection Table – Conventional Design

Flanged Connections

U.S. Customary Units										
Orifice Area Sq. In.	Valve Size Inlet x Outlet	ASME Flange Class		Type Number	Maximum Set Pressure, psig			Max. Back Pressure psig at 100°F	Materials	
		Inlet RF	Outlet RF		-20°F to 100°F	400°F	750°F		Body / Bonnet	Spring
0.068	1/2 x 1	150#	150#	27CA13-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CA13-220	740	635	505	285		
		600#	150#	27CA13-320	1480	1265	1010	285		
		900#	300#	27CA13-420	2220	1900	1510	400		
		1500#	300#	27CA13H-520	3705	3170	2520	400		
	2500#	300#	27CA13H-620	5000	5000	4200	400			
	3/4 x 1	150#	150#	27CA23-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CA23-220	740	635	505	285		
		600#	150#	27CA23-320	1480	1265	1010	285		
		900#	300#	27CA23-420	2220	1900	1510	400		
		1500#	300#	27CA23H-520	3705	3170	2520	400		
	2500#	300#	27CA23H-620	5000	5000	4200	400			
	1 x 1	150#	150#	27CA33-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CA33-220	740	635	505	285		
		600#	150#	27CA33-320	1480	1265	1010	285		
900#		300#	27CA33-420	2220	1900	1510	400			
1500#		300#	27CA33H-520	3705	3170	2520	400			
2500#	300#	27CA33H-620	6170	5280	4200	400				
0.125	1/2 x 1	150#	150#	27DA13-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DA13-220	740	635	505	285		
		600#	150#	27DA13-320	1480	1265	1010	285		
		900#	300#	27DA13H-420	2220	1900	1510	400		
	3/4 x 1	150#	150#	27DA23-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DA23-220	740	635	505	285		
		600#	150#	27DA23-320	1480	1265	1010	285		
		900#	300#	27DA23H-420	2220	1900	1510	400		
		1500#	300#	27DA23H-520	3705	3170	2520	400		
	2500#	300#	27DA23H-620	5000	5000	4200	400			
	1 x 1	150#	150#	27DA33-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DA33-220	740	635	505	285		
		600#	150#	27DA33-320	1480	1265	1010	285		
		900#	300#	27DA33H-420	2220	1900	1510	400		
		1500#	300#	27DA33H-520	3705	3170	2520	400		
2500#	300#	27DA33H-620	5000	5000	4200	400				
0.223	1 x 1-1/2	150#	150#	27EA34-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27EA34-220	740	635	505	285		
		600#	150#	27EA34-320	1480	1265	1010	285		
		900#	300#	27EA34-420	2220	1900	1510	400		
0.350	1-1/2 x 2	150#	150#	27FA45-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27FA45-220	740	635	505	285		
		600#	150#	27FA45-320	1480	1265	1010	285		
0.573	1-1/2 x 2-1/2	150#	150#	27GA46-120	285	200	95	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27GA46-220	740	635	505	285		
		600#	150#	27GA46-320	1000	1000	1000	285		

General Notes:

- Female threaded inlet available. Change first digit of the type number suffix to "F". Example: 27EA34-F20. Maximum set pressure for female inlet is identical to male inlet except for 1/2 x 1" C orifice which may be set to max set pressure of 2500 psig.
- For set pressures below 15 psig, consult the Farris factory.
- Maximum set pressure for steam service valves is 2900 psig or the lower limit as shown in the appropriate selection table.

Selection Table – Conventional Design

Threaded Connections

MNPT x FNPT, Metric Units						
Orifice Area mm ²	Valve Size Inlet x Outlet	Type Number	Maximum Set Pressure, barg	Max. Back Pressure barg at 37.8°C	Materials	
			-28.9°C to 399°C		Body / Bonnet	Spring
43.87	1/2 x 1	27CA13-M20	110	28	316 St. St./ Carb. St.	Stainless Steel
	3/4 x 1	27CA23-M20	172			
	3/4 x 1	27CA23H-M20	345			
	1 x 1	27CA33-M20	172			
	1 x 1	27CA33H-M20	448			
80.65	1/2 x 1	27DA13-M20	110	28	316 St. St./ Carb. St.	Stainless Steel
	3/4 x 1	27DA23-M20	110			
	3/4 x 1	27DA23H-M20	345			
	1 x 1	27DA33-M20	110			
	1 x 1	27DA33H-M20	345			
143.87	1 x 1-1/2	27EA34-M20	172	28	316 St. St./ Carb. St.	Stainless Steel
225.81	1-1/2 x 2	27FA45-M20	110	28	316 St. St./ Carb. St.	Stainless Steel
369.68	1-1/2 x 2-1/2	27GA46-M20	69	28	316 St. St./ Carb. St.	Stainless Steel

General Notes:

1. Female threaded inlet available. Change first digit of the type number suffix to "F". Example: 27EA34-F20. Maximum set pressure for female inlet is identical to male inlet except for 1/2 x 1" C orifice which may be set to 172 barg max set pressure.
2. For set pressures below 1 barg (15 psig), consult the Farris factory.
3. Maximum set pressure for steam service valves is 200 barg or the lower limit as shown in the appropriate selection table.

Selection Table – Conventional Design

Flanged Connections

Metric Units											
Orifice Area mm ²	Valve Size Inlet x Outlet	ASME Flange Class		Type Number	Maximum Set Pressure, barg			Max. Back Pressure barg at 37.8°C	Materials		
		Inlet RF	Outlet RF		-28.9°C to 37.8°C	204°C	399°C		Body / Bonnet	Spring	
43.87	1/2 x 1	150#	150#	27CA13-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27CA13-220	51	44	35	20			
		600#	150#	27CA13-320	102	87	69	20			
		900#	300#	27CA13-420	153	131	104	28			
		1500#	300#	27CA13H-520	255	218	174	28			
		2500#	300#	27CA13H-620	345	345	290	28			
	3/4 x 1	150#	150#	27CA23-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27CA23-220	51	44	35	20			
		600#	150#	27CA23-320	102	87	69	20			
		900#	300#	27CA23-420	153	131	104	28			
		1500#	300#	27CA23H-520	255	218	174	28			
		2500#	300#	27CA23H-620	345	345	290	28			
	1 x 1	150#	150#	27CA33-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27CA33-220	51	44	35	20			
		600#	150#	27CA33-320	102	87	69	20			
		900#	300#	27CA33-420	153	131	104	28			
		1500#	300#	27CA33H-520	255	218	174	28			
		2500#	300#	27CA33H-620	425	364	290	28			
80.65	1/2 x 1	150#	150#	27DA13-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27DA13-220	51	44	35	20			
		600#	150#	27DA13-320	102	87	69	20			
		900#	300#	27DA13H-420	153	131	104	28			
	3/4 x 1	150#	150#	27DA23-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27DA23-220	51	44	35	20			
		600#	150#	27DA23-320	102	87	69	20			
		900#	300#	27DA23H-420	153	131	104	28			
		1500#	300#	27DA23H-520	255	218	174	28			
		2500#	300#	27DA23H-620	345	345	290	28			
	1 x 1	150#	150#	27DA33-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27DA33-220	51	44	35	20			
		600#	150#	27DA33-320	102	87	69	20			
		900#	300#	27DA33H-420	153	131	104	28			
		1500#	300#	27DA33H-520	255	218	174	28			
		2500#	300#	27DA33H-620	345	345	290	28			
	143.87	1 x 1-1/2	150#	150#	27EA34-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel
			300#	150#	27EA34-220	51	44	35	20		
600#			150#	27EA34-320	102	87	69	20			
900#			300#	27EA34-420	153	131	104	28			
225.81	1-1/2 x 2	150#	150#	27FA45-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27FA45-220	51	44	35	20			
		600#	150#	27FA45-320	102	87	69	20			
369.68	1-1/2 x 2-1/2	150#	150#	27GA46-120	20	14	6	20	316 St. St./ Carb. St.	Stainless Steel	
		300#	150#	27GA46-220	51	44	35	20			
		600#	150#	27GA46-320	69	69	69	20			

Selection Table – Balanced Design

Threaded Connections

MNPT x FNPT, U.S. Customary Units							
Orifice Area Sq. In.	Valve Size Inlet x Outlet	Type Number	Maximum Set Pressure, psig		Max. Back Pressure psig at 100°F	Materials	
			-20°F to 450°F			Body / Bonnet	Spring
0.068	1/2 x 1	27CC13B-M20	1480	400	316 St. St./ Carb. St.	Stainless Steel	
	3/4 x 1	27CC23B-M20					
	1 x 1	27CC33B-M20					
0.125	1/2 x 1	27DC13B-M20	1480	400	316 St. St./ Carb. St.	Stainless Steel	
	3/4 x 1	27DC23B-M20					
	1 x 1	27DC33B-M20					

Flanged Connections

U.S. Customary Units									
Orifice Area Sq. In.	Valve Size Inlet x Outlet	ASME Flange Class		Type Number	Maximum Set Pressure, psig		Max. Back Pressure psig at 100°F	Materials	
		Inlet RF	Outlet RF		-20°F to 100°F	400°F		Body / Bonnet	Spring
0.068	1/2 x 1	150#	150#	27CC13B-120	285	200	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CC13B-220	740	635	285		
		600#	150#	27CC13B-320	1480	1265	285		
		900#	300#	27CC13B-420	1480	1265	400		
	3/4 x 1	150#	150#	27CC23B-120	285	200	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CC23B-220	740	635	285		
		600#	150#	27CC23B-320	1480	1265	285		
		900#	300#	27CC23B-420	1480	1265	400		
	1 x 1	150#	150#	27CC33B-120	285	200	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CC33B-220	740	635	285		
		600#	150#	27CC33B-320	1480	1265	285		
		900#	300#	27CC33B-420	1480	1265	400		
0.125	1/2 x 1	150#	150#	27DC13B-120	285	200	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DC13B-220	740	635	285		
		600#	150#	27DC13B-320	1480	1265	285		
	3/4 x 1	150#	150#	27DC23B-120	285	200	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DC23B-220	740	635	285		
		600#	150#	27DC23B-320	1480	1265	285		
	1 x 1	150#	150#	27DC33B-120	285	200	285	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DC33B-220	740	635	285		
		600#	150#	27DC33B-320	1480	1265	285		

Selection Table – Balanced Design

Threaded Connections

MNPT x FNPT, Metric Units							
Orifice Area mm ²	Valve Size Inlet x Outlet	Type Number	Maximum Set Pressure, barg		Max. Back Pressure barg at 37.8°C	Materials	
			-28.9°C to 232°C			Body / Bonnet	Spring
43.87	1/2 x 1 3/4 x 1 1 x 1	27CC13B-M20	102		28	316 St. St./ Carb. St.	Stainless Steel
		27CC23B-M20					
		27CC33B-M20					
80.65	1/2 x 1 3/4 x 1 1 x 1	27DC13B-M20	102		28	316 St. St./ Carb. St.	Stainless Steel
		27DC23B-M20					
		27DC33B-M20					

Flanged Connections

Metric Units									
Orifice Area mm ²	Valve Size Inlet x Outlet	ASME Flange Class		Type Number	Maximum Set Pressure, barg		Max. Back Pressure barg at 37.8°C	Materials	
		Inlet RF	Outlet RF		-28.9°C to 37.8°C	204°C		Body / Bonnet	Spring
43.87	1/2 x 1	150#	150#	27CC13B-120	20	14	20	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CC13B-220	51	44	20		
		600#	150#	27CC13B-320	102	87	20		
		900#	300#	27CC13B-420	102	87	28		
	3/4 x 1	150#	150#	27CC23B-120	20	14	20	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CC23B-220	51	44	20		
		600#	150#	27CC23B-320	102	87	20		
		900#	300#	27CC23B-420	102	87	28		
	1 x 1	150#	150#	27CC33B-120	20	14	20	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27CC33B-220	51	44	20		
		600#	150#	27CC33B-320	102	87	20		
		900#	300#	27CC33B-420	102	87	28		
80.65	1/2 x 1	150#	150#	27DC13B-120	20	14	20	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DC13B-220	51	44	20		
		600#	150#	27DC13B-320	102	87	20		
	3/4 x 1	150#	150#	27DC23B-120	20	14	20	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DC23B-220	51	44	20		
		600#	150#	27DC23B-320	102	87	20		
	1 x 1	150#	150#	27DC33B-120	20	14	20	316 St. St./ Carb. St.	Stainless Steel
		300#	150#	27DC33B-220	51	44	20		
		600#	150#	27DC33B-320	102	87	20		

Capacity Tables - U.S. Customary Units

ASME Pressure Vessel Code, Section VIII and XIII, (UV) Stamp

AIR – 10% Overpressure Capacities in Standard Cubic Feet Per Minute at 60°F					
Set Pressure (psig)	Orifice Area, Sq. In.				
	C	D	E	F	G
	0.068	0.125	0.223	0.350	0.573
15	35	65	117	184	301
20	41	75	135	212	347
30	52	95	171	268	439
40	64	118	210	330	541
50	76	140	250	392	642
60	88	162	289	454	744
70	100	184	329	516	845
80	112	206	368	578	947
90	124	228	408	640	1048
100	136	250	447	702	1150
150	196	361	644	1012	1657
200	256	472	842	1322	2164
250	317	582	1039	1631	2671
300	377	693	1237	1941	3178
350	437	804	1434	2251	3686
400	497	914	1631	2561	4193
450	557	1025	1829	2871	4700
500	618	1136	2026	3181	5207
550	678	1246	2224	3490	5715
600	738	1357	2421	3800	6222
650	798	1468	2618	4110	6729
700	858	1578	2816	4420	7236
750	918	1689	3013	4730	7743
800	979	1799	3211	5039	8251
850	1039	1910	3408	5349	8758
900	1099	2021	3605	5659	9265
950	1159	2131	3803	5969	9772
1000	1219	2242	4000	6279	10280
1050	1280	2353	4198	6589	
1100	1340	2463	4395	6898	
1150	1400	2574	4592	7208	
1200	1460	2685	4790	7518	
1250	1520	2795	4987	7828	
1300	1581	2906	5185	8138	
1350	1641	3017	5382	8447	
1400	1701	3127	5579	8757	
1450	1761	3238	5777	9067	
1500	1821	3349	5974	9377	
1550	1882	3459	6172	9687	
1600	1942	3570	6369	9997	
1650	2002	3681	6566		
1700	2062	3791	6764		
1750	2122	3902	6961		
1800	2183	4012	7159		
1850	2243	4123	7356		
1900	2303	4234	7553		
2000	2423	4455	7948		
2100	2544	4676	8343		
2200	2664	4898	8738		
2300	2785	5119	9133		
2400	2905	5340	9527		
2500	3025	5562	9922		
2600	3146	5783			
2700	3266	6004			
2800	3386	6226			
2900	3507	6447			
3000	3627	6668			
3500	4229	7775			
4000	4831	8881			
4500	5433	9988			
5000	6035	11094			
5500	6637				
6000	7239				
6500	7841				

STEAM – 10% Overpressure Capacities in Pounds Per Hour at Saturation Temperature					
Set Pressure (psig)	Orifice Area, Sq. In.				
	C	D	E	F	G
	0.068	0.125	0.223	0.350	0.573
15	100	184	329	517	847
20	115	213	380	596	976
30	146	269	480	754	1235
40	180	331	591	928	1520
50	214	393	702	1103	1805
60	248	456	813	1277	2090
70	281	518	924	1451	2375
80	315	580	1035	1625	2660
90	349	642	1146	1799	2945
100	383	704	1257	1973	3230
150	552	1015	1811	2843	4655
200	721	1326	2366	3714	6080
250	890	1637	2921	4584	7505
300	1059	1948	3475	5455	8930
350	1228	2259	4030	6325	10355
400	1398	2570	4584	7196	11780
450	1567	2880	5139	8066	13205
500	1736	3191	5694	8936	14631
550	1905	3502	6248	9807	16056
600	2074	3813	6803	10677	17481
650	2243	4124	7357	11548	18906
700	2412	4435	7912	12418	20331
750	2581	4746	8467	13289	21756
800	2750	5056	9021	14159	23181
850	2920	5367	9576	15029	24606
900	3089	5678	10130	15900	26031
950	3258	5989	10685	16770	27456
1000	3427	6300	11239	17641	28881
1050	3596	6611	11794	18511	
1100	3765	6922	12349	19382	
1150	3934	7233	12903	20252	
1200	4103	7543	13458	21122	
1250	4272	7854	14012	21993	
1300	4442	8165	14567	22863	
1350	4611	8476	15122	23734	
1400	4780	8787	15676	24604	
1450	4959	9116	16263	25525	
1500	5144	9456	16869	26477	
1550	5329	9797	17479	27433	
1600	5516	10141	18091	28395	
1650	5710	10496	18726		
1700	5905	10854	19365		
1750	6101	11215	20008		
1800	6292	11567	20636		
1850	6497	11944	21308		
1900	6697	12312	21965		
2000	7109	13068	23314		
2100	7533	13849	24706		
2200	7980	14669	26170		
2300	8434	15504	27660		
2400	8913	16385	29231		
2500	9410	17298	30860		
2600	9935	18262			
2700	10498	19299			
2800	11095	20395			
2900	11745	21591			

- General Notes:
 1. Capacities at 30 psig and below are based on 3 psi overpressure.
 2. For sizing purposes, the coefficients of discharge K are 0.878 for air, gas & steam; 0.676 for water.

Capacity Tables - U.S. Customary Units

ASME Pressure Vessel Code, Section VIII and XIII, (UV) Stamp

WATER – 10% Overpressure Capacities³ in U.S. Gallons Per Minute at 70°F					
Set Pressure (psig)	Orifice Area, Sq. In.				
	C	D	E	F	G
	0.068	0.125	0.223	0.350	0.573
15	7.4	13.6	24.3	38.1	62.4
20	8.3	15.3	27.4	43.1	70.5
30	10.0	18.4	32.9	51.6	84.5
40	11.5	21.2	37.9	59.6	97.6
50	12.9	23.8	42.4	66.6	109
60	14.1	26.0	46.5	73.0	119
70	15.3	28.1	50.2	78.8	129
80	16.3	30.1	53.7	84.3	138
90	17.3	31.9	56.9	89.4	146
100	18.3	33.6	60.0	94.2	154
150	22.4	41.2	73.5	115	189
200	25.9	47.6	84.9	133	218
250	28.9	53.2	94.9	149	244
300	31.7	58.3	104	163	267
350	34.2	63.0	112	176	288
400	36.6	67.3	120	188	308
450	38.8	71.4	127	200	327
500	40.9	75.3	134	210	345
550	42.9	78.9	140	221	362
600	44.8	82.4	147	230	378
650	46.7	85.8	153	240	393
700	48.4	89.0	158	249	408
750	50.1	92.2	164	258	422
800	51.8	95.2	169	266	436
850	53.4	98.1	175	274	450
900	54.9	101	180	282	463
950	56.4	103	185	290	475
1000	57.9	106	189	298	488
1050	59.3	109	194	305	
1100	60.7	111	199	312	
1150	62.1	114	203	319	
1200	63.4	116	208	326	
1250	64.7	119	212	333	
1300	66.0	121	216	339	
1350	67.3	123	220	346	
1400	68.5	126	224	352	
1450	69.7	128	228	359	
1500	70.9	130	232	365	
1550	72.1	132	236	371	
1600	73.2	134	240	377	
1650	74.4	136	244		
1700	75.5	138	247		
1750	76.6	140	251		
1800	77.7	142	254		
1850	78.7	144	258		
1900	79.8	146	261		
2000	81.9	150	268		
2100	83.9	154	275		
2200	85.9	157	281		
2300	87.8	161	288		
2400	89.7	164	294		
2500	91.5	168	300		
2600	93.4	171			
2700	95.1	174			
2800	96.9	178			
2900	98.6	181			
3000	100	184			
3500	108	199			
4000	115	212			
4500	122	225			
5000	129	238			
5500	135				
6000	141				
6500	147				

General Notes:

1. Capacities at 30 psig and below are based on 3 psi overpressure.
2. For sizing purposes, the coefficients of discharge K are 0.878 for air, gas & steam; 0.676 for water.
3. To determine capacity at 25% overpressure, multiply the capacity at 10% by 1.066.

Capacity Tables – Metric Units

ASME Pressure Vessel Code, Section VIII and XIII, (UV) Stamp

AIR – 10% Overpressure Capacities in Standard Cubic Meters Per Minute at 15.6°C					
Set Pressure (barg)	Orifice Area mm ²				
	C	D	E	F	G
	43.87	80.65	143.87	225.81	369.68
1	0.9	1.8	3.2	5.1	8.4
2	1.4	2.6	4.7	7.4	12.1
3	1.9	3.5	6.3	9.9	16.3
4	2.4	4.4	7.9	12.5	20.5
5	2.9	5.3	9.6	15.0	24.6
6	3.4	6.2	11.2	17.6	28.8
7	3.9	7.2	12.8	20.1	33.0
8	4.4	8.1	14.4	22.7	37.1
9	4.9	9.0	16.0	25.2	41.3
10	5.4	9.9	17.7	27.7	45.5
12	6.3	11.7	20.9	32.8	53.8
14	7.3	13.5	24.1	37.9	62.1
16	8.3	15.3	27.4	43.0	70.5
18	9.3	17.1	30.6	48.1	78.8
20	10.3	19.0	33.9	53.2	87.1
25	12.8	23.5	42.0	65.9	108
30	15.2	28.1	50.1	78.7	128
35	17.7	32.6	58.2	91.4	149
40	20.2	37.1	66.3	104	170
45	22.7	41.7	74.4	116	191
50	25.1	46.2	82.5	129	212
55	27.6	50.8	90.6	142	233
60	30.1	55.3	98.7	155	253
65	32.5	59.9	106	167	274
70	35.0	64.4	115	180	295
75	37.5	69.0	123	193	
80	40.0	73.5	131	205	
85	42.4	78.1	139	218	
90	44.9	82.6	147	231	
95	47.4	87.1	155	244	
100	49.9	91.7	163	256	
105	52.3	96.2	171	269	
110	54.8	100	179	282	
115	57.3	105	187		
120	59.7	109	196		
125	62.2	114	204		
130	64.7	119	212		
135	67.2	123	220		
140	69.6	128	228		
145	72.1	132	236		
150	74.6	137	244		
155	77.1	141	252		
160	79.5	146	260		
165	82.0	150	269		
170	84.5	155	277		
175	86.9	159			
180	89.4	164			
185	91.9	169			
190	94.4	173			
195	96.8	178			
200	99.3	182			
220	109	200			
240	119	218			
260	129	237			
280	138	255			
300	148	273			
320	158	291			
340	168	309			
360	178				
380	188				
400	198				
420	208				
440	218				
448	221				

STEAM – 10% Overpressure Capacities in Kilograms Per Hour at Saturation Temperature					
Set Pressure (barg)	Orifice Area mm ²				
	C	D	E	F	G
	0.068	0.125	0.223	0.350	0.573
1	44.9	82.5	147	231	378
2	65.1	119	213	335	548
3	87.2	160	286	449	735
4	109	201	359	563	922
5	131	242	432	678	1110
6	154	283	505	792	1297
7	176	324	578	907	1485
8	198	364	651	1021	1672
9	220	405	723	1136	1860
10	243	446	796	1250	2047
12	287	528	942	1479	2422
14	332	610	1088	1708	2797
16	376	692	1234	1938	3172
18	421	773	1380	2167	3547
20	465	855	1526	2396	3922
25	576	1060	1891	2968	4860
30	688	1264	2256	3541	5797
35	799	1469	2621	4114	6735
40	910	1673	2986	4686	7672
45	1021	1878	3351	5259	8610
50	1133	2082	3715	5832	9547
55	1244	2287	4080	6404	10485
60	1355	2491	4445	6977	11422
65	1466	2696	4810	7550	12360
70	1578	2900	5175	8122	13298
75	1689	3105	5540	8695	14235
80	1800	3310	5905	9268	
85	1911	3514	6269	9840	
90	2023	3719	6634	10413	
95	2134	3923	6999	10985	
100	2250	4136	7379	11581	
105	2371	4358	7775	12204	
110	2495	4587	8183	12843	
115	2620	4817	8594	13489	
120	2749	5054	9018	14153	
125	2880	5294	9446	14825	
130	3012	5537	9878		
135	3145	5782	10315		
140	3283	6035	10766		
145	3425	6297	11233		
150	3569	6562	11706		
155	3715	6830	12185		
160	3870	7115	12694		
165	4028	7404	13209		
170	4191	7704	13744		
175	4356	8009			
180	4533	8332			
185	4716	8669			
190	4911	9027			
195	5113	9400			
200	5329	9796			

General Notes:

1. Capacities at 2.0 barg set pressure and below are based on 0.2 bar overpressure.
2. For sizing purposes the coefficients of discharge K are 0.878 for air, gas, & steam, 0.676 for liquids.

Capacity Tables – Metric Units

ASME Pressure Vessel Code, Section VIII and XIII (UV) Stamp

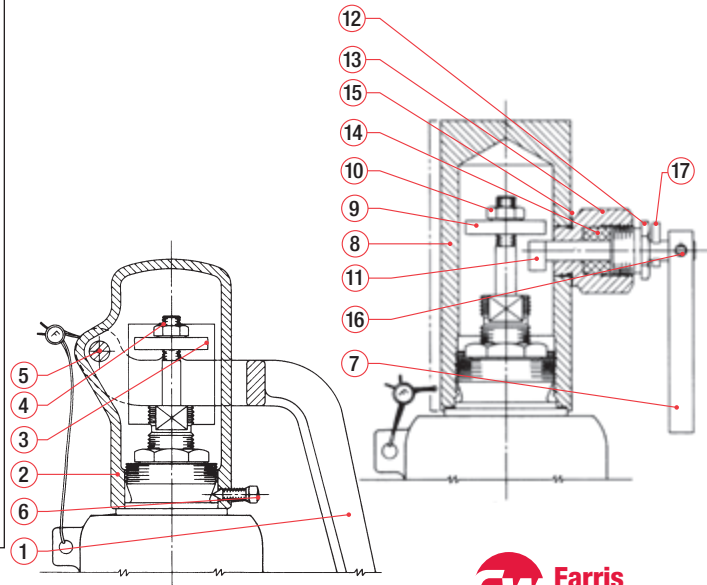
WATER – 10% Overpressure Capacities ³ in Liters Per Minute at 21°C					
Set Pressure (barg)	Orifice Area mm ²				
	C	D	E	F	G
	43.87	80.65	143.87	225.81	369.68
1	27.6	50.8	90.7	142	233
2	37.4	68.7	122	192	315
3	45.7	84.0	150	235	385
4	52.8	97.0	173	271	445
5	59.0	108	193	303	497
6	64.6	118	212	332	545
7	69.8	128	229	359	588
8	74.6	137	244	384	629
9	79.2	145	259	407	667
10	83.5	153	273	429	703
12	91.4	168	300	470	770
14	98.8	181	324	508	832
16	105	194	346	543	890
18	112	205	367	576	944
20	118	217	387	607	995
25	132	242	433	679	1112
30	144	265	474	744	1218
35	156	287	512	804	1316
40	167	307	547	859	1407
45	177	325	580	911	1492
50	186	343	612	961	1573
55	195	360	642	1008	1650
60	204	376	670	1052	1723
65	212	391	698	1095	1794
70	220	406	724	1137	1861
75	228	420	750	1177	
80	236	434	774	1215	
85	243	447	798	1253	
90	250	460	821	1289	
95	257	473	844	1324	
100	264	485	866	1359	
105	270	497	887	1392	
110	276	509	908	1425	
115	283	520	928		
120	289	531	948		
125	295	542	968		
130	301	553	987		
135	306	564	1006		
140	312	574	1024		
145	318	584	1042		
150	323	594	1060		
155	328	604	1078		
160	334	614	1095		
165	339	623	1112		
170	344	632	1129		
175	349	642			
180	354	651			
185	359	660			
190	364	669			
195	368	677			
200	373	686			
220	391	720			
240	409	752			
260	425	782			
280	441	812			
300	457	840			
320	472	868			
340	486	895			
360	501				
380	514				
400	528				
420	541				
440	553				
448	558				

General Notes:
 1. Capacities at 2.0 barg set pressure and below are based on 0.2 bar overpressure.
 2. For sizing purposes the coefficients of discharge K are 0.878 for air, gas, & steam, 0.676 for liquid.
 3. To determine capacity at 25 % overpressure multiply the capacity at 10 % by 1.066.

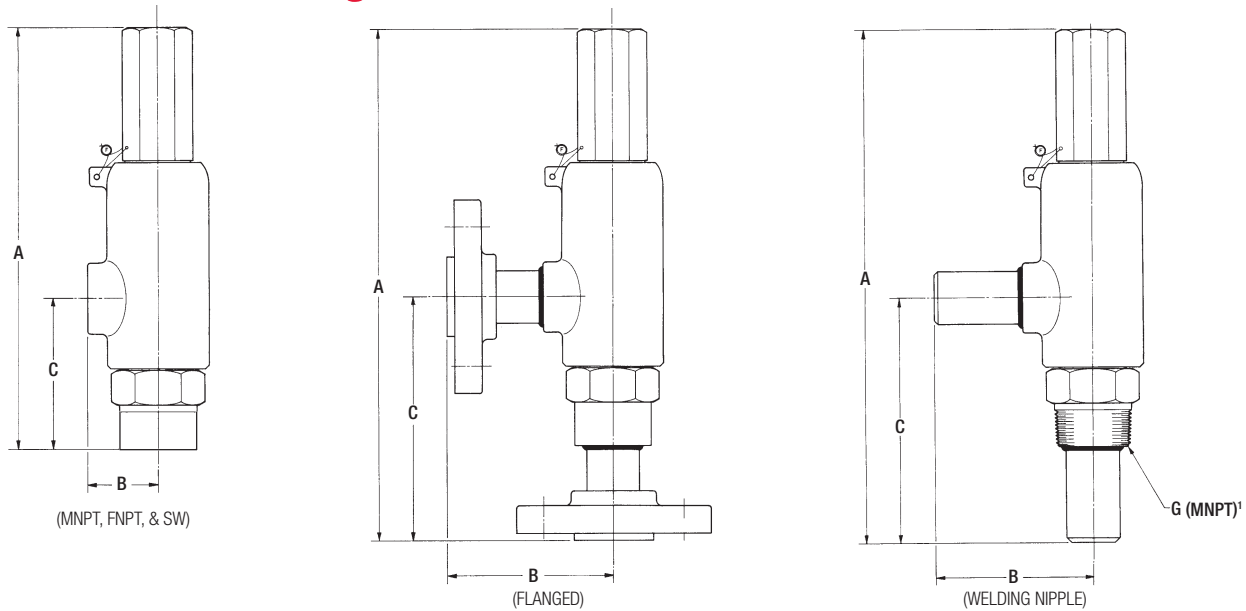
Cap Constructions

Cap Constructions							
Cap Constructions	Item No.	Part Name	Standard Materials	316 St. St.	Monel	Hastelloy C	Duplex
				S4 ² & N4	M4	H4	D4/D8
Open Lever	1	Test Lever	Iron				
	2	Cap, O.L.	Iron				
	3	Stem Test Washer	St. St.	316 St. St.	Monel	Hast. C	Duplex
	4	Stem Jam Nut	St. St.	316 St. St.	Monel	Hast. C	Duplex
	5	Button Head Rivet	Steel				
	6	Set Screw	Steel				
Packed Lever	7	Test Lever	Steel				
	8	Cap, Packed	Steel	316 St. St.	Monel	Hast. C	Duplex
	9	Stem Test Washer	St. St.	316 St. St.	Monel	Hast. C	Duplex
	10	Stem Jam Nut	St. St.	316 St. St.	Monel	Hast. C	Duplex
	11	Cam	St. St.	316 St. St.	Monel	Hast. C	Duplex
	12	Gland	St. St.	316 St. St.	Monel	Hast. C	Duplex
	13	Gland Nut	St. St.	316 St. St.	Monel	Hast. C	Duplex
	14	Packing Ring	Graphite				
	15	Gland Nut Gasket ³	Flexible Graphite	PTFE, Filled	PTFE, Filled	PTFE, Filled	PTFE Filled
	16	Groove Pin	Steel Plt'd				
	17	Retaining Ring	St. St.				

General Notes:
 1. Any part where material field is blank is standard material.
 2. "S4" trim suitable for cryogenic service.
 3. For "N1" trim, material is PTFE Filled



Dimensions & Weights



Threaded Connections (MNPT x FNPT)								
Valve Size	US Customary Units (Inches)			Metric Units (millimeters)			Approx. Weight	
Inlet x Outlet	A (Max.) All Cap Const.	B	C	A (Max.) All Cap Const.	B	C	lb	kg
C and D Orifice								
1/2 x 1	11-1/4	1-3/4	3-9/16	282	45	91	8	3.6
3/4 x 1	11-1/4	1-3/4	3-9/16	286	45	91	8	3.6
3/4 x 1 (HP)	13-5/8	2-1/2	3-3/4	346	64	95	14	6.3
1 x 1	11-1/2	1-3/4	3-3/4	292	45	95	8	3.6
1 x 1 (HP)	13-5/8	2-1/2	3-3/4	346	64	95	14	6.3
E Orifice								
1 x 1-1/2	13-5/8	2-1/2	3-1/2	346	64	89	16	7.2
F Orifice								
1-1/2 x 2	14-9/16	3	3-7/8	370	76	98	17	7.7
G Orifice								
1-1/2 x 2-1/2	14-9/16	3	4-1/8	370	76	105	18	8.1

Socket Weld & FNPT x FNPT Connections								
Valve Size	US Customary Units (Inches)			Metric Units (millimeters)			Approx. Weight	
Inlet x Outlet	A (Max.) All Cap Const.	B	C	A (Max.) All Cap Const.	B	C	lb	kg
C and D Orifice								
1/2 x 1	11-7/16	1-3/4	3-11/16	291	45	94	8	3.6
1/2 x 1 (HP)	13-5/8	2-1/2	3-3/4	346	64	95	14	6.3
3/4 x 1	11-7/16	1-3/4	3-11/16	291	45	94	8	3.6
3/4 x 1 (HP)	13-5/8	2-1/2	3-3/4	346	64	95	14	6.3
1 x 1	11-7/16	1-3/4	3-11/16	291	45	94	8	3.6
1 x 1 (HP)	13-5/8	2-1/2	3-3/4	346	64	95	14	6.3
E Orifice								
1 x 1-1/2	13-3/8	2-1/2	3-1/2	340	64	89	16	7.2
F Orifice								
1-1/2 x 2	14-9/16	3	3-7/8	370	76	98	17	7.7
G Orifice								
1-1/2 x 2-1/2	14-9/16	3	4-1/8	370	76	105	18	8.1

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 General Notes:
 1. Same pipe thread connections also used on socket weld models with corresponding inlet sizes for testing purpose only
 2. Tolerance for "B" and "C" dimensions is ±1/8".

Dimensions & Weights

Flanged Connections											
Orifice	Valve Size Inlet x Outlet	ASME Flange Class		US Customary Units (Inches)			Metric Units (millimeters)			Weight	
		Inlet RF	Outlet RF	A (Max.)	B	C	A (Max.)	B	C	lb	kg
C & D	1/2 x 1	150#	150#	14	5-3/16	6-1/4	356	132	159	15	6.8
		300#	150#								
		600#	150#								
		900#	300#								
	3/4 x 1	1500#	300#	16-1/8	5-15/16	6-1/4	410	151	159	22	9.9
		2500#	300#								
		150#	150#								
		300#	150#								
	1 x 1	600#	150#	14 7/8	5-3/16	7-1/8	378	132	181	15	6.8
		900#	300#								
		1500#	300#								
		2500#	300#								
E	1 x 1-1/2	150#	150#	16-13/16	5-13/16	6-15/16	427	148	176	26	11.7
		300#	150#								
		600#	150#								
		900#	300#								
F	1-1/2 x 2	150#	150#	17-7/8	8-3/16	7-3/16	454	208	183	30	13.6
		300#	150#								
		600#	150#								
G	1-1/2 x 2-1/2	150#	150#	17-1/8	8-3/16	7-7/16	435	208	189	32	14.5
		300#	150#								
		600#	150#								

Welding Nipple Connections									
Valve Size	US Customary Units (Inches)				Metric Units (millimeters)			Approx. Weight	
Inlet x Outlet	A (Max.) All Cap Const.	B	C	G' (MNPT)	A (Max.) All Cap Const.	B	C	lb	kg
C and D Orifice									
1/2 x 1	13	3-3/16	5-1/4	1	330	81	133	9	4
1/2 x 1 (HP)	15-3/16	3-15/16	5-5/16	1	386	100	135	15	6.8
3/4 x 1	12-15/16	3-3/16	5-3/16	1-1/4	329	81	132	9	4
3/4 x 1 (HP)	15-1/8	3-15/16	5-1/4	1-1/4	384	100	133	15	6.8
1 x 1	12-7/8	3-3/16	5-1/8	1-1/2	327	81	130	9	4
1 x 1 (HP)	15-1/16	3-15/16	5-3/16	2	383	100	132	15	6.8
E Orifice									
1 x 1-1/2	14-13/16	3-13/16	4-15/16	1-1/2	376	97	125	17	7.7
F Orifice									
1-1/2 x 2	15-7/8	5-3/16	5-3/16	2	403	132	132	18	8.1
G Orifice									
1-1/2 x 2-1/2	15-7/8	5-3/16	5-7/16	2	403	132	128	19	8.6

General Notes:

1. Same pipe thread connections also used on socket weld models with corresponding inlet sizes for testing purpose only.
2. Tolerance for "B" and "C" dimensions is $\pm 1/8"$.
3. Valves with ring joint inlets have the same center to face dimension as the standard raised face flange models, except for "C" & "D" orifice valves with 2500 class inlet. Consult the factory for those dimensions.

Material Options - Corrosive and Low Temperature Service

Bill of Materials										
Part Name	316 St. St.		MONEL			HASTELLOY C			DUPLEX	
	N1 (NACE)	S4' & N4 (NACE)	M1	M2	M4	H1	H2	H4	D4	D8
	-20 °F to 750 °F	-450 °F to 750 °F	-20 °F to 600 °F		-325 °F to 600 °F	-20 °F to 750 °F		-325 °F to 750 °F	-50 °F to 500 °F	-50 °F to 600 °F
Body			Monel	Monel	Monel	Hastelloy C	Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Bonnet		SA-351 GR. CF8M St. St.			Monel			Hastelloy C	Duplex 4A	Duplex 6A
Disc			Monel	Monel	Monel	Hastelloy C	Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Guide				Monel	Monel		Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Disc Holder				Monel	Monel		Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Stem					Monel			Hastelloy C	Duplex 4A	Duplex 6A
Spring Adj. Screw					Monel			Hastelloy C	Duplex 4A	Duplex 6A
Jam Nut					Monel			Hastelloy C	Duplex 4A	Duplex 6A
Cap, Plain Screwed		316 St. St.			Monel			Hastelloy C	Duplex 4A	Duplex 6A
Cap Gasket					Monel			Hastelloy C	Duplex 4A	Duplex 6A
Body Gasket				Monel	Monel		Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Guide Gasket				Monel	Monel		Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Spring ⁴	Inconel® X-750	316 St. St. / Inconel X-750		Inconel X-750	Inconel X-750		Inconel X-750	Hastelloy C	Inconel X-750	Inconel X-750
Spring Buttons					Monel			Hastelloy C	Duplex 4A	Duplex 6A
O-Ring Retainer ³		316 St. St.	Monel	Monel	Monel	Hastelloy C	Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Retainer Lock Screw ³		316 St. St.	Monel	Monel	Monel	Hastelloy C	Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
O-Ring Seat Seal ³										
Guide Seal ³										
Disc Holder Seal ³										
Wire Seal										
Nameplate (Not Shown)										
Welding Nipple (Inlet)			Monel	Monel	Monel	Hastelloy C	Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Welding Nipple (Outlet)		316 St. St.			Monel			Hastelloy C	Duplex 4A	Duplex 6A
Lap Joint Stub End (Inlet)			Monel	Monel	Monel	Hastelloy C	Hastelloy C	Hastelloy C	Duplex 4A	Duplex 6A
Lap Joint Stub End (Outlet)		316 St. St.			Monel			Hastelloy C	Duplex 4A	Duplex 6A
Lap Joint Flange (Inlet)		316 St. St.			Monel			Hastelloy C	Duplex 4A	Duplex 6A
Lap Joint Flange (Outlet)		316 St. St.			Monel			Hastelloy C	Duplex 4A	Duplex 6A

General Notes:

1. For S4 trim, a 17-4 Ph. or 17-7 Ph. spring may be necessary for some pressures and temperatures.
2. For open and packed lever materials, see page 16
3. Temperature for balanced or O-ring seat design is limited by the elastomer selected. Consult chart on page 7.
4. Balanced design uses the same spring selection as the standard design.

Material Options - Selection Table

Maximum Set Pressure - PSIG Flanged Connections - U.S. Customary Units																
Orifice Area Sq. In.	Valve Size Inlet x Outlet	ASME Flange Class		Type Number	/S4			Max. Back Pressure psig at 100 °F	/M4			Max. Back Pressure psig at 100 °F	/H4			Max. Back Pressure psig at 100 °F
		Inlet RF	Outlet RF		Maximum Set Pressure, PSIG				Maximum Set Pressure, PSIG				Maximum Set Pressure, PSIG			
					-450 °F to 100 °F	400 °F	750 °F		-325 °F to 100 °F	400 °F	600 °F		-325 °F to 100 °F	400 °F	750 °F	
0.068	1/2 x 1	150#	150#	27CA13-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27CA13-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27CA13-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
		900#	300#	27CA13-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400
		1500#	300#	27CA13H-520	3600	2570	2135	400	3000	2365	2330	400	3000	2450	2050	400
	2500#	300#	27CA13H-620	5000	4280	3560	400	5000	3940	3880	400	5000	4080	3420	400	
	3/4 x 1	150#	150#	27CA23-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27CA23-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27CA23-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
		900#	300#	27CA23-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400
		1500#	300#	27CA23H-520	3600	2570	2135	400	3000	2365	2330	400	3000	2450	2050	400
	2500#	300#	27CA23H-620	5000	4280	3560	400	5000	3940	3880	400	5000	4080	3420	400	
	1 x 1	150#	150#	27CA33-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27CA33-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27CA33-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
900#		300#	27CA33-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400	
1500#		300#	27CA33H-520	3600	2570	2135	400	3000	2365	2330	400	3000	2450	2050	400	
2500#	300#	27CA33H-620	6000	4280	3560	400	5000	3940	3880	400	5000	4080	3420	400		
0.125	1/2 x 1	150#	150#	27DA13-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27DA13-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27DA13-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
		900#	300#	27DA13H-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400
	3/4 x 1	150#	150#	27DA23-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27DA23-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27DA23-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
		900#	300#	27DA23H-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400
		1500#	300#	27DA23H-520	3600	2570	2135	400	3000	2365	2330	400	3000	2450	2050	400
	2500#	300#	27DA23H-620	6000	4280	3560	400	5000	3940	3880	400	5000	4080	3420	400	
	1 x 1	150#	150#	27DA33-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27DA33-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27DA33-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
		900#	300#	27DA33H-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400
		1500#	300#	27DA33H-520	3600	2570	2135	400	3000	2365	2330	400	3000	2450	2050	400
2500#	300#	27DA33H-620	5000	4280	3560	400	5000	3940	3880	400	5000	4080	3420	400		
0.223	1 x 1 1/2	150#	150#	27EA34-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27EA34-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27EA34-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
		900#	300#	27EA34-420	2160	1540	1280	400	1800	1420	1395	400	1800	1470	1230	400
0.350	1 1/2 x 2	150#	150#	27FA45-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27FA45-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27FA45-320	1440	1025	855	275	1200	945	930	230	1200	980	820	230
0.573	1 1/2 x 2 1/2	150#	150#	27GA46-120	275	195	95	275	230	180	95	230	230	190	95	230
		300#	150#	27GA46-220	720	515	425	275	600	475	465	230	600	490	410	230
		600#	150#	27GA46-320	1000	1000	855	275	1000	945	930	230	1000	980	820	230

General Notes:

1. For D4 and D8 material selections, refer to the standard construction pressure ratings table
2. For set pressures below 15 psig, consult the Farris Factory.
3. Maximum set pressure for steam service valves is 2900 psig or the lower limit as shown in the appropriate selection table.

Material Options - Selection Table

Maximum Set Pressure - BARG Flanged Connections - Metric Units																
Orifice Area mm ²	Valve Size Inlet x Outlet	ASME Flange Class		Type Number	/S4				/M4				/H4			
		Inlet RF	Outlet RF		Maximum Set Pressure, barg			Max. Back Pressure barg at 37.8 °C	Maximum Set Pressure, barg			Max. Back Pressure barg at 37.8 °C	Maximum Set Pressure, barg			Max. Back Pressure barg at 37.8 °C
					-267 °C to 37.8 °C	204 °C	399 °C		-198 °C to 37.8 °C	204 °C	315 °C		-198 °C to 37.8 °C	204 °C	399 °C	
43.87	1/2 x 1	150#	150#	27CA13-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27CA13-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27CA13-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
		900#	300#	27CA13-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28
		1500#	300#	27CA13H-520	255	218	174	28	206.8	163.5	160.4	28	206.8	169.6	141.3	28
	2500#	300#	27CA13H-620	345	345	290	28	344.7	272.4	267.4	28	344.7	282.7	235.6	28	
	3/4 x 1	150#	150#	27CA23-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27CA23-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27CA23-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
		900#	300#	27CA23-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28
		1500#	300#	27CA23H-520	255	218	174	28	206.8	163.5	160.4	28	206.8	169.6	141.3	28
	2500#	300#	27CA23H-620	345	345	290	28	344.7	272.4	267.4	28	344.7	282.7	235.6	28	
	1 x 1	150#	150#	27CA33-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27CA33-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27CA33-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
900#		300#	27CA33-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28	
1500#		300#	27CA33H-520	255	218	174	28	206.8	163.5	160.4	28	206.8	169.6	141.3	28	
2500#	300#	27CA33H-620	425	364	290	28	344.7	272.4	267.4	28	344.7	282.7	235.6	28		
80.65	1/2 x 1	150#	150#	27DA13-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27DA13-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27DA13-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
		900#	300#	27DA13H-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28
	3/4 x 1	150#	150#	27DA23-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27DA23-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27DA23-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
		900#	300#	27DA23H-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28
		1500#	300#	27DA23H-520	255	218	174	28	206.8	163.5	160.4	28	206.8	169.6	141.3	28
	2500#	300#	27DA23H-620	345	345	290	28	344.7	272.4	267.4	28	344.7	282.7	235.6	28	
	1 x 1	150#	150#	27DA33-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27DA33-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27DA33-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
		900#	300#	27DA33H-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28
		1500#	300#	27DA33H-520	255	218	174	28	206.8	163.5	160.4	28	206.8	169.6	141.3	28
2500#	300#	27DA33H-620	345	345	290	28	344.7	272.4	267.4	28	344.7	282.7	235.6	28		
143.87	1 x 1 1/2	150#	150#	27EA34-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27EA34-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27EA34-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
		900#	300#	27EA34-420	153	131	104	28	124.1	98.1	96.2	28	124.1	101.8	84.8	28
225.81	1 1/2 x 2	150#	150#	27FA45-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27FA45-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27FA45-320	102	87	69	20	82.7	65.4	64.2	15.9	82.7	67.9	56.5	15.9
369.68	1 1/2 x 2 1/2	150#	150#	27GA46-120	20	14	6	20	15.9	12.5	6	15.9	15.9	13	6	15.9
		300#	150#	27GA46-220	51	44	35	20	41.4	32.7	32.1	15.9	41.4	33.9	28.3	15.9
		600#	150#	27GA46-320	69	69	69	20	69	65.4	64.2	15.9	69	67.9	56.5	15.9

General Notes:

1. For D4 and D8 material selections, refer to the standard construction pressure ratings table
2. For set pressures below 1 barg, consult the Farris Factory.
3. Maximum set pressure for steam service valves is 200 barg or the lower limit as shown in the appropriate selection table.

Farris Engineering Product Selection

2400 Series | High Performance Direct Spring Loaded Pressure Relief Valve



Product Description		
Pressure Range:	20 PSIG to 2,000 PSIG	(1.37 to 137.8) BARG
Temperature Range:	-450°F to +550°F	-267.8°C to 287.8°C
Size Range:	1/2" x 3/4" to 1" x 1"	13 x 19 mm to 25 x 25 mm
Materials:	Carbon Steel, Stainless Steel, and Brass/Bronze	
ASME Certification:	UV	
Service:	Air	

2600/2600L Series | Versatile and Customizable Spring Loaded Pressure Relief Valve



Product Description		
Pressure Range:	15 PSIG to 10,000 PSIG	(1.03 to 689) BARG
Temperature Range:	-450°F to +1500°F	-267.8°C to 815.6°C
Size Range:	1" x 2" to 20" x 24"	25 x 51 mm to 508 x 610 mm
Materials:	Carbon Steel, Stainless Steel, Monel, Hastelloy C, Duplex	
ASME Certification:	UV and V	
Service:	Steam/Water/Air	

3800/3800L Series | Pilot Operated Relief Valve with Snap Acting or Modulating Control



Product Description		
Pressure Range:	15 PSIG to 10,000 PSIG	(1.03 to 689) BARG
Temperature Range:	-450°F to +500°F	-267.8°C to 260°C
Size Range:	1" x 2" to 12" x 16"	25 x 51mm to 305 x 406 mm
Materials:	Carbon Steel, Stainless Steel, Monel, Hastelloy C, Duplex	
ASME Certification:	UV	
Service:	Steam/Water/Air	

4200 Series | Spring Loaded Pressure Relief Valve for Section I Steam Applications



Product Description		
Pressure Range:	15 PSIG to 1,480 PSIG	(1.03 to 102) BARG
Temperature Range:	-20°F to +1000°F	-28.9°C to 537.8°C
Size Range:	1-1/4" x 1-1/2" to 6" x 8"	32 x 38 mm to 152 x 203 mm
Materials:	Carbon Steel, Stainless Steel, and Chrome-Moly	
ASME Certification:	UV and V	
Service:	Steam/Air	



Warranty

All Farris Engineering Products have a Warranty Period of twelve months from first installation or eighteen months from delivery, whichever is sooner. All other warranty terms are as per Curtiss-Wright Industrial Standard Terms and Conditions, a copy which is available at www.cw-industrialgroup.com/About/Group-Policies/Terms-Conditions.aspx or contact your local representative.

Certifications, Compliances and Approvals

- ASME V, UV, NV and NPT
- National Board Approval, NB
- ISO 9001:2015
- ISO 4126
- PED 2014/68/EU (European Pressure Equipment Directive)
- ATEX 2014/34/EU (European Potentially Explosive Atmospheres)
- CRN B51, N285.0 (Canadian Registration)
- CSQL (China Safety Quality License)
- Customs Union Certificates TR CU 010/2001 and TR CU 023/2013
- US Coast Guard
- API 526
- Nuclear Quality - 10 CFR 50 Appendix B, NCA-4000, NQA-1, N285.0 CSA N299.2/3/4"
- First Point Assessment Limited
- KGS (Korea Gas Safety)
- UKCA (United Kingdom) Conformity Assessed)

Curtiss-Wright, Valves Division

Headquarters: 10195 Brecksville Road, Brecksville, OH 44141 USA • Telephone: 440-838-7690 • www.cw-valvegroup.com/farris

Offices Worldwide: For a listing of our global sales network, visit our website at www.cw-valvegroup.com/farrisdistributors.

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2700 Series Catalog