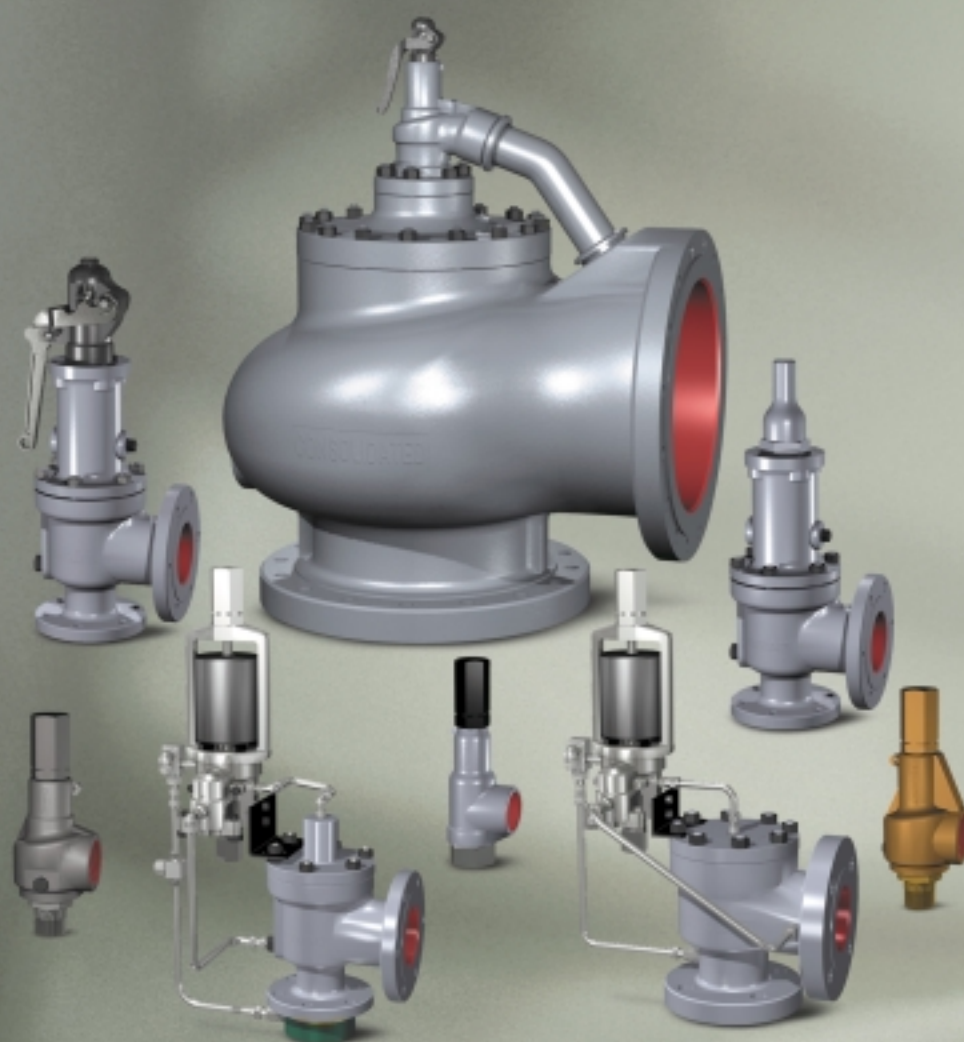


General Information

Safety Relief Valve



Consolidated[®]

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Protection of personnel and equipment is the paramount concern in selection of Safety Relief Valves for plant operating systems. Only the most reliable Safety Relief Valves should be considered for such a crucial role.

The CONSOLIDATED valve line has consistently been recognized as a leader in the pressure relief valve field since its introduction over one hundred years ago. Leadership in design, manufacture and product service and support is founded on a reputation for unrelenting dedication to product innovation and improvement. A continuing program to keep abreast of constantly changing requirements of the valve market and a concentrated

Research and Development effort assure strong support for customer needs. The resulting high quality of design and workmanship of CONSOLIDATED Valves gives assurance of maximum protection and longer trouble-free life for the user.

CONSOLIDATED provides maximum service to its valve customers through a worldwide factory trained sales force. These personnel are technically trained and available to provide guidance in sizing and selection of proper valves for specific applications as well as assistance in solving valve problems as they arise.

Spring Actuated Pressure Relief Valves



1900

The 1900 Series of pressure relief valves provides a wide scope of design in both pressure and temperature ranges. ASME B & PVC, Section VIII certified for vapor, liquid and steam applications meets most overpressure protection requirements of today's industry.



1900 / P1 & P3

Standard in both types, the patented Thermdisc™ Seat is designed for a high degree of seat tightness. Designed for ASME B & PVC, Section I organic fluids, flashing water and limited steam applications. (The P1 and P3 series designs are not for ASME B & PVC, Section I Boiler Drum, Superheater or Reheater applications.)



1982

ASME B & PVC, Section VIII certified threaded connection pressure relief valve for vapor and steam service applications.



19000

The 19000 Series of pressure relief valves are ASME B & PVC, Section VIII compliant for liquid service applications. Seat tightness, blowdown and capacity on all types of media meets the industry needs for overpressure protection in chemical, petrochemical, refinery, power generation (nuclear and conventional) and other commercial applications.



820000

The 820000 Series of pressure relief valves are ASME B & PVC, Section VIII compliant for liquid service applications. This design provides performance characteristics that meet many of the liquid service applications in today's industrial markets.

NOTE: Colors in the bars above the valves are consistent with tabs throughout this catalog.

A staff of factory trained Field Service Technicians are available for “on-the-job” emergencies, start-ups, and or turn-arounds. Field Service Technicians are strategically located to be available to CONSOLIDATED’s customers both domestic and foreign.

Rigid manufacturing standards controlled by an ASME approved Quality Control Program ensure that each valve will be manufactured in accordance with established design criteria and tested for functional performance.

CONSOLIDATED is among a select number of U.S. companies holding ISO 9001 Quality System Certification (Registration). Our Quality Management System, Design Control, and Manufacturing Facility maintain compliance to industry standards through various certification and registration agencies. This quality controlled manufacturing and test program assures that each valve manufactured will provide long and reliable service.

CONSOLIDATED also holds a Safety Quality License for export of pressure relief valves to the People’s Republic of China. The CONSOLIDATED 1900 spring loaded and 3900 series pilot operated safety relief valve is included among the list of products covered by the Safety Quality License.

A Green Tag® certification is attached to each valve following final test and inspection as evidence of CONSOLIDATED’s emphasis on Quality. Our Green Tag® serves as a reminder that each CONSOLIDATED valve meets or exceeds the stringent performance and overpressure protection requirements set forth by the ASME Code, and backed by CONSOLIDATED. The symbol is also used by our Green Tag® Centers located worldwide. These centers are fully certified by us as CONSOLIDATED valve assembly and repair facilities. In North America, they also meet or exceed ASME and National Board standards for pressure relief valve assemblers and valve repair (VR) shops.

CONSOLIDATED spring loaded and pilot operated safety relief valves have been flow tested in accordance with ASME Code rules to establish rated capacities. Capacities specified in this catalog have been certified by the National Board of Boiler and Pressure Vessel Inspectors and are listed in the National Board publication “Pressure Relieving Device Certifications”.

Pilot Operated Pressure Relief Valves



2900 PV

Pop Action, Non-Flowing Pilot Operated Safety Relief Valve

The CONSOLIDATED 2900 PV pop action non-flowing pilot provides excellent performance with full lift at set pressure with minimal blowdown.



2900 MV

Modulating Action, Non-Flowing Pilot Operated Safety Relief Valve

The CONSOLIDATED 2900 MV Pilot Operated Safety Relief Valve is a non-flowing modulating pilot valve that provides exceptional performance and stable operation.



3900 PV

Pop Action, Non-Flowing Pilot Operated Safety Relief Valve

The CONSOLIDATED 3900 PV pop action non-flowing pilot provides excellent performance with full lift at set pressure with minimal blowdown.



3900 MV

Modulating Action, Non-Flowing Pilot Operated Safety Relief Valve

The CONSOLIDATED 3900 MV Pilot Operated Safety Relief Valve is a non-flowing modulating pilot valve that provides exceptional performance and stable operation.



13900

Pop Action, Flowing Pilot Operated Safety Relief Valve

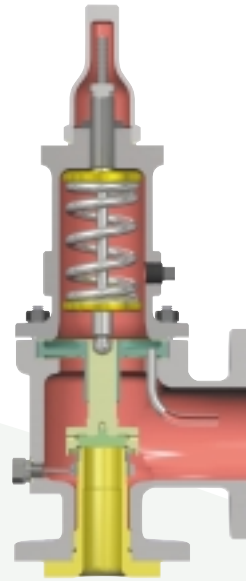
The CONSOLIDATED 13900 pilot operated safety relief valve series is designed to contribute to the overall efficiency and profitability of plant operations.

NOTE: All Pilot Operated Relief Valves are ASME B & PVC, Section VIII Code compliant.

Description of Safety Relief Valve Designs

Conventional Safety Relief Valve

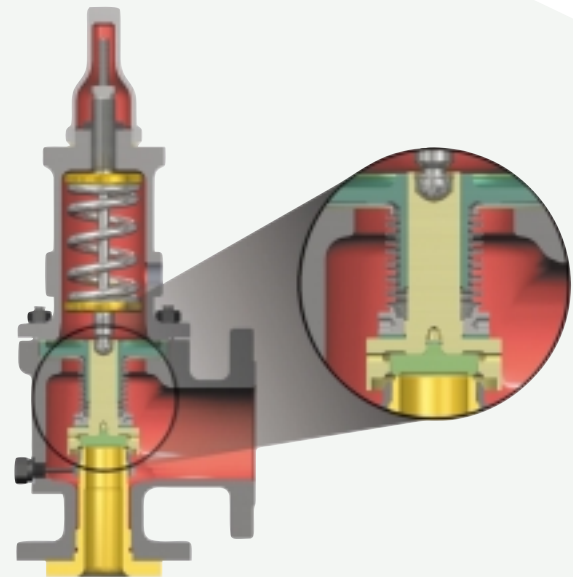
Conventional safety relief valves are for applications where excessive variable or built up back pressure is not present in the system into which the valve discharges. The operational characteristics (opening pressure, closing pressure and relieving capacity) are directly affected by changes of the back pressure on the valve.



Balanced Safety Relief Valve

A balanced safety relief valve is a pressure relief valve which incorporates means of minimizing the effect of back pressure on the operational characteristics. (Opening pressure, closing pressure and relieving capacity)

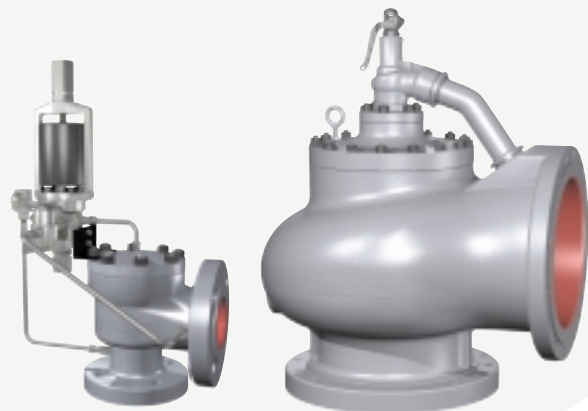
Comment: These design valves are typically equipped with a bellows which balances or eliminates the effect of variable or built up back pressure that may exist in the system into which the safety relief valve discharges.



Pilot Operated Safety Relief Valve

A pilot operated safety relief valve is pressure relief valve in which the major relieving device is combined with and is controlled by a self-actuated auxiliary pressure relief valve.

Comment: Pilot operated relief valves are available in both pop action and modulating action designs. These valves are suitable for applications where it is desired to maintain system operating pressure very close to the valve set point (operating pressure).



Valve Selection Considerations

CONSOLIDATED Pressure Relief Valves Designs

CONSOLIDATED offers a broad range of pressure relief valve solutions, providing reliable protection for plant personnel and equipment. CONSOLIDATED achieves this goal by offering the most efficient solution for any specific pressure relief valve application. In general, most situations can be handled with either a pilot operated or a spring-loaded valve design. CONSOLIDATED offers both of these alternative solutions using world-class designs, and offering unparalleled application expertise and support. The following chart provides some basic guidelines on selecting the right solution for your application. Please consult with your local CONSOLIDATED sales office or local distributor to select the best and most economical solutions for your specific pressure relief applications.

Pilot Valves (POSRV) vs. Spring Loaded Valves (SRV)			
If:	2900 POSRV	3900 POSRV	SRV
Temperature is greater than 505°F or less than -40°F*			
Design Pressure is greater than 3750 psig			
Set Pressure is greater than 3750 psig or less than 15 psig			
Viscosity is greater 28 cp			
Variable Back Pressure is greater than 80% for liquid applications or 60% for gas or vapor applications			
Operating/Set Pressure gap is less than 7% for gas and vapor applications or 12% for liquid applications			
Inlet Pressure Drop exceeds 3% of set pressure**			
Metal Seats are required (POSRV - Main Valve only)			
Soft Seats are required			
Multi-Overpressure scenarios***	one POSRV needed	one POSRV needed	multiple SRV's needed
There is high potential for the valve to be subjected to shock or high vibration			
Polymerization will occur			
Chemical compatibility with elastomers is a problem			
Installation Clearance is a primary issue	POSRV > K orifice ****	POSRV > K orifice	

* Heat Exchanger required.
** Remote Sensing required.

*** Modulator required.
**** 2900 has same center-to-face dimensions as 1900.

CONSOLIDATED strives to provide the best available information, data and assistance to its customers in the selection and application of our products. It is impractical, however, for CONSOLIDATED personnel to be trained in all systems and processes in which CONSOLIDATED products might be used. Ultimate responsibility remains with the customer as the process owner or designer.

Applications

Valve Type ¹	Standard End Connections ²				Materials ³			ASME Codes ⁴				
	Inlet		Outlet		Standard			Sec. I	Sec. III		Sec. VIII	
	Type	Size	Type	Size	Body & Bonnet	Cover Plate	Trim	Steam	Steam & Vapor	Liquid	Steam & Vapor	Liquid
1900	Flanged	1" - 12"	Flanged	2" - 16"	C.S.	N/A	S.S.		X	X	X	X
1900/P	Flanged	1" - 8"	Flanged	2" - 10"	C.S.	N/A	S.S.	X	X		X	
1982	Threaded	1/2" - 2"	Threaded	3/4" - 2-1/2"	C.S.	N/A	S.S.		X	X	X	X
1982	Flanged	1" - 2"	Threaded	1" - 2-1/2"	C.S.	N/A	S.S.		X	X	X	X
19000	Threaded	1/2" - 2"	Threaded	1" - 2-1/2"	C.S.	N/A	S.S.		X	X	X	X
19000	Flanged	1/2" - 2"	Flanged	1" - 2-1/2"	C.S.	N/A	S.S.		X	X	X	X
19000	Socket Weld	1/2" - 2"	Socket Weld	1" - 2-1/2"	C.S.	N/A	S.S.		X	X	X	X
19096MBP	Threaded	1/2" - 1"	Threaded	1"	C.S.	N/A	S.S.		X	X	X	X
19096MBP	Flanged	1/2" - 1"	Flanged	1"	C.S.	N/A	S.S.		X	X	X	X
19096MBP	Socket Weld	1/2" - 1"	Socket Weld	1"	C.S.	N/A	S.S.		X	X	X	X
820000	Threaded	1/2" - 2"	Threaded	1" - 2-1/2"	Bronze	N/A	Bronze					X
820000	Flanged	1" - 2"	Threaded	1" - 2-1/2"	Bronze	N/A	Bronze					X
2900	Flanged	1" - 8"	Flanged	2" - 10"	C.S.	S.S.	S.S.				X	X
3900	Flanged	1" - 10"	Flanged	2" - 10"	C.S.	C.S.	S.S.		X	X	X	X
13900	Flanged	16" - 20"	Flanged	18" - 24"	C.S.	C.S.	S.S.				X	

- NOTES: 1 For pressure and temperature ratings refer to color coded product sections. Flanged valves are provided with ASME standard flanges.
 2 Flanged inlets are available with a selection of ASME facings. Refer to the color coded product sections for description.
 3 Refer to the color coded product sections for optional materials that are available. Contact the factory for special material requirements.
 4 Pressure relief valves are ASME approved for application of the appropriate code symbol stamp.

Pressure / Temperature Ranges

Valve Type	Type	Set Pressure Range (psig)	Temperature Range		NOTES
			Minimum °F (°C)	Maximum °F (°C)	
1900	Flanged	5-6250	-450 (-267)	1500 (815)	1
1900/P	Flanged	5-6000	90 (32)	850 (454)	1, 2
1982	Threaded	10-500	-20 (-28)	800 (426)	1
1982	Flanged	10-500	-20 (-28)	800 (426)	1
19000	Threaded	5-8000	-450 (-267)	1100 (593)	1
19000	Flanged	5-6250	-450 (-267)	1100 (593)	1
19000	Socket Weld	5-8000	-450 (-267)	1100 (593)	1
19096MBP	Threaded	50-2000	-300 (-184)	600 (315)	1
19096MBP	Flanged	50-2000	-300 (-184)	600 (315)	1
19096MBP	Socket Weld	50-2000	-300 (-184)	600 (315)	1
820000	Threaded	15-500	-20 (-28)	400 (204)	1, 3
820000	Flanged	15-500	-20 (-28)	400 (204)	1, 3
2900	Flanged	15-3750	-450 (-267)	1200 (648)	1
3900	Flanged	15-3750	-40 (-40)	505 (262)	1
13900	Flanged	50-300	250 (121)	550 (288)	1

NOTES: 1 Pressure and temperature ranges are limited by size, media, and materials. Refer to product section for specific pressure temperature ratings by size and material selections.

2 Used for steam and organic vapor applications only.

3 Used for liquid applications only.

How to Select a Spring Loaded or Pilot Operated Safety Relief Valve

The following guidelines should be followed when making a valve selection.

Step 1

Calculate the proper valve orifice area (A_c) requirements. Refer to Valve Sizing Section of this catalog or use CONSOLIDATED SRVS.6 Computer Assisted Sizing Program. Utilize the following information:

- Operating pressure
- Set pressure
- Operating temperature
- Relieving temperature
- Design temperature
- Type of fluid
- Required relieving capacity
- Allowable overpressure
(Choose one)
 - ASME Section VIII, Single Valve (10% overpressure)
 - ASME Section VIII, Multiple Valve (16% overpressure)
 - ASME Section VIII, Fire Sizing (21% overpressure)
 - ASME Section I, Single Valve (3% overpressure) (1900/P1 & P3)
- Back pressure
 - constant
 - variable (built up or super-imposed)
- Gas and vapors
 - compressibility
 - molecular weight
 - density
 - ratio of specific heat
- Liquids
 - specific gravity
 - viscosity

Step 2

Based on calculated orifice size, determine which pressure relief valve will meet the orifice area requirements.

Step 3

For spring loaded valves determine if back pressure limits are exceeded and if a bellows is required. If a bellows is required, you must select a 1900 flanged valve.

Step 4

For spring loaded valves check the operating pressure requirements against the valve set pressure requirements. If the operating pressure exceeds 90% of the set pressure, or if the differential is less than 25 psig, review the possibilities for need of a soft seat O-Ring. If an O-Ring seat is not acceptable, review the system and valve setting parameters to achieve proper differential pressure.

SRVS.6 Computer Assisted Sizing Program

SRVS.6 is a Windows-based sizing program for safety relief valves that can be used with the Windows operating systems. This software is also network compatible.

This program includes multi-lingual capability, the ability to save files in a standard Windows format, and the ability to print to any printer configured for the Windows system. The printout options for each valve selection include a detailed datasheet, a certified drawing showing dimensions, weight, materials, and the API designation, if applicable, and a calculation sheet showing the applicable formulae used in the area or capacity calculation. Each selected valve is completely configured to match the order entry configuration, as well as the nameplate designation. Other features making this program the easiest and most convenient sizing program available include the capabilities of copying tag numbers, editing the selected valve options, and resizing tag numbers.

This sizing program may be used for the sizing and selection of the 1900, 1982, 2900 MV, 2900 PV, 3900 MV, 3900 PV, 19000, and 820000 valve types. Available sizing methods include single fluid, gas or liquid, sizing at 10% overpressure, multi-fluid sizing at 10% overpressure, and fire-sizing based upon required capacity, vessel dimensions, or vessel area at 21% overpressure. If necessary, multiple valves may be selected for a single application, using the 16% overpressure factor for the low set valve. Diers (two phase flow) sizing per API 520, Part I, Appendix D, October 1999 is also included.

Included in this software are the checks for ASME Sec. VIII compliance, ASME B16.34 pressure temperature limits, API pressure and temperature limits (if applicable), O-Ring and bellows requirements, spring chart limitations, and steam chart correlations. The output will include noise and reaction force calculation values, outline dimensional drawing (installation dimensions), bill of materials for valve component parts, as well as detailed valve selection criteria.

An extensive help file is included with this software. Help text is provided for every field and form. In addition, technical information on Code requirements, applicable industry standards, and general catalog information is included.

The CONSOLIDATED SRVS.6 Computer Assisted Sizing Program may be obtained through your local Green Tag Center (GTC[®]) or from your CONSOLIDATED Sales Representative.

How to Order a 1900 Safety Relief Valve

Specification Sheet

Page ____ of ____

Requisition No. _____
 Job No. _____
 Date _____
 Revised _____
 By _____

General

1. Item Number:
2. Tag Number:
3. Service, Line or Equipment No:
4. Number Required:

Basis of Selection

5. Code:
 - ASME Sec. I (1900/P series only)
 - ASME Sec. III
 - ASME Sec. VIII
 - OTHER Specify:
6. Comply with API 526: YES NO
7. Fire OTHER Specify:
8. Rupture Disk: YES NO

Valve Design

9. Type: Safety Relief
10. Design: Conventional Bellows
 - Closed Bonnet Yoke/Open Bonnet
 - Metal Seat Resilient Seat
 - API 527 Seat Tightness
 - OTHER Specify:

Connections

11. Inlet Size: _____ Rating: _____ Facing: _____
 Outlet Size: _____ Rating: _____ Facing: _____
12. OTHER Specify: _____

Materials

13. Body/Bonnet:
14. Guide/Rings:
15. Seat Material:
 Metal:
 Resilient:
16. Bellows:
17. Spring:
18. Comply with NACE MRO 175 YES NO
19. OTHER Specify:
20. Cap and Lever Selection
 Screwed Cap (Standard) Bolted Cap
 Plain Lever Packed Lever Gag
21. OTHER Specify:

Service Conditions

22. Fluid and State:
23. Required Capacity per Valve & Units:
24. Molecular Weight or Specific Gravity:
25. Viscosity at Flowing Temperature & Units:
26. Operating Pressure & Units:
27. Blowdown: Standard Other
28. Latent Heat of Vaporization & Units:
29. Operating Temperature & Units:
30. Relieving Temperature & Units:
31. Built-up Back Pressure & Units:
32. Superimposed Back Pressure & Units:
33. Cold differential Test Pressure & Units:
34. Allowable Overpressure in Percent or Units:
35. Compressibility Factor, Z:
36. Ratio of Specific Heats:

Sizing and Selection

37. Calculated Orifice Area (square inches):
38. Selected Orifice Area (square inches):
39. Orifice Designation (letter):
40. Manufacturer:
41. Model Number:
42. Vendor Calculations Required: YES NO

How to Order a 1982 or 19000 Safety Relief Valve

Specification Sheet

Page ____ of ____

Requisition No. _____
 Job No. _____
 Date _____
 Revised _____
 By _____

General

1. Item Number:
2. Tag Number:
3. Service, Line or Equipment No:
4. Number Required:

Basis of Selection

5. Code:
 - ASME Sec. III
 - ASME Sec. VIII
 - OTHER Specify:
6. Fire OTHER Specify:
7. Rupture Disk: YES NO

Valve Design

8. Type: Safety Relief
9. Design:
 - Metal Seat Resilient Seat
 - API 527 Seat Tightness
 - OTHER Specify:

Connections

10. Flanged

Inlet Size:	Rating:	Facing:
Outlet Size:	Rating:	Facing:
11. Threaded

Inlet	<input type="checkbox"/> MNPT <input type="checkbox"/> FNPT	
Outlet	<input type="checkbox"/> MNPT <input type="checkbox"/> FNPT	
12. OTHER Specify:

Materials

13. Base:
14. Bonnet:
15. Guide/Rings:
16. Seat Material:
 - Metal:
 - Resilient:
17. Spring:
18. Comply with NACE MRO 175 YES NO
19. OTHER Specify:
20. Cap and Lever Selection
 - Screwed Cap (Standard) Bolted Cap
 - Plain Lever Packed Lever Gag
21. OTHER Specify:

Service Conditions

22. Fluid and State:
23. Required Capacity per Valve & Units:
24. Molecular Weight or Specific Gravity:
25. Viscosity at Flowing Temperature & Units:
26. Operating Pressure & Units:
27. Blowdown: Standard Other
28. Latent Heat of Vaporization & Units:
29. Operating Temperature & Units:
30. Relieving Temperature & Units:
31. Built-up Back Pressure & Units:
32. Superimposed Back Pressure & Units:
33. Cold differential Test Pressure & Units:
34. Allowable Overpressure in Percent or Units:
35. Compressibility Factor, Z:
36. Ratio of Specific Heats:

Sizing and Selection

37. Calculated Orifice Area (square inches):
38. Selected Orifice Area (square inches):
39. Orifice Designation (letter):
40. Manufacturer:
41. Model Number:
42. Vendor Calculations Required: YES NO

How to Order an 820000 Safety Relief Valve

Specification Sheet

Page ____ of ____

Requisition No. _____
 Job No. _____
 Date _____
 Revised _____
 By _____

General

1. Item Number:
2. Tag Number:
3. Service, Line or Equipment No:
4. Number Required:

Basis of Selection

5. Code:
 ASME Sec. VIII
 OTHER Specify:
6. OTHER Specify:
7. Rupture Disk: YES NO

Valve Design

8. Type: Safety Relief
9. Design:
 API 527 Seat Tightness
 OTHER Specify:

Connections

10. Flanged
 Inlet Size: Rating: Facing:
11. Threaded
 Inlet - MNPT
 Outlet - FNPT

Materials

12. Body/Bonnet: Bronze
13. Guide: Bronze
14. Seat Material: Bronze
15. Spring: 17-7 PH
16. Cap and Lever Selection
 Screwed Cap (Standard)
 Plain Lever Packed Lever Gag
17. OTHER Specify:

Service Conditions

18. Fluid and State:
19. Required Capacity per Valve & Units:
20. Molecular Weight or Specific Gravity:
21. Viscosity at Flowing Temperature & Units:
22. Operating Pressure & Units:
23. Blowdown: Standard Other
24. Latent Heat of Vaporization & Units:
25. Operating Temperature & Units:
26. Relieving Temperature & Units:
27. Built-up Back Pressure & Units:
28. Superimposed Back Pressure & Units:
29. Cold differential Test Pressure & Units:
30. Allowable Overpressure in Percent or Units:
31. Compressibility Factor, Z:
32. Ratio of Specific Heats:

Sizing and Selection

33. Calculated Orifice Area (square inches):
34. Selected Orifice Area (square inches):
35. Orifice Designation (letter):
36. Manufacturer:
37. Model Number:
38. Vendor Calculations Required: YES NO

How to Order a 2900 POSRV

POSRV Specification Sheet

Page _____ of _____

Requisition No. _____
 Job No. _____
 Date _____
 Revised _____
 By _____

General

1. Item Number:
2. Tag Number:
3. Service, Line or Equipment No:
4. Number Required:

Basis of Selection

5. Code: ASME VIII Stamp Required: YES NO
 OTHER Specify _____
6. Comply with API 526: YES NO
7. Fire OTHER Specify: _____
8. Rupture Disk: YES NO

Valve Design, Pilot

9. Design Type: Pilot
10. Number of Pilots:
11. Pilot Action: Pop Modulating
12. Pilot Sense: Internal Remote^{Note 1}
13. Seat Type: Resilient
14. Seat Tightness: API 527 OTHER
 Specify: _____
15. Pilot Vent: Atmosphere Outlet
 OTHER Specify: _____

Valve Design, Main Base

16. Metal Seat Resilient Seat
17. Bellows: YES NO

Connections

18. Inlet Size: _____ Rating: _____ Facing: _____
19. Outlet Size: _____ Rating: _____ Facing: _____
20. OTHER Specify: _____

Materials, Main Valve

21. Body:
22. Nozzle:
23. Seat O-Ring:
24. Disc:
25. Piston Seal:
26. Other O-Rings:
27. Guide:
28. Cover Plate:

Materials, Pilot

29. Body/Bonnet:
30. Internals:
31. Seals:
32. Tubing/Fittings:
33. Spring:
34. Comply with NACE MRO175: YES NO
35. OTHER Specify: _____

Accessories

36. External Filter: YES NO
37. Lifting Lever: N/A
38. Field Test Connection: YES NO
39. Backflow Preventer: YES NO
40. Manual Blowdown Valve: YES NO
41. Heat Exchanger (For High and Low Temperature Applications):
 YES NO
42. Dirty Service: YES NO
43. OTHER Specify: _____

Service Conditions

44. Fluid and State:
45. Required Capacity per Valve & Units:
46. Molecular Weight or Specific Gravity:
47. Viscosity at Flowing Temperature & Units:
48. Operating Pressure & Units:
49. Blowdown: Standard Other
50. Latent Heat of Vaporization & Units:
51. Operating Temperature & Units:
52. Relieving Temperature & Units:
53. Built-up Back Pressure & Units:
54. Superimposed Back Pressure & Units:
55. Cold differential Test Pressure & Units:
56. Allowable Overpressure in Percent or Units:
57. Compressibility Factor, Z:
58. Ratio of Specific Heats:

Sizing and Selection

59. Calculated Orifice Area (square inches):
60. Selected Orifice Area (square inches):
61. Orifice Designation (letter):
62. Manufacturer:
63. Model Number:
64. Vendor Calculations Required: YES NO

Heat Exchanger

65. Sizing Required:
66. Back Pressure Restrictions on Temperature:
67. Set Pressure (psig):
68. Specific Volume of Media at Inlet Conditions (ft³/lbm):
69. Entropy of Media at Inlet Conditions (btu/lbm*°R):
70. Temperature of Ambient Air (°F) (Min./Max.):
71. Media Temperature Before it Enters the Heat Exchanger (°F):

Remote Sensing

72. Sizing Required:
73. Set Pressure (psig):
74. Orifice Selection:
75. Fluid Density of Media in the condensed State (lbm/ft³):
76. Length of Sensing Line (ft)^{NOTE 1}:
77. Equivalent Length of Sensing Line for Valves, Elbows, Tees, etc.:
78. Total Change in Height (ft):

Notes:

- 1 To assure proper valve operation when pilot is remotely sensed use 3/8" diameter tubing for lengths up to ten feet. Contact factory for proper size of tubing when sensing line exceeds ten feet.

How to Order a 3900 POSRV

POSRV Specification Sheet

Page _____ of _____

Requisition No. _____
 Job No. _____
 Date _____
 Revised _____
 By _____

General

1. Item Number:
2. Tag Number:
3. Service, Line or Equipment No:
4. Number Required:

Basis of Selection

5. Code: ASME VIII Stamp Required: YES NO
 OTHER Specify
6. Comply with API 526: YES NO
7. Fire OTHER Specify:
8. Rupture Disk: YES NO

Valve Design

9. Design Type: Pilot
10. Number of Pilots:
11. Pilot Action: Pop Modulating
12. Pilot Sense: Internal Remote^{NOTE 1}
13. Seat Type: Resilient
14. Seat Tightness: API 527 OTHER Specify:
15. Pilot Vent: Atmosphere Outlet
 OTHER Specify:

Connections

16. Inlet Size: Rating: Facing:
17. Outlet Size: Rating: Facing:
18. OTHER Specify:

Materials, Main Valve

19. Body:
20. Nozzle:
21. Seat O-Ring:
22. Disc:
23. Disc Seal:
24. Other O-Rings:
25. Guide:
26. Cover Plate:

Materials, Pilot

27. Body/Bonnet:
28. Internals:
29. Seat: Seals:
30. Tubing/Fittings:
31. Spring:
32. Comply with NACE MR0175: YES NO
33. OTHER Specify:

Accessories

34. External Filter: YES NO
35. Lifting Lever: N/A
36. Field Test Connection: YES NO
37. Backflow Preventer: YES NO
38. Manual Blowdown Valve: YES NO
39. Dirty Service: YES NO
40. OTHER Specify:

Service Conditions

41. Fluid and State:
42. Required Capacity per Valve & Units:
43. Molecular Weight or Specific Gravity:
44. Viscosity at Flowing Temperature & Units:
45. Operating Pressure & Units:
46. Blowdown: Standard Other
47. Latent Heat of Vaporization & Units:
48. Operating Temperature & Units:
49. Relieving Temperature & Units:
50. Built-up Back Pressure & Units:
51. Superimposed Back Pressure & Units:
52. Cold differential Test Pressure & Units:
53. Allowable Overpressure in Percent or Units:
54. Compressibility Factor, Z:
55. Ratio of Specific Heats:

Sizing and Selection

56. Calculated Orifice Area (square inches):
57. Selected Orifice Area (square inches):
58. Orifice Designation (letter):
59. Manufacturer:
60. Model Number:
61. Vendor Calculations Required: YES NO

Notes:

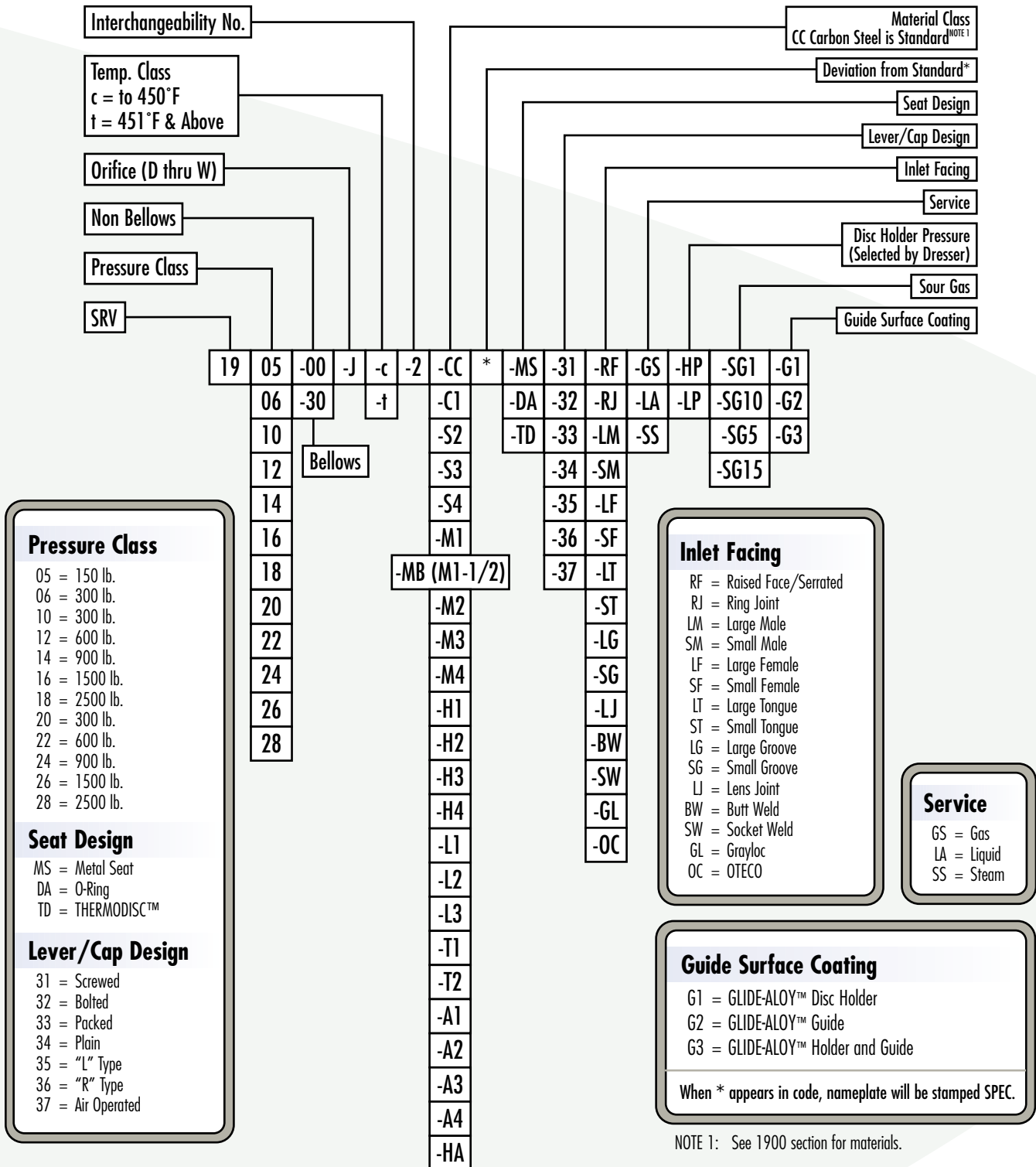
1 To assure proper valve operation when pilot is remotely sensed use 3/8" diameter tubing for lengths up to ten feet. Contact factory for proper size of tubing when sensing line exceeds ten feet.

How to Order a 13900 POSRV

POSRV Specification Sheet	
Page ____ of ____	
Requisition No.	_____
Job No.	_____
Date	_____
Revised	_____
By	_____
General	
1.	Number of Valves:
2.	Size of Valve Inlet:
3.	Type Number of Valve:
4.	CONSOLIDATED Manufacturer:
5.	Body Material:
6.	Trim Material (if any other than standard is required):
7.	O-Ring Seat Material
8.	Set Pressure:
9.	Operating Temperature and Relieving Temperature:
10.	Back Pressure, if any (indicate if Constant or Variable):
11.	Required Capacity:
12.	Lading Fluid:
13.	Allowable Overpressure:
14.	Density
	a) Vapor - molecular weight
	b) Gases - specific gravity (air = 1)
Other	
15.	Code marking required
	a) ASME Unfired Pressure Vessel Code
Notes:	

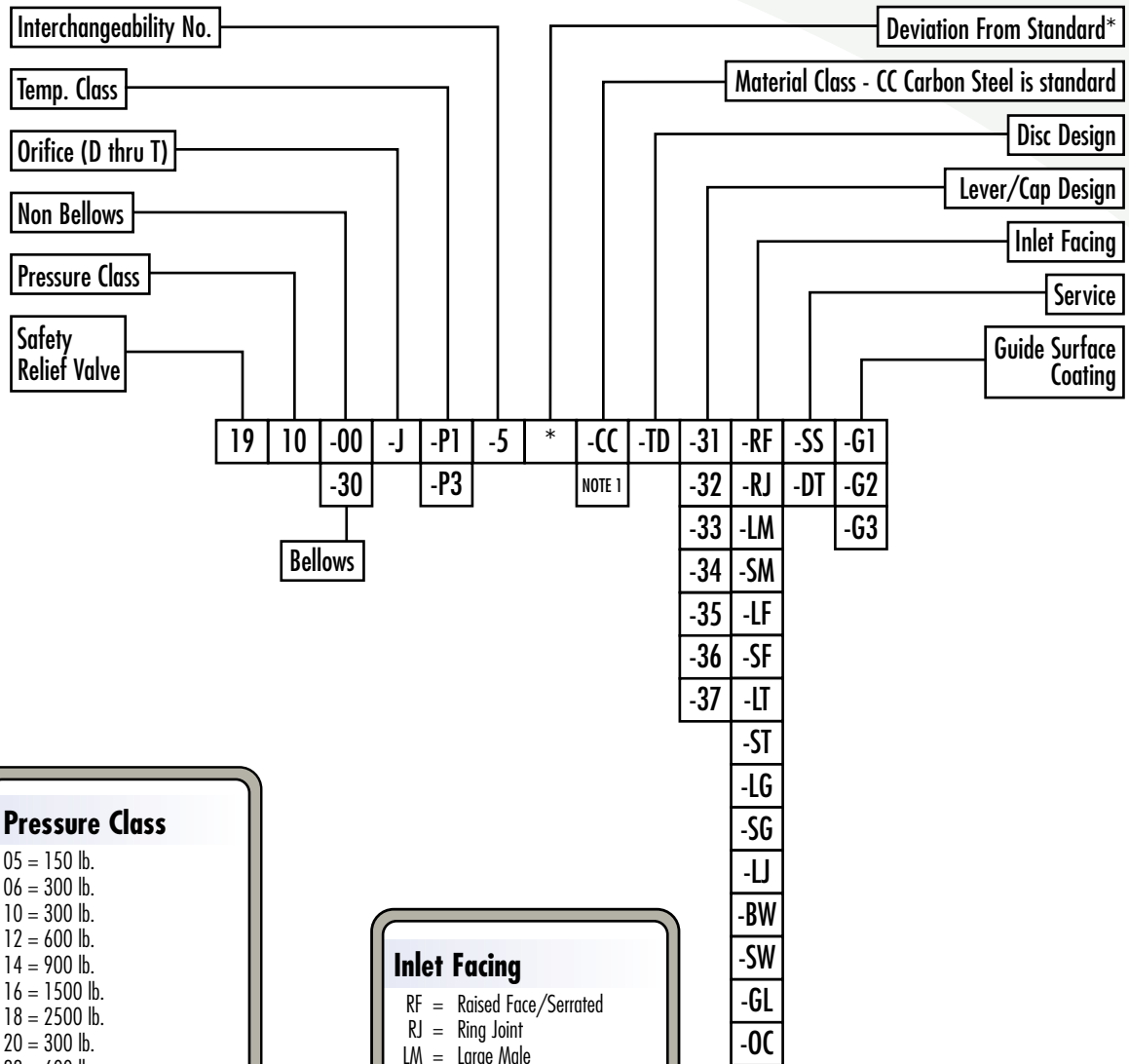
1900 Flanged Valve Coding

Customer orders for CONSOLIDATED safety relief valves are acknowledged by a computer printout of our internal code. We have supplied the following information for your easy interpretation of this coding.



NOTE 1: See 1900 section for materials.

1900/P1, P3 Valve Coding



Pressure Class

- 05 = 150 lb.
- 06 = 300 lb.
- 10 = 300 lb.
- 12 = 600 lb.
- 14 = 900 lb.
- 16 = 1500 lb.
- 18 = 2500 lb.
- 20 = 300 lb.
- 22 = 600 lb.
- 24 = 900 lb.
- 26 = 1500 lb.
- 28 = 2500 lb.

Disc Design

TD = Thermodisc™

Lever/Cap Design

- 31 = Screwed
- 32 = Bolted
- 33 = Packed
- 34 = Plain
- 35 = "L" Type
- 36 = "R" Type
- 37 = Air Operated

Inlet Facing

- RF = Raised Face/Serrated
- RJ = Ring Joint
- LM = Large Male
- SM = Small Male
- LF = Large Female
- SF = Small Female
- LT = Large Tongue
- ST = Small Tongue
- LG = Large Groove
- SG = Small Groove
- LJ = Lens Joint
- BW = Butt Weld
- SW = Socket Weld
- GL = Grayloc
- OC = OTECO

Service

- SS = Steam
- DT = Dowtherm

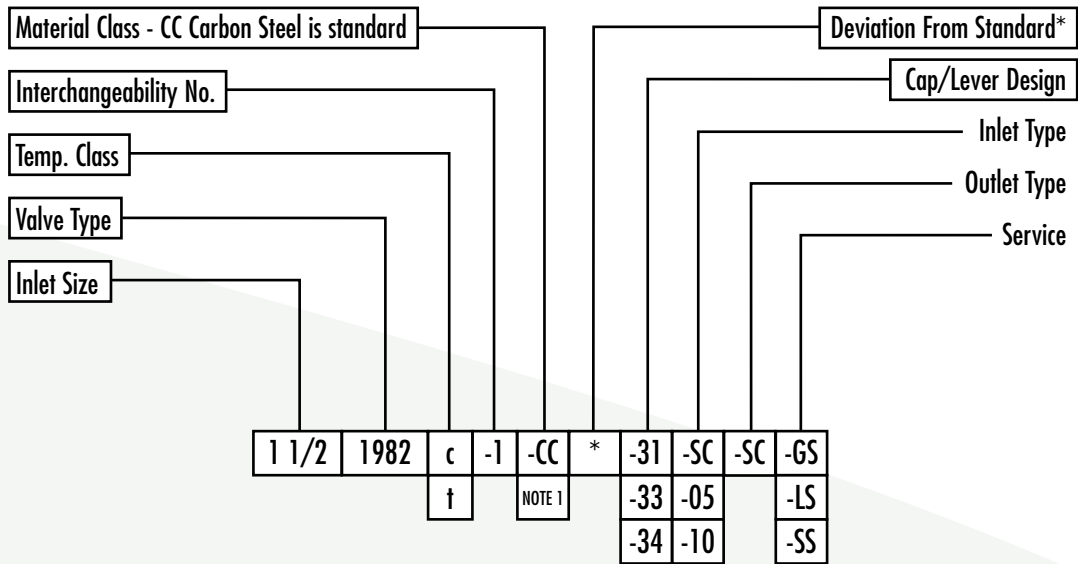
Guide Surface Coating

- G1 = GLIDE-ALOY™ Disc Holder
- G2 = GLIDE-ALOY™ Guide
- G3 = GLIDE-ALOY™ Holder and Guide

When * appears in code, nameplate will be stamped SPEC.

NOTE 1: For other special material requirements, contact factory.

1982 Valve Coding



Temperature Class
 400°F & Below = c
 401°F & Above = t

Cap/Lever Design
 31 = Screwed Cap
 33 = Packed
 34 = Plain

Inlet Type
 SC = Screwed
 05 = 150# R.F.
 10 = 300# R.F.

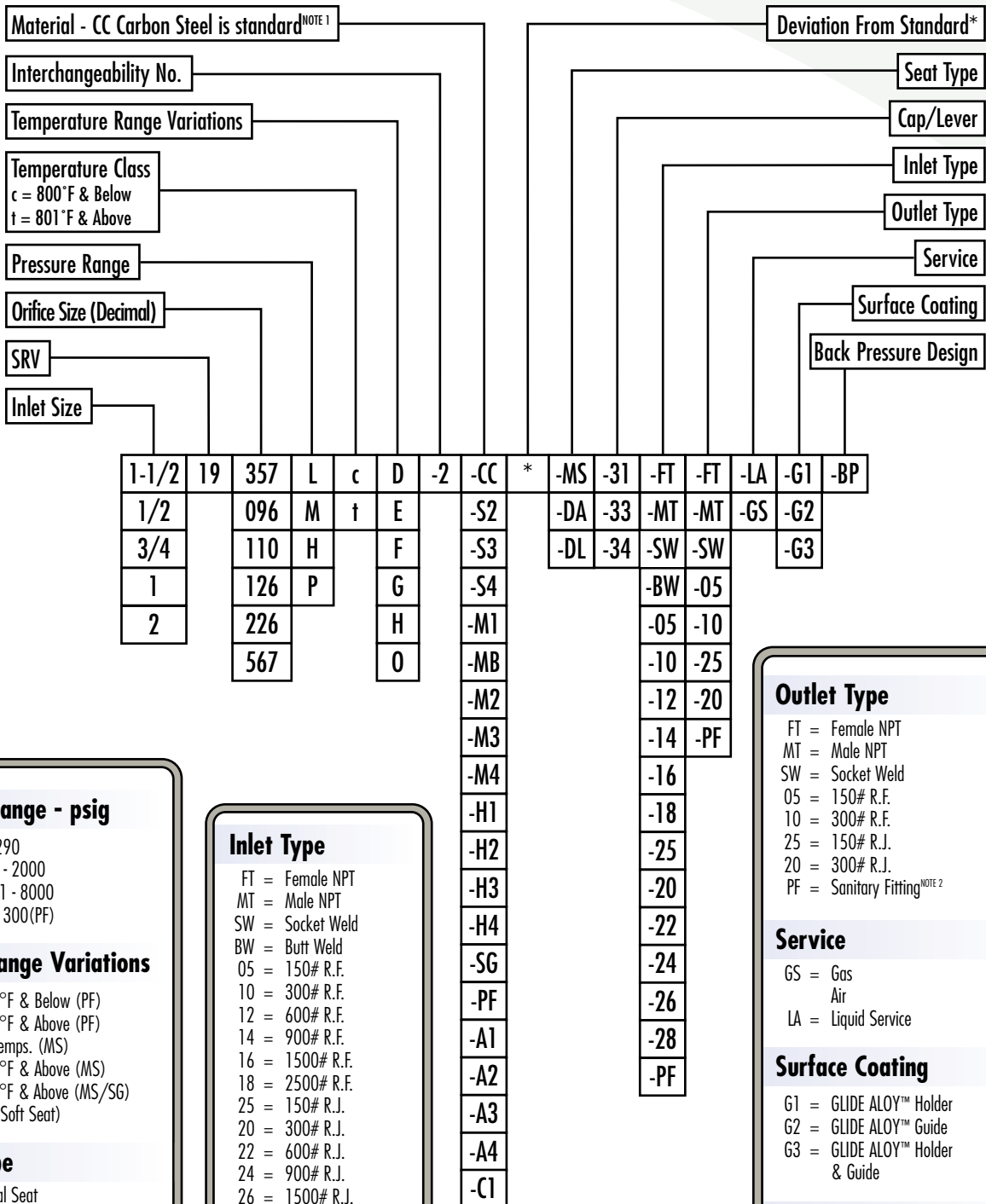
Outlet Type
 SC = Screwed

Service
 GS = Gas
 LS = Liquid
 SS = Steam

When * appears in code, nameplate will be stamped SPEC.

NOTE 1: For other special material requirements, contact factory.

19000 Valve Coding



Press. Range - psig

L = 5 - 290
M = 291 - 2000
H = 2001 - 8000
P = 15 - 300(PF)

Temp. Range Variations

D = 250°F & Below (PF)
E = 251°F & Above (PF)
F = All Temps. (MS)
G = 251°F & Above (MS)
H = 251°F & Above (MS/SG)
O = DA (Soft Seat)

Seat Type

MS = Metal Seat
DA = Soft Seat
DL = NOTE 1

Cap/Lever

31 = Screwed
33 = Packed
34 = Plain

Inlet Type

FT = Female NPT
MT = Male NPT
SW = Socket Weld
BW = Butt Weld
05 = 150# R.F.
10 = 300# R.F.
12 = 600# R.F.
14 = 900# R.F.
16 = 1500# R.F.
18 = 2500# R.F.
25 = 150# R.J.
20 = 300# R.J.
22 = 600# R.J.
24 = 900# R.J.
26 = 1500# R.J.
28 = 2500# R.J.
PF = Sanitary Fitting (Max. Press. B/P 400psig)^{NOTE 2}

NOTES: 1 Soft seat low pressure liquid service 100 psig and below except .110 Sq. In. Orifice.
2 PF design is for clean service applications and is fully described in separate catalog number SRVPF-2.

Outlet Type

FT = Female NPT
MT = Male NPT
SW = Socket Weld
05 = 150# R.F.
10 = 300# R.F.
25 = 150# R.J.
20 = 300# R.J.
PF = Sanitary Fitting^{NOTE 2}

Service

GS = Gas
Air
LA = Liquid Service

Surface Coating

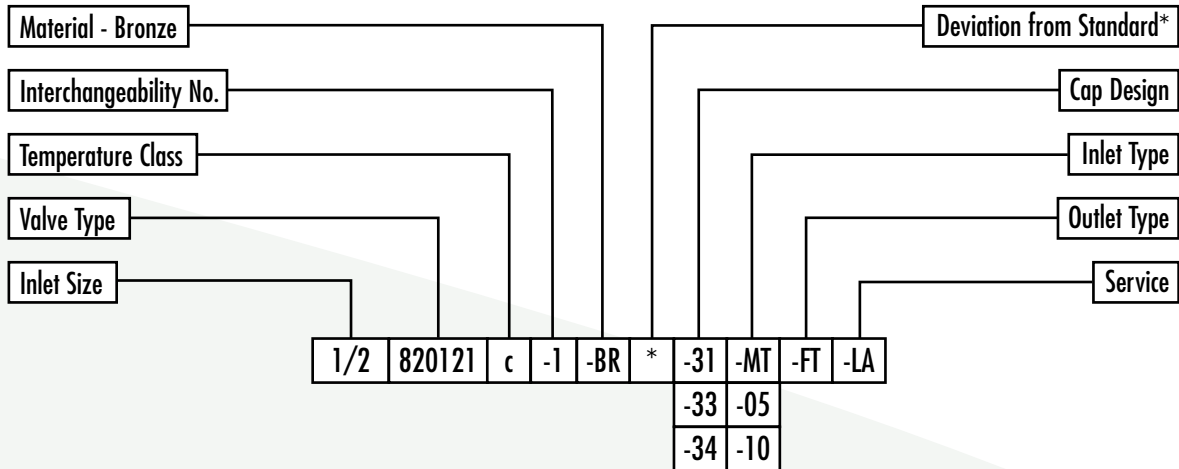
G1 = GLIDE ALOY™ Holder
G2 = GLIDE ALOY™ Guide
G3 = GLIDE ALOY™ Holder & Guide

Back Pressure Design

Med. Pressure
50 - 2000 psig
Max. B/P 400 psig

When * appears in code, nameplate will be stamped SPEC.

820000 Valve Coding



Inlet Size/Valve Type

- 1/2 = 820121
- 3/4 = 820121
- 3/4 = 820216
- 1 = 820216
- 1 = 820332
- 1-1/4 = 820332
- 1-1/2 = 820857
- 2 = 820857

Temperature Class

- c = 400°F & Below

Material

- BR = Bronze

Cap Design

- 31 = Screwed Cap
- 33 = Packed
- 34 = Plain

Inlet Type

- MT = Male NPT
- 05 = 150# RF
- 10 = 300# RF

Outlet Type

- FT = Female NPT

Service

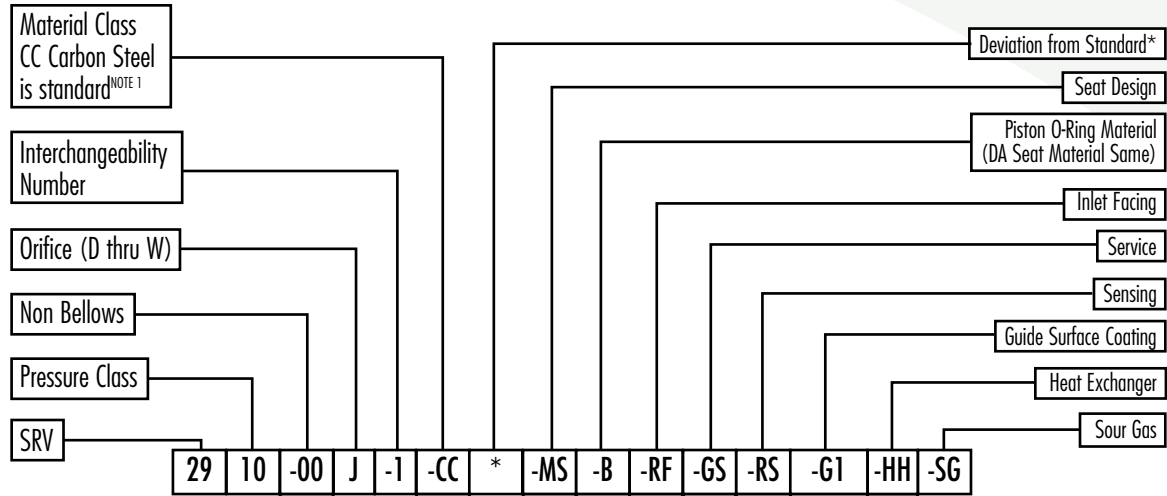
- LA = Liquid

When * appears in code, nameplate will be stamped SPEC.

* Special materials
(Contact factory for availability).

2900 POSRV Main Valve Coding

Customer orders for CONSOLIDATED safety relief valves are acknowledged by a computer printout of our internal code. We have supplied the following information for your easy interpretation of this coding.



Pressure Class

- 05 = 150 lb.
- 06 = 300 lb.
- 10 = 300 lb.
- 12 = 600 lb.
- 14 = 900 lb.
- 16 = 1500 lb.
- 18 = 2500 lb.
- 20 = 300 lb.
- 22 = 600 lb.
- 24 = 900 lb.
- 26 = 1500 lb.
- 28 = 2500 lb.

Seat Design

- MS = Metal Seat
- DA = O-Ring
- TD = THERMODISC™

Inlet Facing

- RF = Raised Face/Serrated
- RJ = Ring Joint
- LM = Large Male
- SM = Small Male
- LF = Large Female
- SF = Small Female
- LT = Large Tongue
- ST = Small Tongue
- LG = Large Groove
- SG = Small Groove
- LJ = Lens Joint
- BW = Butt Weld
- SW = Socket Weld
- GL = Grayloc
- OC = Oteco

- A1
- A2
- A4
- C1
- D1
- D2
- D4
- H1
- H2
- H4
- L1
- L2
- L3
- M1
- MB
- M2
- M4
- S2
- S4
- T1

Heat Exchanger

- HH = Media is 506°F or above
- HL = Media is -41°F or below

When * appears in code, nameplate will be stamped SPEC.

Service

- GS = Gas
- LA = Liquid
- SS = Steam

Sensing

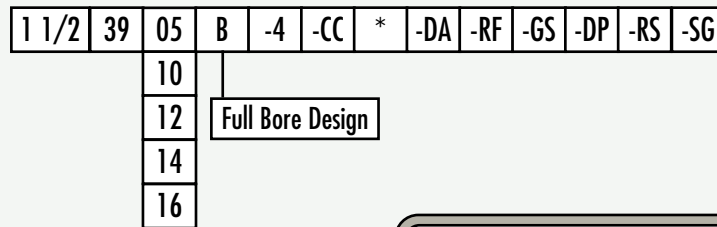
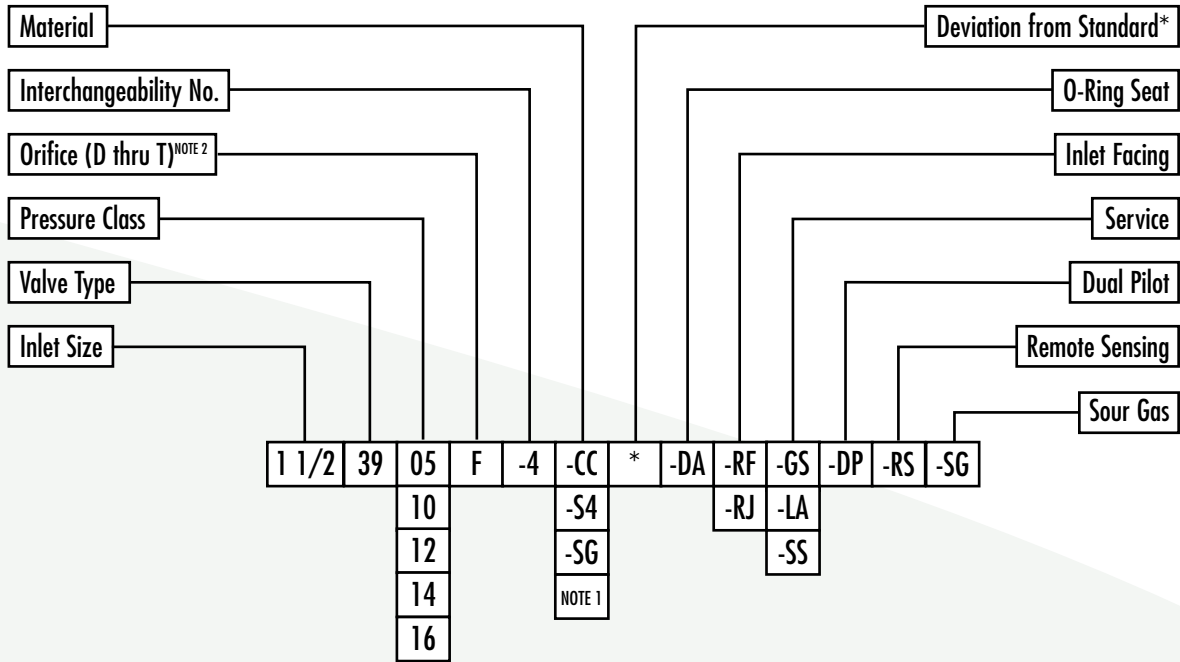
- RS = Remote Sensing
- SR = Sensing Ring

Guide Surface Coating

- G1 = GLIDE-ALOY™ Disc Holder and Piston
- G2 = GLIDE-ALOY™ Guide and Cover Plate
- G3 = GLIDE-ALOY™ Disc Holder, Piston, Guide and Cover Plate
- M7 = Mellonite Disc Holder and Piston
- M8 = Mellonite Guide and Cover Plate
- M9 = Mellonite Disc Holder, Piston, Guide, and Cover Plate

NOTE 1: See 2900 section for materials.

3900 POSRV Main Valve Coding



Pressure Class

05 = 150 Class
10 = 300 Class
12 = 600 Class
14 = 900 Class
16 = 1500 Class

When * appears in code, nameplate will be stamped SPEC.

Material

- CC = Standard Material
- S4 = Entirely 316 Stainless Steel
- C1 = LCC Base and 316 Stainless Steel Cover Plate
- SG = Sour Gas
- M1 = Monel Wetted
- M4 = Entirely Monel
- H1 = Hastelloy Wetted
- H4 = Entirely Hastelloy
- D1 = Duplex Wetted (Consult Factory)
- D4 = Entirely Duplex (Consult Factory)
- A1 = Alloy 20 Wetted
- A4 = Entirely Alloy 20

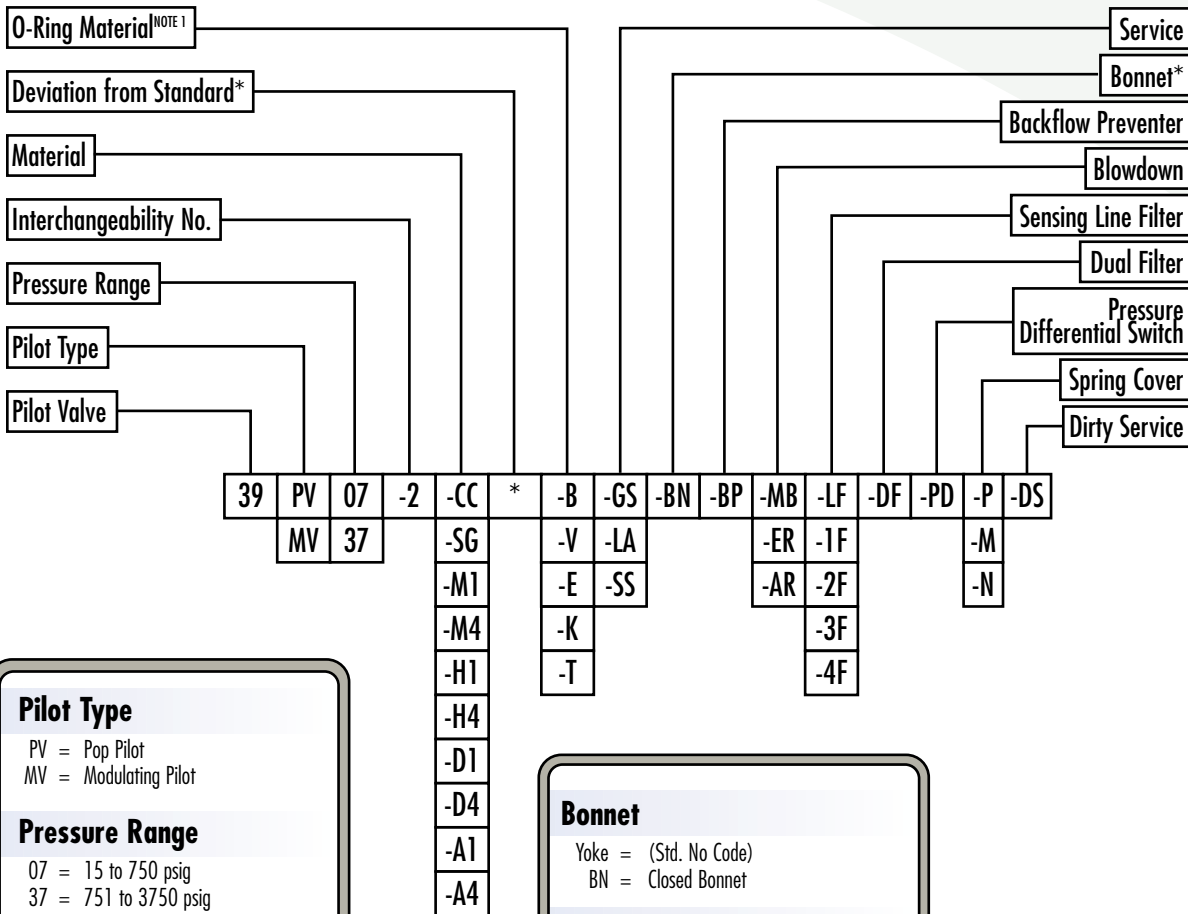
Service

- GS = Gas
- LA = Liquid
- SS = Steam

NOTES: 1 For other special material requirements contact factory
2 Orifice D thru T are standard bore. Inlet Sizes 1-1/2" thru 10".

POSRV Pilot Valve Coding

39PV & 39MV pilots are the actuating mechanisms available for valve designs 2900 and 3900



Pilot Type
 PV = Pop Pilot
 MV = Modulating Pilot

Pressure Range
 07 = 15 to 750 psig
 37 = 751 to 3750 psig

Material
 A1 = Alloy 20 Wetted
 A4 = Entirely Alloy 20
 CC = Standard Material
 SG = Sour Gas
 M1 = Monel Wetted
 M4 = Entirely Monel
 H1 = Hastelloy C Wetted
 H4 = Entirely Hastelloy C
 D1 = Duplex Wetted (Consult Factory)
 D4 = Entirely Duplex (Consult Factory)

O-Ring Material
 B = Buna N (Nitrile)
 V = Viton
 E = Ethylene Propylene
 K = Kalrez
 T = Teflon

Service
 GS = Gas
 LA = Liquid
 SS = Steam

Bonnet
 Yoke = (Std. No Code)
 BN = Closed Bonnet

Blowdown
 MB = Manual Blowdown
 ER = Electronic Remote
 AR = Air Remote

Sensing Line Filter
 LF = Line Filter (Std)

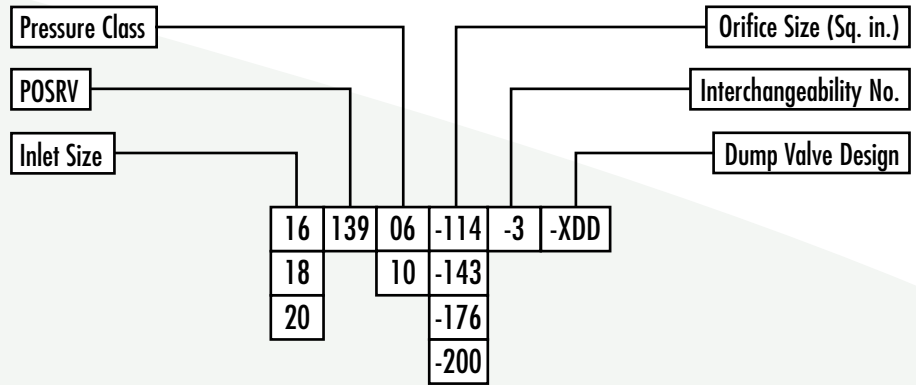
Aux. Hi Capacity Filter Option
 1F = Carbon Steel
 2F = Stainless Steel
 3F = Carbon Steel w/ Flush Valve
 4F = Stainless Steel w/ Flush Valve

Spring Cover
 P = Peek
 M = Metal
 N = None

When * appears in code,
nameplate will be stamped SPEC.

NOTE 1: See 2900 section for special materials for pilot valves

13900 POSRV Valve Coding



As a leading provider of pressure relief valve solutions, CONSOLIDATED offers world-class global aftermarket services. The global aftermarket program is designed to provide consistent and exceptional repair services, technical training, field support, spare parts production and management, complete equipment replacement, and comprehensive diagnostic services. This global support network consists of Green Tag Centers (GTC®), and CONSOLIDATED field service technicians that provide OEM experience, knowledge and technology to support all of your MRO needs worldwide, including hands-on training and on-site support.

The CONSOLIDATED aftermarket service program offers complete services for pressure relief valve products, including on-site installation and start-up, predictive and preventative maintenance programs, equipment testing, rebuilding and trouble-shooting, and complete valve turn-around management. The program also includes on-site inventory planning, diagnostic data interpretation services, on-site machining, field retrofitting, and hands-on training. CONSOLIDATED aftermarket service support is accessible 24 hours a day and seven days a week year round.

OEM Parts - CONSOLIDATED fully understands that quick response in obtaining replacement parts and overhaul services is a critical factor in maintaining a smooth operating plant. As a result, we have placed extremely high importance on this customer need within our global aftermarket program.

Service Parts Inventory Philosophy - CONSOLIDATED's formulated service parts inventory philosophy is designed to provide prompt valve service capability, thus preventing extended maintenance downtime. Your CONSOLIDATED sales representative or local Green Tag Center can assist you in developing an optimum inventory plan to fit your company's inventory needs.

CONSOLIDATED also provides integrated programs, using tools such as "Avert®" to help manage the support of your installed equipment. These programs are location specific and include plant surveys, data management, scheduling and planning of maintenance, repairs, and overhauls. Historical data and trends can be managed using an asset management system to maximize efficiency of overall equipment support. In addition, CONSOLIDATED has developed advanced diagnostic tools and services that also assist in the prevention of unexpected or unnecessary maintenance, repair, or overhaul. Available diagnostic tools include the Electronic Valve Tester (EVT®) for pressure relief valves. Diagnostic services include the on-site application of these highly advanced tools by fully trained technicians.

Consolidated® Operations

"The Total Solutions Provider"

Call 1-800-245-VALV for service in the Americas, or contact the nearest Dresser Sales Office for international service and support.

Safety Relief Valve Maintenance Training

CONSOLIDATED Safety Relief Valves are called upon to open and relieve pressure automatically, even after they have been closed for long periods of time. Are you comfortable with the maintenance and repair as it is currently practiced in your shop? Does your inspection department know what to look for to determine if a pressure relief valve needs attention? You check to determine if the valves leak when installed. But, will your valves close after the system reaches overpressure? Will the Valve Disc reach full lift and relieve the required capacity?

CONSOLIDATED's three day *Safety Relief Valve Maintenance Training Seminars* are available in the Alexandria, Louisiana Training Center, or at your plant site. Two-day *Engineering Sizing and Selection Seminars* are also available for CONSOLIDATED products.

For additional information concerning Training Seminars please contact the CONSOLIDATED Training Manager at (318) 640-6054 or by fax at (318) 640-6041.

