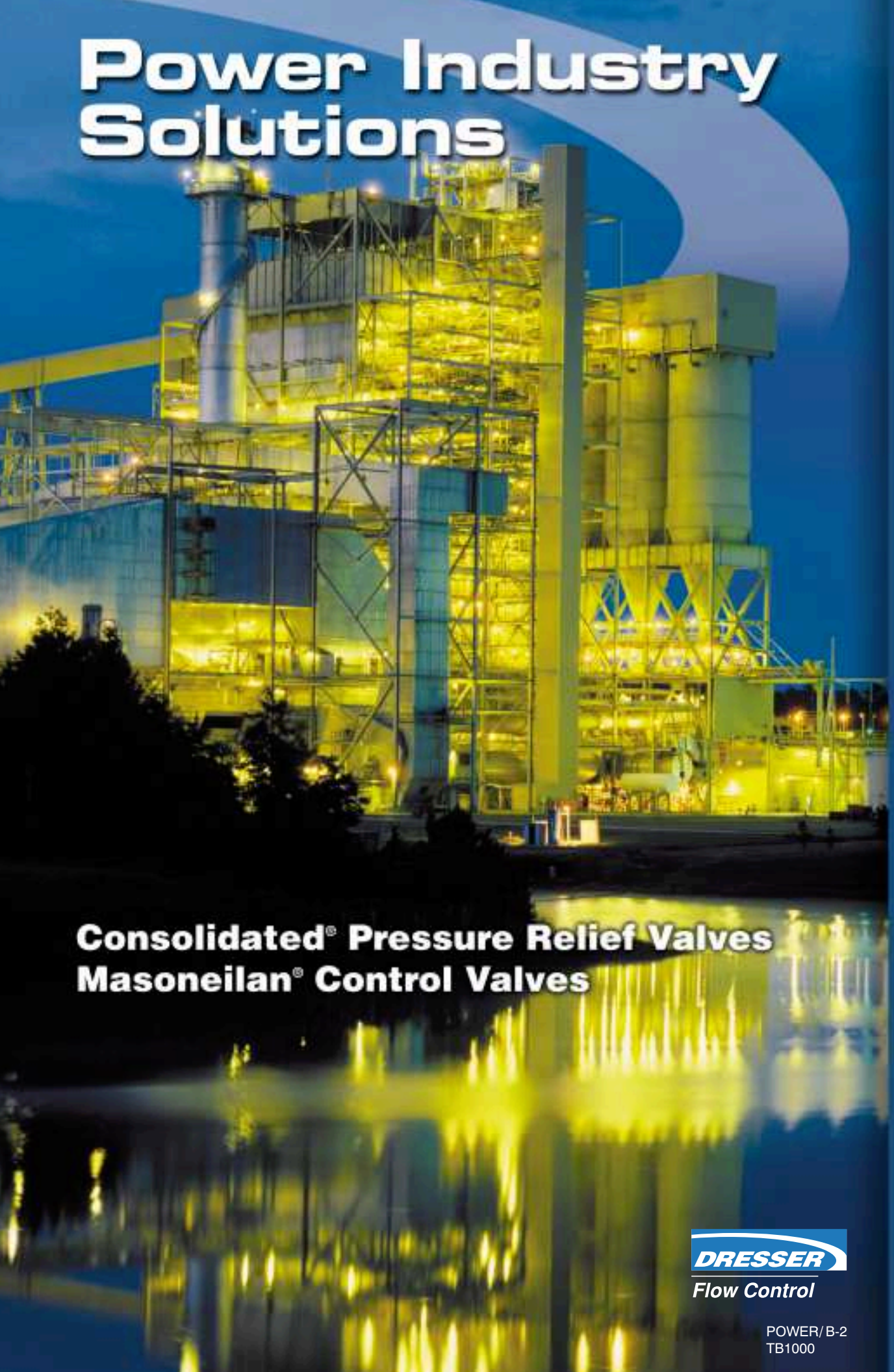
Power Industry Solutions



Consolidated® Pressure Relief Valves
Masoneilan® Control Valves

DRESSER®

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POWER/ B-2
TB1000

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Valve Solutions and Services for the Energy Industry

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TXT® TEXSTEAM

WHEATLEY®

C O N T R O L

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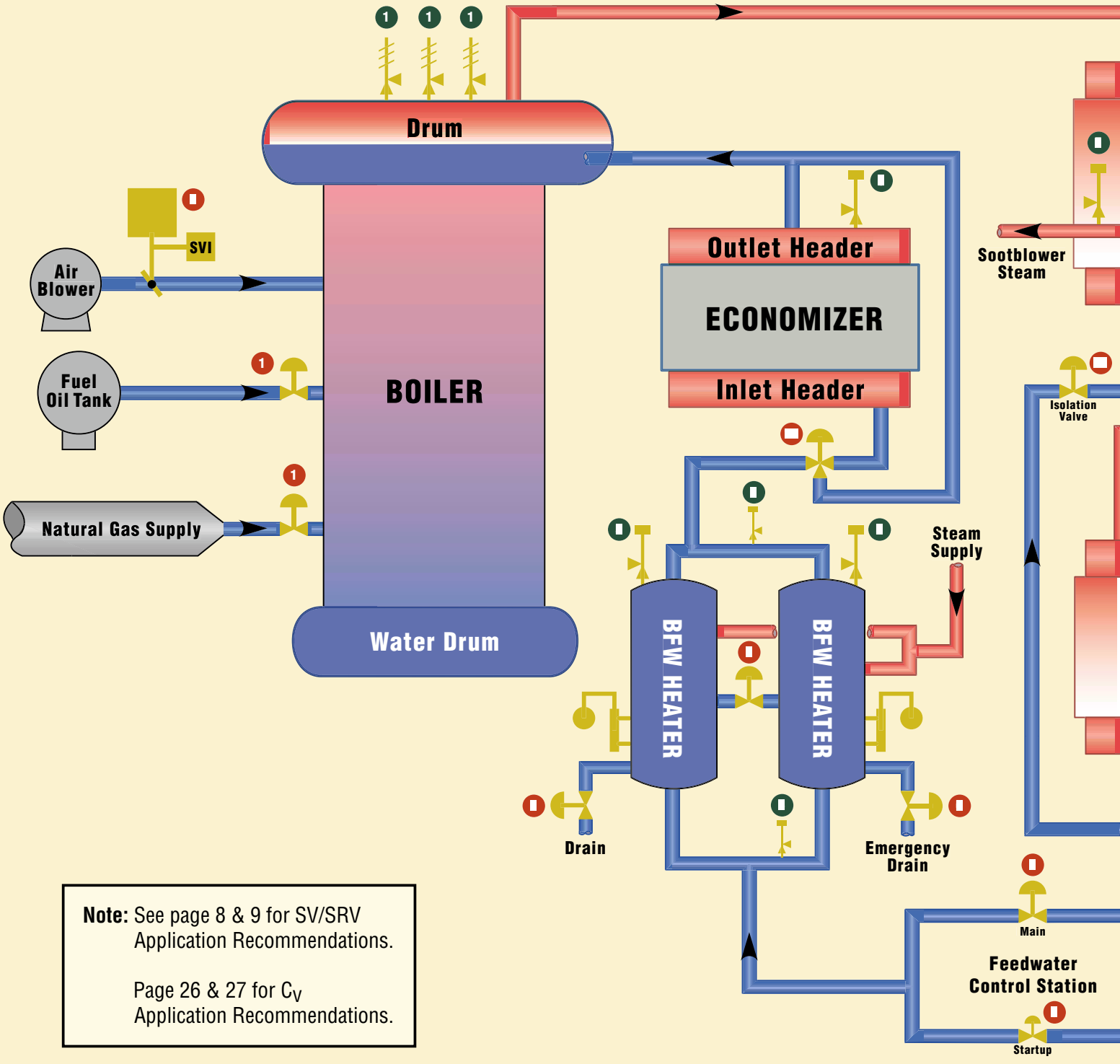
Nil-Cor®

Table of Contents

TYPICAL FOSSIL FUEL



Note: See page 8 & 9 for SV/SRV Application Recommendations.

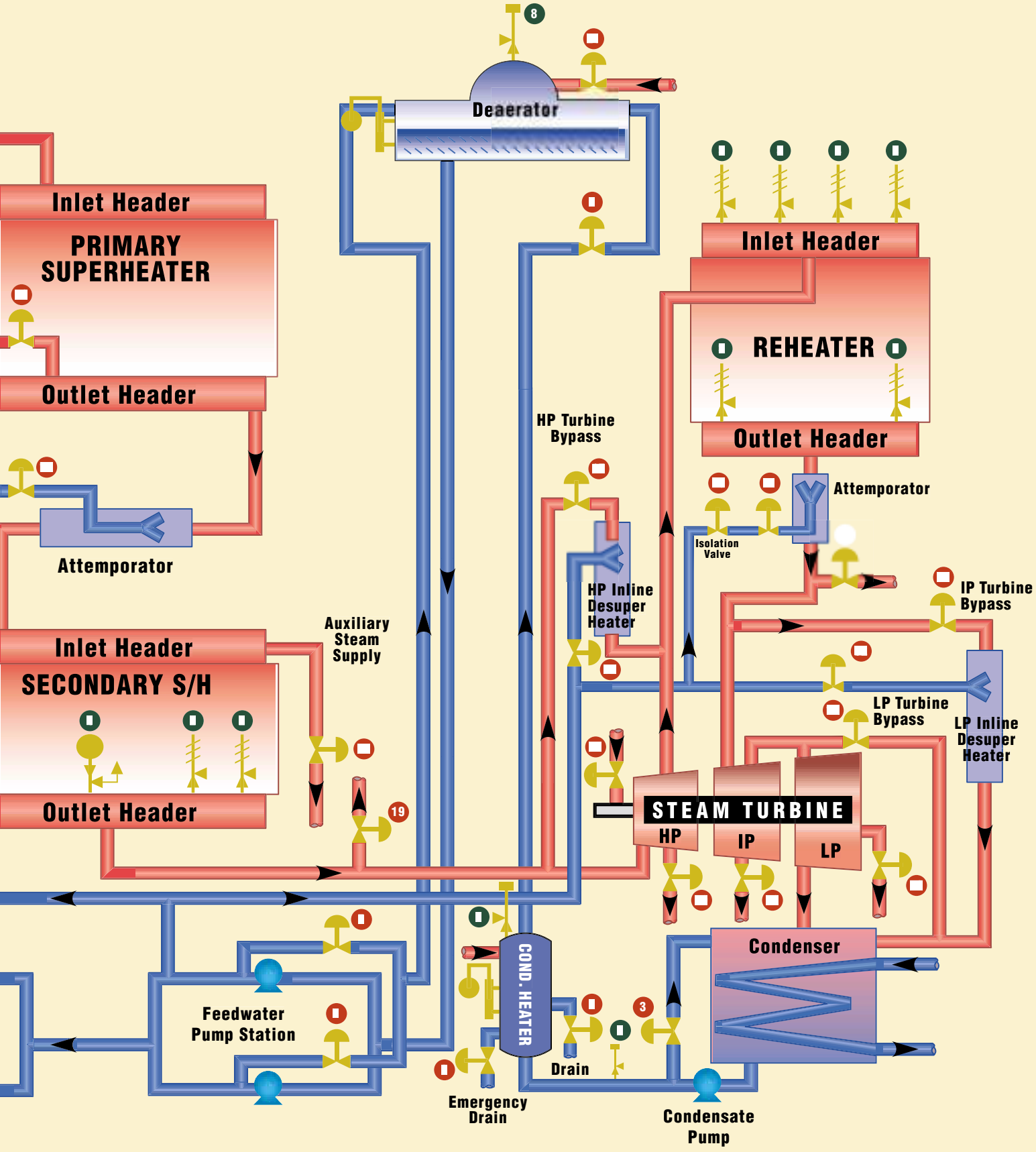
Page 26 & 27 for C_V Application Recommendations.

Consolidated Safety Valve

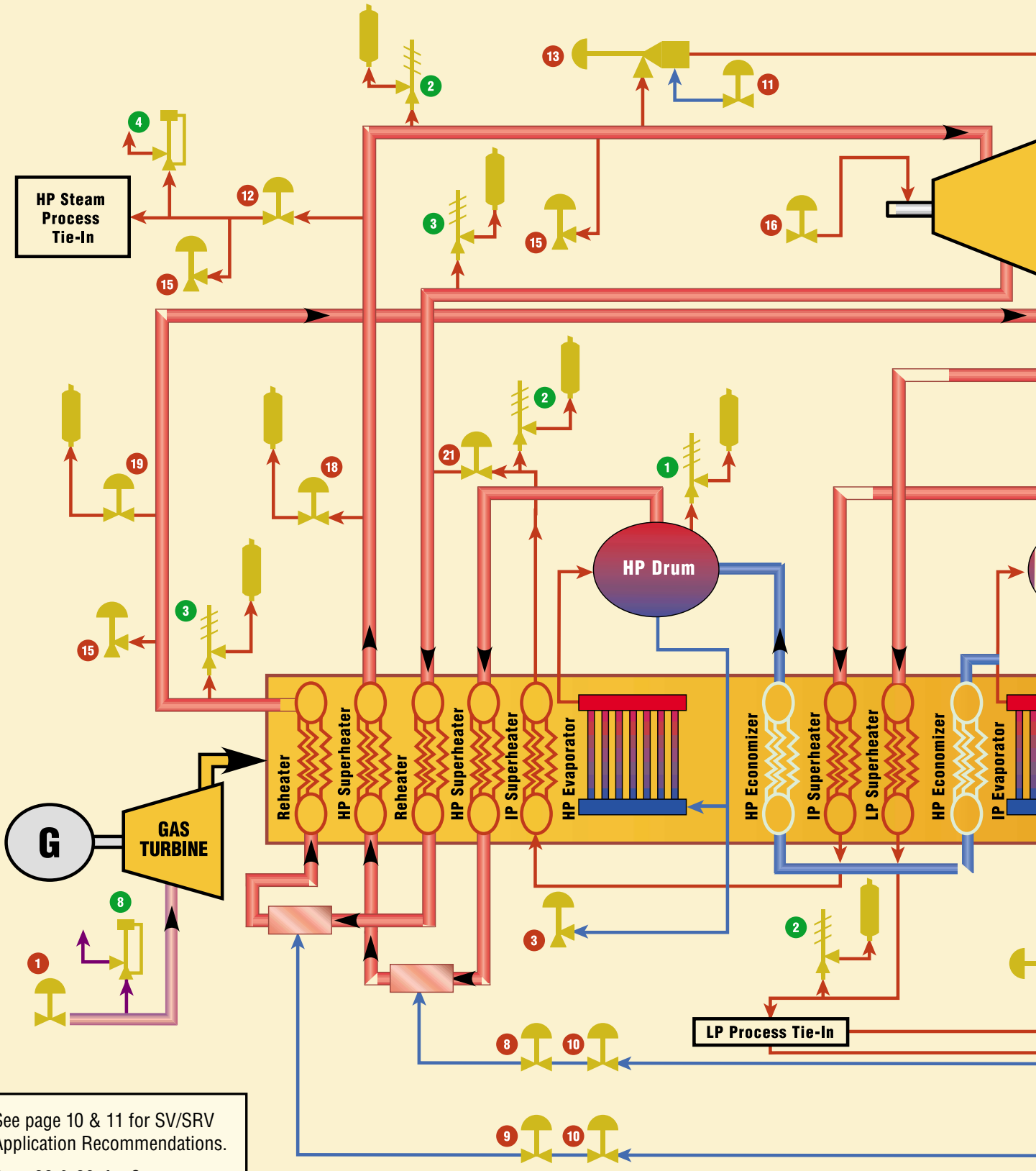
Consolidated Safety Relief Valve
(Option - Pilot Operated Relief Valve)

Consolidated Electromatic Ball Valve

POWER PLANT SYSTEM



TYPICAL COMBINED CYCLE



Note: See page 10 & 11 for SV/SRV Application Recommendations.

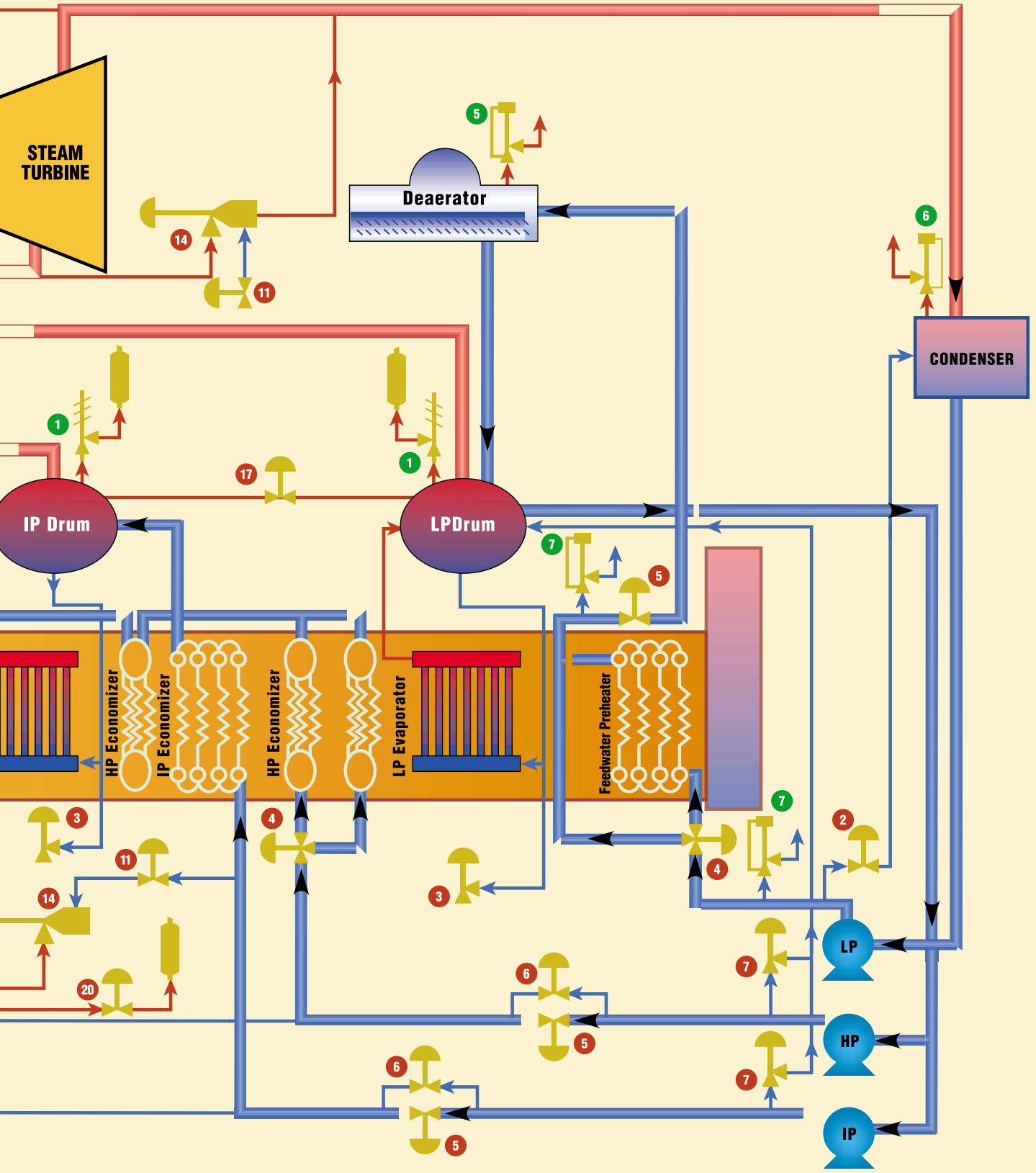
Page 28 & 29 for C_V Application Recommendations.

For more information, request Catalog SV-1.

Consolidated Safety Valve

Pilot-Operated Relief Valve
(Option-Safety Relief Valve)

POWER PLANT SYSTEM



Masoneilan Control Valve

Masoneilan Steam Conditioning Valve

Note: For more information, request Catalog SV-1.

Consolidated Pressure Relief Valves For A Typical Fossil Fuel Power Plant

	Applications	Key Considerations	Valve Recommendations	Page
1	**Boiler Drum Safety Valves** (Section I)	3% Blowdown	MAXIFLOW®	12
		Ease of Maintenance	MAXIFLOW	12
		Seat Tightness	MAXIFLOW, 2700	12, 13
		Ability to Restrict Lift	MAXIFLOW, 2700	12, 13
		Long Product Design Life	MAXIFLOW, 2700	12, 13
		Welded Inlet Option	MAXIFLOW, 2700	12, 13
		High Pressure	MAXIFLOW, 2700, 1811	12-14
		High Temperature	MAXIFLOW, 2700, 1811	12-14
		Economy (Low Prices)	2700, 1811, 1511, 1541, 1543	13-16
		Iron/Bronze Construction	1511, 1541, 1543	15-16
2	**Superheat Safety Valves** (Section I)	3% Blowdown	MAXIFLOW	12
		Ease of Maintenance	MAXIFLOW	12
		Seat Tightness	MAXIFLOW, 2700	12, 13
		Ability to Restrict Lift	MAXIFLOW, 2700	12, 13
		Long Product Design Life	MAXIFLOW, 2700	12, 13
		Welded Inlet Option	MAXIFLOW, 2700	12, 13
		Economy (Low Prices)	2700, 1811	13, 14
		Low Pressure (CL 300)	1811	14
3	**Reheat Inlet/Reheat Outlet Safety Valves** (Section I)	High Capacity	MAXIFLOW	12
		Ease of Maintenance	MAXIFLOW	12
		Ability to Restrict Lift	MAXIFLOW, 2700	12, 13
		Long Product Design Life	MAXIFLOW, 2700	12, 13
		Economy (Low Prices)	2700	13
4	**Power Actuated Relief Valves**	Frequent Safety Valve Lifting	3500-EBV	17
		Startup Venting (Open/Close)	3500-EBV	17
		Shutdown Venting	3500-EBV	17

For more information, request Catalog SRV-1.

Consolidated Pressure Relief Valves For A Typical Fossil Fuel Power Plant

Applications	Key Considerations	Valve Recommendations	Page
5 **Feedwater Heater Safety Relief Valves or Pilot Operated Relief Valves** (Section VIII)	Shell Side Relief	19000, 1900-30, 29MPV	20-23
	Tube Side Relief	19000	18, 19
6 **Economizer Safety Relief Valves or Pilot Operated Relief Valves**	Section I	1900/P	22
	Section VIII Liquid	1900-LA	21
	Section VIII Chatter	29MPV	23
	Section VIII Leakage	29MPV	23
7 **Auxiliary Steam Safety Relief Valves or Pilot Operated Relief Valves** (Reducing Station) (Section VIII)	Closed Bonnet	1900, 1900/P	20-22
	Built-up Backpressure	1900-30, 29MPV	21, 23
	Short Blowdown	MAXIFLOW®, 29MPV	12, 23
	Seat Tightness/High Temp.	MAXIFLOW, 2700, 29MPV	12, 13, 23
	Seat Tightness/Low Temp.	1900-DA, 39MPV	21, 23, 24
	Chatter Problems	29MPV, 39MPV	23, 24
8 **Deaerator Safety Relief Valves or Pilot Operated Relief Valves** (Section VIII)	Standard Product	MAXIFLOW, 2700, 1811, 1900	12-14, 20
	Vibration	1900-DA, 29MPV	21,23
	Entrained Particulate	1900-DA, 29MPV	21,23
	Backpressure	1900-30, 29MPV	21,23
	Chatter Problems	29MPV, 39MPV	23, 24
	Seat Tightness Problems	1900-DA, 29MPV, 39MPV	21,23, 24
	High Capacity	13900	25

Consolidated Pressure Relief Valves For A Typical Combined Cycle Power Plant

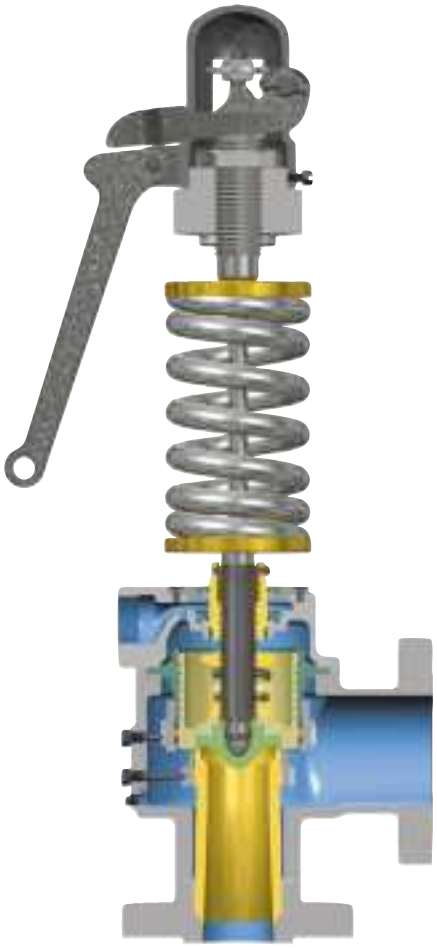
	Applications	Key Considerations	Valve Recommendations	Page
1	**LP/IP/HP Boiler Drum Safety Valves** (Section I)	3% Blowdown	MAXIFLOW®	12
		Ease of Maintenance	MAXIFLOW	12
		Seat Tightness	MAXIFLOW, 2700	12, 13
		Ability to Restrict Lift	MAXIFLOW, 2700	12, 13
		Long Product Design Life	MAXIFLOW, 2700	12, 13
		Welded Inlet Option	MAXIFLOW, 2700	12, 13
		High Pressure	MAXIFLOW, 2700, 1811	12-14
		High Temperature	MAXIFLOW, 2700, 1811	12-14
		Economy (Low Prices)	2700, 1811, 1511, 1541, 1543	13-16
		Iron/Bronze Construction	1511, 1541, 1543	15, 16
2	**LP/IP/HP Superheat Safety Valves** (Section I)	3% Blowdown	MAXIFLOW	12
		Ease of Maintenance	MAXIFLOW	12
		Seat Tightness	MAXIFLOW, 2700	12, 13
		Ability to Restrict Lift	MAXIFLOW, 2700	12, 13
		Long Product Design Life	MAXIFLOW, 2700	12, 13
		Welded Inlet Option	MAXIFLOW, 2700	12, 13
		Economy (Low Prices)	2700, 1811	13, 14
		Low Pressure (CL 300)	1811	14
3	**Reheat Inlet/Reheat Outlet Safety Valves** (Section I)	High Capacity	MAXIFLOW	12
		Ease of Maintenance	MAXIFLOW	12
		Ability to Restrict Lift	MAXIFLOW, 2700	12, 13
		Long Product Design Life	MAXIFLOW, 2700	12, 13
		Economy (Low Prices)	2700	13
4	**Auxiliary Steam Safety Relief Valves or Pilot Operated Relief Valves** (Reducing Station, etc.) (Section VIII)	Closed Bonnet	1900, 1900/P	20-22
		Built-up Backpressure	1900-30, 29MPV	21, 23
		Short Blowdown	MAXIFLOW®, 29MPV	12, 23
		Seat Tightness/High Temp.	MAXIFLOW, 2700, 29MPV	12, 13, 23
		Seat Tightness/Low Temp.	1900-DA, 39MPV	21, 23, 24
		Chatter Problems	29MPV, 39MPV	23, 24

Consolidated Pressure Relief Valves For A Typical Combined Cycle Power Plant

Applications	Key Considerations	Valve Recommendations	Page
5 **Deaerator Safety Relief Valves or Pilot Operated Relief Valves** (Section VIII)	Standard Product	MAXIFLOW, 2700, 1811, 1900	12-14, 20
	Vibration	1900-DA, 29MPV	21,23
	Entrained Particulate	1900-DA, 29MPV	21,23
	Backpressure	1900-30, 29MPV	21,23
	Chatter Problems	29MPV, 39MPV	23, 24
	Seat Tightness Problems	1900-DA, 29MPV, 39MPV	21,23, 24
	High Capacity	13900	25
6 **Turbine Exhaust Safety Relief Valves or Pilot Operated Relief Valves** (Section VIII)	Standard Product	1900	20, 21
	Backpressure	1900-30, 29MPV	21, 23
	Chatter Problems	29MPV	23
	Seat Tightness Problems	1900-DA, 29MPV, 39MPV	21, 23, 24
	High Capacity	13900	25
7 **Inlet/Outlet FW Preheater Safety Relief Valves or Pilot Operated Relief Valves** (Section VIII)	Vibration	1900-DA, 29MPV	21, 23
	Backpressure	1900-30, 29MPV	21, 23
	Chatter Problems	29MPV, 39MPV	23, 24
	Seat Tightness Problems	1900-DA, 29MPV, 39MPV	21, 23, 24
	Section I	1900/P	22
8 **Fuel Gas Line Pilot Operated Relief Valves** (Section VIII)	Vibration	29MPV, 39MPV	23, 24
	Backpressure	29MPV, 39MPV	23, 24
	Chatter Problems	29MPV, 39MPV	23, 24
	Seat Tightness Problems	29MPV, 39MPV	23, 24

1700 MAXIFLOW®

CONSOLIDATED MAXIFLOW® high pressure safety valves are premium products that are installed on a majority of power generating stations worldwide to protect boilers from overpressure conditions.



Specifications

Inlet Sizes:	1-1/2" through 6" in either flanged or weld neck design
Inlet Ratings:	ANSI Class 600 through 4500
Outlet Sizes:	3" through 10" flanged
Outlet Ratings:	ANSI Class 150 and 300
Orifice Sizes:	Eleven sizes - 1 through RR
Temp. Range:	To 1120˚F
Materials:	Alloy and carbon steel cast body with stainless steel trim is standard. Special alloys are available for specific applications.
Certification:	ASME Section I and VIII

For more information request Catalog SV-1.

2700

Consolidated type 2700 safety valves are designed to meet the fast growing co-generation and waste-to-energy markets.

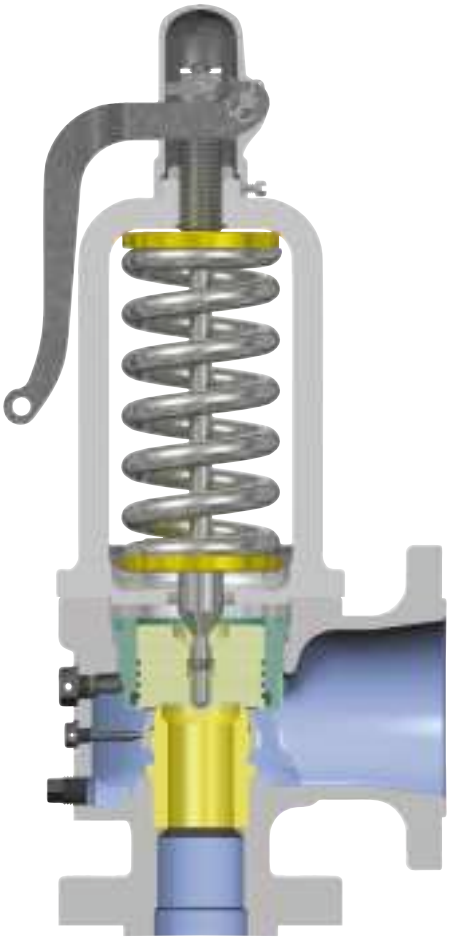
Specifications

Inlet Sizes:	1-1/2" through 6" in either flanged or weld neck design
Inlet Ratings:	ANSI Class 600, 900 and 1500
Outlet Sizes:	3" through 8" flanged
Outlet Ratings:	ANSI Class 150 and 300
Orifice Sizes:	Seven sizes - 1 through Q
Temp. Range:	To 1050˚F
Materials:	Alloy and carbon steel cast body with stainless steel trim is standard. Special alloys are available for specific applications.
Certification:	ASME Section I and VIII

For more information request Catalog SV-1.

1811

CONSOLIDATED type 1811 safety valve is a cost effective, high capacity, flanged steel safety valve designed for steam service.



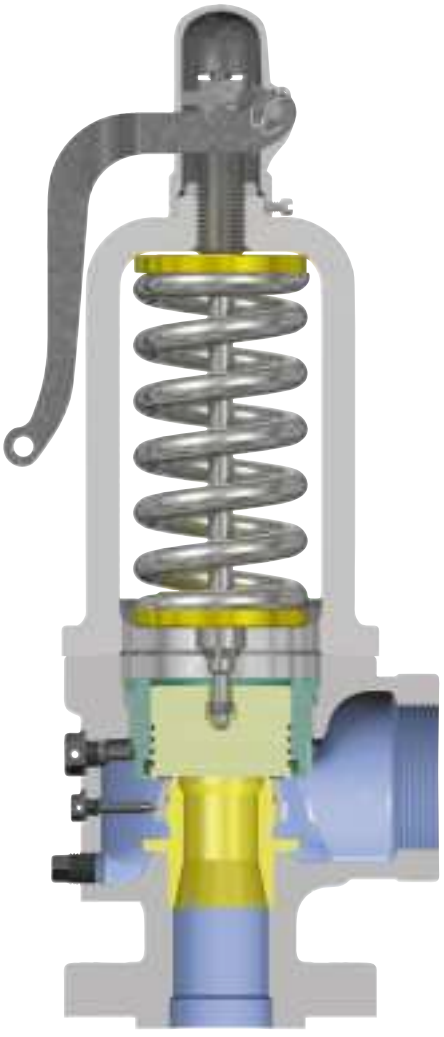
Specifications

Inlet Sizes:	1-1/4" through 6" flanged
Inlet Ratings:	ANSI Class 300 and 600
Outlet Sizes:	1-1/2" through 8" flanged
Outlet Ratings:	ANSI Class 150
Orifice Sizes:	Ten sizes - F through Q
Temp. Range:	To 1000˚F
Materials:	Alloy and carbon steel cast body with stainless steel trim is standard.
Certification:	ASME Section I and VIII

For more information request Catalog SV-1.

1511

CONSOLIDATED type 1511 safety valves are designed for low pressure, steam heating boilers and steam generators as well as air service applications.



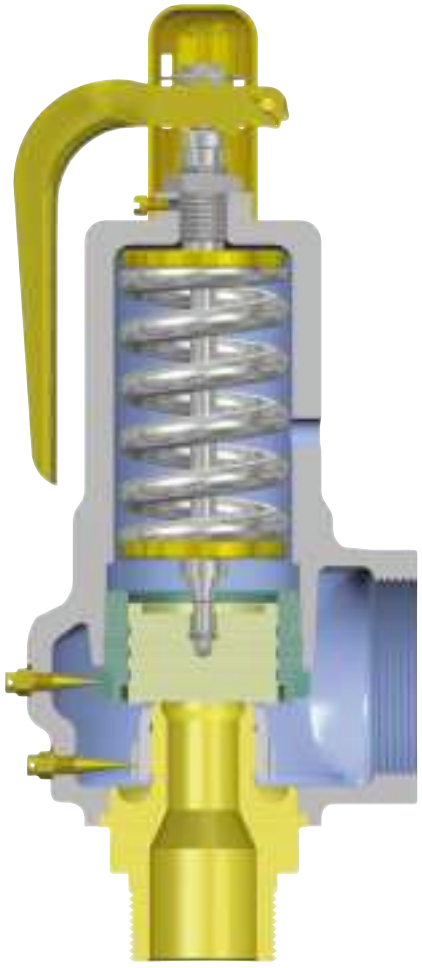
Specifications

Inlet Sizes:	1-1/2" through 6" in either flanged or threaded design
Inlet Ratings:	ANSI Class 250
Outlet Sizes:	2-1/2" through 4" threaded, 6" and 8" in either flanged or threaded design
Outlet Ratings:	ANSI Class 125
Orifice Sizes:	Eight sizes - H through Q
Temp. Range:	-20˚F to 406˚F
Materials:	Cast iron body with brass trim is standard. Stainless steel trim is optional.
Certification:	ASME Section I and VIII

For more information request Catalog SV-1.

1541/1543

CONSOLIDATED type 1541 and 1543 safety valves are designed for steam and other compressible fluids. They find use in numerous application requirements.



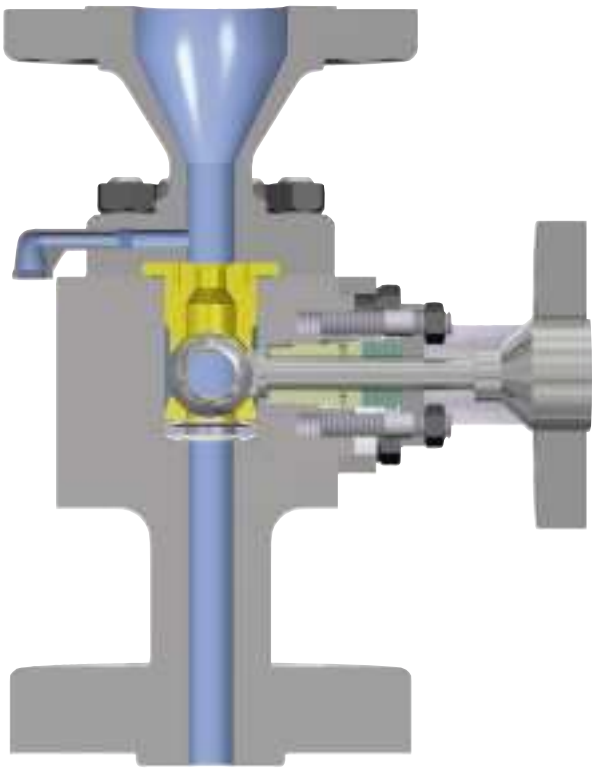
Specifications

Inlet Sizes:	1/2" through 2-1/2" threaded
Outlet Sizes:	3/4" through 2-1/2" threaded
Orifice Sizes:	Six sizes - D through J
Set Pressure Range:	5 psig to 350 psig
Temp. Range:	-20˚F to 420˚F
Materials:	Cast iron bonnet with brass base and trim is standard. Available with bronze bonnet. Stainless steel base and disc are also optional.
Certification:	ASME Section I and VIII

For more information request Catalog SV-4.

3500 ELECTROMATIC® Ball Valve

The CONSOLIDATED series 3500 ELECTROMATIC® Ball Valve is designed to provide automatic or manual overpressure protection for steam boiler systems, and can also be used to assist start-up and shut-down venting.



Specifications

Inlet Sizes:	1-1/2", 2" and 2-1/2" in either flanged or weld neck design
Inlet Rating:	ANSI Class 1500 to 4500
Outlet Sizes:	3" and 4" flanged
Outlet Rating:	ANSI Class 300 and 900
Temp. Range:	To 1100˚F
Materials:	Forged and cast alloy steel bodies with titanium carbide coated ball and seat is standard.
Certification:	ASME Section I and Non-Coded

For more information request Catalog EBV-1.

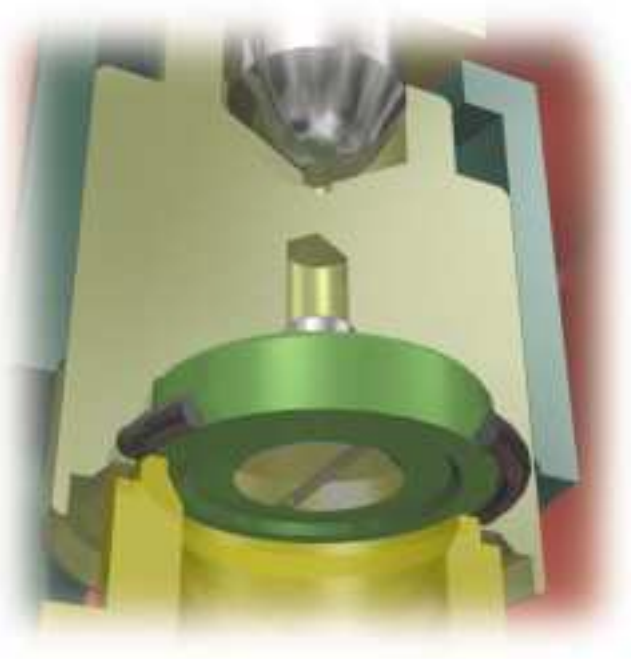
19000

The CONSOLIDATED series 19000 is a threaded end connection design that may be used on compressible and uncompressible media. Seat tightness, blowdown and capacity on all types of media meets the power generation industry needs for most applications.

Specifications

Inlet Sizes:	1/2" through 2" in either threaded, socket weld, butt weld, flanged, Grayloc® or sanitary fitting design
Outlet Sizes:	1" through 2-1/2" in either threaded, socket weld, butt weld, flanged or sanitary fitting design
Orifice Sizes:	.096 $in.^2$ through .567 $in.^2$
Set Pressure Range:	5 psig to 8000 psig
Temp. Range:	-425˚F to 1100˚F
Certification:	ASME Section III and VIII

For more information request Catalog SRV-19000.



19000-DA

The CONSOLIDATED O-Ring seat seal provides positive closure at service pressures closer to the set pressure when compared with metal-to-metal seats. This ensures continuous, trouble free service and enhanced seat tightness at operating points closer to set pressure.

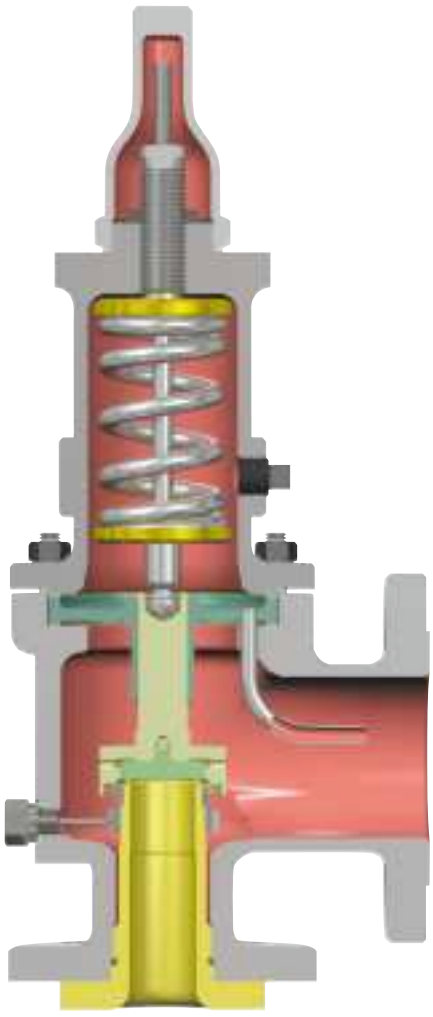
Options for 19000

Additional variations to the CONSOLIDATED type 19000 conventional safety relief valves include:

Material Variations:	316 Stainless Steel
	Monel
	Hastelloy
	Alloy 20
	Exotics

1900

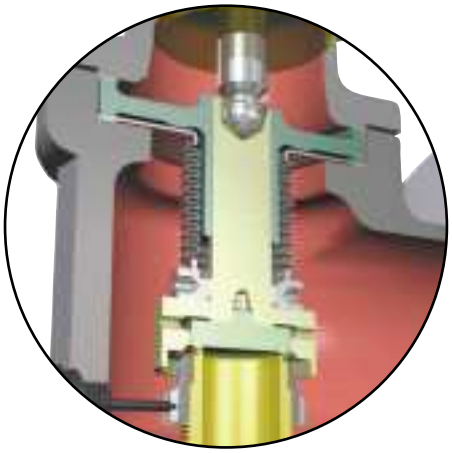
The Consolidated series 1900 is a flanged end connection design that may be used on compressible and uncompressible media. Seat tightness, blowdown and capacity on all types of media meets the power generation industry needs for most applications.

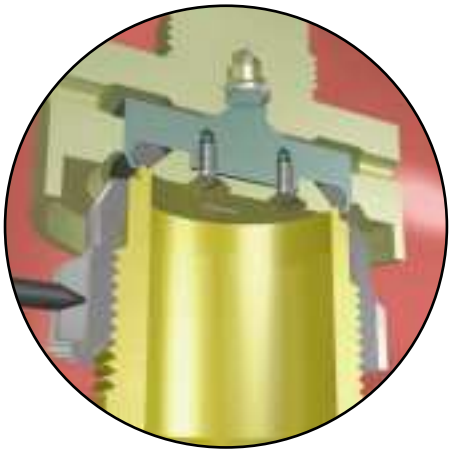


Specifications

Inlet Sizes:	1" through 12" flanged.
Inlet Ratings:	ANSI Class 150 through 2500
Outlet Sizes:	2" through 16" flanged
Outlet Ratings:	ANSI Class 150 and 300
Orifice Sizes:	Sixteen sizes - D through W
Set Pressure Range:	4 psig to 6000 psig
Temp. Range:	-450˚F to 1500˚F
Materials:	Cast carbon steel body with stainless steel trim is standard. Special alloys are available for specific applications.
Certification:	ASME Section III and VIII

For more information request Catalog SRV-1.





1900-30

The Consolidated type 1900-30 includes the addition of a balanced bellows. A balanced bellows is necessary to compensate for the effects of variable back pressure. The bellows is also a cost effective solution in applications where the valve is exposed to highly viscous or corrosive fluids by isolating the upper structure and allowing the use of less expensive materials.

1900-DA

The Consolidated type 1900-DA contains an additional O-Ring seat seal. This soft seat allows the valve to remain leak free at 95% of set pressures over 100 psig.

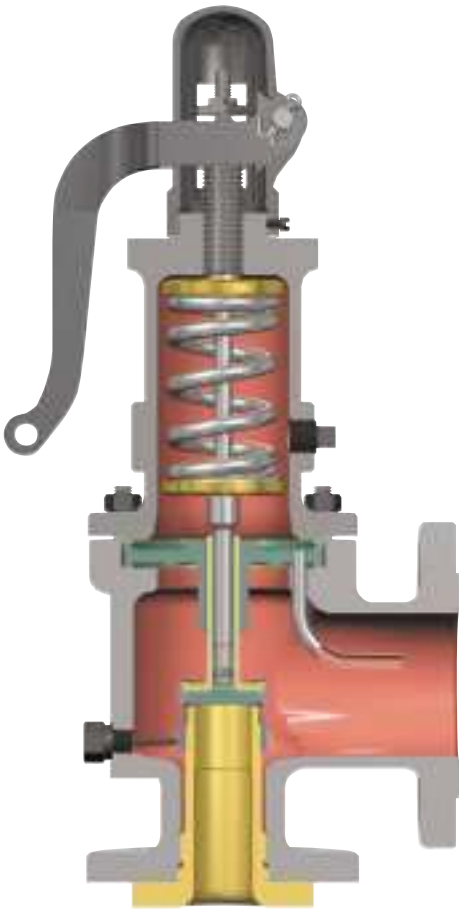
Options for 1900

Additional variations to the Consolidated type 1900 conventional safety relief valves include:

1900-LA:	Special trim allows these valves to be used for applications handling liquids.
1900-TD:	Addition of the exclusive Thermodisc™ allows this valve to be used on steam and with organic heat transfer media.
1900-35:	The addition of a balancing piston will ensure set pressure and valve lift stability in the event of a bellows failure.

1900/P

The Consolidated series 1900/P flanged design is for ASME B & PVC Section I off boiler steam service applications only.



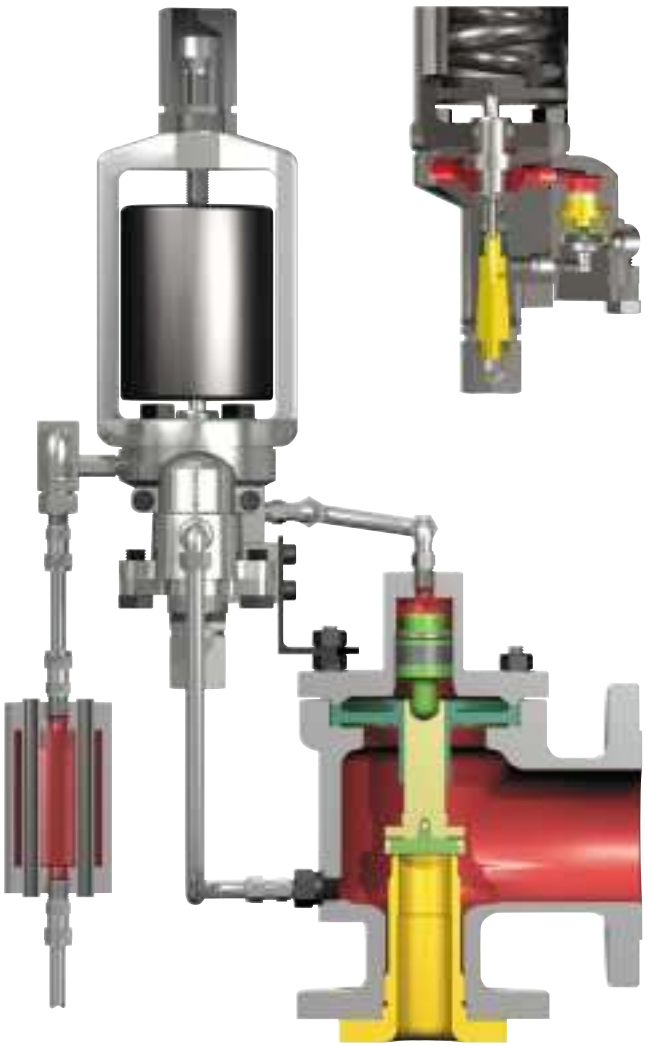
Specifications

Inlet Sizes:	1" through 8" flanged
Outlet Sizes:	2" through 10" flanged
Orifice Sizes:	Fourteen sizes - D through T
Set Pressure Range:	4 psig to 5000 psig
Temp. Range:	-20˚F to 850˚F
Materials:	Carbon steel body with stainless steel trim is standard.
Certification:	ASME Section I, III and VIII

For more information request Catalog SRV-1.

2900 MPV™

The CONSOLIDATED type 2900 MPV™ pilot operated safety relief valve is suitable for both incompressible and compressible applications and performs equally well on liquid, vapor or two-phase flow services. The technology used provides clear solutions and improves performance. The 2900 MPV can correct common problems such as poor seat tightness and valve chatter. This is an ideal solution for pressure relief protection in power plant reducing station applications.



Specifications

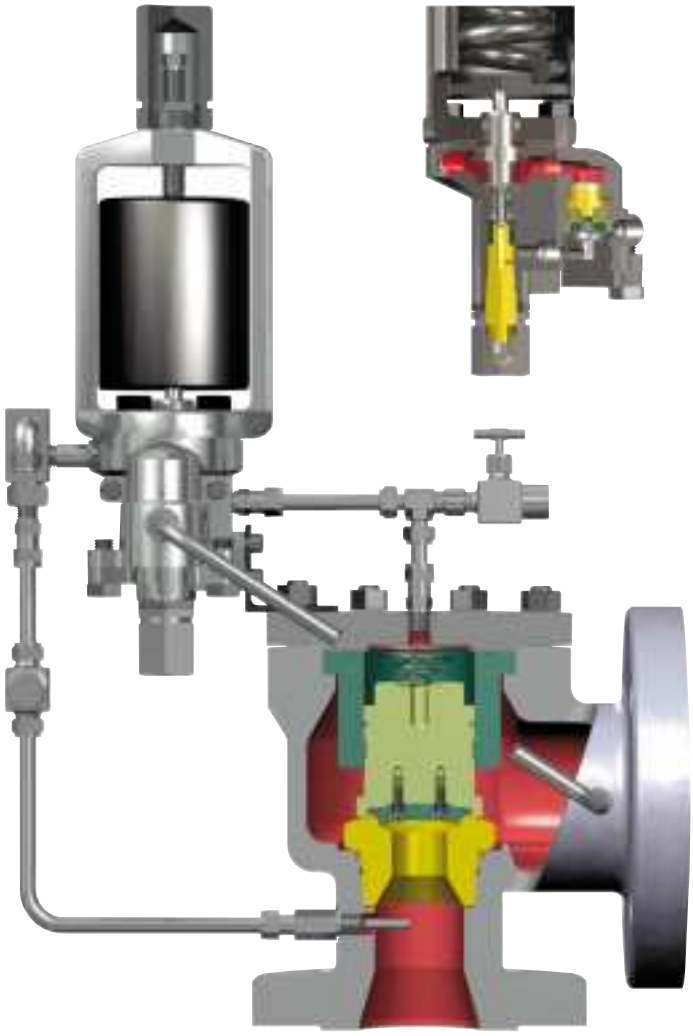
Inlet Sizes:	1" through 12" flanged
Outlet Sizes:	2" through 16" flanged
Orifice Sizes:	Sixteen sizes - D through W
Set Pressure Range:	15 psig to 3750 psig
Temp. Range:	-40˚F to 505˚F without Heat Exchanger* -450˚F to 1200˚F with Heat Exchanger*
Materials:	All wetted parts in the closed position are stainless steel, including the pilot and the main valve cover plate and piston. The main valve base is carbon steel. A completely stainless steel main valve and other exotic materials are also available.
Certification:	ASME Section VIII

*Not suitable for all applications and use of a heat exchanger is subject to factory approval.

For more information request Catalog SRV-1.

3900 MPV™

The Consolidated type 3900 MPV™ non-flowing pilot operated safety relief valve is of a modular design available in a modulating or pop action pilot. Design of the main valve incorporates a replaceable, semi-nozzle construction, as well as a versatile, leak tight, main valve soft seat. The 3900 MPV is suitable for the overpressure protection of many pressurized systems and vessels.



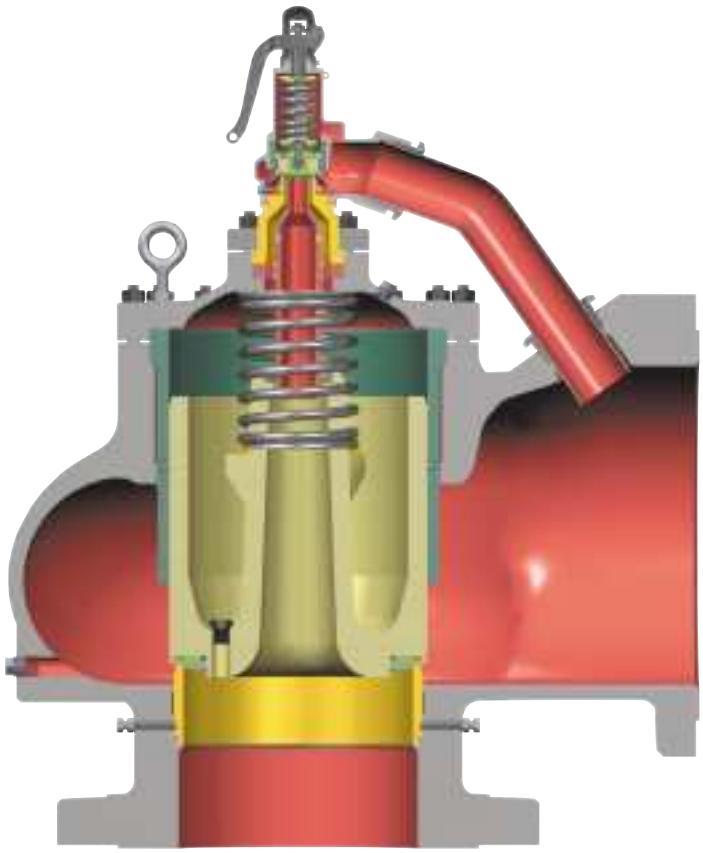
Specifications

Inlet Sizes:	1" through 10" flanged
Outlet Sizes:	2" through 10" flanged
Orifice Sizes:	Fourteen sizes - D through T plus 3" through 10" full bore
Set Pressure Range:	15 psig to 3750 psig
Temp. Range:	-40˚F to 505˚F
Materials:	All stainless steel pilot with carbon steel main valve and stainless steel trim is standard. A completely stainless steel main valve and other exotic materials are also available.
Certification:	ASME Section III and VIII

For more information request Catalog SRV-1.

13900

The CONSOLIDATED series 13900 flanged design is a large orifice high capacity pilot operated pressure relief valve for designed ASME B & PVC Section VIII steam applications such as turbine reheat systems.



Specifications

Inlet Sizes:	16" through 20" flanged
Outlet Sizes:	18" through 24" flanged
Orifice Sizes:	114, 143.1, 176.7 and 201 sq. in.
Set Pressure Range:	50 psig to 300 psig
Temp. Range:	250°F to 550°F
Materials:	Carbon steel body with stainless steel trim is standard.
Certification:	ASME Section VIII

For more information request Catalog SRV-1.

Fossil Fuel Power Plant Typical Applications

	Applications	Key Considerations	Valve Recommendations	Page
	Auxiliary Systems			
1	Fuel Oil or Gas Control	Large Flows, Wide Control Range, Noise	CAMFLEX®,VARIMAX™ 41005,21000,T-BALL®	34,35 32,30,36
2	Air Damper	Precision Control, Diagnostics Feedback	SVI, SVI II & FVP	42
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3	Condensate Recirculation	Flashing, Erosion, Cavitation, Tight Shutoff	21000 (1 or 2 Stage Anti-Cavitation Trim) 41005 (1 or 2 Stage Anti-Cavitation Trim)	31 33
4	Deaerator Level Control	Large Load Fluctuation, Low Load Cavitation, High Rangeability	41005 (1 or 2 Stage Characterized Anti-Cavitation Trim)	33
5	Cond./BFW Continuous Heater Drain	Saturated Water, Flashing, Erosion	CAMFLEX (Low Pressure) 21000A (High Pressure)	34 31
6	Cond./BFW Emergency Heater Drain	Tight Shutoff, High Erosion, Flashing Water	41005	33
	BFW System			
7	Boiler Feed Pump Recirculation	High Pressure Drops, Cavitation, Erosion, Tight Shutoff	LINCOLNLOG® 41005 (VRT Type C Trim)	39 33
8	Main Feedwater Regulator	High Pressure, Varying Pressure Drops, Large Flows	41005 Standard Trim (VRT Type S Partial Stack Trim or 1/2 Stage Characterized Anti-Cav Trim)	33
9	Start-up Feedwater Regulator	High Pressure Drops, Cavitation, Vibration	LINCOLNLOG 41005 (VRT Type C Trim)	39 33
10	Superheater Attemperator Spray	High Pressure, High Rangeability, Tight Shutoff	21000,41005 LINCOLNLOG	30,32 39
11	Reheater Attemperator Spray	High Pressure Drop, High Rangeability, Tight Shutoff, Cavitation	21000,LINCOLNLOG	30,39

Fossil Fuel Power Plant Typical Applications

	Applications	Key Considerations	Valve Recommendations	Page
	BFW System (cont.)			
12	Turbine Bypass Attemperation	High Pressure Drop, High Rangeability, Tight Shutoff, Cavitation	21000,41005 LINCOLNLOG	30,32 39
13	Spraywater Isolation Valves	High Pressure, Tight Shutoff	21000,41005	30,32
14	HP Economizer/ FW Preheater Bypass	Large Flow, High Pressure	80000	37
	Steam System			
15	Auxiliary Steam	High Pressure/High Pressure Drops, High Temperature, Wide Load Fluctuation, High Noise	SE 20(V-Log™ Trim) 41005 (1 or 2 Stage Lo-dB® Trim) 21000 (1 or 2 Stage Lo-dB® Trim)	40 33 31
16	Soot Blower	High Cycle, High Temperature, High Flow Rates, High Pressure, Tight Shutoff	SE 20 (1 or 2 Stage Lo-dB® Trim) 41005 (1 or 2 Stage Lo-dB® Trim) 21000 (1 or 2 Stage Lo-dB® Trim)	40 33 31
17	HP Turbine Bypass	High Pressure/High Pressure Drops, High Temperature,Tight Shutoff, High Noise	SE 20 (V-Log™ Trim) 41005 (1 or 2 Stage Lo-dB® Trim) Steamform	40 33 41
18	IP/LP Turbine Bypass	Moderate Pressure/Large Flows, High Temperature, Tight Shutoff, High Noise	41005 (1 or 2 Stage Lo-dB® Trim) SE 10 (1 or 2 Stage Lo-dB® Trim) Steamform	33 38 41
19	Main/Reheat Steam & Turbine Drains	High Pressure, Tight Shutoff, Erosion	21000, 21000A	30
20	Turbine Seal Pressure	High Pressure Drop, Noise, High Rangeability	21000, 41005	30, 32
21	Deaerator Pegging Steam	Noise, Wide Rangeability, Erosion, Saturated Steam	41005 (1 or 2 Stage Lo-dB® Trim) SE 20 (1 or 2 Stage Lo-dB® Trim)	33 40

Combine Cycle Power Plant Typical Applications

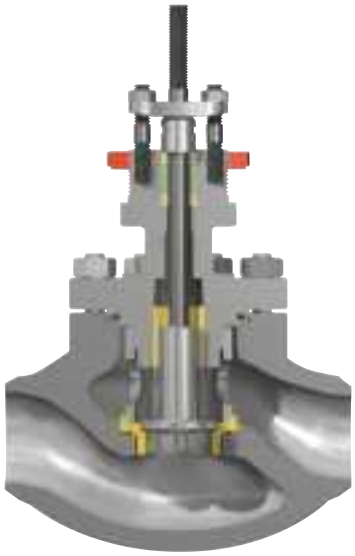
	Applications	Key Considerations	Valve Recommendations	Page
	Auxiliary Systems			
1	Fuel Gas Control	Large Flows, Wide Control Range, Noise	CAMFLEX®, VARIMAX™ 41005, 21000, T-BALL®	34, 35 32, 30, 36
	Condensate System			
2	Condensate Pump Recirculation	Precision Control, Diagnostics Feedback	21000 (1 or 2 Stage Anti-Cavitation Trim) 41005 (1 or 2 Stage Anti-Cavitation Trim)	31 33
3	HP/IP/LP Cond. Blowdown	Saturated Water, Flashing, Erosion	21000A (Stellite Venturi) CAMFLEX (Stellite Venturi)	30 34
	BFW System			
4	HP Economizer/FW Preheater Bypass	Large Flow, High Pressure	80000	37
5	HP/IP/LP Boiler Level Control	High Pressure, Varying Pressure Drops, Large Flows	41005 Standard Trim (VRT Type S or 1/2 Stage Characterized Anti-Cavitation)	32
6	HP/IP Startup Boiler Level Control	High Pressure Drops, Cavitation, Vibration	LINCOLNLOG 41005 (VRT Type C Trim)	39 33
7	HP/IP Boiler Feedpump Recirculation	High Pressure Drops, Erosion Cavitation, Tight Shutoff	LINCOLNLOG 41005 (VRT Type C Trim)	39 33
8	Superheater Attemperator Spray	High Pressure, High Rangeability, Tight Shutoff	21000, 41005 LINCOLNLOG	30, 32 39
9	Reheater Attemperator Spray	High Pressure Drop, High Rangeability, Tight Shutoff, Cavitation	21000, 41005 LINCOLNLOG	30. 32 39
10	Spraywater Isolation Valves	High Pressure, Tight Shutoff	21000, 41005	30, 32
11	Turbine Bypass Attemperation	High Pressure Drop, High Rangeability, Tight Shutoff, Cavitation	21000, 41005 LINCOLNLOG	30, 32 39

Combine Cycle Power Plant Typical Applications

	Applications	Key Considerations	Valve Recommendations	Page
	Steam Systems			
12	Process Steam PRV	High Pressure/High Pressure Drops, High Temperature, Wide Load Fluctuation, High Noise	SE20 (V-Log™ Trim) 41005 (1 or 2 Stage Lo-dB® Trim)	40 33
13	HP Turbine Bypass	High Pressure/High Pressure Drops, High Temperature, Tight Shutoff, High Noise	SE20 (V-Log™ Trim) 41005 (1 or 2 Stage Lo-dB® Trim) Steamform	40 33 41
14	IP/LP Turbine Bypass	Moderate Pressure/Large Flows, High Temperature, Tight Shutoff, High Noise	SE10 (1 or 2 Stage Lo-dB® Trim) 41005 (1 or 2 Stage Lo-dB® Trim) Steamform	38 33 41
15	Main/Reheat Steam & Turbine Drains	High Pressure, Tight Shutoff, Erosion	21000, 21000A	30
16	Turbine Seal Pressure	High Pressure Drop, Noise, High Rangeability	21000, 41005	30, 32
17	LP Pegging Steam	Noise, Wide Rangeability, Erosion, Saturated Steam	41005 (1 or 2 Stage Lo-dB® Trim)	33
18	Superheat Atmospheric Vent	High Pressure/High Pressure Drops, High Temperature, High Noise/Velocity, Trash	SE20 (V-Log™ Trim w/silencer) 41005 (1 or 2 Stage Lo-dB® Trim w/silencer)	40 33
19	Reheat Atmospheric Vent	Moderate Pressure/ High Pressure Drops, High Temperature, High Noise/Velocity, Trash	41005 (1 or 2 Stage Lo-dB® Trim w/silencer)	33
20	LP Process Tie-In Atmospheric Vent	Large Flowrates, High Noise/Velocity, Trash	41005 (1 or 2 Stage Lo-dB® Trim w/silencer)	33
21	IP Superheat Stm. to Cold Reheat	Moderate Pressure, High Temperature, Wide Load Fluctuation, High Noise	41005	33

21000 / 21000A Series
Top-Guided Globe / Angle Valve

The 21000 series single-ported, heavy top-guided control valves are designed with built-in versatility for handling a wide variety of power process applications. This includes optional trim designs for anti-cavitation and noise reduction.



Specifications — Globe & Angle Body

Sizes	3/4" through 6"
ANSI Ratings	Class 150 through 2500
ANSI Leakage	Class IV, V, VI
C_V Range	.11 to 400
Temp. Range	-150˚F to 1050˚F
Materials	Carbon steel, stainless steel, chrome-moly, other alloys
Connections	NPT, flanged, socket weld, butt weld
Actuators	Spring-diaphragm, cylinder
Applications	Low pressure steam & water, general services, flash tank, fuel gas, condensate recirculation, superheater and reheat spray, desuperheater water spray, gland steam pressure, soot blower, steam pressure, auxiliary steam

Heavy Top-Guiding

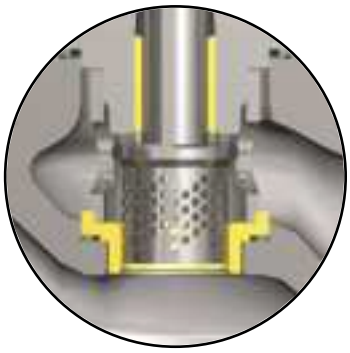
- Larger post guide area vs. other globe valve designs
- Located away from flowstream
- Provides better stability and control

Various Trim Options

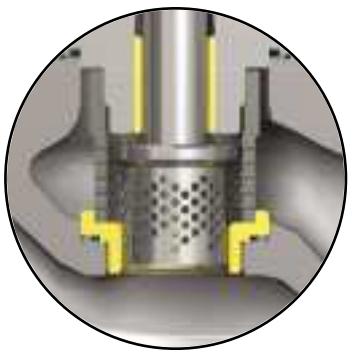
- Single and double-stage low noise and anti-cavitation trim
- Hardened trim standard
- Quick change or threaded seat rings
- Reduced capacities and microflow trim
- Equal percentage and linear contours
- Stellite Venturi Seat
- Soft seat design

Design Flexibility

- Multiple end connections
- Various materials
- Angle body configuration
- Bellows seal design
- Piston actuation option
- Extension bonnet
- Low emission packing
- DIN version available



Single Stage Anti-Cav Trim/LodB trim



2 Stage Anti-Cav Trim/LodB trim

Specifications	LodB	Anti-Cav
Sizes	3/4" through 6"	3/4" through 6"
ANSI Ratings	Class 150 through 2500	Class 150 through 2500
Single Stage	4 to 200	4 to 200
2 Stage	3.5 to 125	2.3 to 62

41005 / 41005A Series
Cage-Guided Globe / Angle Valve

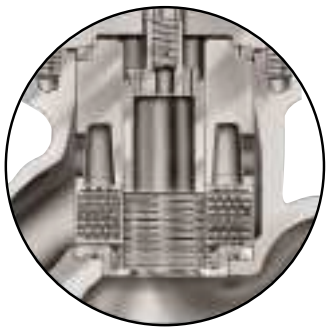
The 41000 series cage-guided control valves are designed for high performance and to exceed the limits of other conventional valves. With numerous trim configurations (including Lo-dB® and anti-cavitation) and its ability to handle large pressure drops, the 41000 Series can be applied in a variety of severe services.

BFW Feedwater
Control Valve Trim

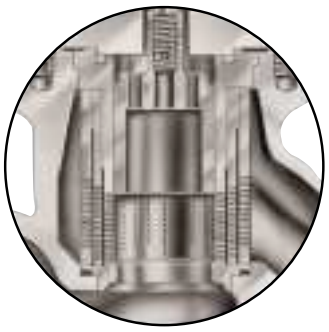
Specifications

Globe & Angle Body

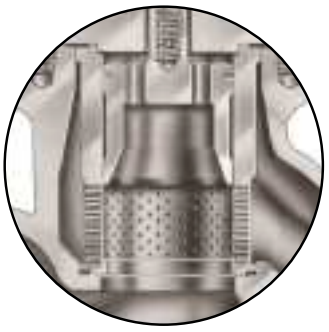
Sizes	2" through 24"
ANSI Ratings	Class 150 through 2500
ANSI Leakage	Class III, IV, V
C_V Range	10 to 2500
Temp. Range	-320˚F to 1050˚F
Materials	Carbon steel, stainless steel, other alloys
Connections	NPT, flanged, socket weld, butt weld
Actuators	Spring diaphragm, pneumatic cylinder
Applications	Auxiliary steam, boiler feedwater, condensate recirculation, deaerator pegging steam, deaerator level control, turbine bypass, and soot blower.



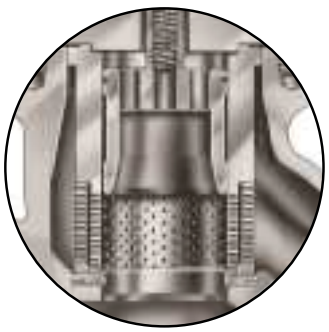
VRT Type S Trim



VRT Type C Trim



LodB Single Stage Trim



LodB Double Stage Trim

Trim Options

VRT Type S Stack Trim

Well-suited for incompressible fluids, such as feed-pump recirculation, injection valve bypass, and boiler feedwater. Engineered to provide anti-cavitation for applications with pressure drops of up to 6000 psi.

VRT Type C Cage Trim

Designed to handle high pressure drops in severe service applications for incompressible fluids. Complete cavitation protection is available for pressure drops up to 3000 psi.

Single Stage Trim

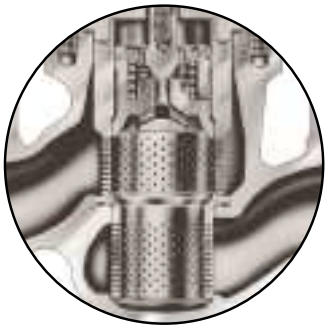
Provides excellent noise attenuation on gas or steam services and cavitation protection on liquid services.

Multi-Stage Trim

Designed for noise control on gas or steam at high pressure drop ratios. Also available for anti-cavitation on high pressure liquid applications.

Pilot Balanced Trim

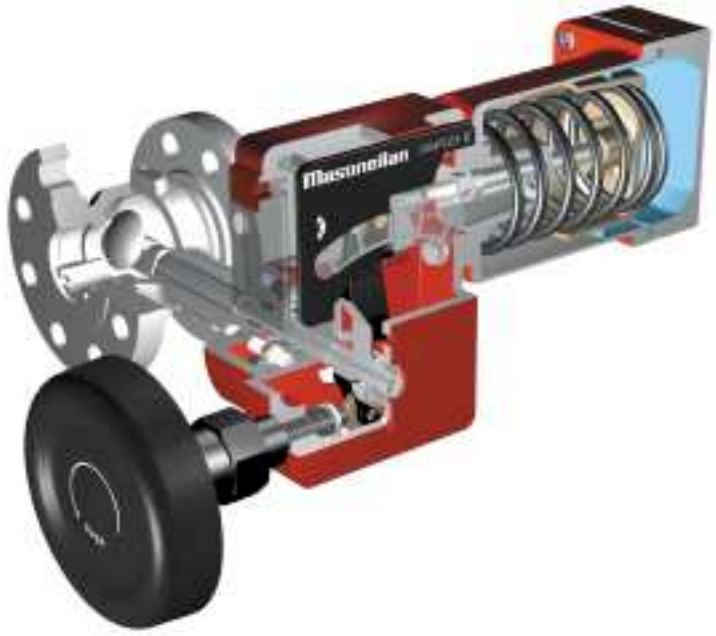
Tighter shutoff capability at high operating temperatures is achievable using a spring-loaded internal auxiliary plug construction. An optional downstream diffuser is also available for additional noise reduction.



Pilot Trim

35002 Series
CAMFLEX® Rotary Globe Valve

The CAMFLEX® is an eccentric rotary/globe valve that features high capacity and tight (metal plug/seat) shutoff. Its unique features permit product enhancements that have placed this rotary valve in the widest range of applications in the industry.



Specifications

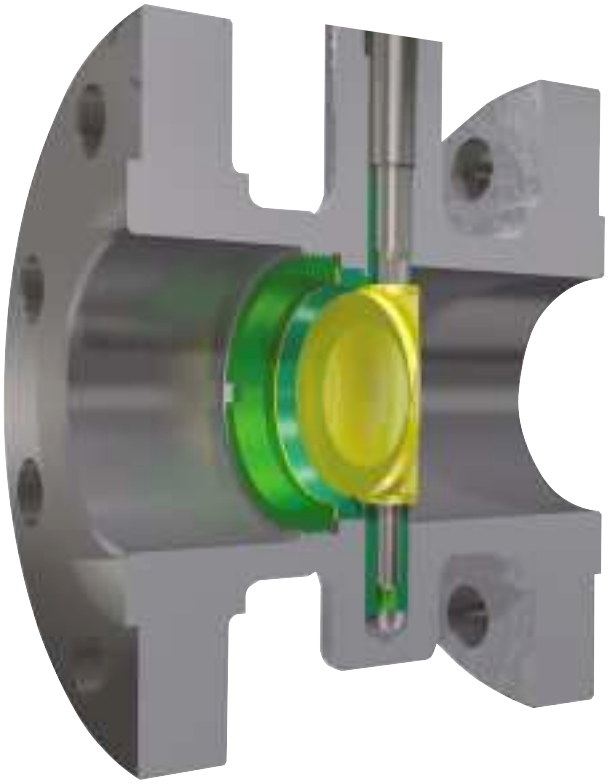
Sizes	1" through 16"
ANSI Ratings	Class 150 through 600
ANSI Leakage	Class IV, VI
C_V Range	2.8 to 3650
Temp. Range	-320˚F to 750˚F
Materials	Carbon steel, stainless steel, chrome-moly
Connections	NPT, flangeless bolted, flanged
Actuators	Spring-diaphragm, pneumatic cylinder
Applications	Heater drain, general service, low pressure steam, flash tank

30000 Series
VARIMAX® Rotary Globe Valve

The 30000 Series VARIMAX® offers globe valve performance in a rotary valve package. Its patented seating concept and ATA (adjustable travel actuator) reduces dynamic unbalanced forces and permits seven C_V adjustments.

Specifications

Sizes	2" through 16"
ANSI Ratings	Class 150 through 600
ANSI Leakage	Class IV, VI
C_V Range	20 to 48300
Temp. Range	-320˚F to 800˚F
Materials	Carbon steel, stainless steel
Connections	Flanged, flangeless
Actuators	Adjustable travel and torque spring-diaphragm
Applications	Fuel gas control



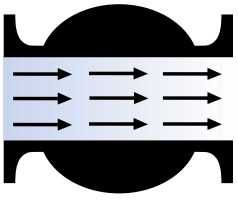
34005 Series
T-BALL® Rotary Control Valve

The 34005 Series T-BALL® is a patented low noise and anti-cavitation rotary control valve designed for both gas and liquid service. It features a full trunnion mounted ball valve with non-clogging trim and high turndown ratios.

Specifications

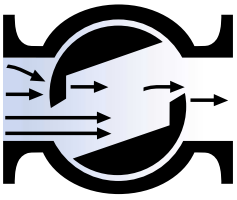
Sizes	2" through 36"
ANSI Ratings	Class 150 through 1500
ANSI Leakage	Class IV, V
C_V Range	.9 to 40,000
Temp. Range	-20˚F to 375˚F
Materials	Carbon steel, stainless steel
Connections	RF, RTJ or Weld ends
Actuators	Spring opposed scotch yoke
Applications	Fuel gas control

T-Ball Trim Options



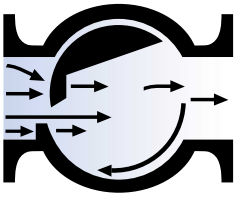
TØ Trim

Monitoring or Mild Service
No Noise Attenuation



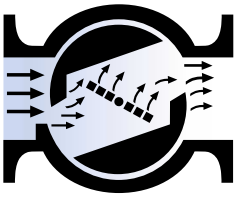
T1 Trim

General Use
Minimal Noise Attenuation



T2 Trim

Moderate to Severe Service
Medium Noise Attenuation

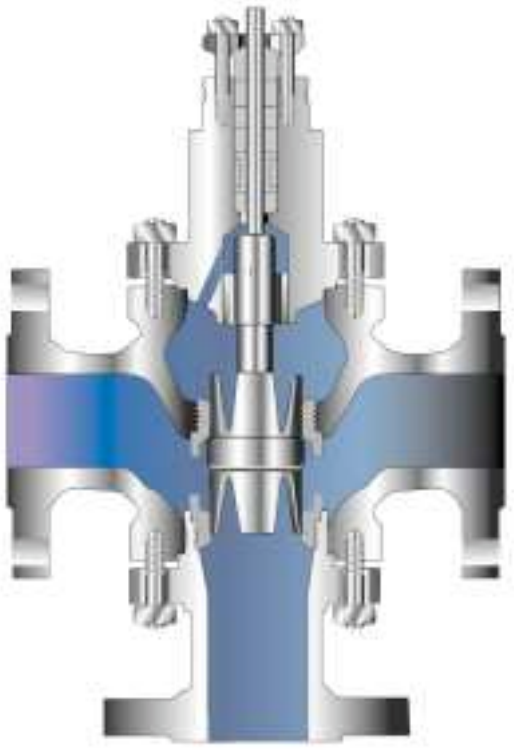


T3 Trim

Severe Service
Maximum Noise Attenuation

80000 Series
3-Way Control Valve

The 80000 Series is a three-way control valve designed for either combining or diverting applications. It is well suited for applications requiring high capacities with low pressure recovery.

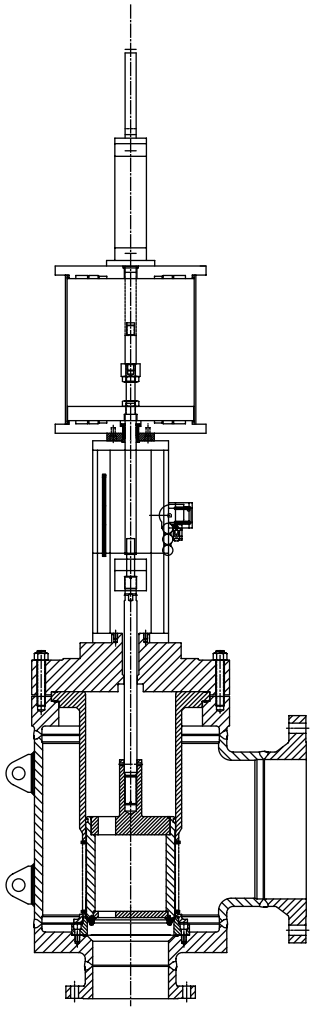


Specifications

Sizes	1" through 10"
ANSI Ratings	Class 150 through 2500
ANSI Leakage	Class II, III, IV
C_V Range	9 to 750
Temp. Range	-20˚F to 850˚F
Materials	Carbon steel, stainless steel
Connections	Flanged, socket weld, butt weld, RTJ, Threaded
Actuators	Spring-diaphragm
Applications	Heat exchangers

SE10 Series
Fabricated Angle & Globe Valves

The SE10 Series are fabricated angle or globe valves specially engineered with Lo-dB® trim for use with high flow compressible fluids and low pressure gas. It features a balanced plug design and Lo-dB noise reduction trim.



Specifications

Sizes	3/4" through 36"
ANSI Ratings	Class 150 through 600
ANSI Leakage	Class IV, V, VI
C_V Range	6500 Max.
Temp. Range	-20˚F to 300˚F
Materials	Carbon steel, stainless steel, chrome-moly, other alloys
Connections	Flanged
Actuators	Pneumatic cylinder, hydraulic
Applications	Condensate recirculation, compressor recycle, compressor bypass or surge

78200/18200 Series LINCOLNLOG® Anti-Cavitation/ Low Noise Valve

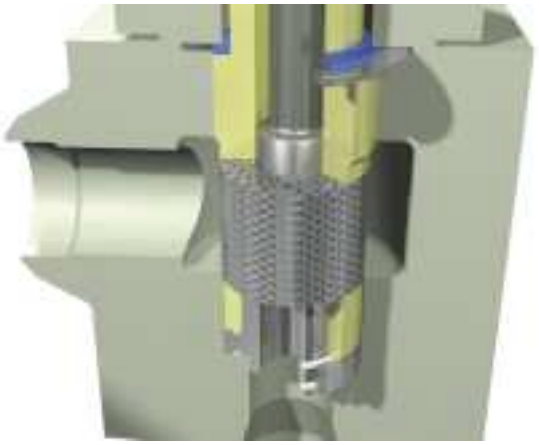
The 78200/18200 Series LINCOLNLOG® valves provide smooth and accurate capacity control of high pressure drop liquids without cavitation, erosion, vibration and high noise levels.

Specifications

Sizes	1" through 10"
Trim Constr.	Multiple stage anti-cavitation
ANSI Ratings	Class 600 through 2500
ANSI Leakage	Class V, VI
C_V Range	.4 to 135
Temp. Range	-20˚F to 500˚F
Materials	Carbon steel, stainless steel, other alloys
Connections	NPT, socket weld, butt weld, flanged
Actuators	Spring diaphragm, pneumatic cylinder
Applications	Boiler feed pump recirculation, reheater spray, boiler feedwater startup

SE20 Series
With V-LOG® Trim
Forged Angle & Globe Valves

The SE20 is a forged Lo-dB® angle or globe valve for high pressure and high temperature steam applications. The unique threaded hung cage design protects against thermal shock and maintains tight shutoff.

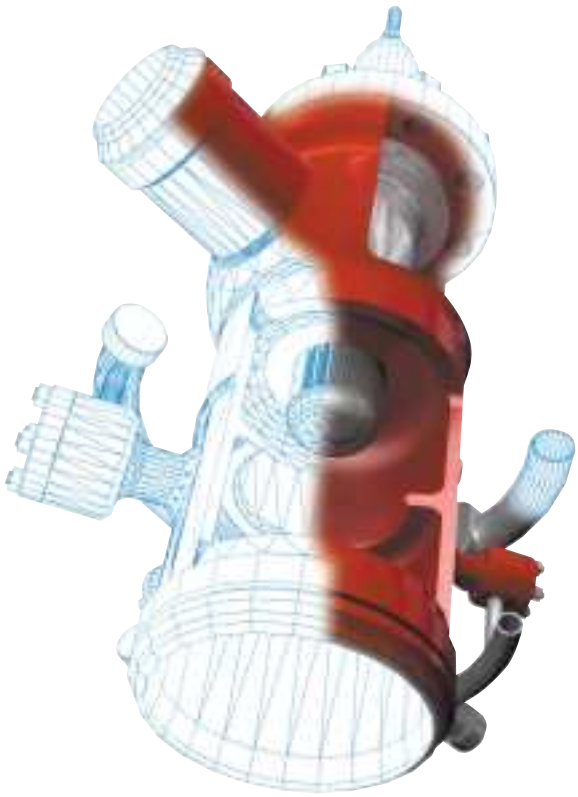


Specifications

Sizes	Up to 6" inlet x 24" outlet
ANSI Ratings	Class 1500 through 4500
ANSI Leakage	Class IV, V
Cv Range	Up to 150
Temp. Range	Up to 1050˚F
Materials	Chrome-moly / SST
Connections	Flanged on butt weld
Actuators	Spring diaphragm, pneumatic cylinder
Applications	Auxiliary steam, turbine bypass, soot blower, vents

Steamform

Employing patented fluid flow conditioning technology and a unique nozzle arrangement, Masoneilan's new and improved Steamform products easily meet today's most challenging steam conditioning applications.



Specifications

Inlet Size	3" through 16"
ANSI Ratings	Class 150 through 2500
Main Valve C_V	60-1200
Water C_V/Nozzle	0.01-5.0
Actuators	Pneumatic cylinder, Electro-hydraulic
Applications	Turbine bypass, Auxiliary Conditioning

FVP

SVI

SVI II

Smart Technology

The SVI II Digital Valve Positioner is an improvement on Masoneilan's highly successful SVI (Smart Valve Interface). The SVI II Digital Valve Positioner and PID Controller communicates locally with pushbuttons, remotely via a HART registered hand-held device, or with a graphical display from your PC using ValVue. The FVP (Fieldbus Valve Positioner) offers highly advanced control technology for pneumatically actuated valves, providing higher precision and greater flexibility. A FieldBus version of ValVue software is available.

Features

Reduced Installation and Startup Costs

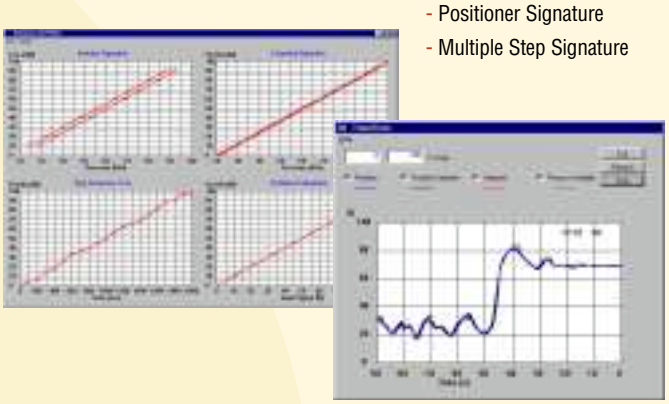
Automated configuration, calibration and tuning functions help optimize equipment setup and operation in less time. Process trend visualization enables the user to minimize adjustment with minimum interaction and do it in less time.

- Automated Configuration
- Automated Calibration
- Automated Tuning
- Process Trend Visualization

Reduced Maintenance Costs

Real-time data collection and tracking allows users to accurately monitor and predict equipment performance. Proactive measures can then be implemented to prevent further degradation.

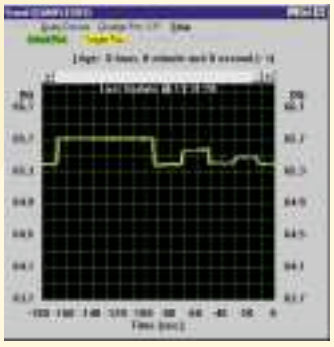
- Easy Predictive Maintenance
- Basic & Advanced Diagnostics
- Makes Process Diagnostics a Reality
- Diagnostic Capabilities
  - Standard Signature
  - Extended Actuator Signature
  - Positioner Signature
  - Multiple Step Signature



Reduced Process Variability

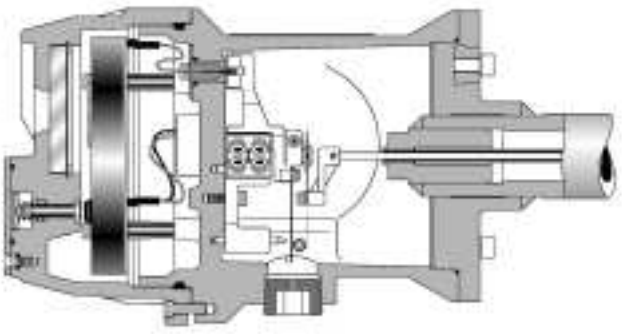
Tighter control to desired set points results in higher throughput, higher yields, improved product quality, and more efficient plant operation.

- Responds to 0.05% Step Changes
- PID Process Control Included in Positioner
- Accurate & Precise Positioning
- Custom Flow Characterization
- Split Ranging
- Trend Display / Log



12300 Digital Level Transmitter & Controller

The 12300 Digital Level Transmitter & Controller is designed for dry or wet calibration, providing superior resolution in both liquid level and specific gravity modes. Various local and remote communications methods are available, including an on-board keypad with LCD and a Windows-based software program using the HART® communications protocol.



Specifications

Range	14" through 120"
ANSI Ratings	Class 150 through 2500
Accuracy	±0.5% of Span
Hysteresis	±0.3% of Span
Repeatability	±0.2% of Span
Deadband	±0.1% of Span
Ambient Temp. Range	-40˚F to 176˚F (-40˚C to 80˚C)
Process Temp. Range	-345˚F to 840˚F (-210˚C to 450˚C)
Materials	Carbon steel, stainless steel, other alloys
Certifications	FM, CSA, and CENELEC

DRESSER
Flow Control

DFC WORLDWIDE OFFICES

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