Sempell™ Gate, Globe, and Check Valve Selection Guide

Isolation Gate Valves







Sempell Raisteam GA251 - GA253	Sempell Raisteam GA254 - GA255	Sempell Dewrance P91R	Sempell Dewrance P67 - P95	Sempell Fasani Style A & B
Applications				
Throughout a power plant including main steam systems and reheat steam systems as well as feedwater applications.	Throughout a power plant including main steam systems and reheat steam systems as well as feedwater applications.	Specifically designed for use in high pressure water and steam applications including main steam systems and reheat steam systems.	Specifically designed for use in high pressure water and steam applications, such as main steam isolation, boiler feed-pump isolation, feed heater isolation, spray water and general service.	Designed for high pressure applications in the power industry, in particular feedwater, steam lines and general isolation services.
Style				
Split Wedge	Parallel Slide	Parallel Slide -Eyelet follower optional	Parallel Slide with eyelet follower	Flexible Wedge, Parallel Slide
Sizes				
NPS 2-1/2 to 30 (DN 65 to 750)	NPS 2-1/2 to 30 (DN 65 to 750)	NPS 5 to 24 (DN 125 to 600)	NPS 5 to 24 (DN 125 to 600)	NPS 2 to 24 (DN 50 to 600)
Ratings				
Up to Class 4500 / PN 720	Up to Class 4500 / PN 720	Up to Class 2500	Up to Class 2850	Up to Class 2500
End Connections				
BWE: ASME B16.25 or ISO 9692-1	BWE: ASME B16.25 or ISO 9692-1	BWE: ASME B16.25	BWE: ASME B16.25	BWE: ASME B16.25 Flanged Ends: By Request
Temperature Ranges				
Up to 720°C (1300°F)	Up to 720°C (1300°F)	Up to 650°C (1200°F)	Up to 650°C (1200°F)	-46 to 650°C (-50.8 to 1200°F)
Standards and Regulations				
PED, DIN/EN or ASME	PED, DIN/EN or ASME	PED, DIN/EN or ASME	ASME B16.34	ASME B16.10 short pattern
Valve Body Materials				
Forged carbon steels, alloys steels and stainless steels	Forged carbon steels, alloys steels and stainless steels	Forged Alloy & Carbon Steel	Cast Alloy & Carbon Steel	Cast Alloy & Carbon Steel

- Continued -

Isolation Gate Valves (continued)







Sempell Raisteam GA251 - GA253	**Sempell Raisteam GA254 - GA255**	**Sempell Dewrance P91R**	**Sempell Dewrance P67 - P95**	**Sempell Fasani Style A & B**
Features				
• Stellited seat/wedge surface • Flexible split-wedge design • Fixed backseat • Electric and hydraulic actuators on request • Bypass-arrangements for pressure equalizing or pre-warming on request • Drain, vent, and overpressure studs on request • Special customized designs, features and materials are available	• Stellited seat/disk surface • Parallel slide or parallel plate with integral overpressure protection • Fixed backseat • Electric or hydraulic actuator on request • Bypass-arrangements for pressure equalizing or pre-warming on request • Drain, vent, and overpressure studs on request • Special customized designs, features and materials are available	• Stellited flat backseat for reliable gland sealing • External anti-rotation device for seat/disk alignment, also serves a visual position indication and travel stop in the closed position • Integral disk carrier/disk assembly ensures correct alignment and facilitates easy dismantling of internal components • Disk designed to be the 'wear element' to allow easy refurbishment and prolong seat life	• Eyelet follower providing a smooth flow path and maximum performance • Welded-in hardfaced stellited seats • Longer seat life with eyelet follower due to reduced erosion • Lower pressure drop characteristic than wedge gate valve • Minimized flow turbulence • Higher allowable seat velocity	• Available in flexible gate and parallel slide configurations • Seats are welded in • Position indicator is offered as standard • Stellite gr. 6 overlay on seat and wedge or disk; Stellite gr. 21 overlay on backseat • Standard ISO top mounting
Data Sheet: VCTDS-02215-EN Product configuration: VCOSI-02218-EN Installation and Maintenance: VCIOM-01039-EN	Data Sheet: VCTDS-02215-EN Product configuration: VCOSI-02218-EN Installation and Maintenance VCIOM-01039-EN	Data Sheet: VCTDS-01393-EN	Data Sheet: VCTDS-01391-EN	Data Sheet: VCTDS-01608-EN Product configuration Guide: VCOSI-01611-EN Installation and maintenance: VCIOM-01605-EN

Isolation Globe Valves







Sempell VA400	**Sempell VA500**	**Sempell VA510**	**Sempell Raisteam** VA250/ 6022-6025, 6032-6035	**Sempell Fasani Style A & B**
Applications				
Vents, drains, bypass systems, warm-up lines, wherever reliable leak tight performance is required.	Vents, drains, bypass systems, warm-up lines, in process control industries such as power generation, hydrocarbon production, chemical processing, and refining.	Vents, drains, bypass systems, warm-up lines, in conventional power plants.	Throughout a power plant including main steam systems and reheat steam systems as well as feedwater applications.	Main and reheat steam, feedwater isolation, and general service isolation and non-return.
Style				
T-pattern	T-pattern	T-pattern	T, Y, and A-pattern options	T and Y-pattern options
Sizes				
NPS 3/8 to 2-1/2 (DN 10 to 65)	NPS 3/8 to 2-1/2 (DN 10 to 65)	NPS 3/8 to 2-1/2 (DN 10 to 65)	NPS 2-1/2 to 26 (DN 65 to 650)	NPS 2 to 24 (DN 50 to 600) Larger sizes available
Ratings				
Class 900-2680 / PN63-500	Up to Class 2680 / PN 500	Up to Class 3600 / PN 630	Up to Class 4500 / PN 720	Up to Class 2850
End Connections				
BWE: ASME B16.25 SWE: ASME B16.11	BWE: ASME B16.25 or ISO 9692-1 SWE: ASME B16.11	BWE: DIN /ASME B16.25 or ISO 9692-1 SWE: DIN / ASME B16.11	BWE: ASME B16.25 or ISO 9692-1	BWE: ASME B16.25 or ISO 9692-1 T Type Flanges: ASME B16.5
Temperature Ranges				
-29 to 625°C (-20 to 1150°F)	Up to 620°C (1150°F)	Up to 720°C (1300°F)	Up to 650°C (1200°F)	-46 to 650°C (50.8 to 1200°F)
Standards and Regulations				
ASME B16.34 and PED	PED, EN/DIN or ASME	PED, EN/DIN or ASME	PED, DIN/EN or ASME	ASME B16.34 with wall thickness acc. to API 600
Valve Body Materials				
Alloy, Carbon Steel	Alloy, Carbon Steel, Stainless Steel	Alloy Steel, Stainless Steel, Carbon Steel	Alloy Steel, Stainless Steel, Carbon Steel	Alloy Steel, Stainless Steel, Carbon Steel
Features				
• One-piece die-forged body • Wear resistant replaceable Stellited seat ring • Limited number of components • Visual position indicator • Manual or automated • Non-rotating stem • Low pressure loss • Double bearings for low actuation forces	• Stellited seat surface • One-piece disk-stem made of corrosion resistant 17 % Cr-steel optional stellited • Loose backseat • Easy to maintain • Manual or automated • Visual position indicator • Screw-down non-return configuration available • Angle pattern available • Special customized designs, features and materials on request	• Stellited seat surface • One-piece disk-stem made of corrosion resistant 17 % Cr-steel • Loose backseat • Outside screw and yoke - non-rising handwheel • Visual position indicator • Optional high-temperature design with cooling ribs • Special customized designs, features and materials are available on request	• Seat and disk surfaces hard faced or stellited • Body and stem guiding available • Pressure seal bonnet • Electric actuator on request • Throttling disk on request • Non-return or screw-down non-return configuration on request • Special customized designs, features and materials are available	• Designed for maximum safety and flow efficiency • Face to face dimensions acc. to ASME B16.10 • Seat is welded-in • Stellite gr.6 overlay on seat and disk • Stellite gr.21 overlay on bonnet • Position indicator is offered as standard • Standard ISO top mounting
ASME Data Sheet: VCTDS-15788-EN DIN/EN Data Sheet: VCTDS-16232-EN	Product Brochure: VCPBR-13925-EN ASME Data Sheet: VCTDS-02197-EN DIN/EN Data Sheet: VCTDS-04581-EN	Product Brochure: VCPBR-13925-EN ASME Data Sheet: VCTDS-05077-EN DIN/EN Data Sheet: VCTDS-05366-EN	DIN/EN Data Sheet: VCTDS-02215-EN	DIN/EN Data Sheet: VCTDS-04565-EN

Isolation Check Valves









Sempell VR500	**Sempell Raisteam KR400 / 6042-6045**	**Sempell Fasani Style A & B**	**Sempell Dewrance F67-F95**
Applications			
All water-steam cycle applications with flow in one direction only and to protect systems that can be affected by reverse flow.	Designed to prevent a backflow in water and steam systems for all high pressure power applications.	Main steam and feedwater applications. Steam and water service requiring flow reversal prevention.	Main steam and feedwater applications. Steam and water service requiring flow reversal prevention.
Style			
Piston type check valve	Swing Check or Tilting Disk	Swing Check or Tilting Disk	Tilting Disk
Sizes			
NPS 3/8 to 2-1/2 (DN 10 to 65)	NPS 2-1/2 to 30 (DN 65 to 750)	NPS 2 to 24 (DN 50 to 600) Larger sizes available	NPS 6 to 24 (DN 150 to 600) Larger sizes available
Ratings			
Up to Class 2680 / PN 500	Up to Class 4500 / PN 700	Up to Class 2850 / PN 500	Up to Class 2850 / PN 500
End Connections			
BWE: ASME B16.25 or ISO 9692-1 SWE: ASME B16.11	BWE: ASME B16.25 or ISO 9692-1	BWE: ASME B16.25 Flanged: ASME B16.5	BWE: ASME B16.25 Flanged: ASME B16.5
Temperature Ranges			
Up to 600°C (1100°F)	Up to 720°C (1300°F)	-46 to 650°C (-50.8 to 1200°F)	-46 to 650°C (-50.8 to 1200°F)
Standards and Regulations			
PED, EN/DIN or ASME	PED, DIN/EN or ASME	ASME B16.34	ASME B16.34
Valve Body Materials			
Carbon Steel, Stainless Steel, Alloy	Carbon Steel, Stainless Steel, Alloy	Carbon Steel, Stainless Steel, Alloy	Carbon Steel, Stainless Steel, Alloy
Features			
• Stellited seat surface • Piston made of 17 % Cr-steel • Return spring for vertical installation • Separated guiding bush • Optional screw-down non-return Configuration	• One-piece block-design • Seat and disk surfaces hard faced or stellited • Swing check disk • Internal shaft without stuffing box • Tilting disk configuration on request • Minimum flow nozzle on request • Special customized designs, features and materials are available	• Unidirectional valve design • Self/quick closing with reverse flow or no flow in pipeline • In open position disk is outside the flow path providing unrestricted flow, less turbulence and pressure loss • Renewable seat is easily replaced • Designed for maximum safety and flow efficiency • Can be installed on both horizontal and vertical (upflow) piping	• Triple offset seat geometry prevents the disk slamming and provides stable disk operation with quick closing • Inclined seat geometry to minimize pressure loss and ensure positive seating on gravity alone • Disk seat is manufactured directly in the body with no welding to avoid any distortion of seat face • Removeable cover for easy access and in-line maintenance • Designed for maximum safety and flow efficiency • Can be installed on both horizontal and vertical (upflow) piping
Product Brochure: VCPBR-13925-EN Data Sheet: VCTDS-08443-EN	Data Sheet VCTDS-02217-EN Instruction Manual VCIOM-02214-EN Product Configuration Sheet VCOSI-02220-EN	Data Sheet VCTDS-04566-EN Instruction Manual VCIOM-01628-EN Product Configuration Sheet VCOSI-01618-EN	Data Sheet VCTDS-01396-EN Instruction Manual VCIOM-01422-EN

Isolation Specialty Check Valves







Sempell 802	Sempell Fasani 803 / BB	Sempell Dewrance B07-B67
Applications		
Cold reheat application. Protects the turbine from backflow with weight loaded disk or quick closing pneumatic/ hydraulic actuator.	Turbine steam extraction application. Prevents backflow after sudden load reductions or turbine trip. indicates disk opening angle.	Bled steam, extraction steam and reverse current check valves; quick close and cold reheat non-return check valves, and turbine exhaust for non-return turbine protection on steam turbines.
Style		
Swinging Disk	Swinging Disk	Tilting Disk
Sizes		
NPS 14 to NPS 32 (DN 350 to 800)	Up to NPS 66 (DN 1650)	NPS 6 to 32 (DN 150 to 800) Larger sizes available up to NPS 48
Ratings		
Up to Class 900 (PN 160)	Up to Class 1500	Class 150 to 1000 Other pressure classes available up to DN 1200
End Connections		
Welded: EN/DIN & ASME	BWE	BWE
Temperature Ranges		
Up to 510°C (950°F)	Up to 570°C (1060°F)	-30 to 100°C (-22 to 212°F)
Standards and Regulations		
ASME B16.34	ASME B16.34	ASME B16.34
Valve Body Materials		
SA217WC6	Carbon Steel, Stainless Steel, Alloy	Carbon Steel, Alloy
Features		
• Pressure sealing design • Hardfaced sealing faces at disk and body seat • Easy maintenance • Indication of control angle directly at disk lever • Actuator mounting possible on either left or right hand side • Limit switches indicate valve status • No overpressure build up in the HP turbine	• Bolted bonnet design • Vertical seat design with a large (75°) disk opening angle provides reduced pressure loss • Hard faced sealing faces at disk and body seat • Easy maintenance • Complete disk closure at no flow conditions due to offset between the seating surface and the lever • Anti-rotation device to avoid damage due to induced flow instability • Quarter turn actuators ensure safe conditions for operators	• Internal counterweight to balance disk under low load conditions • Direct deposited seats • Tilting disk design for quick closing due to lower center of gravity • Lightweight disk with minimum travel, quick closing in < 1 second • Self-draining geometry • Easy access through cover • Automatic self-closure on flow reversal • Low cost maintenance • Top mounted actuator solution
Data Sheet: VCTDS-13972-EN	ASME Data Sheet: VCTDS-02235-EN DIN/EN Data Sheet: VCTDS-02206-EN	Data Sheet: VCTDS-01396-EN Product Manual: VCIOM-01422-EN

Isolation Valves
Special Valves

Emerson designs and manufactures specialist valves to protect critical applications in the generation of steam including bled steam check valves for the protection of steam turbines; and preheater protection valves, automatic bypass protection valves, feed heater isolators and feedwater heater divertors designed to control the flow of boiler feedwater providing isolation and bypass function in the event of a tube failure.



HP preheater protection valve
Models AVS 4/5 / Raisteam 6052-6065, 6302-6325

Medium operated quick closing 3-way change over valve (inlet) and check valve (outlet) for preheater protection.

Features
- Simultaneous fast closing of two medium operated main valves controlled by a pilot valve
- Fail safe - if either electric or pneumatic supplies fail the
- valve will automatically switch over in by-pass mode
- High actuation forces due to high differential pressures on the operating piston
- Protection against unintended opening. The valves can be opened after pressure balance only
- Optional internal damping piston
- Optional external hydraulic brake

Technical Data
Size range:
AVS: DN 80 to 500 (NPS 3 to 20)
Raisteam: DN 150 to 650 (NPS 6 to 26)
Pressure/Rating:
Up to PN 500 / Class 2500
Temperature range:
Up to+ 360°C (+ 680°F)
Connection:
Butt weld ends acc. to ASME B16.25 or 1S0 9692-1
Standards and Regulations:
Acc. to PED, DIN/EN or ASME

Applications
Preheater change over and check valves protect the system in the event of a break in the high-pressure feedwater pipes.



Feedwater heater isolation valves
Model Dewrance A, W and Y

Automatic bypass valves, feed heater isolators and feedwater heater divertors designed to protect a turbine in the event of a feedwater heater tube failure.

Features
- Variety of designs including;
  Automatic bypass valves (Type A),
  Feed heater isolators (Type W) and
  Feedwater heater divertor (Type Y)
- Capable of operation in approximately 5 seconds (300 mm bore pipe) with minimum hydraulic shock
- Medium operated, motor operated and spring-loaded valves available
- Pressure seal bonnet
- External spring adjustment under system pressure
- Fail safe design

Technical Data
Size range:
DN 150 to 500 (NPS 6 to 20)
Pressure/Rating:
Class 1690 to 2260
Temperature range:
-46°C to +650°C
Connections standard:
Butt weld and flanged acc. to ASME B16.34

Applications
Designed to control the flow of boiler feedwater, providing isolation and bypass function in the event of feedwater heater tube failure.

Ancillary equipment

Designed for the safe operation and testing of your water and steam products these include high pressure test and self- sealing covers to allow testing, maintenance or servicing of pressure retaining components. They also include interlocks for pilot valves.



HP self-sealing forged cover
Model V01 / Raisteam 6091-6095

Self-sealing covers will reliably ensure isolation of vessels, pipes and pressure retaining components such as strainers. They can easily be opened to grant access for maintenance, service or revision.

Features
- Forged materials of highest quality, all in compliance with ASME and DIN standards

Technical Data
Size range:
DN 40 to 600 (NPS 1-1/2 to 24)
Pressure/Rating:
Up to PN 500 / Class 2500
Temperature:
Up to +650°C (+1200°F)
Connection:
Butt weld ends acc. to ASME B1 6.25 or ISO 9692-1
Standards and Regulations:
Acc. to PED, DIN/EN or ASME

Applications
Self-sealing covers are used wherever an easy access to a pressure-retaining component is required.



HP test pressure cap
Model V05 / Raisteam 6071-6075

The test cover is a temporary isolation device for hydrostatic testing. It provides an open pipeline during normal operation, and isolation/closure for testing which can be installed and removed within a short time.

Features
- Forged materials of highest quality, all in compliance with ASME and DIN standards
- Excellent reliability
- Low maintenance cost
- Improved performance
- Suitable for vertical or horizontal installation

Technical Data
Size range:
DN 200 to 800 (NPS 8 to 32)
Pressure/Rating:
Up to PN 700 / Class 4500
Temperature:
Up to +650°C (+1200°F)
Connection:
Butt weld ends acc. to ASME B16.25 or ISO 9692-1
Standards and Regulations:
Acc. to PED, DIN/EN or ASME

Application
Provides the facility to isolate high pressure piping without the need for permanently installed isolation valve.



Reheater isolation cast device
Model Dewrance R45-R61

Isolation device specifically designed to be installed in reheat lines to provide in-service low-pressure loss. Isolating internals can be manually installed as required to provide reliable isolation for hydrotest, steam blow and chemical cleaning of reheat section of boiler.

Features

- Minimal parts with full bore seat for optimum performance and low pressure drop
- Simple isolating closure with one jacking stud
- Pressure seal bonnet design gives maximum reliability with minimum maintenance
- No replacement parts required (other than pressure seal)
- Low cost isolating device
- Simple method of isolation with full bore, low pressure drop
- Ability to enter pipe system through cover for steam purge (chemical clean)

Technical Data

Size range:
DN 400 to 900 (NPS 16 to 36)
Pressure/Rating:
500 and 900 class
Temperature:
-46°C to +650°C
Connection:
Butt weld according to ASME Bl 6. 25

Applications

Provides the facility to isolate the reheat section of a boiler without the need for permanently installed isolation valve.



Excess pressure safety device with rupture disk
Model A6.1-A6.2

The excess-pressure safety device with rupture disk is designed to provide overpressure protection for gate valves. In the closed position, the body cavity of a gate valve can retain water. If the seat faces are closely sealed, an increase of the temperature will consequently increase the pressure within the cavity. To avoid any damage of the body/bonnet of the valve a pressure relief device is necessary.

To eliminate this risk three solutions are available:

- Entry side hole in the seat ring or in the wedge
- External equalizing pipe
- Excess-pressure safety device with rupture disk

The excess-pressure safety device with rupture disk is connected to the body cavity with a cooling pipe. In case of a pressure increase the rupture, disk will burst at a defined pressure and relieve the pressure. This safety device has the advantage that it allows the main valve to be bi-directional while the other options allow uni-directional flow only.



Interlocking systems for safety related valve configurations
Models A1-A5 / A300

These valve locks and interlocking systems enable any interlocking solutions, even complex ones. A1-A5 series and A300 series can be used together.

Features

- Models A1-A5: Valve locks with one or two keys for open and/or closed locking position
- Model A 300: Adjustable interlockings with one or more keys for different locking positions. Equipped with a coupling acc. to ISO 5210 for simple mounting on valves or gearboxes

Applications

Interlock of pilot safety valves, control valves for preheater protection valves or even extensive interlocking systems in chemical plants or refineries.

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