



Enhancing and safeguarding refining processes



Supplying a variety of critical technologies to the power industry

FARRIS ENGINEERING
TARGET ROCK
CWFC KOREA
SOLENT & PRATT

***CURTISS -
WRIGHT***

PHÖNIX ARMATUREN-WERKE
STRACK
DAUME REGELARMATUREN

INDUSTRIAL DIVISION – VALVE GROUP
A DIVERSE LINE OF PRODUCTS AND RELATED SERVICES



Decades of Power Experience



Improving plant safety, reliability and efficiency



At a Glance

Curtiss Wright Valve Group

A leader in design and manufacturing

Curtiss-Wright is a leader in designing and manufacturing highly engineered valves, pumps, electronics and related products for the commercial nuclear power industry, oil and gas processing facilities, a range of critical national defense programs, and a host of solutions for numerous other industries.

Curtiss-Wright has a history of solving tough problems that begins with a passion for understanding customer needs. Add to that unparalleled technical expertise, the highest standards of quality and a long heritage of innovative thinking. For nearly a century Curtiss-Wright has been doing things the Wright way.



At a Glance

FARRIS ENGINEERING

For over 60 years, Farris Engineering has been a leader in the design and manufacture of spring loaded and pilot operated pressure relief valves. Used as safety devices, our valves protect processes, personnel and the environment against process disruption. Farris Engineering is recognized as a pressure relief solution provider to the energy, oil & gas production, petrochemical, chemical process, defense and industrial markets worldwide.

TARGET ROCK

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CWFC KOREA

CWFC Korea is a specialized manufacturer of control valves that maintains long-term relationships with customers through its development of new products that provide advanced functionality. Through continued research and development of its products, CWFC, with its partner KPS of Korea, supplies superior quality with the most competitive pricing.

SOLENT & PRATT (S&P)

Solent & Pratt is a UK-based manufacturer of High Performance and Triple Offset Butterfly Valves which are used in severe service conditions throughout the international Process, petrochemical, power, utility (including nuclear and hydro-electric) industries.

PHÖNIX VALVE GROUP

3 brands – Phönix, Strack, Daume Regelarmaturen– a complete range of high quality first class products that guarantee long lasting safety and reliability in chemical plants, refineries, and power plants. Worldwide, we offer valves conforming to national and international design standards (DIN, ANSI, ASME etc.) in highest quality as well as technical advice, and service for complete valve packages to our customers.

PHÖNIX ARMATUREN-WERKE

Founded in 1910 as a small company, Phönix Armaturen-Werke Bregel GmbH is today a leading manufacturer of high quality specialty valves. 185 responsible and dedicated employees guarantee a permanent renewal and perfection of Phönix-products. Phönix bellows sealed globe valves have been used worldwide for over 60 years for critical media in the chemical industry und have – due to design and quality – contributed substantially to the improvement of air quality.

STRACK

Strack GmbH was founded in 1922 and has become a well-known manufacturer of high quality valves conforming to all design standards. Strack manufactures specialty valves und today uses the excellent technological capabilities of Phönix and POB for the fabrication of it's products. A staff of more than 40 valve specialists offers a complete service program (repairs, customization, on-site service) for products from Phönix, Strack, Daume Regelarmaturen and other suppliers.

DAUME REGELARMATUREN

Daume Regelarmaturen have been designed, constructed and manufactured in Hanover since 1947. The products are characterized by a construction according to customized requirements, highest quality and a longevity of products. A number of well-known clients of power stations, nuclear facilities, chemistry and refineries have gained excellent long-term experiences with Daume Regelarmaturen. Local service on commissioning and shutdown in close co-operation with our clients are within the scope of our performance.

POB

Founded in 1998, POB GmbH has latest in machining technology for the manufacturing of valves. A staff of more than 35 well-qualified and dedicated employees complements the production capacities for Phönix-, Strack- and Daume Regelarmaturen products using high performance CNC-machining equipment

Certificates and Approvals

MANAGEMENT SYSTEM

- ISO 9001:2008,
- API Q 1,
- ASME NQA 1,
- 97/23 EC PED,
- AD 2000 HP0,
- 94/9/EC ATEX

NUCLEAR APPLICATIONS

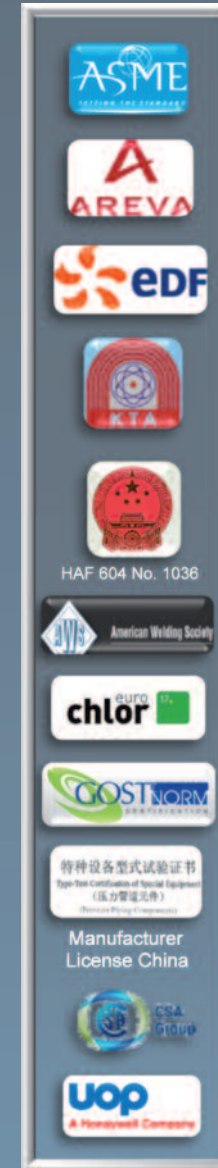
- ASME BPVC Sec III (N-Stamp), National Board VR Stamps #3 and #357,
- SNT-TC-1A Level-II Technicians (MT, PT,LT),
- AWS-CWI,
- Certified Welders to ASME Section-IX, PMI Program,
- STUK/TVO/Areva, EDF KTA 1401 HAF 604, VdTÜV 100, WB 35






INDUSTRIAL APPLICATIONS









- ASME BPVC Sec VIII Div 1 & 2, U-Stamp Design, R-Stamp,
- ASME Pressure Piping (PP), ASME Steam Boiler (S), National Board Registered,
- ASME/National Board Stamps: NV, UV, V, VR,NB,
- API 600, API 6D, ANSI N45.2, Lloyds DOT Rule 54 Appendix D,
- EPA Method 21 (Gland Emissions), TA- Luft approved,
- Fire Safe (API 607 6FA, BS 6755-2 and ISO 10497)
- AAR Class-F Registration


COUNTRY APPROVALS AND PRODUCT LINES








- GOST R / GOZ, Rostechnadzor, UOP, Euro Chlor, TPED,
- Manufacturer License China, CSQA China, TÜV Nord,
- CSA Z299 Canada, CSA N285.0 Canada







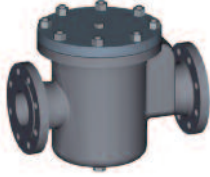










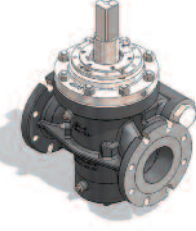
Type	2600 Series Spring Loaded Pressure Relief Valve	2700 Series Spring Loaded Pressure Relief Valve	3800 Series Pilot Operated Pressure Relief Valve	4200 Spring Loaded Safety Valve	6400 Spring Loaded Safety Valve
Design					
Description	Spring loaded Pressure Relief Valve available in conventional and balanced design. Used in Process, Power and Nuclear Applications	Spring loaded Pressure Relief Valve available in conventional and balanced design. Used in Process, Power and Nuclear Applications	Snap-Acting and Modulating Pilot Operating Pressure Relief Valve. Used in Process, Power and Nuclear Applications	Spring loaded Safety Valve. Used in Process and Power Applications	Spring loaded Safety Valve. Used in Process and Power Applications
PN	16 - 400	16 - 400	16 - 400	16 - 100	16 - 160
DN	25 - 500 inlet sizes	15 - 40 inlet sizes	25 - 200 inlet sizes standard. Larger available	32 - 150 inlet sizes standard.	25 - 100 inlet sizes standard.
Class	150 to 2500	150 to 2500	150 to 2500	150 to 600	150 to 900
NPS	1 - 20 inlet sizes	1/2 - 1 1/2 inlet sizes	1/2 - 8 inlet sizes standard, Larger available	1 1/4 - 6 inlet sizes standard	1 - 4 inlet sizes standard
Temperature rating	-268C (-450F) to 815C (1500F)	-268C (-450F) to 399C (750F)	-268C (-450F) to 232C (450F)	-28C (-20F) to 538C (1000F)	-28C (-20F) to 538C (1000F)
Body forms	Angle Pattern Body	Angle Pattern	Angle Pattern Body	Angle Pattern Body	Angle Pattern Body
Basic shell material	SA-216GR. WCB Carbon Steel. Range of other material options available	SA-351, GR CF8M St. Str. Or SA-479 Type 316 St. St. (Body) Sa-216, Gr. WCB, Carb. St. (Bonnet)	SA-216GR. WCB Carbon Steel. Range of other material options available	SA-216GR. WCB Carbon Steel.	SA-216GR. WCB Carbon Steel.
Connections	RF, RTJ, Butt Weld, High Pressure Hub, Graylock, API	MNPT, FNPT, Flanged, Socket Weld, Sanitary, Welded Nipple, Special	RF, RTJ, Butt Weld, High Pressure Hub,	RF, RTJ	RF, RTJ
Operation	Spring loaded Pressure Relief Valve available in conventional and balanced design.. Used in Process, Power and Nuclear Applications	Spring loaded Pressure Relief Valve available in conventional and balanced design.. Used in Process, Power and Nuclear Applications	Snap-acting and modulation Pilot Operated Pressure Relief Valve. Used in Process, Power and Nuclear Applications	Spring loaded Safety Valve. Used in Process and Power Applications	Spring loaded Safety Valve. Used in Process and Power Applications
Application	Gases, Vapor, Liquids and Steam	Gases, Vapor, Liquids and Steam	Gases, Vapor, Liquids and Steam	Air and Steam	Air and Steam
Approvals	ASMEI (V), III (NV), VIII (UV), API-526, US Coast Guard, PED/CE/ATEX, B51 CRN (Canada), CSQI (China), GOST-R and GGNT (Russia), 10 CFR 50 Appendix B, NCA-4000, NQA-1, N285.0	ASMEI (V), III (NV), VIII (UV), API-526, US Coast Guard, PED/CE/ATEX, B51 CRN (Canada), CSQI (China), GOST-R and GGNT (Russia), 10 CFR 50 Appendix B, NCA-4000, NQA-1, N285.0	ASMEI (V), III (NV), VIII (UV), API-526, US Coast Guard, PED/CE/ATEX, B51 CRN (Canada), CSQI (China), GOST-R and GGNT (Russia), 10 CFR 50 Appendix B, NCA-4000, NQA-1, N285.0	ASMEI (V), VIII (UV), PED/CE/ATEX, B51 CRN (Canada), CSQI (China), GOST-R and GGNT (Russia)	ASMEI (V), VIII (UV), B51 CRN (Canada), CSQI (China), GOST-R and GGNT (Russia)








Type	Solenoid Operated Isolation Valves	Solenoid Operated Control Valves	Pilot Operated Safety Valves	Direct Acting Safety Valves	Safety/Relief Valve	Pressure Regulators	Vacuum Relief Valves	Severe Service MOVs
Design								
Description	Solenoid Operated Isolation Valves for Nuclear Power Applications	Modulating Solenoid Operated Control Valves for Nuclear Power Applications	Safety Valve for Nuclear Power Applications	Safety Valve for Nuclear Power Applications	Safety and Relief Applications in Nuclear Power Plants	Process pressure regulation of Water and Gases in Nuclear Power Plant Applications	Vacuum relief protection for Nuclear Power Plant Tanks	Gate and Globe Valves for High Pressure and Severe Service Applications in Nuclear Power Plants
PN	400	400	400	250	400	400		400
DN	15 - 200	25 - 200	150 x 250	200 x 250	15 - 75 (inlet)	15 - 25	25-100	50 - 150
Class	2500	2500	2500	1500	2500	2500		2500
NPS	1/2 - 8	1 - 8	6 x 10	8 x 10	1/2 - 3 (inlet)	1/2 - 1	1 - 4	2 - 6
Temperature rating	700 F	700 F	700 F	680 F				
Body forms	Y-pattern body T-pattern body Angle pattern body	Y-pattern body	Angle Pattern body	Angle Pattern body	Angle Pattern body	Y-pattern body	Straight pattern Y-pattern body	Y-pattern body T-pattern body
Basic shell material	ASME SA-182 316/316L ASME SA-105	ASME SA-182 316/316L ASME SA-105	ASME SA-182 316/316L ASME SA-105	ASME SA-105	ASME SA-182 316/316L ASME SA-105	ASME SA-182 316/316L ASME SA-105	ASME SA-182 316/316L ASME SA-105	ASME SA-182 316/316L ASME SA-105
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends	Flanged Ends Butt weld Ends	Flanged Ends	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends
Operation	Integral solenoid operator	Modulates by integral solenoid operator controlled by separate electronic controller based on 4-20 mA demand signal	Pilot operator based on Target Rock proprietary machined metal bellows used as a pressure sensor with Optional pneumatic override.	Spring over disc. Bellville springs. Optional pneumatic override.	Spring over disc. Lifting lever. Test gag	Metal bellows Rubber Diaphragm	Spring over Disc	Motor Operator
Application	Reactor Head Vent Sampling Isolation Power Operated Relief Valve Containment Isolation	Emergency Feedwater Control Pressurizer Spray Emergency Core Cooling	Main Steam Safety Valve Main Steam Safety Relief Valve Pressurizer Safety Valve	Main Steam Safety Valve Main Steam Safety Relief Valve	Over Pressure Protection of Safety System Piping and Vessels	Safety-Related Nitrogen Accumulators Accessory Cooling Control Room Habitability	Safety Related Storage Tanks with Nitrogen Blankets	Reactor Coolant Emergency Depressurization Systems Emergency Core Cooling Systems
Approvals	ASME Section III ASME QME-1 IEEE 323/334/382	ASME Section III ASME QME-1 IEEE 323/334/382	ASME Section III ASME National Board	ASME Section III ASME National Board ASME QME-1 IEEE 323/334/382	ASME Section III ASME National Board ASME QME-1	ASME Section III	ASME Section III ASME National Board	ASME Section III


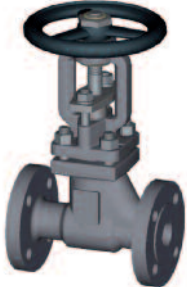

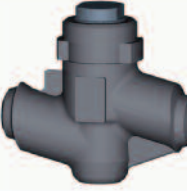



Type	TOSV Butterfly valve	TOSV Double Block & Bleed Butterfly valve	T-Series Butterfly valve	R-Series Butterfly valve	E-Series Butterfly valve	Control Butterfly valve
Design						
Description	Triple Offset Metal Seated Butterfly valves	Triple Offset Metal Seated Twin Disk Double Isolation (DB&B) Butterfly valve	Double Offset PTFE Seated Butterfly valves	Double Offset Rubber Seated Butterfly valves	Double Offset Rubber Seated, Ebonite Lined Butterfly valves	Double or Triple Offset Butterfly valves
PN	16 - 250	16 - 250	16 - 40	16 - 40	16	As TOSV, T, R & E Series
DN	50 - 2100	50 - 1200	80 - 1200	2 - 138	50 - 2100	As TOSV, T, R & E Series
Class	150 - 1500	150 - 1500		150 - 300	150	As TOSV, T, R & E Series
NPS	2 - 84	2 - 48		2 - 138	2 - 84	As TOSV, T, R & E Series
Temperature rating	Up to 1292°F (700°C) are possible	Up to 800°F (425°C)	Up to 400°F (204°C)	Up to 400°F (204°C)	Up to 200°F (90°C)	As TOSV, T, R & E Series
Body forms	Butterfly	Butterfly	Butterfly	Butterfly	Butterfly	Butterfly
Basic shell material	Carbon steel Stainless steel Duplex stainless steels 6 Mo stainless steel Bronze Monel Incoloy Hastelloy B and C Titanium	Carbon steel Stainless steel Duplex stainless steels 6 Mo stainless steel Bronze Monel Incoloy Hastelloy B and C Titanium	Carbon steel Stainless steel Duplex stainless steels 6 Mo stainless steel Bronze Monel Incoloy Hastelloy B and C Titanium	Carbon steel Stainless steel Duplex stainless steels 6 Mo stainless steel Bronze Monel Incoloy Hastelloy B and C Titanium	Carbon steel Stainless steel Duplex stainless steels 6 Mo stainless steel Bronze Monel Incoloy Hastelloy B and C Titanium	Carbon steel Stainless steel Duplex stainless steels 6 Mo stainless steel Bronze Monel Incoloy Hastelloy B and C Titanium
Connections	Wafer, Lugged, Double Flanged & B16.10 face to face	Double Flanged B16.10 face to face	Wafer, Lugged, Double Flanged	Wafer, Lugged, Double Flanged	Wafer, Lugged, Double Flanged	As TOSV, T, R & E Series
Operation	Manual Gearbox, Pneumatic, Hydraulic, Electro-Hydraulic, Electric	Manual Gearbox, Pneumatic, Hydraulic, Electro-Hydraulic, Electric	Manual Gearbox, Pneumatic, Hydraulic, Electro-Hydraulic, Electric	Manual Gearbox, Pneumatic, Hydraulic, Electro-Hydraulic, Electric	Manual Gearbox, Pneumatic, Hydraulic, Electro-Hydraulic, Electric	Manual Gearbox, Pneumatic, Hydraulic, Electro-Hydraulic, Electric
Application	Oil & Gas hydrocarbon gas and liquid lines, Flare gas, Water Filtration, Metering, Fire Systems, Ballast Handling Steam, All metal construction ensures inherently fire safe design	Oil & Gas hydrocarbon gas and liquid lines, Flare gas, Water Filtration, Metering, Fire Systems, Ballast Handling, Steam Isolation, All metal construction ensures inherently fire safe design	Oil & Gas hydrocarbon gas and liquid lines, Chemical, (PTFE resistant to most chemicals) Offshore in fire mains and produced water, Can be fitted with fire safe seat - Inconel 625 secondary seal	Nuclear & Fossil Power Seawater Cooling water	Nuclear & Fossil Power Seawater	As TOSV, T, R & E Series
Approvals	PED (Europe) Firesafe to BS 6755 Pt.2, API 607 4th edition and API 6FA	PED (Europe) Firesafe to BS 6755 Pt.2, API 607 4th edition and API 6FA	PED (Europe) Certified Firesafe to BS 6755 Part 2	PED (Europe), Certified firesafe by Lloyds to DOT Rule 54 App.D for use in fire water mains offshore and marine installations.	PED (Europe)	As TOSV, T, R & E Series

Type	350	350 EC.1 and EC.2	350 EC.4 and EC.5	390	365	355 HS	899 HS
Design							
Description	Globe valve with encapsulated superlong bellows and emergency gland	Globe valve for chlorine service with encapsulated superlong bellows in the bonnet	Globe valve for chlorine service with encapsulated superlong bellows in the body and one piece bonnet	Globe valve with long flushed bellows and emergency gland	Globe valve with flushed bellows and emergency gland	Globe valve with encapsulated superlong bellows and emergency gland	Excess flow valve (pipe break valve)
PN	10 - 250	40	40	10 - 40	10 - 40	325	325
DN	15 - 500	15 - 150	15 - 350	15 - 150	15 - 100	6 - 120	6 - 120
Class	150 - 1500	300	300	150 - 300	150 - 300		
NPS	1/2 - 20	1/2 - 6	1/2 - 14	1/2 - 6	1/2 - 4		
Temperature rating	-196°C up to +800°C	-40°C up to +120°C	-40°C up to +120°C	-196°C up to +450°C	-196°C up to +450°C	-196°C up to +800°C	-196°C up to +800°C
Body forms	Straight pattern body Y-pattern body Angle pattern body	Straight pattern body Angle pattern body	Straight pattern body	Straight pattern body Y-pattern body Angle pattern body	Straight pattern body	Angle pattern body	Straight pattern body
Basic shell material	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, Stainless steel, Hastelloy, Other special alloys	Low temperature carbon steel, Carbon steel, Stainless steel, Hastelloy, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Carbon steel, High temperature carbon steel	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements
Operation	Handwheel, Lever Chainwheel, Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator, Electric actuator	Flanged ends Other requirements	Flanged ends Other requirements	Handwheel, Lever Chainwheel, Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator, Electric actuator	Handwheel, Lever Chainwheel, Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator, Electric actuator	Threaded flanges and other requirements	Threaded flanges and other requirements
Application	For highly toxic, aggressive, inflammable, volatile and expensive media under consideration of the material resistance	For liquid chlorine service and similar dangerous, toxic, aggressive and corrosive media (for example phosgene)	For liquid chlorine service and similar dangerous, toxic, aggressive and corrosive media (for example phosgene)	For highly toxic, aggressive, inflammable, volatile, polymerising and crystallising media under consideration of the material resistance	acc. to TA-Luft (German "Clean Air Act"), especially for media which are dangerous for environment and ground water, for additional energy saving and reduction of service costs	High pressure valves for the high pressure synthesis in the chemical industry (e.g. in urea and ammonia plant, hydrocarbons et.) under consideration of the material resistance	High pressure valves for the high pressure synthesis in the chemical industry (e.g. in urea and ammonia plant, hydrocarbons et.) under consideration of the material resistance
Approvals	Fire safe VdTÜV Prototype WB 35		Euro Chlor approval 13/04 DGM 29823805.5	Fire safe VdTÜV Prototype		DGM 29809524.6	








Type	834	359	350 EC.8 and EC.9	370/320	374/324	420	820	829
Design								
Description	Gate valve with encapsulated superlong bellows and emergency gland	Control valve with encapsulated superlong bellows and emergency gland	Control valve for chlorine service with encapsulated superlong bellows in the body and bonnet	Change-Over-Valve with flushed superlong bellows and emergency gland or with stuffing box seal	3-Way-Valve with encapsulated superlong bellows and emergency gland or with stuffing box seal	Check valve spring loaded option	Strainer basket type with extremely huge filtrating area and low pressure drop	Strainer Y- type
PN	10 - 160	10 - 250	40	10 - 250	10 - 160	10 - 160	10 - 40	10 - 40
DN	15 - 800	15 - 250	15 - 350	15 - 500	15 - 500	15 - 250	15 - 250	15 - 150
Class	150 - 900	150 - 1500	300	150 - 1500	150 - 900	150 - 900	150 - 300	150 - 300
NPS	1/2 - 30	1/2 - 10	1/2 - 14	1/2 - 20	1/2 - 20	1/2 - 10	1/2 - 10	1/2 - 6
Temperature rating	-196°C up to +800°C	-196°C up to +650°C	-40°C up to +120°C	-196°C up to +650°C	-196°C up to +650°C	-196°C up to +450°C	-196°C up to +450°C	-196°C up to +450°C
Body forms	Straight pattern body	Straight pattern body Angle pattern body	Straight pattern body	Three-way-type		Straight pattern body Y-pattern Angle pattern body	Straight pattern body	Y-pattern
Basic shell material	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, Stainless steel, Hastelloy, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Other special alloys
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements
Operation	Handwheel Chainwheel Gear operator Electric actuator	Handwheel, Chainwheel Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Pneumatic piston actuator Pneumatic diaphragm actuator	Handwheel, Chainwheel Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel, Chainwheel Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator			
Application	For highly toxic, aggressive, inflammable, volatile and expensive media under consideration of the material resistance	For highly toxic, aggressive, inflammable, volatile and expensive media under consideration of the material resistance	For liquid chlorine service and similar dangerous, toxic, aggressive and corrosive media (for example phosgene)	Switch-over valve or in combination with safety valves for toxic, aggressive and inflammable gases and liquids, boiler and cooling water, saturated steam etc., under consideration of the material resistance	Regulating valve or mixing valve for toxic, aggressive and inflammable gases and liquids, boiler and cooling water, saturated steam etc., under consideration of the material resistance	For aggressive gases and liquids as far as these are not toxic, inflammable or detrimental to environment under consideration of the material resistance	In front of measuring equipment to protect sensitive valves, pumps, aggregates and similar plant components under consideration of the material resistance	In front of measuring equipment to protect sensitive valves, pumps, aggregates and similar plant components under consideration of the material resistance
Approvals	US Patent US 6.202.984 B1 Fire safe	Fire safe VdTÜV Prototype	Euro Chlor approval 13/05			VdTÜV Prototype		








Type	925	919	941	935	309.40 and 309.50	440-Refrigerant valve	385-Refrigerant valve	S57-Coke Oven Gas valve
Design								
Description	Globe and control valve for cryogenic service with encapsulated superlong bellows and emergency gland with extractable trim and displacer	Globe and control valve for cryogenic service with stuffing box seal, extractable trim and displacer	Globe and control valve for cryogenic service with encapsulated superlong bellows and emergency gland, long isolation distance	Globe and control valve for cryogenic service with stuffing box seal and long isolation distance	Tanker valve (POV) Combination of a pneumatically operated quickclosing valve with bellows and a spring-loaded ball check valve	Globe and control valve with stuffing box seal, inside rising stem, in accordance with refrigerant valves (DIN 3158)	Globe and control valve with flushed bellows and emergency gland, inside rising stem (comparable with refrigerant valves - DIN 3158)	Shut Off Cock and Reversing Cock (3-way-cock) with lubrication system, approved stem sealing system in accordance with TA-Luft
PN	10 - 40	10 - 40	10 - 40	10 - 40	25	10 - 40	10 - 40	10 - 40
DN	15 - 150	15 - 150	15 - 150	15 - 150	40	15 - 150	15 - 400	65 - 300
Class	150 - 300	150 - 300	150 - 300	150 - 300	150	150 - 300	150 - 300	150 - 300
NPS	1/2 - 6	1/2 - 6	1/2 - 6	1/2 - 6	1 1/2	1/2 - 6	1/2 - 16	2 1/2 - 12
Temperature rating	-260°C up to +400°C	-260°C up to +400°C	-260°C up to +400°C	-260°C up to +400°C	-50°C up to +70°C	-196°C up to +450°C	-196°C up to +450°C	-20°C up to +800°C
Body forms	Straight pattern body Y-pattern Angle pattern body	Straight pattern body Y-pattern Angle pattern body	Straight pattern body Y-pattern Angle pattern body	Straight pattern body Y-pattern Angle pattern body	Angle pattern type	Straight pattern body Y-pattern Angle pattern body	Straight pattern body Y-pattern Angle pattern body	Straight pattern body
Basic shell material	Stainless steel Aluminum body	Stainless steel Aluminum body	Stainless steel Aluminum body	Stainless steel Aluminum body	Low temperature carbon steel, Stainless steel other materials on request	Low temperature carbon steel, Carbon steel Stainless steel Hastelloy	Low temperature carbon steel, Carbon steel Stainless steel Hastelloy	Founding - Spheroidal graphite cast irons for example: EN-GJS-400-15 (GGG-40) A 536 Grade 60-40-18
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Threaded ends Other requirements
Operation	Handwheel, Chainwheel Gear operator, Pneumatic piston actuator, Pneumatic diaphragm actuator Electric actuator	Handwheel, Chainwheel Gear operator, Pneumatic piston actuator, Pneumatic diaphragm actuator Electric actuator	Handwheel, Chainwheel Gear operator, Pneumatic piston actuator, Pneumatic diaphragm actuator Electric actuator	Handwheel, Chainwheel Gear operator, Pneumatic piston actuator, Pneumatic diaphragm actuator Electric actuator	Pneumatic diaphragm actuator	Handwheel, Chainwheel Gear operator, Pneumatic piston actuator, Pneumatic diaphragm actuator Electric actuator	Handwheel, Chainwheel Gear operator, Pneumatic piston actuator, Pneumatic diaphragm actuator Electric actuator	Wrench Lever special coke oven plant operation system
Application	For cryogenic use e.g. oxygen, nitrogen and similar liquids, gases and vapours and extreme low service temperatures, for cold box installation	For cryogenic use e.g. oxygen, nitrogen and similar liquids, gases and vapours and extreme low service temperatures, for cold box installation	For cryogenic use e.g. oxygen, nitrogen and similar liquids, gases and vapours and extreme low service temperatures, for cold box installation	For cryogenic use e.g. oxygen, nitrogen and similar liquids, gases and vapours and extreme low service temperatures, for cold box installation	acc. to DIN 26028, CEFIC UN 14, GGV Annex XI with ref. for railway tankers, ISO-Container (309.50) and trucks top loading for extremely dangerous media, e.g. chlorine, hydrofluoric	Especially for media which are not dangerous for environment and cold service media. Operation components protected against icing.	acc. to TA-Luft (German "Clean Air Act"), especially for media which are dangerous for environment and cold service media. Operation components protected against icing.	Especially for coke oven gas in coke oven plants, battery heating system
Approvals					Prototype 06D2, BAM approved, Euro Chlor approval 96/01; 96/02; 96/03; 96/07, EG 2010/35 (TPED) Prototype testes DIN EN 14432			Stem sealing system approved in accordance with VDI 2440/ TA-Luft








Type	661	506/525	662	570/535	580/582/584	664	587
Design							
Description	Globe valve with stuffing box seal, coupled divided stem, integral seat	Globe valve with stuffing box seal, coupled divided stem, renewable disc and seat	Globe valve with encapsulated bellows and emergency gland, coupled divided stem, integral seat	Globe valve with encapsulated bellows and emergency gland, coupled divided stem, renewable disc and seat	Pressure gauge valve with stuffing box seal, vent screw (DIN 16270), test connection (DIN 16271), blocking test connection (DIN 16272)	Pressure gauge valve with encapsulated bellows and emergency gland, vent screw, coupled divided stem, integral seat	Pressure gauge valve with test connection, stuffing box seal, coupled divided stem, renewable disc and seat
PN	160	400/630	100	250 / 400	400	100	400
DN	8	8	8	8	3,5	3,5	3,5
Class	900	2500	600	1500 / 2500	2500	600	2500
NPS	1/4	1/4	1/4	1/4	1/8	1/8	1/8
Temperature rating	-196°C up to +450°C	-196°C up to +650°C	-196°C up to +450°C	-196°C up to +650°C	-40°C up to +120°C	-196°C up to +450°C	-196°C up to +450°C
Body forms	Straight pattern body Angle pattern body	Straight pattern body Angle pattern body	Straight pattern body Angle pattern body	Straight pattern body Angle pattern body	Straight pattern body	Straight pattern body Angle pattern body	Straight pattern body
Basic shell material	Carbon steel Stainless steel Other special alloys	Low temperature carbon steel Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Carbon steel Stainless steel Other special alloys	Low temperature carbon steel Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel, Titanium, Other special alloys	Carbon steel Stainless steel Brass Other special alloys	Carbon steel Stainless steel Other special alloys	Low temperature carbon steel Carbon steel, Stainless steel High chromium stainless steel Hastelloy, Inconel Pure nickel Titanium Other special alloys
Connections	Butt welding ends Socket welding ends Threaded ends Flanged ends Other requirements	Butt welding ends Socket welding ends Threaded ends Flanged ends Other requirements	Butt welding ends Socket welding ends Threaded ends Flanged ends Other requirements	Butt welding ends Socket welding ends Threaded ends Flanged ends Other requirements	Inlet: Male plug G 1/2 acc. to DIN EN 837-1 Outlet: Male plug G 1/2-LH with adjusting nut G 1/2 (form A) or female G 1/2 (form B), Test: Male plug M 20x1,5	Inlet: Butt and socket welding ends, threaded ends, Outlet: Male plug G 1/2-LH with adjusting nut G 1/2 acc. to DIN 16283 Test: Male plug M 20x1,5	Inlet: Butt and socket welding ends, threaded ends, Outlet: Male plug G 1/2-LH with adjusting nut G 1/2 acc. to DIN 16283 Test: Male plug M 20x1,5
Operation	Handwheel T-handle Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel T-handle Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel T-handle Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel T-handle Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel	Handwheel T-handle	Handwheel T-handle
Application	For liquids, gases and vapours under consideration of the material resistance, also be used as first interception valve	For liquids, gases and vapours under consideration of the material resistance, also be used as first interception valve	For highly toxic, aggressive, inflammable, volatile and expensive media under consideration of the material resistance, also be used as first interception valve	For highly toxic, aggressive, inflammable, volatile and expensive media under consideration of the material resistance, also be used as first interception valve	For liquids, gases and vapours under consideration of the material resistance	For highly toxic, aggressive, inflammable, volatile and expensive media under consideration of the material resistance	For liquids, gases and vapours under consideration of the material resistance
Approvals		VdTÜV approved in accordance with WB 35		VdTÜV approved in accordance with WB 35, DGM 297 21 782.8			VdTÜV approved in accordance with WB 35

Type	S 20 / S 24	S 04 / S 03	S 21	S 27	S 29	S 02	S 17
Design							
Description	Globe valve with stuffing seal and rotating or non rotating, rising stem	Gate valve with stuffing seal and non rotating, rising stem	Globe valve with integrated stuffing seal in the body, non rotating and rising stem	Piston Check valve spring loaded option	Strainer	Gate valve API 600	Gate valve with stuffing box seal
PN	10 - 160	10 - 160	630	630	630		16 - 400
DN	15 - 300	50 - 600	10 - 50	10 - 65	10 - 250		15 - 50
Class	150 - 2500	150 - 2500	4500	4500	4500	150 - 2500	150 - 2500
NPS	1/2 - 18	2 - 40	1/2 - 2 1/2	1/2 - 2 1/2	1/2 - 10	2 - 48	1/2 - 2
Temperature rating	-196°C up to +650°C	-196°C up to +800°C	-196°C up to +650°C	-196°C up to +650°C	-196°C up to +650°C	-196°C up to +650°C	-196°C up to +650°C
Body forms	Straight pattern body Y-pattern body Angle pattern body	Circular and flat types Straight pattern body	Straight pattern body	Straight pattern body	Straight pattern body Y-pattern body	Straight pattern body	Straight pattern body
Basic shell material	Low temperature carbon steel Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel Other special alloys	Low and high temp. carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel Titanium, Monel, 6Mo Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel Other special alloys	Low temperature carbon steel, Carbon steel, High temperature carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy, Inconel, Pure nickel Other special alloys
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends	Flanged ends Butt welding ends Socket welding ends Other requirements
Operation	Handwheel, Lever Chainwheel, Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel, Lever Chainwheel, Gear operator Electric actuator, Pneumatic Piston actuator	Handwheel Chainwheel Pneumatic piston actuator Electric actuator			Handwheel, Lever Chainwheel, Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel Electric actuator
Application	For gases and liquids as well as boiler and cooling water, saturated steam and similar under consideration of the materials resistance	For gases and liquids as well as boiler and cooling water, saturated steam and similar under consideration of the materials resistance	High pressure and temperature service in power plants For non aggressive liquids, gases and vapours	High pressure and temperature service in power plants For non aggressive liquids, gases and vapours	In front of measuring equipment to protect sensitive valves, pumps, aggregates and similar plant components under consideration of the material resistance	For gases and liquids as well as boiler and cooling water, saturated steam and similar under consideration of the materials resistance refining and chemical processes	Chemical- and petrochemical plants
Approvals	Fire safe, VdTÜV-Prototype	Fire safe	VdTÜV-Prototype	VdTÜV-Prototype		API 6D, Fire safe	Fire safe

Type	S 22	S 15	S 16	S 601 & S 603	S 72	S 70 / S 25	S 40
Design							
Description	Forged - high pressure Globe valve with stuffing box seal and pressure seal bonnet	Forged - high pressure Globe valve with stuffing box seal and pressure seal bonnet	Forged - high pressure Gate valve with stuffing box seal and bolted bonnet	Forged - high pressure Preheater valve with pressure sealed bonnet	Forged - high pressure Swing check valve with pressure sealed bonnet	Check valve	Bottom valve
PN	160 - 630	160 - 630	160 - 400	160 - 400	160 - 400	160 - 100	10 - 40
DN	50 - 250	50 - 600	50 - 600	150 - 600	50 - 600	50 - 500	15 - 250
Class	900 - 4500	900 - 4500	900 - 4500	900 - 4500	900 - 4500	150 - 2500	150 - 300
NPS	2 - 12	2 - 24	2 - 24	2 - 24	2 - 24	2 - 40	1/2 - 10
Temperature rating	-196°C up to +650°C	-196°C up to +650°C	-196°C up to +650°C	up to +550°C	-196°C up to +650°C	-196°C up to +650°C	-196°C up to +650°C
Body forms	Straight pattern body Y-pattern body Angle pattern body	Straight pattern body	Straight pattern body	Quick Closing 3-way valve and T- or Angel Quick Closing Check valve	Straight pattern body	Swing and Piston check types	Disc opens into tank and opens into valve
Basic shell material	Low temperature carbon steel Carbon steel, High tempera- ture carbon steel, Stainless steel, High temperature stain- less steel, High chromium stainless steel, Hastelloy Inconel, Pure nickel Other special alloys	Low temperature carbon steel Carbon steel, High tempera- ture carbon steel, Stainless steel, High temperature stain- less steel, High chromium stainless steel, Hastelloy Inconel, Pure nickel Other special alloys	Low temperature carbon steel Carbon steel, High tempera- ture carbon steel, Stainless steel, High temperature stain- less steel, High chromium stainless steel, Hastelloy Inconel, Pure nickel Other special alloys	Carbon steel High temperature carbon steel	Low temperature carbon steel Carbon steel, High tempera- ture carbon steel, Stainless steel, High temperature stain- less steel, High chromium stainless steel, Hastelloy Inconel, Pure nickel Other special alloys	Low and high temp. carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel Hastelloy, Inconel, Pure nickel Titanium, Monel, 6Mo Other special alloys	Low and high temp. carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel Hastelloy, Inconel, Pure nickel Titanium, Monel, 6Mo Other special alloys
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Butt welding ends	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Other requirements	Flanged ends Other requirements
Operation	Handwheel, Lever Chainwheel, Gear operator Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator	Handwheel Lever Chainwheel Gear operator Electric actuator	Handwheel Lever Chainwheel Gear operator Electric actuator				Handwheel Chainwheel Pneumatic piston actuator Pneumatic diaphragm actuator Electric actuator
Application	Chemical plants, petrochemical plants and offshore power plants, including the new generation of power plants with temperatures up to 650°C	Chemical plants, petrochemical plants and offshore power plants, including the new generation of power plants with temperatures up to 650°C	Chemical plants, petrochemical plants and offshore	power plants	Chemical plants, petrochemical plants and offshore power plants, including the new generation of power plants with temperatures up to 650°C	High demanding valves for spe- cial and dangerous services	Chemical plants, petrochemical plants
Approvals						API 6D	

Type	S 50	S 51	S 97 / S 98	S 96	S 06		
Design							
Description	Lift plug valve, non-lubricated	Three way lift plug valve special design, non lubricated	Globe and check valves for HF-service	Gate valve for HF-service	Flat plate gate valve with special seat rings	TA-LUFT - special services Gate and globe valves with stuffing box packing with additional spring loading	Repairing and services Own and external gate, globe and check valves
PN	10 - 160	10 - 100	10 - 250	10 - 250	16 - 40		10 - 400
DN	15 - 500	25 - 300	15 - 350	15 - 350	50 - 350		15 - 800
Class	300 - 1500	300	300 - 2500	300 - 2500			150 - 2500
NPS	1/2 - 20	1 - 12	1/2 - 12	1/2 - 12			1/2 - 32
Temperature rating	-196°C up to +800°C	-196°C up to +650°C	-10°C up to +450°C	-10°C up to +450°C	-120°C up to +450°C	-120°C up to +650°C	
Body forms	Straight pattern body	Three way and four way design	Straight pattern body Y-pattern body Angle pattern body	Straight pattern body	Flat type	Springs on both packing stud bolts (decentralized)	
Basic shell material	Low and high temp. carbon steel, Stainless steel High temperature stainless steel, High chromium stainless steel, Hastelloy Inconel Pure nickel Titanium Monel 6Mo Other special alloys	Low temperature carbon steel Carbon steel, High temperature carbon steel, Stainless steel, High chromium stainless steel, High chromium stainless steel Hastelloy Inconel Pure nickel Titanium Other special alloys	Cast carbon steel combination with monel and other special alloys	Cast carbon steel combination with monel and other special alloys	Carbon steel, Low and high temp. carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel, Hastelloy Inconel Pure nickel Monel 6Mo Other special alloys	All kinds of materials	Carbon steel, Low and high temp. carbon steel, Stainless steel, High temperature stainless steel, High chromium stainless steel Hastelloy Inconel Pure nickel Monel 6Mo Other special alloys
Connections	Flanged ends Butt welding ends Socket welding ends Other requirements	Flanged ends Butt welding ends Other requirements	Flanged ends Butt welding ends Socket welding ends Other requirements	Flanged ends Butt welding ends Socket welding ends Other requirements	Flanged ends		Flanged ends Butt welding ends Socket welding ends Other requirements
Operation	Handwheel and lever or automatic mechanism with Pneumatic- and electric actuators	Handwheel and lever or automatic mechanism with Pneumatic- and electric actuators	Handwheel, Pneumatic- and electric actuators	Handwheel, Pneumatic- and electric actuators	Handwheel, Gear operator Pneumatic- and electric actuators		Handwheel, lever, Electric-, hydraulic- and pneumatic operators
Application	Valves for special services, abrasive, synthetic media and Off-Shore	High demanding valves for special services abrasive, synthetic media	Alkylation plants	Alkylation plants	Pipeline		All kind of plants
Approvals			UOP approved TA-Luft approved	UOP approved TA-Luft approved			

Type	189 + VKR	189 + 900	187-6	50-2A	50-2A	186-6	
Design							
Description	Steam conditioning valve	Steam conditioning valve	distribution and mixing Three-Way control valve	natural gas control valve	oxygen control valve	control valve	Repairing and services own and external valves
PN	10 - 500	10 - 500	10 - 500	10 - 160	10 - 160	10 - 160	10 - 500
DN	15 - 600	15 - 600	15 - 600	15 - 600	15 - 600	15 - 600	15 - 600
Class	150 - 2500	150 - 2500	150 - 2500	150 - 900		150 - 900	150 - 2500
NPS	1/2 - 24	1/2 - 24	1/2 - 24	1/2 - 24		1/2 - 24	1/2 - 24
Temperature rating	-60°C up to +650°C	-60°C up to +650°C	-60°C up to +540°C	-10°C up to +200°C	-10°C up to +60°C	-60°C up to +450°C	
Body forms	Straight pattern body and Angle pattern body	Straight pattern body and Angle pattern body	Three way	Straight pattern body and	Straight pattern body and	Straight pattern body and	
Basic shell material	Cast or Forged Carbon steel, Low and high temp., Cast or Forged carbon steel, Cast or Forged Stainless, steel High chromium Cast or Forged stainless steel	Cast or Forged Carbon steel, Low and high temp., Cast or Forged carbon steel, Cast or Forged Stainless, steel High chromium Cast or Forged stainless steel	Cast Carbon steel Low and high temp. Cast carbon steel Cast Stainless steel High chromium Cast stainless steel	Cast Carbon steel Low and high temp. Cast carbon steel Cast Stainless steel High chromium Cast stainless steel	Cast Carbon steel Low and high temp. Cast carbon steel Cast Stainless steel High chromium Cast stainless steel	Cast Carbon steel Low and high temp. Cast carbon steel Cast Stainless steel High chromium Cast stainless steel	Cast or Forged Carbon steel Low and high temp. Cast or Forged carbon steel Cast or Forged Stainless steel High chromium Cast or Forged stainless steel
Connections	Flanged ends Butt welding ends Other requirements	Flanged ends Butt welding ends Other requirements	Flanged ends Butt welding ends Other requirements	Flanged ends Butt welding ends Other requirements	Flanged ends Other requirements	Flanged ends Butt welding ends Other requirements	Flanged ends Butt welding ends Other requirements
Operation	Handwheel, lever, Electric- hydraulic- and pneumatic actuators	Handwheel, lever, Electric- hydraulic- and pneumatic actuators	Handwheel, lever, Electric- hydraulic- and pneumatic actuators	Handwheel, lever, Electric- hydraulic- and pneumatic actuators	automatic mechanism with pneumatic actuators	Handwheel, lever, Electric- hydraulic- and pneumatic actuators	Handwheel, lever, Electric- hydraulic- and pneumatic actuators
Application	industrial applications, high prerssure and temperature service in power plants, petrochemical plants	industrial applications, high prerssure and temperature service in power plants, petrochemical plants	industrial applications, high prerssure and temperature service in power plants, petrochemical plants	industrial applications, high prerssure and temperature service in power plants, petrochemical plants	steelworks and piping	industrial applications, high prerssure and temperature service in power plants, petrochemical plants	All kind of plants

Type	General/Severe Service Single Seated Globe Control Valve	General/Severe Service Multi Stage Globe Control Valve	Disc Stack(Zentrol) type Control Valve	Motor Operated Control Valve	Desuperheater Mechanical Nozzle	Desuperheater Nozzle Spray Control	Pressure Reducing Desuperheater Spray Control Valve
Design							
Description	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.	Modulating Control Valves for Hydro-thermal power & Nuclear Power Applications & etc.
PN	16 - 100	16 - 400	16 - 400	16 - 400	100 - 400	100 - 400	16 - 400
DN	15 - 200	40 - 600	40 - 600	15 - 600	25 (larger sizes available)	25 (larger sizes available)	80 - 600
Class	150 - 600	150 - 2500	150 - 2500	150 - 2500	600 and 2500	600 and 2500	150 - 2500
NPS	1/2 - 8	1 1/2 - 24	1 1/2 - 24	1/2 - 24	1 (larger sizes available)	1 (larger sizes available)	3 - 24
Temperature rating	-150F~1050F (Option : -320F to 1562F)	-150F~1050F (Option : -320F to 1562F)	-150F~1050F (Option : -320F to 1562F)	-150F~1050F (Option : -320F to 1562F)	Sat. +10F, Sat. +15F	Sat. +10F, Sat. +15F	upto + 1050F
Body forms	Globe-pattern body Angle pattern body	Globe-pattern body Angle pattern body	Globe-pattern body Angle pattern body	Globe-pattern body Angle pattern body			Globe-pattern body Angle pattern body
Basic shell material	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys	Carbon Steel(WCB,WCC) Stainless Steel (CF8,CF8M,CF3,CF3M) Chrom Moly(WC6,WC9,C12A) Other alloys
Connections	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Butt welding ends Socket welding ends Threaded ends Other requirements	Flanged ends Welding ends	Flanged ends	Flanged ends Butt welding ends
Operation	Spring diaphragm or Cylinder	Spring diaphragm or Cylinder	Spring diaphragm or Cylinder	Integral motor operator		Spring diaphragm or Cylinder	Spring diaphragm or Cylinder
Application	Low Pressure Steam & Water General Services, Flash Tank, Fuel Gas, Condensate Recirculation, Superheater and Re-heat Pressure, Desuperheater Water Spray, Gland Steam Pressure, Soot Blower, Steam Pressure, Auxiliary Steam	& Boiler Feed Water, Deaerator Pegging Steam, Deaerator Level Control, Turbinebypass(HP/LP)	& Boiler Feed Water, Deaerator Pegging Steam, Deaerator Level Control, Turbinebypass(HP/LP)	& Boiler Feed Water, Deaerator Pegging Steam, Deaerator Level Control, Turbinebypass(HP/LP)	Auxiliary Steam, Turbinebypass(HP/LP)	Auxiliary Steam, Turbinebypass(HP/LP)	Auxiliary Steam, Turbinebypass(HP/LP)

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