

NUCLEAR VALVE PROGRAM



INFO@PHOENIX-VALVEGROUP.COM

PHOENIX-VALVEGROUP.COM



Inspired by tradition, driven by innovation.

Engineering Excellence.

With over a century of expertise, we are global leaders in the design and manufacturing of precision-engineered valves for the most demanding industries – commercial nuclear power, oil & gas processing, and beyond.

Under two powerful brands, we deliver a complete range of high-performance valves that guarantee long-term safety and reliability in chemical plants, refineries, and power stations. Our products meet the strictest international standards, and our team provides expert technical support at every stage – from first contact to long-term service.

What sets us apart?

A relentless drive to understand our customers' needs and a genuine passion for solving complex challenges. Innovation is not a buzzword – it's our daily mindset. Every solution we offer is the result of deep engineering know-how, uncompromising quality, and a commitment to excellence.

Made in Germany. Trusted Everywhere.

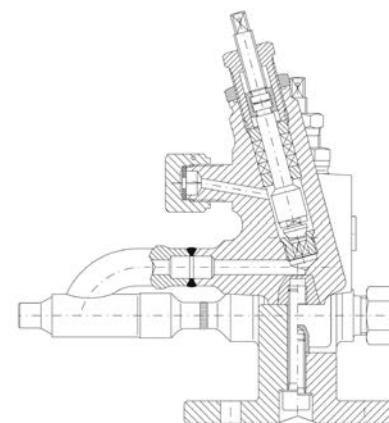
Our valves are built where precision is a tradition – and trusted wherever reliability is non-negotiable.



PHÖNIX Armaturenwerke GmbH

Founded in 1910, PHÖNIX has grown from a small workshop into a global leader in specialty valves. For over a century, our solutions have ensured safety and performance in critical applications.

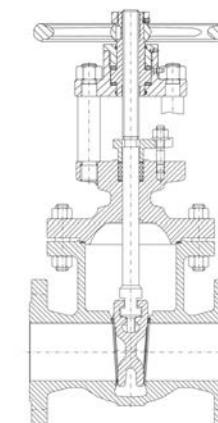
Our bellows sealed globe valves – trusted for more than 70 years – are used worldwide in chemical plants to handle aggressive media and contribute to cleaner industrial environments.



STRACK Armaturenwerke GmbH

Since 1922, STRACK has been a trusted manufacturer of high-quality valves built to meet strict design standards. Our portfolio includes solutions for HF acid service, high-pressure systems, and plug valves – serving niche markets where reliability is essential.

We combine precision, durability, and deep expertise to support industries that demand consistent performance.



Two brands one DNA

Olkiluoto 3, Finland

Unit 3 in Olkiluoto is the first European pressurized water reactor of the third generation (EPR) with a net output of 1,600 MW. Phoenix supplied over 60% of all valves for this unit. Our valves are in service both on the turbine and nuclear islands, including the primary cooling circuits as well as the secondary water and steam circuits.

Taishan, China

Taishan Units 1 and 2 are the first two EPR units built outside of Europe. With a net output of about 1,660 MW each, they are among the most powerful reactors ever constructed. Phoenix supplied a wide range of valves, including bellow seal globe valves for critical service – with and without actuators – covering all possible classifications and sizes from DN 8 to DN 400.

Isar 2, Germany

The Isar 2 nuclear power plant was a boiling water reactor (type SWR69) with a net output of 878 MW. From its first criticality on November 20, 1977 until its final shutdown on March 17, 2011, the plant produced 198.27 TWh of electricity with an average availability of ~87%. Like all German nuclear power plants, Isar 2 was equipped with Phoenix instrumentation valves and manifolds, which proved their reliability throughout the entire lifetime of the plant.

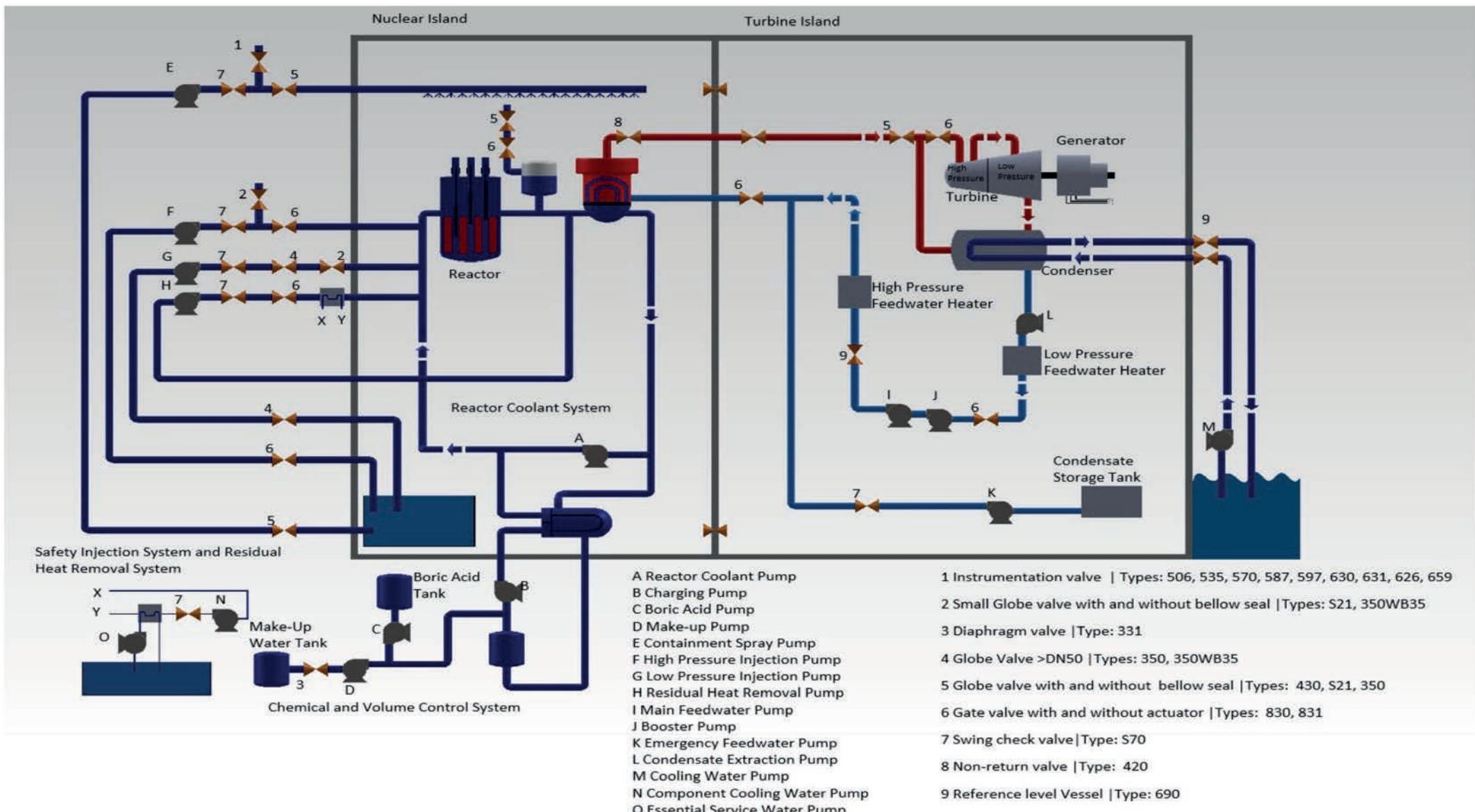
Angra 2 and Angra 3, Brazil

Unit 2 of Brazil's largest nuclear power plant is equipped with a pressurized water reactor with a net output of 1,350 MW. Phoenix supplied more than 1,000 valves for the turbine island. For the new build project Angra 3, Phoenix is also a key supplier, delivering around 2,000 instrumentation valves, including complex 5-valve manifold combinations.

Further Projects in China

In addition to Taishan, Phoenix is a trusted supplier for several other large-scale nuclear new build projects in China. At Tianwan Units 3, 4, 5 and 6, a total of 5208 instrumentation valves were delivered. For Xudapu Units 3 and 4, Phoenix supplied 2308 instrumentation valves, ensuring reliable performance in critical plant systems.

Application of PHOENIX products in a pressurized water reactor circuit



Overview of Nuclear Power Plant Systems with Our Valves

NUCLEAR POWER PLANT SYSTEM	PHOENIX VALVES ARE IN USE						
	INSTRUMENTATION-VALVES	GLOBEVALVE	GATEVALVE	CHECKVALVE	DIAPHRAGMVALVE	CONTROLVALVE	OTHER VALVES
Reactor coolant system	●		●	●		●	●
Clean up systems		●	●	●	●		
Emergency and shutdown cooling systems, residual heat removal systems	●	●	●	●	●	●	●
Chemical and volume control systems	●		●	●	●	●	●
Control rod drive systems	●			●	●	●	●
High-pressure core spray systems	●	●		●	●	●	●
Low-pressure core spray systems	●	●	●	●	●	●	●
Containment spray systems	●	●	●	●	●	●	●
Main feedwater systems	●	●	●	●	●	●	●
Emergency systems, start-up feedwater systems	●	●	●	●	●	●	●
Condensate systems	●	●	●	●	●	●	●
Cooling water systems	●	●		●	●	●	●
Auxiliary systems	●	●	●	●	●	●	●
Main steam system	●		●			●	●
Containment ventilation system	●						●

TYPE PHOENIX	350	350	355	355	350/353	350/353	359/353		
Type of Valve	Globe Valve						Control Valve		
Stem Sealing System	Bellows Sealed and emergency gland								
Design 2D-Sectional drawing									
Body form	Straight pattern		Angle pattern		Straight pattern				
Design 3D									
Description	Bellows Sealed Globe Valve with encapsulated bellows and emergency gland optional with throttling disc				Electrical actuated Bellows sealed globe valve with encapsulated bellows and emergency gland		Electrical actuated Bellows sealed control valve with superlong encapsulated bellows and emergency gland		
Nominal diameter	DN 8 - 50 1/4 - 2 "								
Body rating	up to PN 40 up to Class 900	PN 400 / Class 2500	PN 40 / Class 300	PN 400 / Class 2500	PN 160 / Class 900	PN 400 / Class 2500			
Design parameter	12 bar / 250 °C / 6g 25 bar / 100 °C / 6g 12 bar / 100 °C / 6g 6 bar / 170 °C / 6g	100 bar / 315 °C / 6g 210 bar / 365 °C / 6g 250 bar / 100 °C / 6g	12 bar / 100 °C / 6g	250 bar / 100 °C / 6g	55 bar / 250 °C / 6g/SoF 12 bar / 200 °C / 6g/SoF 6 bar / 250 °C / 6g/SoF	210 bar / 365 °C / 6g/SoF 250 bar / 100 °C / 6g/SoF	99 bar / 311 °C / 2,9g/SoF		
Basic shell material	Stainless steel 1.4571 (SA 182-F316Ti) / 1.4539 (SA 182-F904L)	Stainless steel 1.4571 (SA 182-F316Ti) Carbon steel 1.0460 (SA 105)	Stainless steel 1.4571 (SA 182-F316Ti)		Stainless steel 1.4571 (SA 182-F316Ti)		Carbon steel A42 AP (SA 285 (C))		
Operation	Handwheel				Electrical Actuator				
Application	Nuclear Island, primary and secondary circuit								
Media (others on request)	Air, Borated water, Circulating water, Demineralized water, Raw water, Feed water, Water from CCWS, Reactor coolant, Reagents, Steam, Hydrogen, Nitrogen, Radioactive concentrate, Waste water, Treated water, Drinking water, Tenside, Sludge Demineralized water, Feed water, Water from CCWS, Nitrogen						Feed water, Condensate		
Approvals	Type test approval acc. to WB 35 Report No.: T07-08-02			Type test approval acc. to WB 35 Report No.: T07-09-03/04/06		-	-		

TYPE PHOENIX	S21H	430H	S21E	430E	471E	
Type of Valve	Globe Valve				Bottom Drain Valve	
Stem Sealing System	Gland Packed					
Design 2D-Sectional drawing						
Body form	Straight pattern			Elbow 45°		
Design 3D						
Description	Globe valve with integrated stuffing seal in the body, non rotating and rising stem, optional with throttling disc		Electrical actuated globe valve with integrated stuffing seal in the body, non rotating and rising stem			Electrical actuated rubberized bottom drain valve with integrated stuffing seal in the bonnet, non rotating and rising stem, full bore
Body rating	PN 160 / Class 900 PN 250 / Class 1500 PN 400 / Class 2500	PN 63 / Class 600	PN 400 / Class 2500	PN 40 / Class 300	PN 160 / Class 900	PN 40 / Class 300
Design parameter	up to 55 bar / 250 °C / 6g 130 bar / 320 °C / 6g 175 bar / 307 °C / 6g 210 bar / 365 °C / 6g 500 bar / 80 °C / 6g	20 bar / 210 °C / 6g 40 bar / 170 °C / 6g 6 bar / 250 °C / 6g	130 bar / 320 °C / 6g/SoF 210 bar / 365 °C / 6g/SoF	16 bar / 80 °C / 6g/SoF	55 bar / 250 °C / 6g/SoF 40 bar / 250 °C / 6g/SoF	12 bar / 100 °C / 6g/SoF
Basic shell material	Stainless steel 1.4571 (F316Ti) Carbon steel 1.0460 (SA 105)					Carbon steel 1.0619 (SA 216-WCB)
Operation	Handwheel		Electrical actuator			
Application	Nuclear Island, primary and secondary circuit					
Media (others on request)	Air, Borated water, Demineralized water, Feed water, Reactor coolant, Steam, Nitrogen, Radioactive Circulating water, Raw water, Feed water, Water from CCWS, Reagents, Main steam					Reagents, Solid waste, Waste water, Radioactive
Approvals	Type test approval acc. to WB 35 Report No.: T07-09-02		Type test approval acc. to WB 35 Report No.: T07-09-05		Type test approval acc. to WB 35 Report No.: T07-09-06	-

TYPE PHOENIX	331H	331H	331E	331P	374	350	350/352	353
Type of Valve	Diaphragm Valve					3-Way-Valve	Globe Valve	
Stem Sealing System	Gland Packed					Bellows Sealed		
Design 2D-Sectional drawing								
Body form	Straight pattern					3-Way-Type	Straight pattern	
Design 3D								
Description	Diaphragm valve with integrated stuffing seal in the bonnet, non rotating and rising stem, full bore	Electrical actuated diaphragm valve with integrated stuffing seal in the bonnet, non rotating and rising stem, full bore	Pneumatic operated diaphragm valve with integrated stuffing seal in the bonnet, non rotating and rising stem, full bore	Electrical actuated 3-way valve valve with encapsulated bellows and emergency gland	Globe valve with encapsulated superlong bellows and emergency gland, optional throttling disc	Pneumatic operated globe valve with encapsulated superlong bellows and emergency gland	Electrical actuated globe valve with encapsulated superlong bellows and emergency gland	
Nominal diameter	DN 15 - 50 1/2 - 2 "			DN 25 - 250 1 - 10 "	≥ DN 80 ≥ 3 "			
Body rating	PN 16 / Class 150					PN 40 / Class 300		
Design parameter	12 bar / 110 °C / 6g					25 bar / 100 °C / 6g/SoF 12 bar / 200 °C / 6g/SoF	20 bar / 250 °C / 6g	20 bar / 250 °C / 6g
Basic shell material	Carbon steel 1.0460 (SA 105) Stainless steel 1.4571 (SA 182-F316Ti)					Stainless steel 1.4571 (SA 182-F316Ti) *	Carbon Steel 1.0619 (SA 216 WCB) Stainless Steel 1.4408 (SA 351CF8M)	Stainless steel Z3CND19-10M (SA 351-CF3MA)
Operation	Design acc. to ASME, EN and RCC-M in corresponding materials possible							
Application	Carbon steel: Nuclear Island, secondary circuit Stainless steel: Nuclear Island, primary and secondary circuit					Nuclear Island, primary and secondary circuit		
Media (others on request)	Carbon steel: Borated water, Demineralized water, Water from CCWS, Waste water Stainless steel: Air, Borated water, Demineralized water, Raw water, Water from CCWS, Reactor coolant, Reagents, Nitrogen, Radioactive concentrate, Waste water, Primary effluent					Borated water, Demineralized water, Reactor coolant	Air, Borated water, Demineralized water, Reactor coolant, Steam, Nitrogen, Gas waste, Water from CCWS	
Approvals	-	-	-	-	-	-	-	-

TYPE PHOENIX	430H	430E	430E	830	831		
Type of Valve	Globe Valve			Gate Valve			
Stem Sealing System	Gland Packed						
Design 2D-Sectional drawing							
Body form	Straight pattern						
Design 3D							
Description	Globe valve with integrated stuffing seal in the bonnet, non rotating and rising stem, throttling disc	Electrical actuated globe valve with integrated stuffing seal in the bonnet, non rotating and rising stem	Gate valve with coupled deviated stem, protection against overloading, flexible wedge spate design, gland packed	Electrical actuated gate valve with coupled deviated stem, protection against overloading, flexible wedge spate design, gland packed			
Nominal diameter	\geq DN 80 \geq 3 "		DN 80 - 500 3 - 20 "				
Body rating	PN 40 / Class 300 PN 63 / Class 600	PN 40 / Class 300		PN 63 / Class 600			
Design parameter	12 bar / 100 °C / 4g 40 bar / 170 °C / 6g	16 bar / 170 °C / 6g/SoF 20 bar / 155 °C / 4g/SoF	20 bar / 160 °C / 6g/SoF	12 bar / 170 °C / 6g 18 bar / 210 °C / 4g	17 bar / 210 °C / 6g/SoF 18 bar / 210 °C / 4g/SoF		
Basic shell material	Stainless steel Z3CND19-10M (SA 351-CF3MA)	Stainless steel Z3CND19-10M (SA 351-CF3MA)	Stainless steel 1.4408 (SA 351-CF8M)	Stainless steel 1.4408 (SA 351-CF8M) Z3CND19-10M (SA 351-CF3MA) Carbon steel 1.0619 (SA 216-WCB)			
	Design acc. to ASME, EN and RCC-M in corresponding materials possible						
Operation	Handwheel	Electrical actuator		Handwheel	Electrical actuator		
Application	Carbon steel: Nuclear Island, secondary circuit Stainless steel: Nuclear Island, primary and secondary circuit						
Media (others on request)	Carbon steel: Borated water, Demineralized water, Water from CCWS, Waste water Stainless steel: Air, Borated water, Demineralized water, Raw water, Water from CCWS, Reactor coolant, Reagents, Nitrogen, Radioactive concentrate, Waste water, Primary effluent						
Approvals	-	-	-	-	-		

TYPE PHOENIX	420	S70	820		
Type of Valve	Check Valve	Swing Check Valve	Strainer , Basket Type		
Design 2D-Sectional drawing					
Body form		Straight pattern			
Design 3D					
Description	Check valve spring loaded option	Swing check valve, hing pin inside, no connection to the outside	Strainer basket type with extremly huge filtrating area and low pressure drop		
Nominal diameter	DN 8 - 50 1/4 - 2 "	DN 15 - 50 1/2 - 2 "	DN 15 - 400 1/2 - 16 "	DN 25 - 200 1 - 8 "	
Body rating	PN 40 / Class 300 PN 160 / Class 900	PN 400 / Class 2500	PN 40 / Class 300	PN 40 / Class 300	
Design parameter	20 bar / 120 °C 55 bar / 265 °C	210 bar / 365 °C 250 bar / 100 °C	25 bar / 240 °C	16 bar / 120 °C 20 bar / 60 °C	
Basic shell material	Stainless steel 1.4539 (SA 182-F904L) 1.4571 (SA 182-F316Ti)	Carbon steel 1.0460 (SA 105)	Stainless steel 1.4571 (SA 182-F316Ti)	Carbon steel 1.0619 (SA 216-WCB)	Stainless steel 1.4408 (SA 351-CF8M)
	Design acc. to ASME, EN and RCC-M in corresponding materials possible				
Operation	-	-	-	-	
Application	Carbon steel: Nuclear Island, secondary circuit Stainless steel: Nuclear Island, primary and secondary circuit				
Media (others on request)	Air, Borated water, Circulating water, Demineralized water, Raw water, Feed water, Water from CCWS, Reactor coolant, Reagents, Steam, Main Steam, Hydrogen, Nitrogen, Oxigen, Argon, Radioactive				
Approvals	-	-	-	-	

TYPE PHOENIX	506 / 525	570 / 535	587 / 589	597 / 599	589	626 / 659	630 / 631		
Type of Valve	Globe Valve		Pressure Gauge Valve	Pressure Gauge Valve	587	Manifold 3 Valves	Manifold 5 Valves		
Stem Sealing System	Gland Packed	Bellows Sealed	587: Gland packed 589: Bellows sealed	597: Gland packed 599: Bellows sealed		626: Gland packed 659: Bellows sealed	630: Gland packed 631: Bellows sealed		
Design 2D-Sectional drawing									
Body form	Straight pattern				Special body design				
Design 3D									
Description	Globe valve with stuffing box seal, coupled divided stem, renewable disc and seat	Globe valve with encapsulated bellows and emergency gland, coupled divided stem, renewable disc and seat	Pressure gauge valve with test connection, gland packed or bellows and emergency gland, coupled divided stem, renewable disc and seat	Pressure gauge valve with blocking test connection, gland packed or bellows and emergency gland, coupled divided stem, renewable disc and seat	Reference level vessel	Manifold with 3 valves and test connection, gland packed or bellows and emergency gland, coupled divided stem, renewable disc and seat	Manifold with 5 valves and test connection, gland packed or bellows and emergency gland, coupled divided stem, renewable disc and seat		
Nominal diameter	$\leq DN 25$ $\leq 1 "$		$\leq DN 15$ $\leq 1/2 "$		$\leq DN 25$ $\leq 1 "$	$\leq DN 15$ $\leq 1/2 "$			
Body rating	PN 400-630 Class 2500-4500	PN 250-400 Class 1500-2500	PN 250-400 / Class 1500-2500		PN 250-400 Class 1500-2500				
Design parameter	30 bar / 100 °C 149 bar / 261 °C	149 bar / 261 °C Carbon Steel: 135 bar / 320 °C Stainless Steel: 210/250 bar / 365/100 °C	Carbon Steel: 150 bar / 360 °C Stainless Steel: 200 bar / 360 °C	250 bar / 180 °C	100 bar / 100 °C 160 bar / 400 °C	Carbon Steel: 150 bar / 360 °C Stainless Steel: 200 bar / 360 °C			
Basic shell material	Carbon Steel 1.0460 (SA 105) / 1.5415 (SA 204) Stainless Steel 1.4571 (SA 182-F316Ti) / 1.4529 / 1.4539 (SA 182-F904L) Design acc. to ASME, EN and RCC-M in corresponding materials possible								
Operation	Handwheel		Handwheel T-handle		-	Handwheel T-handle			
Application	Nuclear Island, primary and secondary circuit								
Media (others on request)	Air, Borated water, Circulating water, Demineralized water, Raw water, Carbon Dioxide, Feed water, Water from CCWS, Reactor coolant, Reagents, Steam, Hydrogen, Nitrogen, Oygn Radioactive concentrate, Waste water, Treated water, Tenside, Seal water			reactor cooling, moderator, safety feed, feed water	Air, Borated water, Demineralized water, Feed water, Water from CCWS, Reactor coolant, Steam, Nitrogen, Treated water				
Approvals	Type test approval acc. to WB 35 Report No.: T07-07-01, T07-86-01		Type test approval acc. to WB 35 Report No.: T07-86-02		Type test approval acc. to WB 35 Report No.: T07-84-03	Type test approval acc. to WB 35 Report No.: T07-84-02			

TYPE PHOENIX	830	506	430	S70	829	420
Type of Valve	Gate Valve	Globe Valve		Swing Check Valve	Strainer	Check Valve
Stem Sealing System	Gland packed		-	-	-	-
Design 2D-Sectional drawing						
Body form	Straight pattern				Y-pattern	Straight pattern
Design 3D						
Description	Gate valve with coupled divided stem, flexible wedge spate design, gland packed	Globe valve with stuffing box seal, coupled divided stem, screwed in seat	Globe valve with integrated stuffing seal in the bonnet, non rotating and rising stem	Swing check valve, hing pin inside, no connection to the outside	Strainer basket type with extremely huge filtrating area and low pressure drop	Check valve spring loaded option
Nominal diameter	DN 80 - 500 3 - 20 "	≤ DN 15 ≤ 1/2 "	≥ DN 80 ≥ 3 "	≥ DN 80 ≥ 3 "	DN 15 - 150 1/2 - 6 "	≥ DN 80 ≥ 3 "
Body rating	PN 63 / Class 600	PN 400-630 / Class 2500-4500	PN 63 / Class 600	PN 63 / Class 600	PN 40 / Class 300	PN 40 / Class 300
Design parameter	37,7 bar / 86 °C	135 bar / 268 °C	12 bar / 60 °C	12 bar / 60 °C	12 bar / 60 °C	12 bar / 60 °C
Basic shell material	Stainless steel 1.4408 (SA 351-CF8M)	Carbon Steel 1.5415 (SA 204) Stainless Steel 1.4571 (SA 182-F316Ti)	Carbon steel 1.0619 (SA 216-WCB)	Carbon steel 1.0619 (SA 216-WCB)	Carbon steel 1.0619 (SA 216-WCB)	Carbon steel 1.0619 (SA 216-WCB)
Operation	Handwheel	Handwheel	Handwheel	Handwheel	-	-
Application	Turbine Island					
Media (others on request)	Demineralized water, Gland steam	Feedwater, Steam, Condensate, Demineralized water	Demineralized water	Demineralized water, Gland steam	Demineralized water, Gland steam	Demineralized water, Gland steam
Approvals	-	Type test approval acc. to WB 35 Report No.: T07-07-01, T07-86-01	-	-	-	-

CERTIFICATES AND APPROVALS

MANAGEMENT SYSTEM

- ISO 9001:2015,
- PED 2014/68 EU
- PE(S)R 2016,
- TPED 2010/35/EU,
- TPER 2021
- AD 2000 HP0,
- TSG 07-2019

INDUSTRIAL APPLICATIONS

- GEST 17/492,
- TA Luft 2021 (ISO 15848-1/2)
- Production License of Special Equipment People's Republic of China
- ASME B16.34
- UOP Honeywell
- API 600, 602, 623 etc.

NUCLEAR APPLICATIONS

- KTA 1401
- HAF 604
- ISO 19443-2018 approved by FRAMATOME
- STUK manufacturer approval
- VdTÜV WB 35
- VdTÜV type test approval

COUNTRY APPROVALS AND PRODUCT LINES

- UOP, Euro Chlor, TPED, TP(S)R, UKCA,
- Manufacturer License China,
- Globe-, Gate-, Lift Plug-, Check-, Change Over-, Drain-, Tanker-, Instrumentation valves, Stainer, Drain vessel



CE 0525

UK 0038

CA 0343

P 0038

framatom

stuk



AD 2000 HP0





PHOENIX-VALVEGROUP.COM

INFO@PHOENIX-VALVEGROUP.COM

