› **Our technology. Your success.**
Pumps ▪ Valves ▪ Service

Valves for fossil-fuelled power plants
to EN and ANSI standards

Fulfilling the requirements of optimum solutions

The demands placed on components in power plant applications are immense. This is particularly the case for valves that are used to reliably shut off water and steam. These must withstand enormous heat and pressure and have to fulfill the exacting requirements of standards and codes such as DIN/EN, ASME/ANSI or IBR.

Whether in condensate, feed water or steam systems, valves in power plants are subject to the strictest possible regulations – to which KSB's high-quality products conform one hundred percent.

We do everything possible to offer our customers the very best in products and system solutions. KSB is a loyal partner. And a strong one:

- Over 140 years' experience
- Present in more than 100 countries
- More than 16,000 employees
- More than 160 service centres worldwide
- Approximately 2,600 service specialists

The KSB valve range for fossil-fuelled power plants

- Globe valves
- Gate valves
- Check valves
- Butterfly valves
- Diaphragm valves
- Ball valves
- Control valves
- Feed water by-pass valves
- Line blind valves

Modern manufacturing, innovative materials, top-quality service

An innovative approach, the latest technology and the know-how of our experts put us in a position to meet each and every requirement stipulated by operators, consultants and engineering contractors for power plants.

KSB manufactures its products to uniform quality standards at all of its locations worldwide. A particular strength is our ability to weld all materials – both to DIN/EN and to ASME/ANSI. In-house rubber and liner production, the manufacturing of diaphragms and the operation of an in-house foundry ensure high quality from the outset. In addition, the processing of new high-temperature materials at up to 725 °C combined with the testing and use of new materials in collaboration with universities and research institutes provides an excellent basis for the continual development of our products.

Individual testing procedures and acceptance tests accompany the entire manufacturing process and include surface crack examinations and radiographic, magnetic particle and ultrasonic testing. Depending on their nature and scope, these are either performed in accordance with the relevant regulations or in line with the specific requirements of the customer.

Alongside products, timing also plays a crucial role in delivering a successful project. We have therefore optimised all of our processes from quotations to production, delivery and installation to ensure that no valuable time is wasted. A further benefit is the close customer liaison possible via our application specialists who are available to support you in almost every country across the globe.

Always close to our customers: Numerous locations across the globe help us support you with our valves on virtually every continent.

Assured quality – worldwide

- DIN EN ISO 9001
- DIN EN ISO 14001
- OHSAS 18001
- Pressure Equipment Directive 97/23/EC
- AD 2000-HP0
- DIN EN ISO 3834, -2
- KTA 1401, 1408.3, 3201.3
- AVS D 100/50
- ASME Code Sect. III/NCA-4000 (N, NPT)
- GOST/TR
- IBR


ZERTIFIKAT

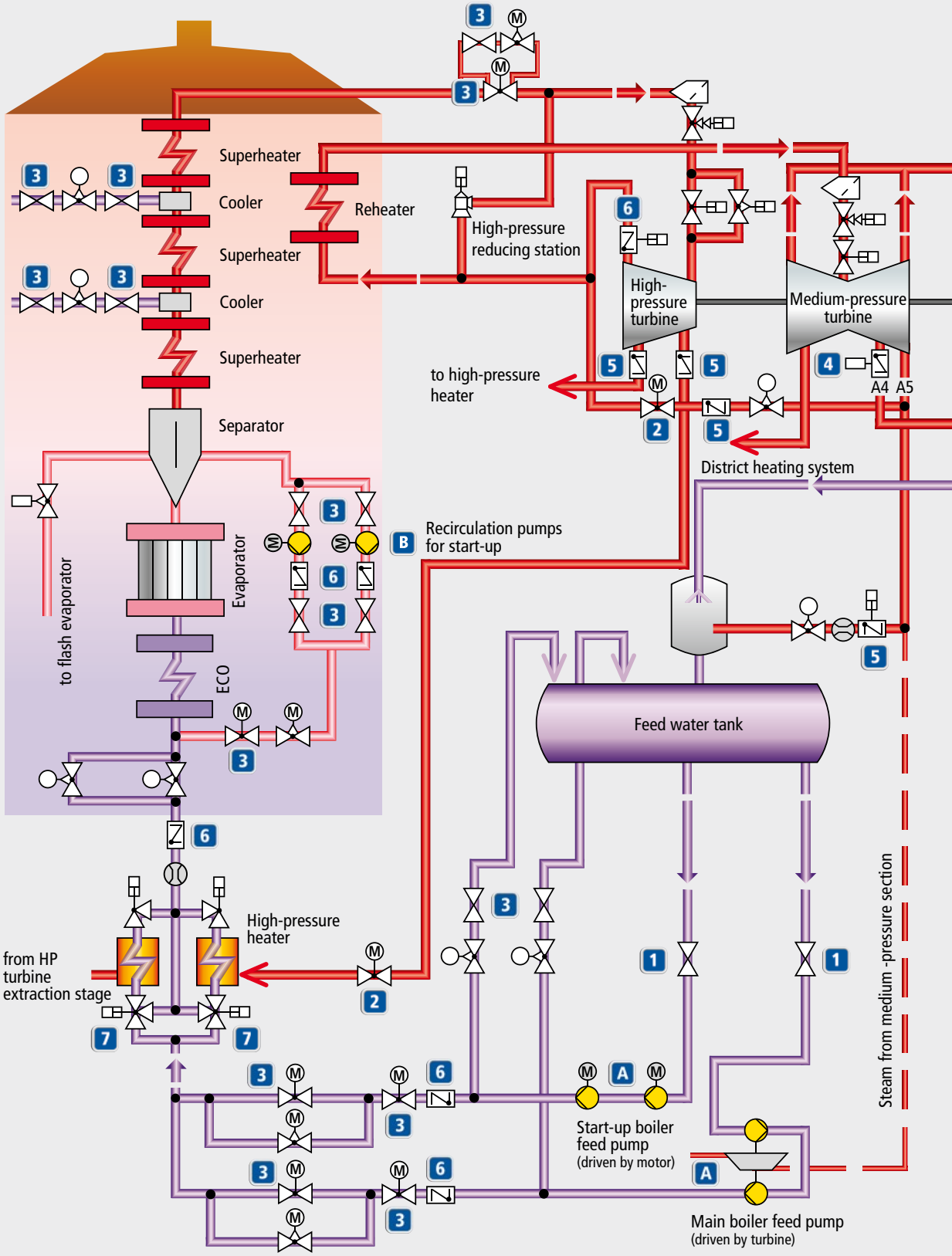

Zertifikat

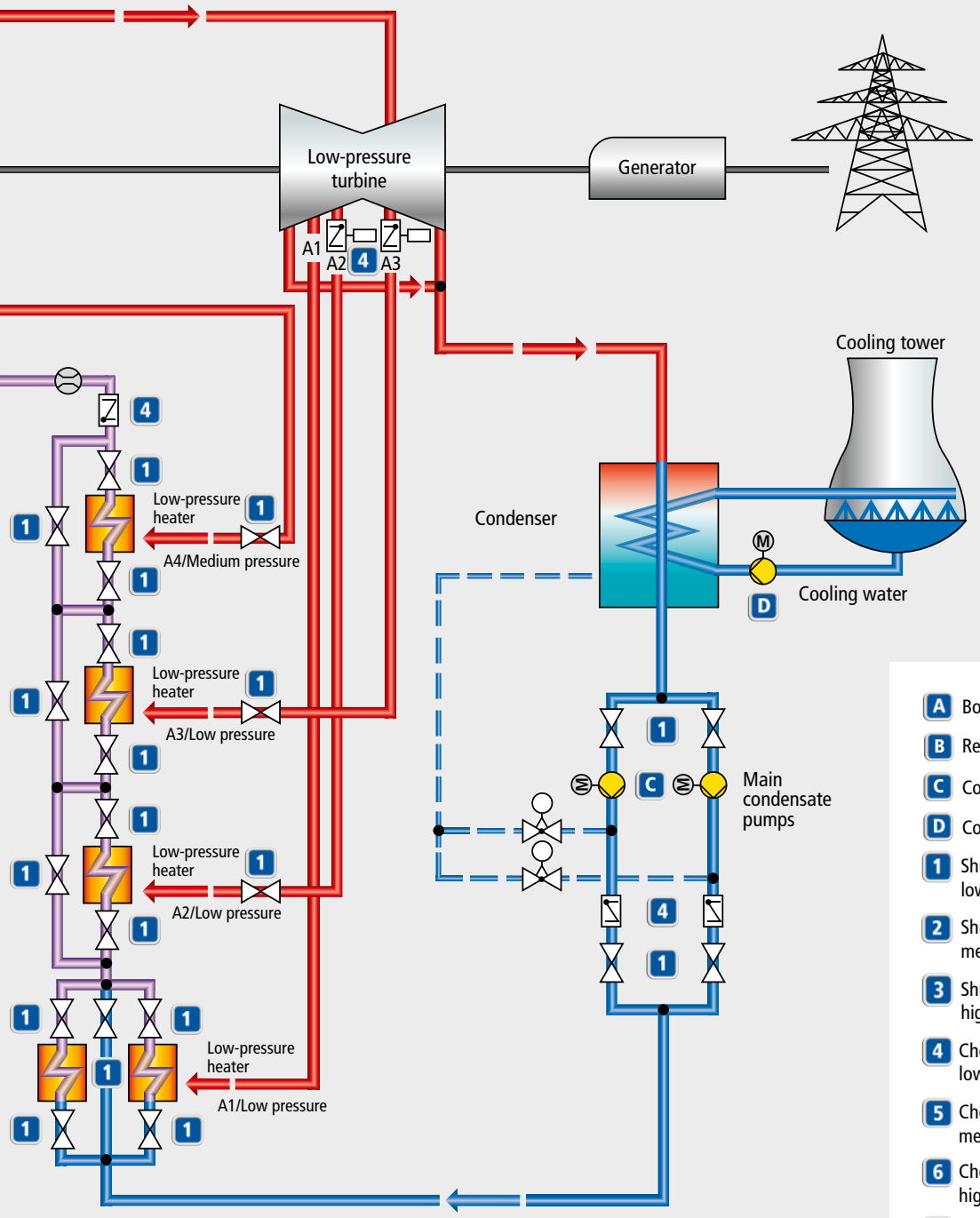

Certificate


CERTIFICATE OF AUTHORIZATION


CERTIFICATE OF AUTHORIZATION

Steam power plant diagram





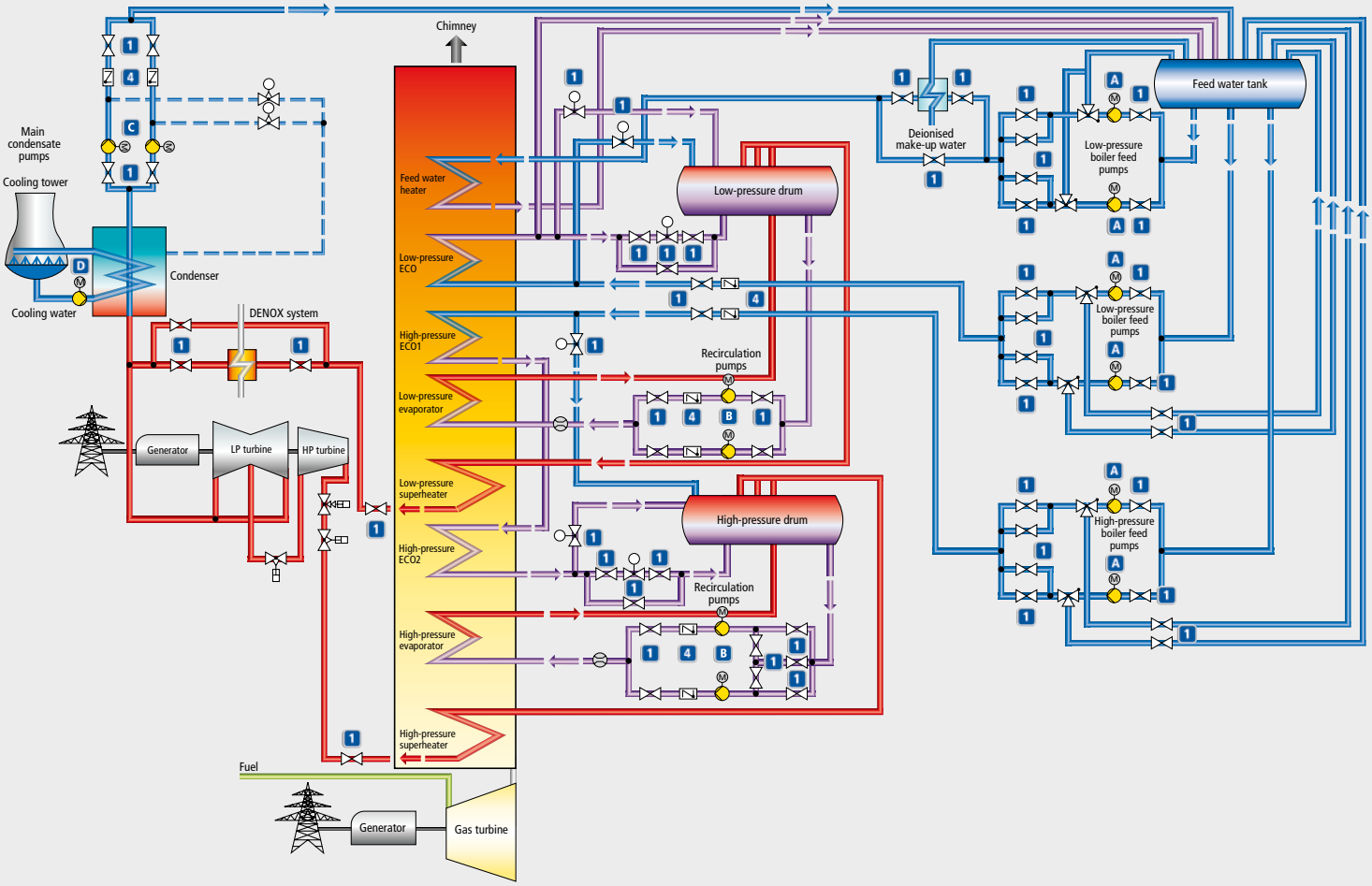
- A Boiler feed pumps
- B Recirculation pumps
- C Condensate pumps
- D Cooling water pumps
- 1 Shut-off valves for low-pressure applications [⋈]
- 2 Shut-off valves for medium-pressure applications [⋈]
- 3 Shut-off valves for high-pressure applications [⋈]
- 4 Check valves for low-pressure applications [⧅]
- 5 Check valves for medium-pressure applications [⧅]
- 6 Check valves for high-pressure applications [⧅]
- 7 Special-purpose valves for high-pressure applications [⋈]

A selection of reference projects

Our valves for fossil-fuelled power plants have already impressed customers in numerous projects. Worldwide, customers bank on reliable shut-off and control when they select products from KSB.

Customer	Plant	Type	DN	Material	Operating data	
					T(°C)	P (bar)
Shanghai Dayao Industry Development Co. Ltd., China	Steam power plant 2 x 1000 MW Waigaoqiao Unit II Shanghai, China	ZTS Gate valve	500	Forged steel for feed water applications WB 36 (1.6368)	500	200
BASF SE, Germany	Combined cycle power plant 1 x 496 MW BASF Ludwigshafen, Germany	ZTS Gate valve	350	Forged steel for feed water applications WB 36 (1.6368)	500	199
Siemens AG, Germany	Steam power plant 1 x 300 MW BFG Gent, Belgium	ZTS Gate valve	700	Forged steel for high-temperature applications P91 (1.4903)	540	572
Alstom Power GmbH, Germany	Steam power plant 1 x 912 MW RDK 8, Karlsruhe, Germany	ZTS Gate valve	250	Forged steel for high-temperature applications P92 (1.4901)	311	608
Power Machines, Russia	Steam power plant 3 x 660 MW (supercritical) Barh, India	ZTS Gate valve	500	Forged steel for feed water applications WB36 (1.6368) connecting branch P 355QH1 (1.0571) according ASTM A106GrC	300	394
CEZ a.s., Czech Republic	Combined cycle power plant 1 x 841 MW Pocerady, Czech Republic	ZTS Gate valve	600	Forged steel for high-temperature applications P91 (1.4903)	390	560
ARES Technology, China	Steam power plant 2 X 660 MW Yuanyanghu, China	SICCA Gate valve	300	Carbon steel for feed water applications A216-WCB Spl.	374	300
Shanghai Electric Co. Ltd., China	Steam power plant 6 x 600 MW Sasan PP, India	SICCA Check valve	350	Carbon steel for feed water applications A216-WCC Spl.	185	44
Siemens Industrial Turbomachinery AB, Sweden	Combined cycle power plant 1 x 242 MW Diamantina, Australia	SICCA Gate valve	150	Alloyed steel for high-temperature applications A217-WC6 Spl.	518	90
Shandong Xinwen Mining Co. Ltd., China	Steam power plant 3 x 350 MW Shenhua Yili, China	SICCA Gate valve	300	Alloyed steel for high-temperature applications A217-WC9 Spl.	540	100
ISGEC Heavy Engineering Ltd., India	Process steam 190 TPH Gail Pata, India	SICCA Gate valve	400	Alloyed steel for high-temperature applications A217-C12A Spl.	515	116
Sterlite Energy Ltd., India	Steam power plant 4 x 600 MW Jharsuguda, India	SICCA Gate valve	400	Alloyed steel for high-temperature applications A217-C12A Spl.	540	170

Combined cycle power plant diagram



- A Boiler feed pumps
- B Recirculation pumps
- C Condensate pumps
- D Cooling water pumps
- 1 Shut-off valves for low-pressure applications [⋈]
- 4 Check valves for low-pressure applications [⋈]

Powerful right down to the last detail

ZTS/SICCA

1 Billet-forged steel design makes the body robust and capable of withstanding very high stresses (ZTS)

- Very dense, homogenous and fine-grained structure
- Ideal for very high pressures and temperatures
- Large range of forged steels

Robust and high-strength cast steel body (SICCA)

- Ideal for very high pressures and temperatures
- Large range of cast materials

2 Reliable sealing to atmosphere

- Pressure seal bonnet
- Graphite gasket, available with metal cap for protection against oxidation (ZTS)
- Graphite gland packing with packing end rings, available with metal cap for protection against oxidation (ZTS)
- Compact design

3 Reliable, tight shut-off and service-friendly design

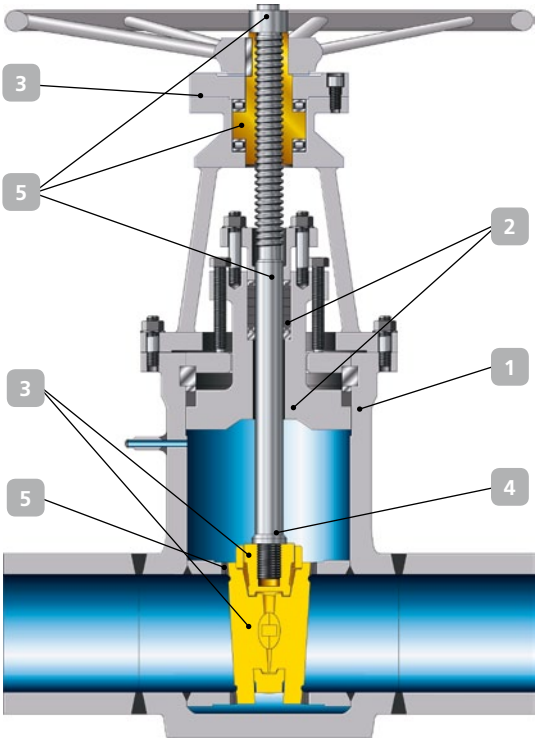
- Wedge holder with flexibly mounted split wedge. Precise alignment of wedge halves with body; wedge halves are easy to replace.
- Actuating moments are absorbed by the wedge holder and guide ribs in the body.
- Straightforward actuator mounting (ZTS with standard DIN/ISO connection flange at the yoke head). No need to dismantle pressure-retaining components.

4 Additional safety and blow-out protection by standard back seat

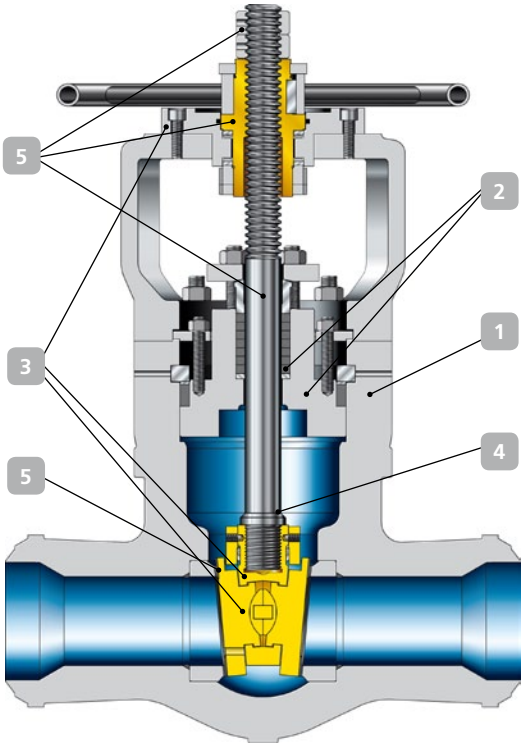
5 Long service life and high functional reliability

- Standard stop nut limits wedge action, thus preventing jamming in the closed position. Reliable opening even in the event of temperature transients.
- Gland packing with non-rotating stem and burnished shank
- Threaded bush runs in ball bearings for smooth actuation.
- Hard-faced seat/disc interface made of stellite

ZTS



SICCA 900-2500 GTC



Operating data

Nominal size	DN 50-800/2″ – 32″
Pressure	Up to 600 bar/8700 psi
Temperature	Up to 650 °C/1200 °F

Body materials

Material	Material number	Temperature limit
P 250 GH	1.0460	Up to 450 °C/850 °F
15 NiCuMoNb 5	1.6368	Up to 450 °C/850 °F
16 Mo 3	1.5415	Up to 530 °C/990 °F
13 CrMo 4-5	1.7335	Up to 550 °C/1020 °F
10 CrMo 9-10	1.7380	Up to 570 °C/1060 °F
X 10 CrMoVNb 9-1	1.4903	Up to 650 °C/1200 °F
X 10 CrWMoVNb 9-2	1.4901	Up to 650 °C/1200 °F

Other materials on request.

Operating data

Nominal size	DN 50-600/2″ – 24″
Pressure	Up to 430 bar/6250 psi
Temperature	Up to 650 °C/1200 °F

Body materials

Material	Temperature limit
ASTM A 216 WCB	Up to 425 °C/800 °F
ASTM A 217 WC6	Up to 593 °C/1100 °F
ASTM A 217 WC9	Up to 593 °C/1100 °F
ASTM A 217 C12A	Up to 650 °C/1200 °F

Other materials on request.

Shut-off valves

	Globe valves			Gate valves	
	DIN		ANSI	DIN	ANSI
1 4 Low-pressure applications **PN 10-40 / Class 150-300** **T up to 450 °C / 850 °F** [used in combined cycle and steam power plants]	 BOA H/HE		 SICCA 150-300 GLC	 STAAL 40 AKD/AKDS	 SICCA 150-300 GTC
	 NORI 40 ZXL/ZXS	 NORI 40 ZXLF/ZXSF	 SICCA 800 GLF		 SICCA 800 GTF
2 5 Medium-pressure applications **PN 63-160 / Class 600-900** **T up to 550 °C / 1020 °F** [used in combined cycle and steam power plants]	 NORI 160 ZXL/ZXS		 SICCA 600 GLC  SICCA 900 GLC	 STAAL 100 AKD/AKDS	 SICCA 600 GTC  SICCA 900 GTC
	 NORI 160 ZXLF/ZXSF		 SICCA 800 GLF	 AKGS-A	 SICCA 800 GTF
3 6 7 High-pressure applications **PN 250-600 / Class 1500-2500** **T up to 650 °C / 1200 °F** [used in combined cycle and steam power plants]	 NORI 320 ZXSV	 NORI 500 ZXSV	 SICCA 900-2.500 GLC	 ZTS	 ZTS 2.500-4.500
	 NORI 320 ZXLF/ZXSF	 NORI 500 ZXLR/ZXSR	 SICCA 800-2.500 GLF		 SICCA 1.500-2.500 GTC  SICCA 1.500 GTF

Check valves

Special-purpose valves

Diaphragm valves	Butterfly valves			Feed water by-pass valve	Start and stop control valves	Line blind valves
DIN	DIN / ANSI	DIN	ANSI	DIN	DIN	DIN
 SISTO-10	 DANAIS	 SISTO-RSK/RSKS	 SERIE 2.000			
 SISTO-16	 ISORIA	 NORI 40 RXL/RXS	 SICCA 150-300 SCC			
 SISTO-KB	 MAMMOUTH	 STAAL 40 AKK/AKKS				
 SISTO-20		 SERIE 2.000				
		 NORI 160 RXL/RXS	 SICCA 600 SCC			
		 STAAL 100 AKK/AKKS	 SICCA 900 SCC			
		 AKR/AKRS	 SICCA 800 PCF			
		 NORI 320 RXL/RXS		 ZJSVM/RJSVM	 ZJSVA/ZXSVA	 VTS
		 NORI 500 RXLR/RXSR	 SICCA 1.500-2.500 SCC			
		 RGS				
		 ZRS	 SICCA 1.500-2.500 PCF			

Technology that makes its mark

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