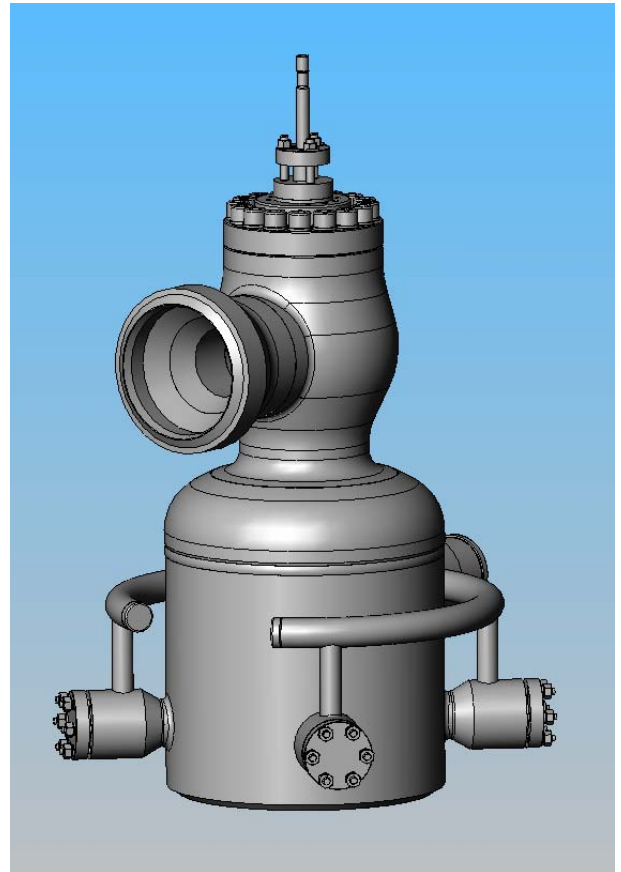


HP Startup Bypass Type HBSE280S

- Specifically designed for HP Startup Bypass applications
- Compact, robust design
- Clamped trim for easiest maintenance
- Springloaded spray nozzles or internal torus desuperheater
- Designed for frequent start-ups
- Designed for conditions up to 280 bar / 580 °C
- Tightness ANSI FC170.2, class V



Application

The HP-Bypass Valve Type HBSE280S is an abbreviation of the well known Sulzer HP Turbine Bypass Valve HBSE.

Application: steam-conditioning valve for steam throttling combined with desuperheating through spraywater injection directly at the valve outlet. Its prime areas of application are high pressure (HP-) Startup bypass systems for coal-fired reheat steam power plants.

With the standard selection of body and trim materials, the HBSE-valve can be applied for the operating temperatures of today's most advanced thermal power plants. The valve is specially designed for the cyclic operation of bypass systems.

Function

The valve combines the function of pressure reduction and desuperheating. The pressure reduction takes place in four stages, the inlet cage, the seat and the dual outlet cages.

Standardwise, the inlet cage is from a slotted type, splitting the steam flow into several small steam flows for reducing the noise emission compared to a window cage, but providing a similar capacity rating. Special inlet cages can be provided upon request for reducing the capacity or lowering the level of noise emission further down.

Two different desuperheater designs are available in the outlet of this valve: spring-loaded nozzles or the torus desuperheater.

The springloaded nozzles provide uniform spraywater injection pattern independent of the spraywater flow. The spring loaded nozzles provide excellent atomization of the spray water regardless of spray water flow due to the small gaps and high injection velocity and therefore provide optimum rangeability regardless of the steam flow. The nozzles are located at a place downstream of the outlet cage where the steam and water are efficiently mixed.

The Torus desuperheater provides spraywater injection through a high number of holes on the full circumference in the outlet of the valve. The Torus desuperheater provides through the shape of the steam flow path highly turbulent steam flow in the area of the spraywater injection which ensures excellent atomization of the injected water and mixing with the steam.

The location of the spray water injection is with both desuperheaters selected for efficient mixing of the water with the steam flow in the full cross section of the outlet and therefore short mixing and evaporation length.

The actual evaporation length will depend on several factors such as: water temperature, degree of superheat after water injection, percentage of spray water, velocity of steam etc. CCI has the tools (CoolSiz™) to calculate the evaporation length of the actual application conditions.

The distinguished shape of the outlet section of the control valve incorporates a cutting-edge after the spraywater injection, which results in a further reduction of the evaporation length.

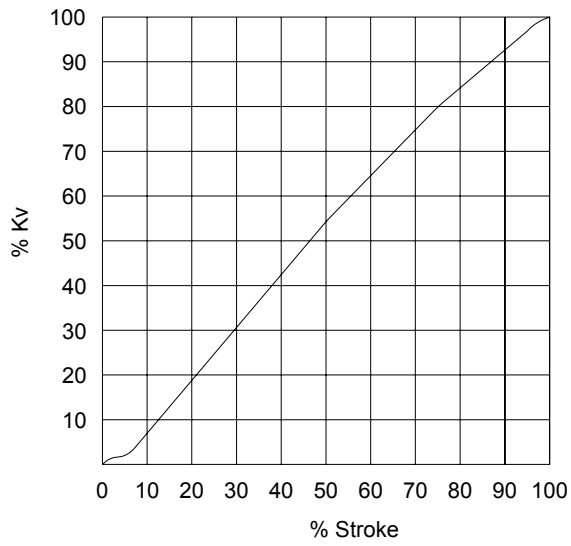
The valve body with its spherical shapes is designed for cyclic operation and frequent start-ups. Material concentrations and abrupt changes of wall thickness are avoided.

Hydraulic- or pneumatic actuators can be fitted to the valve. The actuators can be equipped besides the proportional valve (hydraulic actuator) or positioner (pneumatic actuator) for control purposes, with redundant safe closing devices. The valve can therefore serve as combined control and safe shut-off valve.

Technical Specification

Body style	Angle, flow to close
	Spherical shaped
Pipe connection	For steam pipes: butt-welding
	For spray-water pipes: butt-welding at spraywater manifold
Steam data range	Temperature: ~ 500 - 580 °C
	Design Temperatures > 580 °C upon request
Inlet	Pressure: 280 bar
Outlet	Pressure: 50 bar
Trim	Balanced Trim type with inlet and outlet cage
Pressure rating	Job rated according ASME Sect. VIII
Seat-/stem tightness	ANSI FCI 70.2, class V
Desuperheating	Springloaded spraynozzles (variable injection area), quantity depending on outlet size and water flow or Internal Torus Desuperheater
Water distribution	Circumferential distribution
Actuation	Double-acting hydraulic- or pneumatic cylinder Electric actuator upon request
Serviceability	Replaceable stem/plug
	Replaceable seat
	Replaceable inlet cage
	Replaceable spray-nozzles
	Bolted bonnet
Options	Transition pieces for large pipe diameters and material compatibility
	Prewarming and drain connection available on request
Orientation	No restrictions as for the valve operating position

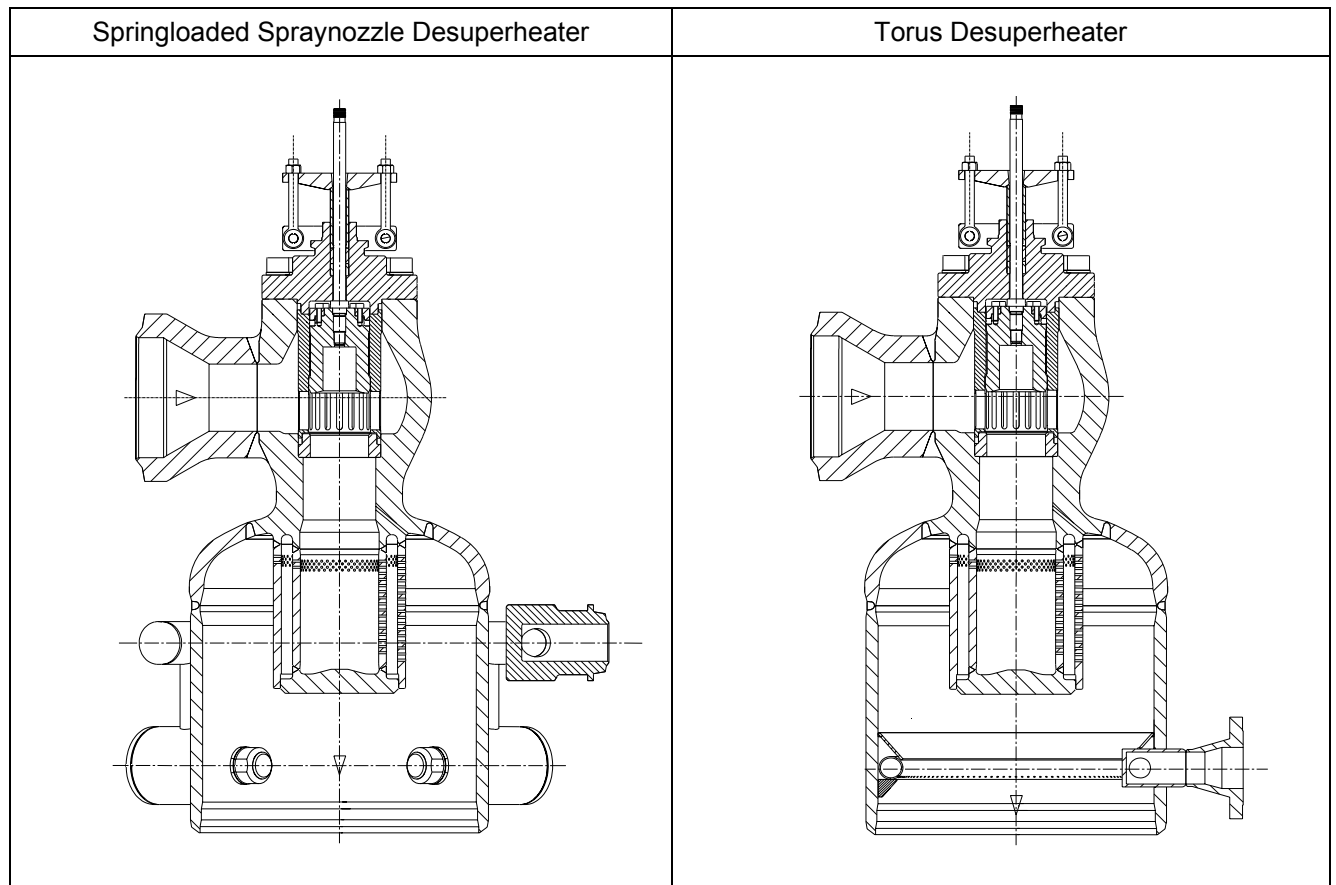
Typical Valve Characteristic



Standard Materials

Body	A182 F91
Inlet connection	Same as body
Desuperheater	P22
Outlet connection	P22
Water connection	F11/F12
Bonnet	A182 F91
Inlet Cage	X20CrMoV121
Outlet Cages	10CrMo910 / F22
Stem	X19CrMoV121
Seat	X20CrMoV121

HBSE280S - Cross Sectional View

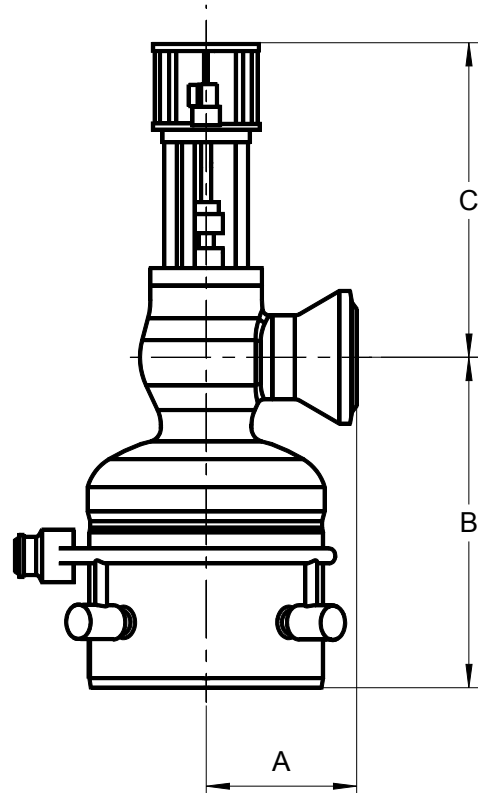


Flow Capacity (Cv/Kv)

Valve size	Cv/Kv
Inlet Cage	Slotted
HBSE280S - 200	506 / 434
HBSE280S - 250	743 / 637

Inlet / outlet pipe dimensions

Valve size	Inlet	Outlet	Water connector
HBSE280S - 200	10" – 14"	20" – 26"	3" – 6"
HBSE280S - 250	10" – 14"	20" – 26"	3" – 6"



Outline dimensions

Valve Dimensions	Type	A	B	C	Weight
	HBSE280S	mm	mm	mm	kg
	-200	420	905	2755	1050
	-250	450	950	2830	1300

CCI Switzerland

Im Link 11
P.O. Box
CH-8404 Winterthur
Telephone ++41 52 264 95 00
Telefax ++41 52 264 95 01

CCI Japan

194-2 Shukunoshō
Ibaraki-City, Osaka 567
Japan
Telephone ++81 726 41 71 97
Telefax ++81 726 41 71 98

CCI World Headquarter

22591 Avenida Empresa
Rancho Santa Margarita
CA 92688, U.S.A
Telephone ++1 949 858 18 77
Telefax ++1 949 858 18 78

CCI Korea

26-17, 26 Pungmu-Ri
Kimpo-Eup, Kimpo Gun
Kyunggi-Do, South Korea
Telephone ++82 31 985 94 30
Telefax ++82 31 985 05 52

CCI Sweden

Box 602
SE-661 29
Säffle, Sweden
Telephone ++46 533 689 600
Telefax ++46 533 689 601

CCI Austria

Carlberggasse 38
P.O. Box 19
AT-1233 Vienna, Austria
Telephone ++43 1 869 27 40
Telefax ++43 1 865 36 03