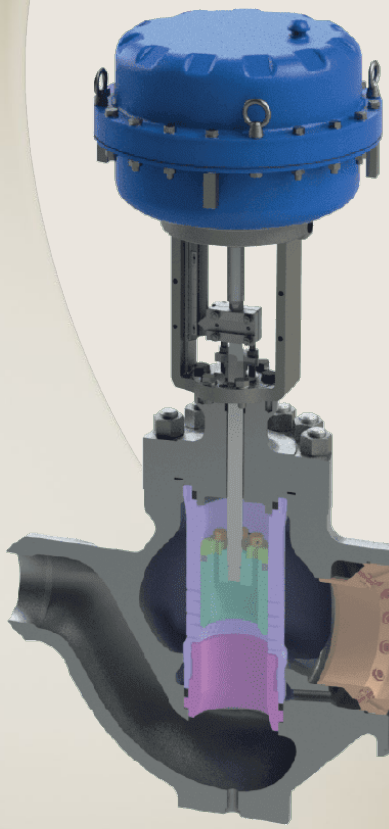
Process Automation

IMI CCI

ABJ Series

Breakthrough
engineering for
a better world



ABJ Series

Proven experience, advanced technology and quality products

IMI develops technology for a wide range of applications in conventional, geothermal, biomass, and nuclear power facilities worldwide.

We aim to continuously improve our existing products and develop new ones with advanced manufacturing operations.

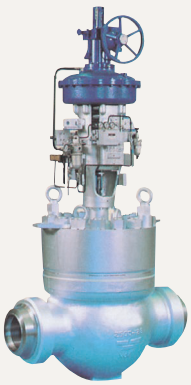
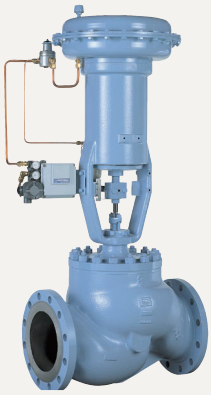
IMI searches for new technologies, manufacturing equipment and materials that strengthen the capabilities of our products. With the ABJ series, we strive to meet the demanding process conditions of today's power plants and deliver outstanding value to our customers.

A wide range of designs to suit your application

Categories	Model	Type of product	Size	Rating
Control Valve	AB100	Severe duty globe NUC, Fossil	3/4" - 18"	Class 150 - 4500
	AB160	General duty globe nuclear	3/4" - 8"	
	AB130	3-Way	3/4" - 8"	
	AB170	Angle	3/4" - 18"	
	AB200	Fossil	3/4" - 8"	Class 150 - 600
	AB260	Nuclear		
	AB300	Severe duty globe	3/4" - 10"	Class 900 - 4500
	AB370	Severe duty angle	3/4" - 4"	
Desuperheater	AB5000	Mechanical spray nozzle	Water: 10 T/H	Class 150 - 2500
	AB5100	Multi nozzle spray valve	Water: 20 T/H	Class 150 - 1500
	AB5300	Atomise steam nozzle	Water: 24 T/H	Class 150 - 1500
	AB5400	Mechanical spray nozzle	Water: 150 T/H	Class 150 - 300
	AB5600	Variable orifice type	Water: 100 T/H	Class 150 - 2500
PRDS Turbine Bypass Valve	AB6350	Small CHP, globe	2" - 8"	Class 150 - 2500
	AB6500	Power, angle	3" - 22"	Class 150 - 4500
Drive Unit	DU	Box type	330-8660 Nm	-

Product guide

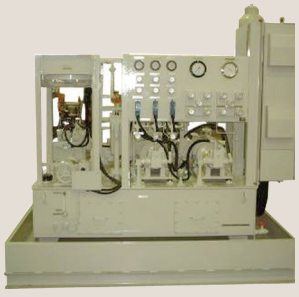
Control valves

Control Valve	**AB100** Special design application	**AB200** Low-medium application	**AB300** High duty application
			
Valve Size	3/4" - 18"	3/4" - 8"	3/4" - 12"
Leakage Class / Rating	FCI/70-2 Class IV, V, VI ASME Class 150 - 4500	FCI/70-2 Class IV, V ASME Class 150 - 600	FCI/70-2 Class IV, V, VI ASME Class 900 - 4500
Body Style	Globe (AB100) Angle (AB170) 3-Way (AB130)	Globe (AB200)	Globe (AB300) Angle (AB370)
Material	Carbon steel Alloy steel Stainless steel	Carbon steel Alloy steel Stainless steel	Carbon steel Alloy steel
Design Features	Suitable for control of all fluids used in thermal or nuclear power generation. Valves designed to specified conditions can also be supplied.	The AB200 was developed specifically for low-medium pressure applications with pressure rating up to ANSI Class 600. Comprising standardised components in order to reduce costs, the AB200 is a superior product that is also economical in line with low-medium end application requirements.	The AB300 provides premium performance at a cost-effective price. IMI offers both standard and specialised trims to meet specific customer requirements. The valve's modular design comes with flexible connection sizes.

Product guide

Actuators

Suitable for control of all fluids used in thermal or nuclear power generation. Valves designed to specified conditions can also be supplied.	**Pneumatic Series C** General design application spring opposed diaphragm (For AB200/AB300)	**Pneumatic Series D** Special design application spring opposed diaphragm (For AB100/AB300/PRDS)
		
Standard Size	60 in^2, 100 in^2, 160 in^2	60 in^2, 100 in^2, 160 in^2, 280 in^2, 400 in^2
Stroke	19 mm - 76 mm	12.7 mm - 102 mm
Stroke	Direct (fail open) or Reverse (fail close)	Direct (fail open) or Reverse (fail close)
Action	50 kN	140 kN
Options	Top mounted handwheel Maximum/minimum lift stops	Top or side mounted handwheel Maximum/minimum lift stops
Max. Air Supply	5.5 BarG	7.0 BarG

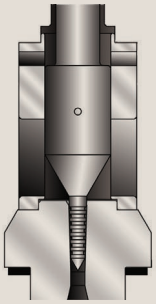
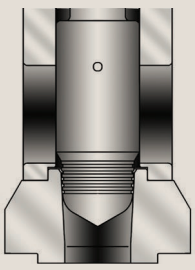
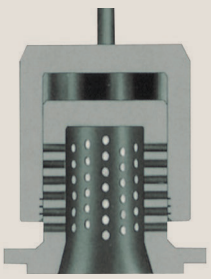
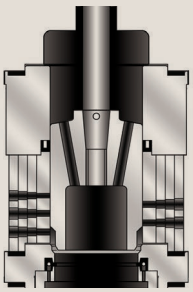


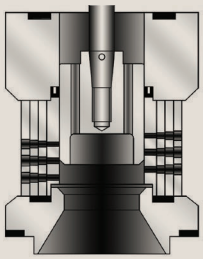
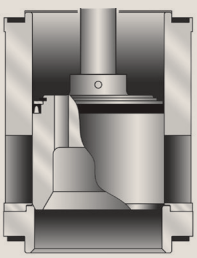
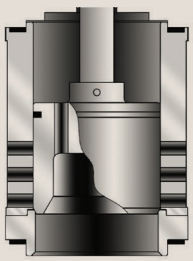
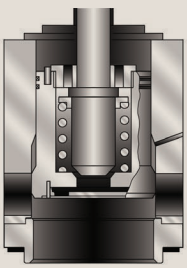
Hydraulic

Pneumatic piston - double acting

Product guide

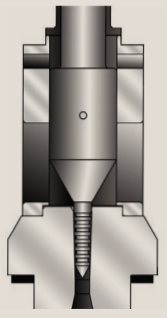
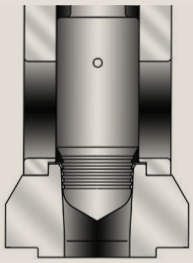
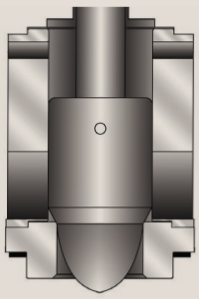
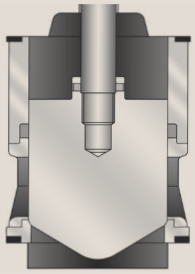
Control valve trim options for AB100/AB300

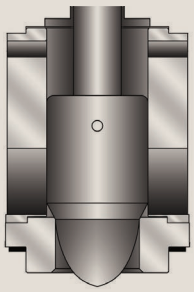
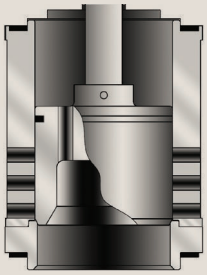
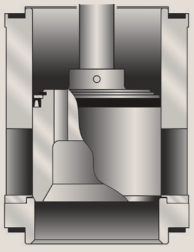
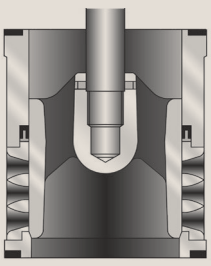
Trim Symbol	MIC/SCAS	MCAS	HFS	HCU/HCB-S
Trim Name	Small cascade	Modified cascade	-	Hycon unbalanced, balanced, soft-seat
Trim Size	MIC #0 to #11	1" - 2"	2" - 6"	1" - 10"
Cv Range	0.05 - 9.9	14.9 - 53	21 - 200	per application
Body Size	up to 2"	1 1/2" to 6"	3" to 8"	2" to 18"
Fluid	All	All	Liquid	Liquid
Trim Feature	Unbalanced	Unbalanced	Balanced, unbalanced	Balanced, unbalanced
Flow Direction	Under-seat	Under-seat	Over-seat	Under-seat
Leakage Class	5	5	4 or 5	4, 5 or 6
Rangeability	50 : 1	50 : 1 - 70 : 1	40 : 1	per application
Max. Allowable ΔP	W:150 bar, S:250 bar	W:150 bar, S:250 bar	W:150 bar	per application
Max. Allowable Temperature	565°C	565°C	427°C	260°C
Characteristics	Modified linear	Modified EQ%	Per application	Per application
Applications	• High pressure drop liquid such as pump recirculation valve. • High pressure desuperheater control water control valve. • Reheater or superheater spray control.	• High pressure drop liquid such as pump recirculation valve. • High pressure desuperheater control water control valve. • Reheater or superheater spray control.	• Service where flashing & cavitation exist. • Feedwater control HP/IP blow down valve.	• Used to prevent cavitation or reduce noise. • Feedwater start-up control valve. • Condenser recirculation valve.
Design				
Remarks	A series of labyrinth grooves give the cascading effect	Larger capacity above SCAS trim	-	Available in each design & hybrid Hycon by application

HCU/HCB	USV/BSV-R/P	USH/BSH-R/P	TADV/H
Hycon balanced, unbalanced	Unbalanced/balanced single V-port	Unbalanced/balanced single multi-hole	Tandem multi-hole
1" - 10"	2 1/2" - 14"	2 1/2" - 14"	4" - 14"
per application	49 - 1940	55 - 1940	68 - 1810
2" to 18"	2 1/2" to 18"	2 1/2" to 18"	4" to 16"
Liquid	All	All	All
Balanced, unbalanced	Balanced, unbalanced	Unbalanced	Balanced
Under-seat	Over-seat	Under-seat	Over-seat
4 or 5	4 or 5	5	5
per application	40 : 1 - 50 : 1	40 : 1 - 50 : 1	40 : 1 - 50 : 1
W:150 bar, S:250 bar	W:150 bar, S:250 bar	W:150 bar	per application
565°C	260°C BSV-R 565°C USV/ BSV-P	260°C BSH-R 565°C USH/BSH-P	565°C
Per application	Modified EQ%	Modified linear	Modified linear
• Used to prevent cavitation or reduce noise. • Boiler feedwater pump min. flow. • Recirculation valve.	• General purpose in most liquids and gases for both modulating and on-off.	• Low noise application for steam service at both temperatures above 260°C and high ΔP. • HP/LP turbine bypass control valve. • Auxilliary steam control Valve. • Soot blower steam control valve.	• Low noise application for steam service at both temperatures above 260°C and high ΔP. • HP/LP turbine bypass control valve. • Auxilliary steam control Valve.
			
Available in each design & hybrid Hycon by application	Over 260°C to 550°C, metal piston ring is available (BSV-P)	-	Retainer clamp for large size body

Product guide

Control valve trim options for AB200

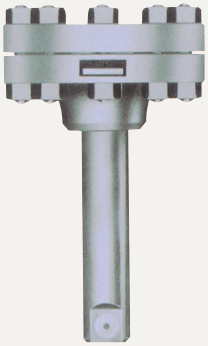
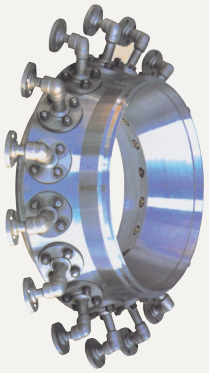
Trim Symbol	MIC/CAS	MCAS	USP	USV
Trim Name	Cascade	Modified cascade	Unbalanced single plug	Unbalanced single V port
Trim Size	Mic #0, 2, 4, 7, 9, 11	1" - 2"	3/4, 1, 1 1/2	2" - 8"
Cv Range	0.05 - 9.9	14.9 - 53	10 - 80	45 - 600
Body Size	up to 2"	1 1/2" to 6"	up to 2"	up to 8"
Fluid	All	All	All	All
Trim Feature	Unbalanced	Unbalanced	Unbalanced	Unbalanced
Flow Direction	Under-seat	Under-seat	Under-seat	Under-seat
Leakage Class	5	5	5	5
Rangeability	50 : 1	50 : 1 - 70 : 1	30 : 1	30 : 1
Max. Allowable ΔP	110 bar	W:150 bar, S:250 bar	110 bar	110 bar
Max. Allowable Temperature	427°C	427°C	427°C	427°C
Characteristics	Modified linear	Modified EQ%	Modified para. small EQ%	Modified para.
Applications	• High pressure drop liquid such as pump recirculation valve. • High pressure desuperheater control water control valve. • Reheater or superheater spray control.	• High pressure drop liquid such as pump recirculation valve. • For relatively bigger Cv.	• General purpose. • Pressure control of before fuel flow Cv. • Cooling water control valve for LP gland steam. • Pressure reducing.	• Boiler feedwater valve. • Process steam valve.
Design				
Remarks	A series of labyrinth grooves give the cascading effect		No cavitation condition	

USH	BSH	BSV	Flare Hole
Unbalanced multi port	Balanced multi port	Balanced V port	-
2" - 8"	2" - 8"	2" - 8"	2" - 8"
39 - 550	39 - 550	45 - 600	25 - 220
up to 8"	up to 8"	up to 8"	2" to 8"
All	All	All	Liquid
Unbalanced	Balanced	Balanced	Balanced
Under-seat	Over or Under-seat	Over-seat	Over-seat
5	4 or 5	4	4 or 5
50 : 1	50 : 1	30 : 1	30 : 1
11 MPa	11 MPa	11 MPa	11 MPa
427°C	260°C	260°C	260°C
Modified EQ%	Modified para.	Modified para.	Modified linear
• Low noise application for steam service at both temperatures above 260°C and high ΔP. • LP heater level control valve. • Condenser recirculation valve.	• For control valve velocity and on/off valve.	• Fuel oil flow control valve. • Deaerator level control valve. • LP heater level control valve. Condenser make up valve. • Strage tank level control valve. • Condenser spill over control valve.	• Flash and cavitation exist service. • HP/LP heater level. • Condenser recirculation valve.
			

Product guide

Desuperheaters

We manufacture a wide range of desuperheating equipment that corresponds to all specifications, ranging from high-capacity to low-capacity applications.
Our desuperheaters are optimised for usage with a wide range of control valves and various other control devices. This range of desuperheating equipment is appropriate for applications requiring narrow turn down and high superheated temperature.

	AB5000 Mechanical Type	**AB5100** Multi-Nozzle	**AB5400**
			
Steam Piping	4" or more	6" or more	6" or more
Mounting	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Rangeability	2:1 - 3:1	3:1 - 20:1	3:1 - 10:1
Min. Set Temperature	Sat. + 15°C	Sat. + 8°C or Sat. + 15°C	Sat. + 10°C
Allowable Temperature Differences (standard)	400°C	250°C	250°C
Control Accuracy	within 10°C	within 6°C	within 6°C
Atomising Steam	No	No	No
Required Water Pressure	line pressure + 3 bar	line pressure + 5 bar	line pressure + 5 bar
Max. Water Capacity	10 ton/h	12 ton/h	150 ton/h
Detecting Distance	12 m (depends on applications)	12 m (depends on applications)	12 m (depends on applications)
DSH Inlet Straight Pipe	Valve: 10D; Bend: 5D	Valve: 10D; Bend: 5D	Valve: 10D; Bend: 5D
Drain Recirculation	No	No	No
Application	Superheater, reheater spray condenser dump	Turbine extraction, process steam	Turbine extraction, process steam
Body Material	A105. F11	WC6	WC6, F11
Design Features	To be mounted between flanges and welded to the header, eliminating the need for support	To be varied the number of nozzle to provide optimum desuperheating for any operating conditions	To be varied the number of nozzle to provide optimum desuperheating for any operating conditions

IMI's range of desuperheating technology achieves stability by using a structure that uses steam kinetic energy. It attains the appropriate spray for wide turndown and accurate application control.	**AB5300** Atomising Spray	**AB5600** Variable Orifice	**AB5700** High Temp Variable Orifice
			
Steam Piping	4" or more	2" - 30"	3" - 20"
Mounting	Horizontal/Vertical	Vertical	Vertical
Rangeability	5:1 - 15:1	33:1	33:1
Min. Set Temperature	Sat. + 8°C	Sat. + 6°C	Sat. + 6°C
Allowable Temperature Differences (standard)	380°C	380°C	380°C
Control Accuracy	within 5°C	within 3°C	within 3°C
Atomising Steam	line pressure + 15 bar	No	No
Required Water Pressure	line pressure + 2 ~ 6 bar	line pressure + 3 bar	line pressure + 3 bar
Max. Water Capacity	24 ton/h	100 ton/h	100 ton/h
Detecting Distance	10 m (depends on applications)	6 m	6 m
DSH Inlet Straight Pipe	Valve: 10D; Bend: 5D	Valve: 10D; Bend: 5D	Valve: 10D; Bend: 5D
Drain Recirculation	No	Self-recirculation	Self-recirculation
Application	Turbine extraction, turbine bypass, process steam	All purposes	High pressure and temperature applications
Body Material	A105, F11	WCB, WC6, WC9	F22, F91
Design Features	To be capable of speeding up the evaporation and absorption of cooling water by the powerful preheating atomisation.	The flow plug changes its position corresponding to the flow rate, and a big turbulence is created immediately along the plug.	Same desuperheating method as AB5600, but it is durable for more high pressure and high temperature.

Product guide

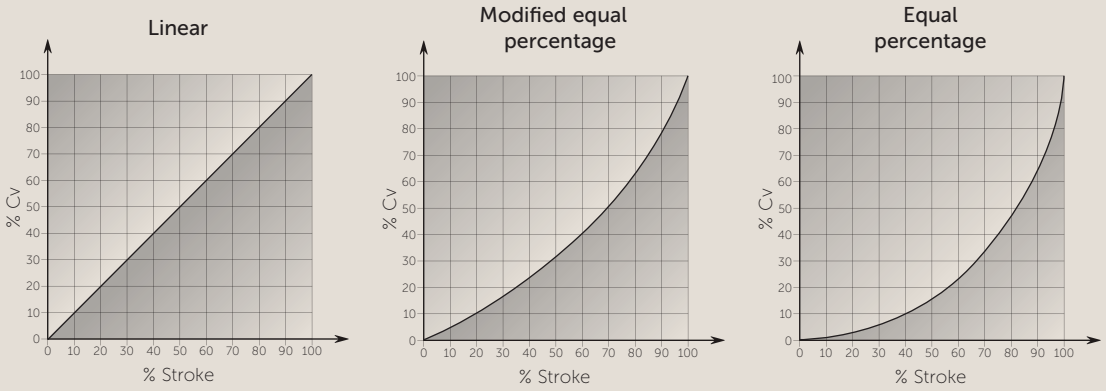
Pressure Reducing Desuperheating System Valves

PRDS: Pressure Reducing Desuperheating System	**AB6350** Globe Type	**AB6500** Angle Type
		
Valve Size	2" x 4" - 8" x 18"	3" x 8" - 8" x 18"
Pressure Rating	Class 150 - 2500	Class 150 - 4500
Body Material	Carbon steel Alloy steel	Carbon steel Alloy steel
Design Features	Self-introducing steam atomises many nozzles and reduces fluid evaporation for temperature control.	Using forged body material and pilot trim creates flexible inlet and outlet connection sizes.

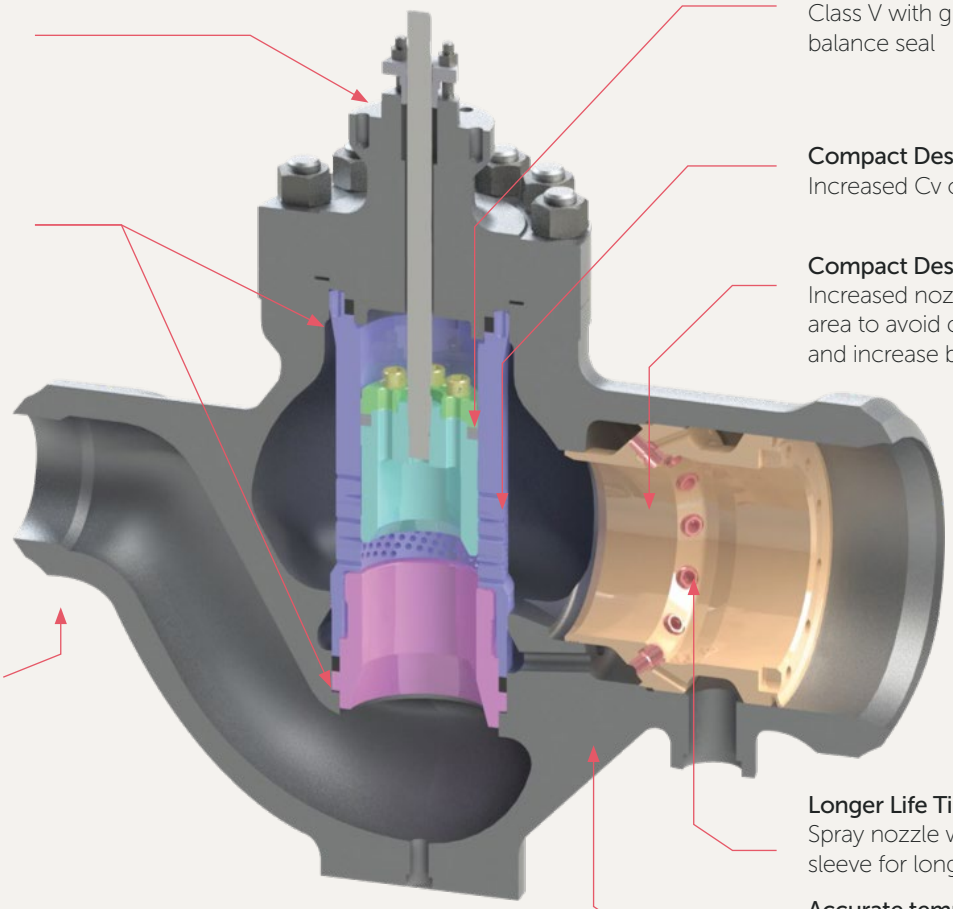
Valve Performance Characteristics

(% Cv vs. % Stroke)

Valves are customised to accommodate a wide range of variables.



AB6350 PRDS valve



Product specification

Body Type	Globe
Design Standard	ASME B16.34
Body Material	ASTM WCB, WC6, WC9
Flow Direction	Flow to Open
Bonnet Type	Bolted bonnet
Valve Size	2", 3", 4", 5", 6", 8"
Pressure Ratings	ASME 150 - 2500
End connections	Butt-weld, Flange
Temperature	Max. 565 °C
Leakage Class	ANSI FCI 70-2 Class IV & V
Seat Type	Quick change
Spray Nozzle	Self-introducing steam atomising type
Actuation	Multi-spring diaphragm, Piston, Electric, Hydraulic

AB6500 PRDS valve

Bonnet Design
Depending on rating, pressure seal bonnet and bolted bonnet are available

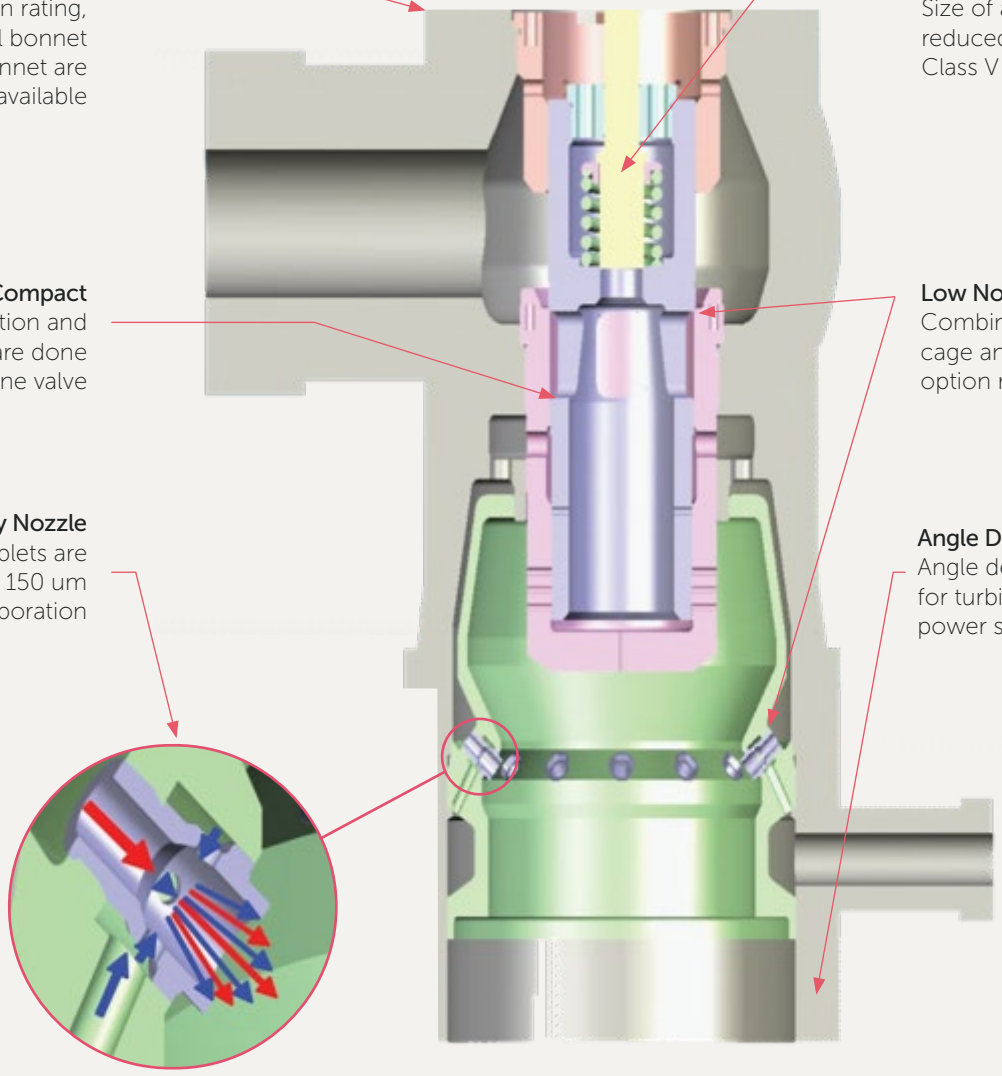
Tandem Trim
Size of actuator can be reduced and leakage Class V is achievable

Compact
Pressure reduction and desuperheating are done in one valve

Low Noise
Combination of multiport cage and diffuser plate option reduces noise

Atomising Spray Nozzle
Water droplets are reduced to 20 - 150 um for quick evaporation

Angle Design
Angle design is suitable for turbine bypass valve of power station



Product specification

Body Material	ASTM A182 F11, F22, F91
Body Style	Angle
Bonnet Style	Bolted bonnet (up to Class 1500) Pressure seal bonnet (Class 2500 and over)
Actuator Type	Diaphragm, Piston, Hydraulic, Electric
Seat Leakage Class	ANSI FCI 70-2 Class IV & V
Spray Nozzle Type	Self-introducing steam atomising type
Temperature Setting	Saturated temperature +6°C or more
Temperature Detector Distance	6 m from outlet connection or more in accordance with specification

Product guide

Drive Unit

Pneumatic Drive Unit
IMI CCI's new drive unit does not have a large hand wheel. Manual operation of the new drive unit is done by auto-manual switch valve and hand pump.

Easy maintenance:
- saving space for installation without a large hand wheel
- stripping down the drive unit by removing only the top cover and two side covers

Auto-manual switch valve
We can select, auto, manual open, manual position lock, manual close.

Hand pump lever
To open or close cylinder by rotating this hand pump after setting automanual switch valve.

Type	DU
Technical Data	Input signal: 4 - 20 mA Supply air pressure: Max. 5 bar Air consumption: Approx. 15 NL (balance position) Linerarity: ±2% FS Hysterisis: 2% Fully rotating angle: +3, -0 degree Characteristic: Linear / Square
Rated Torque	DU-35SHL 330 nm DU-50SHL 990 nm DU-60SHP 1560 nm DU-80SHP 2340 nm DU-100SHP 3670 nm DU-120SHP 6180 nm DU-130SHP 7010 nm DU-200SHP 8660 nm
Accessories	Standard: Positioner (P/P or I/P) Air regulator with filter Auto-manual change-over valve Optional: Air locking valve, limit switch Solenoid valve Position transmitter Booster relay Space heater Pressure switch Anchor bolts

Process Automation

IMI CCI

IMI plc
7-3-6 Minatojima Minamimachi,
Chuo-ku, Kobe 650-0047, Japan
Tel: +81 (0)78 277 1880
Fax: +81 (0)78 277 1881

www.imiplc.com/process-automation

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