azbil

Control Valve 6000 Series

Model AS_11/AC_11

Azbil Corporation

The History of Azbil's Control Valves

Azbil has earned the trust of customers around the world thanks to the technology and product quality it has cultivated over its long history. Now, our latest lineup of control valves carries on that tradition and achieves further innovation.

Developed and produced Japan's first top and bottom-guided double-seated automatic control valve

1906

Takehiko Yamaguchi founded Yamatake Shokai for the import of European and American machine tools

1936

Released the NV 10 Series

1953

Yamatake formed an equity-based alliance with Honeywell of the U.S. (50% share)

Commercialized the world's first cage type control valves

Released the NV 1000 Series

I

1964

II

Released the V Series

III

Developed and sold of the CV3000 Series

Released the CV3000 Alphaplus compact control valve

IV

1985

Released the world's first microprocessor-equipped positioner, the SVP3000 Smart Valve Positioner

1990

V

1995

Released the advanced Smart Valve Positioner 300 Series, with auto setup function

Yamatake-Honeywell changed its name to Yamatake Corporation

1998

2008

The Yamatake Group changed its name to the azbil Group

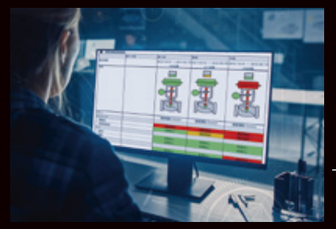
2020

2025

CV Generation **VI**

Released Control Valve 6000 Series

Azbil not only provides control valves, but also offers valve analysis and diagnosis services that make use of Smart Valve Positioners. These services optimize control valve maintenance and contribute to safe and stable plant operation.



Started valve analysis and diagnosis services

Where technology meets trust

The New Era of control valves

Feature
01

Feature
02

Feature
03

Features

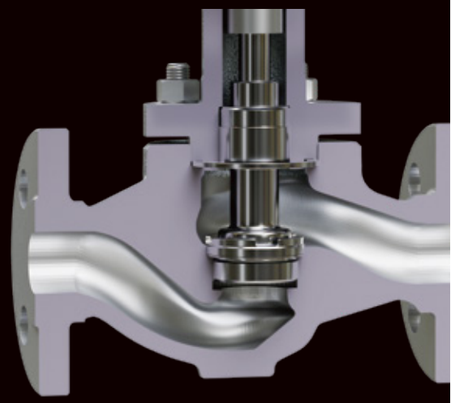
of the Control Valve 6000 Series

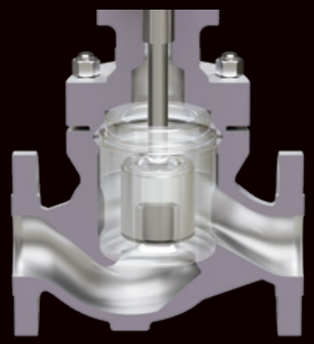
Feature 01

Improved rated Cv value

A larger valve capacity (improved rated Cv) has been achieved by combining expertise gained from many years of experience with cutting-edge computational fluid dynamics (CFD) analysis technology.

▸ P.06





Feature 02

Lower seat leakage

By improving the seat structure and increasing the thrust of the actuator, both the top-guided single-seated control valve and the pressure-balanced cage type control valve have achieved IEC seat leakage Class IV and V.

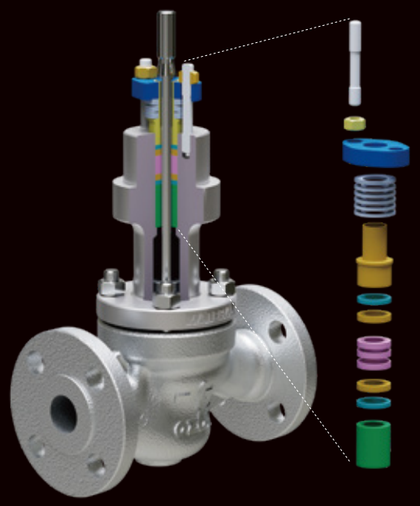
▸ P.08

Feature 03

Low-emission gland packing system

As a measure to contribute to preventing air pollution, you can select a gland structure that complies with ISO 15848-1, the international standard that specifies the performance for preventing fluid leakage.

▸ P.09



Feature

01 Improved rated Cv value

The Control Valve 6000 Series has achieved an excellent rated Cv value, made possible by combining know-how of flow path design gained from many years of experience with cutting-edge fluid analysis technology.

The rated Cv value has improved by an average of **29 %** compared to our conventional single-seated control valves*1, and by an average of **25 %** compared to our conventional pressure-balanced cage type control valves*2.

By mounting a flow stabilizer (patent pending) on the valve body, in particular, for single-seated control valves, the flow at the bottom of the valve can be effectively rectified, increasing the volume of the fluid passing through without increasing the diameter.

*1. Azbil's model AGVB *2. Azbil's model ACP

Verification by fluid analysis

By mounting a flow stabilizer (patent pending) on the valve body, the flow at the bottom of the valve can be effectively rectified.

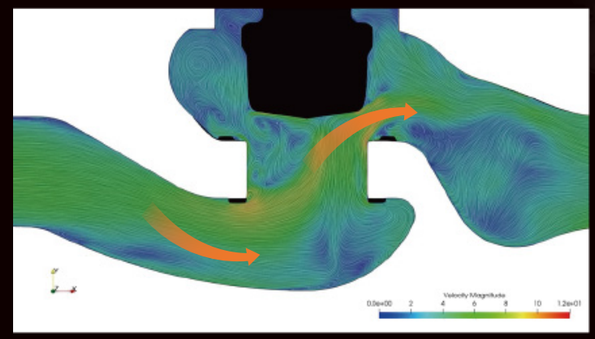
■ Rated Cv value

Average improvement of **25~29%**

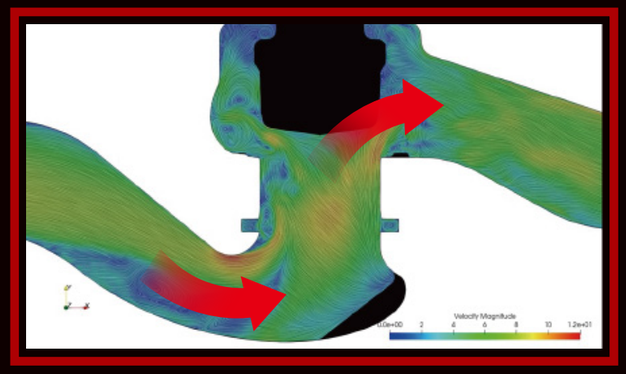
(compared to our conventional models)

Comparison of flow rate with conventional model

Conventional model



Control Valve 6000 Series



Increasing fluid flow volume without increasing diameter.

Feature

02 Lower seat leakage

The Control Valve 6000 Series, for both **single-seated control valves and cage type control valves, has achieved IEC seat leakage Class IV and V.**

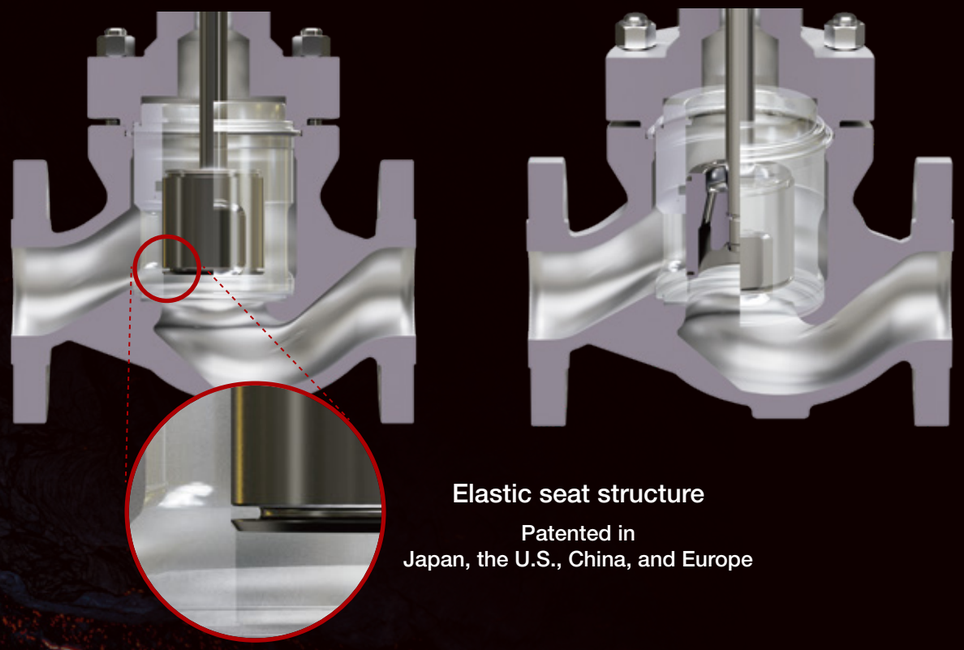
In particular, the pressure-balanced cage type control valve can now comply with IEC Class V thanks to its patented elastic seat structure with slits in the seat part of the plug.

This enables the use of a cost-effective control valve that can be combined with a compact actuator, even in applications that require tight shut-off.

■ Seat leak performance

IEC seat leakage Classes IV and V

Pressure-balanced cage type control valve



Elastic seat structure

Patented in
Japan, the U.S., China, and Europe

Feature

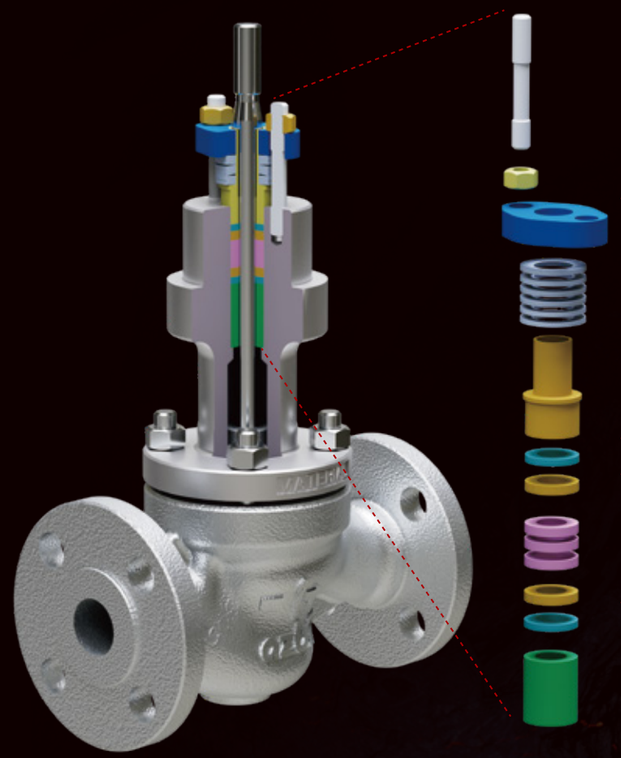
03 Low-emission gland packing system

Efforts to reduce volatile organic compounds (VOCs) emitted into the atmosphere from industrial facilities are progressing around the world.

For the Control Valve 6000 Series, you can select a gland structure that complies with ISO 15848-1, the international standard that specifies the performance for preventing fluid leakage, in order to contribute to preventing air pollution.

■ International Standard

Complies with ISO 15848-1



Live-loaded packing system:

The force of stacked Belleville springs prevents stress relaxation caused by wear of the gland packing.

Gland packing:

A unique packing configuration is used to minimize the thermal expansion and contraction of the packing, which can cause fluid leakage.

Azbil's Valve Development Initiatives

For the Control Valve 6000 Series, we use the latest flow rate testing facility that complies with international standards for control valves to obtain its accurate flow characteristics and valve-specific parameters.

To develop the new control valves, we constructed a dedicated flow rate testing facility that complies with the IEC 60534 series, the international standards for control valves.
At this testing facility, we can obtain the following data for selecting a valve:

The rated Cv, flow characteristics,
and rangeability for up to 140 patterns of specification combinations

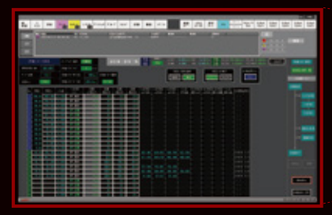
Valve-specific parameters (F_L,xT,F_d*) essential
for accurate sizing calculations (Cv calculations)

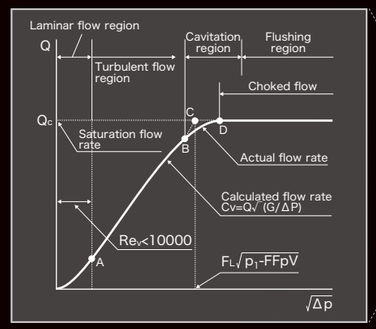
* F_L : Liquid pressure recovery factor of the control valve　xT : Pressure drop ratio factor of the control valve　F_d : Valve style modifier

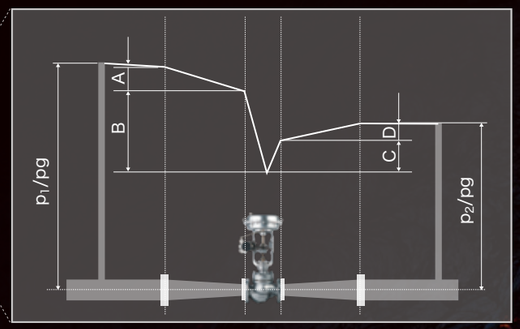
You can select the appropriate size of control valves
when designing a plant and
accurately understand the status of process control
during operation of the plant.

Test equipment

Flow rate test







Making use of obtained indices for valve selection and plant operation

Specification

Valve type	Top-guided single-seated control valve			Pressure-balanced cage type control valve		
Model No.	Model AS111	Model AS211	Model AS311	Model AC111	Model AC211	Model AC311
Pressure rating	ASME150/300/600 HG/T20592PN10/16/25/40/63-2009 HG/T20615class150(PN20)/class300(PN50)/class600(PN110)-2009 JIS10K/16K/20K/30K JPI150/300/600					
Temperature range	-17℃ ≤ t ≤ 230℃	230℃ < t ≤ 400℃	-45℃ ≤ t < -17℃	-17℃ ≤ t ≤ 230℃	230℃ < t ≤ 400℃	-45℃ ≤ t < -17℃
Body material	A216 WCB/SCPH2 A351 CF8/SCS13A A351 CF8M/SCS14A		A351 CF8/SCS13A A351 CF8M/SCS14A	A216 WCB/SCPH2 A351 CF8/SCS13A A351 CF8M/SCS14A		A351 CF8/SCS13A A351 CF8M/SCS14A
Trim material	ASTM A479 316 ASTM A479 316 + CoCr-A seat ASTM A479 316 + CoCr-A face	ASTM A479 316 + CoCr-A seat ASTM A479 316 + CoCr-A face		ASTM A351 CF8M ASTM A479 316 CoCr-A seat ASTM A747 CB7Cu-1	ASTM A351CF8M + CoCr-A seat ASTM A747 CB7Cu-1	ASTM A351CF8M + CoCr-A seat
Leakage class comply with IEC 60534-4(2006) JIS B2005-4(2012) GB/T 17213.4(2015) GB/T 4213(2024)	Class IV, V			Class IV, V	Class IV	Class IV
Range ability	100:1 (Full Port)					
Actuators	Single-acting type pneumatic diaphragm actuator (Model PA2/3/4/5)					
Manual device	Side mounted handwheel					

*Please refer to the specification sheet for details on each specification.

Valve size		Pressure rating		
		Class 150	Class 300	Class 600
1/2 [in.]	(15 [mm])	Top-guided single-seated control valve	Top-guided single-seated control valve	Top-guided single-seated control valve
3/4 [in.]	(20 [mm])	Top-guided single-seated control valve	Top-guided single-seated control valve	Top-guided single-seated control valve
1 [in.]	(25 [mm])	Top-guided single-seated control valve	Top-guided single-seated control valve	Top-guided single-seated control valve
1-1/2 [in.]	(40 [mm])	Top-guided single-seated control valve	Top-guided single-seated control valve	Pressure-balanced cage type control valve
2 [in.]	(50 [mm])	Top-guided single-seated control valve	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve
2-1/2 [in.]	(65 [mm])	Top-guided single-seated control valve	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve
3 [in.]	(75 [mm])	Top-guided single-seated control valve	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve
4 [in.]	(100 [mm])	Top-guided single-seated control valve	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve
6 [in.]	(150 [mm])	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve
8 [in.]	(200 [mm])	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve	Pressure-balanced cage type control valve

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