

# Auto Drain Valve

New

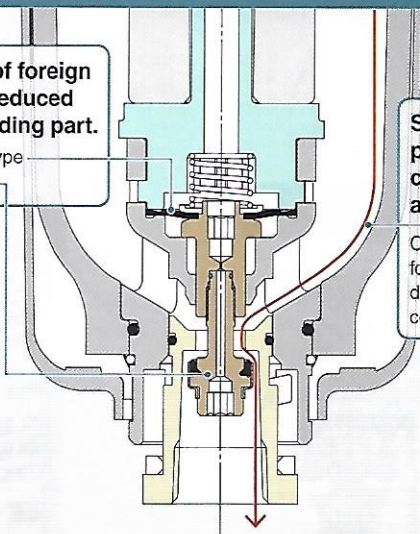
RoHS

## Longer life & Higher resistance to foreign matter

### Improved foreign matter resistance

Catching of foreign matter is reduced with no sliding part.

Diaphragm type  
Poppet type



Shape prevents condensate accumulation.

Condensate and foreign matter are discharged completely.

### Increase in condensate discharge

Reduction of operation frequency due to increased condensate discharge

- Drain discharge: Max. **100 cm<sup>3</sup>/cycle**  
(3 times compared with the current model)

### Double layer design

- Better visibility & environmental resistance
- The bowl is covered with a transparent bowl guard.



With manual discharge mechanism

N.O.: Black  
N.C.: Gray

# AD402-A Series



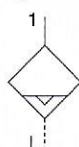
CAT.ES40-65A

# Auto Drain Valve

# AD402-A Series



Symbol



## Specifications

### Standard Specifications

Model	AD402-A
Auto drain type	Float type
Auto drain valve type	N.C. (Normally closed: Drain port is closed when pressure is not applied) N.O. (Normally open: Drain port is open when pressure is not applied)
Fluid	Compressed air
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Operating pressure range*1	N.C.: 0.15 to 1.0 MPa N.O.: 0.1 to 1.0 MPa
Port size	1/4, 3/8, 1/2
Drain port size	3/8
Bowl material	Polycarbonate
Bowl guard material	Polycarbonate
Weight	0.46 kg
Appearance color	White

\*1 Discharged flow rate of the air compressor should be 400 L/min (ANR) or more.

## How to Order

AD402-  04 D-  -A

Semi-standard symbol: When plural options are required, indicate them in alphanumeric order.  
Example) AD402-N04D-2VZ-A

### Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

### Port size

Symbol	Port size
02	1/4
03	3/8
04	1/2

### Auto drain type

Symbol	Description
C*1	N.C. (Normally closed) Drain port is closed when pressure is not applied.
D*2	N.O. (Normally open) Drain port is open when pressure is not applied.

### Semi-standard specifications

	Symbol	Description	
Semi-standard	Bowl*3	Nil	Polycarbonate bowl
		2	Metal bowl
		6	Nylon bowl
Valve	Nil	None*4	
	V	With bleed valve	
Pressure unit	Nil	Name plate and caution plate for bowl in SI units	
	Z*5	Name plate and caution plate for bowl in imperial units	

\*3 Chemical resistance of the bowl ▶ See **P.7**

\*4 For port size 1/4, the valve already mounted.

\*5 Only NPT can be selected.

This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

\*1 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.

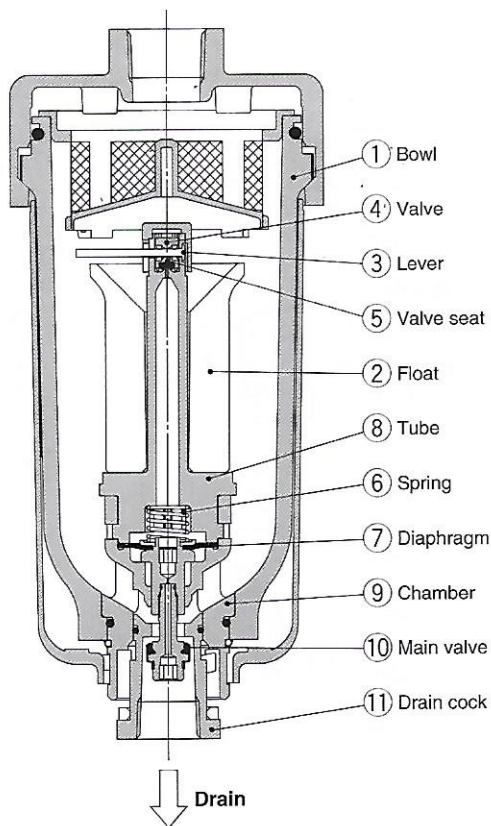
\*2 If the compressor is smaller than 3.7 kW, or discharge flow is less than 400 L/min (ANR), air leakage from the drain cock may occur during start of operations. N.C. type is recommended.

Proper use of float type auto drain ▶ See **P.6**

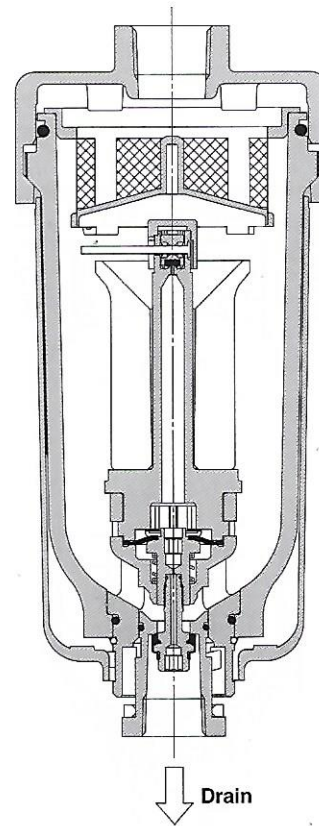
# AD402-A Series

## Working Principle: Float Type Auto Drain

N.O. (Normally open)



N.C. (Normally closed)



● **When pressure inside the bowl is released:**

When pressure is released from the bowl ①, the diaphragm ⑦ is lowered by the spring ⑥. The seal at the main valve ⑩ is interrupted, and the outside air flows inside the bowl ① through the chamber ⑨ and the drain cock ⑪. Therefore, if there is an accumulation of condensate in the bowl ①, it will drain out through the drain cock.

● **When pressure is applied inside the bowl:**

When pressure inside the bowl is 0.1 MPa or higher, the force of the diaphragm ⑦ surpasses the force of the spring ⑥, and the diaphragm goes up. This pushes the main valve ⑩ up so that it creates a seal, and the inside of the bowl ① is shut off from the outside air. If there is no accumulation of condensate in the bowl ① at this time, the float ② will be pulled down by its own weight, causing the valve ④, which is connected to the lever ③, to seal the valve seat ⑤.

● **When there is an accumulation of condensate in the bowl:**

The float ② rises due to its own buoyancy and the seal at the valve seat ⑤ is interrupted. This allows the pressure inside the bowl ① to enter the tube ⑧. The result is that the combined pressure inside the tube ⑧ and the force of the spring ⑥ lowers the diaphragm ⑦. This causes the seal at the main valve ⑩ to be interrupted, and the accumulated condensate in the bowl ① drains out through the drain cock ⑪.

Turning the drain cock ⑪ manually counterclockwise rises the drain cock ⑪, which pushes open the seal created by the main valve ⑩, thus allowing the condensate to drain out.

● **When pressure inside the bowl is released:**

Even when pressure inside the bowl ① is released, the spring ⑥ keeps the diaphragm ⑦ in its upward position. This keeps the seal created by the main valve ⑩ in place; thus, the inside of the bowl ① is shut off from the outside air. Therefore, even if there is an accumulation of condensate in the bowl ①, it will not drain out.

● **When pressure is applied inside the bowl:**

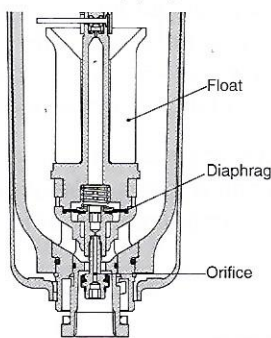
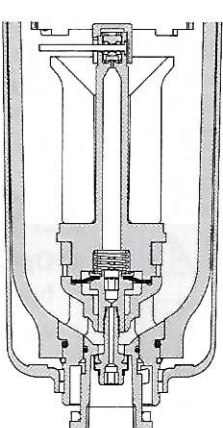
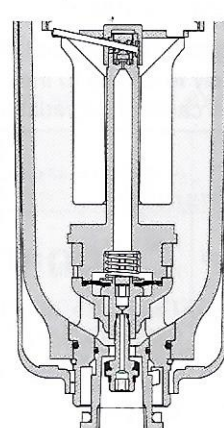
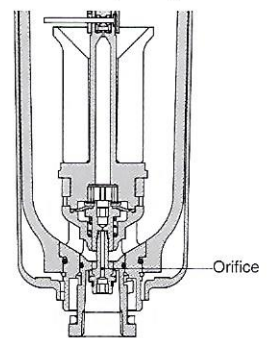
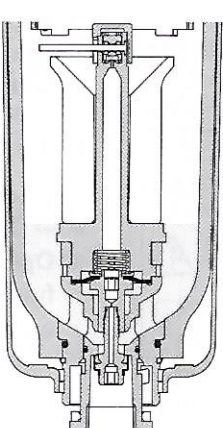
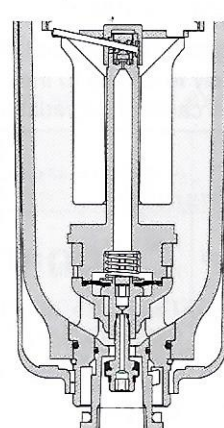
Even when pressure is applied inside the bowl ①, the combined force of the spring ⑥ and the pressure inside the bowl ① keeps the diaphragm ⑦ in its upward position. This maintains the seal created by the main valve ⑩ in place; thus, the inside of the bowl ① is shut off from the outside air. If there is no accumulation of condensate in the bowl ① at this time, the float ② will be pulled down by its own weight, causing the valve ④, which is connected to the lever ③, to seal the valve seat ⑤.

● **When there is an accumulation of condensate in the bowl:**

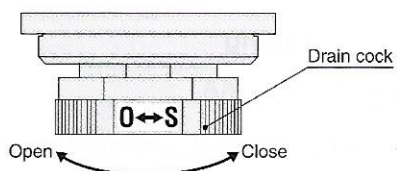
The float ② rises due to its own buoyancy and the seal at the valve seat ⑤ is interrupted. This allows the pressure inside the bowl ① to enter the tube ⑧. The result is that the pressure inside the tube ⑧ surpasses the force of the spring ⑥ and pushes the diaphragm ⑦ downward. This causes the seal at the main valve ⑩ to be interrupted and the accumulated condensate in the bowl ① drains out through the drain cock ⑪.

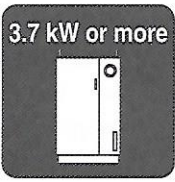
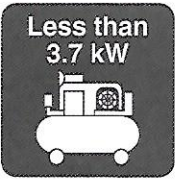
Turning the drain cock ⑪ manually counterclockwise rises the drain cock ⑪, which pushes open the seal created by the main valve ⑩, thus allowing the condensate to drain out.

## Operating State and Proper Use of Float Type Auto Drain

Auto drain	When pressure is not applied (After exhausting residual pressure)	When pressure is applied		Minimum operating pressure
		Before drain accumulates	When drain accumulates	
N.O. (Normally open)	Drain discharged (Open) 	Drain not discharged (Close) 	Drain discharged (Open) 	0.1 MPa or more
N.C. (Normally closed)	Drain not discharged (Close) 	Drain not discharged (Close) 	Drain discharged (Open) 	0.15 MPa or more

\* For both N.O. and N.C., the drain can be discharged manually by turning the drain cock to the "O" position.



Proper use			Recommended auto drain
Compressor	When pressure is not applied (After exhausting residual pressure)	Cold climates	
 <b>3.7 kW or more</b>	<b>Drain not accumulated</b> Do not want to accumulate drain generated at the inlet side when pressure is not applied.	<b>Want to prevent troubles caused by freezing.</b>	N.O.*1 (Normally open)
 <b>Less than 3.7 kW</b>	<b>Drain accumulated</b>		N.C. (Normally closed)

\*1 For N.O. type, the drain discharge passage is open when pressure is not applied. For this reason, the drain exhaust port is not closed completely in a compressor with a small supply amount (less than 3.7 kW) and the air will ceaselessly blow out.