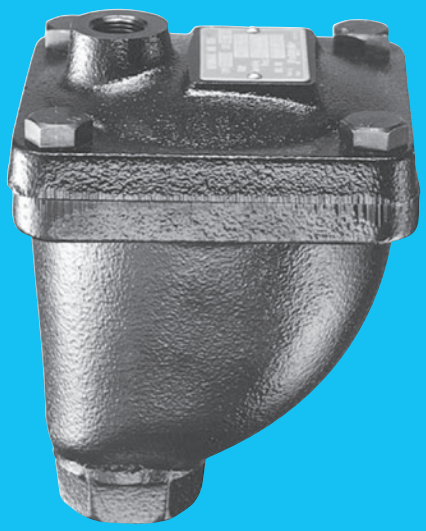
Air Vent Valve
Air Vent Valve with Vacuum Breaker

14



Step 0 Type/Structure/Features

Please refer to this for the usage objective and features of Air Vent Valve and Air Vent Valve with Vacuum Breaker

Step 1 Selection

Please look at the ID chart to choose the right products depending on the intended of uses. Details are on the products page.

Step 2 Sizing

Confirm the discharge volume chart on the product page.

Step 3 Attention for usage

Please check some guidelines for optimal usage of Air Vent Valve and Air Vent Valve with Vacuum Breaker.

What is Air Vent Valve ?

· An air vent valve is a safety device that discharges air at the water supply piping in order to avoid air related problems in the water piping systems.

Purposes

· For protecting piping materials and systems from corrosion due to air (oxygen).
· For preventing water splashing at faucet due to the existence of air.
· For preventing noise resulted from the ingress of air into cold/hot water supply systems, air conditioning systems, and other systems.
· For the smooth startup and stable operation of water supply and other systems/devices through air discharge at the time of initial water conveyance.

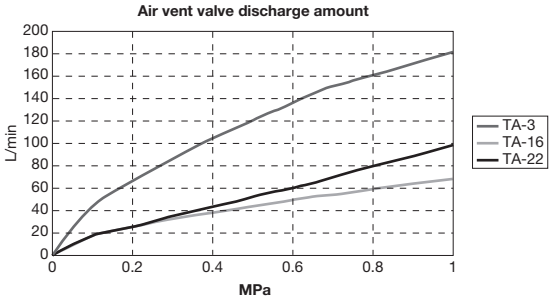
Air Vent for Initial Discharge only

At the start of the pump for deep well, when the air vent is required to pull out the initial air while starting the system for the initial filling of the container such as an empty tank and pipes, vent open force by the pressure during operation is fine without thought. In this case, select a large orifice size in order to discharge the air at high speed initially. However, initial air is discharged and the system does not open the vent after reaching the regular pressure. Please contact us on the selection of this type of application.

Note for Selecting Air Vent Valve

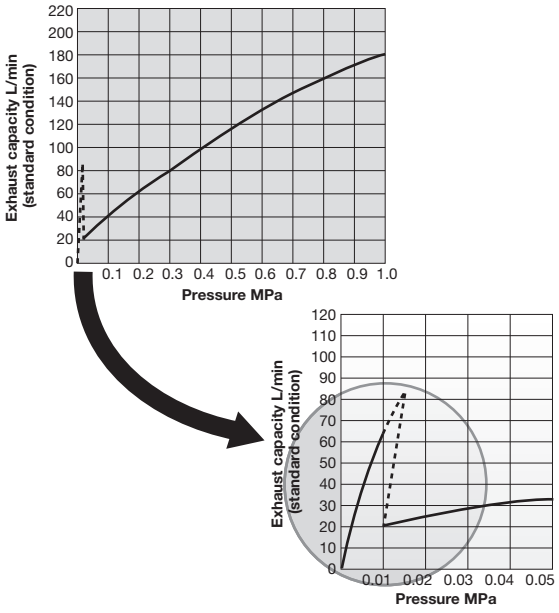
■Discharge Amount

The discharge amount depends on the model. Please refer to the following chart to select a model adequate for the required discharge amount.



■Feature of Quick Exhaust Mechanism

The difference between air vent valves with and without quick exhaust mechanism appears during the operation at low pressure up to 0.015 MPa. By exhausting large amount of air from the piping at low pressure, the valve ensures smooth initial water supply.



Air Vent Valve with Vacuum Breaker

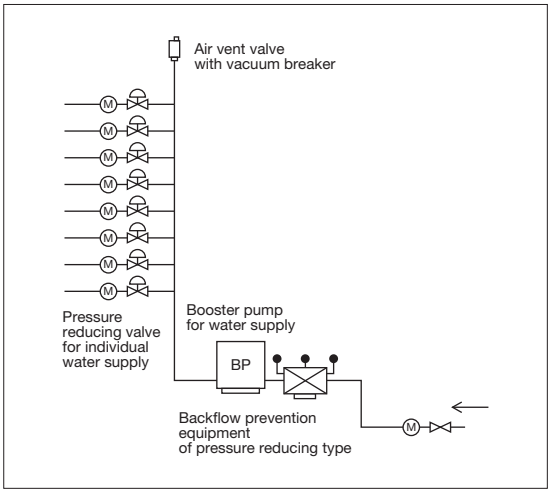
Step 0

An air vent valve with vacuum breaker operates in the same manner as an air vent valve but has an upgraded air intake function that works when negative pressure is generated. It prevents a backflow from a system or unit to which water is supplied by promptly eliminating negative pressure.

Necessity of Air Vent Valves with Vacuum Breaker

An“air vent valve”has been installed at the top of vertical water supply piping for the purpose of discharging air.
In this case, however, if the pressure inside piping drops because of temporary suspension of water supply or an accident, the pressure at the top of the vertical piping becomes negative, which may cause the phenomenon of a backflow (inverted siphon) within the building.
For this reason, the top of the vertical piping requires an“air vent valve with vacuum breaker”that has both a function of introducing into the piping a sufficient quantity of air to eliminate negative pressure, and a function capable of discharging air under pressure.

· Top of vertical piping in collective housing and buildings
· Top of vertical piping connected to direct boosting water supply lines



View about Intake Air Quantity

One of the probable causes of the generation of maximum negative pressure inside water supply piping is a large water leakage due to damage to piping. So, negative pressure no longer occurs if a larger quantity of air than this water leakage can be introduced into the piping.
The air intake performance standards of Scandinavian countries (established by N. Lindblad, Swedish Water & Wastewater Association) take the same view about the intake air quantity. The Nagoya City Waterworks & Sewerage Bureau and some other business units set an intake air quantity for each nominal size of vertical piping based on Scandinavian countries' view.

Required intake air quantity
(The Nagoya City Waterworks & Sewerage Bureau)

ΔP = -2.9kPa

Size at the top of water supply piping	20	25	30	40	50
Intake air quantity [L/min (standard condition)]	90	150	240	420	840
Intake air quantity [L/sec (standard condition)]	1.5	2.5	4.0	7.0	14

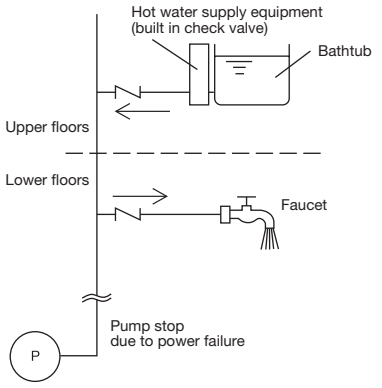
●Example of accidents occurred by the negative pressure in the vertical piping

At the apartment had installed automatic hot water tension function with fully automatic hot water supply equipment , accident occurs when the hot water of the upper floors of bathtub comes out from the lower floors of the faucet.

Causes
Water supply pump is stopped due to a power failure (water outage) ⇨
The negative pressure occurred inside of the vertical piping. ⇨
The lower floors of the residents opened the faucet. ⇨
The backflow generated by the inverted siphon.

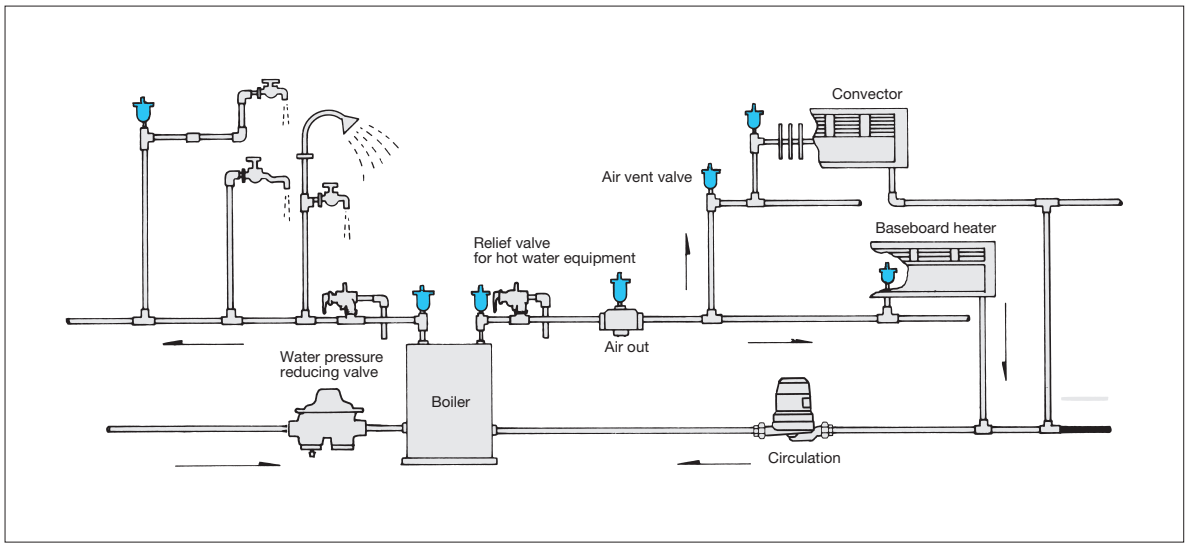
Although there were three check valves installed between the pipe way of the bathtub and the faucet in order to prevent the backflow, the hot water from the tub came out from the faucet of the lower floors because of the failure in the operation.

* The check valve had been structurally improved and the reliability is rising.

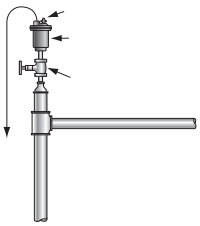


Guidelines for Installing Air Vent Valve

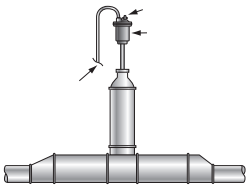
■Air Vent Valve



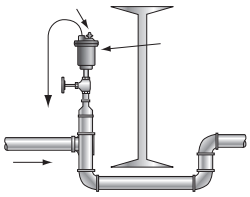
At the top of vertical piping



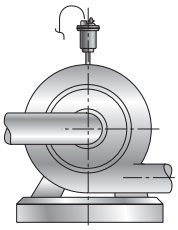
At the top of horizontal piping



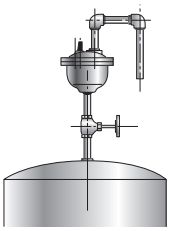
On loop in piping



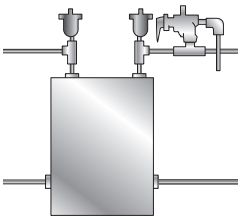
At the centrifugal pump



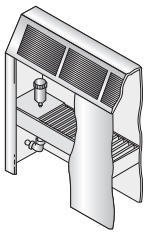
At hot water heating system



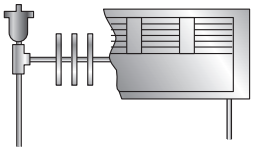
At venting boiler or chilling unit



At venting convectors



At venting baseboard radiation



· Please piping the outlet tip of the exhaust hole as shown in the diagram above in order to prevent the backflow as there will be leakage due to scale and dust inside of piping.

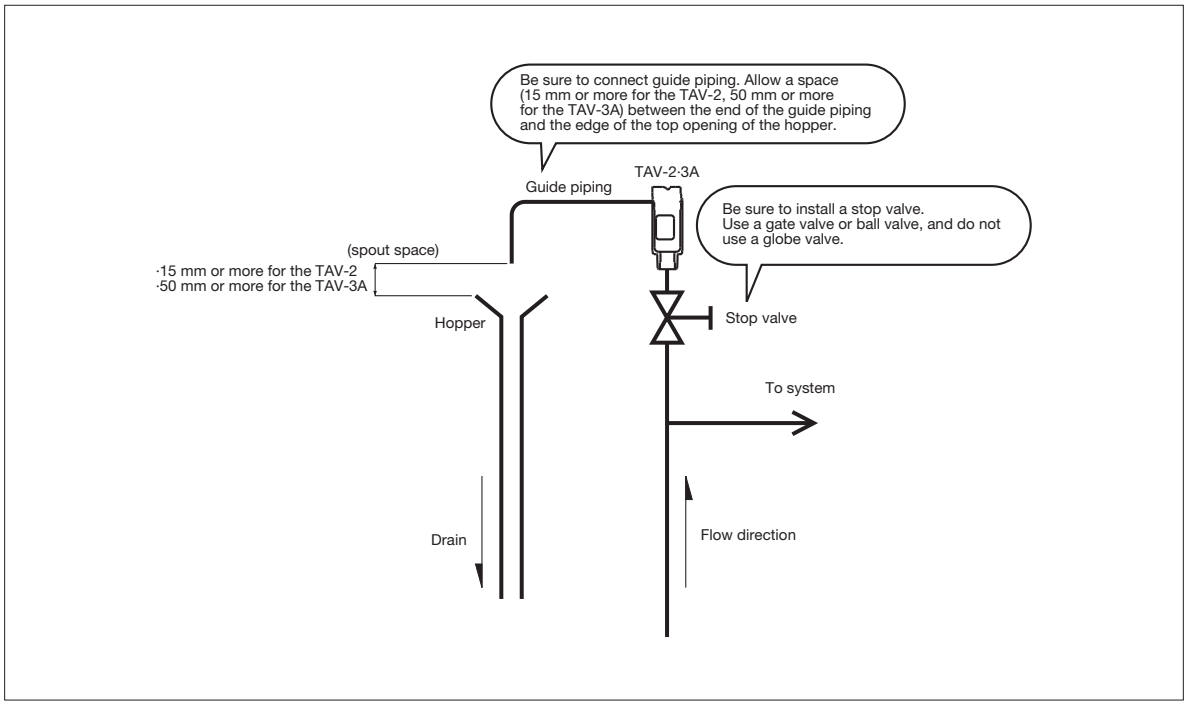
1. Use the air vent valve at any time as a single connector with the nominal diameter above 20A. After fulling water in the system, there is no need to install equalizing pipe as the small amount of air discharge is enough.
2. Please install the equalization pipe in the situation of continuous discharge. Equalizing pipe is essential when air gas flowing in or discharging out continuously.
3. Please be piping the air vent valve vertically in order to discharge air and gas properly.

Step 3

■TAV-2·3A Air Vent with Vacuum Breaker

· In anticipation of water leakage from the air inlet or outlet of the product, connect induction piping to the air inlet and outlet, and guide it to the hopper (drain ditch). Keep a clearance (15 mm or more for the TAV-2, 50 mm or more for the TAV-3A) between the end of the induction piping and the overflow line of the hopper.
  * When hot water is used, its leakage may cause burns or contamination in the area where the product is installed.
· Before connecting the product, carefully wash the inside of piping to remove dirt, scale, etc.
· When connecting the product to piping, pay attention to the quantity and application position of sealing agent or where to attach seal tape.
· Do not disassemble the product.
· Prepare enough space for inspections, maintenance, and repairs. Do not install the product under the roof or inside the wall.
· Vertically install the product in a position where air tends to accumulate.
· Use a stop valve (gate valve, ball valve, cock, etc.) for maintenance and inspections in any case. Do not use a globe valve.
· Drain water when the atmospheric temperature is low, in winter for example, or water is not to be used for a long period of time.
· Open the supply valve of fluid slowly in order to prevent water hammer while initial passing water.
  * When the supply of the fluid is too fast, the product will be damaged by water.

<Piping example>



Air Vent Valve/Air Vent Valve with Vacuum Breaker ID-Charts (for factory)

	Model	Fluid	Material	Max. Press. (MPa)	Max. Temp. (℃)	Connection	Size	Feature	Page
	TA-3	Cold and hot water, Oil	FCD450	1.0	90℃	JIS Rc	15-32A	· General usage	14-9
	TA-3C	Cold and hot water, Oil	FCD450	1.0	60℃	JIS Rc	15-32A	· Nylon coating	14-11
	TA-2	Cold and hot water, Oil	FCD450	1.0	90℃	JIS Rc	15-32A	· Quick exhaust mechanism	14-10
	TA-2C	Cold and hot water, Oil	FCD450	1.0	60℃	JIS Rc	15-32A	· Quick exhaust mechanism · Nylon coating	14-12
	TA-5	Cold and hot water, Oil	CAC406	1.0	90℃	JIS Rc	15-32A	· Quick exhaust mechanism	14-10
	TA-5F	Cold and hot water, Oil			120℃		15-32A	· Quick exhaust mechanism · FKM DISC	
	TA-6	Cold and hot water, Oil	CAC406	1.0	90℃	JIS Rc	15-32A		14-9

* Please contact us for fluid other than the above.

Air Vent Valve/Air Vent Valve with Vacuum Breaker ID-Charts (for residential installation)

Step 1

	Model	Fluid	Material	Max. Press. (MPa)	Max. Temp. (℃)	Connection	Size	Feature	Page
	TA-22ML	Cold and hot water	CAC406C	1.0	100℃	JIS R	15-25A	· Vinyl hose joint	14-17
	TA-18ML	Cold and hot water	SUS304	0.3	100℃	JIS R	6A·10-20A	· Vinyl hose joint	14-15
	TA-16	Cold and hot water	SCS13	1.0	90℃	JIS R	15-25A		14-19
	TA-16L							· L-type hose joint	14-19
	TA-16CVA	Cold and hot water	SCS13	1.0	90℃	JIS R	15-25A	· With check valve (angle type)	14-21
	TA-16CVS							· With check valve (straight type)	14-21
	TAV-2	City water (material)	CAC406	1.0	80℃	JIS R	15A	· Air vent valve with vacuum breaker	14-23
	TAV-3A	City water (material)	CAC406	1.0	35℃	JIS R	20-25A	· Air vent valve with vacuum breaker	14-25

* Please contact us for fluid other than the above.

TA-3,TA-6

■Applications

Building equipment | Industrial equipment | Building complex

■Features

1. Wider pressure range than that of conventional air vent valves and applicable to from low pressure to high.
2. No leakage from the valve due to synthetic rubber used for valve seat. However, just in case, the copper pipes are connected to the exhaust port.
3. To prevent scale problem, unique valve mechanism keeps the seat surface clean.
4. Parts are easy to replace, maintain and inspect from outside even if the valve seat surface is damaged in long period operation.
5. Since the body of the TA-6 is made of bronze, this type is free from rusty water.
6. Compact body while exhaust capacity is 1.5 times larger than that of conventional air vent valve.

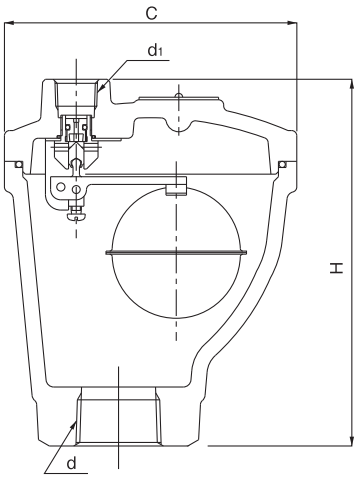
■Specifications

Model		TA-3	TA-6
Application		Cold and hot water, Oil (specific gravity: 0.8 or more)	
Working pressure		0.01-1.0 MPa	
Maximum temperature		90℃	
Material	Body, cover	Ductile cast iron	Cast bronze
	Valve	Brass	
	Valve seat	Brass (equipped with NBR disc)	
	Float	Stainless steel	
Connection		JIS Rc screwed	

· The body of the TA-3 is electrodeposition-coated for rustproofing.

■Dimensions (mm) and Weights (kg)

Nominal size	d	d_1	H	C	Weight
15A	Rc 1/2	Rc 3/8	139	114	2.72
20A	Rc 3/4	Rc 3/8	139	114	2.72
25A	Rc 1	Rc 3/8	143	114	2.88
32A	Rc 1-1/4	Rc 3/8	143	114	2.88



■Please refer to P.14-14 for discharge capacity.

TA-2,TA-5·5F

■Applications

Building equipment | Industrial equipment | Building complex

■Features

1. Equipped with a quick exhaust mechanism, air inside piping can be quickly discharged at the time of initial water supply, ensuring smooth water supply.
2. Wider pressure range than that of conventional air vent valves and applicable to from low pressure to high.
3. Parts are easy to replace, maintain and inspect from outside even if the valve seat surface is damaged in long period operation.
4. Since the body of the TA-5 and TA-5F is made of bronze, these types are free from rusty water.
5. Sucks in air promptly and automatically when pressure becomes negative in piping or tank, preventing damage to piping components by negative pressure.

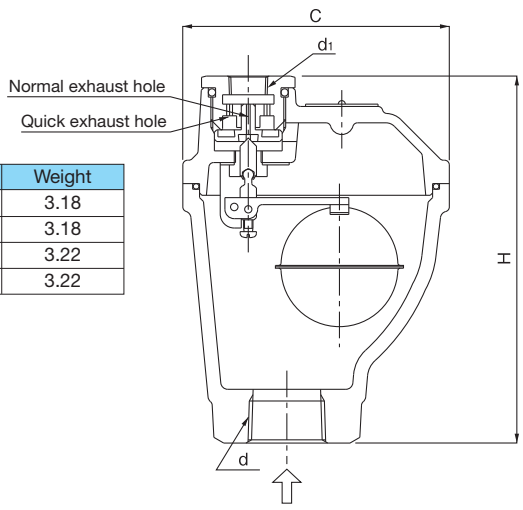
■Specifications

Model		TA-2	TA-5	TA-5F
Application		Cold and hot water, Oil (specific gravity: 0.8 or more)		
Working pressure		0.01-1.0 MPa		
Maximum temperature		90˚C		120˚C
Operating pressure range of quick exhaust valve		0.01 MPa or less		
Material	Body	Ductile cast iron	Cast bronze	
	Cover	Bronze		
	Valve	Brass		
	Sub valve	Brass (equipped with NBR disc)		Brass (equipped with FKM disc)
	Float	Stainless steel		
Connection		JIS Rc screwed		

· The body of the TA-2 is electrodeposition-coated for rustproofing.

■Dimensions (mm) and Weights (kg)

Nominal size	d	d_1	H	C	Weight
15A	Rc 1/2	Rc 3/8	153	114	3.18
20A	Rc 3/4	Rc 3/8	153	114	3.18
25A	Rc 1	Rc 3/8	157	114	3.22
32A	Rc 1-1/4	Rc 3/8	157	114	3.22



■Please refer to P.14-14 for discharge capacity.

TA-3C

■Applications

Building equipment | Industrial equipment | Building complex

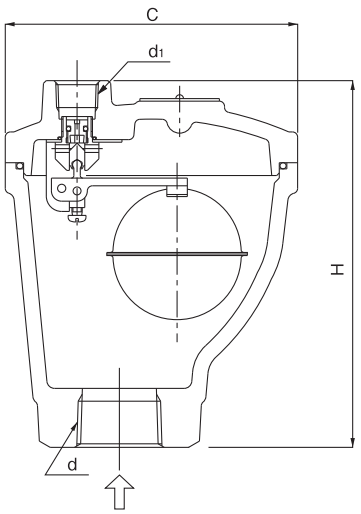
■Features

1. No leakage from the valve due to synthetic rubber used for valve seat.
2. Nylon 11 is coated inside and outside of the body.

■Specifications

Application		Cold and hot water, Oil (specific gravity 0.8 or more)
Working pressure		0.01-1.0 MPa
Maximum temperature		60˚C
Material	Body, cover	Ductile cast iron (FCD450)
	Valve	Brass
	Valve seat	Brass (equipped with NBR disc)
	Float	Stainless steel
Connection		JIS Rc screwed

· Maximum temperature 90˚C when continuous usage.
· Keep warm the valve when temperature difference between atmosphere is 40˚C or more.
· Coating: Use Nylon11 (white) for inside and outside of the body and cover.



■Dimensions (mm) and Weights (kg)

Nominal size	d	d_1	H	C	Weight
15A	Rc 1/2	Rc 3/8	139	114	2.72
20A	Rc 3/4	Rc 3/8	139	114	2.72
25A	Rc 1	Rc 3/8	143	114	2.88
32A	Rc 1-1/4	Rc 3/8	143	114	2.88

■Please refer to P.14-14 for discharge capacity.

TA-2C

■Applications

Building equipment | Industrial equipment | Building complex

■Features

1. Equipped with a quick exhaust mechanism, air inside piping can be quickly discharged at the time of initial water supply, ensuring smooth water supply.
2. Nylon 11 is coated inside and outside surfaces of body.
3. No leakage from the valve due to synthetic rubber used for valve seat.

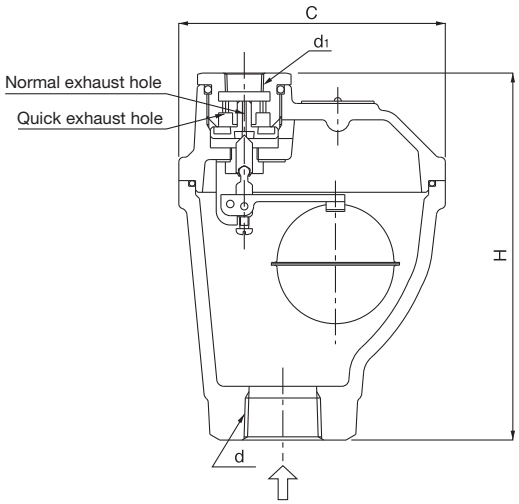
■Specifications

Application		Cold and hot water, Oil (specific gravity 0.8 or more)
Working pressure		0.01-1.0 MPa
Maximum temperature		60℃
Operating pressure range of quick exhaust valve		0.01 MPa or less
Material	Body	Ductile cast iron (FCD450)
	Cover	Bronze
	Valve	Brass
	Sub valve	Brass (equipped with NBR disc)
	Float	Stainless steel
Connection		JIS Rc screwed

· Maximum temperature 90℃ when continuous usage.
· Keep warm the valve when temperature difference between atmosphere is 40℃ or more.
· Coating: Use Nylon11 (white) for inside and outside of the body and cover.

■Dimensions (mm) and Weights (kg)

Nominal size	d	d_1	H	C	Weight
15A	Rc 1/2	Rc 3/8	153	114	3.18
20A	Rc 3/4	Rc 3/8	153	114	3.18
25A	Rc 1	Rc 3/8	157	114	3.22
32A	Rc 1-1/4	Rc 3/8	157	114	3.22



■Please refer to P.14-14 for discharge capacity.

Features of Nylon 11 used for TA-2C·3C

- Water absorption is low, and wear resistance is excellent.
- Seawater resistance and critical atmosphere resistance are very good.
- Outdoor weather resistance is outstanding.
- Heat resistance and hot water resistance are fine.
- Nylon 11 is applicable to food-related equipment because it is nontoxic (it is accepted by FDA).
- Chemical resistance is great.
- Electric insulation and sound damping performance are superb.

· Characteristics comparison of powder coating film

Coating / Characteristics	Nylon 11	Epoxy	Acrylic	Polyester	Polyethylene	PVC (Polyvinyl chloride)
Specific gravity	1.04-1.1	1.3-1.6	1.3-1.6	1.3-1.6	1.0	1.3
Hardness (Pencil hardness)	F	2H	H	H	HB	B
Maximum working temperature (℃)	100-130	100-150	100-120	100-170	70-80	70-80
Wear resistance	◎	○	△	△	△	△
Impact resistance	◎	○	△	△	△	◎
Adhesion	◎	○	○	○	△	△
Low-temperature characteristics	◎-50℃	○	○	○	○	×
Weather resistance	○	×	◎	○	△	○
Alkali resistance	◎	○	○	△	○	○
Acid resistance	△	○	○	○	◎	◎
Solvent resistance	◎	◎	×	◎	△	×
Salt water resistance	◎	○	△	○	○	○

[Meanings of symbols] ◎: Excellent ○: Good △: Care required in use ×: Unacceptable

* Note that the table above shows the features of Nylon 11 and does not describe the working conditions of TA-2C, 3C.

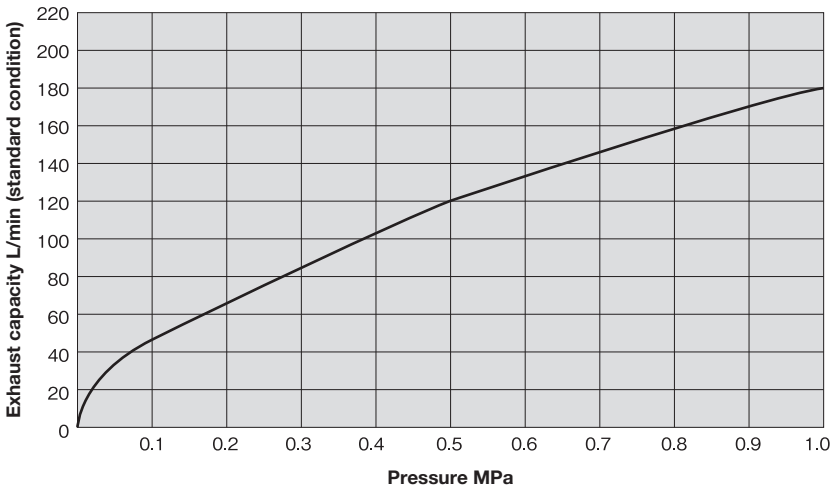
■Characteristics of Nylon 11

Item		Measured value
Melting point		184-186℃
Specific gravity (20℃)		1.04
Coefficient of friction		0.18
* Tensile strength <ASTM D 638>		40-48 MPa
* Elongation (within Elastic limit) <ASTM D 638>		18-34%
Hardness <shore D, Film thickness 5 mm, 20℃>		75
* Impact resistance test <50 cm height falling of hemispherical weight (φ25 mm x 2 kg)>		No peeling
* Bending test <JIS K 5400(180° twist around φ10 mm rod)>		No crack and peeling
* Wear resistance test <Wear amount after 1000 revolutions of Taber tester (CS-17 grinding wheel, 1 kg load)>		5-8 mg
* Erichsen test <JIS Z 2247 B>		10 mm, No crack
Thermal conductivity (Under the condition of 50-170℃)		2.94×10^{-4} J/g/℃
Coefficient of linear expansion (under the condition of -20-100℃)		1.5×10^{-5}
Specific heat		2.1 J/g/℃
Volume resistivity <ASTM D 257 (20℃, 65%RH, 500 V)>		3.5×10^{14} Ω/cm²/cm
Salt spray test <ASTM B 117>		No particular for 2000 hours
* Water absorption	Under the conditions of 20℃, 100%RH	1.6-1.9%
	immersed in boiling water, 100℃	2.4-3%
* Immersion test	5% NaCl 70℃ x 3 days	1.8 volume %, 2.6 weight %
	10% NaOH 70℃ x 3 days	4.1 volume %, 4.9 weight %
	Gasoline Room temp. x 30 days	1.5 volume %, 1.7 weight %
	Insulating oil Room temp. x 30 days	2.5 volume %, 1.9 weight %

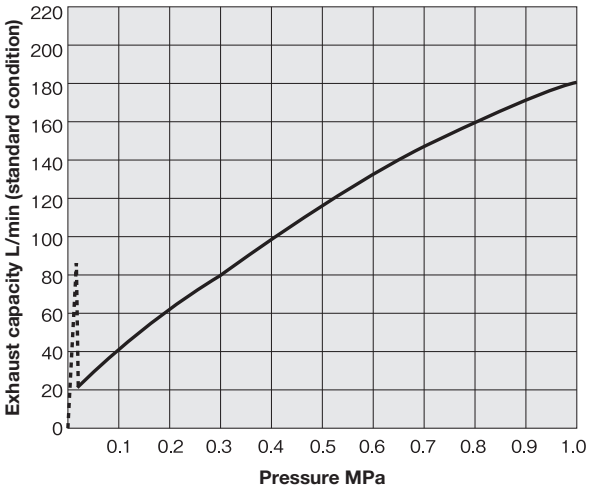
<Attention> The asterisk (*) mark indicates a measured value obtained from a test piece coated on a film thickness of 300 μm by fluidization dip coating. And inside < > indicates test method.

■Exhaust Capacity Chart

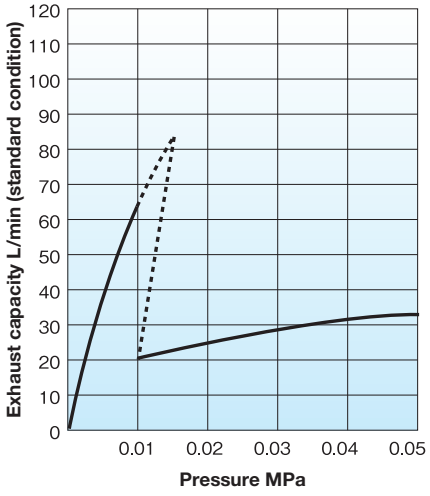
· TA-3·3C·6



· TA-2·2C·5·5F

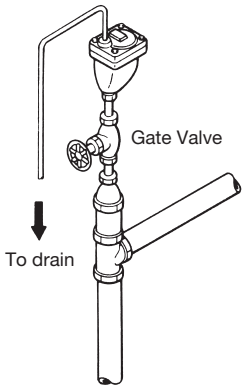


Quick Exhaust Mechanism Operation Area



■Precautions for Installation

- Remove foreign matter and scales from the lines before connecting the product, and install the valve vertically at the place where air easily accumulates.
- Install a stop valve (cock or gate valve) at air vent valve inlet in order to do maintenance and inspection.
- Leakage may occur by foreign matter and scales inside the pipe. Please install pipe to the exhaust hole as shown in the diagram, and make the outlet end prevent from back-flow to the drain.
- When leakage occur by foreign matter and scales, close the stop valve, remove the valve seat from exhaust hole and clean up the valve.



TA-18ML

■Applications

Hot water boiler | Water heater

■Features

1. Body and cap are made of stainless steel and main parts (float) are made of synthetic rubber.
2. Easy to clean by removing the valve seat even if scale or dirt deposits on the valve disc or valve seat.
3. Vinyl hose can be connected easily to the TA-18ML. Do not remove the end cap during using. (Please refer to Fig. 1.)
4. Even if water leaks out of the TA-18ML due to failure, it can be stopped immediately by removing the end cap and tightening the joint cap, ensuring safety. (Please refer to the picture.)

TA-18ML

■Specifications

Application		Cold and hot water
Working pressure		0.01-0.3 MPa
Maximum temperature		100℃
Material	Body	Stainless
	Disc	FKM
	Float	Heat-resistant resin
Connection	Inlet	JIS R screwed
	Outlet	Hose joint type (joint cap)

· Internal parts and valve seat are made with brass.

■Dimensions (mm) and Weights (kg)

Nominal size	d	H	Weight
6A	Rc 1/8	83	0.12
10A	Rc 3/8	87	0.13
15A	Rc 1/2	89	0.13
20A	Rc 3/4	89	0.13

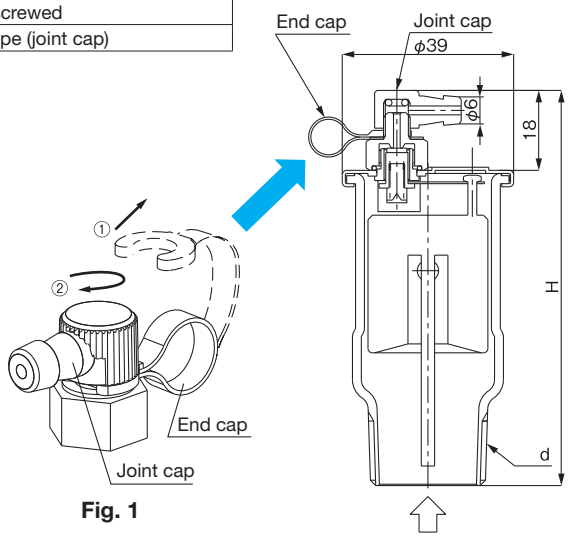
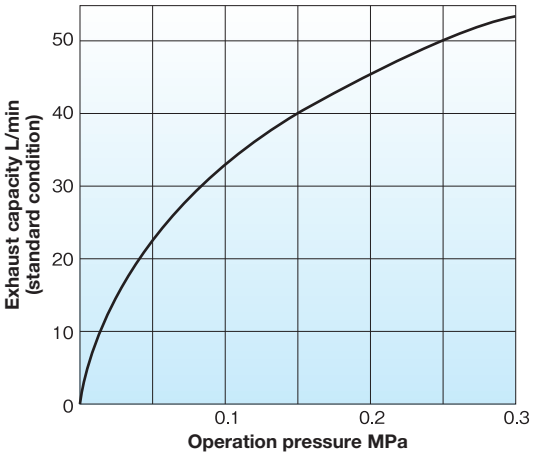


Fig. 1

■Exhaust Capacity Chart



■Precautions for Installation

· Remove foreign matter and scales from the lines and install the valve vertically where the air likely gathers.
· Prepare enough space for inspections, maintenance, and repairs.
· Please be tightened by hand for nominal size 6A and 10A, (Do not use tools) Otherwise, the nominal size 15A and 20A can be tightened by spanner since the body is provided by hexagonal part. Make sure put spanner to hexagonal part for size 32A.
· Utilize together with AO-2 air out (air separator) that may enhance the effectiveness.
· Lead to the vinyl hose to the outlet side of the product to safety place in case water spray out by scale inside piping and air discharge in the initial stage of water passing.
 * When hot water is used, its leakage may cause burns or contamination in the area where the products is installed.
· After tightening the joint cap, install the hose and lead to the drainage outlet and fix the joint cap to avoid the loosening of joint cap.
 * Install the outlet side to the safety place in case water leakage occurred.
 * When hot water is used, its leakage may cause burns or contamination in the area where the products is installed.

TA-22ML

■Applications

Building equipment | Industrial equipment | Building complex

■Features

1. Easy to clean by removing the valve seat even if scale or dirt deposits on the valve disc or valve seat.
2. Vinyl hose can be connected easily to the TA-22ML. Do not remove the end cap during using. (Please refer to Fig. 1.)
3. Even if water leaks out of the TA-22ML due to failure, it can be stopped immediately by removing the end cap and tightening the joint cap, ensuring safety. (Please refer to the picture.)

TA-22ML

■Specifications

Application		Cold and hot water
Working pressure		0.01-1.0 MPa
Maximum temperature		100℃
Material	Body	Bronze
	Disc	FKM
	Seat	Brass
	Float	Heat-resistant resin
Connection	Inlet	JIS R screwed
	Outlet	Hose joint type
Metal plating		Nickel-plated

■Dimensions (mm) and Weights (g)

Nominal size	d	H	Weight
15A	Rc 1/2	95.5	0.36
20A	Rc 3/4	101	0.4
25A	Rc 1	104	0.46

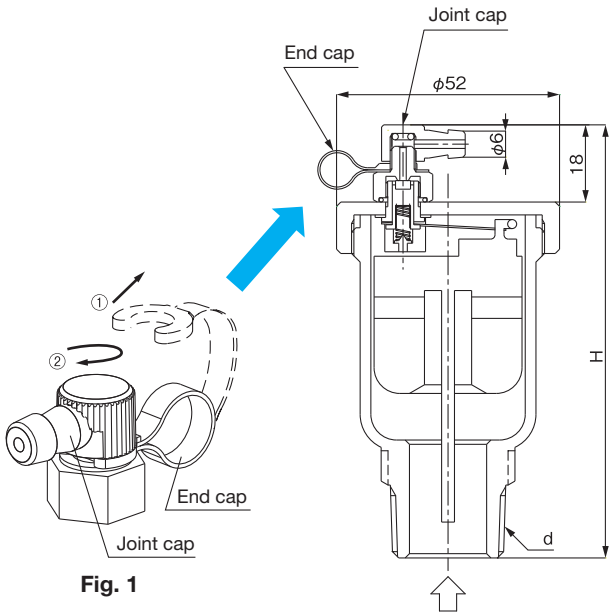
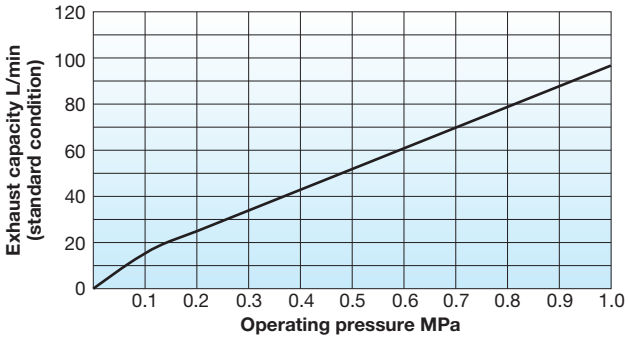


Fig. 1

■Exhaust Capacity Chart



■Precautions for Installation

· Remove foreign matter and scales from the lines and install the valve vertically where the air likely gathers.
· Prepare enough space for inspections, maintenance, and repairs.
· When installing the product to piping, tighten the square part of the inlet side with monkey wrench. In that case, please put monkey wrench to the square part.
· At the time of the initial stage, release the air hole while closing the cap.
· Utilize together with AO-2 air out (air separator) that may enhance the effectiveness.
· Lead to the vinyl hose to the outlet side of the product to safety place in case water spray out by scale inside piping and air discharge in the initial stage of water passing.
 * When hot water is used, its leakage may cause burns or contamination in the area where the products is installed.
· After tightening the joint cap, install the hose and lead to the drainage outlet and fix the joint cap to avoid the loosening of joint cap.
 * Install the outlet side to the safety place in case water leakage occurred.
 * When hot water is used, its leakage may cause burns or contamination in the area where the products is installed.

TA-16,16L

RoHS (TA-16)

■Applications

Building equipment | Industrial equipment | Building complex

■Features

1. All parts, except for the valve disc, gasket, L-shaped hose joint (TA-16L), are made of stainless steel, offering high resistance to corrosion and durability.
2. Wide working pressure range (0.01 to 1.0 MPa) ensures stable exhaust capacity.
3. Can be installed in small space because of compact body.
4. Outstanding sealability offered by fluororubber valve disc.
5. The TA-16 can be connected to any exhaust piping easily by attaching optional piping connection parts.

TA-16 TA-16L

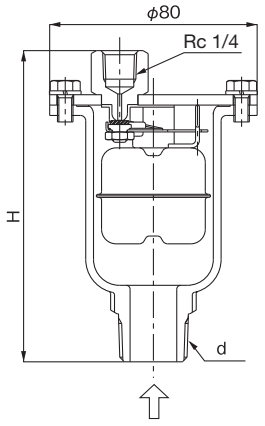
■Specifications

Model		TA-16	TA-16L
Application		Cold and hot water	
Working pressure		0.01-1.0 MPa	
Maximum temperature		90℃	
Material	Body, cover	Stainless steel	
	Valve disc	FKM	
	Gasket	FKM	
	Float	Stainless steel	
Connection	Inlet	JIS R screwed	
	Outlet	JIS Rc screwed	Hose joint type

■Dimensions (mm) and Weights (g)

· TA-16

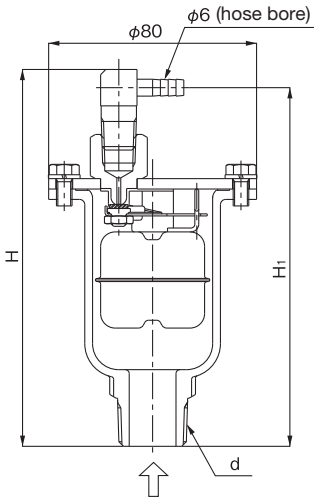
Nominal size	d	H	Weight
15A	R 1/2	118	660
20A	R 3/4	120	680
25A	R 1	124.5	740



TA-16

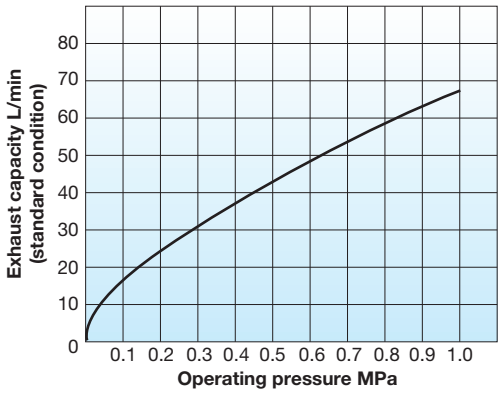
· **TA-16L**

Nominal size	d	H_1	H	Weight
15A	R 1/2	136	143	700
20A	R 3/4	138	145	720
25A	R 1	144	149.5	780



TA-16L

■Exhaust Capacity Chart



■Option for TA-16

Available with manual valves, swivel joints (capable of turning 360 degrees), etc. (made of brass) as piping connection parts for the exhaust ports of air vent valves.

· L-shaped hose joint (R 1/4 x ϕ6)

· Manual valve with copper joint (R 1/4 x ϕ8)

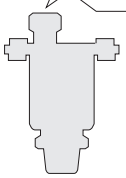
· Manual valve with hose joint (R 1/4 x ϕ6)

· Swivel joint (R 1/4 x Rc 1/4)

· Swivel copper pipe joint (R 1/4 x ϕ8)

· Swivel hose joint (R 1/4 x ϕ6)

· For other connection parts, please contact us.



■Precautions for Installation

· Remove foreign matter and scales from the lines and install the valve vertically where the air likely gathers.
· Install the stop valve (cock or gate valve) at the inlet side of air vent valve in order to do maintenance.
· There might be a possibility of leakage by scale inside the pipe so please install the point of outlet side not to back flow to the drainage channel.
· Stop the stop valve and disassemble and clean the valve body and valve seat in case of leakage caused by the scale inside the piping.

TA-16CVA
TA-16CVS

■Applications

Building equipment | Industrial equipment | Building complex

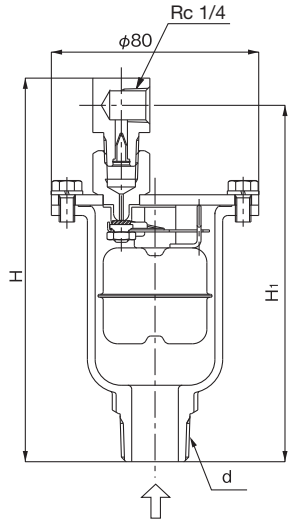
■Features

1. All parts, except for the valve disc, gasket, check valve, check valve joint, are made of stainless steel, offering high resistance to corrosion and durability.
2. Wide working pressure range (0.01 to 1.0 MPa) ensures stable exhaust capacity.
3. Can be installed in small space because of compact body.
4. Outstanding sealability offered by fluororubber valve disc.
5. The TA-16CVS can be connected to any exhaust piping easily by attaching optional piping connection parts.
6. Provided with check valves, the product do not suck in air even if the inlet pressure is negative.

TA-16CVA　　TA-16CVS

■Specifications

Model		TA-16CVA	TA-16CVS
Application		Cold and hot water	
Working pressure		0.01-1.0 MPa	
Closing pressure of check valve		−0.005 MPa	
Maximum temperature		90℃	
Material	Body, cover	Stainless steel	
	Valve disc	FKM	
	Gasket	FKM	
	Float	Stainless steel	
	Check valve joint	Brass	
	Check valve	FKM	
Connection	Inlet	JIS R screwed	
	Outlet	JIS Rc screwed	



TA-16CVA

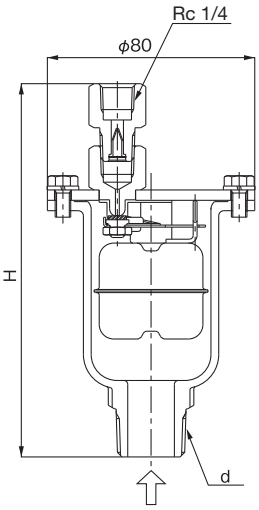
■Dimensions (mm) and Weights (g)

· **TA-16CVA**

Nominal size	d	H_1	H	Weight
15A	R 1/2	135.5	146	720
20A	R 3/4	137.5	148	740
25A	R 1	142	152.5	800

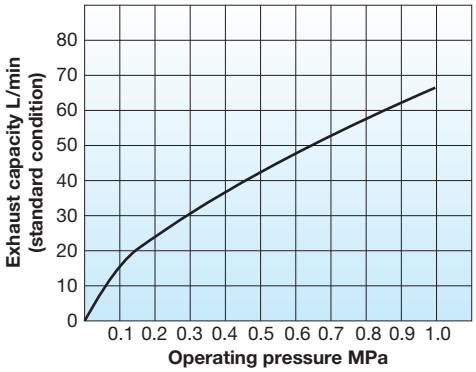
· **TA-16CVS**

Nominal size	d	H	Weight
15A	R 1/2	142	700
20A	R 3/4	144	720
25A	R 1	148.5	780



TA-16CVS

■Exhaust Capacity Chart



■Option for TA-16CVS

Available with manual valves, swivel joints (capable of turning 360 degrees), etc. (made of brass) as piping connection parts for the exhaust ports of air vent valves.

· L-shaped hose joint (R 1/4 x ϕ6)

· Manual valve with copper joint (R 1/4 x ϕ8)

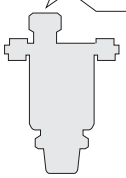
· Manual valve with hose joint (R 1/4 x ϕ6)

· Swivel joint (R 1/4 x Rc 1/4)

· Swivel copper pipe joint (R 1/4 x ϕ8)

· Swivel hose joint (R 1/4 x ϕ6)

· For other connection parts, please contact us.



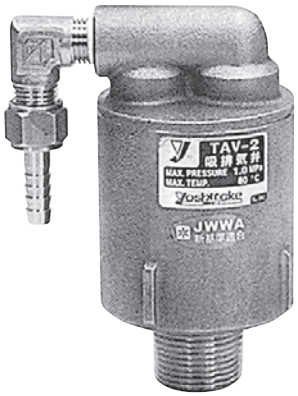
■Precautions for Installation

· Remove foreign matter and scales from the lines and install the valve vertically where the air likely gathers.
· Install the stop valve (cock or gate valve) at the inlet side of air vent valve in order to do maintenance.
· There might be a possibility of leakage by scale inside the pipe so please install the point of outlet side not to back flow to the drainage channel.
· Stop the stop valve and disassemble and clean the valve body and valve seat in case of leakage caused by the scale inside the piping.

TAV-2

■Features

1. Sucks in air promptly when pressure becomes negative in piping or tank, preventing back flow.
2. The product carries out air intake and exhaust automatically as required.



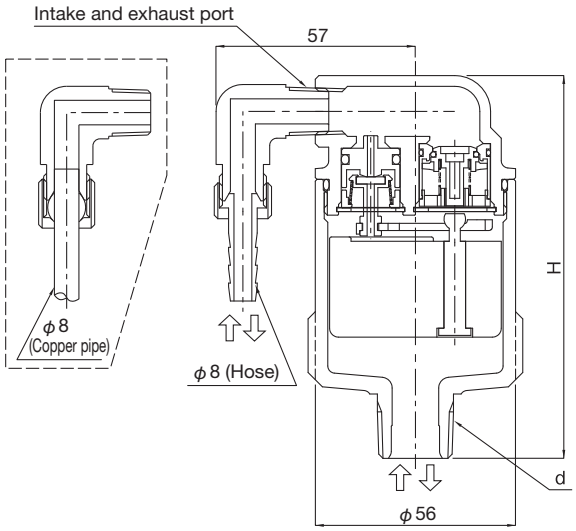
TAV-2

■Specifications

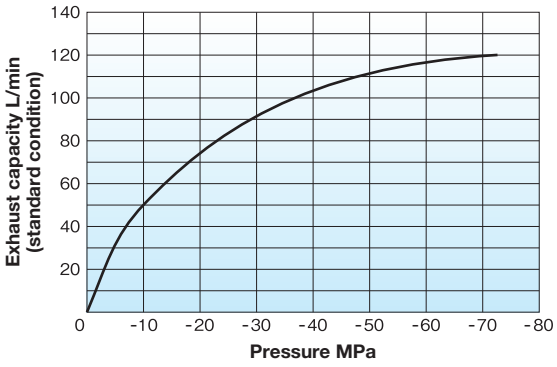
Application		City water
Working pressure		0.05-1.0 MPa
Operating pressure of air intake valve		-1.0 kPa {-100 mmAq} or less (air intake less than pressure 0)
Maximum temperature		0-80℃ (no freeze condition)
Material	Body	Cast bronze (NPb-treated)
	Float	Synthetic resin
	Exhaust packing	Synthetic rubber
Connection	Connection port	JIS R screwed
	Intake and exhaust port	JIS R 1/4 (φ8 hose joint)

■Dimensions (mm) and Weights (kg)

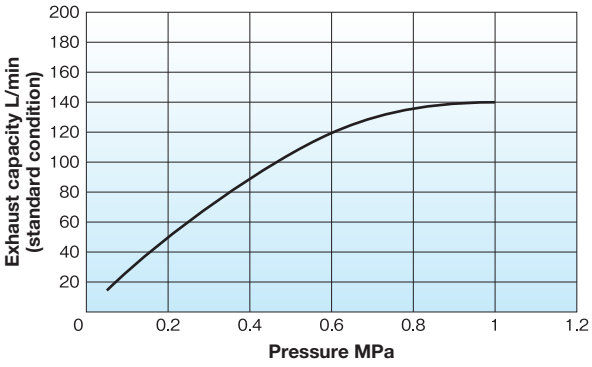
Nominal size	d	H	Intake and exhaust port	Weight
15A	Rc 1/2	107	Rc 1/4	0.8



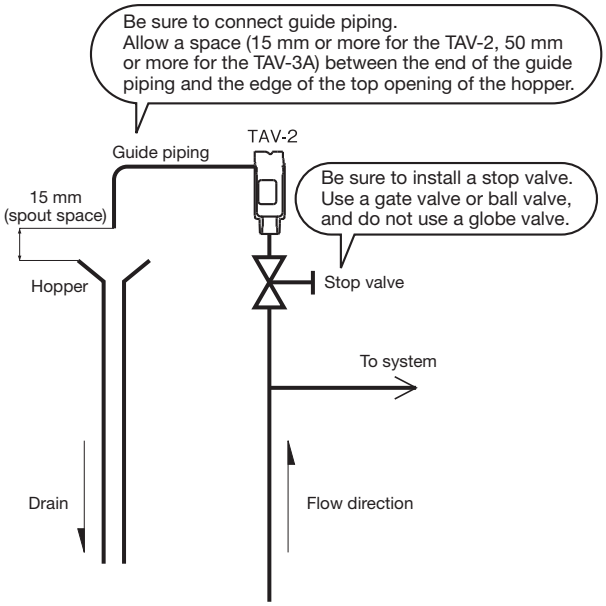
■Intake/Exhaust Capacity Chart



■Exhaust Capacity Chart



■Piping Example



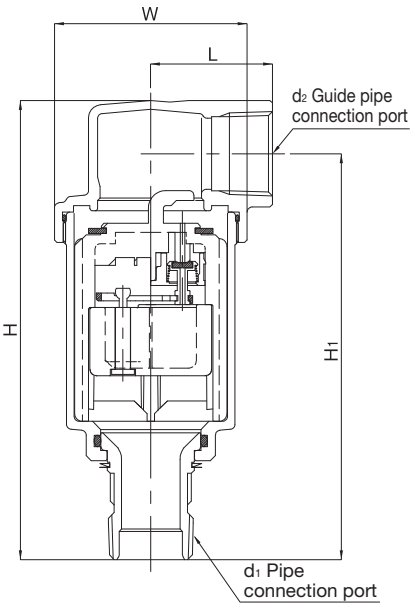
■Precautions for Installation

- In anticipation of water leakage from the air inlet or outlet of the product, connect induction piping to the air inlet and outlet, and guide it to the hopper (drain ditch). Keep a clearance of 15 mm or more between the end of the induction piping and the overflow line of the hopper.
  * When hot water is used, its leakage may cause burns or contamination in the area where the product is installed.
- Before connecting the product, carefully wash the inside of piping to remove dirt, scale, etc.
- When connecting the product to piping, pay attention to the quantity and application position of sealing agent or where to attach seal tape.
- Do not disassemble the product.
- Prepare enough space for inspections, maintenance, and repairs. Do not install the product under the roof or inside the wall.
- Vertically install the product in a position where air tends to accumulate.
- Use a stop valve (gate valve, ball valve, cock, etc.) for maintenance and inspections in any case. Do not use a globe valve.
- Drain water when the atmospheric temperature is low, in winter for example, or water is not to be used for a long period of time.

TAV-3A

■Features

1. Under the standards of the Nagoya City Waterworks & Sewerage Bureau and of the Urban Renaissance Agency (equal to Swedish standard), one product of 25A is appropriate for water supply vertical pipe of 50A. Under the standard of the Bureau of Waterworks, Tokyo Metropolitan Government, one product of 20A is appropriate for water supply vertical pipe of 50A.
2. The product exhausts air accumulated in the piping smoothly.
3. The product complies with the cold resistance performance standard set by the Ministry of Health, Labor and Welfare, Japan. The product can be used at -20°C when water does not remain inside the product.
4. The product exhausts air from water supply vertical pipe when the pipe is filled with water to reduce air blowout from faucet, etc.
5. Pipe end core can be connected to the pipe connection port, and the product can turn by 360 degrees. So, the guide pipe connection port can face any necessary direction.



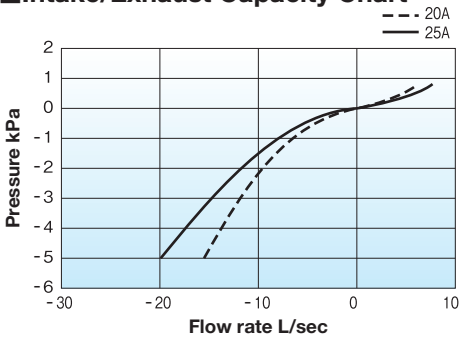
■Specification

Nominal size		20A	25A
Application		City water	
Working pressure		0.05-1.0 MPa	
Intake air quantity (under the pressure of -2.9 kPa)		11.5 L/sec	14.5 L/sec
Working temperature		0-35˚C (no freeze condition)	
Material	Body	Cast bronze (NPb-treated)	
	Float	Synthetic resin	
	Exhaust packing	Synthetic rubber	

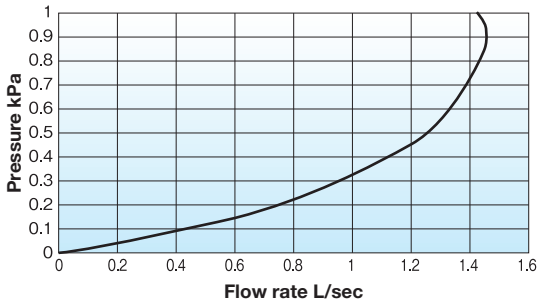
■Dimensions (mm) and Weights (kg)

Nominal size	d_1	d_2	H	H_1	W	L	Weight
20A	Rc 3/4	Rc 1	181	160	76	48	1.4
25A	Rc 1	Rc 1	181	160	76	48	1.4

■Intake/Exhaust Capacity Chart



■Exhaust Capacity Chart



■Selection

There are some standards of the intake air quantity required for negative pressure destruction per nominal size of the water supply vertical pipes. Intake/exhaust valves need to be installed according to these standards.

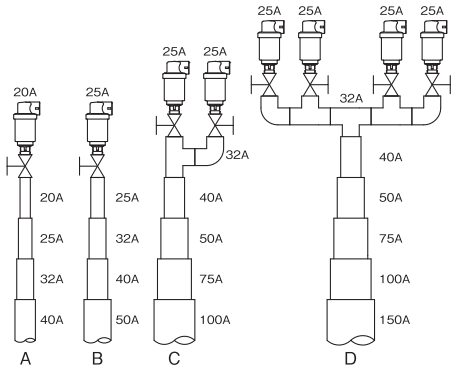
· Intake air quantity required per nominal sizes of vertical pipes and selection of TAV-3A.

Nominal size of the vertical pipe	Reference value of air intake quantity of Nagoya City Waterworks & Sewerage Bureau, and of the Urban Renaissance Agency (Swedish intake air performance standard).		Standard of Bureau of Waterworks Tokyo Metropolitan Government		Selection of TAV-3A
	L/sec	L/min	L/sec	L/min	
20A	1.5	90	1.5	90	1 piece of TAV-3A 20A [Intake air quantity of TAV-3A 20A: 11.5 L/sec (690 L/min)]
25A	2.5	150	2.5	150	
32A	4.0	240	3.5	210	
40A	7.0	420	5.5	330	
50A	-	-	9.0	540	
	14.0	840	-	-	1 piece of TAV-3A 25A [Intake air quantity of TAV-3A 25A: 14.5 L/sec (870 L/min)]
75A	-	-	15.5	930	2 pieces or more
100A	-	-	25.0	1500	
150A	-	-	56.7	3400	

* Air intake quantity is the value at -2.9 kPa.
* The intake air quantity required may differ according to piping configuration or water service business units. Please contact the water service business unit of each area for details.
* When using the products in combination of 2 pieces or more, make sure that the combination satisfies the air intake quantity required.

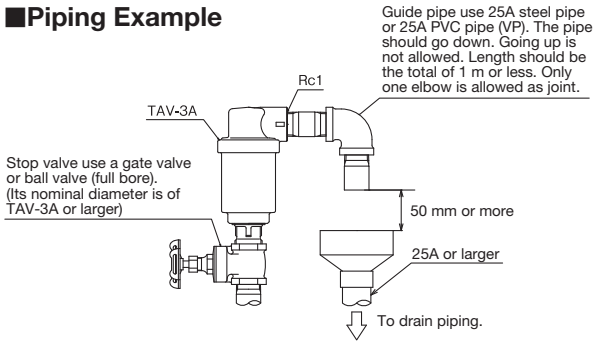
■Piping Example

Install the product of more than sufficient air intake quantity according to the result of the above selection. The piping example is shown below.



· Piping A requires one product of 20A since the vertical pipes consist of 20A to 40A.
· Piping B requires one product of 25A since the vertical pipes use 50A.
· Piping C and D are examples that require 2 products or more. Keep pipe branch portions from interfering with air flow.

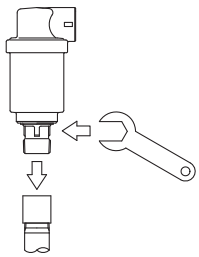
■Piping Example



* Standards for installation may differ according to water service business units. Please contact the water service business unit of each area for details.

■Precautions for Installation

1. Be sure to attach the guide pipe to the guide pipe connection port of the product and lead the pipe to a drain hopper (drain ditch). Keep a clearance of 50 mm or more between the end of the guide pipe and the overflow line of the hopper.
2. Do not use the product for any fluid other than city water. Use the product within the range of working pressure or maximum allowable working temperature.
3. Before connecting the product to piping, remove foreign substances and dirt inside the piping.
4. Install the product perpendicularly. Inclining the product excessively may cause malfunction or leakage.
5. Install the product at a place of 300 mm or higher above the overflow line of water supply equipment or water container.
6. Be sure to make the guide pipe go down from the product. Going up is not allowed.
7. When installing, apply the tool on four grippers located right above the setting screw and tighten the connection.
   * Applying the tool at the point other than the four grippers (body above grippers) will not work. (See the figure on the right.)
8. Install stop valve at inlet side of the product. Close the stop valve immediately in case of water leakage by scale inside piping.
9. When leading fluid, open the fluid supply valve slowly to avoid water hammer.
   * If fluid supply is too quick, the product may be damaged by water hammer.



Air Vent Valve/Air Vent Valve with Vacuum Breaker

⚠CAUTION Please refer to the manual attached to the product for procedures for installation and operation.

■ Troubleshooting

TA-2•2C•3•3C•5•5F•6

Trouble	Cause	Remedy
Air cannot be exhausted.	● Inlet stop valve is closed.	Fully open the stop valve.
	● Piping pressure exceeds working pressure.	Reduce the piping pressure or replace the product with the model for high pressure.
	● Air does not accumulate.	Install the product to a point where air tends to accumulate.
Water outflows.	● Foreign substances are stuck between valve and valve seat.	Disassemble and clean the valve and valve seat.
	● Valve seat is damaged.	Replace the valve and valve seat.
	● Float is damaged and loses the specified function.	Replace the float.

TA-18ML•22ML

Trouble	Cause	Remedy
Water leaks.	● Foreign substances are stuck between valve and valve seat.	Detach the valve seat by using a spanner, and clean the valve seat and the sealing surface of the valve.
Air cannot be exhausted.	● Air does not accumulate.	Install the product to a place where air tends to accumulate.
	● Piping pressure exceeds working pressure.	Reduce the piping pressure or replace the product with the model for high pressure.
	● Cap is fastened.	Loosen the cap before use.

TA-16 series

Trouble	Cause	Remedy
Air cannot be exhausted.	● Inlet stop valve is closed.	Fully open the stop valve.
	● Piping pressure exceeds working pressure.	Reduce the piping pressure or replace the product with the model for high pressure.
	● Air does not accumulate.	Install the product to a point where air tends to accumulate.
Water outflows.	● Foreign substances are stuck between valve and valve seat.	Disassemble and clean the valve and valve seat.
	● Float is damaged and loses the specified function.	Replace the float.
Sucks in external air.	● Foreign substances are stuck on check valve. (TA-16CVA, CVS)	Remove the foreign substances.

TAV-2•3A

Trouble	Cause	Remedy
Insufficient air exhaust, or no exhaust.	● Stop valve right under the product is closed or opened only slightly.	Open the stop valve fully.
	● Piping pressure exceeds working pressure.	Reduce the piping pressure or replace the product with the model for the actual working pressure.
	● Air does not accumulate.	Install the product to a point where air tends to accumulate.
	● The piping, joint or stop valve right under the product has narrow portion in its channel.	Replace the piping, joint or stop valve.
	● Guide pipe is partly or completely blocked.	Check the guide pipe.
No or insufficient Intake. Water cannot be drained completely.	● Stop valve right under the product is closed or opened only slightly.	Open the stop valve fully.
	● Product is installed in an improper position.	Change the configuration according to piping example.
	● Guide pipe is partly or completely blocked.	Check the guide pipe.
Leakage from guide pipe.	● Foreign substances are stuck in the intake valve or the exhaust valve.	Remove the product and apply back washing by water or air from the guide pipe connection port. If the trouble still exists, replace the product.

MEMO