Air Vent Valve

Air Vent Valve Selection

Application			Max. Working Pressure (MPa)	Max. Temperature (˚C)	Model	Page
Steam	Water	Oil				
	●	●	1.0	90	TA-3	293
	●	●		60	TA-3C	299
	●	●		90	TA-2	294
	●	●		60	TA-2C	299
	●	●		90	TA-5	294
	●	●		120	TA-5F	294
	●	●		90	TA-6	293
	●		0.3	100	TA-11	295
	●				TA-11L	295
	●				TA-18	299
	●				TA-18L	299
	●		1.0	100	TA-22	296
	●				TA-22L	296
	●			90	TA-16	297
	●				TA-16CVA	298
	●				TA-16CVS	298
	●				TA-16L	297
	●			80	TAV-2	299
	●			35	TAV-3A	299

Selection of Air Vent Valve

What is an 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.

Applications

- Cold and hot water supply system
- Hot water boiler
- Solar hot water system
- Other various devices
- Air conditioning system
- Hot water heater appliance
- Pressure tank

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.

Types

Float type	Float type W/ Quick ventilation	Float type W/ Vacuum breaker
Discharges air in the piping continuously.	Exhausts large quantity of air upon system start-up and release accumulated air continuously.	Takes in air to reduce vacuum condition and releases accumulated air if any.

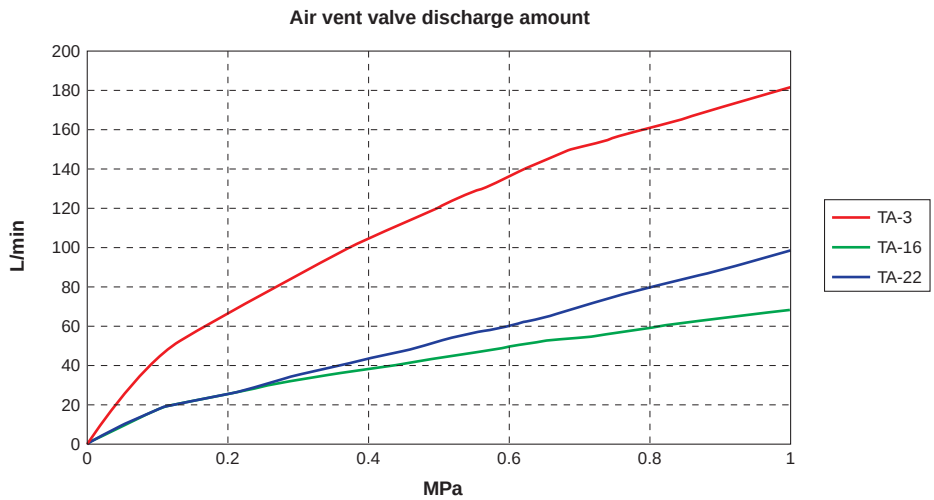
Major Products

TA-3 Series	TA-2·5	TAV-3A
		

Note for Selecting Air Vent Valve

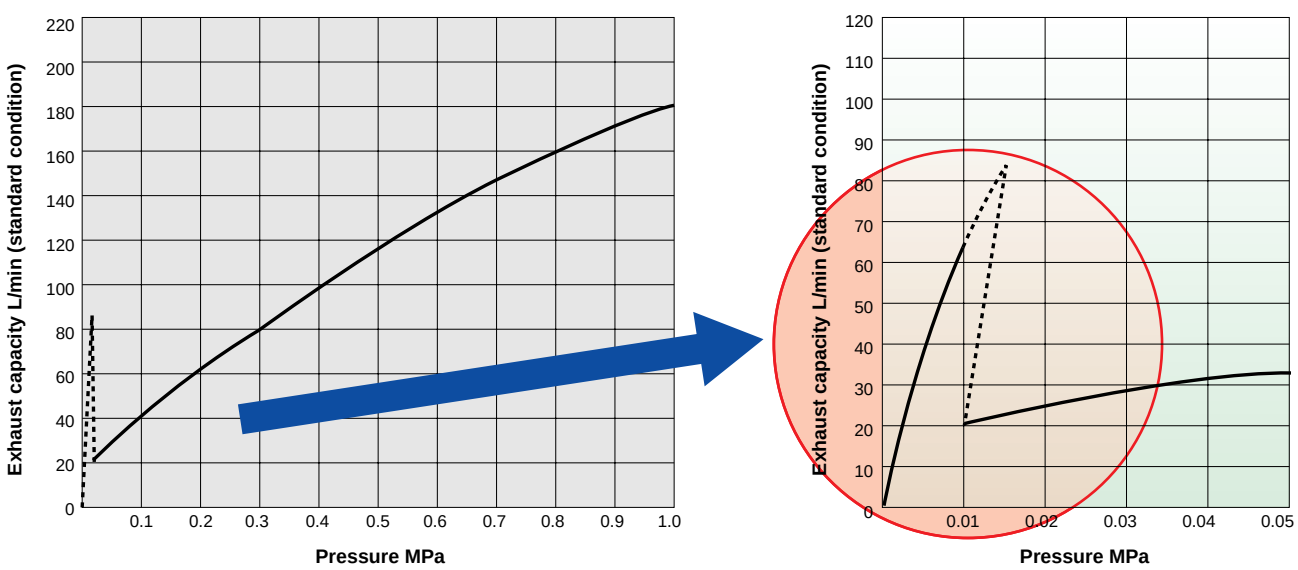
Discharge Amount

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.



Note for Selecting Air Vent Valve

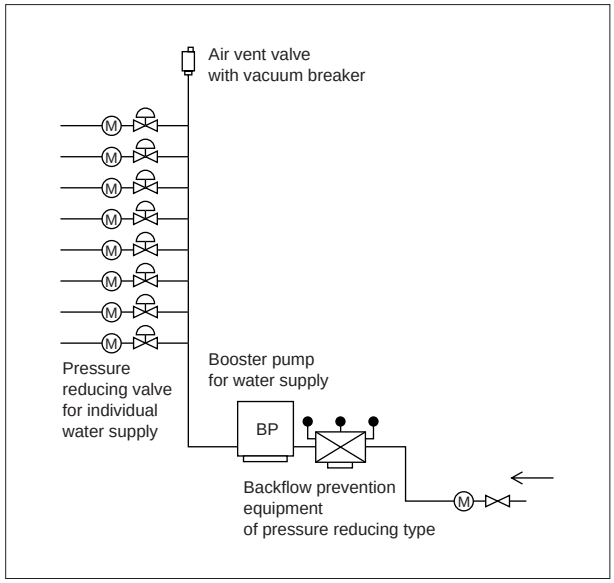
Air Vent Valve with Vacuum Breaker

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.

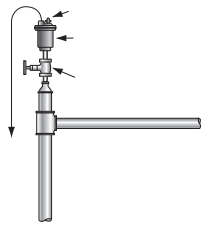
●Required intake air quantity (The Nagoya City Waterworks & Sewerage Bureau)

ΔP = –2.9 kPa

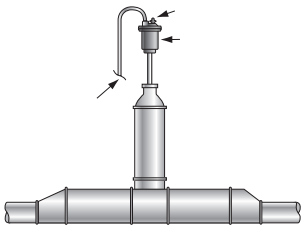
Size at the top of water supply piping	20	25	30	40	50
Intake air quantity [L/min (standard condition)]	90	150	240	420	840
Intake air quantity [L/sec (standard condition)]	1.5	2.5	4.0	7.0	14

Guidelines for Installing Air Vent Valve

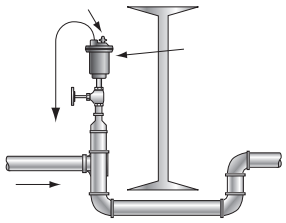
At the top of vertical piping



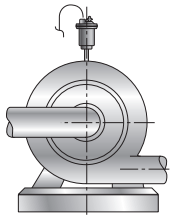
At the top of horizontal piping



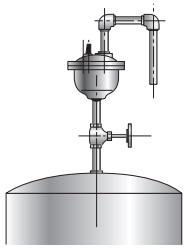
On loop in piping



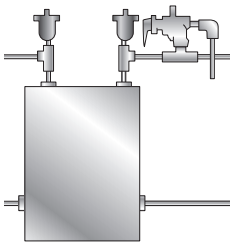
At the centrifugal pump



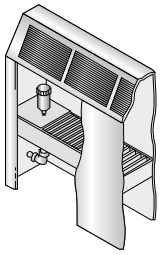
At hot water heating system



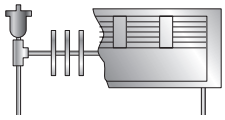
At venting boiler or chilling unit



At venting convectors



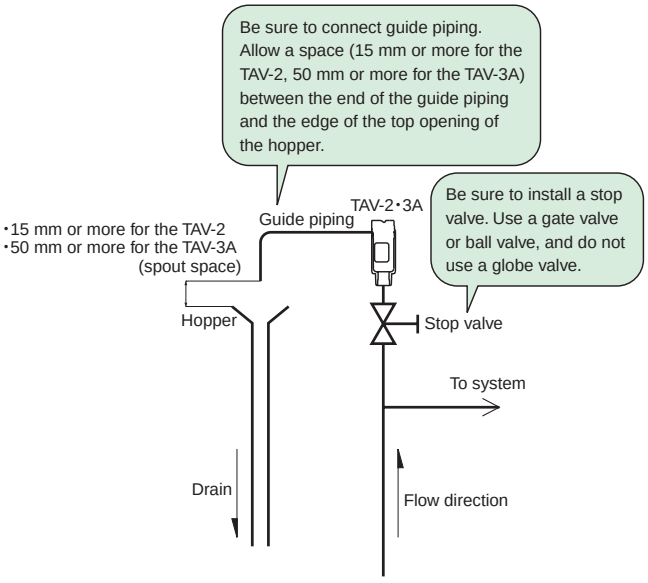
At venting baseboard radiation



Guidelines for Installing Air Vent with Vacuum Breaker

The TAV-2・3A Air Vent with Vacuum Breaker

＜Piping example＞



- 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.

TA-3·6

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.

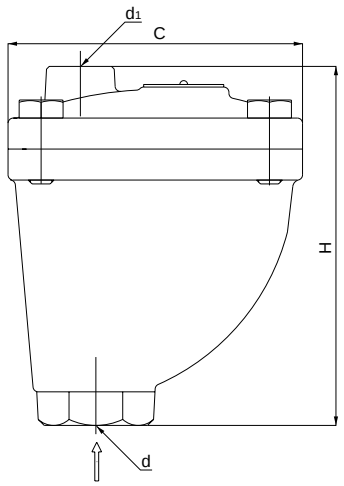
Specification

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˚C	
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	d1	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



TA-2•5•5F

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.

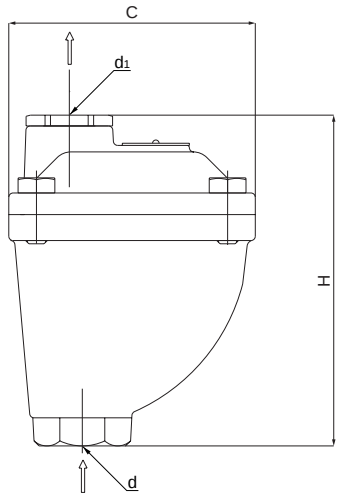
Specification

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



TA-11•11L

Features

1. Easy to clean by removing the valve seat even if scale or dirt deposits on the valve disc or valve seat.
2. Can be installed in small space because of compact body.
3. Since the shapes of valve and float adopt Yoshitake unique structure, stable performance and sufficient exhaust capacity can be obtained.
4. Even if water leaks out of the TA-11 due to failure, it can be stopped immediately by tightening the end cap, ensuring safety.
5. Vinyl hose can be connected easily to the TA-11L.

Specification

Application		Cold and hot water
Working pressure		0.01-0.3 MPa
Maximum temperature		100˚C
Material	Body	Brass
	Disc	NBR
	Seat	Brass
	Float	Heat-resistant resin
Connection	Inlet	JIS R screwed
	Outlet	TA-11: Cap type
		TA-11L: Hose joint type
Metal plating		Nickel-plated

TA-11

Dimensions (mm) and Weights (g)

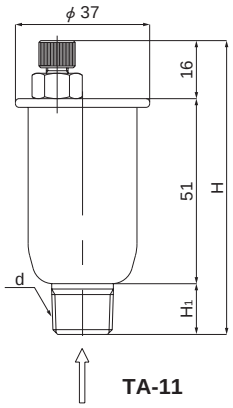
●TA-11

Nominal size	d	H	H_1	Weight
6A	R 1/8	78	11	75
10A	R 3/8	81	14	77
15A	R 1/2	89	22	98
20A	R 3/4	95.5	28.5	148

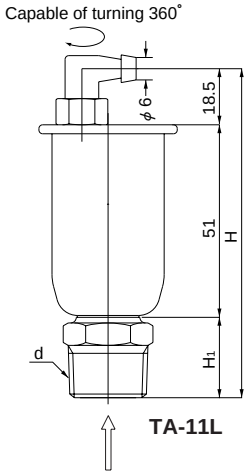
●TA-11L

Nominal size	d	H	H_1	Weight
6A	R 1/8	80.5	11	72
10A	R 3/8	83.5	14	74
15A	R 1/2	91.5	22	95
20A	R 3/4	98	28.5	145

・The shapes of 6A and 10A are slightly different.

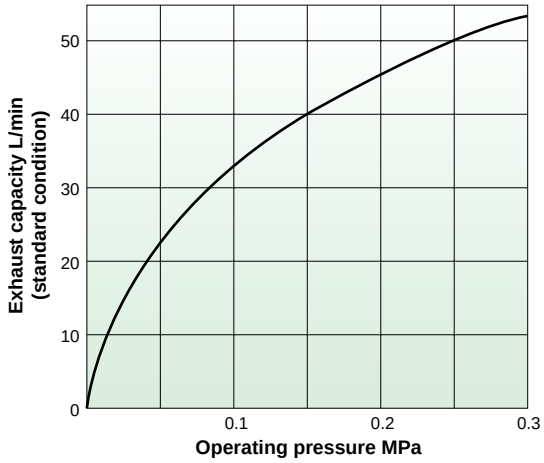


TA-11



TA-11L

Exhaust Capacity Chart



TA-22・22L

Features

1. Easy to clean by removing the valve seat even if scale or dirt deposits on the valve disc or valve seat.
2. Can be installed in small space because of compact body.
3. Since the shapes of valve and float adopt Yoshitake unique structure, stable performance and sufficient exhaust capacity can be obtained.
4. Even if water leaks out of the TA-22 due to failure, it can be stopped immediately by tightening the end cap, ensuring safety.
5. Vinyl hose can be connected easily to the TA-22L.

Specification

Application		Cold and hot water
Working pressure		0.01-1.0 MPa
Maximum temperature		100˚C
Material	Body	Bronze
	Disc	FKM
	Seat	Brass
	Float	Heat-resistant resin
Connection	Inlet	JIS R screwed
	Outlet	TA-22: Cap type
		TA-22L: Hose joint type
Metal plating		Nickel-plated

TA-22

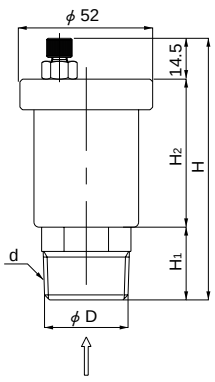
Dimensions (mm) and Weights (g)

●TA-22

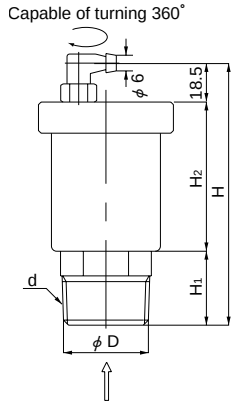
Nominal size	d	D	H	H_1	H_2	Weight
15A	R 1/2	13	92	19.5	58	360
20A	R 3/4	18	97.5	25	58	400
25A	R 1	23	100.5	28.5	57.5	460

●TA-22L

Nominal size	d	D	H	H_1	H_2	Weight
15A	R 1/2	13	96	19.5	58	360
20A	R 3/4	18	101.5	25	58	400
25A	R 1	23	104.5	28.5	57.5	460

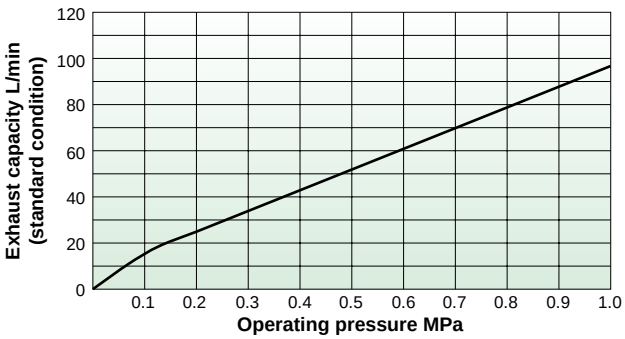


TA-22



TA-22L

Exhaust Capacity Chart



TA-16・16L

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.

Specification

Model		TA-16	TA-16L
Application		Cold and hot water	
Working pressure		0.01-1.0 MPa	
Maximum temperature		90˚C	
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

TA-16

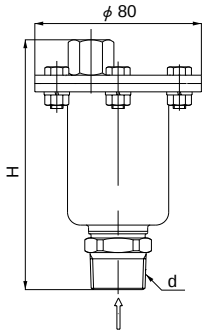
Dimensions (mm) and Weights (g)

●TA-16

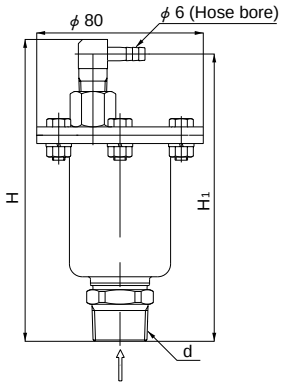
Nominal size	d	H	Weight
15A	R 1/2	118	660
20A	R 3/4	120	680
25A	R 1	124.5	740

●TA-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

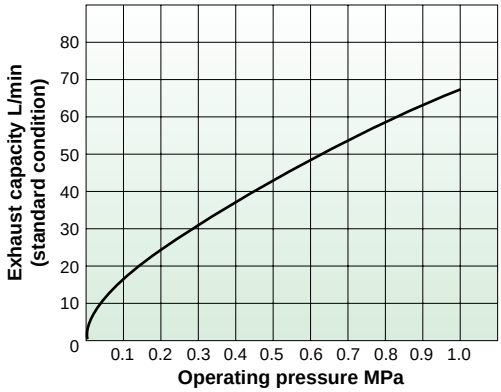


TA-16



TA-16L

Exhaust Capacity Chart



Option

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 ϕ 6)


●Manual valve with copper joint
(R 1/4 x ϕ 8)


●Manual valve with hose joint
(R 1/4 x ϕ 6)


●Swivel joint
(R 1/4 x Rc 1/4)


●Swivel copper pipe joint
(R 1/4 x ϕ 8)


●Swivel hose joint
(R 1/4 x ϕ 6)

・For other connection parts, please contact us.

TA-16CVA・16CVS

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.

Specification

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˚C	
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 TA-16CVS

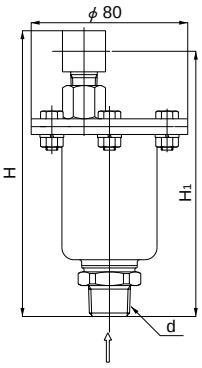
Dimensions (mm) and Weights (g)

●TA-16CVA

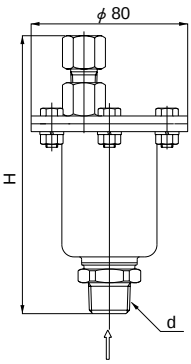
Nominal size	d	H1	H	Weight
15A	R 1/2	135.5	146	720
20A	R 3/4	137.5	148	740
25A	R 1	142	152.5	800

●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

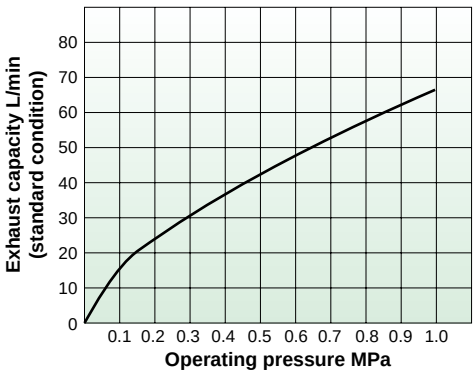


TA-16CVA



TA-16CVS

Exhaust Capacity Chart



Option

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 ϕ 6)

●Manual valve with copper joint (R 1/4 x ϕ 8)

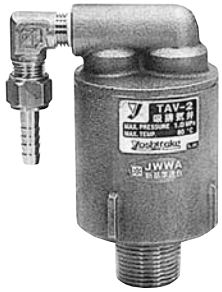
●Manual valve with hose joint (R 1/4 x ϕ 6)

●Swivel joint (R 1/4 x Rc 1/4)

●Swivel copper pipe joint (R 1/4 x ϕ 8)

●Swivel hose joint (R 1/4 x ϕ 6)

・For other connection parts, please contact us.

Feature		Nylon coating	Stainless steel body	Air vent with vacuum breaker
Model		TA-2C・3C	TA-18・18L	TAV-2
Picture		 TA-2C TA-3C	 TA-18 TA-18L	
Application		Cold and hot water, Oil (specific gravity: 0.8 or more)	Cold and hot water	City water
Max. pressure		1.0 MPa	0.3 MPa	1.0 MPa
Max. temperature		60˚C	100˚C	80˚C (no freeze condition)
Connection		JIS Rc screwed	JIS R screwed	JIS R screwed
Material	Body	Ductile cast iron	Stainless steel	Cast bronze (NPb-treated)
	Valve	Brass	Disc: FKM	EPDM
	Valve seat	Brass (equipped with NBR disc)	Brass	Bronze, Heat-resistant resin
	Float	Stainless steel	Heat-resistant resin	Heat-resistant resin
Size		15A-32A	15A, 20A	15A
Others		Nylon coated: TA-2C: Body TA-3C: Body and cover	—	・Operating pressure of vacuum breaker is –1.0 kPa or less.

Feature		Air vent with vacuum breaker
Model		TAV-3A
Picture		
Application		City water
Max. pressure		1.0 MPa
Max. temperature		35˚C (no freeze condition)
Connection		JIS R screwed
Material	Body	Cast bronze (NPb-treated)
	Valve	EPDM, NBR
	Valve seat	Bronze, Heat-resistant resin
	Float	Heat-resistant resin
Size		20A, 25A
Others		・Operating pressure of vacuum breaker is –1.0 kPa or less.