

DIRECT OPERATED SOLENOID VALVES

A Series

Metal Seal, In-line Mounting/Sub-base Mounting



KURODA

ENGINEERING YOUR SUCCESS.



SOLENOID VALVES/COMMON INSTRUCTIONS

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

QUALITY OF AIR

WARNING

- **Use pure air.**

Compressed air containing corrosive gases, chemicals, salt, etc. causes a breakdown or operation failure. So do not use such air.

CAUTION

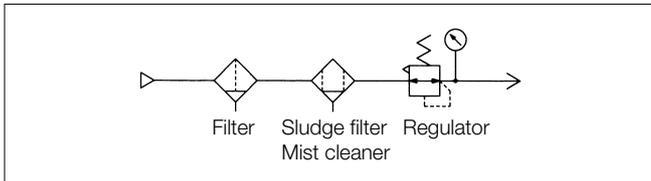
- **Fit an air filter with filtration of 5 μm or fine.**

- **Install an air dryer.**

Compressed air containing much drainage causes the operation failure of pneumatic equipment. Install an air dryer, lower the temperature and reduce drainage.

- **Take proper countermeasures against sludge.**

If sludge produced in compressor oil enters pneumatic equipment, it will cause the operation failure of pneumatic equipment. It is recommendable to use compressor oil (NISSEKI FAIRCALL A68, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a sludge filter or mist cleaner to prevent sludge from entering the pneumatic equipment.



MAINTENANCE AND INSPECTION

WARNING

- **Inspection before maintenance**

First check that load drop prevention has been provided. Then shut off air and power supplies to the system and exhaust residual air in the system beforehand.

For a 3-position closed center type solenoid valve, compressed air is sealed between solenoid valve and cylinder. Exhaust this residual compressed air.

- **Inspection after maintenance**

When restarting the system, check that preventive measures against flying-out of the actuator have been taken. Then connect compressed air supply to the pneumatic system, and perform a proper functional test and a leak test to check that it works safely without fail, before starting the system.

- **Operation at low frequency**

To prevent an operation failure, perform the switching action of the solenoid valve once per 30 days. (Be careful of air supply.)

- **Manual operation**

When the solenoid valve is manually operated, the system connected to it is also operated. Make sure safety before operation.

- **Disassembly of solenoid valve**

When disassembling the solenoid valve, contact KURODA beforehand.

CAUTION

- **Draining**

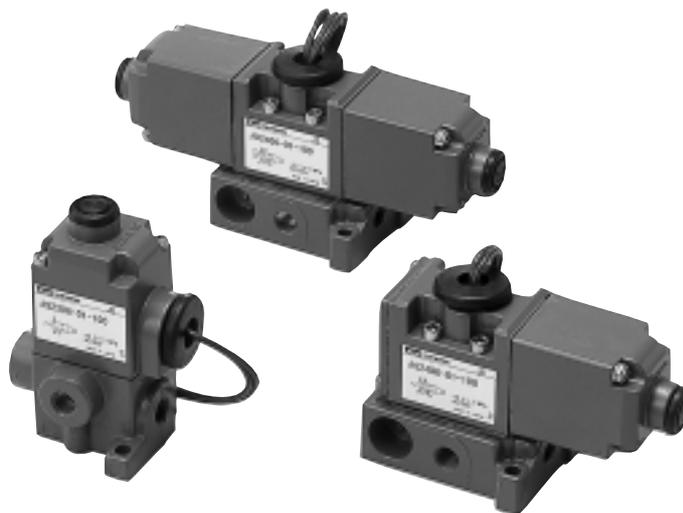
To keep the quality of air to a certain level, drain the air filter at periodical intervals.

3/5-PORT DIRECT OPERATED SOLENOID VALVES

A06 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2306	2-position Single solenoid
AS2406	2-position Single solenoid
AD2406	2-position Double solenoid
AD3406	3-position Closed center
ADE3406	3-position Exhaust center



SPECIFICATIONS

Model No.	Unit	AS2306	AS2406	AD2406	AD3406	ADE3406
Fluid		Non-lubricated/lubricated air				
Port size		Rc $\frac{1}{8}$, $\frac{1}{4}$				
Effective area	mm ²	9	10	10	9	9
Cv value		0.49	0.54	0.54	0.49	0.49
Operating ambient temperature	°C	- 5 ~ 60				
Operating pressure range	MPa	- 0.1 ~ 1				
Maximum frequency	Cycle/min	600	600	600	360	360
Response time (at 0.5MPa)	s (Average)	0.012	0.013	0.012	0.015	0.015
Rated voltage	V	AC100, 200, 110, 220				
Grade of insulation		JIS grade B				
Permissible voltage fluctuation	%	± 10				
Rated frequency	Hz	50/60				
Power consumption	Holding	50Hz	VA	13		13
		60Hz	VA	8.5		8.5
	Inrush	50Hz	VA	37		43
		60Hz	VA	32		39.5
Mass	kg	0.34	0.47	0.66	0.68	0.68

(Note) • When temperature of valve site goes down below 5 °C, complete dry air shall be supplied to prevent from freezing.

- Effective area shown above is value between ports 1 and 2, 4.
- Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

AS2406 - 02 - 100

Function

AS2306
AS2406
AD2406
AD3406
ADE3406

Port size

01	Rc $\frac{1}{8}$
02	Rc $\frac{1}{4}$

Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

OPTIONAL PARTS AND SPARE PARTS

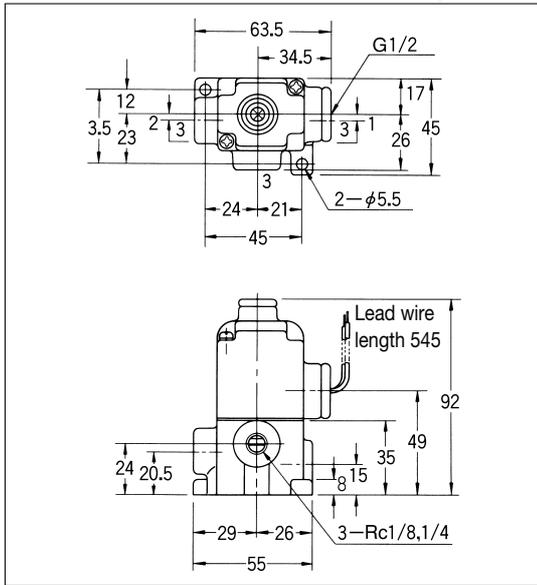
Parts Name		Model No.
Solenoid	AC 100V	A06-103
	AC 110V	A06-10310
	AC 200V	A06-203
	AC 220V	A06-20320
Sub-base	Rc $\frac{1}{8}$	A06-SB-01
	Rc $\frac{1}{4}$	A06-SB-02
Base gasket		A06-G
Spring	For 2-position	A06-SS
	For 3-position	A06-3S

A06 Series

DIMENSIONS

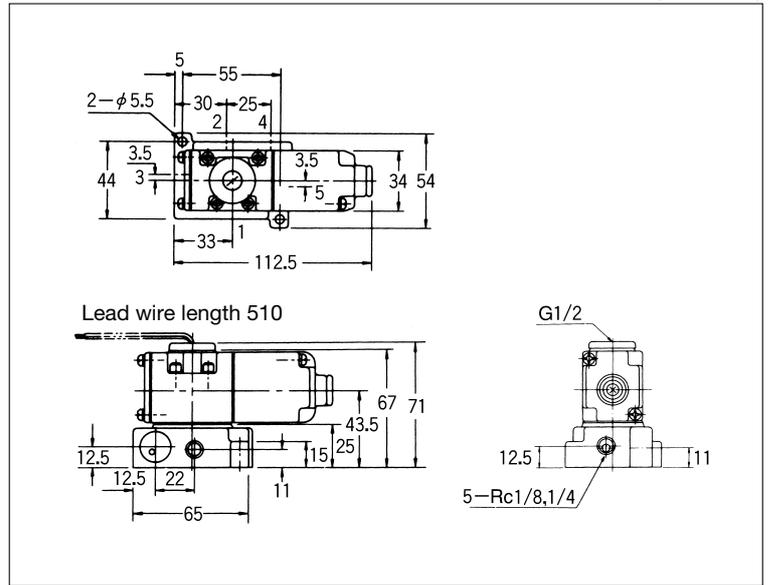
AS2306

(Unit : mm)



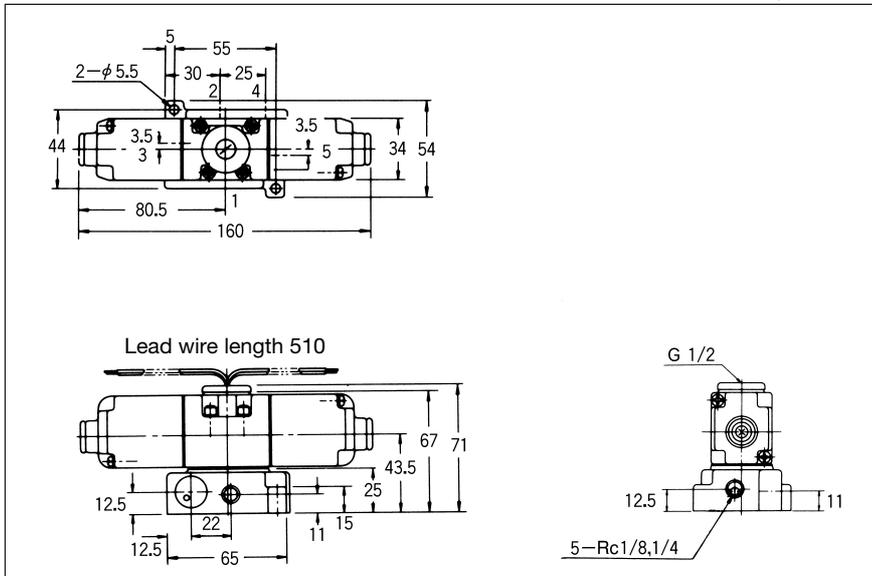
AS2406

(Unit : mm)



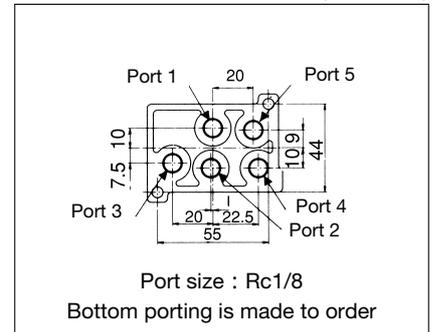
AD2406

(Unit : mm)



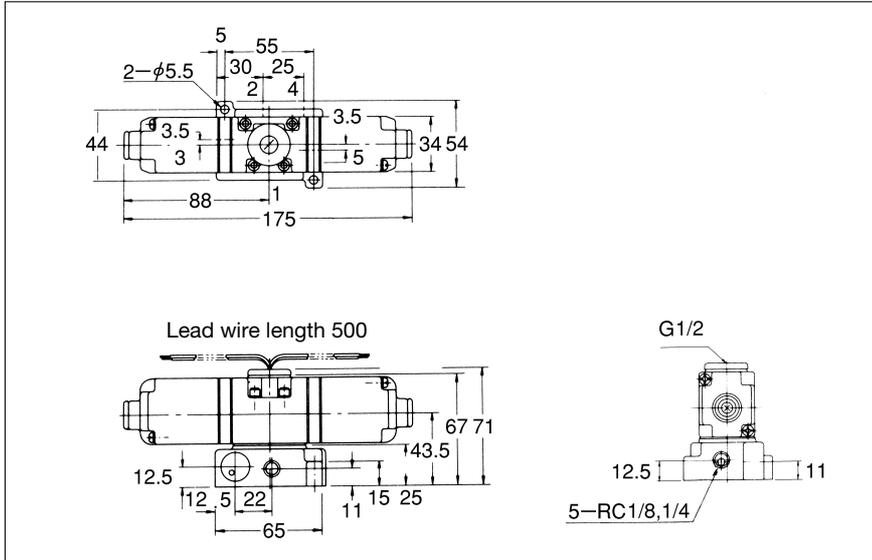
Bottom porting

(Unit : mm)



AD3406、ADE3406

(Unit : mm)



3/5-PORT DIRECT OPERATED SOLENOID VALVES

A08 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2308	2-position Single solenoid
AS2408	2-position Single solenoid
AD2408	2-position Double solenoid
AD3408	3-position Closed center
ADE3408	3-position Exhaust center



SPECIFICATIONS

Model No.	Unit	AS2308	AS2408	AD2408	AD3408	ADE3408
Fluid		Non-lubricated/lubricated air				
Port size		Rc $\frac{1}{4}$, $\frac{3}{8}$				
Effective area	mm ²	22	30	30	25	25
Cv value		1.19	1.63	1.63	1.36	1.36
Operating ambient temperature	°C	- 5 ~ 60				
Operating pressure range	MPa	- 0.1 ~ 1				
Maximum frequency	Cycle/min	400	400	400	250	250
Response time (at 0.5MPa)	s (Average)	0.013	0.015	0.01	0.015	0.015
Rated voltage	V	AC100, 200, 110, 220				
Grade of insulation		JIS grade B				
Permissible voltage fluctuation	%	± 10				
Rated frequency	Hz	50/60				
Power consumption	Holding	50Hz	VA	25		25
		60Hz	VA	14		14
	Inrush	50Hz	VA	130		170
		60Hz	VA	110		140
Mass	kg	0.7	1.0	1.4	1.5	1.5

(Note) • When temperature of valve site goes down below 5 °C, complete dry air shall be supplied to prevent from freezing.

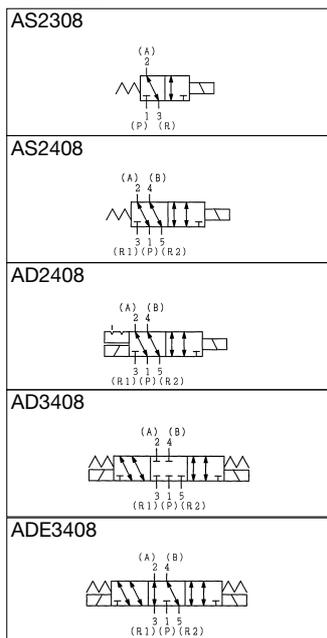
- Effective area shown above is value between ports 1 and 2, 4.
- Response time shown above is in accordance with JIS B 8375.

A08 Series

ORDERING INSTRUCTION

AS2408 - 02 - 100 P

Function



Port size

02	Rc $\frac{1}{4}$
03	Rc $\frac{3}{8}$

Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

Versions

No mark	Standard
I	With indicator light
K	With surge suppressor
P	With indicator light & surge suppressor

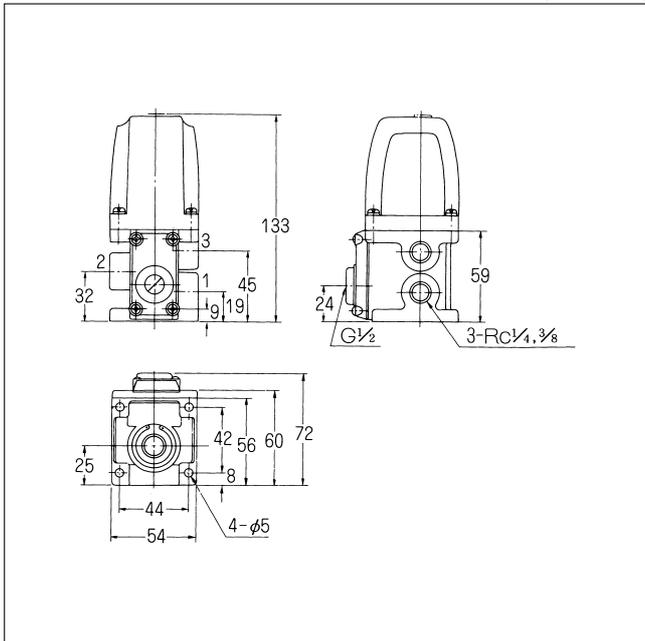
OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Solenoid unit for 2-position	AC 100V	A08-105
	AC 110V	A08-10510
	AC 200V	A08-205
	AC 220V	A08-20520
Solenoid unit for 3-position	AC 100V	A08-109
	AC 110V	A08-10910
	AC 200V	A08-209
	AC 220V	A08-20920
Sub-base	Rc $\frac{1}{4}$	A08-SB-02
	Rc $\frac{3}{8}$	A08-SB-03
Base gasket		A08-G
Spring	For 2-position	A08-SS
	For 3-position	A08-3S

DIMENSIONS

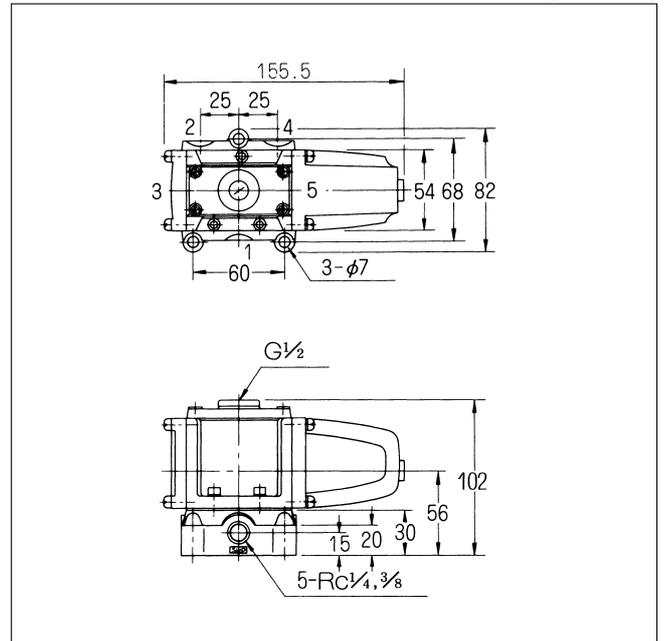
AS2308

(Unit : mm)



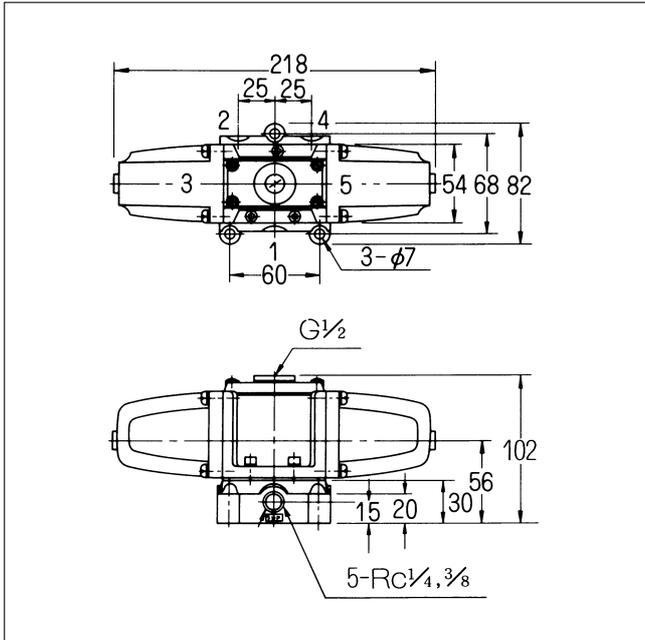
AS2408

(Unit : mm)



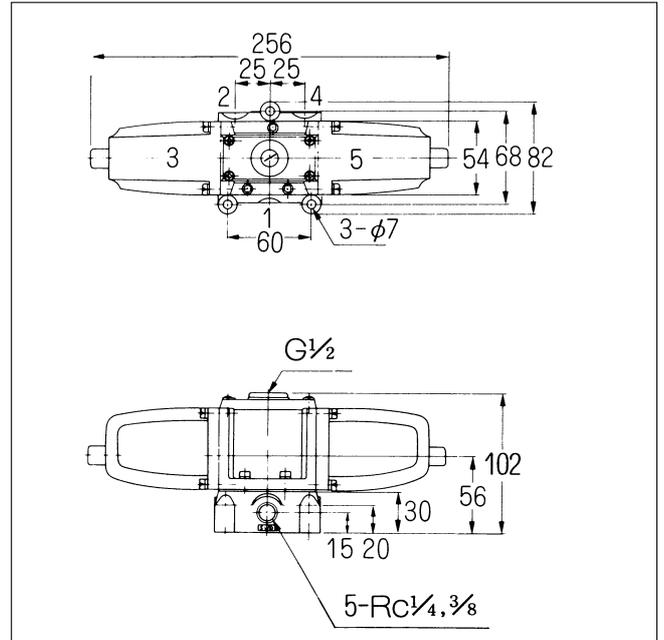
AD2408

(Unit : mm)



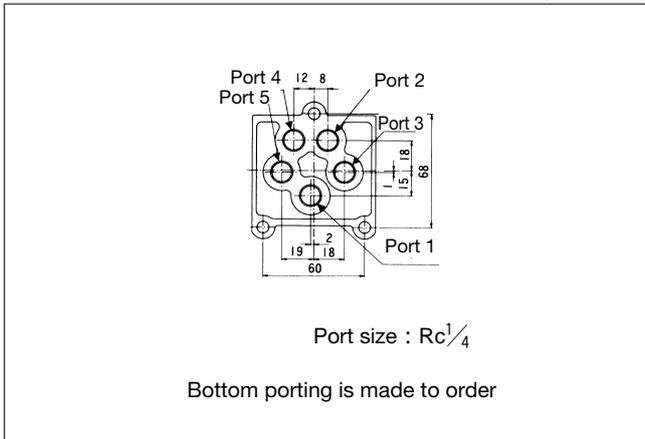
AD3408、ADE3408

(Unit : mm)



Bottom porting

(Unit : mm)



3/5-PORT DIRECT OPERATED SOLENOID VALVES

A10 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2310	2-position Single solenoid
AS2410	2-position Single solenoid
AD2410	2-position Double solenoid
AD3410	3-position Closed center
ADE3410	3-position Exhaust center



SPECIFICATIONS

Model No.	Unit	AS2310	AS2410	AD2410	AD3410	ADE3410
Fluid		Non-lubricated/lubricated air				
Port size		Rc ³ / ₈ , 1/2	Rc ¹ / ₄ , ³ / ₈ , 1/2			
Effective area	mm ²	38	50	50	50	50
Cv value		2.06	2.71	2.71	2.71	2.71
Operating ambient temperature	°C	- 5 ~ 60				
Operating pressure range	MPa	- 0.1 ~ 1				
Maximum frequency	Cycle/min	350	350	350	200	200
Response time (at 0.5MPa)	s (Average)	0.016	0.02	0.015	0.015	0.015
Rated voltage	V	AC100, 200, 110, 220				
Grade of insulation		JIS grade B				
Permissible voltage fluctuation	%	± 10				
Rated frequency	Hz	50/60				
Power consumption	Holding	50Hz	VA	36		36
		60Hz	VA	27		27
	Inrush	50Hz	VA	290		430
		60Hz	VA	250		360
Mass	kg	1.3	1.9	2.7	2.9	2.9

(Note) • When temperature of valve site goes down below 5 °C, complete dry air shall be supplied to prevent from freezing.

- Effective area shown above is value between ports 1 and 2, 4.
- Response time shown above is in accordance with JIS B 8375.

3/5-PORT DIRECT OPERATED SOLENOID VALVES

A15 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2315	2-position Single solenoid
AS2415	2-position Single solenoid
AD2415	2-position Double solenoid
AD3415	3-position Closed center
ADE3415	3-position Exhaust center



SPECIFICATIONS

Model No.	Unit	AS2315	AS2415	AD2415	AD3415	ADE3415
Fluid		Non-lubricated/lubricated air				
Port size		Rc $\frac{1}{2}$, $\frac{3}{4}$				
Effective area	mm ²	80	75	75	75	75
Cv value		4.34	4.07	4.07	4.07	4.07
Operating ambient temperature	°C	- 5 ~ 60				
Operating pressure range	MPa	- 0.1 ~ 1				
Maximum frequency	Cycle/min	150	150	150	150	150
Response time (at 0.5MPa)	s (Average)	0.018	0.035	0.025	0.020	0.020
Rated voltage	V	AC100, 200, 110, 220				
Grade of insulation		JIS grade B				
Permissible voltage fluctuation	%	± 10				
Rated frequency	Hz	50/60				
Power consumption	Holding	50Hz	VA	38		38
		60Hz	VA	28		28
	Inrush	50Hz	VA	370		520
		60Hz	VA	320		480
Mass	kg	1.8	2.8 (3.2)	3.6 (4.0)	3.8 (4.2)	3.8 (4.2)

(Note) • When temperature of valve site goes down below 5 °C, complete dry air shall be supplied to prevent from freezing.

- Effective area shown above is value between ports 1 and 2, 4.
- Response time shown above is in accordance with JIS B 8375.
- Mass in bracket () shown with Rc $\frac{3}{4}$ ported sub-base.