CT-1

CT-1 is a pneumatic control valve. Its valve-opening is accurately controlled by signals output from controller. The singl-seat globe valve body offers large capacity and excellent controllability. The actuator is a multi-spring, single-action type.

■Features

1. CT-1 offers the standard type electro-pneumatic positioner and the air regulator as accessories and also offers several options of positioner (E/P, Smart Positioner) to be mounted depending on request from end user.
2. Drive part is a compact and lightweight.
3. Spherical main valve offers great sealability and great reduction of valve seat leakage (ANSI Class IV).

■Specifications

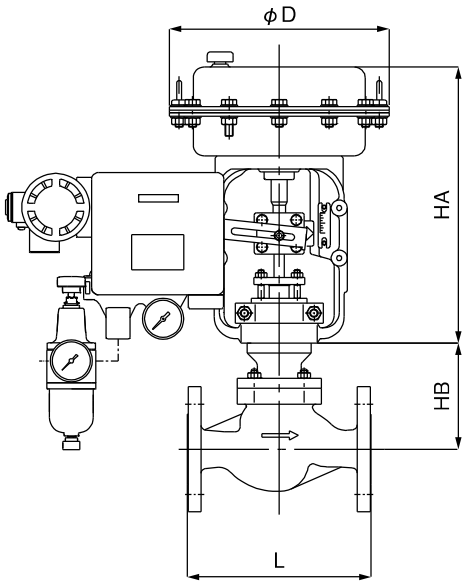
Model		CT-1	
Nominal size		15-100A	
Application		Controlled fluid	Cold and hot water, Air, Steam, Oil, Other non-dangerous fluids
		Driving medium	Compressed air
Flange Connection		JIS 10KRF, JIS 20KRF, ANSI 150RF, ANSI 300RF, EN PN16, EN PN25	
Max. working pressure		1.0 MPa	
Working temperature		-50 to 210˚C (no freezing condition)	
Plug characteristics		Equal percentage	
Rangeability		30:1	
Sealing (plug and seat)		Metal to metal	
Seat leakage		ANSI class IV	
Actuator		Single action	
Valve action		Reverse (fall to close) *1	
Supply air pressure		0.1-0.3 MPa (0.35 MPa or more is required at air regulator's inlet)	
Ambient temperature		-20 to 70˚C	
Material	Body	Cast carbon steel	
	Plug	Stainless steel	
	Seat ring	Stainless steel	
	Gasket	SUS + GRAFOIL®	
	Grand packing	V-PTEF	
	Diaphragm	EPDM	
Accessories		Electro-pneumatic positioner (4-20 mA DC)	
		Air regulator	

*1 Valve opens when the value of input signal increases.
· Available with ASME or EN flanged.

■Cv value

Nominal size	15A	20A	25A	32A	40A	50A	65A	80A	100A
Cv	6	9	14	25	33	50	85	106	175

■Dimensions (mm) and Weights (kg)



Size	L	HA	HB	D	Stroke	Weight
15A	184	276	100	220	20	13
20A	184	276	100	220	20	13
25A	184	276	100	220	20	16
32A	222	320	111	270	25	22
40A	222	320	111	270	25	22
50A	254	320	124	270	25	28
65A	276	394	122	350	30	48
80A	298	394	162	350	30	61
100A	352	394	182	350	30	76

■Positioner

Available with 2 types of positioners

It is next generation positioner and microprocessor-equipped providing with various fucntions such as auto-calibration and the optimum control PID etc.

Electro-pneumatic positioner (EP-1)

- Malfunction preventive structure with high tolerance for vibration
- Quick and accurate response
- Good efficiency with small air consumption
- Easy zero/span adjustment

Smart positioner (EP-1S)

- LCD monitor shows positioner's condition
- Excellent performance even under conditions of frequent vibrations
- With feedback analog signal output terminal
- Good efficiency with small air consumption
- Auto-calibration with easy operation

⚠ Warning	Be sure to install safety device for such as blocking or opening when failure or malfunction of solenoid valve may violate human life, body, or property.
⚠CAUTION	Please refer to the manual attached to the product for procedures for installation and operation.

Disassembly and maintenance, inspection — Air operated valve

PD-1, PD-2

■Disassembly

1. Remove diaphragm cover on operation part and remove diaphragm.
2. Since valve and diaphragm plate are connected by bolt, pass a bar through hole for fixing valve, loosen bolt by bar spanner, and remove plate. In this occasion, be careful that spring rebounds with strong force.
3. After removing diaphragm plate and spring plate, frame can be removed by removing rock nut and set screw holding frame.
4. Next, remove upper cover of body (gland part ass'y). Loosen gland nut in advance. Samely, remove bottom cover.
5. After removing upper part, get out valve from bottom straightly. By above procedure, the product can be disassembled from upper part in order. Also, assembly is the reverse order of disassembly.

■Maintenance and inspection

1. Make periodical inspection to check that diaphragm is not damaged.
2. Be careful for damage on contact surface of valve and valve seat. It becomes cause of fluid leakage. If contact surface is damaged by dirt entry, make lapping with mixed sand.
3. Packing is consumable supply. If getting old, replace with new one.
4. Conduct inspection for spring buckling and stem bending, etc.

Troubleshooting — Air operated valve

PD-3

Trouble	Cause	Remedy
Fluid does not flow (Valve disc is kept closing and does not open).	● Pilot pressure is not supplied.	Check air supply piping.
	● Pilot pressure is low.	Apply pilot pressure as specified in “Specifications”.
	● Sealing failure of outer lip seal.	Replace the actuator set.
Fluid keeps flowing and does not stop (Valve disc is kept opening and does not close). Or, there is valve leakage.	● Leakage from stop valve on bypass piping.	Close stop valve. Or, in case that leakage still occurs even if closing stop valve, replace stop valve.
	● Pilot pressure exists inside.	Remove pilot pressure from pilot port.
	● Foreign substance is stuck on the seat part between valve disc and body.	Clean the seat part between valve disc and body.
	● There is damage on the seat part between valve disc and body.	If there is damage on valve disc, replace the actuator set. If there is damage on the seat part of body, replace the product.
	● Spring failure inside actuator.	Replace the actuator set.
Fluid leaks from the connection part of packing case and body.	● Leakage from gasket due to loose of packing case.	Tighten packing case by the specified tightening torque.
	● Leakage from gasket due to deterioration.	Replace gasket.
Fluid leaks from the leak detection port.	● Leakage due to deterioration or wear of O ring or packing, etc. inside the actuator set.	Replace the actuator set.
Pilot pressure leaks from position indicator part.	● Leakage due to deterioration or wear of O ring or packing, etc. inside the actuator set.	Replace the actuator set.

⚠ Warning	Be sure to install safety device for such as blocking or opening when failure or malfunction of solenoid valve may violate human life, body, or property.
⚠CAUTION	Please refer to the manual attached to the product for procedures for installation and operation.

Troubleshooting — Control valve

CT-1

Trouble	Cause	Remedy
The product does not operate.	● Pilot pressure or external signal is not supplied.	Check existence of pilot pressure (0.35 MPa or more) by device such as pressure gauge. Check existence of external signal by device such as tester.
	● Air supply piping is clogged or leaks.	In case of clogging, clean air supply piping. In case of leakage, replace the piping.
	● Diaphragm bolt is loosened.	Retighten diaphragm bolt.
	● Leakage occurs between lower diaphragm case and diaphragm rod.	Replace actuator.
	● Failure occurs in accessory positioner or regulator.	Inspect or replace positioner or regulator.
	● Failure occurs in body part or actuator.	Inspect or replace body part or actuator.
	● Sensitivity of positioner is not appropriate.	Replace positioner.
Operation is unstable (Hunting occurs).	● Abnormal signal is sent from controller.	Regulate controller and check signal system.
	● Pilot pressure is not stable.	Check air supply piping and replace it with one of larger nominal size.
Leakage from plug.	● Valve does not descend to the position of full close.	Readjust zero point by controller.
	● There is damage on plug or seat ring.	Replace body part.
Leakage from gland packing and bonnet gasket.	● Gland nut or bonnet nut is loosened.	Retighten the nut. In case the leakage is still found, replace packing.
	● Hardening of gland packing or bonnet gasket.	Replace gland packing or bonnet gasket.