

*INSTRUCTION
MANUAL*

*XB100
BOOSTER RELAY*



SSS Co., Ltd.

1. Introduction

The booster relay is installed in the control valve to boost its stroking speed when the required stroking speed is specially high or when the actuator capacity is large.

2. Specifications

The specifications of the **XB100** are shown hereunder.

MODEL		STANDARD				LOW TEMPERATURE				HIGH TEMPERATURE			
		XB 101	XB 102	XB 103		XB 111	XB 112	XB 113		XB 121	XB 122	XB 123	
MAXIMUM SUPPLY PRESSURE		1.03 MPa											
MAXIMUM SIGNAL PRESSURE		1.03 MPa											
MAXIMUM Cv		1.2											
TEMPERATURE LIMITS		-30~83°C				-55~60°C				0~100°C			
INPUT OUTPUT RATIO		1:1											
CONNECTIONS	SUPPLY	Rc	Rc	NPT		Rc	Rc	NPT		Rc	Rc	NPT	
	OUTPUT	1/4	3/8	1/4		1/4	3/8	1/4		1/4	3/8	1/4	
	SIGNAL	Rc 1/4		NPT 1/4		Rc 1/4		NPT 1/4		Rc 1/4		NPT 1/4	
WEIGHT		0.6 kg											

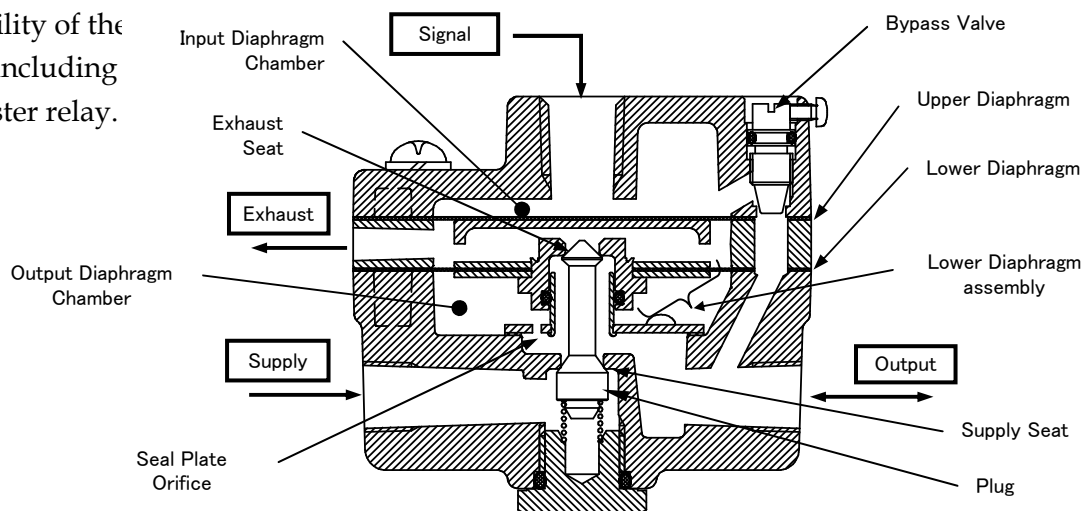
3. Operating Principles

The output pressure from the positioner is introduced to the input diaphragm chamber as a signal pressure to the booster relay and actuates the upper diaphragm. The booster relay output enters the output diaphragm chamber through the seal plate orifice and actuates the lower diaphragm.

Air supply and exhaust are performed so that the forces applied to the upper and lower diaphragms balance.

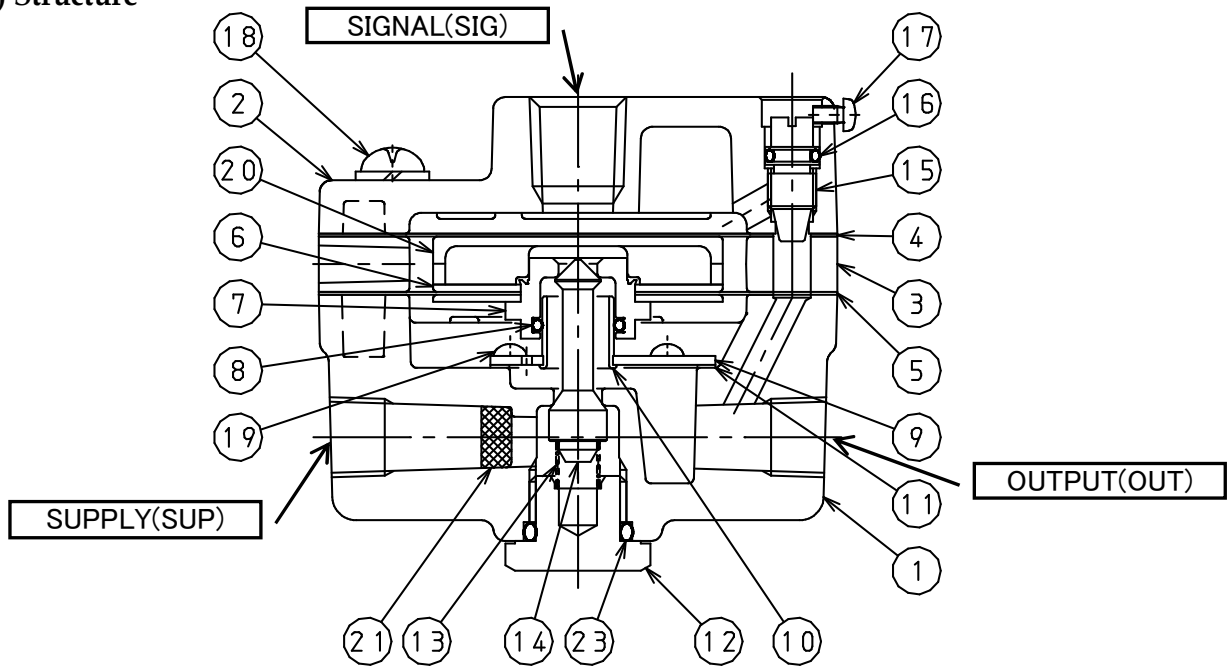
Through this actuation, the lower diaphragm assembly moves up when the signal pressure is lower than the output pressure, opening the exhaust seat to exhaust the output pressure. Conversely, when the signal pressure is higher than the output pressure, the lower diaphragm assembly moves down, closing the exhaust seat and pushing down the plug to open the supply seat and to feed supply pressure to the output side.

The input and output sides can be connected by a by-pass valve which is regulated to improve the stability of the system including the booster relay.



4. Structure and Materials

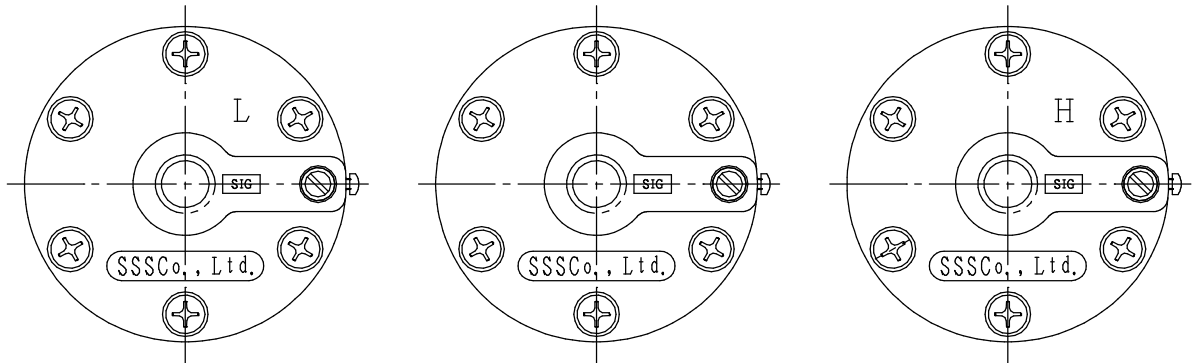
(1) Structure



For Low Temperature

Standard

For High Temperature



(2) Materials (Standard)

No.	Part Name	Material	Qt'y	No.	Part Name	Material	Qt'y
1	Body	ADC12	1	13	Coil Spring	SUS304WPB	1
2	Case	ADC12	1	14	Plug	SUS303	1
3	Bleed Ring	ADC12	1	15	Bypass Valve	SUS303	1
4	Upper Diaphragm	Chloroprene/Polyester	1	16	"O" Ring	NBR	1
5	Lower Diaphragm	Chloroprene/Polyester	1	17	Pan-Head-Screw	SUS304	1
6	Diaphragm Plate	A5052P	2	18	Pan-Head-Screw With Washer	SUS304	6
7	Exhaust Seat	C3601BD	1	19	Pan-Head-Screw	SUS304	4
8	Seal Plate "O" Ring	NBR	1	20	Piston	BALOX420	1
9	Seal Plate	SUS304CP	1	21	Filter	SUS304	1
10	Exhaust Seat Guide	C2700T	1	22	Name Plate	Aluminum Vapor Deposited Polyester	1
11	Seal Plate Gasket	Non-Asbestos Seat	1	23	"O" Ring	NBR	1
12	Plug Cap	C3601BD	1	24	Name Plate	Aluminum Vapor Deposited Polyester	1

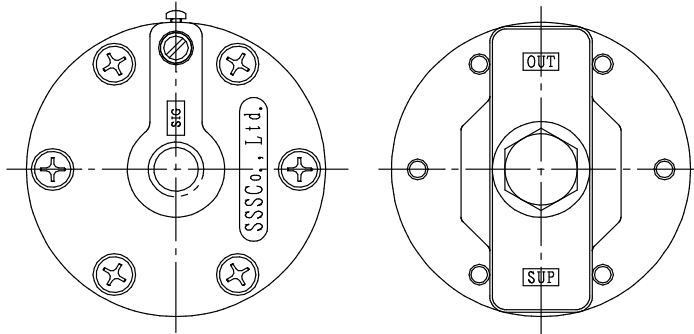
5. Carrying and Storage

- (1) Handle the booster relay carefully.
- (2) Do not expose the crate to rain.
- (3) Store the booster relay in a place free of moisture and corrosive gases when storing the relay for some time after uncrating the box. The booster relay delivered to the customer is painted and surface treated as specified. It may rust, however, if the storage environment is poor.

6. Handling Precautions

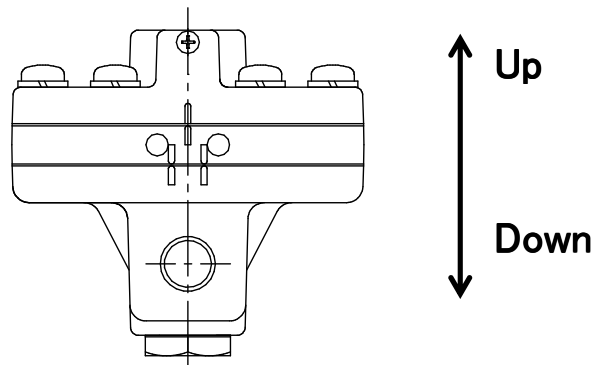
- (1) Be sure to install a filter in the supply pressure line. Install a mist separator in the fluid contains oil mist, carbon or other substances.
- (2) Connect the booster relay after flashing the air pipe.
- (3) Exercise care with "SUP", "OUT" and "SIG" indication indicated below when installing the pipes.

Connection	Indication
Supply Pressure	SUP
Output Pressure	OUT
Signal Pressure	SIG



- (4) Be sure to use the $\phi 6 \times 4$ pipe for piping of signal line for booster relay.

- (5) Install the booster relay vertically figure shown right.



- (6) The relay response will be slow when the bypass valve is opened and will be fast when it is closed.
Be sure to lock the relay using the lock screw after finishing adjustment.

7. Maintenance

Checking Procedures

(1) Checking Diaphragm Seal Leak

Leak must be less than crab spittle (1ml/min) when checked using a leak detection liquid.
 retighten the diaphragm clamping bolt at 4N-m if leak is more than crab spittle.
 If leak cannot still be improved, a trouble is suspected.

(2) Checking Leak from Bypass Valve Seal, Plug Cap Seal and Outer Surfaces

Leak must not be detected when checked using a leak detecting liquid after opening the bypass valve less than four turns from its fully closed position and maintaining the plug cap tight. A trouble is suspected if leak is found.

(3) Checking Actuation

①The valve opening must follow and must not become unstable when the positioner is supplied with signals from fully closed to fully open positions.

②The operating speed of the control valve must not be greatly slow compared with the time **XB100** was installed initially.

Adjust the bypass valve of the booster relay if a trouble is detected in ①and②.

If trouble cannot still be improved, some trouble with the booster relay is suspected.

Replacement of the assembly is recommended if a trouble is detected in (1) to (3) above.

The **XB100** booster relay is recommended to be periodically replaced every five years.

8. Troubleshooting

Phenomenon	Cause	Troubleshooting
Output is not produced after impressing input signal.	Screw on the air pipe is loose and pressure is leaking.	Tighten the screw.
	Bypass valve opening is too large.	Decrease the bypass valve opening and lock it.
Hunting phenomenon	Bypass valve opening is too small.	Increase the bypass valve opening and lock it.



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