

Model SB-1S

Model SF-1S

Model SL-1S

Sight-Glass

Instruction Manual

Thank you very much for purchasing our sight-glass. Please read this instruction manual thoroughly before using the sight-glass, so that you may do so correctly and safely. Please carefully store this manual in a handy place.

----- The following safety symbols are used in this manual.-----

Warning

This symbol indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

Caution

This symbol indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. (“Caution” may also be used to indicate other unsafe practices or risks of property damage.

Contents

Overview	1
1. Features	1
2. Specifications	1
3. Dimension and weight	2
4. Flow rate characteristics chart	3
5. Maintenance and inspection	
5.1. Precautions before operation	4
5.2. Warning and caution for when the product is used.	4
6. Disassembly, cleaning and assembly	
6.1. Warning for disassembling and inspecting	5
6.2. Disassembly procedure	5
6.3. Cautions for assembly	5
6.4. Assembly procedure	6
7. Disassembly drawing	7
After sales service	



Overview

A sight-glass is a device which allows the fluid flow conditions inside the pipe to be checked visibly, and it is mainly applied to manufacturing facilities and widely used as a means of machine protection, for manufacturing processes, and so forth.

1. Features

The sight-glass is designed to be compact and light; thus, it does not take up much space. It can be installed on both vertical and horizontal pipes.

SB-1S

- (1) This type has a ball rotating inside the ball case. This allows you to check the fluid flow conditions, especially when the flow rate is small.
- (2) The rotating ball touches the glasses, and takes off water-scale on the surface of the glasses.

SF-1S

- (1) This type allows you to recognize the rough flow rate by scales of the indicator plates indicated by the flapper.
- (2) Pressure loss due to flow is minimized; thus, it does not affect the device.

SL-1S

- (1) This makes it easy to check the mix conditions of two liquid fluids and the fluid color.
- (2) This makes it easy to check the system in which the fluid continuously flows and the flow-rate is extremely small.

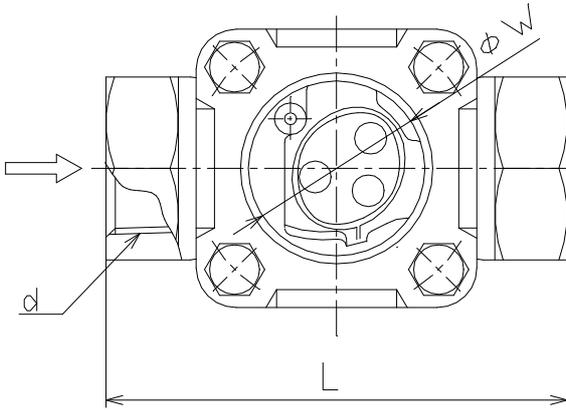
2. Specifications

Model	SB-1S	SF-1S	SL-1S
Type	Ball type	Flapper type	See-through type
Application	Cold / Hot water	Water, oil, other non-corrosive liquid	
Nominal size	15A ~ 25A		
Maximum pressure	1.0MPa (10kgf/cm ² G)		
Maximum temperature	85	180	
Heat impact resistance temperature	————	100	
Material	Body	FC200	
	Glass	Heat resisting glass (1)	
	Ball	Synthetic resin (2)	————
	Flap	————	SUS304
Connection	JIS Rc		
Water hydraulic test	2.0MPa (20kgf/cm ² G)		

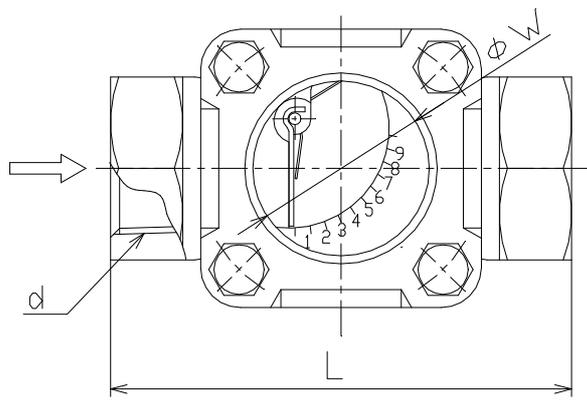
*1 When a fluid is a steam condensate, use units equipped with mica plates.

*2 The balls include white, red, and blue balls (3 in total).

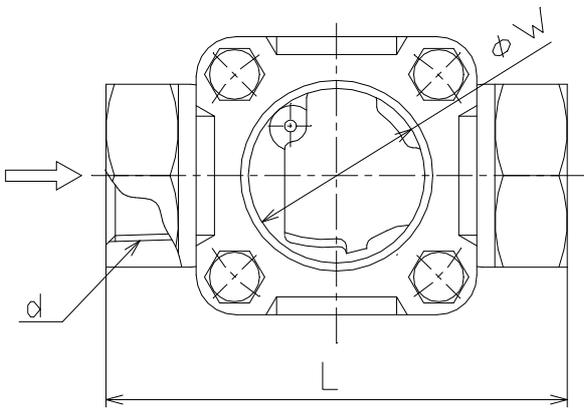
3 . Dimensions and Weights



SB - 1 S



SF - 1 S



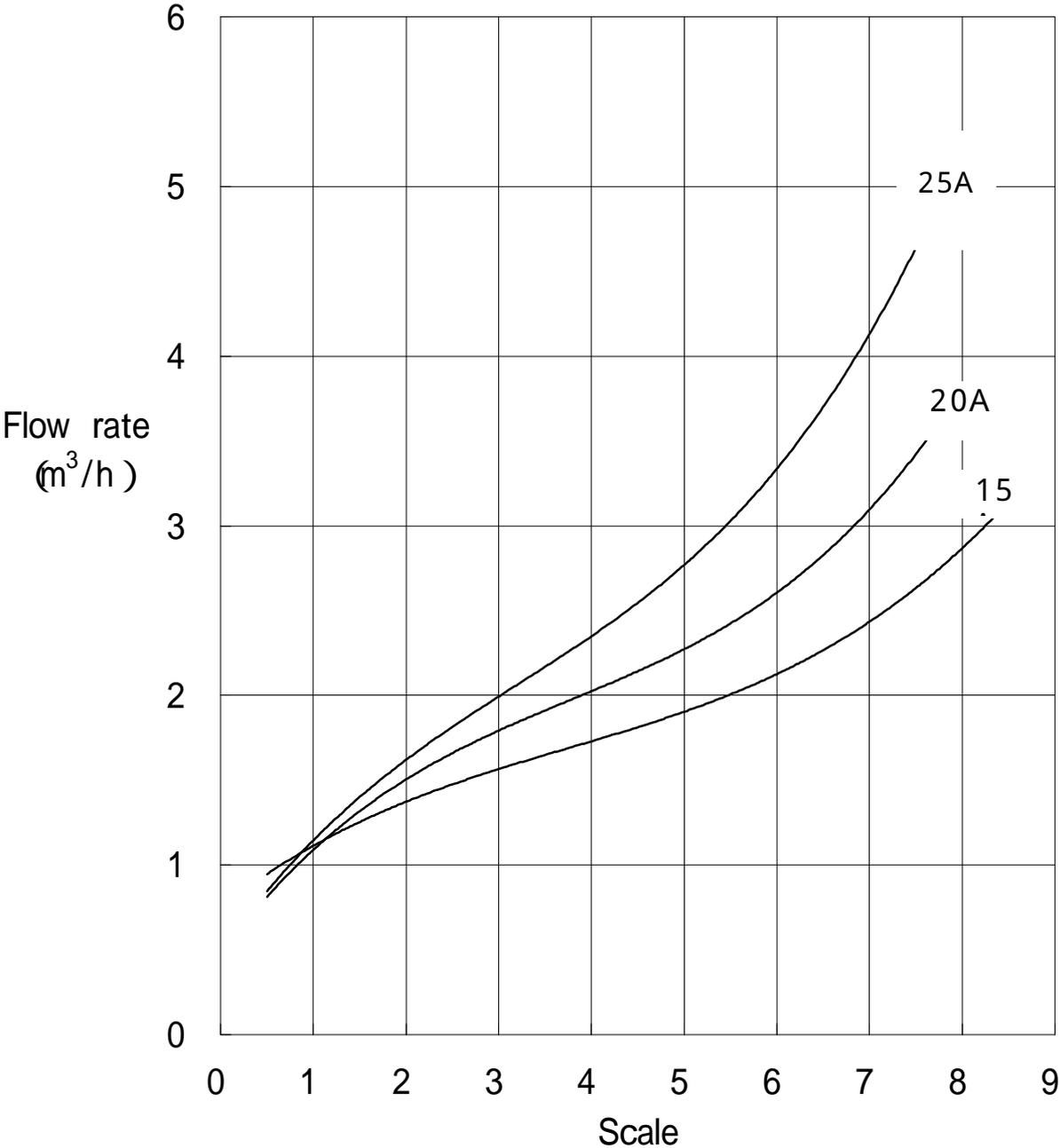
SL - 1 S

Size	d	L	(mm)	
			W	Weight(kg)
15A	Rc 1/2	80	35	0.7
20A	Rc 3/4	90	35	0.8
25A	Rc 1	115	44	1.4

4. Flow rate characteristics chart

The following flow characteristics are standard, and this chart does not assure the relationship between scales of indicator plates and flow rate. This is only for reference.

SF- 1S Flow characteristic chart
(For Water and Horizontal piping)



5. Maintenance and Inspection

5.1. Precautions before operation

Cautions

- (1) Before installing the unit, verify that its specifications are adequate for the conditions in operation.
* If it is not, the device will not function properly.
- (2) The piping should be thoroughly flushed out before installing the unit. *If this is not done, the glass may be damaged by a foreign matter in the piping or soiled by scale, oil, and so forth. Then, it will not be possible to see through the glass.
- (3) When installing the unit, use caution to install the unit in proper direction.
*Otherwise, the device will not function as it does.
- (4) When the fluid is a steam condensate, the unit should be equipped with a mica plate in order to protect the glasses.
*If it is not, the glasses may be corroded.
- (5) Use a special caution not to apply excessive load, bending stresses, and vibrations on the unit during the piping installation.

5.2. Warning and caution for operation.

Warning

- (1) Use a special caution to prevent sudden temperature changes during initial water blowing and normal usage phases.
* Sudden temperature changes may break the glasses, and the fluid may blow out.
- (2) When a fluid of high temperature is treated, do not touch the product directly with your hands.
*Your hands may get burned.

Caution

- (1) The glasses should be inspected annually to ensure that its inner side is free from corrosion and its outer surface is free from scratches, since the glasses is a consumable item.
- (2) The balls of SB-1S are consumable items. When the size of the ball becomes smaller than 5mm, replace it with a new ball.

6. Disassembly, cleaning and assembly.

6.1 Warning for disassembly and inspection

Warning

Completely discharge internal pressure from the product, piping, and devices before disassembly and inspection. When a fluid of high temperature is treated, cool off the product before disassembling it. Disassembling the product which has some pressure left inside may cause you to get injured or burned.

6.2 Disassembly procedure

SB-1S, SL-1S

Balls and ball case are for SB-1S only.

- (1) After confirming that no pressure is left inside the sight glass, remove the hexagon bolts , hexagon nuts and spring washers , and then remove the covers and glasses .
* Be careful not to lose the balls somewhere, because it may fall down when the glasses are removed.
- (2) After taking out all balls, put gloves on your hands and remove the ball case .
*Be careful not to injure your hands with the edges of the case.

SF-1S

- (1) After confirming that no pressure is left inside the sight glass, remove the hexagon bolts , hexagon nuts , and spring washers , and then remove the covers and glasses .
- (2) Pull out the spindle , while holding the flapper and flapper spring .
*Be careful not to lose the flapper spring when pulling out the spindle.

6.3 Cautions for assembly

Cautions

- (1) Clean up the faces of the body, covers, and glasses which the gasket is touching.
* The fluid may leak from the gasket, causing you to get injured or burned.
- (2) The glass is a consumable item. Replace the glass with a new one if the glass is scratched or its thickness has been decreased more than 10%.
(The thickness of new glass should be as follows: 15,20A : 5mm, 25A; 6mm).
*If the corroded glass is not replaced, the fluid may leak out of the glass and cause injury or burns.
- (3) The gasket is a consumable item. Use a new one to assemble.
(The size of the gasket : 15,20A : 44 X 35 X0.8t, 25A : 54X 44X0.8t)
*If the new one is not used, the fluid may leak out of the gasket and cause injury or burn.
- (4) The balls of SB-1S are consumable items. Replace it with a new one when its diameter becomes less than 5mm.
The diameter of the ball is about 5/16(7.94mm) when it is a new one, and three balls (red, white, and blue) are included.

6.4 Assembly procedure

SB-1S, SL-1S

Ball and ball case are for SB-IS only.

(1) Put the brim of the ball case into the ditch of the body, and both right and left spaces between the ball case and glasses should be equal.

* The ball case must face toward the certain direction when it is attached ; otherwise, it does not function as it does. (See the drawing-1)

(2) Put the balls into the ball case, and attach each part from both sides of the body in the following sequence (gaskets glasses gaskets covers).

(3) After screwing the hexagon bolts with hexagon nuts and spring washer loosely, screw each bolt equally and tightly by specified torque.

(See the table-1 for specified torque)

SF-1S

(1) Combine the flapper and flapper spring, and insert the spindle to it while holding it.

*The flapper and flapper spring must face toward the correct direction to be correctly attached.

If they are not facing the correct direction, they do not function properly. (See the drawing-2)

(2) Attach each part from both sides of the body on the following sequence

(gaskets glasses Scale Plates A (B) covers).

(3) After screwing, the hexagon bolts with hexagon nuts and spring washer loosely screw each bolt equally and tightly by specified torque.

(See the table-1 for specified torque)

Table-1

Nominal Size	Specified Torque
15A	4.9N·m (50kgf·cm)
20A	4.8N·m (50kgf·cm)
25A	8.8N·m (90kgf·cm)

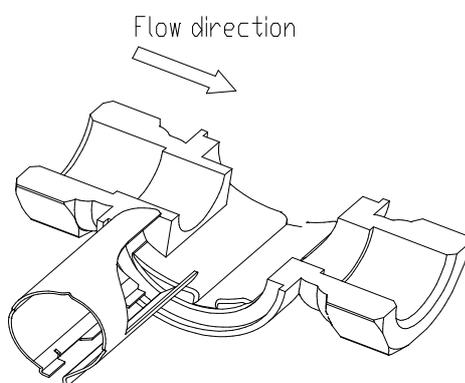


Figure 1

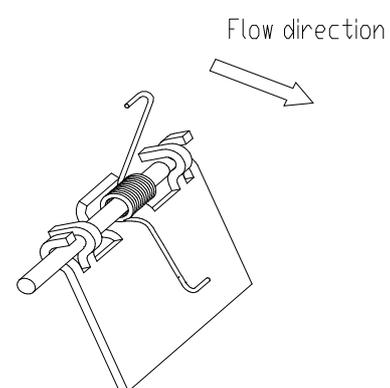
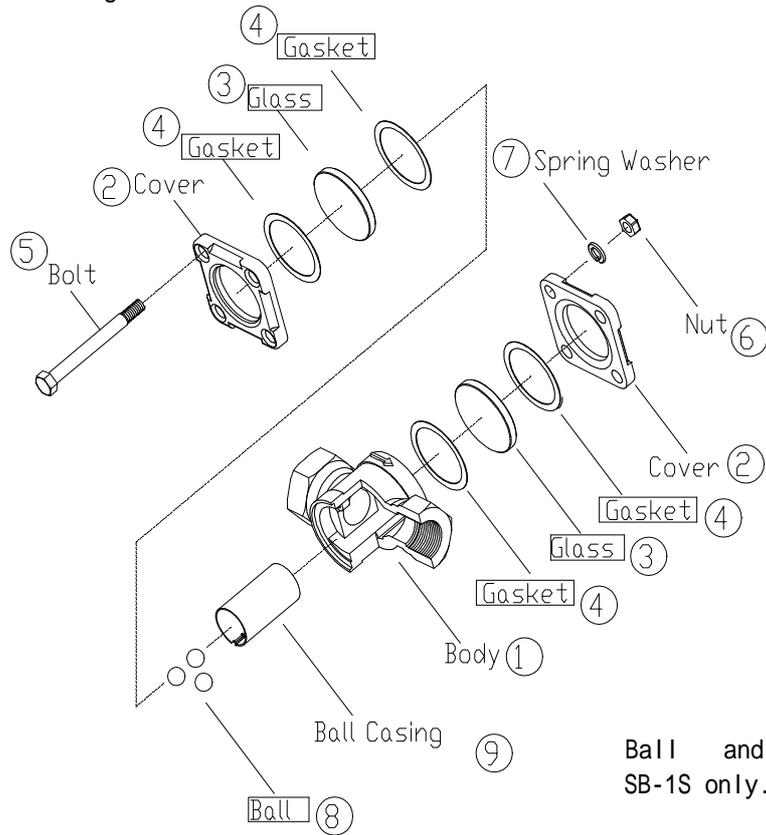


Figure 2

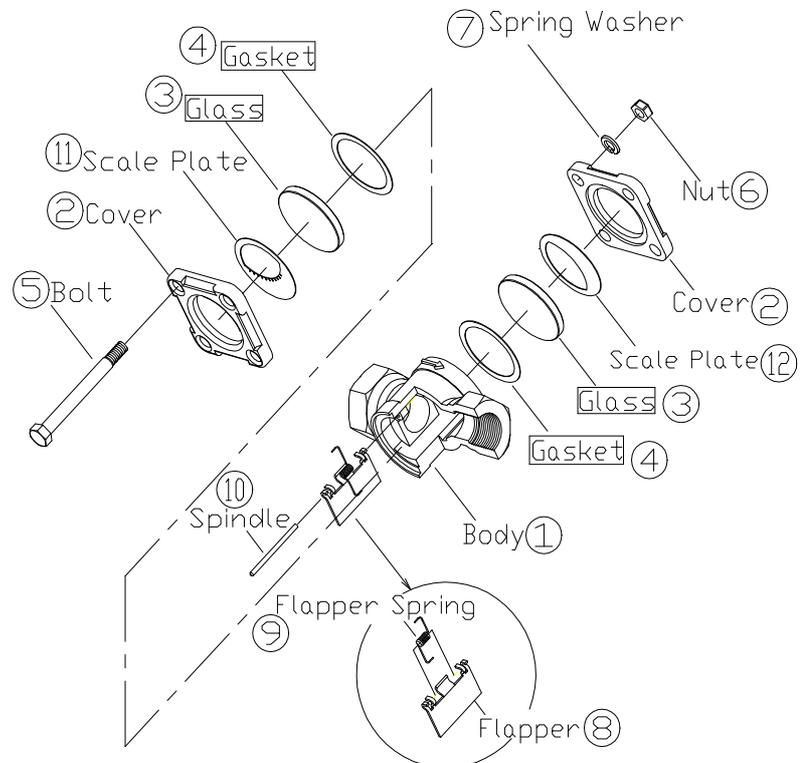
7 . Disassembly drawing

- S B - 1 S
- S L - 1 S



Ball and ball case are for SB-1S only.

- S F - 1 S



consumption parts