INSTRUCTION BULLETIN

VARIABLE AREA FLOWMETERS
10E1400

SIGHT FLOW INDICATORS

ABB Automation

WARNING notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or death.

CAUTION notices apply to hazards or unsafe practices which could result in property damage.

NOTES highlight procedures and contain information which assist the operator in understanding the information contained in this manual.

WARNING
POSSIBLE PROCESS UPSETS

Maintenance must be performed only by qualified personnel and only after securing equipment controlled by this product. Adjusting or removing this product while it is in the system may upset the process being controlled. Some process upsets may cause injury or damage.

NOTICE

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INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR SIGHT FLOW INDICATORS

WARNING

These sight flow indicators should be used in compliance with applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. WE MAKE NO WARRANTY OF FITNESS FOR A PARTICULAR USE.

For pressure/temperature ratings for your unit, please see charts below. If you have any questions call the manufacturer.

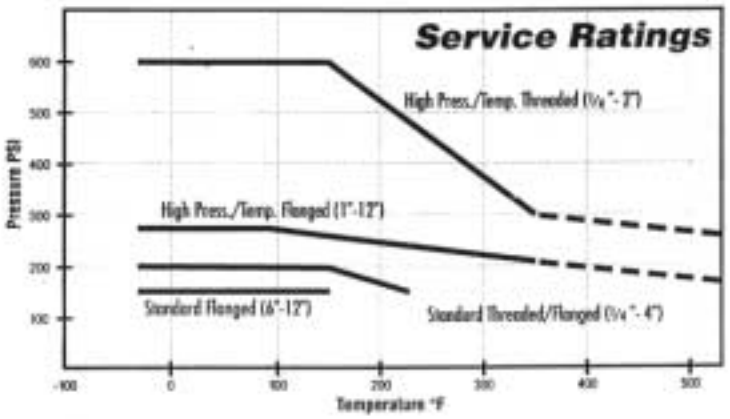


Chart Interpretation		
Series	Max. Pressure	Max. Temperature[1]
Standard Flanged (6"-12")	150 PSI @ 150°F	150°F @ 150 PSI
Standard Threaded/Flanged (¼"-4")	200 PSI @ 150°F	225°F @ 150 PSI
High Press./Temp. Flanged (1"-12")	275 PSI @ 100°F[2]	350°F @ 205 PSI[2,3]
High Press./Temp. Threaded (¼"-2")	600 PSI @ 150°F	350°F @ 300 PSI[3]

Temperature Range for Seal Materials					
	Viton (Std.)	Buna-N	Neoprene	EPT	Teflon
Minimum	0°F	-25°F	-25°F	-25°F	-75°F
Maximum	350°F[4]	225°F	225°F	225°F	350°F[4]

[1]With standard Viton seals.

[2]Steel units rated at 285 PSI max. at 100°F, and 350°F max. at 215 PSI.

[3]Temperatures in excess of 500°F possible with special high temperature seals.

[4]In high pressure/temperature units only.

INSTALLATION INSTRUCTIONS

Before installing, the user should check the unit for shipping damages and freedom of defects such as lens scratches or chips.

If the unit is to be installed in a location or position where objects could strike the unit, the manufacturer recommends installing a shield available from the manufacturer. See shield installation instructions, below.

1. Check and remove any foreign material inside the sight flow indicator.
2. Determine the direction of flow and install the unit according to the arrow stamped on the nameplate.

NOTES: This sight flow indicator is not designed to be a load bearing component; therefore, the piping should be supported accordingly. Position the specific models as follows:

- The plain model can be mounted in any plane or position.
- The propeller model can be mounted in any plane or position (except horizontally facing out and the nameplate upside down). Minimum flow required to turn the propeller could change with the mounting position.
- The drip tube model should be mounted vertically with the flow downward.
- The flapper model should be mounted horizontally or mounted vertically with the flow upward.

SHIELD INSTALLATION INSTRUCTIONS

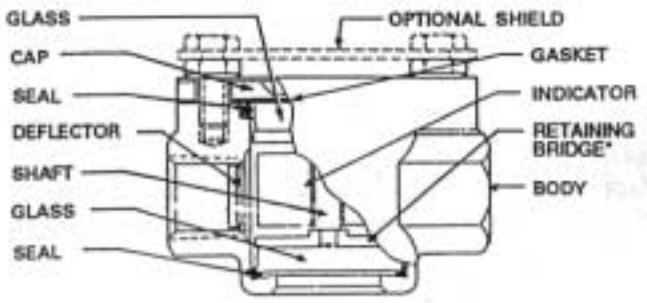
1. With wrench, remove one bolt only from face plate.
2. Insert stud into open hole and turn in approximately four (4) turns.
3. Place lock washer under nut on stud and tighten.
4. Repeat 1, 2 and 3 in that order on second face plate bolt.
5. Install shield on stud extension, resting shield on the nuts already tightened in place.
6. Install hold down nuts on shield.

Sight flow indicator with shield

MAINTENANCE INSTRUCTIONS

If replacement of the glass, seals or indicator is necessary, follow the steps outlined below. See illustration at right for part identification.

1. Relieve the system pressure and take the necessary precautions for handling the residue.
2. Loosen each bolt on the face of the unit two turns; if fluid seeps from under the glass, retighten the bolts and repeat steps 1 and 2. Failure to do this could result in bodily injury or property damage.
3. Remove the bolts, steel cap, gasket, seal and glass.
   NOTE: On the 3" and 4" indicators, repeat step 3 to remove the lower glass and seal.
4. Remove the retaining bridge and shaft.
5. Remove the propeller or flapper if applicable.
6. Remove lower glass and seal.



*Bridge design not used in 3" to 12" sizes

WARNING
The manufacturer recommends replacing the two seals, the gasket and the two glasses whenever the unit is disassembled. The seals and gasket could be permanently deformed and the glass may have been damaged during disassembly or use.

To assemble the 1/4" to 2" indicator, carefully follow the procedure below:

1. Wipe the sealing surfaces of foreign material.
2. Install the bottom seal (do not grease seal).
3. Install the bottom glass with the beveled edge toward the inside.
4. Remove any foreign material from the retaining bridges and shaft.
5. Install the retaining bridge and shaft subassembly.
6. Remove any foreign material from the propeller or flapper.
7. Install the propeller or flapper if applicable. Check indicator for rotational freedom.
8. Install the upper retaining bridge.

WARNING
BOTH RETAINING BRIDGES MUST BE INSTALLED WITH THE RAISED BOSS IN THE CENTER FACING TOWARD THE INSIDE, AWAY FROM THE GLASS. FAILING TO DO THIS COULD RESULT IN BODILY INJURY OR PROPERTY DAMAGE.

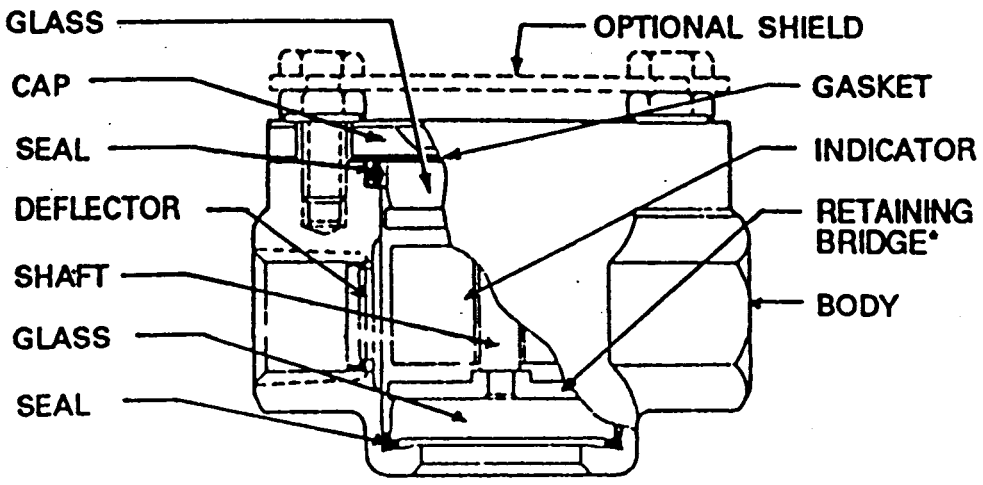
9. Install top seal into groove.
10. Carefully install the top glass with the beveled edge toward the inside (grease the outside diameter of the glass for easier assembly).*
11. Place new gasket, cap and nameplate over the glass. The tip of the arrow should point in the direction of flow.**
12. Using the cap, press the glass into the seal evenly.
13. Assemble washers on bolts and install, start bolts by hand, equalize with a wrench until tight.

To assemble the 3" to 12" indicator, carefully follow the procedure below:

1. Wipe the sealing surfaces of foreign material.
2. Install the lower seal.
3. Carefully install the glass (grease the outside of the glass for easier assembly).*
4. Install the gasket and cap over the glass.
5. Using the cap, press the glass into the seal evenly.
6. Assemble washers on bolts and install, start by hand and equalize with a wrench until tight.
7. Install the indicator support arm into the inlet end if applicable.
8. Install top seal.
9. Carefully install the top glass (grease the glass for easier assembly).*
10. Install the gasket, cap and nameplate over the glass. The tip of the arrow should point in the direction of the flow.**
11. Using the cap, press the glass into the seal evenly.
12. Assemble the washers on the bolt, start bolts by hand and equalize with a wrench until tight.

* For EPT (ethylene propylene) seals only: do not lubricate with standard grease, use Dow Corning 33.

** Models with propellers have a deflector in the inlet port. Drip tube models have drip tube mounted in the inlet port.



*Bridge design not used in 3" to 12" sizes

REPAIR KITS AND PARTS

DESCRIPTION	USED ON	PART NUMBER				
		1/4", 3/8", & 1/2"	3/4" & 1"	1 1/4", 1 1/2" & 2"	3" & 4"	6" - 12"
Repair Kit – Neoprene (Includes Glass, Seals and Gaskets)	1400 Series	1400RK-0050	1400RK-0100	1400RK-0200	1400RK-0400	1400RK-0600
Repair Kit – Viton (Includes Glass, Seals and Gaskets)	1500 Series	1500RK-0050	1500RK-0100	1500RK-0200	1500RK-0400	1500RK-0600
Repair Kits – Viton, Buna-N, EPT, Teflon	1400 & 1500 Series					
Shield Kit	1400 & 1500 Series	1400SK-1720	1400SK-1740	1400SK-1770	1400SK-1790	1400SK-1800
Retaining Bridge (2 required per unit)	1400 & 1500 Series	H-5996-M	H-6000-M	H-6004-M	N/A	N/A
Shaft	1400 & 1500 Series	H-5999-M	H-6003-M	H-6011-M	N/A	N/A
Stainless Steel Tags	1400 & 1500 Series	H-40001-M	H-40001-M	H-40001-M	H-40001-M	H-40001-M
Cap, Plated Steel	1400 Series	H-2888-M	H-2889-M	H-2890-M	C-20136-M	C-30012-RS
Cap Screw	1400 Series	H-40190-M	H-40191-M	H-40191-M	H-40192-M	H-40109-M
Cap, Plated Steel	1500 Series	H-30448-M	H-30449-M	H-30450-M	C-20136-M	C-30012-RS
Cap Screw	1500 Series	H30497-M	H-30498-M	H-30498-M	H-40192-M	H40109-M
Propeller-Delrin	1400 Series	H-40153-M	H-40152-M	H-40151-M	H-40154-P	N/A
Propeller-Ryton	1400 & 1500 Series	H-2910-M	H-2911-M	H-2912-M	H-40158-P	N/A
Propeller-Teflon	1400 & 1500 Series	H-40171-M	H-40172-M	H-40173-M	H-40174-M	N/A
Flapper-Delrin	1400 Series	H-40150-M	H-40149-M	H-40148-M	H-40148-M	N/A
Flapper-Ryton	1400 & 1500 Series	H-2944-M	H-2947-M	H-2948-M	H-2948-M	N/A
Flapper-Teflon	1400 & 1500 Series	H-40196-M	H-40197-M	H-40198-M	H-40198-M	H-40199-M
ADDITIONAL CHARGE FOR TEFLON PROPELLER OR FLAPPER IN NEW VISI-FLO	1400 & 1500 Series					Standard
ADDITIONAL CHARGE FOR HIGH TEMPERATURE PTFE SEALS	1500 Series					

N/A = NOT AVAILABLE

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