



ENGINEERED LIQUID FLOW SOLUTIONS



VISIBILITY AND RELIABILITY

SIGHT FLOW INDICATORS & SIGHT WINDOWS

SIGHT FLOW INDICATORS

KENCO Engineering Company offers a variety of Standard KSF (cast body), Full-view, and Armored Sight Flow Indicators, as well as, a line of Sight Windows. All products are hydrostatically tested to ensure reliability in harsh operating conditions. KENCO Sight Flow Indicators provide a window into piping. They are a cost effective and efficient way to visually monitor the flow of fluids, and to determine if any problems exist along the process pipeline. These inexpensive, simple devices, allow operators to observe flow rate, direction, color and clarity. These indicators can be deployed in one of two ways: (1) individually at critical points along fluid lines where changes, interruptions or contamination is likely to occur, or (2) in groups where simultaneous monitoring of multiple fluid lines is necessary.

APPLICATIONS

One of the advantages of sight flow indicators is their application versatility. Common applications involve monitoring fluid flow through filter, cooling, and intake / outlet pumping lines, as well as numerous other industrial processes. In addition, sight flow indicators are useful as backups for meters, switches and other control devices.

INDUSTRIES SERVED

CHEMICAL / PETROCHEMICAL

- Filter Line Monitoring
- Distilling Operations
- Dye / Ink Color
- Paint / Varnish Consistency
- Chemical Conversion Processes
- General Refinery Piping

PETROLEUM

- Drilling Pump Operations
- Oil / Water Separation
- Loading Terminals

POWER

- Turbine Lubricant Flow
- Cooling Line Water Flow

WASTEWATER TREATMENT

- Second Stage Aeration Tank Pumping Lines

OEM

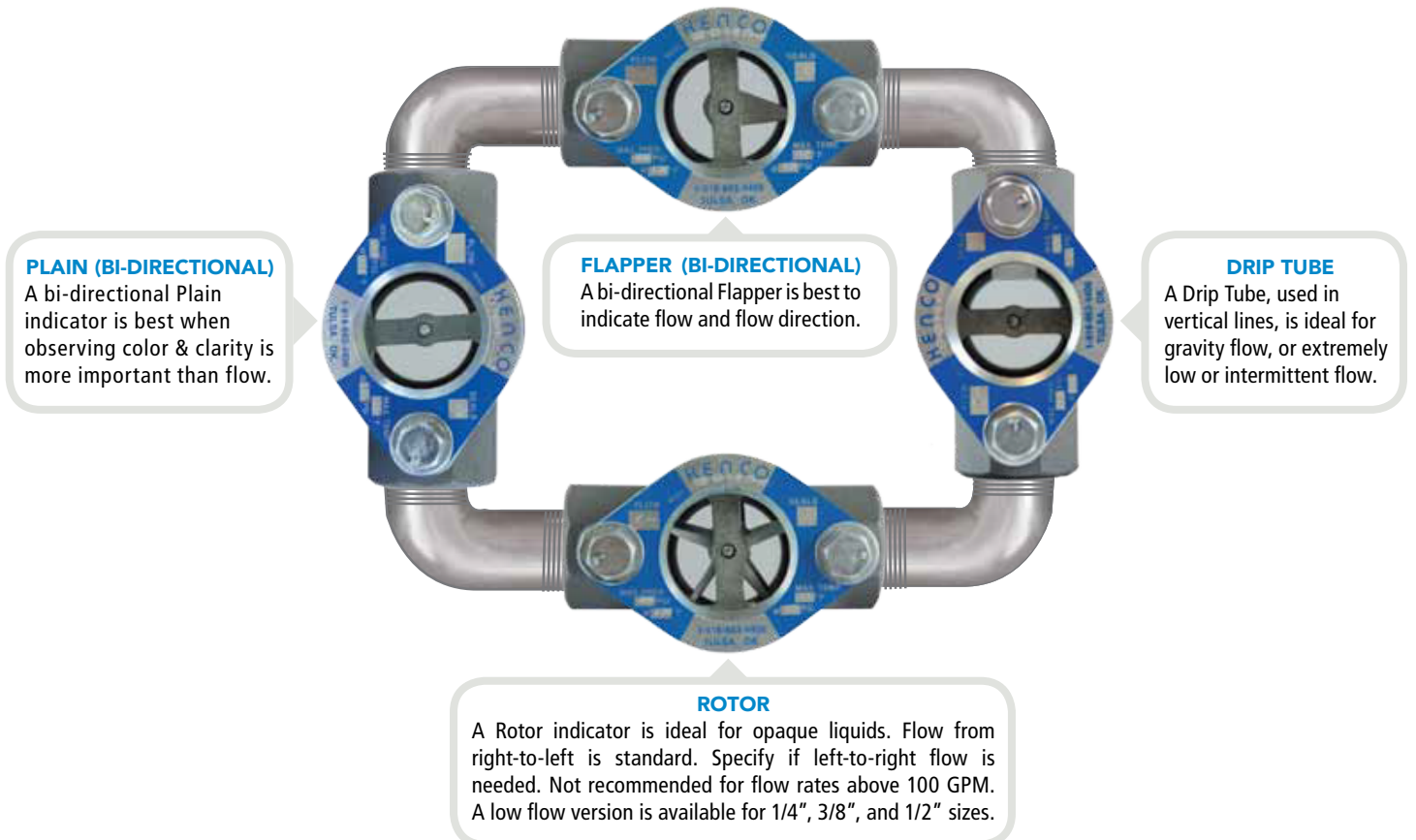
- Compressor Water Flow
- Solvent Recirculation
- Pre- and Post-Filter Trap Monitoring

KSF CAST BODY SIGHT FLOW INDICATORS

KENCO offers a wide variety of Standard KSF (cast body) Sight Flow Indicators. They are available in a complete range of sizes and styles to meet your application needs.

Selecting The Best Style

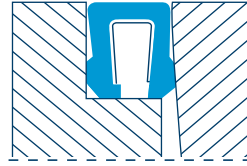
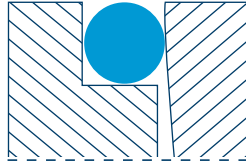
Sight flow indicators are an inexpensive way to identify and repair process line problem areas reliably and efficiently. Selecting the best type of sight flow indicator for a given application is crucial to getting the best performance possible.



LEAK-PROOF GUARANTEE

The most common complaint against sight flow indicators is that they leak. This is primarily caused by the failure of conventional flat seals. KENCO Standard KSF (cast body) Sight Flow Indicators are guaranteed not to leak for three full years under normal use. The reason we are sure that these indicators won't leak is the innovative radial sealing design:

Elastomeric radial seal with memory retention for shape creates a steady sealing force between the outside diameter of the glass and the indicator body.



PTFE lip/spring seal with constant spring expansion force maintains sealing by holding the edges of the PTFE lip seal against the outside diameter of the glass and the sight flow indicator body.

MODULAR DESIGN

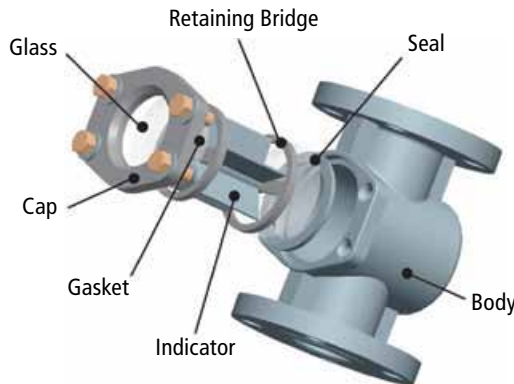


KENCO MODULAR DESIGN



COMPETITOR TIE-ROD DESIGN

KENCO's unique modular design fastens the flow assembly directly to the body with no special torquing sequence. This provides easy access to the unit from the front side, which eliminates clearance problems caused by the Tie-Rod design. The Tie-Rod design also presents challenges fastening the glass and seal to the body.



The KENCO modular design allows for maintenance to the internal parts of the indicator without removing the indicator from the pipeline. This optimizes uptime and reduces replacement costs.

Sight Flow Indicator Maximum Pressure / Temperature Ratings

KSF / KPJ Series Sight Flows	Maximum Pressure	Max. Temperature using Standard Seals
ST Series (1/4" - 2" Threaded) (3/4" - 4" Flanged)	200 psig @ 150°F	250°F @ 135 psig
ST Series (6" - 12" Flanged)	150 psig @ 150°F	150°F @ 150 psig
HT Series (1/4" - 2" Threaded)	400 psig @ 150°F	400°F @ 160 psig
HT Series (3/4" - 4" Flanged)	Carbon Steel 285 psig @ 100°F	Carbon Steel 400°F @ 200 psig
	316 Stainless Steel 275 psig @ 100°F	316 Stainless Steel 400°F @ 195 psig
HT Series (6" - 12" Flanged)	275 psig @ 100°F	Carbon Steel 400°F @ 200 psig
		316L Stainless Steel 400°F @ 195 psig

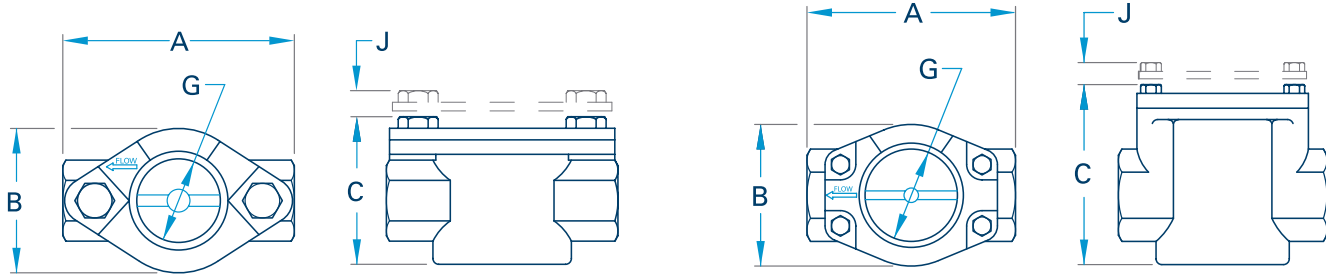
Seal / Indicator Temperature Ratings

Seal Materials	
Neoprene (ST Standard)	-20° to 250°F
Fluorocarbon (HT Standard)	-20° to 400°F
Buna-N	-20° to 212°F
EPDM	-50° to 250°F
PTFE	-40° to 400°F
Kalrez®	0° to 500°F
High Temperature (PTFE)	-40° to 500°F
Indicator Materials	
Delrin® (ST Standard)	-40° to 250°F
Ryton® (HT Standard)	-40° to 450°F
PTFE	-40° to 500°F

Note: Minimum / maximum temperature ratings are driven by the body material, seal material and flow indicator material.

PRODUCT DIMENSIONS - INCHES

THREADED KSF SIGHT FLOW INDICATORS



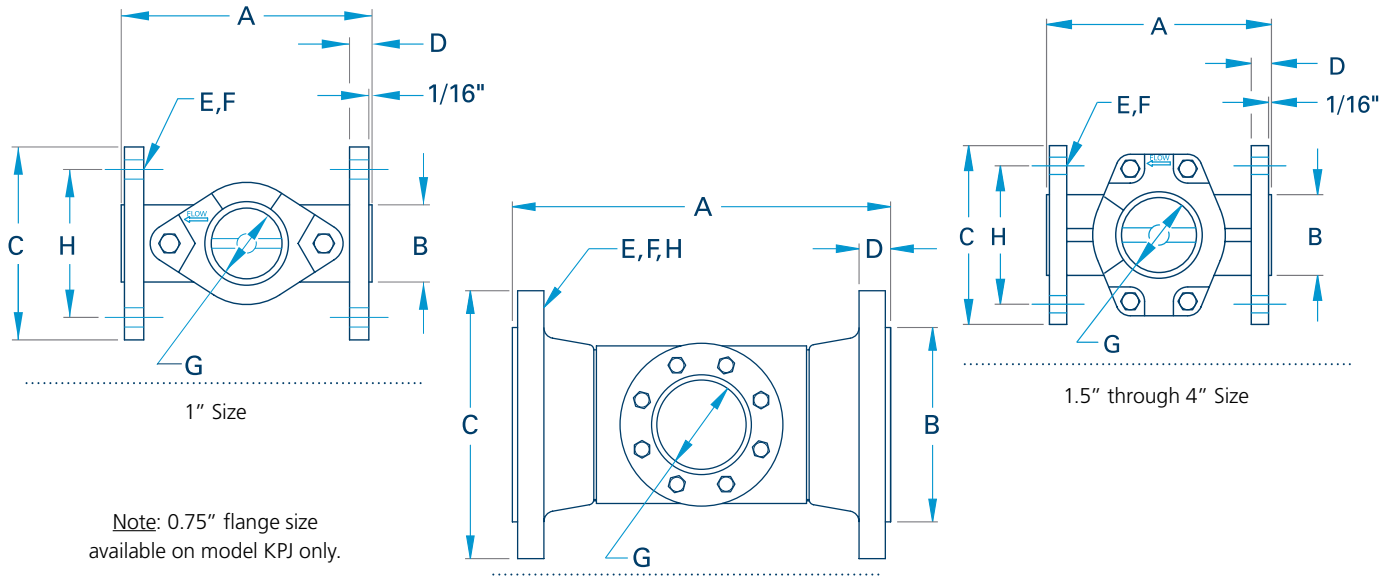
0.25" through 1" Size

1.25" through 2" Size

Indicator Size (inches)	0.25"	0.375"	0.5"	0.75"	1"	1.25"	1.5"	2"
A Overall Length	3.25 ¹	3.25 ¹	3.25 ¹	4.25 ²	4.25	5.25 ³	5.25 ³	5.50 ³
B Overall Width	2.00	2.00	2.00	2.56	2.56	3.31	3.31	3.31
C Overall Height (ST Series)	2.38	2.38	2.38	3.25	3.25	4.31	4.31	4.31
Overall Height (HT Series)	2.56	2.56	2.56	3.44	3.44	4.50	4.50	4.50
G Sight Opening Diameter	1.13	1.13	1.13	1.50	1.50	2.00	2.00	2.00
J Added Height Due to Shield	0.44	0.44	0.44	0.50	0.50	0.50	0.50	0.50
Weight (pounds)	1.60	1.60	1.40	3.00	2.70	8.40	7.90	6.60

1 316 SS Units are 3.63"; 2 Bronze Units are 4.13"; 3 316 SS Units are 5.63"

150# FLANGED KSF SIGHT FLOW INDICATORS



1" Size

1.5" through 4" Size

Note: 0.75" flange size available on model KPJ only.

6" through 12" Size

Indicator Size (inches)	1"	1.5"	2"	3"	4"	6"	8"	10"	12"
A Overall Length	5.00	6.50	7.00	8.00	9.00	14.25	16.13	16.13	17.13
B Raised Face Diameter	2.00	2.88	3.63	5.00	6.19	8.50	10.63	12.75	15.00
C Flange Diameter	4.25	5.00	6.00	7.50	9.00	11.00	13.50	16.00	19.00
D Flange Thickness	0.47	0.59	0.69	0.81	1.00	1.00	1.13	1.19	1.25
E Number of Bolt Holes	4.00	4.00	4.00	4.00	8.00	8.00	8.00	12.00	12.00
F Bolt Hole Diameter	0.63	0.63	0.75	0.75	0.75	0.75	0.75	0.88	0.88
G Sight Opening Diameter	1.50	2.00	2.00	3.00	3.00	4.00	4.00	4.00	4.00
H Bolt Circle Diameter	3.13	3.88	4.75	6.00	7.50	9.50	11.75	14.25	17.00
Weight (pounds)	5.40	11.10	15.00	29.30	35.00	85.00	125.00	165.00	250.00

DIMENSION MATCHING

KENCO Flanged Sight Flow Indicators are available in a version that matches the end-to-end dimension of sight flow indicators from Penberthy and Jacoby-Tarbox. The Model KPJ indicators are available in either Carbon Steel or 316SS materials, and Standard and High Pressure / High Temperature styles. All sizes are dimensionally interchangeable with these manufacturers' indicators, except 3/4", 2", 3", and 4" sizes, as noted in the table below.

Dimensions For Model KPJ Sight Flow Indicators

Indicator Size (inches)	3/4"	2"	3"	4"
A Overall Length	4.63	7.88	9.38	11.00
B Raised Face Diameter	1.69	3.63	5.00	6.19
C Flange Diameter	3.88	6.00	7.50	9.00
D Flange Thickness	0.50	0.69	0.81	1.00
E Number of Bolt Holes	4.00	4.00	4.00	8.00
F Bolt Hole Diameter	0.63	0.75	0.75	0.75
G Sight Opening Diameter	1.50	2.00	3.00	3.00
H Bolt Circle Diameter	2.75	4.75	6.00	7.50
Weight (pounds)	5.20	15.00	31.00	42.00



Construction Materials

Part	Style	Material
Body	All	Carbon Steel
		316 SS (1/4" to 4")
		316L SS (6" to 12")
		Ductile Iron (Threaded Only) Bronze (Threaded Only)
Window	Standard (ST) – 1/4" to 2"	Tempered Soda Lime Glass
	Standard (ST) – 3" to 12" Flanged	Annealed Soda Lime Glass
	High Press./Temp. (HT)	Tempered Borosilicate Glass
Indicator	Standard (ST)	Delrin®
	High Press./Temp. (HT)	Ryton®
	Optional	PTFE
Seals	Standard (ST)	Neoprene
	High Press./Temp. (HT)	Fluorocarbon
	Optional	Buna-N, EPDM, Kalrez®
		PTFE, High Temp. PTFE

ORDERING SYSTEM

KSF Sight Flow Indicators

REQUESTED BY: _____ COMPANY: _____

ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ FAX: _____ EMAIL: _____

Sight Flow Style

KSF=Cast Body Sight Flow Indicator
KPJ=Competitor Dimension Matched Cast Body Sight Flow Indicator

Seal Material

B=Buna-N
N=Neoprene (ST Std.)
E=Ethylene Propylene
V=Fluorocarbon (HT Std.)
T=PTFE
K=Kalrez®
P=High Temp. PTFE

Design Rating

ST=Standard
HT=High Temp. / High Pressure

Material of Construction (Body)

C=Carbon Steel
B=Bronze (Threaded Connections only)
S=316 Stainless Steel
I=Ductile Iron (Threaded Connections Only)
Note: Other materials available upon request

Connection Type

F=Flanged (150#)
F3=Flanged (300#)
T=Threaded

Indicator Style

P=Plain
R=Rotor (1/4" to 4" Sizes Only)
F=Flapper
D=Drip Tube
LR=Low Flow Rotor (1/4", 3/8" & 1/2" Sizes Only)

Connection Size

Threaded	Flanged
0.25=1/4"	0.75=3/4" (KPJ only)
0.375=3/8"	1.0=1"
0.5=1/2"	1.5=1-1/2"
0.75=3/4"	2.0=2"
1.0=1"	3.0=3"
1.5=1-1/2"	4.0=4"
2.0=2"	6.0=6"
	8.0=8"
	10.0=10"
	12.0=12"

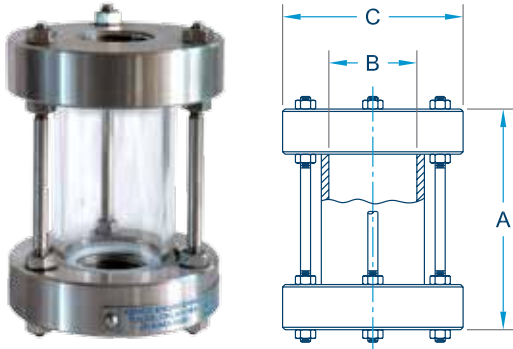
• Example Order Number: KSF-HT-F-1.0-T-S-R

FULL VIEW & ARMORED SIGHT FLOW INDICATORS

KENCO Full View Sight Flow Indicators provide for the maximum viewing area of all types of flow indicators. The open design allows 360° inspection of the liquid being observed. Available in NPT Threaded and Flanged models, these sight flow indicators are designed to enhance the visibility of the media as it passes through the glass cylinder. Full View Indicators are recommended for low pressure applications where maximum visibility is needed. They are best suited for vertically mounted applications.

PRODUCT DIMENSIONS

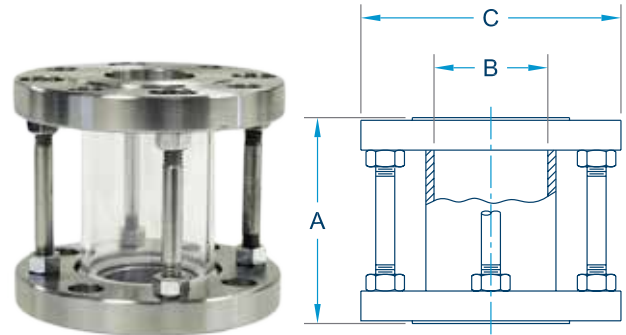
Full View: Threaded End Plates



Size (inches)	Dimensions			Pressure Rating (psig)
	*A	B (I.D.)	C	
1/2"	4.50"	1.44"	3.50"	150
3/4"	4.50"	1.44"	3.50"	150
1"	4.50"	1.63"	3.50"	150
1-1/4"	4.75"	2.13"	4.00"	120
1-1/2"	4.75"	2.13"	4.00"	120
2"	5.50"	2.63"	4.50"	100

*Dimension "A" is ±0.13"

Full View: 150 Lb. Flanged End Plates

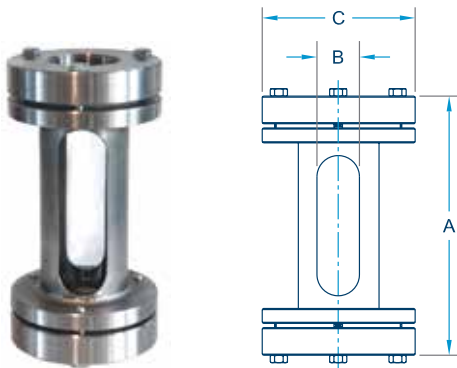


Size (inches)	Dimensions			Pressure Rating (psig)
	*A	B (I.D.)	C	
1/2"	3.88"	0.94"	3.50"	150
3/4"	3.88"	1.19"	3.88"	150
1"	4.00"	1.44"	4.25"	150
1-1/2"	4.00"	2.13"	5.00"	120
2"	4.75"	2.63"	6.00"	100
2-1/2"	5.38"	3.13"	7.00"	85
3"	5.38"	3.50"	7.50"	100
4"	7.50"	4.50"	9.00"	70
6"	10.38"	6.25"	11.00"	45

*Dimension "A" is ±0.13"

KENCO Armored Sight Flow Indicators provide the best mix between visibility and protection. The additional shielding provides protection, while still maintaining maximum visibility. These units can be mounted either vertically or horizontally. The body of the Flanged Armored Indicator is not a wetted part. Only the glass, seal and the PTFE flange facing are in contact with the process media.

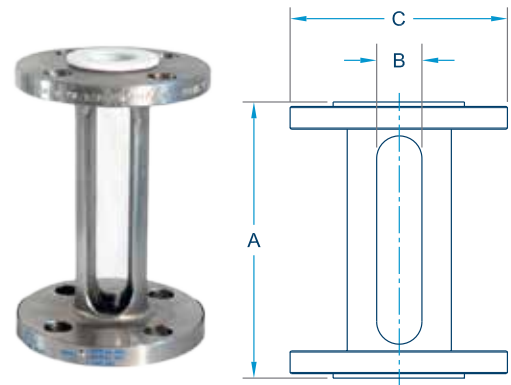
Armored: Threaded End Plates



Size (inches)	Dimensions			Pressure Rating (psig)
	*A	B	C	
1/2"	7.00"	0.63"	2.50"	150
3/4"	7.00"	0.88"	3.00"	150
1"	7.00"	1.00"	3.00"	150
1-1/4"	7.63"	1.25"	4.00"	150
1-1/2"	7.63"	1.25"	4.00"	150
2"	7.63"	1.25"	4.50"	120

*Dimension "A" is ±0.13"

Armored: 150 Lb. Flanged End Plates



Size (inches)	Dimensions			Pressure Rating (psig)
	*A	B	C	
1/2"	6.13"	0.63"	3.50"	150
3/4"	6.38"	0.88"	3.88"	150
1"	6.38"	1.00"	4.25"	150
1-1/2"	6.75"	1.25"	5.00"	150
2"	7.63"	1.25"	6.00"	120
2-1/2"	7.88"	1.50"	7.00"	100
3"	8.13"	1.75"	7.50"	85
4"	8.13"	1.75"	9.00"	90

*Dimension "A" is ±0.13"

ORDERING SYSTEM

Full View & Armored Sight Flow Indicators

REQUESTED BY: _____ COMPANY: _____

ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ FAX: _____ EMAIL: _____

Sight Flow Style

ASF=Armored
FVSF=Full View

Connection Type

F=Flanged
T=Threaded

Connection Size

Threaded

0.5=1/2"
0.75=3/4"
1.0=1"
1.25=1-1/4"
1.5=1-1/2"
2.0=2"

Contact Factory
for other sizes

Flanged

0.5=1/2"
0.75=3/4"
1.0=1"
1.5=1-1/4"
2.0=2"
2.5=2-1/2"
3.0=3"
4.0=4"
6.0=6" (FVSF Only)

Seal Material

A=Aflas
B=Buna-N
N=Neoprene
E=Ethylene Propylene
TE=FEP Encapsulated Silicone (ASF Only)
V=Fluorocarbon
K=Kalrez (ASF Only)
TN=PTFE Envelope - Neoprene Filler (FVSF Only)
TV=PTFE Envelope - Fluorocarbon Filler (FVSF Only)

Material of Construction (Body)

N/A on FVSF (leave blank)
CS=Carbon Steel
S4=304 Stainless Steel
S6=316 Stainless Steel

Material of Construction (End Plate)

N/A on ASF-F (leave blank)
CS=Carbon Steel
S4=304 Stainless Steel
S6=316 Stainless Steel
A20=Alloy 20
HC=Hastelloy C 276
P=PVC
CP=CPVC

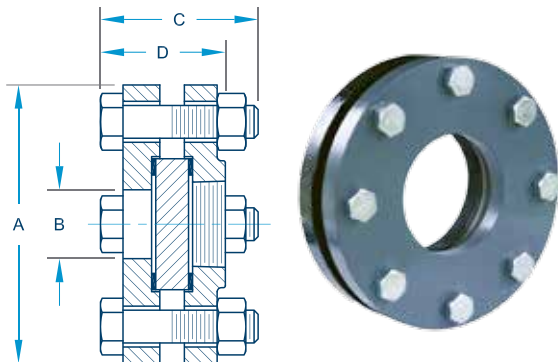
- Example Order Numbers: ASF-F-1.0-N-CS; ASF-T-1.0-N-CS-S6; FVSF-F-1.0-N-CS; FVSF-T-1.0-N-CS
- Custom lengths available upon request.

SIGHT WINDOWS

KENCO Sight Windows are used to provide direct reading of process liquids. They can be mounted directly to the vessel wall, or to pipe, in a variety of configurations.

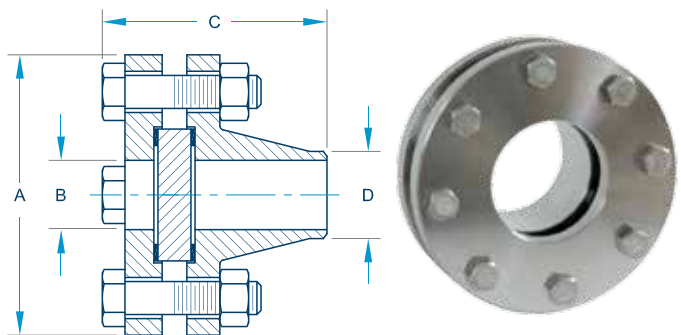
PRODUCT DIMENSIONS

Threaded Flange Window (TFW)



Size	A	B	C (STD)	C (ANSI)	D (STD)	D (ANSI)
1"	4.25"	1.05"	2.61"	2.61"	1.80"	1.80"
1.5"	5.00"	1.61"	2.86"	2.86"	2.24"	2.24"
2"	6.00"	2.07"	3.19"	3.44"	2.51"	2.63"
3"	7.50"	3.07"	3.94"	3.94"	3.10"	3.10"
4"	9.00"	4.03"	3.94"	3.94"	3.19"	3.19"
6"	11.00"	6.07"	4.27"	4.77"	3.59"	4.09"
8"	13.50"	7.98"	4.52"	5.02"	4.09"	4.59"

Weld Neck Window (WNW)



Size	A	B	C (STD)	C (ANSI)	D
1"	4.25"	1.05"	3.31"	3.31"	1.32"
1.5"	5.00"	1.61"	3.81"	3.81"	1.90"
2"	6.00"	2.07"	4.06"	4.19"	2.38"
3"	7.50"	3.07"	4.69"	4.69"	3.50"
4"	9.00"	4.03"	4.94"	4.94"	4.50"
6"	11.00"	6.07"	5.56"	6.06"	6.63"
8"	13.50"	7.98"	6.44"	6.94"	8.63"

