VISIBILITY & RELIABILITY

SIGHT FLOW INDICATORS & SIGHT WINDOWS









FEATURING KSF SIGHT FLOW INDICATORS

ENGINEERED LIQUID FLOW SOLUTIONS

KENCO ENGINEERING

www.kenco-eng.com

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

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

POWER
Turbine Lubricant Flow
Cooling Line Water Flow

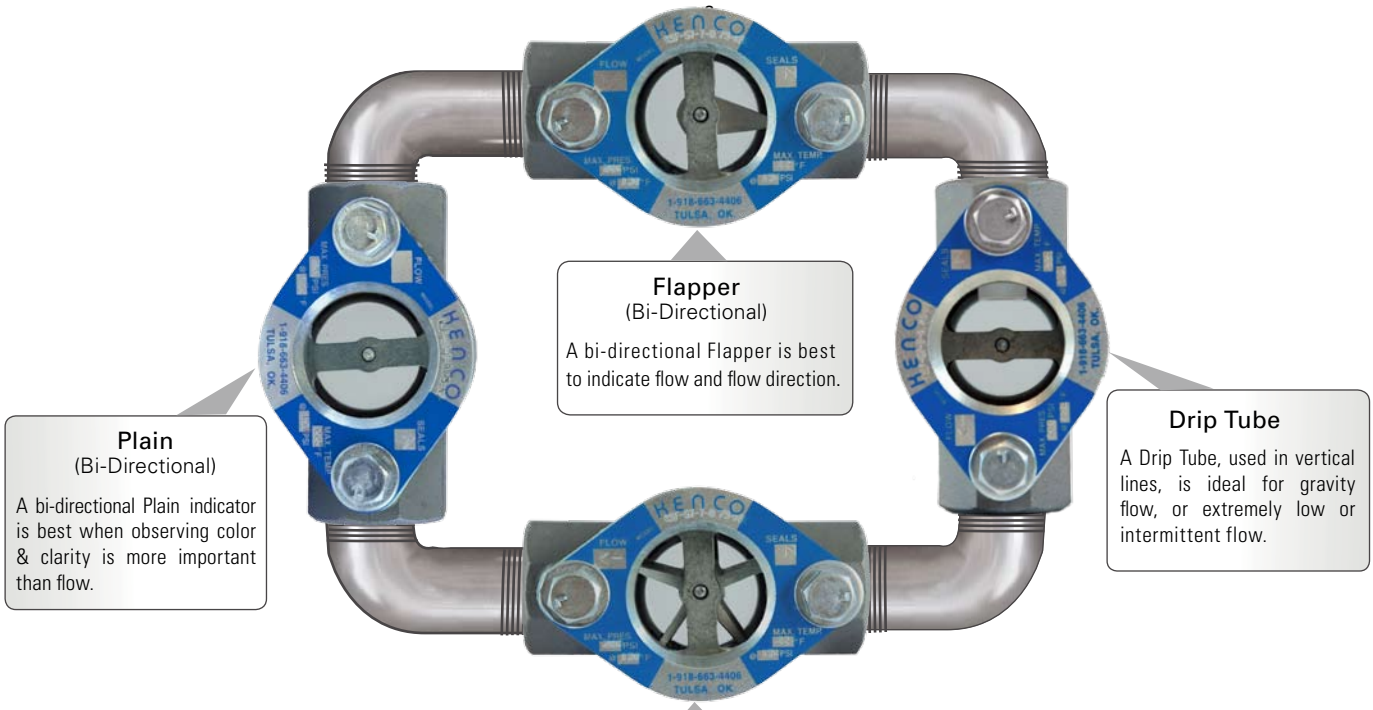
WASTEWATER TREATMENT
Second Stage Aeration Tank Pumping Lines

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

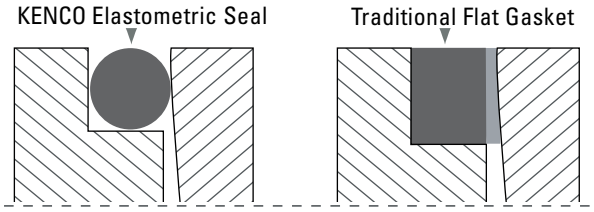
Sight flow indicators are an inexpensive way to identify and repair process line problem areas reliably and efficiently. Selecting the best type of sight flow indicator for a given application is crucial to getting the best performance possible.



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.



A flat gasket will eventually compress, leaving a potential leak path (see light grey area to the left, between the gasket (blue) and sealing surface (hatched)).

MODULAR DESIGN

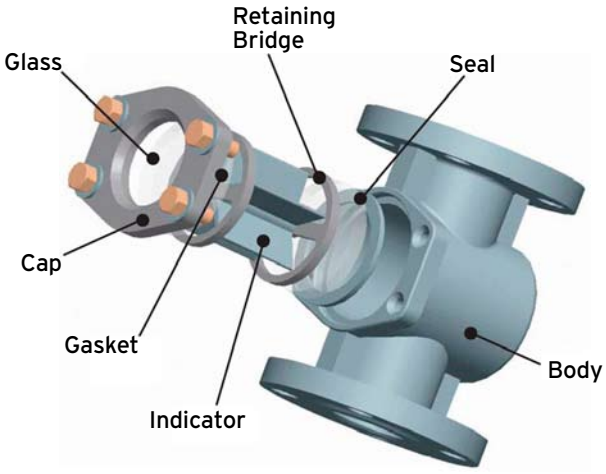


KENCO Modular Design



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.

Pressure / Temperature Ratings (Standard Seals)

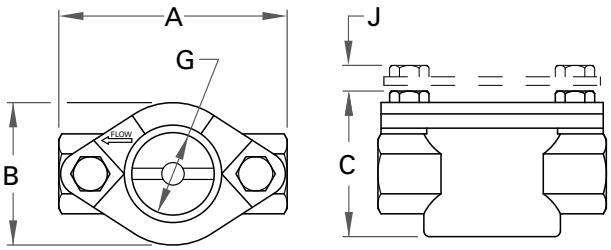
KSF	Max. Pressure	Max Temperature
ST Series (1/4" – 4")	150psig @ 150°F	150°F @ 150psig
ST Series (6" – 12")	200psig @ 150°F	250°F @ 135psig
HT Series (Threaded)	400psig @ 150°F	350°F @ 200psig
HT Series (Flanged) Carbon Steel	285psig @ 100°F	350°F @ 215psig
HT Series (Flanged) 316SS	275psig @ 100°F	350°F @ 205psig
HT Series (Flanged) Ductile Iron	245psig @ 100°F	350°F @ 165psig

Seal/Indicator Material Temperature Ratings

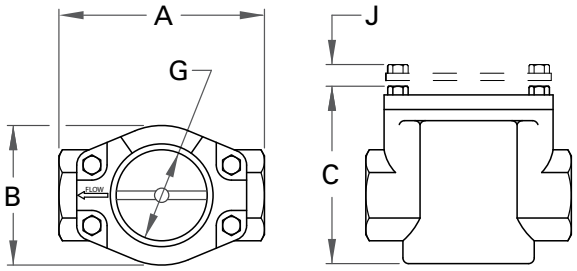
Seal Material	Temperature
Neoprene (ST Series Std.)	-20° to 250°F
Viton® (HT Series Std.)	0° to 350°F
Buna-N	-30° to 250°F
EPT	-20° to 250°F
Teflon®	-40° to 450°F
Kalrez®	0° to 500°F
High Temperature (PTFE)	0° to 500°F
Indicator Material	**Temperature**
Delrin®	-40° to 250°F
Ryton®	-40° to 450°F
Teflon®	-40° to 450°F

PRODUCT DIMENSIONS - INCHES

Threaded KSF Sight Flow Indicators



0.25" through 1" Size

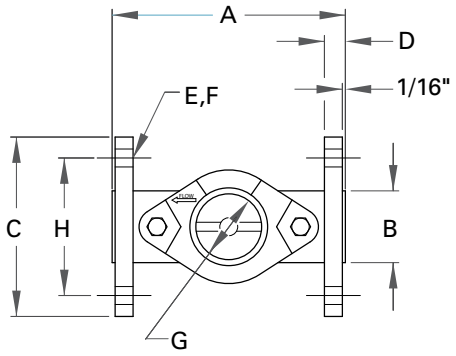


1.25" through 2" Size

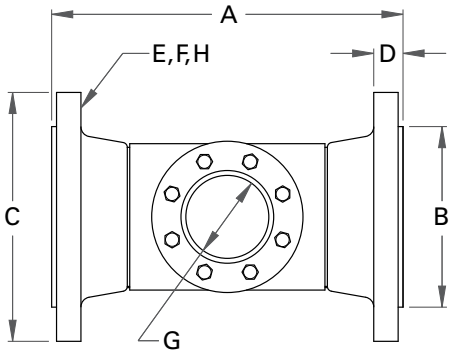
Indicator Size (Inches)	0.25"	0.375"	0.5"	0.75"	1"	1.25"	1.5"	2"
A Overall Length	3.25[1]	3.25[1]	3.25[1]	4.25[2]	4.25	5.25[3]	5.25[3]	5.50[3]
B Overall Width	2.00	2.00	2.00	2.56	2.56	3.31	3.31	3.31
C Overall Height (ST Series)	2.38	2.38	2.38	3.25	3.25	4.31	4.31	4.31
Overall Height (HT Series)	2.56	2.56	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"

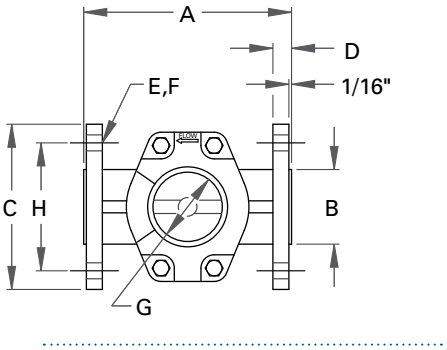
150# Flanged KSF Sight Flow Indicators



1" Size



6" through 12" Size



1.25" through 1" 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	4.0
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	5.20	15.00	29.03	35.00



CONSTRUCTION MATERIALS

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

Design Rating
ST=Standard
HT=High Temp./High Pressure

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

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"

[ ] — [ ] — [ ]

Seal Material
B=Buna-N
N=Neoprene
E=Ethylene Propylene
V=Viton®
T=Teflon®
K=Kalrez®
P=High Temp. PTFE

Material of Construction (Body)
C=Carbon Steel
B=Bronze (Threaded Connections only)
S=316 Stainless Steel
I=Ductile Iron (3" & 4" Sizes Only)

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)

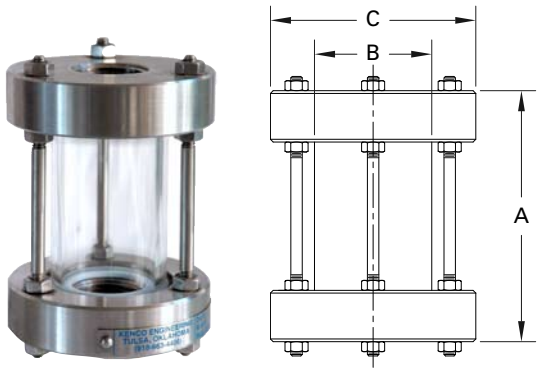
• Example Order Number: KSF-HT-F-1.0-T-S-R

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 fluid 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 - INCHES

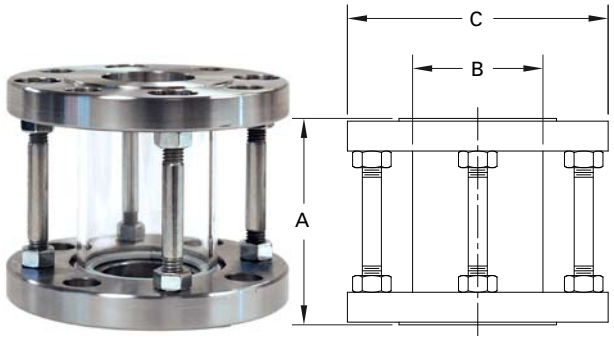
Full View: Threaded End Plates



Size (Inches)	Dimensions			Pressure Rating (psig)
	*A	B (I.D.)	C	
0.50	4.50	1.44	3.50	150
0.75	4.50	1.44	3.50	150
1.00	4.50	1.63	3.50	150
1.25	4.75	2.13	4.00	150
1.50	4.75	2.13	4.00	120
2.00	5.50	2.63	4.50	100

* Dimension "A" is ±0.13"

Full View: Flanged End Plates

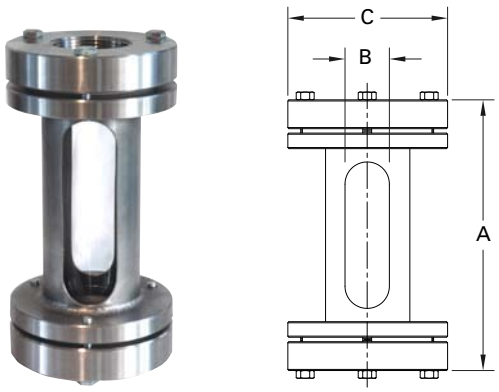


Size (Inches)	Dimensions			Pressure Rating (psig)
	A	B (I.D.)	C	
0.50	3.88	0.94	3.50	150
0.75	3.88	1.19	3.88	150
1.00	4.00	1.44	4.25	150
1.50	4.00	2.13	5.00	120
2.00	4.75	2.63	6.00	100
2.50	5.38	3.13	7.00	85
3.00	5.38	3.50	7.50	100
4.00	7.50	4.50	9.00	70
6.00	10.38	6.25	11.00	45

* 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 and the Teflon® flange facing are in contact with the process media.

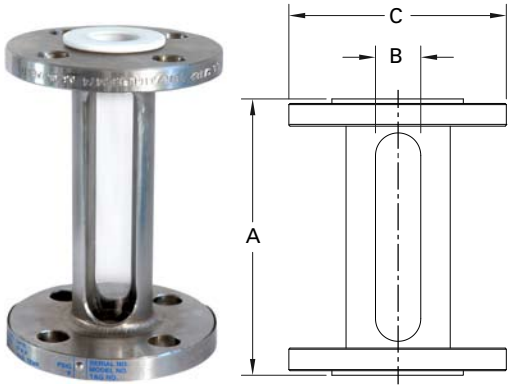
Armored: Threaded End Plates



Size (Inches)	Dimensions			Pressure Rating (psig)
	A	B	C	
0.50	7.00	0.63	2.50	150
0.75	7.00	0.88	3.00	150
1.00	7.00	1.00	3.00	150
1.25	7.63	1.38	4.00	150
1.50	7.63	1.63	4.00	150
2.00	7.63	2.06	4.50	120

* Dimension "A" is ±0.13"

Armored: Flanged End Plates



Size (Inches)	Dimensions			Pressure Rating (psig)
	A	B	C	
0.50	6.13	0.63	3.50	150
0.75	6.38	0.88	3.88	150
1.00	6.38	1.00	4.25	150
1.50	6.75	1.63	5.00	150
2.00	7.63	2.06	6.00	120
2.50	7.88	2.47	7.00	100
3.00	8.13	3.06	7.50	85
4.00	8.13	4.00	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	Flanged
0.25=1/4"	0.5=1/2"
0.375=3/8"	0.75=3/4"
0.5=1/2"	1.0=1"
0.75=3/4"	1.5=1-1/2"
1.0=1"	2.0=2"
1.5=1-1/2"	2.5=2-1/2"
2.0=2"	3.0=3"
	4.0=4"
	6.0=6" (FVSF Only)

Seal Material
A=Aflas (ASF Only)
B=Buna-N (ASF Only)
N=Neoprene
EP=Ethylene Propylene (ASF Only)
TE=Teflon Encapsulated Silicone (ASF Only)
V=Fluorocarbon (ASF Only)
K=Kalrez (ASF Only)
TN=PTFE Envelope - Neoprene Center (FVSF Only)

Material of Construction (Body)
CS=Carbon Steel
S4=304 Stainless Steel
S6=316 Stainless Steel
**N/A on FVSF*

Material of Construction (*End Plate)
CS=Carbon Steel
S4=304 Stainless Steel
S6=316 Stainless Steel
A20=Alloy 20
P=PVC
CP=CPVC
T=Glass Reinforced PTFE
**N/A on ASF-F*

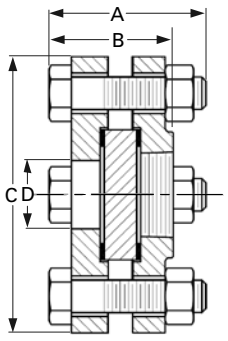
• Example Order Number: ASF-F-0.25-B-S4-S6
* Does not apply to ASF models with flanged process connections

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 - INCHES

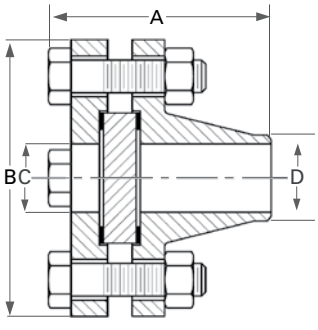
Threaded Flange Window (TFW)





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

Weld Neck Window (WNW)

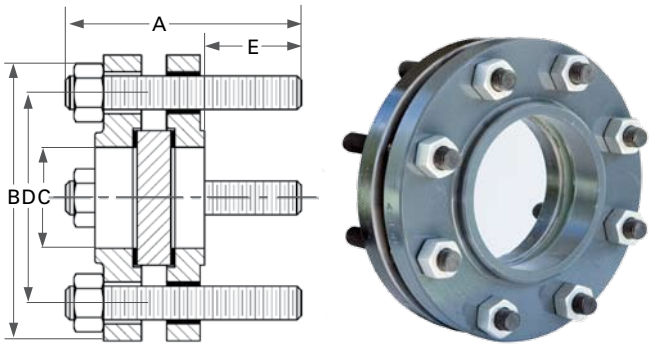




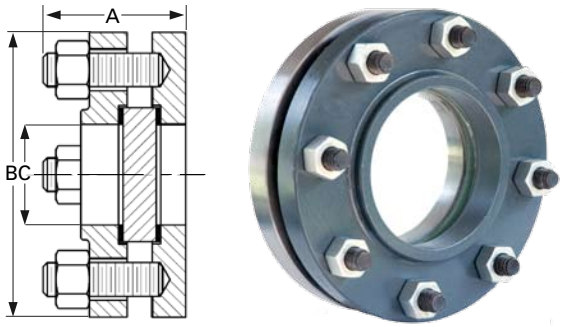
Size (Inches)	1"	1.5"	2"	3"	4"	6"	8"
A (STD)	3.31	3.81	4.06	4.69	4.94	5.56	6.44
A (ANSI)	3.31	3.81	4.19	4.69	4.94	6.06	6.94
B	4.25	5.00	6.00	7.50	9.00	11.00	13.50
C	1.05	1.61	2.07	3.07	4.03	6.07	7.98
D	1.32	1.90	2.38	3.50	4.50	6.63	8.63

PRODUCT DIMENSIONS - INCHES

Bolted Flange Window (BFW)



Flat Plate Window (FPW)



Size (Inches)	1"	1.5"	2"	3"	4"	6"	8"
A (STD)	3.75	4.25	4.75	5.38	5.38	5.88	6.50
A (ANSI)	3.75	4.25	4.88	5.38	5.38	6.38	7.00
B	4.25	5.00	6.00	7.50	9.00	11.00	13.50
C	1.38	1.97	2.46	3.60	4.60	6.75	8.75
D	3.13	3.88	4.75	6.00	7.50	9.50	11.75
Stud Size	1/2-13	1/2-13	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10
Stud Qty	4	4	4	4	8	8	8
E	1.50	1.63	1.81	1.94	1.94	2.19	2.31

Size (Inches)	1"	1.5"	2"	3"	4"	6"	8"
A (STD)	2.41	2.78	3.09	3.53	3.53	3.84	4.47
A (ANSI)	2.41	2.78	3.09	3.53	3.53	4.34	4.97
B	4.25	5.00	6.00	7.50	9.00	11.00	13.50
C	1.38	1.97	2.46	3.60	4.60	6.75	8.75

Pressure Ratings

Pressure Style	Max Temp.	Max. Press.
Standard	300°F @ 150psig	150psig @ 100°F
ANSI	500°F @ 170psig	285psig @ 100°F

Seal Temperature Ratings

Material	Temperature
Neoprene	-20°F to 200°F
Teflon Envelope – Neoprene Filler	-20°F to 300°F
Non-Asbestos (ANSI Only)	0°F to 500°F

ORDERING SYSTEM
Sight Windows

REQUESTED BY: _____ COMPANY: _____

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

PHONE: _____ FAX: _____ EMAIL : _____

[ ] — [ ] — [ ] — [ ] — [ ]

Window Style
BFW=Bolted Flange
FPW =Flat Plate
TFW =Threaded Flange
WNW=Weld Neck

Flange Size
10=1"
15=1 1/2"
20=2"
30=3"
40=4"
60=6"
80=8"

Sight Window Material
C=Carbon Steel
W=316 Stainless Steel Wetted w/Carbon Steel Body
A=316 Stainless Steel w/Stainless Steel Body
X=Other (Specify)

Gasket Material
N=Neoprene
T=Teflon Envelope-Neoprene Filler
A=Non-Asbestos

Pressure Classification
S=Standard
A=ANSI

• Example Order Number: FPW-20-A-T-A

Represented by:

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