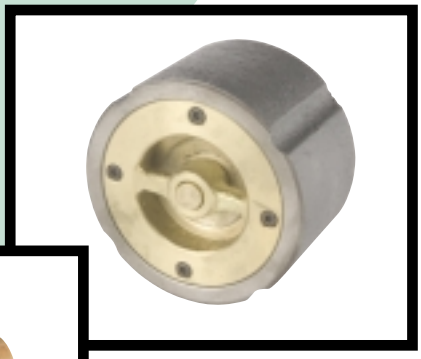
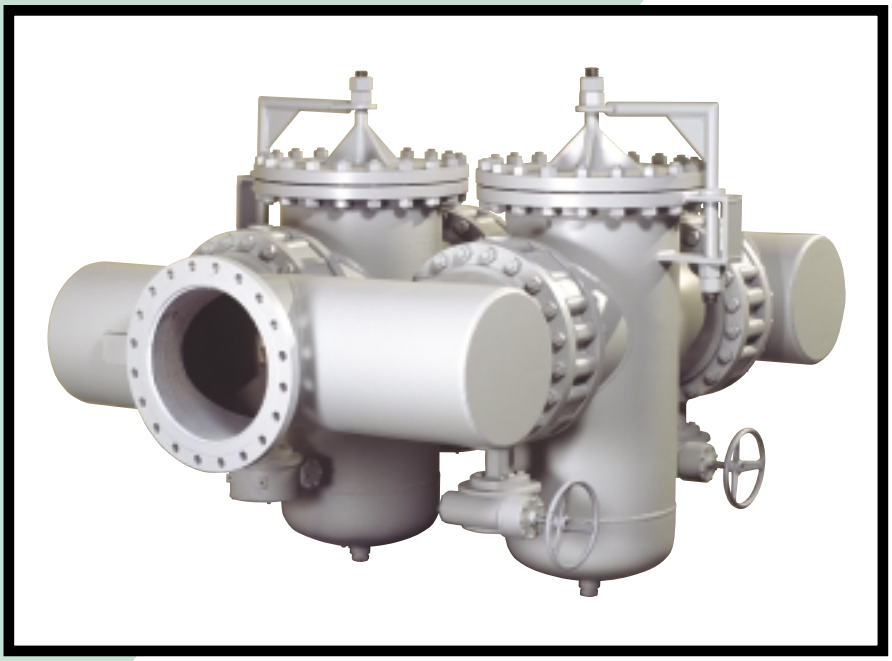
SPENCE STRAINERS INTERNATIONAL DESIGNER'S GUIDE

- Y Strainers
- Basket Strainers
- T-Strainers
- Automatic Backwash Strainers
- Duplex Strainers
- Suction Diffusers
- Butterfly Valves
- Check Valves

SSI
SPENCE STRAINERS INTERNATIONAL
A division of CIRCOR International, Inc.





VFC VaporTec Fluid Controls

Authorized representative

Formerly SSI Equipment, now manufactured by Spence Engineering

It is the philosophy of the
Spence Engineering Company that,
to win and be deserving of the trust of
our customers, we must be ever mindful
of and totally dedicated to quality; in
all that we do; at every level
of our operation.

ISO 9001
Certificate Number: 33694

ASME
"U"
STAMP

SPENCE ENGINEERING COMPANY is a member of the Fluid Controls Institute.

SPENCE STRAINERS INTERNATIONAL

Manufactured by Spence Engineering Company, Inc.









design/fabricate

state-of-the-art

FABRICATED STRAINERS AND VESSELS

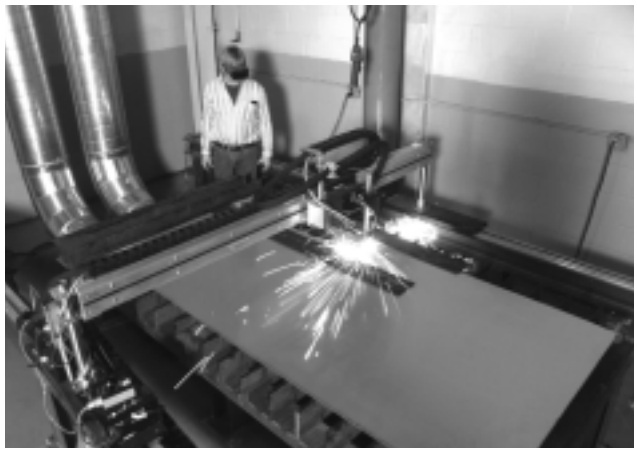
Spence Strainers International offers custom engineered and fabricated Y, Basket, Tee, Duplex, Temporary and Automatic Backwash Strainers. The SSI manufacturing facility has the most up-to-date equipment and qualified staff. State-of-the art, computer controlled automated machining equipment, such as our programmable plasma cutters and CNC machines, greatly reduce manufacturing time, improve quality of components and assures conformance to our customer requirements.

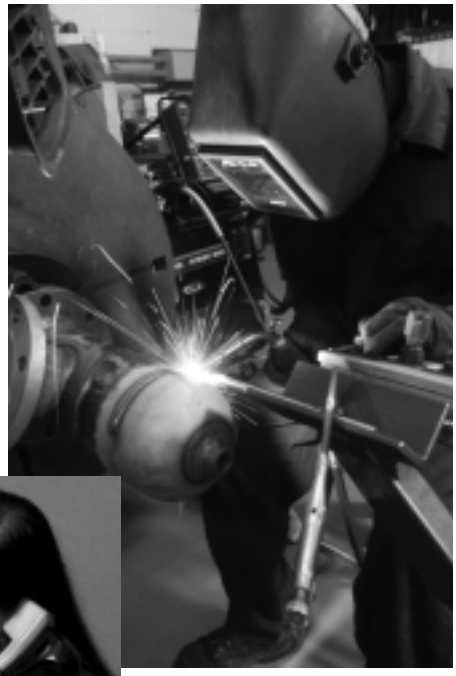
Spence Strainers International will design and fabricate strainers from a variety of metals and alloys to meet your application needs. We are ISO-9001:2000, PED and ASME "U" Stamp certified and dedicated to providing you with the highest quality built product possible.

Combined with over 80 years of manufacturing know how and service from Spence Engineering, our engineered solutions are why more customers are using Spence Strainer fabricated products in their facilities.

Miami, FL 305-831-2618 • Fax: 305-640-9786

capabilities





state-of-the-art

cast products

fabricated products

screens

The finished goods inventory of the SSI warehouse contains one of the industry's broadest inventory of cast Y and basket strainers, butterfly valves, triple duty valves, suction diffusers, check valves, foot valves and connectors which ensures quick or same day shipment delivery of its standard products.

The SSI manufacturing facility has the most up-to-date equipment and qualified staff. State-of-the art, computer controlled, automated machining equipment, such as our programmable plasma cutters and CNC machines, greatly reduce manufacturing time, improve quality of components and ensure conformance to our customers requirements.

SSI will design and fabricate strainers, from a variety of metals and alloys, to meet your exact application needs. All of its Welders are ASME Section IX certified and are dedicated to providing you with the highest quality possible.

Cell manufacturing practices translates into smoother, more efficient workflow, improved quality control. This means cost saving and quality assurance for each product.

And, because SSI is ISO-2000, PED and soon to be ASME "U" and "UM" Stamp Certified, they offer 100% testing and inspection to ensure that every product performs to design specifications before leaving the factory.

SSI

warehouse

Y Strainers

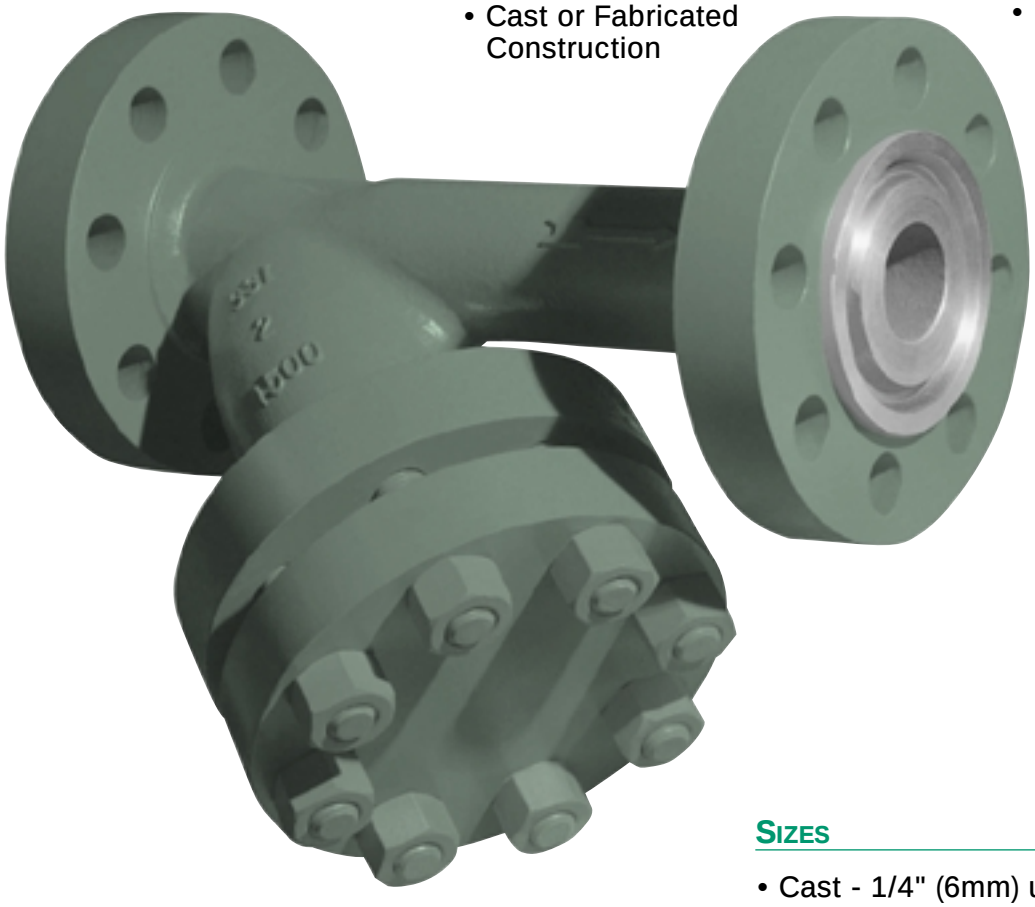
Pressures to 3705 PSIG
Temperatures to 800ºF

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Metals and Mining
- Water and Waste
- Pulp and Paper

Features

- Low pressure drop streamlined design
- Large strainer screens
- Compact end to end dimension
- Cast or Fabricated Construction



End Connections

- Flat Faced
- Raised Face
- RTJ Flanged
- Buttweld
- Threaded (NPT)
- Socketweld
- Sweat

Materials

- Cast Iron
- Ductile Iron
- Bronze
- Carbon Steel
- Low Temp Steel
- Chrome Molly
- Stainless Steel
- Other Materials Upon Request

Sizes

- Cast - 1/4" (6mm) up to 16" (400mm)
- Fabricated - Custom sizes to meet any requirements

Ratings

- ASME Class 125
- ASME Class 150
- ASME Class 300
- ASME Class 600
- ASME Class 900
- ASME Class 1500
- ASME Class 2500

Request quote

Y STRAINER DESIGN FEATURES

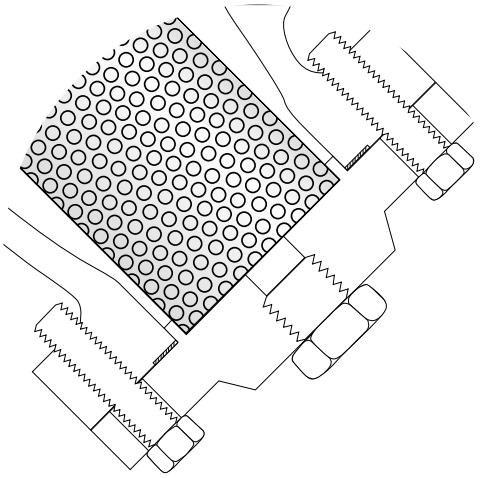
Body-Cover Flanged Joints

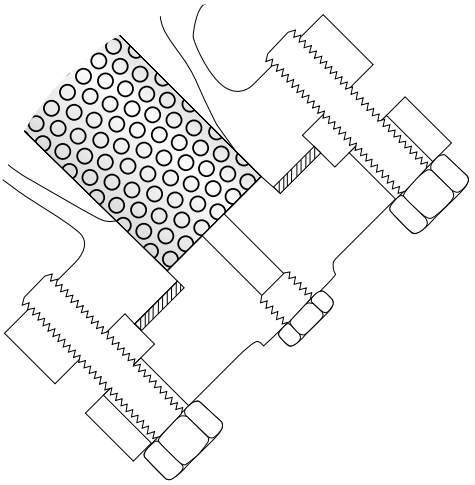
Flanged body-cover joints are designed to meet the requirements of ASME Section VIII, Div. 1 and/or ASME B16.5.

For Series 150Y2 and 300Y2 strainers, the body-cover joint is designed using the equations found in Appendix II of the ASME Pressure Vessel Code. Calculations are performed using standard gaskets and with the existence of a edge moment. The gasket cavity is fully enclosed ensuring proper gasket alignment while preventing unwinding of spiral wound gaskets if used.

Exclusive

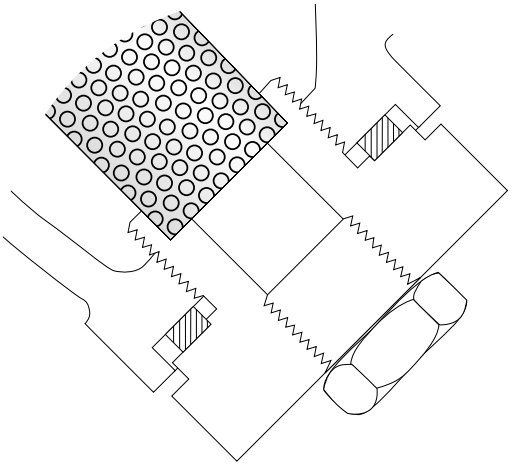
Series 600Y2, 900Y2 and 1500Y2 strainers incorporate a body-cover joint that is in dimensional accordance with the flange dimensions specified in ASME B16.5. Among the advantages of this strong leak-proof design is the convenience of using gaskets that are in accordance with ASME B16.20 and ASME B16.21. This feature eliminates the need for dimensionally special gaskets when maintenance is performed.





Body-Cover Threaded Joints

The design of a strong threaded body-cover joint is dependent on many factors. When designing these joints for strainers, calculations are performed taking into account thread shear (ASME B16.34), cover thickness and operating/gasket seating loads (ASME Sect. VIII, Div. 1). Basic dimensions such as wall thickness and band diameters are in accordance with ASME codes.



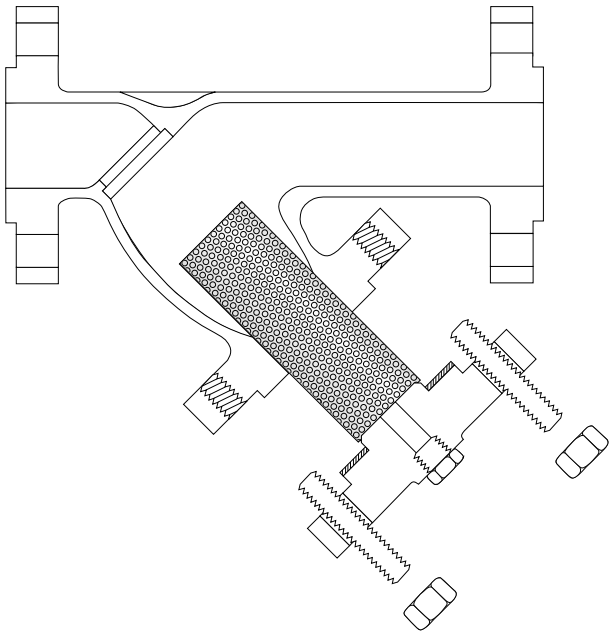
Y STRAINER DESIGN FEATURES

Screen Seating

All Spence Y-Strainers are manufactured with both upper and lower machined seats. This feature eliminates debris by-pass while also acts to securely hold the screen in position when in service.

For assembly and disassembly purposes, Spence Y-Strainers are designed so that the screen is securely slid over or into a machined lip on the cover bonnet. This allows the screen to be easily guided into the upper machined seat during assembly.

In particular, for Series 600Y2, 900Y2 and 1500Y2 strainers, where the cover flange tends to be heavy and difficult to maneuver, the screen is also guided around it's circumference by the strainer body. This feature eliminates the possibility of misaligning the strainer screen during assembly while providing additional support to the screen when in service. This circumferential support reduces maintenance time and costs since the strainer can be assembled quicker and safer than with other designs.



Strainer Screens

All Spence Y-Strainers are equipped with screens that have an open flow area many times greater than the pipe nominal cross-sectional area. This is important in order to reduce initial pressure drop and decrease the rate in which the pressure drop increases as the strainer screen becomes clogged. As shown in the figure the larger the screen area the lower the rate of increase in pressure drop.

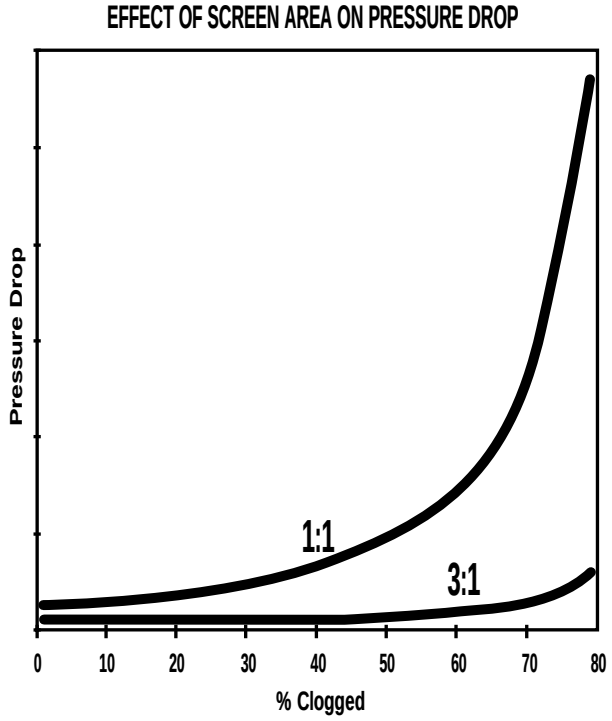
A Y-Strainer screen must be strong enough to handle the resulting differential pressure that occurs when in service. In general all Spence strainer screens are designed to handle a minimum burst pressure of 50 psid. Spence calculates the burst pressure of screens using the formula:

$$P = \frac{St}{R - 0.4t}$$

P = Burst Pressure
S = Reduced allowable stress
t = Thickness of screen material
R = Outside radius of screen

SOURCE: ASME Section VIII, Div. 1, Appendix 1.

Using the above formula, Spence can design and manufacture any strainer screen to suit your specific strength requirements.



Note: Curves are for different ratios of free area to pipe area.

125Y SERIES

BRONZE, CAST IRON Y STRAINERS NPT, SWEAT ENDS, FLANGED

PRESSURES TO 200 PSIG (13.8 BARG)
TEMPERATURES TO 450°F (232°C)

- **ASME Class 125 rated strainers**
- **NPT, SE and FF connections designed in accordance with ASME B16.15, B16.18 and B16.1**
- **One piece cast body**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize intial pressure drop while maximizing time between cleanings.**

APPLICATIONS

- Steam, liquid, gas and oil service
- Power industry
- Pulp and paper
- Chemical industry
- Metal & Mining
- Water & Waste

OPTIONS

- Other perforated screens and mesh liners
- Other drain connections and gasket materials
- Oxygen cleaning
- Special internal/external coatings and linings
- Contact factory for other options

APPLICABLE CODES (Designed in accordance with)

- ASME B16.1
- ASME B16.15
- ASME B16.18

MODELS

- 125Y1T - Bronze, NPT, Threaded Cover
- 125Y1E - Bronze, Sweat Ends, Threaded Cover
- 125Y2F - Cast Iron, Flanged, Bolted Cover

Request quote

Canadian Registration - See appropriate Model pages

125Y Series Ordering Code

Inlet Size				Dash	Model						Body Material	Dash	Perf	Mesh	Add'l Require-ments
0	1	0	0	-	1	2	5	Y	1	T	B	-	A	2	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
- 0038 - ⅜"
- 0050 - ½"
- 0075 - ¾"
- 0100 - 1"
- 0125 - 1¼"
- 0150 - 1½"
- 0200 - 2"
- 0250 - 2½"
- 0300 - 3"
- 0400 - 4"
- 0500 - 5"
- 0600 - 6"
- 0800 - 8"
- 1000 - 10"
- 1200 - 12"
- 1400 - 14"
- 1600 - 16"

Dash - Position 5

Model - Position 6 - 11
- 125Y1T
- 125Y1E
- 125Y2F

Body Material - Position 12
- I - Cast Iron
- B - Bronze

Dash - Position 13

Perf[1] - Position 14
304 SS Material[2]
- A - No Perf
- 1 - 1/32"
- B - 3/64
- 4 - 1/8"
- 2 - 1/16"
- 3 - 3/32"
- 5 - 5/32"
- 6 - 3/16"
- 7 - 7/32"
- 8 - 1/4"
- 9 - 3/8"

Mesh[1, 2] - Position 15
Leave Blank If Not Required (std Y2F)
- 1 - 10
- 2 - 20
- 3 - 30
- 4 - 40
- 5 - 50
- 6 - 60
- 7 - 80
- 8 - 100
- 9 - 120

Add'l Requirements - Position 16
Leave Blank If not Required
- D - Special Drain Size
- F - Silicon Free
- G - Special Gaskets
- T - Special Testing
- X - Oxygen Cleaning
- Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

1. Standard Screens: Y1T, Y1E—20 mesh, Y2F< 3"—3/64" perf, Y2F>3"—1/8" perf
2. For other screen materials contact factory.

125Y1 SERIES
BRONZE Y STRAINERS
NPT, SWEAT ENDS

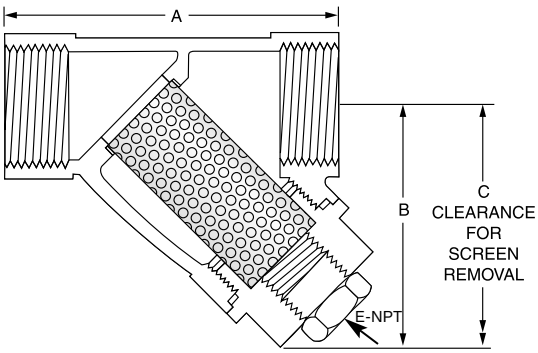
SPECIFICATION

Y Strainer shall be straight flow design with NPT or Sweat Ends inlet/outlet connections. The strainer shall be rated to ASME Class 125 designed in accordance with ASME B16.15 and/or B16.18. The Strainer shall be bronze body and the screen shall be size _____ mesh 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 125Y1 Series.

MATERIALS OF CONSTRUCTION

Body .....Bronze B584
Cover .....Bronze B584
Screen[1] .....304 SS Mesh
Plug .....Bronze B584
Gasket[1] .....Garlock 2900
1. Recommended Spare Parts

Canadian Registration OE10274.5C



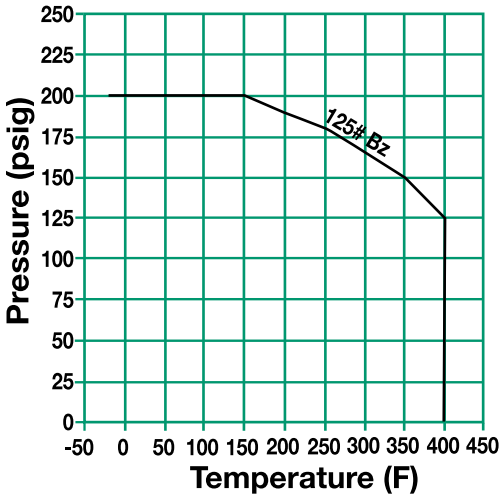
Connections:
3/8" – 3" NPT or Sweat Ends

Note: For Buttweld sizes please indicate pipe schedule on the order.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
3/8" – 3"	20 Mesh	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.15



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	E	WEIGHT
⅜ (10)	3¼ (82)	2⅛ (55)	3½ (89)	⅜ (10)	.8 (.36)
½ (15)	3¼ (82)	2⅛ (55)	3½ (89)	⅜ (10)	1.0 (.25)
¾ (20)	4 (100)	2¾ (70)	4½ (114)	⅜ (10)	1.2 (.60)
1 (25)	4½ (115)	3 (75)	5 (127)	½ (15)	1.6 (.73)
1¼ (32)	5⅜ (136)	3⁹⁄₁₆ (90)	5¾ (146)	½ (15)	2.5 (1.1)
1½ (40)	6⁵⁄₁₆ (160)	3⅞ (98)	6⅜ (162)	½ (15)	3.4 (1.6)
2 (50)	7½ (191)	5⁷⁄₁₆ (138)	9⅛ (230)	½ (15)	5.8 (2.6)
2½ (65)	9⅛ (230)	5¹⁵⁄₁₆ (151)	10 (254)	½ (15)	10.2 (4.6)
3 (80)	10³⁄₁₆ (259)	6⅛ (160)	10⅜ (264)	½ (15)	13.7 (6.2)

Dimensions shown are subject to change. Consult factory for certified drawings when required.

125Y2 SERIES
CAST IRON Y STRAINERS FLANGED

SPECIFICATION

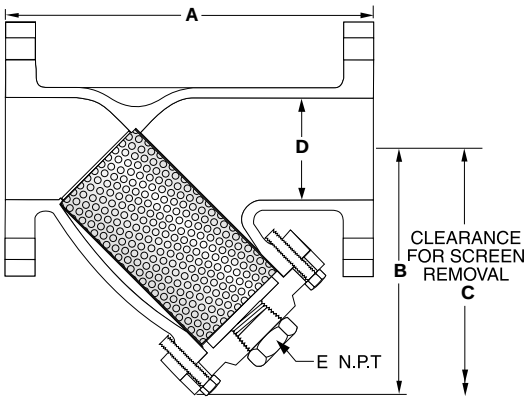
Y Strainer shall be straight flow design with FF Flanged inlet/outlet connections. The strainer shall be rated to ASME Class 125 designed in accordance with ASME B16.1. The Strainer shall be Cast Iron body and the screen shall be size _____ perforated 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 125Y2 Series.

MATERIALS OF CONSTRUCTION

Body .....Cast Iron A126-B
Cover .....Cast Iron A126-B
Screen[1] .....304 SS
Plug .....Cast Iron A126-B
Gasket[1] .....Graphite
Bolt/Stud[2] A307-B
Nut[2] A563

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

Canadian Registration OE0591.9C

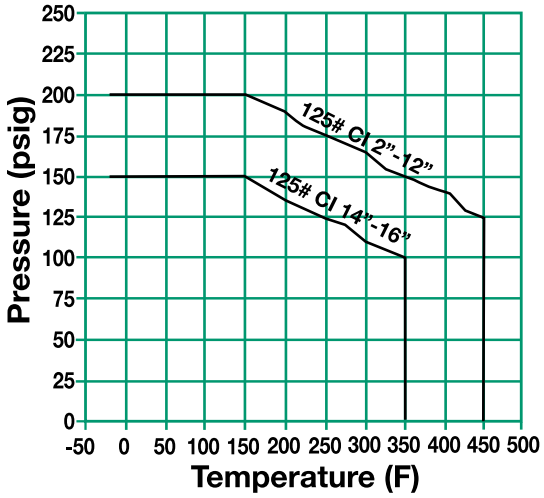


Connections:
2" – 16" FF Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 3"	3/64" Perf	304 SS
4" – 16"	1/8" Perf	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.1



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
2 (50)	8⅞ (226)	6⅛ (156)	8½ (216)	2 (51)	½ (15)	22 (10)
2½ (65)	10¾ (273)	8 1/16 (205)	11¼ (286)	2½ (64)	1 (25)	35 (16)
3 (80)	11⅝ (295)	8½ (216)	12¼ (311)	3 (76)	1 (25)	43 (20)
4 (100)	13⅞ (353)	9⅝ (245)	13⅜ (340)	4 (102)	1 (25)	75 (34)
5 (125)	16⅜ (416)	11⅝ (295)	16⅛ (410)	5 (127)	1¼ (32)	115 (52)
6 (150)	18½ (470)	12⅝ (321)	17 11/16 (449)	6 (152)	1½ (40)	154 (70)
8 (200)	21⅜ (543)	16⅜ (416)	23 (584)	8 (203)	1½ (40)	243 (110)
10 (250)	26 (660)	19⅛ (486)	26 11/16 (678)	10 (254)	2 (50)	390 (117)
12 (300)	30 (762)	22 1/16 (559)	31 (787)	12 (305)	2 (50)	650 (295)
14 (350)	37⅜ (949)	30 11/16 (780)	41 (1041)	14 (356)	2 (50)	815 (370)
16 (400)	42½ (1080)	33 1/16 (840)	46 (1168)	16 (406)	2 (50)	1224 (555)

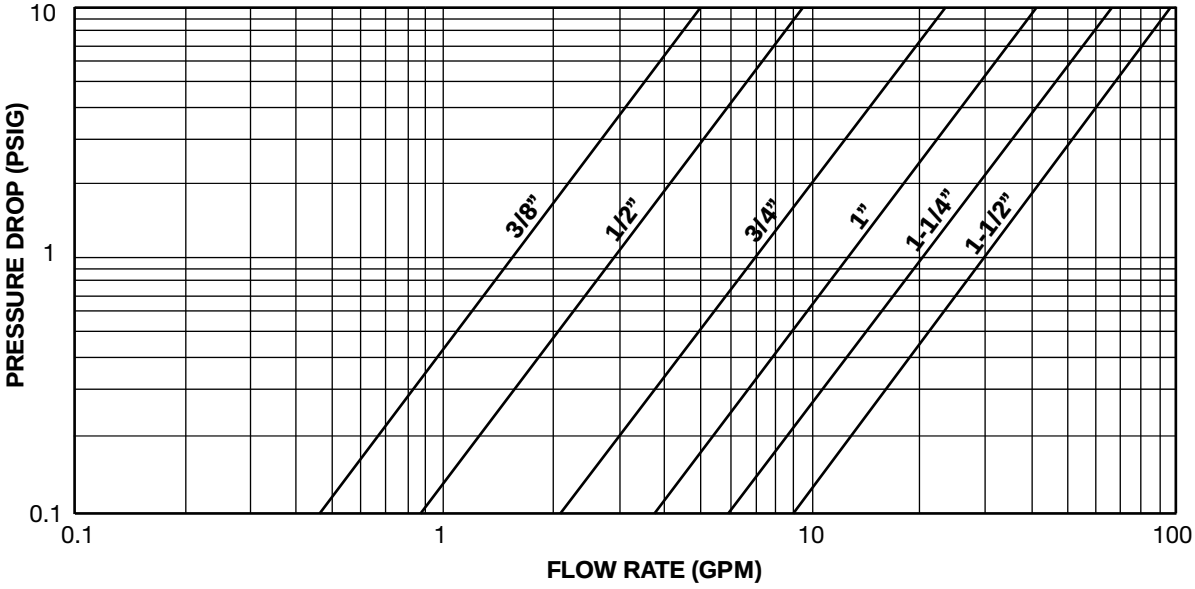
Dimensions shown are subject to change. Consult factory for certified drawings when required.

125Y SERIES BRONZE, CAST IRON

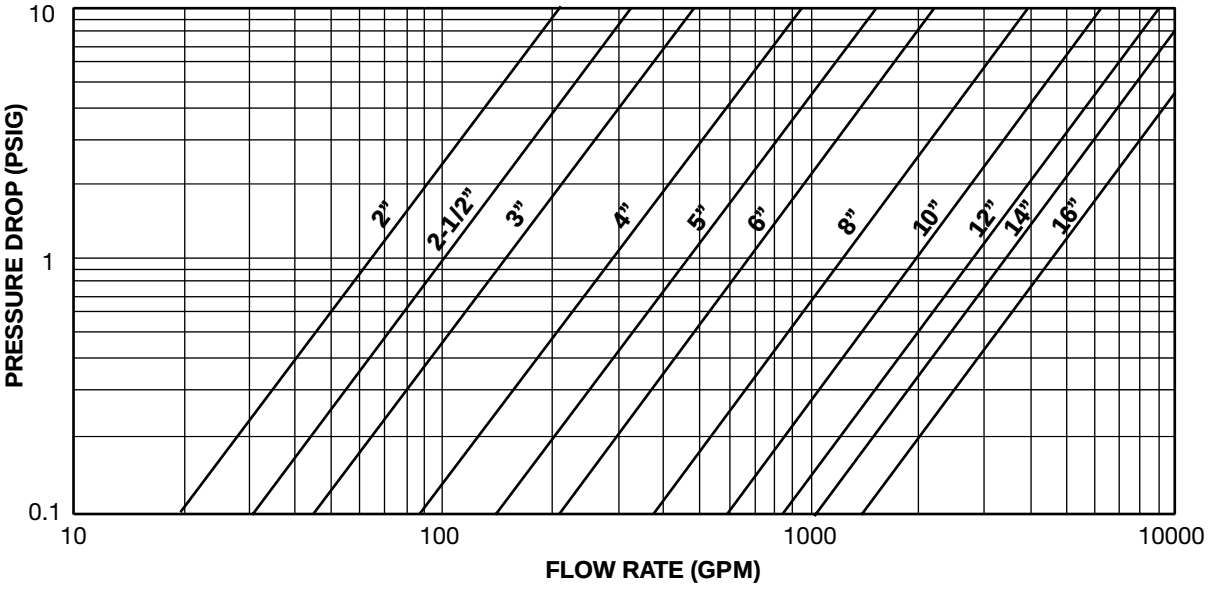
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes ⅜" - 1½")



(Sizes 2" - 16")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

125Y SERIES
BRONZE, CAST IRON Y STRAINERS
OPEN AREA RATIOS
with Standard Perforated Screen

BRONZE

Size	Mesh	Opening %	Std Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
⅜	20	49	0.19	3.8	1.88	9.9
½	20	49	0.30	3.8	1.88	6.2
¾	20	49	0.53	5.5	2.71	5.1
1	20	49	0.86	7.0	3.45	4.0
1¼	20	49	1.50	11.1	5.42	3.6
1½	20	49	2.04	15.2	7.46	3.7
2	20	49	3.36	26.1	12.81	3.8
2½	20	49	4.79	36.6	17.95	3.7
3	20	49	7.39	49.0	24.00	3.2

CAST IRON

Size	Perf. Diameter (in.)	Opening %	Flange Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	29.4	10.58	3.4
2½	3/64	36	4.91	46.0	16.56	3.4
3	3/64	36	7.07	57.0	20.51	2.9
4	1/8	40	12.57	99.0	39.59	3.2
5	1/8	40	19.63	146.5	58.58	3.0
6	1/8	40	28.27	174.0	69.60	2.5
8	1/8	40	50.27	327.3	130.91	2.6
10	1/8	40	78.54	495.2	198.08	2.5
12	1/8	40	113.10	645.0	257.99	2.3
14	1/8	40	153.94	1149.9	459.94	3.0
16	1/8	40	201.06	1431.9	572.75	2.8

OAR = Free Screen Area / Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings
Page 54

Basket Burst Pressure
Page 59

NOTES:

150Y SERIES
CARBON STEEL, STAINLESS STEEL, BRONZE Y STRAINERS FLANGED, BUTTWELD

PRESSURES TO 285 PSIG (19.7 BARG)
TEMPERATURES TO 750°F (390°C)

- **ASME Class 150 rated strainers**
- **RF, FF (Bronze only) and Buttweld connections designed in accordance with ASME B16.5, B16.24, B16.25 and B16.34**
- **All sizes complete with Bolted Cover**
- **Cover flange (CS, SS) in accordance with ASME Section VIII, Div 1 Appendix II and/or ANSI 16.5.**
- **One piece cast body**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS
- Steam, liquid, gas and oil service
- Power Industry
- Pulp & Paper
- Process Equipment
- Chemical Industry
- Metal & Mining
- Water & Waste

OPTIONS
- Other perforated screens and mesh liners
- Other drain connections and gasket materials
- Oxygen cleaning
- Special internal / external coatings and linings
- Contact Factory for other Options

APPLICABLE CODES (Designed in accordance with)
- ASME B16.5
- ASME B16.25
- ASME B16.24
- ASME B16.34

Canadian Registration OE10274.5C

MODELS
- 150Y2F – Carbon, Stainless or Bronze Flanged with Bolted Cover
- 150Y2B – Carbon or Stainless Buttweld with Bolted Cover

Request quote

150Y Series Ordering Code

Inlet Size				Dash	Model					Body Material	Dash	Perf	Mesh	Add'l Requirements
0	2	0	0	-	1	5	0	Y	2	F	T	-	B	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0050 - ½"
0075 - ¾"
0100 - 1"
0125 - 1¼"
0150 - 1½"
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 -10"
1200 -12"

Dash - Position 5

Model - Position 6 - 11
150Y2F
150Y2B[1]

Body Material - Position 12
C - CS
T - SS
B - BZ

Dash - Position 13

1. For Buttweld connections please specify mating pipe schedule.

Perf[2] - Position 14
304SS Material[3]
A - No Perf
1 - 1/32"
B - 3/64
4 - 1/8"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

2. Standard Screens: ALL 1/2"-11/2"—1/32" perf,
ALL 2"-3"—3/64" perf,
ALL >3"—1/8" perf .

Mesh[3] - Position 15
Leave Blank If not Required (std ALL)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120

3. For other screen material, contact factory.

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

150Y2 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS FLANGED, BUTTWELD

SPECIFICATION

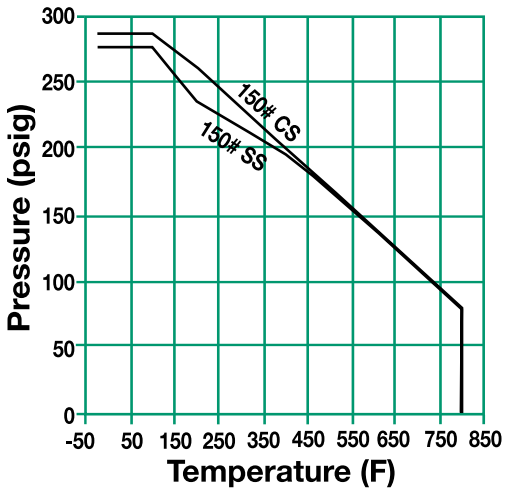
Y Strainer shall be straight flow design with RF Flanged or Buttweld inlet/outlet connections. The strainer shall be rated to ASME Class 150 designed in accordance with ASME B16.5 and/or B16.25. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 150Y2 Series.

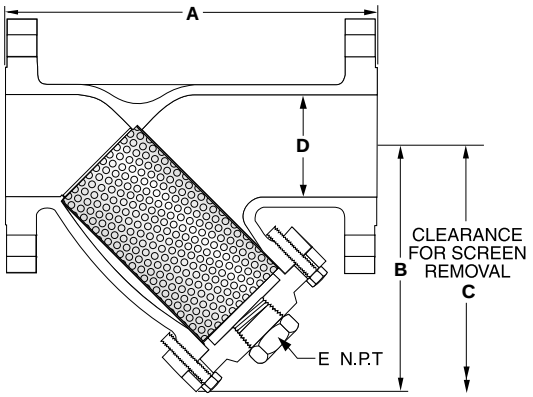
MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304 Stainless Steel	304 Stainless Steel
Plug[2]	A105	A182-316
Gasket[1]	Teflon/Spiral Wound 304/GR[3]	Teflon/Spiral Wound 304/GR[3]
Stud	A193-B7	A193-B8-1
Nut[2]	A194-2H	A194-8

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted
3. Teflon gasket for sizes 4" and below only.

PRESSURE/TEMPERATURE CHART
ASME B16.34





Connections: CS - ½" to 12"
RF Flanged or Buttweld

SS – ½" to 12"
RF Flanged or Buttweld[4]

4. For Buttweld connections please specify mating pipe schedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" – 1½"	1/32" Perf	304 SS
2" – 3"	3/64" Perf	304 SS
4" – 12"	1/8" Perf	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
½ (15)	6 (152)	3⅞ (99)	4¾ (121)	½ (13)	¼ (8)	5.5 (2.5)
¾ (20)	7 (178)	4¼ (108)	5¾ (146)	¾ (19)	⅜ (10)	8 (3.7)
1 (25)	7½ (191)	4¾ (121)	6⅜ (162)	1 (25)	½ (15)	10 (4.6)
1¼ (32)	8¾ (222)	5 9/16 (141)	8 (203)	1¼ (32)	½ (15)	16 (7.3)
1½ (40)	9 (229)	5⅝ (143)	9 (229)	1½ (38)	½ (15)	18 (8.2)
2 (50)	8⅝ (219)	5⅞ (149)	7½ (191)	2 (51)	½ (15)	20 (9.1)
2½ (65)	10¼ (260)	7½ (191)	10½ (267)	2½ (64)	¾ (20)	27 (12.3)
3 (80)	11⅝ (295)	7 1/16 (195)	10⅞ (276)	3 (76)	1 (25)	41 (18.6)
4 (100)	14⅜ (365)	9⅛ (232)	13 (330)	4 (102)	1½ (40)	63 (28.6)
5 (125)	17⅝ (448)	11 (279)	17 (432)	5 (127)	2 (50)	99 (45)
6 (150)	18⅝ (473)	13 (330)	18⅜ (467)	6 (152)	2 (50)	133 (60.5)
8 (200)	24⅜ (619)	15 5/16 (389)	21⅝ (549)	8 (203)	2 (50)	222 (100.9)
10 (250)	26 1/16 (662)	19⅛ (486)	27 (686)	10 (254)	2 (50)	409 (185.9)
12 (300)	30-3/8 (772)	22 (559)	31 (787)	12 (305)	2 (50)	605 (275)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

150Y2 SERIES
BRONZE Y STRAINERS FLANGED

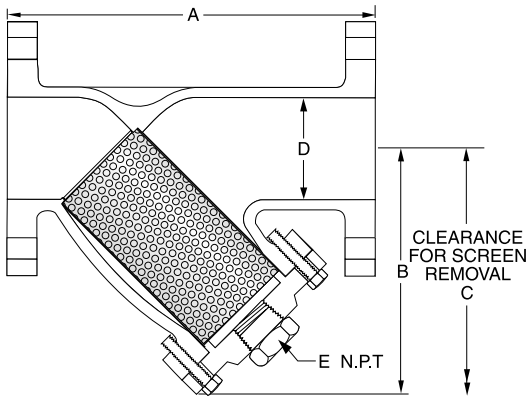
SPECIFICATION

Y Strainer shall be straight flow design with FF Flanged inlet/outlet connections. The strainer shall be rated to ASME Class 150 designed in accordance with ASME B16.24. The Strainer shall be Cast Bronze body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 150Y2 Series.

MATERIALS OF CONSTRUCTION

Body .....Bronze B62
Cover .....Bronze B62
Screen[1] .....304 Stainless Steel
Plug[2] .....Bronze B62
Gasket[1] .....Teflon
Bolt/Stud[2] B16
Nut[2] B16

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

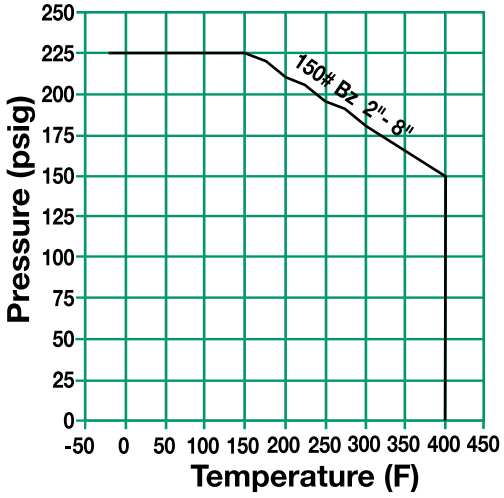


Connections:
BZ - 2" to 8" FF Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 3"	3/64" Perf	304 SS
4" – 8"	1/8" Perf	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.24



DIMENSIONS inches (mm) AND WEIGHTS
pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
2 (50)	8⅝ (219)	4⅞ (124)	7½ (191)	2 (51)	½ (15)	20 (9)
2½ (65)	10¼ (260)	7½ (191)	10½ (267)	2½ (64)	1 (25)	32 (15)
3 (80)	11⅝ (295)	7¾ (197)	10⅞ (276)	3 (76)	1 (25	36 (16)
4 (100)	14⅜ (365)	9⅛ (232)	13 (330)	4 (102)	1 (25)	61 (28)
5 (125)	17⅝ (448)	11 (279)	17 (432)	5 (127)	1¼ (32)	110 (50)
6 (150)	18⅝ (473)	13⅜ (340)	18⅜ (467)	6 (152)	1½ (40)	160 (73)
8 (200)	24⅜ (619)	14⅝ (389)	21⅝ (549)	8 (203)	1½ (40)	210 (95)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

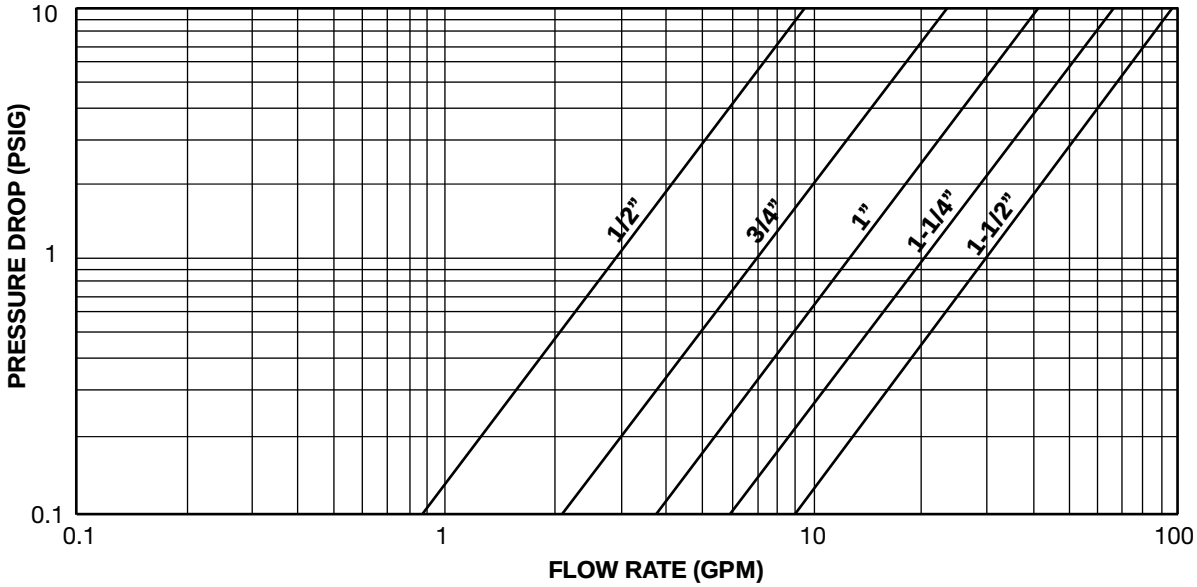
150Y SERIES

CARBON STEEL, STAINLESS STEEL, BRONZE

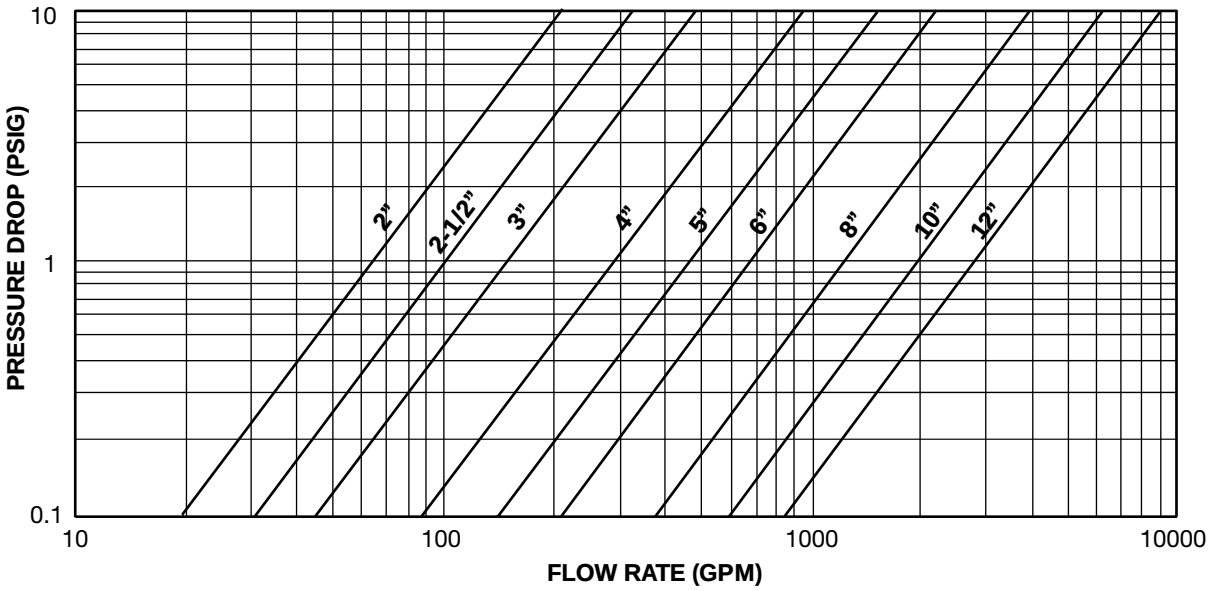
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes ½" - 1½")



(Sizes 2" - 12")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

150Y SERIES

CARBON STEEL, STAINLESS STEEL, BRONZE

OPEN AREA RATIOS

with Standard Perforated Screen*

BRONZE

Size	Perf. Diameter	Opening %	Std Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	21.1	7.60	2.4
2½	3/64	36	4.91	52.3	18.83	3.8
3	3/64	36	7.07	56.2	20.24	2.9
4	1/8	40	12.57	100.1	40.03	3.2
5	1/8	40	19.63	*	*	*
6	1/8	40	28.27	199.6	79.86	2.8
8	1/8	40	50.27	306.4	122.58	2.4

CARBON & STAINLESS STEEL

Size	Perf. Diameter	Opening %	Std Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
½	1/32	28	0.20	5.4	1.52	7.7
¾	1/32	28	0.44	8.5	2.37	5.4
1	1/32	28	0.79	12.4	3.47	4.4
1¼	1/32	28	1.23	22.8	6.39	5.2
1½	1/32	28	1.77	22.8	6.39	3.6
2	3/64	36	3.14	27.1	9.75	3.1
2½	3/64	36	4.91	50.5	18.17	3.7
3	3/64	36	7.07	65.9	23.71	3.4
4	1/8	40	12.57	86.9	34.74	2.8
5	1/8	40	19.63	148.7	59.47	3.0
6	1/8	40	28.27	214.4	85.74	3.0
8	1/8	40	50.27	329.3	131.71	2.6
10	1/8	40	78.54	489.9	195.96	2.5
12	1/8	40	113.10	710.9	284.36	2.5

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

* Consult Factory.

Other Screen Openings
Page 54

Basket Burst Pressure
Page 59

NOTES:

250Y SERIES
CAST IRON, BRONZE, DUCTILE IRON Y STRAINERS NPT, FLANGED

PRESSURES TO 500 PSIG (34.5 BARG)
TEMPERATURES TO 450°F (232°C)

- **ASME Class 250 rated strainers**
- **NPT and FF connections designed in accordance with ASME B16.1, B16.15 and B16.4**
- **One piece cast body**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS

- Steam, liquid, gas and oil service
- Power Industry
- Pulp & Paper
- Process Equipment
- Chemical Industry
- Metal & Mining
- Water & Waste

OPTIONS

- Other perforated screens and mesh liners
- Other drain connections and gasket materials
- Oxygen cleaning
- Special internal / external coatings and linings
- Contact Factory for other Options

APPLICABLE CODES (Designed in accordance with)

- ASME B16.1
- ASME B16.4
- ASME B16.15

Canadian Registration - See appropriate Model pages

MODELS

- 250Y1T - Bronze or Cast Iron, NPT, Threaded Cover
- 250Y1P - Bronze or Cast Iron, BSPT, Threaded cover
- 250Y2F - Ductile Iron, Flanged, Bolted Cover

Request quote

250Y Series Ordering Code

Inlet Size					Model						Body Material	Dash	Perf	Mesh	Add'l Require-ments
0	4	0	0	-	2	5	0	Y	2	F	D	-	4	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0038 - 3/8"
0050 - 1/2"
0075 - 3/4"
0100 - 1"
0125 - 1¼"
0150 - 1½"
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"

Dash - Position 5

Model - Position 6 - 11
250Y1T
250Y1P
250Y2F

Body Material - Position 12
I - Cast Iron
B - Bronze
D - Ductile Iron

Dash - Position 13

Perf[1] - Position 14
304SS Material[2]
A - No Perf (std Y1T Bz
All - std Y1T CI <=2")
1 - 1/32"
B - 3/64"
4 - 1/8"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

Mesh[1, 2] - Position 15
Leave Blank If not Required (std Y2F)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
T - Special Testing
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

1. Standard Screens: Y1 Cast Iron 1/4"-2"—20 mesh, Y1 Cast Iron 2½"-3"—3/64" perf, Y1 Bronze 1/2"-1"—30 mesh, Y1 Bronze 1¼"-3"—20 mesh, Y2 Ductile Iron 2"-3"—3/64" perf, Y2 Ductile Iron 4"-12"—1/8" perf.
2. For other screen material, consult factory.

250Y1 SERIES
CAST IRON Y STRAINERS NPT

SPECIFICATION

Y Strainer shall be straight flow design with NPT inlet/outlet connections. The strainer shall be rated to ASME Class 250 designed in accordance with ASME B16.4. The Strainer shall be cast iron body and the screen shall be size _____ perf / mesh 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 250Y1 Series.

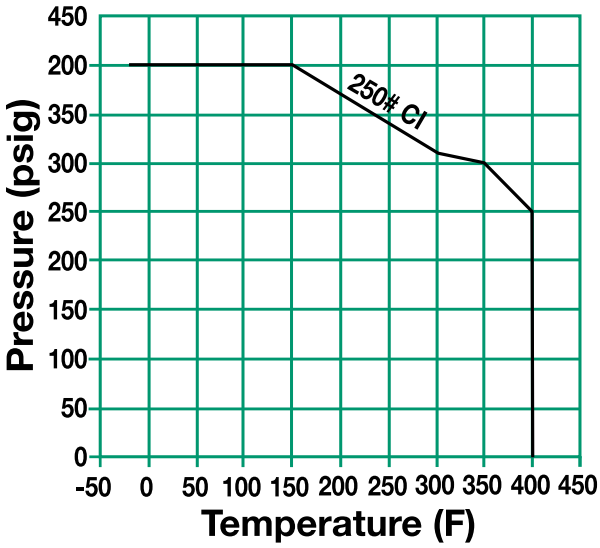
MATERIALS OF CONSTRUCTION

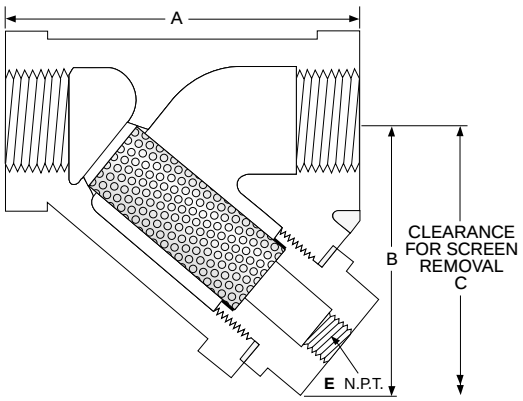
Body.....A126-B
Cap/Cover A126-B
Screen[1].....304 SS
Plug[2] A126-B
Gasket[1] .....Graphite

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

Canadian Registration - OE0591.9C

PRESSURE/TEMPERATURE CHART
ASME B16.4





Connections: 1/4" – 3" NPT

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
1/4"- 2"	20 Mesh	304 SS
2½"- 3"	3/64" Perf	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	E	WEIGHT
¼ (8)	3 5/16 (81)	2 (50)	3⅛ (80)	¼ (8)	1.50 (.70)
⅜ (10)	3⅜16 (81)	2 (50)	3⅛ (80)	¼ (8)	1.50 (.70)
½ (15)	3⅜16 (81)	2 (50)	3⅛ (80)	¼ (8)	1.50 (.70)
¾ (20)	3¾ (95)	2 11/16 (68)	3 11/16 (94)	⅜ (10)	2.50 (.50)
1 (25)	4 (102)	3 (62)	3 11/16 (94)	⅜ (10)	3.00 (1.4)
1¼ (32)	5 (127)	3⅜16 (87)	5 5/16 (129)	¾ (20)	6.00 (1.4)
1½ (40)	5¾ (146)	3 25/32 (96)	5¾ (146)	¾ (20)	8.00 (3.6)
2 (50)	7 (178)	4 11/32 (110)	7¼ (184)	1 (25)	14.00 (3.6)
2½ (65)	9¼ (235)	6⅜32 (155)	8¾ (222)	1½ (40)	29.0 (10)
3 (80)	10 (254)	7 13/32 (188)	9 (2.29)	1½ (40)	38.0 (13.6)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

250Y1 SERIES
BRONZE Y STRAINERS NPT

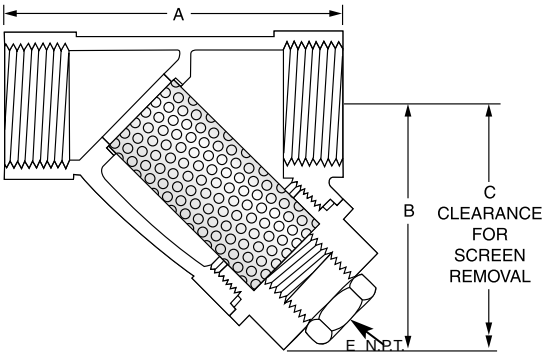
SPECIFICATION

Y Strainer shall be straight flow design with NPT inlet/outlet connections. The strainer shall be rated to ASME Class 250 designed in accordance with ASME B16.15. The Strainer shall be bronze body and the screen shall be size _____ mesh 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 250Y1 Series.

MATERIALS OF CONSTRUCTION

Body B584
Cap B584
Screen[1] .....304 SS
Plug B584
Gasket[1] .....Silicone
1. Recommended Spare Parts

Canadian Registration - OE0591.9C

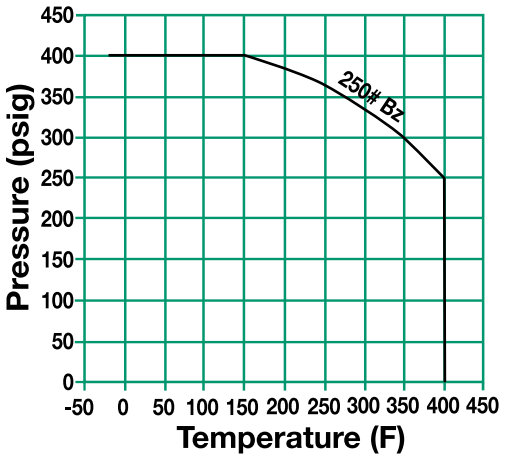


Connections: 1/2" – 3" NPT

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" - 1"	30 Mesh	304 SS
1¼" – 3"	20 Mesh	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.15



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	E	WEIGHT
½ (15)	2 15/16 (75)	2⅛ (54)	3½ (89)	⅜ (10)	.9 (0.4)
¾ (20)	3⅜ (86)	2⅜ (60)	4½ (114)	⅜ (10)	1.3 (0.6)
1 (25)	4 1/16 (103)	3 (76)	5 (127)	¾ (20)	2.1 (1.0)
1¼ (32)	4 15/16 (125)	3 7/16 (87)	5¾ (146)	¾ (20)	3.0 (1.4)
1½ (40)	5¾ (146)	3 13/16 (97)	6⅜ (162)	¾ (20)	4.0 (1.8)
2 (50)	6 11/16 (170)	4 9/16 (116)	9 1/16 (230)	¾ (20)	7.1 (3.2)
2½ (64)	7½ (191)	4⅞ (124)	10 (254)	1¼ (32)	10.1 (4.6)
3 (76)	8½ (216)	5½ (140)	10⅜ (264)	1¼ (32)	13.3 (6.1)

* Consult factory for dimensions.
Dimensions shown are subject to change.
Contact factory for certified prints when required.

250Y2 SERIES
DUCTILE IRON Y STRAINERS FLANGED

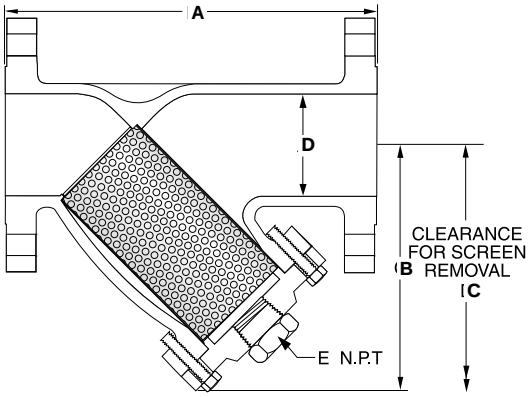
SPECIFICATION

Y Strainer shall be straight flow design with RF Flanged inlet/outlet connections. The strainer shall be rated to ASME Class 250 designed in accordance with ASME B16.1. The Strainer shall be Ductile Iron and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 250Y2 Series.

MATERIALS OF CONSTRUCTION

Body .....Ductile Iron A536
Cap .....Ductile Iron A536
Screen[1] .....304 SS
Plug A126-B
Gasket[1] .....Graphite
Bolt/Stud[2] A307-B
Nut[2] A563

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

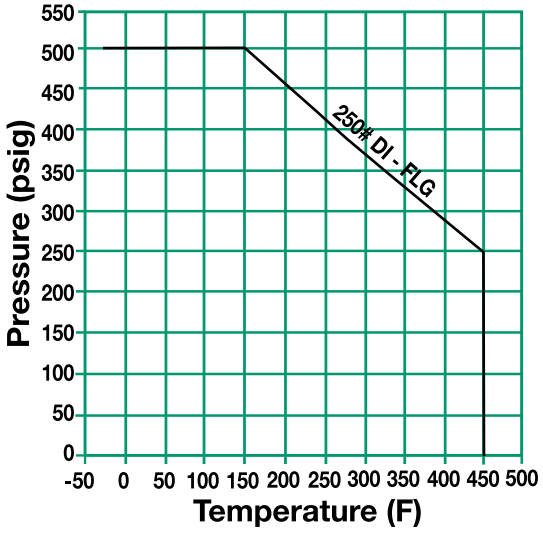


Connections: 2" – 12" RF Flanges

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" - 3"	3/64" Perf.	304 SS
4" – 12"	1/8" Perf.	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.1



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
2 (50)	8⅞ (226)	6⅛ (156)	9⅛ (232)	2 (51)	½ (15)	28 (13)
2½ (65)	10¾ (273)	8 1/16 (205)	9⅞ (251)	2½ (64)	1 (25)	38 (17)
3 (80)	11⅝ (295)	8 7/16 (214)	11¼ (286)	3 (76)	1 (25)	54 (24)
4 (100)	13⅞ (353)	9⅝ (245)	15 (381)	4 (102)	1 (25)	110 (50)
5 (125)	16⅜ (416)	11⅝ (295)	19 (483)	5 (127)	1¼ (32)	160 (73)
6 (150)	18½ (470)	12⅝ (321)	22¾ (578)	6 (152)	1½ (40)	224 (102)
8 (200)	21⅜ (543)	16⅜ (416)	27¾ (692)	8 (203)	1½ (40)	468 (212)
10 (250)	26 (660)	19⅛ (486)	29¾ (756)	10 (254)	2 (50)	590 (268)
12 (300)	30 (762)	22 1/16 (560)	35 (889)	12 (305)	2 (50)	890 (404)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

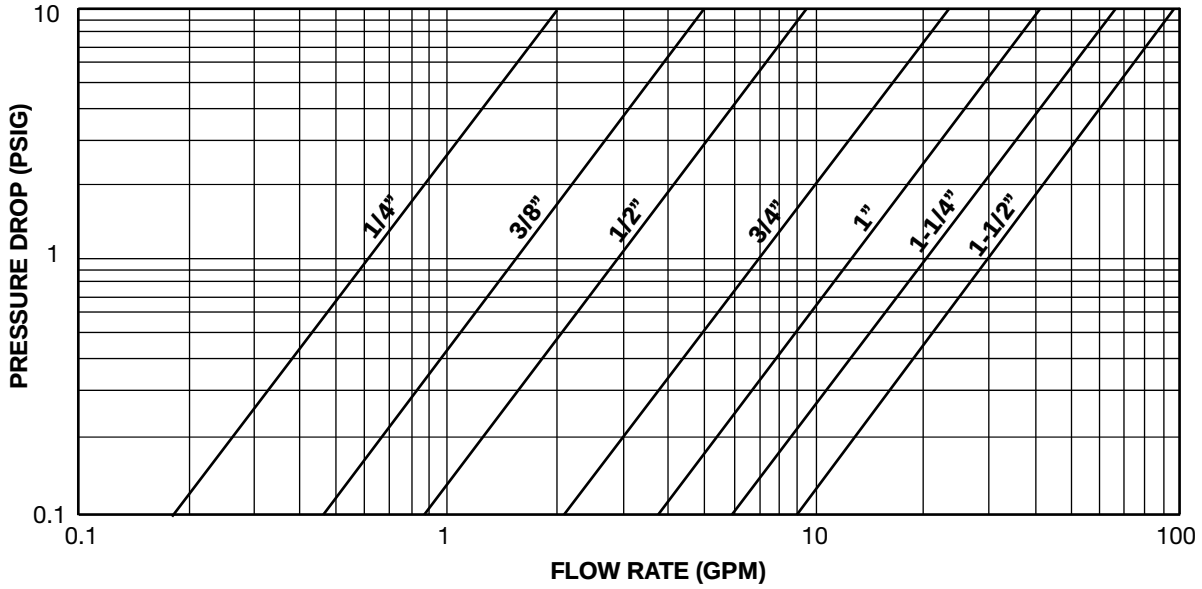
250Y SERIES

CAST IRON, BRONZE, DUCTILE IRON

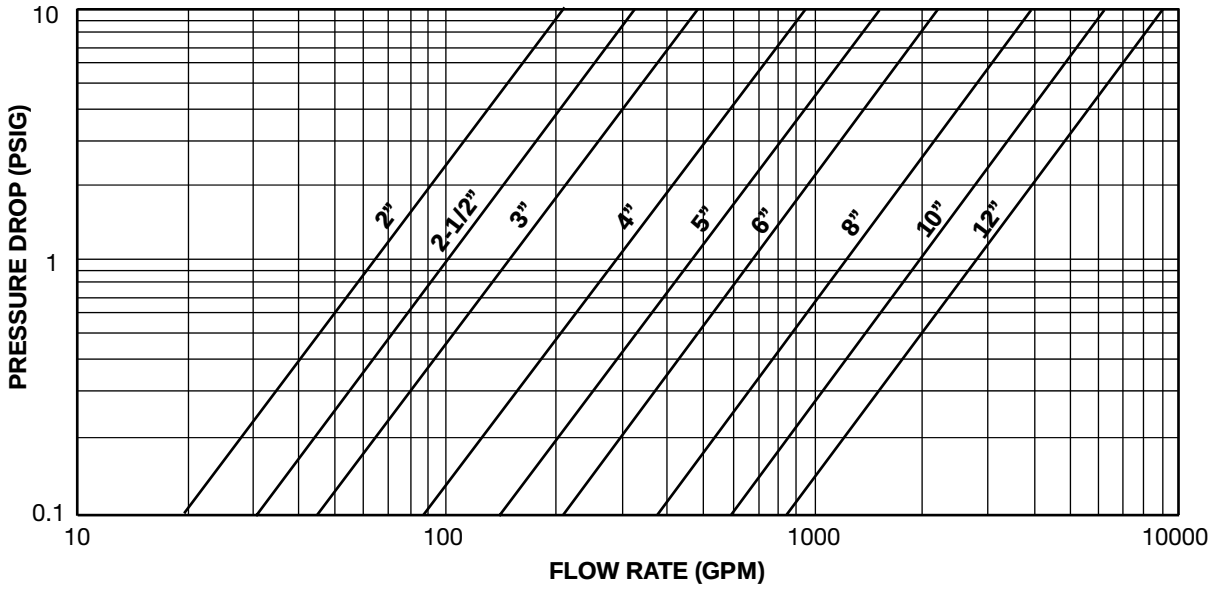
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes ¼" - 1½")



(Sizes 2" - 12")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

250Y SERIES

CAST IRON, BRONZE, DUCTILE IRON

OPEN AREA RATIOS

with Standard Perforated Screen

BRONZE

Size	Mesh	Opening %	Std Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
½	30	45	0.30	2.9	1.28	4.2
¾	30	45	0.53	5.6	2.52	4.7
1	30	45	0.86	9.0	4.03	4.7
1¼	20	49	1.50	15.1	7.38	4.9
1½	20	49	2.04	21.7	10.64	5.2
2	20	49	3.36	29.2	14.31	4.3
2½	20	49	4.79	35.9	17.61	3.7
3	20	49	7.39	49.9	24.45	3.3

CAST IRON

Size	Perf/Mesh Diameter	Opening %	Std Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
¼	20	49	0.30	3.7	1.80	5.9
⅜	20	49	0.30	3.7	1.80	5.9
½	20	49	0.30	3.6	1.74	5.7
¾	20	49	0.53	6.3	3.11	5.8
1	20	49	0.86	7.9	3.85	4.5
1¼	20	49	1.50	13.0	6.35	4.2
1½	20	49	2.04	16.6	8.13	4.0
2	20	49	3.36	28.3	13.85	4.1
2½	3/64	36	4.79	44.7	16.08	3.4
3	3/64	36	7.39	43.2	15.55	2.1

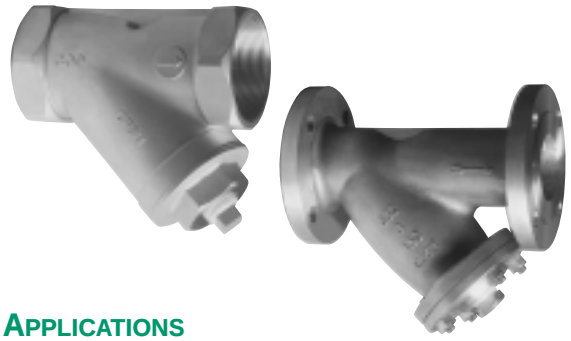
DUCTILE IRON

Size	Perf. Diameter (inches)	Opening %	Flange Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	29.4	10.58	3.4
2½	3/64	36	4.91	46.0	16.56	3.4
3	3/64	36	7.07	57.0	20.51	2.9
4	1/8	40	12.57	99.0	39.59	3.2
5	1/8	40	19.63	146.5	58.58	3.0
6	1/8	40	28.27	174.0	69.60	2.5
8	1/8	40	50.27	327.3	130.91	2.6
10	1/8	40	78.54	495.2	198.08	2.5
12	1/8	40	113.10	645.0	257.99	2.3

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings Page 54

Basket Burst Pressure Page 59



300Y SERIES

CARBON STEEL, STAINLESS STEEL Y STRAINERS NPT, FLANGED, SOCKETWELD, BUTTWELD

PRESSURES TO 740 PSIG (51 BARG)
TEMPERATURES TO 800°F (427°C)

- **ASME Class 300 rated strainers**
- **NPT, RF, Socketweld and Buttweld connections designed in accordance with ASME B16.5, B16.25, B16.11 and B16.34**
- **All Flanged connections complete with Bolted Cover**
- **Cover flange (CS, SS) in accordance with ASME Section VIII, Div 1 Appendix II and/or ANSI 16.5.**
- **One piece cast body – Investment cast on NPT and socketweld versions.**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS

- Steam, liquid, gas and oil service
- Power industry
- Pulp and paper
- Chemical industry
- Process Equipment
- Metal & Mining
- Water & Waste

OPTIONS

- Other perforated screens and mesh liners
- Other drain connections and gasket materials
- Oxygen cleaning
- Special internal/external coatings and linings
- Contact factory for other options

APPLICABLE CODES (Designed in accordance with)

- ASME B16.11
- ASME B16.5
- ASME B16.25
- ASME B16.34

Canadian Registration - See appropriate Model pages

MODELS

- 300Y1T – Carbon or Stainless Steel, NPT with Threaded Cover
- 300Y1W – Carbon or Stainless Steel, Socketweld with Threaded Cover
- 300Y2F – Carbon or Stainless Steel, Flanged with Bolted Cover
- 300Y2B – Carbon or Stainless Steel, Buttweld with Bolted Cover

300Y Series Ordering Code

Inlet Size					Model					Body Material	Dash	Perf	Mesh	Add'l Requirements
0	2	0	0	-	3	0	0	Y	1	W	C	-	6	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0050 - ½"
0075 - ¾"
0100 - 1"
0125 - 1¼"
0150 - 1½"
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

Model - Position 6 - 11
300Y1T
300Y1W
300Y2F
300Y2B[1]

Body Material - Position 12
C - Carbon Steel
T - Stainless Steel

Dash - Position 13

1. For Buttweld connections please specify mating pipe schedule.

Perf[2] - Position 14
304SS Material[3]
A -No Perf
1 - 1/32"
B - 3/64"
4 - 1/8"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

2. Standard Screens:
Y1<2"—1/32" perf,
Y1 >2"—3/64" perf,
Y2<1½"—1/32" perf,
Y2 2"-3"—3/64" perf,
Y2 >3"—1/8" perf

Mesh[3] - Position 15
Leave Blank If not Required (std ALL)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120

3. For other screen material, contact factory.

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

300Y1 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS NPT, SOCKETWELD

SPECIFICATION

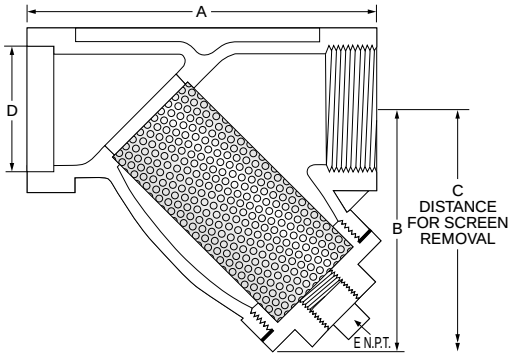
Y Strainer shall be straight flow design with NPT or Socketweld inlet/outlet connections. The strainer shall be rated to ASME Class 300. The Strainer shall be Investment Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 300Y1 Series.

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cap	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug	A105	A182-316
Gasket[1]	Teflon	Teflon

1. Recommended Spare Parts

Canadian Registration - Carbon Steel <3" OE10274.5C
- Stainless Steel OE0591.9C

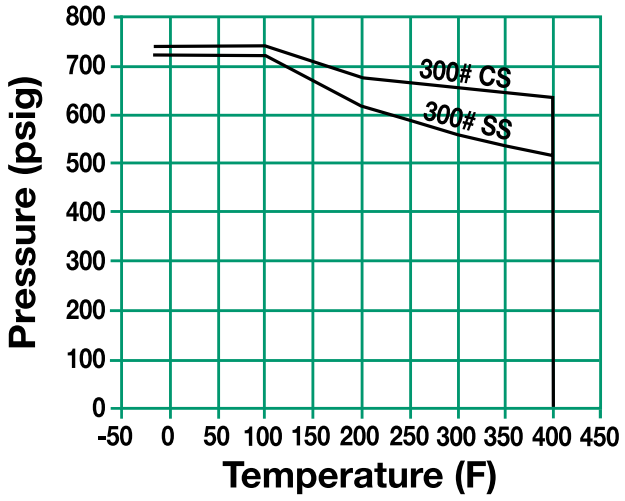


Connections:
CS – 1/2" to 3" NPT or SW
SS – 1/2" to 3" NPT or S

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" – 2"	1/32" Perf	304 SS
2½" – 3"	3/64" Perf	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.34



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
½ (15)	2 1/32 (59)	1⅝ (41)	2⅜ (60)	0.855 (21.72)	⅜ (10)	.50 (.22)
3/4 (20)	3 3/16 (80)	2 (51)	3 3/16 (81)	1.065 (27.05)	⅜ (10)	.82 (.37)
1 (25)	3 3/16 (84)	2⅜ (60)	4 (102)	1.330 (33.78)	½ (15)	1.50 (.68)
1¼ (32)	4⅛ (105)	2⅞ (73)	4½ (114)	1.675 (42.55)	½ (15)	2.0 (.90)
1½ (40)	4¾ (119)	3¼ (83)	4¾ (121)	1.915 (48.64)	½ (15)	2.8 (1.27)
2 (50)	5½ (1.38)	3⅞ (97)	5¾ (146)	2.406 (61.11)	½ (15)	4.3 (1.95)
2½ (65)	7¼ (183)	4 13/16 (124)	7¼ (184)	2.906 (73.81)	½ (15)	10 (4.54)
3 (80)	8 1/16 (205)	5 1/16 (138)	7½ (191)	3.535 (89.79)	½ (15)	14 (6.35)

Dimensions shown are subject to change.
Consult factory for certified drawings when required.

300Y2 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS FLANGED, BUTTWELD

SPECIFICATION

Y Strainer shall be straight flow design with RF Flanged or Buttweld inlet/outlet connections. The strainer shall be rated to ASME Class 300 designed in accordance with ASME B16.5, B16.34 and/or ASME B16.25. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 300Y2 Series.

MATERIALS OF CONSTRUCTION*

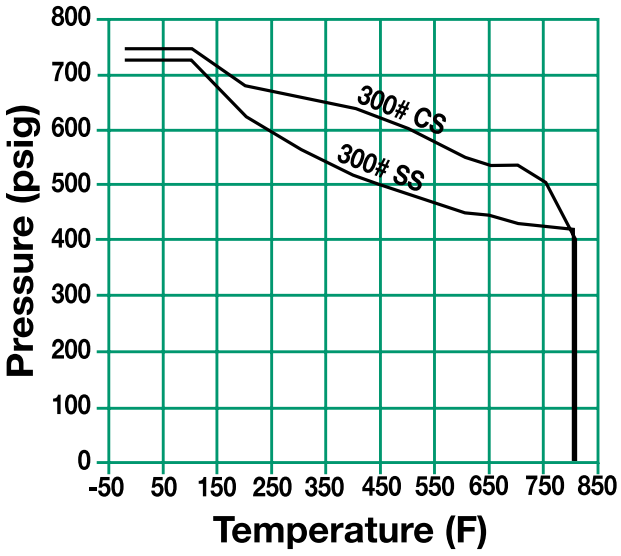
Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug[2]	A105	A182-316
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound
Stud	A193-B7	A193-B8-1
Nut[2]	A194-2H	A194-8

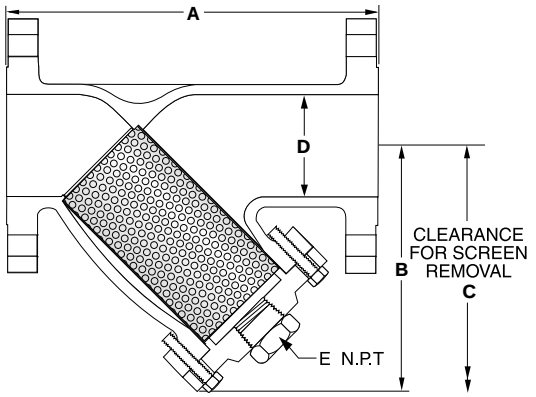
1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

* Low Carbon Steel Available on request. Consult Factory

Canadian Registration - Carbon Steel OE10274.5C
- Stainless Steel OE0591.9C

PRESSURE/TEMPERATURE CHART
ASME B16.34





Connections:
CS - ½" to 12"
RF Flanged or Buttweld[3]

SS – ½" to 12"
RF Flanged or Buttweld[3]

3. For Buttweld connections please specify pipe schedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" – 1½"	1/32" Perf	304 SS
2" - 3"	3/64" Perf	304 SS
4" - 12"	1/8" Perf	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
½ (15)	6½ (165)	4¼ (108)	5¾ (146)	½ (13)	¼ (8)	8 (3.6)
¾ (20)	7¾ (197)	5 (127)	6¾ (171)	¾ (19)	⅜ (10)	14 (6.4)
1 (25)	7⅞ (200)	5½ (140)	8⅛ (206)	1 (25)	½ (15)	15 (6.8)
1½ (40)	10½ (267)	7 (178)	10¼ 9260)	1½ (38)	½ (15)	32 (15)
2 (50)	9 (229)	5 1/16 (145)	8 (203)	2 (51)	½ (15)	25 (11.4)
2½ (65)	10⅞ (276)	7 3/16 (183)	10¼ (260)	2½ (64)	1 (25)	38 (17.3)
3 (80)	12⅝ (320)	8½ (207)	11½ (292)	3 (76)	1 (25)	56 (25.5)
4 (100)	14⅝ (372)	9⅝ (245)	13⅜ (346)	4 (102)	1½ (40)	90 (40.9)
5 (125)	18½ (470)	15⅜ (391)	21½ (546)	5 (127)	2 (50)	180 (82)
6 (150)	19¾ (502)	15 (381)	21½ (546)	6 (152)	2 (50)	203 (92.3)
8 (200)	25 (635)	16½ (419)	22 (559)	8 (203)	2 (50)	323 (146.8)
10 (250)	27⅝ (702)	21 3/16 (538)	30 (762)	10 (254)	2 (50)	571 (259.6)
12 (300)	32⅞ (835)	24 5/16 (617)	34⅜ (873)	12 (305)	2 (50)	893 (405.9)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

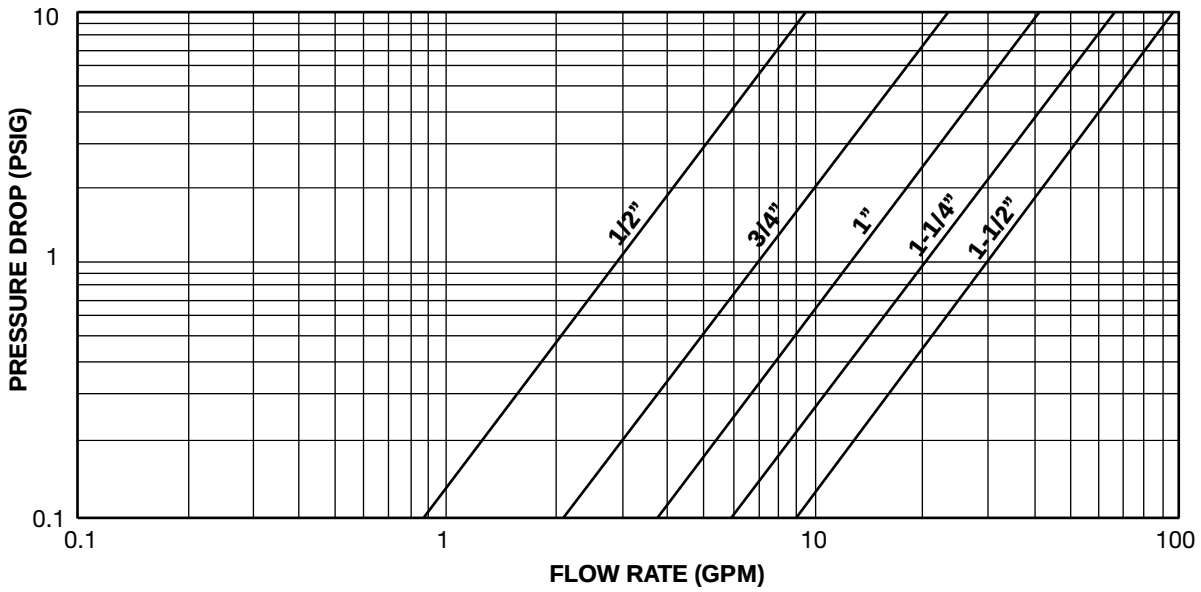
300Y SERIES

CARBON STEEL, STAINLESS STEEL

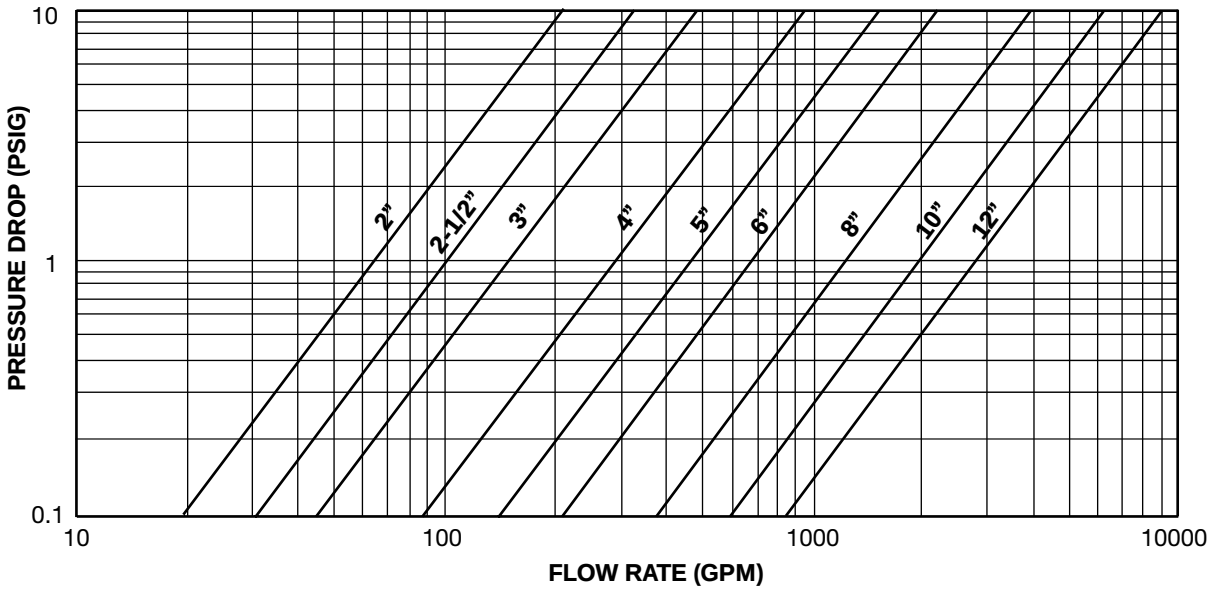
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes ½" - 1½")



(Sizes 2" - 12")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

300Y SERIES
CARBON STEEL, STAINLESS STEEL
OPEN AREA RATIOS
with Standard Perforated Screen

300Y1 Carbon Steel, Stainless Steel

Size	Perf. Diameter (mm²)	Opening %	Std Pipe Inlet Area (in²)	Gross Screen Area (in²)	Free Screen Area (in²)	Open Area Ratio (OAR)
½	1/32	28	0.30	3.2	1.13	3.7
¾	1/32	28	0.53	5.1	1.80	3.4
1	1/32	28	0.86	8.1	2.82	3.3
1¼	1/32	28	1.50	10.2	3.56	2.4
1½	1/32	28	2.04	14.6	5.10	2.5
2	1/32	28	3.36	21.2	7.41	2.2
2½	3/64	36	4.79	37.0	12.94	2.7
3	3/64	36	7.39	47.6	16.66	2.3

300Y2 Carbon Steel, Stainless Steel

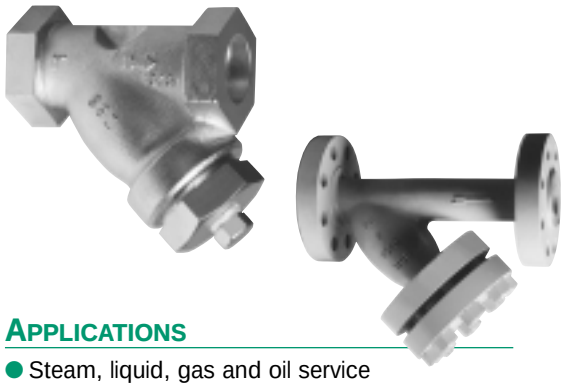
Size	Perf. Diameter (inches)	Opening %	Flange Inlet Area (in²)	Gross Screen Area (in²)	Free Screen Area (in²)	Open Area Ratio (OAR)
½	1/32	28	0.20	6.8	1.91	9.7
¾	1/32	28	0.44	10.4	2.92	6.6
1	1/32	28	0.79	15.3	4.27	5.4
1½	1/32	28	1.77	32.5	9.11	5.2
2	3/64	36	3.14	28.7	10.35	3.3
2½	3/64	36	4.91	48.1	17.32	3.5
3	3/64	36	7.07	71.2	25.62	3.6
4	1/8	40	12.57	106.3	42.54	3.4
6	1/8	40	28.27	233.2	93.29	3.3
8	1/8	40	50.27	340.3	136.14	2.7
10	1/8	40	78.54	489.9	195.96	2.5
12	1/8	40	113.10	710.9	284.36	2.5

OAR = Free Screen Area / Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings
Page 54

Basket Burst Pressure
Page 59

NOTES:



600Y SERIES

CARBON STEEL, STAINLESS STEEL, LOW CARBON STEEL, ALLOY 20 Y STRAINERS NPT, FLANGED, RING JOINT, SOCKETWELD, BUTTWELD

PRESSURES TO 1480 PSIG (102 BARG)
TEMPERATURES TO 800°F (427°C)

- **ASME Class 600 rated strainers**
- **NPT, RF or RTJ, Socketweld and Buttweld connections designed in accordance with ASME B16.11, B16.25, B16.34 and B16.5**
- **SSI Exclusive – Body blow down flange and cover flange dimensions are in dimensional accordance with ASME B16.5**
- **All Flanged connections complete with Bolted Cover**
- **One piece cast body**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS

- Steam, liquid, gas and oil service
- Power industry
- Pulp and paper
- Chemical industry
- Process Equipment
- Metal & Mining
- Water & Waste

OPTIONS

- Low Carbon Steel and Alloy 20 bodies available on Y1T and Y1W models
- Other perforated screens and mesh liners
- Other drain connections and gasket materials
- Oxygen cleaning
- Special internal / external coatings and linings
- Contact Factory for other Options

APPLICABLE CODES (Designed in accordance with)

- ASME B16.11
- ASME B16.5
- ASME B16.34
- ASME B16.25

Canadian Registration - OE10274.5C

MODELS

- 600Y1T* – NPT with Threaded Cover
- 600Y1W* – Socketweld with Threaded Cover
- 600Y2F – Flanged with Bolted Cover
- 600Y2J – Ring Joint with Bolted Cover
- 600Y2B – Buttweld with Bolted Cover

*Carbon Steel, Stainless Steel, Low Carbon Steel or Alloy 20

600Y Series Ordering Code

Inlet Size					Model						Body	Dash	Perf	Mesh	Add'l Require-ments
0	3	0	0	-	6	0	0	Y	1	W	C	-	B	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0050 - ½"
0075 - ¾"
0100 - 1"
0125 - 1¼"
0150 - 1½"
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

Model - Position 6 - 11
600Y1T
600Y1W
600Y2F[1]
600Y2J[1]
600Y2B[1,2]

Body - Position 12
C - CS
T - SS
L - LCS
A - A20

Dash - Position 13

1. CS available 2" - 12", SS available 2" - 6".
2. For Buttweld connections please specify mating pipe schedule.

Perf[3] - Position 14
304SS Material[4]
A - No Perf
1 - 1/32"
B - 3/64"
4 - 1/8"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

3. Standard Screens:
All ½"-1½"—1/32" perf,
All 2"-3"—3/64" perf,
All >3"—1/8" perf.

Mesh[4] - Position 15
Leave Blank If not Required (std ALL)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120

4. For other screen material, contact factory.

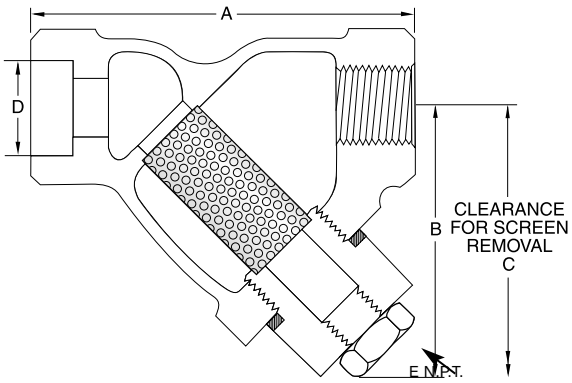
Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

600Y1 SERIES
CARBON STEEL, STAINLESS STEEL, LOW CARBON STEEL, ALLOY 20 Y STRAINERS NPT, SOCKETWELD

SPECIFICATION

Y Strainer shall be straight flow design with NPT or Socketweld inlet/outlet connections. The strainer shall be rated to ASME Class 600 designed in accordance with B16.34 and/or B16.11. The Strainer shall be Cast Carbon Steel, Stainless Steel Low Carbon Steel or Alloy 20 body and the screen shall be size _____ perf 304 SS or Alloy 20. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 600Y1 Series.



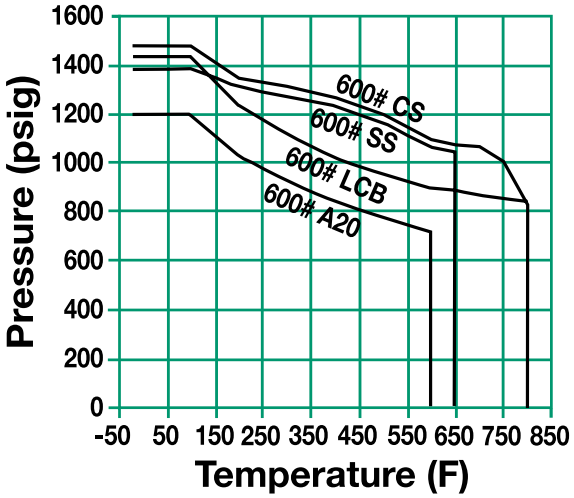
Connections:
CS – ½" to 2" NPT or SW
SS – ½" to 2" NPT or SW
LCS – ½" to 2" NPT or SW
A20 – ½" to 2" NPT or SW

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel	Low Carbon Steel	Alloy 20
Body	A216-WCB	A351-CF8M	A352-LCB	A351-CN7M
Cap[2]	A216-WCB	A351-CF8M	A351-CF8M	A351-CN7M
Screen[1]	304 SS	304 SS	304 SS	304 SS
Plug[2]	A105	304 SS	304 SS	B462
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound	304 SS Spiral Wound	304 SS Spiral Wound

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

PRESSURE/TEMPERATURE CHART
ASME B16.34



SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" – 1½"	1/32" Perf	304 SS/Alloy 20
2"	3/64" Perf	304 SS/Alloy 20

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	E	WEIGHT
½ (15)	3 (76)	2 7/16 (62)	3⅛ (80)	0.855 (21.72)	¼ (8)	1.4 (0.6
¾ (20)	3¾ (95)	2 15/16 (75)	3 9/16 (90)	1.065 (27.05)	⅜ (10)	2.2 (1.0)
1 (25)	4⅝ (118)	3¾ (95)	3 15/16 (100)	1.330 (33.78)	⅜ (10)	4.1 (1.9)
1¼ (32)	5 (127)	4 (102)	4¼ (108)	1.675 (42.55)	¾ (20)	5.3 (2.4)
1½ (40)	5⅝ (143)	4 13/16 (122)	4⅝ (118)	1.915 (48.64)	¾ (20)	8.4 (3.8)
2 (50)	7 (178)	6⅛ (156)	6¾ (171)	2.406 (61.11)	1 (25)	12.6 (5.7)

Dimensions shown are subject to change.
Consult factory for certified drawings when required.

600Y2 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS FLANGED, RING JOINT, BUTTWELD

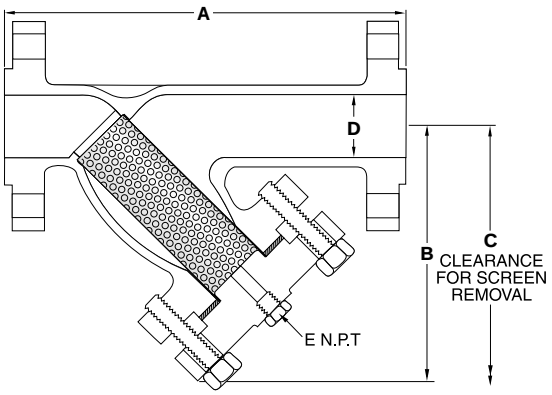
SPECIFICATION

Y Strainer shall be straight flow design with RF Flanged, Ring Joint or Buttweld inlet/outlet connections. The strainer shall be rated to ASME Class 600 designed in accordance with ASME B16.5 and/or B16.34. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 600Y2 Series.

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug[2]	A105	304 SS
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound
Stud	A193-B7	A320-B8
Nut[2]	A194-2H	A194-8

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted



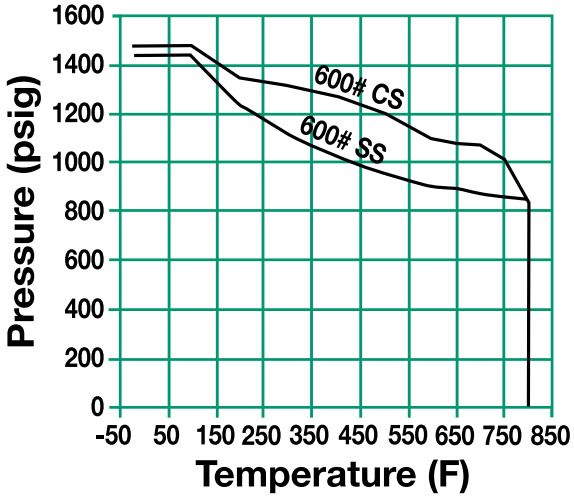
Connections:
CS - 2" to 12" RF Flanged, RTJ or Buttweld[3]
SS – 2" to 6" RF Flanged, RTJ or Buttweld[3]

3. For Buttweld connections please specify mating pipe schedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2"- 3"	3/64" Perf	304 SS
4" – 12"	1/8" Perf	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.34



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE[4]	A	B	C	D	E	WEIGHT
2 (50)	12½ (318)	8 (203)	9¼ (235)	2 (51)	½ (15)	46 (20.9)
3 (80)	15⅝ (397)	10⅛ (257)	11⅜ (289)	3 (76)	1¼ (32)	93 (42.2)
4 (100)	20 (508)	13 (330)	14¼ (362)	4 (102)	1½ (40)	187 (85.0)
6 (150)	25½ (648)	17 (432)	18¼ (463)	6 (152)	2 (50)	403 (183.2)
8 (200)	30 (330)	21⅜ (543)	22 1/16 (576)	8 (203)	2 (50)	660 (300.0)
10 (250)	37⅝ (956)	24¾ (629)	26 (660)	10 (254)	2 (50)	1428 (649.1)
12 (300)	42 (1067)	30 (762)	31¼ (794)	12 (305)	2 (50)	1608 (730.9)

Dimensions shown are subject to change.
Consult factory for certified drawings when required.

4. CS available 2" - 12",
SS available 2" - 6".

Request quote

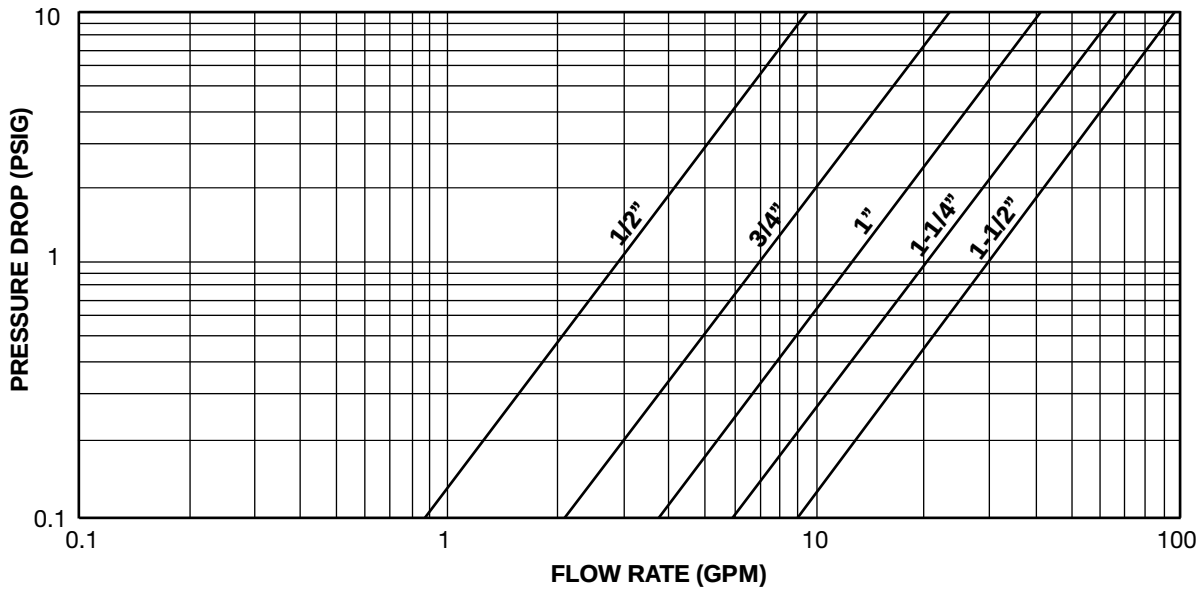
600Y SERIES

CARBON STEEL, STAINLESS STEEL, LOW CARBON STEEL, ALLOY 20

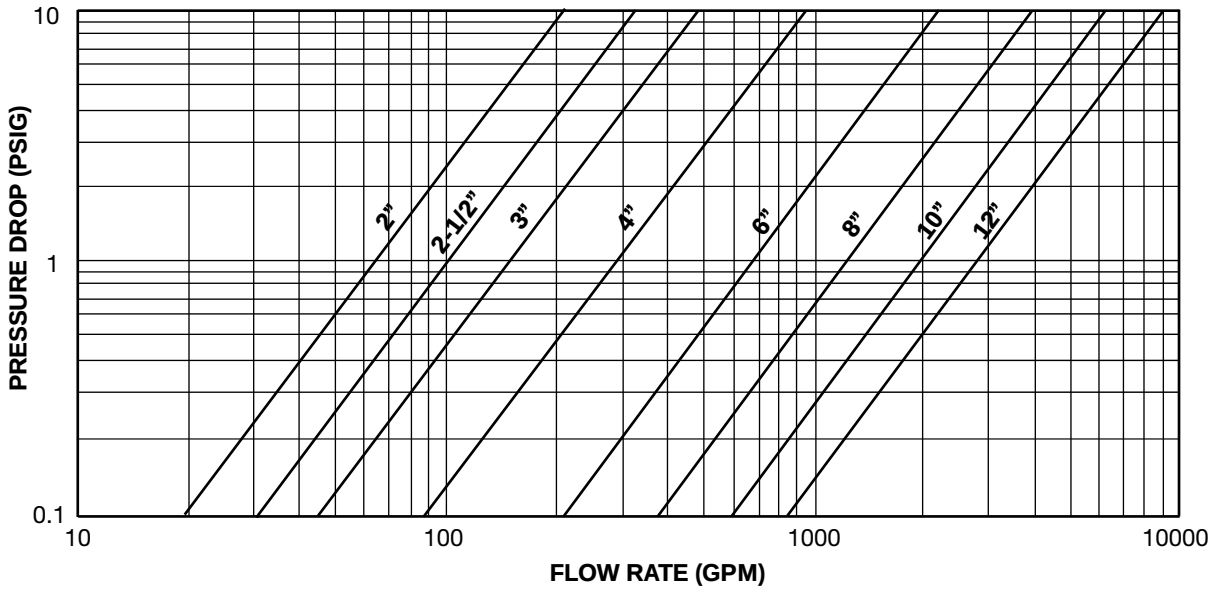
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes ½" - 1½")



(Sizes 2" - 12")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57 | **Correction Factors for Other Viscous Liquids and/or Mesh Liners** Page 56 | **Correction Factors for Clogged Screens** Page 56

600Y SERIES

CARBON STEEL, STAINLESS STEEL, LOW CARBON STEEL, ALLOY 20

OPEN AREA RATIOS

with Standard Perforated Screen

600Y1 - Threaded & Socketweld

Size	Perf. Diameter (inches)	Opening %	XH Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
½	1/32	28	0.23	2.7	0.76	3.3
¾	1/32	28	0.43	4.6	1.28	3.0
1	1/32	28	0.72	8.5	2.38	3.3
1¼	1/32	28	1.28	12.8	3.58	2.8
1½	1/32	28	1.77	16.5	4.61	2.6
2	3/64	36	2.95	27.8	19	3.4

600Y2 - Flanged, Ring Joint Flanged & Buttweld

Size	Perf. Diameter (inches)	Opening %	Flange Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	38.4	13.82	4.4
3	3/64	36	7.07	74.2	26.72	3.8
4	1/8	40	12.57	127.6	51.06	4.1
6	1/8	40	28.27	261.2	104.49	3.7
8	1/8	40	50.27	408.5	163.42	3.3
10	1/8	40	78.54	598.9	239.57	3.1
12	1/8	40	113.10	817.7	327.08	2.9

OAR = Free Screen Area / Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings Page 54
Basket Burst Pressure Page 59

NOTES:

900Y SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS FLANGED, RING JOINT, BUTTWELD

PRESSURES TO 2220 PSIG (153 BARG)
TEMPERATURES TO 800°F (427°C)

- **ASME Class 900 rated strainers**
- **RF or RTJ, and Buttweld connections designed in accordance with ASME B16.34, B16.5 and B16.25**
- **SSI Exclusive – Body blow down flange and cover flange dimensions are in dimensional accordance with ASME B16.5**
- **All Flanged connections complete with Bolted Cover**
- **One piece cast body**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS
- Steam, liquid, gas and oil service
- Power industry
- Pulp and paper
- Chemical industry
- Process Equipment
- Metal & Mining
- Water & Waste

OPTIONS
- Other perforated screens and mesh liners
- Drain connections and other gasket materials
- Oxygen cleaning
- Special internal / external coatings and linings
- Contact Factory for other Options

APPLICABLE CODES (Designed in accordance with)
- ASME B16.5
- ASME B16.34
- ASME B16.25

Canadian Registration OE10274.5C

MODELS
- 900Y2F – Carbon or Stainless Steel Flanged with Bolted Cover
- 900Y2J – Carbon or Stainless Steel Ring Joint with Bolted Cover

For Buttweld connections see FY Series on page 48

NOTE: 900# flanges are the same as 1500# flanges in sizes 1/2" - 2½".

900Y Series Ordering Code

Inlet Size				Dash	Model					Body Material	Dash	Perf	Mesh	Add'l Require-ments
0	8	0	0	-	9	0	0	Y	2	B	C	-	4	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0600 - 6"
0800 - 8"

Dash - Position 5

Model - Position 6 - 11
900Y2F
900Y2J

Body Material - Position 12
C - CS
T - SS

Dash - Position 13

Perf[1] - Position 14
304SS Material[2]
A - No Perf
1 - 1/32"
B - 3/64"
4 - 1/8"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

1. Standard Screens: All <3"—3/64" perf, All >3"—1/8" perf.

Mesh[2] - Position 15
Leave Blank If not Required (std ALL)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120

2. For other screen material, contact factory.

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

900Y2 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS FLANGED, RING JOINT, BUTTWELD

SPECIFICATION

Y Strainer shall be straight flow design with RF Flanged, Ring Joint or Buttweld inlet/outlet connections. The strainer shall be rated to ASME Class 900 designed in accordance with ASME B16.5 and/or B16.34. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 900Y2 Series.

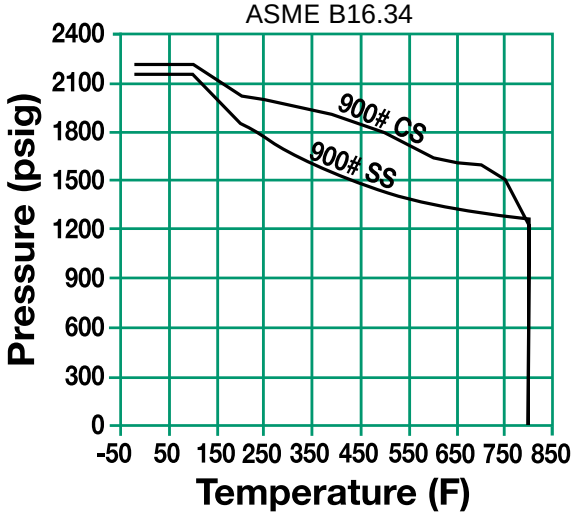
MATERIALS OF CONSTRUCTION

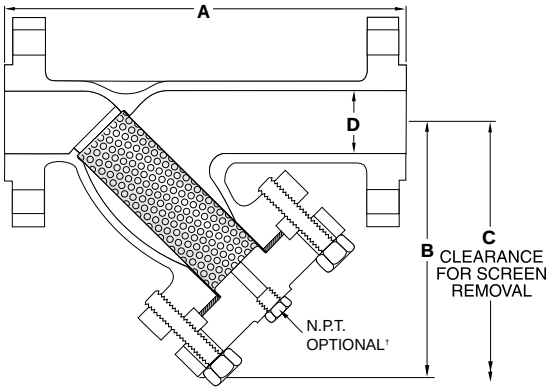
Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug[2]	A105	304 SS
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound
Stud	A193-B7	A320-B8
Nut[2]	A194-2H	A194-8

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

PRESSURE/TEMPERATURE CHART

ASME B16.34





† SSI Series 900Y strainers are not furnished with a drain/blow-down connection. Consult factory if required.

Connections:
CS - 2" to 8" RF Flanged or RTJ
SS – 2" to 8" RF Flanged, RTJ

For Buttweld connection use FY Series on page 48

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 3"	3/64" Perf	304 SS
4" – 8"	1/8" Perf	304 SS

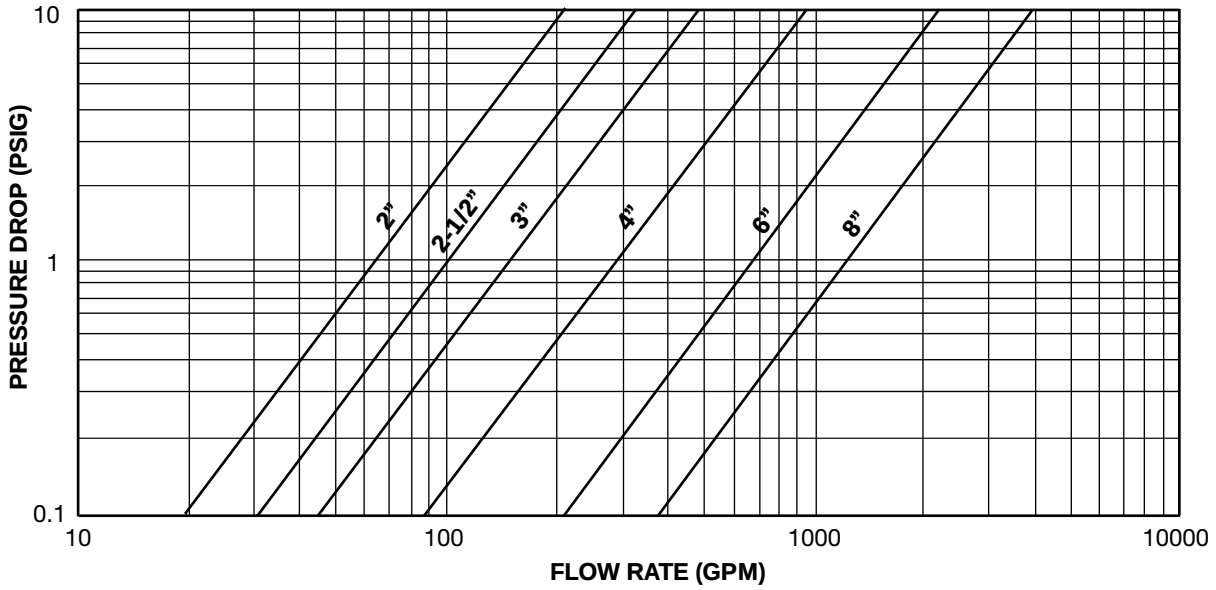
DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	WEIGHT
2 (50)	16¼ (413)	10½ (268)	14⅞ (378)	1.87 (48)	125 (57)
3 (80)	20¼ (514)	12¾ (324)	18 (457)	2.87 (73)	163 (74)
4 (100)	23¼ (541)	15 (381)	21¼ (539)	3.87 (98)	253 (115)
6 (150)	27¾ (705)	18⅞ (480)	26⅜ (667)	5.75 (146)	580 (263.6)
8 (200)	34½ (876)	22⅝ (575)	32 (813)	7.50 (191)	1080 (490.9)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

900Y SERIES
CARBON STEEL, STAINLESS STEEL
PRESSURE DROP VS FLOW RATE
Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 2" - 8")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

900Y SERIES
CARBON STEEL, STAINLESS STEEL
OPEN AREA RATIOS
with Standard Perforated Screen

900Y2 Carbon Steel, Stainless Steel

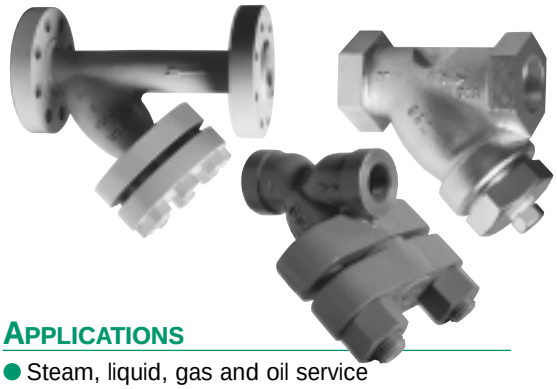
Size	Perf. Diameter (mm²)	Opening %	Flange Inlet Area (in²)	Gross Screen Area (in²)	Free Screen Area (in²)	Open Area Ratio (OAR)
2	3/64	36	3.14	48.9	17.61	5.6
3	3/64	36	7.07	99.5	35.83	5.1
4	1/8	40	12.57	161.6	64.62	5.1
6	1/8	40	28.27	290.7	116.28	4.1
8	1/8	40	50.27	440.2	176.08	3.5

OAR = Free Screen Area / Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings Page 54

Basket Burst Pressure Page 59

NOTES:



1500Y SERIES

CARBON STEEL, STAINLESS STEEL, CHROME MOLY Y STRAINERS NPT, FLANGED, RING JOINT, SOCKETWELD, BUTTWELD

PRESSURES TO 3705 PSIG (258.5 BARG)
TEMPERATURES TO 800°F (426°C)

- **ASME Class 1500 rated strainers**
- **NPT, RF or RTJ, Socketweld and Buttweld connections designed in accordance with ASME B16.34, B16.5, B16.25 and B16.11**
- **SSI Exclusive – Body blow down flange and cover flange dimensions are in dimensional accordance with ASME B16.5.**
- **All Flanged connections complete with Bolted Cover**
- **One piece cast body**
- **Upper and lower machined seats**
- **Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS

- Steam, liquid, gas and oil service
- Power industry
- Pulp and paper
- Chemical industry
- Process Equipment
- Metal & Mining
- Water & Waste

OPTIONS

- Chrome Moly bodies available on Y2T and Y2W models
- Other perforated screens and mesh liners
- Drain connections and other gasket materials
- Oxygen cleaning
- Special internal / external coatings and linings
- Contact Factory for other Options

APPLICABLE CODES (Designed in accordance with)

- ASME B16.11
- ASME B16.5
- ASME B16.34
- ASME B16.25

Canadian Registration - OE10274.5C

MODELS

- 1500Y1T – Carbon or Stainless NPT with Threaded Cover
- 1500Y1W – Carbon or Stainless Socketweld with Threaded Cover
- 1500Y2T – Carbon, Stainless or Chrome Moly NPT with Bolted Cover
- 1500Y2W – Carbon, Stainless or Chrome Moly Socketweld with Bolted Cover
- 1500Y2F – Carbon or Stainless Flanged with Bolted Cover
- 1500Y2J – Carbon or Stainless Ring Joint with Bolted Cover

For Buttweld connections see FY Series on page 48

1500Y Series Ordering Code

Inlet Size				Dash	Model							Body Material	Dash	Perf	Mesh	Add'l Requirements
0	1	5	0	-	1	5	0	0	Y	2	T	R	-	3	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Inlet Size - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0600 - 6"

Dash - Position 5

Model - Position 6 - 12
1500Y1T
1500Y1W
1500Y2T
1500Y1W
1500Y2F
1500Y2J

Body Material - Position 13
C - CS
T - SS
R - CM

Dash - Position 14

Perf[1] - Position 15
304SS Material[2]
A - No Perf
1 - 1/32"
B - 3/64"
4 - 1/8"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

1. Standard Screens: Y1T and Y2T ½"-1½"—1/32" perf, Y2 2"-6"— 1/8" perf.

Mesh[2] - Position 16
Leave Blank If not Required (std ALL)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120

2. For other screen materials, contact factory.

Add'l Requirements - Position 17
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

1500Y1 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS NPT, SOCKETWELD

SPECIFICATION

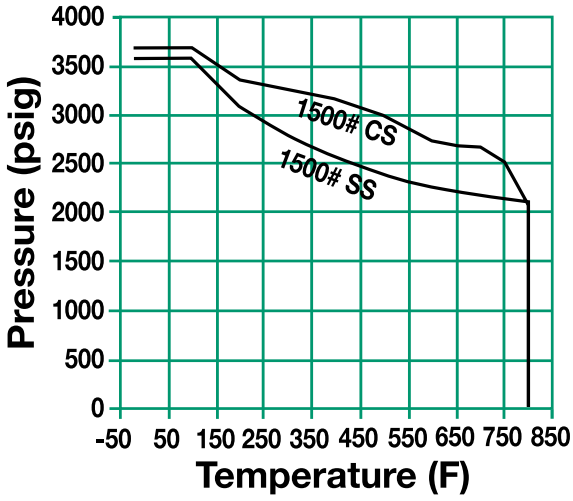
Y Strainer shall be straight flow design with NPT or Socketweld inlet/outlet connections. The strainer shall be rated to ASME Class 1500 designed in accordance with ASME B16.34 and/or B16.11. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall have a threaded cover. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 1500Y1 Series.

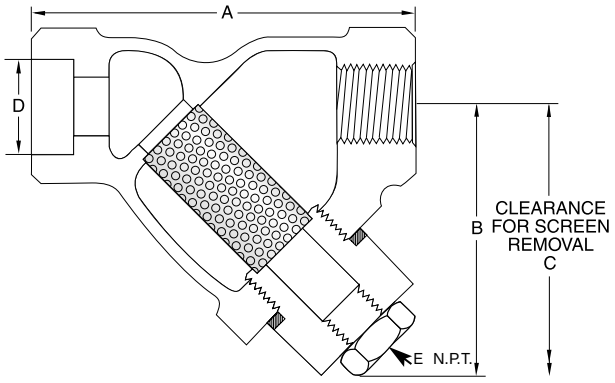
MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cap[2]	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug[2]	A105	A182-316
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

PRESSURE/TEMPERATURE CHART
ASME B16.34





Connections:
CS - ½" to 1" NPT or Socketweld
SS – ½" to 1" NPT or Socketweld

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" – 1"	1/32" Perf	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

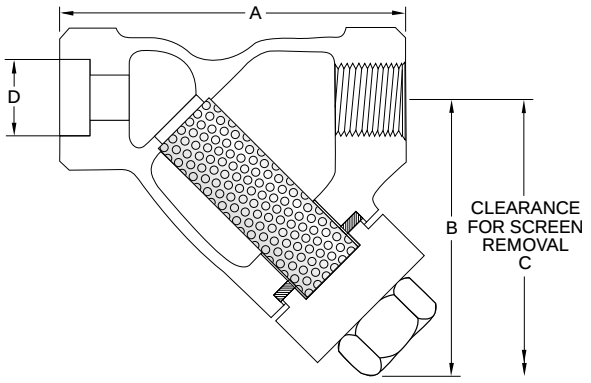
SIZE	A	B	C	D	E	WEIGHT
½ (15)	3 15/16 (100)	3 9/16 (90)	5 5/16 (135)	7/8 (22.23)	¼ (8)	2.4 (1.1)
¾ (20)	4¼ (108)	3 15/16 (100)	5 (127)	1 1/16 (27.05)	⅜ (10)	3.3 (1.5)
1 (25)	5 (127)	4 23/32 (120)	7½ (178)	1⅓ (33.78)	½ (15)	6.0 (2.7)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

1500Y2 SERIES
CARBON STEEL, STAINLESS STEEL CHROME MOLY Y STRAINERS NPT, SOCKETWELD

SPECIFICATION

Y Strainer shall be straight flow design with NPT or Socketweld inlet/outlet connections. The strainer shall be rated to ASME Class 1500designed in accordance with ASME B16.34 and/or B16.11. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall have a bolted cover. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 1500Y2 Series.



1500Y2 NPT/SW strainers are not furnished with a drain/blow down connection. If required consult factory.

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel	Chrome Moly
Body	A216-WCB	A351-CF8M	A217-WC6
Cover[2]	A216-WCB	A351-CF8M	A217-WC6
Screen[1]	304 SS	304 SS	304 SS
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound	304 SS Spiral Wound
Stud	A193-B7	A193-B8-1	*
Nut	A194-2H	A194-8	*

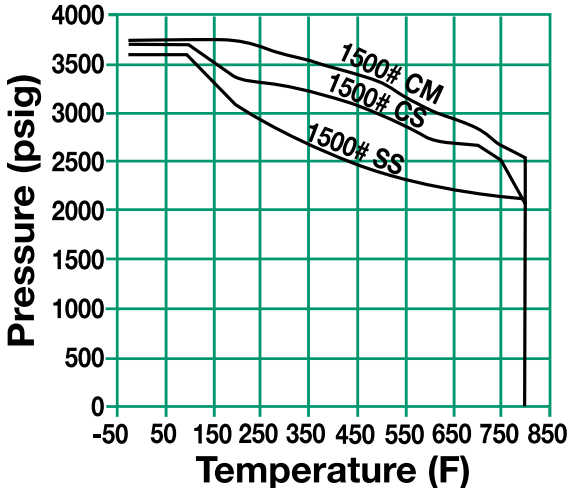
* For Chrome Moly materials of construction contact factory.
1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted

Connections:
CS – 1/2" to 2" NPT or Socketweld
SS – 1/2" to 2" NPT or Socketweld
CM –1/2" to 2" NPT or Socketweld

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
½" – 1½"	1/32" Perf	304 SS
2"	3/64" Perf	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.34



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	WEIGHT
½ (15)	3 15/16 (100)	5 1/8 (130)	6 1/2 (165)	7/8 (22)	7 (3.2)
¾ (20)	4 1/4 (108)	5 29/32 (150)	7 3/32 (180)	1 1/8 (29)	11 (5)
1 (25)	5 (127)	6 11/16 (170)	8 15/32 (215)	1 5/16 (33)	15 (6.8)
1¼ (32)	8 3/8 (213)	7 1/16 (179)	8 5/8 (219)	1 11/16 (43)	22 (10)
1½ (40)	8 3/8 (213)	7 1/16 (179)	8 5/8 (219)	1 15/16 (49)	22 (10)
2 (50)	9 3/8 (238)	7 7/8 (200)	10 (254)	2 7/16 (62)	26 (11.8)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

Request quote

1500Y2 SERIES
CARBON STEEL, STAINLESS STEEL Y STRAINERS FLANGED, RING JOINT, BUTTWELD

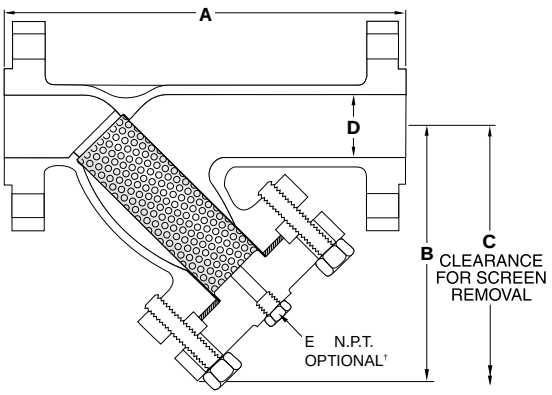
SPECIFICATION

Y Strainer shall be straight flow design with RF Flanged, Ring Joint or Buttweld inlet/outlet connections. The strainer shall be rated to ASME Class 1500 designed in accordance with ASME B16.5 and/or B16.34. The Strainer shall be Cast Carbon Steel or Stainless Steel body and the screen shall be size _____ perf 304 SS. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI 1500Y2 Series.

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug[2]	A105	304 SS
Gasket[1]	304 SS Spiral Wound	304 SS Spiral Wound
Stud	A193-B7	A320-B8
Nut[2]	A194-2H	A194-8

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted



† 1500Y2 strainers are not furnished with a drain/ blowdown connection. If required consult factory.

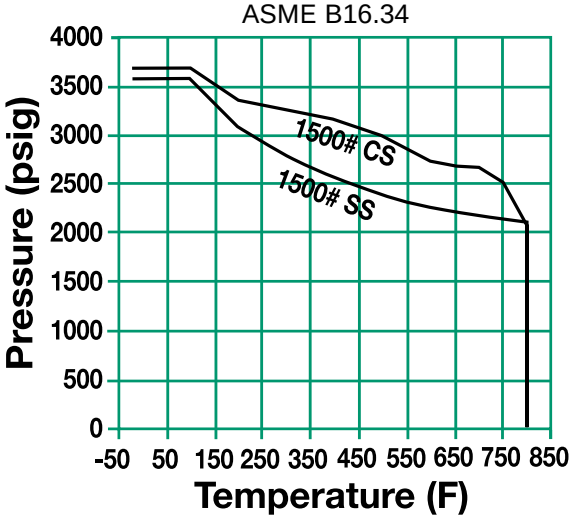
Connections:
CS - 2" to 6" RF Flanged or RTJ
SS – 2" to 6" RF Flanged or RTJ

For Buttweld connection use FY Series on page 48

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 3"	3/64" Perf	304 SS
4" – 6"	1/8" Perf	304 SS

PRESSURE/TEMPERATURE CHART
ASME B16.34



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D	WEIGHT
2 (50)	16¼ (413)	10½ (268)	14⅞ (378)	1⅞ (48)	125 (56.7)
2½ (65)	19⅜ (492)	13⅜ (340)	14½ (368)	2¼ (57)	142 (64.6)
3 (80)	22¼ (565)	14½ (368)	20½ (521)	2¾ (73)	243 (110.2)
4 (100)	25¼ (641)	16⅜ (416)	23 (584)	3⅝ (92)	388 (176)
6 (150)	32 (813)	21¾ (551)	30½ (775)	5⅜ (137)	817 (370.6)

* Consult factory for dimensions

Dimensions shown are subject to change.
Contact factory for certified prints when required.

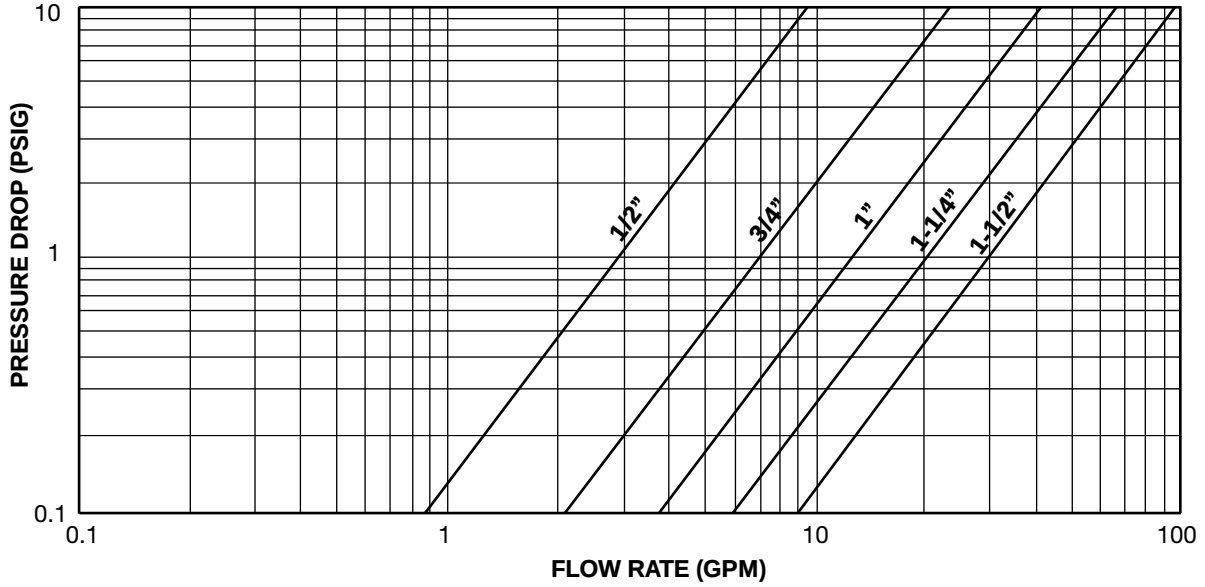
1500Y SERIES

CARBON STEEL, STAINLESS STEEL, CHROME MOLY

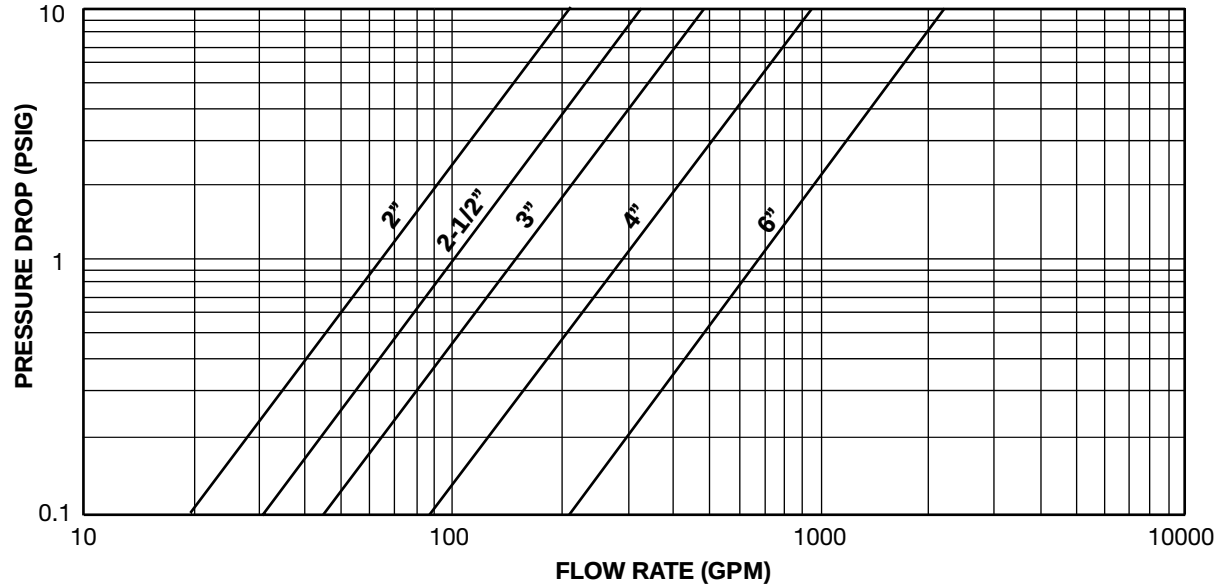
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(SIZES ½" - 1½")



(Sizes 2" - 6")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

1500Y SERIES

CARBON STEEL, STAINLESS STEEL, CHROME MOLY

OPEN AREA RATIOS

with Standard Perforated Screen

1500Y1
Threaded Connections -Threaded Cover

Size	Perf. Diameter (inches)	Opening %	XH Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
½	1/32	28	0.23	5.0	1.4	6.0
¾	1/32	28	0.43	6.6	1.8	4.3
1	1/32	28	0.72	10.6	3.0	4.1

1500Y2
Threaded Connections - Bolted Cover

Size	Perf. Diameter (inches)	Opening %	XH Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
½	1/32	36	0.23	6.2	1.7	7.5
¾	1/32	36	0.43	8.3	2.3	5.4
1	1/32	36	0.72	13.7	3.8	5.4
1¼	1/32	28	1.23	24.9	7.0	5.7
1½	1/32	36	1.77	24.9	6.9	4.0
2	3/64	36	2.95	31.4	11.31	8.6

1500Y2
Flanged

Size	Perf. Diameter (inches)	Opening %	Flanged Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	48.9	17.61	5.6
2½	3/64	36	4.91	83.4	30.02	6.1
3	3/64	36	7.07	109.9	39.56	5.6
4	1/8	40	12.57	165.0	66.01	5.3
6	1/8	40	28.27	314.5	125.78	4.4

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings
Page 54

Basket Burst Pressure
Page 59

FY SERIES
FABRICATED Y STRAINERS

PRESSURES TO 6170 PSIG (425 BARG)
TEMPERATURES TO 800°F (427°C)

- **Custom engineered and fabricated Y strainers**
- **NPT, RF or RTJ, Socketweld and Buttweld connections designed in accordance with ASME B16.34 and B16.5**
- **Standard thru bolt or grooved cover design.**
- **Installation in horizontal or vertical pipelines.**
- **Stainless steel perforated screens are standard**
- **Drain/Blow-off connection furnished with plug**

APPLICATIONS

- Steam, liquid, gas and oil service
- Power industry
- Pulp and paper
- Chemical industry
- Process Equipment
- Metal & Mining
- Water & Waste

APPLICABLE CODES

- Designed/Manufactured to meet ASME B31.1, B31.3 or B31.4 and/or ASME Section VIII, Div. 1.
- Canadian Registration Numbers (CRN) available
- Welders certified to ASME Section IX

MODELS

- FY1 – Standard
- FYZ – Custom Configuration

OPTIONS

- Other materials, sizes and/or configurations
- Quick Opening covers – *See Page 92*
- Other screen, mesh or wedgewire – *See Page 90*
- Vent and/or differential pressure connections
- "U" stamped vessels
- NACE MRO10-75 Certification
- External/Internal coatings
- 600# flange rating and higher
- Gooved end connections
- Oxygen cleaning
- Contact Factory for other Options

FY Series Ordering Code

Model		Material	Inlet Size	Class	Con-nection	Dash	Cover	Perf	Mesh
F	Y	1	C	Q	1	R	-	B	4	4
1	2	3	4	5	6	7	8	9	10	11

Model - Position 1-3
FY1 - Standard
FYZ - Custom Configuration

Material - Position 4
C - Carbon Steel
L - Low Temp CS
V - 304 SS
T - 316 SS
T - 316 SS
M - Monel
H - Hastelloy
Z - Other

Inlet Size - Position 5
H - 2"
J - 2-1/2"
K - 3"
M - 4"
N - 5"
P - 6"
Q - 8"
R - 10"
S - 12"
T - 14"
U - 16"
V - 18"
W - 20"
X - 22"
Y - 24"
1 - 28"
2 - 30"
3 - 36"
4 - 40"
Z - Other

Class - Position 6
1 - 150
3 - 300
4 - 600
5 - 900
6 - 1500
7 - 2500
Z - Other

Connection - Position 7
B - Buttweld[1]
F - Flat Face Flange
G - Grooved
N - NPT
J - Ring Joint Flange
R - Raised Face Flange
K - Socket Weld
Z - Other

1. For Buttweld connection please specify mating pipe schedule.

Dash - Position 8

Cover - Position 9
B - Bolted
C - Bolted w/C-Clamp
D - Bolted w/Davit
J - Bolted w/Hinge
G - Grooved
H - T - Bolt Hinged
T - Threaded Hinged
Y - Yoke Hinged
Z - Other

Perf - Position 10
304SS Material Standard[2]
A - None
B - 3/64"
1 - 1/32"
2 - 1/16"
3 - 3/32"
4 - 1/8"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"
Z - Other

2. For other screen materials, contact factory.

Mesh[2] - Position 11
A - None
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120
Z - Other

For any variations, use the part Numbering system above but clearly indicate the additional requirements.

FY SERIES
FABRICATED Y STRAINERS

SPECIFICATION

Y Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII Div. 1. The Strainer body shall be fabricated steel or other specified material. The screen shall be size _____ perf Stainless Steel. The strainer shall have a bolted cover furnished with a drain connection and plug as standard. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The Y Strainer shall be SSI FY___ Series.

MATERIALS OF CONSTRUCTION

(Carbon Steel shown*)

Shell & Nozzles	SA53S/B / A106-B
Flanges	SA105
Coupling/threadolets	SA105
Plug	SA105
Screen Retainer Ring	A36
Screen[1]	304 SS
Gasket[1]	304 SS Spiral Wound
Stud	SA193-B7
Nut	SA194-2H

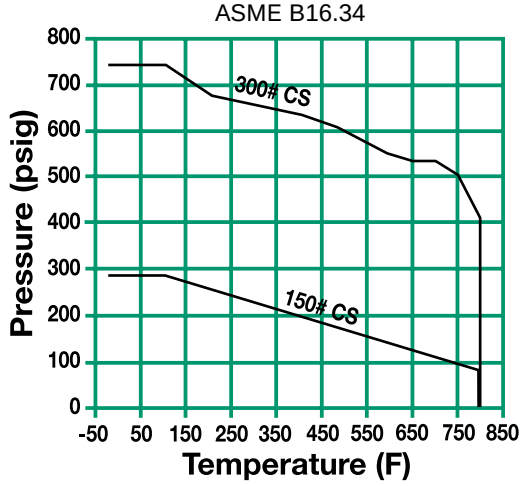
* Other Materials Available. Consult Factory

1. Recommended Spare Parts

Materials specification will change when NACE MR01-75 is specified.

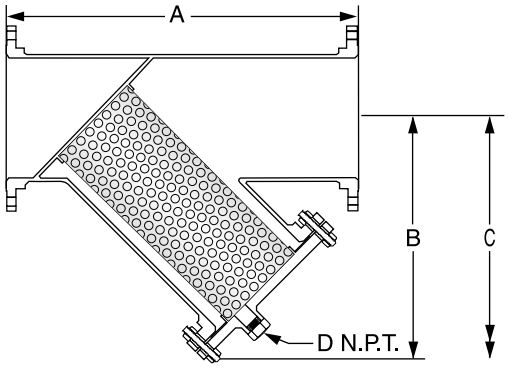
PRESSURE/TEMPERATURE CHART

ASME B16.34



For Quick Opening Covers Ratings *see page 92*

For higher pressure classes and other materials, consult factory.



Shown with Bolted Cover

Connections*:
2-24" NPT, Socketweld,
RF, FF, RTJ or Buttweld

* For additional sizes consult factory.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2"-12"	1/8" Perf	304 SS
14"-24"	3/16" Perf	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

150# Shown - Consult Factory for other ratings

SIZE	A	B	C	D	WEIGHT	
					Cover	Unit
2 (50)	10 13/16 (275)	8 1/4 (210)	13 1/4 (337)	1/2 (15)	5 (2)	28 (13)
2 1/2 (65)	13 3/8 (340)	10 1/4 (260)	16 7/16 (418)	1 (25)	9 (4)	81 (37)
3 (80)	13 3/8 (340)	10 1/4 (260)	16 7/16 (418)	1 (25)	9 (4)	81 (37)
4 (100)	14 3/4 (375)	10 1/2 (267)	16 3/4 (425)	1 1/2 (4)	17 (8)	85 (39)
5 (125)	17 1/4 (438)	12 1/2 (318)	20 (508)	1 1/2 (40)	20 (9)	110 (50)
6 (150)	22 (559)	14 (356)	22 7/16 (570)	2 (50)	26 (12)	145 (66)
8 (200)	24 (610)	17 3/4 (451)	28 7/16 (722)	2 (50)	45 (20)	256 (116)
10 (250)	31 1/2 (800)	22 (559)	35 1/4 (895)	2 (50)	70 (32)	380 (172)
12 (300)	32 3/4 (832)	25 (635)	40 (1016)	2 (50)	110 (50)	700 (317)
14 (350)	39 3/4 (1010)	27 (686)	43 1/4 (1099)	2 (50)	140 (63)	750 (340)
16 (400)	45 1/4 (1149)	30 7/8 (784)	49 1/2 (1257)	2 (50)	180 (82)	905 (410)
18 (450)	48 1/2 (1232)	33 7/8 (861)	54 1/4 (1378)	2 (50)	220 (100)	1125 (510)
20 (500)	53 3/4 (1365)	39 (991)	62 1/2 (1588)	2 (50)	285 (129)	1415 (641)
24 (600)	64 (1626)	44 (1118)	70 1/2 (1791)	2 (50)	430 (195)	1825 (827)

Dimensions shown are subject to change.
Consult factory for certified drawings when required.

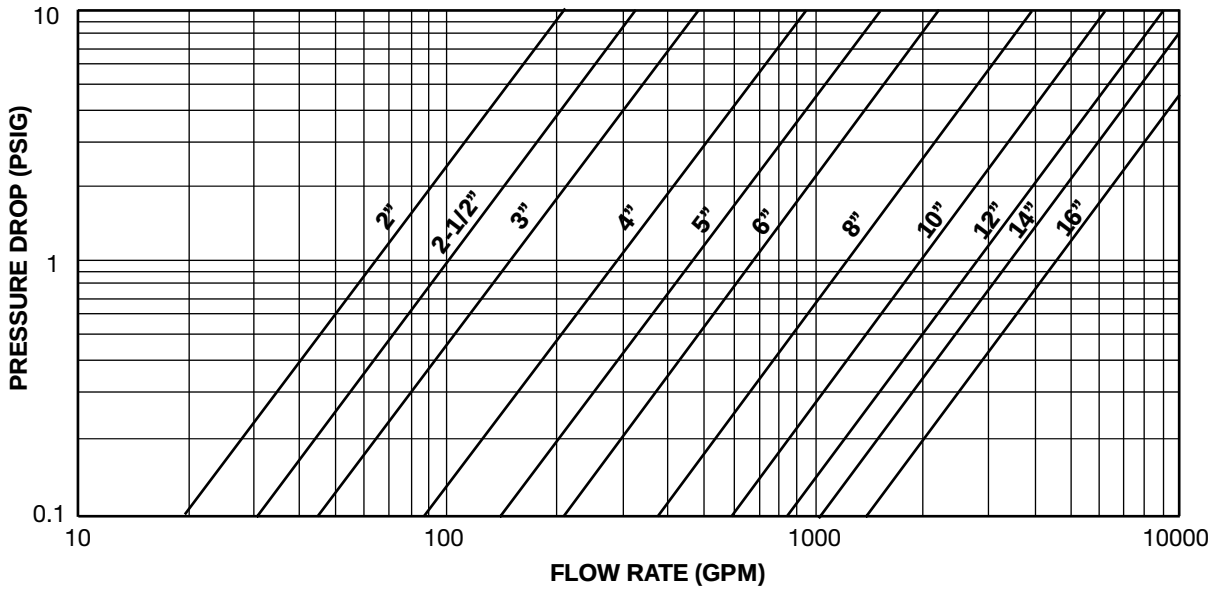
FY SERIES

FABRICATED Y STRAINERS

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 2" - 16")



* For Gas, Steam or Air service, consult factory.

Steam Service Pressure Drop Page 57

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 56

Correction Factors for Clogged Screens Page 56

FY SERIES
FABRICATED Y STRAINERS
OPEN AREA RATIOS
with Standard Perforated Screen

Size	Perf. Diameter (inches)	Opening %	Std Pipe Nominal Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	1/8	40	3.4	39	16	4.6
3	1/8	40	7.4	77	31	4.2
4	1/8	40	12.7	135	54	4.2
5	1/8	40	20.0	160	64	3.2
6	1/8	40	28.9	215	86	3.0
8	1/8	40	50.0	375	150	3.0
10	1/8	40	78.9	545	218	2.8
12	1/8	40	113.1	785	314	2.8
14	3/16	50	140.5	900	360	2.6
16	3/16	50	185.7	1210	484	2.6
18	3/16	50	237.1	1560	624	2.6
20	3/16	50	294.8	1950	780	2.6
24	3/16	50	429.1	2765	1106	2.6

OAR = Free Screen Area / Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

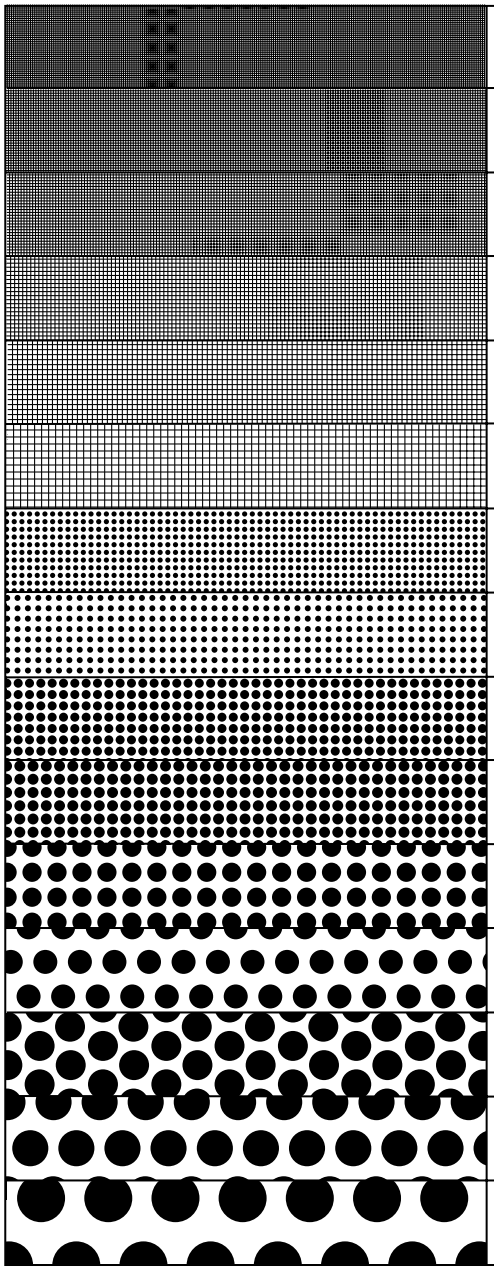
Other Screen Openings Page 54

Basket Burst Pressure Page 59

NOTES:

Y-Strainer Technical Information

SCREEN OPENINGS



FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

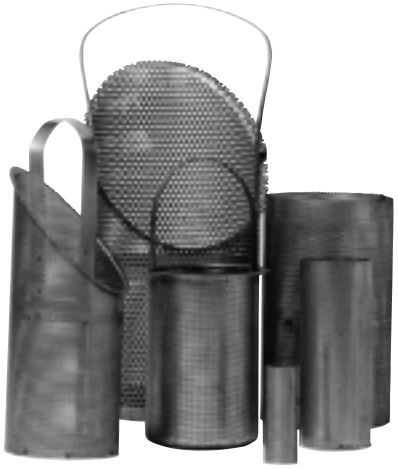
Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

Y STRAINER

REPLACEMENT CYLINDRICAL SCREENS



Spence has screens and baskets for all makes of Y, basket and duplex strainers. The range of materials and size of units is unlimited.

Spence provides baskets manufactured from:

- **Perforated Plate**
- **Mesh or Mesh/Perf. combination**
- **Wedge Wire**
- **Electron Beam Small Hole Perforated Plate**

Using the above processes or combination thereof, Spence can provide screens and baskets suitable for a wide range of applications.

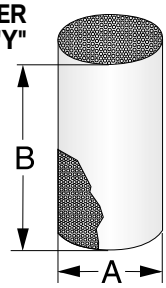
SCREEN/BASKET CHECKLIST

Kindly photocopy this page and fill out the pertinent information.

Performance Requirements

Description	Customers Requirement
Required Level of Filtration =	
Material of Construction =	
Minimum Specified Burst Pressure =	
Flow Direction =	
Other =	

CYLINDRICAL STRAINER STYLE "Y"



Dimensional Requirements

Description		Customers Requirement
Style	Y	
Screen Outer Diameter	A =	
Screen Height	B =	

Y STRAINER

PRESSURE DROP CORRECTION FACTORS

Mesh Lined Baskets and/or Fluids with a Viscosity other than Water

Centistokes	SSU	Unlined Perforated Basket	20 Mesh Lined Basket	40 Mesh Lined Basket	60 Mesh Lined Basket	80 Mesh Lined Basket	100 Mesh Lined Basket	200 Mesh Lined Basket
2	30 (water)	1	1.05	1.2	1.4	1.6	1.7	2
100	500	1.6	1.7	1.9	2.1	2.4	2.6	3.1
216	1000	1.7	2	2.2	2.4	2.6	2.8	3.3
433	2000	1.9	2.2	2.4	2.7	2.9	3.2	3.8
650	3000	2	2.3	2.6	2.9	3.2	3.5	4.1
1083	5000	2.2	2.6	3	3.5	4	4.5	5.3
2200	10000	2.5	3	3.5	4.2	5	6	7.1

1) Obtain water pressure drop from graphs on appropiate product page.
2) Multiply the pressure drop obtained from (1) by the specific gravity of the liquid.
3) Multiply the pressure drop from (2) by the appropiate correction factor for the mesh liner and/or viscosity.

Example

Model: **150Y2**
Size: **4"**
Body: **Carbon Steel**
Filtration: **1/8" perforated screen 40 Mesh lines**
Flow rate: **200 GPM**
Fluid: **Water**
SG: **1**
Viscosity: **30 SSI**

Answer

A) From Pressure Drop Chart *on page 17* pressure drop of water is .48 psid
B) Multiply by specific gravity; .48 x 1 = .48 psid
C) From chart above, multiply answer from B) by correction factor .48 x 1.2 (correction factor) =.576 psid

CORRECTION FACTORS FOR CLOGGED SCREENS

% Clogged	Ratio of Free Screen Area to Pipe Area						
	10:1	8:1	6:1	4:1	3:1	2:1	1:1
10							3.15
20						1.15	3.9
30						1.4	5
40						1.8	6.65
50					1.25	2.5	9.45
60				1.15	1.8	3.7	14.5
70				1.75	2.95	6.4	26
80		1.1	1.75	3.6	6.25	14	58
90	2.3	3.45	6	13.5	24	55	

* Multiply values obtained from Pressure Drop Charts by the appropriate values shown below.

Example

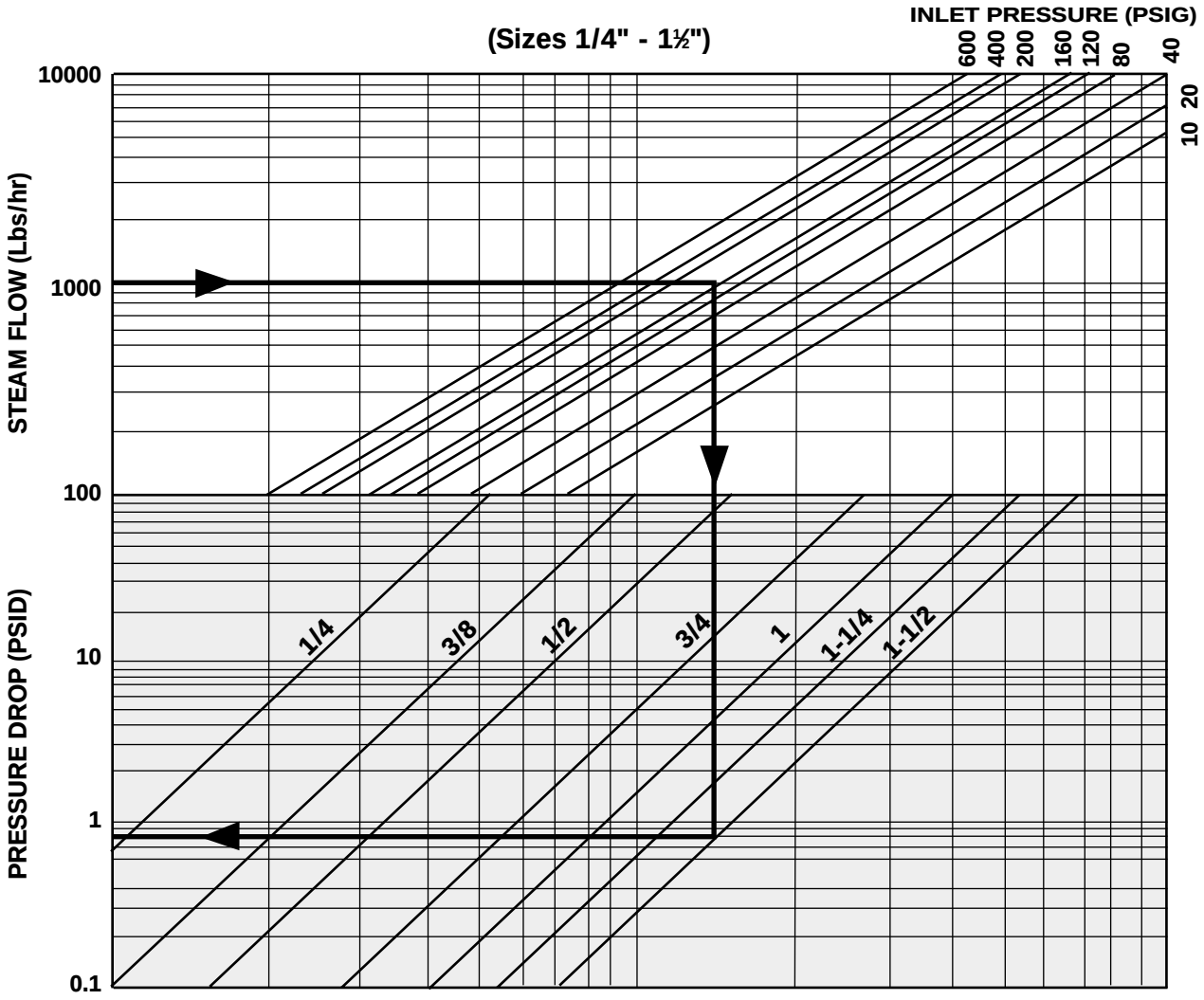
Strainer Size: 6"
Model: 150Y2
Body: Carbon Steel
Filtration: 1/8" Perf.
Flow rate: 1000 GPM
Service: Water
% Clogged: 60%

Answer

A) The Pressure Drop Chart *on page 17* indicates a drop of 2.2 psid with standard screen.
B) The Effective Area Chart indicates a ratio of 3.0 free area to pipe area.
C) Using Chart above we read the correction factor of 3:1 to be 1.8 at 60% clogged.
D) Total pressure drop equals 2.2 x 1.8 = 3.96 psid.

Y STRAINER
PRESSURE DROP
SATURATED STEAM

(Sizes 1/4" - 1½")



Notes: 1. Pressure drop curve is based on saturated steam flow with standard screens.
See page 56 for correction factors to be used with other fluids and/or screen openings.
2. Chart can be used for air and gas by using the following formula:

$$Qs = 0.138Qg\sqrt{(460+t)\ s.g.} \quad \left\{\frac{DP}{P_2}<1.0\right\}_{\text{FOR NON-CRITICAL FLOW}}$$

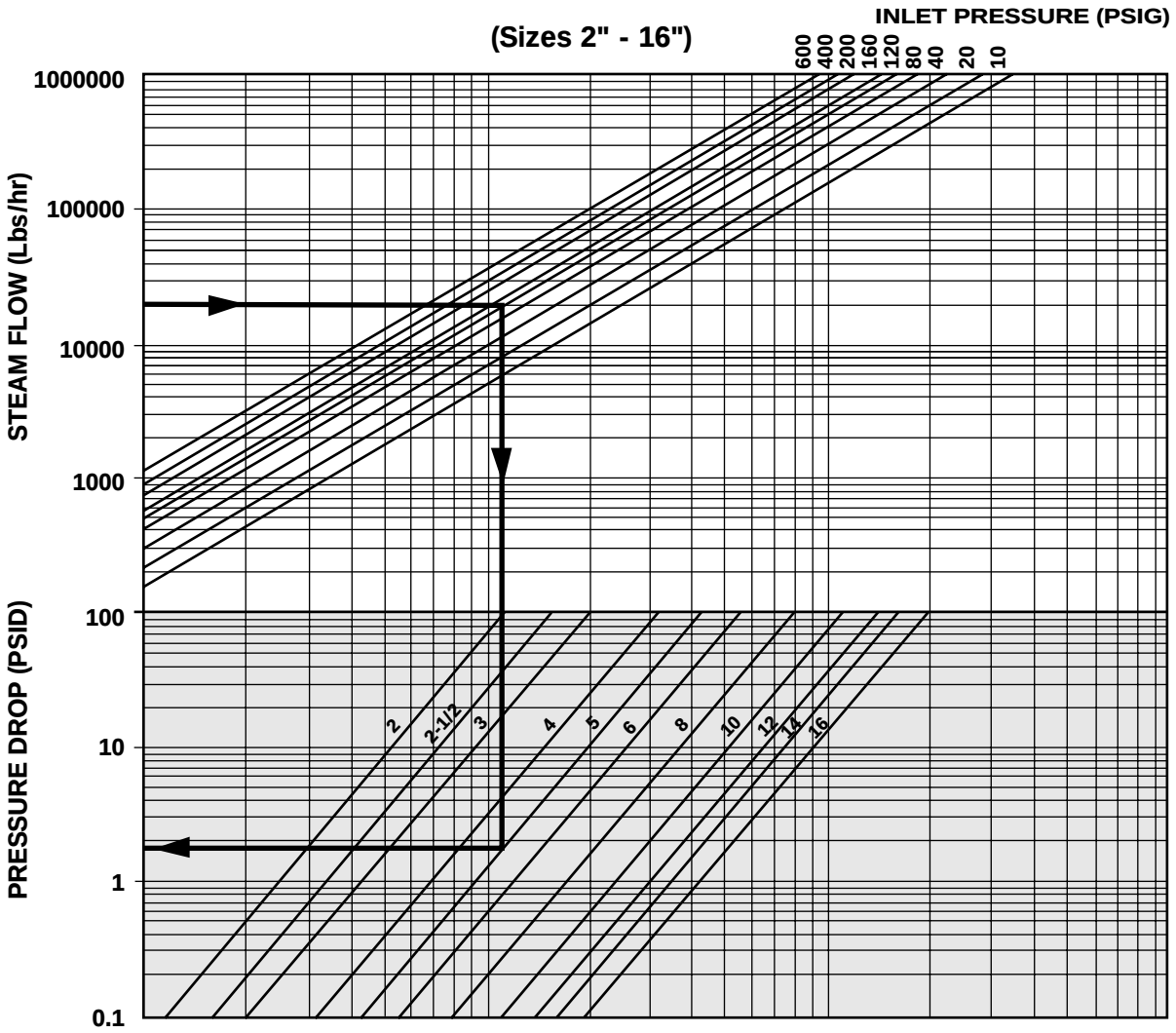
where;
Qs = Equivalent Steam Flow, lbs./hr.
Qg = Air or gas flow, SCFM.
t = Temperature, °F.
s.g. = Specific gravity (s.g. = 1 for air.)
DP = Pressure Drop, psid
P_2 = Outlet Pressure

Example:
Service: Saturated Steam Flow
Pressure: 160 psig
Steam Flow: 1000 Lbs/hr
Size: 1-1/2”

- Locate steam flow
- Follow horizontal line to required pressure.
- Follow vertical line downwards to required strainer size.
- Follow horizontal line to read pressure drop.
- Pressure drop equals 0.8 psid.

Y STRAINER

PRESSURE DROP
SATURATED STEAM



Notes: 1. Pressure drop curve is based on saturated steam flow with standard screens.
See page 56 for correction factors to be used with other screen openings.
2. Chart can be used for air and gas by using the following formula:

$$Qs = 0.138 Qg \sqrt{\frac{(460+t)\ s.g.}{DP}} \left\{ \frac{DP}{P2} < 1.0 \right\}$$

FOR NON-CRITICAL FLOW

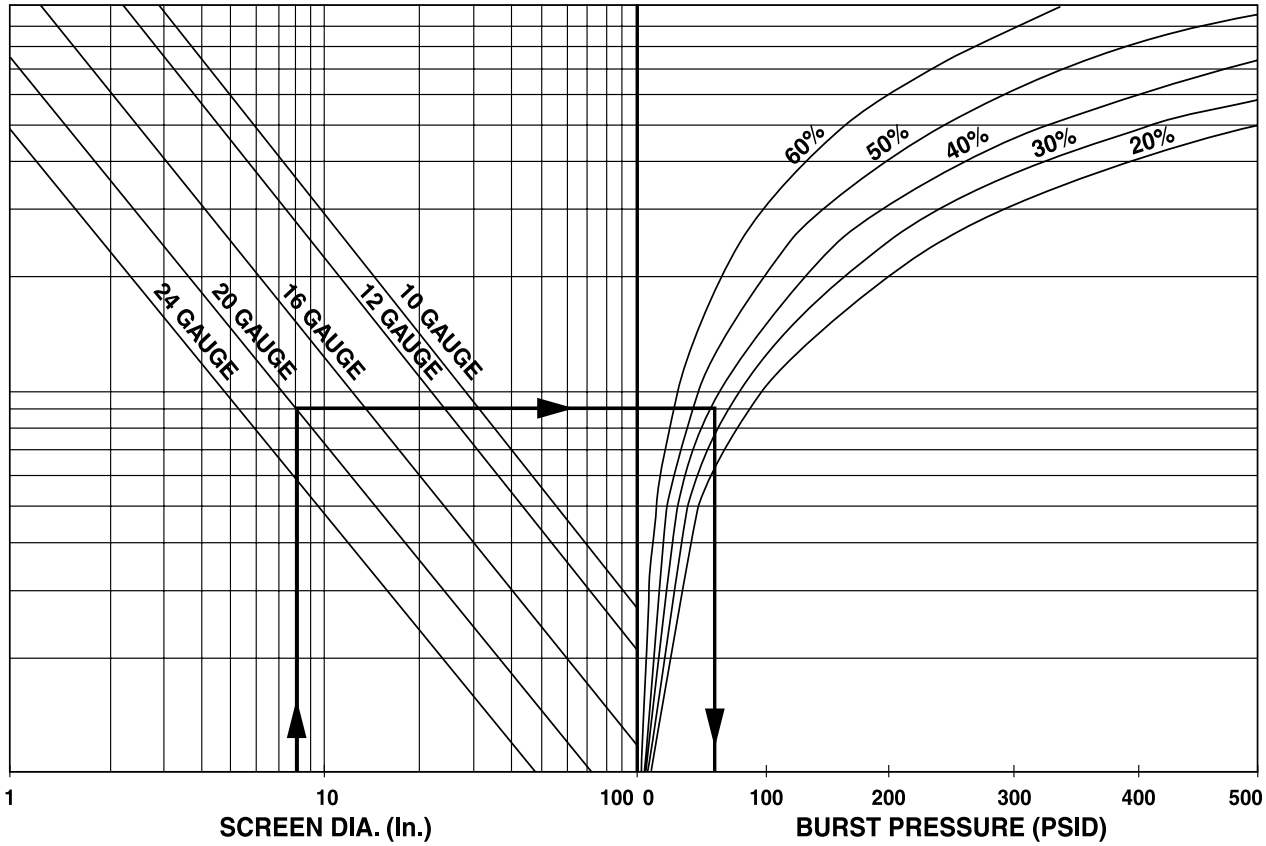
where;
Qs = Equivalent Steam Flow, lbs./hr.
Qg = Air or gas flow, SCFM.
t = Temperature, °F.
s.g. = Specific gravity (s.g. = 1 for air.)
DP = Pressure Drop, psid
P2 = Outlet Pressure

Example:

Service:	Saturated Steam Flow
Pressure:	120 psig
Steam Flow:	20,000 Lbs/hr
Size:	5”

- Locate steam flow
- Follow horizontal line to required pressure.
- Follow vertical line downwards to required strainer size.
- Follow horizontal line to read pressure drop.
- Pressure drop equals 1.8 psid.

Y STRAINER
SCREEN BURST PRESSURE



Notes:

1. The above chart is for use with perforated plate and based on the formula:

$$P = \frac{St}{R - 0.4t}$$

SOURCE: ASME Section VIII, Div. 1, Appendix 1.

P = Burst pressure, psid
S = Reduced allowable stress, psi
t = Thickness of perforated plate, in.
R = Outside radius of screen, in.

2. The above chart is based on a screen material of stainless steel and is valid for operating temperatures up to 100°F The chart may be used for higher temperatures however it will result in a safety factor reduction. (At 100°F the charts safety factor is approximately four (4), at 1000°F the chart safety factor is reduced to approximately two (2). It is the responsibility of the user to determine an acceptable safety factor.
3. The chart may be used for carbon steel at an approximate 25% reduction in safety factor.
4. See Screen Openings Chart for % Open Area's of inventoried perforated plate.

Example:	
Strainer Size:	8"
Screen Thickness:	20 Gauge
Screen Perforations:	0.125" (40% O.A.)

A) Locate screen diameter (assume a 8" diameter screen)
B) Follow vertical line to gauge thickness.
C) Follow horizontal line to required perforation open area.
D) Follow vertical line downward to read burst pressure.
E) Burst pressure equals 60 psid approx.

Y STRAINER

STRAINER CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation Above _____ Below _____

    Left side facing inlet _____ Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____

State _____ Zip Code _____

Telephone (_____) _____

Fax (_____) _____

Y STRAINER
INSTALLATION AND MAINTENANCE INSTRUCTIONS

Strainer Installation Instructions

- Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.
- For horizontal and vertical pipelines, the strainer should be installed so that the blow-down drain connection is pointed downward.
- For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise motion. Threaded end strainers should use an appropriate sealant.
- Once installed, increase line pressure gradually and check for leakage around joints.
- If the strainer is supplied with a start-up screen, monitor pressure drop carefully.

Screen Removal Instructions

- Drain piping.
- Vent line to relieve pressure.
- Loosen cover and open to access screen.
- Remove, clean and replace screen in original position (Note: In some instances, a high pressure water jet or steam may be required for effective cleaning)
- Inspect cover gasket for damage. If necessary, replace. (Note: If spiral wound gaskets have been used, they must be replaced and can not be used again).
- Tighten cover. The strainer is ready for line start-up.

CAUTION SHOULD BE TAKEN DUE TO POSSIBLE EMISSION OF PROCESS MATERIAL FROM PIPING. ALWAYS ENSURE NO LINE PRESSURE EXISTS WHEN OPENING COVER.

Maintenance Instructions

For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down line and follow the “Screen Removal Instructions” above. A pressure gauge installed before and after the strainer in-line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

Trouble Shooting Guides and Diagnostic Techniques

- After pressurizing, inspect cover and other joints for leakage. Gasket replacement or cover tightening is necessary if leakage occurs.
- If the required filtration is not taking place, ensure the screen is installed in the correct position, that being flush to the screen seating surfaces.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

NOTES:

Basket Strainers

Pressures to 3705 PSIG
Temperatures to 800ºF

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Metals and Mining
- Water and Waste Water
- Pulp and Paper

Features

- Cast or Fabricated construction
- Filtration down to 40 microns
- Large strainer baskets
- Both compact and high capacity units are available

Materials of Construction

- Cast Iron
- Bronze
- Carbon Steel
- Stainless Steel
- Other materials upon request

End Connections

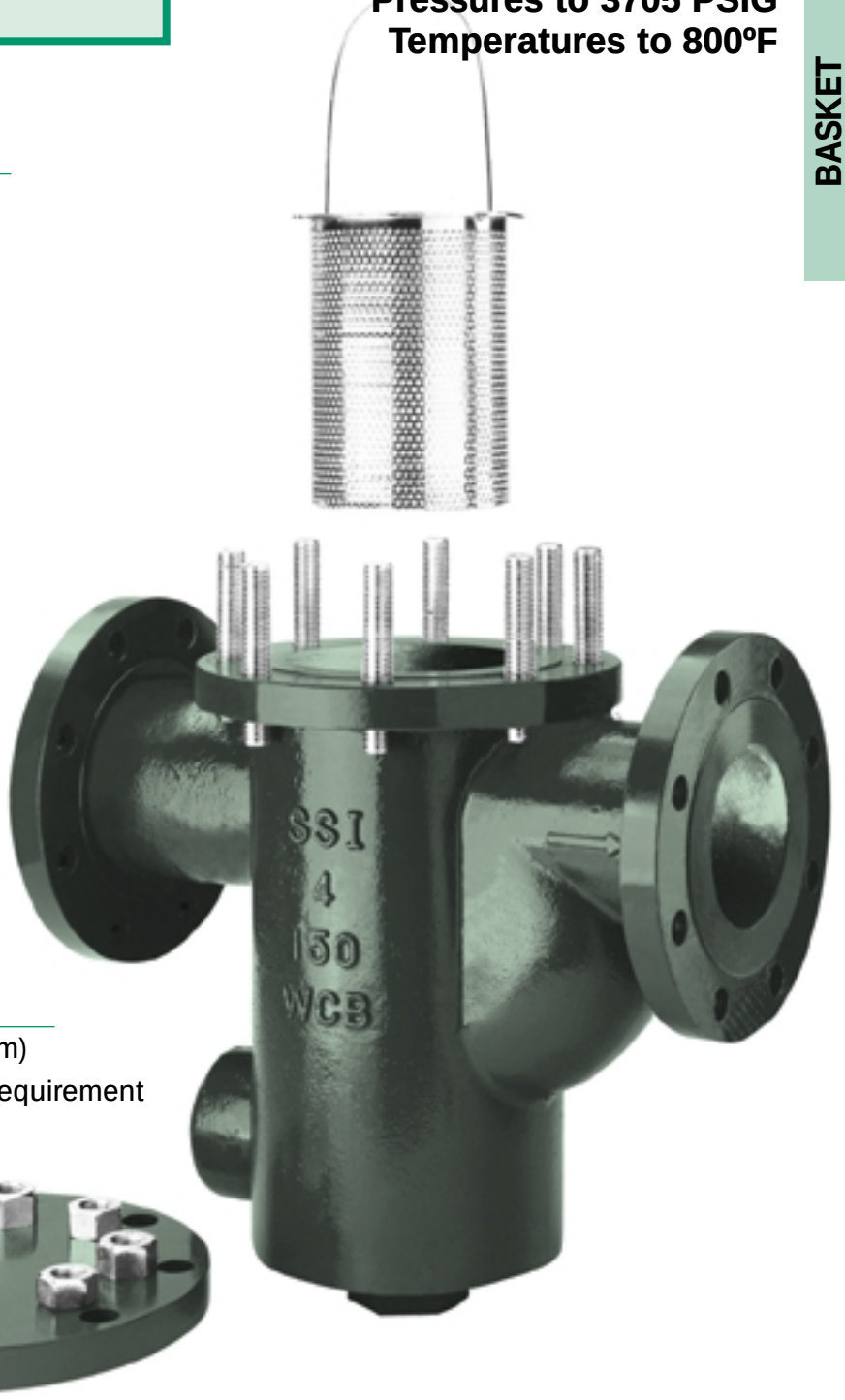
- Flat Faced
- Raised Face
- Buttweld
- Threaded (NPT)
- Socketweld

Sizes

- Cast - 1/2" (15mm) up to 20" (500mm)
- Fabricated - custom sizes to meet requirement

Ratings

- ASME Class 125
- ASME Class 150
- ASME Class 300
- ASME Class 600
- ASME Class 900
- ASME Class 1500



Request quote

125B SERIES
CAST IRON
FLANGED BASKET STRAINERS

PRESSURES TO 200 PSIG (13.8 BARG)
TEMPERATURES TO 450°F (232°C)

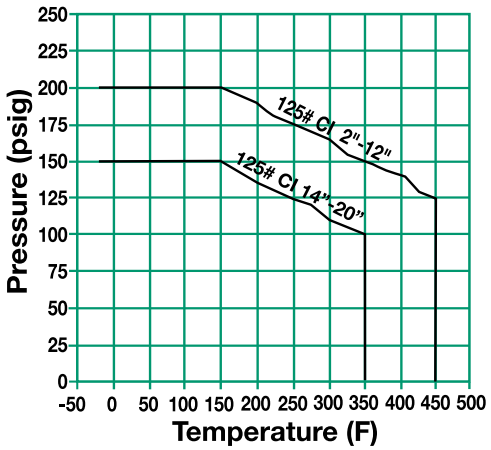
- **ASME Class 125 rated strainers**
- **FF connections designed in accordance with ASME B16.1**
- **Angular basket for straight through flow**
- **Stainless steel perforated basket is standard**
- **Recommended minimum straining level is 250 microns**
- **NPT drain connection furnished with plug as standard**

APPLICATIONS

- Water, Oil Systems
- Other Liquid Systems
- Protection of Pumps, Meters, Valves and Similar Equipment

PRESSURE/TEMPERATURE CHART

ASME B16.1



For Quick Opening Covers Ratings, *see page 91.*

MODELS

- 125B1F - Straight Flow

OPTIONS

- Other screen perforations and mesh liners
- Quick Opening Covers - *See page 91*

APPLICABLE CODES (Designed in accordance with)

- ASME B16.1

Canadian Registration OE10279.5C

125B1 Series Ordering Code

Inlet Size					Model						Body Material	Dash	Perf	Mesh	Add'l Requirements
0	8	0	0	-	1	2	5	B	1	F	I	-	4	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"
1800 - 18"
2000 - 20"

Dash - Position 5

Model - Position 6 - 11
125B1F - Straight Flow

Body Material - Position 12
I - Cast Iron

Dash - Position 13

Perf[1] - Position 14
304 SS Material[2]
B - 3/64" (std < 4")
4 - 1/8" (std => 4")
A - None
1 - 1/32"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"
Z - Other

1. Standard screens
All 2"-3"—3/64" perf,
All 4"-20"— 1/8" perf.

Mesh[2] - Position 15
Leave Blank If not Required (Std. All)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120
Z - Other

2. For other screen material, contact factory.

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
E1 - 1/4" Vent
E2 - 3/8" Vent
E3 - 1/2" Vent
F - Silicon Free
G - Special Gaskets
T - Special Testing
V1- Clamp Cover
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

For any variations, use the part numbering system above but clearly indicate the additional requirement.

125B SERIES
CAST IRON
FLANGED BASKET STRAINERS

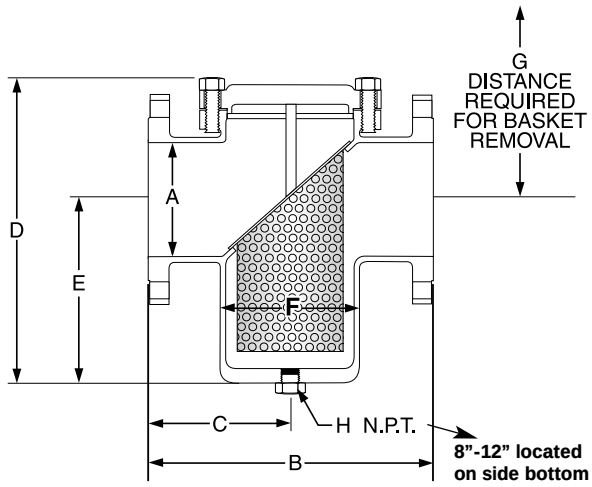
SPECIFICATION

Basket Strainer shall have straight flow with an angular basket. The Basket Strainer shall be cast iron rated to ASME Class 125 designed in accordance with B16.1. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI 125B Series.

MATERIALS OF CONSTRUCTION

Body .....Cast Iron A126-B
Cover .....Cast Iron A126-B
Screen[1] .....304 SS
Plug[2] .....Cast Iron A126-B
Gasket[1] .....Graphite[3]
Bolt/Stud[2] A307-B
Nut[2] A563

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted
3. Gasket for bolted cover. *For Quick Opening Covers see page 91*



Connections: 2"– 20" FF Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 3"	3/64 Perf.	304 SS
4" - 20"	1/8 Perf.	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D*	E	F	G	H**	WEIGHT	
									Cover	Unit
2 (50)	2 (51)	8⅜ (206)	4 1/16 (103)	9 1/16 (230)	5 (127)	2 15/16 (75)	11¾ (298)	½ (15)	5 (2.3)	23 (10)
2½ (65)	2½ (64)	8¼ (210)	4⅛ (106)	9 13/16 (249)	6 (152)	4 (102)	13¼ (337)	¾ (20)	7 (3.2)	33 (15)
3 (80)	3 (76)	9⅞ (251)	4 15/16 (125)	12 3/16 (310)	7⅛ (181)	5 (127)	15⅜ (391)	¾ (20)	9 (4)	44 (20)
4 (100)	4 (102)	11½ (292)	5¾ (146)	13⅝ (346)	8 (203)	5 13/16 (148)	17¾ (451)	1 (25)	13 (6)	67 (30)
5 (125)	5 (127)	13⅛ (333)	6 9/16 (167)	14 9/16 (370)	8½ (216)	7 1/16 (179)	20½ (521)	1 (25)	20 (9)	88 (40)
6 (150)	6 (152)	14⅞ (378)	7 1/16 (189)	15¾ (400)	9 (229)	7 15/16 (202)	23 (584)	1 (25)	26 (12)	120 (54)
8 (200)	8 (203)	18 11/16 (475)	9⅜ (238)	19 15/16 (506)	12 (305)	9 27/32 (250)	30 (762)	1½ (40)	45 (20)	220 (100)
10 (250)	10 (254)	20⅛ (511)	10 (254)	26 (660)	13 3/16 (335)	12 5/16 (313)	35½ (902)	1½ (40)	70 (32)	353 (160)
12 (300)	12 (305)	26¾ (679)	13⅜ (340)	30⅛ (765)	16 7/32 (412)	15 11/32 (390)	42½ (1080)	2 (50)	110 (50)	523 (237)
14 (350)	14 (356)	30¼ (768)	15⅛ (384)	37½ (953)	22 (559)	18 (457)	53 (1346)	1½ (40)	140 (64)	815 (370)
16 (400)	16 (406)	33⅛ (841)	16⅝ (422)	39½ (1003)	22⅞ (581)	20¾ (527)	55⅝ (1413)	2 (50)	180 (82)	1041 (472)
18 (450)	18 (457)	38½ (978)	19¼ (489)	40 (1016)	19 (483)	24¼ (616)	61 (1549)	2 (50)	220 (100)	1446 (656)
20 (500)	20 (508)	41⅜ (1051)	20 11/16 (525)	46¼ (1175)	23¾ (591)	26½ (673)	69¼ (1759)	2 (50)	285 (129)	1980 (898)

* For models with Quick Opening Cover, consult factory. For sizes 2"-6", allow clearance for bottom drain bolt removal.

** Side drain is standard on sizes 8" and larger. Bottom drain is optional.

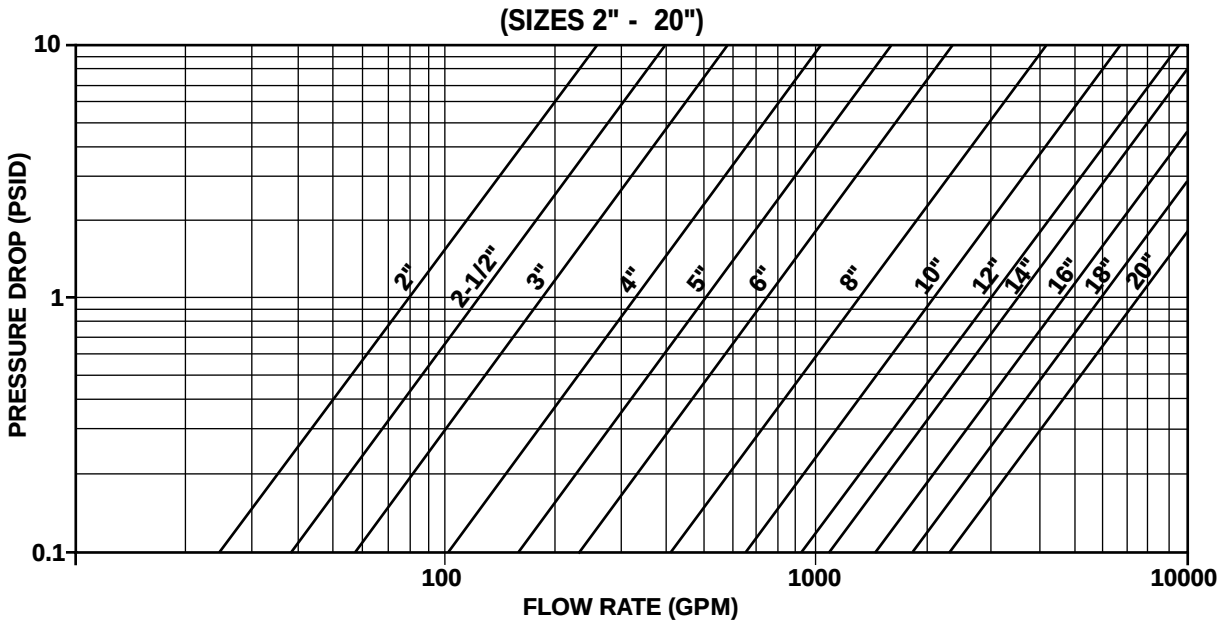
Dimensions shown are subject to change. Consult factory for certified drawings.

125B SERIES

CAST IRON FLANGED BASKET STRAINERS

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*



* For Gas, Steam or Air service, consult factory.

125B SERIES

CAST IRON FLANGED BASKET STRAINERS

OPEN AREA RATIOS

with Standard Perforated Screen

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	29.4	10.6	3.5
2½	3/64	36	4.91	43.6	15.7	3.3
3	3/64	36	7.07	75.0	27.0	3.9
4	1/8	40	12.57	104.4	41.8	3.3
6	1/8	40	28.27	177.3	70.9	2.5
8	1/8	40	50.27	307.0	122.8	2.4
10	1/8	40	78.54	450.0	180.0	2.3
12	1/8	40	113.1	688.5	275.4	2.4
14	1/8	40	153.94	1019.1	407.6	2.6
16	1/8	40	201.06	1248.6	499.4	2.5

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings Page 90

Basket Burst Pressure Page 96

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 95

Correction Factors for Clogged Screens Page 95

NOTES:

150B1 SERIES
CAST BRONZE, CARBON STEEL, STAINLESS STEEL FLANGED BASKET STRAINERS

PRESSURES TO 285 PSIG (19.7 BARG)
TEMPERATURES TO 406°F (207°C)

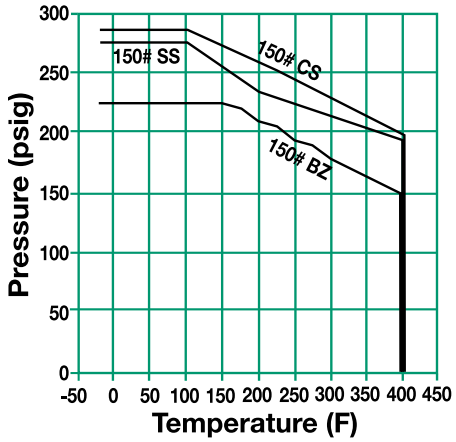
- **ASME Class 150 rated strainer**
- **RF or FF connections designed in accordance with ASME B16.5, B16.34 and B16.24**
- **Cover flange in accordance with ASME Section VIII, Div 1 Appendix II and ASME B16.5**
- **Angular basket for straight through flow**
- **Stainless steel perforated basket is standard**
- **Recommended minimum straining level is 250 microns**
- **NPT drain connection furnished with plug as standard**

APPLICATIONS

- Water, Oil Systems
- Other Liquid Systems
- Protection of Pumps, Meters, Valves and Similar Equipment

PRESSURE/TEMPERATURE CHART

ASME B16.34, ASME B16.24



For Quick Opening Covers Ratings see page 91.

MODELS

- 150B1F – Straight Flow

OPTIONS

- Other screen perforations and mesh liners
- Quick Opening Covers - *See page 91*

APPLICABLE CODES (Designed in accordance with)

- ASME B16.5
- ASME B16.24
- ASME B16.34

Canadian Registration OE10274.5C

150B1 Series Ordering Code

Inlet Size				Dash	Model						Body Material	Dash	Perf	Mesh	Add'l Require-ments
0	6	0	0	-	1	5	0	B	1	F	C	-	4	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

Model - Position 6 - 11
150B1F - Straight Flow

Body Material - Position 12
B - Bronze
C - Carbon Steel
T - Stainless Steel

Dash - Position 13

Perf[1] - Position 14
304 SS Material[2]
B - 3/64"
4 - 1/8"
A - None
1 - 1/32"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"
Z - Other

Mesh[2] - Position 15
Leave Blank If not Required (Std all)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120
Z - Other

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
E1 - 1/4" Vent
E2 - 3/8" Vent
E3 - 1/2" Vent
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
V1- Clamp Cover
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

For any variations, use the part numbering system above but clearly indicate the additional requirement.

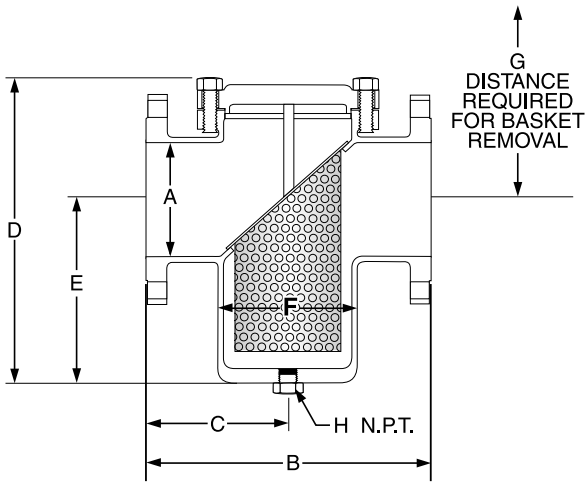
1. Standard Screens: All 2"-3"— 3/64" perf, All 4"-12" — 1/8" perf.

2. For other screen material, contact factory.

150B1 SERIES
CAST BRONZE, CARBON STEEL, STAINLESS STEEL FLANGED BASKET STRAINERS

SPECIFICATION

Basket Strainer shall have straight flow with an angular basket. The Basket Strainer shall be _____ body material rated to ASME Class 150 in accordance with ASME B16.5, B16.24 and/or B16.34. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI 150B1 Series.



Connections
BZ: 2"– 6" FF Flanged
CS, SS: 2"–12" RF Flanged

MATERIALS OF CONSTRUCTION

	Bronze	Carbon Steel	Stainless Steel
Body	Bronze B62	A216-WCB	A351-CF8M
Cover	Bronze B62	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS	304 SS
Plug[2]	Bronze B16	A105	A182-316
Gasket[1]	Teflon[3]	Teflon[3]	Teflon[3]
Bolt/Stud[2]	Bronze B16	A193-B7	A193-B8-1
Nut[2]	Nonferrous	A194-2H	A194-B

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted.
3. Gasket for bolted cover. *For Quick Opening Covers Ratings see page 91.*

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 3"	3/64 Perf.	304 SS
4" - 12"	1/8 Perf.	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C		D*		E		F		G		H		WEIGHT	
			Stl.	Bz.	Stl.	Bz.	Stl.	Bz.	Stl.	Bz.	Stl.	Bz.	Stl.	Bz.	Cover	Unit
2 (50)	2 (51)	8⅛ (206)	4 1/16 (103)	4 1/16 (103)	9 9/16 (243)	8 9/16 (218)	5⅝ (143)	5 (127)	3¼ (83)	2⅞ (73)	12½ (318)	11¾ (298)	1 (25)	1/2 (13)	5 (2.3)	29 (13)
2½ (65)	2½ (64)	8¾ (222)	4⅜ (111)	4⅜ (111)	10 13/16 (275)	8 15/16 (227)	5 15/16 (152)	6¼ (159)	3⅜ (86)	3⅞ (98)	14 (356)	13¾ (349)	1 (25)	3/4 (19)	7 (3.2)	33 (15)
3 (80)	3 (76)	9⅞ (251)	4 15/16 (125)	4 15/16 (125)	12½ (318)	11¼ (286)	7 9/16 (192)	7⅛ (181)	3 9/16 (90)	4¾ (121)	15⅜ (391)	15⅜ (391)	1 (25)	3/4 (19)	9 (4.1)	48 (21.8)
4 (100)	4 (102)	11½ (292)	5¾ (146)	5¾ (146)	16 (406)	13 3/16 (335)	10⅛ (257)	8 (203)	4⅝ (118)	5 11/16 (145)	21¼ (540)	17¾ (451)	1 (25)	1 (25)	13 (5.9)	69 (31.4)
5 (125)	5 (127)	13⅜ (333)	6 9/16 (167)	6 9/16 (167)	15 7/8 (403)	14½ (368)	9½ (241)	8½ (216)	7½ (191)	6 15/16 (176)	22¼ (565)	20½ (521)	1 (25)	1 (25)	20 (9.1)	105 (48)
6 (150)	6 (152)	14⅞ (378)	7 1/16 (189)	7 1/16 (189)	17 3/16 (437)	15 (381)	10 5/16 (241)	9 (229)	6⅜ (162)	7 15/16 (202)	22½ (572)	23 (584)	1 (25)	1 (25)	26 (12)	121 (55)
8 (200)	8 (203)	18¾ (476)	9⅜ (238)	—	21 15/16 (559)	—	13 1/16 (332)	—	8⅞ (226)	—	29⅜ (746)	—	1 (25)	—	45 (20)	214 (97.3)
10 (250)	10 (254)	20⅛ (511)	10 1/16 (256)	—	25 (629)	—	13⅜ (340)	—	10⅝ (270)	—	35 (889)	—	1 (25)	—	70 (32)	309 (140.5)
12 (300)	12 (305)	26¼ (667)	13⅛ (333)	—	30 11/16 (780)	—	17 (432)	—	14⅞ (378)	—	42½ (1080)	—	2 (50)	—	110 (50)	476 (216.4)

*For models with Quick Opening Cover, consult factory. Allow clearance for bottom drain bolt removal.
Dimensions shown are subject to change. Consult factory for certified drawings.

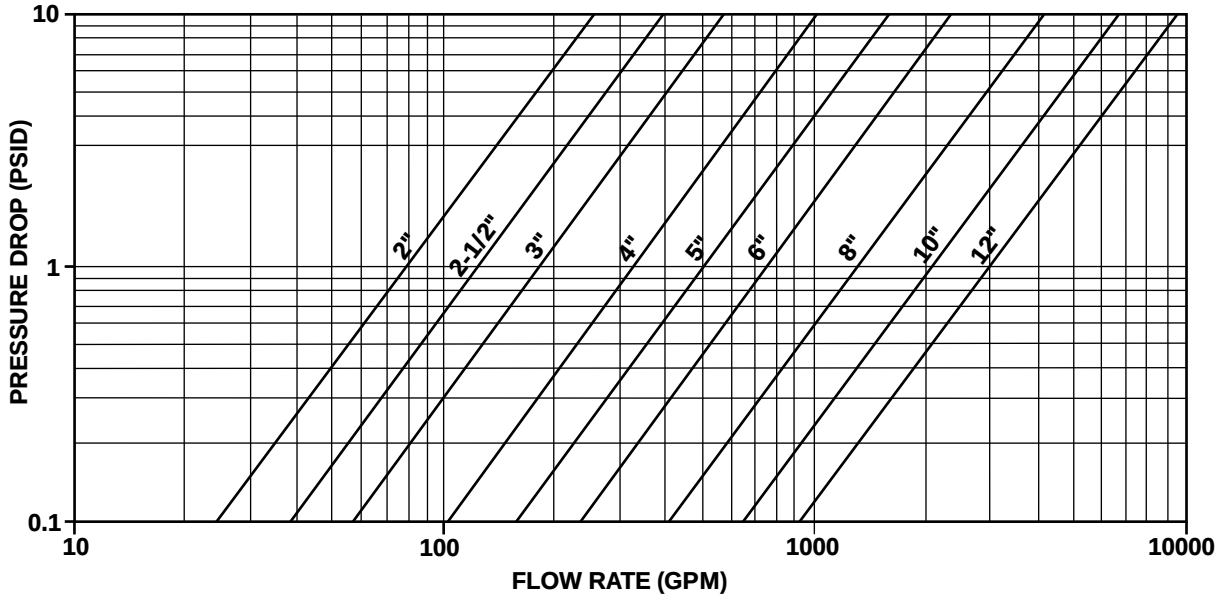
150B1 SERIES

CAST BRONZE, CARBON STEEL, STAINLESS STEEL

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 2" - 12")



* For Gas, Steam or Air service, consult factory.

150B1 SERIES

CAST BRONZE, CARBON STEEL, STAINLESS STEEL

OPEN AREA RATIOS

with Standard Perforated Screen

BRONZE ONLY

Size	Opening diameter (in)	Opening %	Flange Inlet Area (in²)	Gross Screen Area (in²)	Free Screen Area (in²)	Open Area Ratio (OAR)
2	3/64	36	3.14	29.4	10.9	3.5
2½	3/64	36	4.91	44.3	16.4	3.3
3	3/64	36	7.07	66.7	24.7	3.5
4	1/8	40	12.57	97.2	38.9	3.1
5	1/8	40	28.27	170.1	68.0	2.4
6	1/8	40	50.27	318.6	127.5	2.5

CARBON STEEL & STAINLESS STEEL ONLY

Size	Opening diameter (in)	Opening %	Nominal Inlet Area (in²)	Gross Screen Area (in²)	Free Screen Area (in²)	Open Area Ratio (OAR)
2	3/64	36	3.14	38.1	13.7	4.4
2½	3/64	36	4.91	41.6	15.0	3.0
3	3/64	36	7.07	59.6	21.5	3.0
4	1/8	40	12.57	119.9	48.0	3.8
6	1/8	40	28.27	177.4	71.0	2.5
8	1/8	40	50.27	296.5	118.6	2.4
10	1/8	40	78.54	413.5	165.4	2.1
12	1/8	40	113.10	730.3	292.1	2.6

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings Page 90

Basket Burst Pressure Page 96

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 95

Correction Factors for Clogged Screens Page 95

NOTES:

150B2 SERIES
CAST CARBON STEEL, STAINLESS STEEL FLANGED BASKET STRAINERS

PRESSURES TO 285 PSIG (19.7 BARG)
TEMPERATURES TO 800°F (427°C)

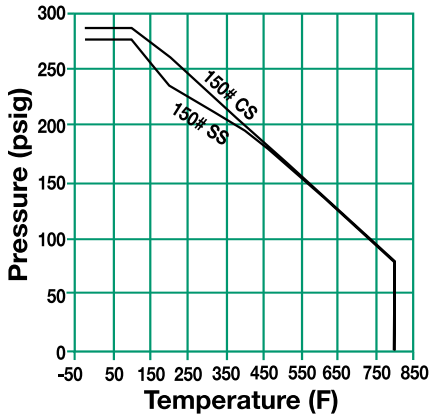
- **ASME Class 150 rated strainers**
- **RF connections designed in accordance with ASME B16.5 and/or B16.34**
- **SSI Exclusive - Cover flange is in dimensional accordance with ASME B16.5**
- **Over the top flow and machined basket seat eliminate any chance of dirty fluid bypass**
- **Large screen area minimizes pressure drop and cleaning intervals**
- **Stainless steel perforated baskets are standard**
- **Recommended minimum straining level is 40 microns**
- **NPT drain connection furnished with plug as standard**

APPLICATIONS

- Water, Oil Systems
- Other Liquid Systems
- Protection of Pumps, Meters, Valves and Similar Equipment

PRESSURE/TEMPERATURE CHART

ASME B16.34



For Quick Opening Covers Ratings See page 91

MODELS

- 150B2F - Over the top flow

OPTIONS

- Other screen perforations and mesh liners
- Quick Opening Covers - *See page 91*

APPLICABLE CODES (Designed in accordance with)

- ASME B16.5
- ASME B16.34

Canadian Registration OE10274.5C

150B2 Series Ordering Code

Inlet Size				Dash	Model						Body Material	Dash	Perf	Mesh	Add'l Requirements
0	4	0	0	-	1	5	0	B	2	F	C	-	4	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0150 - 1½"
0200 - 2"
0300 - 3"
0400 - 4"
0600 - 6"
0800 - 8"

Dash - Position 5

Model - Position 6 - 11
150B2F - Over The Top

Body Material - Position 12
C - Carbon Steel
T - Stainless Steel

Dash - Position 13

Perf[1] - Position 14
304 SS Material[2]
B - 3/64"
4 - 1/8"
A - None
1 - 1/32"
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"
Z - Other

Mesh[2] - Position 15
Leave Blank If not Required (Std. all)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120
Z - Other

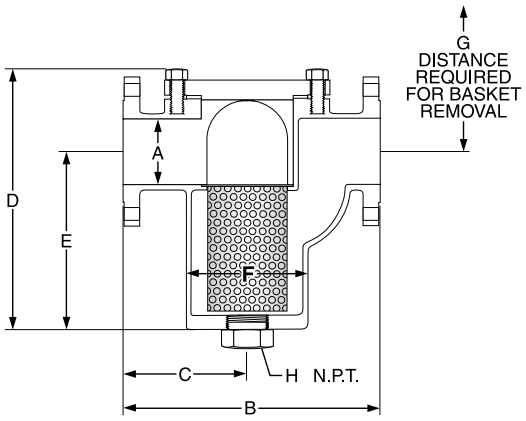
Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
E1 - 1/4" Vent
E2 - 3/8" Vent
E3 - 1/2" Vent
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
V1- Clamp Cover
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

1. Standard screens All 1½"— 1/32" perf, All 2"-3"—3/64" perf, All 4"-8" — 1/8" perf.
2. For other screen material, contact factory.

For any variations, use the part numbering system above but clearly indicate the additional requirement.

150B2 SERIES
CAST CARBON STEEL, STAINLESS STEEL FLANGED BASKET STRAINERS



SPECIFICATION

Basket Strainer shall have over the top flow with a machined basket seat. The Basket Strainer shall be cast steel or stainless steel rated to ASME Class 150 in accordance with ASME B16.5 and B16.34. The cover flange dimensions shall be in dimensional accordance with ASME B16.5. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI 150B2 Series.

MATERIALS OF CONSTRUCTION

Item	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304 SS	304 SS
Plug[2]	A105	304 SS
Gasket[1]	304 SS Spiral Wound[3]	304 SS Spiral Wound[3]
Bolt/Stud[2]	A193-B7	A320-B8
Nut[2]	A194-2H	A194-8

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted.
3. Gasket for bolted cover. *For Quick Opening Covers, see page 91*

Connections: 1½"- 8" RF Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
1½"	1/32 Perf.	304 SS
2" - 3"	3/64 Perf.	304 SS
4" - 8"	1/8 Perf.	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C	D*	E	F	G	H NPT	WEIGHT Cover	WEIGHT Unit
1½ (40)	1½ (38)	9½ (241)	4¾ (121)	10¼ (260)	6⅞ (175)	3 7/16 (87)	13½ (343)	½ (15)	5 (2.3)	30 (13.6)
2 (50)	2 (51)	10½ (267)	5¼ (133)	11 13/16 (300)	8 3/16 (208)	4⅛ (105)	15⅝ (397)	¾ (20)	7 (3.2)	46 (20.9)
3 (80)	3 (76)	13⅛ (333)	6 9/16 (167)	15 9/16 (395)	11 3/16 (284)	5⅜ (137)	19¾ (502)	1 (25)	17 (7.7)	78 (35.5)
4 (100)	4 (102)	17¼ (438)	8⅞ (225)	16⅛ (410)	11 7/16 (291)	6 11/16 (170)	20¾ (527)	2 (50)	20 (9.1)	114 (51.8)
6 (150)	6 (152)	19⅝ (498)	10⅞ (276)	25 9/16 (649)	19 5/16 (491)	10 (254)	31⅛ (791)	2 (50)	45 (20.5)	241 (109.5)
8 (200)	8 (203)	27 (686)	14⅝ (371)	35 7/16 (900)	27 15/16 (710)	12 5/16 (313)	42¼ (1073)	2 (50)	70 (31.8)	432 (196.4)

*For models with Quick Opening Cover, consult factory. Allow clearance for bottom drain bolt removal.

Dimensions shown are subject to change. Consult factory for certified drawings.

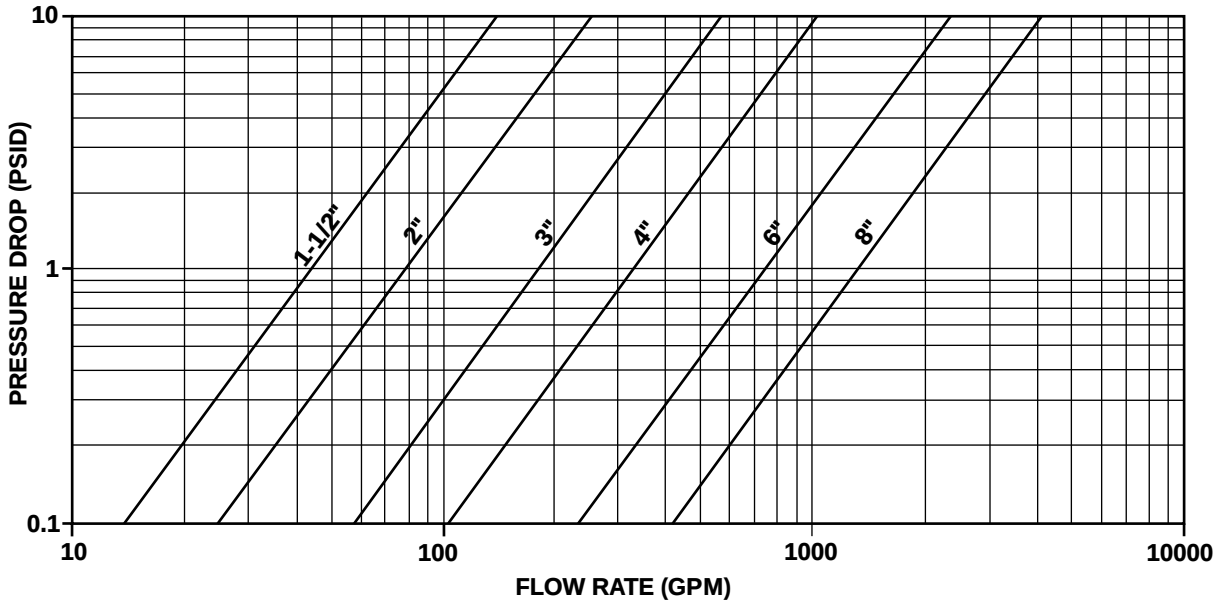
150B2 SERIES

CAST CARBON STEEL, STAINLESS STEEL

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 1½" - 8")



* For Gas, Steam or Air service, consult factory.

150B2 SERIES

CAST CARBON STEEL, STAINLESS STEEL

OPEN AREA RATIOS

with Standard Perforated Screen

Size	Opening diameter (in)	Opening %	Nominal Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
1½	1/32	28	1.77	29.1	8.2	4.6
2	3/64	36	3.13	42.8	15.4	4.9
3	3/64	36	7.07	101.0	36.4	5.1
4	1/8	40	12.57	118.1	47.2	3.8
6	1/8	40	28.27	365.7	146.3	5.2
8	1/8	40	50.27	675.4	270.1	5.4

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Other Screen Openings Page 90

Basket Burst Pressure Page 96

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 95

Correction Factors for Clogged Screens Page 95

NOTES:

300B SERIES
CAST CARBON STEEL, STAINLESS STEEL THREADED BASKET STRAINERS

PRESSURES TO 740 PSIG (51 BARG)
TEMPERATURES TO 800°F (427°C)

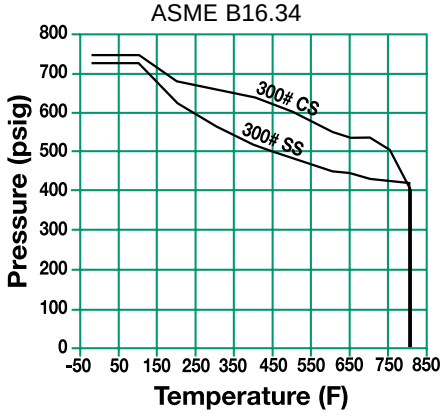
- **ASME Class 300 rated strainers**
- **NPT and Socketweld connections designed in accordance with ASME B16.5 and B16.34**
- **SSI Exclusive – Cover flange is in dimensional accordance with ASME B16.5**
- **Over the top flow and machined basket seat eliminate any chance of dirty fluid by-pass**
- **Large screen area minimizes pressure drop and cleaning intervals**
- **Threaded or socketweld connections**
- **Stainless steel perforated baskets are standard**
- **Recommended minimum straining level is 40 microns**
- **NPT drain connection furnished with plug as standard**

APPLICATIONS

- Water, oil systems
- Other liquid systems
- Protection of pumps, meters, valves and similar equipment

PRESSURE/TEMPERATURE CHART

ASME B16.34



For Quick Opening Covers Ratings, *see page 91*

MODELS

- 300B2T – Threaded over the top flow
- 300B2W – Socketweld over the top flow

OPTIONS

- Other screen perforations and mesh liners
- Quick Opening Covers - *See page 91*
- Socketweld Connections

APPLICABLE CODES (Designed in accordance with)

- ASME B16.5
- ASME B16.34

Canadian Registration - OE10274.5C

300B2 Series Ordering Code

Inlet Size					Model					Con-nection	Body Material	Dash	Perf	Mesh	Add'l Require-ments
0	1	5	0	-	3	0	0	B	2	T	T	-	1	__	__
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size - Position 1 - 4
0050 - 1/2"
0075 - 3/4"
0100 - 1"
0125 - 1¼"
0150 - 1½"
0200 - 2"

Dash - Position 5

Model - Position 6 - 10
300B2 - Over The Top

Connection - Position 11
T - Threaded
W - Socketweld

Body Material - Position 12
C - Carbon Steel
T - Stainless Steel

Dash - Position 13

Perf[1] - Position 14
304 SS Material[2]
1 - 1/32"
B - 3/64"
A - None
2 - 1/16"
3 - 3/32"
4 - 1/8"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"
Z - Other

Mesh[2] - Position 15
Leave Blank If not Required (Std. all)
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120
Z - Other

Add'l Requirements - Position 16
Leave Blank If not Required
D - Special Drain Size
F - Silicon Free
G - Special Gaskets
N - Nace MR01-75
T - Special Testing
V1- Clamp Cover
X - Oxygen Cleaning
Y - Other and / or Multiple Specials

Indicate Specials Clearly On the Order

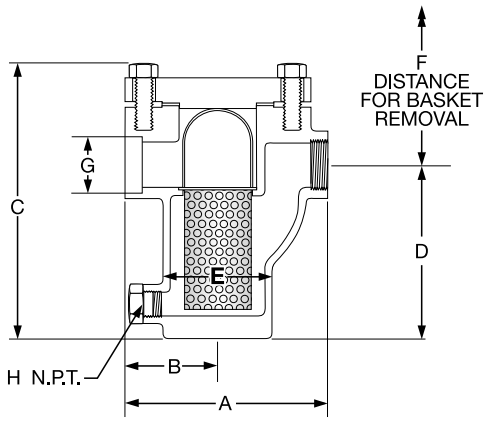
1. Standard screens All 1/2" - 1½"—1/32" perf, All 2"—3/64" perf.
2. For other screen materials, contact factory.

For any variations, use the part numbering system above but clearly indicate the additional requirement.

300B SERIES
CAST CARBON STEEL, STAINLESS STEEL THREADED BASKET STRAINERS

SPECIFICATION

Basket Strainer shall have over the top flow with a machined basket seat. The Basket Strainer shall be cast steel or stainless steel rated to ASME Class 300 designed in accordance with ASME B16.5 and/or B16.34. The cover flange dimensions shall be in accordance with ASME B16.5. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI 300B2 Series.



MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Cover	A216-WCB	A351-CF8M
Screen[1]	304SS	304SS
Plug[2]	A105	A182-316
Gasket[1]	304SS Spiral Wound[3]	304SS Spiral Wound[3]
Bolt/Stud[2]	A193-B7	A193-B8-1
Nut[2]	A194-2H	A194-8

1. Recommended Spare Parts
2. Materials of equivalent strength may be substituted.
3. Gasket for bolted cover. *For Quick Opening Covers, see page 91*

Connections: 1/2"– 2"
NPT or Socketweld

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
1/2" – 1 1/2"	1/32 Perf.	304 SS
2"	3/64 Perf.	304 SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A	B	C*	D	E	F	H	WEIGHT	
								Cover	Unit
½ (15)	6⅛ (156)	3⅛ (80)	6 5/16 (179)	4 (102)	2⅛ (54)	5¾ (146)	⅜ (10)	6 (2.7)	20 (9.1)
¾ (20)	6¾ (171)	3 7/16 (87)	8⅜ (213)	5 (127)	2½ (64)	7 7/16 (189)	⅜ (10)	8 (3.6)	25 (11.4)
1 (25)	6¾ (171)	3 7/16 (87)	8⅜ (213)	5 (127)	2½ (64)	7 7/16 (189)	½ (15)	8 (3.6)	25 (11.4)
1¼ (32)	8⅛ (206)	4 5/16 (109)	11 15/16 (303)	7¾ (197)	3 7/16 (87)	11 1/16 (281)	¾ (20)	12 (5.4)	46 (20.9)
1½ (40)	8⅛ (206)	4 5/16 (109)	11 15/16 (303)	7¾ (197)	3 7/16 (87)	11 1/16 (281)	¾ (20)	12 (5.4)	46 (20.9)
2 (50)	9 (229)	4 13/16 (122)	12 7/16 (316)	7¾ (197)	4¼ (108)	11 11/16 (297)	1 (25)	16 (7.3)	61 (27.8)

*For models with Quick Opening Cover, consult factory.

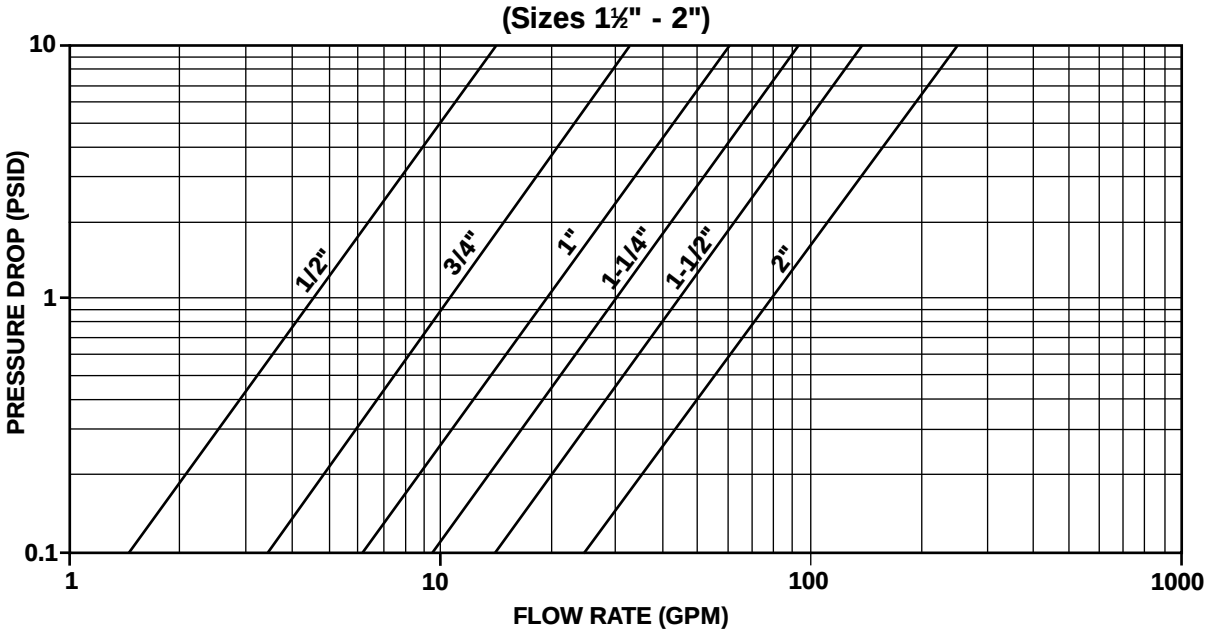
Dimensions shown are subject to change.
Consult factory for certified drawings.

300B SERIES

CAST CARBON STEEL, STAINLESS STEEL

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*



* For Gas, Steam or Air service, consult factory.

300B SERIES

CAST CARBON STEEL, STAINLESS STEEL

OPEN AREA RATIOS

with Standard Perforated Screen

Size	Opening Diameter (in)	Opening %	Nominal Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
½	1/32	28	0.30	14.1	4.0	13.0
¾	1/32	28	0.53	22.3	6.2	11.7
1	1/32	28	0.86	22.3	6.2	7.2
1¼	1/32	28	1.50	46.9	13.1	8.8
1½	1/32	28	2.04	46.9	13.1	6.4
2	3/64	36	3.36	57.1	20.6	6.1

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area

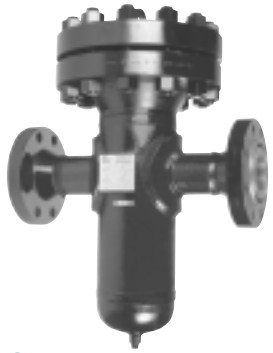
Other Screen Openings Page 90

Basket Burst Pressure Page 96

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 95

Correction Factors for Clogged Screens Page 95

NOTES:



FB SERIES
FABRICATED BASKET STRAINERS

PRESSURES TO 3705 PSIG (255 BARG)
TEMPERATURES TO 800°F (427°C)

- **Multiple and custom body configurations for tight installation, performance and/or economy**
- **Multi-baskets minimize downtime**
- **Stainless steel perforated baskets are standard**
- **Cover lifting lug standard on sizes 10" and larger**
- **Bottom/blowdown outlet is standard**
- **Drain connection with plug furnished as standard**

APPLICATIONS

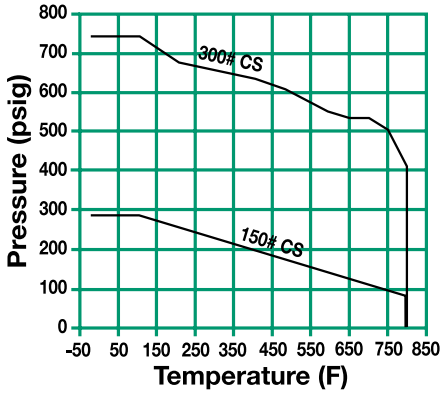
- Water, Oil Systems
- Other Liquid Systems
- Protection of Pumps, Meters, Valves, etc.

MODELS

- FB1 - Standard Body
- FB2 - Undersized Body (most economical)
- FB3 - Oversized Body (highest OARs)
- FB4 - Low Profile Body w/Pleated Bskt
- FB5 - Low Profile Body w/Multiple Bskts

PRESSURE/TEMPERATURE CHART

ASME B16.34



For Quick Opening Covers Ratings, *see page 92*

For higher pressure classes and other materials, consult factory.

APPLICABLE CODES

- Designed/Manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII, Div. I.
- CRN available in all provinces
- Welders Certified to ASME Section IX

OPTIONS

- Other materials, sizes and/or configurations
- Quick Opening Covers - *See page 92*
- Other screen, mesh or wedgewire - *See page 90*
- Vent and/or differential pressure connections
- "U" stamped vessels
- Steam jacketing
- Backflush or backwash
- NACE MR010-75 Certification
- External/internal coatings
- Offset inlet/outlet Nozzles
- 600# flanges and higher
- Pleated Baskets for higher Open Area Ratios
- Air Vents
- Consult factory for other options

FB Series Ordering Code

Model		Material	Inlet Size	Class	Con-nection	Dash	Cover Type	Perf	Mesh
F	B	1	C	H	1	R	-	B	2	3
1	2	3	4	5	6	7	8	9	10	11

Model - Position 1 - 3
- FB1 - Standard Body
- FB2 - Undersized Body
- FB3 - Oversized Body
- FB4 - Low Profile Body w/Pleated Bskt
- FB5 - Low Profile Body w/Multiple Bskts
- FBZ - Custom Configuration

Material - Position 4
- C - Carbon Steel
- L - Low Temp CS
- V - 304 SS
- T - 316 SS
- M - Monel
- H - Hastelloy
- Z - Other

Inlet Size - Position 5
- H - 2
- J - 2½
- K - 3
- M - 4
- N - 5
- P - 6
- Q - 8
- R - 10
- S - 12
- T - 14
- U - 16
- V - 18
- W - 20
- X - 22
- Y - 24
- 1 - 28
- 2 - 30
- 3 - 36
- 4 - 40
- Z - Other

Class - Position 6
- 1 - 150
- 3 - 300
- 4 - 600
- 5 - 900
- Z - Other

Connection - Position 7
- B - Buttweld[1]
- F - Flat Face Flg
- N - NPT
- J - Ring Joint Flg
- R - Raised Face Flg
- K - Socketweld
- Z - Other

Dash - Position 8

1. For Buttweld connections please specify mating pipe schedule

Cover Type - Position 9
- B - Bolted
- C - Bolted w/C-Clamp
- D - Bolted w/Davit
- J - Bolted w/Hinge
- H - T - Bolt Hinged
- T - Threaded Hinged
- Y - Yoke Hinged
- Z - Other

For any variations, use the part numbering system above but clearly indicate the additional requirements.

Perf - Position 10
304 SS Material[2]
- A - None
- B - 3/64"
- 1 - 1/32"
- 2 - 1/16"
- 3 - 3/32"
- 4 - 1/8"
- 5 - 5/32"
- 6 - 3/16"
- 7 - 7/32"
- 8 - 1/4"
- 9 - 3/8"
- Z - Other

Mesh[2] - Position 11
- A - None
- 1 - 10
- 2 - 20
- 3 - 30
- 4 - 40
- 5 - 50
- 6 - 60
- 7 - 80
- 8 - 100
- 9 - 120
- Z - Other

2. For other screen material, contact factory.

FB1 SERIES
FABRICATED BASKET STRAINERS

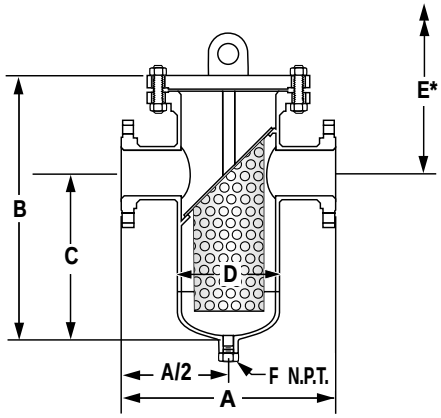
SPECIFICATION

Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII Div. I. The Strainer body shall be fabricated steel or other specified material and inlet/outlet connections shall be in line. The Strainer shall have a single basket with a slant top. The Strainer shall have a bottom blowdown outlet. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI FB _____.

MATERIALS OF CONSTRUCTION (Carbon Steel Shown†)

Body .....A53S/B or A106-B
Nozzles.....A53S/B or A106-B
Flanges SA105
Heads .....SA234-WPB or SA516-70
Reinforcement Pads[2] SA516-70
Couplings SA105
Plug SA105
Basket[1].....304 SS
Gasket[1] .....304 SS Spiral Wound
Stud.....SA193-B7
Nut SA194-2H

† Other Materials Available. Consult factory.
1. Recommended Spare Parts.
2. When required.
Material specification will change when NACE MR01-75 is specified.



Standard cover is bolted.
Cover lifting lug standard on 10" sizes and larger.
Class 150# and 300# flanges are standard.
Class 600# and higher available on request.
*Distance required for basket removal.

Connections*: 2"– 24"
RF, FF, RTJ Flanged or Buttweld

*Larger sizes available. Consult Factory.

For Buttweld connection please specify mating pipe schedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 12"	1/8 Perf.	304 SS
14" – 24"	3/16 Perf.	304 SS

FB1 DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

150# and 300# Class Flanges shown (For 600#, 900# and 1500# dimensions and weights, contact factory.)

Inlet/ Outlet	Body	A		B		C		D	E		F	Weight			
		Class 150	Class 300	Class 150	Class 300	Class 150	Class 300		Class 150	Class 300		Class 150		Class 300	
												Cover[1]	Unit	Cover[1]	Unit
2 (50)	6 (150)	12 (305)	14⅞ (378)	18⅝ (473)	22 (559)	11⅛ (283)	12 (305)	6⅝ (168)	25 (635)	28 (711)	½ (15)	26 (12)	85 (39)	50 (23)	195 (88)
3 (80)	8 (200)	14 (356)	16½ (419)	20½ (521)	25 (635)	12½ (318)	15¾ (400)	8⅝ (219)	28½ (724)	34¼ (870)	¾ (20)	45 (20)	140 (64)	81 (37)	250 (113)
4 (100)	8 (200)	16 (406)	18⅝ (473)	22¼ (565)	26 (660)	14 (356)	15⅞ (403)	8⅝ (219)	30½ (775)	36⅛ (918)	1 (25)	45 (20)	145 (66)	81 (37)	300 (136)
5 (125)	10 (250)	18 (457)	20¼ (514)	24¼ (616)	28 (711)	17 (432)	17⅛ (435)	10¾ (273)	30½ (775)	38⅞ (988)	1 (25)	70 (32)	160 (73)	125 (57)	400 (181)
6 (150)	10 (250)	20 (508)	24½ (622)	27 (686)	30¾ (781)	17 (432)	19⅛ (486)	10¾ (273)	36 (914)	42⅜ (1076)	1 (25)	70 (32)	205 (93)	125 (57)	480 (218)
8 (200)	12 (300)	22 (559)	24⅞ (632)	32 (813)	35½ (902)	21 (533)	22 (559)	12¾ (324)	43 (1092)	55¾ (1416)	1½ (40)	110 (50)	420 (191)	185 (84)	681 (309)
10 (250)	16 (400)	32 (813)	35⅜ (899)	41½ (1054)	42½ (1080)	25 (635)	27¼ (692)	16 (406)	58 (1473)	57¼ (1454)	1½ (40)	180 (82)	650 (295)	295 (134)	1100 (499)
12 (300)	18 (450)	35 (889)	39⅜ (1000)	44¾ (1137)	47¾ (1213)	28 (711)	30⅜ (772)	18 (457)	61½ (1562)	65⅛ (1654)	1½ (40)	220 (100)	1205 (547)	395 (179)	1650 (748)
14 (350)	20 (500)	37 (940)	41½ (1054)	48¾ (1238)	49⅝ (1260)	33 (838)	33 (838)	20 (508)	64½ (1638)	72 (1829)	2 (50)	285 (129)	1600 (726)	505 (229)	2600 (1179)
16 (400)	24 (600)	42 (1067)	47½ (1207)	54¼ (1378)	60 (1524)	36 (914)	38⅞ (988)	24 (610)	72½ (1842)	81⅛ (2061)	2 (50)	430 (195)	1965 (891)	790 (358)	2750 (1247)
18 (450)	24 (600)	46.5 (1181)	*	60 (1524)	*	40 (1016)	*	24 (610)	80 (2032)	*	2 (50)	430 (195)	2200 (998)	*	*
20 (500)	30 (750)	52 (1321)	*	68 (1727)	*	46 (1168)	*	30 (762)	90 (2286)	*	2 (50)	965 (438)	3200 (1452)	*	*
24 (600)	36 (900)	64 (1626)	*	82¾ (2102)	*	55 (1397)	*	36 (914)	110½ (2807)	*	2 (50)	1540 (699)	4500 (2041)	*	*

Dimensions shown are for reference only. Consult factory for certified prints when required.
* Consult factory.
1. Weight and dimension with Bolted Cover.

FB2 SERIES
FABRICATED BASKET STRAINERS

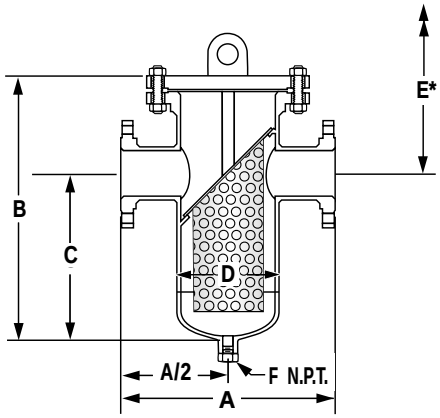
SPECIFICATION

Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII Div. I. The Strainer body shall be fabricated steel or other specified material and inlet/outlet connections shall be in line. The Strainer shall have a single basket with a slant top. The Strainer shall have a bottom blowdown outlet. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI FB _____.

MATERIALS OF CONSTRUCTION (Carbon Steel Shown†)

Body .....SA53S/B or SA106-B
Nozzles .....SA53S/B or SA106-B
Flanges SA105
Heads .....SA234-WPB or SA516-70
Reinforcement Pads[2] SA516-70
Couplings SA105
Plug SA105
Basket[1] .....304 SS
Gasket[1] .....304 SS Spiral Wound
Stud SA193-B7
Nut SA194-2H

† Other Materials Available. Consult factory.
1. Recommended Spare Parts.
2. When required.
Material specification will change when NACE MR01-75 is specified.



Standard cover is bolted.
Cover lifting lug standard on 10" sizes and larger.
Class 150# and 300# flanges are standard.
Class 600# and higher available on request.
*Distance required for basket removal.

Connections*: 2"– 24"
RF, FF, RTJ Flanged or Buttweld

*Larger sizes available. Consult Factory. For Buttweld connection please specify mating pipe schedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 12"	1/8 Perf.	304 SS
14" – 24"	3/16 Perf.	304 SS

FB2 DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

150# and 300# Class Flanges shown (For 600#, 900# and 1500# dimensions and weights, contact factory.)

Inlet/ Outlet	Body	A		B		C		D	E		F	Weight-150#		Weight-300#	
		150	300	150	300	150	300		150	300		Cover[1]	Unit	Cover[1]	Unit
2 (50)	4 (100)	10 (254)	12¾ (324)	14⅞ (378)	20 (508)	8⅞ (226)	12 (305)	4½ (114)	22⅛ (562)	26 (660)	½ (13)	17 (7.7)	34 (15.4)	28 (12.7)	50 (22.7)
3 (80)	6 (150)	13½ (343)	11½ (292)	19⅛ (486)	18⅞ (480)	11⅝ (295)	9 (229)	6⅝ (168)	20¾ (527)	21¾ (552)	½ (13)	26 (11.8)	106 (48.1)	50 (22.7)	160 (72.6)
4 (100)	6 (150)	14 (356)	12⅛ (308)	17⅞ (454)	20 (508)	10⅝ (270)	10 5/16 (262)	6⅝ (168)	21⅛ (536)	21⅜ (543)	½ (13)	26 (11.8)	114 (51.7)	50 (22.7)	175 (79.4)
6 (150)	8 (200)	14⅞ (378)	15⅞ (403)	22⅛ (562)	23⅞ (607)	12½ (318)	12½ (318)	8⅝ (219)	27¼ (692)	29 1/16 (754)	3/4 (19)	45 (20.4)	140 (63.5)	81 (36.7)	225 (102.0)
8 (200)	10 (250)	18 (457)	24½ (622)	30 7/16 (773)	30¾ (781)	19½ (495)	19⅛ (486)	10¾ (273)	36⅛ (917)	35¾ (908)	1 (25)	70 (31.7)	350 (158.7)	125 (56.7)	480 (217.7)
10 (250)	12 (300)	20 (508)	25¾ (654)	36½ (927)	36⅞ (937)	21 (533)	21 (533)	12¾ (324)	32¼ (819)	45⅝ (1153)	1½ (38)	110 (49.9)	400 (181.4)	185 (83.9)	800 (362.8)
12 (300)	14 (350)	26¼ (667)	27⅝ (702)	37⅝ (956)	39¾ (1010)	22 (559)	21 (533)	14 (356)	46⅞ (1191)	50 7/16 (1281)	1½ (38)	139 (63.0)	595 (269.8)	241 (109.3)	930 (421.8)
14 (350)	16 (400)	30 (762)	* *	41⅝ (1057)	* *	26 (660)	* *	16 (406)	46⅞ (1178)	* *	1½ (38)	180 (81.6)	1208 (547.8)	295 (133.8)	* *
16 (400)	18 (450)	34 (864)	* *	45¾ (1162)	* *	30 (762)	* *	18 (457)	55 (1397)	* *	2 (51)	285 (129.3)	1900 (861.7)	505 (229.0)	* *
18 (450)	20 (500)	38⅜ (975)	* *	48.12 (1222)	* *	28 (711)	* *	20 (508)	59¾ (1518)	* *	2 (51)	285 (129.3)	1965 (891.2)	505 (229.0)	* *
20 (500)	24 (600)	40¾ (1035)	* *	55.63 (1413)	* *	32 (813)	* *	24 (610)	66½ (1689)	* *	2 (51)	430 (195.0)	2600 (1179.1)	790 (358.3)	* *
24 (600)	30 (750)	45¼ (1149)	* *	62.88 (1597)	* *	38 (965)	* *	30 (762)	79 (2007)	* *	2 (51)	965 (437.6)	4000 (1814.1)	* *	* *

Dimensions shown are for reference only. Consult factory for certified prints when required.
* Consult factory.
1. Weight and dimensions with Bolted Cover.

FB3 SERIES
FABRICATED BASKET STRAINERS

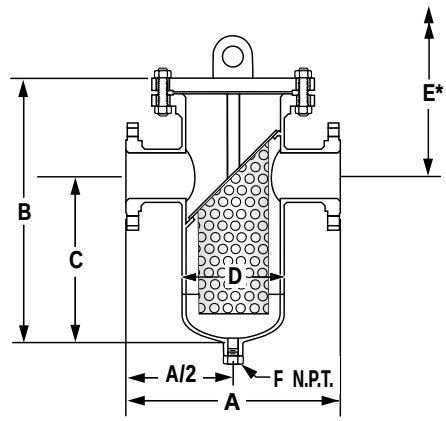
SPECIFICATION

Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII Div. I. The Strainer body shall be fabricated steel or other specified material and inlet/outlet connections shall be in line. The Strainer shall have a single basket with a slant top. The Strainer shall have a bottom blowdown outlet. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI FB _____.

MATERIALS OF CONSTRUCTION (Carbon Steel Shown†)

Body .....SA53S/B or SA106-B
Nozzles .....SA53S/B or SA106-B
Flanges SA105
Heads .....SA234-WPB or SA516-70
Reinforcement Pads[2].....SA516-70
Couplings SA105
Plug SA105
Basket[1].....304 SS
Gasket[1] .....304 SS Spiral Wound
Stud SA193-B7
Nut SA194-2H

† Other Materials Available. Consult factory.
1. Recommended Spare Parts.
2. When required.
Material specification will change when NACE MR01-75 is specified.



Standard cover is bolted.
Cover lifting lug standard on 10" sizes and larger.
Class 150# and 300# flanges are standard.
Class 600# and higher available on request.
*Distance required for basket removal.

Connections[3]: 2"– 20"
RF, FF, RTJ Flanged or Buttweld

3. Larger sizes available. Consult Factory. For Buttweld connection please specify mating pipe schedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2" – 12"	1/8 Perf.	304 SS
14" – 24"	3/16 Perf.	304 SS

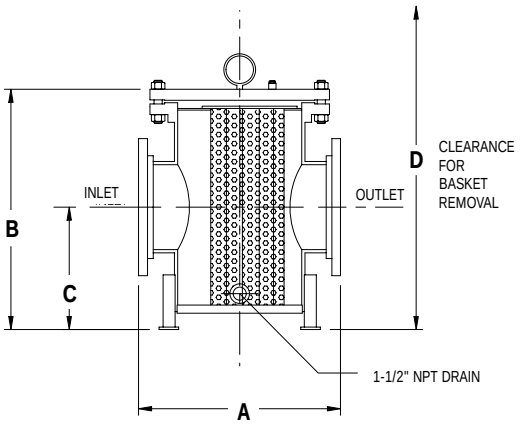
FB3 DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

150# Class Flanges shown (For 300#, 600#, 900# and 1500# dimensions and weights, contact factory.)

Inlet	Body	A	B[4]	C	D	E	F	Weight-150#	
								Cover	Unit
2 (50)	8 (200)	15 (381)	22¼ (565)	14 (356)	8⅝ (219)	25 15⁄16 (659)	½ (13)	45 (20)	135 (61)
3 (80)	10 (250)	22⅝ (575)	26⅞ (683)	15⅞ (403)	10¾ (273)	32⅝ (829)	½ (13)	70 (32)	150 (68)
4 (100)	10 (250)	22⅝ (575)	26⅞ (683)	15⅞ (403)	10¾ (273)	32⅝ (829)	½ (13)	70 (32)	160 (73)
6 (125)	12 (300)	25 (635)	32 (813)	21 (533)	12¾ (324)	37⅛ (943)	¾ (19)	110 (50)	300 (136)
8 (200)	14 (50)	28 (711)	37 (940)	23 (584)	14 (356)	44 9⁄16 (1132)	1 (25)	139 (63)	520 (236)
10 (250)	18 (450)	36 (914)	47⅛ (1197)	30⅜ (772)	18 (457)	53 1⁄16 (1364)	1½ (38)	220 (100)	1150 (523)
12 (300)	20 (50)	37 (940)	46¼ (1175)	31 (787)	20 (508)	52⅞ (1343)	1½ (38)	285 (129)	1500 (682)
14 (350)	24 (600)	42 (1067)	56⅛ (1426)	34½ (876)	24 (610)	66⅜ (1686)	1½ (38)	430 (195)	1850 (841)
16 (400)	30 (750)	52 (1321)	72½ (1842)	49 (1245)	30 (762)	82½ (2096)	2 (51)	965 (438)	2800 (1273)
18 (450)	30 (750)	52 (1321)	72½ (1842)	49 (1245)	30 (762)	82½ (2096)	2 (51)	965 (438)	3050 (1386)
20 (500)	36 (900)	64 (1626)	88⅝ (2251)	60 (1524)	36 (914)	99¾ (2534)	2 (51)	1540 (699)	4000 (1909)

Dimensions shown are for reference only. Consult factory for certified prints when required.
* Consult factory.
4. Weight and dimensions with Bolted Cover.

FB4 SERIES
FABRICATED BASKET STRAINERS



Standard Cover is bolted. Quick Opening Cover is available on request.

Cover lifting lug standard on bolted covers.

Class 125#/150# flanges standard.
Other Classes available on request.

Connections: 10"– 18" Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
10" – 12"	1/8 Perf. Pleated	304 SS
14" – 18"	3/16 Perf. Pleated	304 SS

SPECIFICATION

Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII Div.1. The Strainer body shall be fabricated steel or other specified material and inlet/outlet connections shall be in line. The Strainer shall have a single pleated basket. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI FB4.

MATERIALS OF CONSTRUCTION (Carbon Steel Shown†)

Body .....SA53S/B or SA106-B
Nozzles .....SA53S/B or SA106-B
Flanges SA105
Heads .....SA234-WPB or SA516-70
Couplings SA105
Plug SA105
Basket[1] .....304 SS
Gasket[1] .....304 SS Spiral Wound
Stud SA193-B7
Nut SA194-2H

† Other Materials Available. Consult factory.
1. Recommended Spare Parts.
Material specification will change when NACE MR01-75 is specified.

FB4 DIMENSIONS inches (mm) and WEIGHTS pounds (kg)

For pressure classes greater than 150# consult factory.

Inlet/ Outlet	A	B	C	D	Weight	
					Cover[1]	Unit
10 (250)	23 (584)	29 (737)	12.19 (310)	47 (1194)	180 (82)	600 (272)
12 (300)	27 (686)	38 (965)	16.75 (425)	67 (1702)	220 (100)	1100 (499)
14 (350)	31 (787)	45 (1143)	18.75 (476)	77 (1956)	285 (129)	1300 (590)
16 (400)	31 (787)	45 (1143)	18.75 (476)	77 (1956)	430 (195)	1600 (726)
18 (450)	31 (787)	45 (1143)	18.75 (476)	77 (1956)	430 (195)	1800 (816)

Dimensions shown are for reference only. Consult factory for certified prints when required.

1. Weight and dimensions with Bolted Cover.

FB5 SERIES
FABRICATED BASKET STRAINERS

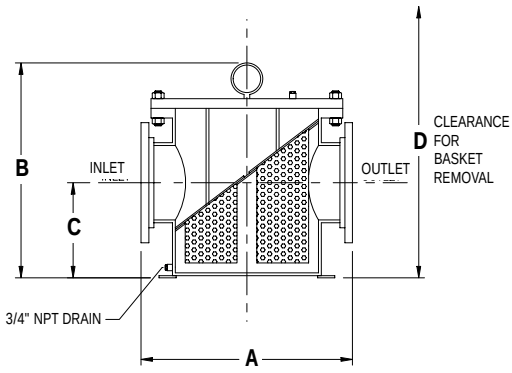
SPECIFICATION

Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ASME B31.4 and/or ASME Section VIII Div.1. The Strainer body shall be fabricated steel or other specified material and inlet/outlet connections shall be in line. The Strainer shall have four independent baskets. The screen shall be size _____ perforated stainless steel. The Strainer shall have an inlet size of _____ and open area ratio of _____. The Basket Strainer shall be SSI FB5.

MATERIALS OF CONSTRUCTION (Carbon Steel Shown†)

Body .....SA53S/B or SA106-B
Nozzles.....SA53S/B or SA106-B
Flanges SA105
Heads .....SA234-WPB or A516-70
Couplings SA105
Plug.....SA105
Basket[1] .....304 SS
Gasket[1] .....Non Asbestos
Stud SA193-B7
Nut SA194-2H

† Other Materials Available. Consult factory.
1. Recommended Spare Parts.
Material specification will change when NACE MR01-75 is specified.



Standard cover is bolted.
Cover lifting lug standard on bolted covers.
Class 125#/150# flanges standard.
Class 300# available on request.

Connections: 8"– 36" Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
8" – 12"	1/8 Perf.-multi basket	304 SS
14" – 36"	3/16 Perf.-multi basket	304 SS

FB5 DIMENSIONS inches (mm) and WEIGHTS pounds (kg)

For pressure classes greater than 150# consult factory.

Inlet/ Outlet	A	B	C	D	Weight	
					Cover[1]	Unit
8 (200)	23.35 (593)	20.13 (511)	9.13 (232)	38 (965)	180 (82)	750 (340)
10 (250)	26.13 (664)	23.75 (603)	11.38 (289)	44 (1118)	220 (100)	1100 (499)
12 (300)	29 (737)	28.38 (721)	14.63 (372)	52 (1321)	285 (129)	1500 (680)
14 (350)	30.5 (775)	31.25 (794)	16.75 (425)	60 (1524)	430 (195)	1900 (862)
16 (400)	33.5 (851)	35.5 (902)	19.13 (486)	66 (1676)	965 (438)	2400 (1089)
20 (500)	44.75 (1137)	46.25 (1175)	28.5 (724)	88 (2235)	1540 (699)	4500 (2041)
24 (600)	44.38 (1127)	52.25 (1327)	31.5 (800)	98 (2489)	1820 (826)	5900 (2676)
30 (750)	61.5 (1562)	66.5 (1689)	41.63 (1057)	125 (3175)	2240 (1016)	12100 (5489)
36 (900)	62 (1575)	66.5 (1689)	41.63 (1057)	125 (3175)	2240 (1016)	12400 (5625)

Dimensions shown are for reference only. Consult factory for certified prints when required.
1. Weight and dimensions with Bolted Cover.

FB SERIES

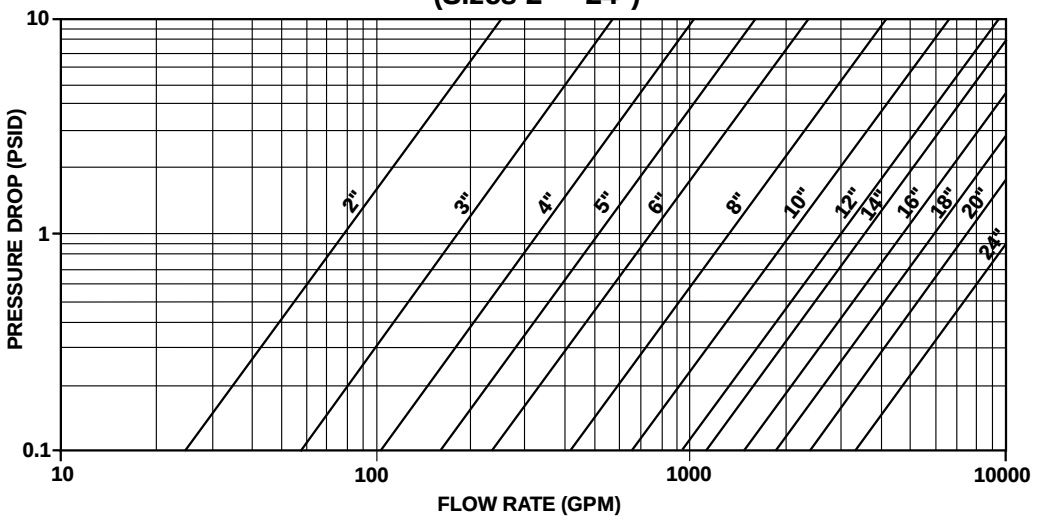
FABRICATED BASKET STRAINERS

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

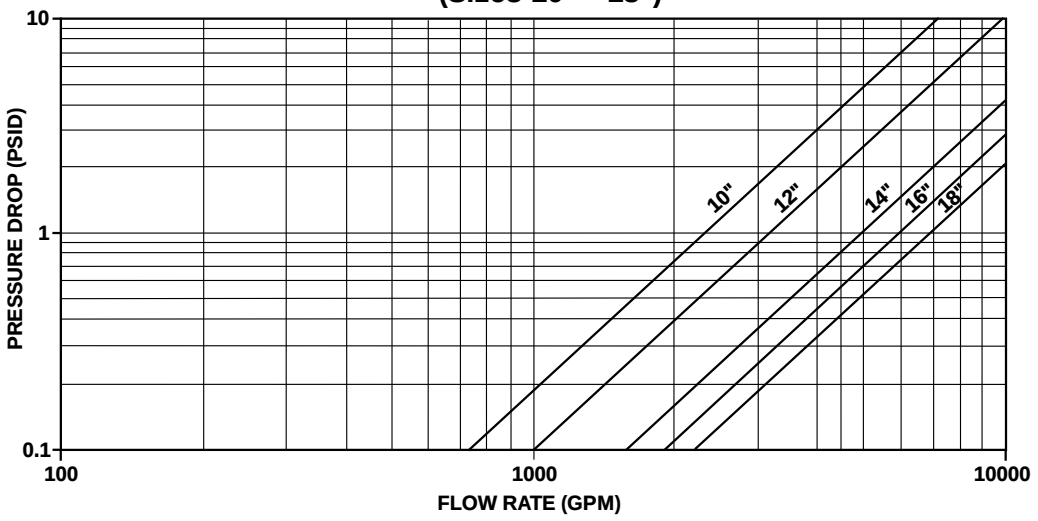
FB1
FB2
FB3

(Sizes 2" - 24")



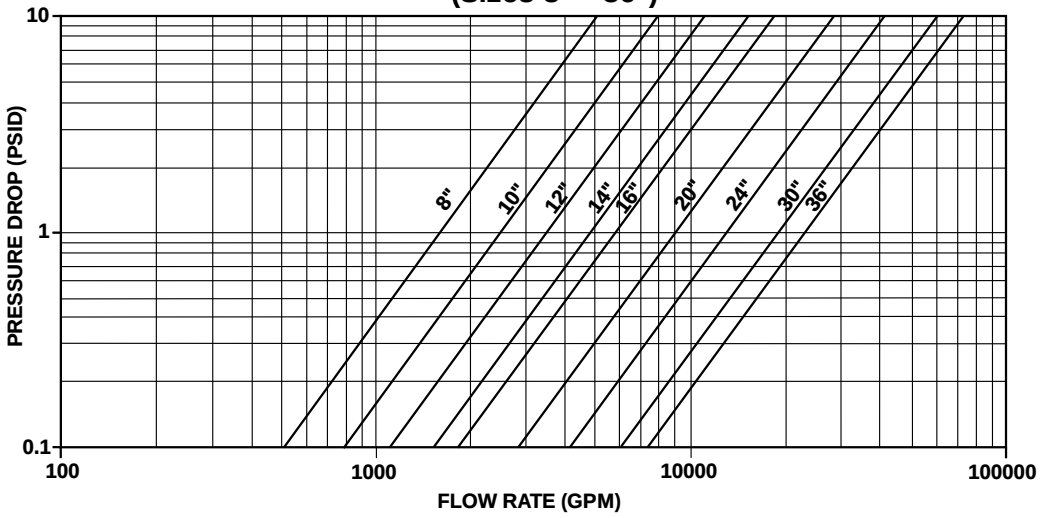
FB4

(Sizes 10" - 18")



FB5

(Sizes 8" - 36")



* For Gas, Steam or Air service, consult factory.

FB SERIES
FABRICATED BASKET STRAINERS
OPEN AREA RATIOS

FB1

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	1/8	40%	3.36	171	68	20.3
3	1/8	40%	7.39	266	106	14.4
4	1/8	40%	12.73	266	106	8.4
6	1/8	40%	28.9	377	151	5.2
8	1/8	40%	50.0	562	225	4.5
10	1/8	40%	78.9	938	375	4.8
12	1/8	40%	113.1	1179	472	4.2
14	3/16	50%	137.9	1429	715	5.2
16	3/16	50%	176.7	1940	970	5.5
18	3/16	50%	227.0	2166	1083	4.8
20	3/16	50%	277.9	3393	1696	6.1
24	3/16	50%	402.0	5150	2575	6.4

FB2

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	1/8	40%	3.4	78	31	9.3
3	1/8	40%	7.4	133	53	7.2
4	1/8	40%	12.7	133	53	4.2
6	1/8	40%	28.9	266	106	3.7
8	1/8	40%	50.0	451	180	3.6
10	1/8	40%	78.9	562	225	2.9
12	1/8	40%	113.1	703	281	2.5
14	3/16	50%	137.9	938	469	3.4
16	3/16	50%	182.7	1204	602	3.3
18	3/16	50%	227.0	1429	715	3.1
20	3/16	50%	291.0	1916	958	3.3
24	3/16	50%	402.0	3393	1696	4.2

FB3

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	1/8	40%	3.4	266	106	31.7
3	1/8	40%	7.4	350	140	19.0
4	1/8	40%	12.7	350	140	11.0
6	1/8	40%	28.9	562	225	7.8
8	1/8	40%	50.0	762	305	6.1
10	1/8	40%	78.9	1179	472	6.0
12	1/8	40%	113.1	1338	535	4.7
14	3/16	50%	137.9	1916	958	6.9
16	3/16	50%	176.7	3393	1696	9.6
18	3/16	50%	227.0	3393	1696	7.5
20	3/16	50%	265.2	5150	2575	9.7

FB4

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
10	1/8	40	78.85	800	320	4.1
12	1/8	40	113.1	1200	480	4.2
14	3/16	50	140.5	2000	1000	7.1
16	3/16	50	185.66	2000	1000	5.4
18	3/16	50	237.1	2000	1000	4.2

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Open Area Ratios can be larger with custom basket designs.
Contact factory when required.

For FB5 Open Area Ratios, consult factory.

Other Screen Openings Page 90

Basket Burst Pressure Page 96

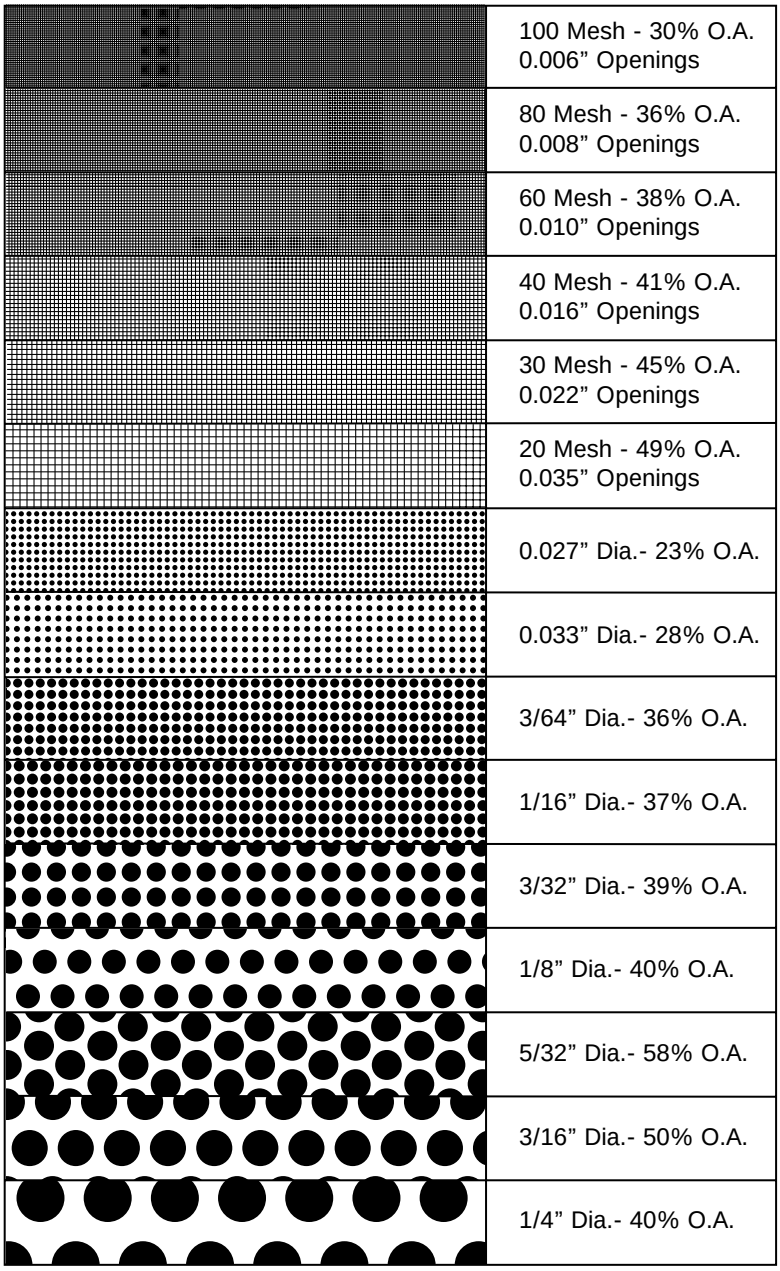
Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 95

Correction Factors for Clogged Screens Page 95

NOTES:

BASKET STRAINER TECHNICAL INFORMATION

SCREEN OPENINGS



FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

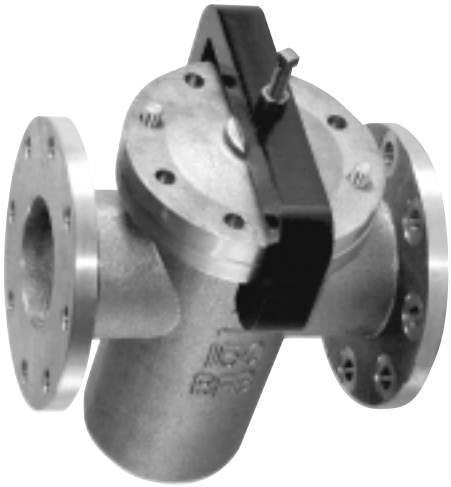
Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

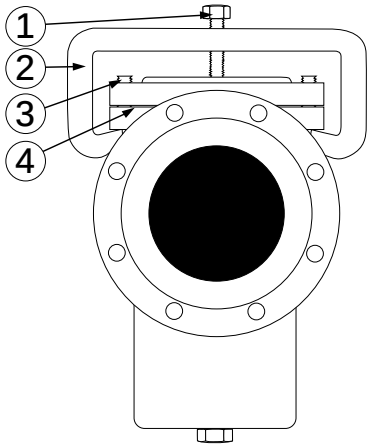
Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

CAST BASKET STRAINERS

QUICK OPENING COVERS





COVER TYPE C - QUICK OPENING C-CLAMP

Cover Type C - Quick Opening C-Clamp

- **Ideal for low pressure applications.**
- **Allows for extremely quick access to strainer basket.**
- **To be used on non-lethal liquid service only.**

Availability

1/2" - 12"

Upper Pressure Limits (Non-shock)

M.A.W.P psig (bar)	Maximum Allowable Working Temp. °F (°C)
50 (3.44)*	100 (37.8)

* Through 5" inlet consult factory for larger sizes.

Part Numbers	Weight (lbs)
0200-clamp	5
0250- clamp	5
0300-clamp	5
0400-clamp	9
0500-clamp	10
0600-clamp	19
0800-clamp	21
1000-clamp	24
1200-clamp	27

Request quote

Materials of Construction

Item #	Description	Specifications
1	Clamp Bolt (2)	A449 Grade 5
2	Clamp	A516-70 Carbon Steel
3	Anti-rotating Stud (2)	A307-B
4	Gasket - 1/2" - 6"	Flat Rubber (Non-asbestos)
	Gasket - 8" - 12"	Buna-N O-ring (Groove in Cover)

CAUTION: This type of closure does not meet the requirements of Section UG-35.2 of ASME Section VIII, Div. 1.

Use caution when utilizing this type of device.

FB SERIES
FABRICATED STRAINERS
QUICK OPENING COVERS AND COVER REMOVAL AIDS

The quick release covers and cover removal aids, available on fabricated strainers, are distinguished by their compact size and functional design. Materials of construction are in accordance with ASME specifications and manufacturing complies with the applicable rules of the ASME Code for Pressure Piping and with the ASME Boiler and Pressure Vessel Code.

COVER REMOVAL AID

Cover Type D - Bolted with Davit Assembly

The Davit Assembly permits the user to swing the cover away to facilitate basket or screen removal for cleaning. It is used primarily for larger strainers where cover removal is difficult. The Davit Assembly is an inexpensive alternative to quick release covers, especially when operating conditions require a bolted cover.

QUICK OPENING COVERS

Cover Type H - T-Bolt Hinged Cover

The T-bolt Hinged Cover is the most economical quick opening closure we offer on fabricated strainers for nominal pressure applications. The T-bolt Hinged Cover utilizes an O-ring seal. It opens quickly and easily by loosening the T-bolts until they clear the holding lugs and swinging the head open on its hinge. Camlock and Break-over Wrench Assemblies that eliminate the need for a wrench are also available.

Request quote

FB SERIES
FABRICATED STRAINERS
QUICK OPENING COVERS AND COVER REMOVAL AIDS

Cover Type Y - Yoke Hinged Cover

The Yoke Hinged Cover is a true ANSI rated closure that utilizes an O-ring seal. The Yoke Hinged Cover is used primarily on high pressure applications and is available with 150#, 300#, 600#, 900#, and 1500# ANSI ratings with a wide range of operating aids, ranging from a single lever chain and sprocket drive to completely automated.

Cover Type T - Threaded Hinged Cover

The Quick Opening Threaded Cover consists of a cap fastened to a hub welded to the strainer body. The female cap is threaded onto the male hub with an O-ring seal. This O-ring prevents corrosion of the closure threads, providing long, trouble free service. The Threaded Cover is for both nominal and high pressure applications.

GENERAL COMPARISON OF DIFFERENT CLOSURE TYPES

Comparison Item	Closure Type				
	Bolted Type B	w/Davit Type D	T-Bolt Type H	Bolted Yoke Type Y	Threaded Type T
Cost	Lowest	Low	Moderate	High	High
Quick Opening Ability	Poor	Fair	Good	Best	Best
Low Pressure Applications	X	X	X	—	—
Nominal Pressure Applications	X	X	X	X	X
High Pressure Applications	X	X	—	X	X

Standard O-Ring material BUNA-N (-30 to 250ºF)
Standard O-Ring material Viton (-15 to 400ºF)

BASKET STRAINERS
REPLACEMENT BASKET SCREENS

We have screens and baskets for all makes of Y, basket and duplex strainers. The range of materials and size of units is unlimited.

We provide baskets manufactured from:

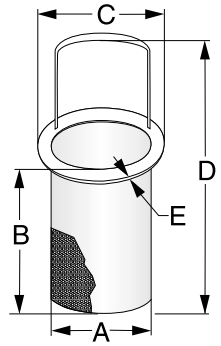
- **Perforated Plate**
- **Mesh or Mesh/Perf. Combination**
- **Wedge Wire**
- **Laser Beam Small Hole Perforated Plate**

Using the above processes or combination thereof, we can provide screens and baskets suitable for a wide range of applications.

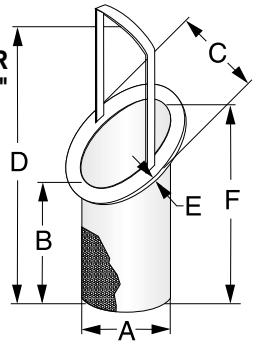
SCREEN/BASKET CHECKLIST

Kindly photocopy this page and fill out the pertinent information.

BASKET STRAINER STYLE "D"



BASKET STRAINER STYLE "B"



Performance Requirements

Description	Customers Requirement
Required Level of Filtration =	
Material of Construction =	
Minimum Specified Burst Pressure =	
Flow Direction =	
Other =	

Dimensional Requirements

Description		Customers Requirement
Style	B or D	
Basket Outer Diameter	A =	
Basket Height	B =	
Ring OD	C =	
Overall Height	D =	
Ring Thickness	E =	
Basket Long Height	F =	

BASKET STRAINER

PRESSURE DROP CORRECTION FACTORS

Mesh Lined Baskets and/or Fluids with a Viscosity other than Water

Centistokes	SSU	Unlined Perforated Basket	20 Mesh Lined Basket	40 Mesh Lined Basket	60 Mesh Lined Basket	80 Mesh Lined Basket	100 Mesh Lined Basket	200 Mesh Lined Basket
2	30 (water)	1	1.05	1.2	1.4	1.6	1.7	2
100	500	1.6	1.7	1.9	2.1	2.4	2.6	3.1
216	1000	1.7	2	2.2	2.4	2.6	2.8	3.3
433	2000	1.9	2.2	2.4	2.7	2.9	3.2	3.8
650	3000	2	2.3	2.6	2.9	3.2	3.5	4.1
1083	5000	2.2	2.6	3	3.5	4	4.5	5.3
2200	10000	2.5	3	3.5	4.2	5	6	7.1

1) Obtain water pressure drop from graphs on appropiate product page.
2) Multiply the pressure drop obtained from (1) by the specific gravity of the liquid.
3) Multiply the pressure drop from (2) by the appropiate correction factor for the mesh liner and/or viscosity.

Example

Model: **150B1**
Size: **4"**
Filtration: **1/8" perforated screen 40 Mesh lines**
Flow rate: **200 GPM**
Fluid: **Water**
SG: **1**
Viscosity: **30 SSI**

Answer

A) From Pressure Drop Chart, pressure drop of water is .38 psid
B) Multiply by specific gravity; .38 x 1 = .38 psid
C) From chart above, multiply .38 x 1.2 (correction factor) = .456 psid

CORRECTION FACTORS FOR CLOGGED SCREENS

% Clogged	Ratio of Free Screen Area to Pipe Area						
	10:1	8:1	6:1	4:1	3:1	2:1	1:1
10							3.15
20						1.15	3.9
30						1.4	5
40						1.8	6.65
50					1.25	2.5	9.45
60				1.15	1.8	3.7	14.5
70				1.75	2.95	6.4	26
80		1.1	1.75	3.6	6.25	14	58
90	2.3	3.45	6	13.5	24	55	

* Multiply values obtained from Pressure Drop Charts by the appropriate values shown below.

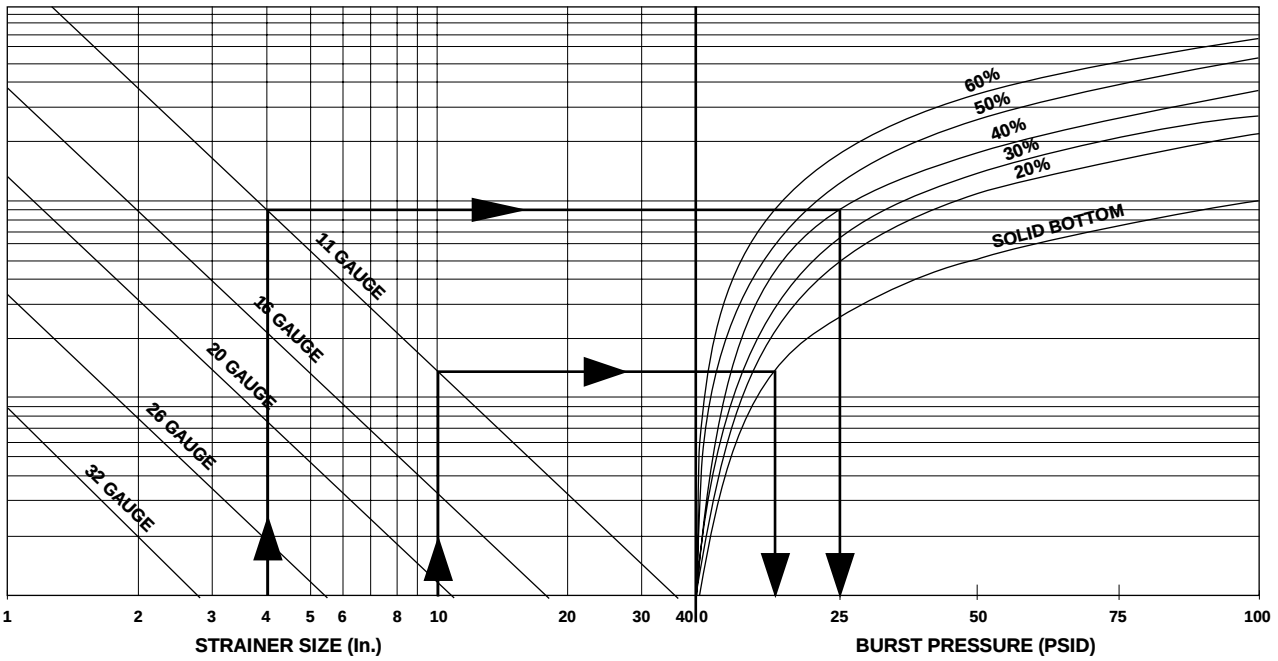
Example

Strainer Size: **6"**
Model: **150B1**
Body: **Carbon Steel**
Filtration: **1/8" Perf.**
Flow rate: **1000 GPM**
Service: **Water**
% Clogged: **60%**

Answer

A) The Pressure Drop Chart indicates a drop of 1.50 psid with standard screen.
B) The Effective Area Chart indicates a ratio of 2.5:1 free area to pipe area.
C) Using Chart above we read the correction factor of 2.5:1 (2:1 approx.) to be 3.7 at 60% clogged.
D) Total pressure drop equals 1.50 x 3.7 = 5.55 psid.

BASKET STRAINER
BURST PRESSURE



Baskets with perforated bottoms are standard.

Chart is based on standard dimensions. Higher burst pressure ratings are available. Please consult factory.

Chart is based on stainless steel screen material. No safety factor is incorporated. It is the responsibility of the user to determine an acceptable safety factor.

Example

Strainer Size: 10"

Basket Type: Perforated screen with 11 gauge solid flat bottom

Screen Material Open Area: 20% - 60%

Answer

A) Locate Strainer size.
B) Follow vertical line to solid thickness.
C) Follow horizontal line to solid bottom curve.
D) Follow vertical line downward to read burst pressure.
E) Burst pressure equals 15 psid.

Source: ASME Section VIII, Div. 1, UG-34

BASKET STRAINERS
CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation Above _____ Below _____

    Left side facing inlet _____ Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____

State _____ Zip Code _____

Telephone (_____) _____

Fax (_____) _____

BASKET STRAINER
INSTALLATION AND MAINTENANCE INSTRUCTIONS

Strainer Installation Instructions

- Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.
- For horizontal and vertical pipelines, the strainer should be installed so that the blow-down drain connection is pointed downward.
- For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise motion. Threaded end strainers should use an appropriate sealant.
- Once installed, increase line pressure gradually and check for leakage around joints.
- If the strainer is supplied with a start-up screen, monitor pressure drop carefully.

Screen Removal Instructions

- Drain piping. (For Duplex Strainers, isolate required chamber).
- Vent line to relieve pressure.
- Loosen cover and open to access screen.
- Remove, clean and replace screen in original position (Note: In some instances, a high pressure water jet or steam may be required for effective cleaning)
- Inspect cover gasket for damage. If necessary, replace. (Note: If spiral wound gaskets have been used, they must be replaced and can not be used again).
- Tighten cover. The strainer is ready for line start-up.

CAUTION SHOULD BE TAKEN DUE TO POSSIBLE EMISSION OF PROCESS MATERIAL FROM PIPING. ALWAYS ENSURE NO LINE PRESSURE EXISTS WHEN OPENING COVER.

Maintenance Instructions

For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down line and follow the “Screen Removal Instructions” above. A pressure gauge installed before and after the strainer in-line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

Trouble Shooting Guides and Diagnostic Techniques

- After pressurizing, inspect cover and other joints for leakage. Gasket replacement or cover tightening is necessary if leakage occurs.
- If the required filtration is not taking place, ensure the screen is installed in the correct position, that being flush to the screen seating surfaces.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

Applications

- Water and Liquid service
- Power Industry – Cooling water
- Pulp & Paper – Removing fibers
- Process Equipment – Protect equipment
- Metal & Mining – Quenching, blast furnace cooling

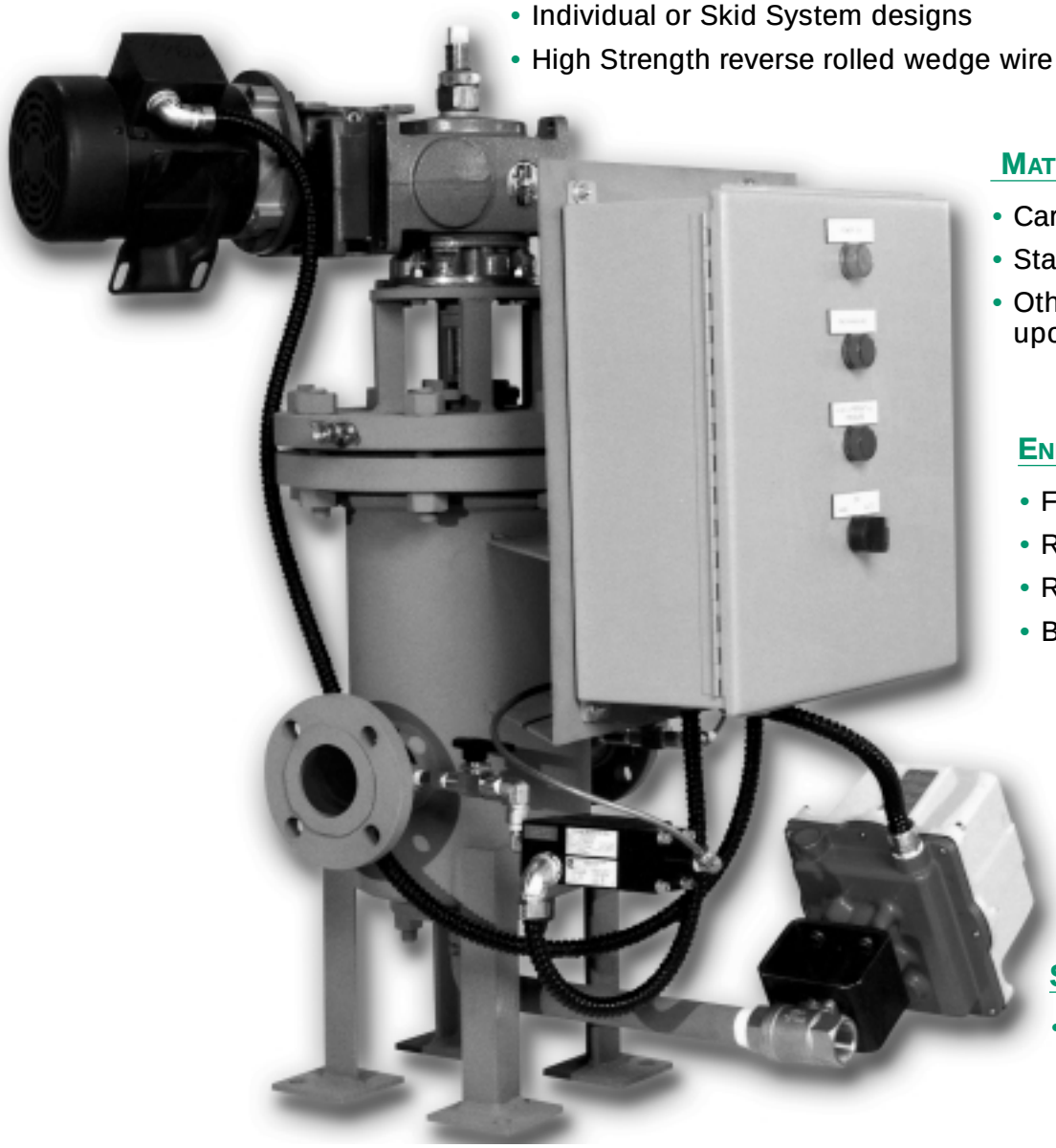
Automatic Self-Cleaning Strainers

Pressures to 740 PSIG (51 BARG)

Temperatures to 400ºF (204ºC)

Features

- Standard and Custom Engineered Designs
- Complete Control Systems
- Intermittent or Continuous Mode options
- Individual or Skid System designs
- High Strength reverse rolled wedge wire screens



Materials

- Carbon Steel
- Stainless Steel
- Other materials upon request

End Connections

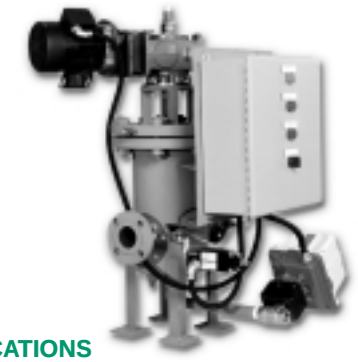
- Flat Faced Flanged
- Raised Faced Flanged
- Ring Joint Flanged
- Buttweld

Ratings

- ASME Class 150
- ASME Class 300

Sizes

- 2” (50mm) to 36” (900 mm)



FA SERIES
FABRICATED AUTOMATIC SELF-CLEANING STRAINERS

Pressures to 740 PSIG (51 BARG)
Temperatures to 400ºF (204ºC)

APPLICATIONS

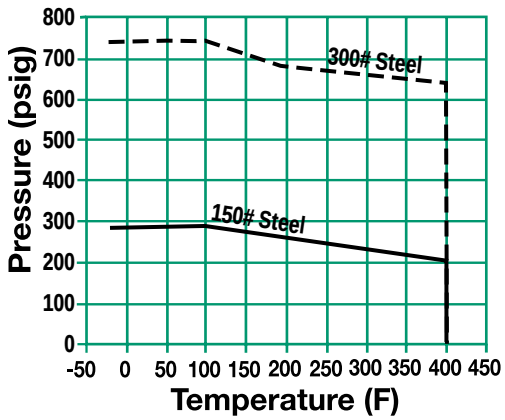
- Water and Liquid service
- Power Industry - cooling water
- Pulp & Paper - Removing fibers
- Process Equipment - Protect equipment
- Metal & Mining – Quenching, blast furnace cooling
- Water & Waste - Clean plant service water

APPLICABLE CODES

- Designed/Manufactured to meet ASME B31.3 or ASME B31.4 and/or ASME Section VIII, Div. 1.
- Canadian Registration Numbers (CRN) upon request
- Welders certified to ASME Section IX
- ASME "U" Stamp upon request

PRESSURE/TEMPERATURE CHART

ASME B16.34



- **Standard and Custom Engineered Designs**
- **Reverse rolled wedge wire screen for high strength**
- **Proportioned outer annulus decreases pressure drop**
- **Low inertia backwash assembly increases efficiency and minimizes power requirements**
- **Fail safe mode to prevent internal damage from jamming by large debris**
- **Large inspection port allows for inspection and removal of settled debris**

MODELS

- FA1 – Inline, side backwash drain, (10" – 36")
- FA2 – Inline, bottom backwash drain, (2" – 8")
- FAZ – Custom Configuration

OPTIONS *(Consult factory)*

- Other materials, sizes and/or configurations
- Other screen sizes/materials– *See page 105*
- "U" stamped vessels
- External/Internal coatings
- Custom control panels and wiring per customer requests. *See page 104*
- Adjustable timer and differential pressure override switch for automatic intermittent control mode
- Continuous on/off control mode
- Customer requested control valves and tubing
- Skid mounted or free standing designs
- Contact Factory for other Options

FA Series Ordering Code

Model			Body Material	Inlet Size	Class	Connection	Dash	Control Panel[1]	Screen Wedge Wire[2]	Std. Slot Opening
F	A	1	C	R	1	R	-	B	V	1
1	2	3	4	5	6	7	8	9	10	11

Model - Position 1 - 3
- FA1 - Inline, Side Backwash drain (Sizes 10"- 36")
- FA2 - Inline, Bottom Backwash drain (Sizes 2"- 8")
- FAZ - Custom Configuration

Body Material - Position 4
- C - Carbon Steel
- V - 304 SS
- T - 316 SS
- M - Monel
- H - Hastelloy
- Z - Other

Inlet Size - Position 5

H - 2	U - 16
J - 2½	V - 18
K - 3	W - 20
M - 4	X - 22
N - 5	Y - 24
P - 6	1 - 28
Q - 8	2 - 30
R - 10	3 - 36
S - 12	4 - 40
T - 14	Z - Other

Class - Position 6
- 1 - 150
- 3 - 300
- Z - Other

Connection - Position 7
- B - Butt Weld
- F - Flat Face Flange
- J - Ring Joint Flange
- R - Raised Face Flange
- Z - Other

Dash - Position 8

Control Panel[1] - Position 9
- A - None
- C - 1-phase, 110/120 VAC
- E - 3-phase, 460/or 80 VAC
- F - 3-phase, 575 VAC
- Z - Other

Screen - Wedge Wire[2] - Position 10
- V - 304SS
- T - 316SS
- M - Monel
- H - Hastelloy
- Z - Other

Standard Slot Opening - Position 11
- 1 - .156"
- 2 - .125" (1/8")
- 3 - .094"
- 4 - .063" (1/16")
- 7 - .031" (1/32")
- 8 - .020"
- 9 - .015"
- A - .010"
- B - .005"
- C - .003"
- Z - Other

1. For standard control system components *see page 105*. For all other please consult factory.
2. Standard Screen material is 304SS

For any variations, use the part numbering system above but clearly indicate the additional requirements.

FA1 SERIES
FABRICATED AUTOMATIC SELF-CLEANING STRAINERS

SPECIFICATION

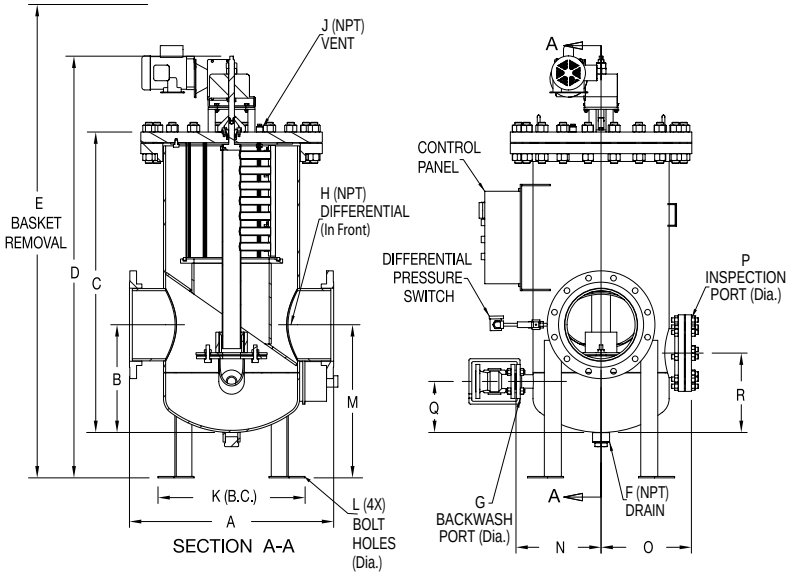
Strainer shall be designed and manufactured to meet ASME B31.3 or ASME B31.4 and/or ASME Section VIII, Div I. The strainer body shall be 1-piece construction, fabricated steel or other specified material and inlet/outlet connections shall be In-Line Design with a side backwash drain. The control system shall be capable of automatically controlling and monitoring the strainer's operation. The strainer shall have a fail-safe mode to prevent internal damage from jamming of strainer shaft caused by large debris. The strainer shall have a Nema 4 control panel with an actuated valve to provide control of the backwash flow. The screen shall be size _____ wedge wire construction. The strainer shall have an inlet size of ____ and open area ratio of _____. The Automatic Strainer shall be SSI FA1____.

MATERIALS OF CONSTRUCTION*-

(Carbon Steel Shown*)

Body.....SA53 Gr B or SA106-B
Flanges.....SA105
Nozzles.....SA53 Gr B or SA106-B
Heads .....SA234 WPB
Screen[1] .....SA240-304 SS
Backwash Arm .....SA240-304 SS
Bearing[1] .....Varies upon tempertature
Gasket - Cover[1] .....Red rubber or BlueGuard
Gasket - Basket[1] .....Gum Rubber or Viton
Gasket - Bearing[1].....Gum Rubber or Viton
Packing[1] .....TFE or Cotton Nitrile
Stud.....SA 193-B7
Nut.....SA 194-2H

* Other Materials Available. Consult Factory.
1. Recommended Spare Parts
Materials specification will change dependent on customer design – contact factory for certified prints.



Connections: 10" - 36"
RF, FF, RTJ or Buttweld

SCREEN OPENINGS*

SIZE	STANDARD SCREEN	STANDARD MATERIALS
10"-36"	.125" (1/8")	304SS Wedge Wire

* See other screen sizes on page 105

MINIMUM INLET PRESSURE
(I/O Differential)

SIZE	PRESSURE
10"-36"	20 PSID

AUTO SELF-CLEANING STRAINERS

FA1 DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)
150# Class flanges shown (For 300# dimensions and weights-contact factory)

INLET SIZE	BODY SIZE	A	B	C	D	E	F (NPT)	G (Dia.)	H (NPT)	J (NPT)	K (B.C.)	L (Dia.)	M	N	O	P (Dia.)	Q	R	WEIGHT DRY	WEIGHT WET	WEIGHT COVER
10 (250)	24 (600)	36 (914)	19 (483)	53 (1346)	74⅜ (1889)	111 (2819)	2 (2)	2 (50)	1/2 (1/2)	1/2 (1/2)	30 9/16 (767)	7/8 (22)	27 (686)	15 (381)	16 (406)	8 (203)	9 (229)	14 (356)	1200 (544)	1950 (884)	415 (188)
12 (300)	24 (600)	36 (914)	19 (483)	53 (1346)	74⅜ (1889)	111 (2819)	2 (2)	2 (50)	1/2 (1/2)	1/2 (1/2)	30 9/16 (767)	7/8 (22)	27 (686)	15 (381)	16 (406)	8 (203)	9 (229)	14 (356)	1200 (544)	1950 (884)	415 (188)
14 (350)	26 (660)	46 (1168)	25 (635)	60 (1524)	81⅛ (2067)	120 (3048)	2 (2)	3 (80)	1/2 (1/2)	1/2 (1/2)	32 9/16 (817)	7/8 (22)	33 (838)	19 (483)	20 (508)	8 (203)	15 (381)	18 (457)	1700 (771)	3000 (1361)	363 (165)
16 (400)	30 (760)	46 (1168)	26 (660)	66 (1676)	87⅛ (2219)	127 (3226)	2 (2)	3 (80)	1/2 (1/2)	1/2 (1/2)	37⅞ (962)	1 (25)	34 (864)	19 (483)	20 (508)	8 (203)	15 (381)	18 (457)	1800 (816)	3100 (1406)	530 (240)
18 (50)	30 (760)	50 (1270)	27 (686)	73 (1854)	94⅜ (2397)	133 (3378)	2 (2)	3 (80)	1/2 (1/2)	1/2 (1/2)	37⅞ (962)	1 (25)	35 (889)	22 (559)	23 (584)	8 (203)	15 (381)	18 (457)	2600 (1179)	4900 (2222)	530 (240)
20 (500)	36 (910)	50 (1270)	30 (762)	79 (2007)	100⅜ (2550)	144 (3658)	2 (2)	4 (100)	1/2 (1/2)	1/2 (1/2)	44⅛ (1121)	1 (25)	38 (965)	23 (584)	23 (584)	12 (305)	16 (406)	20 (508)	2900 (1315)	5400 (2449)	883 (400)
24 (600)	40 (1010)	64 (1626)	32 (813)	87 (2210)	108⅜ (2753)	157 (3988)	3 (3)	4 (100)	1/2 (1/2)	1/2 (1/2)	51⅝ (1311)	1⅜ (35)	40 (1016)	29 (737)	30 (762)	12 (305)	16 (406)	22 (559)	4700 (2132)	9700 (4399)	1205 (546)
30 (760)	48 (1210)	78 (1981)	45 (1143)	117 (2972)	138⅜ (3515)	200 (5080)	3 (3)	4 (100)	1/2 (1/2)	1/2 (1/2)	59⅞ (1521)	1⅜ (35)	53 (1346)	35 (889)	36 (914)	12 (305)	22 (559)	34 (864)	8600 (3900)	14400 (6531)	2015 (914)
36 (910)	58 (1470)	96 (2438)	53 (1346)	140 (3556)	161⅜ (4099)	234 (5944)	3 (3)	5 (125)	1/2 (1/2)	1/2 (1/2)	69⅞ (1775)	1⅜ (35)	61 (1549)	44 (1118)	46 (1168)	12 (305)	24 (610)	40 (1016)	14800 (6712)	32000 (14512)	3492 (1584)

*Dimensions shown are subject to change. Contact factory for certified prints when required.

FA2 SERIES
FABRICATED AUTOMATIC SELF-CLEANING STRAINERS

SPECIFICATION

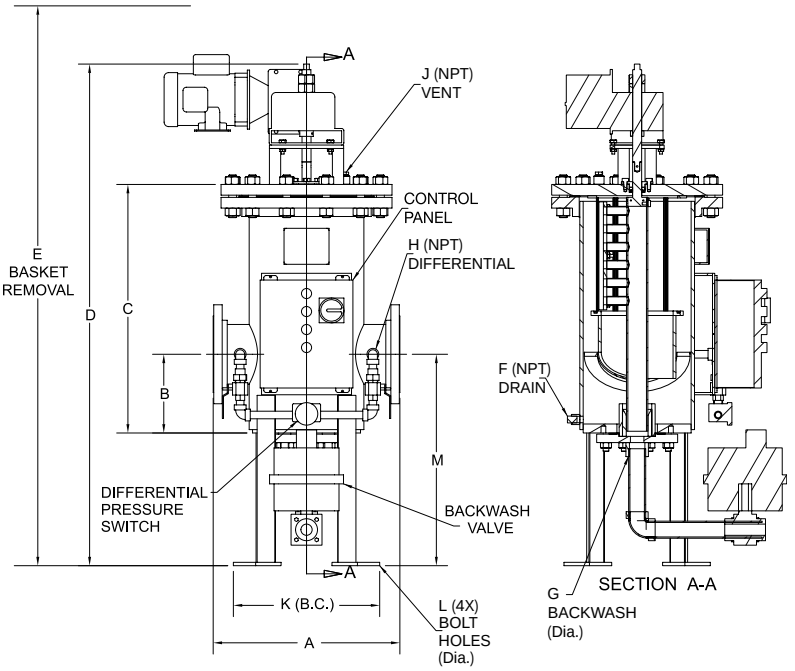
Strainer shall be designed and manufactured to meet ASME B31.3 or ASME B31.4 and/or ASME Section VIII, Div I. The strainer body shall be 1-piece construction, fabricated steel or other specified material and inlet/outlet connections shall be In-Line Design with a bottom backwash drain. The control system shall be capable of automatically controlling and monitoring the strainer's operation. The strainer shall have a fail-safe mode to prevent internal damage from jamming of strainer shaft caused by large debris. The strainer shall have a Nema 4 control panel with an actuated valve to provide control of the backwash flow. The screen shall be size _____ wedge wire construction. The strainer shall have an inlet size of ____ and open area ratio of _____. The Automatic Strainer shall be SSI FA2____.

MATERIALS OF CONSTRUCTION*-

(Carbon Steel Shown*)

Body.....SA53 Gr B or SA106-B
Flanges.....SA105
Nozzles.....SA53 Gr B or SA106-B
Heads .....SA234 WPB
Screen[1] .....SA240-304 SS
Backwash Arm .....SA240-304 SS
Bearing[1] .....Varies upon tempertature
Gasket - Cover[1] .....Red rubber or BlueGuard
Gasket – Basket[1] .....Gum Rubber or Viton
Gasket - Bearing[1] ....Red Rubber or BlueGuard
Packing[1] .....TFE or Cotton Nitrile
Stud.....SA 193-B7
Nut .....SA 194-2H

* Other Materials Available. Consult Factory
1. Recommended Spare Parts
Materials specification will change dependent on customer design – contact factory for certified prints.



Connections: 2"-8"
RF, FF, RTJ or Buttweld

SCREEN OPENINGS*

SIZE	STANDARD SCREEN	STANDARD MATERIALS
2"-8"	.125" (1/8")	304SS Wedge Wire

See other screen sizes on page 105

MINIMUM INLET PRESSURE
(I/O Differential)

SIZE	PRESSURE
2"-8"	20 PSID

FA2 DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

150# Class flanges shown (For 300# dimensions and weights-contact factory)

INLET SIZE	BODY SIZE	A	B	C	D	E	F (NPT)	G (Dia.)	H (NPT)	J (NPT)	K (B.C.)	L (Dia.)	M	WEIGHT		
														DRY	WET	COVER
2 (50)	8 (200)	16 (406)	5 (127)	17⅜ (441)	38¾ (984)	60 (1524)	1/2 (1/2)	1 (1)	1/2 (1/2)	1/2 (1/2)	13¾ (349)	9/16 (14)	13 (330)	310 (141)	329 (149)	50 (23)
3 (80)	8 (200)	16 (406)	5 (127)	17⅜ (441)	38¾ (984)	62 (1575)	1/2 (1/2)	1 (1)	1/2 (1/2)	1/2 (1/2)	13¾ (349)	9/16 (14)	13 (330)	320 (145)	340 (154)	50 (23)
4 (100)	10 (250)	18 (457)	8¾ (222)	23⅞ (606)	52 (1321)	76 (1930)	1/2 (1/2)	1 (1)	1/2 (1/2)	1/2 (1/2)	16 (406)	9/16 (14)	23½ (597)	430 (195)	490 (222)	72 (33)
6 (150)	12 (300)	20¾ (527)	8¾ (222)	29⅝ (752)	57¾ (1467)	86 (2184)	1/2 (1/2)	1½ (1½)	1/2 (1/2)	1/2 (1/2)	18 (457)	9/16 (14)	23½ (597)	560 (254)	670 (304)	103 (47)
8 (200)	16 (400)	24 (610)	8¾ (222)	38 (965)	65¾ (1670)	100 (2540)	1/2 (1/2)	1½ (1½)	1/2 (1/2)	1/2 (1/2)	21 5/16 (541)	9/16 (14)	23½ (597)	875 (397)	1120 (508)	176 (80)

*Dimensions shown are subject to change. Contact factory for certified prints when required.

FA SERIES
FABRICATED AUTOMATIC SELF-CLEANING STRAINERS
GENERAL OPERATION

The Spence Strainer Fabricated Automatic Self-Cleaning Strainer utilizes the latest technology in backwash strainer design.

The strainer cleans itself using a backwash system which is continuous and/or controlled by an automatic control system. A tubular backwash assembly slowly rotates in close contact with the internal wedge-wire straining element, isolating only a small portion of the element at any given time. Debris is removed by a backwash flow which carries unwanted debris away from the internal element and out of the strainer. The operation is detailed as follows:

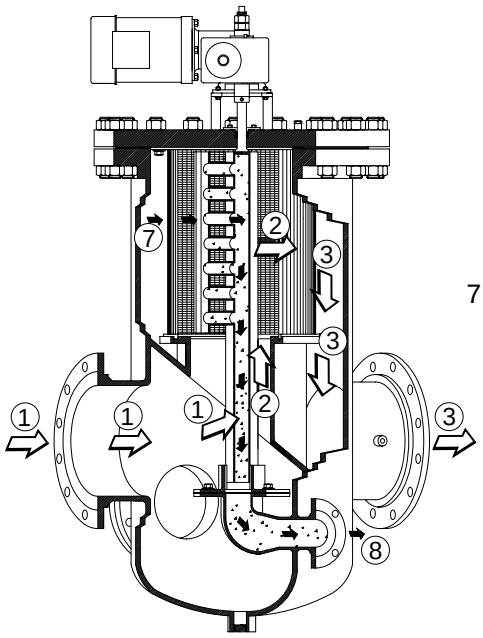
Operation

1. The unfiltered fluid enters the strainer inlet into the lower single chamber. This chamber acts to both slow the fluid prior to straining and to collect any settled debris.

2. The fluid passes upward and then radially outward through the wedge wire straining element. Debris larger then the wedge wire slot size is unable to pass through the straining element.

3. The clean fluid continues through the properly proportioned flow path and out the strainer outlet.

FLOW SCHEMATIC



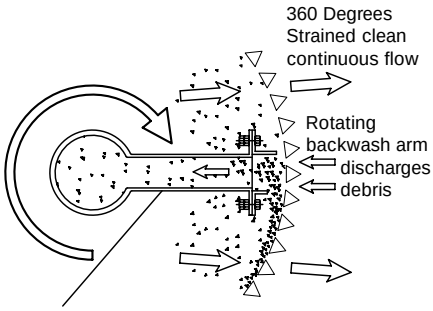
4. The strainer is controlled by an electrical panel, an actuated valve and a differential pressure switch. The cleaning cycle can be initiated manually or automatically by a timer with a differential pressure override.

5. When backwashing is initiated the motor begins to slowly turn the backwash assembly (approximately 2 rpm) and simultaneously the backwash valve is opened. The differential pressure between the line pressure and atmosphere is the driving force behind the backwashing process.

6. The hollow tubular backwash assembly, which is piped to the atmosphere, slowly rotates in close contact with the internal straining element. Only a small potion of the screen is isolated allowing for uninterrupted operation of the strainer during the backwashing process.

7. The pressure differential causes a large reverse flow across the screen and into the tubular backwash assembly. The change in velocity of the fluid entering the backwash assembly creates a vacuum and suction, cleaning the strainer element from the inside. A port shoe, interconnecting the tubular backwash assembly, optimizes the effectiveness of this backwash jet stream.

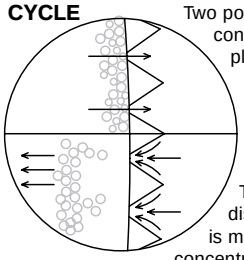
BACKWASH ASSEMBLY / STRAINING ELEMENT INTERFACE



Atmospheric pressure ensures efficiency and minimizes power requirements during the backwash cycle.

STRAINING CYCLE

Two point particle contact minimizes plugging & binding.



The debris dislodging force is maximized by concentrating all the backwash flow momentum into the slots.

BACKWASH CYCLE

8. Unwanted debris is carried into the full port backwash manifold and out the backwash connection. During the whole operation the flow remains uninterrupted keeping flow loss at a minimum.

9. Upon completion of the cycle, the control panel initiates turning the motor off and simultaneously closing the backwash valve.

FA SERIES
FABRICATED AUTOMATIC SELF-CLEANING STRAINERS
CONTROL SYSTEMS

The Spence Strainer control panels are designed for simple and reliable operation. The design allows for quick and easy field adjustments as required by the service conditions.

The FA Series strainers are manufactured complete with our standard control systems. Optional custom designs to meet specific customer and/or service requirements can be furnished.

Standard Control System Components –
contact factory for other options

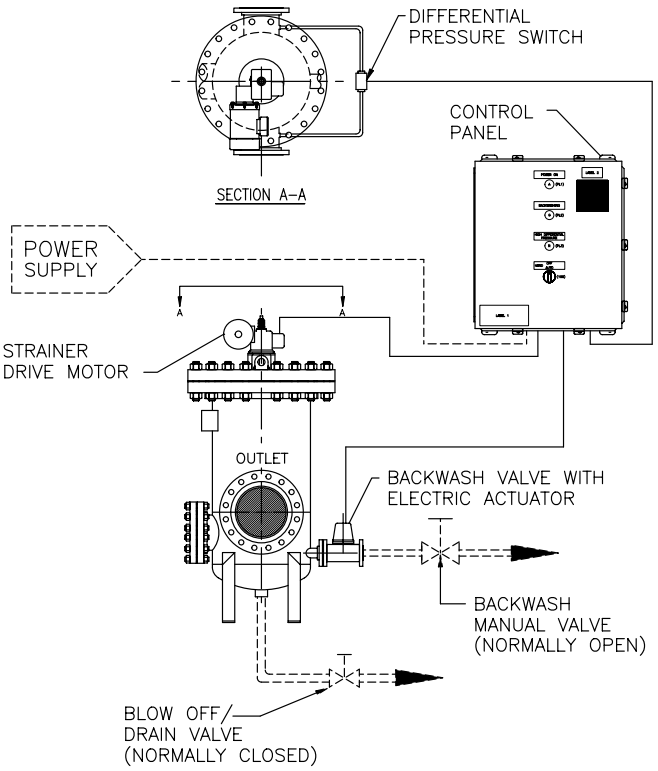
- Nema 4X rated panel box – UL/CSA approved
- Carbon steel, phosphate coated w/grey polyester powder coated panel box
- Adjustable timer (1-10 min on time, 10 min – 10 hr off time)
- Aluminum Nema 4 differential pressure override switch (0-15 psid)
- Control relay for backwash valve activation
- Three Indication panel lights – Power on, Backwash Valve Open, High Differential Pressure
- Selector Switch for Hand(On)/Off/Auto service
- Motor starters with Auxiliary contact
- Terminal block for external connections
- TEFC motor 110/120V, single phase 60Hz, 1/3 Hp
- 110/120 VAC input
- Carbon steel electrically actuated ball valve for backwash (110/120 VAC/60 HZ) – Nema 4 actuator

Modes of Operation

The selector switch allows the customer to easily change between three modes: OFF, AUTO (Automatic Intermittent), or HAND (Continuous).

Automatic Intermittent (AUTO) – When the selector switch is in the AUTO position the strainer operates with the adjustable timer. An authorized operator can adjust the OFF time setting (the time after which it will initiate backwash – 10 min to 10 hour cycle) and ON time setting (the time interval for which it will keep backwash system ON – 1 to 10 min cycle) by adjusting the timer.

The differential pressure switch should be set at 2 psig over the anticipated clean pressure drop. An authorized operator can adjust OFF time setting on the differential pressure switch (the differential pressure at which it will initiate backwash – range 0 – 15 psid). This switch will override the time cycle and initiate backwash should



the differential pressure rise above the programmed setting. After the differential pressure has been satisfied, the strainer will continue cleaning for 60 seconds beyond that point.

The settings are done depending on the quantity of debris collected and limiting value of the differential pressure. Experience will dictate the optimal settings for the timers.

Continuous (HAND) – When the selector switch is in the HAND position the strainer will operate in a continuous mode. In this mode the strainer will backwash continuously with the backwash valve open and the drive motor running. The continuous backwash mode may be desirable or necessary if the installation experiences high solid loadings.

Backwash Valve

Electrically actuated ball valves suitable for water service are standard on all FA Control Systems. Contact factory for other options. Standard sizes of backwash valves are as follows:

Strainer Inlet/Outlet Size	Drain Valve Size
2" - 4"	1"
6" - 8"	1½"
10" - 12"	2"
14" - 18"	3"
20" - 36"	4"

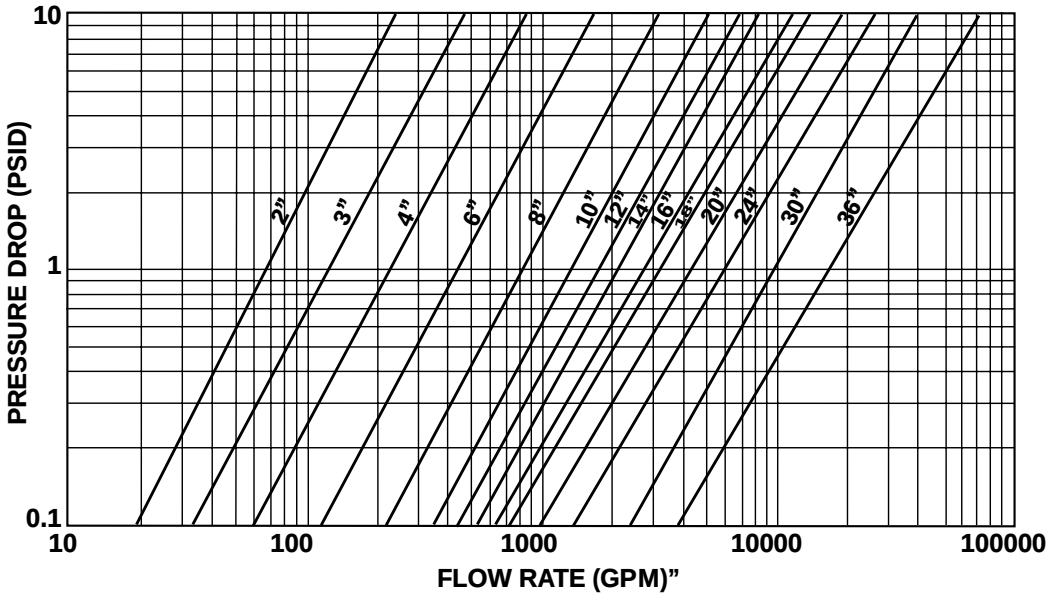
FA SERIES
FABRICATED AUTOMATIC SELF-CLEANING STRAINERS

PRESSURE DROP - LIQUIDS

Water Service, Clean Basket .010" to .156" Slotted Wedge Wire*[1]

(Sizes 2" - 36")

FA1
FA2



* For other fluids and/or special conditions, consult factory

1. For screen sizes below .010" contact factory.

SCREEN SIZES AND OPEN AREA RATIOS

Slot Opening (inches)	Micron (Equivalent)	Mesh (Equivalent)	Open Area %
.156	3962	N/A	71
.125 (1/8)	3175	N/A	67
.094	2350	N/A	61
.063 (1/16)	1600	10	51
.031 (1/32)	775	20	34
.020	500	30	25
.015	381	40	20
.010	254	60	14.3
.005	127	120	7.7
.003	75	200	4.7

* Contact factory for other screen sizes

For Installation and Maintenance Instructions – please contact the factory

FA SERIES

FABRICATED AUTOMATIC SELF-CLEANING STRAINER

Sizing and Selection Guidelines and Worksheet

The information below is the standard FA Series operating parameters and guidelines. Custom engineered designs are available on customer request. Please consult the factory for requirements outside of the normal operating parameters and guidelines below.

1. The strainer meets the design pressure and temperature of the required service application.
2. Determine the backwash discharge pressure, recommend backwash to atmospheric pressure.
3. Minimum inlet pressure (or differential pressure between inlet pressure and backwash discharge pressure) is 20 psid.
4. Review the quantity and type of debris to be removed. Suspended solids should not exceed 200 PPM or 2% of volume.
5. Select the correct screen size and open area for the application *(See page 105)*
6. Determine your acceptable maximum pressure drop across the strainer and review with the FA Series pressure drop curves *on page 105*
7. Strainer inlet velocity should be 6 to 10 feet/min.

Sizing and Selection Worksheet – (Please submit with order and quotation requests)

A. Sizing Requirements

1. Fluid Service: _____
2. Specific Gravity (i.e water =1): _____
3. Viscosity (CPS / SSU) _____
4. Inlet Pressure (PSI): Min _____; Max _____; Operating _____
5. Temperature (F): Min _____: Max _____; Operating _____
6. Flow Rate (GPM): Min _____; Max _____; Operating _____
7. Max allowable Pressure drop (PSI): Clean _____; Dirty _____
8. Backwash pressure (PSI) _____ (enter 0 for atmospheric)
9. Solids to be removed: ☐ Hard; ☐ Soft; ☐ Fibrous ☐ Sticky
10. Solid Concentration (PPM): _____
11. Solid Size: Inches _____ or Microns _____
12. Special : _____

B. Strainer Construction

1. Design Code: ☐ ASME VIII Non Code; ☐ ASME VIII Code “U” Stamp; ☐ Other _____
2. Inlet Size (inches): _____
3. Outlet Size (inches): _____
4. Body Material: ☐ CS; ☐ 304SS; ☐ 316SS ☐ Other _____
5. End Connections: ☐ 125# FF Flanged; ☐ 150# RF Flanged; ☐ Other_____
6. Basket Material: ☐ 304SS; ☐ 316SS ☐ Other _____
7. Screen Size (Slot Size): _____
8. Special: _____

C. Controls

1. Panel: ☐ Nema 4; ☐ Other _____
2. Motor power supply (V, PH, Hz): ☐ 110/120V, 1PH, 60Hz; ☐ Other _____
3. Special: _____

D. Other Special Requirements:_____

Applications

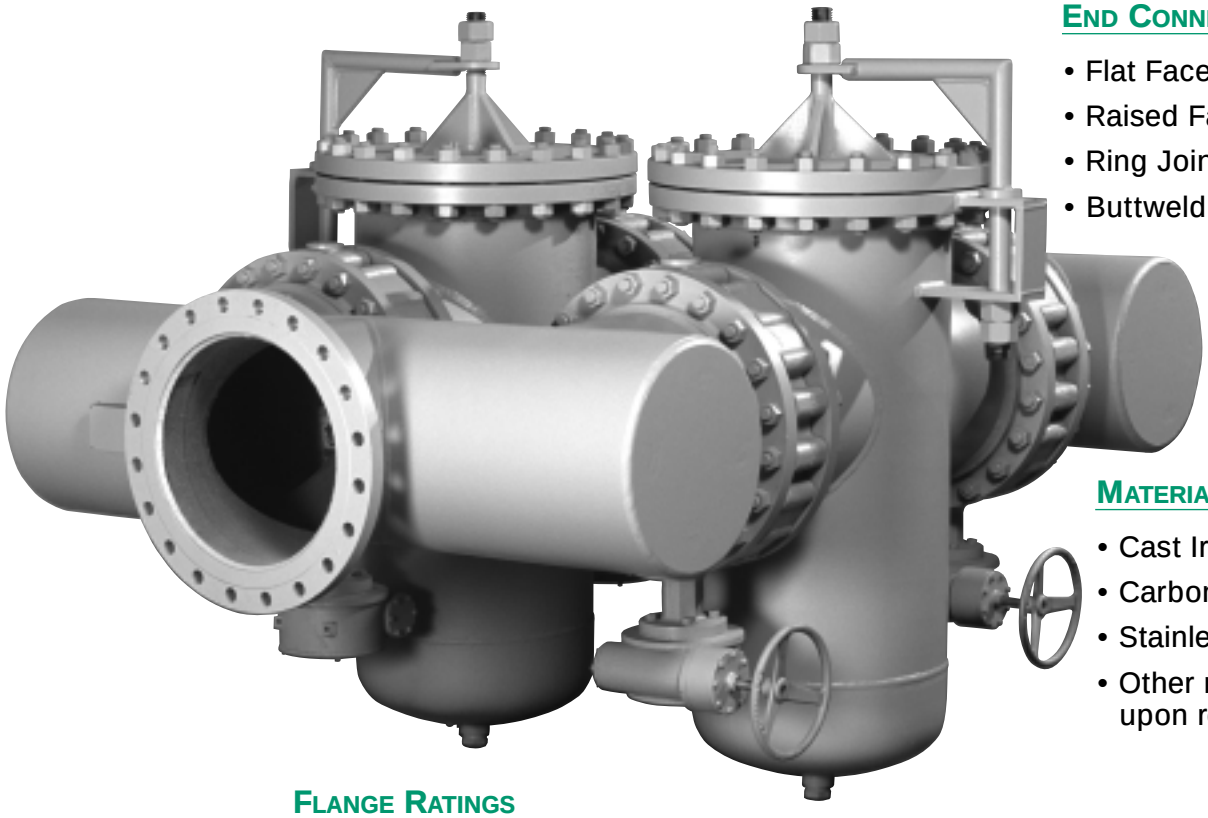
- Chemical Industry
- Metals & Mining
- Process Industry
- Water & Waste Water
- Power Industry
- Pulp & Paper
- Oil & Gas

Fabricated Duplex Strainers

Pressures to 1480 PSIG
Temperatures to 800ºF

Features

- Standard or Custom configurations
- Bolted or Welded Construction
- Compact and Economical units available
- Large strainer baskets



End Connections

- Flat Faced Flanged
- Raised Faced Flanged
- Ring Joint Flanged
- Buttweld

Materials

- Cast Iron
- Carbon Steel
- Stainless Steel
- Other materials upon request

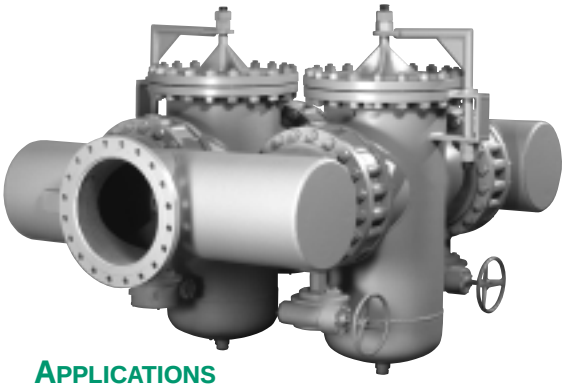
Flange Ratings

- ASME Class 125
- ASME Class 150
- ASME Class 300
- ASME Class 600
- Higher class ratings upon request

Sizes

- 2” (50mm) to 24” (600 mm)
- Larger sizes upon request

Request quote



FD SERIES
FABRICATED DUPLEX STRAINERS

PRESSURES TO 1480 PSIG (102 BARG)
TEMPERATURES TO 800ºF (427ºC)

- **Standard or Custom Configurations for tight installations, performance and/or economy**
- **Bolted cast or fabricated headers and/or strainers**
- **Four individual operated isolation valves are used to divert and isolate flow.**
- **Drain connections furnished with plug as standard**
- **SS Perforated baskets are standard**

APPLICATIONS

- Water, oil systems
- Other liquid systems
- Protection of pumps, meters, valves and other similar equipment

OPTIONS

- Other Materials, Sizes and/or Configurations
- Quick Opening Covers – *See page 121*
- Other Shut off valves/check valves
- Slave linked isolation valves
- Other Scrren, Mesh or Wedgewire – *See page 120*
- Vent and/or Differential Pressure Connections
- Legs and other supports
- Backflush or Backwash
- "U" Stamped Vessels
- Steam Jacketing
- Air Vents
- NACE MR010-75 Certification
- External/Internal Coatings

MODELS *See FD Selection Chart on page 109*

- FD1–Center I/O, Fabricated Headers and (FB2) Fabricated Strainers
- FD2–Off-Center I/O, Cast Iron Headers and (125B1) Cast Strainers
- FD3–Offset I/O, Fabricated Headers and Strainers
- FD4–Center I/O, Fabricated Header and Cast (150B1) Cast Strainers
- FD5–Center I/O, Fabricated Headers and (FB2) Fabricated Strainers
- FD6–Off-Center I/O, Fabricated Headers and (150B1) Cast Strainers
- FD7–Off-Center I/O, Fabricated Headers and (FB2) Fabricated Strainers
- FDZ - Other

APPLICABLE CODES

- Fabricated strainer and header bodies are Desinged/Manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I
- Canadian Registration Numbers (CRN) upon request
- Welders Certified to ASME Section IX

FD Series Ordering Code

Model		Material	Inlet Size	Class	I/O Connection	Dash	Cover	Perf	Mesh	Isolation Valves
F	D	1	T	H	1	R	-	H	4	2	D
1	2	3	4	5	6	7	8	9	10	11	12

Model - Position 1-3
FD1
FD2
FD3
FD4
FD5
FD6
FD7
FDZ

Material - Position 4
I - Cast Iron
C - Carbon Steel
L - Low Temp CS
V - 304 SS
T - 316 SS
M - Monel
H - Hastelloy
Z - Other

Inlet Size - Position 5
H - 2
J - 2-1/2
K - 3
M - 4
N - 5
P - 6
Q - 8
R - 10
S - 12
T - 14
U - 16
V - 18
W - 20
X - 22
Y - 24
Z - Other

Class - Position 6
1 - 150/125
3 - 300
4 - 600
5 - 900
Z - Other

I/O Connection - Position 7
B - Butt Weld
F - Flat Face Flange
N - NPT
J - Ring Joint Flange
R - Raised Face Flange
K - Socket Weld
Z - Other

Dash - Position 8
-

Cover - Position 9
A - None
B - Bolted
C - Bolted w/C-Clamp
D - Bolted w/Davit
J - Bolted w/Hinge

Quick Opening Covers
H - T - Bolt Hinged
T - Threaded Hinged
Y - Yoke Hinged
Z - Other

Perf - Position 10
A - None
B - 3/64
1 - 1/32
2 - 1/16
3 - 3/32
4 - 1/8
5 - 5/32
6 - 3/16
7 - 7/32
8 - 1/4
9 - 3/8
Z - Other

Mesh - Position 11
A - None
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100
9 - 120
Z - Other

Isolation Valves - Position 12
D - DI Body, Soft Seated Butterfly Valve (standard)
C - CS Body, Metal Seated Butterfly Valves
T - SS Body, Metal Seated Butterfly Valves
Z - Other

NOTE: For any variation, use the part numbering system above but clearly indicate the additional requirements.

FD SERIES
FABRICATED DUPLEX STRAINERS
OPERATION/SELECTION

The Spence Strainer Fabricated Duplex Strainer is used in applications where fluid flow cannot be interrupted when the basket is removed for cleaning and/or maintenance. The Spence Strainer Duplex Strainer consists of the following parts:

- (2) Spence Basket Strainers
  (Fabricated FB Series or Cast 125B or Cast 150B Series)
- (2) Header assemblies – Inlet and outlet
- (4) Isolation shut off valves (BF Series Butterfly valves)

The unit is designed to allow changeover from one strainer to the other when cleaning or maintenance work is required. The changeover is accomplished by isolating the particular strainer via closing the two isolation valves around the strainer to provide a tight shut off between the strainer chamber.

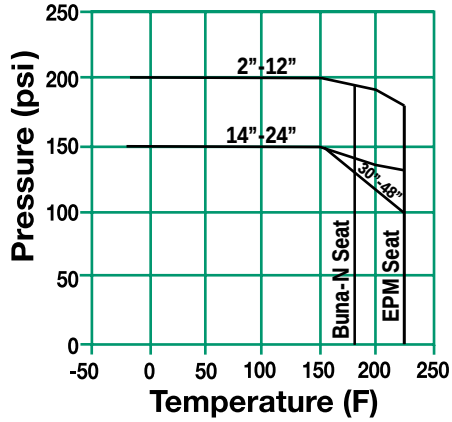
The Strainer and Header assemblies are custom designed and engineered to meet the specific requirements of the application. Many options are available including higher pressure ratings, quick opening covers, various types of isolation valves, special internal coatings and more. Spence Strainers offers seven standard model Duplex Strainers as well as our custom designed units to meet both your application and cost requirements as outlined below.

FD Series Selection Chart

Model	Size (inches)	Material	Inlet/Outlet Connections	Basket Strainers	Headers	Face-to-Face[2]	Cost[3]	Pressure Drop[4]	OAR[5]
FD1	2 - 24	CS, SS	Center	Fabricated	Welded	2	7	2	2
FD2[1]	2 - 16	Cast Iron	Off-Center	Cast	Bolted	3	1	1	3
FD3	2 - 24	CS, SS	Offset	Fabricated	Welded	1	6	2	1
FD4 (Standard unit)	2 - 12	CS, SS	Center	Cast	Welded	5	2	2	3
FD5 (Standard unti)	2 - 24	CS, SS	Center	Fabricated	Welded	5	4	2	2
FD6	2 - 12	CS, SS	Off-Center	Cast	Welded	4	3	1	3
FD7	2 - 24	CS, SS	Off-Center	Fabricated	Welded	4	5	1	2
FDZ	Custom Engineering and Fabricating								

1. All units have differential ports as standard except FD2.
2. 1 being shortest
3. 1 being lowest cost
4. 1 being lowest pressure drop
5. 1 being highest OAR

PRESSURE/TEMPERATURE CHART[1]
All Duplex models using BF Series Butterfly (EPDM-Seat Standard)



NOTES: For higher pressure classes and other materials, consult factory.
For quick opening cover pressure and temperature ratings see pages 121 and 122.

1. Ratings based on BF series Butterfly valves with Ductile Iron body, Ductile Iron disc, EPDM seat (see page 232) – In most cases the isolation valve is the limiting item for the maximum pressure/ temperature ratings. For higher rated options and other materials / isolation valves please consult the factory.

FD1 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

Fabricated strainer and header bodies shall be designed and manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body and header shall be fabricated steel or other specified material and inlet/outlet connections shall be In-Line Center Design. The header shall be a receiver tank design. The strainer shall be a single basket type with a slant top design. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD1_____.

MATERIALS OF CONSTRUCTION
(CARBON STEEL SHOWN[1])

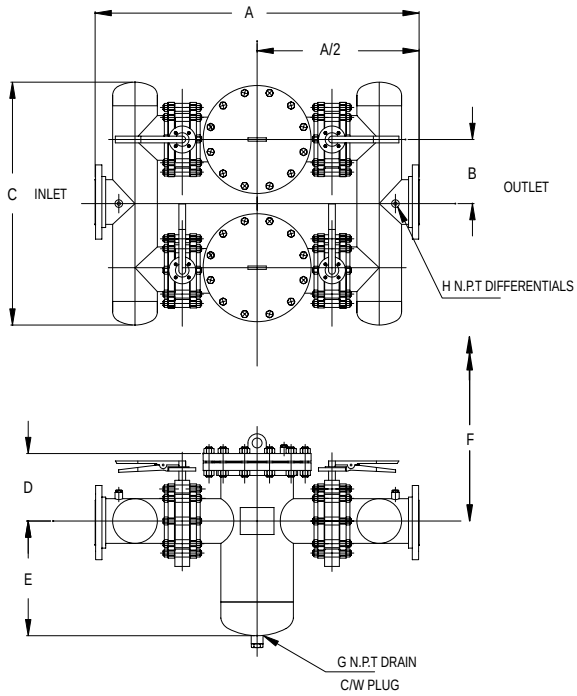
Basket Strainers
Standard..... See FB2 on page 82

Headers
Pipe .....SA53S/B or SA106-B
Flanges.....SA105
Couplings SA105

Shutoff Valves
Standard[1].....See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware
Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact factory.
2. For recommended spare parts - *See FB2 on page 82*
3. Material specification will change when NACE MR01-75 is required.
4. Lever are standard on 8" and lower, Gears on 10" and higher



Note: Standard Covers on basket strainers are bolted.

Inlet/Outlet Connections[5]: 2-24"
RF, FF, RTJ Flanged or Buttweld

5. Larger sizes available upon request. For Buttweld connection please specify mating pipe schedule

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*
150# Class flanges shown (For 300# and 600# dimensions and weights, contact factory)

SIZE	A	B	C	D	E	F	G NPT	H NPT	WEIGHT	
									Cover	Unit
2 (50)	27 15/16 (710)	5 3/16 (132)	20 (508)	6 (152)	8 7/8 (225)	22 1/8 (562)	1/2 (13)	1/2 (13)	17 (7.7)	177 (80)
3 (80)	36 1/16 (916)	6 1/8 (156)	24 (610)	6 1/4 (191)	11 5/8 (295)	20 3/4 (527)	1/2 (13)	1/2 (13)	26 (11.8)	403 (184)
4 (100)	40 3/8 (1025)	7 1/8 (181)	26 (660)	8 1/2 (184)	10 5/8 (270)	21 1/8 (537)	1/2 (13)	1/2 (13)	26 (11.8)	530 (243)
6 (150)	42 1/8 (1089)	9 7/8 (251)	36 (914)	9 5/8 (244)	12 1/2 (318)	27 1/4 (692)	3/4 (19)	1/2 (13)	45 (20.4)	737 (334)
8 (200)	53 (1347)	11 (279)	43 (1092)	10 15/16 (278)	19 1/2 (495)	36 1/8 (918)	1 (25)	1/2 (13)	70 (31.8)	1453 (659)
10 (250)	64 15/16 (1649)	13 3/8 (340)	55 (1397)	15 1/2 (394)	21 (533)	32 1/4 (819)	1 1/2 (38)	1/2 (13)	110 (49.9)	2016 (894)
12 (300)	76 1/4 (1937)	13 1/2 (343)	57 (11448)	15 5/8 (397)	22 (559)	46 7/8 (1191)	1 1/2 (38)	1/2 (13)	139 (63.1)	2974 (1323)
14 (350)	81 3/8 (2067)	14 5/8 (371)	60 (1524)	15 5/8 (397)	26 (660)	46 3/8 (1178)	1 1/2 (38)	1/2 (13)	180 (81.6)	4803 (2167)
16 (400)	96 5/16 (2447)	15 7/8 (403)	64 (1626)	15 3/4 (400)	30 (762)	55 (1397)	2 (51)	1/2 (13)	285 (129.3)	7053 (3199)
18 (450)	110 11/16 (2812)	19 7/8 (505)	82 (2083)	20 1/8 (511)	28 (711)	59 3/4 (1518)	2 (51)	1/2 (13)	285 (129.3)	7753 (3485)
20 (500)	115 3/4 (2940)	20 3/8 (518)	87 (2110)	23 5/8 (600)	32 (813)	66 1/2 (1689)	2 (51)	1/2 (13)	430 (195)	10304 (4671)
24 (600)	132 1/4 (3359)	21 3/8 (543)	94 (2388)	24 7/8 (632)	38 (965)	79 (2007)	2 (51)	1/2 (13)	965 (437.7)	15016 (6811)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD2 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

The duplex strainer shall be designed and manufactured to meet ASME class 125 rated flanges. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body shall be cast iron material and shall be an angular basket design. The header shall be cast iron material and shall have off-center inlet/outlet connections. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD2 _____.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN[1])

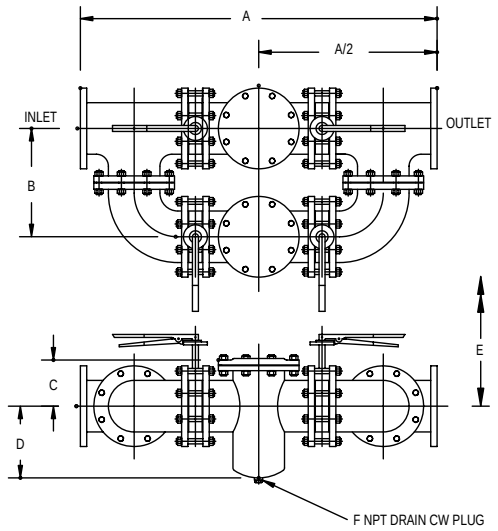
Basket Strainers
Standard ..... See 125B page 64

Headers
Flanged Fittings .....Cast Iron ASTM A126-B

Shutoff Valves
Standard[1] .....See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware
Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact Spence Strainers.
2. For recommended spare parts - See 125B on page 64
3. Material specification will change when NACE MR01-75 is required.
4. Levers are standard on 8" and lower, Gears on 10" and higher
Note: Differential port not available on model FD2.



Note: Standard Covers on basket strainers are bolted.
C-Clamp covers are available as option see page 121

Inlet/Outlet Connections[5]: 2-16"
FF Flanged

5. Larger sizes available upon request.

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 3"	3/64" Perf.	304SS
4"- 16"	1/8" Perf	304SS

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*
125# Class flanges shown

SIZE	A	B	C	D	E	F NPT	WEIGHT	
							Cover	Unit
2 (50)	29 7/16 (748)	9 1/8 (232)	4 1/16 (103)	5 (127)	11 3/4 (298)	1/2 (13)	5 (2.3)	174 (79)
3 (80)	35 7/16 (900)	11 1/8 (283)	5 1/16 (129)	7 1/8 (181)	15 3/8 (391)	3/4 (19)	9 (4.1)	306 (139)
4 (100)	41 5/8 (1057)	13 1/8 (333)	5 5/8 (143)	8 (203)	17 3/4 (451)	1 (25)	13 (5.9)	499 (226.5)
6 (150)	51 1/4 (1302)	16 1/8 (410)	6 3/4 (171)	9 (229)	23 (584)	1 (25)	26 (11.8)	735 (333.4)
8 (200)	59 1/2 (1510)	18 1/8 (460)	7 15/16 (202)	12 (305)	30 (762)	1 1/2 (38)	45 (20.4)	1216 (551.6)
10 (250)	69 5/16 (1760)	22 1/8 (562)	12 (305)	14 (356)	35 1/2 (602)	1 1/2 (38)	70 (31.8)	1958 (888)
12 (300)	80 3/4 (2051)	24 1/8 (613)	13 1/8 (333)	17 (432)	42 1/2 (1080)	2 (51)	110 (49.9)	2919 (1323.9)
14 (350)	92 1/4 (2343)	28 1/8 (714)	15 1/2 (394)	22 (559)	53 (1346)	1 1/2 (38)	140 (63.5)	4182 (1897.2)
16 (400)	99 15/16 (2539)	30 1/8 (765)	16 5/8 (422)	22 7/8 (581)	55 5/8 (1413)	2 (51)	180 (81.6)	5566 (2524.8)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD3 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

Fabricated strainer and header bodies shall be designed and manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body and header shall be fabricated steel or other specified material and inlet/outlet connections shall be Off-Set Design to minimize the face-to-face dimension. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD3_____.

MATERIALS OF CONSTRUCTION
(CARBON STEEL SHOWN[1])

Basket Strainers

Standard ..... See FB2 on page 82
Note: Design is different but materials are the same

Headers

Pipe .....SA53S/B or SA106-B
Flanges SA105
Couplings SA105

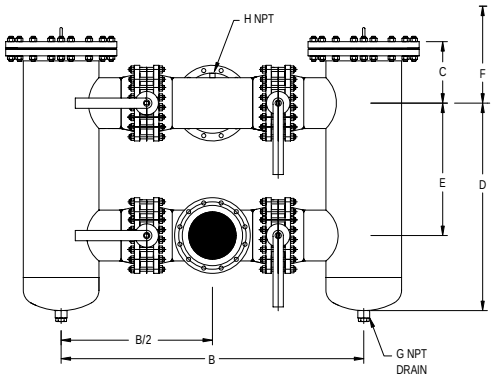
Shutoff Valves

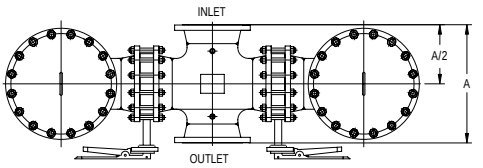
Standard[1] ..... See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware

Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact Spence Strainers.
2. For recommended spare parts - See FB2 on page 82
3. Material specification will change when NACE MR01-75 is required.
4. Levers are standard on 8" and lower, Gears on 10" and higher





Note: Standard Covers on basket strainers are bolted.

Inlet/Outlet Connections[5]: 2-24"
RF, FF, RTJ Flanged or Buttweld

5. Larger sizes available upon request. For Buttweld connection please specify mating pipe schedule

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*
150# Class flanges shown (For 300# and 600# dimensions and weights, contact factory.)

SIZE	A	B	C	D	E	F	G NPT	H NPT	WEIGHT	
									Cover	Unit
2 (50)	10 (254)	26 (660)	6 (152)	20 (508)	14 (356)	32 (813)	3/4 (20)	1/2 (15)	26 (12)	280 (127)
3 (80)	12¼ (311)	30 (762)	8 (203)	22½ (572)	14½ (368)	38½ (978)	1 (25)	1/2 (15)	45 (20)	300 (136)
4 (100)	14¼ (362)	36 (914)	8 (203)	25½ (648)	17½ (445)	41½ (1054)	1 (25)	1/2 (15)	45 (20)	450 (204)
6 (150)	18¾ (464)	44 (1118)	10 (254)	31 (787)	21 (533)	51 (1295)	1 (25)	1/2 (15)	70 (32)	700 (318)
8 (200)	22 (559)	50 (1270)	12 (305)	35 (889)	23 (584)	59 (1499)	1 (25)	1/2 (15)	110 (50)	1400 (636)
10 (250)	25 (635)	64 (1626)	13 (330)	39 (991)	28 (660)	65 (1651)	1½ (40)	1/2 (15)	180 (82)	1850 (840)
12 (300)	29 (737)	72 (1829)	14 (356)	44 (1118)	30 (762)	72 (1829)	1½ (40)	1/2 (15)	220 (100)	2750 (1249)
14 (350)	32 (813)	76 (1930)	18 (457)	50 (1270)	32 (813)	86 (2184)	2 (50)	1/2 (15)	285 (129)	4000 (1816)
16 (400)	34 (864)	84 (2134)	20 (508)	54 (1372)	34 (864)	94 (2388)	2 (50)	1/2 (15)	430 (195)	5300 (2406)
18 (450)	38 (965)	94 (2388)	20 (508)	56 (1422)	36 (914)	96 (2438)	2 (50)	1/2 (15)	430 (195)	5900 (2679)
20 (500)	41⅜ (1051)	104 (2642)	24 (610)	64 (1626)	40 (1016)	112 (2845)	2 (50)	1/2 (15)	965 (438)	8000 (3632)
24 (600)	46 (1168)	122 (3099)	28 (711)	76 (1930)	48 (1219)	132 (3353)	2 (50)	1/2 (15)	1540 (699)	9000 (4086)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD4 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

The duplex strainer shall be designed and manufactured to meet ANSI 150 PSIG rated flanges. The header shall be designed and manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body shall be cast CS or SS and the header shall be fabricated steel or other specified material. The inlet/outlet connections shall be In-Line Center Design. The strainer shall be a single basket type with a slant top design. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD4_____.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN[1])

Basket Strainers

Standard ..... See 150B1 on page 68

Headers

Pipe .....SA53S/B or SA106-B
Flanges SA105
Couplings SA105

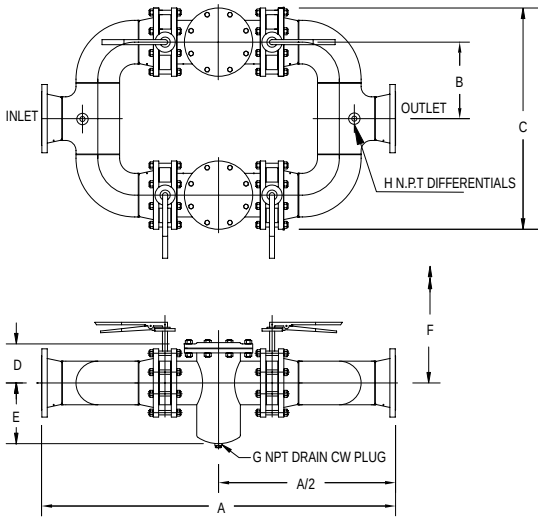
Shutoff Valves

Standard[1] .....See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware

Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact Spence Strainers.
2. For recommended spare parts - See 150B1 on page 68
3. Material specification will change when NACE MR01-75 is required.
4. Levers are standard on 8" and lower, Gears on 10" and higher



Note: Standard Covers on basket strainers are bolted.

Inlet/Outlet Connections[5]: 2-12"
RF, FF, RTJ Flanged or Buttweld

5. Larger sizes available upon request. For Buttweld connection please specify mating pipe schedule

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 3"	3/64" Perf.	304SS
4"- 12"	1/8" Perf.	304SS

Note: Other screens and mesh liners available upon request

FABRICATED DUPLEX STRAINERS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*
150# Class flanges shown

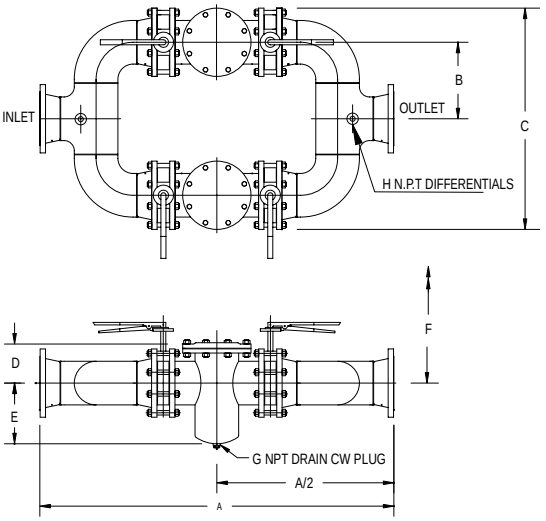
SIZE	A	B	C	D	E	F	G NPT	H NPT	WEIGHT	
									Cover	Unit
2 (50)	30 13/16 (783)	4 5/8 (117)	15 1/4 (387)	3 15/16 (100)	5 5/8 (143)	12 1/2 (318)	1 (25)	1/2 (13)	5 (2.3)	167 (75.9)
3 (80)	37 11/16 (957)	6 1/2 (165)	20 1/2 (521)	4 15/16 (125)	7 9/16 (192)	15 3/8 (391)	1 (25)	1/2 (13)	9 (4.1)	285 (129.3)
4 (100)	44 3/8 (1127)	8 1/4 (210)	25 1/2 (648)	5 5/8 (148)	10 1/16 (258)	21 1/4 (540)	1 (25)	1/2 (13)	13 (5.9)	442 (200.3)
6 (150)	57 (1448)	11 3/4 (298)	34 1/2 (876)	6 7/8 (175)	10 5/16 (262)	22 1/2 (572)	1 (25)	1/2 (13)	26 (11.8)	736 (333.8)
8 (200)	70 (1779)	15 1/8 (384)	43 3/4 (1111)	8 7/8 (225)	13 1/16 (332)	29 3/8 (746)	1 (25)	1/2 (13)	45 (20.4)	1240 (562.4)
10 (250)	78 13/16 (2001)	18 5/8 (473)	53 1/4 (1353)	11 2/3 (296)	13 3/8 (340)	35 (889)	1 (25)	1/2 (13)	70 (31.8)	1783 (808.9)
12 (300)	94 3/4 (2407)	22 1/8 (562)	63 1/4 (1607)	13 3/4 (348)	17 (432)	42 1/2 (1080)	2 (51)	1/2 (13)	110 (49.9)	2781 (1261.6)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD5 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

Fabricated strainer and header bodies shall be designed and manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body and header shall be fabricated steel or other specified material and inlet/outlet connections shall be In-Line Center Design. The strainer shall be a single basket type with a slant top design. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD5_____.



Note: Standard Covers on basket strainers are bolted.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN[1])

Basket Strainers

Standard ..... See FB2 on page 82
Note: Design is different but materials are the same

Headers

Pipe .....SA53S/B or SA106-B
Flanges SA105
Couplings SA105

Shutoff Valves

Standard[1] .....See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware

Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact Spence Strainers.
2. For recommended spare parts - See FB2 on page 82
3. Material specification will change when NACE MR01-75 is required.
4. Levers are standard on 8" and lower, Gears on 10" and higher

Inlet/Outlet Connections[5]: 2-24"
RF, FF, RTJ Flanged or Buttweld

5. Larger sizes available upon request. For Buttweld connection please specify mating pipe schedule

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*

150# Class flanges shown (For 300# and 600# dimensions and weights, contact factory.)

SIZE	A	B	C	D	E	F	G NPT	H NPT	WEIGHT	
									Cover	Unit
2 (50)	32 13/16 (834)	4 5/8 (117)	15 1/4 (387)	6 (152)	8 7/8 (225)	22 1/8 (562)	1/2 (13)	1/2 (13)	17 (7.7)	177 (80.4)
3 (80)	41 5/16 (1049)	6 1/2 (165)	20 1/2 (521)	6 1/4 (159)	11 5/8 (295)	20 3/4 (527)	1/2 (13)	1/2 (13)	26 (11.8)	401 (181.9)
4 (100)	46 7/8 (1190)	8 1/4 (210)	25 1/2 (648)	8 1/2 (216)	10 5/8 (270)	21 1/8 (537)	1/2 (13)	1/2 (13)	26 (11.8)	532 (241.2)
6 (150)	57 (1448)	11 3/4 (298)	34 1/2 (876)	9 5/8 (244)	12 1/2 (318)	27 1/4 (692)	3/4 (19)	1/2 (13)	45 (20.4)	774 (351.0)
8 (200)	69 1/4 (1760)	15 1/8 (384)	43 3/4 (1111)	10 15/16 (278)	19 1/2 (495)	36 1/8 (918)	1 (25)	1/2 (13)	70 (31.8)	1512 (685.8)
10 (250)	78 11/16 (1998)	18 5/8 (473)	53 1/4 (1353)	15 1/2 (394)	21 (533)	32 1/4 (819)	1 1/2 (38)	1/2 (13)	110 (49.9)	1965 (891.4)
12 (300)	94 3/4 (2407)	22 1/8 (562)	63 1/4 (1607)	15 5/8 (397)	22 (559)	46 7/8 (1191)	1 1/2 (38)	1/2 (13)	139 (63.1)	3019 (1369.6)
14 (350)	106 1/2 (2705)	25 1/8 (638)	71 1/4 (1810)	15 5/8 (397)	26 (660)	46 3/8 (1178)	1 1/2 (38)	1/2 (13)	180 (81.6)	4099 (1859.3)
16 (400)	117 5/16 (2980)	28 1/8 (714)	79 3/4 (2026)	15 3/4 (400)	30 (762)	55 (1397)	2 (51)	1/2 (13)	285 (129.3)	5890 (2671.9)
18 (450)	132 3/16 (3358)	31 5/8 (803)	88 1/4 (2242)	20 1/8 (511)	28 (711)	59 3/4 (1518)	2 (51)	1/2 (13)	285 (129.3)	6514 (2954.6)
20 (500)	144 3/8 (3667)	35 1/8 (892)	94 3/4 (2407)	23 5/8 (600)	32 (813)	66 1/2 (1689)	2 (51)	1/2 (13)	430 (195.0)	8463 (3838.9)
24 (600)	163 3/4 (4159)	41 1/8 (1045)	114 1/4 (2902)	24 7/8 (632)	38 (965)	79 (2007)	2 (51)	1/2 (13)	965 (437.7)	12654 (5739.9)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD6 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

The duplex strainer shall be designed and manufactured to meet ANSI 150 PSIG rated flanges. The header shall be designed and manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body shall be cast CS or SS and the header shall be fabricated steel or other specified material. The inlet/outlet connections shall be Offcenter Design. The strainer shall be a single basket type with a slant top design. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD6 _____.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN[1])

Basket Strainers

Standard ..... See 150B1 on page 68

Headers

Pipe .....SA53S/B or SA106-B
Flanges SA105
Couplings SA105

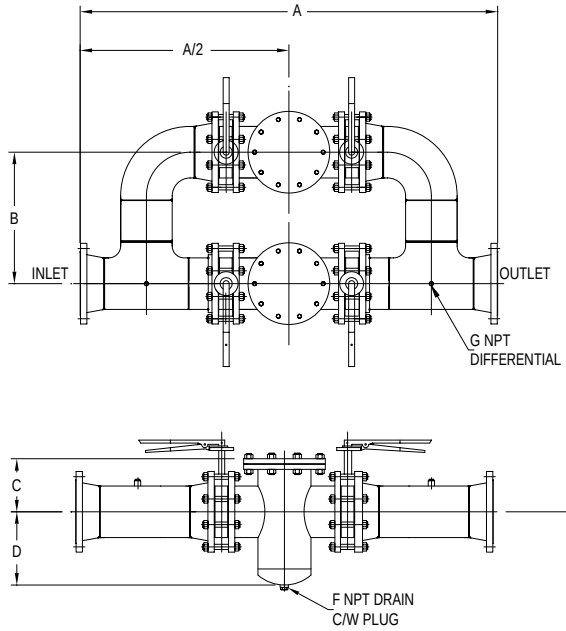
Shutoff Valves

Standard[1] ..... See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware

Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact Spence Strainers.
2. For recommended spare parts - See 150B1 on page 68
3. Material specification will change when NACE MR01-75 is required.
4. Levers are standard on 8" and lower, Gears on 10" and higher



Note: Standard Covers on basket strainers are bolted.

Inlet/Outlet Connections[5]: 2-12"
RF, FF, RTJ Flanged or Buttweld

5. Larger sizes available upon request. For Buttweld connection please specify mating pipe schedule

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 3"	3/64" Perf.	304SS
4"- 12"	1/8" Perf.	304SS

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*
150# Class flanges shown

SIZE	A	B	C	D	E	F NPT	G NPT	WEIGHT	
								Cover	Unit
2 (50)	31 13/16 (808)	10 (254)	3 15/16 (100)	5⅝ (143)	12½ (318)	1 (25)	1/2 (13)	5 (2.3)	168 (76)
3 (80)	38 5/16 (973)	12 (305)	4 15/16 (125)	7 9/16 (192)	15⅜ (391)	1 1	1/2 (13)	9 (4.1)	283 (128.5)
4 (100)	44½ (1130)	13 (330)	5⅞ (148)	10⅛ (258)	21¼ (540)	(25) 1	1/2 (13)	13 (5.9)	433 (196.5)
6 (150)	56⅛ (1426)	17 (432)	6⅞ (175)	10 5/16 (262)	22½ (572)	(25) (25)	1/2 (13)	26 (11.8)	706 (320.4)
8 (200)	67⅞ (1725)	21 (533)	8⅞ (225)	13 1/16 (332)	29⅜ (746)	1 (25)	1/2 (13)	45 (20.4)	1179 (535)
10 (250)	75 11/16 (1922)	25 (635)	11 2/3 (296)	13⅜ (340)	35 (889)	1 (25)	1/2 (13)	70 (31.8)	1686 (764.7)
12 (300)	90⅝ (2302)	28 (711)	13¾ (349)	17 (432)	42½ (1080)	2 (50)	1/2 (13)	110 (49.9)	2621 (1189)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD7 SERIES
FABRICATED DUPLEX STRAINERS

SPECIFICATION

Fabricated strainer and header bodies shall be designed and manufactured to meet ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div I. The duplex strainer shall have four butterfly isolation valves with Ductile Iron trim. The strainer body and header shall be fabricated steel or other specified material and inlet/outlet connections shall be In-Line Center Design. The strainer shall be a single basket type with a slant top design. The strainer shall be furnished with a bottom blowdown capability. The screen shall be size _____ perforated SS. The Duplex Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Duplex Strainer shall be Spence Strainers FD7_____.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN[1])

Basket Strainers

Standard ..... See FB2 on page 82

Headers

Pipe .....SA53S/B or SA106-B
Flanges SA105
Couplings SA105

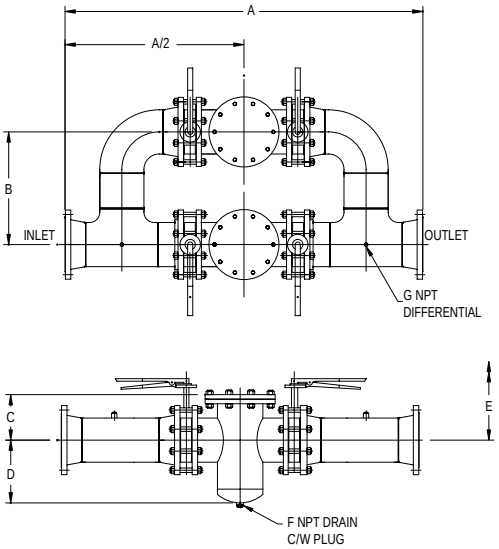
Shutoff Valves

Standard[1] .....See BF Butterfly valves on page 232
Ductile Iron Body (non wetted part)
Ductile Iron Disc, EPDM seats[3]

Hardware

Stud SA193-B7
Nut SA194-2H

1. Other Materials and/or Valves Available – contact Spence Strainers.
2. For recommended spare parts - See FB2 on page 82
3. Material specification will change when NACE MR01-75 is required.
4. Levers are standard on 8" and lower, Gears on 10" and higher



Note: Standard Covers on basket strainers are bolted.

Inlet/Outlet Connections[5]: 2-24"
RF, FF, RTJ Flanged or Buttweld

5. Larger sizes available upon request. For Buttweld connection please specify mating pipe schedule

SCREEN OPENINGS
(Basket Strainers)

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*

150# Class flanges shown (For 300# and 600# dimensions and weights, contact factory.)

SIZE	A	B	C	D	E	F NPT	G NPT	WEIGHT	
								Cover	Unit
2 (50)	33 11/16 (856)	10 (254)	6 (152)	8 7/8 (225)	22 1/8 (562)	1/2 (13)	1/2 (13)	17 (7.7)	178 (80.5)
3 (80)	41 15/16 (1065)	12 (305)	6 1/4 (191)	11 5/8 (295)	20 3/4 (527)	1/2 (13)	1/2 (13)	26 (11.8)	399 (181.2)
4 (100)	47 (1194)	13 (330)	8 1/2 (184)	10 5/8 (270)	21 1/8 (537)	1/2 (13)	1/2 (13)	26 (11.8)	523 (237.3)
6 (150)	56 1/8 (1426)	17 (432)	9 5/8 (244)	12 1/2 (318)	27 1/4 (692)	3/4 (19)	1/2 (13)	45 (20.4)	744 (337.6)
8 (200)	67 1/8 (1706)	21 (533)	10 15/16 (278)	19 1/2 (495)	36 1/8 (918)	1 (25)	1/2 (13)	70 (31.8)	1451 (658.4)
10 (250)	75 9/16 (1919)	25 (635)	15 1/2 (394)	21 (533)	32 1/4 (819)	1 1/2 (38)	1/2 (13)	110 (49.9)	1868 (847.2)
12 (300)	90 5/8 (2302)	28 (711)	15 5/8 (397)	22 (559)	46 7/8 (1191)	1 1/2 (38)	1/2 (13)	139 (63.1)	2859 (1297)
14 (350)	100 3/8 (2550)	31 (787)	15 5/8 (397)	26 (660)	46 5/8 (1178)	1 1/2 (38)	1/2 (13)	180 (81.6)	4756 (2157.2)
16 (400)	109 3/16 (2774)	34 (864)	15 3/4 (400)	30 (762)	55 (1397)	2 (50)	1/2 (13)	285 (129.3)	6951 (3153)
18 (450)	123 1/16 (3126)	38 (965)	20 1/8 (511)	28 (711)	59 3/4 (1518)	2 (50)	1/2 (13)	285 (129.3)	7542 (3421.1)
20 (500)	134 1/4 (3410)	41 (1041)	23 5/8 (600)	32 (813)	66 1/2 (1689)	2 (50)	1/2 (13)	430 (195)	10045 (4556.5)
24 (600)	149 5/8 (3801)	47 (1194)	24 7/8 (632)	38 (965)	79 (2007)	2 (50)	1/2 (13)	965 (437.7)	14874 (6746.8)

* Weights and dimensions with Bolted Cover.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FD SERIES

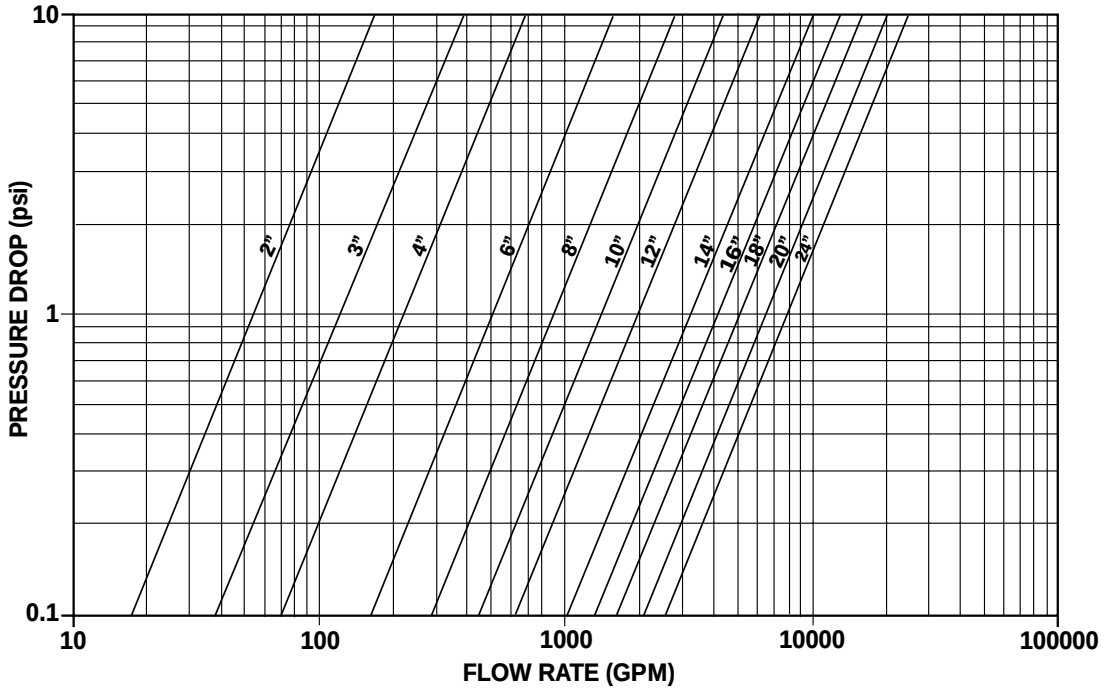
FABRICATED DUPLEX STRAINERS

PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

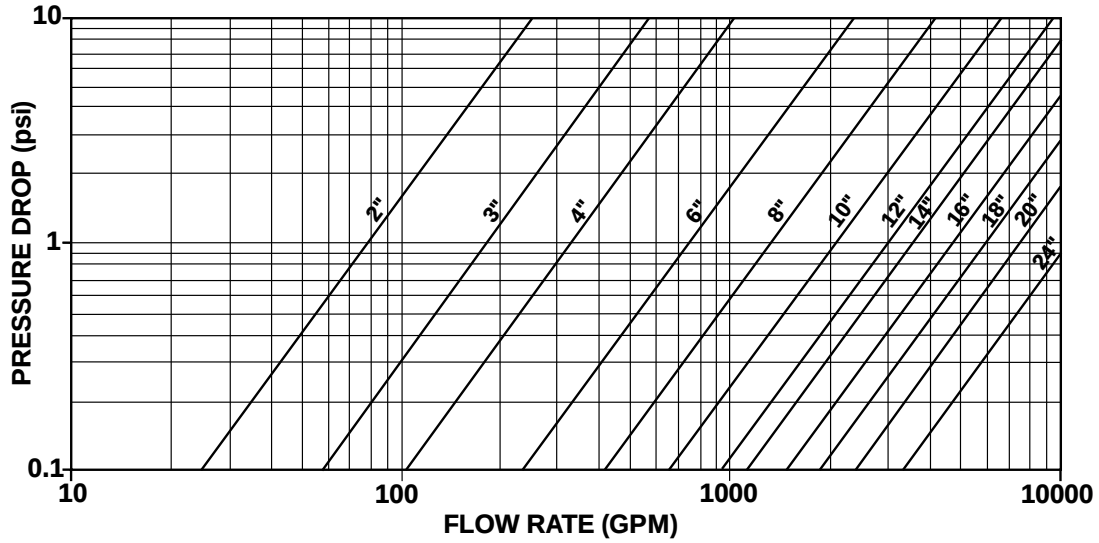
(Sizes 2" - 24")

FD1
FD3
FD4
FD5



(Sizes 2" - 24")

FD2
FD6
FD7



Correction Factors for Other Viscous Liquids and/or Mesh Liners
Page 125

Correction Factors for Clogged Screens
Page 125

FD SERIES
FABRICATED DUPLEX STRAINERS
OPEN AREA RATIOS

FD1 / FD5 / FD7 - Uses FB2 Strainer

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	1/8	40%	3.4	78	31	9.3
3	1/8	40%	7.4	133	53	7.2
4	1/8	40%	12.7	133	53	4.2
6	1/8	40%	28.9	266	106	3.7
8	1/8	40%	50.0	451	180	3.6
10	1/8	40%	78.9	562	225	2.9
12	1/8	40%	113.1	703	281	2.5
14	3/16	50%	137.9	938	469	3.4
16	3/16	50%	182.7	1204	602	3.3
18	3/16	50%	227.0	1429	715	3.1
20	3/16	50%	291.0	1916	958	3.3
24	3/16	50%	402.0	3393	1696	4.2

FD2 - Uses 125B Strainer

Size	Opening diameter (in)	Opening %	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	29.4	10.6	3.5
2½	3/64	36	4.91	43.6	15.7	3.3
3	3/64	36	7.07	75.0	27.0	3.9
4	1/8	40	12.57	104.4	41.8	3.3
6	1/8	40	28.27	177.3	70.9	2.5
8	1/8	40	50.27	307.0	122.8	2.4
10	1/8	40	78.54	450.0	180.0	2.3
12	1/8	40	113.1	688.5	275.4	2.4
14	1/8	40	153.94	1019.1	407.6	2.6
16	1/8	40	201.06	1248.6	499.4	2.5

FD4 / FD6 - Uses 150B Strainer

Size	Opening diameter (in)	Opening %	Nominal Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	3/64	36	3.14	38.1	13.7	4.4
2½	3/64	36	4.91	41.6	15.0	3.0
3	3/64	36	7.07	59.6	21.5	3.0
4	1/8	40	12.57	119.9	48.0	3.8
6	1/8	40	28.27	177.4	71.0	2.5
8	1/8	40	50.27	296.5	118.6	2.4
10	1/8	40	78.54	413.5	165.4	2.1
12	1/8	40	113.10	730.3	292.1	2.6

NOTE: For FD3 open area ratio – please contact the factory.

OAR = Free Screen Area / Nominal Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

Correction Factors for Other Viscous Liquids and/or Mesh Liners Page 125

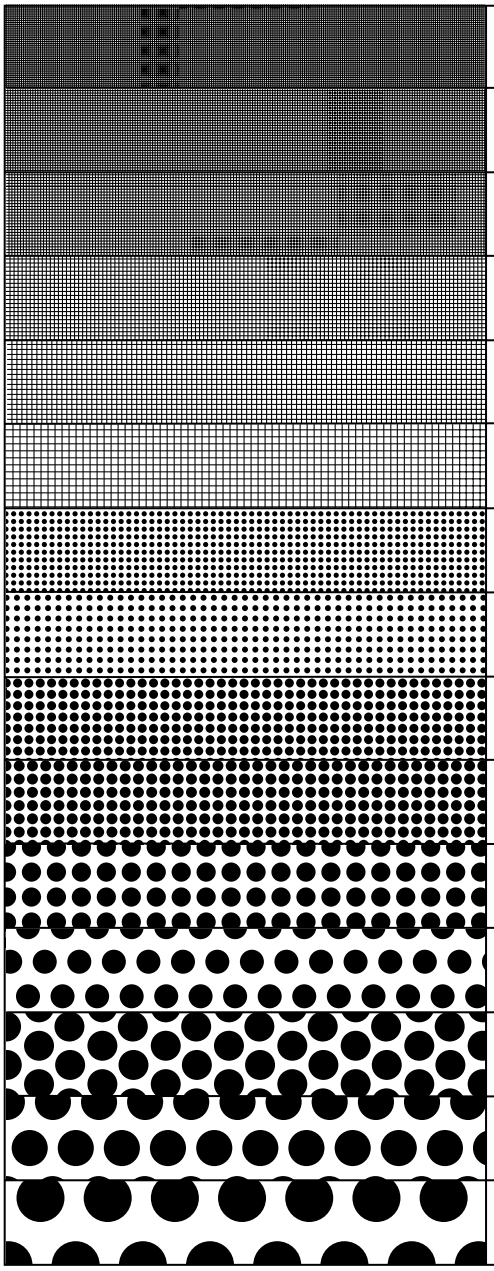
Other Screen Openings Page 120

Basket Burst Pressures Page 126

Correction Factors for Clogged Screens Page 125

DUPLEX STRAINER TECHNICAL INFORMATION

SCREEN OPENINGS



100 Mesh - 30% O.A. 0.006” Openings
80 Mesh - 36% O.A. 0.008” Openings
60 Mesh - 38% O.A. 0.010” Openings
40 Mesh - 41% O.A. 0.016” Openings
30 Mesh - 45% O.A. 0.022” Openings
20 Mesh - 49% O.A. 0.035” Openings
0.027” Dia.- 23% O.A.
0.033” Dia.- 28% O.A.
3/64” Dia.- 36% O.A.
1/16” Dia.- 37% O.A.
3/32” Dia.- 39% O.A.
1/8” Dia.- 40% O.A.
5/32” Dia.- 58% O.A.
3/16” Dia.- 50% O.A.
1/4” Dia.- 40% O.A.

FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

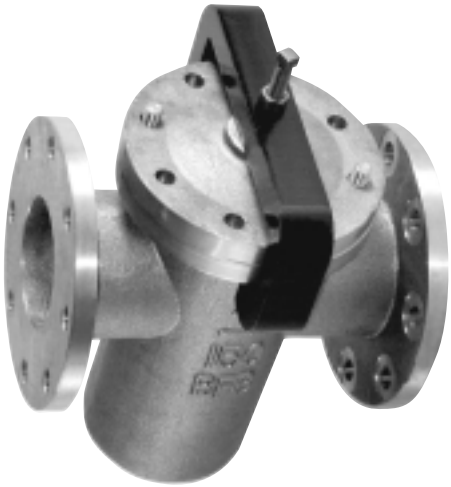
Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

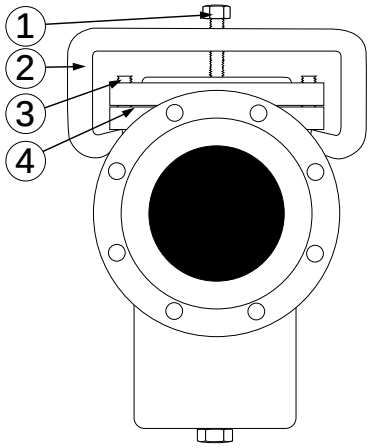
Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

FD2 SERIES

QUICK OPENING COVERS





COVER TYPE C - QUICK OPENING C-CLAMP

Cover Type C - Quick Opening C-Clamp

- **Ideal for low pressure applications.**
- **Allows for extremely quick access to strainer basket.**
- **To be used on non-lethal liquid service only.**

Availability

1/2" - 12"

Upper Pressure Limits (Non-shock)

M.A.W.P psig (bar)	Maximum Allowable Working Temp. °F (°C)
50 (3.44)*	100 (37.8)

* Through 5" inlet consult factory for larger sizes.

Part Numbers	Weight (lbs)
0200-clamp	5
0250- clamp	5
0300-clamp	5
0400-clamp	9
0500-clamp	10
0600-clamp	19
0800-clamp	21
1000-clamp	24
1200-clamp	27

Materials of Construction

Item #	Description	Specifications
1	Clamp Bolt (2)	A449 Grade 5
2	Clamp	A516-70 Carbon Steel
3	Anti-rotating Stud (2)	A307-B
4	Gasket - 1/2" - 6"	Flat Rubber (Non-asbestos)
	Gasket - 8" - 12"	Buna-N O-ring (Groove in Cover)

CAUTION: This type of closure does not meet the requirements of Section UG-35.2 of ASME Section VIII, Div. 1.
Use caution when utilizing this type of device.

Request quote

FD SERIES
FABRICATED STRAINERS
QUICK OPENING COVERS AND COVER REMOVAL AIDS

The quick release covers and cover removal aids, available on fabricated strainers, are distinguished by their compact size and functional design. Materials of construction are in accordance with ASME specifications and manufacturing complies with the applicable rules of the ASME Code for Pressure Piping and with the ASME Boiler and Pressure Vessel Code.

COVER REMOVAL AID

Cover Type D - Bolted with Davit Assembly

The Davit Assembly permits the user to swing the cover away to facilitate basket or screen removal for cleaning. It is used primarily for larger strainers where cover removal is difficult. The Davit Assembly is an inexpensive alternative to quick release covers, especially when operating conditions require a bolted cover.

Request quote

QUICK OPENING COVERS

Cover Type H - T-Bolt Hinged Cover

The T-bolt Hinged Cover is the most economical quick opening closure we offer on fabricated strainers for nominal pressure applications. The T-bolt Hinged Cover utilizes an O-ring seal. It opens quickly and easily by loosening the T-bolts until they clear the holding lugs and swinging the head open on its hinge. Camlock and Break-over Wrench Assemblies that eliminate the need for a wrench are also available.

FD SERIES
FABRICATED STRAINERS
QUICK OPENING COVERS AND COVER REMOVAL AIDS

Cover Type Y - Yoke Hinged Cover

The Yoke Hinged Cover is a true ANSI rated closure that utilizes an O-ring seal. The Yoke Hinged Cover is used primarily on high pressure applications and is available with 150#, 300#, 600#, 900#, and 1500# ANSI ratings with a wide range of operating aids, ranging from a single lever chain and sprocket drive to completely automated.

Cover Type T - Threaded Hinged Cover

The Quick Opening Threaded Cover consists of a cap fastened to a hub welded to the strainer body. The female cap is threaded onto the male hub with an O-ring seal. This O-ring prevents corrosion of the closure threads, providing long, trouble free service. The Threaded Cover is for both nominal and high pressure applications.

GENERAL COMPARISON OF DIFFERENT CLOSURE TYPES

Comparison Item	Closure Type				
	Bolted Type B	w/Davit Type D	T-Bolt Type H	Bolted Yoke Type Y	Threaded Type T
Cost	Lowest	Low	Moderate	High	High
Quick Opening Ability	Poor	Fair	Good	Best	Best
Low Pressure Applications	X	X	X	—	—
Nominal Pressure Applications	X	X	X	X	X
High Pressure Applications	X	X	—	X	X

Standard O-Ring material BUNA-N (-30 to 250ºF)
Standard O-Ring material Viton (-15 to 400ºF)

FD SERIES
REPLACEMENT BASKET SCREENS

We have screens and baskets for all makes of Y, basket and duplex strainers. The range of materials and size of units is unlimited.

We provide baskets manufactured from:

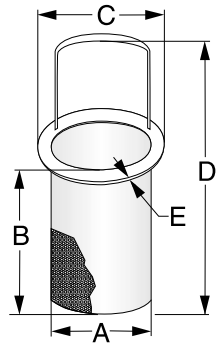
- **Perforated Plate**
- **Mesh or Mesh/Perf. Combination**
- **Wedge Wire**
- **Laser Beam Small Hole Perforated Plate**

Using the above processes or combination thereof, we can provide screens and baskets suitable for a wide range of applications.

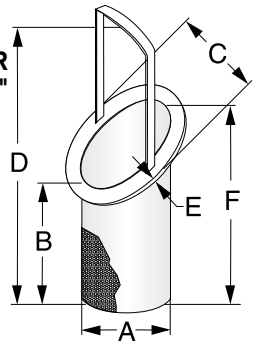
SCREEN/BASKET CHECKLIST

Kindly photocopy this page and fill out the pertinent information.

BASKET STRAINER STYLE "D"



BASKET STRAINER STYLE "B"



Performance Requirements

Description	Customers Requirement
Required Level of Filtration =	
Material of Construction =	
Minimum Specified Burst Pressure =	
Flow Direction =	
Other =	

Dimensional Requirements

Description		Customers Requirement
Style	B or D	
Basket Outer Diameter	A =	
Basket Height	B =	
Ring OD	C =	
Overall Height	D =	
Ring Thickness	E =	
Basket Long Height	F =	

FD SERIES

PRESSURE DROP CORRECTION FACTORS

Mesh Lined Baskets and/or Fluids with a Viscosity other than Water

Centistokes	SSU	Unlined Perforated Basket	20 Mesh Lined Basket	40 Mesh Lined Basket	60 Mesh Lined Basket	80 Mesh Lined Basket	100 Mesh Lined Basket	200 Mesh Lined Basket
2	30 (water)	1	1.05	1.2	1.4	1.6	1.7	2
100	500	1.6	1.7	1.9	2.1	2.4	2.6	3.1
216	1000	1.7	2	2.2	2.4	2.6	2.8	3.3
433	2000	1.9	2.2	2.4	2.7	2.9	3.2	3.8
650	3000	2	2.3	2.6	2.9	3.2	3.5	4.1
1083	5000	2.2	2.6	3	3.5	4	4.5	5.3
2200	10000	2.5	3	3.5	4.2	5	6	7.1

1) Obtain water pressure drop from graphs on appropiate product page.

2) Multiply the pressure drop obtained from (1) by the specific gravity of the liquid.

3) Multiply the pressure drop from (2) by the appropiate correction factor for the mesh liner and/or viscosity.

Example

Model: FD6
Size: 4"
Filtration: 1/8" perforated screen
40 Mesh lines
Flow rate: 200 GPM
Fluid: Water
SG: 1
Viscosity: 30 SSI

Answer

A) From Pressure Drop Chart, pressure drop of water is .38 psid

B) Multiply by specific gravity; .38 x 1 = .38 psid

C) From chart above, multiply .38 x 1.2 (correction factor) =.456 psid

CORRECTION FACTORS FOR CLOGGED SCREENS

% Clogged	Ratio of Free Screen Area to Pipe Area						
	10:1	8:1	6:1	4:1	3:1	2:1	1:1
10							3.15
20						1.15	3.9
30						1.4	5
40						1.8	6.65
50					1.25	2.5	9.45
60				1.15	1.8	3.7	14.5
70				1.75	2.95	6.4	26
80		1.1	1.75	3.6	6.25	14	58
90	2.3	3.45	6	13.5	24	55	

* Multiply values obtained from Pressure Drop Charts by the appropriate values shown below.

Example

Strainer Size: 6"
Model: FD6
Body: Carbon Steel
Filtration: 1/8" Perf.
Flow rate: 1000 GPM
Service: Water
% Clogged: 60%

Answer

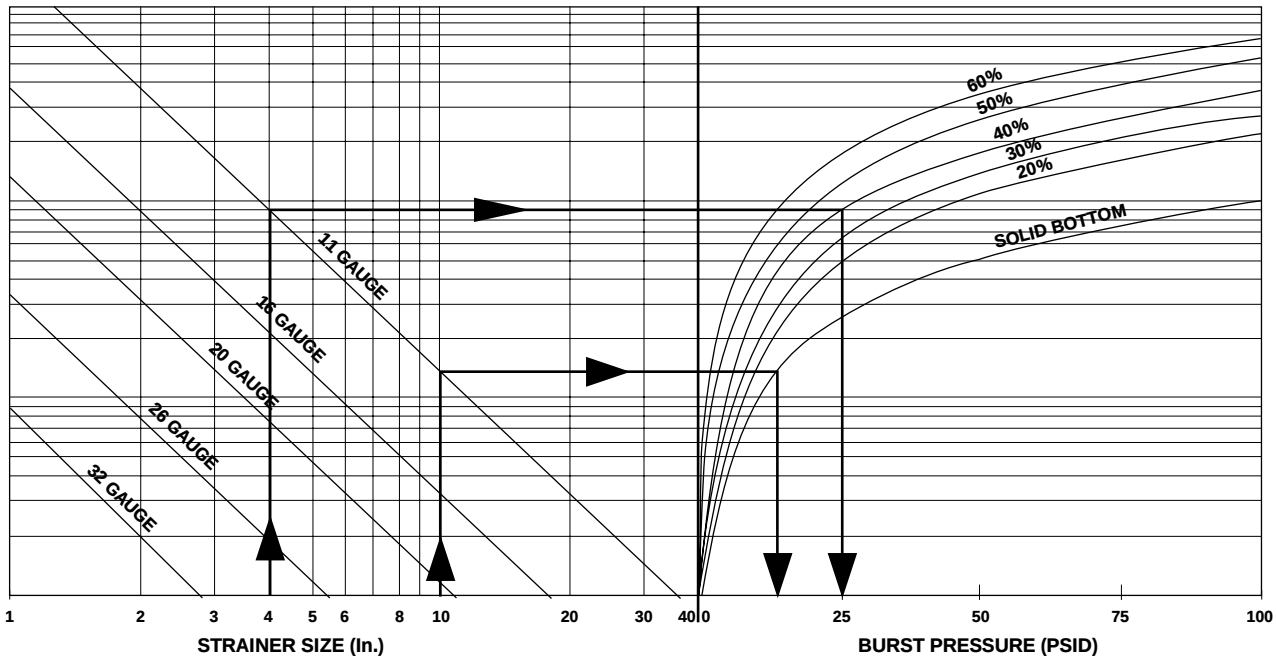
A) The Pressure Drop Chart indicates a drop of 1.50 psid with standard screen.

B) The Effective Area Chart indicates a ratio of 2.5:1 free area to pipe area.

C) Using Chart above we read the correction factor of 2.5:1 (2:1 approx.) to be 3.7 at 60% clogged.

D) Total pressure drop equals 1.50 x 3.7 = 5.55 psid.

FD SERIES
BURST PRESSURE



Baskets with perforated bottoms are standard.

Chart is based on standard dimensions. Higher burst pressure ratings are available. Please consult factory.

Chart is based on stainless steel screen material. No safety factor is incorporated. It is the responsibility of the user to determine an acceptable safety factor.

Example

Strainer Size: 10"

Basket Type: Perforated screen with 11 gauge solid flat bottom

Screen Material Open Area: 20% - 60%

Answer

A) Locate Strainer size.
B) Follow vertical line to solid thickness.
C) Follow horizontal line to solid bottom curve.
D) Follow vertical line downward to read burst pressure.
E) Burst pressure equals 15 psid.

Source: ASME Section VIII, Div. 1, UG-34

FD SERIES
CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. .. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation:

    Above _____

    Below _____

    Left side facing inlet _____

    Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Isolation Valves:

    ❒ Butterfly Valves:

    Type:

    ❒ Lug
    ❒ Wafer

    Seat::

    ❒ BunaN
    ❒ EPDM
    ❒ Metal/High Performance

    Disc:

    ❒ Ductile Iron
    ❒ Aluminum Bronze
    ❒ Stainless Steel

    ❒ Gate Valve

    ❒ Others _____
15. Actuators:

    ❒ Gear
    ❒ Levers
    ❒ Pneumatic
    ❒ Electric
16. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____ State _____ Zip Code _____

Telephone (_____) _____ Fax (_____) _____

FD SERIES
INSTALLATION AND MAINTENANCE INSTRUCTIONS

Strainer Installation Instructions

- Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.
- For horizontal and vertical pipelines, the strainer should be installed so that the blow-down drain connection is pointed downward.
- For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise motion. Threaded end strainers should use an appropriate sealant.
- Once installed, increase line pressure gradually and check for leakage around joints.
- If the strainer is supplied with a start-up screen, monitor pressure drop carefully.

Screen Removal Instructions

- Drain piping. (For Duplex Strainers, isolate required chamber).
- Vent line to relieve pressure.
- Loosen cover and open to access screen.
- Remove, clean and replace screen in original position (Note: In some instances, a high pressure water jet or steam may be required for effective cleaning)
- Inspect cover gasket for damage. If necessary, replace. (Note: If spiral wound gaskets have been used, they must be replaced and can not be used again).
- Tighten cover. The strainer is ready for line start-up.

CAUTION SHOULD BE TAKEN DUE TO POSSIBLE EMISSION OF PROCESS MATERIAL FROM PIPING. ALWAYS ENSURE NO LINE PRESSURE EXISTS WHEN OPENING COVER.

Maintenance Instructions

For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down line and follow the “Screen Removal Instructions” above. A pressure gauge installed before and after the strainer in-line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

Trouble Shooting Guides and Diagnostic Techniques

- After pressurizing, inspect cover and other joints for leakage. Gasket replacement or cover tightening is necessary if leakage occurs.
- If the required filtration is not taking place, ensure the screen is installed in the correct position, that being flush to the screen seating surfaces.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

T Strainers

Pressures to 3705 PSIG
Temperatures to 800ºF

Applications

- Steam, Liquid, Gas and Oil Service
- Process Equipment
- Power Industry
- Chemical Industry
- Water and Waste
- Pulp and Paper
- Metals and Mining

Features

- Horizontal or Vertical Installations
- Stainless Steel Perforated Screens
- Thru Bolt Cover is Standard

Materials

- Stainless Steel
- Carbon Steel
- Other materials upon request

End Connections

- Buttweld End
- RTJ or RF Flanges

Sizes

- 2" (50mm) up to 24" (600mm) as standard
- Large sizes upon request

Ratings

- ASME Class 150
- ASME Class 300
- ASME Class 600
- ASME Class 900
- ASME Class 1500

Higher Pressure Classes on Request

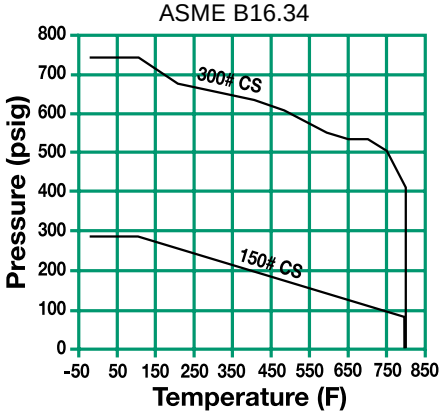
Request quote

FT SERIES
FABRICATED T-STRAINERS
PRESSURES TO 3705 PSIG (255 BARG)
TEMPERATURES TO 800ºF (427ºC)

- **Custom engineered and fabricated T strainers**
- **RF or RTJ Flanges or Buttweld end connections in accordance with ASME 16.34 and 16.5**
- **Standard thru bolt cover design.**
- **Installation in horizontal or vertical pipelines.**
- **Three flow configurations available.**
- **Stainless steel perforated screens are standard**
- **Cover lifting lug standard on sizes 10" and larger**

APPLICATIONS
- Steam, liquid, gas and oil service
- Power Industry
- Pulp & Paper
- Process Equipment
- Chemical Industry
- Metal & Mining
- Water & Waste
- Metal & Mining

PRESSURE/TEMPERATURE CHART
ASME B16.34



For higher pressure classes & other materials, consult factory.

For Quick Opening Covers see page 92

MODELS
- FT1 – Inline, straight through flow
- FT2 – 90 degree angle flow – top to side
- FT3 – 90 degree angle flow – side to top
- FTZ – Custom Configuration

OPTIONS
- Other materials, sizes and/or configurations
- Quick Opening covers – *See page 92*
- Other screen, mesh or wedgewire – *See page 138*
- Vent, Drain and/or differential pressure connections
- "U" stamped vessels
- NACE MRO10-75 Certification
- External/Internal coatings
- 600# flanges and higher
- Oxygen cleaning
- Contact Factory for other Options

APPLICABLE CODES
- Designed/Manufactured to meet ASME B31.1, ASME B31.3, or ASME B31.4 and/or ASME Section VIII, Div. 1.
- Canadian Registration Numbers (CRN) available
- Welders certified to ASME Section IX

FT Series Ordering Code

Model			Material	Inlet Size	Class	Connection	Dash	Cover	Perf	Mesh
F	T	2	V	P	4	R	-	B	4	A
1	2	3	4	5	6	7	8	9	10	11

Model - Position 1 - 3
- FT1 - Inline Flow
- FT2 - 90 degree angle flow - Top to Side
- FT3 - 90 degree angle flow - Side to Top
- FTZ - Custom Configurations

Material - Position 4
- C - Carbon Steel
- L - Low Temp CS
- V - 304 SS
- T - 316 SS
- M - Monel
- Z - Other

For any variations, use the part numbering system above but clearly indicate the additional requirements.

Inlet Size - Position 5

H - 2	U - 16
J - 2½	V - 18
K - 3	W - 20
M - 4	X - 22
N - 5	Y - 24
P - 6	1 - 28
Q - 8	2 - 30
R - 10	3 - 36
S - 12	4 - 40
T - 14	Z - Other

Class - Position 6
- 1 - 150
- 2 - 250
- 3 - 300
- 4 - 600
- 5 - 900
- 6 - 1500
- Z - Other

Connection - Position 7
- B - Butt Weld[1]
- F - Flat Face Flange
- J - Ring Joint Flange
- R - Raised Face Flange
- Z - Other

Dash - Position 8

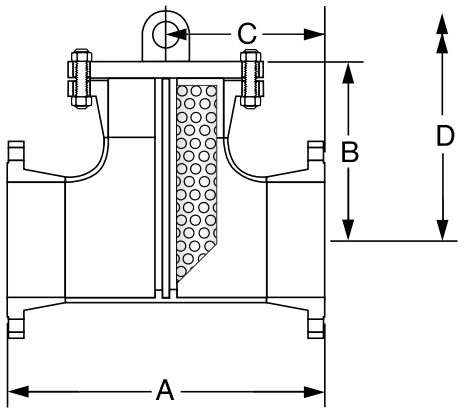
Cover - Position 9
- B - Bolted
- C - Bolted w/C-Clamp
- D - Bolted w/Davit
- J - Bolted w/Hinge
- H - T - Bolt Hinged
- T - Threaded Hinged
- Y - Yoke Hinged
- Z - Other

Perf - Position 10
304 SS Material[2]
- B - 3/64"
- 1 - 1/32"
- 2 - 1/16"
- 3 - 3/32"
- 4 - 1/8"
- 5 - 5/32"
- 6 - 3/16"
- 7 - 7/32"
- 8 - 1/4"
- 9 - 3/8"
- Z - Other

Mesh[2] - Position 11
- A - None
- 1 - 10
- 2 - 20
- 3 - 30
- 4 - 40
- 5 - 50
- 6 - 60
- 7 - 80
- 8 - 100
- 9 - 120
- Z - Other

1. For Buttweld connections please specify mating pipe schedule.
2. For other screen material, contact factory.

FT1 SERIES
FABRICATED T-STRAINERS



SPECIFICATION

T Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ANSI B31.4 and/or ASME Section VIII Div. 1. The strainer shall be straight flow design with vertical screen supports. The screen shall be size _____ perf Stainless Steel. The strainer shall have a bolted cover furnished. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The T Strainer shall be SSI FT1 Series.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN*)

Part.....Carbon Steel
Body SA234-WPB
Flanges SA105
Screen[1] .....304 SS
Internal support ribs .....Carbon Steel
Coupling / threadolets.....SA105
Gasket[1] .....304 SS Spiral Wound
Stud SA193-B7
Nut SA194-2H

* Other material available - consult factory

1. Recommended Spare Parts

Materials specification will change when NACE MR01-75 is specified.

Connections: 2-24"
RF, RTJ or Buttweld[2]

2. For Buttweld connection please specify mating pipe shedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

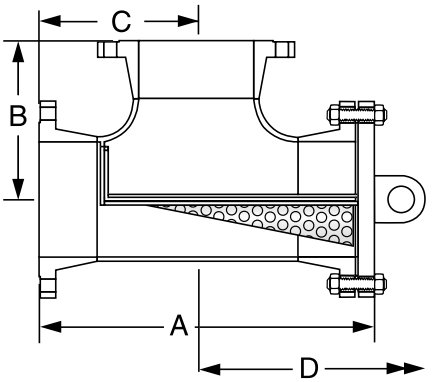
150# and 300# Class flanges shown (For 600#, 900# and 1500# dimensions and weights - contact factory)

Size	A				B		C				D		Approx. Weights					
	Flanged		Buttweld		Flanged/ Buttweld		Flanged		Buttweld		Flanged/ Buttweld		Cover		Unit (Flanged)		Unit (Buttweld)	
	CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS	
	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300
2 (50)	10 3/16 (259)	10 11/16 (271)	5 (127)	5 (127)	6 (152)	6 3/8 (161)	5 1/8 (129)	5 3/8 (136)	2 1/2 (63)	2 1/2 (63)	11 1/8 (282)	11 5/8 (294)	5 (2.3)	8 (3.6)	28 (12.7)	42 (19.1)	16 (7.3)	24 (10.9)
2 1/2 (65)	11 11/16 (297)	12 3/16 (310)	6 (152)	6 (152)	6 3/4 (171)	7 1/8 (180)	5 7/8 (148)	6 1/8 (155)	3 (76)	3 (76)	13 1/16 (331)	13 9/16 (344)	7 (3.2)	14 (6.4)	40 (18.1)	55 (24.9)	25 (11.3)	30 (13.6)
3 (80)	12 7/16 (316)	13 1/5 (335)	6 3/4 (172)	6 3/4 (172)	7 1/4 (185)	7 7/8 (199)	6 1/4 (158)	6 5/8 (167)	3 3/8 (86)	3 3/8 (86)	13 7/8 (352)	14 5/8 (371)	9 (4.1)	16 (7.3)	52 (23.6)	72 (32.7)	32 (14.5)	42 (19.1)
4 (100)	14 7/16 (367)	15 3/16 (386)	8 1/4 (210)	8 1/4 (210)	8 1/4 (210)	9 (228)	7 1/4 (183)	7 5/8 (193)	4 1/8 (105)	4 1/8 (105)	16 3/8 (415)	17 1/8 (434)	17 (7.7)	27 (12.2)	79 (35.8)	125 (56.7)	49 (22.2)	75 (34)
5 (125)	16 15/16 (430)	17 11/16 (449)	9 3/4 (248)	9 3/4 (248)	9 1/2 (242)	10 3/8 (263)	8 1/2 (215)	8 7/8 (225)	4 7/8 (124)	4 7/8 (124)	19 3/8 (491)	20 1/8 (510)	20 (9.1)	35 (15.9)	105 (47.6)	160 (72.6)	67 (30.4)	96 (43.5)
6 (150)	18 7/16 (468)	19 3/16 (487)	11 1/4 (286)	11 1/4 (286)	10 3/8 (263)	11 3/16 (283)	9 1/4 (234)	9 5/8 (244)	5 5/8 (143)	5 5/8 (143)	21 3/8 (542)	22 1/8 (561)	26 (11.8)	50 (22.7)	140 (63.5)	225 (102.1)	92 (41.7)	141 (64)
8 (200)	22 3/16 (564)	22 15/16 (583)	14 (356)	14 (356)	12 3/8 (314)	13 1/4 (336)	11 1/8 (282)	11 1/2 (291)	7 (178)	7 (178)	26 1/8 (663)	26 7/8 (682)	45 (20.4)	81 (36.7)	230 (104.3)	350 (158.8)	152 (68.9)	216 (98)
10 (250)	25 3/16 (640)	26 7/16 (672)	17 (432)	17 (432)	13 15/16 (353)	15 1/4 (387)	12 5/8 (320)	13 1/4 (336)	8 1/2 (216)	8 1/2 (216)	30 1/8 (764)	31 3/8 (796)	70 (31.8)	124 (56.2)	325 (147.4)	495 (224.5)	221 (100.2)	313 (142)
12 (300)	29 3/16 (741)	30 7/16 (773)	20 (508)	20 (508)	16 (406)	17 3/8 (441)	14 5/8 (371)	15 1/4 (387)	10 (254)	10 (254)	35 1/8 (891)	36 3/8 (923)	110 (49.9)	185 (83.9)	500 (226.8)	765 (347)	340 (154.2)	485 (220)
14 (350)	32 3/16 (818)	33 7/16 (849)	22 (559)	22 (559)	17 3/8 (447)	19 (482)	16 1/8 (409)	16 3/4 (425)	11 (279)	11 (279)	39 1/8 (993)	40 3/8 (1025)	140 (63.5)	250 (113.4)	710 (322.1)	1025 (464.9)	490 (222.3)	665 (301.6)
16 (400)	34 3/16 (868)	35 11/16 (906)	24 (610)	24 (610)	18 11/16 (474)	20 1/4 (514)	17 1/8 (434)	17 7/8 (453)	12 (305)	12 (305)	42 1/8 (1069)	43 3/8 (1107)	180 (81.6)	295 (133.8)	860 (390.1)	1320 (598.8)	580 (263.1)	820 (372)
18 (450)	38 3/16 (970)	39 11/16 (1008)	27 (686)	27 (686)	20 3/4 (528)	22 3/8 (568)	19 1/8 (485)	19 7/8 (504)	13 1/2 (343)	13 1/2 (343)	47 1/8 (1196)	48 5/8 (1234)	220 (99.8)	395 (179.2)	1025 (464.9)	1700 (771.1)	725 (328.9)	1060 (480.8)
20 (500)	41 1/16 (1055)	42 15/16 (1091)	30 (762)	30 (762)	22 5/8 (574)	24 1/8 (612)	20 3/4 (528)	21 1/2 (545)	15 (381)	15 (381)	51 1/2 (1307)	52 7/8 (1342)	285 (129.3)	505 (229.1)	1350 (612.4)	2250 (1020.6)	990 (449.1)	1450 (657.7)
24 (600)	46 3/16 (1173)	47 7/16 (1205)	34 (864)	34 (864)	25 1/8 (638)	26 5/8 (676)	23 1/8 (587)	23 3/4 (602)	17 (432)	17 (432)	58 1/8 (1476)	59 3/8 (1507)	430 (195)	790 (358.3)	2100 (952.6)	2340 (1061.4)	1580 (716.7)	2240 (1016.1)

Note: Cover lifting lugs standard on sizes 10 and larger. Lifting lug dimensions are not included above.
Dimensions shown are subject to change. Contact factory for certified prints when required.

T STRAINERS

FT2 SERIES
FABRICATED T-STRAINERS



SPECIFICATION

T Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ANSI B31.4 and/or ASME Section VIII Div. 1. The strainer shall be 90 degree angle flow design with horizontal screen supports. The flow shall be top to side. The screen shall be size _____ perf Stainless Steel. The strainer shall have a bolted cover furnished. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The T Strainer shall be SSI FT2 Series.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN*)

Part.....Carbon Steel
Body SA234-WPB
Flanges SA105
Screen[1] .....304 SS
Internal support ribs .....Carbon Steel
Coupling / threadolets.....SA105
Gasket[1] .....304 SS Spiral Wound
Stud SA193-B7
Nut SA194-2H

* Other material available - consult factory
1. Recommended Spare Parts
Materials specification will change when NACE MR01-75 is specified.

Connections: 2-24"
RF, RTJ or Buttweld[2]

2. For Buttweld connection please specify mating pipe shedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

150# and 300# Class flanges shown (For 600#, 900# and 1500# dimensions and weights, contact factory)

Size	A				B				C				D		Approx. Weights					
	Flanged		Buttweld		Flanged		Buttweld		Flanged		Buttweld		Flanged/ Buttweld		Cover		Unit (Flanged)		Unit (Buttweld)	
	CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS	
	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300
2 (50)	10 15/16 (278)	11 9/16 (294)	8 1/4 (209)	8 5/8 (219)	5 1/8 (129)	5 3/8 (136)	2 1/2 (63)	2 1/2 (63)	5 1/8 (129)	5 3/8 (136)	2 1/2 (63)	2 1/2 (63)	12 5/8 (320)	13 1/8 (333)	5 (2.3)	8 (3.6)	28 (12.7)	42 (19.1)	16 (7.3)	24 (10.9)
2 1/2 (65)	12 3/8 (314)	13 (330)	9 5/8 (244)	10 (254)	5 7/8 (148)	6 1/8 (155)	3 (76)	3 (76)	5 7/8 (148)	6 1/8 (155)	3 (76)	3 (76)	14 7/8 (377)	15 5/8 (396)	7 (3.2)	14 (6.4)	40 (18.1)	55 (24.9)	25 (11.3)	30 (13.6)
3 (80)	13 3/8 (340)	14 5/16 (364)	10 7/16 (265)	11 (280)	6 1/4 (158)	6 5/8 (167)	3 3/8 (86)	3 3/8 (86)	6 1/4 (158)	6 5/8 (167)	3 3/8 (86)	3 3/8 (86)	15 3/8 (390)	16 1/8 (409)	9 (4.1)	16 (7.3)	52 (23.6)	72 (32.7)	32 (14.5)	42 (19.1)
4 (100)	15 3/8 (390)	16 7/16 (418)	12 3/16 (310)	12 7/8 (327)	7 1/4 (183)	7 5/8 (193)	4 1/8 (105)	4 1/8 (105)	7 1/4 (183)	7 5/8 (193)	4 1/8 (105)	4 1/8 (105)	18 1/2 (469)	19 1/4 (488)	17 (7.7)	27 (12.2)	79 (35.8)	125 (56.7)	49 (22.2)	75 (34)
5 (125)	17 7/8 (454)	19 1/16 (484)	14 3/16 (361)	15 (381)	8 1/2 (215)	8 7/8 (225)	4 7/8 (124)	4 7/8 (124)	8 1/2 (215)	8 7/8 (225)	4 7/8 (124)	4 7/8 (124)	21 3/4 (552)	22 1/2 (571)	20 (9.1)	35 (15.9)	105 (47.6)	160 (72.6)	67 (30.4)	96 (43.5)
6 (150)	19 7/16 (494)	20 5/8 (524)	15 3/4 (400)	16 9/16 (421)	9 1/4 (234)	9 5/8 (244)	5 5/8 (143)	5 5/8 (143)	9 1/4 (234)	9 5/8 (244)	5 5/8 (143)	5 5/8 (143)	23 3/4 (604)	24 3/4 (628)	26 (11.8)	50 (22.7)	140 (63.5)	225 (102.1)	92 (41.7)	141 (64)
8 (200)	23 5/16 (592)	24 9/16 (624)	19 1/8 (486)	20 (508)	11 (282)	11 1/2 (291)	7 (178)	7 (178)	11 (282)	11 1/2 (291)	7 (178)	7 (178)	29 1/8 (739)	29 7/8 (758)	45 (20.4)	81 (36.7)	230 (104.3)	350 (158.8)	152 (68.9)	216 (98)
10 (250)	26 3/8 (670)	28 5/16 (719)	22 3/16 (564)	23 1/2 (597)	12 5/8 (320)	13 1/4 (336)	8 1/2 (216)	8 1/2 (216)	12 5/8 (320)	13 1/4 (336)	8 1/2 (216)	8 1/2 (216)	33 5/8 (853)	34 7/8 (885)	70 (31.8)	124 (56.2)	325 (147.4)	495 (224.5)	221 (100.2)	313 (142)
12 (300)	30 7/16 (773)	32 7/16 (824)	25 3/4 (654)	27 1/8 (689)	14 2/4 (371)	15 1/4 (387)	10 (254)	10 (254)	14 2/4 (371)	15 1/4 (387)	10 (254)	10 (254)	39 1/8 (993)	40 3/8 (1025)	110 (49.9)	185 (83.9)	500 (226.8)	765 (347)	340 (154.2)	485 (220)
14 (350)	33 9/16 (853)	35 9/16 (903)	28 3/8 (720)	29 3/4 (755)	16 (409)	16 3/4 (425)	11 (279)	11 (279)	16 (409)	16 3/4 (425)	11 (279)	11 (279)	43 1/8 (1095)	44 3/8 (1126)	140 (63.5)	250 (113.4)	710 (322.1)	1025 (464.9)	490 (222.3)	665 (301.6)
16 (400)	35 5/8 (905)	37 15/16 (964)	30 7/16 (773)	32 (813)	17 1/8 (434)	17 7/8 (453)	12 (305)	12 (305)	17 1/8 (434)	17 7/8 (453)	12 (305)	12 (305)	46 1/8 (1171)	47 5/8 (1209)	180 (81.6)	295 (133.8)	860 (390.1)	1320 (598.8)	580 (263.1)	820 (372)
18 (450)	39 3/4 (1010)	42 1/16 (1069)	34 (865)	35 5/8 (905)	19 1/8 (485)	19 7/8 (504)	13 1/2 (343)	13 1/2 (343)	19 1/8 (485)	19 7/8 (504)	13 1/2 (343)	13 1/2 (343)	51 5/8 (1310)	53 1/8 (1349)	220 (99.8)	395 (179.2)	1025 (464.9)	1700 (771.1)	725 (328.9)	1060 (480.8)
20 (500)	43 1/4 (1098)	45 7/16 (1154)	37 3/8 (949)	38 7/8 (987)	20 3/4 (528)	21 1/2 (545)	15 (381)	15 (381)	20 3/4 (528)	21 1/2 (545)	15 (381)	15 (381)	59 13/16 (1519)	62 7/8 (1596)	285 (129.3)	505 (229.1)	1350 (612.4)	2250 (1020.6)	990 (449.1)	1450 (657.7)
24 (600)	48 1/16 (1221)	50 5/16 (1275)	41 7/8 (1064)	43 3/8 (1102)	23 1/8 (587)	23 3/4 (602)	17 (432)	17 (432)	23 1/8 (587)	23 3/4 (602)	17 (432)	17 (432)	63 1/8 (1603)	64 3/8 (1634)	430 (195)	790 (358.3)	2100 (952.6)	2340 (1061.4)	1580 (716.7)	2240 (1016.1)

Note: Cover lifting lugs standard on sizes 10 and larger. Lifting lug dimensions are not included above.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FT3 SERIES
FABRICATED T-STRAINERS

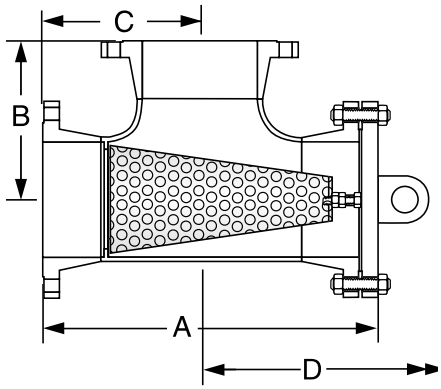
SPECIFICATION

T Strainer shall be designed and manufactured to meet ASME B31.1, ASME B31.3 or ANSI B31.4 and/or ASME Section VIII Div. 1. The strainer shall be 90 degree angle flow design. The flow shall be side to top. The screen shall be size _____ perf Stainless Steel. The strainer shall have a bolted cover furnished. The strainer shall be have an inlet size of _____ and Open Area Ratio of _____. The T Strainer shall be SSI FT3 Series.

MATERIALS OF CONSTRUCTION (CARBON STEEL SHOWN*)

Part.....Carbon Steel
Body SA234-WPB
Flanges SA105
Screen[1] .....304 SS
Internal support ribs .....Carbon Steel
Coupling / threadolets.....SA105
Gasket[1] .....304 SS Spiral Wound
Stud SA193-B7
Nut SA194-2H

* Other material available - consult factory
1. Recommended Spare Parts
Materials specification will change when NACE MR01-75 is specified.



Connections: 2-24"
RF, RTJ or Buttweld[2]

2. For Buttweld connection please specify mating pipe shedule.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
2"- 12"	1/8" Perf.	304SS
14"- 24"	3/16" Perf.	304SS

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

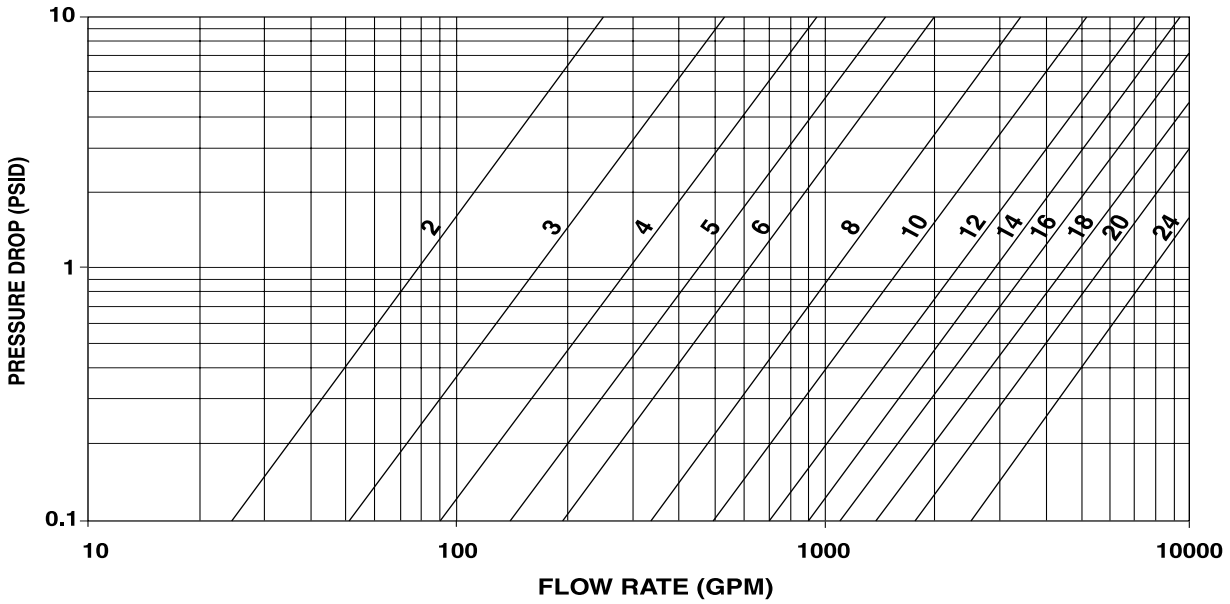
150# and 300# Class flanges shown (For 600#, 900# and 1500# dimensions and weights, contact factory)

Size	A				B				C				D		Approx. Weights					
	Flanged		Buttweld		Flanged		Buttweld		Flanged		Buttweld		Flanged/ Buttweld		Cover		Unit (Flanged)		Unit (Buttweld)	
	CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS	
	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300	150	300
2 (50)	10 15/16 (278)	11 9/16 (294)	8 1/4 (209)	8 5/8 (219)	5 1/8 (129)	5 3/8 (136)	2 1/2 (63)	2 1/2 (63)	5 1/8 (129)	5 3/8 (136)	2 1/2 (63)	2 1/2 (63)	12 5/8 (320)	13 1/8 (333)	5 (2.3)	8 (3.6)	28 (12.7)	42 (19.1)	16 (7.3)	24 (10.9)
2 1/2 (65)	12 3/8 (314)	13 (330)	9 5/8 (244)	10 (254)	5 7/8 (148)	6 1/8 (155)	3 (76)	3 (76)	5 7/8 (148)	6 1/8 (155)	3 (76)	3 (76)	14 7/8 (377)	15 5/8 (396)	7 (3.2)	14 (6.4)	40 (18.1)	55 (24.9)	25 (11.3)	30 (13.6)
3 (80)	13 3/8 (340)	14 5/16 (364)	10 7/16 (265)	11 (280)	6 1/4 (158)	6 5/8 (167)	3 3/8 (86)	3 3/8 (86)	6 1/4 (158)	6 5/8 (167)	3 3/8 (86)	3 3/8 (86)	15 3/8 (390)	16 1/8 (409)	9 (4.1)	16 (7.3)	52 (23.6)	72 (32.7)	32 (14.5)	42 (19.1)
4 (100)	15 3/8 (390)	16 1/16 (418)	12 3/16 (310)	12 7/8 (327)	7 1/4 (183)	7 5/8 (193)	4 1/8 (105)	4 1/8 (105)	7 1/4 (183)	7 5/8 (193)	4 1/8 (105)	4 1/8 (105)	18 1/2 (469)	19 1/4 (488)	17 (7.7)	27 (12.2)	79 (35.8)	125 (56.7)	49 (22.2)	75 (34)
5 (125)	17 7/8 (454)	19 1/16 (484)	14 3/16 (361)	15 (381)	8 1/2 (215)	8 7/8 (225)	4 7/8 (124)	4 7/8 (124)	8 1/2 (215)	8 7/8 (225)	4 7/8 (124)	4 7/8 (124)	21 3/4 (552)	22 1/2 (571)	20 (9.1)	35 (15.9)	105 (47.6)	160 (72.6)	67 (30.4)	96 (43.5)
6 (150)	19 7/16 (494)	20 5/8 (524)	15 3/4 (400)	16 9/16 (421)	9 1/4 (234)	9 5/8 (244)	5 5/8 (143)	5 5/8 (143)	9 1/4 (234)	9 5/8 (244)	5 5/8 (143)	5 5/8 (143)	23 3/4 (604)	24 3/4 (628)	26 (11.8)	50 (22.7)	140 (63.5)	225 (102.1)	92 (41.7)	141 (64)
8 (200)	23 5/16 (592)	24 9/16 (624)	19 1/8 (486)	20 (508)	11 (282)	11 1/2 (291)	7 (178)	7 (178)	11 (282)	11 1/2 (291)	7 (178)	7 (178)	29 1/8 (739)	29 7/8 (758)	45 (20.4)	81 (36.7)	230 (104.3)	350 (158.8)	152 (68.9)	216 (98)
10 (250)	26 3/8 (670)	28 5/16 (719)	22 3/16 (564)	23 1/2 (597)	12 5/8 (320)	13 1/4 (336)	8 1/2 (216)	8 1/2 (216)	12 5/8 (320)	13 1/4 (336)	8 1/2 (216)	8 1/2 (216)	33 5/8 (853)	34 7/8 (885)	70 (31.8)	124 (56.2)	325 (147.4)	495 (224.5)	221 (100.2)	313 (142)
12 (300)	30 7/16 (773)	32 7/16 (824)	25 3/4 (654)	27 1/8 (689)	14 2/4 (371)	15 1/4 (387)	10 (254)	10 (254)	14 2/4 (371)	15 1/4 (387)	10 (254)	10 (254)	39 1/8 (993)	40 3/8 (1025)	110 (49.9)	185 (83.9)	500 (226.8)	765 (347)	340 (154.2)	485 (220)
14 (350)	33 5/16 (853)	35 5/16 (903)	28 3/8 (720)	29 3/4 (755)	16 (409)	16 3/4 (425)	11 (279)	11 (279)	16 (409)	16 3/4 (425)	11 (279)	11 (279)	43 1/8 (1095)	44 3/8 (1126)	140 (63.5)	250 (113.4)	710 (322.1)	1025 (464.9)	490 (222.3)	665 (301.6)
16 (400)	35 5/8 (905)	37 15/16 (964)	30 7/16 (773)	32 (813)	17 1/8 (434)	17 7/8 (453)	12 (305)	12 (305)	17 1/8 (434)	17 7/8 (453)	12 (305)	12 (305)	46 1/8 (1171)	47 5/8 (1209)	180 (81.6)	295 (133.8)	860 (390.1)	1320 (598.8)	580 (263.1)	820 (372)
18 (450)	39 3/4 (1010)	42 1/16 (1069)	34 (865)	35 5/8 (905)	19 1/8 (485)	19 7/8 (504)	13 1/2 (343)	13 1/2 (343)	19 1/8 (485)	19 7/8 (504)	13 1/2 (343)	13 1/2 (343)	51 5/8 (1310)	53 1/8 (1349)	220 (99.8)	395 (179.2)	1025 (464.9)	1700 (771.1)	725 (328.9)	1060 (480.8)
20 (500)	43 1/4 (1098)	45 7/16 (1154)	37 3/8 (949)	38 7/8 (987)	20 3/4 (528)	21 1/2 (545)	15 (381)	15 (381)	20 3/4 (528)	21 1/2 (545)	15 (381)	15 (381)	59 13/16 (1519)	62 7/8 (1596)	285 (129.3)	505 (229.1)	1350 (612.4)	2250 (1020.6)	990 (449.1)	1450 (657.7)
24 (600)	48 1/16 (1221)	50 5/16 (1275)	41 7/8 (1064)	43 3/8 (1102)	23 1/8 (587)	23 3/4 (602)	17 (432)	17 (432)	23 1/8 (587)	23 3/4 (602)	17 (432)	17 (432)	63 1/8 (1603)	64 3/8 (1634)	430 (195)	790 (358.3)	2100 (952.6)	2340 (1061.4)	1580 (716.7)	2240 (1016.1)

Note: Cover lifting lugs standard on sizes 10 and larger. Lifting lug dimensions are not included above.
Dimensions shown are subject to change. Contact factory for certified prints when required.

FT1 SERIES†
FABRICATED T-STRAINER
PRESSURE DROP - LIQUIDS
Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(SIZES 2" - 24")



Notes:

1. Pressure drop curves are based on water flow with standard screens. See Screen Correction Factor Chart for correction factors to be used with other fluids and/or screen openings.

* For Gas or Air service, consult Factory

† FT2 and FT3 - For Pressure Drop contact Factory.

T STRAINERS

Correction Factors for Clogged Screens Consult Factory	**Steam Service Pressure Drop** Consult Factory	**Correction Factors for Other Viscous Liquids and/or Mesh Liners** Consult Factory

FT1 SERIES†
FABRICATED T-STRAINER
OPEN AREA RATIOS
with Standard Perforated Screen

For FT2, FT3 Open Area Ratios please contact SSI.

Size	Perf. Diameter (inches)	Opening %	XH Pipe Inlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2	1/8	40%	3.36	22	9	2.7
2½	1/8	40%	4.79	25	10	2.1
3	1/8	40%	7.39	40	16	2.2
4	1/8	40%	12.73	58	23	1.8
5	1/8	40%	20.01	82	33	1.6
6	1/8	40%	28.89	105	42	1.5
8	1/8	40%	50.03	167	67	1.3
10	1/8	40%	78.85	235	94	1.2
12	1/8	40%	113.10	330	132	1.2
14	3/16	50%	140.50	420	210	1.5
16	3/16	50%	185.66	510	255	1.4
18	3/16	50%	237.10	640	320	1.3
20	3/16	50%	294.83	780	390	1.3
24	3/16	50%	429.13	1,060	530	1.2

OAR = Free Screen Area / Inlet Area
Free Screen Area = Opening % x Gross Screen Area
Values shown are approximate. Consult factory for exact ratios.

† FT2 and FT3 - For Open Area Ratios contact Factory.

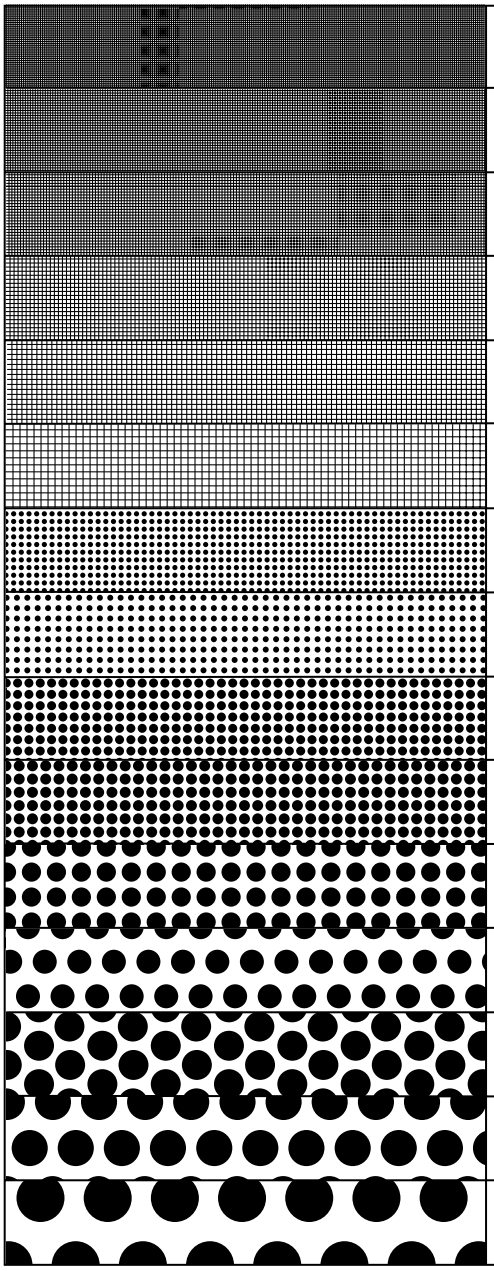
Other Screen Openings
Page 138

Basket Burst Pressure
Page 139

NOTES:

T-STRAINER TECHNICAL INFORMATION

SCREEN OPENINGS



100 Mesh - 30% O.A. 0.006” Openings
80 Mesh - 36% O.A. 0.008” Openings
60 Mesh - 38% O.A. 0.010” Openings
40 Mesh - 41% O.A. 0.016” Openings
30 Mesh - 45% O.A. 0.022” Openings
20 Mesh - 49% O.A. 0.035” Openings
0.027” Dia.- 23% O.A.
0.033” Dia.- 28% O.A.
3/64” Dia.- 36% O.A.
1/16” Dia.- 37% O.A.
3/32” Dia.- 39% O.A.
1/8” Dia.- 40% O.A.
5/32” Dia.- 58% O.A.
3/16” Dia.- 50% O.A.
1/4” Dia.- 40% O.A.

FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

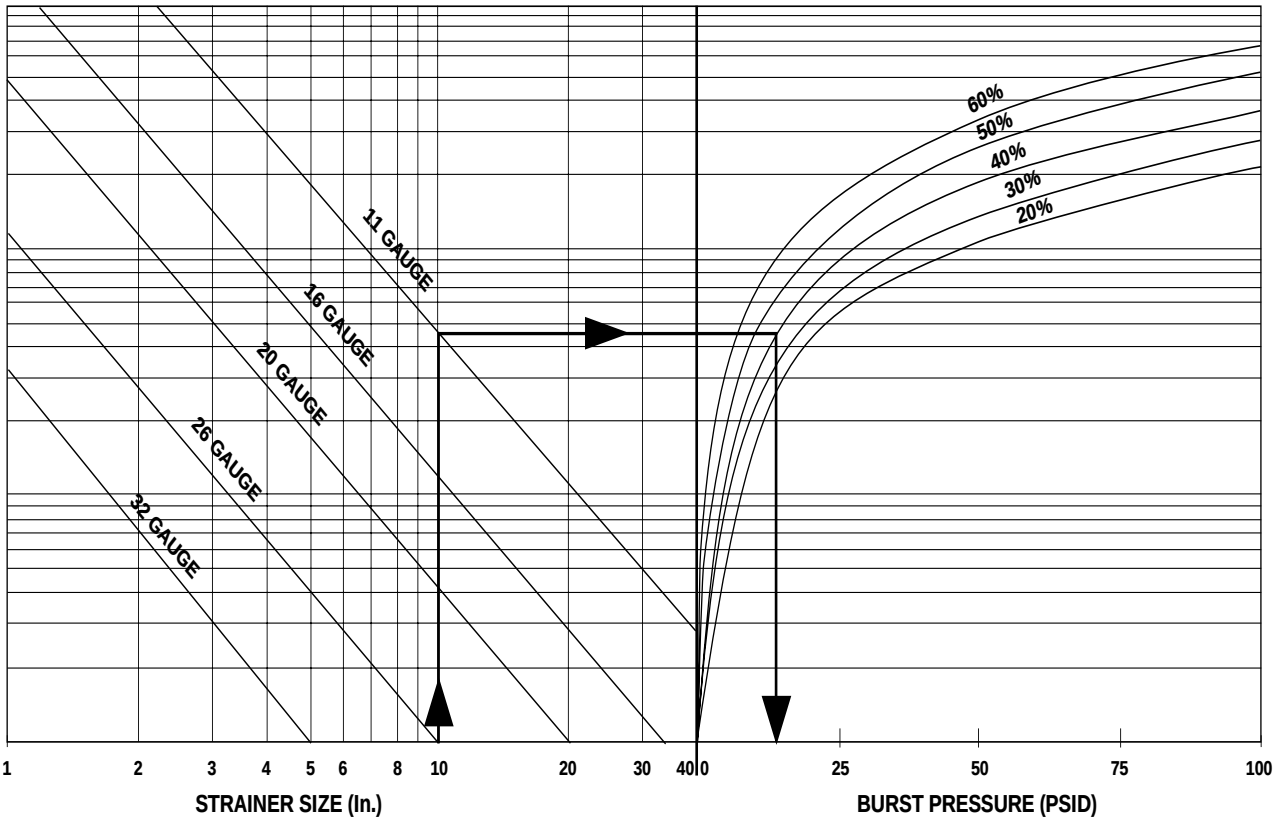
Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

FT SERIES

SCREEN BURST PRESSURE



Notes:

1. The above chart is to be used for strainers manufactured from perforated plate and is based on the formula:

$$t = d\sqrt{\frac{0.3P}{S}}$$

SOURCE: ASME Section VIII, Div. 1., UG-34.

t = Thickness of perforated plate, in.
d = Basket Diameter, in.
P = Burst Pressure, psi
S = Reduced allowable stress, psi

2. The above chart is based on standard dimensions. Higher burst pressure ratings are available. Please contact factory.
3. The above chart is based on a screen material of stainless steel. No safety factor is incorporated. It is the responsibility of the user to determine an acceptable safety factor.
4. See Screen Openings Chart for % Open Area's of inventoried perforated plate.

Example:	
Strainer Size:	**10"**
Screen Thickness:	**11 gauge**
Screen Material Open Area:	**40%**

A) Locate Strainer size.
B) Follow vertical line to gauge thickness.
C) Follow horizontal line to required perforation open area.
D) Follow vertical line downward to read burst pressure.
E) Burst pressure equals 13 psid.

FT SERIES
CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation Above _____ Below _____

    Left side facing inlet _____ Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____

State _____ Zip Code _____

Telephone (_____) _____

Fax (_____) _____

FT SERIES

INSTALLATION AND MAINTENANCE INSTRUCTIONS

Strainer Installation Instructions

- Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.
- For horizontal and vertical pipelines, the strainer should be installed so that the blow-down drain connection is pointed downward.
- For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise motion. Threaded end strainers should use an appropriate sealant.
- Once installed, increase line pressure gradually and check for leakage around joints.
- If the strainer is supplied with a start-up screen, monitor pressure drop carefully.

Screen Removal Instructions

- Drain piping
- Vent line to relieve pressure.
- Loosen cover and open to access screen.
- Remove, clean and replace screen in original position (Note: In some instances, a high pressure water jet or steam may be required for effective cleaning)
- Inspect cover gasket for damage. If necessary, replace. (Note: If spiral wound gaskets have been used, they must be replaced and can not be used again).
- Tighten cover. The strainer is ready for line start-up.

CAUTION SHOULD BE TAKEN DUE TO POSSIBLE EMISSION OF PROCESS MATERIAL FROM PIPING. ALWAYS ENSURE NO LINE PRESSURE EXISTS WHEN OPENING COVER.

Maintenance Instructions

For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down line and follow the “Screen Removal Instructions” above. A pressure gauge installed before and after the strainer in-line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

Trouble Shooting Guides and Diagnostic Techniques

- After pressurizing, inspect cover and other joints for leakage. Gasket replacement or cover tightening is necessary if leakage occurs.
- If the required filtration is not taking place, ensure the screen is installed in the correct position, that being flush to the screen seating surfaces.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

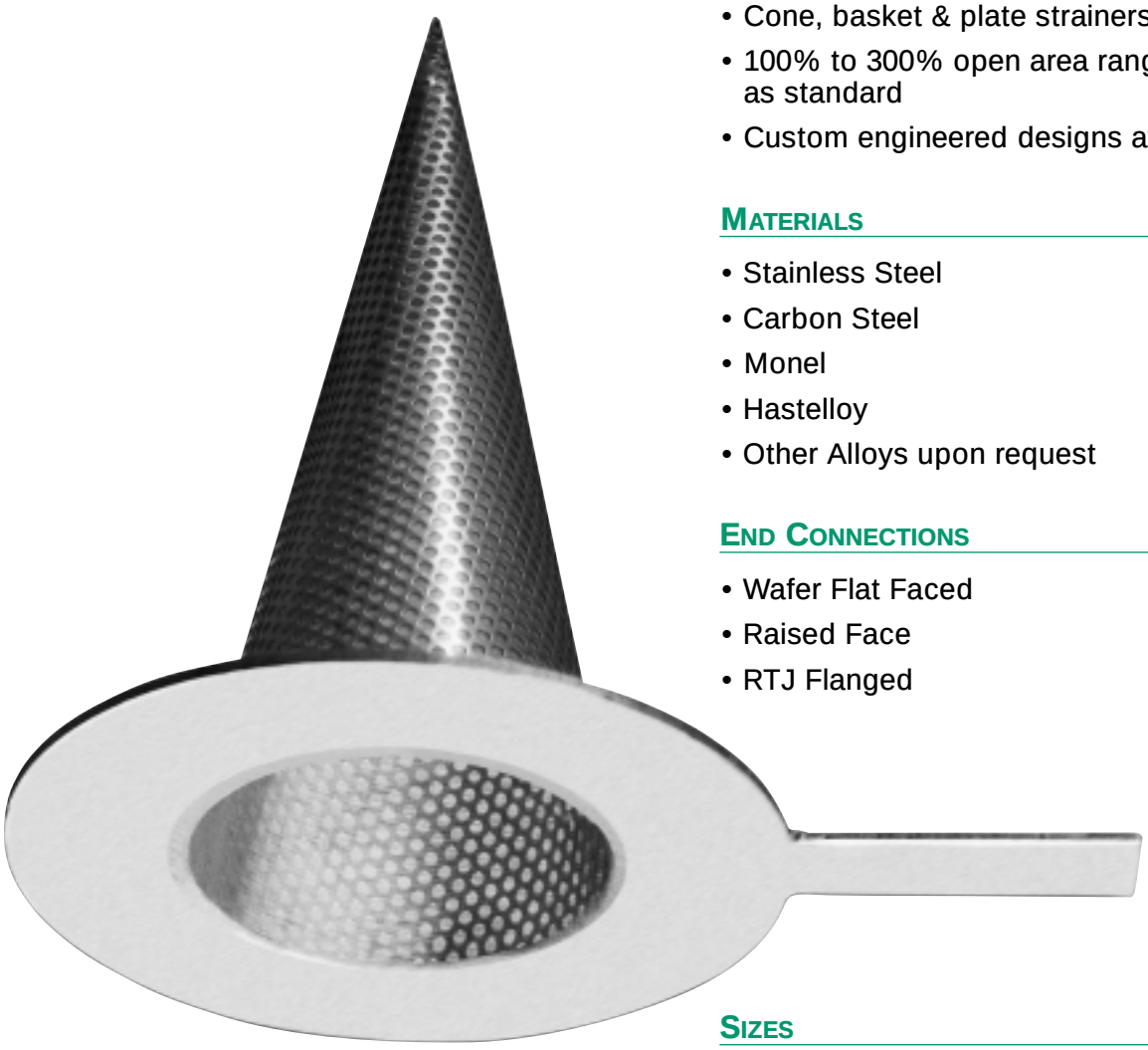
NOTES:

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Metals and Mining
- Water and Waste Water
- Pulp and Paper
- Marine
- Steel Mills

Temporary Strainers

Pressures to 3705 PSIG
Temperatures to 800ºF



Features

- Cone, basket & plate strainers
- 100% to 300% open area range (OAR) as standard
- Custom engineered designs available

Materials

- Stainless Steel
- Carbon Steel
- Monel
- Hastelloy
- Other Alloys upon request

End Connections

- Wafer Flat Faced
- Raised Face
- RTJ Flanged

Sizes

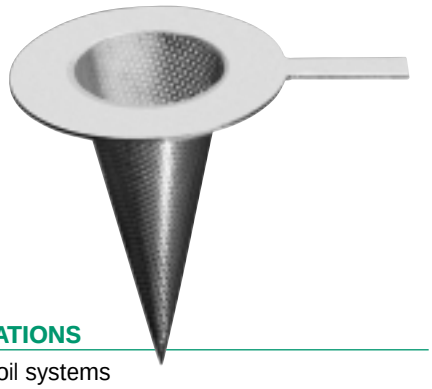
- 3/4" (20mm) up to 24" (600mm) as standard
- Larger sizes available upon request

Request quote

TC, TB AND TP SERIES

TEMPORARY STRAINERS

PRESSURES TO 3600 PSIG (244.9 BARG)
TEMPERATURES TO 800ºF (427ºC)



- **Standard and custom designs**
- **Primarily used for new pipeline start-up or where solid loading is minimal.**
- **Filtration down to 40 Microns available**
- **Available in conical, basket and plate configurations**
- **100% to 300% open area range (OAR) as standard**
- **304SS construction is standard. Construction in other materials is available**
- **May be installed in horizontal or vertical pipelines**

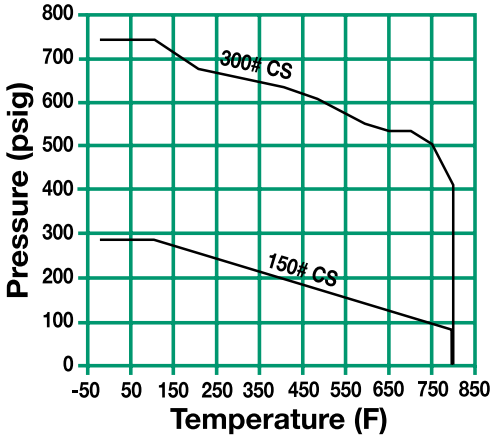
APPLICATIONS

- Water, oil systems
- Other liquid systems
- Protection of pumps, meters, valves and other similar equipment

OPTIONS

- Custom engineered designs
- Customer specified Open Area
- Other Materials, Sizes and/or Configurations
- Other Screen and/or Mesh – *See page 152*

PRESSURE/TEMPERATURE CHART



MODELS *See Construction Details on page 152*

- T*1 – 100% open area - Flow inside to outside
- T*2 – 100% open area - Flow outside to inside
- T*3 – 100% open area – Bidirectional flow
- T*4 – 150% open area – Flow inside to outside
- T*5 – 150% open area – Flow outside to inside
- T*6 – 150% open area – Bidirectional flow
- T*7 – 200% open area – Flow inside to outside
- T*8 – 200% open area – Flow outside to inside
- T*9 – 200% open area – Bidirectional flow
- T*A – 300% open area – Flow inside to outside
- T*B – 300% open area – Flow outside to inside
- T*C – 300% open area – Bidirectional flow
- T*Z – Custom Configuration

* TC – Temporary Cone, TB – Temporary Basket, TP – Temporary Plate

APPLICABLE CODES

- Canadian Registration Numbers (CRN) available

Note: Temporary Strainers are designed for start up service of new or revamped piping systems. Temporary Strainers are not intended to be used in a permanent application. Contact factory when permanent applications are required.

TC, TB, and TP Series Ordering Code

Model			Material	Inlet Size	Class	Connection	Dash	Cover	Perf	Mesh
T	B	1	V	M	1	W	-	A	4	A
1	2	3	4	5	6	7	8	9	10	11

Model - Position 1 - 3
- T*1 - 100% I/O flow
- T*2 - 100% O/I flow
- T*3 - 100% Bidirectional
- T*4 - 150% I/O flow
- T*5 - 150% O/I flow
- T*6 - 150% Bidirectional
- T*7 - 200% I/O flow
- T*8 - 200% O/I flow
- T*9 - 200% Bidirectional
- T*A - 300% I/O flow
- T*B - 300% O/I flow
- T*C - 300% Bidirectional
- T*Z - Custom Configuration

* TC - Temporary Cone
TB - Temporary Basket
TP - Temporary Plate - Only TP1, TP2, TP3

Material - Position 4
- V - 304 SS (standard)
- C - Carbon Steel
- T - 316 SS
- M - Monel
- H - Hastelloy
- Z - Other

Inlet Size* - Position 5

D - 3/4	Q - 8
E - 1	R - 10
G - 1½	S - 12
H - 2	T - 14
J - 2½	U - 16
K - 3	V - 18
M - 4	W - 20
N - 5	Y - 24
P - 6	Z - Other

* Contact factory for other sizes.

Class - Position 6
- 1 - 150
- 3 - 300
- 4 - 600
- 5 - 900
- Z - Other

Connection - Position 7
- W - Wafer Flat Face Smooth Finish (Designed to fit between RF Flanges)
- Z - Other

Dash - Position 8

Cover - Position 9
- A - None

Perf - Position 10
- B - 3/64”
- 1 - 1/32”
- 2 - 1/16”
- 3 - 3/32”
- 4 - 1/8”
- 5 - 5/32”
- 6 - 3/16”
- 7 - 7/32”
- 8 - 1/4”
- 9 - 3/8”
- Z - Other

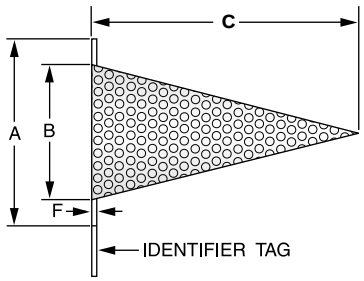
Mesh- Position 11
- A - None
- 1 - 10
- 2 - 20
- 3 - 30
- 4 - 40
- 5 - 50
- 6 - 60
- 7 - 80
- 8 - 100
- 9 - 120
- Z - Other

Note: Any item outside this range must be a special and must be called out on the order (select “Z” and fill special field).

TC SERIES
TEMPORARY CONE STRAINERS

SPECIFICATION

The strainer body shall be fabricated 304 stainless steel or other specified material. The strainer shall be the conical type with an extended identifier tag handle. The screen shall be size _____ perforated SS with _____ mesh liner. The flow shall be _____. The Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Temporary Cone Strainer shall be SSI TC Series.



CONICAL TYPE (TC)

MATERIALS OF CONSTRUCTION
(304 STAINLESS STEEL SHOWN *)

Ring A240-304
Handle A240-304
Peforated Plate A240-304
Mesh (optional).....A276-304

* Other material available - consult factory

Connections: 3/4" - Custom
150#, 300#, 600#, 900# and 1500# Wafer Flat Faced Smooth Flanges are standard
Designed to fit between RF Flanges

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*

SIZE	A				B	C				F[1]	Weight
	150/300#	600#	900#	1500#		100%	150%	200%	300%		
¾ (20)	2⅛ (54)	2½ (64)	2⅝ (67)	2⅝ (67)	⅝ (16)	1⅛ (29)	1 2/3 (43)	2¼ (57)	3⅜ (86)	⅛ (3)	0.5 (0.2)
1 (25)	2½ (64)	2¾ (70)	3 (76)	3 (76)	¾ (19)	1⅝ (41)	2 ½ (64)	3 1/3 (84)	5 (127)	⅛ (3)	0.5 (0.2)
1½ (40)	3¼ (83)	3⅝ (92)	3¾ (95)	3¾ (95)	1¼ (32)	2⅕ (56)	3 ⅜ (86)	4½ (114)	6¾ (171)	⅛ (3)	0.5 (0.2)
2 (50)	4 (102)	4¼ (108)	5½ (140)	5½ (140)	1¾ (44)	3 (76)	4 ½ (114)	6 (152)	9⅛ (232)	⅛ (3)	0.5 (0.2)
2½ (65)	4¾ (121)	5 (127)	6⅜ (162)	6⅜ (162)	2¼ (57)	3⅕ (81)	5 (127)	6⅔ (170)	10⅛ (257)	⅛ (3)	1 (0.5)
3 (80)	5¼ (133)	5¾ (146)	6½ (165)	6¾ (171)	2¾ (70)	4 (102)	6¼ (159)	8½ (216)	12¾ (324)	⅛ (3)	1 (0.5)
4 (100)	6¾ (171)	7½ (191)	8 (203)	8⅛ (206)	3¾ (95)	5⅛ (130)	7⅞ (200)	10⅝ (270)	17 (432)	⅛ (3)	2 (0.9)
5 (125)	7⅝ (194)	9⅜ (238)	9⅝ (244)	9⅞ (251)	4⅝ (117)	6½ (165)	10⅛ (257)	14 (356)	21 (533)	⅛ (3)	2 (0.9)
6 (150)	8⅝ (219)	10⅜ (263)	11¼ (286)	11 (279)	5⅜ (137)	8⅛ (207)	13 (330)	17 (432)	26 (660)	⅛ (3)	3 (1.4)
8 (200)	10⅞ (276)	12½ (318)	14 (356)	13¾ (349)	7⅜ (187)	10⅛ (259)	16 (406)	22 (559)	33 (838)	⅛ (3)	5 (2.3)
10 (250)	13¼ (337)	15⅝ (397)	17 (432)	17 (432)	9⅜ (238)	13 (330)	20 (508)	27 (686)	40 (1016)	⅛ (3)	7 (3.2)
12 (300)	16 (406)	17⅞ (454)	19½ (495)	20⅜ (517)	11 (279)	16 (406)	24 (610)	33 (838)	49 (1245)	⅛ (3)	11 (5.0)
14 (350)	17⅜ (441)	19 (483)	20⅜ (517)	22⅝ (575)	12¼ (311)	17 (432)	27 (686)	36 (914)	54 (1372)	⅛ (3)	12 (5.4)
16 (400)	20⅛ (511)	21⅞ (555)	22½ (572)	25⅛ (638)	14 (356)	20 (508)	31 (787)	41 (1041)	62 (1575)	⅛ (3)	16 (7.3)
18 (450)	21¼ (540)	23¾ (603)	25 (635)	27⅝ (702)	15¾ (400)	23 (584)	35 (889)	47 (1194)	71 (1803)	⅛ (3)	20 (9.1)
20 (500)	23½ (597)	26⅝ (676)	27⅜ (695)	29⅝ (753)	17½ (445)	25 (635)	39 (991)	53 (1346)	79 (2007)	⅛ (3)	26 (11.8)
24 (600)	27⅞ (708)	30⅞ (784)	32⅞ (835)	35⅜ (899)	21¼ (540)	30 (762)	47 (1194)	63 (1600)	95 (2413)	⅛ (3)	30 (13.6)

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
3/4"- 8"	1/8" Perf.	22 Gauge[1]
10"- 24"	1/8" Perf.	16 Gauge[1]

Note: Other screens and mesh liners available upon request

The Open Area % is calculated as follows:

$$OA\% = \left[\frac{\text{Screen Area x Open Area \%}}{\text{Area of Sch. 40/std. pipe}}\right] \times 100$$

Note: Open Area % for 1/8" perf is 40%.

Dimensions shown are subject to change. Contact factory for certified prints when required.

*Dimensions shown using 1/8" perf and no mesh. Open Area percentage will change with alternate perf and/or mesh. The change will equal the ratio of the open area of the perf/mesh compared to the open area of 1/8" mesh.

For Open Area percentages for perf/mesh see page 152

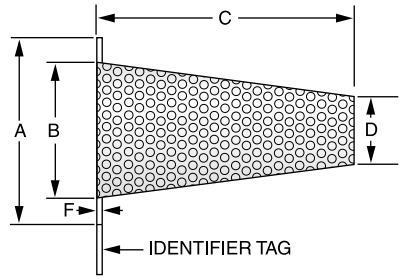
Please contact factory for further information.

1. Thicker material available upon request Please contact factory.

TB SERIES
TEMPORARY BASKET STRAINERS

SPECIFICATION

The strainer body shall be fabricated 304 stainless steel or other specified material. The strainer shall be the basket type with an extended identifier tag handle. The screen shall be size _____ perforated SS with _____ mesh liner. The flow shall be _____. The Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Temporary Cone Strainer shall be SSI TB Series.



BASKET TYPE (TB)

MATERIALS OF CONSTRUCTION
(304 Stainless Steel Shown *)

Ring A240-304
Handle.....A240-304
Peforated Plate A240-304
Mesh (optional) A276-304
* Other material available - consult factory

Connections: 3/4" - Custom
150#, 300#, 600#, 900# and 1500# Wafer Flat Faced Smooth Flanges are standard
Designed to fit between RF Flanges

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
3/4"- 8"	1/8" Perf.	22 Gauge[1]
10"- 24"	1/8" Perf.	16 Gauge[1]

Note: Other screens and mesh liners available upon request

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)*

SIZE	A				B	C				D	F[1]	Weight
	150/300#	600#	900#	1500#		100%	150%	200%	300%			
¾ (20)	2⅛ (54)	2½ (64)	2⅝ (67)	2⅝ (67)	⅝ (16)	¾ (19)	1⅛ (29)	1½ (38)	2¼ (57)	⅓ (8)	⅛ (3)	0.5 (0.2)
1 (25)	2½ (64)	2¾ (70)	3 (76)	3 (76)	¾ (19)	1⅛ (29)	1⅔ (43)	2¼ (57)	3⅜ (86)	⅜ (10)	⅛ (3)	0.5 (0.2)
1½ (40)	3¼ (83)	3⅝ (92)	3¾ (95)	3¾ (95)	1¼ (32)	1½ (38)	2¼ (57)	3 (76)	4½ (114)	⅝ (16)	⅛ (3)	0.5 (0.2)
2 (50)	4 (102)	4¼ (108)	5½ (140)	5½ (140)	1¾ (44)	2 (51)	3 (76)	4 (102)	6 (152)	⅞ (22)	⅛ (3)	0.5 (0.2)
2½ (65)	4¾ (121)	5 (127)	6⅜ (162)	6⅜ (162)	2¼ (57)	2⅛ (56)	3⅜ (86)	4½ (114)	6¾ (171)	1⅛ (29)	⅛ (3)	1 (0.5)
3 (80)	5¼ (133)	5¾ (146)	6½ (165)	6¾ (171)	2¾ (70)	2¾ (70)	4¼ (1)	5⅔ (145)	8½ (216)	1⅜ (35)	⅛ (3)	1 (0.5)
4 (100)	6¾ (171)	7½ (191)	8 (203)	8⅛ (206)	3¾ (95)	3½ (89)	5⅓ (136)	7⅛ (183)	11 (279)	1⅞ (48)	⅛ (3)	2 (0.9)
5 (125)	7⅝ (194)	9⅜ (238)	9⅝ (244)	9⅞ (251)	4⅝ (117)	4½ (114)	6¾ (171)	9⅛ (232)	14 (356)	2⅓ (59)	⅛ (3)	2 (0.9)
6 (150)	8⅝ (219)	10⅜ (263)	11¼ (286)	11 (279)	5⅜ (137)	5½ (140)	8½ (216)	11⅜ (289)	17 (432)	2⅔ (68)	⅛ (3)	3 (1.4)
8 (200)	10⅞ (276)	12½ (318)	14 (356)	13¾ (349)	7⅜ (187)	7 (178)	10⅔ (272)	15 (381)	22 (559)	3⅔ (94)	⅛ (3)	5 (2.3)
10 (250)	13¼ (337)	15⅝ (397)	17 (432)	17 (432)	9⅜ (238)	8⅝ (219)	14 (356)	18 (457)	27 (686)	4⅔ (119)	⅛ (3)	7 (3.2)
12 (300)	16 (406)	17⅞ (454)	19½ (495)	20⅜ (517)	11 (279)	10½ (267)	17 (432)	22 (559)	33 (838)	5½ (140)	⅛ (3)	11 (5.0)
14 (350)	17⅜ (441)	19 (483)	20⅜ (517)	22⅝ (575)	12¼ (311)	11½ (292)	18 (457)	24 (610)	36 (914)	6⅛ (156)	⅛ (3)	12 (5.4)
16 (400)	20⅛ (511)	21⅞ (555)	22½ (572)	25⅛ (638)	14 (356)	14 (356)	21 (533)	28 (711)	42 (1067)	7 (178)	⅛ (3)	16 (7.3)
18 (450)	21¼ (540)	23¾ (603)	25 (635)	27⅞ (702)	15¾ (400)	16 (406)	24 (610)	32 (813)	47 (1194)	7⅞ (200)	⅛ (3)	20 (9.1)
20 (500)	23½ (597)	26⅝ (676)	27⅜ (695)	29⅝ (753)	17½ (445)	17 (432)	27 (686)	35 (889)	53 (1346)	8¾ (222)	⅛ (3)	26 (11.8)
24 (600)	27⅞ (708)	30⅞ (784)	32⅞ (835)	35⅜ (899)	21¼ (540)	21 (533)	32 (813)	42 (1067)	64 (1626)	10⅝ (270)	⅛ (3)	30 (13.6)

Dimensions shown are subject to change. Contact factory for certified prints when required.

*Dimensions shown using 1/8" perf and no mesh. Open Area percentage will change with alternate perf and/or mesh. The change will equal the ratio of the open area of the perf/mesh compared to the open area of 1/8" mesh.

For Open Area percentages for perf/mesh see page 152

Please contact factory for further information.

The Open Area % is calculated as follows:

$$OA\% = \left[\frac{\text{Screen Area x Open Area \%}}{\text{Area of Sch. 40/std. pipe}}\right] \times 100$$

Note: Open Area % for 1/8" perf is 40%.

1. Thicker material available upon request Please contact factory.

TP SERIES
TEMPORARY PLATE STRAINERS

SPECIFICATION

The strainer body shall be fabricated 304 stainless steel or other specified material. The strainer shall be the plate type with an extended identifier tag handle. The screen shall be size _____ perforated SS with _____ mesh liner. The flow shall be _____. The Strainer shall have an inlet size of _____ and Open Area Ratio of _____. The Temporary Cone Strainer shall be SSI TP Series.

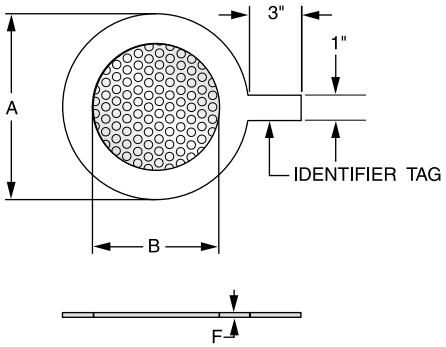


PLATE TYPE (TP)

MATERIALS OF CONSTRUCTION
(304 Stainless Steel Shown *)

Ring A240-304
Handle A240-304
Peforated Plate A240-304
Mesh (optional) A276-304

* Other material available - consult factory

Connections: 3/4" - Custom
150#, 300#, 600#, 900# and 1500# Wafer Flat Faced Smooth Flanges are standard
Designed to fit between RF Flanges

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

SIZE	A				B	D	F[1]	Weight
	150/300#	600#	900#	1500#				
¾ (20)	2⅛ (54)	2½ (64)	2⅝ (67)	2⅝ (67)	⅝ (16)	⅓ (8)	⅛ (3)	0.5 (0.2)
1 (25)	2½ (64)	2¾ (70)	3 (76)	3 (76)	¾ (19)	⅜ (10)	⅛ (3)	0.5 (0.2)
1½ (40)	3¼ (83)	3⅝ (92)	3¾ (95)	3¾ (95)	1¼ (32)	⅝ (16)	⅛ (3)	0.5 (0.2)
2 (50)	4 (102)	4¼ (108)	5½ (140)	5½ (140)	1¾ (44)	⅞ (22)	⅛ (3)	0.5 (0.2)
2½ (65)	4¾ (121)	5 (127)	6⅜ (162)	6⅜ (162)	2¼ (57)	1⅛ (29)	⅛ (3)	1 (0.5)
3 (80)	5¼ (133)	5¾ (146)	6½ (165)	6¾ (171)	2¾ (70)	1⅜ (35)	⅛ (3)	1 (0.5)
4 (100)	6¾ (171)	7½ (191)	8 (203)	8⅛ (206)	3¾ (95)	1⅞ (48)	⅛ (3)	2 (0.9)
5 (125)	7⅝ (194)	9⅜ (238)	9⅝ (244)	9⅞ (251)	4⅝ (117)	2⅓ (59)	⅛ (3)	2 (0.9)
6 (150)	8⅝ (219)	10⅜ (263)	11¼ (286)	11 (279)	5⅜ (137)	2⅔ (68)	⅛ (3)	3 (1.4)
8 (200)	10⅞ (276)	12½ (318)	14 (356)	13¾ (349)	7⅜ (187)	3⅔ (94)	⅛ (3)	5 (2.3)
10 (250)	13¼ (337)	15⅝ (397)	17 (432)	17 (432)	9⅜ (238)	4⅔ (119)	⅛ (3)	7 (3.2)
12 (300)	16 (406)	17⅞ (454)	19½ (495)	20⅜ (517)	11 (279)	5½ (140)	⅛ (3)	11 (5.0)
14 (350)	17⅜ (441)	19 (483)	20⅜ (517)	22⅝ (575)	12¼ (311)	6⅛ (156)	⅛ (3)	12 (5.4)
16 (400)	20⅛ (511)	21⅞ (555)	22½ (572)	25⅛ (638)	14 (356)	7 (178)	⅛ (3)	16 (7.3)
18 (450)	21¼ (540)	23¾ (603)	25 (635)	27⅝ (702)	15¾ (400)	7⅞ (200)	⅛ (3)	20 (9.1)
20 (500)	23½ (597)	26⅝ (676)	27⅜ (695)	29⅝ (753)	17½ (445)	8¾ (222)	⅛ (3)	26 (11.8)
24 (600)	27⅞ (708)	30⅞ (784)	32⅞ (835)	35⅜ (899)	21¼ (540)	10⅝ (270)	⅛ (3)	30 (13.6)

Dimensions shown are subject to change. Contact factory for certified prints when required.

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
3/4"- 8"	1/8" Perf.	22 Gauge[1]
10"- 24"	1/8" Perf.	16 Gauge[1]

Note: Other screens and mesh liners available upon request

The Open Area % is calculated as follows:

$$OA\% = \left[\frac{\text{Screen Area x Open Area \%}}{\text{Area of Sch. 40/std. pipe}}\right] \times 100$$

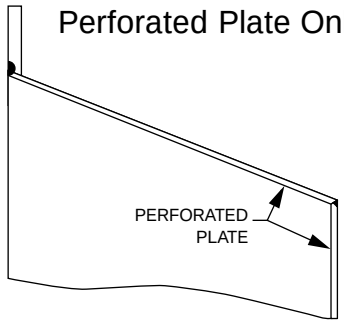
Note: Open Area % for 1/8" perf is 40%.

1. Thicker material available upon request Please contact factory.

TC, TB AND TP SERIES
TEMPORARY STRAINERS
STANDARD CONSTRUCTION DETAILS

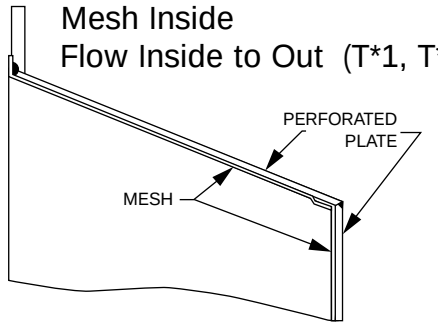
NO MESH

Perforated Plate Only (All)

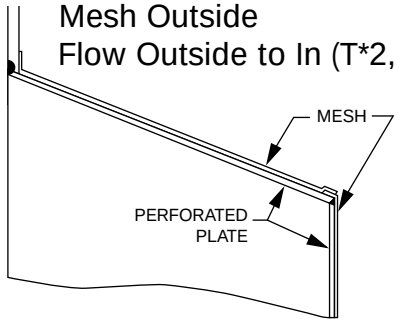


MESH LINED

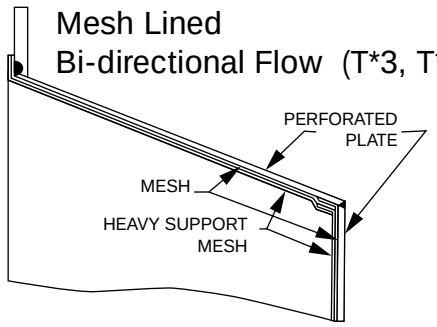
Mesh Inside
Flow Inside to Out (T*1, T*4, T*7, T*A)



Mesh Outside
Flow Outside to In (T*2, T*5, T*8, T*B)



Mesh Lined
Bi-directional Flow (T*3, T*6, T*9, T*C)



* TC - Temporary Cone
TB - Temporary Basket
TP - Temporary Plate (Only TP1, TP2, TP3)

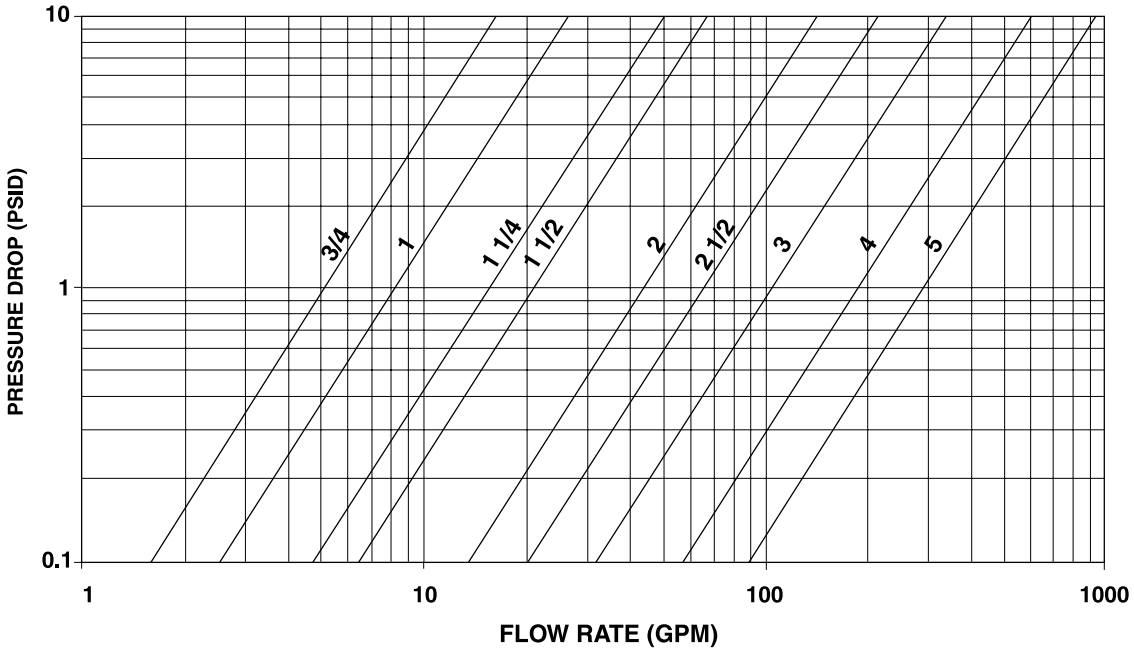
TC, TB AND TP SERIES

TEMPORARY STRAINERS

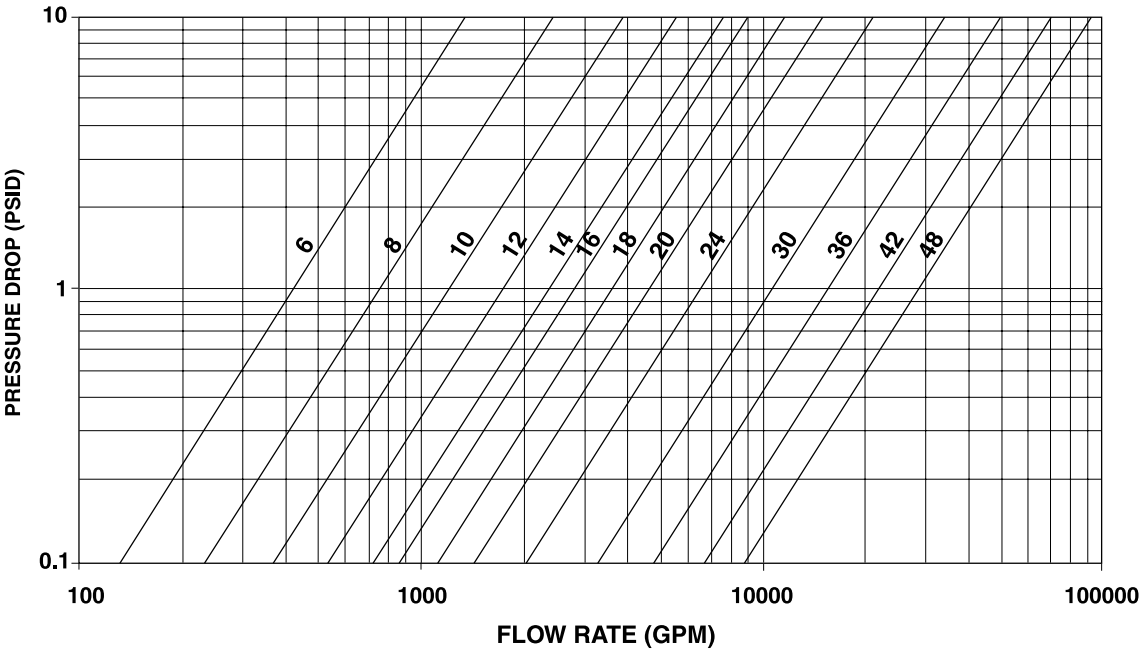
PRESSURE DROP VS FLOW RATE

Water Service Clean Screen, 1/32" - 1/4" perforator Screen*

(SIZES 3/4" - 5")



(SIZES 6" - 48")



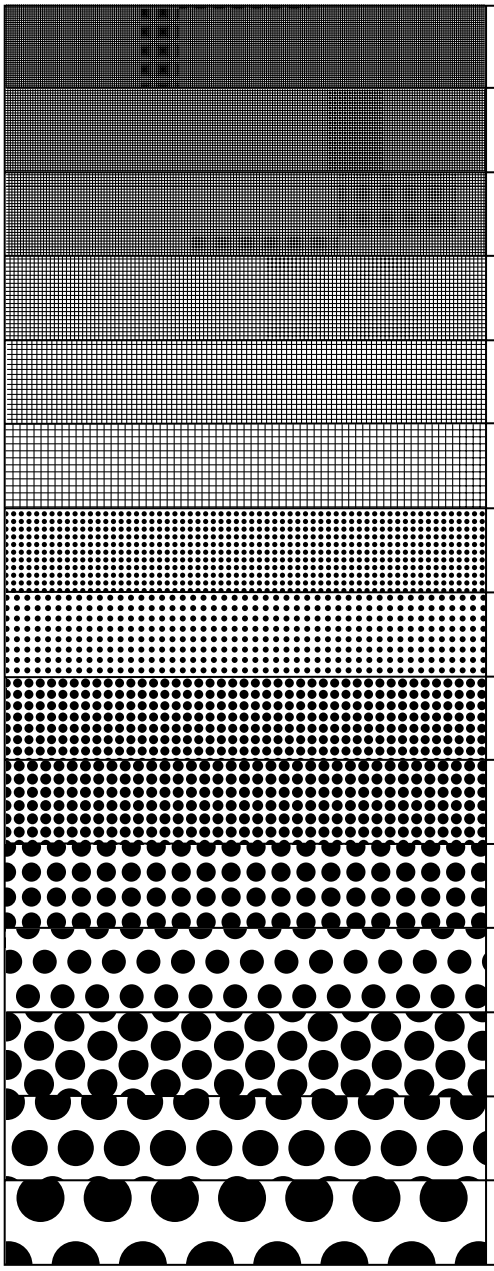
* For Gas, Steam or Air Service, consult factory.

Correction Factors for Other Viscous Liquids and/or Mesh Liners
Page 153

Correction Factors for Clogged Screens
Page 153

TEMPORARY STRAINER TECHNICAL INFORMATION

SCREEN OPENINGS



100 Mesh - 30% O.A. 0.006” Openings
80 Mesh - 36% O.A. 0.008” Openings
60 Mesh - 38% O.A. 0.010” Openings
40 Mesh - 41% O.A. 0.016” Openings
30 Mesh - 45% O.A. 0.022” Openings
20 Mesh - 49% O.A. 0.035” Openings
0.027” Dia.- 23% O.A.
0.033” Dia.- 28% O.A.
3/64” Dia.- 36% O.A.
1/16” Dia.- 37% O.A.
3/32” Dia.- 39% O.A.
1/8” Dia.- 40% O.A.
5/32” Dia.- 58% O.A.
3/16” Dia.- 50% O.A.
1/4” Dia.- 40% O.A.

FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

TEMPORARY STRAINER

PRESSURE DROP CORRECTION FACTORS

Mesh Lined Baskets and/or Fluids with a Viscosity other than Water

Centistokes	SSU	Unlined Perforated Basket	20 Mesh Lined Basket	40 Mesh Lined Basket	60 Mesh Lined Basket	80 Mesh Lined Basket	100 Mesh Lined Basket	200 Mesh Lined Basket
2	30 (water)	1	1.05	1.2	1.4	1.6	1.7	2
100	500	1.6	1.7	1.9	2.1	2.4	2.6	3.1
216	1000	1.7	2	2.2	2.4	2.6	2.8	3.3
433	2000	1.9	2.2	2.4	2.7	2.9	3.2	3.8
650	3000	2	2.3	2.6	2.9	3.2	3.5	4.1
1083	5000	2.2	2.6	3	3.5	4	4.5	5.3
2200	10000	2.5	3	3.5	4.2	5	6	7.1

1. Obtain water pressure drop from graphs on appropiate product page.
2. Multiply the pressure drop obtained from (1) by the specific gravity of the liquid.
3. Multiply the pressure drop from (2) by the appropiate correction factor for the mesh liner and/or viscosity.

Example

Model: **TCIVMIW-A44**
Size: **4"**
Filtration: **1/8" perforated screen 40 Mesh lines**
Flow rate: **200 GPM**
Fluid: **Water**
SG: **1**
Viscosity: **30 SSI**

Answer

A) From Pressure Drop Chart, pressure drop of water is 1.25 psid
B) Multiply by specific gravity; 1.25 x 1 = 1.25 psid
C) From chart above, multiply 1.25 x 1.2 (correction factor) = 1.5 psid

CORRECTION FACTORS FOR CLOGGED SCREENS

% Clogged	Ratio of Free Screen Area to Pipe Area						
	10:1	8:1	6:1	4:1	3:1	2:1	1:1
10							3.15
20						1.15	3.9
30						1.4	5
40						1.8	6.65
50					1.25	2.5	9.45
60				1.15	1.8	3.7	14.5
70				1.75	2.95	6.4	26
80		1.1	1.75	3.6	6.25	14	58
90	2.3	3.45	6	13.5	24	55	

* Multiply values obtained from Pressure Drop Charts by the appropriate values shown below.

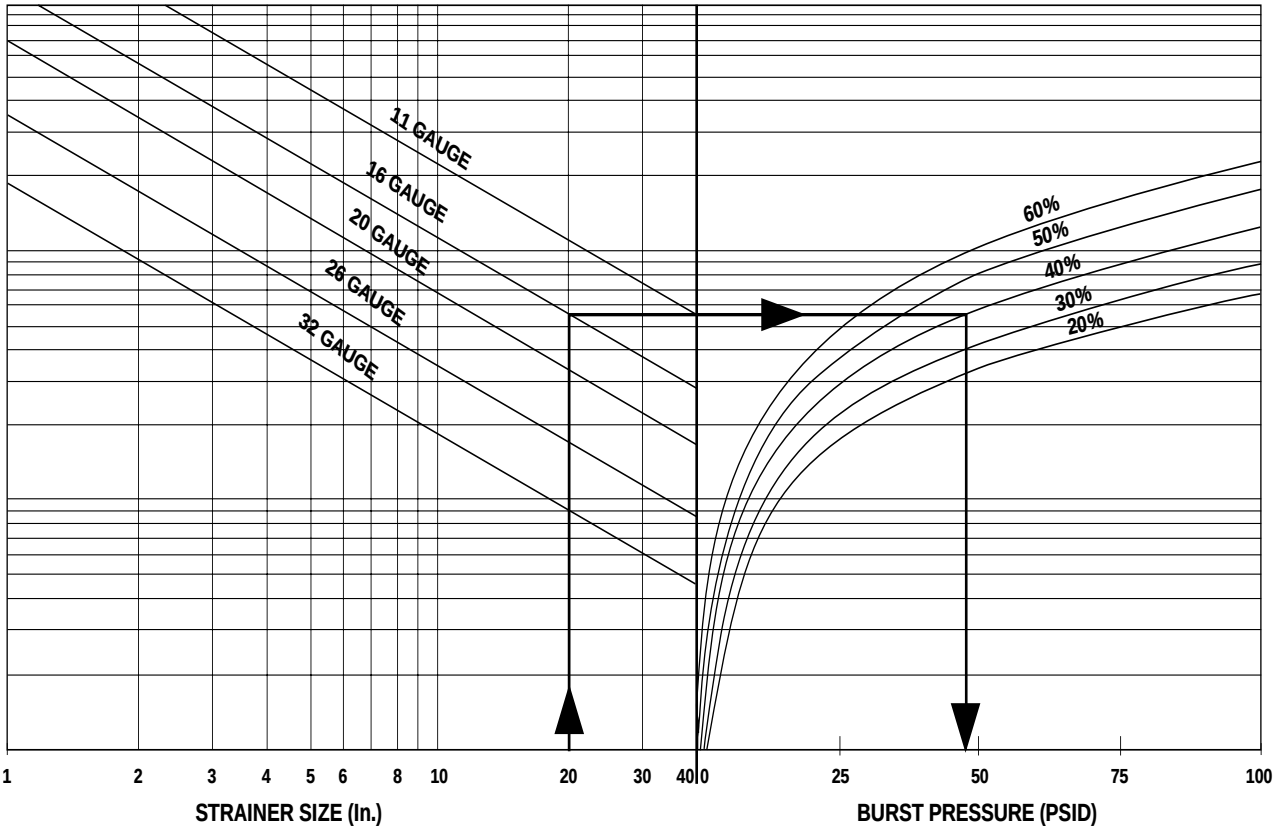
Example

Strainer Size: **6"**
Model: **TCIVPIW-A4A**
Filtration: **1/8" Perf.**
Flow rate: **200 GPM**
Service: **Water**
% Clogged: **60%**

Answer

A) The Pressure Drop Chart indicates a drop of .13 psid with standard screen.
B) The Effective Area of TCI is 100% or 1:1.
C) Using Chart above we read the correction factor of 1:1 to be 14.5 at 60% clogged.
D) Total pressure drop equals .13 x 14.5 = 1.885 psid.

TC SERIES
TEMPORARY STRAINER
BURST PRESSURE



Notes:

1. The above chart is to be used for strainers manufactured from perforated plate and is based on the formula:

$$P = \frac{2St\cos\gamma}{D + 1.2t\cos\gamma}$$

SOURCE: ASME Section VIII, Div. 1., Appendix 1.

P = Burst Pressure, psi.
S = Reduced allowable stress
t = Thickness of perforated plate, in.
D = Dimension B - *See page 145*, in.
γ = 15 degree

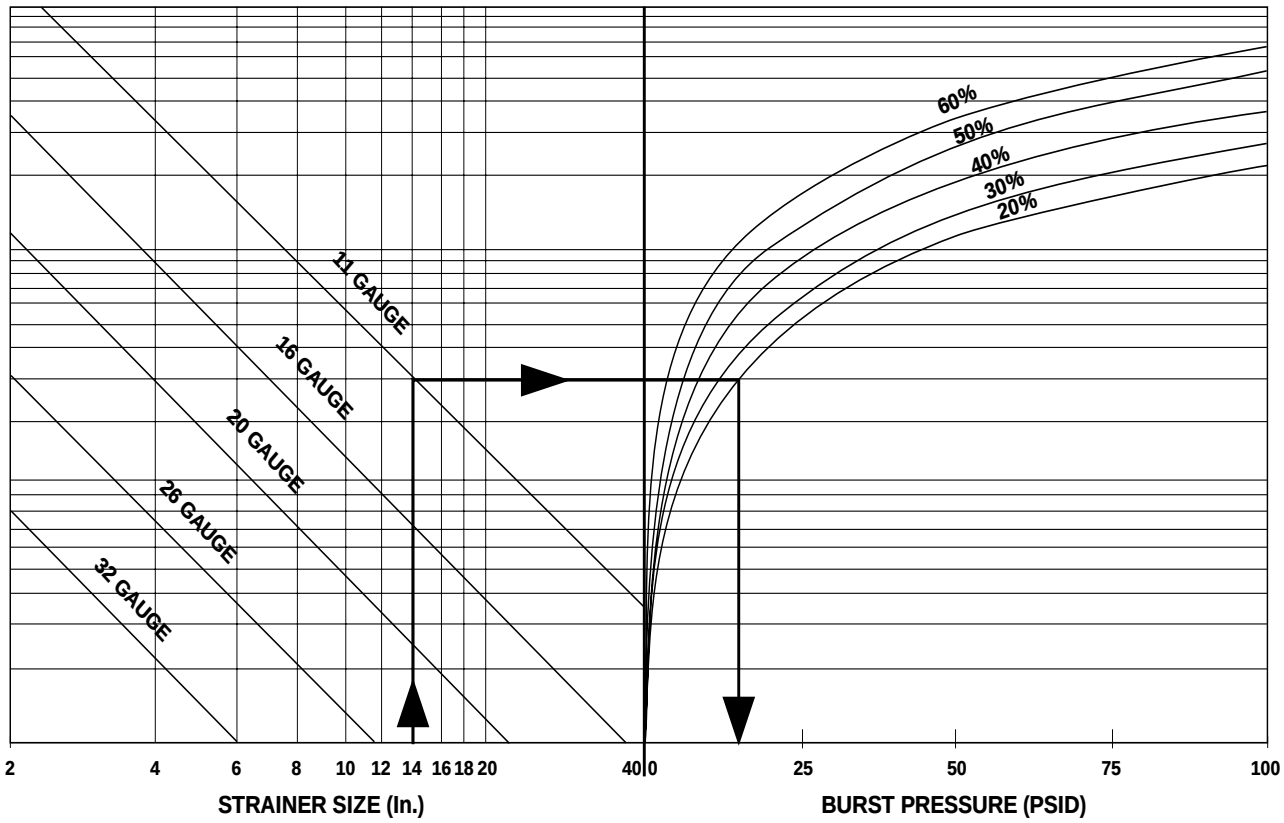
2. The above chart is based on standard dimensions. Higher burst pressure ratings are available. Please contact factory.
3. The above chart is based on a screen material of stainless steel. No safety factor is incorporated. It is the responsibility of the user to determine an acceptable safety factor.
4. See Screen Openings Chart for % Open Area's of inventoried perforated plate.

Example:

Strainer Size:	20"
Screen Thickness:	16 gauge
Screen Material Open Area:	40%

A) Locate Strainer size.
B) Follow vertical line to gauge thickness.
C) Follow horizontal line to required perforation open area.
D) Follow vertical line downward to read burst pressure.
E) Burst pressure equals 48 psid.

TB SERIES
TEMPORARY STRAINER
BURST PRESSURE



Notes:

1. The above chart is to be used for strainers manufactured from perforated plate and is based on the formula:

$$t = d\sqrt{\frac{0.3P}{S}}$$

SOURCE: ASME Section VIII, Div. 1., UG-34.

t = Thickness of perforated plate, in.
d = Dimension B - *See page 146*, in.
P = Burst Pressure, psi
S = Reduced allowable stress, psi

2. The above chart is based on standard dimensions. Higher burst pressure ratings are available. Please contact factory.
3. The above chart is based on a screen material of stainless steel. No safety factor is incorporated. It is the responsibility of the user to determine an acceptable safety factor.
4. See Screen Openings Chart for % Open Area's of inventoried perforated plate.

Example:	
Strainer Size:	14"
Screen Thickness:	11 gauge
Screen Material Open Area:	20%

A) Locate Strainer size.
B) Follow vertical line to gauge thickness.
C) Follow horizontal line to required perforation open area.
D) Follow vertical line downward to read burst pressure.
E) Burst pressure equals 15 psid.

TEMPORARY STRAINER
CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation Above _____ Below _____

    Left side facing inlet _____ Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____

State _____ Zip Code _____

Telephone (_____) _____

Fax (_____) _____

TEMPORARY STRAINERS
INSTALLATION AND MAINTENANCE INSTRUCTIONS

The temporary strainer is a device temporarily installed in a pipeline to remove sediment and debris from fluids. The temporary strainer is to be used for piping start-up applications only. The strainer is not to be used permanently installed in the process piping. If a permanent strainer is required after start-up, please contact the factory and/or refer to the SSI complete product line of pipeline strainers for your application.

STRAINER INSTALLATION INSTRUCTION

- Unpack the strainer. Inspect for any damage occurring during transit. Report damage to the carrier.
- Ensure all machined surfaces are free of defects and that the inside of the strainers is free of foreign materials.
- Verify that the correct size and flange rating for the application.
- Review the application and chemical compatibility of the process fluid to the materials of construction of the strainer.
- If the strainer application has a mesh liner, it is important to note the position of this mesh liner. As specified at the time of order, the mesh liner is on the inside or outside of the strainer.
- Install the strainer into the pipeline between the pipe flanges. Insure that the mesh lining (if provided) is facing the flow.
- Be sure to install necessary gaskets and bolting. Torque bolts properly by using standard piping practices.
- Expel air for the pipeline where the strainer is installed. Start system gradually. This will eliminate sudden shock to the strainer and other equipment in the line. Close any open pipeline vents after air is expelled.

MAINTENANCE INSTRUCTIONS

- For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition.
- Once the pressure drop reaches an unacceptable value, the strainer should be clean and/or removed.
- A pressure gauge installed before and after the strainer in line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.
- Slowly close the pipeline valves upstream and downstream for the strainer. Make sure these valves are tightly closed.
- Relieve the fluid pressure from the pipeline where the strainer is installed. The pipeline must be drained and internal pressure relieved prior to removing the strainer. Proceed to remove the strainer.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

NOTES:

Suction Diffusers

Pressures to 790 PSIG
Temperatures to 800ºF

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Metals and Mining
- Water and Waste
- Pulp and Paper

Features

- Filtration Down to 40 Microns
- Large Diffuser Screens
- Long and Short Neck Versions Available
- Cast and Fabricated Construction

Materials

- Cast Iron
- Carbon Steel
- Stainless Steel
- Other materials upon request

End Connections

- Flat Faced
- Raised Face
- Buttweld

Size Ranges

- Cast-
  2" x 1¼" - 12" x 12"
  (50mm x 32mm - 300mm x 300mm)
- Fabricated-
  Custom sizes to meet Requirement

Ratings

- ASME Class 125
- ASME Class 150
- ASME Class 300

Request quote

125S SERIES
CAST IRON SUCTION DIFFUSERS

Pressures To 200 PSIG (18.96 barg)
Temperatures to 212°F (100°C)

- **All encompassing Strainer, Flow Straightener, Elbow and Pipe Reducer for pump applications**
- **Direct mount to the suction side of a pump in either horizontal or vertical position**
- **Flow turbulence reduced through integral straightening vanes for improved pump efficiency**
- **All strainers supplied with removable Stainless Steel startup mesh over Stainless Steel perforated plate**
- **Cast Iron FF Flanges on all sizes**
- **All sizes complete with O-ring sealed covers with knob bolts to minimize down time**
- **Supporting pads for easy mounting of standard I.D. support foot**
- **Drain connection with plug furnished as standard**

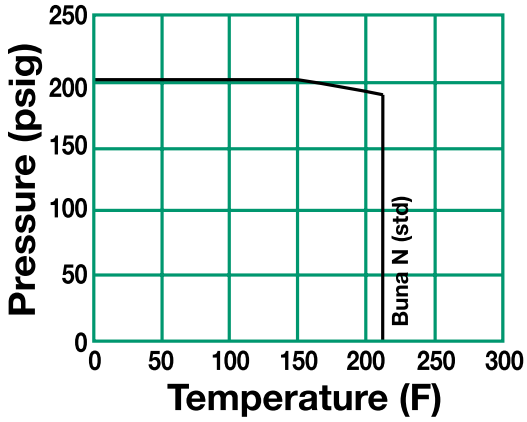
APPLICATIONS

- Pump protection

APPLICABLE CODES (Designed in accordance with)

- ASME B16.1

PRESSURE/TEMPERATURE CHART



MODELS

- 125SFI – Cast Suction Diffuser

OPTIONS

- Other perforated screens and mesh liners
- EPDM or Viton cover O-ring
- Differential connections
- Bolted covers

Cast Iron Suction Diffuser Ordering Code

Inlet Size				Dash	Model						Outlet Size	Dash	Perf	Mesh
0	6	0	0	-	1	2	5	S	F	I	N	-	4	2
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Position 1-4
- 0200 - 2"
- 0250 - 2½"
- 0300 - 3"
- 0400 - 4"
- 0500 - 5"
- 0600 - 6"
- 0800 - 8"
- 1000 - 10"
- 1200 - 12"

Dash - Position 5

Model - Position 6 -11
- 125SFI - 125# Flanged

Outlet Size - Position 12
- G - 1½"
- H - 2"
- J - 2½"
- K - 3"
- M - 4"
- N - 5"
- P - 6"
- Q - 8"
- R - 10"
- S - 12"

Dash - Position 13

Perf - Position 14
- 4 - 1/8"

Mesh - Position 15
- 2 - 20"

Cast Suction Diffusers are supplied standard with Buna N cover O-ring and 1/8 perforated screen with a removable 20 mesh start up liner.

For any variations, use the part numbering system above but clearly indicate the additional requirement.

125S SERIES
CAST IRON SUCTION DIFFUSERS

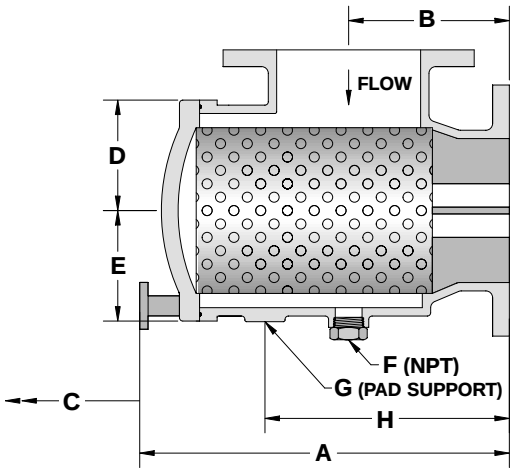
SPECIFICATION

Suction Diffuser shall mount directly to the suction side of the pump in either a horizontal or vertical position. The cover shall have a Buna N O-ring and knobs to minimize down time. The Suction Diffuser shall be available with reduced outlet sizes. The Suction Diffuser shall be _____ inlet by _____ outlet with ASME Class 125 FF flanges and shall have a _____ start up mesh with a _____ perforated screen. The Suction Diffuser shall be SSI S Series.

MATERIALS OF CONSTRUCTION

Body .....Cast Iron A126-B
Cover .....Cast Iron A126-B
Perforated Screen[1] .....304 SS
Mesh Screen .....304 SS
Knob[2] .....Ductile Iron
O-ring[1] - Standard .....Buna N
Optional .....EPDM
Optional .....Viton
Plug[2] .....Malleable Iron

1 Recommended Spares.
2 Materials of equivalent strength may be substituted at manufacturer's option.



Connections:
2" x 1¼" – 12" x 12" Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	START UP LINER
All	1/8" Perf.	20 Mesh*

*20 Mesh Liner is removeable

DIMENSIONS inches (mm) **and WEIGHTS** pounds (kg)

Size		A	B	C[1]	D	E	F	G[2]	H	Weight
Inlet	Outlet									
2 (50)	1½ (40)	10¼ 260.00	4½ 114.30	5 127.00	4½ 114.30	2 3/16 55.00	3/4 (20)	3/4 (20)	5 15/16 151.00	21 (9.5)
2 (50)	2 (50)	10¼ 260.00	4½ 114.30	5 127.00	4½ 114.30	2 3/16 55.00	3/4 (20)	3/4 (20)	5 15/16 151.00	23 (10.4)
2½ (65)	2 (50)	10⅞ 276.00	5 127.00	5 127.00	5 127.00	2½ 64.00	1/2 (15)	1 (25)	6 9/16 167.00	32 (14.5)
2½ (65)	2½ (65)	10⅞ 276.00	5 127.00	5 127.00	5 127.00	2½ 64.00	1/2 (15)	1 (25)	6 9/16 167.00	34 (15.4)
3 (80)	2 (50)	10¼ 260.00	5½ 139.70	5 127.00	5½ 139.70	2 3/16 55.00	3/4 (20)	1 (25)	5 15/16 151.00	37 (16.8)
3 (80)	2½ (65)	11 5/16 288.00	5½ 139.70	5 127.00	5½ 139.70	3 76.00	3/4 (20)	1 (25)	7 1/16 179.00	49 (22.2)
3 (80)	3 (80)	11 5/16 288.00	5½ 139.70	5¼ 133.00	5½ 139.70	3 76.00	3/4 (20)	1 (25)	7 1/16 179.00	55 (24.9)
4 (100)	3 (80)	13 332.00	6½ 165.10	5¼ 133.00	6½ 165.10	3⅜ 98.00	3/4 (20)	1 (25)	8¾ 223.00	57 (25.9)
4 (100)	4 (100)	12 13/16 325.00	6½ 165.10	7⅛ 181.00	6½ 165.10	3⅜ 98.00	3/4 (20)	1¼ (32)	8¼ 210.10	92 (41.7)
5 (125)	4 (100)	15¾ 400.00	7½ 190.50	7⅛ 181.00	7½ 190.50	4 7/16 112.70	3/4 (20)	1¼ (32)	7⅝ 194.00	97 (44.0)
5 (125)	5 (125)	16⅛ 411.00	7½ 190.50	7⅛ 181.00	7½ 190.50	5 9/16 141.00	1 (25)	1¼ (32)	10 254.00	101 (45.8)
6 (150)	4 (100)	13 332.00	8 203.20	7⅛ 181.00	8 203.20	3⅜ 98.00	3/4 (20)	1¼ (32)	8¾ 223.00	140 (63.5)
6 (150)	5 (125)	17 433.00	8 203.20	7⅛ 181.00	8 203.20	5 7/16 138.00	1 (25)	1¼ (32)	10 11/16 272.00	145 (65.8)
6 (150)	6 (150)	17 433.00	8 203.20	7⅞ 200.00	8 203.20	5 7/16 138.00	1 (25)	2 (50)	10 11/16 272.00	182 (82.6)
8 (200)	6 (150)	17 433.00	8 203.20	7⅞ 200.00	9 228.60	5 7/16 138.00	1 (25)	2 (50)	10 11/16 272.00	197 (89.4)
8 (200)	8 (200)	20 13/16 528.00	9 228.60	16¼ 413.00	9 228.60	7 176.50	1 (25)	2 (50)	11⅝ 295.00	292 (132.5)
10 (250)	8 (200)	20 13/16 528.00	9 228.60	16¼ 413.00	11 279.40	7 176.50	1 (25)	2 (50)	11⅝ 295.00	312 (141.5)
10 (250)	10 (250)	26¼ 667.00	11 279.40	16¼ 413.00	11 279.40	9¾ 248.00	1 (25)	2 (50)	14 3/16 360.00	398 (180.5)
12 (300)	8 (200)	25 5/16 643.00	11 279.40	16¼ 413.00	11 279.40	8¼ 209.00	1 (25)	2 (50)	13¾ 349.00	412 (186.9)
12 (300)	10 (250)	26¼ 667.00	11 279.40	16¼ 413.00	12 304.80	9¾ 248.00	1 (25)	2 (50)	14 3/16 360.00	491 (222.7)
12 (300)	12 (300)	26¼ 667.00	12 304.80	18⅛ 461.00	12 304.80	9¾ 248.00	1 (25)	2 (50)	15⅜ 390.00	573 (259.9)

1. Distance required for Screen Removal.
2. Mounting Pad Support.

125S SERIES
OPEN AREA RATIOS
with Standard Perforated Screen

Opening 40%, 1/8" Diameter

Size	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2 x 1½	1.77	25	10.00	5.6
2 x 2	3.14	36	14.40	4.6
2½ x 2	3.14	36	14.40	4.6
2½ x 2½	4.91	49	19.60	4.0
3 x 2	3.14	36	14.40	4.6
3 x 2½	4.91	49	19.60	4.0
3 x 3	7.07	60	24.00	3.4
4 x 3	7.07	111	44.40	6.3
4 x 4	12.57	105	42.00	3.3
5 x 4	12.57	111	44.40	3.5
5 x 5	19.64	176	70.40	3.6
6 x 4	12.57	111	44.40	3.5
6 x 5	19.64	245	98.00	5.0
6 x 6	28.27	245	98.00	3.5
8 x 6	28.27	245	98.00	3.5
8 x 8	50.27	428	171.20	3.4
10 x 8	50.27	428	171.20	3.4
10 x 10	78.54	665	266.00	3.4
12 x 8	50.27	428	171.20	3.4
12 x 10	78.54	665	266.00	3.4
12 x 12	113.10	739	295.60	2.6

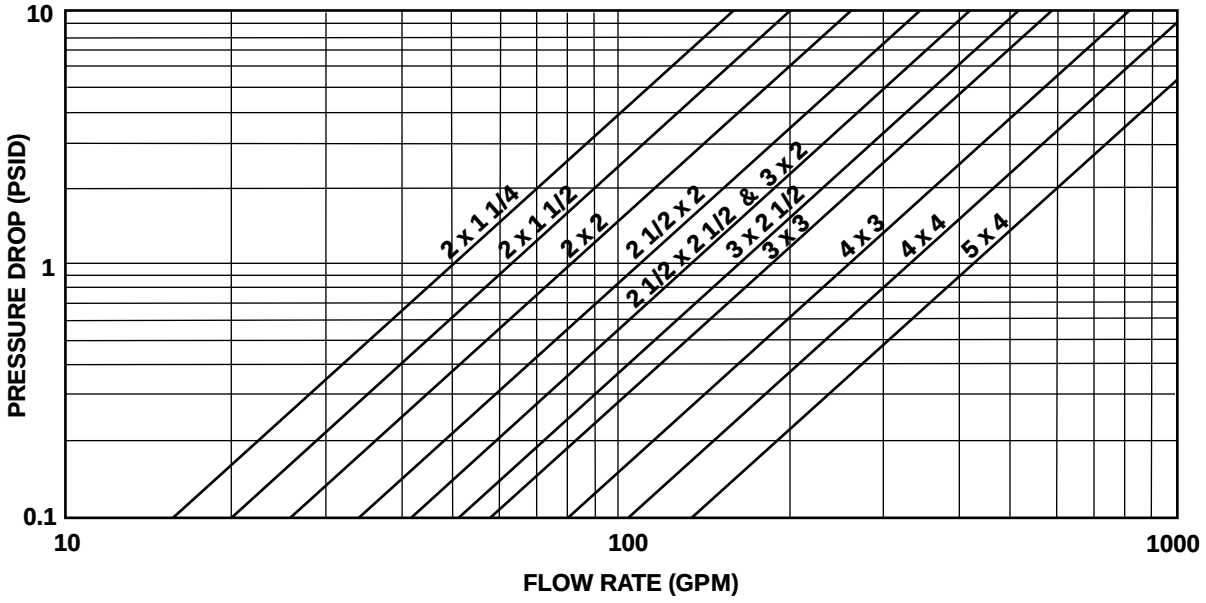
OAR = Free Screen Area divided by Nominal Outlet Area.
Free Screen Area = Opening % times Gross Screen Area.
Values shown are approximate. Contact factory for exact ratios.

125S SERIES

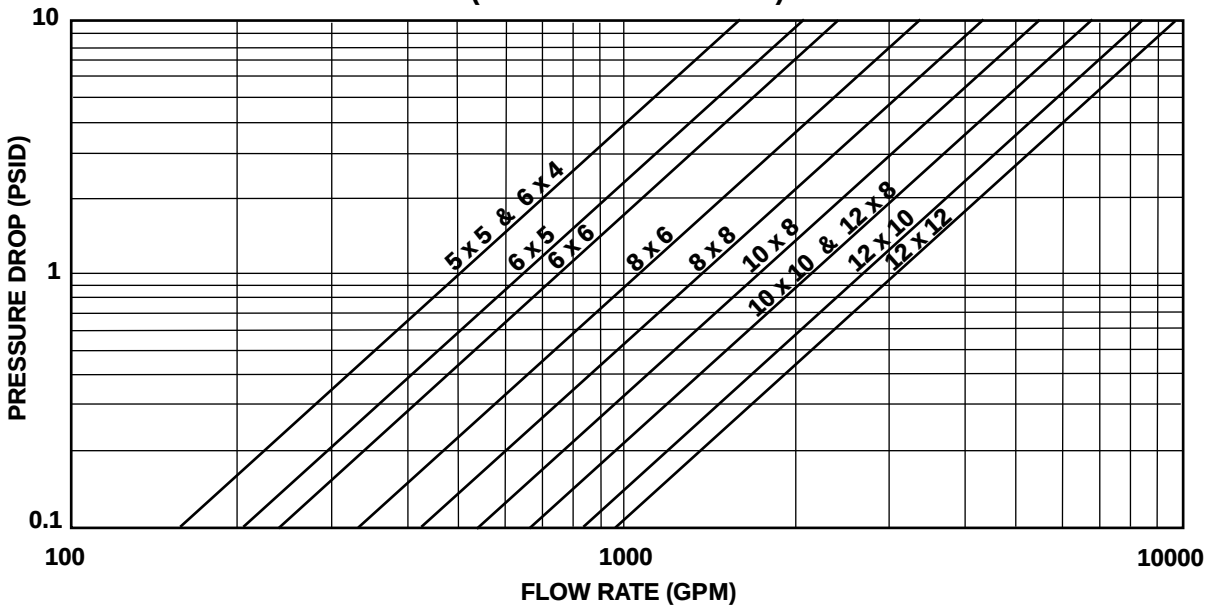
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 2"x1¼" - 5"x4")



(Sizes 5"x5" - 12"x12")



For other viscous liquids or mesh liners, contact factory.

FF SERIES
FABRICATED SUCTION DIFFUSERS

PRESSURES TO 740 PSIG (51 BARG)
TEMPERATURES TO 800°F (427°C)

- **Strainer, flow straightener, elbow and pipe reducer for pump applications**
- **Standard and custom engineered designs**
- **Integral straightening vanes reduce turbulence to improve pump efficiency**
- **One, three or five pipe diameters of flow straightening (Type 1, 3 or 5)**
- **Standard, undersized or oversized outlet connections**
- **Direct mount to the suction side of a pump in either horizontal or vertical position**
- **Supporting pads for easy mounting of standard I.D. support foot**
- **Drain connection with plug furnished as standard**

APPLICATIONS

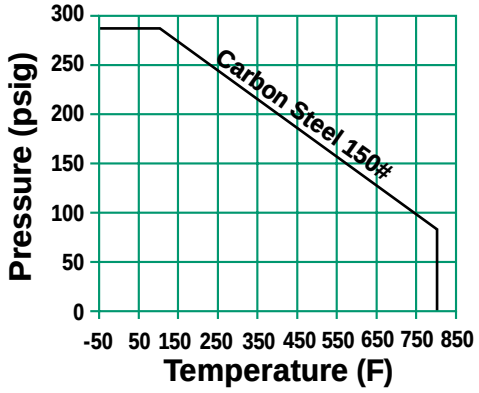
- Pump Protection

APPLICABLE CODES

- Designed and manufactured in accordance with ASME B31.1, ASME B31.3 and/or ASME Section VIII, Div. 1
- CRN available in all Provinces
- Welders certified to ASME Section IX

PRESSURE/TEMPERATURE CHART

ASME B16.5



Contact Factory for higher ratings.

MODELS see Ordering Code below

- Type 1 - One pipe diameter of flow straightening
- Type 3 - Three pipe diameters of flow straightening
- Type 5 - Five pipe diameters of flow straightening

OPTIONS

- Customer specified materials, sizes and designs
- Other flow straightening quality designs
- Hinged or quick opening/operator assisted covers
- Vent and/or differential pressure connections
- ASME "U" stamped vessels on request
- Other perforated screen and mesh liner baskets
- Data Packages and MTR's available on request

Fabricated Suction Diffuser Ordering Code

Model		Material	Inlet Size	Class	Connections	Dash	Cover	Perf.	Mesh
F	F	1	C	T	1	F	-	J	2	2
1	2	3	4	5	6	7	8	9	10	11

Model - Position 1 - 3
- FF1 – Type 1 – Standard Outlet
- FF2 – Type 1 – Undersized Outlet
- FF3 – Type 1 – Oversized Outlet
- FF4 – Type 3 – Standard Outlet
- FF5 – Type 3 – Undersized Outlet
- FF6 – Type 3 – Oversized Outlet
- FF7 – Type 5 – Standard Outlet
- FF8 – Type 5 – Undersized Outlet
- FF9 – Type 5 – Oversized Outlet
- FFZ – Custom Configuration

Standard Outlet is one size smaller than the inlet.
Undersized Outlet is two sizes smaller than the linlet.
Oversized Outlet is the same size as the inlet.

Material - Position 4
- C - Carbon Steel
- L - Low Temp CS
- V - 304 SS
- T - 316 SS
- M - Monel
- Z - Other

Inlet Size - Position 5

H - 2	S - 12
J - 2½	T - 14
K - 3	U - 16
M - 4	V - 18
N - 5	W - 20
P - 6	X - 22
Q - 8	Y - 24
R - 10	Z - Other
1 - 28	3 - 36
2 - 30	4 - 40

Class - Position 6
- A - 125
- 1 - 150
- 2 - 250
- 3 - 300
- Z - Other

Connection - Inlet Position 7
- F - Flat Face Flange
- J - Ring Joint
- R - Raised Face Flange
- Z - Other

Dash - Position 8

Note:
Standard Connections
RF inlet x FF outlet

Cover - Position 9
- B - Bolted
- C - C-Clamp
- J - Bolted w/ Hinge[1]
- D - Davit Bolted
- H - T-Bolt Hinged
- T - Threaded Hinged
- Y - Yoke Hinged
- Z - Other

1. J-Hinged Cover is standard.
2. For other screen materials, contact factory.

Perf. - Position 10
304SS Material[2]

A - None	5 - 5/32"
B - 3/64"	6 - 3/16"
1 - 1/32"	7 - 7/32"
2 - 1/16"	8 - 1/4"
3 - 3/32"	9 - 3/8"
4 - 1/8"	Z - Other

Mesh[2] - Position 11

A - None	6 - 60
1 - 10	7 - 80
2 - 20	8 - 100
3 - 30	9 - 120
4 - 40	Z - Other
5 - 50	

FF SERIES
FABRICATED SUCTION DIFFUSERS

SPECIFICATION

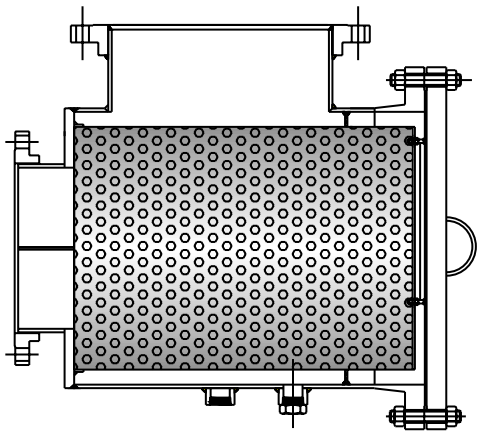
Suction Diffuser shall mount directly to the suction side of the pump in either a horizontal or vertical position. The Suction Diffuser shall be manufactured in accordance with ASME B31.1, ASME B31.3 and /or ASME Section VIII, Div. I. The Suction Diffuser shall be available with reduced outlet sizes. The Suction Diffuser shall be _____ inlet by _____ outlet and shall have a _____ perforated screen. The Suction Diffuser shall have the equivalent of _____ pipe diameters of flow straightening. The Suction Diffuser shall be SSI FF Series.

MATERIALS OF CONSTRUCTION*-(Std Carbon Steel Body)

Body .....SA106-B CS
Cover .....SA105 CS
Flanges .....SA105 CS
Reducer Plate .....SA516-70 CS
Coupling .....SA105 CS
Plug .....SA105 CS
Screen[1] .....304 SS
Cover Gasket[1] .....304 SS Spiral Wound
Stud .....SA193-B7 CS
Nut .....SA194-2H CS

* Other materials are available upon request.
Standard materials are subject to change.
Please contact factory for Certified drawings.

1 Recommended Spare Parts.



Connections:
10" x 6" – 24" x 24" RF Inlet x FF Outlet

SCREEN OPENINGS

SIZE	STANDARD SCREEN	MATERIALS
All	1/8" Perf.	304 SS

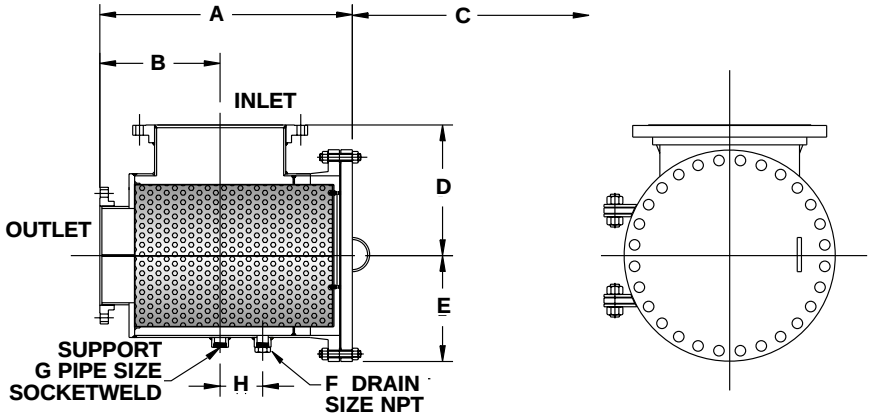
OPEN AREA RATIOS
with Standard Perforated Screen

Opening 40%, 1/8" Diameter

Size Inlet X Outlet	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
10 x 6	28.89	455	182	6.3
10 x 8	50.03	455	182	3.6
10 x 10	78.85	700	280	3.6
12 x 8	50.03	524	210	4.2
12 x 10	78.85	700	280	3.6
12 x 12	113.10	811	324	2.9
14 x 10	78.85	700	280	3.6
14 x 12	113.10	811	324	2.9
14 x 14	137.89	1162	465	3.4
16 x 12	113.10	811	324	2.9
16 x 14	137.89	1162	465	3.4
16 x 16	182.65	1275	510	2.8
18 x 14	137.89	1162	465	3.4
18 x 16	182.65	1275	510	2.8
18 x 18	233.71	1470	588	2.5
20 x 16	182.65	1275	510	2.8
20 x 18	233.71	1470	588	2.5
20 x 20	291.04	2454	982	3.4
24 x 18	233.71	1470	588	2.5
24 x 20	291.04	2454	982	3.4
24 x 24	424.56	2454	982	2.3

OAR = Free Screen Area divided by Nominal Outlet Area.
Free Screen Area = Opening % times Gross Screen Area.
Values shown are approximate. Contact factory for exact ratios.

FF SERIES
FABRICATED SUCTION DIFFUSERS
DIMENSIONS & WEIGHTS



DIMENSIONS* inches (mm) **AND WEIGHTS** pounds (kg)

Inlet	Outlet	A			B			C[1]	D	E	F	G	H	Weight[2]
		TYPE 1	TYPE 3	TYPE 5	TYPE 1	TYPE 3	TYPE 5							
Standard Outlet														
10 (250)	8 (200)	22⅝ (575)	26⅝ (676)	30⅝ (778)	11⅛ (283)	15⅛ (384)	19⅛ (486)	17⅜ (441)	12⅝ (321)	8 (203)	1 (40)	1 (40)	4⅛ (105)	339 (154)
12 (300)	10 (250)	25$^{13}/_{16}$ (656)	30$^{13}/_{16}$ (783)	35$^{13}/_{16}$ (910)	13⅜ (333)	18⅛ (460)	23⅛ (587)	18$^{13}/_{16}$ (478)	12⅝ (327)	10½ (267)	1½ (40)	1½ (40)	4¾ (121)	530 (240)
14 (350)	12 (300)	26⅜ (670)	32⅜ (822)	38⅜ (975)	13⅝ (346)	19⅝ (499)	25⅝ (651)	21½ (546)	15¼ (387)	11¾ (298)	1½ (40)	1½ (40)	5¼ (133)	808 (366)
16 (400)	14 (350)	32$^{5}/_{16}$ (821)	39$^{5}/_{16}$ (998)	46$^{5}/_{16}$ (1,176)	16¾ (425)	23¾ (603)	30¾ (781)	26¾ (679)	16¼ (413)	12½ (318)	2 (50)	2 (50)	5½ (140)	1086 (493)
18 (450)	16 (400)	32$^{9}/_{16}$ (827)	40$^{9}/_{16}$ (1,030)	48$^{9}/_{16}$ (1,233)	10⅝ (270)	18⅝ (473)	26⅝ (676)	26⅝ (676)	17⅝ (448)	13¾ (349)	2 (50)	2 (50)	6½ (165)	1256 (570)
20 (500)	18 (450)	32⅛ (816)	41⅛ (1,045)	50⅛ (1,273)	23⅛ (588)	32⅛ (816)	41⅛ (1,045)	25¼ (641)	20⅛ (511)	16 (406)	2 (50)	2 (50)	2⅞ (73)	1793 (813)
24 (600)	20 (500)	40 (1,016)	50 (1,270)	60 (1,524)	21⅛ (537)	31⅛ (791)	41⅛ (1,045)	32½ (826)	22 (559)	17½ (444)	2 (50)	2 (50)	9 (227)	3545 (1,608)
Undersized Outlet														
10 (250)	6 (150)	21⅞ (556)	24⅞ (632)	27⅞ (708)	11¾ (298)	14¾ (375)	17¾ (451)	17$^{5}/_{16}$ (440)	11⅛ (283)	8 (203)	1 (25)	1 (25)	4 (102)	261 (118)
12 (300)	8 (200)	22½ (572)	26½ (673)	30½ (775)	11¼ (286)	15¼ (387)	19¼ (489)	18$^{13}/_{16}$ (478)	12⅞ (327)	9½ (241)	1½ (40)	1½ (40)	4⅝ (118)	437 (198)
14 (350)	10 (250)	25⅞ (657)	30⅞ (784)	35⅞ (911)	13⅛ (333)	18⅛ (460)	23⅛ (587)	18⅞ (480)	14 (356)	10½ (267)	1½ (40)	1½ (40)	5¼ (133)	670 (304)
16 (400)	12 (300)	26¼ (667)	32¼ (819)	38¼ (972)	13.63 (346)	19⅝ (499)	25⅝ (651)	21½ (546)	15½ (394)	11¾ (298)	2 (50)	2 (50)	5$^{1}/_{16}$ (129)	913 (414)
18 (450)	14 (350)	29$^{5}/_{16}$ (744)	36$^{5}/_{16}$ (922)	43$^{5}/_{16}$ (1,100)	16¾ (425)	23¾ (603)	30¾ (781)	26¾ (679)	16⅜ (416)	12½ (318)	2 (50)	2 (50)	5⅞ (149)	1058 (480)
20 (500)	16 (400)	32$^{9}/_{16}$ (827)	40$^{9}/_{16}$ (1,030)	48$^{9}/_{16}$ (1,233)	17$^{3}/_{16}$ (437)	25$^{3}/_{16}$ (640)	33$^{3}/_{16}$ (843)	26⅝ (676)	17⅞ (454)	13¾ (349)	2 (50)	2 (50)	6⅝ (168)	1452 (659)
24 (600)	18 (450)	32⅛ (816)	41⅛ (1,045)	50⅛ (1,273)	17 (432)	26 (660)	35 (889)	25⅝ (651)	23⅞ (607)	16 (406)	2 (50)	2 (50)	7$^{13}/_{16}$ (198)	2382 (1,080)
Oversized Outlet														
10 (250)	10 (250)	25$^{13}/_{16}$ (656)	30$^{13}/_{16}$ (783)	35$^{13}/_{16}$ (910)	13⅛ (333)	18⅛ (460)	23⅛ (587)	18$^{13}/_{16}$ (478)	13⅝ (346)	10½ (267)	1 (25)	1 (25)	5$^{5}/_{16}$ (135)	420 (190)
12 (300)	12 (300)	26⅜ (670)	32⅜ (822)	38⅜ (975)	13⅝ (346)	19⅝ (499)	25⅝ (651)	21½ (546)	15⅛ (384)	11¾ (298)	1½ (40)	1½ (40)	4$^{11}/_{16}$ (119)	650 (295)
14 (350)	14 (350)	32⅛ (816)	39⅛ (994)	46⅛ (1,172)	16¾ (425)	23¾ (603)	30¾ (781)	26¾ (679)	16 (406)	12½ (318)	1½ (40)	1½ (40)	5 (127)	964 (437)
16 (400)	16 (400)	32$^{9}/_{16}$ (827)	40$^{9}/_{16}$ (1,030)	48$^{9}/_{16}$ (1,233)	17$^{3}/_{16}$ (437)	25$^{3}/_{16}$ (640)	33$^{3}/_{16}$ (843)	26⅝ (676)	17½ (445)	13¾ (349)	2 (50)	2 (50)	8$^{1}/_{16}$ (205)	1280 (580)
18 (450)	18 (450)	32⅛ (816)	41⅛ (1,045)	50⅛ (1,273)	17 (432)	26 (660)	35 (889)	25¼ (641)	19⅞ (505)	16 (406)	2 (50)	2 (50)	5$^{15}/_{16}$ (151)	1572 (713)
20 (500)	20 (500)	40 (1,016)	50 (1,270)	60 (1,524)	21⅛ (537)	31⅛ (791)	41⅛ (1,045)	32½ (826)	21⅝ (549)	17½ (444)	2 (50)	2 (50)	8 (203)	2560 (1,161)
24 (600)	24 (600)	41⅜ (1,051)	53⅜ (1,356)	65⅜ (1,661)	22⅛ (562)	34⅛ (867)	46⅛ (1,172)	34⅞ (886)	23⅞ (606)	17½ (444)	2 (50)	2 (50)	7$^{13}/_{16}$ (198)	3600 (1,633)

1. Distance required for screen removal.
2. Weight shown for Type 1. For Type 3 and 5 multiply Type 1 weight by 1.1 and 1.2, respectively.

* Dimensions are subject to change. Contact factory for certified drawings when required. Custom dimensions available upon request.

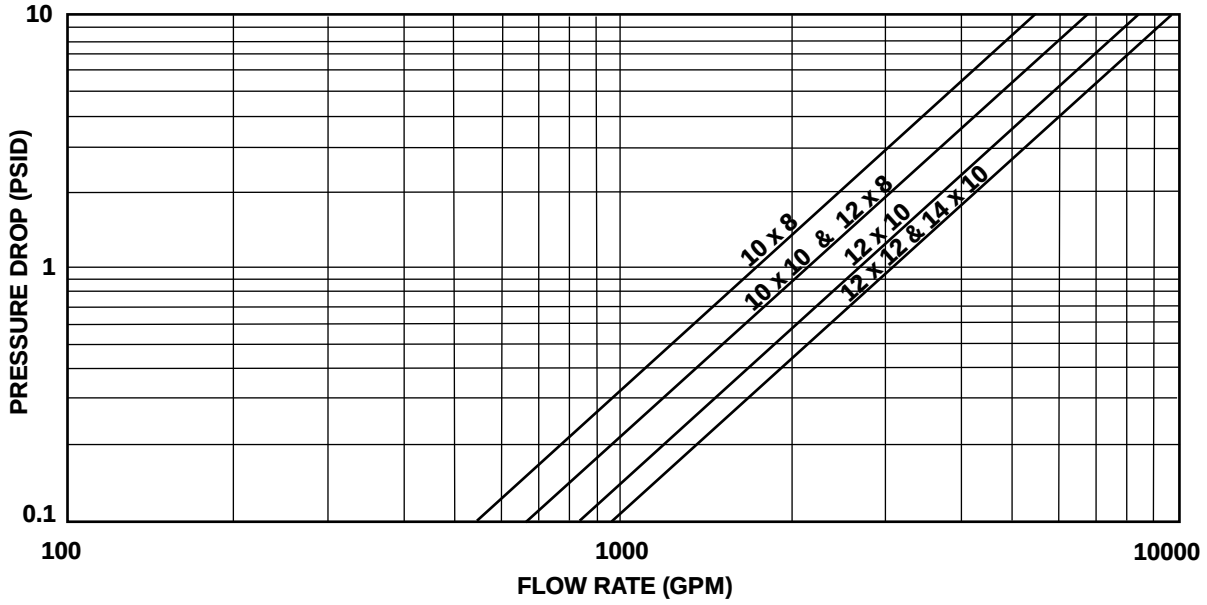
FF SERIES

FABRICATED SUCTION DIFFUSERS

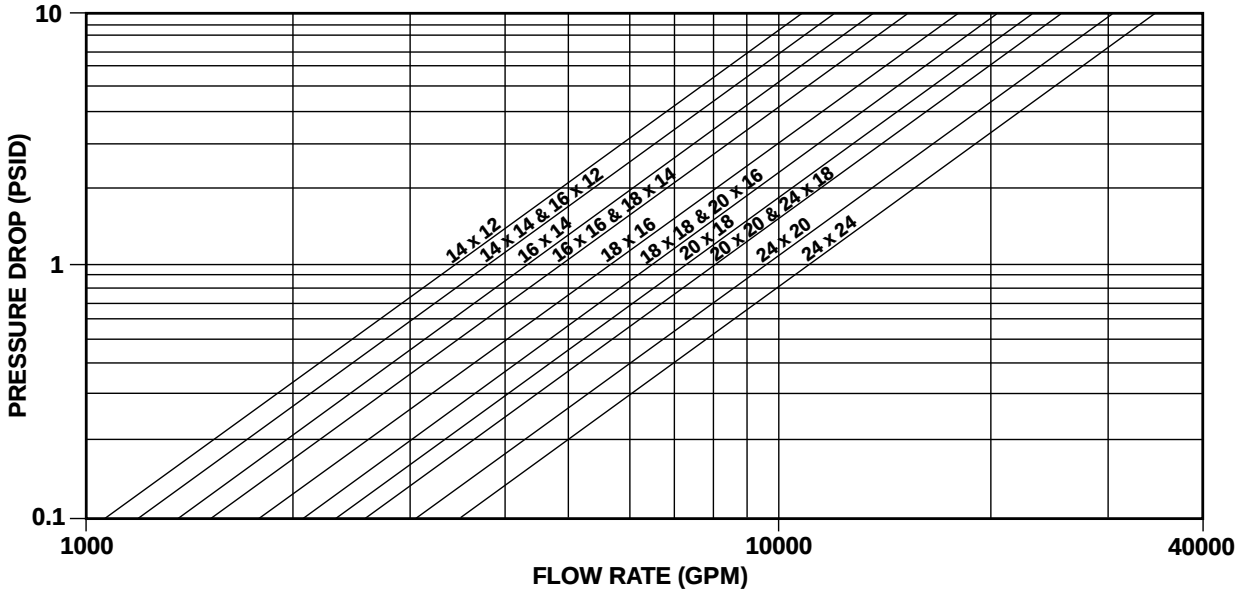
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 10"x 8" - 12"x 12")



(Sizes 14"x 12" - 24"x 24")



* For other viscous liquids or mesh liners, contact factory.

125T SERIES
CAST IRON TRIPLE DUTY VALVES

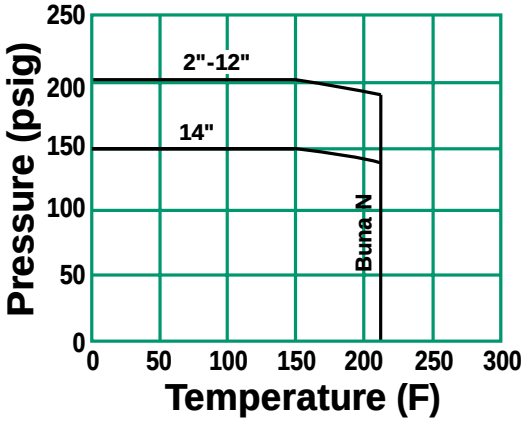
Pressures to 200 PSIG (13.8 barg)
Temperatures to 212°F (100°C)

- **Triple function includes a spring loaded silent check valve, balancing valve and shutoff valve to minimize cost and reduce installation time**
- **Operates automatically and silently**
- **Center guided soft seal disc ensures leak free performance**
- **Spring loaded Buna N disc provides no impact shutoff and prevents water hammer upon closing**
- **Graduated position indicator provides accurate visual check of valve position**
- **Standard handwheel for ease of operation**
- **Cracking pressure of 1/4 PSI**
- **Drain and differential connections with plug are furnished as standard**

APPLICATIONS
- Pump protection

APPLICABLE CODES (Designed in accordance with)
- ASME B16.1

PRESSURE/TEMPERATURE CHART



MODELS
- 125TFI – Cast Iron Triple Duty Valve

Request quote

Triple Duty Valve Ordering Code

Size				Dash	Model						Dash	O-Ring
0	4	0	0	-	1	2	5	T	F	I	-	B
1	2	3	4	5	6	7	8	9	10	11	12	13

Size - Position 1-4
0200 - 2”
0250 - 2½”
0300 - 3”
0400 - 4”
0500 - 5”
0600 - 6”
0800 - 8”
1000 - 10”
1200 - 12”

Dash - Position 5

Model - Position 6 -11
125TFI - Triple Duty Valve

Dash - Position 12

O-Ring - Position 13
B - Buna N

For any variations, use the part numbering system above but clearly indicate the additional requirement.

MAXIMUM RATED FLOW COEFFICIENTS (Cv)*

Valve Size									
2	2-1/2	3	4	5	6	8	10	12	14
83	129	189	335	529	766	1372	2154	3106	4016

* Maximum Cv rating is at 100% of stem rise.

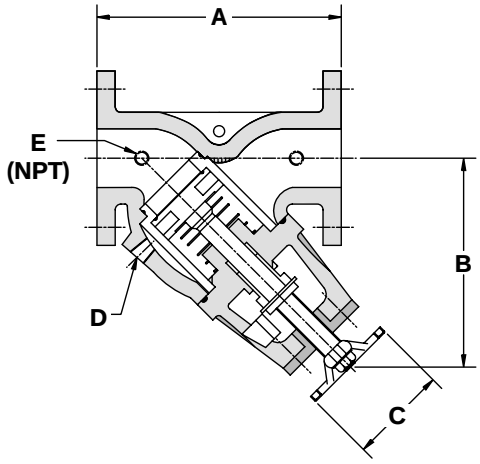
125T SERIES
CAST IRON TRIPLE DUTY VALVES

SPECIFICATION

Triple Duty Valve shall install in a straight run of pipe and perform as a center guided silent check valve, shutoff valve and balancing valve. The valve shall have _____ psi cracking pressure. The valve shall have Cast Iron ASME Class 125 FF flanges. The seat shall have Buna N O-ring seals. The valve shall be an inlet size of _____ and a Cv rating of _____ . The Triple Duty Valve shall be SSI T Series.

MATERIALS OF CONSTRUCTION

Body & Yoke .....Cast Iron A126-B
Disc Guide .....Ductile Iron/Nickel Plate
Disc .....Ductile Iron
Packing Gland .....Ductile Iron
Packing .....Graphite
Spring .....Stainless Steel
Stem.....Stainless Steel
Seat Seal .....Buna N
Disc Seal .....Buna N



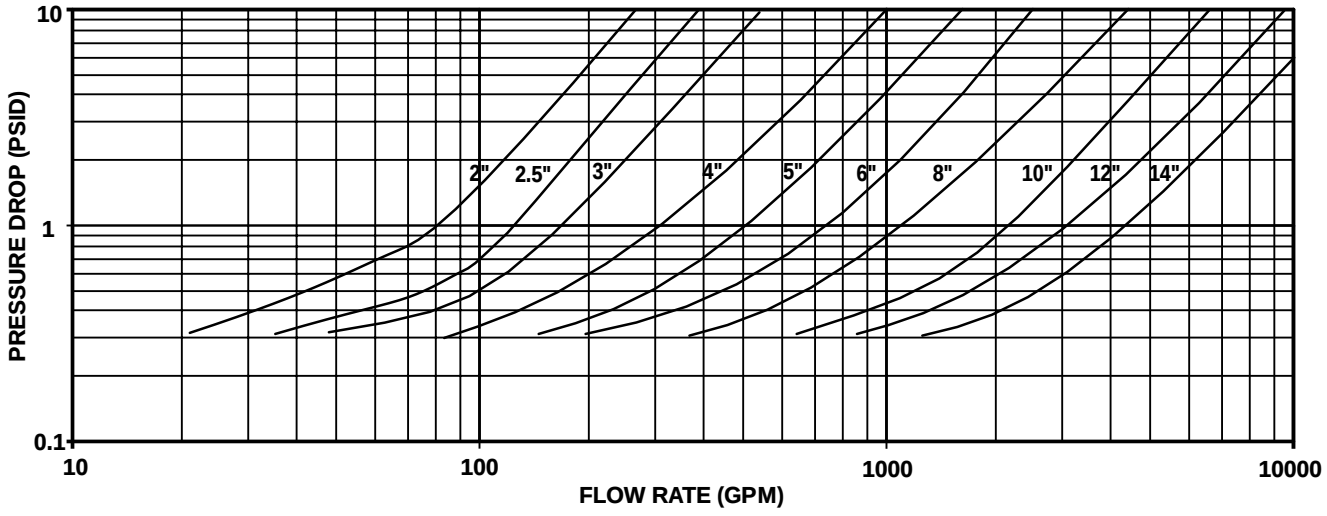
Connections:
2" - 14" FF Flanged

DIMENSIONS inches (mm)
AND WEIGHTS pounds (kg)

Size	A	B	C	D	E	Weight
2 (50)	8⅜ (213)	9⅝ (244)	6⁵⁄₁₆ (159)	1/2 (15)	1/4 (8)	34 (15)
2½ (65)	9¹³⁄₁₆ (250)	10 (254)	6⁵⁄₁₆ (159)	1/2 (15)	1/4 (8)	40 (18)
3 (80)	10 (254)	10⅛ (257)	9⅜ (238)	1/2 (15)	1/4 (8)	50 (23)
4 (100)	14½ (368)	12⅝ (321)	9⅜ (238)	1/2 (15)	1/4 (8)	100 (45)
5 (125)	16 (407)	16⅜ (416)	11 (279)	1/2 (15)	1/4 (8)	155 (70)
6 (150)	18 (457)	17½ (444)	11 (279)	3/4 (20)	1/4 (8)	200 (91)
8 (200)	21½ (546)	18½ (470)	12½ (317)	3/4 (20)	1/4 (8)	350 (159)
10 (250)	25½ (648)	21¹¹⁄₁₆ (552)	12½ (317)	1 (25)	1/4 (8)	480 (218)
12 (300)	30 (762)	24½ (622)	12½ (317)	1 (25)	1/4 (8)	660 (299)
14 (350)	30⅜ (771)	24½ (622)	12½ (317)	1 (25)	1/4 (8)	790 (359)

Dimensions and Weights are approximate. Contact factory for Certified Drawings.
Dimensions shown are in full open position.

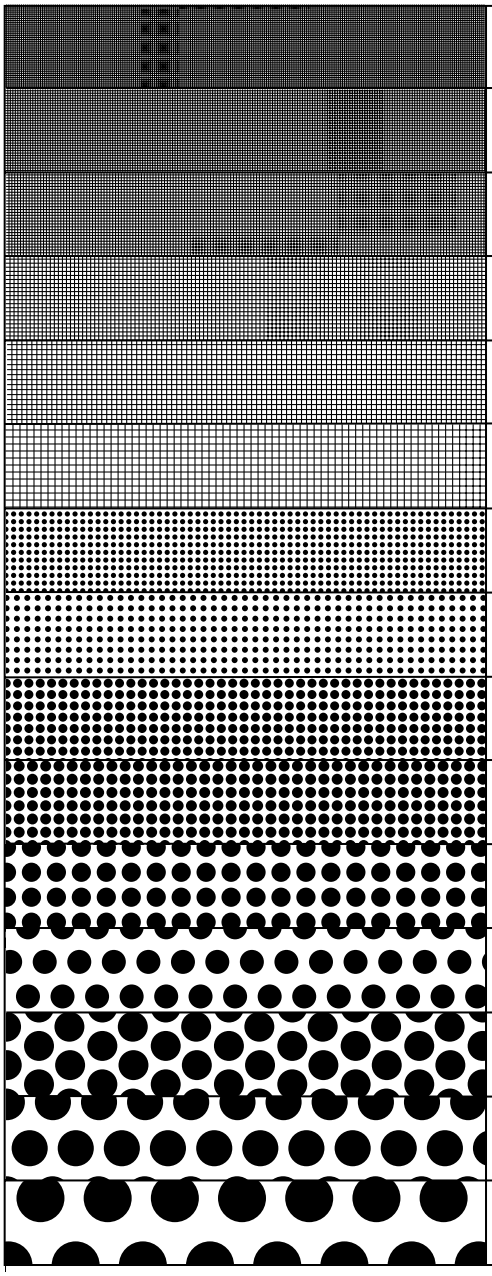
PRESSURE DROP VS FLOW RATE
(Sizes 2" - 14")



NOTES:

PUMP PROTECTION TECHNICAL INFORMATION

SCREEN OPENINGS



100 Mesh - 30% O.A. 0.006” Openings
80 Mesh - 36% O.A. 0.008” Openings
60 Mesh - 38% O.A. 0.010” Openings
40 Mesh - 41% O.A. 0.016” Openings
30 Mesh - 45% O.A. 0.022” Openings
20 Mesh - 49% O.A. 0.035” Openings
0.027” Dia.- 23% O.A.
0.033” Dia.- 28% O.A.
3/64” Dia.- 36% O.A.
1/16” Dia.- 37% O.A.
3/32” Dia.- 39% O.A.
1/8” Dia.- 40% O.A.
5/32” Dia.- 58% O.A.
3/16” Dia.- 50% O.A.
1/4” Dia.- 40% O.A.

FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

SUCTION DIFFUSER
CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation Above _____ Below _____

    Left side facing inlet _____ Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____

State _____ Zip Code _____

Telephone (_____) _____

Fax (_____) _____

SUCTION DIFFUSER
INSTALLATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- Ensure all machined surfaces are free of defects and that the inside of the diffuser is free of foreign objects.
- Provide for distance “C” as this dimension represents the distance required for removal of strainer.
- Mount standard support leg and foot to pad of suction diffuser.
- Align inlet and outlet pipe connections. For flanged connections, the flange bolting should be tightened gradually in a back and forth clockwise motion.
- Once installed, increase line pressure gradually and check for leak around joints.
- After piping and initial circulation is complete, remove fine mesh start-up strainer.

MAINTENANCE

For maximum eficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down the line, drain piping and remove, clean and replace screen. A differential pressure gauge installed before and after diffuser in line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

TRIPLE DUTY VALVE
INSTALLATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- Ensure all machined surfaces are free of defects and that the inside of the valve is free of foreign objects.
- The valve should be installed on the discharge side of the pump with the flow arrow pointed away from the pump discharge.
- Minimum recommended space for pump sizes 2” through 6” is 12”. Minimum recommended space for pump sizes 8” through 14” is 24”.
- It is not recommended to mount a valve directly to the pump.
- Sufficient clearance should be left around the valve for removal and/or repair.
- Valve should be mounted with the stem pointing up to facilitate proper seating of the valve disc.
- When connecting the valve to the line be sure that the flanges are the same – flat face to flat face. Flat face flanges require full face gaskets. The specified face-to-tace dimension of the valve is approximate due to machining tolerances. Allow adjustment in prefabricated piping or request certified dimensions.
- Check to see that flange gaskets are properly positioned before tightening the bolts. Tighten bolts gradually in a back and forth clockwise motion.
- Once installed, “crack” the valve open before starting the pump.
- Gradually adjust the stem until the proper flow rate is reached. Tapped ports are provided on the valve to insert equipment to measure the valve pressure differential.

MAINTENANCE - Packing Replacement

Before starting make a note of the position of the stem indicator.

Shut down the pump and close the isolation valves.

Open the valve completely so that the stem back seats against the inside of the yoke cover. Loosen the two nuts holding the flanged gland.

Remove the old packing and clean out the packing box.

Place a set (usually three or four) of the new packing rings around the stem. Be sure to stagger the 45 degree split in the packing rings. Press packing rings into the packing box.

Replace the flanged gland and nuts. Do not over tighten or the stem may seize.

Adjust the valve stem indicator to its original position. If there is any leakage around the packing tighten both gland nuts a 1/4 turn at a time until the leakage stops. It is very important that the gland nuts be tightened evenly.

For all other maintenance please contact the factory.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Metals & Mining
- Water & Waste Water
- Pulp & Paper

Double Door Check Valves

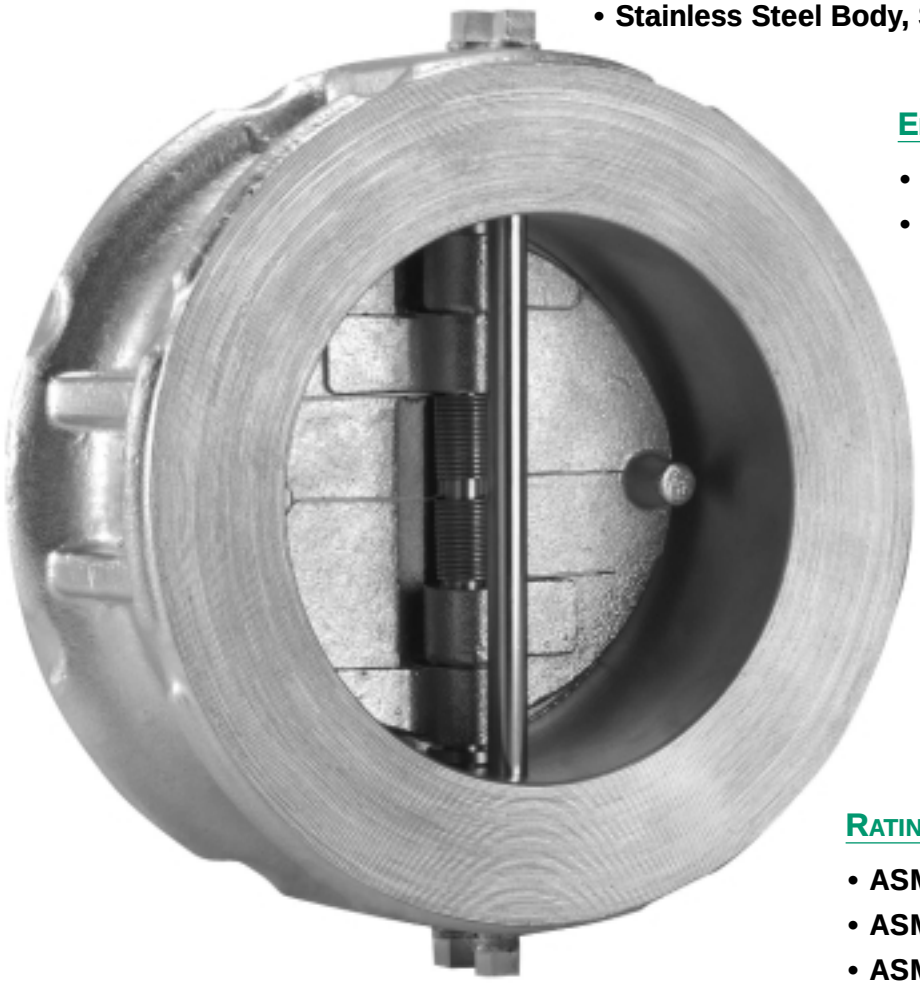
Pressures to 1480 PSIG
Temperatures to 600ºF

Features

- **Compact Design**
- **Low Pressure Loss**
- **Minimal Installation Costs**

Materials of Construction

- **Cast Iron Body, Bronze & Stainless Steel Disc**
- **Carbon Steel Body, Stainless Steel Disc**
- **Stainless Steel Body, Stainless Steel Disc**



End Connections

- **Wafer Flat Face**
- **Wafer Raised Face**

Seat Materials

- **Buna-N**
- **EPDM**
- **Viton**
- **Metal To Metal**

Size Range

- **2” (50mm) up to 24” (600mm)**

Ratings

- **ASME Class 125**
- **ASME Class 150**
- **ASME Class 300**
- **ASME Class 600**

DOUBLE DOOR CHECK VALVE
DESIGN FEATURES

Wafer Double Door Design Advantage

The short face to face design inherently makes this check valve significantly lighter (10% of the weight of a conventional swing check). The valve is designed to fit between two flanges and requires no flanges of its own. The double door check valve can be installed in any position as the spring aids in keeping the valve closed (Consult factory for vertical downward flow). These features allow you to design your piping layout in the most efficient and least expensive fashion.

Shock Bumpers

An integral cast bumper is present on all Series WT double door check valves (Except class 125 Lb.). The bumpers can be found on both discs, which meet when the valve reaches a fully open position. This design feature prevents the discs from pressing against the stop pin and eliminates leverage that would cause unnecessary stresses and wear. The purpose of the stop pin is to prevent over travel of either disc, which would result in valve failure.

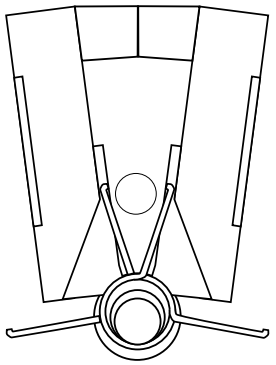


FIGURE 1

Resilient Seat

The basic design of the Series WT double door check valve is illustrated in Fig. 2. This seal is chemically bonded using specially designed adhesives that provide rubber tearing bonds throughout the operating range of the seat material. In case of resilient seat failure, the design permits the doors to float and make contact with the metal surface the seats were adhered to. This feature allows the valve to function even if the resilient seat is not present. The seat design illustrated in Fig. 3 is also available. This design results in a controlled seat squeeze and provides a metal to metal backup seal (Fig.4).

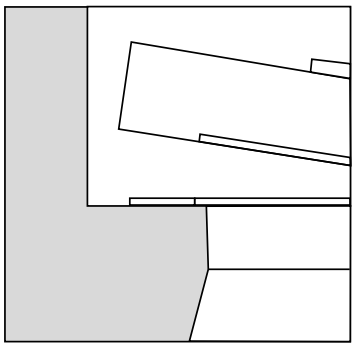


FIGURE 2

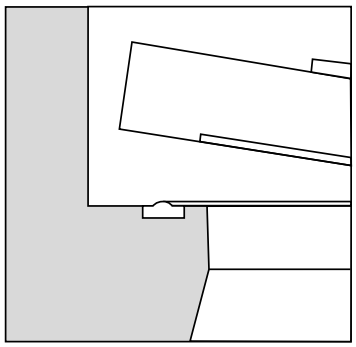


FIGURE 3

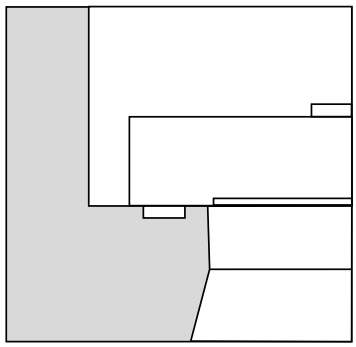


FIGURE 4

DOUBLE DOOR CHECK VALVE
DESIGN FEATURES

Minimal Seat Wear

The Series WT double door check valve was designed to eliminate the possibility of seat wear caused by friction at the heel of the double doors while maintaining low back pressure sealing capabilities. The clearance between the body, disc and hinge pin results in the discs cracking open at the heel location first. When the valve opens the heel does not drag across the seating surface and cause wear. As the valve closes, the spring will take the toe of the disc into the seating surface first, while the line back pressure will force the heels and hinge pin back to the seat to complete the seal.

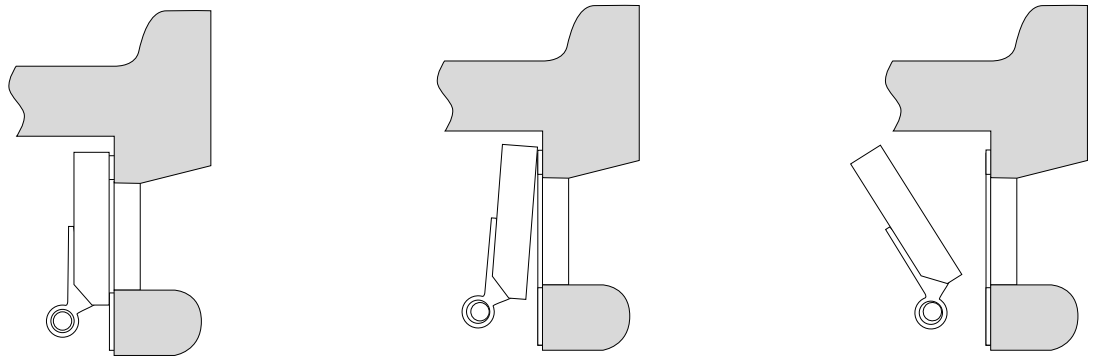


FIGURE 5

Spring Closing

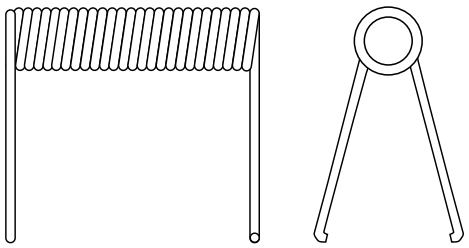
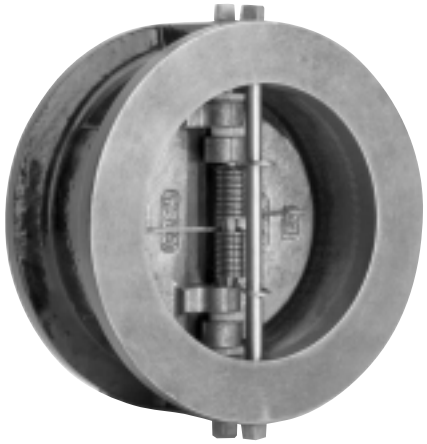


FIGURE 6

The specially designed torsion spring in the Series WT double door check valve holds the valve discs closed under no flow conditions (Consult factory for vertical downward flow). Pipeline flow (head) causes the discs to open and conversely when flow decays to a point near zero velocity, the force from the legs of the torsion spring instantly closes the valve discs for non-slam shutoff. The Series WT double door check valve comes complete with corrosion resistant stainless steel springs as standard.



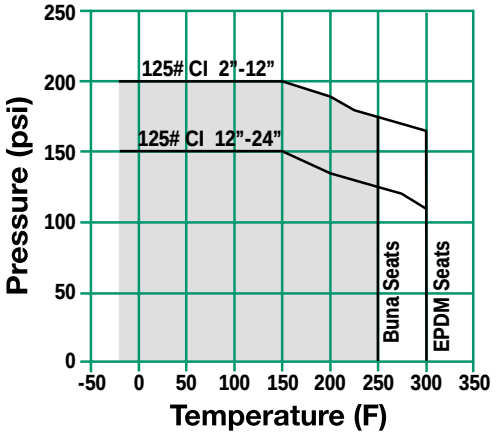
125WT SERIES
CAST IRON
DOUBLE DOOR CHECK VALVES

PRESSURES TO 200 PSIG (13.8 BARG)
TEMPERATURES TO 250ºF (121ºC)

- **ASME Class 125 rated Check Valves**
- **Wafer body style fits between FF or RF flanges**
- **Teflon thrust washers**
- **Resilient Buna-N seats**
- **Seat design lifts then swings discs to minimize seat wear**
- **Independent springs optimizes valve plate closing rates while minimizing spring stress**
- **Lifting lug tap on all valves 6" and larger**

APPLICATIONS
- Liquid and Air Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME B16.1



MODELS
- 125WTIB - Cast Iron Body, Bronze Disc, Buna Seat
- 125WTIT – Cast Iron Body, Stainless Steel Disc, Buna Seat

OPTIONS
- EPDM Seats
- Other Spring Material

APPLICABLE CODES
- ASME Sec VIII and B16.1 Bodies
- API 598
- FM approved 30246911 (2"-10" only)

Canadian Registration - OE10274.5C

Request quote

125WT Series Ordering Code

Inlet Size					Model								Seat	Dash	Spring
1	0	0	0	-	1	2	5	W	T	I	B	B	-	T	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Inlet Size - Position 1 - 4

0200 - 2"	1000 - 10"
0250 - 2½"	1200 - 12"
0300 - 3"	1400 - 14"
0400 - 4"	1600 - 16"
0500 - 5"	1800 - 18"
0600 - 6"	2000 - 20"
0800 - 8"	2400 - 24"

Dash - Position 5

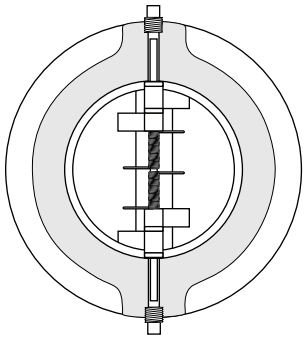
Model - Position 6 - 12
125WTIB - CI Body, Bz Disc
125WTIT - CI Body, SS Disc

Seat - Position 13
B - Buna-N

Dash - Position 14

Spring - Position 15
T - SS

125WT SERIES
CAST IRON DOUBLE DOOR CHECK VALVES



SPECIFICATION

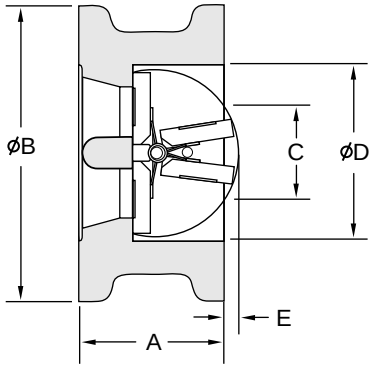
Check Valve shall be dual disc design with Cast Iron wafer body style designed to ASME B16.1 and/or ASME Sec. VIII. The check valve shall have an integral cast bumper and Buna-N resilient seat with bronze of SS discs. The check valve shall be ASME Class 125 rated. The spring shall be 316SS. The check valve shall be SSI 125WT Cast Iron Series.

MATERIALS OF CONSTRUCTION

Body .....A126-B Cast Iron
Discs .....Al/Bz B148 C954 or 316SS A351-CF8M
Seat .....Buna-N
Spring 316SS

CRACKING PRESSURE

Horizontal Mounting - .3psid
Vertical Mounting - .75 to 1.25 psid



Connections: 2" to 24"
FF Wafer Flanged

Seats: 2" to 24"
Buna-N All

DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	A	B*	C[1]	D	E	STUD SELECTION			Weight
						Qty.	Dia.	Length	
2 (50)	2⅛ (54)	4⅛ (105)	2 (51)	2⅜ (60)	1/8 (3)	4	5/8 (16)	5½ (140)	3 (1.4)
2.5 (65)	2⅛ (54)	4⅞ (124)	2½ (64)	2⅞ (73)	1/2 (13)	4	5/8 (16)	6 (152)	5 (2.3)
3 (80)	2¼ (57)	5⅜ (137)	3 (76)	3½ (89)	5/8 (16)	4	5/8 (16)	6¼ (159)	8 (3.6)
4 (100)	2½ (64)	6⅞ (175)	4 (102)	4½ (114)	1 (25)	8	5/8 (16)	6¼ (159)	13 (5.9)
5 (125)	2¾ (70)	7¾ (197)	5 (127)	5½ (140)	1¼ (32)	8	3/4 (19)	7 (184)	16 (7.3)
6 (150)	3 (76)	8¾ (222)	6 (152)	6⅝ (168)	1⅜ (41)	8	3/4 (19)	8 (203)	20 (9.8)
8 (200)	3¾ (95)	11 (279)	8 (203)	8⅝ (219)	2⅜ (60)	8	3/4 (19)	9½ (241)	37 (16.8)
10 (250)	4¼ (108)	13⅜ (340)	10 (254)	10¾ (273)	3 (76)	12	7/8 (22)	10½ (267)	57 (25.9)
12 (300)	5⅝ (143)	16⅛ (410)	12 (305)	12¾ (324)	3⅜ (99)	12	7/8 (22)	12¼ (311)	93 (42.2)
14 (350)	7¼ (184)	17¾ (451)	12½ (318)	14 (356)	4 (102)	12	1 (25)	13 (330)	205 (93.1)
16 (400)	7½ (191)	20¼ (514)	15 (381)	16 (406)	5¼ (133)	16	1 (25)	13½ (343)	271 (123.0)
18 (450)	8 (203)	21⅝ (549)	17 (432)	18 (457)	6 (152)	16	1⅛ (29)	14½ (368)	310 (140.7)
20 (500)	8⅜ (213)	23⅞ (606)	19 (483)	20 (508)	6⅞ (175)	20	1⅛ (29)	15¼ (387)	377 (171.2)
24 (600)	8¾ (222)	28¼ (718)	22¾ (578)	24 (610)	8¼ (210)	20	1¼ (32)	16¼ (413)	551 (250.2)

Dimensions are subject to change. Consult factory for certified drawings when required.

* Add the "B" dimensions and the diameter of the stud to achieve the ANSI B16.1 bolt hole circle diameter.

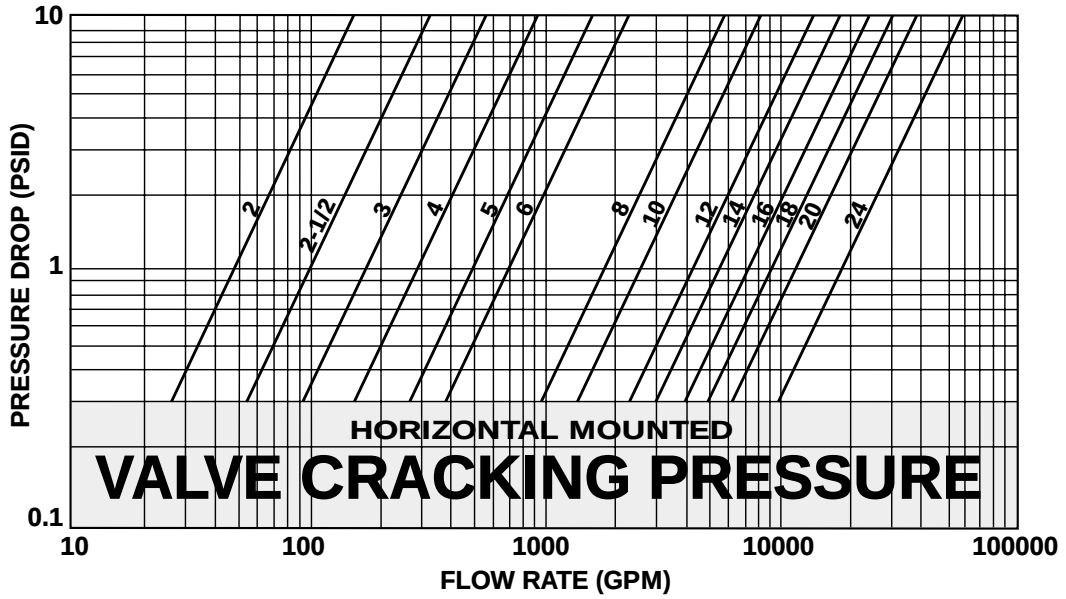
1. Minimum bore diameter of companion flanges

125WT Series Double Door Check Valves

Cast Iron

Pressure Drop - Liquids

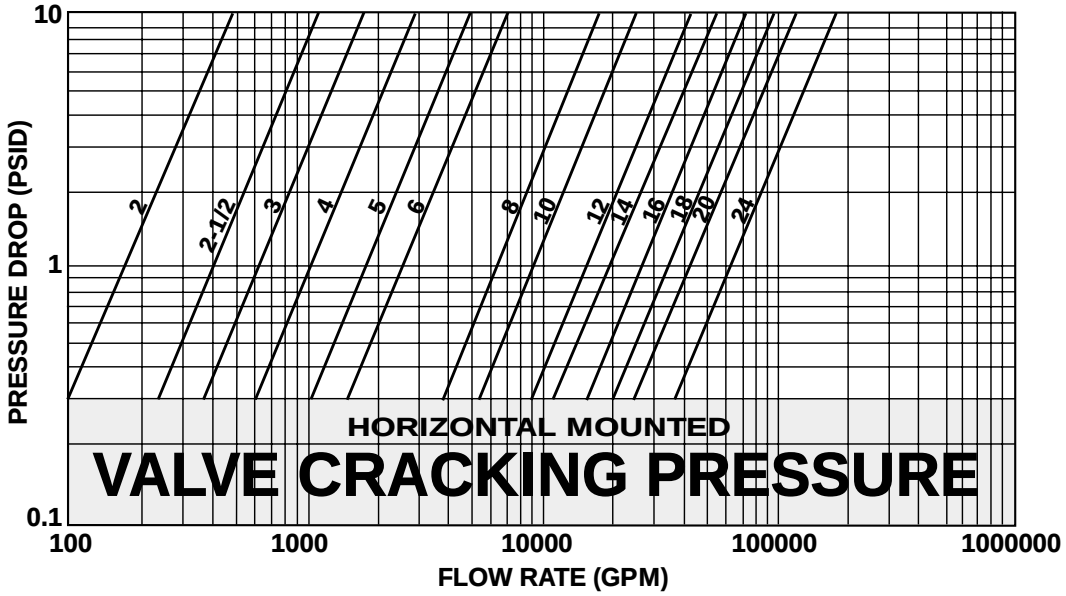
Sizes 2" - 24"



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Pressure Drop - Air

Sizes 2" - 24"



(1) Pressure drop curves are based on air flow at 60 0F and 1 ATM pressure.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

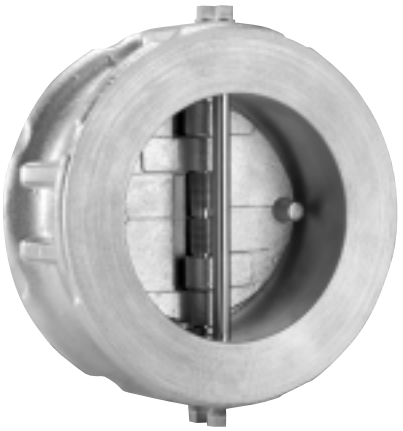
C_V Values (US-GPM @ 1 PSID)

Valve Size (inches)	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
C_V	60	100	170	340	520	850	1600	2400	3800	4400	5800	7500	9800	15000

Installation Note:

1) For correct installation and maintenance please see our I&M manual.
2) Horizontal installation – Disc pin must be installed in vertical position.
3) Vertical installation (downward flow) – Consult factory.

NOTES:



150WT SERIES

CAST STEEL AND STAINLESS STEEL DOUBLE DOOR CHECK VALVES

PRESSURES TO 285 PSIG (19.7 BARG)
TEMPERATURES TO 600ºF (316ºC)

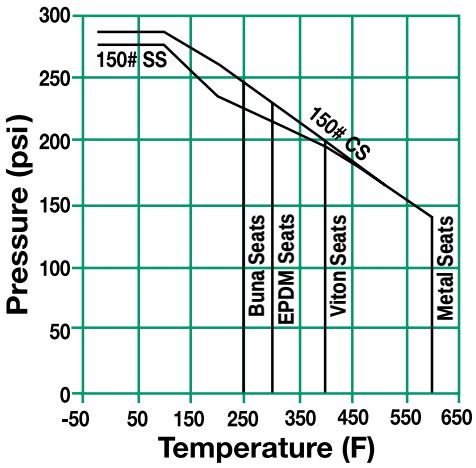
- **ASME Class 150 rated check valves**
- **Wafer body style fits between FF or RF flanges**
- **Size 6" and larger are supplied with a valve lifting lug**
- **Upper and lower SS thrust washers**
- **Resilient Buna-N , Viton and metal seats**
- **Seat design lifts then swings discs to minimize seat wear**
- **Shock bumpers minimize stresses in hinge pins**
- **Independent springs optimizes valve plate closing rates while minimizing spring stress**
- **Dual rating 2" - 3" 150#, 300# and 600# Classes**
- **Dual ratings 4" 150# and 300# Classes**

APPLICATIONS

- Liquid and Air Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART

ASME B16.34



MODELS

- 150WTCT – Cast Steel Body, Stainless Steel Disc. Buna Seat
- 150WTTT – Stainless Steel Body, Stainless Steel Disc, Metal or Viton Seat

OPTIONS

- EPDM Seats
- Other Spring Material

APPLICABLE CODES

- ASME B16.34 ratings
- API 594
- API 598

Canadian Registration - OC10274.5C

150WT Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Spring
0	8	0	0	-	1	5	0	W	T	C	T	B	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Position 1 - 4
2", 2½", 3" sizes use 600WT Series.
4" size use 300WT Series
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

Model - Position 6 - 12
150WTCT - CS Body
150WTTT - SS Body

Seat* - Position 13
B - Buna-N (CS Body only)
M - Metal (SS Body only)
V - Viton (SS Body only)

Dash - Position 14

Spring - Position 15
T - SS

*150WTCT - Buna-N seat only
150WTTT - Viton or Metal seat

150WT SERIES
CAST STEEL AND STAINLESS STEEL DOUBLE DOOR CHECK VALVES

SPECIFICATION

Check Valve shall be dual disc design with Cast Steel or Stainless Steel Body wafer body style designed to ASME B16.34 ratings and API 594. The check valve shall have an integral cast bumper and Buna-N, Viton or metal seat with SS discs. The check valve shall be ASME Class 150 rated. The spring shall be 316SS. The seat design shall lift then swing discs to minimize seat wear. The check valve shall be SSI 150WT Series.

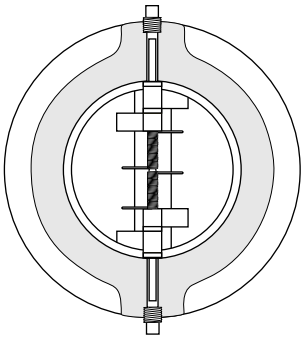
MATERIALS OF CONSTRUCTION

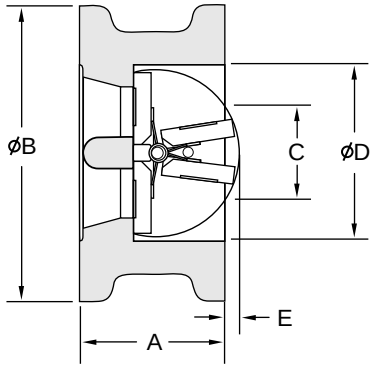
Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Discs	A351-CF8M	A351-CF8M
Seat	Buna-N	Viton or Metal
Spring	304 SS	304 SS

CRACKING PRESSURE

Horizontal Mounting - .3psid

Vertical Mounting - .75 to 1.25 psid





Connections: 6" to 12"
RF Wafer Flanged

Seats:
CS Body - 6" to 12" Buna-N
SS Body –6" to 12" Viton or Metal

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A[1]	B*	C[2]	D	E	STUD SELECTION			Weight
						Qty.	Dia.	Length	
2[3] (50)	*Use 2" 600WT-150# on page 191*								
2½ (66)	*Use 21/2" 600WT-150# on page 191*								
3[3] (80)	*Use 3" 600WT-150# on page 191*								
4[4] (100)	*Use 4" 300WT-150# on page 187*								
6 (150)	3⅞ (99)	8¾ (222)	5⅜ (137)	6⅝ (168)	1⅜ (35)	8	3/4 (19)	8¼ (210)	35 (15.9)
8 (200)	5 (127)	11 (279)	7⅜ (187)	8⅝ (219)	2 (51)	8	3/4 (19)	9¾ (248)	70 (31.8)
10 (250)	5¾ (146)	13⅜ (340)	9½ (241)	10¾ (273)	2⅛ (73)	12	7/8 (22)	11 (279)	114 (51.8)
12 (300)	7⅛ (181)	16⅛ (410)	11¼ (286)	12¾ (324)	3⅜ (86)	12	7/8 (22)	12¼ (311)	180 (81.8)

1. Dimensions in accordance with API 594.

2. Minimum bore diameter of companion flanges.

3. Sizes 2", 21⁄2", 3" 150WT, 300WT & 600WT are interchangeable, use 600WT for all applications in these sizes.

4. Size 4", 150WT & 300WT are interchangeable, use 300WT for 4" size.

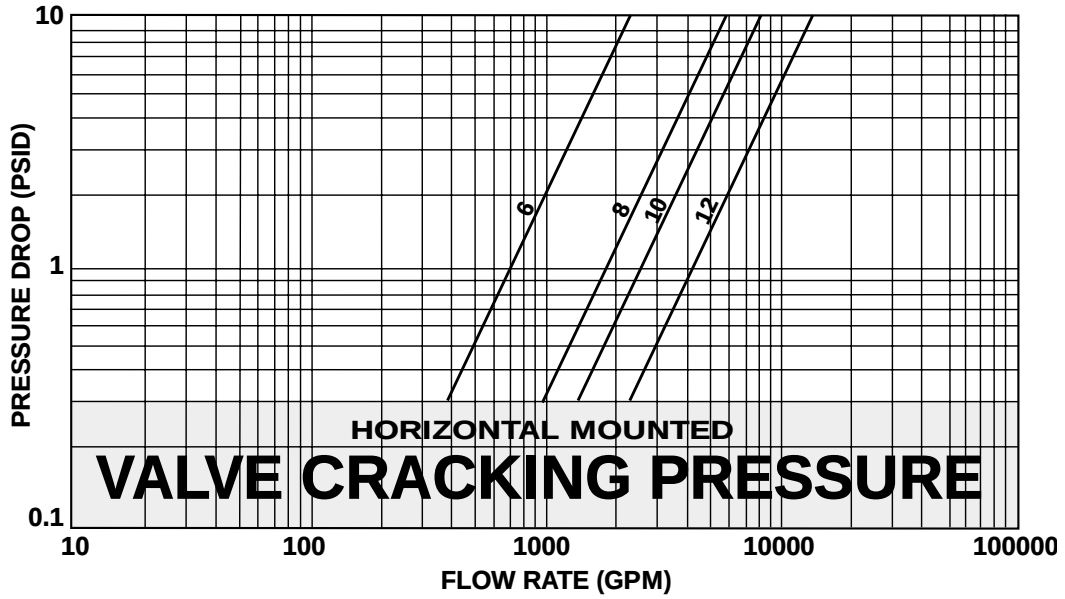
* Add the “B” dimension and the diameter of the stud to achieve the ANSI B16.5 bolt hole circle diameter.

150WT Series Double Door Check Valves

Cast Steel and Stainless Steel

Pressure Drop - Liquids

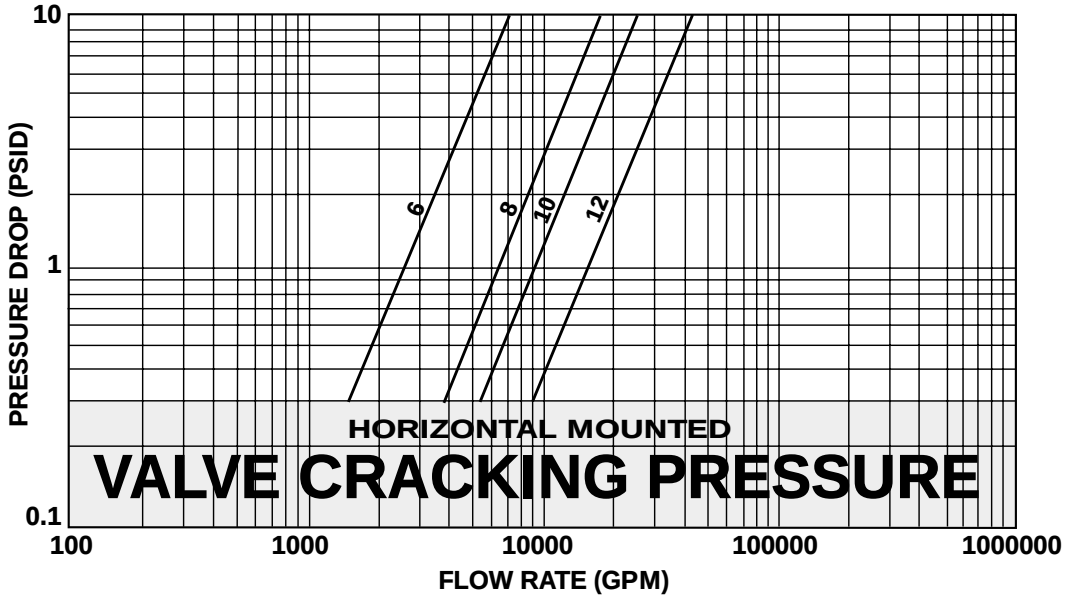
Sizes 6" - 12"



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Pressure Drop - Air

Sizes 6" - 12"



(1) Pressure drop curves are based on air flow at 60 0F and 1 ATM pressure.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

C_V Values (US-GPM @ 1 PSID)

Valve Size (inches)	6	8	10	12
C_V	705	1795	2563	4295

Installation Note:

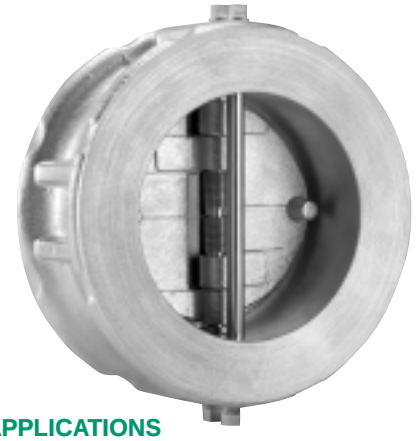
1) For correct installation and maintenance please see our I&M manual.
2) Horizontal installation – Disc pin must be installed in vertical position.
3) Vertical installation (downward flow) – Consult factory.

NOTES:

300WT SERIES

CAST STEEL AND STAINLESS STEEL DOUBLE DOOR CHECK VALVES

PRESSURES TO 740 PSIG (51 BARG)
TEMPERATURES TO 600ºF (316ºC)

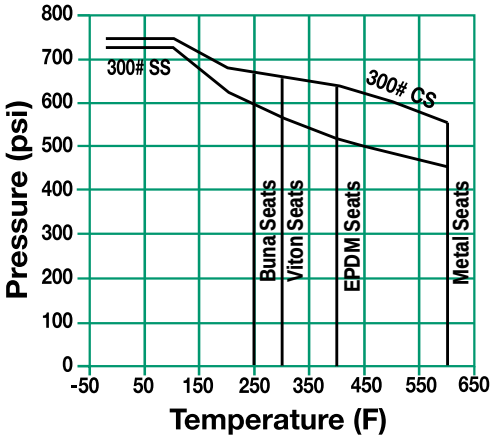


APPLICATIONS

- Liquid and Air Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART

ASME B16.34



Contact factory for EPDM pressure/temperature range.

- **ASME Class 300 rated check valves**
- **Wafer body style fits between FF or RF flanges**
- **Size 6" and larger are supplied with a valve lifting lug**
- **Upper and lower SS thrust washers**
- **Resilient Buna-N and Viton**
- **Seat design lifts then swings discs to minimize seat wear**
- **Shock bumpers minimize stresses in hinge pins**
- **Independent springs optimizes valve plate closing rates while minimizing spring stress**
- **Dual ratings 2"-3" 150#, 300# and 600#.**
- **Dual ratings 4" 150# and 300#.**

MODELS

- 300WTCT – Cast Steel Body, Stainless Steel Disc, Buna Seat
- 300WTTT – Stainless Steel Body, Stainless Steel Disc, Viton Seat

OPTIONS (CONSULT FACTORY)

- EPDM Seats
- Other Spring Material

APPLICABLE CODES

- ASME B16.34 ratings
- API 594
- API 598

Canadian Registration - OC10274.5C

300WT Series Ordering Code

	Inlet Size					Model							Seat	Dash	Spring
	0	6	0	0	-	3	0	0	W	T	C	T	B	-	T
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size* - Position 1 - 4
2", 2½", 3" sizes use 600WT Series
0400 - 4"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

Model - Position 6 - 12
300WTCT - CS Body
300WTTT - SS Body

Seat* - Position 13
B - Buna-N (CS Body only)
V - Viton (SS Body only)

Dash - Position 14

Spring - Position 15
T - SS

*300WTCT - Buna-N seat only
300WTTT - Viton seat only

300WT SERIES
CAST STEEL AND STAINLESS STEEL DOUBLE DOOR CHECK VALVES

SPECIFICATION

Check Valve shall be dual disc design with Cast Steel or Stainless Steel Body wafer body style designed to ASME B16.34 ratings and API 594. The check valve shall have an integral cast bumper and Buna-N or Viton resilent seats with SS discs. The check valve shall be ASME Class 300 rated. The spring shall be 316SS. The seat design shall lift then swing discs to minimize seat wear. The check valve shall be SSI 300WT Series..

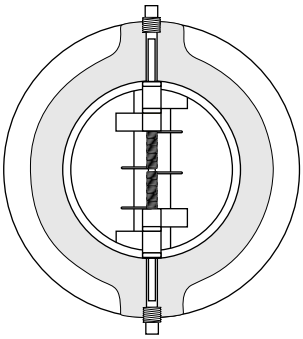
MATERIALS OF CONSTRUCTION

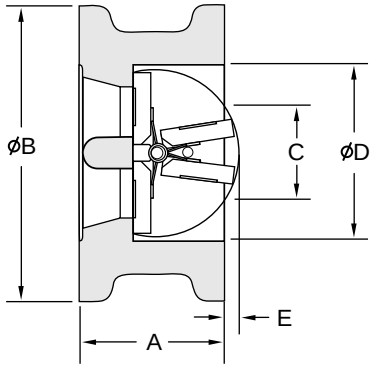
Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Discs	A351-CF8M	A351-CF8M
Seat	Buna-N	Viton
Spring	304 SS	304 SS

CRACKING PRESSURE

Horizontal Mounting - .3psid

Vertical Mounting - .75 to 1.25 psid





Connections: 4" to 12"
Wafer Flanged

Seats:
CS Body - 4" to 12" Buna-N
SS Body – 4" to 12" Viton

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size		A[1]	B*	C[2]	D	E	STUD SELECTION Qty.	STUD SELECTION Dia.	STUD SELECTION Length	Weight
2[3] (50)		*Use 2" 600WT 300# on page 191*								
2½[3] (66)		*Use 2½" 600WT 300# on page 191*								
3[3] (80)		*Use 3" 600WT 300# on page 191*								
4[4] (100)	150WT	2⅞ (73)	6⅞ (175)	3⅜ (86)	4½ (114)	3/4 (19)	8	5/8 (16)	7 (178)	18 (8.2)
	300WT	2⅞ (73)	7⅛ (181)	3⅜ (86)	4½ (114)	3/4 (19)	8	3/4 (19)	8⅛ (207)	18 (8.2)
6 (150)		3⅞ (99)	9⅞ (251)	5⅜ (137)	6⅝ (168)	1⅜ (35)	12	3/4 (19)	9⅝ (245)	44 (20.0)
8 (200)		5 (127)	12⅛ (308)	7⅜ (187)	8⅝ (219)	2 (51)	12	7/8 (22)	11¼ (286)	75 (34.0)
10 (250)		5¾ (146)	14¼ (362)	9½ (241)	10¾ (273)	2⅞ (73)	16	1 (25)	12¾ (324)	123 (55.8)
12 (300)		7⅛ (181)	16⅝ (422)	11¼ (286)	12¾ (324)	3⅜ (86)	16	1⅛ (29)	14⅝ (372)	196 (89.0)

1. Dimensions in accordance with API 594.

2. Minimum bore diameter of companion flanges.

3. Sizes 2", 21⁄2" & 3" for 150WT, 300WT & 600WT are interchangeable, use 600WT for all applications in these sizes.

4. Size 4" for 150WT &300WT are interchangeable, use 300WT for 4" size. 4" sizes fit between both 150# & 300# flanges.

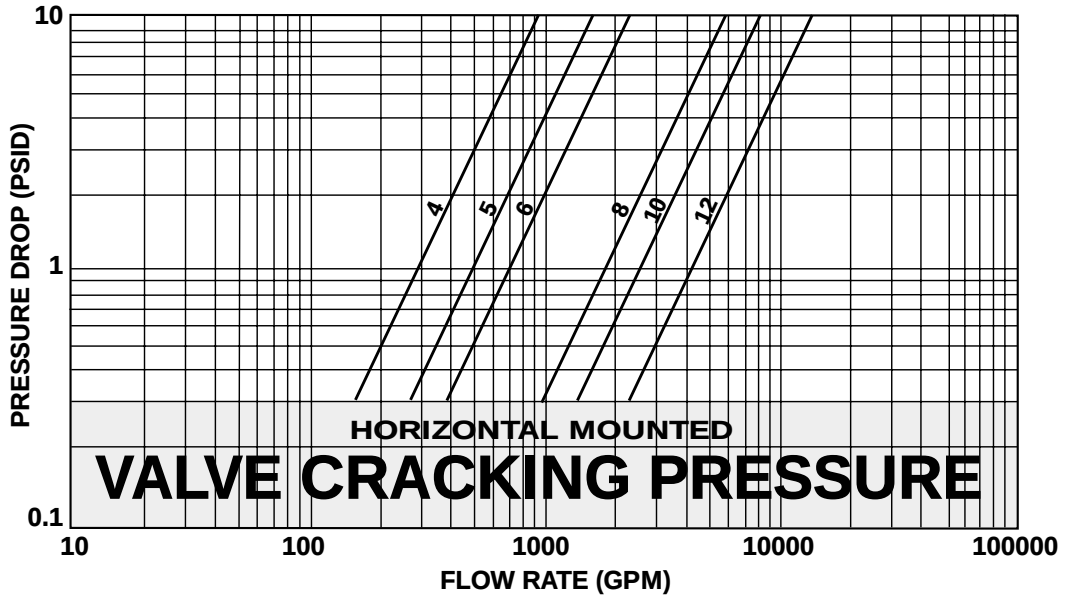
* Add the “B” dimension and the diameter of the stud to achieve the ANSI B16.5 bolt hole circle diameter.

300WT Series Double Door Check Valves

Cast Steel and Stainless Steel

Pressure Drop - Liquids

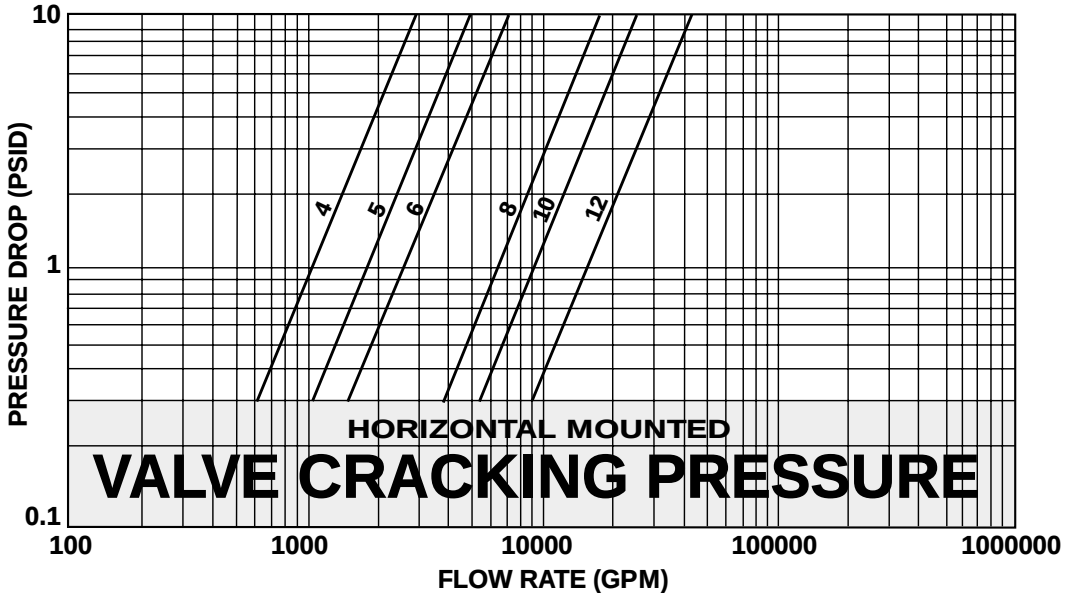
Sizes 4" - 12"



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Pressure Drop - Air

Sizes 4" - 12"



(1) Pressure drop curves are based on air flow at 60 0F and 1 ATM pressure.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

C_V Values (US-GPM @ 1 PSID)

Valve Size (inches)	4	5	6	8	10	12
Cv	291	494	705	1795	2563	4295

Installation Note:

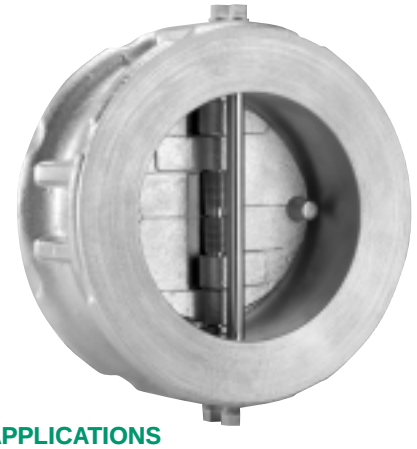
1) For correct installation and maintenance please see our I&M manual.
2) Horizontal installation – Disc pin must be installed in vertical position.
3) Vertical installation (downward flow) – Consult factory.

NOTES:

600WT SERIES

CAST STEEL AND STAINLESS STEEL DOUBLE DOOR CHECK VALVES

PRESSURES TO 1480 PSIG (101.9 BARG)
TEMPERATURES TO 600ºF (316ºC)



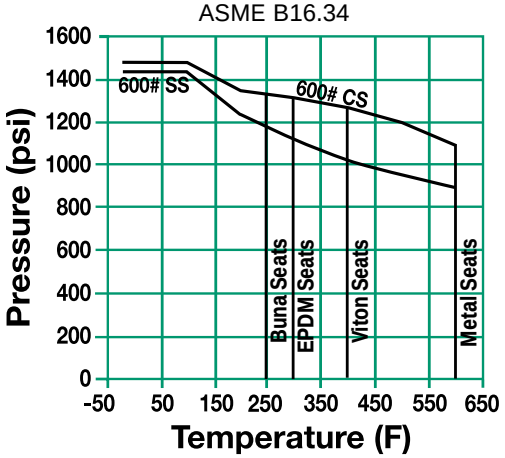
- **ASME Class 600 rated check valves**
- **Wafer body style fits between FF or RF flanges**
- **Upper and lower SS thrust washers**
- **Resilient Buna-N , Viton and metal seats**
- **Seat design lifts then swings discs to minimize seat wear**
- **Shock bumpers minimize stresses in hinge pins**
- **Independent springs optimizes valve plate closing rates while minimizing spring stress**
- **Dual ratings 2"-3" 150#, 300# and 600#.**

APPLICATIONS

- Liquid and Air Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART

ASME B16.34



MODELS

- 600WTCT – Cast Steel Body, Stainless Steel Disc, Buna Seat
- 600WTTT – Stainless Steel Body, Stainless Steel Disc, Metal or Viton Seats

OPTIONS *(Consult Factory)*

- EPDM Seats
- Other Spring Material

APPLICABLE CODES

- ASME B16.34 ratings
- API 594
- API 598

Canadian Registration - OC10274.5C

600WT Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Spring
0	2	0	0	-	6	0	0	W	T	T	T	V	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size* - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"

Dash - Position 5

Model - Position 6 - 12
300WTCT - CS Body
300WTTT - SS Body

* For sizes 2", 2½", 3" 600WT check valves fit between all ANSI 150#, 300# & 600# class flanges.

Seat** - Position 13
B - Buna-N (CS Body only)
M - Metal (SS Body only)
V - Viton (SS Body only)

Dash - Position 14

Spring - Position 15
T - SS

** 600WTCT - Buna-N seat only, 600WTTT - Viton or Metal seat

600WT SERIES
CAST STEEL AND STAINLESS STEEL DOUBLE DOOR CHECK VALVES

SPECIFICATION

Check Valve shall be dual disc design with Cast Steel or Stainless Steel Body wafer body style designed to ASME B16.34 and API 594. The check valve shall have an integral cast bumper and Buna-N or Viton resilent seats with SS discs. The check valve shall be ASME Class 600 rated. The spring shall be 316SS. The seat design shall lift then swing discs to minimize seat wear. The check valve shall be SSI 300WT Series.

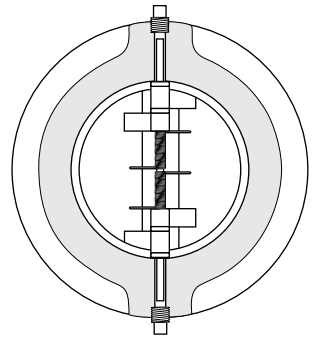
MATERIALS OF CONSTRUCTION

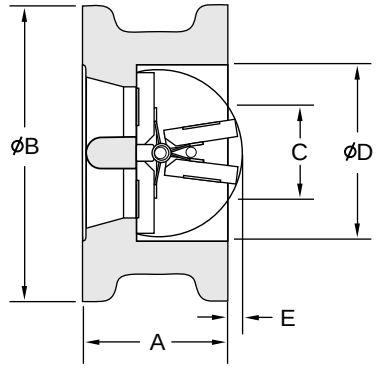
Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Discs	A351-CF8M	A351-CF8M
Seat	Buna-N	Viton or Metal
Spring	304 SS	304 SS

CRACKING PRESSURE

Horizontal Mounting - .3psid

Vertical Mounting - .75 to 1.25 psid





Connections: 2" to 3"
Wafer Flanged

Seats:
CS Body - 2" to 3" Buna-N
SS Body – 2" to 3" Viton or Metal

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size		A[1]	B*	C[2]	D	E	STUD SELECTION			Weight
							Qty.	Dia.	Length	
2[3] (50)	150#	2⅜ (60)	4⅛ (105)	—	2⅜ (60)	—	4	5/8 (15.9)	6 (152)	6 (2.7)
	300#/ 600#	2⅜ (60)	4⅜ (111)	—	2⅜ (60)	—	8	5/8 (15.9)	6⅛ (175)	6 (2.7)
2½[3] (65)	150#	2⅝ (67)	4⅞ (124)	2 (51)	3 (77)	1/4 (6)	4	5/8 (15.9)	6¼ (159)	10 (4.5)
	300#/ 600#	2⅝ (67)	5⅛ (130)	2 (51)	3 (77)	1/4 (6)	8	3/4 (19)	7½ (190)	10 (4.5)
3[3] (80)	150#	2⅞ (73)	5⅜ (137)	2 (51)	3½ (89)	1/4 (6)	4	5/8 (15.9)	7 (178)	13 (5.9)
	300#/ 600#	2⅞ (73)	5⅞ (149)	2 (51)	3½ (89)	1/4 (6)	8	3/4 (19)	8⅛ (207)	13 (5.9)

1. Dimensions in accordance with API 594.

2. Minimum diameter of companion flanges.

3. 300WT and 600WT are interchangeable, use 600WT for both applications.

Dimensions are subject to change. Consult factory for certified drawings when required.

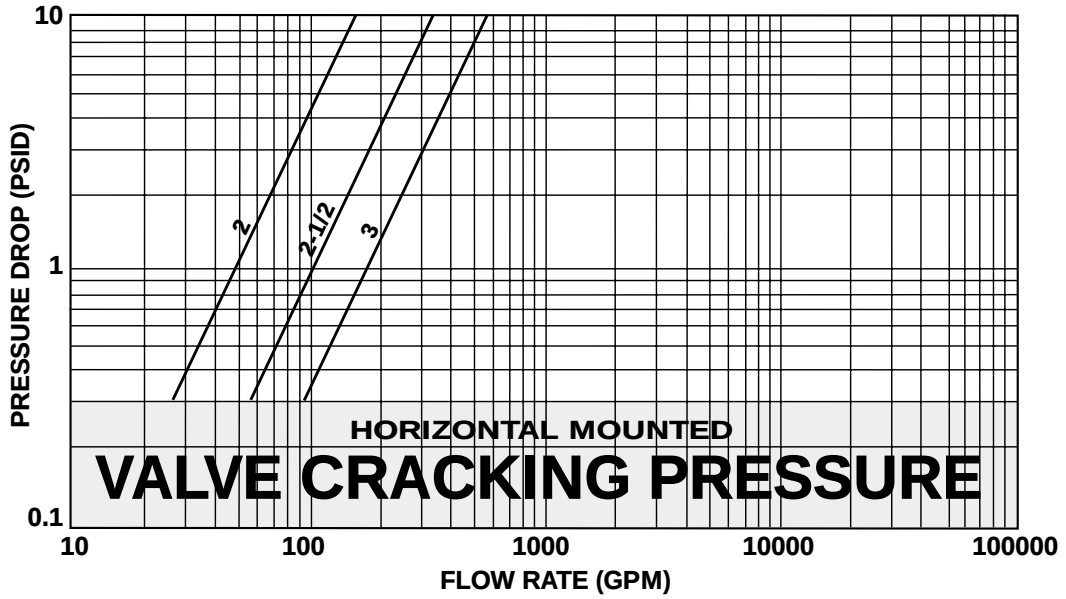
* Add the “B” dimension and the diameter of the stud to achieve the ANSI B16.5 bolt hole circle diameter.

600WT Series Double Door Check Valves

Cast Steel and Stainless Steel

Pressure Drop - Liquids

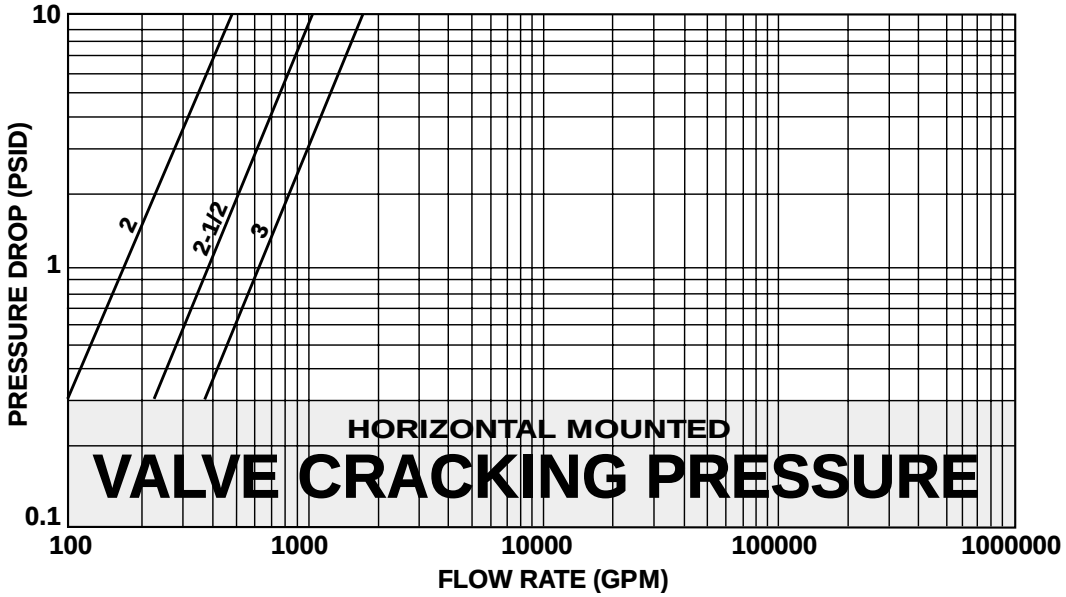
Sizes 2" - 3"



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Pressure Drop - Air

Sizes 2" - 3"



(1) Pressure drop curves are based on air flow at 60 0F and 1 ATM pressure.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

C_V Values (US-GPM @ 1 PSID)

Valve Size (inches)	2	2½	3
C_V	48	90	171

Installation Note:

1) For correct installation and maintenance please see our I&M manual.
2) Horizontal installation – Disc pin must be installed in vertical position.
3) Vertical installation (downward flow) – Consult factory.

DOUBLE DOOR CHECK VALVES
INSTALLATION AND MAINTENANCE INSTRUCTIONS

Valve Location and Orientation in Piping

Check valves should be installed, if possible, a minimum of 6 pipe diameters from other line elements, i.e. elbows, pumps, valves, etc.

Horizontal Lines

- Valves installed in horizontal lines must be bolted in place with the hinge post in the vertical position, i.e. in such a manner that the hinge pin retainers are at the top and bottom of the installed valve, perpendicular to the flow.

Vertical Lines

- In the upward position, no special attention needs to be given to the hinge post position. The only exception being when mounted directly downstream of an elbow. In this case the hinge post should be mounted perpendicular to the outermost portion of the elbow. Consult factory for vertical down flow applications.

Precautions

- Do not install Series WT check valves directly against another valve whereby the check valve discharges downstream directly into the valve.
- Do not install the valve whereby it directly discharges downstream into a tee or elbow fitting.
- Series WT check valves should not be used in severe pulsating services such as reciprocating compressor discharges.
- It is recommended that the check valves be installed a minimum of three pipe diameters downstream of a pump or compressor.

Maintenance

Spence Series WT check valves are permanently lubricated and normally require no routine maintenance.

Reconditioning

IMPORTANT! PRIOR TO DISASSEMBLY, VALVE MUST FIRST BE ISOLATED FROM SYSTEM PRESSURE AND FLOW.

Disc & Shaft Removal

CAUTION! BEFORE ATTEMPTING THE FOLLOWING SHAFT EXTRACTION, BE SURE TO PRESS A HAND OVER THE DISC SPRING. FAILURE TO DO THIS MAY RESULT IN PERSONAL INJURY DUE TO THE SPRING "LAUNCHING" ITSELF UNEXPECTEDLY ONCE THE SHAFT IS PULLED FREE OF IT.

- After observing the above precaution, remove the valve from the pipeline and lay flat with open, body cavity side facing up. Remove pipe plugs from top and bottom of body with a wrench. Insert a punch and lightly tap the top of the shaft until it is accessible on the other side of the body. Pull shaft through body to remove. The internals of the valve are now ready to be cleaned and inspected.

Reassembly

Use new replacement parts, as required and a liberal amount of general-purpose grease (such as Mystic JT-6) on seals and machined mating surfaces. Reinsert the disc into the body cavity with the shaft holes inline with top and bottom shaft port. Slide the shaft into the body through the shaft opening on one side of the valve. Continue sliding the shaft through the disc, spring and remaining shaft port the opposite side of the body. Install pipe plugs into the body using a good industrial grade thread sealant compound.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

NOTES:

Applications

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Metals & Mining
- Water & Waste Water
- Pulp & Paper
- Oil & Gas

Wafer Silent Check Valves

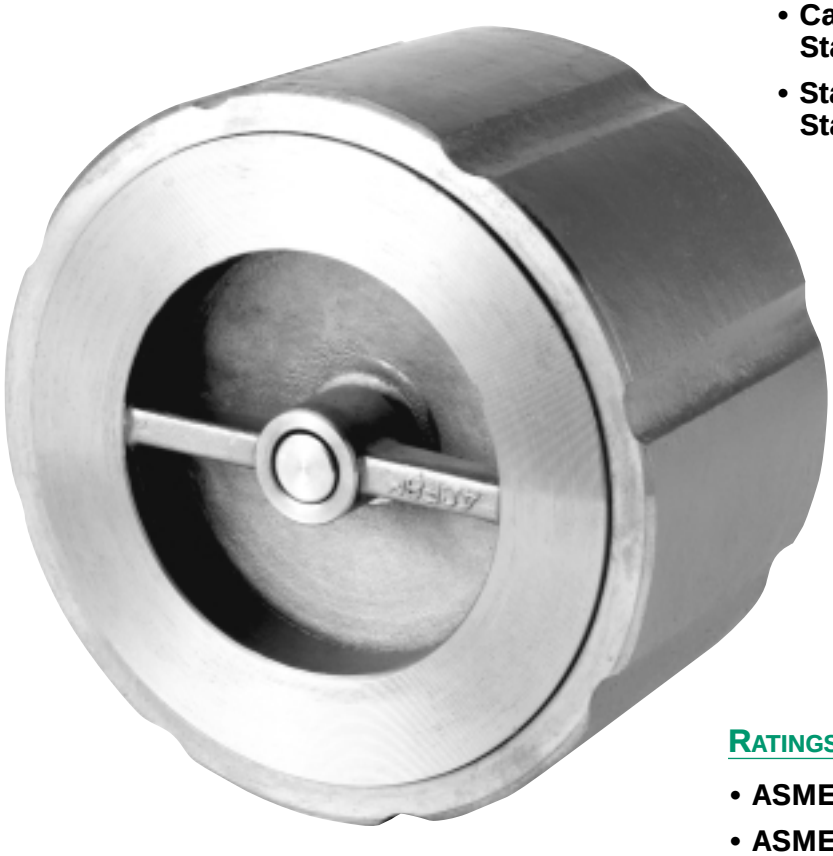
Pressures to 740 PSIG
Temperatures to 400ºF

Features

- Silent Non-slam Closure
- Wafer Body Style
- Reduces surge and water hammer

Materials

- **Cast Iron Body; Bronze & Stainless Steel Disc**
- **Cast Steel Body; Stainless Steel Disc**
- **Stainless Steel; Stainless Steel Disc**



End Connections

- Wafer Flat Faced
- Wafer Raised Face

Sizes

- 2" (50mm) up to 12" (300mm)

Ratings

- **ASME Class 125**
- **ASME Class 150**
- **ASME Class 300**

Request quote

125WC SERIES
CAST IRON WAFER SILENT CHECK VALVES

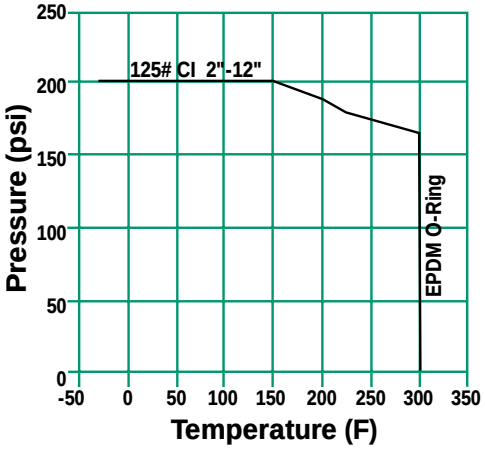
Pressures to 200 PSIG (13.8 barg)
Temperatures to 300ºF (149ºC)

- **ASME Class 125 rated check valves**
- **Designed to reduce surge and water hammer**
- **Silent, non-slam closure**
- **Center guided at both ends to prevent binding and cocking**
- **Compact face to face legnth for space saving**
- **Wafer body style fits between FF or RF flanges**

APPLICATIONS

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME 16.1



MODELS

- 125WCIB - Cast Iron Body, Bronze Disc
- 125WCIT – Cast Iron Body, Stainless Steel Disc

OPTIONS *(Consult factory)*

- EPDM Seats
- Other Spring Material
- Heavier or Lighter Springs

APPLICABLE CODES

- ASME Sec VIII and B16.1 Bodies
- API 598

Canadian Registration - OC10274.5C

125WC Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Spring
0	8	0	0	-	1	2	5	W	C	I	B	M	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

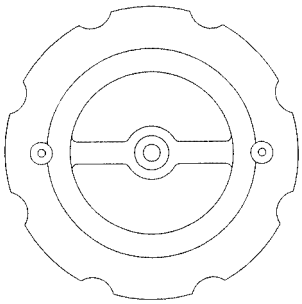
Model - Position 6 - 12
125WCIB - Cast Iron Body, Bronze Disc
125WCIT - Cast Iron Body, Stainless Steel Disc

Seat - Position 13
M - Metal

Dash - Position 14

Spring - Position 15
T - Stainless Steel

125WC SERIES
CAST IRON WAFER SILENT CHECK VALVES

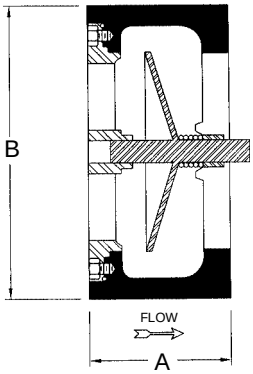


SPECIFICATION

Check Valve shall be single disc design with Cast Iron wafer body style designed to ASME Sec. VIII and ASME B16.1. The check valve shall have a metal to metal seat with bronze or SS discs and be center guided from both ends. The check valve shall be ASME Class 125 rated. The spring shall be 316SS. The check valve shall be SSI 125WC Cast Iron Series.

MATERIALS OF CONSTRUCTION

Body .....A126-B Cast Iron
Discs .....Al/Bz B148 C954 or 316SS A351-CF8M
Seat .....Bronze or SS
Spring 316SS
O-Ring .....EPDM



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A	B*	QTY	Stud Selection		Weight
				Dia.	Length	
2 (50)	2 11/16 (68)	4 1/8 (105)	4	5/8 (16)	6 1/2 (165)	5 (2.3)
2 1/2 (65)	2 7/8 (73)	4 7/8 (124)	4	5/8 (16)	6 3/4 (171)	8 (3.6)
3 (80)	3 3/16 (81)	5 3/8 (137)	4	5/8 (16)	7 (178)	10 (4.5)
4 (100)	4 (103)	6 7/8 (175)	8	5/8 (16)	8 (203)	19 (8.6)
5 (125)	4 5/8 (118)	7 3/4 (197)	8	3/4 (19)	8 3/4 (222)	30 (13.6)
6 (150)	5 9/16 (142)	8 3/4 (222)	8	3/4 (19)	10 1/2 (267)	42 (19.1)
8 (200)	6 1/2 (165)	11 (279)	8	3/4 (19)	11 1/4 (286)	87 (39.5)
10 (250)	8 7/32 (209)	13 3/8 (340)	12	7/8 (22)	12 1/4 (311)	146 (66.2)
12 (300)	11 1/4 (286)	16 1/8 (410)	12	7/8 (22)	16 1/2 (419)	304 (137.9)

*Add the “B” dimension and the diameter of the stud to achieve the ANSI B16.5 Bolt Hole Circle Diameter

Connections: 2" to 12" Flanged FF

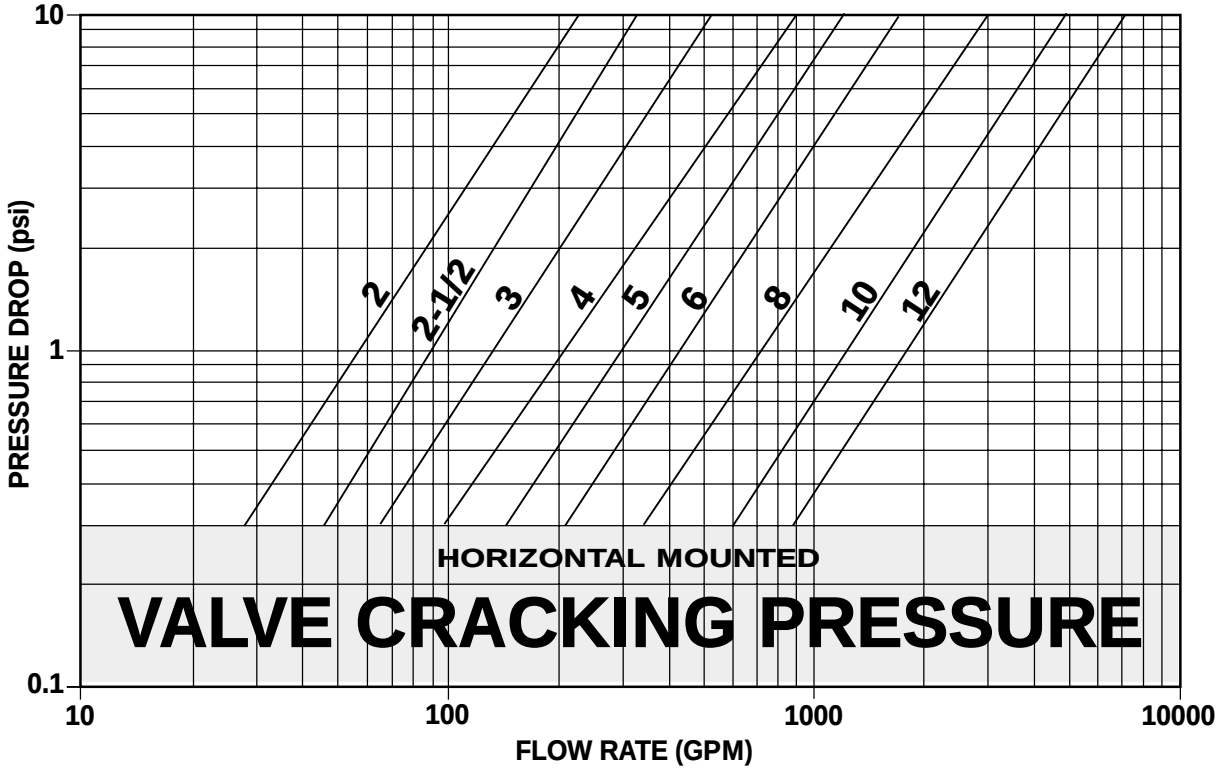
Seats: 2" to 12"
Bronze or Stainless Steel

Cracking Pressure:
Horizontal Mounting - .3 psid
Vertical Mounting - .75 to 1.25 psid

125WC SERIES
WAFER SILENT CHECK VALVE

PRESSURE DROP VS FLOW RATE

(Sizes 2" - 12")



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Installation Note:
1. For correct installation and maintenance please see our I&M manual.
2. Vertical installation (downward flow) – Consult factory.
3. Always use Strainers in upstream piping.
4. Not recommended for Steam Service

Cv Values

Size (inches)	2	2½	3	4	5	6	8	10	12
Min Cv (@ .3 PSID)	51	84	119	179	265	383	639	1114	1604
Cv (@ 1 PSID)	58	90	134	210	300	430	740	1250	1800
Max Cv (@ 10 PSID)	73	106	168	285	391	548	964	1581	2277

NOTES:

150WC SERIES

CAST STEEL AND STAINLESS STEEL WAFER SILENT CHECK VALVES

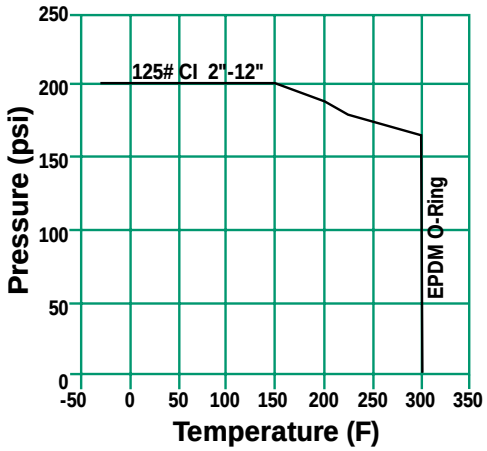
Pressures to 285 PSIG (19.7 barg)
Temperatures to 400ºF (204ºC)

- **ASME Class 150 rated check valves**
- **Designed to reduce surge and Water Hammer**
- **Silent, non-slam closure**
- **Center guided at both ends to prevent binding and cocking**
- **Compact face to face length for space saving**
- **Wafer body style fits between FF or RF flanges**
- **Dual rating 150# and 300# in sizes 2" through 6"**

APPLICATIONS

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME 16.34



MODELS

- 150WCCT – Cast Steel Body, Stainless Steel Disc
- 150WCTT – Stainless Steel Body, Stainless Steel Disc

OPTIONS *(Consult factory)*

- Viton Seats
- Other Spring Material
- Heavier or Lighter Springs

APPLICABLE CODES

- ASME Sec. VIII and B16.34 Bodies
- API 598

Canadian Registration - OC10274.5C

150WC Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Spring
1	0	0	0	-	1	5	0	W	C	T	T	M	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size* - Position 1 - 4
2" through 6" sizes use 300WC Series
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

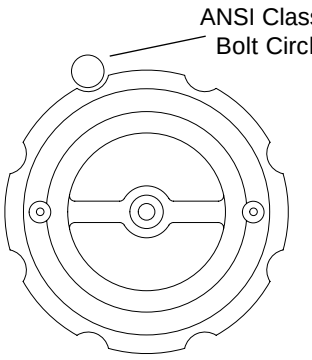
Model - Position 6 - 12
150WCCT - Cast Steel Body, Stainless Steel Disc
150WCTT - Stainless Steel Body, Stainless Steel Disc

Seat - Position 13
M - Metal

Dash - Position 14

Spring - Position 15
T - Stainless Steel

150WC SERIES
CAST STEEL AND STAINLESS STEEL WAFER SILENT CHECK VALVES

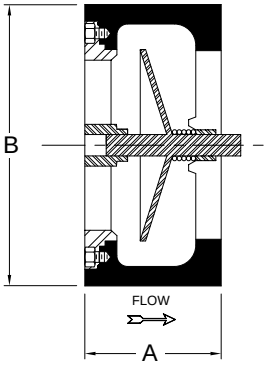


SPECIFICATION

Check Valve shall be single disc design with Cast Steel or Stainless Steel wafer body style designed to ASME Sec. VIII and ASME B16.34 and API 594. The check valve shall have a SS seat and disc and be center guided from both ends. The check valve shall be ANSI 150 PSIG rated. The spring shall be 316SS. The check valve shall be SSI 150WC Cast Steel or Stainless Steel Series.

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Discs	A351-CF8M	A351-CF8M
Seat	A351-CF8M	A351-CF8M
Spring	316SS	316SS
O-Ring	Viton	Viton



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A	B*	QTY	Stud Selection Dia.	Stud Selection Length	Weight
2[1] (50)	*Use 2" 300WC on page 205*					
2½[1] (65)	*Use 2½" 300WC on page 205*					
3[1] (80)	*Use 3" 300WC on page 205*					
4[1] (100)	*Use 4" 300WC on page 205*					
5[1] (125)	*Use 5" 300WC on page 205*					
6[1] (150)	*Use 6" 300WC on page 205*					
8 (200)	6½ (165)	11 (279)	8	¾ (19)	11¼ (286)	79 (35.8)
10 (250)	8¼ (209)	13⅜ (340)	12	⅞ (22)	12¼ (57)	147 (66.7)
12 (300)	11¼ (286)	16⅛ (410)	12	⅞ (22)	16½ (165)	280 (127)

1. Sizes 2” through 6” 150WC and 300WC are interchangeable, use 300WC for all applications in these sizes.

* Add the “B” dimension and the diameter of the stud to achieve the ANSI B16.5 Bolt Hole Circle Diameter.

Dimensions are subject to change. Consult factory for certified drawings when required.

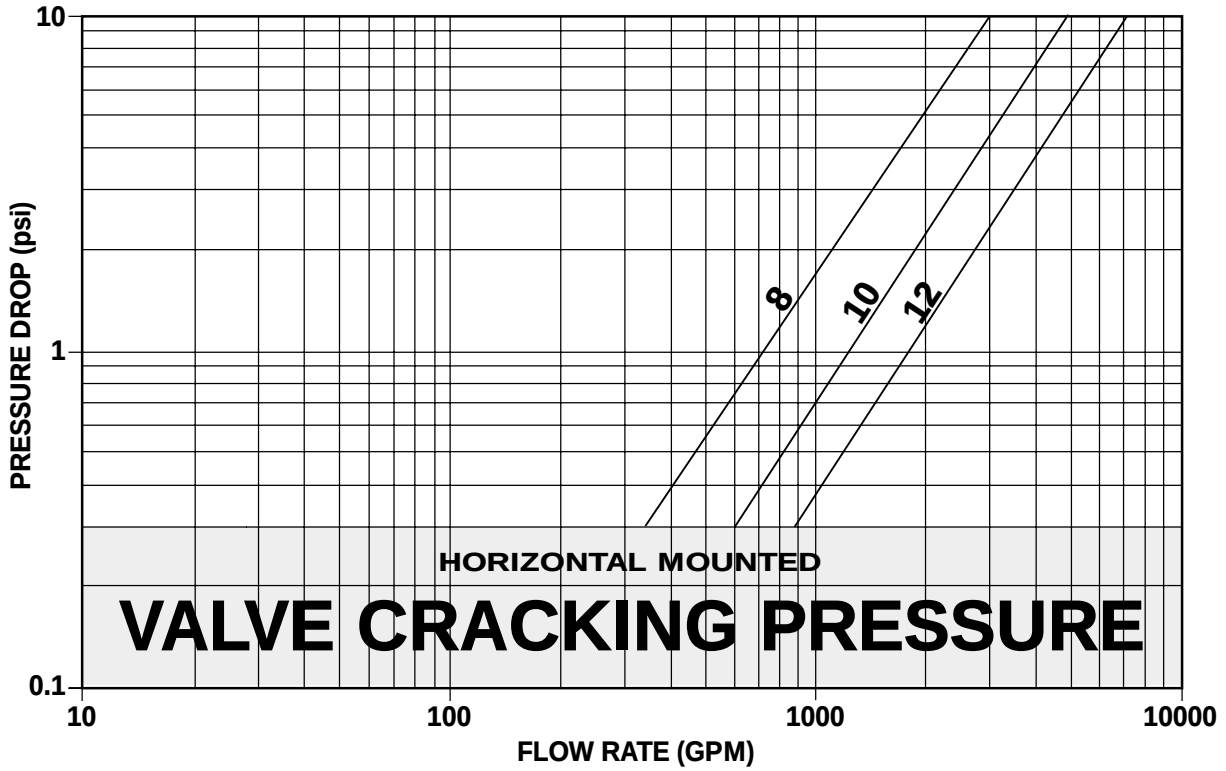
Connections: 8" to 12" Wafer Flanged RF*

** For sizes 2"-6" use 300WC on page 205*

Seats: 8" to 12" Stainless Steel

Cracking Pressure:
Horizontal Mounting - .3 psid
Vertical Mounting - .75 to 1.25 psid

150WC SERIES
CAST STEEL & STAINLESS STEEL
WAFER SILENT CHECK VALVES
PRESSURE DROP VS FLOW RATE
(Sizes 8" - 12")



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Installation Note:
1. For correct installation and maintenance please see our I&M manual.
2. Vertical installation (downward flow) – Consult factory.
3. Always use Strainers in upstream piping.
4. Not recommended for Steam Service.

Cv Values

Size (inches)	8	10	12
Min Cv (.3 PSID)	639	1114	1604
Cv (@ 1 PSID)	740	1250	1800
Max Cv (@ 10 PSID)	1297	1992	2593

NOTES:

300WC SERIES

CAST STEEL AND STAINLESS STEEL WAFER SILENT CHECK VALVES

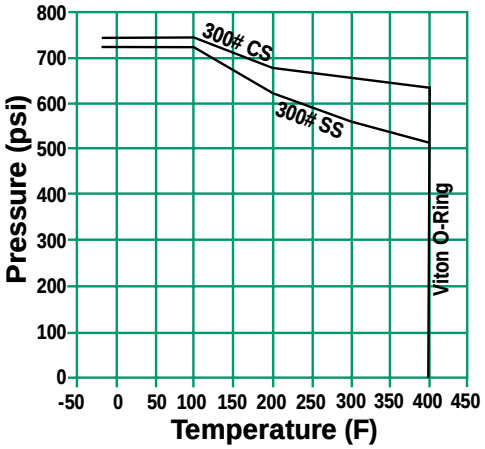
Pressures to 740 PSIG (51 barg)
Temperatures to 400ºF (204ºC)

- **ASME Class 300 rated check valves**
- **Designed to reduce surge and Water Hammer**
- **Silent, non-slam closure**
- **Center guided at both ends to prevent binding and cocking**
- **Compact face to face length for space saving**
- **Wafer body style fits between FF or RF flanges**
- **Dual rating 150# and 300# in sizes 2" through 6"**

APPLICATIONS

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME 16.34



MODELS

- 300WCCT – Cast Steel Body, Stainless Steel Disc
- 300WCTT – Stainless Steel Body, Stainless Steel Disc

OPTIONS *(Consult factory)*

- Viton Seats
- Other Spring Material
- Heavier or Lighter Springs

APPLICABLE CODES

- ASME Sec. VIII and B16.34 Bodies
- API 598

Canadian Registration - OC10274.5C

300WC Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Spring
0	3	0	0	-	3	0	0	W	C	C	T	M	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size* - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"

Dash - Position 5

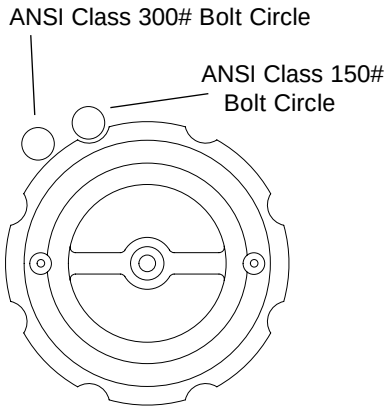
Model - Position 6 - 12
300WCCT - Cast Steel Body, Stainless Steel Disc
300WCTT - Stainless Steel Body, Stainless Steel Disc

Seat - Position 13
M - Metal

Dash - Position 14

Spring - Position 15
T - Stainless Steel

300WC SERIES
CAST STEEL AND STAINLESS STEEL WAFER SILENT CHECK VALVES

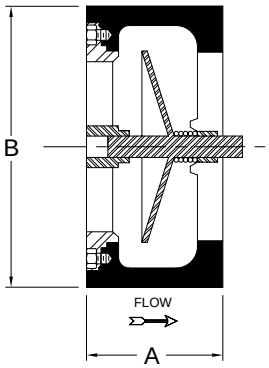


SPECIFICATION

Check Valve shall be single disc design with Cast Steel or Stainless Steel wafer body style designed to ASME Sec. VIII and ASME B16.34. The check valve shall have a SS seat and disc and be center guided from both ends. The check valve shall be ANSI 300 PSIG rated. The spring shall be 316SS. The check valve shall be SSI 300WC Cast Steel or Stainless Steel Series.

MATERIALS OF CONSTRUCTION

Part	Carbon Steel	Stainless Steel
Body	A216-WCB	A351-CF8M
Discs	A351-CF8M	A351-CF8M
Seat	A351-CF8M	A351-CF8M
Spring	316SS	316SS
O-Ring	Viton	Viton



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size		A	B *	Stud Selection QTY	Stud Selection Dia	Length	Weight
2 (50)	150	2 5/8 (67)	4 1/8 (105)	4	5/8 (16)	6 1/4 (159)	5 (2.3)
	300	2 5/8 (67)	4 3/8 (111)	8	5/8 (16)	6 1/2 (165)	5 (2.3)
2 1/2 (65)	150	2 7/8 (73)	4 7/8 (124)	4	5/8 (16)	6 3/4 (171)	7 (3.2)
	300	2 7/8 (73)	5 1/8 (130)	8	3/4 (19)	7 1/4 (184)	7 (3.2)
3 (80)	150	3 1/8 (79)	5 7/8 (137)	4	5/8 (16)	7 (178)	11 (5.0)
	300	3 1/8 (79)	5 7/8 (149)	8	3/4 (19)	7 3/4 (197)	11 (5.0)
4 (100)	150	4 (102)	6 7/8 (175)	8	5/8 (16)	8 (2.3)	20 (9.1)
	300	4 (102)	7 1/8 (181)	8	3/4 (19)	9 (229)	20 (9.1)
5 (125)	150	4 5/8 (117)	7 3/4 (197)	8	3/4 (19)	8.5 (216)	34 (15.4)
	300	4 5/8 (117)	8 1/2 (216)	8	3/4 (19)	9 3/4 (247)	34 (15.4)
6 (150)	150	5 9/16 (141)	8 3/4 (222)	8	3/4 (19)	10 (254)	42 (19.1)
	300	5 9/16 (141)	9 7/8 (251)	12	3/4 (19)	10 3/4 (273)	42 (19.1)

* Add the “B” dimension and the diameter of the stud to achieve the ANSI B16.5 Bolt Hole Circle Diameter.

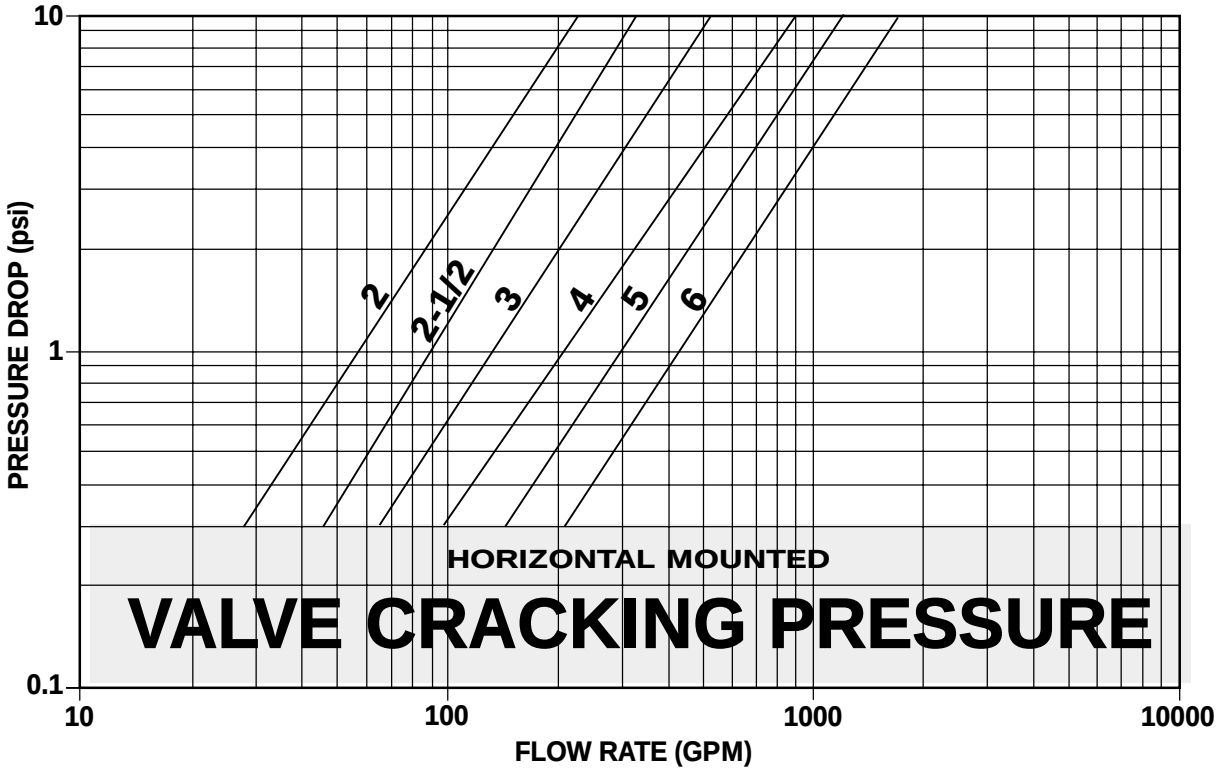
Connections: 2" to 6"
Wafer Flanged RF*

* Sizes 2”-6” are dual rated for 150# and 300# applications and fit between both flanges.

Seats: 2" to 6" Stainless Steel

Cracking Pressure:
Horizontal Mounting - .3 psid
Vertical Mounting - .75 to 1.25 psid

300WC SERIES
WAFER SILENT CHECK VALVE
PRESSURE DROP VS FLOW RATE
(Sizes 2" - 6")



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Installation Note:
1. For correct installation and maintenance please see our I&M manual.
2. Vertical installation (downward flow) – Consult factory.
3. Always use Strainers in upstream piping.
4. Not recommended for Steam Service

Cv Values

Size (inches)	2	2½	3	4	5	6
Min Cv (@ .3 PSID)	51	84	119	179	265	383
Cv (@ 1 PSID)	58	90	134	210	300	430
Max Cv (@ 10 PSID)	73	106	168	285	391	548

WAFER SILENT CHECK VALVES
INSTALLATION AND MAINTENANCE INSTRUCTIONS

Check valves should be installed, if possible, a minimum of 6 pipe diameters from other line elements, i.e. elbows, pipes, valves, etc.

CHECK VALVE INSTALLATION

- Valves may be installed upward vertically, horizontally, or at other angles. For vertical downward flow please consult with the factory.
- Install the valve with proper positioning of the flow arrow.
- Support and align adjacent piping and the valve
- Install lubricated flange bolts.
- Hand tighten, then torque the bolts using the cross-over flange bolt tightening method to load the bolts evenly, and eliminate concentrated stresses.
- Valves must be mounted to ANSI flanges with conventional flat face or ring gaskets.
- Proper centering of the ring gaskets is important to prevent internal leakage.
- Never lift the valve by the bronze or stainless steel trim.
- Install a strainer in the piping.

PRECAUTIONS

- Do not install check valves directly against another valve whereby the check valve discharges downstream directly into the valve.
- Do not install the valve whereby it directly discharges downstream into a tee or elbow fitting.
- These valves are not suggested for installation in sewage ejector piping.
- Careful consideration should be given to the selection of valves for use in an air, steam, hot water and boiler feed systems. Consult our factory on these applications.
- Individuals performing removal and disassembly should be provided with suitable protection from possibly hazardous liquids.
- Prior to disassembly, valve must first be isolated from system pressure and flow.
- Upon disassembly ensure spring pressure is released slowly to prevent personal injury due to the spring “launching” itself unexpectedly.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

NOTES:

Applications

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Metals & Mining
- Water & Waste Water
- Pulp & Paper
- Marine

Flanged Silent Check Valves

Pressures to 285 PSIG
Temperatures to 400ºF

Features

- Silent Non-slam Closure
- Flanged Body Style
- Metal to Metal Seats

Materials

- Cast Iron Body; Bronze Disc
- Cast Steel Body; Stainless Steel Disc
- Stainless Steel Body; Stainless Steel Disc

End Connections

- Flat Faced
- Raised Faced

Sizes

- 2" (20mm) up to 18" (600mm)

Ratings

- ASME Class 125
- ASME Class 150
- ASME Class 250

Request quote

125FC SERIES
CAST IRON FLANGED SILENT CHECK VALVES

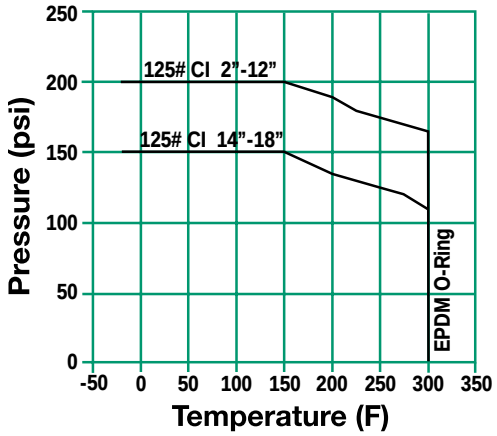
Pressures to 200 PSIG (13.8 barg)
Temperatures to 300ºF (149ºC)

- **ASME Class 125 rated check valve**
- **Designed to reduce surge and water hammer**
- **Silent, non-slam closure**
- **Center guided at both ends to prevent binding and cocking**
- **Flanged body style**
- **Bronze Metal to Metal Seats**
- **Designed to reduce Water Hammer**

APPLICATIONS

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME 16.1



MODELS

- 125FCIB - Cast Iron Body, Bronze Seat and Disc

OPTIONS *(Consult factory)*

- Other Spring Material
- Heavier or Lighter Springs

APPLICABLE CODES

- Bodies in accordance with ASME B16.1
- API 598

Canadian Registraton - OC10274.5C

125FC Series Ordering Code

Inlet Size				Dash	Model								Seat	Dash	Spring
0	8	0	0	-	1	2	5	F	C	I	B	M	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"
1800 - 18"

Dash - Position 5

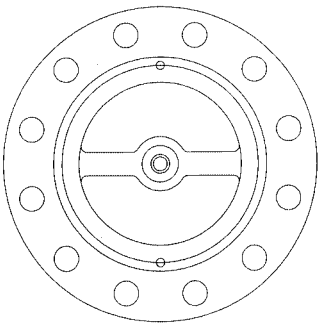
Model - Position 6 - 12
125FCIB - CI Body, Bz Disc

Seat - Position 13
M - Metal

Dash - Position 14

Spring - Position 15
T - Stainless Steel

125FC SERIES
CAST IRON FLANGED SILENT CHECK VALVES

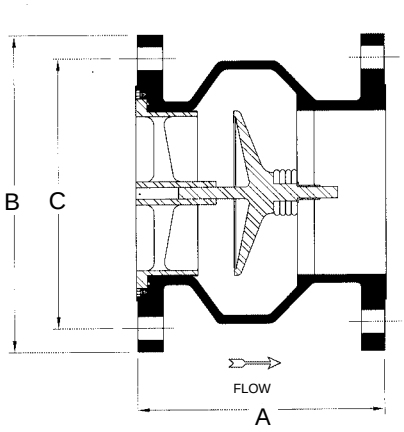

FRONT VIEW

SPECIFICATION

Check Valve shall be single disc design with Cast Iron Flanged body style designed to ASME B16.1. The check valve shall have a metal to metal seat with bronze seat and disc. The check valve shall be ASME Class 125 rated. The spring shall be 316SS. The check valve shall be SSI 125FC Cast Iron Series.

MATERIALS OF CONSTRUCTION

Body .....A126-B Cast Iron
Discs.....B62 Bronze
Seat .....B62 Bronze
Spring 316SS
O-Ring .....EPDM



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A	B	C	Weight
2 (50)	6⅛ (156)	6 (152)	4¾ (121)	21 (9.4)
2½ (65)	7 (178)	7 (178)	5½ (140)	31 (13.8)
3 (80)	7½ (191)	7½ (191)	6 (153)	37 (16.5)
4 (100)	8½ (216)	9 (229)	7½ (191)	62 (28)
5 (125)	9½ (241)	10 (254)	8½ (216)	80 (36)
6 (150)	10½ (267)	11 (280)	9½ (241)	106 (48)
8 (200)	13½ (343)	13½ (343)	11¾ (299)	175 (79)
10 (250)	16¼ (413)	16 (406)	14¼ (362)	267 (121)
12 (300)	20¼ (515)	19 (483)	17 (431)	477 (216)
14 (350)	22¾ (580)	21 (533)	18¾ (477)	785 (356)
16 (400)	24¾ (629)	23½ (597)	21¼ (540)	900 (408)
18 (450)	22½ (572)	25 (635)	22¾ (578)	1032 (468)

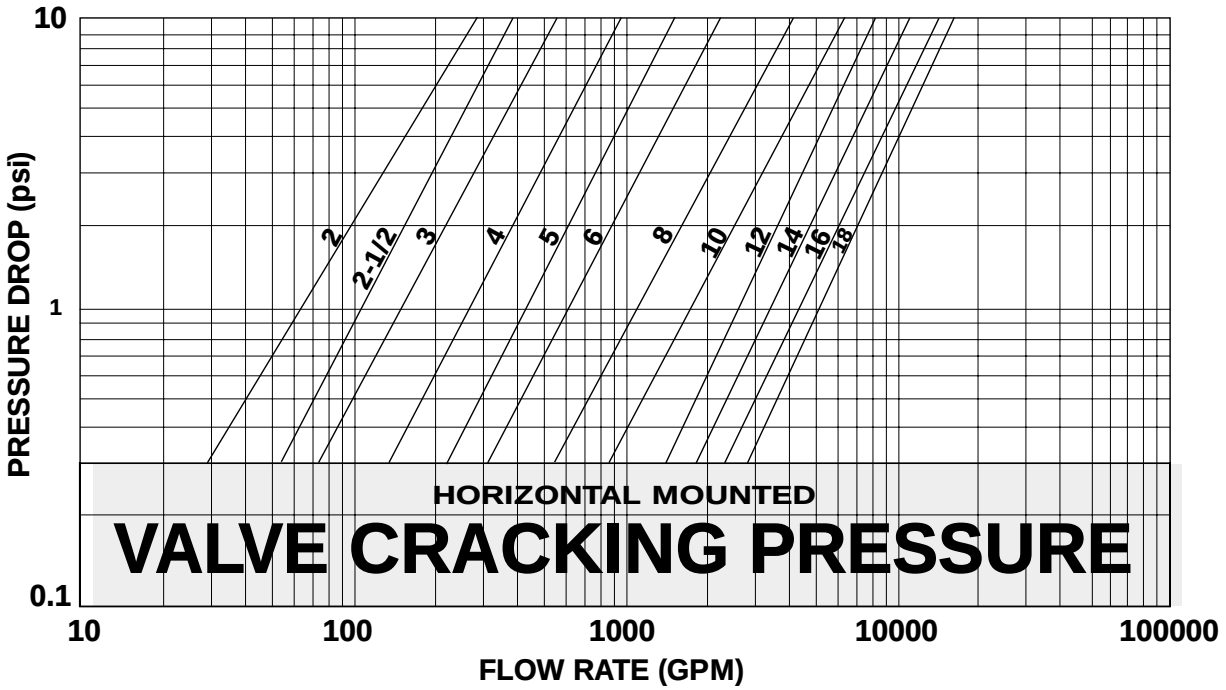
Dimensions shown are subject to change.
Contact factory for certified prints when required.

Connections: 2" to 18" Flanged FF

Seats: 2" to 18" Bronze

Cracking Pressure:
Horizontal Mounting - .3 psid
Vertical Mounting - .75 to 1.25 psid

125FC SERIES
CAST IRON FLANGED SILENT CHECK VALVES
PRESSURE DROP VS FLOW RATE
(Sizes 2" - 18")



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Installation Note:
1. For correct installation and maintenance please see our I&M manual.
2. Vertical installation (downward flow) – Consult factory.
3. Always use Strainers in upstream piping.
4. Not recommended for Steam Service

Cv Values

Size (inches)	2	2½	3	4	5	6	8	10	12	14	16	18
Min Cv (@.3 PSID)	53	99	135	246	402	566	1004	1579	2556	3286	4199	5112
CV (@1 PSID)	63	105	148	265	430	605	1105	1700	2575	3350	4300	5225
Max Cv (@10 PSID)	89	120	174	300	474	696	1297	1992	2593	3479	4427	5376

NOTES:

150FC SERIES
CAST STEEL AND STAINLESS STEEL FLANGED SILENT CHECK VALVES

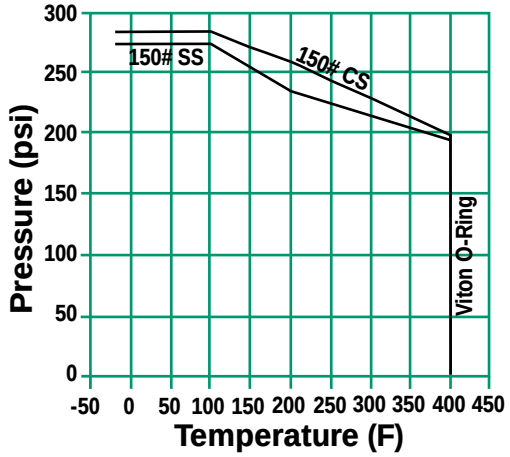
Pressures to 285 PSIG (19.7 barg)
Temperatures to 400ºF (204ºC)

- **ASME Class 150 rated check valve**
- **Designed to reduce surge and water hammer**
- **Silent, non-slam closure**
- **Center guided at both ends to prevent binding and cocking**
- **Flanged body style**
- **Stainless Steel Metal to Metal Seats**

APPLICATIONS

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME 16.34



MODELS

- 150FCCT - Cast Steel Body, Stainless Steel Seat and Disc
- 150FCTT – Stainless Steel Body, Stainless Steel Seat and Disc

OPTIONS *(Consult factory)*

- Other Spring Material
- Heavier or Lighter Springs

APPLICABLE CODES

- ASME Sec. VIII and B16.34 Bodies
- API 598

Canadian Registration - OC10274.5C

150FC Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Spring
0	4	0	0	-	1	5	0	F	C	T	T	M	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size* - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"

Dash - Position 5

Model - Position 6 - 12
150FCCT - CS Body, SS Disc
150FCTT - SS Body, SS Disc

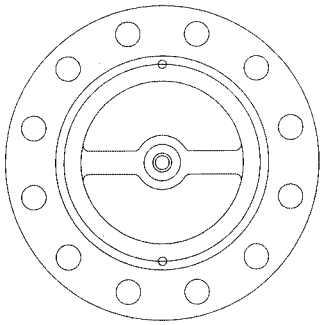
Seat - Position 13
M - Metal

Dash - Position 14

Spring - Position 15
T - Stainless Steel

* Cast Steel body 2" - 16"
Stainless Steel body 2" - 12"

150FC SERIES
CAST STEEL AND STAINLESS STEEL FLANGED SILENT CHECK VALVES



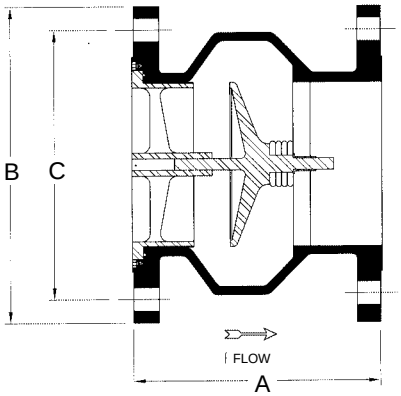
FRONT VIEW

SPECIFICATION

Check Valve shall be single disc design with Cast Steel or Stainless Steel Flanged body style designed to ASME Sec. VIII and ASME B16.34. The check valve shall have a metal to metal seat with Stainless Steel seat and disc. The check valve shall be ASME Class 150 rated. The spring shall be 316SS. The check valve shall be SSI 150FC Cast Steel or Stainless Steel Series.

MATERIALS OF CONSTRUCTION

Part	Cast Steel	Stainless Steel
Body	A216 WCB	A351 CF8M
Discs	A351 CF8M	A351 CF8M
Seat	A351 CF8M	A351 CF8M
Spring	316SS	316SS
O-Ring	Viton	Viton



DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A	B	C	Weight
2 (50)	6¼ (159)	6 (152)	4¾ (121)	15 (6.6)
2½ (65)	7 (178)	7 (178)	5½ (140)	21 (9.3)
3 (80)	7½ (191)	7½ (191)	6 (153)	26 (11.5)
4 (100)	8½ (216)	9 (229)	7½ (191)	48 (21.3)
5 (125)	9½ (242)	10 (254)	8½ (216)	61 (27.3)
6 (150)	10½ (267)	11 (280)	9½ (241)	76 (34.1)
8 (200)	12 (305)	13½ (343)	11¾ (299)	129 (58.4)
10 (250)	14 (356)	16 (406)	14¼ (362)	183 (82.8)
12 (300)	18 (457)	19 (483)	17 (431)	344 (156)
14 * (350)	19½ (495)	21 (533)	18¾ (477)	433 (196)
16 * (400)	21 (533)	23½ (597)	21¼ (540)	607 (275)

* 14" and 16" only available in Cast Steel body, contact factory for Stainless Body availability.

Dimensions are subject to change. Consult factory for certified drawings when required.

Connections :
2” to16” Cast Steel Body Flanged RF
2” to 12” Stainless Steel Body Flanged RF

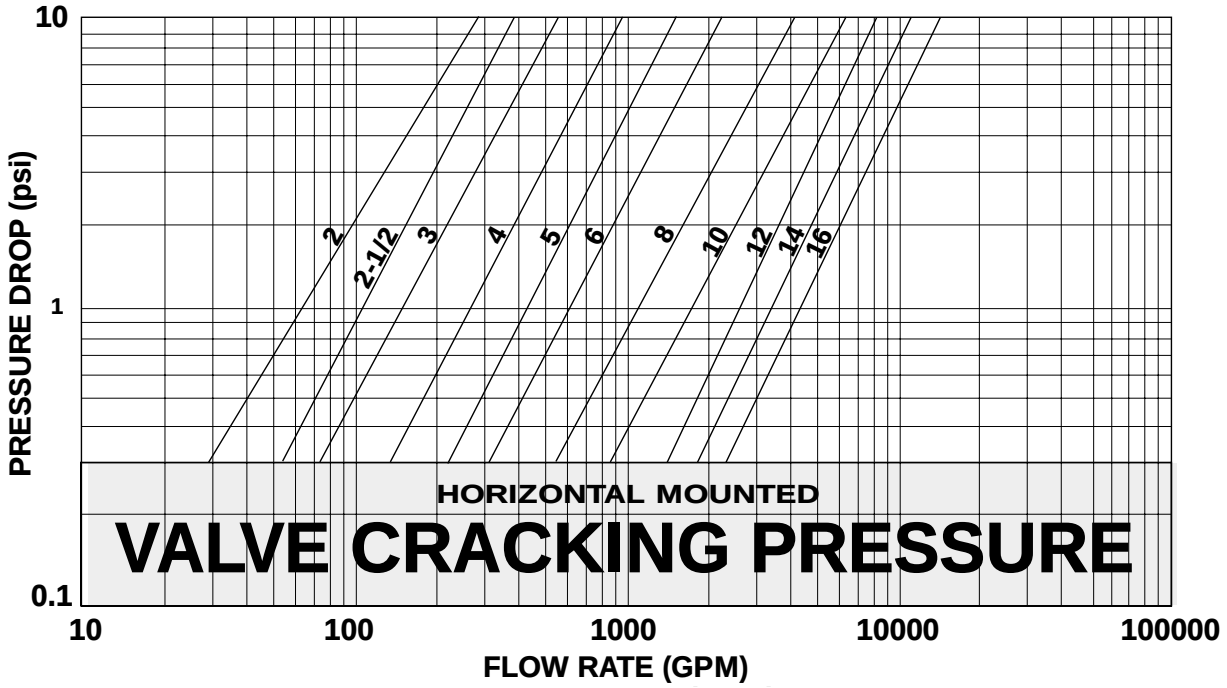
Seats: All sizes - Stainless Steel

Cracking Pressure:
Horizontal Mounting - .3 psid
Vertical Mounting - .75 to 1.25 psid

150FC SERIES

CAST STEEL & STAINLESS STEEL
FLANGED SILENT CHECK VALVES
PRESSURE DROP VS FLOW RATE

(Sizes 2" - 16")



(1) Pressure drop curves are based on water flow.
(2) Valve cracking pressure is equal to or less than 0.3 psid when mounted horizontally.
(3) Valve cracking pressure increases to between 0.75 and 1.25 psid when installed vertically with flow upwards.

Installation Note:
1. For correct installation and maintenance please see our I&M manual.
2. Vertical installation (downward flow) – Consult factory.
3. Always use Strainers in upstream piping.
4. Not recommended for Steam Service

Cv Values

Size (inches)	2	2½	3	4	5	6	8	10	12	14	16
Min Cv (@.3 PSID)	53	99	135	246	402	566	1004	1579	2556	3286	4199
Cv (@1 PSID)	63	105	148	265	430	605	1105	1700	2575	3350	4300
Max Cv (@10 PSID)	89	120	174	300	474	696	1297	1992	2593	3479	4427

NOTES:

250FC SERIES
CAST IRON FLANGED SILENT CHECK VALVES

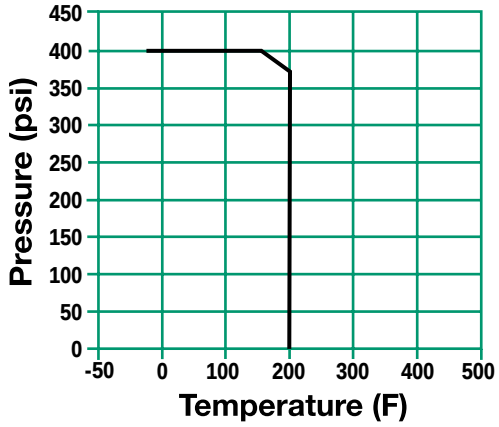
Pressures to 400 PSI (27.6. barg)
Temperatures to 200°F (93°C)

- **ASME Class 250 rated check valve**
- **Designed to reduce surge and water hammer**
- **Silent, non-slam closure**
- **Center guided at both ends to prevent binding and cocking**
- **Flanged body style**
- **Bronze Metal to Metal Seats**
- **Designed to reduce Water Hammer**

APPLICATIONS

- Liquid Service
- Process Industry
- Power Industry
- Chemical Industry
- Oil & Gas
- Pulp & Paper
- Metal & Mining
- Water & Waste

PRESSURE/TEMPERATURE CHART
ASME B16.1



MODELS

- 250FCIB - Cast Iron Body, Bronze Seat and Disc

OPTIONS *(Consult factory)*

- Other Spring Material
- Heavier or Lighter Springs

APPLICABLE CODES (Designed in accordance with)

- ASME B16.1

Request quote

250FC Series Ordering Code

Inlet Size				Dash	Model								Seat	Dash	Spring
0	8	0	0	-	2	5	0	F	C	I	B	M	-	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Position 1 - 4
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"

Dash - Position 5

Model - Position 6 - 12
250FCIB - CI Body, Bz Disc

Seat - Position 13
M - Metal

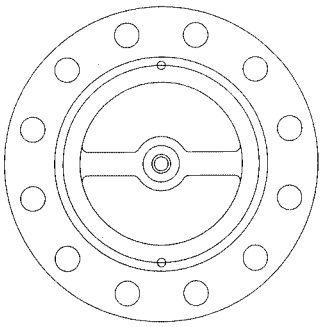
Dash - Position 14

Spring - Position 15
T - Stainless Steel

250FC SERIES
CAST IRON FLANGED SILENT CHECK VALVES

SPECIFICATION

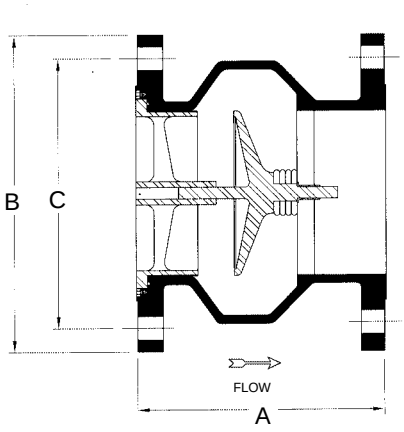
Check Valve shall be single disc design with Cast Iron Flanged body style designed to ASME B16.1. The check valve shall have a metal to metal seat with bronze seat and disc. The check valve shall be ASME Class 250 rated. The spring shall be 304SS. The check valve shall be SSI 250F Cast Iron Series.



FRONT VIEW

MATERIALS OF CONSTRUCTION

Body .....A126-A Cast Iron
Discs.....B62 Bronze
Seat .....B62 Bronze
Spring 304SS
O-Ring .....EPDM



DIMENSIONS inches (mm)
AND WEIGHTS pounds (kg)

Size	A	B	C	Weight
2½ (65)	5½ (127)	5½ (127)	5⅞ (150)	30 (13.6)
3 (80)	6 (140)	8¼ (216)	6⅝ (168)	36 (16.4)
4 (100)	7¼ (184)	10 (254)	7⅞ (200)	59 (27)
5 (125)	8½ (216)	11 (280)	9¼ (235)	78 (36)
6 (150)	9¾ (248)	12½ (318)	10⅝ (270)	103 (47)
8 (200)	12½ (318)	15 (381)	13 (331)	179 (82)
10 (250)	15½ (394)	17½ (445)	15¼ (388)	253 (115)
12 (300)	14¼ (362)	20½ (521)	17¾ (451)	401 (182)

Dimensions shown are subject to change.
Contact factory for certified prints when required.

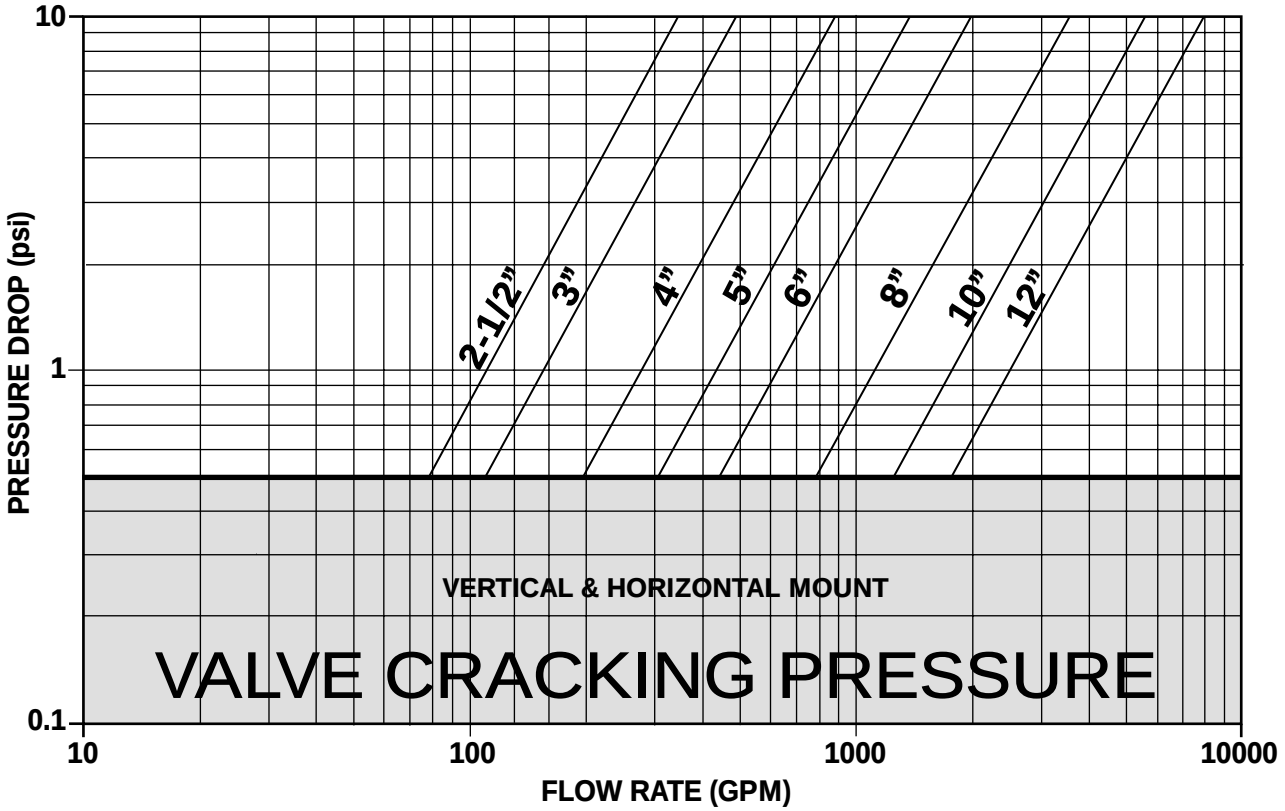
Connections: 2½" to 12" Flanged FF

Seats: 2½" to 12" Bronze

Cracking Pressure: .5 psid

250FC SERIES
CAST IRON FLANGED SILENT CHECK VALVES
PRESSURE DROP VS FLOW RATE[1]

(Sizes 2½" - 12")



1. Pressure drop curves are based on water flow.
2. Valve cracking pressure is equal to or less than 0.5 psid when installed vertically and horizontally.

Installation Note

1. For correct installation and maintenance, please see our I&M manual.
2. Vertically installation (downward flow) – Consult factory
3. Always use Strainers in upstream piping.
4. Not recommended for Steam Service.

Cv Values

Size (inches)	2½	3	4	5	6	8	10	12
Min Cv (@.5 PSID)	78	110	197	308	442	788	1252	1768
Cv (@1 PSID)	110	155	278	435	625	1115	1770	2500
Max Cv (@10 PSID)	348	490	879	1376	1976	3526	5597	7906

FLANGED SILENT CHECK VALVES
INSTALLATION AND MAINTENANCE INSTRUCTIONS

Check valves should be installed, if possible, a minimum of 6 pipe diameters from other line elements, i.e. elbows, pipes, valves, etc.

CHECK VALVE INSTALLATION

- Valves may be installed upward vertically, horizontally, or at other angles. For vertical downward flow please consult with the factory.
- Install the valve with proper positioning of the flow arrow.
- Support and align adjacent piping and the valve
- Install lubricated flange bolts.
- Hand tighten, then torque the bolts using the cross-over flange bolt tightening method to load the bolts evenly, and eliminate concentrated stresses.
- Valves must be mounted to ASME flanges with conventional flat face or ring gaskets.
- Proper centering of the ring gaskets is important to prevent internal leakage.
- Never lift the valve by the bronze or stainless steel trim.
- Install a strainer in the piping.

PRECAUTIONS

- Do not install check valves directly against another valve whereby the check valve discharges downstream directly into the valve.
- Do not install the valve whereby it directly discharges downstream into a tee or elbow fitting.
- These valves are not suggested for installation in sewage ejector piping.
- Careful consideration should be given to the selection of valves for use in an air, steam, hot water and boiler feed systems. Consult our factory on these applications.
- Individuals performing removal and disassembly should be provided with suitable protection from possibly hazardous liquids.
- Prior to disassembly, valve must first be isolated from system pressure and flow.
- Upon disassembly ensure spring pressure is released slowly to prevent personal injury due to the spring “launching” itself unexpectedly.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

125FV SERIES
CAST IRON FLANGED FOOT VALVES

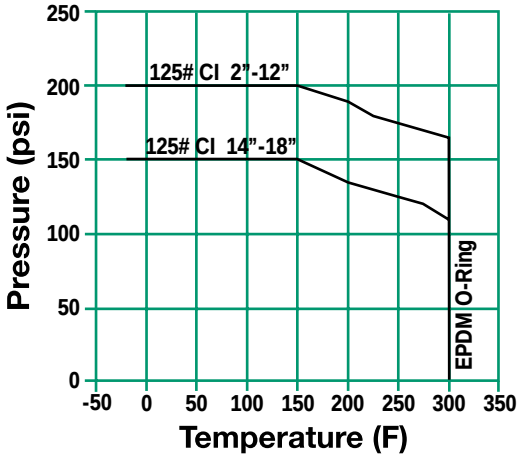
Pressures to 200 PSI (13.8 barg)
Temperatures to 300°F (149°C)

- **ASME Class 125 rated foot valve**
- **Designed to reduced surge and water hammer**
- **Silent, non-slam closure**
- **Heavy duty stainless steel screening with flow areas three to four times that of the pipe area**
- **Center guided at both ends to prevent binding and cocking**
- **Flanged body style**
- **Bronze Metal to Metal Seats**

APPLICATIONS

- Liquid service: for preventing pump column from draining upon pump shutdown.
- Maintaining pump prime upon pump outage.

PRESSURE/TEMPERATURE CHART
ASME B16.1



MODELS

- 125FVIB – Cast Iron Body, Bronze Seat and Disc

OPTIONS

- Consult factory

APPLICABLE CODES

- Bodies in accordance with ASME B16.1

Canadian Registration - OC10274.5C

FOOT VALVES

125FVIB Series Ordering Code

Inlet Size				Dash	Model								Seat	Dash	Perf	Add'l Mesh
0	6	0	0	-	1	2	5	F	V	I	B	M	-	4	5
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size* - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"
1800 - 18"

Dash - Position 5

Model - Position 6 -12
125FVIB - CI Body, Bz Disc, Metal Seat

Seat - Position 13
M - Metal

Dash - Position 14

Perf - Position 15
304SS Material[1]
1 - 1/32"
B - 3/64"
4 - 1/8" (std)
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"
9 - 3/8"

Additional Mesh - Position 16
Leave Blank If Not Required
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 70
8 - 80
9 - 90

125FV SERIES

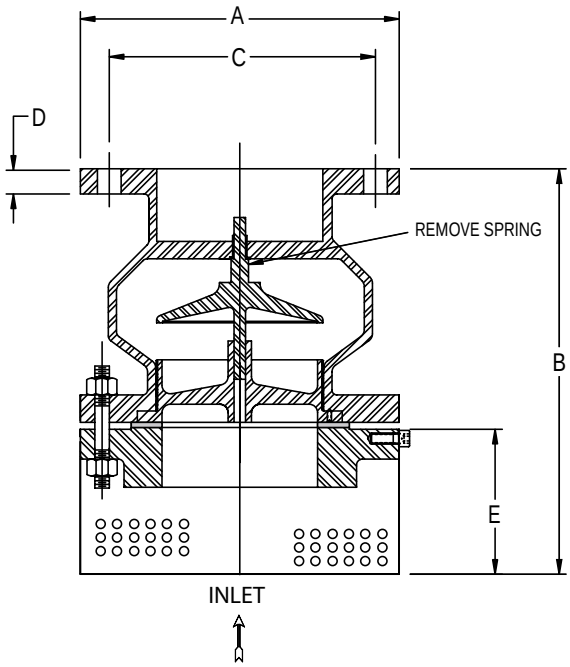
CAST IRON FLANGED FOOT VALVES

SPECIFICATION

Foot Valve shall be composed of a Check Valve with single disc design with Cast Iron Flanged body style designed to ASME B16.1. The check valve shall have a metal to metal seat with bronze seat and disc. The check valve shall be ASME Class 125 rated. The screen shall be constructed from SA240 304 stainless steel. The foot valve shall be SSI 125FV Cast Iron Series.

MATERIALS OF CONSTRUCTION

Body .....A126-B Cast Iron
Disc .....B62 Bronze
Seat .....B62 Bronze
Screen Retainer Bolt SA193 B8
Studs SA193 B7
Hex Nuts.....SA194 2H
Screen Flange.....SA105
Screen.....SA240 304
Gasket .....Red Rubber



Connections : 2" to 18" Flanged FF

Seats: 2" to 18" Bronze

Cracking Pressure:
Vertical Mounting – Consult Factory

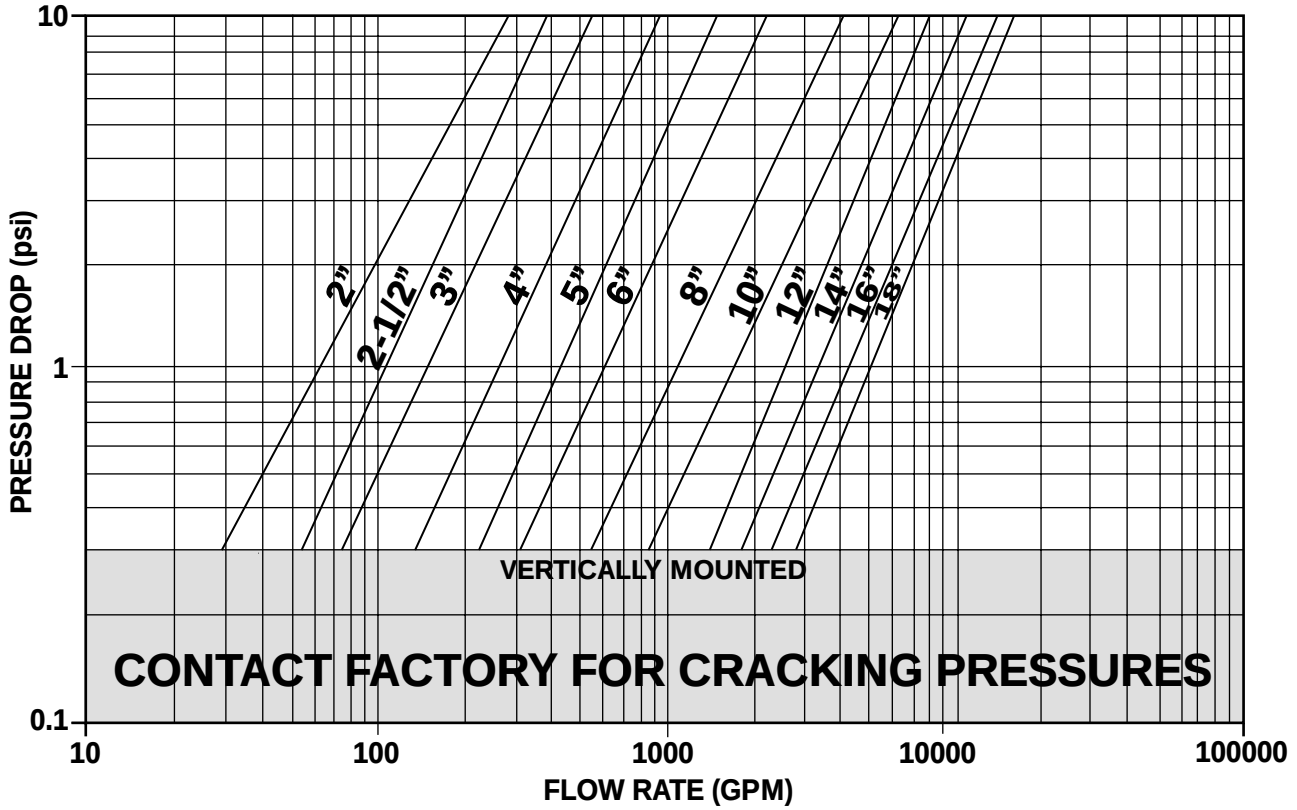
DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	A	B	C	D	E	Stud Length	Bolt Size	No.of Bolts	Weight
2 (51)	6 (152)	8⅜ (213)	4¾ (121)	3/4 (19)	3 (76)	3¼ (83)	5/8 (16)	4	30 (14)
2½ (64)	7 (178)	8⅝ (219)	5½ (140)	7/8 (22)	3 (76)	3½ (89)	5/8 (16)	4	45 (20)
3 (76)	7½ (191)	9⅝ (244)	6 (152)	15/16 (24)	3 (76)	3¾ (95)	5/8 (16)	4	51 (23)
4 (102)	9 (229)	11⅛ (283)	7½ (191)	15/16 (24)	3 (76)	3¾ (95)	5/8 (16)	8	83 (38)
5 (127)	10 (254)	13⅜ (340)	8½ (216)	15/16 (24)	4 (102)	4 (102)	3/4 (19)	8	104 (47)
6 (152)	11 (279)	15⅞ (403)	9½ (241)	1 (25)	5 (127)	4 (102)	3/4 (19)	8	133 (60)
8 (203)	13½ (343)	19⅝ (498)	11¾ (298)	1⅛ (29)	6 (152)	4¼ (108)	3/4 (19)	8	215 (98)
10 (254)	16 (406)	23⅝ (600)	14¼ (362)	1 3/16 (30)	7 (178)	4¾ (121)	7/8 (22)	12	324 (147)
12 (305)	19 (483)	23⅜ (594)	17 (432)	1¼ (32)	8 (203)	4¾ (121)	7/8 (22)	12	557 (253)
14 (356)	21 (533)	25⅞ (657)	18¾ (476)	1⅜ (35)	9 (229)	5¼ (133)	1 (25)	12	890 (404)
16 (406)	23½ (597)	29 (737)	21¼ (540)	1 1/16 (37)	10 (254)	5½ (140)	1 (25)	16	1034 (469)
18 (457)	25 (635)	31⅛ (791)	22¾ (578)	1 3/16 (40)	11 (279)	6 (152)	1⅛ (29)	16	1171 (531)

Dimensions are subject to change. Consult factory for certified drawings when required.

125FV SERIES
CAST IRON FLANGED FOOT VALVES
PRESSURE DROP VS FLOW RATE*

(Sizes 2" - 18")



* Pressure drop curves are based on water flow.

FOOT VALVES

Installation Note

1. For correct installation and maintenance, please see our I & M manual.
2. Mount only in vertical position with upward flow.

Cv Values

Size (inches)	2	2½	3	4	5	6	8	10	12	14	16	18
Min Cv @ .3 PSID)	53	99	135	246	402	566	1004	1579	2556	3286	4199	5112
Cv (@ 1 PSID)	63	105	148	265	430	605	1105	1700	2575	3350	4300	5225
Max Cv (@ 10 PSID)	89	120	174	300	474	696	1297	1992	2593	3479	4427	5376

NOTES:

150FV SERIES
CARBON STEEL AND STAINLESS STEEL FLANGED FOOT VALVES

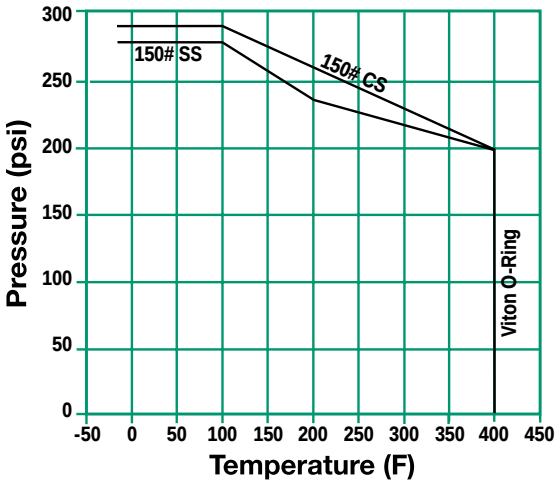
Pressures to 285 PSI (19.7 barg)
Temperatures to 400°F (204°C)

- **ASME Class 150 rated foot valve**
- **Designed to reduced surge and water hammer**
- **Silent, non-slam closure**
- **Heavy duty stainless steel screening with flow areas three to four times that of the pipe area**
- **Center guided at both ends to prevent binding and cocking**
- **Flanged body style**
- **Stainless Steel Metal to Metal Seats**

Applications

- Liquid service: for preventing pump column from draining upon pump shutdown.
- Maintaining pump prime upon pump outage.

PRESSURE/TEMPERATURE CHART
ASME 16.34



Models

- 150FVCT – Carbon Steel Body, Stainless Steel Seat and Disc
- 150FVTT – Stainless Steel Body, Stainless Steel Seat and Disc

Options *(Consult factory)*

- Consult factory

Applicable Codes

- ASME Sec. VIII and B16.34 Bodies

Canadian Registration - OC10274.5C

Request quote

FOOT VALVES

150FVCT Series Ordering Code

Inlet Size				Dash	Model							Seat	Dash	Perf	Add'l Mesh
0	6	0	0	-	1	5	0	F	V	C	T	M	-	4	5
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inlet Size* - Position 1 - 4
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"

Dash - Position 5

Model - Position 6 -12
150FVCT - CS Body, SS Disc, Metal Seat
150FVTT - SS Body, SS Disc, Metal Seat

Seat - Position 13
M - Metal

Dash - Position 14

Perf - Position 15
304SS Material[1]
1 - 1/32"
B - 3/64"
4 - 1/8" (std)
2 - 1/16"
3 - 3/32"
5 - 5/32"
6 - 3/16"
7 - 7/32"
8 - 1/4"

Additional Mesh - Position 16
Leave Blank If Not Required
1 - 10
2 - 20
3 - 30
4 - 40
5 - 50
6 - 60
7 - 80
8 - 100

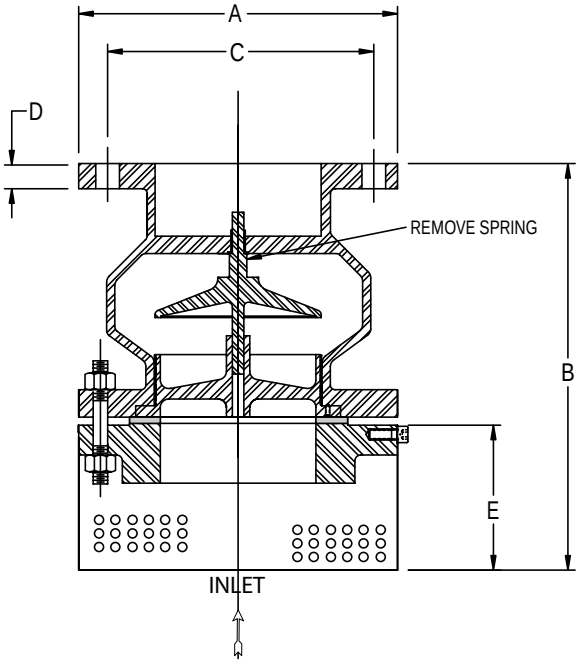
150FV SERIES
CARBON STEEL AND STAINLESS STEEL FLANGED FOOT VALVES

SPECIFICATION

Foot Valve shall be composed of a Check Valve with single disc design with Carbon Steel Flanged body style designed to ASME Sec. VIII and ASME B16.1. The check valve shall have a metal to metal seat with stainless steel seat and disc. The check valve shall be ASME Class 150 rated. The screen shall be SA240 304 stainless steel. The foot valve shall be SSI 150FC Carbon Steel Series.

MATERIALS OF CONSTRUCTION

Part	Cast Steel	Stainless Steel
Body	A216 WCB	A351 CF8M
Disc	A351 CF8M	A351 CF8M
Seat	A351 CF8M	A351 CF8M
Screen Retainer Bolt	SA193 B8	SA193 B8
Studs	SA193 B7	SA193 B7
Hex Nuts	SA194 2H	SA194 2H
Screen Flange	SA105	SS-304
Screen	SA240 304	SA240 316
Gasket	Red Rubber	Red Rubber



Connections :
2" to 16" Carbon Steel Body Flanged RF
8" to 12" Stainless Steel Body Flanged RF

Seats: All sizes – Stainless Steel

Cracking Pressure:
Vertical Mounting – Consult Factory

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A	B	C	D	E	Stud Length	Bolt Size	No.of Bolts	Weight
2 (51)	6 (152)	8⅜ (213)	4¾ (121)	3/4 (19)	3 (76)	3¼ (83)	5/8 (16)	4	25 (11)
2½ (64)	7 (178)	8⅝ (219)	5½ (140)	7/8 (22)	3 (76)	3½ (89)	5/8 (16)	4	35 (16)
3 (76)	7½ (191)	9⅝ (244)	6 (152)	15/16 (24)	3 (76)	3¾ (95)	5/8 (16)	4	45 (20)
4 (102)	9 (229)	11⅛ (283)	7½ (191)	15/16 (24)	3 (76)	3¾ (95)	5/8 (16)	8	70 (32)
5 (127)	10 (254)	13⅜ (340)	8½ (216)	15/16 (24)	4 (102)	4 (102)	3/4 (19)	8	90 (41)
6 (152)	11 (279)	15⅞ (403)	9½ (241)	1 (25)	5 (127)	4 (102)	3/4 (19)	8	115 (52)
8 (200)	13½ (343)	19⅝ (498)	11¾ (298)	1⅛ (29)	6 (152)	4¼ (108)	3/4 (19)	8	181 (82)
10 (254)	16 (406)	23⅝ (600)	14¼ (362)	1 1/16 (30)	7 (178)	4¾ (121)	7/8 (22)	12	265 (120)
12 (305)	19 (483)	23⅜ (594)	17 (432)	1¼ (32)	8 (203)	4¾ (121)	7/8 (22)	12	425 (193)
14* (356)	21 (533)	25⅞ (657)	18¾ (476)	1⅜ (35)	9 (229)	5¼ (133)	1 (25)	12	550 (249)
16* (406)	23½ (597)	29 (737)	21¼ (540)	1 1/16 (37)	10 (254)	5½ (140)	1 (25)	16	695 (315)

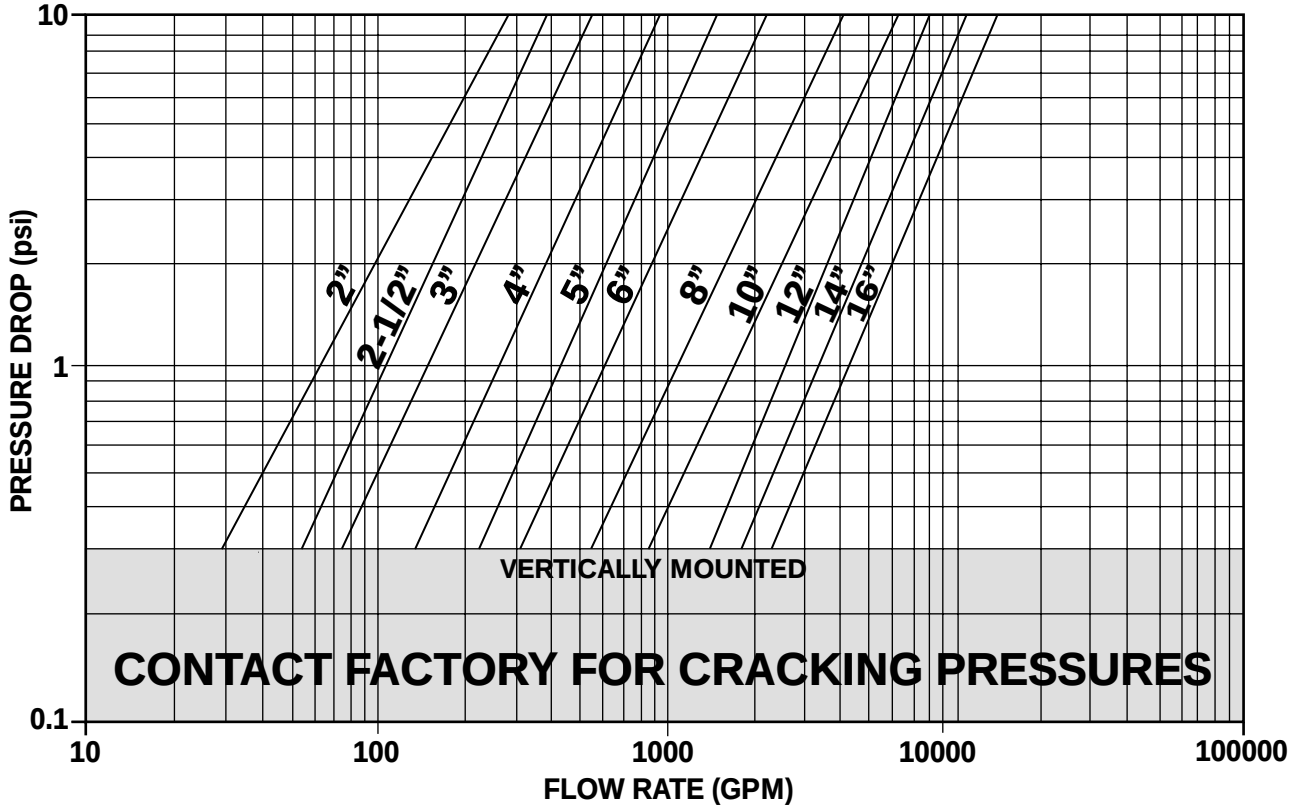
* 14" and 16" only available in Cast Steel body, contact factory for Stainless Steel body availability.
Dimensions are subject to change. Consult factory for certified drawings when required.

FOOT VALVES

150FV SERIES

CARBON STEEL AND STAINLESS STEEL FLANGED FOOT VALVES PRESSURE DROP VS FLOW RATE*

(Sizes 2" - 16")



* Pressure drop curves are based on water flow.

FOOT VALVES

Installation Note

1. For correct installation and maintenance, please see our I & M manual.
2. Mount only in vertical position with upward flow.

Cv Values

Size (inches)	2	2½	3	4	5	6	8	10	12	14	16
Min Cv (@ .3 PSID)	53	99	135	246	402	566	1004	1579	2556	3286	4199
Cv (@ 1 PSID)	63	105	148	265	430	605	1105	1700	2575	3350	4300
Max Cv (@ 10 PSID)	89	120	174	300	474	696	1297	1992	2593	3479	4427

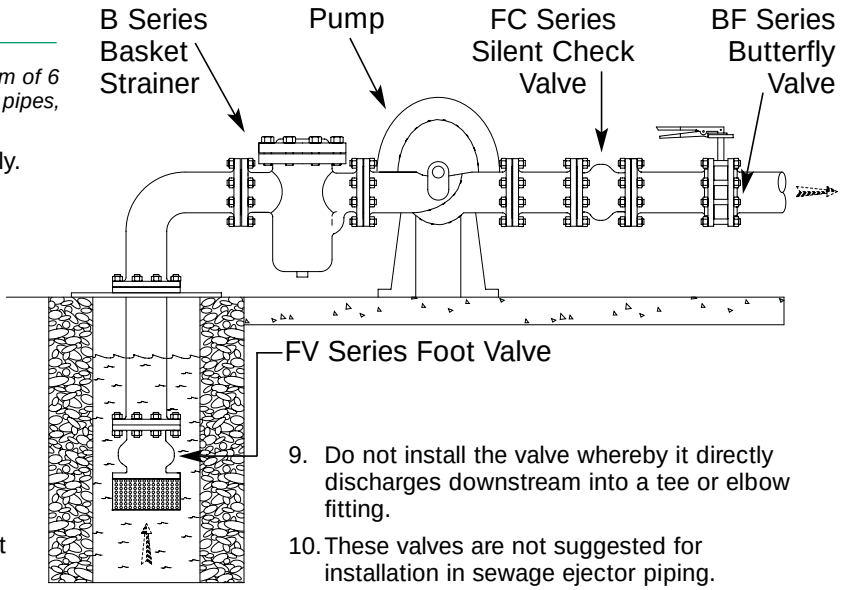
FLANGED FOOT VALVES

INSTALLATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

Foot valves should be installed, if possible, a minimum of 6 pipe diameters from other line elements, i.e. elbows, pipes, valves, etc.

1. Valves may be installed upward vertically only.
2. Install the valve with proper positioning of the flow arrow.
3. Support and align adjacent piping and the valve.
4. Install lubricated flange bolts.
5. Hand tighten, then torque the bolts using the crossover flange bolt tightening method to load the bolts evenly and eliminate concentrated stresses.
6. Valves must be mounted to ANSI flanges with conventional flat face or ring gaskets.
7. Proper centering of the gaskets is important to prevent internal leakage.
8. Do not install foot valve directly against another valve whereby the check valve discharges downstream directly into the valve.



9. Do not install the valve whereby it directly discharges downstream into a tee or elbow fitting.
10. These valves are not suggested for installation in sewage ejector piping.
11. Never lift the valve by the bronze or stainless steel trim.

PRECAUTIONS

- Individuals performing removal and disassembly should be provided with suitable protection from possible hazardous liquids.
- Do no install foot valve directly against another valve whereby the foot valve discharges downstream directly into the valve.
- Foot valves are not recommended for installation in sewage ejector piping.
- Prior to disassembly, the valve must first be isolated from the system's (electrically isolated pump) pressure and flow.

MAINTENANCE

1. Individuals performing removal and disassembly should be provided with suitable protection from possibly hazardous liquids.

2. Prior to disassembly, valve must first be isolated from system pressure and flow.

3. To replace screen remove two screen retainer bolts, replace the screen and reassemble retainer bolts.

4. To replace gasket, first dismantle the screen and then remove nuts of the strainer flange studs and separate the gasket from foot valve. Replace the gasket and reassemble in the reverse order.

5. To replace the valve seat, first dismantle the screen, screen flange and then remove two seat retaining counter-sunk screws and take out the valve seat. Replace the valve seat and reassemble in reverse order.

6. Lubricate bolts/nuts, hand tighten, then torque the bolts using the crossover flange bolt tightening method to load the bolts evenly, and eliminate concentrated stresses.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel in the event of leakage of fluids or gasses.*

NOTES:

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Pulp and Paper
- Metals and Mining
- Water and Waste

Butterfly Valves

Pressures To 200 PSIG
Temperatures to 300°F

Request quote

Features

- Positive Shutoff
- Non-collapsible Phenolic Backed Seat
- Minimal Installation Costs

Materials of Construction

- Ductile Iron Body
- Stainless Steel Shaft
- Ductile Iron, Aluminum Bronze or 316 SS Disc

Seat Materials

- Buna-N
- EPDM
- Viton (upon request)

Body Type

- Wafer
- Lug

Size Range

- 2" (50mm) upto 48" (1200mm)
- Larger Sizes upon request

Ratings

- ASME Class 125

BF SERIES
BUTTERFLY VALVES
Pressures to 200 PSIG (13.8 BARG)
Temperatures to 225 F (107 C)

- **Wafer or Lug body fits between FF or RF flanges**
- **Ductile Iron, Bronze or SS Disc**
- **EPDM or Buna-N Seats**
- **Four bushings ensure maximum shaft support and centralized alignment.**
- **360 (degree) polished disc assures positive shutoff**
- **Non-collapsible phenolic backed seat**
- **Blowout proof one piece shaft and pinned disc**
- **Universal ISO 5211 mounting pad**
- **Dead end service screws standard on Lug body**

APPLICATIONS

- Fluids and Gases
- HVAC
- Irrigation
- OEM
- Process Industry
- Oil and Gas
- Pulp and Paper
- Water and Waste Water

APPLICABLE CODES

- API 609–General Design (2”–24” & 24" only)
- ISO 5211 (Part I & II) – Mounting Pad
- MSS SP-67–Laying Length (2”–24” & 24" only)

MODELS

- 32 – Lug, Ductile Iron Body
- 42 – Wafer, Ductile Iron Body

OPTIONS

- 10 position or Infinite Lever handles
- Gear with handwheel and/or chain assist
- Pneumatic Actuators
- Electric Actuators
- Other electronic accessories
- Larger sizes upon request

BF Series Ordering Code

Inlet Size	Dash	Model	Disc	Seat	Bushing	Dead End	Dash	Operator	Actuator Orientation	Actuator Acces-sories	Positioner Set	Positioner Acces-sories	Dash	Inlet Pressure
0400	**-**	**32**	**32**	**10**	**2**	**2**	**-**	**A**						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Box 1
0200 - 2"
0250 - 2½"
0300 - 3"
0400 - 4"
0500 - 5"
0600 - 6"
0800 - 8"
1000 - 10"
1200 - 12"
1400 - 14"
1600 - 16"
1800 - 18"
2000 - 20"
2400 - 24"

Dash - Box 2

Model - Box 3
32 - Lug, DI Body
42 - Wafer, DI Body
52 - Double Flanged, DI Body

Disc - Box 4
11 - Ductile Iron
21 - Bronze
32 - Stainless

Seat - Box 5
10 - EPDM
20 - Buna-N

Bushing - Box 6
1 - Bronze (>=14")
2 - Teflon (<14")

Dead End - Box 7
1 - STD (Only Wafer)
2 - Dead End (Only Lug)

Dash - Box 8

Operator - Box 9
A - Bare Shaft
01 - Lever - std 10 position
02 - Lever - Infinite position
03 - Gear
04 - Gear with C/W 20ft

Actuators
*A - PA / PAS100
*B - PA / PAS200
*C - PA / PAS300
*D - PA / PAS500
*E - PA / PAS700
*F - PA / PAS1030
*G - PA / PAS1400
*H - PA / PAS2200
* I - PA / PAS2900
*J - PA / PAS4100
*K - PA / PAS5800
*L - PA / PAS9000
*M - PA / PAS12100
*N - PA / PAS23600
*O - PA / PAS29500
*P - PA / PAS37200
XA- Electric Actuator
*Choose the model actuator type below
B - PA (Double Acting)
D - PAS Fail Open (Spring Return)
E - PAS Fail Closed (Spring Return)
F - PA w/100% Fail Open Travel Stop
H - PAS w/100% Fail Open Travel Stop

Box 10 -15: Only Use with Actuator Selection - Leave Blank if Actuator is Not Required

Actuator Orientation - Box 10
LP - Parellel to Pipe
RP - Perp to Pipe

Actuator Accessories - Box 11
A0 - None
L1 - Limit Switch w/Beacon
MP - Moore Pneumatic
MI - Moore E/P
4P - PMV P4 Pneumatic
5I - PMV P5 E/P
5P - PMV P5 Pneumatic
S1 - Solenoid Switch

Positioner Set - Box 12
A0 - None
02 - 3-15/4-20mA
03 - 3-9/4-12mA
04 - 9-15/12-20mA

Positioner Accessories - Box 13
A0 - None
02 - Limit Switch - Mechanical
03 - Limit Switch - Proximity Switch
04 - Feedback - Potentiometer 1K
05 - Feedback 4-20mA Pos. Trans

Dash - Box 14

Inlet Pressure - Box 15
Inlet Pressure to be given by customer

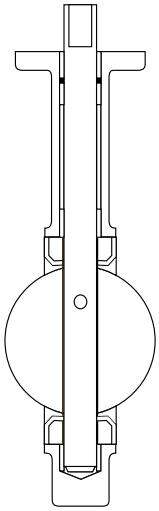
BF SERIES
BUTTERFLY VALVES
SPECIFICATION

Butterfly shall be designed and manufactured for use with ASME Class 125 or 150 flanges and in compliance with API 609, MSS-SP-67, ISO 5211, ISO 5752 and API 598. The butterfly valves shall be Ductile Iron Body with _____ Disc and _____ resilient soft seats. The shaft shall be one piece Stainless Steel. The seat shall have a phenolic backing to prevent it from collapsing or dislodging.The strainer shall be straight flow design with vertical screen supports. The Butterfly valve shall be SSI BF Series.

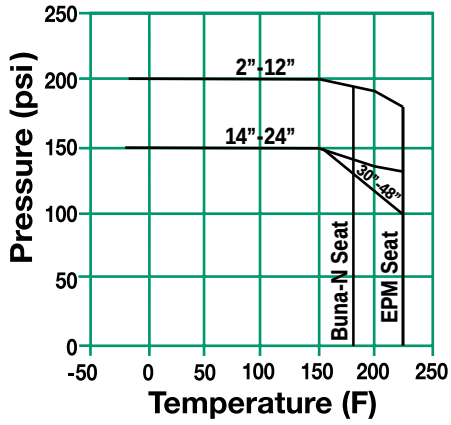
MATERIALS OF CONSTRUCTION

Body .....Ductile Iron A536 65-45-12
Disc.....Ductile Iron (Nickel Plated) A536 65-45-12
Aluminum Bronze B148 C954
Stainless Steel 316 A351-CF8M
Shaft .....Stainless Steel 416 A582 (w/DI and BZ disc)
Stainless Steel 316 A276 (w/SS disc)
Seat .....Buna-N
EPDM
Bushings.....Teflon/Fiberglass backed (< 14")
Bronze (>= 14")
Seal .....Buna N o-ring
Pin .....Stainless Steel 316
Key .....Carbon Steel (>= 12")

1. Dead End 18-8 SS screws are standard on Lug bodies



PRESSURE/TEMPERATURE CHART



Connections: 2-48" Wafer or Lug

Disc: Ductile Iron – Electrolytic Nickel Plated
Aluminum Bronze, Stainless Steel 316

Seats: Buna-N or EPDM, do not use EPDM when hydrocarbons are present

Velocity Limits
Fluids .....30 ft/s (10 m/s)
Gases.....200 ft/s (65 m/s)

Note: For greater velocities consult factory

Valve Seating Torques (lbs-in) & PA / PAS Pneumatic Actuator Selection

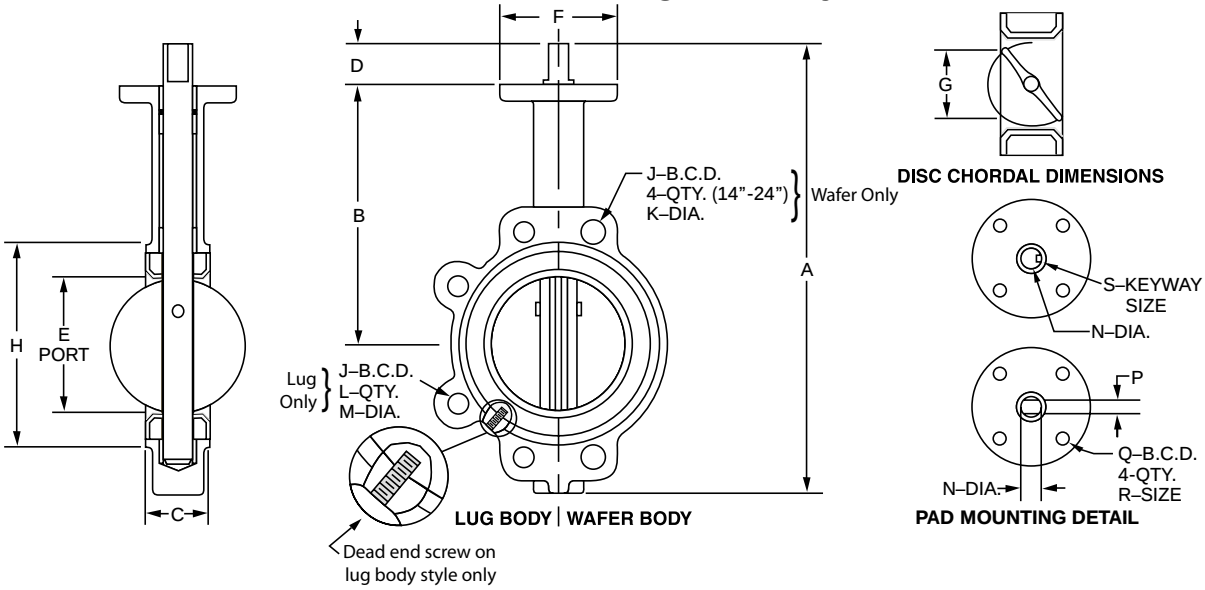
Size	Valve Seating Torque[1]		Actuator Selection **w/80 PSIG** Air Supply [3]						Actuator Selection **w/100 PSIG** Air Supply [3]					
					Fail Closed		Fail Open				Fail Closed		Fail Open	
	200/150 PSIG [2]		PA		PAS [4]		PAS [4]		PA		PAS [4]		PAS [4]	
	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry
2"	132	211	200	300	500	700	500	700	200	200	500	700	300	500
2½"	191	306	300	500	700	1030	700	1030	200	300	700	1030	500	700
3"	292	467	500	500	1030	1400	1030	1400	300	500	1030	1400	500	1030
4"	433	693	500	700	1400	2200	1400	2200	500	700	1400	2200	700	1400
5"	697	1115	1030	1400	2200	4100	2200	2900	700	1030	2200	4100	1400	2200
6"	907	1542	1030	2200	2900	5800	2900	4100	1030	1400	2900	5800	2200	2900
8"	1697	2885	2200	4100	5800	9000	5800	9000	2200	2900	5800	9000	2900	5800
10"	2857	4857	4100	5800	9000	*	9000	12100	2900	5800	9000	*	5800	9000
12"	4338	6941	5800	9000	*	*	12100	*	4100	9000	*	*	9000	12100
14"	6088	9132	*	*	*	*	*	*	*	*	*	*	*	*
16"	8356	12534	*	*	*	*	*	*	*	*	*	*	*	*
18"	11198	16797	*	*	*	*	*	*	*	*	*	*	*	*
20"	14938	22407	*	*	*	*	*	*	*	*	*	*	*	*
24"	23350	35025	*	*	*	*	*	*	*	*	*	*	*	*
30"	33336	50004	*	*	*	*	*	*	*	*	*	*	*	*
36"	46528	69792	*	*	*	*	*	*	*	*	*	*	*	*
42"	79864	119796	*	*	*	*	*	*	*	*	*	*	*	*
48"	111112	166668	*	*	*	*	*	*	*	*	*	*	*	*

Note: The maximum required operating torques for the valves will be the torques required at the valve stem to initiate disc movement out of the seat with full differential pressure across the disc for either lubricated (wet) or non-lubricated services (dry).
For information on PA (Double Acting) and PAS (Spring Return) Pneumatic Actuators contact factory.
1. Lubricating (wet) service applies only where a non-drying "oily" media is present (ex. Oil, glycerin, glycol/water, etc.). Non-Lubricating (dry) service applies where the media does not lubricate the seat elastomer (ex. Dry gas, water, dry abrasives, etc.)
2. 2"- 12" are based 200 PSIG line pressure; 14"-48" are based 150 PSIG line pressure
3. 10 - 15% Safety Factor built in to Actuator Selection
4. All PAS (spring return) actuators are selected using standard with (4) springs. The number of springs can be changed to fit a different actuator selection. Contact factory when required.

* Consult Factory

BF SERIES

2" - 24" Wafer and Lug Butterfly Valves



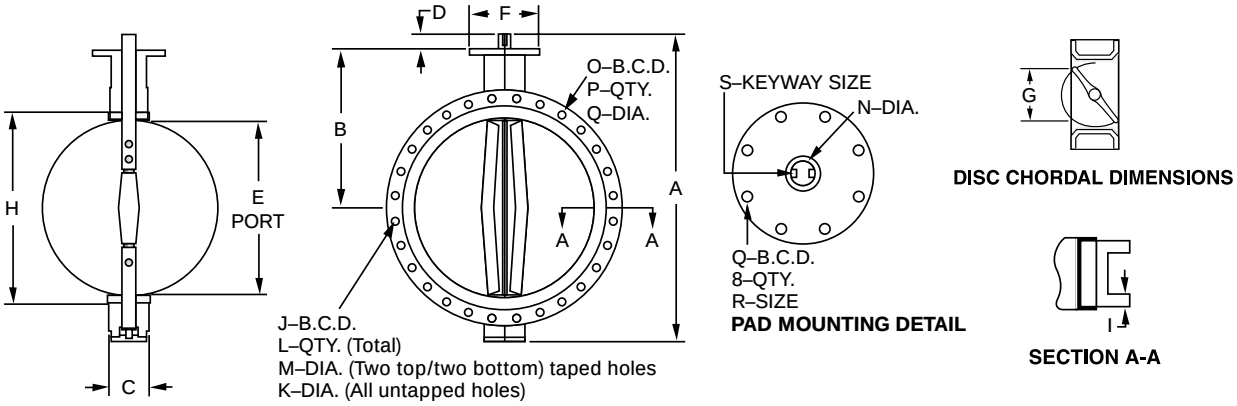
DIMENSIONS inches (mm) and WEIGHTS pounds (kg)

Size	Valve												Pad Mounting					Weight[4]	
	A	B	C[1]	D	E	F	G	H	J	K[2]	L[3]	M[3]	N	P	Q	R	S	Lug	Wafer
2 (50)	10¾ (273)	6⅓ (161)	1⅔ (42)	1¼ (32)	2 (53)	3 (76)	1¼ (32)	3 15/16 (100)	4¾ (121)	-	4	5/8-11UNC	1/2 (13)	11/32 (9)	2 (50)	9/32 (7)	-	7 (3.2)	6 (2.7)
2½ (65)	11⅔ (296)	6⅞ (175)	1¾ (44)	1¼ (32)	2½ (65)	3 (76)	1 13/16 (47)	4¾ (121)	5½ (140)	-	4	5/8-11UNC	1/2 (13)	11/32 (9)	2 (50)	9/32 (7)	-	8 (3.6)	7 (3.2)
3 (80)	12⅛ (308)	7⅛ (181)	1 25/32 (45)	1¼ (32)	3⅛ (80)	3 (76)	2½ (64)	5 (127)	6 (152)	-	4	5/8-11UNC	1/2 (13)	11/32 (9)	2 (50)	9/32 (7)	-	14 (6.3)	10 (4.5)
4 (100)	13⅝ (346)	7⅞ (200)	2 (52)	1¼ (32)	4⅛ (105)	3⅝ (92)	3½ (89)	6⅛ (156)	7½ (191)	-	8	5/8-11UNC	5/8 (16)	7/16 (11)	2¾ (70)	13/32 (10)	-	26 (11.8)	13 (5.9)
5 (125)	14⅔ (372)	8⅜ (213)	2⅛ (54)	1¼ (32)	4⅞ (123)	3⅝ (92)	4⅜ (111)	7½ (191)	8½ (216)	-	8	3/4-10UNC	3/4 (19)	1/2 (13)	2¾ (70)	13/32 (10)	-	28 (12.7)	18 (8.2)
6 (150)	15⅝ (397)	8⅞ (226)	2 3/16 (56)	1¼ (32)	6⅛ (156)	3⅝ (92)	5¾ (146)	8⅜ (213)	9½ (241)	-	8	3/4-10UNC	3/4 (19)	1/2 (13)	2¾ (70)	13/32 (10)	-	31 (14.1)	20 (9.1)
8 (200)	18⅞ (480)	10¼ (260)	2⅜ (61)	1¾ (44)	8 (203)	4½ (114)	7⅝ (194)	10 9/16 (268)	11¾ (298)	-	8	3/4-10UNC	7/8 (22)	5/8 (16)	4 (102)	15/32 (12)	-	49 (22.2)	32 (14.5)
10 (250)	21¼ (540)	11½ (292)	2 9/16 (66)	1¾ (44)	9⅞ (251)	4½ (114)	9½ (241)	12 13/16 (325)	14¼ (362)	-	12	7/8-9UNC	1⅛ (29)	13/16 (21)	4 (102)	15/32 (12)	-	72 (32.7)	42 (19)
12 (300)	24 9/16 (624)	13¼ (337)	3 (77)	1¾ (44)	11⅞ (301)	5½ (140)	11½ (292)	15⅞ (403)	17 (432)	-	12	7/8-9UNC	1¼ (32)	-	4 (102)	15/32 (12)	1/4 x 1	105 (47.6)	70 (31.7)
14 (350)	26¾ (679)	14½ (368)	3 (76)	1¾ (44)	13⅛ (334)	5½ (140)	12 13/16 (325)	17 3/16 (437)	18¾ (476)	1 (27)	12	1-8UNC	1¼ (32)	-	4 (102)	15/32 (12)	1/4 x 1	155 (70.3)	95 (43.1)
16 (400)	29 15/16 (760)	15¾ (400)	3 13/32 (87)	2 (51)	15⅜ (391)	7¾ (197)	15 (381)	19 7/32 (488)	21¼ (540)	1 (27)	16	1-8UNC	1 5/16 (33)	-	5½ (140)	11/16 (18)	1/32 x 1 9/16	195 (88.4)	117 (53.1)
18 (450)	31 9/16 (802)	16⅝ (422)	4 5/32 (106)	2 (51)	17⅜ (441)	7¾ (197)	16⅞ (428)	21 7/32 (539)	22¾ (578)	1¼ (32)	16	1⅛-7UNC	1½ (38)	-	5½ (140)	11/16 (18)	3/8 x 1 13/16	230 (104)	165 (74.8)
20 (500)	35⅔ (906)	18⅞ (480)	5 3/16 (132)	2½ (64)	19⅜ (492)	7¾ (197)	18 11/16 (475)	23⅜ (594)	25 (635)	1¼ (32)	20	1⅛-7UNC	1⅝ (41)	-	5½ (140)	11/16 (18)	3/8 x 1 13/16	396 (180)	275 (125)
24 (600)	43 (1091)	22⅛ (562)	6 (152)	2¾ (70)	23 5/16 (592)	10⅞ (276)	22 9/16 (574)	32⅛ (816)	29½ (749)	1⅜ (35)	20	1¼-7UNC	2 (51)	-	6½ (165)	7/8 (23)	1/2 x 2⅜	610 (277)	440 (200)

Note: Dimensions are subject to change. Consult factory for certified drawings when required.
All dimensions and weights are with bare shaft. Add dimensions and weights of operators when required.
Valves are designed for installation between ASME B16.1 Class 125 and ASME B16.5 Class 150 flanges.
Gaskets are not required and should not be used.
1. Dimension C is the installed dimension. Approximately 1/8" wider when relaxed.
2. Dimension K is the untapped guide hole diameter on wafer body style only.
Four holes total - two on top and two on bottom. Sizes 14"-24" only, smaller sizes have no guide holes.
3 .Dimension M and Quantity L refer to lug body style tapped holes only
4 .Weights are with bare shaft. Add weights of operators when required.

BF SERIES

30" to 48" Double Flanged Butterfly Valves



DIMENSIONS inches (mm) and WEIGHTS pounds (kg)

Size	Valve													Pad Mounting				Weight[5]
	A	B	C[1]	D	E	F	G	H	I	J	K[2]	L[3]	M[4]	N	Q	R	S	Double Flange
30 (750)	50 9/16 (1284)	26 (660)	6 9/16 (167)	2 5/8 (67)	28 9/16 (725)	11 13/16 (300)	22 3/4 (705)	31 5/16 (795)	2 1/8 (54)	36 (914)	1 3/8 (35)	28	1 1/4-7UNC-2B	2 1/2 (63)	10 (254)	23/32 (18)	23/32 x 2 1/2	1067 (480)
36 (900)	58 1/2 (1487)	28 3/8 (721)	8 (203)	4 5/8 (118)	33 1/8 (842)	11 13/16 (300)	32 (813)	37 5/16 (974)	2 3/8 (60)	42 3/4 (1086)	1 5/8 (41)	32	1 1/2-6UNC-2B	2 15/16 (75)	10 (254)	23/32 (18)	13/16 x 3 15/16	1618 (728)
42 (1050)	70 1/4 (1785)	33 3/4 (857)	9 7/8 (251)	6 (150)	39 5/16 (998)	11 13/16 (300)	38 (965)	44 1/4 (1124)	2 5/8 (67)	49 1/2 (1257)	1 5/8 (41)	36	1 1/2-6UNC-2B	3 3/4 (95)	10 (254)	23/32 (18)	1 x 5 1/2	2889 (1300)
48 (1200)	76 15/16 (1954)	37 (940)	10 7/8 (276)	6 (150)	44 3/8 (1127)	13 3/4 (349)	42 15/16 (1090)	49 3/4 (1264)	2 3/4 (70)	56 (1422)	1 5/8 (41)	44	1 1/2-6UNC-2B	4 1/8 (105)	11 3/4 (298)	7/8 (22)	1/8 x 5 1/2	3054 (1374)

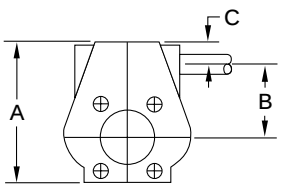
Note: Dimensions shown are subject to change. Consult factory for certified drawings when required.
All dimensions and weights are with bare shaft. Add dimensions and weights of operators when required.
Valves are designed for installation between ASME B16.1 Class 125 and ASME B16.47 Series A Class 150 flanges.
Gaskets are not required and should not be used.
1. Dimension C is the installed dimension. Approximately 3/8" wider when relaxed.
2. Dimension K refers the untapped hole diameters on all holes except the two top and two bottom tapped holes.
3. Quantity L is the total number of bolt holes including four tapped holes and the remainder untapped holes.
4. Dimension M is the tap hole size for the two top and two bottom holes.
5. Weights are with bare shaft. Add weights of operators when required.

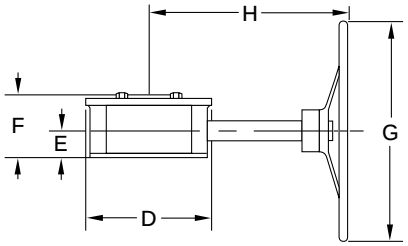
Cv VALUES (GPM @ 1 PSID)

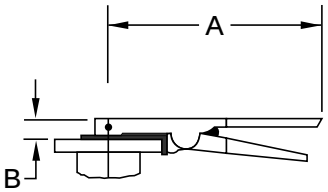
Size (Inches)	Disc Position (Degrees)								
	10	20	30	40	50	60	70	80	90/100
2	0.06	3	7	16	27	44	70	105	115
2 1/2	0.1	6	12	25	45	75	119	178	196
3	0.2	9	18	39	70	116	183	275	302
4	0.3	17	36	78	39	230	364	546	600
5	0.5	29	61	133	237	392	620	930	1022
6	0.8	45	95	205	366	605	958	1437	1579
8	2	89	188	408	727	1202	1903	2854	3136
10	3	151	320	694	1237	2047	3240	4859	5340
12	4	234	495	1072	1911	3162	5005	7507	8250
14	6	338	715	1549	2761	4568	7230	10844	11917
16	8	464	983	2130	3797	6282	9942	14913	16388
18	11	615	1302	2822	5028	8320	13168	19752	21705
20	14	791	1674	3628	6465	10698	16931	25396	27908
24	22	1222	2587	5605	9989	16528	26157	39236	43116
30	35	1928	4082	8844	14526	22216	35033	52550	58121
36	47	2606	5517	11953	20788	33491	52546	78531	86375
42	67	3700	7832	16969	31971	53285	85256	124605	135240
48	85	4694	9937	21530	43684	72807	114411	165376	176640

BF SERIES - MANUAL ACTUATOR GEAR AND LEVER

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)







Gear Size	Ratio	A	B	C	D	E	F	G	H	Weight
2 - 6 (50 - 150)	24:1	5 (127)	1 11/16 (45)	1 1/8 (28)	4 1/8 (105)	1 5/8 (41)	3 (80)	6 (150)	7 5/8 (193)	11 (5.2)
8 - 10 (100-300)	30:1	7 (178)	2 5/8 (63)	1 5/16 (34)	6 (150)	1 13/16 (46)	3 5/16 (86)	12 (300)	12 1/2 (350)	29 (13.1)
12 - 14 (300-350)	50:1	7 13/16 (198)	3 (80)	1 1/2 (38)	6 5/8 (162)	2 (51)	3 1/2 (83)	12 (300)	12 1/2 (347)	33 (15)
16 - 20 (500)	560:1	CONSULT FACTORY				4 15/16 (126)	7 3/16 (182)	11 13/16 (300)	11 (278)	125 (58.9)
24 (600)	640:1	CONSULT FACTORY				5 3/4 (146)	8 (202)	11 13/16 (300)	12 (304)	160 (72.4)

Note: Dimensions are subject to change.

Consult factory for certified drawings when required. Gear shown above with standard handwheel. Chainwheel option available - contact factory for dimensions and weights.

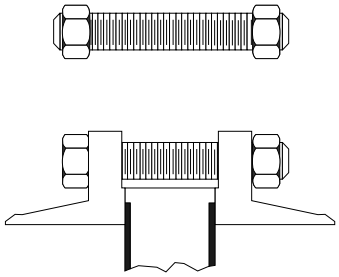
Lever Size	A	B	Weight
2 - 6 (50 - 150)	10 5/8 (252)	1 1/4 (24)	2 (.9)
8 (100)	14 3/16 (359)	1 3/4 (36)	4 (1.95)

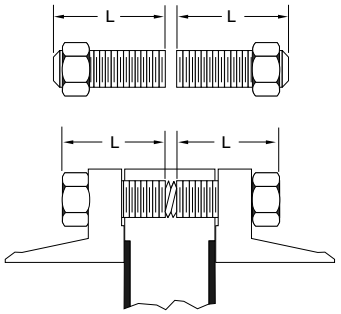
Note: Dimensions are subject to change. Consult factory for certified drawings when required.

It is recommended that levers be used through 8" valve size for liquid or rated pressure service. 10"-12" valves with levers should only be used on gas and low pressure applications. 10 Position or Infinite Position levers available. Dimensions are for both options.

Pneumatic Actuators (PA and PAS) models and other electronic assessories available to be mounted – contact factory

Electric Actuators available to be mounted – contact factory





WAFER STYLE - RECOMMENDED FLANGE BOLT LENGTHS inches

Valve Size	Qty.	Bolt Size	Length of Fasteners	
			Bolts	Threaded Studs
2	4	5/8-UNC	4	4 3/4
2 1/2	4	5/8-UNC	4 1/4	5 1/4
3	4	5/8-UNC	4 1/2	5 1/4
4	8	5/8-UNC	4 3/4	5 1/2
5	8	3/4-UNC	5	6
6	8	3/4-UNC	5 1/4	6
8	8	3/4-UNC	5 3/4	6 1/2
10	12	7/8-UNC	6	7
12	12	7/8-UNC	6 3/4	7 3/4
14	12	1-UNC	7	8 1/4
16	16	1-UNC	7 1/2	8 3/4
18	16	1 1/8-UNC	8 3/4	10
20	20	1 1/8-UNC	10	11
24	20	1 1/4-UNC	11 1/4	12 3/4

Note: Bolt lengths are based on ANSI class 150 weld neck flanges per ASME B16.5.

LUG STYLE - RECOMMENDED FLANGE BOLT LENGTHS inches

Valve Size	Qty.	Bolt Size	Length of Fasteners	
			Bolts	Threaded Studs
2	4	5/8-UNC	1 1/4	2 1/4
2 1/2	4	5/8-UNC	1 1/2	2 1/4
3	4	5/8-UNC	1 1/2	2 1/2
4	8	5/8-UNC	1 3/4	2 1/2
5	8	3/4-UNC	1 3/4	2 3/4
6	8	3/4-UNC	1 3/4	2 3/4
8	8	3/4-UNC	2	3
10	12	7/8-UNC	2 1/4	3 1/4
12	12	7/8-UNC	2 1/2	3 1/2
14	12	1-UNC	2 3/4	3 3/4
16	16	1-UNC	3	4
18	16	1 1/8-UNC	3 1/2	4 3/4
20	20	1 1/8-UNC	4	5 1/4
24	20	1 1/4-UNC	4 3/4	6

Note: Bolt lengths are based on ANSI class 150 weld neck flanges per ASME B16.5.

BUTTERFLY VALVES
INSTALLATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION CONSIDERATIONS

A. Piping and Flange Compatibilities - The BF Series butterfly valves have been designed to be installed between all types of ANSI 125/150 flanges, whether flat-faced, raised-faced, weld-neck, etc. They have been engineered so that the critical disc chord dimension at the full open position will clear the adjacent inside diameter of most types of piping, including Schedule 40, lined pipe, heavy wall, etc. If in question, one should compare the minimum pipe I.D. with the published disc cord dimension at full open.

B. Valve Location and Orientation in Piping.

1. Valve Location - Butterfly valves should be installed, if possible, a minimum of 6 pipe diameters from other line elements, i.e. elbows, pumps, valves, etc. Of course, 6 pipe diameters is not always practical, but it is important to achieve as much distance as possible. Where the butterfly valve is connected to a check valve or pump, use an expansion joint between them to ensure the disc does not interfere with the adjacent equipment.
2. Valve Orientation

   a) In general, we recommend the valve be installed with the stem in the vertical position and the actuator mounted vertically directly above the valve; however there are those applications as discussed below where the stem should be horizontal. The valve should not be installed upside down.

   b) For slurries, sludge, mine tailing, pulp stock, dry cement, and any media with sediment or particles, we recommend the valve be installed with the stem in the horizontal position with the lower disc edge opening in the downstream direction.

INSTALLATION PROCEDURE

A. General Installation

1. Make sure the pipeline and pipe flange faces are clean. Any foreign material, such as pipe scale, metal chips, welding slag, etc., can obstruct disc movement and/or damage the disc or seat.
2. The valve has a phenolic backed seat. As a result, no gaskets are required. This seat serves the function of a gasket.
3. Align the piping and then spread the pipe flanges a distance apart so as to permit the valve body to be easily dropped between the flanges without contacting the pipe flanges.
4. Check to see that the valve disc has been positioned to a partially open position, with the disc edge about 1/4" to 3/8" from the face of the seat (approximately 10° open).
5. Insert the valve between the flanges, taking care not to damage the seat faces. Always pick the valve up by the locating holes or by using a nylon sling on the neck of the body. Never pick up the valve by the actuator or operator mounted on top of the valve.
6. Place the valve between the flanges, center it, and then span the valve body with all flange bolts, but do not tighten the bolts. Carefully open the disc to the full open position, making sure the disc does not hit the adjacent pipe I.D. Systematically remove jack bolts on other flange spreaders and hand-tighten the flange bolts. Very slowly close the valve disc to ensure disc edge clearance from the adjacent pipe flange I.D. Open the disc to full open and tighten all flange bolts per specification. Repeat a full close to full open rotation of the disc to ensure proper clearances.

B. Installation with Flange Welding - When butterfly valves are to be installed between ANSI welding type flanges, care should be taken to abide by the following procedure to ensure no damage will occur to the seat:

1. Place the valve between the flanges with the flange bores and valve body bore aligned properly. The disc should be in the 10° open position.
2. Span the body with the bolts.
3. Take this assembly of flange-body-flange and align it properly to the pipe.
4. Tack weld the flanges to the pipe.
5. When tack welding is complete, remove the bolts and the valve from the pipe flanges and complete the welding of the flanges. Be sure to let the pipe and flanges cool before installing the valve.
6. NOTE: Never complete the welding process (after tacking) with the valve between pipe flanges. This causes severe seat damage due to heat transfer.

MAINTENANCE AND REPAIR

The many features of the BF Series minimize wear and maintenance requirements. No routine lubrication is required. If components require replacement, the valve may be removed from the line by placing the disc near the closed position, then supporting the valve and removing the flange bolts.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*

SERIES ASM

NEOPRENE/EPMD FLANGED SINGLE SPHERE CONNECTOR

Pressures to 225 PSIG (15.51 barg)
Temperatures to 230ºF (110ºC)

- **For connection pipes and equipment where flanged ends are preferred**
- **Flat faced flanged single sphere connectors**
- **Easy to install floating flanges allow variable pressure, temperature and movement**
- **Increased acoustic resistance, dampens hydraulic surge and shock**
- **Accommodates thermal movement and misalignment**
- **Four way greater movement provides high level of installation flexibility**
- **Precision molded synthetic rubber reinforced with nylon cord**
- **Horizontal or vertical mounting**

APPLICATIONS

- Process Industry
- Weak Acids
- Alkalies
- Compressed Air
- Pulp & Paper
- Oil & Gas
- Water & Waste
- Pump suction & discharge
- Sea water
- Chemical lines

MODELS

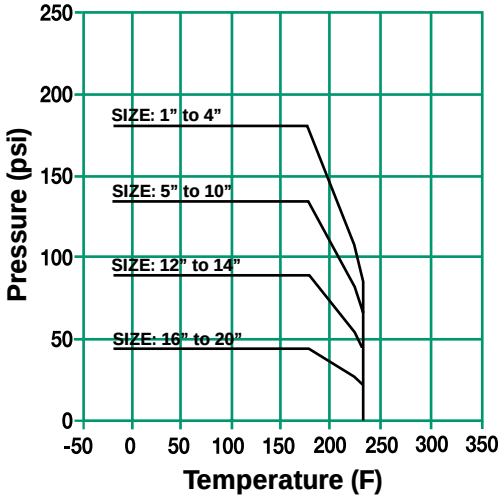
- ASM - Flanged Connection

OPTIONS

- Control Rods

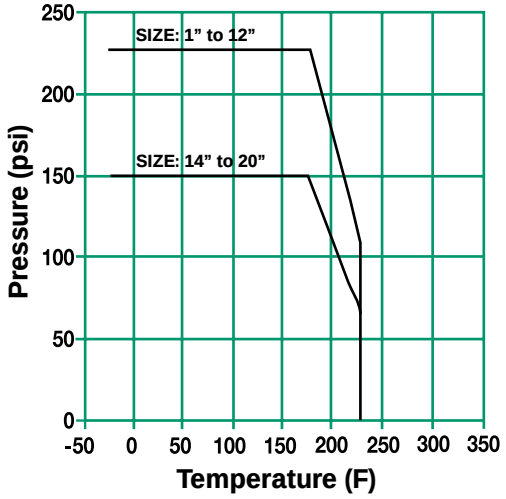
PRESSURE/TEMPERATURE RATINGS

WITHOUT CONTROL RODS



PRESSURE/TEMPERATURE RATINGS

WITH CONTROL RODS



Series ASM Ordering Code

	Inlet Size				Dash	Model		
	0	6	0	0	-	A	S	M
	1	2	3	4	5	6	7	8

Inlet Size* - Position 1 - 4

0100 -	1"	0600 -	6"
0125 -	1¼"	0800 -	8"
0150 -	1½"	1000 -	10"
0200 -	2"	1200 -	12"
0250 -	2½"	1400 -	14"
0300 -	3"	1600 -	16"
0400 -	4"	1800 -	18"
0500 -	5"	2000 -	20"

Dash - Position 5

Model - Position 6 -8
ASM - Single Sphere, FLG, CI, Neoprene

Part Numbers for Ordering Single Sphere Connector Control Rods

ASM	
Size	**Part Number**
1	0100-ASMROD
1¼	0125-ASMROD
1½	0150-ASMROD
2	0200-ASMROD
2½	0250-ASMROD
3	0300-ASMROD
4	0400-ASMROD
5	0500-ASMROD
6	0600-ASMROD
8	0800-ASMROD
10	1000-ASMROD
12	1200-ASMROD
14	1400-ASMROD
16	1600-ASMROD
18	1800-ASMROD
20	2000-ASMROD

Other sizes available. Consult factory.

SERIES ASM

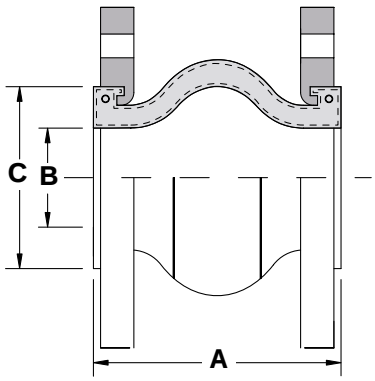
NEOPRENE/EPMD FLANGED SINGLE SPHERE CONNECTOR

SPECIFICATION

Single Sphere Connector body material shall be neoprene cover and tube elastomer with nylon cord fabric reinforcement. The single sphere connector will have Carbon Steel, Zinc Plated flanges and a hard steel wire frame. The twin sphere connector shall be SSI ASM Series.

MATERIALS OF CONSTRUCTION

Body .....Neoprene
Reinforcing Fabric .....Nylon Cord Fabric
Wire .....Hard Steel Wire
Floating Flanges .....Carbon Steel Zinc Plated RST 37-2



Connections: 1" to 20" Flanged

Burst Pressure 850 PSIG

DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	A	Allowable Movement				B	C	Weight	
		Axial Compression	Axial Extension	Lateral Deflection	Angular Deflection			Connector Only	With Rods
1 (25)	6 (152)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	1 17/32 (39)	2 15/16 (75)	5 (2.3)	10 (4.7)
1¼ (32)	6 (152)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 15)	1 17/32 (39)	2 15/16 (75)	7 (3.2)	10 (4.7)
1½ (38)	6 (152)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	1 17/32 (39)	2 15/16 (75)	8 (3.6)	12 (5.4)
2 (51)	6 (152)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	1 29/32 (48)	3⅜ (86)	11 (5.0)	15 (7.0)
2½ (64)	6 (152)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	2 15/32 (63)	4⅛ (105)	11 (5.0)	19 (8.7)
3 (76)	6 (152)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	2⅞ (73)	4 21/32 (118)	13 (5.9)	23 (10.4)
4 (102)	6⅛ (156)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	3 15/16 100)	5 27/32 (148)	17 (7.7)	25 (11.4)
5 (127)	6⅛ (156)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	5 (127)	7 1/64 (178)	21 (9.5)	30 (13.6)
6 (152)	6⅛ (156)	3/4 (19)	15/32 (12)	9/16 (14)	19/32 (15)	5 25/32 (147)	8 3/32 (210)	25 (11.3)	37 (16.8)
8 (203)	6⅛ (156)	1 (25)	15/32 (12)	7/8 (22)	19/32 (15)	7 27/32 (199)	10¼ (260)	37 (16.8)	53 (24.0)
10 (254)	8 (203)	1 (25)	5/8 (16)	7/8 (22)	19/32 (15)	9¾ (248)	12 11/16 (322)	58 (26.3)	82 (37.2)
12 (305)	8 (203)	1 (25)	5/8 (16)	7/8 (22)	19/32 (15)	11 21/32 (296)	14 3/16 (370)	80 (36.3)	109 (49.4)
14 (356)	8 (203)	1 (25)	5/8 (16)	7/8 (22)	19/32 (15)	13 7/32 (336)	16¼ (413)	101 (45.8)	138 (62.6)
16 (406)	8 (203)	1 (25)	5/8 (16)	7/8 (22)	19/32 (15)	15 5/32 (385)	18 3/32 (464)	127 (57.6)	176 (79.8)
18 (457)	8 (203)	1 (25)	5/8 (16)	7/8 (22)	19/32 (15)	17 5/16 (440)	20⅝ (524)	136 (61.7)	183 (83.0)
20 (508)	8 (203)	1 (25)	5/8 (16)	7/8 (22)	19/32 (15)	19 3/32 (490)	22 9/16 (573)	158 (71.7)	212 (96.1)

Other sizes available. Consult factory.

Dimensions are subject to change. Consult factory for certified drawings when required.

Installation Note:
For correct Installation & Maintenance instructions *see page 244*

SERIES ATM

NEOPRENE FLANGED TWIN SPHERE CONNECTOR

Pressures to 225 PSIG (15.51 barg)
Temperatures to 230ºF (110ºC)

- **For connection pipes and equipment where flanged ends are preferred**
- **Flat faced flanged double sphere connectors**
- **Easy to install floating flanges allow variable pressure, temperature and movement**
- **Increased acoustic resistance, dampens hydraulic surge and shock**
- **Accommodates thermal movement and misalignment**
- **Four way greater movement provides high level of installation flexibility.**
- **Precision molded synthetic rubber reinforced with nylon cord.**
- **Horizontal or vertical mounting**

APPLICATIONS

- Process Industry
- Weak Acids
- Alkalies
- Compressed Air
- Pulp & Paper
- Oil & Gas
- Water & Waste
- Pump suction & discharge
- Sea water
- Chemical lines

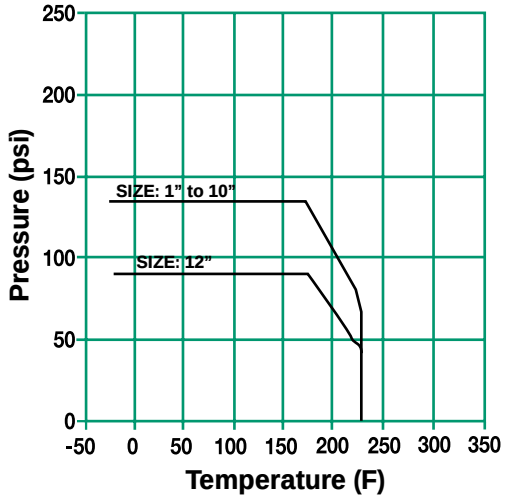
MODELS

- ATM - Flanged Connection

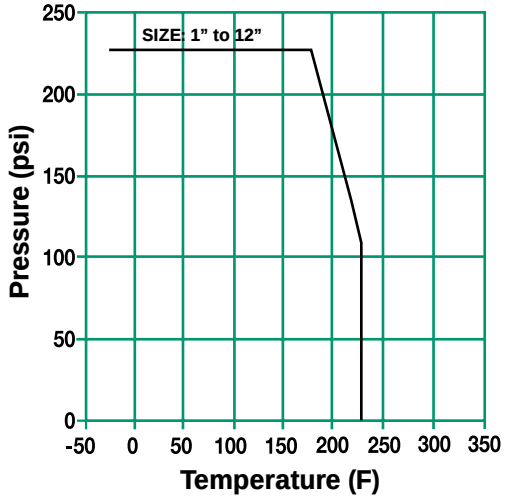
OPTIONS

- Control Rods

PRESSURE/TEMPERATURE RATINGS
WITHOUT CONTROL RODS



PRESSURE/TEMPERATURE RATINGS
WITH CONTROL RODS



Series ATM Ordering Code

Inlet Size				Dash	Model		
0	6	0	0	-	A	T	M
1	2	3	4	5	6	7	8

Inlet Size* - Position 1 - 4

0100 -	1"	0400 -	4"
0125 -	1¼"	0500 -	5"
0150 -	1½"	0600 -	6"
0200 -	2"	0800 -	8"
0250 -	2½"	1000 -	10"
0300 -	3"	1200 -	12"

Dash - Position 5

Model - Position 6 -8
ATM - Twin Sphere, FLG, CI, Neoprene

Part Numbers for Twin Sphere Connector Control Rods

ATM	
Size	**Part Number**
1	0100-ATMROD
1¼	0125-ATMROD
1½	0150-ATMROD
2	0200-ATMROD
2½	0250-ATMROD
3	0300-ATMROD
4	0400-ATMROD
5	0500-ATMROD
6	0600-ATMROD
8	0800-ATMROD
10	1000-ATMROD
12	1200-ATMROD

Other sizes available. Consult factory.

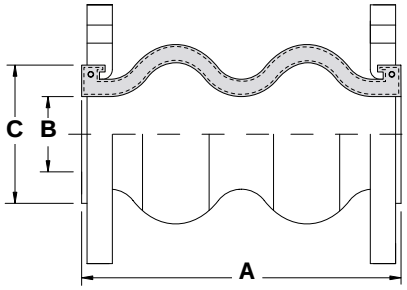
SERIES ATM
NEOPRENE FLANGED TWIN SPHERE CONNECTOR

SPECIFICATION

Twin Sphere Connector body material shall be neoprene cover and tube elastomer with nylon fabric reinforcement. The twin sphere connector will have Carbon Steel, Zinc Plated flanges and a steel wire frame.The twin sphere connector shall be SSI ATM Series.

MATERIALS OF CONSTRUCTION

Body .....Neoprene
Reinforcing Fabric .....Nylon Cord Fabric
Wire .....Hard Steel Wire
Floating Flanges .....Mild Steel Zinc Plated RST 37-2



Connections: 1" to 12"

Burst Pressure 854 PSIG

DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	A	Allowable Movement				B	C	Weight	
		Axial Compression	Axial Extension	Lateral Deflection	Angular Deflection			Connector Only	With Rods
1 (25)	4¾ (121)	2 3/32 (53)	1 1/16 (27)	1 25/32 (45)	1 19/32 (40)	1 17/32 (39)	2 61/64 (75)	5 (2.3)	10.6 (4.8)
1¼ (32)	7 (178)	2 3/32 (53)	1 1/16 (27)	1 25/32 (45)	1 19/32 (40)	1 17/32 (39)	2 61/64 (75)	5 (2.3)	10.6 (4.8)
1½ (38)	7 (178)	2 3/32 (53)	1 1/16 (27)	1 25/32 (45)	1 19/32 (40)	1 17/32 (39)	2 61/64 (75)	5 (2.3)	12.1 (5.5)
2 (51)	7 (178)	2 3/32 (53)	1 1/16 (27)	1 25/32 (45)	1 19/32 (40)	1 29/32 (48)	3 11/32 (85)	8 (3.6)	15.9 (7.2)
2½ (64)	7 (178)	2 3/32 (53)	1 1/16 (27)	1 25/32 (45)	1 19/32 (40)	2 15/32 (63)	4⅛ (105)	10 (4.5)	19.6 (8.9)
3 (76)	7 (178)	2 3/32 (53)	1 1/16 (27)	1 25/32 (45)	1 19/32 (40)	2⅞ (73)	4 21/32 (118)	13 (5.9)	23.1 (10.5)
4 (102)	9 (229)	2 3/32 (53)	1 1/32 (31)	1 19/32 (40)	1⅜ (35)	3 15/16 (100)	5 27/32 (148)	19 (8.6)	26.7 (12.1)
5 (127)	9 (229)	2 3/32 (53)	1 1/32 (31)	1 19/32 (40)	1⅜ (35)	5 (127)	7 (178)	22 (10.0)	31.5 (14.3)
6 (152)	9 (229)	2 9/16 (65)	1 1/32 (31)	1 19/32 (40)	1⅜ (35)	5 25/32 (147)	8 9/32 (210)	27 (12.2)	39.2 (17.8)
8 (203	13 330)	2 9/16 (65)	1 3/16 (30)	1⅜ (35)	1 3/16 (30)	7 27/32 (199)	10¼ (260)	42 (19.0)	59.5 (27.0)
10 (254)	13 (330)	2 9/16 (65)	1 3/16 (30)	1⅜ (35)	1 3/16 (30)	9¾ (248)	12 11/16 (322)	58 (26.3)	88 (39.9)
12 (305)	13 (330)	2 9/16 (65)	1 3/16 (30)	1⅜ (35)	1 3/16 (30)	11 21/32 (296)	14 9/16 (370)	84 (38.1)	117.9 (53.5)

Other sizes available. Consult factory.
Dimensions are subject to change. Consult factory for certified drawings when required.

Installation Note:
For correct Installation & Maintenance instructions *see page 244*

SERIES AUM

NEOPRENE NPT END CONNECTION DOUBLE SPHERE CONNECTORS

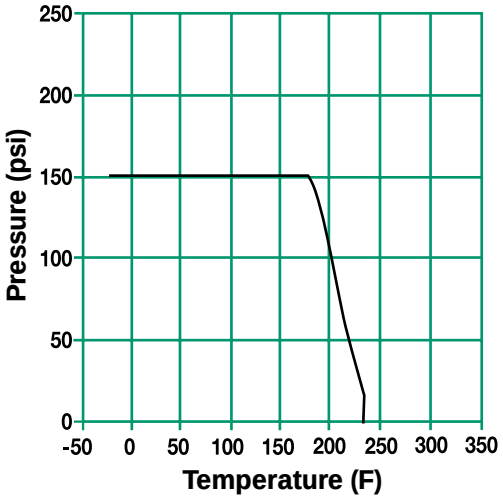
Pressures to 150 PSIG (10.34 barg)
Temperatures to 230ºF (110ºC)

APPLICATIONS

- Process Industry
- Weak Acids
- Alkalies
- Compressed Air
- Pulp & Paper
- Oil & Gas
- Water & Waste
- Pump suction & discharge
- Chemical lines

- **For connection pipes and equipment where threaded union ends are preferred**
- **Accommodates thermal movement and misalignment**
- **Four way greater movements provide high level of installation flexibility.**
- **Precision molded of synthetic rubber reinforced with nylon cord.**
- **Excellent ability to absorb vibrations, sounds and withstand high pressures.**
- **Easy to install.**

PRESSURE/TEMPERATURE RATINGS



MODELS

- AUM – NPT Connection

APPLICABLE CODES

- ASME/ANSI B1-20.1

Request quote

Series AUM Ordering Code

Inlet Size				Dash	Model		
0	2	0	0	-	A	U	M
1	2	3	4	5	6	7	8

Inlet Size* - Position 1 - 4
0050 - 1/2"
0075 - 3/4"
0100 - 1"
0125 - 1¼"
0150 - 1½"
0200 - 2"

Dash - Position 5

Model - Position 6 -8
AUM - Twin Sphere, NPT, CI, Neoprene

SERIES AUM

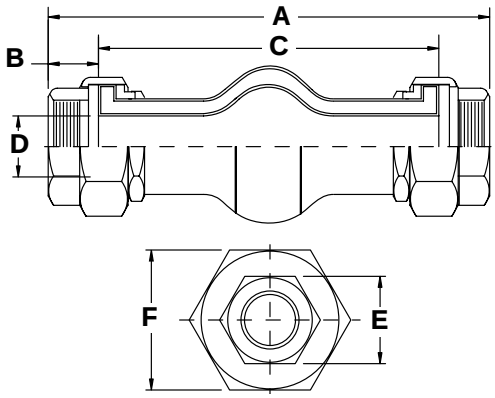
NEOPRENE NPT END CONNECTION DOUBLE SPHERE CONNECTORS

SPECIFICATION

Union End Connector body material shall be neoprene cover and tube elastomer with nylon cord fabric reinforcement. The twin sphere connector will have Cast Ductile Iron threaded union ends. The twin sphere connector shall be SSI AUM Series.

MATERIALS OF CONSTRUCTION

Body .....Neoprene
Reinforcing Fabric .....Nylon Cord Fabric
Wire .....Hard Steel Wire
Threaded Union Ends .....Cast Ductile Iron



Connections: 1/2" to 2"

Burst Pressure 570 PSIG

DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	Installed Length				Travel		Allowable Movement			Dimensions						Weight
	Neutral Length	Minimum Installed	Maximum Installed	Recommended Pipe Opening	Total Compressed	Total Extended	Axial Compression	Lateral Deflection	Angular Deflections	"B" Length of Fittings	"C" Length of Rubber	"D" Connector	Inner Diameter	"E" Width of Fitting Hex Head	"F" Width of Union Hex Head	
1/2 (13)	8 (203)	7 11/32 (187)	8 1/8 (206)	7 5/16 (186)	7 1/8 (181)	8 7/32 (209)	7/8 (22)	1/4 (6)	7/8 (22)	32	29/32 (23)	6 3/32 (155)	17/32 (13)	1 1/16 (27)	1 11/16 (43)	1 (0.5)
3/4 (19)	8 (203)	7 11/32 (187)	8 1/8 (206)	6 7/8 (175)	7 1/8 (181)	8 7/32 (209)	7/8 (22)	1/4 (6)	7/8 (22)	32	1 (25)	5 29/32 (150)	3/4 (19)	1 11/32 (34)	1 31/32 (50)	1 (0.5)
1 (25)	8 (203)	7 11/32 (187)	8 1/8 (206)	6 5/8 (168)	7 1/8 (181)	8 7/32 (209)	7/8 (22)	1/4 (6)	7/8 (22)	25	1 3/16 (30)	5 17/32 (140)	1 (25)	1 5/8 (41)	2 1/2 (64)	2 (0.9)
1 1/4 (32)	8 (203)	7 11/32 (187)	8 1/8 (206)	6 5/8 (168)	7 1/8 (181)	8 7/32 (209)	7/8 (22)	1/4 (6)	7/8 (22)	25	1 3/16 (30)	5 17/32 (140)	1 1/4 (32)	1 31/32 (50)	2 27/32 (72)	3 (1.5)
1 1/2 (38)	8 (203)	7 11/32 (187)	8 1/8 (206)	6 5/8 (168)	7 1/8 (181)	8 7/32 (209)	7/8 (22)	1/4 (6)	7/8 (22)	20	1 3/8 (35)	5 1/8 (130)	1 17/32 (39)	2 1/4 (57)	3 23/32 (94)	4 (2.0)
2 (51)	8 (203)	7 11/32 (187)	8 1/8 (206)	6 5/8 (168)	7 1/8 (181)	8 7/32 (209)	7/8 (22)	1/4 (6)	7/8 (22)	15	2 (40)	4 23/32 (120)	1 27/32 (47)	2 3/4 (70)	3 23/32 (94)	6 (2.6)

Dimensions are subject to change. Consult factory for certified drawings when required.

Installation Note:
For correct Installation & Maintenance instructions *see page 244*

CONNECTORS (EXPANSION JOINTS)
INSTALLATION AND MAINTENANCE INSTRUCTIONS

TYPICAL INSTALLATION

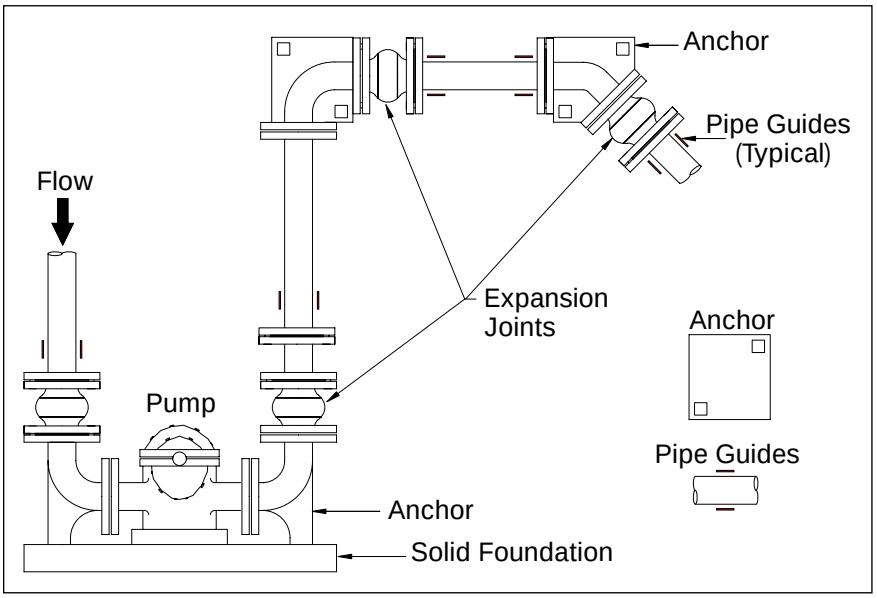
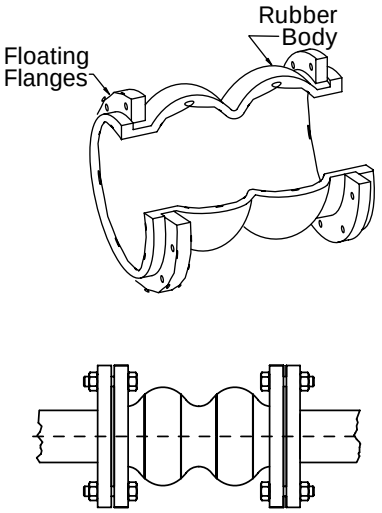


Figure 1. Typical piping layout utilizing Expansion Joints and the proper use of anchors in branch locations.



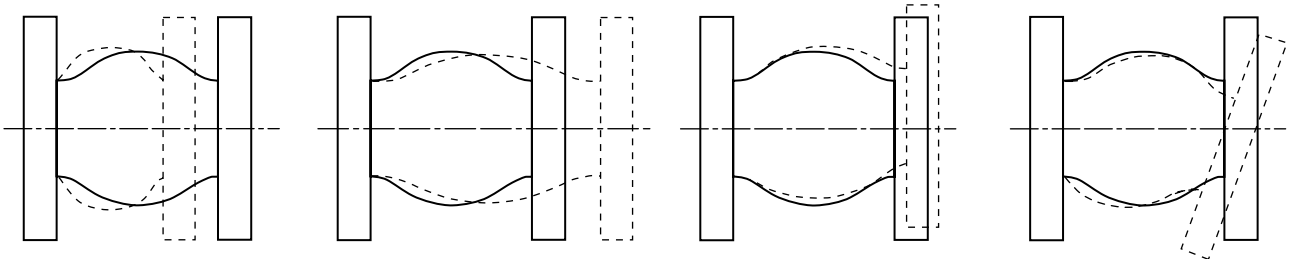
Series ATM Twin Sphere
Expansion Joint

WARNING

Expansion joints may operate in pipelines or equipment carrying fluids and or gases at elevated temperatures and pressures. Precaution should be taken to make sure these parts are installed correctly and inspected regularly. Caution should be taken to protect personnel in the event of leakage of fluids or gases.

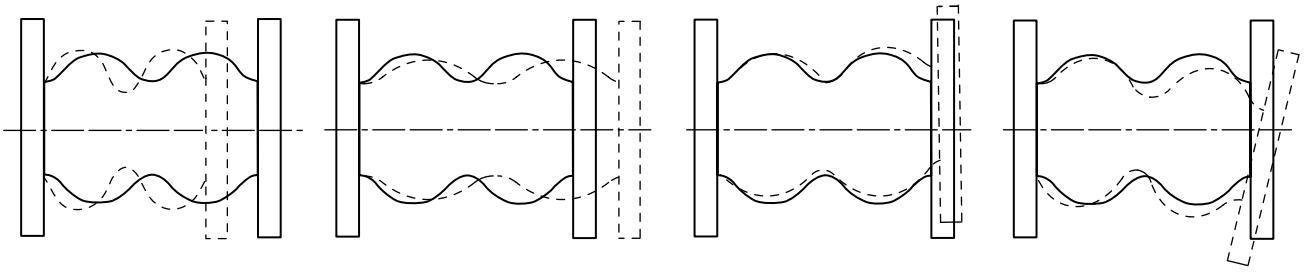
ALLOWABLE MOVEMENT

SERIES ASM



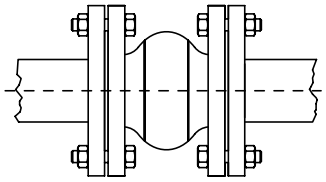
AXIAL COMPRESSION *AXIAL EXTENSION* *TRANSVERSE MOVEMENT* *ANGULAR DEFLECTION*

SERIES ATM

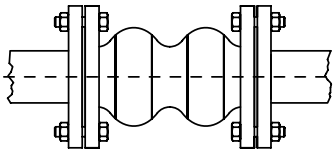


AXIAL COMPRESSION *AXIAL EXTENSION* *TRANSVERSE MOVEMENT* *ANGULAR DEFLECTION*

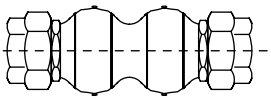
CONNECTORS (EXPANSION JOINTS)
INSTALLATION AND MAINTENANCE INSTRUCTIONS



Series ASM Single Sphere Connector



Series ATM Single Sphere Connector



Series AUM Connector

CONNECTOR (EXPANSION JOINT) MOUNTING INSTRUCTIONS

- Make sure that the expansion joint rating, for temperature, pressure, vacuum, movement and elastomeric materials, matches the systems requirements.
- Anchors are required whenever a piping system changes direction. Expansion joints should be locates as close as possible to anchor points (See Figure 1).
- For piping that is not anchored, control rods must be used to prevent excessive movement from occurring (See Installation & Maintenance Instructions Control Rod For Expansion Joints).
- Expansion joints are not designed to make up for piping misalignment errors. Piping misalignments of more than 1/8", in any direction, will reduce the rated movement, stress the materials and reduce service life of the expansion joint.
- Before installation, check the interior, exterior and flange faces of the expansion joint for cuts and gouges.
- Piping must be supported so that expansion joint does not carry any weight. Make sure that the rubber expansion joints do not support compression or extension due to the weight of the upstream or downstream pipe.
- When installing the rubber expansion joint, make sure that the connector not be twisted in any case (especially for Series AUM).
- To determine end thrust, multiply thrust factor by PSIG.
- Vacuum rating is based on installed length, without external load. Product should not be installed "extended" on vacuum applications.
- Install at the face to face dimension shown on the drawing. Make sure the mating flanges are clean and are standard steel flat faced or no more than the 1/16" raised face type (See Figure 2).
- Joints must be pre-compressed approximately 1/8" to 3/16" in order to obtain a correct installed fact-to-face dimension.
- Floating metallic flanges freely rotate on the bellow to compensate for mating flange misalignment.
- Install the expansion joint against the mating pipe flanges and install bolts so that the bolt head is against the expansion joint flange.
- Flange-to-flange dimensions of the expansion joint must match the breech opening.
- Make sure mating flanges are clean and are FLAT FACED TYPE. When attaching beaded end flange expansion joints to raised face flanges, a ring gasket is required to prevent metal flange faces from cutting rubber bead during installation.
- Never install expansion joints next to wafer type check or butterfly valves. Serious damage to the rubber flange bead can result due to lack of flange mating surface and/or bolt connection.
- Do no use gaskets. Care must be taken when pushing the joint into the breech between the mating flanges so as not to roll the leading edge of the joint out of its flange groove.
- Do not bolt directly to another component with an elastomer face or to a specialty flange such as the Victualic® type without inserting a solid full-face metallic gasket.
- Cross tighten the bolts. Minimum recommended flange bolt torque foot pounds for the following joint sizes are: 1" to 2" – 28.90ft-lbm 2-1/2" to 8" – 43.40 ft-lb., 10" to 20" – 57.90 ft-lb.
- Do not over tighten to the point where there is metal to metal contact between the joint flange and the mating flange. Never tighten an expansion joint to the point that there is metal-to-metal contact between the expansion joint flange and the mating flange. NOTE: Over torquing bolts can cause deformation of the rubber expansion joint flanges, this resulting in possible premature failure.

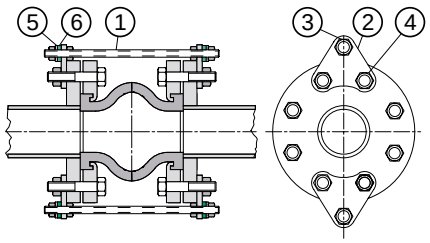
NOTE: Due to rubber's tendency to relax after initial tightening, it is necessary to retighten the flange bolts, typically within 1 week of initial installation.

- If bolt threads are facing the joint, trim the length of the bolts so they do not extend past the nut more than 1/8" to avoid contact with the joint.
- Insulation over expansion joints is not recommended. However, if insulation is required, it should be a design that is easy to remove to allow access to the flanges.
- Store expansion joints face down, in a cool dry location on a wooden pallet.
- Check the tightness of retaining rings two or three weeks after installation and re-tighten as necessary.

CONTROL RODS FOR EXPANSION JOINTS

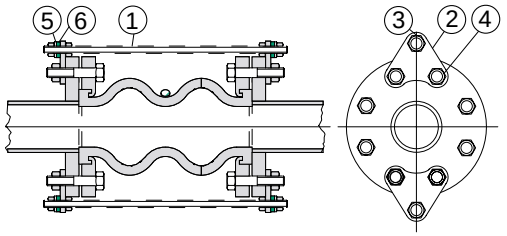
INSTALLATION AND MAINTENANCE INSTRUCTIONS

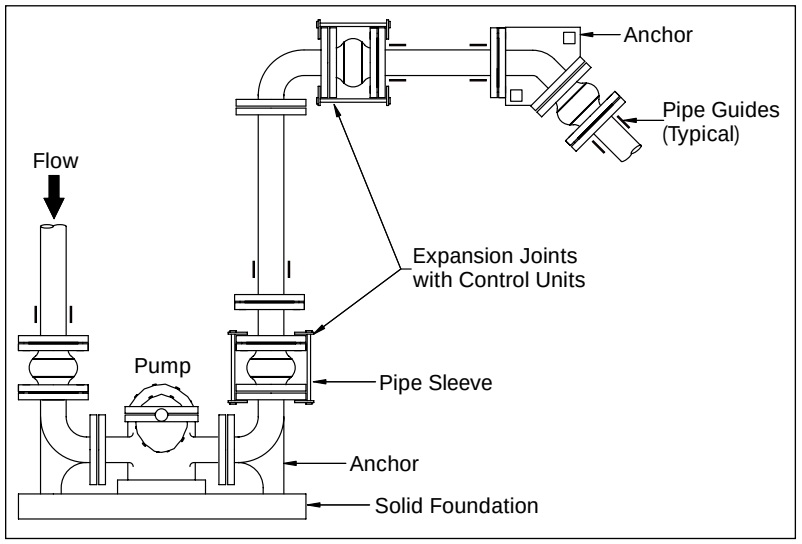
Series ASM With Control Rods

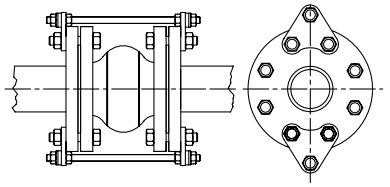


1. ROD
2. PLATE
3. NUT
4. HEAD NUT
5. STEEL WASHER
6. RUBBER WASHER

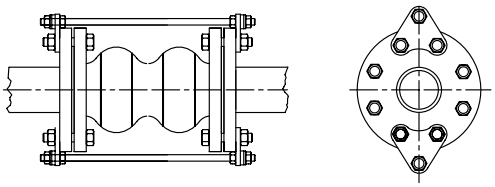
Series ATM With Control Rods







Series ASM with Control Rods



Series ATM with Control Rods

Figure 1. Typical piping layout showing the use of Control Rods with Expansion Joints, when proper system anchoring is limited.

WARNING

Expansion joints may operate in pipelines or equipment carrying fluids and or gases at elevated temperatures and pressures. Normal precautions should be taken to make sure these parts are installed correctly and inspected regularly. Caution should be taken to protect personnel in the event of leakage of fluids or gasses.

FUNCTION

Expansion joints are not designed to withstand excessive end thrusts, wide temperature fluctuations or high pressure changes (i.e. starting a pump). When pressures or temperatures exceed the unit's design capability, premature failure of the expansion joint will occur. To prevent excessive movement, Expansion joints must be installed in an anchored system, between two fixed anchor points in a piping system, to control expansion or contraction of the line. Piping anchors must be capable of withstanding the line thrust generated by internal pressure or wide temperature fluctuations. The failure of these anchors can cause excessive pipeline motion. When proper anchoring cannot be provided, control rods are required (See Figure 1).

A control rod assembly is a set of two or more control rods placed across an expansion joint, from flange to flange, to minimize or prevent damage to the expansion joint caused by excessive extension, compression or motion of a pipeline and to absorb static pressure thrust. Control rods allow specified expansion joint movement (axial extension) and pipe contraction (axial compression) which will then preclude the possibility of motion that would over-elongate and damage the joint. The control rod assembly can also be set at the maximum allowable expansion and or contraction of the expansion joint. Control rods are not required in systems that are anchored. However, when used in this manner, control units are an additional safety factor and minimizes possible damage to adjacent equipment. Control rods are always required in unanchored systems.

CONTROL RODS FOR EXPANSION JOINTS
INSTALLATION AND MAINTENANCE INSTRUCTIONS

CONTROL RODS MOUNTING INSTRUCTIONS

- Anchors are required whenever a piping system changes direction. Expansion joints should be located as close as possible to anchor points. If an anchoring system is not used, it is recommended that control rods be installed on the expansion join to prevent excessive movement from occurring due to pressure thrust in the line (See Figure 1).
- To determine end thrust, multiply thrust factor by operating pressure of system. This is the end thrust in PSIG.
- Vacuum rating is based on installed length, without external load. Product should not be installed “extended” on vacuum applications.
- Joints must be precompressed approximately 1/8” to 3/16” in order to obtain a correct installed face-to-face dimension. During installation, the precompression should not exceed 3/16” (5 mm).
- The alignment of the piping system should be adjusted and secured with fixation points as close as possible on each side of the expansion joint at a distance less than three times the pipe’s nominal diameter.
- These fixation points must be installed when mounting an expansion joint with control rods or an elbow pipe. If there is considerable distance between two fixation points, guiding points can be installed in order to support and guide the pipe (cf. installation scheme).
- Before installation, check the interior, exterior and flange faces of the expansion joint for cuts and gouges.
- When installing, make sure that the rubber expansion joints do not support compression or extension due to the weight of the upstream or downstream pipe.
- When installing the rubber expansion joint, make sure that the connector is not twisted (especially for Series AUM).
- Mounting order: (1) upstream pipe – anchor, (2) downstream pipe – anchor, (3) expansion joint.
- Verify that the upstream and downstream pipe alignment does not deviate more than 1/8" (3 mm) and that the expansion joint does not support heavy weight.
- To prevent damage to the expansion joint surface, verify that the surfaces, coming in contact with the expansion joint, are clean and without cutting edges (pipe).
- Avoid direct contact with the expansion joint rubber surface by inserting the bolts on the arch side of the joint.
- If welding is carried out within close range, cover or dismount the expansion joint.
- Do not paint or coat the joint with insulation.
- Store the joint in a flat position avoiding humidity and extreme temperatures.
- Bolt tightness should be checked daily within the first month after services and checked periodically

NOTES:

REFERENCE & PIPING DESIGN

Guide for the Selection, Installation and Maintenance of Pipeline Strainers

Prepared by PIPELINE STRAINER SECTION FLUID CONTROLS INSTITUTE, INC.
FCI 89-1-1992

CONTENTS

PREFACE

Experience has proven the need for strainers in the protection of pumps, compressors, turbines, meters, automatic valves, sprinkler heads, burner nozzles, steam traps and other pipeline equipment

This guide has been established as a technical reference for project engineers and managers responsible for specifying and using pipeline strainers. While strainers remain a relatively low cost item, when specified properly, the protection they provide is invaluable. It is the intent of this guide to provide the background and information necessary to make knowledgeable and sound engineering decisions in the specification of pipeline strainers.

The Pipeline Strainer Section of the Fluid Controls Institute, Inc. acknowledges and appreciates the assistance of those people who have made the creation and updating of this technical resource possible.

Chapter 1

Definition
A pipeline strainer is a device which provides a means of mechanically removing solids from a flowing fluid by utilizing a perforated, mesh or wedge wire straining element. The most common range of strainer particle retention is 1 inch to 40 micron (.00156 inch).

Purpose
Strainers are employed in pipelines to protect downstream mechanical equipment such as condensers, heat exchangers, pumps, compressors, meters, spray nozzles, turbines, steam traps, etc. from the detrimental effect of sediment, rust, pipe scale or other extraneous debris.

Types of Strainers
Two frequently specified strainers are the “Y” strainer and the basket strainer. While there is primarily one type of “Y” strainer (Fig. 1A), there are several variations of basket strainers (Figs. 1B through 1E).

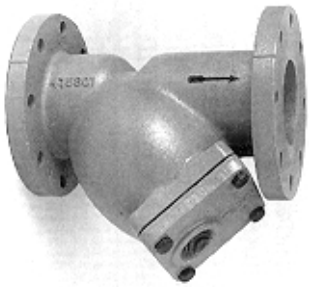


FIGURE 1A

FIGURE 1B

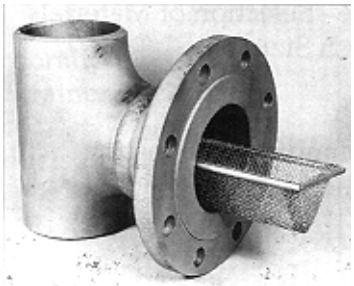


FIGURE 1C

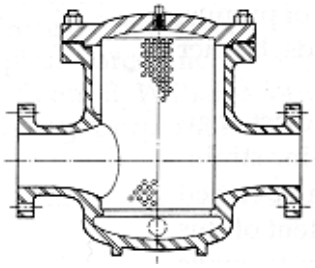


FIGURE 1D

FIGURE 1E

Vertical piping, frequently found at pump inlets, necessitates the use of a “Y” strainer or a tee type basket strainer. Most basket strainers are intended for horizontal or slightly inclined piping. Special attention must be given, however, to maintaining the position of the debris collection chamber and the drain (blowdown) connection in their lowest position (Fig. 2). A “Y” strainer in vertical piping must be placed with its screen in the downward position to trap the sediment in the debris collection chamber.

FIGURE 2

Tee type strainers, suction diffusers and several variations of basket strainers can also be used in a right angle flow application (Fig. 3).

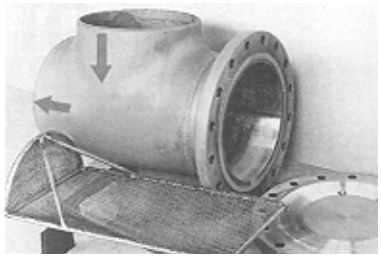


FIGURE 3

“Y” strainers and most variations of basket strainers can be self-cleaning. With the addition of a blowdown valve and some modification of the straining element of a basket strainer, the element can be flushed out by opening and closing the blowdown valve. This can be done without flow shut down or disassembling any piping.

In sizes above 4”, a single basket strainer will generally create less pressure drop than a “Y” type. Basket strainers are normally installed in a horizontal pipe with the cover over the basket at the top. Cleaning of the strainer is generally simple and no draining is required. Cover flanges for basket strainers are relatively easy to remove and servicing is simplified. Replacement of covers on “Y”-type strainers is facilitated by some manufacturers through the use of studs, rather than bolts, which help to align the cover during the replacement operations. Hinged covers and screen locking devices can also make servicing easier.

There seems to be a general misconception among engineers and contractors concerning “Y” strainers and basket strainers used in steam service. In many instances, basket and “Y” strainers will perform comparably in steam service. It is essential in ordering strainers for steam service that the manufacturer be so advised. As mentioned above, the housings may be furnished without a bottom, allowing the accumulated debris to be blown out by opening the blowdown valve (Fig. 4).

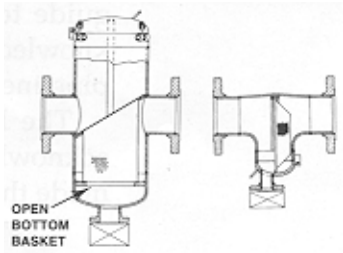


FIGURE 4

While there are some high pressure applications for basket strainers, (Fig. 5), due to the required thickness and subsequent high cost, basket strainers are not normally constructed for pressures above 1,500 psi. “Y” strainers, on the other hand, are readily available for working pressures up to 6,000 psi and higher. In addition to “Y” and basket types, other strainers are available such as duplex/twin, geometric, washdown/back-flushing, automatic self cleaning, plate or expanded cross section type, scraper, and magnetic screen types. Descriptions of these as well as miscellaneous options available with them, follow.

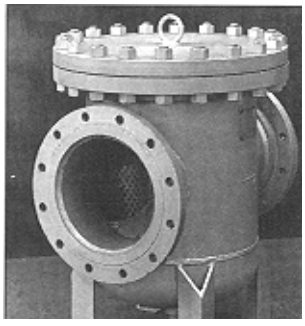


FIGURE 5

Duplex/Twin Strainers

For applications where continuous operation is required and the line cannot be disassembled for cleanout, duplex or twin basket strainers can be used. Refer also to Automatic Strainers for continuous service applications. Examples are fuel oil strainers for industrial or marine oil burners, lubricating lines on board ships, cooling towers, continuously running chemical operations, and many industrial water intake and service lines.

When one basket becomes full, the flow is switched to the other basket. The first basket is removed, cleaned and replaced. For smaller sizes the “plug”-type duplex basket strainer (Fig. 6) is generally used since it is less costly to make and simpler to operate and maintain than other types. It is basically a plug valve with two integral basket wells into which flow can be diverted by rotating the plug. In larger sizes the plug design becomes unwieldy, and an individual valving arrangement is used (Fig. 7). Here, flow is shifted from one basket to the other by integral sliding gate valves. These strainers are frequently furnished with an interlocking chain-drive mechanism so the two valves work in unison (one basket compartment opens while the other is being valved off). This prevents accidental shutoff of the line.

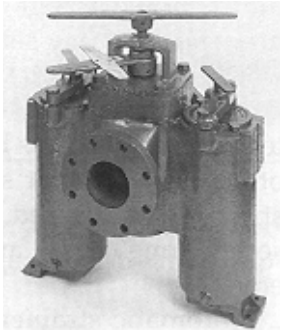


FIGURE 6

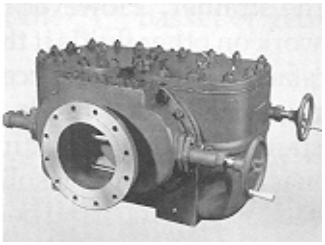


FIGURE 7

This type strainer can be furnished with individual globe valves instead of gate valves. Globe valves give more positive shutoff, but since these strainers are not normally used for high pressures they are generally not needed. The globe- valve-type duplex strainer is usually more expensive than the gate-valve type.

Twin strainers, two single basket strainers connected in parallel with individual control valves are also available (Fig. 8). Where continuous operations is required, however, a duplex strainer is generally preferred. It occupies less space and is a “one-piece unit”. However, because of the more circuitous path the liquid must take through a duplex strainer, pressure drop is higher than through the equivalent size single basket strainer.

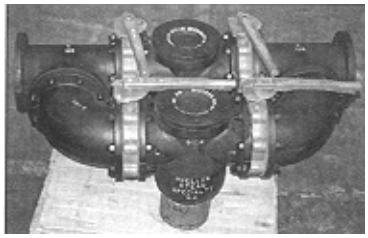


FIGURE 8

Geometric (Temporary) Strainers (Fig. 9A through 9C) Where cost is of prime importance, a geometric strainer may be installed between flanges in a pipe line. Variations of geometric strainers include cone (Fig. 9A), truncated cone (Fig. 9B) and flat geometries (Fig. 9C). The design considerations with these types of strainers are:

1. They have a lower net open area than basket strainers.
2. The pipe line must be disassembled to inspect, clean or remove these strainers.
3. Structural strength can be difficult to achieve, particularly in larger sizes, and in the case of wire mesh.

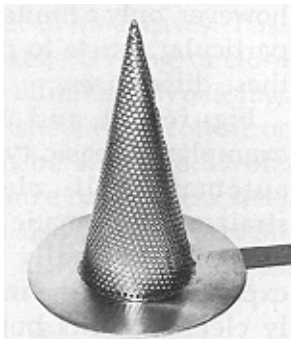


FIGURE 9A

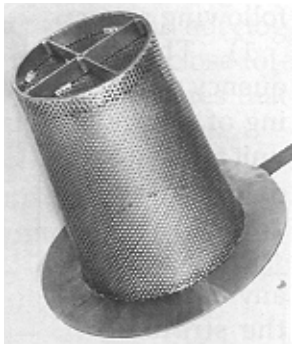


FIGURE 9B

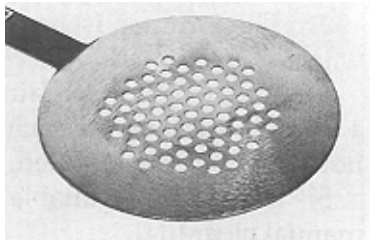


FIGURE 9C

While these strainers were once called temporary or startup strainers, more frequently than not, they are now left in the line during operation. As with all types of strainers, periodic maintenance must be carried out to ensure efficient operation.

Washdown, Manual, Fixed or Rotary Spray, Back-Flushing Strainers (Figure 10)

These strainers are fitted with side inlets or other devices for the introduction of high velocity liquid (the same as being strained – usually water). The turbulence created back-flushes the strainer basket and opening a drain valve evacuates the debris.

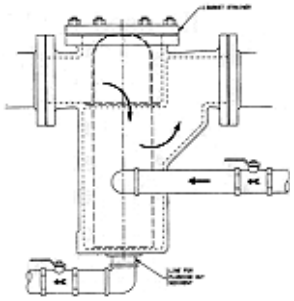


FIGURE 10

Automatic Self-Cleaning Strainers

An automatic self-cleaning strainer is a unit which goes through a complete cleaning cycle, using some of the fluid flowing through the strainer to flush out the collected debris, with little or no attention by the plant personnel. There are numerous styles of automatic strainers produced and each has its desirable features; however, only a limited discussion is presented in this particular article to discuss these differences.

Figures 11 and 12 are examples of basic types of automatic self-cleaning strainers. Automatic strainers are normally more expensive than the manually cleaned units but their extra cost can often be justified for one or more of the following reasons:

1. The frequency of cleaning of a manual unit and the cost of labor for doing this.
2. If there is any danger that the strainer or the equipment that it is protecting may be damaged by the strainer not being cleaned when required.
3. The strainer is necessarily located in a place where it is not readily accessible for cleaning.
4. Plugging of the strainer is unpredictable due to a variable loading rate such that manual cleaning cannot be properly scheduled.
5. Insufficient available personnel to perform the manual cleaning.

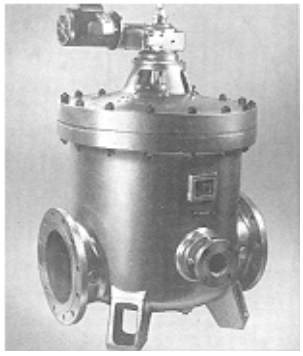


FIGURE 11

FIGURE 12

There are many types of automatic and semi-automatic controls for the strainer and among these are:

1. Differential pressure switch which senses the pressure drop through the strainer and initiates a cleaning cycle at a preset pressure differential.
2. Timer which initiates cleaning cycle of strainer are preset intervals of time.
3. Pushbutton start for which an operator pushes a button to initiate a cleaning cycle (semi-automatic).
4. Differential pressure switch alarms which signal the operator that the strainer needs cleaning (semi-automatic).
5. Any combination of the above controls.

All of the above control systems are normally used with strainers that clean intermittently. Some automatic strainers also clean continuously so that a control to initiate the cleaning cycle is not required.

For intermittent cleaning strainers, the differential pressure switch control is normally preferred, because it will initiate a cleaning cycle when required regardless of strainer plugging rate. If a fairly constant strainer plugging rate occurs, the timer control can be utilized. Also, if the strainer may go through long periods of slow plugging during which it may not clean, a timer control may be desired to make certain the strainer operates periodically to keep it from binding. Normally, because of its automatic cleaning characteristic, an automatic strainer is cleaner for longer periods of time, than a manually cleaned strainer.

When used in process or inplant service water systems, it is not normally necessary to prescreen the liquids handled by self-cleaning strainers. It is essential, however, that any self-cleaning strainer be protected from logs, long sticks, and heavy concentrations of large fish when the strainer is installed in intake systems where water is being taken from a river, lake or other surface water source. When very fine process straining is desired, two self-cleaning strainers in series – one coarse and one fine – should be considered.

Automatic strainers are most commonly used on water service, the primary reason being the difficulty of disposing of the fluid which flushes the debris from the strainer. However, most automatic strainers can work on other fluids if the fluid can be disposed of satisfactorily. Many successful applications have been made with such fluids as black liquor, white water, starch, fuel oils (including Bunker C), lubricating oils, machine coolants, gasoline, ammonia flushing liquor, caustic solutions and cooking oils.

Plate or Expanded Cross Section Strainers (Fig. 13)
Where short face-to-face dimensions are essential, the plate strainer may be used (a flat geometric strainer is also an option). Only low net open areas are available with this type of strainer. In addition, operating pressure drops are normally higher and maximum allowable pressure drops lower than with other types of strainers.

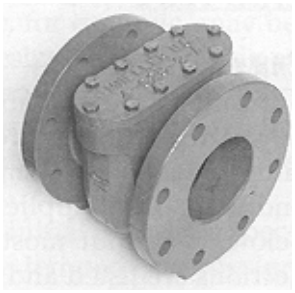


FIGURE 13

Scraper Strainers (Fig. 14)
For applications where continuous operation is required. A scraper strainer provides removal of solids without interrupting flow and disassembly is not required for cleaning. Examples are straining of industrial cooling water (chemical, petroleum, power, and steel), cooling towers, water intake, and marine. Industrial and marine fuel filtration and deluge fire protection systems. Screens are of the peripheral inflow design. Rotation of hand wheel rotates the screen against a scraper bar or brush removing collected debris from the screen's outer surface. Debris moves to the sump area where it is removed by periodic flushing. Scraper strainers can normally be converted from manual to automatic self-cleaning operation.

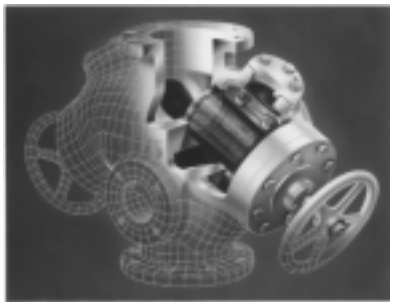


FIGURE 14

Magnetic Strainers (Fig. 15)
An effective solution to the problem of excessive and premature wear of plump seals and wear rings has been the magnetic screen assembly. A standard strainer is fitted with magnets which are removable for cleaning. These magnets are so spaced and arranged as to create a magnetic field around the interior of the screen and attract fine ferrous particle which could damage downstream equipment.

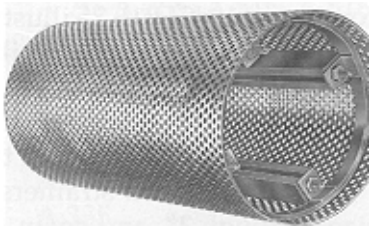


FIGURE 15

Engineers have specified this type of strainer in pilot jobs and, after evaluation, have standardized this specification for all pump strainers. Magnets can be incorporated in almost any of the "Y", basket or geometric type strainers.

Special Application Strainers
A. High Differential Strainers
There is an increasing demand for strainers with screens which can withstand full line pressure when clogged. While the types of strainers already discussed can be structurally enhanced to withstand fairly high pressures (Fig. 16A and 16B), cases where extremely high differentials exist may call for special design. These screens are frequently constructed of very heavy wire mesh or welded to ensure complete structural integrity. A few manufacturers can supply these strainers over a wide range of pressure requirements.

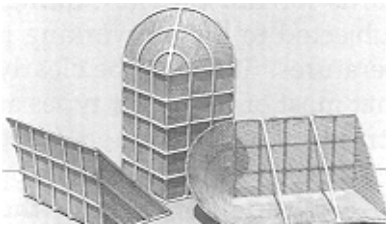


FIGURE 16A

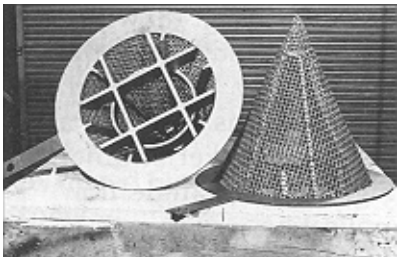


FIGURE 16B

B. Micronic Strainers

Strainers are available with extremely fine wire mesh which will remove particles as fine as 5 microns. These strainers, though expensive, are more economical than the disposable cartridge-type filters in that the straining elements can be cleaned and reused. Corrosion resistance is also better in most cases. Baskets must be supplied with a gasket, “O” ring, or close tolerance metal-to-metal seal to eliminate bypassing. Oil separation can be accomplished with cotton or fiber-filled screens. Water can be separated from gasoline using a fine mesh. Bronze or stainless steel wool-packed straining elements also serve certain filter requirements.

C. High Capacity (Volume) Basket Strainers

These strainers are designed for viscous fluids, gasoline and fuel oil service where fine straining has to be combined with a large basket which will not clog after extended periods. A gasketed seat or close tolerance metal-to-metal fit for the baskets insures that no bypassing of fine particles will occur.

Miscellaneous Strainer Options

Strainers can be incorporated into a piping system in a variety of ways. Mechanical equipment can incorporate a strainer in the body. This can be economical and can reduce pipe connections and labor (Fig. 17).

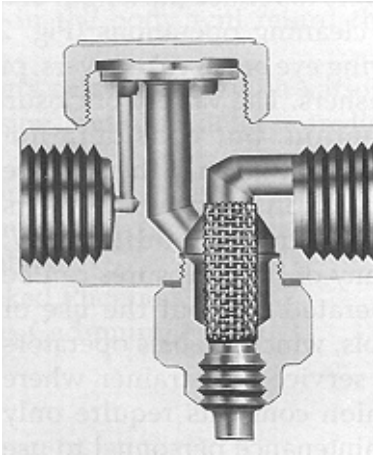


FIGURE 17

In some cases a strainer is required at the inlet of a pump or meter which is extremely close to the ground. An offset strainer (Fig. 18) with a high inlet and low outlet will satisfy this need. Other designs may use a tee type basket strainer (Fig. 3) in an angle flow application.

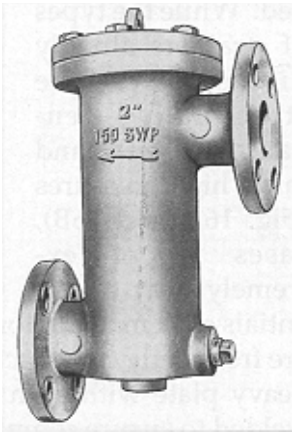


FIGURE 18

Quite frequently line sizes are reduced following a strainer prior to temperature control valves or heating and cooling coils (Fig. 19). A reducing strainer can eliminate joints, reduce pressure loss, and still provide the same offset produced by the reducer. Of course, the reducer is also eliminated.

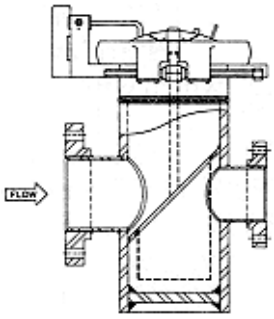


FIGURE 19

Special processes may warrant special strainer housings. Steel or stainless steel strainers may be fitted with a fabricated or cast outer jacket with connections for the introduction of steam or other heating or cooling medium (Fig. 20). These types of strainers are used in applications mainly in process piping where the liquid handled must be maintained at other than ambient temperatures.

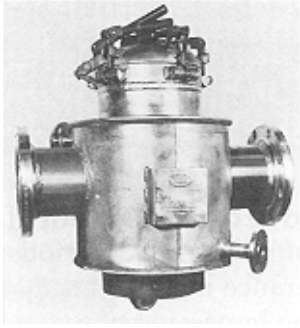


FIGURE 20

In addition to special process needs, there may be special maintenance needs. Simplifying the handling of strainers during cleanings or inspections reduces maintenance costs. Strainers are available with many types of quick-opening covers to reduce the length of time and labor involved in cleaning operations (Fig. 21). Among these are swing eye bolts, yoke covers, pinwheel covers and “C” washers. The variety of closures are too numerous to mention, but consideration should be given to them where reduction of downtime is important. Additionally, many of these closures can be operated without the use of tools, which enables operators to service the strainer where Union contracts require only maintenance personnel to use tools.

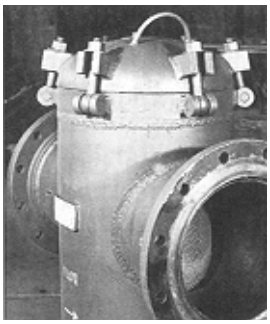


FIGURE 21

CHAPTER 2

End Connections
Strainers are available in a variety of end connections. Iron strainers are most commonly furnished in either threaded or flanged ends. Steel, stainless steel and bronze are supplied in any of the types discussed below. The four most common groups of end connections are listed and described below.

Threaded
Usually a tapered female pipe thread, although male connections are also available.

Flanged
ANSI (American National Standards Institute) and MSS (Manufacturer’s Standardization Society) standard flange ratings 25, 125, 150, 250, 300, 400, 600, 900, 1500 and2500 pounds can be supplied. Ring-type joints (male and female), and tongue and groove joints are also available. The U.S. Navy also has some flange standards which are quite different from the commercial standards. Among these are B-176, B177, and MIL-F-20042C.

Weld Ends
Butt weld end strainers are generally available in all sizes, and although many forms of end preparations can be used, the standard 37-1/2" beveled end is most common. ANSI B16.25 illustrates the various types of weld joint preparations available.

It is very important that the purchaser specify the bore of pipe being used so that the manufacturer can provide a matching bore in the strainer.

Socket weld end strainers are usually available in sizes through 3”, and again, it is important to specify the bore of the pipe used. In ordering weld end strainers of any type, consider whether you desire a welded blowdown connection.

Special Ends
Grooved ends are available on many strainers, and a detail of this end should be supplied to the manufacturer. Other special ends such as “O” ring and union ends are also available on special order, and complete details should be furnished.

Most “Y”-type and certain other types of small strainers are designed according to the fitting standards for full pressure ratings and therefore can be subjected to higher working pressures at lower temperatures. It should be clearly understood, however, that most of the larger types and many of the smaller strainers are designed for the working pressure requested and should not be operated above that pressure without consulting the manufacturer. It is important to note that the flange rating is not necessarily the same as the pressure rating of the vessel. A fabricated carbon steel strainer, for example, may be operated at 40 psig at 500∞F, designed for 100 psig at 650∞F, and have 150-lb ANSI flanges. The maximum safe pressure at any temperature (650∞F and below) for this vessel is 100 psig, even though the flange can be taken to 170 psig at 500∞F.

It is important, at the time of initial design, to specify working pressure, working temperature, design pressure, design temperature, required flange rating and any operating conditions affecting vessel loading.

CHAPTER 3

Materials of Construction
Strainer components can include a body, flanges, cover, perforated plate, mesh, wedge wire, gasket and cover fasteners. Listed below are some materials of construction for these components.

CHAPTER 4

A – Housing/Body

Description	ASTM Specification
Iron Castings	A 126, A 278
Ductile Iron Castings	A 395, A 536
Iron-Austenitic Castings	A 436
Carbon Steel Castings	A 216
Carbon Steel Castings	A 27
Carbon Steel Pipe	A 53, A 106
Carbon Steel Plate	A 20, A 285, A 515, A 516
Carbon Steel Forgings	A 105
Carbon Moly Castings	A 217, A 352
Chrome Moly Forgings	A 182
Stainless Steel Castings	A 743, A 744, A 351
Chrome Moly Plate	A 387
Chrome Moly Pipe	A 335
Stainless Steel Pipe	A 312
Stainless Steel Plate	A 240
Stainless Steel Forgings	A 182
Aluminum Castings	B 26
Bronze Castings	B 61, B 62
Monel	B 164, B 127
Nickel 200 Plate	B 160, B 162
Hastelloy B Castings	A 494
Hastelloy B Plate	B 333
Hastelloy C Plate	B 575
Hastelloy C Pipe	B 619
Titanium Pipe	B 337
Titanium Castings	B 367

B – Perf. Plate/Mesh/Wedge Wire

Carbon Steel	S.S. (Various Grades Available)
Monel	Hastelloy B
Hastelloy C	Alloy 20
Nickel	Brass
Copper	Galvanized Steel
Incoloy	Inconel
Titanium	Aluminum

C – Gaskets

Red Rubber	Compressed Nonasbestos
Teflon	Buna-N, O Ring
Neoprene	S.S. – Jacketed
Graphite	S.S. – Spiral Wound

D – Fasteners

Carbon Steel	Alloy Steel
Silicon Bronze	304 S.S.
316 S.S.	Monel

Corrosion Resistance – Selection of Materials

Almost every strainer operating in a pipe line is subject to some degree of corrosion or erosion. It is therefore very important that corrosion/erosion resistance is considered when selecting materials and/or coatings. The selection of the material or coating used is also usually based on economic considerations and should be made by the customer and/or consulting engineer after some discussion with the strainer manufacturer.

It is important that the type of fluid, the pressure and temperature conditions, type of adjacent piping, desired service life, and the customer's prior experience with similar fluid conditions be known. Corrosion resistance charts offer some assistance in the selection of materials or coatings. (See Corrosion Data Survey – Metals Solution, 6th Edition, NACE).

Electrolytic corrosion is also a consideration in some services and the manufacturer should be advised. Sometimes the inclusion of magnesium or zinc-consumable bars in the body will retard this action.

Most types of strainers can be lined with various coatings to retard corrosion, and some of these are listed below:

Epoxy	Asphalt
Teflon	Vinyl
Kel-F	Rubber
Neoprene	Baked Phenolic

Penton (Plating: Zinc, Cadmium, Nickel,Galvanizing, etc.)

CHAPTER 5

Perforations and Mesh Sizing

An extremely important consideration in the selection of a strainer is the size of the perforations, mesh or wire opening used in the making of the straining element. A tendency exists to select smaller holes than those actually needed, leading to too-frequent cleaning, excessive pressure drops, and screens constructed of thinner metal which will withstand less pressure differential.

Generally, stainless steel perforated metal can only be obtained in a thickness which is one gage thickness less than the diameter of the punched holes. Carbon steel and brass can be obtained in approximately the same thickness as the hole diameter. These limitations are important considerations. For example, a strainer made with stainless steel plate perforated with 1/64" diameter holes in a 16" line would be impractical, as the plate

would be about 17” in diameter and only .014” thick, and would have a very low maximum allowable differential pressure.

The most common way to accomplish fine straining in large strainers is by mesh lining a larger hole, heavier gage perforated plate.
The following table illustrates available perforations, mesh, and wedge wire and their respective straining capability. The main criteria for choosing hole and mesh size is the size and quantity of particles which can pass through downstream equipment without causing damage.

PERFORATED METAL**

Hole Diameter x Hole Spacing	Percent Open Area
.020 x .043	20
.027 x .066	17
*.033 x .077	20
*.045 x .086	28
*.057 x .121	25
*.062 x 3/32	41
*.094 x 5/32	33
.100 x 5/32	37
*1/8 x 3/16	40
*5/32 x 3/16	63
3/16 x 1/4	51
*1/4 x 3/8	40
5/16 x 7/16	47
3/8 x 1/2	51
7/16 x 19/32	49
1/2 x 11/16	48
5/8 x 13/16	54
3/4 x 1	51
1 x 1-3/8	48

*These are standards as they appear in the Designers, Specifiers and Buyers Handbook for Perforated Metals published by the Industrial Perforators Association.

**Perforated plate listed is for staggered pattern only.

MESH

Mesh (Openings (Inches)	Wire Diameter (Inches)	Opening		Percent Open Area
		Inches	Micron	
2	.063	.437	11100	76.4
2	.092	.407	10360	66.6
3	.063	.270	6860	65.6
4	.47	.208	5160	65.9
4	.063	.187	4750	56.0
5	.041	.159	4040	63.2
6	.035	.132	3350	62.7
7	.035	.108	2740	57.2
8	.028	.097	2460	60.2
10	.025	.075	1910	56.3
11	.018	.073	1850	64.5
12	.023	.060	1520	51.8
14	.020	.051	1300	51.0
16	.018	.044	1130	50.7
18	.017	.038	980	48.3
20	.016	.034	872	46.2
30	.013	.020	513	37.1
40	.010	.015	384	36.0
50	.009	.011	282	30.3
60	.007	.009	231	33.9
80	.005	.0075	180	36.0
24 x 115	.0056			
100	.0045	.0055	141	30.3
120	.0037	.0046	118	30.1
30 x 160		.0046	118	
150	.0026	.0041	105	37.4
40 x 200		.0033	85	
170	.0024	.0035	79	35.1
30 x 260		.0029	75	
200	.0021	.0029	74	33.6
250	.0016	.0024	62	36.0
50 x 250	.0024		62	
28 x 480		.0023	59	
300	.0015	.0018	46	29.7
325	.0014	.0017	44	30.0
400	.0010	.0015	39	36.0
80 x 700		.0012	40	
125 x 600			30	
165 x 800			28	
165 x 1400			17	
200 x 1400			10	
250 x 1400			83	
25 x 2300			53	
5 x 2400			4	
400 x 2800			3	

WEDGE WIRE

Opening	Micron	% Open
.003”	75	
.005”	127	7.7
.010”	254	14.3
.015”	381	25
.020”	500	25
.031”	775	34
.034”	864	20
.062”	1550	51
.063”	1600	50
.094”	2350	44
.125”	3175	66
.156”	3962	71

CHAPTER 6

Capacity

The capacity ratio, or open area ratio (OAR) of a strainer influences such operating characteristics as the length of time it can operate without cleaning and the created pressure loss. The ratio/OAR is the relationship between internal cross sectional area (flow area) of the pipe and the open flow area of the material which makes up the straining element.

A 100% OAR, or 1-to-1 ratio would give an unrestricted flow area equal to that of the pipe while the element was clean. As clogging occurs, however, flow would be inhibited. A 200% OAR, or 2-to-1 ratio would provide full flow, after the element became 50% clogged. A 250% OAR is a good standard for general heating and air conditioning service. However, larger OAR’s or ratios would be appropriate for flow in which much debris is expected to be strained or where very viscous fluids are being handled.

When considering the OAR of a straining element, there are two accepted methods of analysis used by various specifying agencies and manufacturers. One method maintains a “line of sight” reasoning and uses the multiple of the open areas for elements in series. In this method, a 60% open area material in series with a 40% open area material has a resultant combined open area of 24% (i.e. as in accordance with military standards). An alternative method allows the open area of the more restrictive element in series to be used. This would be 40% for the example above (i.e. as in accordance with Underwriter Laboratories’ Standards). The method used influences the estimated operating pressure drop, as well as design decisions such as sizing.

As an example, fuel oils are generally strained to a fine degree to protect small orifices in burner nozzles. This requires a fine woven mesh be used in series with a reinforcing perforated plate. Due to the fact that the perforated plate may have a 50% open area and the mesh 30%, the resultant combined open area may be considered to be only 15% if there is not flow path other than line of sight through the two elements in series. This, of course, would mean that to have a OAR of 250%, a high capacity, large bodied strainer is required.

This same strainer using only the perforated plate would have an OAR more than three times as great. So, it may be seen that in any given strainer, the OAR may be varied by using various perforations or meshes having different open areas. Thus, it is essential to specify not only the OAR desired, but the straining element opening size and the method for calculating OAR.

CHAPTER 7

Pressure Loss

Because strainers are made with various dimensions and configurations, most reputable manufacturers have tested and published pressure drop results.

Most pump installations designed for reasonable velocities will permit approximately a 2-psi drop across the strainer. When a screen becomes clogged, the pressure drop varies with the clogging pattern experienced and the type of strainer being used. While some manufacturers speculate as to the change in head loss at different percentages of clogging, it should be recognized that this type of testing is very difficult to relate to actual line performance. This is because of differences in strainer clogging characteristics — a 1/4” perforated basket two-thirds full of 1/2” stones will be less affected than a small amount of fine leaves on a large 100-mesh basket. If large amounts of solids are expected, use a strainer with a high net open area as discussed in Chapter 6.

As a strainer becomes clogged to the point where the OAR of the strainer approaches the pipe area, the pressure drop across the strainer increases very rapidly and unpredictably. It is at this point, therefore that it is recommended the strainer be cleaned. Otherwise, a large differential pressure will develop. The maximum differential pressure a strainer can withstand varies widely with strainer type, line size and material used. Always consult the manufacturer for maximum differential pressure a straining element can withstand.

From the foregoing discussion, it is obvious that periodic cleaning is essential in any strainer installation. Once the rate of clogging is established, a cleaning schedule can be set up. Pressure gauges on each side of the strainer can be valuable to determine when the strainer requires cleaning. Differential pressure switches can be set up to operate warning lights or alarms if so desired.

Some manufacturers have related their strainers' pressure drop to equivalent feet of pipe at various turbulent flow rates, and this can simplify the computation of head loss for an entire system. However, varying field conditions and fluid properties can affect the accuracy of general type pressure drop estimations. Further, operating viscous fluids under laminar flow conditions requires analysis different from that for fluids under turbulent conditions. Accordingly, the manufacturer should always be consulted for the most specific and accurate estimated pressure loss.

CHAPTER 8

Specifications and Manufacturer Testing
Needless to say, the more information provided to the manufacturer when ordering strainers, the better the chance of obtaining a strainer which is appropriately suited for a particular job. It is for this reason that considerable space is devoted to the preparation of specifications.

Specification
To allow the manufacturer to make selection or recommendations for a particular strainer, as much as possible, the following information should be provided:

A – Physical characteristics

1 – Pipe size and schedule.
2 – Strainer type requires.
3 – End connections.
4 – Material (body, screen, studs, gaskets).
5 – Pressure rating (design/operating — including shock).
6 – Temperature rating (design, operating, minimum).
7 – Straining element opening size.
8 – Capacity:
  (a) Net effective open area required.
  (b) Method of net open area calculation.
9 – Special requirements (hinged cover, vent tapping, jacketed, etc.).
10 – Applicable specifications (military specifications, special nondestructive tests or other QC Requirements).
11 – For automatic self-cleaning strainers, specify the following:
  (a) Voltage and frequency of power supply;
  (b) Air supply pressure if available;
  (c) Type of controls desired;
  (d) Type of motor, switch and control panel enclosure required.

B - Flow data

1 – Liquid:
  (a) Description of fluid.
  (b) Rate of flow – gallons per minute (gpm) or pounds per hour (lbs/hr).
  (c) Viscosity – SSU.
  (d) Specific gravity/density.
  (e) Temperature.
  (f) Concentration (if acid or other corrosive).

2 – Gas:
  (a) Description of Gas
  (b) Rate of flow – standard cubic feet per minute (scfm).
  - actual cubic fee per minute (cfm).
  (c) Specific gravity.
  (d) Temperature and pressure.
  (e) Molecular weight.

3 – Steam:
  (a) Flow-pounds per hour.
  (b) Temperature.
  (c) Pressure.
  (d) Density.
  (e) State of flow.

C - Solids to be removed
Specify the nature and relative size of the sediment. Parts per million (ppm) or percent by volume or cubic inches per hour or percent by weight can also be specified.

NOTE: If strainer is to be steam jacketed, the following information for the heat transfer fluid or steam must be given:

(a) Type of fluid.
(b) Rate of flow.
(c) Temperature.
(d) Pressure.
(e) Type and size connections desired.
(f) Material for jacket construction.
(g) Whether strainer end flanges are oversized to match jacketed pipe.

D – Allowable pressure drop (psi):

1 – Clean.
2 – 50% clogged.

NOTE: Operating pressure drop is a function of operating conditions, fluid characteristics and strainer geometry. Consequently, if specifying a strainer type and geometry, a desired pressure drop may not be obtainable if fluid

parameters are fixed. The “trade-off” relationship between fluid conditions, strainer geometry and operating pressure drop establishes what compromises must be made.

Available Types of Manufacturer Testing

A - Hydrostatic:
Most common test – usually 1-1/2 times working pressure to determine that a strainer body, cover gaskets, etc., are sound.

B – Radiographic examination:
To determine if the casting or welded joint has any slag or sand inclusions, gas pockets or subsurface defects. This type of test is quite expensive and usually specified only for high pressure strainers.

C – Magnetic Particle:
A reasonably low cost examination to reveal relatively shallow subsurface cracks, gas pockets, etc. Iron dust is sprinkled on the surface of the casting/weld and a magnetic force is induced electrically, causing the dust to align over defects and cracks showing their location and size. Can be used only on iron and steel.

D – Dye penetrant:
Equivalent to magnetic particle testing, except used mainly with nonmagnetic castings/welds to reveal surface defects, cracks, depressions, etc.

E – Air test:
Either under water or with part covered with soap solution. This is a more stringent test for porosity and gasket leakage than hydrostatic, and leaks often are more obvious. Sometimes not done, due to relative danger involved.

F – Hydrostatic burst test:
Sometimes done to establish manufacturer’s maximum working pressure rating, or at the request of purchaser.

G – Shock:
Usually a government requirement where strainers will remain operative or intact in the event of a near-proximity explosion. Test normally conducted on a machine where weighted hammer strikes plate on which strainer is mounted.

H – Vibration:
Normally a government requirement where strainers must withstand a vibration test which involves a number of frequencies. This usually simulates shipboard vibrations, earthquake, etc.

I – Surge test:
A strainer is pressurized with water and a quick-opening valve on the outlet flange is rapidly opened to determine that no damage is sustained by the basket. Normally, a military requirement.

J – Helium leak test:
A very stringent test where the strainer is pressurized with helium and leaks are checked with sensitive instruments. A maximum leak rate is usually specified. Used mostly for nuclear plants for radioactive water piping.

K – Ferroxyl:
A test to detect free iron in stainless steel strainers where the iron would contaminate the product.

NOTE: Many tests by their very nature can be more or less stringent. Acceptance standards should be included in any inquiry calling for such tests. Naturally, the more stringent the test requirements, the more costly the ultimate strainer becomes.

CHAPTER 9

Shock-Hydraulic and Thermal
Any liquid being transmitted in a pipe line possesses a certain amount of energy (weight times velocity). A rapid change in velocity results in a momentary shock wave. In the case of a quick-closing valve, the energy of the flowing fluid must be used up in some way, and the resulting shock, or “water hammer”, is clearly audible. A pressure wave, in some cases, travels at over 3,000 feet per second and traverses the pipeline in one direction, then the other, until it dissipates. A theoretical figure of 54 psi for each foot per second that is stopped by the valve may be used. A 12 foot per second velocity could produce a shock wave having a peak of 648 psi; therefore, consideration should be given to the shock and non-shock rating of the strainer.

No attempt will be made here to go into the highly technical field of hydraulic shock, and it is covered briefly to point out that even if your system can produce only a specific head, if the possibility of shock is present, tremendous overpressures may result.

Commonly known is the phenomenon of pouring hot tea into a glass and watching the glass crack. This is an example of thermal shock. Rapid changes of temperature in piping systems can have the same effect, and in selecting strainers consideration must be given to this possibility.

In improperly trapped steam lines, condensate can collect in low points and subsequently become a slug of water traveling at high velocity down the line. Almost all strainers cause a change in direction of

flow due to their configuration, and the result can be obvious if the strainer cannot absorb this type of shock. In considering this situation, it is important to remember that steam velocities of 4,000 to 20,000 feet per minute are quite common.

CHAPTER 10

Conclusion

Strainers are no longer confined to a simple cast body with a wire mesh screen, but are a technical, highly refined, carefully designed piece of equipment.

Sometimes they operate at 1,500ºF and 10,000 psig or at cryogenic temperatures. They are modified with steam jackets, cover lifting davits, magnets, motorized cleaning devices and automatic vent valves. They are supplied with screwed, flanged, socket weld, butt weld, ring joint and silver brazing end connections.

Accordingly, the implementation of a strainer needs to be well thought out and engineered. While it is good practice to use a strainer to protect downstream equipment, it is very important to carefully consider the options available. Choosing the correct strainer can save money not only by protecting equipment, but also by keeping operations and maintenance costs at a minimum.

List of Figures

NOTES:

FLANGE STANDARDS

CAST IRON

125 lb. CAST IRON — ANSI STANDARD B16.1

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	—	—	4 1/4	4 5/8	5	6	7	7 1/2	8 1/2	9	10	11	13 1/2	16	19
Thickness of Flange (min)[a]	—	—	7/16	1/2	9/16	5/8	11/16	3/4	13/16	15/16	15/16	1	1 1/8	1 3/16	1 1/4
Diameter of Bolt Circle	—	—	3 1/8	3 1/2	3 7/8	4 3/4	5 1/2	6	7	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17
Number of Bolts	—	—	4	4	4	4	4	4	8	8	8	8	8	12	12
Diameter of Bolts	—	—	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8

[a] 125 lb. cast iron flanges have plain faces.

250 lb. CAST IRON — ANSI STANDARD B16.1

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	—	—	4 7/8	5 1/4	6 1/8	6 1/2	7 1/2	8 1/4	9	10	11	12 1/2	15	17 1/2	20 1/2
Thickness of Flange (min)[b]	—	—	11/16	3/4	13/16	7/8	1	1 1/8	1 3/16	1 1/4	1 3/8	1 7/16	1 5/8	1 7/8	2
Diameter of Raised Face	—	—	2 11/16	3 1/16	3 9/16	4 3/16	4 15/16	5 11/16	6 5/16	6 15/16	8 5/16	9 11/16	11 15/16	14 1/16	16 7/16
Diameter of Bolt Circle	—	—	3 1/2	3 7/8	4 1/2	5	5 7/8	6 5/8	7 1/4	7 7/8	9 1/4	10 5/8	13	15 1/4	17 3/4
Number of Bolts	—	—	4	4	4	8	8	8	8	8	8	12	12	16	16
Diameter of Bolts	—	—	5/8	5/8	3/4	5/8	3/4	3/4	3/4	3/4	3/4	3/4	7/8	1	1 1/8

[b] 250 lb. cast iron flanges have a 1/16" raised face which is included in the flange thickness dimensions.

BRONZE

150 lb. BRONZE — ANSI STANDARD B16.24

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	3 1/2	3 7/8	4 1/4	4 5/8	5	6	7	7 1/2	8 1/2	9	10	11	13 1/2	16	19
Thickness of Flange (min)[c]	5/16	11/32	3/8	13/32	7/16	1/2	9/16	5/8	11/16	11/16	3/4	13/16	15/16	1	1 1/16
Diameter of Bolt Circle	2 3/8	2 3/4	3 1/8	3 1/2	3 7/8	4 3/4	5 1/2	6	7	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17
Number of Bolts	4	4	4	4	4	4	4	4	8	8	8	8	8	12	12
Diameter of Bolts	1/2	1/2	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8

[c] 150 lb. bronze flanges have plain faces with two concentric gasket-retaining grooves between the port and the bolt holes.

300 lb. BRONZE — ANSI STANDARD B16.24

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	3 3/4	4 5/8	4 7/8	5 1/4	6 1/2	6 1/2	7 1/2	8 1/4	9	10	11	12 1/2	15	—	—
Thickness of Flange (min)[d]	1/2	17/32	19/32	5/8	11/16	3/4	13/16	29/32	31/32	1 1/16	1 1/8	1 3/16	1 3/8		
Diameter of Bolt Circle	2 5/8	3 1/4	3 1/2	3 7/8	4 1/2	5	5 7/8	6 5/8	7 1/4	7 7/8	9 1/4	10 5/8	13		
Number of Bolts	4	4	4	4	4	8	8	8	8	8	8	12	12		
Diameter of Bolts	1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	3/4	3/4	3/4	3/4	7/8		

[d] 300 lb. bronze flanges have plain faces with two concentric gasket-retaining grooves between the port and the bolt holes.

FLANGE STANDARDS

STEEL

150 lb. STEEL — ANSI STANDARD B16.5

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	—	—	4	4 5/8	5	6	7	7 1/2	8 1/2	9	10	11	13 1/2	16	19
Thickness of Flange (min)[e]	—	—	7/16	1/2	9/16	5/8	11/16	3/4	13/16	15/16	15/16	1	1 1/8	1 3/16	1 1/4
Diameter of Raised Face	—	—	2	2 1/2	2 7/8	3 5/8	4 1/8	5	5 1/2	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15
Diameter of Bolt Circle	—	—	3 1/8	3 1/2	3 7/8	4 3/4	5 1/2	6	7	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17
Number of Bolts	—	—	4	4	4	4	4	4	8	8	8	8	8	12	12
Diameter of Bolts	—	—	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8

[e] 150 lb. steel flanges have a 1/16" raised face which is included in the flange thickness dimensions.

300 lb. STEEL — ANSI STANDARD B16.5

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	—	—	4 7/8	5 1/4	6 1/8	6 1/2	7 1/2	8 1/4	9	10	11	12 1/2	15	17 1/2	20 1/2
Thickness of Flange (min)[f]	—	—	11/16	3/4	13/16	7/8	1	1 1/8	1 3/16	1 1/4	1 3/8	1 7/16	1 5/8	1 7/8	2
Diameter of Raised Face	—	—	2	2 1/2	2 7/8	3 5/8	4 1/8	5	5 1/2	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15
Diameter of Bolt Circle	—	—	3 1/2	3 7/8	4 1/2	5	5 7/8	6 5/8	7 1/4	7 7/8	9 1/4	10 5/8	13	15 1/4	17 3/4
Number of Bolts	—	—	4	4	4	8	8	8	8	8	8	12	12	16	16
Diameter of Bolts	—	5/8	5/8	3/4	5/8	3/4	3/4	3/4	3/4	3/4	3/4	3/4	7/8	1	1 1/8

[f] 300 lb. steel flanges have a 1/16" raised face which is included in the flange thickness dimensions.

400 lb. STEEL — ANSI STANDARD B16.5

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	33/4	4 5/8	4 7/8	5 1/4	6 1/8	6 1/2	7 1/2	8 1/4	9	10	11	12 1/2	15	17 1/2	20 1/2
Thickness of Flange (min)[g]	9/16	5/8	11/16	13/16	7/8	1	1 1/8	1 1/4	1 3/8	1 3/8	1 1/2	1 5/8	1 7/8	2 1/8	2 1/4
Diameter of Raised Face	1/38	1 11/16	2	2 1/2	2 7/8	3 5/8	4 1/8	5	5 1/2	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15
Diameter of Bolt Circle	25/8	3 1/4	3 1/2	3 7/8	4 1/2	5	5 7/8	6 5/8	7 1/4	7 7/8	9 1/4	10 5/8	13	15 1/4	17 3/4
Number of Bolts	4	4	4	4	4	8	8	8	8	8	8	12	12	16	16
Diameter of Bolts	1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	7/8	7/8	7/8	7/8	1	1 1/8	1 1/4

[g] 400 lb. steel flanges have a 1/4" raised face which is included in the flange thickness dimensions.

600 lb. STEEL — ANSI STANDARD B16.5

Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Diameter of Flange	3 3/4	4 5/8	4 7/8	5 1/4	6 1/8	6 1/2	7 1/2	8 1/4	9	10 3/4	13	14	16 1/2	20	22
Thickness of Flange (min)[h]	9/16	5/8	11/16	13/16	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	1 7/8	2 3/16	2 1/2	2 5/8
Diameter of Raised Face	1 3/8	1 11/16	2	2 1/2	2 7/8	3 5/8	4 1/8	5	5 1/2	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15
Diameter of Bolt Circle	2 5/8	3 1/4	3 1/2	3 7/8	4 1/2	5	5 7/8	6 5/8	7 1/4	8 1/2	10 1/2	11 1/2	13 3/4	17	19 1/4
Number of Bolts	4	4	4	4	4	8	8	8	8	8	8	12	12	16	20
Diameter of Bolts	1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/4	1 1/4

[h] 600 lb. steel flanges have a 1/4" raised face which is included in the flange thickness dimensions.

Pipe Data Tables

Pipe Size (in.)	Outside Diameter (in.)	Weight Class	Carbon Steel Sched.	Stainless Steel Sched.	Wall Thickness (in.)	Inside Diameter (in.)	Circum. (Ext.) (in.)	Circum (Int.) (in.)	Flow Area (sq. in.)	Weight of Pipe (lbs/Ft.)	Weight of Water (lbs/Ft.)	Gallons of Water per Ft.	Section Modulus	Pipe Size (in.)
		—	—	10S	.049	.307		.96	.074	.19	.032	.004	.00437	
1/8	.405	STD	40	40S	.068	.269	1.27	.85	.057	.24	.025	.003	.00523	1/8
		XS	80	80S	.095	.215		.68	.036	.31	.016	.002	.00602	
		—	—	10S	.065	.410		1.29	.132	.33	.057	.007	.01032	
1/4	.540	STD	40	40S	.088	.364	1.70	1.14	.104	.42	.045	.005	.01227	1/4
		XS	80	80S	.119	.302		.95	.072	.54	.031	.004	.01395	
		—	—	10S	.065	.545		1.71	.233	.42	.101	.012	.01736	
3/8	.675	STD	40	40S	.091	.493	2.12	1.55	.191	.57	.083	.010	.0216	3/8
		XS	80	80S	.126	.423		1.33	.141	.74	.061	.007	.0255	
		—	—	5S	.065	.710		2.23	.396	.54	.172	.021	.0285	
		—	—	10S	.083	.674		2.12	.357	.67	.155	.019	.0341	
		STD	40	40S	.109	.622		1.95	.304	.85	.132	.016	.0407	
1/2	.840	XS	80	80S	.147	.546	2.64	1.72	.234	1.09	.102	.012	.0478	1/2
		—	160	—	.187	.466		1.46	.171	1.31	.074	.009	.0527	
		XXS	—	—	.294	.252		.79	.050	1.71	.022	.003	.0577	
		—	—	5S	.065	.920		2.89	.665	.69	.288	.035	.0467	
		—	—	10S	.083	.884		2.78	.614	.86	.266	.032	.0566	
		STD	40	40S	.113	.824	3.30	2.59	.533	1.13	.231	.028	.0706	
3/4	1.050	XS	80	80S	.154	.742		2.33	.433	1.47	.188	.022	.0853	3/4
		—	160	—	.219	.612		1.92	.296	1.94	.128	.015	.1004	
		XXS	—	—	.308	.434		1.36	.148	2.44	.064	.008	.1103	
		—	—	5S	.065	1.185		3.72	1.103	.87	.478	.057	.0760	
		—	—	10S	.109	1.097		3.45	.945	1.40	.409	.049	.1151	
		STD	40	40S	.133	1.049	4.13	3.30	.864	1.68	.375	.045	.1328	
1	1.315	XS	80	80S	.179	.957		3.01	.719	2.17	.312	.037	.1606	1
		—	160	—	.250	.815		2.56	.522	2.84	.230	.027	.1903	
		XXS	—	—	.358	.599		1.88	.282	3.66	.122	.015	.2136	
		—	—	5S	.065	1.530		4.81	1.839	1.11	.797	.096	.1250	
		—	—	10S	.109	1.442		4.53	1.633	1.81	.708	.085	.1934	
		STD	40	40S	.140	1.380		4.34	1.495	2.27	.649	.078	.2346	
1 1/4	1.660	XS	80	80S	.191	1.278	5.22	4.02	1.283	3.00	.555	.067	.2913	1 1/4
		—	160	—	.250	1.160		3.64	1.057	3.76	.458	.055	.3421	
		XXS	—	—	.382	.896		2.81	.630	5.21	.273	.033	.4110	
		—	—	5S	.065	1.770		5.56	2.461	1.28	1.066	.128	.1662	
		—	—	10S	.109	1.682		5.28	2.222	2.09	.963	.115	.2598	
		STD	40	40S	.145	1.610	5.97	5.06	2.036	2.72	.882	.106	.3262	
1 1/2	1.900	XS	80	80S	.200	1.500		4.71	1.767	3.63	.765	.092	.4118	1 1/2
		—	160	—	.281	1.338		4.20	1.406	4.86	.608	.073	.5078	
		XXS	—	—	.400	1.100		3.46	.950	6.41	.420	.049	.5977	
		—	—	5S	.065	2.245		7.05	3.958	1.61	1.72	.206	.2652	
		—	—	10S	.109	2.157		6.78	3.654	2.64	1.58	.190	.4204	
		STD	40	40S	.154	2.067		6.49	3.355	3.65	1.45	.174	.5606	
2	2.375	XS	80	80S	.218	1.939	7.46	6.09	2.953	5.02	1.28	.153	.7309	2
		—	160	—	.344	1.687		5.30	2.241	7.46	.97	.116	.9790	
		XXS	—	—	.436	1.503		4.72	1.774	9.03	.77	.092	1.1040	
		—	—	5S	.083	2.709		8.51	5.764	2.48	2.50	.299	.4939	
		—	—	10S	.120	2.635		8.28	5.453	3.53	2.36	.283	.6868	
		STD	40	40S	.203	2.469		7.76	4.788	5.79	2.07	.249	1.064	
2 1/2	2.875	XS	80	80S	.276	2.323	9.03	7.30	4.238	7.66	1.87	.220	1.339	2 1/2
		—	160	—	.375	2.125		6.68	3.546	10.01	1.54	.184	1.638	
		XXS	—	—	.552	1.771		5.56	2.464	13.69	1.07	.128	1.997	

Pipe Data Tables cont'd.

Pipe Size (in.)	Outside Diameter (in.)	Weight Class	Carbon Steel Sched.	Stainless Steel Sched.	Wall Thickness (in.)	Inside Diameter (in.)	Circum. (Ext.) (in.)	Circum (Int.) (in.)	Flow Area (sq. in.)	Weight of Pipe (lbs/Ft.)	Weight of Water (lbs/Ft.)	Gallons of Water per Ft.	Section Modulus	Pipe Size (in.)
		—	—	5S	.083	3.334		10.47	8.730	3.03	3.78	.454	.744	
		—	—	10S	.120	3.260		10.24	8.347	4.33	3.62	.434	1.041	
		STD	40	40S	.216	3.068		9.64	7.393	7.58	3.20	.384	1.724	
3	3.500	XS	80	80S	.300	2.900	11.00	9.11	6.605	10.25	2.86	.343	2.225	3
		—	160	—	.438	2.624		8.24	5.408	14.32	2.35	.281	2.876	
		XXS	—	—	.600	2.300		7.23	4.155	18.58	1.80	.216	3.424	
		—	—	5S	.083	4.334		13.62	14.75	3.92	6.39	.766	1.249	
		—	—	10S	.120	4.260		13.38	14.25	5.61	6.18	.740	1.761	
		STD	40	40S	.237	4.026		12.65	12.73	10.79	5.50	.661	3.214	
4	4.500	XS	80	80S	.337	3.826	14.14	12.02	11.50	14.98	4.98	.597	4.271	4
		—	120	—	.438	3.624		11.39	10.31	19.00	4.47	.536	5.178	
		—	160	—	.531	3.438		10.80	9.28	22.51	4.02	.482	5.898	
		XXS	—	—	.674	3.152		9.90	7.80	27.54	3.38	.405	6.791	
		—	—	5S	.109	5.345		16.79	22.44	6.36	9.72	1.17	2.498	
		—	—	10S	.134	5.295		16.63	22.02	7.77	9.54	1.14	3.029	
		STD	40	40S	.258	5.047		15.86	20.01	14.62	8.67	1.04	5.451	
5	5.563	XS	80	80S	.375	4.813	17.48	15.12	18.19	20.78	7.88	.945	7.431	5
		—	120	—	.500	4.563		14.34	16.35	27.04	7.09	.849	9.250	
		—	160	—	.625	4.313		13.55	14.61	32.96	6.33	.759	10.796	
		XXS	—	—	.750	4.063		12.76	12.97	38.55	5.61	.674	12.090	
		—	—	5S	.109	6.407		20.13	32.24	7.60	13.97	1.68	3.576	
		—	—	10S	.134	6.357		19.97	31.74	9.29	13.75	1.65	4.346	
		STD	40	40S	.280	6.065		19.05	28.89	18.97	12.51	1.50	8.496	
6	6.625	XS	80	80S	.432	5.761	20.81	18.10	26.07	28.57	11.29	1.35	12.22	6
		—	120	—	.562	5.501		17.28	23.77	36.39	10.30	1.24	14.98	
		—	160	—	.719	5.187		16.30	21.15	45.35	9.16	1.10	17.81	
		XXS	—	—	.864	4.897		15.38	18.84	53.16	8.16	.978	20.02	
		—	—	5S	.109	8.407		26.41	55.51	9.93	24.06	2.88	6.131	
		—	—	10S	.148	8.329		26.17	54.48	13.40	23.61	2.83	8.212	
		—	20	—	.250	8.125		25.53	51.85	22.36	22.47	2.69	13.39	
		—	30	—	.277	8.071		25.36	51.16	24.70	22.17	2.66	14.69	
		STD	40	40S	.322	7.981		25.07	50.03	28.55	21.70	2.60	16.81	
		—	60	—	.406	7.813		24.55	47.94	35.64	20.77	2.49	20.58	
8	8.625	XS	80	80S	.500	7.625	27.10	23.95	45.66	43.39	19.78	2.37	24.51	8
		—	100	—	.594	7.437		23.36	43.46	50.95	18.83	2.26	28.14	
		—	120	—	.719	7.187		22.58	40.59	60.71	17.59	2.11	32.58	
		—	140	—	.812	7.001		21.99	38.50	67.76	16.68	2.00	35.65	
		XXS	—	—	.875	6.875		21.60	37.12	72.42	16.10	1.93	37.56	
		—	160	—	.906	6.813		21.40	36.46	74.69	15.80	1.89	38.48	
		—	—	5S	.134	10.482		32.93	86.29	15.19	37.39	4.48	11.71	
		—	—	10S	.165	10.420		32.74	85.28	18.65	36.95	4.43	14.30	
		—	20	—	.250	10.250		32.20	82.52	28.04	35.76	4.29	21.15	
		—	30	—	.307	10.136		31.84	80.69	34.24	34.96	4.19	25.57	
		STD	40	40S	.365	10.020		31.48	78.86	40.48	34.20	4.10	29.90	
10	10.750	XS	60	80S	.500	9.750	33.77	30.63	74.66	54.74	32.35	3.88	39.43	10
		—	80	—	.594	9.562		30.04	71.84	64.43	31.13	3.73	45.54	
		—	100	—	.719	9.312		29.25	68.13	77.03	29.53	3.54	53.22	
		—	120	—	.844	9.062		28.47	64.53	89.29	27.96	3.35	60.32	
		XXS	140	—	1.000	8.750		27.49	60.13	104.13	26.06	3.12	68.43	
		—	160	—	1.125	8.500		26.70	56.75	115.64	24.59	2.95	74.29	

PIPE DATA TABLES CONT'D.

Pipe Size (in.)	Outside Diameter (in.)	Weight Class	Carbon Steel Sched.	Stainless Steel Sched.	Wall Thickness (in.)	Inside Diameter (in.)	Circum. (Ext.) (in.)	Circum (Int.) (in.)	Flow Area (sq. in.)	Weight of Pipe (lbs/Ft.)	Weight of Water (lbs/Ft.)	Gallons of Water per Ft.	Section Modulus	Pipe Size (in.)
		—	—	5S	.156	12.438		39.08	121.50	20.98	52.65	6.31	19.2	
		—	—	10S	.180	12.390		38.92	120.57	24.17	52.25	6.26	22.0	
		—	20	—	.250	12.250		38.48	117.86	33.38	51.07	6.12	30.2	
		—	30	—	.330	12.090		37.98	114.80	43.77	49.74	5.96	39.0	
		STD	—	40S	.375	12.000		37.70	113.10	49.56	49.00	5.88	43.8	
		—	40	—	.406	11.938		37.50	111.93	53.52	48.50	5.81	47.1	
12	12.750	XS	—	80S	.500	11.750	40.06	36.91	108.43	65.42	46.92	5.63	56.7	12
		—	60	—	.562	11.626		36.52	106.16	73.15	46.00	5.51	62.8	
		—	80	—	.688	11.374		35.73	101.64	88.63	44.04	5.28	74.6	
		—	100	—	.844	11.062		34.75	96.14	107.32	41.66	4.99	88.1	
		XXS	120	—	1.000	10.750		33.77	90.76	125.49	39.33	4.71	100.7	
		—	140	—	1.125	10.500		32.99	86.59	139.67	37.52	4.50	109.9	
		—	160	—	1.312	10.126		31.81	80.53	160.27	34.89	4.18	122.6	
		—	—	5S	.156	13.688		43.00	147.15	23.07	63.77	7.64	23.2	
		—		10S	.188	13.624		42.80	145.78	27.73	63.17	7.57	27.8	
		—	10	—	.250	13.500		42.41	143.14	36.71	62.03	7.44	36.6	
		—	20	—	.312	13.376		42.02	140.52	45.61	60.89	7.30	45.0	
		STD	30	—	.375	13.250		41.63	137.88	54.57	59.75	7.16	53.2	
		—	40	—	.438	13.124		41.23	135.28	63.44	58.64	7.03	61.3	
14	14.000	XS	—	—	.500	13.000	43.98	40.84	132.73	72.09	57.46	6.90	69.1	14
		—	60	—	.594	12.812		40.25	128.96	85.05	55.86	6.70	80.3	
		—	80	—	.750	12.500		39.27	122.72	106.13	53.18	6.37	98.2	
		—	100	—	.938	12.124		38.09	115.49	130.85	50.04	6.00	117.8	
		—	120	—	1.094	11.812		37.11	109.62	150.79	47.45	5.69	132.8	
		—	140	—	1.250	11.500		36.13	103.87	170.28	45.01	5.40	146.8	
		—	160	—	1.406	11.188		35.15	98.31	189.11	42.60	5.11	159.6	
		—	—	5S	.165	15.670		49.23	192.85	27.90	83.57	10.02	32.2	
		—	—	10S	.188	15.624		49.08	191.72	31.75	83.08	9.96	36.5	
		—	10	—	.250	15.500		48.69	188.69	42.05	81.74	9.80	48.0	
		—	20	—	.312	15.376		48.31	185.69	52.27	80.50	9.65	59.2	
		STD	30	—	.375	15.250		47.91	182.65	82.58	79.12	9.49	70.3	
		XS	40	—	.500	15.000		47.12	176.72	82.77	76.58	9.18	91.5	
16	16.00	—	60	—	.656	14.688	50.27	46.14	169.44	107.50	73.42	8.80	116.6	16
		—	80	—	.844	14.312		44.96	160.92	136.61	69.73	8.36	144.5	
		—	100	—	1.031	13.938		43.79	152.58	164.82	66.12	7.93	170.5	
		—	120	—	1.219	13.562		42.61	144.50	192.43	62.62	7.50	194.5	
		—	140	—	1.438	13.124		41.23	135.28	233.64	58.64	7.03	220.0	
		—	160	—	1.594	12.812		40.26	128.96	245.25	55.83	6.70	236.7	
		—	—	5S	.165	17.67		55.51	245.22	31.43	106.26	12.74	40.8	
		—	—	10S	.188	17.62		55.37	243.95	35.76	105.71	12.67	46.4	
		—	10	—	.250	17.50		54.98	240.53	47.39	104.21	12.49	61.1	
		—	20	—	.312	17.38		54.59	237.13	58.94	102.77	12.32	75.5	
		STD	—	—	.375	17.25		54.19	233.71	70.59	101.18	12.14	89.6	
		—	30	—	.438	17.12		53.80	230.30	82.15	99.84	11.96	103.4	
		XS	—	—	.500	17.00		53.41	226.98	93.45	98.27	11.79	117.0	
18	18.00	—	40	—	.562	16.88	56.55	53.02	223.68	104.87	96.93	11.62	130.1	18
		—	60	—	.750	16.50		51.84	213.83	138.17	92.57	11.11	168.3	
		—	80	—	.938	16.12		50.66	204.24	170.92	88.50	10.61	203.8	
		—	100	—	1.156	15.69		49.29	193.30	207.96	83.76	10.04	242.3	
		—	120	—	1.375	15.25		47.91	182.66	244.14	79.07	9.49	277.6	
		—	140	—	1.562	14.88		46.73	173.80	274.22	75.32	9.03	305.5	
		—	160	—	1.781	14.44		45.36	163.72	308.50	70.88	8.50	335.6	

Pipe Data Tables cont'd.

Pipe Size (in.)	Outside Diameter (in.)	Weight Class	Carbon Steel Sched.	Stainless Steel Sched.	Wall Thickness (in.)	Inside Diameter (in.)	Circum. (Ext.) (in.)	Circum (Int.) (in.)	Flow Area (sq. in.)	Weight of Pipe (lbs/Ft.)	Weight of Water (lbs/Ft.)	Gallons of Water per Ft.	Section Modulus	Pipe Size (in.)
		—	—	5S	.188	19.62		61.65	302.46	39.78	131.06	15.71	57.4	
		—	—	10S	.218	19.56		61.46	300.61	46.06	130.27	15.62	66.3	
		—	10	—	.250	19.50		61.26	298.65	52.73	129.42	15.51	75.6	
		—	20	—	.375	19.25		60.48	290.04	78.60	125.67	15.12	111.3	
		STD	30	—	.500	19.00		59.69	283.53	104.13	122.87	14.73	145.7	
		XS	40	—	.594	18.81		59.10	278.00	123.11	120.46	14.44	170.4	
20	20.00	—	60	—	.812	18.38	62.83	57.73	265.21	166.40	114.92	13.78	225.7	20
		—	80	—	1.031	17.94		56.35	252.72	208.87	109.51	13.13	277.1	
		—	100	—	1.281	17.44		54.78	238.83	256.10	103.39	12.41	331.5	
		—	120	—	1.500	17.00		53.41	226.98	296.37	98.35	11.79	375.5	
		—	140	—	1.750	16.50		51.84	213.82	341.09	92.66	11.11	421.7	
		—	160	—	1.969	16.06		50.46	202.67	379.17	87.74	10.53	458.5	
		—	—	5S	.188	21.62		67.93	367.25	43.80	159.14	19.08	69.7	
		—	—	10S	.218	21.56		67.75	365.21	50.71	158.26	18.97	80.4	
		—	10	—	.250	21.50		67.54	363.05	58.07	157.32	18.86	91.8	
		STD	20	—	.375	21.25		66.76	354.66	86.61	153.68	18.42	135.4	
		XS	30	—	.500	21.00		65.97	346.36	114.81	150.09	17.99	117.5	
22	22.00	—	60	—	.875	20.25	69.12	63.62	322.06	197.41	139.56	16.73	295.0	22
		—	80	—	1.125	19.75		62.05	306.35	250.81	132.76	15.91	366.4	
		—	100	—	1.375	19.25		60.48	291.04	302.88	126.12	15.12	432.6	
		—	120	—	1.625	18.75		58.90	276.12	353.61	119.65	14.34	493.8	
		—	140	—	1.875	18.25		57.33	261.59	403.00	113.36	13.59	550.3	
		—	160	—	2.125	17.75		55.76	247.45	451.06	107.23	12.85	602.4	
		—	—	5S	.218	23.56		74.03	436.10	55	188.98	22.65	96.0	
		—	10	10S	.250	23.50		73.83	433.74	63	187.95	22.53	109.6	
		STD	20	—	.375	23.25		73.04	424.56	95	183.95	22.05	161.9	
		XS	—	—	.500	23.00		72.26	415.48	125	179.87	21.58	212.5	
		—	30	—	.562	22.88		71.86	411.00	141	178.09	21.35	237.0	
24	24.00	—	40	—	.688	22.62	75.40	71.08	402.07	171	174.23	20.88	285.1	24
		—	60	—	.969	22.06		69.31	382.35	238	165.52	19.86	387.7	
		—	80	—	1.219	21.56		67.74	365.22	297	158.26	18.97	472.8	
		—	100	—	1.531	20.94		65.78	344.32	367	149.06	17.89	570.8	
		—	120	—	1.812	20.38		64.01	326.08	430	141.17	16.94	652.1	
		—	140	—	2.062	19.88		62.44	310.28	483	134.45	16.12	718.9	
		—	160	—	2.344	19.31		60.67	292.98	542	126.84	15.22	787.9	
		—	—	5S	.250	29.50		92.68	683.49	79	296.18	35.51	172.3	
		—	10	10S	.312	29.38		92.29	677.71	99	293.70	35.21	213.8	
30	30.00	STD	—	—	.375	29.25	94.25	91.89	671.96	119	291.18	34.91	255.3	30
		XS	20	—	.500	29.00		91.11	660.52	158	286.22	34.31	336.1	
		—	30	—	.625	28.75		90.32	649.18	196	281.31	33.72	414.9	

CONVERSION TABLES

LIQUID WEIGHTS and MEASURES

To Convert	To	Multiply By
Gallons	Liters	3.7853
Gallons	Cu. Inches	231
Gallons	Cu. Feet	0.1337
Gallons	Cu. Meters	0.00379
Gallons	Lbs. of Water	8.339
Liters	Gallons	0.26418
Liters	Cu. Inches	61.025
Liters	Cu. Feet	0.0353
Liters	Cu. Meters	0.001
Liters	Lbs. of Water	2.202
Cu. Inches	Gallons	0.00433
Cu. Inches	Liters	0.01639
Cu. Inches	Cu. Feet	0.00058
Cu. Inches	Cu. Meters	0.000016
Cu. Inches	Lbs. of Water	0.0362
Cu. Feet	Gallons	7.48052
Cu. Feet	Liters	28.316
Cu. Feet	Cu. Inches	1728
Cu. Feet	Cu. Meters	0.0283
Cu. .Feet	Lbs. of Water	62.371
Cu. Meters	Gallons	264.17
Cu. Meters	Liters	999.972
Cu. Meters	Cu. Inches	61023.74
Cu. Meters	Cu. Feet	35.3145
Cu. Meters.	Lbs. of Water	2202.61
Lbs. of Water	Gallons	0.11992
Lbs. of Water	Liters	0.45419
Lbs. of Water	Cu. Inches	27.643
Lbs. of Water	Cu. Feet	0.01603
Lbs. of Water	Cu. Meters	0.000454

LINEAL MEASURES

Inches	mm	25.4
Inches	cm	2.54
Inches	Meters	0.0254
Feet	cm	30.48
Feet	Meters	0.3048
mm	Inches	0.03937
mm	Feet	0.00328
cm	Inches	0.3937
cm	Feet	0.03281
Meters	Feet	3.28

AREA

Sq. Inches	Sq. Feet	0.006944
Sq. Inches	Sq. cm	6.4516
Sq. Feet	Sq. Inches	144
Sq. Feet	Sq. cm	929.03
Sq. Feet	Sq. Meters	0.0929
Sq. cm	Sq. Inches	0.155
Sq. cm	Sq. Feet	0.00108
Sq. cm	Sq. Meters	0.0001
Sq. Meter	Sq. Inches	1550
Sq. Meter	Sq. Feet	10.76

CONVERSIONS of PRESSURE AND HEAD

To Convert	To	Multiply By
Lbs .per Sq .In.	Lbs. per Sq. Ft.	144
Lbs. per Sq. In.	Atmospheres	0.06805
Lbs. per Sq. In.	Ins. of Water	27.728
Lbs. per Sq. In.	Ft. of Water	2.3106
Lbs. per Sq. In.	Ins. of Mercury	2.03602
Lbs. per Sq. In.	mm of Mercury	51.715
Lbs. per Sq. In.	Bar	0.06895
Lbs. per Sq. In.	kg per Sq. cm	0.070307
Lbs. per Sq. In.	kg per Sq. M	703.070
Lbs. per Sq. Ft.	Lbs. per Sq. In.	0.0069445
Lbs. per Sq. Ft.	Atmospheres	0.000473
Lbs. per Sq. Ft.	Ins. of Water	0.1926
Lbs. per Sq. Ft.	Ft. of Water	0.01605
Lbs. per Sq. Ft.	Ins. of Mercury	0.014139
Lbs. per Sq. Ft.	mm of Mercury	0.35913
Lbs. per Sq. Ft.	Bar	0.000479
Lbs. per Sq. Ft.	kg per Sq. cm	0.000488
Lbs. per Sq. Ft.	kg per Sq. M	4.88241
Atmospheres	Lbs. per Sq. In.	14.696
Atmospheres	Lbs. per Sq. Ft.	2116.22
Atmospheres	Ins. of Water	407.484
Atmospheres	Ft. of Water	33.957
Atmospheres	Ins. of Mercury	29.921
Atmospheres	mm of Mercury	760
Atmospheres	Bar	1.01325
Atmospheres	kg per Sq. cm	1.0332
Atmospheres	kg per Sq. M	10332.27
Ins. of Water	Lbs. per Sq. In.	0.03609
Ins. of Water	Lbs. per Sq. Ft.	5.1972
Ins. of Water	Atmospheres	0.002454
Ins.of Water	Ft. of Water	0.08333
Ins. of Water	Ins. of Mercury	0.07343
Ins. of Water	mm of Mercury	1.8651
Ins. of Water	Bar	0.00249
Ins. of Water	kg per Sq. cm	0.00253
Ins. of Water	kg per Sq. M	25.375
Ft. of Water	Lbs. per Sq. In.	0.432781
Ft. of Water	Lbs. per Sq. Ft.	63.3205
Ft. of Water	Atmospheres	0.029449
Ft. of Water	Ins. of Water	12
Ft. of Water	Ins. of Mercury	0.88115
Ft. of Water	mm of Mercury	22.3813
Ft. of Water	Bar	0.029839
Ft. of Water	kg per Sq. cm	0.03043
Ft. of Water	kg per Sq. M	304.275
Ins. of Mercury	Lbs. per Sq. In.	0.491154
Ins. of Mercury	Lbs. per Sq. Ft.	70.7262
Ins. of Mercury	Atmospheres	0.033421
Ins. of Mercury	Ins. of Water	13.6185
Ins. of Mercury	Ft. of Water	1.1349
Ins. of Mercury	mm of Mercury	25.40005
Ins. of Mercury	Bar	0.033864
Ins. of Mercury	kg per Sq. cm	0.03453
Ins. of Mercury	kg per Sq. M	345.316
mm of Mercury	Lbs. per Sq. In.	0.019337
mm of Mercury	Lbs. per Sq. Ft.	2.7845
mm of Mercury	Atmospheres	0.001316
mm of Mercury	Ins. of Water	0.53616
mm of Mercury	Ft. of Water	0.04468
mm of Mercury	Ins. of Mercury	0.03937
mm of Mercury	Bar	0.00133
mm of Mercury	kg per Sq. cm	0.00136
mm of Mercury	kg per Sq. M	13.59509
kg per Sq. cm	Lbs. per Sq. In.	14.2233
kg per Sq. cm	Lbs. per Sq. Ft.	2048.155
kg per Sq. cm	Atmospheres	0.96784
kg per Sq. cm	Ins. of Water	394.38
kg per Sq. cm	Ft. of Water	32.865
kg per Sq. cm	Ins. of Mercury	28.959
kg per Sq. cm	mm of Mercury	735.559
kg per Sq. cm	Bar	0.98067
kg per Sq. cm	kg per Sq. M	10000

Note: All weights and measures of water are based on temperature of 60°F.

Note: Temperature of Water and Mercury is 68°F and 32°F respectively.

TEMPERATURE

To convert Fahrenheit to Celsius: $\frac{°F - 32}{1.8}$

To convert Celsius to Fahrenheit: (1.8 x °C) + 32

VELOCITY

1 Ft per Sec. = 0.3048 M Per Sec.

1 M per Sec. = 3.2808 Ft. per Sec.

Pressure to Vacuum

Gage Indicated		Absolute Pressure		
PSIG	Inches of Hg	PSIA	Inches of Hg	Torricelli
-14.70000	29.92000	0.0	0.0	0.0
-14.69998	29.91996	0.00002	0.00004	0.001
-14.69996	29.91992	0.00004	0.00008	0.002
-14.69994	29.91988	0.00006	0.00012	0.003
-14.69992	29.91984	0.00008	0.00016	0.004
-14.69990	29.91980	0.00010	0.00020	0.005
-14.69981	29.91961	0.00019	0.00039	0.010
-14.69961	29.91921	0.00039	0.00079	0.020
-14.69942	29.91882	0.00058	0.00118	0.030
-14.69923	29.91843	0.00077	0.00157	0.040
-14.69903	29.91803	0.00097	0.00197	0.050
-14.69806	29.91606	0.00194	0.00394	0.100
-14.69613	29.91212	0.00387	0.00788	0.200
-14.69449	29.90818	0.00551	0.01182	0.300
-14.69226	29.90424	0.00774	0.01576	0.400
-14.69032	29.90030	0.00968	0.01970	0.500
-14.68066	29.88063	0.01934	0.03937	1.000
-14.66698	29.84126	0.03302	0.07874	2.000
-14.64197	29.80189	0.05803	0.11811	3.000
-14.62262	29.76252	0.07738	0.15748	4.000
-14.60329	29.72315	0.09671	0.19685	5.000
-14.50658	29.52630	0.19342	0.39370	10.000
-14.40980	29.32940	0.29020	0.59060	15.000
-14.31320	29.13260	0.38680	0.78740	20.000
-14.21840	28.93570	0.48160	0.98430	25.000
-14.20870	28.920	0.49130	1.000	25.400
-14.11970	28.740	0.58030	1.181	30.000
-13.75700	28.000	0.94330	1.920	48.770
-12.28300	25.000	2.41700	4.920	124.970
-10.31800	21.000	4.38200	8.920	226.570
-8.84400	18.000	5.85600	11.920	302.770
-7.37000	15.000	7.320	14.920	378.970
-5.89600	12.000	8.804	17.920	455.770
-4.91300	10.000	9.787	19.920	505.970
-3.93000	8.000	10.770	21.920	556.770
-2.94800	6.000	11.752	23.920	607.570
-1.96500	4.000	12.735	25.920	658.370
-0.98300	2.000	13.732	27.920	709.170
-0.49100	1.000	14.209	28.920	733.570
-0.24600	0.500	14.454	29.420	747.270
		ATMOSPHERIC		
0.0	0.0	14.700	29.920	760.000
+ 0.30		15.000	30.540	775.720
+ 1.00		15.700	31.970	811.910
+ 2.00		16.700	34.000	863.630
+ 10.00		24.700	50.290	277.35

Properties of Water

Water Temp.	Saturation Pressure	Weight	Weight Density	Specific Volume
Deg. F	PSIA	lbs/Gallon	lbs/Cu.Ft.	Cu.Ft./lb
32	0.0886	8.344	62.414	0.016022
40	0.1216	8.345	62.426	0.016019
50	0.1780	8.343	62.410	0.016023
60	0.2561	8.338	62.371	0.016033
70	0.3629	8.329	62.305	0.016050
80	0.5068	8.318	62.220	0.016072
90	0.6981	8.304	62.116	0.016099
100	0.9492	8.288	61.996	0.016130
110	1.2750	8.270	61.862	0.016165
120	1.6927	8.250	61.713	0.016204
130	2.2230	8.228	61.550	0.016247
140	2.8892	8.205	61.376	0.016293
150	3.7184	8.180	61.188	0.016343
160	4.7414	8.154	60.994	0.016395
170	5.9926	8.126	60.787	0.016451
180	7.5110	8.097	60.569	0.016510
190	9.340	8.067	60.343	0.016572
200	11.526	8.035	60.107	0.016637
210	14.123	8.002	59.862	0.016705
212	14.696	7.996	59.812	0.016719
220	17.186	7.969	59.613	0.016775
240	24.968	7.898	59.081	0.016926
260	35.427	7.823	58.517	0.017089
280	49.200	7.743	57.924	0.017264
300	67.005	7.661	57.307	0.01745
350	134.604	7.431	55.586	0.01799
400	247.259	7.172	53.648	0.01864
450	422.55	6.880	51.467	0.01943
500	680.86	6.543	48.948	0.02043
550	1045.43	6.143	45.956	0.02176
600	1543.2	5.655	42.301	0.02364
650	2208.4	4.999	37.397	0.02674
700	3094.3	3.651	27.307	0.03662

NOTE:
Weight of water per gallon is based on 7.48052 gallons per cubic foot.

Specific gravity of water @ 60°F = 1.00

STEAM TABLE*

h = Total heat of steam, Btu per pound
v = Specific volume, cubic feet per pound

Pressure psi (gage)	Temperature F° (sat.)		Saturated Liquid	Saturated Vapor	TOTAL TEMPERATURE, °F												
					220	240	260	280	300	320	340	360	380	400	420	440	460
0	212	h	180.1	1150.4	1154.4	1164.2	1173.8	1183.3	1192.8	1202.3	1211.7	1221.1	1230.5	1239.9	1249.3	1258.8	1268.2
		v	0.0167	26.80	27.15	28.00	28.85	29.70	30.53	31.37	32.20	33.03	33.85	34.68	35.50	36.32	37.14
5	228	h	196.2	1156.3		1162.3	1172.2	1182.0	1191.6	1201.2	1210.8	1220.3	1229.7	1239.2	1248.7	1258.2	1267.6
		v	0.0168	20.089		20.48	21.11	21.74	22.36	22.98	23.60	24.21	24.82	25.43	26.04	26.65	27.25
10	240	h	208.4	1160.6			1170.7	1180.6	1190.5	1200.2	1209.8	1219.4	1229.0	1238.5	1248.1	1257.6	1267.1
		v	0.0169	16.303			16.819	17.330	17.836	18.337	18.834	19.329	19.821	20.31	20.80	21.29	21.77
15	250	h	218.8	1164.1			1169.1	1179.3	1189.3	1199.1	1208.9	1218.6	1228.3	1237.9	1247.5	1257.0	1266.6
		v	0.0170	13.746			13.957	14.390	14.816	15.238	15.657	16.072	16.485	16.897	17.306	17.714	18.121
20	259	h	227.9	1167.1			1167.5	1177.9	1188.1	1198.1	1208.0	1217.8	1227.5	1237.2	1246.8	1256A	1266.1
		v	0.0171	11.898			11.911	12.288	12.659	13.025	13.387	13.746	14.103	14.457	14.810	15.162	15.512
25	267	h	236.0	1169.7				1176.5	1186.8	1197.0	1207.0	1216.9	1226.7	1236.5	12462	1255.9	1265.5
		v	0.0171	10.498				10.711	11.040	11.364	11.684	12.001	12.315	12.628	12.938	13.247	13.555
30	274	h	243.4	1172.0				1175.0	1185.6	1195.9	1206.0	1216.0	1225.9	1235.8	1245.6	1255.3	1265.0
		v	0.0172	9.401				9.484	9.781	10.072	10.359	10.643	10.925	11.204	11.482	11.758	120033
40	287	h	256.3	1175.9					1183.0	1193.6	1204.0	1214.3	1224.4	1234.3	1244.3	1254.1	1263.9
		v	0.0173	7.787					7.947	8.192	8.432	8.668	8.902	9.134	9.364	9.592	9.819
50	298	h	267.5	1179.1					1180.3	1191.3	1202.0	1212.5	1222.7	1232.9	1242.9	1252.9	1262.8
		v	0.0174	6.655					6.676	6.889	7.096	7.300	7.501	7.700	7.896	8.091	8.285
60	308	h	277.4	1181.9						1188.9	1199.9	1210.6	1221.1	1231.4	1241.6	1251.7	1261.7
		v	0.0175	5.816						5.9321	6.116	6.296	6.473	6.648	6.820	6.991	7.161
70	316	h	286.4	1184.2						1186.4	1197.7	1208.7	1219.4	1229.9	1240.2	1250.4	1260.6
		v	0.0176	5.168						5.200	5.366	5.528	5.687	5.843	5.997	6.150	6.301
80	324	h	294.6	1186.2							1195.5	1206.7	1217.7	1228.3	1238.8	1249.2	1259.4
		v	0.0177	4.652							4.773	4.921	5.065	5.207	5.347	5.485	5.621
90	331	h	302.1	1188.1							1193.2	1204.7	1215.9	1226.7	1237.4	1247.9	1258.2
		v	0.0178	4.232							4.292	4.429	4.562	4.693	4.821	4.947	5.071
100	338	h	309.1	1189.7							1190.8	1202.7	1214.1	1225.2	1236.0	1246.6	1257.1
		v	0.0178	3.882							3.895	4.022	4.146	4.267	4.385	4.502	4.617
125	353	h	324.8	1193.0								1197.3	1209.4	1211.1	1232.3	1243.3	1254.1
		v	0.0180	3.220								3.258	3.365	3.468	3.569	3.667	3.764
150	366	h	338.5	1195.6									1204.5	1216.7	1228.4	1239.8	1251.0
		v	0.0182	2.752									2.818	2.910	2.998	3.085	3.169
175	378	h	350.8	1197.6									1199.3	1212.2	1224.5	1236.3	1247.8
		v	0.0183	2.404									2.414	2.498	2.577	2.655	2.730
200	388	h	361.9	1199.3										1207.4	1220.3	1232.6	1244.5
		v	0.0185	2.134										2.180	2.253	2.324	2.393
225	397	h	372.1	1200.6										1202.5	1216.0	1228.8	1241.1
		v	0.0186	1.9183										1.9276	1.9964	2.062	2.126
250	406	h	381.6	1201.7											1211.5	1224.9	1237.6
		v	0.0187	1.7422											1.7870	1.8488	1.9081
275	414	h	390.5	1202.6											1206.8	1220.8	1234.0
		v	0.0188	1.5954											1.6130	1.6717	1.7277
300	422	h	398.8	1203.2												1216.5	1230.3
		v	0.0190	1.4711												1.5222	1.5755
350	436	h	414.1	1204.1												1207.5	1222.4
		v	0.0192	1.2720												1.2831	1.3326
400	448	h	428.1	1204.6													1214.0
		v	0.0194	1.1194													1.1468
450	460	h	440.9	1204.6													
		v	0.0196	0.9985													
500	470	h	452.9	1204.2													
		v	0.0198	0.9004													
550	480	h	464.1	1203.7													
		v	0.0200	0.8191													
600	489	h	474.7	1203.0													
		v	0.0202	0.7503													

*Adapted with permission from “Thermodynamic Properties of Steam”, Keenan and Keyes, published by John Wiley & Sons, Inc.

STEAM TABLE*

h = Total heat of steam, Btu per pound
v = Specific volume, cubic feet per pound

TOTAL TEMPERATURE, °F																	Temp-erature °F (sat.)	Pres-sure psi (gage)
480	500	520	540	560	580	600	620	640	660	680	700	720	740	750				
1277.6	1287.1	1296.6	1306.2	1315.7	1325.3	1334.8	1344.5	1354.2	1363.8	1373.5	1383.2	1393.0	1402.8	1407.7	h	212	0
37.96	38.78	39.60	40.41	41.23	42.04	42.86	43.68	44.49	45.31	46.12	46.94	47.75	48.56	48.97	v		
1277.1	1286.6	1296.2	1305.7	1315.3	1324.8	1334.4	1344.1	1353.8	1363.5	1373.2	1382.9	1392.7	1402.6	1407.5	h	228	5
27.86	28.46	29.06	29.67	30.27	30.87	31.47	32.07	32.67	33.27	33.87	34.47	35.07	35.67	35.96	v		
1276.6	1286.2	1295.8	1305.3	1314.9	1324.5	1334.1	1343.8	1353.5	1363.2	1372.9	1382.6	1392.5	1402.3	1407.2	h	240	10
22.26	22.74	23.22	23.71	24.19	24.68	25.16	25.64	26.12	26.60	27.08	27.56	28.04	28.52	28.76	v		
1276.2	1285.7	1295.3	1304.9	1314.5	1324.2	1333.8	1343.5	1353.2	1362.9	1372.6	1382.4	1392.3	1402.1	1407.0	h	250	15
18.528	18.933	19.337	19.741	20.144	20.547	20.95	21.35	21.75	22.15	22.56	22.96	23.36	23.76	23.96	v		
1275.7	1285.3	1294.9	1304.5	1314.1	1323.8	1333.5	1343.2	1352.9	1362.6	1372.3	1382.1	1391.9	1401.8	1406.7	h	259	20
15.862	16.210	16.558	16.905	17.251	17.597	17.943	18.288	18.633	18.977	19.322	19.666	20.01	20.35	20.52	v		
1275.2	1284.8	1294.5	1304.1	1313.8	1323.4	1333.1	1342.8	1352.5	1362.3	1372.1	1381.9	1391.7	1401.6	1406.5	h	267	25
13.862	14.168	14.473	14.778	15.082	15.385	15.688	15.990	16.293	16.595	16.896	17.198	17.499	17.8001	7.951	v		
1274.7	1284.4	1294.0	1303.7	1313.4	1323.1	1332.8	1342.5	1352.2	1362.0	1371.8	1381.6	1391.5	1401.4	1406.3	h	274	30
12.307	12.580	12.852	13.123	13.394	13.665	13.935	14.204	14.473	14.742	15.011	15.279	15.547	15.815	15.949	v		
1273.7	1283.4	1293.2	1302.9	1312.6	1322.4	1332.1	1341.9	1351.7	1361.5	1371.3	1381.1	1391.0	1400.9	1405.8	h	287	40
10.044	10.269	10.493	10.717	10.940	11.162	11.384	11.605	11.826	12.047	12.268	12.488	12.708	12.927	13.037	v		
1272.7	1282.5	1292.3	1302.1	1311.9	1321.7	1331.5	1341.3	1351.1	1360.9	1370.8	1380.6	1390.5	1400.4	1405.4	h	298	50
8.478	8.670	8.861	9.051	9.240	9.429	9.618	9.806	9.993	10.181	10.368	10.555	10.741	10.928	11.021	v		
1271.6	1281.5	1291.4	1301.3	1311.1	1321.0	1330.8	1340.6	1350.5	1360.3	1370.2	1380.1	1390.0	1399.9	1404.9	h	308	60
7.329	7.496	7.663	7.829	7.994	8.159	8.323	8.486	8.649	8.812	8.975	9.138	9.300	9.462	9.543	v		
1270.6	1280.6	1290.5	1300.5	1310.4	1320.2	1330.1	1340.0	1349.9	1359.8	1369.7	1379.6	1389.6	1399.5	1404.5	h	316	70
6.450	6.599	6.747	6.894	7.041	7.187	7.332	7.477	7.622	7.766	7.910	8.054	8.198	8.341	8.413	v		
1269.5	1279.6	1289.6	1299.6	1309.6	1319.5	1329.4	1339.4	1349.3	1359.3	1369.2	1379.1	1389.1	1399.0	1404.0	h	324	80
5.756	5.891	6.024	6.156	6.288	6.419	6.550	6.680	6.810	6.940	7.069	7.199	7.327	7.456	7.520	v		
1268.5	1278.6	1288.7	1298.8	1308.8	1318.8	1328.7	1338.7	1348.7	1358.6	1368.6	1378.5	1388.5	1398.5	1403.5	h	331	90
5.195	5.317	5.439	5.559	5.679	5.799	5.918	6.036	6.154	6.272	6.389	6.506	6.623	6.740	6.798	v		
1267.4	1277.7	1287.8	1297.9	1308.0	1318.0	1328.1	1338.1	1348.0	1358.0	1368.0	1378.0	1388.1	1398.1	1403.1	h	338	100
4.730	4.843	4.955	5.066	5.176	5.285	5.394	5.503	5.611	5.719	5.827	5.934	6.041	6.148	6.201	v		
1264.7	1275.2	1285.5	1295.8	1306.0	1316.2	1326.4	1336.5	1346.6	1356.6	1366.7	1376.8	1386.9	1397.0	1402.0	h	353	125
3.860	3.954	4.047	4.140	4.232	4.323	4.413	4.503	4.593	4.683	4.772	4.861	4.949	5.038	5.082	v		
1261.9	1272.6	1283.2	1293.6	1304.0	1314.3	1324.6	1334.8	1345.0	1355.2	1365.3	1375.4	1385.6	1395.8	1400.8	h	366	150
3.252	3.334	3.414	3.494	3.573	3.652	3.730	3.807	3.884	3.960	4.037	4.113	4.188	4.264	4.301	v		
1259.0	1270.0	1280.8	1291.4	1302.0	1312.4	1322.8	1333.2	1343.5	1353.7	1363.9	1374.2	1384.4	1394.6	1399.7	h	378	175
2.804	2.877	2.948	3.019	3.089	3.157	3.226	3.294	3.361	3.429	3.495	3.562	3.628	3.694	3.727	v		
1256.0	1267.3	1278.3	1289.2	1299.9	1310.5	1321.0	1331.4	1341.8	1352.2	1362.5	1372.8	1383.1	1393.3	1398.5	h	388	200
2.460	2.525	2.590	2.653	2.716	2.777	2.839	2.900	2.960	3.019	3.079	3.139	3.198	3.256	3.286	v		
1253.0	1264.5	1275.8	1286.9	1297.8	1308.5	1319.2	1329.8	1340.3	1350.7	1361.1	1371.5	1381.9	1392.2	1397.3	h	397	225
2.187	2.247	2.306	2.364	2.421	2.477	2.533	2.587	2.642	2.696	2.750	2.804	2.857	2.910	2.936	v		
1249.9	1261.7	1273.2	1284.5	1295.6	1306.5	1317.3	1328.0	1338.7	1349.2	1359.7	1370.2	1380.6	1391.0	1396.2	h	406	250
1.9654	2.021	2,076	2.129	2.181	2.233	2.284	2.334	2.384	2.434	2.483	2.532	2.580	2.629	2.653	v		
1246.6	1258.8	1270.6	1282.1	1293.4	1304.5	1315.5	1326.3	1337.0	1347.7	1358.3	1368.8	1379.3	1389.8	1395.0	h	414	275
1.7816	1.8338	1.8846	1.9342	1.9829	2.031	2.078	2.125	2.171	2.217	2.262	2.307	2.352	2.396	2.418	v		
1243.3	1255.8	1267.9	1279.7	1291.2	1302.5	1313.6	1324.5	1335.4	1346.1	1356.8	1367.4	1378.0	1388.6	1393.8	h	422	300
1.6266	1.6759	1.7237	1.7703	1.8159	1.8607	1.9048	1.9483	1.9912	2.034	2.076	2.118	2.159	2.200	2.220	v		
1236.4	1249.6	1262.4	1274.7	1286.6	1298.2	1309.7	1320.9	1332.0	1343.0	1353.9	1364.7	1375.4	1386.1	1391.4	h	436	350
1.3795	1.4243	1.4675	1.5094	1.5501	1.5900	1.6291	1.6676	1.7056	1.7430	1.7801	1.8168	1.8531	1.8892	1.9071	v		
1229.0	1243.2	1256.6	1269.4	1281.8	1293.9	1305.7	1317.2	1328.6	1339.8	1350.9	1361.9	1372.8	1383.6	1389.0	h	448	400
1.1908	1.2325	1.2724	1.3108	1.3480	1.3842	1.4196	1.4544	1.4885	1.5222	1.5554	1.5883	1.6207	1.6529	1.6689	v		
1221.2	1236.3	1250.5	1264.0	1276.9	1289.4	1301.6	1313.5	1325.1	1336.5	1347.8	1359.0	1370.1	1381.1	1386.5	h	460	450
1.0416	1.0811	1.1186	1.1544	1.1889	1.2224	1.2550	1.2868	1.3180	1.3488	1.3789	1.4088	1.4382	1.4675	1.4819	v		
1212.8	1229.0	1244.0	1258.3	1271.8	1284.8	1297.3	1309.6	1321.5	1333.2	1344.7	1356.1	1367.3	1378.4	1384.0	h	470	500
0.9204	0.9584	0.9941	1.0280	1.0604	1.0917	1.1221	1.1516	1.1805	1.2088	1.2367	1.2641	1.2913	1.3180	1.3313	v		
	1221.4	1237.4	1252.4	1266.5	1280.0	1293.0	1305.6	1317.8	1329.8	1341.6	1353.2	1364.6	1375.8	1381.4	h	480	550
	0.8565	0.8909	0.9234	0.9542	0.9838	1.0124	1.0401	1.0671	1.0935	1.1195	1.1449	1.1700	1.1947	1.2070	v		
	1213.2	1230.3	1246.1	1261.0	1275.1	1288.5	1301.5	1314.1	1326.3	1338.3	1350.2	1361.8	1373.2	1378.9	h	489	600
	0.7703	0.8040	0.8353	0.8649	0.8931	0.9203	0.9465	0.9720	0.9968	1.0211	1.0450	1.0684	1.0916	1.1030	v		

*Adapted with permission from “Thermodynamic Properties of Steam”, Keenan and Keyes, published by John Wiley & Sons, Inc.

Miami, FL 305-831-2618 • Fax: 305-640-9786

info@vaportec-corp.com • www.vaportec-corp.com

Request quote