

RADAFAB FABRICATED WYE STRAINER

MODEL YBS

STANDARD STRAINER: OUR FABRICATED STRAINER CAN BE SUPPLIED FLANGED, BUTTWELD, OR ANY COMBINATION. QUICK OPENING CLOSURES ARE AVAILABLE.

STANDARD MATERIAL SPECIFICATIONS: STANDARD MATERIAL OF CONSTRUCTION IS CARBON STEEL. BASKET MATERIAL IS SPECIFIED BY THE CUSTOMER.

OTHER MATERIALS AVAILABLE IN:

1 1/4 CR - 1/2 MO

5 CR - 1/2 MO

9 CR - 1 MO

304/304L SS

316/316L SS MONEL

OTHER ALLOYS - REVIEWED ON AN INDIVIDUAL BASIS.

DIMENSIONAL DATA: SEE FOLLOWING PAGES.

PRESSURE DROP INFORMATION: AVAILABLE ON REQUEST.

RECOMMENDED SPARE PARTS:

- 1.) BASKET
- 2.) GASKETS FOR ACCESS OPENING
- 3.) O-RINGS FOR QUICK OPENING ACCESS CLOSURES

OPTIONS:

- 1.) QUICK OPENING CLOSURES
- 2.) PRESSURE TAP CONNECTIONS
- 3.) VENTS
- 4.) CONTINUOUS SLOT-OPENING WEDGE WIRE Basket
- 5.) HINGE FOR ACCESS BLIND FLANGE
- 6.) FLAT TOP BASKET FOR OFFSET NOZZLES
- 7.) BLOWDOWN BASKET

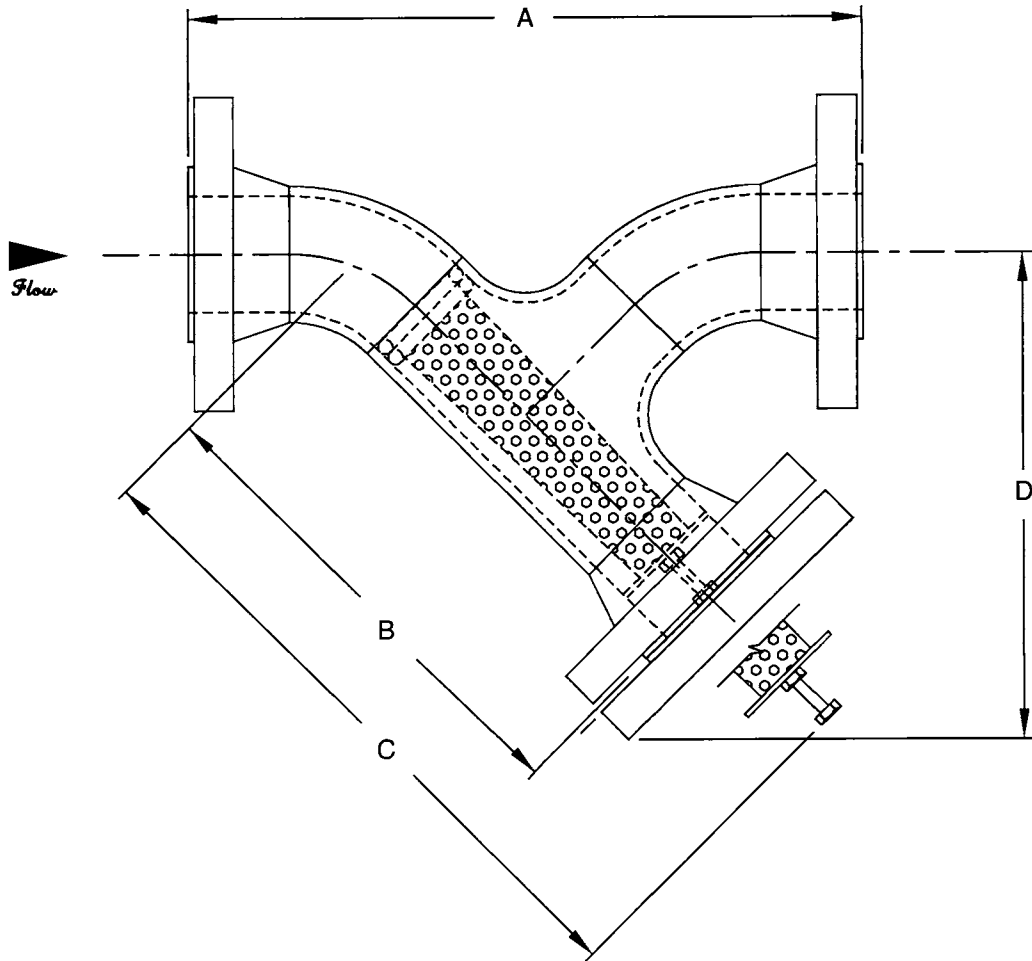
DESIGN CODES/ STANDARDS: STANDARD DESIGN AND FABRICATION PER ASME B31.3
OTHER CODES AVAILABLE ARE:
A.S.M.E. 31.1
A.S.M.E. B31.8
A.S.M.E. PRESSURE VESSEL AND BOILER CODE, SECTION VIII, DIV. 1.
N.A.C.E.
M.D.M.T. REQUIRED FOR A.S.M.E. B31.3 AND SECTION VIII DESIGN.

PAINT/COATINGS: AS SPECIFIED BY CUSTOMER

NDE: PER APPLICABLE CODE AND/OR AS SPECIFIED BY CUSTOMER.

FABRICATED FLANGED WYE STRAINER

MODEL YBS STANDARD



CLASS 150, DIMENSIONAL DATA

SIZE	DIM. A	DIM. B	DIM. C	DIM. D	WEIGHT
2"	13 1/4"	9"	15 7/8"	8 1/2"	34 LBS
3"	17 1/8"	11 1/2"	21"	10 3/4"	67 LBS
4"	20 3/4"	13 3/4"	25"	19 1/2"	93 LBS
6"	28 1/8"	18 1/2"	33 1/4"	17"	166 LBS
8"	35 5/16"	23"	41"	21"	282 LBS
10"	41 11/16"	27 1/4"	48 1/4"	24 15/16"	463 LBS
12"	49 1/16"	32"	56 1/2"	29 3/8"	625 LBS
14"	55 3/4"	35 3/4"	62 3/4"	32 3/4"	829 LBS
16"	61 3/8"	39"	68"	35 15/16"	1054 LBS
18"	68 3/4"	43 3/4"	76 1/4"	39 13/16"	1305 LBS
20"	75 1/2"	48 3/16"	83 7/8"	43 13/16"	1612 LBS
24"	87 7/16"	54"	93"	49 1/2"	2195 LBS

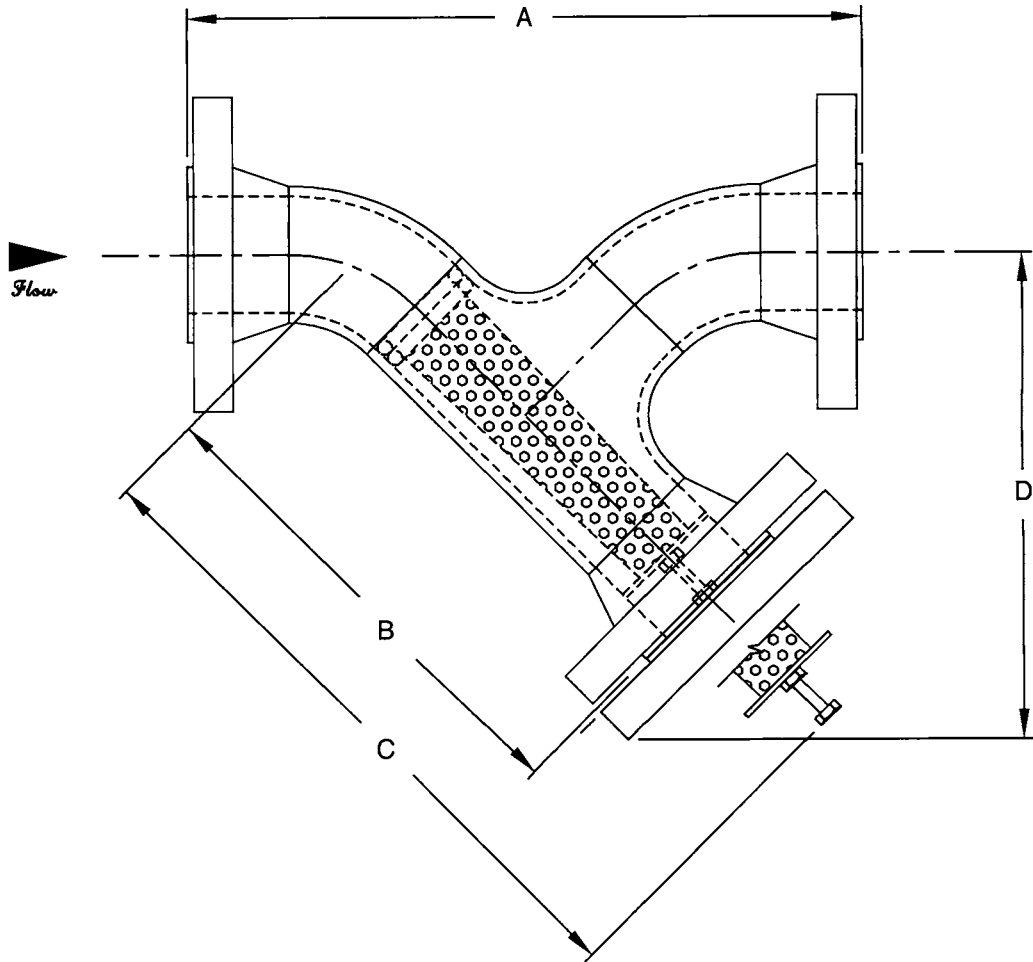
NOTE: DIMENSIONS SHOWN ARE (REFERENCE DIMENSIONS) FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS WILL BE PROVIDED ON "AS-BUILT" DRAWINGS, AVAILABLE WITH ORDER. THE DIMENSIONS ABOVE ARE ONLY APPLICABLE WITH RAISED FACE WELD NECK (RFWN) FLANGES. ALL DIMENSIONS ARE BASED ON STANDARD SIZES LISTED IN SPECIFICATIONS ASME/ANSI B16.5 AND ASME B16.9 FOR FLANGED FITTINGS AND BUTTWELDING FITTINGS, RESPECTIVELY. LARGER SIZES AVAILABLE PER ASME B16.47, SERIES "A" & "B".

DESIGN CRITERIA:

STANDARD DESIGN & FABRICATION ARE IN ACCORDANCE WITH ASME B31.3. OTHER CODES ARE AVAILABLE

FABRICATED FLANGED WYE STRAINER

MODEL YBS STANDARD



CLASS 300, DIMENSIONAL DATA

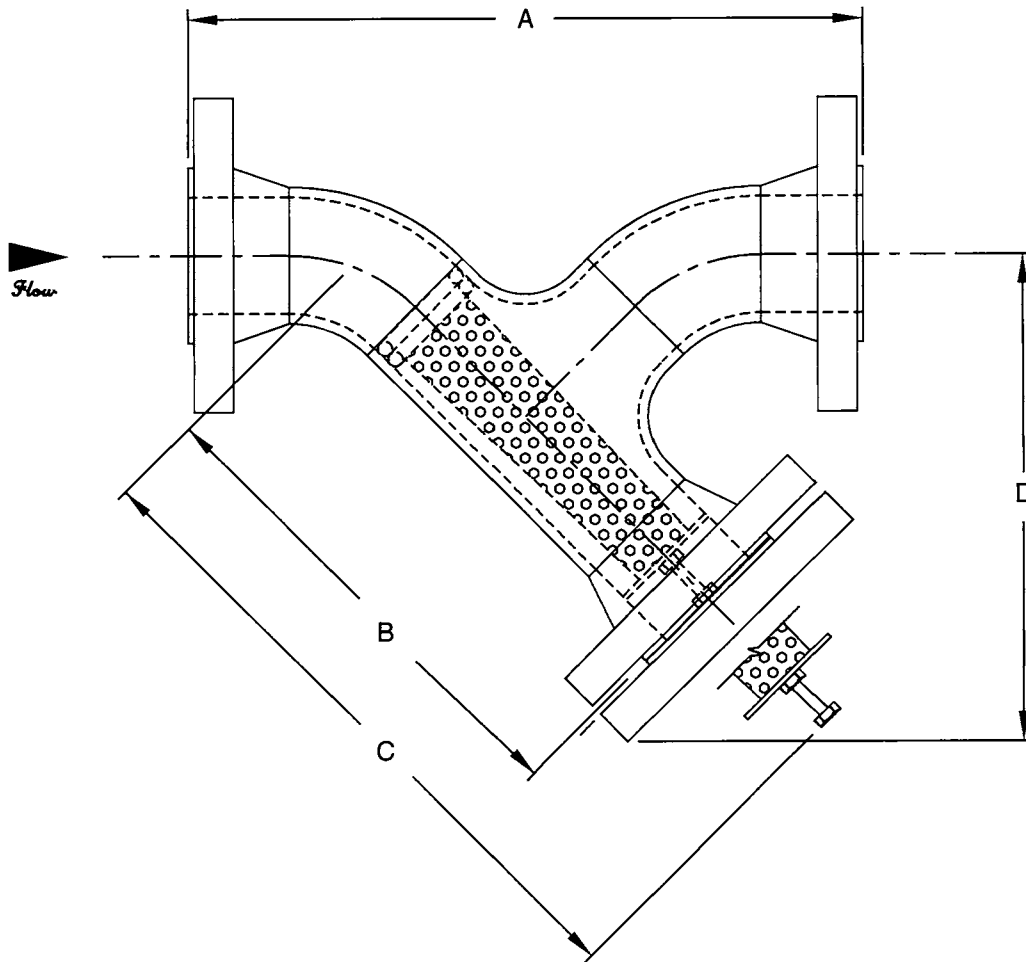
SIZE	DIM. A	DIM. B	DIM. C	DIM. D	WEIGHT
2"	13 3/4"	9 1/4"	17 1/4"	9 1/2"	42 LBS
3"	17 7/8"	12 1/8"	22 1/4"	12 1/2"	66 LBS
4"	21 1/2"	14 7/8"	27 1/4"	15 1/16"	118 LBS
6"	28 15/16"	18 7/8"	34"	18 15/16"	236 LBS
8"	36 1/16"	23 3/8"	41 3/4"	23 1/4"	406 LBS
10"	42 15/16"	27 7/8"	49 1/2"	27 5/8"	628 LBS
12"	50 5/16"	32 5/8"	57 3/4"	32 1/8"	863 LBS
14"	56 15/16"	36 5/16"	63 7/8"	35 3/4"	1171 LBS
16"	62 7/8"	39 3/4"	69 1/2"	39"	1516 LBS
18"	70 1/4"	44 1/2"	77 3/4"	43 1/2"	1939 LBS
20"	76 7/8"	48 7/8"	85 1/4"	47 5/8"	2406 LBS
24"	88 11/16"	54 5/8"	94 1/4"	53 7/8"	3342 LBS

NOTE: DIMENSIONS SHOWN ARE (REFERENCE DIMENSIONS) FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS WILL BE PROVIDED ON "AS-BUILT" DRAWINGS, AVAILABLE WITH ORDER. THE DIMENSIONS ABOVE ARE ONLY APPLICABLE WITH RAISED FACE WELD NECK (RFWN) FLANGES. ALL DIMENSIONS ARE BASED ON STANDARD SIZES LISTED IN SPECIFICATIONS ASME/ANSI B16.5 AND ASME B16.9 FOR FLANGED FITTINGS AND BUTTWELDING FITTINGS, RESPECTIVELY. LARGER SIZES AVAILABLE PER ASME B16.47, SERIES "A" & "B".

DESIGN CRITERIA:
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FABRICATED FLANGED WYE STRAINER

MODEL YBS STANDARD



CLASS 600, DIMENSIONAL DATA

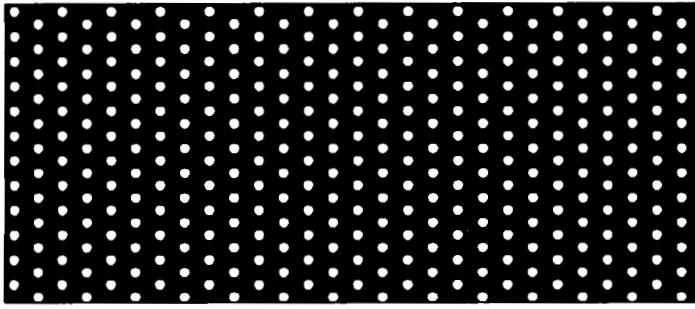
SIZE	DIM. A	DIM. B	DIM. C	DIM. D	WEIGHT
*2"	14 1/2"	9 5/8"	17 3/4"	9 7/8"	55 LBS
3"	19 1/8"	12 1/2"	22 3/4"	12 3/4"	99 LBS
4"	23 1/4"	15 3/4"	28 1/4"	16 3/16"	189 LBS
6"	30 1/8"	19 7/8"	36"	20 5/8"	378 LBS
8"	38 5/16"	24 1/2"	44"	25 1/8"	590 LBS
10"	46 3/16"	29 1/2"	52 3/4"	30 1/8"	1003 LBS
12"	52 13/16"	33 7/8"	60 1/4"	34 1/8"	1219 LBS
14"	59 3/16"	37 1/2"	66 1/4"	37 3/8"	1348 LBS
16"	65 7/8"	41 1/4"	72 1/2"	41 1/4"	2330 LBS
18"	72 3/4"	45 3/4"	80 1/4"	45 11/16"	2846 LBS
20"	79 9/16"	50 1/4"	88"	50"	3618 LBS
24"	91 7/8"	56 1/4"	97 1/2"	56 5/8"	5029 LBS

NOTE: * PIPE PUB REQUIRED ON CLOSED END FOR FULL FLANGE BOLT ACCESS (2" MIN. LENGTH).
 DIMENSIONS SHOWN ARE (REFERENCE DIMENSIONS) FOR ESTIMATING PURPOSES ONLY.
 ACTUAL DIMENSIONS WILL BE PROVIDED ON "AS-BUILT" DRAWINGS, AVAILABLE WITH ORDER.
 THE DIMENSIONS ABOVE ARE ONLY APPLICABLE WITH RAISED FACE WELD NECK (RFWN) FLANGES.
 ALL DIMENSIONS ARE BASED ON STANDARD SIZES LISTED IN SPECIFICATIONS ASME/ANSI B16.5
 AND ASME B16.9 FOR FLANGED FITTINGS AND BUTTWELDING FITTINGS, RESPECTIVELY.
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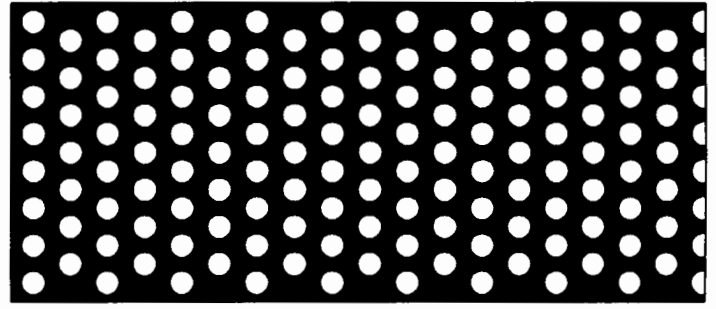
DESIGN CRITERIA:

STANDARD DESIGN & FABRICATION ARE IN ACCORDANCE WITH ASME B31.3. OTHER CODES ARE AVAILABLE

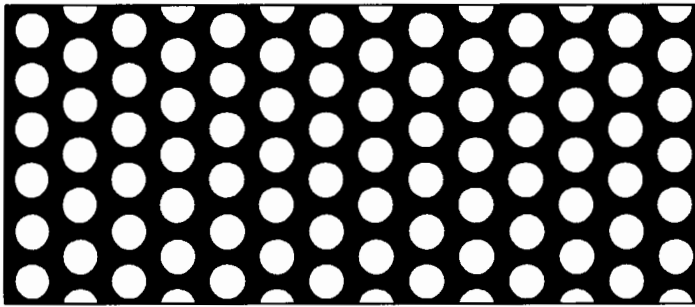
BASE MATERIALS FOR STRAINERS



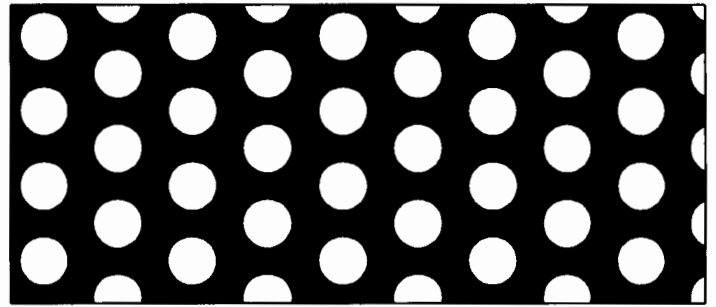
1/16"∅ on 1/8" ctrs.



1/8"∅ on 3/16" ctrs.



3/16"∅ on 1/4" ctrs.



1/4"∅ on 3/8" ctrs.

PERFORATED MATERIALS

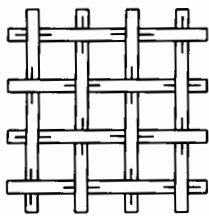
Gage	Perforation	Holes/sq. in.	% of Open Area	Material Range
20	1/16"∅ on 1/8" ctrs.	74.0	22.7%	Carbon Steel, 304SS, 316SS
16	1/8"∅ on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS 304L, 316L, Monel
16	3/16"∅ on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
16	1/4"∅ on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
14	1/8"∅ on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS
14	3/16"∅ on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
14	1/4"∅ on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
12	1/8"∅ on 3/16" ctrs.	33.0	40.3%	Carbon Steel
11	1/8"∅ on 3/16" ctrs.	33.0	40.3%	304SS, 316SS
11	1/4"∅ on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS

OTHER PERFORATIONS AVAILABLE UPON REQUEST.

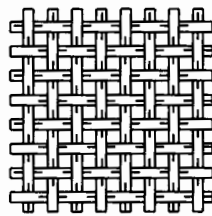
WIRE MESH TYPE BASE MATERIAL (Available From Stock)

Mesh	Wire Diameters		Width of Opening		% of Opening	Material Range
	in.	mm.	in.	mm.		
2	.063	1.6	.437	11.10	76.4%	Carbon Steel, 304SS, 316SS
3	.063	1.6	.270	6.86	65.5%	Carbon Steel, 304SS, 316SS
4	.063	1.6	.187	4.75	56.0%	Carbon Steel, 304SS, 316SS
5	.063"	1.6	.137	3.48	46.9%	Carbon Steel, 304SS, 316SS
6	.047	1.19	.120	3.50	51.8%	Carbon Steel, 304SS, 316SS
8	.047	1.19	.078	1.98	38.9%	Carbon Steel, 304SS, 316SS

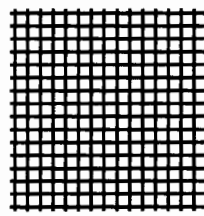
OTHER SIZES AND MATERIALS AVAILABLE UPON APPLICATION.



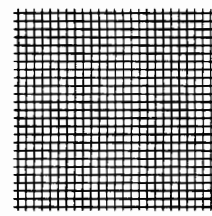
4 Mesh
.072



8 Mesh
.047



10 Mesh
.025



20 Mesh
.016

WIRE MESH LINER MATERIAL (Available From Stock)

Mesh	Wire Diameters		Width of Opening		% of Opening	Material Range
	in.	mm.	in.	mm.		
10	.025	.640	.075	1.91	56.3%	304SS, 316SS
20	.016	.406	.034	.86	46.2%	304SS, 316SS
30	.013	.330	.020	.52	37.1%	304SS, 316SS
40	.010	.254	.015	.38	36.0%	304SS, 316SS
50	.009	.229	.011	.28	30.3%	304SS, 316SS
60	.0075	.191	.009	.23	30.5%	304SS, 316SS
80	.0055	.140	.007	.19	31.4%	304SS, 316SS
100	.0045	.114	.006	.14	30.3%	304SS, 316SS

OTHER SIZES AND MATERIALS AVAILABLE UPON APPLICATION.

Fabricated Y-Strainer Pressure Drop — Liquids (Sizes 2 - 24)

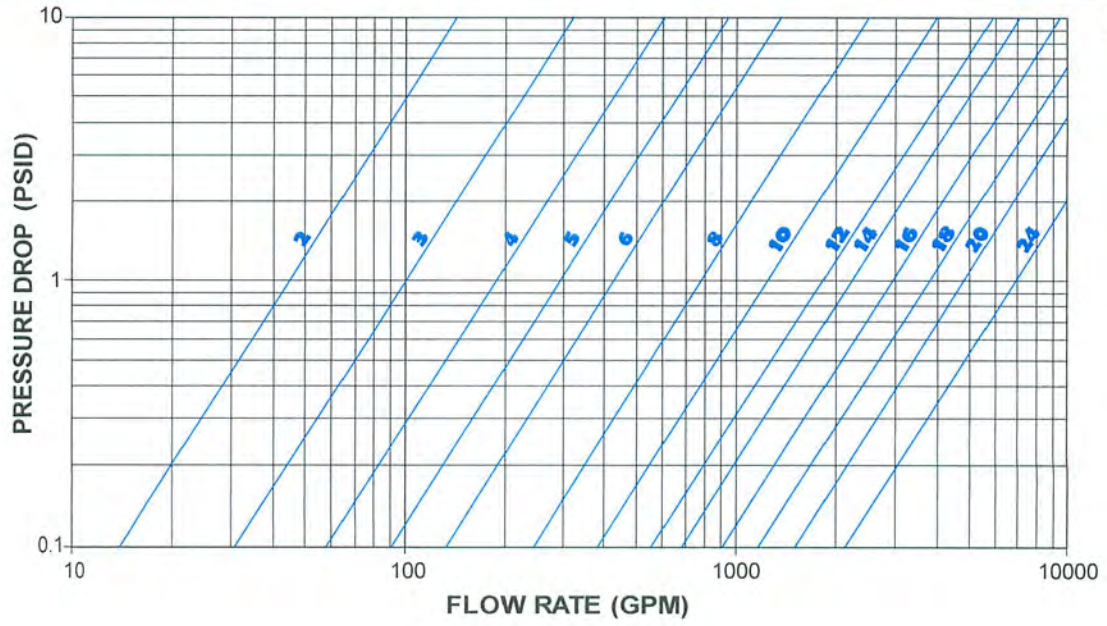


FIGURE 3

Screen Correction Factor Chart (For Non-Standard and Mesh Lined Screens)

*Multiply values obtained from figure 1 thru 6 by the appropriate values shown below

Chart #1

Size Range	SCREEN OPENINGS							
	Perforated Plate % Screen Material Open Area					Mesh lined standard screens % Screen Material Open Area		
	60%	50%	40%	30%	20%	50%	40%	30%
$\frac{1}{4}$ " - $1\frac{1}{2}$ "	0.45	0.55	0.7	1	1.15	1.05	1.05	1.2
2" - 48"	0.65	0.8	1	1.4	2.15	1.05	1.05	1.2

- Notes:**
1. See page 5 for % Open Areas of Radafab inventoried perforated plate.
 2. Standard screens for sizes $\frac{3}{4}$ " to $1\frac{1}{2}$ " is approximately a 30% open area screen media
 3. Standard screens for sizes 2" and larger is approximately a 40% open area screen media

Example:

Strainer Size:	10"	A) Using figure 5 the pressure drop is determined to be 2.0 psid with Radafab's standard screen.
Rad Model:	RAD-FAB-Y	B) Looking at page 6 we find that the % Open area of 100 mesh is 30%.
Filtration:	100 Mesh lined $\frac{1}{8}$ " Perf.	C) Using chart 1 we read the correction factor to be 1.2 for 100 mesh lined $\frac{1}{8}$ " perf.
Flow rate:	3000 GPM	D) Total pressure drop equals $2.0 \times 1.2 = 2.4$ psid clean.
Service:	Water	

Viscosity and Density Correction Factor Chart

Chart #2				Chart #3			
Size Range	Component Factor (CF)	Viscosity Cp	Body Loss Factor (BF)	Screen Loss Factor			
				Perf alone (PF)	20 Mesh Lined (MF)	30, 40, Mesh Lined (MF)	60 to 300 Mesh Lined (MF)
$\frac{3}{4}$ " - $1\frac{1}{2}$ "	0.25	10	1	1.15	1.3	1.4	1.5
2" - 48"	0.35	25	1.2	1.25	2	2.2	2.5
		100	1.6	1.4	3	4	6.5
		200	2.2	1.5	4.5	7	11.5
		500	4.4	1.6	10	15	25
		1000	8	1.7	15	30	50
		2000	15.2	1.9	30	60	100

How to Use:

- 1) Determine the pressure drop (P1) through the strainer with water flow and standard screens.
- 2) If non-standard screens (i.e. 40 mesh, etc.) are being used, apply factors in Chart #1 to determine corrected pressure drop (P2).
- 3) Multiply P1 or P2 (if used) by the specific gravity of the fluid actually flowing through the strainer to get P3.
- 4) Using Chart #2 multiply P3 by the appropriate Component Factor (CF) to get P4.
- 5) Let $P5 = P3 - P4$.
- 6) Multiply P4 by the appropriate Body Loss Factor (BF) in Chart #3 to get P6.
- 7) Multiply P5 by the appropriate Screen Loss Factor (PF or MF) in Chart #3 to get P7.
- 8) Total pressure drop $P8 = P6 + P7$.

Example:

Strainer Size:	10"	A) As shown in the above example, the corrected pressure drop (P2) = 2.4 psid
Rad Model:	RAD-FAB-Y	B) Since S.G. = 1, $P3 = P2 = 2.4$ psid
Filtration:	100 mesh lined $\frac{1}{8}$ " perf.	C) Using Chart #2 $P4 = 0.35 \times P3 = 0.84$ psid
Flow rate:	3000 GPM	D) $P5 = 2.4 - 0.84 = 1.56$ psid
Specific Gravity:	1	E) Using Chart #3 $P6 = 0.84 \times 1.6 = 1.34$ psid
Viscosity:	100 cP	F) Again using Chart #3 $P7 = 1.56 \times 6.5 = 10.14$ psid
		G) Total pressure drop $P8 = 1.34 + 10.14 = 11.48$ psid clean

Correction Factors For Clogged Screens

* Multiply values obtained from figures 1 thru 6 by the appropriate values shown below

Chart #4

% 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	-

Notes: 1. See page 10 for the ratio of free area to pipe area for Radafab Strainers equipped with standard screens.
 2. For screens other than Radafab's standard, use the following formula to calculate the ratio free area to pipe area:

$$R = \frac{A_g \times OA}{100A_p}$$

Where;

- R = Ratio free area to pipe area
- A_g = Gross screen area, sq. in. (See page 10)
- OA = Open area of screen media, % (See page 5, i.e. 1/8" perf. = 40%)
- A_p = Nominal area of pipe fitting sq. in. (See page 10)

Example #1

Strainer Size: 8"
RAD Model: RAD-FAB-T
Filtration: 1/8" Perf.
Flow rate: 1000 GPM
Service: Water
% Clogged: 20%

- A) Using Figure #4 the pressure drop is determined to be 0.9 psid with Radafab's standard screen.
- B) Looking at page 10 ratio of free area to pipe area for a 8" Radafab series T strainer is equal to 1.3:1 (1:1 approx.).
- C) Using Chart #4 we read the correction factor to be 3.9 at 20% clogged.
- D) Total pressure drop equals 0.9 x 3.9 = 3.51 psid when 20% clogged.

Example #2

Strainer Size: 8"
RAD Model: RAD-FAB-T
Filtration: 5/32" Perf.
Flow rate: 1000 GPM
Service: Water
% Clogged: 60%

- A) Using Figure #4 the pressure drop is determined to be 0.9 psid with IFC's standard screen.
- B) Looking at page 24 we find that the % Open area (OA) of 5/32" Perf. is 58%.
- C) Using Chart #1 we read the correction factor to be 0.65 for 5/32" Perf.
- D) Total clean pressure drop equals 0.9 x 0.65 = 0.59 psid.
- E) Since a non-standard screen is being used, we must calculate the Ratio free area to pipe area.
- F) Looking at page 10 we find A_g = 167 in², A_p = 50.03 in².
- G) The ratio free area to pipe area is calculated as 1.9:1. (2:1 approx.)
- H) Using Chart #4 we read the correction factor to be 3.7 at 60% clogged.
- I) Total pressure drop equals 0.59 x 3.7 = 2.2 psid when 60% clogged.



RADAFAB
OILFIELD & INDUSTRIAL SUPPLY INC.

Serving the Oil and Gas Industries Since 1982

Engineering Data Fabricated Strainer Screen Effective Areas

Radafab Fabricated Strainer Screen Effective Areas

Strainer Type	Pipe Size (In.)	Std. Opening (in.)	Nominal Area of Sch. 40 / Std. Pipe (Sq. In.)	Gross Screen Area (Sq. In.)	Free Area (Sq. In.)	Ratio Free Area to Pipe Area
Y (Style #1)	2	0.125	3.36	39	16	4.6
Y (Style #1)	3	0.125	7.39	77	31	4.2
Y (Style #1)	4	0.125	12.73	135	54	4.2
Y (Style #1)	5	0.125	20.01	160	64	3.2
Y (Style #1)	6	0.125	28.89	215	86	3.0
Y (Style #1)	8	0.125	50.03	375	150	3.0
Y (Style #1)	10	0.125	78.85	545	218	2.8
Y (Style #1)	12	0.125	113.10	785	314	2.8
Y (Style #1)	14	0.188	140.50	900	360	2.6
Y (Style #1)	16	0.188	185.66	1210	484	2.6
Y (Style #1)	18	0.188	237.10	1560	624	2.6
Y (Style #1)	20	0.188	294.83	1950	780	2.6
Y (Style #1)	24	0.188	429.13	2765	1106	2.6

Certificate of Authorization Permit

Quality Management System

Expiry Date: **November 4, 2017**

Reg. No.: **AQP-1181**

RADAFAB OILFIELD & INDUSTRIAL SUPPLY INC.

7225 - 108 AVENUE S.E.
CALGARY, ALBERTA

having complied with the provisions of the SAFETY CODES ACT, is hereby authorized to perform the activities identified in the following table:

	<u>Construction</u>	<u>Repair</u>	<u>Alter</u>
Pressure Vessels			
ASME Section VIII-1 Pressure Vessels	Shop	Shop	Shop
Indirect Fired Heater Coils			
ASME B31.3 Indirect Fired Heater Coils	Shop	Shop	Shop
Pressure Piping			
ASME B31.3 Process Piping	Shop	Shop	Shop
Fittings			
Category A,E,H	Shop	Shop	Shop

As a condition of this permit, the holder is required to participate in interim audits by a safety codes officer to verify that the quality management system is being maintained in a manner acceptable to a safety codes officer.

Dated at Edmonton, this 30th day of July, 2014




Chief Inspector and Administrator

Certificate No.: 10064