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BREAKING THE MOLD

For over 80 years Aitken has partnered with clients to engineer and manufacture equipment solutions for their critical projects. Having earned trust from some of industry's iconic brands, it is our experience, expertise and willingness to challenge the norm that helps our clients, big and small, thrive.

Our team is crafted with people that drive innovation by thinking without limits. This allows us to be highly responsive to evolving needs throughout a project, manage tight fabrication schedules and maintain quality control timing to deliver products on time.

KEY PRODUCT CATEGORIES

Over the years, we have become known for working alongside our clients in helping to clearly identify the challenge so our engineering department can design custom solutions. When a more standardized product is needed, our catalogue offers a wide range of products that service heavy industrial industries. Products are available in carbon steel and most alloys ranging in size up to 72" and beyond.'

- Plate Products
- Pressure Vessels
- Flow Products
- Metering Products

AREAS OF EXPERTISE



Engineering Design

Inhouse PE and application engineers with direct experience with parts



Customization

Solution-focused designs



Specialty welding

450+ welding procedures for ferrous and exotic metals



Material Sourcing

Domestic and international



Fabrication

Advanced FEA and CFD capabilities



Field Installation

Access to 1,000+ craft labor for larger installs



CERTIFICATIONS



SPECTACLE BLINDS PADDLE BLINDS & PADDLE SPACERS



Plate Products

GENERAL INFORMATION

Aitken plate product thicknesses are based on ASME B16.48 specifications. In July 1993 the American Society of Mechanical Engineers (ASME) B16 committee gave to its Subcommittee C the assignment to convert the API 590 steel line blanks standard into an ASME standard.

The American Petroleum Institute no longer publishes the API 590 standard. Pressure-temperature ratings are those listed in ASME B16.5 for the material groups corresponding to the listed materials in Table 1A and shall include material restrictions cited in notes of Table 2.

Aitken standard manufacturing tolerances are as follows:

- Outside diameter: (+0.00", -0.0625")
- Inside diameter: (+/- 0.0625")
- Thickness: (per B16.48 tolerances)

Ring joint dimensions and tolerances are in strict accordance with ANSI B16.5 and B16.20. Octagonal ring is furnished as standard on male ring joint plate products unless oval ring is specified at time of order.

For paddle spacers, the hole diameter in the handle is 1/2" for 1" wide handles, and 3/4" for 1 1/2" wide handles.

ASME B16.48 prohibits the use of indicator or bolt holes in the handles of paddle blanks.

One coat of standard shop primer will be applied to all carbon steel plate products unless otherwise specified.

Standard materials are:

- ASTM A516 GR 70
- 304 stainless steel
- 316 stainless steel

Other alloys can be furnished upon request.

Standard finishes are:

- Mill Finish (MF): Some scale may be apparent
- Serrated Finish (SF): 125-250 AARH (3.2 - 6.3 Ra)

Aitken plate products are produced in strict accordance with the following codes of practice:

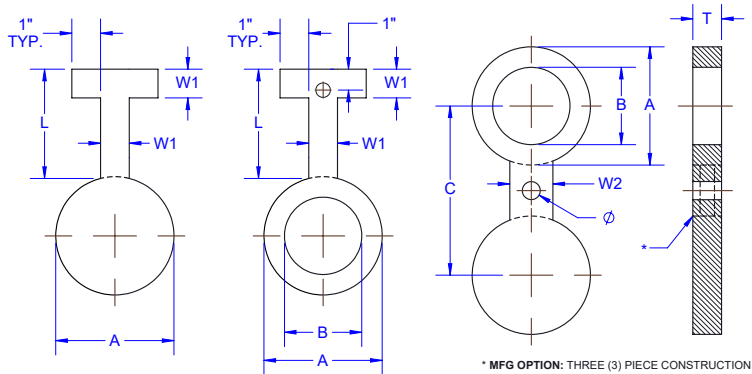
- ASME B16.48
- ANSI B16.5
- ANSI B16.20
- ASME B16.47 (for larger diameter flanges)

Weights are for carbon steel components.



Class 150 Raised/ Flat Face

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)								WT (LBS)		
	A	B	C	T	L	W1	W2	Ø	1	1A	2
1/2"	1.75"	0.62"	2.38"	*0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
3/4"	2.12"	0.82"	2.75"	*0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
1"	2.50"	1.05"	3.12"	*0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
1 1/4"	2.88"	1.66"	3.50"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
1 1/2"	3.25"	1.90"	3.88"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	2
2"	4.00"	2.38"	4.75"	0.25"	4.00"	1.00"	2.00"	N/A	2	1	2
2 1/2"	4.75"	2.88"	5.50"	0.25"	4.00"	1.00"	2.00"	N/A	2	2	3
3"	5.25"	3.50"	6.00"	0.25"	4.00"	1.00"	2.50"	N/A	2	2	3
3 1/2"	6.25"	4.00"	7.00"	0.38"	4.00"	1.00"	2.50"	0.75"	4	3	6
4"	6.75"	4.50"	7.50"	0.38"	4.00"	1.00"	2.50"	0.75"	5	3	7
5"	7.62"	5.56"	8.50"	0.38"	4.00"	1.00"	3.00"	0.875"	6	3	8
6"	8.62"	6.62"	9.50"	0.50"	4.00"	1.00"	3.00"	0.875"	9	4	13
8"	10.88"	8.62"	11.75"	0.50"	4.00"	1.00"	3.00"	0.875"	14	6	19
10"	13.25"	10.75"	14.25"	0.62"	5.00"	1.00"	4.00"	1.00"	26	10	34
12"	16.00"	12.75"	17.00"	0.75"	5.00"	1.50"	4.00"	1.00"	45	18	60
14"	17.62"	14.00"	18.75"	0.75"	5.00"	1.50"	4.25"	1.125"	54	21	73
16"	20.12"	16.00"	21.25"	0.88"	5.00"	1.50"	4.25"	1.125"	81	31	110
18"	21.50"	18.00"	22.75"	1.00"	5.00"	1.50"	4.50"	1.25"	106	33	136
20"	23.75"	20.00"	25.00"	1.12"	5.00"	1.50"	4.75"	1.25"	144	44	185
24"	28.12"	24.00"	29.50"	1.25"	5.00"	1.50"	5.50"	1.375"	223	63	283

WT=Approximate Weight

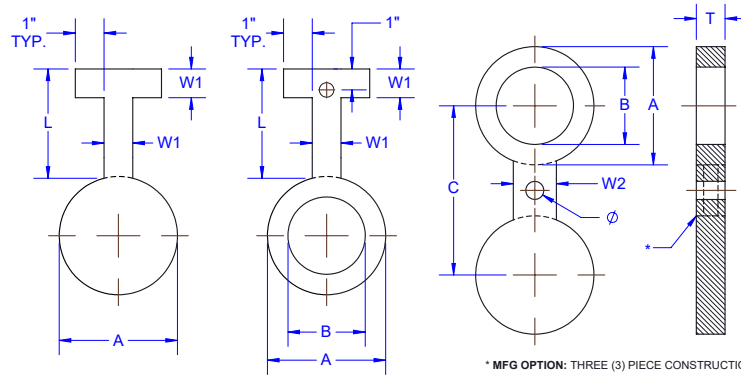
*Thickness exceeds ASME B16.48 requirements.

SIZE	RATING/FACING	TYPE	MATERIAL	GASKET SURFACE
1/2-24	150#	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	MF=Mill Finish SF=Serrated Finish 125-250 AARH (3.2 - 6.3 Ra) X=Other



Class 300 Raised/ Flat Face

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)								WT (LBS)		
	A	B	C	T	L	W1	W2	Ø	1	1A	2
1/2"	2.00"	0.62"	2.62"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
3/4"	2.50"	0.82"	3.25"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
1"	2.75"	1.05"	3.50"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
1 1/4"	3.12"	1.66"	3.88"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	2
1 1/2"	3.62"	1.90"	4.50"	0.25"	4.00"	1.00"	1.50"	N/A	2	1	2
2"	4.25"	2.38"	5.00"	0.38"	4.00"	1.00"	2.00"	0.75"	2	2	3
2 1/2"	5.00"	2.88"	5.88"	0.38"	4.00"	1.00"	2.00"	0.875"	3	2	4
3"	5.75"	3.50"	6.62"	0.38"	4.00"	1.00"	2.50"	0.875"	4	3	5
3 1/2"	6.38"	4.00"	7.25"	0.50"	4.00"	1.00"	2.50"	0.875"	6	4	8
4"	7.00"	4.50"	7.88"	0.50"	4.00"	1.00"	2.50"	0.875"	7	4	9
5"	8.38"	5.56"	9.25"	0.62"	4.00"	1.00"	3.00"	0.875"	11	7	16
6"	9.75"	6.62"	10.62"	0.62"	4.00"	1.00"	3.00"	0.875"	14	8	21
8"	12.00"	8.62"	13.00"	0.88"	4.00"	1.00"	3.00"	1.00"	30	15	43
10"	14.12"	10.75"	15.25"	1.00"	5.00"	1.00"	4.00"	1.125"	46	21	65
12"	16.50"	12.75"	17.75"	1.12"	5.00"	1.50"	4.00"	1.25"	71	30	98
14"	19.00"	14.00"	20.25"	1.25"	5.00"	1.50"	4.25"	1.25"	104	49	149
16"	21.12"	16.00"	22.50"	1.50"	5.00"	1.50"	4.25"	1.375"	153	67	216
18"	23.38"	18.00"	24.75"	1.62"	5.00"	1.50"	4.50"	1.375"	202	84	282
20"	25.62"	20.00"	27.00"	1.75"	6.00"	1.50"	4.75"	1.375"	261	105	360
24"	30.38"	24.00"	32.00"	2.00"	6.00"	1.50"	5.50"	1.625"	417	160	571

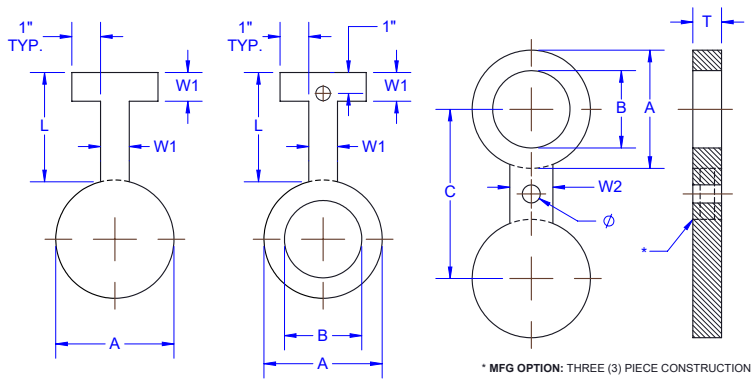
WT=Approximate Weight

SIZE	RATING/FACING	TYPE	MATERIAL	GASKET SURFACE
1/2-24	300#	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	MF=Mill Finish SF=Serrated Finish 125-250 AARH (3.2 - 6.3 Ra) X=Other



Class 600
Raised/
Flat Face

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)								WT (LBS)		
	A	B	C	T	L	W1	W2	Ø	1	1A	2
1/2"	2.00"	0.62"	2.62"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
3/4"	2.50"	0.82"	3.25"	0.25"	4.00"	1.00"	1.50"	N/A	1	1	1
1"	2.75"	1.05"	3.50"	0.25"	4.00"	1.00"	2.25"	0.75"	1	1	1
1 1/4"	3.12"	1.44"	3.88"	0.38"	4.00"	1.00"	2.25"	0.75"	2	2	2
1 1/2"	3.62"	1.68"	4.50"	0.38"	4.00"	1.00"	2.62"	0.875"	2	2	3
2"	4.25"	2.16"	5.00"	0.38"	4.00"	1.00"	2.25"	0.75"	2	2	3
2 1/2"	5.00"	2.64"	5.88"	0.50"	4.00"	1.00"	2.62"	0.875"	4	3	6
3"	5.75"	3.26"	6.62"	0.50"	4.00"	1.00"	2.62"	0.875"	5	4	7
3 1/2"	6.25"	3.76"	7.25"	0.62"	4.00"	1.00"	3.00"	1.00"	7	5	10
4"	7.50"	4.26"	8.50"	0.62"	4.00"	1.00"	3.00"	1.00"	9	6	14
5"	9.38"	5.30"	10.50"	0.75"	4.00"	1.00"	3.38"	1.125"	16	11	26
6"	10.38"	6.36"	11.50"	0.88"	5.00"	1.00"	3.38"	1.125"	23	15	36
8"	12.50"	8.33"	13.75"	1.12"	5.00"	1.00"	3.75"	1.25"	41	24	63
10"	15.62"	10.42"	17.00"	1.38"	5.00"	1.50"	4.12"	1.375"	78	45	119
12"	17.88"	12.39"	19.25"	1.62"	5.00"	1.50"	4.12"	1.375"	119	64	178
14"	19.25"	13.62"	20.75"	1.75"	5.00"	1.50"	4.50"	1.50"	149	76	220
16"	22.12"	15.62"	23.75"	2.00"	6.00"	1.50"	4.88"	1.625"	224	115	332
18"	24.00"	17.62"	25.75"	2.12"	6.00"	1.50"	5.25"	1.75"	278	131	403
20"	26.75"	19.56"	28.50"	2.50"	6.00"	1.50"	5.25"	1.75"	405	192	591
24"	31.00"	23.50"	33.00"	2.88"	6.00"	1.50"	6.00"	2.00"	623	270	887

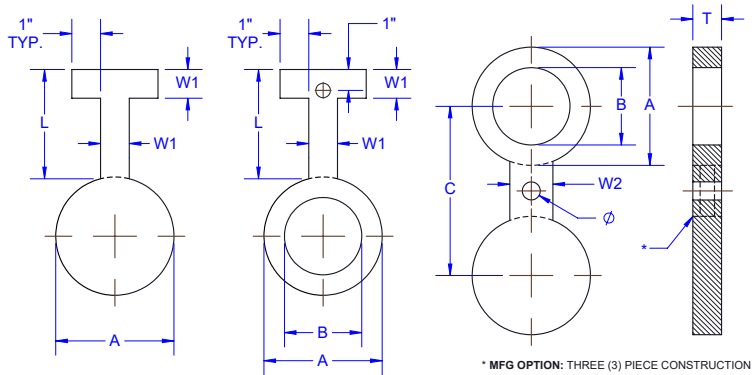
WT=Approximate Weight

SIZE	RATING/FACING	TYPE	MATERIAL	GASKET SURFACE
1/2-24	600#	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	MF=Mill Finish SF=Serrated Finish 125-250 AARH (3.2 - 6.3 Ra) X=Other



Class 900
Raised/
Flat Face

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)								WT (LBS)		
	A	B	C	T	L	W1	W2	Ø	1	1A	2
1/2"	2.38"	0.62"	3.25"	0.25"	5.00"	1.00"	1.50"	N/A	1	1	1
3/4"	2.62"	0.82"	3.50"	0.25"	5.00"	1.00"	1.62"	0.875"	1	1	1
1"	3.00"	1.05"	4.00"	0.25"	5.00"	1.00"	2.25"	1.00"	1	1	2
1 1/4"	3.38"	1.44"	4.38"	0.38"	5.00"	1.00"	2.25"	1.00"	2	2	2
1 1/2"	3.75"	1.68"	4.88"	0.38"	5.00"	1.00"	2.62"	1.125"	2	2	3
2"	5.50"	2.16"	6.50"	0.50"	5.00"	1.00"	2.25"	1.00"	5	4	7
2 1/2"	6.38"	2.64"	7.50"	0.50"	5.00"	1.00"	2.62"	1.125"	6	5	9
3"	6.50"	3.26"	7.50"	0.62"	5.00"	1.00"	2.62"	1.00"	7	6	11
4"	8.00"	4.26"	9.25"	0.75"	5.00"	1.00"	3.00"	1.25"	12	9	20
5"	9.62"	5.30"	11.00"	0.88"	5.00"	1.00"	3.38"	1.375"	20	14	32
6"	11.25"	6.36"	12.50"	1.00"	5.00"	1.00"	3.38"	1.25"	30	21	49
8"	14.00"	8.33"	15.50"	1.38"	5.00"	1.00"	3.75"	1.50"	62	41	101
10"	17.00"	10.42"	18.50"	1.62"	5.00"	1.50"	4.12"	1.50"	109	69	173
12"	19.50"	12.39"	21.00"	1.88"	5.00"	1.50"	4.12"	1.50"	163	99	257
14"	20.38"	13.62"	22.00"	2.12"	6.00"	1.50"	4.50"	1.625"	202	115	310
16"	22.50"	15.62"	24.25"	2.38"	6.00"	1.50"	4.88"	1.75"	274	145	413
18"	25.00"	17.62"	27.00"	2.62"	6.00"	1.50"	5.25"	2.00"	373	191	558
20"	27.38"	19.56"	29.50"	2.88"	6.00"	1.50"	5.25"	2.125"	488	243	724
24"	32.88"	23.50"	35.50"	3.50"	6.00"	1.50"	6.00"	2.625"	852	421	1,271

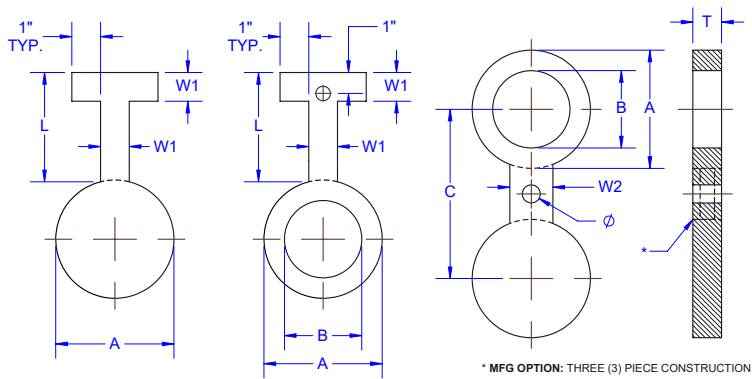
WT=Approximate Weight

SIZE	RATING/FACING	TYPE	MATERIAL	GASKET SURFACE
1/2-24	900#	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	MF=Mill Finish SF=Serrated Finish 125-250 AARH (3.2 - 6.3 Ra) X=Other



Class 1500
Raised/
Flat Face

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)								WT (LBS)		
	A	B	C	T	L	W1	W2	Ø	1	1A	2
1/2"	2.38"	0.62"	3.25"	0.25"	5.00"	1.00"	1.50"	N/A	1	1	1
3/4"	2.62"	0.82"	3.50"	0.38"	5.00"	1.00"	1.62"	0.875"	2	2	2
1"	3.00"	1.05"	4.00"	0.38"	5.00"	1.00"	2.20"	1.00"	2	2	2
1 1/4"	3.38"	1.38"	4.38"	0.38"	5.00"	1.00"	2.50"	1.00"	2	2	3
1 1/2"	3.75"	1.61"	4.88"	0.50"	5.00"	1.00"	2.75"	1.125"	3	2	4
2"	5.50"	2.07"	6.50"	0.50"	5.00"	1.00"	2.75"	1.00"	5	4	7
2 1/2"	6.38"	2.47"	7.50"	0.62"	6.00"	1.00"	3.00"	1.125"	7	6	12
3"	6.75"	3.07"	8.00"	0.75"	6.00"	1.00"	3.00"	1.25"	9	8	15
4"	8.12"	4.03"	9.50"	0.88"	6.00"	1.00"	3.50"	1.375"	15	12	24
5"	9.88"	5.05"	11.50"	1.12"	6.00"	1.00"	3.50"	1.625"	27	20	45
6"	11.00"	6.06"	12.50"	1.38"	6.00"	1.00"	3.50"	1.50"	40	29	65
8"	13.75"	7.98"	15.50"	1.62"	7.00"	1.00"	4.00"	1.75"	72	49	118
10"	17.00"	10.02"	19.00"	2.00"	8.00"	1.50"	4.50"	2.00"	136	91	218
12"	20.38"	11.94"	22.50"	2.38"	8.00"	1.50"	4.50"	2.125"	228	153	371
14"	22.62"	13.12"	25.00"	2.62"	9.00"	1.50"	5.00"	2.375"	310	209	507
16"	25.12"	15.00"	27.75"	3.00"	9.00"	1.50"	5.25"	2.625"	434	283	706
18"	27.62"	16.88"	30.50"	3.38"	10.00"	1.50"	5.75"	2.875"	589	374	950
20"	29.62"	18.81"	32.75"	3.75"	10.00"	1.50"	6.00"	3.125"	750	454	1,191
24"	35.38"	22.62"	39.00"	4.38"	10.00"	1.50"	7.00"	3.625"	1,239	740	1,972

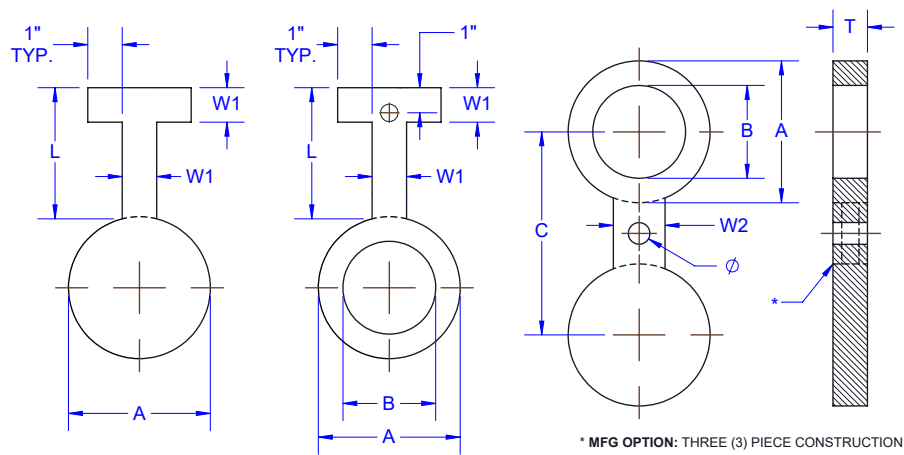
WT=Approximate Weight



SIZE	RATING/FACING	TYPE	MATERIAL	GASKET SURFACE
1/2-24	1500#	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	MF=Mill Finish SF=Serrated Finish 125-250 AARH (3.2 - 6.3 Ra) X=Other

Class 2500
Raised/
Flat Face

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)								WT (LBS)		
	A	B	C	T	L	W1	W2	Ø	1	1A	2
1/2"	2.62"	0.62"	3.50"	0.38"	5.00"	1.00"	1.50"	N/A	2	2	2
3/4"	2.88"	0.82"	3.75"	0.38"	5.00"	1.00"	1.62"	0.875"	2	2	2
1"	3.25"	1.05"	4.25"	0.38"	5.00"	1.00"	2.50"	1.00"	2	2	2
1 1/4"	4.00"	1.38"	5.12"	0.50"	5.00"	1.00"	2.50"	1.125"	3	3	4
1 1/2"	4.50"	1.61"	5.75"	0.62"	5.00"	1.00"	2.75"	1.25"	4	4	6
2"	5.62"	2.07"	6.75"	0.62"	5.00"	1.00"	2.75"	1.125"	6	5	9
2 1/2"	6.50"	2.47"	7.75"	0.75"	6.00"	1.00"	3.00"	1.25"	9	8	14
3"	7.62"	3.07"	9.00"	0.88"	6.00"	1.00"	3.00"	1.375"	13	11	22
4"	9.12"	4.03"	10.75"	1.12"	7.00"	1.00"	3.50"	1.625"	24	20	40
5"	10.88"	5.05"	12.75"	1.38"	7.00"	1.00"	3.50"	1.875"	39	32	68
6"	12.38"	6.06"	14.50"	1.62"	8.00"	1.50"	3.50"	2.125"	61	48	101
8"	15.12"	7.81"	17.25"	2.12"	8.00"	1.50"	4.00"	2.125"	116	87	193
10"	18.62"	9.75"	21.25"	2.62"	9.00"	1.50"	4.50"	2.625"	213	158	359
12"	21.50"	11.37"	24.38"	3.12"	9.00"	1.50"	4.50"	2.875"	334	294	565

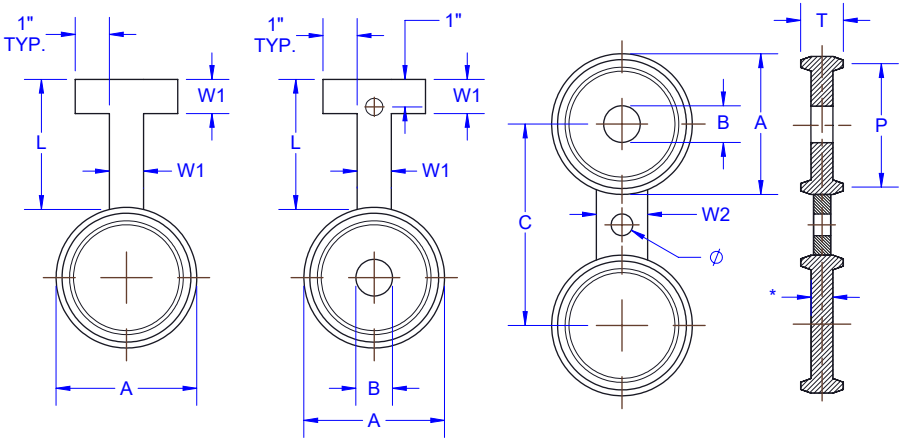
WT=Approximate Weight

SIZE	RATING/FACING	TYPE	MATERIAL	GASKET SURFACE
1/2-12	2500#	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	MF=Mill Finish SF=Serrated Finish 125-250 AARH (3.2 - 6.3 Ra) X=Other



Class 150
Male
Octagonal
Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)										R#	WT (LBS)		
	A	B	C	T	*	P	L	W1	W2	Ø		1	1A	2
1"	2.19"	1.32"	3.12"	0.75"	0.25"	1.875"	4.00"	1.00"	2.00"	0.625"	R 15	2	2	2
1 1/4"	2.56"	1.66"	3.50"	0.75"	0.25"	2.25"	4.00"	1.00"	2.00"	0.625"	R 17	2	2	2
1 1/2"	2.87"	1.90"	3.88"	0.75"	0.25"	2.562"	4.00"	1.00"	2.25"	0.625"	R 19	2	2	3
2"	3.56"	2.38"	4.75"	0.75"	0.25"	3.25"	4.00"	1.00"	2.25"	0.75"	R 22	2	2	3
2 1/2"	4.31"	2.88"	5.50"	0.88"	0.38"	4.00"	4.00"	1.00"	2.25"	0.75"	R 25	3	2	4
3"	4.81"	3.50"	6.00"	0.88"	0.38"	4.50"	4.00"	1.00"	2.25"	0.75"	R 29	3	2	5
3 1/2"	5.50"	4.00"	7.00"	0.88"	0.38"	5.188"	4.00"	1.00"	2.50"	0.75"	R 33	4	3	6
4"	6.19"	4.50"	7.50"	0.88"	0.38"	5.875"	4.00"	1.00"	2.50"	0.75"	R 36	5	3	8
5"	7.06"	5.56"	8.50"	1.00"	0.50"	6.75"	5.00"	1.00"	3.00"	0.875"	R 40	7	4	8
6"	7.94"	6.62"	9.50"	1.00"	0.50"	7.625"	5.00"	1.00"	3.25"	0.875"	R 43	9	4	12
8"	10.06"	8.62"	11.75"	1.12"	0.62"	9.75"	5.00"	1.00"	3.75"	0.875"	R 48	15	7	20
10"	12.31"	10.75"	14.25"	1.25"	0.75"	12.00"	5.00"	1.00"	4.00"	1.00"	R 52	24	9	30
12"	15.31"	12.75"	17.00"	1.38"	0.88"	15.00"	6.00"	1.50"	4.75"	1.00"	R 56	39	15	52
14"	15.94"	14.00"	18.75"	1.38"	0.88"	15.625"	6.00"	1.50"	5.00"	1.125"	R 59	44	15	57
16"	18.19"	16.00"	21.25"	1.50"	1.00"	17.875"	6.00"	1.50"	5.00"	1.125"	R 64	62	19	79
18"	20.69"	18.00"	22.75"	1.62"	1.12"	20.375"	6.00"	1.50"	5.00"	1.25"	R 68	85	26	110
20"	22.31"	20.00"	25.00"	1.62"	1.12"	22.00"	7.00"	1.50"	5.00"	1.25"	R 72	105	30	134
24"	26.81"	24.00"	29.50"	1.88"	1.38"	26.50"	7.00"	1.50"	6.00"	1.38"	R 76	170	46	216

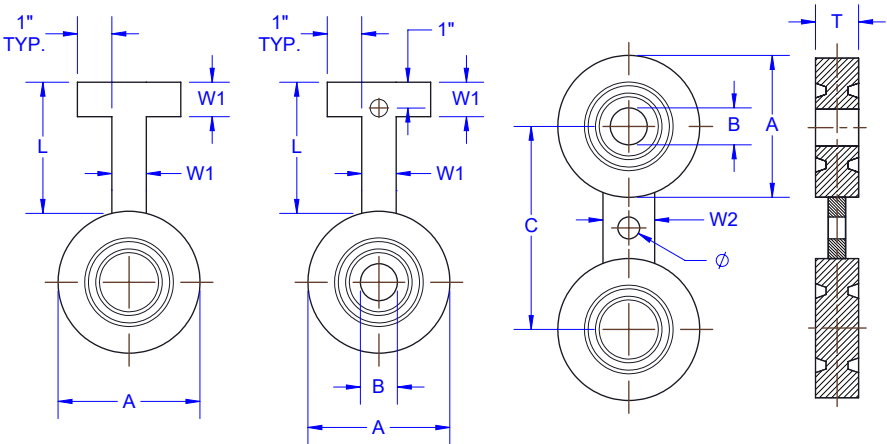
WT=Approximate Weight R#=Ring Number

SIZE	RATING/FACING	TYPE	MATERIAL	NOTE:
1-24	150/MO	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	Groove Dimensions are per ASME B16.5, and gasket surface finish & tolerances are per ANSI B16.20



Class 150 Female Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)									R#	WT (LBS)		
	A	B	C	T	P	L	W1	W2	Ø		1	1A	2
1"	2.50"	1.32"	3.12"	0.75"	1.875"	4.00"	1.00"	2.00"	0.625"	R 15	2	1	2
1 1/4"	2.88"	1.66"	3.50"	0.75"	2.25"	4.00"	1.00"	2.00"	0.625"	R 17	3	2	3
1 1/2"	3.25"	1.90"	3.88"	0.75"	2.562"	4.00"	1.00"	2.25"	0.625"	R 19	4	3	5
2"	4.00"	2.38"	4.75"	0.75"	3.25"	4.00"	1.00"	2.25"	0.75"	R 22	5	4	7
2 1/2"	4.75"	2.88"	5.50"	0.88"	4.00"	4.00"	1.00"	2.25"	0.75"	R 25	6	4	9
3"	5.25"	3.50"	6.00"	0.88"	4.50"	4.00"	1.00"	2.25"	0.75"	R 29	7	4	10
3 1/2"	6.06"	4.00"	7.00"	0.88"	5.188"	4.00"	1.00"	2.50"	0.75"	R 33	8	5	13
4"	6.75"	4.50"	7.50"	0.88"	5.875"	4.00"	1.00"	2.50"	0.75"	R 36	9	6	15
5"	7.62"	5.56"	8.50"	1.00"	6.75"	5.00"	1.00"	2.75"	0.875"	R 40	14	7	19
6"	8.62"	6.62"	9.50"	1.00"	7.625"	5.00"	1.00"	3.25"	0.875"	R 43	17	8	23
8"	10.75"	8.62"	11.75"	1.12"	9.75"	5.00"	1.00"	3.75"	0.875"	R 48	29	11	39
10"	13.00"	10.75"	14.25"	1.25"	12.00"	5.00"	1.00"	4.00"	1.00"	R 52	47	17	60
12"	16.00"	12.75"	17.00"	1.38"	15.00"	6.00"	1.50"	4.75"	1.00"	R 56	77	30	104
14"	16.75"	14.00"	18.75"	1.38"	15.625"	6.00"	1.50"	5.00"	1.125"	R 59	88	30	114
16"	19.00"	16.00"	21.25"	1.50"	17.875"	6.00"	1.50"	5.00"	1.125"	R 64	123	38	158
18"	21.50"	18.00"	22.75"	1.62"	20.375"	6.00"	1.50"	5.00"	1.25"	R 68	170	52	220
20"	23.50"	20.00"	25.00"	1.62"	22.00"	7.00"	1.50"	5.00"	1.25"	R 72	210	60	268
24"	28.00"	24.00"	29.50"	1.88"	26.50"	7.00"	1.50"	6.00"	1.375"	R 76	340	92	431

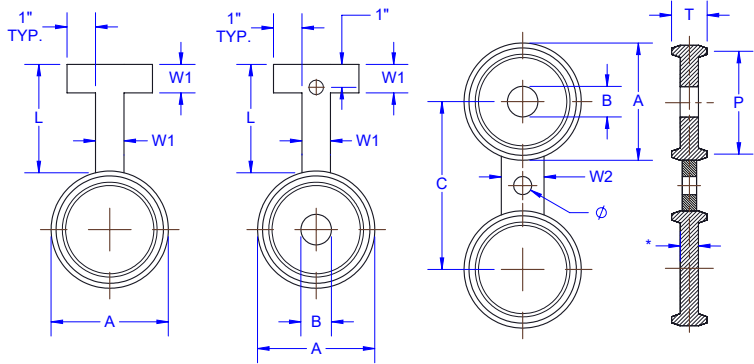
WT=Approximate Weight R#=Ring Number



SIZE	RATING/FACING	TYPE	MATERIAL	NOTE:
1-24	150/FG	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	Groove Dimensions are per ASME B16.5, and gasket surface finish & tolerances are per ANSI B16.20

Class 300 Male Octagonal Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)										R#	WT (LBS)		
	A	B	C	T	*	P	L	W1	W2	Ø		1	1A	2
1/2"	1.59"	0.84"	2.62"	0.63"	0.25"	1.344"	4.00"	1.00"	1.50"	0.625"	R 11	1	1	1
3/4"	2.00"	1.05"	3.25"	0.88"	0.38"	1.688"	4.00"	1.00"	1.75"	0.75"	R 13	2	1	2
1"	2.31"	1.32"	3.50"	0.88"	0.38"	2.00"	4.00"	1.00"	2.00"	0.75"	R 16	2	2	2
1 1/4"	2.69"	1.66"	3.88"	0.88"	0.38"	2.375"	4.00"	1.00"	2.00"	0.75"	R 18	2	2	2
1 1/2"	3.00"	1.90"	4.50"	0.88"	0.38"	2.688"	4.00"	1.00"	2.25"	0.875"	R 20	2	2	3
2"	3.69"	2.38"	5.00"	1.13"	0.50"	3.25"	4.00"	1.00"	2.25"	0.75"	R 23	3	2	3
2 1/2"	4.44"	2.88"	5.88"	1.25"	0.62"	4.00"	4.00"	1.00"	2.25"	0.875"	R 26	3	2	4
3"	5.31"	3.50"	6.62"	1.25"	0.62"	4.875"	4.00"	1.00"	2.25"	0.875"	R 31	4	3	5
3 1/2"	5.63"	4.00"	7.25"	1.38"	0.75"	5.188"	4.00"	1.00"	2.50"	0.875"	R 34	5	4	7
4"	6.31"	4.50"	7.88"	1.25"	0.62"	5.875"	5.00"	1.00"	2.50"	0.875"	R 37	6	4	9
5"	7.56"	5.56"	9.25"	1.38"	0.75"	7.125"	5.00"	1.00"	3.00"	0.875"	R 41	11	7	15
6"	8.75"	6.62"	10.62"	1.51"	0.88"	8.312"	5.00"	1.00"	3.25"	0.875"	R 45	15	9	20
8"	11.06"	8.62"	13.00"	1.63"	1.00"	10.625"	5.00"	1.00"	3.75"	1.00"	R 49	28	15	39
10"	13.19"	10.75"	15.25"	1.75"	1.12"	12.75"	5.00"	1.00"	4.00"	1.125"	R 53	42	20	62
12"	15.44"	12.75"	17.75"	2.01"	1.38"	15.00"	6.00"	1.50"	4.75"	1.25"	R 57	62	23	90
14"	16.94"	14.00"	20.25"	2.13"	1.50"	16.50"	6.00"	1.50"	5.00"	1.25"	R 61	76	31	105
16"	18.94"	16.00"	22.50"	2.25"	1.62"	18.50"	6.00"	1.50"	5.00"	1.375"	R 65	102	38	138
18"	21.44"	18.00"	24.75"	2.38"	1.75"	21.00"	7.00"	1.50"	5.00"	1.375"	R 69	140	52	192
20"	23.50"	20.00"	27.00"	2.69"	2.00"	23.00"	7.00"	1.50"	5.00"	1.375"	R 73	193	70	264
24"	27.88"	24.00"	32.00"	3.06"	2.25"	27.25"	7.00"	1.50"	6.00"	1.625"	R 77	317	108	425

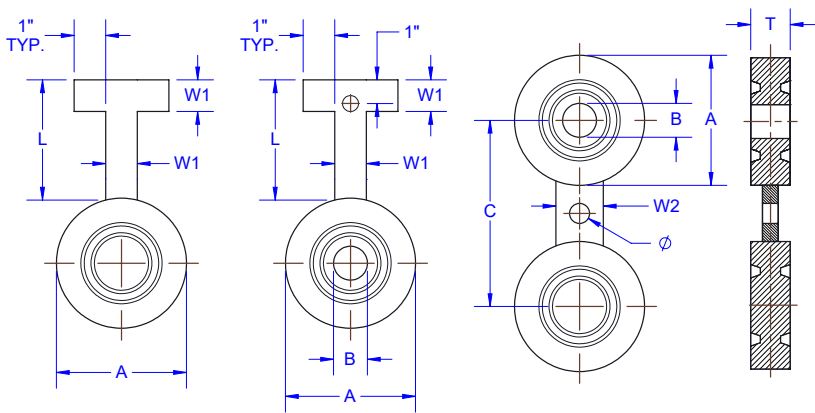
WT=Approximate Weight R#=Ring Number

SIZE	RATING/FACING	TYPE	MATERIAL	NOTE:
1/2-24	300/MO	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	Groove Dimensions are per ASME B16.5, and gasket surface finish & tolerances are per ANSI B16.20



Class 300 Female Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)									R#	WT (LBS)		
	A	B	C	T	P	L	W1	W2	Ø		1	1A	2
1/2"	2.00"	0.84"	2.62"	0.62"	1.344"	4.00"	1.00"	1.50"	0.625"	R 11	1	1	1
3/4"	2.50"	1.05"	3.25"	0.75"	1.688"	4.00"	1.00"	1.75"	0.75"	R 13	2	1	2
1"	2.75"	1.32"	3.50"	0.75"	2.00"	4.00"	1.00"	2.00"	0.75"	R 16	3	2	4
1 1/4"	3.12"	1.66"	3.88"	0.88"	2.375"	4.00"	1.00"	2.00"	0.75"	R 18	3	3	5
1 1/2"	3.56"	1.90"	4.50"	0.88"	2.688"	4.00"	1.00"	2.25"	0.875"	R 20	4	3	6
2"	4.25"	2.38"	5.00"	1.00"	3.25"	4.00"	1.00"	2.25"	0.75"	R 23	5	4	8
2 1/2"	5.00"	2.88"	5.88"	1.12"	4.00"	4.00"	1.00"	2.25"	0.875"	R 26	7	5	11
3"	5.75"	3.50"	6.62"	1.12"	4.875"	4.00"	1.00"	2.25"	0.875"	R 31	9	6	14
3 1/2"	6.25"	4.00"	7.25"	1.12"	5.188"	4.00"	1.00"	2.50"	0.875"	R 34	12	8	17
4"	6.88"	4.50"	7.88"	1.25"	5.875"	5.00"	1.00"	2.50"	0.875"	R 37	14	9	21
5"	8.25"	5.56"	9.25"	1.38"	7.125"	5.00"	1.00"	2.75"	0.875"	R 41	22	13	32
6"	9.50"	6.62"	10.62"	1.38"	8.312"	5.00"	1.00"	3.25"	0.875"	R 45	29	16	43
8"	11.88"	8.62"	13.00"	1.62"	10.625"	5.00"	1.00"	3.75"	1.00"	R 49	53	27	77
10"	14.00"	10.75"	15.25"	1.75"	12.75"	5.00"	1.00"	4.00"	1.125"	R 53	82	35	113
12"	16.25"	12.75"	17.75"	2.00"	15.00"	6.00"	1.50"	4.75"	1.25"	R 57	120	48	165
14"	18.00"	14.00"	20.25"	2.12"	16.50"	6.00"	1.50"	5.00"	1.25"	R 61	151	61	210
16"	20.00"	16.00"	22.50"	2.25"	18.50"	6.00"	1.50"	5.00"	1.375"	R 65	203	75	276
18"	22.62"	18.00"	24.75"	2.38"	21.00"	7.00"	1.50"	5.00"	1.375"	R 69	280	104	383
20"	25.00"	20.00"	27.00"	2.75"	23.00"	7.00"	1.50"	5.00"	1.375"	R 73	385	140	527
24"	29.50"	24.00"	32.00"	3.12"	27.25"	7.00"	1.50"	6.00"	1.625"	R 77	633	216	849

WT=Approximate Weight R#=Ring Number

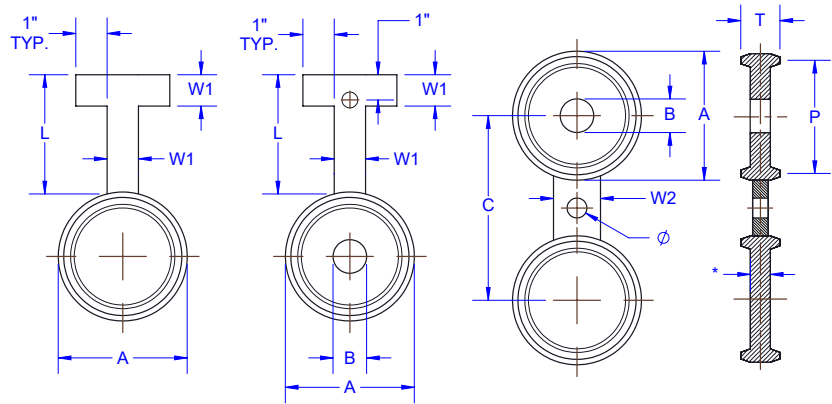


SIZE	RATING/FACING	TYPE	MATERIAL
1/2-24	300/FG	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20

Class 600
Male
Octagonal
Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)										R#	WT (LBS)		
	A	B	C	T	*	P	L	W1	W2	Ø		1	1A	2
1/2"	1.59"	0.84"	2.62"	0.63"	0.25"	1.344"	4.00"	1.00"	1.50"	0.625"	R 11	1	1	1
3/4"	2.00"	1.05"	3.25"	0.88"	0.38"	1.688"	4.00"	1.00"	1.75"	0.75"	R 13	1	1	1
1"	2.31"	1.32"	3.50"	0.88"	0.38"	2.00"	4.00"	1.00"	2.00"	0.75"	R 16	2	2	2
1 1/4"	2.69"	1.66"	3.88"	0.88"	0.38"	2.375"	4.00"	1.00"	2.25"	0.75"	R 18	3	2	3
1 1/2"	3.00"	1.90"	4.50"	0.88"	0.38"	2.688"	4.00"	1.00"	2.25"	0.875"	R 20	3	2	3
2"	3.69"	2.38"	5.00"	1.13"	0.50"	3.25"	4.00"	1.00"	2.00"	0.75"	R 23	3	3	4
2 1/2"	4.44"	2.88"	5.88"	1.25"	0.62"	4.00"	4.00"	1.00"	2.25"	0.875"	R 26	4	3	6
3"	5.31"	3.50"	6.62"	1.25"	0.62"	4.875"	4.00"	1.00"	2.62"	0.875"	R 31	5	4	7
3 1/2"	5.63"	4.00"	7.25"	1.38"	0.75"	5.188"	4.00"	1.00"	2.62"	1.00"	R 34	7	6	10
4"	6.31"	4.50"	8.50"	1.38"	0.75"	5.875"	5.00"	1.00"	2.88"	1.00"	R 37	9	7	14
5"	7.56"	5.56"	10.50"	1.51"	0.88"	7.125"	5.00"	1.00"	2.88"	1.125"	R 41	17	11	25
6"	8.75"	6.62"	11.50"	1.75"	1.12"	8.312"	5.00"	1.00"	2.88"	1.125"	R 45	23	15	35
8"	11.06"	8.62"	13.75"	2.01"	1.38"	10.625"	6.00"	1.00"	3.25"	1.25"	R 49	41	23	62
10"	13.19"	10.75"	17.00"	2.25"	1.62"	12.75"	6.00"	1.00"	4.75"	1.375"	R 54	71	40	112
12"	15.44"	12.75"	19.25"	2.51"	1.88"	15.00"	6.00"	1.50"	4.75"	1.375"	R 57	106	51	162
14"	16.94"	14.00"	20.75"	2.63"	2.00"	16.50"	6.00"	1.50"	4.75"	1.50"	R 61	112	58	134
16"	18.94"	16.00"	23.75"	2.88"	2.25"	18.50"	7.00"	1.50"	5.00"	1.625"	R 65	130	65	176
18"	21.44"	18.00"	25.75"	3.13"	2.50"	21.00"	7.00"	1.50"	5.25"	1.75"	R 69	184	69	251
20"	23.50"	20.00"	28.50"	3.44"	2.75"	23.00"	7.00"	1.50"	5.00"	1.75"	R 73	250	91	340
24"	27.88"	24.00"	33.00"	4.06"	3.25"	27.25"	8.00"	1.50"	6.00"	2.00"	R 77	407	139	547

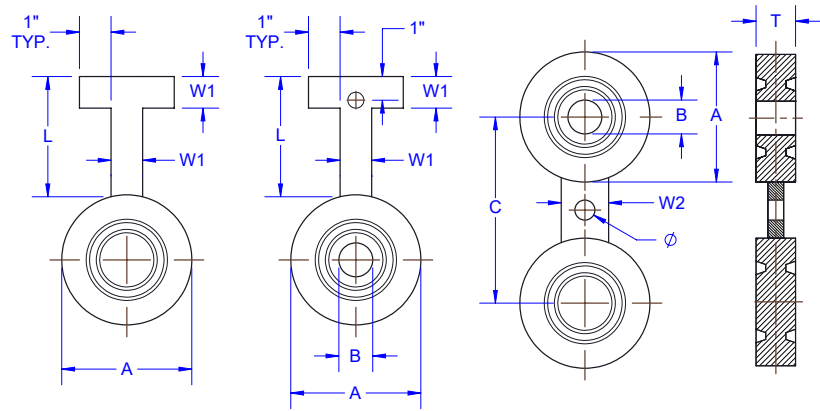
WT=Approximate Weight R#=Ring Number



SIZE	RATING/FACING	TYPE	MATERIAL	NOTE:
1/2-24	600/MO	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	Groove Dimensions are per ASME B16.5, and gasket surface finish & tolerances are per ANSI B16.20

Class 600 Female Octagonal Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)									R#	WT (LBS)		
	A	B	C	T	P	L	W1	W2	Ø		1	1A	2
1/2"	2.00"	0.84"	2.62"	0.75"	1.344"	4.00"	1.00"	1.50"	0.625"	R 11	1	1	1
3/4"	2.50"	1.05"	3.25"	0.88"	1.688"	4.00"	1.00"	1.75"	0.75"	R 13	1	1	1
1"	2.75"	1.32"	3.50"	0.88"	2.00"	4.00"	1.00"	2.00"	0.75"	R 16	2	1	2
1 1/4"	3.12"	1.66"	3.88"	0.88"	2.375"	4.00"	1.00"	2.00"	0.75"	R 18	3	3	4
1 1/2"	3.56"	1.90"	4.50"	0.88"	2.688"	4.00"	1.00"	2.25"	0.875"	R 20	4	3	6
2"	4.25"	2.38"	5.00"	1.12"	3.25"	4.00"	1.00"	2.25"	0.75"	R 23	6	4	9
2 1/2"	5.00"	2.88"	5.88"	1.25"	4.00"	4.00"	1.00"	2.25"	0.875"	R 26	8	6	13
3"	5.75"	3.50"	6.62"	1.25"	4.875"	4.00"	1.00"	2.25"	0.875"	R 31	11	7	16
3 1/2"	6.25"	4.00"	7.25"	1.38"	5.188"	4.00"	1.00"	2.50"	1.00"	R 34	13	9	20
4"	6.88"	4.50"	8.50"	1.38"	5.875"	5.00"	1.00"	2.50"	1.00"	R 37	16	10	24
5"	8.25"	5.56"	10.50"	1.50"	7.125"	5.00"	1.00"	2.75"	1.125"	R 41	24	15	39
6"	9.50"	6.62"	11.50"	1.75"	8.312"	5.00"	1.00"	3.25"	1.125"	R 45	36	20	53
8"	11.88"	8.62"	13.75"	2.00"	10.625"	6.00"	1.00"	3.75"	1.25"	R 49	65	32	95
10"	14.00"	10.75"	17.00"	2.25"	12.75"	6.00"	1.00"	4.00"	1.375"	R 53	98	42	137
12"	16.25"	12.75"	19.25"	2.50"	15.00"	6.00"	1.50"	4.75"	1.375"	R 57	146	58	202
14"	18.00"	14.00"	20.75"	2.62"	16.50"	6.00"	1.50"	5.00"	1.50"	R 61	165	67	229
16"	20.00"	16.00"	23.75"	2.88"	18.50"	7.00"	1.50"	5.00"	1.625"	R 65	225	83	386
18"	22.62"	18.00"	25.75"	3.12"	21.00"	7.00"	1.50"	5.00"	1.75"	R 69	367	137	502
20"	25.00"	20.00"	28.50"	3.50"	23.00"	7.00"	1.50"	5.00"	1.75"	R 73	499	182	679
24"	29.50"	24.00"	33.00"	4.12"	27.25"	8.00"	1.50"	6.00"	2.00"	R 77	814	278	1,094

WT=Approximate Weight R#=Ring Number

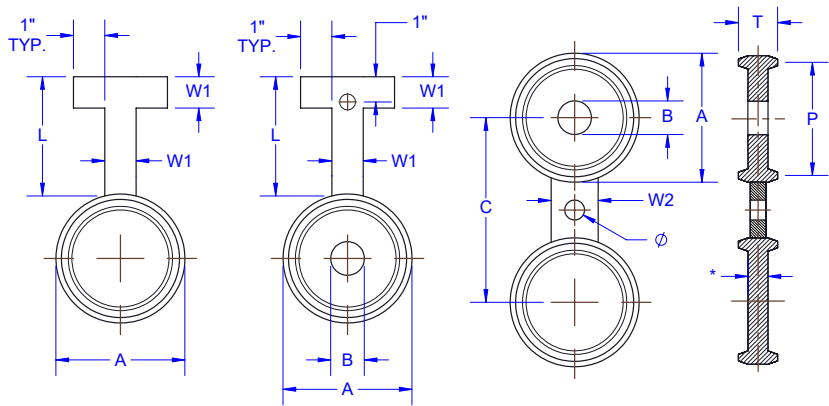


SIZE	RATING/FACING	TYPE	MATERIAL
1/2-24	600/FG	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20

Class 900
Male
Octagonal
Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)										R#	WT (LBS)		
	A	B	C	T	*	P	L	W1	W2	Ø		1	1A	2
1/2"	1.87"	0.84"	3.25"	0.88"	0.38"	1.562"	5.00"	1.00"	1.50"	0.875"	R 12	1	1	1
3/4"	2.06"	1.05"	3.50"	0.88"	0.38"	1.75"	5.00"	1.00"	1.75"	0.875"	R 14	1	1	1
1"	2.31"	1.32"	4.00"	0.88"	0.38"	2.00"	5.00"	1.00"	2.00"	1.00"	R 16	2	2	2
1 1/4"	2.69"	1.66"	4.38"	1.00"	0.50"	2.375"	5.00"	1.00"	2.12"	1.00"	R 18	3	2	3
1 1/2"	3.00"	1.90"	4.88"	1.00"	0.50"	2.688"	5.00"	1.00"	2.12"	1.125"	R 20	3	3	3
2"	4.19"	2.38"	6.50"	1.25"	0.62"	3.75"	5.00"	1.00"	2.00"	1.00"	R 24	3	3	4
2 1/2"	4.69"	2.88"	7.50"	1.38"	0.75"	4.25"	6.00"	1.00"	2.12"	1.125"	R 27	4	3	6
3"	5.31"	3.50"	7.50"	1.38"	0.75"	4.875"	6.00"	1.00"	2.62"	1.00"	R 31	7	6	12
4"	6.31"	4.50"	9.25"	1.63"	1.00"	5.875"	6.00"	1.00"	2.88"	1.25"	R 37	14	10	19
5"	7.56"	5.56"	11.00"	1.75"	1.12"	7.125"	6.00"	1.00"	2.88"	1.375"	R 41	23	16	33
6"	8.75"	6.62"	12.50"	1.88"	1.25"	8.312"	6.00"	1.00"	2.88"	1.25"	R 45	32	22	47
8"	11.06"	8.62"	15.50"	2.25"	1.62"	10.625"	7.00"	1.00"	3.12"	1.50"	R 49	59	38	95
10"	13.19"	10.75"	18.50"	2.51"	1.88"	12.75"	7.00"	1.00"	4.75"	1.50"	R 53	102	66	170
12"	15.44"	12.75"	21.00"	2.88"	2.25"	15.00"	7.00"	1.50"	4.75"	1.50"	R 57	157	92	250
14"	17.13"	14.00"	22.00"	3.19"	2.38"	16.50"	7.00"	1.50"	4.75"	1.625"	R 62	165	100	270
16"	19.13"	16.00"	24.25"	3.56"	2.75"	18.50"	7.00"	1.50"	5.00"	1.75"	R 66	174	120	290
18"	21.75"	18.00"	27.00"	3.94"	3.00"	21.00"	8.00"	1.50"	5.25"	2.00"	R 70	253	135	356
20"	23.75"	20.00"	29.50"	4.32"	3.38"	23.00"	8.00"	1.50"	5.00"	2.125"	R 74	323	150	449
24"	28.25"	24.00"	35.50"	5.13"	3.88"	27.25"	8.00"	1.50"	6.00"	2.625"	R 78	547	200	756

WT=Approximate Weight R#=Ring Number

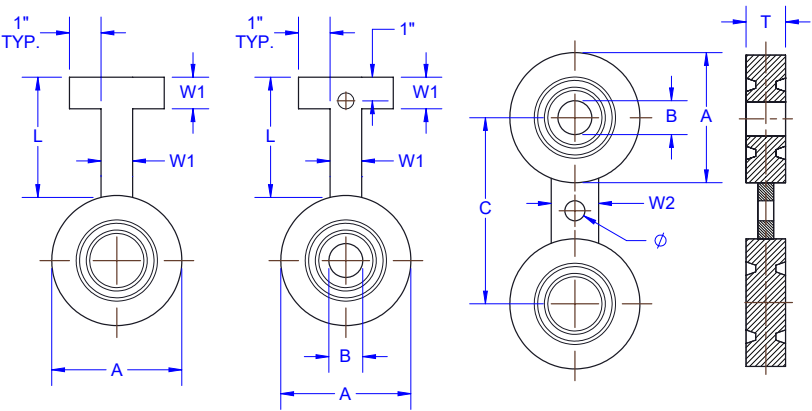


SIZE	RATING/FACING	TYPE	MATERIAL
1/2-24	900/MO	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20

Class 900 Female Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)									R#	WT (LBS)		
	A	B	C	T	P	L	W1	W2	Ø		1	1A	2
1/2"	2.38"	0.84"	3.25"	0.88"	1.562"	5.00"	1.00"	1.50"	0.875"	R 12	1	1	1
3/4"	2.62"	1.05"	3.50"	0.88"	1.75"	5.00"	1.00"	1.75"	0.875"	R 14	2	2	2
1"	2.81"	1.32"	4.00"	0.88"	2.00"	5.00"	1.00"	2.00"	1.00"	R 16	3	3	4
1 1/4"	3.19"	1.66"	4.38"	1.00"	2.375"	5.00"	1.00"	2.00"	1.00"	R 18	4	3	5
1 1/2"	3.62"	1.90"	4.88"	1.00"	2.688"	5.00"	1.00"	2.50"	1.125"	R 20	5	4	6
2"	4.88"	2.38"	6.50"	1.25"	3.75"	5.00"	1.00"	2.00"	1.00"	R 24	8	7	13
2 1/2"	5.38"	2.88"	7.50"	1.38"	4.25"	6.00"	1.00"	2.62"	1.125"	R 27	11	8	18
3"	6.12"	3.50"	7.50"	1.38"	4.875"	6.00"	1.00"	2.62"	1.00"	R 31	13	9	21
4"	7.12"	4.50"	9.25"	1.62"	5.875"	6.00"	1.00"	2.88"	1.25"	R 37	20	13	30
5"	8.50"	5.56"	11.00"	1.75"	7.125"	6.00"	1.00"	2.88"	1.375"	R 41	32	25	45
6"	9.50"	6.62"	12.50"	1.88"	8.312"	6.00"	1.00"	2.88"	1.25"	R 45	41	22	60
8"	12.12"	8.62"	15.50"	2.25"	10.625"	7.00"	1.00"	3.12"	1.50"	R 49	77	40	112
10"	14.25"	10.75"	18.50"	2.50"	12.75"	7.00"	1.00"	4.75"	1.50"	R 53	119	53	169
12"	16.50"	12.75"	21.00"	2.88"	15.00"	7.00"	1.50"	4.75"	1.50"	R 57	178	74	249
14"	18.38"	14.00"	22.00"	3.25"	16.50"	7.00"	1.50"	4.75"	1.625"	R 62	252	108	546
16"	20.62"	16.00"	24.25"	3.62"	18.50"	7.00"	1.50"	5.00"	1.75"	R 66	347	140	484
18"	23.38"	18.00"	27.00"	4.00"	21.00"	8.00"	1.50"	5.25"	2.00"	R 70	505	208	712
20"	25.50"	20.00"	29.50"	4.38"	23.00"	8.00"	1.50"	5.00"	2.125"	R 74	646	251	898
24"	30.38"	24.00"	35.50"	5.25"	27.25"	8.00"	1.50"	5.50"	2.625"	R 78	1,094	413	1,512

WT=Approximate Weight R#=Ring Number

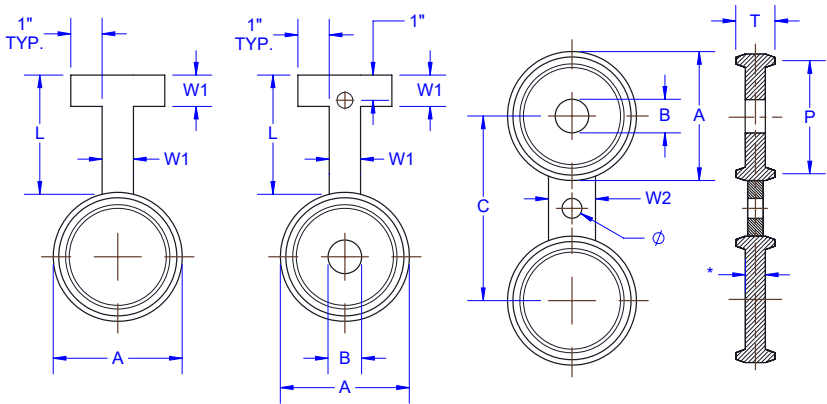


SIZE	RATING/FACING	TYPE	MATERIAL
1/2-24	900/FG	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20

Class 1500 Male Octagonal Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)										R#	WT (LBS)		
	A	B	C	T	*	P	L	W1	W2	Ø		1	1A	2
1/2"	1.87"	0.84"	3.25"	0.88"	0.38"	1.562"	5.00"	1.00"	1.50"	0.875"	R 12	1	1	1
3/4"	2.06"	1.05"	3.50"	0.88"	0.38"	1.75"	5.00"	1.00"	1.75"	0.875"	R 14	1	1	2
1"	2.31"	1.32"	4.00"	1.00"	0.50"	2.00"	5.00"	1.00"	2.12"	1.00"	R 16	2	2	3
1 1/4"	2.69"	1.66"	4.38"	1.00"	0.50"	2.375"	5.00"	1.00"	2.12"	1.00"	R 18	2	2	3
1 1/2"	3.00"	1.90"	4.88"	1.12"	0.62"	2.688"	5.00"	1.00"	2.25"	1.125"	R 20	3	3	4
2"	4.19"	2.38"	6.50"	1.38"	0.75"	3.75"	5.00"	1.00"	2.12"	1.00"	R 24	5	4	8
2 1/2"	4.69"	2.88"	7.50"	1.51"	0.88"	4.25"	6.00"	1.00"	2.25"	1.125"	R 27	7	5	11
3"	5.81"	3.50"	8.00"	1.75"	1.12"	5.375"	6.00"	1.00"	2.88"	1.25"	R 35	9	7	16
4"	6.81"	4.50"	9.50"	1.88"	1.25"	6.375"	6.00"	1.00"	3.00"	1.375"	R 39	17	14	27
5"	8.06"	5.56"	11.50"	2.13"	1.50"	7.625"	6.00"	1.00"	3.00"	1.625"	R 44	24	18	44
6"	8.81"	6.62"	12.50"	2.30"	1.62"	8.312"	6.00"	1.00"	3.12"	1.50"	R 46	36	22	61
8"	11.25"	8.62"	15.50"	2.81"	2.00"	10.62"	7.00"	1.00"	3.38"	1.75"	R 50	68	41	110
10"	13.38"	10.75"	19.00"	3.31"	2.50"	12.75"	8.00"	1.00"	5.25"	2.00"	R 54	128	75	205
12"	15.88"	12.75"	22.50"	3.94"	2.88"	15.00"	8.00"	1.50"	5.25"	2.125"	R 58	210	127	340
14"	17.50"	14.00"	25.00"	4.43"	3.12"	16.50"	9.00"	1.50"	5.50"	2.375"	R 63	220	140	360
16"	19.63"	16.00"	27.75"	4.88"	3.50"	18.50"	9.00"	1.50"	5.75"	2.625"	R 67	256	155	372
18"	22.13"	18.00"	30.50"	5.26"	3.88"	21.00"	10.00"	1.50"	6.00"	2.875"	R 71	350	165	508
20"	24.25"	20.00"	32.75"	5.75"	4.25"	23.00"	10.00"	1.50"	6.50"	3.125"	R 75	456	197	657
24"	28.63"	24.00"	39.00"	6.63"	5.00"	27.25"	10.00"	1.50"	7.00"	3.625"	R 79	742	306	1,054

WT=Approximate Weight R#=Ring Number

SIZE
1/2-24

RATING/FACING
1500/MO

TYPE
1=Paddle Blank
1A=Paddle Spacer
2=Figure 8 Blank

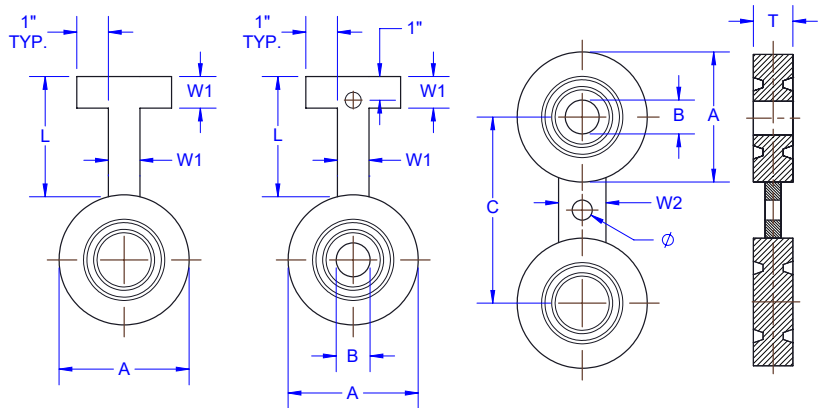
MATERIAL
Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20



Class 1500
Female
Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)									R#	WT (LBS)		
	A	B	C	T	P	L	W1	W2	Ø		1	1A	2
1/2"	2.38"	0.84"	3.25"	0.88"	1.562"	5.00"	1.00"	1.50"	0.875"	R 12	1	1	1
3/4"	2.62"	1.05"	3.50"	1.00"	1.75"	5.00"	1.00"	1.75"	0.875"	R 14	2	2	2
1"	2.81"	1.32"	4.00"	1.00"	2.00"	5.00"	1.00"	2.00"	1.00"	R 16	3	3	4
1 1/4"	3.19"	1.66"	4.38"	1.00"	2.375"	5.00"	1.00"	2.12"	1.00"	R 18	4	3	5
1 1/2"	3.62"	1.90"	4.88"	1.12"	2.688"	5.00"	1.00"	2.25"	1.125"	R 20	5	4	6
2"	4.88"	2.38"	6.50"	1.38"	3.75"	5.00"	1.00"	2.12"	1.00"	R 24	8	7	13
2 1/2"	5.38"	2.88"	7.50"	1.50"	4.25"	6.00"	1.00"	2.25"	1.125"	R 27	11	8	18
3"	6.62"	3.50"	8.00"	1.75"	5.375"	6.00"	1.00"	2.88"	1.25"	R 35	19	14	31
4"	7.62"	4.50"	9.50"	1.88"	6.375"	6.00"	1.00"	3.00"	1.375"	R 39	28	19	43
5"	9.00"	5.56"	11.50"	2.12"	7.625"	6.00"	1.00"	3.00"	1.625"	R 44	41	25	61
6"	9.75"	6.62"	12.50"	2.38"	8.312"	6.00"	1.00"	3.12"	1.50"	R 46	53	30	79
8"	12.50"	8.62"	15.50"	2.88"	10.625"	7.00"	1.00"	3.38"	1.75"	R 50	106	57	159
10"	14.62"	10.75"	19.00"	3.25"	12.75"	8.00"	1.50"	5.25"	2.00"	R 54	161	76	236
12"	17.25"	12.75"	22.50"	4.00"	15.00"	8.00"	1.50"	5.25"	2.125"	R 58	268	124	390
14"	19.25"	14.00"	25.00"	4.38"	16.50"	9.00"	1.50"	5.50"	2.375"	R 63	365	174	539
16"	21.50"	16.00"	27.75"	4.88"	18.50"	9.00"	1.50"	5.75"	2.625"	R 67	511	230	744
18"	24.12"	18.00"	30.50"	5.25"	21.00"	10.00"	1.50"	6.00"	2.875"	R 71	700	312	1,015
20"	26.50"	20.00"	32.75"	5.62"	23.00"	10.00"	1.50"	6.50"	3.125"	R 75	912	394	1,313
24"	31.25"	24.00"	39.00"	6.62"	27.25"	10.00"	1.50"	7.00"	3.625"	R 79	1,484	611	2,108

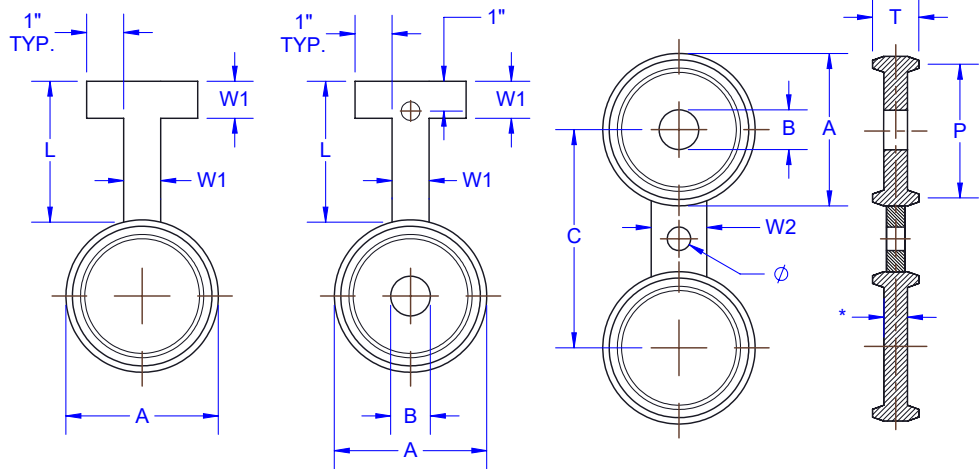
WT=Approximate Weight R#=Ring Number



SIZE	RATING/FACING	TYPE	MATERIAL	NOTE:
1/2-24	1500/FG	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A	Groove Dimensions are per ASME B16.5, and gasket surface finish & tolerances are per ANSI B16.20

Class 2500
Male
Octagonal
Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)										R#	WT (LBS)		
	A	B	C	T	*	P	L	W1	W2	Ø		1	1A	2
1/2"	2.00"	0.84"	3.50"	1.00"	0.50"	1.688"	5.00"	1.00"	1.62"	0.875"	R 13	1	1	1
3/4"	2.31"	1.05"	3.75"	1.12"	0.62"	2.00"	5.00"	1.00"	1.88"	0.875"	R 16	2	2	2
1"	2.69"	1.32"	4.25"	1.12"	0.62"	2.375"	5.00"	1.00"	2.12"	1.00"	R 18	3	3	4
1 1/4"	3.28"	1.66"	5.12"	1.38"	0.75"	2.844"	5.00"	1.00"	2.12"	1.125"	R 21	3	3	4
1 1/2"	3.69"	1.90"	5.75"	1.51"	0.88"	3.25"	5.00"	1.00"	2.38"	1.25"	R 23	4	4	6
2"	4.44"	2.38"	6.75"	1.63"	1.00"	4.00"	5.00"	1.00"	2.25"	1.125"	R 26	8	6	12
2 1/2"	4.88"	2.88"	7.75"	1.81"	1.12"	4.375"	6.00"	1.00"	2.38"	1.25"	R 28	10	7	17
3"	5.50"	3.50"	9.00"	1.94"	1.25"	5.00"	6.00"	1.00"	3.00"	1.375"	R 32	15	11	24
4"	6.81"	4.50"	10.75"	2.31"	1.50"	6.188"	7.00"	1.00"	3.25"	1.625"	R 38	25	16	41
5"	8.25"	5.56"	12.75"	2.82"	1.88"	7.50"	7.00"	1.00"	3.50"	1.875"	R 42	41	26	66
6"	9.75"	6.62"	14.50"	3.19"	2.25"	9.00"	8.00"	1.00"	3.75"	2.125"	R 47	57	35	91
8"	11.88"	8.62"	17.25"	3.81"	2.75"	11.00"	8.00"	1.00"	3.75"	2.125"	R 51	102	63	165
10"	14.63"	10.75"	21.25"	4.63"	3.25"	13.50"	9.00"	1.50"	3.75"	2.625"	R 55	190	115	306
12"	17.25"	12.75"	24.38"	5.38"	3.88"	16.00"	9.00"	1.50"	6.00"	2.875"	R 60	312	187	507

WT=Approximate Weight R#=Ring Number

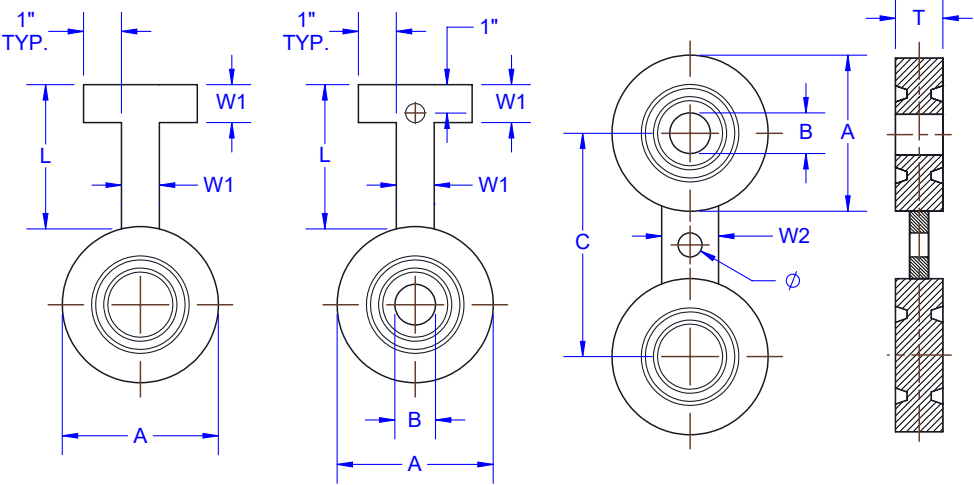


SIZE	RATING/FACING	TYPE	MATERIAL
1/2-12	2500/MO	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20

Class 2500 Female Ring Joint

ASME
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	DIMENSIONAL DATA (IN)									R#	WT (LBS)		
	A	B	C	T	P	L	W1	W2	Ø		1	1A	2
1/2"	2.56"	0.84"	3.50"	1.00"	1.688"	5.00"	1.00"	1.50"	0.875"	R 13	2	2	4
3/4"	2.88"	1.05"	3.75"	1.12"	2.00"	5.00"	1.00"	1.75"	0.875"	R 16	3	3	5
1"	3.25"	1.32"	4.25"	1.12"	2.375"	5.00"	1.00"	2.12"	1.00"	R 18	4	4	6
1 1/4"	4.00"	1.66"	5.12"	1.38"	2.844"	5.00"	1.00"	2.12"	1.125"	R 21	7	5	10
1 1/2"	4.50"	1.90"	5.75"	1.50"	3.25"	5.00"	1.00"	2.38"	1.25"	R 23	8	7	14
2"	5.25"	2.38"	6.75"	1.62"	4.00"	5.00"	1.00"	2.25"	1.125"	R 26	13	11	20
2 1/2"	5.88"	2.88"	7.75"	1.88"	4.375"	6.00"	1.00"	2.38"	1.25"	R 28	17	13	27
3"	6.62"	3.50"	9.00"	2.00"	5.00"	6.00"	1.00"	3.00"	1.375"	R 32	22	17	35
4"	8.00"	4.50"	10.75"	2.50"	6.188"	7.00"	1.00"	3.25"	1.625"	R 38	37	26	60
5"	9.50"	5.56"	12.75"	2.88"	7.50"	7.00"	1.00"	3.50"	1.875"	R 42	64	43	104
6"	11.00"	6.62"	14.50"	3.25"	9.00"	8.00"	1.00"	3.75"	2.125"	R 47	91	59	147
8"	13.38"	8.62"	17.25"	3.88"	11.00"	8.00"	1.00"	3.75"	2.125"	R 51	158	94	249
10"	16.75"	10.75"	21.25"	4.62"	13.50"	9.00"	1.50"	3.58"	2.625"	R 55	300	178	476
12"	19.50"	12.75"	24.38"	5.25"	16.00"	9.00"	1.50"	6.00"	2.875"	R 60	453	261	714

WT=Approximate Weight R#=Ring Number



SIZE	RATING/FACING	TYPE	MATERIAL
1/2-12	2500/FG	1=Paddle Blank 1A=Paddle Spacer 2=Figure 8 Blank	Per ASME B16.5, Table 1-A

NOTE:
Groove Dimensions are per
ASME B16.5, and gasket surface finish
& tolerances are per ANSI B16.20

DRIP RINGS BLEED RINGS & TEST INSERTS



Drip Rings, Bleed Rings & Test Inserts

GENERAL INFORMATION

Aitken standard manufacturing tolerances are as follows:

- Outside diameter: (+0.00", -0.0625")
- Inside diameter: (+/- 0.0625")
- Thickness: (+0.0625", -0.00")

Ring joint dimensions and tolerances are in strict accordance with ANSI B16.5 and B16.20. Female oval ring groove is furnished as standard.

Aitken provides one 1/2" or 3/4", threaded or socket-weld tap. Multiple taps can be provided but must be orientated by customer. Thickness of ring may be affected if larger taps are requested.

One coat of standard shop primer will be applied to all carbon steel plate products unless specified differently.

Standard materials are:

- ASTM A516 GR 70
- 304 stainless steel
- 316 stainless steel

Other alloys can be furnished upon request.

Standard finish is: 125-250 AARH (3.2-6.3 Ra)

Aitken drip rings, bleed rings and test inserts are produced in strict accordance with the following codes of practice.

- ANSI B16.5
- ANSI B16.20
- ASME B16.47 (for larger diameter flanges)

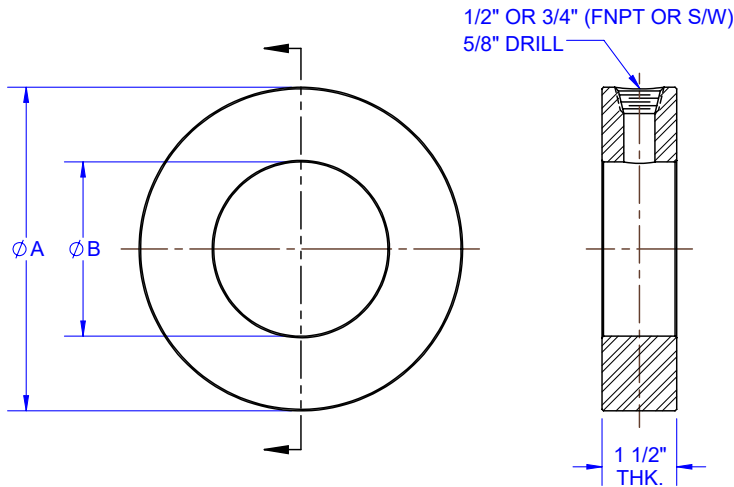
Listed weights are for carbon steel components.



Bleed Rings

Standard
Raised Face/
Flat Face

(Drip Rings - Test Inserts)



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	B	"A" DIMENSION (IN)					WT (LBS)				
		150#	300#	600#	900#	1500#	150#	300#	600#	900#	1500#
1"	1.32"	2.50"	2.75"	2.75"	3.00"	3.00"	2	2	2	2	2
1 1/2"	1.90"	3.25"	3.625"	3.625"	3.75"	3.75"	2	3	3	4	4
2"	2.375"	4.00"	4.25"	4.25"	5.50"	5.50"	4	4	4	8	8
2 1/2"	2.875"	4.75"	5.00"	5.00"	6.375"	6.375"	5	6	6	11	11
3"	3.50"	5.25"	5.75"	5.75"	6.50"	6.75"	5	7	7	10	11
4"	4.50"	6.75"	7.00"	7.50"	8.00"	8.125"	9	10	12	15	15
6"	6.625"	8.625"	9.75"	10.375"	11.25"	11.00"	10	17	21	28	26
8"	8.625"	10.875"	12.00"	12.50"	14.00"	13.75"	15	23	27	41	38
10"	10.75"	13.25"	14.125"	15.625"	17.00"	17.00"	20	28	43	58	58
12"	12.75"	16.00"	16.50"	17.75"	19.375"	20.25"	31	37	51	71	83
14"	14.00"	17.625"	19.00"	19.125"	20.25"	22.50"	38	55	57	72	104
16"	16.00"	20.125"	21.125"	22.00"	22.375"	25.00"	50	64	77	82	123
18"	18.00"	21.50"	23.375"	23.875"	24.875"	27.5"	46	74	82	99	144
20"	20.00"	23.75"	25.625"	26.625"	27.25"	29.5"	55	86	103	115	157
24"	24.00"	28.125"	30.375"	30.875"	32.75"	35.25"	72	116	126	166	223

WT=Approximate Weight

MATERIAL
A516-70
304 SS
316 SS
Others by request

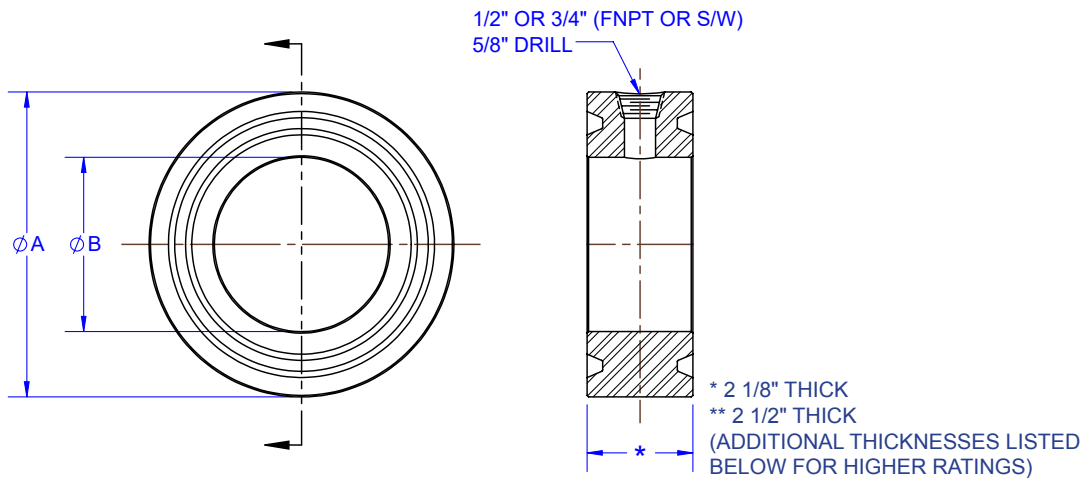
GASKET SURFACE
Smooth mill
125-250 AARH
Other



Bleed Rings

Standard
Ring Joint

(Drip Rings - Test Inserts)



DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	*300 / *400 / *600#			*900#			*1500#			**2500#		
	A	B	R#	A	B	R#	A	B	R#	A	B	R#
1"	2.75"	1.32"	R 16	2.812"	1.32"	R 16	2.812"	1.32"	R 16	3.25"	1.32"	R 18
1 1/2"	3.562"	1.90"	R 20	3.625"	1.90"	R 20	3.625"	1.90"	R 20	4.50"	1.90"	R 23
2"	4.25"	2.375"	R 23	4.875"	2.375"	R 24	4.875"	2.375"	R 24	5.25"	2.375"	R 26
2 1/2"	5.00"	2.875"	R 26	5.375"	2.875"	R 27	5.375"	2.875"	R 27	5.875"	2.875"	R 28
3"	5.75"	3.50"	R 31	6.125"	3.50"	R 31	6.625"	3.50"	R 35	6.625"	3.50"	R 32
4"	6.875"	4.50"	R 37	7.125"	4.50"	R 37	7.625"	4.50"	R 39	8.00"	4.50"	R 38
6"	9.50"	6.625"	R 45	9.50"	6.625"	R 45	9.75"	6.625"	R 46	11.00"	6.625"	R 47
8"	11.875"	8.625"	R 49	12.125"	8.625"	R 49	12.50"	8.625"	R 50	13.375"	8.625"	R 51
10"	14.00"	10.75"	R 53	14.25"	10.75"	R 53	14.625"	10.75"	R 54	16.75" (2)	10.75"	R 55
12"	16.25"	12.75"	R 57	16.50"	12.75"	R 57	17.25" (1)	12.75"	R 58	19.50" (2)	12.75"	R 60
14"	18.00"	14.00"	R 61	18.375"	14.00"	R 62	19.25" (1)	14.00"	R 63	-	-	-
16"	20.00"	16.00"	R 65	20.62"	16.00"	R 66	21.5" (2)	16.00"	R 67	-	-	-
18"	22.62"	18.00"	R 69	23.38" (1)	18.00"	R 70	24.12" (2)	18.00"	R 71	-	-	-
20"	25.00"	20.00"	R 73	25.5" (1)	20.00"	R 74	26.5" (2)	20.00"	R 75	-	-	-
24"	29.50"	24.00"	R 77	30.38" (1)	24.00"	R 78	31.25" (3)	24.00"	R 79	-	-	-

R#=Ring Number

API 6A dimensions - next page

ADDITIONAL THICKNESS

- (1) Use 2 1/2" THK
- (2) Use 2 3/4" THK
- (3) Use 3" THK



Bleed Rings

Standard
Ring Joint

API 6A DIMENSIONS

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	*3,000# W.O.G (6 B)				*5,000# W.O.G (6 B)				**10,000# W.O.G (6 BX)			
	A	B	R#	WT	A	B	R#	WT	A	B	R#	WT
1 13/16"	-	-	-	-	-	-	-	-	4.125"	1.812"	151	8
2 1/16"	4.875"	2.062"	R 24	10	4.875"	2.062"	R 24	10	4.375"	2.062"	152	9
2 9/16"	5.375"	2.562"	R 27	11	5.375"	2.562"	R 27	11	5.19"	2.562"	153	12
3 1/16"	-	-	-	-	-	-	-	-	6.00"	3.062"	154	15
3 1/8"	6.125"	3.125"	R 31	14	6.625"	3.125"	R 35	17	-	-	-	-
4 1/16"	7.125"	4.062"	R 37	17	7.625"	4.062"	R 39	20	7.28"	4.062"	155	21
7 1/16"	9.50"	7.125"	R 45	19	9.75"	7.125"	R 46	26	11.88"	7.062"	156	51

WT=Approximate Weight R#=Ring Number

+ CUSTOM SIZES AND RATINGS
AVAILABLE UPON REQUEST

APPROXIMATE WEIGHTS

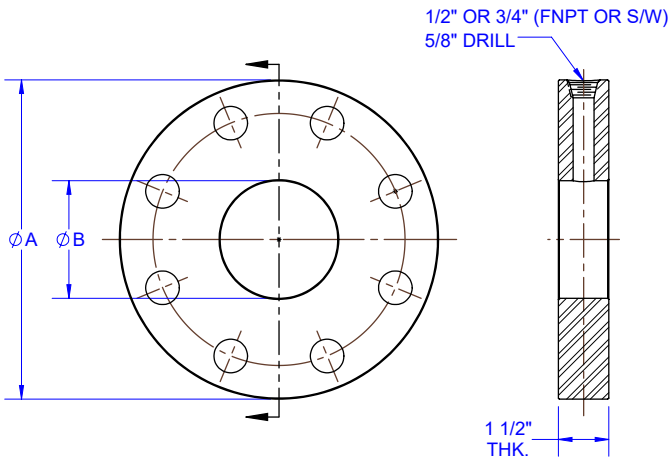
*300 / *400 / *600#		*900#		*1500#		**2500#	
SIZE	WT	SIZE	WT	SIZE	WT	SIZE	WT
1"	3	1"	3	1"	3	1"	5
1 1/2"	5	1 1/2"	5	1 1/2"	5	1 1/2"	10
2"	6	2"	9	2"	9	2"	13
2 1/2"	8	2 1/2"	10	2 1/2"	10	2 1/2"	15
3"	10	3"	12	3"	12	3"	18
4"	13	4"	15	4"	18	4"	25
6"	22	6"	22	6"	25	6"	43
8"	32	8"	35	8"	39	8"	59
10"	39	10"	42	10"	47	10"	101
12"	48	12"	52	12"	75	12"	134
14"	61	14"	67	14"	98	-	-
16"	69	16"	81	16"	127	-	-
18"	89	18"	124	18"	158	-	-
20"	107	20"	140	20"	185	-	-
24"	140	24"	194	24"	268	-	-

WT=Approximate Weight



Bleed Rings

Standard
Full Face



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	B	"A" DIMENSION (IN)					WT (LBS)				
		150#	300#	600#	900#	1500#	150#	300#	600#	900#	1500#
1"	1.32"	4.25"	4.88"	4.88"	5.88"	5.88"	6	7	7	11	11
1 1/2"	1.90"	5.00"	6.13"	6.13"	7.00"	7.00"	7	11	11	15	15
2"	2.375"	6.00"	6.50"	6.50"	8.50"	8.50"	10	12	12	22	22
2 1/2"	2.875"	7.00"	7.50"	7.50"	9.63"	9.63"	14	16	16	28	28
3"	3.50"	7.50"	8.25"	8.25"	9.50"	10.50"	15	19	19	26	32
4"	4.50"	9.00"	10.00"	10.75"	11.50"	12.25"	20	26	32	37	43
6"	6.625"	11.00"	12.50"	14.00"	15.00"	15.50"	26	38	51	60	66
8"	8.625"	13.50"	15.00"	16.50"	18.50"	19.00"	36	50	66	89	96
10"	10.75"	16.00"	17.50"	20.00"	21.50"	23.00"	47	64	85	104	122
12"	12.75"	19.00"	20.50"	22.00"	24.00"	26.50"	63	78	95	123	156
14"	14.00"	21.00"	23.00"	23.75"	25.25"	29.50"	77	101	108	130	195
16"	16.00"	23.5"	25.50"	27.00"	27.75"	32.50"	93	119	141	152	231
18"	18.00"	25.00"	28.00"	29.25"	31.00"	36.00"	93	139	162	186	281
20"	20.00"	27.50"	30.50"	32.00"	33.75"	38.75"	109	162	184	217	316
24"	24.00"	32.00"	36.00"	37.00"	41.00"	46.00"	137	220	233	324	445

WT=Approximate Weight

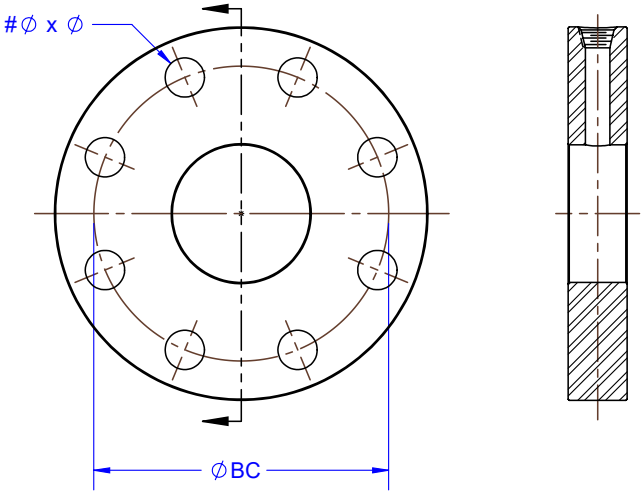
- * Drilling information on next page.
- 1. Larger sizes available
 - 2. Larger tap sizes available
 - 3. Tap sizes will be confirmed for each size at quotation stage

Material	Gasket Surface
A516-70	125-250 AARH
304 SS	Other
316 SS	
Others by request	



Bleed Rings

Standard
Full Face



DRILLING INFORMATION

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	150#			300#			600#			900#			1500#		
	Ø	BC	#Ø	Ø	BC	#Ø	Ø	BC	#Ø	Ø	BC	#Ø	Ø	BC	#Ø
1"	0.63"	3.13"	4	0.75"	3.50"	4	0.75"	3.50"	4	1.00"	4.00"	4	1.00"	4.00"	4
1 1/2"	0.63"	3.88"	4	0.88"	4.50"	4	0.88"	4.50"	4	1.13"	4.88"	4	1.13"	4.88"	4
2"	0.75"	4.75"	4	0.75"	5.00"	8	0.75"	5.00"	8	1.00"	6.50"	8	1.00"	6.50"	8
2 1/2"	0.75"	5.50"	4	0.88"	5.88"	8	0.88"	5.88"	8	1.13"	7.50"	8	1.13"	7.50"	8
3"	0.75"	6.00"	4	0.88"	6.63"	8	0.88"	6.63"	8	1.00"	7.50"	8	1.25"	8.00"	8
4"	0.75"	7.50"	8	0.88"	7.88"	8	1.00"	8.50"	8	1.25"	9.25"	8	1.38"	9.50"	8
6"	0.88"	9.50"	8	0.88"	10.63"	12	1.13"	11.50"	12	1.25"	12.50"	12	1.50"	12.50"	12
8"	0.88"	11.75"	8	1.00"	13.00"	12	1.25"	13.75"	12	1.50"	15.50"	12	1.75"	15.50"	12
10"	1.00"	14.25"	12	1.13"	15.25"	16	1.38"	17.00"	16	1.50"	18.50"	16	2.00"	19.00"	12
12"	1.00"	17.00"	12	1.25"	17.75"	16	1.38"	19.25"	20	1.50"	21.00"	20	2.13"	22.50"	16
14"	1.12"	18.75"	12	1.25"	20.25"	20	1.50"	20.75"	20	1.62"	22.00"	20	2.38"	25.00"	16
16"	1.12"	21.25"	16	1.38"	22.50"	20	1.62"	23.75"	20	1.75"	24.25"	20	2.62"	27.75"	16
18"	1.25"	22.75"	16	1.38"	24.75"	24	1.75"	25.75"	20	2.00"	27.00"	20	2.88"	30.50"	16
20"	1.25"	25.00"	20	1.38"	27.00"	24	1.75"	28.50"	24	2.12"	29.50"	20	3.12"	32.75"	16
24"	1.38"	29.50"	20	1.62"	32.00"	24	2.00"	33.00"	24	2.62"	35.50"	20	3.62"	39.00"	16

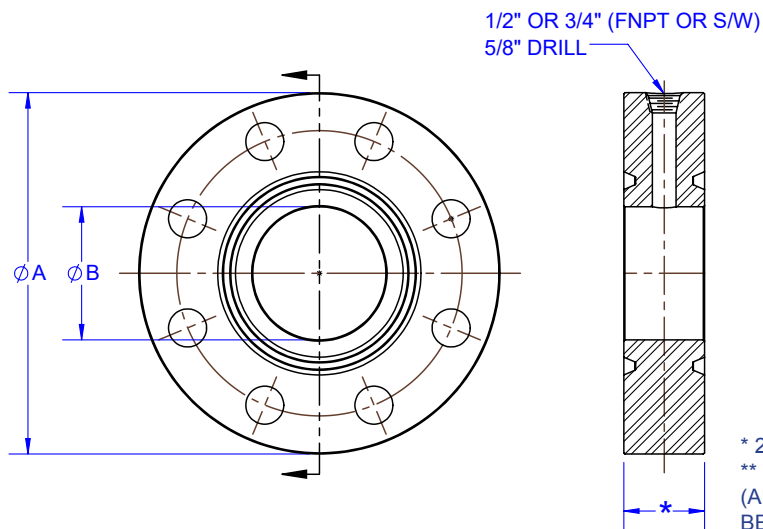


1. Tap sizes will be confirmed for each size at quotation stage

Bleed Rings

Standard
Full Face
Ring Joint

(Drip Rings - Test Inserts)



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

"A" DIMENSION (IN)

SIZE	*300#				*600#				*900#				*1500#				**2500#			
	A	B	R#	WT	A	B	R#	WT	A	B	R#	WT	A	B	R#	WT	A	B	R#	WT
1"	4.88"	1.32"	R 16	10	4.88"	1.32"	R 16	10	5.88"	1.32"	R 16	14	5.88"	1.32"	R 16	14	6.25"	1.32"	R 18	19
1 1/2"	6.13"	1.90"	R 20	15	6.13"	1.90"	R 20	15	7.00"	1.90"	R 20	20	7.00"	1.90"	R 20	20	8.00"	1.90"	R 23	31
2"	6.50"	2.38"	R 23	16	6.50"	2.38"	R 23	16	8.50"	2.38"	R 24	28	8.50"	2.38"	R 24	28	9.25"	2.38"	R 26	39
2 1/2"	7.50"	2.88"	R 26	20	7.50"	2.88"	R 26	20	9.63"	2.88"	R 27	36	9.63"	2.88"	R 27	36	10.50"	2.88"	R 28	50
3"	8.25"	3.50"	R 31	24	8.25"	3.50"	R 31	24	9.50"	3.50"	R 31	34	10.50"	2.88"	R 35	41	12.00"	4.50"	R 32	61
4"	10.00"	4.50"	R 37	35	10.75"	4.50"	R 37	42	11.50"	4.50"	R 37	48	12.25"	4.50"	R 39	55	14.00"	4.50"	R 38	86
6"	12.50"	6.63"	R 45	49	14.00"	6.63"	R 45	65	15.00"	6.63"	R 45	77	15.50"	6.63"	R 46	81	19.00"	6.63"	R 47	157
8"	15.00"	8.63"	R 49	66	16.50"	8.63"	R 49	85	18.50"	8.63"	R 49	114	19.00"	8.63"	R 50	119	21.75"	8.63"	R 51	192
10"	17.50"	10.75"	R 53	81	20.00"	10.75"	R 53	121	21.50"	10.75"	R 53	147	23.00"	10.75"	R 54	173	26.50" (2)	10.75"	R 55	309
12"	20.50"	12.75"	R 57	111	22.00"	12.75"	R 57	134	24.00"	12.75"	R 57	175	26.50" (1)	12.75"	R 58	260	30.00" (2)	12.75"	R 60	391
14"	23.00"	14.00"	R 61	143	23.75"	14.00"	R 61	153	25.25"	14.00"	R 62	184	29.5" (1)	14.00"	R 63	325	-	-	-	-
16"	25.50"	16.00"	R 65	167	27.00"	16.00"	R 65	199	27.75"	16.00"	R 66	215	32.5" (2)	16.00"	R 67	423	-	-	-	-
18"	28.00"	18.00"	R 69	196	29.25"	18.00"	R 69	223	31.0" (1)	18.00"	R 70	193	36.0" (2)	18.00"	R 71	514	-	-	-	-
20"	30.50"	20.00"	R 73	230	32.00"	20.00"	R 73	261	33.75" (1)	20.00"	R 74	361	38.75" (2)	20.00"	R 75	580	-	-	-	-
24"	36.00"	24.00"	R 77	311	37.00"	24.00"	R 77	330	41.0" (1)	24.00"	R 78	647	46.0" (3)	24.00"	R 79	889	-	-	-	-

WT=Approximate Weight R#=Ring Number

Drilling information on next page

Additional Thickness

- (1) Use 2 1/2" THK
- (2) Use 2 3/4" THK
- (3) Use 3" THK

Material

A516-70
304 SS
316 SS
Others by request

Gasket Surface

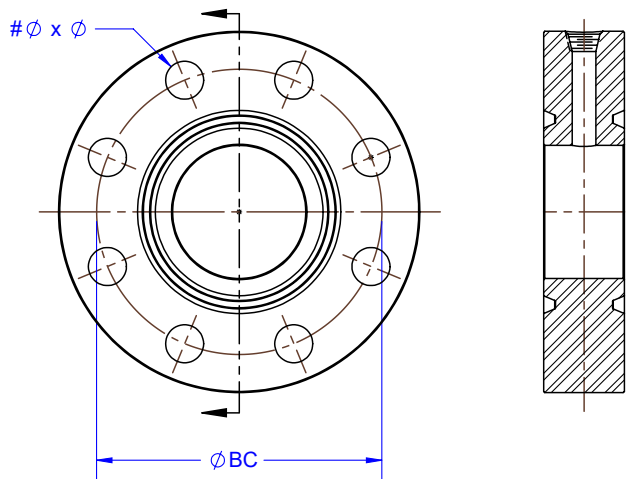
Machined



Bleed Rings

Standard
Full Face
Ring Joint

(Drip Rings - Test Inserts)



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DRILLING INFORMATION

SIZE	300#			600#			900#			1500#			2500#		
	Ø	BC	#Ø	Ø	BC	#Ø	Ø	BC	#Ø	Ø	BC	#Ø	Ø	BC	#Ø
1"	0.75"	3.50"	4	0.75"	3.50"	4	1.00"	4.00"	4	1.00"	4.00"	4	1.00"	4.25"	4
1 1/2"	0.88"	4.50"	4	0.88"	4.50"	4	1.13"	4.88"	4	1.13"	4.88"	4	1.25"	5.75"	4
2"	0.75"	5.00"	8	0.75"	5.00"	8	1.00"	6.50"	8	1.00"	6.50"	8	1.13"	6.25"	8
2 1/2"	0.88"	5.88"	8	0.88"	5.88"	8	1.13"	7.50"	8	1.13"	7.50"	8	1.25"	7.75"	8
3"	0.88"	6.63"	8	0.88"	6.63"	8	1.00"	7.50"	8	1.25"	8.00"	8	1.38"	9.00"	8
4"	1.00"	8.50"	8	1.00"	8.50"	8	1.25"	9.25"	8	1.38"	9.50"	8	1.63"	1.75"	8
6"	1.13"	11.50"	12	1.13"	11.50"	12	1.25"	12.50"	12	1.50"	12.50"	12	2.13"	14.50"	8
8"	1.25"	13.75"	12	1.25"	13.75"	12	1.50"	15.50"	12	1.75"	15.50"	12	2.13"	17.25"	12
10"	1.38"	17.00"	16	1.38"	17.00"	16	1.50"	18.50"	16	2.00"	19.00"	12	2.63"	21.25"	12
12"	1.38"	19.25"	20	1.38"	19.25"	20	1.50"	21.00"	20	2.13"	22.50"	16	2.88"	24.38"	12
14"	1.25"	20.25"	20	1.50"	20.75"	20	1.62"	22.00"	20	2.38"	25.00"	16	-	-	-
16"	1.38"	22.50"	20	1.62"	23.75"	20	1.75"	24.25"	20	2.62"	27.75"	16	-	-	-
18"	1.38"	24.75"	24	1.75"	25.75"	20	2.00"	27.00"	20	2.88"	30.50"	16	-	-	-
20"	1.38"	27.00"	24	1.75"	28.50"	2	2.12"	29.50"	20	3.12"	32.75"	16	-	-	-
24"	1.62"	32.00"	24	2.00"	33.00"	24	2.62"	35.50"	20	3.62"	39.00"	16	-	-	-

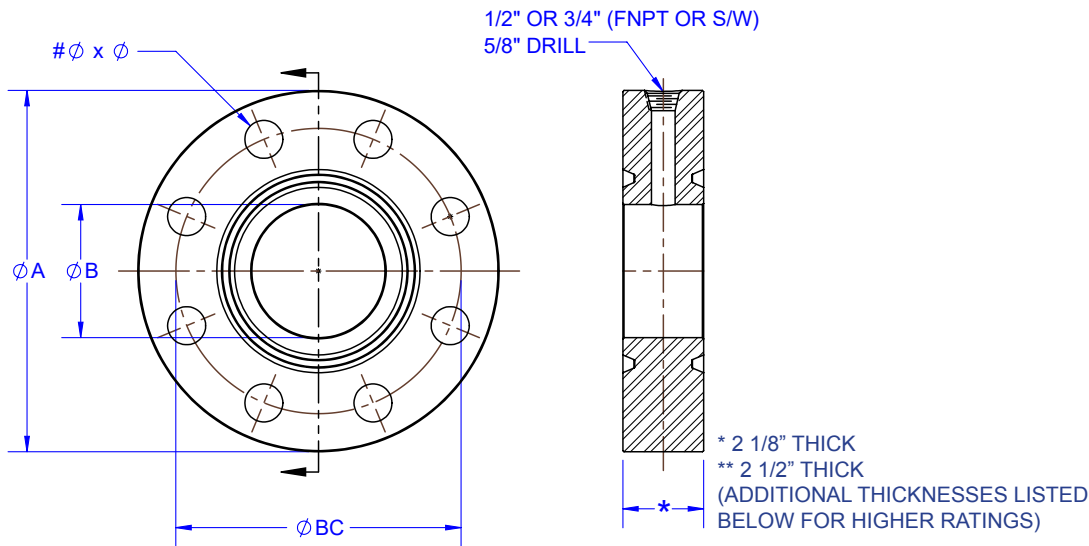


1. Tap sizes will be confirmed for each size at quotation stage.

Bleed Rings

Standard
Full Face
Ring Joint

(Drip Rings - Test Inserts)



DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

SIZE	*3,000# (6B)				*5,000# (6B)				**10,000# (6BX)			
	A	B	R#	WT	A	B	R#	WT	A	B	R#	WT
1 11/16"	-	-	-	-	-	-	-	-	7.38"	1.81"	151	26
2 1/16"	8.50"	2.06"	24	29	8.50"	2.06"	24	29	7.88"	2.06"	152	29
2 9/16"	9.63"	2.56"	27	36	9.63"	2.56"	27	36	9.13"	2.56"	153	39
3 1/16"	-	-	-	-	-	-	-	-	10.63"	3.06"	154	52
3 1/8"	9.50"	3.13"	31	36	10.50"	3.13"	35	42	-	-	-	-
4 1/16"	11.50"	4.06"	37	49	12.25"	4.06"	39	56	12.44"	4.06"	155	70

WT=Approximate Weight R#=Ring Number

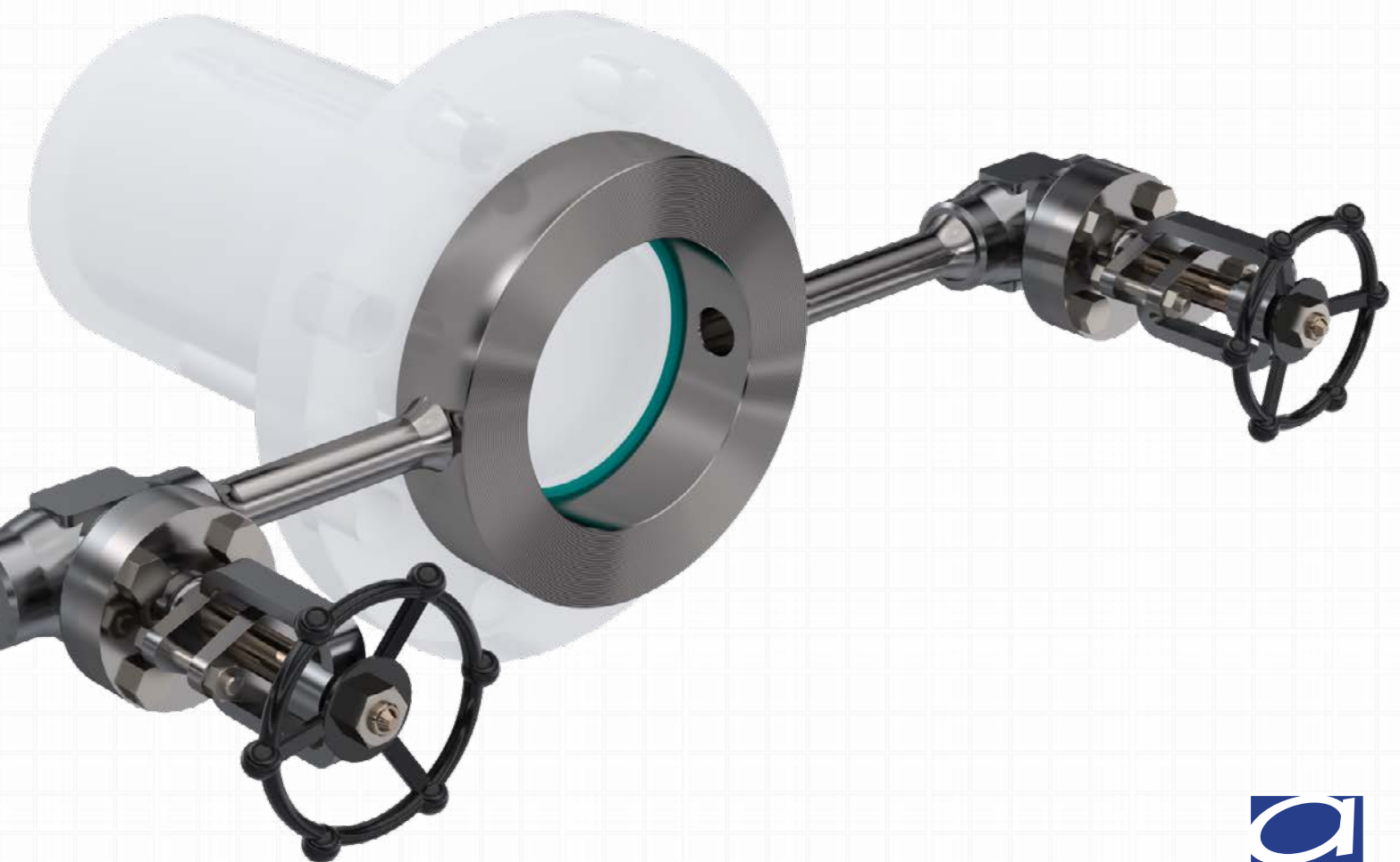
DRILLING INFORMATION

SIZE	3,000# (6B)			5,000# (6B)			10,000# (6BX)		
	ϕ	BC	# ϕ	ϕ	BC	# ϕ	ϕ	BC	# ϕ
1 11/16"	-	-	-	-	-	-	0.88"	5.56"	8
1 13/16"	-	-	-	-	-	-	0.88"	5.75"	8
2 1/16"	1.00"	6.50"	8	1.00"	6.50"	8	0.88"	6.25"	8
2 9/16"	1.13"	7.50"	8	1.13"	7.50"	8	1.00"	7.25"	8
3 1/16"	-	-	-	-	-	-	1.13"	8.50"	8
3 1/8"	1.00"	7.50"	8	1.25"	8.00"	8	-	-	-
4 1/16"	1.25"	9.25"	8	1.38"	9.50"	8	1.25"	10.19"	8



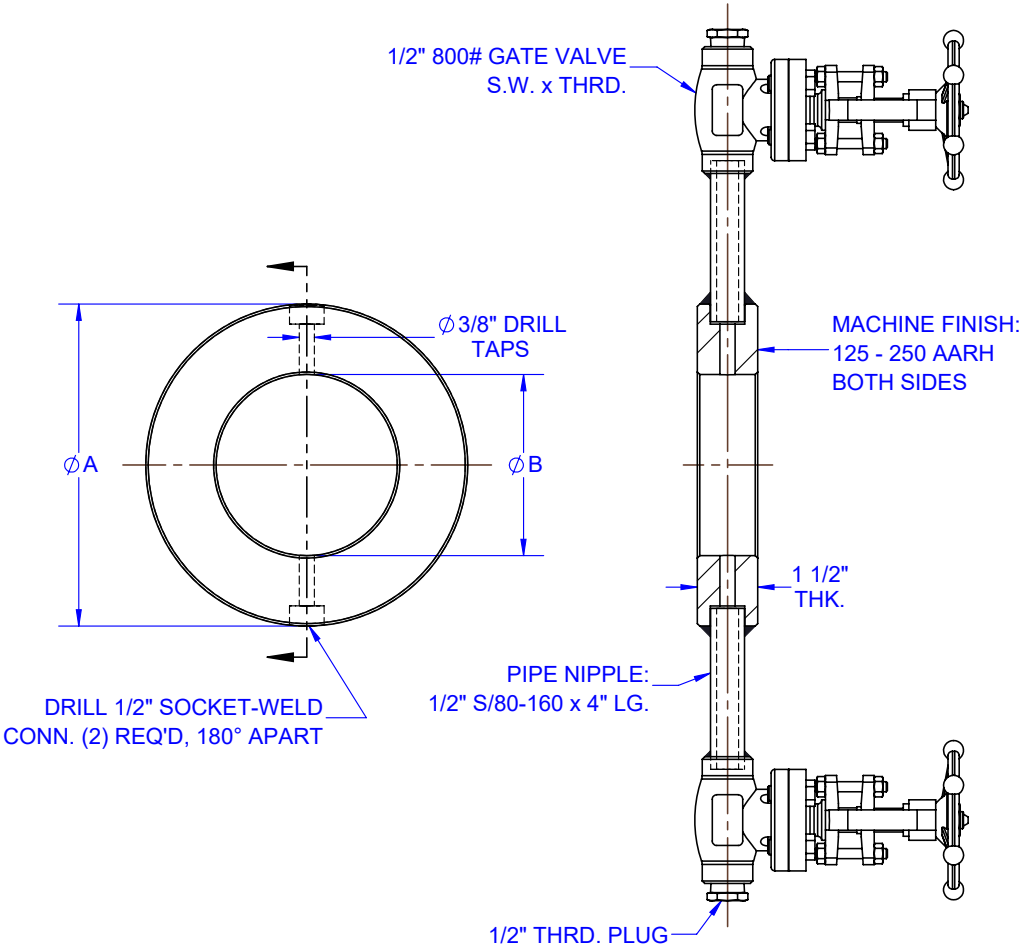
1. Larger tap sizes available.
2. Tap sizes will be confirmed for each size at quotation stage.

CALIBRATION RING



Calibration Rings

Standard



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONS "A" AND "B"

SIZE	I.D. "B"	O.D. "A"				
		150#	300#	600#	900#	1500#
1"	1.32"	2-1/2"	2-3/4"	2-3/4"	3"	3"
1-1/2"	1.9"	3-1/4"	3-5/8"	3-5/8"	3-3/4"	3-3/4"
2"	2-3/8"	4"	4-1/4"	4-1/4"	5-1/2"	5-1/2"
2-1/2"	2-7/8"	4-3/4"	5"	5"	6-3/8"	6-3/8"
3"	3-1/8"	5-5/16"	5-13/16"	5-13/16"	-	-
4"	4-1/2"	6-3/4"	7"	7-1/2"	8"	8-1/8"

MATERIAL

A516-70
304 SS
316 SS
Others by request

GASKET SURFACE

Smooth Mill
125-250 AARH
Others by request

NOTES:

1. Drill 0.375" DIA. Pressure taps, 180° apart.
2. Socket I.D. to be 0.860" $\pm$ 0.005".
3. Socket depth to be 0.500".
4. Other sizes and ratings available up.



TEMPORARY STRAINERS



Strainers

The problem with unwanted material in pipelines is a never ending one. Whether the flowing material is water, oil, gas, paint or a variety of food or chemical products, there is often present unwanted matter that can cause serious problems. Dirt, foreign matter or even clumps of the product itself, can clog or damage spray nozzles, pumps, turbine meters, or similar equipment.

Strainers are a solution to these problems. They prevent the passage of unwanted matter in the line that could cause damage or even ruin the product itself.

When compared to the cost of replacing damaged pumps, meters, etc., strainers are an inexpensive insurance policy.

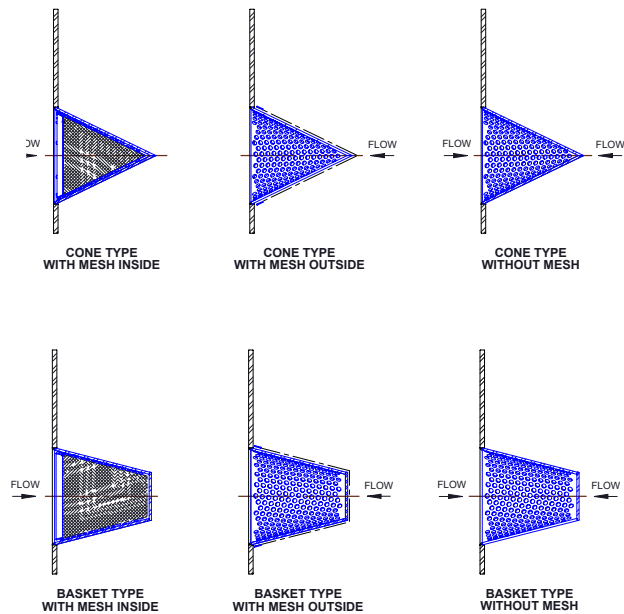
Strainers are widely used in the following industries:

- Tank cars and truck
- Ceramics
- Chemicals
- Electric power
- Food processing
- Marine
- Turbine meter service
- Pipeline
- Paint, ink, latex
- Pulp & paper
- Petroleum refining
- Pharmaceutical
- Process equipment
- Waste & water treatment
- Compressor stations
- Co-generation



Strainers

Temporary
"Start-Up"



MODEL NUMBER FOR AITKEN TEMPORARY STRAINERS

Line Size and Rating

C Cone Strainer

B Basket Strainer

1 100% Open Area

1.5 150% Open Area

2 200% Open Area

3 300% Open Area

MI Mesh Inside (if required)

MO Mesh Outside (if required)

Typical Number: 4" - 150"#

Type C - 1.5 - MI

SPECIFICATIONS

1. Open area: Range in open area of strainer to cross sectional area of the pipe 100% and up.
2. Standard perforated material thickness: 16 GA. (up to 18"), 14 GA. (20" and above). Flange rings 14 GA. (up to 8"), 11GA. (10" up to 18"), 1/4" thk. (20" and up). Heavier gauge available for perforated and/or rings.
3. Perforation: Hole sizes 1/16" and up. (See following pages)
4. Material: Carbon steel, stainless steel, monel.
5. Flange facings: Raised face and RTJ available.
6. Liners/Covers: 10 mesh and up. See following pages – STD mesh is 304SS.
7. Dimensional data: See following pages.

Special 3-PLY compressor suction strainers are also available.

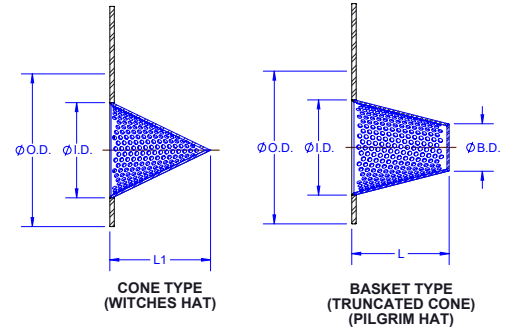


Strainer

Dimensions

FLANGE DIMENSIONS

NOMINAL PIPE SIZE	I.D.	O.D.				
		150#	300#	600#	900#	1500#
1 1/2"	1.250"	3.250"	3.625"	3.625"	3.750"	3.750"
2"	1.750"	4.000"	4.250"	4.250"	5.500"	5.500"
2 1/2"	2.250"	4.750"	5.000"	5.000"	6.375"	6.375"
3"	2.750"	5.250"	5.750"	5.750"	6.500"	6.750"
4"	3.750"	6.750"	7.000"	7.500"	8.000"	8.125"
5"	4.625"	7.625"	8.375"	9.375"	9.625"	9.875"
6"	5.375"	8.625"	9.750"	10.375"	11.250"	11.000"
8"	7.375"	10.875"	12.000"	12.500"	14.000"	13.750"
10"	9.375"	13.250"	14.125"	15.625"	17.000"	17.000"
12"	11.000"	16.000"	16.500"	17.875"	19.500"	20.375"
14"	12.250"	17.375"	19.000"	19.000"	20.375"	22.625"
16"	14.000"	20.125"	21.125"	21.875"	22.500"	-
18"	15.750"	21.250"	23.375"	23.750"	25.000"	-
20"	17.500"	23.500"	25.625"	26.625"	-	-
24"	21.250"	27.875"	30.375"	30.875"	-	-
30"	28.125"	34.375"	37.125"	37.875"	-	-



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

NOTES:

1. Standard perforated material thickness: 16 GA. (up to 18"), 14GA. (20" and above). Flange rings 14 GA. (up to 8), 11GA. (10" up to 18"), 1/4" thk. (20" and up). Heavier gauge available for perforated and/or rings.
2. Special lengths are available.
3. B.D. equals 1/2 the nominal pipe size.
4. Open areas shown are based upon perforation size of 1/8" on 3/16" cntr.

CONE LENGTH "L1"

NOMINAL PIPE SIZE	100% C-1	150% C-1.5	200% C-2	300% C-3
1 1/2"	3.500"	4.500"	6.000"	9.000"
2"	4.000"	6.000"	8.000"	11.000"
2 1/2"	4.000"	6.000"	8.000"	11.000"
3"	5.000"	7.000"	9.000"	13.000"
4"	8.000"	10.000"	12.000"	18.000"
5"	8.000"	11.000"	14.000"	22.000"
6"	9.000"	13.000"	18.000"	25.000"
8"	12.000"	17.000"	23.000"	33.000"
10"	14.000"	21.000"	28.000"	41.000"
12"	16.000"	25.000"	34.000"	49.000"
14"	18.000"	27.000"	36.000"	53.000"
16"	21.000"	31.000"	40.000"	61.000"
18"	24.000"	35.000"	46.000"	68.000"
20"	26.000"	38.000"	51.000"	76.000"
24"	31.000"	45.000"	61.000"	90.000"
30"	38.000"	57.000"	76.000"	114.000"
36"	46.000"	68.000"	91.000"	130.000"

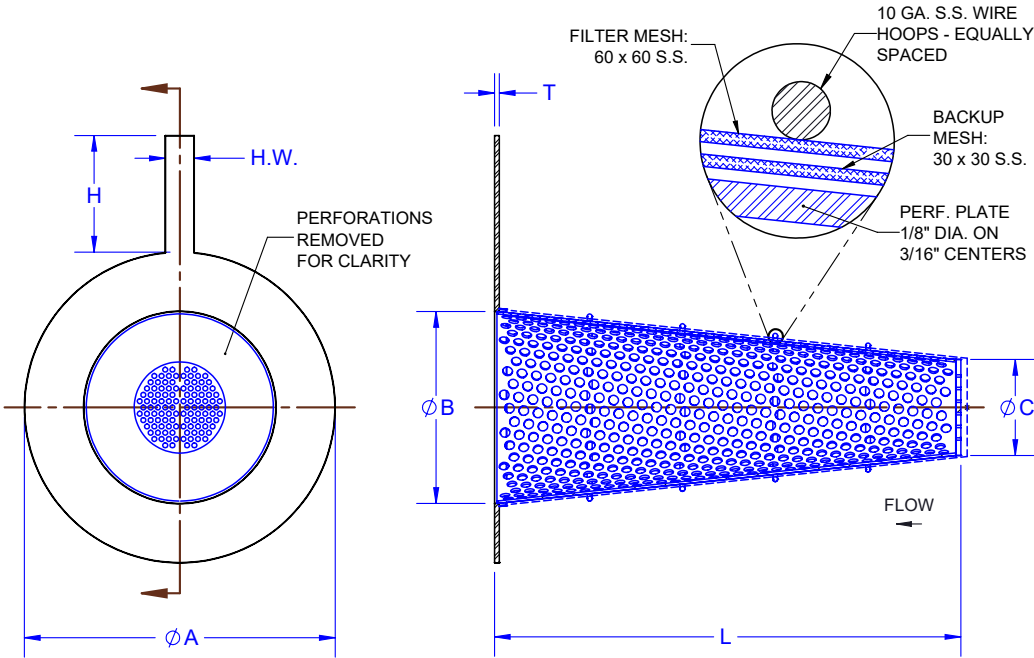
BASKET LENGTH "L"

NOMINAL PIPE SIZE	100% B-1	150% B-1.5	200% B-2	300% B-3
1 1/2"	2.000"	2.500"	3.500"	5.000"
2"	2.500"	3.000"	4.000"	6.000"
2 1/2"	2.500"	3.000"	4.500"	6.000"
3"	3.000"	4.500"	6.000"	8.000"
4"	4.000"	5.000"	7.000"	11.000"
5"	4.500"	7.000"	9.000"	14.000"
6"	5.500"	8.000"	11.000"	17.000"
8"	7.000"	11.000"	14.000"	21.000"
10"	8.000"	13.000"	17.000"	26.000"
12"	10.000"	15.000"	20.000"	31.000"
14"	10.000"	16.000"	22.000"	33.000"
16"	12.000"	19.000"	24.000"	37.000"
18"	14.000"	21.000"	27.000"	41.000"
20"	16.000"	24.000"	31.000"	48.000"
24"	18.000"	28.000"	37.000"	57.000"
30"	22.000"	34.000"	46.000"	71.000"
36"	27.000"	42.000"	58.000"	85.000"



Compressor Suction Strainer

IR11
For Raised
Face Flanges



DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND MATERIALS AVAILABLE UPON REQUEST

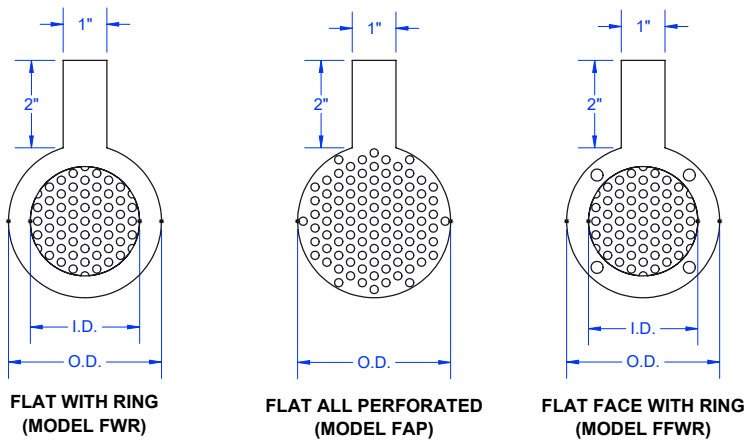
NOMINAL PIPE SIZE	CLASS 150 A	CLASS 300 A	CLASS 600 A	B	C	HW	H	L	#HOOPS	T
2"	4.00"	4.25"	4.25"	1.4375"	0.875"	1.00"	4.00"	5.00"	0	0.125"
2.5"	4.75"	5.00"	5.00"	1.625"	0.875"	1.00"	4.00"	6.25"	0	0.125"
3"	5.25"	5.75"	5.75"	2.125"	1.125"	1.00"	4.00"	7.50"	1	0.125"
3.5"	6.25"	6.37"	6.25"	-	-	1.00"	4.00"	-	-	0.125"
4"	6.75"	7.00"	7.50"	3.00"	1.50"	1.00"	4.00"	9.00"	1	0.125"
6"	8.62"	9.75"	10.38"	4.75"	2.375"	1.50"	6.00"	13.00"	2	0.1875"
8"	10.88"	12.00"	12.50"	6.625"	3.3125"	1.50"	6.00"	16.25"	3	0.25"
10"	13.25"	14.12"	15.62"	8.25"	4.125"	1.50"	6.00"	20.25"	4	0.25"
12"	16.00"	16.50"	17.88"	9.875"	4.9375"	1.50"	6.00"	24.00"	4	0.25"
14"	17.62"	19.00"	19.25"	10.875"	5.4375"	1.50"	6.00"	27.00"	5	0.25"
16"	20.12"	21.12"	22.12"	12.50"	6.25"	1.50"	6.00"	32.00"	5	0.25"
18"	21.5"	23.38"	24.00"	14.125"	7.0625"	1.50"	6.00"	36.00"	6	0.375"
20"	23.75"	25.62"	26.75"	15.75"	7.875"	1.50"	6.00"	40.00"	6	0.375"
24"	28.12"	30.38"	31.00"	19.00"	9.50"	1.50"	6.00"	48.00"	7	0.375"



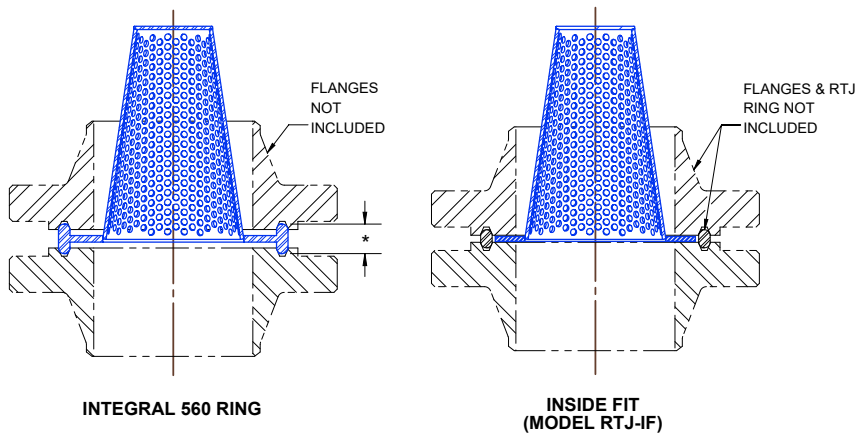
Ring joint flange compatible strainers also available.

Facings

Flat Strainers
& Ring Joint
Strainers



STRAINER FOR RING JOINT FACINGS



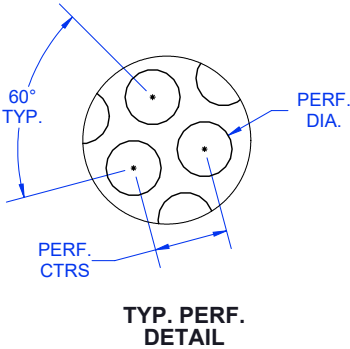
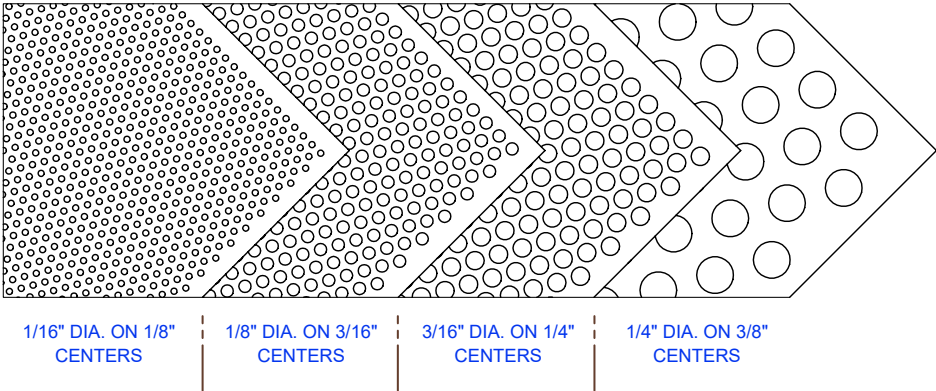
*Thickness exceeds standard ring dimensions.



Bolt-in indicator tabs come with rabbeted type strainers for RTJ compressor strainers with 3/16" or 1/4" thick rings. The RTJ-I ring and gasket are made of one piece.

Base Material

Perforated



PERFORATED MATERIALS

+ CUSTOM SIZES AND MATERIALS AVAILABLE UPON REQUEST

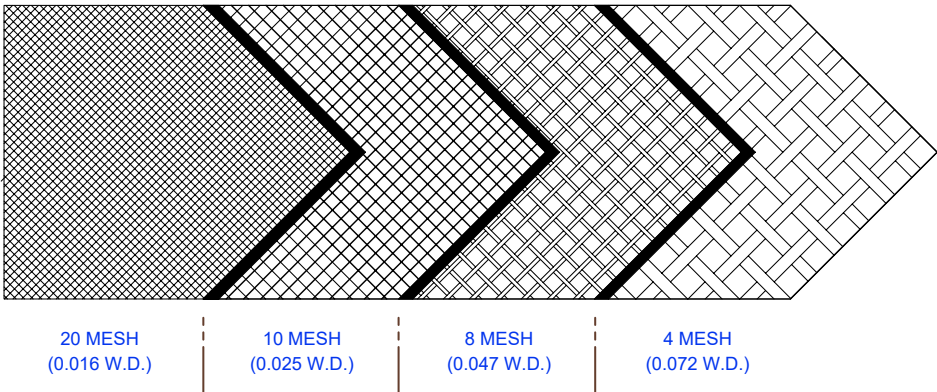
GAGE	PERFORATION	HOLES / SQ IN	% OF OPEN AREA	MATERIAL RANGE
20	1/16"Ø on 1/8" ctrs.	74.0	22.7%	Carbon Steel, 304SS, 316SS
16	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS 304L, 316L, Monel
16	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
16	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
14	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS
14	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
14	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
12	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel
11	1/8"Ø on 3/16" ctrs.	33.0	40.3%	304SS, 316SS
11	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS



Other perforations available upon request.

Base Material

Wire Mesh Base
Wire Mesh Liner



WIRE MESH TYPE BASE MATERIAL

+ CUSTOM SIZES AND MATERIALS AVAILABLE UPON REQUEST

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	IN	MM	IN	MM		
2	0.063"	1.6	0.437"	11.10	76.4%	Carbon Steel, 304SS, 316SS
3	0.063"	1.6	0.270"	6.86	65.5%	Carbon Steel, 304SS, 316SS
4	0.063"	1.6	0.187"	4.75	56.0%	Carbon Steel, 304SS, 316SS
5	0.063"	1.6	0.137"	3.48	46.9%	Carbon Steel, 304SS, 316SS
6	0.047"	1.19	0.120"	3.50	51.8%	Carbon Steel, 304SS, 316SS
8	0.047"	1.19	0.078"	1.98	38.9%	Carbon Steel, 304SS, 316SS

WIRE MESH LINER MATERIAL

+ CUSTOM SIZES AND MATERIALS AVAILABLE UPON REQUEST

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	IN	MM	IN	MM		
10	0.025"	0.640	0.075"	1.91	56.3%	304SS, 316SS
20	0.016"	0.406	0.034"	0.86	46.2%	304SS, 316SS
30	0.013"	0.330	0.020"	0.52	37.1%	304SS, 316SS
40	0.010"	0.254	0.015"	0.38	36.0%	304SS, 316SS
50	0.009"	0.229	0.011"	0.28	30.3%	304SS, 316SS
60	0.0075"	0.191	0.009"	0.23	30.5%	304SS, 316SS
80	0.0055"	0.140	0.007"	0.19	31.4%	304SS, 316SS
100	0.0045"	0.114	0.006"	0.14	30.3%	304SS, 316SS



Available from stock.

Cone Strainer

Type "C"

+ CUSTOM SIZES AND MATERIALS
AVAILABLE UPON REQUEST

PRESSURE DROP OF CLEAN VS. WATER FLOW RATE

FLOW RATE	100% OPEN AREA												200% OPEN AREA											
	GPM	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	
100	3.7	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	
200	17	2.4	1.2	-	-	-	-	-	-	-	-	-	11	2.1	1.1	-	-	-	-	-	-	-	-	
300	40	6	2.9	-	-	-	-	-	-	-	-	-	24	4.5	2.5									
400	72	12	5.4	-	-	-	-	-	-	-	-	-	40	8	4.2	-	-	-	-	-	-	-	-	
500	-	18	9	-	-	-	-	-	-	-	-	-	60	12	6.2	-	-	-	-	-	-	-	-	
600	-	27	14	1.2	-	-	-	-	-	-	-	-	83	17	8.8	1.1								
700	-	37	18	1.7	-	-	-	-	-	-	-	-	23	13	1.6	-	-	-	-	-	-	-	-	
800	-	50	25	2.3	-	-	-	-	-	-	-	-	-	28	16	2	-	-	-	-	-	-	-	
900	-	65	32	2.9	1.1	-	-	-	-	-	-	-	35	18	2.5	1.1	-	-	-	-	-	-	-	
1000	-	80	40	3.6	1.5	-	-	-	-	-	-	-	-	43	24	3	1.4	-	-	-	-	-	-	
2000	-	-	-	17	6.1	2	-	-	-	-	-	-	-	-	82	11	3.7	1.8	-	-	-	-	-	
3000	-	-	-	39	16	4.9	2.1	1.6	-	-	-	-	-	-	-	24	10	3.9	2	1.5	-	-	-	
4000	-	-	-	72	29	9	4	2.8	1.7	-	-	-	-	-	-	40	18	6.6	3.5	2.4	1.5	-	-	
5000	-	-	-	-	45	16	6.5	4.6	2.5	1.5			-	-	-	60	26	10	5.1	3.7	2.3	1.4	-	
6000	-	-	-	-	68	22	9.5	7	3.8	2.2	1.5		-	-	-	73	37	14	7.1	5	3.1	1.9	1.3	
7000	-	-	-	-	95	31	15	9.5	5.2	3	1.9		-	-	-	-	49	19	9.5	6.9	4.1	2.6	1.9	
8000	-	-	-	-	-	41	19	14	7	4	2.7		-	-	-	-	75	24	12	9	5.2	3.2	2.3	
9000	-	-	-	-	-	52	24	17	9	5.2	3.3		-	-	-	-	29	16	12	6.7	4	2.8		
10000	-	-	-	-	-	68	30	21	12	6.6	4.2		-	-	-	-	35	19	14	8	5	3.4		

Correction Factor:
For liquids more viscous than water or where wire cloth liner is added, multiply pressure drop in charts by:

VISCOSITY (SSU)	PERFORATED (1/8" HOLES)	PERFORATED W/ WIRE CLOTH		
		40 MESH	60 MESH	80 MESH
30	1.00	1.32	1.53	1.62
270	1.30	1.61	1.83	2.00
385	1.44	1.76	2.00	2.20
500	1.58	1.92	2.13	2.41
1000	1.66	2.22	2.41	2.63
2000	1.86	2.41	2.72	2.91



Basket Strainer

Type "B"

+ CUSTOM SIZES AND MATERIALS
AVAILABLE UPON REQUEST

PRESSURE DROP OF CLEAN VS. WATER FLOW RATE

FLOW RATE	100% OPEN AREA												200% OPEN AREA											
GPM	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"		
100	3.2	2.1	-	-	-	-	-	-	-	-	-	2.7	1.7	-	-	-	-	-	-	-	-	-		
200	15	4.8	1.1	-	-	-	-	-	-	-	-	12	3.8	-	-	-	-	-	-	-	-	-		
300	32	9	2.5	-	-	-	-	-	-	-	-	27	7	1.9	-	-	-	-	-	-	-	-		
400	58	15	4.5	-	-	-	-	-	-	-	-	46	12	3.5	-	-	-	-	-	-	-	-		
500	91	21	7.1	-	-	-	-	-	-	-	-	72	17	5.6	-	-	-	-	-	-	-	-		
600	-	29	11	1.2	-	-	-	-	-	-	-	-	23	8	-	-	-	-	-	-	-	-		
700	-	38	15	1.6	-	-	-	-	-	-	-	-	30	12	1.2	-	-	-	-	-	-	-		
800	-	47	19	2	-	-	-	-	-	-	-	-	37	16	1.7	-	-	-	-	-	-	-		
900	-	60	25	2.6	1	-	-	-	-	-	-	46	19	2	-	-	-	-	-	-	-	-		
1000	-	-	31	3.2	1.2	-	-	-	-	-	-	-	-	25	2.5	-	-	-	-	-	-	-		
2000	-	-	-	14	5	1.8	-	-	-	-	-	-	-	-	11	3.7	1.5	-	-	-	-	-		
3000	-	-	-	31	12	4.2	1.9	1.4	-	-	-	-	-	-	25	9	3.3	1.6	1	-	-	-		
4000	-	-	-	56	21	7.7	3.5	2.5	1.5	-	-	-	-	-	45	17	6	2.8	2	1.1	-	-		
5000	-	-	-	91	33	13	5.6	3.9	2.2	1.3	-	-	-	-	70	26	9.3	4.5	3	1.8	1	-		
6000	-	-	-	-	48	18	8.1	5.6	3.3	1.9	1.2	-	-	-	-	38	15	6.3	4.2	2.5	1.5	1		
7000	-	-	-	-	68	25	11	8	4.5	2.6	1.8	-	-	-	-	50	19	8.8	6	3.4	2	1.4		
8000	-	-	-	-	88	32	16	11	6	3.4	2.2	-	-	-	-	68	25	12	8	4.5	2.7	1.8		
9000	-	-	-	-	-	41	19	13	7.3	4.4	2.8	-	-	-	-	85	32	16	10	5.8	3.3	2.2		
10000	-	-	-	-	-	50	23	17	9.3	5.5	3.5	-	-	-	-	-	39	19	13	7	4.1	2.7		

Correction Factor:
For liquids more viscous than water or where wire cloth liner is added, multiply pressure drop in charts by:

VISCOSITY (SSU)	PERFORATED (1/8" HOLES)	PERFORATED W/ WIRE CLOTH		
		40 MESH	60 MESH	80 MESH
30	1.00	1.32	1.53	1.62
270	1.30	1.61	1.83	2.00
385	1.44	1.76	2.00	2.20
500	1.58	1.92	2.13	2.41
1000	1.66	2.22	2.41	2.63
2000	1.86	2.41	2.72	2.91



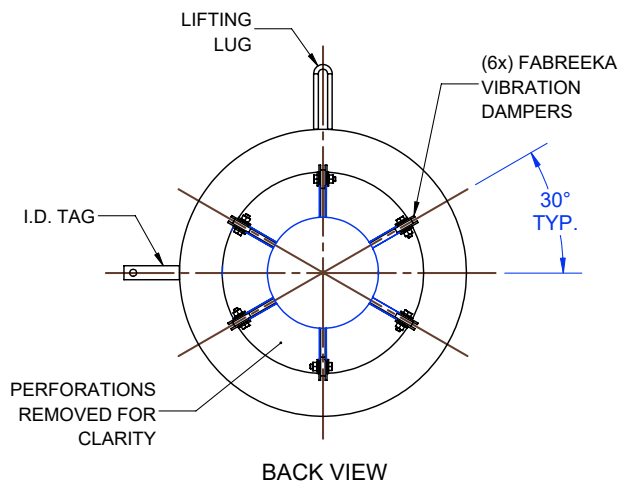
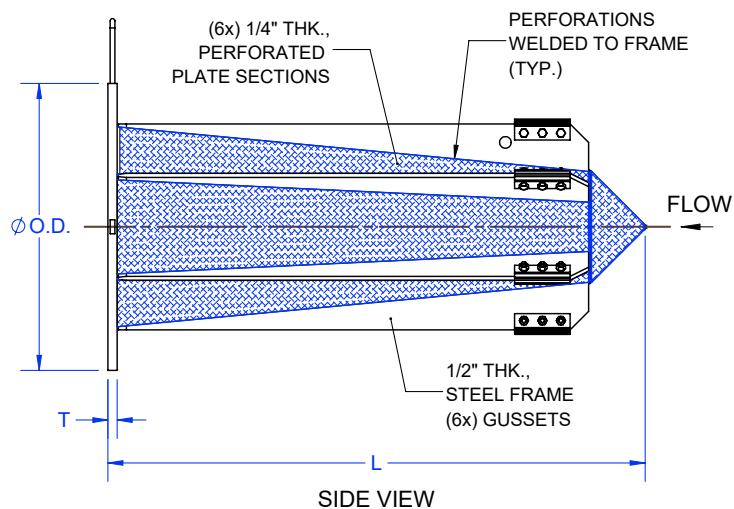
TYPE-R



Type-R Rev 4

Compressor
Suction
Strainer

(For Raised / Flat Face Flanges)



Notes:

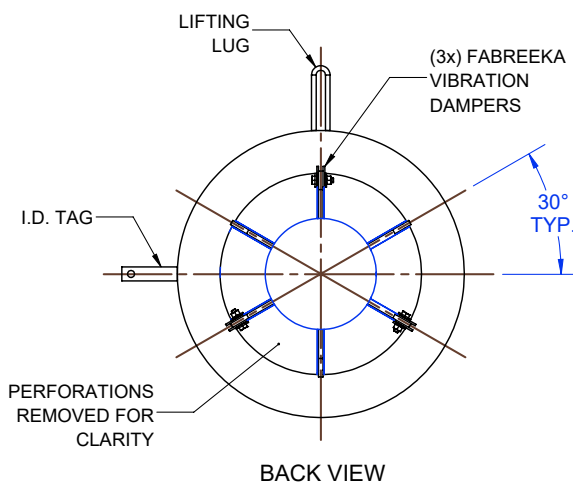
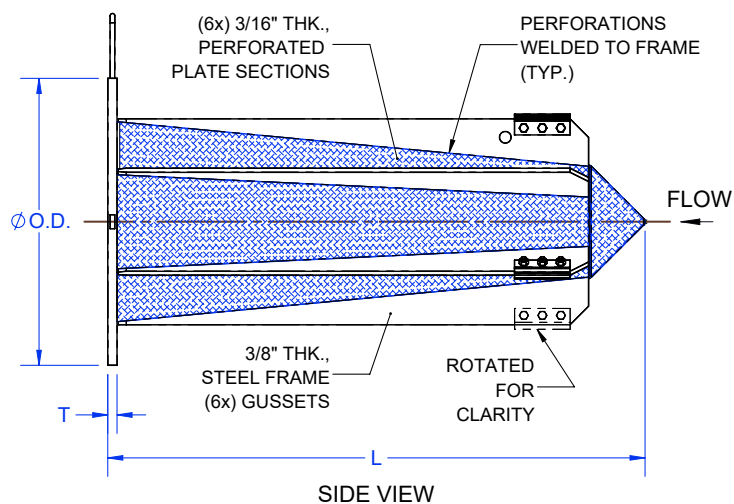
1. Available in carbon steel and stainless steel.
2. Various perforations and mesh available to suit process requirements.
3. Design ability for customer specified collapse and differential pressure.
Customer to advise collapse pressure requirement and open area requirement.
4. Customer to advise pipeline I.D. and wall thickness.
5. Vibration dampeners - not included on sizes smaller than - 12".
6. Spacer rings available



Type-R Rev 3

Compressor
Suction
Strainer

(For Raised / Flat Face Flanges)



Notes:

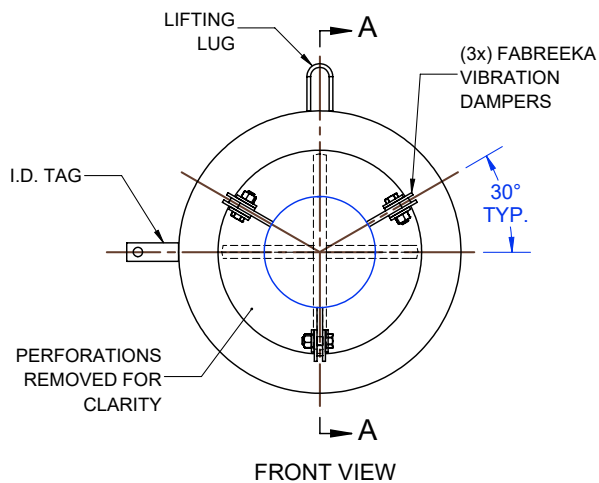
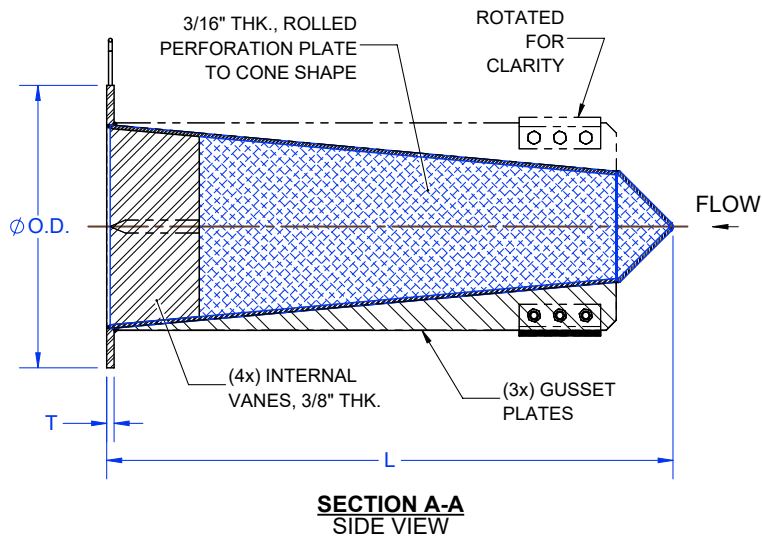
1. Available in carbon steel and stainless steel.
2. Various perforations and mesh available to suit process requirements.
3. Design ability for customer specified collapse and differential pressure.
Customer to advise collapse pressure requirement and open area requirement.
4. Customer to advise pipeline I.D. and wall thickness.
5. Vibration dampeners - not included on sizes smaller than - 12".
6. Spacer rings available
7. As this Type-R strainer is a temporary start-up strainer it is warrantied for 500 operational hours.



Standard Type-R w/ Short Vanes

Compressor
Suction
Strainer

(For Raised / Flat Face Flanges)



Notes:

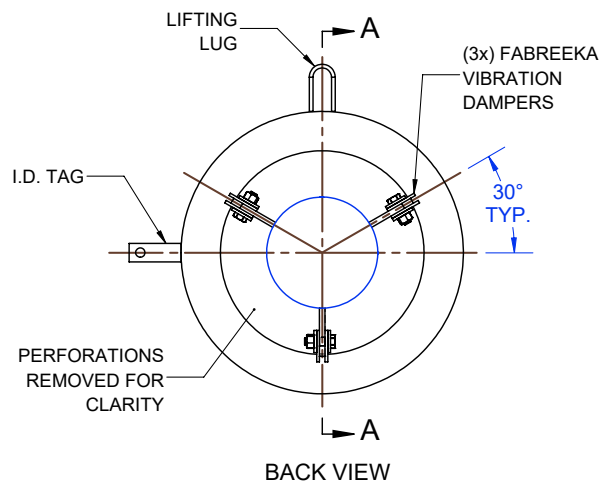
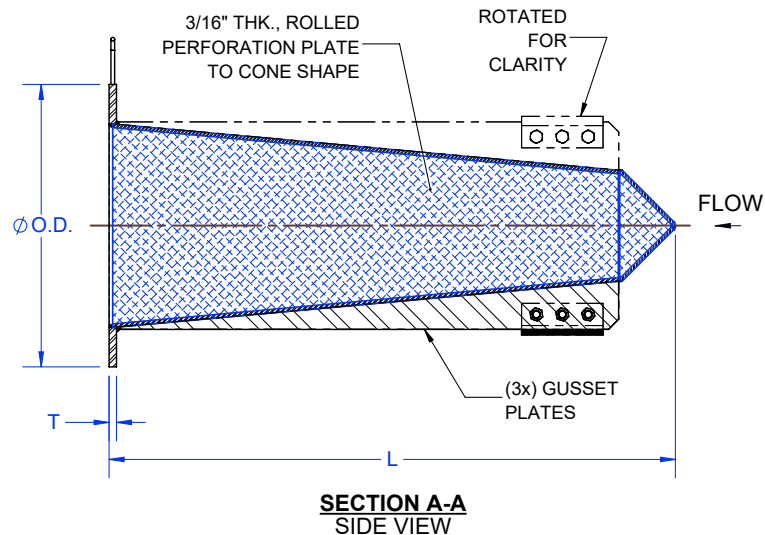
1. Available in carbon steel and stainless steel.
2. Various perforations and mesh available to suit process requirements.
3. Design ability for customer specified collapse and differential pressure.
Customer to advise collapse pressure requirement and open area requirement.
4. Customer to advise pipeline I.D. and wall thickness.
5. Vibration dampeners - not included on sizes smaller than - 20".
6. Spacer rings available



Standard Type-R w/o Short Vanes

Compressor
Suction
Strainer

(For Raised / Flat Face Flanges)

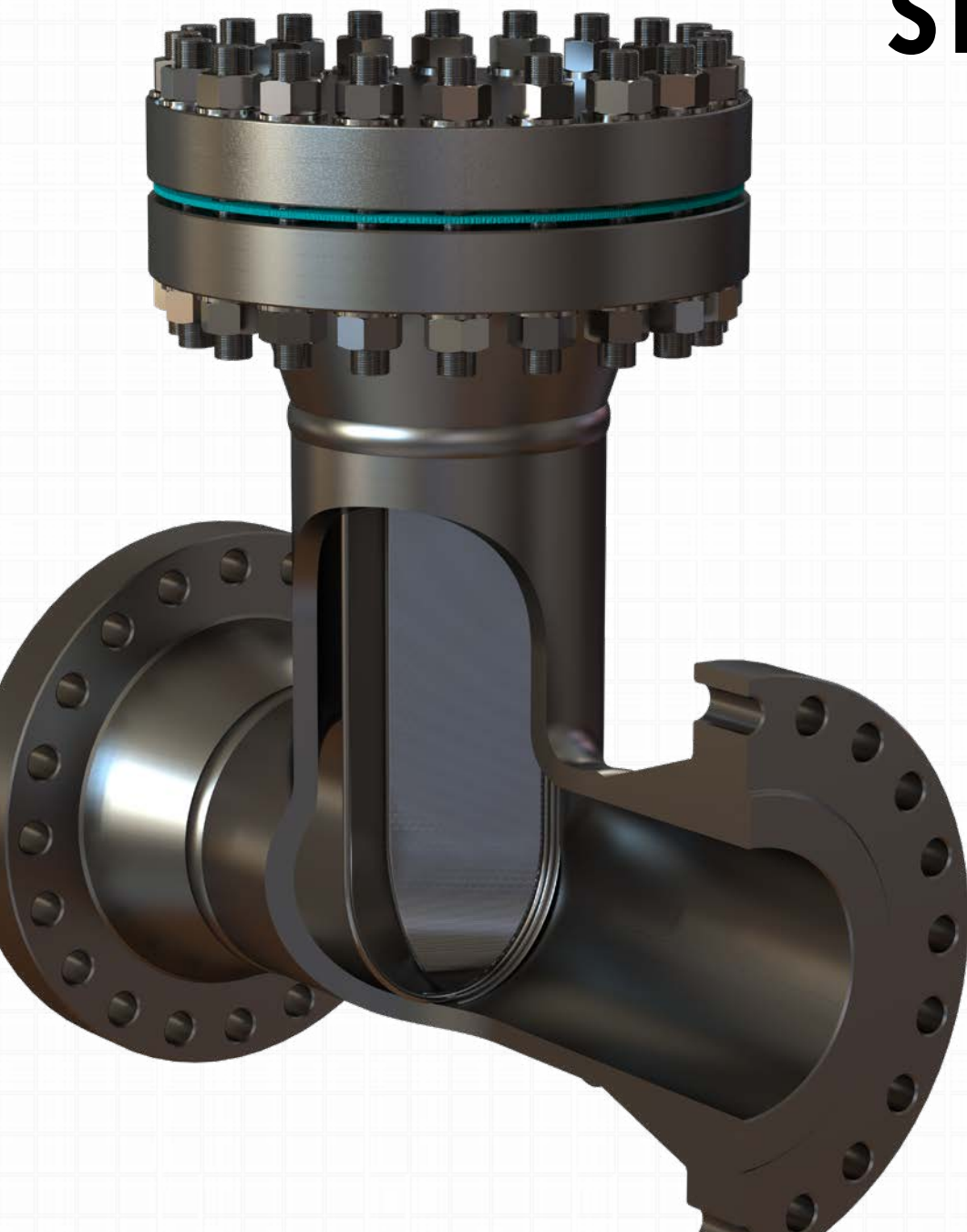


Notes:

1. Available in carbon steel and stainless steel.
2. Various perforations and mesh available to suit process requirements.
3. Design ability for customer specified collapse and differential pressure.
Customer to advise collapse pressure requirement and open area requirement.
4. Customer to advise pipeline I.D. and wall thickness.
5. Vibration dampeners - not included on sizes smaller than - 20".
6. Spacer rings available



TEE STRAINERS



Strainers

The problem with unwanted material in pipelines is a never ending one. Whether the flowing material is water, oil, gas, paint or a variety of food or chemical products, there is often present unwanted matter that can cause serious problems. Dirt, foreign matter or even clumps of the product itself, can clog or damage spray nozzles, pumps, turbine meters, or similar equipment.

Strainers are a solution to these problems. They prevent the passage of unwanted matter in the line that could cause damage or even ruin the product itself.

When compared to the cost of replacing damaged pumps, meters, etc., strainers are an inexpensive insurance policy.

Strainers are widely used in the following industries:

- Tank cars and truck
- Ceramics
- Chemicals
- Electric power
- Food processing
- Marine
- Turbine meter service
- Pipeline
- Paint, ink, latex
- Pulp & paper
- Petroleum refining
- Pharmaceutical
- Process equipment
- Waste & water treatment
- Compressor stations
- Co-generation



Tee Strainers

STANDARD STRAINER:

Our standard “bathtub” strainer uses double runner rods so that flow can be reversed. Our special angle flow “TAM” strainer allows for bi-directional flow.

STANDARD MATERIAL SPECIFICATIONS:

standard material of construction is carbon steel.
Basket material is specified by the customer.

OTHER MATERIALS AVAILABLE IN:

- 11/4CR-1/2MO
- 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:

See pressure drop charts.

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. Davit for access blind flange
- 5. Blowdown basket

DESIGN CODE(S) / STANDARDS:

Standard design and fabrication per ASME B31.3 other codes available are:
ASME 31.1
ASME B31.4
ASME B31.8
ASME Pressure vessel and boiler code, section VIII, DIV. 1 DOT NACE
MDMT required for ASME B31.3 and section VIII design.

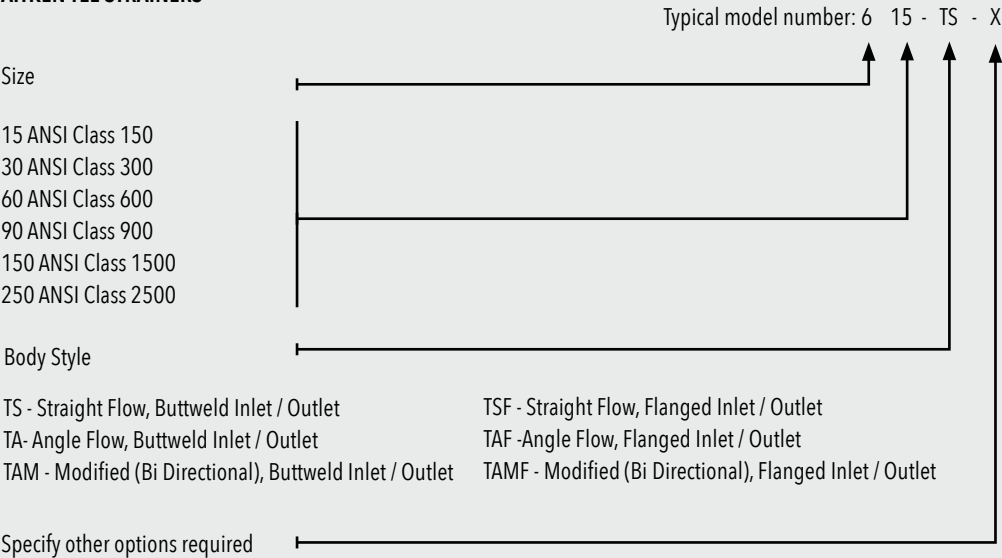
PAINT/COATINGS:

Provided with external SP-3 mechanical tool cleaning and one coat of shop primer or as specified by customer.

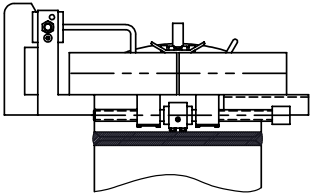
NOE:

Per applicable code and/or as specified by customer.

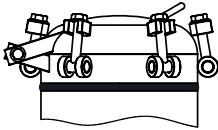
**MODEL NUMBER FOR
AITKEN TEE STRAINERS**



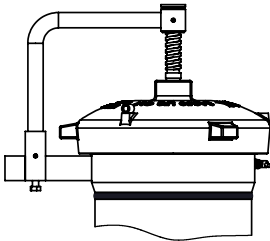
Tee Strainer Options



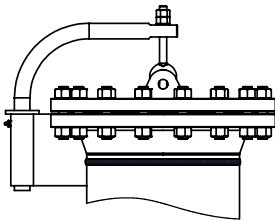
**DOUBLE - BOLT
CLOSURE**



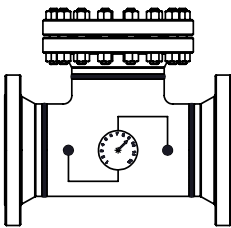
T-BOLT CLOSURE



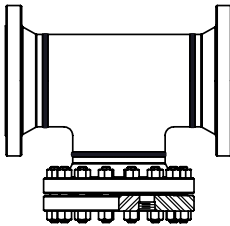
THREADED CLOSURE



**DAVIT FOR BLIND
FLANGE**

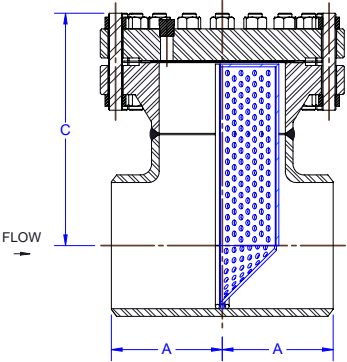


**DIFFERENTIAL PRESSURE
CONNECTIONS**

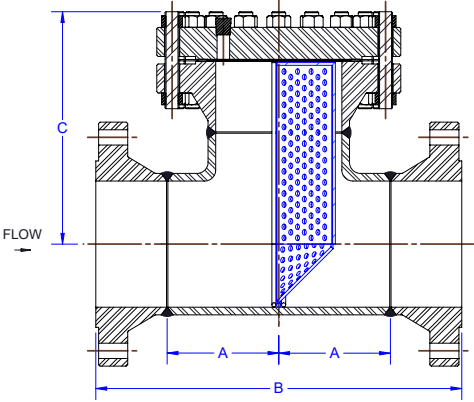


**BLOW DOWN
CONNECTION**

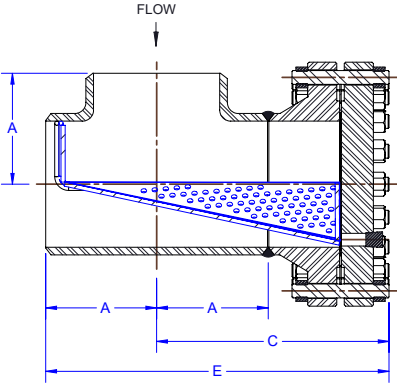
Tee Type Strainers



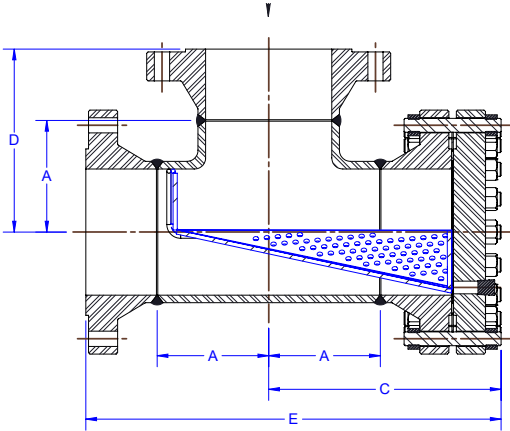
TEE STRAIGHT BUTTWELD (TS)



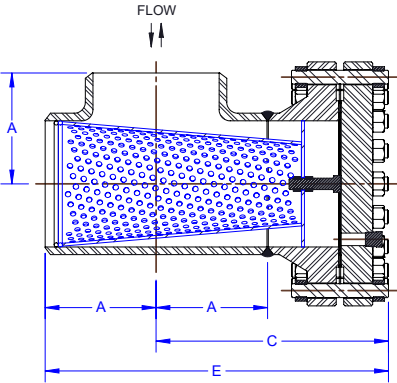
TEE STRAIGHT FLANGED (TSF)



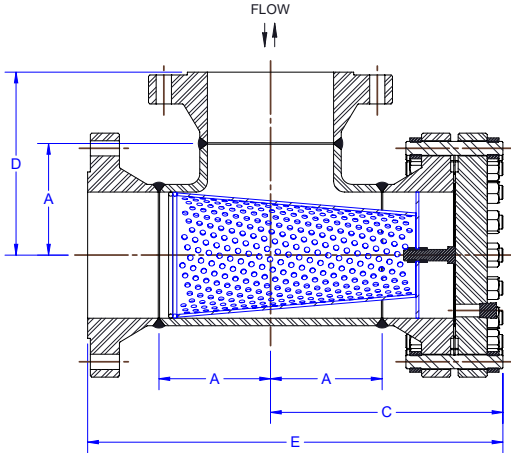
TEE ANGLE FLOW BUTTWELD (TA)



TEE ANGLE FLOW FLANGED (TAF)



TEE ANGLE MODIFIED BUTTWELD (TAM)



TEE ANGLE MODIFIED FLANGED (TAMF)



Tee Type
Strainers

CLASS 150

SIZE	A	B	C	D	E
2"	2.50"	10.255"	6.005"	5.1275"	11.1325"
2.5"	3.00"	11.755"	6.875"	5.8775"	12.7525"
3"	3.625"	13.005"	7.57"	6.5025"	14.0725"
4"	4.125"	14.505"	8.32"	7.2525"	15.5725"
5"	4.875"	17.005"	9.57"	8.5025"	18.0725"
6"	5.625"	18.505"	10.38"	9.2525"	19.6325"
8"	7.00"	22.255"	12.375"	11.1275"	23.5025"
10"	8.50"	25.255"	13.935"	12.6275"	26.5625"
12"	10.00"	29.255"	16.005"	14.628"	30.633"
14"	11.00"	32.255"	17.625"	16.128"	33.753"
16"	12.00"	34.255"	18.695"	17.1275"	35.8225"
18"	13.50"	38.255"	20.815"	19.1275"	39.9425"
20"	15.00"	41.615"	22.615"	20.8075"	43.4225"
24"	17.00"	46.255"	25.125"	23.1275"	48.2525"
26"	19.50"	48.755"	27.195"	24.3775"	51.5725"
30"	22.00"	55.015"	30.575"	27.5075"	58.0825"
36"	26.50"	65.635"	36.505"	32.8175"	69.3225"
42"	30.00"	73.755"	40.815"	36.8775"	77.6925"
48"	35.00"	85.375"	46.875"	42.6875"	89.5625"
60"	44.00"	107.135"	58.885"	53.5675"	112.4525"

CLASS 300

SIZE	A	B	C	D	E
2"	2.50"	10.63"	6.25"	5.315"	11.565"
2.5"	3.00"	12.13"	7.13"	6.065"	13.195"
3"	3.625"	13.62"	7.995"	6.81"	14.805"
4"	4.125"	15.14"	8.885"	7.57"	16.455"
5"	4.875"	17.64"	10.255"	8.82"	19.075"
6"	5.625"	19.14"	11.075"	9.57"	20.645"
8"	7.00"	22.89"	13.13"	11.445"	24.575"
10"	8.50"	26.37"	15.12"	13.185"	28.305"
12"	10.00"	30.37"	17.25"	15.185"	32.435"
14"	11.00"	33.37"	18.87"	16.685"	35.555"
16"	12.00"	35.63"	20.13"	17.815"	37.945"
18"	13.50"	39.63"	22.25"	19.815"	42.065"
20"	15.00"	42.89"	24.01"	21.445"	45.455"
24"	17.00"	47.37"	26.50"	23.685"	50.185"
26"	19.50"	53.63"	30.19"	26.815"	57.005"
30"	22.00"	60.63"	34.13"	30.315"	64.445"
36"	26.50"	72.13"	40.51"	36.065"	76.575"
42"	30.00"	75.89"	40.70"	35.945"	80.645"
48"	35.00"	87.75"	47.19"	41.875"	93.065"
60"	44.00"	109.63"	57.32"	50.815"	116.135"

CLASS 600

SIZE	A	B	C	D	E
2"	2.50"	11.51"	7.13"	5.755"	12.885"
2.5"	3.00"	12.99"	7.99"	6.495"	14.485"
3"	3.625"	14.5"	8.875"	7.25"	16.125"
4"	4.125"	17.00"	10.375"	8.50"	18.875"
5"	4.875"	19.5"	11.875"	9.75"	21.625"
6"	5.625"	21.24"	12.875"	10.62"	23.495"
8"	7.00"	25.25"	15.19"	12.625"	27.815"
10"	8.50"	29.75"	17.75"	14.875"	32.625"
12"	10.00"	32.99"	19.49"	16.495"	35.985"
14"	11.00"	35.75"	21.00"	17.875"	38.875"
16"	12.00"	38.75"	22.75"	19.375"	42.125"
18"	13.50"	42.25"	24.75"	21.125"	45.875"
20"	15.00"	45.75"	26.75"	22.875"	49.625"
24"	17.00"	50.75"	29.75"	25.375"	55.125"
26"	19.50"	56.875"	33.94"	28.4375"	62.565"
30"	22.00"	63.875"	38.00"	31.9375"	70.125"
36"	26.50"	75.615"	44.75"	37.8075"	82.745"
42"	30.00"	82.375"	48.50"	41.1875"	89.875"
48"	35.00"	95.255"	55.88"	47.6275"	103.695"
60"	44.00"	118.995"	69.62"	59.4975"	129.305"

+ CUSTOM SIZES AND RATINGS
AVAILABLE UPON REQUEST



Tee Type Strainers

CLASS 900

SIZE	A	B	C	D	E
2"	2.50"	13.75"	8.75"	6.875"	15.625"
2.5"	3.00"	14.99"	9.49"	7.495"	16.985"
3"	3.625"	16.00"	9.875"	8.00"	17.875"
4"	4.125"	18.00"	11.125"	9.00"	20.125"
5"	4.875"	20.50"	12.625"	10.25"	22.875"
6"	5.625"	23.00"	14.065"	11.50"	25.565"
8"	7.00"	27.51"	16.63"	13.755"	30.385"
10"	8.50"	32.25"	19.25"	16.125"	35.375"
12"	10.00"	36.51"	21.75"	18.255"	40.005"
14"	11.00"	39.51"	23.51"	19.755"	43.265"
16"	12.00"	41.75"	24.75"	20.875"	45.625"
18"	13.50"	45.75"	27.25"	22.875"	50.125"
20"	15.00"	50.25"	29.75"	25.125"	54.875"
24"	17.00"	57.75"	34.75"	28.875"	63.625"

CLASS 1500

SIZE	A	B	C	D	E
2"	2.50"	13.75"	8.75"	6.875"	15.625"
2.5"	3.00"	14.99"	9.49"	7.495"	16.985"
3"	3.125"	17.24"	10.875"	8.62"	19.495"
4"	4.125"	18.76"	11.875"	9.38"	21.255"
5"	4.875"	22.74"	14.625"	11.37"	25.995"
6"	5.625"	25.50"	16.375"	12.75"	29.125"
8"	7.00"	31.51"	19.75"	15.755"	35.505"
10"	8.50"	37.75"	23.50"	18.875"	42.375"
12"	10.00"	42.99"	26.75"	21.495"	48.245"
14"	11.00"	46.25"	28.75"	23.125"	51.875"
16"	12.00"	49.25"	30.75"	24.625"	55.375"
18"	13.50"	53.51"	33.51"	26.755"	60.265"
20"	15.00"	58.75"	36.75"	29.375"	66.125"
24"	17.00"	66.75"	41.75"	33.375"	75.125"

CLASS 2500

SIZE	A	B	C	D	E
2"	2.50"	15.75"	10.25"	7.875"	18.125"
2.5"	3.00"	17.99"	11.62"	8.995"	20.615"
3"	3.625"	21.24"	13.615"	10.62"	24.235"
4"	4.125"	24.00"	15.375"	12.00"	27.375"
5"	4.875"	28.50"	18.245"	14.25"	32.495"
6"	5.625"	33.50"	21.375"	16.75"	38.125"
8"	7.00"	39.75"	25.25"	19.875"	45.125"
10"	8.50"	50.75"	32.25"	25.375"	57.625"
12"	10.00"	57.25"	36.25"	28.625"	64.875"

+ CUSTOM SIZES AND RATINGS
AVAILABLE UPON REQUEST



Tee Strainer Weights

**WEIGHTS FOR STRAIGHT FLOW TEE STRAINER
W / B.W. INLET & OUTLET**

PIPE SIZE	150#	300#	600#	900#	1500#
2"	20	27	35	63	67
2.5"	31	37	51	97	97
3"	38	45	62	83	130
4"	54	72	113	146	192
5"	74	100	181	232	360
6"	94	137	236	303	439
8"	156	231	309	528	771
10"	241	351	609	738	1,230
12"	346	508	772	1,069	1,931
14"	465	685	1,023	1,445	2,570
16"	570	861	1,389	1,783	3,400
18"	750	1,213	1,709	2,435	4,477
20"	912	1,491	2,255	3,112	5,765
24"	1,357	2,192	3,228	5,432	9,120

**WEIGHTS FOR STRAIGHT FLOW TEE STRAINER
W / FLANGED INLET & OUTLET**

PIPE SIZE	150#	300#	600#	900#	1500#
2"	33	43	55	111	115
2.5"	51	61	87	145	169
3"	62	77	102	155	226
4"	86	122	193	248	330
5"	114	168	313	404	624
6"	142	227	390	523	767
8"	240	371	535	902	1,317
10"	351	549	979	1,274	2,138
12"	516	692	1,220	1,813	3,311
14"	693	1,057	1,691	2,569	4,450
16"	854	1,353	2,313	3,153	5,900
18"	1,060	1,823	2,771	4,283	7,727
20"	1,252	2,237	3,611	5,440	9,865
24"	1,877	3,050	5,146	5,566	15,770

WEIGHTS FOR ANGLE FLOW TEE STRAINER

PIPE SIZE	150#	300#	600#	900#	1500#
2"	13	43	55	111	115
2.5"	51	61	87	145	169
3"	62	77	102	155	226
4"	86	122	193	248	330
5"	114	168	313	404	624
6"	142	227	390	523	767
8"	240	371	535	902	1,317
10"	351	549	979	1,274	2,138
12"	516	692	1,220	1,813	3,311
14"	693	1,057	1,691	2,569	4,450
16"	854	1,353	2,313	3,153	5,900
18"	1,060	1,823	2,771	4,283	7,727
20"	1,252	2,237	3,611	5,440	9,865
24"	1,877	3,050	5,146	5,566	15,770

**WEIGHTS FOR STRAIGHT FLOW TEE STRAINER
W / B.W. INLET & OUTLET**

PIPE SIZE	150#	300#	600#	900#	1500#
2"	22	29	37	65	69
2.5"	33	39	53	99	99
3"	41	47	64	85	132
4"	57	75	116	149	195
5"	77	103	184	235	363
6"	97	140	239	306	442
8"	160	235	314	532	775
10"	243	353	612	740	1,232
12"	348	510	774	1,071	1,933
14"	467	687	1,025	1,447	2,572
16"	573	864	1,392	1,785	3,503
18"	753	1,216	1,712	2,438	4,480
20"	915	1,494	2,258	3,115	5,768
24"	1,361	2,196	3,232	5,436	9,126

**WEIGHTS FOR ANGLE MODIFIED FLOW TEE
STRAINER W / FLANGED INLET & OUTLET**

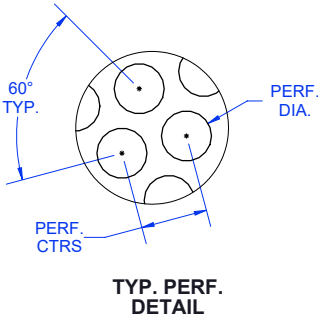
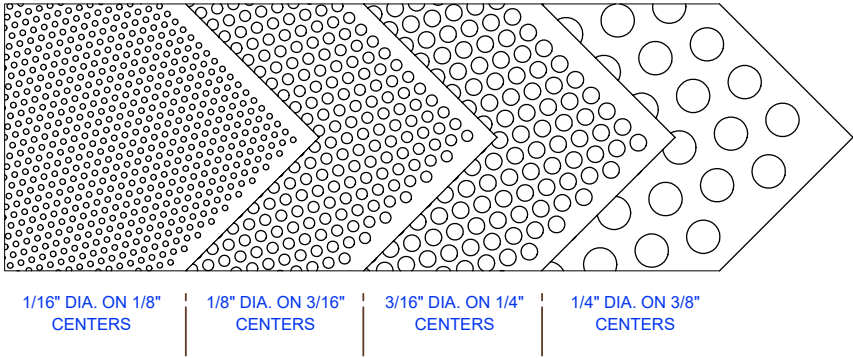
PIPE SIZE	150#	300#	600#	900#	1500#
2"	34	44	56	112	116
2.5"	52	62	88	146	170
3"	63	78	103	156	228
4"	88	123	195	249	332
5"	116	169	315	406	626
6"	144	229	392	525	769
8"	242	373	537	903	1,319
10"	352	550	980	1,275	2,139
12"	517	693	1,221	1,814	3,312
14"	695	1,059	1,693	2,571	4,452
16"	856	1,355	2,315	3,155	5,920
18"	1,260	1,825	2,773	4,285	7,729
20"	1,253	2,239	3,613	5,442	9,867
24"	1,879	3,250	5,148	5,568	15,772

**+ CUSTOM SIZES AND RATINGS
AVAILABLE UPON REQUEST**



Base Material

Perforated



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

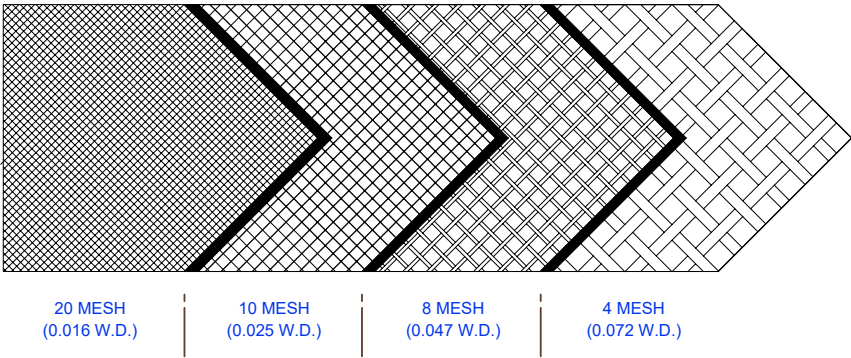
PERFORATED MATERIALS				
GAGE	PERFORATIONS	HOLES / SQ.IN.	% OF OPEN AREA	MATERIAL RANGE
20"	1/16"Ø on 1/8" ctrs.	74.0	22.7%	Carbon Steel, 304SS, 316SS
16"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS 304L, 316L, Monel
16"	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
16"	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
14"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS
14"	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
14"	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
12"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel
11"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	304SS, 316SS
11"	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS



Other perforations available upon request.

Base Material

Wire Mesh Base
Wire Mesh Liner



WIRE MESH TYPE BASE MATERIAL + CUSTOM SIZES AND MATERIALS AVAILABLE UPON APPLICATION

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	INCHES	MM	INCHES	MM		
2	0.063"	1.6	0.437"	11.10	76.4%	Carbon Steel, 304SS, 316SS
3	0.063"	1.6	0.270"	6.86	65.5%	Carbon Steel, 304SS, 316SS
4	0.063"	1.6	0.187"	4.75	56.0%	Carbon Steel, 304SS, 316SS
5	0.063"	1.6	0.137"	3.48	46.9%	Carbon Steel, 304SS, 316SS
6	0.047"	1.19	0.120"	3.50	51.8%	Carbon Steel, 304SS, 316SS
8	0.047"	1.19	0.078"	1.98	38.9%	Carbon Steel, 304SS, 316SS

WIRE MESH LINER MATERIAL + CUSTOM SIZES AND MATERIALS AVAILABLE UPON APPLICATION

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	INCHES	MM	INCHES	MM		
10	0.025"	0.640	0.075"	1.91	56.3%	304SS, 316SS
20	0.016"	0.406	0.034"	0.86	46.2%	304SS, 316SS
30	0.013"	0.330	0.020"	0.52	37.1%	304SS, 316SS
40	0.010"	0.254	0.015"	0.38	36.0%	304SS, 316SS
50	0.009"	0.229	0.011"	0.28	30.3%	304SS, 316SS
60	0.0075"	0.191	0.009"	0.23	30.5%	304SS, 316SS
80	0.0055"	0.140	0.007"	0.19	31.4%	304SS, 316SS
100	0.0045"	0.114	0.006"	0.14	30.3%	304SS, 316SS



Tee Strainer Open Areas

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

LINE SIZE	SQ. IN OF PIPE	T.S.			T.A.			T.A.M.		
		GROSS SQ. IN	% OF OPEN AREA	% INCREASE PER 1" ADDED TO LENGTH	GROSS SQ. IN	% OF OPEN AREA	% INCREASE PER 1" ADDED TO LENGTH	GROSS SQ. IN	% OF OPEN AREA	LENGTH
2"	3.36	15	179%	29.4%	14	171%	47%	22	262%	5 3/4"
2.5"	4.79	21	177%	-	20	195%	43%	-	-	-
3"	7.39	30	162%	11.5%	30	193%	34%	48	260%	7 3/4"
4"	12.73	48	151%	16.6%	51	189%	27%	83	261%	9 3/4"
6"	28.9	96	133%	11.3%	105	177%	18%	167	231%	13"
8"	50	158	126%	8.4%	178	185%	14%	278	222%	16"
10"	78.6	237	120%	6.9%	275	190%	11%	433	220%	19 1/2"
12"	113.1	336	119%	6.9%	397	189%	9%	619	219%	23"
14"	138	408	118%	5.2%	476	198%	8%	766	222%	25 1/2"
16"	183	521	114%	2.6%	606	196%	7%	183	209%	27 1/2"
18"	234	664	114%	4%	791	193%	7%	1,223	209%	31"
20"	291	805	111%	3.6%	970	190%	6%	1,513	208%	34 1/4"
24"	425	1,130	106%	3%	1,185	179%	5%	2,064	194%	38 1/2"

- Notes:**
1. Based on perforated plate with open area ratio of 40.3% (e.g. 1/8" DIA. Holes on 3/16" centers).
 2. All based on 150# rating.
 3. Reduce by 15% if mesh is added.



Tee Type Strainers

Pressure Drop
For Liquids

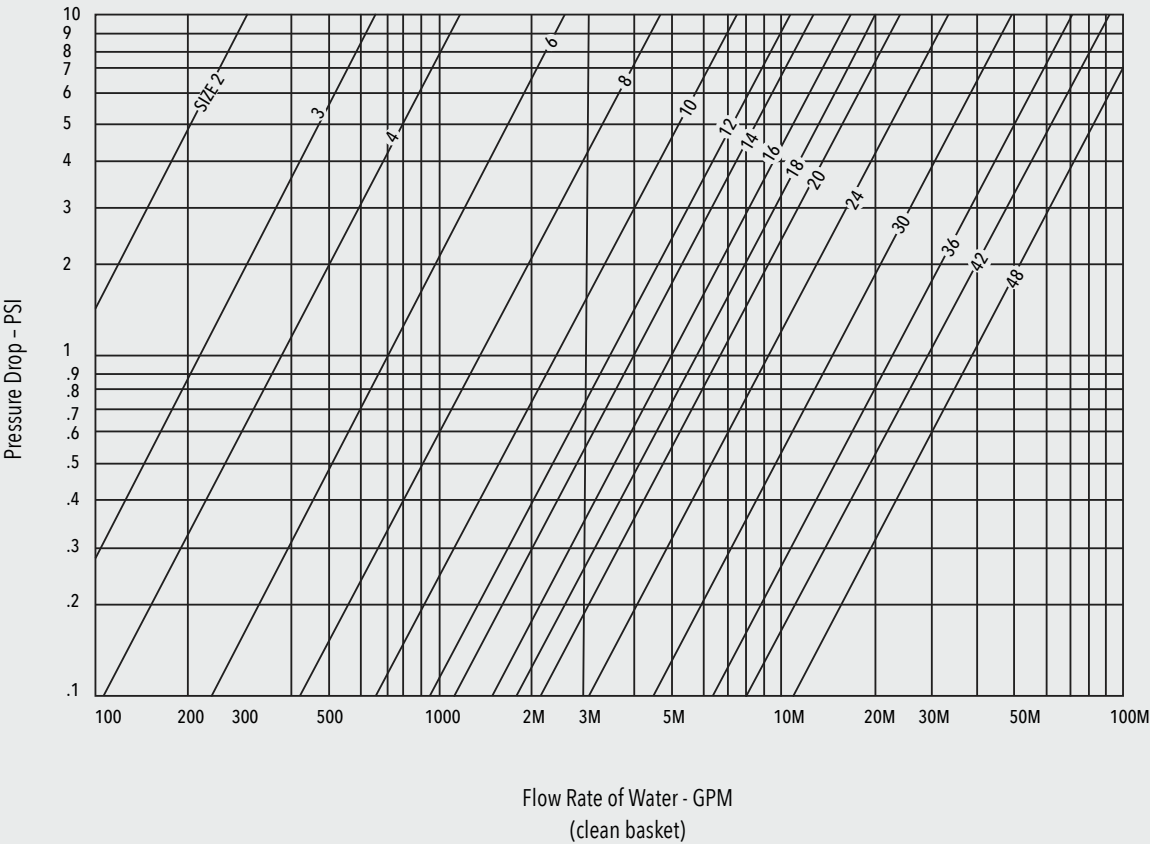
CORRECTION FACTOR:

For liquids more viscous than water
or where wire cloth liner is added,
multiply pressure in charts by:

VISCOSITY (SSU)	PERFORATED (1/8" HOLES)	PERFORATED W/ WIRE CLOTH		
		40 MESH	60 MESH	80 MESH
30	1	1.32	1.53	1.62
270	1.3	1.61	1.83	2
385	1.44	1.76	2	2.2
500	1.58	1.92	2.13	2.41
1000	1.66	2.22	2.41	2.63
2000	1.86	2.41	2.72	2.91

(Perforated basket 1/8" diameter holes on 3/16" centers)

PRESSURE DROP FOR LIQUIDS



FABRICATED WYE STRAINER



Fabricated Wye Strainer

Model YBS Standard

STANDARD STRAINER:

Our fabricated strainer can be supplied flanged, butt weld, or any combination. Quick open 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 CODE(S) / STANDARDS:

Standard design and fabrication per ASME B31.3 other codes available are:
ASME 31.1
ASME B31.4
ASME B31.8
ASME pressure vessel and boiler code, section VIII, DOT div. 1
NACE
MDMT required for ASME B31.3 and section VIII design

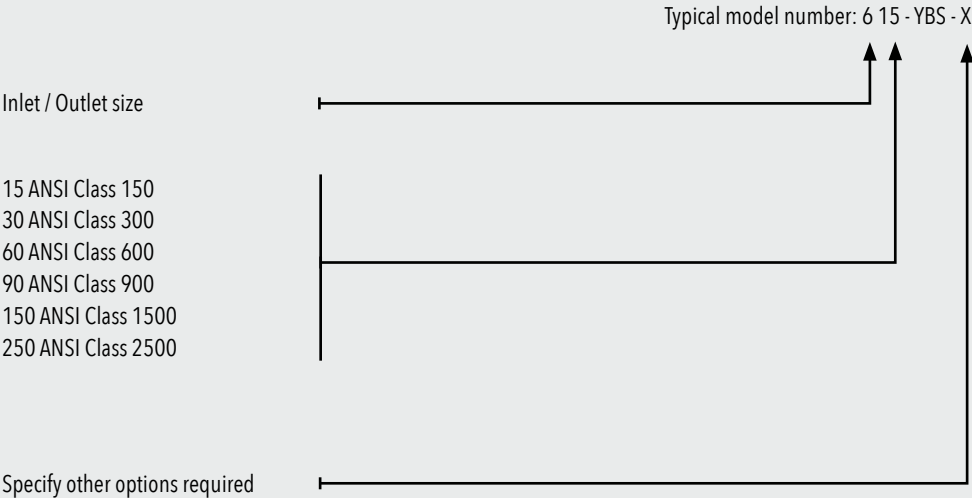
PAINT / COATINGS:

Provided with external SP-3 mechanical tool cleaning and one coat of shop primer or as specified by customer.

NDE:

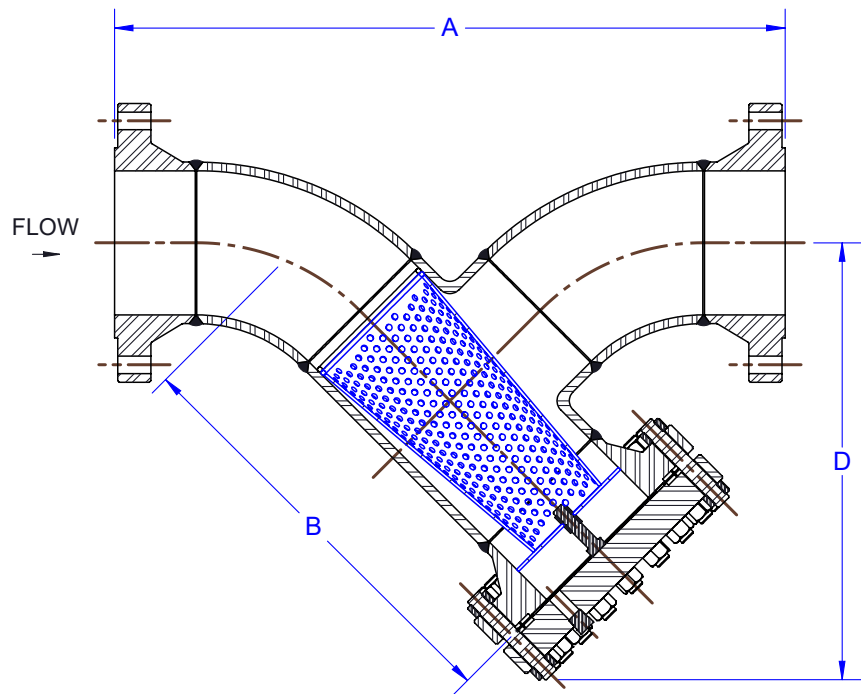
Per applicable code and/or as specified by customer.

**MODEL NUMBER FOR AITKEN
FABRICATED WYE STRAINERS**



Class 150 Fabricated Flanged Wye Strainer

Model YBS Standard



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

SIZE	DIM. A	DIM. B	DIM. C	DIM. D	WT (LBS)
2"	13 1/4"	9"	15 7/8"	8 1/2"	34
3"	17 1/8"	11 1/2"	21"	10 3/4"	67
4"	20 3/4"	13 3/4"	25"	19 1/2"	93
6"	28 1/8"	18 1/2"	33 1/4"	17"	166
8"	35 5/16"	23"	41"	21"	282
10"	41 11/16"	27 1/4"	48 1/4"	24 15/16"	463
12"	49 1/16"	32"	56 1/2"	29 3/8"	625
14"	55 3/4"	35 3/4"	62 3/4"	32 3/4"	829
16"	61 3/8"	39"	68"	35 15/16"	1,054
18"	68 3/4"	43 3/4"	76 1/4"	39 13/16"	1,305
20"	75 1/2"	48 3/16"	83 7/8"	43 13/16"	1,612
24"	87 7/16"	54"	93"	49 1/2"	2,195

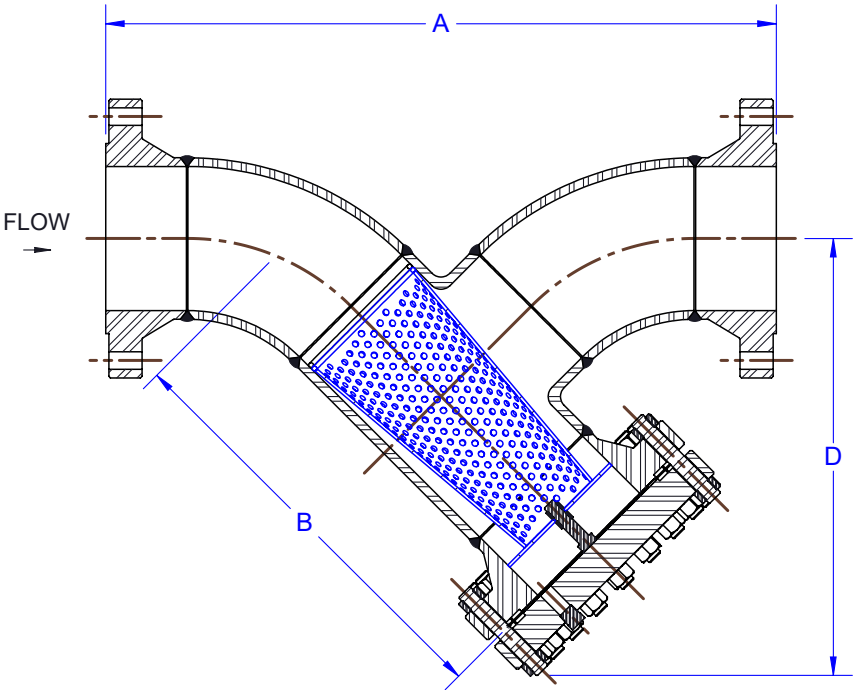
Note: Dimensions shown are reference dimensions for estimating purposes only. Actual dimensions will be provided on "as-built" drawings, available with order. The dimensions above are only applicable with raised face weld neck (RFWN) flanges. All dimensions are based on standard sizes listed in specifications 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.



Class 300 Fabricated Flanged Wye Strainer

Model YBS Standard



DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

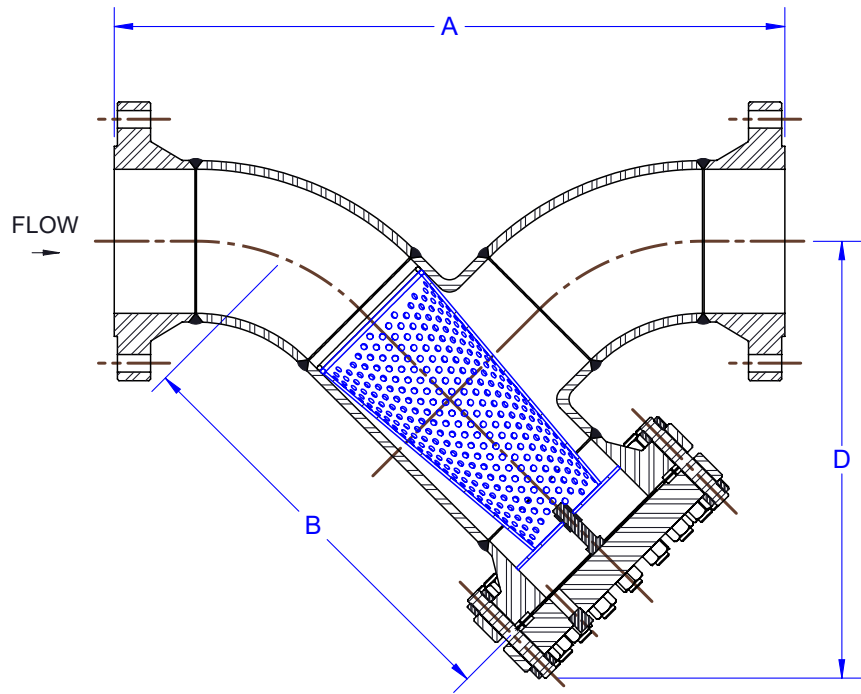
SIZE	DIM. A	DIM. B	DIM. C	DIM. D	WT (LBS)
2"	13 3/4"	9 1/4"	17 1/4"	9 1/2"	42
3"	17 7/8"	12 1/8"	22 1/4"	12 1/2"	66
4"	21 1/2"	14 7/8"	27 1/4"	15 1/16"	118
6"	28 15/16"	18 7/8"	34"	18 15/16"	236
8"	36 1/16"	23 3/8"	41 3/4"	23 1/4"	406
10"	42 15/16"	27 7/8"	49 1/2"	27 5/8"	628
12"	50 5/16"	32 5/8"	57 3/4"	32 1/8"	863
14"	56 15/16"	36 5/16"	63 7/8"	35 3/4"	1,171
16"	62 7/8"	39 3/4"	69 1/2"	39"	1,516
18"	70 1/4"	44 1/2"	77 3/4"	43 1/2"	1,939
20"	76 7/8"	48 7/8"	85 1/4"	47 5/8"	2,406
24"	88 11/16"	54 5/8"	94 1/4"	53 7/8"	3,342



Design Criteria: Standard design & fabrication are in accordance with ASME B31.3. Other codes are available.

Class 600 Fabricated Flanged Wye Strainer

Model YBS Standard



DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

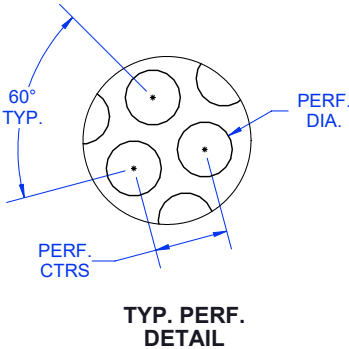
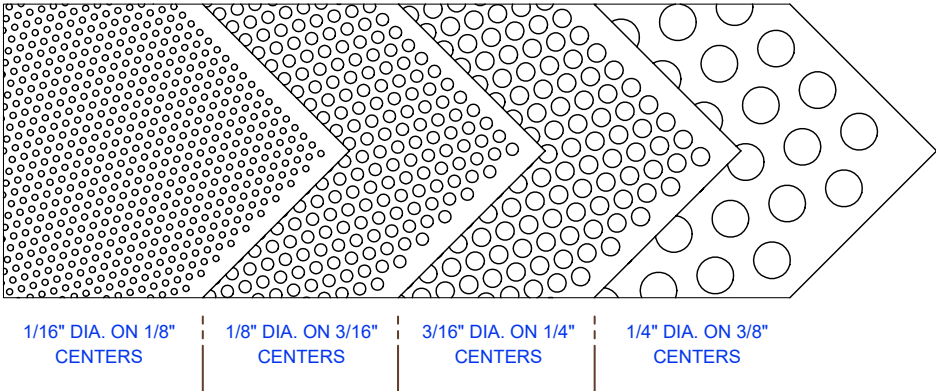
SIZE	DIM. A	DIM. B	DIM. C	DIM. D	WT (LBS)
*2"	14 1/2"	9 5/8"	17 3/4"	9 7/8"	55
3"	19 1/8"	12 1/2"	22 3/4"	12 3/4"	99
4"	23 1/4"	15 3/4"	28 1/4"	16 3/16"	189
6"	30 1/8"	19 7/8"	36"	20 5/8"	378
8"	38 5/16"	24 1/2"	44"	25 1/8"	590
10"	46 3/16"	29 1/2"	52 3/4"	30 1/8"	1,003
12"	52 13/16"	33 7/8"	60 1/4"	34 1/8"	1,219
14"	59 3/16"	37 1/2"	66 1/4"	37 3/8"	1,348
16"	65 7/8"	41 1/4"	72 1/2"	41 1/4"	2,330
18"	72 3/4"	45 3/4"	80 1/4"	45 11/16"	2,846
20"	79 9/16"	50 1/4"	88"	50"	3,618
24"	91 7/8"	56 1/4"	97 1/2"	56 5/8"	5,029



*Pipe pup required on closed end for full flange bolt access (2.0 in. minimum length)
Design Criteria: Standard design & fabrication are in accordance with ASME B31.3. Other codes are available.

Base Material

Perforated



PERFORATED MATERIALS

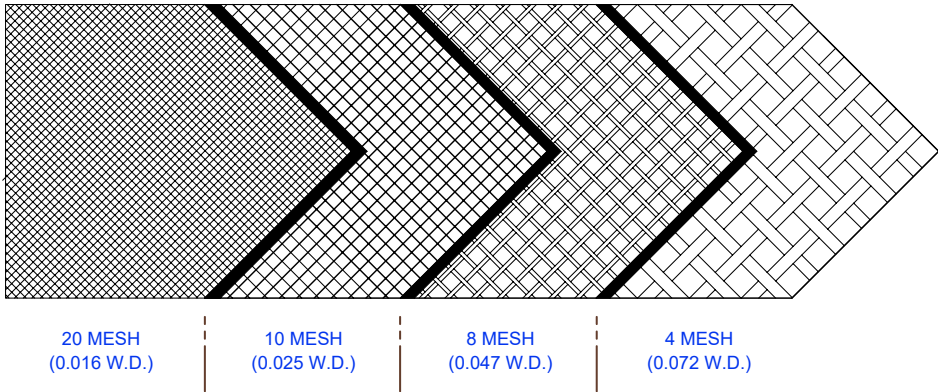
+ CUSTOM SIZES AVAILABLE UPON REQUEST

GAGE	PERFORATIONS	HOLES / SQ.IN.	% OF OPEN AREA	MATERIAL RANGE
20"	1/16"Ø on 1/8" ctrs.	74.0	22.7%	Carbon Steel, 304SS, 316SS
16"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS 304L, 316L, Monel
16"	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
16"	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
14"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS
14"	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
14"	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
12"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel
11"	1/8"Ø on 3/16" ctrs.	33.0	40.3%	304SS, 316SS
11"	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS



Base Material

Wire Mesh Base
Wire Mesh Liner



WIRE MESH TYPE BASE MATERIAL + CUSTOM SIZES AND MATERIALS AVAILABLE UPON APPLICATION

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	IN	MM	IN	MM		
2	0.063"	1.6	0.437"	11.10	76.4%	Carbon Steel, 304SS, 316SS
3	0.063"	1.6	0.270"	6.86	65.5%	Carbon Steel, 304SS, 316SS
4	0.063"	1.6	0.187"	4.75	56.0%	Carbon Steel, 304SS, 316SS
5	0.063"	1.6	0.137"	3.48	46.9%	Carbon Steel, 304SS, 316SS
6	0.047"	1.19	0.120"	3.50	51.8%	Carbon Steel, 304SS, 316SS
8	0.047"	1.19	0.078"	1.98	38.9%	Carbon Steel, 304SS, 316SS

WIRE MESH LINER MATERIAL + CUSTOM SIZES AND MATERIALS AVAILABLE UPON APPLICATION

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	IN	MM	IN	MM		
10	0.025"	0.640	0.075"	1.91	56.3%	304SS, 316SS
20	0.016"	0.406	0.034"	0.86	46.2%	304SS, 316SS
30	0.013"	0.330	0.020"	0.52	37.1%	304SS, 316SS
40	0.010"	0.254	0.015"	0.38	36.0%	304SS, 316SS
50	0.009"	0.229	0.011"	0.28	30.3%	304SS, 316SS
60	0.0075"	0.191	0.009"	0.23	30.5%	304SS, 316SS
80	0.0055"	0.140	0.007"	0.19	31.4%	304SS, 316SS
100	0.0045"	0.114	0.006"	0.14	30.3%	304SS, 316SS



FABRICATED VERTICAL BASKET STRAINERS



Strainers

The problem with unwanted material in pipelines is a never ending one. Whether the flowing material is water, oil, gas, paint, or a variety of food or chemical products, there is often present unwanted matter that can cause serious problems. Dirt, foreign matter or even clumps of the product itself, can clog or damage spray nozzles, pumps, turbine meters, or similar equipment.

Strainers are a solution to these problems. They prevent the passage of unwanted matter in the line that could cause damage or even ruin the product itself.

When compared to the cost of replacing damaged pumps, meters, etc., strainers are an inexpensive insurance policy.

Strainers are widely used in the following industries:

- Tank cars and trucks
- Ceramics
- Chemicals
- Electric power
- Food processing
- Marine
- Turbine meter service
- Pipeline
- Paint, ink & latex
- Pulp & paper
- Petroleum refining
- Pharmaceutical
- Process equipment
- Waste & water treatment
- Compressor stations
- Co-generation

Vertical Basket Strainer

Model VBS

STANDARD STRAINER:

The strainer most widely accepted by all type of industry. The standard strainer design makes it the most economical style strainer. Minimum open area ratio is 3:1.

SUPER STRAINER:

The super strainer's larger body and basket design allows for more removable capacity and less frequent clean out intervals. Minimum open area ratio is 4:1.

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:

See pressure drop charts.

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. Davit for access blind flange
- 6. Flat top basket for offset nozzles
- 7. Self-flushing slowdown basket
- 8. Turbine meter strainer
- 9. Legs/skirt

DESIGN CODE(S) / STANDARDS:

Standard design and fabrication per ASME B31.3 other codes available are:

ASME 31.1

ASME B31.4

ASME B31.8

ASME pressure vessel and boiler code, section VIII, Div. 1

DOT

NACE

MDMT required for ASME B31.3 and section VIII design.

PAINT / COATINGS:

Provided with external SP-3 mechanical tool cleaning and one coat of shop primer or as specified by customer.

Optional paint/coating is available per customer/ project specifications.

MODEL NUMBER FOR VERTICAL BASKET STRAINERS

Typical model number: 6 - 15 - 10 - VBS - X

Inlet / Outlet Size

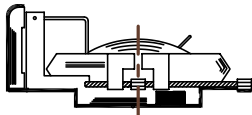
- 15 ANSI Class 150
- 30 ANSI Class 300
- 60 ANSI Class 600
- 90 ANSI Class 900
- 150 ANSI Class 1500
- 250 ANSI Class 2500

Body Size

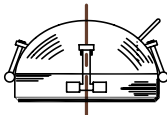
Specify other options required



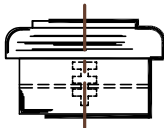
Strainer Options



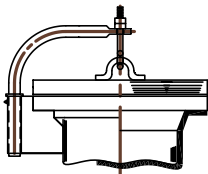
DOUBLE - BOLT CLOSURE



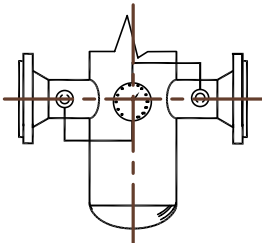
T-BOLT CLOSURE



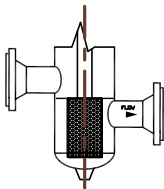
THREADED CLOSURE



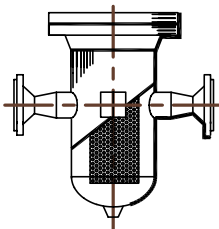
DAVIT FOR BLIND FLANGE



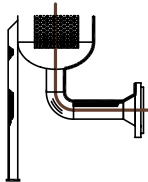
DIFFERENTIAL PRESSURE CONNECTIONS



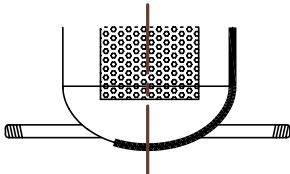
OFFSET NOZZLES



TURBINE METER STRAINER



LEG OR SKIRT W/ BOTTOM DRAIN



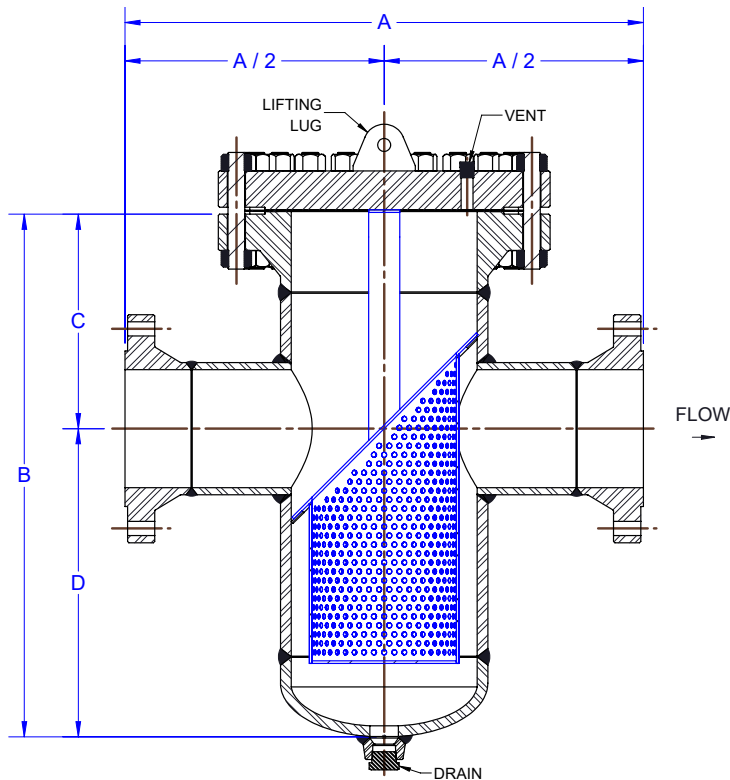
SIDE DRAIN



Note:
1. Modification of baskets for bi-directional flow available.
2. Custom options available upon request.

Vertical Basket Strainer

Model VBS
Standard



- Note:
- 1. RTJWN flanges and vent connection options are also available.
 - 2. Strainer face-to-face and height dimensions can be modified per customer specification.

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

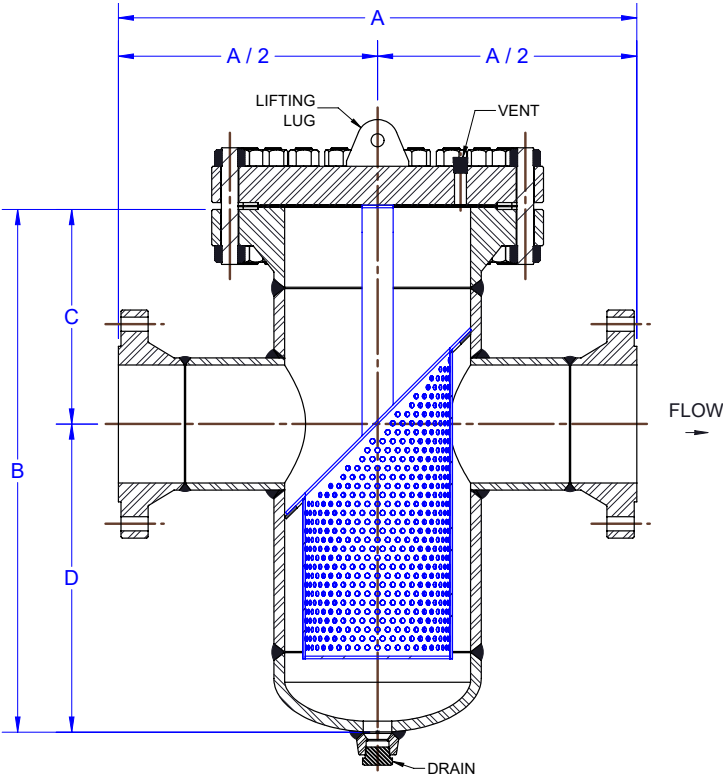
NOZZLE SIZE (NPS)	VESSEL SIZE (NPS)	DIMENSIONAL DATA (IN)				OPEN AREA**	DRAIN SIZE	WT (LBS)		
		A	B*	C	D			CLASS 150	CLASS 300	CLASS 600
2"	4"	19"	17"	9"	8"	589%	0.75"	70	100	135
2"	6"	22"	21"	9"	12"	1288%	0.75"	120	180	245
3"	6"	22"	21"	9"	12"	584%	0.75"	130	205	270
4"	8"	26"	25"	11"	14"	537%	0.75"	190	310	520
6"	10"	30"	31"	13"	18"	427%	0.75"	290	450	830
8"	12"	36"	36"	15"	21"	393%	1"	480	700	1,105
10"	16"	40"	42"	18"	24"	364%	1"	750	1,095	2,085
12"	18"	43"	49"	20"	29"	350%	1"	940	1,380	2,825
14"	20"	48"	51"	22"	29"	339%	2"	1,140	2,155	3,550
16"	20"	50"	51"	22"	29"	320%	2"	1,235	2,275	3,985
18"	24"	58"	67"	24"	43"	420%	2"	1,534	3,345	5,450
20"	24"	60"	67"	24"	43"	337%	2"	1,860	3,615	6,645
24"	30"	70"	83"	32"	51"	334%	2"	3,465	6,093	10,115



Dimensions for reference only. Certified drawings are available with order. *Also the recommended clearance for basket removal.
**Ratio of the inlet ID area to basket open area. (Open area based on Class 150 with STD pipe schedule). Standard design and fabrication: ASME B31.3 (Other codes available). Larger sizes and higher ANSI ratings are also available.

Vertical Basket Strainer

Model VBS
Super



- Note:
- 1. RTJWN flanges, davit arm, quick opening closure, vent connections, differential pressure connections, flanged drain and support options are also available.
 - 2. Strainer face-to-face and height dimensions can be modified per customer specification.

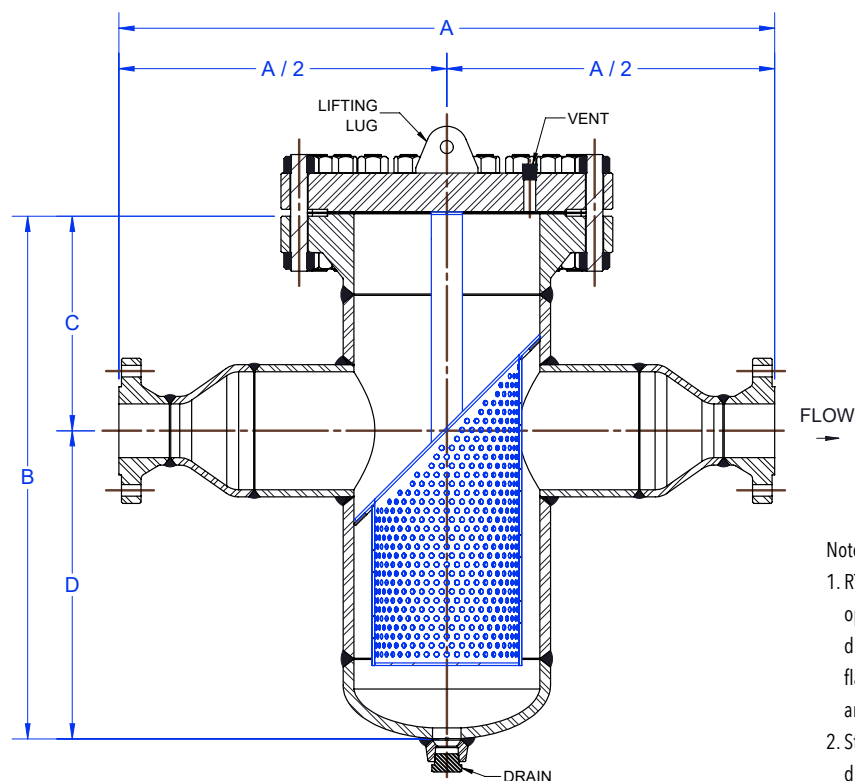
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

NOZZLE SIZE (NPS)	VESSEL SIZE (NPS)	DIMENSIONAL DATA (IN)				OPEN AREA**	DRAIN SIZE	WT (LBS)		
		A	B*	C	D			CLASS 150	CLASS 300	CLASS 600
2"	8"	22"	23"	9"	14"	2038%	0.75"	152	215	415
3"	8"	22"	23"	9"	14"	925%	0.75"	168	235	438
4"	10"	26"	29"	11"	18"	970%	0.75"	254	420	705
6"	12"	30"	34"	13"	21"	681%	0.75"	376	650	1,045
8"	14"	36"	38"	15"	23"	515%	1"	518	885	1,425
8"	16"	36"	39"	15"	24"	574%	1"	604	1,025	1,910
10"	18"	40"	47"	18"	29"	592%	1"	787	1,265	2,600
12"	20"	43"	49"	20"	29"	413%	2"	1,030	2,030	3,350
14"	24"	48"	65"	22"	43"	711%	2"	1,492	3,120	5,025
16"	24"	50"	65"	22"	43"	537%	2"	1,534	3,345	5,450
18"	30"	58"	75"	24"	51"	607%	2"	2,990	4,950	8,250
20"	30"	60"	75"	24"	51"	488%	2"	3,125	5,326	8,780
24"	36"	70"	88"	32"	56"	432%	2"	4,760	8,550	12,700



Dimensions for reference only. Certified drawings are available with order. *Also the recommended clearance for basket removal.
**Ratio of the inlet ID area to basket open area. (Open area based on Class 150 with STD pipe schedule).
Standard design and fabrication: ASME B31.3 (Other codes available). Larger sizes and higher ANSI ratings are also available.

Turbine
Meter
Vertical
Basket
Strainer



- Note:
- 1. RTJWN flanges, davit arm, quick opening closure, vent connections, differential pressure connections, flanged drain and support options are also available.
 - 2. Strainer face-to-face and height dimensions can be modified per customer specification.

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

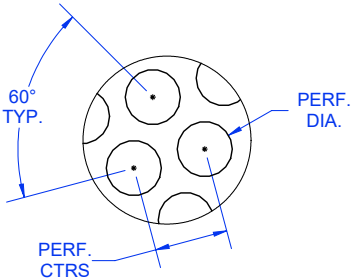
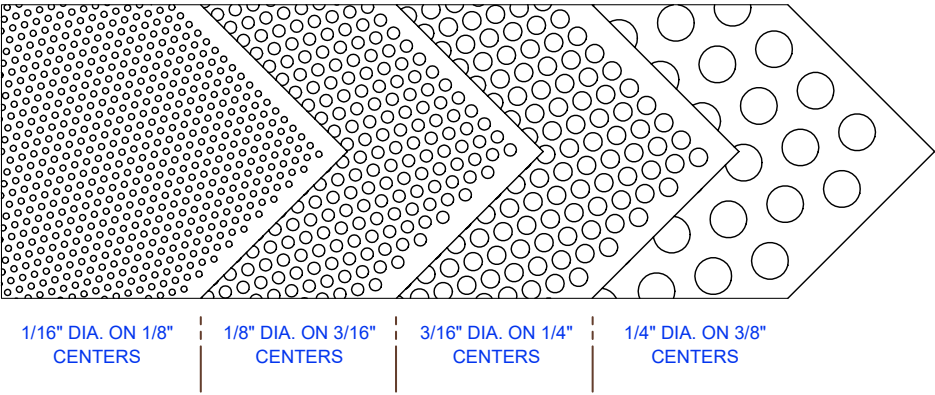
NOZZLE SIZE (NPS)	VESSEL SIZE (NPS)	DIMENSIONAL DATA (IN)					DRAIN SIZE	WT (LBS)		
		A	B*	C	D	OPEN AREA**		CLASS 150	CLASS 300	CLASS 600
3"/6"	10"	36"	31"	13"	18"	1670%	0.75"	264	320	452
4"/8"	12"	40"	36"	15"	21"	1547%	1"	353	431	515
6"/10"	16"	46"	42"	18"	24"	994%	1"	664	978	1,555
8"/12"	18"	51"	49"	20"	29"	935%	1"	1,057	1,454	2,185
10"/14"	20"	65"	51"	22"	29"	592%	2"	1,382	1,816	2,183
12"/18"	24"	71"	67"	24"	43"	867%	2"	2,193	2,430	4,383



Dimensions for reference only. Certified drawings are available with order. *Also the recommended clearance for basket removal.
**Ratio of the inlet ID area to basket open area. (Open area based on Class 150 with STD pipe schedule).
Standard design and fabrication: ASME B31.3 (Other codes available). Larger sizes and higher ANSI ratings are also available.

Base Material

Perforated



TYP. PERF. DETAIL

+ CUSTOM SIZES AVAILABLE UPON REQUEST

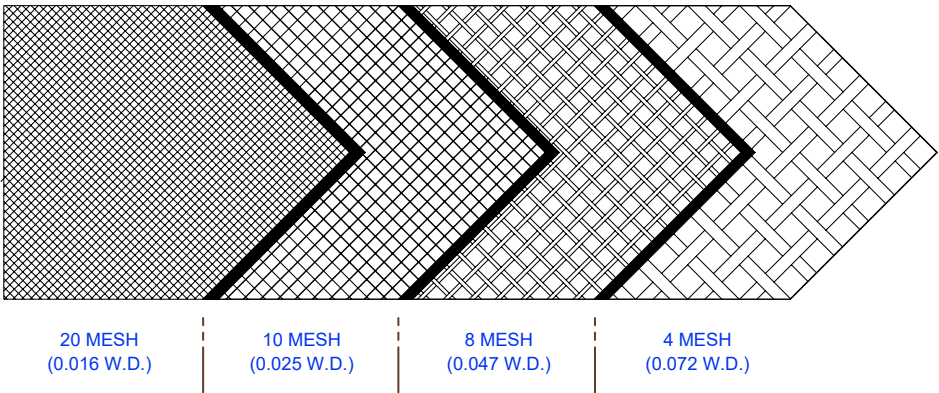
PERFORATED MATERIALS

GAGE	PERFORATIONS	HOLES / SQ IN	% OF OPEN AREA	MATERIAL RANGE
20	1/16"Ø on 1/8" ctrs.	74.0	22.7%	Carbon Steel, 304SS, 316SS
16	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS 304L, 316L, Monel
16	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
16	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
14	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel, 304SS, 316SS
14	3/16"Ø on 1/4" ctrs.	18.5	51.0%	Carbon Steel, 304SS, 316SS
14	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS
12	1/8"Ø on 3/16" ctrs.	33.0	40.3%	Carbon Steel
11	1/8"Ø on 3/16" ctrs.	33.0	40.3%	304SS, 316SS
11	1/4"Ø on 3/8" ctrs.	8.0	40.3%	Carbon Steel, 304SS, 316SS



Base Material

Wire Mesh Base
Wire Mesh Liner



WIRE MESH TYPE BASE MATERIAL

+ CUSTOM SIZES AVAILABLE UPON REQUEST

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	IN	MM	IN	MM		
2	0.063"	1.6	0.437"	11.10	76.4%	Carbon Steel, 304SS, 316SS
3	0.063"	1.6	0.270"	6.86	65.5%	Carbon Steel, 304SS, 316SS
4	0.063"	1.6	0.187"	4.75	56.0%	Carbon Steel, 304SS, 316SS
5	0.063"	1.6	0.137"	3.48	46.9%	Carbon Steel, 304SS, 316SS
6	0.047"	1.19	0.120"	3.50	51.8%	Carbon Steel, 304SS, 316SS
8	0.047"	1.19	0.078"	1.98	38.9%	Carbon Steel, 304SS, 316SS

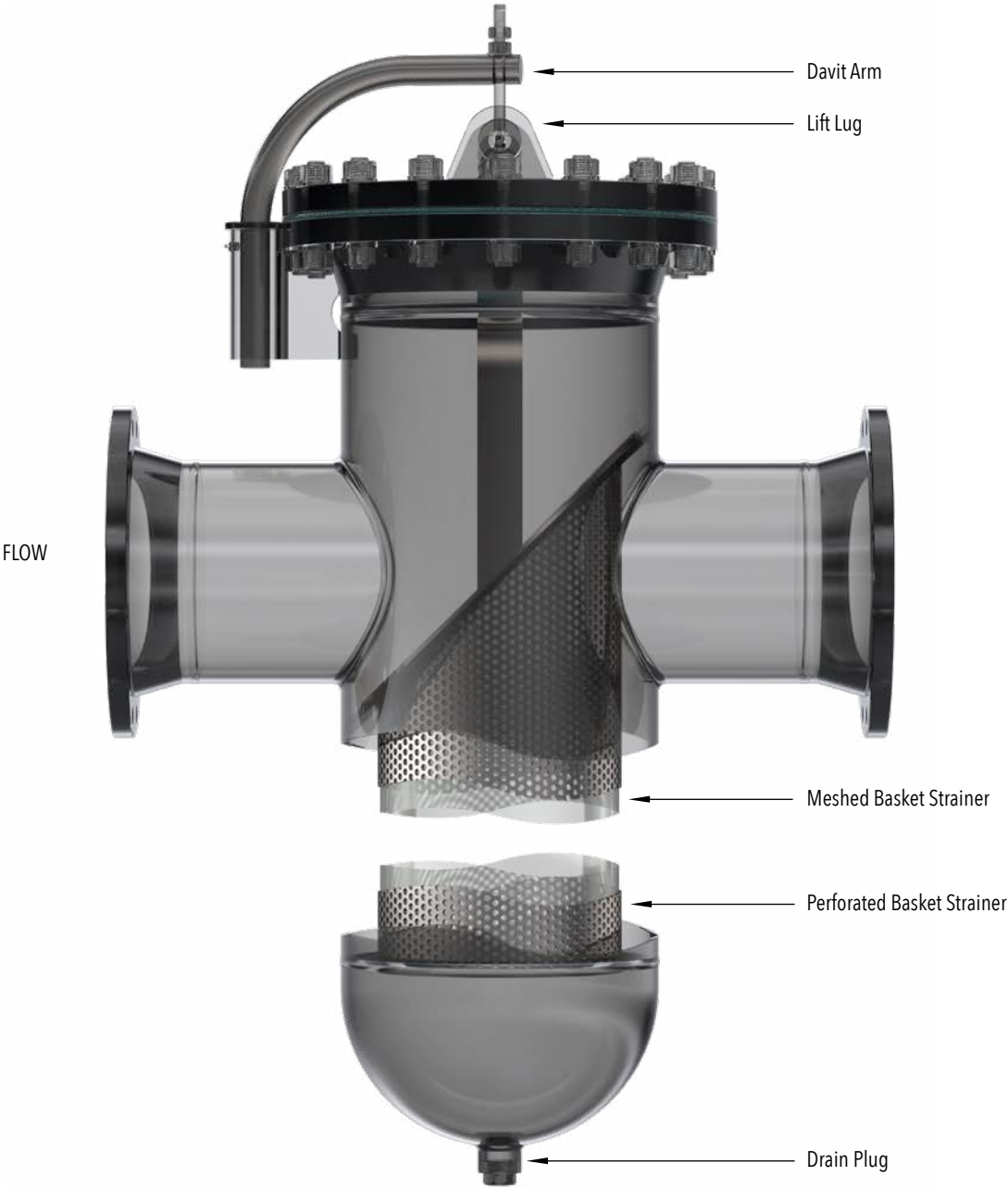
WIRE MESH LINER MATERIAL

+ CUSTOM SIZES AVAILABLE UPON REQUEST

MESH	WIRE DIAMETERS		WIDTH OF OPENING		% OF OPENING	MATERIAL RANGE
	IN	MM	IN	MM		
10	0.025"	0.640	0.075"	1.91	56.3%	304SS, 316SS
20	0.016"	0.406	0.034"	0.86	46.2%	304SS, 316SS
30	0.013"	0.330	0.020"	0.52	37.1%	304SS, 316SS
40	0.010"	0.254	0.015"	0.38	36.0%	304SS, 316SS
50	0.009"	0.229	0.011"	0.28	30.3%	304SS, 316SS
60	0.0075"	0.191	0.009"	0.23	30.5%	304SS, 316SS
80	0.0055"	0.140	0.007"	0.19	31.4%	304SS, 316SS
100	0.0045"	0.114	0.006"	0.14	30.3%	304SS, 316SS



Vertical Basket Strainer



Vertical Basket Strainer

Pressure Drop
For Liquids

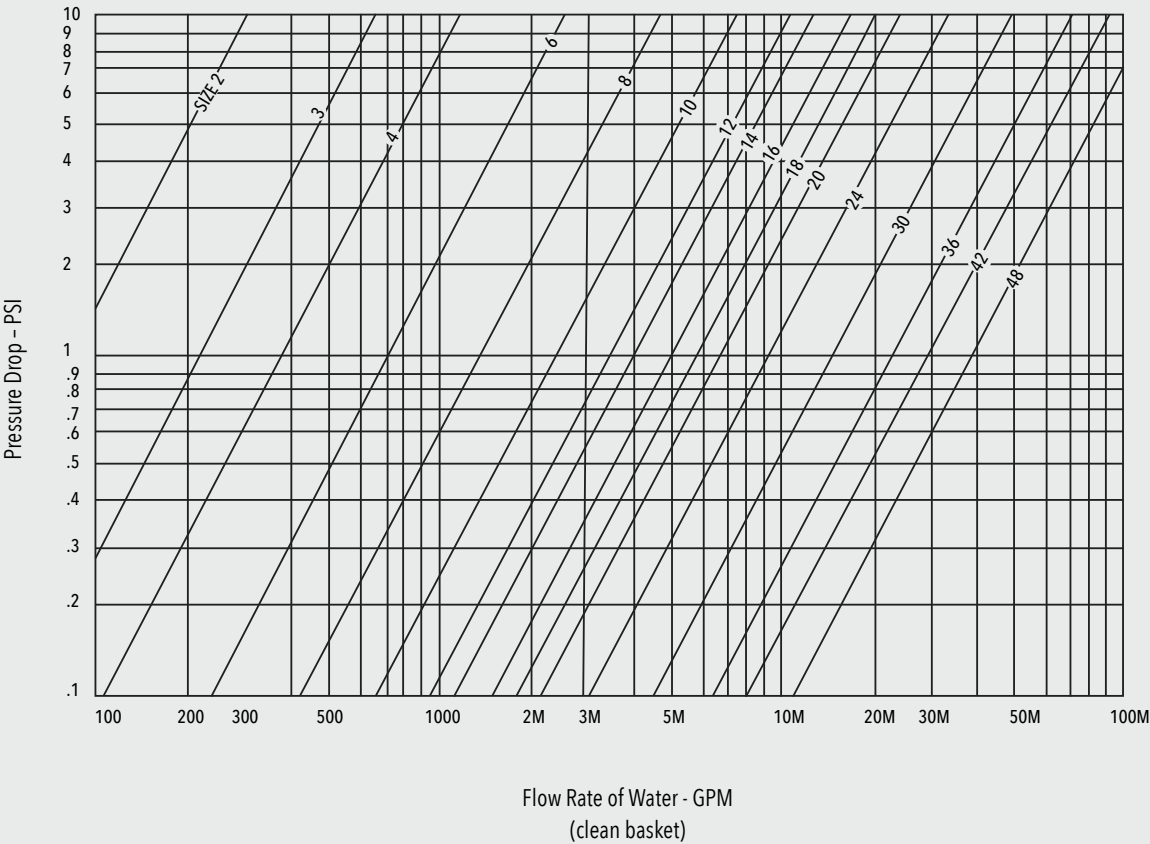
CORRECTION FACTOR:

For liquids more viscous than water
or where wire cloth liner is added,
multiply pressure in charts by:

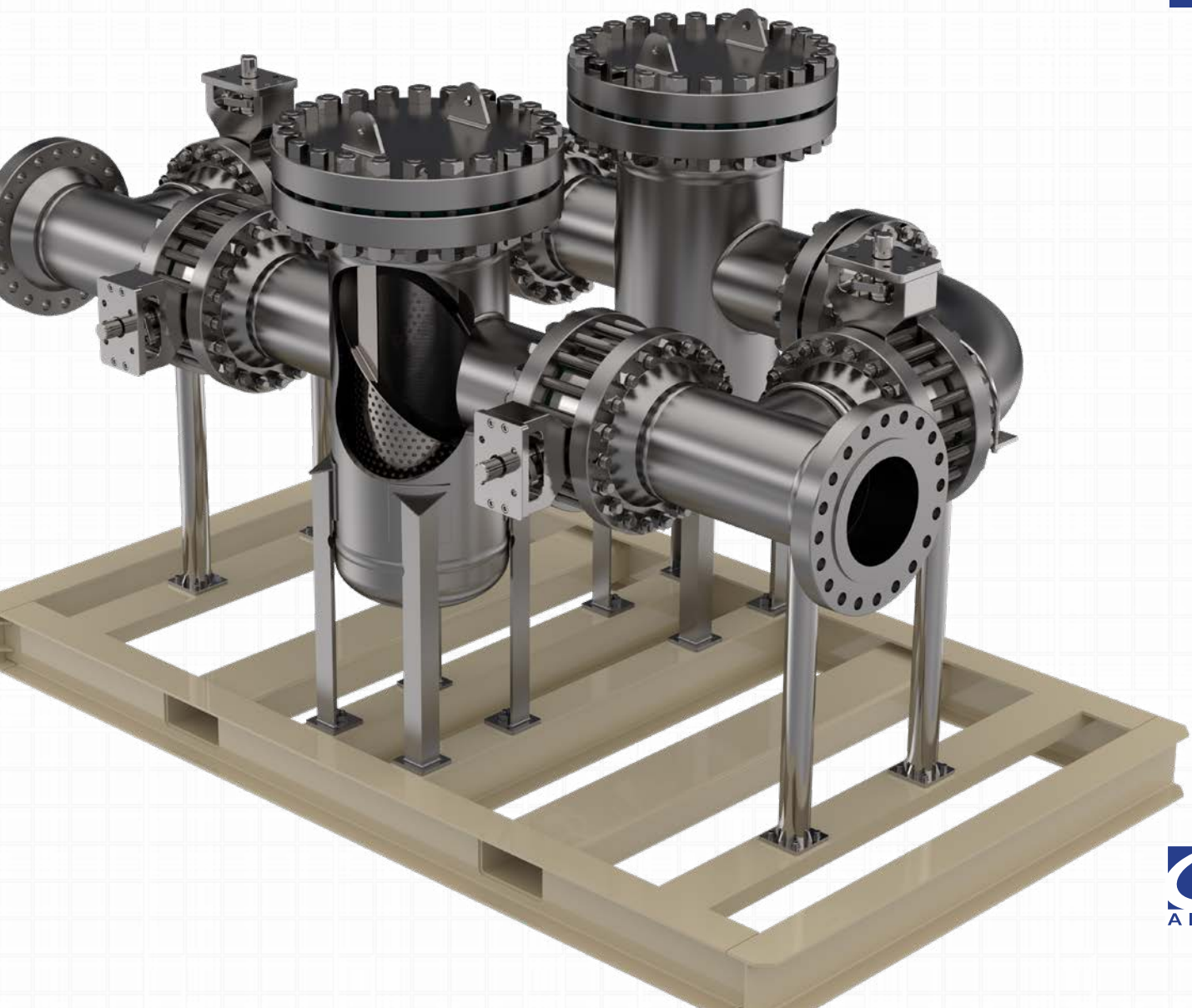
VISCOSITY (SSU)	PERFORATED (1/8" HOLES)	PERFORATED W/ WIRE CLOTH		
		40 MESH	60 MESH	80 MESH
30	1	1.32	1.53	1.62
270	1.3	1.61	1.83	2
385	1.44	1.76	2	2.2
500	1.58	1.92	2.13	2.41
1000	1.66	2.22	2.41	2.63
2000	1.86	2.41	2.72	2.91

(Perforated basket 1/8" diameter holes on 3/16" centers)

PRESSURE DROP FOR LIQUIDS



FABRICATED DUPLEX STRAINERS



Vertical Basket Duplex Strainer

STANDARD STRAINER:

The strainer most widely accepted by all type of industry. The standard strainer design makes it the most economical style strainer. Minimum open area ratio is 3:1.

SUPER STRAINER:

The super strainer's larger body and basket design allows for more removable capacity and less frequent clean out intervals. Minimum open area ratio is 4:1.

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

DIMENSIONAL DATA:

See following pages.

PRESSURE DROP INFORMATION

See pressure drop charts.

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. Davit for access blind flange
- 6. Flat top basket for offset nozzles
- 7. Self flushing slowdown basket
- 8. Turbine meter strainer
- 9. Legs / base skirt

DESIGN CODE(S) / STANDARDS:

Standard design and fabrication per ASME B31.3

Other codes available are:

- ASME 31.1
- ASME B31.4
- ASME B31.8
- ASME pressure vessel and boiler code, section VIII, Div. 1
- DOT
- NACE

PAINT / COATINGS:

Provided with external SP-3 mechanical tool cleaning and one coat of shop primer or as specified by customer.

Optional paint/coating is available per customer/ project specifications.

**MODEL NUMBER FOR VERTICAL
BASKET DUPLEX STRAINERS**

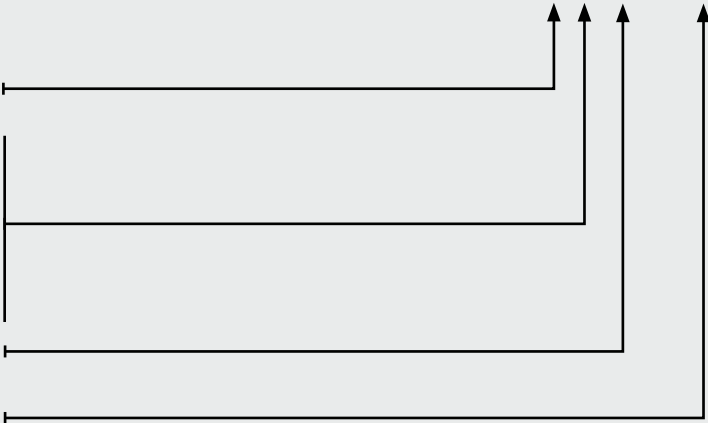
Inlet / Outlet size

- 15 ANSI Class 150
- 30 ANSI Class 300
- 60 ANSI Class 600
- 90 ANSI Class 900
- 150 ANSI Class 1500
- 250 ANSI Class 2500

Body Size

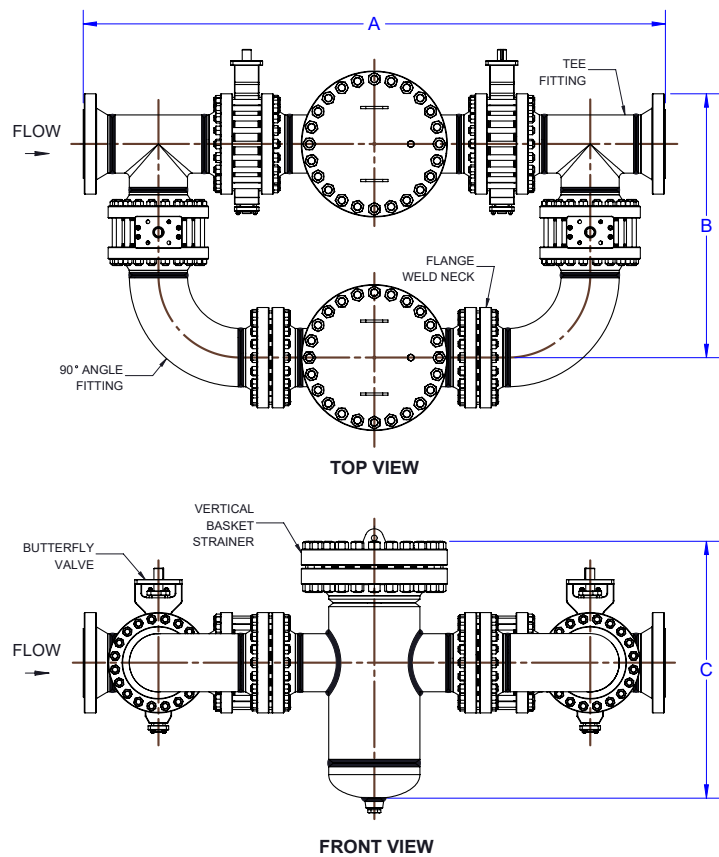
Specify other options required

Typical model number: 6 - 15 - 10 - VBS - X



Duplex Strainer Assembly

"D" Type



Note: Dimensions for reference only. Certified drawings are available with order.

DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

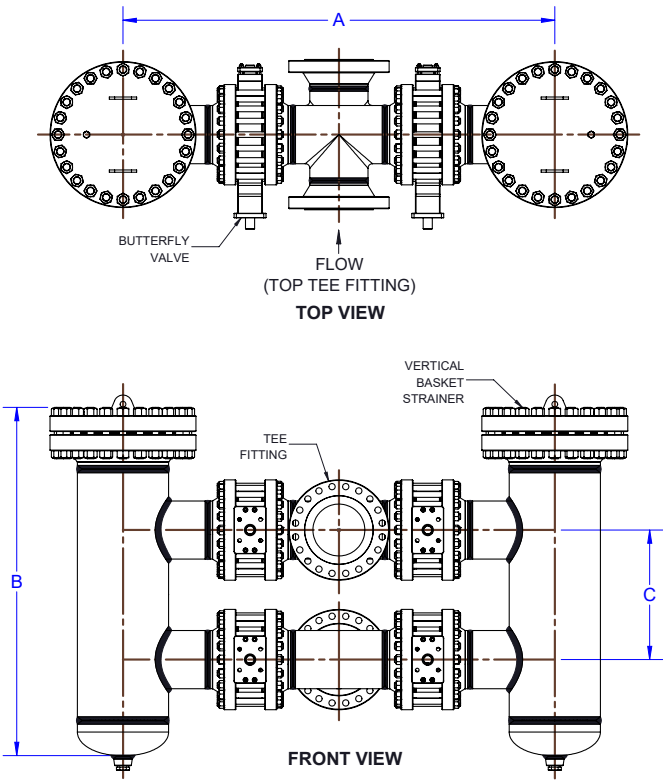
NOZZLE/ BODY SIZE	150 CLASS				300 CLASS				600 CLASS			
	A	B	C	WT	A	B	C	WT	A	B	C	WT
8/12"	117 1/4"	45 1/2"	36"	4,808	121 3/4"	47 7/8"	36"	5,822	137 3/4"	56 1/8"	36"	7,770
10/14"	132 3/4"	52 7/8"	41"	6,898	138"	55 1/2"	41"	8,270	160 3/4"	72 1/8"	41"	12,782
10/16"	132 3/4"	52 7/8"	42"	6,998	138"	55 1/2"	42"	8,560	160 3/4"	72 1/8"	42"	12,982
12/18"	149 3/4"	61 3/8"	49"	9,702	155 1/4"	64 1/8"	49"	11,662	174 1/4"	73 7/8"	49"	17,414
14/18"	166 3/4"	69 3/8"	51"	11,762	175 1/4"	75 3/8"	51"	14,078	188 3/4"	80 5/8"	51"	21,970
14/20"	166 3/4"	69 3/8"	51"	12,042	175 1/4"	73 5/8"	51"	15,388	188 3/4"	80 5/8"	51"	23,080
16/20"	181 3/4"	76 3/8"	51"	14,158	187 3/4"	80 7/8"	51"	20,052	204 3/4"	89 5/8"	51"	28,572
18/24"	206 3/4"	87 7/8"	67"	20,608	209 3/4"	89 3/8"	67"	27,316	227 3/4"	98 5/8"	67"	36,382
20/24"	218 1/2"	92 3/4"	67"	24,444	227 1/4"	97 1/8"	67"	32,156	244 3/4"	107 5/8"	67"	47,312
24/30"	249 3/4"	107 3/8"	83"	37,344	255 1/4"	111 5/8"	83"	48,486	280 3/4"	124 5/8"	83"	58,830

Note: Dimensions for reference only. Certified drawings are available with order.



Duplex Strainer Assembly

"H" Type



Note: Dimensions for reference only. Certified drawings are available with order.

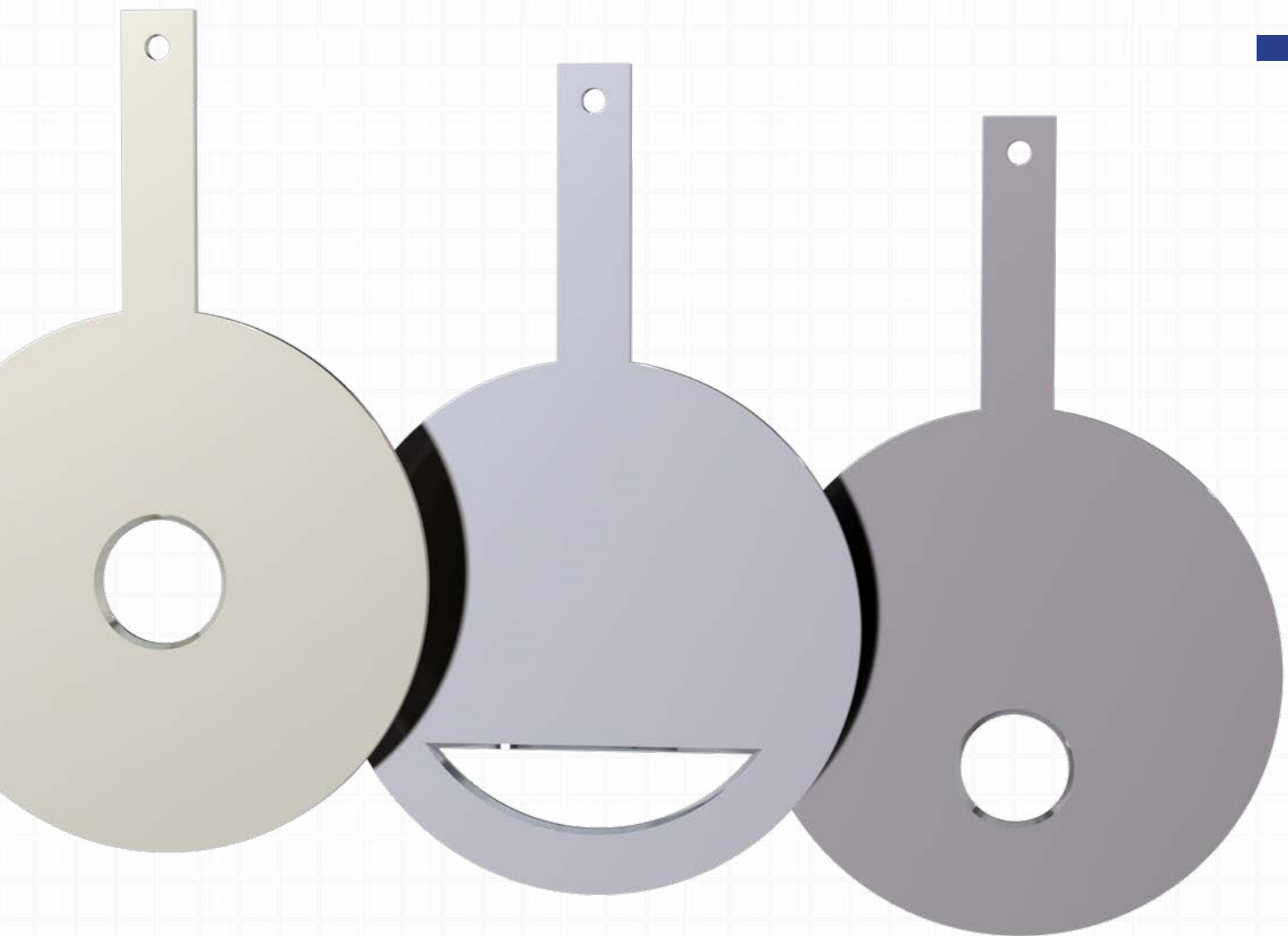
DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

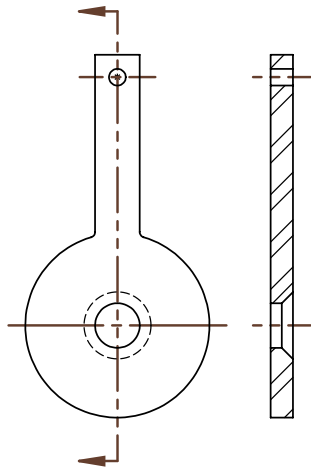
NOZZLE/ BODY SIZE	150 CLASS				300 CLASS				600 CLASS			
	A	B	C	WT	A	B	C	WT	A	B	C	WT
8/12"	94 1/2"	47 7/8"	18"	4,864	98 3/4"	48 1/2"	18"	5,962	108"	49 3/4"	18"	7,994
10/14"	110 1/4"	56 7/8"	22"	6,972	111 1/2"	57 1/2"	22"	8,468	122 1/2"	58 5/8"	22"	13,160
10/16"	110 1/4"	57 3/8"	22"	7,072	111 1/2"	58 1/8"	22"	8,758	122 1/2"	59 5/8"	22"	13,360
12/18"	120 1/2"	66 3/8"	26"	9,822	124 3/4"	67 1/8"	26"	11,946	135 3/4"	68 3/8"	26"	17,866
14/18"	134 1/2"	74 3/8"	30"	11,916	141 3/4"	75 1/8"	30"	14,450	148 1/2"	76 3/8"	30"	22,664
14/20"	134 1/2"	75 1/16"	30"	12,196	141 3/4"	75 3/4"	30"	15,760	148 1/2"	77 1/8"	30"	23,774
16/20"	145 1/2"	83 1/16"	34"	14,344	152"	83 3/4"	34"	20,544	159 1/2"	85 1/8"	34"	29,534
18/24"	164 1/2"	92 3/8"	38"	20,848	170"	93"	38"	27,926	186"	94 5/8"	38"	37,492
20/24"	173 7/8"	100 3/8"	42"	24,754	181 1/4"	101"	42"	32,912	188 1/2"	102 5/8"	42"	48,692
24/30"	200 1/2"	117 7/8"	50"	37,764	207 3/4"	120 1/8"	50"	49,576	217 1/2"	121 7/8"	50"	60,784



STANDARD ORIFICE PLATES

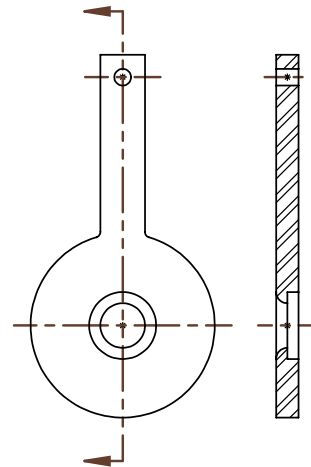


Standard Orifice Plates



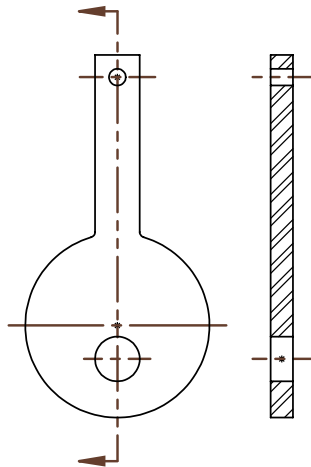
CONCENTRIC BORE AND BEVEL

Used primarily for clean homogeneous flow of liquids, gases, or vapors that are relatively non-viscous. The bevel is machined to a 45-degree angle to the desired edge thickness. Accuracy range at $\pm 0.6\%$ for beta ratio between 0.2 to 0.75. For pipe taps, accuracy range at $\pm 0.8\%$ to $\pm 1.6\%$ for beta ratio between 0.2 to 0.5.



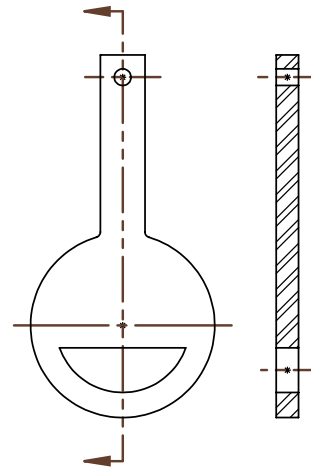
QUADRANT BORE

This type of orifice bore is used primarily in the measurement of high viscosity flow, such as heavy crude, syrups, and slurries. The radius on the inlet side is equal to the plate thickness. The quadrant is always recommended where the Reynolds Number factor is less than 100,000. Accuracy is $\pm 2\%$ for beta ratio between 0.24 to 0.6.



ECCENTRIC BORE

Used primarily for measurement of entrained solids or slurries. The eccentric bore can also be used to measure vapors & gases where condensation is present. The eccentric bore is offset to where the bore edge is inscribed in a circle that is 98% of line I.D. Accuracy range between $\pm 1.5\%$ to $\pm 2\%$ for beta ratio between 0.3 to 0.75.



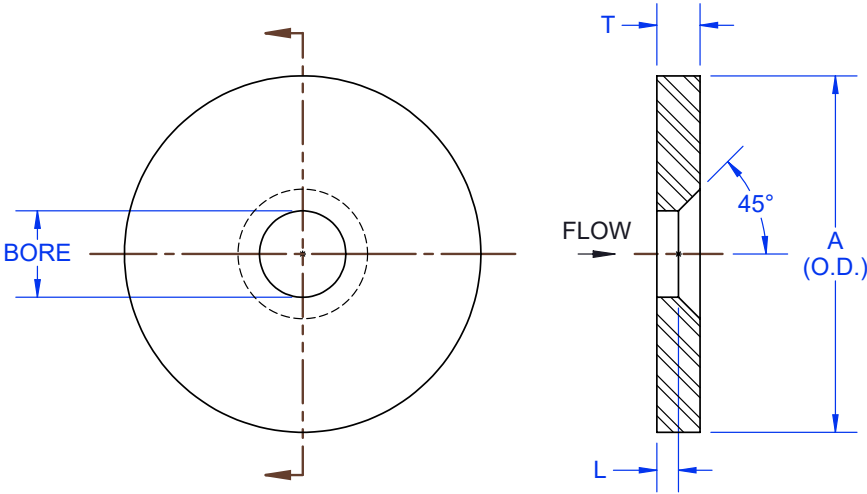
SEGMENTAL BORE

The segmental bore is located in the same way that the eccentric bore is. These bores are used primarily for slurries or extremely dirty gases where the flow may contain impurities heavier than fluid. Accuracy is $\pm 2\%$ for beta ratio between 0.35 to 0.75.

Orifice Plates

Model 500
Universal

SPECIFICATIONS:
Universal orifice plates are manufactured for use with RTJ plate holders and are interchangeable with most orifice fittings. Each plate is carefully manufactured to meet or exceed standards set by AGA, ISA, ANSI, ASME and API recommendations.



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

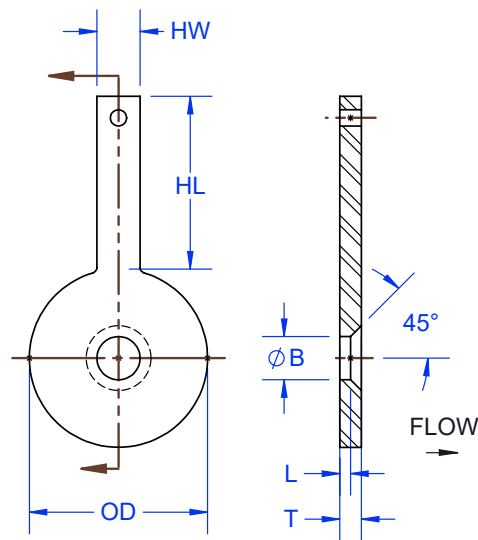
NOM. PIPE SIZE	A	L	T	WT* (LBS)
1"	1.312"	0.02"	0.125"	0.05
1.5"	2"	0.03"	0.125"	0.11
2"	2.437"	0.03"	0.125"	0.17
2.5"	2.812"	0.03"	0.125"	0.2
3"	3.437"	0.03"	0.125"	0.3
4"	4.406"	0.06"	0.125"	0.5
5"	6"	0.06"	0.125"	1
6"	6.437"	0.06"	0.125"	1.2
8"	8.437"	0.125"	0.25"	2
10"	10.687"	0.125"	0.25"	3.2
12"	12.593"	0.25"	0.25"	8.8
14"	14"	0.25"	0.25"	10.9
16"	16"	0.25"	0.375"	14.2
18"	18"	0.25"	0.375"	18
20"	20"	0.375"	0.375"	33.4
24"	24"	0.375"	0.375"	48.1



Notes: Dimension "A" does not include seal ring. L = T (plate thickness) for restriction applications. *Blank weight.

Orifice Plates

Model 520



SPECIFICATIONS:

520 Paddle type orifice plates are manufactured for use with raised face orifice flanges and holding blocks. Each plate is carefully manufactured to meet or exceed standards set by AGA, ISA, ANSI, ASME and API recommendations.

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

NOM. PIPE SIZE	125#/150#	250#/300#	400#	600#	900#	1500#	2500#	ALL PRESSURE RATINGS			
	OD	OD	OD	OD	OD	OD	OD	HL	HW	L	T
0.5"	1.875"	2.125"	2.125"	2.125"	2.50"	2.50"	2.75"	4"	1"	0.015"	0.125"
0.75"	2.25"	2.625"	2.625"	2.625"	2.75"	2.75"	3.00"	4"	1"	0.015"	0.125"
1"	2.625"	2.875"	2.875"	2.875"	3.125"	3.125"	3.375"	4"	1"	0.02"	0.125"
1.25"	3.00"	3.25"	3.25"	3.25"	3.50"	3.50"	4.125"	4"	1"	0.025"	0.125"
1.5"	3.375"	3.75"	3.75"	3.75"	3.875"	3.875"	4.625"	4"	1"	0.03"	0.125"
2"	4.125"	4.375"	4.375"	4.375"	5.625"	5.625"	5.75"	4"	1"	0.0313"	0.125"
2.5"	4.875"	5.125"	5.125"	5.125"	6.50"	6.50"	6.625"	4"	1"	0.0313"	0.125"
3"	5.375"	5.875"	5.875"	5.875"	6.625"	6.875"	7.75"	4"	1"	0.0313"	0.125"
4"	6.875"	7.125"	7.00"	7.625"	8.125"	8.25"	9.25"	4"	1"	0.0625"	0.125"
5"	7.75"	8.50"	8.375"	9.50"	9.75"	10.00"	11.00"	4"	1"	0.0625"	0.125"
6"	8.75"	9.875"	9.75"	10.50"	11.375"	11.125"	12.500"	6"	1.5"	0.0625"	0.125"
8"	11.00"	12.125"	12.00"	12.625"	14.125"	13.875"	15.25"	6"	1.5"	0.125"	0.25"
10"	13.375"	14.25"	14.125"	15.75"	17.125"	17.125"	18.75"	6"	1.5"	0.125"	0.25"
12"	16.125"	16.625"	16.50"	18.00"	19.625"	20.50"	21.625"	6"	1.5"	0.125"	0.25"
14"	17.75"	19.125"	19.00"	19.375"	20.50"	22.75"	-	6"	1.5"	0.125"	0.25"
16"	20.25"	21.25"	21.125"	22.25"	22.625"	25.25"	-	6"	1.5"	0.25"	0.375"
18"	21.50"	23.375"	23.25"	24.00"	25.00"	27.625"	-	6"	1.5"	0.25"	0.375"
20"	23.75"	25.625"	25.375"	26.75"	27.375"	29.625"	-	6"	1.5"	0.25"	0.375"
22"	26.00"	27.75"	27.50"	28.875"	-	-	-	6"	1.5"	0.25"	0.375"
24"	28.125"	30.375"	30.125"	31.00"	32.875"	35.50"	-	6"	1.5"	0.25"	0.5"
30"	34.625"	37.375"	37.25"	38.125"	-	-	-	6"	1.5"	0.5"	0.5"
36"	41.125"	43.875"	43.875"	44.375"	-	-	-	6"	1.5"	0.5"	*0.5"

B – To be specified by customer. All dimensions are in inches. *AGA, MPMS, ISA tables do not cover this size. Suggested thickness shown.

Note: Aitken Standard orifice plates comply with AGA, API, ANSI standards, when not specified by customer.

Recommended plate thickness applies to steel plates at a maximum of 150°F and a specified maximum allowable differential pressure.

Refer to MPMS 14.3.2, Table 2-3. L = T (plate thickness) for restriction applications.



Orifice Plate Weights

Model 520

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

BLANK WEIGHT IN POUNDS

NOM. PIPE SIZE	125# 150#	250# 300#	400#	600#	900#	1500#	2500#	ISA PLATE THICKNESS
0.5"	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.125"
0.75"	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.125"
1 "	0.3	0.3	0.3	0.3	0.4	0.4	0.6	0.125"
1.25"	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.125"
1.5"	0.4	0.5	0.5	0.5	0.5	0.5	0.7	0.125"
2"	0.6	0.6	0.6	0.6	1	1	1	0.125"
2.5"	0.8	0.8	0.8	0.8	1.3	1.3	1.3	0.125"
3"	0.9	1.1	1.1	1.1	1.3	1.4	1.8	0.125"
4"	1.4	1.5	1.5	2.6	2.7	2.9	3.5	0.125"
5"	1.8	2.1	2.1	2.6	2.7	2.9	3.5	0.125"
6"	2.4	3	2.9	3.4	3.9	3.7	4.4	0.125"
8"	7.4	8.8	8.6	9.4	11.6	11.4	13.6	0.25"
10"	10.6	11.8	11.6	14.4	17	17	20.2	0.25"
12"	14.8	15.7	15.4	18.3	21.7	23.7	26.3	0.25"
14"	17.8	20.6	20.4	21.2	23.7	29.1	-	0.25"
16"	34.5	38	37.5	41.6	43	53.5	-	0.375"
18"	38.9	45.9	45.4	48.4	52.5	64	-	0.375"
20"	47.4	59.1	54	60	62.8	73.5	-	0.375"
22"	56.7	64.6	64.6	69.9	-	-	-	0.375"
24"	88.4	103.1	101.1	107.3	120.7	140.7	-	0.5"
30"	133.7	155.7	155.7	162	-	-	-	0.5"
36"	188.5	209.6	209.6	219.4	-	-	-	*0.5"



*AGA, MPMS, ISA tables do not cover this size. Suggested thickness shown.

Integral Orifice Plates

Model 560 & 590

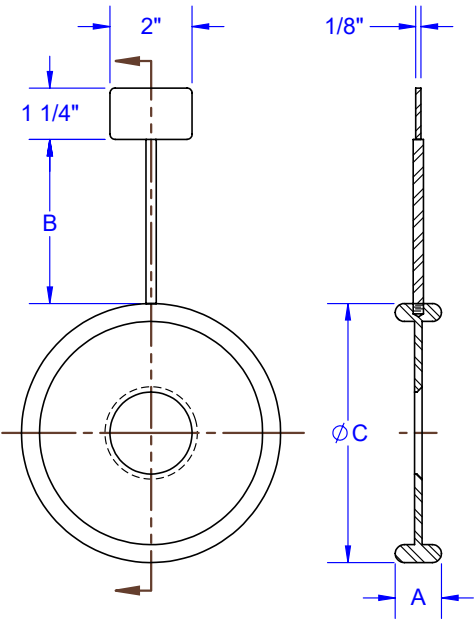


PLATE (MODEL 560)

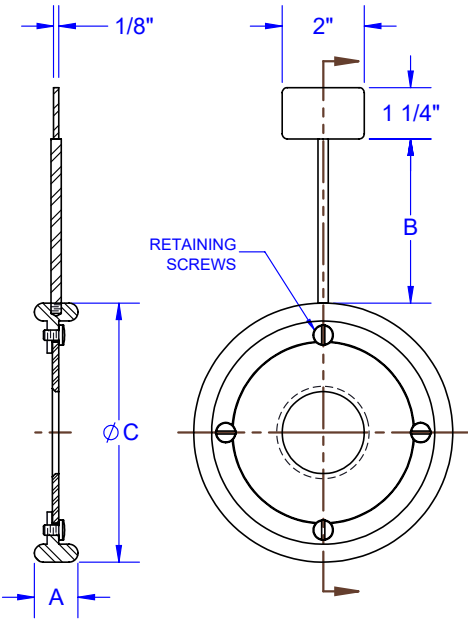


PLATE W/ SCREWS (MODEL 590)



Integral Orifice Plates

Ring-Type Joint Plate Holders
Model 560 & 590

+ CUSTOM SIZES AND RATINGS
AVAILABLE UPON REQUEST

API RING NUMBERS, DIMENSIONAL DATA AND WEIGHTS (US CUSTOMARY UNITS)

ANSI 300 TO 600	LINE SIZE (IN)	0.5	0.75	1	1.5	2	2.5	3	4	6	8	10	12	14	16	18	20	24
	API Ring Number	R-11	R-13	R-16	R-20	R-23	R-26	R-31	R-37	R-45	R-49	R-53	R-57	R-61	R-65	R-69	R-73	R-77
	ANSI 300 Gap1 (in)	0.625"	0.625"	0.625"	0.625"	0.655"	0.655"	0.655"	0.655"	0.655"	0.78"	0.78"	0.78"	0.78"	0.905"	0.905"	0.905"	1.03"
	ANSI 600 Gap1 (in)	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.75"	0.75"	0.75"	0.75"	0.875"	0.875"	0.875"	1"
	A:(in)	0.945"	1.025"	1.025"	1.025"	1.125"	1.125"	1.125"	1.125"	1.125"	1.25"	1.25"	1.25"	1.25"	1.375"	1.375"	1.375"	1.66"
	B:(in)	4.25"	4.25"	4.25"	4.25"	4.25"	5.25"	5.25"	5.25"	6.25"	6.25"	7.25"	7.25"	7.25"	7.25"	7.25"	7.25"	7.25"
	C: Ring OD (in)	1.593"	2"	2.313"	3"	3.688"	4.438"	5.313"	6.313"	8.75"	11.063"	13.188"	15.438"	16.938"	18.938"	21.438"	23.5"	27.875"
	560 Plate Blank Weight (lb)	0.3	0.5	0.6	0.9	1.9	2.5	3.3	4.3	7.2	10.6	14.3	18.7	21.9	35.6	45.9	56.2	80.8
	590 Plate Blank Weight (lb)	-	-	-	-	1.7	2.1	2.6	3.2	4.6	5.9	7.2	8.4	9.3	12.3	14	17.7	26.1
ANSI 900	API Ring Number	R-12	R-14	R-16	R-20	R-24	R-27	R-31	R-37	R-45	R-49	R-53	R-57	R-62	R-66	R-70	R-74	R-78
	ANSI 900 Gap1 (in)	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.75"	0.75"	0.75"	0.75"	0.875"	0.875"	0.875"	1"
	A:(in)	1.025"	1.025"	1.025"	1.025"	1.025"	1.025"	1.195"	1.155"	1.155"	1.28"	1.28"	1.28"	1.47"	1.595"	1.685"	1.685"	2.09"
	B:(in)	4.25"	4.25"	4.25"	4.25"	5.25"	5.25"	5.25"	5.25"	6.25"	6.25"	7.25"	7.25"	7.25"	7.25"	7.25"	7.25"	9.25"
	C: Ring OD (in)	1.875"	2.063"	2.313"	3"	4.188"	4.688"	5.313"	6.313"	8.75"	11.063"	13.188"	15.438"	17.125"	19.125"	21.75"	23.75"	28.25"
	560 Plate Blank Weight (lb)	0.4	0.5	0.6	0.9	2	2.7	3.3	4.3	7.2	10.6	14.3	18.7	27.1	42.6	57.8	65.2	102.8
	590 Plate Blank Weight (lb)	-	-	-	-	1.8	2.3	2.6	3.2	4.6	5.9	7.2	8.4	14.8	18.9	26.9	27.5	49.7
ANSI 1500	API Ring Number	R-12	R-14	R-16	R-20	R-24	R-27	R-35	R-39	R-46	R-50	R-54	R-58	R-63	R-67	R-71	R-75	R-79
	ANSI 1500 Gap1 (in)	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.565"	0.75"	0.75"	0.75"	0.75"	0.875"	0.875"	0.875"	1"
	A:(in)	1.025"	1.025"	1.025"	1.025"	1.195"	1.195"	1.195"	1.195"	1.195"	1.47"	1.47"	1.69"	1.84"	2.005"	2.005"	2.055"	2.31"
	B:(in)	4.25"	4.25"	4.25"	4.25"	5.25"	5.25"	5.25"	5.25"	6.25"	6.25"	7.25"	8.25"	8.25"	9.25"	9.25"	10.25"	10.25"
	C: Ring OD (in)	1.875"	2.063"	2.313"	3"	4.188"	4.688"	5.813"	6.813"	8.813"	11.25"	13.375"	15.875"	17.5"	19.625"	22.125"	24.25"	28.625"
	560 Plate Blank Weight (lb)	0.4	0.5	0.6	0.9	2	2.7	3.8	4.9	8.2	14	18.3	30.8	40.8	64.4	77.5	93.7	132.8
	590 Plate Blank Weight (lb)	-	-	-	-	1.8	2.3	2.9	3.5	5.6	9.5	11.4	21.2	29.1	42.1	47.8	57.8	81.2
ANSI 2500	API Ring Number	R-13	R-16	R-18	R-23	R-26	R-28	R-32	R-38	R-47	R-51	R-55	R-60	-	-	-	-	-
	ANSI 2500 Gap1 (in)	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.625"	0.75"	0.75"	0.75"	-	-	-	-	-
	A:(in)	1.025"	1.025"	1.025"	1.195"	1.195"	1.255"	1.255"	1.345"	1.465"	1.69"	1.94"	2"	-	-	-	-	-
	B:(in)	4.25"	4.25"	4.25"	5.25"	5.25"	5.25"	6.25"	6.25"	7.25"	8.25"	8.25"	9.25"	-	-	-	-	-
	C: Ring OD (in)	2"	2.313"	2.688"	3.688"	4.438"	4.875"	5.5"	6.813"	9.75"	11.875"	14.625"	17.25"	-	-	-	-	-
	560 Plate Blank Weight (lb)	0.5	0.6	0.7	1.5	2.5	3.3	4.5	6.6	13.1	20.1	37.6	49.8	-	-	-	-	-
	590 Plate Blank Weight (lb)	-	-	-	-	2.1	2.9	3.7	5.5	10.2	15.5	26.6	39.3	-	-	-	-	-

STANDARD PLATE THICKNESS (US CUSTOMARY UNITS)

PLATE SIZE (IN)²	THICKNESS (IN)
0.5 to 6"	0.125"
8 to 14"	0.25"
16 to 20"	0.375"
24" and Larger	0.5"

- (1) Approximate gap refers to the approximate distance between the flanges.
- (2) DN50 to DN150 (2-in to 6-in) Model 560 plate holders have 6.4 mm (0.25-in) thick plates as standard; add 3.2 mm (0.125-in) to the A dimension and approximate gap for Model 560 holders in these sizes.
- (3) The oval form is standard.

560 Ring Joint Orifice Plate Holders are a one-piece integral plate seal. 590 Ring Joint Orifice Plate Holders are provided with hold-down screws to keep the universal plate in the holder. Universal Plates are sold separately.

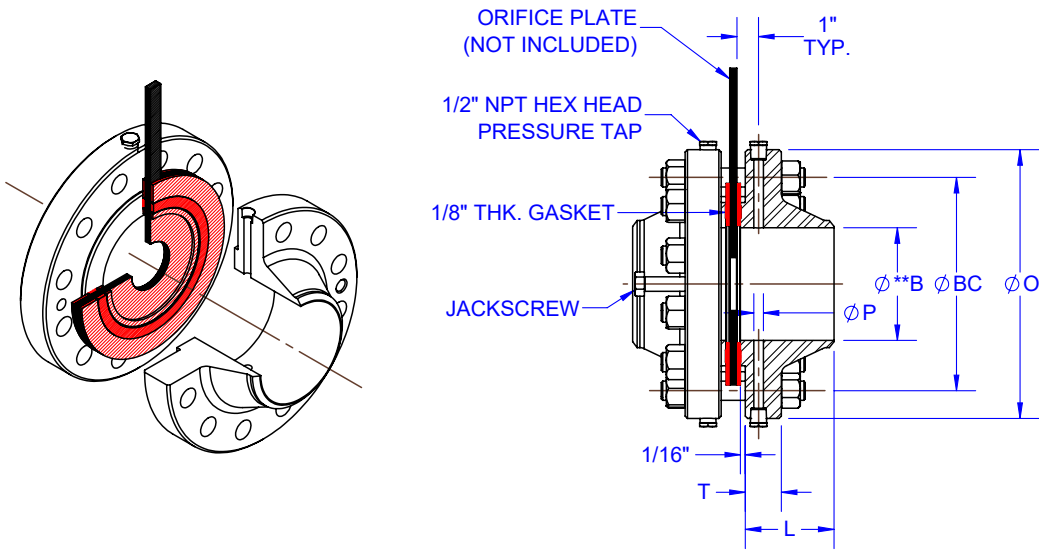


ORIFICE FLANGE UNIONS



Class 300
Welding
Neck
Orifice
Flanges

Raised Face



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

See Class 600 for 3" nominal pipe size and smaller

DIMENSIONAL DATA (IN)

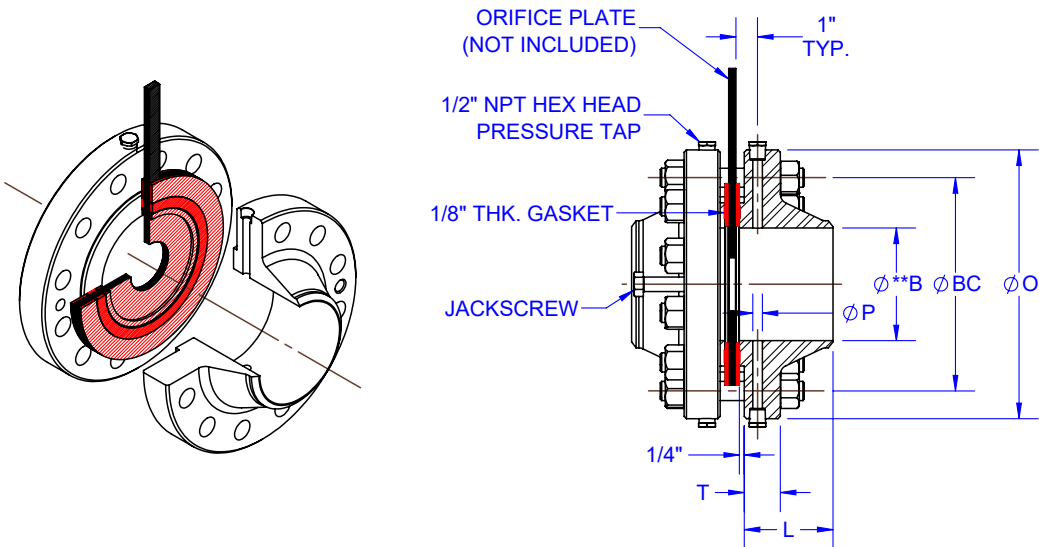
NOMINAL PIPE SIZE	DIAMETER OF FLANGE	MINIMUM FLANGE THICKNESS	DIAMETER OF RAISED FACE	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	SIZE OF HOLES	SIZE & LENGTH OF STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	O	T	R#	L	P	BC	#Ø	Ø	S	J	WT
3"	8.25"	1.50"	5.00"	3.50"	0.375"	6.62"	8	0.81"	0.75"x5.25"	0.75"x3"	48
4"	10.00"	1.50"	6.19"	3.62"	0.50"	7.88"	8	0.81"	0.75"x5.25"	0.75"x3"	68
6"	12.50"	1.50"	8.50"	3.94"	0.50"	10.62"	12	0.88"	0.75"x5.25"	0.75"x3"	100
8"	15.00"	1.62"	10.62"	4.38"	0.50"	13.00"	12	1.00"	0.875"x5.75"	0.75"x3"	155
10"	17.50"	1.88"	12.75"	4.62"	0.50"	15.25"	16	1.12"	1"x6.5"	1"x4.5"	220
12"	20.50"	2.00"	15.00"	5.12"	0.50"	17.75"	16	1.25"	1.125"x7"	1"x4.5"	330
14"	23.00"	2.12"	16.25"	5.62"	0.50"	20.25"	20	1.25"	1.125"x7.25"	1"x4.5"	425
16"	25.50"	2.25"	18.50"	5.75"	0.50"	22.25"	20	1.38"	1.25"x7.75"	1"x4.5"	590
18"	28.00"	2.38"	21.00"	6.25"	0.50"	24.75"	24	1.38"	1.25"x8"	1"x4.5"	750
20"	30.50"	2.50"	23.00"	6.38"	0.50"	27.00"	24	1.38"	1.25"x8.5"	1"x4.5"	910
22"	33.00"	2.69"	25.25"	6.50"	0.50"	29.25"	24	1.62"	1.5"x9.25"	1"x5.5"	1125
24"	36.00"	2.75"	27.25"	6.62"	0.50"	32.00"	24	1.62"	1.5"x9.5"	1"x5.5"	1350
36"	50.00"	4.18"	40.25"	9.50"	0.50"	46.00"	32	2.12"	2"x13.25"	1"x6.5"	3200

*Sizes not listed in ASME/ANSI B16.36, orifice flanges. **Dimension "B" to be specified by customer.
Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings.
Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 400 Welding Neck Orifice Flanges

Raised Face



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

See Class 600 for 3" nominal pipe size and smaller

DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	DIAMETER OF FLANGE	MINIMUM FLANGE THICKNESS	DIAMETER OF RAISED FACE	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	SIZE OF HOLES	SIZE & LENGTH OF STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	O	T	R#	*L	P	BC	#Ø	Ø	S	J	WT
4"	10.00"	1.50"	6.10"	3.50"	0.50"	7.88"	8	1.00"	0.875"x5.5"	0.75"x4"	83
6"	12.50"	1.62"	8.50"	4.06"	0.50"	10.62"	12	1.00"	0.875"x6.25"	0.75"x4"	135
8"	15.00"	1.88"	10.62"	4.62"	0.50"	13.00"	12	1.12"	1"x6.75"	0.75"x4"	205
10"	17.50"	2.12"	12.75"	4.88"	0.50"	15.25"	16	1.25"	1.125"x7.5"	1"x4.5"	300
12"	20.50"	2.25"	15.00"	5.38"	0.50"	17.75"	16	1.38"	1.25"x8"	1"x4.5"	420
14"	23.00"	2.39"	16.25"	5.88"	0.50"	20.25"	20	1.375"	1.25"x8.25"	1"x4.5"	555
16"	25.50"	2.50"	18.50"	6.00"	0.50"	22.50"	20	1.50"	1.375"x8.75"	1"x5.5"	710
18"	28.00"	2.62"	21.00"	6.50"	0.50"	24.75"	24	1.50"	1.375"x9.25"	1"x5.5"	865
20"	30.50"	2.75"	23.00"	6.62"	0.50"	27.00"	24	1.625"	1.5"x9.75"	1"x5.5"	1070
24"	38.00"	3.00"	27.25"	6.88"	0.50"	32.00"	24	1.875"	1.75"x11"	1"x6.5"	1560

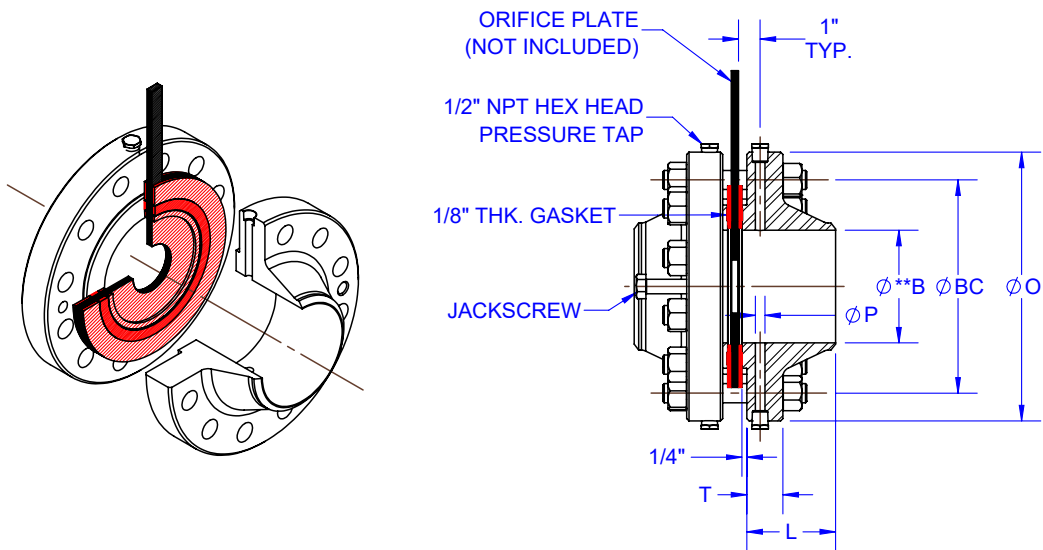
*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

**Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 600
Welding
Neck
Orifice
Flanges

Raised Face



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	DIAMETER OF FLANGE	MINIMUM FLANGE THICKNESS	DIAMETER OF RAISED FACE	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	SIZE OF HOLES	SIZE & LENGTH OF STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	O	T	R#	*L	P	BC	#Ø	Ø	S	J	WT
1"	4.88"	1.50"	2.00"	3.25"	0.25"	3.50"	4	0.75"	0.625"x5"	0.625"x3"	19
1.5"	6.12"	1.50"	2.88"	3.375"	0.25"	4.50"	4	0.875"	0.75"x5.25"	0.625"x3"	23
2"	6.50"	1.50"	3.625"	3.375"	0.25"	5.00"	8	0.75"	0.625"x5"	0.625"x3"	25
2.5"	7.50"	1.50"	4.125"	3.50"	0.25"	5.875"	8	0.875"	0.75"x5.25"	0.625"x3"	33
3"	8.25"	1.50"	5.00"	3.50"	0.375"	6.625"	8	0.875"	0.75"x5.25"	0.75"x3"	45
4"	10.75"	1.50"	6.19"	4.00"	0.50"	8.50"	8	1.00"	0.875"x6"	0.75"x4"	97
6"	14.00"	1.88"	8.50"	4.62"	0.50"	11.50"	12	1.12"	1"x7"	0.75"x4"	195
8"	16.50"	2.19"	10.62"	5.25"	0.50"	13.75"	12	1.25"	1.125"x7.75"	0.75"x4.5"	285
10"	20.00"	2.50"	12.75"	6.00"	0.50"	17.00"	16	1.38"	1.25"x8.75"	1"x5.5"	450
12"	22.00"	2.62"	15.00"	6.12"	0.50"	19.25"	20	1.38"	1.25"x9"	1"x5.5"	540
14"	23.75"	2.75"	16.25"	6.50"	0.50"	20.75"	20	1.50"	1.375"x9.5"	1"x4.5"	820
16"	27.00"	3.00"	18.50"	7.00"	0.50"	23.75"	20	1.625"	1.5"x10.25"	1"x5.5"	1110
18"	29.25"	3.25"	21.00"	7.25"	0.50"	25.75"	20	1.75"	1.625"x11"	1"x5.5"	1305
20"	32.00"	3.50"	23.00"	7.50"	0.50"	28.50"	24	1.75"	1.625"x11.75"	1"x5.5"	1624
24"	37.00"	4.00"	27.25"	8.00"	0.50"	33.00"	24	2.00"	1.875"x13.25"	1"x6.5"	2322

*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

**Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 900 Welding Neck Orifice Flanges

Raised Face

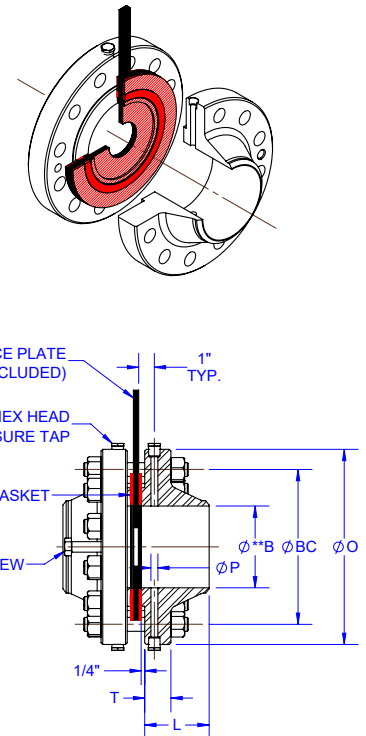
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF RAISED FACE	OUTSIDE DIAMETER OF FLANGE	MINIMUM THICKNESS OF FLANGE	LENGTH THROUGH HUB	DIAMETER OF HUB	HUB DIAMETER BEGINNING OF CHAMFER	BORE	DIAMETER OF PRESSURE CONNECTION	LENGTH STUD BOLTS
SIZE	R#	O	t	Y	X	A	B	π	(2) (3)
3"	5.00"	9.50"	1.50"	4.00"	5.00"	3.50"	(4)	3/8"	6.00"
4"	6.19"	11.50"	1.75"	4.50"	6.25"	4.50"	(4)	1/2"	7.00"
6"	8.5"	15.00"	2.19"	5.50"	9.25"	6.63"	(4)	1/2"	7.75"
8"	10.62"	18.50"	2.50"	6.38"	11.75"	8.63"	(4)	1/2"	9.00"
10"	12.75"	21.50"	2.75"	7.25"	14.50"	10.75"	(4)	1/2"	9.50"
12"	15.00"	24.00"	3.12"	7.88"	16.50"	12.75"	(4)	1/2"	10.25"
14"	16.25"	25.25"	3.38"	8.38"	17.75"	14.00"	(4)	1/2"	11.00"
16"	18.50"	27.75"	3.50"	8.50"	20.00"	16.00"	(4)	1/2"	11.50"
18"	21.00"	31.00"	4.00"	9.00"	22.25"	18.00"	(4)	1/2"	13.00"
20"	23.00"	33.75"	4.25"	9.75"	24.50"	20.00"	(4)	1/2"	14.00"
24"	27.25"	41.00"	5.50"	11.50"	29.50"	24.00"	(4)	1/2"	17.50"

DRILLING TEMPLATE

NOMINAL PIPE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	DIAMETER OF HOLES	DIAMETER OF BOLTS
3"	7.50"	8	1.00"	7/8"
4"	9.25"	8	1.25"	1 1/8"
6"	12.50"	12	1.25"	1 1/8"
8"	15.50"	12	1.50"	1 3/8"
10"	18.50"	16	1.50"	1 3/8"
12"	21.00"	20	1.50"	1 3/8"
14"	22.00"	20	1.62"	1 1/2"
16"	24.25"	20	1.75"	1 5/8"
18"	27.00"	20	2.00"	1 7/8"
20"	29.50"	20	2.12"	2"
24"	35.50"	20	2.62"	2 1/2"



*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

**Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 1500 Welding Neck Orifice Flanges

Raised Face

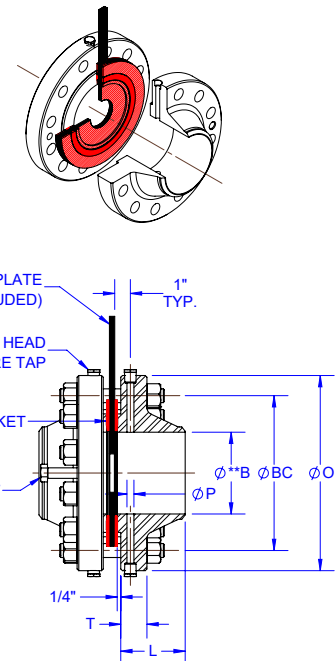
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF RAISED FACE	OUTSIDE DIAMETER OF FLANGE	MINIMUM THICKNESS OF FLANGE	LENGTH THROUGH HUB	DIAMETER OF HUB	HUG DIAMETER BEGINNING OF CHAMFER	BORE	DIAMETER OF PRESSURE CONNECTION	LENGTH STUD BOLTS
SIZE	R#	O	t	Y	X	A	B	π	(2) (3)
1"	2.00"	5.88"	1.50"	3.25"	2.06"	1.32"	(4)	1/4"	6.00"
1½"	2.88"	7.00"	1.50"	3.50"	2.75"	1.90"	(4)	1/4"	6.25"
2"	3.62"	8.50"	1.50"	4.00"	4.12"	2.38"	(4)	1/4"	6.00"
2½"	4.12"	9.62"	1.62"	4.12"	4.88"	2.88"	(4)	1/4"	6.50"
3"	5.00"	10.50"	1.88"	4.62"	5.25"	3.50"	(4)	3/8"	7.25"
4"	6.19"	12.25"	2.12"	4.88"	6.38"	4.50"	(4)	1/2"	8.00"
6"	8.50"	15.50"	3.25"	6.75"	9.00"	6.63"	(4)	1/2"	10.50"
8"	10.62"	19.00"	3.62"	8.38"	11.50"	8.63"	(4)	1/2"	11.75"
10"	12.75"	23.00"	4.25"	10.00"	14.50"	10.75"	(4)	1/2"	13.50"
12"	15.00"	26.50"	4.88"	11.12"	17.75"	12.75"	(4)	1/2"	15.00"
14"	16.25"	29.50"	5.25"	11.75"	19.50"	14.00"	(4)	1/2"	16.25"
16"	18.50"	32.50"	5.75"	12.25"	21.75"	16.00"	(4)	1/2"	17.75"
18"	21.00"	36.00"	6.38"	12.88"	23.50"	18.00"	(4)	1/2"	19.75"
20"	23.00"	38.75"	7.00"	14.00"	25.25"	20.00"	(4)	1/2"	21.50"
24"	27.25"	46.00"	8.00"	16.00"	30.00"	24.00"	(4)	1/2"	24.50"

DRILLING TEMPLATE

NOMINAL PIPE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	DIAMETER OF HOLES	DIAMETER OF BOLTS
1"	4.00"	4	1.00"	7/8"
1.5"	4.88"	4	1.12"	1"
2"	6.50"	8	1.00"	7/8"
2.5"	7.50"	8	1.12"	1"
3"	8.00"	8	1.25"	1 1/8"
4"	9.50"	8	1.38"	1 1/4"
6"	12.50"	12	1.50"	1 3/8"
8"	15.50"	12	1.75"	1 5/8"
10"	19.00"	12	2.00"	1 7/8"
12"	22.50"	16	2.12"	2"
14"	25.00"	16	2.38"	2 1/4"
16"	27.75"	16	2.62"	2 1/2"
18"	30.50"	16	2.88"	2 3/4"
20"	32.75"	16	3.12"	3"
24"	39.00"	16	3.62"	3 1/2"



*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

**Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.

Class 2500 Welding Neck Orifice Flanges

Raised Face

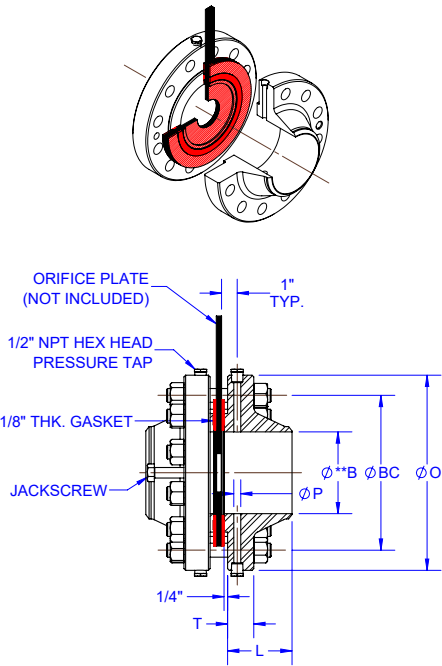
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF RAISED FACE	OUTSIDE DIAMETER OF FLANGE	MINIMUM THICKNESS OF FLANGE	LENGTH THROUGH HUB	DIAMETER OF HUB	HUG DIAMETER BEGINNING OF CHAMFER	BORE	DIAMETER OF PRESSURE CONNECTION	LENGTH STUD BOLTS
SIZE	R#	O	t	Y	X	A	B	π	(2) (3)
1"	2.00"	6.25"	1.50"	3.62"	2.25"	1.32"	(4)	1/4"	6.00"
1.5"	2.88"	8.00"	1.75"	4.38"	3.12"	1.90"	(4)	1/4"	7.00"
2"	3.62"	9.25"	2.00"	5.00"	3.75"	2.38"	(4)	1/4"	7.25"
2.5"	4.12"	10.50"	2.25"	5.62"	4.50"	2.88"	(4)	1/4"	8.00"
3"	5.00"	12.00"	2.62"	6.62"	5.25"	3.50"	(4)	3/8"	9.00"
4"	6.19"	14.00"	3.00"	7.50"	6.50"	4.50"	(4)	1/2"	10.25"
6"	8.50"	19.00"	4.25"	10.75"	9.25"	6.63"	(4)	1/2"	13.75"
8"	10.62"	21.75"	5.00"	12.50"	12.00"	8.63"	(4)	1/2"	15.25"
10"	12.75"	26.50"	6.50"	16.50"	14.75"	10.75"	(4)	1/2"	19.25"
12"	15.00"	30.00"	7.25"	18.25"	17.38"	12.75"	(4)	1/2"	21.25"

DRILLING TEMPLATE

NOMINAL PIPE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	DIAMETER OF HOLES	DIAMETER OF BOLTS
1"	4.25"	4	1.00"	7/8"
1½"	5.75"	4	1.25"	1 1/8"
2"	6.75"	8	1.12"	1"
2½"	7.75"	8	1.25"	1 1/8"
3"	9.00"	8	1.38"	1 1/4"
4"	10.75"	8	1.62"	1 1/2"
6"	14.50"	8	2.12"	2"
8"	17.25"	12	2.12"	2"
10"	21.25"	12	2.62"	2 1/2"
12"	24.38"	12	2.88"	2 3/4"



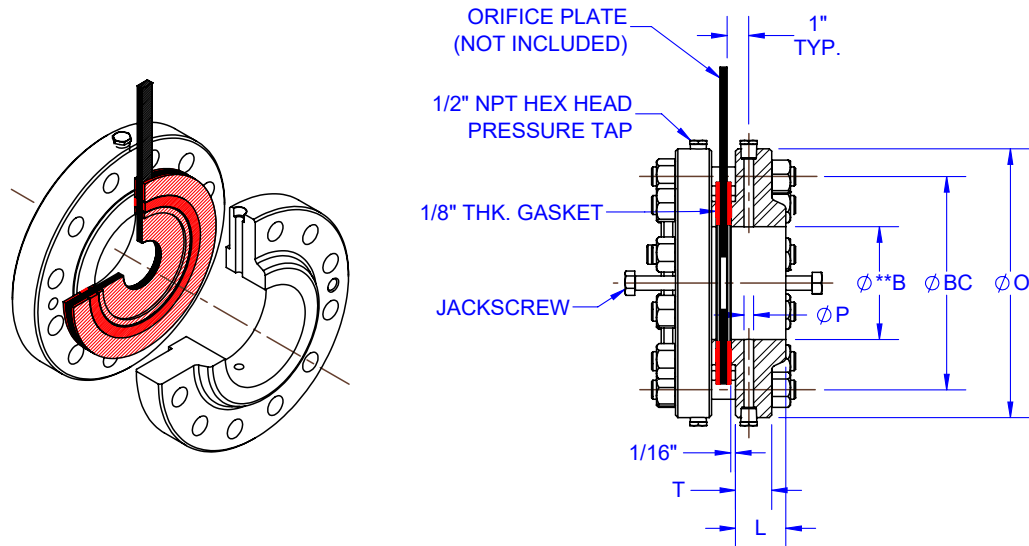
*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

**Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 300 Slip-On Orifice Flanges

Raised Face



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

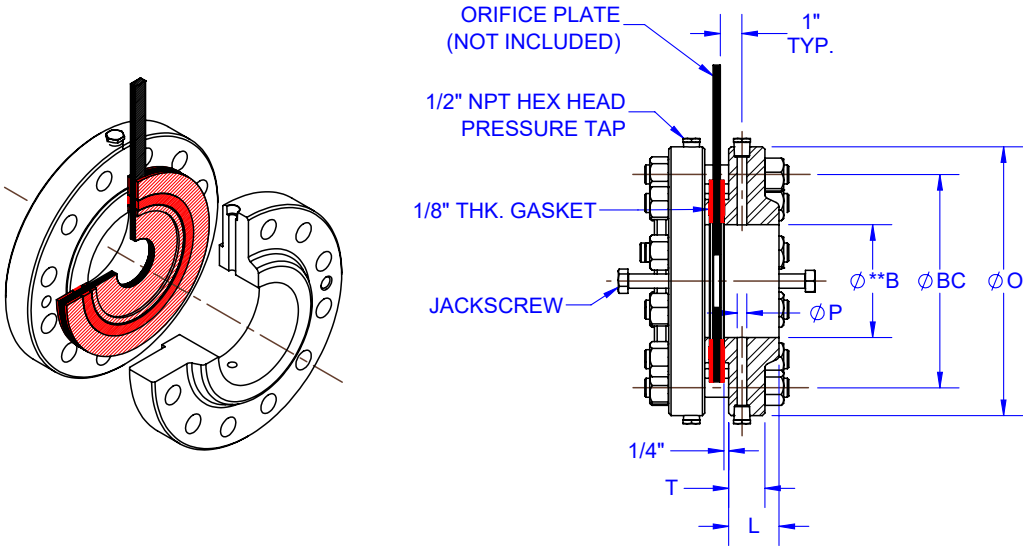
NOMINAL PIPE SIZE	DIAMETER OF FLANGE	MINIMUM FLANGE THICKNESS	DIAMETER OF RAISED FACE	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	SIZE OF HOLES	SIZE & LENGTH OF STUDS	SIZE & LENGTH JACKSCREW	WEIGHT / UNION (LBS)
SIZE	O	T	R#	L	P	BC	#Ø	Ø	S	x	WT
*0.5"	3.75"	1.50"	1.38"	1.81"	0.12"	2.62"	4	0.56"	0.5"x4.75"	0.5"x3"	9
*0.75"	4.62"	1.50"	1.69"	1.88"	0.12"	3.25"	4	0.69"	0.625"x5"	0.5"x3"	9
1"	4.88"	1.50"	2.00"	1.88"	0.25"	3.50"	4	0.69"	0.625"x5"	0.625"x3"	15
*1.25"	5.25"	1.50"	2.50"	1.81"	0.25"	3.88"	4	0.69"	0.625"x5"	0.625"x3"	17
1.5"	6.12"	1.50"	2.88"	1.88"	0.25"	4.50"	4	0.81"	0.75"x5.25"	0.625"x3"	19
2"	6.50"	1.50"	3.62"	1.94"	0.25"	5.00"	8	0.69"	0.625"x5"	0.625"x3"	23
2.5"	7.50"	1.50"	4.12"	2.00"	0.25"	5.88"	8	0.81"	0.75"x5.25"	0.625"x3"	31
3"	8.25"	1.50"	5.00"	2.06"	0.375"	6.62"	8	0.81"	0.75"x5.25"	0.75"x3"	39
4"	10.00"	1.50"	6.19"	2.12"	0.50"	7.88"	8	0.81"	0.75"x5.25"	0.75"x3"	60
6"	12.50"	1.50"	8.50"	2.12"	0.50"	10.62"	12	0.88"	0.75"x5.25"	0.75"x3"	100
8"	15.00"	1.62"	10.62"	2.44"	0.50"	13.00"	12	1.00"	0.875"x5.75"	0.75"x3"	135
10"	17.50"	1.88"	12.75"	2.62"	0.50"	15.25"	16	1.12"	1"x6.5"	1"x4.5"	196
12"	20.50"	2.00"	15.00"	2.88"	0.50"	17.75"	16	1.25"	1.125"x7"	1"x4.5"	281
14"	23.00"	2.12"	16.25"	3.00"	0.50"	20.25"	20	1.25"	1.125"x7.25"	1"x4.5"	380
16"	25.50"	2.25"	18.50"	3.25"	0.50"	22.25"	20	1.38"	1.25"x7.75"	1"x4.5"	530
18"	28.00"	2.38"	21.00"	3.50"	0.50"	24.75"	24	1.38"	1.25"x8"	1"x4.5"	691
20"	30.50"	2.50"	23.00"	3.75"	0.50"	27.00"	24	1.38"	1.25"x8.5"	1"x4.5"	781
24"	36.00"	2.75"	27.25"	4.19"	0.50"	32.00"	24	1.62"	1.5"x9.5"	1"x5.5"	1,201

*Sizes not listed in ASME/ANSI B16.36, orifice flanges. **Dimension "B" to accommodate nominal pipe size. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 400 & 600 Slip-On Orifice Flanges

Raised Face



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST
See Class 300 for 3" nominal pipe size and smaller

CLASS 400 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	DIAMETER OF FLANGE	MINIMUM FLANGE THICKNESS	DIAMETER OF RAISED FACE	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	SIZE OF HOLES	SIZE & LENGTH OF STUDS	SIZE & LENGTH JACKSCREW	WEIGHT / UNION (LBS)
SIZE	O	T	R#	*L	P	BC	#Ø	Ø	S	J	WT
4"	10.00"	1.50"	6.19"	2.00"	0.50"	7.88"	8	1.00"	0.875"x6"	0.75"x4"	65
6"	12.50"	1.62"	8.50"	2.25"	0.50"	10.62"	12	1.00"	0.875"x6.25"	0.75"x4"	110
8"	15.00"	1.88"	10.62"	2.68"	0.50"	13.00"	12	1.12"	1"x7"	0.75"x4"	170
10"	17.50"	2.12"	12.75"	2.88"	0.50"	15.25"	16	1.25"	1.125"x7.75"	1"x4.5"	239
12"	20.50"	2.25"	15.00"	3.12"	0.50"	17.75"	16	1.38"	1.25"x8.25"	1"x4.5"	333

CLASS 600 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	DIAMETER OF FLANGE	MINIMUM FLANGE THICKNESS	DIAMETER OF RAISED FACE	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	DIAMETER OF BOLT CIRCLE	NUMBER OF HOLES	SIZE OF HOLES	SIZE & LENGTH OF STUDS	SIZE & LENGTH JACKSCREW	WEIGHT / UNION (LBS)
SIZE	O	T	R#	*L	P	BC	#Ø	Ø	S	J	WT
4"	10.75"	1.50"	6.19"	2.12"	0.50"	8.50"	8	1.00"	0.875"x6"	0.75"x4"	75
6"	14.00"	1.88"	8.50"	2.62"	0.50"	11.5"	12	1.12"	1"x7"	0.75"x4"	160
8"	16.50"	2.19"	10.62"	3.00"	0.50"	13.75"	12	1.25"	1.125"x8"	0.75"x4.5"	230
10"	20.00"	2.50"	12.70"	3.38"	0.50"	17.00"	16	1.38"	1.25"x8.75"	1"x5.5"	355
12"	22.00"	2.62"	15.00"	3.62"	0.50"	19.25"	20	1.38"	1.25"x9"	1"x5.5"	430

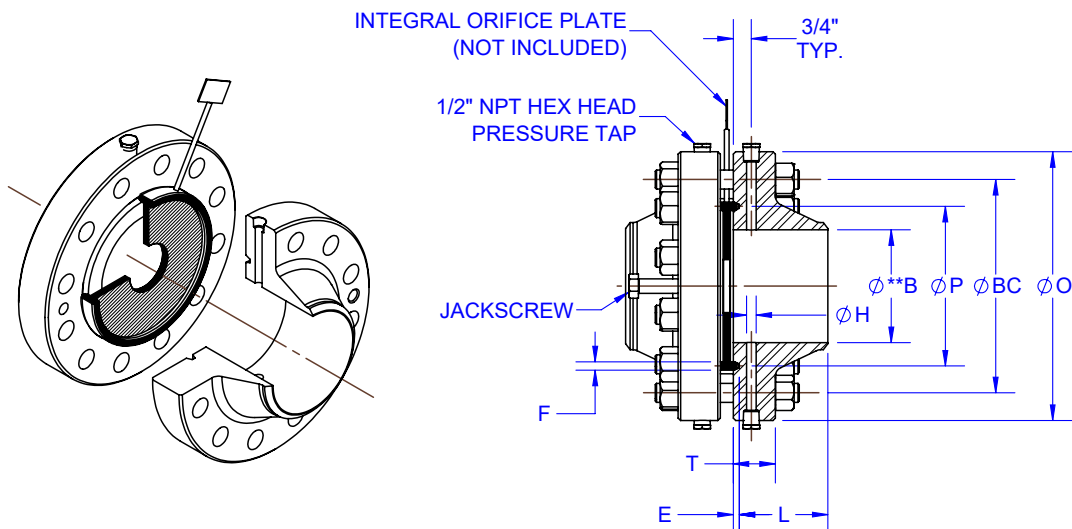
*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail.

**Dimension "B" to accommodate nominal pipe size. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs (2) Gaskets 1/16" thick compressed non-asbestos. Weights are approximate.



Class 300 Orifice Flanges

Ring Joint



CLASS 300 DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

NOMINAL PIPE SIZE	A.P.I. RING #	Ø FLANGE	MIN. FLANGE TH. HUB	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	PITCH Ø RING & GROVE	GROVE DEPTH	GROVE WIDTH	Ø BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	SIZE & LENGTH STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	R#	O	T	*L	H	P	E	F	BC	#Ø	Ø	S	J	WT
0.5"	11	3.75"	1.25"	2.75"	0.12"	1.3438"	0.2188"	0.2813"	2.625"	4	0.56"	0.5"x5.25"	0.5"x3"	10
0.75"	13	4.62"	1.25"	2.88"	0.12"	1.6875"	0.25"	0.3438"	3.25"	4	0.69"	0.625"x5.5"	0.5"x3.5"	10
1"	16	4.88"	1.25"	3.00"	0.12"	2.00"	0.25"	0.3438"	3.50"	4	0.69"	0.625"x5.5"	0.625"x4"	15
1.25"	18	5.25"	1.25"	3.06"	0.12"	2.375"	0.25"	0.3438"	3.88"	4	0.69"	0.625"x5.75"	0.625"x4"	23
1.5"	20	6.12"	1.25"	3.12"	0.18"	2.6875"	0.25"	0.3438"	4.50"	4	0.81"	0.75"x5.75"	0.625"x4"	25
2"	23	6.50"	1.25"	3.12"	0.38"	3.25"	0.3125"	0.4688"	5.00"	8	0.69"	0.625"x5.5"	0.625"x4"	30
2.5"	26	7.50"	1.25"	3.25"	0.38"	4.00"	0.3125"	0.4688"	5.875"	8	0.81"	0.75"x5.75"	0.625"x4"	46
3"	31	8.25"	1.25"	3.25"	0.38"	4.875"	0.3125"	0.4688"	6.625"	8	0.81"	0.75"x5.75"	0.75"x4"	56
4"	37	10.00"	1.25"	3.38"	0.50"	5.875"	0.3125"	0.4688"	7.875"	8	0.81"	0.75"x5.75"	0.75"x4"	65
6"	45	12.50"	1.43"	3.88"	0.50"	8.3125"	0.3125"	0.4688"	10.625"	12	0.88"	0.75"x6.25"	0.75"x4"	107
8"	49	15.00"	1.62"	4.38"	0.50"	10.625"	0.3125"	0.4688"	13.00"	12	1"	0.875"x6.75"	0.75"x4"	169
10"	53	17.50"	1.88"	4.62"	0.50"	12.75"	0.3125"	0.4688"	15.25"	16	1.12"	1"x7.5"	1"x4.5"	250
12"	57	20.50"	2.00"	5.12"	0.50"	15.00"	0.3125"	0.4688"	17.75"	16	1.25"	1.125"x8"	1"x5.5"	365
14"	61	23.00"	2.12"	5.62"	0.50"	16.50"	0.3125"	0.4688"	20.25"	20	1.25"	1.12"x8.5"	1"x5.5"	491
16"	65	25.50"	2.25"	5.75"	0.50"	18.00"	0.3125"	0.4688"	22.50"	20	1.38"	1.25"x9"	1"x5.5"	640
18"	69	28.00"	2.38"	6.25"	0.50"	21.00"	0.3125"	0.4688"	24.75"	24	1.38"	1.25"x9.25"	1"x5.5"	785
20"	73	30.50"	2.50"	6.38"	0.50"	23.00"	0.375"	0.5313"	27.00"	24	1.38"	1.25"x9.5"	1"x5.5"	960
24"	77	36.00"	2.75"	6.62"	0.50"	27.25"	0.4375"	0.6563"	32.00"	24	1.62"	1.5"x10.5"	1"x6.5"	1,410

*Dimension does not include groove depth (E). Add dimension (E) to dimension (L) for overall hub length, see detail. **Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs. Customer to specify bore size (I.E. S/40). Weights are approximate.



Class 400 & 600 Orifice Flanges

Ring Joint

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

CLASS 400 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	A.P.I. RING #	Ø FLANGE	MIN. FLANGE TH. HUB	LENGTH TH. HUB	PRESSURE TAP HOLE SIZE	PITCH Ø RING & GROVE	GROVE DEPTH	GROVE WIDTH	Ø BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	SIZE & LENGTH STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	R#	O	T	*L	H	P	E	F	BC	#Ø	Ø	S	J	WT
4"	37	10.00"	1.50"	3.50"	0.50"	5.875"	0.312"	0.469"	7.88"	8	1.00"	0.875"x6"	0.75"x4"	92
6"	45	12.50"	1.62"	4.06"	0.50"	8.312"	0.312"	0.469"	10.62"	12	1.00"	0.875"x6.5"	0.75"x4"	145
8"	49	15.00"	1.88"	4.62"	0.50"	10.625"	0.312"	0.469"	13.00"	12	1.12"	1"x7.25"	0.75"x4.5"	225
10"	53	17.50"	2.12"	4.88"	0.50"	12.75"	0.312"	0.469"	15.25"	16	1.25"	1.125"x8"	1"x5.5"	325
12"	57	20.50"	2.25"	5.38"	0.50"	15.00"	0.312"	0.469"	17.75"	16	1.38"	1.25"x8.5"	1"x5.5"	445
14"	61	23.00"	2.38"	5.88"	0.50"	16.50"	0.312"	0.469"	20.25"	20	1.38"	1.25"x9"	1"x5.5"	595
16"	65	25.50"	2.50"	6.00"	0.50"	18.50"	0.312"	0.469"	22.511"	20	1.50"	1.375"x9.25"	1"x5.5"	750
18"	69	28.00"	2.62"	6.50"	0.50"	21.00"	0.312"	0.469"	24.75"	24	1.50"	1.375"x9.5"	1"x6.5"	915
20"	73	30.50"	2.75"	6.62"	0.50"	23.00"	0.375"	0.531"	27.00"	24	1.62"	1.5"x10.25"	1"x6.5"	1,155

CLASS 600 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	A.P.I. RING #	Ø FLANGE	MIN. FLANGE TH. HUB	LENGTH TH. HUB	PRESSURE TAP HOLE SIZE	PITCH Ø RING & GROVE	GROVE DEPTH	GROVE WIDTH	Ø BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	SIZE & LENGTH STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	R#	O	T	*L	H	P	E	F	BC	#Ø	Ø	S	J	WT
4"	37	10.75"	1.50"	4.00"	0.50"	5.875"	0.312"	0.469"	8.50"	8	1.00"	0.875"x6.5"	0.75"x4"	110
6"	45	14.00"	1.88"	4.62"	0.50"	8.312"	0.312"	0.469"	11.50"	12	1.12"	1"x7.5"	0.75"x4.5"	210
8"	49	16.50"	2.19"	5.25"	0.50"	10.625"	0.312"	0.469"	13.75"	12	1.25"	1.125"x8.25"	0.75"x5.5"	305
10"	53	20.00"	2.50"	6.00"	0.50"	12.75"	0.312"	0.469"	17.00"	16	1.38"	1.25"x9.25"	1"x5.5"	485
12"	57	22.00"	2.62"	6.12"	0.50"	15.00"	0.312"	0.469"	19.25"	20	1.38"	1.25"x9.5"	1"x5.5"	580
14"	61	23.75"	2.75"	6.50"	0.50"	15.00"	0.312"	0.469"	20.75"	20	1.50"	1.375"x10"	1"x6.5"	825
16"	65	25.50"	2.50"	6.00"	0.50"	18.5"	0.312"	0.469"	22.50"	20	1.50"	1.375"x9.25"	1"x5.5"	750
18"	69	28.00"	2.62"	6.50"	0.50"	21.00"	0.312"	0.469"	24.75"	24	1.50"	1.375"x9.5"	1"x6.5"	915
20"	73	30.50"	2.75"	6.62"	0.50"	23.00"	0.375"	0.531"	27.00"	24	1.62"	1.5"x10.25"	1"x6.5"	1,155

Refer to Class 300 for detailed rendering.



*Dimension does not include groove depth (E). Add dimension (E) to dimension (L) for overall hub length, see detail. **Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs. Customer to specify bore size (I.E. S/40). Weights are approximate.

Class 900, 1500 & 2500 Orifice Flanges

Ring Joint

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

CLASS 900 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	A.P.I. RING #	Ø FLANGE	MIN. FLANGE TH. HUB	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	PITCH Ø RING & GROVE	GROVE DEPTH	GROVE WIDTH	Ø BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	SIZE & LENGTH STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	R#	O	T	*L	H	P	E	F	BC	#Ø	Ø	S	J	WT
3"	31	9.50"	1.50"	4.00"	0.38"	4.875"	0.312"	0.469"	7.50"	8	1.00"	0.875"x6.5"	0.75"x4"	79
4"	37	11.50"	1.75"	4.50"	0.50"	5.875"	0.312"	0.469"	9.25"	8	1.25"	1.125"x7.5"	0.75"x4"	129
6"	45	15.00"	2.19"	5.50"	0.50"	8.312"	0.312"	0.469"	12.50"	12	1.25"	1.125"x8.25"	0.75"x4.5"	263
8"	49	18.50"	2.50"	6.38"	0.50"	10.625"	0.312"	0.469"	15.50"	12	1.50"	1.38"x9.5"	1"x5.5"	445
10"	53	21.50"	2.75"	7.25"	0.50"	12.75"	0.312"	0.469"	18.50"	16	1.50"	1.38"x10"	1"x5.5"	634
12"	57	24.00"	3.12"	7.88"	0.50"	15.00"	0.312"	0.469"	21.00"	20	1.50"	1.38"x10.75"	1"x5.5"	872

CLASS 1500 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	A.P.I. RING #	Ø FLANGE	MIN. FLANGE TH. HUB	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	PITCH Ø RING & GROVE	GROVE DEPTH	GROVE WIDTH	Ø BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	SIZE & LENGTH STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	R#	O	T	*L	H	P	E	F	BC	#Ø	Ø	S	J	WT
1"	16	5.88"	1.50"	3.25"	0.25"	2.00"	0.25"	0.344"	4.00"	4	1.00"	0.875"x6.25"	0.625"x4"	26
1.5"	20	7.00"	1.50"	3.50"	0.25"	2.688"	0.25"	0.344"	4.88"	4	1.12"	1"x6.5"	0.625"x4"	45
2"	24	8.50"	1.50"	4.00"	0.25"	3.75"	0.312"	0.469"	6.50"	8	1.00"	0.875"x6.5"	0.625"x4"	65
2.5"	27	9.62"	1.62"	4.12"	0.25"	4.25"	0.312"	0.469"	7.50"	8	1.12"	1"x7"	0.625"x4"	98
3"	35	10.50"	1.88"	4.62"	0.38"	5.375"	0.312"	0.469"	8.00"	8	1.25"	1.125"x7.25"	0.75"x4"	123
4"	39	12.25"	2.12"	4.88"	0.50"	6.375"	0.312"	0.469"	9.50"	8	1.38"	1.25"x8.5"	0.75"x4.5"	182
6"	46	15.50"	3.25"	6.75"	0.50"	8.312"	0.375"	0.531"	12.50"	12	1.50"	1.375"x11"	0.75"x5.5"	407

CLASS 2500 DIMENSIONAL DATA (IN)

NOMINAL PIPE SIZE	A.P.I. RING #	Ø FLANGE	MIN. FLANGE TH. HUB	LENGTH THROUGH HUB	PRESSURE TAP HOLE SIZE	PITCH Ø RING & GROVE	GROVE DEPTH	GROVE WIDTH	Ø BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	SIZE & LENGTH STUDS	SIZE & LENGTH JACKSCREW	WEIGHT/ UNION (LBS)
SIZE	R#	O	T	*L	H	P	E	F	BC	#Ø	Ø	S	J	WT
1"	18	6.25"	1.50"	3.62"	0.25"	2.375"	0.25"	0.344"	4.25"	4	1.00"	0.875"x6.25"	0.625"x4"	26
1.5"	23	8.00"	1.75"	4.38"	0.25"	3.25"	0.312"	0.469"	5.75"	4	1.25"	1.125"x7.5"	0.75"x4"	56
2"	26	9.25"	2.00"	5.00"	0.25"	4.00"	0.312"	0.469"	6.75"	4	1.12"	1"x7.75"	0.75"x4"	84
2.5"	28	10.50"	2.25"	5.62"	0.25"	4.375"	0.375"	0.531"	7.75"	8	1.25"	1.125"x8.5"	0.75"x4.5"	104
3"	32	12.00"	2.62"	6.62"	0.38"	5.00"	0.375"	0.531"	9.00"	8	1.38"	1.25"x9.5"	0.75"x5.5"	188

Refer to Class 300 for detailed rendering.

*Dimension does not include groove depth (E). Add dimension (E) to dimension (L) for overall hub length, see detail. **Dimension "B" to be specified by customer. Reference ASME B16.5 & B16.36 for material of construction, dimensions, pressure, temperature ratings and identification markings. Each orifice union comes complete with: (2) Jackscrews (2) 1/2" plugs. Customer to specify bore size (I.E. S/40). Weights are approximate.



Orifice Flanges

Instructions

TO REMOVE ORIFICE PLATE:

1. Loosen all studs and remove the top half of the studs.
2. Spread flanges apart by turning the jackbolts clockwise.
3. Remove orifice plate for inspection or replacement.

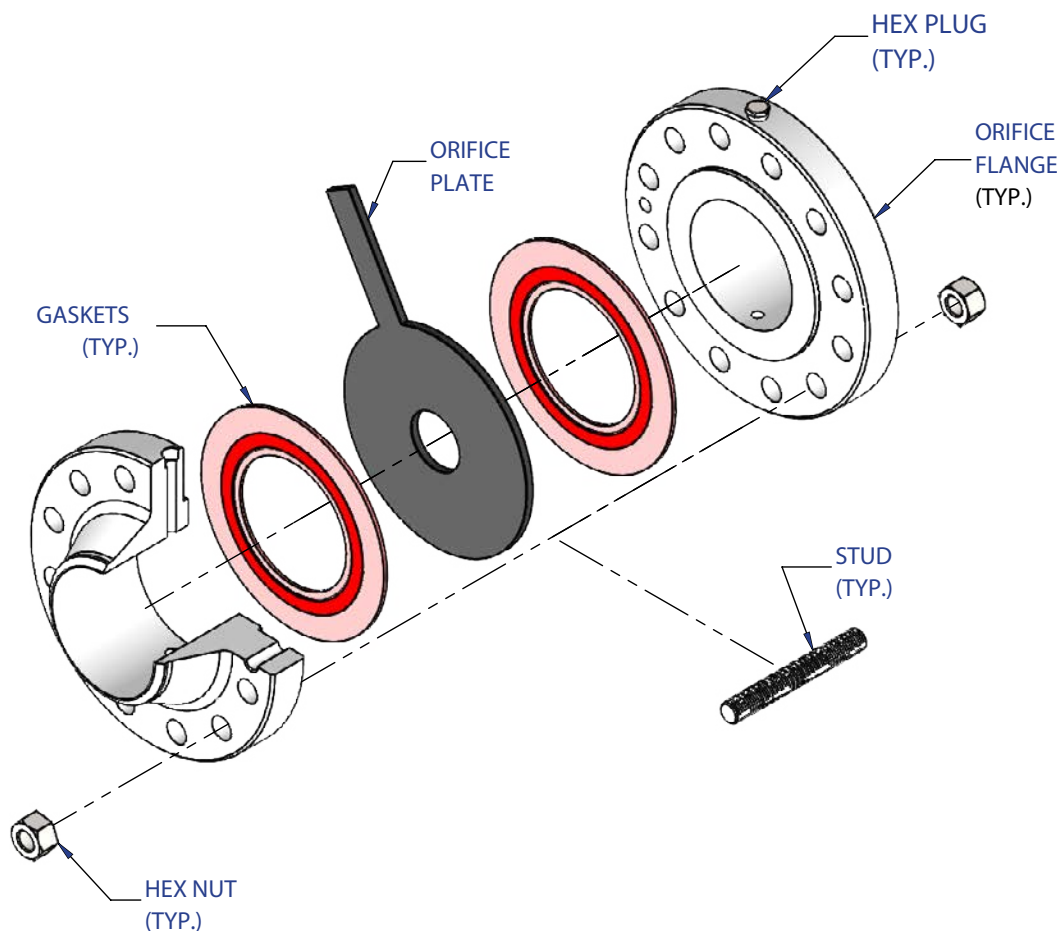
TO INSTALL ORIFICE PLATE:

1. Replace orifice plate and gaskets between flanges
2. Release the flanges by turning the two jackbolts counterclockwise.
3. Replace all studs.

WHEN INSTALLING ORIFICE PLATE:

1. Orifice bore must be centered within 3% of inside pipe diameter.
2. If bore is beveled, bevel must face downstream.
3. Pipe ends should be flush (within 1/4") with orifice plate
4. Inside diameter of gaskets* must not protrude beyond inside surface of pipe.
5. Orifice plate must be installed flat without distortion.
6. Tighten flange bolts evenly to prevent plate buckling.
7. On orifice flanges other than weld neck or corner tap, pressure tap holes must be drilled through the pipe. Holes must be free of burrs or other irregularities. Holes may be left square or rounded slightly.

*Gaskets should be replaced at each orifice plate inspection.



Corner Tap Unions

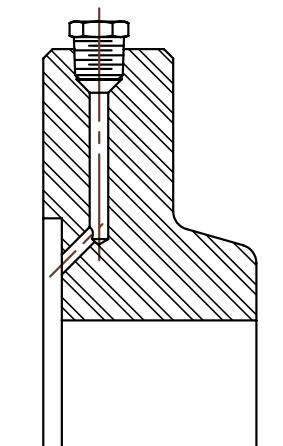
TO REMOVE ORIFICE PLATE:

- Recognized by ASME / AGA / ISA
- Dependable repeatability and accuracy
- Ideal for use in HVAC installations
- Recommended for smaller line sizes
- Available in 150# ANSI Rating
- No field drilling or tapping

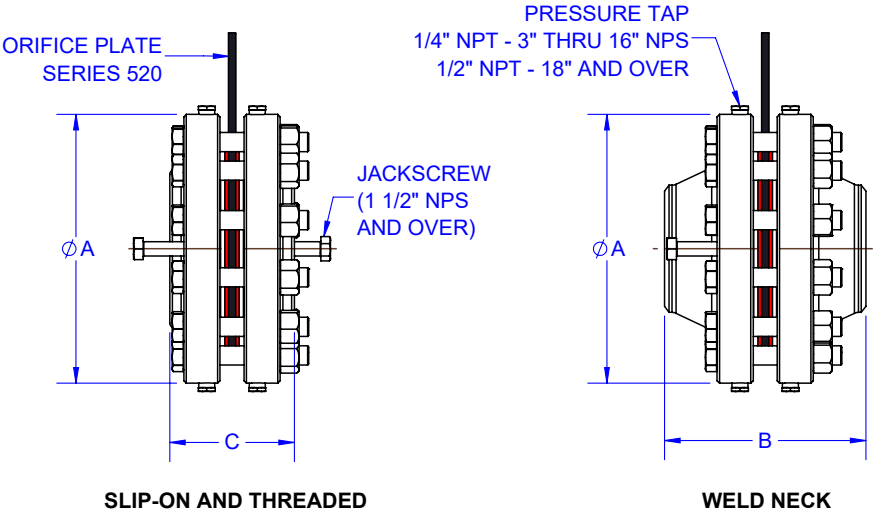
"Principals & Practices of Flow Meter Engineering" by L.K. Spink indicates that the corner tap style orifice flange is especially desirable in installation of 2" pipe size and smaller. This is because the corner tap design places the pressure signal point directly at the upstream and downstream face of the orifice plate. Other tap location (such as flange taps with fairly high beta ratios) place the downstream pressure signal point somewhere beyond the plane of the venacontracta, and in a highly turbulent region, therefore creating inaccuracy in flow measurement. The corner tap eliminates these problems in smaller sizes. Because corner taps are available in 150# ANSI rating, they are very economical in installations where #300 flange taps may not be necessary. This is desirable in HVAC installations where lighter weight piping is required.

The 45° exit pattern design makes the pressure tap

Corner hole less subject to clogging by impurities in the flow.



Corner Tap Unions



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

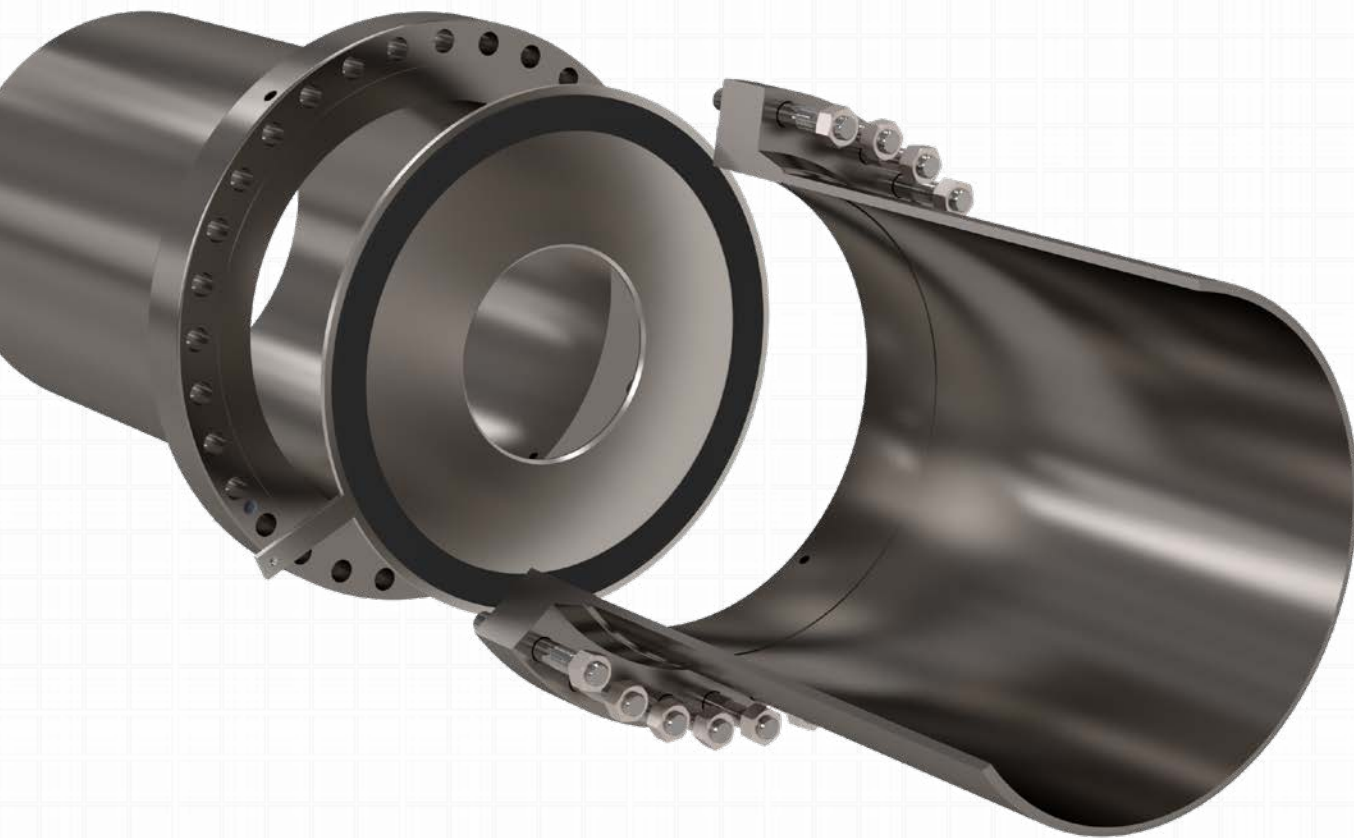
150 LB						
PIPE SIZE	A	B	C	MACHINE BOLTS		
				NO.	SIZE	LENGTH
3"	7.50"	5.625"	2.50"	4	0.625"	3.00"
3.5"	8.50"	5.75"	2.625"	8	0.625"	3.00"
4"	9.00"	6.125"	2.75"	8	0.625"	3.00"
5"	10.00"	7.125"	3.00"	8	0.75"	3.00"
6"	11.00"	7.125"	3.25"	8	0.75"	3.25"
8"	13.50"	8.125"	3.50"	8	0.75"	3.50"
10"	16.00"	8.125"	4.00"	12	0.875"	3.75"
12"	19.00"	9.125"	4.50"	12	0.875"	4.50"
14"	21.00"	10.125"	4.625"	12	1.00"	4.25"
16"	23.50"	10.125"	5.125"	16	1.00"	4.25"
18"	25.00"	11.25"	5.75"	16	1.125"	5.00"
20"	27.50"	11.625"	6.125"	20	1.125"	5.25"
24"	32.00"	12.25"	6.875"	20	1.25"	5.75"

300 LB						
PIPE SIZE	A	B	C	MACHINE BOLTS		
				NO.	SIZE	LENGTH
3"	8.25"	6.375"	3.50"	8	0.75"	3.50"
3.5"	9.00"	6.50"	3.625"	8	0.75"	3.50"
4"	10.00"	6.875"	3.875"	8	0.75"	3.75"
5"	11.00"	7.875"	4.125"	8	0.75"	4.00"
6"	12.50"	7.875"	4.25"	12	0.75"	4.00"
8"	15.00"	8.875"	4.00"	12	0.875"	4.75"
10"	17.50"	9.375"	5.375"	16	1.00"	5.25"
12"	20.50"	10.375"	5.875"	16	1.125"	5.50"
14"	23.00"	11.375"	6.125"	20	1.125"	6.00"
16"	25.50"	11.625"	6.625"	20	1.25"	6.25"
18"	28.00"	12.75"	7.25"	24	1.25"	6.50"
20"	30.50"	13.00"	7.75"	24	1.25"	7.00"
24"	36.00"	13.5"	8.625"	24	1.50"	7.75"



Note: B & C dimensions do not include orifice plate thickness.

ORIFICE FLANGE UNION METER TUBES



Orifice Flange Union Meter Tubes

Special care is taken to assure that each meter tube is manufactured to meet or exceed the recommendations of The American Gas Association (AGA), American Society of Mechanical Engineers (ASME), API/ANSI MPMS chapter 14.3, and GPA (Gas Processors Association) 8185-90. Each meter tube is individually inspected at various production points to assure adherence to quality standards. Each weld is made by code certified welders and then ground and polished smooth. Pipe and tubing are carefully inspected before purchase to guarantee quality.

TYPICAL METER TUBE CONFIGURATION:

PIPE: Commercially A-106 GRADE B SMLS

FLANGES: 300# Raised Face Weldneck Orifice

OUTER ENDS: Beveled for welding

INSPECTION: Micrometer charts

HARDWARE: 1/16" non-asbestos or spiral
wound gaskets, B-7 studs, jackscrews, plugs

COUPLINGS: None (specified by customer)

ORIFICE PLATE: Sold Separately

OPTIONS:

PIPE: Stainless steel, monel, hastelloy, nickel & others

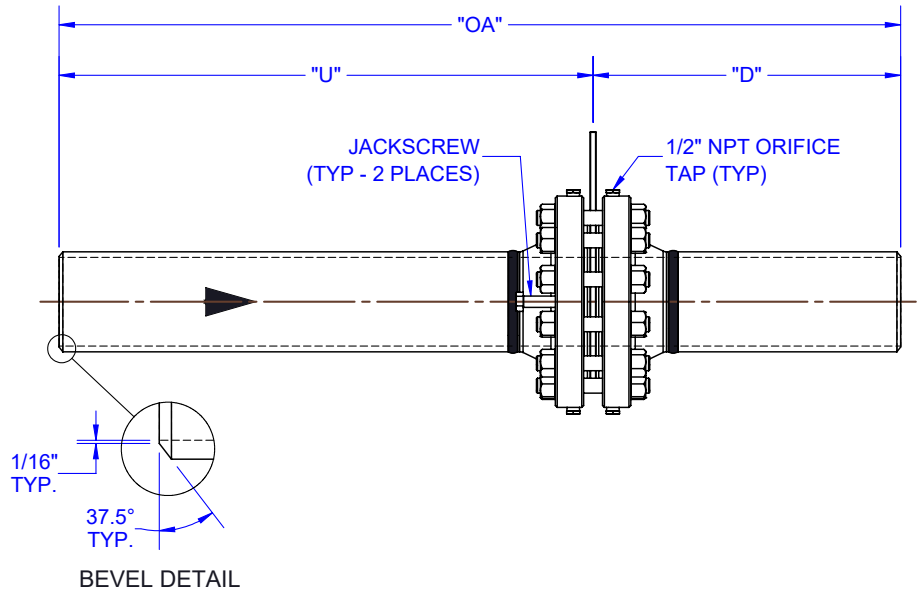
OUTER ENDS: Flanged, threaded, or socketweld

STRAIGHTENING VANES: Line and flanged type

INSPECTION: Hydrostatic and all other NDE testing



Orifice
Flange
Meter
Tube
Assembly



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

PIPE SIZE	TYPICAL APPLICATION			PIPE I.D.	
	"U"	"D"	"OA"	SCH. 40	SCH. 80
2"	5'-0"	3'-0"	8'-0"	2.067"	1.939"
3"	6'-0"	4'-0"	10'-0"	3.068"	2.900"
4"	8'-0"	4'-0"	12'-0"	4.026"	3.826"
6"	12'-0"	5'-0"	17'-0"	6.065"	5.761"
8"	15'-0"	5'-0"	20'-0"	7.981"	7.625"
10"	19'-0"	6'-0"	25'-0"	10.020"	9.564"
12"	21'-0"	7'-0"	28'-0"	11.938"	11.376"

Lengths above are Aitken standard lengths. Customer to advise length required to meet applicable code.

When ordering, please specify:

1. Line size
2. Flange rating and type
3. Pipe I.D.
4. Ends (Beveled, Flanged, Threaded, Other)
5. Inspection and testing requirements
6. Pipe length



FLOW NOZZLES



Flow Nozzles

SERVICE:

Recommended for steam and water service. Also suitable for other gases and liquids.

***ACCURACY:**

Uncalibrated accuracy of two percent. Calibrated accuracy of one quarter percent.

DESIGN:

Each flow nozzle is manufactured in strict accordance with recommendations set forth in the ASME Fluid Meters Handbook and ASME piping design codes. Each flow nozzle is computer designed for optimum accuracy and performance.

FABRICATION:

Welding is accomplished by code certified welders in conformance with ASME Boiler and Pressure Vessel Codes.

MATERIALS:

In order to assure a highly polished transition and throat section, it is recommended that stainless steel be used. Upon special request, nozzles can be made out of virtually any material.

ADVANTAGES:

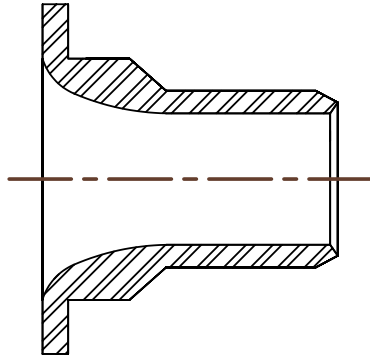
1. Flow capacity is 60% greater for flow nozzles than that of an orifice plate with same beta ratio.
2. Flow nozzles have a less damming effect on solids or foreign matter in the flow stream than an orifice plate.
3. Nozzles sustain accuracy and wear qualities over a longer period of time than the orifice plate.

*It is recommended that the buyer purchase the complete flow section from the same manufacturer to assure stated accuracy.



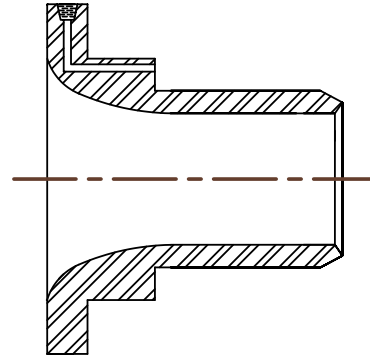
Flow Nozzles Types

Flanged Flow
Tapped Type Flanged Flow
Weld-In Flow
Holding Ring



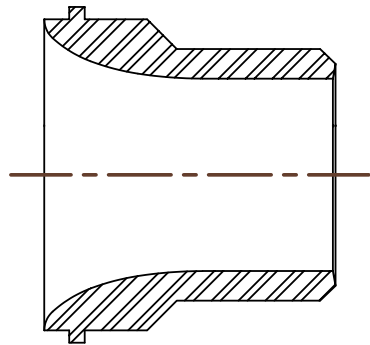
FLANGED FLOW NOZZLE

The most commonly used flow nozzle. It is designed to be inserted between pipe flanges. A specially machined shoulder on the back side of the nozzle assures the proper alignment of the nozzle with the pipe inside diameter. This style flow nozzle utilizes pipe wall taps.



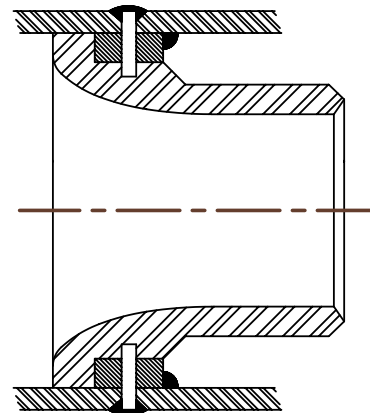
TAPPED TYPE FLANGED FLOW NOZZLE

Basically the same as the "flange" style. A downstream tap, usually a 1/2" connection, is provided in the flange of the nozzle. This style nozzle is recommended in smaller line sizes where the downstream tap usually interferes with the pipe weld or downstream holding flange.



WELD-IN FLOW NOZZLE

Designed to be installed permanently in a pipe section. This nozzle has a specially machined step on the outside diameter, that is used to align a beveled inlet and outlet bored pipe section. This type of nozzle is widely used where high temperature and pressure applications prohibit the use of pipe flanges such as in power plants and feed water installations. Pipe wall taps are utilized with this style nozzle.



HOLDING RING FLOW NOZZLE

Designed so that the welding of dissimilar materials is eliminated. The holding ring and locating pins are made of the same material as the pipe in which the nozzle is to be installed. This allows the nozzle to be offered in a wide range of materials. This style is not recommended for line sizes below 4 inches.



Order Entry Form

+ Attach appropriate completed Bore Calculation Data Sheet.

NOZZLE TYPE

☐ Flanged (Std) ☐ Flanged (Tap) ☐ Throat-Tap ☐ Weld-In ☐ Holding-Ring

FLOW NOZZLE PIPE SECTION

Manufacturing & Design Code: ☐ B31.3 ☐ B31.8
 ☐ ASME Section VIII, Div. I, "U" Stamp ☐ Other: _____

Design Temp.: _____ °F Design Pressure: _____ PSIG Corrosion Allowance: _____

Pressure Tap Connection: _____

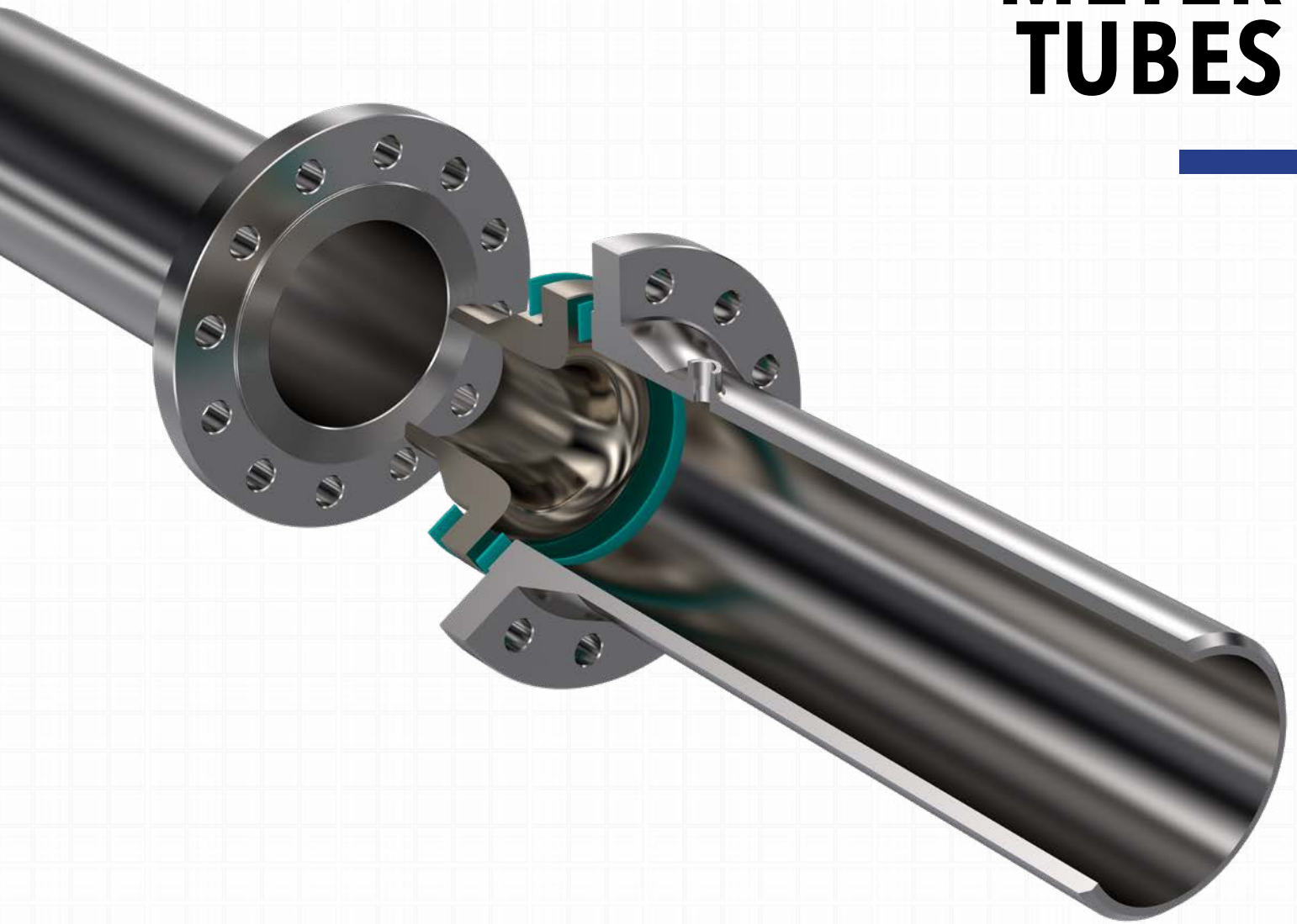
Outer End Prep: ☐ Beveled ☐ Other _____

Surface Prep: ☐ Sand Blast ☐ Shop Primer ☐ Other _____

MATERIAL SPECIFICATIONS

Nozzle: _____ Pipe: _____

FLOW NOZZLE METER TUBES



Flow Nozzles & Flow Nozzle Sections

SERVICE:

Recommended for steam and water service. Also suitable for other gases and liquids.

***ACCURACY:**

Uncalibrated accuracy of 2%. Calibrated accuracy of 1/4%.

DESIGN:

Each flow nozzle and flow nozzle section is manufactured in strict accordance with recommendations set forth in the ASME Fluid Meters Handbook, ASME MFC-3M-1989 and ASME piping design codes. Each flow nozzle and nozzle section is computer designed for optimum accuracy and performance.

FABRICATION:

Welding is accomplished by code certified welders in conformance with ASME Boiler and Pressure Vessel Codes.

MATERIALS:

In order to assure a highly polished transition and throat section, it is recommended that stainless steel be used. Upon special request, nozzles can be made out of virtually any material.

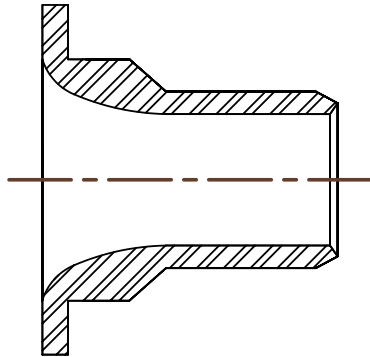
ADVANTAGES:

1. Flow capacity is 60% greater for flow nozzles, compared to an orifice plate with same beta ratio.
2. Flow nozzles have less damming effect of solids or foreign matter in the flow stream than the orifice plate.
3. Nozzles sustain accuracy and wear qualities over a longer period of time than the orifice plate.

*It is recommended that the buyer purchase the complete flow section from the same manufacturer to assure stated accuracy.

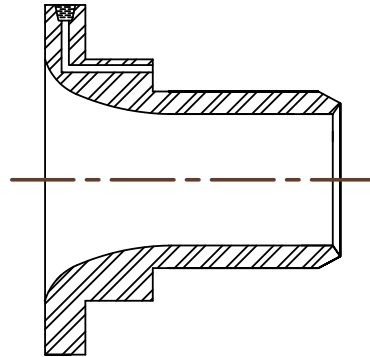
Flow Nozzle Types

Flanged Flow
Tapped Type Flanged Flow
Weld-In Flow
Holding Ring



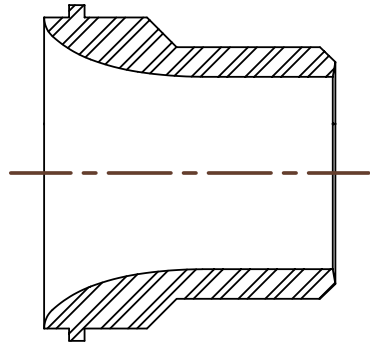
FLANGED FLOW NOZZLE

The most commonly used flow nozzle. It is designed to be inserted between pipe flanges. A specially machined shoulder on the back side of the nozzle assures the proper alignment of the nozzle with the pipe inside diameter. This style flow nozzle utilizes pipe wall taps.



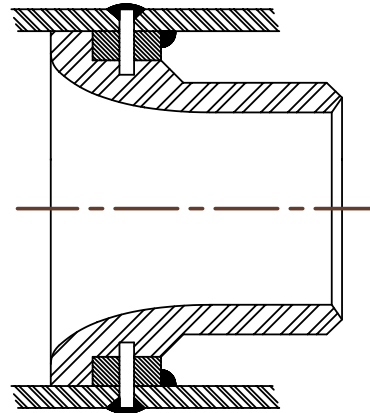
TAPPED TYPE FLANGED FLOW NOZZLE

Basically the same as the "flange" style. A downstream tap, usually a 1/2" connection, is provided in the flange of the nozzle. This style nozzle is recommended in smaller line sizes where the downstream tap usually interferes with the pipe weld or downstream holding flange.



WELD-IN FLOW NOZZLE

Designed to be installed permanently in a pipe section. This nozzle has a specially machined step on the outside diameter, that is used to align a beveled inlet and outlet bored pipe section. This type of nozzle is widely used where high temperature and pressure applications prohibit the use of pipe flanges such as in power plants and feed water installations. Pipe wall taps are utilized with this style nozzle.



HOLDING RING FLOW NOZZLE

Designed so that the welding of dissimilar materials is eliminated. The holding ring and locating pins are made of the same material as the pipe in which the nozzle is to be installed. This allows the nozzle to be offered in a wide range of materials. This style is not recommended for line sizes below 4 inches.

Flow Nozzle Meter Tubes

DIMENSIONAL DATA

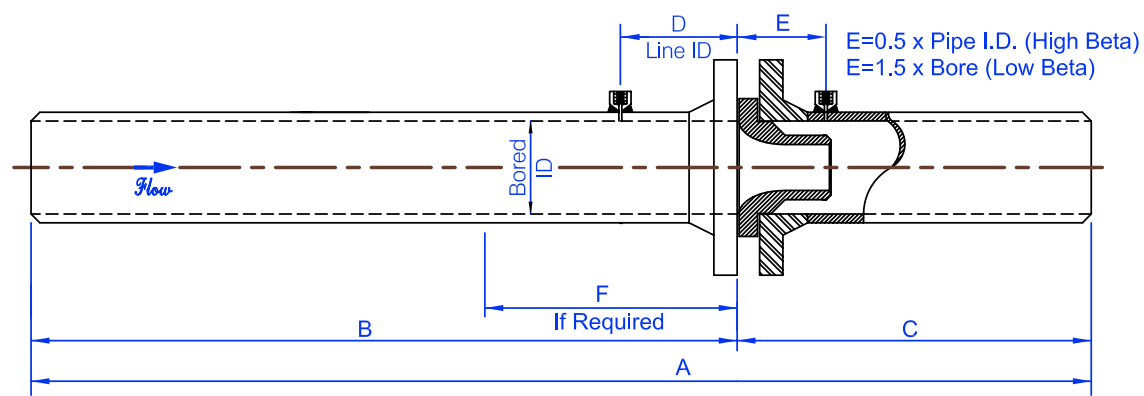
PIPE SIZE	PIPE	SCHEDULE	BORED ID	A	B	C	F	WT
4"	40	4.026"	4.065"	6'-8"	5'-0"	1'-8"	1'-4"	87
	80	3.826"	4.026"					112
	120	3.624"	3.697"					127
	160	3.438"	3.514"					148
5"	40	5.047"	5.089"	8'-4"	6'-3"	2'-1"	1'-8"	162
	80	4.813"	4.874"					188
	120	4.563"	4.626"					238
	160	4.313"	4.408"					285
6"	40	6.065"	6.111"	10'-0"	7'-6"	2'-6"	2'-0"	244
	80	5.761"	5.805"					330
	120	5.501"	5.577"					410
	160	5.187"	5.304"					500
8"	40	7.981"	8.033"	13'-4"	10'-0"	3'-4"	2'-8"	450
	80	7.625"	7.681"					618
	120	7.187"	7.299"					846
	160	6.813"	6.97"					1,025
10"	40	10.02"	10.081"	16'-8"	12'-6"	4'-2"	3'-4"	750
	80	9.562"	9.638"					1,108
	120	9.062"	9.201"					1,500
	160	8.5"	8.707"					1,929
12"	40	11.938"	12.004"	20'-0"	15'-0"	5'-0"	4'-0"	1,100
	80	11.374"	11.467"					1,879
	120	10.75"	10.919"					2,609
	160	10.126"	10.373"					3,308
14"	40	13.124"	13.197"	23'-4"	17'-6"	5'-10"	4'-8"	1,618
	80	12.5"	12.603"					2,580
	120	11.812"	12.003"					3,575
	160	11.188"	11.455"					4,450
16"	40	15"	15.25"	26'-8"	20'-0"	6'-8"	5'-4"	2,392
	80	14.312"	14.435"					3,789
	120	13.562"	13.778"					5,240
	160	12.812"	13.122"					6,610
18"	40	16.876"	17"	30'-0"	22'-6"	7'-6"	6'-0"	3,419
	80	16.124"	16.265"					5,399
	120	15.25"	15.499"					7,563
	160	14.438"	14.788"					9,495
20"	40	18.812"	19"	33'-4"	25'-0"	8'-4"	6'-8"	4,365
	80	17.938"	18.095"					7,203
	120	17"	17.274"					10,043
	160	16.062"	16.455"					12,782
24"	40	22.624"	22.876"	40'-0"	30'-0"	10'-0"	8'-0"	7,248
	80	21.562"	21.762"					12,206
	120	20.376"	20.723"					17,526
	160	19.312"	19.794"					21,950

General Notes

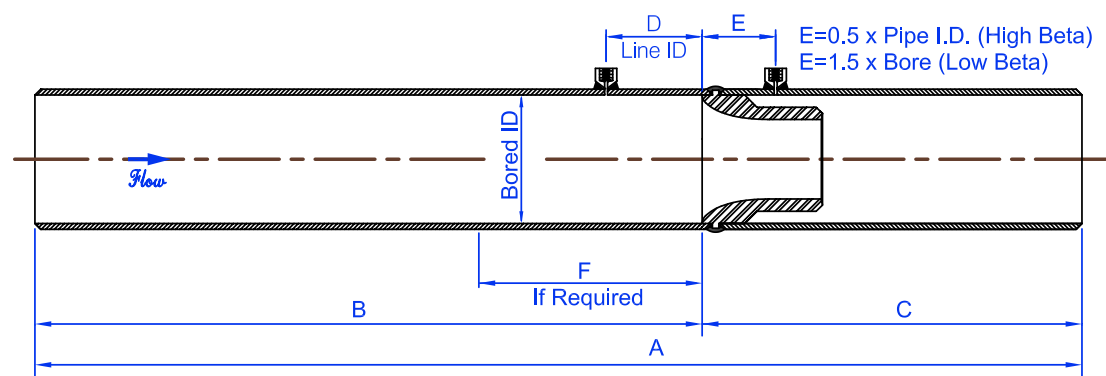
1. Dimensions shown are based on Figure A & 0.7 Beta Ratio from ASME Fluid Meters Handbook. 2. Boring of dimension "F" is required on holding ring type nozzle section.
3. Pipe boring (Dimension F) is required if pipe is out of round by more than 0.33% of average pipe ID or if pipe surface does not maintain a 300 Micro-Inch Finish.
4. Nozzle sections are manufactured in strict accordance with Fluid Meters Handbook and ASME Piping Design Codes.
5. Dimensions are approximate and subject to change.
6. Weights are based on weld-in style flow nozzles and beveled ends.



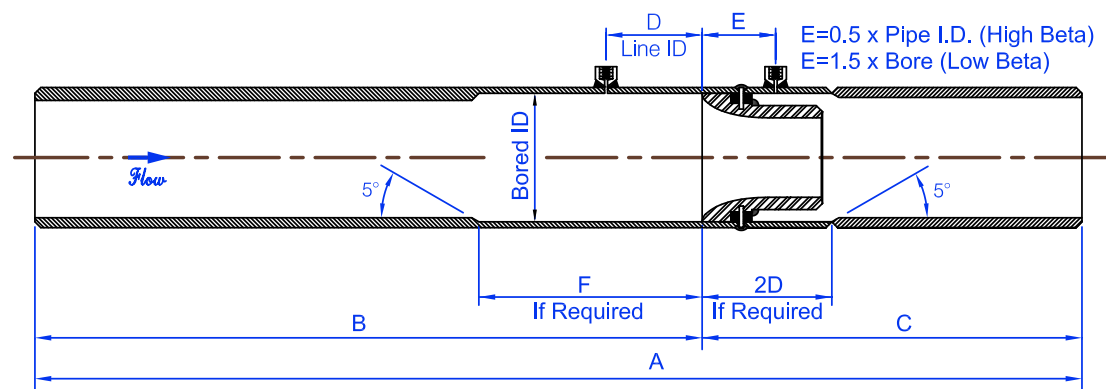
Flow Nozzle Sections



FLANGED FLOW NOZZLE



WELD-IN FLOW NOZZLE



HOLDING PIN FLOW NOZZLE

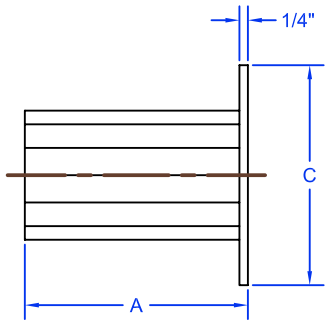
STRAIGHTENING VANES



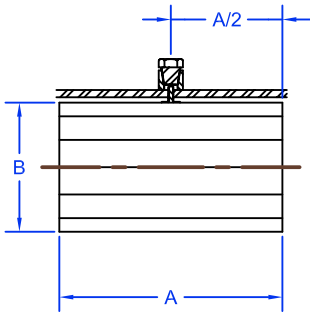
Straightening Vanes

Size and Type of
Vane Installation

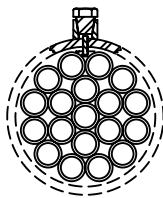
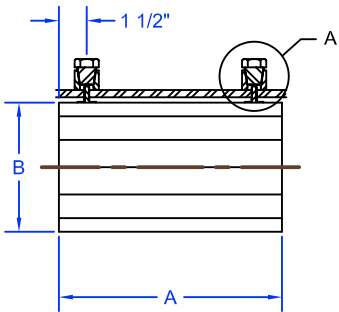
FLANGE MODEL
ALL SIZES



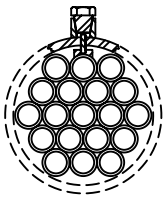
LINE MODEL
2" - 10"



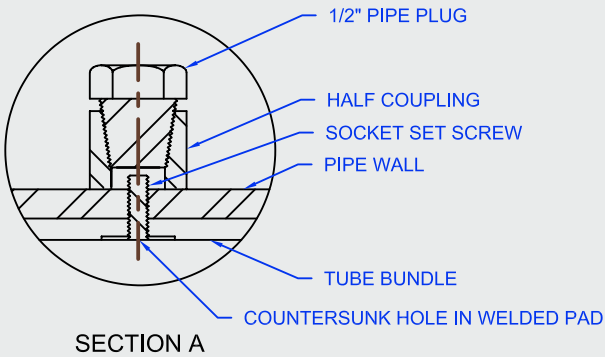
LINE MODEL
12" & UP



TYPE II
CONCENTRIC BUNDLE



TYPE III
SCALLOP BUNDLE



Note: Tube Dimensions shown are subject to change without notice.

Straightening Vanes

Carbon Steel

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA								LINE MODEL	WEIGHTS		
LINE SIZE	TYPE OF VANE	LINE ID	LENGTH OF VANE	OD OF VANE	OD OF TUBES*	TUBE WT	NO. OF TUBES	NO. & SIZE OF SCREWS	FLANGE MODEL	LINE MODEL	FLANGE OD
			A	B	D	E			LBS	LBS	C
2"	II	2.067"	6"	1 27/32"	3/8"	0.049	19	1-3/8" X 3/4"	3	2	3 5/8"
2"	II	1.939"	6"	1 27/32"	3/8"	0.049	19	1-3/8" X 3/4"	3	2	3 5/8"
3"	III	3.068"	8"	2 13/16"	9/16"	0.049	19	1-3/8" X 3/4"	4	3	5"
3"	II	2.900"	8"	2 3/4"	9/16"	0.049	19	1-3/8" X 3/4"	4	3	5"
4"	III	4.026"	10"	3 3/4"	3/4"	0.049	19	1-3/8" X 3/4"	8	7	6 3/16"
4"	II	3.826"	10"	3 21/32"	3/4"	0.049	19	1-3/8" X 1"	8	7	6 3/16"
5"	II	5.047"	12"	4 27/32"	1"	0.049	19	1-1/2" X 1"	11	9	7 5/16"
6"	III	6.065"	12"	5 5/8"	1 1/8"	0.049	19	1-1/2" X 1"	21	19	8 1/2"
6"	II	5.761"	12"	5 1/2"	1 1/8"	0.049	19	1-1/2" X 1"	21	19	8 1/2"
8"	II	7.625"	16"	7 5/16"	1 1/2"	0.065	19	1-1/2" X 1"	37	35	10 5/8"
8"	II	7.981"	16"	7 29/32"	1 5/8"	0.065	19	1-1/2" X 1"	37	35	10 5/8"
10"	II	10.136"	20"	9 3/4"	2"	0.065	19	1-1/2" X 1"	57	54	12 3/4"
10"	II	10.020"	20"	9 3/4"	2"	0.065	19	1-1/2" X 1"	57	54	12 3/4"
12"	III	12.090"	24"	11 7/8"	2 3/8"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	III	11.374"	24"	10"	2"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	II	11.938"	24"	11 9/16"	2 3/8"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
14"	III	13.250"	28"	12 1/2"	2 1/2"	0.120	19	2-1/2" X 1 1/4"	105	100	16 1/4"
14"	III	13.000"	28"	12 1/2"	2 1/2"	0.120	19	2-1/2" X 1 1/4"	105	100	16 1/4"
16"	III	15.250"	32"	15"	3"	0.188	19	2-1/2" X 1 1/4"	274	268	18 1/2"
16"	II	15.000"	32"	14 19/32"	3"	0.188	19	2-1/2" X 1 1/4"	274	268	18 1/2"
18"	II	17.25"	36"	17 1/16"	3 1/2"	0.188	19	2-1/2" X 1 1/4"	386	378	21"
20"	III	19.250"	40"	18 1/8"	3 5/8"	0.250	19	2-1/2" X 1 1/4"	477	468	23"
24"	III	23.250"	48"	22 1/2"	4 1/2"	0.250	19	2-1/2" X 1 1/2"	704	693	27 1/4"
26"	III	25.250"	52"	25"	5"	0.188	19	2-1/2" X 1 1/2"	814	796	29 1/2"
30"	III	29.250"	60"	27 1/2"	5 1/2"	0.188	19	2-1/2" X 1 1/2"	1,295	1,273	33 3/4"
34"	II	33.250"	68"	32 13/16"	6 3/4"	0.250	19	2-1/2" X 1 1/2"	1,880	1,860	38"
36"	III	35.250"	72"	33 3/4"	6 3/4"	0.250	19	2-1/2" X 1 1/2"	1,582	1,559	40 1/4"



*O.D. of tubes is subject to change based on material availability at time of order.
Note: Tube dimensions shown are subject to change without notice. WT=Approximate Weight

Straightening Vanes

304 Stainless Steel

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA								LINE MODEL	WEIGHTS		
LINE SIZE	TYPE OF VANE	LINE ID	LENGTH OF VANE	OD OF VANE	OD OF TUBES*	TUBE WT	NO. OF TUBES	NO. & SIZE OF SCREWS	FLANGE MODEL	LINE MODEL	FLANGE OD
			A	B	D	E			LBS	LBS	C
2"	II	2.067"	6"	1 27/32"	3/8"	0.049	19	1-3/8" X 3/4"	3	2	3 5/8"
2"	II	1.939"	6"	1 27/32"	3/8"	0.049	19	1-3/8" X 3/4"	3	2	3 5/8"
3"	III	3.068"	8"	2 13/16"	9/16"	0.049	19	1-3/8" X 3/4"	4	3	5"
3"	II	2.900"	8"	2 3/4"	9/16"	0.049	19	1-3/8" X 3/4"	4	3	5"
4"	III	4.026"	10"	3 3/4"	3/4"	0.049	19	1-3/8" X 3/4"	8	7	6 3/16"
4"	II	3.826"	10"	3 21/32"	3/4"	0.049	19	1-3/8" X 1"	8	7	6 3/16"
6"	III	6.065"	12"	5 5/8"	1 1/8"	0.049	19	1-1/2" X 1"	21	19	8 1/2"
6"	II	5.761"	12"	5 1/2"	1 1/8"	0.049	19	1-1/2" X 1"	21	19	8 1/2"
8"	II	7.625"	16"	7 5/16"	1 1/2"	0.065	19	1-1/2" X 1"	37	35	10 5/8"
8"	II	7.981"	16"	7 29/32"	1 5/8"	0.065	19	1-1/2" X 1"	37	35	10 5/8"
10"	II	10.136"	20"	9 3/4"	2"	0.065	19	1-1/2" X 1"	57	54	12 3/4"
10"	II	10.020"	20"	9 3/4"	2"	0.065	19	1-1/2" X 1"	57	54	12 3/4"
12"	III	12.090"	24"	11 1/4"	2 1/4"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	II	11.374"	24"	10 31/32"	2 1/4"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	III	11.938"	24"	11 1/4"	2 1/4"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	II	11.938"	24"	11 9/16"	2 3/8"	0.083	19	2-1/2" X 1 1/4"	81	77	15"



*O.D. of tubes is subject to change based on material availability at time of order.
Note: Tube dimensions shown are subject to change without notice. WT=Approximate Weight

Straightening Vanes

316 Stainless Steel

DIMENSIONAL DATA								LINE MODEL	WEIGHTS		
LINE SIZE	TYPE OF VANE	LINE ID	LENGTH OF VANE	OD OF VANE	OD OF TUBES*	TUBE WT	NO. OF TUBES	NO. AND SIZE OF SCREWS	FLANGE MODEL	LINE MODEL	FLANGE OD
			A	B	D	E			LBS	LBS	C
2"	II	2.067"	6"	1 27/32"	3/8"	0.049	19	1-3/8" X 3/4"	3	2	3 5/8"
2"	II	1.939"	6"	1 27/32"	3/8"	0.049	19	1-3/8" X 3/4"	3	2	3 5/8"
3"	III	3.068"	8"	2 13/16"	9/16"	0.065	19	1-3/8" X 3/4"	4	3	5"
3"	II	2.900"	8"	2 3/4"	9/16"	0.065	19	1-3/8" X 3/4"	4	3	5"
4"	III	4.026"	10"	3 3/4"	3/4"	0.049	19	1-3/8" X 3/4"	8	7	6 3/16"
4"	II	3.826"	10"	3 21/32"	3/4"	0.049	19	1-3/8" X 1"	8	7	6 3/16"
6"	III	6.065"	12"	5"	1"	0.049	19	1-1/2" X 1"	21	19	8 1/2"
6"	III	5.761"	12"	5"	1"	0.049	19	1-1/2" X 1"	21	19	8 1/2"
8"	II	7.625"	16"	7 5/16"	1 1/2"	0.065	19	1-1/2" X 1"	37	35	10 5/8"
8"	II	7.981"	16"	7 29/32"	1 5/8"	0.065	19	1-1/2" X 1"	37	35	10 5/8"
10"	II	10.136"	20"	9 3/4"	2"	0.065	19	1-1/2" X 1"	57	54	12 3/4"
10"	II	10.020"	20"	9 3/4"	2"	0.065	19	1-1/2" X 1"	57	54	12 3/4"
12"	III	12.090"	24"	10"	2"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	III	11.374"	24"	10"	2"	0.083	19	2-1/2" X 1 1/4"	81	77	15"
12"	III	11.938"	24"	10"	2"	0.083	19	2-1/2" X 1 1/4"	81	77	15"



*O.D. of tubes is subject to change based on material availability at time of order.
Note: Tube dimensions shown are subject to change without notice. WT=Approximate Weight

CLASSICAL VENTURIS



Classical Venturis

DESIGN:

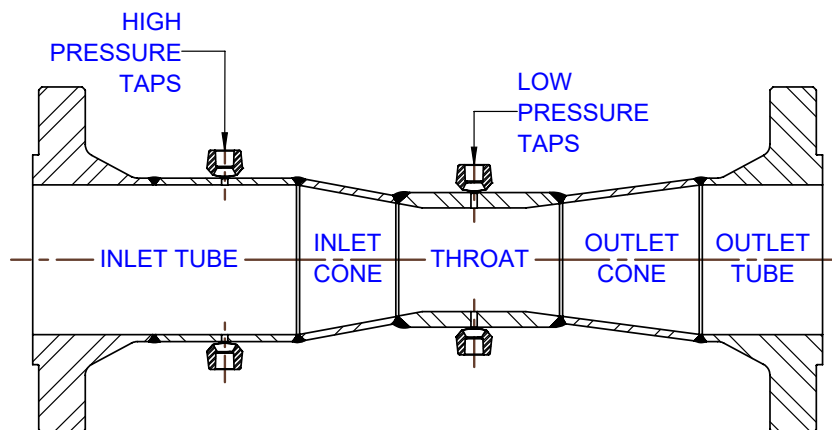
The Classical Style Venturi Tube consists of (1) a straight inlet section of the same diameter as the pipe and in which the high pressure tap is located; (2) a converging conical inlet section in which the cross section of the stream decreases and the velocity increases with a consequent increase of velocity head and decrease of pressure head; (3) a cylindrical throat which provides for the low pressure tap location of this decreased pressure in an area where flow velocity is neither increasing nor decreasing; and (4) a divergent recovery cone in which velocity decreases and the decreased velocity head is recovered as a pressure head.

ACCURACY:

The classical venturi is designed to have an uncalibrated inaccuracy of $\pm 1 - 2\%$ of actual flow. Accuracy of $\pm 0.25\%$ can be obtained when the venturi is calibrated at a recognized hydraulics laboratory.

ASME TYPICAL SPECIFICATIONS:

- The Primary Element shall produce a differential, which is proportional to the square of the flow rate through the device, utilizing static pressure sensed at the inlet tap and the throat tap.
- Shall be fabricated in accordance with the appropriate ASME Piping Code, ASME MFC-3M-2019 and ASME Fluid Meters, 6TH Edition. The inlet section shall consist of a straight pipe of like diameter to the preceding line pipe, and an entrance cone with an ASME specified 21-degree angle of convergence. The throat shall be a straight cylindrical section of at least 0.5 times the throat diameter. The outlet section shall be an exit cone with ASME specified 15-degree angle of divergence for Short Form applications and 7-degree angle for Long Form applications.
- Shall be furnished with four pressure sensing taps: two in the straight inlet pipe section (upstream tap) and two in the throat section (downstream tap). There shall be no annular chambers or slots within the primary element.
- Shall have a discharge coefficient that is constant over the normal range of flow, independent of Beta Ratio or line size.
- Shall have an uncalibrated accuracy of $\pm 1-1/2\%$ of actual flow for the range specified for fabricated venturis and 1% for machined venturis.



Venturi Tubes

Classical & Modified

MODEL NUMBER FOR CLASSICAL & MODIFIED VENTURI TUBES

Typical Number: 10 - CVT - RF 30 - F 1

Line Size	01" to 96"	←
	CVT (Classical Venturi Tube)	←
RF	Raised Face Flange Both Ends	
RJ	Ring Type Joint Flange Both Ends	
W	Beveled For Welding Both Ends	
*PSRF	Pipe, Shell, RF Flanged Both Ends	←
*PSRJ	Pipe, Shell, RJ Flanged Both Ends	
*PSW	Pipe, Shell, Beveled Both Ends for Welding	
O	Other (Special)	

OO	Unrated	
15	150 ANSI Rated	
30	300 ANSI Rated	
60	600 ANSI Rated	←
90	900 ANSI Rated	
150	1500 ANSI Rated	
250	2500 ANSI Rated	

**M	Machined Convergent	
F	Fabricated Convergent	←
***Z	Machined Venturi	

1	Carbon Steel Body / 304SS Throat	
2	Carbon Steel Body / 316SS Throat	
3	304SS Body / 304SS Throat	
4	316SS Body / 316SS Throat	
5	Fiberglass Reinforced Plastic (Standard)	←
6	Fiberglass Reinforced Plastic (High Temperature)	
7	Fiberglass Reinforced Plastic / 304SS Throat	
8	Others (Special)	

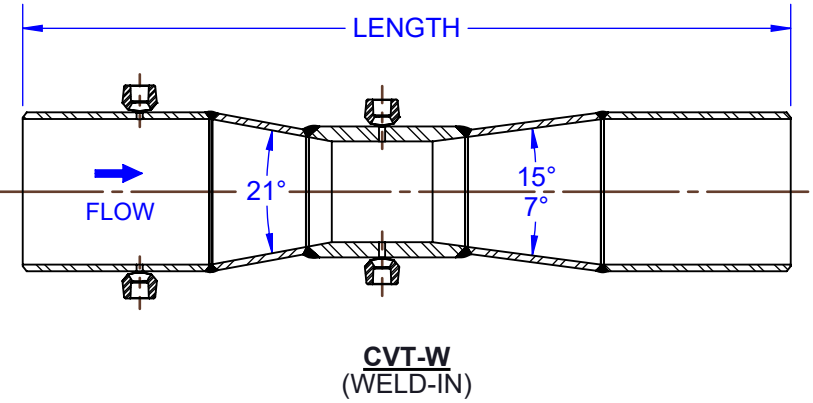
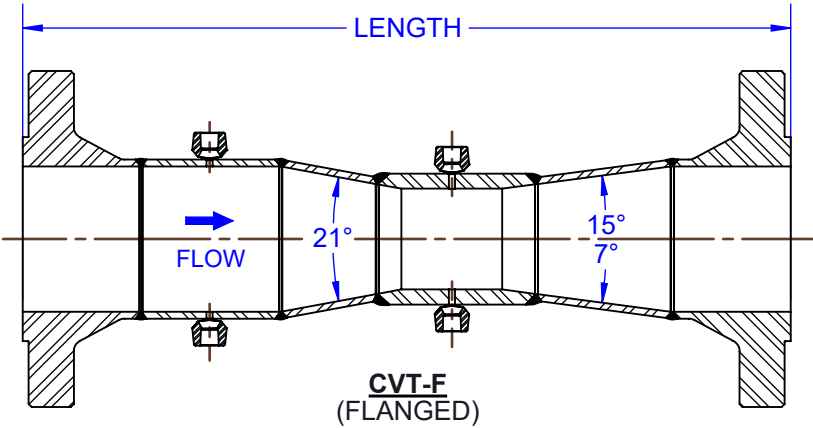
*Available in line sizes 8" and larger (for high pressure, high temperature service).

**Available in line sizes 2 1/2" through 6".

***Standard for 2" and below.



Types of Venturis



- 1. Lengths are based on slip-on flanges.
- 2. Lengths and weights are based on Std. Wt. pipe.
- 3. This data is for estimating only and subject to change without notice.

Straightening Vanes

Carbon Steel

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA

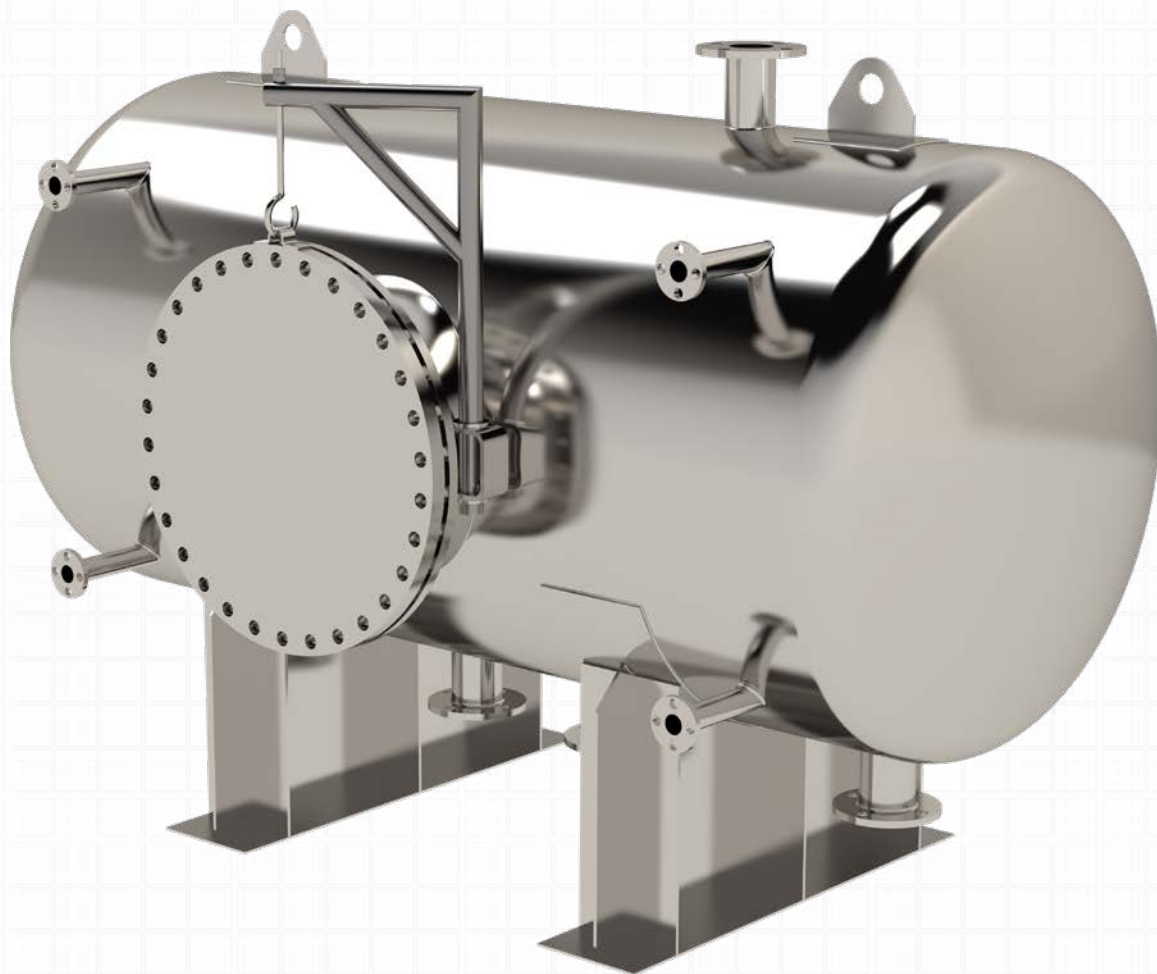
LINE SIZE	BETA RATIO	LENGTH (IN)		WT (LBS)		
		CVT-F	CVT-W	CVT-W	CVT-F15	CVT-F30
4"	0.35	24"	24"	22	48	65
4"	0.55	20"	20"	20	45	62
4"	0.7	16"	16"	16	30	35
6"	0.35	34"	37"	55	113	133
6"	0.55	27"	30"	52	110	130
6"	0.7	22"	25"	50	108	128
8"	0.35	45"	48"	100	160	216
8"	0.55	36"	40"	85	145	201
8"	0.7	29"	33"	78	138	194
10"	0.35	56"	60"	160	246	322
10"	0.55	45"	50"	135	221	297
10"	0.7	37"	42"	115	201	277
12"	0.35	67"	73"	278	406	508
12"	0.55	54"	60"	226	354	456
12"	0.7	44"	50"	185	313	415
14"	0.35	74"	80"	346	516	674
14"	0.55	60"	66"	295	465	623
14"	0.7	49"	55"	250	420	528
16"	0.35	86"	92"	438	624	878
16"	0.55	70"	76"	394	580	834
16"	0.7	57"	63"	358	544	798

DIMENSIONAL DATA continued

LINE SIZE	BETA RATIO	LENGTH (IN)		WT (LBS)		
		CVT-F	CVT-W	CVT-W	CVT-F15	CVT-F30
18"	0.35	98"	106"	565	805	1,125
18"	0.55	78"	86"	445	685	1,005
18"	0.7	64"	72"	390	630	905
20"	0.35	108"	118"	734	1,044	1,384
20"	0.55	86"	96"	630	940	1,280
20"	0.7	72"	82"	536	846	1,186
24"	0.35	130"	142"	958	1,378	1,938
24"	0.55	104"	116"	820	1,240	1,800
24"	0.7	86"	98"	706	1,126	1,686
30"	0.35	164"	180"	1,660	O.A.	O.A.
30"	0.55	132"	147"	1,415	O.A.	O.A.
30"	0.7	107"	122"	1,245	O.A.	O.A.
36"	0.35	197"	215"	2,418	O.A.	O.A.
36"	0.55	158"	176"	2,080	O.A.	O.A.
36"	0.7	130"	148"	1,810	O.A.	O.A.
42"	0.35	222"	240"	3,318	O.A.	O.A.
42"	0.55	186"	204"	2,820	O.A.	O.A.
42"	0.7	150"	168"	2,341	O.A.	O.A.
48"	0.35	264"	288"	4,510	O.A.	O.A.
48"	0.55	212"	236"	4,510	O.A.	O.A.
48"	0.7	174"	198"	3,108	O.A.	O.A.



PRESSURE VESSELS



Pressure Vessels

Aitken is a manufacturer of pressure vessels for various process industries in both the domestic and international markets. These industries include, but are not limited to, areas such as chemical and petrochemical plants, refineries, power plants, gas transmission facilities, paper and pulp plants, water treatment and offshore and on shore oil and gas production facilities.

Aitken is authorized by the American Society of Mechanical Engineers (ASME) to use the ASME Section VIII, Division 1 "U"-stamp symbol. Other fabrication codes include ASME B31.1, ASME B31.3, ASME B31.4, ASME B31.8 and NACE MR-01-75.

Standard materials of construction include pressure vessel quality carbon steel, 304 and 316 stainless steel, low-temperature carbon steel and chrome-moly. High alloy materials such as monel and nickel are reviewed on an individual basis.

Aitkens' engineering staff are experienced in estimating, engineering and mechanical design using the latest design software. A full range of on-site printing, plotting, scanning and copying abilities allows Aitken to meet the customer's full documentation requirements.

Aitken operates under an established, documented and controlled quality control system. Aitkens' experienced quality control personnel provide monitoring of all phases of the fabrication process to ensure that all products meet the high quality standards established by Aitkens' management team.

Aitken has built a reputation as a reliable pressure vessel supplier by providing high quality, on-time and responsive service, technical and engineering assistance, experienced staff, skilled craftsmen and timely delivery.



LAUNCHERS & RECEIVERS



Launcher Receiver

Standard Specifications

DESIGN CRITERIA:

Design Codes
ASME B31.4 (Standard)
ASME Section VIII, Division 1
ASME B31.8
ASME B31.3

DESIGN PRESSURE:

Specified by customer

DESIGN TEMPERATURE:

Specified by customer

NON-DESTRUCTIVE TESTING:

Specified by customer

WELDING CODES:

ASME Section XI or API 1104

HYDROSTATIC TESTING:

Specified by customer

CONSTRUCTION SPECIFICATIONS

Closure:

1. Threaded Closure
2. Yoke Type Closure
3. Blind Flange

BODY MATERIALS:

1. Carbon Steel
2. Stainless Steel
3. High Yield (X42, X52, X60, etc.)

STANDARD OUTLET:

1. Bypass / Kicker
2. Drain
3. Vent
4. Pressure gages

SUPPORTS:

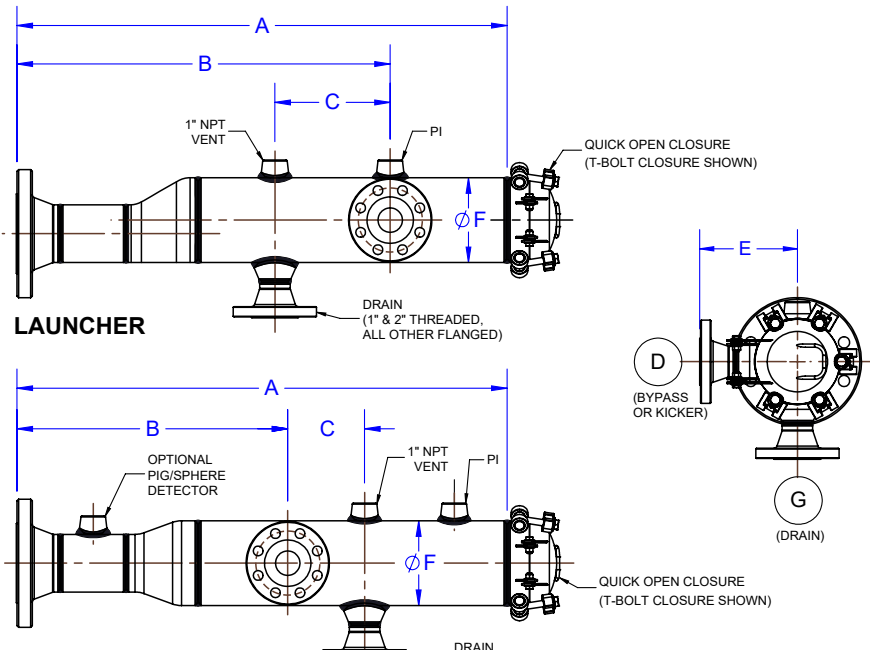
Specified by customer

EXTERNAL COATING:

1. SP-3 cleaning and shop primer (Standard)
2. Customer specifications



Launcher Receiver



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

LINE SIZE	LAUNCHER			COMMON				RECEIVER			WT (LBS)		
	A	B	C	D	E	F	G	A	B	C	150#	300#	600#
4"	52"	40"	15"	2"	11"	6.625"	1"	62"	29"	7"	125	130	150
6"	56"	42"	16"	3"	12"	8.625"	2"	66"	31"	8"	195	225	250
8"	58"	44"	18"	4"	13"	10.75"	2"	74"	34"	9"	300	330	400
10"	64"	47"	18"	4"	14"	12.75"	2"	82"	36"	10"	370	420	490
12"	68"	49"	18"	6"	16"	16"	4"	90"	38"	11"	795	850	950
14"	76"	54"	18"	6"	16"	16"	4"	112"	45"	12"	880	950	1060
16"	90"	64"	20"	8"	17"	18"	4"	114"	50"	14"	1075	1160	1325
18"	96"	66"	20"	10"	20"	20"	6"	120"	55"	16"	1270	1415	1600
20"	98"	66"	22"	10"	21"	24"	6"	124"	58"	18"	1655	1860	2175
24"	104"	70"	26"	10"	23"	26"	6"	130"	60"	18"	2225	2500	2825
26"	108"	72"	26"	10"	24"	28"	6"	138"	64"	18"	2420	2765	3330
28"	110"	74"	28"	12"	26"	30"	6"	148"	68"	20"	2825	3285	3925
30"	114"	76"	28"	12"	28"	36"	8"	160"	74"	22"	3550	4035	4655
36"	122"	82"	32"	14"	32"	40"	8"	172"	80"	24"	4215	4765	5515

Standard dimensions. Custom design available. Barrel length can be made to accommodate "smart" pig.

Design Code

ASME B31.4 (Standard)
 ASME Section VIII, Div. 1
 ASME B31.8
 ASME B31.3

External Coating

Shop primer
 Standard
 Customer specifications





SAMPLE COOLERS

Sample Cooler

High Pressure
Type 100 HSC

SHELL:
125 PSIG @ 100°F (standard)

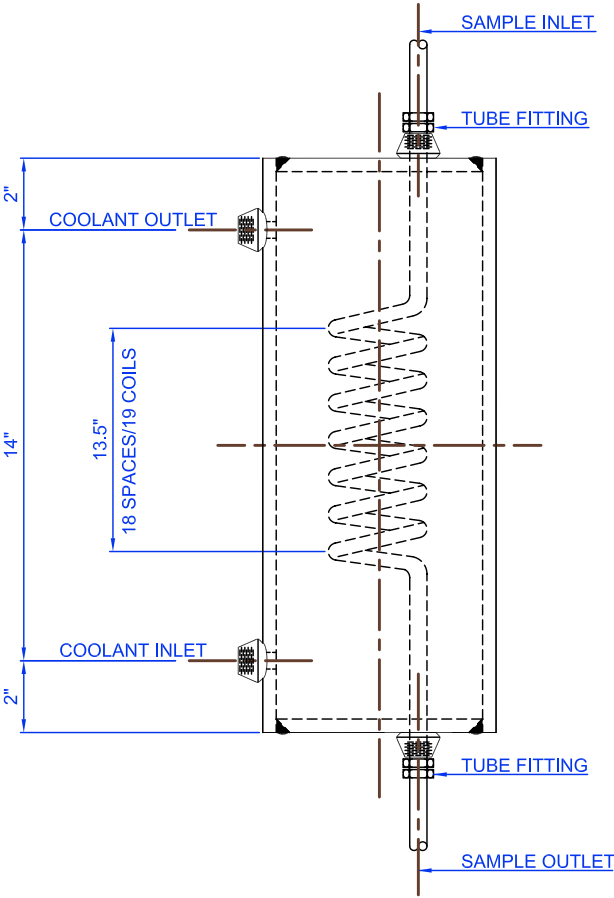
COIL:
2000 PSIG @ 100°F (standard)

DESIGN CODE:
ASME Section VIII, Div. 1
ASME B31.3 (standard)
NACE MR0175

MATERIALS:
Carbon steel body & 304 stainless steel coil (standard)
Other materials available

MOUNTING OPTIONS:
Legs
Supports
Brackets

COATING:
SSPC SP- 3, shop primer (standard)
Special coatings available



TYPE	HOUSING	COIL	COIL APPROX. SURFACE AREA	VOLUME	WT (LBS)
A	4.5"	0.375"	1.5 SQFT	1 GAL	20 LBS
B	8.625"	0.375"	1.5 SQFT	2 GAL	33 LBS



Sample Cooler

High Pressure
Type 200 HSC

Bolted Cover -
Removable Coil

SHELL:
125 PSIG @ 100°F (standard)

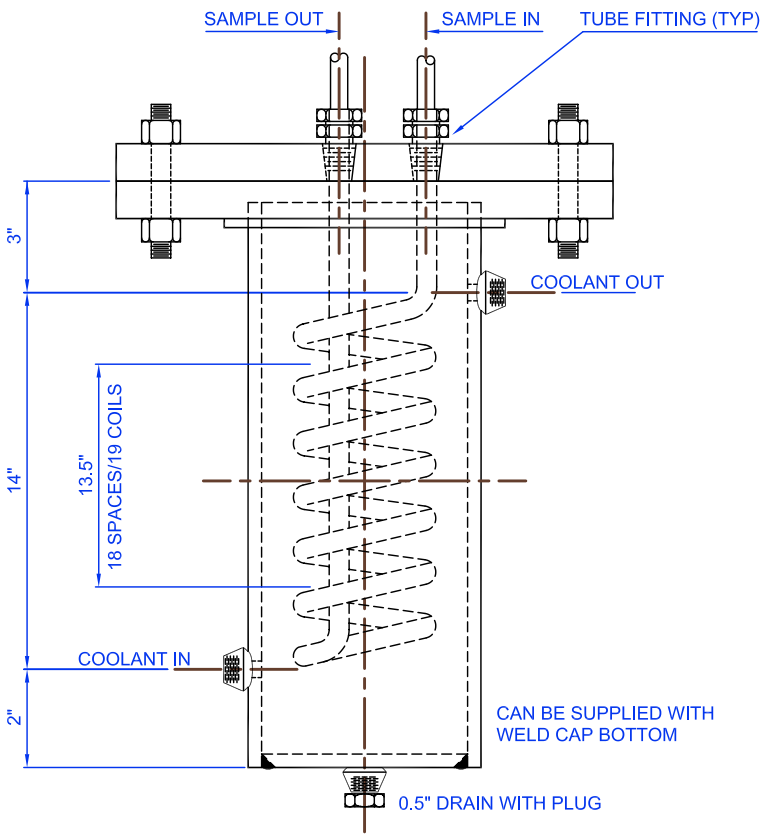
COIL:
2000 PSIG @ 100°F (standard)

DESIGN CODE:
ASME Section VIII, Div. 1
ASME B31.3 (standard)
NACE MR0175

MATERIALS:
Carbon steel body & 304 stainless steel coil (standard)
Other materials available

MOUNTING OPTIONS:
Legs
Supports
Brackets

COATING:
SSPC SP- 3, shop primer (standard)
Special coatings available



TYPE	HOUSING	COIL	COIL APPROX. SURFACE AREA	VOLUME	WT (LBS)
A	6.625"	0.375"	2.5 SQFT	1 GAL	80 LBS
B	8.625"	0.5"	3.5 SQFT	2 GAL	125 LBS
C	10.75"	0.5"	5 SQFT	3 GAL	186 LBS



Sample Cooler

Low Pressure
Type 100 SC

Open Top

Coolant Atmospheric Pressure

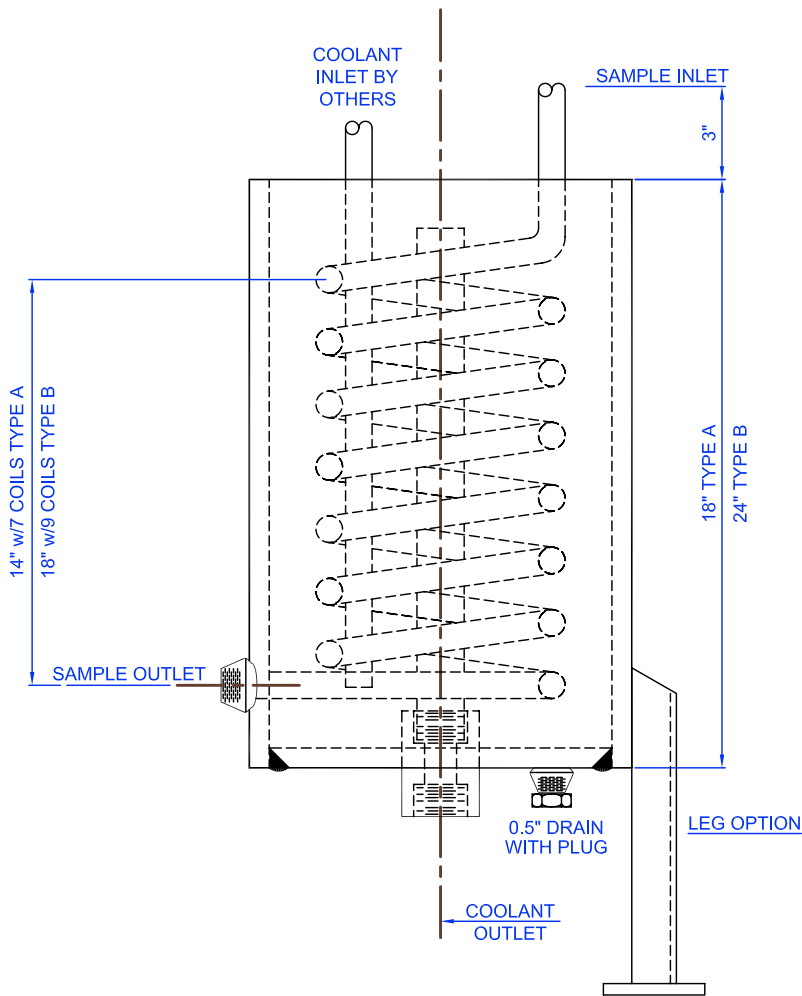
DESIGN CODE:
ASME B31.3 (standard)
NACE MR0175

MATERIALS:
Carbon steel body & 304 stainless steel coil (standard)
Other materials available

MOUNTING OPTIONS:

Legs
Supports
Brackets

COATING:
SSPC SP- 3, shop primer (standard)
Special coatings available



TYPE	HOUSING	COIL	COIL APPROX. SURFACE AREA	VOLUME	WT (LBS)
A	12.75"	0.5" S/40	4 SQFT	9 GAL	80 LBS
B	20"	0.75" S/40	8 SQFT	30 GAL	165 LBS



REFERENCE INFO

Standard English Conversion Tables

LENGTH

CONVERT FROM	CONVERT TO	MULTIPLY BY
Inches	Feet	0.083
Inches	Yards	0.028
Feet	Inches	12
Feet	Yards	0.333
Feet	Miles	0.000
Yards	Feet	3
Yards	Miles	0.001

AREA

CONVERT FROM	CONVERT TO	MULTIPLY BY
Sq inches	Sq feet	0.007
Sq inches	Sq yards	0.001
Sq feet	Sq inches	144
Sq feet	Sq yards	0.111
Sq yards	Sq inches	1,296
Sq yards	Sq feet	9
Sq yards	Acres	0.000
Acres	Sq feet	43,560

VOLUME

CONVERT FROM	CONVERT TO	MULTIPLY BY
Cu inches	Cu feet	0.001
Cu inches	Cu yards	0.000
Cu inches	US gal	0.004
Cu feet	Cu inches	1,728
Cu feet	Cu yards	0.037
Cu feet	US gal	7.481
Cu yards	Cu inches	46,656
Cu yards	Cu feet	27

WEIGHT

CONVERT FROM	CONVERT TO	MULTIPLY BY
Grains	Ounces	0.002
Ounces	Grains	437.5
Ounces	Pounds	0.063
Pounds	Ounces	16
Pounds	US tons	0.001
Pounds	Long tons	0.000
US tons	Pounds	2,000
Long tons	Pounds	2,240

SHEET INFORMATION

GAUGE	THICKNESS (IN)	WT/SQFT (LBS)
10	0.135	5.625
11	0.120	5
12	0.105	4.375
14	0.075	3
16	0.060	2.5
18	0.048	2
20	0.036	2
22	0.030	1
24	0.024	1

STEEL PLATE WEIGHT

THICKNESS (IN)	WT/SQFT (LBS)
3/16	7.66
1/4	10.21
5/16	12.76
3/8	15.32
1/2	20.42
5/8	25.53
3/4	30.63
7/8	35.74
1	40.84

DRILL SIZE FOR PIPE TAPS

NOMINAL PIPE SZ (IN)	TAP DRILL SZ (IN)	DECIMAL EQUIVALENT	NO OF THREADS PER IN	THREAD ENGAGEMENT
1/8	11/32	0.344	27	1/4
1/4	7/16	0.438	18	3/8
3/8	37/64	0.578	18	3/8
1/2	23/32	0.719	14	1/2
3/4	59/64	0.922	14	9/16
1	1 5/32	1.156	11.5	11/16
1 1/4	1 1/2	1.5	11.5	11/16
1 1/2	1 47/64	1.734	11.5	11/16



Standard English Conversion Tables

CONVERSION OF LIQUID MEASURES AND WEIGHTS

TO CONVERT → CONVERT FROM ↓	US GALLON	IMPERIAL GALLON	US PINT	US LB *H ₂ O	US CUBIC FT	US CUBIC IN	LITER	CUBIC METER
U.S. gallon	1	0.833	8	8.337	0.134	231	3.785	0.004
Imperial gallon	1.201	1	9.608	10	0.161	277.42	4.546	0.005
U.S. pint	0.125	0.104	1	1.042	0.017	28.875	0.473	0.000
U.S. pound *H ₂ O	0.120	0.1	0.960	1	0.016	27.708	0.454	0.000
U.S. cubic foot	7.481	6.229	59.844	62.365	1	1728	28.317	0.028
U.S. cubic inch	0.004	0.004	0.035	0.036	0.001	1	0.016	0.000
Liter	0.264	0.220	2.113	2.202	0.035	61.025	1	0.001
Cubic meter	264.17	219.969	2113.34	2202	35.314	61023.38	999.972	1

Water (H₂O) @ 60°F (15.6°C) / 1 Barrel = 42 Gallons (Petroleum measure)

CONVERSIONS OF PRESSURE AND HEAD

TO CONVERT → CONVERT FROM ↓	LB/IN ²	LB/FT ²	KG/CM ²	KG/M ²	IN *H ₂ O	FT *H ₂ O	IN **MERCURY	MM **MERCURY	†BAR	†MPA
Lb/In ²	1	144	0.070	703.07	27.728	2.311	2.306	51.715	0.069	0.007
Lb/Ft ²	0.007	1	0.000	4.882	0.193	0.016	0.014	0.359	0.000	0.000
kg/cm ²	14.223	2048.155	1	10000	394.38	32.865	28.959	735.559	0.981	0.098
kg/m ²	0.001	0.205	0.000	1	0.039	0.003	0.003	0.074	0.000	0.000
In. *H ₂ O	0.036	5.197	0.003	25.375	1	0.083	0.073	1.865	0.002	0.000
Ft. *H ₂ O	0.433	62.321	0.030	304.275	12	1	0.881	22.381	0.030	0.003
In. **Mercury	0.491	70.726	0.035	345.316	13.619	1.135	1	25.400	0.034	0.003
Mm **Mercury	0.019	2.785	0.001	13.595	0.536	0.045	0.039	1	0.001	0.000
†Bar	14.504	2088.55	1.020	10197.2	402.156	33.513	29.53	750.062	1	0.1
†Mpa	145.038	20885.5	10.197	101972	4021.56	335.13	295.3	7500.62	10	1

Water (H₂O) @ 68°F (20°C) / **Mercury @ 32°F (0°C) / †Mpa (megapascal) = 10 Bar

CONVERSION OF FLOW RATES

TO CONVERT → CONVERT FROM ↓	US GAL/MIN	IMP GAL/MIN	US MILLION GAL/DAY	CU FT/SEC (SEC-FT)	CU METERS / HOUR	LITERS / SEC	BARRELS (42 GAL/MIN)	BARRELS (42 GAL/DAY)
U.S. gal/min	1	0.833	0.001	0.002	0.227	0.063	0.024	34.286
Imp gal/min	1.201	1	0.002	0.003	0.273	0.076	0.029	41.176
US Million gal/day	694.4	578.25	1	1.547	157.7	43.8	16.53	23810
Cu ft/sec	448.83	373.7	0.646	1	101.9	28.32	10.686	15388
Cu m/sec	15852	13200	22.83	3535	3600	1000	377.4	-
Cu m/min	264.2	220	0.380	0.589	60	16.667	6.29	9058
Cu m/hr	4.403	3.67	0.006	0.009	1	0.278	0.105	151
Liters/sec	15.85	13.2	0.023	0.035	3.6	1	0.377	543.3
Liters/min	0.264	0.22	0.000	0.001	0.06	0.017	0.006	9.058
Barrels (42 gal)/min	42	34.97	0.061	0.094	9.538	2.65	1	1440
Barrels (42 gal)/day	0.029	0.024	0.000	0.000	0.007	0.002	0.001	1

To use above conversion charts, locate the unit to be converted in the left hand column. Then follow the conversion factors across the row for the desired conversion unit. Use this factor to multiply with your numerical value to convert. Example: Convert 5 psi to inches of water. From the Conversion of Pressure and Head Chart, 5 (psi) x 27.7276 (Conversion factor) = 138.638 inches of water.



SI Units and Conversion Tables

LENGTH

CONVERT FROM	CONVERT TO	SI SYMBOL	MULTIPLY BY
Feet	Meter	m	0.30
Inch	Millimeter	mm	25.4
Microinches	Micrometer	μm	0.025
Statute miles	Kilometer	km	1.609

VOLUME

CONVERT FROM	CONVERT TO	SI SYMBOL	MULTIPLY BY
Cu inches	Cu millimeter	mm ³	16387
Cu inches	Cu centimeter	cm ³	16.387
Cu inches	Cu meter	m ³	0.000
Cu feet	Cu meter	m ³	0.028
Fluid ounce	Milliliter	mL	29.57
Quarts (US)	Liter	L	0.946
Gallons (US)	Liter	L	3.785

PRESSURE

CONVERT FROM	CONVERT TO	SI SYMBOL	MULTIPLY BY
lbs/in ²	Pascal	Pa	6,895
lbs/in ²	Kilopascal	kPa	6.895
lbs/in ²	Megapascal	MPa	0.007
lbs/in ²	Bar	Bar	0.069
Bar	Kilopascal	kPa	100
Millibar	Pascal	Pa	100

AREA

CONVERT FROM	CONVERT TO	SI SYMBOL	MULTIPLY BY
Sq inches	Sq millimeter	mm ²	645.163
Sq inches	Sq centimeter	cm ²	6.452
Sq inches	Sq meter	m ²	0.001
Sq feet	Sq meter	m ²	0.093
Acres	Hectare	ha	0.405

MASS

CONVERT FROM	CONVERT TO	SI SYMBOL	MULTIPLY BY
Pounds	Kilogram	kg	0.454
Ton (short)	Metric ton	t	0.907
Ton (long)	Metric ton	t	1.016

VELOCITY

CONVERT FROM	CONVERT TO	SI SYMBOL	MULTIPLY BY
Feet/Second	Meter/Second	m/s	0.305
Feet/Second	cm/sec	cm/sec	30.48
Feet/Minute	Meter/Second	m/s	0.005
Miles/Hour	Kilometer/Hour	km/h	1.609

Conversion Temperature Tables

CONVERSION TEMPERATURE TABLE

°C		°F	°C		°F	°C		°F	°C		°F	°C		°F
-73.3	-100	-148	-3.3	26	78.8	21.1	70	158	110	230	446	354	670	1238
-67.8	-90	-130	-2.8	27	80.6	21.7	71	159.8	115	240	464	360	680	1256
-62.2	-80	-112	-2.2	28	82.4	22.2	72	161.6	121	250	482	365	690	1274
-59.5	-75	-103	-1.7	29	84.2	22.8	73	163.4	127	260	500	371	700	1292
-56.7	-70	-94	-1.1	30	86	23.3	74	165.2	132	270	518	376	710	1310
-53.9	-65	-85	-0.6	31	87.8	23.9	75	167	138	280	536	382	720	1328
-51.1	-60	-76	0	32	89.6	24.4	76	168.8	143	290	554	387	730	1346
-48.4	-55	-67	0.6	33	91.4	25	77	170.6	149	300	572	393	740	1364
-45.6	-50	-58	1.1	34	93.2	25.6	78	172.4	154	310	590	399	750	1382
-42.8	-45	-49	1.7	35	95	26.1	79	174.2	160	320	608	404	760	1400
-40	-40	-40	2.2	36	96.8	26.7	80	176	165	330	626	410	770	1418
-37.2	-35	-31	2.8	37	98.6	27.2	81	177.8	171	340	644	415	780	1436
-34.4	-30	-22	3.3	38	100.4	27.8	82	179.6	177	350	662	421	790	1454
-31.6	-25	-13	3.9	39	102.4	28.3	83	181.4	182	360	680	426	800	1472
-28.8	-20	-4	4.4	40	104	28.9	84	183.2	188	370	698	432	810	1490
-26.1	-15	5	5	41	105.8	29.4	85	185	193	380	716	438	820	1508
-23.3	-10	14	5.6	42	107.6	30	86	186.8	199	390	734	443	830	1526
-20.6	-5	23	6.1	43	109.4	30.6	87	188.6	204	400	752	449	840	1544
-17.8	0	32	6.7	44	111.2	31.1	88	190.4	210	410	770	454	850	1562
-17.2	1	33.8	7.2	45	113	31.7	89	192.2	215	420	788	460	860	1580
-16.7	2	35.6	7.8	46	114.8	32.2	90	194	221	430	806	465	870	1598
-16.1	3	37.4	8.3	47	116.6	32.8	91	195.8	226	440	824	471	880	1616
-15.6	4	39.2	8.9	48	118.4	33.3	92	197.6	232	450	842	476	890	1634
-15	5	41	9.4	49	120.2	33.9	93	199.4	238	460	860	482	900	1652
-14.4	6	42.8	10	50	122	34.4	94	201.2	243	470	878	487	910	1670
-13.9	7	44.6	10.6	51	123.8	35	95	203	249	480	896	493	920	1688
-13.3	8	46.4	11.1	52	125.6	35.6	96	204.8	254	490	914	498	930	1706
-12.8	9	48.2	11.7	53	127.4	36.1	97	206.6	260	500	932	504	940	1724
-12.2	10	50	12.2	54	129.2	36.7	98	208.4	265	510	950	510	950	1742
-11.7	11	51.8	12.8	55	131	37.2	99	210.2	271	520	968	515	960	1760
-11.1	12	53.6	13.3	56	132.8	37.8	100	212	276	530	986	520	970	1778
-10.6	13	55.4	13.9	57	134.6	43	110	230	282	540	1004	526	980	1796
-10	14	57.2	14.4	58	136.4	49	120	248	288	550	1022	532	990	1814
-9.4	15	59	15	59	138.2	54	130	266	293	560	1040	538	1000	1832
-8.9	16	60.8	15.6	60	140	60	140	284	299	570	1058	565	1050	1922
-8.3	17	62.6	16.1	61	141.8	65	150	302	304	580	1076	593	1100	2012
-7.8	18	64.4	16.7	62	143.6	71	160	320	310	590	1094	620	1150	2102
-7.2	19	66.2	17.2	63	145.4	76	170	338	315	600	1112	648	1200	2192
-6.7	20	68	17.8	64	147.2	83	180	356	321	610	1130	675	1250	2282
-6.1	21	69.8	18.3	65	149	88	190	374	326	620	1148	704	1300	2372
-5.6	22	71.6	18.9	66	150.8	93	200	392	332	630	1166	734	1350	2462
-5	23	73.4	19.4	67	152.6	99	210	410	338	640	1184	760	1400	2552
-4.4	24	75.2	20	68	154.4	100	212	413	343	650	1202	787	1450	2642
-3.9	25	77	20.6	69	156.2	104	220	428	349	660	1220	815	1500	2732

Example how to use table: Convert 70 degrees Fahrenheit to centigrade. Find your value (70) in the bold letters. To the left, under the column °C, is your conversion for centigrade. Answer: 70°F = 21.1 °C Note, for converting centigrade to Fahrenheit the same procedure would be used, except you would go to the right hand column for degrees Fahrenheit. Therefore, 70 degrees centigrade would equal to 158 degrees Fahrenheit.



Specifications

MATERIAL SPECIFICATIONS

P-NO./GROUP NO.	NOMINAL STEEL DESIGNATION	FORGINGS (FLANGES, COUPLINGS, WELDOLETS, ETC)	WROUGHT FITTINGS (ELBOWS, REDUCERS, TEES, WELD CAPS, ETC)	PIPE	PLATE	REMARKS
1/1	Carbon	SA-105	SA-234-WPB	SA-106-B	SA-516-70 or SA-36	SA-36 for Non-pressure retaining parts
		SA-350-LF2	SA-420-WPL6	SA-333 Gr. 6	SA-516-70	Cold Temperature Service
4/1	1Cr - 1/2Mo	SA-182-F12	SA-234-WP12	SA-335-P12	SA-387-12	Alloy Steel
	1 1/4Cr - 1/2Mo	SA-182-F11	SA-234-WP11	SA-335-P11	SA-387-11	-
5A/1	2 1/4Cr - 1/2Mo	SA-182-F22	SA-234-WP22	SA-335-P22	SA-387-22	Alloy Steel
5B/1	5Cr - 1/2Mo	SA-185-F5	SA-234-WP5	SA-335-P5	SA-387-5	Alloy Steel
	9Cr - 1 Mo	SA-182-F9	SA-234-WP9	SA-335-P9	SA-387-9	-
8/1	18Cr - 8Ni	SA-182-F304	SA-403-WP304	SA-312-TP304	SA-240-304	Stainless Steel
	18Cr - 8Ni	SA-182-F304H	SA-403-WP304H	SA-312-TP304H	SA-240-304H	-
	16Cr - 12Ni - 2Mo	SA-182-F316	SA-403-WP316	SA-312-TP316	SA-240-316	Stainless Steel
	16Cr - 12Ni - 2Mo	SA-182-F316H	SA-403-WP316H	SA-312-TP316H	SA-240-316H	-
	18Cr - 8 Ni	SA-182-F304L	SA-403-WP304L	SA-312-TP304L	SA-240-304L	Low Carbon Stainless Steel
	16Cr - 12Ni - 2Mo	SA-182-F316L	SA-403-WP316L	SA-312-TP316L	SA-240-316L	Low Carbon Stainless Steel
43	67Ni - 30Cu	SB164		SB-165	SB-127	Money
45	35Ni-35Fe-20Cr-Cb	SB-462	SB-366	SB-729	SB-463	Alloy 20

BOLTING MATERIAL SPECIFICATION

MATERIAL	SPECIFICATION	DESCRIPTION	REMARKS
Carbon Steel	SA-193-B7	Stud	-
Carbon Steel	SA-194-2H	Nut	-
Carbon Steel	SA-193-B7M	Stud	Nace
Carbon Steel	SA-194-2HM	Nut	Nace
Carbon Steel	SA-320-L7	Stud	Low Temp. Service (-150°F)
Carbon Steel	SA-194-4	Nut	Low Temp. Service (-150°F)
304 Stainless Steel	SA-193-B8	Stud	-
304 Stainless Steel	SA-194-8	Nut	-
316 Stainless Steel	SA-193-B8M	Stud	-
316 Stainless Steel	SA-194-8M	Nut	-



Gravity and Density

EQUIVALENTS OF API GRAVITY, BAUME GRAVITY, SPECIFIC GRAVITY, AND WEIGHT DENSITY AT 60°F / 60°F

API GRAVITY	BAUME GRAVITY	SPECIFIC GRAVITY(G)	WT DENSITY (LB/FT ³)
6	4.099	1.029	64.18
8	2.049	1.014	63.26
10	10.00	1.000	62.37
12	11.98	0.986	61.50
14	13.96	0.973	60.65
16	15.94	0.959	59.83
18	17.92	0.947	59.03
20	19.89	0.934	58.25
22	21.87	0.922	57.87
24	23.85	0.910	56.75
26	25.83	0.898	56.03
28	27.81	0.887	55.32
30	29.79	0.876	54.64
32	31.77	0.865	53.97
34	33.75	0.855	53.32
36	35.72	0.845	52.69
38	37.70	0.835	52.06
40	39.68	0.825	51.46
42	41.66	0.816	50.86
44	43.64	0.806	50.28
46	45.62	0.797	49.72
48	50.60	0.788	49.16
50	50.58	0.780	48.62
52	51.55	0.771	48.09

API GRAVITY	BAUME GRAVITY	SPECIFIC GRAVITY(G)	WT DENSITY (LB/FT ³)
54	53.53	0.763	47.57
56	55.51	0.755	47.07
58	57.49	0.747	46.57
60	59.47	0.739	46.08
62	61.45	0.731	45.61
64	63.43	0.724	45.14
66	65.41	0.717	44.68
68	67.39	0.709	44.23
70	69.36	0.702	43.79
72	71.34	0.695	43.36
74	73.32	0.689	42.94
76	75.30	0.682	42.53
78	77.28	0.675	42.12
80	79.26	0.669	41.72
82	81.24	0.663	41.33
84	83.22	0.657	40.95
86	85.19	0.651	40.57
88	87.17	0.645	40.20
90	89.15	0.639	39.84
92	91.13	0.633	39.48
94	93.11	0.628	39.13
96	95.09	0.622	38.79
98	97.07	0.617	38.45
100	99.05	0.611	38.12

The above table is based on the weight of oil @ 60°F in air to the same weight of water @ 60°F in air.
The relation of Degrees Baume' or API to Specific Gravity is expressed by the following formulas:

For liquids lighter than water
Degrees Baume' = 140/G - 130
Degrees A.P.I. = 141.5/G - 131.5

For liquids heavier than water:
Degrees Baume' = 145 - 145/G



Hardness Conversion



BRINELL 10mm Ball 3000 kg Dia of impression	BRINELL	ROCKWELL C Brale 150 kg Load	ROCKWELL A Brale 60 kg Load	ROCKWELL B 1/4" Brale 100 kg Load	SHORE SCIEROSCOPE
-	-	80	92	-	-
-	-	79	91.5	-	-
-	-	78	91	-	-
-	-	77	90.5	-	-
-	-	76	90	-	-
-	-	75	89.5	-	-
-	-	74	89	-	-
-	-	73	88.5	-	-
-	-	72	88	-	-
-	-	71	87	-	-
2.2	780	70	86.5	-	106
-	760	69	86	-	103
2.25	745	68	85.5	-	100
-	725	67	85	-	97
2.3	712	66	84.5	-	95
-	697	65	84	-	93
2.35	682	64	83.5	-	91
-	668	63	83	-	89
2.4	653	62	82.5	-	87
-	640	61	81.5	-	86
2.45	627	60	81	-	84
-	615	59	80.5	-	82
2.5	601	58	80	-	81
-	590	57	79.5	-	80
2.55	578	56	79	-	78
-	567	55	78.5	-	77
2.6	555	54	78	120	75
-	545	53	77.5	120	74
2.65	534	52	77	119	72
2.7	514	51	76.5	119	70
2.75	495	50	76	118	67
2.8	477	49	75.5	117	65
-	470	48	74.5	117	64
2.85	461	47	74	116	63
2.9	444	46	73.5	115	61
2.95	429	45	73	115	59
3	415	44	72.5	114	57
-	408	43	72	114	56
3.05	401	42	71.5	113	55
3.1	388	41	71	112	54
3.15	375	40	70.5	111	52
3.2	363	39	70	111	51
3.25	352	38	69.5	110	49
-	346	37	69	110	48
3.3	341	36	68.5	109	47

BRINELL 10mm Ball 3000 kg Dia of impression	BRINELL	ROCKWELL C Brale 150 kg Load	ROCKWELL A Brale 60 kg Load	ROCKWELL B 1/4" Brale 100 kg Load	SHORE SCIEROSCOPE
3.35	331	35	68	109	46
3.4	321	34	67.5	108	45
3.45	311	33	67	108	44
3.5	302	32	66.5	107	43
3.55	293	31	66	106	42
3.6	285	30	65.5	105	40
3.65	277	29	65	104	39
3.7	269	28	64.5	104	38
3.75	262	27	64	103	38
-	258	26	63.5	102	37
3.8	255	25	63	102	37
3.85	248	24	62.5	101	36
3.9	241	23	62	101	35
-	238	22	61.5	100	34
3.95	235	21	61	99	34
4	229	20	60	98	33
4.05	223	-	59.5	97	32
4.1	217	-	59	96	31
4.15	212	-	58	95	31
4.2	207	-	57.5	94	30
4.25	202	-	57	93	30
4.3	197	-	56.5	92	29
4.35	192	-	56	91	28
4.4	187	-	55.5	90	28
4.45	183	-	55	89	27
4.5	179	-	54	88	27
4.55	174	-	53.5	87	26
4.6	170	-	53	86	26
4.65	166	-	52.5	85	25
4.7	163	-	52	84	25
4.75	159	-	51	83	24
4.8	156	-	50.5	82	24
4.85	153	-	50	81	23
4.9	149	-	49.5	80	23
4.95	146	-	49	79	22
5	143	-	48.5	78	22
5.05	140	-	48	77	21
5.1	137	-	47	76	21
5.15	134	-	46.5	75	21
5.15	134	-	46	74	21
5.2	131	-	45.5	73	20
5.2	131	-	45	72	20
5.25	128	-	44.5	71	20
5.3	126	-	44	70	20
-	-	-	-	-	-

Pipe Dimensions & Weights

NOMINAL PIPE SIZE	METRIC PIPE SIZE	OD (IN)	LEGEND	5S	5	10S	10	20	30	STD & 40S	40	60	XH & 80S	80	100	120	140	160	XXH
1/8	6	0.41	WT	-	0.035	0.049	0.049	-	0.057	0.068	0.068	-	0.095	0.095	-	-	-	-	-
			ID	-	0.335	0.307	0.307	-	0.291	0.269	0.269	-	0.215	0.215	-	-	-	-	-
			LBS/FT	-	0.138	0.19	0.19	-		0.24	0.24	-	0.31	0.31	-	-	-	-	-
1/4	8	W	WT	-	0.049	0.065	0.065	-	0.073	0.088	0.088	-	0.119	0.119	-	-	-	-	-
			ID	-	0.442	0.41	0.41	-	0.364	0.364	0.364	-	0.302	0.302	-	-	-	-	-
			LBS/FT	-	0.257	0.33	0.33	-	0.36	0.42	0.42	-	0.54	0.54	-	-	-	-	-
3/8	10	0.68	WT	-	0.049	0.065	0.065	-	0.073	0.091	0.091	-	0.126	0.126	-	-	-	-	-
			ID	-	0.577	0.545	0.545	-	0.529	0.493	0.493	-	0.423	0.423	-	-	-	-	-
			LBS/FT	-	0.328	0.42	0.42	-	0.47	0.57	0.57	-	0.74	0.74	-	-	-	-	-
1/2	15	0.84	WT	0.065	0.065	0.083	0.083	-	0.95	0.109	0.109	-	0.147	0.147	-	-	-	0.188	0.294
			ID	0.71	0.71	0.674	0.674	-	0.65	0.622	0.622	-	0.546	0.546	-	-	-	0.464	0.252
			LBS/FT	0.54	0.54	0.67	0.67	-	0.76	0.85	0.85	-	1.09	1.09	-	-	-	1.31	1.71
3/4	20	1.05	WT	0.065	0.065	0.083	0.083	-	0.095	0.113	0.113	-	0.154	0.154	-	-	-	0.219	0.308
			ID	0.92	0.92	0.884	0.884	-	0.86	0.824	0.824	-	0.742	0.742	-	-	-	0.612	0.434
			LBS/FT	0.69	0.69	0.86	0.86	-	0.97	1.13	1.13	-	1.47	1.47	-	-	-	1.94	2.44
1	25	1.32	WT	0.065	0.065	0.109	0.109	-	0.114	0.133	0.133	-	0.179	0.179	-	-	-	0.25	0.358
			ID	1.25	1.25	1.097	1.097	-	1.087	1.049	1.049	-	0.957	0.957	-	-	-	0.815	0.599
			LBS/FT	0.87	0.87	1.4	1.4	-	1.46	1.68	1.68	-	2.17	2.17	-	-	-	2.84	3.66
1-1/4	32	1.66	WT	0.065	0.065	0.109	0.109	-	0.117	0.14	0.14	-	0.191	0.191	-	-	-	0.25	0.382
			ID	1.53	1.53	1.442	1.442	-	1.426	1.38	1.38	-	1.278	1.278	-	-	-	1.16	0.896
			LBS/FT	1.11	1.11	1.81	1.81	-	1.93	2.27	2.27	-	3	3	-	-	-	3.76	5.21
1-1/2	40	1.90	WT	0.065	0.065	0.109	0.109	-	0.125	0.145	0.145	-	2	2	-	-	-	0.281	0.4
			ID	1.77	1.77	1.682	1.682	-	1.65	1.61	1.61	-	1.5	1.5	-	-	-	1.338	1.1
			LBS/FT	1.28	1.28	2.09	2.09	-	2.37	2.72	2.72	-	3.63	3.63	-	-	-	4.86	6.41
2	50	2.38	WT	0.065	0.065	0.109	0.109	-	0.125	0.154	0.154	-	0.218	0.218	-	-	-	0.344	0.436
			ID	2.245	2.245	2.157	2.157	-	2.125	2.067	2.067	-	1.939	1.939	-	-	-	1.687	1.503
			LBS/FT	1.61	1.61	2.64	2.64	-	3	3.65	3.65	-	5.02	5.02	-	-	-	7.46	9.03
2-1/2	65	2.88	WT	0.083	0.083	0.12	0.12	-	0.188	0.203	0.203	-	0.276	0.276	-	-	-	0.375	0.552
			ID	2.709	2.709	2.755	2.755	-	2.499	2.469	2.469	-	2.323	2.323	-	-	-	2.125	1.771
			LBS/FT	2.48	2.48	3.53	3.53	-	5.4	5.79	5.79	-	7.66	7.66	-	-	-	10.01	13.69
3	80	3.50	WT	0.083	0.083	0.12	0.12	-	0.188	0.216	0.216	-	0.3	0.3	-	-	-	0.438	0.6
			ID	3.334	3.334	3.26	3.26	-	3.124	3.068	3.068	-	2.9	2.9	-	-	-	2.624	2.3
			LBS/FT	3.03	3.03	4.33	4.33	-	6.65	7.58	7.58	-	10.25	10.25	-	-	-	14.32	18.58
3-1/2	90	4.00	WT	0.083	0.083	0.12	0.12	-	0.188	0.226	0.226	-	0.381	0.381	-	-	-	0.438	0.6
			ID	3.334	3.334	3.26	3.26	-	3.124	3.068	3.068	-	2.9	2.9	-	-	-	2.624	2.3
			LBS/FT	3.03	3.03	4.33	4.33	-	6.65	7.58	7.58	-	10.25	10.25	-	-	-	14.32	18.58
4	100	4.50	WT	0.083	0.083	0.12	0.12	-	0.188	0.237	0.237	-	0.337	0.337	-	0.438	-	0.531	0.674
			ID	4.334	4.334	4.26	4.26	-	4.124	4.026	4.026	-	3.826	3.826	-	3.624	-	3.438	3.152
			LBS/FT	3.92	3.92	5.61	5.61	-	8.66	10.79	10.79	-	14.98	14.98	-	19	-	22.51	27.54
4-1/2	120	5.00	WT	-	-	-	-	-	-	0.247	0.247	-	0.355	0.355	-	-	-	-	0.71
			ID	-	-	-	-	-	-	4.506	4.506	-	4.29	4.29	-	-	-	-	3.58
			LBS/FT	-	-	-	-	-	-	12.53	12.53	-	17.61	17.61	-	-	-	-	32.53



Pipe Dimensions & Weights

NOMINAL PIPE SIZE	METRIC PIPE SIZE	OD (IN)	LEGEND	55	5	10S	10	20	30	STD & 40S	40	60	XH & 80S	80	100	120	140	160	XXH
5	125	5.56	WT	0.109	0.109	0.134	0.134	-	-	0.258	0.258	-	0.375	0.375	-	0.5	-	0.625	0.75
			ID	5.345	5.345	5.295	5.295	-	-	5.047	5.047	-	4.813	4.813	-	4.563	-	4.313	4.063
			LBS/FT	6.36	6.36	7.77	7.77	-	-	14.62	14.62	-	20.78	20.78	-	27.04	-	32.96	38.55
6	150	6.63	WT	0.109	0.109	0.134	0.134	-	-	0.28	0.28	-	0.432	0.432	-	0.562	-	0.719	0.864
			ID	6.407	6.407	6.357	6.357	-	-	6.065	6.065	-	5.761	5.761	-	5.501	-	5.187	4.897
			LBS/FT	7.6	7.6	9.29	9.29	-	-	18.97	18.97	-	28.57	28.57	-	36.39	-	45.35	53.16
7	180	7.63	WT	-	-	-	-	-	-	0.301	0.301	-	0.5	0.5	-	-	-	-	0.875
			ID	-	-	-	-	-	-	7.023	7.023	-	6.625	6.625	-	-	-	-	5.875
			LBS/FT	-	-	-	-	-	-	23.57	23.57	-	38.05	38.05	-	-	-	-	63.08
8	200	8.63	WT	0.109	0.109	0.148	0.148	0.25	0.277	0.322	0.322	0.406	0.5	0.5	0.594	0.719	0.812	0.906	0.875
			ID	8.407	8.407	8.329	8.329	8.125	8.071	7.981	7.981	7.813	7.625	7.625	7.437	7.187	7.001	6.813	2.875
			LBS/FT	9.93	9.93	13.4	13.4	22.36	24.7	28.55	28.55	35.64	43.39	43.39	50.95	60.71	67.76	74.69	72.42
9	225	9.63	WT	-	-	-	-	-	-	0.342	0.342	-	0.5	0.5	-	-	-	-	-
			ID	-	-	-	-	-	-	8.941	8.941	-	8.625	8.625	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	33.9	33.9	-	48.72	48.72	-	-	-	-	-
10	250	10.75	WT	0.134	0.134	0.165	0.165	0.25	0.307	0.365	0.365	0.5	0.5	0.594	0.719	0.844	1	1.125	1
			ID	10.482	10.482	10.42	10.42	10.25	10.136	10.02	10.02	9.75	9.75	9.562	9.312	9.062	8.75	8.5	8.75
			LBS/FT	15.19	15.19	18.65	18.65	28.04	34.24	40.48	40.48	54.74	54.74	64.43	77.03	89.29	104.13	115.64	104.13
11	275	11.75	WT	-	-	-	-	-	-	0.375	0.375	-	0.5	0.5	-	-	-	-	-
			ID	-	-	-	-	-	-	11	11	-	10.75	10.75	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	45.55	45.55	-	60.07	60.07	-	-	-	-	-
12	300	12.75	WT	0.156	0.165	0.18	0.18	0.25	0.33	0.375	0.406	0.562	0.5	0.688	0.844	1	1.125	1.312	1
			ID	12.438	14.42	12.39	12.39	12.25	12.09	12	11.938	11.626	11.75	11.374	11.062	11.75	10.5	10.126	11.75
			LBS/FT	20.98	22.18	24.17	24.17	33.38	43.77	49.56	53.52	73.15	65.42	88.63	107.32	125.49	139.67	160.27	125.49
14	350	14.00	WT	0.156	0.156	0.188	0.25	0.312	0.375	0.375	0.438	0.594	0.5	0.75	0.938	1.094	1.25	1.406	-
			ID	13.688	13.688	13.624	13.5	13.376	13.25	13.25	13.124	12.812	13	12.5	12.124	11.812	11.5	11.188	-
			LBS/FT	23.07	23.07	27.73	36.71	45.61	54.57	54.57	63.44	85.05	72.09	106.13	194.96	150.79	170.21	189.11	-
16	400	16.00	WT	0.165	0.165	0.188	0.25	0.312	0.375	0.375	0.5	0.656	0.5	0.844	1.031	1.219	1.438	1.594	-
			ID	15.67	15.67	15.624	15.5	15.376	15.25	15.25	15	14.688	15	14.312	13.938	13.562	13.124	12.812	-
			LBS/FT	27.9	27.9	31.75	42.05	51.27	93.27	93.27	82.77	107.5	82.77	136.61	164.82	192.43	223.64	245.25	-
18	450	18.00	WT	0.165	0.165	0.188	0.25	0.312	0.438	0.375	0.562	0.75	0.5	0.938	1.156	1.375	1.562	1.781	-
			ID	17.67	17.67	17.624	17.5	17.376	17.124	17.25	16.876	16.5	17	16.124	15.688	15.25	14.876	14.438	-
			LBS/FT	31.43	31.43	35.76	47.39	58.94	82.15	70.59	104.67	138.17	93.45	170.92	207.96	244.14	274.22	308.5	-
20	500	20.00	WT	0.188	0.188	0.218	0.25	0.375	0.5	0.375	0.594	0.812	0.5	1.031	1.281	1.5	1.75	1.969	-
			ID	19.624	19.624	19.564	19.5	19.25	19	19.25	18.812	18.376	19	17.938	17.438	17	16.5	16.062	-
			LBS/FT	39.78	39.78	46.27	52.73	78.6	104.13	78.6	123.11	166.4	104.13	208.87	256.1	296.37	341.09	379.17	-
22	550	22.00	WT	0.188	0.188	0.218	0.25	0.375	0.5	0.375	-	0.875	0.5	1.125	1.375	1.625	1.875	2.215	-
			ID	21.624	21.624	21.564	21.5	21.25	21	21.25	-	20.25	21	19.75	19.25	18.75	18.25	17.75	-
			LBS/FT	43.8	43.8	50.94	58.07	86.61	114.81	86.61	-	197.41	114.81	250.81	302.88	353.61	403	451.06	-
24	600	24.00	WT	0.218	0.218	0.25	0.25	0.375	0.562	0.375	0.688	0.969	0.5	1.219	1.531	1.812	2.062	2.344	-
			ID	23.564	23.564	23.5	23.5	23.25	22.876	23.25	22.624	22.062	23	21.562	20.938	20.376	19.876	19.312	-
			LBS/FT	55.37	55.37	63.41	63.41	94.62	140.68	94.62	171.29	238.35	125.49	296.58	367.39	429.39	483.12	542.13	-



Pipe Dimensions & Weights

NOMINAL PIPE SIZE	METRIC PIPE SIZE	OD (IN)	LEGEND	5S	5	10S	10	20	30	STD & 40S	40	60	XH & 80S	80	100	120	140	160	XXH
26	650	26.00	WT	-	-	-	0.312	0.5	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	25.376	25	-	25.25	-	-	25	-	-	-	-	-	-
			LBS/FT	-	-	-	85.6	136.17	-	102.63	-	-	136.17	-	-	-	-	-	-
28	700	28.00	WT	-	-	-	0.312	0.5	0.625	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	27.376	27	26.75	27.25	-	-	27	-	-	-	-	-	-
			LBS/FT	-	-	-	92.26	146.85	182.73	110.64	-	-	146.85	-	-	-	-	-	-
30	750	30.00	WT	0.25	0.25	0.312	0.312	0.5	0.625	0.375	-	-	0.5	-	-	-	-	-	-
			ID	29.5	29.5	29.376	29.376	29	29.75	29.25	-	-	29	-	-	-	-	-	-
			LBS/FT	79.43	79.43	98.93	98.93	157.53	196.08	118.62	-	-	157.53	-	-	-	-	-	-
32	800	32.00	WT	-	-	-	0.312	0.5	0.625	0.375	0.688	-	0.5	-	-	-	-	-	-
			ID	-	-	-	31.376	31	30.75	31.25	30.624	-	31	-	-	-	-	-	-
			LBS/FT	-	-	-	105.59	168.21	209.43	126.66	230.08	-	168.21	-	-	-	-	-	-
34	850	34.00	WT	-	-	-	0.312	0.5	0.625	0.375	0.688	-	0.5	-	-	-	-	-	-
			ID	-	-	-	33.376	33	32.75	33.25	32.624	-	33	-	-	-	-	-	-
			LBS/FT	-	-	-	112.25	178.89	222.78	134.67	244.77	-	178.89	-	-	-	-	-	-
36	900	26.00	WT	-	-	-	0.312	0.5	0.625	0.375	0.75	-	0.5	-	-	-	-	-	-
			ID	-	-	-	35.376	35	34.75	35.25	34.5	-	35	-	-	-	-	-	-
			LBS/FT	-	-	-	118.92	189.57	236.13	142.68	382.35	-	189.57	-	-	-	-	-	-
38	950	38.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	37.25	-	-	-	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	150.82	-	-	200.43	-	-	-	-	-	-
40	1000	40.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	39.25	-	-	39	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	158.84	-	-	211.12	-	-	-	-	-	-
42	1050	42.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	41.25	-	-	41	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	166.86	-	-	221.81	-	-	-	-	-	-
44	1100	44.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	43.25	-	-	43	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	174.88	-	-	232.5	-	-	-	-	-	-
46	1150	46.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	45.25	-	-	45	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	182.89	-	-	243.19	-	-	-	-	-	-
48	1200	48.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	47.25	-	-	47	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	190.91	-	-	253.88	-	-	-	-	-	-
54	1350	54.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	53.25	-	-	53	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	215	-	-	286	-	-	-	-	-	-
60	1500	60.00	WT	-	-	-	-	-	-	0.375	-	-	0.5	-	-	-	-	-	-
			ID	-	-	-	-	-	-	59.25	-	-	59	-	-	-	-	-	-
			LBS/FT	-	-	-	-	-	-	239	-	-	318	-	-	-	-	-	-



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