



AITKEN

A DBM GLOBAL COMPANY

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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



A DBM GLOBAL COMPANY

## CERTIFICATIONS



# **SPECTACLE BLINDS PADDLE BLINDS & PADDLE SPACERS**

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# 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.

Tolerances are tied to the appropriate code specifications unless otherwise noted.

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)

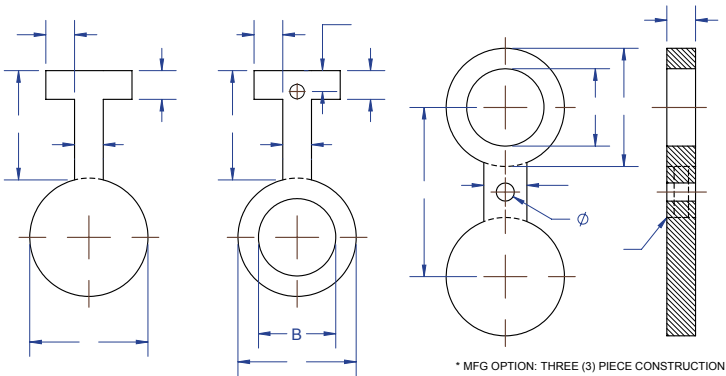
Aitken plate products are produced in strict accordance with the following codes of practice:

- 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.

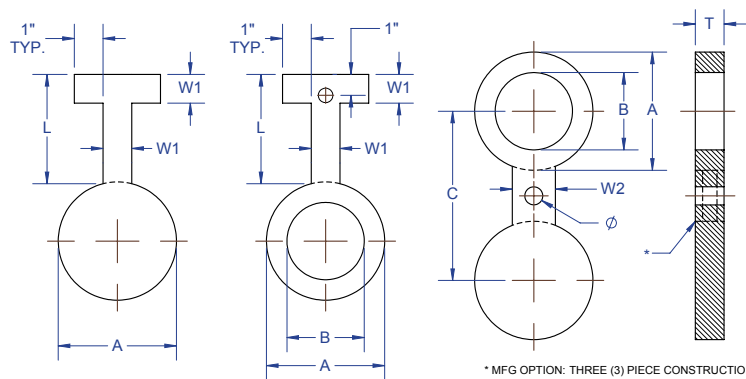
| SIZE   | RATING/FACING | TYPE                                                       | MATERIAL                  | GASKET SURFACE                                                                  |
|--------|---------------|------------------------------------------------------------|---------------------------|---------------------------------------------------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

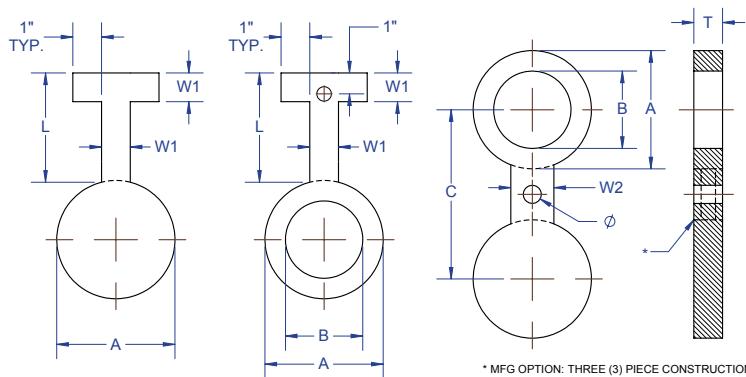
WT=Approximate Weight

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

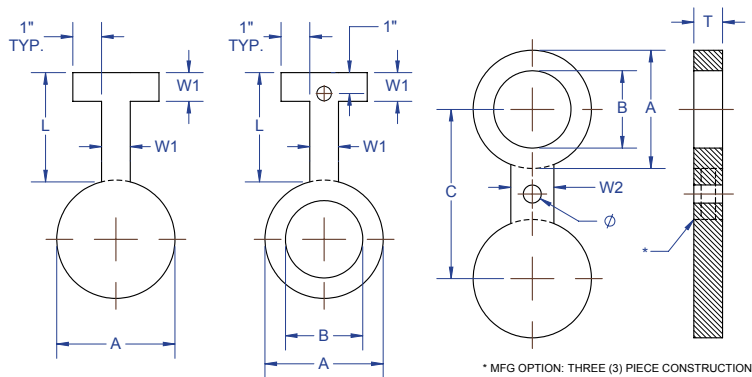
WT=Approximate Weight

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

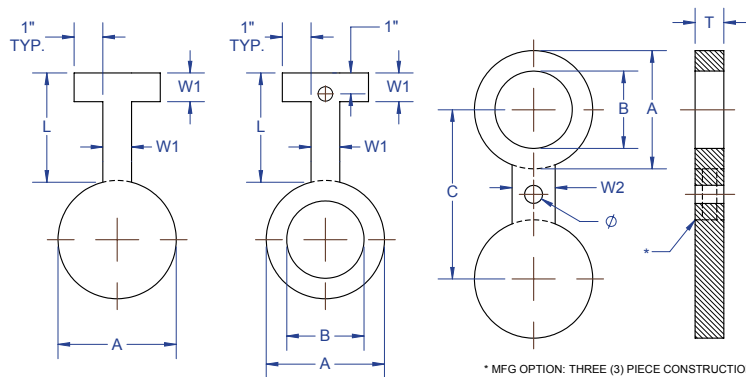
WT=Approximate Weight

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

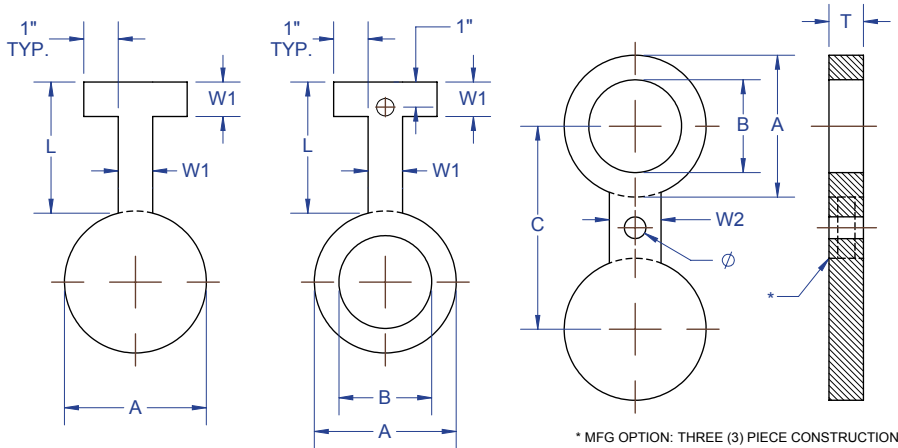


| SIZE   | RATING/FACING | TYPE                                                   | MATERIAL                  | GASKET SURFACE                                                              |
|--------|---------------|--------------------------------------------------------|---------------------------|---------------------------------------------------------------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

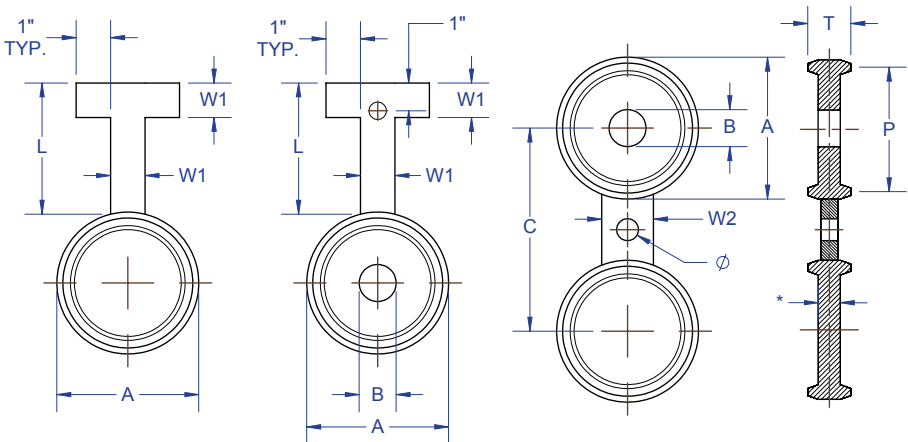
WT=Approximate Weight

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

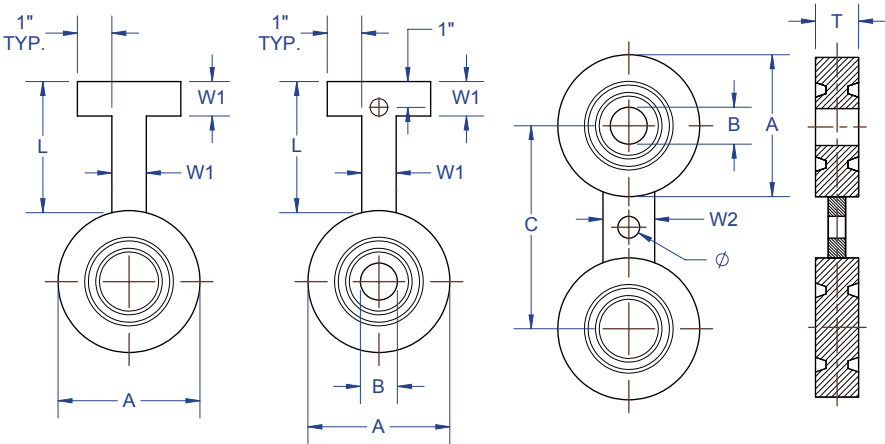
WT=Approximate Weight R#=Ring Number

| SIZE | RATING/FACING | TYPE                                                   | MATERIAL                  | NOTE:                                                                                            |
|------|---------------|--------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------|
| 1-24 | 150/MO        | 1=Paddle Blank<br>1A=Paddle Spacer<br>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 |

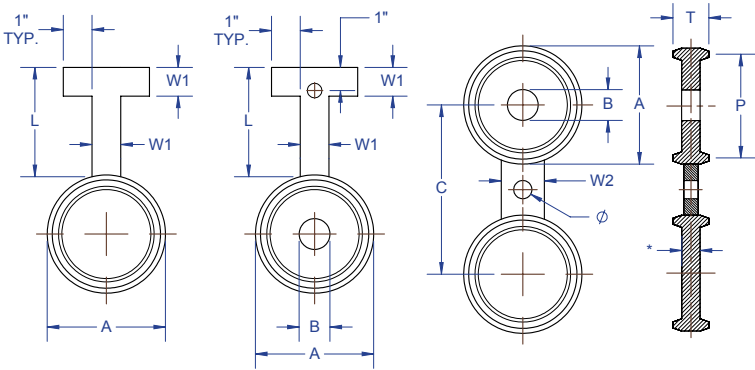
WT=Approximate Weight R#=Ring Number

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

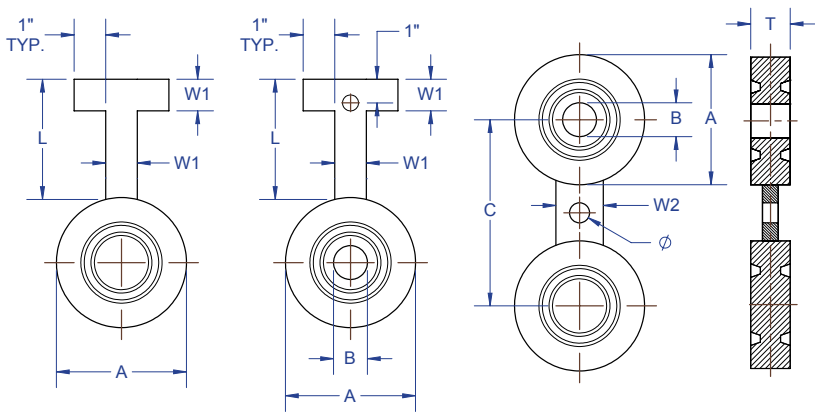
WT=Approximate Weight R#=Ring Number

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

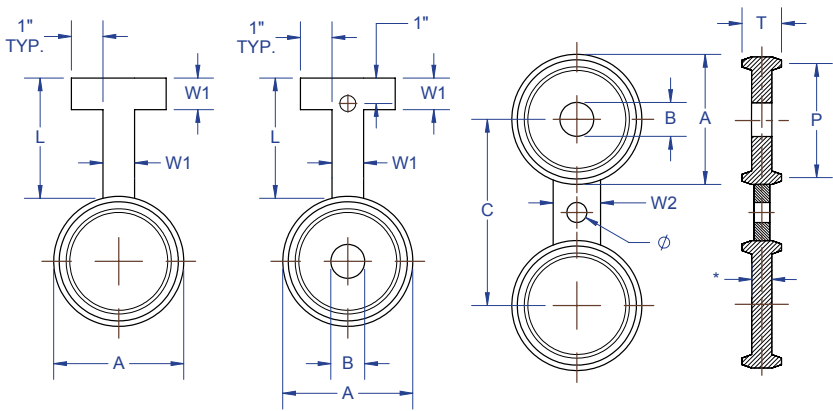
| SIZE   | RATING/FACING | TYPE                                                   | MATERIAL                  | NOTE:                                                                                                  |
|--------|---------------|--------------------------------------------------------|---------------------------|------------------------------------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

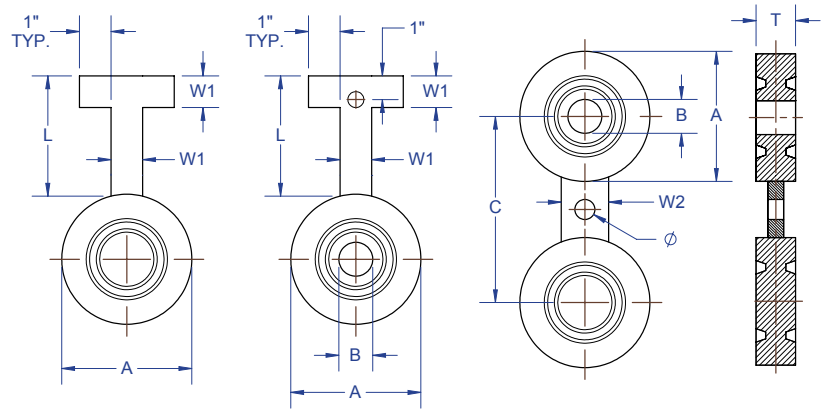
WT=Approximate Weight R#=Ring Number

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

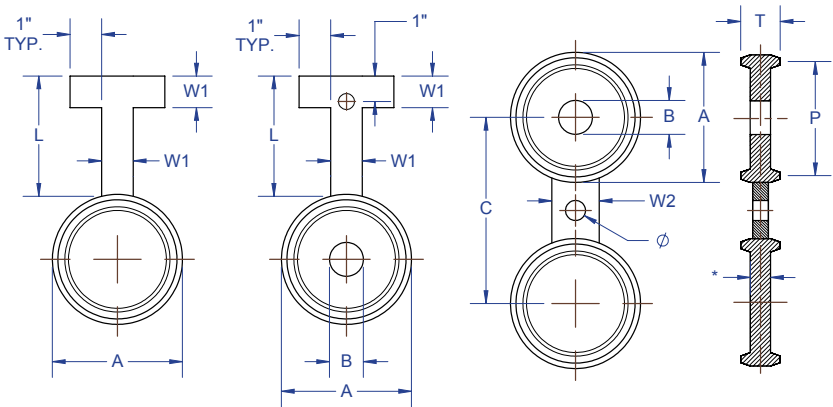
WT=Approximate Weight R#=Ring Number

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



Class 900  
Male  
Octagonal  
Ring Joint

ASME  
B16.48



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

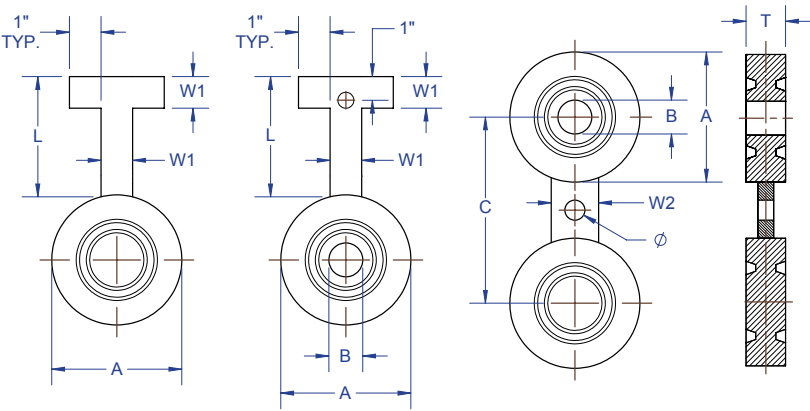
| SIZE   | DIMENSIONAL DATA (IN) |        |        |       |       |         |       |       |       |        | R#   | WT (LBS) |     |     |
|--------|-----------------------|--------|--------|-------|-------|---------|-------|-------|-------|--------|------|----------|-----|-----|
|        | A                     | 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 |

| SIZE   | RATING/FACING | TYPE                                                   | MATERIAL                  | NOTE:                                                                                                  |
|--------|---------------|--------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------|
| 1/2-24 | 900/MO        | 1=Paddle Blank<br>1A=Paddle Spacer<br>2=Figure 8 Blank | Per ASME B16.5, Table 1-A | Groove Dimensions are per<br>ASME B16.5, and gasket surface finish<br>& 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 |

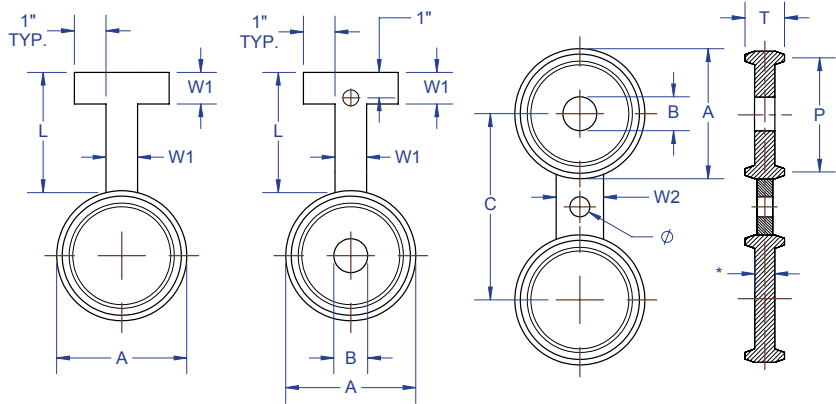
WT=Approximate Weight R#=Ring Number

| SIZE   | RATING/FACING | TYPE                                                   | MATERIAL                  | NOTE:                                                                                                  |
|--------|---------------|--------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------|
| 1/2-24 | 900/FG        | 1=Paddle Blank<br>1A=Paddle Spacer<br>2=Figure 8 Blank | Per ASME B16.5, Table 1-A | Groove Dimensions are per<br>ASME B16.5, and gasket surface finish<br>& 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 |

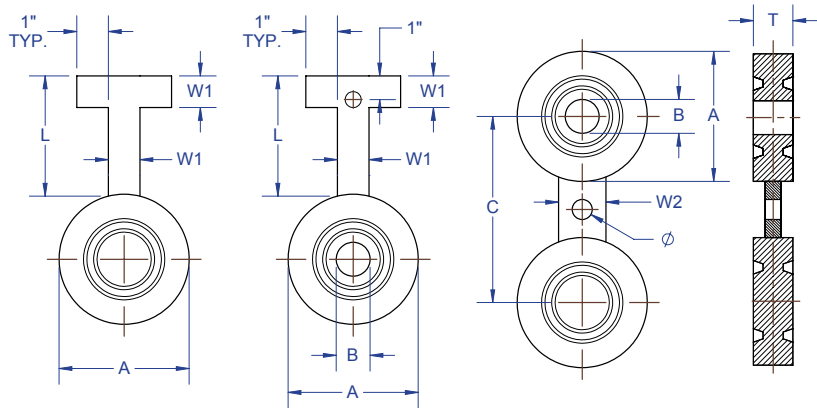
WT=Approximate Weight R#=Ring Number

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

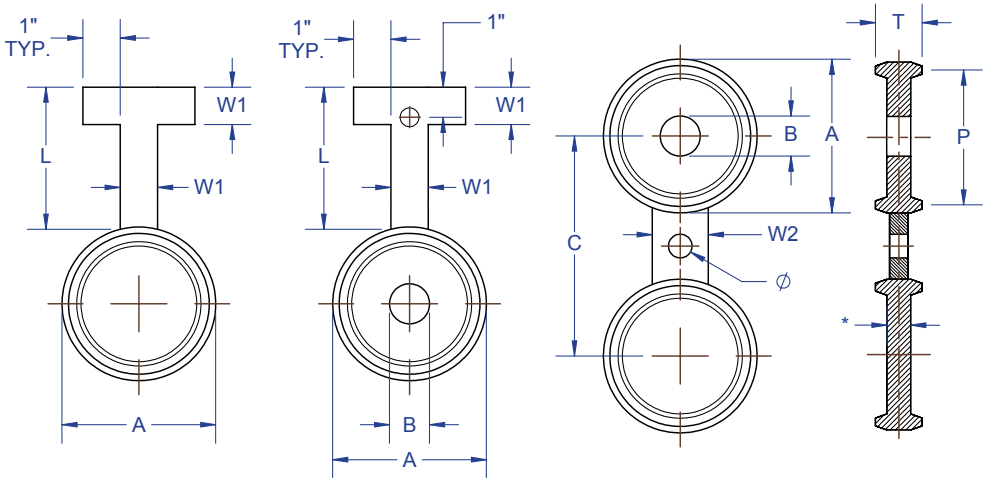
| SIZE   | RATING/FACING | TYPE                                                   | MATERIAL                  | NOTE:                                                                                                  |
|--------|---------------|--------------------------------------------------------|---------------------------|------------------------------------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

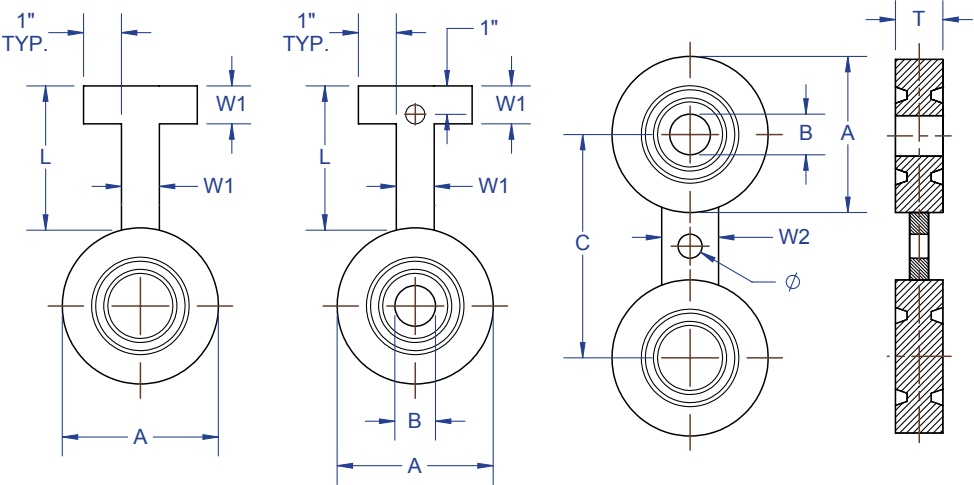
WT=Approximate Weight R#=Ring Number

| SIZE   | RATING/FACING | TYPE                                                   | MATERIAL                  | NOTE:                                                                                                  |
|--------|---------------|--------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------|
| 1/2-12 | 2500/MO       | 1=Paddle Blank<br>1A=Paddle Spacer<br>2=Figure 8 Blank | Per ASME B16.5, Table 1-A | Groove Dimensions are per<br>ASME B16.5, and gasket surface finish<br>& 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                  | NOTE:                                                                                                  |
|--------|---------------|--------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------|
| 1/2-12 | 2500/FG       | 1=Paddle Blank<br>1A=Paddle Spacer<br>2=Figure 8 Blank | Per ASME B16.5, Table 1-A | Groove Dimensions are per<br>ASME B16.5, and gasket surface finish<br>& tolerances are per ANSI B16.20 |

# DRIP RINGS BLEED RINGS & TEST INSERTS



# Drip Rings, Bleed Rings & Test Inserts

## GENERAL INFORMATION

Tolerances are tied to the appropriate code specifications unless otherwise noted.

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.

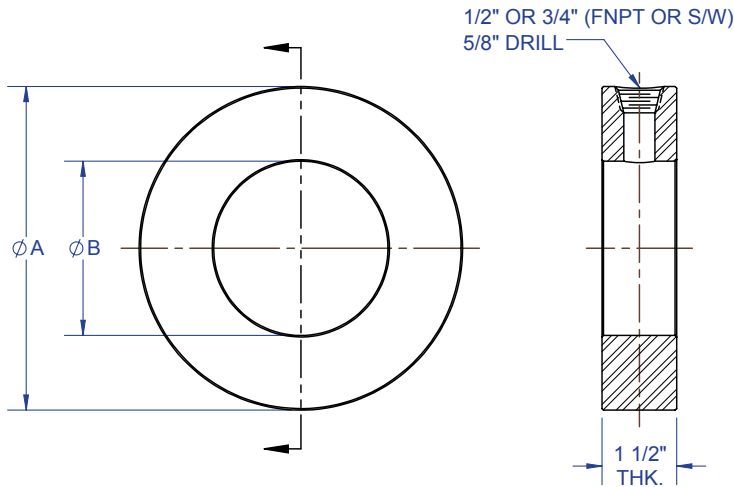
- ANSI B16.5
- ANSI B16.20
- ASME B16.47 (for larger diameter flanges)

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

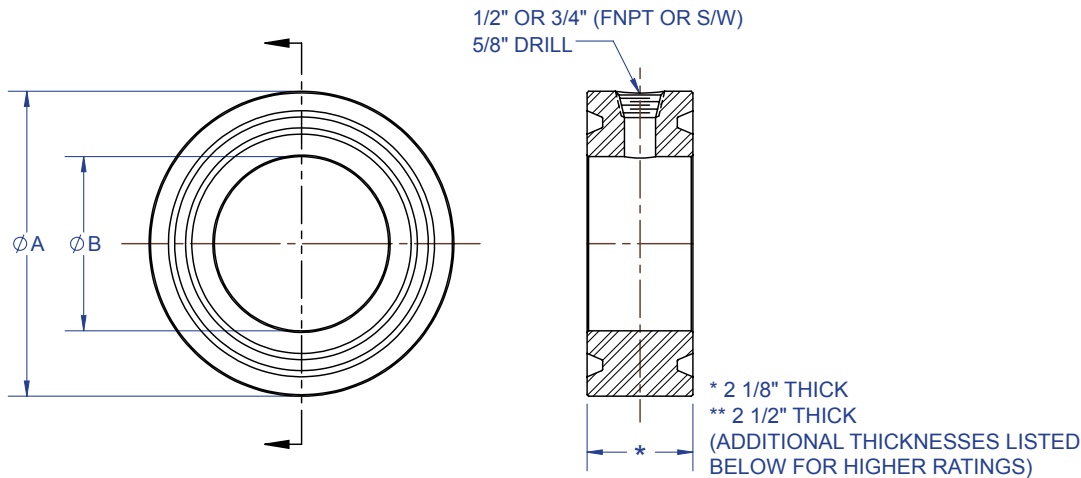
**GASKET SURFACE**  
Smooth mill  
125-250 AARH  
Other



# 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 | -       | -   |

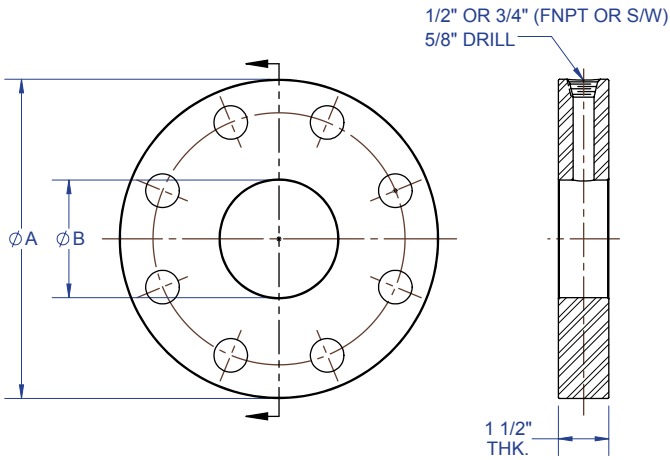
WT=Approximate Weight





# 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**

A516-70  
304 SS  
316 SS  
Others by request

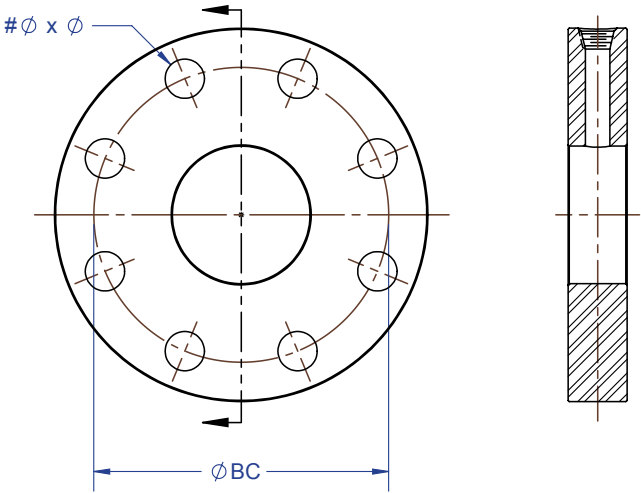
**Gasket Surface**

125-250 AARH  
Other



# Bleed Rings

Standard  
Full Face



## DRILLING INFORMATION

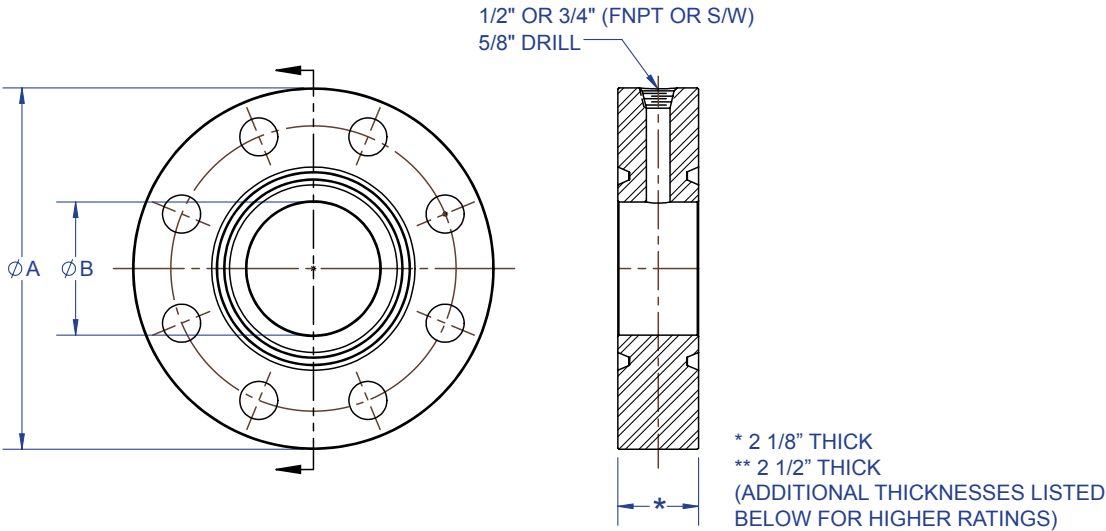
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

| 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 |

Bleed  
Rings

Standard  
Full Face  
Ring Joint

(Drip Rings - Test Inserts)



"A" DIMENSION (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

| 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

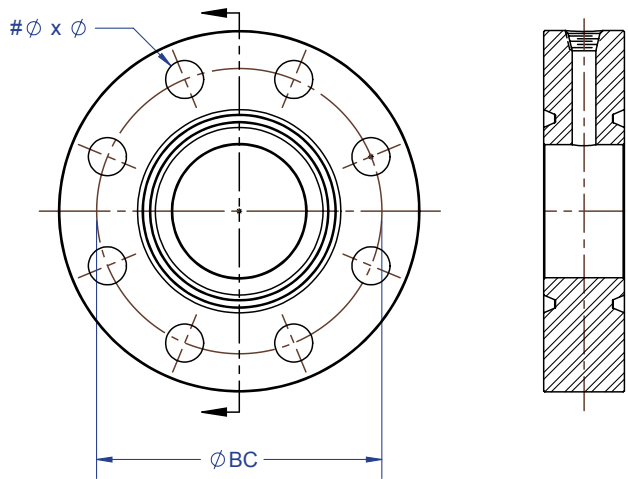
| Additional Thickness | Material          | Gasket Surface |
|----------------------|-------------------|----------------|
| (1) Use 2 1/2" THK   | A516-70           | Machined       |
| (2) Use 2 3/4" THK   | 304 SS            |                |
| (3) Use 3" THK       | 316 SS            |                |
|                      | Others by request |                |



# Bleed Rings

Standard  
Full Face  
Ring Joint

(Drip Rings - Test Inserts)



+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

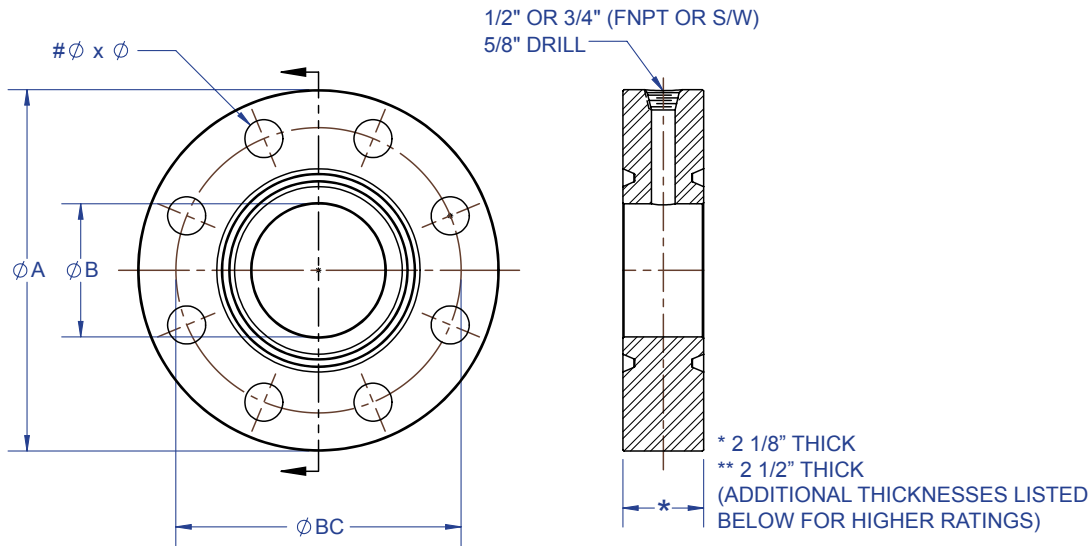
## DRILLING INFORMATION

| 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 | -     | -      | -  |

# 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

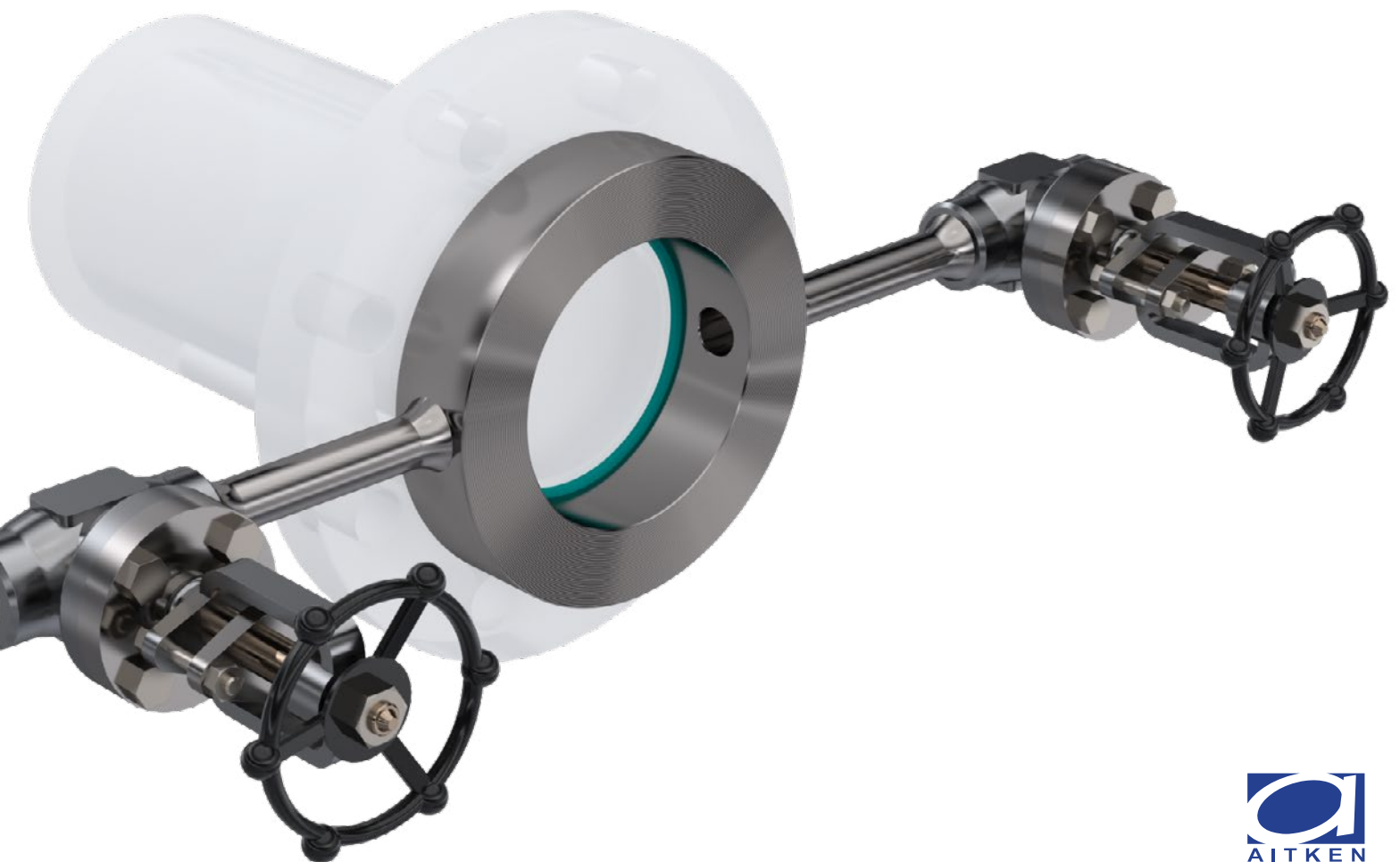
| SIZE     | 3,000# (6B) |       |          | 5,000# (6B) |       |          | 10,000# (6BX) |        |          |
|----------|-------------|-------|----------|-------------|-------|----------|---------------|--------|----------|
|          | $\phi$      | BC    | # $\phi$ | $\phi$      | BC    | # $\phi$ | $\phi$        | BC     | # $\phi$ |
| 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.

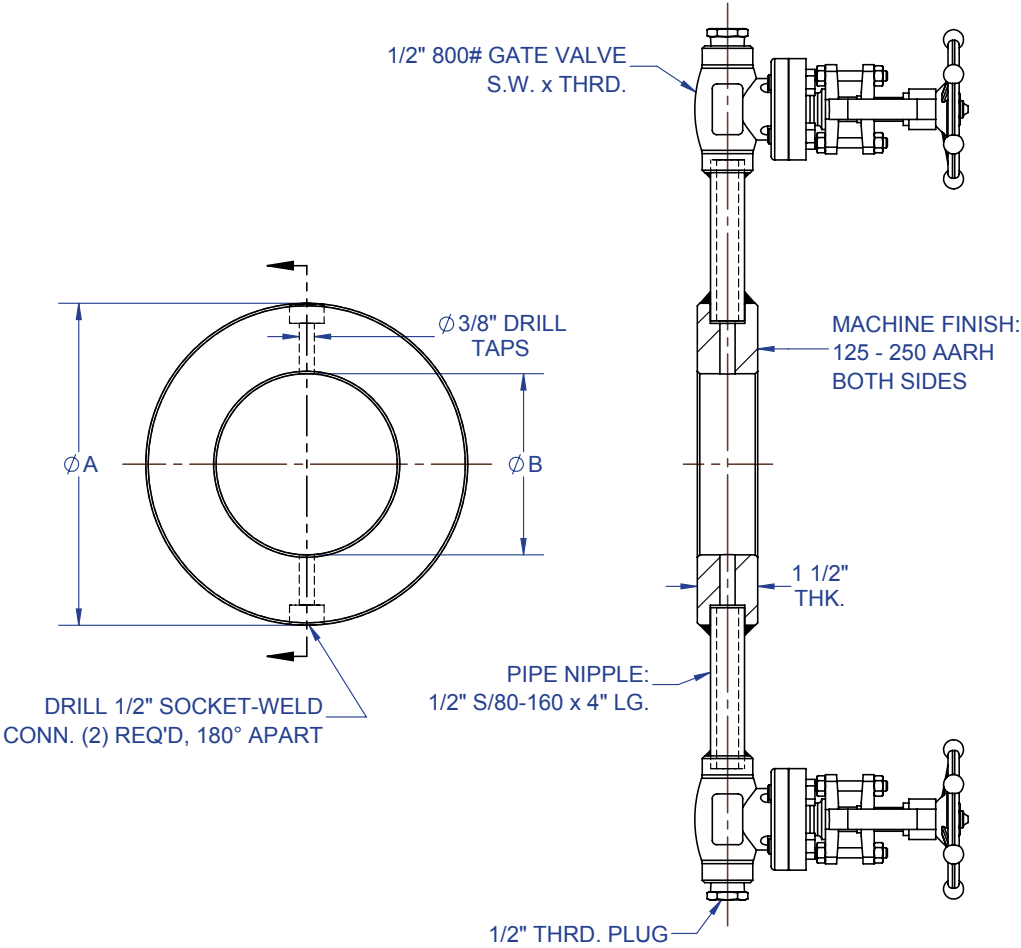
# CALIBRATION RINGS

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# 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

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# 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.

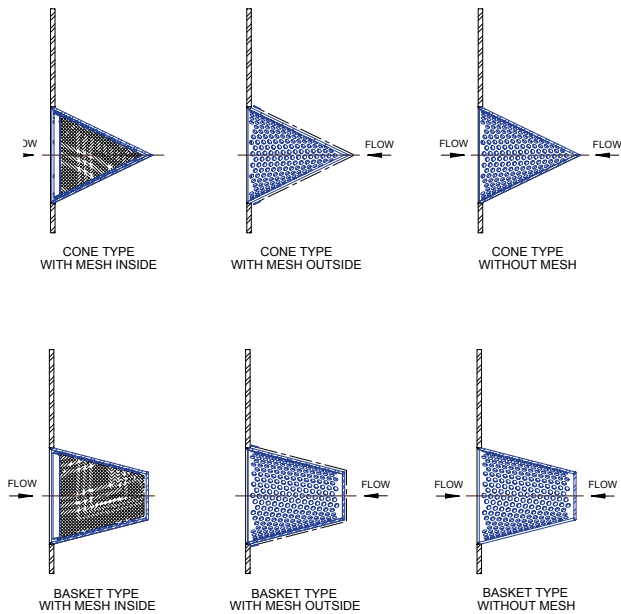
When compared to the cost of replacing damaged pumps, meters, etc., strainers are an inexpensive insurance policy.

Strainers are widely used in the following industries:

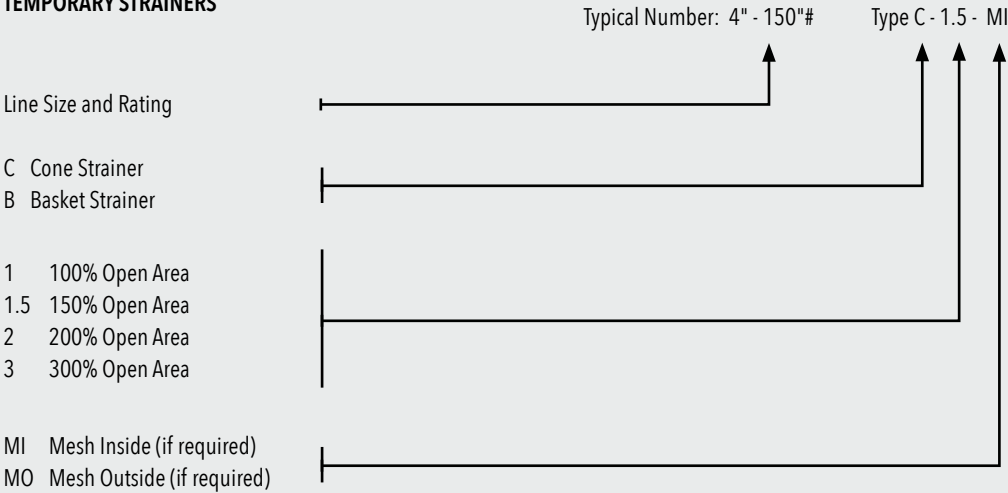
- Tank cars and truck
- Ceramics
- Chemicals
- Electric power
- Food processing
- Marine
- Turbine meter service
- Pipeline
- Paint, ink, latex
- Pulp & paper
- Petroleum refining
- Pharmaceutical
- Process equipment
- Waste & water treatment
- Compressor stations
- Co-generation

# Strainers

Temporary  
"Start-Up"



## MODEL NUMBER FOR AITKEN TEMPORARY STRAINERS



## 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.

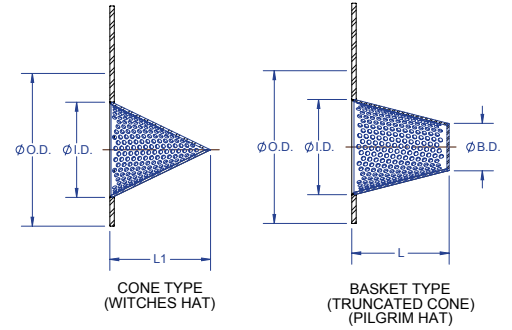
Special 3-PLY compressor suction strainers are also available.

# Strainer

## Dimensions

### FLANGE DIMENSIONS

| NOMINAL<br>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:

- 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.
- Special lengths are available.
- B.D. equals 1/2 the nominal pipe size.
- Open areas shown are based upon perforation size of 1/8" on 3/16" cntr.

### CONE LENGTH "L1"

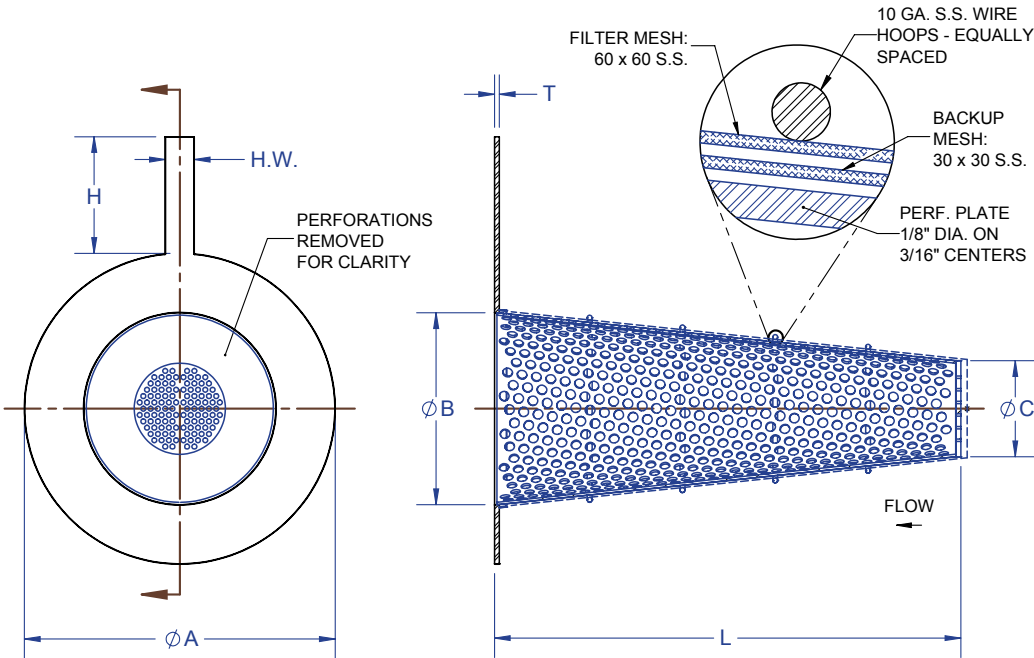
| NOMINAL<br>PIPE SIZE | 100%<br>C-1 | 150%<br>C-1.5 | 200%<br>C-2 | 300%<br>C-3 |
|----------------------|-------------|---------------|-------------|-------------|
| 1 1/2"               | 3.500"      | 4.500"        | 6.000"      | 9.000"      |
| 2"                   | 4.000"      | 6.000"        | 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<br>PIPE SIZE | 100%<br>B-1 | 150%<br>B-1.5 | 200%<br>B-2 | 300%<br>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

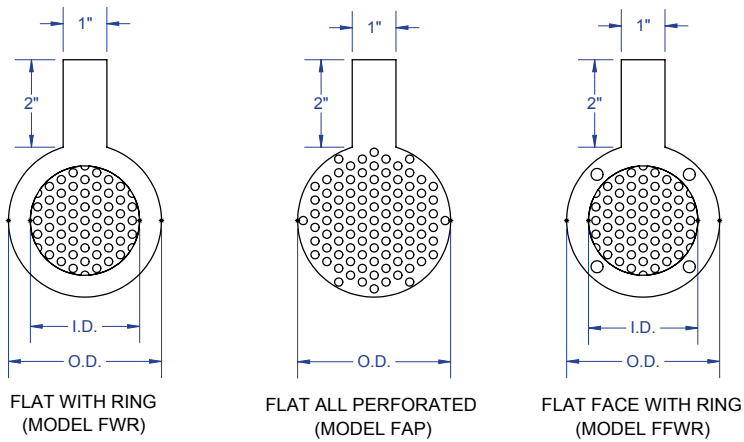
| NOMINAL PIPE SIZE | CLASS 150 A | CLASS 300 A | CLASS 600 A | B       | C       | HW    | H     | L      | #HOOPS | T       |
|-------------------|-------------|-------------|-------------|---------|---------|-------|-------|--------|--------|---------|
| 2"                | 4.00"       | 4.25"       | 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"  |



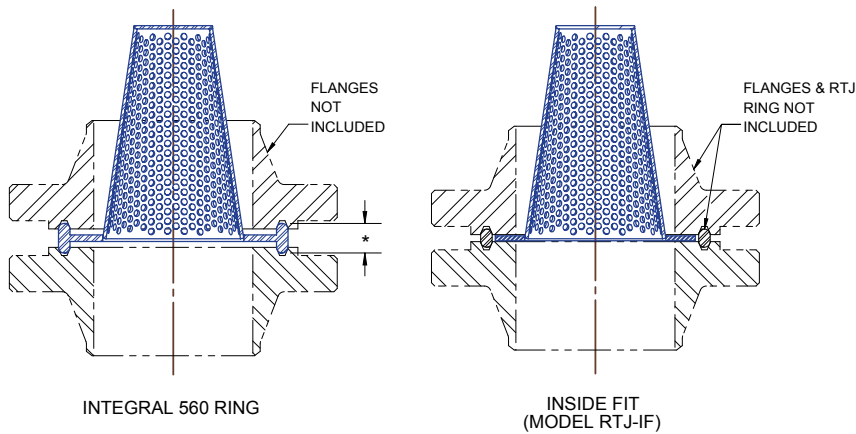
Ring joint flange compatible strainers also available.

# Facings

Flat Strainers  
& Ring Joint  
Strainers



## STRAINER FOR RING JOINT FACINGS



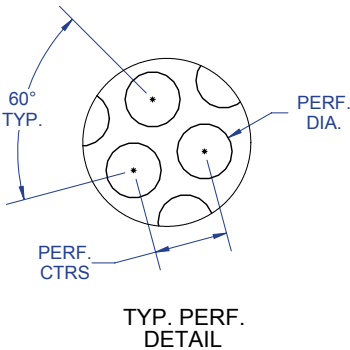
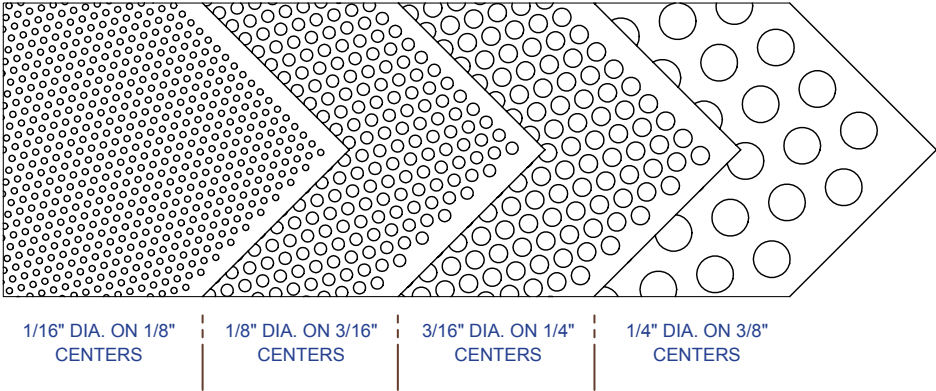
\*Thickness exceeds standard ring dimensions.



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

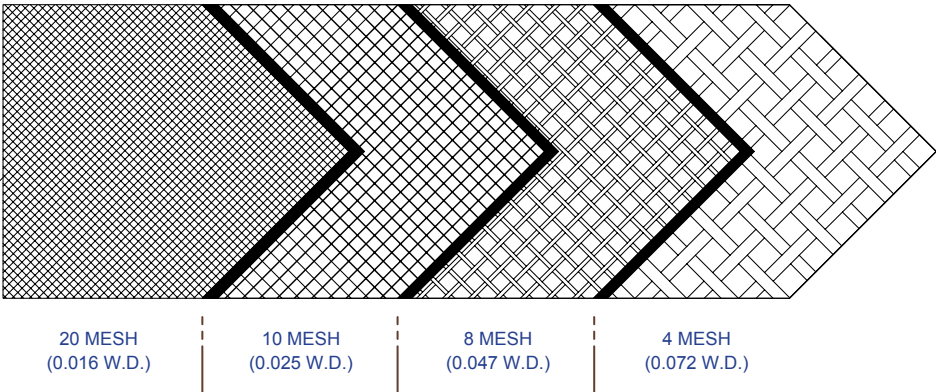
| GAGE | PERFORATION          | HOLES / SQ IN | % OF OPEN AREA | MATERIAL RANGE                                  |
|------|----------------------|---------------|----------------|-------------------------------------------------|
| 20   | 1/16"Ø on 1/8" ctrs. | 74.0          | 22.7%          | Carbon Steel, 304SS, 316SS                      |
| 16   | 1/8"Ø on 3/16" ctrs. | 33.0          | 40.3%          | Carbon Steel, 304SS, 316SS<br>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<br>(SSU) | PERFORATED<br>(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<br>(SSU) | PERFORATED<br>(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    |



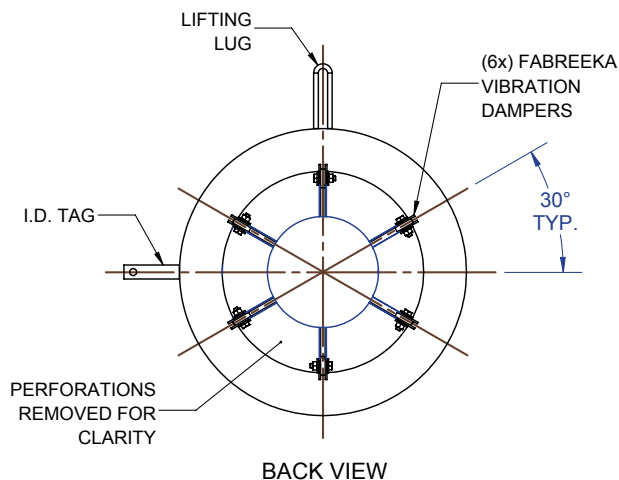
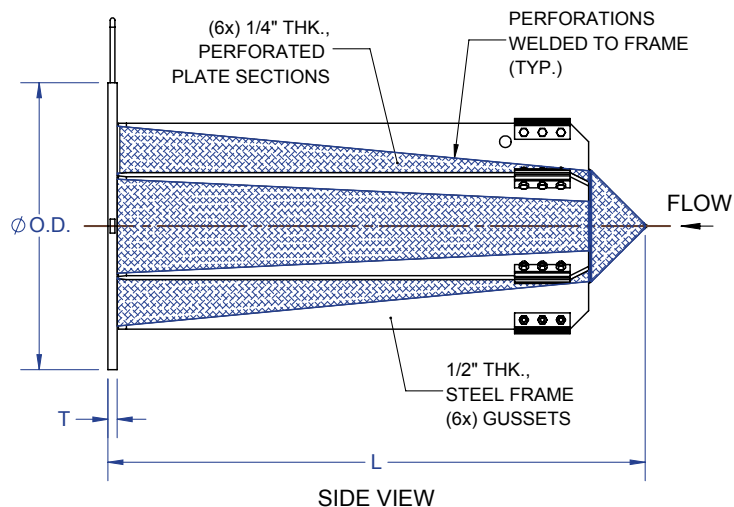
# TYPE-R



# Type-R Rev 4

Compressor  
Suction  
Strainer

(For Raised / Flat Face Flanges)



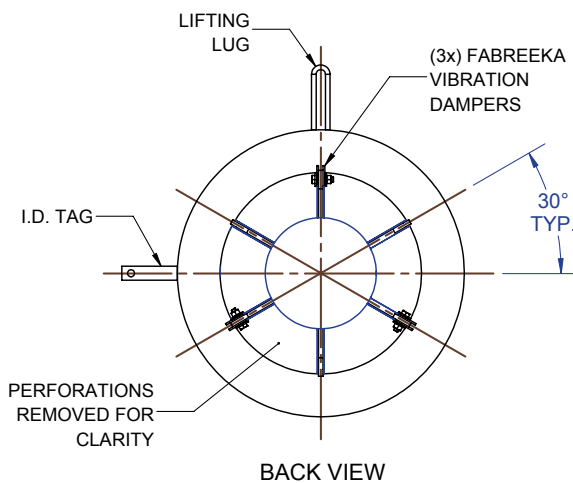
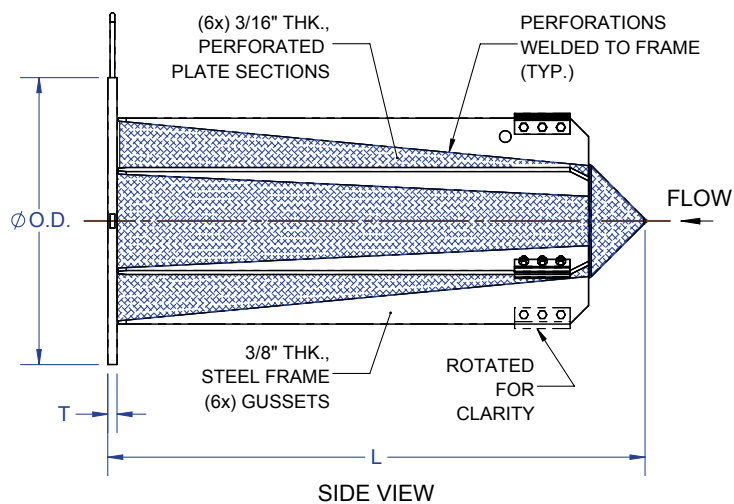
## Notes:

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)



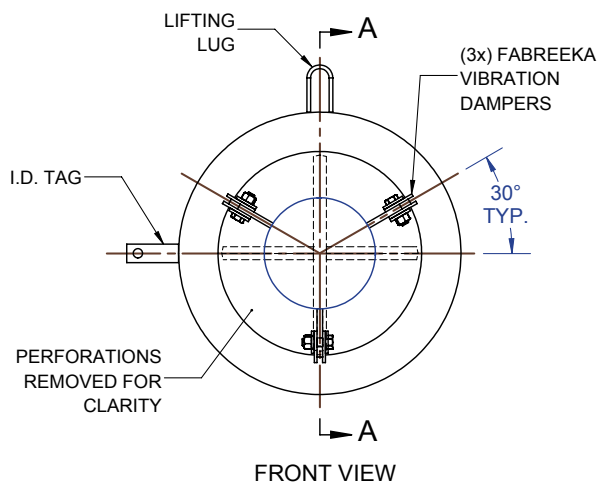
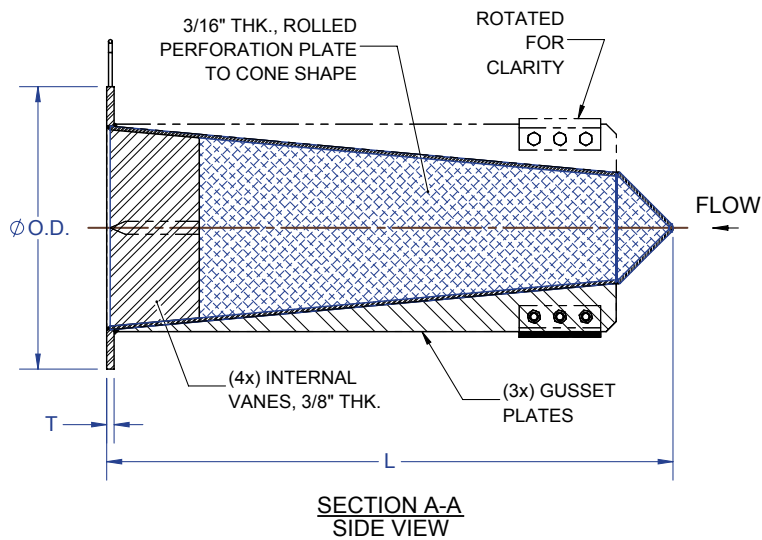
## Notes:

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)



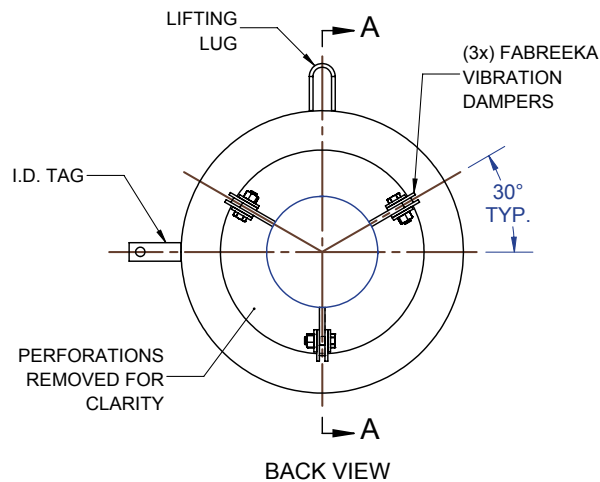
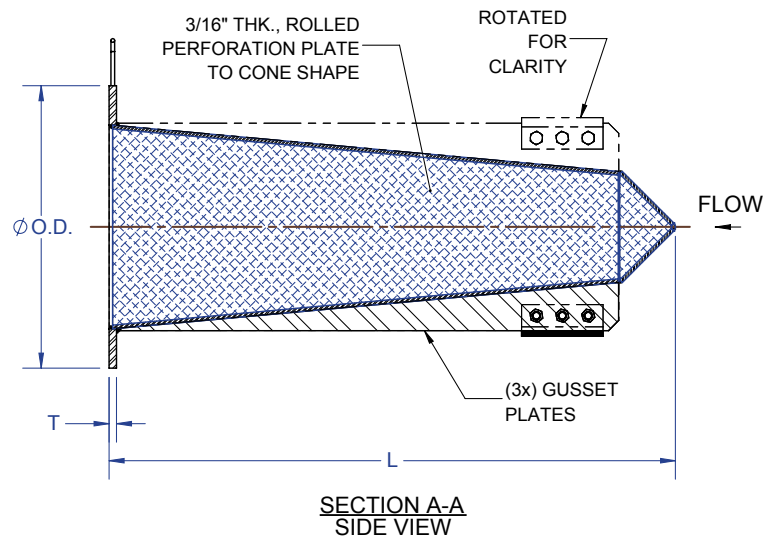
## Notes:

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)

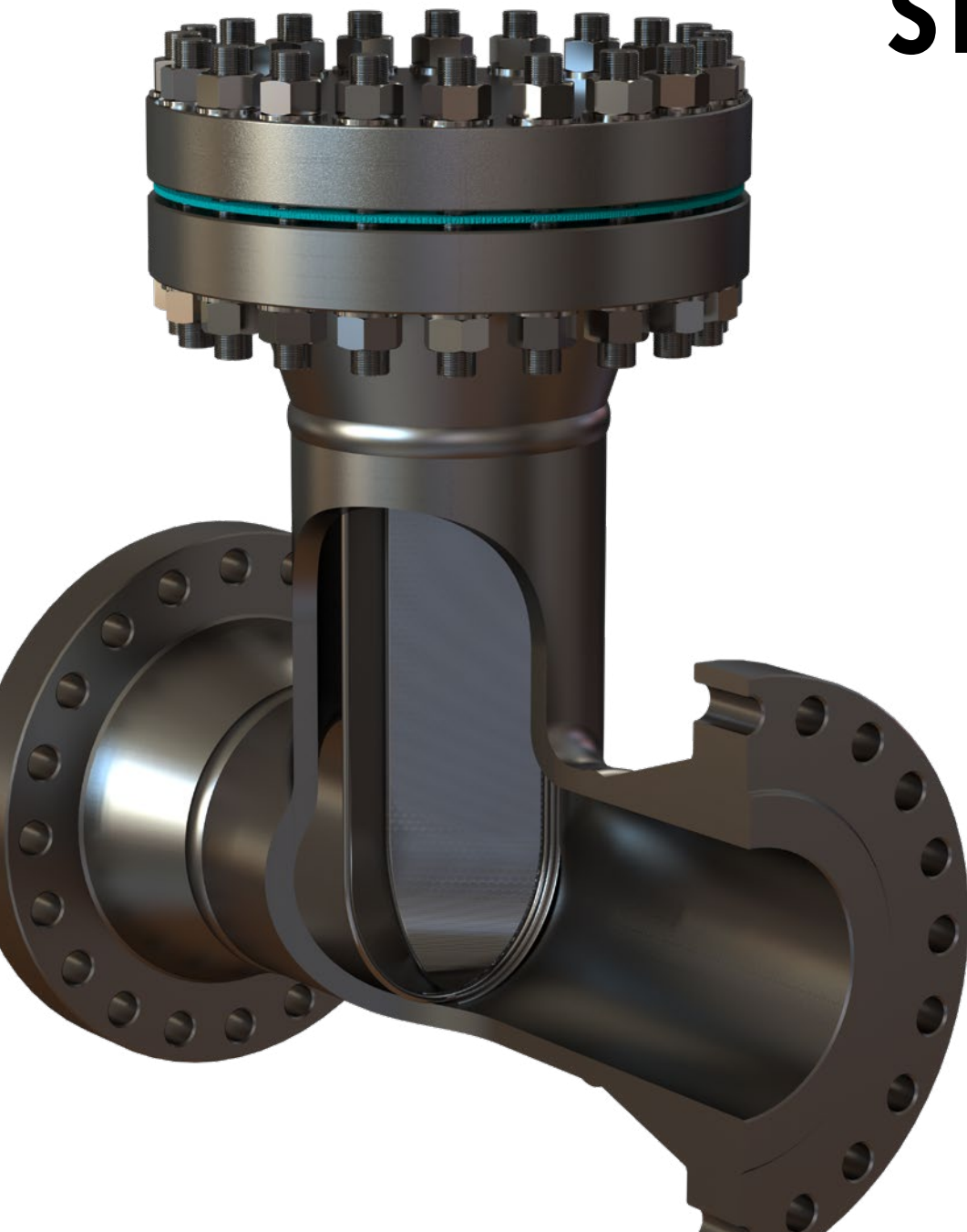


## Notes:

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

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# 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

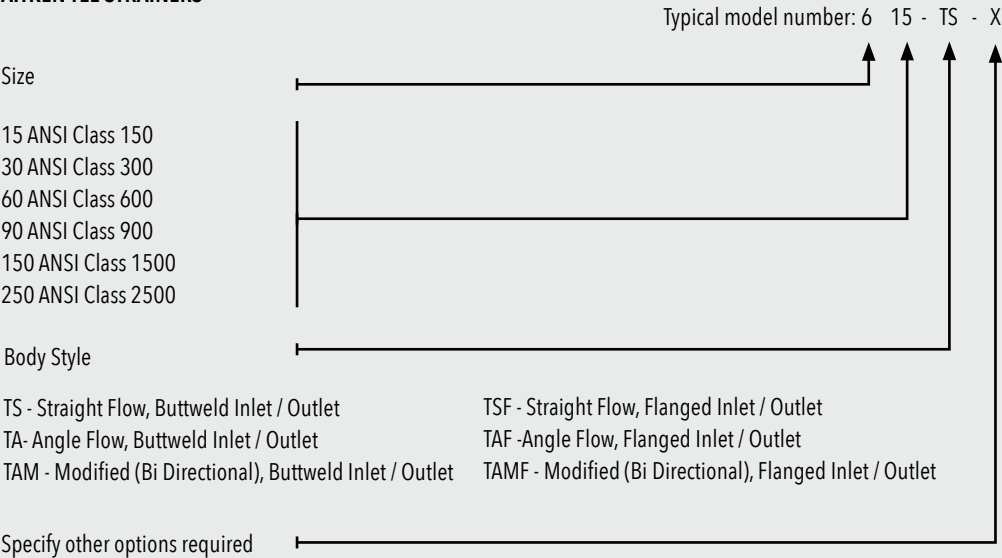
**OPTIONS:**  
1. Quick opening closures  
2. Pressure tap connections  
3. Vents  
4. Davit for access blind flange  
5. Blowdown basket

**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.

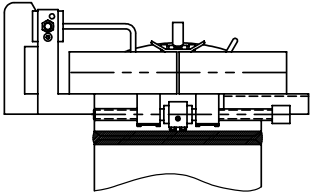
**PAINT/COATINGS:**  
Provided with external SP-3 mechanical tool cleaning and one coat of shop primer or as specified by customer.

**NOTE:**  
Per applicable code and/or as specified by customer.

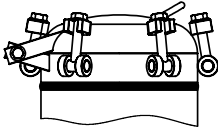
## MODEL NUMBER FOR AITKEN TEE STRAINERS



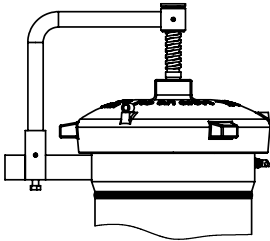
# Tee Strainer Options



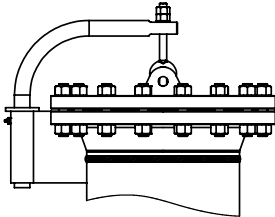
DOUBLE - BOLT CLOSURE



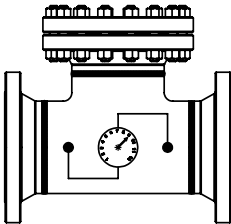
T-BOLT CLOSURE



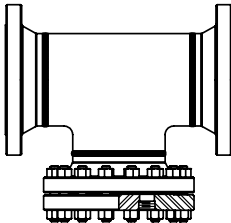
THREADED CLOSURE



DAVIT FOR BLIND FLANGE

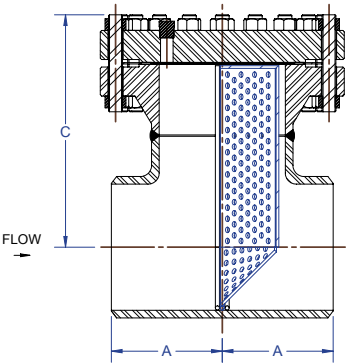


DIFFERENTIAL PRESSURE CONNECTIONS

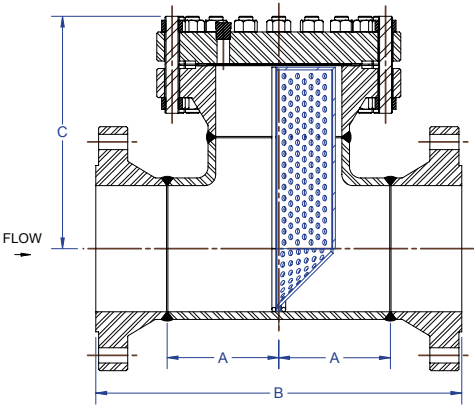


BLOW DOWN CONNECTION

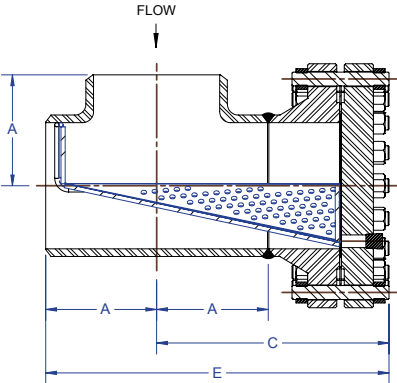
# Tee Type Strainers



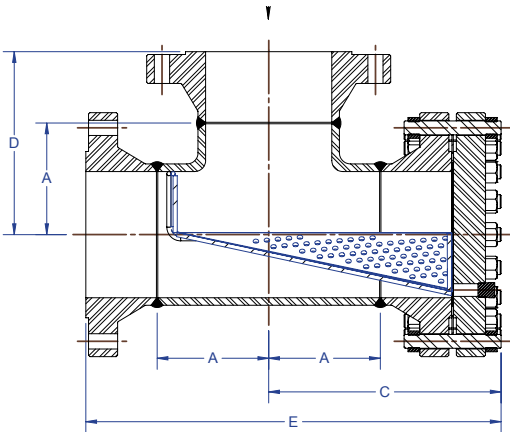
TEE STRAIGHT BUTTWELD (TS)



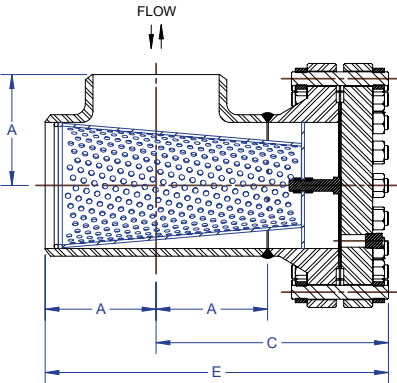
TEE STRAIGHT FLANGED (TSF)



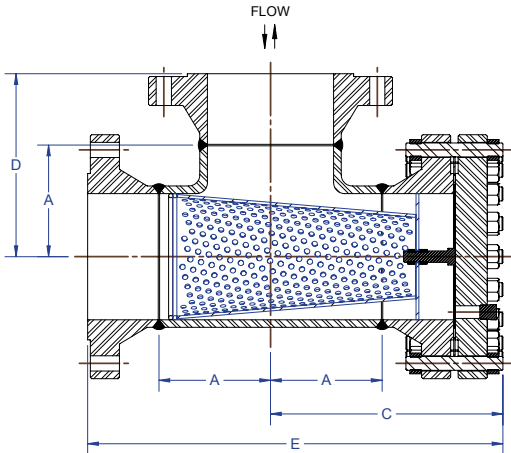
TEE ANGLE FLOW BUTTWELD (TA)



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 |

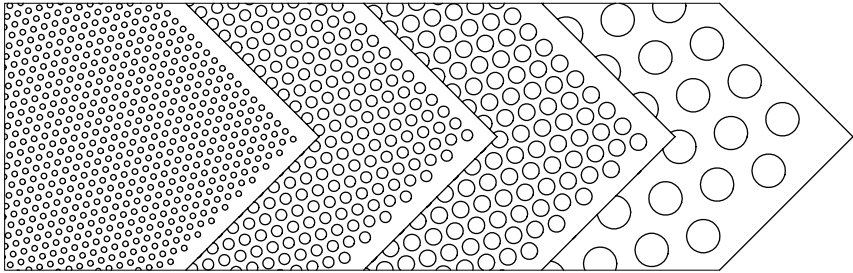
WEIGHTS FOR ANGLE MODIFIED FLOW TEE  
STRAINER W / FLANGED INLET & OUTLET

| 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 |

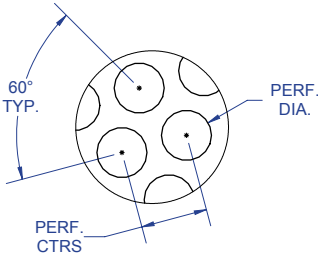
+ CUSTOM SIZES AND RATINGS  
AVAILABLE UPON REQUEST

# Base Material

Perforated



1/16" DIA. ON 1/8" CENTERS | 1/8" DIA. ON 3/16" CENTERS | 3/16" DIA. ON 1/4" CENTERS | 1/4" DIA. ON 3/8" CENTERS



TYP. PERF. DETAIL

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

PERFORATED MATERIALS

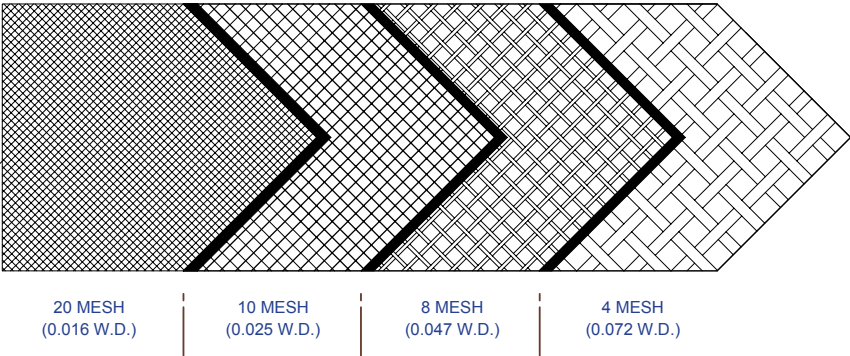
| GAGE | PERFORATIONS         | HOLES / SQ.IN. | % OF OPEN AREA | MATERIAL RANGE                                  |
|------|----------------------|----------------|----------------|-------------------------------------------------|
| 20"  | 1/16"Ø on 1/8" ctrs. | 74.0           | 22.7%          | Carbon Steel, 304SS, 316SS                      |
| 16"  | 1/8"Ø on 3/16" ctrs. | 33.0           | 40.3%          | Carbon Steel, 304SS, 316SS<br>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

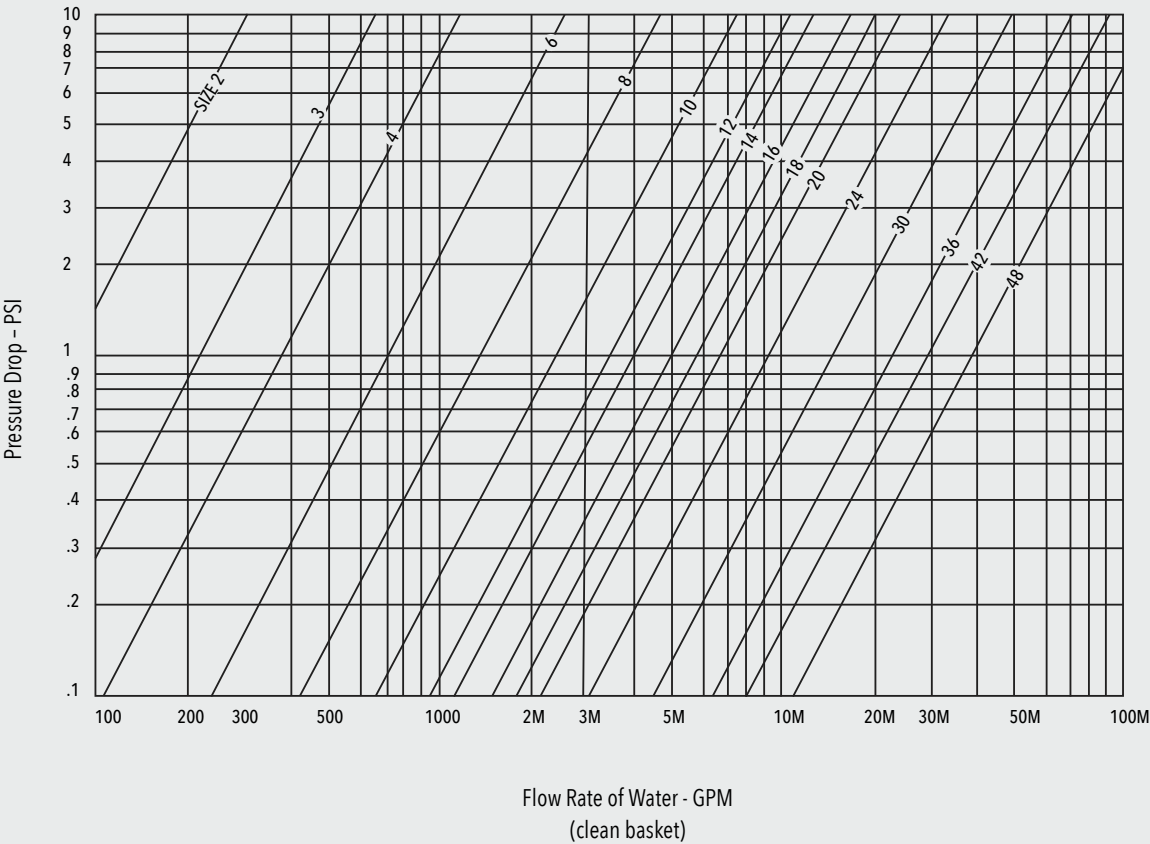
**CORRECTION FACTOR:**

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

| VISCOSITY<br>(SSU) | PERFORATED<br>(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 STRAINERS

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# 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**

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

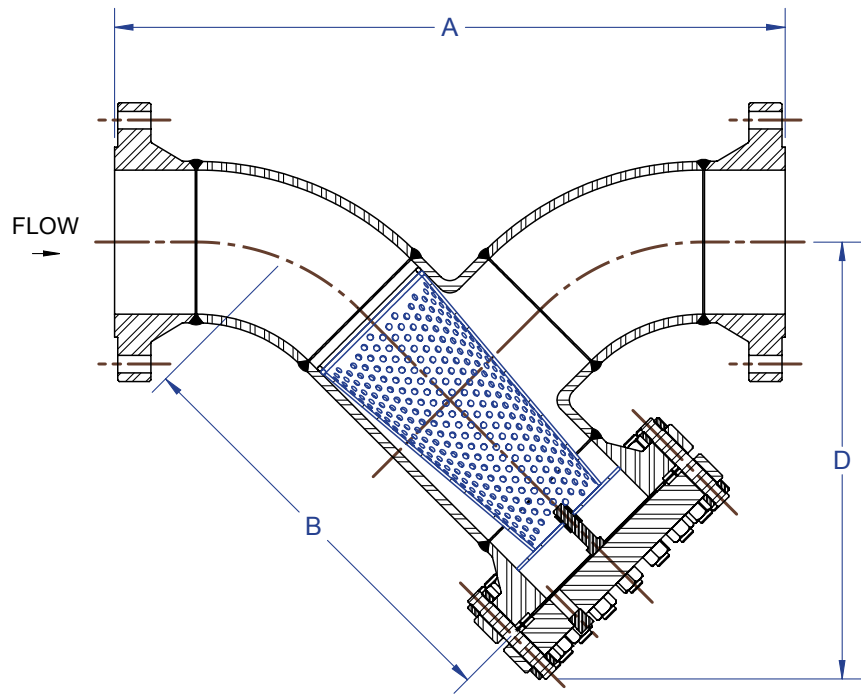
Specify other options required

Typical model number: 6 15 - YBS - X



# 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    |

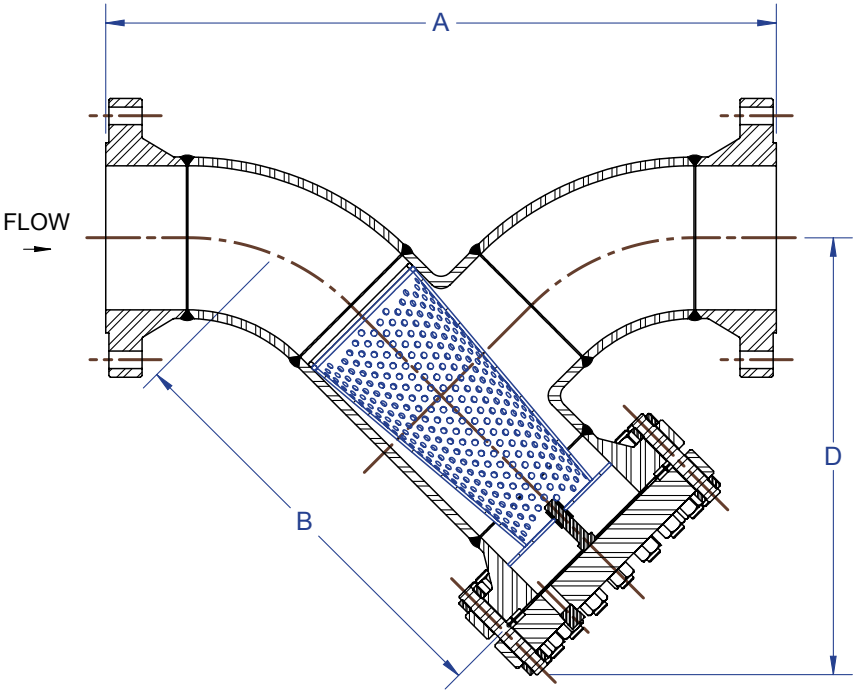
Note: Dimensions shown are reference dimensions for estimating purposes only. Actual dimensions will be provided on "as-built" drawings, available with order. The dimensions above are only applicable with raised face weld neck (RFWN) flanges. All dimensions are based on standard sizes listed in specifications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



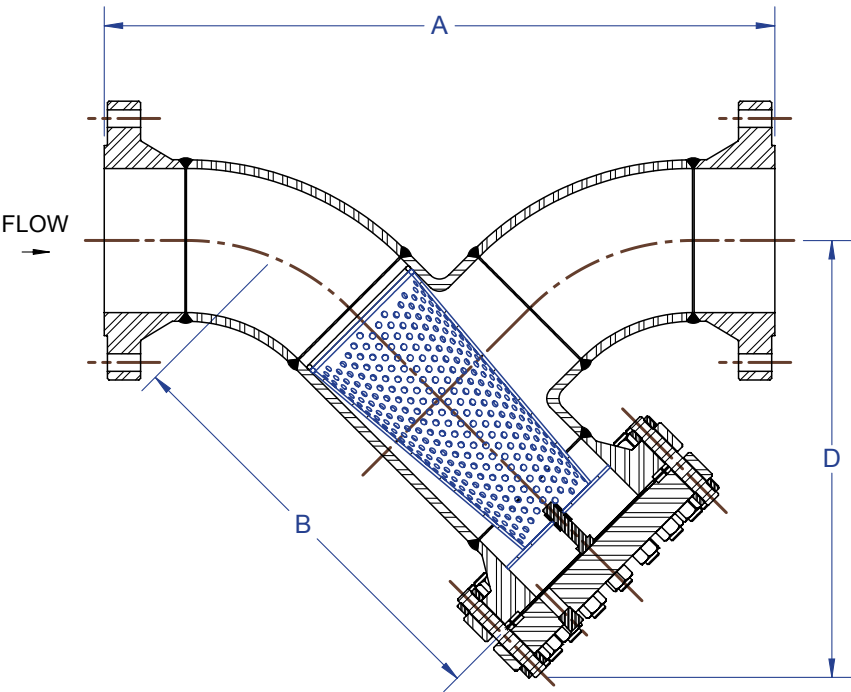
DIMENSIONAL DATA (IN)

+ 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    |

# Class 600 Fabricated Flanged Wye Strainer

Model YBS Standard



## DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

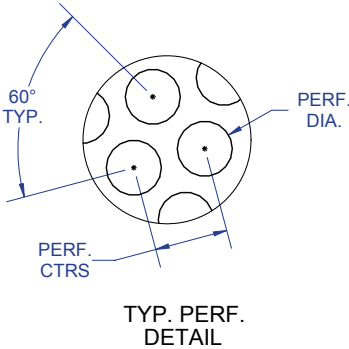
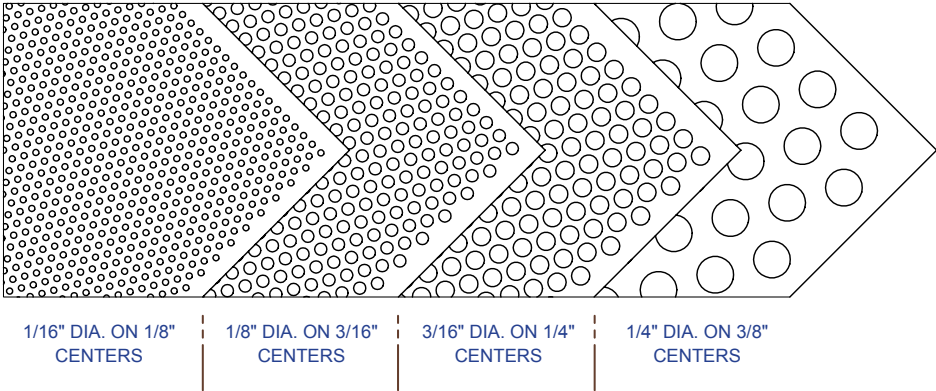
| SIZE | DIM. A    | DIM. B  | DIM. C  | DIM. D    | WT (LBS) |
|------|-----------|---------|---------|-----------|----------|
| *2"  | 14 1/2"   | 9 5/8"  | 17 3/4" | 9 7/8"    | 55       |
| 3"   | 19 1/8"   | 12 1/2" | 22 3/4" | 12 3/4"   | 99       |
| 4"   | 23 1/4"   | 15 3/4" | 28 1/4" | 16 3/16"  | 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

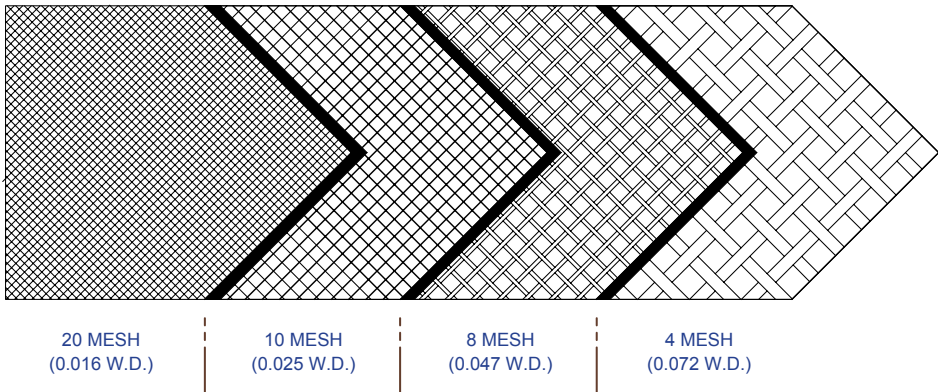
| GAGE | PERFORATIONS         | HOLES / SQ.IN. | % OF OPEN AREA | MATERIAL RANGE                                  |
|------|----------------------|----------------|----------------|-------------------------------------------------|
| 20"  | 1/16"Ø on 1/8" ctrs. | 74.0           | 22.7%          | Carbon Steel, 304SS, 316SS                      |
| 16"  | 1/8"Ø on 3/16" ctrs. | 33.0           | 40.3%          | Carbon Steel, 304SS, 316SS<br>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

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# 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

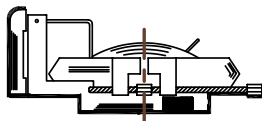
250 ANSI Class 2500

Body Size

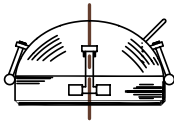
Specify other options required



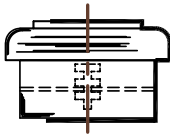
# Strainer Options



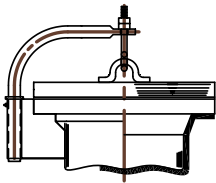
DOUBLE - BOLT CLOSURE



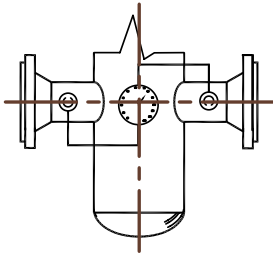
T-BOLT CLOSURE



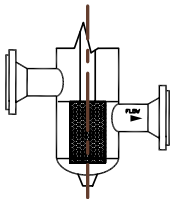
THREADED CLOSURE



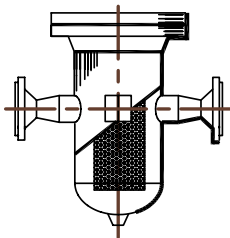
DAVIT FOR BLIND FLANGE



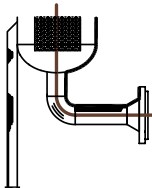
DIFFERENTIAL PRESSURE CONNECTIONS



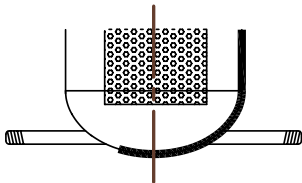
OFFSET NOZZLES



TURBINE METER STRAINER



LEG OR SKIRT W/ BOTTOM DRAIN



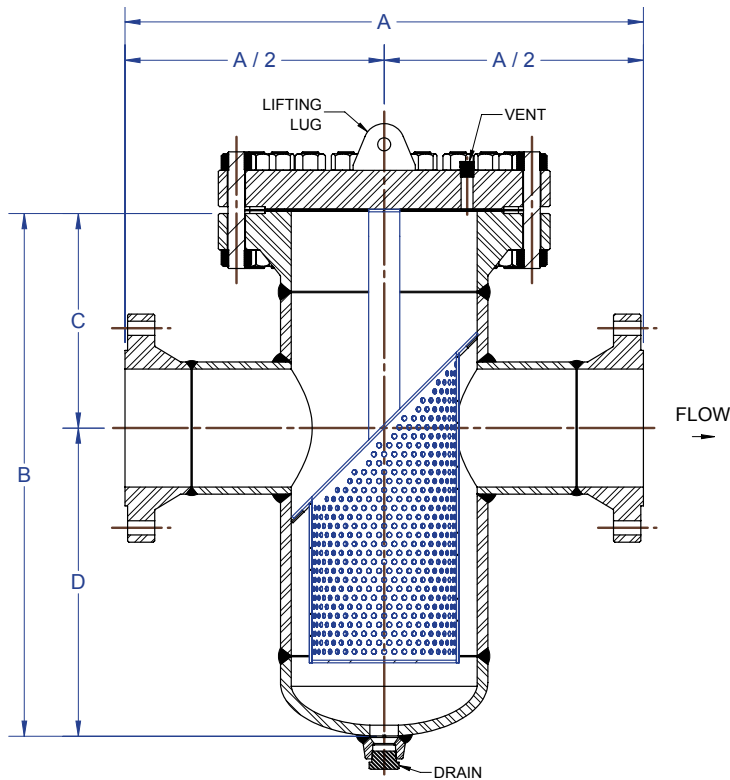
SIDE DRAIN



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

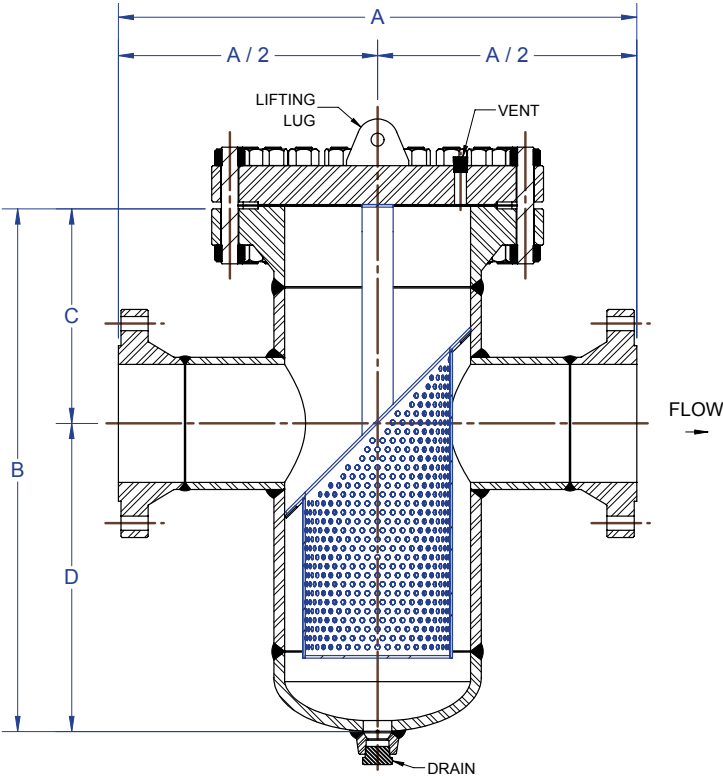
| NOZZLE<br>SIZE (NPS) | VESSEL<br>SIZE (NPS) | DIMENSIONAL DATA (IN) |     |     |     | OPEN<br>AREA** | DRAIN<br>SIZE | WT (LBS)     |              |              |
|----------------------|----------------------|-----------------------|-----|-----|-----|----------------|---------------|--------------|--------------|--------------|
|                      |                      | A                     | B*  | C   | D   |                |               | CLASS<br>150 | CLASS<br>300 | CLASS<br>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.

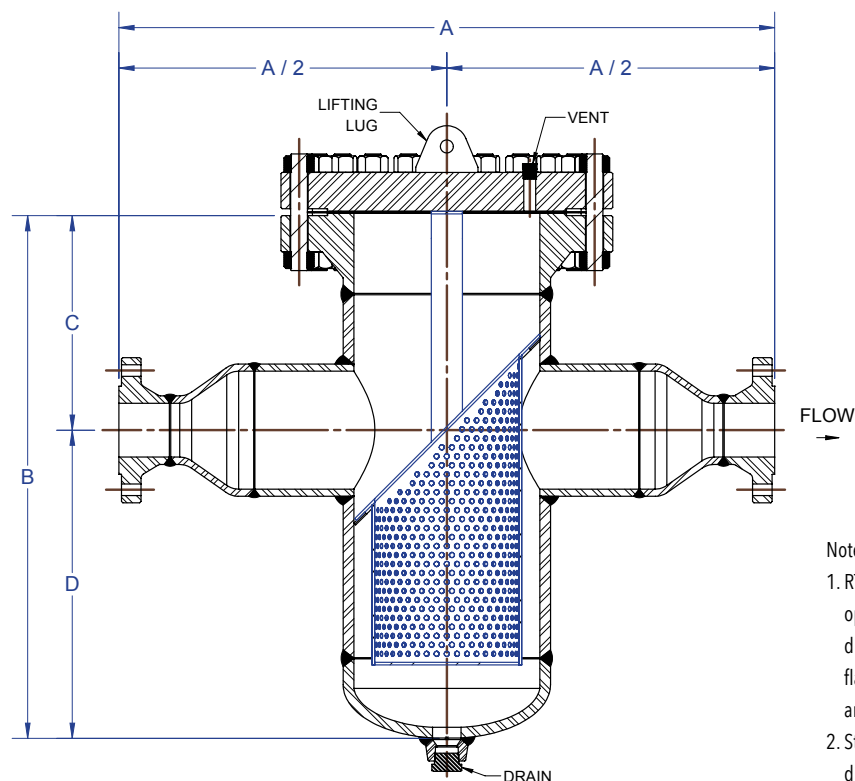
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

| NOZZLE<br>SIZE (NPS) | VESSEL<br>SIZE (NPS) | DIMENSIONAL DATA (IN) |     |     |     | OPEN<br>AREA** | DRAIN<br>SIZE | WT (LBS)     |              |              |
|----------------------|----------------------|-----------------------|-----|-----|-----|----------------|---------------|--------------|--------------|--------------|
|                      |                      | A                     | B*  | C   | D   |                |               | CLASS<br>150 | CLASS<br>300 | CLASS<br>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<br>SIZE (NPS) | VESSEL<br>SIZE (NPS) | DIMENSIONAL DATA (IN) |     |     |     |                | DRAIN<br>SIZE | WT (LBS)     |              |              |
|----------------------|----------------------|-----------------------|-----|-----|-----|----------------|---------------|--------------|--------------|--------------|
|                      |                      | A                     | B*  | C   | D   | OPEN<br>AREA** |               | CLASS<br>150 | CLASS<br>300 | CLASS<br>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        |

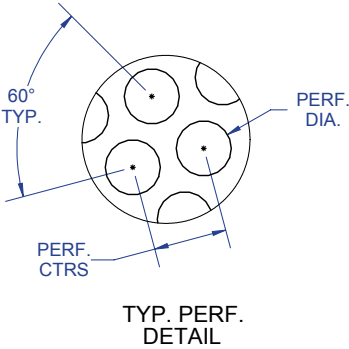
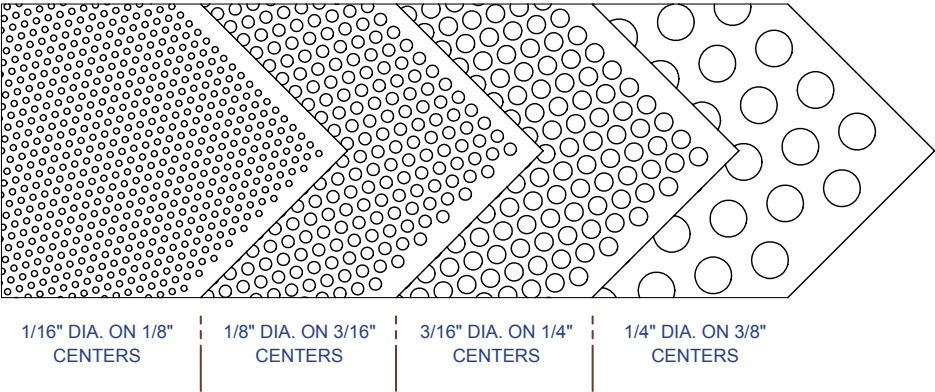


Dimensions for reference only. Certified drawings are available with order. \*Also the recommended clearance for basket removal.  
\*\*Ratio of the inlet ID area to basket open area. (Open area based on Class 150 with STD pipe schedule).  
Standard design and fabrication: ASME B31.3 (Other codes available).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



# Base Material

Perforated



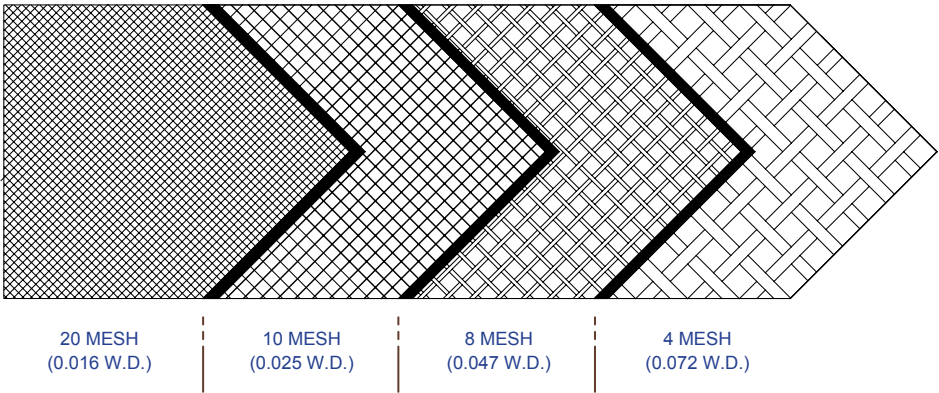
PERFORATED MATERIALS

+ 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<br>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 |

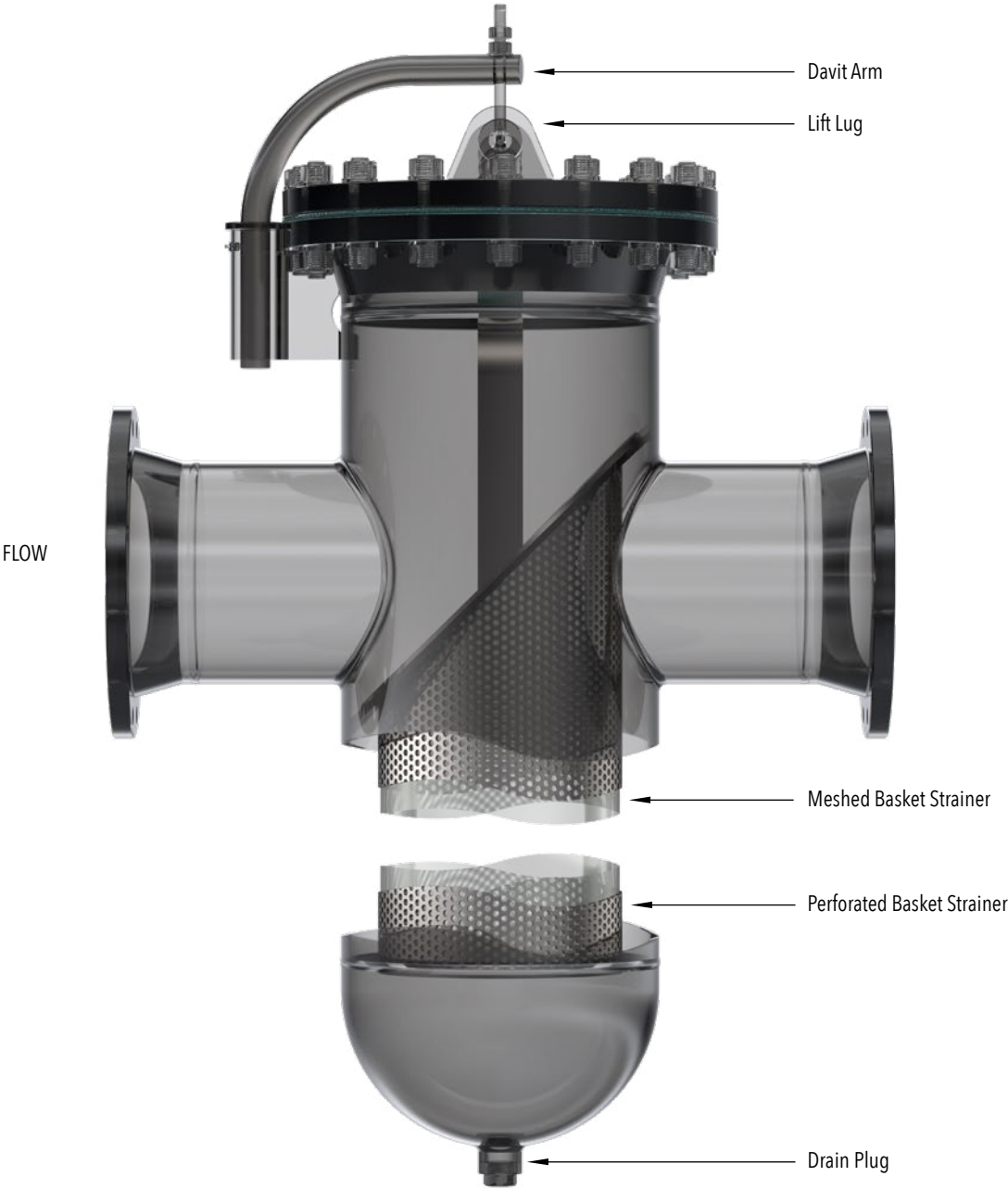
WIRE MESH LINER MATERIAL

+ 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

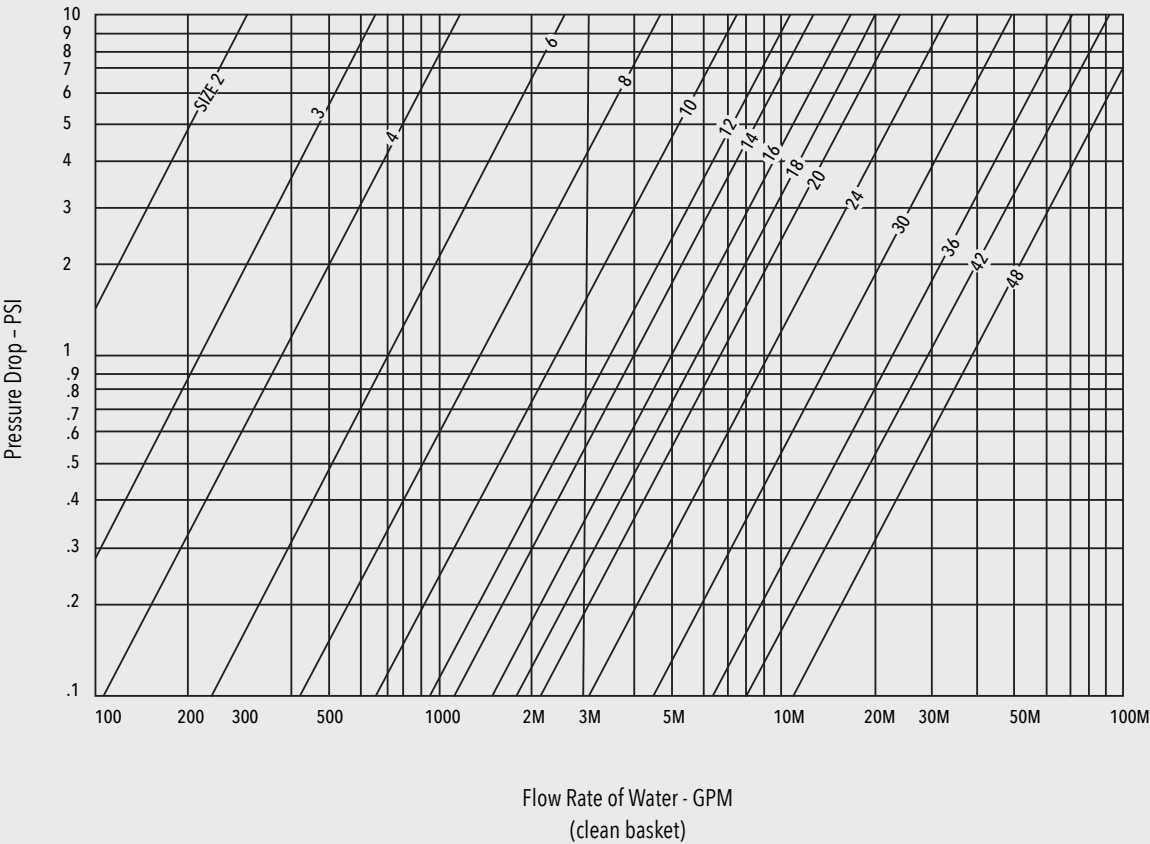
**CORRECTION FACTOR:**

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

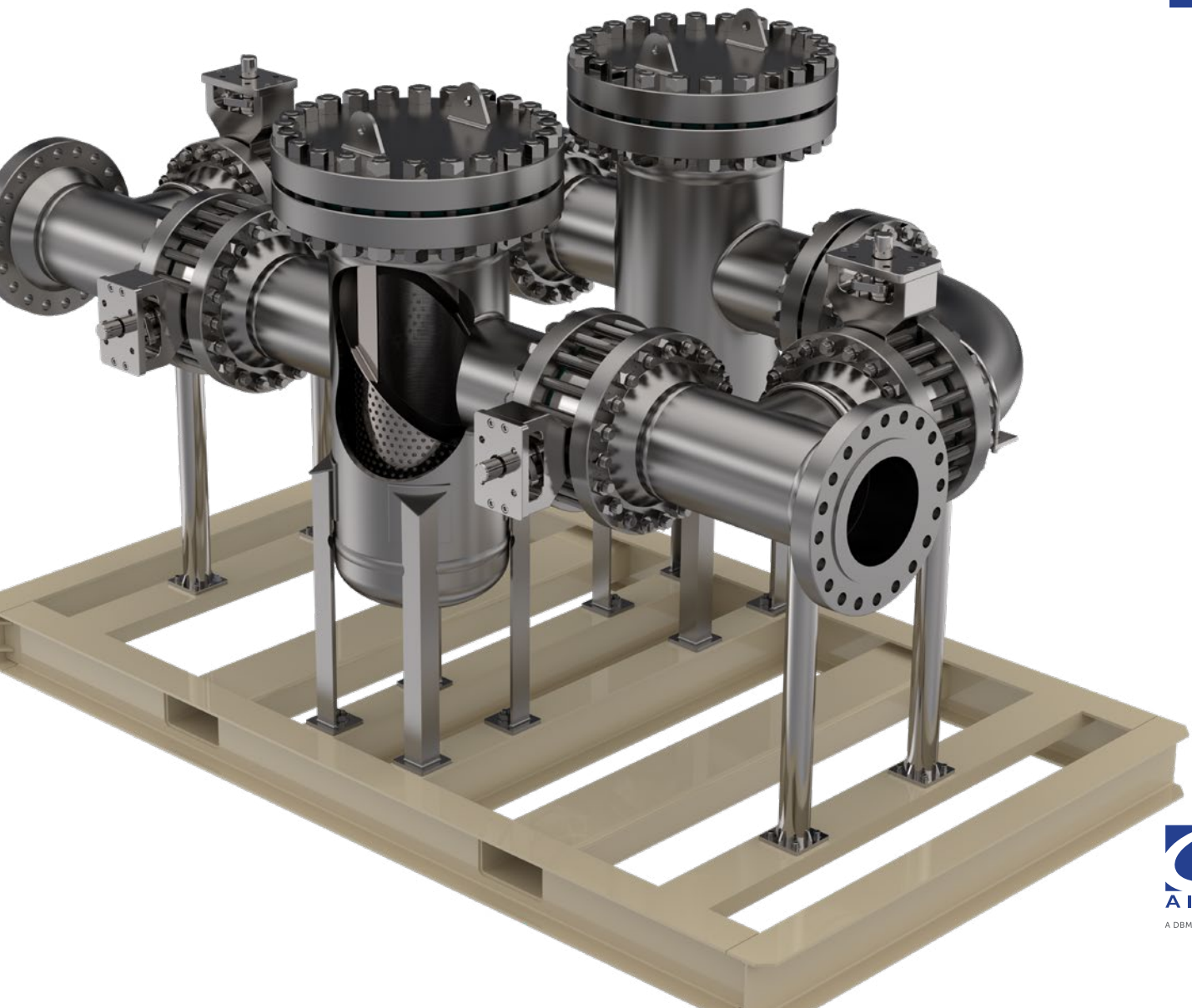
| VISCOSITY<br>(SSU) | PERFORATED<br>(1/8" HOLES) | PERFORATED W/ WIRE CLOTH |         |         |
|--------------------|----------------------------|--------------------------|---------|---------|
|                    |                            | 40 MESH                  | 60 MESH | 80 MESH |
| 30                 | 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**

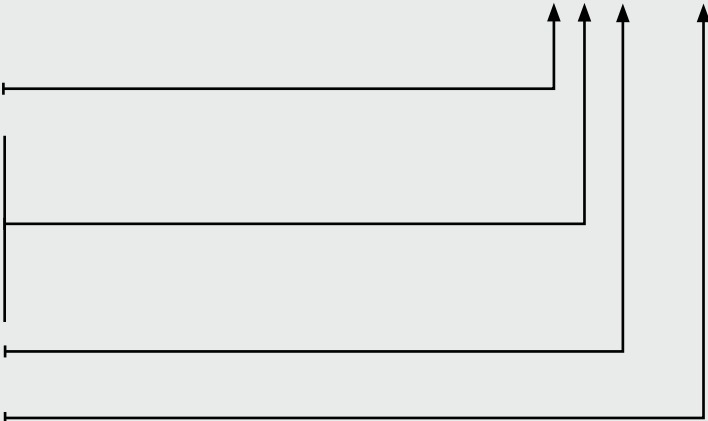
Inlet / Outlet size

- 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

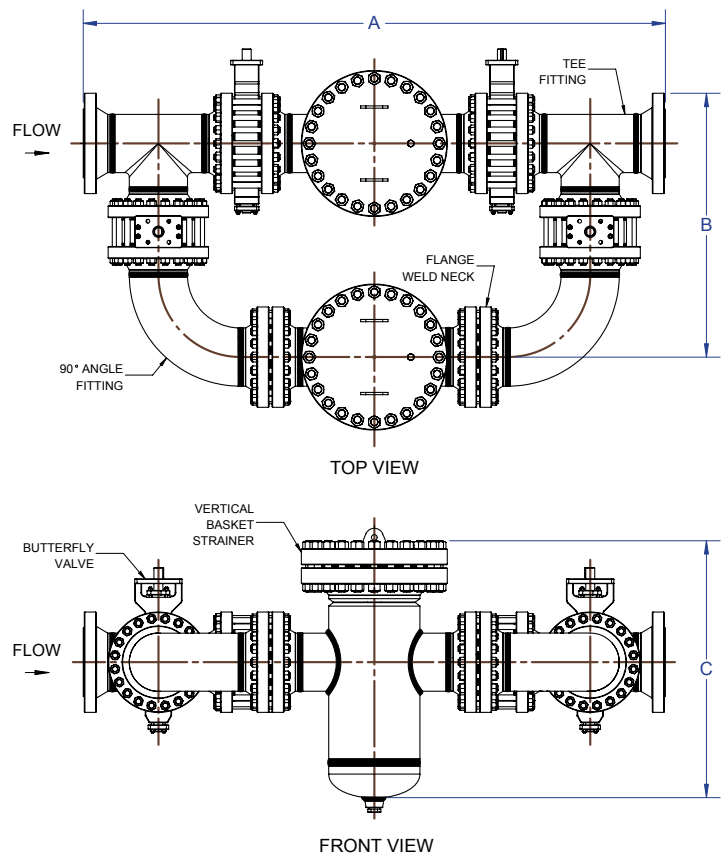
Specify other options required

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)

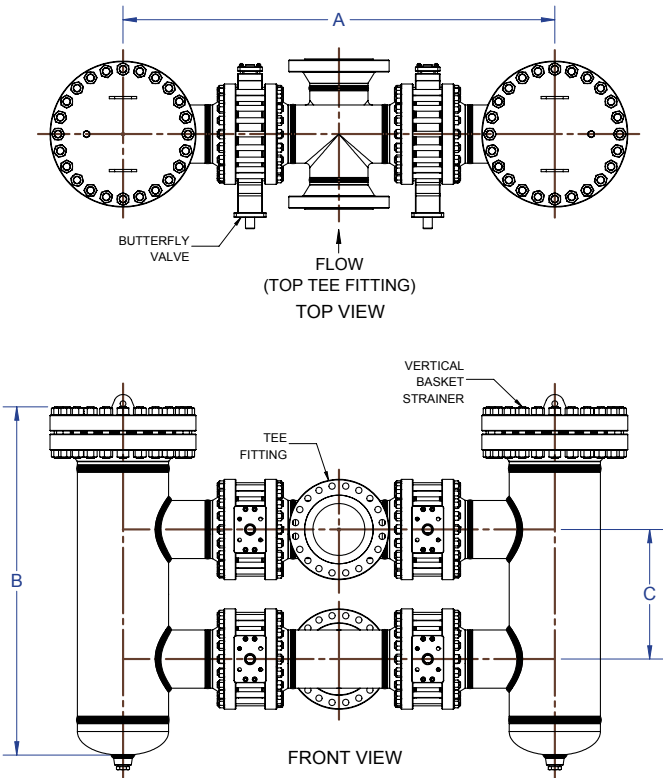
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

| NOZZLE/<br>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.

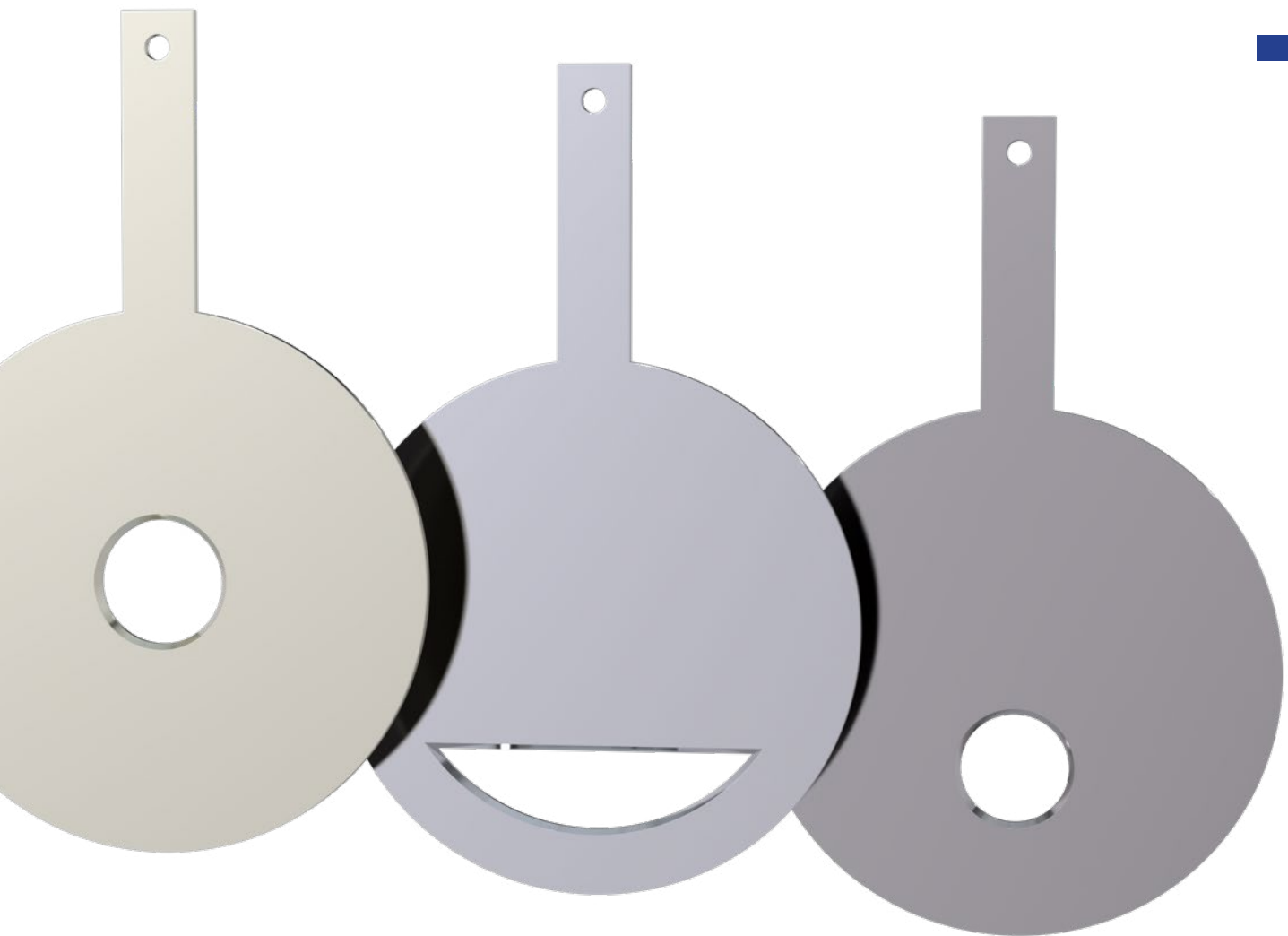
## DIMENSIONAL DATA (IN)

+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

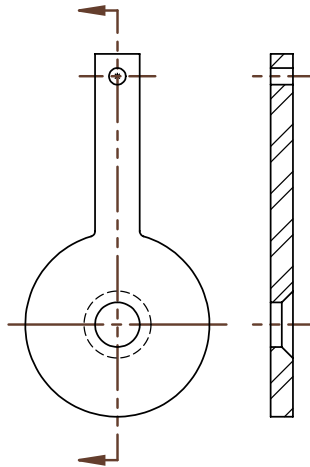
| NOZZLE/<br>BODY SIZE | 150 CLASS |          |     |        | 300 CLASS |          |     |        | 600 CLASS |          |     |        |
|----------------------|-----------|----------|-----|--------|-----------|----------|-----|--------|-----------|----------|-----|--------|
|                      | 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

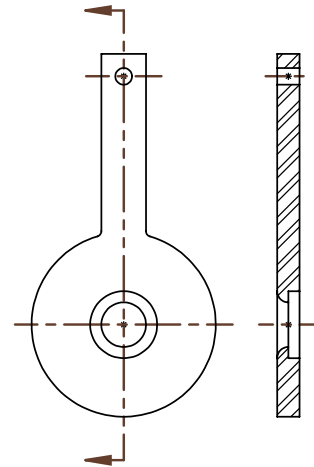


# Standard Orifice Plates



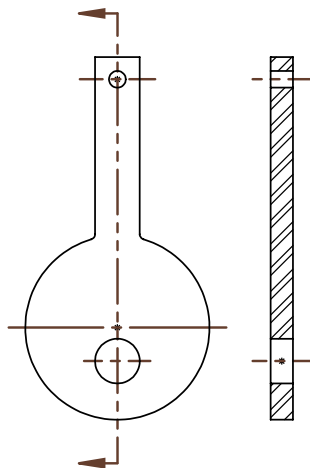
## CONCENTRIC BORE AND BEVEL

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.



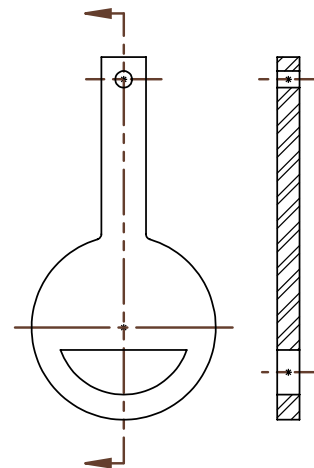
## QUADRANT BORE

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.



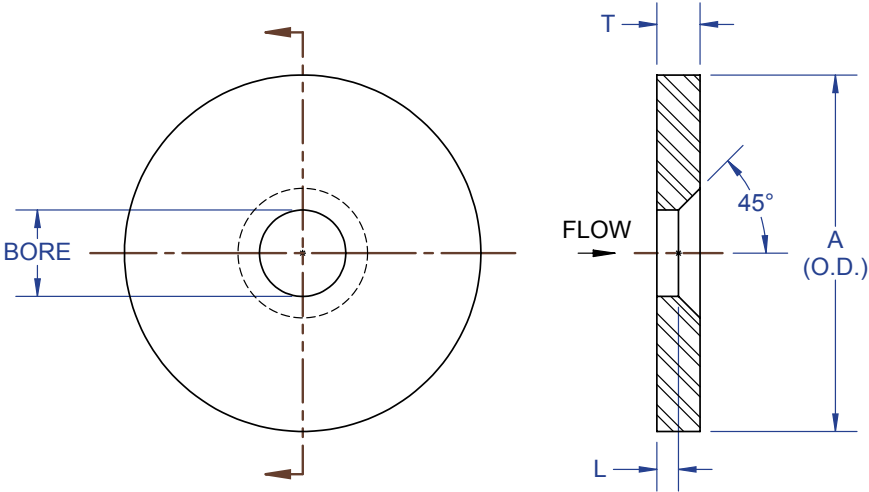
## SEGMENTAL BORE

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

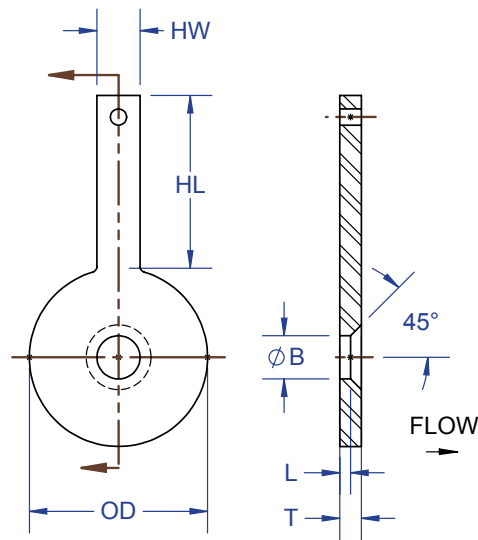
| NOM. PIPE SIZE | A       | L      | T      | WT* (LBS) |
|----------------|---------|--------|--------|-----------|
| 1"             | 1.312"  | 0.02"  | 0.125" | 0.05      |
| 1.5"           | 2"      | 0.03"  | 0.125" | 0.11      |
| 2"             | 2.437"  | 0.03"  | 0.125" | 0.17      |
| 2.5"           | 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

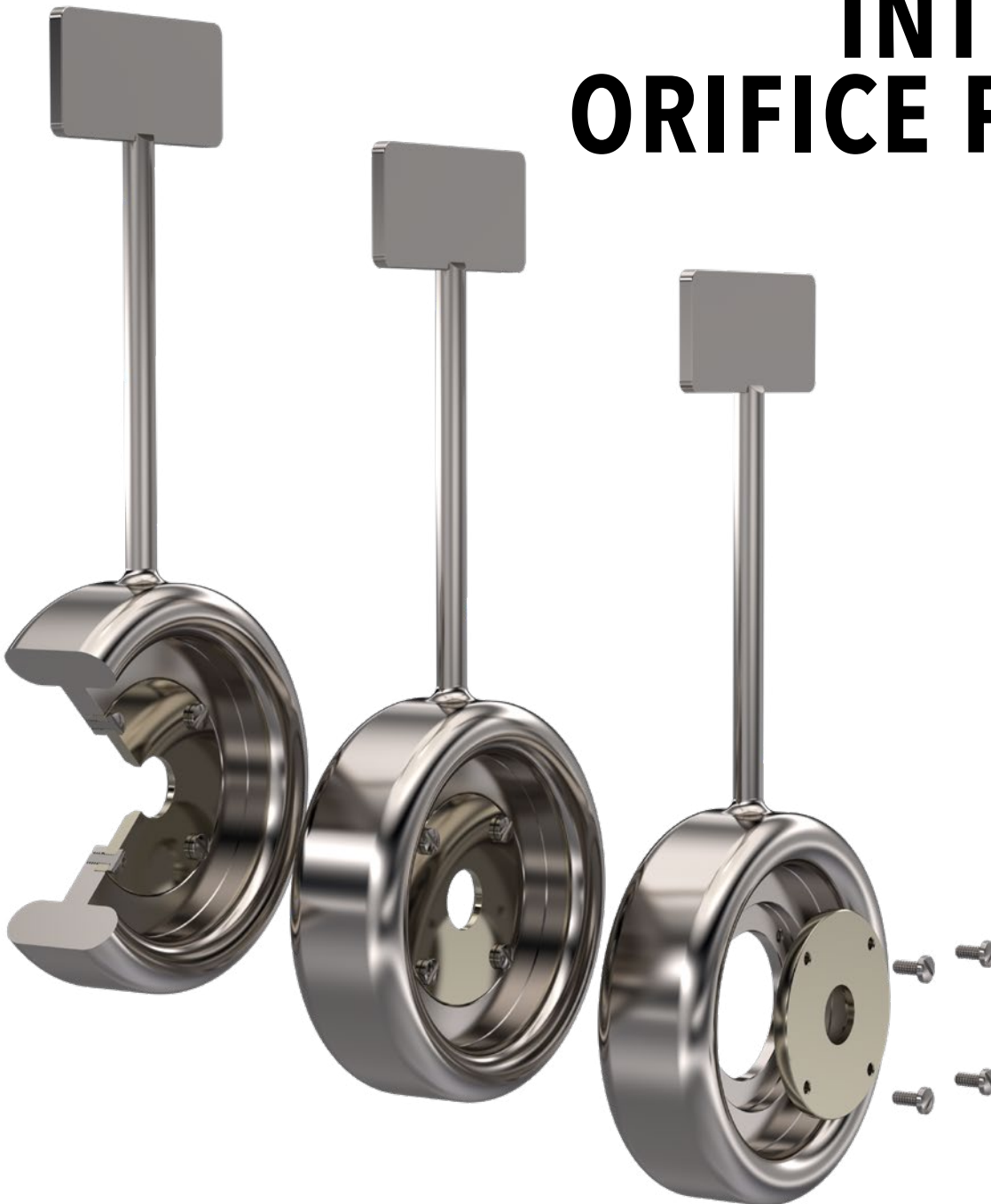
BLANK WEIGHT IN POUNDS

| NOM.<br>PIPE SIZE | 125#<br>150# | 250#<br>300# | 400#  | 600#  | 900#  | 1500# | 2500# | ISA PLATE<br>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



# Integral Orifice Plates

Model 560 & 590

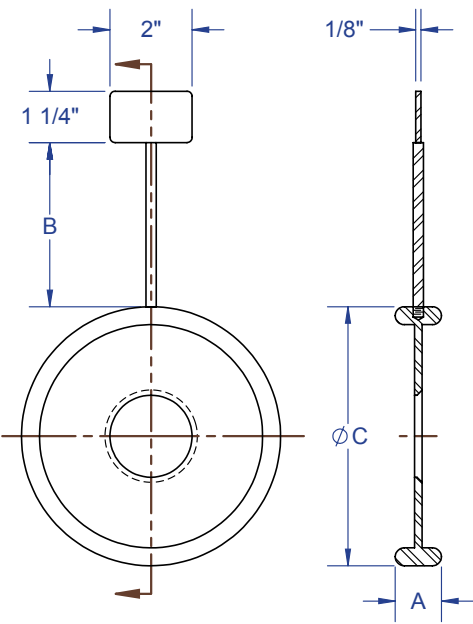


PLATE (MODEL 560)

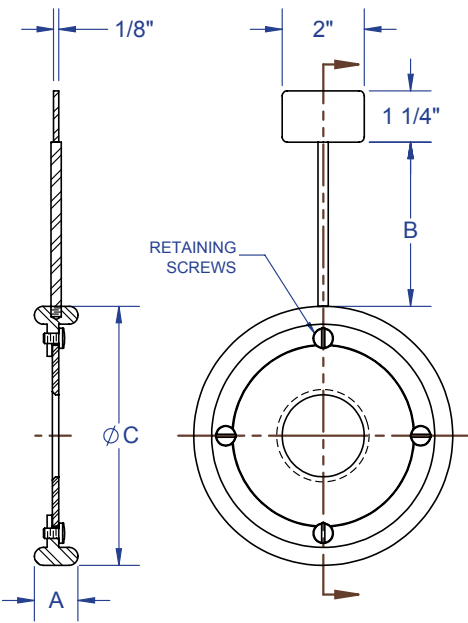


PLATE W/ SCREWS (MODEL 590)

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.





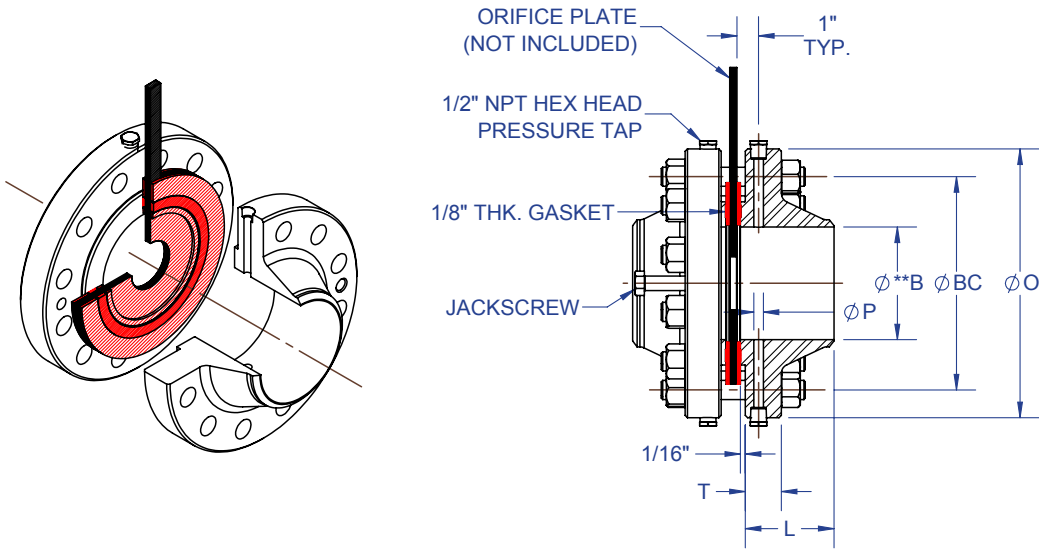
# ORIFICE FLANGE UNIONS

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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)

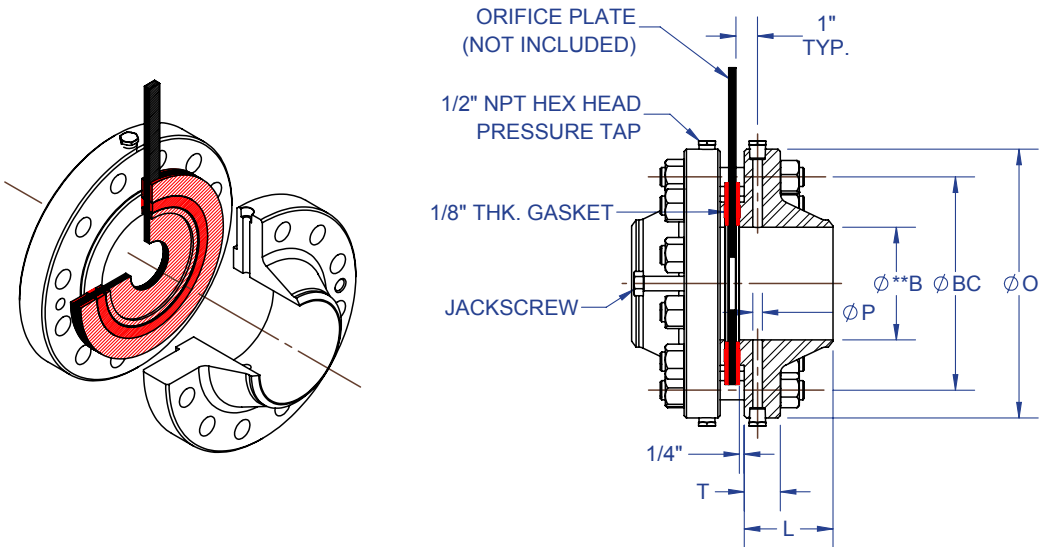
| NOMINAL<br>PIPE SIZE | DIAMETER<br>OF FLANGE | MINIMUM<br>FLANGE<br>THICKNESS | DIAMETER<br>OF RAISED<br>FACE | LENGTH<br>THROUGH<br>HUB | PRESSURE<br>TAP HOLE<br>SIZE | DIAMETER<br>OF BOLT<br>CIRCLE | NUMBER<br>OF HOLES | SIZE<br>OF HOLES | SIZE & LENGTH<br>OF STUDS | SIZE & LENGTH<br>JACKSCREW | WEIGHT/<br>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<br>PIPE SIZE | DIAMETER<br>OF FLANGE | MINIMUM<br>FLANGE<br>THICKNESS | DIAMETER<br>OF RAISED<br>FACE | LENGTH<br>THROUGH<br>HUB | PRESSURE<br>TAP HOLE<br>SIZE | DIAMETER<br>OF BOLT<br>CIRCLE | NUMBER<br>OF HOLES | SIZE<br>OF HOLES | SIZE & LENGTH<br>OF STUDS | SIZE & LENGTH<br>JACKSCREW | WEIGHT/<br>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                   |

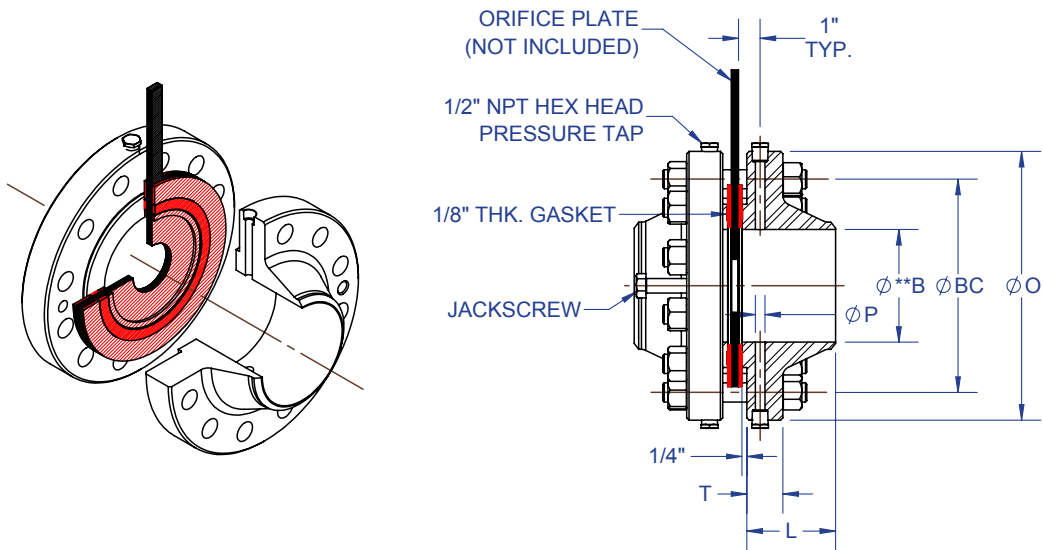
\*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

\*\*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<br>PIPE SIZE | DIAMETER<br>OF FLANGE | MINIMUM<br>FLANGE<br>THICKNESS | DIAMETER<br>OF RAISED<br>FACE | LENGTH<br>THROUGH<br>HUB | PRESSURE<br>TAP HOLE<br>SIZE | DIAMETER<br>OF BOLT<br>CIRCLE | NUMBER<br>OF HOLES | SIZE OF<br>HOLES | SIZE & LENGTH<br>OF STUDS | SIZE & LENGTH<br>JACKSCREW | WEIGHT/<br>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

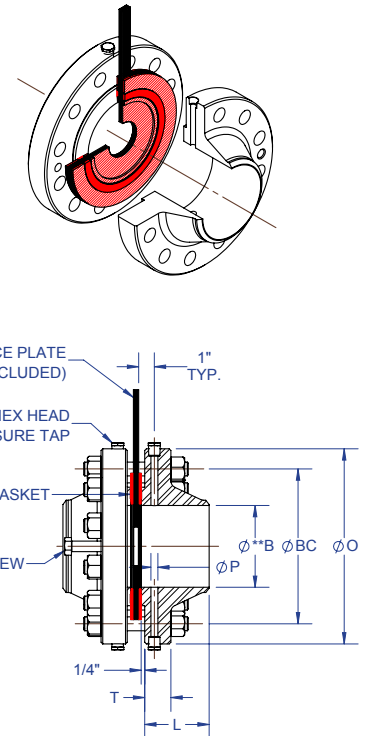
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

| NOMINAL<br>PIPE SIZE | OUTSIDE<br>DIAMETER OF<br>RAISED FACE | OUTSIDE<br>DIAMETER OF<br>FLANGE | MINIMUM<br>THICKNESS OF<br>FLANGE | LENGTH<br>THROUGH<br>HUB | DIAMETER OF<br>HUB | HUB DIAMETER<br>BEGINNING OF<br>CHAMFER | BORE | DIAMETER<br>OF PRESSURE<br>CONNECTION | LENGTH STUD<br>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<br>PIPE SIZE | DIAMETER OF<br>BOLT CIRCLE | NUMBER OF<br>HOLES | DIAMETER OF<br>HOLES | DIAMETER OF<br>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

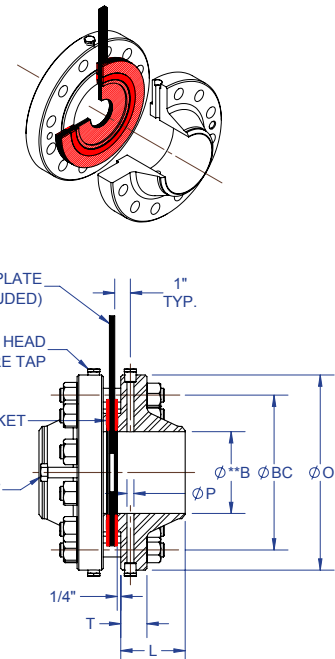
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

DIMENSIONAL DATA (IN)

| NOMINAL<br>PIPE SIZE | OUTSIDE<br>DIAMETER OF<br>RAISED FACE | OUTSIDE<br>DIAMETER<br>OF FLANGE | MINIMUM<br>THICKNESS<br>OF FLANGE | LENGTH<br>THROUGH HUB | DIAMETER OF<br>HUB | HUG DIAMETER<br>BEGINNING<br>OF CHAMFER | BORE | DIAMETER<br>OF PRESSURE<br>CONNECTION | LENGTH STUD<br>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<br>PIPE SIZE | DIAMETER OF<br>BOLT CIRCLE | NUMBER<br>OF HOLES | DIAMETER<br>OF HOLES | DIAMETER<br>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

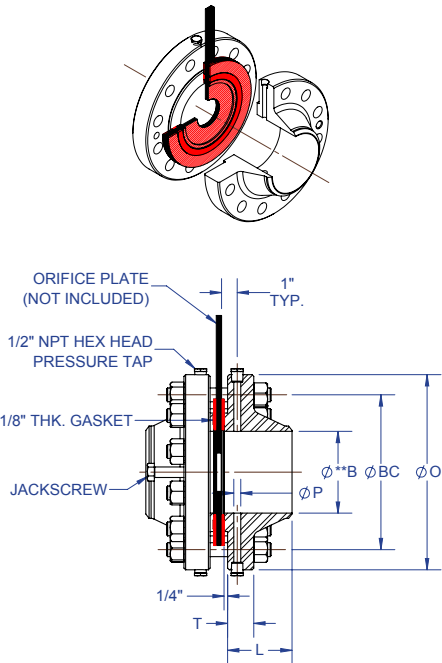
+ CUSTOM SIZES AND RATINGS AVAILABLE UPON REQUEST

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"            |



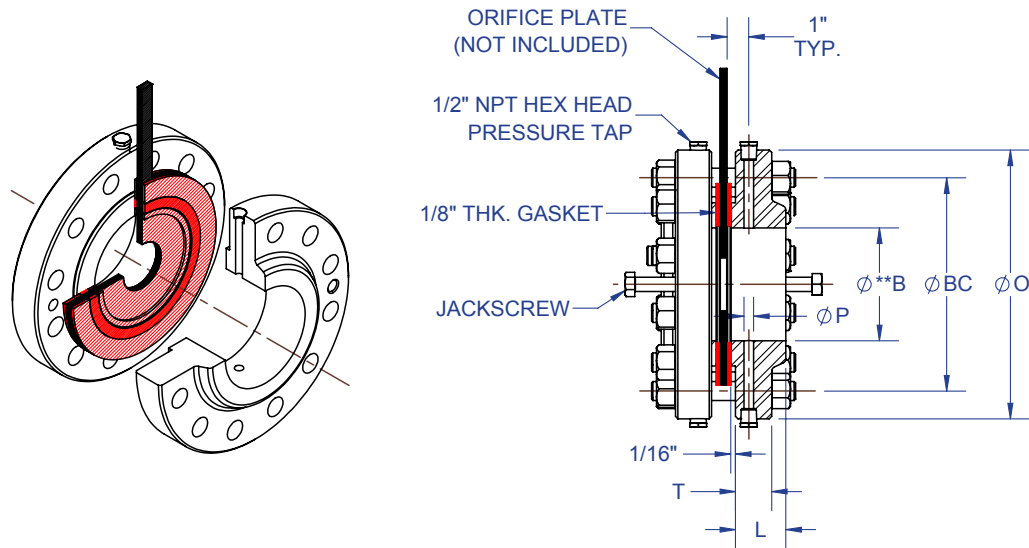
\*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail above.

\*\*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)

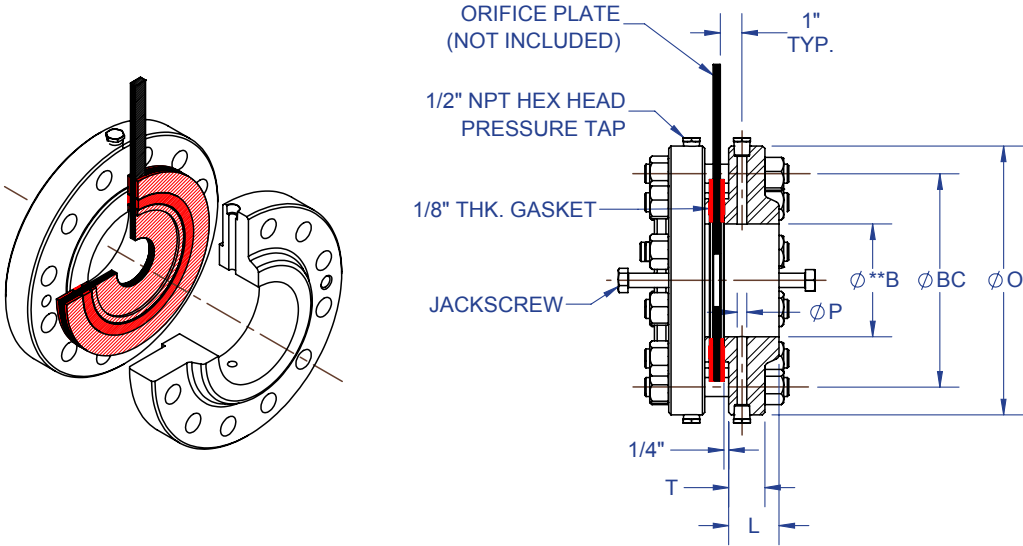
| NOMINAL<br>PIPE SIZE | DIAMETER<br>OF FLANGE | MINIMUM<br>FLANGE<br>THICKNESS | DIAMETER<br>OF RAISED<br>FACE | LENGTH<br>THROUGH<br>HUB | PRESSURE<br>TAP HOLE<br>SIZE | DIAMETER<br>OF BOLT<br>CIRCLE | NUMBER<br>OF HOLES | SIZE<br>OF HOLES | SIZE & LENGTH<br>OF STUDS | SIZE & LENGTH<br>JACKSCREW | WEIGHT /<br>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                  |

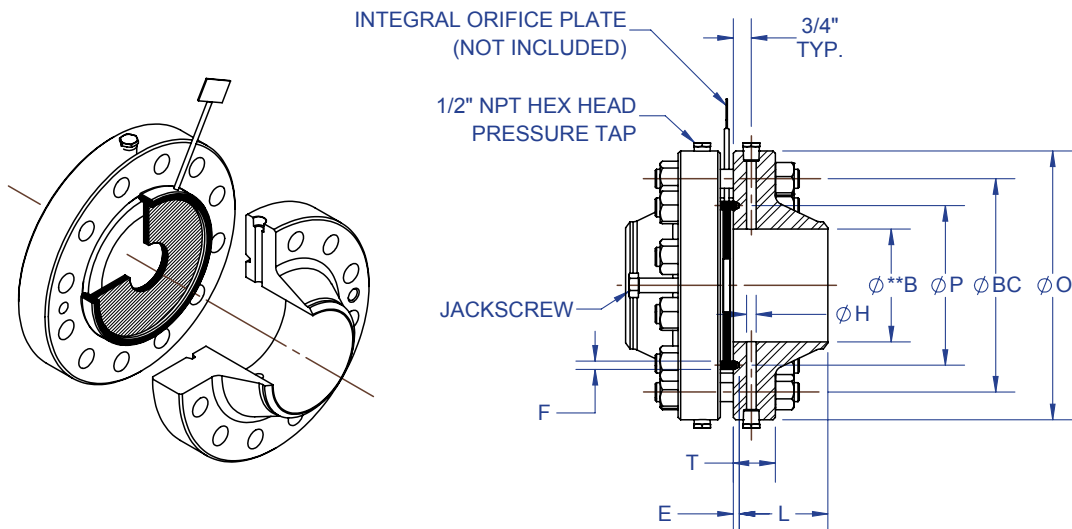
\*Dimension does not include 1/4" raised face thickness. Add 1/4" to dimension "L" for overall length through hub, see detail.

\*\*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<br>PIPE SIZE | A.P.I.<br>RING<br># | $\phi$<br>FLANGE | MIN.<br>FLANGE<br>TH. HUB | LENGTH<br>THROUGH<br>HUB | PRESSURE<br>TAP HOLE<br>SIZE | PITCH<br>$\phi$ RING<br>& GROVE | GROVE<br>DEPTH | GROVE<br>WIDTH | $\phi$ BOLT<br>CIRCLE | NO.<br>OF<br>HOLES | SIZE OF<br>HOLES | SIZE & LENGTH<br>STUDS | SIZE & LENGTH<br>JACKSCREW | WEIGHT/<br>UNION<br>(LBS) |
|----------------------|---------------------|------------------|---------------------------|--------------------------|------------------------------|---------------------------------|----------------|----------------|-----------------------|--------------------|------------------|------------------------|----------------------------|---------------------------|
| SIZE                 | R#                  | O                | T                         | *L                       | H                            | P                               | E              | F              | BC                    | # $\phi$           | $\phi$           | 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.

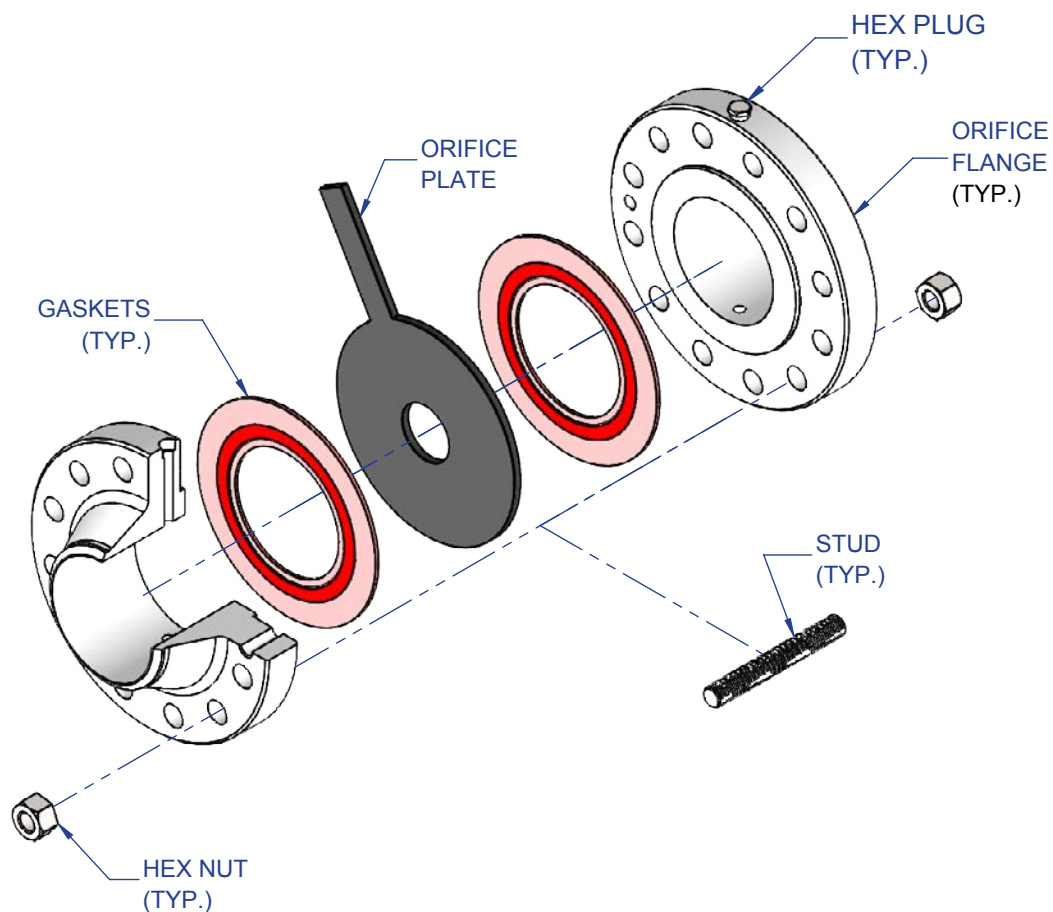
### TO INSTALL ORIFICE PLATE:

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

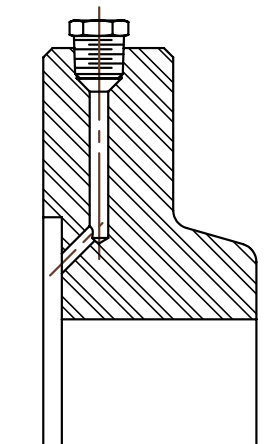
## TO REMOVE ORIFICE PLATE:

- 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

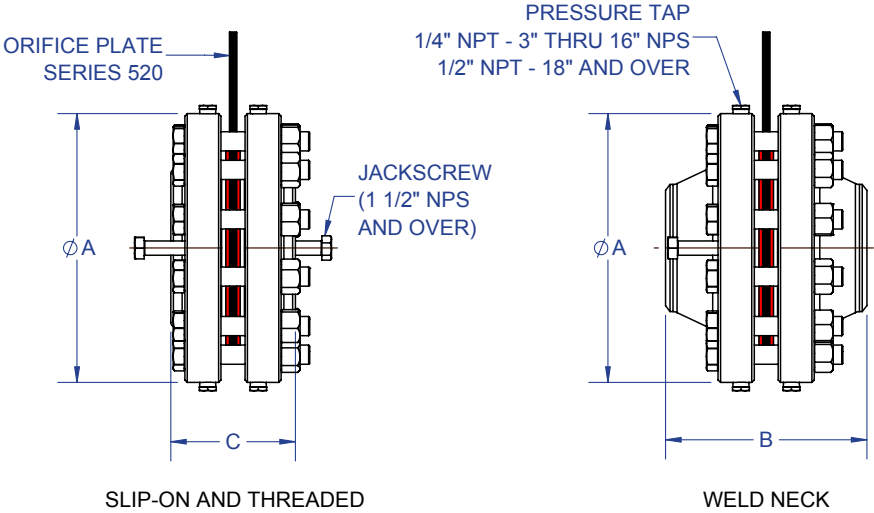
"Principals & Practices of Flow Meter Engineering" by L.K. Spink indicates that the corner tap style orifice flange is especially desirable in installation of 2" pipe size and smaller. This is because the corner tap design places the pressure signal point directly at the upstream and downstream face 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"  |

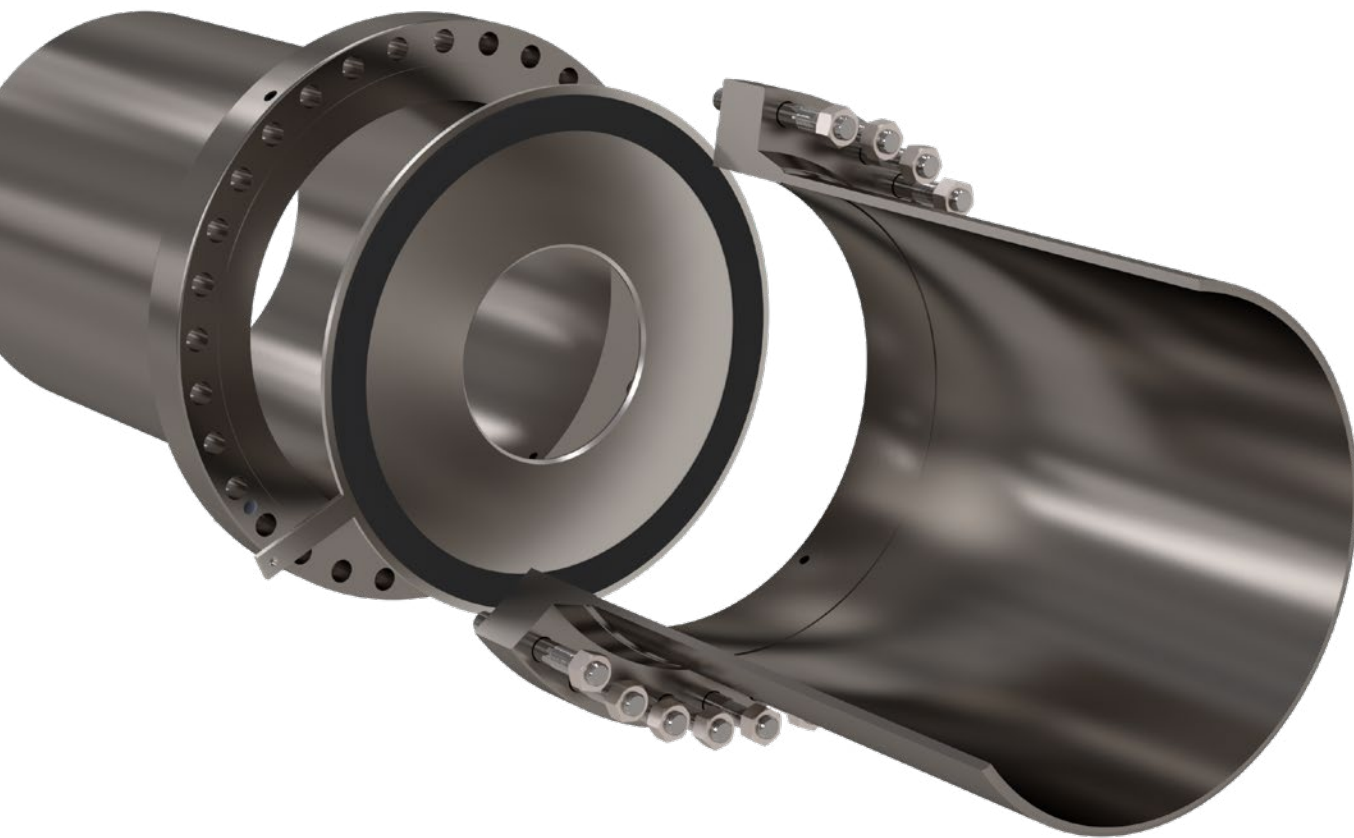
300 LB

| 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

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# 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:**

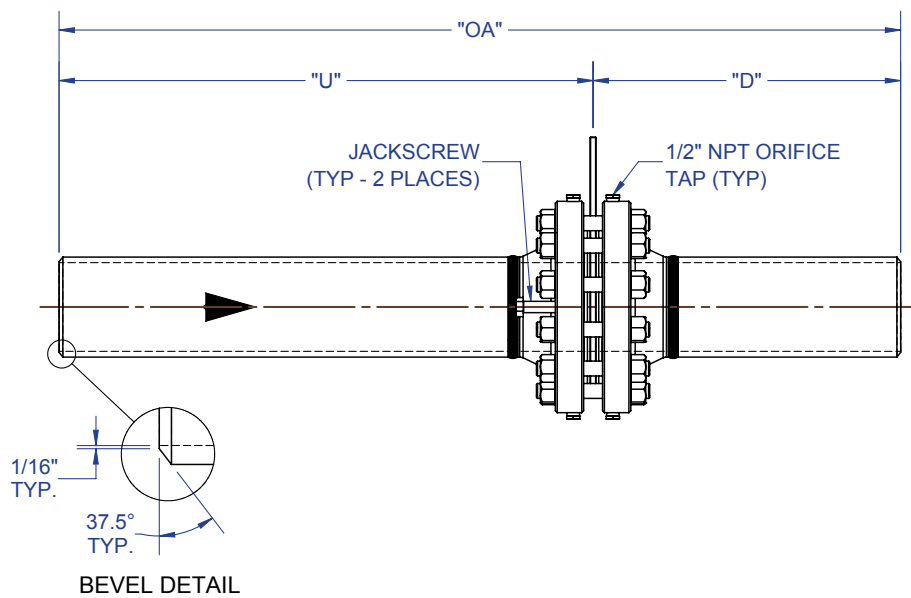
PIPE: Stainless steel, monel, hastelloy, nickel & others

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

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# 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.

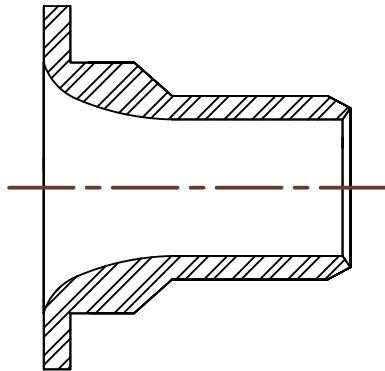
**ADVANTAGES:**

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.

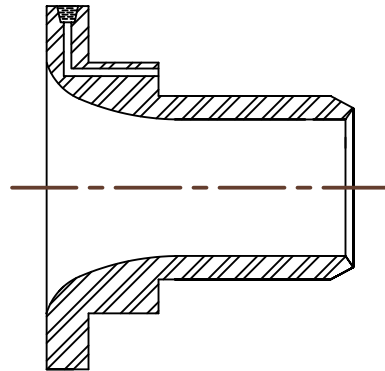
# Flow Nozzles Types

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



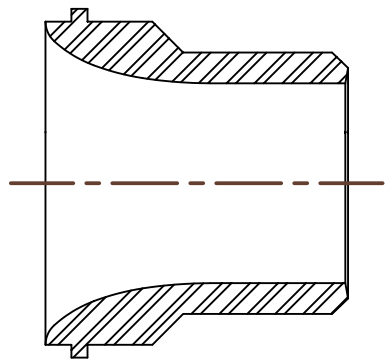
## FLANGED FLOW NOZZLE

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.



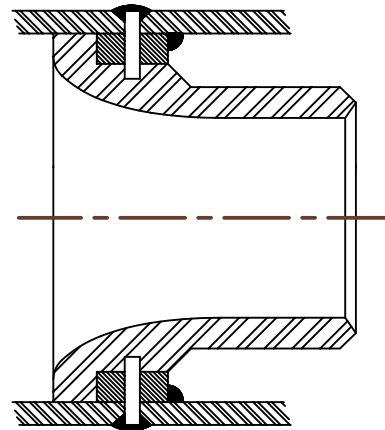
## TAPPED TYPE FLANGED FLOW NOZZLE

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 \_\_\_\_\_

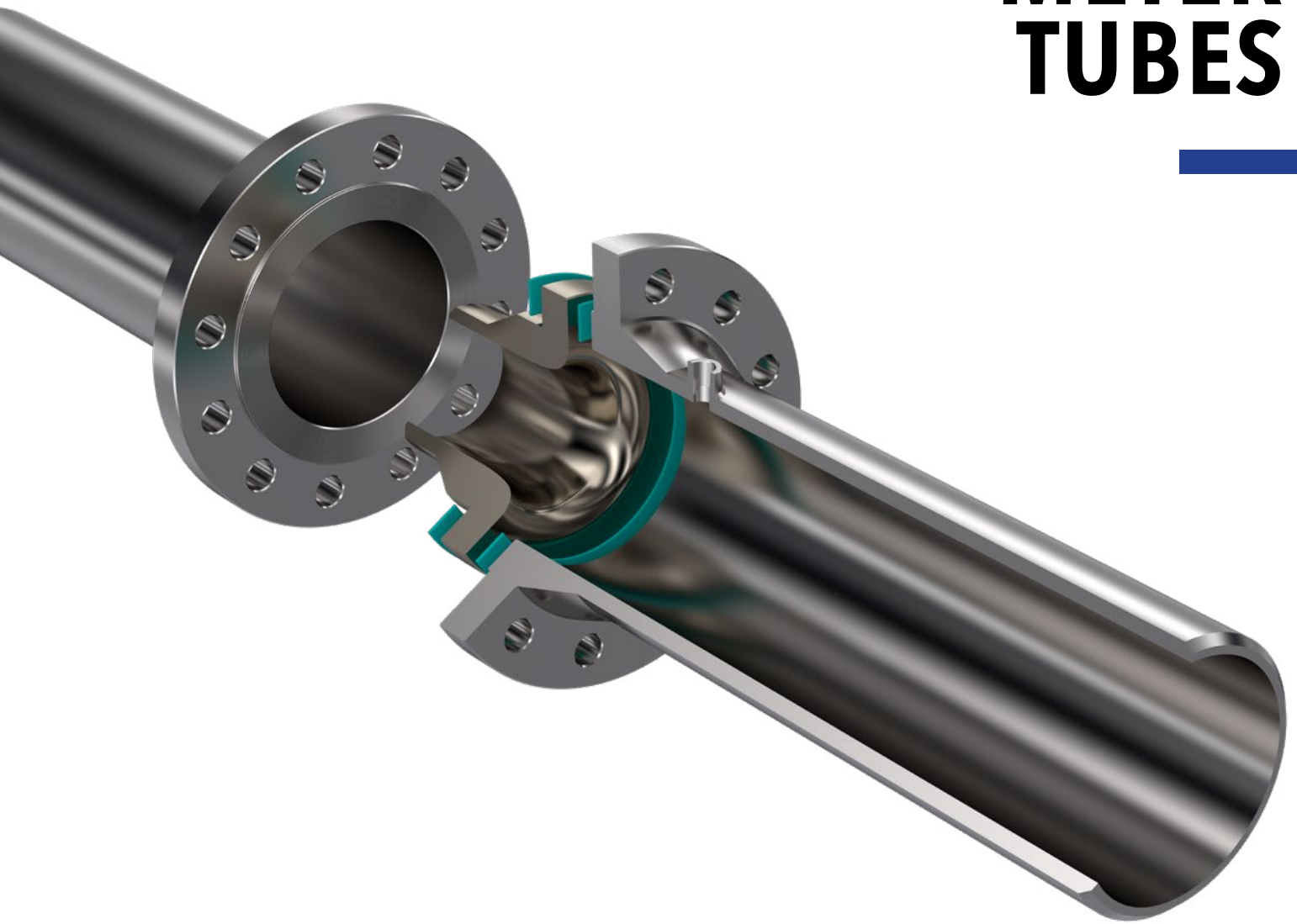
Surface Prep:    ☐ Sand Blast    ☐ Shop Primer    ☐ Other \_\_\_\_\_

### MATERIAL SPECIFICATIONS

Nozzle: \_\_\_\_\_    Pipe: \_\_\_\_\_

# FLOW NOZZLE METER TUBES

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# 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:**

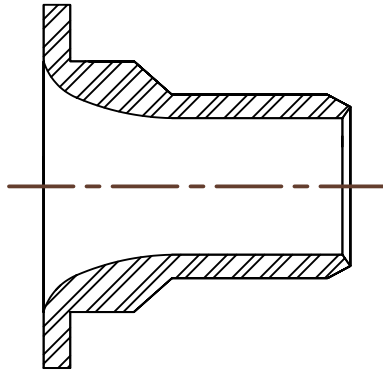
1. Flow capacity is 60% greater for flow nozzles, compared to an orifice plate with same beta ratio.
2. Flow nozzles have less damming effect of solids or foreign matter in the flow stream than the orifice plate.
3. Nozzles sustain accuracy and wear qualities over a longer period of time than the orifice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

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



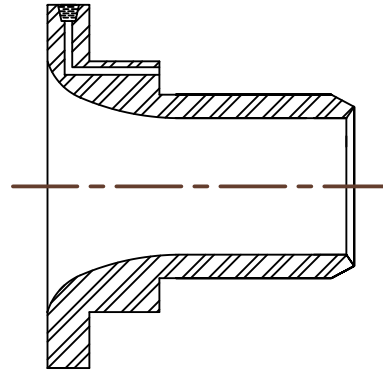
# Flow Nozzle Types

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



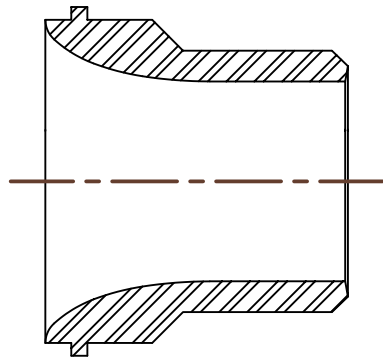
## FLANGED FLOW NOZZLE

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.



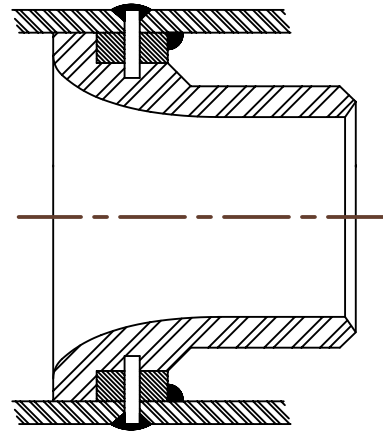
## TAPPED TYPE FLANGED FLOW NOZZLE

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

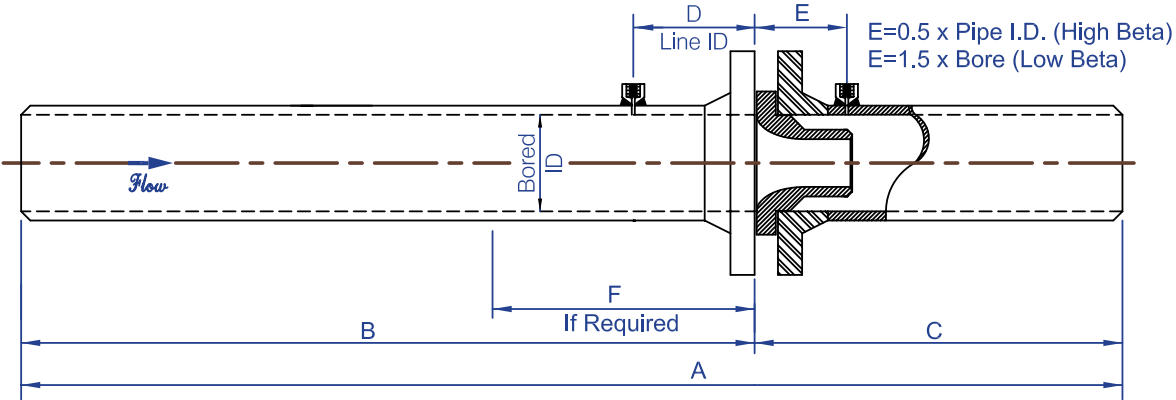
## DIMENSIONAL DATA

| 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 |

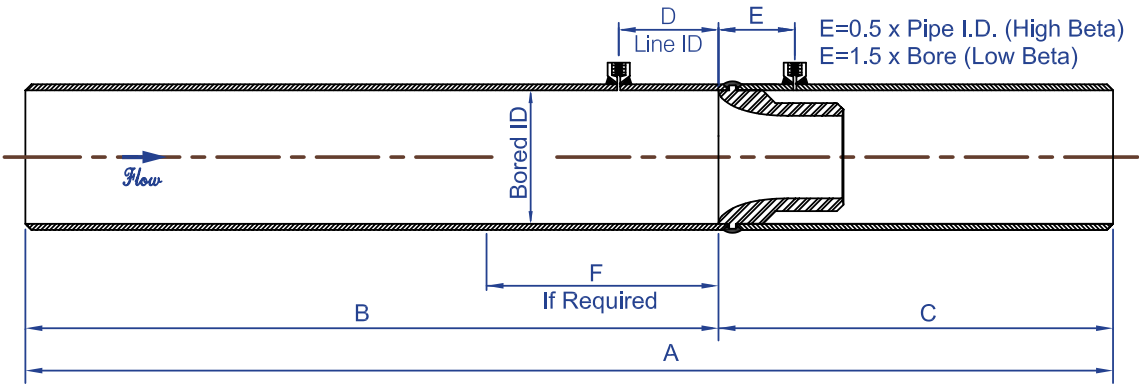
### General Notes

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.

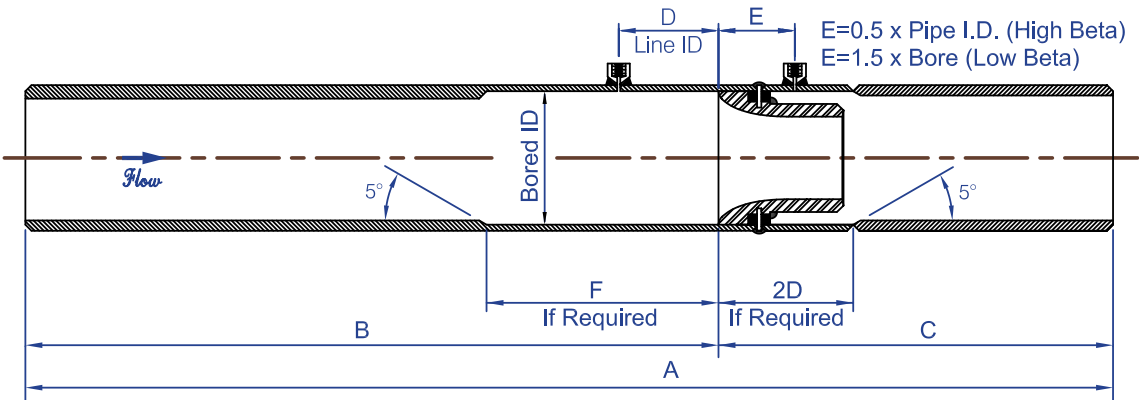
# Flow Nozzle Sections



FLANGED FLOW NOZZLE



WELD-IN FLOW NOZZLE



HOLDING PIN FLOW NOZZLE

# STRAIGHTENING VANES

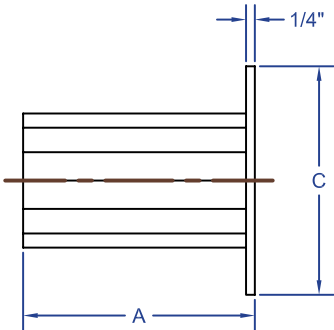
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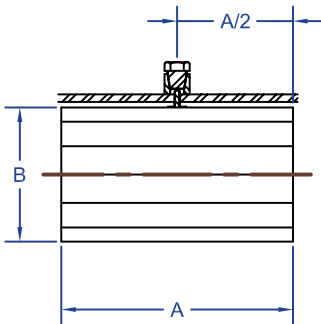
# Straightening Vanes

Size and Type of  
Vane Installation

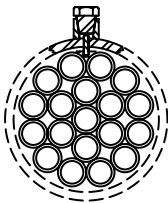
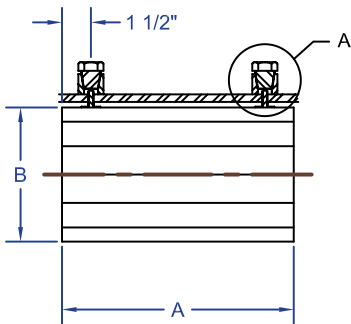
FLANGE MODEL  
ALL SIZES



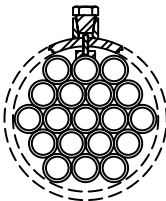
LINE MODEL  
2" - 10"



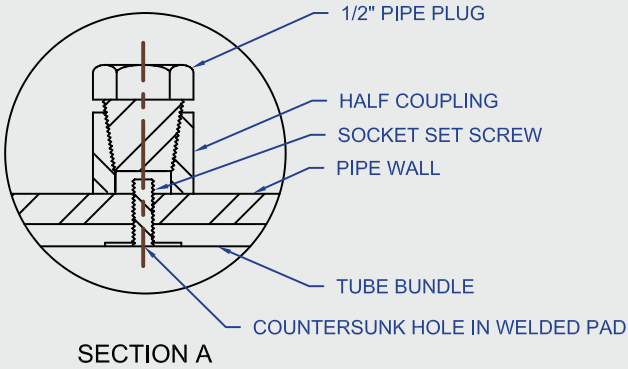
LINE MODEL  
12" & UP



TYPE II  
CONCENTRIC BUNDLE



TYPE III  
SCALLOP BUNDLE



# 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

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# Classical Venturis

## DESIGN:

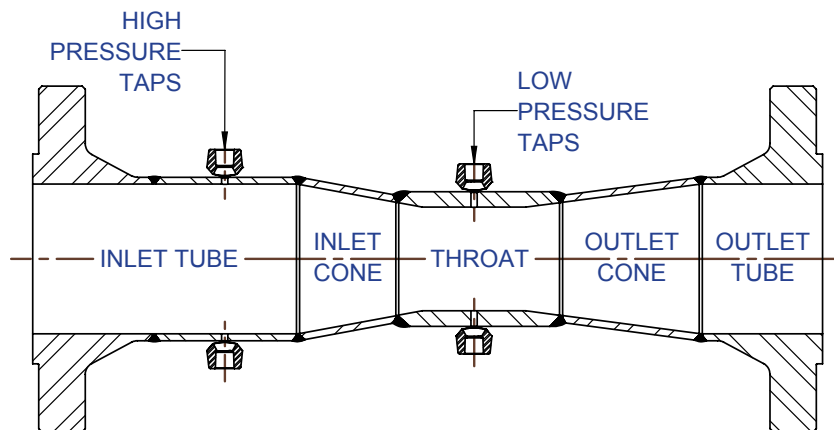
The Classical Style Venturi Tube consists of (1) a straight inlet section of the same diameter as the pipe and in which the high pressure tap is located; (2) a converging conical inlet section in which the cross section of the stream decreases and the velocity increases with a consequent increase of 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)                                 |   |

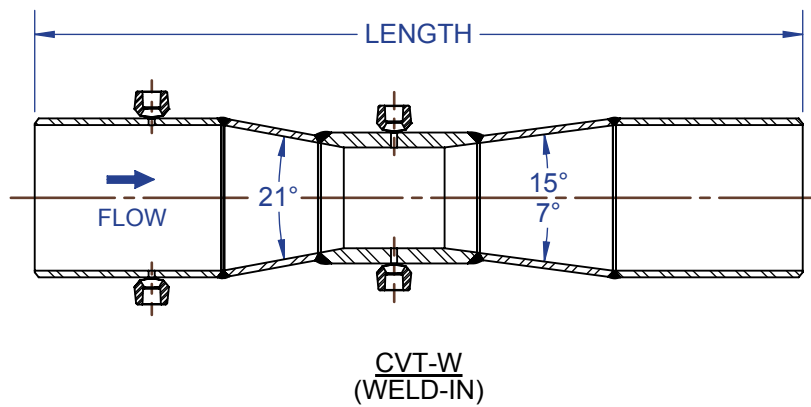
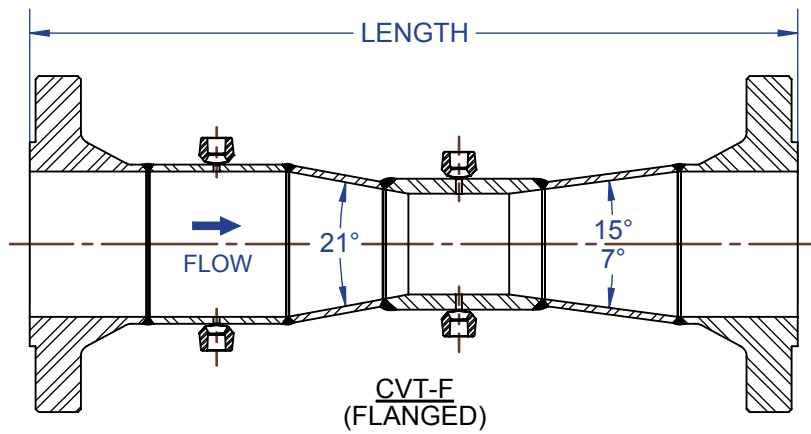
\*Available in line sizes 8" and larger (for high pressure, high temperature service).

\*\*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<br>SIZE | BETA<br>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     |

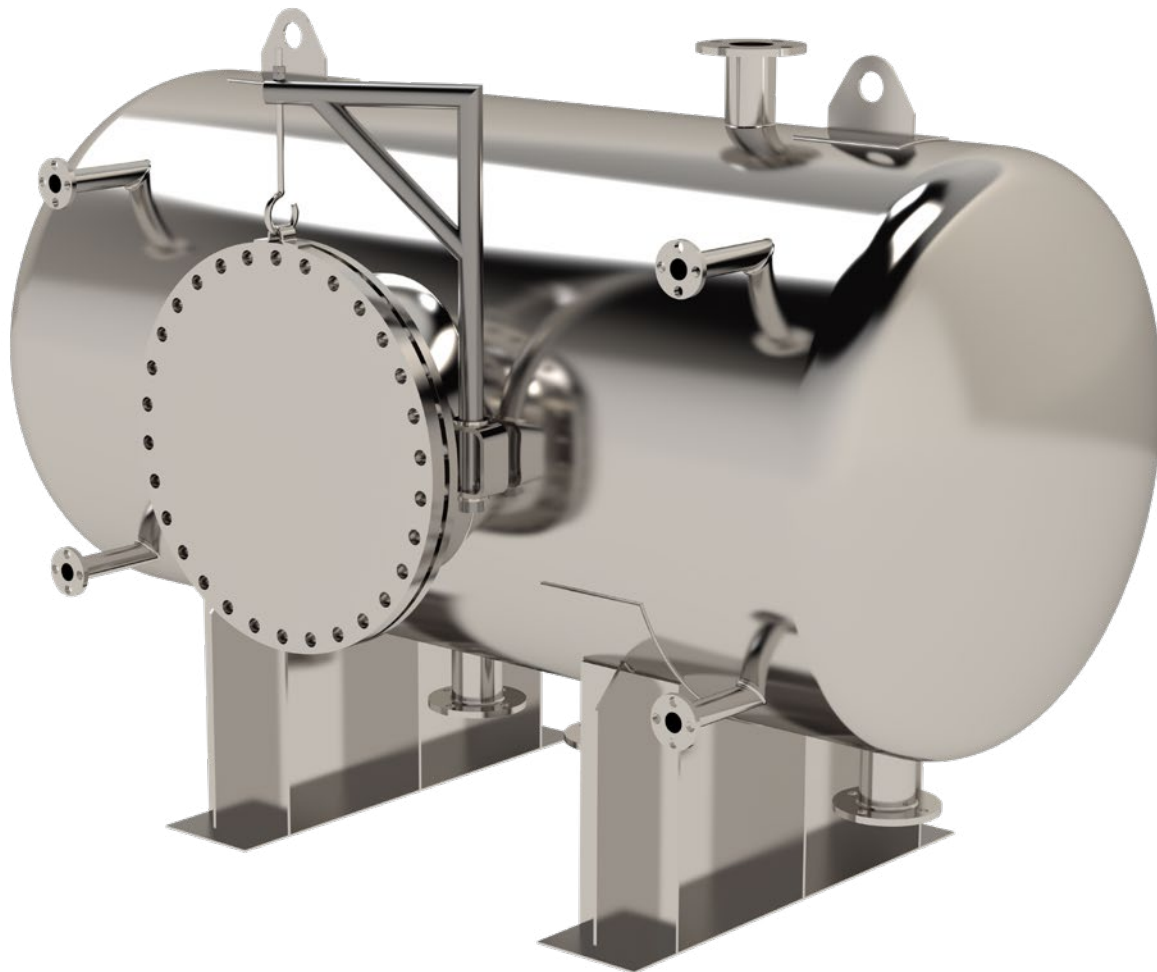
DIMENSIONAL DATA continued

| LINE<br>SIZE | BETA<br>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

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## 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-molly. 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

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# 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

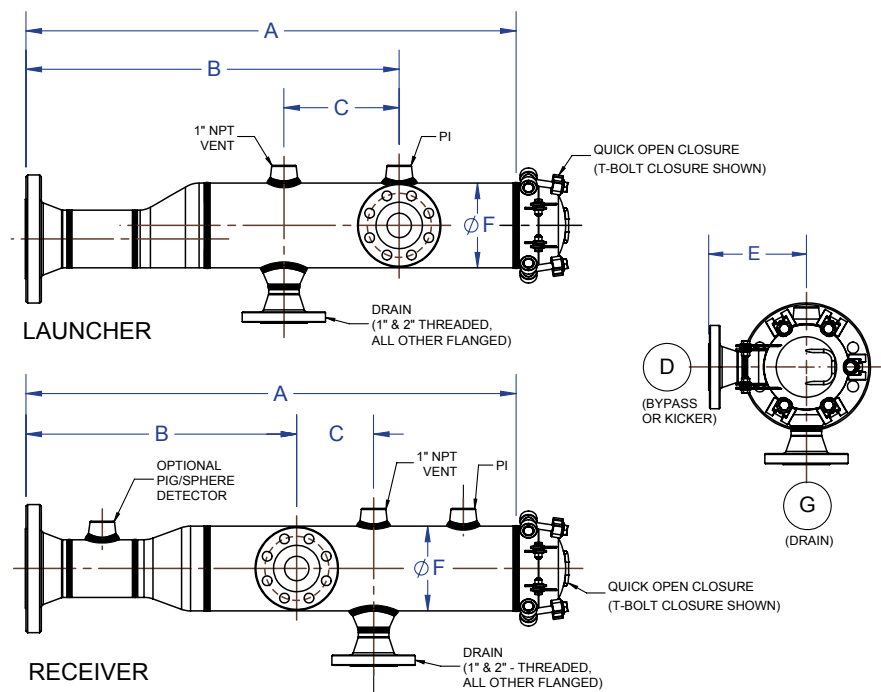
## SUPPORTS:

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

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# Sample Cooler

High Pressure  
Type 100 HSC

**SHELL:**  
125 PSIG @ 100°F (standard)

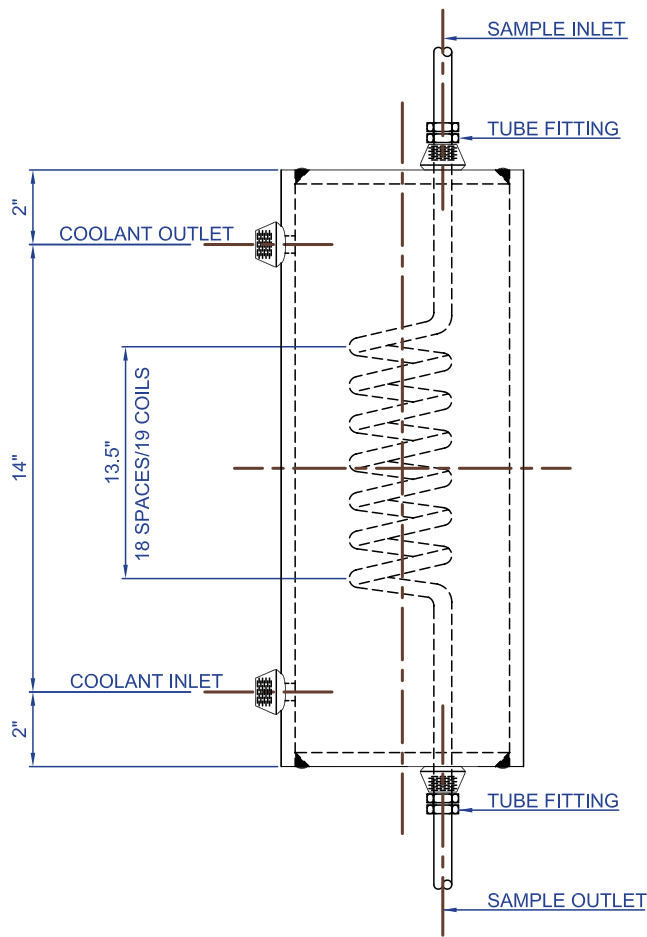
**COIL:**  
2000 PSIG @ 100°F (standard)

**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)

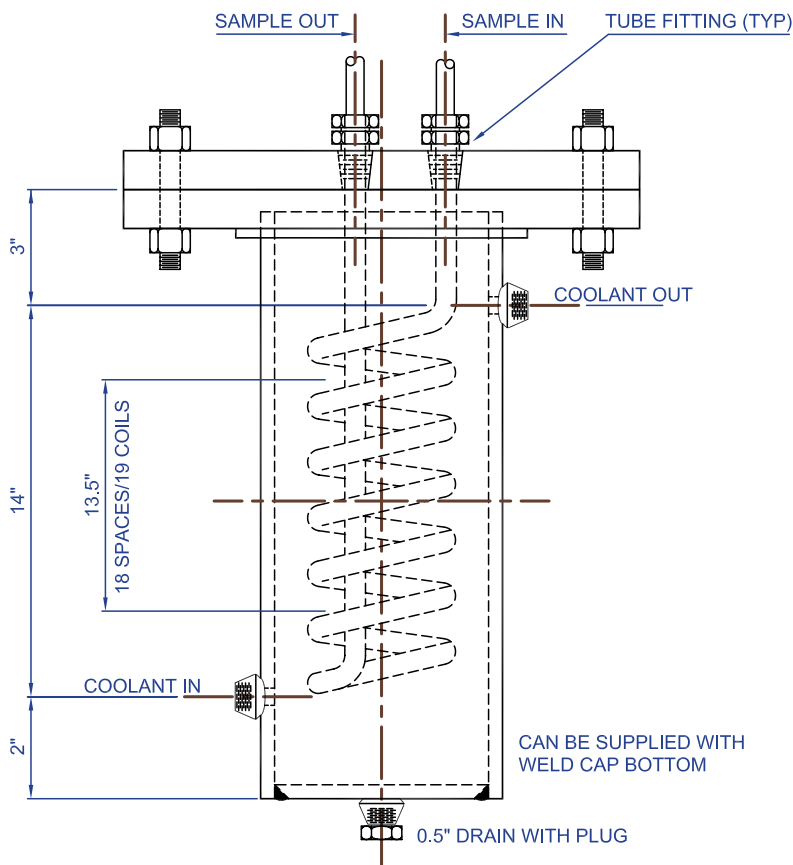
**COIL:**  
2000 PSIG @ 100°F (standard)

**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

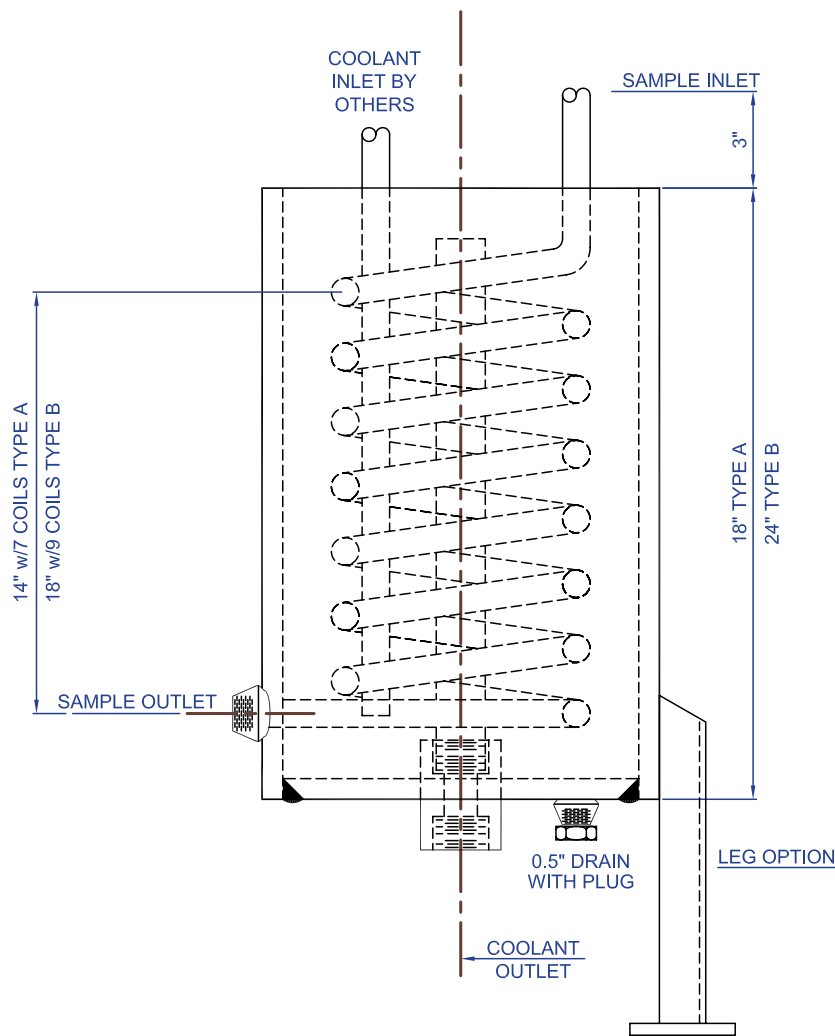
**DESIGN CODE:**  
ASME B31.3 (standard)  
NACE MR0175

**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

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# 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 →<br>CONVERT FROM ↓ | US GALLON | IMPERIAL GALLON | US PINT | US LB *H <sub>2</sub> 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 <sub>2</sub> 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 (H<sub>2</sub>O) @ 60°F (15.6°C) / 1 Barrel = 42 Gallons (Petroleum measure)

## CONVERSIONS OF PRESSURE AND HEAD

| TO CONVERT →<br>CONVERT FROM ↓ | LB/IN <sup>2</sup> | LB/FT <sup>2</sup> | KG/CM <sup>2</sup> | KG/M <sup>2</sup> | IN *H <sub>2</sub> O | FT *H <sub>2</sub> O | IN **MERCURY | MM **MERCURY | †BAR  | †MPA  |
|--------------------------------|--------------------|--------------------|--------------------|-------------------|----------------------|----------------------|--------------|--------------|-------|-------|
| Lb/In <sup>2</sup>             | 1                  | 144                | 0.070              | 703.07            | 27.728               | 2.311                | 2.306        | 51.715       | 0.069 | 0.007 |
| Lb/Ft <sup>2</sup>             | 0.007              | 1                  | 0.000              | 4.882             | 0.193                | 0.016                | 0.014        | 0.359        | 0.000 | 0.000 |
| kg/cm <sup>2</sup>             | 14.223             | 2048.155           | 1                  | 10000             | 394.38               | 32.865               | 28.959       | 735.559      | 0.981 | 0.098 |
| kg/m <sup>2</sup>              | 0.001              | 0.205              | 0.000              | 1                 | 0.039                | 0.003                | 0.003        | 0.074        | 0.000 | 0.000 |
| In. *H <sub>2</sub> O          | 0.036              | 5.197              | 0.003              | 25.375            | 1                    | 0.083                | 0.073        | 1.865        | 0.002 | 0.000 |
| Ft. *H <sub>2</sub> 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 (H<sub>2</sub>O) @ 68°F (20°C) / \*\*Mercury @ 32°F (0°C) / †Mpa (megapascal) = 10 Bar

## CONVERSION OF FLOW RATES

| TO CONVERT →<br>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 2.7276 (Conversion factor) = 13.638 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       |

## AREA

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

## VOLUME

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

## 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       |

## PRESSURE

| CONVERT FROM | CONVERT TO | SI SYMBOL | MULTIPLY BY |
|--------------|------------|-----------|-------------|
| lbs/in2      | Pascal     | Pa        | 6,895       |
| lbs/in2      | Kilopascal | kPa       | 6.895       |
| lbs/in2      | Megapascal | MPa       | 0.007       |
| lbs/in2      | Bar        | Bar       | 0.069       |
| Bar          | Kilopascal | kPa       | 100         |
| Millibar     | Pascal     | Pa        | 100         |

# 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<br>(FLANGES, COUPLINGS,<br>WELDOLETS, ETC) | WROUGHT FITTINGS<br>(ELBOWS, REDUCERS, TEES,<br>WELD CAPS, ETC) | PIPE          | PLATE                 | REMARKS                                   |
|------------------|---------------------------|-----------------------------------------------------|-----------------------------------------------------------------|---------------|-----------------------|-------------------------------------------|
| 1/1              | Carbon                    | SA-105                                              | SA-234-WPB                                                      | SA-106-B      | SA-516-70 or<br>SA-36 | SA-36 for Non-pressure<br>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/FT³) |
|-------------|---------------|---------------------|---------------------|
| 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/FT³) |
|-------------|---------------|---------------------|---------------------|
| 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<br>10mm Ball<br>3000 kg Dia of<br>impression | BRINELL | ROCKWELL C<br>Brale<br>150 kg<br>Load | ROCKWELL A<br>Brale<br>60 kg<br>Load | ROCKWELL B<br>1/4" Brale<br>100 kg<br>Load | SHORE<br>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<br>10mm Ball<br>3000 kg Dia of<br>impression | BRINELL | ROCKWELL C<br>Brale<br>150 kg<br>Load | ROCKWELL A<br>Brale<br>60 kg<br>Load | ROCKWELL B<br>1/4" Brale<br>100 kg<br>Load | SHORE<br>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<br>PIPE<br>SIZE | METRIC<br>PIPE<br>SIZE | OD<br>(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<br>PIPE<br>SIZE | METRIC<br>PIPE<br>SIZE | OD<br>(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<br>PIPE<br>SIZE | METRIC<br>PIPE<br>SIZE | OD<br>(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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and minimize downtime**



**AITKEN**

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