

DIMENSION OF PIPE FLANGES AS PER TABLE BS- 10

Table D: For Working Steam Pressure upto 50 lbs per sq. inch

| Nominal Pipe size | O.D of Pipe | Dia. of Flange | Dia. of Bolt Circle | No. of Bolt | Dia. of Bolt | Thickness |
|-------------------|-------------|----------------|---------------------|-------------|--------------|-----------|
| 1/2" | 21.3 | 95.3 | 66.7 | 4 | 12.7 | 4.8 |
| 3/4" | 26.7 | 101.6 | 73.0 | 4 | 12.7 | 4.8 |
| 1" | 33.4 | 114.3 | 82.6 | 4 | 12.7 | 4.8 |
| 1 1/4" | 42.2 | 120.7 | 87.6 | 4 | 12.7 | 6.4 |
| 1 1/2" | 48.3 | 133.4 | 98.4 | 4 | 12.7 | 6.4 |
| 2" | 60.3 | 152.4 | 114.3 | 4 | 15.9 | 7.9 |
| 2 1/2" | 73.0 | 165.1 | 127.0 | 4 | 15.9 | 7.9 |
| 3" | 88.9 | 184.2 | 146.1 | 4 | 15.9 | 9.5 |
| 3 1/2" | 101.6 | 203.2 | 165.1 | 4 | 15.9 | 9.5 |
| 4" | 114.3 | 215.9 | 177.8 | 4 | 15.9 | 9.5 |
| 5" | 141.3 | 254.0 | 209.6 | 8 | 15.9 | 12.7 |
| 6" | 168.3 | 279.4 | 228.6 | 8 | 15.9 | 12.7 |
| 7" | 190.5 | 304.8 | 260.4 | 8 | 15.9 | 12.7 |
| 8" | 219.1 | 336.6 | 292.1 | 8 | 15.9 | 12.7 |
| 9" | 244.5 | 368.3 | 323.9 | 8 | 15.9 | 15.9 |
| 10" | 273.0 | 406.4 | 355.6 | 8 | 19.1 | 15.9 |
| 12" | 323.9 | 457.2 | 406.4 | 12 | 19.1 | 15.9 |
| 14" | 355.6 | 527.1 | 469.9 | 12 | 22.2 | 19.1 |
| 16" | 406.4 | 577.9 | 520.7 | 12 | 22.2 | 19.1 |
| 18" | 457.2 | 641.4 | 584.2 | 12 | 22.2 | 22.2 |
| 20" | 508.0 | 704.9 | 641.4 | 16 | 22.5 | 25.4 |
| 24" | 609.6 | 825.5 | 755.7 | 16 | 25.4 | 28.6 |

Table E: For Working Steam Pressure 50 lbs upto 100 lbs per sq. inch

| Nominal Pipe Size | Dia. of Flange | Dia. of Bolt Circle | No. of Bolt | Dia. of Bolt | Thickness |
|-------------------|----------------|---------------------|-------------|--------------|-----------|
| 1/2" | 95.3 | 66.7 | 4 | 12.7 | 6.4 |
| 3/4" | 101.6 | 73.0 | 4 | 12.7 | 6.4 |
| 1" | 114.3 | 82.6 | 4 | 12.7 | 7.1 |
| 1 1/4" | 120.7 | 87.3 | 4 | 12.7 | 7.9 |
| 1 1/2" | 133.4 | 98.4 | 4 | 12.7 | 8.7 |
| 2" | 152.4 | 114.3 | 4 | 15.9 | 9.5 |
| 2 1/2" | 165.1 | 127.0 | 4 | 15.9 | 10.3 |
| 3" | 184.2 | 146.1 | 4 | 15.9 | 11.1 |
| 3 1/2" | 203.2 | 165.1 | 8 | 15.9 | 11.9 |
| 4" | 215.9 | 177.8 | 8 | 15.9 | 12.7 |
| 5" | 254.0 | 209.6 | 8 | 15.9 | 14.3 |
| 6" | 279.4 | 228.6 | 8 | 19.1 | 17.5 |
| 7" | 304.8 | 260.4 | 8 | 19.1 | 19.1 |
| 8" | 336.6 | 292.1 | 8 | 19.1 | 19.1 |
| 9" | 368.3 | 323.9 | 12 | 19.1 | 20.6 |
| 10" | 406.4 | 355.6 | 12 | 19.1 | 22.2 |
| 12" | 457.2 | 406.4 | 12 | 22.2 | 25.4 |
| 14" | 527.2 | 469.9 | 12 | 22.2 | 25.4 |
| 16" | 577.9 | 520.7 | 12 | 22.2 | 25.4 |
| 18" | 641.4 | 584.2 | 16 | 22.2 | 28.6 |
| 20" | 704.9 | 647.4 | 16 | 22.2 | 31.8 |
| 24" | 825.5 | 755.7 | 16 | 25.4 | 38.1 |

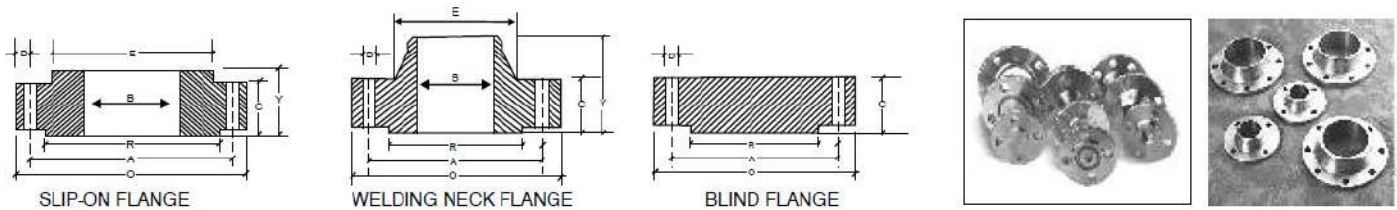
Table F: For Working Steam Pressure above 100 lbs and upto 150 lbs per sq. inch

| Nominal Pipe Size | O.D of Pipe | Dia of Flange | Dia of Bolt Circle | No. of Bolt | Dia. of Bolt | Thickness |
|-------------------|-------------|---------------|--------------------|-------------|--------------|-----------|
| 1/2" | 21.3 | 95.3 | 66.7 | 4 | 12.7 | 9.5 |
| 3/4" | 26.7 | 101.6 | 73.0 | 4 | 12.7 | 9.5 |
| 1" | 33.4 | 120.7 | 87.3 | 4 | 15.9 | 9.5 |
| 1 1/4" | 42.2 | 133.4 | 98.4 | 4 | 15.9 | 12.7 |
| 1 1/2" | 48.3 | 139.7 | 104.8 | 4 | 15.9 | 12.7 |
| 2" | 60.3 | 165.1 | 127.0 | 4 | 15.9 | 15.9 |
| 2 1/2" | 73.0 | 184.2 | 146.1 | 8 | 15.9 | 15.9 |
| 3" | 88.9 | 203.2 | 165.1 | 8 | 15.9 | 15.9 |
| 3 1/2" | 101.6 | 215.9 | 177.8 | 8 | 15.9 | 19.1 |
| 4" | 114.3 | 228.6 | 190.5 | 8 | 15.9 | 19.1 |
| 5" | 141.3 | 279.4 | 235.0 | 8 | 19.1 | 22.2 |
| 6" | 168.3 | 304.8 | 260.4 | 12 | 19.1 | 22.2 |
| 7" | 190.3 | 336.6 | 292.1 | 12 | 19.1 | 22.2 |
| 8" | 219.1 | 368.3 | 323.9 | 12 | 19.1 | 25.4 |
| 9" | 244.5 | 406.4 | 355.6 | 12 | 22.2 | 25.4 |
| 10" | 273.0 | 431.8 | 381.0 | 12 | 22.2 | 25.4 |
| 12" | 323.0 | 489.0 | 438.2 | 16 | 22.2 | 28.6 |
| 14" | 355.6 | 552.5 | 495.3 | 16 | 25.4 | 31.8 |
| 16" | 406.4 | 609.6 | 552.5 | 20 | 25.4 | 31.8 |
| 18" | 457.2 | 673.1 | 609.6 | 20 | 28.6 | 34.9 |
| 20" | 508.0 | 736.6 | 673.1 | 24 | 28.6 | 38.1 |
| 24" | 609.6 | 850.9 | 781.1 | 24 | 31.8 | 41.3 |

Table H: For Working Steam Pressure above 150 lbs and upto 250 lbs per sq. inch

| Nominal Pipe size | Dia of Flange | Dia. of Bolt Circle | No. of Bolt | Dia. of Bolt | Thickness |
|-------------------|---------------|---------------------|-------------|--------------|-----------|
| 1/2" | 114.3 | 82.6 | 4 | 15.9 | 12.7 |
| 3/4" | 114.3 | 82.6 | 4 | 15.9 | 12.7 |
| 1" | 120.78 | 87.3 | 4 | 15.9 | 14.3 |
| 1 1/4" | 133.4 | 98.4 | 4 | 15.9 | 17.5 |
| 1 1/2" | 139.7 | 104.8 | 4 | 15.9 | 17.5 |
| 2" | 165.1 | 127.0 | 4 | 15.9 | 19.1 |
| 2 1/2" | 184.2 | 146.1 | 8 | 15.9 | 19.1 |
| 3" | 203.2 | 165.1 | 8 | 15.9 | 22.2 |
| 3 1/2" | 215.9 | 177.8 | 8 | 15.9 | 22.2 |
| 4" | 228.6 | 190.5 | 8 | 15.9 | 25.4 |
| 5" | 279.4 | 235.0 | 8 | 19.1 | 28.6 |
| 6" | 304.8 | 260.4 | 12 | 19.1 | 28.6 |
| 7" | 336.6 | 292.1 | 12 | 19.1 | 31.8 |
| 8" | 368.3 | 323.9 | 12 | 19.1 | 31.8 |
| 9" | 406.4 | 355.6 | 12 | 22.2 | 34.9 |
| 10" | 431.8 | 381.0 | 12 | 22.2 | 34.9 |
| 12" | 489.0 | 438.2 | 16 | 22.2 | 38.1 |
| 14" | 552.5 | 495.3 | 16 | 25.4 | 41.3 |
| 16" | 609.6 | 552.5 | 20 | 25.4 | 44.5 |
| 18" | 673.1 | 609.6 | 20 | 28.6 | 47.6 |
| 20" | 736.6 | 673.1 | 24 | 28.6 | 50.8 |
| 24" | 850.9 | 781.1 | 24 | 31.8 | 57.2 |

FORGED FLANGES TO ANSI B 16.5 (ASA 150 / 300 LBS)



150 LBS

| Nominal Pipe Size (MM) (INCH.) | Flange Dia O | Dia of Bolt Circle A | Dia of Bolt Holes D | No. of Holes | Thk. of Flange C | Dia of Hub E | Length through Hub | | | Dia of Bore | | Dia of R/F R | Depth of Socket F | |
|-----------------------------------|-----------------|-------------------------|------------------------|--------------|---------------------|-----------------|--------------------|----------|----------|----------------|----------|-----------------|----------------------|------|
| | | | | | | | S/O & S/W Y | W/N Y | L/J Y | S/O & S/W B | L/J B | | | |
| 15 | 1/2 | 88.9 | 60.3 | 15.9 | 4 | 11.1 | 30.2 | 15.9 | 47.6 | 15.9 | 22.3 | 22.9 | 34.9 | 9.5 |
| 20 | 3/4 | 98.4 | 69.8 | 15.9 | 4 | 12.7 | 38.1 | 15.9 | 52.4 | 15.9 | 27.7 | 28.2 | 42.9 | 11.1 |
| 25 | 1 | 107.9 | 79.4 | 15.9 | 4 | 14.3 | 49.2 | 17.5 | 55.6 | 17.5 | 34.5 | 35.0 | 50.8 | 12.7 |
| 32 | 1 1/4 | 117.5 | 88.9 | 15.9 | 4 | 15.9 | 58.7 | 20.6 | 57.1 | 20.6 | 43.2 | 43.7 | 63.5 | 14.3 |
| 40 | 1 1/2 | 127.0 | 98.4 | 15.9 | 4 | 17.5 | 65.1 | 22.2 | 61.9 | 22.2 | 49.5 | 50.0 | 73.0 | 15.9 |
| 50 | 2 | 152.4 | 120.6 | 19.0 | 4 | 19.0 | 77.8 | 25.4 | 63.5 | 25.4 | 62.0 | 62.5 | 92.1 | 17.5 |
| 65 | 2 1/2 | 177.8 | 139.7 | 19.0 | 4 | 22.2 | 90.5 | 28.6 | 69.8 | 28.6 | 74.7 | 75.4 | 104.8 | 19.0 |
| 80 | 3 | 190.5 | 152.4 | 19.0 | 4 | 23.8 | 107.9 | 30.2 | 69.8 | 30.2 | 90.7 | 91.4 | 127.0 | 20.6 |
| 100 | 4 | 228.6 | 190.5 | 19.0 | 8 | 23.8 | 134.9 | 33.3 | 76.2 | 33.3 | 116.1 | 116.8 | 157.2 | 23.8 |
| 125 | 5 | 254.0 | 215.9 | 22.2 | 8 | 23.8 | 163.5 | 36.5 | 88.9 | 36.5 | 143.8 | 144.5 | 185.7 | 23.8 |
| 150 | 6 | 279.4 | 241.3 | 22.2 | 8 | 25.4 | 192.1 | 39.7 | 88.9 | 39.7 | 170.7 | 171.4 | 215.9 | 27.0 |
| 200 | 8 | 342.9 | 298.4 | 22.2 | 8 | 28.6 | 246.1 | 44.4 | 101.6 | 44.4 | 221.5 | 222.2 | 269.9 | 31.7 |
| 250 | 10 | 406.4 | 361.9 | 25.4 | 12 | 30.2 | 304.8 | 49.2 | 101.6 | 49.2 | 276.3 | 277.4 | 323.8 | 33.3 |
| 300 | 12 | 482.6 | 431.8 | 25.4 | 12 | 31.8 | 365.1 | 55.6 | 114.3 | 55.6 | 327.1 | 328.2 | 381.0 | 39.7 |
| 350 | 14 | 533.4 | 476.2 | 28.6 | 12 | 34.9 | 400.0 | 57.1 | 127.0 | 79.4 | 359.1 | 360.2 | 412.7 | 41.3 |
| 400 | 16 | 596.9 | 539.7 | 28.6 | 16 | 36.5 | 457.2 | 63.5 | 127.0 | 87.3 | 410.5 | 411.2 | 469.9 | 44.4 |
| 450 | 18 | 635.0 | 577.8 | 31.7 | 16 | 39.7 | 504.8 | 68.3 | 139.7 | 96.8 | 461.8 | 462.3 | 533.4 | 49.2 |
| 500 | 20 | 698.5 | 635.0 | 31.7 | 20 | 42.9 | 558.8 | 73.0 | 144.5 | 103.2 | 513.1 | 514.3 | 584.2 | 54.0 |
| 600 | 24 | 812.8 | 749.3 | 34.9 | 20 | 47.6 | 663.6 | 82.5 | 152.4 | 111.1 | 615.9 | 615.9 | 692.1 | 63.5 |

300 LBS

| Nominal Pipe Size (MM) (INCH.) | Flange Dia O | Dia of Bolt Circle A | Dia of Bolt Holes D | No. of Holes | Thk. of Flange C | Dia of Hub E | Length through Hub | | | Dia of Bore | | Dia of R/F R | Depth of Socket F | |
|-----------------------------------|-----------------|-------------------------|------------------------|--------------|---------------------|-----------------|--------------------|----------|----------|----------------|----------|-----------------|----------------------|------|
| | | | | | | | S/O & S/W Y | W/N Y | L/J Y | S/O & S/W B | L/J B | | | |
| 15 | 1/2 | 95.2 | 66.7 | 15.9 | 4 | 14.3 | 38.1 | 22.2 | 52.4 | 22.2 | 22.3 | 22.9 | 34.9 | 9.5 |
| 20 | 3/4 | 117.5 | 82.5 | 19.0 | 4 | 15.9 | 47.6 | 25.4 | 57.1 | 25.4 | 27.7 | 28.2 | 42.9 | 11.1 |
| 25 | 1 | 123.8 | 88.9 | 19.0 | 4 | 17.5 | 54.0 | 27.0 | 61.9 | 27.0 | 34.5 | 35.0 | 50.8 | 12.7 |
| 32 | 1 1/4 | 133.3 | 98.4 | 19.0 | 4 | 19.0 | 63.5 | 27.0 | 65.1 | 27.0 | 43.2 | 43.7 | 63.5 | 14.3 |
| 40 | 1 1/2 | 155.6 | 114.3 | 22.2 | 4 | 20.6 | 69.8 | 30.2 | 68.3 | 30.2 | 49.5 | 50.0 | 73.0 | 15.9 |
| 50 | 2 | 165.1 | 127.0 | 19.0 | 8 | 22.2 | 84.1 | 33.3 | 69.8 | 33.3 | 62.0 | 62.5 | 92.1 | 17.5 |
| 65 | 2 1/2 | 190.5 | 149.2 | 22.2 | 8 | 25.4 | 100.0 | 38.1 | 76.2 | 38.1 | 74.7 | 75.4 | 104.8 | 19.0 |
| 80 | 3 | 209.5 | 168.3 | 22.2 | 8 | 28.6 | 117.5 | 42.9 | 79.4 | 42.9 | 90.7 | 91.4 | 127.0 | 20.6 |
| 100 | 4 | 254.0 | 200.0 | 22.2 | 8 | 31.8 | 146.0 | 47.6 | 85.7 | 47.6 | 116.1 | 116.8 | 157.2 | 23.8 |
| 125 | 5 | 279.4 | 234.9 | 22.2 | 8 | 34.9 | 177.8 | 50.8 | 98.4 | 50.8 | 143.8 | 144.5 | 185.7 | - |
| 150 | 6 | 317.5 | 269.9 | 22.2 | 12 | 36.5 | 206.4 | 52.4 | 98.4 | 52.4 | 170.7 | 171.4 | 215.9 | - |
| 200 | 8 | 381.0 | 330.2 | 25.4 | 12 | 41.3 | 260.3 | 61.9 | 111.1 | 61.9 | 221.5 | 222.2 | 269.9 | - |
| 250 | 10 | 444.5 | 387.3 | 28.6 | 16 | 47.6 | 320.7 | 66.7 | 117.5 | 95.2 | 276.3 | 277.4 | 323.8 | - |
| 300 | 12 | 520.7 | 450.8 | 31.7 | 16 | 50.8 | 374.6 | 73.0 | 130.2 | 101.6 | 327.1 | 328.2 | 381.0 | - |
| 350 | 14 | 584.2 | 514.3 | 31.7 | 20 | 54.0 | 425.4 | 76.2 | 142.9 | 111.1 | 359.1 | 360.2 | 412.7 | - |
| 400 | 16 | 647.7 | 571.5 | 34.9 | 20 | 57.2 | 482.6 | 82.5 | 146.0 | 120.6 | 410.5 | 411.2 | 469.9 | - |
| 450 | 18 | 711.2 | 628.5 | 34.9 | 24 | 60.3 | 533.4 | 88.9 | 158.7 | 130.2 | 461.8 | 462.3 | 533.4 | - |
| 500 | 20 | 774.7 | 685.8 | 34.9 | 24 | 63.5 | 587.4 | 95.2 | 161.9 | 139.7 | 513.1 | 514.3 | 584.2 | - |
| 600 | 24 | 914.4 | 812.8 | 41.3 | 24 | 69.8 | 701.7 | 106.4 | 168.3 | 152.4 | 615.9 | 615.9 | 692.1 | - |

All Dimensions are in Millimeters/Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in "Thickness(C)" and "Length through Hub(Y)"

DIMENSIONAL TOLERANCES

| Threaded, Socket-Welding, Slip-on, Lap Joint and Blind | | | Welding Neck | | |
|--|---|---|-------------------------------------|--|---|
| Outside Diameter | When O.D is 24" or less | + 1/16" (1.6mm) | Outside Diameter | When O.D is 24" or less | ± 1/6" (1.6mm) |
| | When O.D is Over 24" | + 1/8" (3.2mm) | | When O.D is over 24" | ± 1/18" (3.2mm) |
| Inside Diameter | Threaded | Within limits on boring guage | Inside Diameter | 10" and Smaller | + 1/32" (0.8mm) |
| | Socket-Welding, Slip-on and Lap joint | 10" 7 Smaller + 1/32" (0.8mm) - 0" 12" & Larger + 1/16" (1.6mm) - 0" | | 12" thru 18" | + 1/16" (1.6mm) |
| Outside Diameter of Hub | 12" and Smaller | + 1/32" (0.8mm) - 1/16" (1.6mm) | Diameter of Contact Face | 20" and Larger | + 1/8" (3.2mm) - 1/16" (1.6mm) |
| | 14" and Larger | ± 1/8" (3.2mm) | | 1/16" Raised Face | +1/32" (0.8mm) |
| Diameter of Contact Face | 1/16" Raised Face | ±1/32" (0.8mm) | Diameter of Hub at Base | 1/4" Raised Face Tongue & Groove Male, Female | + 1/64" (0.4mm) |
| | 1/4" Raised Face Tongue & Groove Male, Female | ± 1/64" (0.4mm) | | When Hub Base is 24" or Smaller | = 1/16" (1.6mm) |
| Diameter of Counterbore | Same as for Inside Diameter | | Diameter of Hub at Point of Welding | When Hub Base is Over 24" | - 1/8" (3.2mm) |
| | Drilling | Bolt Circle | | ± 1/16" (1.6mm) | 5" and Smaller |
| Bolt hole Spacing | | ± 1/32" (0.8mm) | 6" and Larger | + 5/32" (4.0mm) - 1/32" (0.8mm) | |
| Eccentricity of Both Circle with Respect to Facing | | 2 1/2" & Smaller 1/32" (0.8mm) max 3" & Larger 1/16" (1.6mm) max | Drilling | Bolt Circle | + 1/16" (1.6mm) |
| Eccentricity of Both Circle with Respect to Bore | | 1/32" (0.8mm) max | | Bolt hole spacing | + 1/32" (0.8mm) |
| Eccentricity of Facing with Respect to Bore | | 1/32" (0.8mm) max | | Eccentricity of Bolt Circle with Respect to Facing | 2 1/2" & Smaller 1/32" (0.8mm) max 3" & Larger 1/16" (1.6mm) max |
| Thickness | 18" and Smaller | + 1/8" (3.2mm) - 0" | Thickness | Eccentricity of Bolt Circle with Respect to Bore | 1/32" (0.8mm) max |
| | 20" and Larger | + 3/16" (4.8mm) - 0" | | Eccentricity of Facing with Respect to Bore | 1/32" (0.8mm) max |
| Length Thru Hub | 10" and Smaller | ± 1/16" (1.6mm) | Length Thru Hub | 18" and Smaller | + 1/8" (3.2mm)-0" |
| | 12" and Larger | ± 1/8" (3.2mm) | | 20" and Larger | + 3/16" (4.8mm)-0" |