

**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      |

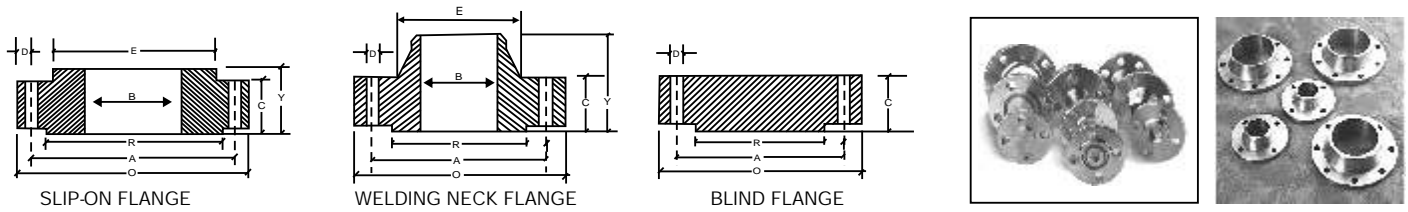
**Table F: For Working Steam Pressure above 100 lbs and upto 150 lbs per sq. inch**

| 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<br>(MM) (INCH.) |       | Flange Dia<br>O | Dia of Bolt Circle<br>A | Dia of Bolt Holes<br>D | No. of Holes | Thk. of Flange<br>C | Dia of Hub<br>E | Length through Hub |          |          | Dia of Bore    |          | Dia of R/F<br>R | Depth of Socket<br>F |
|-----------------------------------|-------|-----------------|-------------------------|------------------------|--------------|---------------------|-----------------|--------------------|----------|----------|----------------|----------|-----------------|----------------------|
|                                   |       |                 |                         |                        |              |                     |                 | S/O & S/W<br>Y     | W/N<br>Y | L/J<br>Y | S/O & S/W<br>B | L/J<br>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<br>(MM) (INCH.) |       | Flange Dia<br>O | Dia of Bolt Circle<br>A | Dia of Bolt Holes<br>D | No. of Holes | Thk. of Flange<br>C | Dia of Hub<br>E | Length through Hub |          |          | Dia of Bore    |          | Dia of R/F<br>R | Depth of Socket<br>F |
|-----------------------------------|-------|-----------------|-------------------------|------------------------|--------------|---------------------|-----------------|--------------------|----------|----------|----------------|----------|-----------------|----------------------|
|                                   |       |                 |                         |                        |              |                     |                 | S/O & S/W<br>Y     | W/N<br>Y | L/J<br>Y | S/O & S/W<br>B | L/J<br>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<br><br><b>Diameter</b>                           | <b>When O.D is 24" or less</b>                      | <b>+ 1/16" (1.6mm)</b>   | <b>Outside<br/><br/><b>Diameter</b></b>   | When O.D. is 24" or less                                 | $\pm 1/16"$ (1.6mm)   |
|  | <b>When O.D is Over 24"</b>                         | <b>+ 1/8" (3.2mm)</b>  |   | When O.D is over 24"                                     | $\pm 1/18"$ (3.2mm)   |
| Inside<br><br>Diameter                                   | Threaded  | Within limits on boring guage  | Inside<br><br>Diameter                    | 10" and Smaller  | + 1/32" (0.8mm)   |
|  | Socket-Welding, Slip-on and Lap joint               | <b>10" 7 Smaller</b><br>+ 1/32" (0.8mm) - 0"<br>12" & Larger<br>+ 1/16" (1.6mm) - 0" |   | 12" thru 18"   | + 1/16" (1.6mm)   |
| Outside<br>Diameter<br>of Hub                            | 12" and Smaller                                     | + 1/32" (0.8mm)<br>- 1/16" (1.6mm)   | Diameter<br>of<br>Contact<br>Face         | 20" and Larger   | + 1/8" (3.2mm)<br>- 1/16" (1.6mm)   |
|  | 14" and Larger                                      | $\pm 1/8"$ (3.2mm)   |   | 1/16" Raised Face  | +1/32" (0.8mm)  |
| Diameter<br>of<br>Contact<br>Face                        | 1/16" Raised Face                                   | $\pm 1/32"$ (0.8mm)  | Diameter<br>of Hub<br>at Base             | 1/4" Raised Face<br>Tongue & Groove<br>Male, Female      | + 1/64" (0.4mm)   |
|  | 1/4" Raised Face<br>Tongue & Groove<br>Male, Female | $\pm 1/64"$ (0.4mm)  |   | When Hub Base is 24" or Smaller                          | = 1/16" (1.6mm)   |
| <b>Diameter<br/>of<br/>Counterbore</b>                   | <b>Same as for<br/>Inside Diameter</b>              |  | Diameter of<br>Hub at Point<br>of Welding | When Hub Base is<br>Over 24"                             | - 1/8" (3.2mm)  |
|  | Drilling  | Bolt Circle  |   | $\pm 1/16"$ (1.6mm)                                      | 5" and Smaller  |
| Bolt hole Spacing  |   | $\pm 1/32"$ (0.8mm)  | 6" and Larger                             | + 5/32" (4.0mm)<br>- 1/32" (0.8mm)                       |   |
| Eccentricity of<br>Both Circle with<br>Respect to Facing |   | 2 1/2" & Smaller<br>1/32" (0.8mm) max<br>3" & Larger<br>1/16" (1.6mm) max            | Drilling                                  | Bolt Circle  | + 1/16" (1.6mm)   |
| Eccentricity of<br>Both Circle with<br>Respect to Bore   |   | 1/32" (0.8mm) max  |   | Bolt hole spacing  | + 1/32" (0.8mm)   |
| Eccentricity of<br>Facing with<br>Respect to Bore        |   | 1/32" (0.8mm) max  |   | Eccentricity of<br>Bolt Circle with<br>Respect to Facing | 2 1/2" & Smaller<br>1/32" (0.8mm) max<br>3" & Larger<br>1/16" (1.6mm) max |
| Eccentricity of<br>Facing with<br>Respect to Bore        | 1/32" (0.8mm) max                                   | Eccentricity of<br>Bolt Circle with<br>Respect to Bore                               |   | 1/32" (0.8mm) max  |   |
| Thickness  | 18" and Smaller                                     | + 1/8" (3.2mm) - 0"  | Thickness                                 | 18" and Smaller  | + 1/8" (3.2mm)-0"   |
|  | 20" and Larger                                      | + 3/16" (4.8mm) - 0"   |   | 20" and Larger   | + 3/16" (4.8mm)-0"  |
| Length   | 10" and Smaller                                     | $\pm 1/16"$ (1.6mm)  | Length                                    | 10" and Smaller  | + 1/16" (1.6mm)   |
| Thru Hub   | 12" and Larger                                      | $\pm 1/8"$ (3.2mm)   | Thru Hub                                  | 12" and Larger   | + 1/8" (3.2mm)  |