

# 法兰参数对照表

Flange parameters comparison table

表1 PN0.6MPa ( 6压力 ) 板式平焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                  | 连接尺寸                 |                   |                       |       |         | 密封面尺寸 |   | 法兰<br>厚度 | 法兰内径<br>B1 |      | 坡口<br>宽度<br>b | 法兰理论<br>重量系列<br>Z<br>kg |
|----------------|------------|------------------|----------------------|-------------------|-----------------------|-------|---------|-------|---|----------|------------|------|---------------|-------------------------|
|                |            |                  | 法兰外径<br>系列1/系列2<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔直径<br>系列1/系列2<br>L | 螺栓、螺柱 |         |       |   |          |            |      |               |                         |
|                | 数量n        | 螺纹Th.<br>系列1/系列2 |                      |                   |                       | d     | f       | C     | A | B        |            |      |               |                         |
| 10             | 17.2       | 14               | 75                   | 50                | 12                    | 4     | M10     | 32    | 2 | 12       | 18         | 15   | 3             | 0.32                    |
| 15             | 21.3       | 18               | 80                   | 55                | 12                    | 4     | M10     | 40    | 2 | 12       | 22         | 19   | 3             | 0.34                    |
| 20             | 26.9       | 25               | 90                   | 65                | 12                    | 4     | M10     | 50    | 2 | 14       | 27.5       | 26   | 3             | 0.54                    |
| 25             | 33.7       | 32               | 100                  | 75                | 12                    | 4     | M10     | 60    | 2 | 14       | 34.5       | 33   | 4             | 0.64                    |
| 32             | 42.4       | 38               | 120                  | 90                | 14                    | 4     | M12     | 70    | 2 | 16       | 43.5       | 39   | 4             | 1.10                    |
| 40             | 48.3       | 45               | 130                  | 100               | 14                    | 4     | M12     | 80    | 3 | 16       | 49.5       | 46   | 4             | 1.22                    |
| 50             | 60.3       | 57               | 140                  | 110               | 14                    | 4     | M12     | 90    | 3 | 16       | 61.5       | 59   | 4             | 1.35                    |
| 65             | 76.1       | 76               | 160                  | 130               | 14                    | 4     | M12     | 110   | 3 | 16       | 77.5       | 78   | 5             | 1.67                    |
| 80             | 88.9       | 89               | 190/185              | 150               | 18                    | 4     | M16     | 125   | 3 | 18       | 90.5       | 91   | 5             | 2.48                    |
| 100            | 114.3      | 108              | 210/205              | 170               | 18                    | 4     | M16     | 145   | 3 | 18       | 116        | 110  | 5             | 2.89                    |
| 125            | 139.7      | 133              | 240/235              | 200               | 18                    | 8     | M16     | 175   | 3 | 20       | 141.5      | 135  | 5             | 3.94                    |
| 150            | 168.3      | 159              | 265/260              | 225               | 18                    | 8     | M16     | 200   | 3 | 20       | 170.5      | 161  | 5             | 4.47                    |
| 175            |            | 194              | 290                  | 255               | 18                    | 8     | M16     | 230   | 3 | 22       |            | 196  | 6             | 5.54                    |
| 200            | 219.1      | 219              | 320/315              | 280               | 18                    | 8     | M16     | 255   | 3 | 22       | 221.5      | 222  | 7             | 6.07                    |
| 225            |            | 245              | 340                  | 305               | 18                    | 8     | M16     | 280   | 3 | 22       |            | 248  | 8             | 6.60                    |
| 250            | 273        | 273              | 375/370              | 335               | 18                    | 12    | M16     | 310   | 3 | 24       | 276.5      | 276  | 9             | 8.03                    |
| 300            | 323.9      | 325              | 440/435              | 395               | 23                    | 12    | M20     | 362   | 4 | 24       | 327.5      | 328  | 9             | 10.30                   |
| 350            | 355.6      | 377              | 490/485              | 445               | 23                    | 12    | M20     | 415   | 4 | 26       | 359.5      | 380  | 10            | 12.59                   |
| 400            | 406.4      | 426              | 540/535              | 495               | 23                    | 16    | M20     | 462   | 4 | 28       | 411        | 430  | 10            | 15.20                   |
| 450            | 457        | 480              | 595/590              | 550               | 23                    | 16    | M20     | 518   | 4 | 28       | 462        | 484  | 10            | 17.59                   |
| 500            | 508        | 530              | 645/640              | 600               | 23                    | 20/16 | M20     | 568   | 4 | 30       | 513.5      | 534  | 10            | 20.67注意                 |
| 600            | 610        | 630              | 755                  | 705               | 26/25                 | 20    | M24/M22 | 670   | 5 | 30       | 616.5      | 634  | 10            | 26.57                   |
| 700            | 711        | 720              | 860                  | 810               | 26/25                 | 24    | M24/M22 | 755   | 5 | 32       | 715        | 724  | 10            | 37.10                   |
| 800            | 813        | 820              | 975                  | 920               | 30                    | 24    | M27     | 880   | 5 | 32       | 817        | 824  | 10            | 46.20                   |
| 900            | 914        | 920              | 1075                 | 1020              | 30                    | 24    | M27     | 980   | 5 | 34       | 918        | 924  | 10            | 55.10                   |
| 1000           | 1016       | 1020             | 1175                 | 1120              | 30                    | 28    | M27     | 1080  | 5 | 36       | 1020       | 1024 | 10            | 64.36                   |
| 1200           | 1219       | 1220             | 1405/1400            | 1340              | 34                    | 32    | M30     | 1295  | 5 | 30       | 1223       | 1224 | 12            | 73参考                    |
| 1300           |            | 1320             | 1520                 | 1450              | 34                    | 32    | M30     | 1405  | 5 | 30       |            | 1324 | 12            | 80参考                    |
| 1400           | 1422       | 1420             | 1630/1620            | 1560              | 36/34                 | 36    | M33/M30 | 1510  | 5 | 34       | 1426       | 1424 | 14            | 105参考                   |
| 1500           |            | 1520             | 1720                 | 1660              | 34                    | 36    | M30     | 1610  | 5 | 34       |            | 1524 | 14            | 115参考                   |
| 1600           | 1626       | 1620             | 1830/1820            | 1760              | 36/34                 | 40    | M33/M30 | 1710  | 5 | 36       | 1630       | 1624 | 16            | 125参考                   |
| 1750           |            |                  | 1995                 | 1920              | 41                    | 44    | M36     | 1860  | 5 | 36       |            |      | 16            | 155参考                   |
| 1800           | 1829       | 1820             | 2045                 | 1970              | 41                    | 44    | M36     | 1910  | 5 | 38       | 1833       | 1824 | 17            | 170参考                   |
| 2000           | 2032       | 2020             | 2265                 | 2180              | 42/48                 | 48    | M39/M42 | 2110  | 5 | 38       | 2036       | 2024 | 19            | 210参考                   |
| 2200           |            |                  | 2475                 | 2390              | 48                    | 52    | M42     | 2330  | 6 | 40       |            |      | 20            | 240参考                   |
| 2400           |            |                  | 2685                 | 2600              | 48                    | 56    | M42     | 2540  | 6 | 42       |            |      | 22            | 300参考                   |

法兰参数对照表  
Flange parameters comparison table

表2 PN1.0MPa ( 10压力 ) 板式平焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                  | 连接尺寸                 |                   |                       |       |         | 密封面尺寸 |   | 法兰<br>厚度 | 法兰内径<br>B1 |      | 坡口<br>宽度<br>b | 法兰理论<br>重量系列<br>Z<br>kg |
|----------------|------------|------------------|----------------------|-------------------|-----------------------|-------|---------|-------|---|----------|------------|------|---------------|-------------------------|
|                |            |                  | 法兰外径<br>系列1/系列2<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔直径<br>系列1/系列2<br>L | 螺栓、螺柱 |         |       |   |          |            |      |               |                         |
|                | 数量n        | 螺纹Th.<br>系列1/系列2 |                      |                   |                       | d     | f       | C     | A |          | B          |      |               |                         |
| 10             | 17.2       | 14               | 90                   | 60                | 14                    | 4     | M12     | 40    | 2 | 12       | 18         | 15   | 3             | 0.46                    |
| 15             | 21.3       | 18               | 95                   | 65                | 14                    | 4     | M12     | 45    | 2 | 12       | 22         | 19   | 3             | 0.51                    |
| 20             | 26.9       | 25               | 105                  | 75                | 14                    | 4     | M12     | 55    | 2 | 14       | 27.5       | 26   | 3             | 0.75                    |
| 25             | 33.7       | 32               | 115                  | 85                | 14                    | 4     | M12     | 65    | 2 | 14       | 34.5       | 33   | 4             | 0.89                    |
| 32             | 42.4       | 38               | 140/135              | 100               | 18                    | 4     | M16     | 78    | 2 | 16       | 43.5       | 39   | 4             | 1.40                    |
| 40             | 48.3       | 45               | 150/145              | 110               | 18                    | 4     | M16     | 85    | 3 | 18       | 49.5       | 46   | 4             | 1.71                    |
| 50             | 60.3       | 57               | 165/160              | 125               | 18                    | 4     | M16     | 100   | 3 | 18       | 61.5       | 59   | 4             | 2.09                    |
| 65             | 76.1       | 76               | 185/180              | 145               | 18                    | 4     | M16     | 120   | 3 | 20       | 77.5       | 78   | 5             | 2.84                    |
| 80             | 88.9       | 89               | 200/195              | 160               | 18                    | 3/4   | M16     | 135   | 3 | 20       | 90.5       | 91   | 5             | 3.24注意                  |
| 100            | 114.3      | 108              | 220/215              | 180               | 18                    | 8     | M16     | 155   | 3 | 22       | 116        | 110  | 5             | 4.01                    |
| 125            | 139.7      | 133              | 250/245              | 210               | 18                    | 8     | M16     | 185   | 3 | 24       | 141.5      | 135  | 5             | 5.46                    |
| 150            | 168.3      | 159              | 285/280              | 240               | 23                    | 8     | M20     | 210   | 3 | 24       | 170.5      | 161  | 5             | 6.67                    |
| 175            |            | 194              | 310                  | 270               | 23                    | 8     | M20     | 240   | 3 | 24       |            | 196  | 6             | 7.44                    |
| 200            | 219.1      | 219              | 340/335              | 295               | 23                    | 8     | M20     | 265   | 3 | 24       | 221.5      | 222  | 7             | 8.24                    |
| 225            |            | 245              | 365                  | 325               | 23                    | 8     | M20     | 295   | 3 | 24       |            | 248  | 8             | 9.30                    |
| 250            | 273        | 273              | 395/390              | 350               | 23                    | 12    | M20     | 320   | 3 | 26       | 276.5      | 276  | 9             | 10.7                    |
| 300            | 323.9      | 325              | 445/440              | 400               | 23                    | 12    | M20     | 363   | 4 | 28       | 327.5      | 328  | 9             | 12.9                    |
| 350            | 355.6      | 377              | 505/500              | 460               | 23                    | 16    | M20     | 423   | 4 | 28       | 359.5      | 380  | 10            | 15.9                    |
| 400            | 406.4      | 426              | 565                  | 515               | 26/25                 | 16    | M24/M22 | 482   | 4 | 30       | 411        | 430  | 10            | 21.8                    |
| 450            | 457        | 480              | 615                  | 565               | 26/25                 | 20    | M24/M22 | 532   | 4 | 30       | 462        | 484  | 10            | 24.4                    |
| 500            | 508        | 530              | 670                  | 320               | 26/25                 | 20    | M24/M22 | 585   | 4 | 32       | 513.5      | 534  | 10            | 27.7                    |
| 600            | 610        | 630              | 780                  | 725               | 30                    | 20    | M27     | 685   | 5 | 36       | 616.5      | 634  | 10            | 39.4                    |
| 700            | 711        | 720              | 895                  | 340               | 30                    | 24    | M27     | 800   | 5 | 36       | 715        | 724  | 10            | 53                      |
| 800            | 813        | 820              | 1015/1010            | 950               | 34                    | 24    | M30     | 905   | 5 | 38       | 817        | 824  | 10            | 67                      |
| 900            | 914        | 920              | 1115/1110            | 1050              | 34                    | 28    | M30     | 1005  | 5 | 38       | 918        | 924  | 10            | 76参考                    |
| 1000           | 1016       | 1020             | 1230/1220            | 1160              | 36/34                 | 28    | M33/M30 | 1115  | 5 | 38       | 1020       | 1024 | 10            | 90参考                    |
| 1200           | 1219       | 1220             | 1340                 | 1270              | 36                    | 28    | M33     | 1222  | 5 | 40       |            | 1124 | 10            | 125参考                   |
| 1300           |            | 1320             | 1455/1450            | 1380              | 39/41                 | 32    | M36     | 1325  | 5 | 44       | 1223       | 1224 | 12            | 143参考                   |
| 1400           | 1422       | 1420             | 1575                 | 1490              | 41                    | 32    | M36     | 1420  | 5 | 46       |            | 1324 | 12            | 180参考                   |
| 1500           |            | 1520             | 1575                 | 1590              | 42/48                 | 36    | M39/M42 | 1525  | 5 | 48       | 1426       | 1424 | 14            | 195参考                   |
| 1600           | 1626       | 1620             | 1785                 | 1700              | 48                    | 36    | M42     | 1640  | 5 | 50       |            | 1524 | 14            | 225参考                   |
| 1750           |            |                  | 1915                 | 1820              | 48/54                 | 40    | M45/M48 | 1750  | 5 | 52       | 1630       | 1624 | 16            | 275参考                   |
| 1800           | 1829       | 1820             | 2065                 | 1970              | 54                    | 44    | M48     | 1900  | 5 | 54       |            |      | 16            | 310参考                   |
| 2000           | 2032       | 2020             | 2115                 | 2020              | 48/54                 | 44    | M45/M48 | 1950  | 5 | 56       | 1833       | 1824 | 17            | 340参考                   |
| 2200           |            |                  | 2325                 | 2230              | 48/54                 | 48    | M45/M48 | 2160  | 5 | 60       | 2036       | 2024 | 18            | 420参考                   |
| 2400           |            |                  | 2550                 | 2440              | 56                    | 52    | M52     | 2370  | 6 | 80       |            |      | 20            | 660参考                   |

## 法兰参数对照表

Flange parameters comparison table

表3 PN1.6MPa (16压力) 板式平焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                  | 连接尺寸                 |                   |                       |       |         | 密封面尺寸 |   | 法兰<br>厚度 | 法兰内径<br>B1 |      | 坡口<br>宽度<br>b | 法兰理论<br>重量系列<br>Z<br>kg |
|----------------|------------|------------------|----------------------|-------------------|-----------------------|-------|---------|-------|---|----------|------------|------|---------------|-------------------------|
|                |            |                  | 法兰外径<br>系列1/系列2<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔直径<br>系列1/系列2<br>L | 螺栓、螺柱 |         |       |   |          |            |      |               |                         |
|                | 数量n        | 螺纹Th.<br>系列1/系列2 |                      |                   |                       | d     | f       | C     | A |          | B          |      |               |                         |
| 10             | 17.2       | 14               | 90                   | 60                | 14                    | 4     | M12     | 40    | 2 | 14       | 18         | 15   | 3             | 0.55                    |
| 15             | 21.3       | 18               | 95                   | 65                | 14                    | 4     | M12     | 45    | 2 | 14       | 22         | 19   | 3             | 0.71                    |
| 20             | 26.9       | 25               | 105                  | 75                | 14                    | 4     | M12     | 55    | 2 | 16       | 27.5       | 26   | 3             | 0.87                    |
| 25             | 33.7       | 32               | 115                  | 85                | 14                    | 4     | M12     | 65    | 2 | 18       | 34.5       | 33   | 4             | 1.18                    |
| 32             | 42.4       | 38               | 140/135              | 100               | 18                    | 4     | M16     | 78    | 2 | 18       | 43.5       | 39   | 4             | 1.60                    |
| 40             | 48.3       | 45               | 150/145              | 110               | 18                    | 4     | M16     | 85    | 3 | 20       | 49.5       | 46   | 4             | 2.00                    |
| 50             | 60.3       | 57               | 165/160              | 125               | 18                    | 4     | M16     | 100   | 3 | 22       | 61.5       | 59   | 4             | 2.61                    |
| 65             | 76.1       | 76               | 185/180              | 145               | 18                    | 4     | M16     | 120   | 3 | 24       | 77.5       | 78   | 5             | 3.45                    |
| 80             | 88.9       | 89               | 200/195              | 160               | 18                    | 8     | M16     | 135   | 3 | 24       | 90.5       | 91   | 5             | 3.71                    |
| 100            | 114.3      | 108              | 220/215              | 180               | 18                    | 8     | M16     | 155   | 3 | 24       | 116        | 110  | 5             | 4.80                    |
| 125            | 139.7      | 133              | 250/245              | 210               | 18                    | 8     | M16     | 185   | 3 | 28       | 141.5      | 135  | 5             | 6.47                    |
| 150            | 168.3      | 159              | 285/280              | 240               | 23                    | 8     | M20     | 210   | 3 | 28       | 170.5      | 161  | 5             | 7.92                    |
| 175            |            | 194              | 310                  | 270               | 23                    | 8     | M20     | 240   | 3 | 28       |            | 196  | 6             | 8.81                    |
| 200            | 219.1      | 219              | 340/335              | 295               | 23                    | 12    | M20     | 265   | 3 | 30       | 221.5      | 222  | 7             | 10.10                   |
| 225            |            | 245              | 365                  | 325               | 23                    | 12    | M20     | 295   | 3 | 30       |            | 248  | 8             | 11.20                   |
| 250            | 273        | 273              | 405                  | 355               | 26/25                 | 12    | M24/M22 | 320   | 3 | 32       | 276.5      | 276  | 9             | 15.70                   |
| 300            | 323.9      | 325              | 460                  | 410               | 26/25                 | 12    | M24/M22 | 375   | 4 | 32       | 327.5      | 328  | 9             | 18.10                   |
| 350            | 355.6      | 377              | 520                  | 470               | 26/25                 | 16    | M24/M22 | 436   | 4 | 34       | 359.5      | 380  | 10            | 23.30                   |
| 400            | 406.4      | 426              | 580                  | 525               | 30                    | 16    | M27     | 485   | 4 | 38       | 411        | 430  | 10            | 31.00                   |
| 450            | 457        | 480              | 640                  | 585               | 30                    | 20    | M27     | 515   | 4 | 42       | 462        | 484  | 10            | 40.20                   |
| 500            | 508        | 530              | 715/705              | 650               | 34                    | 20    | M30     | 608   | 4 | 48       | 513.5      | 534  | 10            | 55.20                   |
| 600            | 610        | 630              | 840                  | 770               | 36/41                 | 20    | M33/M36 | 718   | 5 | 50       | 616.5      | 634  | 10            | 80.80                   |
| 700            | 711        | 720              | 910                  | 840               | 36/41                 | 24    | M33/M36 | 788   | 5 | 50       | 715        | 724  | 10            | 106.0                   |
| 800            | 813        | 820              | 1025/1020            | 950               | 39/41                 | 24    | M36     | 898   | 5 | 52       | 817        | 824  | 10            | 130.5                   |
| 900            | 914        | 920              | 1125/1120            | 1050              | 39/41                 | 28    | M36     | 998   | 5 | 44       | 918        | 924  | 10            | 91参考                    |
| 1000           | 1016       | 1020             | 1255                 | 1170              | 42/48                 | 28    | M39/M42 | 1110  | 5 | 46       | 1020       | 1024 | 10            | 127参考                   |
| 1100           |            | 1120             | 1370                 | 1280              | 42                    | 28    | M39     | 1222  | 5 | 50       |            | 1124 | 10            | 160参考                   |
| 1200           | 1219       | 1220             | 1485                 | 1390              | 48/54                 | 32    | M45/M48 | 1325  | 5 | 52       | 1223       | 1224 | 12            | 186参考                   |
| 1300           |            | 1320             | 1585                 | 1490              | 54                    | 32    | M48     | 1425  | 5 | 54       |            | 1324 | 12            | 215参考                   |
| 1400           | 1422       | 1420             | 1685                 | 1590              | 48/54                 | 36    | M48/M45 | 1525  | 5 | 58       | 1426       | 1424 | 14            | 245参考                   |
| 1500           |            | 1520             | 1820                 | 1710              | 54                    | 36    | M48     | 1640  | 5 | 60       |            | 1524 | 14            | 320参考                   |
| 1600           | 1626       | 1620             | 1930                 | 1820              | 55/58                 | 40    | M52     | 1750  | 5 | 64       | 1630       | 1624 | 16            | 360参考                   |
| 1750           |            |                  | 2080                 | 1970              | 58                    | 44    | M52     | 1900  | 5 | 66       |            |      | 16            | 400参考                   |
| 1800           | 1829       | 1820             | 2130                 | 2020              | 55/58                 | 44    | M52     | 1950  | 5 | 68       | 1833       | 1824 | 17            | 430参考                   |
| 2000           | 2032       | 2020             | 2345                 | 2230              | 60                    | 48    | M56     | 2150  | 5 | 70       | 2036       | 2024 | 18            | 515参考                   |

※系列1国家标准GB/T9119-2000/系列2机械行业标准JB/T81-94

## 法兰参数对照表

Flange parameters comparison table

表4 PN2.5MPa ( 25压力 ) 板式平焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                  | 连接尺寸                 |                   |                       |       |         | 密封面尺寸 |   | 法兰<br>厚度 | 法兰内径<br>B1 |      | 坡口<br>宽度<br>b | 法兰理论<br>重量系列<br>Z<br>kg |
|----------------|------------|------------------|----------------------|-------------------|-----------------------|-------|---------|-------|---|----------|------------|------|---------------|-------------------------|
|                |            |                  | 法兰外径<br>系列1/系列2<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔直径<br>系列1/系列2<br>L | 螺栓、螺柱 |         |       |   |          |            |      |               |                         |
|                | 数量n        | 螺纹Th.<br>系列1/系列2 |                      |                   |                       | d     | f       | C     | A |          | B          |      |               |                         |
| 10             | 17.2       | 14               | 90                   | 60                | 14                    | 4     | M12     | 40    | 2 | 16       | 18         | 15   | 3             | 0.64                    |
| 15             | 21.3       | 18               | 95                   | 65                | 14                    | 4     | M12     | 45    | 2 | 16       | 22         | 19   | 3             | 0.80                    |
| 20             | 26.9       | 25               | 105                  | 75                | 14                    | 4     | M12     | 55    | 2 | 18       | 27.5       | 26   | 3             | 0.99                    |
| 25             | 33.7       | 32               | 115                  | 85                | 14                    | 4     | M12     | 65    | 2 | 18       | 34.5       | 33   | 4             | 1.18                    |
| 32             | 42.4       | 38               | 140/135              | 100               | 18                    | 4     | M16     | 78    | 2 | 20       | 43.5       | 39   | 4             | 1.96                    |
| 40             | 48.3       | 45               | 150/145              | 110               | 18                    | 4     | M16     | 85    | 3 | 22       | 49.5       | 46   | 4             | 2.60                    |
| 50             | 60.3       | 57               | 165/160              | 125               | 18                    | 4     | M16     | 100   | 3 | 24       | 61.5       | 59   | 4             | 2.71                    |
| 65             | 76.1       | 76               | 185/180              | 145               | 18                    | 8     | M16     | 120   | 3 | 24       | 77.5       | 78   | 5             | 3.22                    |
| 80             | 88.9       | 89               | 200/195              | 160               | 18                    | 8     | M16     | 135   | 3 | 26       | 90.5       | 91   | 5             | 4.06                    |
| 100            | 114.3      | 108              | 235/230              | 190               | 23                    | 8     | M20     | 160   | 3 | 28       | 116        | 110  | 5             | 6.00                    |
| 125            | 139.7      | 133              | 270                  | 220               | 26/25                 | 8     | M24/M22 | 188   | 3 | 30       | 141.5      | 135  | 5             | 8.26                    |
| 150            | 168.3      | 159              | 300                  | 250               | 26/25                 | 8     | M24/M22 | 218   | 3 | 30       | 170.5      | 161  | 5             | 10.40                   |
| 175            |            | 194              | 330                  | 280               | 26/25                 | 12    | M24/M22 | 248   | 3 | 32       |            | 196  | 6             | 11.90                   |
| 200            | 219.1      | 219              | 360                  | 310               | 26/25                 | 12    | M24/M22 | 278   | 3 | 32       | 221.5      | 222  | 7             | 14.50                   |
| 225            |            | 245              | 395                  | 340               | 30                    | 12    | M27     | 302   | 3 | 34       |            | 248  | 8             | 17.00                   |
| 250            | 273        | 273              | 425                  | 370               | 30                    | 12    | M27     | 332   | 3 | 34       | 276.5      | 276  | 9             | 18.90                   |
| 300            | 323.9      | 325              | 485                  | 430               | 30                    | 16    | M27     | 390   | 4 | 36       | 327.5      | 328  | 9             | 26.80                   |
| 350            | 355.6      | 377              | 555/550              | 490               | 34                    | 16    | M30     | 448   | 4 | 42       | 359.5      | 380  | 10            | 34.35                   |
| 400            | 406.4      | 426              | 620/610              | 550               | 36/34                 | 16    | M33/M30 | 505   | 4 | 44       | 411        | 430  | 10            | 44.90                   |
| 450            | 457        | 480              | 670/660              | 600               | 36/34                 | 20    | M33/M30 | 555   | 4 | 48       | 462        | 484  | 10            | 51.92                   |
| 500            | 508        | 530              | 730                  | 660               | 36/41                 | 20    | M33/M36 | 610   | 4 | 52       | 513.5      | 534  | 10            | 67.30                   |
| 600            | 610        | 630              | 845/840              | 770               | 41                    | 20    | M36     | 718   | 5 | 56       | 616.5      | 634  | 10            | 95.20                   |
| 700            | 711        | 720              | 960/955              | 875               | 42/48                 | 24    | M39/M42 | 815   | 5 | 60       | 715        | 724  | 10            | 116                     |
| 800            | 813        | 820              | 1085/1070            | 990               | 48                    | 24    | M45/M42 | 930   | 5 | 64       | 817        | 824  | 10            | 150.2                   |
| 900            | 914        | 920              | 1185/1180            | 1090              | 48/54                 | 28    | M45/M48 | 1025  | 5 | 58       | 918        | 924  | 10            | 160参考                   |
| 1000           | 1016       | 1020             | 1320/1305            | 1210              | 55/58                 | 28    | M52     | 1140  | 5 | 62       | 1020       | 1024 | 10            | 210参考                   |
| 1100           |            | 1124             | 1425                 | 1315              | 55                    | 28    | M52     | 1245  | 5 | 66       |            | 1124 | 10            | 260参考                   |
| 1200           | 1219       | 1220             | 1530/1525            | 1420              | 55/58                 | 32    | M52     | 1350  | 5 | 70       | 1223       | 1224 | 12            | 300参考                   |
| 1300           |            | 1320             | 1640                 | 1530              | 65                    | 32    | M56     | 1450  | 5 | 74       |            | 1324 | 12            | 355参考                   |
| 1400           | 1422       | 1420             | 1755/1750            | 1640              | 60/65                 | 36    | M56     | 1560  | 5 | 76       | 1426       | 1424 | 14            | 450参考                   |
| 1500           |            | 1520             | 1865                 | 1750              | 60                    | 36    | M56     | 1670  | 5 | 80       |            | 1524 | 14            | 530参考                   |
| 1600           | 1626       | 1620             | 1975                 | 1860              | 60                    | 40    | M56     | 1780  | 5 | 84       | 1630       | 1624 | 16            | 570参考                   |
| 1800           | 1829       | 1820             | 2195                 | 2070              | 68                    | 44    | M64     | 1985  | 5 | 90       | 1833       | 1824 | 17            | 700参考                   |
| 2000           | 2032       | 2020             | 2425                 | 2300              | 68                    | 48    | M64     | 2210  | 5 | 96       | 2036       | 2024 | 18            | 900参考                   |

※系列1国家标准GB/T9119-2000/系列2机械行业标准JB/T81-94

# 法兰参数对照表

Flange parameters comparison table

表5 PN4.0MPa ( 40压力 ) 凹凸面对焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                      | 连接尺寸                     |                           |                               |          |          | 密封面尺寸 |                    |                    |   |          |    |     |     | 法兰颈           |               |               |                  | 法兰理论<br>重量系列<br>2<br>kg |        |
|----------------|------------|----------------------|--------------------------|---------------------------|-------------------------------|----------|----------|-------|--------------------|--------------------|---|----------|----|-----|-----|---------------|---------------|---------------|------------------|-------------------------|--------|
|                |            |                      | 法兰外径<br>系列1/<br>系列2<br>D | 螺栓<br>孔中<br>心圆<br>直径<br>K | 螺栓孔<br>直径<br>系列1/<br>系列2<br>L | 螺栓、螺柱    |          | d     | X凸面<br>系列1/<br>系列2 | Y凹面<br>系列1/<br>系列2 | f | f1<br>f2 |    |     |     | 法兰<br>厚度<br>C | 法兰<br>内径<br>B | 法兰<br>高度<br>H | 颈部<br>直径<br>Nmax |                         |        |
|                | 数量<br>n    | 螺纹Th.<br>系列1/<br>系列2 |                          |                           |                               |          |          |       |                    |                    |   |          |    |     |     |               |               |               |                  |                         |        |
|                |            |                      |                          |                           |                               | 国际<br>A管 | 国内<br>B管 |       |                    |                    |   |          | A型 | B型  |     |               |               |               |                  |                         |        |
| 10             | 17.2       | 14                   | 90                       | 60                        | 14                            | 4        | M12      | 40    | 34                 | 35                 | 2 | 4        | 16 | 8   | 35  | 26            | 2.3           | 6             | 3                | 0.77                    | 0.67   |
| 15             | 21.3       | 18                   | 95                       | 65                        | 14                            | 4        | M12      | 45    | 39                 | 40                 | 2 | 4        | 16 | 12  | 35  | 30            | 3.2           | 6             | 3                | 0.87                    | 0.77   |
| 20             | 26.9       | 25                   | 105                      | 75                        | 14                            | 4        | M12      | 55    | 50                 | 51                 | 2 | 4        | 16 | 18  | 36  | 38            | 3.2           | 6             | 4                | 1.09                    | 0.97   |
| 25             | 33.7       | 32                   | 115                      | 85                        | 14                            | 4        | M12      | 65    | 57                 | 58                 | 2 | 4        | 16 | 25  | 38  | 45            | 3.2           | 6             | 4                | 1.31                    | 1.18   |
| 32             | 42.4       | 38                   | 140/135                  | 100                       | 18                            | 4        | M16      | 78    | 65                 | 66                 | 2 | 4        | 18 | 31  | 45  | 56            | 3.6           | 6             | 5                | 2.17                    | 1.98   |
| 40             | 48.3       | 45                   | 150/145                  | 110                       | 18                            | 4        | M16      | 85    | 75                 | 76                 | 3 | 4        | 18 | 38  | 48  | 64            | 3.6           | 7             | 5                | 2.51                    | 2.14   |
| 50             | 60.3       | 57                   | 165/160                  | 125                       | 18                            | 4        | M16      | 100   | 87                 | 88                 | 3 | 4        | 20 | 48  | 48  | 76            | 4             | 8             | 5                | 3.34                    | 2.92   |
| 65             | 76.1       | 76                   | 185/180                  | 145                       | 18                            | 4        | M16      | 120   | 109                | 110                | 3 | 4        | 22 | 66  | 52  | 96            | 5             | 10            | 6                | 4.34                    | 3.85   |
| 80             | 88.9       | 89                   | 200/195                  | 160                       | 18                            | 8        | M16      | 135   | 120                | 121                | 3 | 4        | 24 | 78  | 58  | 112           | 5.6           | 12            | 6                | 5.52                    | 5.03   |
| 100            | 114.3      | 108                  | 235/230                  | 190                       | 23                            | 8        | M20      | 160   | 149                | 150                | 3 | 4.5      | 26 | 96  | 68  | 138           | 6.3           | 12            | 6                | 8.39                    | 7.71   |
| 125            | 139.7      | 133                  | 270                      | 220                       | 26/25                         | 8        | M24/M22  | 188   | 175                | 176                | 3 | 4.5      | 28 | 120 | 68  | 160           | 6.3           | 12            | 6                | 11.06                   | 10.27  |
| 150            | 168.3      | 159                  | 300                      | 250                       | 26/25                         | 8        | M24/M22  | 218   | 203                | 204                | 3 | 4.5      | 30 | 145 | 72  | 186           | 7.1           | 12            | 6                | 14.16                   | 13.30  |
| (175)          |            | 194                  | 350                      | 295                       | 30                            | 8        | M27      | 258   | 233                | 234                | 3 | 4.5      | 36 | 177 | 88  | 226           | 7.1           | 12            | 6                | 21.80                   | 20.97  |
| 200            | 219.1      | 219                  | 375                      | 320                       | 30                            | 12       | M27      | 282   | 259                | 260                | 3 | 4.5      | 38 | 200 | 88  | 250           | 8             | 16            | 8                | 25.56                   | 24.72  |
| (225)          |            | 245                  | 415                      | 355                       | 34                            | 12       | M30      | 315   | 286                | 287                | 3 | 4.5      | 40 | 226 | 98  | 280           | 8             | 16            | 8                | 32.48                   | 31.60  |
| 250            | 273        | 273                  | 450/445                  | 385                       | 34                            | 12       | M30      | 345   | 312                | 313                | 3 | 4.5      | 42 | 252 | 102 | 310           | 10            | 18            | 10               | 39.87                   | 39.00  |
| 300            | 323.9      | 325                  | 515/510                  | 450                       | 34                            | 12       | M30      | 408   | 363                | 364                | 4 | 4.5      | 46 | 301 | 116 | 368           | 10            | 18            | 10               | 55.97                   | 53.21  |
| 350            | 355.6      | 377                  | 580/570                  | 510                       | 36/34                         | 16       | M33/M30  | 465   | 421                | 422                | 4 | 5        | 52 | 351 | 120 | 418           | 11            | 20            | 10               | 75.30                   | 72.29  |
| 400            | 406.4      | 426                  | 660/655                  | 585                       | 41                            | 16       | M36      | 535   | 473                | 474                | 4 | 5        | 58 | 398 | 142 | 480           | 12.5          | 20            | 10               | 112.02                  | 108.44 |
| 450            | 457        | 480                  | 685/680                  | 610                       | 41                            | 20       | M36      | 560   | 523                | 524                | 4 | 5        | 60 | 448 | 146 | 530           | 14.2          | 20            | 12               | 112.82                  | 109.70 |
| 500            | 508        | 530                  | 755                      | 670                       | 42/48                         | 20       | M39/M42  | 612   | 575                | 576                | 4 | 5        | 62 | 495 | 156 | 580           | 16            | 20            | 12               | 142.70                  | 138.60 |
| 600            | 610        | 630                  | 890                      | 795                       | 48/54                         | 20       | M45/M48  | 730   | 675/677            | 676/678            | 5 | 6        | 62 | 595 | 176 | 700           | 17.5          | 20            | 20               | 167                     | 160参考  |
| 700            | 711        | 720                  | 995                      | 900                       | 48/54                         | 24       | M45/M48  | 835   | 777/767            | 778/768            | 5 | 6        | 68 | 680 | 200 | 780           | 19            | 20            | 20               | 275                     | 265参考  |
| 800            | 813        | 820                  | 1140/1135                | 1030                      | 58                            | 24       | M52      | 960   | 882/875            | 883/876            | 5 | 6        | 76 | 780 | 220 | 910           | 20            | 20            | 22               | 410                     | 400参考  |

※系列1国家标准GB/T9119-2000/系列2机械行业标准JB/T81-94

法兰参数对照表  
Flange parameters comparison table

表6 PN6.3MPa ( 64压力 ) 凹凸面对焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                      | 连接尺寸                     |                       |                               |       |         | 密封面尺寸 |                    |                    |   |          |    |     |     | 法兰颈           |               |               |                  | 法兰理论<br>重量系列<br>2<br>kg |        |
|----------------|------------|----------------------|--------------------------|-----------------------|-------------------------------|-------|---------|-------|--------------------|--------------------|---|----------|----|-----|-----|---------------|---------------|---------------|------------------|-------------------------|--------|
|                |            |                      | 法兰外径<br>系列1/<br>系列2<br>D | 螺栓<br>孔中心圆<br>直径<br>K | 螺栓孔<br>直径<br>系列1/<br>系列2<br>L | 螺栓、螺柱 |         | d     | X凸面<br>系列1/<br>系列2 | Y凹面<br>系列1/<br>系列2 | f | f1<br>f2 |    |     |     | 法兰<br>厚度<br>C | 法兰<br>内径<br>B | 法兰<br>高度<br>H | 颈部<br>直径<br>Nmax |                         |        |
|                | 数量<br>n    | 螺纹Th.<br>系列1/<br>系列2 |                          |                       |                               |       |         |       |                    |                    |   |          |    |     |     |               |               |               |                  |                         |        |
|                | 国际<br>A管   | 国内<br>B管             |                          |                       |                               |       |         |       |                    |                    |   |          |    |     |     |               |               |               |                  | A型                      | B型     |
| 10             | 17.2       | 14                   | 100                      | 70                    | 14                            | 4     | M12     | 50    | 34                 | 35                 | 2 | 4        | 18 | 8   | 48  | 34            | 3             | 6             | 3                | 1.12                    | 1.02   |
| 15             | 21.3       | 18                   | 105                      | 75                    | 14                            | 4     | M12     | 55    | 39                 | 40                 | 2 | 4        | 18 | 12  | 48  | 38            | 3.2           | 6             | 3                | 1.25                    | 1.14   |
| 20             | 26.9       | 25                   | 130/125                  | 90                    | 18                            | 4     | M16     | 68    | 50                 | 51                 | 2 | 4        | 20 | 18  | 56  | 48            | 3.6           | 6             | 4                | 2.12                    | 1.95   |
| 25             | 33.7       | 32                   | 140/135                  | 100                   | 18                            | 4     | M16     | 78    | 57                 | 58                 | 2 | 4        | 22 | 25  | 58  | 52            | 3.6           | 8             | 4                | 2.64                    | 2.46   |
| 32             | 42.4       | 38                   | 155/150                  | 110                   | 23                            | 4     | M20     | 82    | 65                 | 66                 | 2 | 4        | 24 | 31  | 62  | 64            | 3.6           | 8             | 5                | 3.50                    | 3.28   |
| 40             | 48.3       | 45                   | 170/165                  | 125                   | 23                            | 4     | M20     | 95    | 75                 | 76                 | 3 | 4        | 24 | 37  | 68  | 74            | 4             | 10            | 5                | 4.35                    | 3.91   |
| 50             | 60.3       | 57                   | 180/175                  | 135                   | 23                            | 4     | M20     | 105   | 87                 | 88                 | 3 | 4        | 26 | 47  | 70  | 86            | 5             | 10            | 5                | 5.29                    | 4.80   |
| 65             | 76.1       | 76                   | 205/200                  | 150                   | 23                            | 8     | M20     | 130   | 109                | 110                | 3 | 4        | 28 | 64  | 75  | 106           | 6             | 12            | 6                | 7.00                    | 6.43   |
| 80             | 88.9       | 89                   | 215/210                  | 170                   | 23                            | 8     | M20     | 140   | 120                | 121                | 3 | 4        | 30 | 77  | 75  | 120           | 6             | 12            | 6                | 8.07                    | 7.50   |
| 100            | 114.3      | 108                  | 250                      | 200                   | 26/25                         | 8     | M24/M22 | 168   | 149                | 150                | 3 | 4.5      | 32 | 94  | 80  | 140           | 7             | 12            | 6                | 11.51                   | 10.80  |
| 125            | 139.7      | 133                  | 295                      | 240                   | 30                            | 8     | M27     | 202   | 175                | 176                | 3 | 4.5      | 36 | 118 | 98  | 172           | 7.5           | 12            | 6                | 18.02                   | 17.09  |
| 150            | 168.3      | 159                  | 345/340                  | 280                   | 34                            | 8     | M30     | 240   | 203                | 204                | 3 | 4.5      | 38 | 142 | 108 | 206           | 8.5           | 12            | 8                | 26.45                   | 25.29  |
| (175)          |            | 194                  | 375/370                  | 310                   | 34                            | 12    | M30     | 270   | 233                | 234                | 3 | 4.5      | 42 | 174 | 110 | 232           | 8.5           | 12            | 8                | 30.63                   | 29.61  |
| 200            | 219.1      | 219                  | 415/405                  | 345                   | 36/34                         | 12    | M33/M30 | 300   | 259                | 260                | 3 | 4.5      | 44 | 198 | 116 | 264           | 10.5          | 16            | 8                | 39.63                   | 38.51  |
| (225)          |            | 245                  | 430                      | 370                   | 36/34                         | 12    | M33/M30 | 325   | 286                | 287                | 3 | 4.5      | 46 | 222 | 120 | 290           | 10.5          | 16            | 8                | 43.34                   | 42.32  |
| 250            | 273        | 273                  | 470                      | 400                   | 36/41                         | 12    | M33/M36 | 352   | 312                | 313                | 3 | 4.5      | 48 | 246 | 122 | 316           | 13.5          | 18            | 10               | 53.64                   | 52.47  |
| 300            | 323.9      | 325                  | 530                      | 460                   | 36/41                         | 16    | M33/M36 | 412   | 363                | 364                | 4 | 4.5      | 54 | 294 | 136 | 370           | 15.5          | 18            | 10               | 73.10                   | 69.97  |
| 350            | 355.6      | 377                  | 600/595                  | 525                   | 41                            | 16    | M36     | 475   | 421                | 422                | 4 | 5        | 60 | 342 | 154 | 430           | 17.5          | 20            | 10               | 103.50                  | 100.10 |
| 400            | 406.4      | 426                  | 670                      | 585                   | 42/48                         | 16    | M39/M42 | 525   | 473                | 474                | 4 | 5        | 66 | 386 | 170 | 484           | 20            | 20            | 10               | 143.30                  | 138.90 |
| 450            | 457        | 480                  | 715                      | 630                   | 48                            | 20    | M42     | 570   | 523                | 524                | 4 | 5        | 70 | 440 | 186 | 540           | 22.5          | 22            | 15               | 160                     | 155参考  |
| 500            | 508        | 530                  | 800                      | 705                   | 48/54                         | 20    | M45     | 640   | 575                | 576                | 4 | 5        | 70 | 485 | 200 | 595           | 22.5          | 22            | 18               | 215                     | 210参考  |
| 600            | 610        | 630                  | 930                      | 820                   | 58                            | 20    | M52     | 750   | 675/677            | 676/678            | 5 | 6        | 76 | 585 | 220 | 710           | 25            | 22            | 18               | 320                     | 310参考  |
| 700            | 711        | 720                  | 1045                     | 935                   | 58                            | 24    | M52     | 865   | 777/767            | 778/768            | 5 | 6        | 84 | 670 | 240 | 800           | 25            | 24            | 18               | 450                     | 435参考  |
| 800            | 813        | 820                  | 1165                     | 1050                  | 62                            | 24    | M56     | 980   | 882/875            | 883/876            | 5 | 6        | 90 | 765 | 260 | 925           | 25            | 24            | 18               | 540                     | 525参考  |

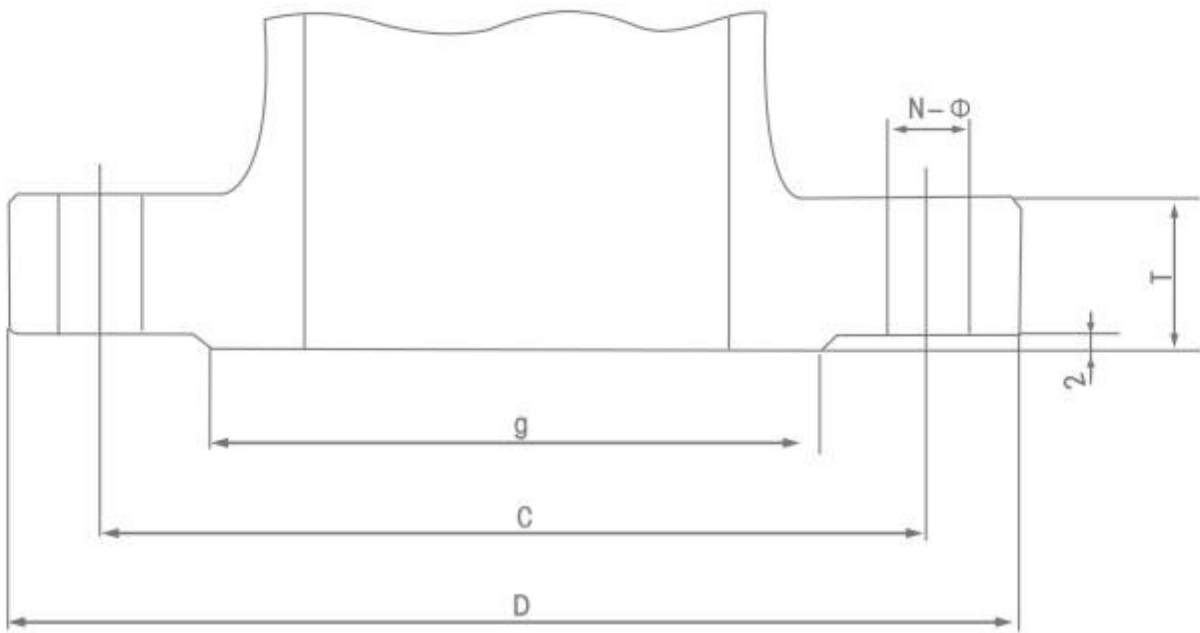
※系列1国家标准GB/T9119-2000/系列2机械行业标准JB/T81-94

法兰参数对照表

Flange parameters comparison table

表7 PN10.0MPa ( 100压力 ) 凹凸面对焊钢制管法兰 mm

| 公称<br>通径<br>DN | 管子外径<br>A1 |                      | 连接尺寸                     |                           |                               |       |         | 密封面尺寸 |                    |                    |   |          | 法兰<br>厚度<br>C | 法兰<br>内径<br>B | 法兰<br>高度<br>H | 法兰颈              |                     |               |               | 法兰理论<br>重量系列<br>2<br>kg |        |
|----------------|------------|----------------------|--------------------------|---------------------------|-------------------------------|-------|---------|-------|--------------------|--------------------|---|----------|---------------|---------------|---------------|------------------|---------------------|---------------|---------------|-------------------------|--------|
|                |            |                      | 法兰外径<br>系列1/<br>系列2<br>D | 螺栓<br>孔中<br>心圆<br>直径<br>K | 螺栓孔<br>直径<br>系列1/<br>系列2<br>L | 螺栓、螺柱 |         | d     | X凸面<br>系列1/<br>系列2 | Y凹面<br>系列1/<br>系列2 | f | f1<br>f2 |               |               |               | 颈部<br>直径<br>Nmax | 法兰<br>焊端<br>壁厚<br>S | 直边<br>段<br>H1 | 圆角<br>半径<br>R |                         |        |
|                | 数量<br>n    | 螺纹Th.<br>系列1/<br>系列2 |                          |                           |                               |       |         |       |                    |                    |   |          |               |               |               |                  |                     |               |               |                         |        |
| 10             | 17.2       | 14                   | 100                      | 70                        | 14                            | 4     | M12     | 50    | 34                 | 35                 | 2 | 4        | 18            | 8             | 45            | 34               | 3                   | 6             | 3             | 1.12                    | 1.01   |
| 15             | 21.3       | 18                   | 105                      | 75                        | 14                            | 4     | M12     | 55    | 39                 | 40                 | 2 | 4        | 20            | 12            | 48            | 38               | 3.2                 | 6             | 3             | 1.37                    | 1.26   |
| 20             | 26.9       | 25                   | 130/125                  | 90                        | 18                            | 4     | M16     | 68    | 50                 | 51                 | 2 | 4        | 22            | 18            | 56            | 48               | 3.6                 | 6             | 4             | 2.30                    | 2.13   |
| 25             | 33.7       | 32                   | 140/125                  | 100                       | 18                            | 4     | M16     | 78    | 57                 | 58                 | 2 | 4        | 24            | 25            | 58            | 52               | 3.6                 | 8             | 4             | 2.86                    | 2.67   |
| 32             | 42.4       | 38                   | 155/150                  | 110                       | 23                            | 4     | M20     | 82    | 65                 | 66                 | 2 | 4        | 24            | 31            | 62            | 64               | 3.6                 | 8             | 5             | 3.50                    | 3.28   |
| 40             | 48.3       | 45                   | 170/165                  | 125                       | 23                            | 4     | M20     | 95    | 75                 | 76                 | 3 | 4        | 26            | 37            | 70            | 76               | 4                   | 10            | 5             | 4.72                    | 4.28   |
| 50             | 60.3       | 57                   | 195                      | 145                       | 26/25                         | 4     | M24/M22 | 112   | 87                 | 88                 | 3 | 4        | 28            | 45            | 72            | 86               | 6                   | 10            | 5             | 6.58                    | 6.02   |
| 65             | 76.1       | 76                   | 220                      | 170                       | 26/25                         | 8     | M24/M22 | 138   | 109                | 110                | 3 | 4        | 32            | 62            | 84            | 110              | 7                   | 12            | 6             | 9.20                    | 8.60   |
| 80             | 88.9       | 89                   | 230                      | 180                       | 26/25                         | 8     | M24/M22 | 148   | 120                | 121                | 3 | 4        | 34            | 75            | 90            | 124              | 7                   | 12            | 6             | 10.61                   | 9.97   |
| 100            | 114.3      | 108                  | 265                      | 210                       | 30                            | 8     | M27     | 172   | 149                | 150                | 3 | 4.5      | 38            | 92            | 100           | 146              | 8                   | 12            | 6             | 15.54                   | 14.70  |
| 125            | 139.7      | 133                  | 315/310                  | 250                       | 34                            | 8     | M30     | 210   | 175                | 176                | 3 | 4.5      | 42            | 112           | 115           | 180              | 10.5                | 12            | 6             | 25.10                   | 24.00  |
| 150            | 168.3      | 159                  | 355/350                  | 290                       | 34                            | 12    | M30     | 250   | 203                | 204                | 3 | 4.5      | 46            | 136           | 130           | 214              | 11.5                | 12            | 8             | 34.43                   | 33.26  |
| (175)          |            | 194                  | 385/380                  | 320                       | 34                            | 12    | M30     | 280   | 233                | 234                | 3 | 4.5      | 48            | 166           | 135           | 246              | 11.5                | 16            | 10            | 41.60                   | 40.47  |
| 200            | 219.1      | 219                  | 430                      | 360                       | 36/41                         | 12    | M33/M36 | 312   | 259                | 260                | 3 | 4.5      | 54            | 190           | 145           | 276              | 14.5                | 16            | 10            | 57.14                   | 55.80  |
| (225)          |            | 245                  | 470                      | 400                       | 41                            | 12    | M36     | 352   | 286                | 287                | 3 | 4.5      | 56            | 212           | 165           | 312              | 14.5                | 16            | 10            | 73.30                   | 71.90  |
| 250            | 273        | 273                  | 505/500                  | 430                       | 41                            | 12    | M36     | 382   | 312                | 313                | 3 | 4.5      | 60            | 236           | 170           | 340              | 18.5                | 18            | 10            | 89.30                   | 87.90  |
| 300            | 323.9      | 325                  | 585                      | 500                       | 42/48                         | 16    | M39/M42 | 442   | 363                | 364                | 4 | 4.5      | 70            | 284           | 195           | 400              | 20.5                | 18            | 12            | 137.45                  | 130.10 |
| 350            | 355.6      | 377                  | 665                      | 560                       | 48/54                         | 16    | M45/M48 | 498   | 421                | 422                | 4 | 5        | 76            | 332           | 210           | 460              | 22.5                | 20            | 12            | 186.00                  | 175.20 |
| 400            | 406.4      | 426                  | 715                      | 620                       | 48/54                         | 16    | M45/M48 | 558   | 473                | 474                | 4 | 5        | 80            | 376           | 220           | 510              | 25                  | 20            | 12            | 223.50                  | 218.50 |
| 450            | 457        | 480                  | 770                      | 675                       | 58                            | 20    | M52     | 615   | 523                | 524                | 4 | 5        | 84            | 430           | 235           | 570              | 25                  | 20            | 18            | 280                     | 270参考  |
| 500            | 508        | 530                  | 870                      | 760                       | 58                            | 20    | M52     | 690   | 575                | 576                | 4 | 5        | 90            | 465           | 245           | 600              | 30                  | 22            | 18            | 350                     | 335参考  |
| 600            | 610        | 630                  | 990                      | 875                       | 58                            | 24    | M52     | 800   | 675/677            | 676/678            | 5 | 6        | 95            | 570           | 265           | 700              | 30                  | 22            | 18            | 460                     | 445参考  |



GB/T PN16 / PN40(RF)steel

※系列1国家标准GB/T9119-2000/系列2机械行业标准JB/T81-94

## 法兰参数对照表

Flange parameters comparison table

表8 PN2.0MPa ( Class 150 ) 美标带颈平焊钢制管法兰 mm

| 公称<br>通径    |     | 钢管<br>外径<br>A | 连接尺寸          |                   |                |            |           | 密封面尺寸 |      | 法兰<br>厚度<br>C | 法兰<br>内径<br>B | 法兰颈<br>N | 法兰<br>高度<br>H | 理论<br>重量<br>kg |
|-------------|-----|---------------|---------------|-------------------|----------------|------------|-----------|-------|------|---------------|---------------|----------|---------------|----------------|
|             |     |               | 法兰<br>外径<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔<br>直径<br>L | 螺栓孔<br>数量n | 螺纹<br>Th. |       |      |               |               |          |               |                |
| NPS<br>(in) | DN  |               |               |                   |                |            |           | 突面d   | 台高f1 |               |               |          |               |                |
| 1/2         | 15  | 21.3          | 89            | 60.5              | 16             | 4          | M14       | 35    | 1.6  | 11.5          | 22            | 30       | 16            | 0.41           |
| 3/4         | 20  | 26.9          | 98            | 70                | 16             | 4          | M14       | 43    | 1.6  | 13            | 27.5          | 38       | 16            | 0.58           |
| 1           | 25  | 33.7          | 108           | 79.5              | 16             | 4          | M14       | 51    | 1.6  | 14.5          | 34.5          | 49       | 17            | 0.80           |
| 1 1/4       | 32  | 42.4          | 117           | 89                | 16             | 4          | M14       | 63.5  | 1.6  | 16            | 43.5          | 59       | 21            | 1.07           |
| 1 1/2       | 40  | 48.3          | 127           | 98.5              | 16             | 4          | M14       | 73    | 1.6  | 17.5          | 49.5          | 65       | 22            | 1.37           |
| 2           | 50  | 60.3          | 152           | 120.5             | 18             | 4          | M16       | 92    | 1.6  | 19.5          | 61.5          | 78       | 25            | 2.01           |
| 2 1/2       | 65  | 76.1          | 178           | 139.5             | 18             | 4          | M16       | 105   | 1.6  | 22.5          | 77.5          | 90       | 29            | 3.32           |
| 3           | 80  | 88.9          | 190           | 152.5             | 18             | 4          | M16       | 127   | 1.6  | 24            | 90.5          | 108      | 30            | 3.83           |
| 4           | 100 | 114.3         | 229           | 190.5             | 18             | 8          | M16       | 157.5 | 1.6  | 24            | 116           | 135      | 33            | 5.40           |
| 5           | 125 | 139.7         | 254           | 216               | 22             | 8          | M20       | 186   | 1.6  | 24            | 141.5         | 164      | 36            | 6.26           |
| 6           | 150 | 168.3         | 274           | 241.5             | 22             | 8          | M20       | 216   | 1.6  | 25.5          | 170.5         | 192      | 40            | 7.50           |
| 8           | 200 | 219.1         | 343           | 298.5             | 22             | 8          | M20       | 270   | 1.6  | 29            | 221.5         | 246      | 44            | 12.3           |
| 10          | 250 | 273           | 406           | 362               | 26             | 12         | M24       | 324   | 1.6  | 30.5          | 276.5         | 305      | 49            | 16.2           |
| 12          | 300 | 323.9         | 483           | 432               | 26             | 12         | M24       | 381   | 1.6  | 32            | 327.5         | 365      | 56            | 26.5           |
| 14          | 350 | 355.6         | 533           | 476               | 29.5           | 12         | M27       | 413   | 1.6  | 35            | 359.5         | 400      | 57            | 34.5           |
| 16          | 400 | 406.4         | 597           | 540               | 29.5           | 16         | M27       | 470   | 1.6  | 37            | 411           | 457      | 64            | 45.5           |
| 18          | 450 | 457           | 635           | 578               | 32.5           | 16         | M30       | 533.5 | 1.6  | 40            | 462           | 505      | 68            | 48.5           |
| 20          | 500 | 508           | 698           | 635               | 32.5           | 20         | M30       | 584   | 1.6  | 43            | 513.5         | 559      | 73            | 61.8           |
| 24          | 600 | 610           | 813           | 749.5             | 35.5           | 20         | M33       | 692   | 1.6  | 48            | 616.5         | 664      | 83            | 87.7           |

表9 PN5.0MPa ( Class 300 ) 美标带颈平焊钢制管法兰 mm

| 公称<br>通径    |     | 钢管<br>外径<br>A | 连接尺寸          |                   |                |            |           | 密封面尺寸 |      | 法兰<br>厚度<br>C | 法兰<br>内径<br>B | 法兰颈<br>N | 法兰<br>高度<br>H | 理论<br>重量<br>kg |
|-------------|-----|---------------|---------------|-------------------|----------------|------------|-----------|-------|------|---------------|---------------|----------|---------------|----------------|
|             |     |               | 法兰<br>外径<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔<br>直径<br>L | 螺栓孔<br>数量n | 螺纹<br>Th. |       |      |               |               |          |               |                |
| NPS<br>(in) | DN  |               |               |                   |                |            |           | 突面d   | 台高f1 |               |               |          |               |                |
| 1/2         | 15  | 21.3          | 89            | 66.5              | 16             | 4          | M14       | 35    | 1.6  | 14.5          | 22            | 38       | 22            | 0.63           |
| 3/4         | 20  | 26.9          | 117           | 82.5              | 18             | 4          | M16       | 43    | 1.6  | 16            | 27.5          | 48       | 25            | 1.16           |
| 1           | 25  | 33.7          | 124           | 89                | 18             | 4          | M16       | 51    | 1.6  | 17.5          | 34.5          | 54       | 27            | 1.37           |
| 1 1/4       | 32  | 42.4          | 133           | 98.5              | 18             | 4          | M16       | 63.5  | 1.6  | 19.5          | 43.5          | 64       | 27            |                |
| 1 1/2       | 40  | 48.3          | 156           | 114.5             | 22             | 4          | M20       | 73    | 1.6  | 21            | 49.5          | 70       | 30            |                |
| 2           | 50  | 60.3          | 165           | 127               | 18             | 8          | M16       | 92    | 1.6  | 22.5          | 61.5          | 84       | 33            |                |
| 2 1/2       | 65  | 76.1          | 190           | 149               | 22             | 8          | M20       | 105   | 1.6  | 25.5          | 77.5          | 100      | 38            |                |
| 3           | 80  | 88.9          | 210           | 168.5             | 22             | 8          | M20       | 127   | 1.6  | 29            | 90.5          | 118      | 43            |                |
| 4           | 100 | 114.3         | 254           | 200               | 22             | 8          | M20       | 157.5 | 1.6  | 32            | 116           | 146      | 48            |                |
| 5           | 125 | 139.7         | 279           | 235               | 22             | 8          | M20       | 186   | 1.6  | 35            | 141.5         | 178      | 51            |                |
| 6           | 150 | 168.3         | 318           | 270               | 22             | 12         | M20       | 216   | 1.6  | 37            | 170.5         | 206      | 52            |                |
| 8           | 200 | 219.1         | 381           | 330               | 26             | 12         | M24       | 270   | 1.6  | 41.5          | 221.5         | 260      | 62            |                |
| 10          | 250 | 273           | 444           | 387.5             | 29.5           | 16         | M27       | 324   | 1.6  | 48            | 276.5         | 321      | 67            |                |
| 12          | 300 | 323.9         | 521           | 451               | 32.5           | 16         | M30       | 381   | 1.6  | 51            | 327.5         | 375      | 73            |                |
| 14          | 350 | 355.6         | 584           | 514.5             | 32.5           | 20         | M30       | 413   | 1.6  | 54            | 359.5         | 426      | 76            |                |
| 16          | 400 | 406.4         | 648           | 571.5             | 35.5           | 20         | M33       | 470   | 1.6  | 57.5          | 411           | 483      | 83            |                |
| 18          | 450 | 457           | 711           | 628.5             | 35.5           | 24         | M33       | 533.5 | 1.6  | 60.5          | 462           | 533      | 89            |                |
| 20          | 500 | 508           | 775           | 686               | 35.5           | 24         | M33       | 584   | 1.6  | 63.5          | 513.5         | 587      | 95            |                |
| 24          | 600 | 610           | 915           | 813               | 42             | 24         | M39×3     | 692   | 1.6  | 70            | 616.5         | 702      | 104           |                |

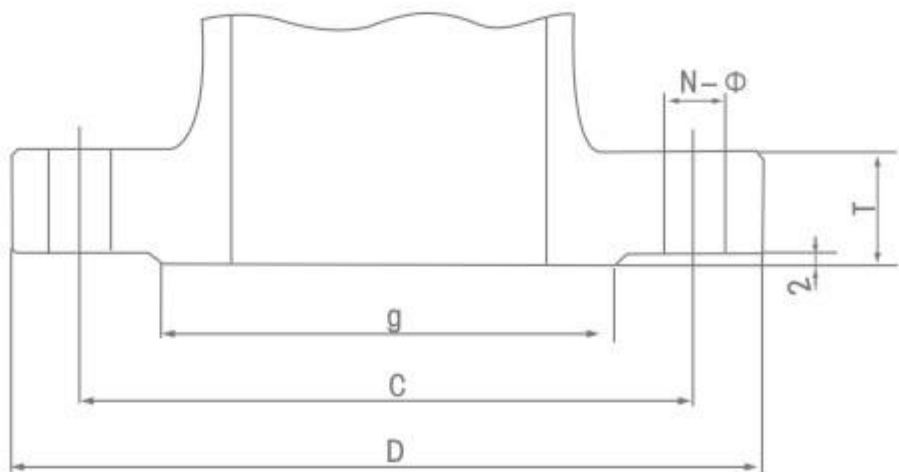
※系列1国家标准GB/T9119-2000/系列2机械行业标准JB/T81-94

## 法兰参数对照表

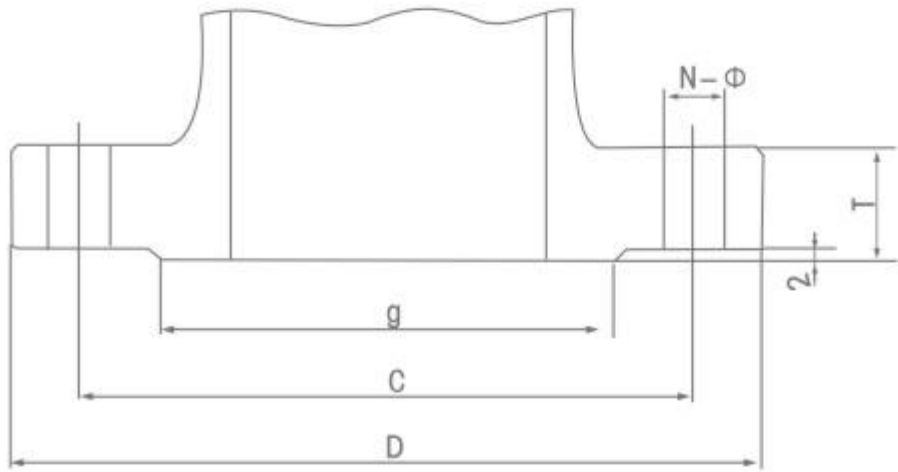
Flange parameters comparison table

表10 PN11.0MPa ( Class 600 ) 美标带颈平焊钢制管法兰 mm

| 公称<br>通径    |     | 钢管<br>外径<br>A | 连接尺寸          |                   |                |            |           | 密封面尺寸 |      | 法兰<br>厚度<br>C | 法兰<br>内径<br>B | 法兰颈<br>N | 法兰<br>高度<br>H | 理论<br>重量<br>kg |
|-------------|-----|---------------|---------------|-------------------|----------------|------------|-----------|-------|------|---------------|---------------|----------|---------------|----------------|
|             |     |               | 法兰<br>外径<br>D | 螺栓孔<br>中心圆<br>直径K | 螺栓孔<br>直径<br>L | 螺栓孔<br>数量n | 螺纹<br>Th. |       |      |               |               |          |               |                |
| NPS<br>(in) | DN  |               |               |                   |                |            |           | 突面d   | 台高f1 |               |               |          |               |                |
| 1/2         | 15  | 21.3          | 95            | 66.5              | 16             | 4          | M14       | 35    | 6.4  | 14.5          | 14            | 38       | 52            | 1.35           |
| 3/4         | 20  | 26.9          | 118           | 82.5              | 18             | 4          | M16       | 43    | 6.4  | 16            | 18.5          | 48       | 57            | 1.59           |
| 1           | 25  | 33.7          | 124           | 89                | 18             | 4          | M16       | 51    | 6.4  | 17.5          | 24.5          | 54       | 62            | 1.82           |
| 1 1/4       | 32  | 42.4          | 133           | 98.5              | 18             | 4          | M16       | 63.5  | 6.4  | 21            | 32            | 64       | 67            | 2.50           |
| 1 1/2       | 40  | 48.3          | 156           | 114.5             | 22             | 4          | M20       | 73    | 6.4  | 22.5          | 38            | 70       | 70            | 3.63           |
| 2           | 50  | 60.3          | 165           | 127               | 18             | 8          | M16       | 92    | 6.4  | 25.5          | 49            | 84       | 73            | 4.54           |
| 2 1/2       | 65  | 76.1          | 190           | 149               | 22             | 8          | M20       | 105   | 6.4  | 29            | 61.5          | 100      | 79            | 6.36           |
| 3           | 80  | 88.9          | 210           | 168.5             | 22             | 8          | M20       | 127   | 6.4  | 32            | 72.5          | 117      | 83            | 8.17           |
| 4           | 100 | 114.3         | 273           | 216               | 26             | 8          | M24       | 157.5 | 6.4  | 38.5          | 96.5          | 152      | 102           | 16.8           |
| 5           | 125 | 139.7         | 330           | 267               | 29.5           | 8          | M27       | 186   | 6.4  | 44.5          | 119.5         | 189      | 114           | 30.9           |
| 6           | 150 | 168.3         | 356           | 292               | 29.5           | 12         | M27       | 216   | 6.4  | 48            | 146           | 222      | 117           | 33.1           |
| 8           | 200 | 219.1         | 419           | 349               | 32.5           | 12         | M30       | 270   | 6.4  | 55.5          | 187           | 273      | 133           | 50.9           |
| 10          | 250 | 273           | 508           | 432               | 35.5           | 16         | M33       | 324   | 6.4  | 63.5          | 238           | 343      | 152           | 85.8           |
| 12          | 300 | 323.9         | 560           | 489               | 35.5           | 20         | M33       | 381   | 6.4  | 67            | 279.5         | 400      | 156           | 102.6          |
| 14          | 350 | 355.6         | 605           | 527               | 39             | 20         | M36×3     | 413   | 6.4  | 70            | 305.5         | 432      | 165           | 157.5          |
| 16          | 400 | 406.4         | 685           | 603               | 42             | 20         | M39×3     | 470   | 6.4  | 76.5          | 350           | 495      | 178           | 218.4          |
| 18          | 450 | 457           | 745           | 654               | 45             | 20         | M42×3     | 533.5 | 6.4  | 83            | 397           | 546      | 184           | 252.0          |
| 20          | 500 | 508           | 815           | 724               | 45             | 24         | M42×3     | 584   | 6.4  | 89            | 444           | 610      | 190           | 313.3          |
| 22          | 550 | 559           | 870           | 778               | 48             | 24         | M45×3     | 641   | 6.4  | 95            | 487           | 665      | 197           | 376.5          |
| 24          | 600 | 610           | 940           | 838               | 51             | 24         | M48×3     | 692   | 6.4  | 102           | 530           | 718      | 203           | 443.6          |



Class 150 / 300Lb (RF)Steel



Class 600Lb (RF)Steel

# 材质化学成分表

Chemical composition list of materials

材质化学成分表 Material chemical composition list

| ASTM       | 化学成份%      |           |       |       |           |           |           |             |         |           |      | 抗拉屈服         |              |            |            | 硬 度          | 屈服强度          |
|------------|------------|-----------|-------|-------|-----------|-----------|-----------|-------------|---------|-----------|------|--------------|--------------|------------|------------|--------------|---------------|
|            | C ≤        | Mn ≤      | P ≤   | S ≤   | Si ≤      | Cr ≤      | Mo ≤      | Ni ≤        | Cu ≤    | V ≤       | Nb ≤ | 收缩率<br>MPa,≥ | 延伸率<br>MPa,≥ | 收缩率<br>%,≥ | 延伸率<br>%,≥ | 布氏硬度<br>Hb,≤ | J , ≥         |
| A105       | 0.35       | 0.60-1.05 | 0.035 | 0.040 | 0.10-0.35 | 0.30      | 0.12      | 0.4         | 0.40    | 0.08      | 0.02 | 485          | 250          | 30         | 30         | 187          |               |
| A182 F11   | 0.05-0.15  | 0.30-0.60 | 0.030 | 0.030 | 0.50-1.00 | 100-150   | 0.44-0.65 |             |         |           |      | 415          | 205          | 20         | 45         | 121-174      |               |
| A182 F22   | 0.05-0.15  | 0.30-0.60 | 0.040 | 0.040 | 0.5       | 200-250   | 0.87-1.13 |             |         |           |      | 415          | 205          | 20         | 35         | 170          |               |
| A182 F304  | 0.08       | 2.00      | 0.045 | 0.030 | 1.00      | 180-200   |           | 80-110      |         |           |      | 515          | 205          | 30         | 50         |              |               |
| A182 F304L | 0.030      | 2.00      | 0.045 | 0.030 | 1.00      | 180-200   |           | 80-130      |         |           |      | 485          | 170          | 30         | 50         |              |               |
| A182 F316  | 0.08       | 2.00      | 0.045 | 0.030 | 1.00      | 160-180   | 200-300   | 100-140     |         |           |      | 515          | 205          | 30         | 50         |              |               |
| A182 F316L | 0.030      | 2.00      | 0.045 | 0.030 | 1.00      | 160-180   | 200-300   | 100-150     |         |           |      | 485          | 170          | 30         | 50         |              |               |
| A182 F51   | 0.030      | 2.00      | 0.030 | 0.020 | 1.00      | 210-230   | 25-35     | 45-65       |         |           |      | 620          | 450          | 25         | 45         |              |               |
| A182 F6a   | 0.15       | 1.00      | 0.040 | 0.030 | 1.00      | 115-135   |           | 0.50        |         |           |      | 585          | 380          | 18         | 35         | 167-229      |               |
| A93 B7     | 0.37-0.49  | 0.65-1.10 | 0.035 | 0.040 | 0.15-0.35 | 0.75-1.20 | 0.15-0.25 |             |         |           |      | 860          | 720          | 16         | 50         | 321          |               |
| A193 B7M   | 0.37-0.49  | 0.65-1.10 | 0.035 | 0.040 | 0.15-0.35 | 0.75-1.20 | 0.15-0.25 | 80-110      |         |           |      | 690          | 550          | 18         | 50         | 235          |               |
| A193 B8    | 0.08       | 2.00      | 0.045 | 0.030 | 1.00      | 180-200   |           | 100-140     |         | 0.25-0.35 |      | 515          | 205          | 30         | 50         | 223          |               |
| 193 B8M    | 0.08       | 2.00      | 0.045 | 0.030 | 1.00      | 160-180   | 200-300   |             |         |           |      | 515          | 205          | 30         | 50         | 223          |               |
| A193 B16   | 0.36-0.47  | 0.45-0.70 | 0.035 | 0.040 | 0.15-0.35 | 0.80-1.15 | 0.50-0.65 |             |         |           |      | 860          | 720          | 18         | 50         | 321          |               |
| A194 2H    | ≥0.40      | 1.00      | 0.040 | 0.050 | 0.04      |           |           |             |         |           |      |              |              |            |            | 248-352      |               |
| A194 2HM   | ≥0.40      | 1.00      | 0.040 | 0.050 | 0.04      |           |           | 80-110      |         |           |      |              |              |            |            | 159-237      |               |
| A194 8     | 0.08       | 2.00      | 0.045 | 0.030 | 1.00      | 180-200   |           | 100-140     |         |           |      |              |              |            |            | 126-300      |               |
| A194 BM    | 0.08       | 2.00      | 0.045 | 0.030 | 1.00      | 160-180   | 200-300   |             |         |           |      |              |              |            |            | 126-300      |               |
| A216 WCB   | 0.30       | 1.00      | 0.04  | 0.045 | 0.60      | 0.50      | 0.20      | 0.50        | 0.30    | 0.03      |      | 485-655      | 250          | 22         | 35         |              |               |
| A216 WCC   | .025       | 1.20      | 0.04  | 0.045 | 0.60      | 0.50      | 0.2       | 0.50        | 0.30    | 0.03      |      | 485-655      | 275          | 22         | 35         |              |               |
| A217 C5    | 0.20       | 0.40-0.70 | 0.04  | 0.045 | 0.75      | 400-650   | 0.45-0.65 | 0.50        | 0.50    |           |      | 620-795      | 415          | 18         | 35         |              |               |
| A217 CA15  | 0.15       | 1.00      | 0.040 | 0.040 | 1.50      | 115-140   | 0.50      | 1.00        |         |           |      | 620-795      | 450          | 18         | 30         |              |               |
| A217 WC6   | 0.05-0.20  | 0.50-0.80 | 0.04  | 0.045 | 0.60      | 100-150   | 0.45-0.65 | 0.50        | 0.50    |           |      | 485-655      | 275          | 20         | 35         |              |               |
| A217 WC9   | 0.05-0.18  | 0.40-0.70 | 0.04  | 0.045 | 0.60      | 200-275   | 0.90-1.20 |             | 0.50    |           |      | 480          | 275          | 20         | 35         |              |               |
| A276 410   | 0.08-0.15  | 1.00      | 0.040 | 0.030 | 1.00      | 115-135   |           |             |         |           |      |              | 275          | 20         | 45         |              |               |
| A276 420   | ≥15        | 1.00      | 0.040 | 0.030 | 1.00      | 120-140   |           |             |         |           |      | 860          |              |            |            | 241          |               |
| A320 L7    | 0.38-0.048 | 0.75-1.00 | 0.035 | 0.040 | 0.15-0.35 | 0.80-1.10 | 0.15-0.25 |             |         |           |      | 690          | 725          | 16         | 50         |              | Avg:27,min:20 |
| A320 L7M   | 0.38-0.048 | 0.75-1.00 | 0.035 | 0.040 | 0.15-0.35 | 0.80-1.10 | 0.15-0.25 |             |         |           |      | 515-690      | 550          | 18         | 50         | 235          | Avg:27,min:20 |
| A336 F22   | 0.05-0.15  | 0.30-0.60 | 0.025 | 0.025 | 0.5       | 200-250   | 0.90-1.10 |             |         |           |      | 415-585      | 310          | 19         | 40         |              |               |
| A350 LF1   | 0.30       | 0.60-1.35 | 0.035 | 0.040 | 0.15-0.30 | 0.30      | 0.12      | 0.40        | 0.40    | 0.08      | 0.02 | 415-585      | 205          | 28         | 38         |              | Avg:18,min:14 |
| A350 LF2   | 0.30       | 0.60-1.35 | 0.035 | 0.040 | 0.15-0.30 | 0.30      | 0.12      | 0.40        | 0.40    | 0.08      | 0.02 | 485-655      | 250          | 30         | 30         |              | Avg:20,min:16 |
| A351 CF8   | 0.08       | 1.50      | 0.040 | 0.040 | 2.00      | 180-210   | 0.50      | 80-110      |         |           |      | 485          | 205          | 35.0       |            |              |               |
| A351 CF3   | 0.03       | 1.50      | 0.040 | 0.040 | 2.00      | 170-210   | 0.50      | 80-120      |         |           |      | 485          | 205          | 35.0       |            |              |               |
| A351 CF8M  | 0.08       | 1.50      | 0.040 | 0.040 | 1.50      | 180-210   | 200-300   | 90-120      |         |           |      | 485          | 205          | 30.0       |            |              |               |
| A351 CF3M  | 0.03       | 1.50      | 0.040 | 0.040 | 1.50      | 170-210   | 200-300   | 90-130      |         |           |      | 485          | 205          | 30.0       |            |              |               |
| A351 CF8C  | 0.08       | 1.50      | 0.040 | 0.040 | 2.00      | 180-210   | 0.50      | 90-120      | 3.0-4.0 |           |      | 485          | 205          | 30.0       |            |              |               |
| A351 CN7M  | 0.07       | 1.50      | 0.040 | 0.040 | 1.50      | 190-220   | 200-300   | 275-305     |         |           |      | 425          | 170          | 35         |            |              |               |
| A352 LC1   | 0.25       | 0.50-0.80 | 0.04  | 0.045 | 0.60      |           | 0.45-0.65 |             |         |           |      | 450-620      | 240          | 24         | 35         |              |               |
| A352 LC2   | 0.25       | 0.50-0.80 | 0.04  | 0.045 | 0.60      |           |           | 200-300     |         |           |      | 485-655      | 275          | 24         | 35         |              | Avg:18,min:14 |
| A352 LC3   | 0.15       | 0.50-0.80 | 0.04  | 0.045 | 0.60      |           |           | 300-400     |         |           |      | 485-655      | 275          | 24         | 35         |              | Avg:20,min:16 |
| A352 LCB   | 0.30       | 1.00      | 0.04  | 0.045 | 0.60      | 0.50      | 0.20      | 0.50        | 0.30    | 0.30      |      | 450-620      | 240          | 24         | 35         |              | Avg:20,min:16 |
| A352 LCC   | .025       | 1.20      | 0.04  | 0.045 | 0.60      | 0.50      | 0.20      | 0.50        |         | 0.30      |      | 485-655      | 275          | 22         | 35         | 139-202      | Avg:18,min:14 |
| A439 D2    | 0.30       | 0.70-1.25 | 0.08  |       | 1.50-3.00 | 175-275   |           | 18.00-22.00 |         |           |      | 400          | 207          | 8.0        |            |              | Avg:20,min:16 |