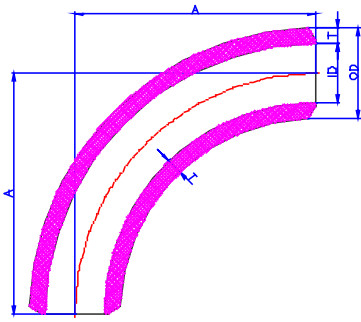


**GB/T 12459、GB/T 13401、ASME B16.9**

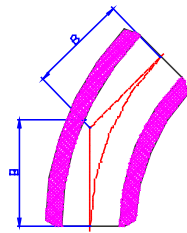
| 公称尺寸<br>Nominal Size |       | 端部外径<br>Outside Diameter at Bevel | 中心至端面 Center to End |           |            |
|----------------------|-------|-----------------------------------|---------------------|-----------|------------|
|                      |       |                                   | 90° Elbows          |           | 45° Elbows |
| DN                   | NPS   | OD                                | A                   |           | B          |
|                      |       |                                   | 长半径<br>LR           | 短半径<br>SR | 长半径<br>LR  |
| 15                   | 1/2   | 21.3                              | 38                  | -         | 16         |
| 20                   | 3/4   | 26.7                              | 38                  | -         | 19         |
| 25                   | 1     | 33.4                              | 38                  | 25        | 22         |
| 32                   | 1 1/4 | 42.2                              | 48                  | 32        | 25         |
| 40                   | 1 1/2 | 48.3                              | 57                  | 38        | 29         |
| 50                   | 2     | 60.3                              | 76                  | 51        | 35         |
| 65                   | 2 1/2 | 73.0                              | 95                  | 64        | 44         |
| 80                   | 3     | 88.9                              | 114                 | 76        | 51         |
| 90                   | 3 1/2 | 101.6                             | 133                 | 89        | 57         |
| 100                  | 4     | 114.3                             | 152                 | 102       | 64         |
| 125                  | 5     | 141.3                             | 190                 | 127       | 79         |
| 150                  | 6     | 168.3                             | 229                 | 152       | 95         |
| 200                  | 8     | 219.1                             | 305                 | 203       | 127        |
| 250                  | 10    | 273.0                             | 381                 | 254       | 159        |
| 300                  | 12    | 323.8                             | 457                 | 305       | 190        |
| 350                  | 14    | 355.6                             | 533                 | 356       | 222        |
| 400                  | 16    | 406.4                             | 610                 | 406       | 254        |
| 450                  | 18    | 457.0                             | 686                 | 457       | 286        |
| 500                  | 20    | 508.0                             | 762                 | 508       | 318        |
| 550                  | 22    | 559.0                             | 838                 | 559       | 343        |
| 600                  | 24    | 610.0                             | 914                 | 610       | 381        |
| 650                  | 26    | 660.0                             | 991                 | 660       | 406        |
| 700                  | 28    | 711.0                             | 1067                | 711       | 438        |
| 750                  | 30    | 762.0                             | 1143                | 762       | 470        |
| 800                  | 32    | 813.0                             | 1219                | 813       | 502        |
| 850                  | 34    | 864.0                             | 1295                | 864       | 533        |
| 900                  | 36    | 914.0                             | 1372                | 914       | 565        |
| 950                  | 38    | 965.0                             | 1448                | 965       | 600        |
| 1000                 | 40    | 1016.0                            | 1524                | 1016      | 632        |
| 1050                 | 42    | 1067.0                            | 1600                | 1067      | 660        |
| 1100                 | 44    | 1118.0                            | 1676                | 1118      | 695        |
| 1150                 | 46    | 1168.0                            | 1753                | 1168      | 727        |
| 1200                 | 48    | 1219.0                            | 1829                | 1219      | 759        |
| 1300                 | 52    | 1321.0                            | 1981                | 1321      | 821        |
| 1400                 | 56    | 1422.0                            | 2134                | 1420      | 883        |
| 1500                 | 60    | 1524.0                            | 2286                | 1524      | 947        |
| 1600                 | 64    | 1626.0.0                          | 2438                | 1620      | 1010       |
| 1700                 | 68    | 1727.0                            | 2591                | 1727      | 1073       |
| 1800                 | 72    | 1829.0                            | 2743                | 1829      | 1137       |
| 1900                 | 76    | 1932.0                            | 2896                | 1930      | 1199       |
| 2000                 | 80    | 2032.0                            | 3048                | 2032      | 1263       |

注释: Notes:

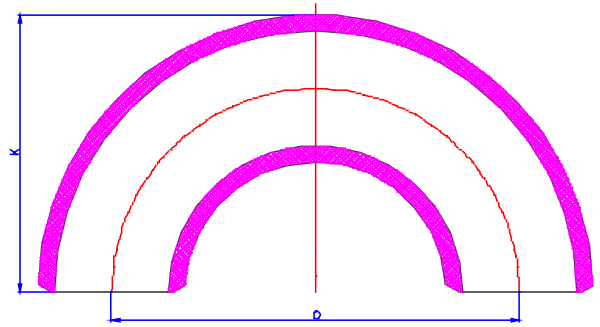
- 1) 除上述标准外, 还可按 GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 等标准制造。  
 1) Besides these, GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc. are also applied.
- 2) 更大规格的弯头, 可根据采购方与制造商协商一致的尺寸制造。  
 2) The elbow with NPS over 80 shall be made subject to the sizes agreed by purchaser and manufacturer.



对焊 90° 3D 弯头  
BW 90° 3D Elbow



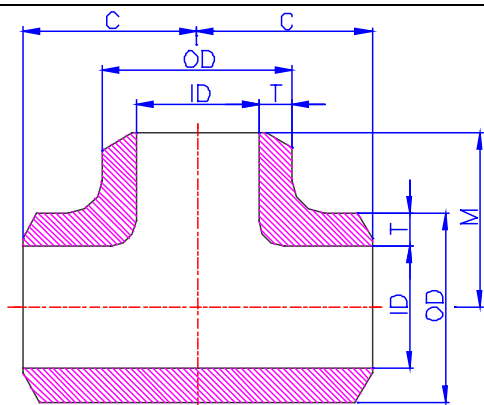
对焊 45° 3D 弯头  
BW 45° 3D Elbow



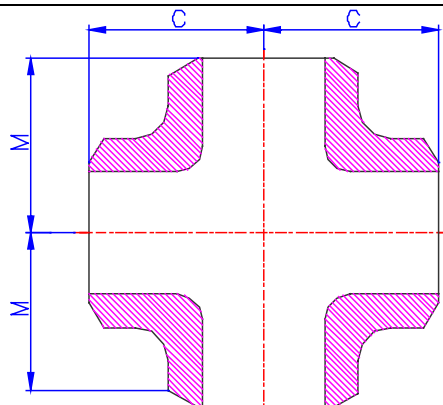
对焊 180° 长半径\短半径弯头  
BW 180° LR\SR Return

GB/T 12459、GB/T 13401、ASME B16.9

| 公称尺寸<br>Nominal Size |       | 端部外径<br>Outside Diameter<br>at Bevel | 中心至端面<br>Center to End |            | 中心至中心<br>Center to Center |           | 背面至端面<br>Back to Face |           |
|----------------------|-------|--------------------------------------|------------------------|------------|---------------------------|-----------|-----------------------|-----------|
|                      |       |                                      | 90° Elbows             | 45° Elbows | 180° Returns              |           |                       |           |
| DN                   | NPS   | OD                                   | A                      | B          | O                         |           | K                     |           |
|                      |       |                                      | 3D                     | 3D         | 长半径<br>LR                 | 短半径<br>SR | 长半径<br>LR             | 短半径<br>SR |
| 15                   | 1/2   | 21.3                                 | -                      | -          | 76                        | -         | 48                    | -         |
| 20                   | 3/4   | 26.7                                 | 57                     | 24         | 76                        | -         | 51                    | -         |
| 25                   | 1     | 33.4                                 | 76                     | 31         | 76                        | 51        | 56                    | 41        |
| 32                   | 1 1/4 | 42.2                                 | 95                     | 39         | 95                        | 64        | 70                    | 52        |
| 40                   | 1 1/2 | 48.3                                 | 114                    | 47         | 114                       | 76        | 83                    | 62        |
| 50                   | 2     | 60.3                                 | 152                    | 63         | 152                       | 102       | 106                   | 81        |
| 65                   | 2 1/2 | 73.0                                 | 190                    | 79         | 191                       | 127       | 132                   | 100       |
| 80                   | 3     | 88.9                                 | 229                    | 95         | 229                       | 152       | 159                   | 121       |
| 90                   | 3 1/2 | 101.6                                | 267                    | 111        | 267                       | 178       | 184                   | 140       |
| 100                  | 4     | 114.3                                | 305                    | 127        | 305                       | 203       | 210                   | 159       |
| 125                  | 5     | 141.3                                | 381                    | 157        | 381                       | 254       | 262                   | 197       |
| 150                  | 6     | 168.3                                | 457                    | 189        | 457                       | 305       | 313                   | 237       |
| 200                  | 8     | 219.1                                | 610                    | 252        | 610                       | 406       | 414                   | 313       |
| 250                  | 10    | 273.0                                | 762                    | 316        | 762                       | 508       | 518                   | 391       |
| 300                  | 12    | 323.8                                | 914                    | 378        | 914                       | 609       | 619                   | 467       |
| 350                  | 14    | 355.6                                | 1067                   | 441        | 1067                      | 711       | 711                   | 533       |
| 400                  | 16    | 406.4                                | 1219                   | 505        | 1219                      | 813       | 813                   | 610       |
| 450                  | 18    | 457.0                                | 1372                   | 568        | 1372                      | 914       | 914                   | 686       |
| 500                  | 20    | 508.0                                | 1524                   | 632        | 1524                      | 1016      | 1016                  | 762       |
| 550                  | 22    | 559.0                                | 1676                   | 694        | 1676                      | 1118      | 1118                  | 838       |
| 600                  | 24    | 610.0                                | 1829                   | 757        | 1829                      | 1219      | 1219                  | 914       |
| 650                  | 26    | 660.0                                | 1981                   | 821        | -                         | -         | -                     | -         |
| 700                  | 28    | 711.0                                | 2134                   | 883        | -                         | -         | -                     | -         |
| 750                  | 30    | 762.0                                | 2286                   | 964        | -                         | -         | -                     | -         |
| 800                  | 32    | 813.0                                | 2438                   | 1010       | -                         | -         | -                     | -         |
| 850                  | 34    | 864.0                                | 2591                   | 1073       | -                         | -         | -                     | -         |
| 900                  | 36    | 914.0                                | 2743                   | 1135       | -                         | -         | -                     | -         |
| 950                  | 38    | 965.0                                | 2896                   | 1200       | -                         | -         | -                     | -         |
| 1000                 | 40    | 1016.0                               | 3048                   | 1264       | -                         | -         | -                     | -         |
| 1050                 | 42    | 1067.0                               | 3200                   | 1326       | -                         | -         | -                     | -         |
| 1100                 | 44    | 1118.0                               | 3353                   | 1389       | -                         | -         | -                     | -         |
| 1150                 | 46    | 1168.0                               | 3505                   | 1453       | -                         | -         | -                     | -         |
| 1200                 | 48    | 1219.0                               | 3658                   | 1516       | -                         | -         | -                     | -         |



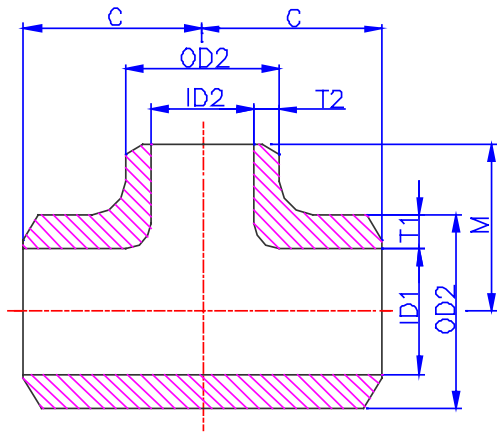
对焊等径三通  
BW Straight Tee



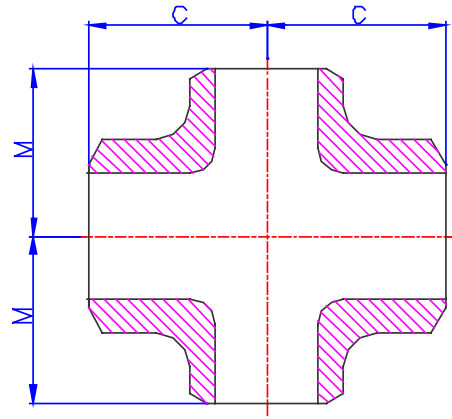
对焊等径四通  
BW Straight Cross

GB/T 12459、GB/T 13401、ASME B16.9

| 公称尺寸<br>Nominal Size |             | 端部外径<br>OD at Bevel               | 中心至端面<br>Center to End |     |
|----------------------|-------------|-----------------------------------|------------------------|-----|
| DN                   | NPS         | OD <sub>1</sub> × OD <sub>2</sub> | C                      | M   |
| 15                   | 1/2         | 21.3                              | 25                     | 25  |
| 15×10                | 1/2×3/8     | 21.3×17.1                         |                        | 25  |
| 15×8                 | 1/2×1/4     | 21.3×13.7                         |                        | 25  |
| 20                   | 3/4         | 26.7                              | 29                     | 29  |
| 20×15                | 3/4×1/2     | 26.7×21.3                         |                        | 29  |
| 20×10                | 3/4×3/8     | 26.7×17.1                         |                        | 29  |
| 25                   | 1           | 33.4                              | 38                     | 38  |
| 25×20                | 1×3/4       | 33.4×26.7                         |                        | 38  |
| 25×15                | 1×1/2       | 33.4×21.3                         |                        | 38  |
| 32                   | 1 1/4       | 42.2                              | 48                     | 48  |
| 32×25                | 1 1/4×1     | 42.2×33.4                         |                        | 48  |
| 32×20                | 1 1/4×3/4   | 42.2×26.7                         |                        | 48  |
| 32×15                | 1 1/4×1/2   | 42.2×21.3                         |                        | 48  |
| 40                   | 1 1/2       | 48.3                              | 57                     | 57  |
| 40×32                | 1 1/2×1 1/4 | 48.3×42.2                         |                        | 57  |
| 40×25                | 1 1/2×1     | 48.3×33.4                         |                        | 57  |
| 40×20                | 1 1/2×3/4   | 48.3×26.7                         |                        | 57  |
| 40×15                | 1 1/2×1/2   | 48.3×21.3                         |                        | 57  |
| 50                   | 2           | 60.3                              | 64                     | 64  |
| 50×40                | 2×1 1/2     | 60.3×48.3                         |                        | 64  |
| 50×32                | 2×1 1/4     | 60.3×42.2                         |                        | 64  |
| 50×25                | 2×1         | 60.3×33.4                         |                        | 64  |
| 50×20                | 2×3/4       | 60.3×26.7                         |                        | 64  |
| 65                   | 2 1/2       | 73.0                              | 76                     | 76  |
| 65×50                | 2 1/2×2     | 73.0×60.3                         |                        | 76  |
| 65×40                | 2 1/2×1 1/2 | 73.0×48.3                         |                        | 76  |
| 65×32                | 2 1/2×1 1/4 | 73.0×42.2                         |                        | 76  |
| 65×25                | 2 1/2×1     | 73.0×33.4                         |                        | 76  |
| 80                   | 3           | 88.9                              | 86                     | 86  |
| 80×65                | 3×2 1/2     | 88.9×73.0                         |                        | 86  |
| 80×50                | 3×2         | 88.9×60.3                         |                        | 86  |
| 80×40                | 3×1 1/2     | 88.9×48.3                         |                        | 86  |
| 80×32                | 3×1 1/4     | 88.9×42.2                         |                        | 86  |
| 90                   | 3 1/2       | 101.6                             | 95                     | 95  |
| 90×80                | 3 1/2×3     | 101.6×88.9                        |                        | 95  |
| 90×65                | 3 1/2×2 1/2 | 101.6×73.0                        |                        | 95  |
| 90×50                | 3 1/2×2     | 101.6×60.3                        |                        | 95  |
| 90×40                | 3 1/2×1 1/2 | 101.6×48.3                        |                        | 95  |
| 100                  | 4           | 114.3                             | 105                    | 105 |
| 100×90               | 4×3 1/2     | 114.3×101.6                       |                        | 105 |
| 100×80               | 4×3         | 114.3×88.9                        |                        | 105 |
| 100×65               | 4×2 1/2     | 114.3×73.0                        |                        | 105 |
| 100×50               | 4×2         | 114.3×60.3                        |                        | 105 |
| 100×40               | 4×1 1/2     | 114.3×48.3                        |                        | 105 |



对焊异径三通  
BW Reducing Tee



对焊异径四通  
BW Reducing Cross

GB/T 12459、GB/T 13401、ASME B16.9

| 公称尺寸<br>Nominal Size |         | 端部外径<br>OD at Bevel | 中心至端面<br>Center to End |     |
|----------------------|---------|---------------------|------------------------|-----|
| DN                   | NPS     | $OD_1 \times OD_2$  | C                      | M   |
| 125                  | 5       | 141.3               | 124                    | 124 |
| 125×100              | 5×4     | 141.3×114.3         |                        | 117 |
| 125×90               | 5×3 1/2 | 141.3×101.6         |                        | 114 |
| 125×80               | 5×3     | 141.3×88.9          |                        | 111 |
| 125×65               | 5×2 1/2 | 141.3×73.0          |                        | 108 |
| 125×50               | 5×2     | 141.3×60.3          |                        | 105 |
| 150                  | 6       | 168.3               | 143                    | 143 |
| 150×125              | 6×5     | 168.3×141.3         |                        | 137 |
| 150×100              | 6×4     | 168.3×114.3         |                        | 130 |
| 150×90               | 6×3 1/2 | 168.3×101.6         |                        | 127 |
| 150×80               | 6×3     | 168.3×88.9          |                        | 124 |
| 150×65               | 6×2 1/2 | 168.3×73.0          |                        | 121 |
| 200                  | 8       | 219.1               | 178                    | 178 |
| 200×150              | 8×6     | 219.1×168.3         |                        | 168 |
| 200×125              | 8×5     | 219.1×141.3         |                        | 162 |
| 200×100              | 8×4     | 219.1×114.3         |                        | 156 |
| 200×90               | 8×3 1/2 | 219.1×101.6         |                        | 152 |
| 250                  | 10      | 273.0               |                        | 216 |
| 250×200              | 10×8    | 273.0×219.1         | 203                    |     |
| 250×150              | 10×6    | 273.0×168.3         | 194                    |     |
| 250×125              | 10×5    | 273.0×141.3         | 191                    |     |
| 250×100              | 10×4    | 273.0×114.3         | 184                    |     |
| 300                  | 12      | 323.8               | 254                    |     |
| 300×250              | 12×10   | 323.8×273.0         |                        | 241 |
| 300×200              | 12×8    | 323.8×219.1         |                        | 229 |
| 300×150              | 12×6    | 323.8×168.3         |                        | 219 |
| 300×125              | 12×5    | 323.8×141.3         |                        | 216 |
| 350                  | 14      | 355.6               |                        | 279 |
| 350×300              | 14×12   | 355.6×323.8         | 270                    |     |
| 350×250              | 14×10   | 355.6×273.0         | 257                    |     |
| 350×200              | 14×8    | 355.6×219.1         | 248                    |     |
| 350×150              | 14×6    | 355.6×168.3         | 238                    |     |
| 400                  | 16      | 406.4               | 305                    |     |
| 400×350              | 16×14   | 406.4×355.6         |                        | 305 |
| 400×300              | 16×12   | 406.4×323.8         |                        | 295 |
| 400×250              | 16×10   | 406.4×273.0         |                        | 283 |
| 400×200              | 16×8    | 406.4×219.1         |                        | 273 |
| 400×150              | 16×6    | 406.4×168.3         |                        | 264 |

| 对焊三通、四通<br>BW TEES & CROSSES |       |                                   |                        |     |
|------------------------------|-------|-----------------------------------|------------------------|-----|
| 公称尺寸<br>Nominal Size         |       | 端部外径<br>OD at Bevel               | 中心至端面<br>Center to End |     |
| DN                           | NPS   | OD <sub>1</sub> × OD <sub>2</sub> | C                      | M   |
| 450                          | 18    | 457.0                             | 343                    | 343 |
| 450×400                      | 18×16 | 457.0×406.4                       |                        | 330 |
| 450×350                      | 18×14 | 457.0×355.6                       |                        | 330 |
| 450×300                      | 18×12 | 457.0×323.8                       |                        | 321 |
| 450×250                      | 18×10 | 457.0×273.0                       |                        | 308 |
| 450×200                      | 18×8  | 457.0×219.1                       |                        | 298 |
| 500                          | 20    | 508.0                             | 381                    | 381 |
| 500×450                      | 20×18 | 508.0×457.0                       |                        | 368 |
| 500×400                      | 20×16 | 508.0×406.4                       |                        | 356 |
| 500×350                      | 20×14 | 508.0×355.6                       |                        | 356 |
| 500×300                      | 20×12 | 508.0×323.8                       |                        | 346 |
| 500×250                      | 20×10 | 508.0×273.0                       |                        | 333 |
| 500×200                      | 20×8  | 508.0×219.1                       | 324                    |     |
| 550                          | 22    | 559.0                             | 419                    | 419 |
| 550×500                      | 22×20 | 559.0×508.0                       |                        | 406 |
| 550×450                      | 22×18 | 559.0×457.0                       |                        | 394 |
| 550×400                      | 22×16 | 559.0×406.4                       |                        | 381 |
| 550×350                      | 22×14 | 559.0×355.6                       |                        | 381 |
| 550×300                      | 22×12 | 559.0×323.8                       |                        | 371 |
| 550×250                      | 22×10 | 559.0×273.0                       | 359                    |     |
| 600                          | 24    | 610.0                             | 432                    | 432 |
| 600×550                      | 24×22 | 610.0×559.0                       |                        | 432 |
| 600×500                      | 24×20 | 610.0×508.0                       |                        | 432 |
| 600×450                      | 24×18 | 610.0×457.0                       |                        | 419 |
| 600×400                      | 24×16 | 610.0×406.4                       |                        | 406 |
| 600×350                      | 24×14 | 610.0×355.6                       |                        | 406 |
| 600×300                      | 24×12 | 610.0×323.8                       | 397                    |     |
| 600×250                      | 24×10 | 610.0×273.0                       | 384                    |     |
| 650                          | 26    | 660.0                             | 495                    | 495 |
| 650×600                      | 26×24 | 660.0×610.0                       |                        | 483 |
| 650×550                      | 26×22 | 660.0×559.0                       |                        | 470 |
| 650×500                      | 26×20 | 660.0×508.0                       |                        | 457 |
| 650×450                      | 26×18 | 660.0×457.0                       |                        | 444 |
| 650×400                      | 26×16 | 660.0×406.4                       |                        | 432 |
| 650×350                      | 26×14 | 660.0×355.6                       | 432                    |     |
| 650×300                      | 26×12 | 660.0×323.8                       | 422                    |     |
| 700                          | 28    | 711.0                             | 521                    | 521 |
| 700×650                      | 28×26 | 711.0×660.0                       |                        | 521 |
| 700×600                      | 28×24 | 711.0×610.0                       |                        | 508 |
| 700×550                      | 28×22 | 711.0×559.0                       |                        | 495 |
| 700×500                      | 28×20 | 711.0×508.0                       |                        | 483 |
| 700×450                      | 28×18 | 711.0×457.0                       |                        | 470 |
| 700×400                      | 28×16 | 711.0×406.4                       | 457                    |     |
| 700×350                      | 28×14 | 711.0×355.6                       | 457                    |     |
| 700×300                      | 28×12 | 711.0×323.8                       | 448                    |     |
| 750                          | 30    | 762.0                             | 559                    | 559 |
| 750×700                      | 30×28 | 762.0×711.0                       |                        | 546 |
| 750×650                      | 30×26 | 762.0×660.0                       |                        | 546 |
| 750×600                      | 30×24 | 762.0×610.0                       |                        | 533 |
| 750×550                      | 30×22 | 762.0×559.0                       |                        | 521 |
| 750×500                      | 30×20 | 762.0×508.0                       |                        | 508 |
| 750×450                      | 30×18 | 762.0×457.0                       | 495                    |     |
| 750×400                      | 30×16 | 762.0×406.4                       | 483                    |     |
| 750×350                      | 30×14 | 762.0×355.6                       | 483                    |     |
| 750×300                      | 30×12 | 762.0×323.8                       | 473                    |     |
| 750×250                      | 30×10 | 762.0×273.0                       | 460                    |     |

| 对焊三通、四通<br>BW TEES & CROSSES |       |                                   |                        |     |
|------------------------------|-------|-----------------------------------|------------------------|-----|
| 公称尺寸<br>Nominal Size         |       | 端部外径<br>OD at Bevel               | 中心至端面<br>Center to End |     |
| DN                           | NPS   | OD <sub>1</sub> × OD <sub>2</sub> | C                      | M   |
| 800                          | 32    | 813.0                             | 597                    | 597 |
| 800×750                      | 32×30 | 813.0×762.0                       |                        | 584 |
| 800×700                      | 32×28 | 813.0×711.0                       |                        | 572 |
| 800×650                      | 32×26 | 813.0×660.0                       |                        | 572 |
| 800×600                      | 32×24 | 813.0×610.0                       |                        | 559 |
| 800×550                      | 32×22 | 813.0×559.0                       |                        | 546 |
| 800×500                      | 32×20 | 813.0×508.0                       |                        | 533 |
| 800×450                      | 32×18 | 813.0×457.0                       |                        | 521 |
| 800×400                      | 32×16 | 813.0×406.4                       |                        | 508 |
| 800×350                      | 32×14 | 813.0×355.6                       |                        | 508 |
| 850                          | 34    | 864.0                             | 635                    | 635 |
| 850×800                      | 34×32 | 864.0×813.0                       |                        | 622 |
| 850×750                      | 34×30 | 864.0×762.0                       |                        | 610 |
| 850×700                      | 34×28 | 864.0×711.0                       |                        | 597 |
| 850×650                      | 34×26 | 864.0×660.0                       |                        | 597 |
| 850×600                      | 34×24 | 864.0×610.0                       |                        | 584 |
| 850×550                      | 34×22 | 864.0×559.0                       |                        | 572 |
| 850×500                      | 34×20 | 864.0×508.0                       |                        | 559 |
| 850×450                      | 34×18 | 864.0×457.0                       |                        | 546 |
| 850×400                      | 34×16 | 864.0×406.4                       |                        | 533 |
| 900                          | 36    | 914.0                             | 673                    | 673 |
| 900×850                      | 36×34 | 914.0×864.0                       |                        | 660 |
| 900×800                      | 36×32 | 914.0×813.0                       |                        | 648 |
| 900×750                      | 36×30 | 914.0×762.0                       |                        | 635 |
| 900×700                      | 36×28 | 914.0×711.0                       |                        | 622 |
| 900×650                      | 36×26 | 914.0×660.0                       |                        | 622 |
| 900×600                      | 36×24 | 914.0×610.0                       |                        | 610 |
| 900×550                      | 36×22 | 914.0×559.0                       |                        | 597 |
| 900×500                      | 36×20 | 914.0×508.0                       |                        | 584 |
| 900×450                      | 36×18 | 914.0×457.0                       |                        | 572 |
| 900×400                      | 36×16 | 914.0×406.4                       | 559                    |     |
| 950                          | 38    | 965.0                             | 711                    | 711 |
| 950×900                      | 38×36 | 965.0×914.0                       |                        | 711 |
| 950×850                      | 38×34 | 965.0×864.0                       |                        | 698 |
| 950×800                      | 38×32 | 965.0×813.0                       |                        | 686 |
| 950×750                      | 38×30 | 965.0×762.0                       |                        | 673 |
| 950×700                      | 38×28 | 965.0×711.0                       |                        | 648 |
| 950×650                      | 38×26 | 965.0×660.0                       |                        | 648 |
| 950×600                      | 38×24 | 965.0×610.0                       |                        | 635 |
| 950×550                      | 38×22 | 965.0×559.0                       |                        | 622 |
| 950×500                      | 38×20 | 965.0×508.0                       |                        | 610 |
| 950×450                      | 38×18 | 965.0×457.0                       | 597                    |     |
| 1000                         | 40    | 1016.0                            | 749                    | 749 |
| 1000×950                     | 40×38 | 1016.0×965.0                      |                        | 749 |
| 1000×900                     | 40×36 | 1016.0×914.0                      |                        | 737 |
| 1000×850                     | 40×34 | 1016.0×864.0                      |                        | 724 |
| 1000×800                     | 40×32 | 1016.0×813.0                      |                        | 711 |
| 1000×750                     | 40×30 | 1016.0×762.0                      |                        | 698 |
| 1000×700                     | 40×28 | 1016.0×711.0                      |                        | 673 |
| 1000×650                     | 40×26 | 1016.0×660.0                      |                        | 673 |
| 1000×600                     | 40×24 | 1016.0×610.0                      |                        | 660 |
| 1000×550                     | 40×22 | 1016.0×559.0                      |                        | 648 |
| 1000×500                     | 40×20 | 1016.0×508.0                      | 635                    |     |
| 1000×450                     | 40×18 | 1016.0×457.0                      | 622                    |     |

| 对焊三通、四通<br>BW TEES & CROSSES |       |                                   |                        |     |
|------------------------------|-------|-----------------------------------|------------------------|-----|
| 公称尺寸<br>Nominal Size         |       | 端部外径<br>OD at Bevel               | 中心至端面<br>Center to End |     |
| DN                           | NPS   | OD <sub>1</sub> × OD <sub>2</sub> | C                      | H   |
| 1050                         | 42    | 1067.0                            | 762                    | 711 |
| 1050×1000                    | 42×40 | 1067.0×1016.0                     |                        | 711 |
| 1050×950                     | 42×38 | 1067.0×965.0                      |                        | 711 |
| 1050×900                     | 42×36 | 1067.0×914.0                      |                        | 711 |
| 1050×850                     | 42×34 | 1067.0×864.0                      |                        | 711 |
| 1050×800                     | 42×32 | 1067.0×813.0                      |                        | 711 |
| 1050×750                     | 42×30 | 1067.0×762.0                      |                        | 711 |
| 1050×700                     | 42×28 | 1067.0×711.0                      |                        | 698 |
| 1050×650                     | 42×26 | 1067.0×660.0                      |                        | 698 |
| 1050×600                     | 42×24 | 1067.0×610.0                      |                        | 660 |
| 1050×550                     | 42×22 | 1067.0×559.0                      |                        | 660 |
| 1050×500                     | 42×20 | 1067.0×508.0                      |                        | 660 |
| 1050×450                     | 42×18 | 1067.0×457.0                      |                        | 648 |
| 1050×400                     | 42×16 | 1067.0×406.4                      |                        | 635 |
| 1100                         | 44    | 1118.0                            | 813                    | 762 |
| 1100×1050                    | 44×42 | 1118.0×1067.0                     |                        | 762 |
| 1100×1000                    | 44×40 | 1118.0×1016.0                     |                        | 749 |
| 1100×950                     | 44×38 | 1118.0×965.0                      |                        | 737 |
| 1100×900                     | 44×36 | 1118.0×914.0                      |                        | 724 |
| 1100×850                     | 44×34 | 1118.0×864.0                      |                        | 724 |
| 1100×800                     | 44×32 | 1118.0×813.0                      |                        | 711 |
| 1100×750                     | 44×30 | 1118.0×762.0                      |                        | 711 |
| 1100×700                     | 44×28 | 1118.0×711.0                      |                        | 698 |
| 1100×650                     | 44×26 | 1118.0×660.0                      |                        | 698 |
| 1100×600                     | 44×24 | 1118.0×610.0                      |                        | 698 |
| 1100×550                     | 44×22 | 1118.0×559.0                      |                        | 686 |
| 1100×500                     | 44×20 | 1118.0×508.0                      |                        | 686 |
| 1150                         | 46    | 1168.0                            |                        | 851 |
| 1150×1100                    | 46×44 | 1168.0×1118.0                     | 800                    |     |
| 1150×1050                    | 46×42 | 1168.0×1067.0                     | 787                    |     |
| 1150×1000                    | 46×40 | 1168.0×1016.0                     | 775                    |     |
| 1150×950                     | 46×38 | 1168.0×965.0                      | 762                    |     |
| 1150×900                     | 46×36 | 1168.0×914.0                      | 762                    |     |
| 1150×850                     | 46×34 | 1168.0×864.0                      | 749                    |     |
| 1150×800                     | 46×32 | 1168.0×813.0                      | 749                    |     |
| 1150×750                     | 46×30 | 1168.0×762.0                      | 737                    |     |
| 1150×700                     | 46×28 | 1168.0×711.0                      | 737                    |     |
| 1150×650                     | 46×26 | 1168.0×660.0                      | 737                    |     |
| 1150×600                     | 46×24 | 1168.0×610.0                      | 724                    |     |
| 1150×550                     | 46×22 | 1168.0×559.0                      | 724                    |     |
| 1200                         | 48    | 1219.0                            | 889                    |     |
| 1200×1150                    | 48×46 | 1219.0×1168.0                     |                        | 838 |
| 1200×1100                    | 48×44 | 1219.0×1118.0                     |                        | 838 |
| 1200×1050                    | 48×42 | 1219.0×1067.0                     |                        | 813 |
| 1200×1000                    | 48×40 | 1219.0×1016.0                     |                        | 813 |
| 1200×950                     | 48×38 | 1219.0×965.0                      |                        | 813 |
| 1200×900                     | 48×36 | 1219.0×914.0                      |                        | 787 |
| 1200×850                     | 48×34 | 1219.0×864.0                      |                        | 787 |
| 1200×800                     | 48×32 | 1219.0×813.0                      |                        | 787 |
| 1200×750                     | 48×30 | 1219.0×762.0                      |                        | 762 |
| 1200×700                     | 48×28 | 1219.0×711.0                      |                        | 762 |
| 1200×650                     | 48×26 | 1219.0×660.0                      |                        | 762 |
| 1200×600                     | 48×24 | 1219.0×610.0                      |                        | 737 |
| 1200×550                     | 48×22 | 1219.0×559.0                      |                        | 737 |

| 对焊三通、四通<br>BW TEES & CROSSES |       |                                   |                        |      |
|------------------------------|-------|-----------------------------------|------------------------|------|
| 公称尺寸<br>Nominal Size         |       | 端部外径<br>OD at Bevel               | 中心至端面<br>Center to End |      |
| DN                           | NPS   | OD <sub>1</sub> × OD <sub>2</sub> | C                      | M    |
| 1300                         | 52    | 1321.0                            | 965                    | 914  |
| 1300×1200                    | 52×48 | 1321.0×1219.0                     |                        | 864  |
| 1300×1100                    | 52×44 | 1321.0×1118.0                     |                        | 813  |
| 1300×1000                    | 52×40 | 1321.0×1016.0                     |                        | 762  |
| 1400                         | 56    | 1422.0                            | 1041                   | 965  |
| 1400×1300                    | 56×52 | 1422.0×1321.0                     |                        | 914  |
| 1400×1200                    | 56×48 | 1422.0×1219.0                     |                        | 864  |
| 1400×1100                    | 56×44 | 1422.0×1118.0                     |                        | 813  |
| 1500                         | 60    | 1524.0                            | 1118                   | 1016 |
| 1500×1400                    | 60×56 | 1524.0×1422.0                     |                        | 965  |
| 1500×1300                    | 60×52 | 1524.0×1321.0                     |                        | 914  |
| 1500×1200                    | 60×48 | 1524.0×1219.0                     |                        | 864  |
| 1600                         | 64    | 1626.0                            | 1194                   | 1092 |
| 1600×1500                    | 64×60 | 1626.0×1524.0                     |                        | 1067 |
| 1600×1400                    | 64×56 | 1626.0×1422.0                     |                        | 1016 |
| 1600×1300                    | 64×52 | 1626.0×1321.0                     |                        | 965  |
| 1600×1200                    | 64×48 | 1626.0×1219.0                     |                        | 914  |
| 1700                         | 68    | 1727.0                            | 1270                   | 1168 |
| 1700×1600                    | 68×64 | 1727.0×1626.0                     |                        | 1143 |
| 1700×1500                    | 68×60 | 1727.0×1524.0                     |                        | 1118 |
| 1700×1400                    | 68×56 | 1727.0×1422.0                     |                        | 1067 |
| 1700×1300                    | 68×52 | 1727.0×1321.0                     |                        | 1016 |
| 1700×1200                    | 68×48 | 1727.0×1219.0                     |                        | 965  |
| 1800                         | 72    | 1829.0                            | 1320                   | 1245 |
| DN1800×1700                  | 72×68 | 1829.0×1727.0                     |                        | 1219 |
| DN1800×1600                  | 72×64 | 1829.0×1626.0                     |                        | 1194 |
| DN1800×1500                  | 72×60 | 1829.0×1524.0                     |                        | 1168 |
| DN1800×1400                  | 72×56 | 1829.0×1422.0                     |                        | 1118 |
| DN1800×1300                  | 72×52 | 1829.0×1321.0                     |                        | 1067 |
| DN1800×1200                  | 72×48 | 1829.0×1219.0                     |                        | 1016 |
| 1900                         | 76    | 1932.0                            | 1422                   | 1320 |
| DN1900×1800                  | 76×72 | 1930.0×1829.0                     |                        | 1295 |
| DN1900×1700                  | 76×68 | 1930.0×1727.0                     |                        | 1270 |
| DN1900×1600                  | 76×64 | 1930.0×1626.0                     |                        | 1245 |
| DN1900×1500                  | 76×60 | 1930.0×1524.0                     |                        | 1219 |
| DN1900×1400                  | 76×56 | 1930.0×1422.0                     |                        | 1168 |
| DN1900×1300                  | 76×52 | 1930.0×1321.0                     |                        | 1118 |
| DN1900×1200                  | 76×48 | 1930.0×1219.0                     |                        | 1067 |
| DN2000                       | 80    | 2032.0                            | 1499                   | 1397 |
| DN2000×1900                  | 80×76 | 2032.0×1930.0                     |                        | 1372 |
| DN2000×1800                  | 80×72 | 2032.0×1829.0                     |                        | 1346 |
| DN2000×1700                  | 80×68 | 2032.0×1727.0                     |                        | 1321 |
| DN2000×1600                  | 80×64 | 2032.0×1626.0                     |                        | 1295 |
| DN2000×1500                  | 80×60 | 2032.0×1524.0                     |                        | 1270 |
| DN2000×1400                  | 80×56 | 2032.0×1422.0                     |                        | 1219 |
| DN2000×1300                  | 80×52 | 2032.0×1321.0                     |                        | 1168 |
| DN2000×1200                  | 80×48 | 2032.0×1219.0                     |                        | 1118 |

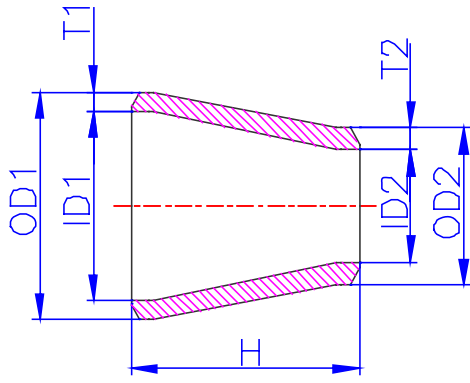
注释:

1) 除上述标准外, 还可按 GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 等标准制造。  
1) Besides the above mentioned standards, the standards of GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc. are also applied.

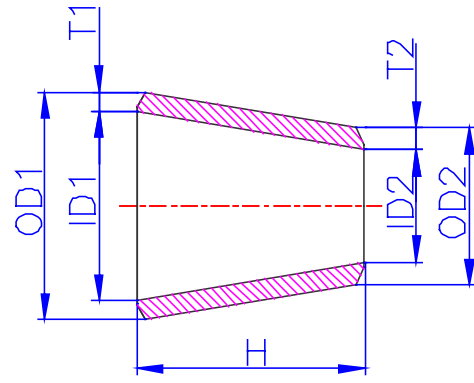
2) 对于 ≥DN 650 (NPS 26) 的等径三通、四通和 ≥DN 350 (NPS 14) 的异径三通、四通, 推荐但不一定要采用出口尺寸 M。  
2) For the straight tees and crosses with DN ≥ 650 (NPS 26) and the reducing tees and crosses with DN ≥ 350 (NPS 14), the outlet sizes are recommended to use (that mean the other sizes may be applied).

3) 更大规格的三通、四通, 按采购方与制造商协商的尺寸制造, 或按制造商的尺寸供货。  
3) For the tees and crosses with the sizes larger than that listed in the above table, they will be supplied subject to the sized agreed by purchaser and manufacturer or according to manufacturer's size.





a) 无缝  
Seamless

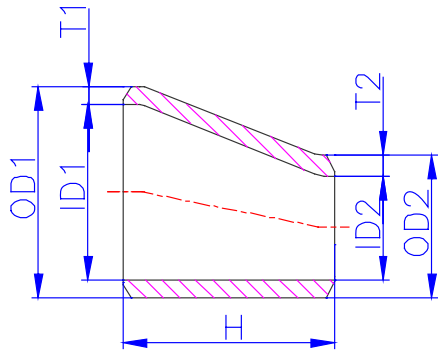


b) 焊缝  
Weld

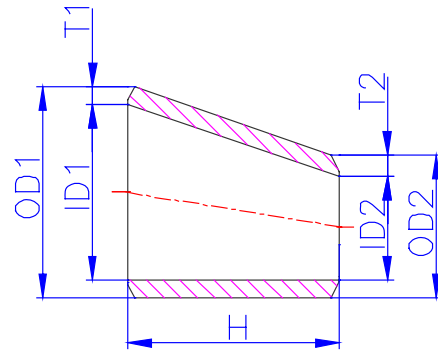
对焊同心异径管  
BW Concentric Reducers

GB/T 12459、GB/T 13401、ASME B16.9

| 公称尺寸<br>Nominal Size |                                      | 端部外径<br>OD at Bevel               | 端面至端面<br>End to End |
|----------------------|--------------------------------------|-----------------------------------|---------------------|
| DN                   | NPS                                  | OD <sub>1</sub> × OD <sub>2</sub> | H                   |
| 20×15                | $\frac{3}{4} \times \frac{1}{2}$     | 26.7×21.3                         | 38                  |
| 20×10                | $\frac{3}{4} \times \frac{3}{8}$     | 26.7×17.1                         |                     |
| 25×20                | $1 \times \frac{3}{4}$               | 33.4×26.7                         | 51                  |
| 25×15                | $1 \times \frac{1}{2}$               | 33.4×21.3                         |                     |
| 32×25                | $1 \frac{1}{4} \times 1$             | 42.2×33.4                         | 51                  |
| 32×20                | $1 \frac{1}{4} \times \frac{3}{4}$   | 42.2×26.7                         |                     |
| 32×15                | $1 \frac{1}{4} \times \frac{1}{2}$   | 42.2×21.3                         |                     |
| 40×32                | $1 \frac{1}{2} \times 1 \frac{1}{4}$ | 48.3×42.2                         |                     |
| 40×25                | $1 \frac{1}{2} \times 1$             | 48.3×33.4                         | 64                  |
| 40×20                | $1 \frac{1}{2} \times \frac{3}{4}$   | 48.3×26.7                         |                     |
| 40×15                | $1 \frac{1}{2} \times \frac{1}{2}$   | 48.3×21.3                         |                     |
| 50×40                | $2 \times 1 \frac{1}{2}$             | 60.3×48.3                         |                     |
| 50×32                | $2 \times 1 \frac{1}{4}$             | 60.3×42.2                         | 76                  |
| 50×25                | $2 \times 1$                         | 60.3×33.4                         |                     |
| 50×20                | $2 \times \frac{3}{4}$               | 60.3×26.7                         |                     |
| 65×50                | $2 \frac{1}{2} \times 2$             | 73.0×60.3                         |                     |
| 65×40                | $2 \frac{1}{2} \times 1 \frac{1}{2}$ | 73.0×48.3                         | 89                  |
| 65×32                | $2 \frac{1}{2} \times 1 \frac{1}{4}$ | 73.0×42.2                         |                     |
| 65×25                | $2 \frac{1}{2} \times 1$             | 73.0×33.4                         |                     |
| 80×65                | $3 \times 2 \frac{1}{2}$             | 88.9×73.0                         |                     |
| 80×50                | $3 \times 2$                         | 88.9×60.3                         | 89                  |
| 80×40                | $3 \times 1 \frac{1}{2}$             | 88.9×48.3                         |                     |
| 80×32                | $3 \times 1 \frac{1}{4}$             | 88.9×42.2                         |                     |
| 90×80                | $3 \frac{1}{2} \times 3$             | 101.6×88.9                        |                     |
| 90×65                | $3 \frac{1}{2} \times 2 \frac{1}{2}$ | 101.6×73.0                        | 102                 |
| 90×50                | $3 \frac{1}{2} \times 2$             | 101.6×60.3                        |                     |
| 90×40                | $3 \frac{1}{2} \times 1 \frac{1}{2}$ | 101.6×48.3                        |                     |
| 90×32                | $3 \frac{1}{2} \times 1 \frac{1}{4}$ | 101.6×42.2                        |                     |
| 100×90               | $4 \times 3 \frac{1}{2}$             | 114.3×101.6                       |                     |
| 100×80               | $4 \times 3$                         | 114.3×88.9                        | 102                 |
| 100×65               | $4 \times 2 \frac{1}{2}$             | 114.3×73.0                        |                     |
| 100×50               | $4 \times 2$                         | 114.3×60.3                        |                     |
| 100×40               | $4 \times 1 \frac{1}{2}$             | 114.3×48.3                        |                     |
| 125×100              | $5 \times 4$                         | 141.3×114.3                       |                     |
| 125×90               | $5 \times 3 \frac{1}{2}$             | 141.3×101.6                       | 127                 |
| 125×80               | $5 \times 3$                         | 141.3×88.9                        |                     |
| 125×65               | $5 \times 2 \frac{1}{2}$             | 141.3×73.0                        |                     |
| 125×50               | $5 \times 2$                         | 141.3×60.3                        |                     |



a) 无缝  
Seamless



b) 焊缝  
Weld

对焊偏心异径管  
BW Eccentric Reducers

GB/T 12459、GB/T 13401、ASME B16.9

| 公称尺寸<br>Nominal Size |         | 端部外径<br>OD at Bevel | 端面至端面<br>End to End |
|----------------------|---------|---------------------|---------------------|
| DN                   | NPS     | $OD_1 \times OD_2$  | H                   |
| 150×125              | 6×5     | 168.3×141.3         | 140                 |
| 150×100              | 6×4     | 168.3×114.3         |                     |
| 150×90               | 6×3 1/2 | 168.3×101.6         |                     |
| 150×80               | 6×3     | 168.3×88.9          |                     |
| 150×65               | 6×2 1/2 | 168.3×73.0          |                     |
| 200×150              | 8×6     | 219.1×168.3         | 152                 |
| 200×125              | 8×5     | 219.1×141.3         |                     |
| 200×100              | 8×4     | 219.1×114.3         |                     |
| 200×90               | 8×3 1/2 | 219.1×101.6         |                     |
| 250×200              | 10×8    | 273.0×219.1         | 178                 |
| 250×150              | 10×6    | 273.0×168.3         |                     |
| 250×125              | 10×5    | 273.0×141.3         |                     |
| 250×100              | 10×4    | 273.0×114.3         |                     |
| 300×250              | 12×10   | 323.8×273.0         | 203                 |
| 300×200              | 12×8    | 323.8×219.1         |                     |
| 300×150              | 12×6    | 323.8×168.3         |                     |
| 300×125              | 12×5    | 323.8×141.3         |                     |
| 350×300              | 14×12   | 355.6×323.8         | 330                 |
| 350×250              | 14×10   | 355.6×273.0         |                     |
| 350×200              | 14×8    | 355.6×219.1         |                     |
| 350×150              | 14×6    | 355.6×168.3         |                     |
| 400×350              | 16×14   | 406.4×355.6         | 356                 |
| 400×300              | 16×12   | 406.4×323.8         |                     |
| 400×250              | 16×10   | 406.4×273.0         |                     |
| 400×200              | 16×8    | 406.4×219.1         |                     |
| 400×150              | 16×6    | 406.4×168.3         |                     |
| 450×400              | 18×16   | 457.0×406.4         | 381                 |
| 450×350              | 18×14   | 457.0×355.6         |                     |
| 450×300              | 18×12   | 457.0×323.8         |                     |
| 450×250              | 18×10   | 457.0×273.0         |                     |
| 450×200              | 18×8    | 457.0×219.1         |                     |
| 500×450              | 20×18   | 508.0×457.0         | 508                 |
| 500×400              | 20×16   | 508.0×406.4         |                     |
| 500×350              | 20×14   | 508.0×355.6         |                     |
| 500×300              | 20×12   | 508.0×323.8         |                     |
| 500×250              | 20×10   | 508.0×273.0         |                     |
| 550×500              | 22×20   | 559.0×508.0         | 508                 |
| 550×450              | 22×18   | 559.0×457.0         |                     |
| 550×400              | 22×16   | 559.0×406.4         |                     |
| 550×350              | 22×14   | 559.0×355.6         |                     |
| 550×300              | 22×12   | 559.0×323.8         |                     |

## 对焊同心、偏心异径管

## BW CONCENTRIC &amp; ECCENTRIC REDUCERS

| 公称尺寸<br>Nominal Size |       | 端部外径<br>OD at Bevel               | 端面至端面<br>End to End |
|----------------------|-------|-----------------------------------|---------------------|
| DN                   | NPS   | OD <sub>1</sub> × OD <sub>2</sub> | H                   |
| 600×550              | 24×22 | 610.0×559.0                       | 508                 |
| 600×500              | 24×20 | 610.0×508.0                       |                     |
| 600×450              | 24×18 | 610.0×457.0                       |                     |
| 600×400              | 24×16 | 610.0×406.4                       |                     |
| 600×350              | 24×14 | 610.0×355.6                       |                     |
| 600×300              | 24×12 | 610.0×323.8                       |                     |
| 650×600              | 26×24 | 660.0×610.0                       | 610                 |
| 650×550              | 26×22 | 660.0×559.0                       |                     |
| 650×500              | 26×20 | 660.0×508.0                       |                     |
| 650×450              | 26×18 | 660.0×457.0                       |                     |
| 650×400              | 26×16 | 660.0×406.4                       |                     |
| 650×350              | 26×14 | 660.0×355.6                       |                     |
| 700×650              | 28×26 | 711.0×660.0                       | 610                 |
| 700×600              | 28×24 | 711.0×610.0                       |                     |
| 700×550              | 28×22 | 711.0×559.0                       |                     |
| 700×500              | 28×20 | 711.0×508.0                       |                     |
| 700×450              | 28×18 | 711.0×457.0                       |                     |
| 700×400              | 28×16 | 711.0×406.4                       |                     |
| 700×350              | 28×14 | 711.0×355.6                       |                     |
| 750×700              | 30×28 | 762.0×711.0                       |                     |
| 750×650              | 30×26 | 762.0×660.0                       |                     |
| 750×600              | 30×24 | 762.0×610.0                       |                     |
| 750×550              | 30×22 | 762.0×559.0                       |                     |
| 750×500              | 30×20 | 762.0×508.0                       |                     |
| 750×450              | 30×18 | 762.0×457.0                       |                     |
| 750×400              | 30×16 | 762.0×406.4                       |                     |
| 750×350              | 30×14 | 762.0×355.6                       |                     |
| 800×750              | 32×30 | 813.0×762.0                       | 610                 |
| 800×700              | 32×28 | 813.0×711.0                       |                     |
| 800×650              | 32×26 | 813.0×660.0                       |                     |
| 800×600              | 32×24 | 813.0×610.0                       |                     |
| 800×550              | 32×22 | 813.0×559.0                       |                     |
| 800×500              | 32×20 | 813.0×508.0                       |                     |
| 850×800              | 34×32 | 864.0×813.0                       | 610                 |
| 850×750              | 34×30 | 864.0×762.0                       |                     |
| 850×700              | 34×28 | 864.0×711.0                       |                     |
| 850×650              | 34×26 | 864.0×660.0                       |                     |
| 850×600              | 34×24 | 864.0×610.0                       |                     |
| 850×550              | 34×22 | 864.0×559.0                       |                     |
| 900×850              | 36×34 | 914.0×864.0                       | 610                 |
| 900×800              | 36×32 | 914.0×813.0                       |                     |
| 900×750              | 36×30 | 914.0×762.0                       |                     |
| 900×700              | 36×28 | 914.0×711.0                       |                     |
| 900×650              | 36×26 | 914.0×660.0                       |                     |
| 900×600              | 36×24 | 914.0×610.0                       |                     |
| 900×550              | 36×22 | 914.0×559.0                       |                     |
| 950×900              | 38×36 | 965.0×914.0                       |                     |
| 950×850              | 38×34 | 965.0×864.0                       |                     |
| 950×800              | 38×32 | 965.0×813.0                       |                     |
| 950×750              | 38×30 | 965.0×762.0                       |                     |
| 950×700              | 38×28 | 965.0×711.0                       |                     |
| 950×650              | 38×26 | 965.0×660.0                       |                     |
| 950×600              | 38×24 | 965.0×610.0                       |                     |

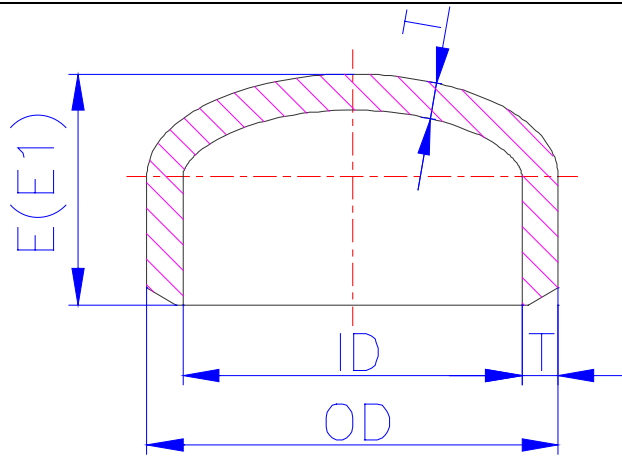
## 对焊同心、偏心异径管

## BW CONCENTRIC &amp; ECCENTRIC REDUCERS

| 公称尺寸<br>Nominal Size  |   | 端部外径<br>OD at Bevel   | 端面至端面<br>End to End |     |     |
|---|---|---|---------------------|-----|-----|
| DN  | NPS                                       | OD <sub>1</sub> × OD <sub>2</sub>   | H                   |     |     |
| 1000×950<br>1000×900<br>1000×850                              | 40×38<br>40×36<br>40×34                   | 1016.0×965.0<br>1016.0×914.0<br>1016.0×864.0                                      | 610                 |     |     |
| 1000×800<br>1000×750<br>1000×700                              | 40×32<br>40×30<br>40×28                   | 1016.0×813.0<br>1016.0×762.0<br>1016.0×711.0                                      |                     |     |     |
| 1050×1000<br>1050×950<br>1050×900                             | 42×40<br>42×38<br>42×36                   | 1067.0×1016.0<br>1067.0×965.0<br>1067.0×914.0                                     |                     | 610 |     |
| 1050×850<br>1050×800<br>1050×750<br>1050×700                  | 42×34<br>42×32<br>42×30<br>42×28          | 1067.0×864.0<br>1067.0×813.0<br>1067.0×762.0<br>1067.0×711.0                      |                     |     |     |
| 1100×1050<br>1100×1000<br>1100×950                            | 44×42<br>44×40<br>44×38                   | 1118.0×1067.0<br>1118.0×1016.0<br>1118.0×965.0                                    |                     |     | 610 |
| 1100×900<br>1100×850<br>1100×800                              | 44×36<br>44×34<br>44×32                   | 1118.0×914.0<br>1118.0×864.0<br>1118.0×813.0                                      |                     |     |     |
| 1150×1100<br>1150×1050<br>1150×1000                           | 46×44<br>46×42<br>46×40                   | 1168.0×1118.0<br>1168.0×1067.0<br>1168.0×1016.0                                   | 711                 |     |     |
| 1150×950<br>1150×900<br>1150×850                              | 46×38<br>46×36<br>46×34                   | 1168.0×965.0<br>1168.0×914.0<br>1168.0×864.0                                      |                     |     |     |
| 1200×1150<br>1200×1100<br>1200×1050                           | 48×46<br>48×44<br>48×42                   | 1219.0×1168.0<br>1219.0×1118.0<br>1219.0×1067.0                                   |                     | 711 |     |
| 1200×1000<br>1200×950<br>1200×900                             | 48×40<br>48×38<br>48×36                   | 1219.0×1016.0<br>1219.0×965.0<br>1219.0×914.0                                     |                     |     |     |
| 1300×1200<br>1300×1150<br>1300×1100<br>1300×1050<br>1300×1000 | 52×48<br>52×46<br>52×44<br>52×42<br>52×40 | 1321.0×1219.0<br>1321.0×1168.0<br>1321.0×1118.0<br>1321.0×1067.0<br>1321.0×1016.0 | 711                 |     |     |
| 1400×1300<br>1400×1200<br>1400×1100<br>1400×1000              | 56×52<br>56×48<br>56×44<br>56×42          | 1422.0×1321.0<br>1422.0×1219.0<br>1422.0×1118.0<br>1422.0×1067.0                  |                     |     |     |
| 1500×1400<br>1500×1300<br>1500×1200<br>1500×1100              | 60×56<br>60×52<br>60×48<br>60×46          | 1524.0×1422.0<br>1524.0×1321.0<br>1524.0×1219.0<br>1524.0×1168.0                  |                     |     |     |

## 注释:

- 除上述标准外, 还可按 GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 等标准制造。  
Besides the above mentioned standards, the standards of GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc. are also applied.
- 更大规格的同心或偏心异径管, 按采购方与制造商协商的尺寸制造, 或按制造商的尺寸供货。  
For the concentric and eccentric reducers with the sizes larger than that listed in the above table, they will be supplied subject to the sizes agreed by the purchaser and manufacturer or according to the manufacturer's size.



对焊管帽  
BW Cap

GB/T 12459、GB/T 13401、ASME B16.9

| 公称尺寸<br>Nominal Size |       | 端部外径<br>OD at Bevel | 长度<br>Length |                | 对尺寸 E 的限制厚度<br>Limiting Wall Thickness<br>for Length E |
|----------------------|-------|---------------------|--------------|----------------|--|
| DN                   | NPS   | OD                  | E            | E <sub>1</sub> |  |
| 15                   | 1/2   | 21.3                | 25           | 25             | 4.57   |
| 20                   | 3/4   | 26.7                | 25           | 25             | 3.81   |
| 25                   | 1     | 33.4                | 38           | 38             | 4.57   |
| 32                   | 1 1/4 | 42.2                | 38           | 38             | 4.83   |
| 40                   | 1 1/2 | 48.3                | 38           | 38             | 5.08   |
| 50                   | 2     | 60.3                | 38           | 44             | 5.59   |
| 65                   | 2 1/2 | 73.0                | 38           | 51             | 7.11   |
| 80                   | 3     | 88.9                | 51           | 64             | 7.62   |
| 90                   | 3 1/2 | 101.6               | 64           | 76             | 8.13   |
| 100                  | 4     | 114.3               | 64           | 76             | 8.64   |
| 125                  | 5     | 141.3               | 76           | 89             | 9.65   |
| 150                  | 6     | 168.3               | 89           | 102            | 10.92  |
| 200                  | 8     | 219.1               | 102          | 127            | 12.70  |
| 250                  | 10    | 273.0               | 127          | 152            | 12.7   |
| 300                  | 12    | 323.8               | 152          | 178            | 12.7   |
| 350                  | 14    | 355.6               | 165          | 191            | 12.7   |
| 400                  | 16    | 406.4               | 178          | 203            | 12.7   |
| 450                  | 18    | 457.0               | 203          | 229            | 12.7   |
| 500                  | 20    | 508.0               | 229          | 254            | 12.7   |
| 550                  | 22    | 559.0               | 254          | 254            | 12.7   |
| 600                  | 24    | 610.0               | 267          | 305            | 12.7   |
| 650                  | 26    | 660.0               | 267          | ---            | ---  |
| 700                  | 28    | 711.0               | 267          | ---            | ---  |
| 750                  | 30    | 762.0               | 267          | ---            | ---  |
| 800                  | 32    | 813.0               | 267          | ---            | ---  |
| 850                  | 34    | 864.0               | 267          | ---            | ---  |
| 900                  | 36    | 914.0               | 267          | ---            | ---  |
| 950                  | 38    | 965.0               | 305          | ---            | ---  |
| 1000                 | 40    | 1016.0              | 305          | ---            | ---  |
| 1050                 | 42    | 1067.0              | 305          | ---            | ---  |
| 1100                 | 44    | 1118.0              | 343          | ---            | ---  |
| 1150                 | 46    | 1168.0              | 343          | ---            | ---  |
| 1200                 | 48    | 1219.0              | 343          | ---            | ---  |

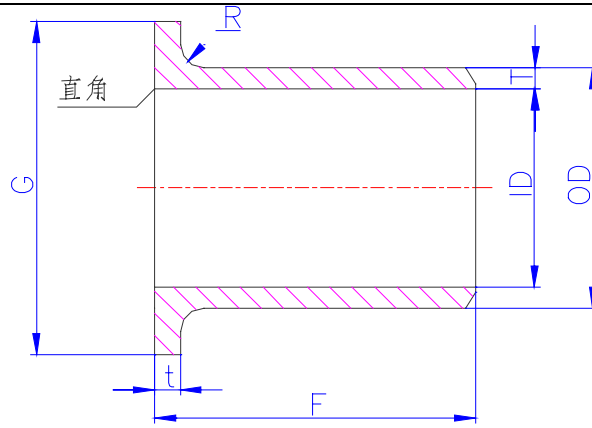
注释: Notes:

1) 管帽形状为标准椭圆形。

The configuration of the cap is normal ellipse.

2) 管帽的长度不大于限制厚度时为 E, 大于限制厚度时为 E<sub>1</sub>; 当管帽的公称尺寸 ≥ DN 650 (NPS 26) 时, 长度 E<sub>1</sub> 按采购方与制造商协商的尺寸制造, 或按制造商的尺寸供货。

Length E applies for the thickness not exceeding the Limiting Wall Thickness, Length E<sub>1</sub> applies for the thickness exceeding the Limiting Wall Thickness. For the caps with the DN ≥ 650 (NPS26), they will be made subject to the sizes agreed between the purchaser and manufacturer or be supplied according to the manufacturer's size.



翻边短节

Lap Joint Stub End

GB/T 12459、GB/T 13401、ASME B16.9、MSS SP-43

| 公称尺寸<br>Nominal Size |       | 筒体外径<br>OD of Cylinder |       | 长度<br>Length       |                     | 圆角半径<br>Radius of Fillet |                  | 搭接直径<br>Diameter<br>of Lap |
|----------------------|-------|------------------------|-------|--------------------|---------------------|--------------------------|------------------|----------------------------|
| DN                   | NPS   | OD                     |       | F                  |                     | R                        |                  |                            |
|                      |       | Max.                   | Min.  | 长型<br>Long Pattern | 短型<br>Short Pattern | A                        | B <sub>max</sub> | G                          |
| 15                   | 1/2   | 22.8                   | 20.5  | 76                 | 51                  | 3                        | 0.8              | 35                         |
| 20                   | 3/4   | 28.1                   | 25.9  | 76                 | 51                  | 3                        | 0.8              | 43                         |
| 25                   | 1     | 35.0                   | 32.6  | 102                | 51                  | 3                        | 0.8              | 51                         |
| 32                   | 1 1/4 | 43.6                   | 41.4  | 102                | 51                  | 5                        | 0.8              | 64                         |
| 40                   | 1 1/2 | 49.9                   | 47.5  | 102                | 51                  | 6                        | 0.8              | 73                         |
| 50                   | 2     | 62.4                   | 59.5  | 152                | 64                  | 8                        | 0.8              | 92                         |
| 65                   | 2 1/2 | 75.3                   | 72.2  | 152                | 64                  | 8                        | 0.8              | 105                        |
| 80                   | 3     | 91.3                   | 88.1  | 152                | 64                  | 10                       | 0.8              | 127                        |
| 90                   | 3 1/2 | 104.0                  | 100.8 | 152                | 76                  | 10                       | 0.8              | 140                        |
| 100                  | 4     | 116.7                  | 113.5 | 152                | 76                  | 11                       | 0.8              | 157                        |
| 125                  | 5     | 144.3                  | 140.5 | 203                | 76                  | 11                       | 1.6              | 186                        |
| 150                  | 6     | 171.3                  | 167.5 | 203                | 89                  | 13                       | 1.6              | 216                        |
| 200                  | 8     | 222.1                  | 218.3 | 203                | 102                 | 13                       | 1.6              | 270                        |
| 250                  | 10    | 277.2                  | 272.3 | 254                | 127                 | 13                       | 1.6              | 324                        |
| 300                  | 12    | 328.0                  | 323.1 | 254                | 152                 | 13                       | 1.6              | 381                        |
| 350                  | 14    | 359.9                  | 354.8 | 305                | 152                 | 13                       | 1.6              | 413                        |
| 400                  | 16    | 411.0                  | 405.6 | 305                | 152                 | 13                       | 1.6              | 470                        |
| 450                  | 18    | 462.0                  | 456.0 | 305                | 152                 | 13                       | 1.6              | 533                        |
| 500                  | 20    | 514.0                  | 507.0 | 305                | 152                 | 13                       | 1.6              | 584                        |
| 550                  | 22    | 565.0                  | 558.0 | 305                | 152                 | 13                       | 1.6              | 641                        |
| 600                  | 24    | 616.0                  | 609.0 | 305                | 152                 | 13                       | 1.6              | 692                        |

注释: Notes:

1) 当短型翻边短节用于PN 50和PN 110(300和600级)的较大法兰以及大于等于PN 150(900级)的大部分规格的法兰时,或当长型翻边短节用于PN 260和PN 420(1500和2500级)的较大法兰时,为了避免法兰可能影响焊接,或许需要增加筒体的长度。长度增加量由制造商与采购方双方协商。

1)When the short type is used on the larger flange with PN 50 and PN 110(300 and 600 LB) and on flanges with PN 150(900 LB) and above, or the long type is used on the larger flange with PN 260 and PN 420(1500 and 2500LB), the length of the cylinder may be added to be feasible the welding, the adding length shall be negotiated by manufacturer and purchaser.

2) 当采用榫槽面和凹凸密封面时,必须增加搭接边的厚度。增加厚度应附加(不包括)在基本长度F上。

2)The thickness of joint shall be added if the TG and FM contact surface of flange are used, and the adding thickness shall increase (not be included in) the base length F.

3) A型圆角半径R与GB/T 9118.1~9118.2或ASME B16.5中的松套法兰的圆角半径相符合。B型的圆角半径R仅用于MSS SP-43标准中,其长度F为短型。

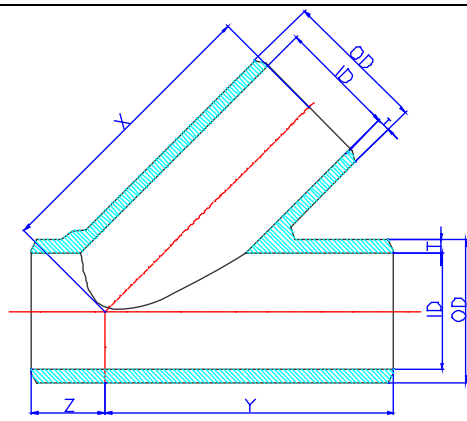
3)The radius of fillet R(type A) shall conform to the ones of loose flanges according to GB/T 9118.1~9118.2 or ASME B16.5. The radius of fillet R(type B) is only applied for the standards of MSS SP-43 with short length F.

4) 搭接直径G与ASME B16.5中表示的标准机加工面相符合。搭接边的背面应进行机加工,使其与安装表面一致。当采用环连接密封面时,使用ASME B16.5中给出的尺寸K。

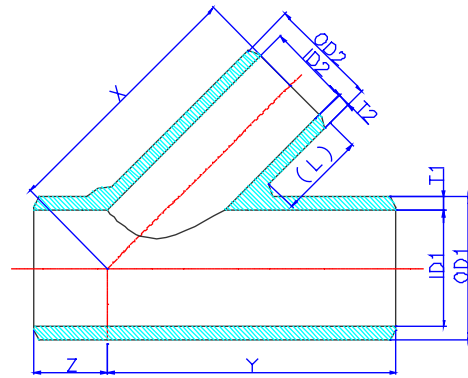
4)The lap joint diameter G shall conform to the standard machined face indicated in ASME B16.5, and the back of joint shall be machined to conform to the surface of installation, The size K specified in ASME B16.5 shall be used when using the RTJ contact surface.

5) 搭接厚度t应不小于管子的公称壁厚。

5)The minimum lap joint thickness t shall not be less than the nominal pipe wall thickness.



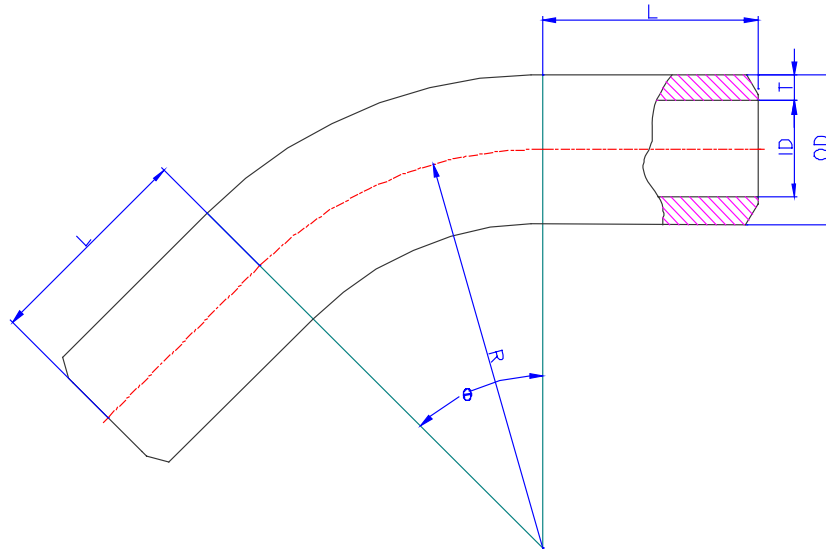
对焊等径 45° 斜三通  
BW Straight 45° Lateral Tee



对焊异径 45° 斜三通  
BW Reducing 45° Lateral Tee

| 公称尺寸<br>Nominal Size |       | 端部外径<br>OD at Bevel | 中心至端面<br>Center to End |     |
|----------------------|-------|---------------------|------------------------|-----|
| DN                   | NPS   | OD                  | X and Y                | Z   |
| 15                   | 1/2   | 21.3                | 90                     | 50  |
| 20                   | 3/4   | 26.7                | 108                    | 50  |
| 25                   | 1     | 33.4                | 133                    | 50  |
| 32                   | 1 1/4 | 42.2                | 184                    | 57  |
| 40                   | 1 1/2 | 48.3                | 216                    | 64  |
| 50                   | 2     | 60.3                | 230                    | 64  |
| 65                   | 2 1/2 | 73.0                | 267                    | 64  |
| 80                   | 3     | 88.9                | 280                    | 76  |
| 90                   | 3 1/2 | 101.6               | 292                    | 76  |
| 100                  | 4     | 114.3               | 343                    | 76  |
| 125                  | 5     | 141.3               | 381                    | 90  |
| 150                  | 6     | 168.3               | 445                    | 102 |
| 200                  | 8     | 219.1               | 520                    | 127 |
| 250                  | 10    | 273.0               | 610                    | 140 |
| 300                  | 12    | 323.8               | 700                    | 152 |
| 350                  | 14    | 355.6               | 787                    | 165 |
| 400                  | 16    | 406.4               | 876                    | 178 |
| 450                  | 18    | 457.0               | 953                    | 203 |
| 500                  | 20    | 508.0               | 1029                   | 216 |
| 550                  | 22    | 559.0               | 1112                   | 229 |
| 600                  | 24    | 610.0               | 1207                   | 254 |
| 650                  | 26    | 660.0               | 1308                   | 267 |
| 700                  | 28    | 711.0               | 1422                   | 286 |
| 750                  | 30    | 762.0               | 1524                   | 299 |
| 800                  | 32    | 813.0               | 1626.0                 | 311 |
| 850                  | 34    | 864.0               | 1727                   | 330 |
| 900                  | 36    | 914.0               | 1829                   | 350 |
| 950                  | 38    | 965.0               | 1930                   | 483 |
| 1000                 | 40    | 1016.0              | 2032                   | 508 |
| 1050                 | 42    | 1067.0              | 2134                   | 533 |
| 1100                 | 44    | 1118.0              | 2235                   | 559 |
| 1150                 | 46    | 1168.0              | 2337                   | 584 |
| 1200                 | 48    | 1219.0              | 2438                   | 610 |
| 1250                 | 50    | 1270.0              | 2540                   | 635 |
| 1300                 | 52    | 1321.0              | 2642                   | 660 |
| 1350                 | 54    | 1372.0              | 2743                   | 686 |
| 1400                 | 56    | 1422.0              | 2845                   | 711 |
| 1450                 | 58    | 1473.0              | 2946                   | 737 |
| 1500                 | 60    | 1524.0              | 3048                   | 762 |

注释:  
1) 异径三通的 X 值按支管公称尺寸对应的 X 值制造, 但当支管变径超过 2 档 (例如 NPS 20×14) 时, 45 度夹角处的长度 L 应等于或大于支管外径 OD<sub>2</sub>。  
1) The value X of the reducing tee shall be according to the one matching to the nominal size of branch pipe, but when the varying diameter of branch exceeds and includes two levels (for example NPS 20×14), the length L near the 45° angle shall be equal or larger than the OD<sub>2</sub> of branch pipe.

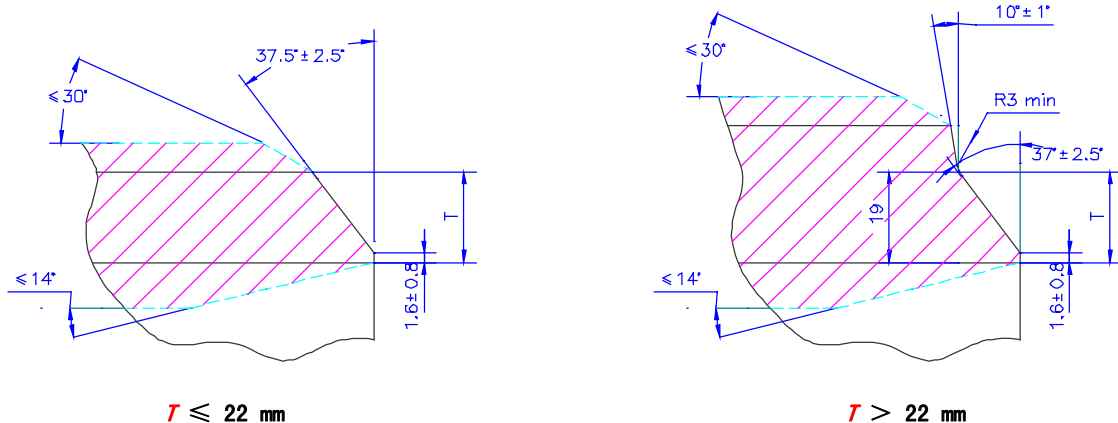


弯管  
Bend

| 项目<br>Item                  | 内容<br>Content   |
|-----------------------------|---|
| 标准<br>Standard              | DL/T 515 《电站弯管》、SY/T 5257 《油气输送用钢制弯管》、ASME B16.49 《用于输送和分配的管道系统中的工厂制造的钢制感应弯管》或采购文件规定<br>DL/T 515 <i>Pipe Bends for Power Station</i> , SY/T 5257 <i>Steel Bend for Oil and Gas Transmission</i> , ASME B16.49 <i>Factory-Made Wrought Steel Induction Bends for Transportation and Distribution Systems</i> and or purchasing specification |
| 材料<br>Material              | 碳素钢、合金钢、不锈钢<br>Carbon Steel、Alloy Steel、Stainless Steel   |
| 弯曲半径 $R$<br>Bend Radius     | $R \geq 30D$ (OD 为管子外径)<br>$R \geq 30D$ (OD is outside diameter of pipe)  |
| 弯曲角度 $\theta$<br>Bend Angle | 常用 DL/T 515、SY/T 5257、ASME B16.49 具体按设计文件规定<br>Using DL/T 515、SY/T 5257、ASME B16.49, and details per the specification of design documents.   |
| 直段长度 $L$<br>Straight Length | 按标准或设计文件规定的长度；或两端直段长度为 500mm<br>Per standard or specified length in the design documentation, or both straight lengths are 500mm.   |
| 外径 $OD$<br>Outside Diameter | $OD \leq 1220\text{mm}$   |
| 壁厚 $T$<br>Wall Thickness    | 按设计文件规定<br>According to the specification of design documentation.  |
| 端部坡口<br>Bevel at Ends       | 按对焊管件端部坡口型式；或按设计文件规定<br>According to the bevel ends of BW fittings or per specification of design documentation.  |

对焊管件端部坡口型式

BEVEL ENDS OF BW FITTINGS (the picture of bend can be used, if using, this part shall be moved to other place)



注释: Note:

1) 图示为对焊管件常用的端部焊接坡口型式。当采购文件对端部坡口有另外规定时, 按采购文件规定的型式加工。

1) The general bevel ends are as the above. If specially required, the purchase specification shall be performed.



### 对焊管件的公差

### TOLERANCES FOR BW FITTINGS

| 公称尺寸<br>Nominal Size |           | 所有管件 <sup>1) 2)</sup><br>All Fittings |                  | 45°、90° 弯头、三通、四通<br>45° & 90° Elbows & Tees, Crosses | 3D 弯头<br>3D Radius Elbows | 180° 弯头<br>Returns |     |     | 管帽<br>Caps        | 异径管、翻边短节<br>Reducers & Lap Joint Stub Ends | 翻边短节<br>Lap Joint Stub Ends |         |           |
|----------------------|-----------|---------------------------------------|------------------|--|---------------------------|--------------------|-----|-----|-------------------|--|-----------------------------|---------|-----------|
| DN                   | NPS       | OD <sup>3) 4)</sup>                   | ID <sup>3)</sup> | A, B, C, M   | A, B                      | O                  | K   | U   | E, E <sub>i</sub> | H, F                                       | G                           | R       | t         |
| 15-65                | 1/2-2 1/2 | +1.6<br>-0.8                          | ±0.8             | ±2   | ±3                        | ±6                 | ±6  | ±1  | ±3                | ±2   | 0<br>-1                     | 0<br>-1 | +1.6<br>0 |
| 80-90                | 3-3 1/2   | ±1.6                                  | ±1.6             | ±2   | ±3                        | ±6                 | ±6  | ±1  | ±3                | ±2   | 0<br>-1                     | 0<br>-1 | +1.6<br>0 |
| 100                  | 4         | ±1.6                                  | ±1.6             | ±2   | ±3                        | ±6                 | ±6  | ±1  | ±3                | ±2   | 0<br>-1                     | 0<br>-2 | +1.6<br>0 |
| 125-200              | 5-8       | +2.4<br>-1.6                          | ±1.6             | ±2   | ±3                        | ±6                 | ±6  | ±1  | ±6                | ±2   | 0<br>-1                     | 0<br>-2 | +1.6<br>0 |
| 250-450              | 10-18     | +4.0<br>-3.2                          | ±3.2             | ±2   | ±3                        | ±10                | ±6  | ±2  | ±6                | ±2   | 0<br>-2                     | 0<br>-2 | +3.2<br>0 |
| 500-600              | 20-24     | +6.4<br>-4.8                          | ±4.8             | ±2   | ±3                        | ±10                | ±6  | ±2  | ±6                | ±2   | 0<br>-2                     | 0<br>-2 | +3.2<br>0 |
| 650-750              | 26-30     | +6.4<br>-4.8                          | ±4.8             | ±3   | ±6                        | ---                | --- | --- | ±10               | ±5   | ---                         | ---     | ---       |
| 800-1200             | 32-48     | +6.4<br>-4.8                          | ±4.8             | ±5   | ±6                        | ---                | --- | --- | ±10               | ±5   | ---                         | ---     | ---       |
| 1300-1500            | 52-60     | +6.4<br>-4.8                          | ±4.8             | ±5   | ---                       | ---                | --- | --- | ---               | ---  | ---                         | ---     | ---       |
| 1600-1700            | 64-68     | +6.4<br>-4.8                          | ±4.8             | ±5   | ---                       | ---                | --- | --- | ---               | ---  | ---                         | ---     | ---       |
| 1800-2000            | 72-80     | +6.4<br>-4.8                          | ±4.8             | ±5   | ---                       | ---                | --- | --- | ---               | ---  | ---                         | ---     | ---       |

注释:  
 1) 端部内径和公称壁厚由采购方指定。  
 The inside diameter and the nominal wall thickness shall be specified by the purchaser.  
 2) 如采购方未规定壁厚公差, 则适用 87.5% 的最小壁厚。  
 If the purchaser doesn't specify the thickness tolerance, 87.5% of the nominal thickness shall be the min. thickness.  
 3) 圆度为正负偏差绝对值之和。  
 Out-of-roundness is the sum of absolute values of plus and minus tolerance.  
 4) 当需要增加壁厚以满足设计要求时, 该项公差可超过表列值。  
 when the wall thickness needs increasing to meet the design requirement, the tolerance may exceed the ones indicated in the above list.

| 公称尺寸<br>Nominal Size |       | Q | P  |  |
|----------------------|-------|---|----|--|
| DN                   | NPS   |   |    |  |
| 15-100               | 1/2-4 | 1 | 2  |  |
| 125-200              | 5-8   | 2 | 4  |  |
| 250-300              | 10-12 | 3 | 5  |  |
| 350-400              | 14-16 | 3 | 6  |  |
| 450-600              | 18-24 | 4 | 10 |  |
| 650-750              | 26-30 | 5 | 10 |  |
| 800-1050             | 32-42 | 5 | 13 |  |
| 1100-1200            | 44-48 | 5 | 19 |  |
| 1300-2000            | 50-80 | 5 | 19 |  |

GB、ASME、MSS 管件标准中的接管外径和壁厚表(适用于所有材料)

OUTSIDE DIAMETER AND WALL THICKNESS OF THE CONNECTING PIPE FOR FITTING PER STANDARDS GB、ASME、MSS (APPLYING FOR ALL MATERIALS)

| 公称尺寸<br>Nominal Size |       | 外径<br>OD | 公称壁厚 T<br>Nominal Wall Thickness T |       |       |       |       |       |       |       |       |        |        |        |        |
|----------------------|-------|----------|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| DN                   | NPS   |          | OD                                 | Sch10 | Sch20 | Sch30 | STD   | Sch40 | Sch60 | XS    | Sch80 | Sch100 | Sch120 | Sch140 | Sch160 |
| 6                    | 1/8   | 10.3     | 1.24                               | -     | 1.45  | 1.73  | 1.73  | -     | 2.41  | 2.41  | -     | -      | -      | -      | -      |
| 8                    | 1/4   | 13.7     | 1.65                               | -     | 1.85  | 2.24  | 2.24  | -     | 3.02  | 3.02  | -     | -      | -      | -      | -      |
| 10                   | 3/8   | 17.1     | 1.65                               | -     | 1.85  | 2.31  | 2.31  | -     | 3.20  | 3.20  | -     | -      | -      | -      | -      |
| 15                   | 1/2   | 21.3     | 2.11                               | -     | 2.41  | 2.77  | 2.77  | -     | 3.73  | 3.73  | -     | -      | -      | 4.78   | 7.47   |
| 20                   | 3/4   | 26.7     | 2.11                               | -     | 2.41  | 2.87  | 2.87  | -     | 3.91  | 3.91  | -     | -      | -      | 5.56   | 7.82   |
| 25                   | 1     | 33.4     | 2.77                               | -     | 2.90  | 3.38  | 3.38  | -     | 4.55  | 4.55  | -     | -      | -      | 6.35   | 9.09   |
| 32                   | 1 1/4 | 42.2     | 2.77                               | -     | 2.97  | 3.56  | 3.56  | -     | 4.85  | 4.85  | -     | -      | -      | 6.35   | 9.70   |
| 40                   | 1 1/2 | 48.3     | 2.77                               | -     | 3.18  | 3.68  | 3.68  | -     | 5.08  | 5.08  | -     | -      | -      | 7.14   | 10.15  |
| 50                   | 2     | 60.3     | 2.77                               | -     | 3.18  | 3.91  | 3.91  | -     | 5.54  | 5.54  | -     | -      | -      | 8.74   | 11.07  |
| 65                   | 2 1/2 | 73.0     | 3.05                               | -     | 4.78  | 5.16  | 5.16  | -     | 7.01  | 7.01  | -     | -      | -      | 9.53   | 14.02  |
| 80                   | 3     | 88.9     | 3.05                               | -     | 4.78  | 5.49  | 5.49  | -     | 7.62  | 7.62  | -     | -      | -      | 11.13  | 15.24  |
| 90                   | 3 1/2 | 101.6    | 3.05                               | -     | 4.78  | 5.74  | 5.74  | -     | 8.08  | 8.08  | -     | -      | -      | -      | -      |
| 100                  | 4     | 114.3    | 3.05                               | -     | 4.78  | 6.02  | 6.02  | -     | 8.56  | 8.56  | -     | 11.13  | -      | 13.49  | 17.12  |
| 125                  | 5     | 141.3    | 3.40                               | -     | -     | 6.55  | 6.55  | -     | 9.53  | 9.53  | -     | 12.70  | -      | 15.88  | 19.05  |
| 150                  | 6     | 168.3    | 3.40                               | -     | -     | 7.11  | 7.11  | -     | 10.97 | 10.97 | -     | 14.27  | -      | 18.26  | 21.95  |
| 200                  | 8     | 219.1    | 3.76                               | 6.35  | 7.04  | 8.18  | 8.18  | 10.31 | 12.70 | 12.70 | 15.09 | 18.26  | 20.62  | 23.01  | 22.23  |
| 250                  | 10    | 273.0    | 4.19                               | 6.35  | 7.80  | 9.27  | 9.27  | 12.70 | 12.70 | 15.09 | 18.26 | 21.44  | 25.40  | 28.58  | 25.40  |
| 300                  | 12    | 323.8    | 4.57                               | 6.35  | 8.38  | 9.53  | 10.31 | 14.27 | 12.70 | 17.48 | 21.44 | 25.40  | 28.58  | 33.32  | 25.40  |
| 350                  | 14    | 355.6    | 6.35                               | 7.92  | 9.53  | 9.53  | 11.13 | 15.09 | 12.70 | 19.05 | 23.83 | 27.79  | 31.75  | 35.71  | -      |
| 400                  | 16    | 406.4    | 6.35                               | 7.92  | 9.53  | 9.53  | 12.70 | 16.66 | 12.70 | 21.44 | 26.19 | 30.96  | 36.53  | 40.49  | -      |
| 450                  | 18    | 457.0    | 6.35                               | 7.92  | 11.13 | 9.53  | 14.27 | 19.05 | 12.70 | 23.83 | 29.36 | 34.93  | 39.67  | 45.24  | -      |
| 500                  | 20    | 508.0    | 6.35                               | 9.53  | 12.70 | 9.53  | 15.09 | 20.62 | 12.70 | 26.19 | 32.54 | 38.10  | 44.45  | 50.01  | -      |
| 550                  | 22    | 559.0    | 6.35                               | 9.53  | 12.70 | 9.53  | -     | 22.23 | 12.70 | 28.58 | 34.93 | 41.28  | 47.63  | 53.98  | -      |
| 600                  | 24    | 610.0    | 6.35                               | 9.53  | 14.27 | 9.53  | 17.48 | 24.61 | 12.70 | 30.96 | 38.89 | 46.02  | 52.37  | 59.54  | -      |
| 650                  | 26    | 660.0    | 7.92                               | 12.70 | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 700                  | 28    | 711.0    | 7.92                               | 12.70 | 15.88 | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 750                  | 30    | 762.0    | 7.92                               | 12.70 | 15.88 | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 800                  | 32    | 813.0    | 7.92                               | 12.70 | 15.88 | 9.53  | 17.48 | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 850                  | 34    | 864.0    | 7.92                               | 12.70 | 15.88 | 9.53  | 17.48 | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 900                  | 36    | 914.0    | 7.92                               | 12.70 | 15.88 | 9.53  | 19.05 | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 950                  | 38    | 965.0    | -                                  | -     | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 1000                 | 40    | 1016.0   | -                                  | -     | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 1050                 | 42    | 1067.0   | -                                  | -     | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 1100                 | 44    | 1118.0   | -                                  | -     | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 1150                 | 46    | 1168.0   | -                                  | -     | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 1200                 | 48    | 1219.0   | -                                  | -     | -     | 9.53  | -     | -     | 12.70 | -     | -     | -      | -      | -      | -      |
| 1300                 | 52    | 1321.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 1400                 | 56    | 1422.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 1500                 | 60    | 1524.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 1600                 | 64    | 1626.0.0 | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 1700                 | 68    | 1727.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 1800                 | 72    | 1829.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 1900                 | 76    | 1932.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |
| 2000                 | 80    | 2032.0   | -                                  | -     | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      |

注释:  
 1) 表中数值选自 ASME B36.10M; 适用于 GB 和 ASME、MSS 管件标准中的接管壁厚。  
 The above digits quoted from B36.10M. The connecting pipe thickness of fittings per standards GB, ASME and MSS also apply them.  
 2) 如果产品要求的接管外径和壁厚本表中没有列出的话, 可在订货中直接给出要求的数值。  
 If the outside diameter and wall thickness of the connecting pipe aren't included in the above table, these sizes can be specified directly in the purchase order.

**GB、ASME、MSS 管件标准中的接管外径和壁厚表(适用于不锈钢材料)**

**OUTSIDE DIAMETER AND WALL THICKNESS OF THE CONNECTING PIPE FOR FITTING PER STANDARDS GB、ASME、MSS (APPLYING FOR STAINLESS STEEL MATERIALS)**

| 公称尺寸<br>Nominal Size |       | 外径<br>OD | 公称壁厚 <i>T</i><br>Nominal Wall Thickness <i>T</i> |        |        |        |
|----------------------|-------|----------|--|--------|--------|--------|
| DN                   | NPS   | OD       | Sch5S  | Sch10S | Sch40S | Sch80S |
| 6                    | 1/8   | 10.3     | -  | 1.24   | 1.73   | 2.41   |
| 8                    | 1/4   | 13.7     | -  | 1.65   | 2.24   | 3.02   |
| 10                   | 3/8   | 17.1     | -  | 1.65   | 2.31   | 3.20   |
| 15                   | 1/2   | 21.3     | 1.65   | 2.11   | 2.77   | 3.73   |
| 20                   | 3/4   | 26.7     | 1.65   | 2.11   | 2.87   | 3.91   |
| 25                   | 1     | 33.4     | 1.65   | 2.77   | 3.38   | 4.55   |
| 32                   | 1 1/4 | 42.2     | 1.65   | 2.77   | 3.56   | 4.85   |
| 40                   | 1 1/2 | 48.3     | 1.65   | 2.77   | 3.68   | 5.08   |
| 50                   | 2     | 60.3     | 1.65   | 2.77   | 3.91   | 5.54   |
| 65                   | 2 1/2 | 73.0     | 2.11   | 3.05   | 5.16   | 7.01   |
| 80                   | 3     | 88.9     | 2.11   | 3.05   | 5.49   | 7.62   |
| 90                   | 3 1/2 | 101.6    | 2.11   | 3.05   | 5.74   | 8.08   |
| 100                  | 4     | 114.3    | 2.11   | 3.05   | 6.02   | 8.56   |
| 125                  | 5     | 141.3    | 2.77   | 3.40   | 6.55   | 9.53   |
| 150                  | 6     | 168.3    | 2.77   | 3.40   | 7.11   | 10.97  |
| 200                  | 8     | 219.1    | 2.77   | 3.76   | 8.18   | 12.70  |
| 250                  | 10    | 273.0    | 3.40   | 4.19   | 9.27   | 12.70  |
| 300                  | 12    | 323.8    | 3.96   | 4.57   | 9.53   | 12.70  |
| 350                  | 14    | 355.6    | 3.96   | 4.78   | 9.53   | 12.70  |
| 400                  | 16    | 406.4    | 4.19   | 4.78   | 9.53   | 12.70  |
| 450                  | 18    | 457.0    | 4.19   | 4.78   | 9.53   | 12.70  |
| 500                  | 20    | 508.0    | 4.78   | 5.54   | 9.53   | 12.70  |
| 550                  | 22    | 559.0    | 4.78   | 5.54   | -      | -      |
| 600                  | 24    | 610.0    | 5.54   | 6.35   | 9.53   | 12.70  |
| 650                  | 26    | 660.0    | -  | -      | -      | -      |
| 700                  | 28    | 711.0    | -  | -      | -      | -      |
| 750                  | 30    | 762.0    | 6.35   | 7.92   | -      | -      |

注释:

1) 表中数值选自 ASME B36.19M; 适用于 GB 和 ASME、MSS 管件标准中的接管壁厚。

The values quoted from B36.19M. The connecting pipe thickness of fittings per standards GB, ASME and MSS also apply them.

2) 如果产品要求的接管外径和壁厚本表中没有列出的话, 可在订货中直接给出要求的数值。

If the connecting outside diameter and wall thickness aren't included, these can be specified directly in the purchase order.

**其它管件标准的尺寸说明**

**THE SIZE SPECIFICATION FOR OTHER FITTING STANDARDS (temporary contents)**

| 标准号<br>Standard No.              | 说明 specification   |
|----------------------------------|--|
| <b>2000GD<br/>87GD</b>           | 按不同用途, 根据设计压力、设计温度和材料, 规定了产品的尺寸。<br>Per different purpose, design pressure, temperature and materials, products sizes can be specified.  |
| <b>DL/T 695</b>                  | 接管尺寸分为外径控制管和内径控制管两个系列; 规定了产品的结构尺寸; 对部分产品规定了外径、内径和壁厚。<br>The connecting pipe size includes outside diameter controlled pipes and inside diameter controlled pipes. Specifying the structure sizes and the outside & inside diameter and wal thickness for some products.  |
| <b>HG/T 21631<br/>HG/T 21635</b> | 分英制和公制两种规格, 其中英制的外径与壁厚与 ASME 标准相同; 公制和 II 系列规格中的外径为小外径尺寸, 壁厚按公称压力 (MPa) 规定了 PN1.0, PN1.6, PN2.5, PN4.0, PN6.4 和 PN10 的壁厚值。<br>This standard includes metric and inch system. The outside diameter and wall thickness of inch system are same as ASME standard. The outside diameter in metric system and II series are the smaller ones. The wall thickness are specified per nominal pressure (MPa) PN1.0, PN1.6, PN2.5, PN4.0, PN6.4 and PN10.       |
| <b>SH/T 3408<br/>SH/T 3409</b>   | 外径按 ASME 标准的数值取的整数; 按 Sch 规定了壁厚, 其中有的数值与 ASME 标准略有不同。<br>The outside diameters are rounded per the one specified in ASME standard; The wall thickness is specified per Sch. Some values are a little different from the one in ASME standard.  |
| <b>SY/T 0510</b>                 | A 类外径分 I、II 系列, 并按 Sch 给出了该标准规定的壁厚, 有的与 ASME 标准数值不同; B 类外径为公制外径, 壁厚按公称压力 (MPa) 规定了 1.0, 1.6, 2.5, 4.0, 6.4, 10.0 和 16.0 的壁厚值。<br>The outside diameter of type A includes I and II series and the wall thickness is specified per Sch, Some values are different from the ones in ASME standard. The outside diameter of type B is metric unit, and the wall thickness is specified per nominal pressure (MPa). 1.0, 1.6, 2.5, 4.0, 6.4, 10.0 and 16.0. |
| <b>EN 10253</b>                  | 按不同用途分为 2 个部分, 分别规定了产品的尺寸。<br>Per different purpose, two parts are used to specify the sizes of the products individually.   |

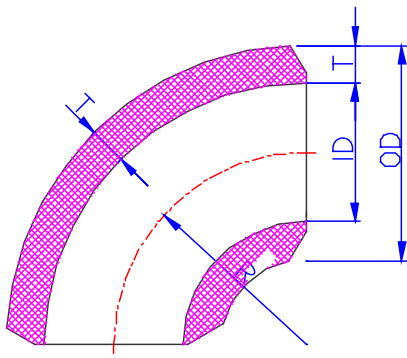
**GB/T 12459、GB/T 13401 的 II 系列外径  
和 HG/T 21631 的 II 系列外径与壁厚表  
OUTSIDE DIAMETER (II Series) OF GB/T 12459 & GB/T 13401 AND  
OUTSIDE DIAMETER AND WALL THICKNESS (II Series) OF HG/T  
21631**

| 公称<br>尺寸<br>Nominal<br>Size | 外径<br>OD | 公称压力<br>Nominal Pressure<br>PN (MPa) |           |          |           |          |           |
|-----------------------------|----------|--------------------------------------|-----------|----------|-----------|----------|-----------|
|                             |          | 1.0                                  |           | 1.6      |           | 2.5      |           |
| DN                          | OD       | 碳钢<br>CS                             | 不锈钢<br>SS | 碳钢<br>CS | 不锈钢<br>SS | 碳钢<br>CS | 不锈钢<br>SS |
| 15                          | 18       | -                                    | -         | -        | -         | -        | -         |
| 20                          | 25       | -                                    | -         | -        | -         | -        | -         |
| 25                          | 32       | -                                    | -         | -        | -         | -        | -         |
| 32                          | 38       | -                                    | -         | -        | -         | -        | -         |
| 40                          | 45       | -                                    | -         | -        | -         | -        | -         |
| 50                          | 57       | -                                    | -         | -        | -         | -        | -         |
| 65                          | 76       | -                                    | -         | -        | -         | -        | -         |
| 80                          | 89       | -                                    | -         | -        | -         | -        | -         |
| 100                         | 108      | -                                    | -         | -        | -         | -        | -         |
| 125                         | 133      | -                                    | -         | -        | -         | -        | -         |
| 150                         | 159      | 5                                    | 3.5       | 5.5      | 4.0       | 6.0      | 5.0       |
| 200                         | 219      | 5                                    | 3.5       | 6.0      | 4.0       | 7.0      | 5.0       |
| 250                         | 273      | 5                                    | 3.5       | 6.0      | 4.5       | 8.0      | 6.0       |
| 300                         | 325      | 6                                    | 4.0       | 7.0      | 5.0       | 8.0      | 7.0       |
| 350                         | 377      | 6                                    | 4.5       | 7.0      | 6.0       | 9.0      | 8.0       |
| 400                         | 426      | 6                                    | 4.5       | 8.0      | 6.0       | 10       | 9.0       |
| 450                         | 480      | 7                                    | 5.0       | 8.0      | 7.0       | 11       | 9.0       |
| 500                         | 530      | 7                                    | 5.5       | 9.0      | 7.0       | 12       | 10        |
| 600                         | 630      | 8                                    | 6.0       | 10       | 8.0       | 13       | 12        |
| 700                         | 720      | 8                                    | 7.0       | 11       | 9.0       | 15       | 13        |
| 800                         | 820      | 9                                    | 7.0       | 12       | 10        | 16       | 15        |
| 900                         | 920      | 9                                    | 8.0       | 13       | -         | -        | -         |
| 1000                        | 1020     | 10                                   | -         | 14       | -         | -        | -         |
| 1100                        | 1120     | -                                    | -         | -        | -         | -        | -         |
| 1200                        | 1220     | -                                    | -         | -        | -         | -        | -         |

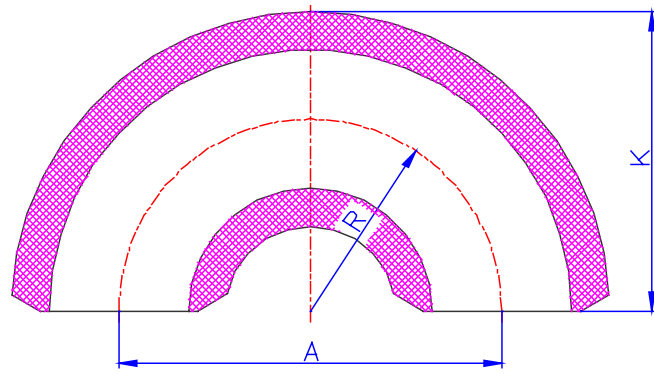
**HG/T 21635 的公制系列外径与壁厚表  
OUTSIDE DIAMETER AND WALL THICKNESS  
(Metric System) OF HG/T 21635**

| 公称<br>尺寸<br>Nominal<br>Size | 外径<br>OD | 公称压力<br>Nominal Pressure<br>PN (MPa) |     |     |      |
|-----------------------------|----------|--------------------------------------|-----|-----|------|
|                             |          | 2.5                                  | 4.0 | 6.4 | 10.0 |
| DN                          | OD       | 2.5                                  | 4.0 | 6.4 | 10.0 |
| 15                          | 18       | -                                    | -   | -   | -    |
| 20                          | 25       | -                                    | -   | -   | -    |
| 25                          | 32       | 3.0                                  | 3.0 | 3.0 | 4.0  |
| 32                          | 38       | 3.0                                  | 3.0 | 3.5 | 4.5  |
| 40                          | 45       | 3.5                                  | 3.5 | 3.5 | 4.5  |
| 50                          | 57       | 3.5                                  | 3.5 | 3.5 | 5.0  |
| 65                          | 76       | 4.0                                  | 4.0 | 4.5 | 6.0  |
| 80                          | 89       | 4.0                                  | 4.0 | 5.0 | 7.0  |
| 100                         | 108      | 4.0                                  | 4.0 | 6.0 | 8.0  |
| 125                         | 133      | 4.0                                  | 4.0 | 6.0 | 9.0  |
| 150                         | 159      | 4.5                                  | 4.5 | 7.0 | 10   |
| 200                         | 219      | 6.0                                  | 6.0 | 9.0 | 12   |
| 250                         | 273      | 7.0                                  | 7.0 | 11  | -    |
| 300                         | 325      | 8.0                                  | 8.0 | 12  | -    |
| 350                         | 377      | 9.0                                  | 9.0 | -   | -    |
| 400                         | 426      | 9.0                                  | 11  | -   | -    |
| 450                         | 480      | 9.0                                  | -   | -   | -    |
| 500                         | 530      | 9.0                                  | -   | -   | -    |
| 600                         | 630      | 9.0                                  | -   | -   | -    |
| 700                         | 720      | -                                    | -   | -   | -    |
| 800                         | 820      | -                                    | -   | -   | -    |
| 900                         | 920      | -                                    | -   | -   | -    |
| 1000                        | 1020     | -                                    | -   | -   | -    |
| 1100                        | 1120     | -                                    | -   | -   | -    |
| 1200                        | 1220     | -                                    | -   | -   | -    |

注释：  
 1) GB/T 12459 和 GB/T 13401 标准的 II 系列外径见本表中的外径值；II 系列的壁厚可选择\*\*页壁厚表的数值，也可在订货中直接给出要求的壁厚值。  
 The outside diameter (II series) of GB/T 12459 and GB/T 13401 standards shall be per the one indicated in the above table; The wall thickness of II series can be per the table in page \*\* or be specified directly in the purchase order.  
 2) HG/T 21631 (原 HGJ 528) 标准中外径和壁厚分为 I、II 两个系列；其中 I 系列的外径和壁厚按\*\*页表中的数值。  
 The outside diameter and wall thickness of HG/T 21631 (previously HGJ 528) standards have the series of I system and II system, and the outside diameter and wall thickness of I series are in accordance with the ones in the table of page \*\*.  
 3) HG/T 21635 (原 HGJ 514) 标准中外径和壁厚分为公制、英制两个系列；其中英制系列的外径和壁厚按\*\*页表中的数值。  
 The outside diameter and wall thickness of HG/T 21635 (previously HGJ 514) standard have the series of metric system and inch system, and the outside diameter and wall thickness of inch system are in accordance with the ones in the table of page \*\*.



90° 弯头  
90° Elbow



180° 弯管  
Return Bend

SH/T 3065 石油化工管式炉急弯弯管

SH/T 3065 RETURN BENDS & ELBOWS OF TUBULAR HEATER IN PETROCHEMICAL INDUSTRY

| 项目<br>Item   | 内容<br>Content  |
|--|--|
| 材料<br>Material                                       | 碳素钢、合金钢、不锈钢<br>Carbon steel、Alloy steel、Stainless steel  |
| 90° 弯头弯曲半径 $R$<br>Bending radius<br>(90° Elbow)      | 按设计文件规定<br>Specified according to the design documentation.  |
| 180° 弯管中心距离 $A$<br>Center to center<br>(Return Bend) | 按设计文件规定<br>Specified according to the design documentation.  |
| 壁厚 $T$<br>Wall thickness                             | 按设计文件规定<br>Specified according to the design documentation.  |
| 端部坡口<br>Bevel at ends                                | 按对焊管件端部坡口型式；或按设计文件规定<br>According to the bevel ends of BW fittings or the specification of design documentation. |

急弯弯管的公差

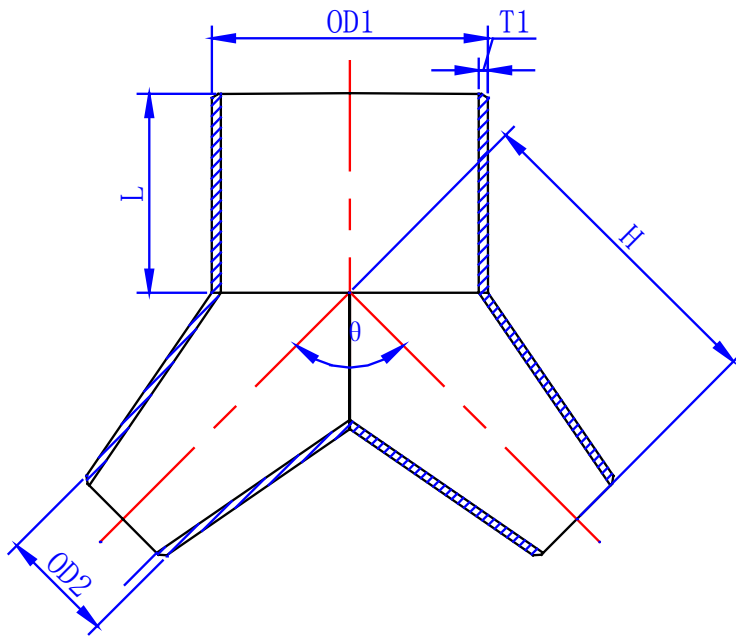
TOLERANCES FOR RETURN BENDS & ELBOWS

| 项目<br>Item | $OD \leq 76$  |                | $OD = 89 \sim 127$ |            | $OD = 141 \sim 193$ |                | $OD = 219 \sim 237$ |                |
|------------|---|----------------|--------------------|------------|---------------------|----------------|---------------------|----------------|
|            | 90°   | 180°           | 90°                | 180°       | 90°                 | 180°           | 90°                 | 180°           |
| $OD$       | +1.50<br>-0.75  | +1.50<br>-0.75 | $\pm 1.50$         | $\pm 1.50$ | +2.00<br>-1.50      | +2.00<br>-1.50 | +2.00<br>-1.50      | +2.00<br>-1.50 |
| $ID$       | $\pm 0.75$  | $\pm 0.75$     | $\pm 1.50$         | $\pm 1.50$ | $\pm 1.50$          | $\pm 1.50$     | $\pm 1.50$          | $\pm 1.50$     |
| $R$        | $\pm 1.00$  | -              | $\pm 1.50$         | -          | $\pm 2.00$          | -              | $\pm 2.00$          | -              |
| $A$        | -   | $\pm 2.00$     | -                  | $\pm 2.50$ | -                   | $\pm 2.50$     | -                   | $\pm 3.00$     |
| $K$        | -   | +6.00          | -                  | +6.00      | -                   | +6.00          | -                   | +6.00          |
| $U$        | -   | $\pm 1.00$     | -                  | $\pm 1.00$ | -                   | $\pm 1.00$     | -                   | $\pm 2.00$     |
| $P$        | 1.50  | 2.00           | 1.50               | 2.00       | 3.00                | 4.00           | 3.00                | 4.00           |
| $Q$        | 0.75  |                |                    |            | 1.50                |                |                     |                |
| $T$        | -12.5% $T$ ；对于设计文件规定 $T$ 为最小壁厚的急弯弯管， $T$ 的负偏差为零。<br>-12.5% $T$ ; If $T$ is the min. one, the minus tolerance shall be zero. |                |                    |            |                     |                |                     |                |

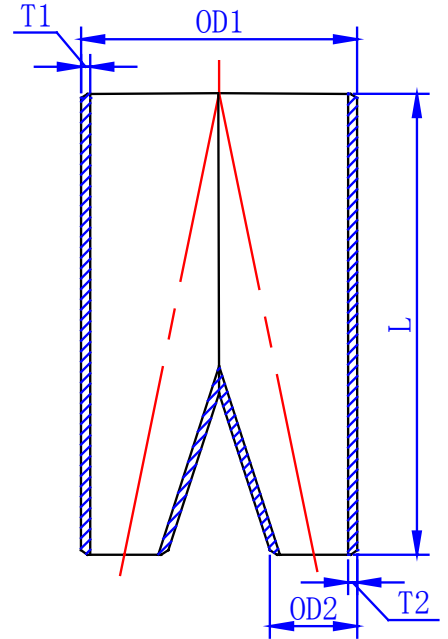
注释：

1) 项目  $U$ 、 $P$ 、 $Q$  代表的内容见\*\*页对焊管件的公差图示。

1) As for what the items  $U$ 、 $P$ 、 $Q$  mean, please refer the sketch of tolerance for BW fittings in the page of \*\*.



1 型  
Type 1



2 型  
Type 2

**钢板制裤形三通 WYE MADE UP OF STEEL PLATES**

| 项目<br>Item                    | 内容<br>Content  |
|-------------------------------|--|
| 成形工艺<br>Forming Process       | 采用钢板下料、卷制和焊接的成形工艺制造<br>Using the processes of cutting steel plate、rolling and welding.   |
| 材料<br>Material                | 碳素钢、合金钢、不锈钢<br>Carbon steel、Alloy steel、Stainless steel  |
| 结构长度 $L$<br>Structure length  | 按设计文件规定；或制造商与采购方协商确定<br>According to the specification of design documentation or the agreement between manufacture and purchaser. |
| 外径 $OD$<br>Outside Diameter   | 按设计文件规定<br>According to the specification of design documentation.   |
| 夹角 $\theta$<br>Included Angle | 按设计文件规定<br>According to the specification of design documentation.   |
| 壁厚 $T$<br>Thickness           | 按设计文件规定<br>According to the specification of design documentation.   |
| 公差<br>Tolerance               | 按对焊管件公差执行；或按设计文件规定<br>According to the tolerance of BW fittings or the specification of design documentation.                      |
| 端部坡口<br>Bevel at ends         | 按对焊管件端部坡口型式；或按设计文件规定<br>According to the bevel ends of BW fittings or specification of design documentation.                       |

注释 Note:

1) 除图示形状外，还可按采购文件规定的形状制造。

1) Besides the above figures, others can also be manufactured per the purchase specification.

2) 确定产品形状和尺寸的通常作法如下：

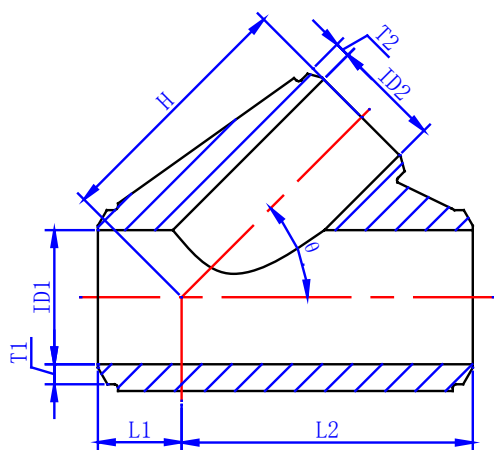
a) 由采购方提供制造图纸，制造商按提供的图纸制造。

b) 由采购方提出需要的形状、外径，壁厚和夹角等技术要求，由制造商提供制造图纸，经采购方批准后制造。

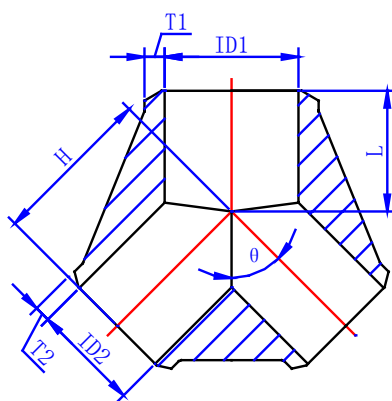
2) Generally, the figures and the sizes will be specified per the following:

a) The purchaser provides the drawings and the manufacturer will fabricate them accordingly.

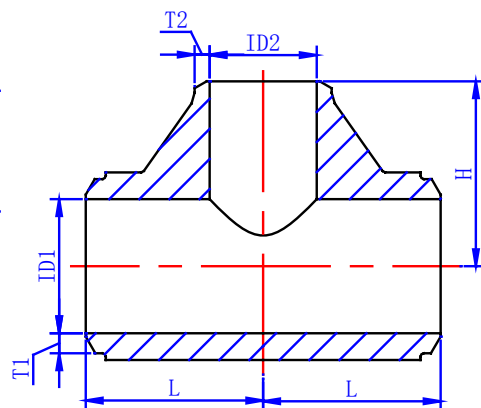
b) Per the provided specifications by the purchasers such as figures, outside diameters, wall thicknesses, angels and etc, the manufacturer provides the drawings for purchaser's review, then manufacture after approval.



锻制 45° 三通  
Forged Lateral 45° Tee



锻制裤型三通  
Forged WYE



锻制 T 型三通  
Forged Tee

大直径锻制三通 FORGED LARGE SIZE TEES

| 项目<br>Item                  | 内容<br>Content   |
|-----------------------------|---|
| 标准<br>Standards             | JB 4726~4728 压力容器用钢锻件<br>JB 4726~4728 Steel forgings for pressure vessels<br>DL 473 大直径三通锻件技术条件<br>DL 473 Standard specification for large size tees.<br>ASTM A105 管道元件用碳钢锻件<br>ASTM A105 Standard Specification for Carbon Steel Forgings for Piping Applications<br>ASTM A182 高温用锻制或轧制合金钢和不锈钢管法兰、锻制管件、阀门和零件<br>ASTM A182 Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service<br>ASTM A336 高温承压件用合金钢锻件<br>ASTM A336 Standard Specification for Alloy Steel Forgings for Pressure and High-Temperature Parts<br>ASTM A965 高温承压件用奥氏体钢锻件<br>ASTM A965 Standard Specification for Austenitic Steel Forgings for Pressure and High Temperature Parts |
| 制造工艺<br>Fabrication Process | 采用锻件镗孔、热处理、超声波检测和精加工成形的工艺制造<br>Using the processes of forging boring, heat treatment, ultrasonic examination and finishing.   |
| 材料<br>Material              | 碳素钢、合金钢、不锈钢<br>Carbon steel, Alloy steel, Stainless steel   |
| 尺寸<br>Size                  | 按设计文件规定；或制造商与采购方协商确定<br>Per the specification of design documentation or the agreement between manufacturer and purchaser.  |
| 公差<br>Tolerance             | 按对焊管件公差执行；或按设计文件规定<br>Per the tolerance of BW fittings or the specification of design documentation.  |
| 端部坡口<br>Bevelends           | 按对焊管件端部坡口型式；或按设计文件规定<br>Per the bevel ends of BW fittings or specification of design documentation.   |

注释: Note:

1) 除图示形状外，还可按采购文件规定的形状制造。

1) Besides the above figures, others can also be manufactured per the purchase specification.

2) 确定产品形状和尺寸的通常作法如下:

a) 由采购方提供制造图纸，制造商按提供的图纸制造。

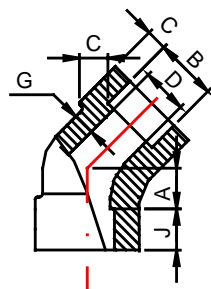
b) 由采购方提出需要的形状、内径，壁厚和夹角等技术要求，由制造商提供制造图纸，经采购方批准后制造。

2) Generally, the figures and the sizes will be specified per the following:

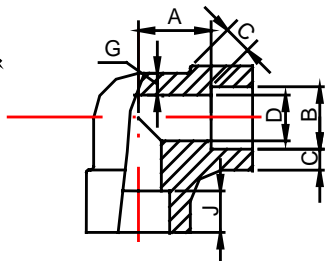
a) The purchaser provides the drawings and the manufacturer will fabricate them accordingly.

b) Per the provided specifications by the purchasers such as figures, inside diameters, wall thicknesses, angels and etc, the manufacturer provides the drawings for purchaser's review, then manufacture after approval.

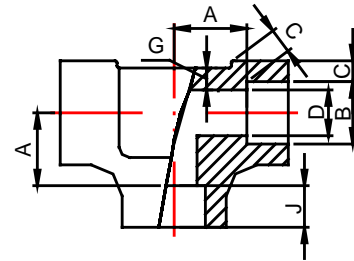




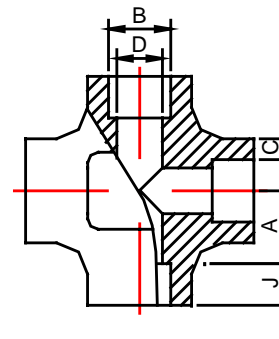
承插焊 45° 弯头  
SW 45° Elbow



承插焊 90° 弯头  
SW 90° Elbow



承插焊三通  
SW Tee



承插焊四通  
SW Cross

GB/T 14383、ASME B16.11

| 公称尺寸<br>Nominal Size |       | 承插孔径<br>Socket<br>Bore Dia. | 流通孔径<br>Bore Dia. of Fittings |      |      | 承插孔壁厚<br>Socket Wall Thickness |      |       |       |       |       | 本体壁厚<br>Body Wall |      |       | 承插孔深度<br>Depth of<br>Socket | 中心至承插孔底<br>Center to Bottom of Socket |      |      |           |      |      |
|----------------------|-------|-----------------------------|-------------------------------|------|------|--------------------------------|------|-------|-------|-------|-------|-------------------|------|-------|-----------------------------|---------------------------------------|------|------|-----------|------|------|
| DN                   | NPS   | B                           | D                             |      |      | G                              |      |       |       |       |       | G <sub>min</sub>  |      |       | J <sub>min</sub>            | A                                     |      |      |           |      |      |
|                      |       |                             | 3000                          | 6000 | 9000 | 3000                           |      | 6000  |       | 9000  |       | 3000              | 6000 | 9000  |                             | 90° Elbow, Tee, Cross                 |      |      | 45° Elbow |      |      |
|                      |       |                             |                               |      |      | ave                            | min  | ave   | min   | ave   | min   |                   |      |       |                             | 3000                                  | 6000 | 9000 | 3000      | 6000 | 9000 |
| 6                    | 1/8   | 10.9                        | 6.1                           | 3.2  | -    | 3.18                           | 3.18 | 3.96  | 3.43  | -     | -     | 2.41              | 3.15 | -     | 9.5                         | 11.0                                  | 11.0 | -    | 8.0       | 8.0  | -    |
| 8                    | 1/4   | 14.3                        | 8.5                           | 5.6  | -    | 3.78                           | 3.30 | 4.60  | 4.01  | -     | -     | 3.02              | 3.68 | -     | 9.5                         | 11.0                                  | 13.5 | -    | 8.0       | 8.0  | -    |
| 10                   | 3/8   | 17.7                        | 11.8                          | 8.4  | -    | 4.01                           | 3.50 | 5.03  | 4.37  | -     | -     | 3.20              | 4.01 | -     | 9.5                         | 13.5                                  | 15.5 | -    | 8.0       | 11.0 | -    |
| 15                   | 1/2   | 21.9                        | 15.0                          | 11.0 | 5.6  | 4.67                           | 4.09 | 5.97  | 5.18  | 9.53  | 8.18  | 3.73              | 4.78 | 7.47  | 9.5                         | 15.5                                  | 19.0 | 25.5 | 11.0      | 12.5 | 15.5 |
| 20                   | 3/4   | 27.3                        | 20.2                          | 14.8 | 10.3 | 4.90                           | 4.27 | 6.96  | 6.04  | 9.78  | 8.56  | 3.91              | 5.56 | 7.82  | 12.5                        | 19.0                                  | 22.5 | 28.5 | 13.0      | 14.0 | 19.0 |
| 25                   | 1     | 34.0                        | 25.9                          | 19.9 | 14.4 | 5.69                           | 4.98 | 7.92  | 6.93  | 11.38 | 9.96  | 4.55              | 6.35 | 9.09  | 12.5                        | 22.5                                  | 27.0 | 32.0 | 14.0      | 17.5 | 20.5 |
| 32                   | 1 1/4 | 42.8                        | 34.3                          | 28.7 | 22.0 | 6.07                           | 5.28 | 7.92  | 6.93  | 12.14 | 10.62 | 4.85              | 6.35 | 9.70  | 12.5                        | 27.0                                  | 32.0 | 35.0 | 17.5      | 20.5 | 22.5 |
| 40                   | 1 1/2 | 48.9                        | 40.1                          | 33.2 | 27.2 | 6.35                           | 5.54 | 8.92  | 7.80- | 12.70 | 11.12 | 5.08              | 7.14 | 10.15 | 12.5                        | 32.0                                  | 38.0 | 38.0 | 20.5      | 25.5 | 25.5 |
| 50                   | 2     | 61.2                        | 51.7                          | 42.1 | 37.4 | 6.93                           | 6.04 | 10.92 | 9.50  | 13.84 | 12.12 | 5.54              | 8.74 | 11.07 | 16.0                        | 38.0                                  | 41.0 | 54.0 | 25.5      | 28.5 | 28.5 |
| 65                   | 2 1/2 | 73.9                        | 61.2                          | -    | -    | 8.76                           | 7.62 | -     | -     | -     | -     | 7.01              | -    | -     | 16.0                        | 41.0                                  | -    | -    | 28.5      | -    | -    |
| 80                   | 3     | 89.9                        | 76.4                          | -    | -    | 9.52                           | 8.30 | -     | -     | -     | -     | 7.62              | -    | -     | 16.0                        | 57.0                                  | -    | -    | 32.0      | -    | -    |
| 100                  | 4     | 115.5                       | 100.7                         | -    | -    | 10.69                          | 9.35 | -     | -     | -     | -     | 8.56              | -    | -     | 19.0                        | 66.5                                  | -    | -    | 41.0      | -    | -    |

注释 Note:

1) 沿承插孔周边的平均壁厚不应小于平均值，局部允许达到最小值。

1) The even thickness around the socket hole shall not be less than the average value, the thickness at partial areas can be the min. one.

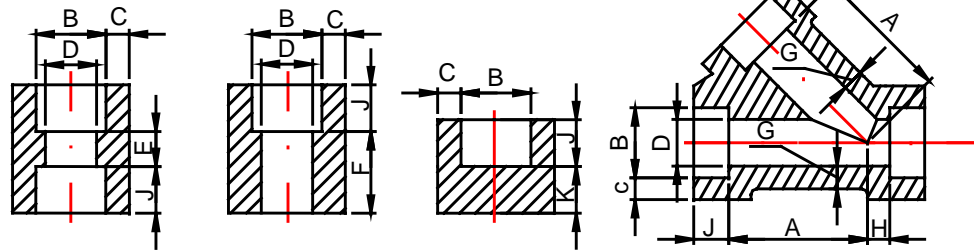
2) 考虑到管子外径公差的原因，有的承插孔径比 B16.11 规定略大。

2) Considering the tolerance of outside diameter of pipe, the diameters of some socket holes can be a little larger than the ones specified in B16.11.

3) 当选用的接管尺寸与样本的接管外径与壁厚表规定不一致时，请在采购文件中说明接管尺寸。

3) When the sizes of the connecting pipes aren't conformed to the ones specified in this catalog, the sizes of the connecting pipes shall be provided in the purchase specification.





承插焊双承口管箍  
SW Coupling

承插焊单承口管箍  
SW Half-Coupling

承插焊管帽  
SW Cap

承插焊 45° 三通  
SW 45° Lateral

GB/T 14383、ASME B16.11

| 公称尺寸<br>Nominal Size |       | 承插<br>孔径<br>Socket<br>Bore<br>Dia. | 流通孔径<br>Bore Dia. of<br>Fittings |      |      | 承插孔壁厚<br>Socket Wall Thickness |      |       |      |       |       | 本体壁厚<br>Body Wall |      |       | 承插孔<br>深度<br>Depth<br>of<br>Socket | 长度<br>Laying<br>Lengths | 长度<br>Laying<br>Lengths | 顶部厚度<br>End Wall<br>Thickness |      |      | 中心至承插孔底<br>Center to<br>Bottom of Socket |      |      |      |
|----------------------|-------|------------------------------------|----------------------------------|------|------|--------------------------------|------|-------|------|-------|-------|-------------------|------|-------|------------------------------------|-------------------------|-------------------------|-------------------------------|------|------|--|------|------|------|
| DN                   | NPS   | B                                  | D                                |      |      | C                              |      |       |      |       |       | G <sub>min</sub>  |      |       | J <sub>min</sub>                   | E                       | F                       | K <sub>min</sub>              |      |      | A  |      | H    |      |
|                      |       |                                    | 3000                             | 6000 | 9000 | 3000                           |      | 6000  |      | 9000  |       | 3000              | 6000 | 9000  |                                    |                         |                         | 3000                          | 6000 | 9000 | 3000                                     | 6000 | 3000 | 6000 |
|                      |       |                                    | ave                              | min  |      | ave                            | min  | ave   | min  | ave   | min   | 3000              | 6000 | 9000  |                                    |                         |                         | 3000                          | 6000 | 9000 | 3000                                     | 6000 | 3000 | 6000 |
| 6                    | 1/8   | 10.9                               | 6.1                              | 3.2  | -    | 3.18                           | 3.18 | 3.96  | 3.43 | -     | -     | 2.41              | 3.15 | -     | 9.5                                | 6.5                     | 16.0                    | 4.8                           | 6.4  | -    | -  | -    | -    | -    |
| 8                    | 1/4   | 14.3                               | 8.5                              | 5.6  | -    | 3.78                           | 3.30 | 4.60  | 4.01 | -     | -     | 3.02              | 3.68 | -     | 9.5                                | 6.5                     | 16.0                    | 4.8                           | 6.4  | -    | -  | -    | -    | -    |
| 10                   | 3/8   | 17.7                               | 11.8                             | 8.4  | -    | 4.01                           | 3.50 | 5.03  | 4.37 | -     | -     | 3.20              | 4.01 | -     | 9.5                                | 6.5                     | 17.5                    | 4.8                           | 6.4  | -    | 37                                       | -    | 9.5  | -    |
| 15                   | 1/2   | 21.9                               | 15.0                             | 11.0 | 5.6  | 4.67                           | 4.09 | 5.97  | 5.18 | 9.53  | 8.18  | 3.73              | 4.78 | 7.47  | 9.5                                | 9.5                     | 22.5                    | 6.4                           | 7.9  | 11.2 | 41                                       | 51   | 9.5  | 11   |
| 20                   | 3/4   | 27.3                               | 20.2                             | 14.8 | 10.3 | 4.90                           | 4.27 | 6.96  | 6.04 | 9.78  | 8.56  | 3.91              | 5.56 | 7.82  | 12.5                               | 9.5                     | 24.0                    | 6.4                           | 7.9  | 12.7 | 51                                       | 60   | 11   | 13   |
| 25                   | 1     | 34.0                               | 25.9                             | 19.9 | 14.4 | 5.69                           | 4.98 | 7.92  | 6.93 | 11.38 | 9.96  | 4.55              | 6.35 | 9.09  | 12.5                               | 12.5                    | 28.5                    | 9.6                           | 11.2 | 14.2 | 60                                       | 71   | 13   | 16   |
| 32                   | 1 1/4 | 42.8                               | 34.3                             | 28.7 | 22.0 | 6.07                           | 5.28 | 7.92  | 6.93 | 12.14 | 10.62 | 4.85              | 6.35 | 9.70  | 12.5                               | 12.5                    | 30.0                    | 9.6                           | 11.2 | 14.2 | 71                                       | 81   | 16   | 17   |
| 40                   | 1 1/2 | 48.9                               | 40.1                             | 33.2 | 27.2 | 6.35                           | 5.54 | 8.92  | 7.80 | 12.70 | 11.12 | 5.08              | 7.14 | 10.15 | 12.5                               | 12.5                    | 32.0                    | 11.2                          | 12.7 | 15.7 | 81                                       | 98   | 17   | 21   |
| 50                   | 2     | 61.2                               | 51.7                             | 42.1 | 37.4 | 6.93                           | 6.04 | 10.92 | 9.50 | 13.84 | 12.12 | 5.54              | 8.74 | 11.07 | 16.0                               | 19.0                    | 41.0                    | 12.7                          | 15.7 | 19.0 | 98                                       | 151  | 21   | 30   |
| 65                   | 2 1/2 | 73.9                               | 61.2                             | -    | -    | 8.76                           | 7.62 | -     | -    | -     | -     | 7.01              | ---- | -     | 16.0                               | 19.0                    | 43.0                    | 15.7                          | 19.0 | -    | 151                                      | -    | 30   | -    |
| 80                   | 3     | 89.9                               | 76.4                             | -    | -    | 9.52                           | 8.30 | -     | -    | -     | -     | 7.62              | ---- | -     | 16.0                               | 19.0                    | 44.5                    | 19.0                          | 22.4 | -    | 184                                      | -    | 57   | -    |
| 100                  | 4     | 115.5                              | 100.7                            | -    | -    | 10.69                          | 9.35 | -     | -    | -     | -     | 8.56              | ---- | -     | 19.0                               | 19.0                    | 48.0                    | 22.4                          | 28.4 | -    | 201                                      | -    | 66   | -    |

注释 (续) Note (continued):

3) 当产品为异径时, 其外形尺寸与等径管件相同, 异径端的 B、J、D 按异径端的尺寸加工。

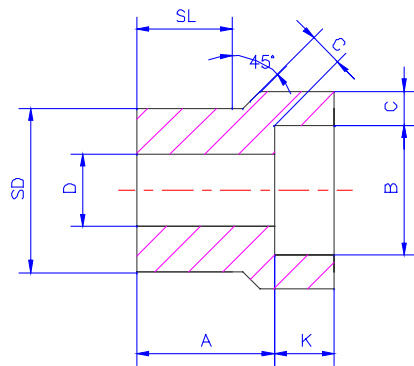
3) When the fittings are reducing, the structure sizes shall be same as the ones of the straight fittings and B, J, D shall be machined per the according reducing ends.

4) 双承口管箍也可加工成同心异径或偏心异径型式。

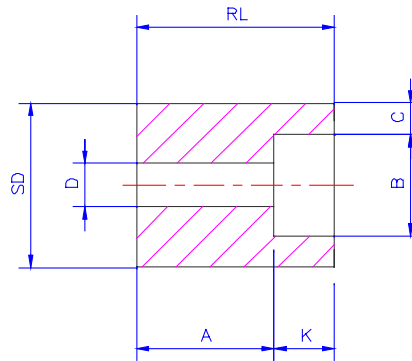
4) Couplings can be the concentric or eccentric type.

5) 管件也可按要求加工成承插焊和螺纹混合的连接型式。

5) Fitting can also be manufactured as the mixed connectings of SW and THRD.



1 型  
Type 1



2 型  
Type 2

MSS SP-79 承插焊异径插入件  
MSS SP-79 SW REDUCER INSERTS

| 公称尺寸<br>Nominal Size             |  | 型式<br>Type |      | 承插孔径<br>Socket<br>Bore Dia. | 承插孔深度<br>Depth of<br>Socket | 主体直径<br>Shank<br>Dia. | 结构长度<br>Laying Length |      | 流通孔径<br>Bore |      | 壁厚<br>Wall       |      | 长度<br>Length |      |                   |      |
|----------------------------------|--|------------|------|-----------------------------|-----------------------------|-----------------------|-----------------------|------|--------------|------|------------------|------|--------------|------|-------------------|------|
| DN                               | NPS  | 3000       | 6000 | B                           | K <sub>min</sub>            | SD                    | A                     |      | D            |      | C <sub>min</sub> |      | SL           |      | RL <sub>min</sub> |      |
|                                  |  |            |      |                             |                             |                       | 3000                  | 6000 | 3000         | 6000 | 3000             | 6000 | 3000         | 6000 | 3000              | 6000 |
| 10×8                             | <sup>3</sup> / <sub>8</sub> × <sup>1</sup> / <sub>4</sub>  | 1          | 1    | 14.3                        | 9.5                         | 17.1                  | 19.1                  | 21.3 | 9.2          | 6.4  | 3.8              | 4.6  | 14.2         | 15.7 | -                 | -    |
| 15×10<br>×8                      | <sup>1</sup> / <sub>2</sub> × <sup>3</sup> / <sub>8</sub><br>× <sup>1</sup> / <sub>4</sub>   | 1          | 1    | 17.7                        | 9.5                         | 21.3                  | 20.6                  | 23.1 | 12.5         | 9.1  | 4.0              | 5.0  | 15.7         | 15.7 | -                 | -    |
|                                  |  | 1          | 1    | 14.3                        | 9.5                         |                       | 20.6                  | 20.6 | 9.2          | 6.4  | 3.8              | 4.6  | 15.7         | 15.7 | -                 | -    |
| 20×15<br>×10<br>×8               | <sup>3</sup> / <sub>4</sub> × <sup>1</sup> / <sub>2</sub><br>× <sup>3</sup> / <sub>8</sub><br>× <sup>1</sup> / <sub>4</sub>  | 1          | 1    | 21.9                        | 9.5                         | 26.7                  | 22.4                  | 25.4 | 15.8         | 11.8 | 4.7              | 6.0  | 17.5         | 19.1 | 27.0              | -    |
|                                  |  | 2          | 1    | 17.7                        | 9.5                         |                       | 15.7                  | 22.4 | 12.5         | 9.1  | 4.0              | 5.0  | -            | 19.1 | 27.0              | 32.0 |
|                                  |  | 2          | 2    | 14.3                        | 9.5                         |                       | 17.5                  | 22.4 | 9.2          | 6.4  | 3.8              | 4.6  | -            | -    | -                 | -    |
| 25×20<br>×15<br>×10<br>×8        | 1× <sup>3</sup> / <sub>4</sub><br>× <sup>1</sup> / <sub>2</sub><br>× <sup>3</sup> / <sub>8</sub><br>× <sup>1</sup> / <sub>4</sub>                                    | 1          | 1    | 27.3                        | 12.5                        | 33.4                  | 23.9                  | 28.5 | 20.9         | 15.5 | 4.9              | 7.0  | 19.1         | 20.6 | -                 | -    |
|                                  |  | 2          | 1    | 21.9                        | 9.5                         |                       | 15.7                  | 28.5 | 15.8         | 11.8 | 4.7              | 6.0  | -            | 20.6 | 28.5              | -    |
|                                  |  | 2          | 2    | 17.7                        | 9.5                         |                       | 17.5                  | 22.4 | 12.5         | 9.1  | 4.0              | 5.0  | -            | -    | 28.5              | 33.3 |
|                                  |  | 2          | 2    | 14.3                        | 9.5                         |                       | 19.1                  | 23.9 | 9.2          | 6.4  | 3.8              | 4.6  | -            | -    | 28.5              | 33.3 |
| 32×25<br>×20<br>×15<br>×10<br>×8 | 1 <sup>1</sup> / <sub>4</sub> ×1<br>× <sup>3</sup> / <sub>4</sub><br>× <sup>1</sup> / <sub>2</sub><br>× <sup>3</sup> / <sub>8</sub><br>× <sup>1</sup> / <sub>4</sub> | 1          | 1    | 34.0                        | 12.5                        | 42.2                  | 25.4                  | 30.2 | 26.6         | 20.7 | 5.7              | 7.9  | 20.6         | 22.4 | -                 | -    |
|                                  |  | 2          | 2    | 27.3                        | 12.5                        |                       | 17.5                  | 20.6 | 20.9         | 15.5 | 4.9              | 7.0  | -            | -    | 31.8              | 34.8 |
|                                  |  | 2          | 2    | 21.9                        | 9.5                         |                       | 19.1                  | 22.4 | 15.8         | 11.8 | 4.7              | 6.0  | -            | -    | 31.8              | 34.8 |
|                                  |  | 2          | 2    | 17.7                        | 9.5                         |                       | 20.6                  | 23.9 | 12.5         | 9.1  | 4.0              | 5.0  | -            | -    | 31.8              | 34.8 |
| 2                                | 2  | 14.3       | 9.5  | 22.4                        | 25.4                        | 9.2                   | 6.4                   | 3.8  | 4.6          | -    | -                | 31.8 | 34.8         |      |                   |      |

**MSS SP-79 承插焊异径插入件**  
**MSS SP-79 SW REDUCER INSERTS**

| 公称尺寸<br>Nominal Size |       | 型式<br>Type |      | 承插孔径<br>Socket<br>Bore Dia. | 承插孔深度<br>Depth of<br>Socket | 主体直径<br>Shank<br>Dia. | 结构长度<br>Laying Length |      | 流通孔径<br>Bore |      | 壁厚<br>Wall       |      | 长度<br>Length |      |                   |      |
|----------------------|-------|------------|------|-----------------------------|-----------------------------|-----------------------|-----------------------|------|--------------|------|------------------|------|--------------|------|-------------------|------|
| DN                   | NPS   | 3000       | 6000 | B                           | K <sub>min</sub>            | SD                    | A                     |      | D            |      | C <sub>min</sub> |      | SL           |      | RL <sub>min</sub> |      |
|                      |       |            |      |                             |                             |                       | 3000                  | 6000 | 3000         | 6000 | 3000             | 6000 | 3000         | 6000 | 3000              | 6000 |
| 40×32                | 1½×1¼ | 1          | 1    | 42.8                        | 12.5                        | 48.3                  | 28.5                  | 35.1 | 35.1         | 29.5 | 6.1              | 7.9  | 22.4         | 25.4 | -                 | -    |
| ×25                  | ×1    | 2          | 1    | 34.0                        | 12.5                        |                       | 17.5                  | 29.2 | 26.6         | 20.7 | 5.7              | 7.9  | -            | 25.4 | 33.3              | -    |
| ×20                  | ×¾    | 2          | 2    | 27.3                        | 12.5                        |                       | 19.1                  | 25.4 | 20.9         | 15.5 | 4.9              | 7.0  | -            | -    | 33.3              | 39.6 |
| ×15                  | ×½    | 2          | 2    | 22.0                        | 9.5                         |                       | 20.6                  | 26.9 | 15.8         | 11.8 | 4.7              | 6.0  | -            | -    | 33.3              | 39.6 |
| ×10                  | ×⅜    | 2          | 2    | 17.7                        | 9.5                         |                       | 22.4                  | 28.5 | 12.5         | 9.1  | 4.0              | 5.0  | -            | -    | 33.3              | 39.6 |
| 50×40                | 2×1½  | 1          | 1    | 48.9                        | 12.5                        | 60.3                  | 31.8                  | 38.9 | 40.9         | 34.0 | 6.4              | 8.9  | 25.4         | 28.7 | -                 | -    |
| ×32                  | ×1¼   | 2          | 2    | 42.8                        | 12.5                        |                       | 20.6                  | 23.9 | 35.1         | 29.5 | 6.1              | 7.9  | -            | -    | 38.1              | 41.2 |
| ×25                  | ×1    | 2          | 2    | 34.0                        | 12.5                        |                       | 22.4                  | 25.4 | 26.6         | 20.7 | 5.7              | 7.9  | -            | -    | 38.1              | 41.2 |
| ×20                  | ×¾    | 2          | 2    | 27.3                        | 12.5                        |                       | 23.9                  | 26.9 | 20.9         | 15.5 | 4.9              | 7.0  | -            | -    | 38.1              | 41.2 |
| ×15                  | ×½    | 2          | 2    | 21.9                        | 9.5                         |                       | 25.4                  | 28.5 | 15.8         | 11.8 | 4.7              | 6.0  | -            | -    | 38.1              | 41.2 |
| 65×50                | 2½×2  | 1          | 1    | 61.4                        | 16.0                        | 73.0                  | 46.0                  | 42.7 | 52.5         | 42.9 | 6.9              | 10.9 | 38.1         | 31.8 | -                 | -    |
| ×40                  | ×1½   | 2          | 2    | 48.9                        | 12.5                        |                       | 35.1                  | 35.1 | 40.9         | 34.0 | 6.4              | 8.9  | -            | -    | 53.9              | 53.9 |
| ×32                  | ×1¼   | 2          | 2    | 42.8                        | 12.5                        |                       | 36.6                  | 36.6 | 35.1         | 29.5 | 6.1              | 7.9  | -            | -    | 53.9              | 53.9 |
| ×25                  | ×1    | 2          | 2    | 34.0                        | 12.5                        |                       | 38.1                  | 38.1 | 26.6         | 20.7 | 5.7              | 7.9  | -            | -    | 53.9              | 53.9 |
| ×20                  | ×¾    | 2          | 2    | 27.3                        | 12.5                        |                       | 39.6                  | 38.1 | 20.9         | 15.5 | 4.9              | 7.0  | -            | -    | 53.9              | 53.9 |
| 80×65                | 3×2½  | 1          | 1    | 74.1                        | 16.0                        | 88.9                  | 38.1                  | 57.2 | 62.7         | 54.0 | 8.8              | 11.9 | 31.8         | 44.5 | -                 | -    |
| ×50                  | ×2    | 2          | 2    | 61.4                        | 16.0                        |                       | 25.4                  | 31.8 | 52.5         | 42.9 | 6.9              | 10.9 | -            | -    | 47.5              | 53.9 |
| ×40                  | ×1½   | 2          | 2    | 48.9                        | 12.5                        |                       | 28.5                  | 31.8 | 40.9         | 34.0 | 6.4              | 8.9  | -            | -    | 47.5              | 53.9 |
| ×32                  | ×1¼   | 2          | 2    | 42.8                        | 12.5                        |                       | 30.2                  | 31.8 | 35.1         | 29.5 | 6.1              | 7.9  | -            | -    | 47.5              | 53.9 |
| ×25                  | ×1    | 2          | 2    | 34.0                        | 12.5                        |                       | 31.8                  | 31.8 | 26.6         | 20.7 | 5.7              | 7.9  | -            | -    | 47.5              | 53.9 |
| 100×80               | 4×3   | 2          | 1    | 90.0                        | 16.0                        | 114.3                 | 33.3                  | 54.0 | 77.9         | 66.6 | 9.5              | 13.8 | -            | -    | 60.5              | -    |
| ×65                  | ×2½   | 2          | 2    | 74.1                        | 16.0                        |                       | 38.1                  | 54.0 | 62.7         | 54.0 | 8.8              | 12.5 | -            | -    | 60.5              | -    |
| ×50                  | ×2    | 2          | 2    | 61.4                        | 16.0                        |                       | 38.1                  | 54.0 | 52.5         | 42.9 | 6.9              | 11.0 | -            | -    | 60.5              | -    |
| ×40                  | ×1½   | 2          | 2    | 48.9                        | 12.5                        |                       | 41.2                  | 57.0 | 40.9         | 34.0 | 6.4              | 8.9  | -            | -    | 60.5              | -    |
| ×32                  | ×1¼   | 2          | 2    | 42.8                        | 12.5                        |                       | 42.9                  | 57.0 | 35.1         | 29.5 | 6.1              | 7.9  | -            | -    | 60.5              | -    |

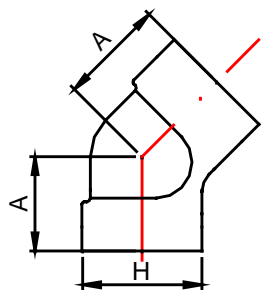
注释 Note:

1) 制造商选择可以用型式 1 代替型式 2。

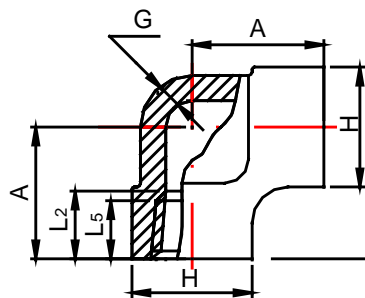
1) At the option of the manufacturer, type 2 reducers may be furnished instead of type 1.

2) 公称尺寸 的表示方式为 SD×B。

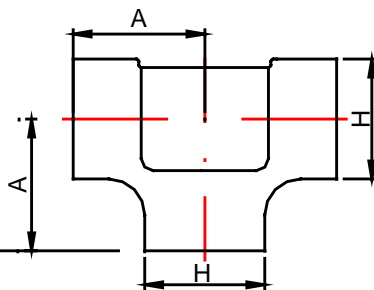
2) The nominal size is showed as SD×B.



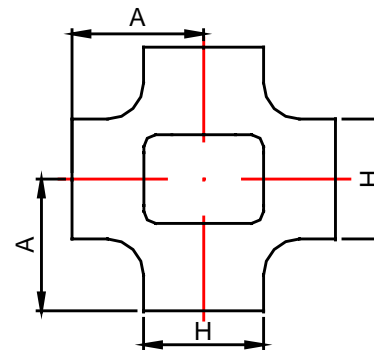
螺纹 45° 弯头  
Threaded 45° Elbow



螺纹 90° 弯头  
Threaded 90° Elbow



螺纹三通  
Threaded Tee



螺纹四通  
Threaded Cross

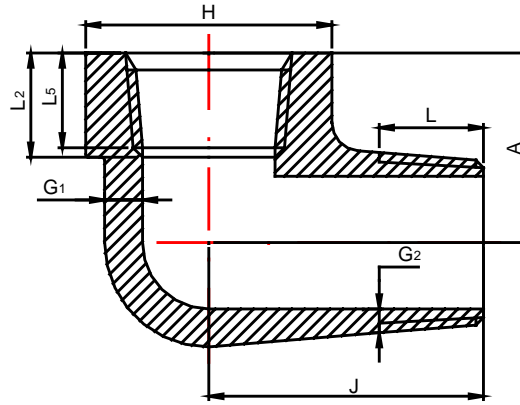
GB/T 14383、ASME B16.11

| 公称尺寸<br>Nominal Size |       | 中心至端面<br>Center-to-End    |      |      |            |      |      | 端部外径<br>Outside Diameter of Band |      |      | 本体壁厚<br>Wall Thickness  |       |       | 螺纹长度<br>Length of Thread  |                           |
|----------------------|-------|---------------------------|------|------|------------|------|------|----------------------------------|------|------|-------------------------|-------|-------|---------------------------|---------------------------|
| DN                   | NPS   | <i>A</i>                  |      |      |            |      |      | <i>H</i>                         |      |      | <i>G</i> <sub>min</sub> |       |       | <i>L</i> <sub>5 min</sub> | <i>L</i> <sub>2 min</sub> |
|                      |       | 90° Elbows, Tees, Crosses |      |      | 45° Elbows |      |      |                                  |      |      |                         |       |       |                           |                           |
|                      |       | 2000                      | 3000 | 6000 | 2000       | 3000 | 6000 | 2000                             | 3000 | 6000 | 2000                    | 3000  | 6000  |                           |                           |
| 6                    | 1/8   | 21                        | 21   | 25   | 17         | 17   | 19   | 22                               | 22   | 25   | 3.18                    | 3.18  | 6.35  | 6.4                       | 6.7                       |
| 8                    | 1/4   | 21                        | 25   | 28   | 17         | 19   | 22   | 22                               | 25   | 33   | 3.18                    | 3.30  | 6.60  | 8.1                       | 10.2                      |
| 10                   | 3/8   | 25                        | 28   | 33   | 19         | 22   | 25   | 25                               | 33   | 38   | 3.18                    | 3.51  | 6.98  | 9.1                       | 10.4                      |
| 15                   | 1/2   | 28                        | 33   | 38   | 22         | 25   | 28   | 33                               | 38   | 46   | 3.18                    | 4.09  | 8.15  | 10.9                      | 13.6                      |
| 20                   | 3/4   | 33                        | 38   | 44   | 25         | 28   | 33   | 38                               | 46   | 56   | 3.18                    | 4.32  | 8.53  | 12.7                      | 13.9                      |
| 25                   | 1     | 38                        | 44   | 51   | 28         | 33   | 35   | 46                               | 56   | 62   | 3.68                    | 4.98  | 9.93  | 14.7                      | 17.3                      |
| 32                   | 1 1/4 | 44                        | 51   | 60   | 33         | 35   | 43   | 56                               | 62   | 75   | 3.89                    | 5.28  | 10.59 | 17.0                      | 18.0                      |
| 40                   | 1 1/2 | 51                        | 60   | 64   | 35         | 43   | 44   | 62                               | 75   | 84   | 4.01                    | 5.56  | 11.07 | 17.8                      | 18.4                      |
| 50                   | 2     | 60                        | 64   | 83   | 43         | 44   | 52   | 75                               | 84   | 102  | 4.27                    | 7.14  | 12.09 | 19.0                      | 19.2                      |
| 65                   | 2 1/2 | 76                        | 83   | 95   | 52         | 52   | 64   | 92                               | 102  | 121  | 5.61                    | 7.65  | 15.29 | 23.6                      | 28.9                      |
| 80                   | 3     | 86                        | 95   | 106  | 64         | 64   | 79   | 109                              | 121  | 146  | 5.99                    | 8.84  | 16.64 | 25.9                      | 30.5                      |
| 100                  | 4     | 106                       | 114  | 114  | 79         | 79   | 79   | 146                              | 152  | 152  | 6.55                    | 11.18 | 18.67 | 27.7                      | 33.0                      |

注释 Note:

1) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



内外螺纹 90° 弯头  
Female and Male Threaded 90° Elbow

GB/T 14383、ASME B16.11

| 公称尺寸<br>Nominal Size |       | 中心至内螺纹端面<br>Center to Female End<br>Street Ells |      | 中心至外螺纹端面<br>Center to Male End<br>Street Ells |      | 端部外径<br>Outside Diameter of end |      | 本体壁厚<br>Wall Thickness |       | 本体壁厚<br>Wall Thickness |      | 内螺纹长度<br>Length Internal<br>Thread |                    | 外螺纹长度<br>Length Male<br>Thread |
|----------------------|-------|---|------|---|------|---------------------------------|------|------------------------|-------|------------------------|------|------------------------------------|--------------------|--------------------------------|
| DN                   | NPS   | A   |      | J   |      | H                               |      | G <sub>1 min</sub>     |       | G <sub>2 min</sub>     |      | L <sub>s min</sub>                 | L <sub>2 min</sub> | L <sub>min</sub>               |
|                      |       | 3000  | 6000 | 3000  | 6000 | 3000                            | 6000 | 3000                   | 6000  | 3000                   | 6000 |                                    |                    |                                |
| 6                    | 1/8   | 19  | 22   | 25  | 32   | 19                              | 25   | 3.18                   | 5.08  | 2.74                   | 4.22 | 6.4                                | 6.7                | 10                             |
| 8                    | 1/4   | 22  | 25   | 32  | 38   | 25                              | 32   | 3.30                   | 5.66  | 3.22                   | 5.28 | 8.1                                | 10.2               | 11                             |
| 10                   | 3/8   | 25  | 28   | 38  | 41   | 32                              | 38   | 3.51                   | 6.98  | 3.50                   | 5.59 | 9.1                                | 10.4               | 13                             |
| 15                   | 1/2   | 28  | 35   | 41  | 48   | 38                              | 44   | 4.09                   | 8.15  | 4.16                   | 6.53 | 10.9                               | 13.6               | 14                             |
| 20                   | 3/4   | 35  | 44   | 48  | 57   | 44                              | 51   | 4.32                   | 8.53  | 4.88                   | 6.86 | 12.7                               | 13.9               | 16                             |
| 25                   | 1     | 44  | 51   | 57  | 66   | 51                              | 62   | 4.98                   | 9.93  | 5.56                   | 7.95 | 14.7                               | 17.3               | 19                             |
| 32                   | 1 1/4 | 51  | 54   | 66  | 71   | 62                              | 70   | 5.28                   | 10.59 | 5.56                   | 8.48 | 17.0                               | 18.0               | 21                             |
| 40                   | 1 1/2 | 54  | 64   | 71  | 84   | 70                              | 84   | 5.56                   | 11.07 | 6.25                   | 8.89 | 17.8                               | 18.4               | 21                             |
| 50                   | 2     | 64  | 83   | 84  | 105  | 84                              | 102  | 7.14                   | 12.09 | 7.64                   | 9.70 | 19.0                               | 19.2               | 22                             |

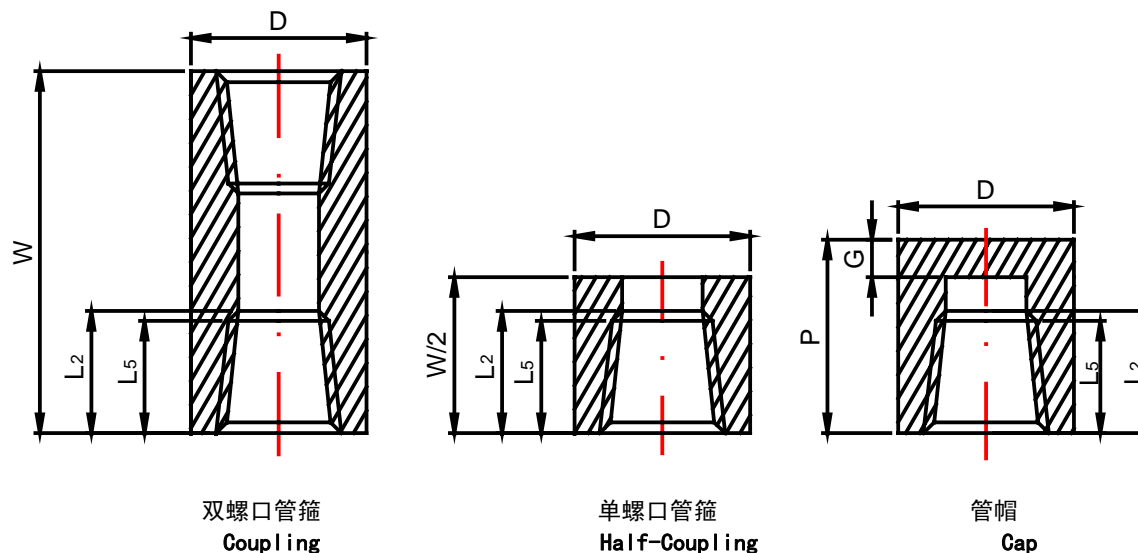
注释 Note:

1) 制造商也可以选择使用\*\*页中螺纹 90° 弯头的 A 和 H 尺寸。

1) At the option of manufacturer, the sizes A and H of threaded 90° elbow in the page of \*\* can be applied.

2) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

2) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



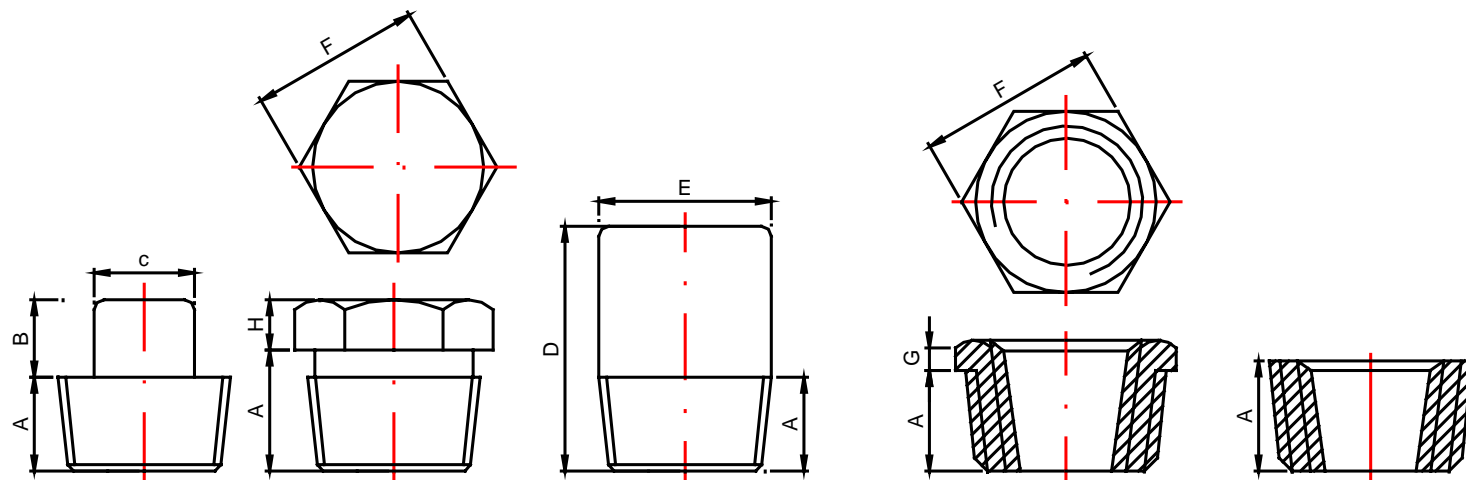
GB/T 14383、ASME B16.11

| 公称尺寸<br>Nominal Size |       | 端面至端面<br>End-to-End | 端面至端面<br>End-to-End |      | 外径<br>Outside Diameter |      | 顶部厚度<br>End Wall        |      | 螺纹长度<br>Length of Thread  |                           |
|----------------------|-------|---------------------|---------------------|------|------------------------|------|-------------------------|------|---------------------------|---------------------------|
| DN                   | NPS   | <i>W</i>            | <i>P</i>            |      | <i>D</i>               |      | <i>G</i> <sub>min</sub> |      | <i>L</i> <sub>s min</sub> | <i>L</i> <sub>2 min</sub> |
|                      |       | 3000 & 6000         | 3000                | 6000 | 3000                   | 6000 | 3000                    | 6000 |                           |                           |
| 6                    | 1/8   | 32                  | 19                  | -    | 16                     | 22   | 4.8                     | -    | 6.4                       | 6.7                       |
| 8                    | 1/4   | 35                  | 25                  | 27   | 19                     | 25   | 4.8                     | 6.4  | 8.1                       | 10.2                      |
| 10                   | 3/8   | 38                  | 25                  | 27   | 22                     | 32   | 4.8                     | 6.4  | 9.1                       | 10.4                      |
| 15                   | 1/2   | 48                  | 32                  | 33   | 28                     | 38   | 6.4                     | 7.9  | 10.9                      | 13.6                      |
| 20                   | 3/4   | 51                  | 37                  | 38   | 35                     | 44   | 6.4                     | 7.9  | 12.7                      | 13.9                      |
| 25                   | 1     | 60                  | 41                  | 43   | 44                     | 57   | 9.7                     | 11.2 | 14.7                      | 17.3                      |
| 32                   | 1 1/4 | 67                  | 44                  | 46   | 57                     | 64   | 9.7                     | 11.2 | 17.0                      | 18.0                      |
| 40                   | 1 1/2 | 79                  | 44                  | 48   | 64                     | 76   | 11.2                    | 12.7 | 17.8                      | 18.4                      |
| 50                   | 2     | 86                  | 48                  | 51   | 76                     | 92   | 12.7                    | 15.7 | 19.0                      | 19.2                      |
| 65                   | 2 1/2 | 92                  | 60                  | 64   | 92                     | 108  | 15.7                    | 19.0 | 23.6                      | 28.9                      |
| 80                   | 3     | 108                 | 65                  | 68   | 108                    | 127  | 19.0                    | 22.4 | 25.9                      | 30.5                      |
| 100                  | 4     | 121                 | 68                  | 75   | 140                    | 159  | 22.4                    | 28.4 | 27.7                      | 33.0                      |

注释 Note:

1) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



方头管塞  
Square Head Plug

六角头管塞  
Hex Head Plug

圆头管塞  
Round Head Plug

六角头内外螺纹接头  
Hex Head Bushing

无头内外螺纹接头  
Flush Bushing

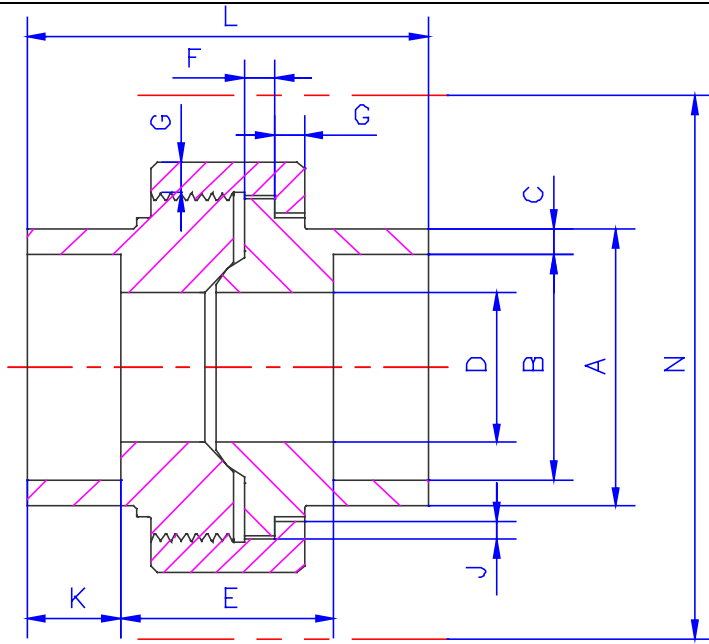
GB/T 14383、ASME B16.11

| 公称尺寸<br>Nominal Size |       | 长度<br>Length | 方头高度<br>Square Height | 方头对边宽度<br>Width Flats | 圆头直径<br>Head Diameter | 总长<br>Length | 六角头厚度<br>Hex Height | 六角头厚度<br>Hex Height | 六角头对边宽度<br>Hex Width Flats |
|----------------------|-------|--------------|-----------------------|-----------------------|-----------------------|--------------|---------------------|---------------------|----------------------------|
| DN                   | NPS   | $A_{min}$    | $B_{min}$             | $C_{min}$             | $E_{nom}$             | $D_{min}$    | $H_{min}$           | $G_{min}$           | $F_{nom}$                  |
| 6                    | 1/8   | 10           | 6                     | 7                     | 10                    | 35           | 6                   | -                   | 11                         |
| 8                    | 1/4   | 11           | 6                     | 10                    | 14                    | 41           | 6                   | 3                   | 16                         |
| 10                   | 3/8   | 13           | 8                     | 11                    | 18                    | 41           | 8                   | 4                   | 18                         |
| 15                   | 1/2   | 14           | 10                    | 14                    | 21                    | 44           | 8                   | 5                   | 22                         |
| 20                   | 3/4   | 16           | 11                    | 16                    | 27                    | 44           | 10                  | 6                   | 27                         |
| 25                   | 1     | 19           | 13                    | 21                    | 33                    | 51           | 10                  | 6                   | 36                         |
| 32                   | 1 1/4 | 21           | 14                    | 24                    | 43                    | 51           | 14                  | 7                   | 46                         |
| 40                   | 1 1/2 | 21           | 16                    | 28                    | 48                    | 51           | 16                  | 8                   | 50                         |
| 50                   | 2     | 22           | 18                    | 32                    | 60                    | 64           | 18                  | 9                   | 65                         |
| 65                   | 2 1/2 | 27           | 19                    | 36                    | 73                    | 70           | 19                  | 10                  | 75                         |
| 80                   | 3     | 28           | 21                    | 41                    | 89                    | 70           | 21                  | 10                  | 90                         |
| 100                  | 4     | 32           | 25                    | 65                    | 114                   | 76           | 25                  | 13                  | 115                        |

注释 Note:

1) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



3000 级别承插焊活接头  
Class 3000 Unions of SW Ends

MSS SP-83

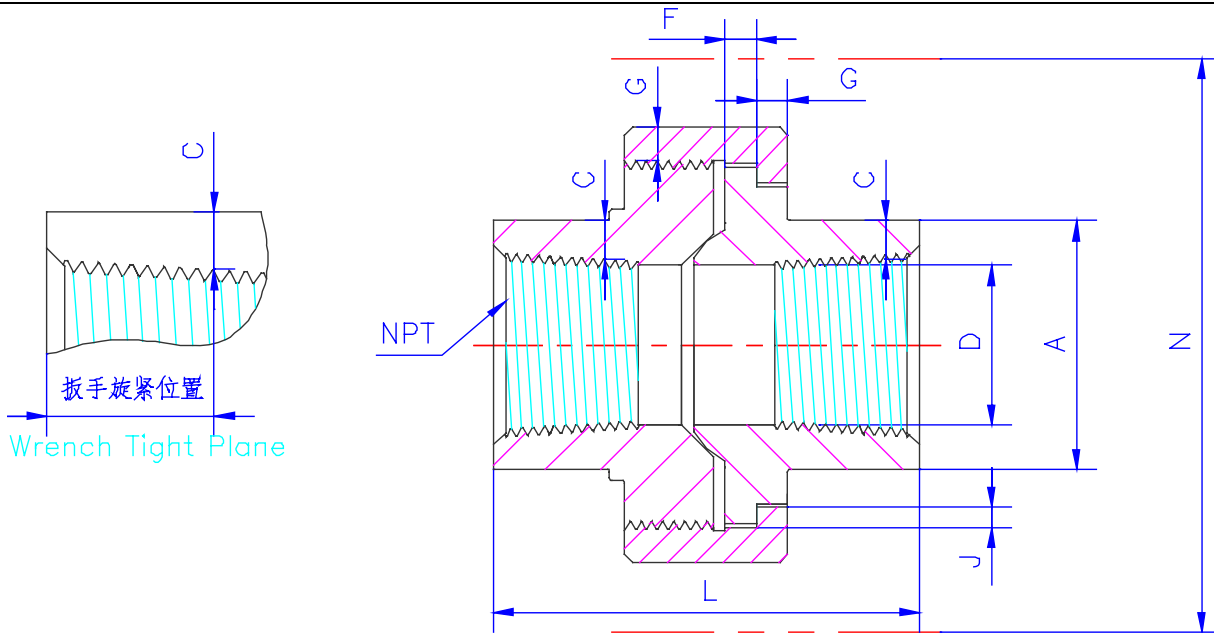
| 公称尺寸<br>Nominal<br>Size |       | 端部<br>外径<br>Pipe<br>End | 承插<br>孔径<br>Socket<br>Bore<br>Dia. | 承插孔<br>壁厚<br>Socket<br>Wall | 流通<br>孔径<br>Water<br>Way<br>Bore | 结构<br>长度<br>Laying<br>Length | 突缘<br>厚度<br>Male<br>Flange | 螺母<br>厚度<br>Nut | 每英<br>寸螺<br>纹数<br>THD<br>Per<br>Inch | 螺母<br>承缘<br>高度<br>Bearing | 插口<br>深度<br>Depth<br>of<br>Socket | 组装<br>长度<br>Length<br>Assem | 螺母组<br>装空间<br>Clear<br>Assem.<br>Nut |
|-------------------------|-------|-------------------------|------------------------------------|-----------------------------|----------------------------------|------------------------------|----------------------------|-----------------|--------------------------------------|---------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| DN                      | NPS   | $A_{min}$               | $B$                                | $C_{min}$                   | $D$                              | $E$                          | $F_{min}$                  | $G_{min}$       | $H$                                  | $J_{min}$                 | $K_{min}$                         | $L_{nom}$                   | $N$                                  |
| 6                       | 1/8   | 21.8                    | 10.7                               | 3.2                         | 6.1                              | 20.8                         | 3.2                        | 3.2             | 16                                   | 1.2                       | 9.7                               | 41.4                        | 51                                   |
| 8                       | 1/4   | 21.8                    | 14.1                               | 3.3                         | 8.5                              | 20.8                         | 3.2                        | 3.2             | 16                                   | 1.2                       | 9.7                               | 41.4                        | 51                                   |
| 10                      | 3/8   | 25.9                    | 17.5                               | 3.5                         | 11.8                             | 23.8                         | 3.4                        | 3.4             | 14                                   | 1.4                       | 9.7                               | 46.0                        | 56                                   |
| 15                      | 1/2   | 31.2                    | 21.7                               | 4.1                         | 15.0                             | 23.8                         | 3.7                        | 3.7             | 14                                   | 1.5                       | 9.7                               | 49.0                        | 59                                   |
| 20                      | 3/4   | 37.1                    | 27.1                               | 4.3                         | 20.2                             | 28.6                         | 4.1                        | 4.1             | 11                                   | 1.7                       | 12.7                              | 56.9                        | 66                                   |
| 25                      | 1     | 45.5                    | 33.8                               | 5.0                         | 25.9                             | 30.2                         | 4.6                        | 4.4             | 11                                   | 1.9                       | 12.7                              | 62.0                        | 79                                   |
| 32                      | 1 1/4 | 54.9                    | 42.5                               | 5.3                         | 34.3                             | 36.5                         | 5.3                        | 5.2             | 10                                   | 2.1                       | 12.7                              | 71.1                        | 94                                   |
| 40                      | 1 1/2 | 61.5                    | 48.6                               | 5.5                         | 40.1                             | 38.1                         | 5.8                        | 5.6             | 10                                   | 2.3                       | 12.7                              | 76.5                        | 112                                  |
| 50                      | 2     | 75.2                    | 61.1                               | 6.0                         | 51.7                             | 41.4                         | 6.6                        | 6.4             | 10                                   | 2.7                       | 15.7                              | 86.1                        | 132                                  |
| 65                      | 2 1/2 | 91.7                    | 73.8                               | 7.7                         | 61.2                             | 57.0                         | 7.5                        | 7.1             | 8                                    | 3.1                       | 15.7                              | 102.4                       | 150                                  |
| 80                      | 3     | 109.2                   | 89.8                               | 8.3                         | 76.4                             | 58.7                         | 8.3                        | 8.0             | 8                                    | 3.5                       | 15.7                              | 109.0                       | 176                                  |

注释 Note:

1)  $H$  为每英寸螺纹牙数, 应至少 4 整圈螺纹啮合。此处的内外螺纹按 ASME B1.1 2A/2B 加工。

1)  $H$  is the number of threads per inch with the min. of 4 tightening turns, and the female and male thread herein shall be machined per ASME B1.1 2A/2B.





3000 级别螺纹活接头  
Class 3000 Unions of THRD Unions

MSS SP-83

| 公称尺寸<br>Nominal Size |       | 端部外径<br>Pipe End | 壁厚<br>Wall | 流通孔径<br>Water Way<br>Bore | 突缘厚度<br>Male<br>Flange | 螺母厚度<br>Nut | 每英寸<br>螺纹数<br>THD Per<br>Inch | 螺母承<br>缘高度<br>Bearing | 组<br>装<br>长<br>度<br>Length<br>Assem | 螺<br>母<br>组<br>装<br>空<br>间<br>Clear<br>Assem.<br>Nut |
|----------------------|-------|------------------|------------|---------------------------|------------------------|-------------|-------------------------------|-----------------------|-------------------------------------|--|
| DN                   | NPS   | $A_{min}$        | $C_{min}$  | $D$                       | $F_{min}$              | $G_{min}$   | $H$                           | $J_{min}$             | $L_{nom}$                           | $N$  |
| 6                    | 1/8   | 14.7             | 2.4        | 8.4<br>6.4                | 3.2                    | 3.2         | 16                            | 1.2                   | 41.4                                | 51   |
| 8                    | 1/4   | 19.1             | 3.0        | 11.1<br>9.4               | 3.2                    | 3.2         | 16                            | 1.2                   | 41.4                                | 51   |
| 10                   | 3/8   | 22.9             | 3.2        | 14.3<br>13.5              | 3.4                    | 3.4         | 14                            | 1.4                   | 46.0                                | 56   |
| 15                   | 1/2   | 27.7             | 3.7        | 17.9<br>17.1              | 3.7                    | 3.7         | 14                            | 1.5                   | 49.0                                | 59   |
| 20                   | 3/4   | 33.5             | 3.9        | 23.0<br>21.4              | 4.1                    | 4.1         | 11                            | 1.7                   | 56.9                                | 66   |
| 25                   | 1     | 41.4             | 4.5        | 29.0<br>27.7              | 4.6                    | 4.4         | 11                            | 1.9                   | 62.0                                | 79   |
| 32                   | 1 1/4 | 50.5             | 4.9        | 37.7<br>35.4              | 5.3                    | 5.2         | 10                            | 2.1                   | 71.1                                | 94   |
| 40                   | 1 1/2 | 57.2             | 5.1        | 43.5<br>41.2              | 5.8                    | 5.6         | 10                            | 2.3                   | 76.5                                | 112  |
| 50                   | 2     | 70.1             | 5.5        | 55.6<br>52.1              | 6.6                    | 6.4         | 10                            | 2.7                   | 86.1                                | 132  |
| 65                   | 2 1/2 | 85.3             | 7.0        | 66.3<br>64.3              | 7.5                    | 7.1         | 8                             | 3.1                   | 102.4                               | 150  |
| 80                   | 3     | 102.4            | 7.6        | 82.6<br>77.3              | 8.3                    | 8.0         | 8                             | 3.5                   | 109.0                               | 176  |

注释 Note:

1)  $H$ 为每英寸螺纹牙数, 应至少 4 整圈螺纹啮合。此处的内外螺纹按 ASME B1.1 2A/2B 加工。

1)  $H$  is the number of threads per inch with the min. of 4 tightening turns, and the female and male thread herein shall be machined per ASME B1.1 2A/2B.

2) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

2) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).

| 承插焊管件的公差<br>TOLERANCES FOR SW FITTINGS |         |                          |                               |                                       |                          |                           |                          |                    |              |                       |
|--|---------|--------------------------|-------------------------------|---------------------------------------|--------------------------|---------------------------|--------------------------|--------------------|--------------|-----------------------|
| 公称尺寸<br>Nominal Size                   |         | 所有管件<br>All Fittings     |                               | 弯头、三通和四通<br>Elbows, Tees & Crosses    | 双承口管箍<br>Couplings       | 单承口管箍<br>Half-Couplings   | 异径插入件<br>Reducer Inserts |                    |              | 活接头<br>Unions         |
|  |         | 承插孔径<br>Socket Bore Dia. | 流通孔径<br>Bore Dia. of Fittings | 中心至承插孔底<br>Center to Bottom of Socket | 承插孔底距离<br>Laying Lengths | 承插孔底至端面<br>Laying Lengths | 结构长度<br>Laying Length    | 主体直径<br>Shank Dia. | 长度<br>Length | 结构长度<br>Laying Length |
| DN                                     | NPS     | <i>B</i>                 | <i>D</i>                      | <i>A, H</i>                           | <i>E</i>                 | <i>F</i>                  | <i>A</i>                 | <i>SD</i>          | <i>SL</i>    | <i>E</i>              |
| 6~8                                    | 1/8~1/4 | +0.4<br>0                | +1.5<br>0                     | ±1.0                                  | ±1.5                     | ±1.0                      | +1.5<br>0                | ±<br>0.25          | 0<br>-1.5    | ±1.5                  |
| 10~20                                  | 3/8~3/4 | +0.4<br>0                | +1.5<br>0                     | ±1.5                                  | ±3.0                     | ±1.5                      | +1.5<br>0                | ±<br>0.25          | 0<br>-1.5    | ±3.0                  |
| 25~40                                  | 1~1 1/2 | +0.4<br>0                | +1.5<br>0                     | ±2.0                                  | ±4.0                     | ±2.0                      | +2.0<br>0                | ±<br>0.25          | 0<br>-2.0    | ±4.0                  |
| 50                                     | 2       | +0.5<br>0                | +1.5<br>0                     | ±2.0                                  | ±4.0                     | ±2.0                      | +2.0<br>0                | ±0.5               | 0<br>-2.0    | ±4.0                  |
| 65~80                                  | 2 1/2~3 | +0.5<br>0                | +3.0<br>0                     | ±2.5                                  | ±5.0                     | ±2.5                      | +2.5<br>0                | ±0.5               | 0<br>-2.5    | ±5.0                  |
| 100                                    | 4       | +0.5<br>0                | +3.0<br>0                     | ±2.5                                  | ±5.0                     | ±2.5                      | +2.5<br>0                | ±0.7               | 0<br>-2.5    | -                     |

| 螺纹管件的公差<br>TOLERANCES FOR THRD FITTINGS |         |                                    |  |                     |                         |
|---|---------|------------------------------------|--|---------------------|-------------------------|
| 公称尺寸<br>Nominal Size                    |         | 弯头、三通和四通<br>Elbows, Tees & Crosses |  | 双螺口管箍<br>Couplings  | 单螺口管箍<br>Half-Couplings |
|   |         | 中心至端面<br>Center-to-End             |  | 端面至端面<br>End-to-End | 端面至端面<br>End-to-End     |
| DN                                      | NPS     | <i>A, J</i>                        |  | <i>W</i>            | <i>W/2</i>              |
| 6~8                                     | 1/8~1/4 | ±1.0                               |  | ±1.0                | ±1.0                    |
| 10~20                                   | 3/8~3/4 | ±1.5                               |  | ±1.5                | ±1.5                    |
| 25~50                                   | 1~2     | ±2.0                               |  | ±2.0                | ±2.0                    |
| 65~100                                  | 2 1/2~4 | ±2.5                               |  | ±2.5                | ±2.5                    |

| 管件级别和与之适配的管子壁厚等级的关系<br>CLASS OF THE FITTINGS VS THE GRADE OF THE CONNECTING PIPES |               |  |  |                    |               |  |
|---|---------------|--|--|--------------------|---------------|--|
| 连接型式<br>Joint Type  | 级别代号<br>Class | 适配的管子壁厚等级<br>Grade of Connecting Pipes |  | 连接型式<br>Joint Type | 级别代号<br>Class | 适配的管子壁厚等级<br>Grade of Connecting Pipes |
| 承插焊<br>SW   | 3000          | Sch80、XS                               |  | 螺纹<br>THRD         | 2000          | Sch80、XS                               |
|   | 6000          | Sch160                                 |  |                    | 3000          | Sch160                                 |
|   | 9000          | XXS                                    |  |                    | 6000          | XXS                                    |

注释 Note:

1) 本表并未限制与管件连接时使用更厚或更薄的管子。实际使用的管子可以比表中所示的更厚或更薄。当使用更厚的管子时，管件的强度决定承压能力；当使用更薄的管子时，管子的强度决定承压能力。

1) In this table, it isn't restricted to use the pipes with thinner or thicker thickness than the connecting fittings. The actually used pipes can be thinner or thicker than the ones indicated in the table. When using thicker pipes, the fittings shall govern the pressure bearing; when using thinner pipes, the pipes shall govern the pressure bearing.

## Sch160 和双加厚管的公称壁厚

### NOMINAL WALL THICKNESS OF SCHEDULE 160 AND DOUBLE EXTRA STRONG PIPE

| 公称尺寸<br>Nominal Size |     | 公称壁厚<br>Nominal Wall Thickness |      |
|----------------------|-----|--------------------------------|------|
| DN                   | NPS | Sch160                         | XXS  |
| 6                    | 1/8 | 3.15                           | 4.83 |
| 8                    | 1/4 | 3.68                           | 6.05 |
| 10                   | 3/8 | 4.01                           | 6.40 |

注释 Note:

1) 由于 ASME B36.10M 未包括上述规格的 sch160 和 XXS 的壁厚, 表列数值可作为确定额定值时管子的公称壁厚。

1) Since ASME B36.10M doesn't include the thickness for Sch160 nor XXS, The values indicated in the table may be used as the nominal wall thickness of pipe.

## 异径管件公称尺寸的表达方法

### SYMBOLS OF NOMINAL SIZE OF REDUCING FITTINGS

$2 \times 1$

$2 \times 1 \times 1\frac{1}{2}$

$2 \times 1 \times 1\frac{1}{2} \times \frac{3}{4}$

说明 Note:

1) 对于异径弯头、双接口管箍、异径插件、内外螺纹接头等具有两个端面的产品, 首先给出大端的公称尺寸, 然后给出小端的公称尺寸。

1) For products with two ends such as reducing elbows, couplings, reducer inserts, unions and etc, the size of the large end shall be given first, followed by the size of the small end.

2) 对于异径三通等具有三个端面的产品, 首先给出主管大端的公称尺寸, 然后给出主管相对端的公称尺寸。最后给出支管端的公称尺寸。

2) For the products with three ends such as reducing tees and etc., the size of the largest run opening shall be given first followed by the size of the opposite end of the run and the size of the outlet is given last.

3) 对于异径四通, 首先给出主管大端的公称尺寸, 然后给出主管相对端的公称尺寸。第三个尺寸是支管大端的公称尺寸, 最后给出支管相对端的公称尺寸。

3) For reducing crosses, the size of the largest run opening shall be give first, followed by the size of the opposite end of the run, the largest side-outlet opening is the third given followed by the opposite opening.

## 异径短节的端部连接型式说明

### END TYPES OF SWAGED NIPPLES

1) 异径短节的端部连接型式包括坡口端 (BE)、平口端 (PE)、锥管螺纹端 (TE) 或其它型式。常用的 9 种连接型式 (代号) 如下:

1) The end types of swaged nipples include bevel end (BE)、plain end (PE)、thread end (TE) and other types, the following indicates the common nine (9) t:

a) 两端坡口 (BBE)

a) bevel of both ends (BBE)

b) 两端平口 (PBE)

b) plain of both ends (PBE)

c) 两端螺纹 (TBE)

c) thread of both ends (TBE)

d) 大端坡口/小端平口 (BLE/PSE)

d) bevel of large end / plain of small end (BLE/PSE)

e) 大端坡口/小端螺纹 (BLE/TSE)

e) bevel of large end / thread of small end (BLE/TSE)

f) 大端平口/小端坡口 (PLE/BSE)

f) plain of large end / bevel of small end (PLE/BSE)

g) 大端平口/小端螺纹 (PLE/TSE)

g) plain of large end / thread of small end (PLE/TSE)

h) 大端螺纹/小端坡口 (TLE/BSE)

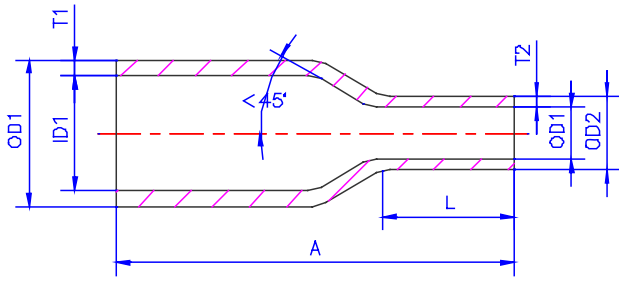
h) thread of large end / bevel of small end (TLE/BSE)

i) 大端螺纹/小端平口 (TLE/PSE)

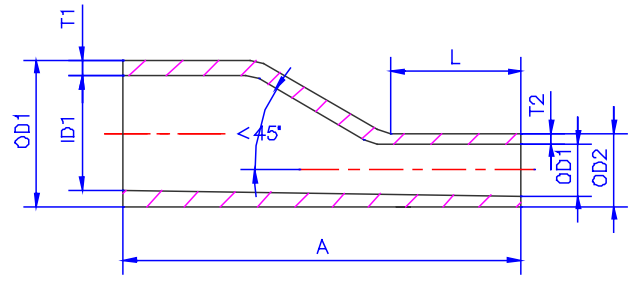
i) bevel of large end / plain of small end (TLE/PSE)

2) 端部坡口型式见\*\*页图示; 螺纹端按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

2) Refer the drawings in the page of \*\* for the bevel end. Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



同心异径短节  
Concentric Swaged Nipple



偏心异径短节  
Eccentric Swaged Nipple

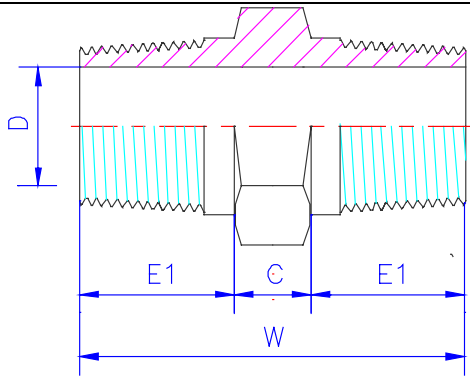
MSS SP-95、SH/T 3416

| 公称尺寸<br>Nominal Size |             | 端部外径<br>OD at End                 | 小端长度<br>Length of<br>Small End | 端面至<br>端面<br>End to<br>End | 公称尺寸<br>Nominal Size |             | 端部外径<br>OD at End                 | 小端长度<br>Length of<br>Small End | 端面至<br>端面<br>End to<br>End |
|----------------------|-------------|-----------------------------------|--------------------------------|----------------------------|----------------------|-------------|-----------------------------------|--------------------------------|----------------------------|
| DN                   | NPS         | OD <sub>1</sub> × OD <sub>2</sub> | L <sub>min</sub>               | A                          | DN                   | NPS         | OD <sub>1</sub> × OD <sub>2</sub> | L <sub>min</sub>               | A                          |
| 8×6                  | 1/4×1/8     | 13.7×10.3                         | 20                             | 57                         | 65×6                 | 2 1/2×1/8   | 73.0×10.3                         | 22                             | 178                        |
| 10×6                 | 3/8×1/8     | 17.1×10.3                         | 20                             | 64                         | 65×8                 | 2 1/2×1/4   | 73.0×13.7                         | 22                             |                            |
| 10×8                 | 3/8×1/4     | 17.1×13.7                         | 20                             | 64                         | 65×10                | 2 1/2×3/8   | 73.0×17.1                         | 22                             |                            |
| 15×6                 | 1/2×1/8     | 21.3×10.3                         | 20                             | 70                         | 65×15                | 2 1/2×1/2   | 73.0×21.3                         | 25                             |                            |
| 15×8                 | 1/2×1/4     | 21.3×13.7                         | 20                             | 70                         | 65×20                | 2 1/2×3/4   | 73.0×26.7                         | 25                             |                            |
| 15×10                | 1/2×3/8     | 21.3×17.1                         | 20                             | 70                         | 65×25                | 2 1/2×1     | 73.0×33.4                         | 30                             |                            |
| 20×6                 | 3/4×1/8     | 26.7×10.3                         | 20                             | 76                         | 65×32                | 2 1/2×1 1/4 | 73.0×42.2                         | 30                             |                            |
| 20×8                 | 3/4×1/4     | 26.7×13.7                         | 20                             | 76                         | 65×40                | 2 1/2×1 1/2 | 73.0×48.3                         | 40                             |                            |
| 20×10                | 3/4×3/8     | 26.7×17.1                         | 22                             | 76                         | 65×50                | 2 1/2×2     | 73.0×60.3                         | 40                             |                            |
| 20×15                | 3/4×1/2     | 26.7×21.3                         | 22                             | 76                         | 80×6                 | 3×1/8       | 88.9×10.3                         | 22                             |                            |
| 25×6                 | 1×1/8       | 33.4×10.3                         | 20                             | 89                         | 80×8                 | 3×1/4       | 88.9×13.7                         | 22                             |                            |
| 25×8                 | 1×1/4       | 33.4×13.7                         | 20                             | 89                         | 80×10                | 3×3/8       | 88.9×17.1                         | 22                             |                            |
| 25×10                | 1×3/8       | 33.4×17.1                         | 22                             | 89                         | 80×15                | 3×1/2       | 88.9×21.3                         | 25                             |                            |
| 25×15                | 1×1/2       | 33.4×21.3                         | 22                             | 89                         | 80×20                | 3×3/4       | 88.9×26.7                         | 25                             |                            |
| 25×20                | 1×3/4       | 33.4×26.7                         | 22                             | 89                         | 80×25                | 3×1         | 88.9×33.4                         | 30                             |                            |
| 32×6                 | 1 1/4×1/8   | 42.2×10.3                         | 20                             | 102                        | 80×32                | 3×1 1/4     | 88.9×42.2                         | 30                             |                            |
| 32×8                 | 1 1/4×1/4   | 42.2×13.7                         | 20                             | 102                        | 80×40                | 3×1 1/2     | 88.9×48.3                         | 40                             |                            |
| 32×10                | 1 1/4×3/8   | 42.2×17.1                         | 22                             | 102                        | 80×50                | 3×2         | 88.9×60.3                         | 40                             |                            |
| 32×15                | 1 1/4×1/2   | 42.2×21.3                         | 22                             | 102                        | 80×65                | 3×2 1/2     | 88.9×73.0                         | 40                             |                            |
| 32×20                | 1 1/4×3/4   | 42.2×26.7                         | 25                             | 102                        | 90×6                 | 3 1/2×1/8   | 101.6×10.3                        | 22                             | 203                        |
| 32×25                | 1 1/4×1     | 42.2×33.4                         | 25                             | 102                        | 90×8                 | 3 1/2×1/4   | 101.6×13.7                        | 22                             |                            |
| 40×6                 | 1 1/2×1/8   | 48.3×10.3                         | 20                             | 114                        | 90×10                | 3 1/2×3/8   | 101.6×17.1                        | 22                             |                            |
| 40×8                 | 1 1/2×1/4   | 48.3×13.7                         | 20                             | 114                        | 90×15                | 3 1/2×1/2   | 101.6×21.3                        | 25                             |                            |
| 40×10                | 1 1/2×3/8   | 48.3×17.1                         | 22                             | 114                        | 90×20                | 3 1/2×3/4   | 101.6×26.7                        | 25                             |                            |
| 40×15                | 1 1/2×1/2   | 48.3×21.3                         | 25                             | 114                        | 90×25                | 3 1/2×1     | 101.6×33.4                        | 30                             |                            |
| 40×20                | 1 1/2×3/4   | 48.3×26.7                         | 25                             | 114                        | 90×32                | 3 1/2×1 1/4 | 101.6×42.2                        | 30                             |                            |
| 40×25                | 1 1/2×1     | 48.3×33.4                         | 25                             | 114                        | 90×40                | 3 1/2×1 1/2 | 101.6×48.3                        | 40                             |                            |
| 40×32                | 1 1/2×1 1/4 | 48.3×42.2                         | 25                             | 114                        | 90×50                | 3 1/2×2     | 101.6×60.3                        | 40                             |                            |
| 50×6                 | 2×1/8       | 60.3×10.3                         | 20                             | 165                        | 90×65                | 3 1/2×2 1/2 | 101.6×73.0                        | 40                             |                            |
| 50×8                 | 2×1/4       | 60.3×13.7                         | 22                             | 165                        | 90×80                | 3 1/2×3     | 101.6×88.9                        | 40                             |                            |
| 50×10                | 2×3/8       | 60.3×17.1                         | 22                             | 165                        | 100×8                | 4×1/4       | 114.3×13.7                        | 25                             | 229                        |
| 50×15                | 2×1/2       | 60.3×21.3                         | 25                             | 165                        | 100×10               | 4×3/8       | 114.3×17.1                        | 25                             |                            |
| 50×20                | 2×3/4       | 60.3×26.7                         | 30                             | 165                        | 100×15               | 4×1/2       | 114.3×21.3                        | 25                             |                            |
| 50×25                | 2×1         | 60.3×33.4                         | 30                             | 165                        | 100×20               | 4×3/4       | 114.3×26.7                        | 30                             |                            |
| 50×32                | 2×1 1/4     | 60.3×42.2                         | 30                             | 165                        | 100×25               | 4×1         | 114.3×33.4                        | 30                             |                            |
| 50×40                | 2×1 1/2     | 60.3×48.3                         | 30                             | 165                        | 100×32               | 4×1 1/4     | 114.3×42.2                        | 40                             |                            |

| 异径短节 SWAGED NIPPLES  |                                 |                                   |                                |                                |                      |                                  |                                   |                                |                                |    |     |
|----------------------|---------------------------------|-----------------------------------|--------------------------------|--------------------------------|----------------------|----------------------------------|-----------------------------------|--------------------------------|--------------------------------|----|-----|
| 公称尺寸<br>Nominal Size |                                 | 端部外径<br>OD at End                 | 小端长度<br>Length of<br>Small End | 端面<br>至<br>端面<br>End to<br>End | 公称尺寸<br>Nominal Size |                                  | 端部外径<br>OD at End                 | 小端长度<br>Length of<br>Small End | 端面<br>至<br>端面<br>End to<br>End |    |     |
| DN                   | NPS                             | OD <sub>1</sub> × OD <sub>2</sub> | L <sub>min</sub>               | A                              | DN                   | NPS                              | OD <sub>1</sub> × OD <sub>2</sub> | L <sub>min</sub>               | A                              |    |     |
| 100×40               | 4×1 <sup>1</sup> / <sub>2</sub> | 114.3×48.3                        | 40                             | 229                            | 200×25               | 8×1                              | 219.1×33.4                        | 40                             | 330                            |    |     |
| 100×50               | 4×2                             | 114.3×60.3                        | 45                             |                                | 200×32               | 8×1 <sup>1</sup> / <sub>4</sub>  | 219.1×42.2                        | 40                             |                                |    |     |
| 100×65               | 4×2 <sup>1</sup> / <sub>2</sub> | 114.3×73.0                        | 45                             |                                | 200×40               | 8×1 <sup>1</sup> / <sub>2</sub>  | 219.1×48.3                        | 45                             |                                |    |     |
| 100×80               | 4×3                             | 114.3×88.9                        | 45                             |                                | 200×50               | 8×2                              | 219.1×60.3                        | 45                             |                                |    |     |
| 100×90               | 4×3 <sup>1</sup> / <sub>2</sub> | 114.3×101.6                       | 45                             |                                | 200×65               | 8×2 <sup>1</sup> / <sub>2</sub>  | 219.1×73.0                        | 45                             |                                |    |     |
| 125×8                | 5× <sup>1</sup> / <sub>4</sub>  | 141.3×13.7                        | 25                             | 279                            | 200×80               | 8×3                              | 219.1×88.9                        | 50                             |                                |    |     |
| 125×10               | 5× <sup>3</sup> / <sub>8</sub>  | 141.3×17.1                        | 25                             |                                | 200×90               | 8×3 <sup>1</sup> / <sub>2</sub>  | 219.1×101.6                       | 50                             |                                |    |     |
| 125×15               | 5× <sup>1</sup> / <sub>2</sub>  | 141.3×21.3                        | 25                             |                                | 200×100              | 8×4                              | 219.1×114.3                       | 50                             |                                |    |     |
| 125×20               | 5× <sup>3</sup> / <sub>4</sub>  | 141.3×26.7                        | 30                             |                                | 200×125              | 8×5                              | 219.1×141.3                       | 60                             |                                |    |     |
| 125×25               | 5×1                             | 141.3×33.4                        | 30                             |                                | 200×150              | 8×6                              | 219.1×168.3                       | 60                             |                                |    |     |
| 125×32               | 5×1 <sup>1</sup> / <sub>4</sub> | 141.3×42.2                        | 40                             |                                | 250×50               | 10×2                             | 273.0×60.3                        | 45                             | 381                            |    |     |
| 125×40               | 5×1 <sup>1</sup> / <sub>2</sub> | 141.3×48.3                        | 40                             |                                | 250×65               | 10×2 <sup>1</sup> / <sub>2</sub> | 273.0×73.0                        | 45                             |                                |    |     |
| 125×50               | 5×2                             | 141.3×60.3                        | 45                             |                                | 250×80               | 10×3                             | 273.0×88.9                        | 50                             |                                |    |     |
| 125×65               | 5×2 <sup>1</sup> / <sub>2</sub> | 141.3×73.0                        | 45                             |                                | 250×90               | 10×3 <sup>1</sup> / <sub>2</sub> | 273.0×101.6                       | 50                             |                                |    |     |
| 125×80               | 5×3                             | 141.3×88.9                        | 45                             |                                | 250×100              | 10×4                             | 273.0×114.3                       | 60                             |                                |    |     |
| 125×90               | 5×3 <sup>1</sup> / <sub>2</sub> | 141.3×101.6                       | 45                             |                                | 250×125              | 10×5                             | 273.0×141.3                       | 60                             |                                |    |     |
| 125×100              | 5×4                             | 141.3×114.3                       | 50                             |                                | 250×150              | 10×6                             | 273.0×168.3                       | 65                             |                                |    |     |
| 150×15               | 6× <sup>1</sup> / <sub>2</sub>  | 168.3×21.3                        | 30                             |                                | 304                  | 250×200                          | 10×8                              | 273.0×219.1                    |                                | 65 |     |
| 150×20               |                                 | 6× <sup>3</sup> / <sub>4</sub>    | 168.3×26.7                     | 30                             |                      | 300×50                           | 12×2                              | 323.8×60.3                     |                                | 50 | 406 |
| 150×25               |                                 | 6×1                               | 168.3×33.4                     | 40                             |                      | 300×65                           | 12×2 <sup>1</sup> / <sub>2</sub>  | 323.8×73.0                     |                                | 50 |     |
| 150×32               |                                 | 6×1 <sup>1</sup> / <sub>4</sub>   | 168.3×42.2                     | 40                             |                      | 300×80                           | 12×3                              | 323.8×88.9                     | 60                             |    |     |
| 150×40               |                                 | 6×1 <sup>1</sup> / <sub>2</sub>   | 168.3×48.3                     | 45                             |                      | 300×90                           | 12×3 <sup>1</sup> / <sub>2</sub>  | 323.8×101.6                    | 60                             |    |     |
| 150×50               |                                 | 6×2                               | 168.3×60.3                     | 45                             |                      | 300×100                          | 12×4                              | 323.8×114.3                    | 65                             |    |     |
| 150×65               |                                 | 6×2 <sup>1</sup> / <sub>2</sub>   | 168.3×73.0                     | 45                             |                      | 300×125                          | 12×5                              | 323.8×141.3                    | 65                             |    |     |
| 150×80               |                                 | 6×3                               | 168.3×88.9                     | 45                             |                      | 300×150                          | 12×6                              | 323.8×168.3                    | 65                             |    |     |
| 150×90               |                                 | 6×3 <sup>1</sup> / <sub>2</sub>   | 168.3×101.6                    | 50                             |                      | 300×200                          | 12×8                              | 323.8×219.1                    | 70                             |    |     |
| 150×100              |                                 | 6×4                               | 168.3×114.3                    | 50                             |                      | 300×250                          | 12×10                             | 323.8×273.0                    | 70                             |    |     |
| 150×125              | 6×5                             | 168.3×141.3                       | 60                             |                                |                      |                                  |                                   |                                |                                |    |     |

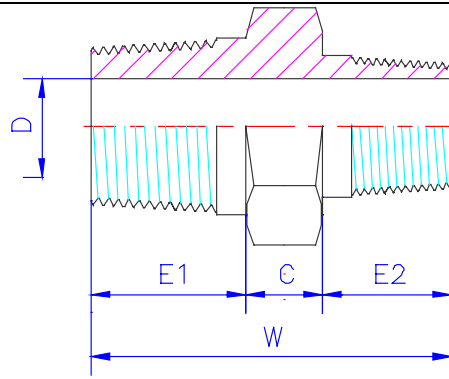
注释 Note:  
 1) 当按 SH/T 3416 标准订货时, 其外径应使用 SH/T 3065 《石油化工企业钢管外径系列》中规定的外径。  
 1) If ordering per SH/T 3416, the outside diameter specified in SH/T 3065 《tube outside diameter in petrochemical industry》 shall be applied.

| 异径短节的公差<br>TOLERANCES OF SWAGED NIPPLES |           |                   |                    |                   |                     |   |
|---|-----------|-------------------|--------------------|-------------------|---------------------|---|
| 公称尺寸<br>Nominal Size                    |           | 端部外径<br>OD at End |                    | 端部内径<br>ID at End | 端面至端面<br>End to End | 壁厚<br>Wall  |
| DN                                      | NPS       | OD                |                    | ID                | A                   | T   |
|   |           | 平口端部<br>Plain End | 其它端部<br>Other Ends |                   |                     |   |
| 6~10                                    | 1/8~3/8   | +0.4<br>-0.8      | ±0.8               | ±0.8              | ±1.6                | 不小于公称壁厚的 87.5%<br>Not less than 87.5%<br>Nominal Wall Thickness |
| 15~40                                   | 1/2~1 1/2 | +0.4<br>-0.8      | +1.6<br>-0.8       | ±0.8              | ±1.6                |   |
| 50~65                                   | 2~2 1/2   | ±0.8              | +1.6<br>-0.8       | ±0.8              | ±3.2                |   |
| 80~100                                  | 3~4       | ±0.8              | ±1.6               | ±1.6              | ±3.2                |   |
| 125~150                                 | 5~6       | +2.4<br>-1.6      | +2.4<br>-1.6       | ±1.6              | ±4.8                |   |
| 200~300                                 | 8~12      | +4.0<br>-3.2      | +4.0<br>-3.2       | ±3.2              | ±6.4                |   |



同径六角双丝头

straight Hexagonal Nipple



异径六角双丝头

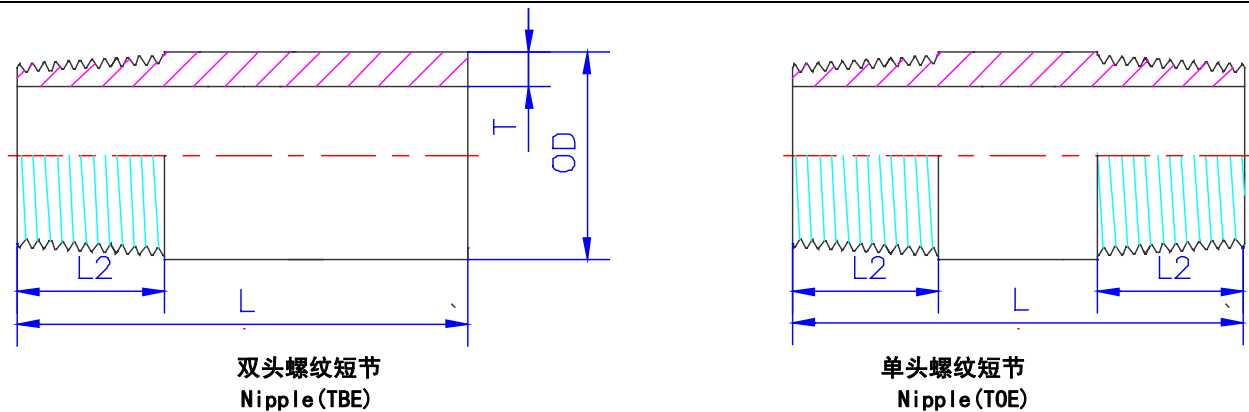
Reducing Hexagonal Nipple

| 公称尺寸<br>Nominal Size |               | 尺寸<br>Size |            |            |     |       |        |
|----------------------|---------------|------------|------------|------------|-----|-------|--------|
| DN                   | NPS           | $C_{nom}$  | $E_{1nom}$ | $E_{2nom}$ | $W$ | $D$   |        |
|                      |               |            |            |            |     | Sch80 | Sch160 |
| 6                    | 1/8           | 6          | 10         | -          | 26  | 5     | 4      |
| 8                    | 1/4           | 6          | 15         | -          | 36  | 7     | 6      |
|                      | 1/4 x 1/8     | 6          | 15         | 10         | 31  | 5     | 4      |
| 10                   | 3/8           | 8          | 16         | -          | 40  | 10    | 8      |
|                      | 3/8 x 1/4     | 8          | 16         | 15         | 39  | 7     | 6      |
| 15                   | 1/2           | 8          | 20         | -          | 48  | 13    | 10     |
|                      | 1/2 x 3/8     | 8          | 20         | 16         | 44  | 10    | 8      |
|                      | 1/2 x 1/4     | 8          | 20         | 15         | 43  | 7     | 6      |
| 20                   | 3/4           | 10         | 21         | -          | 52  | 18    | 14     |
|                      | 3/4 x 1/2     | 10         | 21         | 20         | 51  | 13    | 10     |
|                      | 3/4 x 3/8     | 10         | 21         | 16         | 47  | 10    | 8      |
| 25                   | 1             | 10         | 25         | -          | 60  | 23    | 19     |
|                      | 1 x 3/4       | 10         | 25         | 21         | 56  | 18    | 14     |
|                      | 1 x 1/2       | 10         | 25         | 20         | 55  | 13    | 10     |
| 32                   | 1 1/4         | 12         | 25         | -          | 62  | 31    | 28     |
|                      | 1 1/4 x 1     | 12         | 25         | 25         | 62  | 23    | 19     |
|                      | 1 1/4 x 3/4   | 12         | 25         | 21         | 58  | 18    | 14     |
|                      | 1 1/4 x 1/2   | 12         | 25         | 20         | 57  | 13    | 10     |
| 40                   | 1 1/2         | 16         | 26         | -          | 68  | 36    | 32     |
|                      | 1 1/2 x 1 1/4 | 16         | 26         | 25         | 67  | 31    | 28     |
|                      | 1 1/2 x 1     | 16         | 26         | 25         | 67  | 23    | 19     |
|                      | 1 1/2 x 3/4   | 16         | 26         | 21         | 63  | 18    | 14     |
|                      | 1 1/2 x 1/2   | 16         | 26         | 20         | 62  | 13    | 10     |
| 50                   | 2             | 18         | 27         | -          | 72  | 47    | 40     |
|                      | 2 x 1 1/2     | 18         | 27         | 26         | 71  | 36    | 32     |
|                      | 2 x 1 1/4     | 18         | 27         | 25         | 70  | 31    | 28     |
|                      | 2 x 1         | 18         | 27         | 25         | 70  | 23    | 19     |
|                      | 2 x 3/4       | 18         | 27         | 21         | 66  | 18    | 14     |
|                      | 2 x 1/2       | 18         | 27         | 20         | 65  | 13    | 10     |
| 65                   | 2 1/2         | 20         | 38         | -          | 96  | 57    | 51     |
|                      | 2 1/2 x 2     | 20         | 38         | 27         | 85  | 47    | 40     |
|                      | 2 1/2 x 1 1/2 | 20         | 38         | 26         | 84  | 36    | 32     |
|                      | 2 1/2 x 1 1/4 | 20         | 38         | 25         | 83  | 31    | 28     |
|                      | 2 1/2 x 1     | 20         | 38         | 25         | 83  | 23    | 19     |
|                      | 2 1/2 x 3/4   | 20         | 38         | 21         | 79  | 18    | 14     |
| 80                   | 3             | 20         | 40         | -          | 100 | 70    | 63     |
|                      | 3 x 2 1/2     | 20         | 40         | 38         | 98  | 57    | 51     |
|                      | 3 x 2         | 20         | 40         | 27         | 87  | 47    | 40     |
|                      | 3 x 1 1/2     | 20         | 40         | 26         | 86  | 36    | 32     |
|                      | 3 x 1 1/4     | 20         | 40         | 25         | 85  | 31    | 28     |
|                      | 3 x 1         | 20         | 40         | 25         | 85  | 23    | 19     |

注释 Note::

1) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



**ASTM A733**

| 公称尺寸<br>Nominal Size |       | 管子外径<br>OD of Pipes | 螺纹长度<br>Lengths of Thread | 管子壁厚<br>Wall of Pipes   | 长度<br>Pipe Nipple Lengths. |     |     |
|----------------------|-------|---------------------|---------------------------|-------------------------|----------------------------|-----|-----|
| DN                   | NPS   | OD                  | L <sub>2 min</sub>        | T                       | L                          |     |     |
|                      |       |                     |                           |                         | I                          | II  | III |
| 6                    | 1/8   | 10.3                | 6.7                       | STD, XS<br>Sch40, Sch80 | 50                         | 75  | 100 |
| 8                    | 1/4   | 13.7                | 10.2                      |                         |                            |     |     |
| 10                   | 3/8   | 17.1                | 10.4                      |                         |                            |     |     |
| 15                   | 1/2   | 21.3                | 13.6                      | STD, XS<br>Sch40, Sch80 | 50                         | 75  | 100 |
| 20                   | 3/4   | 26.7                | 13.9                      |                         |                            |     |     |
| 25                   | 1     | 33.4                | 17.3                      |                         |                            |     |     |
| 32                   | 1 1/4 | 42.2                | 18.0                      | STD, XS<br>Sch40, Sch80 | 75                         | 100 | 150 |
| 40                   | 1 1/2 | 48.3                | 18.4                      |                         |                            |     |     |
| 50                   | 2     | 60.3                | 19.2                      |                         |                            |     |     |
| 65                   | 2 1/2 | 73.0                | 28.9                      | STD, XS<br>Sch40, Sch80 | 100                        | 150 | 200 |
| 80                   | 3     | 88.9                | 30.5                      |                         |                            |     |     |
| 90                   | 3 1/2 | 101.6               | 31.8                      |                         |                            |     |     |
| 100                  | 4     | 114.3               | 33.0                      | STD, XS<br>Sch40, Sch80 | 100                        | 150 | 200 |
| 125                  | 5     | 141.3               | 35.7                      |                         |                            |     |     |
| 150                  | 6     | 168.3               | 38.4                      |                         |                            |     |     |
| 200                  | 8     | 219.1               | 43.5                      | STD, XS<br>Sch40, Sch80 | 150                        | 200 | 250 |
| 250                  | 10    | 273.0               | 48.9                      | STD, XS<br>Sch40, Sch60 | 150                        | 200 | 250 |
| 300                  | 12    | 323.8               | 54.0                      | STD, XS                 | 150                        | 200 | 250 |

注释 Note:

1) 表中的长度为常用的参考长度；制造商应按采购文件规定的长度制造。当采购文件未规定长度时，制造商可选择 I、II、III 型中的任一长度型号供货。

1) The lengths indicated in the above table are the generally referenced ones. The manufacturer shall conform to the ones specified in the purchase specification. If not specified, the manufacturer can select one of the above three series.

2) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

2) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).

**六角双丝头和螺纹短节的公差**

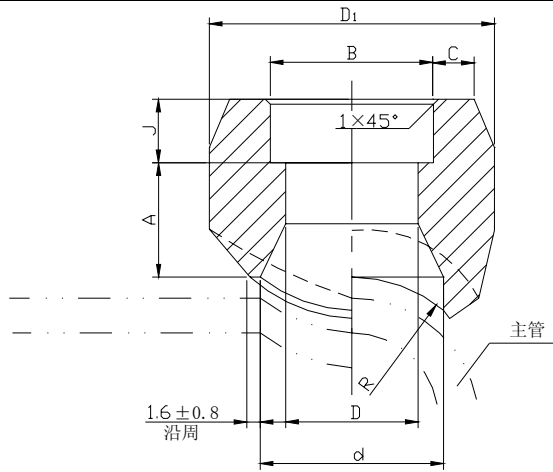
**TOLERANCES OF HEXAGONAL NIPPLES & PIPE NIPPLES**

| 公称尺寸<br>Nominal Size |          | 六角双丝头<br>Hexagonal Nipple |           | 螺纹短节<br>Pipe Nipple |
|----------------------|----------|---------------------------|-----------|---------------------|
| DN                   | NPS      | H                         | D         | L                   |
| 6~20                 | 1/8~3/4  | ±1.6                      | 0<br>-0.8 | ±1.6                |
| 25~80                | 1~3      | ±1.6                      | 0<br>-1.6 | ±1.6                |
| 90~300               | 3 1/2~12 | -                         | -         | ±1.6                |

注释 Note:

1) 当螺纹短节的长度 L ≥ 305mm (12") 时，公差为 ±3.2mm。

1) If the length L of the thread nipple is more than and including 305mm (12"), the tolerance shall be ±3.2mm.



承插焊支管座  
SW Outlets

GB/T 19326、MSS SP-97

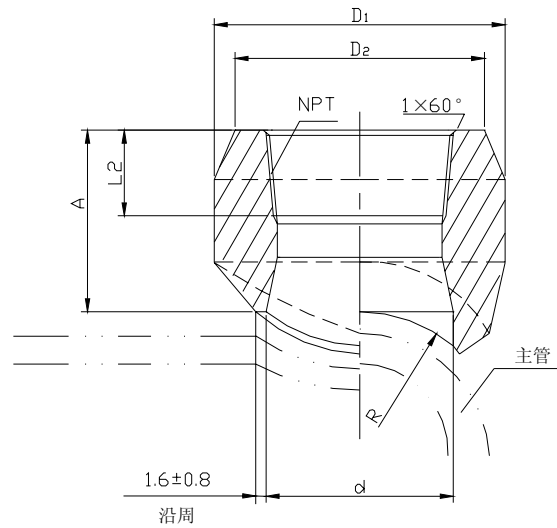
| 主管公称尺寸<br>Run pipes<br>Nominal Size |          | 支管公称尺寸<br>Branch<br>Nominal Size |       | 承插孔<br>深度<br>Depth of<br>Socket | 结构长度<br>Face of<br>Fitting<br>to Crotch |      | 本体直径<br>OD of Fitting |      | 承插孔壁厚<br>Socket Wall Thickness |       | 开孔直径<br>Cut Hole Dia. |      |
|-------------------------------------|----------|----------------------------------|-------|---------------------------------|---|------|-----------------------|------|--------------------------------|-------|-----------------------|------|
| DN                                  | NPS      | DN                               | NPS   | $J_{min}$                       | $A_{max}$                               |      | $D_{1min}$            |      | $C_{min}$                      |       | $d_{nom}$             |      |
|                                     |          |                                  |       |                                 | 3000                                    | 6000 | 3000                  | 6000 | 3000                           | 6000  | 3000                  | 6000 |
| 8~900                               | 1/4~36   | 6                                | 1/8   | 9.5                             | 10                                      | -    | 27                    | -    | 3.18                           | -     | 16                    | -    |
| 10~900                              | 3/8~36   | 8                                | 1/4   | 9.5                             | 10                                      | -    | 27                    | -    | 3.78                           | -     | 16                    | -    |
| 15~900                              | 1/2~36   | 10                               | 3/8   | 9.5                             | 13                                      | -    | 30                    | -    | 4.01                           | -     | 19                    | -    |
| 20~900                              | 3/4~36   | 15                               | 1/2   | 9.5                             | 16                                      | 24   | 38                    | 47   | 4.67                           | 5.97  | 24                    | 19   |
| 25~900                              | 1~36     | 20                               | 3/4   | 12.5                            | 16                                      | 25   | 47                    | 53   | 4.90                           | 6.96  | 30                    | 25   |
| 32~900                              | 1 1/4~36 | 25                               | 1     | 12.5                            | 22                                      | 29   | 56                    | 63   | 5.69                           | 7.92  | 36                    | 33   |
| 40~900                              | 1 1/2~36 | 32                               | 1 1/4 | 12.5                            | 22                                      | 30   | 66                    | 74   | 6.07                           | 7.92  | 45                    | 38   |
| 50~900                              | 2~36     | 40                               | 1 1/2 | 12.5                            | 24                                      | 32   | 75                    | 83   | 6.35                           | 8.92  | 51                    | 49   |
| 65~900                              | 2 1/2~36 | 50                               | 2     | 16.0                            | 24                                      | 37   | 90                    | 104  | 6.93                           | 10.92 | 65                    | 59   |
| 80~900                              | 3~36     | 65                               | 2 1/2 | 16.0                            | 25                                      | -    | 105                   | -    | 8.76                           | -     | 76                    | -    |
| 100~900                             | 4~36     | 80                               | 3     | 16.0                            | 30                                      | -    | 124                   | -    | 9.52                           | -     | 94                    | -    |
| 125~900                             | 5~36     | 100                              | 4     | 19.0                            | 30                                      | -    | 154                   | -    | 10.69                          | -     | 121                   | -    |

注释 Note:

1) 承插孔径  $B$  和流通孔径  $D$  尺寸见第\*\*页。

1) As for the sizes of socket diameter  $B$  and bore  $D$ , please refer to the ones in the page of \*\*.





螺纹支管座  
THD Outlet

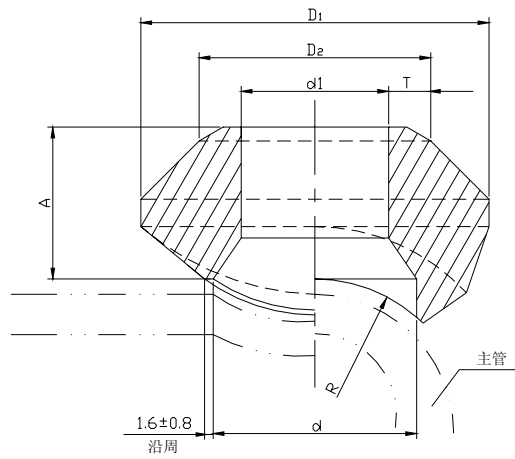
GB/T 19326、MSS SP-97

| 主管公称尺寸<br>Run pipes<br>Nominal Size |          | 支管公称尺寸<br>Branch<br>Nominal Size |       | 长度<br>Length |      | 本体直径<br>OD of<br>Fitting |      | 支管端部外径<br>OD at End<br>of Branch |      | 螺纹长度<br>Length of<br>Thread | 开孔直径<br>Cut Hole Dia. |      |
|-------------------------------------|----------|----------------------------------|-------|--------------|------|--------------------------|------|----------------------------------|------|-----------------------------|-----------------------|------|
| DN                                  | NPS      | DN                               | NPS   | A            |      | D <sub>1 min</sub>       |      | D <sub>2 min</sub>               |      | L <sub>2 min</sub>          | d <sub>nom</sub>      |      |
|                                     |          |                                  |       | 3000         | 6000 | 3000                     | 6000 | 3000                             | 6000 |                             | 3000                  | 6000 |
| 8~900                               | 1/4~36   | 6                                | 1/8   | 19           | —    | 27                       | —    | 22                               | —    | 6.7                         | 16                    | —    |
| 10~900                              | 3/8~36   | 8                                | 1/4   | 19           | —    | 27                       | —    | 22                               | —    | 10.2                        | 16                    | —    |
| 15~900                              | 1/2~36   | 10                               | 3/8   | 21           | —    | 30                       | —    | 25                               | —    | 10.4                        | 19                    | —    |
| 20~900                              | 3/4~36   | 15                               | 1/2   | 25           | 32   | 38                       | 45   | 33                               | 42   | 13.6                        | 24                    | 19   |
| 25~900                              | 1~36     | 20                               | 3/4   | 27           | 37   | 47                       | 52   | 39                               | 48   | 13.9                        | 30                    | 25   |
| 32~900                              | 1 1/4~36 | 25                               | 1     | 33           | 40   | 56                       | 63   | 48                               | 58   | 17.3                        | 36                    | 33   |
| 40~900                              | 1 1/2~36 | 32                               | 1 1/4 | 33           | 41   | 66                       | 72   | 58                               | 67   | 18.0                        | 45                    | 38   |
| 50~900                              | 2~36     | 40                               | 1 1/2 | 35           | 43   | 75                       | 83   | 64                               | 77   | 18.4                        | 51                    | 49   |
| 65~900                              | 2 1/2~36 | 50                               | 2     | 38           | 52   | 90                       | 104  | 77                               | 93   | 19.2                        | 65                    | 59   |
| 80~900                              | 3~36     | 65                               | 2 1/2 | 46           | —    | 105                      | —    | 94                               | —    | 28.9                        | 76                    | —    |
| 100~900                             | 4~36     | 80                               | 3     | 51           | —    | 124                      | —    | 114                              | —    | 30.5                        | 94                    | —    |
| 125~900                             | 5~36     | 100                              | 4     | 57           | —    | 154                      | —    | 140                              | —    | 33.0                        | 121                   | —    |

注释 Note:

1) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



对焊支管座  
BW Outlet

GB/T 19326、MSS SP-97

| 主管公称尺寸<br>Run pipes<br>Nominal Size |          | 支管公称尺寸<br>Branch<br>Nominal Size |       | 长度<br>Length |     |        | 本体直径<br>OD of Fitting |     |        | 开孔直径<br>Cut Hole Dia. |     |        |
|-------------------------------------|----------|----------------------------------|-------|--------------|-----|--------|-----------------------|-----|--------|-----------------------|-----|--------|
| DN                                  | NPS      | DN                               | NPS   | A            |     |        | D <sub>i min</sub>    |     |        | d <sub>nom</sub>      |     |        |
|                                     |          |                                  |       | STD          | XS  | SCH160 | STD                   | XS  | SCH160 | STD                   | XS  | SCH160 |
| 8~900                               | 1/4~36   | 6                                | 1/8   | 16           | 16  | —      | 24                    | 24  | —      | 16                    | 16  | —      |
| 10~900                              | 3/8~36   | 8                                | 1/4   | 16           | 16  | —      | 26                    | 26  | —      | 16                    | 16  | —      |
| 15~900                              | 1/2~36   | 10                               | 3/8   | 19           | 19  | —      | 30                    | 30  | —      | 19                    | 19  | —      |
| 20~900                              | 3/4~36   | 15                               | 1/2   | 19           | 19  | 28     | 36                    | 36  | 36     | 24                    | 24  | 14     |
| 25~900                              | 1~36     | 20                               | 3/4   | 22           | 22  | 32     | 43                    | 43  | 46     | 30                    | 30  | 19     |
| 32~900                              | 1 1/4~36 | 25                               | 1     | 27           | 27  | 38     | 55                    | 55  | 51     | 36                    | 36  | 25     |
| 40~900                              | 1 1/2~36 | 32                               | 1 1/4 | 32           | 32  | 44     | 66                    | 66  | 63     | 45                    | 45  | 33     |
| 50~900                              | 2~36     | 40                               | 1 1/2 | 33           | 33  | 51     | 74                    | 74  | 71     | 51                    | 51  | 38     |
| 65~900                              | 2 1/2~36 | 50                               | 2     | 38           | 38  | 55     | 90                    | 90  | 82     | 65                    | 65  | 43     |
| 80~900                              | 3~36     | 65                               | 2 1/2 | 41           | 41  | 62     | 104                   | 104 | 98     | 76                    | 76  | 54     |
| 90~900                              | 3 1/2~36 | 80                               | 3     | 44           | 44  | 73     | 124                   | 124 | 122    | 93                    | 93  | 73     |
| 100~900                             | 4~36     | 90                               | 3 1/2 | 48           | 48  | —      | 138                   | 138 | —      | 113                   | 113 | —      |
| 125~900                             | 5~36     | 100                              | 4     | 51           | 51  | 84     | 154                   | 154 | 154    | 120                   | 120 | 98     |
| 150~900                             | 6~36     | 125                              | 5     | 57           | 57  | 94     | 187                   | 187 | 188    | 141                   | 141 | 122    |
| 200~900                             | 8~36     | 150                              | 6     | 60           | 78  | 105    | 213                   | 227 | 222    | 170                   | 170 | 146    |
| 250~900                             | 10~36    | 200                              | 8     | 70           | 99  | —      | 265                   | 292 | —      | 220                   | 220 | —      |
| 300~900                             | 12~36    | 250                              | 10    | 78           | 94  | —      | 323                   | 325 | —      | 275                   | 265 | —      |
| 350~900                             | 14~36    | 300                              | 12    | 86           | 103 | —      | 379                   | 381 | —      | 325                   | 317 | —      |
| 400~900                             | 16~36    | 350                              | 14    | 89           | 100 | —      | 411                   | 416 | —      | 357                   | 351 | —      |
| 450~900                             | 18~36    | 400                              | 16    | 94           | 106 | —      | 465                   | 468 | —      | 408                   | 403 | —      |
| 500~900                             | 20~36    | 450                              | 18    | 97           | 111 | —      | 522                   | 525 | —      | 459                   | 455 | —      |
| 550~900                             | 22~36    | 500                              | 20    | 102          | 119 | —      | 573                   | 584 | —      | 508                   | 509 | —      |
| 650~900                             | 26~36    | 600                              | 24    | 116          | 140 | —      | 690                   | 708 | —      | 614                   | 612 | —      |

注释 Note:

1)  $D_2$ 与支管接管外径相等、 $d_1$ 与支管接管内径相等、 $T$ 与支管接管壁厚相等。

1)  $D_2$  is same to the outside diameter of branch pipe,  $d_1$  is same to the inside diameter of branch pipe,  $T$  is same to the wall thickness of branch pipe.

2) 支管端部焊接坡口型式见\*\*页图示。

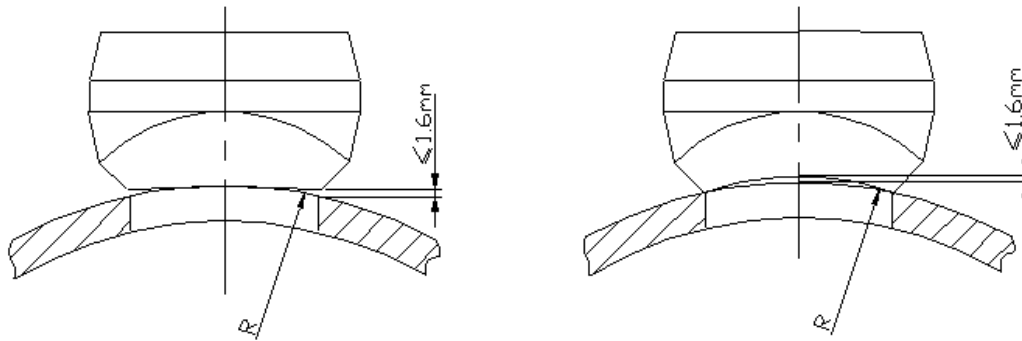
2) As fo the bevel ends of the branch pipe, please refers to the figure in the page of \*\*.

**支管座的公差**  
**TOLERANCES OF OUTLETS**

| 支管公称尺寸<br>Branch Nominal Size |         | 螺纹、对焊<br>Outlet of<br>THD & BW | 承插焊<br>SW Outlet |           | 对焊<br>BW Outlet |                |
|-------------------------------|---------|--------------------------------|------------------|-----------|-----------------|----------------|
| DN                            | NPS     | A                              | B                | D         | D <sub>2</sub>  | d <sub>1</sub> |
| 6~20                          | 1/8~3/4 | ±0.8                           | +0.5<br>0        | +1.5<br>0 | +0.8<br>-0.4    | ±0.4           |
| 25~100                        | 1~4     | ±1.6                           | +0.5<br>0        | +1.5<br>0 | +0.8<br>-0.4    | ±0.4           |
| 125~300                       | 5~12    | ±3.2                           | -                | -         | +1.6<br>-0.8    | ±0.8           |
| 350~600                       | 14~24   | ±4.8                           | -                | -         | +1.6<br>-0.8    | ±0.8           |

支管座与主管之间的间隙允许偏差如下图所示。

The following figures show the allowable spacing tolerances between outlet and the running pipe:



**支管座的级别与主管壁厚的关系**

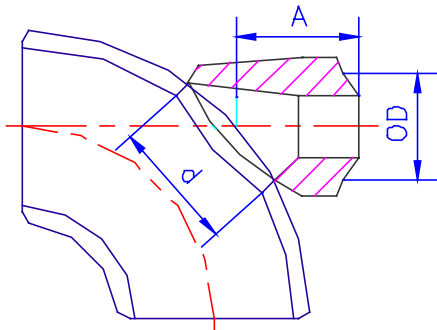
**CLASS OF OUTLETS VS SCHEDULE OF THE CONNECTING RUN PIPE**

| 支管公称尺寸<br>Branch Nominal Size |        | 连接形式<br>Type                        | 支管座的级别<br>Class of Outlet | 适用的主管壁厚<br>Schedule of the Connecting<br>Run Pipe |
|-------------------------------|--------|-------------------------------------|---------------------------|---|
| DN                            | NPS    |                                     |                           |   |
| 6~100                         | 1/8~4  | 承插焊、螺纹<br>Socket Welding & Threaded | 3000                      | XS  |
| 15~50                         | 1/2~2  | 承插焊、螺纹<br>Socket Welding & Threaded | 6000                      | SCH160  |
| 6~600                         | 1/8~24 | 对焊<br>Buttwelding                   | STD                       | STD   |
| 6~600                         | 1/8~24 | 对焊<br>Buttwelding                   | XS                        | XS  |
| 15~150                        | 1/2~6  | 对焊<br>Buttwelding                   | SCH160                    | SCH160  |

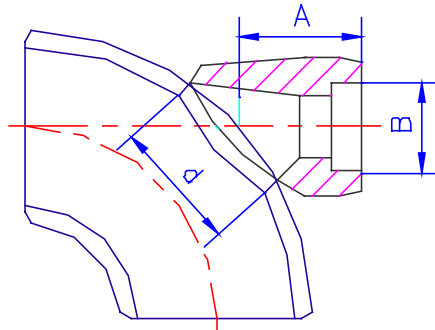
注释 Note:

1) 当支管或主管的厚度超出本表规定时，经制造商和采购方协商，支管座可以制成特殊的厚度、尺寸和形状。

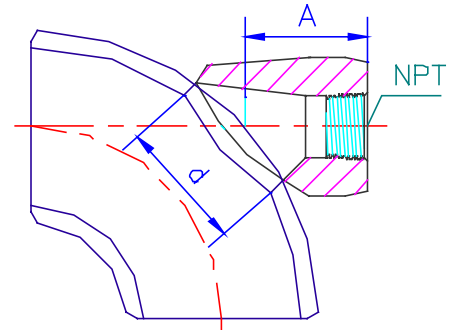
1) When the schedule of branch or running pipe is out of the scope indicated in the above table, the outlet can be fabricated with special thickness, size and configuration on the basis of the agreement between the purchaser and the manufacturer.



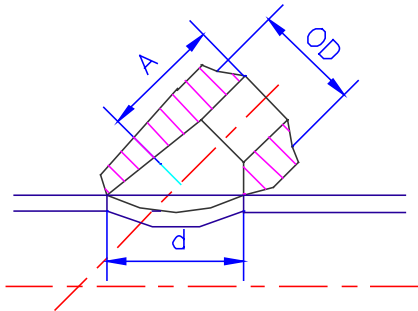
对焊弯头支管座  
BW Elbolet



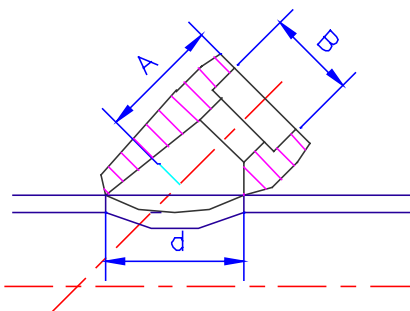
承插焊弯头支管座  
SW Elbolet



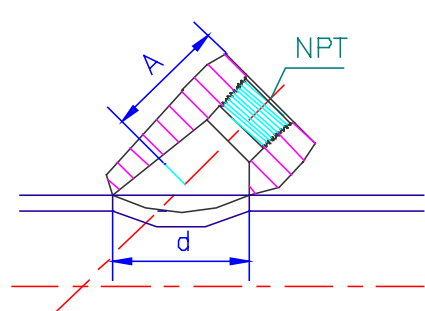
螺纹弯头支管座  
THD Elbolet



对焊 45° 支管座  
BW Latrolet



承插焊 45° 支管座  
SW Elbolet



螺纹 45° 支管座  
THD Elbolet

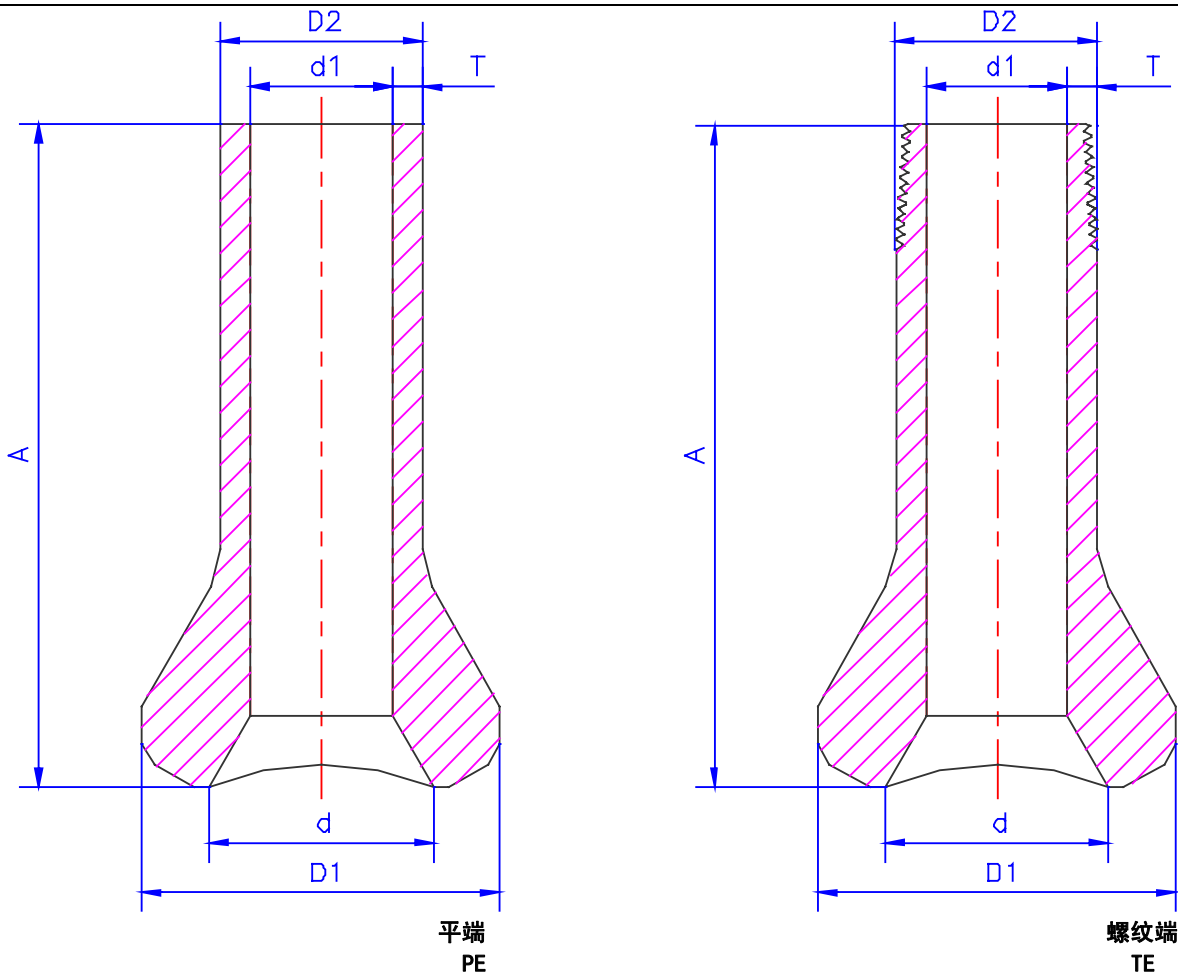
弯头支管座和 45° 支管座  
ELBOLETS AND LATROLETS

| 主管公称尺寸<br>Run pipes<br>Nominal Size |          | 支管公称尺寸<br>Branch<br>Nominal Size |       | 长度<br>Length |        |                      |      | 开孔直径<br>Cut Hole Dia. |        |                      |      |
|-------------------------------------|----------|----------------------------------|-------|--------------|--------|----------------------|------|-----------------------|--------|----------------------|------|
| DN                                  | NPS      | DN                               | NPS   | A            |        |                      |      | d <sub>nom</sub>      |        |                      |      |
|                                     |          |                                  |       | 对焊<br>BW     |        | 承插焊和螺纹<br>SW and THD |      | 对焊<br>BW              |        | 承插焊和螺纹<br>SW and THD |      |
|                                     |          |                                  |       | STD、XS       | SCH160 | 3000                 | 6000 | STD、XS                | SCH160 | 3000                 | 6000 |
| 20~900                              | 3/4~36   | 15                               | 1/2   | 45           | 50     | 45                   | 50   | 31                    | 30     | 31                   | 30   |
| 25~900                              | 1~36     | 20                               | 3/4   | 50           | 58     | 50                   | 58   | 42                    | 40     | 42                   | 40   |
| 32~900                              | 1 1/4~36 | 25                               | 1     | 60           | 70     | 60                   | 70   | 54                    | 50     | 54                   | 50   |
| 40~900                              | 1 1/2~36 | 32                               | 1 1/4 | 68           | 76     | 68                   | 76   | 61                    | 58     | 61                   | 58   |
| 50~900                              | 2~36     | 40                               | 1 1/2 | 75           | 83     | 75                   | 83   | 76                    | 66     | 76                   | 66   |
| 65~900                              | 2 1/2~36 | 50                               | 2     | 90           | 98     | 90                   | 98   | 90                    | 83     | 90                   | 83   |
| 80~900                              | 3~36     | 65                               | 2 1/2 | 95           | 105    | -                    | -    | 100                   | 95     | -                    | -    |
| 90~900                              | 3 1/2~36 | 80                               | 3     | 120          | 130    | -                    | -    | 132                   | 115    | -                    | -    |
| 125~900                             | 5~36     | 100                              | 4     | 140          | 150    | -                    | -    | 168                   | 150    | -                    | -    |
| 200~900                             | 8~36     | 150                              | 6     | 195          | 210    | -                    | -    | 238                   | 225    | -                    | -    |
| 250~900                             | 10~36    | 200                              | 8     | 220          | -      | -                    | -    | 338                   | -      | -                    | -    |
| 300~900                             | 12~36    | 250                              | 10    | 270          | -      | -                    | -    | 432                   | -      | -                    | -    |
| 350~900                             | 14~36    | 300                              | 12    | 290          | -      | -                    | -    | 498                   | -      | -                    | -    |

注释 Note:

1) 其它尺寸参照\*~\*页。

1) As for other sizes, please refer to the ones in the page of \*\*.



### 加长支管座

#### NIPOLETS

| 主管公称尺寸<br>Run pipes<br>Nominal Size |          | 支管公称尺寸<br>Branch<br>Nominal Size |       | 长度<br>Length | 端部外径<br>OD at End | 本体直径<br>OD of Fitting |        | 开孔直径<br>Cut Hole Dia. |        |
|-------------------------------------|----------|----------------------------------|-------|--------------|-------------------|-----------------------|--------|-----------------------|--------|
| DN                                  | NPS      | DN                               | NPS   | A            | D <sub>2</sub>    | D <sub>1 min</sub>    |        | d <sub>nom</sub>      |        |
|                                     |          |                                  |       |              |                   | XS                    | Sch160 | XS                    | Sch160 |
| 20~900                              | 3/4~36   | 15                               | 1/2   | 89           | 21.3              | 38                    | 47     | 24                    | 19     |
| 25~900                              | 1~36     | 20                               | 3/4   |              | 26.7              | 47                    | 53     | 30                    | 25     |
| 32~900                              | 1 1/4~36 | 25                               | 1     |              | 33.4              | 56                    | 63     | 36                    | 33     |
| 40~900                              | 1 1/2~36 | 32                               | 1 1/4 | 89           | 42.2              | 66                    | 72     | 45                    | 38     |
| 50~900                              | 2~36     | 40                               | 1 1/2 |              | 48.3              | 75                    | 83     | 51                    | 49     |
| 65~900                              | 2 1/2~36 | 50                               | 2     |              | 60.3              | 90                    | 104    | 65                    | 59     |
| 80~900                              | 3~36     | 65                               | 2 1/2 | 89           | 73.0              | 105                   | —      | 76                    | —      |
| 90~900                              | 3 1/2~36 | 80                               | 3     |              | 88.9              | 124                   | —      | 94                    | —      |
| 125~900                             | 5~36     | 100                              | 4     |              | 114.3             | 154                   | —      | 121                   | —      |

#### 注释 Note:

1) 本产品用于支管端部与阀门连接的情况。

1) This nipolet is used to connect the valve at the the end of the branch pipe.

2) D<sub>2</sub>的公差: DN15~40 (NPS1/2~1 1/2) 为±0.25mm, DN50~100 (NPS2~4) 为±0.5mm; T为XS或Sch160等级的壁厚, d<sub>1</sub> = D<sub>2</sub> - 2T。

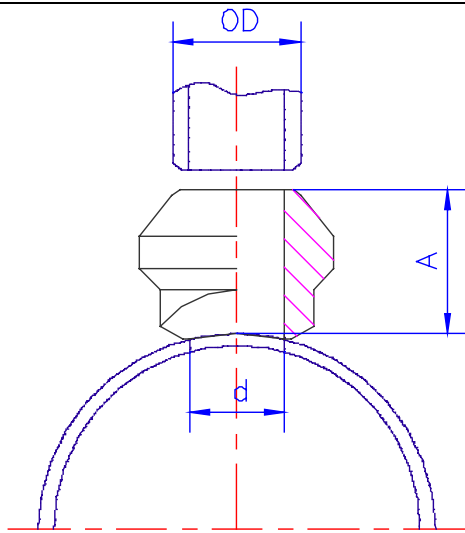
2) The tolerance of D<sub>2</sub> shall be as: DN15~40 (NPS1/2~1 1/2) : ±0.25mm, DN50~100 (NPS2~4) : ±0.5mm. T is the thickness of XS or Sch160, d<sub>1</sub> = D<sub>2</sub> - 2T.

2) 根据采购要求, 端部可加工成平头或螺纹端的型式; 其中螺纹按GB/T 12716 (等同于ASME B1.20.1) 中的NPT螺纹加工。

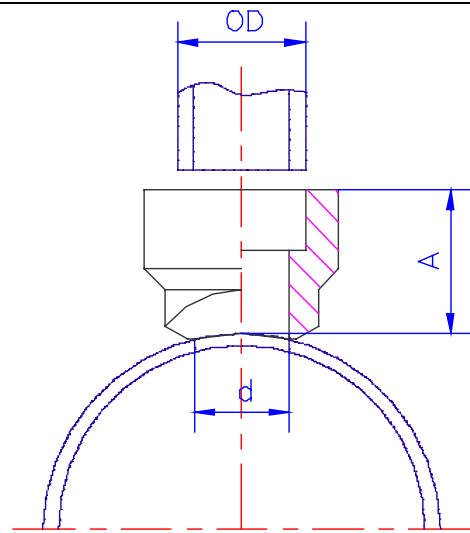
3) Per the purchase specification, the ends can be machined as plain or threaded type, and the thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1)

4) A尺寸亦可按采购要求加工成114mm、140mm及165mm的长度。

4) Per the purchase specification, the size of A can be machined as 114mm, 140mm and 165mm.



对焊薄壁支管座  
BW Pipet



承插焊薄壁支管座  
SW Pipet

薄壁支管座  
PIPETS

| 主管公称尺寸<br>Run pipes Nominal Size |          | 支管公称尺寸<br>Branch Nominal Size |       | 长度<br>Length |           | 开孔直径<br>Cut Hole Dia. |        |
|----------------------------------|----------|-------------------------------|-------|--------------|-----------|-----------------------|--------|
| DN                               | NPS      | DN                            | NPS   | A            |           | $d_{nom}$             |        |
|                                  |          |                               |       | 对焊<br>BW     | 承插焊<br>SW | Sch5s                 | Sch10s |
| 8~900                            | 1/4~36   | 6                             | 1/8   | 16           | -         | -                     | 7.8    |
| 10~900                           | 3/8~36   | 8                             | 1/4   | 16           | -         | -                     | 10.4   |
| 15~900                           | 1/2~36   | 10                            | 3/8   | 19           | -         | -                     | 13.8   |
| 20~900                           | 3/4~36   | 15                            | 1/2   | 19           | 26        | 18.0                  | 17.1   |
| 25~900                           | 1~36     | 20                            | 3/4   | 22           | 27        | 23.4                  | 22.5   |
| 32~900                           | 1 1/4~36 | 25                            | 1     | 27           | 33        | 30.1                  | 27.9   |
| 40~900                           | 1 1/2~36 | 32                            | 1 1/4 | 32           | 33        | 38.9                  | 36.7   |
| 50~900                           | 2~36     | 40                            | 1 1/2 | 33           | 35        | 45.0                  | 42.8   |
| 65~900                           | 2 1/2~36 | 50                            | 2     | 38           | 38        | 57.0                  | 54.8   |
| 80~900                           | 3~36     | 65                            | 2 1/2 | 42           | 46        | 68.8                  | 66.9   |
| 90~900                           | 3 1/2~36 | 80                            | 3     | 45           | 51        | 84.7                  | 82.8   |
| 100~900                          | 4~36     | 90                            | 3 1/2 | 48           | -         | 97.4                  | 95.5   |
| 125~900                          | 5~36     | 100                           | 4     | 51           | 57        | 110.1                 | 108.2  |
| 150~900                          | 6~36     | 125                           | 5     | 57           | -         | 135.8                 | 134.5  |
| 200~900                          | 8~36     | 150                           | 6     | 60           | -         | 162.8                 | 161.5  |
| 250~900                          | 10~36    | 200                           | 8     | 70           | -         | 213.6                 | 211.6  |
| 300~900                          | 12~36    | 250                           | 10    | 78           | -         | 266.2                 | 264.6  |
| 350~900                          | 14~36    | 300                           | 12    | 86           | -         | 315.9                 | 314.7  |
| 400~900                          | 16~36    | 350                           | 14    | 89           | -         | 347.7                 | 346.0  |
| 450~900                          | 18~36    | 400                           | 16    | 94           | -         | 398.8                 | 396.8  |
| 500~900                          | 20~36    | 450                           | 18    | 97           | -         | 448.6                 | 447.4  |
| 550~900                          | 22~36    | 500                           | 20    | 102          | -         | 498.4                 | 496.9  |
| 650~900                          | 26~36    | 600                           | 24    | 116          | -         | 598.9                 | 597.3  |
| 800~900                          | 32~36    | 750                           | 30    | 137          | -         | 749.3                 | 746.2  |

注释 Note:

1) 薄壁支管座通常用于主管壁厚为 Sch5s 或 Sch10s 的情况。

1) The pipets are usually used for connection when the schedule of the run pipe is Sch5s or Sch10s.

2) OD为支管接管外径；焊接坡口型式见\*\*页图示。

2) OD is the outside diameter of the connecting branch pipe. As for the bevel ends, please refer the figure in page of \*\*.



ASME 规范中的压力管道常用金属材料  
THE GENERAL METALLIC MATERIALS OF ASME PRESSURE PIPING CODE

| 规范 Code                     | 牌号 Grade                   | 化学成分 Chemical Composition %, max |           |           |       |           |           |           |             |                | 力学性能 Mechanical Requirement |                     |                 |           |       |
|-----------------------------|----------------------------|----------------------------------|-----------|-----------|-------|-----------|-----------|-----------|-------------|----------------|-----------------------------|---------------------|-----------------|-----------|-------|
|                             |                            | C                                | Si        | Mn        | P     | S         | Cr        | Ni        | Mo          | Other          | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other |
| ASTM A 53/<br>ASME SA 53    | B <sup>1)</sup><br>无缝/S    | 0.30                             | -         | 1.20      | 0.05  | 0.045     | 0.40      | 0.40      | 0.15        | Cu:0.40;V:0.08 | 415                         | 240                 | e <sup>2)</sup> | -         | -     |
|                             | B <sup>1)</sup><br>电阻焊/ERW | 0.30                             | -         | 1.20      | 0.05  | 0.045     | 0.40      | 0.40      | 0.15        | Cu:0.50;V:0.08 | 415                         | 240                 | e <sup>2)</sup> | -         | -     |
| ASTM A 105/<br>ASME SA 105/ | A105 <sup>1) 3) 4)</sup>   | 0.35                             | 0.10-0.35 | 0.60-1.05 | 0.035 | 0.040     | 0.30      | 0.40      | 0.12        | Cu:0.40;V:0.08 | 485                         | 250                 | 22              | 187       | Z≥30% |
| ASTM A 106/<br>ASME SA 106  | B <sup>1) 3)</sup>         | 0.30                             | 0.10 min  | 0.29-1.06 | 0.035 | 0.035     | 0.40      | 0.40      | 0.15        | Cu:0.40;V:0.08 | 415                         | 240                 | 22              | -         | -     |
|                             | C <sup>1) 3)</sup>         | 0.35                             | 0.10 min  | 0.29-1.06 | 0.035 | 0.035     | 0.40      | 0.40      | 0.15        | Cu:0.40;V:0.08 | 485                         | 275                 | 20              | -         | -     |
| ASTM A 182/<br>ASME SA 182  | F5                         | 0.15                             | 0.50      | 0.30-0.60 | 0.030 | 0.030     | 4.0-6.0   | 0.50      | 0.44-0.65   | -              | 485                         | 275                 | 20              | 143-217   | Z≥35% |
|                             | F9                         | 0.15                             | 0.50-1.00 | 0.30-0.60 | 0.030 | 0.030     | 8.0-10.0  | -         | 0.90-1.10   | -              | 585                         | 380                 | 20              | 179-217   | Z≥40% |
|                             | F91                        | 0.08-0.12                        | 0.20-0.50 | 0.30-0.60 | 0.020 | 0.010     | 8.0-9.5   | 0.40      | 0.85-1.05   | 5)             | 585                         | 415                 | 20              | 248       | Z≥40% |
|                             | F11 CL1                    | 0.05-0.15                        | 0.50-1.00 | 0.30-0.60 | 0.030 | 0.030     | 1.00-1.50 | -         | 0.44-0.65   | -              | 415                         | 205                 | 20              | 121-174   | Z≥45% |
|                             | F11 CL2                    | 0.10-0.20                        | 0.50-1.00 | 0.30-0.80 | 0.040 | 0.040     | 1.00-1.50 | -         | 0.44-0.65   | -              | 485                         | 275                 | 20              | 143-207   | Z≥30% |
|                             | F11 CL3                    | 0.10-0.20                        | 0.50-1.00 | 0.30-0.80 | 0.040 | 0.040     | 1.00-1.50 | -         | 0.44-0.65   | -              | 515                         | 310                 | 20              | 156-207   | Z≥30% |
|                             | F12 CL1                    | 0.05-0.15                        | 0.50      | 0.30-0.60 | 0.045 | 0.045     | 0.80-1.25 | -         | 0.44-0.65   | -              | 415                         | 220                 | 20              | 121-174   | Z≥45% |
|                             | F12 CL2                    | 0.10-0.20                        | 0.10-0.60 | 0.30-0.80 | 0.040 | 0.040     | 0.80-1.25 | -         | 0.44-0.65   | -              | 485                         | 275                 | 20              | 143-207   | Z≥30% |
|                             | F22 CL1                    | 0.05-0.15                        | 0.50      | 0.30-0.60 | 0.040 | 0.040     | 2.00-2.50 | -         | 0.87-1.13   | -              | 415                         | 205                 | 20              | 170       | Z≥35% |
|                             | F22 CL3                    | 0.05-0.15                        | 0.50      | 0.30-0.60 | 0.040 | 0.040     | 2.00-2.50 | -         | 0.87-1.13   | -              | 515                         | 310                 | 20              | 156-207   | Z≥30% |
|                             | F304 <sup>6)</sup>         | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-11.0  | -           | -              | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F304H                      | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-11.0  | -           | -              | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F304L <sup>6)</sup>        | 0.030                            | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-13.0  | -           | -              | 485                         | 170                 | 30              | -         | Z≥50% |
|                             | F316 <sup>6)</sup>         | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 10.0-14.0 | 2.00-3.00   | -              | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F316H                      | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 10.0-14.0 | 2.00-3.00   | -              | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F316L <sup>6)</sup>        | 0.030                            | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 10.0-15.0 | 2.00-3.00   | -              | 485                         | 170                 | 30              | -         | Z≥50% |
|                             | F321                       | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-19.0 | 9.0-12.0  | -           | Ti:5C-0.7      | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F321H                      | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-19.0 | 9.0-12.0  | -           | Ti:4C-0.7      | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F347                       | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-20.0 | 9.0-13.0  | -           | Nb:10C-1.10    | 515                         | 205                 | 30              | -         | Z≥50% |
|                             | F347H                      | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-20.0 | 9.0-13.0  | -           | Nb:8C-1.10     | 515                         | 205                 | 30              | -         | Z≥50% |
| F51                         | 0.030                      | 1.00                             | 2.00      | 0.030     | 0.020 | 21.0-23.0 | 4.5-6.5   | 2.5-3.5   | N:0.08-0.20 | 620            | 450                         | 25                  | -               | Z≥45%     |       |
| F60                         | 0.030                      | 1.00                             | 2.00      | 0.030     | 0.020 | 22.0-23.0 | 4.5-6.5   | 3.0-3.5   | N:0.14-0.20 | 655            | 485                         | 25                  | -               | Z≥45%     |       |

注: 1) Cu, Ni, Cr, Mo、和 V 的含量总合不应大于 1.00%。

2)  $e = 1940A^{0.2}/U^{0.9}$ ; 详见规范。

3) 在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.06% Mn 含量, 直到 1.35% 为止。

4) Cr 和 Mo 的含量总合不应大于 0.32%。

5) Nb:0.06-0.10, N:0.03-0.07, Al:0.02, V:0.18-0.25, Ti:0.01, Zr:0.01。

6) F304、F304L、F316 和 F316L 的 N 含量不应大于 0.10%。

NOTE: 1) The sum of Cu, Ni, Cr, Mo and V shall not exceed 1.00 %.

2)  $e = 1940A^{0.2}/U^{0.9}$ ; Details refer the see the specification.

3) Below the specified max.C, If the content C decreases each 0.01 %, an increase of 0.06% manganese will be permitted up to a maximum of 1.35%.

4) The sum of chromium and molybdenum shall not exceed 0.32 %.

5) Nb:0.06-0.10, N:0.03-0.07, Al:0.02, V:0.18-0.25, Ti:0.01, Zr:0.01.

6) Grades F304, F304L, F316 and F316L shall have a maximum nitrogen content of 0.10%.



| 规范<br>Code                 | 牌号<br>Grade                 | 化学成分 Chemical Composition %, max |           |           |       |           |           |           |           |                          | 力学性能 Mechanical Requirement |                     |                 |           |       |
|----------------------------|-----------------------------|----------------------------------|-----------|-----------|-------|-----------|-----------|-----------|-----------|--------------------------|-----------------------------|---------------------|-----------------|-----------|-------|
|                            |                             | C                                | Si        | Mn        | P     | S         | Cr        | Ni        | Mo        | Other                    | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other |
| ASTM A 234/<br>ASME SA 234 | WPB <sup>7)8)9)10)11)</sup> | 0.30                             | 0.10 min  | 0.29-1.06 | 0.050 | 0.058     | 0.40      | 0.40      | 0.15      | Cu:0.40;V:0.08           | 415-655                     | 240                 | 22              | 197       | -     |
|                            | WPC <sup>8)9)10)11)</sup>   | 0.35                             | 0.10 min  | 0.29-1.06 | 0.050 | 0.058     | 0.40      | 0.40      | 0.15      | Cu:0.40;V:0.08           | 485-655                     | 275                 | 22              | 197       | -     |
|                            | WP5 CL1                     | 0.15                             | 0.50      | 0.30-0.60 | 0.040 | 0.030     | 4.0-6.0   | -         | 0.44-0.65 | -                        | 415-585                     | 205                 | 22              | 217       | -     |
|                            | WP5 CL3                     | 0.15                             | 0.50      | 0.30-0.60 | 0.040 | 0.030     | 4.0-6.0   | -         | 0.44-0.65 | -                        | 520-690                     | 310                 | 22              | 217       | -     |
|                            | WP9 CL1                     | 0.15                             | 1.00      | 0.30-0.60 | 0.030 | 0.030     | 8.0-10.0  | -         | 0.90-1.10 | -                        | 415-585                     | 205                 | 22              | 217       | -     |
|                            | WP9 CL3                     | 0.15                             | 1.00      | 0.30-0.60 | 0.030 | 0.030     | 8.0-10.0  | -         | 0.90-1.10 | -                        | 520-690                     | 310                 | 22              | 217       | -     |
|                            | WP91                        | 0.08-0.12                        | 0.20-0.50 | 0.30-0.60 | 0.020 | 0.010     | 8.0-9.5   | 0.40      | 0.85-1.05 | 12)                      | 585-760                     | 415                 | 20              | 248       | -     |
|                            | WP11 CL1                    | 0.05-0.15                        | 0.50-1.00 | 0.30-0.60 | 0.030 | 0.030     | 1.00-1.50 | -         | 0.44-0.65 | -                        | 415-585                     | 205                 | 22              | 197       | -     |
|                            | WP11 CL2                    | 0.05-0.20                        | 0.50-1.00 | 0.30-0.80 | 0.040 | 0.040     | 1.00-1.50 | -         | 0.44-0.65 | -                        | 485-655                     | 275                 | 22              | 197       | -     |
|                            | WP11 CL3                    | 0.05-0.20                        | 0.50-1.00 | 0.30-0.80 | 0.040 | 0.040     | 1.00-1.50 | -         | 0.44-0.65 | -                        | 520-690                     | 310                 | 22              | 197       | -     |
|                            | WP12 CL1                    | 0.05-0.20                        | 0.60      | 0.30-0.80 | 0.045 | 0.045     | 0.80-1.25 | -         | 0.44-0.65 | -                        | 415-585                     | 220                 | 22              | 197       | -     |
|                            | WP12 CL2                    | 0.05-0.20                        | 0.60      | 0.30-0.80 | 0.045 | 0.045     | 0.80-1.25 | -         | 0.44-0.65 | -                        | 485-655                     | 275                 | 22              | 197       | -     |
|                            | WP22 CL1                    | 0.05-0.15                        | 0.50      | 0.30-0.60 | 0.040 | 0.040     | 1.90-2.60 | -         | 0.87-1.13 | -                        | 415-585                     | 205                 | 22              | 197       | -     |
| WP22 CL3                   | 0.05-0.15                   | 0.50                             | 0.30-0.60 | 0.040     | 0.040 | 1.90-2.60 | -         | 0.87-1.13 | -         | 520-690                  | 310                         | 22                  | 197             | -         |       |
| ASTM A 240/<br>ASME SA 240 | 304                         | 0.08                             | 0.75      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-10.5  | -         | N:0.10                   | 515                         | 205                 | 40              | 201       | -     |
|                            | 304H                        | 0.04-0.10                        | 0.75      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-10.5  | -         | -                        | 515                         | 205                 | 40              | 201       | -     |
|                            | 304L                        | 0.030                            | 0.75      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-12.0  | -         | N:0.10                   | 485                         | 170                 | 40              | 201       | -     |
|                            | 316                         | 0.08                             | 0.75      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 10.0-14.0 | 2.00-3.00 | N:0.10                   | 515                         | 205                 | 40              | 217       | -     |
|                            | 316H                        | 0.04-0.10                        | 0.75      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 10.0-14.0 | 2.00-3.00 | -                        | 515                         | 205                 | 40              | 217       | -     |
|                            | 316L                        | 0.030                            | 0.75      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 10.0-14.0 | 2.00-3.00 | N:0.10                   | 485                         | 170                 | 40              | 217       | -     |
|                            | 321                         | 0.08                             | 0.75      | 2.00      | 0.045 | 0.030     | 17.0-19.0 | 9.0-12.0  | -         | N:0.10;<br>Ti:5(C+N)-0.7 | 515                         | 205                 | 40              | 217       | -     |
|                            | 321H                        | 0.04-0.10                        | 0.75      | 2.00      | 0.045 | 0.030     | 17.0-19.0 | 9.0-12.0  | -         | Ti:4(C+N)-0.7            | 515                         | 205                 | 40              | 217       | -     |
|                            | 347                         | 0.08                             | 0.75      | 2.00      | 0.045 | 0.030     | 17.0-19.0 | 9.0-13.0  | -         | Nb:10C-1.00              | 515                         | 205                 | 40              | 201       | -     |
| ASTM A 312/<br>ASME SA 312 | TP347H                      | 0.04-0.10                        | 0.75      | 2.00      | 0.045 | 0.030     | 17.0-20.0 | 9.0-13.0  | -         | Nb:8C-1.00               | 515                         | 205                 | 40              | 201       | -     |
|                            | TP304                       | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-11.0  | -         | -                        | 515                         | 205                 | 35              | -         | -     |
|                            | TP304H                      | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-11.0  | -         | -                        | 515                         | 205                 | 35              | -         | -     |
|                            | TP304L                      | 0.035                            | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0 | 8.0-13.0  | -         | -                        | 485                         | 170                 | 35              | -         | -     |
|                            | TP316 <sup>13)</sup>        | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 11.0-14.0 | 2.00-3.00 | -                        | 515                         | 205                 | 35              | -         | -     |
|                            | TP316H <sup>13)</sup>       | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0 | 11.0-14.0 | 2.00-3.00 | -                        | 515                         | 205                 | 35              | -         | -     |
| TP316L                     | 0.035                       | 1.00                             | 2.00      | 0.045     | 0.030 | 16.0-18.0 | 10.0-14.0 | 2.00-3.00 | -         | 485                      | 170                         | 35                  | -               | -         |       |

注: 7) 采用棒料或板料制造的管件, C 含量不应大于 0.35%。

8) 采用锻件制造的管件, C 含量不应大于 0.35%, Si 含量不应大于 0.35%, 且无最小值限制。

9) 在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.06% Mn 含量, 直到 1.35% 为止。

10) Cu, Ni, Cr 和 Mo 的含量总合不应大于 1.00%。

11) Cr 和 Mo 的含量总合不应大于 0.32%。

12) V:0.18-0.25, Nb:0.06-0.10, N:0.03-0.07, Al:0.02, Ti:0.01, Zr:0.01。

13) TP316 和 TP316H 的焊管, Ni 含量的范围可为 10.0-14.0 %。

NOTE: 7) Fittings made from bars or plates shall have max. C 0.35.

8) Fittings made from forgings shall have C max. 0.35 and Si max. 0.35 without min. limitation.

9) Below the specified max. C, if the content C decreases each 0.01 %, an increase of 0.06% Mn will be permitted up to a maximum of 1.35%.

10) The sum of Cu, Ni, Cr, and Mo shall not exceed 1.00 %.

11) The sum of Cr and Mo shall not exceed 0.32 %.

12) V:0.18-0.25, Nb:0.06-0.10, N:0.03-0.07, Al:0.02, Ti:0.01, Zr:0.01.

13) For welded TP316 and TP316H pipe, the range of Ni shall be 10.0-14.0 %.

ASME 规范中的压力管道常用金属材料(续)

The General Ferrous Material for ASME Pressure Piping Code ( )

| 规范 Code                                   | 牌号 Grade                             | 化学成分 Chemical Composition %, max |           |           |       |       |           |           |           |                                 | 力学性能 Mechanical Requirement |                     |                 |           |       |
|---|--------------------------------------|----------------------------------|-----------|-----------|-------|-------|-----------|-----------|-----------|---------------------------------|-----------------------------|---------------------|-----------------|-----------|-------|
|   |                                      | C                                | Si        | Mn        | P     | S     | Cr        | Ni        | Mo        | Other                           | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other |
| ASTM A 312/<br>ASME SA 312                | TP321 <sup>14)</sup>                 | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030 | 17.0-19.0 | 9.0-12.0  | -         | N:0.10;Ti:5C-0.70               | 515                         | 205                 | 35              | -         | -     |
|   | TP321H <sup>14)</sup>                | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030 | 17.0-19.0 | 9.0-12.0  | -         | Ti:4C-0.60                      | 515                         | 205                 | 35              | -         | -     |
|   | TP347                                | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030 | 17.0-19.0 | 9.0-13.0  | -         | Nb:10C-1.00                     | 515                         | 205                 | 35              | -         | -     |
| ASTM A 333/<br>ASME SA 333 <sup>25)</sup> | TP347H                               | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030 | 17.0-19.0 | 9.0-13.0  | -         | Nb:8C-1.0                       | 515                         | 205                 | 35              | -         | -     |
| ASTM A 333/<br>ASME SA 333 <sup>25)</sup> | 6 <sup>15)</sup>                     | 0.30                             | 0.10 min  | 0.29-1.06 | 0.025 | 0.025 | -         | -         | -         | -                               | 415                         | 240                 | 22              | -         | -     |
|   | 9                                    | 0.20                             | -         | 0.40-1.06 | 0.025 | 0.025 | -         | 1.60-2.24 | -         | Cu:0.75-1.25                    | 435                         | 315                 | (28)            | -         | -     |
|   | 3                                    | 0.19                             | 0.18-0.37 | 0.31-0.64 | 0.025 | 0.025 | -         | 3.18-3.82 | -         | -                               | 450                         | 240                 | 22              | -         | -     |
| ASTM A 335/<br>ASME SA 335                | 8                                    | 0.13                             | 0.13-0.32 | 0.90      | 0.025 | 0.025 | -         | 8.40-9.60 | -         | -                               | 690                         | 515                 | 16              | -         | -     |
|   | P5                                   | 0.15                             | 0.50      | 0.30-0.60 | 0.025 | 0.025 | 4.00-6.00 | -         | 0.45-0.65 | -                               | 415                         | 205                 | 22              | -         | -     |
|   | P5b                                  | 0.15                             | 1.00-2.00 | 0.30-0.60 | 0.025 | 0.025 | 4.00-6.00 | -         | 0.44-0.65 | -                               | 415                         | 205                 | 22              | -         | -     |
|   | P5c                                  | 0.12                             | 0.50      | 0.30-0.60 | 0.025 | 0.025 | 4.00-6.00 | -         | 0.45-0.65 | <sup>16)</sup>                  | 415                         | 205                 | 22              | -         | -     |
|   | P9                                   | 0.15                             | 0.25-1.00 | 0.30-0.60 | 0.025 | 0.025 | 8.0-10.0  | -         | 0.90-1.10 | -                               | 415                         | 205                 | 22              | -         | -     |
|   | P91                                  | 0.08-0.12                        | 0.20-0.50 | 0.30-0.60 | 0.020 | 0.010 | 8.00-9.50 | 0.40      | 0.85-1.05 | <sup>17)</sup>                  | 585                         | 415                 | 20              | 250       | -     |
|   | P11                                  | 0.05-0.15                        | 0.50-1.00 | 0.30-0.60 | 0.025 | 0.025 | 1.00-1.50 | -         | 0.44-0.65 | -                               | 415                         | 205                 | 22              | -         | -     |
| ASTM A 350/<br>ASME SA 350 <sup>25)</sup> | P12                                  | 0.05-0.15                        | 0.50      | 0.30-0.61 | 0.025 | 0.025 | 0.80-1.25 | -         | 0.44-0.65 | -                               | 415                         | 220                 | 22              | -         | -     |
|   | P22                                  | 0.05-0.15                        | 0.50      | 0.30-0.60 | 0.025 | 0.025 | 1.90-2.60 | -         | 0.87-1.13 | -                               | 415                         | 205                 | 22              | -         | -     |
|   | LF2 CL1 & CL2 <sup>18) 19) 20)</sup> | 0.30                             | 0.15-0.30 | 0.60-1.35 | 0.035 | 0.040 | 0.30      | 0.40      | 0.12      | Cu:0.40;Nb:0.02<br>V:0.08,      | 485-655                     | 250                 | 22              | 197       | -     |
| ASTM A 350/<br>ASME SA 350 <sup>25)</sup> | LF9 <sup>19)</sup>                   | 0.20                             | -         | 0.40-1.06 | 0.035 | 0.040 | 0.30      | 1.60-2.24 | 0.12      | Cu:0.75-1.25,<br>Nb:0.02;V:0.03 | 435-605                     | 315                 | 25              | 197       | -     |
|   | LF3 CL1 & CL2 <sup>19)</sup>         | 0.20                             | 0.20-0.35 | 0.90      | 0.035 | 0.040 | 0.30      | 3.3-3.7   | 0.12      | Cu:0.40;Nb:0.02<br>V:0.03       | 485-655                     | 260                 | 22              | 197       | -     |

注: 14) 壁厚>9.53mm (3/8 in.) 的 TP321 无缝管和壁厚>4.76mm (3/16 in.) 的 TP321H 无缝管, 其抗拉强度最小为 485MPa (70ksi), 屈服强度最小为 170MPa (25ksi)。  
 15) 在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.05% Mn 含量, 直到 1.35% 为止。  
 16) P5c 应有 4×C-0.7% 的 Ti 含量, 或应有 (8-10)×C% 的 Nb 含量。  
 17) P91 应有 V:0.18-0.25, N:0.03-0.07, Al:0.02, Nb:0.06-0.10, Ti:0.01, Zr:0.01。  
 18) 在熔炼分析中, Cu, Ni, Cr, V 和 Mo 的总合不超过 1.00%。  
 19) 在熔炼分析中, Cr 和 Mo 的总合不超过 0.32%。  
 20) 经协商, Nb 的含量熔炼分析时可为 0.05%, 产品分析时可为 0.06%。

NOTE:  
 14) For TP321 SMLS pipes with thickness (T.) > 9.53mm (3/8 in.) and TP321H SMLS pipes with T > 4.76mm (3/16 in.), the min. tension strength is 485MPa (70ksi) and the min. yield strength is 170MPa (25ksi).  
 15) Below the specified max. C, If the content C decreases each 0.01%, an increase of 0.06% manganese will be permitted up to a maximum of 1.35%.  
 16) Grade P5c shall have a Ti content 4×C-0.7%; or a Nb content (8-10)×C%.  
 17) Grade P91 shall have V:0.18-0.25, N:0.03-0.07, Al:0.02, Nb:0.06-0.10, Ti:0.01, Zr:0.01.  
 18) The sum of Cu, Ni, Cr, V and Mo shall not exceed 1.00% during heat analysis.  
 19) The sum of Cr and Mo shall not exceed 0.32% during heat analysis.  
 20) Pe agreement, the content of Nb may be 0.05% during heat analysis and 0.06% during product analysis.

| 规范<br>Code                                | 牌号<br>Grade         | 化学成分 Chemical Composition %, max |           |           |       |           |            |           |            |   | 力学性能 Mechanical Requirement |                     |                 |           |                       |
|---|---------------------|----------------------------------|-----------|-----------|-------|-----------|------------|-----------|------------|---|-----------------------------|---------------------|-----------------|-----------|-----------------------|
|   |                     | C                                | Si        | Mn        | P     | S         | Cr         | Ni        | Mo         | Other   | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other                 |
| ASTM A 387<br>ASME SA 387 <sup>26)</sup>  | 5                   | 0.15                             | 0.55      | 0.25-0.66 | 0.035 | 0.030     | 3.90-6.10  | -         | 0.40-0.70  | -   | 415-585<br>(515-690)        | 205<br>(310)        | 18              | -         | Z <sub>≥</sub><br>40% |
|   | 9                   | 0.15                             | 1.05      | 0.25-0.66 | 0.030 | 0.030     | 7.90-10.10 | -         | 0.85-1.15  | -   | 415-585<br>(515-690)        | 205<br>(310)        | 18              | -         | Z <sub>≥</sub><br>40% |
|   | 91                  | 0.06-0.15                        | 0.18-0.56 | 0.25-0.66 | 0.025 | 0.012     | 7.90-9.60  | 0.43      | 0.80-1.10  | V:0.16-0.27<br>Nb:0.05-0.11<br>N:0.025-0.080<br>Al:0.05 | 585-760                     | 415                 | 18              | -         | -                     |
|   | 11                  | 0.04-0.17                        | 0.44-0.86 | 0.35-0.73 | 0.035 | 0.035     | 0.94-1.56  | -         | 0.40-0.70  | -   | 415-585<br>(515-690)        | 240<br>(310)        | 22              | -         | -                     |
|   | 12                  | 0.04-0.17                        | 0.13-0.45 | 0.35-0.73 | 0.035 | 0.035     | 0.74-1.21  | -         | 0.40-0.65  | -   | 380-550<br>(450-585)        | 230<br>(275)        | 22              | -         | -                     |
|   | 22                  | 0.04-0.15                        | 0.50      | 0.25-0.66 | 0.035 | 0.035     | 1.88-2.62  | -         | 0.85-1.15  | -   | 415-585<br>(515-690)        | 205<br>(310)        | 18              | -         | Z <sub>≥</sub><br>40% |
| ASTM A 403/<br>ASME SA 403                | WP304               | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0  | 8.0-11.0  | -          | -   | 515                         | 205                 | 28              | -         | -                     |
|   | WP304H              | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0  | 8.0-11.0  | -          | -   | 515                         | 205                 | 28              | -         | -                     |
|   | WP304L              | 0.030                            | 1.00      | 2.00      | 0.045 | 0.030     | 18.0-20.0  | 8.0-12.0  | -          | -   | 485                         | 170                 | 28              | -         | -                     |
|   | WP316               | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0  | 10.0-14.0 | 2.00-3.00  | -   | 515                         | 205                 | 28              | -         | -                     |
|   | WP316H              | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0  | 10.0-14.0 | 2.00-3.00  | -   | 515                         | 205                 | 28              | -         | -                     |
|   | WP316L              | 0.030                            | 1.00      | 2.00      | 0.045 | 0.030     | 16.0-18.0  | 10.0-14.0 | 2.00-3.00  | -   | 485                         | 170                 | 28              | -         | -                     |
|   | WP321               | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-19.0  | 9.0-12.0  | -          | Ti:5(C+N <sub>2</sub> )-0.70                            | 515                         | 205                 | 28              | -         | -                     |
|   | WP321H              | 0.04-0.10                        | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-19.0  | 9.0-12.0  | -          | Ti:4(C+N <sub>2</sub> )-0.70                            | 515                         | 205                 | 28              | -         | -                     |
|   | WP347               | 0.08                             | 1.00      | 2.00      | 0.045 | 0.030     | 17.0-19.0  | 9.0-12.0  | -          | Nb:10C-1.10   | 515                         | 205                 | 28              | -         | -                     |
| WP347H                                    | 0.04-0.10           | 1.00                             | 2.00      | 0.045     | 0.030 | 17.0-19.0 | 9.0-12.0   | -         | Nb:8C-1.10 | 515   | 205                         | 28                  | -               | -         |                       |
| ASTM A 420/<br>ASME SA 420 <sup>25)</sup> | WPL6 <sup>21)</sup> | 0.30                             | 0.15-0.40 | 0.50-1.35 | 0.035 | 0.040     | 0.30       | 0.40      | 0.12       | Cu:0.40;V:0.08,<br>Nb:0.02                              | 415-655                     | 240                 | 22              | -         | -                     |
|   | WPL9                | 0.20                             | -         | 0.40-1.06 | 0.030 | 0.030     | -          | 1.60-2.24 | -          | Cu:0.75-1.25  | 435-610                     | 315                 | 20              | -         | -                     |
|   | WPL3 <sup>22)</sup> | 0.20                             | 0.13-0.37 | 0.31-0.64 | 0.05  | 0.05      | -          | 3.2-3.8   | -          | -   | 450-620                     | 240                 | 22              | -         | -                     |
|   | WPL8 <sup>23)</sup> | 0.13                             | 0.13-0.37 | 0.90      | 0.030 | 0.030     | -          | 8.4-9.6   | -          | -   | 690-865                     | 515                 | 16              | -         | -                     |
| ASTM A 515/<br>ASME SA 515                | 65 <sup>24)</sup>   | 0.28                             | 0.13-0.45 | 0.98      | 0.035 | 0.035     | -          | -         | -          | -   | 450-585                     | 240                 | 23              | -         | -                     |
|   | 70 <sup>24)</sup>   | 0.31                             | 0.13-0.45 | 1.30      | 0.035 | 0.035     | -          | -         | -          | -   | 485-620                     | 260                 | 21              | -         | -                     |
| ASTM A 516/<br>ASME SA 516                | 65 <sup>24)</sup>   | 0.24                             | 0.13-0.45 | 0.79-1.30 | 0.035 | 0.035     | -          | -         | -          | -   | 450-585                     | 240                 | 23              | -         | -                     |
|   | 70 <sup>24)</sup>   | 0.27                             | 0.13-0.45 | 0.79-1.30 | 0.035 | 0.035     | -          | -         | -          | -   | 485-620                     | 260                 | 21              | -         | -                     |
| ASTM A 815/<br>ASME SA 815                | S31803              | 0.030                            | 1.0       | 2.00      | 0.030 | 0.020     | 21.0-23.0  | 4.5-6.5   | 2.5-3.5    | N:0.08-0.20   | 620                         | 450                 | 20              | 290       | -                     |
|   | S32205              | 0.030                            | 1.00      | 2.00      | 0.030 | 0.020     | 22.0-23.0  | 4.5-6.5   | 3.0-3.5    | N:0.14-0.20   | 655                         | 450                 | 20              | 290       | -                     |

注: 21) 经协商, Nb 的含量熔炼分析时可 0.05%, 产品分析时可 0.06%。  
22) 用钢板或锻件制造的管件, Mn 含量最大为 0.90%。  
23) 用钢板制造的管件, Mn 含量最大为 0.98%。  
24) C 和 Mn 的含量因钢板的厚度不同而有所不同, 请查阅相关规范。  
25) 这些低温材料的冲击试验温度和冲击试验性能要求详见标准规定。  
26) 因钢板的热处理状态不同, 而力学性能要求不同, 详见规范。

NOTE: 21) Pe agreement, the content of Nb may be 0.05 % during heat analysis and 0.06% during product analysis.  
22) Fittings made from plates or forgings shall have Mn Max.0.90 %.  
23) Fittings made from plates shall have Mn Max 0.98 %.  
24) The contents of C and Mn may vary with the different thickness, please refer the relevant standards.  
25) As for the impact test temperature and the test properties, please refer the relevant standards.  
26) Because of the different heat treatment, the plates' properties are different, refer the standards.

中国标准中的压力管道常用金属材料  
THE GENERAL METALLIC MATERIALS OF CHINESE PRESSURE PIPING CODE

| 标准<br>Standard                        | 现用牌号<br>New<br>Grade    | 原用牌号<br>Old<br>Grade | 化学成分 Chemical Composition %, max |           |           |       |       |           |           |           |  | 力学性能 Mechanical Requirement |                     |                 |           |  |
|---------------------------------------|-------------------------|----------------------|----------------------------------|-----------|-----------|-------|-------|-----------|-----------|-----------|--|-----------------------------|---------------------|-----------------|-----------|--|
|                                       |                         |                      | C                                | Si        | Mn        | P     | S     | Cr        | Ni        | Mo        | Other                                      | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other  |
| GB/T 699                              | 20                      | -                    | 0.17-0.23                        | 0.17-0.37 | 0.35-0.65 | 0.035 | 0.035 | 0.25      | 0.30      | -         | Cu:0.25                                    | 410                         | 245                 | 25              | 156       | Z <sub>≥</sub> 55%                               |
| GB/T 711                              | 20                      | -                    | 0.17-0.24                        | 0.17-0.37 | 0.35-0.65 | 0.035 | 0.040 | 0.25      | 0.25      | -         | Cu:0.25                                    | 410                         | -                   | 28              | -         | -  |
| GB/T 713 <sup>1)</sup>                | Q245R <sup>2)3)4)</sup> | 20g, 20R             | 0.20                             | 0.35      | 0.50-1.00 | 0.025 | 0.015 | 0.30      | 0.30      | 0.080     | Alt <sub>≥</sub> 0.020;Cu:0.30             | 400-520                     | 245                 | 25              | -         | A <sub>KV</sub> ≥31J                             |
|                                       | Q345R <sup>2)3)4)</sup> | 16Mng, 16MnR         | 0.20                             | 0.55      | 1.20-1.60 | 0.025 | 0.015 | 0.30      | 0.30      | 0.080     | Alt <sub>≥</sub> 0.020;Cu:0.30             | 510-640                     | 345                 | 21              | -         | A <sub>KV</sub> ≥34J                             |
|                                       | 15CrMoR                 | 15CrMog, 15CrMoR     | 0.12-0.18                        | 0.15-0.40 | 0.40-0.70 | 0.025 | 0.010 | 0.80-1.20 | 0.30      | 0.45-0.60 | Cu:0.30                                    | 450-590                     | 295                 | 19              | -         | A <sub>KV</sub> ≥31J                             |
|                                       | 12Cr1MoVR               | 12Cr1MoVg            | 0.08-0.15                        | 0.15-0.40 | 0.40-0.70 | 0.025 | 0.010 | 0.90-1.20 | 0.30      | 0.25-0.35 | V:0.15-0.30;Cu:0.30                        | 440-590                     | 245                 | 19              | -         | A <sub>KV</sub> ≥34J                             |
| GB/T 3077                             | 15CrMo                  | -                    | 0.12-0.18                        | 0.17-0.37 | 0.40-0.70 | 0.035 | 0.035 | 0.80-1.10 | 0.30      | 0.40-0.55 | Cu:0.30                                    | 440                         | 295                 | 22              | 179       | Z <sub>≥</sub> 60%;A <sub>KU2</sub> ≥94J         |
|                                       | 12Cr1MoV                | -                    | 0.08-0.15                        | 0.17-0.37 | 0.40-0.70 | 0.035 | 0.035 | 0.90-1.20 | 0.30      | 0.25-0.35 | V:0.15-0.30;Cu:0.30                        | 490                         | 245                 | 22              | 179       | Z <sub>≥</sub> 50%;A <sub>KU2</sub> ≥71J         |
| GB 3087                               | 20 <sup>1)</sup>        | -                    | 0.17-0.23                        | 0.17-0.37 | 0.35-0.65 | 0.035 | 0.035 | 0.25      | 0.30      | -         | Cu:0.25                                    | 410-550                     | 245                 | 20              | -         | -  |
| GB/T 3274 <sup>1)</sup><br>(GB/T 700) | Q235A                   | -                    | 0.22                             | 0.35      | 1.40      | 0.045 | 0.050 | 0.30      | 0.30      | -         | Cu:0.30;N:0.008                            | 370-500                     | 235                 | 26              | -         | -  |
|                                       | Q235B                   | -                    | 0.20                             | 0.35      | 1.40      | 0.045 | 0.045 | 0.30      | 0.30      | -         | Cu:0.30;N:0.008                            | 370-500                     | 235                 | 26              | -         | A <sub>KV</sub> ≥27J                             |
|                                       | Q275A                   | -                    | 0.24                             | 0.35      | 1.50      | 0.045 | 0.050 | 0.30      | 0.30      | -         | Cu:0.30;N:0.008                            | 410-540                     | 275                 | 22              | -         | -  |
|                                       | Q275B                   | -                    | 0.21                             | 0.35      | 1.50      | 0.045 | 0.045 | 0.30      | 0.30      | -         | Cu:0.30;N:0.008                            | 410-540                     | 275                 | 22              | -         | A <sub>KV</sub> ≥27J                             |
| GB 3531 <sup>1)</sup>                 | 16MnDR                  | -                    | 0.20                             | 0.15-0.50 | 1.20-1.60 | 0.025 | 0.015 | 0.25      | 0.40      | 0.08      | Cu:0.25;Als <sub>≥</sub> 0.015             | 490-620                     | 315                 | 21              | -         | A <sub>KV</sub> ≥27J(-40℃)                       |
|                                       | 09MnNiDR                | -                    | 0.12                             | 0.15-0.50 | 1.20-1.60 | 0.025 | 0.015 | 0.25      | 0.30-0.80 | 0.08      | Cu:0.25;Nb:0.04,<br>Als <sub>≥</sub> 0.015 | 440-570                     | 300                 | 23              | -         | A <sub>KV</sub> ≥27J(-70℃)                       |
| GB 5310                               | 20G                     | -                    | 0.17-0.24                        | 0.17-0.37 | 0.35-0.65 | 0.030 | 0.030 | 0.25      | 0.25      | 0.15      | Cu:0.20;V:0.08                             | 410-550                     | 245                 | 24              | -         | A <sub>KV</sub> ≥35J                             |
|                                       | 15CrMoG                 | -                    | 0.12-0.18                        | 0.17-0.37 | 0.40-0.70 | 0.030 | 0.030 | 0.80-1.10 | -         | 0.40-0.55 | -  | 440-640                     | 235                 | 21              | -         | A <sub>KV</sub> ≥35J                             |
|                                       | 12Cr1MoVG               | -                    | 0.08-0.15                        | 0.17-0.37 | 0.40-0.70 | 0.030 | 0.030 | 0.90-1.20 | -         | 0.25-0.35 | V:0.15-0.30                                | 470-640                     | 255                 | 21              | -         | A <sub>KV</sub> ≥35J                             |
| GB/T 5312 <sup>2)</sup>               | 410                     | -                    | 0.21                             | 0.35      | 0.40-1.20 | 0.035 | 0.035 | 0.25      | 0.30      | 0.10      | Cu:0.30                                    | 410-530                     | 235                 | 22              | -         | -  |
|                                       | 460                     | -                    | 0.22                             | 0.35      | 0.80-1.40 | 0.035 | 0.035 | 0.25      | 0.30      | 0.10      | Cu:0.30                                    | 460-580                     | 265                 | 21              | -         | -  |
|                                       | 490                     | -                    | 0.23                             | 0.35      | 0.80-1.50 | 0.035 | 0.035 | 0.25      | 0.30      | 0.10      | Cu:0.30                                    | 490-610                     | 285                 | 21              | -         | -  |
| GB 6479 <sup>5)</sup>                 | 20                      | -                    | 0.17-0.24                        | 0.17-0.37 | 0.35-0.65 | 0.030 | 0.030 | 0.25      | 0.25      | 0.15      | Cu:0.20;V:0.08                             | 410-550                     | 245                 | 24              | -         | A <sub>KU2</sub> ≥39J                            |
|                                       | 16Mn                    | -                    | 0.12-0.20                        | 0.20-0.60 | 1.20-1.60 | 0.030 | 0.030 | 0.30      | 0.30      | -         | Cu:0.20                                    | 490-670                     | 320                 | 21              | -         | A <sub>KU2</sub> ≥47J/A <sub>KV</sub> ≥21J(-40℃) |
|                                       | 15CrMo                  | -                    | 0.12-0.18                        | 0.17-0.37 | 0.40-0.70 | 0.030 | 0.030 | 0.80-1.10 | 0.30      | 0.40-0.55 | Cu:0.20                                    | 440-640                     | 235                 | 21              | -         | A <sub>KU2</sub> ≥47J                            |
|                                       | 1Cr5Mo                  | -                    | 0.15                             | 0.50      | 0.60      | 0.030 | 0.030 | 4.00-6.00 | 0.60      | 0.45-0.60 | Cu:0.20                                    | 390-590                     | 195                 | 22              | -         | A <sub>KU2</sub> ≥94J                            |

注: 1) 当厚度不同时, 规定的力学性能数值将有变化, 详见标准。

2) Cr, Ni, Cu 和 Mo 的含量总合不应大于 0.70%。

3) Q245R、Q345R 中可添加微量 Nb, V, Ti 元素, 这 3 个元素的含量分别不应大于 0.050%、0.10%、0.12%。

4) 如钢中添加 Nb, V, Ti 等微量元素, Alt 含量的下限不适用。

5) 当壁厚大于 16~40mm 时, 屈服强度允许降低 10MPa。

NOTE: 1) The mechanical properties may vary because of the different thickness, See the standards.

2) The sum of Cr, Ni, Cu and Mo shall not exceed 0.70%.

3) The microelements of Nb, V and Ti can be added in Q245R、Q345R and the content shall not exceed 0.050%、0.10%、0.12% accordingly.

4) When the microelements Nb, V & Ti are added in steel, the lower limitation of Alt doesn't apply.

5) When the thickness exceeds 16~40mm, the yield strength can be reduced by 10MPa.

| 标准<br>Standard                 | 现用牌号<br>New<br>Grade | 原用牌号<br>Old<br>Grade | 化学成分 Chemical Composition %, max |           |           |       |       |             |            |           |   | 力学性能 Mechanical Requirement |                     |                 |           |  |
|--------------------------------|----------------------|----------------------|----------------------------------|-----------|-----------|-------|-------|-------------|------------|-----------|---|-----------------------------|---------------------|-----------------|-----------|--|
|                                |                      |                      | C                                | Si        | Mn        | P     | S     | Cr          | Ni         | Mo        | Other   | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other                                      |
| GB/T 8163 <sup>1)</sup>        | 20                   | -                    | 0.17-0.23                        | 0.17-0.37 | 0.35-0.65 | 0.035 | 0.035 | 0.25        | 0.30       | -         | Cu:0.25   | 410-550                     | 245                 | 20              | -         | -  |
|                                | Q345B                | 16Mn, 16MnRE         | 0.20                             | 0.55      | 1.0-1.60  | 0.040 | 0.040 | -           | -          | -         | V:0.02-0.15;<br>Nb:0.015-0.060;<br>Ti:0.02-0.20 | 490-665                     | 325                 | 21              | -         | -  |
| GB/T 9711.1 <sup>7)8)9)</sup>  | L360                 | -                    | 0.30                             | -         | 1.25      | 0.030 | 0.030 | -           | -          | -         | -   | 460                         | 360                 | 19              | -         | -  |
|                                | L415                 | -                    | 0.26                             | -         | 1.35      | 0.030 | 0.030 | -           | -          | -         | -   | 520                         | 415                 | 17              | -         | -  |
|                                | L450                 | -                    | 0.26                             | -         | 1.40      | 0.030 | 0.030 | -           | -          | -         | -   | 535                         | 450                 | 17              | -         | -  |
|                                | L485                 | -                    | 0.23                             | -         | 1.60      | 0.030 | 0.030 | -           | -          | -         | -   | 570                         | 485                 | 16              | -         | -  |
|                                | L555                 | -                    | 0.18                             | -         | 1.80      | 0.030 | 0.030 | -           | -          | -         | -   | 625-825                     | 555                 | 15              | -         | -  |
| GB/T 9711.2 <sup>7)9)10)</sup> | L360...              | -                    | 0.20                             | 0.45      | 1.60      | 0.025 | 0.020 | -           | -          | -         | -   | 460                         | 360-515             | 20              | -         | R <sub>t0.5</sub> /R <sub>m</sub> :0.88max |
|                                | L415...              | -                    | 0.21                             | 0.45      | 1.60      | 0.025 | 0.020 | -           | -          | -         | -   | 520                         | 415-565             | 18              | -         | R <sub>t0.5</sub> /R <sub>m</sub> :0.88max |
|                                | L450...              | -                    | 0.16                             | 0.45      | 1.60      | 0.025 | 0.020 | -           | -          | -         | -   | 535                         | 450-570             | 18              | -         | R <sub>t0.5</sub> /R <sub>m</sub> :0.90max |
|                                | L485...              | -                    | 0.16                             | 0.45      | 1.70      | 0.025 | 0.020 | -           | -          | -         | -   | 570                         | 485-605             | 18              | -         | R <sub>t0.5</sub> /R <sub>m</sub> :0.90max |
|                                | L555...              | -                    | 0.16                             | 0.45      | 1.80      | 0.025 | 0.020 | -           | -          | -         | -   | 625                         | 555-675             | 18              | -         | R <sub>t0.5</sub> /R <sub>m</sub> :0.90max |
| GB 9948 <sup>1)6)</sup>        | 20                   | -                    | 0.17-0.23                        | 0.17-0.37 | 0.35-0.65 | 0.030 | 0.020 | 0.25        | 0.25       | 0.15      | Cu:0.20;V:0.08                                  | 410-550                     | 245                 | 24              | -         | A <sub>KV</sub> ≥35J                       |
|                                | 15CrMo               | -                    | 0.12-0.18                        | 0.17-0.37 | 0.40-0.70 | 0.030 | 0.020 | 0.80-1.10   | 0.30       | 0.40-0.55 | Cu:0.20   | 440-640                     | 235                 | 21              | 170       | A <sub>KV</sub> ≥35J                       |
|                                | 1Cr5Mo               | -                    | 0.15                             | 0.50      | 0.60      | 0.030 | 0.020 | 4.00-6.00   | 0.60       | 0.45-0.60 | Cu:0.20   | 390-590                     | 195                 | 22              | 187       | A <sub>KV</sub> ≥35J                       |
|                                | 1Cr19Ni9             | -                    | 0.04-0.10                        | 1.00      | 2.00      | 0.030 | 0.020 | 18.00-20.00 | 8.00-11.00 | -         | Cu:0.20   | 520                         | 205                 | 35              | -         | -  |
| GB/T 18984 <sup>1)6)</sup>     | 16MnDG               | -                    | 0.12-0.20                        | 0.20-0.55 | 1.20-1.60 | 0.025 | 0.020 | -           | -          | -         | -   | 490-665                     | 325                 | 30              | -         | A <sub>KV</sub> ≥21J<br>(-45℃)             |
|                                | 09Mn2VDG             | -                    | 0.12                             | 0.17-0.37 | 1.85      | 0.025 | 0.020 | -           | -          | -         | V:0.12  | 450                         | 300                 | 30              | -         | A <sub>KV</sub> ≥21J<br>(-70℃)             |

注：6) 力学性能中的屈服强度值为下屈服强度 ReL。

7) 这些钢级与 API 5L 规范中的钢级类似对应如下（然而，所列对应钢级在其它方面可能不同）：

L360-X52, L415-X60, L450-X65, L485-X70, L555-X80

8) 列出的是焊接钢管的化学成分要求。其中，对于 L450 级以下钢级，最大 C 含量比规定值每降低 0.01%，允许在规定的最大 Mn 含量上增加 0.05% Mn 含量。但不超过 L360 的钢级，Mn 含量不应超过 1.45%；对高于 L360 的钢级，Mn 含量不应超过 1.60%。对于 L485 和 L555 钢级，最大 C 含量比规定值每降低 0.01%，允许在规定的最大 Mn 含量上增加 0.05% Mn 含量。但最大 Mn 含量不应超过 0.2%。其它微量化学元素的规定等要求等详见标准。

9) 力学性能中的屈服强度值为规定总伸长强度 (proof strength, total extension) R<sub>t0.5</sub>。屈服比及冲击试验规定等要求详见标准。

10) 在规定的最大 C 含量以下，每降低 0.01% C 含量，允许在规定的最大 Mn 含量上增加 0.05% Mn 含量。但最大 Mn 含量不应超过 0.2%。其它微量化学元素的规定及 CEV 要求等详见标准。

NOTE: 6) The value of yield strength is the lower one.

7) The comparison between these steel grades and the specification of API 5L shall be as the following: (however, the accordingly grades may be different at other factors)

L360-X52, L415-X60, L450-X65, L485-X70, L555-X80

8) The above table indicates the chemical requirements of the welded pipes. For grades below L450, the max. C content decreases each 0.01% than the specified one, an increase of 0.05 % Mn. may be permitted on the specified max. one. However, for the grades below L360, the max. Mn. content is 1.45%, and for the grades above L360, a max. Mn content is 1.60%. For L485 and L555, the max. C content decreases each 0.01% than the specified one, an increase of 0.05 % Mn. may be permitted on the specified max. one up to 0.20%. As for the details for the other microelements, please refer the standards.

9) The value of yield strength is the specified total extension strength R<sub>t0.5</sub>. As for the ratio of yield strength and the requirements of impact test, please refer the standards.

10) Under the specified max. C content, If decreasing each 0.01% C, an increase of 0.05 % Mn. may be permitted on the specified max. one up to max. Mn 0.20%, as for other microelements and the CEV, please refer the standards.

中国标准中的压力管道常用金属材料(续)

THE GENERAL METALLIC MATERIALS OF CHINESE PRESSURE PIPING CODE (CONTINUED)

| 标准<br>Standard          | 现用牌号<br>New<br>Grade        | 原用牌号<br>Old<br>Grade       | 化学成分 Chemical Composition %, max |      |      |       |       |             |             |           |                       | 力学性能 Mechanical Requirement      |                                       |                            |           |               |
|-------------------------|-----------------------------|----------------------------|----------------------------------|------|------|-------|-------|-------------|-------------|-----------|-----------------------|----------------------------------|---------------------------------------|----------------------------|-----------|---------------|
|                         |                             |                            | C                                | Si   | Mn   | P     | S     | Cr          | Ni          | Mo        | Other                 | T. S.<br>( $R_m$ )<br>min<br>MPa | P. S.<br>( $R_{p0.2}$ )<br>min<br>MPa | EL.<br>( $A$ )<br>min<br>% | HB<br>max | Other         |
| GB/T 1220               | 022Cr19Ni10                 | 00Cr19Ni10                 | 0.030                            | 1.00 | 2.00 | 0.045 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | -                     | 480                              | 175                                   | 40                         | 187       | $Z \geq 60\%$ |
|                         | 022Cr17Ni12Mo2              | 00Cr17Ni14Mo2              | 0.030                            | 1.00 | 2.00 | 0.045 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -                     | 480                              | 175                                   | 40                         | 187       | $Z \geq 60\%$ |
| GB/T 1220,<br>GB/T 1221 | 06Cr19Ni10                  | 0Cr18Ni9                   | 0.08                             | 1.00 | 2.00 | 0.045 | 0.030 | 18.00-20.00 | 8.00-11.00  | -         | -                     | 520                              | 205                                   | 40                         | 187       | $Z \geq 60\%$ |
|                         | 06Cr17Ni12Mo2               | 0Cr17Ni12Mo2               | 0.08                             | 1.00 | 2.00 | 0.045 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -                     | 520                              | 205                                   | 40                         | 187       | $Z \geq 60\%$ |
|                         | 06Cr18Ni11Ti                | 0Cr18Ni10Ti                | 0.08                             | 1.00 | 2.00 | 0.045 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Ti: 5C-0.70           | 520                              | 205                                   | 40                         | 187       | $Z \geq 50\%$ |
|                         | 06Cr18Ni11Nb                | 0Cr18Ni11Nb                | 0.08                             | 1.00 | 2.00 | 0.045 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Nb: 10C-1.10          | 520                              | 205                                   | 40                         | 187       | $Z \geq 50\%$ |
| GB/T 4237               | 022Cr19Ni10                 | 00Cr19Ni10                 | 0.030                            | 0.75 | 2.00 | 0.045 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | N: 0.10               | 485                              | 170                                   | 40                         | 201       | -             |
|                         | 022Cr17Ni12Mo2              | 00Cr17Ni14Mo2              | 0.030                            | 0.75 | 2.00 | 0.045 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | N: 0.10               | 485                              | 170                                   | 40                         | 217       | -             |
| GB/T 4237,<br>GB/T 4238 | 06Cr19Ni10                  | 0Cr18Ni9                   | 0.08                             | 0.75 | 2.00 | 0.045 | 0.030 | 18.00-20.00 | 8.00-10.50  | -         | N: 0.10               | 515                              | 205                                   | 40                         | 201       | -             |
|                         | 06Cr17Ni12Mo2               | 0Cr17Ni12Mo2               | 0.08                             | 0.75 | 2.00 | 0.045 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | N: 0.10               | 515                              | 205                                   | 40                         | 217       | -             |
|                         | 06Cr18Ni11Ti <sup>11)</sup> | 0Cr18Ni10Ti <sup>12)</sup> | 0.08                             | 0.75 | 2.00 | 0.045 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | N: 0.10; Ti $\geq 5C$ | 515                              | 205                                   | 40                         | 217       | -             |
|                         | 06Cr18Ni11Nb                | 0Cr18Ni11Nb                | 0.08                             | 0.75 | 2.00 | 0.045 | 0.030 | 17.00-19.00 | 9.00-13.00  | -         | Nb: 10C-1.00          | 515                              | 205                                   | 40                         | 201       | -             |
| GB/T 12771              | 06Cr19Ni10                  | 0Cr18Ni9                   | 0.08                             | 0.75 | 2.00 | 0.040 | 0.030 | 18.00-20.00 | 8.00-11.00  | -         | -                     | 520                              | 210                                   | 35                         | -         | -             |
|                         | 022Cr19Ni10                 | 00Cr19Ni10                 | 0.030                            | 0.75 | 2.00 | 0.040 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | -                     | 480                              | 180                                   | 35                         | -         | -             |
|                         | 06Cr18Ni11Ti                | 0Cr18Ni10Ti                | 0.08                             | 0.75 | 2.00 | 0.040 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Ti: $\geq 5C-0.70$    | 520                              | 210                                   | 35                         | -         | -             |
|                         | 06Cr18Ni11Nb                | 0Cr18Ni11Nb                | 0.08                             | 0.75 | 2.00 | 0.040 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Nb: 10C-1.10          | 520                              | 210                                   | 35                         | -         | -             |
|                         | 06Cr17Ni12Mo2               | 0Cr17Ni12Mo2               | 0.08                             | 0.75 | 2.00 | 0.040 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -                     | 520                              | 210                                   | 35                         | -         | -             |
|                         | 022Cr17Ni12Mo2              | 00Cr17Ni14Mo2              | 0.030                            | 0.75 | 2.00 | 0.040 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -                     | 480                              | 180                                   | 35                         | -         | -             |
| GB/T 13296              | 06Cr19Ni10                  | 0Cr18Ni9                   | 0.07                             | 1.00 | 2.00 | 0.035 | 0.030 | 17.00-19.00 | 8.00-11.00  | -         | -                     | 520                              | 205                                   | 35                         | -         | -             |
|                         | 022Cr19Ni10                 | 00Cr19Ni10                 | 0.030                            | 1.00 | 2.00 | 0.035 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | -                     | 480                              | 175                                   | 35                         | -         | -             |
|                         | 06Cr18Ni11Ti                | 0Cr18Ni10Ti                | 0.08                             | 1.00 | 2.00 | 0.035 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Ti: $\geq 5C$         | 520                              | 205                                   | 35                         | -         | -             |
|                         | 06Cr18Ni11Nb                | 0Cr18Ni11Nb                | 0.08                             | 1.00 | 2.00 | 0.035 | 0.030 | 17.00-19.00 | 9.00-13.00  | -         | Nb + Ta: 10C-1.00     | 520                              | 205                                   | 35                         | -         | -             |
|                         | 06Cr17Ni12Mo2               | 0Cr17Ni12Mo2               | 0.08                             | 1.00 | 2.00 | 0.035 | 0.030 | 16.00-18.00 | 11.00-14.00 | 2.00-3.00 | -                     | 520                              | 205                                   | 35                         | -         | -             |
|                         | 022Cr17Ni12Mo2              | 00Cr17Ni14Mo2              | 0.030                            | 1.00 | 2.00 | 0.035 | 0.030 | 16.00-18.00 | 12.00-15.00 | 2.00-3.00 | -                     | 480                              | 175                                   | 40                         | -         | -             |
| GB/T 14976              | 06Cr19Ni10                  | 0Cr18Ni9                   | 0.07                             | 1.00 | 2.00 | 0.035 | 0.030 | 17.00-19.00 | 8.00-11.00  | -         | -                     | 520                              | 205                                   | 35                         | -         | -             |
|                         | 022Cr19Ni10                 | 00Cr19Ni10                 | 0.030                            | 1.00 | 2.00 | 0.035 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | -                     | 480                              | 175                                   | 35                         | -         | -             |
|                         | 06Cr18Ni11Ti                | 0Cr18Ni10Ti                | 0.08                             | 1.00 | 2.00 | 0.035 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Ti: $\geq 5C$         | 520                              | 205                                   | 35                         | -         | -             |
|                         | 06Cr18Ni11Nb                | 0Cr18Ni11Nb                | 0.08                             | 1.00 | 2.00 | 0.035 | 0.030 | 17.00-19.00 | 9.00-13.00  | -         | Nb $\geq 10C$         | 520                              | 205                                   | 35                         | -         | -             |
|                         | 06Cr17Ni12Mo2               | 0Cr17Ni12Mo2               | 0.08                             | 1.00 | 2.00 | 0.035 | 0.030 | 16.00-18.50 | 10.00-14.00 | 2.00-3.00 | -                     | 520                              | 205                                   | 35                         | -         | -             |
|                         | 022Cr17Ni12Mo2              | 00Cr17Ni14Mo2              | 0.030                            | 1.00 | 2.00 | 0.035 | 0.030 | 16.00-18.00 | 12.00-15.00 | 2.00-3.00 | -                     | 480                              | 175                                   | 35                         | -         | -             |

注: 11) GB/T 4238 对该牌号中的元素 N 含量未加限定。

NOTE: 11) GB/T 4238 doesn't have any limitation to the content of Ni of this item grade.

| 标准<br>Standard                | 现用牌号<br>New<br>Grade | 原用牌号<br>Old<br>Grade | 化学成分 Chemical Composition % max |           |           |       |       |             |             |           |  | 力学性能 Mechanical Requirement |                     |                 |           |                                 |
|-------------------------------|----------------------|----------------------|---------------------------------|-----------|-----------|-------|-------|-------------|-------------|-----------|--|-----------------------------|---------------------|-----------------|-----------|---------------------------------|
|                               |                      |                      | C                               | Si        | Mn        | P     | S     | Cr          | Ni          | Mo        | Other                                      | T. S.<br>min<br>MPa         | Y. S.<br>min<br>MPa | EL.<br>min<br>% | HB<br>max | Other                           |
| JB 4726 <sup>12)13) 14)</sup> | 20                   | -                    | 0.17-0.23                       | 0.17-0.37 | 0.60-1.00 | 0.030 | 0.020 | 0.25        | 0.25        | -         | Cu:0.25                                    | 390-540                     | 215                 | 24              | 106-159   | $A_{KV} \geq 34J$               |
|                               | 16Mn                 | -                    | 0.13-0.19                       | 0.20-0.60 | 1.20-1.60 | 0.030 | 0.020 | 0.30        | 0.30        | -         | Cu:0.25                                    | 450-600                     | 275                 | 20              | 121-178   | $A_{KV} \geq 31J(0^{\circ}C)$   |
|                               | 15CrMo               | -                    | 0.12-0.18                       | 0.10-0.60 | 0.30-0.80 | 0.030 | 0.020 | 0.80-1.25   | 0.30        | 0.45-0.65 | Cu:0.25                                    | 440-610                     | 275                 | 20              | 118-180   | $A_{KV} \geq 34J$               |
|                               | 12Cr1MoV             | -                    | 0.09-0.15                       | 0.17-0.37 | 0.40-0.70 | 0.030 | 0.020 | 0.90-1.20   | 0.30        | 0.25-0.35 | V:0.15-0.30;<br>Cu:0.25                    | 440-610                     | 255                 | 19              | 118-180   | $A_{KV} \geq 34J$               |
|                               | 12Cr2Mo1             | -                    | 0.15                            | 0.50      | 0.30-0.60 | 0.025 | 0.015 | 2.00-2.50   | 0.30        | 0.90-1.10 | Cu:0.25                                    | 510-680                     | 310                 | 18              | 136-201   | $A_{KV} \geq 41J$               |
|                               | 1Cr5Mo               | -                    | 0.15                            | 0.50      | 0.60      | 0.030 | 0.020 | 4.00-6.00   | 0.50        | 0.45-0.65 | Cu:0.25                                    | 590-760                     | 390                 | 18              | 174-229   | $A_{KV} \geq 34J$               |
| JB 4727 <sup>12)14) 15)</sup> | 16MnD                | -                    | 0.13-0.18                       | 0.20-0.60 | 1.20-1.60 | 0.025 | 0.015 | 0.30        | 0.40        | -         | Nb:0.030;<br>Cu:0.25;<br>Als: $\geq 0.015$ | 450-600                     | 275                 | 20              | -         | $A_{KV} \geq 27J(-40^{\circ}C)$ |
|                               | 09MnNiD              | -                    | 0.12                            | 0.15-0.35 | 1.20-1.60 | 0.025 | 0.015 | 0.30        | 0.45-0.85   | -         | Nb:0.050;<br>Cu:0.25;<br>Als: $\geq 0.015$ | 420-570                     | 260                 | 23              | -         | $A_{KV} \geq 47J(-70^{\circ}C)$ |
| JB 4728 <sup>13)14)</sup>     | 0Cr18Ni9             | -                    | 0.07                            | 1.00      | 2.00      | 0.035 | 0.030 | 17.00-19.00 | 8.00-11.00  | -         | -  | 520                         | 205                 | 35              | 139-187   | -                               |
|                               | 00Cr19Ni10           | -                    | 0.03                            | 1.00      | 2.00      | 0.035 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | -  | 480                         | 175                 | 35              | 128-187   | -                               |
|                               | 0Cr17Ni12Mo2         | -                    | 0.08                            | 1.00      | 2.00      | 0.035 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -  | 520                         | 205                 | 35              | 139-187   | -                               |
|                               | 00Cr17Ni14Mo2        | -                    | 0.03                            | 1.00      | 2.00      | 0.035 | 0.030 | 16.00-18.00 | 12.00-15.00 | 2.00-3.00 | -  | 480                         | 175                 | 35              | 128-187   | -                               |
|                               | 0Cr18Ni10Ti          | -                    | 0.08                            | 1.00      | 2.00      | 0.035 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Ti: $\geq 5C$                              | 520                         | 205                 | 35              | 139-187   | -                               |
|                               | 0Cr18Ni12Mo2Ti       | -                    | 0.08                            | 1.00      | 2.00      | 0.035 | 0.030 | 16.00-19.00 | 11.00-14.00 | 1.80-2.50 | Ti: $\geq 5C-0.7$                          | 520                         | 205                 | 35              | 139-187   | -                               |
| YB/T 5089                     | 06Cr19Ni10           | 0Cr18Ni9             | 0.08                            | 1.00      | 2.00      | 0.045 | 0.030 | 18.00-20.00 | 8.00-11.00  | -         | -  | -                           | -                   | -               | -         | -                               |
|                               | 022Cr19Ni10          | 00Cr19Ni10           | 0.030                           | 1.00      | 2.00      | 0.045 | 0.030 | 18.00-20.00 | 8.00-12.00  | -         | -  | -                           | -                   | -               | -         | -                               |
|                               | 06Cr18Ni11Ti         | 0Cr18Ni10Ti          | 0.08                            | 1.00      | 2.00      | 0.045 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Ti: $\geq 5C-0.7$                          | -                           | -                   | -               | -         | -                               |
|                               | 06Cr18Ni11Nb         | 0Cr18Ni11Nb          | 0.08                            | 1.00      | 2.00      | 0.045 | 0.030 | 17.00-19.00 | 9.00-12.00  | -         | Nb $\geq 10C-1.10$                         | -                           | -                   | -               | -         | -                               |
|                               | 06Cr17Ni12Mo2        | 0Cr17Ni12Mo2         | 0.08                            | 1.00      | 2.00      | 0.045 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -  | -                           | -                   | -               | -         | -                               |
|                               | 022Cr17Ni12Mo2       | 00Cr17Ni14Mo2        | 0.030                           | 1.00      | 2.00      | 0.045 | 0.030 | 16.00-18.00 | 10.00-14.00 | 2.00-3.00 | -  | -                           | -                   | -               | -         | -                               |
| DL 473                        | 20                   | -                    | 0.17-0.24                       | 0.17-0.37 | 0.35-0.65 | 0.035 | 0.035 | 0.25        | 0.25        | -         | Cu:0.20                                    | 412-549                     | 245                 | 24              | 117-156   | $A_{KV} \geq 27J$               |
|                               | 12Cr1MoV             | -                    | 0.08-0.15                       | 0.17-0.37 | 0.40-0.70 | 0.035 | 0.035 | 0.90-1.20   | 0.30        | 0.25-0.35 | V:0.15-0.30;<br>Cu:0.20                    | 440-610                     | 255                 | 21              | 132-183   | $A_{KV} \geq 34J$               |
|                               | 12Cr2Mo1             | -                    | 0.08-0.15                       | 0.50      | 0.30-0.60 | 0.030 | 0.030 | 2.00-2.50   | 0.30        | 0.90-1.10 | Cu:0.20                                    | 450-600                     | 280                 | 20              | 135-180   | $A_{KV} \geq 41J$               |

注: 12) 对真空碳脱氧钢, 允许 Si 含量小于或等于 0.12%。  
13) 锻件分为 I、II、III、IV 共 4 个级别, 每个级别的检验项目规定不同。  
14) 锻件的厚度不同时, 其力学性能规定不同, 详见标准。  
15) 锻件分为 II、III、IV 共 3 个级别, 每个级别的检验项目规定不同。

NOTE: 12) For the deoxidizing steel with vacuum carbon, the content of Si may be up to 0.12%.  
13) The forgings have the grades of I、II、III and IV, and the inspection items for each grade are different.  
14) The mechanical properties vary with the differet thickness for forrgings, details, please refer the standards.  
15) The forgings have the grades of I、II and III, and the inspection items for each grade are different.