# Killed Steel Carbon Steel Pipe Fittings Equal Tee SCH40 SCH80 SCH160

Our Product Introduction

## Basic Information

- Place of Origin: CHINA
- Brand Name: DEYE
- Certification: ISO9001:2015 PED
- Model Number: PF-TEE-C05
- Minimum Order Quantity: 10PCS
- Price: USD0.58-USD100 for seamless fittings
- Packaging Details: Ply-wooden cases, pallets, cartons
- Delivery Time: 5-8 days for stock items
- Payment Terms: L/C, T/T, D/P


## Product Specification

- Standard: ASME ANSI MSS SP-44 DIN GOST
- Material: A234WPB, WP11, WP22, WPC, P9, P11, A420WPL6
- Thickness: STD SCH40 SCH80 SCH120 SCH160 XS XXS
- Size: 1/2"-72"
- Connection: Butt Welded BW
- Surface: Black Finishing, Vanish Finishing, Anti-Rust Oil
- Highlight: **Killed Steel Carbon Steel Pipe Fittings**, **Carbon Steel Pipe Fittings Equal Tee**, **SCH160 carbon steel equal tee**


## More Images


## Product Description

### Killed Steel Carbon Steel Pipe Fittings Equal Tee SCH40 SCH80 SCH160

The equal tee is utilized as the branch has the same distance across as the run pipe. Equal Tee are equipped for taking care of any high or low weight stream of fluid through it. Equal tee (or straight tee), means the branch diameter of this tee is same with the main pipe (Run pipe) diameter of this tee. The equal tee are with the same channel and outlet sizes, however, customers can profit from us "decreasing" tees too that have maybe a couple closes with various in measurement,

**Product Information/Product Description/Basis Information/Specification**

| | |
|---|---|
| Product Name | ANSI B16.9 Butt-Welding Carbon Steel Pipe Fitting equal tee or reducing tee |
| Types | LR 90deg Elbows, SR 90deg Elbow, 45deg LR elbow, 22.5LR Elbow, 80deg Returns, Bends, Reducing Elbow, straight Tee, Equal Tee, Con. Reducers, Ecc. reducers, Y tees, caps, Stub Ends,<br>Long and short lap joint stub ends |
| Size | 1/2"-72" Seamless Elbow ( 1/2″ 24″), ERW / Welded / Fabricated Elbow (1/2″ 72″) |
| Wall Thickness | SCH10,SCH20,SCH30,STD,SCH40,SCH60,XS,SCH80,SCH100,SCH120,SCH140,SCH160,XXS,<br>DIN, SGP JIS thickness |
| Mat. Standard | ASTMA234,ASTM A420,ASTM A312, ANSI B16.9/B16.28/B16.25,ASME B16.9, |
| | JIS B2311-1997/2312, JIS B2311/B2312, DIN 2605-1/2617/2615, |
| | GB 12459-99,EN Standard etc. |
| Material Grade | Carbon Steel : A234 WPB, WP5, WP6, WP9,WP11,WP12, WP22, A420WPL6, WPL8, WP91 |
| | 12CrMo, 15Cr5Mo, 1Cr5Mo, 12Cr1MoV , WPHY 42, WPHY 46, WPHY 52, WPH 60, WPHY 65 & WPHY 70 |
| | ST37.0,ST35.8,ST37.2,ST35.4/8,ST42,ST45,ST52,ST52.4 |
| | STP G38,STP G42,STPT42,STB42,STS42,STPT49,STS49 |
| | Stainless Steel304, 304L, 304H. 316, 316L, 316H, 321, 347, 347H, Duplex SS 2507, DSS2205, UNS31803 UNS32750 1.4301,1.4306, 1.4401, 1.4435, 1.4406, 1.4404, 1.4462, 1.4410, 1.4501 |
| Connection | Plain ends PE or Bevel Ends BE |
| Surface | Black painting,varnish paint, anti rust oil, hot galvanized, cold galvanized, 3PE, FEB |
| Transport Package | Plastic film,wooden cases ,wooden pallet,or as per customers' requests |

**Technology/ Technical Data Sheet**

**Thickness List for pipefittings ANSI B16.9**

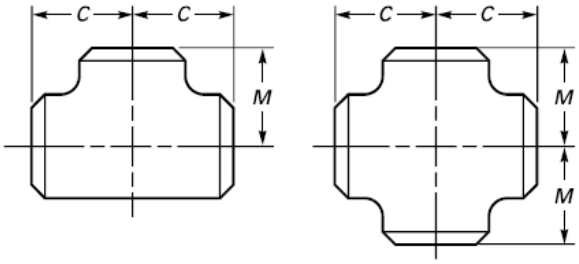
Unit: mm

| NPS | Outside Dimeter | Different thickness with tolerance of +-12.5% | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sch20** | Sch30 | STD | **Sch40** | Sch60 | **XS** | **Sch80** | Schl20 | Sch160 | **XXS** |
| 1/8 | 10. 3 | —— | —— | 1. 73 | 1. 73 | —— | 2. 41 | 2. 41 | —— | —— | —— |
| 1/4 | 13. 7 | — | — | 2. 24 | 2. 24 | — | 3. 02 | 3. 02 | — | — | — |
| 3/8 | 17. 1 | — | — | 2. 31 | 2. 31 | — | 3. 20 | 3. 20 | — | — | — |
| 1/2 | 21. 3 | —— | —— | 2. 77 | 2. 77 | —— | 3. 73 | 3. 73 | —— | 4. 78 | 7. 47 |
| 3/4 | 26. 7 | —— | —— | 2. 87 | 2. 87 | —— | 3. 91 | 3. 91 | —— | 5. 56 | 7. 82 |
| 1 | 33.4 | — | — | 3. 38 | 3. 38 | — | 4. 55 | 4. 55 | — | 6. 35 | 9. 09 |
| 1 1/4 | 42. 2 | — | — | 3. 56 | 3. 56 | — | 4. 85 | 4. 85 | — | 6. 35 | 9. 70 |
| 1 1/2 | 48. 3 | —— | —— | 3. 68 | 3. 68 | —— | 5. 08 | 5. 08 | —— | 7. 14 | 10. 15 |
| 2 | 60. 3 | —— | —— | 3. 91 | 3. 91 | —— | 5. 54 | 5. 54 | —— | 8. 74 | 11. 07 |
| 2 1/2 | 73. 0 | — | — | 5. 16 | 5. 16 | — | 7. 01 | 7.01 | — | 9. 53 | 14. 02 |
| 3 | 88. 9 | — | — | 5. 49 | 5. 49 | — | 7. 62 | 7. 62 | — | 11. 13 | 15. 24 |
| 3 1/2 | 101. 6 | —— | —— | 5. 74 | 5. 74 | —— | 8. 08 | 8. 08 | —— | —— | —— |
| 4 | 114. 3 | —— | —— | 6.02 | 6. 02 | —— | 8. 56 | 8. 56 | 11. 13 | 13. 49 | 17. 12 |
| 5 | 141. 3 | — | — | 6. 55 | 6. 55 | — | 9. 53 | 9. 53 | 12. 70 | 15. 88 | 19. 05 |
| 6 | 168. 3 | — | — | 7. 11 | 7. 11 | — | 10. 97 | 10. 97 | 14. 27 | 18. 26 | 21.95 |
| 8 | 219. 1 | 6. 35 | 7. 04 | 8. 18 | 8. 18 | 10. 31 | 12. 70 | 12. 70 | 18. 26 | 23. 01 | 22.23 |
| 10 | 273. 1 | 6. 35 | 7. 80 | 9. 27 | 9.27 | 12. 70 | 12. 70 | 15. 09 | 21. 44 | 28. 58 | 25. 40 |
| 12 | 323.9 | 6. 35 | 8. 38 | 9. 53 | 10. 31 | 14. 27 | 12. 70 | 17. 48 | 25. 40 | 33. 32 | 25. 40 |
| 14 | 355. 6 | 7. 92 | 9. 53 | 9. 53 | 11. 13 | 15. 09 | 12. 70 | 19. 05 | 27. 79 | 35. 71 | — |
| 16 | 406. 4 | 7. 92 | 9. 53 | 9. 53 | 12. 70 | 16. 66 | 12. 70 | 21. 44 | 30. 96 | 40. 49 | —— |
| 18 | 457. 2 | 7. 92 | 11. 13 | 9. 53 | 14. 27 | 19. 05 | 12. 70 | 23. 83 | 34. 96 | 45. 24 | —— |
| 20 | 508. 0 | 9. 53 | 12. 70 | 9. 53 | 15. 09 | 20. 62 | 12. 70 | 26. 19 | 38. 10 | 50. 01 | — |
| 22 | 558. 8 | 9. 53 | 12. 70 | 9. 53 | — | 22. 23 | 12. 70 | 28. 58 | 41. 28 | 53. 98 | — |
| 24 | 609. 6 | 9. 53 | 14. 27 | 9. 53 | 17. 48 | 24. 61 | 12. 70 | 30. 96 | 46. 02 | 59. 54 | —— |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 660.4 | 12. 70 | —— | 9. 53 | —— | —— | 12. 70 | —— | —— | —— | —— |
| 28 | 711.2 | 12. 70 | 15. 88 | 9. 53 | — | — | 12. 70 | — | — | — | — |
| 30 | 762. 0 | 12. 70 | 15. 88 | 9. 53 | — | — | 12. 70 | — | — | — | — |
| 32 | 812. 8 | 12. 70 | 15. 88 | 9. 53 | 17. 48 | —— | 12. 70 | —— | —— | —— | —— |
| 34 | 863. 6 | 12. 70 | 15. 88 | 9. 53 | 17. 48 | —— | 12. 70 | —— | —— | —— | —— |
| 36 | 914. 4 | 12. 70 | 15. 88 | 9. 53 | 17. 48 | — | 12. 70 | — | — | — | — |
| 38 | 965.2 | — | — | 9. 53 | — | — | 12. 70 | — | — | — | — |
| 40 | 1016. 0 | —— | —— | 9. 53 | —— | —— | 12. 70 | —— | —— | —— | —— |
| 42 | 1066. 8 | —— | —— | 9. 53 | —— | —— | 12. 70 | —— | —— | —— | —— |
| 44 | 1117. 6 | — | — | 9. 53 | — | — | 12. 70 | — | — | — | — |
| 46 | 1168.4 | — | — | 9. 53 | — | — | 12. 70 | — | — | — | — |
| 48 | 1219. 2 | — | — | 9. 53 | — | — | 12. 70 | — | — | — | — |

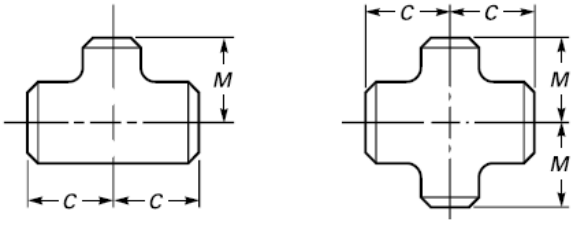
## Dimension List

### Dimensions of Straight Tees and Crosses




| Nominal Pipe Size (NPS) | Outside Diameter at Bevel | Center-to-End | |
|---|---|---|---|
| | | Run, C | Outlet, M [Notes (1) and (2)] |
| 72 | 21.3 | 25 | 25 |
| % | 26.7 | 29 | 29 |
| 1 | 33.4 | 38 | 38 |
| 174 | 42.2 | 48 | 48 |
| i72 | 48.3 | 57 | 57 |
| 2 | 60.3 | 64 | 64 |
| 272 | 73.0 | 76 | 76 |
| 3 | 88.9 | 86 | 86 |
| 372 | 101.6 | 95 | 95 |
| 4 | 114.3 | 105 | 105 |
| 5 | 141.3 | 124 | 124 |
| 6 | 168.3 | 143 | 143 |
| 8 | 219.1 | 178 | 178 |
| 10 | 273.0 | 216 | 216 |
| 12 | 323.8 | 254 | 254 |
| 14 | 355.6 | 279 | 279 |
| 16 | 406.4 | 305 | 305 |
| 18 | 457.0 | 343 | 343 |
| 20 | 508.0 | 381 | 381 |
| 22 | 559.0 | 419 | 419 |
| 24 | 610.0 | 432 | 432 |
| 26 | 660.0 | 495 | 495 |
| 28 | 711.0 | 521 | 521 |
| 30 | 762.0 | 559 | 559 |
| 32 | 813.0 | 597 | 597 |
| 34 | 864.0 | 635 | 635 |
| 36 | 914.0 | 673 | 673 |
| 38 | 965.0 | 711 | 711 |
| 40 | 1 016.0 | 749 | 749 |
| 42 | 1 067.0 | 762 | 711 |
| 44 | 1 118.0 | 813 | 762 |
| 46 | 1 168.0 | 851 | 800 |
| 48 | 1 219.0 | 889 | 838 |

### Dimensions of Reducing Outlet Tees and Reducing Outlet Crosses



| Nominal Pipe Size (NPS) | Outside Diameter at Bevel | | Center-to-End | | Nominal Pipe Size (NPS) | Outside Diameter at Bevel | | Center-to-End | |
|---|---|---|---|---|---|---|---|---|---|
| | Run | Outlet | Run, C | Outlet, M [Note (1)] | | Run | Outlet | Run, C | Outlet, M [Note (1)] |
| 1/2 x1/2 x3/8 | 21.3 | 17.3 | 25 | 25 | 4 x 4 x 3-1/2 | 114.3 | 101.6 | 105 | 102 |
| 1/2 x1/2 x1/4 | 21.3 | 13.7 | 25 | 25 | 4x4x3 | 114.3 | 88.9 | 105 | 98 |
| 3/4 x 3/4 x1/2 | 26.7 | 21.3 | 29 | 29 | 4 X 4 X 2-1/2 | 114.3 | 73.0 | 105 | 95 |
| 3/4 x 3/4 x3/8 | 26.7 | 17.3 | 29 | 29 | 4x4x2 | 114.3 | 60.3 | 105 | 89 |
| 1 X 1 X 3/4 | 33.4 | 26.7 | 38 | 38 | 4 x 4 x 1-1/2 | 114.3 | 48.3 | 105 | 86 |
| 1 x 1 x 1/2 | 33.4 | 21.3 | 38 | 38 | | | | | |
| | | | | | 5X5X4 | 141.3 | 114.3 | 124 | 117 |
| 1-1/4 x 1-1/4 x 1 | 42.2 | 33.4 | 48 | 48 | 5 X 5 X 3-1/2 | 141.3 | 101.6 | 124 | 114 |
| 1-1/4 x 1-1/4 x3/4 | 42.2 | 26.7 | 48 | 48 | 5X5X3 | 141.3 | 88.9 | 124 | 111 |
| 1-1/4 x 1-1/4 x1/2 | 42.2 | 21.3 | 48 | 48 | 5 X 5 X 2-1/2 | 141.3 | 73.0 | 124 | 108 |
| | | | | | 5X5X2 | 141.3 | 60.3 | 124 | 105 |
| 1-1/2 x1-1/2 x 1-1/4 | 48.3 | 42.2 | 57 | 57 | 6X6X5 | 168.3 | 141.3 | 143 | 137 |
| 1-1/2 x1-1/2 x 1 | 48.3 | 33.4 | 57 | 57 | 6x6x4 | 168.3 | 114.3 | 143 | 130 |
| 1-1/2 x1-1/2 x3/4 | 48.3 | 26.7 | 57 | 57 | 6 x 6 x 3-1/2 | 168.3 | 101.6 | 143 | 127 |
| 1-1/2 x1-1/2 x 1/2 | 48.3 | 21.3 | 57 | 57 | 6x6x3 | 168.3 | 88.9 | 143 | 124 |
| | | | | | 6 x 6 x 2-1/2 | 168.3 | 73.0 | 143 | 121 |
| 2 x 2 x 1-1/2 | 60.3 | 48.3 | 64 | 60 | | | | | |
| 2 x 2 x 1-1/4 | 60.3 | 42.2 | 64 | 57 | 8x8x6 | 219.1 | 168.3 | 178 | 168 |
| 2 X 2 X 1 | 60.3 | 33.4 | 64 | 51 | 8x8x5 | 219.1 | 141.3 | 178 | 162 |
| 2 x 2 x 3/4 | 60.3 | 26.7 | 64 | 44 | 8X8X4 | 219.1 | 114.3 | 178 | 156 |
| | | | | | 8 x 8 x 3-1/2 | 219.1 | 101.6 | 178 | 152 |
| 2-1/2 X 2-1/2 X 2 | 73.0 | 60.3 | 76 | 70 | | | | | |
| 2-1/2 X 2-1/2 X 1-1/2 | 73.0 | 48.3 | 76 | 67 | 10 x 10 x 8 | 273.0 | 219.1 | 216 | 203 |
| 2-1/2 X 2-1/2 X 1-1/4 | 73.0 | 42.2 | 76 | 64 | 10 x 10 x 6 | 273.0 | 168.3 | 216 | 194 |
| 2-1/2 X 2-1/2 X 1 | 73.0 | 33.4 | 76 | 57 | 10 x 10 x 5 | 273.0 | 141.3 | 216 | 191 |
| | | | | | 10 x 10 x 4 | 273.0 | 114.3 | 216 | 184 |
| 3 X 3 X 2-1/2 | 88.9 | 73.0 | 86 | 83 | 12 x 12 x 10 | 323.8 | 273.0 | 254 | 241 |
| 3x3x2 | 88.9 | 60.3 | 86 | 76 | 12 x 12 x 8 | 323.8 | 219.1 | 254 | 229 |
| 3 x 3 x 1-1/2 | 88.9 | 48.3 | 86 | 73 | 12 X 12 X 6 | 323.8 | 168.3 | 254 | 219 |
| 3 x 3 x 1-1/4 | 88.9 | 42.2 | 86 | 70 | 12 x 12 x 5 | 323.8 | 141.3 | 254 | 216 |
| 3-1/2 x 3-1/2 x 3 | 101.6 | 88.9 | 95 | 92 | 14 X 14 X 12 | 355.6 | 323.8 | 279 | 270 |
| 3-1/2 x 3-1/2 x 2-1/2 | 101.6 | 73.0 | 95 | 89 | 14 X 14 X 10 | 355.6 | 273.0 | 279 | 257 |
| 3-1/2 x 3-1/2 x 2 | 101.6 | 60.3 | 95 | 83 | 14 X 14 X 8 | 355.6 | 219.1 | 279 | 248 |
| 3-1/2 x 3-1/2 x 1-1/2 | 101.6 | 48.3 | 95 | 79 | 14 x 14 x 6 | 355.6 | 168.3 | 279 | 238 |

| Size (NPS) | Outside Diameter at Bevel | | Center to Ends | | Nominal Pipe Size (NPS) | Outside Diameter at Bevel | | Center to Ends | |
|---|---|---|---|---|---|---|---|---|---|
| | Run | Outlet | Run, C | Outlet, M [Note (1)] | | Run | Outlet | Run, C | Outlet, M [Note (1)] |
| 16 x 14 | 406.4 | 355.6 | 305 | 305 | 28 X 28 X 26 | 711 | 660.0 | 521 | 521 |
| 16 x 12 | 406.4 | 323.8 | 305 | 295 | 28 X 28 X 24 | 711 | 610.0 | 521 | 508 |
| 16 x 10 | 406.4 | 273.0 | 305 | 283 | 28 x 28 x 22 | 711 | 559.0 | 521 | 495 |
| 16 x 8 | 406.4 | 219.1 | 305 | 273 | 28 x 28 x 20 | 711 | 508.0 | 521 | 483 |
| 16 x 6 | 406.4 | 168.3 | 305 | 264 | | | | | |
| | | | | | 28 X 28 X 18 | 711 | 457.0 | 521 | 470 |
| 18 x 16 | 457.0 | 406.4 | 343 | 330 | 28 X 28 X 16 | 711 | 406.4 | 521 | 457 |
| 18 x 14 | 457.0 | 355.6 | 343 | 330 | 28 x 28 x 14 | 711 | 355.6 | 521 | 457 |
| 18 X 12 | 457.0 | 323.8 | 343 | 321 | 28 X 28 X 12 | 711 | 323.8 | 521 | 448 |
| 18 x 10 | 457.0 | 273.0 | 343 | 308 | | | | | |
| 18 X 8 | 457.0 | 219.1 | 343 | 298 | 30 X 30 X 28 | 762 | 711.0 | 559 | 546 |
| | | | | | 30 x 30 x 26 | 762 | 660.0 | 559 | 546 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 X 18 | 508.0 | 457.0 | 381 | 368 | 30 x 30 x 24 | 762 | 610.0 | 559 | 533 |
| 20 x 16 | 508.0 | 406.4 | 381 | 356 | 30 x 30 x 22 | 762 | 559.0 | 559 | 521 |
| 20 x 14 | 508.0 | 355.6 | 381 | 356 | 30 x 30 x 20 | 762 | 508.0 | 559 | 508 |
| 20 X 12 | 508.0 | 323.8 | 381 | 346 | | | | | |
| 20 X 10 | 508.0 | 273.0 | 381 | 333 | 30 x 30 x 18 | 762 | 457.0 | 559 | 495 |
| 20 X 8 | 508.0 | 219.1 | 381 | 324 | 30 x 30 x 16 | 762 | 406.4 | 559 | 483 |
| | | | | | 30 x 30 x 14 | 762 | 355.6 | 559 | 483 |
| 22 X 20 | 559.0 | 508.0 | 419 | 406 | 30 x 30 x 12 | 762 | 323.8 | 559 | 473 |
| 22 x 18 | 559.0 | 457.0 | 419 | 394 | 30 x 30 x 10 | 762 | 273.0 | 559 | 460 |
| 22 x 16 | 559.0 | 406.4 | 419 | 381 | | | | | |
| 22 X 14 | 559.0 | 355.6 | 419 | 381 | 32 x 32 x 30 | 813 | 762.0 | 597 | 584 |
| 22 X 12 | 559.0 | 323.8 | 419 | 371 | 32 X 32 X 28 | 813 | 711.0 | 597 | 572 |
| 22 X 10 | 559.0 | 273.0 | 419 | 359 | 32 X 32 X 26 | 813 | 660.0 | 597 | 572 |
| | | | | | 32 x 32 x 24 | 813 | 610.0 | 597 | 559 |
| 24 X 22 | 610.0 | 559.0 | 432 | 432 | | | | | |
| 24 X 20 | 610.0 | 508.0 | 432 | 432 | 32 X 32 X 22 | 813 | 559.0 | 597 | 546 |
| 24 X 18 | 610.0 | 457.0 | 432 | 419 | 32 X 32 X 20 | 813 | 508.0 | 597 | 533 |
| | | | | | 32 X 32 X 18 | 813 | 457.0 | 597 | 521 |
| 24 X 16 | 610.0 | 406.4 | 432 | 406 | 32 x 32 x 16 | 813 | 406.4 | 597 | 508 |
| 24 X 14 | 610.0 | 355.6 | 432 | 406 | 32 X 32 X 14 | 813 | 355.6 | 597 | 508 |
| 24 X 12 | 610.0 | 323.8 | 432 | 397 | | | | | |
| 24 x 10 | 610.0 | 273.0 | 432 | 384 | 34 x 34 x 32 | 864 | 813.0 | 635 | 622 |
| | | | | | 34 x 34 x 30 | 864 | 762.0 | 635 | 610 |
| 26 X 24 | 660.0 | 610.0 | 495 | 483 | 34 x 34 x 28 | 864 | 711.0 | 635 | 597 |
| 26 x 22 | 660.0 | 559.0 | 495 | 470 | 34 x 34 x 26 | 864 | 660.0 | 635 | 597 |
| 26 X 20 | 660.0 | 508.0 | 495 | 457 | | | | | |
| | | | | | 34 x 34 x 24 | 864 | 610.0 | 635 | 584 |
| 26 x 18 | 660.0 | 457.0 | 495 | 444 | 34 x 34 x 22 | 864 | 559.0 | 635 | 572 |
| 26 X 16 | 660.0 | 406.4 | 495 | 432 | 34 x 34 x 20 | 864 | 508.0 | 635 | 559 |
| 26 x 14 | 660.0 | 355.6 | 495 | 432 | 34 x 34 x 18 | 864 | 457.0 | 635 | 546 |
| 26 X 12 | 660.0 | 323.8 | 495 | 422 | 34 x 34 x 16 | 864 | 406.4 | 635 | 533 |

**Application/Usage**

Low and middle pressure fluid pipeline, boiler, petroleum and natural gas industry, drilling, chemical industry, electric industry, shipbuilding, fertilizer equipment and pipeline, structure, petrochemical, pharmaceutical industries, etc.

**Material Specification**

Designation: A 234/A 234M – 05 Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

This specification covers wrought carbon steel and alloy steel fittings of seamless and welded construction covered by the latest revision of ASME B16.9, B16.11, MSS SP-79, and MSS SP-95. These fittings are for use in pressure piping and in pressure vessel fabrication for service at moderate and elevated temperatures. Fittings differing from these ASME and MSS standards shall be furnished in accordance with Supplementary Requirement S58 of Specification A 960.

**Chemical Requirements (Composition, %)**

| Grade and Material | C | Mn | P | S | Silicon | Chromium | Molybdenum | Nickel | Copper |
|---|---|---|---|---|---|---|---|---|---|
| WPBB,C,D,E,F 0.30 max | | 0.29–1.06 | 0.05 | 0.058 | 0.10 min | 0.40 max | 0.15 max | 0.40 max | 0.40 max |
| WPCC,D,E,F 0.35 max | | 0.29–1.06 | 0.05 | 0.058 | 0.10 min | 0.40 max | 0.15 max | 0.40 max | 0.40 max |
| WP1 | 0.28 max | 0.30–0.90 | 0.045 | 0.045 | 0.10–0.50 | . . . | 0.44–0.65 . . . . . | | |
| WP12 CL1, | 0.05–0.20 | 0.30–0.80 | 0.045 | 0.045 | 0.60 max | 0.80–1.25 | 0.44–0.65 . . . . . | | |
| WP12 CL2 | | | | | | | | | |
| WP11 CL1 | 0.05–0.15 | 0.30–0.60 | 0.03 | 0.03 | 0.50–1.00 | 1.00–1.50 | 0.44–0.65 . . . . . | | |
| WP11 CL2, | 0.05–0.20 | 0.30–0.80 | 0.04 | 0.04 | 0.50–1.00 | 1.00–1.50 | 0.44–0.65 . . . . . | | |
| WP11 CL3 | | | | | | | | | |
| WP22 CL1, | 0.05–0.15 | 0.30–0.60 | 0.04 | 0.04 | 0.50 max | 1.90–2.60 | 0.87–1.13 . . . . . | | |
| WP22 CL3 | | | | | | | | | |
| WP5 CL1, | 0.15 max | 0.30–0.60 | 0.04 | 0.03 | 0.50 max | 4.0–6.0 | 0.44–0.65 . . . . . | | |
| WP5 CL3 | | | | | | | | | |
| WP9 CL1, | 0.15 max | 0.30–0.60 | 0.03 | 0.03 | 1.00 max | 8.0–10.0 | 0.90–1.10 . . . . . | | |
| WP9 CL3 WPR | 0.20 max | 0.40–1.06 | 0.045 | 0.05 | . . . | . . . | . . . | 1.60–2.24 | 0.75–1.25 |
| WP91 | 0.08–0.12 | 0.30–0.60 | 0.02 | 0.01 | 0.20–0.50 | 8.0–9.5 | 0.85–1.05 | 0.40 max | . . . |
| WP911 | 0.09–0.13 | 0.30–0.60 | 0.02 | 0.01 | 0.10–0.50 | 8.5–9.5 | 0.90–1.10 | 0.40 max | . . |

**Mechanical Performance Requirements**

| | | WPC | | WP11 CL1 | | WP11 CL3 | | | |
|---|---|---|---|---|---|---|---|---|---|
| Grade and Marking Symbol | WPB | WP11 CL2 / WP12 CL2 | WP1 | WP22 CL1 / WP5 CL1 | WPR | WP22 CL3 / WP5 CL3 | WP91 | WP911 | WP12 CL1 |
| | | | | WP9 CL1 | | WP9 CL3 | | | |
| Tensile strength, range ksi [MPa] | 60–85 | 70–95 | 55–80 | 60–85 | 63–88 | 75–100 | 85–110 | 90–120 | 60–85 |
| | [415–585] | [485–655] | [380–550] | [415–585] | [435–605] | [520–690] | [585–760] | [620–840] | [415–585] |
| Yield strength, min, ksi [MPa] | 35 [240] | 40 [275] | 30 [205] | 30 [205] | 46 [315] | 45 [310] | 60 [415] | 64 [440] | 32 [220] |
| (0.2 % offset or 0.5 % extension-under-load) | | | | | | | | | |

## Production Process

Elbow Marking process and reequipment


ELBOW Shaper Machining


Tee form Process and equipment

Reducer Form process and equipment

Sand blasted process and equipment


Beveling Process


Painting Shop

Package For shipment




**Reference Standards**

ASME B16.9 Specification for Butt Welded Fittings
ASME B16.9 specification is designed for butt welded fittings applied in industrial construction pipelines. Including elbow, tee, cross, cap, reducer, and etc.

Standard Scope
The standard includes specifications of NPS 1/2 to NPS 48 (DN15-DN1200) factory-made wrought butt-welded pipe fittings overall dimensions, tolerances ratings, test methods and markings.

Special Fittings
Special fittings here refer to special sizes, forms and tolerances that agreed between buyer and manufacturer.

Fabricated Fittings
Fabricated laterals and other fittings by circumferential or intersection welds are considered pipe fabrication could not apply this standard.

Units under ASME B16.9 shall be stated in both SI (Metric) and U.S. Customary units. Designation for size is NPS.

Reference Standards
It is not considered practical to identify the specific edition of each standard and specification in the individual references. A product made comply with a prior edition of referenced standards and in all other respects conforming to this standard will be considered complied.

ASME B16.5: Pipe Flanges and Flanged Fittings: NPS 1⁄2 Through NPS 24 Metric/Inch Standard
ASME B16.25: For Buttwelding Ends
ASME B31: Code for Pressure Piping
ASME B31.3: Process Piping
ASME B36.10M, Welded and Seamless Wrought Steel Pipe
ASME B36.19M, Stainless Steel Pipe
ASME Boiler and Pressure Vessel Code
ASTM A234/A234M-17, Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
ASTM A403/A403M-16, Specification for Wrought Austenitic Stainless Steel Piping Fittings
ASTM A420/A420M-16, Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for LowTemperature Service
ASTM A815/A815M-14e1, Specification for Wrought Ferritic, Ferritic/Austenitic and Martensitic Stainless Steel Piping Fittings
ASTM A960/A960M-16a, Specification for Common Requirements for Wrought Steel Piping Fittings
ASTM E29-13, Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications
ASTM B361-16, ASTM B363-14, ASTM B366/B366M-17: For other material metals. (Aluminum, Titanium, Nickel, and alloy).

**FAQ/ Customer Question and Answers**

Q: Customer asked for butt weld fittings in A105:
A: Most common carbon steel buttweld fitting material is A234WPB. It is equivalent to A105 flanges, however there is no such thing as an A105 or A106 butt weld fitting A106 Gr.B is for pipe grade.
The A234WPB fittings are made from A106GR.B pipes. A105 is a material from Bar forged to

be High pressure Fittings or Flange

Q: Customer requests “Normalized” butt weld fittings:
A: This is also a misconception since flanges are available in A105 and A105 N, where N stands for normalized. However, there is no such thing as A234WPBN. Manufactures normalize their butt weld fittings was considered that normalized heat treating process was done, Especially for the elbows and Tees Customer needing “normalized” butt weld fittings should request WPL6 fittings which are high yield and are normalized as a standard procedure.

Q: Customer forgets to mention pipe schedule:
A: Buttweld fittings are sold as per pipe size but pipe schedule must be specified to match the ID of the fitting to the ID of the pipe. If no schedule is mentioned, we will assume a standard wall is requested.

Q; Customer forgets to mention welded or seamless butt weld fitting:
A: Butt weld fittings are available in both welded and seamless configuration. A seamless butt weld carbon steel or stainless-steel fitting is made of seamless pipe and is generally more expensive. Seamless pipe fittings are NOT common in sizes bigger than 12”. Welded pipe fittings are made of ERW welded carbon steel or stainless-steel pipe. They are available in sizes ½” to 72” and are more affordable than seamless fittings.

Q: What does Short Radius (SR) or Long Radius (LR) means?
A: You will often hear SR45 elbow or LR45 elbow. The 45 or 90 refers to the angle of the bend for buttweld fitting to change the direction of flow.A long radius elbow (LR 90 Elbow or LR 45 elbow) will have a pipe bend that will be 1.5 times the size of the pipe. So, a 6 inch LR 90 has bending radius that is 1.5 x nominal pipe size. A short radius elbow (SR45 or SR90) has a pipe bend that is equal to the size of the fitting, so a 6” SR 45 has a bending radius that is 6” nominal pipe size.

Q: What is a 3R or 3D elbow pipe fitting?
A: First, the terms 3R or 3D are used synonymously. A 3R butt weld elbow has a bending radius that is 3 times the nominal pipe size. A 3R elbow is equal to 3D Elbows

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**SHIJIAZHUANG DEYE PIPING INDUSTRY CO., LTD Pipefittings Department)**

+8613292824811 sales@deyepiping.com piping-industry.com

No. 368 Youyi St. Shijiazhuang, Hebei, China