

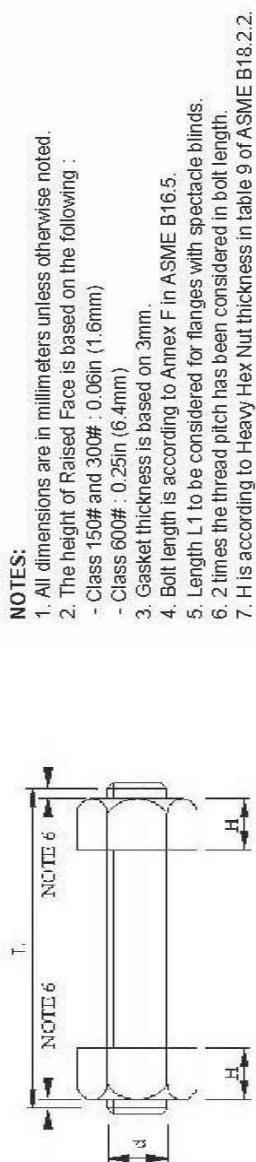




| | | | | | | | |
|---|--|------------------------|------------------------|--------------------------|--------------------|------------------|--|
|  | <p style="text-align: center;">NATIONAL IRANIAN OIL COMPANY SOUTH PARS GAS FIELD DEVELOPMENT PHASES 17 & 18</p> | | | | | |  N I O C Pars Oil and Gas Company |
| DOCUMENT TITLE | DOCUMENT No. | | | | | | Doc. Class: 2 |
| PIPING TYPICAL DETAIL DRAWING | DOC. TYPE DW | PROJECT 1718 | UNIT NO. 999 | MAT. CODE 1301 | S/N 0001 | REV. 3 | Page 13 of 25 |

7. BOLT/NUT DIMENSION TABLE – STUD BOLT/NUT FOR ASME B16.5 (RF,FF)



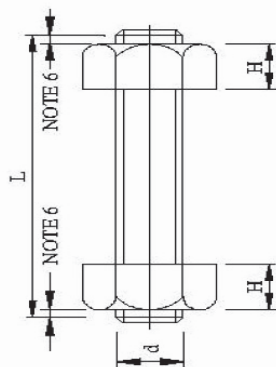
STUD BOLT/NUT

| FLANGE NOMINAL SIZE | | 150# | | | | 300# | | | | 600# | | | |
|------------------------|-----|-------|--------------|-----|-----|-------|--------------|-----|-----|-------|--------------|-----|-----|
| | | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 |
| in | mm | | | | | | | | | | | | |
| 1/2 | 15 | 1/2 | 4 | 65 | 70 | 1/2 | 4 | 70 | 80 | 1/2 | 4 | 85 | 95 |
| 3/4 | 20 | 1/2 | 4 | 70 | 75 | 5/8 | 4 | 80 | 90 | 5/8 | 4 | 95 | 105 |
| 1 | 25 | 1/2 | 4 | 75 | 80 | 5/8 | 4 | 85 | 95 | 5/8 | 4 | 100 | 110 |
| 1 1/2 | 40 | 1/2 | 4 | 80 | 90 | 3/4 | 4 | 100 | 110 | 3/4 | 4 | 115 | 130 |
| 2 | 50 | 5/8 | 4 | 90 | 100 | 5/8 | 8 | 95 | 110 | 5/8 | 8 | 115 | 130 |
| 3 | 80 | 5/8 | 4 | 105 | 110 | 3/4 | 8 | 120 | 130 | 3/4 | 8 | 140 | 155 |
| 4 | 100 | 5/8 | 8 | 105 | 115 | 3/4 | 8 | 125 | 140 | 7/8 | 8 | 155 | 175 |
| 6 | 150 | 3/4 | 8 | 115 | 125 | 3/4 | 12 | 135 | 155 | 1 | 12 | 185 | 210 |
| 8 | 200 | 3/4 | 8 | 120 | 130 | 7/8 | 12 | 150 | 175 | 1 1/8 | 12 | 205 | 235 |
| 10 | 250 | 7/8 | 12 | 130 | 145 | 1 | 16 | 170 | 200 | 1 1/4 | 16 | 225 | 265 |
| 12 | 300 | 7/8 | 12 | 130 | 150 | 1 1/8 | 16 | 185 | 215 | 1 1/4 | 20 | 235 | 275 |
| 14 | 350 | 1 | 12 | 145 | 165 | 1 1/8 | 20 | 190 | 225 | 1 3/8 | 20 | 245 | 295 |
| 16 | 400 | 1 | 16 | 150 | 170 | 1 1/4 | 20 | 200 | 240 | 1 1/2 | 20 | 265 | 320 |
| 18 | 450 | 1 1/8 | 16 | 160 | 185 | 1 1/4 | 24 | 210 | 250 | 1 5/8 | 20 | 285 | 340 |
| 20 | 500 | 1 1/8 | 20 | 170 | 200 | 1 1/4 | 24 | 215 | 265 | 1 5/8 | 24 | 300 | 365 |
| 24 | 600 | 1 1/4 | 20 | 185 | 220 | 1 1/2 | 24 | 245 | 295 | 1 7/8 | 24 | 340 | 415 |

| | | | | | | | |
|---|--|------------------------|------------------------|--------------------------|--------------------|------------------|--|
|  | <p style="text-align: center;">NATIONAL IRANIAN OIL COMPANY SOUTH PARS GAS FIELD DEVELOPMENT PHASES 17 & 18</p> | | | | | |  N I O C Pars Oil and Gas Company |
| DOCUMENT TITLE | DOCUMENT No. | | | | | | Doc. Class: 2 |
| PIPING TYPICAL DETAIL DRAWING | DOC. TYPE DW | PROJECT 1718 | UNIT NO. 999 | MAT. CODE 1301 | S/N 0001 | REV. 3 | Page 14 of 25 |

8. BOLT/NUT DIMENSION TABLE – STUD BOLT/NUT FOR ASME B16.5 (RTJ)



- NOTES:**
1. All dimensions are in millimeters unless otherwise noted.
 2. The height of Facings of depth of both flanges acc to table C1.
 3. H is according to Heavy Hex Nut thickness in table 9 of ASME B18.2.2.
 4. Bolt length is according to Annex F in ASME B16.5.
 5. Length L1 to be considered for flanges with spectacle blinds.
 6. 2 times the thread pitch has been considered in bolt length.
 7. For Stud bolts, with dia. 2" and above, an additional length equal to 1 bolt dia has been considered.



STUD BOLT/NUT

| FLANGE NOMINAL SIZE | | 300# | | | | 600# | | | | 900# | | | | 1500# | | | | 2500# | | | |
|------------------------|-----|-------|--------------|-----|----|-------|--------------|-----|-----|-------|--------------|-----|-----|-------|--------------|-----|-----|-------|--------------|-----|-----|
| | | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 |
| 1/2 | 15 | 1/2 | 4 | 85 | - | 1/2 | 4 | 85 | 105 | 3/4 | 4 | 115 | 135 | 3/4 | 4 | 115 | 135 | 3/4 | 4 | 130 | 155 |
| 3/4 | 20 | 5/8 | 4 | 95 | - | 5/8 | 4 | 95 | 120 | 3/4 | 4 | 120 | 145 | 3/4 | 4 | 120 | 145 | 3/4 | 4 | 135 | 165 |
| 1 | 25 | 5/8 | 4 | 100 | - | 5/8 | 4 | 100 | 125 | 7/8 | 4 | 135 | 155 | 7/8 | 4 | 135 | 155 | 7/8 | 4 | 150 | 175 |
| 1 1/2 | 40 | 3/4 | 4 | 115 | - | 3/4 | 4 | 115 | 140 | 1 | 4 | 150 | 175 | 1 | 4 | 150 | 175 | 1 1/8 | 4 | 180 | 220 |
| 2 | 50 | 5/8 | 8 | 115 | - | 5/8 | 8 | 115 | 145 | 7/8 | 8 | 160 | 190 | 7/8 | 8 | 155 | 190 | 1 | 8 | 190 | 230 |
| 3 | 80 | 3/4 | 8 | 135 | - | 3/4 | 8 | 145 | 175 | 7/8 | 8 | 160 | 195 | 1 1/8 | 8 | 195 | 195 | 1 1/4 | 8 | 240 | 290 |
| 4 | 100 | 3/4 | 8 | 145 | - | 7/8 | 8 | 160 | 200 | 1 1/8 | 8 | 185 | 230 | 1 1/4 | 8 | 210 | 230 | 1 1/2 | 8 | 275 | 340 |
| 6 | 150 | 3/4 | 12 | 155 | - | 1 | 12 | 190 | 230 | 1 1/8 | 12 | 210 | 260 | 1 3/8 | 12 | 275 | 255 | 2 | 8 | 405 | 490 |
| 8 | 200 | 7/8 | 12 | 170 | - | 1 1/8 | 12 | 210 | 260 | 1 3/8 | 12 | 235 | 295 | 1 5/8 | 12 | 315 | 295 | 2 | 12 | 450 | 550 |
| 10 | 250 | 1 | 16 | 190 | - | 1 1/4 | 16 | 230 | 290 | 1 3/8 | 16 | 250 | 315 | 1 7/8 | 12 | 360 | 315 | 2 1/2 | 12 | 575 | 690 |
| 12 | 300 | 1 1/8 | 16 | 200 | - | 1 1/4 | 20 | 240 | 300 | 1 3/8 | 20 | 270 | 340 | 2 | 16 | 445 | 545 | 2 3/4 | 12 | 630 | 765 |
| 14 | 350 | 1 1/8 | 20 | 205 | - | 1 3/8 | 20 | 250 | 320 | 1 1/2 | 20 | 295 | 380 | 2 1/4 | 16 | 485 | 595 | - | - | - | - |
| 16 | 400 | 1 1/4 | 20 | 220 | - | 1 1/2 | 20 | 270 | 345 | 1 5/8 | 20 | 305 | 400 | 2 1/2 | 16 | 535 | 660 | - | - | - | - |
| 18 | 450 | 1 1/4 | 24 | 225 | - | 1 5/8 | 20 | 290 | 370 | 1 7/8 | 20 | 350 | 455 | 2 3/4 | 16 | 590 | 720 | - | - | - | - |
| 20 | 500 | 1 1/4 | 24 | 240 | - | 1 5/8 | 24 | 310 | 395 | 2 | 20 | 375 | 520 | 3 | 16 | 645 | 785 | - | - | - | - |
| 24 | 600 | 1 1/2 | 24 | 270 | - | 1 7/8 | 24 | 355 | 460 | 2 1/2 | 20 | 470 | 650 | 3 1/2 | 16 | 735 | 905 | - | - | - | - |

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|--|---|------------------------|------------------------|--------------------------|--------------------|------------------|--|
|  <p>CONSORTIUM (IOIC)</p> | <p align="center">NATIONAL IRANIAN OIL COMPANY SOUTH PARS GAS FIELD DEVELOPMENT PHASES 17 & 18</p> | | | | | |  <p align="center">N I O C Pars Oil and Gas Company</p> |
| DOCUMENT TITLE | DOCUMENT No. | | | | | | Doc. Class: 2 |
| PIPING TYPICAL DETAIL DRAWING | DOC. TYPE DW | PROJECT 1718 | UNIT NO. 999 | MAT. CODE 1301 | S/N 0001 | REV. 3 | Page 15 of 25 |

9. BOLT/NUT DIMENSION TABLE – STUD BOLT/NUT FOR ASME B16.47-A (RF)

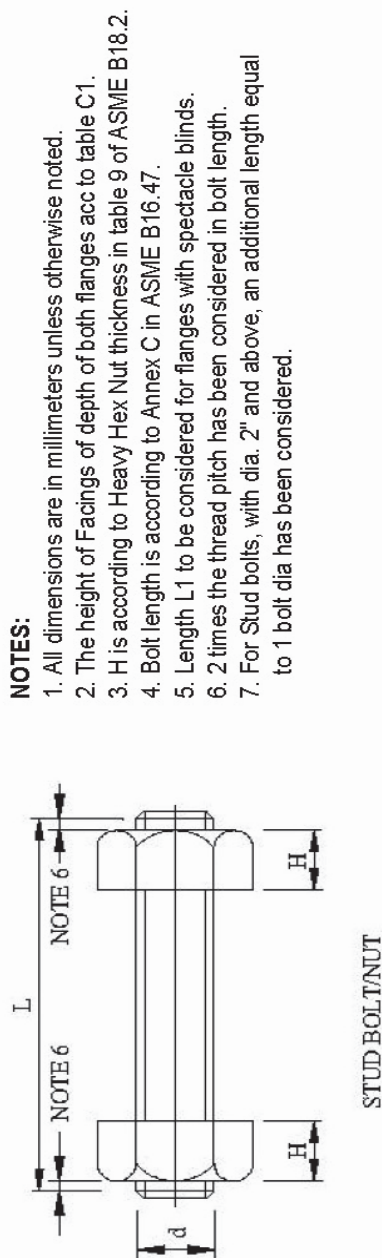


STUD BOLT/NUT

| FLANGE NOMINAL SIZE | | 150# | | | | 300# | | | | 600# | | | |
|------------------------|------|-------|--------------|-----|-----|-------|--------------|-----|-----|-------|--------------|-----|-----|
| | | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 |
| 26 | 650 | 1 1/4 | 24 | 235 | 270 | 1 5/8 | 28 | 280 | 335 | 1 7/8 | 28 | 360 | 440 |
| 28 | 700 | 1 1/4 | 28 | 240 | 275 | 1 5/8 | 28 | 290 | 350 | 2 | 28 | 370 | 455 |
| 30 | 750 | 1 1/4 | 28 | 245 | 285 | 1 3/4 | 28 | 310 | 375 | 2 | 28 | 375 | 465 |
| 32 | 800 | 1 1/2 | 28 | 275 | 315 | 1 7/8 | 28 | 330 | 400 | 2 1/4 | 28 | 395 | 490 |
| 34 | 850 | 1 1/2 | 32 | 280 | 325 | 1 7/8 | 28 | 335 | 410 | 2 1/4 | 28 | 400 | 505 |
| 36 | 900 | 1 1/2 | 32 | 295 | 340 | 2 | 32 | 350 | 430 | 2 1/2 | 28 | 420 | 530 |
| 38 | 950 | 1 1/2 | 32 | 285 | - | 1 1/2 | 32 | 330 | - | 2 1/4 | 28 | 410 | - |
| 40 | 1000 | 1 1/2 | 36 | 295 | 345 | 1 5/8 | 32 | 350 | 435 | 2 1/4 | 32 | 470 | 595 |
| 42 | 1050 | 1 1/2 | 36 | 305 | 360 | 1 5/8 | 32 | 360 | 450 | 2 1/2 | 28 | 500 | 625 |
| 44 | 1100 | 1 1/2 | 40 | 315 | - | 1 3/4 | 32 | 375 | - | 2 1/2 | 32 | 515 | - |
| 46 | 1150 | 1 1/2 | 40 | 320 | 380 | 1 7/8 | 28 | 390 | 485 | 2 1/2 | 32 | 525 | 665 |
| 48 | 1200 | 1 1/2 | 44 | 330 | 390 | 1 7/8 | 32 | 400 | 500 | 2 3/4 | 32 | 550 | 700 |
| 50 | 1250 | 1 3/4 | 44 | 350 | - | 2 | 32 | 420 | - | 3 | 28 | 585 | - |
| 52 | 1300 | 1 3/4 | 44 | 360 | - | 2 | 32 | 430 | - | 3 | 32 | 600 | - |
| 54 | 1350 | 1 3/4 | 44 | 370 | - | 2 1/4 | 28 | 455 | - | 3 | 32 | 610 | - |
| 56 | 1400 | 1 3/4 | 48 | 375 | - | 2 1/4 | 28 | 460 | - | 3 1/4 | 32 | 635 | - |
| 58 | 1450 | 1 3/4 | 48 | 385 | - | 2 1/4 | 32 | 470 | - | 3 1/4 | 32 | 650 | - |
| 60 | 1500 | 1 3/4 | 52 | 390 | - | 2 1/4 | 32 | 480 | - | 3 1/2 | 28 | 675 | - |

| | | | | | | | |
|---|--|-------------------------------|-------------------------------|---------------------------------|---------------------------|-------------------------|--|
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| | | | | | | | Page 16 of 25 |

10. BOLT/NUT DIMENSION TABLE – STUD BOLT/NUT FOR ASME B16.47-A (RJ)



| FLANGE NOMINAL SIZE | | 300# | | | | 600# | | | | 900# | | | |
|------------------------|------|-------|--------------|-----|----|-------|--------------|-----|-----|-------|--------------|-----|------|
| | | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 | d(in) | No. of Bolts | L | L1 |
| in | mm | | | | | | | | | | | | |
| 26 | 650 | 1 5/8 | 24 | 305 | - | 1 7/8 | 24 | 385 | 490 | 2 3/4 | 28 | 560 | 700 |
| 28 | 700 | 1 5/8 | 28 | 315 | - | 2 | 28 | 435 | 550 | 3 | 28 | 585 | 735 |
| 30 | 750 | 1 3/4 | 28 | 335 | - | 2 | 28 | 440 | 560 | 3 | 28 | 600 | 755 |
| 32 | 800 | 1 7/8 | 28 | 360 | - | 2 1/4 | 28 | 465 | 595 | 3 1/4 | 28 | 635 | 800 |
| 34 | 850 | 1 7/8 | 32 | 365 | - | 2 1/4 | 32 | 505 | 645 | 3 1/2 | 28 | 675 | 850 |
| 36 | 900 | 2 | 32 | 415 | - | 2 1/2 | 32 | 540 | 680 | 3 1/2 | 32 | 770 | 960 |
| 38 | 950 | - | - | - | - | - | - | - | - | - | - | - | - |
| 40 | 1000 | - | - | - | - | - | - | - | - | - | - | - | - |
| 42 | 1050 | - | - | - | - | - | - | - | - | 3 1/2 | - | 795 | 1065 |