



| | | CASING | | | | | | | | | | | |
|---------------------------|-------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| NOMINAL DIAMETER | inch | 4-1/2" | 5" | | 6-5/8" | 7" | | 9-5/8" | | 13-3/8" | 18-5/8" | 20" | 30" |
| | mm | 114.30 | 127.00 | | 168.30 | 177.80 | | 244.47 | | 339.72 | 437.10 | 508.00 | 762.00 |
| NOMINAL WEIGHT | lb/ft | 13.50 | 13.00 | 15.00 | 28.00 | 26.00 | 29.00 | 40.00 | 43.50 | 61.00 | 87.50 | 94.00 | 234.00 |
| | kg/m | 19.42 | 19.35 | 22.32 | 41.18 | 38.70 | 43.15 | 59.53 | 64.73 | 90.78 | 125.88 | 139.89 | 348.23 |
| WALL THICKNESS | mm | 7.37 | 6.40 | 7.50 | 10.60 | 9.19 | 10.36 | 10.03 | 11.05 | 10.92 | 11.05 | 11.13 | 19.05 |
| COUPLING OUTSIDE DIAMETER | mm | 127.00 ^ | 141.30^ | | 187.70^ | 194.50^ | | 269.90^ | | 365.10^ | 508.00^ | 533.40^ | - |
| PIPE INSIDE DIAMETER | mm | 99.60 | 114.20 | 112.00 | 147.10 | 159.40 | 157.00 | 224.50 | 222.50 | 317.90 | 451.00 | 485.80 | 723.90 |
| GO GAUGE DIAMETER | mm | 96.40^ | 111.00^ | 108.80^ | 143.90^ | 156.20^ | 153.90^ | 220.40^ | 218.40^ | 313.90^ | 446.20^ | 481.00^ | - |
| INSIDE CAPACITY | l/m | 7.79 | 10.23 | 9.85 | 16.99 | 19.96 | 19.38 | 39.55 | 38.84 | 79.37 | 159.74 | 185.32 | 411.57 |
| STEEL BUOYANCY | l/m | 2.47 | 2.44 | 2.82 | 5.35 | 4.87 | 5.45 | 7.40 | 8.11 | 11.28 | 16.04 | 17.36 | 44.47 |
| CLOSED END BUOYANCY | l/m | 10.26 | 12.67 | | 22.34 | 24.83 | | 46.95 | | 90.65 | 175.78 | 202.68 | 456.04 |

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| | | DRILL PIPES | | | | | HEVI- WATE | | TUBING | | | | | | |
|------------------------------|-------|-------------|-----------|----------|-----------|-------------|------------|-------------|-------------|-----------|-------------|----------|-------------|----------|--------|
| NOMINAL DIAMETER | inch | 2-3/8" | 2-7/8" | 3-1/2" | | 4-1/2" | | 5" | 3-1/2"HWDP | 5"HWDP | | 2-3/8" | | 2-7/8" | |
| | mm | 60.30 | 73.00 | 88.90 | | 114.30 | | 127.00 | 88.90 | 127.00 | | 60.30 | | 73.00 | |
| NOMINAL WEIGHT | lb/ft | 6.65 | 10.40 | 13.30 | | 16.60 | | 19.50 | 26.00 | 50.00 | | 4.70 | 4.60 | 6.50 | 6.40 |
| | kg/m | 9.91 | 15.40 | 19.80 | | 24.70 | | 29.00 | 38.69 | 74.70 | | 6.99 | 6.85 | 9.67 | 9.52 |
| WALL THICKNESS | mm | 7.11 | 9.19 | 9.35 | | 8.56 | | 9.19 | 18.26 | 25.40 | | 4.83 | | 5.51 | |
| PIPE INSIDE DIAMETER | inch | 1-13/16" | 2-5/32" | 2-3/4" | | 3-13/16" | | 4-9/32" | 2-1/16" | 3" | | 2-63/64" | | 2-7/16" | |
| | mm | 46.11 | 54.60 | 70.20 | | 97.58 | | 108.60 | 52.40 | 76.20 | | 50.67 | | 62.00 | |
| TYPE OF UPSET | | EXT. | EXT. | EXT. | INT. | EXT. + INT. | | EXT. + INT. | EXTERNAL | | EXT. | N.S. | EXT. | N.S. | |
| CONNECTION TYPE | | 2-3/8"IF | 2-7/8" IF | 3-1/2"IF | 3-1/2" FH | 4" IF | | 4-1/2" IF | 3-1/2" IF | 4-1/2" IF | | API | TDS | API | TDS |
| STEEL TYPE | | E | E | E | | E , G | | E , G | AISI 4145 H | | J 55 , N 80 | | J 55 , N 80 | | |
| TOOL JOINT OUTSIDE DIAMETER | inch | 3-3/8" | 4-1/8" | 4-3/4" | 4-5/8" | 6-1/4" | 6-1/4" | 6-3/8" | 6-1/2" | 4-3/4" | 6-1/2" | 3-1/16" | 2-7/8" | 3-21/32" | 3-1/2" |
| | mm | 85.70 | 104.80 | 120.60 | 117.50 | 158.80 | 158.80 | 161.90 | 165.10 | 120.60 | 165.10 | 77.80 | 68.50 | 93.20 | 88.90 |
| TOOL JOINT INSIDE DIAMETER | inch | 1-3/4" | 2-1/8" | 2-11/16" | 2-7/16" | 3-1/4" | 3" | 3-3/4" | 3-1/4" | 2-1/16" | 3" | --- | | --- | |
| | mm | 44.40 | 54.00 | 68.30 | 61.90 | 82.60 | 76.20 | 95.20 | 82.60 | 52.38 | 76.20 | --- | | --- | |
| NOMINAL WEIGHT w/ Tool Joint | kg/m | 10.42 | 16.10 | 20.76 | 20.84 | 27.33 | 27.70 | 30.06 | 32.55 | 38.70 | 74.40 | 6.89 | 6.71 | 9.58 | 9.38 |
| INSIDE CAPACITY | l/m | 1.68 | 2.36 | 3.87 | | 7.30 | | 9.16 | 2.15 | 4.56 | | 2.02 | | 3.02 | |
| STEEL BUOYANCY | l/m | 1.33 | 2.05 | 2.63 | | 3.48 | | 3.98 | 4.93 | 9.48 | | 0.88 | | 1.22 | |
| CLOSED END BUOYANCY | l/m | 3.01 | 4.41 | 6.50 | | 10.78 | | 13.14 | 7.08 | 14.04 | | 2.90 | | 4.24 | |

| | | DRILL COLLARS | | | | | | | | BITS | | | |
|---------------------|------|---------------|-----------|-----------|----------|----------|-----------|--|-----------|-----------|---------|----------------|--------|
| OUTSIDE DIAMETER | inch | 3-1/2" | 4-3/4" | 6" | 6-1/2" | 6-3/4" | 8" | | 9-1/2" | DIAMETER | | Hole Capacity | |
| | mm | 88.90 | 120.60 | 152.00 | 165.10 | 171.40 | 203.20 | | 241.3 | inch | mm | liters / meter | |
| INSIDE DIAMETER | inch | 1-1/2" | 2-1/4" | 2-1/4" | 2-13/16" | 2-13/16" | 2-13/16" | | 3" | 3" | 5-5/8" | 143 | 16.00 |
| | mm | 38.10 | 57.10 | 57.10 | 71.40 | 71.40 | 71.40 | | 76.20 | 76.20 | 5-7/8" | 149 | 17.50 |
| CONNECTION TYPE | | 2-3/8" IF | 3-1/2" IF | 4-1/2" FH | 4-1/2"IF | 4-1/2"IF | 6-5/8"REG | | 6-5/8"REG | 7-5/8"REG | 8-1/2" | 216 | 36.60 |
| NOMINAL WEIGHT | kg/m | 39.90 | 69.70 | 122.90 | 136.60 | 149.80 | 223.20 | | 218.80 | 323.20 | 12-1/4" | 311 | 76.00 |
| INSIDE CAPACITY | l/m | 1.14 | 2.56 | 2.56 | 4.00 | 4.00 | 4.00 | | 4.56 | 4.56 | 17-1/2" | 445 | 155.20 |
| STEEL BUOYANCY | l/m | 5.07 | 8.87 | 15.68 | 17.41 | 19.09 | 28.43 | | 27.87 | 41.17 | 24" | 610 | 291.90 |
| CLOSED END BUOYANCY | l/m | 6.21 | 11.43 | 18.24 | 21.41 | 23.09 | 32.43 | | 45.73 | 45.73 | 26" | 660 | 342.50 |



| | | CASING | | | | | | | | | | | | | | | | | | |
|------------------------------------|------------|---------|--------|-------|--------------|-------|------|------|--------|-------|------|-------|------|-------|--------|-------|--------|---------|---------|-----|
| NOMINAL DIAMETER | | inch | 4-1/2" | | | 5" | | | 6-5/8" | | | 7" | | | 9-5/8" | | | 13-3/8" | 18-5/8" | 20" |
| NOMINAL WEIGHT | | lb/ft | 13.50 | 13.00 | 15.00 | 28.00 | | | 26.00 | 29.00 | | 40.00 | | 43.50 | | 61.00 | 87.50 | 94.00 | | |
| WALL THICKNESS | | mm | 7.37 | 6.40 | 7.50 | 10.60 | | | 9.19 | 10.36 | | 10.03 | | 11.05 | | 10.92 | 11.05 | 11.13 | | |
| STEEL TYPE | | | K 55 | | K55 N80 P110 | | | K55 | K55 | P110 | K55 | N80 | K55 | N80 | P110 | K55 | J 55 | J55 | | |
| COLLAPSE PRESSURE | | at | 437 | 282 | 375 | 419 | 555 | 680 | 294 | 368 | 575 | 173 | 210 | 198 | 259 | 301 | 104 | 42 | 35 | |
| BURST PRESSURE | | at | 422 | 330 | 385 | 410 | 595 | 824 | 338 | 382 | 762 | 267 | 390 | 310 | 430 | 592 | 210 | 152 | 142 | |
| MECHANICAL STRENGTH | | Tons | 94 | 92 | 107 | 190 | 289 | 398 | 185 | 207 | 413 | 280 | 407 | 304 | 447 | 615 | 428 | 608 | 659 | |
| MECH. STRENGTH OF COUPLING | API - LONG | Tons | 97 | 83 | 110 | 202 | 260 | 347 | 178 | 205 | 354 | 250 | 323 | 194 | 367 | 422 | 281 ^ | 353 ^ | 425 | |
| | BUTTRESS | Tons | 141 | 138 | 160 | 286 | 321 | 410 | 263 | 294 | 425 | 375 | 412 | 380 | 478 | 617 | 520 | 635 | 658 | |
| Make Up Torque: | | kGm | 265 | 252 | 352 | 690 | 810 | 1080 | 510 | 640 | 1100 | 720 | 1020 | 820 | 1140 | 1530 | 820 ^ | 1040 ^ | 1260 | |
| Couplings : API Long , ^ API Short | | lb - ft | 1920 | 1820 | 2230 | 5000 | 5860 | 7810 | 3670 | 4630 | 7970 | 5200 | 7370 | 5930 | 8250 | 11060 | 5950 ^ | 7540 ^ | 9110 | |

| | | DRILL PIPES | | | | | | | | HEVI- WATE | | TUBING | | | | | | |
|-----------------------------|-----|--------------------|----------|----------|----------|----------|------------|--------|-------------|-------------|-------------|-----------------------|---------|-------------------------------------|----------|-----------------------|------|------|
| NOMINAL DIAMETER | | inch | 2-3/8" | 2-7/8" | 3-1/2" | | 4-1/2" | | 5" | 3-1/2" HWDP | | 5" HWDP | | 2-3/8" | | 2-7/8" | | |
| NOMINAL WEIGHT | | lb/ft | 6.65 | 10.40 | 13.30 | | 16.60 | | 19.50 | 26.00 | | 50.00 | | 4.70 | 4.60 | 6.50 | 6.40 | |
| WALL THICKNESS | | mm | 7.11 | 9.19 | 9.35 | | 8.56 | | 9.19 | 18.20 | | 25.40 | | 4.83 | | 5.51 | | |
| TYPE OF UPSET | | | EXT. | EXT. | EXT. | INT. | EXT.+ INT. | | EXT. + INT. | EXTERNAL | | | | EXT. | N.S. | EXT. | N.S. | |
| CONNECTION TYPE | | | 2-3/8"IF | 2-7/8"IF | 3-1/2"IF | 3-1/2"FH | 4"IF | | 4-1/2" IF | 3-1/2" IF | 4-1/2" IF | API | TDS | API | TDS | | | |
| TOOL JOINT OUTSIDE DIAMETER | | inch | 3-3/8" | 4-1/8" | 4-3/4" | 4-5/8" | 6-1/4" | 6-1/4" | 6-3/8" | 6-1/2" | 4-3/4" | 6-1/2" | 3-1/16" | 2-7/8" | 3-21/32" | 3-1/2" | | |
| TOOL JOINT INSIDE DIAMETER | | inch | 1-3/4" | 2-1/8" | 2-11/16" | 2-7/16" | 3-1/4" | 3" | 3-3/4" | 3-1/4" | 2-1/16" | 3" | --- | | --- | | | |
| STEEL TYPE | | | E | E | E | E | E | G | E | G | AISI 4145 H | | | | J 55 | N 80 | J 55 | N 80 |
| P I C | NEW | TENSILE STRENGTH | Tons | 62 | 97 | 123 | 123 | 150 | 210 | 179 | 250 | 150 | 300 | 31 | 37 | 43.5 | 51 | |
| | | RECOMMENDED TORQUE | kGm | 475 | 820 | 1250 | 1200 | 2350 | 2740 | 2600 | 3500 | 1370 | 4070 | 190 | 150 | 320 | 220 | |
| P L E A | I | TENSILE STRENGTH | Tons | 48 | 75 | 96 | 96 | 118 | 166 | 141 | 197 | C O N V E R S I O N S | | | | | | |
| | | RECOMMENDED TORQUE | kGm | 340 | 635 | 1005 | 950 | 1670 | 2290 | 2180 | 3030 | 1 inch = 25.4 mm | | 1 lbs - 0.4536 kg | | 1 at = 14.22 PSI | | |
| S S | II | TENSILE STRENGTH | Tons | 42 | 65 | 83 | 83 | 102 | 143 | 122 | 171 | 1 feet = 0.3048 m | | 1 lbs/gal = 119.8 kg/m ³ | | 1 bar = 1.02 at | | |
| | | RECOMMENDED TORQUE | kGm | 300 | 530 | 870 | 820 | 1470 | 1975 | 1950 | 2660 | 1 US gallon = 3.785 l | | 1 PSI = 0.0703 at | | 1 barrel = 159 liters | | |

| | | DRILL COLLARS | | | | | | | | | BITS - MAKE UP TORQUES | | |
|----------------------------|--|---------------|-----------|-----------|-----------|----------|----------|-----------|-----------|-----------|------------------------|------------|--------|
| OUTSIDER DIAMETER | | inch | 3-1/2" | 4-3/4" | 6" | 6-1/2" | 6-3/4" | 8" | | 9-1/2" | DIAMETER | CONNECTION | TORQUE |
| | | mm | 88.90 | 120.60 | 152.00 | 165.10 | 171.40 | 203.20 | | 241.3 | inch | TYPE | kGm |
| INSIDE DIAMETER | | inch | 1-1/2" | 2-1/4" | 2-1/4" | 2-13/16" | 2-13/16" | 2-13/16" | 3" | 3" | 5-7/8" | 3-1/2"REG | 1400 |
| | | mm | 38.10 | 57.10 | 57.10 | 71.40 | 71.40 | 71.40 | 76.20 | 76.20 | 8-1/2" | 4-1/2"REG | 2200 |
| CONNECTION TYPE | | | 2-3/8" IF | 3-1/2" IF | 4-1/2" FH | 4-1/2"IF | 4-1/2"IF | 6-5/8"REG | 6-5/8"REG | 7-5/8"REG | 12-1/4" | 6-5/8"REG | 4400 |
| MINIMAL MAKE UP TORQUE | | kGm | 625 | 1350 | 3150 | 4000 | 4000 | 7200 | 6800 | 12300 | 17-1/2" | 7-5/8"REG | 5500 |
| RECOMMENDED MAKE UP TORQUE | | kGm | 700 | 1500 | 3500 | 4400 | 4400 | 7900 | 7500 | 13500 | 26" | 7-5/8"REG | 5500 |