

## MINIMUM ULTIMATE TENSILE LOADS & PROOF LOADS

Ref: ISO 898/1-1978  
Metric Bolts, Screws and Studs

### COARSE THREADS

| TENSILE LOADS                              |        |        |        |        |         |         | PROOF LOADS             |                        |                                  |                |        |        |        |        |        |        |
|--|--------|--------|--------|--------|---------|---------|-------------------------|------------------------|----------------------------------|----------------|--------|--------|--------|--------|--------|--------|
| PROPERTY CLASS                             |        |        |        |        |         |         | NOM. THREAD DIA. mm     | PITCH OF THE THREAD mm | NOM. STRESS AREA mm <sup>2</sup> | PROPERTY CLASS |        |        |        |        |        |        |
| 5.6  | 5.8    | 6.8    | 8.8    | 9.8    | 10.9    | 12.9    |                         |                        |                                  | 5.6            | 5.8    | 6.8    | 8.8    | 9.8    | 10.9   | 12.9   |
| Minimum ultimate tensile load (As x Rm), N |        |        |        |        |         |         | Proof Load (As x SP), N |                        |                                  |                |        |        |        |        |        |        |
| 2510                                       | 2620   | 3020   | 4020   | 4530   | 5230    | 6140    | 3                       | 0.5                    | 5.03                             | 1410           | 1910   | 2210   | 2920   | 3270   | 4180   | 4880   |
| 3390                                       | 3530   | 4070   | 5420   | 6100   | 7050    | 8270    | 3.5                     | 0.6                    | 6.78                             | 1900           | 2580   | 2980   | 3940   | 4410   | 5630   | 6580   |
| 4390                                       | 4570   | 5270   | 7020   | 7900   | 9130    | 10700   | 4                       | 0.7                    | 8.78                             | 2460           | 3340   | 3860   | 5100   | 5710   | 7290   | 8520   |
| 7100                                       | 7380   | 8520   | 11350  | 12800  | 14800   | 17300   | 5                       | 0.8                    | 14.2                             | 3980           | 5400   | 6250   | 8230   | 9230   | 11800  | 13800  |
| 10000                                      | 10400  | 12100  | 16100  | 18100  | 20900   | 24500   | 6                       | 1                      | 20.1                             | 5630           | 7640   | 8840   | 11600  | 13100  | 16700  | 19500  |
| 14100                                      | 15000  | 17300  | 23100  | 26000  | 30100   | 35300   | 7                       | 1                      | 28.9                             | 8090           | 11000  | 12700  | 16800  | 18800  | 24000  | 28000  |
| 18300                                      | 19000  | 22000  | 29200  | 32900  | 38100   | 44600   | 8                       | 1.25                   | 36.6                             | 10200          | 13900  | 16100  | 21200  | 23800  | 30400  | 35500  |
| 29000                                      | 30200  | 34800  | 46400  | 52200  | 60300   | 70800   | 10                      | 1.5                    | 58.0                             | 16200          | 22000  | 25500  | 33700  | 37700  | 48100  | 56300  |
| 42200                                      | 43800  | 50600  | 67400  | 75900  | 87700   | 103000  | 12                      | 1.75                   | 84.3                             | 23600          | 32000  | 37100  | 48900  | 54800  | 70000  | 81800  |
| 57500                                      | 59800  | 69000  | 92000  | 104000 | 120000  | 140000  | 14                      | 2                      | 115                              | 32200          | 43700  | 50600  | 66700  | 74800  | 95500  | 112000 |
| 78500                                      | 81600  | 94000  | 125000 | 141000 | 163000  | 192000  | 16                      | 2                      | 157                              | 44000          | 59700  | 69100  | 91000  | 102000 | 130000 | 152000 |
| 96000                                      | 99800  | 115000 | 159000 | -      | 200000  | 234000  | 18                      | 2.5                    | 192                              | 53800          | 73000  | 84500  | 115000 | -      | 159000 | 186000 |
| 122000                                     | 127000 | 147000 | 203000 | -      | 255000  | 299000  | 20                      | 2.5                    | 245                              | 68600          | 93100  | 108000 | 147000 | -      | 203000 | 238000 |
| 152000                                     | 158000 | 182000 | 252000 | -      | 315000  | 370000  | 22                      | 2.5                    | 303                              | 84800          | 115000 | 133000 | 182000 | -      | 252000 | 294000 |
| 176000                                     | 184000 | 212000 | 293000 | -      | 367000  | 431000  | 24                      | 3                      | 353                              | 98800          | 134000 | 155000 | 212000 | -      | 293000 | 342000 |
| 230000                                     | 239000 | 275000 | 381000 | -      | 477000  | 560000  | 27                      | 3                      | 459                              | 128000         | 174000 | 202000 | 275000 | -      | 381000 | 445000 |
| 280000                                     | 292000 | 337000 | 466000 | -      | 583000  | 684000  | 30                      | 3.5                    | 561                              | 157000         | 213000 | 247000 | 337000 | -      | 466000 | 544000 |
| 347000                                     | 361000 | 416000 | 576000 | -      | 722000  | 847000  | 33                      | 3.5                    | 694                              | 194000         | 264000 | 305000 | 416000 | -      | 570000 | 673000 |
| 408000                                     | 425000 | 490000 | 678000 | -      | 850000  | 997000  | 36                      | 4                      | 817                              | 229000         | 310000 | 359000 | 490000 | -      | 678000 | 792000 |
| 488000                                     | 508000 | 586000 | 810000 | -      | 1020000 | 1200000 | 39                      | 4                      | 976                              | 273000         | 371000 | 429000 | 586000 | -      | 810000 | 947000 |

### FINE THREADS

| TENSILE LOADS                              |        |        |        |        |         |         | PROOF LOADS             |                        |                                  |                |        |        |        |        |        |        |
|--|--------|--------|--------|--------|---------|---------|-------------------------|------------------------|----------------------------------|----------------|--------|--------|--------|--------|--------|--------|
| PROPERTY CLASS                             |        |        |        |        |         |         | NOM. THREAD DIA. mm     | PITCH OF THE THREAD mm | NOM. STRESS AREA mm <sup>2</sup> | PROPERTY CLASS |        |        |        |        |        |        |
| 5.6  | 5.8    | 6.8    | 8.8    | 9.8    | 10.9    | 12.9    |                         |                        |                                  | 5.6            | 5.8    | 6.8    | 8.8    | 9.8    | 10.9   | 12.9   |
| Minimum ultimate tensile load (As x Rm), N |        |        |        |        |         |         | Proof Load (As x SP), N |                        |                                  |                |        |        |        |        |        |        |
| 19600                                      | 20400  | 23500  | 31360  | 353000 | 40800   | 47800   | 8                       | 1                      | 39.2                             | 11000          | 14900  | 17200  | 22700  | 25500  | 32500  | 38000  |
| 30600                                      | 31800  | 36700  | 49000  | 551000 | 63600   | 74700   | 10                      | 1.25                   | 61.2                             | 17100          | 233000 | 26900  | 35500  | 39800  | 50800  | 59400  |
| 46000                                      | 47900  | 553000 | 73700  | 829000 | 95800   | 112000  | 12                      | 1.25                   | 92.1                             | 25800          | 35000  | 40500  | 53400  | 59900  | 76400  | 89300  |
| 62500                                      | 65000  | 75000  | 100000 | 112000 | 130000  | 152000  | 14                      | 1.5                    | 125                              | 35000          | 47500  | 55000  | 72500  | 81200  | 104000 | 121000 |
| 83500                                      | 86800  | 100000 | 134000 | 150000 | 174000  | 204000  | 16                      | 1.5                    | 167                              | 46800          | 63500  | 73500  | 96900  | 109000 | 139000 | 162000 |
| 108000                                     | 112000 | 130000 | 179000 | -      | 225000  | 264000  | 18                      | 1.5                    | 216                              | 60500          | 82100  | 95000  | 130000 | -      | 179000 | 210000 |
| 136000                                     | 141000 | 163000 | 226000 | -      | 283000  | 332000  | 20                      | 1.5                    | 272                              | 76200          | 103000 | 120000 | 163000 | -      | 226000 | 264000 |
| 166000                                     | 173000 | 200000 | 276000 | -      | 346000  | 406000  | 22                      | 1.5                    | 333                              | 93200          | 126000 | 146000 | 200000 | -      | 276000 | 323000 |
| 192000                                     | 200000 | 230000 | 319000 | -      | 399000  | 469000  | 24                      | 2                      | 384                              | 108000         | 146000 | 169000 | 233000 | -      | 319000 | 372000 |
| 248000                                     | 258000 | 298000 | 412000 | -      | 516000  | 605000  | 27                      | 2                      | 496                              | 139000         | 188000 | 218000 | 298000 | -      | 412000 | 481000 |
| 310000                                     | 323000 | 373000 | 515000 | -      | 646000  | 758000  | 30                      | 2                      | 621                              | 174000         | 236000 | 273000 | 373000 | -      | 515000 | 602000 |
| 380000                                     | 396000 | 457000 | 632000 | -      | 791000  | 928000  | 33                      | 2                      | 761                              | 213000         | 289000 | 335000 | 457000 | -      | 632000 | 738000 |
| 432000                                     | 450000 | 519000 | 718000 | -      | 900000  | 1050000 | 36                      | 3                      | 865                              | 242000         | 329000 | 381000 | 519000 | -      | 718000 | 838000 |
| 515000                                     | 536000 | 618000 | 855000 | -      | 1070000 | 1260000 | 39                      | 3                      | 1030                             | 288000         | 391000 | 453000 | 618000 | -      | 855000 | 999000 |