

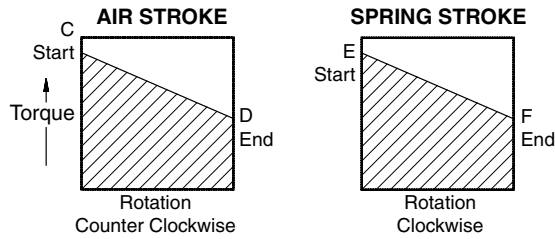
Data sheet

Sheet No.: 1.104.02 Rev. A
Date: November 2009

SPRING RETURN ACTUATOR TORQUE (Nm.)

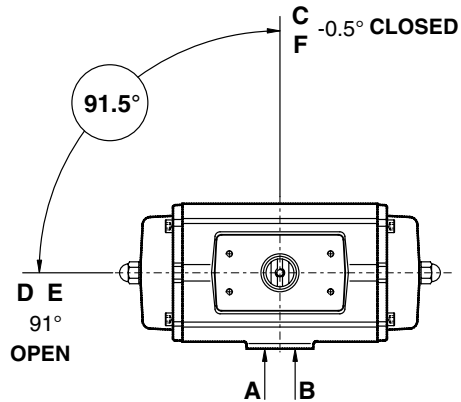
90°

SINGLE ACTING TORQUE



Note

- Emerson Process Management recommends that the valve manufacturer supply the maximum required torque values (Including any adjustments or suggested safety factors for valve service conditions or application). Additionally, the valve manufacturer must identify at which position(s) and direction(s) of rotation (Counter Clock Wise or Clock Wise) these maximum requirements occur.
- If in doubt, or you require any assistance with sizing actuators, do not hesitate to contact your nearest Emerson's Valve Automation Division representative.
- Pressure on port "A" opens the actuator*
- The actuator is shown in closed position* (* code A, data sheet 1.504)



| Springset nr. | Air Stroke (Nm) | | | | | | | | | | | | | | Spring Stroke (Nm) | | | | |
|---------------|-----------------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|--------------------|------|------|------|------|
| | SUPPLY PRESSURE | | | | | | | | | | | | | | | | | | |
| | 3.0 barg | | 3.5 barg | | 4.0 barg | | 4.5 barg | | 5.0 barg | | 5.5 barg | | 6.0 barg | | 7.0 barg | | E | F | |
| PS 2500 | 6 | 896 | 602 | 1142 | 848 | 1387 | 1093 | 1633 | 1339 | 1879 | 1585 | 2124 | 1830 | 2370 | 2076 | 2861 | 2567 | 792 | 497 |
| | 8 | 712 | 320 | 958 | 566 | 1203 | 811 | 1449 | 1057 | 1694 | 1302 | 1940 | 1548 | 2186 | 1794 | 2677 | 2285 | 1056 | 663 |
| | 10 | - | - | 774 | 284 | 1019 | 529 | 1265 | 775 | 1510 | 1020 | 1756 | 1266 | 2001 | 1511 | 2492 | 2002 | 1321 | 829 |
| | 12 | - | - | - | - | 835 | 247 | 1081 | 492 | 1326 | 738 | 1572 | 984 | 1817 | 1229 | 2308 | 1720 | 1585 | 995 |
| PS 4000 | 6 | 1524 | 1028 | 1940 | 1444 | 2356 | 1860 | 2772 | 2276 | 3189 | 2693 | 3605 | 3109 | 4021 | 3525 | 4854 | 4358 | 1337 | 839 |
| | 8 | 1213 | 551 | 1629 | 968 | 2045 | 1384 | 2462 | 1800 | 2878 | 2216 | 3294 | 2633 | 3710 | 3049 | 4543 | 3882 | 1783 | 1119 |
| | 10 | - | - | 1318 | 491 | 1734 | 908 | 2151 | 1324 | 2567 | 1740 | 2983 | 2157 | 3400 | 2573 | 4232 | 3405 | 2229 | 1399 |
| | 12 | - | - | - | - | 1424 | 431 | 1840 | 848 | 2256 | 1264 | 2672 | 1680 | 3089 | 2097 | 3921 | 2929 | 2674 | 1679 |
| 14 | - | - | - | - | - | - | - | - | - | 1945 | 788 | 2362 | 1204 | 2778 | 1620 | 3610 | 2453 | 3120 | 1958 |

| Springset nr. | Air Stroke (Nm) | | | | | | | | | | | | | | Spring Stroke (Nm) | | | | | |
|---------------|-----------------|-----|----------|-----|----------|-----|----------|------|----------|------|----------|------|----------|------|--------------------|------|------|------|------|-----|
| | SUPPLY PRESSURE | | | | | | | | | | | | | | | | | | | |
| | 3.0 barg | | 3.5 barg | | 4.0 barg | | 4.5 barg | | 5.0 barg | | 5.5 barg | | 6.0 barg | | 7.0 barg | | E | F | | |
| ES 12 | 2 | - | - | 3.8 | 1.0 | 5.1 | 2.3 | 6.4 | 3.6 | 7.7 | 4.9 | 9.0 | 6.2 | 10.3 | 7.5 | 12.9 | 10.1 | 7.2 | 4.6 | |
| | 25 | 2 | 9 | 6 | 12 | 9 | 14 | 11 | 16 | 13 | 19 | 16 | 21 | 18 | 24 | 21 | 29 | 25 | 7 | 4 |
| | 3 | 7 | 2 | 9 | 5 | 12 | 7 | 14 | 9 | 16 | 12 | 19 | 14 | 21 | 17 | 26 | 21 | 11 | 7 | |
| | 4 | - | - | - | - | 9 | 3 | 11 | 5 | 14 | 8 | 16 | 10 | 19 | 13 | 23 | 17 | 14 | 9 | |
| ES 40 | 2 | 17 | 12 | 22 | 16 | 26 | 21 | 31 | 25 | 35 | 30 | 40 | 34 | 44 | 39 | 53 | 48 | 13 | 8 | |
| | 3 | 12 | 4 | 17 | 8 | 22 | 13 | 26 | 18 | 31 | 22 | 35 | 27 | 40 | 31 | 49 | 40 | 20 | 12 | |
| | 4 | - | - | - | - | 17 | 5 | 21 | 10 | 26 | 14 | 30 | 19 | 35 | 23 | 44 | 33 | 26 | 17 | |
| | 5 | - | - | - | - | - | - | - | - | - | 21 | 7 | 26 | 11 | 30 | 16 | 39 | 25 | 33 | 21 |
| ES 65 | 2 | 26 | 17 | 32 | 23 | 39 | 30 | 46 | 37 | 53 | 44 | 60 | 51 | 67 | 58 | 81 | 72 | 21 | 13 | |
| | 3 | 18 | 5 | 25 | 11 | 32 | 18 | 39 | 25 | 46 | 32 | 52 | 39 | 59 | 46 | 73 | 60 | 32 | 20 | |
| | 4 | - | - | - | - | 24 | 6 | 31 | 13 | 38 | 20 | 45 | 27 | 52 | 34 | 66 | 48 | 42 | 26 | |
| | 5 | - | - | - | - | - | - | - | - | - | 30 | 8 | 37 | 15 | 44 | 22 | 58 | 36 | 53 | 33 |
| ES 100 | 2 | 39 | 27 | 49 | 37 | 60 | 47 | 70 | 57 | 80 | 67 | 90 | 78 | 100 | 88 | 121 | 108 | 29 | 18 | |
| | 3 | 29 | 10 | 39 | 20 | 49 | 30 | 59 | 41 | 70 | 51 | 80 | 61 | 90 | 71 | 110 | 92 | 44 | 27 | |
| | 4 | - | - | - | - | 39 | 14 | 49 | 24 | 59 | 34 | 69 | 44 | 80 | 54 | 100 | 75 | 58 | 37 | |
| | 5 | - | - | - | - | - | - | - | - | - | 49 | 17 | 59 | 27 | 69 | 38 | 89 | 58 | 73 | 46 |
| ES 150 | 2 | 63 | 41 | 79 | 58 | 95 | 74 | 112 | 90 | 128 | 107 | 144 | 123 | 161 | 139 | 193 | 172 | 48 | 29 | |
| | 3 | 46 | 14 | 62 | 30 | 79 | 47 | 95 | 63 | 111 | 79 | 128 | 96 | 144 | 112 | 177 | 145 | 72 | 44 | |
| | 4 | - | - | - | - | 62 | 19 | 78 | 36 | 95 | 52 | 111 | 68 | 127 | 85 | 160 | 117 | 95 | 58 | |
| | 5 | - | - | - | - | - | - | - | - | - | 78 | 24 | 94 | 41 | 110 | 57 | 143 | 90 | 119 | 73 |
| ES 200 | 2 | 85 | 57 | 107 | 79 | 130 | 101 | 152 | 124 | 174 | 146 | 197 | 169 | 219 | 191 | 264 | 236 | 65 | 41 | |
| | 3 | 62 | 19 | 84 | 42 | 106 | 64 | 129 | 86 | 151 | 109 | 173 | 131 | 196 | 153 | 240 | 198 | 98 | 61 | |
| | 4 | - | - | - | - | 83 | 26 | 105 | 49 | 127 | 71 | 150 | 93 | 172 | 116 | 217 | 160 | 131 | 82 | |
| | 5 | - | - | - | - | - | - | - | - | - | 104 | 33 | 126 | 56 | 149 | 78 | 193 | 123 | 164 | 102 |
| ES 350 | 2 | 144 | 96 | 183 | 135 | 221 | 174 | 260 | 213 | 299 | 252 | 338 | 290 | 377 | 329 | 454 | 407 | 116 | 74 | |
| | 3 | 101 | 30 | 140 | 68 | 179 | 107 | 217 | 146 | 256 | 185 | 295 | 224 | 334 | 263 | 412 | 340 | 174 | 112 | |
| | 4 | - | - | - | - | 136 | 41 | 175 | 80 | 214 | 118 | 252 | 157 | 291 | 196 | 369 | 274 | 232 | 149 | |
| | 5 | - | - | - | - | - | - | - | - | - | 171 | 52 | 210 | 91 | 249 | 130 | 326 | 207 | 289 | 186 |
| ES 600 | 2 | 249 | 166 | 315 | 232 | 381 | 298 | 447 | 364 | 513 | 430 | 579 | 496 | 645 | 562 | 777 | 694 | 195 | 122 | |
| | 3 | 179 | 54 | 245 | 120 | 311 | 186 | 377 | 252 | 443 | 318 | 509 | 384 | 575 | 450 | 707 | 582 | 292 | 183 | |
| | 4 | - | - | - | - | 240 | 74 | 306 | 140 | 372 | 206 | 438 | 272 | 504 | 338 | 636 | 470 | 389 | 245 | |
| | 5 | - | - | - | - | - | - | - | - | - | 302 | 94 | 368 | 160 | 434 | 226 | 566 | 358 | 487 | 306 |
| ES 950 | 2 | 375 | 249 | 474 | 347 | 572 | 446 | 671 | 544 | 769 | 643 | 868 | 741 | 966 | 840 | 1163 | 1037 | 290 | 179 | |
| | 3 | 272 | 82 | 371 | 181 | 469 | 279 | 568 | 378 | 666 | 476 | 765 | 575 | 863 | 673 | 1060 | 870 | 434 | 269 | |
| | 4 | - | - | - | - | 366 | 113 | 465 | 211 | 563 | 310 | 662 | 408 | 760 | 507 | 957 | 704 | 579 | 359 | |
| | 5 | - | - | - | - | - | - | - | - | - | 460 | 143 | 559 | 242 | 657 | 340 | 854 | 537 | 724 | 448 |
| ES 1600 | 2 | 617 | 416 | 780 | 579 | 943 | 742 | 1106 | 905 | 1269 | 1068 | 1432 | 1231 | 1594 | 1394 | 1920 | 1719 | 474 | 299 | |
| | 3 | 445 | 144 | 608 | 307 | 771 | 470 | 934 | 633 | 1097 | 796 | 1260 | 959 | 1423 | 1121 | 1748 | 1447 | 711 | 449 | |
| | 4 | - | - | - | - | 599 | 198 | 762 | 361 | 925 | 523 | 1088 | 686 | 1251 | 849 | 1577 | 1175 | 947 | 598 | |
| | 5 | - | - | - | - | - | - | - | - | - | 753 | 251 | 916 | 414 | 1079 | 577 | 1405 | 903 | 1184 | 748 |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | 907 | 305 | 1233 | 630 | 1421 | 897 | |



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