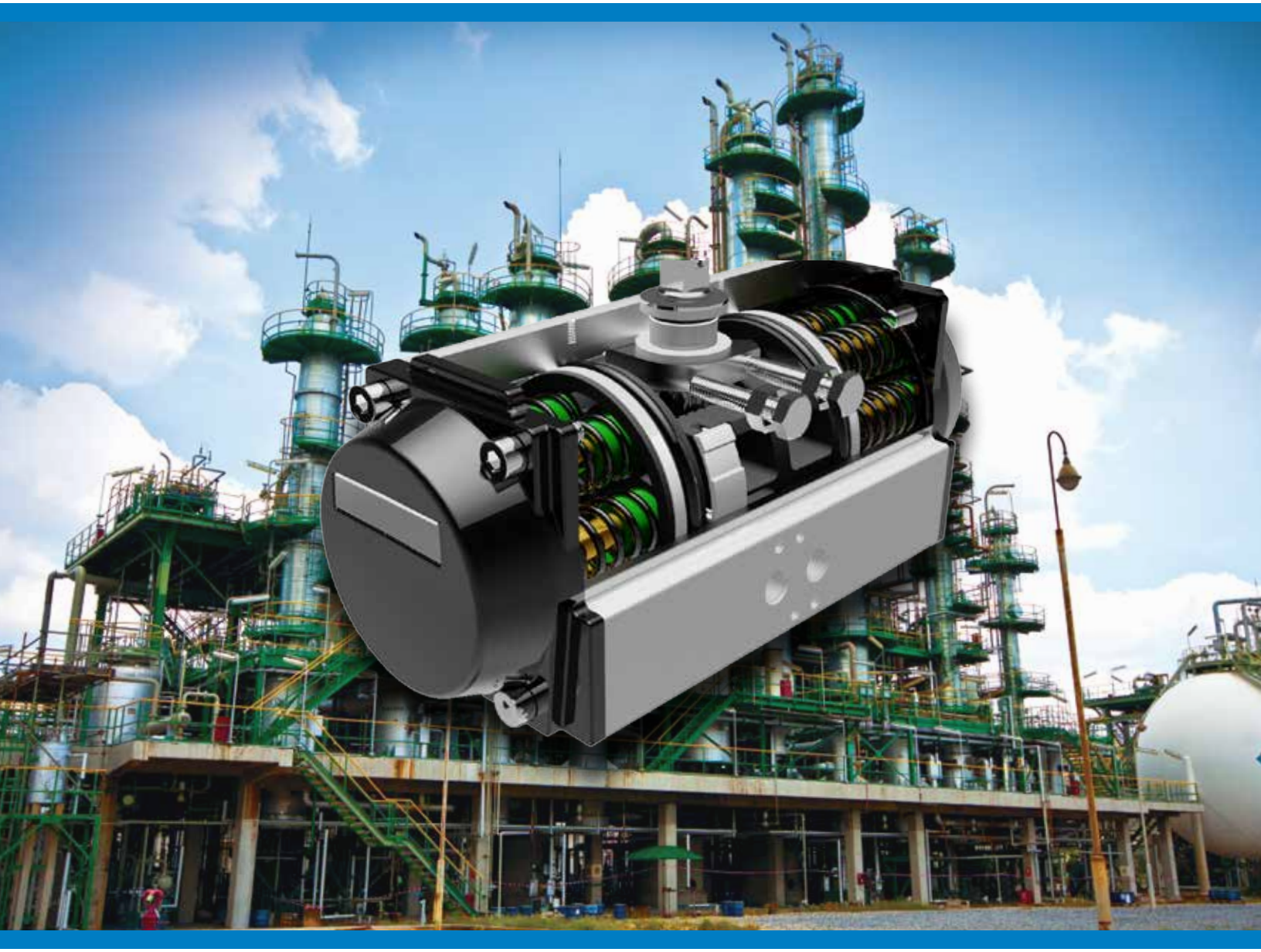
# NIBCO® SURE SEAL®

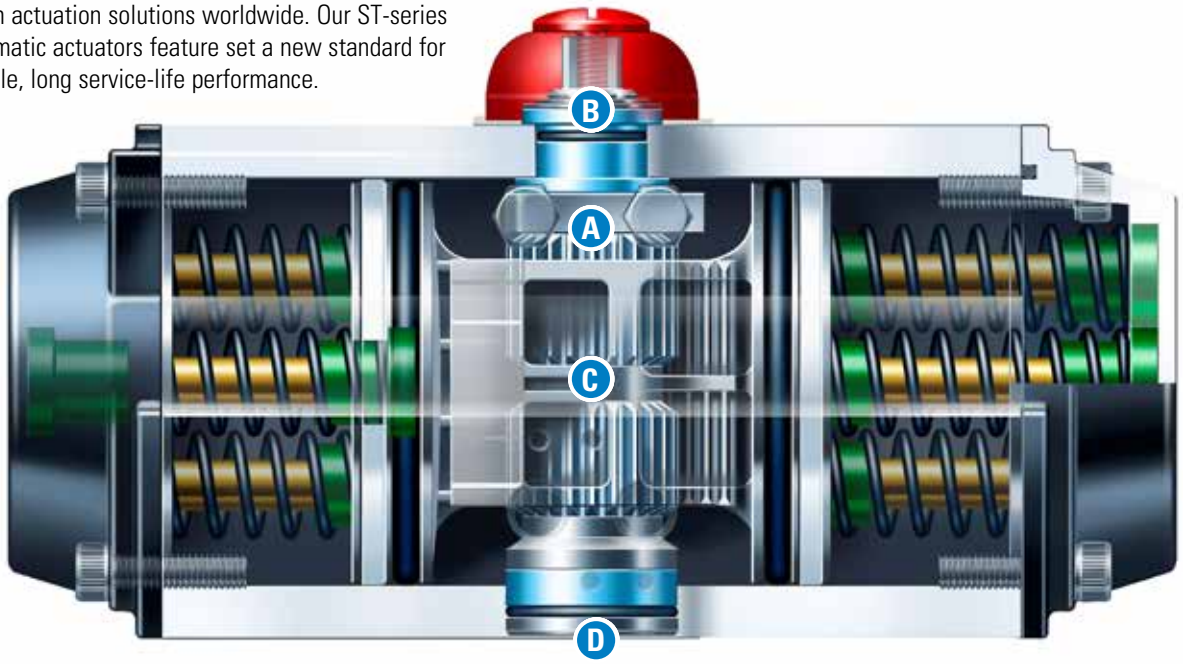
## Pneumatic Actuation



NIBCO offers a comprehensive selection of pneumatic actuation for industrial and commercial applications that are available in a broad range of materials, sizes, and pressures. Sure Seal® valves will exceed your application expectations and, like all NIBCO products, guarantee superior quality, performance, and service.

# ST-SERIES FEATURES AND BENEFITS

NIBCO® Sure Seal® offers pneumatic rack and pinion actuation solutions worldwide. Our ST-series pneumatic actuators feature set a new standard for reliable, long service-life performance.

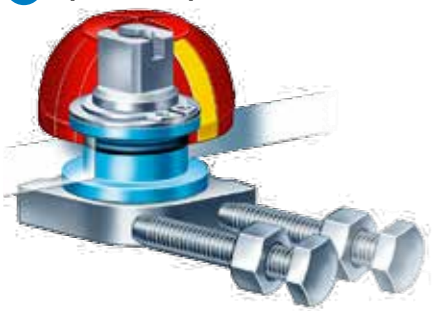



## A Improved Travel Stop Design



Allows the actuator to stop off the pinion rather than the pistons. A standard actuator will have 100 degrees of travel with +5 or -5 degrees of adjustment on the open and close stop. The forged steel travel stop can be machined to any length of travel.

## B Upgraded Top Hat Thrust Bearing Design



Provides the largest pinion bearing surface in the industry. This upgraded thrust bearing limits friction between the actuator body and pinion, increases durability by absorbing side-load forces and extends the cycle life of pinion O-rings.

## C Increased Tooth Engagement



Enables consistent torque output and accuracy. A minimum of two teeth are engaged at all times during the stroke.



## D New High-Performance Options Available

Several new options are available to provide the level of corrosion protection needed for the required application. Whether your application is pharmaceutical, food and beverage, oil and gas, refining, marine or chemical processing, our standard and optional coatings will ensure reliable performance.

### Mounting Options:

- 3.25" and 5" bolt circles along with "Double D" and keyway pinions available for direct valve automation

### Actuator Options:

- 120°, 135°, 180° rotation in double-acting and spring return
- Low and high temperature
- Fast-acting/quick exhaust
- 100% travel stop adjustment
- 3-position actuators

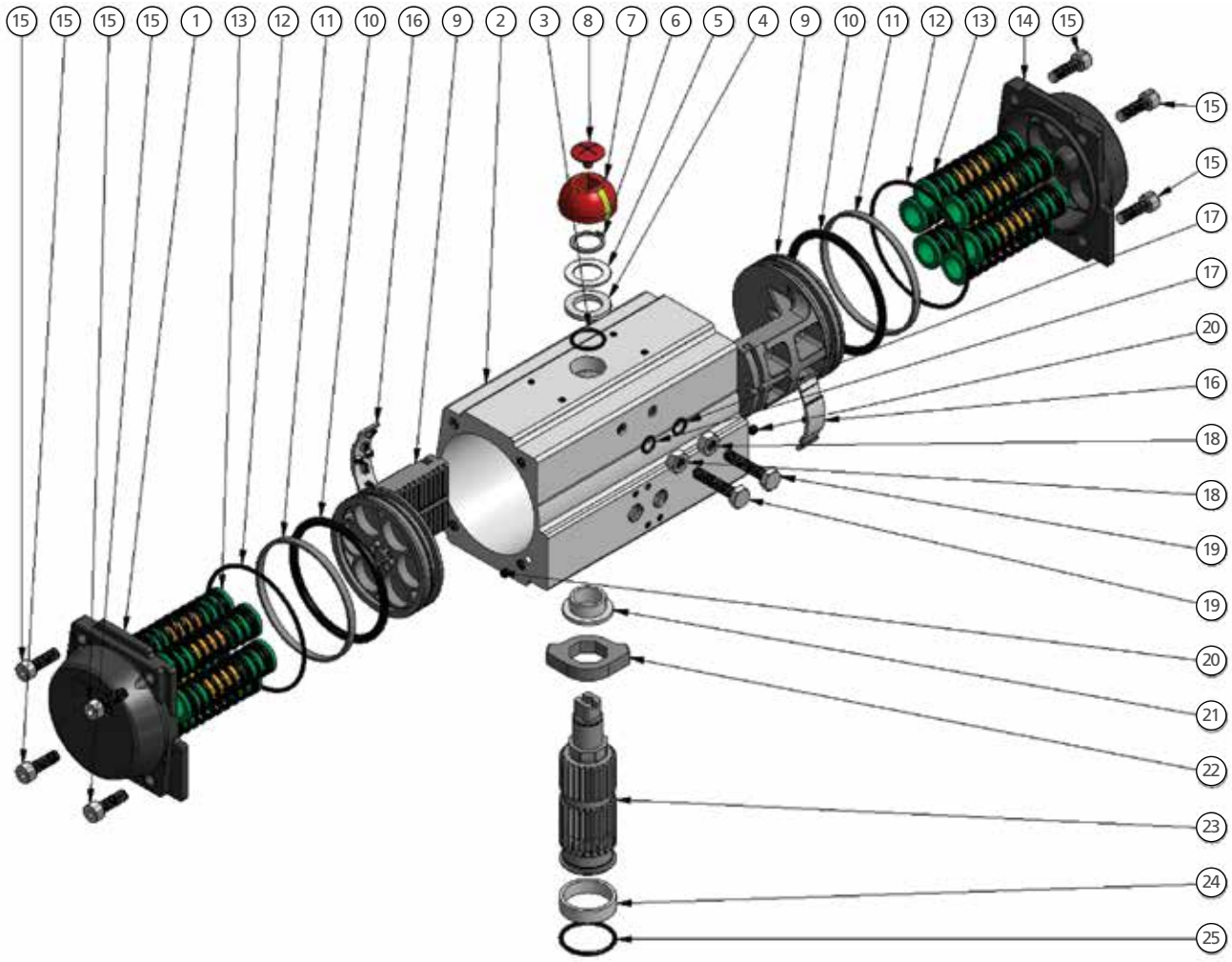
### Coating Options:

- Anodized Type II
- Hard Anodized Type III
- Anodized Type II/epoxy polyester powder coat
- ANI-high phosphorus nickel impregnated
- Anodized Type II/PTFE sealed

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# ST-SERIES TECHNICAL INFORMATION




| ST-Series Actuators Parts Overview | | | |
|---|---|---|---|
| Item # | Qty. | Description | Material |
| 1 | 1 | Left End Cap | ASTM 384 Cast Aluminum |
| 2 | 1 | Body | 6005T5 Extruded Aluminum |
| 3 | 1 | Upper Pinion O-ring | NBR/FKM*/Low Temp NBR** |
| 4 | 1 | Flange Bearing | Acetal/Polysulfone (PSU)* |
| 5 | 1 | Pinion Washer | Stainless Steel |
| 6 | 1 | Pinion Circlip | Stainless Steel |
| 7 | 1 | Indicator | ABS |
| 8 | 1 | Indicator Screw | ABS |
| 9 | 2 | Piston | ASTM A23320 Anodized |
| 10 | 2 | Piston O-ring | NBR/FKM*/Low Temp NBR** |
| 11 | 2 | Piston Guide | Bronze Impregnated PTFE |
| 12 | 2 | End Cap O-ring | NBR/FKM*/Low Temp NBR** |
| 13 | 0-12 | Spring Cartridge | Epoxy-Coated Spring Steel |

| ST-Series Actuators Parts Overview | | | |
|---|---|---|---|
| Item # | Qty. | Description | Material |
| 14 | 1 | Right End Cap | ASTM 384 Cast Aluminum |
| 15 | 8 | End Cap Socket Head Cap Screw | Stainless Steel |
| 16 | 2 | Piston Skate | Acetal/Polysulfone (PSU)* |
| 17 | 2 | Stop O-ring | NBR/FKM*/Low Temp NBR** |
| 18 | 2 | Stop Nut | Stainless Steel |
| 19 | 2 | Stop Bolt | Stainless Steel |
| 20 | 2 | Air Channel Plug | NBR/FKM*/Low Temp NBR** |
| 21 | 1 | Thrust Bearing | Acetal/Polysulfone (PSU)* |
| 22 | 1 | Pinion Cam | Electroless Nickel/Forged 1045 Carbon Steel |
| 23 | 1 | Pinion | Electroless Nickel/Alloy Steel |
| 24 | 1 | Lower Pinion Thrust Bearing | Bearing Acetal/Polysulfone (PSU)* |
| 25 | 1 | Lower Pinion O-ring | NBR/FKM*/Low Temp NBR** |

* Material used for high temperature applications
** Material used for low temperature applications

*Visit our website for the most current information.*

# ST-SERIES TORQUE VALUES

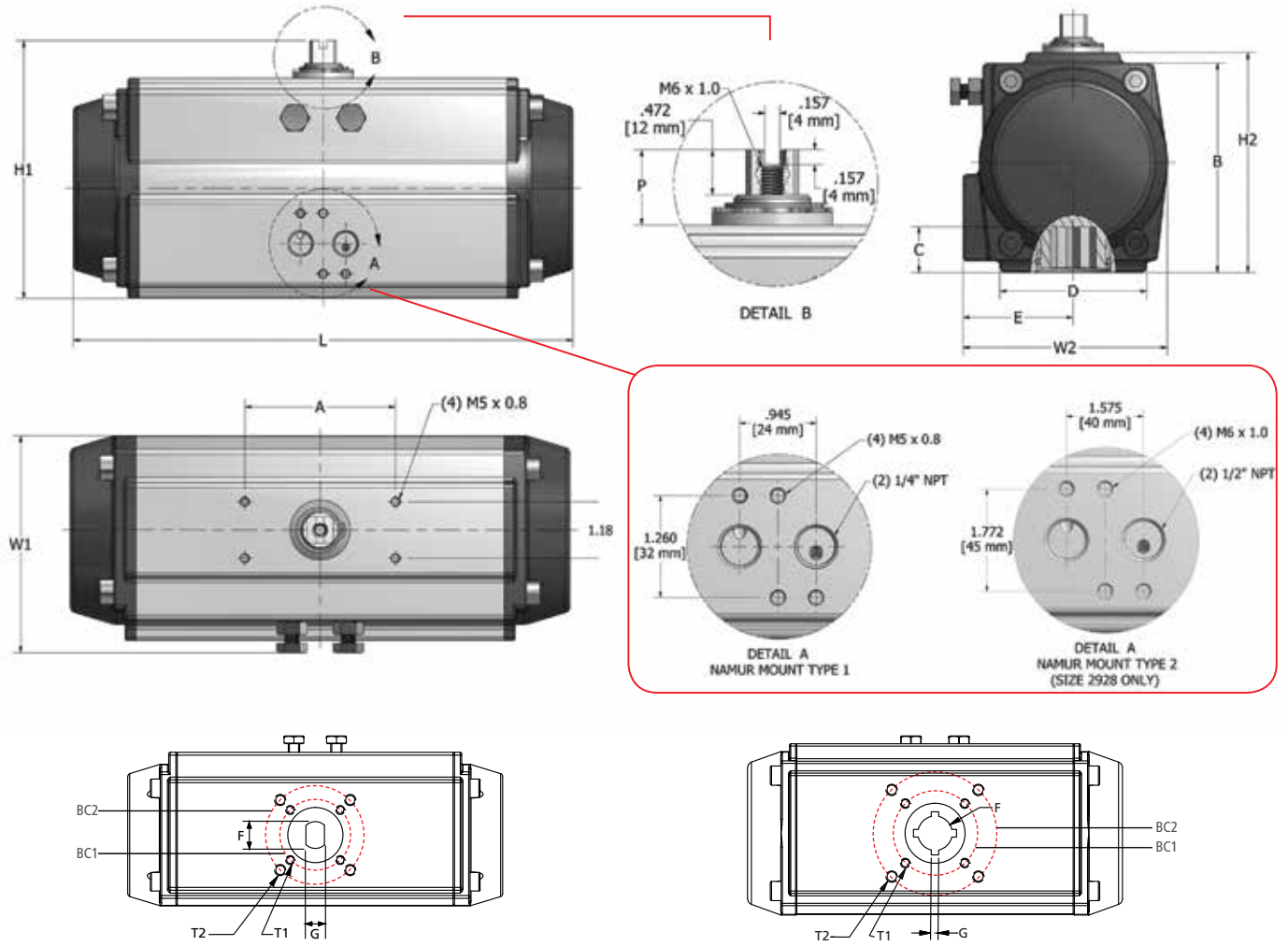
| PSI | Double Acting | | | | | | Spring Return | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 | 60 | 80 | 100 | 120 | | ALL | | 40 | | 60 | | 80 | | 100 | | 120 | |
| Model | | | | | | Spring # | Spring | | Air | | Air | | Air | | Air | | Air | |
| | | | | | | | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |
| U10 | 57 | 85 | 113 | 141 | 170 | | | | | | | | | | | | | |
| U20 | 96 | 143 | 191 | 239 | 287 | SR-2 | 42 | 29 | 67 | 53 | 115 | 101 | 162 | 149 | 210 | 197 | 258 | 245 |
| | - | - | - | - | - | SR-3 | 63 | 43 | 53 | 32 | 100 | 80 | 148 | 128 | 196 | 176 | 244 | 224 |
| | - | - | - | - | - | SR-4 | 84 | 57 | 38 | 11 | 86 | 59 | 134 | 107 | 182 | 155 | 229 | 203 |
| | - | - | - | - | - | SR-5 | 105 | 71 | - | - | 72 | 38 | 120 | 86 | 167 | 134 | 215 | 181 |
| | - | - | - | - | - | SR-6 | 126 | 86 | - | - | 58 | 17 | 105 | 65 | 153 | 113 | 201 | 160 |
| U34 | 170 | 255 | 340 | 425 | 510 | SR-2 | 71 | 46 | 122 | 97 | 206 | 181 | 290 | 265 | 375 | 349 | 459 | 434 |
| | - | - | - | - | - | SR-3 | 107 | 69 | 99 | 61 | 183 | 145 | 267 | 230 | 352 | 314 | 436 | 398 |
| | - | - | - | - | - | SR-4 | 143 | 92 | 76 | 26 | 160 | 110 | 244 | 194 | 328 | 278 | 413 | 362 |
| | - | - | - | - | - | SR-5 | 178 | 115 | - | - | 137 | 74 | 221 | 158 | 305 | 242 | 390 | 327 |
| | - | - | - | - | - | SR-6 | 214 | 138 | - | - | 114 | 39 | 198 | 123 | 282 | 207 | 367 | 291 |
| U48 | 241 | 361 | 482 | 602 | 723 | SR-2 | 99 | 71 | 167 | 140 | 287 | 259 | 406 | 378 | 525 | 498 | 644 | 617 |
| | - | - | - | - | - | SR-3 | 148 | 107 | 132 | 91 | 251 | 210 | 370 | 329 | 490 | 448 | 609 | 568 |
| | - | - | - | - | - | SR-4 | 197 | 142 | 96 | 41 | 216 | 161 | 335 | 280 | 454 | 399 | 573 | 518 |
| | - | - | - | - | - | SR-5 | 246 | 178 | - | - | 180 | 111 | 299 | 231 | 419 | 350 | 538 | 469 |
| | - | - | - | - | - | SR-6 | 296 | 213 | - | - | 145 | 62 | 264 | 181 | 383 | 301 | 502 | 420 |
| U75 | 369 | 553 | 738 | 922 | 1107 | SR-2 | 157 | 106 | 259 | 208 | 441 | 391 | 624 | 573 | 806 | 756 | 989 | 939 |
| | - | - | - | - | - | SR-3 | 235 | 160 | 206 | 130 | 388 | 312 | 571 | 495 | 753 | 678 | 936 | 860 |
| | - | - | - | - | - | SR-4 | 314 | 213 | 152 | 52 | 335 | 234 | 517 | 417 | 700 | 599 | 883 | 782 |
| | - | - | - | - | - | SR-5 | 392 | 266 | - | - | 282 | 156 | 464 | 338 | 647 | 521 | 829 | 703 |
| | - | - | - | - | - | SR-6 | 470 | 319 | - | - | 229 | 77 | 411 | 260 | 594 | 442 | 776 | 625 |
| U105 | 544 | 816 | 1088 | 1360 | 1632 | SR-2 | 234 | 157 | 381 | 304 | 650 | 573 | 919 | 843 | 1189 | 1112 | 1458 | 1381 |
| | - | - | - | - | - | SR-3 | 351 | 236 | 303 | 187 | 572 | 456 | 841 | 726 | 1110 | 995 | 1379 | 1264 |
| | - | - | - | - | - | SR-4 | 468 | 314 | 224 | 70 | 493 | 339 | 762 | 609 | 1031 | 878 | 1301 | 1147 |
| | - | - | - | - | - | SR-5 | 585 | 393 | - | - | 415 | 222 | 684 | 492 | 953 | 761 | 1222 | 1030 |
| | - | - | - | - | - | SR-6 | 702 | 471 | - | - | 336 | 105 | 605 | 374 | 874 | 644 | 1143 | 913 |
| U157 | 787 | 1181 | 1574 | 1968 | 2361 | SR-2 | 335 | 213 | 566 | 444 | 956 | 833 | 1345 | 1223 | 1735 | 1612 | 2124 | 2002 |
| | - | - | - | - | - | SR-3 | 503 | 320 | 459 | 276 | 849 | 666 | 1239 | 1055 | 1628 | 1445 | 2018 | 1834 |
| | - | - | - | - | - | SR-4 | 671 | 426 | 353 | 109 | 742 | 498 | 1132 | 888 | 1522 | 1277 | 1911 | 1667 |
| | - | - | - | - | - | SR-5 | 838 | 533 | - | - | 636 | 330 | 1025 | 720 | 1415 | 1110 | 1805 | 1499 |
| | - | - | - | - | - | SR-6 | 1006 | 639 | - | - | 529 | 163 | 919 | 552 | 1309 | 942 | 1698 | 1331 |
| U237 | 1190 | 1784 | 2379 | 2974 | 3569 | SR-2 | 535 | 353 | 836 | 654 | 1431 | 1249 | 2026 | 1844 | 2620 | 2438 | 3215 | 3033 |
| | - | - | - | - | - | SR-3 | 803 | 530 | 659 | 386 | 1254 | 981 | 1849 | 1576 | 2444 | 2171 | 3038 | 2765 |
| | - | - | - | - | - | SR-4 | 1071 | 707 | 483 | 119 | 1078 | 713 | 1672 | 1308 | 2267 | 1903 | 2862 | 2498 |
| | - | - | - | - | - | SR-5 | 1339 | 883 | - | - | 901 | 446 | 1496 | 1040 | 2090 | 1635 | 2685 | 2230 |
| | - | - | - | - | - | SR-6 | 1606 | 1060 | - | - | 724 | 178 | 1319 | 773 | 1914 | 1367 | 2508 | 1962 |
| U331 | 1658 | 2487 | 3316 | 4145 | 4974 | SR-2 | 752 | 438 | 1221 | 906 | 2050 | 1735 | 2879 | 2564 | 3708 | 3393 | 4537 | 4223 |
| | - | - | - | - | - | SR-3 | 1128 | 656 | 1002 | 531 | 1831 | 1360 | 2660 | 2189 | 3489 | 3018 | 4318 | 3847 |
| | - | - | - | - | - | SR-4 | 1503 | 875 | 783 | 155 | 1612 | 984 | 2441 | 1813 | 3270 | 2642 | 4099 | 3471 |
| | - | - | - | - | - | SR-5 | 1879 | 1094 | - | - | 1393 | 608 | 2222 | 1437 | 3051 | 2266 | 3880 | 3095 |
| | - | - | - | - | - | SR-6 | 2255 | 1313 | - | - | 1174 | 232 | 2004 | 1061 | 2833 | 1890 | 3662 | 2719 |
| U406 | 2035 | 3052 | 4069 | 5087 | 6104 | SR-2 | 877 | 579 | 1456 | 1158 | 2473 | 2175 | 3491 | 3193 | 4508 | 4210 | 5525 | 5227 |
| | - | - | - | - | - | SR-3 | 1315 | 868 | 1166 | 720 | 2184 | 1737 | 3201 | 2754 | 4219 | 3772 | 5236 | 4789 |
| | - | - | - | - | - | SR-4 | 1754 | 1158 | 877 | 281 | 1894 | 1298 | 2912 | 2316 | 3929 | 3333 | 4946 | 4351 |
| | - | - | - | - | - | SR-5 | 2192 | 1447 | - | - | 1605 | 860 | 2622 | 1877 | 3640 | 2895 | 4657 | 3912 |
| | - | - | - | - | - | SR-6 | 2630 | 1737 | - | - | 1316 | 422 | 2333 | 1439 | 3350 | 2456 | 4368 | 3474 |
| U633 | 3166 | 4749 | 6332 | 7914 | 9497 | SR-2 | 1423 | 939 | 2210 | 1726 | 3785 | 3301 | 5360 | 4876 | 6935 | 6450 | 8509 | 8025 |
| | - | - | - | - | - | SR-3 | 2135 | 1408 | 1741 | 1014 | 3316 | 2589 | 4890 | 4164 | 6465 | 5739 | 8040 | 7313 |
| | - | - | - | - | - | SR-4 | 2847 | 1878 | 1272 | 303 | 2846 | 1877 | 4421 | 3452 | 5996 | 5027 | 7570 | 6602 |
| | - | - | - | - | - | SR-5 | 3558 | 2347 | - | - | 2377 | 1166 | 3951 | 2741 | 5526 | 4315 | 7101 | 5890 |
| | - | - | - | - | - | SR-6 | 4270 | 2817 | - | - | 1907 | 454 | 3482 | 2029 | 5057 | 3604 | 6631 | 5178 |
| U1009 | 5049 | 7574 | 10099 | 12624 | 15148 | SR-2 | 2103 | 1346 | 3703 | 2947 | 6228 | 5471 | 8753 | 7996 | 11277 | 10521 | 13802 | 13045 |
| | - | - | - | - | - | SR-3 | 3154 | 2019 | 3030 | 1895 | 5555 | 4420 | 8080 | 6945 | 10604 | 9469 | 13129 | 11994 |
| | - | - | - | - | - | SR-4 | 4206 | 2692 | 2357 | 844 | 4882 | 3368 | 7406 | 5893 | 9931 | 8418 | 12456 | 10943 |
| | - | - | - | - | - | SR-5 | 5257 | 3366 | - | - | 4209 | 2317 | 6733 | 4842 | 9258 | 7366 | 11783 | 9891 |
| | - | - | - | - | - | SR-6 | 6308 | 4039 | - | - | 3535 | 1266 | 6060 | 3790 | 8585 | 6315 | 11110 | 8840 |
| U1260 | 6297 | 9445 | 12594 | 15742 | 18891 | SR-2 | 2590 | 1851 | 4446 | 3707 | 7594 | 6856 | 10743 | 10004 | 13891 | 13152 | 17040 | 16301 |
| | - | - | - | - | - | SR-3 | 3885 | 2777 | 3520 | 2412 | 6669 | 5561 | 9817 | 8709 | 12966 | 11858 | 16114 | 15006 |
| | - | - | - | - | - | SR-4 | 5180 | 3702 | 2595 | 1117 | 5743 | 4266 | 8892 | 7414 | 12040 | 10563 | 15188 | 13711 |
| | - | - | - | - | - | SR-5 | 6475 | 4628 | - | - | 4818 | 2971 | 7966 | 6119 | 11114 | 9268 | 14263 | 12416 |
| | - | - | - | - | - | SR-6 | 7769 | 5553 | - | - | 3892 | 1676 | 7040 | 4824 | 10189 | 7973 | 13337 | 11121 |
| U1831 | 9158 | 13737 | 18316 | 22895 | 27475 | SR-2 | 3851 | 2763 | 6348 | 5260 | 10903 | 9815 | 15459 | 14371 | 20014 | 18926 | 24570 | 23482 |
| | - | - | - | - | - | SR-3 | 5777 | 4145 | 4966 | 3334 | 9522 | 7890 | 14077 | 12445 | 18633 | 17000 | 23188 | 21556 |
| | - | - | - | - | - | SR-4 | 7703 | 5526 | 3585 | 1408 | 8140 | 5964 | 12696 | 10519 | 17251 | 15075 | 21807 | 19630 |
| | - | - | - | - | - | SR-5 | 9628 | 6908 | - | - | 6759 | 4038 | 11314 | 8594 | 15870 | 13149 | 20425 | 17705 |
| | - | - | - | - | - | SR-6 | 11554 | 8289 | - | - | 5377 | 2113 | 9932 | 6668 | 14488 | 11224 | 19043 | 15779 |
| U2928 | 14641 | 21962 | 29282 | 36603 | 43923 | SR-2 | 5352 | 3769 | 10069 | 8486 | 16987 | 15404 | 23906 | 22323 | 30825 | 29242 | 37743 | 36160 |
| | - | - | - | - | - | SR-3 | 8027 | 5653 | 8184 | 5810 | 15103 | 12729 | 22022 | 19647 | 28940 | 26566 | 35859 | 33485 |
| | - | - | - | - | - | SR-4 | 10703 | 7537 | 6300 | 3134 | 13219 | 10053 | 20137 | 16971 | 27056 | 23890 | 33974 | 30809 |
| | - | - | - | - | - | SR-5 | 13379 | 9422 | - | - | 11334 | 7377 | 18253 | 14296 | 25171 | 21214 | 32090 | 28133 |
| | | | | | | SR-6 | 16055 | 11306 | - | - | 9450 | 4701 | 16368 | 11620 | 23287 | 18539 | 30206 | 25457 |

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# ST-SERIES TECHNICAL DIMENSIONS




| Size | L | W1 | W2 | H1 | H2 | P | BC1 | T1 | BC2 | T2 | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U10 | 4.91 | 3.11 | 2.38 | 3.17 | 2.38 | 0.79 (20mm) | 1.42 (F03) | #10-32 UNF | 1.97 (F05) | 1/4-20 UNC | 3.15 | - | .55 | 1.89 | 1.44 | .433 (11 mm) | - |
| U20 | 5.79 | 3.15 | 2.80 | 3.62 | 2.83 | 0.79 (20mm) | 1.42 (F03)* | #10-32 UNF* | 1.97 (F05)* | 1/4-20 UNC* | 3.15 | - | .59 | 2.09 | 1.61 | .433 (11 mm) | - |
| U34 | 6.69 | 3.50 | 3.30 | 4.24 | 3.46 | 0.79 (20mm) | 1.97 (F05) | 1/4-20 UNC | 2.76 (F07) | 5/16-18 UNC | 3.15 | 3.19 | .71 | 2.67 | 1.85 | .551 (14 mm) | - |
| U48 | 7.32 | 3.90 | 3.74 | 4.71 | 3.93 | 0.79 (20mm) | 1.97 (F05) | 1/4-20 UNC | 2.76 (F07) | 5/16-18 UNC | 3.15 | 3.70 | 1.259 | 3.07 | 2.09 | .563 | .375 |
| U75 | 8.35 | 4.43 | 4.06 | 5.08 | 4.29 | 0.79 (20mm) | 1.97 (F05) | 1/4-20 UNC | 2.76 (F07) | 5/16-18 UNC | 3.15 | 3.88 | 1.259 | 3.07 | 2.25 | .750 | .500 |
| U105 | 10.43 | 4.72 | 4.27 | 5.38 | 4.59 | 0.79 (20mm) | 1.97 (F05) | 1/4-20 UNC | 2.76 (F07) | 5/16-18 UNC | 3.15 | 4.37 | 1.259 | 3.07 | 2.30 | .750 | .500 |
| U157 | 10.67 | 5.16 | 4.78 | 6.06 | 5.28 | 0.79 (20mm) | 2.76 (F07) | 5/16-18 UNC | 4.02 (F10) | 3/8-16 UNC | 3.15 | 4.84 | 1.259 | 3.62 | 2.52 | .750 | .500 |
| U237 | 12.28 | 5.87 | 5.61 | 7.32 | 6.14 | 1.18 (30mm) | 2.76 (F07) | 5/16-18 UNC | 4.02 (F10) | 3/8-16 UNC | 3.15/5.12** | 5.75 | 2.283 | 3.94 | 2.93 | 1.125 | .250 |
| U331 | 15.04 | 6.08 | 5.75 | 7.68 | 6.50 | 1.18 (30mm) | 4.02 (F10) | 3/8-16 UNC | 4.92 (F12) | 1/2-13 UNC | 3.15/5.12** | 6.10 | 2.283 | 4.33 | 2.95 | 1.125 | .250 |
| U406 | 15.51 | 6.24 | 5.98 | 7.99 | 6.81 | 1.18 (30mm) | 4.02 (F10) | 3/8-16 UNC | 4.92 (F12) | 1/2-13 UNC | 3.15/5.12** | 6.36 | 2.283 | 4.72 | 3.03 | 1.125 | .250 |
| U633 | 18.11 | 7.26 | 6.85 | 8.98 | 7.80 | 1.18 (30mm) | 4.02 (F10) | 3/8-16 UNC | 4.92 (F12) | 1/2-13 UNC | 3.15/5.12** | 7.26 | 2.283 | 4.72 | 3.43 | 1.125 | .250 |
| U1009 | 20.87 | 8.78 | 8.11 | 10.28 | 9.09 | 1.18 (30mm) | 5.00 | 1/2-13 UNC | - | - | 5.12 | 8.52 | 3.031 | 5.12 | 4.06 | 1.125 | .250 |
| U1260 | 21.50 | 9.70 | 8.90 | 11.26 | 10.08 | 1.18 (30mm) | 5.00 | 1/2-13 UNC | - | - | 5.12 | 9.29 | 3.031 | 5.12 | 4.45 | 1.625 | .375 |
| U1831 | 25.28 | 11.42 | 10.24 | 12.64 | 11.46 | 1.18 (30mm) | 6.50 (F16) | 3/4-10 UNC | - | - | 5.12 | 10.45 | 3.543 | 6.30 | 5.12 | 1.875 | .500 |
| U2928 | 29.13 | 12.48 | 11.57 | 14.17 | 12.99 | 1.18 (30mm) | 6.50 (F16) | 3/4-10 UNC | - | - | 5.12 | 11.85 | 3.543 | 6.30 | 5.79 | 1.875 | .500 |

*Size U20 is also available with an F04 (#10-32 UNF on a 1.654 B.C.) mounting pattern in place of the F03/F05
**Sizes U237 - U633 have 3.15 x 1.18 and a 5.12 x 1.18 top mounting with (8) M5 x 0.8 threaded holes

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# ST-SERIES TECHNICAL SPECIFICATIONS

## Weight - ST-Series Weights (lbs)

| Size | DA | K55 | Single Spring |
|---|---|---|---|
| U10 | 2.00 | - | - |
| U20 | 3.00 | 3.30 | 0.03 |
| U34 | 4.65 | 5.05 | 0.04 |
| U48 | 5.75 | 6.25 | 0.05 |
| U75 | 7.65 | 8.65 | 0.10 |
| U105 | 10.45 | 11.95 | 0.15 |
| U157 | 13.25 | 14.75 | 0.15 |
| U237 | 21.00 | 23.50 | 0.25 |
| U331 | 26.85 | 30.35 | 0.35 |
| U406 | 30.05 | 34.55 | 0.45 |
| U633 | 45.05 | 51.55 | 0.65 |
| U1009 | 72.45 | 82.95 | 1.05 |
| U1260 | 87.20 | 104.70 | 1.75 |
| U1831 | 124.00 | 149.00 | 2.50 |
| U2928 | 180.00 | 222.00 | 4.20 |

## Air Volume - ST-Series Free Internal Air Volume Cubic Inches ($in^3$)

| Size | Opening Stroke | Closing Stroke (DA only) |
|---|---|---|
| U10 | 4.27 | 5.49 |
| U20 | 5.49 | 11.59 |
| U34 | 8.54 | 15.87 |
| U48 | 13.43 | 23.19 |
| U75 | 20.75 | 32.34 |
| U105 | 30.51 | 56.75 |
| U157 | 46.99 | 72.62 |
| U237 | 76.28 | 104.96 |
| U331 | 111.06 | 163.54 |
| U406 | 131.81 | 195.28 |
| U633 | 206.87 | 294.74 |
| U1009 | 341.12 | 484.53 |
| U1260 | 405.20 | 642.58 |
| U1831 | 590.71 | 994.08 |
| U2928 | 911.08 | 1502.40 |

Actual air consumption is calculated using the internal volume and supply pressure in the following equation:

**Air Consumption (Standard Cubic Feet) per Stroke =**

$$\frac{V}{1728} \quad \frac{(\text{Supply Pressure} + 14.7)}{14.7}$$

## Speed - ST-Series Speed of Operation (sec)

| Size | Double Acting | | | Spring Return | | |
|---|---|---|---|---|---|---|
| | Opening Stroke | Closing Stroke | Per Cycle | Opening Stroke | Closing Stroke | Per cycle |
| U10 | 0.2 | 0.2 | 0.4 | - | - | - |
| U20 | 0.2 | 0.2 | 0.4 | 0.3 | 0.3 | 0.6 |
| U34 | 0.3 | 0.3 | 0.6 | 0.3 | 0.4 | 0.7 |
| U48 | 0.3 | 0.4 | 0.7 | 0.4 | 0.5 | 0.9 |
| U75 | 0.4 | 0.5 | 0.9 | 0.5 | 0.6 | 1.1 |
| U105 | 0.6 | 0.6 | 1.2 | 0.7 | 0.9 | 1.6 |
| U157 | 0.8 | 0.8 | 1.6 | 0.9 | 1.1 | 2.0 |
| U237 | 0.9 | 1.1 | 2.0 | 1.2 | 1.4 | 2.6 |
| U331 | 1.2 | 1.3 | 2.5 | 1.4 | 1.5 | 2.9 |
| U406 | 1.4 | 1.4 | 2.8 | 1.5 | 1.8 | 3.3 |
| U633 | 1.7 | 1.8 | 3.5 | 1.8 | 2.1 | 3.9 |
| U1009 | 2.4 | 2.5 | 4.9 | 2.5 | 2.8 | 5.3 |
| U1260 | 2.7 | 3.2 | 5.9 | 3.5 | 4.0 | 7.5 |
| U1831 | 3.5 | 4.0 | 7.5 | 4.1 | 4.6 | 8.7 |
| U2928 | 4.0 | 4.5 | 8.5 | 4.5 | 5.0 | 9.5 |

## Temperature - ST-Series Temperature Specifications

| Temperature Designation | Temperature Range (F°) | Temperature Range (C°) | Bearing Material | O-ring Material | Grease |
|---|---|---|---|---|---|
| Standard Temp | -4° to 176° | -20° to 80° | Delrin/Bronze Impregnated PTFE | NBR | Standard |
| High Temp | 5° to 320° | -15° to 160° | PPSU/Bronze Impregnated PTFE | FKM | High Temp |
| Low Temp | -58° to 176° | -50° to 70° | Delrin/Bronze Impregnated PTFE | Low Temp NBR | Standard |

*Visit our website for the most current information.*



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# ST-SERIES PARTS AND ACCESSORIES



## Electric Actuators

Sure Seal® quarter-turn and multi-turn electric actuators offer a wide range of operating torques, operating times, and sizing configurations with all of the options necessary to fulfill customer specifications.



## Declutchable Manual Override

Sure Seal manufactures one of the safest, easiest to operate manual overrides in the industry. Built to perform in tough chemical and industrial settings, Sure Seal delivers reliable performance and enhances plant safety.



## Pneumatic, Electro-Pneumatic and Smart Digital Positioners

Sure Seal advanced control positioners offer consistently reliable solutions with proven durability for long trouble-free service life.



## Direct Mount Solenoid Valves

Direct NAMUR solenoid valves provide high-cycle, high-flow, fast-response performance in the most severe environments. Equipped with a standard manual override, Sure Seal solenoid valves offer several coil voltage options.



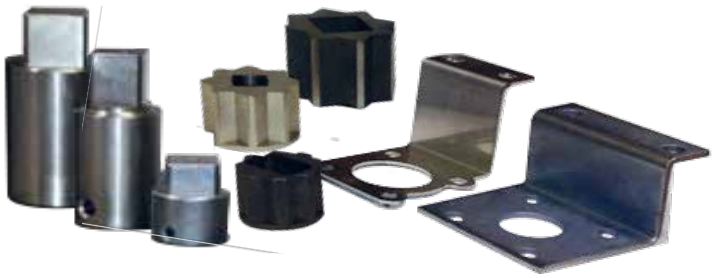
## Positioners

The Series SP/SE from Sure Torque is designed to offer years of trouble-free and economical operation. Every component has been field-tested and field-proven to exceed your expectations of performance and reliability. The Series SP/SE simply outperforms every other positioner in its class.



## Limit Switches

Sure Seal Watchman VPT Series are ruggedly designed to meet industrial process requirements for reliable cost-effective feedback systems. This series are ruggedly designed to keep up with today's advanced process control technology. The Sentinel VPT is an accurate, versatile valve position transmitter.



## Special Applications

Accessories for special applications, custom solutions.



## Pneumatic Accessories

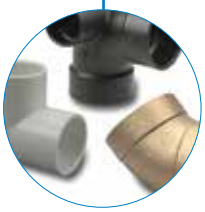
A complete line of pneumatic accessories are available including purge block/rebreathing, speed controls and air lock block with different anti-corrosion options.

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NIBCO® PEX Piping Systems • NIBCO® Press System®

## FITTINGS



Wrot and cast copper pressure and drainage fittings • Cast copper alloy flanges • Wrot and cast press fittings • ABS and PVC DWV fittings • Schedule 40 PVC pressure fittings • CPVC CTS fittings • CPVC CTS-to-metal transition fittings • Schedule 80 PVC and CPVC systems • CPVC metric piping systems • CPVC BlazeMaster® fire protection fittings • Lead-Free* fittings

BlazeMaster® is a registered trademark of The Lubrizol Corporation.
*Weighted average lead content ≤0.25%

## VALVES & ACTUATION



Pressure-rated bronze, iron and alloy-iron gate, globe and check valves • Pressure-rated bronze ball valves • Boiler specialty valves • Commercial and industrial butterfly valves • Circuit balancing valves • Carbon and stainless steel ball valves • ANSI flanged steel ball valves • Pneumatic and electric actuators and controls • Grooved ball and butterfly valves • High performance butterfly valves • UL/FM fire protection valves • MSS specification valves • Bronze specialty valves • Low pressure gate, globe, check and ball valves • Frostproof sillcocks • Quarter–turn supply stops • Quarter-turn low pressure valves • PVC ball valves • CPVC CTS ball valves • Bronze & Iron Y-Strainers • Lead-Free* valves • Coil-Connect® Kits

*Weighted average lead content ≤0.25%

## CHEMTROL®



Thermoplastic pipe, valves and fittings in PVC, Corzan® CPVC, polypropylene and PVDF Kynar® • Pneumatic and electric actuation systems

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| WEB: www.nibco.com | USA | FAX: 800.234.0557 | FAX: 888.336.4226 | FAX: +1/574.295.3455 |


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