



D-Series Rack & Pinion Pneumatic Actuators

NAMUR/ISO

Dual Travel Stops

Blowout Proof Pinion



FIVE YEAR Warranty

Three-Point Suspension

Splined Drive Inserts



EMERSON
Process Management

Introduction

Bettis® D-Series pneumatic rack and pinion actuators provide its users with reliability and economy in valve automation. Specifically designed for quarter-turn applications, the D-Series is ideal for the on/off or continuous operation of plug, butterfly and ball valves, as well as dampers and other 90° turn devices. The D-Series actuators are compact and lightweight, making them very suitable for installation within areas of tight piping connections.

Operating Ranges

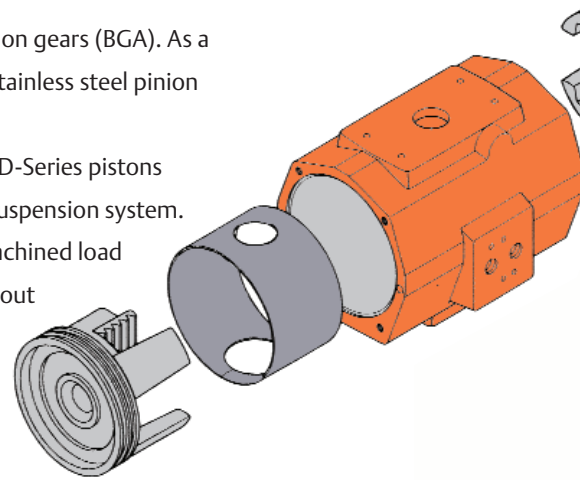
D-Series actuators produce minimum torque outputs up to 22,379 lb-in (2,528 Nm) for double-acting models and 7,939 lb-in (897 Nm) spring ending torques on spring-return models. D-Series pneumatic actuators are suitable for continuous operation at pressures ranging from 40 to 120 psig (3 to 8 Bar) while exposed to temperatures of -4°F to +175°F (-20°C to +80°C). Optional temperature trims extend the range from -40°F to +250°F (-40°C to + 121°C). Consult factory for higher temperatures.

D-Series actuators offer many significant benefits. Among them are:

- **Splined Drive Inserts** – The D-Series blowout-proof shaft is fitted with changeable inserts for universal mounting to a wide variety of valves without the need for brackets or couplings.
- **Corrosion Resistance** – As standard, an exclusive two-component polyurethane epoxy coating, in conjunction with a fully anodized housing and dichromated pistons, provides the D-Series actuators with a highly corrosion resistant surface. Coupled with all 304 SS fasteners, the D-Series provides excellent protection from hostile environments.
- **BettisGuard™** – For the most hostile applications, BettisGuard adds the highest practical level of corrosion protection by impregnating the body and end caps with a ceramic filled fluoropolymer-based

epoxy resin and aluminum pinion gears (BGA). As a further option we can supply stainless steel pinion gears (BGS).

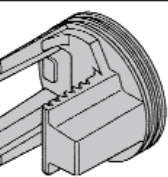
- **Three-Point Suspension** – D-Series pistons feature a unique, three point suspension system. Each piston has three wide, machined load fingers strategically located about the rear circumference of the piston. These load fingers counteract the piston/ rack side loading and prevent the natural tendency of the piston/rack to cock in the actuator bore. To accept and distribute this loading the D-Series is also equipped with a low friction Nylatron body bore bearing. The body bearing, which completely covers the working area of the piston fingers, prevents metal to metal contact and greatly reduces the high point loading often found on other designs with only slim heel bearings. This feature provides for longer, more dependable actuator, piston seal and bearing cycle life.
- **Dual Stroke Adjustment** – Allows stroke adjustment at both outbound and inbound strokes providing for precision alignment of your valves working element (see inset on page 3).
- **Blowout-Proof Pinion** – A unique radiused gearing design protects the pinion gear from blowouts.
- **NAMUR Mounting** – Allows close coupling to NAMUR designated accessories. The pinion gear interface supports a positive, international standard drive for positioners, switches and other accessories.
- **Modular** – The D-Series actuators can easily be converted from double-acting to spring-return configurations as well as many other options.
- **Multiple-Spring Design** – The D-Series has a multiple spring design to facilitate 40 to 120 psig supply air requirements. All springs are “nested” to prevent misalignment and are safely contained by a spring release bolt.



Two-component polyurethane epoxy coating provides excellent corrosion resistance and chip protection on end caps.



Acorn nut and O-ring seal protect bolt threads, and prevent contamination and water ingress



NAMUR accessory interface

Precision stroke adjustment

Low friction piston head and heel bearings

One piece, blowout-proof pinion gear

304 stainless steel fasteners

Three point suspension eliminates metal-to-metal contact between pistons and cylinder and promotes high cycle life

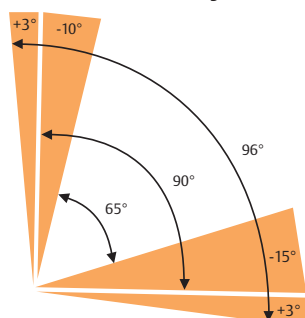
NAMUR solenoid direct mounting interface pattern. Note that air ports are also tapped for conventional 1/4" - 18 NPT fittings, except model D0012 utilizes 1/8" - 27 NPT.

Splined Inserts

- Fits into the bottom of the pinion gear shaft to allow universal mounting to a wide range of valve topworks.
- Eliminates special brackets and couplings.
- Available for virtually any valve shaft – square, double D and key drives.



D-Series Travel Adjustment



Replaceable drive inserts for universal mounting are easily adapted for custom applications

Materials of Construction

Body – Precision cast anodized aluminum alloy.

Pinion Gear – Single piece aluminum alloy, hard anodized. Stainless steel optional.

Pistons – Cast aluminum alloy with Dichromate corrosion protection.

End Caps – Cast aluminum alloy, two part epoxy coated.

Fasteners – 304 series stainless steel.

Seals – Nitrile is standard. Fluoroelastomer is available for high temperature and silicone for low temperature.

Springs – High quality carbon spring steel for maximum life.

Bearings – Nylatron standard. Special trims available.

Sizing Data

D-Series actuators are available in ten spring-return models and ten double-acting models.

Standards

D-Series actuators are manufactured in accordance with ISO 9001 and also generally comply with the following international standards:

- NAMUR, DVI/DVE 3845
- DIN 3337
- ISO 5211



Typical Specifications

| | |
|---------------------|--|
| Operating Pressures | Spring-return and double-acting 40 – 120 psig |
| Temperature | Standard -4°F to +175°F |
| | Optional -4°F to +250°F* |
| | -40°F to +175°F |
| | *consult factory for higher temperatures |
| Media | Air dry or lubricated; non-corrosive gas |
| Rotation | 96° total travel adjustment (see inset page 3) |

Torque Ratings

D-Series Double-Acting Torque (lb.in.) vs. Supply Pressure (psig)

| Torque of double-acting actuators (lb.in.) | | | | | | | | | | | | | |
|--|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Supply pressure (psi) | | | | | | | | | | | | | |
| Model | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 70 | 75 | 80 | 90 | 100 | 120 |
| DD0012 | 44 | 51 | 59 | 66 | 74 | 81 | 90 | 104 | 111 | 119 | 134 | 149 | 179 |
| DD0025 | 81 | 95 | 109 | 123 | 137 | 151 | 165 | 193 | 206 | 220 | 248 | 276 | 332 |
| DD0040 | 153 | 179 | 205 | 231 | 257 | 283 | 309 | 361 | 387 | 413 | 466 | 518 | 622 |
| DD0065 | 233 | 272 | 312 | 352 | 392 | 431 | 471 | 551 | 590 | 630 | 709 | 789 | 948 |
| DD0100 | 344 | 402 | 461 | 520 | 578 | 637 | 696 | 813 | 872 | 930 | 1048 | 1165 | 1400 |
| DD0200 | 754 | 883 | 1011 | 1140 | 1269 | 1398 | 1527 | 1784 | 1913 | 2042 | 2299 | 2557 | 3072 |
| DD0350 | 1310 | 1534 | 1757 | 1981 | 2205 | 2428 | 2652 | 3100 | 3323 | 3547 | 3994 | 4442 | 5337 |
| DD0600 | 2226 | 2606 | 2986 | 3366 | 3747 | 4127 | 4507 | 5267 | 5647 | 6028 | 6788 | 7548 | 9069 |
| DD0950 | 3323 | 3890 | 4458 | 5025 | 5593 | 6160 | 6728 | 7862 | 8430 | 8997 | 10132 | 11267 | 13537 |
| DD1600 | 5493 | 6431 | 7369 | 8307 | 9245 | 10183 | 11121 | 12998 | 13936 | 14874 | 16750 | 18626 | 22379 |

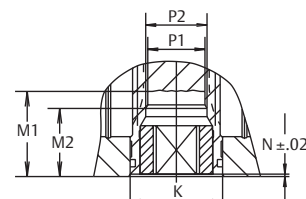
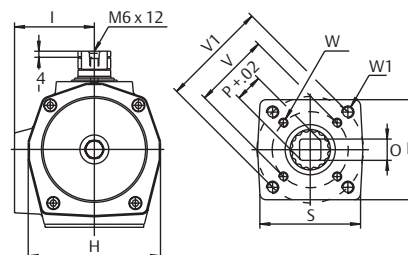
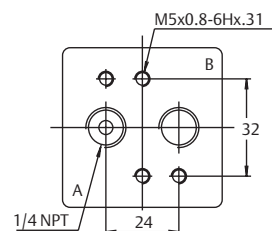
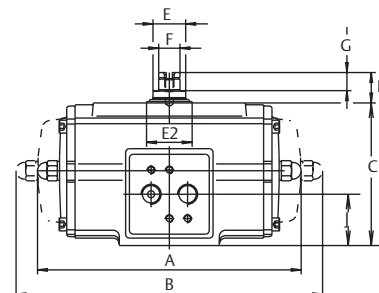
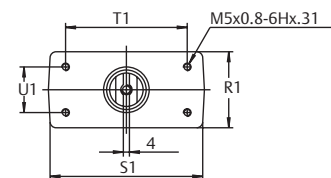
Torque Ratings

| D-Series Spring-Return Torque (90°: Torque in lb.in.) | | | | | | | | | | | | | |
|---|--------|--------------------------|------|-------|------|-------|-------|-------|-------|-------|-------|---------------|------|
| | | Air Stroke (lb.in.) | | | | | | | | | | | |
| | | Supply Pressure (in psi) | | | | | | | | | | Spring Stroke | |
| | Spring | 40 | | 60 | | 80 | | 100 | | 120 | | lb.in. | |
| Model | Set | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |
| DS0012 | 2 | – | – | 48 | 23 | 80 | 56 | 112 | 87 | 143 | 119 | 64 | 41 |
| DS0025 | 1 | 93 | 80 | 152 | 139 | 211 | 197 | 270 | 257 | 329 | 315 | 31 | 20 |
| | 2 | 71 | 44 | 129 | 103 | 189 | 162 | 248 | 220 | 306 | 280 | 63 | 39 |
| | 3 | 49 | 8 | 107 | 66 | 166 | 126 | 225 | 185 | 284 | 243 | 94 | 58 |
| | 4 | – | – | 85 | 31 | 144 | 90 | 202 | 149 | 261 | 206 | 125 | 78 |
| | 5 | – | – | – | – | 121 | 54 | 180 | 113 | 239 | 172 | 156 | 98 |
| DS0040 | 6 | – | – | – | – | 99 | 18 | 157 | 77 | 216 | 136 | 188 | 117 |
| | 1 | 175 | 150 | 286 | 260 | 396 | 371 | 506 | 481 | 617 | 591 | 58 | 36 |
| | 2 | 133 | 82 | 243 | 193 | 354 | 304 | 464 | 413 | 574 | 524 | 117 | 74 |
| | 3 | 90 | 15 | 201 | 126 | 312 | 236 | 422 | 346 | 533 | 457 | 176 | 110 |
| | 4 | – | – | 159 | 58 | 270 | 169 | 380 | 279 | 491 | 390 | 234 | 146 |
| | 5 | – | – | – | – | 228 | 101 | 338 | 212 | 449 | 322 | 293 | 183 |
| DS0065 | 6 | – | – | – | – | 185 | 34 | 296 | 144 | 407 | 255 | 351 | 220 |
| | 1 | 264 | 224 | 432 | 392 | 600 | 560 | 768 | 728 | 936 | 898 | 93 | 58 |
| | 2 | 197 | 117 | 365 | 285 | 533 | 453 | 701 | 622 | 869 | 790 | 186 | 117 |
| | 3 | 129 | 10 | 297 | 178 | 466 | 347 | 634 | 515 | 802 | 683 | 279 | 175 |
| | 4 | – | – | 230 | 72 | 398 | 240 | 566 | 408 | 735 | 576 | 372 | 234 |
| | 5 | – | – | – | – | 331 | 133 | 499 | 301 | 667 | 469 | 465 | 292 |
| DS0100 | 6 | – | – | – | – | 264 | 26 | 432 | 195 | 601 | 363 | 558 | 351 |
| | 1 | 397 | 341 | 645 | 590 | 894 | 838 | 1143 | 1087 | 1392 | 1337 | 129 | 81 |
| | 2 | 304 | 192 | 552 | 441 | 801 | 690 | 1051 | 939 | 1299 | 1188 | 258 | 161 |
| | 3 | 211 | 43 | 459 | 293 | 709 | 542 | 958 | 790 | 1206 | 1039 | 388 | 242 |
| | 4 | – | – | 366 | 143 | 615 | 392 | 863 | 641 | 1112 | 889 | 516 | 323 |
| | 5 | – | – | – | – | 522 | 244 | 771 | 492 | 1019 | 741 | 646 | 403 |
| DS0200 | 6 | – | – | – | – | 429 | 95 | 678 | 344 | 927 | 593 | 775 | 484 |
| | 1 | 864 | 739 | 1409 | 1284 | 1955 | 1830 | 2500 | 2376 | 3046 | 2922 | 289 | 181 |
| | 2 | 656 | 406 | 1201 | 952 | 1747 | 1498 | 2292 | 2043 | 2839 | 2589 | 579 | 361 |
| | 3 | 448 | 73 | 994 | 620 | 1539 | 1165 | 2065 | 1711 | 2630 | 2256 | 868 | 543 |
| | 4 | – | – | 786 | 287 | 1332 | 833 | 1878 | 1378 | 2423 | 1924 | 1157 | 723 |
| | 5 | – | – | – | – | 1124 | 500 | 1670 | 1045 | 2216 | 1592 | 1447 | 904 |
| DS0350 | 6 | – | – | – | – | 916 | 167 | 1462 | 713 | 2008 | 1259 | 1736 | 1065 |
| | 1 | 1483 | 1273 | 2431 | 2221 | 3379 | 3169 | 4327 | 4117 | 5276 | 5065 | 513 | 329 |
| | 2 | 1106 | 684 | 2053 | 1632 | 3001 | 2580 | 3949 | 3528 | 4897 | 4477 | 1025 | 659 |
| | 3 | 727 | 96 | 1675 | 1044 | 2623 | 1991 | 3571 | 2939 | 4519 | 3887 | 1537 | 988 |
| | 4 | – | – | 1297 | 454 | 2245 | 1403 | 3192 | 2351 | 4140 | 3299 | 2049 | 1316 |
| | 5 | – | – | – | – | 1867 | 813 | 2815 | 1762 | 3762 | 2710 | 2561 | 1645 |
| DS0600 | 6 | – | – | – | – | 1488 | 225 | 2436 | 1173 | 3384 | 2121 | 3074 | 1975 |
| | 1 | 2542 | 2174 | 4153 | 3785 | 5764 | 5395 | 7375 | 7007 | 8966 | 8618 | 861 | 541 |
| | 2 | 1920 | 1183 | 3531 | 2794 | 5142 | 4405 | 6753 | 6017 | 8364 | 7628 | 1723 | 1083 |
| | 3 | 1298 | 193 | 2908 | 1804 | 4520 | 3415 | 6131 | 5026 | 7742 | 6637 | 2584 | 1623 |
| | 4 | – | – | 2287 | 813 | 3898 | 2425 | 5509 | 4036 | 7120 | 5647 | 3447 | 2165 |
| | 5 | – | – | – | – | 3276 | 1435 | 4887 | 3046 | 6498 | 4656 | 4308 | 2706 |
| DS0950 | 6 | – | – | – | – | 2654 | 444 | 4265 | 2055 | 5876 | 3666 | 5170 | 3247 |
| | 1 | 3810 | 3250 | 6215 | 5655 | 8620 | 8060 | 11025 | 10464 | 13430 | 12869 | 1282 | 794 |
| | 2 | 2898 | 1777 | 5303 | 4182 | 7708 | 6587 | 10113 | 8992 | 12518 | 11396 | 2562 | 1587 |
| | 3 | 1966 | 305 | 4391 | 2709 | 6796 | 5114 | 9200 | 7519 | 11605 | 9924 | 3844 | 2381 |
| | 4 | – | – | 3478 | 1237 | 5883 | 3641 | 8289 | 6046 | 10694 | 8451 | 5126 | 3175 |
| | 5 | – | – | – | – | 4972 | 2168 | 7376 | 4573 | 9781 | 6978 | 6407 | 3968 |
| DS1600 | 6 | – | – | – | – | 4059 | 696 | 6464 | 3100 | 8869 | 5505 | 7688 | 4762 |
| | 1 | 6286 | 5397 | 10262 | 9373 | 14237 | 13349 | 18213 | 17325 | 22188 | 21299 | 2096 | 1323 |
| | 2 | 4765 | 2988 | 8741 | 6964 | 12716 | 10939 | 16692 | 14914 | 20668 | 18890 | 4193 | 2646 |
| | 3 | 3245 | 579 | 7220 | 4554 | 11195 | 8530 | 15171 | 12505 | 19147 | 16481 | 6289 | 3970 |
| | 4 | – | – | 5699 | 2145 | 9675 | 6120 | 13650 | 10095 | 17625 | 14071 | 8385 | 5293 |
| | 5 | – | – | – | – | 8153 | 3710 | 12129 | 7686 | 16105 | 11662 | 10481 | 6616 |
| | 6 | – | – | – | – | 6633 | 1301 | 10609 | 5277 | 14583 | 9252 | 12578 | 7939 |

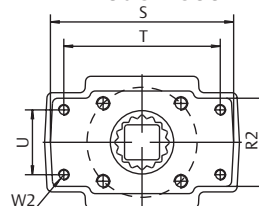
Dimensions

| Dim. (Inch) | D-Series | | | | | | | | | |
|-------------|--------------------------|-----------------|------------------|------------------|------------------|------------------|------------------|-----------------|-----------------|------------------|
| Model | 0012 | 0025 | 0040 | 0065 | 0100 | 0200 | 0350 | 0600 | 0950 | 1600 |
| A (DD) | 4.06 | 6.26 | 7.09 | 7.83 | 8.70 | 11.14 | 12.01 | 15.24 | 16.69 | 20.31 |
| B (DS) | 4.65 | 6.77 | 8.03 | 9.80 | 10.51 | 14.17 | 15.24 | 18.78 | 20.35 | 25.08 |
| C | 2.36 | 3.15 | 3.66 | 4.13 | 4.65 | 5.63 | 7.13 | 8.66 | 10.20 | 11.69 |
| D | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 1.18 | 1.18 | 1.18 |
| E | 0.63 | 0.63 | 0.87 | 0.87 | 0.87 | 1.42 | 1.42 | 2.17 | 2.17 | 2.52 |
| E2 | 0.91 | 0.91 | 1.18 | 1.18 | 1.18 | 1.77 | 1.77 | 2.56 | 2.56 | 2.95 |
| F | 0.39 | 0.39 | 0.55 | 0.55 | 0.55 | 0.75 | 0.75 | 1.42 | 1.42 | 1.42 |
| G | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.39 | 0.39 | 0.39 |
| H | 2.36 | 2.91 | 3.39 | 3.86 | 4.25 | 5.04 | 6.81 | 8.15 | 9.09 | 10.43 |
| I | 1.30 | 1.81 | 2.09 | 2.26 | 2.48 | 2.87 | 3.71 | 4.45 | 4.96 | 5.59 |
| J | 0.83 | 1.26 | 1.32 | 1.54 | 1.59 | 1.99 | 2.85 | 3.33 | 4.15 | 4.74 |
| K | 0.50 | 0.94 | 1.30 | 1.30 | 1.50 | 2.17 | 2.17 | 2.68 | 2.95 | 3.74 |
| K1 | 0.25 | - | - | - | - | - | - | - | - | - |
| L | 1.00 | - | - | - | - | - | - | - | - | - |
| L1 | 2.00 | - | - | - | - | - | - | - | - | - |
| M | 0.65 | - | - | - | - | - | - | - | - | - |
| M1 | - | 1.36 | 1.36 | 1.36 | 1.36 | 1.97 | 1.97 | 2.05 | 2.52 | 3.23 |
| M2 | - | - | - | - | 1.06 | 1.46 | 1.46 | - | - | - |
| M3 | - | 0.669 | 0.669 | 0.669 | 0.787 | 1.161 | 1.161 | 1.161 | 1.949 | 2.303 |
| N | 0.394 | 0.04 | 0.04 | 0.04 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| O max. | 0.358 | 0.437 | 0.556 | 0.556 | 0.753 | 0.871 | 1.068 | 1.067 | 1.424 | 1.817 |
| O min. | 0.354 | 0.433 | 0.551 | 0.551 | 0.748 | 0.866 | 1.063 | 1.063 | 1.417 | 1.811 |
| P | 0.476 | 0.555 | 0.713 | 0.713 | 0.992 | 1.110 | 1.425 | 1.425 | 1.898 | 2.370 |
| P1 | - | 0.555 | 0.713 | 0.831 | 0.909 | 1.303 | 1.303 | 1.437 | 1.909 | 2.382 |
| P2 | - | - | - | - | 0.988 | 1.264 | 1.264 | - | - | - |
| R | 1.57 | 2.05 | 2.56 | 2.76 | 2.76 | 3.54 | 4.49 | 4.88 | 5.12 | 6.06 |
| R1 | 1.57 | 1.97 | 1.97 | 1.97 | 2.36 | 2.36 | 2.36 | 3.54 | 3.54 | 4.92 |
| R2 | - | - | - | - | - | - | - | - | - | 5.20 |
| S | - | 2.05 | 2.56 | 2.76 | 2.76 | 3.54 | 4.49 | 4.88 | 5.59 | 11.02 |
| S1 | - | 3.94 | 3.94 | 3.94 | 3.94 | 3.94 | 3.94 | 6.69 | 6.69 | 8.27 |
| T | 1.57 | - | - | - | - | - | - | - | - | 9.236 |
| T1 | - | 3.150 | 3.150 | 3.150 | 3.150 | 3.150 | 3.150 | 5.118 | 5.118 | 5.118 |
| U | 1.22 | - | - | - | - | - | - | - | - | 3.827 |
| U1 | - | 1.181 | 1.181 | 1.181 | 1.181 | 1.181 | 1.181 | 1.181 | 1.181 | 1.181 |
| V | 1.654 | - | 1.969 | 1.969 | 1.969 | 2.756 | 2.756 | 4.016 | 4.016 | 6.496 |
| V1 | - | 1.969 | 2.756 | 2.756 | 2.756 | 4.016 | 4.016 | 4.921 | 5.512 | - |
| W | 4x10-24 UNC x5.5 deep | - | 1/4"- 20x.39 | 1/4"- 20x.39 | 1/4"- 20x.39 | 5/16"- 18x.39 | 5/16"- 18x.39 | 3/8"- 16x.63 | 3/8"- 16x.63 | 3/4"- 10x1.14 |
| W1 | 2xM4 x4 deep | 1/4"- 20x.39 | 5/16"- 18x.39 | 5/16"- 18x.39 | 5/16"- 18x.39 | 3/8"- 16x.63 | 3/8"- 16x.63 | 1/2"- 13x.79 | 5/8"- 11x.98 | - |
| W2 | 4xM4 x4 deep | - | - | - | - | - | - | - | - | 5/8"- 11x.98 |
| X | 1/8" NPT | - | - | - | - | - | - | - | - | - |
| Y | M6x.48" | - | - | - | - | - | - | - | - | - |

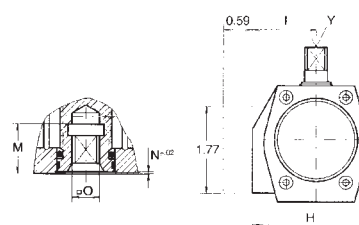
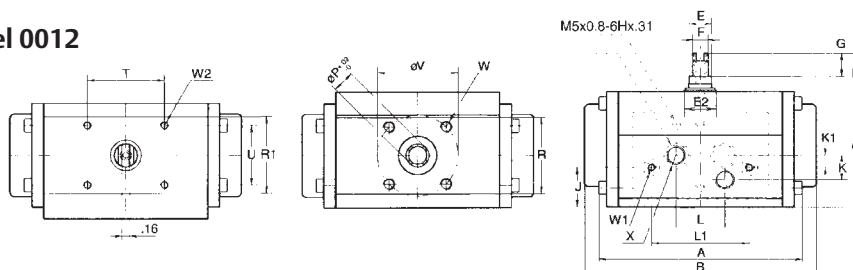
Note: Flange and square drive to ISO 5211. Top and solenoid flange to VDI/VDE 3845 and NAMUR



Model 1600



Model 0012



Technical Data

| Model | | 0012 | 0025 | 0040 | 0065 | 0100 | 0200 | 0350 | 0600 | 0950 | 1600 |
|----------------------------|---------------|------|------|------|------|------|------|------|------|------|-------|
| Bore | inch | 1.8 | 2.2 | 2.8 | 3.1 | 3.6 | 4.3 | 5.7 | 6.9 | 7.9 | 9.1 |
| Stroke | inch | 0.5 | 0.6 | 0.7 | 0.9 | 1.0 | 1.5 | 1.5 | 1.7 | 2.0 | 2.5 |
| Weight: (DD) Double-acting | lb. | 1.3 | 2.9 | 4.0 | 5.3 | 6.8 | 12.8 | 22.9 | 42.8 | 58.2 | 94.1 |
| (DS) Spring-return | lb. | 1.5 | 3.7 | 5.3 | 7.9 | 10.1 | 20.1 | 37.3 | 60.8 | 85.1 | 145.1 |
| Operating time | sec. | 0.4 | 0.5 | 0.7 | 1.1 | 1.2 | 2.3 | 3.6 | 4.5 | 5.4 | 6.9 |
| Air consumption | port A stroke | 3.1 | 6.1 | 9.8 | 20.1 | 21.4 | 49 | 110 | 177 | 287 | 445 |
| At 1 atm (cu./in.) | port B stroke | 3.7 | 6.7 | 13.4 | 22.0 | 29.9 | 61 | 116 | 189 | 299 | 488 |

NAMUR Control Valves and Switches

For actuator control via an electrical or pneumatic signal, Bettis can supply a wide variety of control valves. The direct mount feature to the NAMUR interface eliminates interconnecting tubing and fittings. The universal valve (5/2 or 3/2) can be used for double-acting or spring-return.

The single solenoid control is continuously rated and, in the event of electrical failure, the actuator returns to the clockwise (normal closed or open) position; by mechanical spring in single-acting and air in the case of double-acting.

NAMUR is an international standard which allows direct mounting of control components such as solenoid valves, positioners and mechanical or proximity switches. Note that all D models 0025 through 1600 actuators have air ports which have been drilled and tapped to 1/4" – 18 NPT in the event that traditional imperial tubing or piping is required. D 0012 models (due to size constraints) have as standard 1/8" NPT body air ports with a special non-NAMUR bolt pattern (see drawing). As options, a NAMUR solenoid interface block and NAMUR switch adapter are available for the D0012.

Control Systems

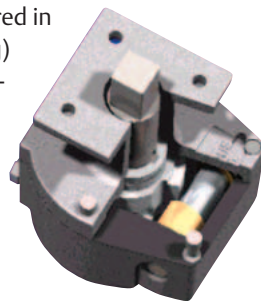
Bettis D-Series actuators can be equipped with an extensive variety of control systems. Components such as the BettiSwitch II and any NAMUR control component are easily bolted on.



Accessories

■ Gear Operator

Manual Override to open and close the actuator manually. Offered in declutchable (double-acting) or non-declutchable (spring-return) configurations.



■ Breather Block

To prevent contaminants from entering the spring-return actuator.

■ Partial Test Stroke Devices (PTSD)

This rugged device allows for a simple, mechanical means of periodic testing for the proper operation of your automation system without upsetting flow processes. Bettis can provide PTSD for testing in either clockwise or counter-clockwise direction with 15–20 degrees of field adjustable rotation and other ranges available. Consult factory with your requirements.

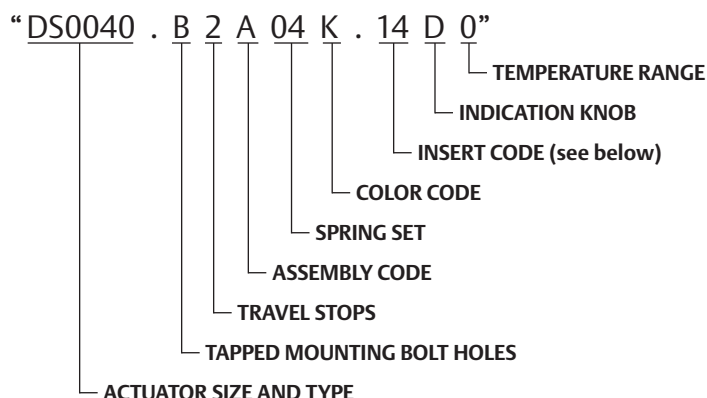
A digital positioner and partial stroke test device provides diagnostics for Emergency Shut Down (ESD) applications. Request detailed information from factory.



General Control Valve Specifications

| | | | |
|--------------|-----------------|------------------------------|-----------------------|
| Air Pressure | 29 – 120 psi | Air Entry | 1/4" – 18 NPT |
| Lubrication | Not needed | Air Flow CV | 0.7 |
| Temperature | -13° to +140° F | Assembly | Waterproof to NEMA 4X |
| Power | AC 2.0W DC 2.5W | Consult factory for details. | |

Bettis D-Series Ordering/Model Designation



Actuator Size and Type

DD – D-Series & Double-Acting or
DS – D-Series & Spring-Return
XXXX – Body size (0012, 0025, 0040, 0065, 0100, 0200, 0350, 0600, 0950 or 1600)

Tapped, Mounting Bolt Holes

B – UNC (Standard Bettis Trim, ISO 5211 with UNC bolt holes on valve mounting side, Metric bolt holes on NAMUR patterns NPT ports)
M – All Metric (ISO 5211)
D – All DIN (DIN 3337)
U – UNC (ISO 5211 with UNC on valve side & NAMUR patterns)

Travel Stops

2 – Dual Travel Stops (Standard Bettis Trim for all models except for 0012)
0 – No Travel Adjustment (Standard Bettis trim only for the 0012. No options)

Assembly Code

A – Fail-CW (Mounted in line, standard)
B – Fail-CW (mounted across line, special order)
C – Fail CCW (mounted across line, special order)
D – Fail CCW (mounted in line, special order)

Spring Set Number

00 – No springs (Double-Acting)
01, 02, 03, 04, 05 & 06 spring set (Spring-Return only)

Color Code

K – Bettis orange

Insert Code – Inner Square

XX – See Options chart (Bettis standard will be the ISO/DIN size)

Indication Knob

D – Visual Indication (Disk, use only when required with switch for visual indication)
K – Visual Indication (Knob, Standard)
N – No Visual Indicator

Temperature Range – Note: For temperatures outside these ranges contact Bettis

0 – Standard Temperature -4 to 175F (-20 to 80C)
1 – High Temperature -4 to 250F (-20 to 121C)
2 – Low Temperature -40 to 175F (-40 to 80C)

Insert Code / Options

| Double-Acting (DD) and Spring-Return (DS) Models | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|
| | 0012 | 0025 | 0040 | 0065 | 0100 | 0200 | 0350 | 0600 | 0950 | 1600 |
| ▲ 00 | ◆ | X | X | X | X | X | X | X | X | X |
| ** 09 | | X | | | | | | | | |
| 10 | | X | X | X | | | | | | |
| 11 | | X* | | | | | | | | |
| 12 | | | X | X | X | | | | | |
| 14 | | | X* | X* | | X | X | X | | |
| 16 | | | | | X | X | X | X | | |
| 17 | | | | | X | X | X | X | | |
| 19 | | | | | X* | X | X | X | | |
| 22 | | | | | | X* | X | X | X | |
| 24 | | | | | | X | X | X | | |
| 27 | | | | | | X | X* | X* | X | |
| 36 | | | | | | | | | X* | |
| 46 | | | | | | | | | | X* |
| | 0012 | 0025 | 0040 | 0065 | 0100 | 0200 | 0350 | 0600 | 0950 | 1600 |

* Standard insert for this model, also standard for ISO and UNC

** Insert codes 09 through 46 equals size of female square insert in mm (nominal)

▲ For “00” option, no insert installed

◆ Model not equipped with insert. See drawing on page 6

© 2003, Emerson Process Management. All rights reserved.

The Emerson logo is a trade mark and service mark of Emerson Electric Co.

The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, expressed or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

Bettis USA

P.O. Box 508
Waller, TX 77484 U.S.A.
T 281-727-5300
F 281-727-5303
Website: www.EmersonProcess.com
E-mail: Info.Bettis@EmersonProcess.com

Bettis Canada Ltd.

4112-91 A Street
Edmonton, Alberta T6E 5V2
Canada
T 780-450-3600
F 780-450-1400

BETTIS®


EMERSON™
Process Management