

ACTUATORS

D-C Series – Double Acting Actuators
S-C Series – Spring Return Actuators



D-C Series

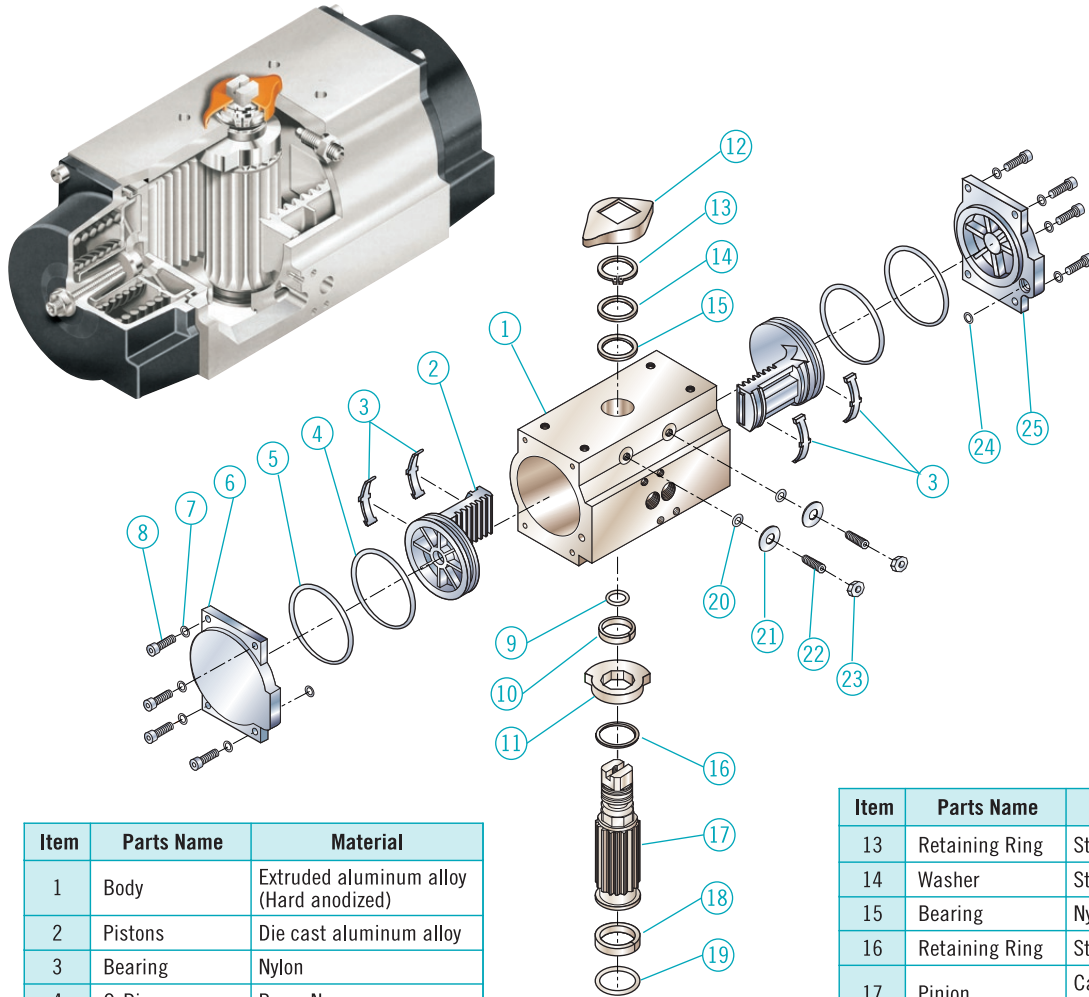


S-C Series

Technical Data

Operating Pressure Range: 40~120 psig
Maximum Allowable Working Pressure: 150 psig
Maximum Operating Pressure: 120 psi
Operating Media: Dry or lubricated non-corrosive gas
Operating temperature: Standard -40°F ~ +200°F

Construction & Parts List

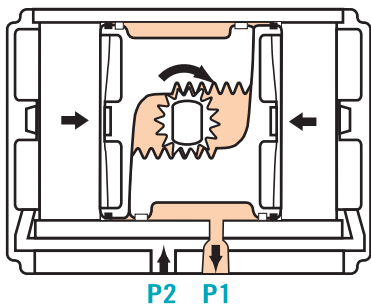


| Item | Parts Name | Material |
|------|------------------|---|
| 1 | Body | Extruded aluminum alloy (Hard anodized) |
| 2 | Pistons | Die cast aluminum alloy |
| 3 | Bearing | Nylon |
| 4 | O-Ring | Buna-N |
| 5 | O-Ring | Buna-N |
| 6 | End Cap (L) | die cast aluminum alloy |
| 7 | Washer | Stainless steel |
| 8 | Cap Screw | Stainless steel |
| 9 | O-Ring | Buna-N |
| 10 | Bearing | Nylon |
| 11 | Stop | Sinteral steel |
| 12 | Piston Indicator | Polyethylene |

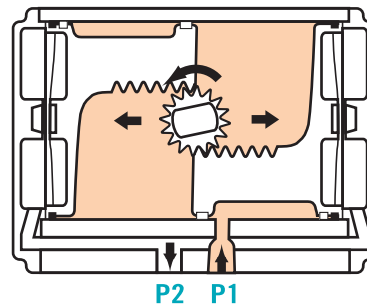
| Item | Parts Name | Material |
|------|----------------|--|
| 13 | Retaining Ring | Stainless steel |
| 14 | Washer | Stainless steel |
| 15 | Bearing | Nylon |
| 16 | Retaining Ring | Stainless steel |
| 17 | Pinion | Carbon Steel (Electroless nickel plated) |
| 18 | Bearing | Nylon |
| 19 | O-Ring | Buna-N |
| 20 | O-Ring | Buna-N |
| 21 | Washer | Stainless steel |
| 22 | Stop Screw | Stainless steel |
| 23 | Nut | Stainless steel |
| 24 | O-Ring | Buna-N |
| 25 | End Cap (R) | Die cast aluminum alloy |

Operation Method

A. Double-Acting (Top View)



For clockwise output, apply pressure to P2, which force the pistons to move together. The volume between the pistons is exhausted at P1.

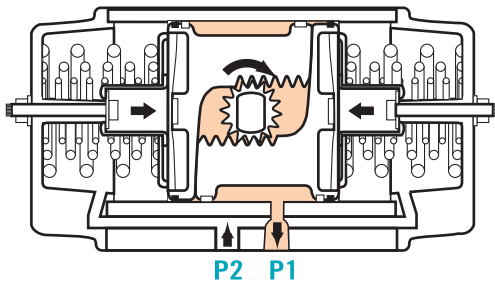


For counterclockwise output, apply pressure to P1, which force the pistons apart. The linear travel of the pistons is converted to a rotation of the drive shaft by the rack to pinion connection. The volume outside each piston is exhausted at P2.

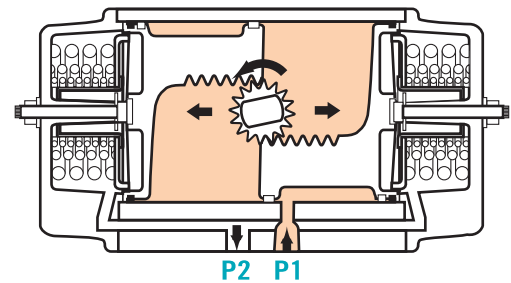
NOTE:

When required Reverse Rotation the pistons can be inverted in the housing resulting in a clockwise rotation when pressure is applied to P1

B. Spring-Return (Top View)



For clockwise output, the volume between the pistons is exhausted at P1, causing the springs to force the pistons together. The volume outside the pistons is vented at P2.



For counterclockwise output, apply pressure P1, which force the pistons apart and compress the springs. The linear travel of the pistons converted to a rotation of the drive shaft by the rack to pinion connection. The volume outside each piston is exhausted at P2.

NOTE:

When required, Reverse Rotation the pistons can be inverted in the housing resulting in a clockwise rotation when pressure is applied to P1 and a counterclockwise rotation when P1 is vented.

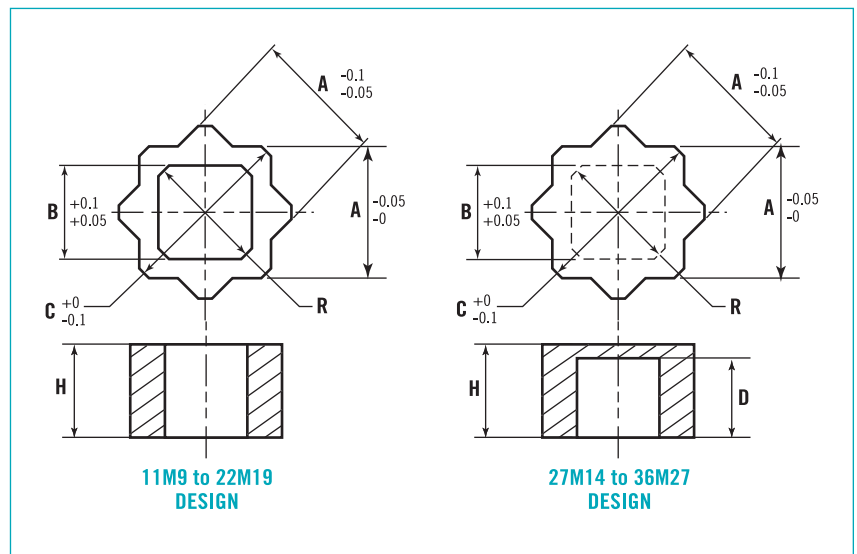
Reduction Adaptors

- Reduce Actuators ISO Output Shaft Broached Square Drive to Smaller ISO Square Stems.
- Iron-Based Powdered Metal Construction for High Strength.
- Fit D-C and S-C Pneumatic Actuators.

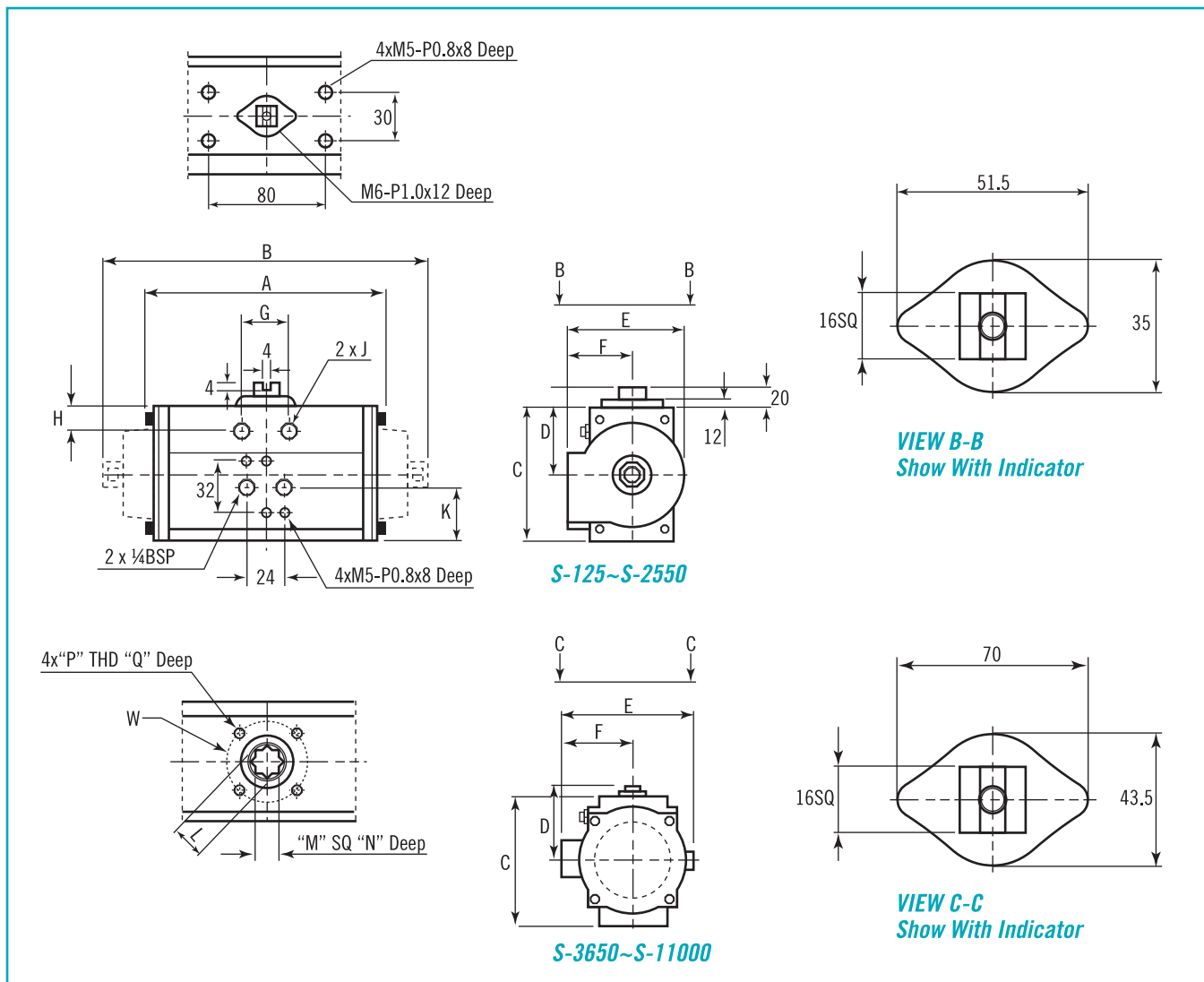


Double-Square Insert Dimensions-mm

| INSERT | A | B | C | D | H | R |
|--------|----|----|------|------|------|------|
| 11M9 | 11 | 9 | 15.0 | N/A | 17.0 | 12.5 |
| 14M9 | 14 | 9 | 19.1 | N/A | 20.0 | 12.5 |
| 14M11 | 14 | 11 | 19.1 | N/A | 20.0 | 14.5 |
| 17M9 | 17 | 9 | 23.1 | N/A | 24.0 | 12.5 |
| 17M11 | 17 | 11 | 23.1 | N/A | 24.0 | 14.5 |
| 17M14 | 17 | 14 | 23.1 | N/A | 24.0 | 19.2 |
| 22M11 | 22 | 11 | 29.6 | N/A | 30.0 | 14.5 |
| 22M14 | 22 | 14 | 29.6 | N/A | 30.0 | 19.2 |
| 22M17 | 22 | 17 | 29.6 | N/A | 30.0 | 23.3 |
| 22M19 | 22 | 19 | 29.6 | N/A | 30.0 | 25.8 |
| 27M14 | 27 | 14 | 36.0 | 27.0 | 29.0 | 19.2 |
| 27M17 | 27 | 17 | 36.0 | 27.0 | 29.0 | 23.3 |
| 27M22 | 27 | 22 | 36.0 | 27.0 | 29.0 | 30.0 |
| 36M19 | 36 | 19 | 48.0 | 33.0 | 35.0 | 25.8 |
| 36M27 | 36 | 27 | 48.0 | 33.0 | 35.0 | 37.0 |



Dimensions-mm



| Model | ISO PATTERN | OUTPUT TORQUE AT 80PSI AIR | A | B | B | D | E | F | G | H | J |
|-------------------|-------------|----------------------------|-------|-------|-------|-------|-------|-------|------|------|-------------|
| D-125 | F04 | 125IN-LB | 120.0 | --- | 64.0 | 52.5 | 62.2 | 33.7 | 24.0 | 11.0 | M x P0.8 |
| D-250 / S-250 | F04 or F05 | 250IN-LB | 144.3 | 194.6 | 79.0 | 57.7 | 81.4 | 47.8 | 32.5 | 12.6 | M5 x P0.8 |
| D-4500 / S-450 | F05 & F07 | 450IN-LB | 149.2 | 205.6 | 98.0 | 67.4 | 95.0 | 51.5 | 32.5 | 13.8 | M6 x P1.0 |
| D-1000 / S-1000 | F05 & F07 | 1000IN-LB | 183.0 | 250.0 | 121.0 | 79.2 | 119.0 | 64.5 | 46.2 | 16.6 | M8 x P1.25 |
| D-2250 / S-2250 | F07 & F10 | 2250IN-LB | 259.6 | 355.0 | 141.0 | 89.5 | 140.5 | 75.5 | 54.0 | 18.6 | M10 x P1.5 |
| D-3650 / S-3650 | F10 & F12 | 3650IN-LB | 304.3 | 422.0 | 176.0 | 99.1 | 185.2 | 105.5 | 79.7 | 27.3 | M12 x P1.75 |
| D-5000 / S-5000 | F10 & F12 | 5000IN-LB | 364.4 | 487.0 | 196.0 | 116.5 | 204.8 | 107.8 | 79.4 | 28.3 | M12 x P1.75 |
| D-11000 / S-11000 | F14 | 11000IN-LB | 490.0 | 642.0 | 243.7 | 138.5 | 238.2 | 125.0 | 95.3 | 35.8 | M16 x P2.0 |

| Model | ISO PATTERN | OUTPUT TORQUE AT 80PSI AIR | K | L | M | N | P | Q | W |
|-------------------|-------------|----------------------------|-------|------|------|------|--------------------------|-------------|---------------|
| D-125 | F04 | 125IN-LB | 23.5 | 12.5 | 9.0 | 10.0 | M5 x P0.8 | 8.0 | 42.0 |
| D-250 / S-250 | F04 or F05 | 250IN-LB | 29.7 | 14.5 | 11.0 | 17.0 | M5 x P0.8 / M6 x P1.0 | 8.0 / 10.0 | 42.0 / 50.0 |
| D-4500 / S-450 | F05 & F07 | 450IN-LB | 30.2 | 18.8 | 14.0 | 21.0 | M6 x P1.0 / M8 x P1.25 | 10.0 / 12.0 | 50.0 / 70.0 |
| D-1000 / S-1000 | F05 & F07 | 1000IN-LB | 33.5 | 23.0 | 17.0 | 25.5 | M6 x P1.0 / M8 x P1.25 | 10.0 / 12.0 | 50.0 / 70.0 |
| D-2250 / S-2250 | F07 & F10 | 2250IN-LB | 39.0 | 29.5 | 22.0 | 31.0 | M8 x P1.25 / M10 x P1.5 | 12.0 / 15.0 | 70.0 / 102.0 |
| D-3650 / S-3650 | F10 & F12 | 3650IN-LB | 97.4 | 35.5 | 27.0 | 35.0 | M10 x P1.5 / M12 x P1.75 | 15.0 / 19.0 | 102.0 / 125.0 |
| D-5000 / S-5000 | F10 & F12 | 5000IN-LB | 99.0 | 35.5 | 27.0 | 35.0 | M10 x P1.5 / M12 x P1.75 | 15.0 / 19.0 | 102.0 / 125.0 |
| D-11000 / S-11000 | F14 | 11000IN-LB | 124.7 | 47.5 | 36.0 | 45.0 | M16 x P2.0 | 24.0 | 140.0 |

Torque Table (in. lbs)

D-C Series: Double-Acting Actuators

| Model | Air Supply Pressure (unit: psig) | | | | |
|---------|----------------------------------|------|-------|-------|-------|
| | 40 | 60 | 80 | 100 | 120 |
| | Air Torque Output (in.lbs) | | | | |
| D-125 | 63 | 94 | 125 | 156 | 188 |
| D-250 | 125 | 187 | 250 | 312 | 375 |
| D-450 | 225 | 337 | 450 | 562 | 675 |
| D-1000 | 500 | 750 | 1000 | 1250 | 1500 |
| D-2250 | 1125 | 1687 | 2250 | 2812 | 3375 |
| D-3650 | 1825 | 2738 | 3650 | 4563 | 5475 |
| D-5000 | 2500 | 3750 | 5000 | 6250 | 7500 |
| D-11000 | 5500 | 8250 | 11000 | 13750 | 16500 |

S-C Series: Spring-Return Actuators

| Model No. | | Spring Torque Output | | Air Supply Pressure (unit: psig) | | | | | | | | | |
|-----------|------------|----------------------|------|----------------------------------|------|-------|------|-------|------|-------|-------|-------|-------|
| | | | | 40 | | 60 | | 80 | | 100 | | 120 | |
| | | | | Air Torque Output (in.lbs) | | | | | | | | | |
| Basic | Spring Set | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |
| S-250 | 2 | 69 | 45 | 76 | 47 | 138 | 109 | 201 | 172 | 263 | 234 | 326 | 312 |
| | 3 | 104 | 67 | | | 113 | 70 | 173 | 133 | 229 | 195 | 301 | 258 |
| | 4 | 140 | 90 | | | 88 | 31 | 151 | 93 | 213 | 156 | 276 | 218 |
| | 5 | 175 | 112 | | | | | 126 | 54 | 189 | 116 | 254 | 179 |
| | 6 | 209 | 135 | | | | | | | 164 | 77 | 227 | 139 |
| | S-450 | 2 | 126 | 81 | 135 | 83 | 248 | 196 | 361 | 309 | 473 | 421 | 586 |
| 3 | | 190 | 121 | | | 203 | 125 | 316 | 238 | 428 | 350 | 541 | 463 |
| 4 | | 254 | 162 | | | 158 | 54 | 271 | 167 | 383 | 279 | 496 | 392 |
| 5 | | 317 | 202 | | | | | 226 | 96 | 339 | 209 | 451 | 321 |
| 6 | | 381 | 243 | | | | | | | 293 | 137 | 406 | 251 |
| S-1000 | | 2 | 279 | 179 | 300 | 184 | 549 | 433 | 798 | 682 | 1048 | 931 | 1297 |
| | 3 | 418 | 270 | | | 449 | 278 | 698 | 526 | 947 | 775 | 1196 | 1025 |
| | 4 | 559 | 360 | | | 350 | 120 | 599 | 371 | 848 | 618 | 1097 | 867 |
| | 5 | 698 | 450 | | | | | 500 | 212 | 749 | 464 | 998 | 710 |
| | 6 | 839 | 540 | | | | | | | 650 | 304 | 899 | 557 |
| | S-2250 | 2 | 659 | 394 | 690 | 395 | 1253 | 958 | 1816 | 1521 | 2379 | 2084 | 2939 |
| 3 | | 990 | 590 | | | 1034 | 591 | 1596 | 1154 | 2159 | 1717 | 2722 | 2280 |
| 4 | | 1320 | 787 | | | 816 | 226 | 1379 | 788 | 2029 | 1351 | 2505 | 1914 |
| 5 | | 1650 | 984 | | | | | 1161 | 424 | 1724 | 984 | 2287 | 1549 |
| 6 | | 1980 | 1181 | | | | | | | 1506 | 621 | 2069 | 1181 |
| S-3650 | | 2 | 1053 | 607 | 1152 | 659 | 2063 | 1570 | 2975 | 2482 | 3886 | 3393 | 4797 |
| | 3 | 1573 | 912 | | | 1726 | 996 | 2637 | 1907 | 3549 | 2819 | 4460 | 3730 |
| | 4 | 2091 | 1217 | | | 1388 | 423 | 2300 | 1335 | 3211 | 2246 | 4123 | 3157 |
| | 5 | 2625 | 1519 | | | | | 1967 | 744 | 2878 | 1655 | 3789 | 2566 |
| | 6 | 3144 | 1824 | | | | | | | 2540 | 1082 | 3452 | 1994 |
| | S-5000 | 2 | 1560 | 785 | 1590 | 803 | 2780 | 1990 | 3970 | 3180 | 5160 | 4380 | 6350 |
| 3 | | 2340 | 1180 | | | 2380 | 1200 | 3570 | 2400 | 4760 | 3590 | 5960 | 4780 |
| 4 | | 3130 | 1570 | | | 1980 | 414 | 3180 | 1600 | 4370 | 2800 | 5560 | 3990 |
| 5 | | 3910 | 1960 | | | | | 2780 | 815 | 3970 | 2010 | 5160 | 3200 |
| 6 | | 4690 | 2360 | | | | | | | 3570 | 1220 | 4760 | 2410 |
| S-11000 | | 2 | 3400 | 1720 | 3460 | 1760 | 6060 | 4360 | 8660 | 6960 | 11300 | 9560 | 13900 |
| | 3 | 5100 | 2570 | | | 5200 | 2650 | 7790 | 5240 | 10400 | 7840 | 13000 | 10400 |
| | 4 | 6790 | 3430 | | | 4330 | 932 | 6930 | 3530 | 9520 | 6130 | 12100 | 8730 |
| | 5 | 8490 | 4290 | | | | | 6060 | 1810 | 8660 | 4410 | 11300 | 7010 |
| | 6 | 10200 | 5150 | | | | | | | 7790 | 2700 | 10400 | 5300 |

Ordering Information

| Model | D-C | Double-Acting Actuators | S-C | Spring-Return Actuators | |
|-------------------------------|---------|--|---|-------------------------|---|
| ↓ | ↓ | Code Actuators Size | | | |
| | | (1) D-125 (2) D-250 (3) D-450 (4) D-1000 (5) D-2250 (6) D-3650 (7) D-5000 (8) D-11000 | | | |
| | | (9) S-250 (10) S-450 (11) S-1000 (12) S-2250 (13) S-3650 (14) S-5000 (15) S-11000 | | | |
| | | Code | Spring Set (only for S-C series) | | |
| | | 2 | 3 | 4 | 5 |
| ↓ | ↓ | Code Reduction Adaptors | | | |
| | | Please refer to the <i>Double Square Actuator Inserts Table</i> and fill in the Insert Model of your request directly. | | | |
| 0 | Without | | | | |
| Complete Ordering Code | | | | | |

Ordering code example:

S-C-9-2-1

→ S-C = Model

→ 9 = S-250

→ 2 = Spring Set

→ 11M9 = Insert Model of Double-Square