

# VALV-POWR® SERIES VPVL MODEL D DOUBLE-ACTING AND SPRING-RETURN RACK- AND-PINION COMPACT PNEUMATIC ACTUATORS

The Jamesbury® Valv-Powr – VPVL double-oppoed piston actuators combine the benefits of high cycle life, a rugged construction, and an extremely compact and symmetrical design with a unique range of features and options. They are specifically designed for fast efficient operation of ball, butterfly, and other rotary type valves.

## FEATURES

### Single-Source Responsibility

- Valves, actuators, and accessories are designed to operate as a unit with the highest degree of compatibility.
- Valves, actuators, and accessories can be supplied completely assembled to provide unit responsibility from a single source.

### Versatility

- Modular designs with same body and end caps for double-acting and spring-return. Springs can be added in the field to convert double-acting to spring-return or for changes in supply pressure.
- Failure direction can be easily reversed from spring-to-open or spring-to-close orientation simply by inverting the pistons.
- Actuator to valve attachments comply with ISO 5211.
- Solenoid valve and accessory attachments comply with NAMUR VDI/VDE 3845.
- A wide range of optional accessories and control devices that include limit switches, solenoid valves, and mechanical safety lockouts are available to satisfy virtually all automated valve requirements.

### High Cycle Life

- Bearings on all sliding and rotating moving parts to ensure long life.
- Dual piston rack-and-pinion mechanism for simple construction, high cycle life, and constant torque.
- Hard-anodized PTFE-coated extruded aluminum body with honed internal surface for strength and lower coefficient of friction.
- Mechanically multi-guided aluminum pistons for precise movement, low friction, and high cycle life.
- Machined teeth on piston racks and pinions for excellent rack and pinion engagement and maximum efficiency.



### Corrosion Resistant

- Hard-anodized PTFE-coated body, polyester-coated end caps, and epoxy-coated springs, along with internal and external stainless steel fasteners, provide corrosion resistance in a variety of difficult applications and environments.

### Reliability

- Safety-contained multi-spring design with preloaded and heavy-duty coated springs for simpler range versatility, greater safety, and corrosion resistance.
- External adjustable stops in both directions assure flexibility and accuracy when setting the valve in the open and closed positions.
- As an added safety feature, the external adjustment screws are designed to start venting internal pneumatic pressure in the actuator before the screw is fully backed out. The sound of escaping pressure indicates an unsafe condition.

## SPECIFICATIONS

Maximum Supply Range: 116 psi (8 bar)

Temperature Range:

Standard -40°F to +176°F (-40°C to +80°C)

High Temp 5°F to +302°F (-15°C to +150°C)

Low Temp -60°F to +176°F (-51°C to +80°C)

Rotation Adjustment: Close -5° to +5° from 0°

Open +5° to -5° from 90°

Supply Media: Air, mineral-based hydraulic fluid

## STANDARDS

Actuator to valve mounting: ISO 5211

Actuator to solenoid mounting: Namur, VDI/VDE3845\*

Actuator to accessory mounting: Namur, VDI/VDE3845

Approved to ATEX 94/9/EC Directive:

IIGD c T95°C for Standard and Low Temperature option or IIGD c T150°C for the High Temperature option.

\* Except VPVL650, 700, 800

### ACTUATOR SELECTION

To select an actuator for a particular valve and service, first determine the maximum operating torque that will be required from the applicable valve bulletin. Then refer to the appropriate torque output table and select an actuator that will, at the available supply pressure, provide a torque output no less than the required operating torque for the

valve. For spring-return units, both the spring torque and the air torque must exceed the required operating torque for the valve. If you have any question that the actuator selected meets your intended service requirement, contact Metso. Contact information is located on last page of this technical bulletin.

| Actuator Model |    | Air Volume       |         |       |         |         |       | Bore Diam. |     | Moving Time<br>Seconds <sup>1</sup> |         | Weight |       |
|----------------|----|------------------|---------|-------|---------|---------|-------|------------|-----|-------------------------------------|---------|--------|-------|
|                |    | in. <sup>3</sup> |         |       | ml      |         |       |            |     |                                     |         |        |       |
|                |    | Opening          | Closing | Swept | Opening | Closing | Swept | in.        | mm  | Opening                             | Closing | lb.    | kg    |
| VPVL051        | DA | 5.5              | 9.2     | 3.4   | 90.1    | 150.8   | 55.5  | 1.97       | 50  | 0.2                                 | 0.3     | 2.2    | 1.0   |
|                | SR |                  | -       |       |         | -       |       |            |     | 0.3                                 | 0.3     | 2.4    | 1.1   |
| VPVL100        | DA | 9.8              | 15.9    | 6.0   | 160.6   | 260.6   | 97.8  | 2.48       | 63  | 0.3                                 | 0.3     | 3.5    | 1.6   |
|                | SR |                  | -       |       |         | -       |       |            |     | 0.3                                 | 0.4     | 3.7    | 1.7   |
| VPVL200        | DA | 18.9             | 29.9    | 11.8  | 309.7   | 490     | 194.1 | 2.95       | 75  | 0.3                                 | 0.4     | 6.0    | 2.7   |
|                | SR |                  | -       |       |         | -       |       |            |     | 0.4                                 | 0.5     | 6.8    | 3.1   |
| VPVL250        | DA | 31.1             | 47.6    | 18.6  | 509.6   | 780     | 305.4 | 3.46       | 88  | 0.4                                 | 0.5     | 8.2    | 3.7   |
|                | SR |                  | -       |       |         | -       |       |            |     | 0.5                                 | 0.6     | 9.5    | 4.3   |
| VPVL300        | DA | 43.3             | 67.7    | 27.1  | 709.6   | 1109    | 443.7 | 3.94       | 100 | 0.5                                 | 0.7     | 11.5   | 5.2   |
|                | SR |                  | -       |       |         | -       |       |            |     | 0.6                                 | 0.8     | 13.4   | 6.1   |
| VPVL350        | DA | 72.6             | 109.8   | 43.8  | 1190    | 1799    | 717.2 | 4.53       | 115 | 0.7                                 | 0.9     | 17.6   | 8.0   |
|                | SR |                  | -       |       |         | -       |       |            |     | 0.8                                 | 1.1     | 20.5   | 9.3   |
| VPVL400        | DA | 94               | 143     | 56    | 1540    | 2443    | 924   | 4.92       | 125 | 0.9                                 | 1.2     | 21.6   | 9.8   |
|                | SR |                  | -       |       |         | -       |       |            |     | 1.1                                 | 1.4     | 25.8   | 11.7  |
| VPVL450        | DA | 147              | 231     | 89    | 2409    | 3765    | 1451  | 5.71       | 145 | 1.2                                 | 1.5     | 31.3   | 14.2  |
|                | SR |                  | -       |       |         | -       |       |            |     | 1.4                                 | 1.8     | 38.4   | 17.4  |
| VPVL500        | DA | 192              | 300     | 116   | 3146    | 4916    | 1893  | 6.30       | 160 | 1.5                                 | 1.8     | 39.9   | 18.1  |
|                | SR |                  | -       |       |         | -       |       |            |     | 1.7                                 | 2.1     | 49.2   | 22.3  |
| VPVL550        | DA | 260              | 420     | 156   | 4261    | 6883    | 2556  | 7.09       | 180 | 2.0                                 | 2.4     | 53.6   | 24.3  |
|                | SR |                  | -       |       |         | -       |       |            |     | 2.2                                 | 2.8     | 72.1   | 32.7  |
| VPVL600        | DA | 362              | 577     | 217   | 5932    | 9455    | 3549  | 7.87       | 200 | 2.7                                 | 3.5     | 75.2   | 34.1  |
|                | SR |                  | -       |       |         | -       |       |            |     | 3.2                                 | 4.0     | 92.4   | 41.9  |
| VPVL650        | DA | 610              | 928     | 364   | 10000   | 15200   | 5963  | 9.45       | 240 | 3.5                                 | 4.1     | 116    | 52.7  |
|                | SR |                  | -       |       |         | -       |       |            |     | 4.0                                 | 4.6     | 148    | 67.3  |
| VPVL700        | DA | 885              | 1305    | 528   | 14503   | 21385   | 8655  | 10.43      | 265 | 4.0                                 | 4.5     | 163    | 74.0  |
|                | SR |                  | -       |       |         | -       |       |            |     | 4.5                                 | 5.0     | 205    | 93.0  |
| VPVL800        | DA | 1526             | 2441    | 917   | 25000   | 40000   | 15032 | 12.99      | 330 | 6.0                                 | 7.0     | 280    | 127.0 |
|                | SR |                  | -       |       |         | -       |       |            |     | 7.5                                 | 8.5     | 373    | 169.0 |

**NOTES:**  
 (1) The above times are based on the following conditions: A) Room temperature , B) Solenoid valve orifice diameter of 4 mm (5/32 in.) and a flow rate capacity of 400 L/min (14.1 cfm), C) Minimum inner piping diameter of 8 mm (5/16 in.), D) 5.5 bar (80 psi) air supply pressure, E) Without valve loading.

## ACTUATOR SELECTION (CONTINUED)

### SPRING RETURN

| Actuator Model | Spring-Return Torque Output |      | Air Torque Output at Specified Supply Pressure |               |                 |               |
|----------------|-----------------------------|------|--|---------------|-----------------|---------------|
|                | FT•LBS                      | N•m  | FT•LBS <sub>s</sub> @ 60 psi                   | N•m @ 4.2 bar | FT•LBS @ 80 psi | N•m @ 5.5 bar |
| 051 SR4/5      | 4.4                         | 6.0  | 3.1  | 4.2           |                 |               |
| 051 SR6        | 5.9                         | 8.0  |  |               | 4.1             | 5.6           |
| 100 SR4/5      | 7.4                         | 10   | 6.7  | 9.1           |                 |               |
| 100 SR6        | 9.8                         | 13.3 |  |               | 8.9             | 12            |
| 200 SR4/5      | 14.7                        | 19.9 | 13   | 17            |                 |               |
| 200 SR6        | 19.6                        | 26.5 |  |               | 17              | 23            |
| 250 SR4/5      | 24.3                        | 33   | 18   | 24            |                 |               |
| 250 SR6        | 32.5                        | 44.5 |  |               | 23              | 32            |
| 300 SR4/5      | 33.6                        | 45.6 | 29   | 39            |                 |               |
| 300 SR6        | 44.9                        | 60.8 |  |               | 38              | 52            |
| 350 SR4/5      | 54.4                        | 73.8 | 44   | 60            |                 |               |
| 350 SR6        | 72.6                        | 98.4 |  |               | 59              | 80            |
| 400 SR4/5      | 69.7                        | 95   | 60   | 81            |                 |               |
| 400 SR6        | 93                          | 126  |  |               | 80              | 108           |
| 450 SR4/5      | 109                         | 148  | 94   | 128           |                 |               |
| 450 SR6        | 146                         | 198  |  |               | 126             | 170           |
| 500 SR4/5      | 149                         | 202  | 126  | 170           |                 |               |
| 500 SR6        | 199                         | 269  |  |               | 168             | 227           |
| 550 SR4/5      | 210                         | 285  | 153  | 208           |                 |               |
| 550 SR6        | 280                         | 379  |  |               | 204             | 277           |
| 600 SR4/5      | 282                         | 383  | 231  | 313           |                 |               |
| 600 SR6        | 376                         | 510  |  |               | 308             | 418           |
| 650 SR4/5      | 479                         | 649  | 399  | 541           |                 |               |
| 650 SR6        | 638                         | 865  |  |               | 532             | 721           |
| 700 SR4/5      | 724                         | 981  | 520  | 705           |                 |               |
| 700 SR6        | 966                         | 1308 |  |               | 693             | 940           |
| 800 SR4/5      | 1221                        | 1656 | 1105   | 1499          |                 |               |
| 800 SR6        | 1628                        | 2207 |  |               | 1474            | 1999          |

### DOUBLE ACTING

| Actuator Model | Torque Output in FT•LBS - VPVL XXDA Double-Acting Actuator at Specified psi Supply Pressures |        |        |        |        |        |         |
|----------------|--|--------|--------|--------|--------|--------|---------|
|                | 40 psi   | 50 psi | 60 psi | 70 psi | 80 psi | 90 psi | 100 psi |
| VPVL 051       | 6.8  | 8.5    | 10.1   | 11.8   | 13.5   | 15.2   | 16.9    |
| VPVL 100       | 12   | 14.9   | 17.9   | 20.9   | 23.9   | 26.8   | 29.8    |
| VPVL 200       | 23.7   | 29.6   | 35     | 41     | 47     | 53     | 59      |
| VPVL 250       | 37.2   | 46.6   | 55     | 65     | 74     | 83     | 93      |
| VPVL 300       | 54   | 67.6   | 81     | 94     | 108    | 122    | 135     |
| VPVL 350       | 87.5   | 109    | 131    | 153    | 175    | 197    | 219     |
| VPVL 400       | 113  | 141    | 169    | 197    | 225    | 254    | 282     |
| VPVL 450       | 177  | 221    | 265    | 310    | 354    | 398    | 442     |
| VPVL 500       | 231  | 289    | 346    | 404    | 462    | 519    | 577     |
| VPVL 550       | 312  | 390    | 467    | 545    | 623    | 701    | 779     |
| VPVL 600       | 433  | 541    | 649    | 757    | 866    | 974    | 1082    |
| VPVL 650       | 727  | 909    | 1091   | 1272   | 1454   | 1636   | 1818    |
| VPVL 700       | 1055   | 1319   | 1583   | 1847   | 2111   | 2375   | 2638    |
| VPVL 800       | 1833   | 2291   | 2749   | 3207   | 3665   | 4123   | 4581    |

| Actuator Model | Torque Output in N•m - VPVL XXDA Double-Acting Actuator at Specified bar Supply Pressures |         |         |         |         |         |         |
|----------------|---|---------|---------|---------|---------|---------|---------|
|                | 2.7 bar   | 3.5 bar | 4.2 bar | 4.8 bar | 5.5 bar | 6.2 bar | 6.9 bar |
| VPVL 051       | 8.9   | 11.6    | 14      | 16      | 18.3    | 20.7    | 23      |
| VPVL 100       | 16  | 20.5    | 24.6    | 28.1    | 32      | 36      | 40      |
| VPVL 200       | 31  | 40      | 48      | 55      | 64      | 72      | 80      |
| VPVL 250       | 48  | 66      | 79      | 90      | 103     | 117     | 130     |
| VPVL 300       | 68  | 93      | 112     | 128     | 146     | 165     | 184     |
| VPVL 350       | 115   | 150     | 181     | 207     | 236     | 266     | 296     |
| VPVL 400       | 143   | 194     | 233     | 266     | 305     | 344     | 383     |
| VPVL 450       | 224   | 304     | 365     | 417     | 478     | 539     | 600     |
| VPVL 500       | 293   | 397     | 477     | 545     | 624     | 703     | 782     |
| VPVL 550       | 395   | 536     | 643     | 735     | 842     | 949     | 1056    |
| VPVL 600       | 575   | 745     | 893     | 1021    | 1170    | 1319    | 1468    |
| VPVL 650       | 986   | 1232    | 1479    | 1725    | 1971    | 2218    | 2465    |
| VPVL 700       | 1338  | 1815    | 2179    | 2490    | 2853    | 3216    | 3579    |
| VPVL 800       | 2485  | 3106    | 3727    | 4348    | 4969    | 5590    | 6211    |

## OPTIONS

### Solenoid Valves

Direct-mounted solenoid valves are available in both 3-way and 4-way configuration, which mount directly to the actuator in accordance with NAMUR and VDI/VDE 3845 standards, excluding the VPVL650, 700 and 800. In general, 3-way solenoids are used for spring-return actuators and 4-way versions for double-acting.

| Direct-Mount Solenoid Valves |   |             |
|------------------------------|---|-------------|
| Part Number                  | 031-0576-01   | 031-0580-01 |
| Enclosure                    | NEMA IV   | NEMA VII    |
| Configuration                | 3 or 4-way  |             |
| Pipe Size                    | 1/4" Inlet, 1/8" Exhaust  |             |
| Cv                           | 0.7   |             |
| Voltage                      | Standard: 120 VAC 60 Hz (110/50)<br>Optional: 240 VAC 60 Hz, 12 VDC, 24 VDC |             |
| Body Material                | Black Anodized Aluminum   |             |
| Power Consumption            | AC: 6.9 watts or DC: 6.3 watts  |             |
| Humidity Resistant           | Feature rebreather and are suitable for humid & tropical environment        |             |

**NOTE:** Please consult factory for other solenoid valves or additional options including special voltages, double solenoids, special electrical connections, etc.

### Mechanical Safety Lockout

To comply with the intent of OSHA requirements for locking actuators in position prior to performing maintenance, an actuator can have the mechanical safety lockout option added to it. Design of the stop cam allows for locking the actuator in either the full-open or full-closed position. Actuators equipped with this option have a special lockout screw and a tamperproof cover attached to the housing of the actuator with stainless steel wire. The lockout kits are readily available to permanently lock the actuator in place to prevent unwanted operation.

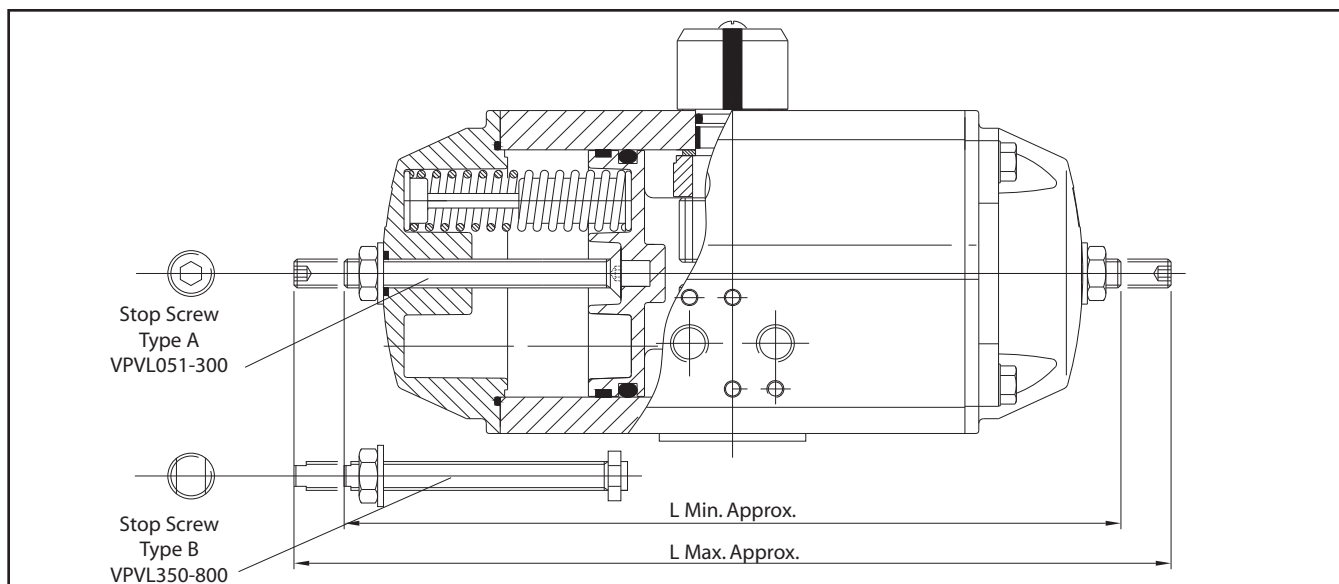
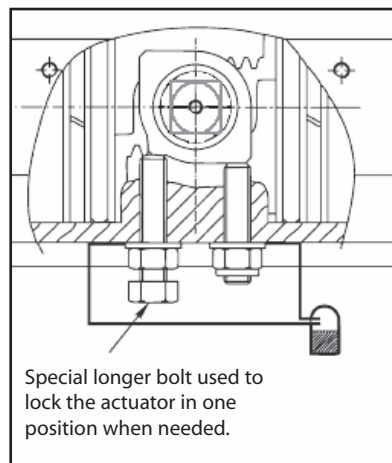
### 100% Adjustable Travel Stop

To limit the rotation on the stroke beyond the standard VPVL actuator, a stainless steel 100%-adjustable travel stop

option can be added. The stops, located in the end caps, allow the valve position to be set anywhere between full closed and full open. This option limits travel of only the counter-clockwise stroke for standard double-acting and spring-closed units. The 100% Adjustable Stop option is specified in the actuator ordering code.

| Actuator | 100% Travel Stop Lengths |     |       |      |
|----------|--------------------------|-----|-------|------|
|          | L Min                    |     | L Max |      |
|          | inch                     | mm  | inch  | mm   |
| VPVL051  | 6.2                      | 158 | 7.3   | 186  |
| VPVL100  | 7.2                      | 184 | 8.5   | 216  |
| VPVL200  | 9.5                      | 242 | 11.3  | 286  |
| VPVL250  | 11.0                     | 280 | 13.0  | 330  |
| VPVL300  | 11.9                     | 303 | 14.1  | 359  |
| VPVL350  | 14.0                     | 356 | 16.7  | 424  |
| VPVL400  | 14.5                     | 368 | 17.5  | 444  |
| VPVL450  | 17.7                     | 449 | 21.1  | 537  |
| VPVL500  | 18.1                     | 461 | 21.9  | 555  |
| VPVL550  | 20.9                     | 531 | 24.8  | 631  |
| VPVL600  | 24.7                     | 628 | 29.1  | 739  |
| VPVL650  | 25.7                     | 653 | 30.9  | 785  |
| VPVL700  | 30.0                     | 762 | 36.1  | 918  |
| VPVL800  | 35.8                     | 910 | 42.8  | 1086 |

| Lockout Kits |       |
|--------------|-------|
| VPVL051      | LD98  |
| VPVL100      | LD99  |
| VPVL200      | LD100 |
| VPVL250      | LD101 |
| VPVL300      | LD102 |
| VPVL350      | LD103 |
| VPVL400      | LD104 |
| VPVL450      | LD105 |
| VPVL500      | LD106 |
| VPVL550      | LD107 |
| VPVL600      | LD108 |
| VPVL650      | LD109 |
| VPVL700      | LD110 |
| VPVL800      | LD111 |

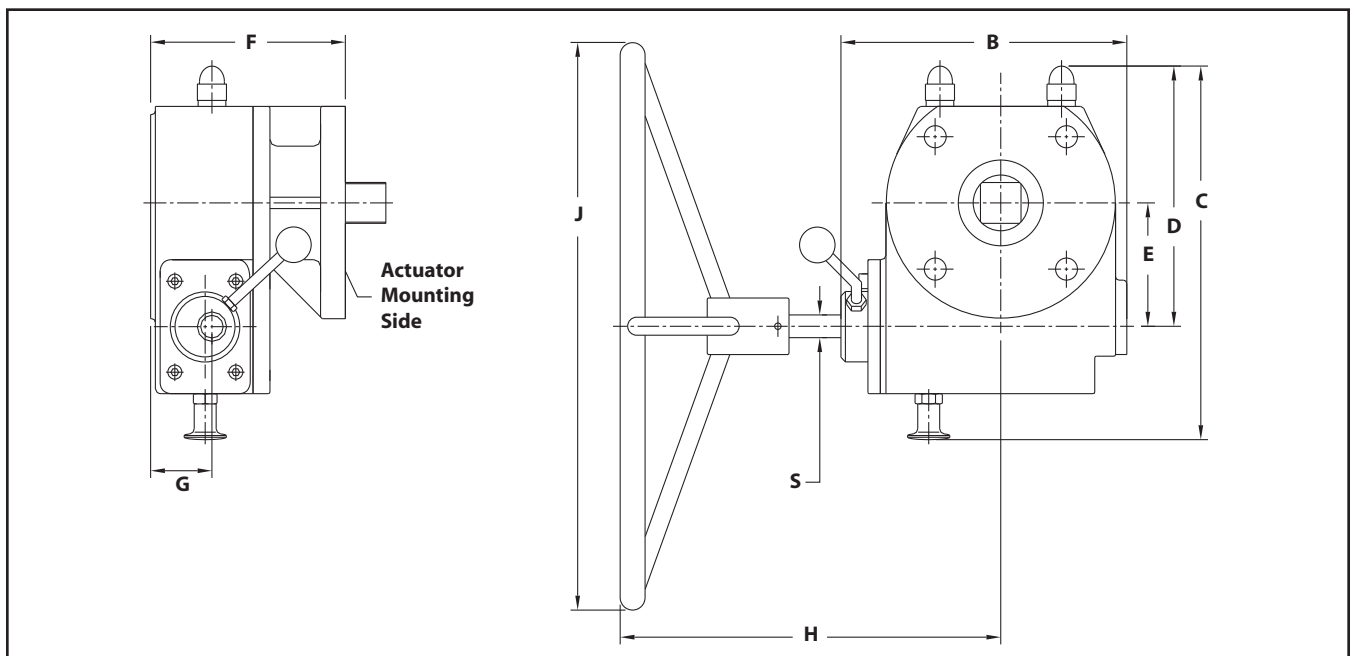


### Declutchable Manual Override

A side-declutchable manual override is available for VPVL actuators. It consists of a manual gear actuator mounted between the actuator and the valve. The device is normally disengaged from the shaft. Upon engagement of the override clutch, overriding the actuator is done with ease, aided by the high-reduction ratio of the manual gear unit.



### DIMENSIONS



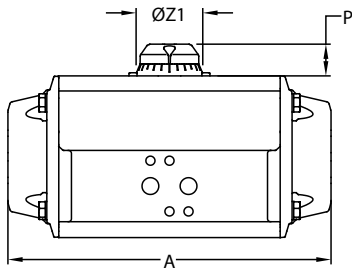
| VPVL Actuator Model (DA or SR) | Declutchable Override Kit | Approximate Dimensions - Inches |       |       |      |      |      |       |       |      | Approx. Weight lbs. |
|--------------------------------|---------------------------|---------------------------------|-------|-------|------|------|------|-------|-------|------|---------------------|
|                                |                           | B                               | C     | D     | E    | F    | G    | H     | J     | S    |                     |
| VPVL250 and VPVL300            | DO-1                      | 5.75                            | 6.89  | 5.61  | 2.36 | 4.53 | 1.44 | 8.94  | 7.87  | 0.47 | 22                  |
| VPVL350 and VPVL400            | DO-2                      | 7.68                            | 9.49  | 6.06  | 2.48 | 5.63 | 2.09 | 10.28 | 7.87  | 0.59 | 40                  |
| VPVL450 and VPVL500            | DO-3                      | 8.74                            | 11.12 | 7.46  | 3.31 | 6.30 | 2.48 | 10.63 | 11.81 | 0.79 | 50                  |
| VPVL550 and VPVL600            | DO-4                      | 9.84                            | 12.84 | 9.00  | 4.23 | 6.77 | 2.36 | 13.31 | 19.69 | 0.79 | 84                  |
| VPVL650 and VPVL700*           | DO-5                      | 10.87                           | 14.45 | 10.16 | 5.00 | 7.48 | 2.68 | 14.41 | 35.43 | 0.98 | 141                 |
| VPVL800                        | DO-6                      | 13.39                           | 16.69 | 12.32 | 6.06 | 8.07 | 3.07 | 15.63 | 39.37 | 0.98 | 201                 |

\* The VPVL700 DA unit may be used if the air pressure required to produce the needed output torque is lower than 95 psi.

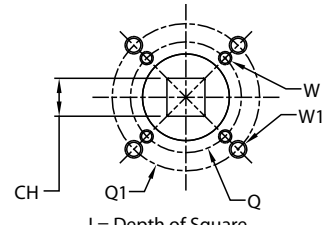
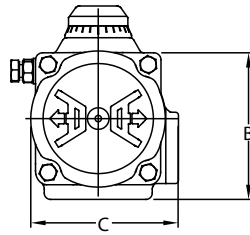
| VPVL Actuator Model (DA or SR) | Declutchable Override Kit | Approximate Dimensions - mm |     |     |     |     |    |     |      |    | Approx. Weight kgs. |
|--------------------------------|---------------------------|-----------------------------|-----|-----|-----|-----|----|-----|------|----|---------------------|
|                                |                           | B                           | C   | D   | E   | F   | G  | H   | J    | S  |                     |
| VPVL250 and VPVL300            | DO-1                      | 146                         | 175 | 142 | 60  | 115 | 37 | 227 | 200  | 12 | 10                  |
| VPVL350 and VPVL400            | DO-2                      | 195                         | 241 | 154 | 63  | 143 | 53 | 261 | 200  | 15 | 18                  |
| VPVL450 and VPVL500            | DO-3                      | 222                         | 282 | 190 | 84  | 160 | 63 | 270 | 300  | 20 | 23                  |
| VPVL550 and VPVL600            | DO-4                      | 250                         | 326 | 228 | 107 | 172 | 60 | 338 | 500  | 20 | 38                  |
| VPVL650 and VPVL700*           | DO-5                      | 276                         | 367 | 258 | 127 | 190 | 68 | 366 | 900  | 25 | 64                  |
| VPVL800                        | DO-6                      | 340                         | 424 | 313 | 154 | 205 | 78 | 397 | 1000 | 25 | 91                  |

\* The VPVL700 DA unit may be used if the air pressure required to produce the needed output torque is lower than 6.5 bar.

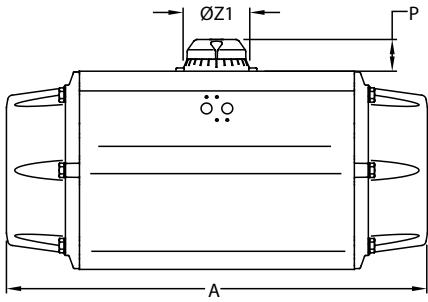
**DIMENSIONS**



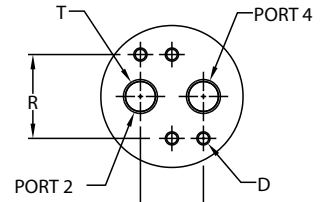
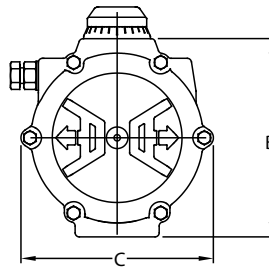
VPVL051 thru VPVL650



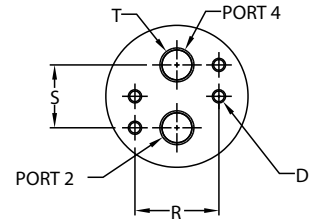
I = Depth of Square  
Bottom View ISO 5211



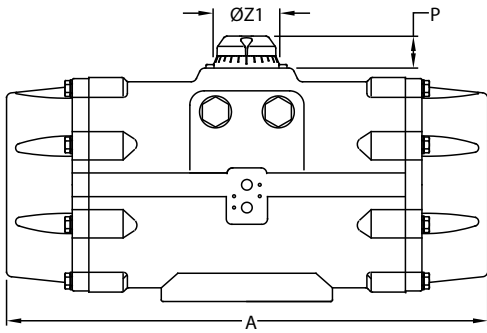
VPVL700



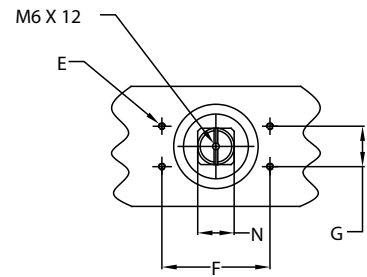
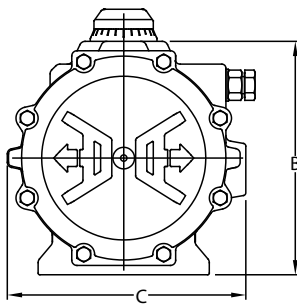
VPVL051 thru VPVL600



VPVL650 thru VPVL800  
4 X 4



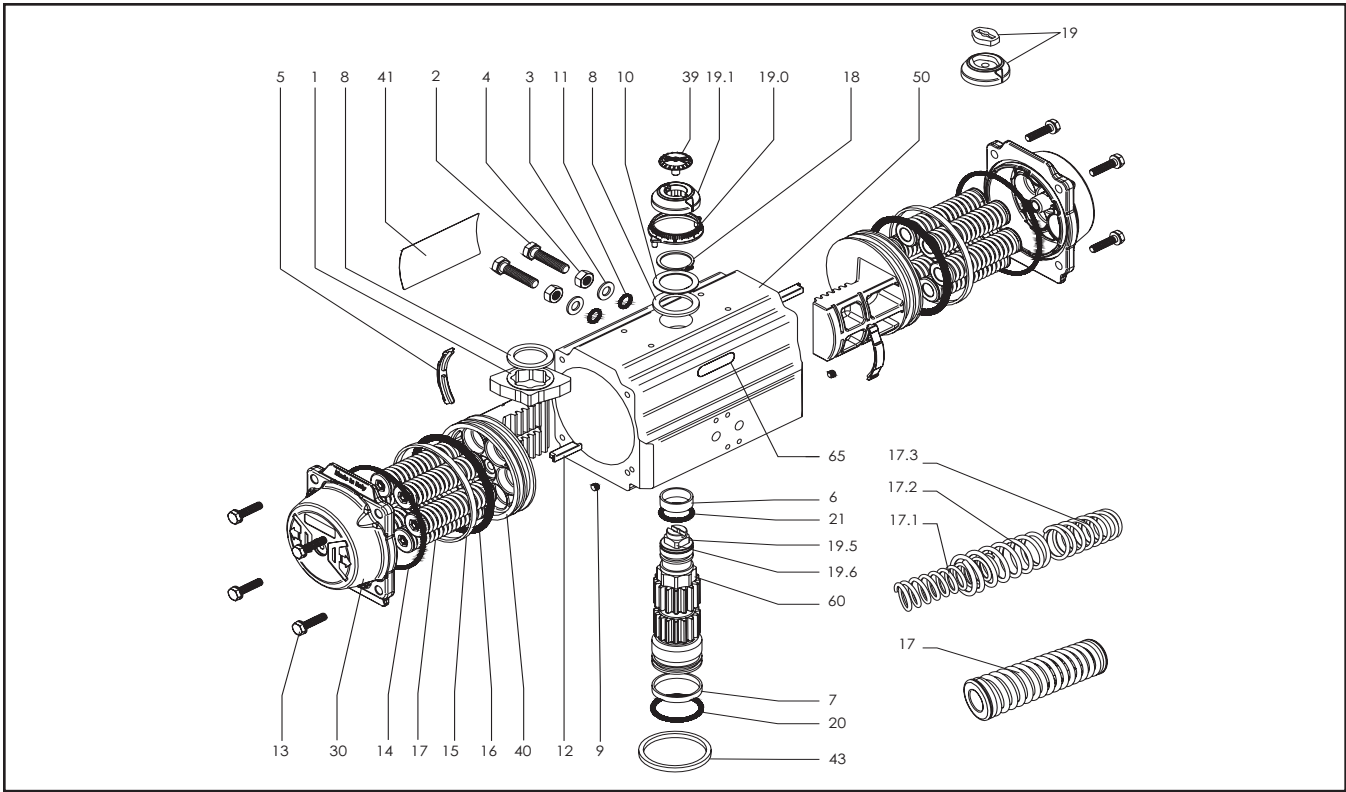
VPVL800



Top View

| Size    | Dimensions - inches |       |       |           |           |      |      |      |      |      |      |         |      |            | Weight - pounds |       |     |     |      |      |       |       |
|---------|---------------------|-------|-------|-----------|-----------|------|------|------|------|------|------|---------|------|------------|-----------------|-------|-----|-----|------|------|-------|-------|
|         | A                   | B     | C     | D         | E         | F    | G    | N    | P    | R    | S    | T (NPT) | Z    | ISO Flange | Q               | Q1    | W   | W1  | CH   | I    | DA    | SR    |
| VPVL051 | 5.39                | 2.72  | 2.83  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 0.43 | 0.79 | 1.26 | 0.94 | 1/8"    | 1.65 | F03 + F05  | 1.42            | 1.97  | M5  | M6  | 0.43 | 0.47 | 2.2   | 2.4   |
| VPVL100 | 6.04                | 3.35  | 3.33  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 0.43 | 0.79 | 1.26 | 0.94 | 1/8"    | 1.65 | F05 + F07  | 1.97            | 2.76  | M6  | M8  | 0.55 | 0.63 | 3.5   | 3.7   |
| VPVL200 | 8.01                | 4.02  | 3.66  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 0.67 | 0.79 | 1.26 | 0.94 | 1/8"    | 1.65 | F05 + F07  | 1.97            | 2.76  | M6  | M8  | 0.55 | 0.63 | 6.0   | 6.8   |
| VPVL250 | 9.49                | 4.53  | 4.06  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 0.67 | 0.79 | 1.26 | 0.94 | 1/8"    | 1.65 | F05 + F07  | 1.97            | 2.76  | M6  | M8  | 0.75 | 0.83 | 8.2   | 9.5   |
| VPVL300 | 10.20               | 5.00  | 4.67  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 0.67 | 0.79 | 1.26 | 0.94 | 1/4"    | 1.65 | F07 + F10  | 2.76            | 4.02  | M8  | M10 | 0.75 | 0.83 | 11.5  | 13.4  |
| VPVL350 | 11.97               | 5.71  | 5.39  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 1.06 | 1.18 | 1.26 | 0.94 | 1/4"    | 2.28 | F07 + F10  | 2.76            | 4.02  | M8  | M10 | 0.87 | 0.94 | 17.6  | 20.5  |
| VPVL400 | 13.11               | 6.18  | 5.79  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 1.06 | 1.18 | 1.26 | 0.94 | 1/4"    | 2.28 | F07 + F10  | 2.76            | 4.02  | M8  | M10 | 0.87 | 0.94 | 21.6  | 25.8  |
| VPVL450 | 15.53               | 6.97  | 6.54  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 1.06 | 1.18 | 1.26 | 0.94 | 1/4"    | 2.66 | F10 + F12  | 4.02            | 4.92  | M10 | M12 | 1.06 | 1.14 | 31.3  | 38.4  |
| VPVL500 | 16.63               | 7.72  | 7.13  | M5 X 0.31 | M5 X 0.31 | 3.15 | 1.18 | 1.06 | 1.18 | 1.26 | 0.94 | 1/4"    | 2.66 | F10 + F12  | 4.02            | 4.92  | M10 | M12 | 1.06 | 1.14 | 39.9  | 49.2  |
| VPVL550 | 18.66               | 8.68  | 7.87  | M5 X 0.31 | M5 X 0.31 | 5.12 | 1.18 | 1.42 | 1.97 | 1.26 | 0.94 | 1/4"    | 3.15 | F14        | 5.51            | 5.51  | M16 | -   | 1.42 | 1.50 | 53.6  | 72.1  |
| VPVL600 | 20.79               | 9.65  | 8.58  | M5 X 0.31 | M5 X 0.31 | 5.12 | 1.18 | 1.42 | 1.97 | 1.26 | 0.94 | 1/4"    | 3.15 | F14        | 5.51            | 5.51  | M16 | -   | 1.42 | 1.50 | 75.2  | 92.4  |
| VPVL650 | 23.82               | 11.75 | 10.16 | M6 X 0.39 | M5 X 0.31 | 5.12 | 1.18 | 1.42 | 1.97 | 1.77 | 1.57 | 3/8"    | 4.53 | F16        | 6.50            | 6.50  | M20 | -   | 1.81 | 1.89 | 116.2 | 148.4 |
| VPVL700 | 27.95               | 12.99 | 12.56 | M6 X 0.39 | M5 X 0.31 | 5.12 | 1.18 | 1.42 | 1.97 | 1.77 | 1.57 | 1/2"    | 4.53 | F16        | 6.50            | 6.50  | M20 | -   | 1.81 | 1.89 | 163.1 | 205.0 |
| VPVL800 | 34.49               | 16.14 | 16.46 | M6 X 0.39 | M5 X 0.31 | 5.12 | 1.18 | 1.42 | 1.97 | 1.77 | 1.57 | 1/2"    | 4.53 | F16 + F25  | 6.50            | 10.00 | M20 | M16 | 2.17 | 2.24 | 280.0 | 372.6 |

| Size    | Dimensions - millimeters |     |     |         |        |     |    |    |    |    |    |         |     |            | Weight - kilograms |     |     |     |    |    |       |       |
|---------|--------------------------|-----|-----|---------|--------|-----|----|----|----|----|----|---------|-----|------------|--------------------|-----|-----|-----|----|----|-------|-------|
|         | A                        | B   | C   | D       | E      | F   | G  | N  | P  | R  | S  | T (NPT) | Z   | ISO Flange | Q                  | Q1  | W   | W1  | CH | I  | DA    | SR    |
| VPVL051 | 137.0                    | 69  | 72  | M5 X 8  | M5 X 8 | 80  | 30 | 11 | 20 | 32 | 24 | 1/8"    | 42  | F03 + F05  | 36                 | 50  | M5  | M6  | 11 | 12 | 1.0   | 1.1   |
| VPVL100 | 153.5                    | 85  | 85  | M5 X 8  | M5 X 8 | 80  | 30 | 11 | 20 | 32 | 24 | 1/8"    | 42  | F05 + F07  | 50                 | 70  | M6  | M8  | 14 | 16 | 1.6   | 1.7   |
| VPVL200 | 203.5                    | 102 | 93  | M5 X 8  | M5 X 8 | 80  | 30 | 17 | 20 | 32 | 24 | 1/8"    | 42  | F05 + F07  | 50                 | 70  | M6  | M8  | 14 | 16 | 2.7   | 3.1   |
| VPVL250 | 241.0                    | 115 | 103 | M5 X 8  | M5 X 8 | 80  | 30 | 17 | 20 | 32 | 24 | 1/8"    | 42  | F05 + F07  | 50                 | 70  | M6  | M8  | 19 | 21 | 3.7   | 4.3   |
| VPVL300 | 259.0                    | 127 | 119 | M5 X 8  | M5 X 8 | 80  | 30 | 17 | 20 | 32 | 24 | 1/4"    | 42  | F07 + F10  | 70                 | 102 | M8  | M10 | 19 | 21 | 5.2   | 6.1   |
| VPVL350 | 304.0                    | 145 | 137 | M5 X 8  | M5 X 8 | 80  | 30 | 27 | 30 | 32 | 24 | 1/4"    | 58  | F07 + F10  | 70                 | 102 | M8  | M10 | 22 | 24 | 8.0   | 9.3   |
| VPVL400 | 333.0                    | 157 | 147 | M5 X 8  | M5 X 8 | 80  | 30 | 27 | 30 | 32 | 24 | 1/4"    | 58  | F07 + F10  | 70                 | 102 | M8  | M10 | 22 | 24 | 9.8   | 11.7  |
| VPVL450 | 394.5                    | 177 | 166 | M5 X 8  | M5 X 8 | 80  | 30 | 27 | 30 | 32 | 24 | 1/4"    | 68  | F10 + F12  | 102                | 125 | M10 | M12 | 27 | 29 | 14.2  | 17.4  |
| VPVL500 | 422.5                    | 196 | 181 | M5 X 8  | M5 X 8 | 80  | 30 | 27 | 30 | 32 | 24 | 1/4"    | 68  | F10 + F12  | 102                | 125 | M10 | M12 | 27 | 29 | 18.1  | 22.3  |
| VPVL550 | 474.0                    | 221 | 200 | M5 X 8  | M5 X 8 | 130 | 30 | 36 | 50 | 32 | 24 | 1/4"    | 80  | F14        | 140                | 140 | M16 | -   | 36 | 38 | 24.3  | 32.7  |
| VPVL600 | 528.0                    | 245 | 218 | M5 X 8  | M5 X 8 | 130 | 30 | 36 | 50 | 32 | 24 | 1/4"    | 80  | F14        | 140                | 140 | M16 | -   | 36 | 38 | 34.1  | 41.9  |
| VPVL650 | 605.0                    | 299 | 258 | M6 X 10 | M5 X 8 | 130 | 30 | 36 | 50 | 45 | 40 | 3/8"    | 115 | F16        | 165                | 165 | M20 | -   | 46 | 48 | 52.7  | 67.3  |
| VPVL700 | 710.0                    | 330 | 319 | M6 X 10 | M5 X 8 | 130 | 30 | 36 | 50 | 45 | 40 | 1/2"    | 115 | F16        | 165                | 165 | M20 | -   | 46 | 48 | 74.0  | 93.0  |
| VPVL800 | 876.0                    | 410 | 418 | M6 X 10 | M5 X 8 | 130 | 30 | 36 | 50 | 45 | 40 | 1/2"    | 115 | F16 + F25  | 165                | 254 | M20 | M16 | 55 | 57 | 127.0 | 169.0 |



**BILL OF MATERIALS AND PARTS LIST**

| No.  | Unit Qty       | Part Description              | Material                           | Specifications       | Corrosion Protection    |
|------|----------------|-------------------------------|------------------------------------|----------------------|-------------------------|
| 1    | 1              | Octi-Cam (Stop Arrangement)   | Stainless Steel1                   | EN 10088-3/ISO 10831 |                         |
| 2    | 2              | Stop Cap Screw                | Stainless Steel                    | ASTM A193            |                         |
| 3    | 2              | Washer (Stop Cap Screw)       | Stainless Steel                    | ISO 3506             |                         |
| 4    | 2              | Nut (Stop Cap Screw)          | Stainless Steel                    | ISO 3506             |                         |
| 5*   | 2              | Bearing (Piston Back)         | Polyphthalamide                    | Amodel ET1001HS      |                         |
| 6*   | 1              | Bearing (Pinion Top)          | Polyetherimide                     | Stanyl TW300         |                         |
| 7*   | 1              | Bearing (Pinion Bottom)       | Polyetherimide                     | Stanyl TW300         |                         |
| 8*   | 2              | Thrust Bearing (Pinion)       | Polyphthalamide                    | Amodel ET1001HS      |                         |
| 9*   | 2              | Plug (Transfer Port)          | Nitrile Rubber                     | NBR 70Shore A        |                         |
| 10   | 1              | Thrust Washer (Pinion)        | Stainless Steel                    | EN 10088-3           |                         |
| 11*  | 2              | O-ring (Stop Cap Screw Seal)  | Nitrile Rubber                     | NBR 70Shore A        |                         |
| 12   | 2              | Piston Guide                  | Polyphthalamide GF                 | Amodel AS1145        |                         |
| 13   | 8/12/16        | Cap Screw (End Cap)           | Stainless Steel                    | ISO 3506             |                         |
| 14*  | 2              | O-ring (End Cap)              | Nitrile Rubber                     | NBR 70Shore A        |                         |
| 15*  | 2              | Bearing (Piston Head)         | Polyphthalamide                    | Amodel ET1001HS      |                         |
| 16*  | 2              | O-ring (Piston)               | Nitrile Rubber                     | NBR 70Shore A        |                         |
| 17   | min. 4/ max.12 | Spring (Cartridge)            | Alloy Steel                        | DIN 17223 Part2      | Epoxy Coated            |
| 17.1 |                |                               |                                    |                      |                         |
| 17.2 | max.2          | Spring                        | Alloy Steel                        | DIN 17223 Part2      | Epoxy Coated            |
| 17.3 |                |                               |                                    |                      |                         |
| 18   | 1              | Spring Clip (Pinion)          | Carbon Steel                       | DIN 17222            | ENP                     |
| 19   | 1              | Position Indicator3           | High-grade Polymer/Stainless Steel |                      |                         |
| 19.0 | 1              | Graduated Ring                | High-grade Polymer                 |                      |                         |
| 19.1 | 1              | Position Indicator            | High-grade Polymer                 |                      |                         |
| 19.5 | 1              | Top Adapter                   | Extruded Aluminum                  |                      |                         |
| 19.6 | 1              | Hex Socket Screw              | Stainless Steel                    |                      |                         |
| 20*  | 1              | O-ring (Pinion Bottom)        | Nitrile Rubber                     | NBR 70Shore A        |                         |
| 21*  | 1              | O-ring (Pinion Top)           | Nitrile Rubber                     | NBR 70Shore A        |                         |
| 30   | 1              | End Cap                       | Aluminum                           | UNI 5075             | Polyester-Coated        |
| 39   | 1              | Cap Screw (Indicator)         | Stainless Steel                    | ISO 3506             |                         |
| 40   | 2              | Pistons                       | Aluminum                           | UNI 5075             | Anodized                |
| 41   | 1              | Actuator Identification Label | Polyester Aluminum                 |                      |                         |
| 50   | 1              | Body                          | Aluminum                           | ASTM B221            | Anodized<br>PTFE-Coated |
| 60   | 1              | Drive Shaft                   | Carbon Steel Plated                | ASTM A105            | ENP                     |
| 65   | 1              | Plastic Label                 | High-grade Polymer                 |                      |                         |

\* Suggested spare parts for maintenance

Notes: (1) AISI 420 for models VPVL-051 through 300; GS400-15 for models VPVL-350 through 800

(2) Qty 8 pieces for models VPVL-051 through 650; Qty 12 pieces for model VPVL-700 through 750; Qty 16 pieces for model VPVL800

(3) For models VPVL051 through 100



## HOW TO ORDER

To specify a complete *Valv-Powr* Value-Line® Actuator, simply make a selection from the code boxes below.

**EXAMPLE:** VPVL 400 SR4/5 B AS D, shown below, is a 59 FT•LBS 60-psi (84 N•m @ 4.2 bar) spring-return actuator with spring-to-close rotation, hard-anodized PTFE-coated body, polyester-coated end caps, standard temperature rating, and 100% adjustable travel stops.

|          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|
| <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> |
| VPVL     | 400      | SR4/5    | B        | AS       | D        | —        |

**NOTE:** for multiple options, specify them in order as listed in Item 5, for example: VPVL400 SR4/5 B HT AS Model D.

|          |  |
|----------|--|
| <b>1</b> | <b>Product Group</b>                                       |
| VPVL     | <i>Valv-Powr Value-Line</i> Double-Opposed Piston Actuator |

|   |                          |
|---|--------------------------|
| <b>2</b>  | <b>Size</b>              |
| 051,<br>100, 200,<br>250, 300,<br>350, 400,<br>450, 500,<br>550, 600,<br>650, 700,<br>800 | Select from torque table |

|          |  |
|----------|--|
| <b>3</b> | <b>Series+</b>   |
| DA       | <i>Valv-Powr Value-Line</i> Double-Acting Piston Actuator    |
| SR4/5    | Spring-Return 60-psi (4.1 bar) Spring-to-Close (CW Rotation) |
| SR6      | Spring-Return 80-psi (5.5 bar) Spring-to-Close (CW Rotation) |

+ Other spring rates on application

|          |  |
|----------|--|
| <b>4</b> | <b>Exterior Protection*</b>                                |
| B        | Hard-Anodized PTFE-Coated Body & Polyester-Coated End Caps |

\* Consult factory for other protection options.

|          |   |
|----------|---|
| <b>5</b> | <b>Options</b>  |
| —        | Standard Temperature Rating: -40°F to +176°F (-40°C to +80°C) |
| HT†      | High-Temperature Rating: +5°F to +302°F (-15°C to +150°C)     |
| LX*†     | Low-Temperature Rating: -60°F to +176°F (-51°C to +80°C)      |
| FO       | Spring-to-Open (CCW Rotation)                                 |
| AS       | 100% Travel Stop  |
| LD       | Mechanical Safety Lockout                                     |

\* "LX" option must be ordered complete from the factory.

† HT and LX options decrease cycle life.

|          |              |
|----------|--------------|
| <b>6</b> | <b>Model</b> |
| D        | Model D      |

|          |                      |
|----------|----------------------|
| <b>7</b> | <b>Modifier Code</b> |
| —        | Standard             |

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Subject to change without prior notice.

