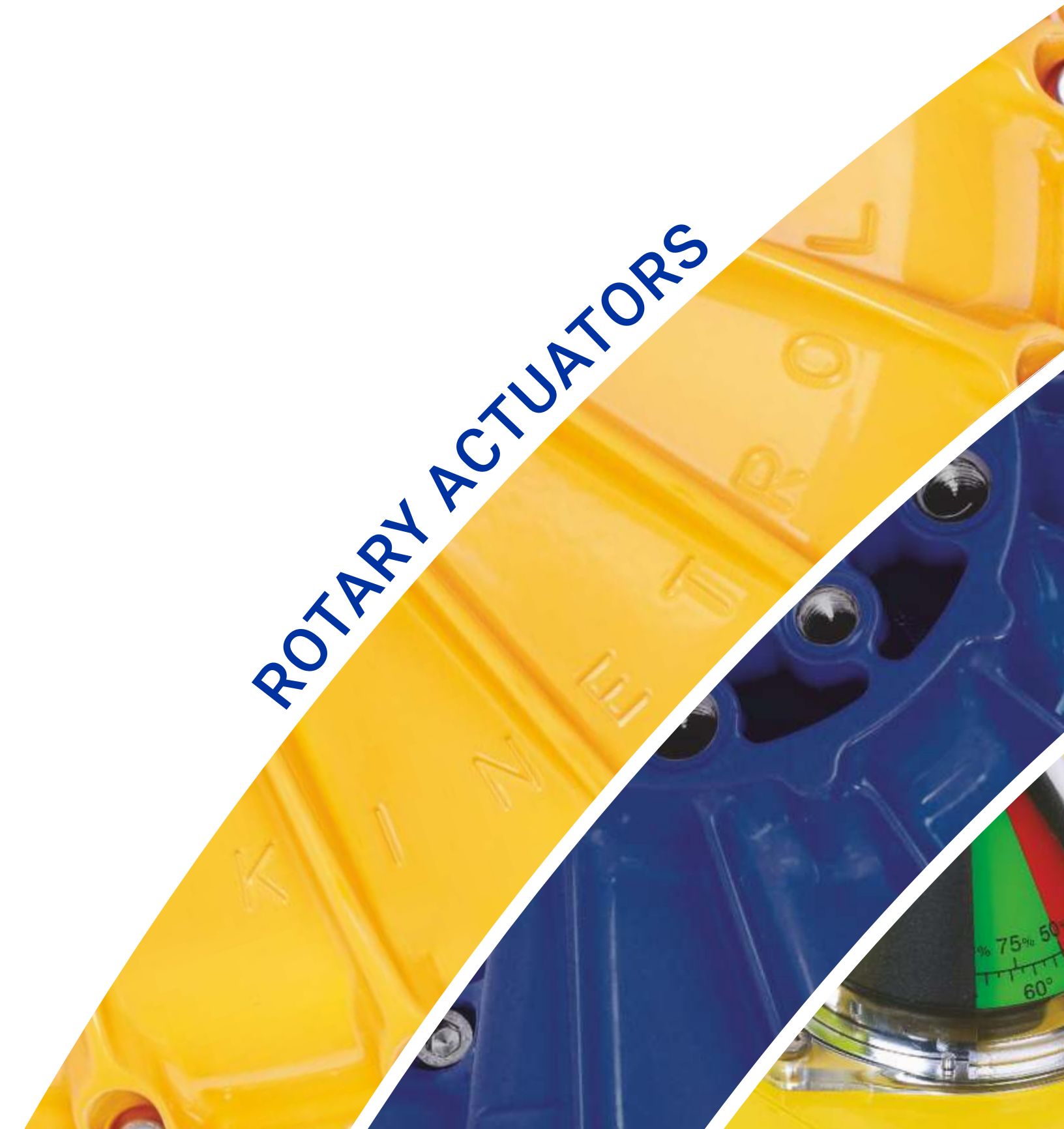


# KINETROL®

ROTARY ACTUATORS



|   | Pages        |
|---|--------------|
| <b>Kinetrol Vane Actuators</b>  | <b>2</b>     |
| <b>Modular 'Add On' Control Units</b>                                   | <b>3</b>     |
| <b>Top-Mount Accessory Build Arrangements</b>                           | <b>4</b>     |
| <b>Actuator General Specification</b>                                   | <b>5</b>     |
| <b>Double Acting Metric &amp; English Torque Outputs</b>                | <b>6</b>     |
| <b>Spring Return Metric Torque Outputs</b>                              | <b>7</b>     |
| <b>Spring Return English Torque Outputs</b>                             | <b>8</b>     |
| <b>Actuator Models 0M0 - 60</b>   | <b>9-25</b>  |
| <b>ISO Adaptor</b>  | <b>26</b>    |
| <b>Fail-Safe Spring Return Units</b>                                    | <b>27/28</b> |
| <b>Female Drive Spring Units</b>  | <b>29</b>    |
| <b>Actuator Ordering Codes</b>  | <b>30</b>    |
| <b>VLS/ULS Limit Switch Box</b>   | <b>31/32</b> |
| <b>Explosion Proof Limit Switch Box</b>                                 | <b>33/34</b> |
| <b>AS Interface Bus Communications</b>                                  | <b>35/36</b> |
| <b>DeviceNet Communications</b>   | <b>37</b>    |
| <b>Clear Cone Monitors</b>  | <b>38</b>    |
| <b>Solenoid Valves</b>  | <b>38</b>    |
| <b>EL Electropneumatic Positioner</b>                                   | <b>39/40</b> |
| <b>AP Positioner</b>  | <b>41/42</b> |
| <b>P3 On/Off Positioner</b>   | <b>43/44</b> |
| <b>Explosion Proof P3 On/Off Positioner</b>                             | <b>45</b>    |
| <b>I/P Controller</b>   | <b>46</b>    |
| <b>Manual Fail-Safe Spring Units</b>                                    | <b>47/48</b> |
| <b>Fire Fail-Safe Spring Units</b>                                      | <b>49</b>    |
| <b>Spring to Centre Actuators</b>                                       | <b>50</b>    |
| <b>180 Degree Pneumatic Actuators</b>                                   | <b>51/52</b> |
| <b>G3 Damper Drives</b>   | <b>53/54</b> |
| <b>Geared Manual Overrides</b>  | <b>55</b>    |
| <b>Blueline Paint Finish</b>  | <b>56</b>    |
| <b>Valve Mounting Service</b>   | <b>56</b>    |
| <b>Actuator Dimensions</b>  | <b>57/58</b> |
| <b>Spring Return Actuator Dimensions</b>                                | <b>59/60</b> |
| <b>Limit Switch Box Dimensions</b>                                      | <b>61</b>    |
| <b>AP Positioner Dimensions</b>   | <b>62</b>    |
| <b>EL Positioner Dimensions</b>   | <b>63</b>    |
| <b>P3 &amp; Explosion Proof P3 On/Off Positioner Dimensions</b>         | <b>64</b>    |
| <b>180 Degree Actuator Dimensions &amp; Spring to Centre Dimensions</b> | <b>65</b>    |
| <b>Other Products</b>   | <b>66</b>    |



Certificate No. FM22163

Kinetrol's rigorous quality program is approved to ISO 9001:2015 ensuring that each unit is manufactured to the highest standards.

**APPLICATIONS**

Operation or positioning of ball, butterfly, plug and control valves, ventilation dampers and automatic doors. Uses also include movement and positioning of components during manufacture - in fact anything that needs to be turned through 90° or less, automatically or by remote control.

**LONG MAINTENANCE-FREE LIFE**  
Up to 4 million operations guaranteed

**PROVEN IN SERVICE**  
Millions of units operating trouble-free worldwide

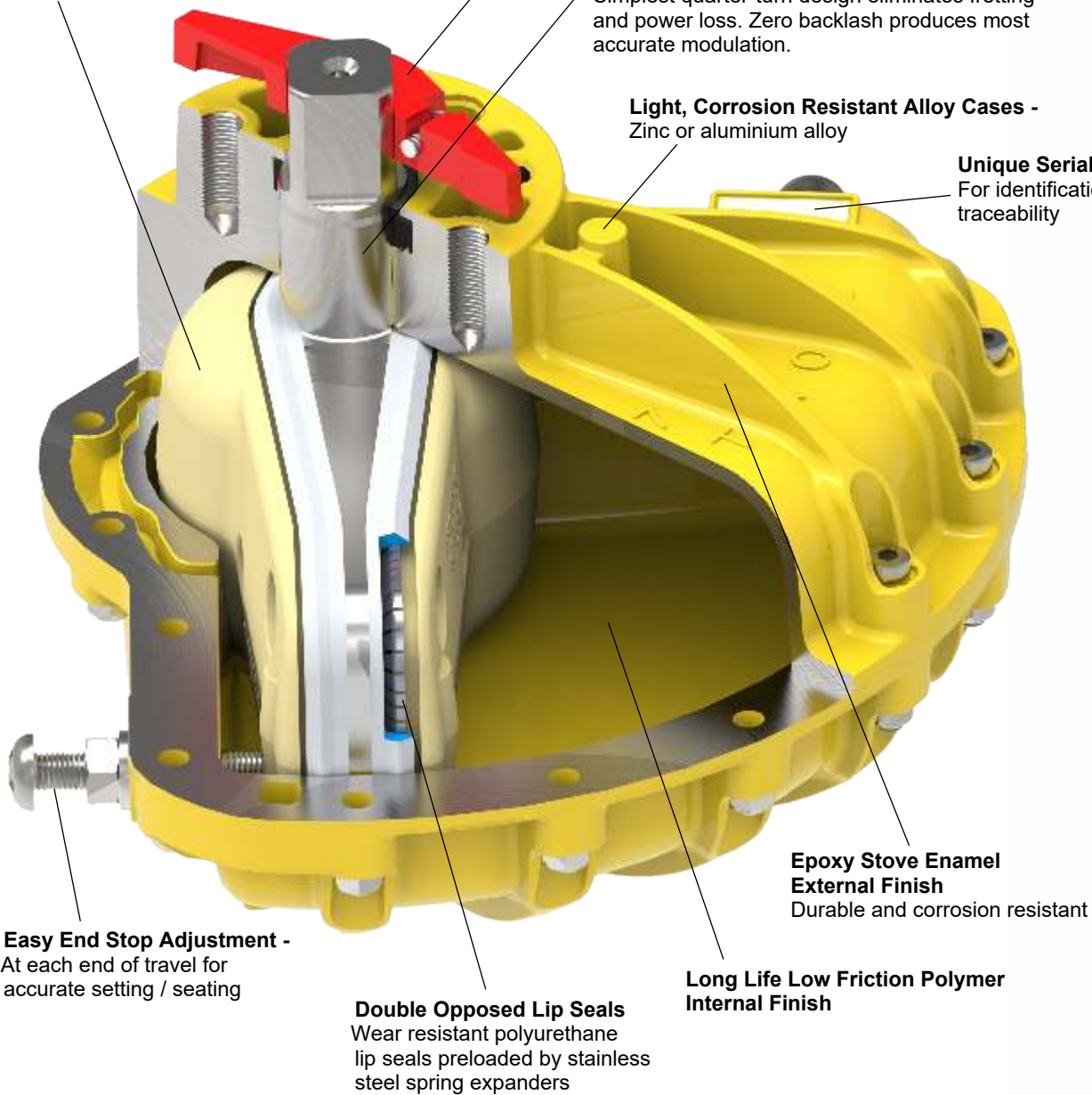
**Patented Energy Absorbent, Space Filling Sideplates**  
Minimise dimensions and air consumption thereby maximising efficiency and operating speeds

**Visual Position Indication**

**Internal Shaft / Vane Casting**  
Single moving part with no cranks or gearing. Simplest quarter-turn design eliminates fretting and power loss. Zero backlash produces most accurate modulation.

**Light, Corrosion Resistant Alloy Cases -**  
Zinc or aluminium alloy

**Unique Serial Number -**  
For identification and traceability



**Easy End Stop Adjustment -**  
At each end of travel for accurate setting / seating

**Double Opposed Lip Seals**  
Wear resistant polyurethane lip seals preloaded by stainless steel spring expanders

**Epoxy Stove Enamel External Finish**  
Durable and corrosion resistant

**Long Life Low Friction Polymer Internal Finish**

**CHOICE OF MALE OR FEMALE OUTPUT DRIVE SQUARES**  
Easy and versatile interface to applications

**CLOSE COUPLED CONTROL MODULES**  
Fail-safe spring returns, limit switch boxes, solenoid valves and positioners all close coupled to actuators (see page 4)

The policy of KINETROL is one of continuous improvement. We reserve the right to alter the product as described and illustrated without notice.



Kinetrol modular concept easily provides the control assembly needed

**1. Visual Indicator**

Gives visual indication of valve position as standard except models 0M0, 01, 16, 18, 20, 30 and 60.

**2. Clear Cone Monitor**

Gives 360° and overhead position indication. Available on actuator models 03, 05, 07, 08, 09, 10, 12, 14, 15, limit switch boxes, AP positioners, EL positioners, P3 positioners and EHD models (details page 38).

**3. I/P Controller**

4-20mA electrical signal controls main air supply to pneumatic positioner as alternative to air signal control (details page 46).

**4. AP Positioner**

3-15psi (0.2-1 bar) air signal controls main air supply to turn, stop or hold the actuator vane in proportional response to that air signal. Limit switch and angle retransmit options available (details pages 41/42).

**5. EL Electropneumatic Positioner**

A single unit gives smooth accurate control in response to a 4-20mA signal. Limit switch and angle retransmit options in same housing (details pages 39/40).

**6. P3 On/Off Positioner**

Modulation and/or two endstop positions and a mid-range setpoint anywhere within the 90° span. Easy setpoint adjustment and integral position feedback options (details page 43/44).

**7. Explosion Proof P3 On/Off Positioner**

Provides the same basic options as the P3 Positioner but in a flame proof enclosure with ATEX approval (details page 45).

**8. VLS/ULS Limit Switch Box**

Weathertight unit with up to 4 switches for remote position indication or control use. Optional switches for flame proof/explosion proof needs and high visibility Clear Cone monitor (details pages 31/32).

**9. Explosion Proof Limit Switch Box**

Provides the same basic options as the VLS/ULS Switch Box but in a flame proof enclosure with ATEX, FM and IEC approvals (details page 33/34).

**10. Solenoid**

Optional integral pneumatic solenoid valve for actuators. Various electrical, environmental and explosion proof requirements covered (details page 38).

**11. Actuator**

17 sizes covering torque range 0.1 Nm (1 lbf in) to 40765 Nm (356,977 lbf in). Operating air pressure range 1.4 bar (20 psi) to 7 bar (100 psi). Adjustable stops as standard. Restricted travel stops and ISO/DIN versions available (details pages 9 to 25).

**12. 180° Converter**

Compact units give constant torque output through to 200° travel (details pages 51/52).

**13. Fail-Safe Spring Return Units**

Clock type spring return gives reliable fail-safe operation with high torque output throughout spring stroke, yet has easy adjustment to suit application (details pages 27 to 29).

**14. Spring To Centre**

Patented spring unit to provide accurate adjustable port travel position on loss of air/signal (details page 50).

**15. ISO Adaptor**

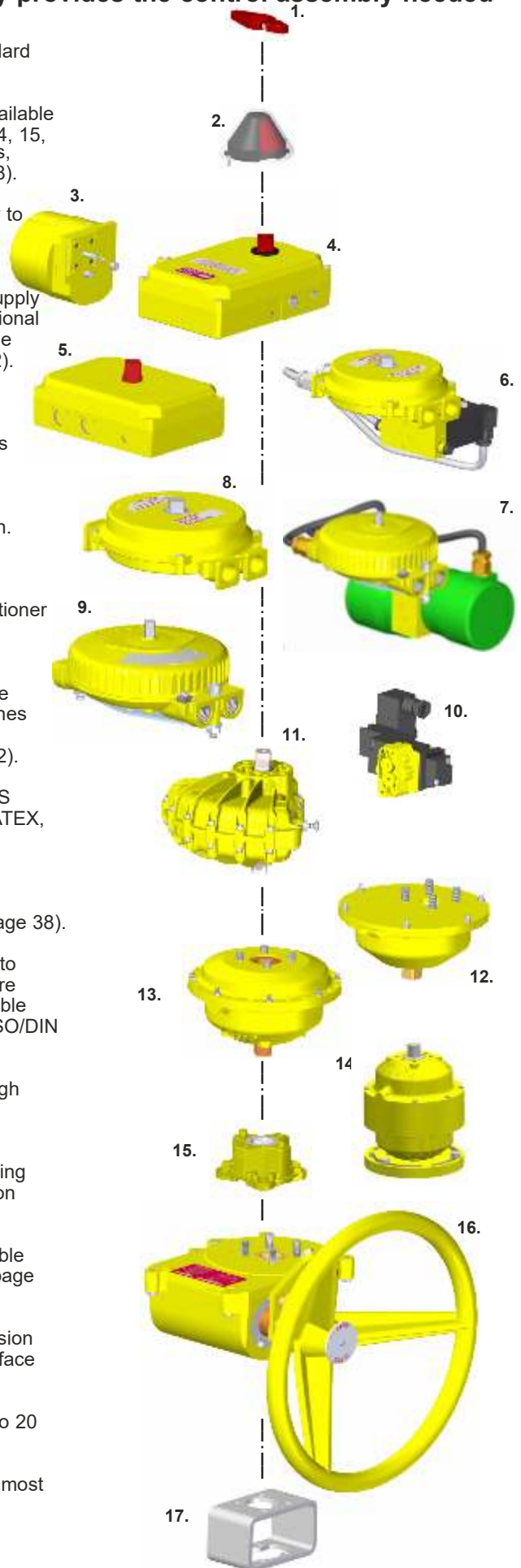
The patented ISO adaptor provides easy conversion from a Kinetrol male drive to an ISO flange interface for ultimate mounting flexibility (details page 26).

**16. Gearbox**

Geared manual override on all models from 05 to 20 excluding model 15 (details page 55).

**17. Mounting Bracket**

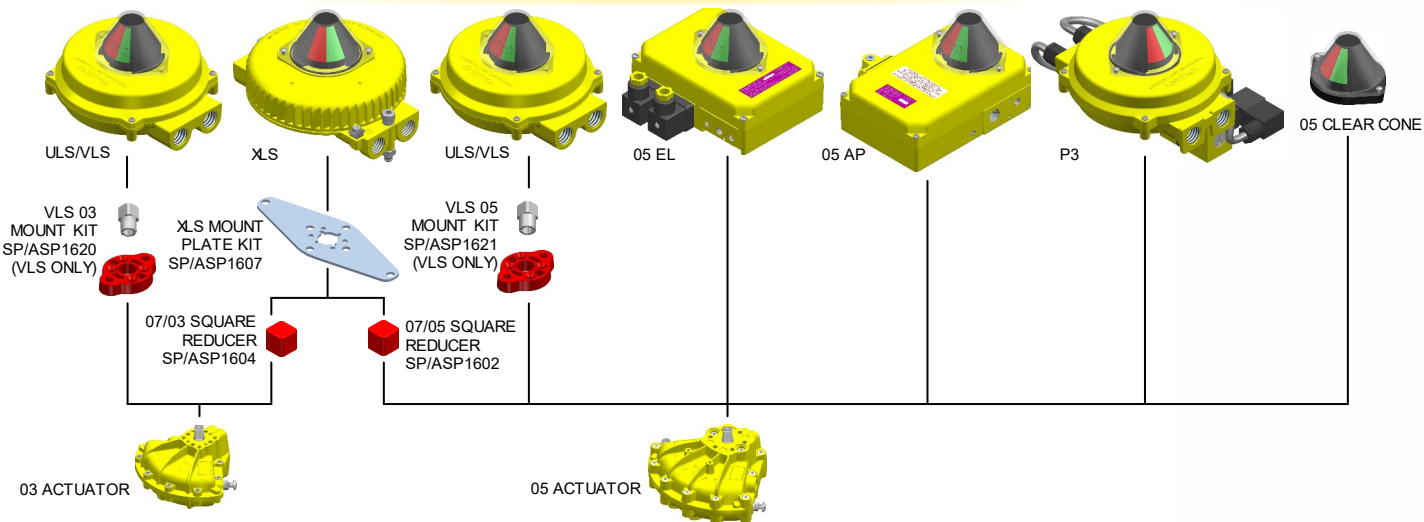
A comprehensive range of brackets provides for most ball, plug and butterfly valves (details page 56).



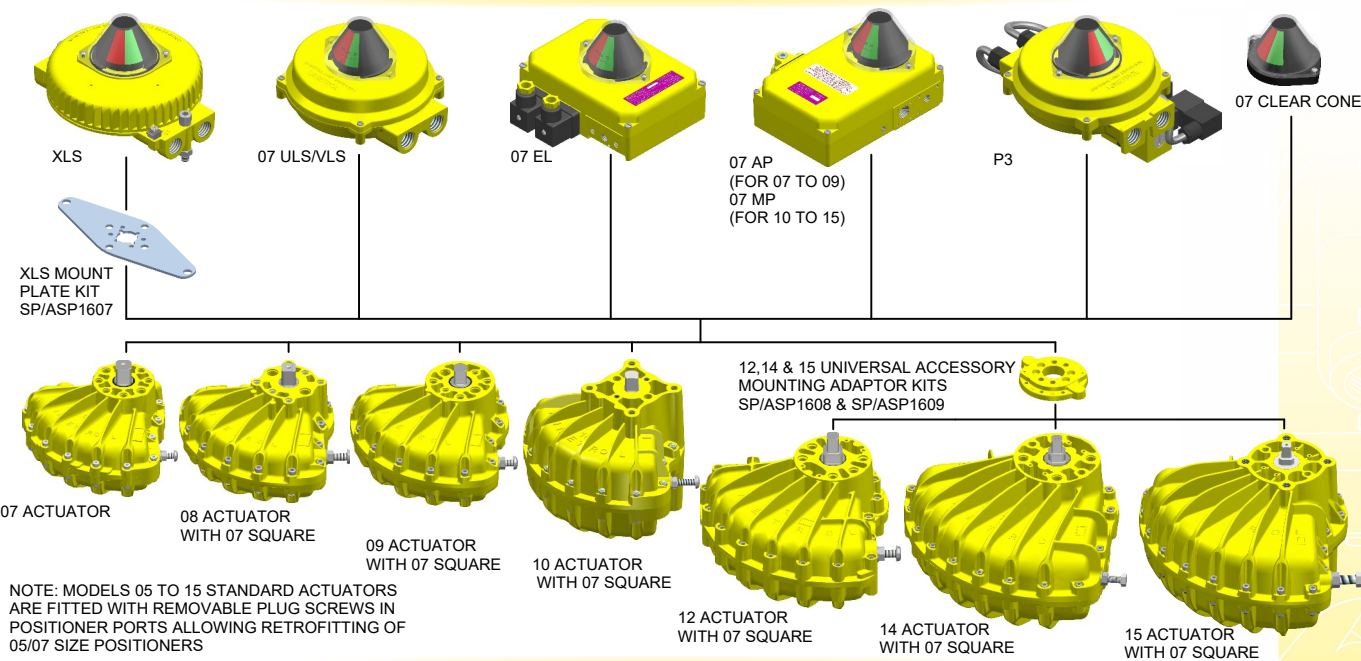
Kinetrol Actuators, Springs and Accessories are approved up to ATEX Category 1.



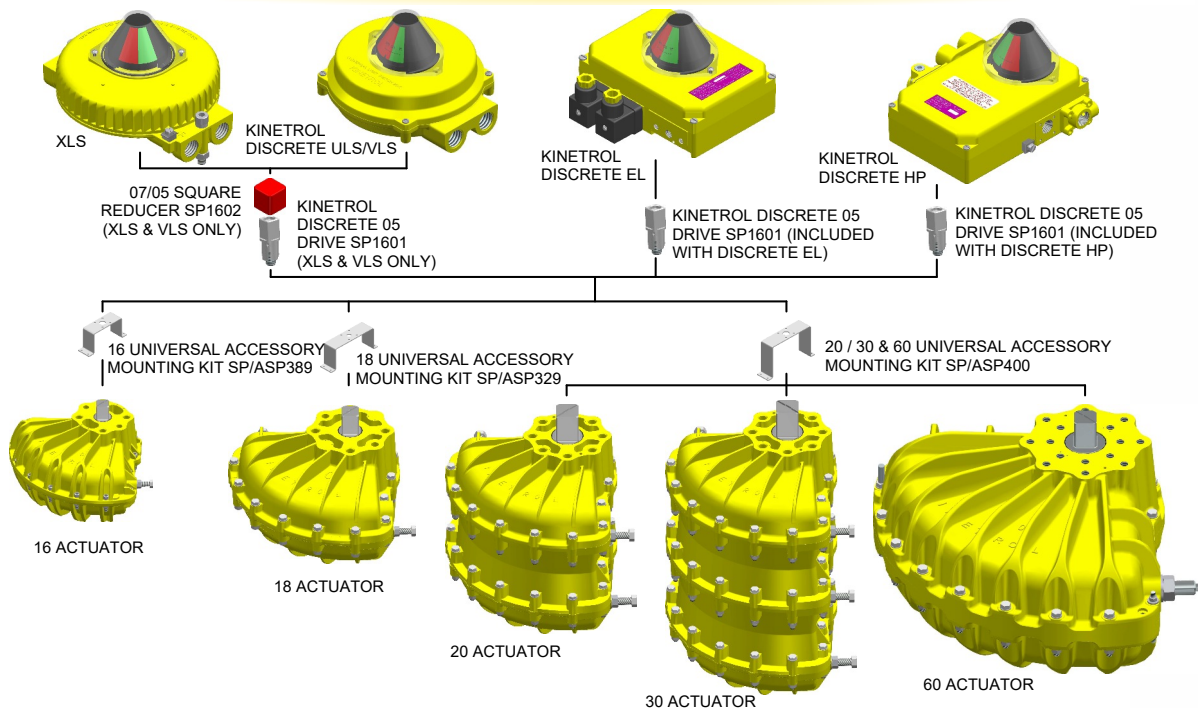
**Models 03 & 05**



**Models 07 to 15**



**Models 16 to 60**



Actuator General Specification

**Materials of Construction:**

**Casing:**

Models 0M0, 01, 02, 03 & 05 - Pressure die cast ZL16 zinc alloy.

Models 07, 08, 09, 10, 12, 14, 15, 16, 18, 20, 30 & 60 - Die cast or sand cast aluminium alloy.

**Vane & Output Shaft:**

Models 0M0, 01, 02, 03 and 05 - Stainless steel.

Models 07 to 60 - SG iron, zinc plated.

**Shaft bushes:** PTFE coated bronze.

**Seals:** Moulded polyurethane.

High and low temperature seals also available - contact Kinetrol.

**Seal expanders:** Stainless spring steel.

**Couplings:** Weldable mild steel, zinc plated.

**Working temperature range:**

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

**High temperature option:** -20°C (-4°F) to +100°C (212°F) using temperature seals for higher temperatures with special equipment - contact Kinetrol.

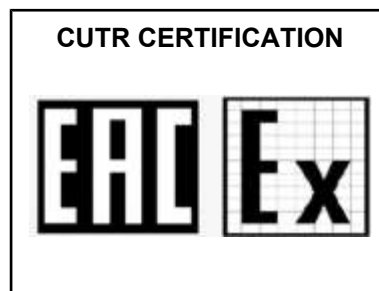
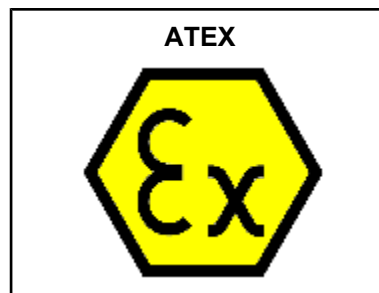
If consulted Kinetrol may, under certain circumstances/conditions, be prepared to extend its high temperature limits

**Low temperature option:** -54°C (-65°F) to +60°C (140°F) using temperature seals include option "W" at end of actuator coding.

**Maximum recommended working pressure:** 100 psi (7 bar)

**Maximum overload pressure:** 150 psi (10 bar)

**Certification**



**Double Acting Torque Outputs - Metric Units Nm**

| Actuator Model | Pressure (bar) |       |       |       |       |       |       |       |       |       |       |       |
|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                | 1.5            | 2.0   | 2.5   | 3.0   | 3.5   | 4.0   | 4.5   | 5.0   | 5.5   | 6.0   | 6.5   | 7.0   |
| 0M0-100        | 0.1            | 0.2   | 0.25  | 0.35  | 0.4   | 0.5   | 0.55  | 0.6   | 0.7   | 0.75  | 0.85  | 0.9   |
| 01-100         | 1.1            | 1.6   | 2.1   | 2.6   | 3.0   | 3.5   | 4.0   | 4.5   | 5.1   | 5.6   | 6.1   | 6.7   |
| 02-100         | 1.8            | 2.7   | 3.6   | 4.6   | 5.5   | 6.4   | 7.3   | 8.2   | 9.2   | 10.2  | 11.1  | 12.1  |
| 03-100         | 3.9            | 5.8   | 7.6   | 9.6   | 11.5  | 13.4  | 15.4  | 17.4  | 19.3  | 21.3  | 23.2  | 25.3  |
| 05-100         | 9.0            | 12.5  | 16.5  | 20.0  | 24.0  | 27.5  | 31.5  | 35.0  | 39.0  | 43.0  | 46.5  | 50.5  |
| 07-100         | 22.0           | 30.5  | 39.5  | 48.5  | 57.5  | 66.5  | 76.0  | 85.5  | 95.0  | 105.0 | 114.0 | 124.0 |
| 08-100         | 38.7           | 53.2  | 67.7  | 82.3  | 96.8  | 111.4 | 125.9 | 140.5 | 155.0 | 169.0 | 184.1 | 198.7 |
| 09-100         | 46             | 64    | 83    | 102   | 121   | 140   | 159   | 179   | 199   | 220   | 241   | 261   |
| 10-100         | 80             | 111   | 141   | 172   | 202   | 232   | 263   | 294   | 325   | 355   | 385   | 416   |
| 12-100         | 103            | 147   | 190   | 232   | 275   | 319   | 360   | 403   | 446   | 490   | 532   | 575   |
| 14-100         | 265            | 360   | 460   | 560   | 660   | 760   | 870   | 975   | 1080  | 1180  | 1280  | 1375  |
| 15-100         | 435            | 605   | 769   | 937   | 1109  | 1287  | 1457  | 1632  | 1808  | 1982  | 2153  | 2337  |
| 16-100         | 640            | 860   | 1090  | 1310  | 1530  | 1750  | 1980  | 2200  | 2420  | 2650  | 2870  | 3100  |
| 18-100         | 1250           | 1750  | 2250  | 2750  | 3250  | 3750  | 4300  | 4850  | 5400  | 5950  | 6400  | 6900  |
| 20-100         | 2480           | 3440  | 4400  | 5310  | 6290  | 7230  | 8160  | 9090  | 10020 | 10960 | 11890 | 12760 |
| 30-100         | 3720           | 5160  | 6600  | 7695  | 9435  | 10845 | 12240 | 13635 | 15030 | 16440 | 17835 | 19140 |
| 60-100         | 8345           | 11106 | 14041 | 16680 | 19673 | 22806 | 25680 | 28870 | 31995 | 34909 | 37818 | 40765 |

**Double Acting Torque Outputs - English Units lbf ins**

| Actuator Model | Pressure (psi) |        |        |        |        |        |        |        |        |  |
|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--|
|                | 20             | 30     | 40     | 50     | 60     | 70     | 80     | 90     | 100    |  |
| 0M0-100        | 1              | 2      | 3      | 3.5    | 4.5    | 5      | 6      | 7      | 8      |  |
| 01-100         | 9              | 15     | 21     | 26     | 32     | 39     | 45     | 51     | 58     |  |
| 02-100         | 14             | 25     | 36     | 48     | 59     | 70     | 82     | 93     | 105    |  |
| 03-100         | 29             | 53     | 77     | 101    | 124    | 148    | 173    | 196    | 220    |  |
| 05-100         | 70             | 116    | 160    | 205    | 250    | 300    | 346    | 393    | 440    |  |
| 07-100         | 175            | 280    | 390    | 500    | 610    | 730    | 850    | 960    | 1080   |  |
| 08-100         | 311            | 488    | 666    | 826    | 1012   | 1208   | 1367   | 1563   | 1740   |  |
| 09-100         | 360            | 590    | 820    | 1050   | 1280   | 1530   | 1780   | 2020   | 2280   |  |
| 10-100         | 640            | 1020   | 1390   | 1760   | 2130   | 2500   | 2880   | 3250   | 3625   |  |
| 12-100         | 830            | 1350   | 1870   | 2400   | 2900   | 3440   | 3970   | 4480   | 5000   |  |
| 14-100         | 2150           | 3350   | 4550   | 5800   | 7000   | 8300   | 9600   | 10800  | 12000  |  |
| 15-100         | 3558           | 5602   | 7593   | 9700   | 11753  | 13895  | 15991  | 18125  | 20337  |  |
| 16-100         | 5200           | 7900   | 10600  | 13400  | 16100  | 18800  | 21600  | 24300  | 27000  |  |
| 18-100         | 10000          | 16100  | 22200  | 28300  | 34500  | 41300  | 48000  | 54500  | 60000  |  |
| 20-100         | 20000          | 32000  | 43000  | 54500  | 66000  | 78000  | 89000  | 100500 | 112000 |  |
| 30-100         | 30000          | 48000  | 64500  | 81750  | 99000  | 117000 | 133500 | 150750 | 168000 |  |
| 60-100         | 67602          | 102031 | 135487 | 173262 | 208807 | 245953 | 283879 | 319645 | 356977 |  |

For spring return torques see pages 7/8



**Spring Return Torque Outputs - Metric Units Nm**

| Actuator Model | Position of air OR spring return stroke | Pressure (bar) |        |        |        |        |         |         |         |         |         |         |         |
|----------------|---|----------------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
|                |   | 1.7            | 2.0    | 2.4    | 2.8    | 3.1    | 3.5     | 3.8     | 4.1     | 4.5     | 4.8     | 5.2     | 5.5     |
| 01-120         | Start                                   |                |        |        |        |        | 1.5     |         | 1.7     |         | 1.9     |         | 2.3     |
|                | Finish                                  |                |        |        |        |        | 0.9     |         | 1.1     |         | 1.5     |         | 1.8     |
| 02-120         | Start                                   |                |        |        |        |        | 3.0     | 3.4     | 3.6     | 3.8     | 4.2     | 4.4     | 4.7     |
|                | Finish                                  |                |        |        |        |        | 1.4     | 1.7     | 2.0     | 2.4     | 2.8     | 3.3     | 3.7     |
| 03-120-5600    | Start                                   | 2.8            | 3.4    | 4.1    | 4.8    | 5.3    | 5.7     |         |         |         |         |         |         |
|                | Finish                                  | 2.1            | 2.8    | 3.5    | 4.2    | 4.8    | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     |
| 03-120         | Start                                   |                |        |        |        |        | 6.3     | 6.9     | 7.5     | 8.1     | 8.9     | 9.5     | 10.3    |
|                | Finish                                  |                |        |        |        |        | 4.1     | 4.7     | 5.5     | 6.4     | 7.2     | 7.8     | 8.7     |
| 05-120         | Start                                   |                |        |        |        |        | 13.0    | 14.1    | 15.3    | 16.4    | 18.1    | 19.2    | 20.9    |
|                | Finish                                  |                |        |        |        |        | 8.5     | 9.6     | 11.3    | 13.0    | 14.7    | 15.8    | 17.5    |
| 07-120-4000    | Start                                   | 9.0            | 11.9   | 15.3   | 18.6   | 22.0   |         |         |         |         |         |         |         |
|                | Finish                                  | 5.1            | 8.5    | 11.9   | 15.3   | 18.0   | 18.0    | 18.0    | 18.0    | 18.0    | 18.0    | 18.0    | 18.0    |
| 07-120         | Start                                   |                |        |        |        |        | 30.5    | 33.9    | 37.3    | 40.7    | 43.5    | 46.9    | 50.8    |
|                | Finish                                  |                |        |        |        |        | 19.8    | 23.7    | 27.1    | 30.5    | 34.4    | 38.4    | 42.4    |
| 08-120         | Start                                   |                |        |        |        |        | 52.7    | 57.2    | 61.7    | 67.2    | 72.7    | 77.0    | 81.3    |
|                | Finish                                  |                |        |        |        |        | 36.8    | 41.3    | 45.8    | 51.4    | 56.9    | 61.2    | 65.5    |
| 09-120-4200    | Start                                   | 26.0           | 31.6   | 37.3   | 44.1   | 50.8   |         |         |         |         |         |         |         |
|                | Finish                                  | 14.7           | 21.5   | 28.2   | 35.0   | 41.8   | 41.8    | 41.8    | 41.8    | 41.8    | 41.8    | 41.8    | 41.8    |
| 09-120         | Start                                   |                |        |        |        |        | 61.0    | 67.8    | 74.6    | 81.9    | 89.3    | 96.6    | 104.0   |
|                | Finish                                  |                |        |        |        |        | 50.3    | 56.5    | 63.8    | 71.2    | 79.1    | 86.4    | 93.8    |
| 10-120-5800    | Start                                   | 56.0           | 65.0   | 77.0   | 89.0   | 97.0   | 108.0   |         |         |         |         |         |         |
|                | Finish                                  | 41.8           | 52.0   | 64.0   | 77.2   | 86.9   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   | 100.0   |
| 10-120         | Start                                   |                |        |        |        |        | 107.0   | 115.5   | 124.0   | 136.0   | 145.0   | 155.9   | 164.0   |
|                | Finish                                  |                |        |        |        |        | 78.0    | 90.0    | 102.0   | 114.6   | 124.0   | 134.9   | 143.0   |
| 12-120-4300    | Start                                   | 54.0           | 68.9   | 83.6   |        |        |         |         |         |         |         |         |         |
|                | Finish                                  | 42.9           | 57.6   | 72.3   | 72.3   | 72.3   | 72.3    | 72.3    | 72.3    | 72.3    | 72.3    | 72.3    | 72.3    |
| 12-120-4400    | Start                                   |                |        | 89.3   | 103.0  | 117.0  | 132.0   | 147.0   | 161.0   | 176.0   | 191.0   |         |         |
|                | Finish                                  |                |        | 66.1   | 80.2   | 94.9   | 110.0   | 124.0   | 139.0   | 154.0   | 168.0   | 168.0   | 168.0   |
| 12-120         | Start                                   |                |        |        |        |        | 145.0   | 160.0   | 176.0   | 191.0   | 206.0   | 221.0   | 238.0   |
|                | Finish                                  |                |        |        |        |        | 111.0   | 127.0   | 142.0   | 158.0   | 174.0   | 189.0   | 204.0   |
| 14-120-4900    | Start                                   | 192.0          | 220.0  | 249.0  | 288.0  | 322.0  | 356.0   | 390.0   | 424.0   | 469.0   | 497.0   | 529.0   | 529.0   |
|                | Finish                                  | 119.0          | 158.0  | 186.0  | 220.0  | 254.0  | 288.0   | 322.0   | 356.0   | 390.0   | 418.0   | 447.0   | 447.0   |
| 14-120         | Start                                   |                |        |        |        |        | 374.0   | 408.0   | 442.0   | 479.0   | 517.0   | 554.0   | 588.0   |
|                | Finish                                  |                |        |        |        |        | 249.0   | 290.0   | 330.0   | 367.0   | 406.0   | 443.0   | 478.0   |
| 14-120-5000    | Start                                   | 172.0          | 208.0  | 237.0  |        |        |         |         |         |         |         |         |         |
|                | Finish                                  | 140.0          | 174.0  | 198.0  | 198.0  | 198.0  | 198.0   | 198.0   | 198.0   | 198.0   | 198.0   | 198.0   | 198.0   |
| 15-120         | Start                                   |                |        |        |        |        | 614.0   | 680.0   | 752.0   | 801.0   | 848.0   | 914.0   | 962.0   |
|                | Finish                                  |                |        |        |        |        | 392.0   | 392.0   | 522.0   | 590.0   | 656.0   | 723.0   | 790.0   |
| 16-120-6100    | Start                                   | 359.0          | 428.0  | 497.0  |        |        |         |         |         |         |         |         |         |
|                | Finish                                  | 245.0          | 333.0  | 421.0  | 421.0  | 421.0  | 421.0   | 421.0   | 421.0   | 421.0   | 421.0   | 421.0   | 421.0   |
| 16-120-6000    | Start                                   |                |        | 514.0  | 583.0  | 652.0  | 722.0   |         |         |         |         |         |         |
|                | Finish                                  |                |        | 404.0  | 492.0  | 580.0  | 668.0   | 668.0   | 668.0   | 668.0   | 668.0   | 668.0   | 668.0   |
| 16-120         | Start                                   |                |        |        |        |        | 864.0   | 939.0   | 1004.0  | 1097.0  | 1165.0  | 1256.0  | 1321.0  |
|                | Finish                                  |                |        |        |        |        | 576.0   | 660.0   | 742.0   | 832.0   | 906.0   | 1002.0  | 1081.0  |
| 18-120-7000    | Start                                   | 807.0          | 970.0  | 1182.0 | 1260.0 |        |         |         |         |         |         |         |         |
|                | Finish                                  | 484.0          | 736.0  | 967.0  | 1040.0 | 1040.0 | 1040.0  | 1040.0  | 1040.0  | 1040.0  | 1040.0  | 1040.0  | 1040.0  |
| 18-120         | Start                                   |                |        |        | 1457.0 | 1637.0 | 1875.0  | 2053.0  | 2206.0  | 2426.0  | 2585.0  | 2800.0  | 2954.0  |
|                | Finish                                  |                |        |        | 874.0  | 1036.0 | 1250.0  | 1441.0  | 1630.0  | 1840.0  | 2011.0  | 2234.0  | 2417.0  |
| 20-120-8000    | Start                                   | 1621.0         | 1940.0 | 2325.0 | 2692.0 |        |         |         |         |         |         |         |         |
|                | Finish                                  | 1025.0         | 1362.0 | 1763.0 | 2203.0 | 2203.0 | 2203.0  | 2203.0  | 2203.0  | 2203.0  | 2203.0  | 2203.0  | 2203.0  |
| 20-120-7300    | Start                                   |                |        |        | 2788.0 | 3072.0 | 3471.0  | 3739.0  | 4023.0  |         |         |         |         |
|                | Finish                                  |                |        |        | 1958.0 | 2271.0 | 2632.0  | 2983.0  | 3291.0  | 3291.0  | 3291.0  | 3291.0  | 3291.0  |
| 20-120         | Start                                   |                |        |        |        |        |         |         | 4121.0  | 4514.0  | 4798.0  | 5181.0  | 5456.0  |
|                | Finish                                  |                |        |        |        |        |         |         | 3046.0  | 3423.0  | 3732.0  | 4133.0  | 4464.0  |
| 30-120-7600    | Start                                   | 2433.0         | 2878.0 | 3466.0 | 4038.0 |        |         |         |         |         |         |         |         |
|                | Finish                                  | 1622.0         | 2127.0 | 2696.0 | 3304.0 | 3304.0 | 3304.0  | 3304.0  | 3304.0  | 3304.0  | 3304.0  | 3304.0  | 3304.0  |
| 30-120-8300    | Start                                   |                |        |        | 4112.0 | 4554.0 | 5113.0  |         |         |         |         |         |         |
|                | Finish                                  |                |        |        | 3118.0 | 3542.0 | 4183.0  | 4183.0  | 4183.0  | 4183.0  | 4183.0  | 4183.0  | 4183.0  |
| 30-120-7800    | Start                                   |                |        |        |        |        | 5237.0  | 5676.0  | 6072.0  | 6648.0  |         |         |         |
|                | Finish                                  |                |        |        |        |        | 3871.0  | 4304.0  | 4844.0  | 5440.0  | 5440.0  | 5440.0  | 5440.0  |
| 30-120         | Start                                   |                |        |        |        |        |         |         |         | 6771.0  | 7179.0  | 7772.0  | 8184.0  |
|                | Finish                                  |                |        |        |        |        |         |         |         | 5134.0  | 5598.0  | 6200.0  | 6696.0  |
| 60-120-8400    | Start                                   |                |        |        | 8343.0 | 9506.0 | 10669.0 |         |         |         |         |         |         |
|                | Finish                                  |                |        |        | 6965.0 | 7936.0 | 8907.0  | 8907.0  | 8907.0  | 8907.0  | 8907.0  | 8907.0  | 8907.0  |
| 60-120-8500    | Start                                   |                |        |        |        |        | 10669.0 | 11763.0 | 12858.0 | 13996.0 |         |         |         |
|                | Finish                                  |                |        |        |        |        | 8907.0  | 9821.0  | 10734.0 |         | 11684.0 | 11684.0 | 11684.0 |
| 60-120         | Start                                   |                |        |        |        |        |         |         |         | 14001.0 | 15145.0 | 16313.0 | 17437.0 |
|                | Finish                                  |                |        |        |        |        |         |         |         | 11689.0 | 12644.0 | 13619.0 | 14558.0 |

Torque outputs identical for counter-clockwise models. *Italic* figures apply to spring end torque only - air end torque will be greater.

For double acting torques see page 6

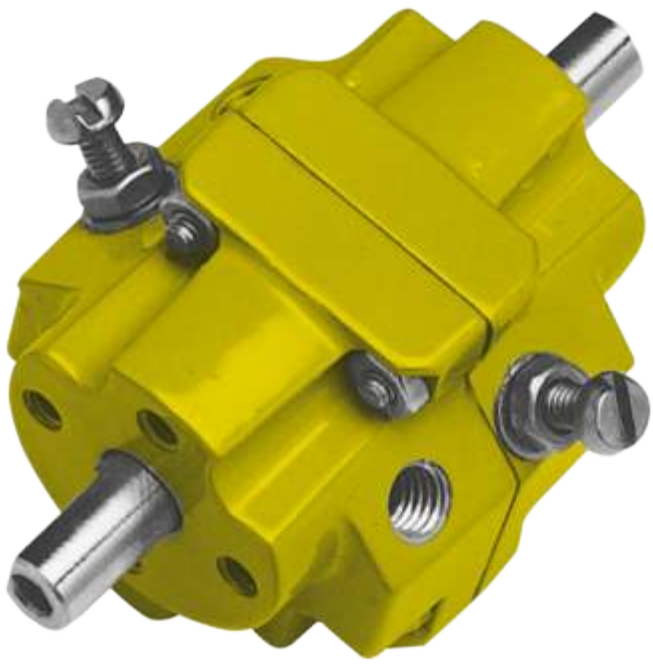
## Spring Return Torque Outputs - English Units lbf ins

| Actuator Model | Position of air OR spring return stroke | Pressure (psi) |       |       |       |       |       |        |        |        |        |        |        |
|----------------|---|----------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
|                |   | 25             | 30    | 35    | 40    | 45    | 50    | 55     | 60     | 65     | 70     | 75     | 80     |
| 01-120         | Start                                   |                |       |       |       |       | 13    |        | 15     |        | 17     |        | 20     |
|                | Finish                                  |                |       |       |       |       | 8     |        | 10     |        | 13     |        | 16     |
| 02-120         | Start                                   |                |       |       |       |       | 27    | 30     | 32     | 34     | 37     | 39     | 42     |
|                | Finish                                  |                |       |       |       |       | 12    | 15     | 18     | 21     | 25     | 29     | 33     |
| 03-120-5600    | Start                                   | 25             | 30    | 36    | 42    | 47    | 50    |        |        |        |        |        |        |
|                | Finish                                  | 19             | 25    | 31    | 37    | 42    | 45    | 45     | 45     | 45     | 45     | 45     | 45     |
| 03-120         | Start                                   |                |       |       |       |       | 56    | 61     | 66     | 71     | 79     | 84     | 91     |
|                | Finish                                  |                |       |       |       |       | 37    | 41     | 49     | 56     | 64     | 69     | 77     |
| 05-120         | Start                                   |                |       |       |       |       | 115   | 125    | 135    | 145    | 160    | 170    | 185    |
|                | Finish                                  |                |       |       |       |       | 75    | 85     | 100    | 115    | 130    | 140    | 155    |
| 07-120-4000    | Start                                   | 80             | 105   | 135   | 165   | 195   |       |        |        |        |        |        |        |
|                | Finish                                  | 45             | 75    | 105   | 135   | 160   | 160   | 160    | 160    | 160    | 160    | 160    | 160    |
| 07-120         | Start                                   |                |       |       |       |       | 270   | 300    | 330    | 360    | 385    | 415    | 450    |
|                | Finish                                  |                |       |       |       |       | 175   | 210    | 240    | 270    | 305    | 340    | 375    |
| 08-120         | Start                                   |                |       |       |       |       | 466   | 506    | 546    | 595    | 644    | 682    | 720    |
|                | Finish                                  |                |       |       |       |       | 326   | 366    | 406    | 455    | 504    | 542    | 580    |
| 09-120-4200    | Start                                   | 230            | 280   | 330   | 390   | 450   |       |        |        |        |        |        |        |
|                | Finish                                  | 130            | 190   | 250   | 310   | 370   | 370   | 370    | 370    | 370    | 370    | 370    | 370    |
| 09-120         | Start                                   |                |       |       |       |       | 540   | 600    | 660    | 725    | 790    | 855    | 925    |
|                | Finish                                  |                |       |       |       |       | 445   | 500    | 565    | 630    | 700    | 765    | 830    |
| 10-120-5800    | Start                                   | 500            | 587   | 683   | 760   | 886   | 953   |        |        |        |        |        |        |
|                | Finish                                  | 366            | 472   | 568   | 645   | 780   | 847   | 847    | 847    | 847    | 847    | 847    | 847    |
| 10-120         | Start                                   |                |       |       |       |       | 950   | 1025   | 1100   | 1190   | 1280   | 1365   | 1450   |
|                | Finish                                  |                |       |       |       |       | 690   | 795    | 900    | 1000   | 1100   | 1185   | 1270   |
| 12-120-4300    | Start                                   | 480            | 610   | 740   |       |       |       |        |        |        |        |        |        |
|                | Finish                                  | 380            | 510   | 640   | 640   | 640   | 640   | 640    | 640    | 640    | 640    | 640    | 640    |
| 12-120-4400    | Start                                   |                |       | 790   | 910   | 1040  | 1170  | 1300   | 1430   | 1560   | 1690   |        |        |
|                | Finish                                  |                |       | 585   | 710   | 840   | 970   | 1100   | 1230   | 1360   | 1490   | 1490   | 1490   |
| 12-120         | Start                                   |                |       |       |       |       | 1280  | 1415   | 1555   | 1690   | 1825   | 1960   | 2110   |
|                | Finish                                  |                |       |       |       |       | 985   | 1125   | 1260   | 1400   | 1540   | 1670   | 1810   |
| 14-120-4900    | Start                                   | 1700           | 1950  | 2200  | 2550  | 2850  | 3150  | 3450   | 3750   | 4150   | 4400   | 4680   | 4680   |
|                | Finish                                  | 1050           | 1400  | 1650  | 1950  | 2250  | 2550  | 2850   | 3150   | 3450   | 3700   | 3960   | 3960   |
| 14-120         | Start                                   |                |       |       |       |       | 3310  | 3610   | 3915   | 4240   | 4580   | 4900   | 5200   |
|                | Finish                                  |                |       |       |       |       | 2205  | 2570   | 2920   | 3250   | 3595   | 3920   | 4230   |
| 14-120-5000    | Start                                   | 1520           | 1840  | 2100  |       |       |       |        |        |        |        |        |        |
|                | Finish                                  | 1240           | 1540  | 1750  | 1750  | 1750  | 1750  | 1750   | 1750   | 1750   | 1750   | 1750   | 1750   |
| 15-120         | Start                                   |                |       |       |       |       | 5434  | 6018   | 6656   | 7089   | 7505   | 8090   | 8514   |
|                | Finish                                  |                |       |       |       |       | 3469  | 4098   | 4620   | 5222   | 5806   | 6399   | 6992   |
| 16-120-6100    | Start                                   | 3178           | 3790  | 4401  |       |       |       |        |        |        |        |        |        |
|                | Finish                                  | 2172           | 2950  | 3729  | 3729  | 3729  | 3729  | 3729   | 3729   | 3729   | 3729   | 3729   | 3729   |
| 16-120-6000    | Start                                   |                |       | 4551  | 5163  | 5774  | 6386  |        |        |        |        |        |        |
|                | Finish                                  |                |       | 3579  | 4357  | 5136  | 5914  | 5914   | 5914   | 5914   | 5914   | 5914   | 5914   |
| 16-120         | Start                                   |                |       |       |       |       | 7646  | 8310   | 8885   | 9708   | 10310  | 11116  | 11691  |
|                | Finish                                  |                |       |       |       |       | 5098  | 5841   | 6567   | 7363   | 8018   | 8868   | 9567   |
| 18-120-7000    | Start                                   | 7142           | 8585  | 10461 | 11151 |       |       |        |        |        |        |        |        |
|                | Finish                                  | 4283           | 6514  | 8558  | 9204  | 9204  | 9204  | 9204   | 9204   | 9204   | 9204   | 9204   | 9204   |
| 18-120         | Start                                   |                |       |       | 12894 | 14487 | 16594 | 18169  | 19523  | 21470  | 22877  | 24780  | 26143  |
|                | Finish                                  |                |       |       | 7735  | 9169  | 11063 | 12753  | 14426  | 16284  | 17797  | 19771  | 21390  |
| 20-120-8000    | Start                                   | 14346          | 17169 | 20576 | 23824 |       |       |        |        |        |        |        |        |
|                | Finish                                  | 9071           | 12054 | 15603 | 19497 | 19497 | 19497 | 19497  | 19497  | 19497  | 19497  | 19497  | 19497  |
| 20-120-7300    | Start                                   |                |       |       | 24674 | 27187 | 30718 | 33090  | 35604  |        |        |        |        |
|                | Finish                                  |                |       |       | 17328 | 20098 | 23293 | 26400  | 29125  | 29125  | 29125  | 29125  | 29125  |
| 20-120         | Start                                   |                |       |       |       |       |       |        | 36471  | 39949  | 42462  | 45852  | 48286  |
|                | Finish                                  |                |       |       |       |       |       |        | 26957  | 30294  | 33028  | 36577  | 39506  |
| 30-120-7600    | Start                                   | 16797          | 25470 | 30674 | 35736 |       |       |        |        |        |        |        |        |
|                | Finish                                  | 9394           | 18824 | 23860 | 29240 | 29240 | 29240 | 29240  | 29240  | 29240  | 29240  | 29240  | 29240  |
| 30-120-8300    | Start                                   |                |       |       | 36391 | 40303 | 45250 |        |        |        |        |        |        |
|                | Finish                                  |                |       |       | 27594 | 31347 | 37020 | 37020  | 37020  | 37020  | 37020  | 37020  | 37020  |
| 30-120-7800    | Start                                   |                |       |       |       |       | 46347 | 50233  | 53737  | 58835  |        |        |        |
|                | Finish                                  |                |       |       |       |       | 34258 | 38090  | 42869  | 48144  | 48144  | 48144  | 48144  |
| 30-120         | Start                                   |                |       |       |       |       |       |        | 59923  | 63693  | 68782  | 72428  |        |
|                | Finish                                  |                |       |       |       |       |       |        | 45436  | 49542  | 54870  | 59260  |        |
| 60-120-8400    | Start                                   |                |       |       | 73841 | 84134 | 94428 |        |        |        |        |        |        |
|                | Finish                                  |                |       |       | 61647 | 70240 | 78834 | 78834  | 78834  | 78834  | 78834  | 78834  | 78834  |
| 60-120-8500    | Start                                   |                |       |       |       |       | 94428 | 104114 | 113800 | 123872 |        |        |        |
|                | Finish                                  |                |       |       |       |       | 78834 | 86921  | 95007  | 103416 | 103416 | 103416 | 103416 |
| 60-120         | Start                                   |                |       |       |       |       |       |        |        | 123872 | 134045 | 144379 | 154333 |
|                | Finish                                  |                |       |       |       |       |       |        |        | 103416 | 111909 | 120537 | 128847 |

Torque outputs identical for counter-clockwise models. *Italic* figures apply to spring end torque only - air end torque will be greater.

For double acting torques see page 6

# Model OM0 (miniature)



### Specification

#### Output Torque

8.0 lbf ins/0.9 Nm  
at 100 psi/7 bar

#### Angle of Travel (adjustable)

80° - 100°  
(restricted travel  
versions available)

#### Displaced Volume

0.15 in<sup>3</sup>/2.4 cm<sup>3</sup>

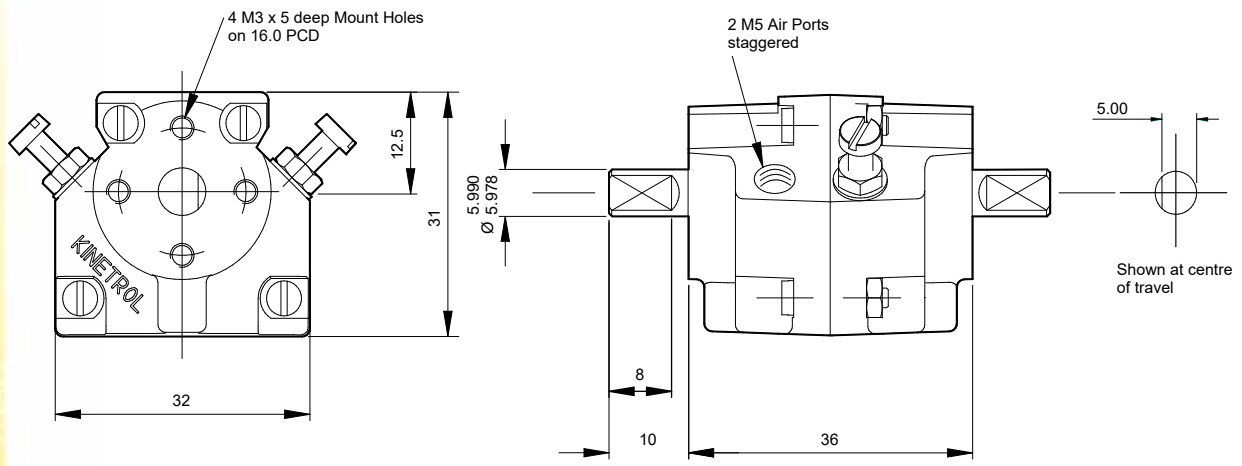
#### Finish

Epoxy stove enamel

#### Weight

0.26 lb/0.12 kg

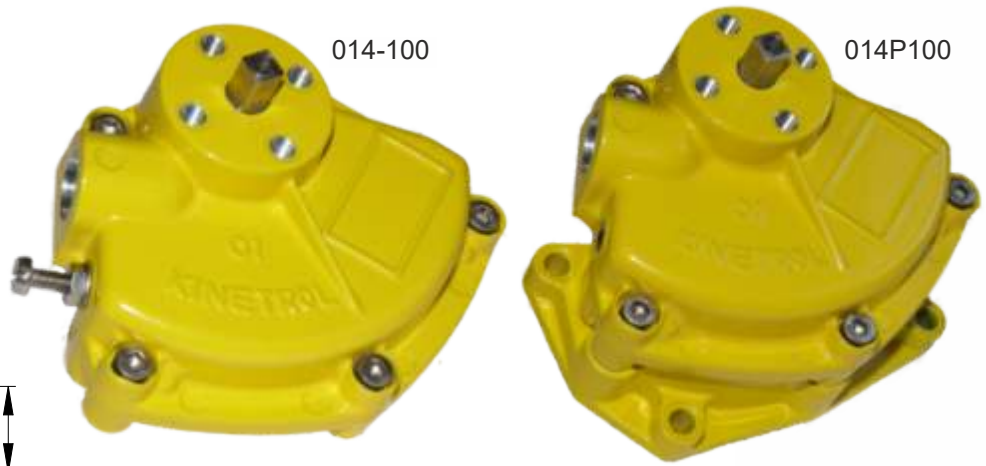
For further information  
see General Specification  
on page 5.



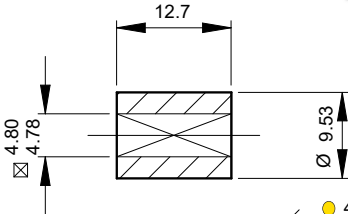
### Options

- Code identification see page 30
- Torque outputs see page 6
- English dimensions see pages 57/58

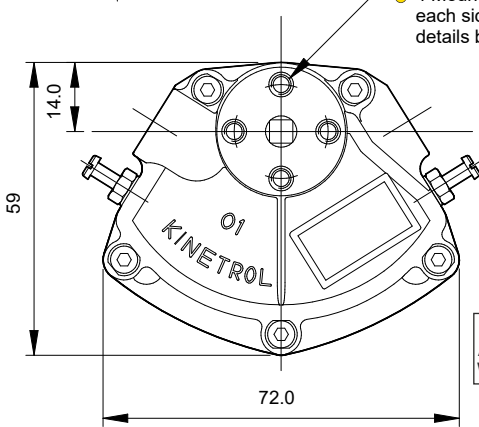




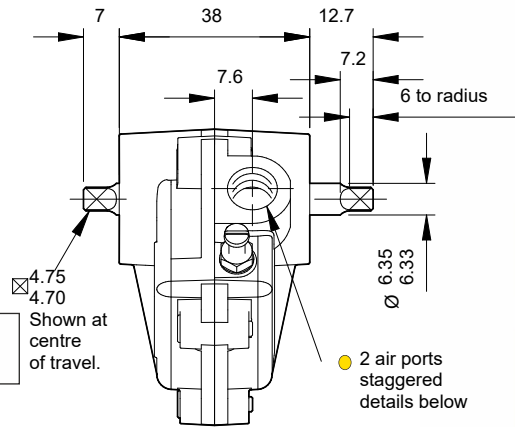
Standard Coupling  
(supplied with both actuator types  
weight 0.2 oz/0.005 kg)



4 Mount Holes  
each side  
details below

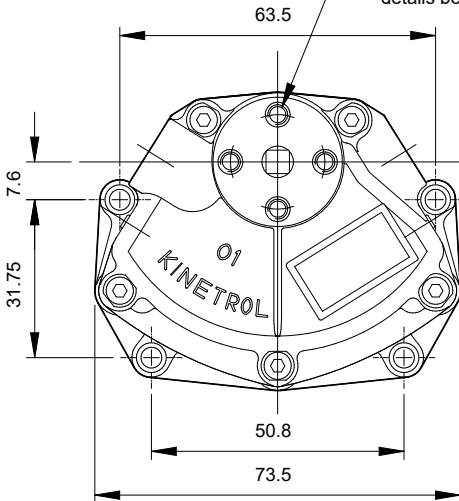


ACTUATOR 014-100  
Angle of travel: 78° - 100°  
Weight 0.62 lb/0.28 kg

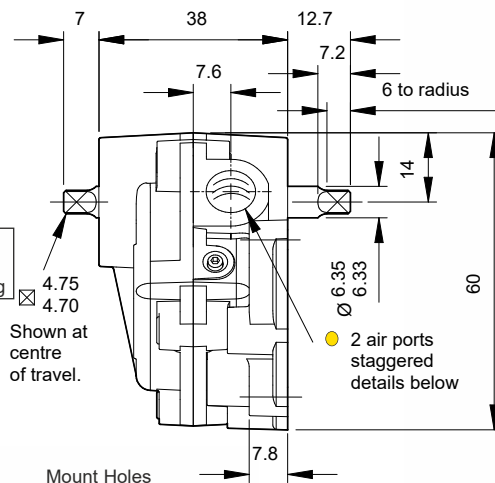


2 air ports  
staggered  
details below

4 Aux. Mount Holes  
each side  
details below



ACTUATOR 014P100  
Angle of travel: 90°  
Weight 0.77 lb/0.34 kg



2 air ports  
staggered  
details below

**Air Port/Mount Hole Details**

| Model   | Air Ports                     | Mount Holes                            |
|---------|-------------------------------|--|
| 014-100 | G <sup>1</sup> / <sub>8</sub> | 4 x M4 x 6 deep on 19.0 PCD            |
| 017-100 | 1/8 NPT                       | 4 x 8-32 UNC x 0.25" deep on 0.75" PCD |
| 014P100 | G <sup>1</sup> / <sub>8</sub> | 4 x Ø4.1 (M4 clearance)                |

**Specification**

**Output Torque**

58 lbf ins/6.7 Nm  
at 100 psi/7 bar

**Angle of Travel**

See Drawings  
(restricted travel  
versions available)

**Displaced Volume**

1.00 in<sup>3</sup>/16.5 cm<sup>3</sup>

**Finish**

Epoxy stove enamel

**Weight**

See Drawings

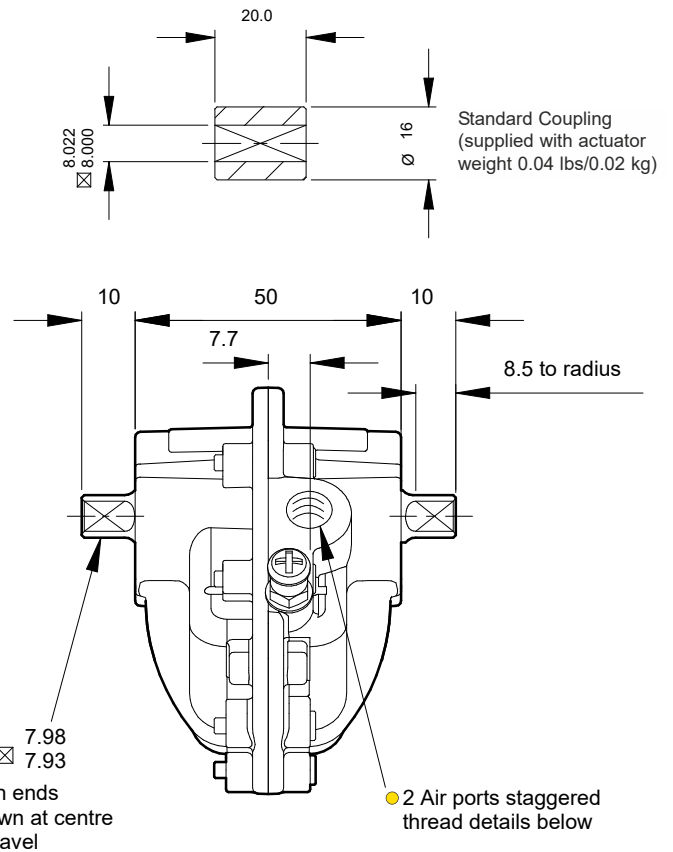
For further information  
see General Specification  
on page 5.

**Options**

- Conversion kit between two types. SP870
- Fail safe spring return units - clockwise or counter clockwise see pages 27/28 (springs mounted above the actuator)
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57/58 for English dimensions and TD121 for dimensions of spring options



# Model 02



## Specification

### Output Torque

106 lbf ins/12.1 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel versions available)

### Displaced Volume

1.89 in<sup>3</sup>/31 cm<sup>3</sup>

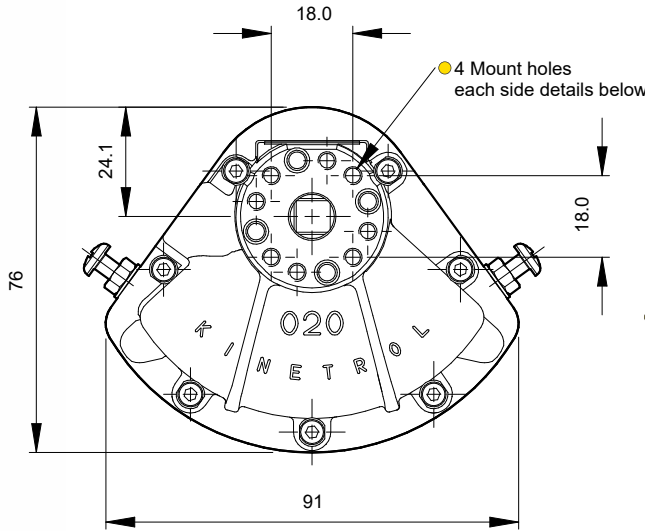
### Finish

Epoxy stove enamel

### Weight

0.97 lb/0.44 kg  
(excluding coupling)

For further information see General Specification on page 5.



### Air Port/Mount Hole Details

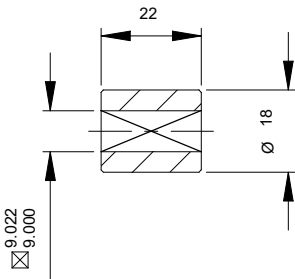
| Model   | Air Ports                     | Mount Holes                            |
|---------|-------------------------------|--|
| 024-100 | G <sup>1</sup> / <sub>8</sub> | 4 x M4 x 8 deep on 25.5 PCD            |
| 027-100 | 1/ <sub>8</sub> NPT           | 4 x 8-32 UNC x 0.32" deep on 1.00" PCD |

Visual Red Indicator supplied as standard - see page 3

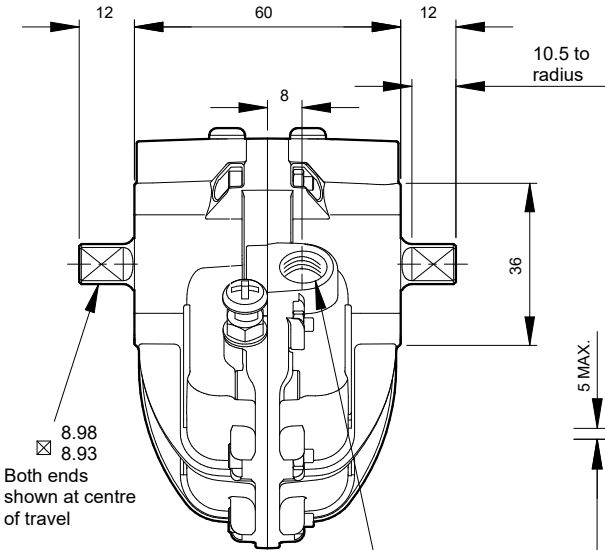
## Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27/28
- 180° model see pages 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-59 for English dimensions and dimensions of spring options
- ISO adaptor see page 26



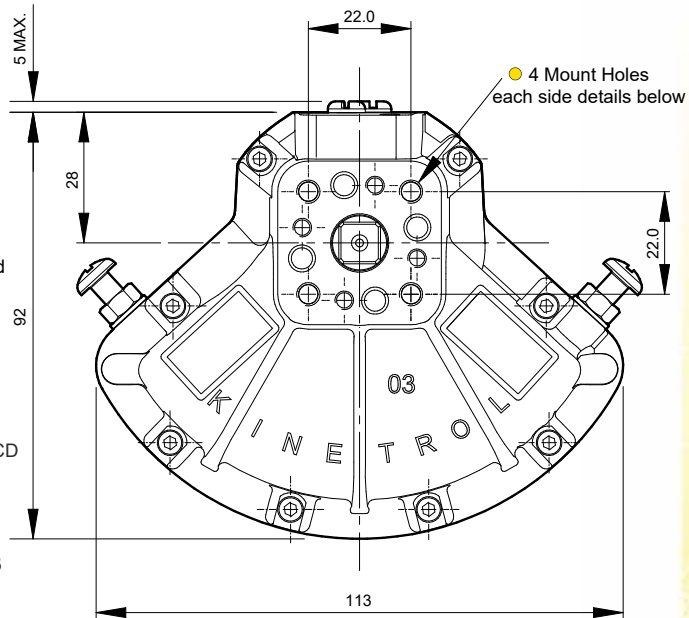


Standard Coupling  
(supplied with actuator  
weight 0.07 lbs/0.03 kg)



Both ends shown at centre of travel

2 Air ports staggered thread details below



4 Mount Holes each side details below

**Air Port/Mount Hole Details**

| Model   | Air Ports                     | Mount Holes                              |
|---------|-------------------------------|--|
| 034-100 | G <sup>1</sup> / <sub>8</sub> | 4 x M5 x 10 deep on 31.1 PCD             |
| 037-100 | 1/8 NPT                       | 4 x 10-24 UNC x 0.39" deep on 1.225" PCD |

Visual Red Indicator supplied as standard - see page 3

**Specification**

**Output Torque**

220 lbf ins/25.3 Nm  
at 100 psi/7 bar

**Angle of Travel (adjustable)**

80° - 100°  
(restricted travel versions available)

**Displaced Volume**

3.66 in<sup>3</sup>/60 cm<sup>3</sup>

**Finish**

Epoxy stove enamel

**Weight**

1.53 lb/0.70 kg  
(excluding coupling)

For further information see General Specification on page 5.

**Options**

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- Clear Cone position monitor see page 38
- 180° model see pages 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- ISO adaptor see page 26
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High temperature/Low temperature options see page 5

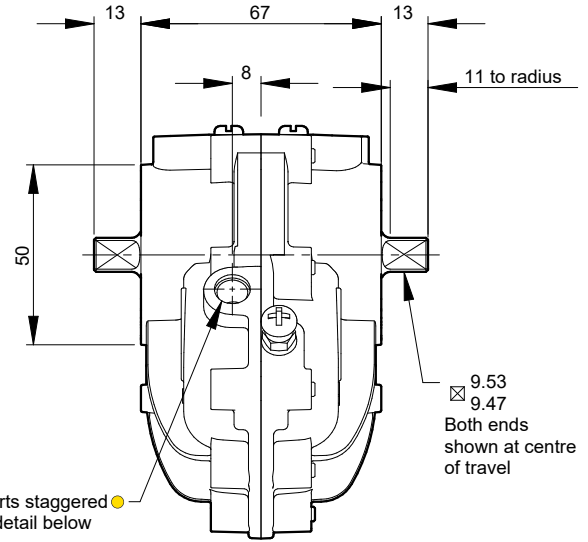
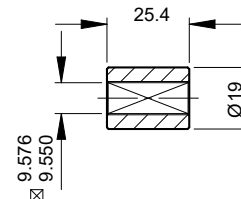




# Model 05



Standard Coupling  
(supplied with actuator  
weight 0.09 lbs/0.04 kg)



2 Air ports staggered  
thread detail below

9.53  
9.47  
Both ends  
shown at centre  
of travel

## Specification

### Output Torque

440 lbf ins/50.5 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

84° - 100°  
(restricted travel  
versions available)

### Displaced Volume

6.9 in<sup>3</sup>/113 cm<sup>3</sup>

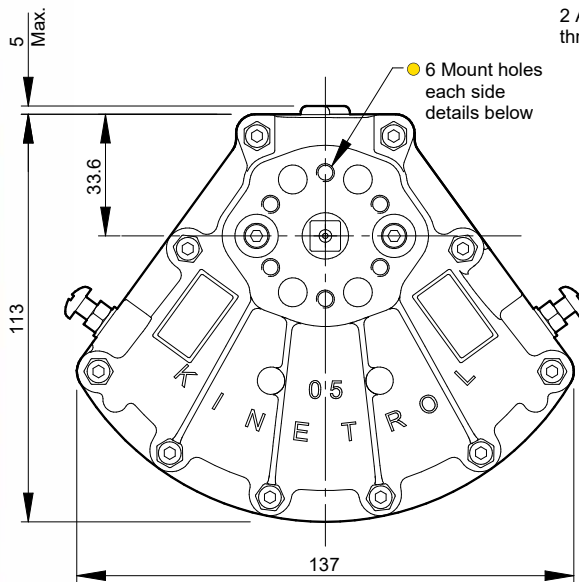
### Finish

Epoxy stove enamel

### Weight

3.46 lb/1.57 kg  
(excluding coupling)

For further information  
see General Specification  
on page 5.



6 Mount holes  
each side  
details below

### Air Port/Mount Hole Details

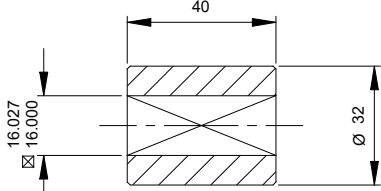
| Model   | Air Ports                     | Mount Holes                                 |
|---------|-------------------------------|---|
| 054-100 | G <sup>1</sup> / <sub>8</sub> | 6 x M5 x 10 deep on 34.9 PCD                |
| 057-100 | 1/ <sub>8</sub> NPT           | 6 x 10-24 UNC x 0.39"<br>deep on 1.375" PCD |

Visual Red Indicator supplied as standard - see page 3

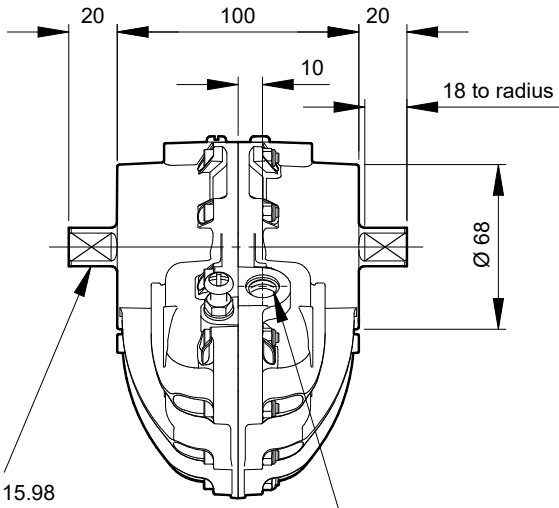
## Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner- full range of options including hazardous area see pages 43-45
- Clear Cone position monitor see page 38
- 180° model see pages 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- ISO adaptor see page 26
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High temperature / Low temperature options see page 5





Standard Coupling  
(supplied with actuator  
weight 0.37 lbs/0.17 kg)



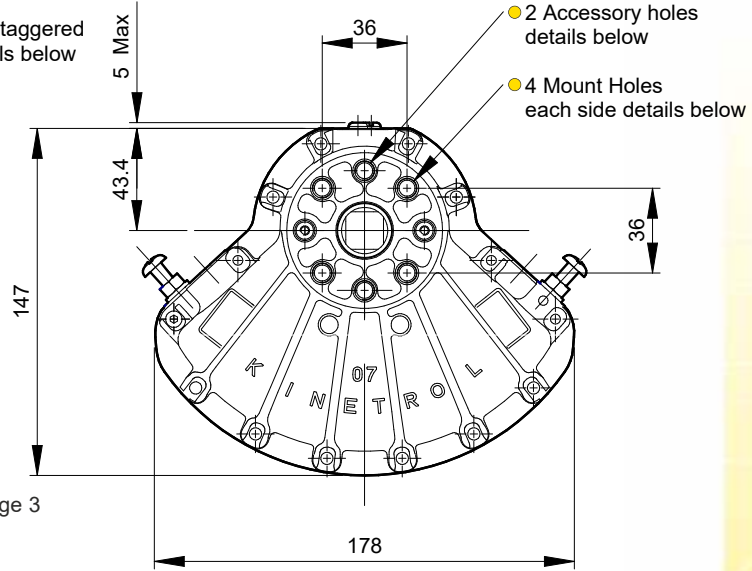
15.98  
15.93  
Both ends  
shown at centre  
of travel

2 Air ports staggered  
thread details below

**Air Port/Mount Hole Details**

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes  |
|---------|-------------------------------|--|
| 074-100 | G <sup>1</sup> / <sub>4</sub> | 4 x M8 x 16 deep on 50.9 PCD<br>2 x M8 x 16 deep on 50.8 PCD                             |
| 077-100 | 1/4 NPT                       | 4 x 5/16 -18 UNC x 0.63" deep on 2.00" PCD<br>2 x 5/16 -18 UNC x 0.63" deep on 2.00" PCD |

Visual Red Indicator supplied as standard - see page 3



**Options**

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner full range of options including hazardous area see pages 43-45
- Clear Cone position monitor see page 38
- 180° model see pages 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- ISO adaptor see page 26
- G<sup>3</sup>/<sub>8</sub> or 3/8 NPT air port option available - contact Kinetrol
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High temperature / Low temperature options see page 5

**Specification**

**Output Torque**

1080 lbf ins/124 Nm  
at 100 psi/7 bar

**Angle of Travel  
(adjustable)**

80° - 100°  
(restricted travel  
versions available)

**Displaced Volume**

18.3 in<sup>3</sup>/300 cm<sup>3</sup>

**Finish**

Epoxy stove enamel

**Weight**

3.97 lb/1.8 kg  
(excluding coupling)

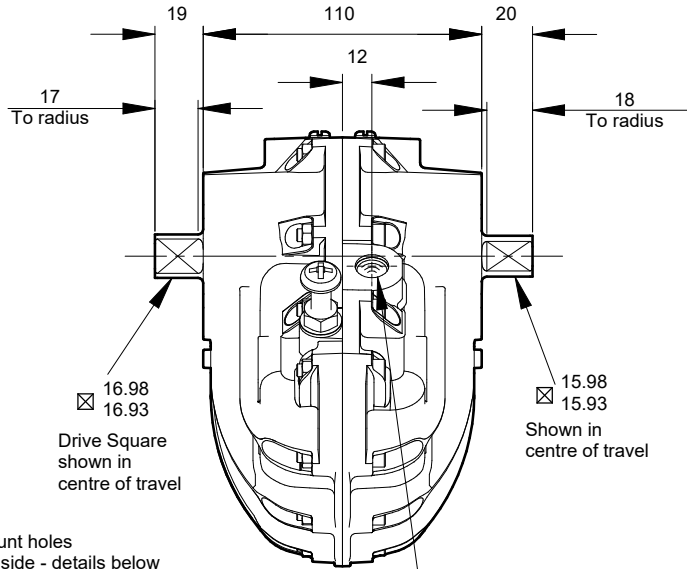
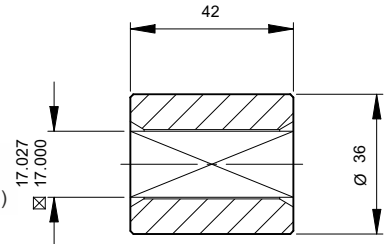
For further information  
see General  
Specification on  
page 5.



# Model 08



Standard Coupling  
(supplied with actuator  
weight 0.52 lbs/0.24 kg)



## Specification

### Output Torque

1740 lbf ins/199 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel  
versions available)

### Displaced Volume

29.6 in<sup>3</sup>/485 cm<sup>3</sup>

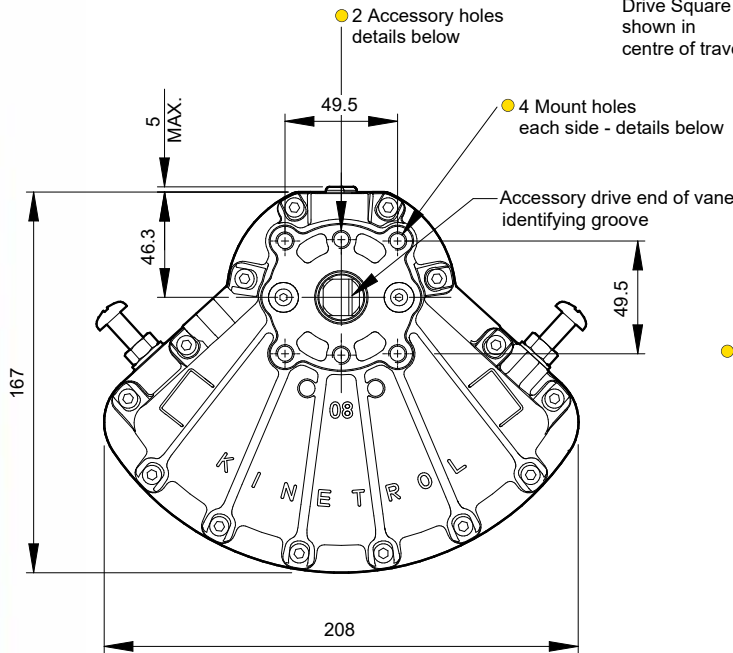
### Finish

Epoxy stove enamel

### Weight

5.60 lb/2.54 kg  
(excluding coupling)

For further information  
see General Specification  
on page 5.



● 2 Accessory holes  
details below

● 4 Mount holes  
each side - details below

Accessory drive end of vane  
identifying groove

● 2 Air ports staggered  
thread details below

### ● Air Port/Mount Hole Details

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes  |
|---------|-------------------------------|--|
| 084-100 | G <sup>1</sup> / <sub>4</sub> | 4 x M8 x 16 deep on 70.0 PCD<br>2 x M8 x 16 deep on 50.8 PCD                                   |
| 087-100 | 1/4 NPT                       | 4 x 5/16 -18 UNC x 0.63"<br>deep on 2.76" PCD<br>2 x 5/16 -18 UNC x 0.63"<br>deep on 2.00" PCD |

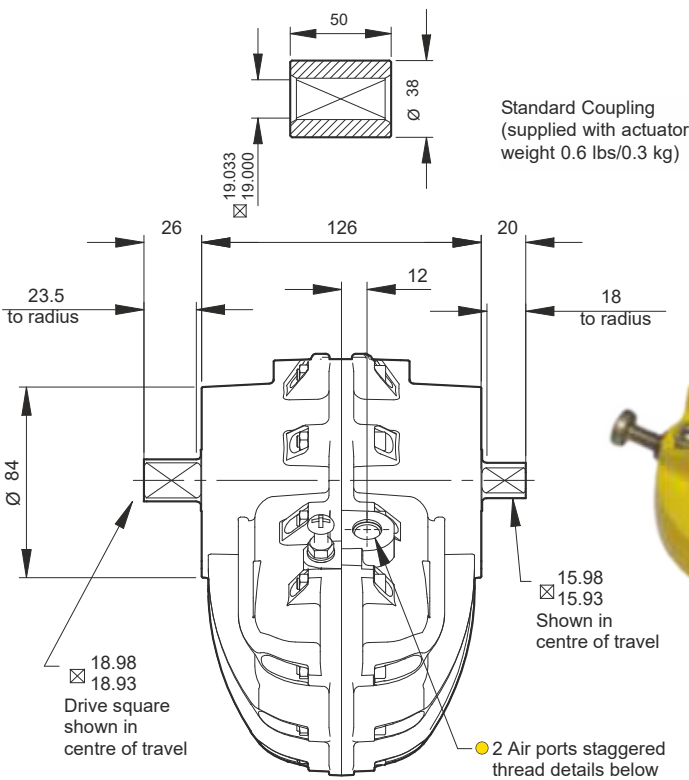
Visual Red Indicator supplied as standard - see page 3

## Options

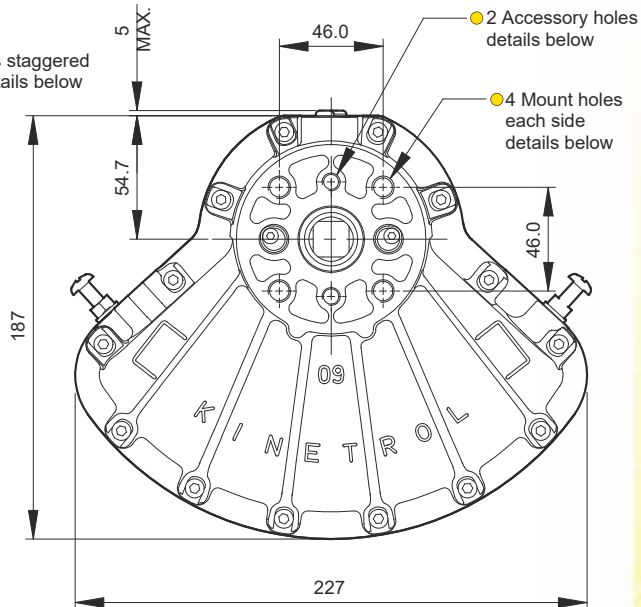
- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner - full range of options including hazardous area see pages 43-45
- Clear Cone position monitor see page 38
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- ISO adaptor see page 26
- G<sup>3</sup>/<sub>8</sub> or 3/8 NPT air port option available - contact Kinetrol
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High temperature / Low temperature options see page 5







Standard Coupling  
(supplied with actuator  
weight 0.6 lbs/0.3 kg)



**● Air Port/Mount Hole Details**

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes   |
|---------|-------------------------------|---|
| 094-100 | G <sup>1</sup> / <sub>4</sub> | 4 x M10 x 20 deep on 65.0 PCD<br>2 x M8 x 16 deep on 50.8 PCD                             |
| 097-100 | 1/4 NPT                       | 4 x 3/8 - 16 UNC x 0.79" deep on 2.56" PCD<br>2 x 5/16 - 18 UNC x 0.62" deep on 2.00" PCD |

Visual Red Indicator supplied as standard - see page 3

**Specification**

**Output Torque**

2280 lbf ins/261 Nm  
at 100 psi/7 bar

**Angle of Travel  
(adjustable)**

80° - 100°  
(restricted travel  
versions available)

**Displaced Volume**

39.3 in<sup>3</sup>/644 cm<sup>3</sup>

**Finish**

Epoxy stove enamel

**Weight**

8.52 lb/3.86 kg  
(excluding coupling)

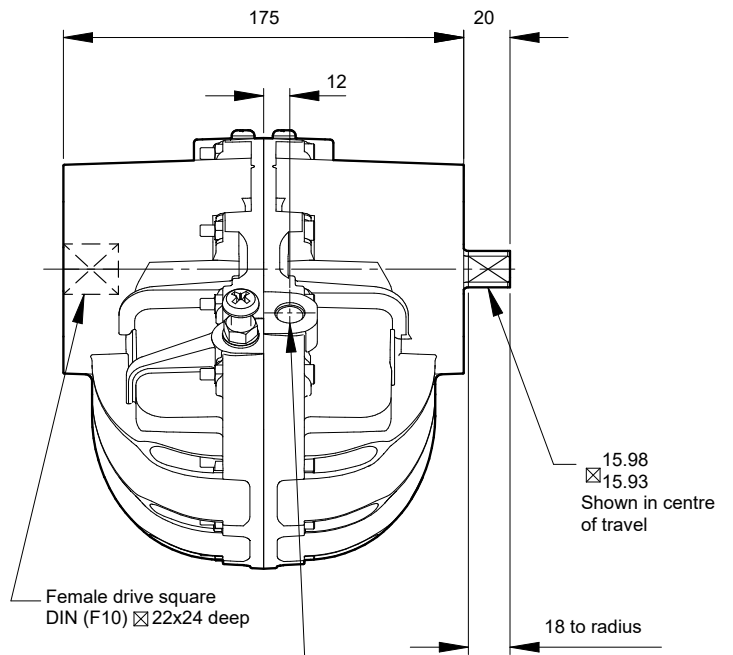
For further information  
see General  
Specification on page 5.

**Options**

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner full range of options including hazardous area see pages 43-45
- Clear Cone position monitor see page 38
- 180° model see pages 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- ISO adaptor see page 26
- G<sup>3</sup>/<sub>8</sub> or 3/8 NPT air port option available - contact Kinetrol
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High temperature / Low temperature options see page 5



# Model 10



## Specification

### Output Torque

3625 lbf ins/416 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

78° - 100°  
(restricted travel  
versions available)

### Displaced Volume

62.5 in<sup>3</sup>/1025 cm<sup>3</sup>

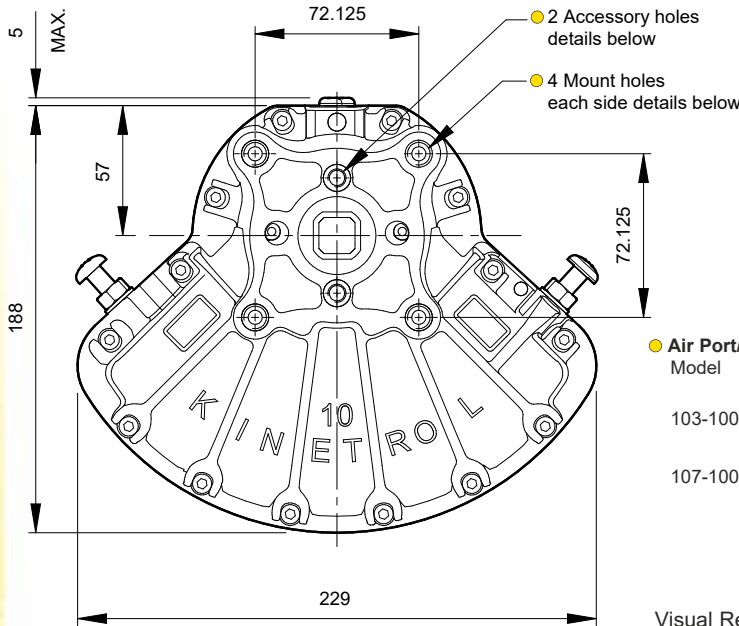
### Finish

Epoxy stove enamel

### Weight

11.9 lb/5.4 kg  
(no coupling)

For further information  
see General Specification  
on page 5.



### ● Air Port/Mount Hole Details

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes  |
|---------|-------------------------------|--|
| 103-100 | G <sup>1</sup> / <sub>4</sub> | 4 x M10 x 16 deep on 102.0 PCD<br>2 x M8 x 16 deep on 50.8 PCD                           |
| 107-100 | 1/4 NPT                       | 4 x 3/8 - 16 UNC x 0.63" deep on 4.02" PCD<br>2 x 3/8 - 16 UNC x 0.63" deep on 2.00" PCD |

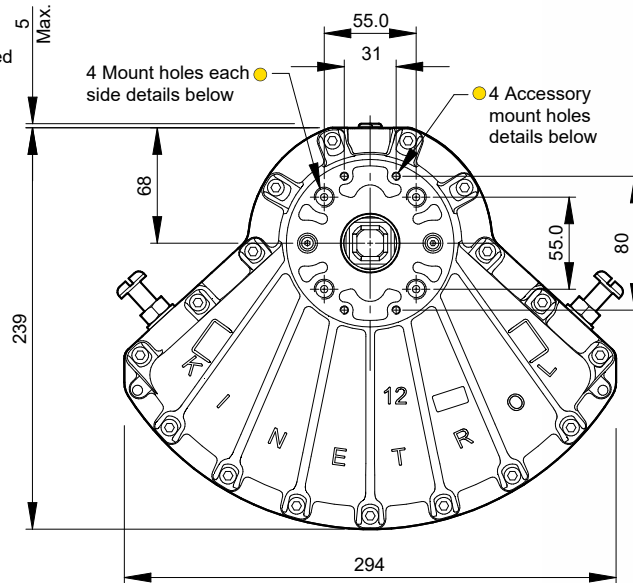
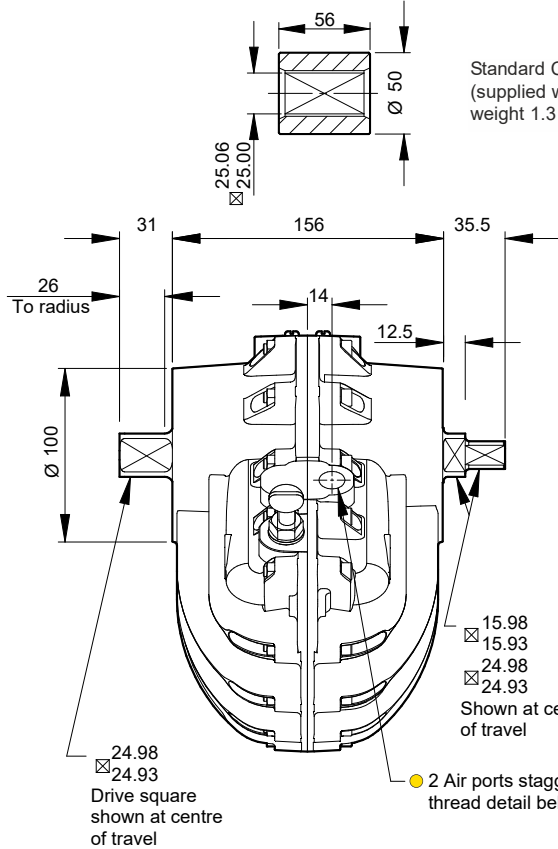
Visual Red Indicator supplied as standard - see page 3

## Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner- full range of options including hazardous area see pages 43-45
- Clear Cone position monitor see page 38
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High temperature / Low temperature options see page 5



Standard Coupling  
(supplied with actuator weight 1.3 lbs/0.6 kg)



#### Air Port/Mount Hole Details

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes                                 |
|---------|-------------------------------|---|
| 124-100 | G <sup>3</sup> / <sub>8</sub> | 4 x M12 x 24 deep on 77.8 PCD<br>4 x M5 x 10 deep                   |
| 127-100 | 3/8 NPT                       | 4 x 1/2 - 13 UNC x 0.94" deep on 3.06" PCD<br>4 x 10-24 x 3/8" deep |

Visual Red Indicator supplied as standard - see page 3

### Specification

#### Output Torque

5000 lbf ins/575 Nm  
at 100 psi/7 bar

#### Angle of Travel (adjustable)

80° - 102°  
(restricted travel versions available)

#### Displaced Volume

86 in<sup>3</sup>/1410 cm<sup>3</sup>

#### Finish

Epoxy stove enamel

#### Weight

14.8 lb/6.7 kg  
(excluding coupling)

For further information see General Specification on page 5.

### Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner - full range of options including hazardous area see pages 43-45
- 180° model see page 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- Accessory mount plate for positioners, switch boxes and clear cone monitor. See TD149.
- High Temperature / Low temperature options see page 5

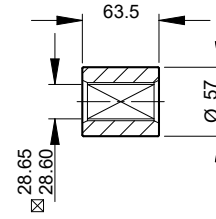




# Model 14



Standard Coupling  
(supplied with actuator  
weight 1.5 lbs/0.7 kg)



## Specification

### Output Torque

12000 lbf ins/1375 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel  
versions available)

### Displaced Volume

201 in<sup>3</sup>/3294 cm<sup>3</sup>

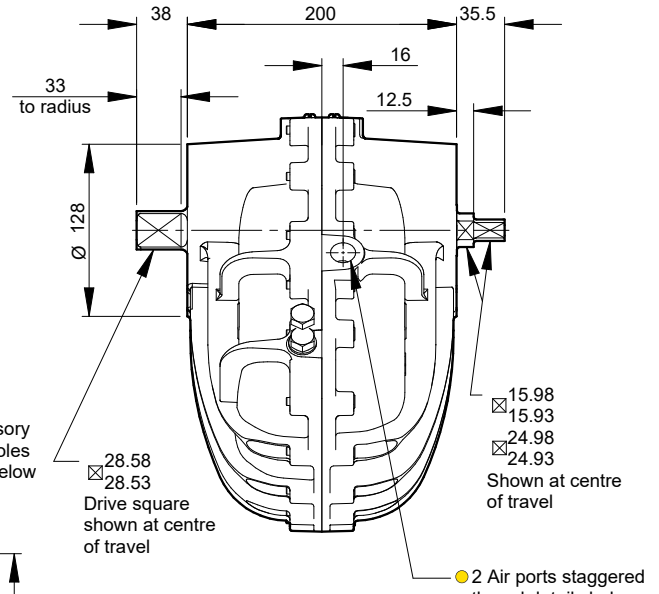
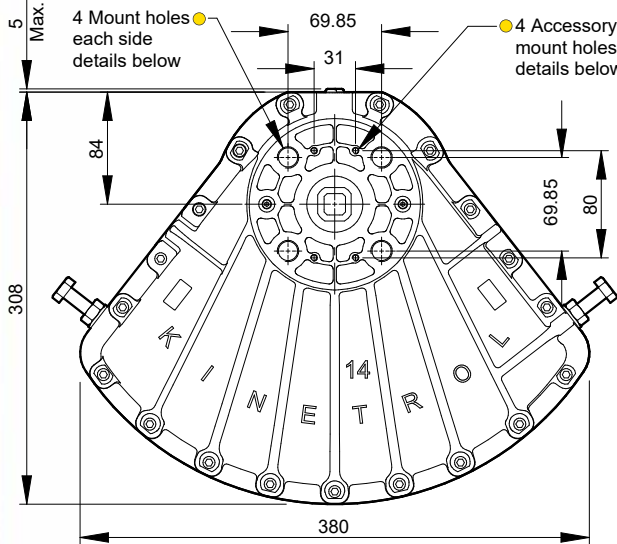
### Finish

Epoxy stove enamel

### Weight

29.5 lb/13.4 kg  
(excluding coupling)

For further information  
see General Specification  
on page 5.



### Air Port/Mount Hole Details

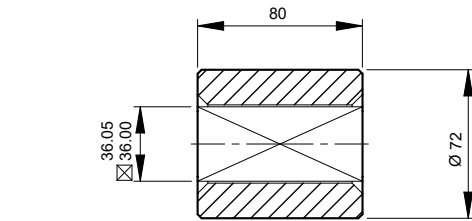
| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes                                 |
|---------|-------------------------------|---|
| 144-100 | G <sup>1</sup> / <sub>2</sub> | 4 x M16 x 28.5 deep on 98.8 PCD<br>4 x M5 x 10 deep                 |
| 147-100 | 1/2 NPT                       | 4 x 5/8 - 11 UNC x 1.12" deep on 3.89" PCD<br>4 x 10-24 x 3/8" deep |

Visual Red Indicator supplied as standard - see page 3

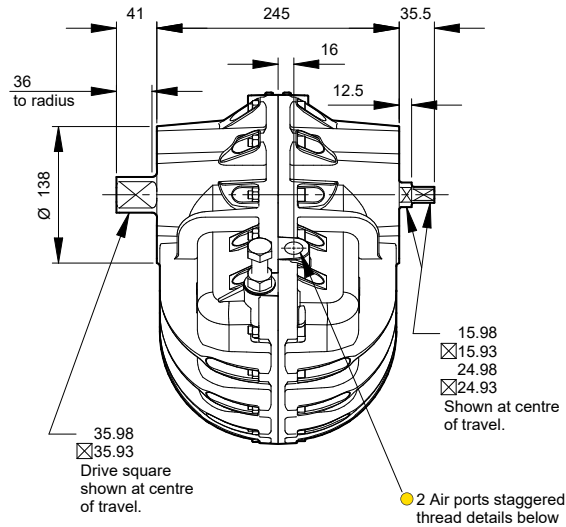
## Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner - full range of options including hazardous area see pages 43-45
- 180° model see page 51/52
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- Accessory mount plate for positioners, switch boxes and clear cone monitor. See TD149.
- High Temperature / Low temperature options see page 5





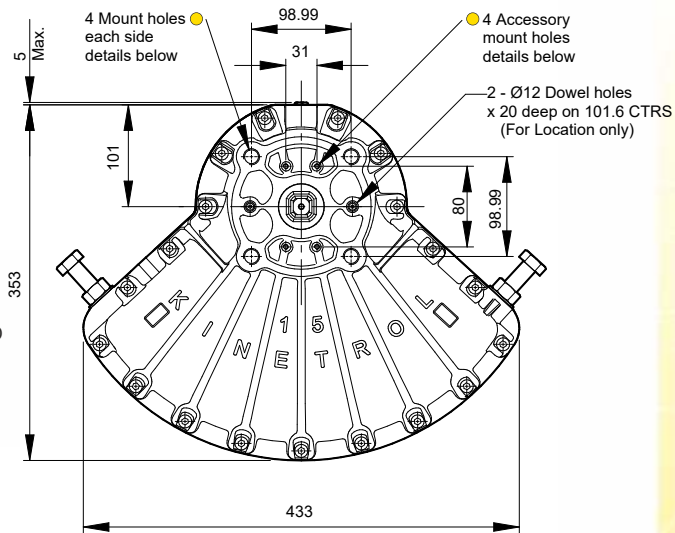
Standard Coupling  
(supplied with actuator  
weight 3.7 lbs/1.7 kg)



**● Air Port/Mount Hole Details**

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes                                 |
|---------|-------------------------------|---|
| 154-100 | G <sup>1</sup> / <sub>2</sub> | 4 x M16 x 28.5 deep on 140.0 PCD<br>4 x M5 x 10 deep                |
| 157-100 | 1/2 NPT                       | 4 x 5/8 - 11 UNC x 1.12" deep on 5.51" PCD<br>4 x 10-24 x 3/8" deep |

Visual Red Indicator supplied as standard - see page 3



**Specification**

**Output Torque**

20337 lbf ins/2337 Nm  
at 100 psi/7 bar

**Angle of Travel (adjustable)**

80° - 100°  
(restricted travel versions available)

**Displaced Volume**

361 in<sup>3</sup>/5920 cm<sup>3</sup>

**Finish**

Epoxy stove enamel

**Weight**

46.2 lb/21.0 kg  
(excluding coupling)

For further information  
see General  
Specification on  
page 5.

**Options**

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Integral solenoid valve see page 38
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- P3 on/off positioner - full range of options including hazardous area see pages 43-45
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- Accessory mount plate for positioners, switch boxes and clear cone monitor. See TD149.
- High temperature / low temperature options see page 5

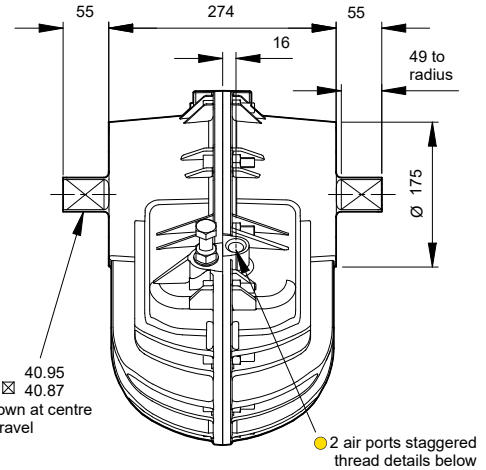
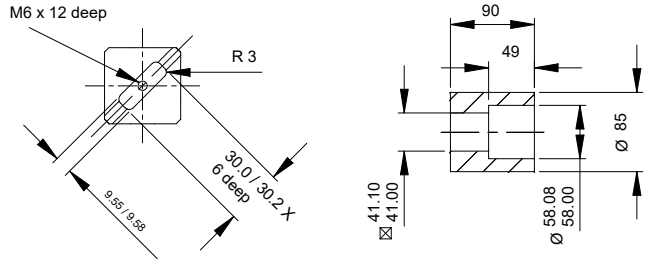


# Model 16



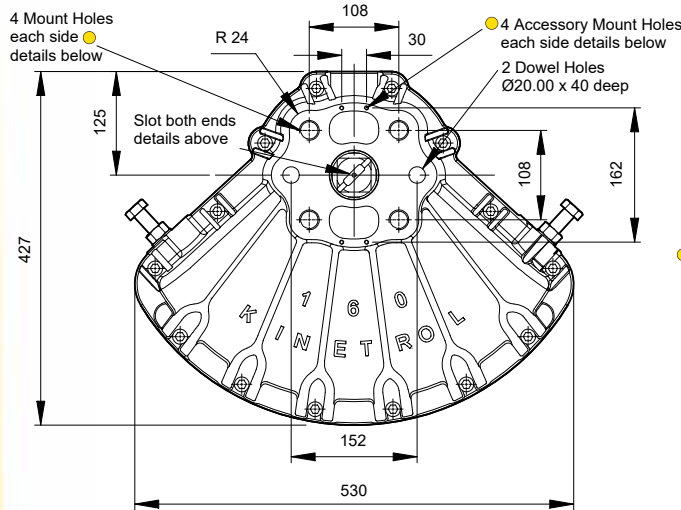
Standard Coupling  
(supplied with actuator  
weight 5.3 lbs/2.4 kg)

Vane Slot detail both ends



### Air Port/Mount Hole Details

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes                                      |
|---------|-------------------------------|--|
| 164-100 | G <sup>1</sup> / <sub>2</sub> | 4 x M24 x 38 deep on 152.7 PCD<br>4 x M5 x 8 deep                        |
| 167-100 | 1/2 NPT                       | 4 x 7/8 - 9 UNC x 1.50" deep on 6.012" PCD<br>4 x 10-24 UNC x 0.31" deep |



## Specification

### Output Torque

27000 lbf ins/3100 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel  
versions available)

### Displaced Volume

465 in<sup>3</sup>/7630 cm<sup>3</sup>

### Finish

Epoxy stove enamel

### Weight

82.5 lb/37.4 kg  
(excluding coupling)

For further information  
see General Specification  
on page 5.

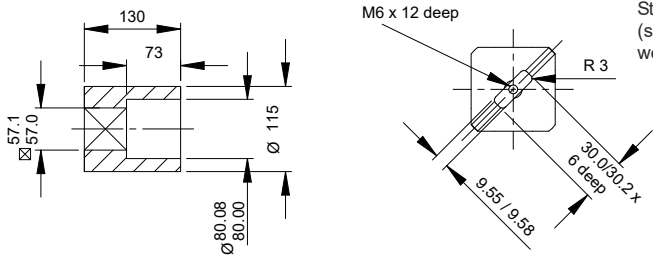
- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- 180° model see page 51/52

## Options

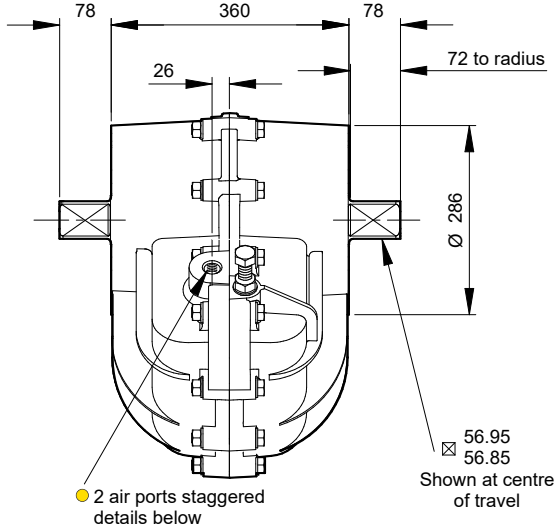
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High Temperature / Low temperature options see page 5





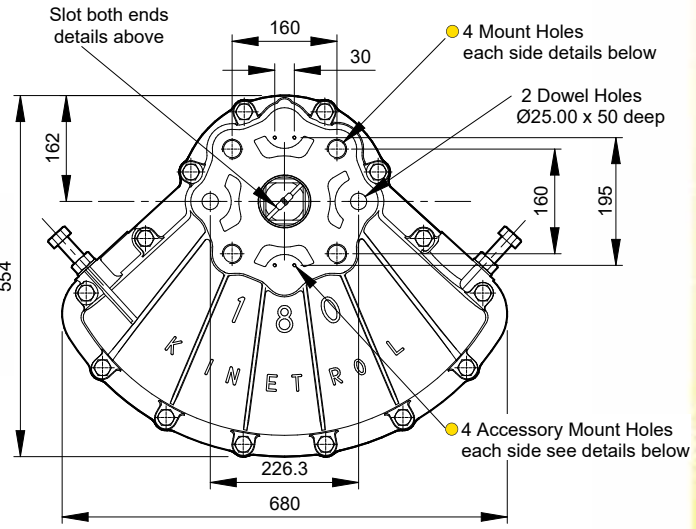


Standard Coupling  
(supplied with actuator  
weight 13.3 lbs/6 kg)



**● Air Port/Mount Hole Details**

| Model   | Air Ports                     | Mount Holes & Accessory Mount Holes                                       |
|---------|-------------------------------|---|
| 184-100 | G <sup>3</sup> / <sub>4</sub> | 4 x M30 x 50 deep on 226.3 PCD<br>4 x M5 x 8 deep                         |
| 187-100 | 3/4 NPT                       | 4 x 1 1/8 - 7 UNC x 2.00" deep on 8.91" PCD<br>4 x 10-24 UNC x 0.31" deep |



### Specification

### Output Torque

60000 lbf ins/6900 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel versions available)

### Displaced Volume

1047 in<sup>3</sup>/17170 cm<sup>3</sup>

### Finish

Epoxy stove enamel

### Weight

194 lb/88 kg  
(excluding coupling)

### Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- Female drive and mounting details to DIN 3337 and ISO 5211 see page 57/58
- Spring to centre see page 50
- Geared manual override see page 55
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High Temperature / Low temperature options see page 5

For further information see General Specification on page 5.

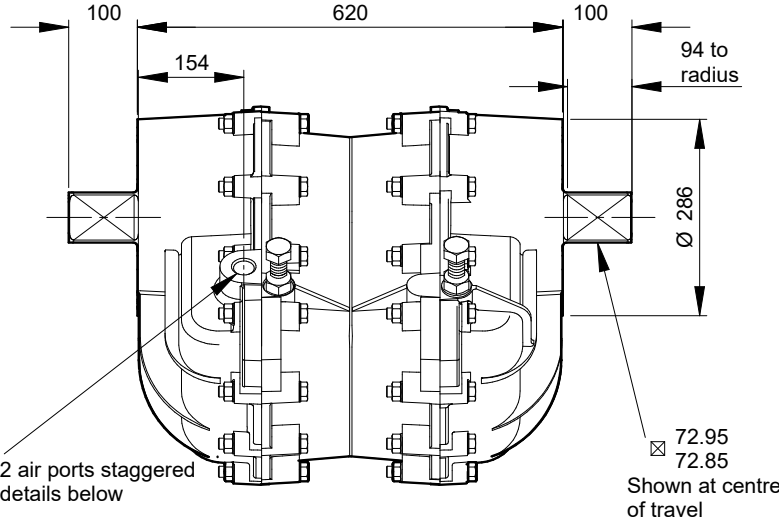
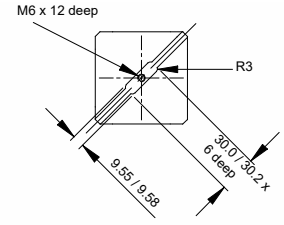
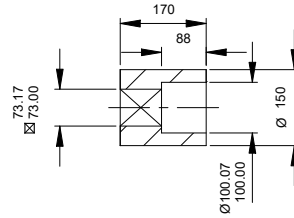


# Model 20



Standard Coupling  
(supplied with actuator  
weight 34 lbs/15.4 kg)

Vane Slot detail both ends



## Specification

### Output Torque

112000 lbf ins/12760 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel  
versions available)

### Displaced Volume

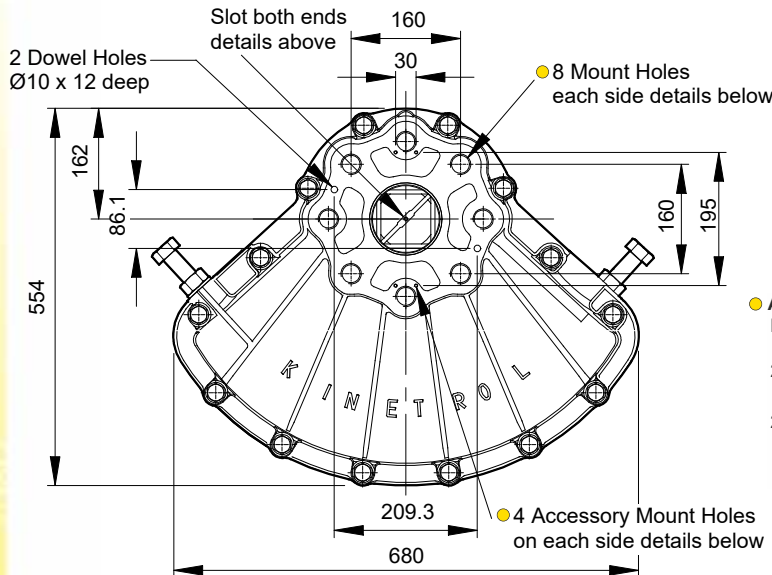
2034 in<sup>3</sup>/33350 cm<sup>3</sup>

### Finish

Epoxy stove enamel

### Weight

440 lb/199.6 kg  
(excluding coupling)



#### Air Port/Mount Hole Details

| Model   | Air Ports | Mount Holes & Accessory Mount Holes  |
|---------|-----------|--|
| 204-100 | G1        | 8 x M30 x 50 deep on 226.3 PCD<br>4 x M5 x 8 deep                          |
| 207-100 | 1 NPT     | 8 x 1 1/8" - 7 UNC x 2.00" deep on 8.91" PCD<br>4 x 10-24 UNC x 0.31" deep |

## Options

- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Female drive and mounting details to DIN 3337 and ISO 5211 see pages 57/58
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- Geared manual override see page 55
- AP pneumatic positioner - full range of options see pages 41/42
- Code identification see page 30
- EL electropneumatic positioner - full range of options see pages 39/40
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High Temperature / Low temperature options see page 5

For further information  
see General Specification  
on page 5.



## Specification

### Output Torque

168000 lbf ins/19140 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel  
versions available)

### Displaced Volume

3050 in<sup>3</sup>/50025 cm<sup>3</sup>

### Finish

Epoxy stove enamel

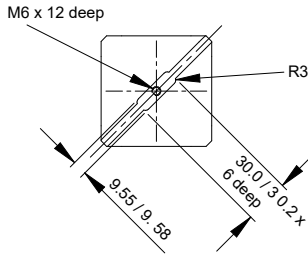
### Weight

601.91 lb/273 kg  
(excluding coupling)

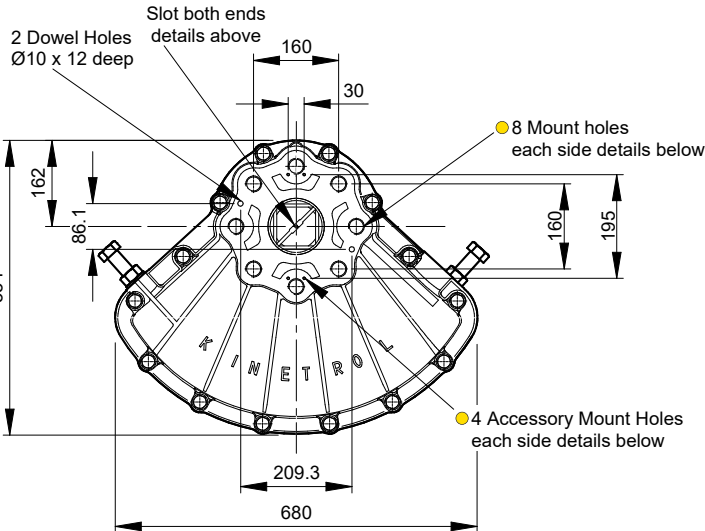
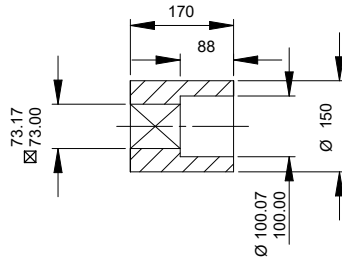
For further information  
see General Specification  
on page 5.



Vane Slot detail both ends

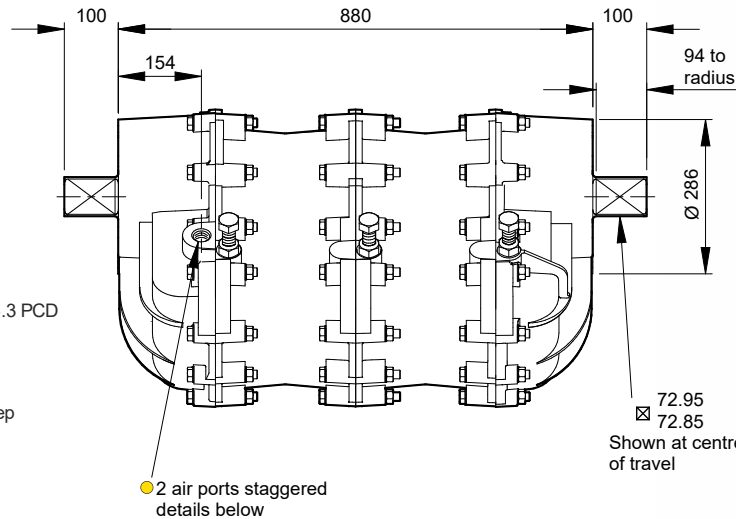


Standard Coupling  
(supplied with actuator  
weight 34 lbs/15.4 kg)



#### Air Ports/Mount Hole Details

| Model   | Air Ports | Mount Holes & Accessory Mount Holes                                       |
|---------|-----------|---|
| 304-100 | G1        | 8 x M30 x 50 deep on 226.3 PCD<br>4 x M5 x 8 deep                         |
| 307-100 | 1 NPT     | 8 x 1 1/8 - 7 UNC x 2.00" deep on 8.91" PCD<br>4 x 10-24 UNC x 0.31" deep |

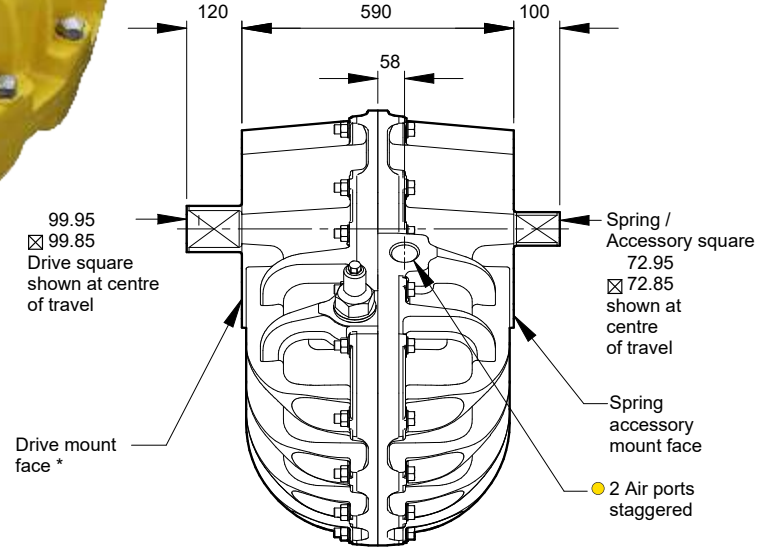
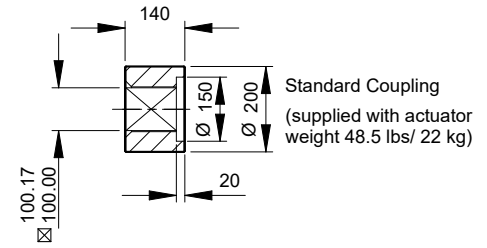


## Options

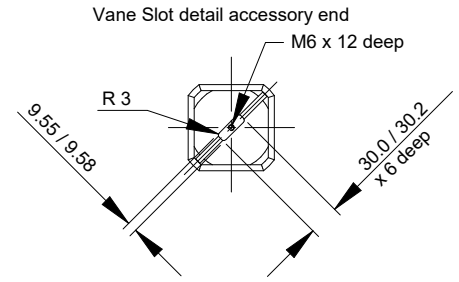
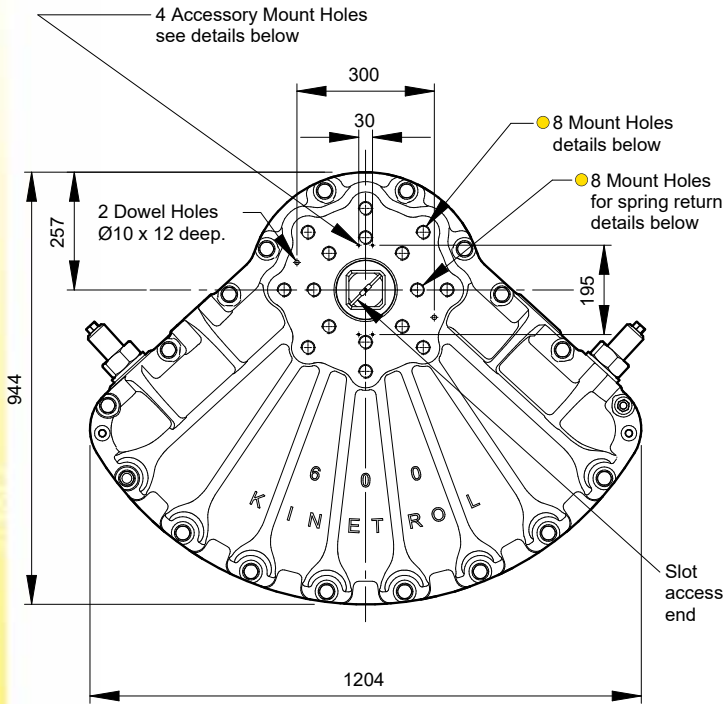
- Fail safe spring return units - clockwise or counter clockwise see pages 27-29
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options
- High Temperature / Low temperature options see page 5



# Model 60



\*For mounting to driven load



### Air Port/Mount Hole Details

| Model   | Air Ports | Mount Holes & Accessory Mount Holes  |
|---------|-----------|--|
| 604-100 | G2        | 8 x M30 x 80 deep on 356 PCD<br>4 x M5 x 8 deep  |
| 607-100 | 2 NPT     | 8 x 1 <sup>1</sup> / <sub>8</sub> - 7 UNC x 3.15" deep on 14.02" PCD<br>4 x 10-24 UNC x 0.31" deep |

## Specification

### Output Torque

356977 lbf ins/40765 Nm  
at 100 psi/7 bar

### Angle of Travel (adjustable)

80° - 100°  
(restricted travel versions available)

### Displaced Volume

6284 in<sup>3</sup>/103064 cm<sup>3</sup>

### Finish

Epoxy stove enamel

### Weight

1047.2 lb/475 kg  
(excluding coupling)

For further information see General Specification on page 5.



## Options

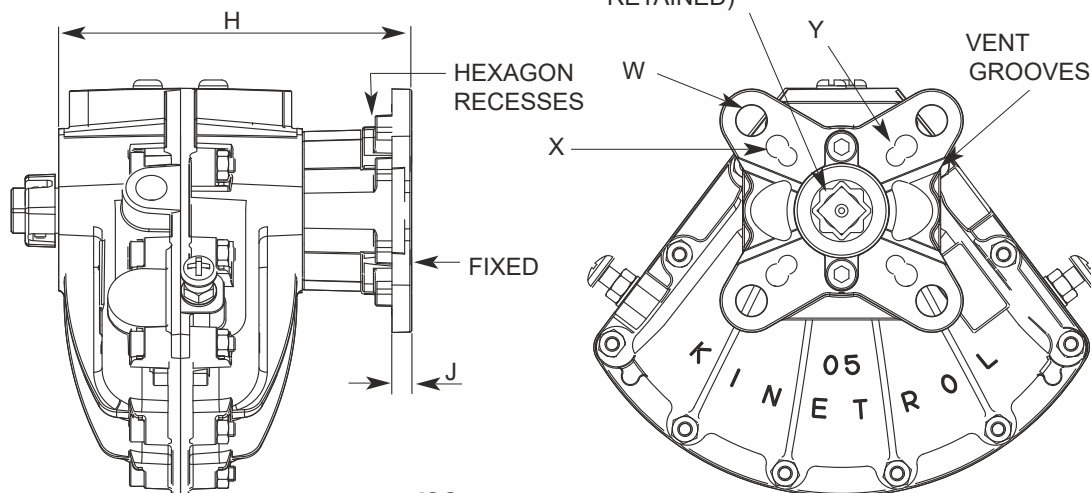
- Fail safe spring return units - clockwise or counter clockwise see pages 27-29 (springs are mounted above the actuator only use code 600-1\*0 for ISO and 609-1\*0 for ANSI)
- Limit switch boxes for open/close indication - various switches for hazardous areas see pages 31-34
- AP pneumatic positioner - full range of options see pages 41/42
- EL electropneumatic positioner - full range of options see pages 39/40
- Code identification see page 30
- Torque outputs see pages 6-8
- See pages 57-60 for English dimensions and dimensions of spring options

## Ultimate Mounting Flexibility

- Low cost direct mount flange and coupling for mounting to valves with ISO 5211 drive interfaces, available for actuator models 02, 03, 05, 07, 08 and 09
- Mounting directly to standard Kinetrol double acting actuator thereby reducing stocking requirements
- Multiple mounting hole sets in one part
- International patents. The novel design allows metric mounting screws to face in either direction. Valve flanges with tapped holes can easily be interfaced for the first time. Nut recesses in flange make for easy installation
- Robust epoxy coated zinc alloy (02 to 07) and aluminium alloy (08 and 09) adaptor with no threads for maximum corrosion resistance
- Female drive bi-square (star) coupling is retained by adaptor and made from zinc plated steel (other materials available on request)
- Serrated drive versions also available.



International Patents



| Adaptor Kit* | Order Codes                             | ISO Flange Sizes | H mm | J mm | G mm | E † mm | W PCD mm | X PCD mm | Y PCD mm | Weight Kg |
|--------------|---|------------------|------|------|------|--------|----------|----------|----------|-----------|
| SP 1406 ♦    | 023F120 / 023F100                       | F03/F05          | 74   | 5.0  | 11   | 12     | 6.6 50   | 5.5 36   | -        | 0.13      |
| SP 1407 ♦    | 023F180 / (024-100Z fitted with SP1407) | F04              | 74   | 5.0  | 11   | 12     | 5.5 42   | -        | -        | 0.13      |
| SP 1449      | 033F100**                               | F03/F05          | 84   | 5.0  | 11   | 12     | 6.6 50   | 5.5 36   | -        | 0.13      |
| SP 1454      | 034-100Z fitted with SP1454             | F04              | 84   | 5.0  | 11   | 12     | 5.5 42   | -        | -        | 0.13      |
| SP 1450 ♦    | 053F100                                 | F04/F05/F07      | 97   | 5.4  | 14   | 17     | 9.0 70   | 6.6 50   | 5.5 42   | 0.27      |
| SP 1451 ♦    | 073F100                                 | F05/F07          | 140  | 8    | 17   | 19     | 9.0 70   | 6.6 50   | -        | 0.53      |
| SP 1445 ♦    | 083F100                                 | F07/F10          | 160  | 10   | 22   | 24     | 11.0 102 | 9.0 70   | -        | 1.04      |
| SP 1452 ♦    | 093F100                                 | F07/F10          | 176  | 10   | 22   | 24     | 11.0 102 | 9.0 70   | -        | 1.04      |

\* ANSI (e.g. ASP1449) colour versions (identical dimensions) also available.

\*\* Default 03 version

† Minimum

♦ Also mounts directly to male drive spring units





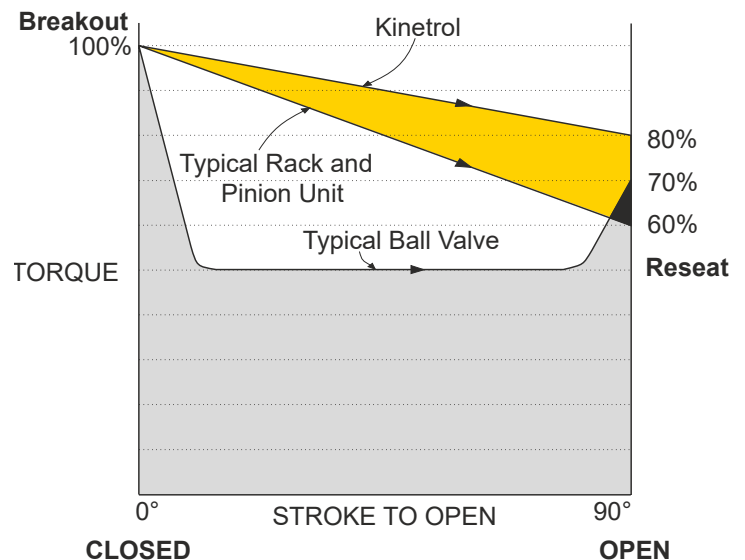
*Spring housing cut away*

- **Lowest Torque Loss**  
Typically 20% through 90° yields extra torque through spring stroke - enables the selection of smaller actuators (see diagram)
- **Reliable low stress range clock type spring**
- **Separate housing for modular assembly, easily retrofitted**
- **Sealed, non-breathing housing**  
Protects spring in corrosive environments
- **Adjustable pretension for 'balanced' air and spring stroke torques**  
Various combinations available for balanced / optimised torques at various air pressures
- **Keeper plates available to ensure safe handling of pretensioned springs**
- **Available with ISO/DIN female drive and mounting for models 03-20**
- **Springs guaranteed against failure for lifetime of actuator**
- **ATEX Category 1 approved for many models**  
Category 2 for other models

The diagram shows the torque requirement of a typical ball valve under normal conditions. The typical torque output characteristics of Kinetrol and Rack and Pinion actuators, both sized to overcome the valve's breakout torque, are also illustrated. The diagram demonstrates that the Kinetrol actuator will exceed the torque requirement of the valve throughout the entire stroke whilst the rack and pinion unit will fail to reseat the valve.

The higher torque losses associated with the rack and pinion actuators (torque loss can be as high as 70%) dictate the selection of larger units to ensure complete reseating.

All spring units are guaranteed, in normal use, to operate correctly for as long as the original actuators to which they were fitted.



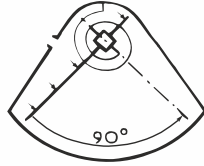
**KINETROL  
SPRINGS**  
Lifetime Guarantee

**ATEX**  
UP TO CATEGORY 1  
APPROVED



## Direction of Spring Action

Spring units are available for either clockwise or counter clockwise spring action. Spring units are mounted as standard between the actuator and what it drives (except model 01 & 60). With spring units alone, direction is determined by looking at the unit from the end which interfaces with the actuator.



Suffix - 020 = clockwise  
Suffix - 030 = counter clockwise

The direction of actuator/spring assemblies are determined by looking at whole assembly from the non-output end.

## Asymmetrical Torque Applications

If high torque is required in one direction and lower torque in the other direction this can be set up easily by changing spring pretension to be higher or lower as required. Air stroke torque will always be double-acting torque (at air pressures available) less spring pretension torque.

### Low Air Pressure Applications

If air pressure available for actuator operation is less than 50psi (3.5 bar), 'balanced' torque output on air and spring strokes is still possible by using a spring return unit from a smaller actuator size. Listed below are factory assembled options of this kind.

Replace the '\*' used in ordering codes below with a '2' (clockwise) or '3' (counter clockwise) depending on direction of spring action required.

See pages 7 & 8 for full torque details and pages 59 & 60 for dimensions of all models. Refer to TD121 for available male and female drive low pressure spring options.

| Ordering Code | Description                            |
|---------------|--|
| 03-1*0-5600   | 03 actuator with one 02 spring unit    |
| 07-1*0-4000   | 07 actuator with one 05 spring unit    |
| 09-1*0-4200   | 09 actuator with one 07 spring unit    |
| 10-1*0-5800   | 10 actuator with one 09 spring unit    |
| 12-1*0-4300   | 12 actuator with one 09 spring unit    |
| 12-1*0-4400   | 12 actuator with two 09 spring units   |
| 14-1*0-4900   | 14 actuator with two 12 spring units   |
| 14-1*0-5000   | 14 actuator with one 12 spring unit    |
| 16-1*0-6000   | 16 actuator with one 15 spring unit    |
| 16-1*0-6100   | 16 actuator with one 14 spring unit    |
| 18-1*0-7000   | 18 actuator with one 16 spring unit    |
| 20-1*0-8000   | 20 actuator with one 18 spring unit    |
| 20-1*0-7300   | 20 actuator with three 16 spring units |
| 30-1*0-7600   | 30 actuator with three 16 spring units |
| 30-1*0-8300   | 30 actuator with two 18 spring units   |
| 30-1*0-7800   | 30 actuator with five 16 spring units  |
| 60-1*0-8400   | 60 actuator with four 18 spring units  |
| 60-1*0-8500   | 60 actuator with five 18 spring units  |

## Pretension Setting

Factory assembled actuator/spring return assemblies have the spring pretension set for 'balanced' torque output when the actuator is operated by air at 80psi (5.5bar).

Factory assemblies can be preset for different air pressures below 80psi (5.5 bar) on request.

Spring return units supplied separate from actuators are also pretensioned for 80psi (5.5 bar) air operation unless otherwise stated.

## Keeper Plates

These are provided on all pretensioned spring return units supplied separate from actuators. They are also available as spare parts. Refer to TD129 for part numbers.

A keeper plate must always be used to restrain spring tension whenever a spring unit case is removed from the actuator.

## Materials Specifications

|                                 |  |
|---------------------------------|--|
| <b>Spring Casing</b>            | Models 02 to 05 pressure die-cast in ZL 16 zinc alloy.<br>Models 07 to 60 in aluminium alloy.                              |
| <b>Finish</b>                   | Epoxy stove enamel.  |
| <b>Spring</b>                   | Clock type spring steel.   |
| <b>Square</b>                   | Steel, zinc plated.  |
| <b>Mount Holes (output end)</b> | Same as matching actuator (except model 01 & 60), low pressure combinations & ISO drive versions. See pages 59/60 & TD121. |





- Simple, elegant direct-mount interface for most valves
- Multiple ISO mounting flange hole drillings for each model
- Large ISO/DIN compatible 'star' drive for most models
- Valve leak tell-tale/relief slots in mounting face
- Female serrated insert drive options available for maximum direct mount flexibility on some models
- Keeper plates available to ensure safe handling
- Same reliable, long-life, fully sealed spring unit as on male-drive units
- Allows accessories to be direct mounted to top of actuator (e.g positioner)

Torques are identical to standard and low pressure spring torques given on pages 7 & 8.

Directions of spring action are as described on page 28. Female drive spring units are always designed to be mounted between the actuator and the application. Consequently, a female spring designated 'clockwise' as a separate module will, when mounted below an actuator, result in a 'clockwise' assembly. Female drive springs are not designed to interface directly with modular switch boxes, positioners etc.

### ISO/DIN 'Star' Drives

Female bi-square (star) drive spring fail-safe units are available for models 03 to 20.

Star drive units are specified by adding a 'F' to the DIN/ISO code:

e.g. for a standard model 07 actuator with a female star drive, a regular 074-120 code becomes 073F120.

See page 60 for full dimensions.

### Serrated Drives

Female serrated drive spring fail-safe units are available for models 05, 07, 08, 09 & 10 to give maximum mounting flexibility.

Features include:

- Can accommodate large diameter valve stems
- Deep hole in shaft for long valve stems
- Precision stainless steel inserts
- Common internal drive shapes available
- Same spring can be used with different valve type/sizes
- 48 teeth allow many different orientations

Serrated drive units are (excluding couplings) specified by adding an 'S' to the ISO/DIN code:

e.g. for a standard model 07 actuator with a serrated female drive, a regular 074-120 code becomes 073S120.

See TD141 for full dimensions of the serrated drive springs and associated couplings.

A range of blank and internally profiled serrated stainless steel couplings are available (see TD141 for codes).

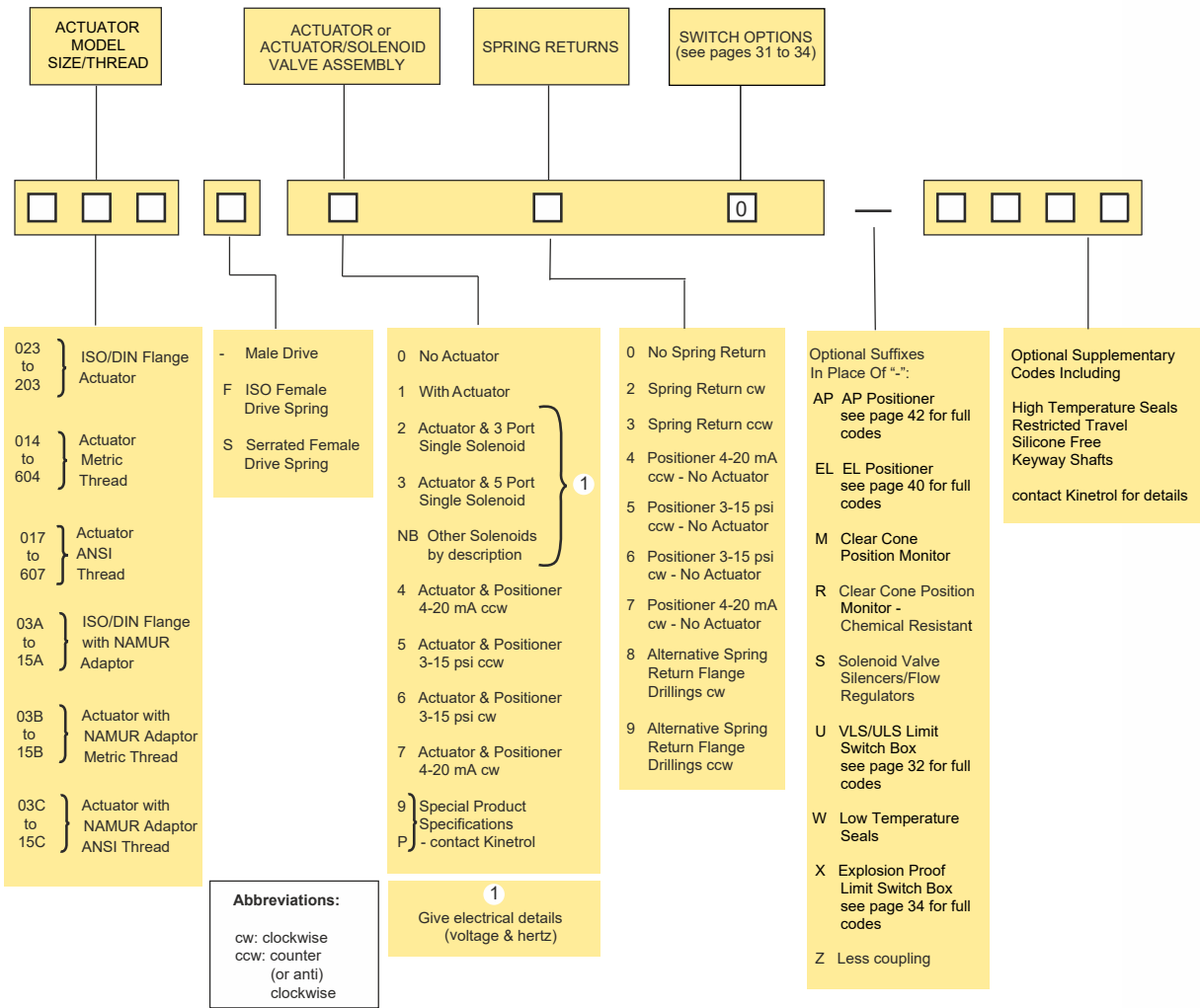
### Coding of Alternative Flange Drillings

Some female spring fail-safe star and serrated drive models are available with alternative ISO mounting hole patterns (see page 60 and TD141). The digits '8' and '9' are used to designate clockwise and anti-clockwise versions respectively:

e.g. clockwise code 053F180 specifies the F04 flange alternative of the 053F120 which specifies the clockwise F03/05/07 version.



# Kinetrol Actuators and Add-On Control Units



| EXAMPLES |              |   |
|----------|--------------|---|
| A:       | 054-100      | Double acting actuator (Metric threads) no optional supplementary items       |
| B:       | 054-120M     | A + spring return (fail-safe cw) + Clear Cone monitor                         |
| C:       | 057-100      | Double acting actuator (ANSI threads)   |
| D:       | 144-130-4900 | 144 actuator (Metric threads) + spring return fail-safe ccw (2 x 124 springs) |
| E:       | 053F100      | Double acting actuator with ISO adaptor                                       |

- 180° Actuator ordering codes - see page 51
- Damper Drive ordering codes - see page 54
- Female Drive Spring Unit ordering codes - see page 29
- Geared Manual Override ordering codes - see page 55
- ISO Adaptor ordering codes - see page 26
- Low Pressure Air Application ordering codes - see page 28
- Manual Fail-Safe Unit ordering codes - see page 47
- Fire Fail-Safe Unit ordering codes - see page 49
- P3 On/Off Positioner ordering codes - see page 44
- Explosion Proof P3 On/Off Positioner ordering codes - see page 45
- Spring to Centre ordering codes - see page 50
- DeviceNet ordering codes - see page 37





Offers a wide range of signalling options in a fully enclosed, corrosion resistant metal case. Available for direct mounting onto Kinetrol rotary actuators or discrete mounting via an industry standard VDI/VDE interface onto any make of rotary actuator. Easy to wire and set up with industrial standard robustness. Internally fitted options include AS Interface digital communication and a 4-20mA, 2-wire modulating angle retransmit circuit.

The range of switch and terminal arrangements includes 2 or 4 switches, extra connections allowing single point termination of wiring for limit switches and solenoid valves. ATEX approved Ex d (Category 2) explosion proof and Ex ia intrinsically safe packages (Category 1). Integral sealed Clear Cone Monitor and red/green Led indicator options also give high visibility external visual indication of position.

**Specification**

**Casing**

Precision diecast aluminium alloy, switch option 003  
Ex d diecast zinc alloy

**Finish**

Epoxy stove enamel

**Seals**

Nitrile rubber 'O' ring seals

**Cable entry options**

2 or 4 entries

M20 x 1.5 Conduit thread  
or  
1/2 NPS Conduit thread

4 Way plug DIN 43650A  
(fits either conduit thread)

4 Way M12 Connector  
(M20 Conduit thread only)

**Dimensions**

See page 61

- Units sealed to IP67/NEMA 6 (ATEX units IP66/NEMA 4X, IP67 option available)
- Robust corrosion resistant epoxy painted diecast box
- Easy and accurate setting of switch position
- Available for direct mounting to Kinetrol models 03 to 15 (for minimum height)  
Discrete Kinetrol 05 square drive insert for use with Kinetrol actuator models 16 to 60
- Quick access - No special tools required
- Discrete VDI/VDE (NAMUR) interface option for use with industry standard actuators
- Two or four cable entries as standard to allow back wiring of solenoid valves
- Multiple switch options available for general and hazardous areas
- AS Interface bus circuit option inside box reads up to 4 switch inputs, drives up to 2 solenoids powered by bus only (see pages 35 & 36)
- DeviceNet option inside box with various network speeds allows 2 on / off inputs and drives up to 2 solenoids (see page 37)
- Optional Clear Cone monitor available
- Integral LED indicator lamps and angle retransmit circuit options are available
- Compact SPST version of type 004 available for model 02 actuator

**LOAD RATINGS FOR STANDARD MICROSCHWITCHES (type 004)**

| Voltage        | Resistive Load |
|----------------|----------------|
| 125 V AC       | 15A            |
| 250 V AC       | 15A            |
| up to 12 V DC  | 15A            |
| up to 24 V DC  | 10A            |
| up to 48 V DC  | 3A             |
| up to 250 V DC | 0.25A          |

**MULTIPLICATION FACTORS FOR NON-RESISTIVE LOADS**

|                                 |         |
|---------------------------------|---------|
| Steady state tungsten lamp load | - x 0.1 |
| Steady state inductive load     | - x 0.2 |
| Peak inductive load             | - x 1.0 |

**Weight**

|                    |   |        |
|--------------------|---|--------|
| VLS                | - | 0.68kg |
| Uls Switch Options |   |        |
| 001 and 009        | - | 1.05kg |
| 003                | - | 1.4kg  |

**Temperature Range**

Standard -20°C to +80°C  
High Temp Seals up to 100°C  
Also see switch temperatures on page 32

## Ordering Codes

### Switch Type 001

2 intrinsically safe 2 wire inductive proximity sensors for hazardous areas (ATEX CAT 1), normally closed.  
Ambient temperature range -20°C to +80°C

### Switch Type 002

2 pneumatic switches with 4mm (5.32") push in fittings (ATEX CAT 2), normally closed.  
Ambient temperature range -15°C to +60°C

### Switch Type 003

Certificated unit to EEx ed II T6 for hazardous areas to Zone 1 (ATEX CAT 2) 2 x 3 wire switches for SPDT.  
Ambient temperature range -20°C to +70°C

### Switch Type 004

2 x 3 wire microswitches for SPDT.  
Ambient temperature range -40°C to +80°C

### Switch Type 005

2 x 2 wire proximity sensors 20-250 volts AC, normally open.  
Ambient temperature range -25°C to +70°C

### Switch Type 006

2 x 2 wire proximity sensors 5-60 volts DC, normally open, with Led switch status indicators.  
Ambient temperature range -20°C to +80°C

### Switch Type 007

4 x 3 wire microswitches for DPDT.  
Ambient temperature range -40°C to +80°C

### Switch Type 008

2 x 2 wire inductive slotted proximity sensors, normally closed.  
Ambient temperature range -20°C to +80°C

### Switch Type 009

2 x 3 wire gold plated contacts intrinsically safe microswitches for SPDT (ATEX CAT 1).  
Ambient temperature range -20°C to +80°C

### Switch Type 00E

2 x 2 wire proximity sensors 20-140 volts AC / 10-140 volts DC.  
Ambient temperature range -25°C to +80°C

### Switch Type 00M

4 x 3 wire inductive proximity sensors 10-30 volts DC, normally open.  
Ambient temperature range -25°C to +70°C

### Switch Type 00N

2 x 3 wire inductive proximity sensors 10-30 volts DC, normally open.  
Ambient temperature range -25°C to +80°C

### Electronics Option B - E

AS interface options are available with both the two and four entry Kinetrol Universal Limit Switch Box. Options B to E allow for different extended addressing options. For more information on the Kinetrol AS interface card see page 35 & 36.

### Electronics Option P

Two or four way Universal Limit Switch Box fitted with potentiometer (20K ohms conductive plastic type).

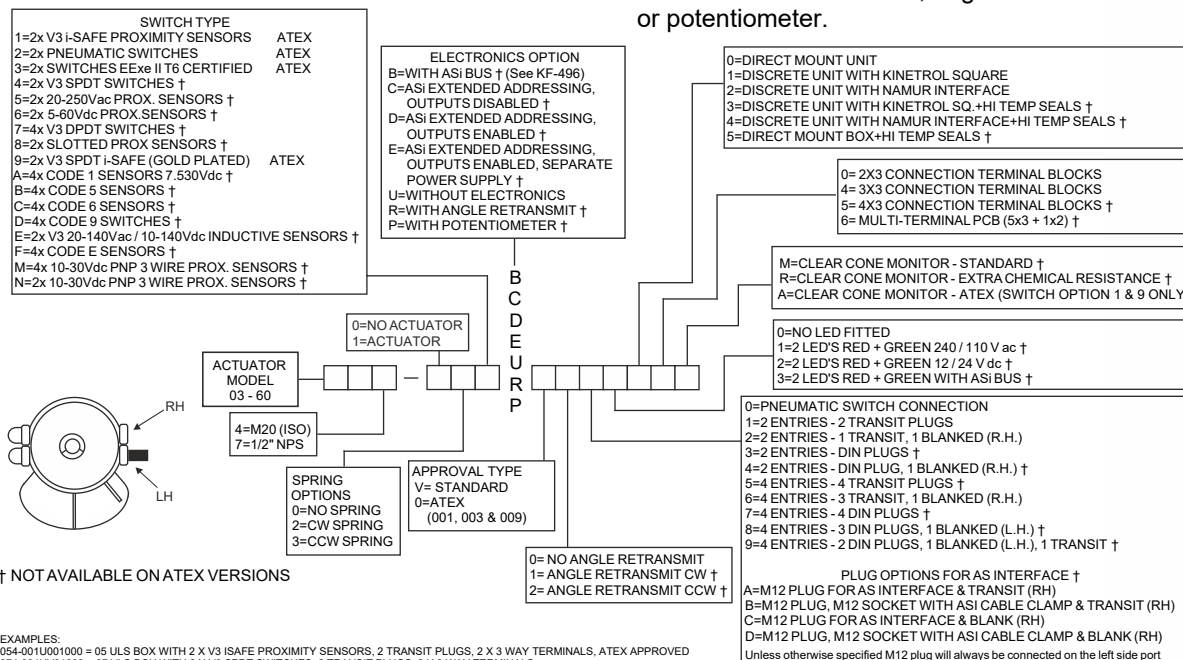
### Electronics Option R

Two or four entry Universal Limit Switch Box fitted with angle retransmit, loop powered two wire circuit passes 4-20mA current, proportional to 0-90° position of actuator.

### Electronics Option U (standard)

Two or four entry Universal Limit Switch Box without AS interface card, angle retransmit or potentiometer.

### For ATEX ratings please refer to TD139



† NOT AVAILABLE ON ATEX VERSIONS

EXAMPLES:  
054-001U001000 = 05 ULS BOX WITH 2 X V3 ISAFE PROXIMITY SENSORS, 2 TRANSIT PLUGS, 2 X 3 WAY TERMINALS, ATEX APPROVED  
074-004UV01000 = 07 VLS BOX WITH 2 X V3 SPDT SWITCHES, 2 TRANSIT PLUGS, 2 X 3 WAY TERMINALS  
074-004RV12000 = 07 VLS BOX WITH 2 X V3 SPDT SWITCHES, ANGLE RETRANSMIT CLOCKWISE, 1 X TRANSIT & 1 BLANKING PLUG, 2 X 3 WAY TERMINALS  
094-124BV02000 = 09 SPRING RETURN CLOCKWISE ACTUATOR & VLS BOX WITH 2 X V3 SPDT SWITCHES, STANDARD ASI, 2 TRANSIT PLUGS, 2 X 3 WAY TERMINALS  
094-109U001000 = 09 DOUBLE ACTING ACTUATOR, ULS BOX WITH 2 X V3 ISAFE MECH. SWITCHES GOLD PLATED, 2 TRANSIT PLUGS, 2 X 3 WAY TERMINALS, ATEX APPROVED

Further switch options are available upon request - contact Kinetrol for details

For more information see KF-487





The Explosion Proof Limit Switch Box offers a wide range of signalling options in a compact corrosion resistant aluminium alloy housing. Available for close - mounting onto Kinetrol actuators or discrete mounting via a Kinetrol 05 square or industry standard VDI/VDE interface onto any make of rotary actuator. Easy to wire and set up with true industrial robustness.

Internally fitted options include AS interface digital communication and a 4-20mA, 2-wire, modulating angle retransmit circuit. The range of switches and terminal arrangements includes 2 or 4 switches and extra connections - allowing single point termination of wiring for limit switches and solenoid valves. This product is available to mount on Kinetrol models 03 - 60.

- Wide range of worldwide explosion proof approvals including IECEX, ATEX & FM (for USA & Canada) - all in one device
- All units protected to IP66 / NEMA 4X / TYPE 4X
- Attractive, functional and part-spherical profile. Robust corrosion resistant, anodised & epoxy painted diecast aluminium alloy housing
- Close - mount to Kinetrol actuator models 03 - 15 for low profile
- Discrete Kinetrol 05 square drive insert for use with Kinetrol actuator models 16 - 60
- Discrete NAMUR drive for use with VDI/VDE 3845 drive actuators
- 2 or 4 cable entries available to allow back wiring of solenoid valves
- Up to 4 switches available for SPDT, DPDT or multiple circuit operation
- Easy and accurate setting of switching position
- Optional antistatic Clear Cone Monitor available
- Integral angle retransmit circuit options are available
- Integral AS interface bus circuit option reads up to 4 switch inputs and drives up to 2 bus powered solenoids
- -40° C to +80° C ambient operating temperatures (dependent on switch options)
- Positioner options available





## Switching Operation Conditions

| Switch Code | Voltage |     | Current         | Temperature Range |
|-------------|---------|-----|-----------------|-------------------|
|             | AC      | DC  |                 |                   |
| 1/A         | —       | 8   | 6mA             | -20°C to +80°C    |
| 4/7         | 250     | 48  | 2.4A AC/1.8A DC | -40°C to +80°C    |
| 5/B         | 250     | 300 | 100mA           | -25°C to +70°C    |
| 6/C         | —       | 60  | 100mA           | -20°C to +80°C    |
| 9/D         | —       | 30  | 100mA           | -40°C to +80°C    |
| E/F         | 140     | 140 | 200mA           | -25°C to +80°C    |
| M/N         | —       | 30  | 100mA           | -25°C to +70°C    |

## Labels

### IECEX & ATEX - Approval type E



### FMC/U, IECEX & ATEX - Approval type F & P



## Specification

### NORTH AMERICAN APPROVAL

**Type of protection, Explosion Proof** US: Class I, Division 1, Gas groups B,C,D. Class II, Division 1, Dust groups E,F,G. T5 NEMA 4X.  
For Gas group A use order code "P".  
CANADA: Class I, Division 1, Gas groups B,C,D. Class II, Division 1, Dust groups E,F,G. T5 TYPE 4X.

**EUROPE/GLOBAL - ATEX / IECEx APPROVAL**  
**Protection concept, Flame Proof 'd'** Group II C/A21, Category 2, Gas & Dust, T5, IP66

**Casing** precision diecast LM24 alloy, anodised & epoxy stove enamel.

**Coupling** zinc plated steel.

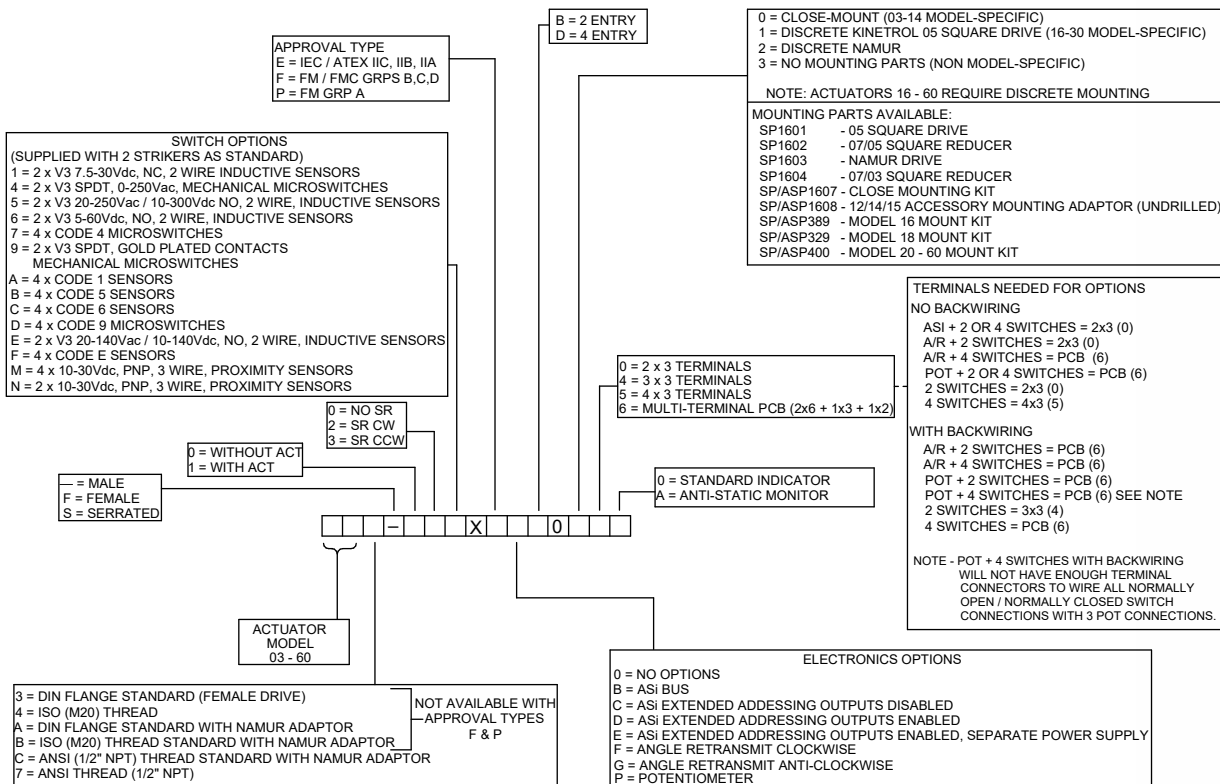
**Seals** fluoropolymer dynamic seals and NBR static seals.

**Weight** 1.5 kg

**Cable Entry Options** M20 x 1.5 or 1/2" 14 NPT conduit entry threads.

**Dimensions** see page 61

## Ordering Codes



For more information see KF-619





### AS Interface Bus

The Actuator Sensor Interface card allows easy digital serial communication for your sensors and actuators, allowing your actuators to be controlled and monitored when they are in the field, via a single 2 wire cable.

AS interface devices are used to make up control systems based on a two-wire communication cable known as a bus. These can be controlled or monitored by means of a digital signal sent via the bus to and from a "master" device (which can be a computer or a PLC).

The slave devices will always function in response to commands sent by the master device, either to actuate or to return a message reporting the value of a sensed variable, or both. The AS Interface specification allows 31 or fewer slave devices to be powered by a DC voltage fed into the same two wire cable used as the communication bus, with allowed power consumption adequate to drive the slave plus a standard pneumatic solenoid valve.

An AS Interface bus can be used as the final field link in a more complex hierarchy of devices making up a large plant-wide control system. Actuators and sensors must often be installed in unprotected environments where conditions can be demanding; the AS Interface bus can be used as the link between these field devices and the "indoor" equipment making up the upper part of the control system.

The AS Interface bus is designed for on/off control and monitoring. It is a good choice when a simple, economical, reliable and robust solution is required for controlling and monitoring a series of actuators and sensors in a process control or machine application.

### The Kinetrol AS Interface Card

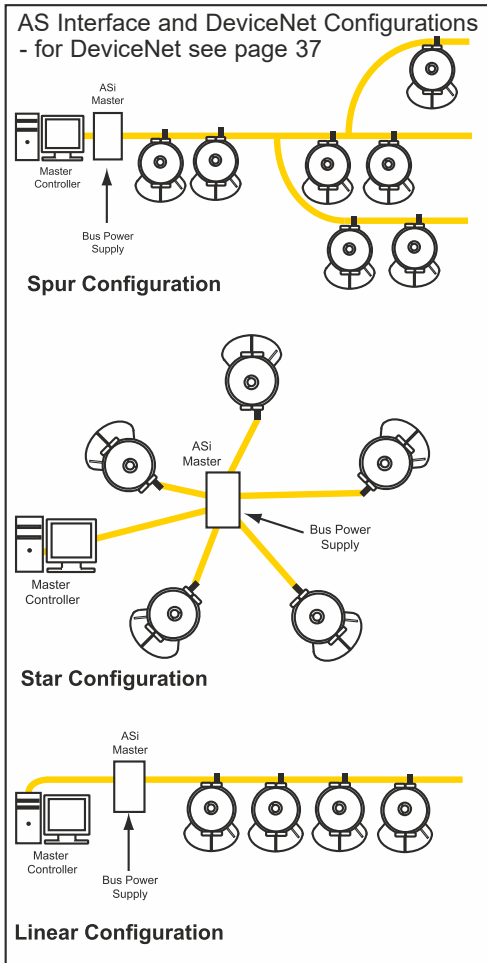
The Kinetrol AS Interface card is fitted inside the Kinetrol VLS Limit Switch box, thus combining the industrial quality robustness of the box with the advantages of digital serial communication.

The AS interface bus cable can be routed in through the conduit entries and connected to the internal terminal blocks. Alternatively, an M12 connector plug facing outwards from the conduit entry can be supplied to allow quick connection from M12 sockets or with clip on adaptations for ribbon type yellow AS interface cables.

### AS Interface Card Features

- AS interface 2.1 compatibility
- Up to 31 units with solenoid valve on-off control, powered and controlled via a single, two core cable
- Up to 62 units (using extended addressing)
- All metal robust industrial-quality limit switch box, direct mounted on a Kinetrol actuator
- 2 on/off outputs per unit
- 4 on/off inputs per unit
- Reads mechanical switches or inductive sensors
- Retrofittable to standard Kinetrol VLS Limit Switch Box
- Can also be supplied in an explosion proof housing and with European, North American and Worldwide approvals
- LED external indicator option
- Up to 31 24V 2.5W solenoid valves can be connected to bus with no separate power supply
- M12 connector plug option available for instant bus connection
- Cable clamping connector block for yellow ribbon-type AS interface cable available with M12 socket to fit onto plug option
- Output short circuit protection built in
- Operating temperature range -20°C to +80°C (-40°C option available - contact Kinetrol)





## AS Interface 2.1 Specification

- Master - Slave protocol
- Up to 62 Slaves per Master (using extended addressing)
- Each Slave has its own unique address (set by user)
- All Slaves can be scanned every 5 milliseconds
- Baud Rate - 197 Kbits/second
- Slaves may be added anywhere in the bus
- Slaves may be parallel connected on the bus, using star or spur configurations
- Up to 124 inputs per bus
- Up to 124 outputs per bus, 62 using the Kinetrol device
- 26.5 to 31.5 Vdc, 8 A max power supply
- 100 m (325ft) maximum cable length (repeaters may extend network distance)
- Untwisted, unshielded, 2-wire (1.5mm<sup>2</sup>) cable can be used

## AS Interface Extended Addressing

Kinetrol's AS Interface circuit is a slave device to allow 32 devices (usually 31 slaves plus an AS Interface master device) to be powered and controlled via a 2-wire bus cable, with full capability to energise one solenoid on every unit all at the same time. This is the standard (Option code B).

The AS Interface 2.1 specification also allows for an extended address option, whereby 62 addresses can be connected and powered via one bus cable. The specified limits on device capacitance however, mean that if the full extended-address compliment of slaves all had standard solenoid valves connected, the bus limit would be exceeded.

Kinetrol offer these options to allow use of extended addressing:

### 1. (Option Code C)

AS Interface circuit with extended addressing enabled and outputs disabled, to read limit switch sensors only. If a solenoid is connected it will not function.

### 2. (Option Code D)

AS Interface circuit with extended addressing and outputs enabled (one solenoid per interface card), plus added isolating relay option fitted to outputs, to allow up to 31 solenoids to be energised simultaneously even from the bus, though up to 62 slave units may be connected to the bus. This requires the user's control system to include a pre-programmed limit on the maximum number of solenoids to be energised. If the system instructs too many units to switch on solenoids, they will obey, and the bus capacitance limit will be exceeded – thus this option must be at the user's risk with regard to this issue.

### 3. (Option Code E)

AS Interface circuit with extended addressing and outputs enabled (one solenoid per interface card), plus added relay options fitted to outputs to allow solenoid valves to be powered by a supply separate from the AS Interface bus. This option requires a separate 24V DC power supply to each actuator, and allows up to 62 slave units to energise their solenoids simultaneously.

To order the Kinetrol AS Interface card refer to codes for VLS/ULS Limit Switch Box or Explosion Proof Limit Switch Box on pages 32 and 34.

For more information  
see KF-496







### DeviceNet Protocol

DeviceNet allows the user to build an intelligent communication network with various control devices, all feeding back to a central control unit. Using the Master-Slave model, up to 63 devices can be monitored and controlled in a single network. (see page 36 for DeviceNet configurations).

The control network is formed using the DeviceNet 5-core bus cable, providing both communication transport and power to each node within the system. The power provided through the bus is enough to drive the DeviceNet card with additional power available to drive one solenoid valve at each node. The bus cable can be routed to the terminal blocks via the switch box conduit entries or alternately, M12 connector plugs can be installed for quicker and easier connection.

The DeviceNet card can be installed remotely or locally, using either the Master controller or the provided DIP switches to set up each node in the system.

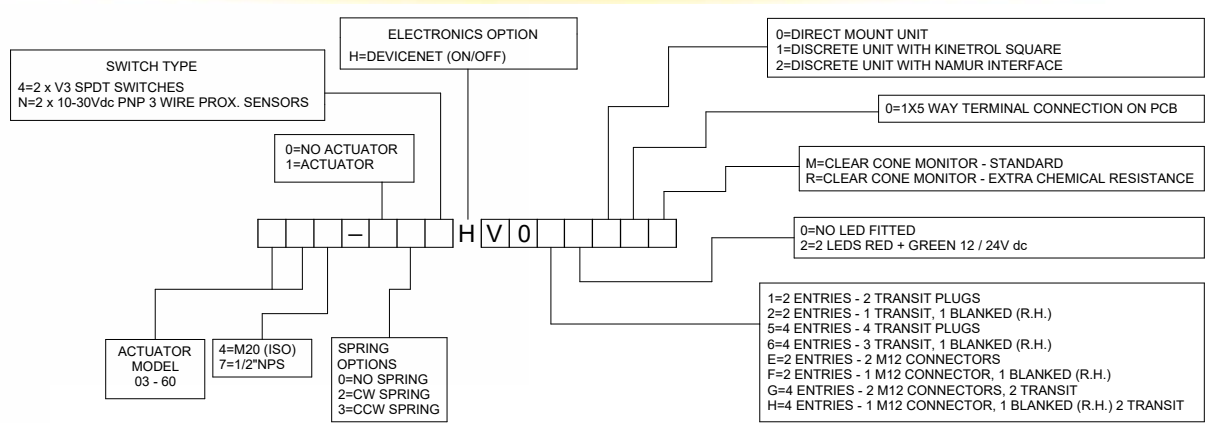
### DeviceNet On/Off Communication Card

Kinetrrol's DeviceNet communication option is available within the Kinetrrol VLS limit switch box and offers the same advantages plus the highly specified DeviceNet circuit to give genuine industrial quality and integration capabilities into existing DeviceNet networks.

#### Specification

- Up to 63 units with on-off control, powered and controlled using DeviceNet's 5-core cable
- Single 5-way terminal provided with each card
- Field selectable network speeds (125, 250 and 500 Kbits/s)
- Available in the Kinetrrol VLS limit switch box and is retrofittable
- 2 on/off outputs and inputs per unit
- Reads mechanical switches or inductive sensors
- LED external indicator option
- Up to 63 24V 1W solenoid valves can be connected to the bus with no separate power supply
- 11.0 to 26.4V dc, 3 W max power supply
- Unique Node ID for each unit in the network (1 to 63)
- M12 connector plug option available for faster installation
- Operating temperature range 0°C to +60°C
- Output short circuit protection built in

### Ordering Codes



**Clear Cone Monitor**

The optional Clear Cone provides all round high visibility position monitoring on all limit switch boxes and positioner models. A red/green colour coded monitor is sealed inside a robust, clear polycarbonate cover. Positioner models are marked with black printed legible angle scales.

The monitor is also available directly mounted onto actuator models 03, 05, 07, 08, 09 and 10, all EHD units and 12, 14 & 15 using an adaptor plate.

For highly corrosive environments special cover materials are available - contact Kinetrol for details.

Conductive ATEX approved versions (to Category 1) are available for switch boxes and positioners - contact Kinetrol for details.

For dimensions see pages 61, 62, 63 & 64.



**Solenoid Valves**

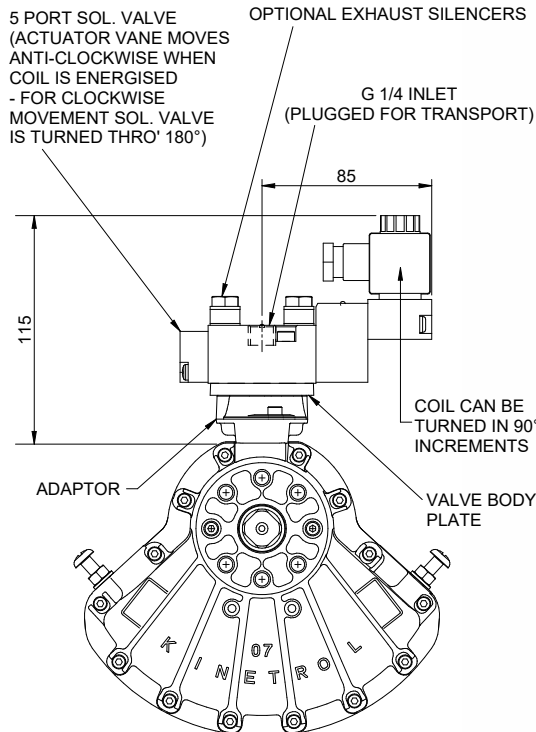
As an option Kinetrol actuator sizes 03 to 15 can be supplied with integral solenoid valves with NAMUR interface. Air is ported through the actuator body via an adaptor so no external tubing is necessary.

Standard optional solenoid valves can be converted to 5 or 3 port versions by changing the valve body plate supplied with the valve.



**Specification**

|  |   |
|--|---|
| <b>Coil Voltages</b>                       | AC: 50/60Hz<br>110V ac, 240V ac and 24V dc<br>For other voltages contact Kinetrol |
| <b>Electrical Connection</b>               | DIN 43650 plug with Pg9 cable gland (6-8mm dia) as standard                       |
| <b>Manual Override</b>                     | extra to order  |
| <b>Exhaust Silencers / Flow Regulators</b> | extra to order  |
| <b>Hazardous Areas</b>                     | certified solenoids are available as extras to order                              |
| <b>Environmental Protection</b>            | to IP65 as standard   |
| <b>Minimum Air Supply</b>                  | 2 bar   |



Single solenoid, 3 or 5 port, interchangeable for double acting or spring return, NAMUR interface. Most brands of NAMUR interface solenoid valve can be supplied to special order.







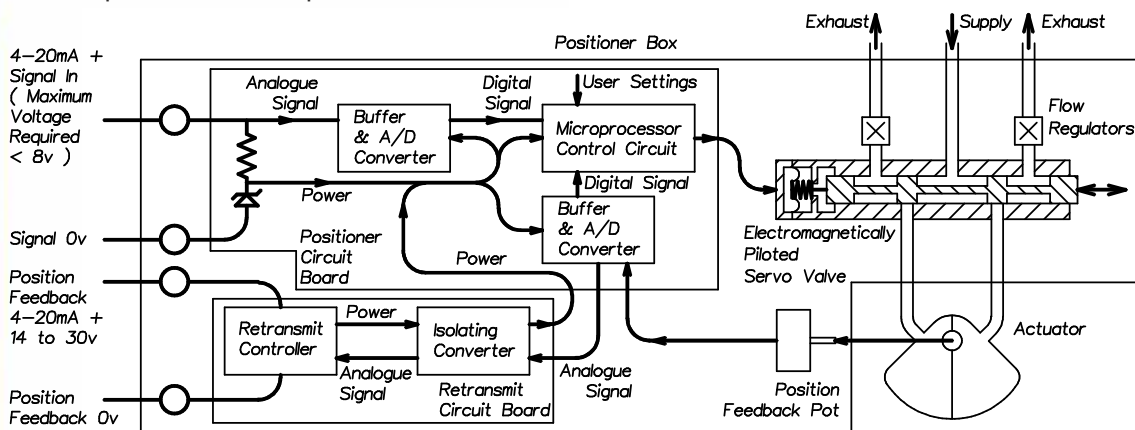
## Operation

The EL positioner uses a unique low power proportional servo valve to control the position of a quarter-turn actuator.

The microprocessor in the loop-powered 4-20mA position circuit reads the signal via one channel of a 12-bit A-D converter, reads the position voltage from the feedback potentiometer via the second channel of the A-D converter, and compares the two. If it detects a position which is different from that required by the signal, it changes the output to the servo valve, in order to drive the actuator in the direction required to reach the correct position. As the actuator moves, the feedback potentiometer voltage changes and the microprocessor continually calculates the adjustments required for the servo valve in order to guide the actuator accurately into position. The microprocessor is programmed with a sophisticated but compact algorithm which allows this critical dynamic valve adjustment to be made correctly. This in turn gives optimal results with any actuator/load combination - slow or fast, low or high friction, low or high inertia. All can be optimised by tuning the PGAIN and DAMP parameters via the positioner circuit push buttons.

The EL positioner controls airflow to an actuator and moves it to a position determined by a 4-20mA signal. Its features are:

- **Fast, smooth and precise control from a digital circuit and proportional servo valve**
- **Simple time saving field set up**  
Quick calibration via push buttons and LED feedback and easy reversal of rotation sense (clockwise/counter clockwise) without special tools or parts change.
- **Universal application**  
The unit can be mounted in any orientation on to any quarter turn or linear application by connection via a NAMUR or Kinetrol square interface.
- **Loop powered**  
No separate power needed, just a 4-20mA signal plus air supply.
- **Integral options - easily retrofitted modules include:**
  - two wire 4-20mA isolated angle retransmit
  - mechanical or inductive position indicator switches (general or hazardous areas)
  - Clear Cone high visibility indicator
  - Threaded conduit entries or DIN plugs for external connection.
- **Intrinsically safe approved options**
- **Weatherproof, compact and robust metal housing**
- **Zero backlash coupling with easily adjustable switch strikers**
- **Vibration and shock resistant to 4G**
- **Built in gauge ports/external connections**



Simplified Functional Diagram of EL Positioner





## Application

The EL positioner can be directly mounted on standard Kinetrol actuator models 05 to 15, both double acting and spring return, giving an assembly with no external plumbing, wiring or mechanical connections and the best backlash free control. Mount kits are available for models 16, 18, 20, 30 and 60 actuators.

Alternatively, discrete versions mount on any actuator via VDI/VDE 3845 NAMUR drive, or Kinetrol male square, with mounting bracket. Special adaptations for linear cylinders are also available - consult Kinetrol for details.

The EL Positioner ATEX approval includes the fitting of a special version of the popular Clear Cone high visibility monitor.

## Specification

**Air Supply** instrument quality (dry, clean, oil free Class 6.4.4 ISO8573.2001), 3.5 to 7 bar (50 psi to 100 psi). Consult Kinetrol for 5µm inlet air filter option

**Signal** 4-20mA, requiring max 8V to drive through positioner circuit

**Control Response** 0-90° positioning with one linear and 10 non-linear preselected characteristics as standard. Consult Kinetrol for the following versions:  
 i) linearisation of butterfly valve characteristics  
 ii) Pre-selected travel time extension option (with active feedback control of travel speed)  
 iii) customised responses

**Sensitivity** better than 0.1mA\*\*

**Hysteresis** better than 0.7% of span\*\*

**Repeatability** better than 0.7% of span\*\*

**Deviation from Linearity** less than 0.7% of span\*\*

**Flowrate** 3.3 scfm/93 l/m @ 5.5 bar

**Operating Temperature** -20° to +70°C

**Adjustments** low & high points (define range), proportional gain, velocity proportional setpoint advance (damping)

**Weight** 2.95 kg/6.5 lb

**Dimensions** see page 63

**Materials** case and cover - zinc alloy  
 spool and liner - stainless steel

**Finish** epoxy stove enamel

**Enclosure Rating** IP65/NEMA 4X

\*\* These refer to the combination of Kinetrol actuator with EL positioner - not just the positioner performance

## Travel Times

Maximum velocity (no load) at 80 psi / 5.5 Bar  
 Direct mount from EL positioner to actuator

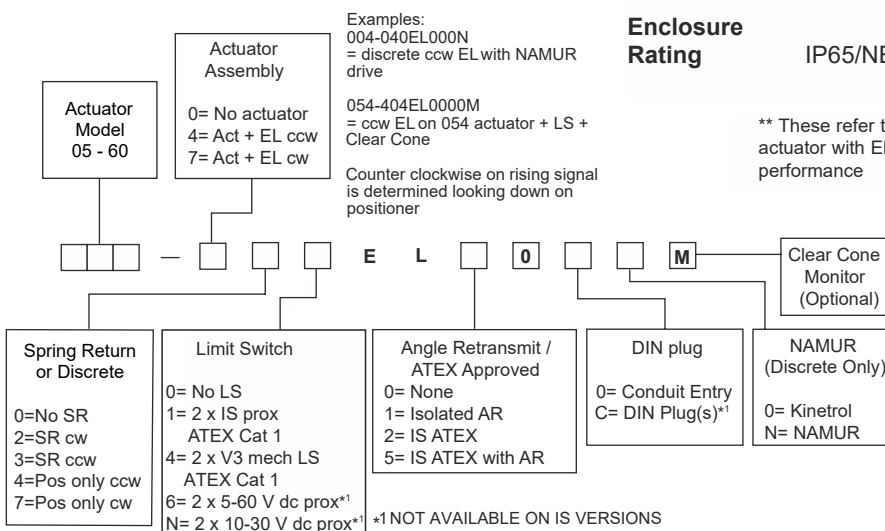
| Model   | 05  | 07 | 08 | 09 | 10 | 12 | 14  | 15  |
|---------|-----|----|----|----|----|----|-----|-----|
| Deg/Sec | 129 | 65 | 38 | 33 | 22 | 15 | 7.5 | 4.3 |

\*Externally piped from EL positioner to actuator

| Model   | 7* | 8* | 9* | 10* | 12* | 14* |
|---------|----|----|----|-----|-----|-----|
| Deg/Sec | 76 | 46 | 38 | 28  | 18  | 8.6 |

| Model   | 15* | 16* | 18* | 20* | 30* | 60* |
|---------|-----|-----|-----|-----|-----|-----|
| Deg/Sec | 4.3 | 4.1 | 2   | 1   | 0.7 | 0.3 |

## Ordering Codes



For more information see KF-372



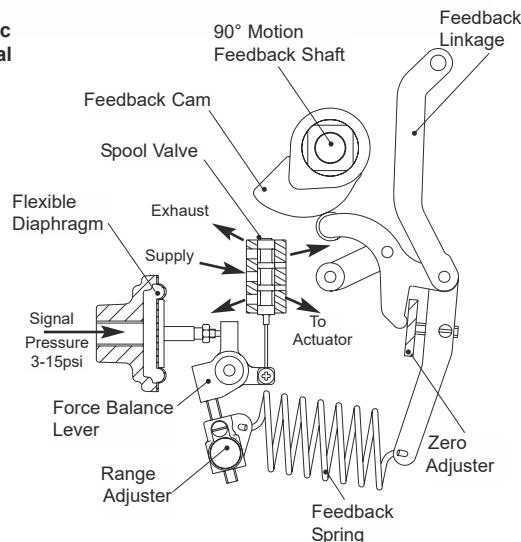


### Operation

The AP Positioner is designed to drive a rotary or linear actuator to a position set by a 3-15 psi (0.2 to 1.0 bar) signal and hold it there until the signal changes. When a signal pressure is applied to the diaphragm it moves the force balance lever clockwise against the tension of the feedback spring. This moves the spool valve, supplying air pressure to one side of the actuator while exhausting trapped air from the other side. The feedback shaft follows the movement of the actuator and turns the cam counter clockwise, pushing the cam follower and increasing the tension on the feedback spring until it balances the forces on the diaphragm and moves the spool valve to its hold position.

The input signal and desired position is determined by the cam profile. A cam giving 0-90° output movement linearly proportional to a 3-15 psi (0.2-1.0 bar) signal is standard, and almost any desired characteristic can be supplied to order; if it cannot be found in the list of existing options contact Kinetrol.

Schematic Functional Diagram



The AP positioner moves an actuator to a position set by a 3-15psi control signal and holds it there. Its features are:

- **Fast, smooth, accurate response**
- **Simple, all-mechanical function for unbeatable reliability**
- **Three flow options to optimise control on all actuator sizes**
- **Universal application**  
The unit can be mounted in any orientation on to any quarter-turn or linear application
- **Easy set up**  
Quick calibration and reversal of rotational sense (clockwise and counter clockwise) without special tools or parts change
- **ATEX CAT 1 / IECEx approved versions available**
- **Easily retrofitted integral module options include:**
  - Two wire 4-20mA angle retransmit (inside the same case)
  - Mechanical or inductive limit switches (general or hazardous areas)
  - 4-20mA I/P convertors (general or hazardous areas)
  - Clear Cone visual position indicator (general or hazardous areas)
  - DIN plug option for retransmit connection
  - Low (-40°C) and high (100°C) temperature versions available
  - Fail hold options available
  - Choice of mount options - see opposite
- **Weatherproof, compact and robust metal housing**
- **Vibration and shock resistant to 4G**
- **Built in ports for signal air supply and gauge connections**
- **ATEX CAT 2 Exd switch option available**



The AP positioner can be directly mounted on standard Kinetrol models 05, 07, 08, 09, 10, 12, 14 and 15 actuators, both double acting and spring return, giving an assembly with no external plumbing, wiring or mechanical connections and the best in direct backlash free control. Mount kits are available for models 16, 18, 20, 30 and 60.

Alternatively, discrete versions mount on any actuator using VDI/VDE 3845 NAMUR drive, or Kinetrol male square with mounting brackets. Neat adaptations for linear cylinders are also available - consult Kinetrol for details.

## Specification

|                                    |  |
|------------------------------------|--|
| <b>Air Supply</b>                  | instrument quality (dry, clean, oil free) 3.5 to 7 bar, (50 psi to 100 psi) standard. Consult Kinetrol for low pressure application  |
| <b>Signal</b>                      | 3-15psi (0.2-1.0 bar) standard. Consult Kinetrol for split range, 6-30 psi etc.  |
| <b>Control Response</b>            | 0-90° linear output standard. Consult Kinetrol for other characteristic cam options  |
| <b>Sensitivity</b>                 | better than 0.7% of span*  |
| <b>Hysteresis</b>                  | better than 0.7% of span*  |
| <b>Deviation from linearity</b>    | less than 1% of span*  |
| <b>Flowrates @ 5.5 bar</b>         | AP: 3.3 scfm (93nl/min)<br>MP: 10.0 scfm (283nl/min)<br>HP: 27.0 scfm (764nl/min)  |
| <b>Operating Temperature Range</b> | -20° to +80°C Standard<br>-20° to +100°C High Temp<br>-40° to +80°C Low Temp   |
| <b>Weight</b>                      | 2.8 kg/6.2 lb  |
| <b>Materials</b>                   | <ul style="list-style-type: none"> <li>• case and cover - zinc alloy</li> <li>• spool and liner - stainless steel</li> <li>• diaphragm:                     <ul style="list-style-type: none"> <li>- reinforced polyurethane (standard)</li> <li>- fluorocarbon rubber (high temp)</li> <li>- silicone rubber (low temp)</li> </ul> </li> <li>• feedback spring - steel</li> </ul> |
| <b>Dimensions</b>                  | see page 62  |
| <b>Finish</b>                      | epoxy stove enamel   |
| <b>Enclosure Rating</b>            | IP54   |
| <b>Output Torque</b>               | same as double acting or spring return actuator. When controlling fast movement of inertia loads consult Kinetrol  |

\* These refer to the combination of Kinetrol actuator with AP positioner - not just the positioner performance

**Maximum Vibration Tolerance** 4G, 100Hz

**I/P Converter Options** see page 46

## Travel Times

Maximum velocity (no load) at 80 psi / 5.5 bar

| Model   | 05  | 07 | 08 | 09 | 10 | 12 | 14   | 15  |
|---------|-----|----|----|----|----|----|------|-----|
| Deg/Sec | 180 | 90 | 53 | 45 | 33 | 25 | 10.6 | 6.0 |

\*Externally piped from AP positioner to actuator

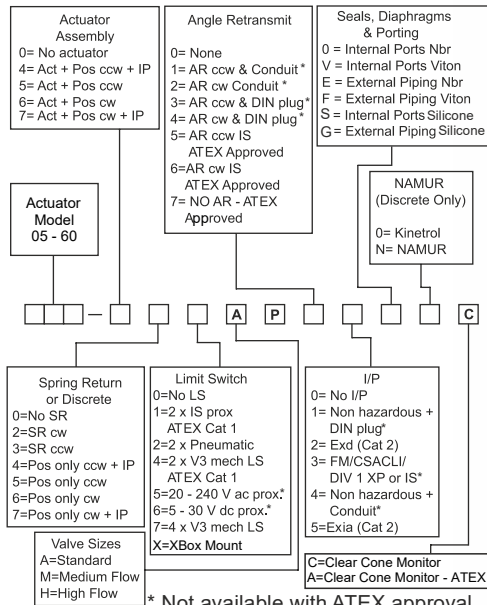
| Model   | 12* | 14*  | 15* | 16*  | 18*  | 20* | 30* | 60* |
|---------|-----|------|-----|------|------|-----|-----|-----|
| Deg/Sec | 32  | 13.8 | 7.5 | 22.5 | 11.3 | 5.6 | 3.8 | 1.9 |

## Cam Options

Giving typical control characteristics. Contact Kinetrol for details of other options or see TD112.

| Air Signal              | Electrical Signal | Output Movement | Characteristic    | Cam No. |
|-------------------------|-------------------|-----------------|-------------------|---------|
| 3-15 psi<br>0.2-1.0 bar | 4-20mA            | 0-90°           | Linear            | 5-1A    |
| 3-9psi<br>0.2-0.6 bar   | 4-12mA            | 0-90°           | Linear            | 5-2A    |
| 6-12 psi<br>0.4-0.8 bar | 8-16mA            | 0-90°           | Linear            | 5-3A    |
| 9-15psi<br>0.6-1.0 bar  | 12-20mA           | 0-90°           | Linear            | 5-4A    |
| 3-15 psi<br>0.2-1.0 bar | 4-20mA            | 0-60°           | Linear            | 5-5A    |
| 3-15 psi<br>0.2-1.0 bar | 4-20mA            | 0-45°           | Linear            | 5-6A    |
| 3-15 psi<br>0.2-1.0 bar | 4-20mA            | 0-90°           | Proportional Flow | 5-7A    |
| 3-9 psi<br>0.2-0.6 bar  | 4-12mA            | 0-90°           | Proportional Flow | 5-8A    |
| 9-15 psi<br>0.6-1.0 bar | 12-20mA           | 0-90°           | Proportional Flow | 5-22A   |
| 3-12 psi<br>0.2-0.8 bar | 4-16mA            | 0-90°           | Linear            | 5-13A   |
| 9-15 psi<br>0.6-1.0 bar | 12-20mA           | 0-60°           | Linear            | 5-14A   |

## Ordering Codes



\*A Valve is supplied with all sizes up to and inc' 09  
\*M Valve is supplied with 10-15  
\*H Valve is supplied with sizes 16-60

UNLESS SPECIFICALLY REQUESTED OTHERWISE Recommended spring unit for model 14 actuator is 4900 type. This should be coded 12□49AP or 13□49AP instead of the usual 12□AP or 13□AP. The same applies to other specially coded spring assemblies.

For more information see KF-391







The P3 On/Off positioner consists of an electronic positioning circuit mounted in a robust all-metal enclosure, which controls a ¼-turn rotary pneumatic actuator via standard on-off solenoid valves which are direct-mounted on the actuator's own interface.

The P3 circuit is designed so that its assembly can be mounted inside a standard Kinetrol limit switch box (either ULS-type, or explosion proof XLS-type), using only two screws. The P3 assembly includes a feedback potentiometer and anti-backlash gear drive, which engages with gear teeth on the limit switch coupling, to read the actuator's position. The limit switch coupling, complete with gear teeth, needs to replace the standard coupling if a standard box is being retrofitted with a P3.

The positioner circuit is powered by the mid-point input voltage. It functions by comparing the actual mid-point position (read by the feedback potentiometer) with the set position (set via an on-board preset or a remote preset or a remote 4-20mA signal). The positioner circuit uses its solid-state switched outputs to power solenoid valves which drive the actuator towards the position where the set position corresponds with the actual position. When it gets there, the solenoids are switched to hold that position.

The positioner circuit incorporates a unique power supply allowing it to be powered by any of 24V dc, 115V ac or 230V ac, 50/60 Hz, without the need for any change. The supply maintains full isolation of the low voltage control circuit from the power input line (up to 5KV). Switching of the solenoid valve outputs is achieved through opto-isolated solid state switches which operate at all the above voltages – only the solenoid coils themselves need to be adapted specifically to the supply voltage. The use of solid state switching avoids any limitations on relay contact life.

Double acting models are available as fail-free (standard), fail-down (moves clockwise or counter clockwise on loss of electrical power if air supply is still present) and fail-hold (holds position on loss of electrical and / or air supply) variants. Spring return models move in the direction of the spring on loss of electrical or air supply.

An optional angle retransmit (AR) circuit can be retrofitted by plugging it into the top of the positioner circuit and fixing with three screws. The AR circuit is a 2-wire loop-powered 4-20mA device, which reads the position of the positioner's feedback pot. It is fully functional whether or not the positioner circuit is powered. The feedback signal is electronically isolated (ie. floating) relative to the low voltage positioner circuit (which in turn is electrically isolated from the power supply and solenoid connections).

Extra solid-state switches have been incorporated on the positioner board to allow supply to both solenoid valves via a single cable for movement to the upscale position when the positioner is in spring-return or fail-down mode, while still allowing the positioner to control the two valves independently for the mid position. If the mid-position input is energised, then these extra switches isolate the solenoids from the upscale/downscale inputs.

The three power input lines (for up, mid, down positions) are independently fused using plug-in miniature fuses on the positioner circuit board.

External connections are made via a multi-option connector board, which allows simultaneous connection of up to four changeover limit switches, three control supply inputs plus neutral/negative, and a single low-voltage signal. This connector board, like the positioner circuit assembly, mounts in either the standard ULS or XLS box using two screws.

If an angle retransmit circuit is fitted using the low voltage signal terminal, optional 4-20mA inputs or external setpoint pot wires can be connected, either directly to the terminal block on the positioner circuit or, if only three or less limit switches are in use, relayed through an unused limit switch terminal on the connector board.

The limit switch box is fitted with a ground terminal which must be connected to a suitable external ground.

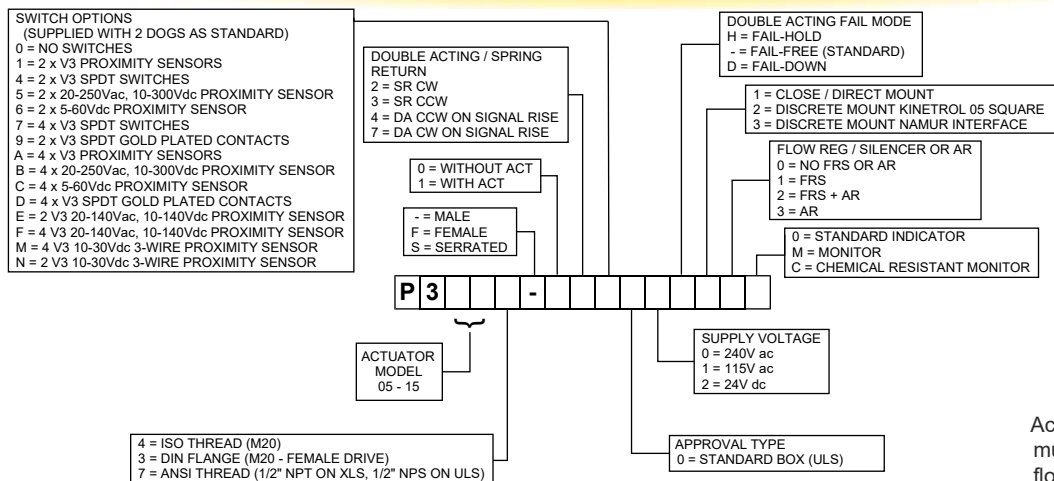
Industrial solenoid valves which permit the use of standard quality air supplies (instrument quality air is not necessary), are direct-mounted on adaptor blocks on the side of the actuator, and electrically connected via steel-armoured flying leads with DIN sockets on the solenoid end. At the positioner end, they connect to two 2-way terminal blocks on the circuit board. A range of solenoid valve options are available, determined by the function required, the supply voltage, and whether or not the unit requires hazardous area certification. Customer selection is via the order code.

- Robust modulating actuator control - tolerant of standard quality air supplies (instrument quality air is not necessary) via industrial solenoid valves.
- Three position rotary control using only three electrical inputs plus air supply, for filling applications etc.
- Two endstop positions + adjustable mid position anywhere in angular range of actuator (90 or 180°).
- Control circuit mounts inside standard all metal industrial quality Kinetrol ULS or XLS limit switch boxes – available fully assembled, or (on non-explosion proof models only) for user retrofit to existing boxes.
- Direct mounting onto model 05 to 15 actuators. Namur mounting options available.
- Uses direct-mounting standard solenoid valves outside box to position actuator.
- Easy adjustment of mid position set point by switch-selectable choice of methods: on-board pot, remote pot or 4-20mA input signal.
- Explosion proof options available (approved to IECEx, ATEX) by use of XLS housing plus standard explosion proof solenoid valves (see page 45).
- All new positioner circuit – runs on 24V dc, 115V ac or 230V ac power without any adjustment.
  - Solid-state universal-voltage solenoid switching -no mechanical contacts.
  - Three separate on-board mains fuses for three inputs.
  - Switchable selection of mid-point setting method (on-board preset, remote preset, remote 4-20mA signal).
  - Switchable selection of double acting or spring return operating mode.
  - Power input isolated from signal inputs and outputs for all voltage options.
  - Moulded reinforced plastic internal circuit cover for insulated safety.
  - Positioner has user-adjustable zero, span, deadband and damping parameters via preset pots for easy optimisation of positioning performance.
  - Damping parameter gives velocity-proportional setpoint advance to allow better stabilisation of fast-moving or high-inertia loads while maintaining resolution and repeatability.
- Retrofittable isolated loop-powered 4-20mA angle-retransmit circuit available – just plugs in inside same enclosure – with its own user-adjustable zero and span presets.

## Specification

|   |   |
|---|---|
| <b>Compatible Actuator Sizes</b>        | models 05 to 15   |
| <b>Supply Voltages</b>                  | 230V ac ± 10%, 50 or 60 Hz<br>115V ac ± 10%, 50 or 60 Hz<br>24V dc ± 10%  |
| <b>Power Consumption</b>                | positioner 1.5W max.<br>solenoids 5 VA max. per solenoid.   |
| <b>Operating Temperature Range</b>      | -5 to +50°C<br>(limited by solenoid valve specification)<br>explosion proof option see page 45  |
| <b>Operating Pressure</b>               | 30 to 100 psi<br>2.0 to 7.0 Bar   |
| <b>Selectable External Inputs</b>       | 4-20mA - impedance 250 ohm.<br>Potentiometer - minimum resistance 10K ohm.  |
| <b>Positioner Performance</b>           | linearity - better than 1% of range<br>deadband - 0.1 to 3% of range<br>repeatability - better than 1% of range   |
| <b>Optional 2-wire Angle Transducer</b> | supply voltage - 14.7 to 27V dc.<br>output - 4-20mA. linearly proportionate to angular position, electrically isolated from all other inputs and outputs<br>functions with or without positioner circuit energisation |
| <b>Dimensions</b>                       | see page 64   |

## Ordering Codes



For more information see KF-633

Actuator size 05 must be fitted with flow regulators



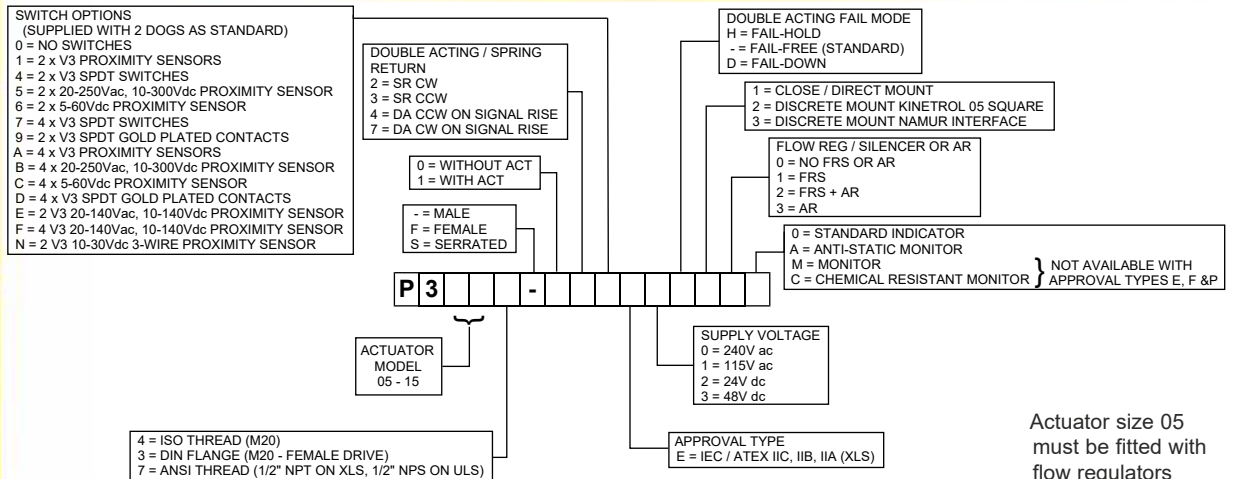
The explosion proof P3 on/off positioner offers a robust three position rotary control device with a fast, smooth, accurate response in a compact corrosion resistant, aluminium housing.

The unit is available ATEX approved to Category 2 and offers four voltages, many switch options and angle position feedback. Available for close mounting on Kinetrol actuator models 05 to 15 or discrete mounting via a Kinetrol 05 square or NAMUR drive.

### Specification

|   |   |   |   |
|---|---|---|---|
| <b>European / Global Protection<br/>ATEX / IECEx Approval</b> | Exd Group IIC Category 2<br>Gas & Dust T5, IP66                               | <b>Coupling</b>                         | zinc plated steel or stainless steel option.  |
| <b>Voltages</b>   | 240V ac, 115V ac<br>48V dc, 24V dc  | <b>Positioner Performance</b>           | linearity -<br>better than 1% of range<br>deadband -<br>0.1 to 3% of range<br>(subject to optimisation of speed, deadband and damping).   |
| <b>Working Temperature Range</b>                              | -20°C to +60°C  | <b>Optional 2-wire Angle Transducer</b> | supply voltage -<br>8.5 to 27V dc<br>output -<br>4-20mA, linearly proportionate to angular position, electrically isolated from all other inputs and outputs<br>functions with or without positioner circuit energisation |
| <b>Power Consumption</b>                                      | positioner 1.5 W max.<br>solenoids 5 VA max. per solenoid.                    | <b>Dimensions</b>                       | see page 64   |
| <b>Selected External Inputs</b>                               | 4-20mA - impedance<br>250 ohm.<br>potentiometer - minimum resistance 10K ohm. |   |   |
| <b>Casing</b>   | precision diecast LM24 alloy, anodised & epoxy stove enamel.                  |   |   |

### Ordering Codes



Actuator size 05 must be fitted with flow regulators





The optional Kinetrol I/P Controller is mounted in place of the standard diaphragm housing on the side of the AP positioner case. The AP positioner can still be mounted in any orientation and gives an angular output position which is proportional to the input current control signal between 4-20mA.

The 4-20mA signal is converted to an air pressure by a coil and magnet and flapper valve arrangement. This air pressure controls the positioner in the normal way.

Zero and range adjustment is done within the positioner in the same way as with a standard pneumatic positioner. No adjustment is necessary within the I/P Controller. The cover is removed only to connect the two wires - this is not necessary with the DIN plug option.



### Specification - Safe Area

|                                  |   |
|----------------------------------|---|
| <b>Electrical Control Signal</b> | 4-20mA  |
| <b>Coil Impedance</b>            | 20 ohms typical   |
| <b>Cable Entry</b>               | 16mm conduit or gland (mini DIN plug, IP 65 with Pg9 cable gland, 6-8mm dia optional) |
| <b>Air Supply</b>                | 80 psi/5.5 bar nominal  |
| <b>Air Entry</b>                 | G <sup>1</sup> / <sub>8</sub> (fitted with 6mm pipe dia. push in connector)           |
| <b>Weight</b>                    | 1.2 kg  |
| <b>Dimensions</b>                | see page 62   |
| <b>Linearity</b>                 | 1.5%*   |
| <b>Hysteresis</b>                | less than 1%*   |
| <b>Sensitivity/Deadband</b>      | less than 1%*   |
| <b>Supply Pressure Influence</b> | 0.2% per psi between 80 and 60 psi  |
| <b>Quiescent Air Consumption</b> | 3.5 l/min free air max  |
| <b>Working Temperature Range</b> | -20°C to +80°C  |

Instrument quality dry, clean air obligatory (Class 6.4.4 ISO8573.2001)

\* These refer to the combination of Kinetrol actuator with I/P controller - not just the positioner performance

### I/P Controller - Hazardous Area

Kinetrol offers various optional I/P converters which are explosion proof or intrinsically safe certified for use in ATEX Zones 1 & 2 or NEC and CSA CLASS I DIVISION 1. They are mounted directly onto Kinetrol AP positioners with integral air supply.

### Specification - Hazardous Area

|                                  |   |
|----------------------------------|---|
| <b>Electrical Control Signal</b> | 4-20mA  |
| <b>Input Resistance</b>          | 260 ohms at 24°C  |
| <b>Cable Entry</b>               | Exd - M20 x 1.5 conduit entry<br>FM/CSA - 1/2 NPT conduit entry                                       |
| <b>Air Supply</b>                | 50-100 psi/3.5 to 7 bar   |
| <b>Air Entry</b>                 | Exd (AP & MP) G <sup>1</sup> / <sub>4</sub> (1/4 NPT)<br>(HP) G <sup>3</sup> / <sub>8</sub> (3/8 NPT) |
| <b>Working Temperature</b>       | -40°C to 75°C for Exd<br>-55°C to 85°C for Exia   |

Instrument quality dry, clean air obligatory (Class 3.4.4 ISO 8573.1)

#### ATEX certificated as follows:

Explosion proof

Ex II 2G Ex d IIB+H2 T6 Ta= -40°C to +75°C  
Ex II 2D Ex tD A21 IP65 T85°C Ta= -40°C to +75°C

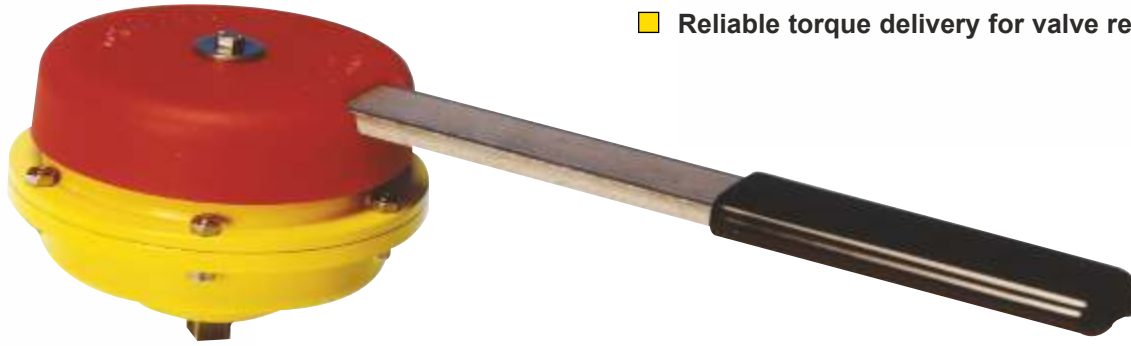
Intrinsically safe

Ex II 1G Ex ia IIC T4 Ta= -55°C to +85°C

For FM Approved version - contact Kinetrol



If you want to operate a valve manually, but maintain the advantage of the fail-safe spring's certainty of position when unattended, use this device.



- Manual unit, cannot be left in the wrong position
- Reliable torque delivery for valve reseal

- ISO5211 female drive & ATEX Category 2 approved options available for models 02, 03, 05 and 07
- Clockwise or counter clockwise 90° spring action
- Spring housing sealed to IP65 to protect from internal corrosion
- Bi-square (star) and serrated female drive options available

### Application

Manual fail-safe spring units are available in Kinetrol sizes 02, 03, 05 and 07 with factory adjusted torques from 1.4Nm to 45.5Nm.

### ISO/Female Drive Versions

The 03, 05 and 07 models are available with female drives for direct mount. The model 03 has F03/05 or F04 mounting flanges, the model 05 has F03/05/07 or F04 flanges and the model 07 has a F05/07 flange.

### Specification

|                           |  |
|---------------------------|--|
| Spring Case               |  |
| 02, 03, 05 & 07 ATEX      | Die cast zinc alloy, epoxy paint finish      |
| 07 non-ATEX               | Die cast aluminium alloy, epoxy paint finish |
| Shaft                     | Stainless steel or carbon steel zinc plated  |
| Manual lever              | 03 & 05 - Stainless Steel<br>02 - Aluminium  |
| Working Temperature range | -40°C to +80°C                               |

To order female drive versions, replace the '0-' in the product code with '3F'. For example a model 05 ISO female drive manual fail-safe cw handle with F03/05/07 flanges is coded: 053F020-1006. The F04 flange version is coded 053F020-1006/F4.

Female drive versions with the same flange dimensions are available with ANSI threads eg 057F020-1006/F4.

Serrated female drive options can also be supplied for models 05 and 07. To order these replace the 'F' in the product code with an 'S'.

Female 02 versions are available by use of an ISO adaptor. Refer to page 26 for details.

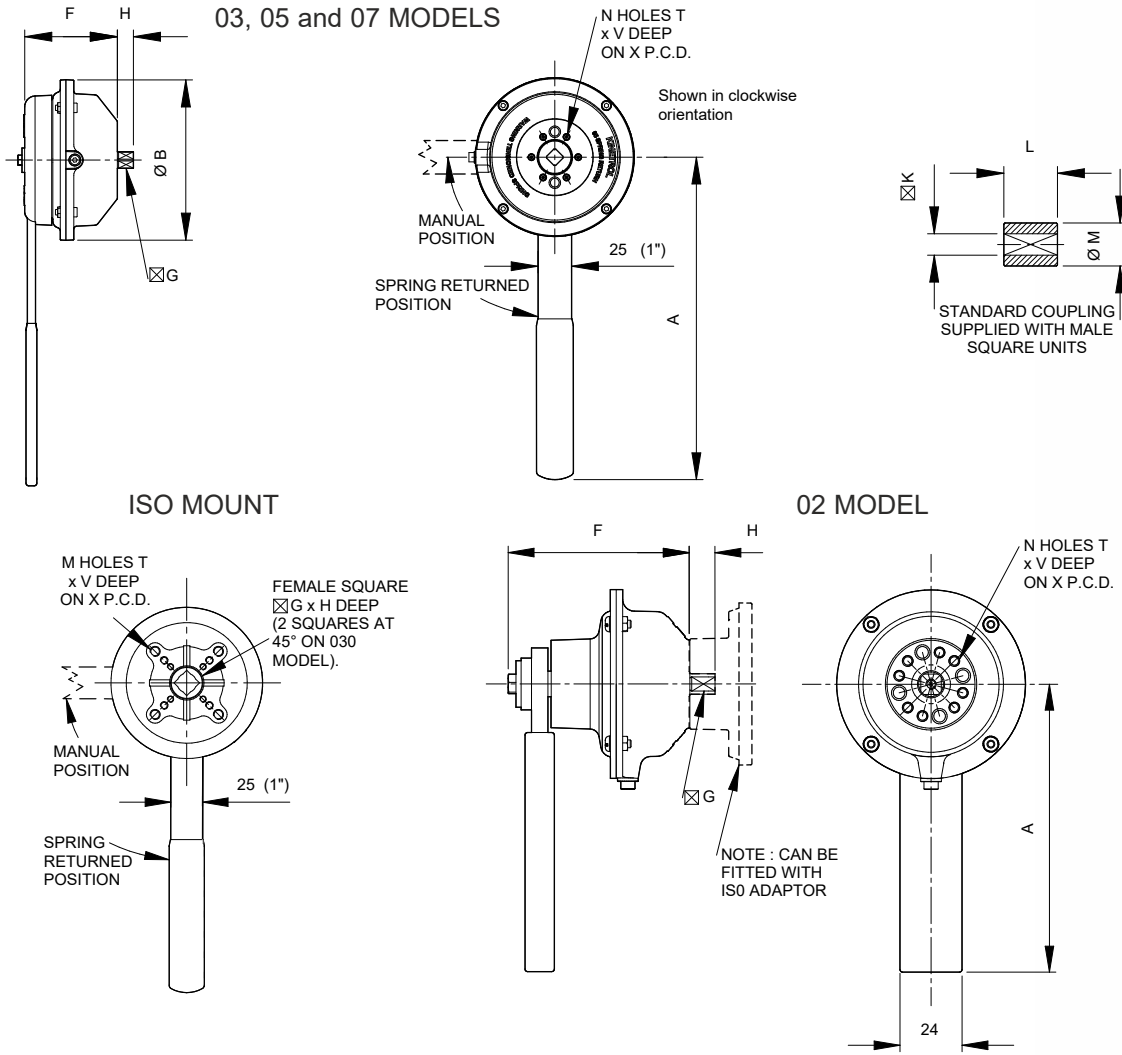
### Ordering Codes

To order a manual fail-safe spring unit, quote model number, direction of spring (as per technical data on page 28) followed by product type code:

Type Codes:    -1006    Manual spring unit (e.g. 054-020-1006)  
                      -1016    ATEX manual spring unit

For reduced torque versions contact Kinetrol.





Dimensions/Torques

Metric Units

|                 | A   | B   | C  | D  | F    | G              | H †  | K                | L    | M    | N  | T        | V        | X        | Maximum Torque Nm | Torque Reduction Thro' Stroke Nm |
|-----------------|-----|-----|----|----|------|----------------|------|------------------|------|------|----|----------|----------|----------|-------------------|----------------------------------|
|                 | mm  | mm  | mm | mm | mm   | mm             | mm   | mm               | mm   | mm   | mm | mm       | mm       | mm       |                   |                                  |
| 024-020-1006    | 110 | 73  | -  | -  | 70   | 7.98<br>7.93   | 10.0 | 8.022<br>8.000   | 22.0 | 16.0 | 4  | M4       | 8.0      | 25.5     | 5.1               | 1.0                              |
| 034-020-1006    | 238 | 108 | -  | -  | 62   | 8.98<br>8.93   | 12.0 | 9.022<br>9.000   | 22.0 | 18.0 | 4  | M5       | 10.0     | 31.1     | 14.0              | 3.0                              |
| 054-020-1006    | 238 | 118 | -  | -  | 68.5 | 9.525<br>9.470 | 13.0 | 9.58<br>9.55     | 25.4 | 19.0 | 6  | M5       | 8.0      | 34.9     | 24.0              | 3.5                              |
| 074-020-1006    | 360 | 152 | -  | -  | 103  | 15.98<br>15.93 | 20.0 | 16.027<br>16.000 | 40.0 | 32.0 | 4  | M8       | 15.0     | 50.8     | 45.5              | 5.8                              |
| 033F020-1006    | 238 | 108 | -  | -  | 66   | 11.0           | 12.0 | -                | -    | -    | 4  | M5/M6    | 10/12    | 36/50    | 14.0              | 3.0                              |
| 033F020-1006/F4 | 238 | 108 | -  | -  | 66   | 11.0           | 12.0 | -                | -    | -    | 4  | M5       | 10.0     | 42.0     | 14.0              | 3.0                              |
| 053F020-1006    | 238 | 118 | -  | -  | 68.5 | 14.0           | 16.0 | -                | -    | -    | 4  | M5/M6/M8 | 10/12/13 | 36/50/70 | 24.0              | 3.5                              |
| 053S020-1006    | 238 | 118 | -  | -  | 68.5 | *              | *    | -                | -    | -    | 4  | M5/M6/M8 | 10/12/13 | 36/50/70 | 24.0              | 3.5                              |
| 053F020-1006/F4 | 238 | 118 | -  | -  | 68.5 | 14.0           | 16.0 | -                | -    | -    | 4  | M5       | 10.0     | 42.0     | 24.0              | 3.5                              |
| 073F020-1006    | 360 | 152 | -  | -  | 103  | 17.0           | 22.0 | -                | -    | -    | 4  | M6/M8    | 14       | 50/70    | 45.5              | 5.8                              |
| 073S020-1006    | 360 | 152 | -  | -  | 103  | *              | *    | -                | -    | -    | 4  | M6/M8    | 14       | 50/70    | 45.5              | 5.8                              |

English Units

|                 | A     | B    | C    | D    | F    | G              | H †  | K              | L    | M    | N    | T               | V              | X              | Maximum Torque lbf.ins | Torque Reduction Thro' Stroke lbf.ins |
|-----------------|-------|------|------|------|------|----------------|------|----------------|------|------|------|-----------------|----------------|----------------|------------------------|---------------------------------------|
|                 | inch  | inch | inch | inch | inch | inch           | inch | inch           | inch | inch | inch | inch            | inch           | inch           |                        |                                       |
| 027-020-1006    | 4.33  | 2.87 | -    | -    | 2.76 | 0.314<br>0.312 | 0.39 | 0.316<br>0.315 | 0.86 | 0.63 | 4    | 8-32            | 0.310          | 1.00           | 45                     | 8.00                                  |
| 037-020-1006    | 9.37  | 4.25 | -    | -    | 2.44 | 0.354<br>0.352 | 0.47 | 0.355<br>0.354 | 0.86 | 0.70 | 4    | 10-24           | 0.390          | 1.22           | 124                    | 26.55                                 |
| 057-020-1006    | 9.37  | 4.64 | -    | -    | 2.70 | 0.375<br>0.373 | 0.51 | 0.377<br>0.376 | 1.00 | 0.75 | 6    | 10-24           | 0.310          | 1.37           | 212                    | 31.00                                 |
| 077-020-1006    | 14.17 | 5.98 | -    | -    | 4.06 | 0.629<br>0.627 | 0.79 | 0.631<br>0.630 | 1.57 | 1.26 | 4    | ¼"-18           | 0.625          | 2.00           | 400                    | 51.00                                 |
| 037F020-1006    | 9.37  | 4.25 | -    | -    | 2.60 | 0.43           | 0.47 | -              | -    | -    | 4    | 10-24 / ¼"      | 0.31/0.39      | 1.42/1.97      | 124                    | 26.55                                 |
| 037F020-1006/F4 | 9.37  | 4.25 | -    | -    | 2.60 | 0.43           | 0.47 | -              | -    | -    | 4    | 10-24           | 0.390          | 1.65           | 124                    | 26.55                                 |
| 057F020-1006    | 9.37  | 4.64 | -    | -    | 2.70 | 0.55           | 0.63 | -              | -    | -    | 4    | 10-24 / ¼" / ⅜" | 0.39/0.47/0.51 | 1.42/1.97/2.76 | 212                    | 30.98                                 |
| 057S020-1006    | 9.37  | 4.64 | -    | -    | 2.70 | *              | *    | -              | -    | -    | 4    | 10-24 / ¼" / ⅜" | 0.39/0.47/0.51 | 1.42/1.97/2.76 | 212                    | 30.98                                 |
| 057F020-1006/F4 | 9.37  | 4.64 | -    | -    | 2.70 | 0.55           | 0.63 | -              | -    | -    | 4    | 10-24           | 0.390          | 1.65           | 212                    | 30.98                                 |
| 077F020-1006    | 14.17 | 5.98 | -    | -    | 4.06 | 0.669          | 0.75 | -              | -    | -    | 4    | ¼" / ⅜"         | 0.39/0.51      | 1.97/2.76      | 400                    | 51.00                                 |
| 077S020-1006    | 14.17 | 5.98 | -    | -    | 4.06 | *              | *    | -              | -    | -    | 4    | ¼" / ⅜"         | 0.39/0.51      | 1.97/2.76      | 400                    | 51.00                                 |

\* Refer to TD141 for details on serrations and inserts

† Minimum

Weights – Metric

- 02 Models – 0.50 kg
- 03 Models – 1.87 kg
- 05 Models – 1.87 kg
- 07 Models (Non-ATEX) – 4.21 kg
- (ATEX) – 5.17 kg

Weights – English

- 02 Models – 1.102 lb
- 03 Models – 4.123 lb
- 05 Models – 4.123 lb
- 07 Models (Non-ATEX) – 9.281 lb
- (ATEX) – 11.374 lb





To open or close a valve or damper automatically in case of a fire this device allows the valve to operate using a fusible link mechanism designed to yield at a set temperature.



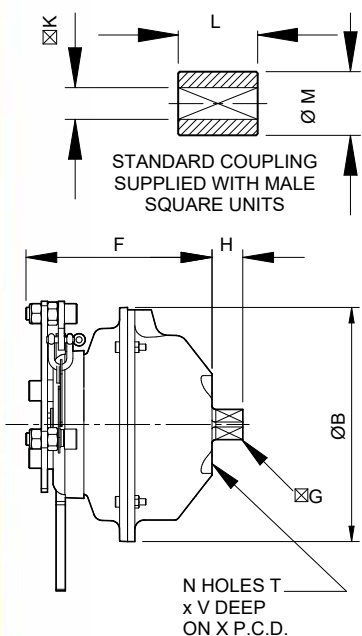
### Yield Temperatures

Fire fail-safe fusible links  
Solder type (UL approved)

|                                 |      |       |
|---------------------------------|------|-------|
| Yield temperature options       | 74°C | 100°C |
| Max. normal ambient temperature | 38°C | 66°C  |

### ISO/Female Drive Options

All models are available with female drive options for direct mount - see page 60



### Weights – Metric

- 05 Models – 2.70 kg
- 07 Models – 4.30 kg
- 09 Models – 9.20 kg
- 12 Models – 22.50 kg

### Weights – English

- 05 Models – 5.95 lb
- 07 Models – 9.48 lb
- 09 Models – 20.28 lb
- 12 Models – 49.60 lb

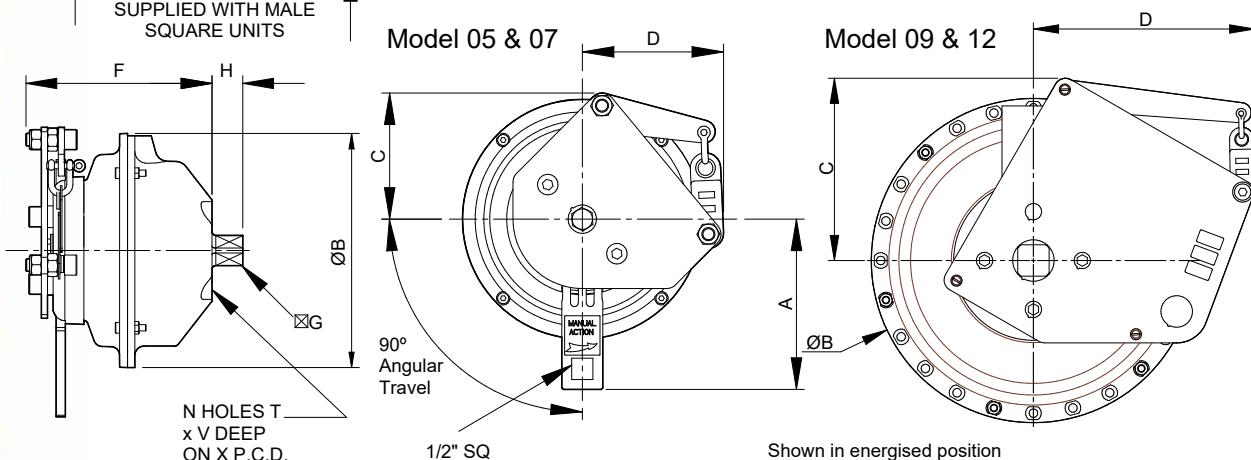
- Reliable torque delivery for valve reseal
- Available for Models 05, 07, 09 and 12 (maximum torque 226 Nm 2300 lbf ins)
- Two Yield Temperature Options
- Clockwise or counter clockwise 90° spring action
- ISO5211 female drive options available
- Spring housing sealed to IP65 to protect from internal corrosion
- ATEX Category 2 approved options available

### Ordering Codes

To order a fire fail-safe spring unit, quote model number, direction of spring (as per coding guide on page 47) followed by product type code:

- 0074 Fire fail-safe spring unit 74°C
- 0100 Fire fail-safe spring unit 100°C
- 1074 ATEX fire fail-safe spring unit 74°C
- 1100 ATEX fire fail-safe spring unit 100°C (example: 054-020-0074)

For reduced torque versions contact Kinetrol



### Metric Units

|              | A   | B   | C   | D   | F   | G              | H †  | K                | L    | M    | N  | T   | V    | X    | Maximum Torque Nm |
|--------------|-----|-----|-----|-----|-----|----------------|------|------------------|------|------|----|-----|------|------|-------------------|
|              | mm  | mm  | mm  | mm  | mm  | mm             | mm   | mm               | mm   | mm   | mm | mm  | mm   | mm   |                   |
| 054-020-0074 | 108 | 118 | 80  | 90  | 88  | 9.525<br>9.470 | 13.0 | 9.58<br>9.55     | 25.4 | 19.0 | 6  | M5  | 13.0 | 34.9 | 24.0              |
| 074-020-0074 | 108 | 152 | 80  | 90  | 121 | 15.98<br>15.93 | 20.0 | 16.027<br>16.000 | 40.0 | 32.0 | 4  | M8  | 15.0 | 50.8 | 45.5              |
| 094-020-0074 | -   | 200 | 108 | 130 | 144 | 18.98<br>18.93 | 26.0 | 19.033<br>19.000 | 50.0 | 38.0 | 4  | M10 | 20.0 | 65   | 95.0              |
| 124-020-0074 | -   | 258 | 145 | 176 | 209 | 25.00<br>24.90 | 31.0 | 25.06<br>25.00   | 56.0 | 50.0 | 4  | M12 | 24.0 | 77.8 | 205.0             |

### English Units

|              | A    | B     | C    | D    | F    | G              | H †  | K              | L    | M    | N    | T       | V     | X    | Maximum Torque lbf.ins |
|--------------|------|-------|------|------|------|----------------|------|----------------|------|------|------|---------|-------|------|------------------------|
|              | inch | inch  | inch | inch | inch | inch           | inch | inch           | inch | inch | inch | inch    | inch  | inch |                        |
| 057-020-0074 | 4.25 | 4.64  | 3.15 | 3.54 | 3.47 | 0.375<br>0.373 | 0.51 | 0.377<br>0.376 | 1.00 | 0.75 | 6    | 10-24   | 0.510 | 1.37 | 212                    |
| 077-020-0074 | 4.25 | 5.98  | 3.15 | 3.54 | 4.76 | 0.629<br>0.627 | 0.79 | 0.631<br>0.630 | 1.57 | 1.26 | 4    | 5/16-18 | 0.625 | 2.00 | 400                    |
| 097-020-0074 | -    | 7.87  | 4.25 | 5.12 | 5.67 | 0.747<br>0.745 | 1.02 | 0.749<br>0.748 | 1.97 | 1.50 | 4    | 3/8     | 0.787 | 2.56 | 841                    |
| 127-020-0074 | -    | 10.16 | 5.71 | 6.93 | 8.23 | 0.984<br>0.980 | 1.22 | 0.986<br>0.984 | 2.20 | 1.97 | 4    | 1/2     | 0.944 | 3.06 | 1814                   |



A patented part-turn rotary actuator that is driven to an end stop, in either direction, from an initial centre position and is spring returned to an accurate and positive mid point when the air supply is removed. The mid-position can be set mechanically anywhere in the actuator's travel range.

The spring to centre assemblies consist of one double acting actuator fitted with two or more opposing clock type springs contained within a single housing. Controlled with a dual coil, 5/3 solenoid valve (or two 3/2 single coil valves) which, when totally de-energised, allow the springs to precisely centre the actuator against physical stops. When either coil is energised the actuator will travel towards one of its end stops. As the vane moves towards an end stop the air stroke torque reduces as the spring torque increases and vice versa. When the coil is de-energised the vane will spring return to its original centre position. The usual 'centre' position will be in the middle of the actuator's 0 - 90 degree travel, but this can easily be adjusted to any mid-stroke location. A vernier scale on the adjustable plate (see attached picture) permits precise mid-position setting to within 1 degree.



(Actuator should be mounted to application to enable adjustable centre position and stationary end points)

- Reliable low stress clock type springs.
- Sealed, non-breathing housing protects spring in corrosive environments.
- Available in models 05 to 18 (excluding 15).
- Stroke up to 100° (200° option available - contact Kinetrol)
- Mid position can be set mechanically anywhere in the actuator's travel range using 'vernier' type scale.
- Self contained spring assembly which can be easily removed without a keeper plate.
- Can be used in aggressive or hazardous environments without the need for complex or sensitive instruments.
- Can be fitted with high temperature seal option for up to 100°C

| Actuator Model | Torque - Nm<br>Based on 5.5 bar |   |        | Torque - lbf ins<br>Based on 80 psi |   |         |
|----------------|---------------------------------|---|--------|-------------------------------------|---|---------|
|                | *Start                          | — | Finish | *Start                              | — | Finish  |
| 050-1205       | 19.2                            | — | 17.5   | 170.0                               | — | 169.9   |
| 070-1205       | 49.6                            | — | 42.4   | 412.0                               | — | 375.2   |
| 090-1205       | 99.0                            | — | 93.8   | 876.0                               | — | 830.1   |
| 120-1205       | 221.0                           | — | 204.0  | 1956.0                              | — | 1805.5  |
| 140-1205       | 533.0                           | — | 478.0  | 4717.0                              | — | 4230.6  |
| 160-1205       | 1009.0                          | — | 933.0  | 8930.0                              | — | 8257.7  |
| 180-1205       | 2686.0                          | — | 2417.0 | 23771.0                             | — | 21392.2 |

\* Start torque when angle adjusted to mid position  
Note: can be ordered without actuator eg. 050-0205





- **Simple compact unit**  
No external moving parts
- **Unique linkage design**  
converts to 180° travel  
120° option available
- **Constant gear-up ratio through travel range**  
Hence constant output torque
- **Rolling contact linkage mechanism**  
Ensures low wear, long life, low friction
- **Linkage sealed for life**  
Protected from the environment, long maintenance free life
- **Compatible with all Kinetrol modules**  
Direct mounted spring returns, limit switch boxes, positioners etc.
- **Adjustable endstops**

## Operation

Kinetrol's 180° actuator is produced by adding a 2:1 step-up linkage onto the output shaft of well proven 90° vane actuators.

Factory fitted, direct mount linkage units are available to suit model 02, 03, 05, 07, 09, 12, 14 and 16 actuators, giving a neat single unit with no mount kits or brackets. The linkage's unique geometry gives constant 2:1 step-up so that the output torque remains constant throughout the actuator's travel.

The all-steel mechanism of the linkage employs rolling contacts to minimise frictional losses and wear, and to maximise life. The linkage is lubricated for life, and encased in a robust, fully sealed, die cast alloy casing. Exterior surfaces are protected by a corrosion resistant epoxy stove enamel finish. Standard adjustable endstops on the 90 degree actuator can be used to set the angle of travel. The other end of the 90 degree actuator allows the full range of Kinetrol modular accessories to be fitted directly.

120 degree actuators are also available with adjustable end stops to give up to 133° of travel for the above model range - contact Kinetrol for details.

## Ordering Codes

To order a 180° actuator, add a '1' to the end of the code for the 90° actuator on which it is based and a '2' for a 120° actuator.

Examples:

To order an 074 cw spring return actuator plus 180° linkage, use code: 074-1201.

To order an 074 cw spring return actuator plus 120° linkage, use code: 074-1202.





### Double Acting Torques/Metric Units Nm

| Actuator Model | 1.4            | 2.0   | 2.8   | 3.5   | 4.1   | 4.8   | 5.5   | 6.2    | 6.9    |
|----------------|----------------|-------|-------|-------|-------|-------|-------|--------|--------|
|                | Pressure (bar) |       |       |       |       |       |       |        |        |
| 02-1001        | 0.6            | 1.1   | 1.6   | 2.2   | 2.7   | 3.2   | 3.7   | 4.2    | 4.8    |
| 03-1001        | 1.3            | 2.4   | 3.5   | 4.6   | 5.6   | 6.7   | 7.8   | 8.8    | 10.0   |
| 05-1001        | 3.2            | 5.2   | 7.2   | 9.3   | 11.3  | 13.6  | 15.6  | 17.8   | 19.9   |
| 07-1001        | 7.9            | 12.6  | 17.6  | 22.6  | 27.6  | 33.0  | 38.4  | 43.2   | 48.8   |
| 09-1001        | 16.3           | 20.0  | 37.1  | 47.6  | 58.0  | 69.2  | 80.4  | 91.2   | 103.0  |
| 12-1001        | 37.5           | 60.8  | 84.4  | 108.0 | 131.0 | 156.0 | 181.0 | 202.0  | 226.0  |
| 14-1001        | 97.2           | 151.0 | 206.0 | 262.0 | 316.0 | 375.0 | 434.0 | 488.0  | 542.0  |
| 16-1001        | 235.0          | 357.0 | 479.1 | 605.7 | 727.7 | 849.8 | 976.3 | 1098.4 | 1220.4 |

### Double Acting Torques/English Units lbf ins

| Actuator Model | 20             | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100   |
|----------------|----------------|------|------|------|------|------|------|------|-------|
|                | Pressure (psi) |      |      |      |      |      |      |      |       |
| 02-1001        | 5.6            | 10   | 14   | 19   | 24   | 28   | 33   | 37   | 42    |
| 03-1001        | 12             | 21   | 31   | 40   | 50   | 59   | 69   | 78   | 88    |
| 05-1001        | 28             | 46   | 64   | 82   | 100  | 120  | 138  | 157  | 176   |
| 07-1001        | 70             | 112  | 156  | 200  | 244  | 292  | 340  | 384  | 432   |
| 09-1001        | 144            | 236  | 328  | 420  | 512  | 612  | 712  | 808  | 912   |
| 12-1001        | 332            | 540  | 748  | 960  | 1160 | 1376 | 1588 | 1792 | 2000  |
| 14-1001        | 860            | 1340 | 1820 | 2320 | 2800 | 3320 | 3840 | 4320 | 4800  |
| 16-1001        | 2080           | 3160 | 4240 | 5360 | 6440 | 7520 | 8640 | 9720 | 10800 |

### Spring Return Torques/Metric Units Nm

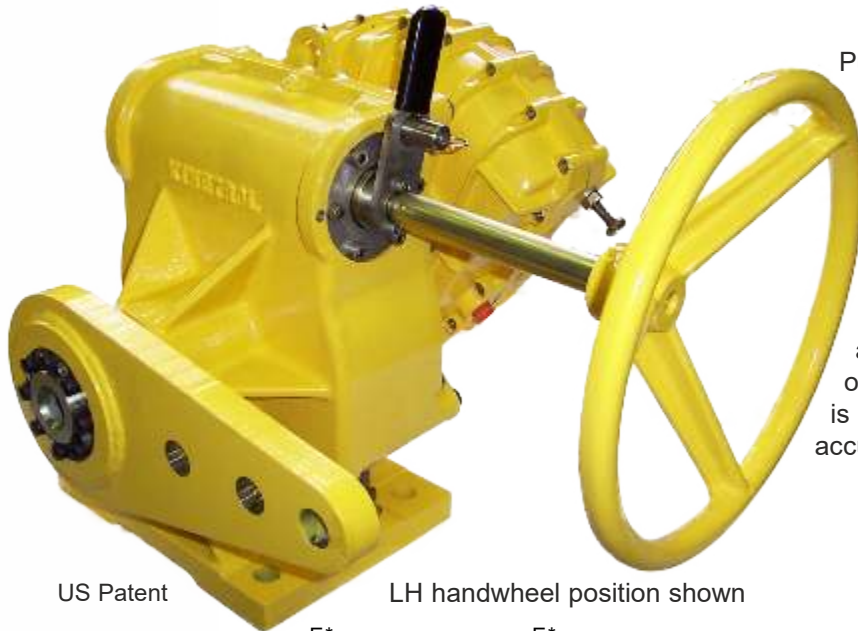
### Spring Return Torques/English Units lbf ins

| Actuator Model | Position of air OR spring stroke | 3.5                    | 4     | 4.5   | 5     | 5.5   |
|----------------|----------------------------------|------------------------|-------|-------|-------|-------|
|                |                                  | Pressure Setting (bar) |       |       |       |       |
| 02-1201        | Start                            | 1.1                    | 1.3   | 1.4   | 1.6   | 1.8   |
|                | Finish                           | 0.5                    | 0.7   | 0.9   | 1.2   | 1.4   |
| 03-1201        | Start                            | 3.3                    | 3.7   | 4.0   | 4.3   | 4.9   |
|                | Finish                           | 1.0                    | 1.5   | 1.9   | 2.2   | 2.8   |
| 05-1201        | Start                            | 4.9                    | 5.5   | 6.2   | 7.0   | 7.9   |
|                | Finish                           | 3.2                    | 4.0   | 4.9   | 5.8   | 6.7   |
| 07-1201        | Start                            | 11.6                   | 13.5  | 15.5  | 17.4  | 19.3  |
|                | Finish                           | 7.5                    | 9.5   | 11.6  | 13.8  | 16.1  |
| 09-1201        | Start                            | 23.2                   | 27.4  | 31.1  | 35.3  | 39.5  |
|                | Finish                           | 19.1                   | 23.2  | 27.0  | 31.4  | 35.6  |
| 12-1201        | Start                            | 55.1                   | 64.8  | 75.6  | 81.1  | 90.4  |
|                | Finish                           | 42.2                   | 52.0  | 60.0  | 68.9  | 77.5  |
| 14-1201-4900   | Start                            | 135.0                  | 156.0 | 178.0 | 195.0 | 201.0 |
|                | Finish                           | 109.0                  | 131.0 | 148.0 | 164.0 | 170.0 |
| 16-1201        | Start                            | 346.8                  | 391.0 | 426.0 | 465.0 | 504.3 |
|                | Finish                           | 181.4                  | 237.0 | 282.0 | 332.0 | 381.9 |

| Actuator Model | Position of air OR spring stroke | 50                     | 60   | 70   | 80   |
|----------------|----------------------------------|------------------------|------|------|------|
|                |                                  | Pressure Setting (psi) |      |      |      |
| 02-1201        | Start                            | 10.3                   | 12.2 | 14.1 | 16.0 |
|                | Finish                           | 4.6                    | 6.8  | 9.5  | 12.5 |
| 03-1201        | Start                            | 29.6                   | 33.4 | 37.2 | 43.7 |
|                | Finish                           | 8.7                    | 13.7 | 19.0 | 24.7 |
| 05-1201        | Start                            | 44                     | 51   | 61   | 70   |
|                | Finish                           | 28                     | 38   | 49   | 59   |
| 07-1201        | Start                            | 103                    | 126  | 146  | 171  |
|                | Finish                           | 67                     | 92   | 116  | 143  |
| 09-1201        | Start                            | 205                    | 251  | 300  | 351  |
|                | Finish                           | 169                    | 215  | 266  | 315  |
| 12-1201        | Start                            | 486                    | 595  | 693  | 802  |
|                | Finish                           | 374                    | 479  | 585  | 688  |
| 14-1201-4900   | Start                            | 1200                   | 1420 | 1670 | 1780 |
|                | Finish                           | 969                    | 1200 | 1400 | 1500 |
| 16-1201        | Start                            | 3069                   | 3534 | 3998 | 4463 |
|                | Finish                           | 1605                   | 2197 | 2788 | 3380 |

For dimensions see page 65



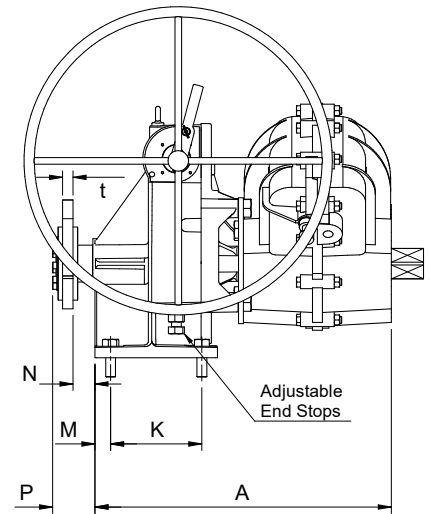
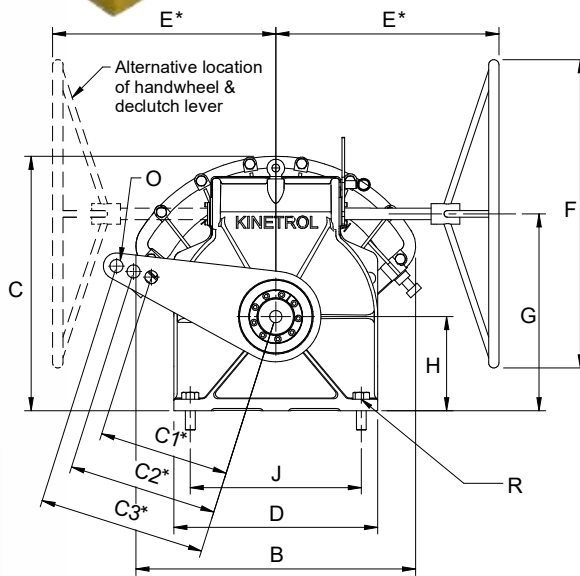


US Patent

LH handwheel position shown

Purpose designed, factory built and tested drives for air/gas flow control dampers on burner, heater, boiler and turbine systems in power plants, refineries and a wide range of industrial applications.

Combining the proven performance of Kinetrol's vane type actuator with an equally rugged integral manual override/mounting frame, the G3 drive is compact with unbeatable control, accuracy and cycle life.



**Metric Units**

| Model | A mm | B mm | C mm | D mm | E* mm | F* mm | G mm | H mm | J mm | K mm | ØR mm | M mm | P mm | Weight† kgs |
|-------|------|------|------|------|-------|-------|------|------|------|------|-------|------|------|-------------|
| 124   | 366  | 294  | 336  | 275  | 205   | 300   | 300  | 165  | 216  | 152  | 21    | 25   | 70   | 46          |
| 144   | 410  | 380  | 390  | 275  | 300   | 300   | 300  | 165  | 216  | 152  | 21    | 25   | 70   | 46          |
| 164   | 495  | 530  | 470  | 275  | 330   | 400   | 300  | 165  | 216  | 152  | 21    | 25   | 70   | 51          |
| 184   | 721  | 680  | 620  | 496  | 430   | 760   | 479  | 229  | 416  | 222  | 27    | 38   | 94   | 141         |
| 204   | 981  | 680  | 620  | 496  | 508   | 600   | 479  | 229  | 416  | 222  | 27    | 38   | 94   | 158         |

**English Units**

| Model | A inch | B inch | C inch | D inch | E* inch | F* inch | G inch | H inch | J inch | K inch | ØR inch | M inch | P inch | Weight† lbs |
|-------|--------|--------|--------|--------|---------|---------|--------|--------|--------|--------|---------|--------|--------|-------------|
| 127   | 14.4   | 11.6   | 13.2   | 10.8   | 11.0    | 12.0    | 12.0   | 6.5    | 8.50   | 6.00   | 0.83    | 1      | 2.8    | 102         |
| 147   | 16.2   | 15.0   | 15.4   | 10.8   | 12.0    | 12.0    | 12.0   | 6.5    | 8.50   | 6.00   | 0.83    | 1      | 2.8    | 102         |
| 167   | 19.5   | 20.9   | 18.5   | 10.8   | 13.0    | 16.0    | 12.0   | 6.5    | 8.50   | 6.00   | 0.83    | 1      | 2.8    | 112         |
| 187   | 28.4   | 26.8   | 24.4   | 19.5   | 17.0    | 30.0    | 18.9   | 9.0    | 16.38  | 8.74   | 1.05    | 1.6    | 3.7    | 310         |
| 207   | 38.6   | 26.8   | 24.4   | 19.5   | 20.0    | 24.0    | 18.9   | 9.0    | 16.38  | 8.74   | 1.05    | 1.6    | 3.7    | 350         |

\* Default dimensions may change according to ordering code options

† Listed weights exclude actuator

- Integral manual override
- Suitable for new installations or replacement of existing electric or pneumatic drives
- Available with same mounting foot print to replace existing floor mount drives
- Can result in lower energy costs resulting from accurate flow control
- Reduced operating costs due to long maintenance-free life (2 million operation warranty)
- Compact space saving design
- Quick and easy installation and set up
- Robust construction with durable epoxy finish
- Manual override usable with actuator removed



## Options

- Double acting and spring fail-safe (open or closed)
- Modulating (3-15 psi and 4-20mA signal)
- Fail to low signal
- Lock in last position
- Limit switch remote position indication
- 4-20mA angle retransmission
- High visibility position indication
- Different sided/diameter handwheels and extensions
- Infinitely adjustable output levers to suit existing or new requirements
- High temperature option available



## Ordering Codes

**HANDWHEEL SIDE**  
(SEE SKETCH)  
L=LEFT  
R=RIGHT

**HANDWHEEL DIAMETER (F)**

|             | AVAILABLE ON MODELS: |    |    |    |    |
|-------------|----------------------|----|----|----|----|
|             | 12                   | 14 | 16 | 18 | 20 |
| 3=300mm 12" | S                    | S  | E  |    |    |
| 4=400mm 16" | E                    | E  | S  |    |    |
| 5=600mm 24" |                      |    | E  | E  | S  |
| 6=762mm 30" |                      |    |    | S  |    |

**OUTPUT LEVER THICKNESS (t)**

1=3/8"  
2=1/2"  
3=5/8"  
4=3/4"  
5=7/8"  
6=1"  
7=1 1/8"  
8=1 1/4"  
9=1 1/2"

**OPTIONAL LIMIT SWITCH BOX (TO INDICATE IF HANDWHEEL IS ENGAGED OR DISENGAGED)**

OPTIONS:

0 = NO LIMIT SWITCH  
1 = 2 x i/S PROX. SENSORS  
2 = 2 x PNEUMATIC LS  
4 = 2 x V3 MECH LS  
5 = 2 x 20-260V ac PROX.\*  
6 = 2 x 5-60V dc PROX.\*  
7 = 4 x V3 MECH LS

**WHERE APPLICABLE:**

S = STANDARD  
Y = NO COST OPTION  
E = EXTRA COST OPTION  
□ = NOT AVAILABLE

**INCLUDING D/A ACTUATOR:**

124 } ISO D/A ACT (FOR USE WITH OR WITHOUT POSITIONER)  
144 }  
164 }  
184 }  
204 }  
127 } ANSI D/A ACT (FOR USE WITH OR WITHOUT POSITIONER)  
147 }  
167 }  
187 }  
207 }

**HOLE DIAMETER (d)**

2=12.7mm 1/2"  
3=15.9mm 5/8"  
A=11/16"  
4=19.1mm 3/4"  
5=22.2mm 7/8"  
6=25.4mm 1"  
7=28.6mm 1 1/8"  
8=31.8mm 1 1/4"  
9=38.1mm 1 1/2"

**LEVER HOLE PATTERN**

| No. | DISTANCE FROM CENTRE |               |               | AVAILABLE ON MODELS: |    |    |    |    |
|-----|----------------------|---------------|---------------|----------------------|----|----|----|----|
|     | C1                   | C2            | C3            | 12                   | 14 | 16 | 18 | 20 |
| 01  | 101.6mm 4"           | 152.4mm 6"    | 203.2mm 8"    | Y                    | Y  |    |    |    |
| 02  | 127mm 5"             | 152.4mm 6"    | 177.8mm 7"    | Y                    | Y  | Y  |    |    |
| 03  | 127mm 5"             | 198.1mm 7.8"  | 254mm 10"     | Y                    | Y  | Y  |    |    |
| 04  | 152.4mm 6"           | 254mm 10"     | 304.8mm 12"   | Y                    | Y  | Y  | Y  |    |
| 05  | 165.1mm 6.5"         | 190.5mm 7.5"  | 215.9mm 8.5"  | Y                    | Y  | Y  | Y  |    |
| 06  | 190.5mm 7.5"         | 215.9mm 8.5"  | 241.3mm 9.5"  | Y                    | Y  | Y  | Y  |    |
| 07  | 266.7mm 10.5"        | 292.1mm 11.5" | 317.5mm 12.5" | Y                    | Y  | Y  | Y  | Y  |
| 08  | 228.6mm 9"           | 342.9mm 13.5" | 457.2mm 18"   | Y                    | Y  | Y  | Y  |    |
| 09  | 254mm 10"            | 304.8mm 12"   | 381mm 15"     | Y                    | Y  | Y  | Y  | Y  |
| 10  | 254mm 10"            | 381mm 15"     | 508mm 20"     | Y                    | Y  | Y  | Y  | Y  |
| 11  | 254mm 10"            | 317.5mm 12.5" | 406.4mm 16"   | Y                    | Y  | Y  | Y  | Y  |
| 12  | 254mm 10"            | 330.2mm 13"   | 406.4mm 16"   | Y                    | Y  | Y  | Y  | Y  |
| 13  | 304.8mm 12"          | 406.4mm 16"   | 444.5mm 17.5" | Y                    | Y  | Y  | Y  | Y  |
| 14  | 317.5mm 12.5"        | 363.2mm 14.3" | 406.4mm 16"   | Y                    | Y  | Y  | Y  | Y  |
| 15  | 147.3mm 5.8"         | 279.4mm 11"   | 304.8mm 12"   | Y                    | Y  | Y  | Y  |    |
| 16  | 152.4mm 6"           | 190.5mm 7.5"  | 228.6mm 9"    | Y                    | Y  | Y  |    |    |
| 17  | 101.6mm 4"           |               | 304.8mm 12"   | Y                    | Y  |    |    |    |
| 18  |                      |               | 127mm 5"      | Y                    | Y  | Y  |    |    |
| 19  |                      |               | 203.2mm 8"    | Y                    | Y  | Y  | Y  |    |

**POSITION MONITOR ON LS BOX:**

C=YES  
0=NO

**HANDWHEEL OFFSET (E)**

|             | AVAILABLE ON MODELS: |    |    |    |    |
|-------------|----------------------|----|----|----|----|
|             | 12                   | 14 | 16 | 18 | 20 |
| 1=300mm 12" | S                    | S  |    |    |    |
| 2=330mm 13" |                      |    | S  |    |    |
| 3=430mm 17" | E                    | E  | E  | S  |    |
| 4=508mm 20" | E                    | E  | E  | E  | S  |
| 5=600mm 24" | E                    | E  | E  | E  | E  |

IF NECESSARY, FIT OPTIONAL EXTENSION TO ENSURE THAT HANDWHEEL IS AT A SAFE DISTANCE FROM MOVING OUTPUT LEVER.

\* Not available with ATEX approval

For more information see KF-535





# Geared Manual Overrides

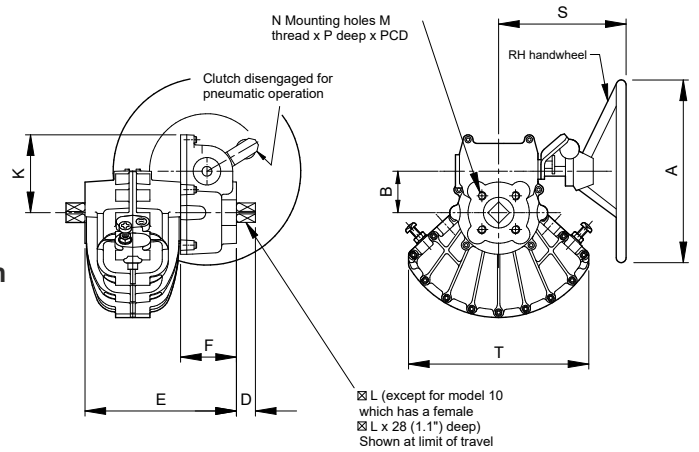


- Declutch lever switch available
- Corrosion resistant - fully sealed to IP65

PHOTO SHOWS LEFT HAND HANDWHEEL.

Kinetrol declutchable geared overrides are available for models 05 to 20 (excluding model 15), rated for the same torques as the actuators and fitted between the actuator and the load. The standard unit is supplied with the right hand handwheel option (see drawing below), whereby when the handwheel is moved in a clockwise direction the actuator moves in a counter clockwise direction. A left hand handwheel option is also available on some models (see below).

## Dimensions



DRAWING SHOWS RIGHT HAND HANDWHEEL.

## Handwheel Orientation

Models 05 - 14  
Standard - Right Hand  
- Left Hand option available

Models 16 - 20  
Standard - Left Hand only

## Working Temperature Range

-20°C to +80°C

Low / High temperature options available on sizes 05 - 14 - contact Kinetrol

## Metric Units

| Actuator Model (ISO) | A mm | B mm  | D mm | E mm | F mm | K mm | $\varnothing L$ mm | M   | N No. | P mm | PCD mm | S mm | T mm | Wt kgs |
|----------------------|------|-------|------|------|------|------|--------------------|-----|-------|------|--------|------|------|--------|
| 05                   | 300  | 67.8  | 13   | 170  | 103  | 127  | 9.5                | M5  | 6     | 12   | 34.9   | 220  | 137  | 9.18   |
| 07                   | 300  | 67.8  | 20   | 192  | 92   | 127  | 16.0               | M8  | 4     | 16   | 50.9   | 220  | 178  | 11.20  |
| 08                   | 300  | 67.8  | 19   | 202  | 92   | 127  | 17.0               | M8  | 4     | 16   | 70.0   | 220  | 208  | 10.61  |
| 09                   | 300  | 67.8  | 26   | 218  | 92   | 127  | 19.0               | M10 | 4     | 20   | 65.0   | 220  | 227  | 12.06  |
| 10                   | 300  | 67.8  | -    | 267  | 92   | 127  | 22.0               | M10 | 4     | 20   | 102.0  | 220  | 230  | 13.40  |
| 12                   | 300  | 67.8  | 31   | 248  | 92   | 127  | 25.0               | M12 | 4     | 25   | 77.8   | 220  | 294  | 15.40  |
| 14                   | 400  | 67.8  | 38   | 292  | 92   | 127  | 28.6               | M16 | 4     | 28   | 98.8   | 250  | 380  | 22.36  |
| 16*                  | 600  | 141.0 | 55   | 462  | 188  | 200  | 41.0               | M20 | 4     | 28   | 165.0  | 376  | 530  | 45.00  |
| 18*                  | 920  | 165.0 | 78   | 655  | 295  | 225  | 57.0               | M16 | 8     | 24   | 254.0  | 440  | 679  | 75.00  |
| 20*                  | 610  | 150.0 | 100  | 600  | 240  | 300  | 75.0               | M30 | 8     | 35   | 226.3  | 640  | 679  | 113.00 |

## English Units

| Actuator Model (ANSI) | A inch | B inch | D inch | E inch | F inch | K inch | $\varnothing L$ inch | M UNC          | N No. | N inch | PCD inch | S inch | T inch | Wt lbs |
|-----------------------|--------|--------|--------|--------|--------|--------|----------------------|----------------|-------|--------|----------|--------|--------|--------|
| 05                    | 11.81  | 2.67   | 0.51   | 6.69   | 4.06   | 5.0    | 0.375                | 10-24          | 6     | 0.47   | 1.375    | 8.66   | 5.39   | 20.2   |
| 07                    | 11.81  | 2.67   | 0.79   | 7.56   | 3.62   | 5.0    | 0.630                | $\frac{3}{16}$ | 4     | 0.63   | 2.000    | 8.66   | 7.01   | 24.7   |
| 08                    | 11.81  | 2.67   | 0.75   | 7.95   | 3.62   | 5.0    | 0.670                | $\frac{3}{16}$ | 4     | 0.63   | 2.760    | 8.66   | 8.19   | 23.4   |
| 09                    | 11.81  | 2.67   | 1.02   | 8.58   | 3.62   | 5.0    | 0.748                | $\frac{3}{8}$  | 4     | 0.79   | 2.560    | 8.66   | 8.94   | 26.6   |
| 10                    | 11.81  | 2.67   | -      | 10.51  | 3.62   | 5.0    | 0.866                | $\frac{3}{8}$  | 4     | 0.79   | 4.016    | 8.66   | 9.06   | 29.5   |
| 12                    | 11.81  | 2.67   | 1.22   | 9.76   | 3.62   | 5.0    | 0.984                | $\frac{1}{2}$  | 4     | 0.98   | 3.060    | 8.66   | 11.57  | 33.9   |
| 14                    | 15.70  | 2.67   | 1.50   | 11.50  | 3.62   | 5.0    | 1.125                | $\frac{3}{4}$  | 4     | 1.10   | 3.890    | 9.84   | 14.96  | 49.2   |

## Handwheel Orientation

| MODEL    | RH HANDWHEEL        |                  | LH HANDWHEEL        |                  |
|----------|---------------------|------------------|---------------------|------------------|
|          | HANDWHEEL DIRECTION | OUTPUT DIRECTION | HANDWHEEL DIRECTION | OUTPUT DIRECTION |
| 05 to 14 | CW                  | CCW              | CW                  | CW               |
|          | CCW                 | CW               | CCW                 | CCW              |
| 16 to 20 | N/A                 |                  | CW                  | CW               |
|          | N/A                 |                  | CCW                 | CCW              |

## Ordering Codes

Models 05 to 14:

- (Standard right hand handwheel)  
Example: 074 K/Box (ISO Version)  
077 K/Box (ANSI Version)

- (Left hand handwheel)

Example: 074 K/Box LH (ISO Version)

\* For model 16, 18 and 20 replace 'K' with 'G' and add 'LH'

Example: 164 G/Box LH (ISO Version)



## Kinetrol's Blueline Food Grade Finish Product

Kinetrol's Blueline coating solution for food production applications meets FDA and BfR L1 specification and is available on all Kinetrol actuators and accessories offering significant advantages including:

- Good resistance to "caustic washdown"
- Exceptional resistance to chipping / flaking
- Good non-stick properties
- Good resistance to salt-laden environments
- In extreme circumstances if the coating becomes dislodged, it is clearly visible to the human eye, and sensors/detectors used in food production



## Kinetrol's Valve Automation Service & Interfacing Options

Kinetrol can select, supply and actuate ball, butterfly and plug valves from across the industry or mount free issue valves to Kinetrol actuators and control units for either on / off or modulating valve service.

With over 50 years of valve automation experience Kinetrol can also offer a wide range of engineered and customised packages including assemblies which are SIL rated and/or fully compliant with ATEX, NEC or IEC requirements.

Kinetrol is continually responding to the evolving requirements of the industry for interfacing and mounting arrangements that satisfy user needs and conform to industry standards. The Kinetrol female drive spring fail safe and hand spring unit options with topworks details that conform to ISO 5211 standard, facilitate direct mounting to valves. The innovative, patented ISO adaptor for Kinetrol Models 02 – 09 provides versatile direct mounting to ISO top works valves (see page 26).

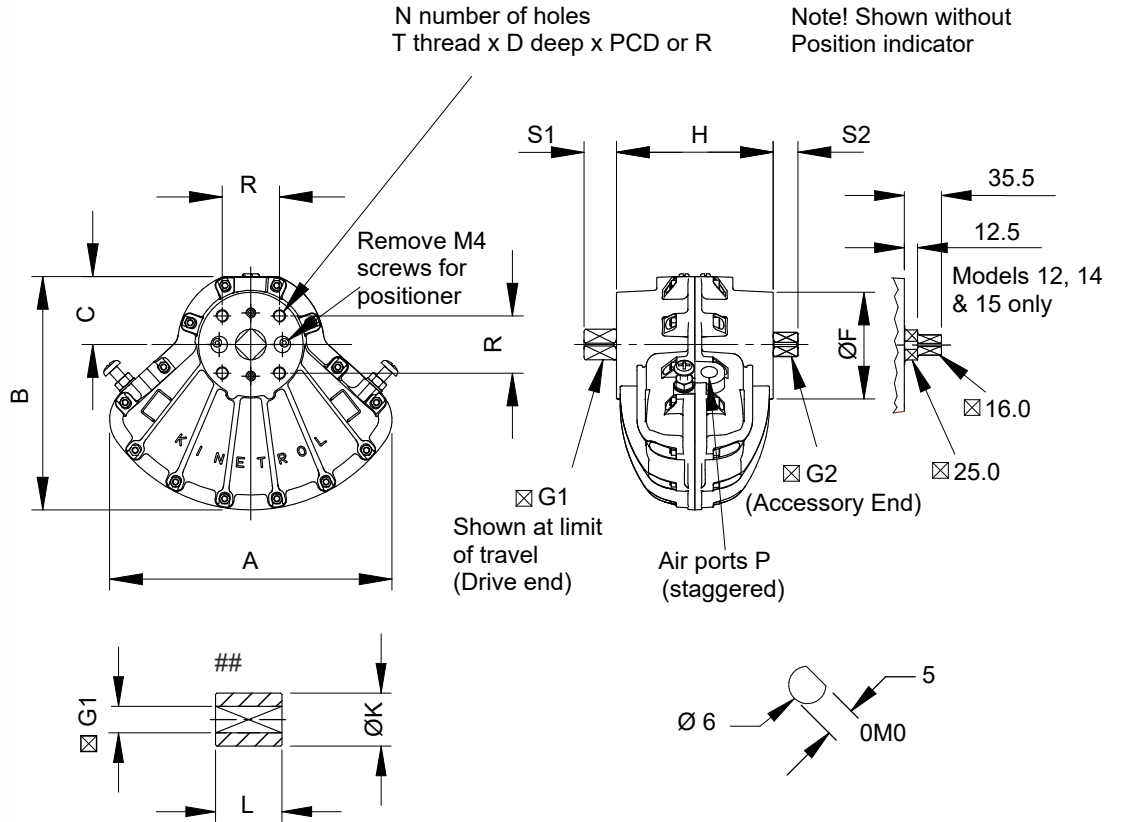
Kinetrol's direct mounting limit switch boxes, positioners and other control modules eliminate the cost of interfacing hardware resulting in compact assemblies. Our larger actuators, models 16 and above also offer a drive slot and insert option which is designed to interface with ancillary drives which comply to VDI/VDE 3485 norm.

Our rigorous QA and test procedures ensure that effective solutions are engineered and built to the highest standard.



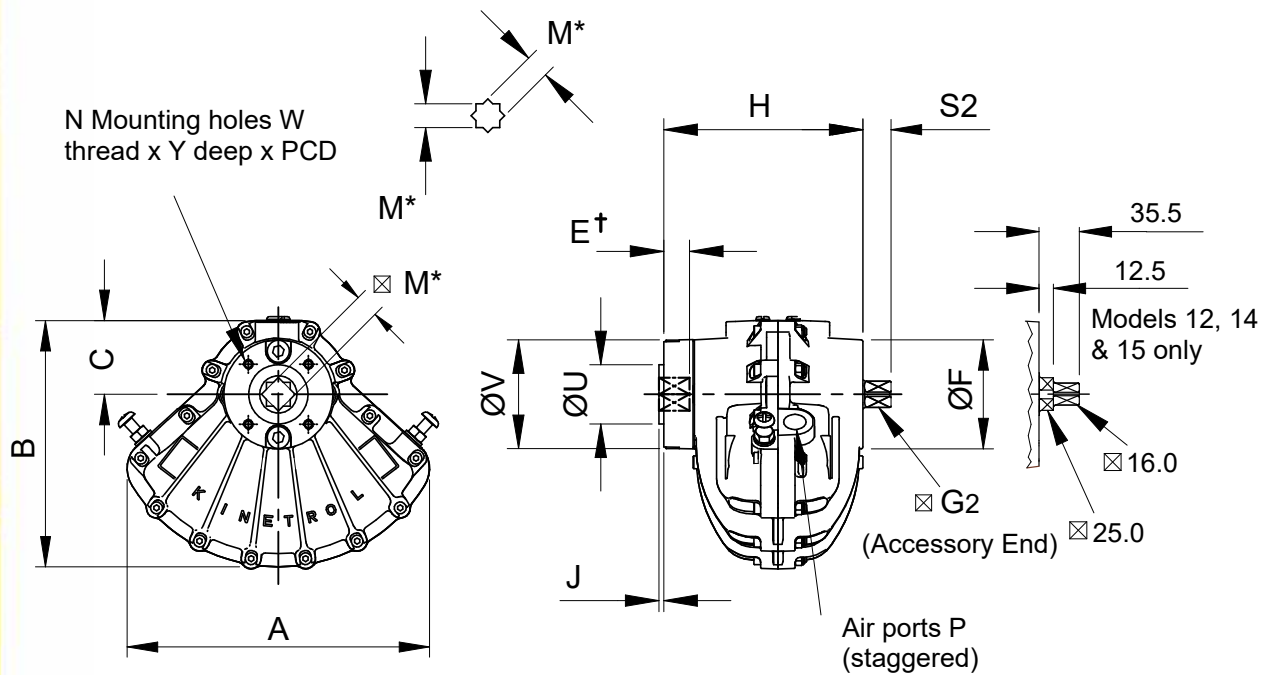
For more information on either of the above please contact Kinetrol.

Standard Actuator



## For Model 15, 16, 18, 20, 30 and 60 coupling details see pages 20 to 25

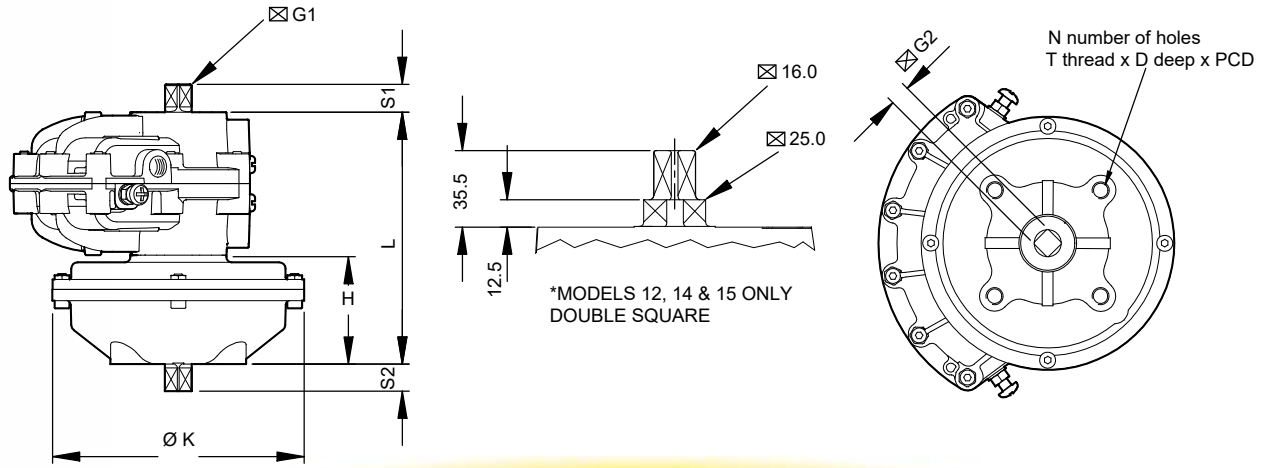
ISO/DIN Options







## Male Spring Return Actuator Dimensions



### Metric Units

| Actuator**<br>Model | L<br>mm | H<br>mm | ØK<br>mm | ⊠G1<br>mm | ⊠G2<br>mm | S1<br>mm | S2<br>mm | N<br>No. | T<br>ISO | D<br>mm | PCD<br>mm  | Wt<br>kg † |
|---------------------|---------|---------|----------|-----------|-----------|----------|----------|----------|----------|---------|------------|------------|
| 024-120             | 90      | 40      | 73       | 8.0       | 8.0       | 10       | 10       | 4        | M4       | 8.0     | 25.5       | 0.93       |
| 034-120             | 103     | 43      | 108      | 9.0       | 9.0       | 12       | 12       | 4        | M5       | 10.0    | 31.1       | 2.03       |
| 054-120             | 117     | 50      | 119      | 9.5       | 9.5       | 13       | 13       | 6        | M5       | 8.0     | 34.9       | 3.12       |
| 074-120             | 182     | 82      | 152      | 16.0      | 16.0      | 20       | 20       | 4        | M8       | 16.0    | 50.9       | 4.71       |
| 084-120             | 197     | 87      | 174      | 16.0      | 17.0      | 20       | 19       | 4        | M8       | 16.0    | 70.0       | 7.62       |
| 094-120             | 218     | 92      | 200      | 16.0      | 19.0      | 20       | 26       | 4        | M10      | 20.0    | 65.0       | 11.06      |
| 104-120             | 285     | 110     | 206      | 16.0      | 22.0      | 20       | 26       | 4        | M10      | 16.0    | 102.0      | 14.80      |
| 124-120             | 292     | 136     | 258      | 16.0*     | 25.0      | 36       | 31       | 4        | M12      | 24.0    | 77.8       | 23.50      |
| 144-120-4900        | 417     | 217     | 258      | 16.0*     | 28.6      | 36       | 38       | 4        | M16      | 28.5    | 98.8       | 43.10      |
| 144-120             | 387     | 187     | 396      | 16.0*     | 28.6      | 36       | 38       | 4        | M16      | 28.5    | 98.8/140.0 | 64.10      |
| 144-120-5000        | 337     | 137     | 258      | 16.0*     | 28.6      | 36       | 38       | 4        | M16      | 28.5    | 98.8       | 38.18      |
| 154-120             | 432     | 187     | 396      | 16.0*     | 36.0      | 36       | 41       | 4        | M16      | 28.5    | 140.0      | 77.00      |
| 164-120-6100        | 461     | 187     | 396      | 41.0      | 41.0      | 55       | 55       | 4        | M24      | 28.0    | 152.7      | 88.10      |
| 164-120             | 486     | 212     | 524      | 41.0      | 41.0      | 55       | 55       | 4        | M24      | 38.0    | 152.7      | 140.0      |
| 184-120-7000        | 572     | 212     | 524      | 57.0      | 57.0      | 78       | 78       | 4        | M30      | 50.0    | 226.3      | 161.0      |
| 184-120             | 602     | 242     | 634      | 57.0      | 57.0      | 78       | 78       | 4        | M30      | 50.0    | 226.3      | 278.0      |
| 204-120-8000        | 861     | 238     | 634      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 390.0      |
| 204-120-7300        | 1032    | 412     | 524      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 408.0      |
| 204-120             | 982     | 359     | 634      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 538.0      |
| 304-120-7600        | 1293    | 412     | 524      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 524.0      |
| 304-120-8300        | 1243    | 358     | 634      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 630.4      |
| 304-120-7800        | 1493    | 612     | 524      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 688.0      |
| 304-120             | 1354    | 483     | 634      | 73.0      | 73.0      | 100      | 100      | 8        | M30      | 50.0    | 226.3      | 768.4      |
| 600-120-8400***     | 1194    | 604     | 634      | ***       | ***       | ***      | ***      | ***      | ***      | ***     | ***        | 1125.0     |
| 600-120-8500***     | 1315    | 725     | 634      | ***       | ***       | ***      | ***      | ***      | ***      | ***     | ***        | 1272.0     |
| 600-120***          | 1436    | 846     | 634      | ***       | ***       | ***      | ***      | ***      | ***      | ***     | ***        | 1420.0     |

\*\*\* Springs mounted above actuator - see page 25 for mounting details

† All weights include coupling - except 103

### English Units

| Actuator**<br>Model | L<br>inch | H<br>inch | ØK<br>inch | ⊠G1<br>inch | ⊠G2<br>inch | S1<br>inch | S2<br>inch | N<br>No. | T<br>UNC | D<br>inch | PCD<br>inch | Wt<br>lb † |
|---------------------|-----------|-----------|------------|-------------|-------------|------------|------------|----------|----------|-----------|-------------|------------|
| 027-120             | 3.54      | 1.58      | 2.87       | 0.315       | 0.315       | 0.39       | 0.39       | 4        | 8-32     | 0.31      | 1.00        | 2.05       |
| 037-120             | 4.06      | 1.69      | 4.21       | 0.354       | 0.354       | 0.47       | 0.47       | 4        | 10-24    | 0.39      | 1.225       | 4.48       |
| 057-120             | 4.61      | 1.97      | 4.69       | 0.375       | 0.375       | 0.51       | 0.51       | 6        | 10-24    | 0.31      | 1.375       | 6.88       |
| 077-120             | 7.17      | 3.23      | 6.00       | 0.630       | 0.630       | 0.79       | 0.79       | 4        | 5/16-18  | 0.63      | 2.00        | 10.38      |
| 087-120             | 7.76      | 3.43      | 6.85       | 0.630       | 0.669       | 0.79       | 0.75       | 4        | 5/16-18  | 0.63      | 2.76        | 16.80      |
| 097-120             | 8.58      | 3.62      | 7.90       | 0.630       | 0.748       | 0.79       | 1.02       | 4        | 3/8-16   | 0.79      | 2.56        | 24.38      |
| 107-120             | 11.22     | 4.33      | 8.11       | 0.630       | 0.866       | 0.79       | 1.02       | 4        | 3/8-16   | 0.63      | 4.02        | 32.63      |
| 127-120             | 11.50     | 5.35      | 10.16      | 0.630*      | 0.984       | 1.40       | 1.22       | 4        | 1/2-13   | 0.94      | 3.06        | 51.81      |
| 147-120-4900        | 16.43     | 8.54      | 10.16      | 0.630*      | 1.125       | 1.40       | 1.50       | 4        | 5/8-11   | 1.12      | 3.89        | 95.02      |
| 147-120             | 15.24     | 7.36      | 15.59      | 0.630*      | 1.125       | 1.40       | 1.50       | 4        | 5/8-11   | 1.13      | 5.51        | 141.32     |
| 147-120-5000        | 13.27     | 5.40      | 10.16      | 0.630*      | 1.125       | 1.40       | 1.50       | 4        | 5/8-11   | 1.13      | 3.89        | 84.19      |
| 157-120             | 17.00     | 7.36      | 15.59      | 0.630*      | 1.417       | 1.40       | 1.61       | 4        | 5/8-11   | 1.13      | 5.51        | 170.0      |
| 167-120-6100        | 18.15     | 7.36      | 15.59      | 1.614       | 1.614       | 2.17       | 2.17       | 4        | 7/8-9    | 1.10      | 6.01        | 194.2      |
| 167-120             | 19.11     | 8.33      | 20.63      | 1.614       | 1.614       | 2.17       | 2.17       | 4        | 7/8-9    | 1.50      | 6.01        | 308.0      |
| 187-120-7000        | 22.50     | 8.33      | 20.63      | 2.244       | 2.244       | 3.07       | 3.07       | 4        | 1 1/8-7  | 1.97      | 8.91        | 356.0      |
| 187-120             | 23.69     | 9.52      | 24.96      | 2.244       | 2.244       | 3.07       | 3.07       | 4        | 1 1/8-7  | 1.97      | 8.91        | 612.9      |
| 207-120-8000        | 33.90     | 9.37      | 24.96      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 859.8      |
| 207-120-7300        | 40.61     | 16.20     | 20.63      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 901.0      |
| 207-120             | 38.67     | 14.13     | 24.96      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 1186.1     |
| 307-120-7600        | 50.91     | 16.20     | 20.63      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 1158.0     |
| 307-120-8300        | 48.93     | 14.13     | 24.96      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 1389.8     |
| 307-120-7800        | 58.78     | 24.07     | 20.63      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 1520.0     |
| 307-120             | 53.68     | 19.02     | 24.96      | 2.874       | 2.874       | 3.94       | 3.94       | 8        | 1 1/8-7  | 1.97      | 8.91        | 1694.0     |
| 609-120-8400***     | 47.01     | 23.78     | 24.96      | ***         | ***         | ***        | ***        | ***      | ***      | ***       | ***         | 2480.0     |
| 609-120-8500***     | 51.77     | 28.54     | 24.96      | ***         | ***         | ***        | ***        | ***      | ***      | ***       | ***         | 2804.0     |
| 609-120***          | 56.54     | 33.31     | 24.96      | ***         | ***         | ***        | ***        | ***      | ***      | ***       | ***         | 3131.0     |

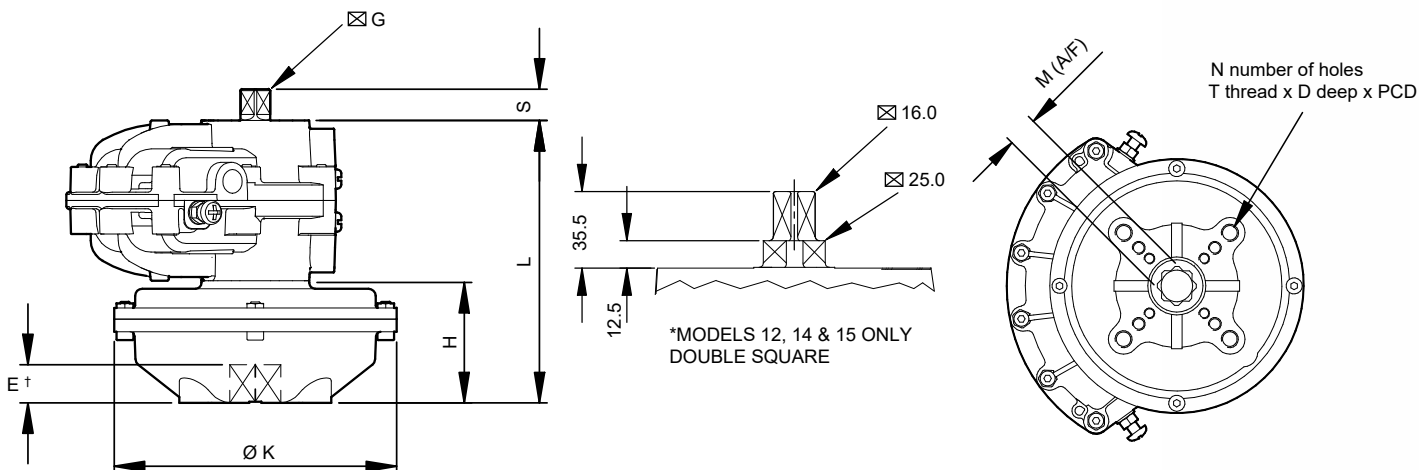
\*\*\* Springs mounted above actuator - see page 25 for mounting details

† All weights include coupling - except 107



\*\* Clockwise (120) and counterclockwise (130) units have identical dimensions

# ISO Flange Female Spring Return Actuator Dimensions



## Metric Units

| Actuator**<br>Model | ISO<br>Flange No. | L<br>mm | H<br>mm | ØK<br>mm | M<br>mm | S<br>mm | ⊠G<br>mm | E †<br>mm | N<br>No. | T<br>ISO | D<br>mm  | PCD<br>mm |
|---------------------|-------------------|---------|---------|----------|---------|---------|----------|-----------|----------|----------|----------|-----------|
| 033F120             | F03/F05           | 103     | 43      | 108      | 11      | 12      | 9.0      | 12        | 4        | M5/M6    | 8/10     | 36/50     |
| 033F180             | F04               | 103     | 43      | 108      | 11      | 12      | 9.0      | 12        | 4        | M5       | 10       | 42        |
| 053F120             | F03/F05/F07       | 117     | 50      | 119      | 14      | 13      | 9.5      | 16        | 4        | M5/M6/M8 | 10/12/13 | 36/50/70  |
| 053F180             | F04               | 117     | 50      | 119      | 14      | 13      | 9.5      | 16        | 4        | M5       | 10       | 42        |
| 073F120-4000        | F03/F05/F07       | 150     | 50      | 118      | 14      | 20      | 16.0     | 16        | 4        | M5/M6/M8 | 10/12/13 | 36/50/70  |
| 073F120             | F05/F07           | 182     | 82      | 152      | 17      | 20      | 16.0     | 19        | 4        | M6/M8    | 10/13    | 50/70     |
| 083F120             | F07               | 197     | 87      | 174      | 17      | 20      | 16.0     | 19        | 4        | M8       | 16       | 70        |
| 093F120-4200        | F05/F07           | 208     | 82      | 152      | 17      | 20      | 16.0     | 19        | 4        | M6/M8    | 10/13    | 50/70     |
| 093F120             | F07/F10           | 218     | 92      | 200      | 22      | 20      | 16.0     | 24        | 4        | M8/M10   | 13/16    | 70/102    |
| 103F120-5800        | F07/F10           | 268     | 92      | 200      | 22      | 20      | 16.0     | 24        | 4        | M8/M10   | 13/16    | 70/102    |
| 103F120             | F10               | 285     | 110     | 206      | 22      | 20      | 16.0     | 24        | 4        | M10      | 16       | 102       |
| 123F120-4300        | F10               | 248     | 92      | 200      | 22      | 35.5    | 16.0*    | 25        | 4        | M10      | 16       | 102       |
| 123F120             | F10               | 292     | 136     | 258      | 22      | 35.5    | 16.0*    | 25        | 4        | M10      | 16       | 102       |
| 123F180             | F12               | 292     | 136     | 258      | 27      | 35.5    | 16.0*    | 29        | 4        | M12      | 20       | 125       |
| 143F120-4900        | F12               | 417     | 217     | 258      | 27      | 35.5    | 16.0*    | 29        | 4        | M12      | 20       | 125       |
| 143F120-5000        | F12               | 337     | 136     | 258      | 27      | 35.5    | 16.0*    | 29        | 4        | M12      | 20       | 125       |
| 143F120             | F12               | 387     | 187     | 396      | 27      | 35.5    | 16.0*    | 29        | 4        | M12      | 24       | 125       |
| 153F120***          | F14               | 432     | 187     | 396      | 36      | 35.5    | 16.0*    | 38        | 4        | M16      | 28       | 140       |
| 163F120***          | F14               | 486     | 212     | 524      | 36      | 55      | 41.0     | 38        | 4        | M16      | 24       | 140       |
| 183F120-7000***     | F16               | 572     | 212     | 524      | 46      | 78      | 57.0     | 48        | 4        | M20      | 30       | 165       |
| 183F120***          | F16               | 602     | 242     | 634      | 46      | 78      | 57.0     | 48        | 4        | M20      | 30       | 165       |
| 203F120-8000***     | F25               | 861     | 238     | 634      | 55      | 100     | 73.0     | 57        | 8        | M16      | 24       | 254       |
| 203F120-7300***     | F25               | 1032    | 412     | 524      | 55      | 100     | 73.0     | 57        | 8        | M16      | 24       | 254       |
| 203F120***          | F25               | 982     | 359     | 634      | 55      | 100     | 73.0     | 57        | 8        | M16      | 24       | 254       |

## English Units

| Actuator**<br>Model | ISO<br>Flange No. | L<br>inch | H<br>inch | ØK<br>inch | M<br>inch | S<br>inch | ⊠G<br>inch | E †<br>inch | N<br>No. | T<br>UNC       | D<br>inch      | PCD<br>inch    |
|---------------------|-------------------|-----------|-----------|------------|-----------|-----------|------------|-------------|----------|----------------|----------------|----------------|
| 037F120             | F03/F05           | 4.06      | 1.69      | 4.21       | 0.433     | 0.47      | 0.354      | 0.47        | 4        | 10-24 1/4      | 0.31/0.39      | 1.41/1.97      |
| 037F180             | F04               | 4.06      | 1.69      | 4.21       | 0.433     | 0.47      | 0.354      | 0.47        | 4        | 10-24          | 0.39           | 1.65           |
| 057F120             | F03/F05/F07       | 4.61      | 1.97      | 4.69       | 0.551     | 0.51      | 0.374      | 0.63        | 4        | 10-24 1/4 5/16 | 0.39/0.47/0.51 | 1.42/1.97/2.76 |
| 057F180             | F04               | 4.61      | 1.97      | 4.69       | 0.551     | 0.51      | 0.374      | 0.63        | 4        | 10-24          | 0.39           | 1.65           |
| 077F120-4000        | F03/F05/F07       | 5.91      | 1.97      | 4.65       | 0.551     | 0.79      | 0.630      | 0.63        | 4        | 10-24 1/4 5/16 | 0.39/0.47/0.51 | 1.42/1.97/2.76 |
| 077F120             | F05/F07           | 7.17      | 3.23      | 5.98       | 0.669     | 0.79      | 0.630      | 0.75        | 4        | 1/4 5/16       | 0.39/0.51      | 1.97/2.76      |
| 087F120             | F07               | 7.76      | 3.43      | 6.85       | 0.669     | 0.79      | 0.630      | 0.75        | 4        | 5/16           | 0.63           | 2.76           |
| 097F120-4200        | F05/F07           | 8.19      | 3.23      | 5.98       | 0.669     | 0.79      | 0.630      | 0.75        | 4        | 1/4 5/16       | 0.39/0.51      | 1.97/2.76      |
| 097F120             | F07/F10           | 8.58      | 3.62      | 7.87       | 0.866     | 0.79      | 0.630      | 0.94        | 4        | 5/16 3/8       | 0.51/0.63      | 2.76/4.01      |
| 107F120-5800        | F07/F10           | 10.55     | 3.62      | 7.87       | 0.866     | 0.79      | 0.630      | 0.94        | 4        | 5/16 3/8       | 0.51/0.63      | 2.76/4.01      |
| 107F120             | F10               | 11.22     | 4.33      | 8.11       | 0.866     | 0.79      | 0.630      | 0.94        | 4        | 3/8            | 0.63           | 4.02           |
| 127F120-4300        | F10               | 9.76      | 3.62      | 7.87       | 0.866     | 1.40      | 0.630*     | 0.94        | 4        | 3/8            | 0.63           | 4.02           |
| 127F120             | F10               | 11.50     | 5.35      | 10.16      | 0.866     | 1.40      | 0.630*     | 0.98        | 4        | 3/8            | 0.63           | 4.02           |
| 127F180             | F12               | 11.50     | 5.35      | 10.16      | 1.063     | 1.40      | 0.630*     | 0.98        | 4        | 1/2            | 0.79           | 4.92           |
| 147F120-4900        | F12               | 16.42     | 8.54      | 10.16      | 1.063     | 1.40      | 0.630*     | 1.14        | 4        | 1/2            | 0.79           | 4.92           |
| 147F120-5000        | F12               | 13.27     | 5.35      | 10.16      | 1.063     | 1.40      | 0.630*     | 1.14        | 4        | 1/2            | 0.79           | 4.92           |
| 147F120             | F12               | 15.24     | 7.36      | 15.59      | 1.063     | 1.40      | 0.630*     | 1.14        | 4        | 1/2            | 0.94           | 4.92           |
| 157F120***          | F14               | 17.00     | 7.36      | 15.59      | 1.420     | 1.40      | 0.630*     | 1.50        | 4        | 5/8            | 1.10           | 5.51           |
| 167F120***          | F14               | 19.13     | 8.35      | 20.63      | 1.417     | 2.17      | 1.614      | 1.50        | 4        | 5/8            | 0.94           | 5.51           |
| 187F120-7000***     | F16               | 22.52     | 8.35      | 20.63      | 1.811     | 3.07      | 2.244      | 1.89        | 4        | 3/4            | 1.18           | 6.50           |
| 187F120***          | F16               | 23.69     | 9.52      | 24.96      | 1.811     | 3.07      | 2.244      | 1.89        | 4        | 3/4            | 1.18           | 6.50           |
| 207F120-8000***     | F25               | 33.90     | 9.37      | 24.96      | 2.165     | 3.94      | 2.874      | 2.24        | 8        | 5/8            | 0.94           | 10.00          |
| 207F120-7300***     | F25               | 40.63     | 16.22     | 20.63      | 2.165     | 3.94      | 2.874      | 2.24        | 8        | 5/8            | 0.94           | 10.00          |
| 207F120***          | F25               | 38.67     | 14.13     | 24.96      | 2.165     | 3.94      | 2.874      | 2.24        | 8        | 5/8            | 0.94           | 10.00          |

† Minimum

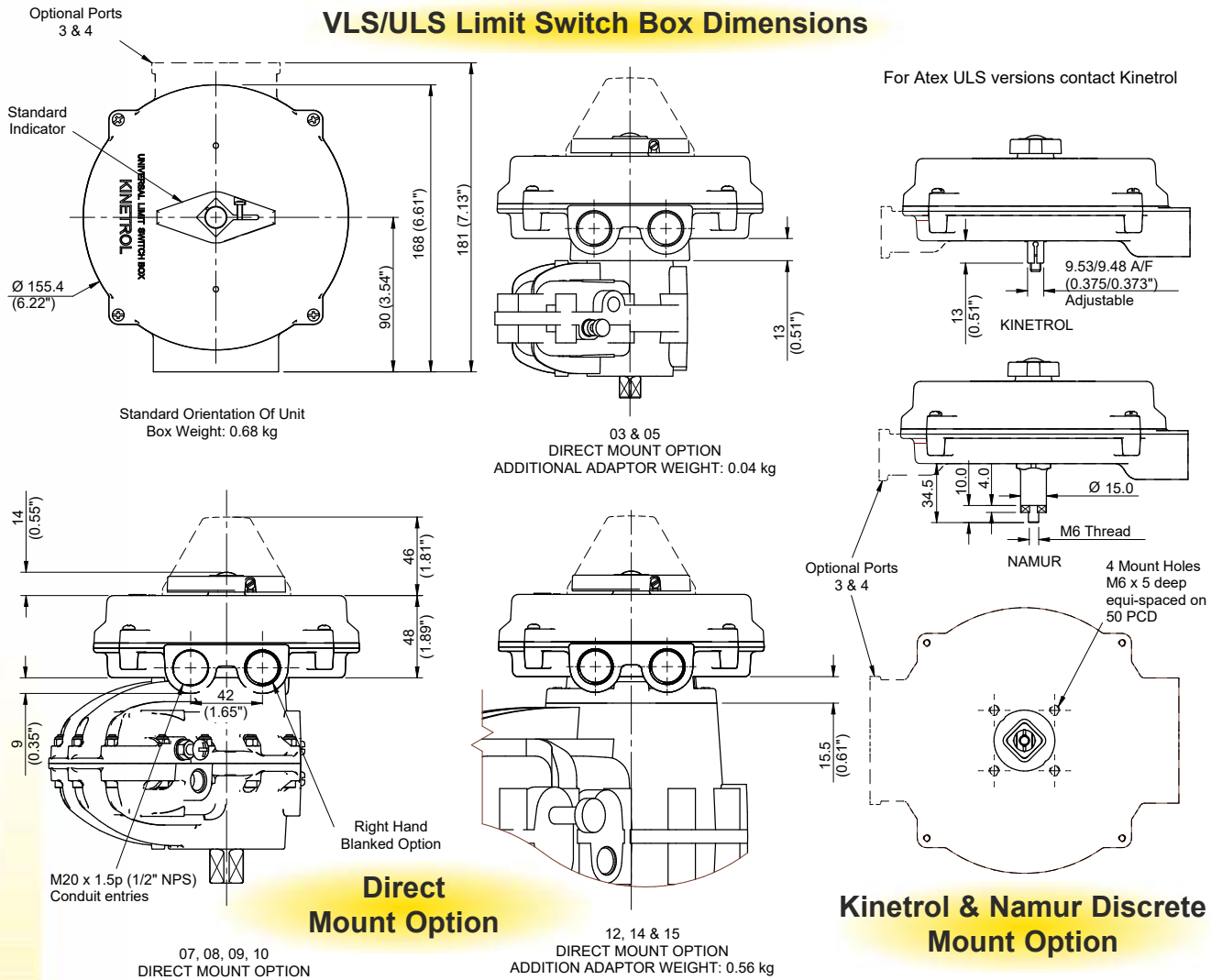


\*\* Clockwise (120 or 180) and counterclockwise (130 or 190) units have identical dimensions

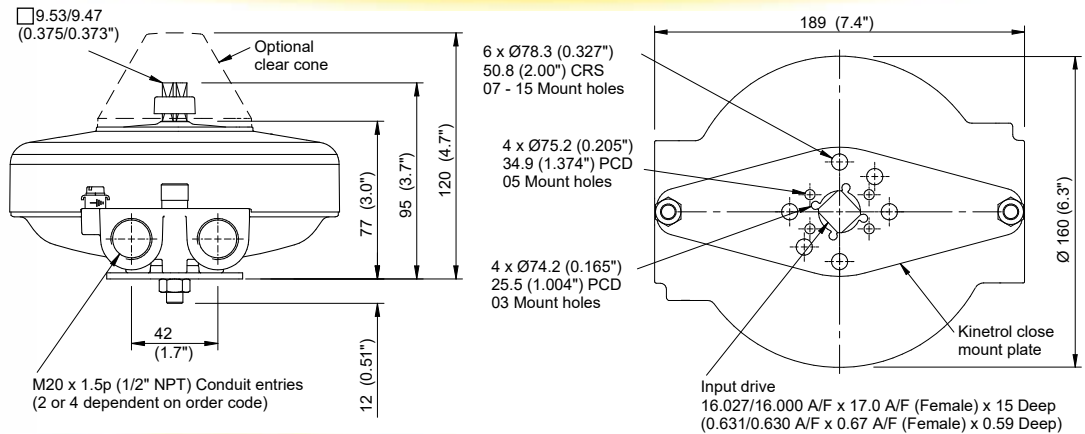
All female drives are "Star" type except for sizes marked "\*\*\*\*" where square orientation is shown by dimension "M"



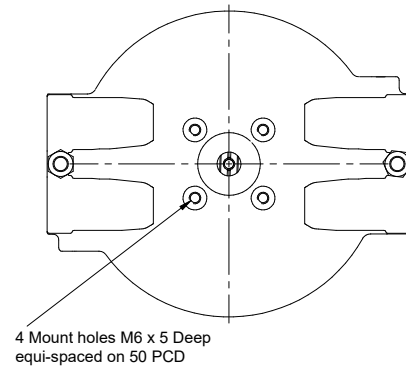
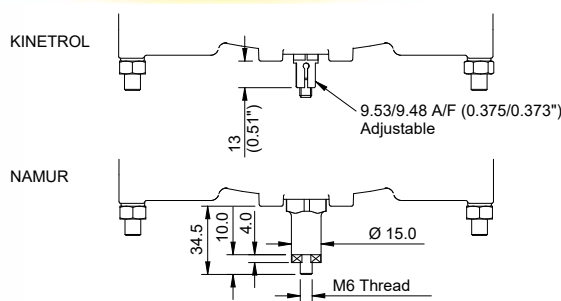
## VLS/ULS Limit Switch Box Dimensions



## Explosion Proof Limit Switch Box Dimensions

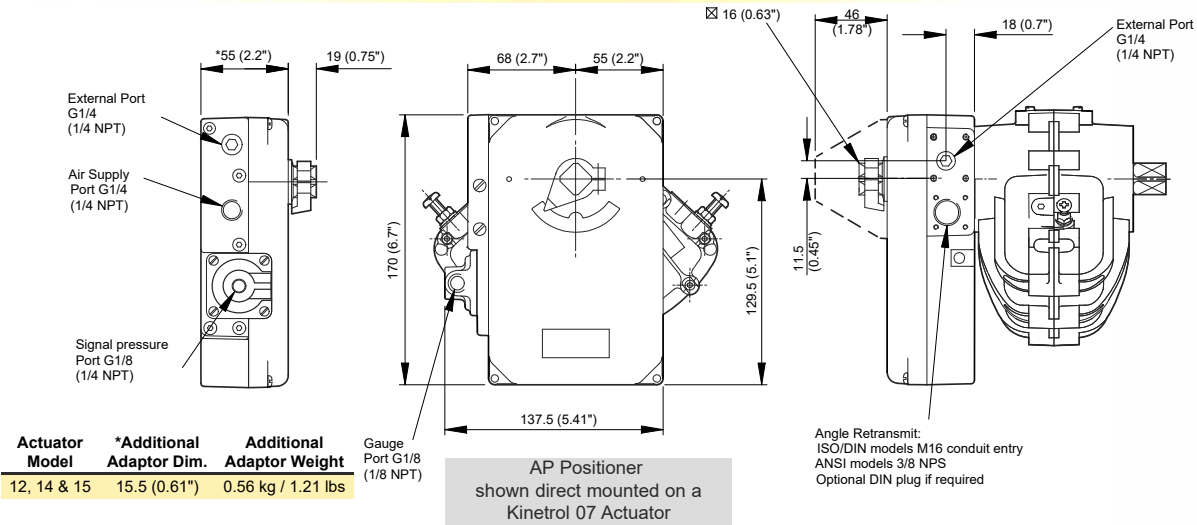


### Kinetrol Close Mount Option

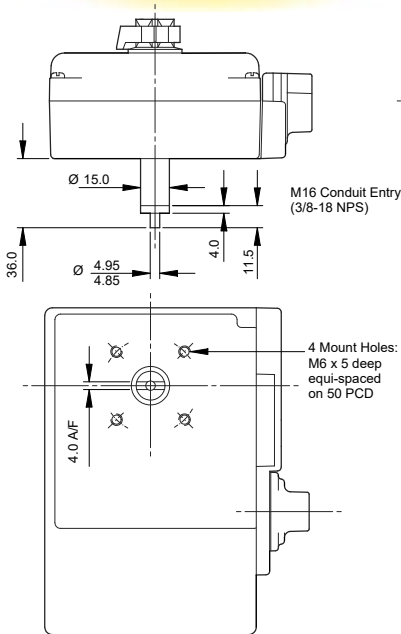


### Discrete Mount Option

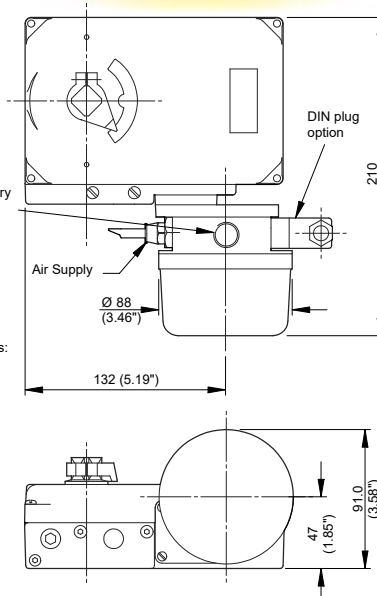
## AP Positioner Dimensions



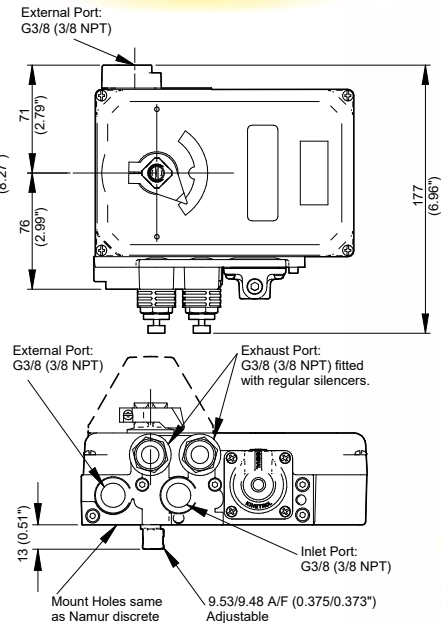
### Namur Discrete Version



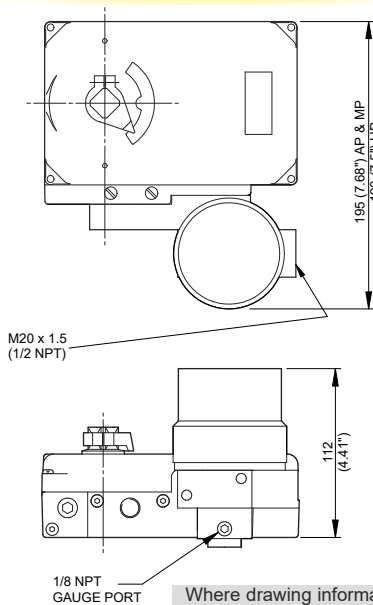
### Non-Hazardous I/P Version



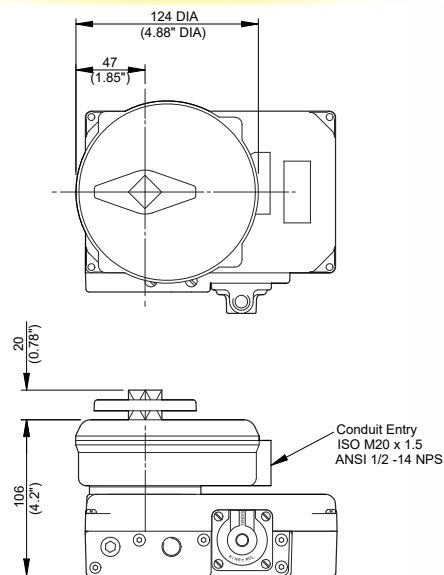
### Kinetrol Discrete/ High Flow Version



### Explosion Proof I/P Version

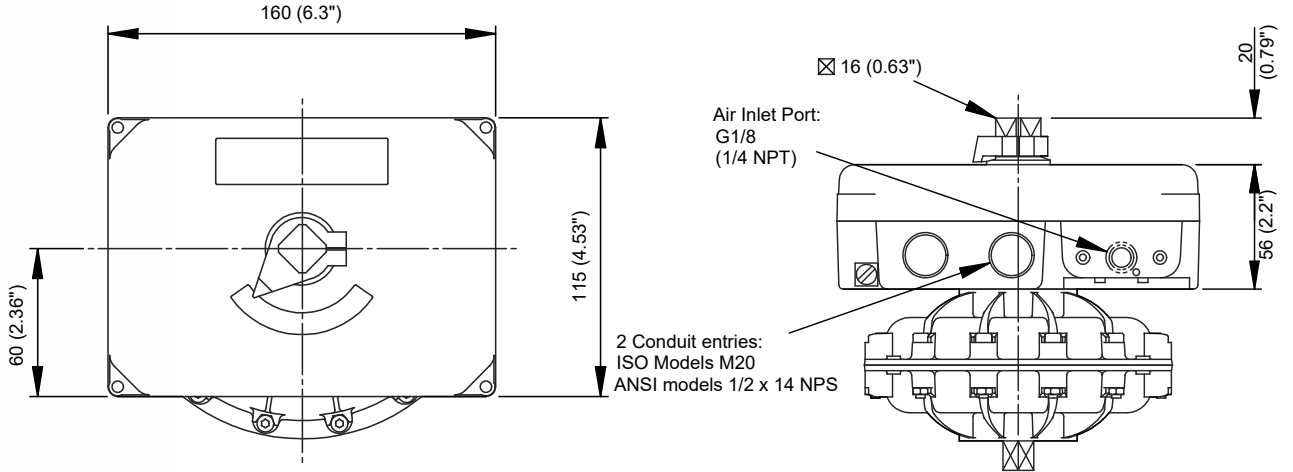


### Switch Box Version



Where drawing information is not given - it is the same as the direct mount version

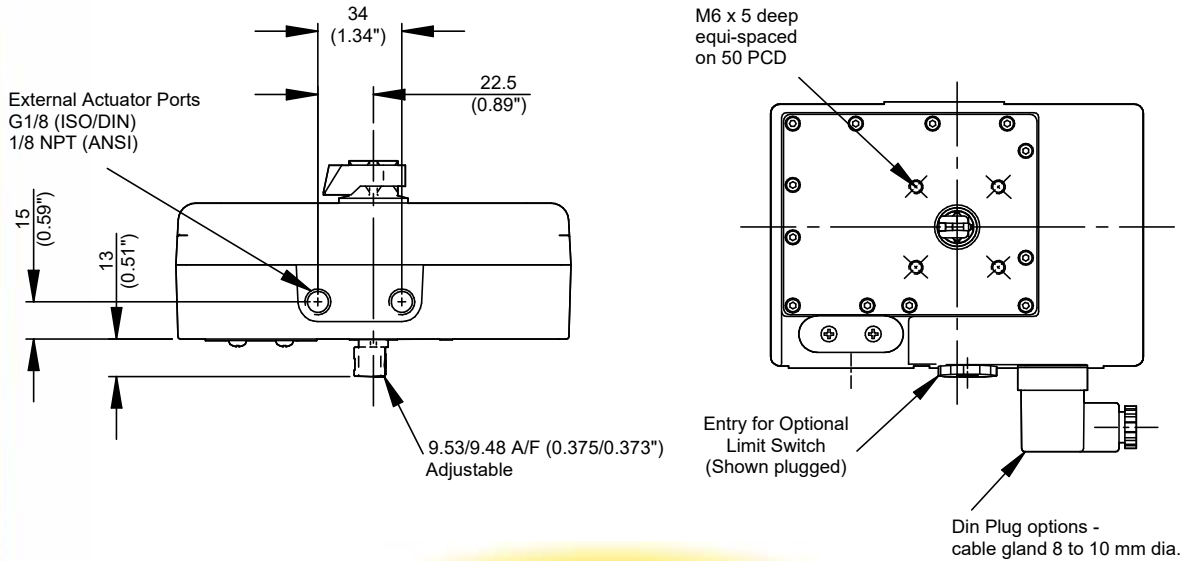
## EL Positioner Dimensions



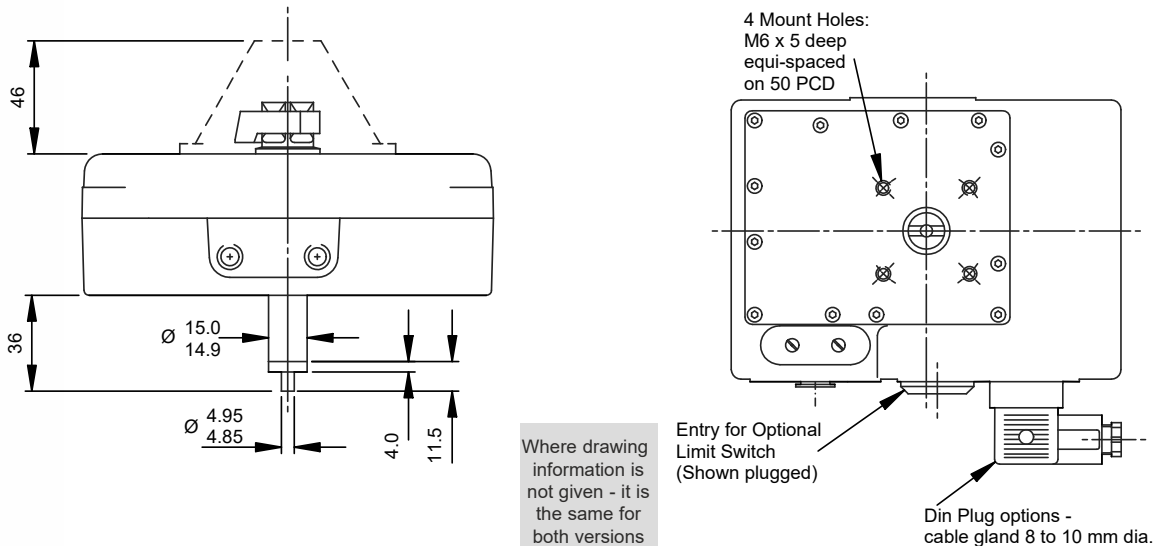
| Actuator Model | *Additional Adaptor Dim. | Additional Adaptor Weight |
|----------------|--------------------------|---------------------------|
| 12, 14 & 15    | 15.5 (0.61")             | 0.56 kg / 1.21 lbs        |

EL Positioner shown direct mounted on a Kinetrol 05 actuator

## Kinetrol Discrete Version



## Namur Discrete Version



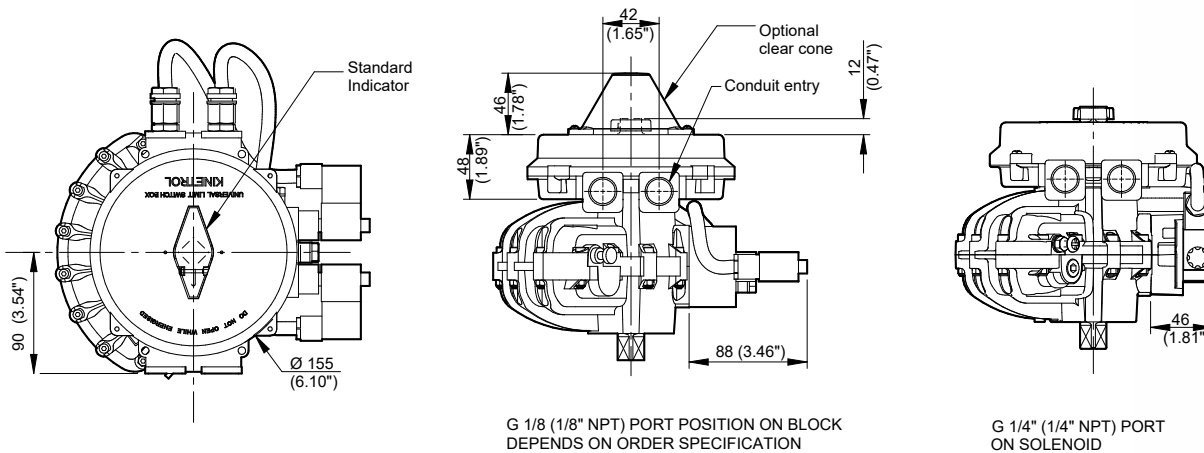
Where drawing information is not given - it is the same for both versions



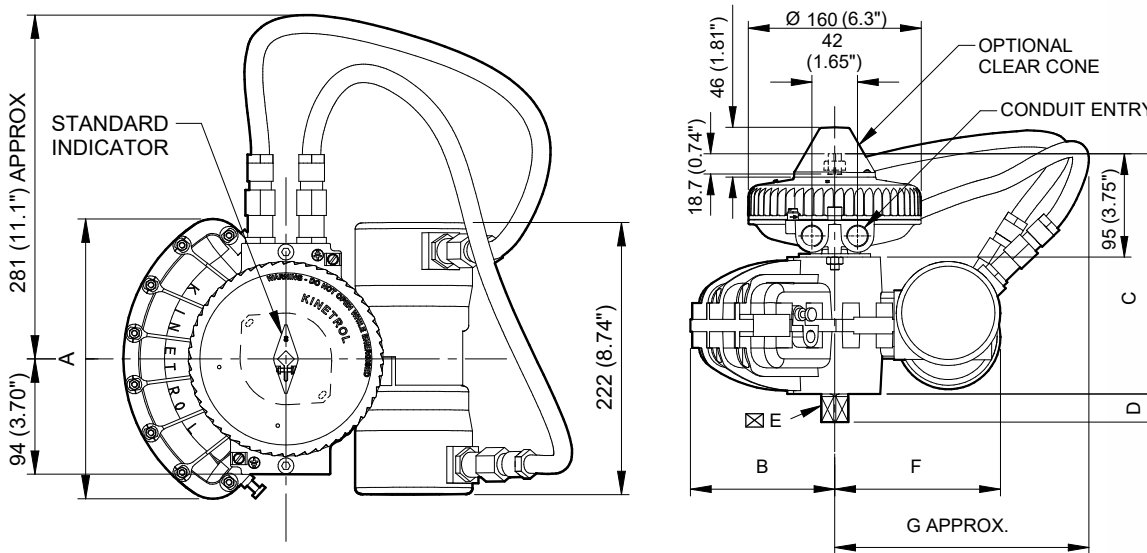
## P3 On/Off Pneumatic Positioner Dimensions

### Fail free / Fail down / Spring return units

### Fail hold unit



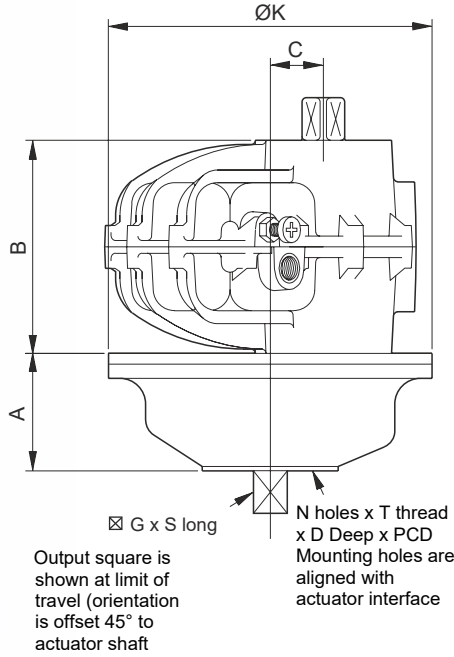
## Explosion Proof P3 On/Off Positioner Dimensions



| Model | A              | B             | C            | D            | ⊠E             | F          | G           |
|-------|----------------|---------------|--------------|--------------|----------------|------------|-------------|
| 05    | 137.0 (5.39")  | 78.4 (3.09")  | 162 (6.4")   | 13.0 (0.51") | 9.5 (0.375")   | 133 (5.2") | 214 (8.4")  |
| 07    | 178.0 (7.01")  | 102.6 (4.04") | 195 (7.7")   | 20.0 (0.79") | 16.0 (0.630")  | 142 (5.6") | 223 (8.8")  |
| 08    | 208.0 (8.19")  | 120.7 (4.75") | 205 (8.1")   | 19.0 (0.75") | 17.0 (0.669")  | 145 (5.7") | 226 (8.9")  |
| 09    | 227.0 (8.94")  | 133.0 (5.24") | 221 (8.7")   | 26.0 (1.02") | 19.0 (0.748")  | 153 (6.0") | 234 (9.2")  |
| 10    | 229.0 (9.00")  | 130.5 (5.14") | 273 (10.75") | 24.0 (0.94") | 22.0* (0.870") | 155 (6.2") | 236 (9.3")  |
| 12    | 294.0 (11.57") | 171.0 (6.73") | 266 (10.5")  | 31.0 (1.22") | 25.0 (0.984")  | 167 (6.6") | 218 (8.6")  |
| 14    | 380.0 (14.96") | 222.0 (8.74") | 314 (12.4")  | 38.0 (1.50") | 28.6 (1.125")  | 183 (7.2") | 264 (10.4") |
| 15    | 433.0 (17.05") | 252.0 (9.92") | 355 (14.0")  | 41.0 (1.61") | 36.0 (1.417")  | 200 (7.9") | 281 (11.1") |

\* Model 10 DIN (F10) Female Drive

## 180 Degree Actuator Dimensions



### Dimensions/Metric Units

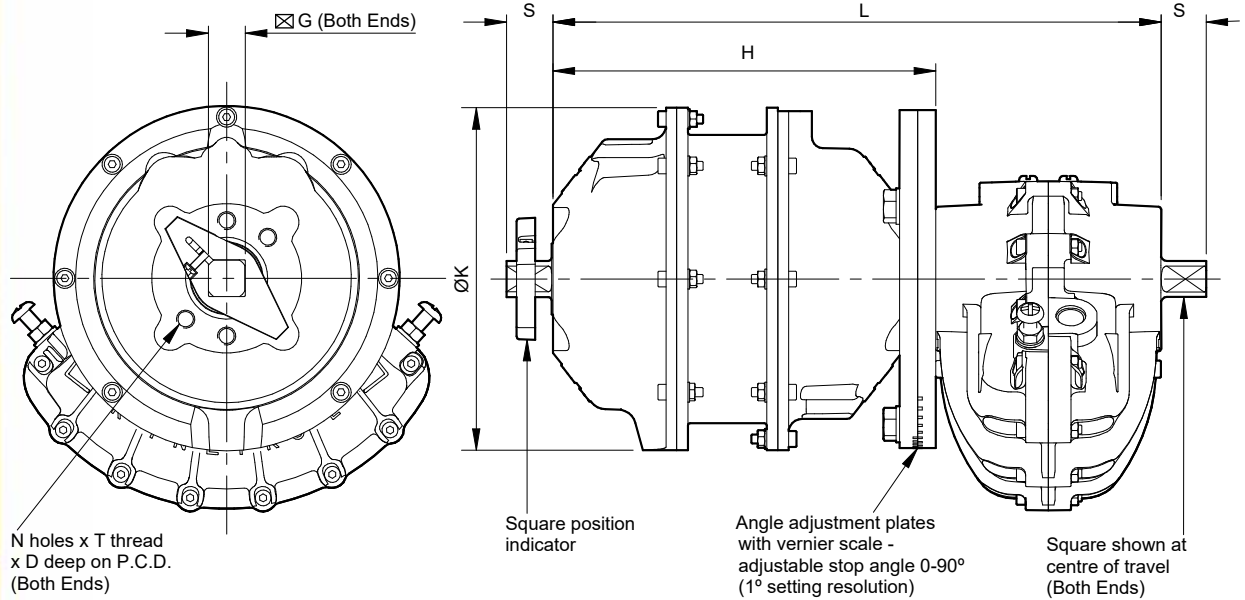
| Actuator Model | A mm | B mm | C mm | K mm | G mm | S mm | N ISO | T mm | D mm | PCD mm | W kg  |
|----------------|------|------|------|------|------|------|-------|------|------|--------|-------|
| 02 - 1001      | 32   | 50   | 12.5 | 73   | 8.0  | 10.0 | 4     | M4   | 8.0  | 25.5   | 1.1   |
| 03 - 1001      | 36   | 60   | 20   | 108  | 9.0  | 12.0 | 4     | M5   | 10.0 | 31.1   | 2     |
| 05 - 1001      | 42   | 67   | 20   | 119  | 9.5  | 13.0 | 6     | M5   | 8.0  | 34.9   | 2.5   |
| 07 - 1001      | 59   | 100  | 25   | 152  | 16.0 | 20.0 | 4     | M8   | 16.0 | 50.9   | 4.57  |
| 09 - 1001      | 70   | 126  | 35   | 200  | 19.0 | 26.0 | 4     | M10  | 20.0 | 65.0   | 13.2  |
| 12 - 1001      | 99   | 156  | 45   | 258  | 25.0 | 31.0 | 4     | M12  | 22.0 | 77.8   | 20.45 |
| 14 - 1001      | 125  | 200  | 70   | 396  | 28.6 | 38.0 | 4     | M16  | 28.5 | 98.8   | 35.25 |
| 16 - 1001      | 176  | 274  | 100  | 520  | 41.0 | 55.0 | 4     | M24  | 38.0 | 152.7  | 125   |

### Dimensions/English Units

| Actuator Model | A inch | B inch | C inch | K inch | G inch | S inch | N UNC | T inch  | D inch | PCD inch | W lb   |
|----------------|--------|--------|--------|--------|--------|--------|-------|---------|--------|----------|--------|
| 02 - 1001      | 1.24   | 1.97   | 0.49   | 2.87   | 0.315  | 0.39   | 4     | 8-32    | 0.31   | 1.000    | 2.43   |
| 03 - 1001      | 1.40   | 2.36   | 0.79   | 4.25   | 0.354  | 0.47   | 4     | 10-24   | 0.39   | 1.225    | 4.41   |
| 05 - 1001      | 1.65   | 2.64   | 0.79   | 4.69   | 0.375  | 0.51   | 6     | 10-24   | 0.31   | 1.375    | 5.51   |
| 07 - 1001      | 2.32   | 3.94   | 0.98   | 6.00   | 0.630  | 0.79   | 4     | 3/16-18 | 0.63   | 2.000    | 11.68  |
| 09 - 1001      | 2.76   | 4.96   | 1.38   | 7.90   | 0.748  | 1.02   | 4     | 3/8-16  | 0.79   | 2.560    | 29.10  |
| 12 - 1001      | 3.90   | 6.14   | 1.77   | 10.16  | 0.984  | 1.22   | 4     | 1/2-13  | 0.87   | 3.060    | 44.99  |
| 14 - 1001      | 4.92   | 7.87   | 2.76   | 15.59  | 1.125  | 1.50   | 4     | 5/8-11  | 1.13   | 3.890    | 77.55  |
| 16 - 1001      | 6.93   | 10.79  | 3.94   | 20.47  | 1.614  | 2.17   | 4     | 3/4-9   | 1.50   | 6.012    | 275.00 |

N.B. Weights are inclusive of actuator and 180 degree assembly, coupling and indicator (except models 14 & 16).

## Spring to Centre Dimensions



| Actuator Model | L mm | H mm | K mm | ⊠G mm | S mm | N No. | T ISO | D mm | PCD mm | Wgt* kg |
|----------------|------|------|------|-------|------|-------|-------|------|--------|---------|
| 050-1205       | 178  | 111  | 119  | 9.5   | 13   | 6     | M5    | 10   | 34.9   | 4.0     |
| 070-1205       | 270  | 170  | 152  | 16.0  | 20   | 4     | M8    | 16   | 50.9   | 10.2    |
| 090-1205       | 328  | 202  | 200  | 19.0  | 26   | 4     | M10   | 20   | 65.0   | 23.6    |
| 120-1205       | 466  | 310  | 258  | 25.0  | 31   | 4     | M12   | 22   | 77.8   | 36.0    |
| 140-1205       | 640  | 440  | 400  | 28.6  | 38   | 4     | M16   | 28   | 98.8   | 124.0   |
| 160-1205       | 880  | 606  | 400  | 41.0  | 55   | 4     | M24   | 38   | 152.7  | 200.0   |
| 180-1205       | 1163 | 803  | 532  | 57.0  | 78   | 4     | M30   | 50   | 226.3  | 445.0   |

\* Weight includes standard coupling

## Spring Fail-Safe Electric Actuators

Kinetrol's double acting and spring return electrohydraulic actuators are designed for use in locations without a compressed air supply. A hydraulic pump delivers pressurised oil to a Kinetrol quarter-turn actuator, providing a double acting torque output up to 1220 Nm/10800 lbf in.

In the case of single acting units, a Kinetrol spring return and fail-open solenoid valve produce a positive fail-safe action.

A 100% rated pump motor and pressure release valve provide stall protection. This, together with the units capacity for up to 3000 starts per hour, make it ideal for both high cycle double acting or modulating applications.

Various AC and DC voltage builds are available and options include auxiliary limit switches and/or a 4-20 mA transducer for position feedback.

See leaflet KF-503 for further information.



## Rotary Dampers

Kinetrol's range of fluid dashpots are used to steady drives, decelerate motion and damp vibration. Standard designs include fixed and adjustable rate devices for limited angle or continuous rotation damping in one or both directions of travel.

Applications for these robust, industrial dampers include the precise control of:

- tension on wire/paper/film/textile handling equipment
- the rate of descent of curtains, shutters, etc.
- oscillations of pendulums, gimbals, etc.
- jerk on camera & simulator systems
- vibration on transfer machinery.

See catalogue KF-72 for more information.  
If required, Kinetrol can engineer special designs to meet customers specifications.





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