

NEW



POWER JACKS

Manufacturers and European Distributors of **Duff-Norton**® Actuators



Cubic Worm Gear Actuators
UK Designed and Manufactured

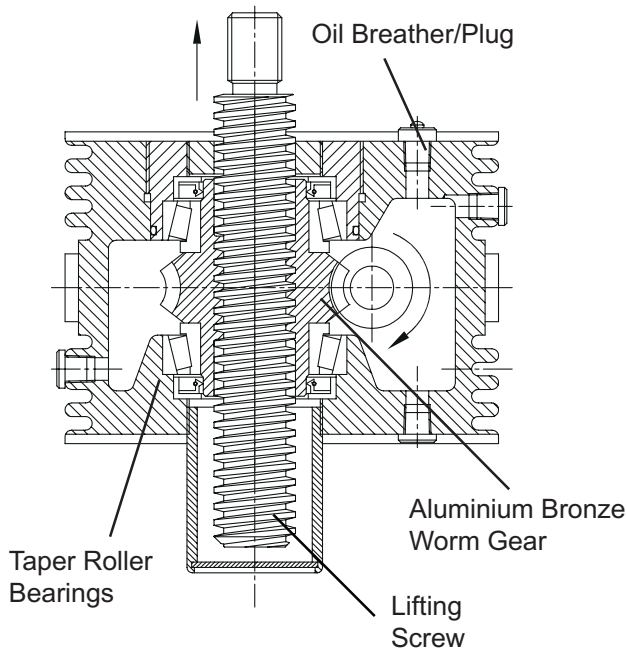
SYM-METRIC ACTUATORS



Certificate No FM 23810



THE SYM-METRIC ACTUATORS



- I ncreased Performance
- M etric Design
- P recision Bearings
- R obust Construction
- O il Lubricated
- V ariants Available
- E asy Mounting
- D ouble Start Option

- A nti-backlash Feature
- C levis or Top Plate End Attachment
- T wo Start Lifting Screw Options
- U pright or Inverted Positioning
- A nti-Rotation (Keyed Lifting Screw)
- T hread Protection (Bellows Boots)
- O ptional Reduction Ratios
- R otating Screw Models

Clockwise rotation of worm raises load on all models – counter clockwise available at extra charge. Unless lifting screw is keyed, top should be bolted to lifting member to prevent screw from rotating. Recommended lubricants are listed in the installation and maintenance instructions.

Actuators supplied complete with drive shaft keys.

Actuators are available fitted with our patented anti-backlash device.

■ Dimensions in this publication are stated in millimetres and are subject to change without notice.

Performance of Standard Sym-metric Actuators

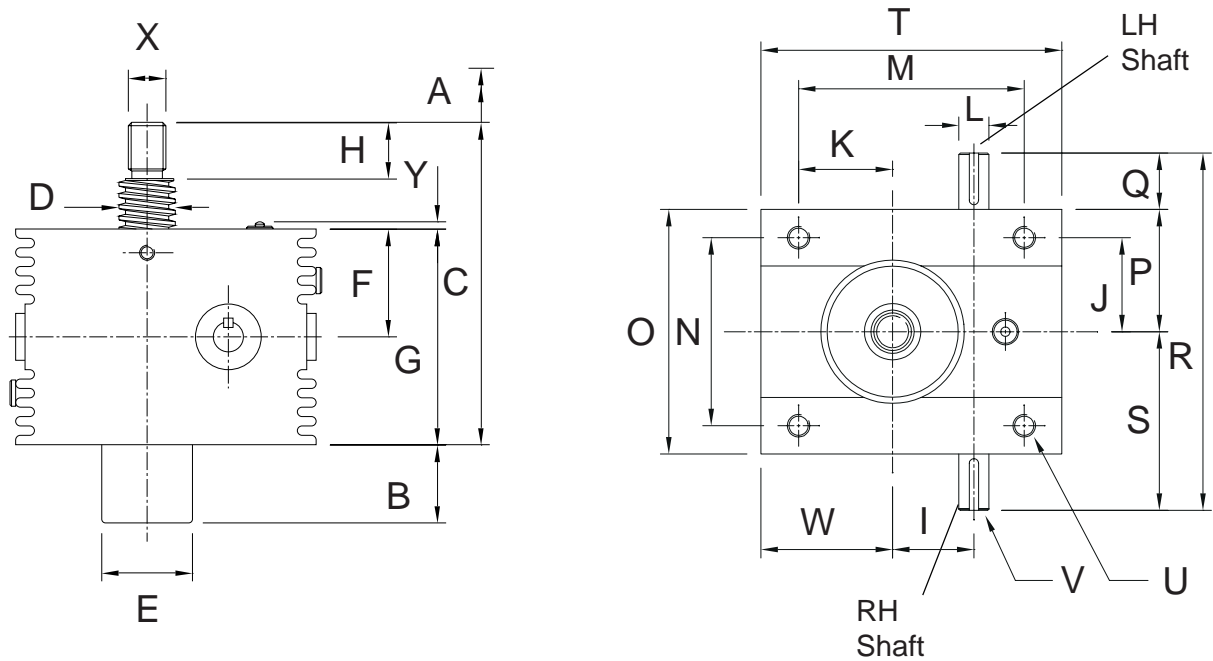
| Actuator Model | | ST025 | | ST050 | | ST100 | | ST200 | | |
|--|----------------|----------|--------|--------|--------|--------|--------|--------|--------|------|
| Capacity (kN) | | 25 | | 50 | | 100 | | 200 | | |
| Lifting Screw | Diameter | Ø30mm | | Ø40mm | | Ø55mm | | Ø65mm | | |
| | Pitch | 6mm | | 9mm | | 12mm | | 12mm | | |
| | No of Starts * | Single | Double | Single | Double | Single | Double | Single | Double | |
| Worm Gear Ratios | Standard | 6 : 1 | | 6 : 1 | | 8 : 1 | | 8 : 1 | | |
| | Option 1 | 8 : 1 | | 8 : 1 | | 6 : 1 | | 6 : 1 | | |
| | Option 2 | 24 : 1 | | 24 : 1 | | 24 : 1 | | 24 : 1 | | |
| Turn of Worm for Raise of Lifting Screw | 1 Turn | Standard | 1mm | 2mm | 1.5mm | 3mm | 1.5mm | 3mm | 1.5mm | 3mm |
| | 4 Turns | Option 1 | 3mm | 6mm | 4.5mm | 9mm | 8mm | 16mm | 8mm | 16mm |
| | 4 Turns | Option 2 | 1mm | 2mm | 1.5mm | 3mm | 2mm | 4mm | 2mm | 4mm |
| Maximum Input Power per Actuator (kW) | Standard | 1.5 | | 3 | | 3.75 | | 3.75 | | |
| | Option 1 | 1.5 | | 3 | | 3.75 | | 3.75 | | |
| | Option 2 | 0.375 | | 0.550 | | 1.125 | | 1.125 | | |
| Torque at Full Load (Nm) † | Standard | 19 | 25 | 53 | 72 | 110 | 148 | 247 | 323 | |
| | Option 1 | 15 | 20 | 43 | 58 | 138 | 186 | 311 | 407 | |
| | Option 2 | 8 | 11 | 23 | 32 | 56 | 75 | 126 | 165 | |
| Static Actuator Efficiency Rating (%) ‡ | Standard | 20.9 | 31.4 | 22.2 | 32.5 | 21.4 | 31.7 | 19.0 | 29.0 | |
| | Option 1 | 19.4 | 29.3 | 20.6 | 30.2 | 22.7 | 33.6 | 20.1 | 30.7 | |
| | Option 2 | 12.1 | 18.3 | 12.5 | 18.4 | 14.0 | 20.7 | 12.4 | 18.9 | |
| Weight with Base Raise of 150mm (kg) | | 13 | | 25 | | 41 | | 70 | | |
| Weight for each Additional 25mm Raise (kg) | | 0.21 | | 0.32 | | 0.57 | | 0.86 | | |

* Single start lifting screw is standard.

† For loads of 25% to 100% of actuator capacity, torque requirements are approximately proportional to the load

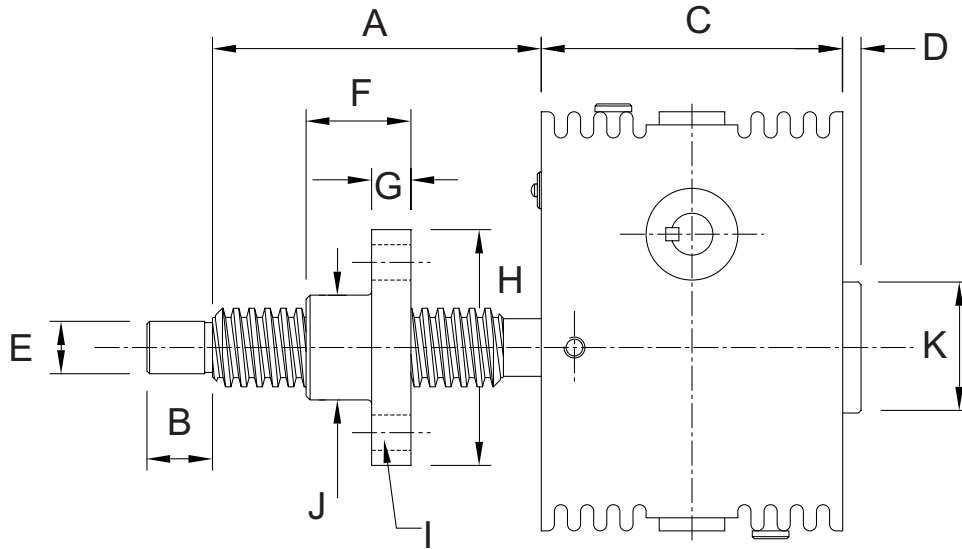
‡ Efficiency values are based on an oil lubricated worm gear set and a grease lubricated lifting screw

Standard Sym-metric Translating Screw Actuators



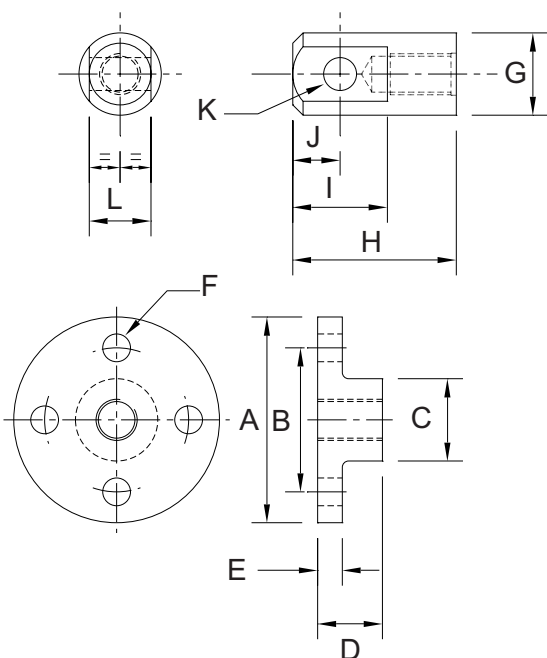
| Model | ST025 | ST050 | ST100 | ST200 |
|-------|-----------------------|-----------------------|-----------------------|-----------------------|
| A | Raise as required | | | |
| B | Raise | Raise | Raise | Raise |
| C | Min Closed Height 157 | Min Closed Height 192 | Min Closed Height 224 | Min Closed Height 265 |
| D | Ø30 | Ø40 | Ø55 | Ø65 |
| E | Ø50 | Ø60 | Ø76 | Ø95 |
| F | 57.5 | 72.5 | 85 | 97.5 |
| G | 115 | 145 | 170 | 195 |
| H | 30 | 35 | 40 | 55 |
| I | 43.26 | 55.58 | 66 | 66 |
| J | 50 | 62.5 | 72.5 | 82.5 |
| K | 50 | 60 | 65 | 72.5 |
| L | Ø16 js6 | Ø19 js6 | Ø25 js6 | Ø28 js6 |
| M | 120 | 155 | 165 | 190 |
| N | 100 | 125 | 145 | 165 |
| O | 130 | 160 | 190 | 220 |
| P | 65 | 80 | 95 | 110 |
| Q | 30 | 35 | 50 | 50 |
| R | 190 | 230 | 290 | 320 |
| S | 95 | 115 | 145 | 160 |
| T | 160 | 200 | 235 | 275 |
| U | M12 x 1.75 x 16 Deep | M16 x 2 x 24 Deep | M20 x 2.5 x 30 Deep | M24 x 3 x 36 Deep |
| V | 5 x 5 x 25 | 6 x 6 x 32 | 8 x 7 x 40 | 8 x 7 x 40 |
| W | 70 | 83 | 100 | 115 |
| X | M20 x 2.5 | M24 x 3 | M36 x 4 | M48 x 5 |
| Y | 4 Max | 4 Max | 4 Max | 4 Max |

Standard Sym-metric Rotating Screw Actuators



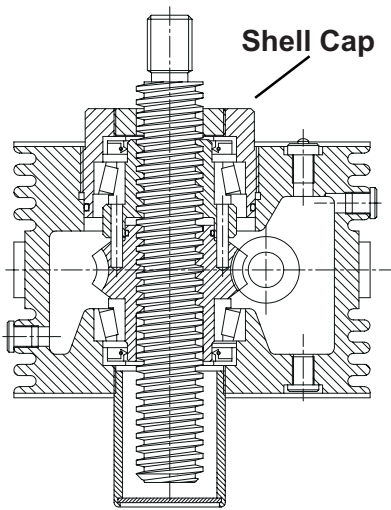
| Model Number | Rating (kN) | A | B | C | D | E | F | G | H | I | J | K |
|--------------|-------------|------------|----|-----|----|----|----|----|-----|---------------------------------|----|----|
| SR025 | 25 | Raise +60 | 25 | 115 | 15 | 20 | 40 | 15 | 90 | 4 Holes – 13.5 dia on 65 P.C.D. | 40 | 50 |
| SR050 | 50 | Raise +80 | 30 | 145 | 15 | 25 | 65 | 20 | 115 | 4 Holes – 18 dia on 85 P.C.D. | 55 | 62 |
| SR100 | 100 | Raise +100 | 50 | 170 | 31 | 35 | 75 | 25 | 160 | 4 Holes – 22 dia on 120 P.C.D. | 80 | 76 |
| SR200 | 200 | Raise +100 | 65 | 195 | 50 | 45 | 75 | 25 | 185 | 4 Holes – 26 dia on 135 P.C.D. | 90 | 95 |

Standard Translating Screw Ends



| Model | 25kN | 50kN | 100kN | 200kN |
|-------|-----------|-----------|------------|------------|
| A | Ø100 | Ø120 | Ø150 | Ø170 |
| B | P.C.D. 70 | P.C.D. 85 | P.C.D. 110 | P.C.D. 120 |
| C | Ø40 | Ø50 | Ø65 | Ø75 |
| D | 31.5 | 36.5 | 42 | 58 |
| E | 12 | 16 | 20 | 25 |
| F | Ø13.5 | Ø18 | Ø22 | Ø26 |
| G | Ø40 | Ø50 | Ø65 | Ø75 |
| H | 79.5 | 91.5 | 120 | 143 |
| I | 46 | 60 | 66 | 80 |
| J | 23 | 30 | 33 | 40 |
| K | Ø16 | Ø20 | Ø22 | Ø30 |
| L | 30 | 35 | 40 | 50 |

Sym-metric Actuators with Anti-Backlash Feature

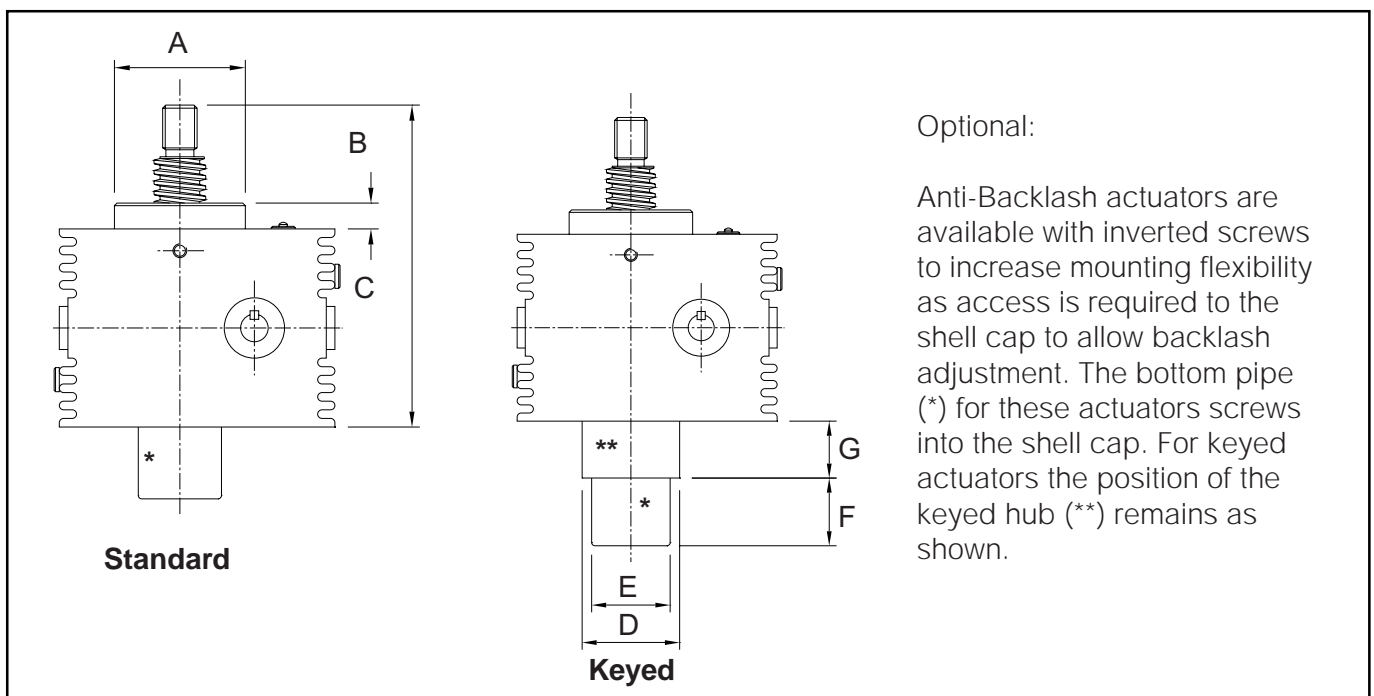


Sym-metric actuators are available with anti-backlash nuts for applications where a reversal of loading from tension to compression is encountered.

Anti-Backlash Features:

- Reduction in the vertical backlash between the screw and the worm gear nut to a practical minimum for the smoother, more precise operation and minimum wear.
- Acts as a safety device, providing a dual nut load carrying unit, when the worm gear becomes worn.
- Wear indicator for critical applications.

The anti-backlash feature can be maintained by adjusting the shell cap until the desired amount of backlash is achieved. To avoid binding and excessive wear, do not adjust lifting screw backlash to less than 0.013mm.



Optional:

Anti-Backlash actuators are available with inverted screws to increase mounting flexibility as access is required to the shell cap to allow backlash adjustment. The bottom pipe (*) for these actuators screws into the shell cap. For keyed actuators the position of the keyed hub (**) remains as shown.

Standard Dimensions

| Model | Standard | | | Keyed (K) | | | |
|--------------|----------|----|-----|-----------|----|-------|----|
| | A | B | C | D | E | F | G |
| ST025-AB (K) | 76 | 15 | 172 | 60 | 50 | Raise | 35 |
| ST050-AB (K) | 100 | 25 | 217 | 75 | 60 | Raise | 42 |
| ST100-AB (K) | 127 | 28 | 252 | 90 | 76 | Raise | 52 |
| ST200-AB (K) | 145 | 34 | 299 | 102 | 95 | Raise | 63 |

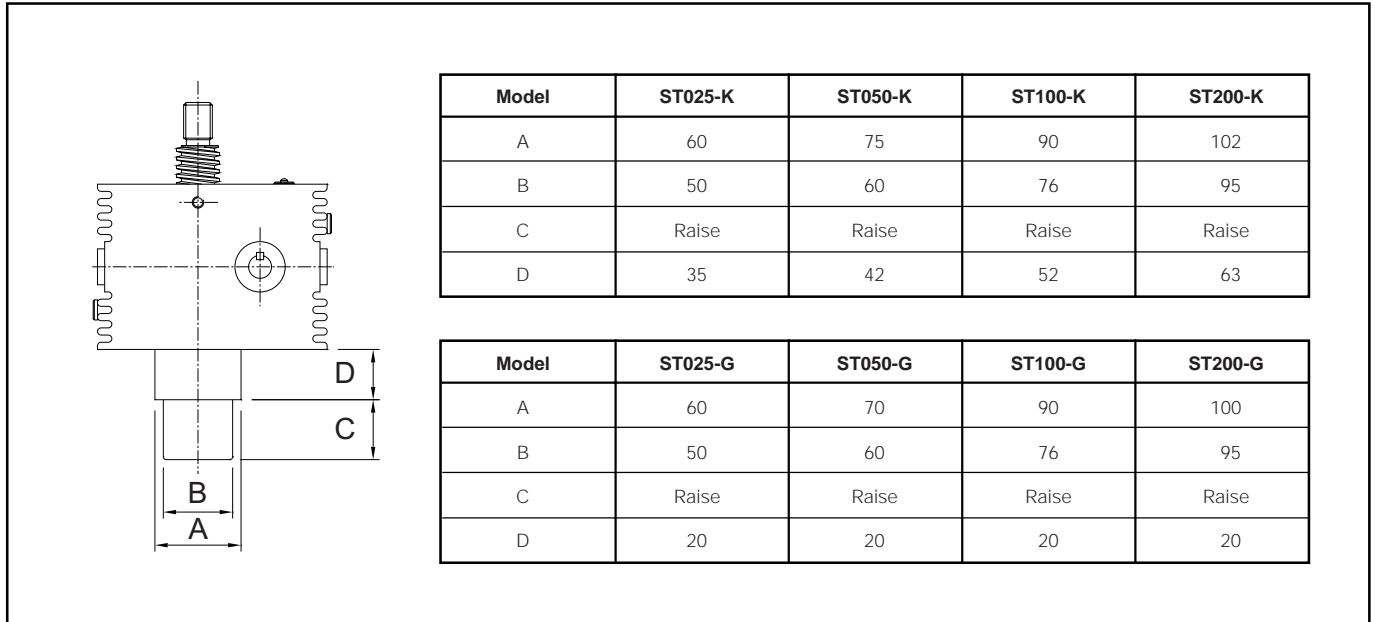
Torque and Efficiencies for Standard Anti-Backlash Actuators

| Model | | ST025-AB | | ST050-AB | | ST100-AB | | ST200-AB | |
|---------------------------------------|----------|----------|--------|----------|--------|----------|--------|----------|--------|
| Capacity (kN) | | 25 | | 50 | | 100 | | 200 | |
| Lifting Screw No of Starts * | | Single | Double | Single | Double | Single | Double | Single | Double |
| Torque at Full Load (Nm) | Standard | 21 | 28 | 60 | 82 | 124 | 168 | 279 | 367 |
| | Option 1 | 17 | 23 | 48 | 66 | 155 | 211 | 352 | 461 |
| | Option 2 | 9 | 12 | 26 | 36 | 63 | 86 | 142 | 187 |
| Static Actuator Efficiency Rating (%) | Standard | 18.8 | 28.2 | 20.0 | 29.3 | 19.3 | 28.5 | 17.1 | 26.0 |
| | Option 1 | 17.5 | 26.3 | 18.6 | 27.2 | 20.5 | 30.2 | 18.1 | 27.6 |
| | Option 2 | 10.9 | 16.4 | 11.3 | 16.5 | 12.6 | 18.6 | 11.2 | 17.0 |
| Weight with Base Raise of 150mm (kg) | | 13.4 | | 26.5 | | 43.5 | | 74 | |

Sym-metric Actuators with Key or Secondary Guide

Keyed translating screw actuator stops the screw from rotating without the need for end pinning. However, the key-way in the screw will cause greater than normal wear on the internal threads of the worm gear.

Secondary Guiding for the screw, for greater lateral rigidity aiding screw guidance and improved side load resilience.



Other Options

- Bellows Boot
- Motor Adapters – IEC and NEMA Face Mounts, including motor couplings
- Stainless Steel Lifting Screw
- Plain End Lifting Screw
- No Pilot End on Rotating Screw
- Left Hand Threaded Lifting Screw, for raise with counter clockwise worm rotation
- Single Worm Shaft Extension
- Stainless Steel Worm Shaft
- Chrome Plated Worm Shaft Ends
- Side adapter bolts for drive shaft accessories
- Bolt on Trunion Mount Plate
- Hand Crank
- Thrust rings instead of taper roller bearings, for impact loading



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