

NEW



# POWER JACKS

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



Cubic Worm Gear Actuators  
UK Designed and Manufactured

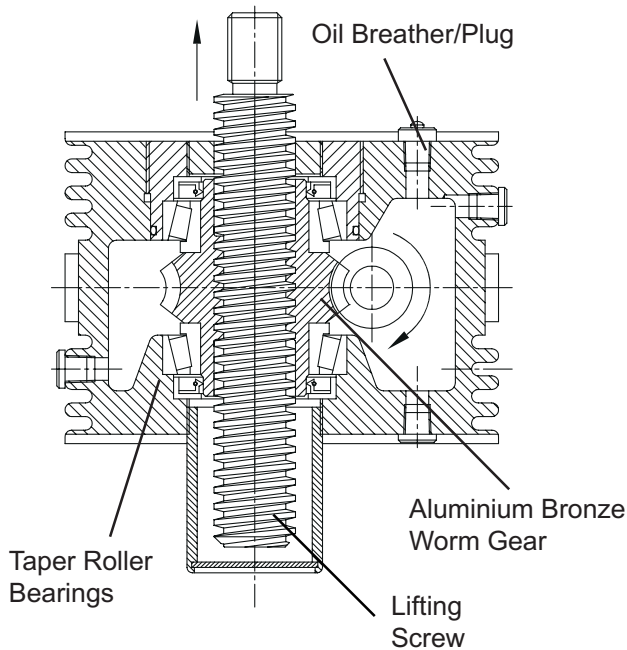
SYM-METRIC ACTUATORS



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

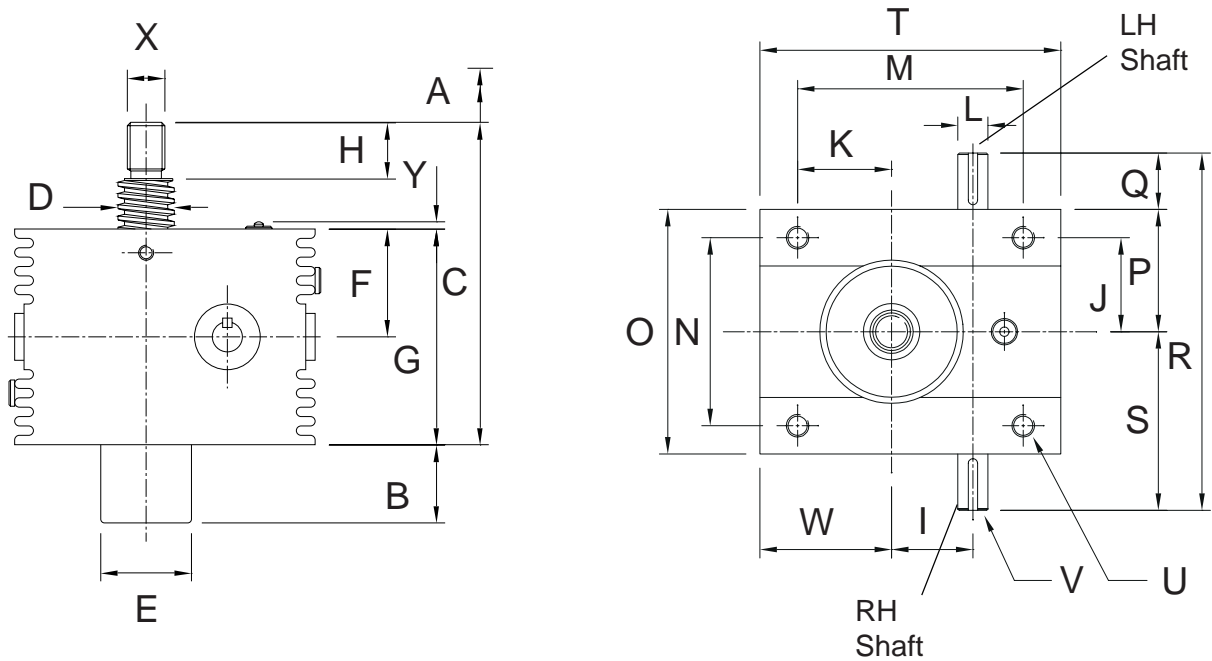
Actuator Model		ST025		ST050		ST100		ST200		
Capacity (kN)		25		50		100		200		
Lifting Screw	Diameter	Ø30mm		Ø40mm		Ø55mm		Ø65mm		
	Pitch	6mm		9mm		12mm		12mm		
	No of Starts *	Single	Double	Single	Double	Single	Double	Single	Double	
Worm Gear Ratios	Standard	6 : 1		6 : 1		8 : 1		8 : 1		
	Option 1	8 : 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

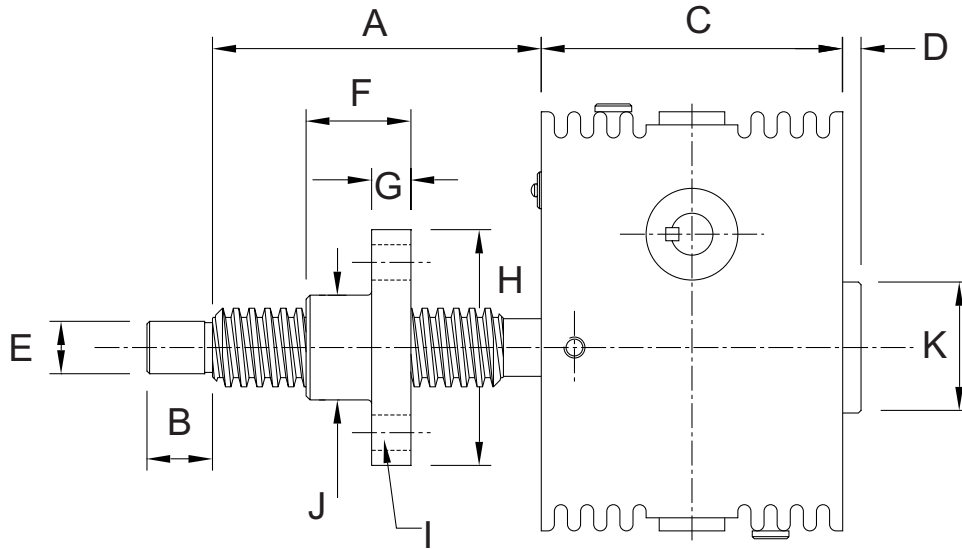
‡ Efficiency values are based on an oil lubricated worm gear set and a grease lubricated lifting screw

# Standard Sym-metric Translating Screw Actuators



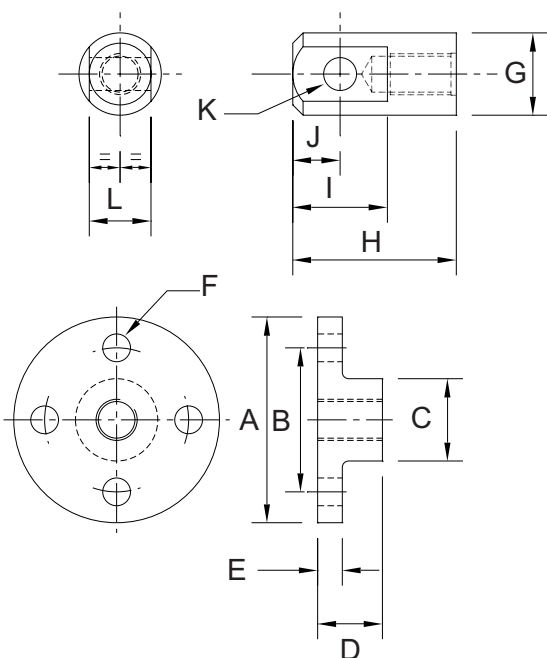
Model	ST025	ST050	ST100	ST200
A	Raise as required			
B	Raise	Raise	Raise	Raise
C	Min Closed Height 157	Min Closed Height 192	Min Closed Height 224	Min Closed Height 265
D	Ø30	Ø40	Ø55	Ø65
E	Ø50	Ø60	Ø76	Ø95
F	57.5	72.5	85	97.5
G	115	145	170	195
H	30	35	40	55
I	43.26	55.58	66	66
J	50	62.5	72.5	82.5
K	50	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



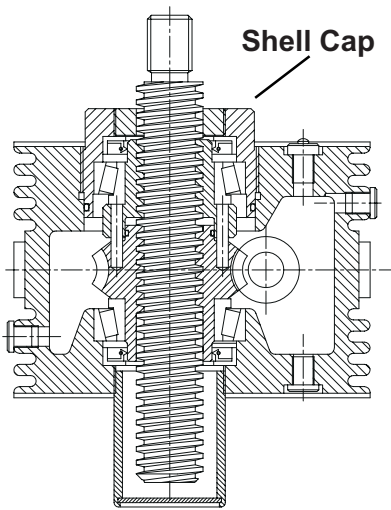
Model Number	Rating (kN)	A	B	C	D	E	F	G	H	I	J	K
SR025	25	Raise +60	25	115	15	20	40	15	90	4 Holes – 13.5 dia on 65 P.C.D.	40	50
SR050	50	Raise +80	30	145	15	25	65	20	115	4 Holes – 18 dia on 85 P.C.D.	55	62
SR100	100	Raise +100	50	170	31	35	75	25	160	4 Holes – 22 dia on 120 P.C.D.	80	76
SR200	200	Raise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

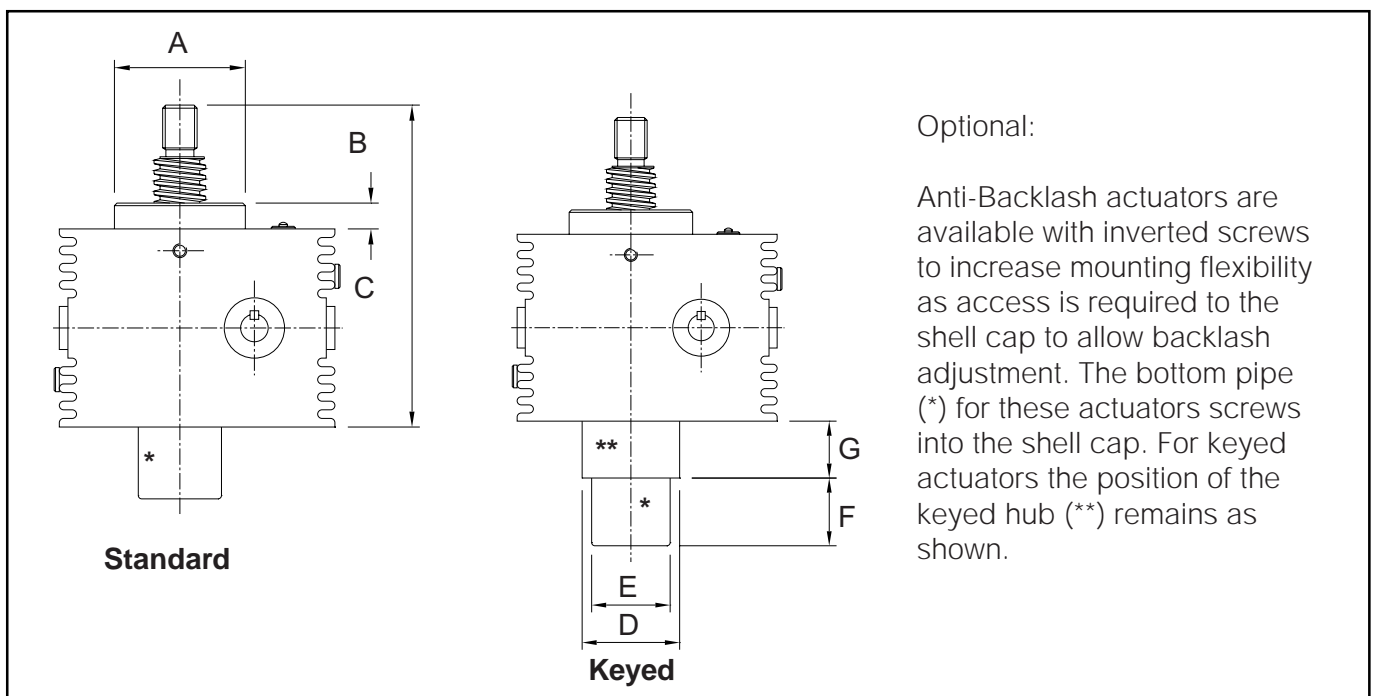


Sym-metric actuators are available with anti-backlash nuts for applications where a reversal of loading from tension to compression is encountered.

## 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

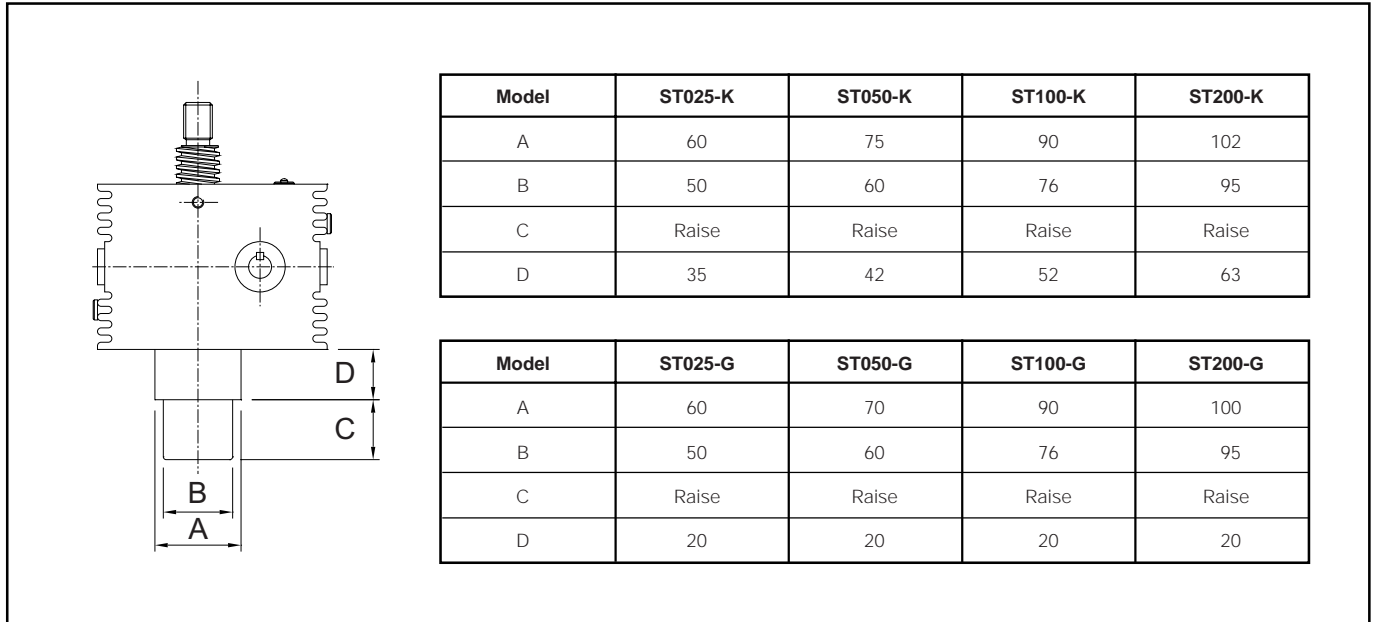
## Torque and Efficiencies for Standard Anti-Backlash Actuators

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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