

C-SERIES S-SERIES

Metric Machine
Screw Jacks



POWERJACK


Any questions? Please contact us.

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Power Jacks are a manufacturer focused on providing customers with the best engineered solution for precision linear actuation, power transmission and mechanical jacking.

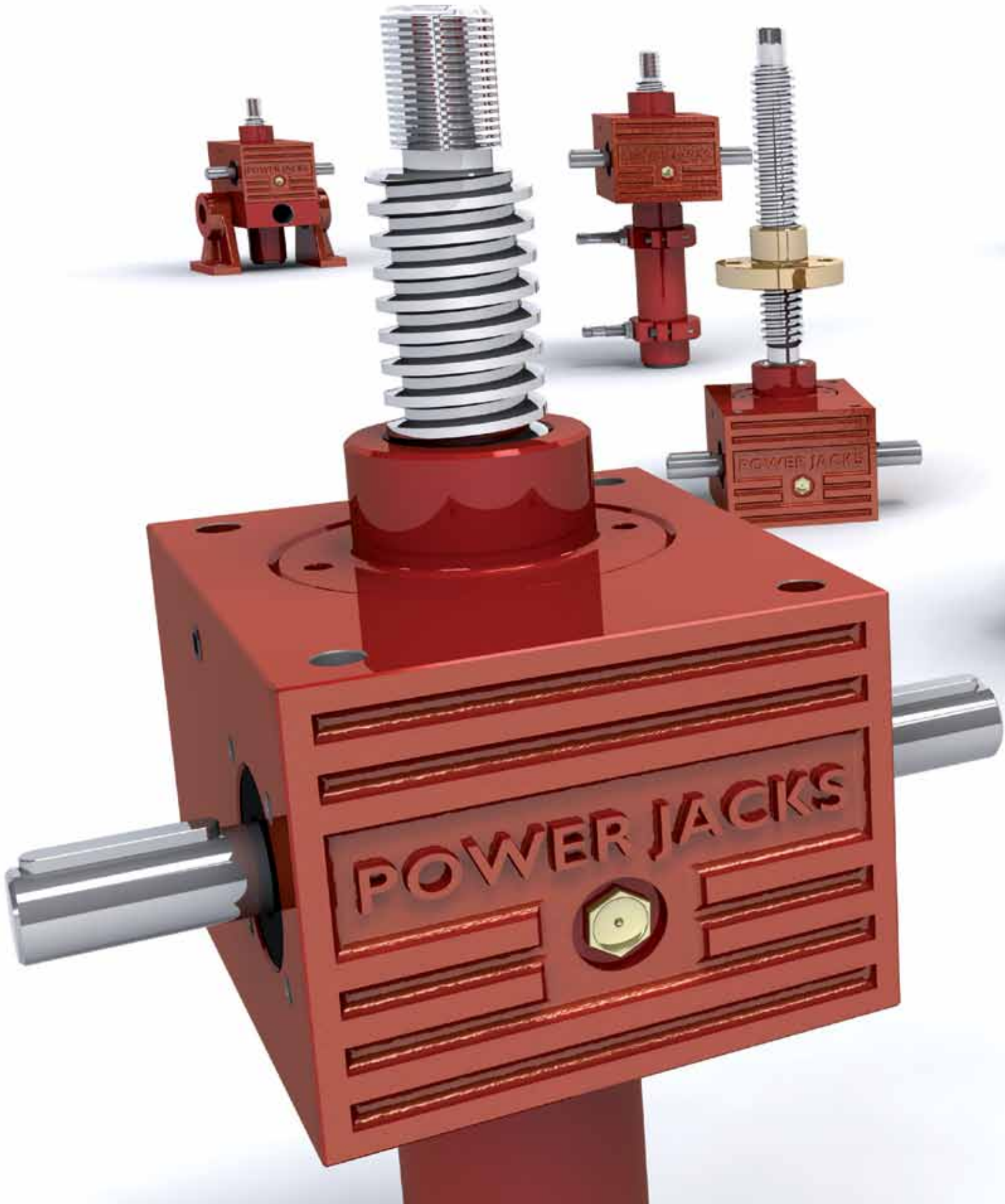
Our expertise has been built on a history of engineering craftsmanship and design dating back to 1903. The facility in Scotland is the UK's largest screw jack manufacturing facility, that uses the latest engineering technologies to deliver quality products (BS EN ISO 9001:2008) that offer reliability, performance and economy.

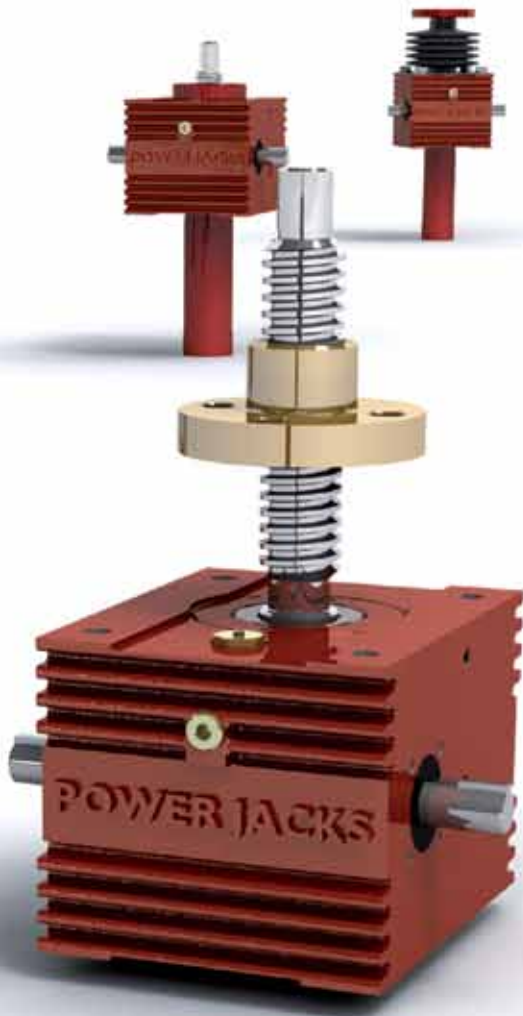
Power Jacks is synonymous with screw jack technology and its development. We have been involved with Screw Jacks since the product was invented in the late 1930's and this gives us unparalleled experience in the design and manufacture of both standard and special designs.

Complimenting the screw jacks the Power Jacks portfolio also includes the design and manufacture of spiral bevel gearboxes, electric linear actuators and planetary roller screws. This enables us to offer our customers a complete linear motion and power transmission system and solution.

We know our customers demand our engineering expertise to help find a solution for their applications. We take pride in designing and delivering the best solution. This is what defines the Power Jacks range.

Contents





Standard Cubic

C-Series Screw Jack Features	6
C-Series Screw Jack.....	7
C-Series Translating Screw Jack Building System.....	8
C-Series Rotating Screw Jack Building System	9
C-Series Screw Jack Product Code.....	10
C-Series Metric Machine Screw Jack Performance	11
C-Series Translating Screw Jack 10kN.....	12
C-Series Rotating Screw Jack 10kN	13
C-Series Translating Screw Jack 25kN.....	14
C-Series Rotating Screw Jack 25kN	15
C-Series Translating Screw Jack 50kN.....	16
C-Series Rotating Screw Jack 50kN	17
C-Series Translating Screw Jack 100kN.....	18
C-Series Rotating Screw Jack 100kN.....	19
Anti-Backlash for C-Series Screw Jacks	20
Anti-Rotation (Keyed) for C-Series Screw Jacks	21
Anti-Rotation with Anti-Backlash or Safety Nut	21
C-Series with Safety Nut	22
End Fittings for C-Series Translating Screw Jacks	23
Trunnion Mounts for C-Series.....	24
Motor Adaptor for C-Series.....	25
Limit Switches on C-Series Screw Jack Cover Pipe	26
Rotary Limit Switches for C-Series Screw Jacks.....	27

High Performance

S-Series Screw Jack Features	28
S-Series Screw Jack.....	29
S-Series Translating Screw Jack Building System.....	30
S-Series Rotating Screw Jack Building System.....	31
S-Series Screw Jack Product Code.....	32
S-Series Metric Machine Screw Jack Performance	33
S-Series Translating Screw Jack 25kN.....	34
S-Series Rotating Screw Jack 25kN.....	35
S-Series Translating Screw Jack 50kN.....	36
S-Series Rotating Screw Jack 50kN.....	37
S-Series Translating Screw Jack 100kN.....	38
S-Series Rotating Screw Jack 100kN.....	39
S-Series Translating Screw Jack 200kN.....	40
S-Series Rotating Screw Jack 200kN.....	41
Anti-Backlash for S-Series Screw Jacks	42
Anti-Rotation (Keyed) for S-Series Screw Jacks.....	43
Anti-Rotation with Anti-Backlash or Safety Nut	44
S-Series with Safety Nut.....	45
End Fittings for S-Series Translating Screw Jacks	46
Trunnion Mounts for S-Series	47
Motor Adaptor for S-Series	48
Limit Switches on S-Series Screw Jack Cover Pipe	49
Rotary Limit switches for S-Series Screw Jacks	50
Other Products from Power Jacks	51

Introducing the new C-Series Screw Jack range from Power Jacks, delivering new levels of versatility and quality.

Created by a team of experienced design engineers, the focus was to provide our customers with a new compact cubic Screw Jack, which offers versatility in mounting methods. In addition to this, we wanted to design a jack that had the perfect combination of excellent performance, a long lasting service life, durability, flexibility and an extensive accessory list. Perfect for industrial applications operating individually or as a multi unit jacking system.

Over 140 Million Standard Configurations.

4 Standard Screw Jack Designs

- Standard
- Anti-Backlash*
- Anti-Rotation*
- Safety Nut

Anti-Rotation can be combined with standard, anti-backlash and safety nut designs.
* Translating screw configurations.

Gearbox Housing

Is one of the most functional features of the C-Series screw jack. Using a rugged cast housing made of either a highly durable SG Iron or Aluminium. This provides a strong housing that firmly and accurately holds the gear set in a reservoir of chosen lubricant suited to the most industrial demands.

Reliable Worm Gear set

Proven design used in millions of screw jacks.

Forced Grease Lubrication

Of lead screw. Radial lubrication holes on the worm gear allow the worm shaft to force grease through directly onto the lead screw threads. This lowers friction and operating temperature while increasing life.

Corrosion Protection

To suit all economic needs.

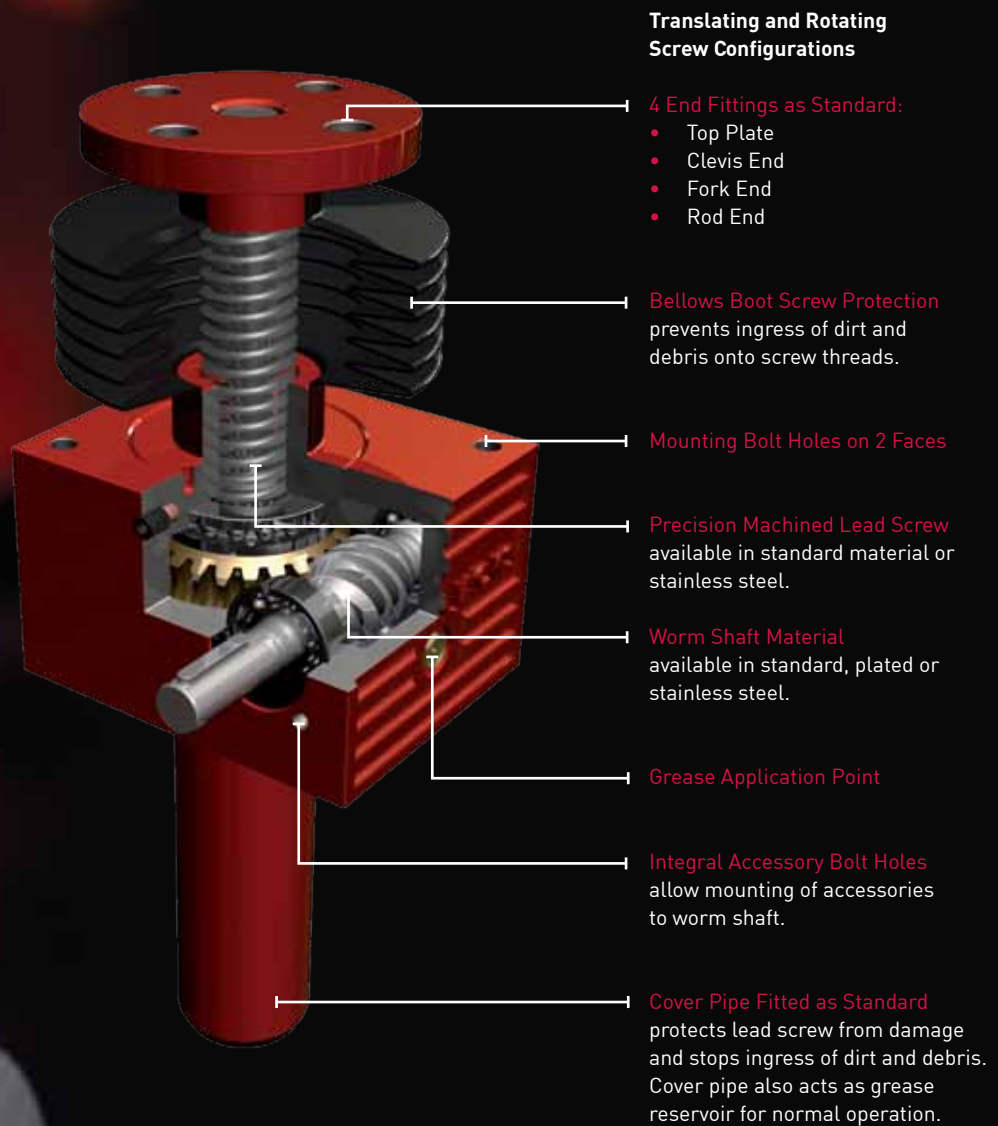
- Standard Industrial Paint Finish
- Arduous Environment Paint Finish
- Customer Specified Paint
- Plated Finish

Compact
Durable
Versatile
Dynamic



C-SERIES

Features



Special Features



2 Screw Lead Options
for each screw jack size

Over 140 million standard configurations



Worm Shaft Extensions
as standard double (both sides) or optionally single extension (one side)



2 Gear Ratio Options
for each screw jack size

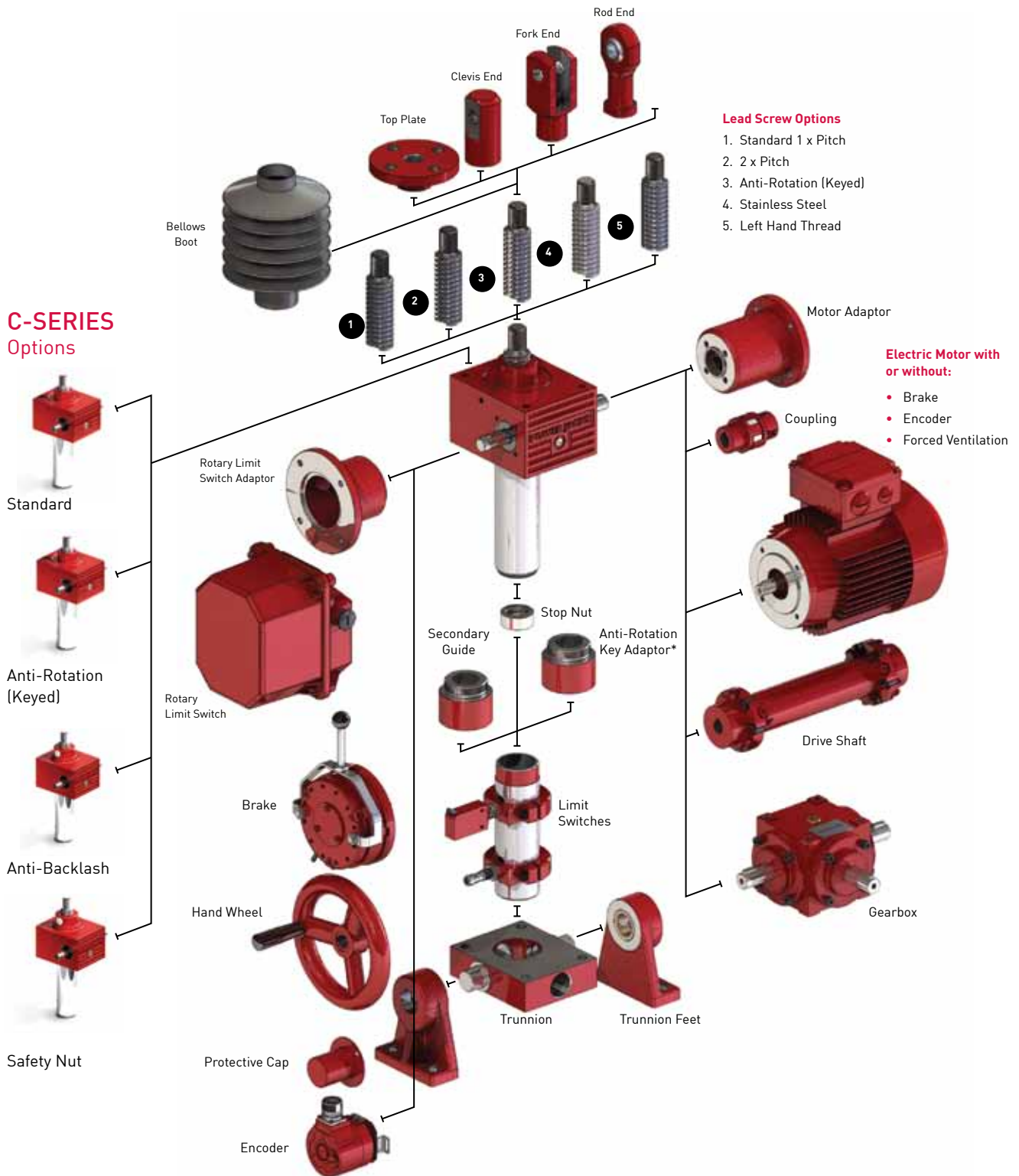
Aluminium Bronze Worm Gear
accurately hobbled for greater gear contact

Optimum lubrication
via 2 integrated systems

Delivering impressive rotary
to linear motion performance

C-SERIES

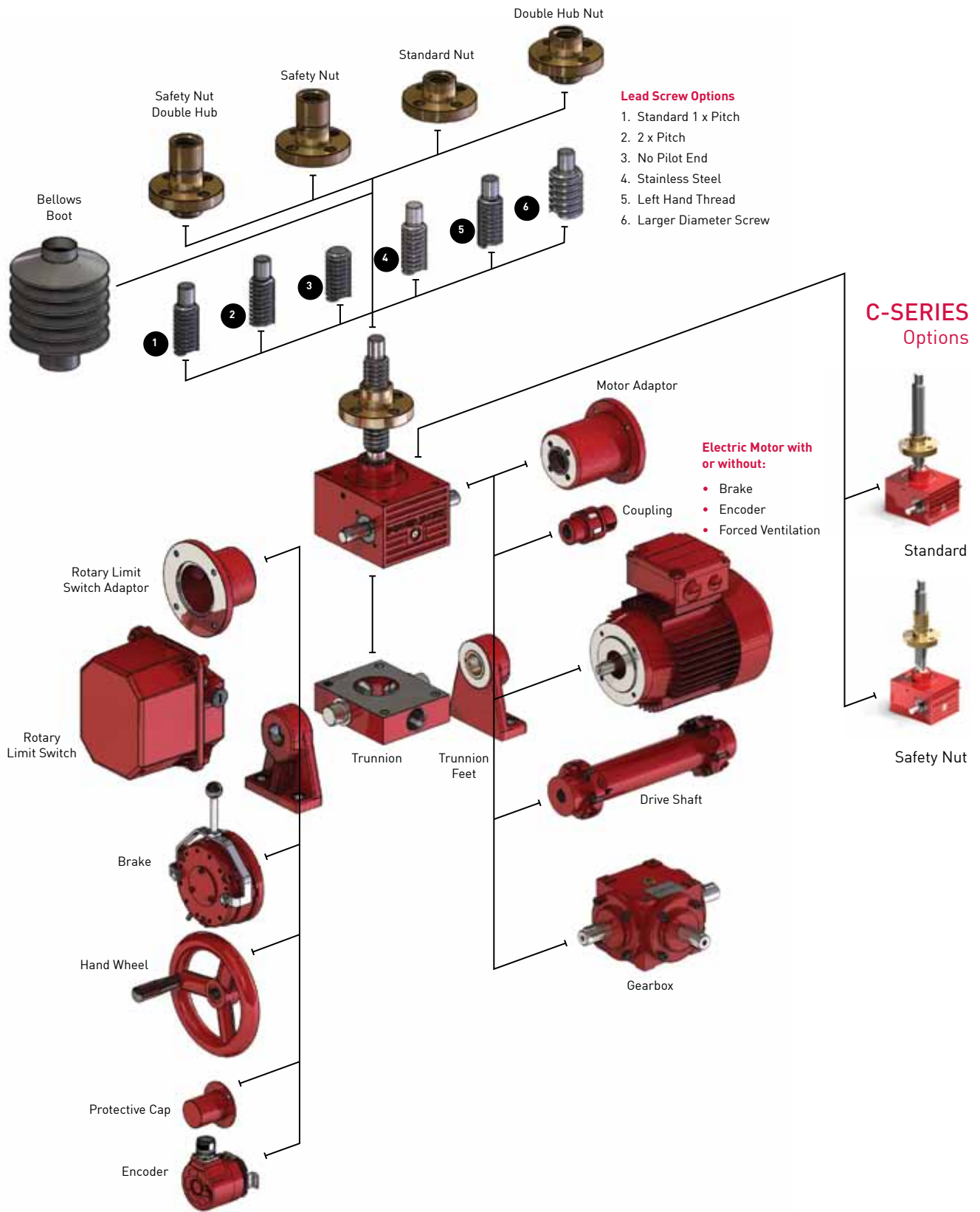
Translating Screw Jack Building System



*For use with Anti-Backlash and some safety nut models only.

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Rotating Screw Jack Building System



C-SERIES

Screw Jack Product Code

Example

1	2	3	4	5	6
C	M	T	0	2	5

1 Screw Jack Type

C = C-Series Screw Jack

2 Screw Type

M = Machine Screw

3 Screw Configuration

T = Translating Screw

R = Rotating Screw

4,5,6 Capacity (kN)

010 = 10kN

025 = 25kN

050 = 50kN

100 = 100kN

7,8,9,10 Stroke (mm)

e.g.**0750** = 750mm

7	8	9	10
0	7	5	0

11 End Type

E = Threaded End

C = Clevis

T = Top Plate

F = Fork End

R = Rod End

A = Plain End^{#9}

P = Pilot End^{#1}

N = No Pilot^{#1}

12 Gearbox Mounting

B = Base Mount

T = Trunnion Mount

Standard^{#2}

U = T + Trunnion Feet

X = Trunnion Mount 90°^{#3}

Y = X + Trunnion Feet

13 Lead Screw Pitch

1 = Option 1 Lead^{#4}

2 = Option 2 Lead^{#4}

3 = Option 1 Left Hand^{#5}

4 = Option 2 Left Hand^{#5}

14 Gear Ratio

1 = Option 1 Ratio

2 = Option 2 Ratio

11	12	13	14
T	B	1	1

15 Features

0 = None

K = Anti-Rotation (keyed)

C = Secondary Guide

R = Anti-Backlash

Y = Anti-Backlash &

Anti-Rotation (keyed)

H = Double Hub Nut^{#1}

16 Cover Pipe

0 = Cover Pipe

N = No Cover Pipe

17 Stop Nut

0 = No Stop Nut

P = Full Power Stop Nut

18 Safety Nut

0 = No Safety Nut

T = Safety Nut Tension

C = Safety Nut Compression

19	20	21	22
0	0	0	B

19 Worm Shaft Type

0 = Standard Material

N = Nickel Plated

C = Chrome Plated

S = Stainless Steel

20 Worm Shaft Ends

0 = Both

L = Left Hand Side Only

R = Right Hand Side Only

21 Lead Screw Material

0 = Standard

S = Stainless Steel

L = Large Diameter^{#1, #8}

T = Large Diameter

Stainless Steel ^{#1, #8}

22 Lead Screw Cover

0 = None

B = Bellows Boot (fabric)

23 Drive

0 = Side Bolt Holes (both sides)

M = Motor ^{#6, #8}

B = Brake Motor ^{#6, #8}

H = Hand Wheel

1 = Side Bolt Holes - LHS

2 = Side Bolt Holes - RHS

3 = No Side Bolt Holes

A = Motor Adaptor ^{#6, #8}

24 Limit Switch ^{#7, #8}

0 = None

L = Electro-Mechanical Limit Switch

R = Rotary Cam Limit Switch

P = Proximity Sensor

25 Extra Design ^{#8}

0 = None

S = Design Notes

Notes:

#1. Rotating screw models only.

#2. Trunnions on same side as worm shaft (standard).

#3. Trunnions at 90° to worm shaft.

#4. Standard right hand thread form. Worm shaft turns clockwise to extend screw.

#5. Left hand thread form. Worm shaft turns anti-clockwise to extend screw.

#6. Includes motor adaptor and coupling. IEC motor adaptor is standard.

#7. Limit switch mounting included.

#8. Design notes required to detail device/item specification.

#9. Plain end "A" has same dimensions as "E-threaded end" except no thread form.

Performance

Screw Jack Model ⁴	CM-010		CM-025		CM-050		CM-100			
Capacity	kN		10		25		50		100	
Lead Screw ¹	Diameter (mm)		20		30		40		55	
	Lead	Option	1	2	1	2	1	2	1	2
		mm	5	10	6	12	9	18	12	24
Gear Ratios	Option 1		5:1		6:1		6:1		8:1	
	Option 2		20:1		24:1		24:1		24:1	
Turn of worm for travel of lead screw	Option 1	1 Turn	1mm	2mm	1mm	2mm	1.5mm	3mm	1.5mm	3mm
	Option 2	4 Turn	1mm	2mm	1mm	2mm	1.5mm	3mm	2mm	4mm
Maximum Input Power (kW)	Option 1		0.375		1.5		3		3.75	
	Option 2		0.19		0.375		0.55		1.125	
Start up torque at full load (Nm) ²	Option 1		6.8	9.4	19.8	26.4	56.0	76.0	115.9	156.6
	Option 2		3.0	4.1	8.7	11.7	25.5	34.7	60.5	81.9
Maximum Through Torque (Nm) ⁷	Option 1		20.4		59.4		168.0		347.7	
	Option 2		9.0		26.1		76.5		181.5	
Static Efficiency ³	Option 1		0.236	0.339	0.201	0.302	0.213	0.314	0.206	0.305
	Option 2		0.133	0.192	0.113	0.171	0.117	0.172	0.132	0.195
Dynamic Efficiency ³	Option 1		0.306	0.424	0.264	0.383	0.281	0.398	0.272	0.388
	Option 2		0.194	0.268	0.167	0.242	0.172	0.244	0.190	0.271
Lead Screw Restraining Torque (Nm) ⁵	-		22	30	76	102	210	290	575	780
Worm Shaft Radial Load (N) ⁶	-		325		380		740		1000	
Maximum Input Speed (rpm)	-		1800		1800		1800		1800	
Gear Case Material	-		Aluminium		SG Iron		SG Iron		SG Iron	
Weight (kg) – stroke = 150mm	Translating		3.0		8.3		19.5		36.0	
	Rotating		3.1		8.7		20.2		40.2	
Weight (kg) – per extra 25mm	Translating		0.11		0.21		0.32			
	Rotating		0.05		0.11		0.19		0.36	

Axial Backlash

Typical Axial Backlash Values:

- Standard Screw Jack is 0.12mm to 0.23mm
- Screw Jack with Anti-Backlash feature is adjustable to a minimum of 0.025mm.

Useful Formulae

$$\text{Input Speed (rpm)} = \frac{\text{Linear Speed (mm/min)} * \text{Gear Ratio}}{\text{Lead of Screw (mm)}}$$

$$\text{Input Power (kW)} = \frac{\text{Load (kN)} * \text{Lead (mm)} * \text{Input Speed (rpm)}}{60000 * \text{Efficiency} * \text{Gear Ratio}}$$

$$\text{Input Torque (Nm)} = \frac{\text{Load (kN)} * \text{Lead (mm)}}{2 * \pi * \text{Efficiency} * \text{Gear Ratio}}$$

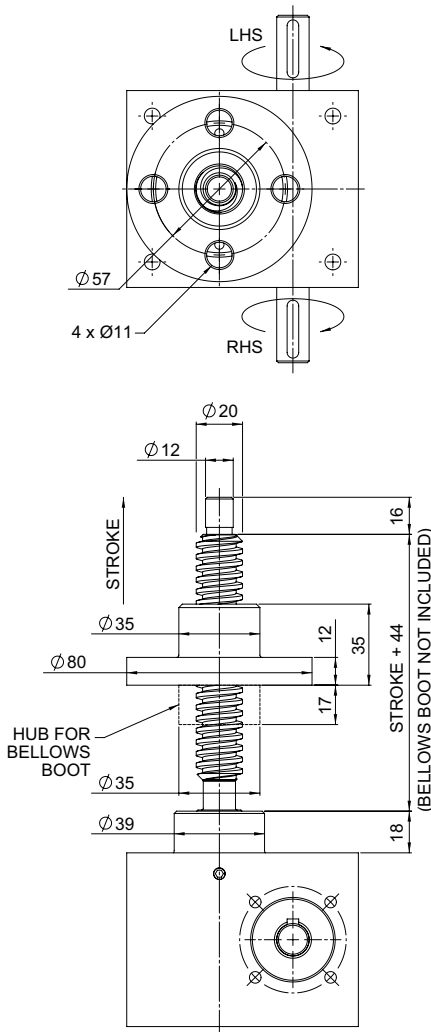
Notes:

1. All metric machine screws have a trapezoidal thread form.
2. For loads of 25% to 100% of screw jack capacity, torque requirements are approximately proportional to the load.
3. Efficiency values for standard grease lubricated worm gear box and lifting screw.
4. All C-Series screw jacks have grease lubricated gearbox and lead screw as standard.
5. Torque required to prevent the lead screw or lead nut from rotating if no anti-rotation device fitted.
6. Radial force applied midway along worm shaft key at 90° to key.
7. Maximum transmittable torque through worm shaft, not through gear set.

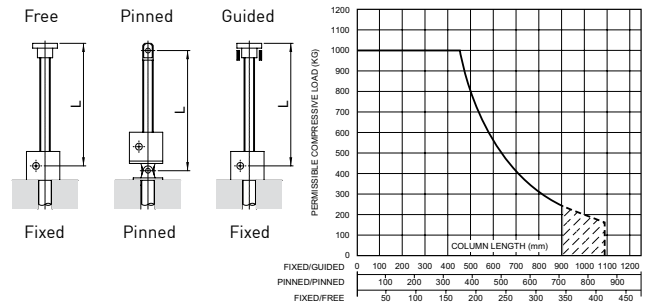
C-SERIES

Rotating Screw Jack 10kN

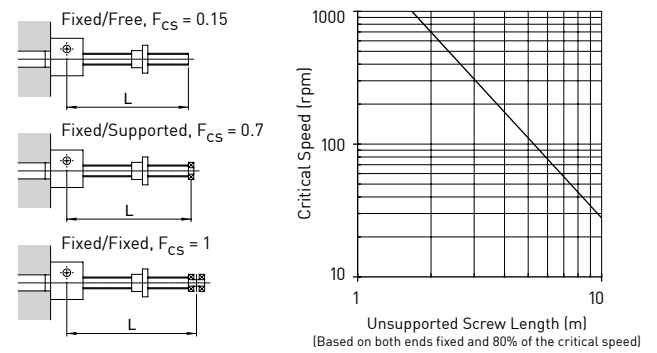
CMR010



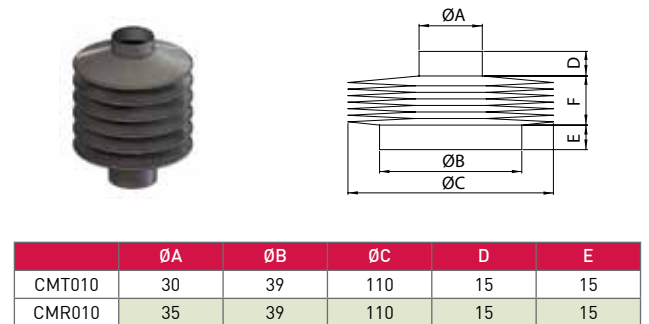
Column Strength



Critical Screw Speed



Bellows Boot



Stroke	1 - 500	501 - 1000	1001 - 1500	1500 - 2000
F	30	60	90	170*

*control tapes fitted ØC=110

Accessories & Options

	Anti-Backlash		End Fittings		Rotary Limit Switch Adaptor
	Anti-Rotation (Keyed)		Limit Switches		Double Hub Nut
	Safety Nut		Motor Adaptors		Drives
	Trunnion Mounts		Corrosion Protection		Secondary Guide

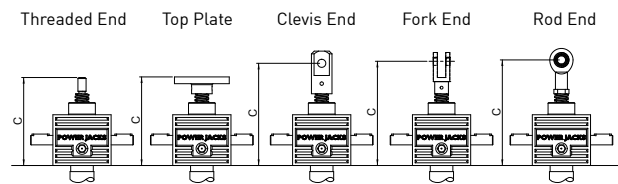
C-SERIES

Translating Screw Jack 25kN

Performance

Screw Jack Model ⁴	CM-025	
Capacity	kN	25
Lead Screw ¹	Diameter (mm)	30
	Lead (mm)	6 12
Gear Ratios	Option 1	6:1
	Option 2	24:1
Turn of worm for travel of lead screw	Option 1 1 Turn	1mm 2mm
	Option 2 4 Turn	1mm 2mm
Maximum Input Power (kW)	Option 1	1.5
	Option 2	0.375
Start up torque at full load (Nm) ²	Option 1	19.8 26.4
	Option 2	8.7 11.7
Maximum Through Torque (Nm) ⁷	Option 1	59.4
	Option 2	26.1
Static Efficiency ³	Option 1	0.201 0.302
	Option 2	0.113 0.171
Dynamic Efficiency ³	Option 1	0.264 0.383
	Option 2	0.167 0.242
Maximum Input Speed (rpm)	1800	
Gear Case Material	SG Iron	
Weight (kg) – stroke = 150mm	CMT	8.3
	CMR	8.7
Weight (kg) – per extra 25mm	CMT	0.21
	CMR	0.11

CMT025 Closed Height



Closed Height 'C'	Threaded End	Top Plate	Clevis End	Fork End	Rod End
CMT025	145	145	170	195	192
Stroke (mm)	With Bellow Boots [B]				
0 - 500	165	165	190	215	212
501 - 1000	190	190	215	240	237
1001 - 1500	215	215	240	265	262
1501 - 2000	245	245	270	295	292

CMT025 Stop Nut



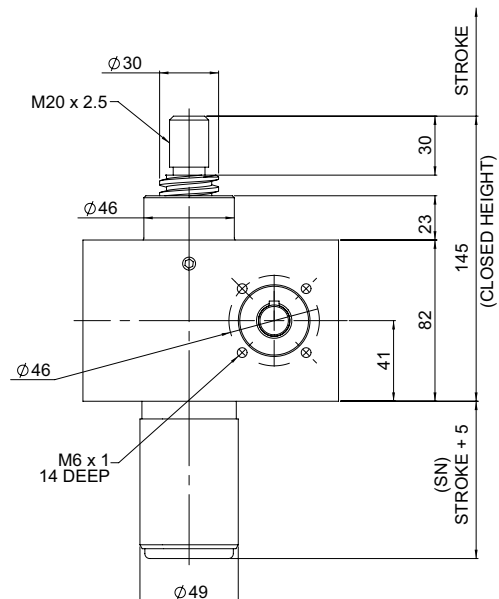
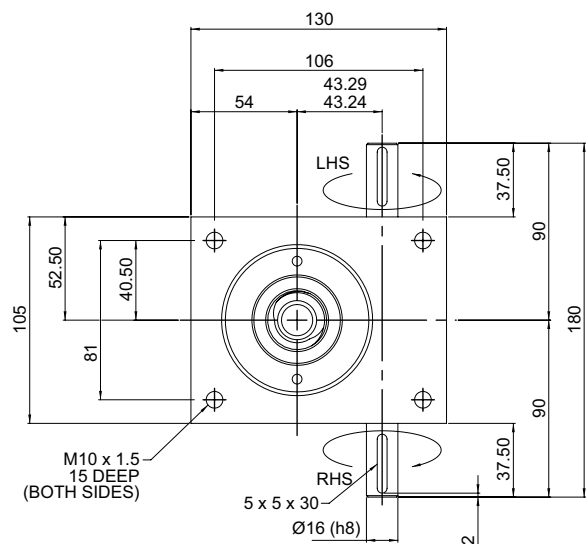
Stop nut provides a full power mechanical stop at the end of the lead screw. To be used as a safety feature in emergency conditions.

SN = Stroke + 21mm

Note:

1. All dimension in millimetres unless otherwise stated.
2. Designs subject to change without notice.

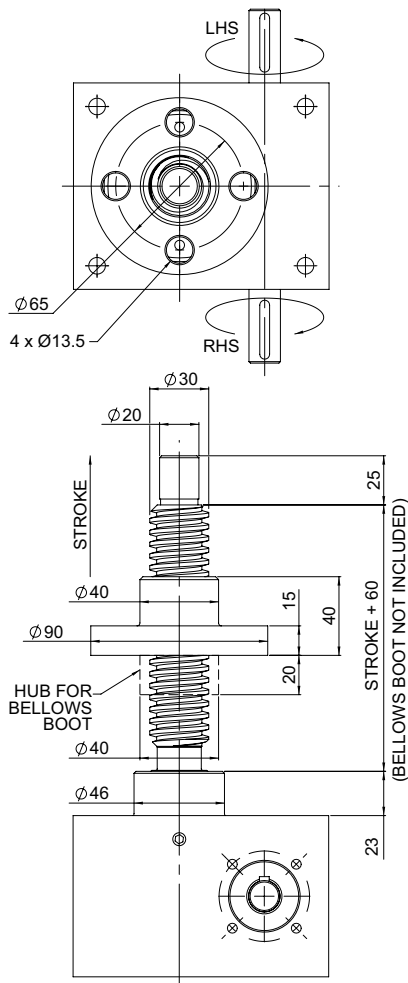
CMT025



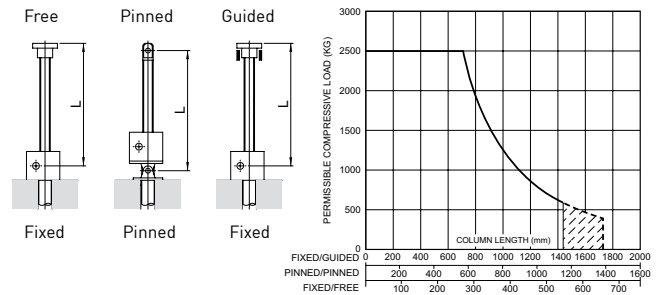
C-SERIES

Rotating Screw Jack 25kN

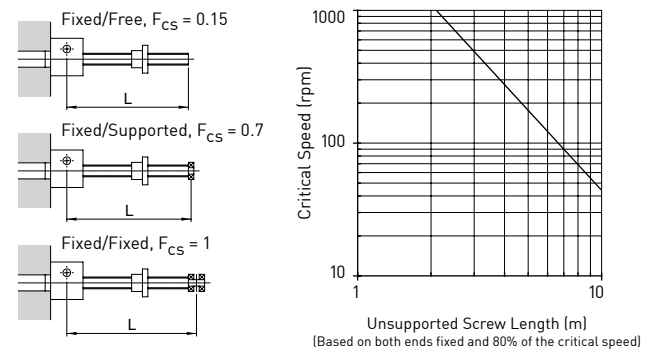
CMR025



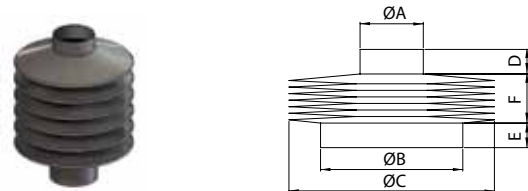
Column Strength



Critical Screw Speed



Bellows Boot

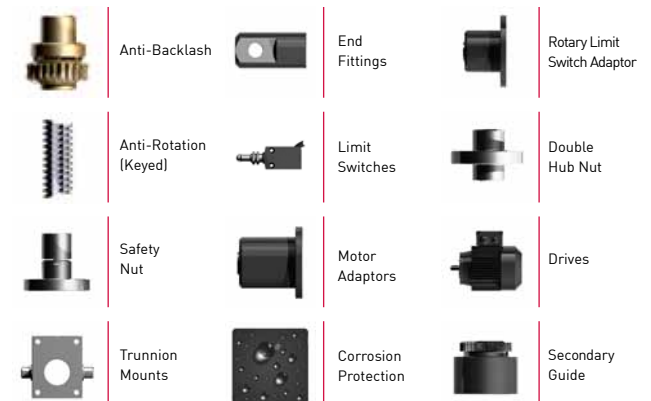


	ØA	ØB	ØC	D	E
CMT025	40	46	120	15	15
CMR025	40	46	120	15	15

Stroke	1 - 500	501 - 1000	1001 - 1500	1500 - 2000
F	30	55	80	110*

*control tapes fitted ØC=150

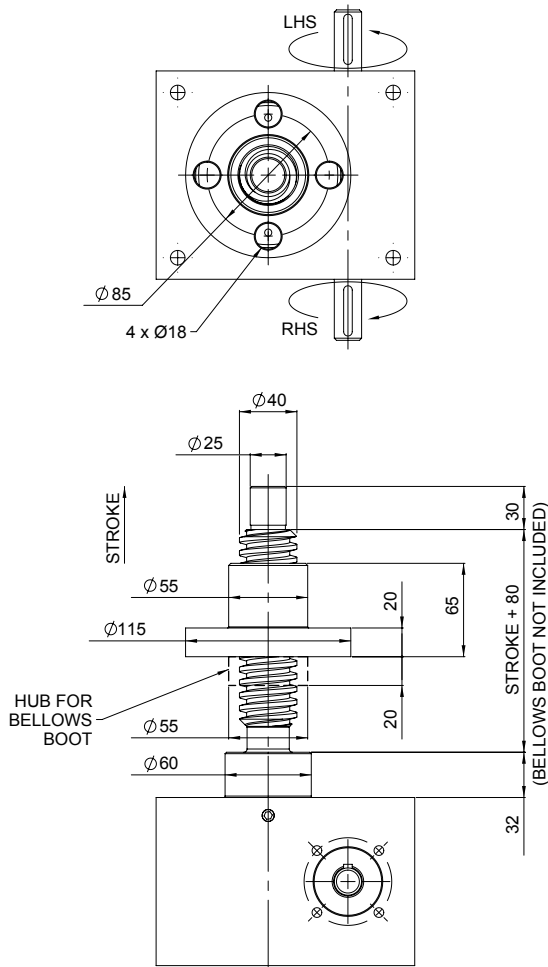
Accessories & Options



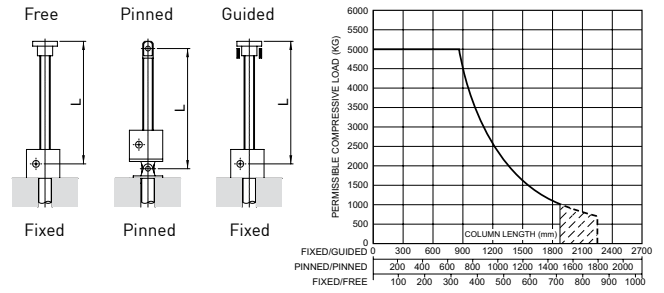
C-SERIES

Rotating Screw Jack 50kN

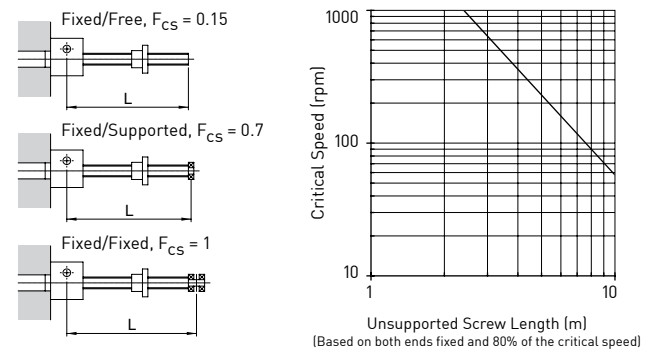
CMR050



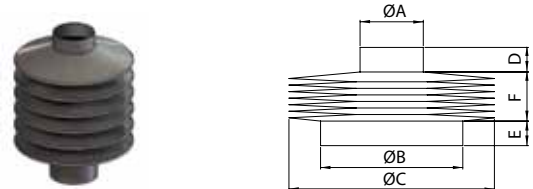
Column Strength



Critical Screw Speed



Bellows Boot



	ØA	ØB	ØC	D	E
CMT050	50	60*	140	15	15
CMR050	55	60	140	15	15

*ØB=70 for an anti-backlash models

Stroke	1 - 500	501 - 1000	1001 - 1500	1500 - 2000
F	30	50	75	140**

**control tapes fitted ØC=140

Accessories & Options

	Anti-Backlash		End Fittings		Rotary Limit Switch Adaptor
	Anti-Rotation (Keyed)		Limit Switches		Double Hub Nut
	Safety Nut		Motor Adaptors		Drives
	Trunnion Mounts		Corrosion Protection		Secondary Guide

