E-Series

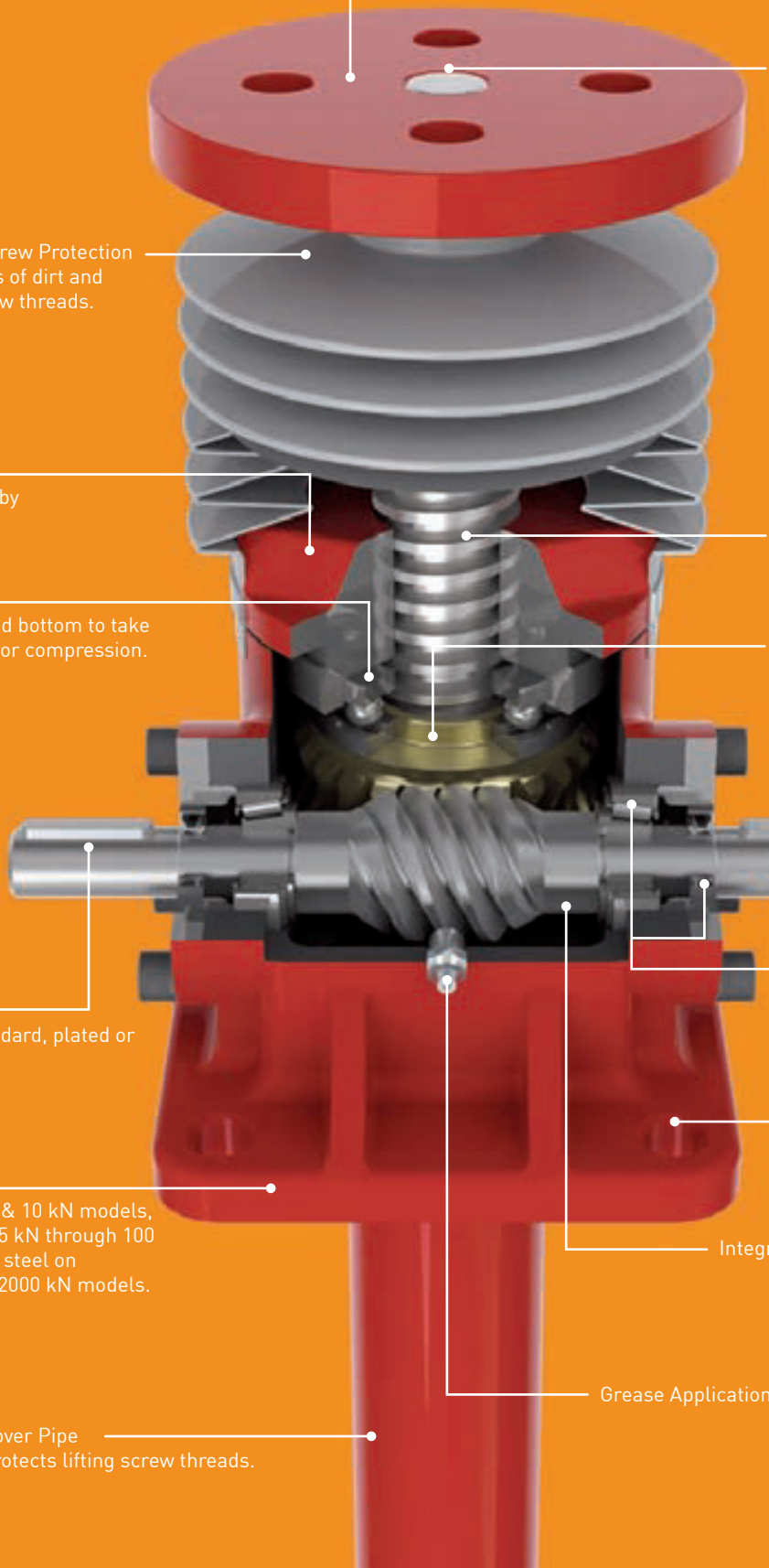
2

Metric Machine Screw Jack

AVAILABLE IN MANY STANDARD MODELS WITH A WIDE RANGE OF CAPABILITIES, THERE IS A STANDARD MODEL FOR ALMOST ANY REQUIREMENT.

Key Features

- Standard Performance Power Jack
- Metric Single Face Machine Screw Jacks
- Capacities - 5kN to 2000 kN as standard
- Translating and Rotating Screw in Upright and Inverted types
- Precision Worm Gear Set
- 2 Gear ratios and 1 screw lead as standard
- Anti-backlash and anti-rotation (keyed) options
- 6 mounting options including trunnion and double clevis
- Special custom designs available


End Fittings as Standard
1. Top Plate (shown)
2. Clevis End
3. Fork End
4. Rod End
Threaded end on screw as standard. End fittings screw on.
Bellows Boot Screw Protection
Prevents ingress of dirt and debris onto screw threads.
Shell Cap
Locked in place by set screws.
Precision Machined Lead Screw available in standard material or stainless steel.
Load Bearings
Bearings, top and bottom to take loads in tension or compression.
Accurately hobbed aluminium bronze worm gear for greater gear contact.
Thrust Bearings and Grease Seals
At each end of worm. 5 & 10 kN models do not have separate seals.
Worm Shaft
Available in standard, plated or stainless steel.
Mounting Bolt Holes
Housing
Aluminium on 5 & 10 kN models, ductile iron on 25 kN through 100 kN models, cast steel on 200 kN through 2000 kN models.
Integrated Lubrication Systems
Grease Application Point
Cover Pipe
Protects lifting screw threads.

Translating Screw

Upright

Inverted

Rotating Screw

Upright

Inverted

Typical Applications

Conventional Machine Screw Jacks are most widely used for intermittent duty cycles, as the screw jack incorporates a precision worm gear set in a rugged casting delivering positive, precise actuation. Available in a comprehensive range of materials and fittings with the option for special designs for specific application requirements.

Selecting the Right Screw Jack

Consider all application constraints then choose a product that looks suitable for the intended application. Calculate the power and torque requirements. This is a 5 step process:

- Screw Jack Input Speed (RPM)
- Operating Input Power (kW)
- Operating Input Torque (Nm)
- Screw Jack Start-up Torque (Nm)
- Mechanical Power and Torque Check

Special Designs

1. **Modifications to the standard screw jacks**
   This would include non-standard painting or plating of the housing, 2 or 3 start threaded lifting screws, stainless steel lifting screws or worm shafts, increased closed heights, extended worm shafts, opposite threading of lifting screws, etc.
2. **Additions to the standard screw jacks**
   Items such as wear indicators, safety nuts, rotation monitoring kits, special lifting screw end fittings, encoder adapter flanges, etc.
3. **Completely special screw jacks**
   Where a modification of our existing range is not practical we have the facilities to design and manufacture screw jacks tailored specifically to your requirements.

Systems

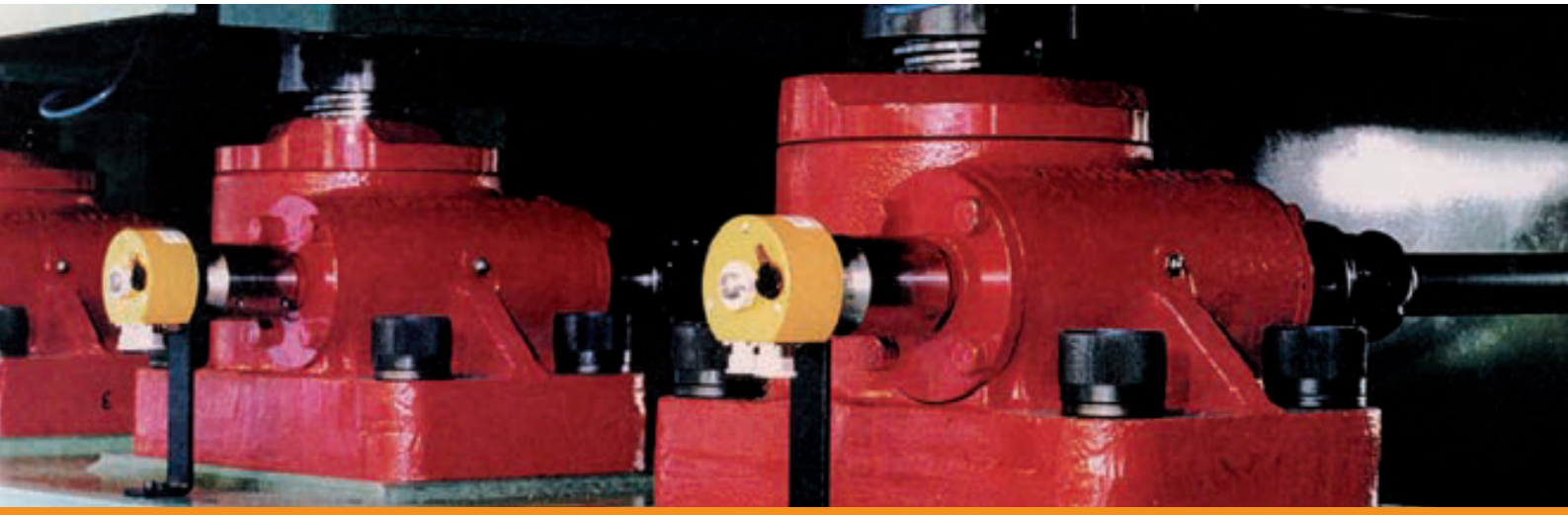
The screw jacks can be connected together in systems so that multiple units can be operated and controlled together. These jacking system arrangements or configurations can be built in many formats with the use of bevel gearboxes, motors, reduction gearbox , drive shafts, couplings, plummer blocks and motion control devices.

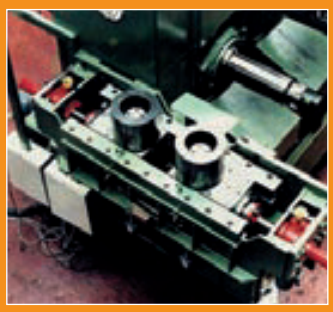
The use of bevel gearboxes allows the distribution of drive throughout a jacking system. The gearboxes come in 2,3 and 4 way drive types. See Neeter Drive Bevel Gearboxes brochure for more details.

Bevel gearboxes and other system components can also be supplied in stainless steel or other corrosion resistant designs.

Two of the most popular system configurations are the 'H' and 'U' configured jacking systems. Remember that multiple screw jacks can be linked together mechanically or electrically. The latter is useful if there is no space for linking drive shafts.

If multiple machine screw jacks are connected in a mechanically linked system then the complete system may be considered self-locking. If you would like this checked consult Power Jacks. Alternatively, to be sure, include a brake on the system either as a stand alone device or as a brake motor.





BRONX METAL SECTION STRAIGHTENER

Variable centre straighteners for moving the centre straightening rollers, end pinch rollers and the landing legs.

A jacking system for each straightening roller has two special design screw jacks and a strengthened gearbox, rated for a 700kN dynamic capacity in compression. The pinch rollers have their position adjusted by two horizontally opposing screw jacks, driven individually by motorised helical gearboxes.

For more application examples see the 'Power at Work' brochure or www.powerjacks.com.

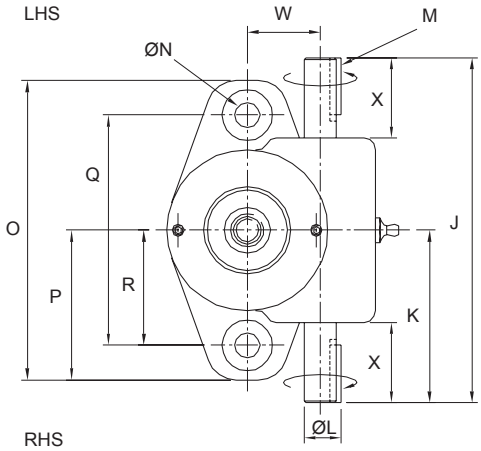
Standard Performance

Model		EMT0005 EMR0005	EMT0010 EMR0010	EMT0025 EMR0025	EMT0050 EMR0050	EMT0100 EMR0100	EMT0200 EMR0200	EMT0300 EMR0300	EMT0500 EMR0500	EMT1000 EMR1000	EMT1500 EMR1500	EMT2000 EMR2000
Capacity	kN	5	10	25	50	100	200	300	500	1000	1500	2000
Lifting Screw note1	mm	16 x 3	20 x 5	30 x 6	40 x 9	55 x 12	65 x 12	95 x 16	120 x 16	160 x 20	Available on Request	Available on Request
Gear Ratios	Option 1	5:1	5:1	6:1	6:1	8:1	8:1	10 2/3:1	10 2/3:1	12:1		
	Option 2	20:1	20:1	24:1	24:1	24:1	24:1	32:1	32:1	36:1		
Turn of worm for travel of lifting screw	Option 1	5 for 3mm	1 for 1mm	1 for 1mm	1 for 1.5mm	1 for 1.5mm	1 for 1.5mm	1 for 1.5mm	1 for 1.5mm	3 for 5mm		
	Option 2	20 for 3mm	4 for 1mm	4 for 1mm	4 for 1.5mm	2 for 1mm	2 for 1mm	2 for 1mm	2 for 1mm	9 for 5mm		
Max. Input Power (kW)	Option 1	0.25	0.375	1.5	3	3.75	3.75	6	11.25	18.5		
	Option 2	0.12	0.19	0.375	0.55	1.125	1.125	1.9	4.5	8.25		
Start up torque at full load (Nm) note2	Option 1	2.5	6.8	19.8	56	115.9	263.8	480	904	2025		
	Option 2	1.1	3	8.7	25.5	60.5	137	284	504	1119		
Weight (kg) - stroke = 150mm		1.03	2.27	8.17	15.88	24.72	45	86	195	553		
Weight (kg) per extra 25mm		0.073	0.13	0.21	0.32	0.57	0.86	1.58	2.49	4.31		
Option 1	Gear Ratio	5	5	6	6	8	8	10 2/3	10 2/3	12		
	Screw Jack Static Efficiency	0.189	0.233	0.201	0.213	0.206	0.181	0.149	0.132	0.131		
	Screw Jack Dynamic Efficiency	0.252	0.306	0.264	0.281	0.272	0.242	0.205	0.181	0.178		
Option 2	Gear Ratio	20	20	24	24	24	24	32	32	36		
	Screw Jack Static Efficiency	0.107	0.130	0.115	0.117	0.132	0.116	0.084	0.079	0.079		
	Screw Jack Dynamic Efficiency	0.160	0.194	0.167	0.172	0.190	0.169	0.128	0.120	0.123		

Notes

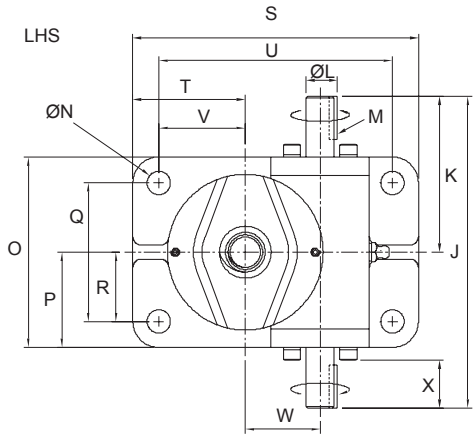
1. All metric machine screws have a trapezoidal thread form, single start as standard (diameter x pitch)
2. For loads of 25% to 100% of screw jack capacity, torque requirements are approximately proportional to the load
3. Efficiency values for standard grease lubricated worm gear box and lifting screw
4. All E-Series screw jacks have grease lubricated gearbox and lead screw as standard
5. For performance data for Anti-Backlash, Anti-Rotation (Keyed) and other variants, see p25.

Plan View



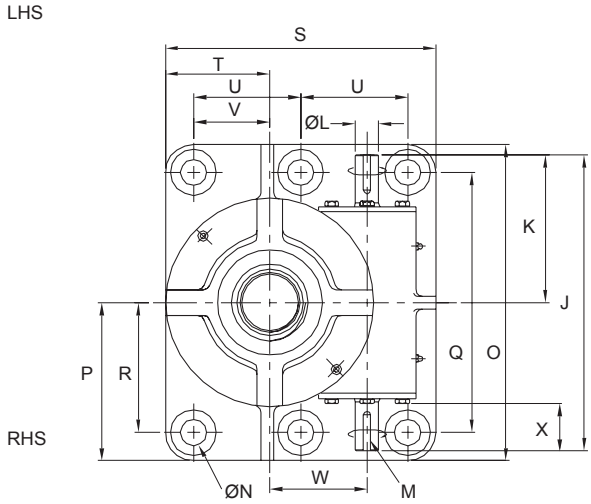
Models:
EMT0005
EMT0010

Plan View



Models:
EMT0025
EMT0050
EMT0100
EMT0200
EMT0300
EMT0500

Plan View

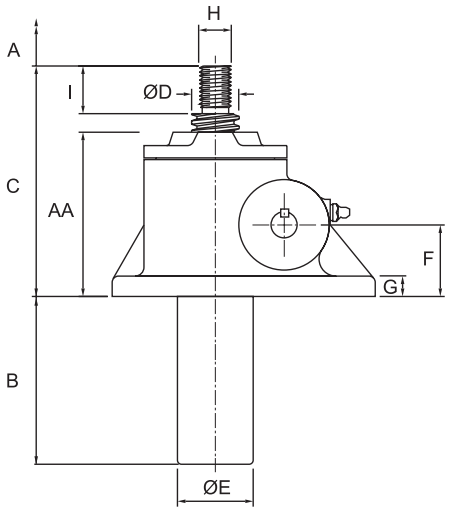


Models:
EMT1000
EMT1500
EMT2000

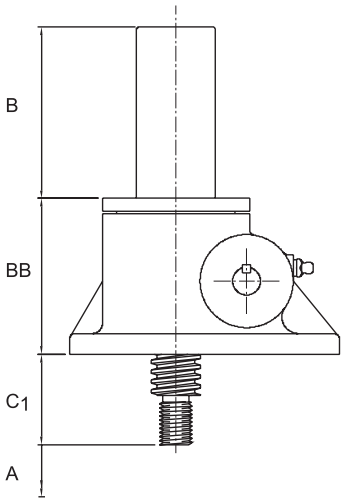
Note

1. Closed Height of threaded end and top plate units is the same for upright or inverted models
2. LHS = Left Hand Side
3. RHS = Right Hand Side.

Upright



Inverted



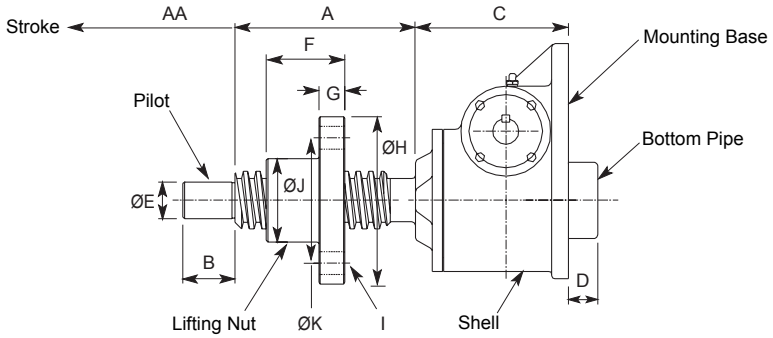
Model	EMT0005	EMT0010	EMT0025	EMT0050	EMT0100	EMT0200	EMT0300	EMT0500	EMT1000	EMT1500	EMT2000
Capacity (kN)	5	10	25	50	100	200	300	500	1000	Available on Request	Available on Request
A	Stroke as required										
B	A + 9	A + 10	A + 5	A - 5	A + 3	A - 1	A + 15	A +13	A +3		
C	95	125	145	185	200	265	325	390	560		
C1	40	45	55	65	80	95	115	150	260		
ØD	16	20	30	40	55	65	95	120	160		
ØE	26.7	33.4	48.3	60.3	73	89	115	141	194		
F	26 ± 0.13	40 ± 0.13	45 ± 0.13	60 ± 0.13	60 ± 0.13	85 ± 0.13	105 ± 0.13	120 ± 0.13	150 ± 0.13		
G	10	10	13	14	16	20	30	32	40		
H	M10 x 1.5	M12 x 1.75	M20 x 2.5	M24 x 3	M36 x 4	M48 x 5	M72 x 4	M100 x 4	M125 x 4		
I	20	24	30	35	40	55	65	90	125		
J	120	150	180	230	280	300	380	460	580		
K	60	75	90	115	140	150	190	230	290		
ØL	10 h8	14 h8	16 h8	19 h8	25 h8	28 h8	35 h8	40 h8	45 h8		
M	3 x 3 x 18	5 x 5 x 25	5 x 5 x 25	6 x 6 x 32	8 x 7 x 40	8 x 7 x 40	10 x 8 x 50	12 x 8 x 56	14 x 9 x 70		
ØN	9	11	13.5	18	22	26	39	51	51		
O	110	130	110	150	190	210	260	300	620		
P	55	65	55	75	95	105	130	150	310		
Q	85	100	80	115	145	150	190	200	510		
R	42.5	50	40	57.5	72.5	75	95	100	255		
S	-	-	165	205	225	275	365	535	530		
T	-	-	65	75	75	105	140	225	205		
U	-	-	135	170	180	215	295	435	210		
V	-	-	50	57.5	52.5	75	105	175	150		
W	23.82 + 0.076 - 0.000	31.75 + 0.076 - 0.000	43.26 + 0.025 - 0.025	55.58 + 0.050 - 0.000	66 + 0.060 - 0.000	66 + 0.070 - 0.000	95.25 + 0.130 - 0.000	135 + 0.070 - 0.000	190.5 + 0.076 - 0.000		
X	27	35	27.5	35	44	44	56	66	88		
AA	64	90	103.5	138	146.5	195	235	275	405		
BB	64	78	95.5	122	130.5	179	235	275	405		

Note

1. All dimensions in mm
2. Closed height of threaded end and top plate units are the same for upright or inverted models
3. Rotating screw jacks (refer p24) have the same dimensions for the shell as the translating screw type.

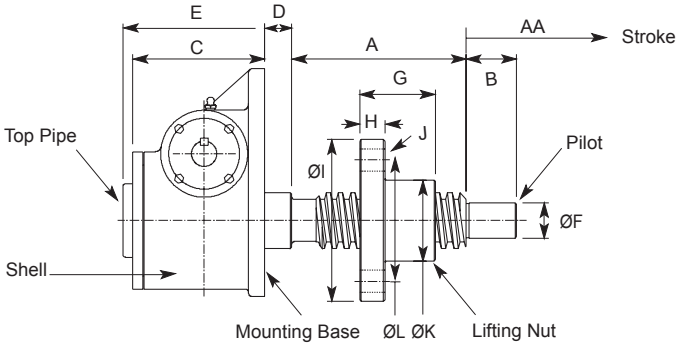
For other dimensions and performance data refer to metric translating screw jacks. All dimensions in mm.

Upright



Model	EMR0005	EMR0010	EMR0025	EMR0050	EMR0100	EMR0200	EMR0300	EMR0500	EMR1000	EMR1500	EMR2000
Capacity (kN)	5	10	25	50	100	200	300	500	1000	1500	2000
A	AA + 40	AA + 44	AA + 60	AA + 80	AA + 100	AA + 100	AA + 180	AA + 200	AA + 250	Available on Request	Available on Request
B	16	16	25	30	50	65	85	100	125		
C	64	90	103.5	138	146.5	195	235	275	405		
D	34	0	0	0	28	24	40	63	128		
ØE	10	12	20	25	35	45	75	90	125		
F	25	35	40	65	75	75	140	150	175		
G	10	12	15	20	25	25	35	50	60		
ØH	60	80	90	115	160	185	230	280	380		
I	4 x ø9	4 x ø11	4 x ø13.5	4 x ø18	4 x ø22	4 x ø26	6 x ø26	6 x ø33	6 x ø45		
ØJ	25	35	40	55	80	90	125	160	210		
ØK (PCD)	42	57	65	85	120	135	175	220	295		

Inverted



Model	EMR0005	EMR0010	EMR0025	EMR0050	EMR0100	EMR0200	EMR0300	EMR0500	EMR1000	EMR1500	EMR2000
Capacity (kN)	5	10	25	50	100	200	300	500	1000	1500	2000
A	AA + 40	AA + 44	AA + 60	AA + 80	AA + 100	AA + 100	AA + 180	AA + 200	AA + 250	Available on Request	Available on Request
B	16	16	25	30	50	65	85	100	125		
C	64	90	95.5	122	130.5	179	235	275	405		
D	12	10	14	18	26.5	25	25	35	105		
E	64	90	95.5	122	130.5	203	275	313	458		
ØF	10	12	20	25	35	45	75	90	125		
G	25	35	40	65	75	75	140	150	175		
H	10	12	15	20	25	25	35	50	60		
øI	60	80	90	115	160	185	230	280	380		
J	4 x 9	4 x 11	4 x 13.5	4 x 18	4 x 22	4 x 26	6 x 26	6 x 33	6 x 45		
ØK	25	35	40	55	80	90	125	160	210		
ØL (PCD)	42	57	65	85	120	135	175	220	295		

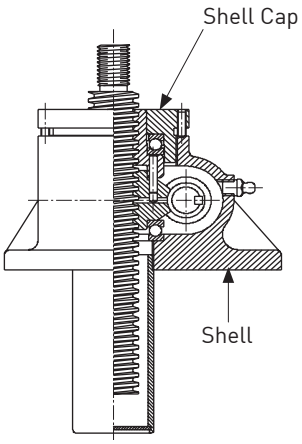
PCD = Pitch Circle Diameter

E-Series Metric Screw Jacks are available with anti-backlash nuts for applications where a reversal of loading from tension to compression is encountered and axial backlash is to be minimised.

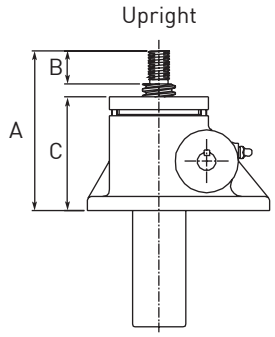
Anti-Backlash Features

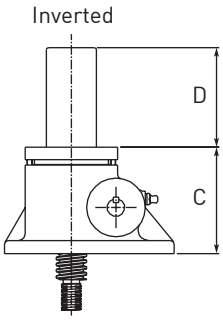
- Reduction in the axial backlash between the screw and the worm gear nut to a practical minimum for smoother, more precise operation and minimum wear
- Acts as a safety device, providing a dual nut load carrying unit, when the worm gear becomes worn
- Wear indicator for critical applications.

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 0.025 mm.



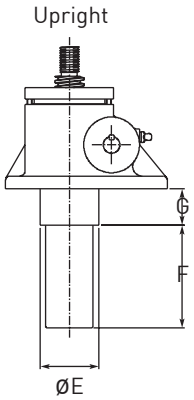
Anti-Backlash

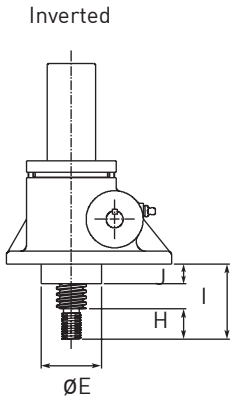




Note: Inverted unit closed height same as standard unit

Keyed Anti-Backlash (with Anti-Rotation)





Standard Dimensions (mm)

Model	Capacity	Anti-Backlash				Keyed Anti-Backlash (with Anti-Rotation)					
		A	B	C	D	E	F	G	H	I	J
EMT0005	5kN	95	20	65	Stroke + 34	36	Stroke + 9	25	20	40	16
EMT0010	10kN	125	24	86	Stroke + 35	38	Stroke + 9	30	24	45	16
EMT0025	25kN	145	30	103.5	Stroke + 30	60	Stroke +30	37	30	55	19.5
EMT0050	50kN	185	35	138	Stroke - 5	75	Stroke + 20	40	35	65	24
EMT0100	100kN	200	40	146.5	Stroke +3	90	Stroke + 3	48	40	80	30
EMT0200	200kN	265	55	195	Stroke +24	102	Stroke + 24	58	55	110	39
EMT0300	300kN	340	65	250	Stroke + 38	138	Stroke + 15	73	65	115	43
EMT0500	500kN	415	90	295	Stroke + 55	206	Stroke + 13	95	90	213	63
EMT1000	1000kN	585	125	415	Stroke + 35	264	Stroke + 3	180	125	405	145

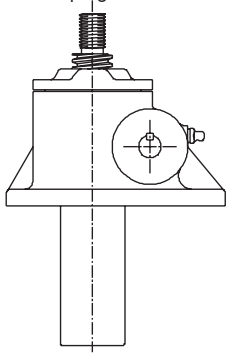
Torque and Efficiencies for Standard Anti-Backlash Screw Jacks

Model		EMT0005	EMT0010	EMT0025	EMT0050	EMT0100	EMT0200	EMT0300	EMT0500	EMT1000
Capacity (kN)		5	10	25	50	100	200	300	500	1000
Start-up torque at full load (Nm)	Option 1	2.9	7.8	23.5	62	129	281	535	1003	2248
	Option 2	1.3	3.7	9.8	28	67	153	314	568	1245
Screw Jack Static Efficiency	Option 1	0.164	0.203	0.169	0.192	0.185	0.170	0.134	0.119	0.118
	Option 2	0.090	0.109	0.102	0.105	0.119	0.104	0.076	0.070	0.071
Weight with Base Raise of 150mm (kg) approx.		1.48	2.72	8.62	16.78	26.12	48.6	90.5	208.6	609.8

Note: For loads from 25% to 100% of screw jack capacity, torque requirements are proportional to the load.

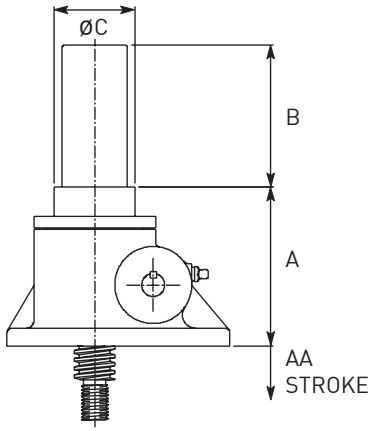
A keyed translating screw jack stops the screw from rotating without the need for end pinning. However the key-way in the screw will cause greater than normal wear on the internal threads of the worm gear.

Upright



(dimensions as non-keyed version. P22-23)

Inverted



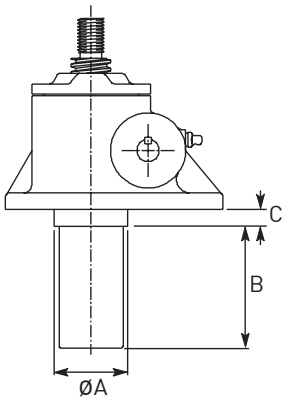
Standard Keyed Dimensions for Inverted Models

Model		EMT0005	EMT0010	EMT0025	EMT0050	EMT0100	EMT0200	EMT0300	EMT0500	EMT1000
Inverted	A	79	78	125.5	159	167.5	210	267	**	**
	B	AA + 9	AA + 35	AA + 30	AA + 20	AA + 3	AA -1	AA + 15	**	**
	ØC	35	N/A	60	75	90	102	141.5	**	**

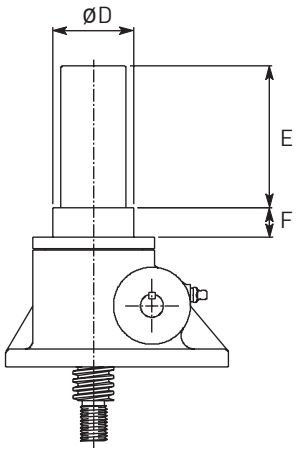
Secondary Guide

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

Upright



Inverted



Standard Secondary Guide Dimensions

Model		EMT0005	EMT0010	EMT0025	EMT0050	EMT0100	EMT0200	EMT0300	EMT0500	EMT1000
Upright	ØA	36	38	60	70	90	100	138	155	225
	B	Stroke + 34	Stroke + 34	Stroke + 30	Stroke + 20	Stroke + 29	Stroke + 24	Stroke + 40	Stroke + 38	Stroke + 50
	C	16	20	20	18	20	20	38	38	65
Inverted	ØD	36	**	60	70	90	100	138	155	**
	E	Stroke + 34	Stroke + 34	Stroke + 30	Stroke + 20	Stroke + 29	Stroke + 24	Stroke + 40	Stroke + 38	**
	F	16	**	20	18	20	20	38	38	**

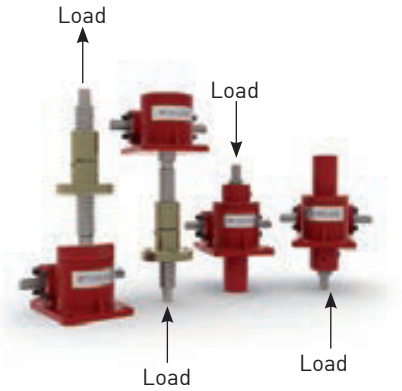
** Consult Power Jacks Ltd

Note: All dimensions in mm.

Power Jacks metric machine screw jacks can be fitted with a safety nut, which is BS EN1570 compliant and provides 2 safety roles:

1. In the event of excessive wear on the nut thread the load will be transferred from the standard nut to the safety nut. This will also provide visual wear indication as the gap between the safety nut decreases to zero as the standard lifting nut wears.
2. In the unlikely event of catostrophic nut thread failure, the safety nut will sustain the load. The safety of industrial and human cargo is therefore improved.

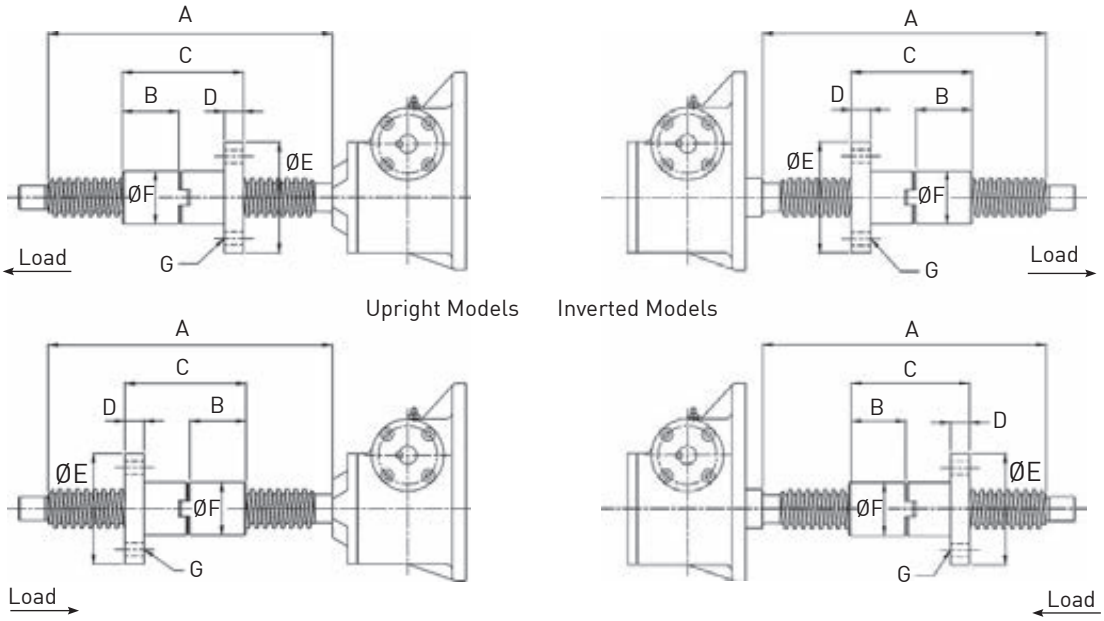
There are several configurations for each safety nut device as they only work in one load direction. For this reason when ordering please supply a sketch of your application showing load directions.



Translating Screw Jacks with Safety Nuts

Translating Metric Screw Jacks with safety nuts are similar in format to the anti-backlash units. Consult Power Jacks for details.

Rotating Screw Jacks with Safety Nuts



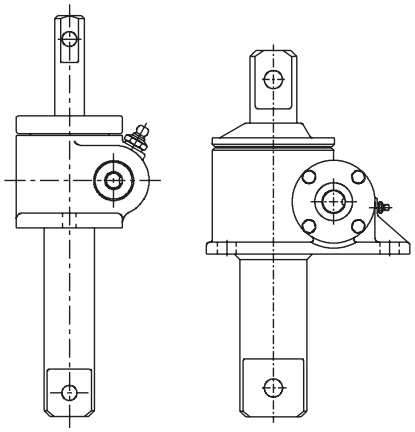
Upright Rotating Screw

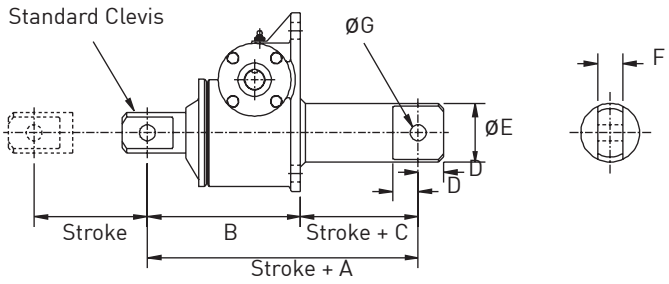
Model	Rating (kN)	A	B	C	D	E	F	G
EMR0025	25	Stroke + 95	33.5	75	15	90	40	4 Holes - 13.5 Dia. on 65 Dia. PCD
EMR0050	50	Stroke + 140	58	125	20	115	55	4 Holes - 18 Dia. on 85 Dia. PCD
EMR0100	100	Stroke + 170	67	145	25	160	80	4 Holes - 22 Dia. on 120 Dia. PCD
EMR0200	200	Stroke + 170	67	25	25	185	90	4 Holes - 26 Dia. on 135 Dia. PCD

Inverted Rotating Screw

Model	Rating (kN)	A	B	C	D	E	F	G
EMT0025	25	Stroke + 95	33.5	75	15	90	40	4 Holes - 13.5 Dia. on 65 Dia. PCD
EMT0050	50	Stroke + 140	58	125	20	115	55	4 Holes - 18 Dia. on 85 Dia. PCD
EMT0100	100	Stroke + 170	67	145	25	160	80	4 Holes - 22 Dia. on 120 Dia. PCD
EMT0200	200	Stroke + 170	67	25	25	185	90	4 Holes - 26 Dia. on 135 Dia. PCD

Note: All dimensions in millimetres.



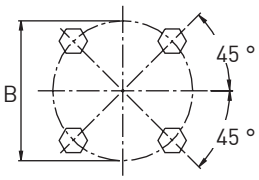


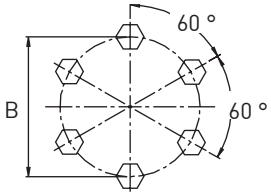
Note: For other performance and dimension information refer to translating screw models.

Model	EMT0005	EMT0010	EMT0025	EMT0050	EMT0100	EMT0200	EMT0300	EMT0500
Capacity (kN)	5	10	25	50	100	200	300	500
Style	1	1	2	2	2	2	2	2
A	150	180	213	260	352	428	492	570
B	115	145	170	210	247	313	367	440
C	35	35	43	50	105	115	125	130
D	15	20	23	30	33	40	60	75
E	26.7	33.4	48.3	60.3	73	102	133	168
F	15	20	30	35	40	50	80	110
ØG	10	12	16	20	22	30	45	60
Max Stroke at Rated Load (Compression)	220	175	352	420	593	592	1338	1920

Note: All dimensions in millimetres unless otherwise stated.

Configuration A





Configuration B

Model	'B' Bolt PCD (mm)	Bolt Information	Configuration
EMT0005	N/A	N/A	N/A
EMT0010	N/A	N/A	N/A
EMT0025	46	M6 X 1mm Pitch, 14mm Deep	A
EMT0050	61	M8 X 1.25mm Pitch, 22mm Deep	A
EMT0100	70	M8 X 1.25mm Pitch, 14mm Deep	A
EMT0200	88	M10 X 1.5mm Pitch, 14mm Deep	A
EMT0300	107	M10 X 1.5mm Pitch, 19mm Deep	A
EMT0500	135	M16 X 2mm Pitch, 25mm Deep	A
EMT1000	160	M16 X 2mm Pitch, 28mm Deep	B