

Worm Gear Screw Jack NPT, with Trapezoidal Threaded Spindle

Housing: Made from aluminium alloy in die-cast version. All sides machined. As standard filled with lubricant. Protective tube steel, blank.

Gearing: Worm made from ETG100, Gear made from Gbz12.

Self-locking to a certain extend. Vibration, an increase in the spindle pitch or the use of rolling screw elements (see page 976 subsequent ff) release the self-locking. In this case, e.g., a brake motor should be included in the system. For lower stroke speeds, worm gear sets with higher transmission ratios can be supplied on request.

Spindle: With trapezoidal thread DIN 103. Material C15, from size 4 C45. On request also available as left-hand, stainless steel or ball screw version.

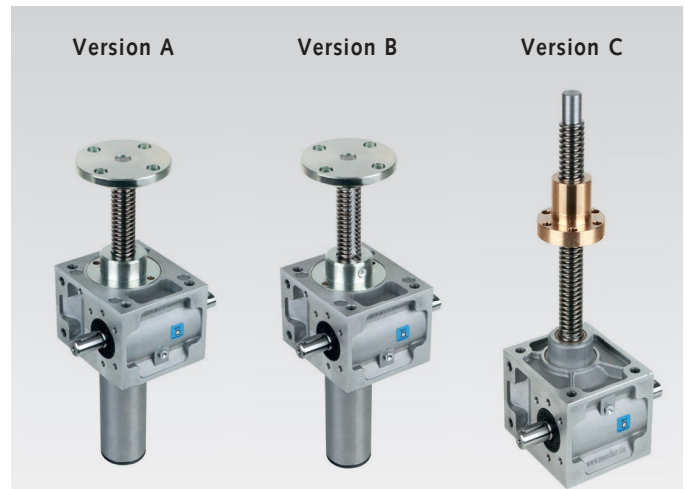
Travelling nut (version C): Material bronze CuSn12-C-GC (2.1052).

Lubrication: The spindle must be greased by the customer. Please refer to the operating instructions on the Internet at www.maedler.de

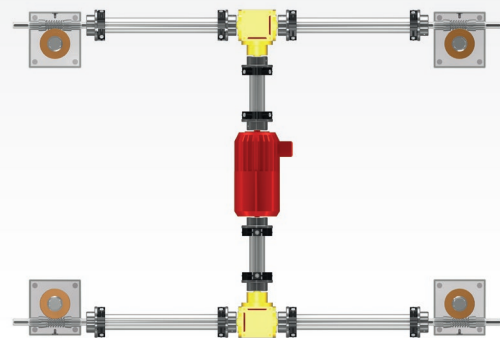
Stroke: The standard stroke is 1mm per full rotation on the input shaft. A slower version is optionally available. Size 0 with stroke 0.2 mm and from size 1 with stroke 0.25 mm. Other spindle designs, such as a double-thread or with a different lead, are available upon request and checking.

Accessorie: Accessories such as flange plates, mounting feet, etc. can be found from page 978 onwards. Other accessories shown below, such as motor, angular gear or clevis, are available on request.

The product numbers listed on page 975 only refer to the basic gear units without spindle and accessories. Please ask for the price of the complete unit including spindle and accessories as, e.g., flange plate/travelling nut, bellow or coil spring cover, fastening strips.



Drive diagram (example)



Versions

Version A: With this standard version the threaded spindle moves 1 mm in axial direction with every full rotation of the worm shaft. The object to be moved must be secured against twisting.

Version B: As design A, but with anti-rotation lock. The spindle is secured against rotation by a groove over the entire length of the thread and a lug in the gear. Thus the load only needs to be applied.

Version C: In this version the spindle is fixed to the worm gear. The axial movement is taken over by the threaded nut running outside the gear unit (also 1 mm stroke per full rotation of the worm shaft).

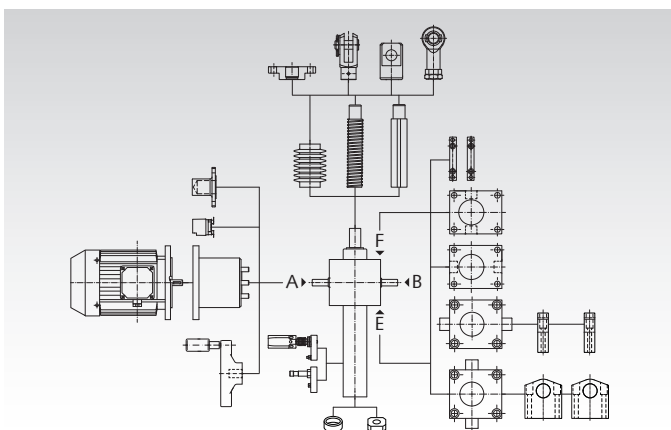
General Information

Versions A and B are available with an optional spindle end safety feature. This means the threaded spindle is locked before the safety sleeve is mounted, to limit the stroke in extended position so that the spindle cannot be screwed out of the gear unit. **Attention:** the protective sleeve is lengthened by the spindle end safety feature, see dimension table protective tube length.

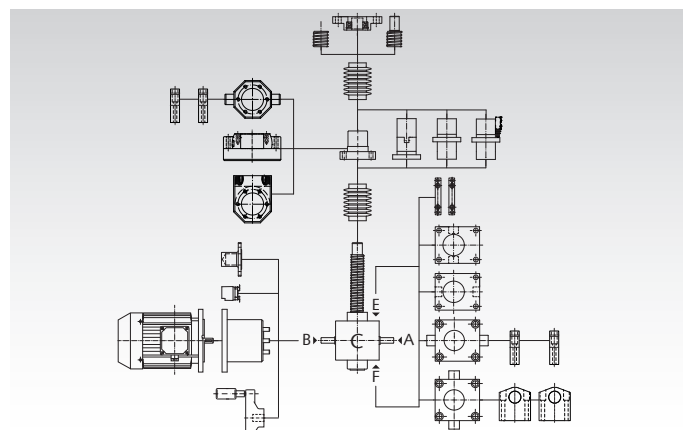
When using a bellows, the required spindle length becomes longer. Dimension C_3 from the dimension table changes for version A/B.

By connecting several worm gear screw jacks with cardan shafts or connecting shafts and angular gearboxes, different drive schemes can be realized in a simple way.

Accessories for NPT Version A and B



Accessories for NPT Version C



Technical Data and Dimensions Tables Worm Gear Screw Jack NPT

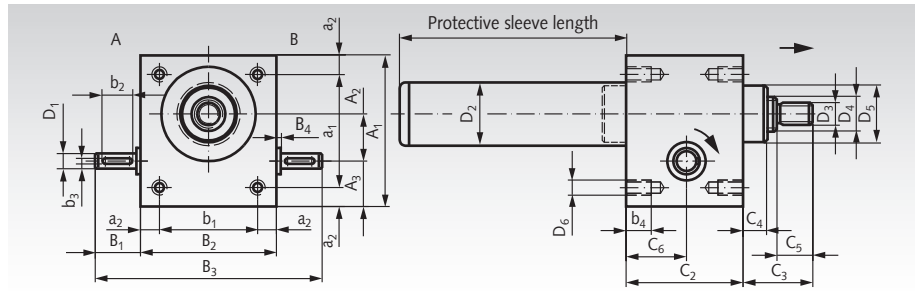
NPT Version A and B

Version A: Standard version.

Version B: With anti-rotation guide.

Other sizes with different spindle, lead and number of threads available on request.

Ordering details: e.g.: Prod. No. Type, Size, Stroke Length, accessories



Product No. Version A	Product No. Version B	Size	max. Storke Force N	D ₄ Spindle	Efficiency %	Stroke ¹⁾ mm	MD ²⁾ Nm	A ₁ mm	A ₂ mm	A ₃ mm	a ₁ mm	a ₂ mm	B ₁ mm	B ₂ mm	B ₃ mm	B ₄ mm
475 000 00	475 006 00	0	2500	Tr. 16x4	33	1	1,5	64	22,62	17,38	48	8	20	54	94	1,0
475 001 00	475 011 00	1	5000	Tr. 18x4	33	1	3,2	80	25	24	60	10	24	72	120	1,5
475 002 00	475 012 00	2	10000	Tr. 20x4	31	1	7	100	32	28	78	11	27,5	85	140	2,0
475 003 00	475 013 00	3	25000	Tr. 30x6	31	1	16	130	45	31	106	12	45	105	195	2,0
475 004 00	475 014 00	4	50000	Tr. 40x7	28	1	34	180	63	39	150	15	47,5	145	240	2,5

Size	b ₁ mm	b ₂ mm	b ₃ ^{P9} mm	b ₄ mm	C ₂ mm	C ₃ mm	C ₄ mm	C ₅ mm	C ₆ mm	D ₁ ^{h6} mm	D ₂ mm	D ₃ mm	D ₅ mm	D ₆ mm	Protective Sleeve ³⁾ mm	Weight ⁴⁾ kg
0	38	16	3	11	50	30	12	15	25	9	33,5	M10	30	M6	Stroke +20 (45)	0,6
1	52	18	3	13	62	35	12	19	32	10	33,5	M12	30	M8	Stroke +20 (48)	1,2
2	63	20	5	15	75	45	18	19	37,5	14	42	M14	39	M8	Stroke +30 (55)	2,1
3	81	36	5	15	82	50	23	22	41	16	50	M20	46	M10	Stroke +30 (60)	6
4	115	36	6	16	117	65	32	29	58,5	20	65	M30	60	M12	Stroke +50 (85)	17

¹⁾ Stroke pro full rotation of the input shaft.

²⁾ Required torque at max. load (only under optimum conditions, with run-in spindle).

³⁾ Length in brackets for version with spindle end safety feature.

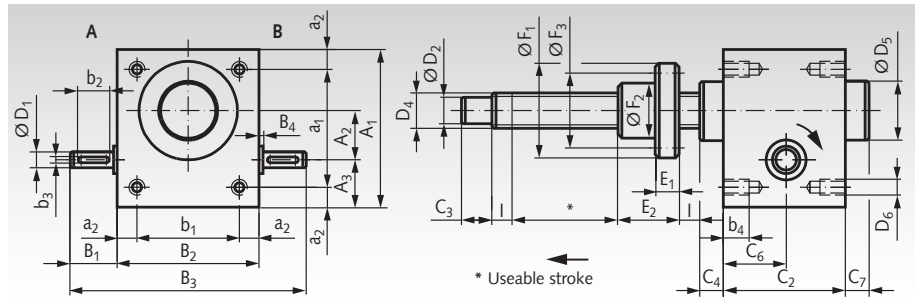
⁴⁾ Only weight of gearbox without spindle and accessories.

NPT Version C

Version C: Travelling nut version.

Other sizes with different spindle, lead and number of threads available on request.

Ordering details: e.g.: Prod. No. Type, Size, Stroke Length, Accessories



Product No. Version C	Size	max. Storke Force N	D ₄ Spindle	Efficiency %	Stroke ¹⁾ mm	MD ²⁾ Nm	A ₁ mm	A ₂ mm	A ₃ mm	a ₁ mm	a ₂ mm	B ₁ mm	B ₂ mm	B ₃ mm	B ₄ mm
475 020 00	0	2500	Tr. 16x4	33	1	1,5	64	22,62	17,38	48	8	20	54	94	1,0
475 021 00	1	5000	Tr. 18x4	33	1	3,2	80	25	24	60	10	24	72	120	1,5
475 022 00	2	10000	Tr. 20x4	31	1	7	100	32	28	78	11	27,5	85	140	2,0
475 023 00	3	25000	Tr. 30x6	31	1	16	130	45	31	106	12	45	105	195	2,0
475 024 00	4	50000	Tr. 40x7	28	1	34	180	63	39	150	15	47,5	145	240	2,5

Size	b ₁ mm	b ₂ mm	b ₃ ^{P9} mm	b ₄ mm	C ₂ mm	C ₃ mm	C ₄ mm	C ₆ mm	C ₇ mm	I mm	D ₁ ^{h6} mm	D ₂ mm	D ₅ mm	D ₆ mm	Travelling Nut					Mounting Bore	Weight ³⁾ kg
															E ₁ mm	E ₂ mm	F ₁ mm	F ₂ ^{h9} mm	F ₃ mm		
0	38	16	3	11	50	12	12	25	17	10	9	10	30	M6	10	25	45	25	35	6 x Ø6	0,6
1	52	18	3	13	62	15	12	32	17	10	10	12	30	M8	12	44	48	28	38	6 x Ø6	1,2
2	63	20	5	15	75	20	18	37,5	23	15	14	15	39	M8	12	44	55	32	45	6 x Ø7	2,1
3	81	36	5	15	82	25	23	41	28	20	16	20	46	M10	14	46	62	38	50	6 x Ø7	6
4	115	36	6	16	117	30	32	58,5	37	25	20	25	60	M12	16	73	95	63	78	6 x Ø9	17

¹⁾ Stroke pro full rotation of the input shaft.

²⁾ Required torque at max. load (only under optimum conditions, with run-in spindle)

³⁾ Only weight of gearbox without spindle and accessories.

Operating Time Worm Gear Screw Jacks NPT

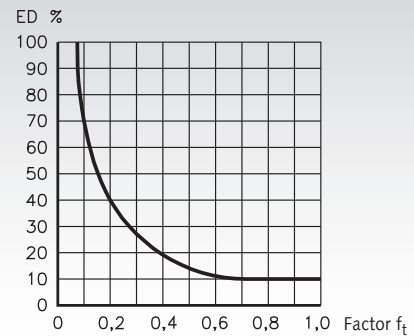
The stroke force and stroke speed predetermine which model and size should be chosen. A further decision criterion is the heating up caused by friction. To keep this value within limits, the nominal values must be corrected, using a temperature factor (f_t). The heating-up process depends on the operating time (OT) per time unit (in %).

For stroke speed $V_H = \text{const.}$ applies: $F_{\text{eff}} = F_{\text{Nom.}} \cdot f_t$

For stroke force $F = \text{const.}$ applies:

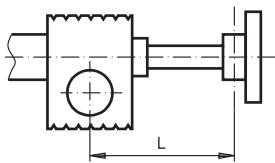
F_{eff} = effective stroke force
 $F_{\text{Nom.}}$ = Nominal stroke force for model and size

OT- f_t -Diagram Example: OT = 40% = A $f_t = 0,2$



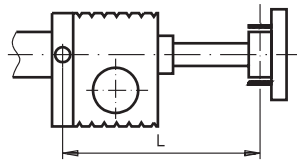
Buckling

Euler-Case 1 $f_k=0.5$



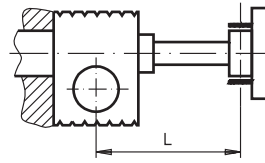
Version A and B
unguided stroke
fixed gear unit

Euler-Case 2 $f_k=1$



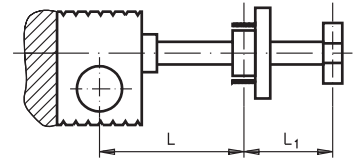
Version A and B
guided stroke
with swivel plate

Euler-Case 3 $f_k=1.4$



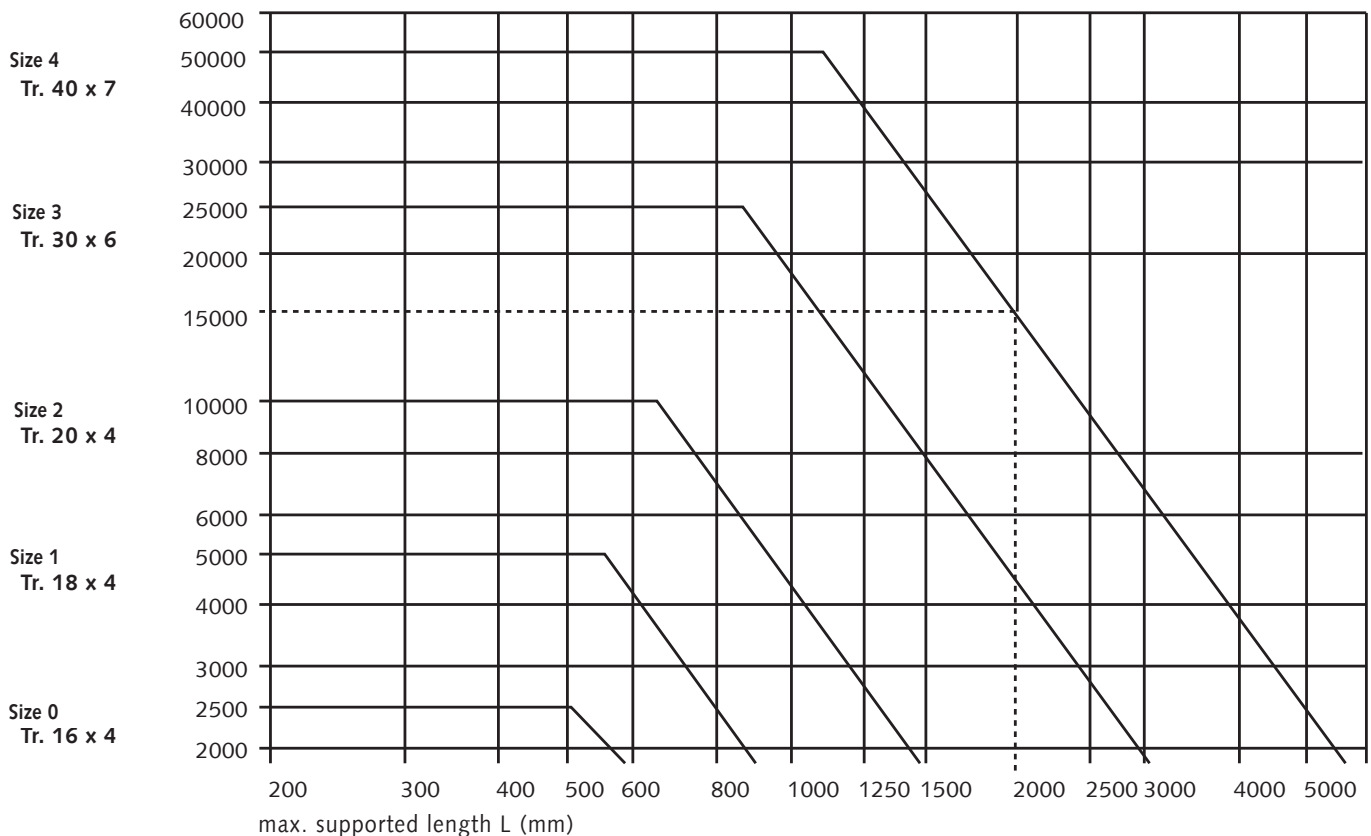
Version A and B
guided stroke
fixed gear unit

Euler-Case 4 $f_k=2$



Version C
for small L_1 applies: $f_k = 1.4$
(Euler 3)

Buckling Force P_k [N]



Example

Worm Gear Screw Jacks with Tr 40 x 7 and a spindle length of 2000 mm (stroke + nut + overrun), assumed safety factor $S_k = 4$
 P_k from table: 15,000 N

Mounting set up Euler 1 = $P_{k \text{ perm.}} = 15,000 \times 0.5 \times 1/4$
 Mounting set up Euler 2 = $P_{k \text{ perm.}} = 15,000 \times 1.0 \times 1/4$
 Mounting set up Euler 3 = $P_{k \text{ perm.}} = 15,000 \times 1.4 \times 1/4$
 Mounting set up Euler 4 = $P_{k \text{ perm.}} = 15,000 \times 2.0 \times 1/4$