Datasheet

Our modular system for a complete and flexible solution. The screw jack **MAR40** allows the transformation of rotary movements into linear "push/pull" movements.

Features at a glance

- Screw jack for lifting and actuation systems
- For conversion of rotary movements into linear "push/pull" movements
- For motorised or manually adjustable rotary movements
- Trapezoidal threaded spindle in stainless steel (AISI 304), **TPN Ø14 - 4 mm pitch**
- Housing in anodised aluminium, bevel gear and shaft in steel, surface-hardened
- High wear and fatigue resistance
- Maintenance-free: lubricated with Klüber long-life grease
- Standard stroke lengths of the threaded spindle in mm: **100 - 200 - 300 - 400 - 700 - 1000**
- Can be used individually or combined with flexible shafts, couplings, and gearboxes
- Screw jack for lifting and actuation systems

Optional available on request:

- Version supplied complete with flange and extension shaft; compatible for mounting a spindle position indicator **OP3**, for manual adjustment and direct reading of a measured value (see dimensions MAR40 FL-OP3).
- Protective aluminium cover (optionally in stainless steel) with spiral spring in stainless steel (AISI 301) for lengths up to 400 mm.

Technical characteristics

Rotation direction	Clockwise (clockwise rotation)
Radial load	50 N (10 N ≅ 1 kg)
Axial load (push/pull)	700 N (10 N ≅ 1 kg)
Screw load	not allowed
Revolution	max. 1500 rpm
Backlash	0,75° up to 1.5° max.
Dimensions	
Spindle	TPN Ø14 – 4 mm pitch
Stroke length	100 - 200 - 300 - 400 - 700 – 1.000 mm
Protective cover length	< 400 mm
Material	
Spindle	Stainless steel (AISI 304)
Housing	Aluminium, black anodised
Bevel gearbox and shaft	Steel, surface-hardened
Spiral spring	Stainless steel (AISI 301)
Protective cover	Aluminium (optionally in stainless steel AISI 303)
Weight	
Spindle/meter	900 g/m
Housing gearbox	500 g
Transmission ratio	1:1 – 1:2 – 1:4 – 1:7,5 – 1:10 – 1:15 – 1:20 – 1:30 – 1:40
Input torque	see performance table
Operating temperature	-20 … +80 °C
Life	10.000 h
Lubrication	Klüber AG 11-462 (grease)

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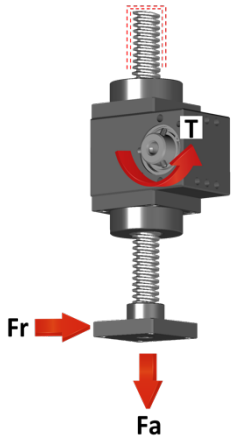
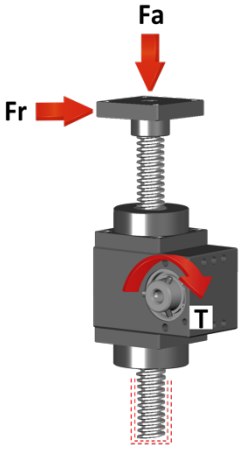
Installation

The main cause of breakage on the trapezoidal threaded spindle is radial loads caused by eccentricity. It is necessary to align the spindle and mounting surface of the gearbox orthogonally.
When mounting multiple screw jacks (also connected by shafts), it is essential that the couplings are perfectly aligned to distribute the load evenly. In this case, the use of flexible couplings is recommended to compensate for misalignments.

Radial and axial load
The loads acting on the shafts can be: Radial '**FR**' (radial force) and axial '**FA**' (axial force), related to the axis of the shaft. The axial load can be in push or pull. **FR** - force / radial load acts vertically on the shaft / axle **FA** - force / axial load acts horizontally on the shaft / axle

Push	Pull
	

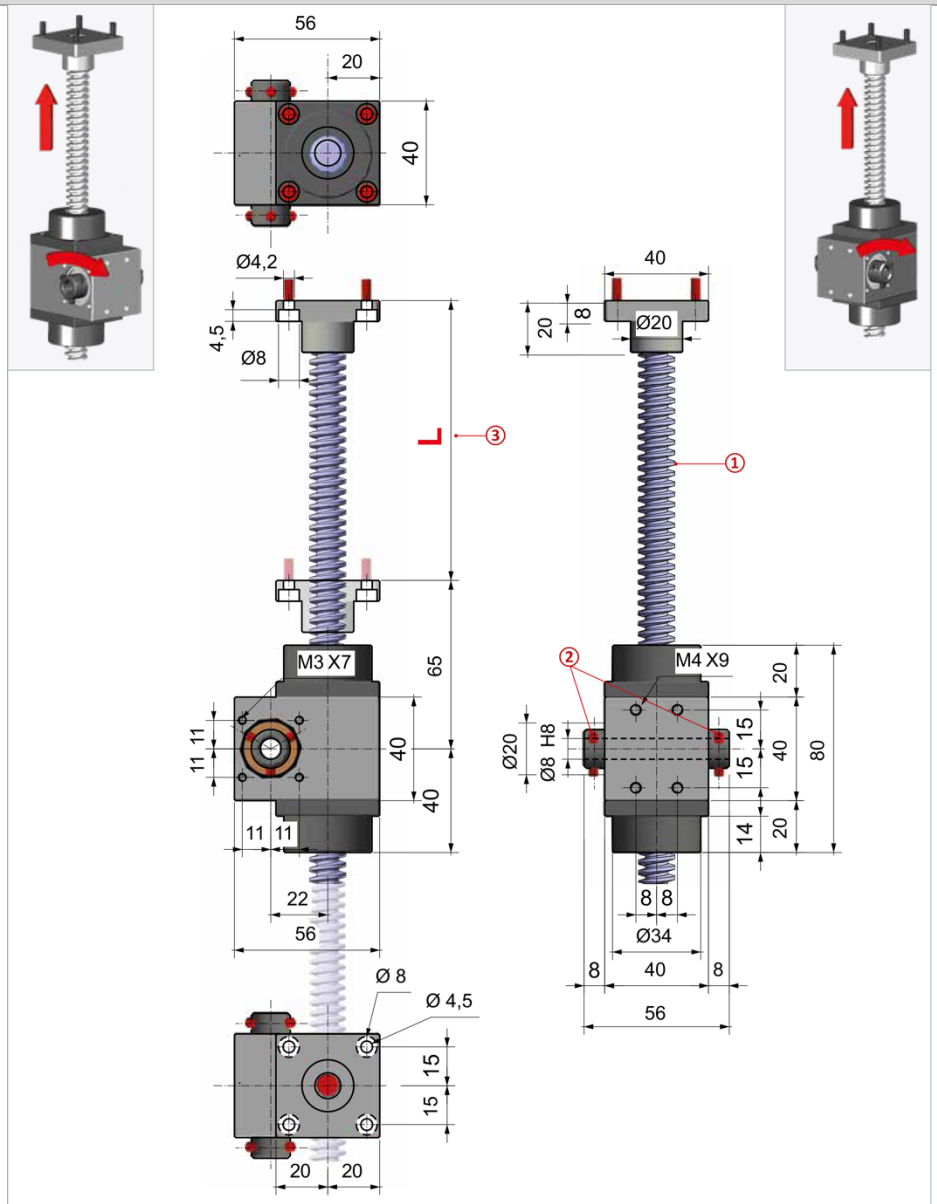
Sizing verification

- Load (kg) = the force which is applied to the threaded spindle of the screw jack.
- Linear speed (mm/s) = the desired linear speed of load handling; it is recommended to limit the input rotatory speed to a maximum of 1500 rpm.
- Stroke length (mm) = the linear distance the load must be moved, generally equal to the total length of the threaded spindle.
- Protective cover (optional on request) = to protect the threaded spindle in case of contamination, dust, foreign objects and/or oscillating installation and movements.
- Torque (Nm) = torque required to the load handling.

Datasheet

Dimensions

MAR40



① Trapezoidal threaded spindle, ② 3x fixing screws M4-120°,
③ Stroke in mm

All dimensions in mm

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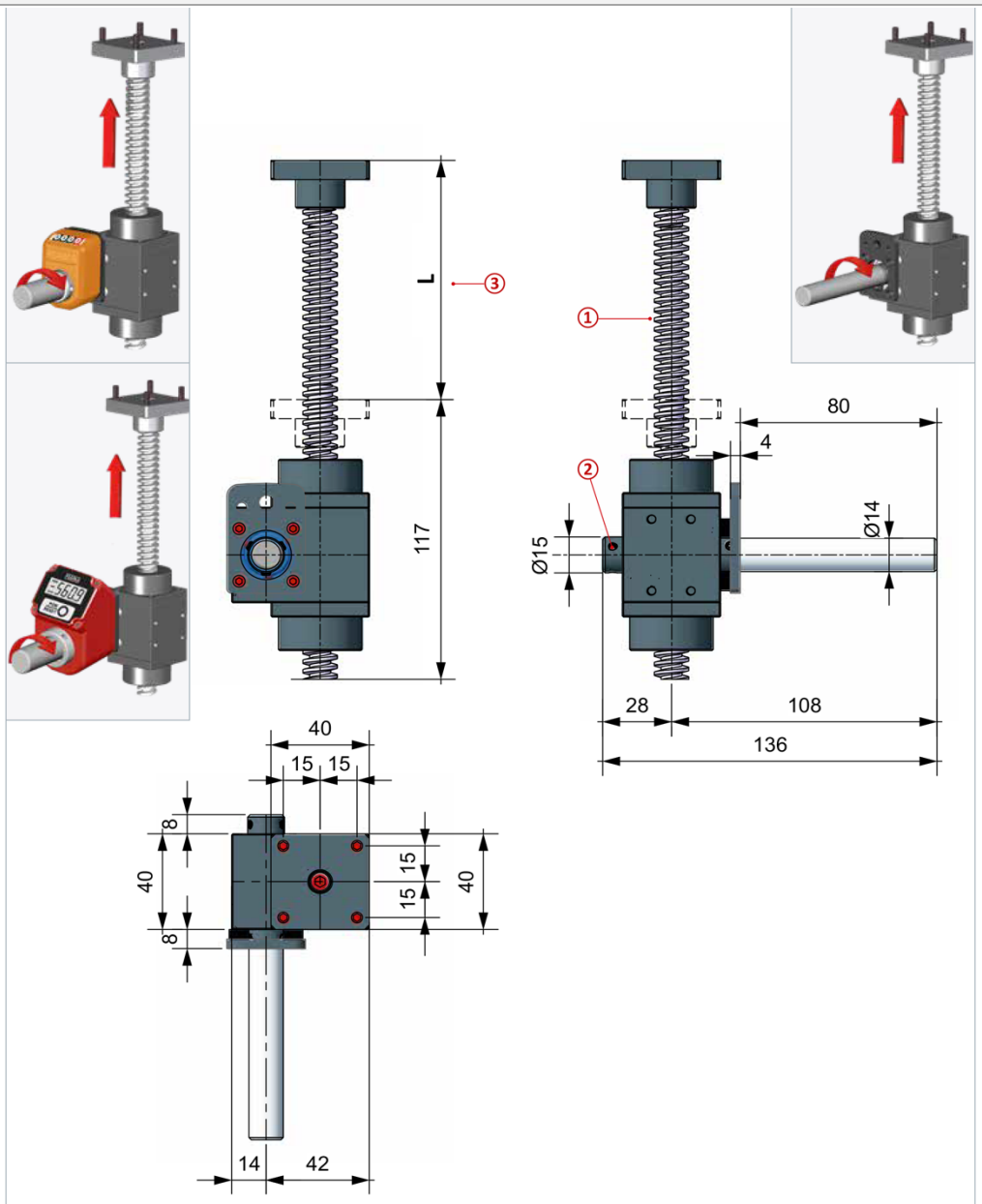
MAR40 FL-OP3/EP3

Version complete with flange and extension shaft; compatible for mounting a spindle position indicator OP3 or programmable indicator EP3, for manual setting and direct reading of a measured value



① Trapezoidal threaded Ø14x4, ② M4 fixing screws - No. 3 M4,
③ Measuring path (mm)

All dimensions in mm

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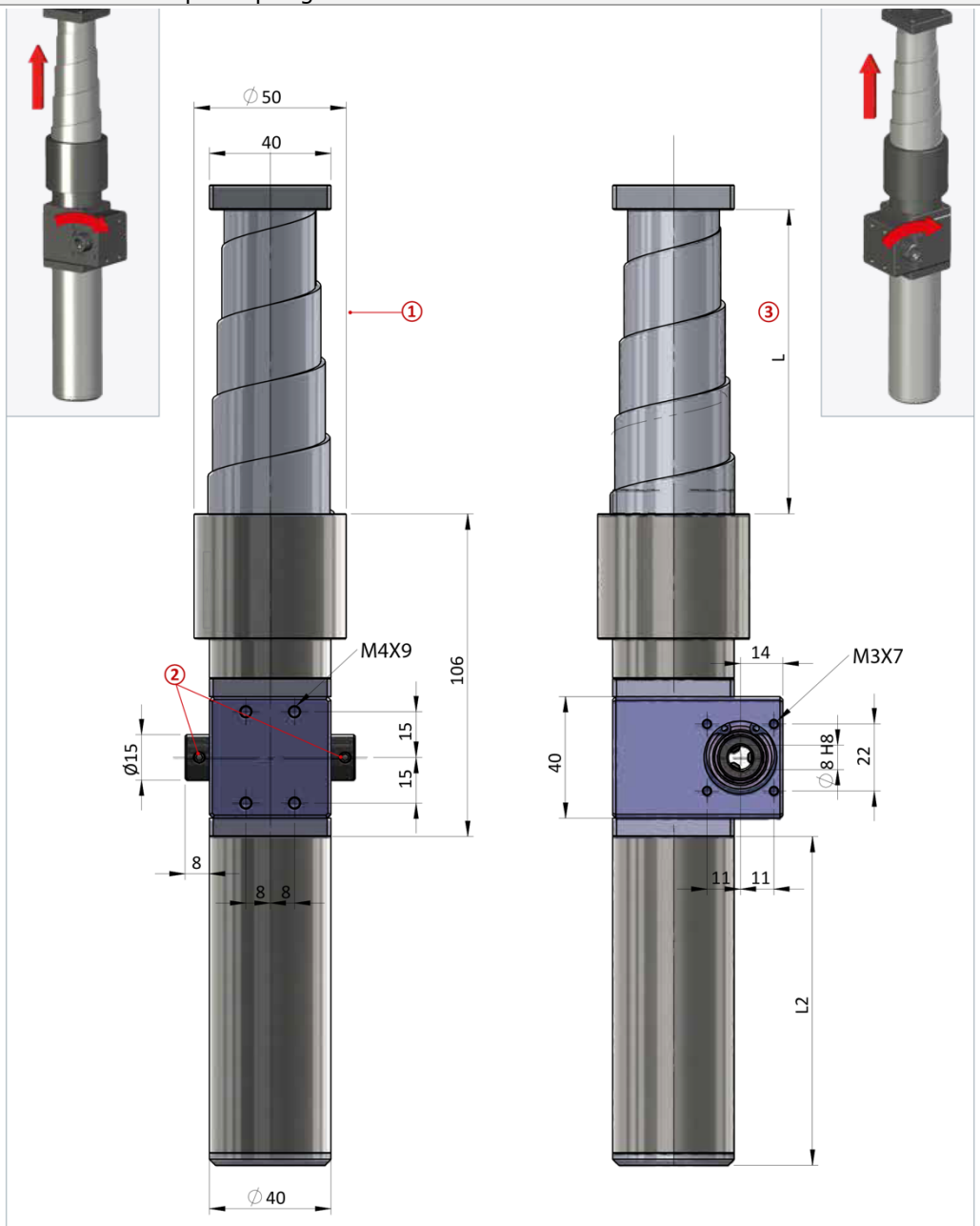
Datasheet

MAR40-PROT

With protective tube and spiral spring



① Aluminum trapezoidal spindle guard and stainless steel coil spring,
② M4 fixing screws - No. 3 M4, ③ Measuring path (mm)

All dimensions in mm

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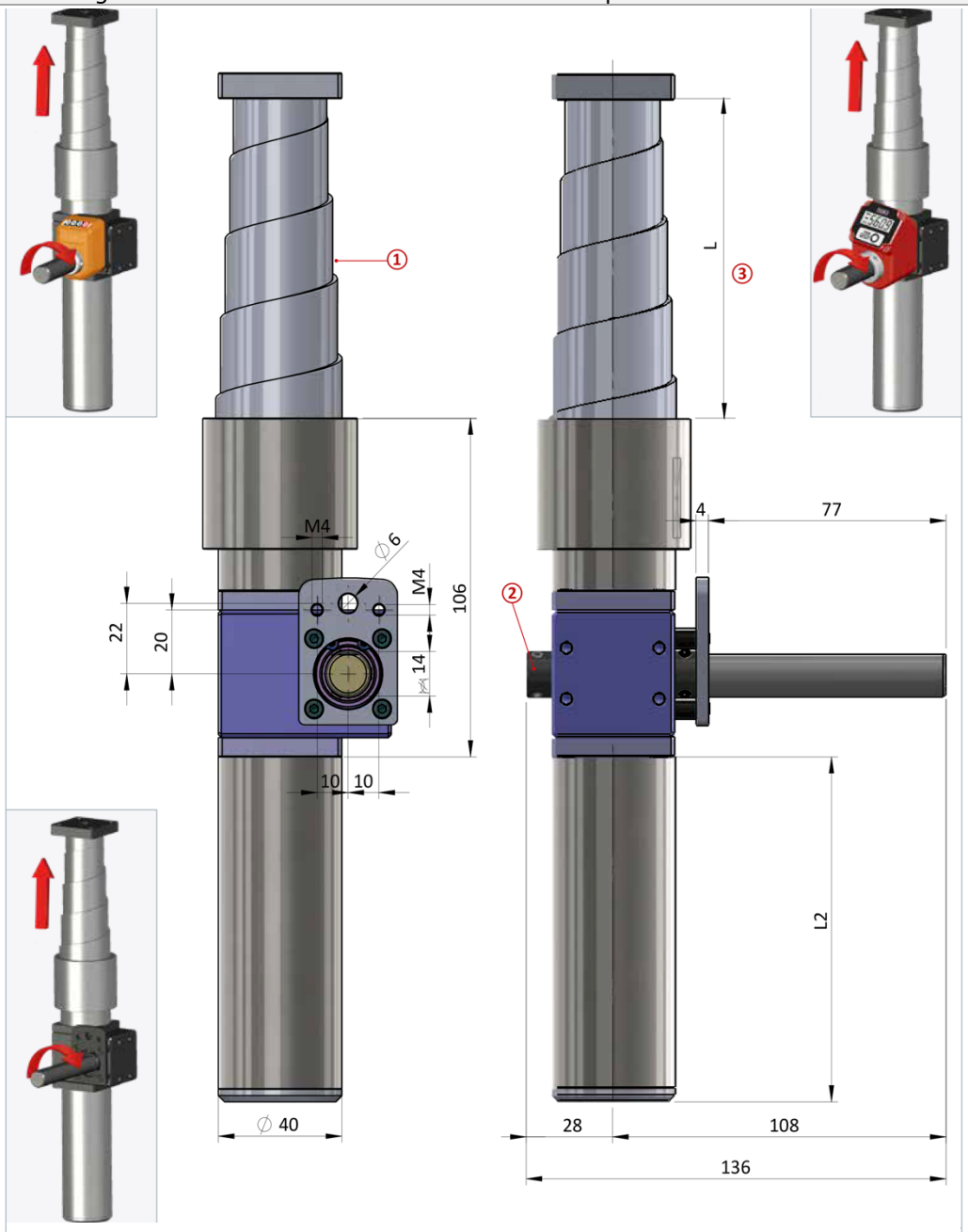
MAR40-PROT FL-OP3/EP3

Complete with flange and extension shaft for visualization with position indicator OP3 or EP3



① Aluminum trapezoidal spindle guard and stainless steel coil spring,
② M4 fixing screws - No. 3 M4, ③ Measuring path (mm)

All dimensions in mm

Datasheet

Performance table

Tab. 1 =	Handling of loads according to the input torque
Tab. 2 =	Handling of loads according to the trapezoidal spindle (with guides)
Tab. 3 =	Spindle travel speed according to input speed
i =	Gear ratio [/]
T =	Torque [Nm]
C =	Handling of loads [kg]
s =	Measuring path [mm]
ω =	rotational speed [rpm]
v =	Traversing speed [mm/s]

i [/]	**Tab.1**		**Tab. 2**		**Tab. 3**	
	T [Nm]	**C** [kg]	**s** [mm]	**C** [kg] (**T** max)	**ω** [rpm]	**v** [mm/s]
1/1	1	32,0	50	265,8	250	16,67
	2	64,0	100	265,8	500	33,33
	3	96,1	150	265,8	750	50,00
	4	128,1	200	265,8	1000	66,67
	5	160,1	250	265,8	1250	83,33
	6	192,1	300	265,8	1500	100,00
	7	224,2				
	8	256,2				
	8,3	265,8				
1/2	0,5	32,0	50	269,0	250	8,33
	1	64,0	100	269,0	500	16,67
	1,5	96,1	150	269,0	750	25,00
	2	128,1	200	269,0	1000	33,33
	2,5	160,1	250	269,0	1250	41,67
	3	192,1	300	269,0	1500	50,00
	3,5	224,2				
	4	256,2				
	4,2	269,0				
1/4	0,25	32,0	50	288,2	250	4,17
	0,5	64,0	100	288,2	500	8,33
	0,75	96,1	150	288,2	750	12,50
	1	128,1	200	288,2	1000	16,67
	1,25	160,1	250	288,2	1250	20,83
	1,5	192,1	300	288,2	1500	25,00
	1,75	224,2				
	2	256,2				
	2,25	288,2				

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i [/]	Tab.1		Tab. 2		Tab. 3	
	T [Nm]	C [kg]	s [mm]	C [kg] (T max)	ω [rpm]	v [mm/s]
1/7,5	0,1	24,0	50	288,2	250	2,22
	0,2	48,0	100	288,2	500	4,44
	0,3	72,1	150	288,2	750	6,67
	0,4	96,1	200	288,2	1000	8,89
	0,5	120,1	250	288,2	1250	11,11
	0,6	144,1	300	288,2	1500	13,33
	0,7	168,1				
	0,8	192,1				
	0,9	216,2				
	1	240,2				
	1,1	264,2				
	1,2	288,2				
1/10	0,1	21,1	50	253,6	250	1,67
	0,2	42,3	100	253,6	500	3,33
	0,3	63,4	150	253,6	750	5,00
	0,4	84,5	200	253,6	1000	6,67
	0,5	105,7	250	253,6	1250	8,33
	0,6	126,8	300	253,6	1500	10,00
	0,7	148,0				
	0,8	169,1				
	0,9	190,2				
	1	211,4				
	1,1	232,5				
	1,2	253,6				
1/15	0,1	24,5	50	294,0	250	1,11
	0,2	49,0	100	294,0	500	2,22
	0,3	73,5	150	294,0	750	3,33
	0,4	98,0	200	294,0	1000	4,44
	0,5	122,5	250	294,0	1250	5,56
	0,6	147,0	300	294,0	1500	6,67
	0,7	171,5				
	0,8	196,0				
	0,9	220,5				
	1	245,0				
	1,1	269,5				
	1,2	294,0				

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Datasheet

i [/]	Tab.1		Tab. 2		Tab. 3	
	T [Nm]	C [kg]	s [mm]	C [kg] (T max)	ω [rpm]	v [mm/s]
1/20	0,1	42,3	50	295,9	250	0,83
	0,2	84,5	100	295,9	500	1,67
	0,3	126,8	150	295,9	750	2,50
	0,4	169,1	200	295,9	1000	3,33
	0,5	211,4	250	295,9	1250	4,17
	0,6	253,6	300	295,9	1500	5,00
	0,7	295,9				
1/30	0,1	30,3	50	302,6	250	0,56
	0,2	60,5	100	302,6	500	1,11
	0,3	90,8	150	302,6	750	1,67
	0,4	121,1	200	302,6	1000	2,22
	0,5	151,3	250	302,6	1250	2,78
	0,6	181,6	300	302,6	1500	3,33
	0,7	211,8				
	0,8	242,1				
	0,9	272,4				
	1	302,6				
1/40	0,1	55,7	50	278,6	250	0,42
	0,2	111,4	100	278,6	500	0,83
	0,3	167,2	150	278,6	750	1,25
	0,4	222,9	200	278,6	1000	1,67
	0,5	278,6	250	278,6	1250	2,08
			300	278,6	1500	2,50

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Datasheet

Order example

Type	MAR40	-	1:1	-	200	-		-
MAR40								

Transmission ratios
1:1 - 1:2 - 1:4 - 1:7,5 - 1:10 - 1:15 - 1:20 - 1:30 - 1:40

Stroke length (mm)
50 – 100 – **200** – 300

Coupling flange (optional)

	= Not specified (standard)
FL-OP3/EP3	= for Spindle position indicator

Protection tube (optional)

	= Not specified (standard)
PROT	= Aluminum
PROT-IN	= Stainless steel AISI 303

Position indicator (optional) please order separately

	= Not specified (standard)
OP3	= Spindle position indicator OP3
EP3	= Spindle position indicator EP3

Our **MAR40** spindle position indicator are available in combination with mechanical digital spindle position indicator **OP3** and electronic digital spindle position indicator **EP3**. Please order spindle position indicator separately. Further information on our spindle position indicators can be found on the corresponding data sheet.

Other versions that cannot be generated from the order code may be available as special versions on request.

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Datasheet

Accessory

Hand wheels 	Reversible handles 	Bearing brackets 	Flanges 
Cardan joints 	Coupling shafts 	Clamping flanges 	

System components

Digital position indicator 	Programmable electronic-digital spindle position indicator 	Angular gearboxes 	Axle modules 

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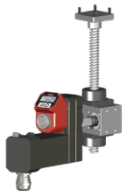
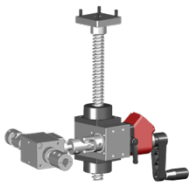
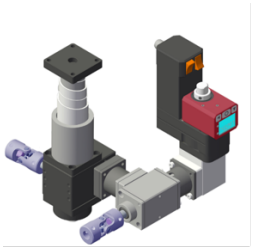
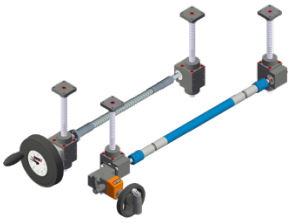
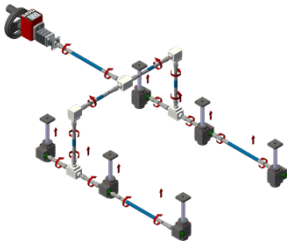
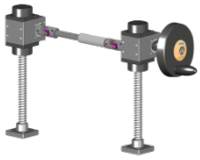
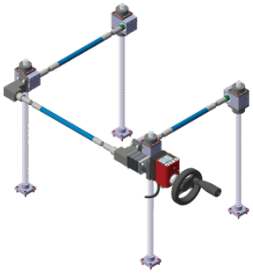
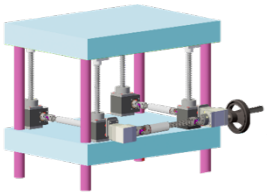
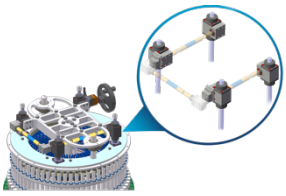
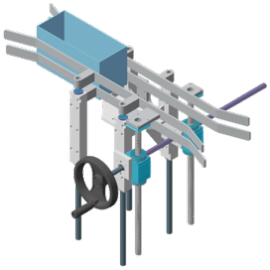
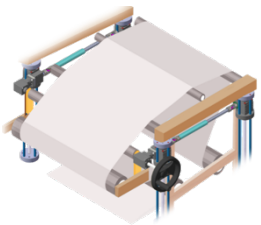
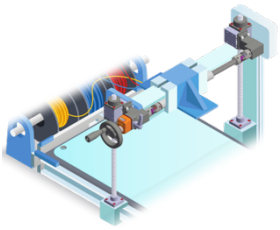
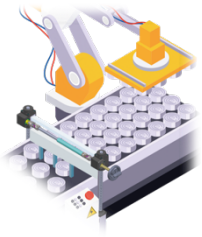
Combination / application options



You can find more information on our homepage www.willtec.de

Manufacturer: FIAMA

The manufacturer reserves the right to make changes to the products that it deems necessary for their improvement without prior notice.

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