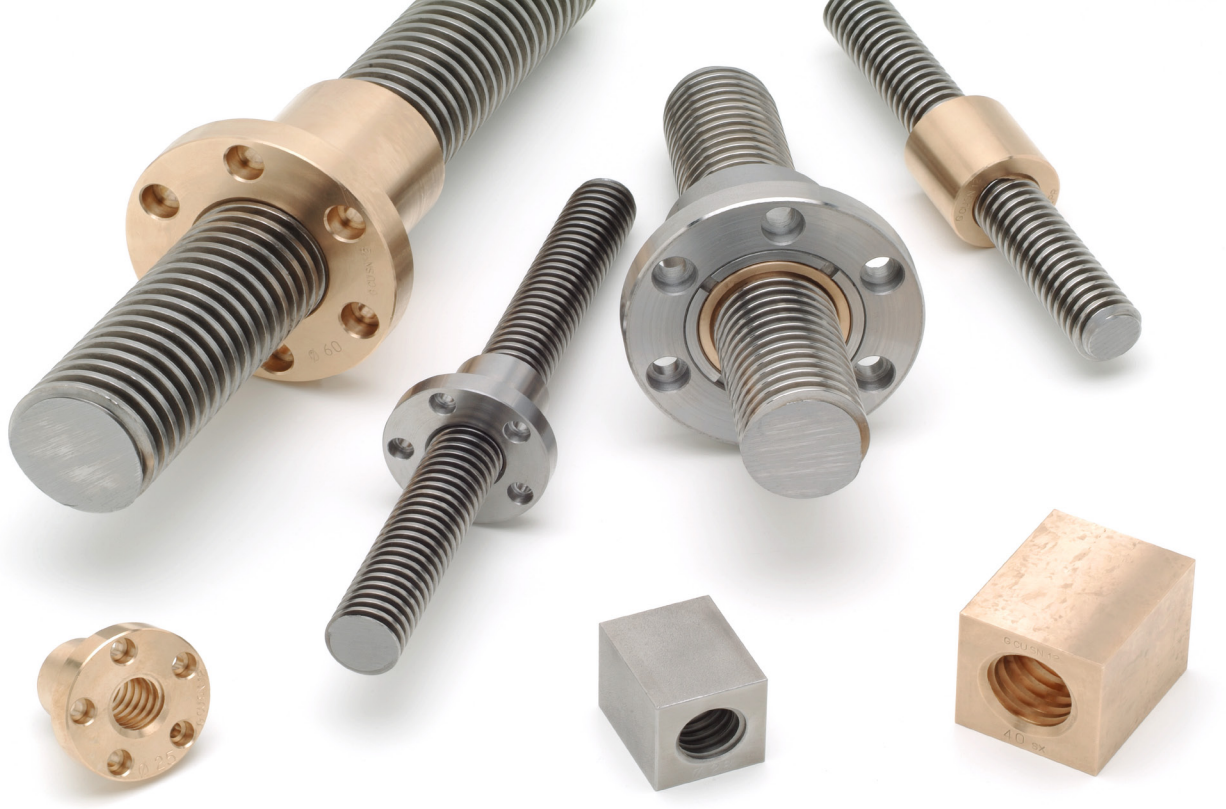

Montesi
TURNING TO COLD FORMING

viti manovra

Trapezoidal rolled screws

2023.00

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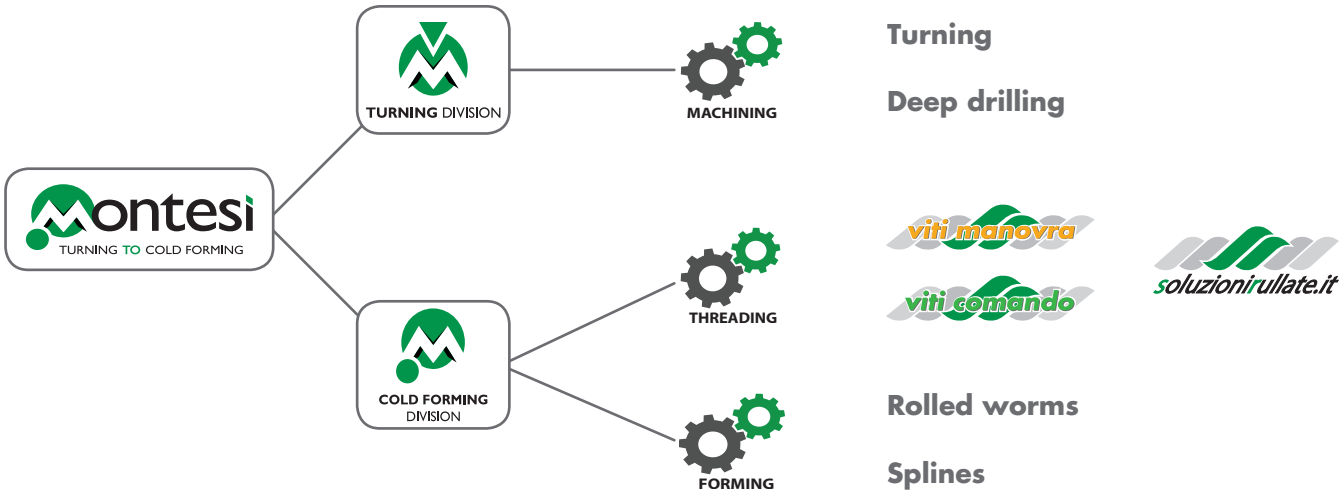
Montesi
TURNING TO COLD FORMING



Montesi
TURNING TO COLD FORMING

Torneria Montesi Srl has been operating since 1964 as a trusted supplier of mechanical components.

The Company's history boasts know-how and experience honed at the service of important Italian and foreign companies in a variety of sectors.

We believe in technological innovation applied to production processes and the human propensity for continuous improvement, areas in which the Company invests steadfastly.

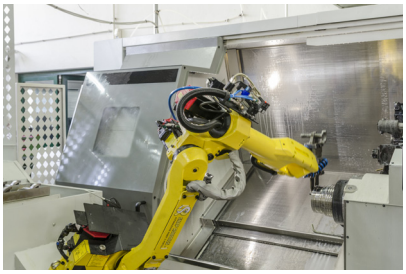
We believe that the quality of the relationship with customers is essential in every occasion and to meet expectations.

We apply the ISO 9001 Organisational System awarded to us by DNV-GL, and customer satisfaction is monitored and certified by CERVED.

TURNING DIVISION

The Turning production division houses the departments dedicated to machining for chip removal using CNC turning units and machining stations.
One of our departments is dedicated to deep drilling.

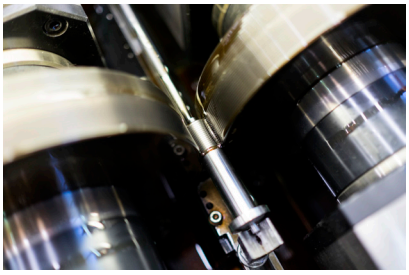
Cutting-edge technological machinery, flexible automation systems and lean organization allow the achievement and maintenance of high standards of efficiency, productivity and quality.



COLD FORMING
DIVISION

The Cold Moulding (cold deformation) production division houses the departments for cold moulding by rolling.

Drive and manoeuvring screws are produced in the roll threading departments. The moulding departments are used to manufacture rolled worms and splines by rack forming.
Combined with high know-how, CNC rolling machines of the latest-generation PSF (precision screw forming) allow achieving high-quality standards.



soluzionirullate.it

Soluzionirullate.it is our information platform dedicated to MONTESI rolled manoeuvring and drive screws.

The service provides:

- technical information on processes and products, and on the correct choice/dimensioning of the components of a nut-screw system;
- commercial material and operating tools in "mobile" mode dedicated to industrial distribution operators;
- web platform for online orders on e-commerce channels.

The rolling process.

Rolled threading is a manufacturing process that applies cold moulding tp the outer surface of round parts. The thread is obtained by tools rotating by the "radial-dynamic" effect exerted on the screw. The two rolling tools penetrate the external surface of the raw material, gradually deforming it until the desired shapes and sizes are obtained.

The rolling process offers the following advantages:

- increased strength of the thread tooth;
- excellent roughness on the thread flank and on the base radius;
- no gaps in the fibres of the raw material, unlike what occurs when the threading is removed or milled.
- reduced sensitivity to the notch

viti manovra

The manoeuvring screws are identified with threads compliant with Trapezoidal screw standards DIN 103 ISO 2901 - 2902 - 2903 - 2904, and used for adjustment-blocking or translation actions.

In the **adjustment-block** action, the lead nut-screw combination is mainly used to support a load (in tension or compression).
The conversion of rotary motion into linear motion is occasional and aimed only at adjusting the distance of the load. The system offers a guarantee of irreversibility (retrograde motions are not triggered).
In the **sideshift** action the nut-screw system is used to produce a displacement by converting a rotary motion into linear motion. The evaluation of efficiency and wear is extremely important. The system offers a guarantee of irreversibility (retrograde motions are not triggered).

Rolled screws are produced in carbon steel (low-high), high strength (8.8) and stainless steel.
For each class of material, variants are available for different uses. Each range is supported by right, left, one or two-thread versions.

The nuts can be full-material and modular nuts. The different characteristics allow optimising the selection of materials, shapes and arrangement for fastening.

The CUSTOM service offers customised machining for small series of screw terminals, solutions with removed thread, machining of nut screws according to drawing, and customisation of radial slacks.

The accessories include special lubricants and adapters to support nuts.
Industrial distribution is offered with a wide range of standardised items available in stock for immediate delivery, together with an excellent back office service.

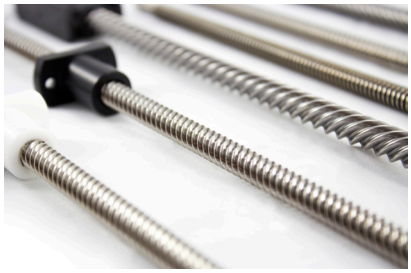
Industrial manufacturing includes the production of manoeuvring screws according to the customer's design, and industrialised with high-efficiency and quality processes.

viti comando

The MONTESI drive screws feature a thread geometry aimed at maximising efficiency and optimising "P x V" values.
Trapezoidal multi-start thread screws and special thread screws
with one- or multi-start round thread, and high-helix screws.
Drive screws are suitable for fast, high-performance handling. They are combined with plastic or bronze nuts.

Drive screws are produced according to the customer's design and industrialised according to high-productivity processes.
Sectors of application:

- automation;
- electrical engineering;
- household appliances;
- textile and graphic industry;
- construction engineering;
- construction engineering;
- medical technology;
- automotive technology.



Trapezoidal rolled screws	Low-carbon steel	**RAT**
	High-carbon steel	**RATHCP**
	304 stainless steel	**RIT304**
	316 stainless steel	**RIT316**
	ETG 100	**RATH**

			Cylindrical	Cylindrical XL	Flanged	Flanged XL	Square	Square pre-drilled	Hexagonal
Nuts	trapezio NUT	Steel	**MAC**	**MACXL**	**MAF**		**MAQ**	**MAQF**	**MAE**
		CuSn12	**MBC**	**MBCXL**	**MBF**	**MBFXL**	**MBQ**	**MBQF**	
		Copper alloy	**MLRC**		**MLRF**	**MLRFXL**	**MLRQ**		
		Aluminium bronze			**MBALF**	**MBALFXL**			
	Full	303 stainless steel	**MIC303**						**MIE303**
		304 stainless steel	**MIC304**						**MIE304**
		Polyamide PA6 + Oil	**MPAIC**				**MPQ**		
		Polyamide PA6 + Lubricants				**MPA2XL**			
		Polyamide PA6 + MoS2	**MPA3C**						
		POM C Polyacetal	**MPC**		**MPFXL**				
			Bronze threaded insert	POM C polyacetal threaded insert	Threaded insert Polyamide PA6 + oil	Threaded insert Polyamide PA6 + lubricants	Threaded insert Polyamide PA6 + MoS2	Steel flange	Stainless steel flange
	swap TRAPEZIO	Flanged steel replaceable thread insert	**SWAP FAB**	**SWAP FAP**	**SWAP INPA**	**SWAP INPA2**	**SWAP INPA3**		
	Modular	Flanged replaceable stainless steel thread insert	**SWAP FIB**	**SWAP FIP**					
	swap T-NOSE	CuSn12 cylindrical with applicable flange						**MTNB**	**MTNBI**
		Cylindrical copper alloy with applicable flange						**MTNLR**	**MTNLRI**

custom	Screws	Screw terminals machining
		Special thread coatings
		Thread removed
		Thread milled
	Nuts	Nuts with customised shapes
		Customised radial slack

accessori	Lubricants
	Adapter supports for nuts

Manoeuvring screws
Sales plan

Trapezoidal rolled screws
Carbon steel screws

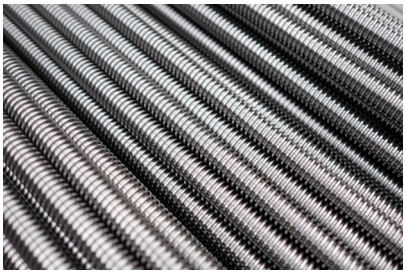
Construction and performance characteristics

Trapezoidal thread profile rolled manoeuvring screws. Drives with rolled manoeuvring screws represent an economical and effective solution for constructions in the sectors of clamping, positioning and forward feed.

Recommended uses

RAT range
Broad field of use in drives aimed at clamping or maneuvering high loads with low-forward speeds. The two-start version doubles the feed speed and is widely used in economic drives for the positioning sectors.

RAT High-Carbon Precision (RATHCP) range
Use in drives aimed at positioning where precision and quality are required. The two-start version doubles the feed speed and is used in drives for the positioning sectors.



Pitch accuracy

The RAT range is made in Class C8 (0.100 mm/300 mm), while the RATHCP range in Class C7 (0.050 mm/300 mm). The control is carried out "on process" by means of digital instruments to guarantee that the pre-set values are maintained.

Straightness

Straightness is handled by means of qualitative procedures to guarantee that the set values are maintained.

Mechanical characteristics of raw material

C-20 carbon steel

It guarantees good surface hardness results on the thread and can be easily removed by machining.

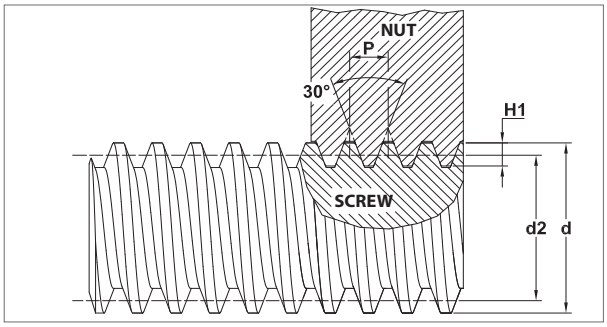
C-45 carbon steel

It guarantees excellent surface hardness results on thread and core. Excellent hardenability characteristics.

Technical data	RAT - RATHCP ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7e
Number of start threads	1 - 2
Available diameters:	
1-start thread	10 - 80 mm
2-start thread	12 - 40 mm
Available pitches:	
1-start thread	3 - 10 mm
2-start thread	6 - 14 mm
Direction of rotation:	
1-start thread	right and left
2-start thread	right
Max length:	3000 mm - 6000 mm
Accuracy class ISO 3408-3:	
1-start thread	RAT = C8 = 0.100 mm on 300 mm RATHCP = C7 = 0.050 mm on 300 mm
2-start thread	RAT = C8 = 0.100 mm on 300 mm
Straightness:	
1-start thread	RAT = 0.10 - 0.50 mm on 300 mm RATHCP = 0.03 - 0.10 mm on 300 mm
2-start thread	RAT = 0.10 - 0.50 mm on 300 mm RATHCP = 0.03 - 0.10 mm on 300 mm

Trapezoidal rolled screws
Carbon steel screws
RAT range

Technical features	
Raw material	C22E 1.1151 C-20 carbon steel
Thread starts	1
Accuracy class	C8 = 0.100 mm on 300 mm
Maximum length	3000 mm up to Tr18x04 6000 mm from Tr20x04



	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10^4 mm^4]	moment of resistance 10^3 mm^3	mass Kg/m
				min	max	min	max							
S	RAT10031D	Tr10x03	RIGHT	9.764	10.000	8.191	8.415	0.5	6°24'	0.51	1.5	0.0057	0.02	0.45
S	RAT10031S	Tr10x03 LH	LEFT	9.764	10.000	8.191	8.415	0.5	6°24'	0.51	1.5	0.0057	0.02	0.45
S	RAT12031D	Tr12x03	RIGHT	11.764	12.000	10.191	10.415	0.5	5°12'	0.46	1.5	0.02	0.047	0.65
S	RAT12031S	Tr12x03 LH	LEFT	11.764	12.000	10.191	10.415	0.5	5°12'	0.46	1.5	0.02	0.047	0.65
S	RAT14041D	Tr14x04	RIGHT	13.700	14.000	11.640	11.905	0.5	6°03'	0.5	2	0.03	0.067	0.89
S	RAT14041S	Tr14X04 LH	LEFT	13.700	14.000	11.640	11.905	0.5	6°03'	0.5	2	0.03	0.067	0.89
S	RAT16041D	Tr16x04	RIGHT	15.700	16.000	13.640	13.905	0.3	5°12'	0.46	2	0.068	0.124	1.2
S	RAT16041S	Tr16x04 LH	LEFT	15.700	16.000	13.640	13.905	0.3	5°12'	0.46	2	0.068	0.124	1.2
S	RAT18041D	Tr18x04	RIGHT	17.700	18.000	15.640	15.905	0.3	4°33'	0.43	2	0.133	0.206	1.58
S	RAT18041S	Tr18x04 LH	LEFT	17.700	18.000	15.640	15.905	0.3	4°33'	0.43	2	0.133	0.206	1.58
S	RAT20041D	Tr20x04	RIGHT	19.700	20.000	17.640	17.905	0.2	4°03'	0.4	2	0.238	0.318	2.01
S	RAT20041S	Tr20x04 LH	LEFT	19.700	20.000	17.640	17.905	0.2	4°03'	0.4	2	0.238	0.318	2.01
S	RAT22051D	Tr22x05	RIGHT	21.665	22.000	19.114	19.394	0.2	4°40'	0.43	2.5	0.285	0.366	2.35
S	RAT22051S	Tr22x05 LH	LEFT	21.665	22.000	19.114	19.394	0.2	4°40'	0.43	2.5	0.285	0.366	2.35
S	RAT24051D	Tr24x05	RIGHT	23.665	24.000	21.094	21.394	0.2	4°14'	0.41	2.5	0.465	0.526	3.1
S	RAT25051D	Tr25x05	RIGHT	24.665	25.000	22.094	22.394	0.2	4°03'	0.4	2.5	0.53	0.61	3.1
S	RAT25051S	Tr25x05 LH	LEFT	24.665	25.000	22.094	22.394	0.2	4°03'	0.4	2.5	0.53	0.61	3.1
S	RAT28051D	Tr28x05	RIGHT	27.665	28.000	25.094	25.394	0.1	3°34'	0.37	2.5	1.055	0.976	3.75
S	RAT28051S	Tr28x05 LH	LEFT	27.665	28.000	25.094	25.394	0.1	3°34'	0.37	2.5	1.055	0.976	3.75
S	RAT30061D	Tr30x06	RIGHT	29.625	30.000	26.547	26.882	0.1	4°03'	0.4	3	1.135	1.03	4.52
S	RAT30061S	Tr30x06 LH	LEFT	29.625	30.000	26.547	26.882	0.1	4°03'	0.4	3	1.135	1.03	4.52
S	RAT32061D	Tr32x06	RIGHT	31.625	32.000	24.463	25.000	0.1	3°45'	0.39	3	1.610	1.34	4.55
S	RAT35061D	Tr35x06	RIGHT	34.625	35.000	31.547	31.882	0.1	3°25'	0.36	3	2.68	2.04	6.34
S	RAT35061S	Tr35x06 LH	LEFT	34.625	35.000	31.547	31.882	0.1	3°25'	0.36	3	2.68	2.04	6.34
S	RAT36061D	Tr36x06	RIGHT	35.625	36.000	32.547	32.882	0.1	3°18'	0.36	3	2.67	2.13	6.71
S	RAT36061S	Tr36x06 LH	LEFT	35.625	36.000	32.547	32.882	0.1	3°18'	0.36	3	2.67	2.13	6.71
S	RAT40071D	Tr40x07	RIGHT	39.575	40.000	36.020	36.375	0.1	3°30'	0.37	3.5	4.25	2.79	8.21
S	RAT40071S	Tr40x07 LH	LEFT	39.575	40.000	36.020	36.375	0.1	3°30	0.37	3.5	4.25	2.79	8.21
S	RAT45081D	Tr45x08	RIGHT	44.550	45.000	40.493	40.868	0.1	3°33'	0.35	4	7.32	4.21	10.35
S	RAT45081S	Tr45x08 LH	LEFT	44.550	45.000	40.493	40.868	0.1	3°33'	0.35	4	7.32	4.21	10.35
S	RAT50081D	Tr50x08	RIGHT	49.550	50.000	45.468	45.868	0.1	3°10'	0.34	4	11.71	5.96	13.05
S	RAT50081S	Tr50x08 LH	LEFT	49.550	50.000	45.468	45.868	0.1	3°10	0.34	4	11.71	5.96	13.05
S	RAT55091D	Tr55x09	RIGHT	54.500	55.000	49.935	50.360	0.1	3°03'	0.33	4.5	19.9	8.88	15.41
S	RAT60091D	Tr60x09	RIGHT	59.500	60.000	54.935	55.360	0.2	2°57'	0.33	4.5	26.4	11	18.65
S	RAT60091S	Tr60x09 LH	LEFT	59.500	60.000	54.935	55.360	0.3	2°57'	0.33	4.5	26.4	11	18.65
S	RAT70101D	Tr70x10	RIGHT	69.470	70.000	64.425	64.850	0.3	2°48'	0.32	5	51.8	18.2	26.05
S	RAT80101D	Tr80x10	RIGHT	79.470	80.000	74.425	74.850	0.3	2°25'	0.29	5	98.9	29.5	34.7

(1) Helix angle of average diameter

(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.

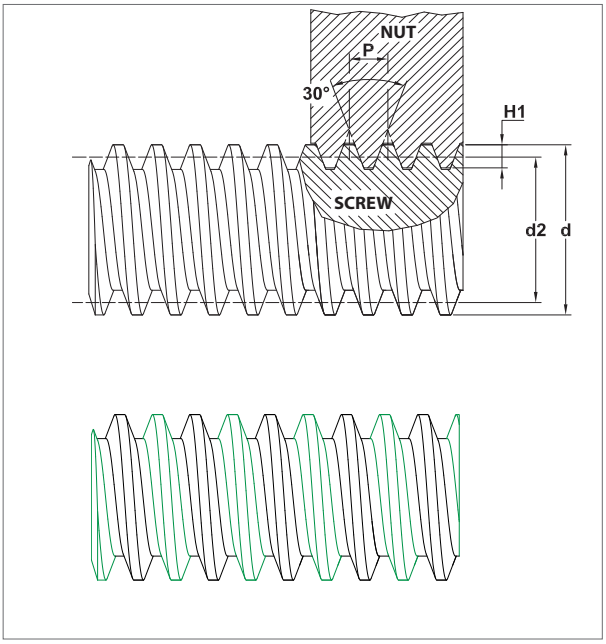
(3) Radial dimension of support between screw tooth and nut screw tooth.

S *Available stock*

R *Available on request*

Trapezoidal rolled screws
Carbon steel screws
2-start RAT range

Technical features	
Raw material	C22E 1.1151 C-20 carbon steel
Thread starts	2
Accuracy class	C8 = 0.100 mm on 300 mm
Maximum length	3000 mm

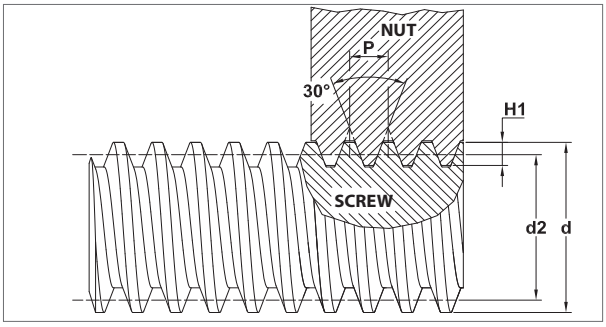


	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10^4 mm^4]	moment of resistance 10^3 mm^3	mass Kg/m
				min	max	min	max							
S	RAT12062D	Tr12x06 (P3)	RIGHT	11.764	12.000	10.164	10.415	0.5	10°21'	0.6	1.5	0.02	0,047	0.65
S	RAT14082D	Tr14x08 (P4)	RIGHT	13.700	14.000	11.608	11.905	0.5	12°03'	0.6	2	0.03	0,067	0.89
S	RAT16082D	Tr16x08 (P4)	RIGHT	15.700	16.000	13.608	13.905	0.3	10°21'	0.6	2	0,068	0,124	1.2
S	RAT18082D	Tr18x08 (P4)	RIGHT	17.700	18.000	15.608	15.905	0.3	9°03'	0.58	2	0,133	0,206	1.58
S	RAT20082D	Tr20x08 (P4)	RIGHT	19.700	20.000	17.608	17.905	0.2	8°03'	0.56	2	0,238	0,318	2.01
S	RAT22102D	Tr22x10 (P5)	RIGHT	21.665	22.000	19.080	19.394	0.2	9°16'	0.58	2.5	0,285	0,366	2.35
S	RAT25102D	Tr25x10 (P5)	RIGHT	24.665	25.000	22.080	22.394	0.2	8°03'	0.58	2.5	0.53	0.61	3.1
S	RAT30122D	Tr30x12 (P6)	RIGHT	29.625	30.000	26.507	26.882	0.2	8°03'	0.57	3	1,135	1.03	4.52
S	RAT40142D	Tr40x14 (P7)	RIGHT	39.575	40.000	35.977	36.375	0.2	7°01'	0.53	3.5	4.25	2.79	8.21

(1) Helix angle of average diameter
(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.
(3) Radial dimension of support between screw tooth and nut screw tooth.
S *Available stock*
R *Available on request*

Trapezoidal rolled screws
C-45 precision screw
RAT HC Precision range

Technical features	
Raw material	C45E 1.0503 C-45 carbon steel
Thread starts	1
Accuracy class	C7 = 0.050 mm on 300 mm
Maximum length	3000 mm



	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10^4 mm^4]	moment of resistance 10^3 mm^3	mass Kg/m
				min	max	min	max							
R	RATHCP16041D	Tr16x04	RIGHT	15.700	16.000	13.640	13.905	0.1	5°12'	0.46	2	0,068	0,124	1.2
R	RATHCP20041D	Tr20x04	RIGHT	19.700	20.000	17.640	17.905	0.07	4°03'	0.4	2	0,238	0,318	2.01
R	RATHCP25051D	Tr25x05	RIGHT	24.665	25.000	22.094	22.394	0.05	4°03'	0.4	2.5	0.53	0.61	3.1
R	RATHCP30061D	Tr30x06	RIGHT	29.625	30.000	26.547	26.882	0.04	4°03'	0.4	3	1,135	1.03	4.52
R	RATHCP40071D	Tr40x07	RIGHT	39.575	40.000	36.020	36.375	0.03	3°30'	0.37	3.5	4.25	2.79	8.21
R	RATHCP50081D	Tr50x08	RIGHT	49.550	50.000	45.468	45.868	0.03	3°10'	0.34	4	11.71	5.96	13.05

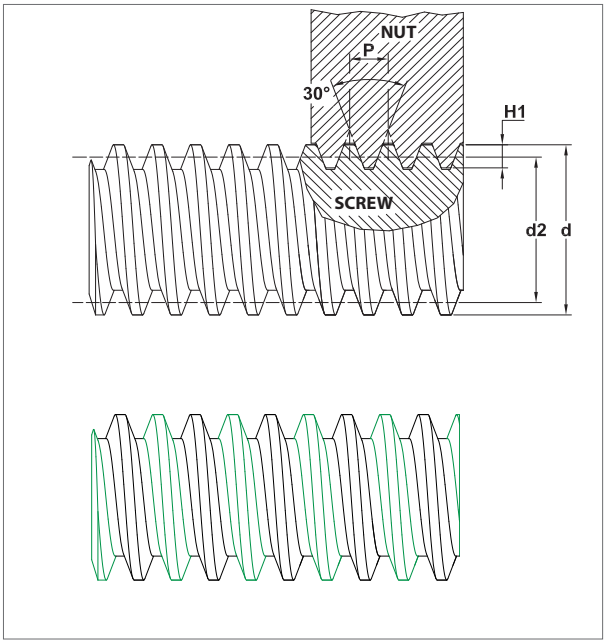
(1) Helix angle of average diameter
(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.
(3) Radial dimension of support between screw tooth and nut screw tooth.
S *Available stock*
R *Available on request*

Trapezoidal rolled screws

C-45 precision screw

2-start RAT HC Precision range

Technical features	
Raw material	C45E 1.0503 C-45 carbon steel
Thread starts	2
Accuracy class	C7 = 0.050 mm on 300 mm
Maximum length	3000 mm



	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10^4 mm^4]	moment of resistance 10^3 mm^3	mass Kg/m
				min	max	min	max							
R	RATHCP16082D	Tr16x08 (P4)	RIGHT	15.700	16.000	13.608	13.905	0.1	10°21'	0.6	2	0,068	0,124	1.2
R	RATHCP20082D	Tr20x08 (P4)	RIGHT	19.700	20.000	17.608	17.905	0.07	8°03'	0.56	2	0,238	0,318	2.01
R	RATHCP25102D	Tr25x10 (P5)	RIGHT	24.665	25.000	22.080	22.394	0.05	8°03'	0.58	2.5	0.53	0.61	3.1
R	RATHCP30122D	Tr30x12 (P6)	RIGHT	29.625	30.000	26.507	26.882	0.04	8°03'	0.57	3	1,135	1.03	4.52
R	RATHCP40142D	Tr40x14 (P7)	RIGHT	39.575	40.000	35.977	36.375	0.03	7°01'	0.53	3.5	4.25	2.79	8.21

(1) Helix angle of average diameter

(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.

(3) Radial dimension of support between screw tooth and nut screw tooth.

S *Available stock*

R *Available on request*

Trapezoidal rolled screws
High-resistance steel screws

Construction and performance characteristics

Trapezoidal thread profile rolled clamping screws. Resistance Class 8.8, with very high core and thread flank hardness performance.

Performance:
- Mechanical characteristics of the raw material in Resistance Class 8.8.
- Absence of heat treatment on the product obtained with relative:
  - Cost savings.
  - Elimination of post-treatment straightening phases.
- Superior wear resistance.
- Compatibility with surface treatments.
- Excellent mechanical workability and weldability.

Comparative tests with carbon steel rolled screws showed:
- breaking test under **traction** load **+31%**.
- test on the surface **hardness** of the thread wall: **+11%**.

Recommended uses

Tightening needs with adjustment and blocking of loads in a static situation.

Nuts

We recommend using it in combination with steel extra long nut screws (MACXL) to increase the thread support surface, even on small diameters.

Mechanical characteristics of raw material

Class 8.8 steel

Special resistance Class 8.8 steel at delivery. Cold deformation caused by the rolled thread further increases the strength of the thread flanks. Excellent mechanical workability and weldability.

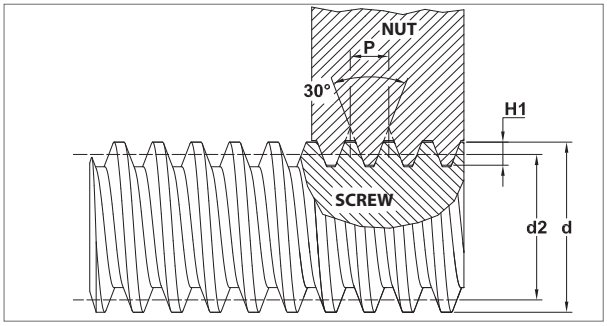
Technical data	RAT - RAT Heavy duty ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7e
Number of start threads	1
Available diameters:	16- 30 mm
Available pitches:	4 -6 mm
Direction of rotation:	right and left
Max length:	3000 mm
Accuracy class ISO 3408-3:	C8 = 0.100 mm on 300 mm
Straightness:	0.10 - 0.50 mm on 300 mm

Trapezoidal rolled screws

High-resistance steel screws

Heavy duty RAT range

Technical features	
Raw material	Class 8.8 steel
Thread starts	1
Accuracy class	C8 = 0.100 mm on 300 mm
Maximum length	3000 mm



	Item code	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	H1 mm (2)	mass Kg/m
				min	max	min	max				
S	RATH16041D	Tr16x04	RIGHT	15.700	16.000	13.640	13.905	0.3	5°12'	2	1.2
S	RATH16041S	Tr16x04 LH	LEFT	15.700	16.000	13.640	13.905	0.3	5°12'	2	1.2
S	RATH20041D	Tr20x04	RIGHT	19.700	20.000	17.640	17.905	0.2	4°03'	2	1.98
S	RATH20041S	Tr20x04 LH	LEFT	19.700	20.000	17.640	17.905	0.2	4°03'	2	1.98
S	RATH25051D	Tr25x05	RIGHT	24.665	25.000	22.094	22.394	0.2	4°03'	2.5	3.06
S	RATH25051S	Tr25x05 LH	LEFT	24.665	25.000	22.094	22.394	0.2	4°03'	2.5	3.06
S	RATH30061D	Tr30x06	RIGHT	29.625	30.000	26.547	26.882	0.1	4°03'	3	4.47
S	RATH30061S	Tr30x06 LH	LEFT	29.625	30.000	26.547	26.882	0.1	4°03'	3	4.47

(1) Helix angle of average diameter
(2) Radial dimension of support between screw tooth and nut screw tooth.
S *Available stock*
R *Available on request*

Trapezoidal rolled screws
Stainless steel screws

Construction and performance characteristics

Trapezoidal thread profile stainless steel rolled manoeuvring screws. Drives with stainless steel screws are an excellent solution for tightening and forward motion in mechanically difficult operating environments in contact with oxidising and corrosive agents.

Recommended uses

RIT304 range
Use in drives aimed at tightening or maneuvering with high loads and low feed speeds in humid and oxidising environments. The two-start version doubles the feed speed and is used for positioning in aggressive environments where extreme precision is not required. Suitable for solutions in the nautical sector.

RIT316 range
Use in drives aimed at maneuvering or positioning in highly aggressive environments. Suitable for solutions in the agricultural-food, chemical, pharmaceutical, oil, textile and paper sectors.

Stainless steel system

The RIT304 and RIT316 ranges can be coupled to modular nut screws with stainless steel bushing and threaded insert in plastic material (SWAP). This represents an excellent solution for a good efficiency of the system in drives aimed at forward motion and positioning.

Mechanical characteristics of raw material

1.4301 A2 AISI 304 stainless steel

Good resistance to corrosion by the elements agents, good workability, excellent weldability.

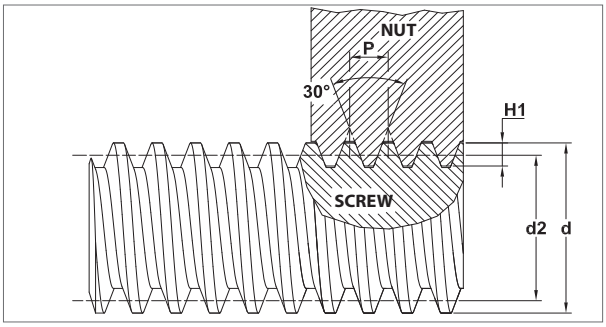
1.4401 A4 AISI 316 stainless steel

Excellent resistance to corrosion and acid-alkaline chemical aggressions, good weldability.

Technical data	RIT304 - RIT316 ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7e
Number of start threads	RIT304: 1 - 2 RIT316: 1
Available diameters:	
1-start thread	RIT304: 12 - 60 mm RIT316: 12 - 40 mm
2-start thread	RIT304: 16 - 40 mm
Available pitches:	
1-start thread	3 - 9 mm
2-start thread	8 - 14 mm
Direction of rotation:	
1-start thread	right and left
2-start thread	right
Max length:	3000 mm
Accuracy class ISO 3408-3:	
1-start thread	RIT304 = C8 = 0.100 mm on 300 mm RIT316 = C8 = 0.100 mm on 300 mm
2-start thread	RIT304 = C10 = 0.200 mm / 300 mm
Straightness:	
RIT 304	0.10 - 0.50 mm on 300 mm
RIT 316	0.10 - 0.50 mm on 300 mm

Trapezoidal rolled screws
AISI 304 stainless steel screws
RIT304 range

Technical features	
Raw material	1.4301 AISI 304 A2 Stainless steel
Thread starts	1
Accuracy class	C8 = 0.100 mm on 300 mm
Maximum length	3000 mm



	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10^4 mm^4]	moment of resistance 10^3 mm^3	mass Kg/m
				min	max	min	max							
S	RIT12031D	Tr12x03	RIGHT	11.764	12.000	10.191	10.415	0.5	5°12'	0.46	1.5	0.02	0.047	0.65
S	RIT12031S	Tr12x03 LH	LEFT	11.764	12.000	10.191	10.415	0.5	5°12'	0.46	1.5	0.02	0.047	0.65
S	RIT14041D	Tr14x04	RIGHT	13.700	14.000	11.640	11.905	0.5	6°03'	0.5	2	0.03	0.067	0.89
S	RIT14041S	Tr14X04 LH	LEFT	13.700	14.000	11.640	11.905	0.5	6°03'	0.5	2	0.03	0.067	0.89
S	RIT16041D	Tr16x04	RIGHT	15.700	16.000	13.640	13.905	0.3	5°12'	0.46	2	0.068	0.124	1.2
S	RIT16041S	Tr16x04 LH	LEFT	15.700	16.000	13.640	13.905	0.3	5°12'	0.46	2	0.068	0.124	1.2
S	RIT18041D	Tr18x04	RIGHT	17.700	18.000	15.640	15.905	0.3	4°33'	0.43	2	0.133	0.206	1.58
S	RIT18041S	Tr18x04 LH	LEFT	17.700	18.000	15.640	15.905	0.3	4°33'	0.43	2	0.133	0.206	1.58
S	RIT20041D	Tr20x04	RIGHT	19.700	20.000	17.640	17.905	0.2	4°03'	0.4	2	0.238	0.318	2.05
S	RIT20041S	Tr20x04 LH	LEFT	19.700	20.000	17.640	17.905	0.2	4°03'	0.4	2	0.238	0.318	2.05
S	RIT25051D	Tr25x05	RIGHT	24.665	25.000	22.094	22.394	0.2	4°03'	0.4	2.5	0.53	0.61	3.1
S	RIT25051S	Tr25x05 LH	LEFT	24.665	25.000	22.094	22.394	0.2	4°03'	0.4	2.5	0.53	0.61	3.1
S	RIT30061D	Tr30x06	RIGHT	29.625	30.000	26.547	26.882	0.1	4°03'	0.4	3	1.135	1.03	4.52
S	RIT30061S	Tr30x06 LH	LEFT	29.625	30.000	26.547	26.882	0.1	4°03'	0.4	3	1.135	1.03	4.52
S	RIT35061D	Tr35x06	RIGHT	34.625	35.000	31.547	31.882	0.1	3°25'	0.36	3	2.68	2.04	6.37
S	RIT35061S	Tr35x06 LH	LEFT	34.625	35.000	31.547	31.882	0.1	3°25'	0.36	3	2.68	2.04	6.37
S	RIT40071D	Tr40x07	RIGHT	39.575	40.000	36.020	36.375	0.1	3°30'	0.37	3.5	4.25	2.79	8.12
S	RIT40071S	Tr40x07 LH	LEFT	39.575	40.000	36.020	36.375	0.1	3°30	0.37	3.5	4.25	2.79	8.12
S	RIT50081D	Tr50x08	RIGHT	49.550	50.000	45.468	45.868	0.1	3°10'	0.34	4	11.71	5.96	13.05
S	RIT60091D	Tr60x09	RIGHT	59.500	60.000	54.935	55.360	0.2	2°57'	0.33	4.5	26.4	11	18.65

(1) Helix angle of average diameter

(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.

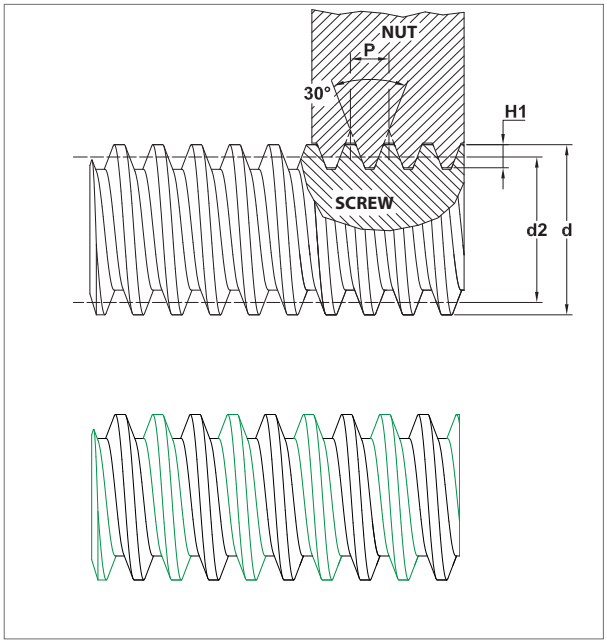
(3) Radial dimension of support between screw tooth and nut screw tooth.

S *Available stock*

R *Available on request*

Trapezoidal rolled screws
AISI 304 stainless steel screws
RIT304 range 2-start screws

Technical features	
Raw material	1.4301 AISI 304 A2 Stainless steel
Thread starts	2
Accuracy class	C10 = 0.200 mm on 300 mm
Maximum length	3000 mm



	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10^4 mm^4]	moment of resistance 10^3 mm^3	mass Kg/m
				min	max	min	max							
S	RIT16082D	Tr16x08 (P4)	RIGHT	15.700	16.000	13.608	13.905	0.3	10°21'	0.6	2	0,068	0,124	1.2
S	RIT20082D	Tr20x08 (P4)	RIGHT	19.700	20.000	17.608	17.905	0.2	8°03'	0.56	2	0,238	0,318	2.05
S	RIT25102D	Tr25x10 (P5)	RIGHT	24.665	25.000	22.080	22.394	0.2	8°03'	0.58	2.5	0.53	0.61	3.1
S	RIT30122D	Tr30x12 (P6)	RIGHT	29.625	30.000	26.507	26.882	0.2	8°03'	0.57	3	1,135	1.03	4.52
S	RIT40142D	Tr40x14 (P7)	RIGHT	39.575	40.000	35.977	36.375	0.2	7°01'	0.53	3.5	4.25	2.79	8.12

(1) Helix angle of average diameter

(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.

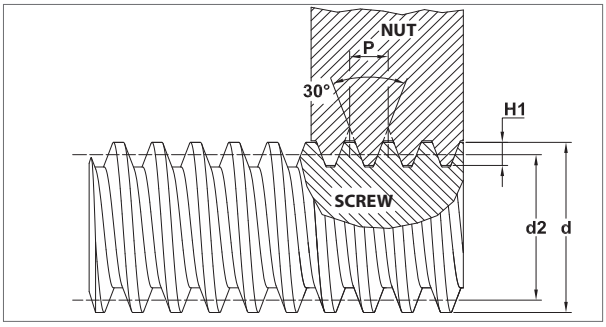
(3) Radial dimension of support between screw tooth and nut screw tooth.

S *Available stock*

R *Available on request*

Trapezoidal rolled screws
AISI 316 stainless steel screws
RIT316 range

Technical features	
Raw material	1.4401 AISI 316 A4 stainless steel
Thread starts	1
Accuracy class	C8 = 0.100 mm on 300 mm
Maximum length	3000 mm



	Code Item	Thread	Orientation	d		d2		Straightness	Helix angle α (1)	performance η (2)	H1 mm (3)	moment of inertia of a surface Iy [10⁴ mm⁴]	moment of resistance 10³ mm³	mass Kg/m
				min	max	min	max							
S	RIT31612031D	Tr12x03	RIGHT	11.764	12.000	10.191	10.415	0.5	5°12'	0.46	1.5	0.02	0,047	0.65
S	RIT31612031S	Tr12x03 LH	LEFT	11.764	12.000	10.191	10.415	0.5	5°12'	0.46	1.5	0.02	0,047	0.65
S	RIT31616041D	Tr16x04	RIGHT	15.700	16.000	13.640	13.905	0.3	5°12'	0.46	2	0,068	0,124	1.2
S	RIT31616041S	Tr16x04 LH	LEFT	15.700	16.000	13.640	13.905	0.3	5°12'	0.46	2	0,068	0,124	1.2
S	RIT31620041D	Tr20x04	RIGHT	19.700	20.000	17.640	17.905	0.2	4°03'	0.4	2	0,238	0,318	2.05
S	RIT31620041S	Tr20x04 LH	LEFT	19.700	20.000	17.640	17.905	0.2	4°03'	0.4	2	0,238	0,318	2.05
S	RIT31625051D	Tr25x05	RIGHT	24.665	25.000	22.094	22.394	0.2	4°03'	0.4	2.5	0.53	0.61	3.1
S	RIT31625051S	Tr25x05 LH	LEFT	24.665	25.000	22.094	22.394	0.2	4°03'	0.4	2.5	0.53	0.61	3.1
S	RIT31630061D	Tr30x06	RIGHT	29.625	30.000	26.547	26.882	0.1	4°03'	0.4	3	1,135	1.03	4.52
S	RIT31630061S	Tr30x06 LH	LEFT	29.625	30.000	26.547	26.882	0.1	4°03'	0.4	3	1,135	1.03	4.52
S	RIT31640071D	Tr40x07	RIGHT	39.575	40.000	36.020	36.375	0.1	3°30'	0.37	3.5	4.25	2.79	8.12
S	RIT31640071S	Tr40x07 LH	LEFT	39.575	40.000	36.020	36.375	0.1	3°30	0.37	3.5	4.25	2.79	8.12

(1) Helix angle of average diameter

(2) Theoretical efficiency for the conversion of a rotation into a longitudinal movement with friction coefficient I = 0.1. The ACTUAL PERFORMANCE data obtained experimentally through laboratory tests are available in the Technical Information chapter.

(3) Radial dimension of support between screw tooth and nut screw tooth.

S *Available stock*

R *Available on request*

Construction and performance characteristics

Leaded steel nuts with trapezoidal thread The thread is obtained by chip removal, by means of a special process which ensures that no "vibration" is exerted on the thread and by chamfering the thread crest. Recommended for manual adjustment and tightening actions.

Recommended uses

MAC range
Cylindrical nuts. Length of the threaded portion sized for tightening tasks. Suitable for insertion and fixing inside pipes or hollow structures. Convenient for customised reworking.

MACXL range
Extra long cylindrical nuts to increase the contact surface between threads. Suitable for heavy tightening. Recommended for use in pairs with RAT Heavy duty screw range.

MAF range
Cylindrical nut screws with pre-drilled flange for Allen fixing screws.

MAE range
Hexagonal nuts. Particularly convenient for manual adjustments with key.

MAQ and MAQF range
Square parallelepiped nuts. Length of the threaded portion sized for tightening tasks. The MAQF range features pre-drilled items for Allen fixing screws.

Mechanical characteristics of raw material

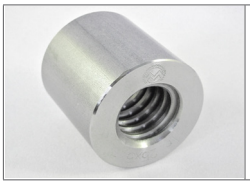
11SMnPb37 1.0737 Leaded steel

Low carbon steel, with S and Pb. The Pb content remains largely within the maximum limits set by the legislation on the limitation of hazardous substances in electrical and electronic equipment. Wire and electrode weldable steel (MIG-MAG).

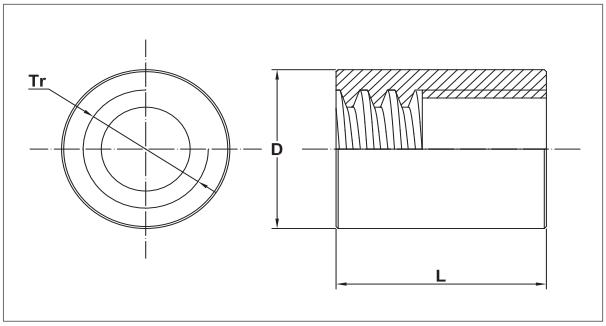
Technical data	MAC - MACXL - MAF - MAE MAQ - MAQF ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
1-start thread	12 - 80 mm
2-start thread	12 - 40 mm
Available pitches:	
1-start thread	3 - 10 mm
2-start thread	6 - 14 mm
Direction of rotation:	
1-start thread	right and left
2-start thread	right
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.25 mm
standard radial tolerance	0.30 mm

Full nuts
Steel nuts
MAC cylindrical range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm



Suitable for tightening work. Suitable for insertion and fixing inside pipes or hollow structures. Convenient for customised reworking.



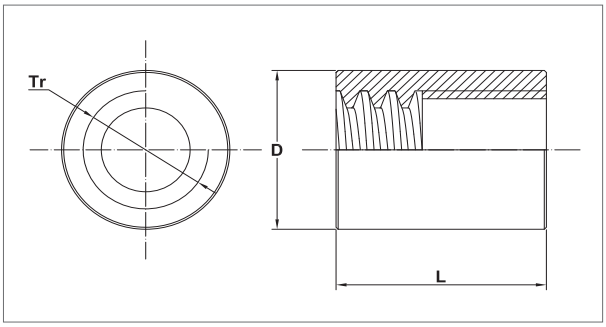
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MAC12031D	Tr12x03	right	36	36	250	593.76	0.34
S	MAC12031S	Tr12x03 LH	left	36	36	250	593.76	0.34
S	MAC14041D	Tr14x04	right	36	36	245	678.58	0.35
S	MAC14041S	Tr14X04 LH	left	36	36	245	678.58	0.35
S	MAC16041D	Tr16x04	right	36	36	230	791.68	0.32
S	MAC16041S	Tr16x04 LH	left	36	36	230	791.68	0.32
S	MAC18041D	Tr18x04	right	36	36	220	904.77	0.32
S	MAC18041S	Tr18x04 LH	left	36	36	220	904.77	0.32
S	MAC20041D	Tr20x04	right	40	40	300	1130.97	0.25
S	MAC20041S	Tr20x04 LH	left	40	40	395	1130.97	0.25
S	MAC22051D	Tr22x05	right	40	40	285	1225.22	0.28
S	MAC22051S	Tr22x05 LH	left	40	40	280	1225.22	0.28
S	MAC25051D	Tr25x05	right	45	45	400	1590.43	0.26
S	MAC25051S	Tr25x05 LH	left	45	45	395	1590.43	0.26
S	MAC28051D	Tr28x05	right	45	45	360	1802.48	0.25
S	MAC28051S	Tr28x05 LH	left	45	45	360	1802.48	0.25
S	MAC30061D	Tr30x06	right	50	50	520	2120.57	0.26
S	MAC30061S	Tr30x06 LH	left	50	50	515	2120.57	0.26
S	MAC35061D	Tr35x06	right	55	55	650	2764.6	0.22
S	MAC35061S	Tr35x06 LH	left	55	55	650	2764.6	0.22
S	MAC36061D	Tr36x06	right	55	55	635	2851	0.22
S	MAC36061S	Tr36x06 LH	left	55	55	635	2851	0.22
S	MAC40071D	Tr40x07	right	60	60	800	3440.04	0.24
S	MAC40071S	Tr40x07 LH	left	60	60	795	3440.04	0.24
S	MAC45081D	Tr45x08	right	65	65	960	4186.17	0.24
S	MAC45081S	Tr45x08 LH	left	65	65	960	4186.17	0.24
S	MAC50081D	Tr50x08	right	70	70	1110	5057.96	0.24
S	MAC50081S	Tr50x08 LH	left	70	70	1110	5057.96	0.24
S	MAC55091D	Tr55x09	right	80	80	1760	6346.01	0.23
S	MAC60091D	Tr60x09	right	80	80	1500	6974.33	0.23
S	MAC60091S	Tr60x09 LH	left	80	80	1500	6974.33	0.23
S	MAC70101D	Tr70x10	right	100	100	3875	10210.17	0.22
S	MAC80101D	Tr80x10	right	120	120	8080	11780.27	0.22

S *Available stock*
R *Available on request*

Full nuts
Steel nuts
MAC 2-start cylindrical range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	2
Bushing tolerances	
D	h9
L	± 0.1 mm

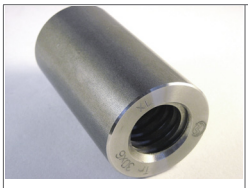
Suitable for tightening work. Suitable for insertion and fixing inside pipes or hollow structures. Convenient for customised reworking.



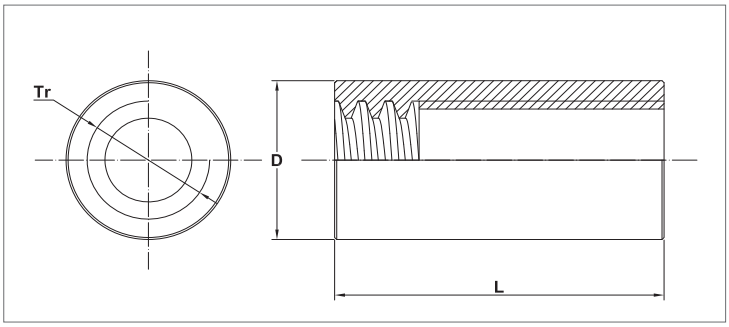
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MAC12062D	Tr12x06 (P3)	right	36	36	250	593.76	0.37
S	MAC14082D	Tr14x08 (P4)	right	36	36	245	678.58	0.46
S	MAC16082D	Tr16x08 (P4)	right	36	36	230	791.68	0.36
S	MAC18082D	Tr18x08 (P4)	right	36	36	220	904.77	0.35
S	MAC20082D	Tr20x08 (P4)	right	40	40	300	1130.97	0.34
S	MAC22102D	Tr22x10 (P5)	right	40	40	285	1225.22	0.38
S	MAC25102D	Tr25x10 (P5)	right	45	45	400	1590.43	0.36
S	MAC30122D	Tr30x12 (P6)	right	50	50	520	2120.57	0.34
S	MAC40142D	Tr40x14 (P7)	right	60	60	800	3440.04	0.36

S Available stock
R Available on request

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm



Suitable for heavy duty tightening work.
Suitable for heavy duty tightening. Recommended for use in pairs with the RAT heavy duty screw range. Convenient for customised reworking.

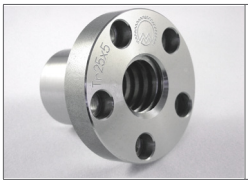


	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²
S	MACXL16041D	Tr16x04	right	36	48	305	1055.57
S	MACXL20041D	Tr20x04	right	40	60	450	1696.46
S	MACXL25051D	Tr25x05	right	45	75	665	2650.71
S	MACXL30061D	Tr30x06	right	50	90	935	3817.03

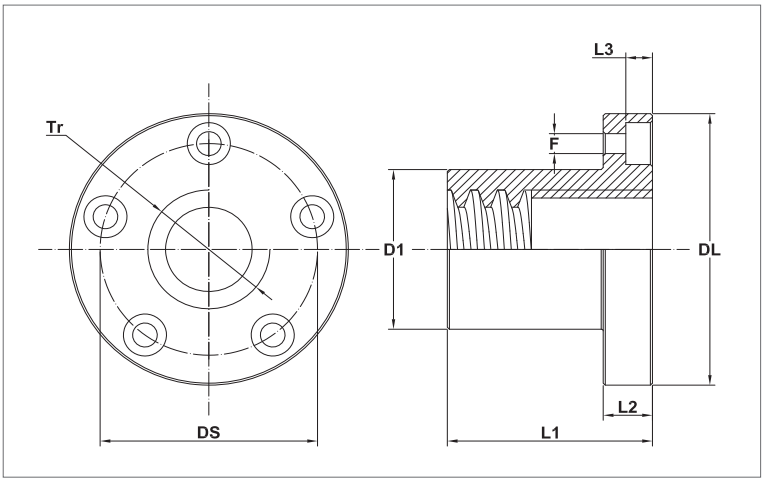
S *Available stock*
R *Available on request*

Full nuts
Steel nuts
MAF Flanged Range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	1
Bushing tolerances	
D1	h7
DL, DS, L1, L2, L3	± 0.1 mm



Suitable for tightening work, pre-drilled flange for assembly with Allen screws.

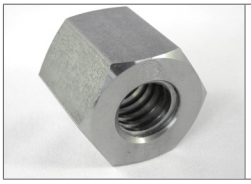


	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
S	MAF16041D	Tr16x04	right	22	45	32	30	10	6	4	M 5	130	659.73	0.37
S	MAF20041D	Tr20x04	right	30	52	40	40	12	6	5	M 5	230	1130.97	0.33
S	MAF25051D	Tr25x05	right	35	62	48	45	12	6.5	5	M 6	365	1590.43	0.29
S	MAF30061D	Tr30x06	right	40	68	53	50	12	6.5	5	M 6	470	2120.57	0.3
S	MAF40071D	Tr40x07	right	55	84	68	65	12	6.5	6	M 6	945	3726.71	0.28
S	MAF50081D	Tr50x08	right	65	100	80	80	15	9	6	M 8	1490	5780.53	0.25

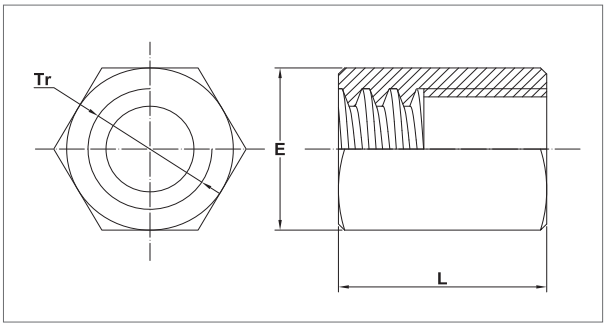
S *Available stock*
R *Available on request*

Full nuts
Steel nuts
MAE hexagonal range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	1
Bushing tolerances	
E	h9
L	± 0.1 mm



Suitable for tightening work. Particularly convenient for manual adjustments with key.

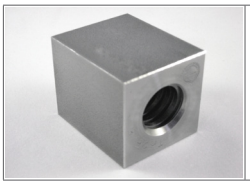


	Code Item	Thread	Orientation	E mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MAE16041D	Tr16x04	right	27	24	83	791.68	0.32
S	MAE20041D	Tr20x04	right	30	30	112	1130.97	0.25
S	MAE25051D	Tr25x05	right	45	45	450	1590.43	0.26
S	MAE30061D	Tr30x06	right	50	50	585	2120.57	0.26
S	MAE40071D	Tr40x07	right	60	60	906	3440.04	0.24
S	MAE50081D	Tr50x08	right	70	70	1316	5057.96	0.24

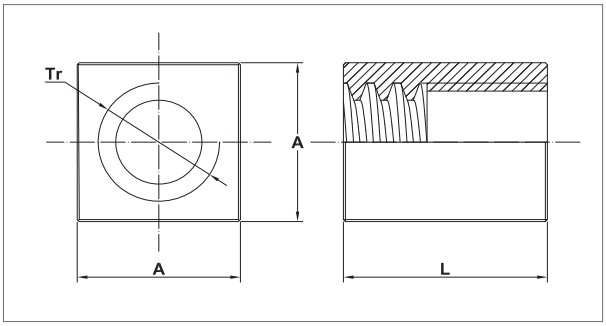
S Available stock
R Available on request

Full nuts
Steel nuts
MAQ square range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	1
Bushing tolerances	
A	h11
L	± 0.1 mm



Suitable for tightening work. Convenient for customised reworking.

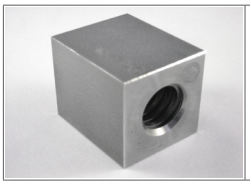


	Code Item	Thread	Orientation	A mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MAQ12031D	Tr12x03	right	25	30	122	494.8	0.34
S	MAQ12031S	Tr12x03 LH	left	25	30	122	494.8	0.34
S	MAQ14041D	Tr14x04	right	30	35	208	659.73	0.35
S	MAQ14041S	Tr14X04 LH	left	30	35	208	659.73	0.35
S	MAQ16041D	Tr16x04	right	30	40	198	769.69	0.32
S	MAQ16041S	Tr16x04 LH	left	30	40	198	769.69	0.32
S	MAQ18041D	Tr18x04	right	35	40	310	1005.31	0.32
S	MAQ18041S	Tr18x04 LH	left	35	40	310	1005.31	0.32
S	MAQ20041D	Tr20x04	right	40	50	512	1413.72	0.25
S	MAQ20041S	Tr20x04 LH	left	40	50	512	1413.72	0.25
S	MAQ22051D	Tr22x05	right	40	50	490	1531.53	0.28
S	MAQ22051S	Tr22x05 LH	left	40	50	490	1531.53	0.28
S	MAQ25051D	Tr25x05	right	45	55	678	1943.86	0.26
S	MAQ25051S	Tr25x05 LH	left	45	55	678	1943.86	0.26
S	MAQ28051D	Tr28x05	right	45	55	627	2203.04	0.25
S	MAQ28051S	Tr28x05 LH	left	45	55	627	2203.04	0.25
S	MAQ30061D	Tr30x06	right	50	60	873	2544.69	0.26
S	MAQ30061S	Tr30x06 LH	left	50	60	873	2544.69	0.26
S	MAQ35061D	Tr35x06	right	60	75	1611	3769.91	0.22
S	MAQ35061S	Tr35x06 LH	left	60	75	1611	3769.91	0.22
S	MAQ40071D	Tr40x07	right	60	75	1442	4300.05	0.24
S	MAQ40071S	Tr40x07 LH	left	60	75	1442	4300.05	0.24
S	MAQ45081D	Tr45x08	right	70	90	2430	5796.24	0.24
S	MAQ45081S	Tr45x08 LH	left	70	90	2430	5796.24	0.24
S	MAQ50081D	Tr50x08	right	70	90	2170	6503.1	0.24
S	MAQ50081S	Tr50x08 LH	left	70	90	2170	6503.1	0.24
S	MAQ55091D	Tr55x09	right	80	100	3305	7932.52	0.23
S	MAQ60091D	Tr60x09	right	80	100	2990	8717.92	0.23
S	MAQ60091S	Tr60x09 LH	left	80	100	2990	8717.92	0.23
S	MAQ70101D	Tr70x10	right	100	120	3020	12252.2	0.22

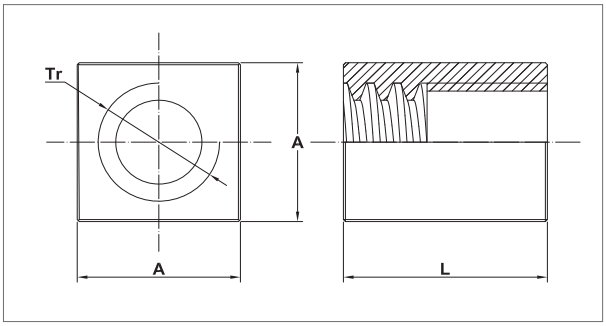
S *Available stock*
R *Available on request*

Full nuts
Steel nuts
MAQ 2-start square range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	2
Bushing tolerances	
A	h11
L	± 0.1 mm



Suitable for tightening work. Convenient for customised reworking.

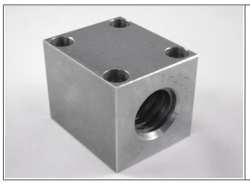


	Code Item	Thread	Orientation	A mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MAQ12062D	Tr12x06 (P3)	right	25	30	122	494.8	0.37
S	MAQ14082D	Tr14x08 (P4)	right	30	35	208	659.73	0.46
S	MAQ16082D	Tr16x08 (P4)	right	30	40	198	769.69	0.36
S	MAQ18082D	Tr18x08 (P4)	right	35	40	310	1005.31	0.35
S	MAQ20082D	Tr20x08 (P4)	right	40	50	512	1413.72	0.34
S	MAQ22102D	Tr22x10 (P5)	right	40	50	490	1531.53	0.38
S	MAQ25102D	Tr25x10 (P5)	right	45	55	678	1943.86	0.36
S	MAQ30122D	Tr30x12 (P6)	right	50	60	873	2544.69	0.34
S	MAQ40142D	Tr40x14 (P7)	right	60	75	1442	4300.05	0.36

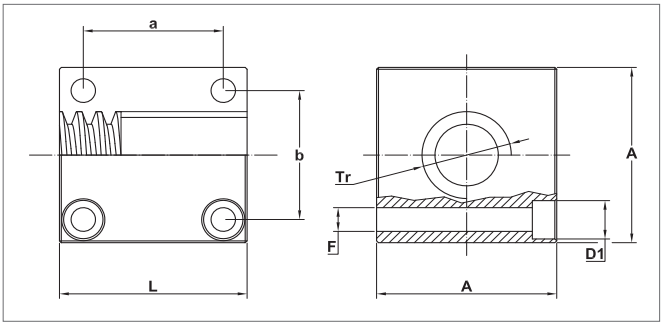
S Available stock
R Available on request

Full nuts
Steel nuts
MAQF Pre-drilled Square Range

Technical features	
Raw material	11SMnPb37 1.0737 steel
Thread starts	1
Bushing tolerances	
A	h11
L	± 0.1 mm



Suitable for tightening work. Pre-drilled for assembly with Allen screws.



	Code Item	Thread	Orientation	A mm	L mm	a mm	b mm	D1 screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
S	MAQF12031D	Tr12x03	right	25	30	20	17	M4	107	494.8	0.34
S	MAQF12031S	Tr12x03 LH	left	25	30	20	17	M4	107	494.8	0.34
S	MAQF14041D	Tr14x04	right	30	35	24	20	M5	181	659.73	0.35
S	MAQF14041S	Tr14X04 LH	left	30	35	24	20	M5	181	659.73	0.35
S	MAQF16041D	Tr16x04	right	35	40	26	24	M5	280	769.69	0.32
S	MAQF16041S	Tr16x04 LH	left	35	40	26	24	M5	280	769.69	0.32
S	MAQF18041D	Tr18x04	right	35	40	26	24	M5	267	1005.31	0.32
S	MAQF18041S	Tr18x04 LH	left	35	40	26	24	M5	267	1005.31	0.32
S	MAQF20041D	Tr20x04	right	40	50	38	28	M6	465	1413.72	0.25
S	MAQF20041S	Tr20x04 LH	left	40	50	38	28	M6	465	1413.72	0.25
S	MAQF22051D	Tr22x05	right	40	50	38	29	M6	443	1531.53	0.28
S	MAQF22051S	Tr22x05 LH	left	40	50	38	29	M6	443	1531.53	0.28
S	MAQF25051D	Tr25x05	right	45	55	40	33	M6	620	1943.86	0.26
S	MAQF25051S	Tr25x05 LH	left	45	55	40	33	M6	620	1943.86	0.26
S	MAQF28051D	Tr28x05	right	45	55	40	34	M6	572	2203.04	0.25
S	MAQF28051S	Tr28x05 LH	left	45	55	40	34	M6	572	2203.04	0.25
S	MAQF30061D	Tr30x06	right	50	60	49	38	M6	817	2544.69	0.26
S	MAQF30061S	Tr30x06 LH	left	50	60	49	38	M6	817	2544.69	0.26
S	MAQF35061D	Tr35x06	right	60	75	56	45	M8	1476	3769.91	0.22
S	MAQF35061S	Tr35x06 LH	left	60	75	56	45	M8	1476	3769.91	0.22
S	MAQF40071D	Tr40x07	right	60	75	55	49	M8*	1344	4300.05	0.24
S	MAQF40071S	Tr40x07 LH	left	60	75	55	49	M8*	1344	4300.05	0.24
S	MAQF45081D	Tr45x08	right	70	90	70	56	M8	2315	5796.24	0.24
S	MAQF45081S	Tr45x08 LH	left	70	90	70	56	M8	2315	5796.24	0.24
S	MAQF50081D	Tr50x08	right	70	90	70	59	M8*	2055	6503.1	0.24
S	MAQF50081S	Tr50x08 LH	left	70	90	70	59	M8*	2055	6503.1	0.24
S	MAQF55091D	Tr55x09	right	80	100	80	65	M8	3150	7932.52	0.23
S	MAQF60091D	Tr60x09	right	80	100	80	69	M8*	2845	8717.92	0.23
S	MAQF70101D	Tr70x10	right	100	120	100	85	M8	5830	12252.2	0.22

(*) special Allen fixing screws included

S *Available stock*

R *Available on request*

Full nuts
CuSn12 bronze nuts

Construction and performance characteristics

CuSn12 bronze nuts with Trapezoidal thread. The thread is obtained by chip removal, by means of a special process which ensures that no "vibration" is exerted on the thread and by chamfering the thread crest. Recommended for load handling at medium-low speeds. Good resistance to wear. **90-100 degree HB hardness**.

Recommended uses

MBC range
Cylindrical nuts. Length of the threaded portion sized for maneuvering work. Suitable for insertion and locking inside pipes or hollow structures.

MBF range
Pre-drilled flanged nuts for fixing with Allen screws. Flexible use and quick assembly.

MBF XL range
Extra long thread flanged nuts. Superior resistance to wear thanks to the larger contact surface of the threads.

MBQ range
Square parallelepiped nuts. Length of the threaded portion sized for maneuvering work. Suitable for insertion and locking inside structures.

MBQF range
Parallelepiped-shaped square nuts. The pre-drilling to house Allen fixing screws is very useful, as it allows quick use during assembly and mechanical fixing.

Mechanical characteristics of raw material

UNI 7013-72 CuSn12 bronze

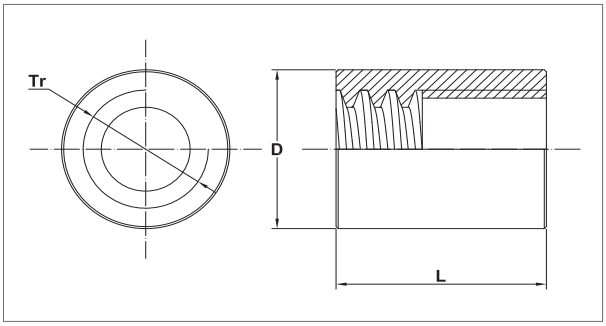
Bronze with 12% tin. It has superior properties of hardness and resistance to wear by friction compared to industrial bronzes. This solution provides an excellent compromise between good system efficiency (reduced bronze-steel friction) and resistance to wear of the nut. Production cycle managed with casting certifications to guarantee the purity of the alloy used.

Technical data	MBC - MBF - MBFXL - MBQ MBQF ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
1-start thread	10 - 80 mm
2-start thread	12 - 40 mm
Available pitches:	
1-start thread	3 - 10 mm
2-start thread	6 - 14 mm
Direction of rotation:	
1-start thread	right and left
2-start thread	right
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 mm in progression on the diameters

Full nuts
CuSn12 bronze nuts
MBC cylindrical range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	1
Bushing tolerances	
D	h7
L	± 0.1 mm

Suitable for maneuvering work.
Suitable for insertion and locking inside pipes or hollow structures.
Convenient for customised reworking.



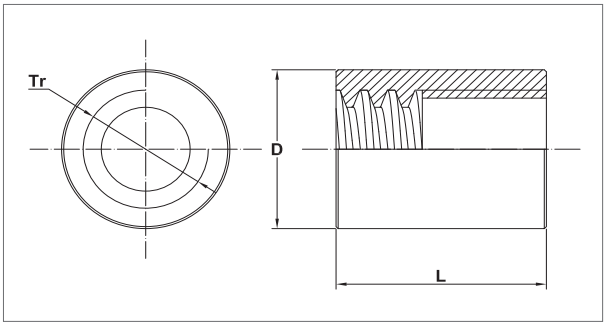
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MBC10031D	Tr10x03	right	20	20	50	480.66	0.35
S	MBC12031D	Tr12x03	right	36	36	250	593.76	0.35
S	MBC12031S	Tr12x03 LH	left	36	36	250	593.76	0.35
S	MBC14041D	Tr14x04	right	36	36	245	678.58	0.37
S	MBC14041S	Tr14X04 LH	left	36	36	245	678.58	0.37
S	MBC16041D	Tr16x04	right	36	36	230	791.68	0.37
S	MBC16041S	Tr16x04 LH	left	36	36	230	791.68	0.37
S	MBC18041D	Tr18x04	right	36	36	220	904.77	0.34
S	MBC18041S	Tr18x04 LH	left	36	36	220	904.77	0.34
S	MBC20041D	Tr20x04	right	40	40	367	1130.97	0.33
S	MBC20041S	Tr20x04 LH	left	40	40	367	1130.97	0.33
S	MBC22051D	Tr22x05	right	40	40	285	1225.22	0.29
S	MBC22051S	Tr22x05 LH	left	40	40	280	1225.22	0.29
S	MBC25051D	Tr25x05	right	45	45	492	1590.43	0.29
S	MBC25051S	Tr25x05 LH	left	45	45	492	1590.43	0.29
S	MBC28051D	Tr28x05	right	45	45	360	1802.48	0.28
S	MBC28051S	Tr28x05 LH	left	45	45	360	1802.48	0.28
S	MBC30061D	Tr30x06	right	50	50	520	2120.57	0.3
S	MBC30061S	Tr30x06 LH	left	50	50	515	2120.57	0.3
S	MBC35061D	Tr35x06	right	55	55	650	2764.6	0.27
S	MBC35061S	Tr35x06 LH	left	55	55	650	2764.6	0.27
S	MBC36061D	Tr36x06	right	55	55	638	2851	0.27
S	MBC36061S	Tr36x06 LH	left	55	55	638	2851	0.27
S	MBC40071D	Tr40x07	right	60	60	800	3440.04	0.28
S	MBC40071S	Tr40x07 LH	left	60	60	795	3440.04	0.28
S	MBC45081D	Tr45x08	right	65	65	960	4186.17	0.28
S	MBC45081S	Tr45x08 LH	left	65	65	960	4186.17	0.28
S	MBC50081D	Tr50x08	right	70	70	1110	5057.96	0.25
S	MBC50081S	Tr50x08 LH	left	70	70	1110	5057.96	0.25
S	MBC55091D	Tr55x09	right	80	80	1760	6346.01	0.26
S	MBC60091D	Tr60x09	right	80	80	1500	6974.33	0.25
S	MBC60091S	Tr60x09 LH	left	80	80	1500	6974.33	0.25
S	MBC70101D	Tr70x10	right	100	100	3875	10210.17	0.24

S Available stock
R Available on request

Full nuts
CuSn12 bronze nuts
MBC 2-start cylindrical range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	2
Bushing tolerances	
D	h7
L	± 0.1 mm

Suitable for maneuvering work.
Suitable for insertion and locking inside pipes or hollow structures.
Convenient for customised reworking.



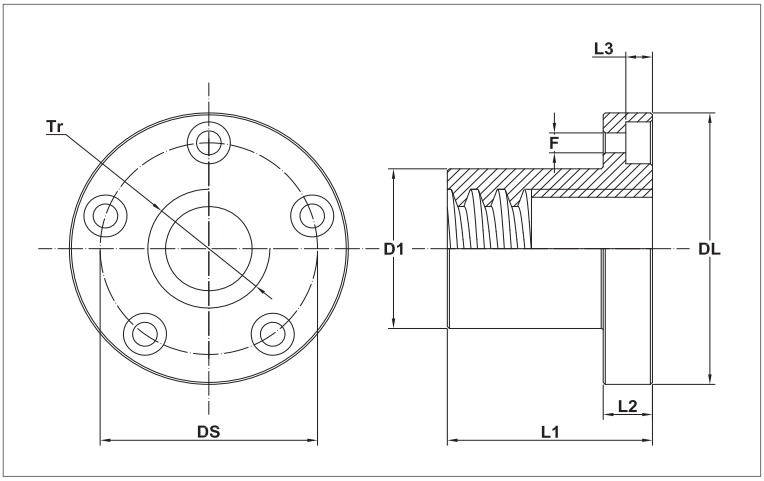
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MBC12062D	Tr12x06 (P3)	right	36	36	250	593.76	0.39
S	MBC14082D	Tr14x08 (P4)	right	36	36	245	678.58	0.49
S	MBC16082D	Tr16x08 (P4)	right	36	36	230	791.68	0.43
S	MBC18082D	Tr18x08 (P4)	right	36	36	220	904.77	0.37
S	MBC20082D	Tr20x08 (P4)	right	40	40	300	1130.97	0.35
S	MBC22102D	Tr22x10 (P5)	right	40	40	285	1225.22	0.39
S	MBC25102D	Tr25x10 (P5)	right	45	45	400	1590.43	0.39
S	MBC30122D	Tr30x12 (P6)	right	50	50	520	2120.57	0.39
S	MBC40142D	Tr40x14 (P7)	right	60	60	800	3440.04	0.38

S Available stock
R Available on request

Full nuts
CuSn12 bronze nuts
MBF Flanged Range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	1
Bushing tolerances	
D1	h7
DL,DS,L1,L2,L3	± 0.1 mm

Suitable for maneuvering work, pre-drilled flange for mounting with Allen screws.



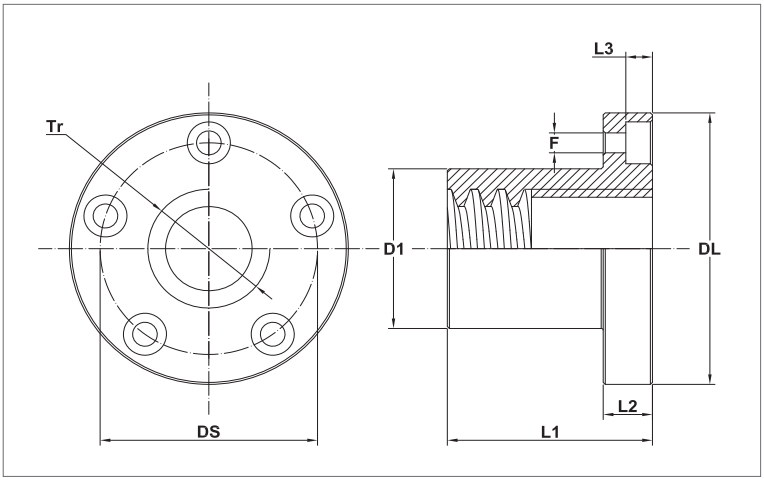
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
S	MBF10031D	Tr10x03	right	18	37	26	22	8	5	4	M 4	255	293.73	0.35
S	MBF12031D	Tr12x03	right	18	37	26	22	8	5	4	M 4	250	362.85	0.35
S	MBF12031S	Tr12x03 LH	left	18	37	26	22	8	5	4	M 4	250	362.85	0.35
S	MBF14041D	Tr14x04	right	20	42	30	25	10	6	4	M 5	245	471.23	0.37
S	MBF14041S	Tr14X04 LH	left	20	42	30	25	10	6	4	M 5	245	471.23	0.37
S	MBF16041D	Tr16x04	right	22	45	32	30	10	6	4	M 5	230	659.73	0.37
S	MBF16041S	Tr16x04 LH	left	22	45	32	30	10	6	4	M 5	230	659.73	0.37
S	MBF18041D	Tr18x04	right	25	48	35	35	10	6	4	M 5	220	879.64	0.34
S	MBF18041S	Tr18x04 LH	left	25	48	35	35	10	6	4	M 5	220	879.64	0.34
S	MBF20041D	Tr20x04	right	30	52	40	40	10	6	5	M 5	300	1130.97	0.33
S	MBF20041S	Tr20x04 LH	left	30	52	40	40	10	6	5	M 5	395	1130.97	0.33
S	MBF22051D	Tr22x05	right	30	52	40	40	10	6	5	M 5	285	1225.22	0.29
S	MBF22051S	Tr22x05 LH	left	30	52	40	40	10	6	5	M 5	280	1225.22	0.29
S	MBF25051D	Tr25x05	right	35	62	48	45	12	6.5	5	M 6	400	1590.43	0.29
S	MBF25051S	Tr25x05 LH	left	35	62	48	45	12	6.5	5	M 6	395	1590.43	0.29
S	MBF28051D	Tr28x05	right	40	68	53	50	12	6.5	5	M 6	360	2002.76	0.28
S	MBF28051S	Tr28x05 LH	left	40	68	53	50	12	6.5	5	M 6	360	2002.76	0.28
S	MBF30061D	Tr30x06	right	40	68	53	50	12	6.5	5	M 6	520	2120.57	0.3
S	MBF30061S	Tr30x06 LH	left	40	68	53	50	12	6.5	5	M 6	515	2120.57	0.3
S	MBF35061D	Tr35x06	right	50	78	63	60	12	6.5	6	M 6	650	3015.92	0.27
S	MBF35061S	Tr35x06 LH	left	50	78	63	60	12	6.5	6	M 6	650	3015.92	0.27
S	MBF36061D	Tr36x06	right	50	78	63	60	12	6.5	6	M 6	635	3110.18	0.27
S	MBF36061S	Tr36x06 LH	left	50	78	63	60	12	6.5	6	M 6	635	3110.18	0.27
S	MBF40071D	Tr40x07	right	55	84	68	65	12	6.5	6	M 6	800	3726.71	0.28
S	MBF40071S	Tr40x07 LH	left	55	84	68	65	12	6.5	6	M 6	795	3726.71	0.28
S	MBF45081D	Tr45x08	right	55	90	72	65	15	9	6	M 8	960	4186.17	0.28
S	MBF45081S	Tr45x08 LH	left	55	90	72	65	15	9	6	M 8	960	4186.17	0.28
S	MBF50081D	Tr50x08	right	65	100	80	80	15	9	6	M 8	1110	5780.53	0.25
S	MBF50081S	Tr50x08 LH	left	65	100	80	80	15	9	6	M 8	1110	5780.53	0.25
S	MBF55091D	Tr55x09	right	70	120	95	80	18	10.5	6	M 10	1760	6346.01	0.26
S	MBF60091D	Tr60x09	right	75	120	95	100	18	10.5	6	M 10	1500	8717.91	0.25
S	MBF60091S	Tr60x09 LH	left	75	120	95	100	18	10.5	6	M 10	1500	8717.91	0.25

S *Available stock*
R *Available on request*

Full nuts
CuSn12 bronze nuts
MBF 2-start Flanged range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	2
Bushing tolerances	
D1	h7
DL,DS,L1,L2,L3	± 0.1 mm

Suitable for maneuvering work, pre-drilled flange for mounting with Allen screws.



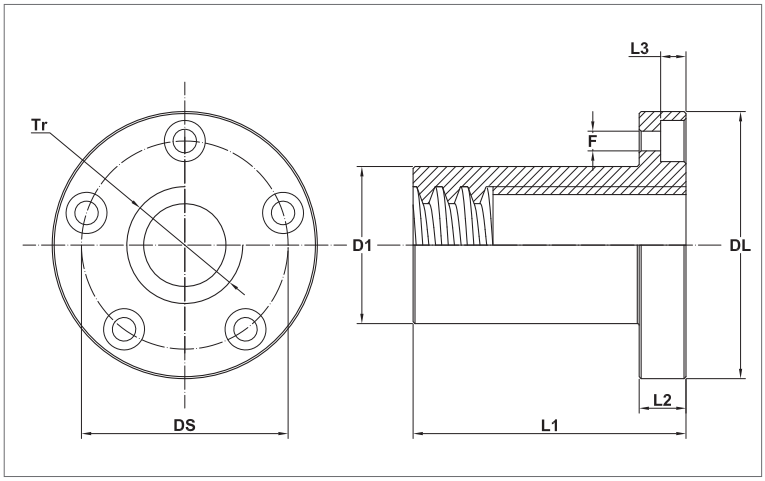
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
S	MBF12062D	Tr12x06 (P3)	right	18	37	26	22	8	5	4	M 4	250	362.85	0.39
S	MBF14082D	Tr14x08 (P4)	right	20	42	30	25	10	6	4	M 5	245	471.23	0.49
S	MBF16082D	Tr16x08 (P4)	right	22	45	32	30	10	6	4	M 5	230	659.73	0.43
S	MBF18082D	Tr18x08 (P4)	right	25	48	35	35	10	6	4	M 5	220	879.64	0.37
S	MBF20082D	Tr20x08 (P4)	right	30	52	40	40	10	6	5	M 5	300	1130.97	0.35
S	MBF22102D	Tr22x10 (P5)	right	30	52	40	40	10	6	5	M 5	285	1225.22	0.39
S	MBF25102D	Tr25x10 (P5)	right	35	62	48	45	12	6.5	5	M 6	400	1590.43	0.39
S	MBF30122D	Tr30x12 (P6)	right	40	68	53	50	12	6.5	5	M 6	520	2120.57	0.39
S	MBF40142D	Tr40x14 (P7)	right	55	84	68	65	12	6.5	6	M 6	800	3726.71	0.38

S *Available stock*
R *Available on request*

Full nuts
CuSn12 bronze nuts
Extra long Flanged range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	1 - 2
Bushing tolerances	
D1	h7
DL,DS,L1,L2,L3	± 0.1 mm

Suitable for maneuvering and handling high loads, pre-drilled flange for assembly with Allen screws.



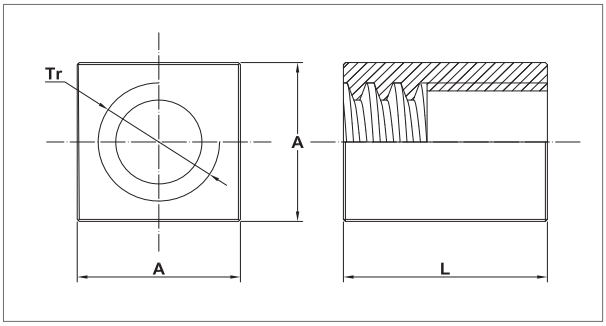
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
S	MBFXL16041D	Tr16x04	right	22	45	32	48	10	6	4	M 5	190	1 055,58	0.37
S	MBFXL16041S	Tr16x04 LH	left	22	45	32	48	10	6	4	M 5	190	1 055,58	0.37
S	MBFXL16082D	Tr16x08 (P4)	right	22	45	32	48	10	6	4	M 5	190	1 055,58	0.43
S	MBFXL20041D	Tr20x04	right	30	52	40	60	10	6	5	M 5	370	1 696,46	0.33
S	MBFXL20041S	Tr20x04 LH	left	30	52	40	60	10	6	5	M 5	370	1 696,46	0.33
S	MBFXL20082D	Tr20x08 (P4)	right	30	52	40	60	10	6	5	M 5	370	1 696,46	0.35
S	MBFXL25051D	Tr25x05	right	35	62	48	75	12	6.5	5	M 6	550	2 650,72	0.29
S	MBFXL25051S	Tr25x05 LH	left	35	62	48	75	12	6.5	5	M 6	550	2 650,72	0.29
S	MBFXL25102D	Tr25x10 (P5)	right	35	62	48	75	12	6.5	5	M 6	550	2 650,72	0.39
S	MBFXL30061D	Tr30x06	right	40	68	53	90	12	6.5	5	M 6	790	3 817,04	0.3
S	MBFXL30061S	Tr30x06 LH	left	40	68	53	90	12	6.5	5	M 6	790	3 817,04	0.3
S	MBFXL30122D	Tr30x12 (P6)	right	40	68	53	90	12	6.5	5	M 6	790	3 817,04	0.39
S	MBFXL35061D	Tr35x06	right	50	78	63	105	12	6.5	6	M6	1250	5 257,05	0.3
S	MBFXL35061S	Tr35x06 LH	left	50	78	63	105	12	6.5	6	M6	1250	5 257,05	0.3
S	MBFXL40071D	Tr40x07	right	55	84	68	120	12	6.5	6	M 6	1750	6 880,09	0.28
S	MBFXL40071S	Tr40x07 LH	left	55	84	68	120	12	6.5	6	M 6	1750	6 880,09	0.28
S	MBFXL40142D	Tr40x14 (P7)	right	55	84	68	120	12	6.5	6	M 6	1750	6 880,09	0.38
S	MBFXL50081D	Tr50x08	right	65	100	80	150	15	9	6	M 8	2830	10 838,49	0.25
S	MBFXL50081S	Tr50x08 LH	left	65	100	80	150	15	9	6	M 8	2830	10 838,49	0.25

S Available stock
R Available on request

Full nuts
CuSn12 bronze nuts
MBQ Square range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	1 - 2
Bushing tolerances	
A	h9
L	± 0.1 mm

Suitable for maneuvering work.
Convenient for customised reworking.

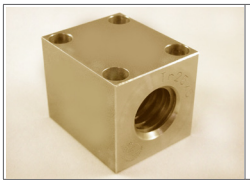


	Code Item	Thread	Orientation	A mm	L mm	mass g	Support surface in mm²	Dynamic performance
S	MBQ16041D	Tr16x04	right	35	40	380	879.65	0.37
S	MBQ16041S	Tr16x04 LH	left	35	40	380	879.65	0.37
S	MBQ16082D	Tr16x08 (P4)	right	35	40	380	879.65	0.43
S	MBQ20041D	Tr20x04	right	40	50	588	1413.72	0.33
S	MBQ20041S	Tr20x04 LH	left	40	50	588	1413.72	0.33
S	MBQ20082D	Tr20x08 (P4)	right	40	50	588	1413.72	0.35
S	MBQ25051D	Tr25x05	right	45	55	777	1943.86	0.29
S	MBQ25051S	Tr25x05 LH	left	45	55	777	1943.86	0.29
S	MBQ25102D	Tr25x10 (P5)	right	45	55	777	1943.86	0.39
S	MBQ30061D	Tr30x06	right	50	60	985	2544.69	0.3
S	MBQ30061S	Tr30x06 LH	left	50	60	985	2544.69	0.3
S	MBQ30122D	Tr30x12 (P6)	right	50	60	985	2544.69	0.39
S	MBQ40071D	Tr40x07	right	60	75	1665	4300.05	0.28
S	MBQ40071S	Tr40x07 LH	left	60	75	1665	4300.05	0.28
S	MBQ40142D	Tr40x14 (P7)	right	60	75	1665	4300.05	0.38

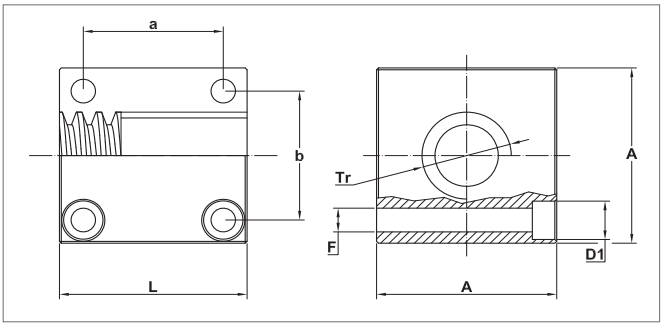
S *Available stock*
R *Available on request*

Full nuts
CuSn12 bronze nuts
MBQF Pre-drilled Square Range

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze
Thread starts	1 - 2
Bushing tolerances	
A	h9
L	± 0.1 mm



Suitable for maneuvering work.
Pre-drilled for assembly with Allen screws.



	Code Item	Thread	Orientation	A mm	L mm	a mm	b mm	D1 screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
S	MBQF16041D	Tr16x04	right	35	40	26	24	M5	350	879.65	0.37
S	MBQF16041S	Tr16x04 LH	left	35	40	26	24	M5	350	879.65	0.37
S	MBQF16082D	Tr16x08 (P4)	right	35	40	26	24	M5	350	879.65	0.43
S	MBQF20041D	Tr20x04	right	40	50	38	28	M6	588	1413.72	0.33
S	MBQF20041S	Tr20x04 LH	left	40	50	38	28	M6	588	1413.72	0.33
S	MBQF20082D	Tr20x08 (P4)	right	40	50	38	28	M6	588	1413.72	0.35
S	MBQF25051D	Tr25x05	right	45	55	40	33	M6	777	1943.86	0.29
S	MBQF25051S	Tr25x05 LH	left	45	55	40	33	M6	777	1943.86	0.29
S	MBQF25102D	Tr25x10 (P5)	right	45	55	40	33	M6	777	1943.86	0.39
S	MBQF30061D	Tr30x06	right	50	60	49	38	M6	985	2544.69	0.3
S	MBQF30061S	Tr30x06 LH	left	50	60	49	38	M6	985	2544.69	0.3
S	MBQF30122D	Tr30x12 (P6)	right	50	60	49	38	M6	985	2544.69	0.39
S	MBQF40071D	Tr40x07	right	60	75	55	49	M8*	1665	4300.05	0.28
S	MBQF40071S	Tr40x07 LH	left	60	75	55	49	M8*	1665	4300.05	0.28
S	MBQF40142D	Tr40x14 (P7)	right	60	75	55	49	M8*	1665	4300.05	0.38

(*) special Allen fixing screws included
S *Available stock*
R *Available on request*

Construction and performance characteristics

Industrial-grade bronze nuts with zinc and lead and Trapezoidal thread. The thread is obtained by chip removal, by means of a special process which ensures that no "vibration" is exerted on the thread and by chamfering the thread crest. Recommended for handling small loads at low speeds. Good wear resistance in light applications. **65-80 degree HB hardness**. Economic solution with good performance-cost compromise.

Recommended uses

MLRC range
Cylindrical nuts. Length of the threaded portion sized for maneuvering work. Suitable for insertion and locking inside pipes or hollow structures.

MLRF range
Pre-drilled flanged nuts for fixing with Allen screws. Flexible use and quick assembly.

MLRF XL range
Extra long thread flanged nuts. Superior resistance to wear thanks to the larger contact surface of the thread flanks.

MLRQ range
Square parallelepiped nuts. Length of the threaded portion sized for maneuvering work. Suitable for insertion and locking inside structures.

Mechanical characteristics of raw material

DIN 17656 CuSn5Zn5Pb5 Bronze

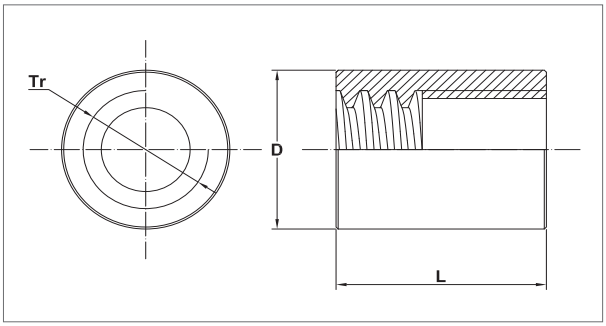
Bronze with tin, zinc and 5% lead. Good hardness properties and resistance to friction wear. The Pb content remains within the limits set by the legislation on the limitation of hazardous substances in electrical and electronic equipment.

Technical data	MLRC - MLRF - MLRFXL MLRQ ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
1-start thread	12 - 40 mm
2-start thread	12 - 40 mm
Available pitches:	
1-start thread	3 - 7 mm
2-start thread	6 - 14 mm
Direction of rotation:	
1-start thread	right and left
2-start thread	right
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 mm in progression on the diameters

Full nuts
Copper alloy nuts
MLRC Cylindrical range

Technical features	
Raw material	DIN 17656 CuSn5Zn5Pb5 Bronze
Thread starts	1 - 2
Bushing tolerances	
D	h7
L	± 0.1 mm

Suitable for moderate-wear maneuvering work. Suitable for insertion and locking inside pipes or hollow structures. Convenient for customised reworking.



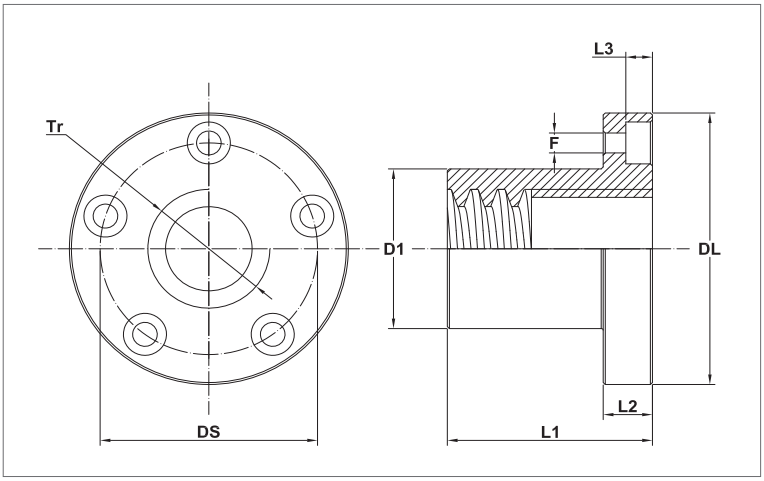
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
R	MLRC12031D	Tr12x03	right	30	28	158	461.81	0.35
R	MLRC12031S	Tr12x03 LH	left	30	28	158	461.81	0.35
R	MLRC12062D	Tr12x06 (P3)	right	30	28	158	461.81	0.39
R	MLRC14041D	Tr14x04	right	30	28	152	527.79	0.37
R	MLRC14041S	Tr14X04 LH	left	30	28	152	527.79	0.37
R	MLRC14082D	Tr14x08 (P4)	right	30	28	152	527.79	0.49
R	MLRC16041D	Tr16x04	right	36	32	252	703.72	0.37
R	MLRC16041S	Tr16x04 LH	left	36	32	252	703.72	0.37
R	MLRC16082D	Tr16x08 (P4)	right	36	32	252	703.72	0.43
R	MLRC18041D	Tr18x04	right	36	36	270	904.78	0.34
R	MLRC18041S	Tr18x04 LH	left	36	36	270	904.78	0.34
R	MLRC18082D	Tr18x08 (P4)	right	36	36	270	904.78	0.37
R	MLRC20041D	Tr20x04	right	40	40	367	904.78	0.33
R	MLRC20041S	Tr20x04 LH	left	40	40	367	904.78	0.33
R	MLRC20082D	Tr20x08 (P4)	right	40	40	367	904.78	0.35
R	MLRC22051D	Tr22x05	right	40	40	352	1225.22	0.29
R	MLRC22051S	Tr22x05 LH	left	40	40	352	1225.22	0.29
R	MLRC22102D	Tr22x10 (P5)	right	40	40	352	1225.22	0.39
R	MLRC25051D	Tr25x05	right	45	48	524	1696.46	0.29
R	MLRC25051S	Tr25x05 LH	left	45	48	524	1696.46	0.29
R	MLRC25102D	Tr25x10 (P5)	right	45	48	524	1696.46	0.39
R	MLRC30061D	Tr30x06	right	50	60	780	2544.69	0.28
R	MLRC30061S	Tr30x06 LH	left	50	60	780	2544.69	0.28
R	MLRC30122D	Tr30x12 (P6)	right	50	60	780	2544.69	0.39
R	MLRC40071D	Tr40x07	right	60	80	1185	4586.73	0.3
R	MLRC40071S	Tr40x07 LH	left	60	80	1185	4586.73	0.3
R	MLRC40142D	Tr40x14 (P7)	right	60	80	1185	4586.73	0.38

S Available stock
R Available on request

Full nuts
Copper alloy nuts
MLRF Flanged range

Technical features	
Raw material	DIN 17656 CuSn5Zn5Pb5 Bronze
Thread starts	1 - 2
Bushing tolerances	
D1	h7
DL, DS, L1, L2, L3	± 0.1 mm

Suitable for moderate-wear maneuvering work, pre-drilled flange for assembly with Allen screws.



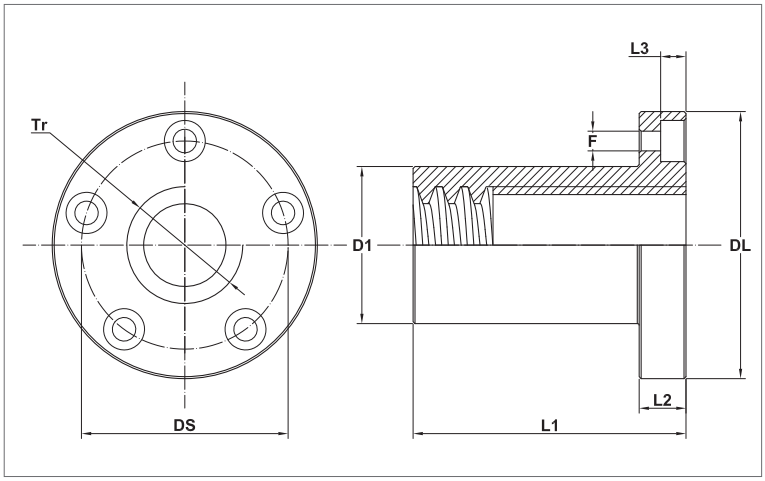
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
R	MLRF12031D	Tr12x03	right	18	37	26	22	8	5	4	M 4	250	362.85	0.35
R	MLRF12031S	Tr12x03 LH	left	18	37	26	22	8	5	4	M 4	250	362.85	0.35
R	MLRF12062D	Tr12x06 (P3)	right	18	37	26	22	8	5	4	M 4	250	362.85	0.39
R	MLRF14041D	Tr14x04	right	20	42	30	25	10	6	4	M 5	245	471.23	0.37
R	MLRF14041S	Tr14X04 LH	left	20	42	30	25	10	6	4	M 5	245	471.23	0.37
R	MLRF14082D	Tr14x08 (P4)	right	20	42	30	25	10	6	4	M 5	245	471.23	0.49
R	MLRF16041D	Tr16x04	right	22	45	32	30	10	6	4	M 5	230	659.73	0.37
R	MLRF16041S	Tr16x04 LH	left	22	45	32	30	10	6	4	M 5	230	659.73	0.37
R	MLRF16082D	Tr16x08 (P4)	right	22	45	32	30	10	6	4	M 5	230	659.73	0.43
R	MLRF18041D	Tr18x04	right	25	48	35	35	10	6	4	M 5	220	879.64	0.34
R	MLRF18041S	Tr18x04 LH	left	25	48	35	35	10	6	4	M 5	220	879.64	0.34
R	MLRF18082D	Tr18x08 (P4)	right	25	48	35	35	10	6	4	M 5	220	879.64	0.37
R	MLRF20041D	Tr20x04	right	30	52	40	40	10	6	5	M 5	300	1130.97	0.33
R	MLRF20041S	Tr20x04 LH	left	30	52	40	40	10	6	5	M 5	395	1130.97	0.33
R	MLRF20082D	Tr20x08 (P4)	right	30	52	40	40	10	6	5	M 5	300	1130.97	0.35
R	MLRF22051D	Tr22x05	right	30	52	40	40	10	6	5	M 5	285	1225.22	0.29
R	MLRF22051S	Tr22x05 LH	left	30	52	40	40	10	6	5	M 5	280	1225.22	0.29
R	MLRF22102D	Tr22x10 (P5)	right	30	52	40	40	10	6	5	M 5	285	1225.22	0.39
R	MLRF25051D	Tr25x05	right	35	62	48	45	12	6.5	6	M 6	400	1590.43	0.29
R	MLRF25051S	Tr25x05 LH	left	35	62	48	45	12	6.5	6	M 6	395	1590.43	0.29
R	MLRF25102D	Tr25x10 (P5)	right	35	62	48	45	12	6.5	6	M 6	400	1590.43	0.39
R	MLRF30061D	Tr30x06	right	40	68	53	50	12	6.5	6	M 6	360	2002.76	0.28
R	MLRF30061S	Tr30x06 LH	left	40	68	53	50	12	6.5	6	M 6	360	2002.76	0.28
R	MLRF30122D	Tr30x12 (P6)	right	40	68	53	50	12	6.5	6	M 6	520	2120.57	0.39
R	MLRF40071D	Tr40x07	right	40	68	53	50	12	6.5	6	M 6	520	2120.57	0.3
R	MLRF40071S	Tr40x07 LH	left	40	68	53	50	12	6.5	6	M 6	515	2120.57	0.3
R	MLRF40142D	Tr40x14 (P7)	right	55	84	68	65	12	6.5	6	M 6	800	3726.71	0.38

S Available stock
R Available on request

Full nuts
Copper alloy nuts
Extra long Flanged range

Technical features	
Raw material	DIN 17656 CuSn5Zn5Pb5 Bronze
Thread starts	1 - 2
Bushing tolerances	
D1	h7
DL,DS,L1,L2,L3	± 0.1 mm

Suitable for moderate wear maneuvering work and repeated movements. Pre-drilled flange for assembly with Allen screws.



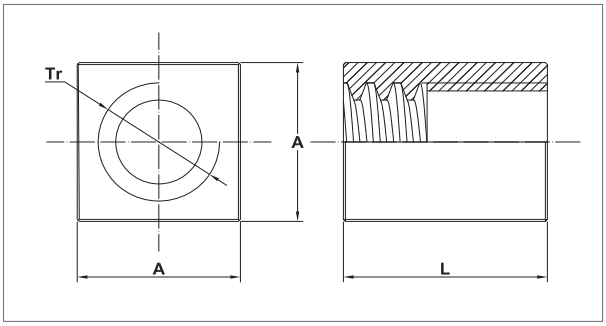
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²	Dynamic performance
R	MLRFXL16041D	Tr16x04	right	22	45	32	48	10	6	4	M 5	190	1 055,58	0.37
R	MLRFXL16041S	Tr16x04 LH	left	22	45	32	48	10	6	4	M 5	190	1 055,58	0.37
R	MLRFXL16082D	Tr16x08 (P4)	right	22	45	32	48	10	6	4	M 5	190	1 055,58	0.43
R	MLRFXL20041D	Tr20x04	right	30	52	40	60	10	6	5	M 5	370	1 696,46	0.33
R	MLRFXL20041S	Tr20x04 LH	left	30	52	40	60	10	6	5	M 5	370	1 696,46	0.33
R	MLRFXL20082D	Tr20x08 (P4)	right	30	52	40	60	10	6	5	M 5	370	1 696,46	0.35
R	MLRFXL25051D	Tr25x05	right	35	62	48	75	12	6.5	6	M 6	550	2 650,72	0.29
R	MLRFXL25051S	Tr25x05 LH	left	35	62	48	75	12	6.5	6	M 6	550	2 650,72	0.29
R	MLRFXL25102D	Tr25x10 (P5)	right	35	62	48	75	12	6.5	6	M 6	550	2 650,72	0.39
R	MLRFXL30061D	Tr30x06	right	40	68	53	90	12	6.5	6	M 6	790	3 817,04	0.3
R	MLRFXL30061S	Tr30x06 LH	left	40	68	53	90	12	6.5	6	M 6	790	3 817,04	0.3
R	MLRFXL30122D	Tr30x12 (P6)	right	40	68	53	90	12	6.5	6	M 6	790	3 817,04	0.39
R	MLRFXL40071D	Tr40x07	right	55	84	68	120	12	6.5	6	M 6	1750	6 880,09	0.28
R	MLRFXL40071S	Tr40x07 LH	left	55	84	68	120	12	6.5	6	M 6	1750	6 880,09	0.28
R	MLRFXL40142D	Tr40x14 (P7)	right	55	84	68	120	12	6.5	6	M 6	1750	6 880,09	0.38

S Available stock
R Available on request

Full nuts
Copper alloy nuts
MLRQ square range

Technical features	
Raw material	DIN 17656 CuSn5Zn5Pb5 Bronze
Thread starts	1 - 2
Bushing tolerances	
A	h9
L	± 0.1 mm

Suitable for moderate-wear maneuvering work.
Convenient for customised reworking.



	Code Item	Thread	Orientation	A mm	L mm	mass g	Support surface in mm²	Dynamic performance
R	MLRQ16041D	Tr16x04	right	35	40	380	879.65	0.37
R	MLRQ16041S	Tr16x04 LH	left	35	40	380	879.65	0.37
R	MLRQ16082D	Tr16x08 (P4)	right	35	40	380	879.65	0.43
R	MLRQ20041D	Tr20x04	right	40	50	588	1413.72	0.33
R	MLRQ20041S	Tr20x04 LH	left	40	50	588	1413.72	0.33
R	MLRQ20082D	Tr20x08 (P4)	right	40	50	588	1413.72	0.35
R	MLRQ25051D	Tr25x05	right	45	55	777	1943.86	0.29
R	MLRQ25051S	Tr25x05 LH	left	45	55	777	1943.86	0.29
R	MLRQ25102D	Tr25x10 (P5)	right	45	55	777	1943.86	0.39
R	MLRQ30061D	Tr30x06	right	50	60	985	2544.69	0.3
R	MLRQ30061S	Tr30x06 LH	left	50	60	985	2544.69	0.3
R	MLRQ30122D	Tr30x12 (P6)	right	50	60	985	2544.69	0.39
R	MLRQ40071D	Tr40x07	right	60	75	1665	4300.05	0.28
R	MLRQ40071S	Tr40x07 LH	left	60	75	1665	4300.05	0.28
R	MLRQ40142D	Tr40x14 (P7)	right	60	75	1665	4300.05	0.38

S Available stock
R Available on request

Construction and performance characteristics

Trapezoidal threaded aluminium-bronze nuts. The thread is obtained by chip removal, by means of a special process which ensures that no "vibration" is exerted on the thread and by chamfering the thread crest. Very high resistance to wear in heavy duty applications. **170-200 degree HB hardness**. Solution suitable for handling high loads both in intermittent and continuous operation and with high wear factors.

Recommended uses

MBALF range
Pre-drilled flanged nuts for assembly with Allen screws. Flexible use and quick assembly. Excellent compromise between good performance values and the hardness and resistance to wear properties of the nut. We recommend using Class 8.8 fixing screws.

MBALXL range
Extra long thread flanged nuts. Superior resistance to wear thanks to the larger thread contact surface. Recommended use for maneuvering and handling high loads, at medium speeds, in continuous operation and with high wear. We recommend using Class 8.8 fixing screws.

Mechanical characteristics of raw material

UNI 5275 Cu Al11Fe4Ni4 XANTAL Aluminium bronze

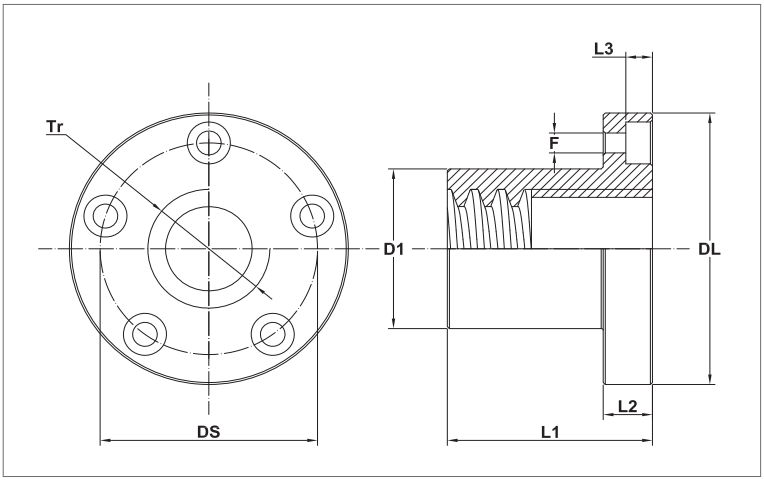
Bronze with 11% aluminium alloy with iron and nickel. Remarkable mechanical and corrosion resistance. Highly performing solution in terms of wear resistance, maintaining good performance values. Production cycle managed with casting certifications to guarantee the purity of the alloy used.

Technical data	MBALF - MBALFXL ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1
Available diameters:	
MBALF	16 - 25 mm
MBALF XL	30 - 50 mm
Available pitches:	
MBALF	4 - 5 mm
MBALF XL	6 - 8 mm
Direction of rotation:	right and left
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 in progression on the diameters

Full nuts
Aluminium bronze nuts
MBALF Flanged Range

Technical features	
Raw material	Cu Al11Fe4Ni4 XANTAL Aluminium bronze
Thread starts	1
Bushing tolerances	
D1	h7
DL,DS,L1,L2,L3	± 0.1 mm

Suitable for maneuvering, heavy. Pre-drilled flange for assembly with Allen screws.



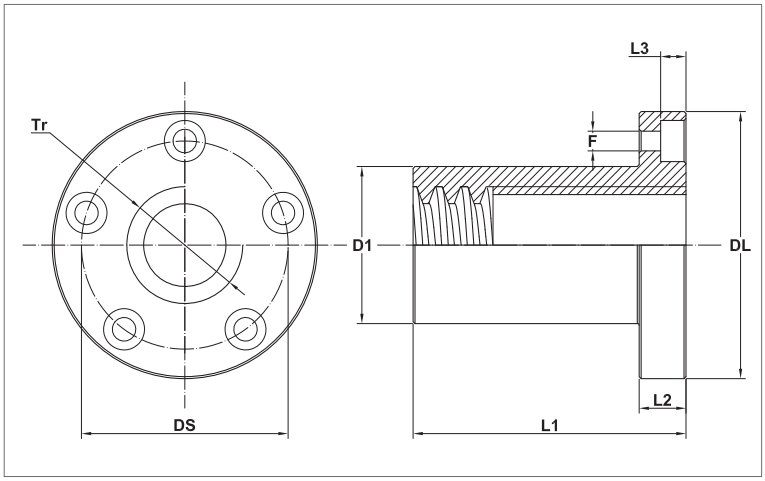
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²
S	MBALF16041D	Tr16x04	right	22	45	32	30	10	6	4	M 5	230	659.73
S	MBALF16041S	Tr16x04 LH	left	22	45	32	30	10	6	4	M 5	230	659.73
S	MBALF18041D	Tr18x04	right	25	48	35	35	10	6	4	M 5	220	879.64
S	MBALF18041S	Tr18x04 LH	left	25	48	35	35	10	6	4	M 5	220	879.64
S	MBALF20041D	Tr20x04	right	30	52	40	40	10	6	5	M 5	300	1130.97
S	MBALF20041S	Tr20x04 LH	left	30	52	40	40	10	6	5	M 5	395	1130.97
S	MBALF25051D	Tr25x05	right	35	62	48	45	12	6.5	5	M 6	400	1590.43
S	MBALF25051S	Tr25x05 LH	left	35	62	48	45	12	6.5	5	M 6	395	1590.43

S Available stock
R Available on request

Full nuts
Aluminium bronze nuts
Extra long Flanged range

Technical features	
Raw material	Cu Al11Fe4Ni4 XANTAL Aluminium bronze
Thread starts	1
Bushing tolerances	
D1	h7
DL,DS,L1,L2,L3	± 0.1 mm

Suitable for heavy maneuvering and handling with high loads, pre-drilled flange for assembly with Allen screws.



	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²
R	MBALFXL30061D	Tr30x06	right	40	68	53	90	18	6.5	6	M 6	710	3817.04
R	MBALFXL30061S	Tr30x06 LH	left	40	68	53	90	18	6.5	6	M 6	710	3817.04
R	MBALFXL35061D	Tr35x06	right	50	78	63	105	20	6.5	6	M 8	1220	3817.04
R	MBALFXL35061S	Tr35x06 LH	left	50	78	63	105	20	6.5	6	M 8	1220	3817.04
R	MBALFXL40071D	Tr40x07	right	55	84	68	120	25	9	6	M 8	1630	6880.09
R	MBALFXL40071S	Tr40x07 LH	left	55	84	68	120	25	9	6	M 8	1630	6880.09
R	MBALFXL50081D	Tr50x08	right	65	100	80	150	30	10.5	6	M 10	2580	10838.49
R	MBALFXL50081S	Tr50x08 LH	left	65	100	80	150	30	10.5	6	M 10	2580	10838.49

S Available stock
R Available on request

Construction and performance characteristics

Trapezoidal threaded stainless steel nuts. The thread is obtained by chip removal, by means of a special process which ensures that no "vibration" is exerted on the thread and by chamfering the thread crest. AISI 303 stainless steel is suitable for uses not subject to particular critical corrosion conditions. AISI 304 stainless steel is suitable for uses exposed to natural corrosion and applications with moderate conditions of chemical corrosion and oxidation.

Recommended uses

MIC303 range
AISI303 steel cylindrical nuts. Suitable for maneuvering and tightening work in applications with moderate corrosion conditions and aggression of chemical and oxidising agents.

MIC304 range
AISI 304 steel cylindrical nuts. Suitable for maneuvering and tightening work in applications with severe corrosion conditions and aggression of chemical and oxidising agents.

MIE303 range
AISI 303 steel hexagonal nuts. Suitable for manual maneuvering and tightening with wrench in applications with moderate corrosion conditions and aggression of chemical and oxidising agents.

MIE304 range
AISI 304 steel hexagonal nuts. Suitable for manual maneuvering and tightening with wrench under corrosion conditions and aggression of chemical and oxidising agents.

Stainless steel system

The MIC and MIE ranges are suitable for coupling with stainless steel rolled screws. This combination solution is excellent for tightening in environments exposed to the elements.

Mechanical characteristics of raw material

AISI 303 1.4305 stainless steel

X8 CrNiS18-09 Austenitic steel. Excellent workability. Good resistance to the elements.

AISI 304 1.4301 stainless steel

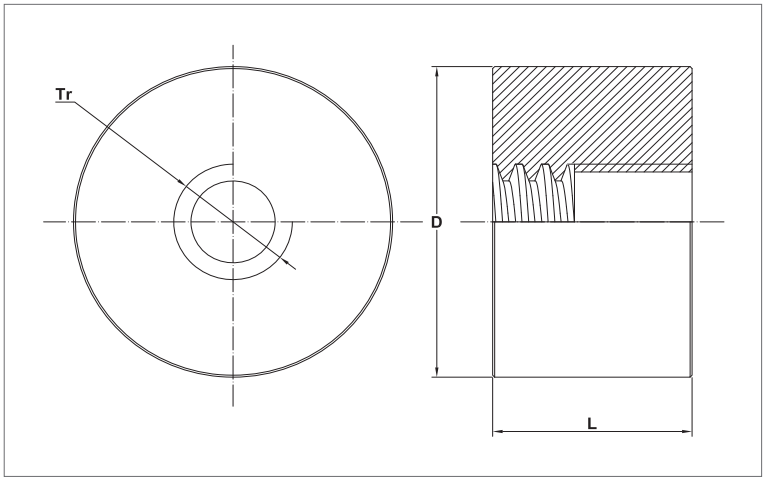
X5 CrNi18-10 Austenitic steel. Excellent workability. Excellent resistance to the elements, good resistance to oxidising and corrosive agents.

Technical data	MIC303-MIC304-MIE303 ranges MIE304
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1
Available diameters:	
MIC303 - MIC304	12 - 60 mm
MIE303 - MIE304	16 - 50 mm
Available pitches:	
MIC303 - MIC304	3 - 9 mm
MIE303 - MIE304	4 - 8 mm
Direction of rotation:	right and left
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.25 mm
standard radial tolerance	0.30 mm

Full nuts
AISI 303 stainless steel nuts
MIC303 Cylindrical Range

Technical features	
Raw material	AISI 303 1.4305 stainless steel
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm

Suitable for maneuvering and tightening work in applications under moderate corrosion and oxidation conditions. Convenient for customised reworking.

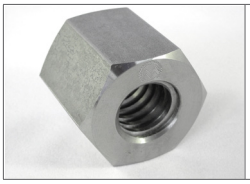


	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
R	MIC303 12031D	Tr12x03	right	30	20	250	593.76	0.34
R	MIC303 12031S	Tr12x03 LH	left	30	20	250	593.76	0.34
R	MIC303 14041D	Tr14x04	right	30	20	245	678.58	0.35
R	MIC303 14041S	Tr14X04 LH	left	30	20	245	678.58	0.35
R	MIC303 16041D	Tr16x04	right	36	24	230	791.68	0.32
R	MIC303 16041S	Tr16x04 LH	left	36	24	230	791.68	0.32
R	MIC303 18041D	Tr18x04	right	36	24	220	904.77	0.32
R	MIC303 18041S	Tr18x04 LH	left	36	24	220	904.77	0.32
R	MIC303 20041D	Tr20x04	right	50	30	300	1130.97	0.25
R	MIC303 20041S	Tr20x04 LH	left	50	30	395	1130.97	0.25
R	MIC303 25051D	Tr25x05	right	50	36	400	1590.43	0.26
R	MIC303 25051S	Tr25x05 LH	left	50	36	395	1590.43	0.26
R	MIC303 30061D	Tr30x06	right	70	45	520	2120.57	0.26
R	MIC303 30061S	Tr30x06 LH	left	70	45	515	2120.57	0.26
R	MIC303 35061D	Tr35x06	right	70	55	650	2764.6	0.22
R	MIC303 35061S	Tr35x06 LH	left	70	55	650	2764.6	0.22
R	MIC303 40071D	Tr40x07	right	80	60	800	3440.04	0.24
R	MIC303 40071S	Tr40x07 LH	left	80	60	795	3440.04	0.24
R	MIC303 50081D	Tr50x08	right	80	75	1110	5057.96	0.24
R	MIC303 50081S	Tr50x08 LH	left	80	75	1110	5057.96	0.24
R	MIC303 60091D	Tr60x09	right	90	80	1500	6974.33	0.23
R	MIC303 60091S	Tr60x09 LH	left	90	80	1500	6974.33	0.23

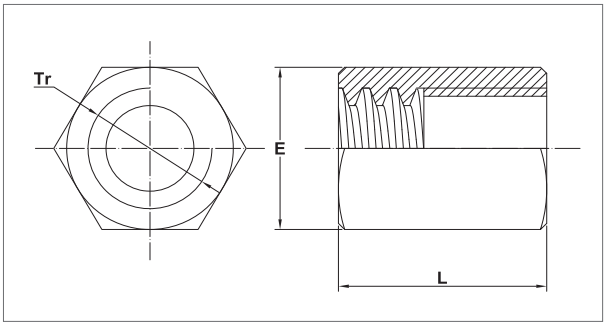
S Available stock
R Available on request

Full nuts
AISI 303 stainless steel nuts
MIE303 Hexagonal Range

Technical features	
Raw material	AISI 303 1.4305 stainless steel
Thread starts	1
Bushing tolerances	
E	h9
L	± 0.1 mm



Suitable for manual maneuvering and tightening work with key in applications with moderate corrosion and oxidation conditions.



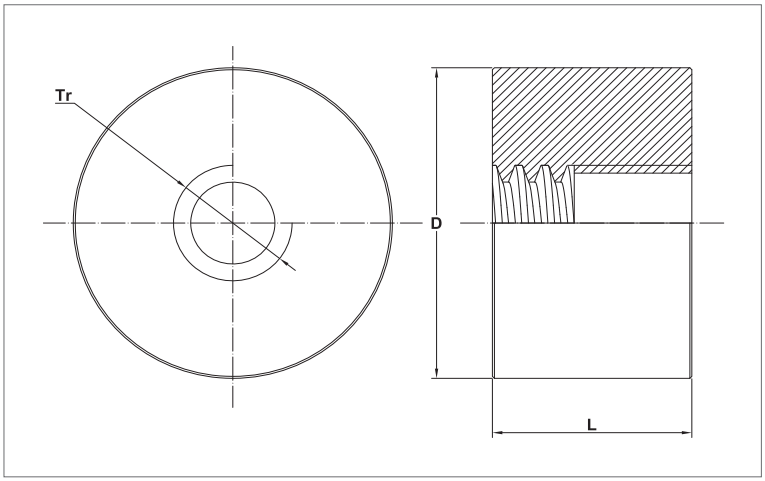
	Code Item	Thread	Orientation	E mm	L mm	mass g	Support surface in mm²	Dynamic performance
R	MIE303 16041D	Tr16x04	right	27	24	230	791.68	0.32
R	MIE303 20041D	Tr20x04	right	36	30	300	1130.97	0.25
R	MIE303 25051D	Tr25x05	right	46	36	400	1590.43	0.26
R	MIE303 30061D	Tr30x06	right	46	45	520	2120.57	0.26
R	MIE303 40071D	Tr40x07	right	80	60	800	3440.04	0.24
R	MIE303 50081D	Tr50x08	right	80	75	1110	5057.96	0.24

S Available stock
R Available on request

Full nuts
AISI 304 stainless steel nuts
MIC304 Cylindrical Range

Technical features	
Raw material	AISI 304 1.4301 stainless steel
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm

Suitable for maneuvering and tightening work in applications with severe corrosion and oxidation conditions. Convenient for customised reworking.

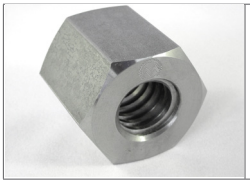


	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²	Dynamic performance
R	MIC304 12031D	Tr12x03	right	30	20	250	593.76	0.34
R	MIC304 12031S	Tr12x03 LH	left	30	20	250	593.76	0.34
R	MIC304 14041D	Tr14x04	right	30	20	245	678.58	0.35
R	MIC304 14041S	Tr14X04 LH	left	30	20	245	678.58	0.35
R	MIC304 16041D	Tr16x04	right	36	24	230	791.68	0.32
R	MIC304 16041S	Tr16x04 LH	left	36	24	230	791.68	0.32
R	MIC304 18041D	Tr18x04	right	36	24	220	904.77	0.32
R	MIC304 18041S	Tr18x04 LH	left	36	24	220	904.77	0.32
R	MIC304 20041D	Tr20x04	right	50	30	300	1130.97	0.25
R	MIC304 20041S	Tr20x04 LH	left	50	30	395	1130.97	0.25
R	MIC304 25051D	Tr25x05	right	50	36	400	1590.43	0.26
R	MIC304 25051S	Tr25x05 LH	left	50	36	395	1590.43	0.26
R	MIC304 30061D	Tr30x06	right	70	45	520	2120.57	0.26
R	MIC304 30061S	Tr30x06 LH	left	70	45	515	2120.57	0.26
R	MIC304 35061D	Tr35x06	right	70	55	650	2764.6	0.22
R	MIC304 35061S	Tr35x06 LH	left	70	55	650	2764.6	0.22
R	MIC304 40071D	Tr40x07	right	80	60	800	3440.04	0.24
R	MIC304 40071S	Tr40x07 LH	left	80	60	795	3440.04	0.24
R	MIC304 50081D	Tr50x08	right	80	75	1110	5057.96	0.24
R	MIC304 50081S	Tr50x08 LH	left	80	75	1110	5057.96	0.24
R	MIC304 60091D	Tr60x09	right	90	80	1500	6974.33	0.23
R	MIC304 60091S	Tr60x09 LH	left	90	80	1500	6974.33	0.23

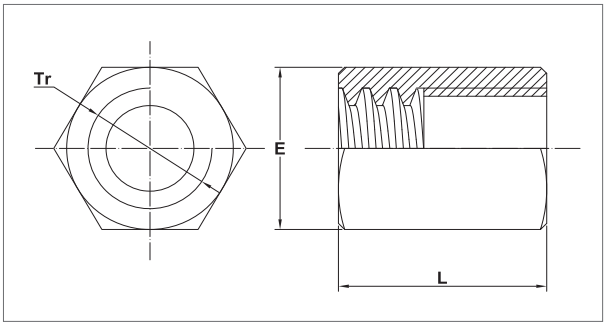
S Available stock
R Available on request

Full nuts
AISI 304 stainless steel nuts
MIE304 Hexagonal Range

Technical features	
Raw material	AISI 304 1.4301 stainless steel
Thread starts	1
Bushing tolerances	
E	h9
L	± 0.1 mm



Suitable for manual maneuvering and tightening with key in applications with severe corrosion and oxidation conditions.



	Code Item	Thread	Orientation	E mm	L mm	mass g	Support surface in mm²	Dynamic performance
R	MIE304 16041D	Tr16x04	right	27	24	230	791.68	0.32
R	MIE304 20041D	Tr20x04	right	36	30	300	1130.97	0.25
R	MIE304 25051D	Tr25x05	right	46	36	400	1590.43	0.26
R	MIE304 30061D	Tr30x06	right	46	45	520	2120.57	0.26
R	MIE304 40071D	Tr40x07	right	80	60	800	3440.04	0.24
R	MIE304 50081D	Tr50x08	right	80	75	1110	5057.96	0.24

S Available stock
R Available on request

Construction and performance characteristics

Plastic nuts with Trapezoidal thread. Generally suited for handling and positioning work where high efficiency and quite system operation are required. Four types of plastic materials are available for uses with different characteristics.

Recommended uses

MPA1 C - MAPA1 Q range
Polyamide 6 nuts + oil. Totally self-lubricating. Cylindrical and square version. Good resistance to wear and excellent friction coefficient. Suitable for maneuvering and handling work at low speeds and with medium-high loads.

MPA2 FXL range
Polyamide 6 flanged nuts + solid lubricants. Good resistance to wear and self-lubricating properties. Extra long. Suitable for handling also for 2-start screws.

MPA3 C range
Polyamide 6 cylindrical nuts + MoS2. Good resistance to wear with low-medium loads. Recommended for use in environments not exposed to humidity and with precision rolled RATHCP type screws. Requires lubrication.

MPC - MPCC - MPFXL range
POM-C acetal copolymer resin cylindrical nuts. Material with excellent performance, and good hygroscopic and self-lubricating properties. The MPCC version is supplied with a pre-machining for the keyway and seeger. The extra long thread MPFXL version is ideal for use in quiet and efficient operations.

Mechanical characteristics of raw material

PA6 + oil

Special polyamide for characteristics of resistance to wear by friction. Completely self-lubricating.

PA6 + solid lubricants

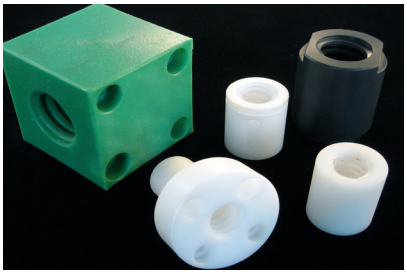
Excellent polyamide to improve the "P x V" ratio.

PA6 + MoS2

Polyamide with good wear resistance characteristics. Requires lubrication.

Polyacetals (POM-C)

Acetal copolymer with excellent mechanical and chemical properties. Completely self-lubricating.

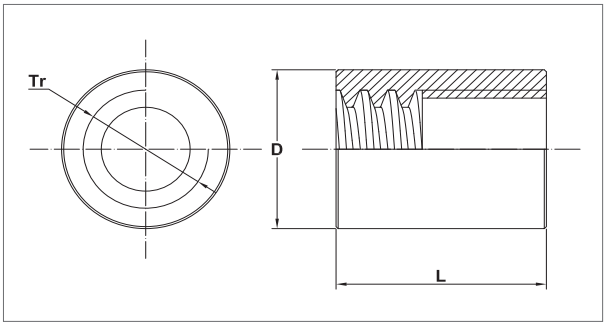


Technical data	MPA1C - MPA1Q - MPA2FXL MPA3C - MPC - MPCC ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
MPA1C - MPA1Q	20 - 50 mm
MPA2FXL	12 - 40 mm
MPA3C	12 - 40 mm
MPC - MPCC	16 - 22 mm
MPFXL	16 - 40 mm
Available pitches:	
1-start thread	3 - 9 mm
2-start thread	6 - 14 mm
Direction of rotation:	right and left
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 in progression on the diameters

Full nuts
Polyamide nuts
PA6 + oil cylindrical range

Technical features	
Raw material	Polyamide PA6 + Oil
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm

Good resistance to wear and excellent friction coefficient. Suitable for maneuvering and handling work at low speeds and with medium-high loads.



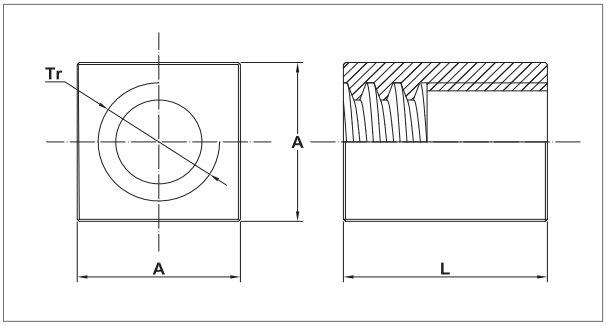
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²
R	MPA1C20041D	Tr20x04	right	40	40	60	1130.97
R	MPA1C20041S	Tr20x04 LH	left	40	40	60	1130.97
R	MPA1C25051D	Tr25x05	right	45	45	75	1590.43
R	MPA1C25051S	Tr25x05 LH	left	45	45	75	1590.43
R	MPA1C30061D	Tr30x06	right	50	50	110	2120.57
R	MPA1C30061S	Tr30x06 LH	left	50	50	110	2120.57
R	MPA1C40071D	Tr40x07	right	60	80	270	4586.72
R	MPA1C40071S	Tr40x07 LH	left	60	80	279	4586.72
R	MPA1C50081D	Tr50x08	right	70	100	410	7225.66
R	MPA1C50081S	Tr50x08 LH	left	70	100	410	7225.66

S Available stock
R Available on request

Full nuts
Polyamide nuts
PA6 + oil square range

Technical features	
Raw material	Polyamide PA6 + Oil
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm

Good resistance to wear and excellent friction coefficient. Suitable for maneuvering and handling work at low speeds and with medium-high loads.



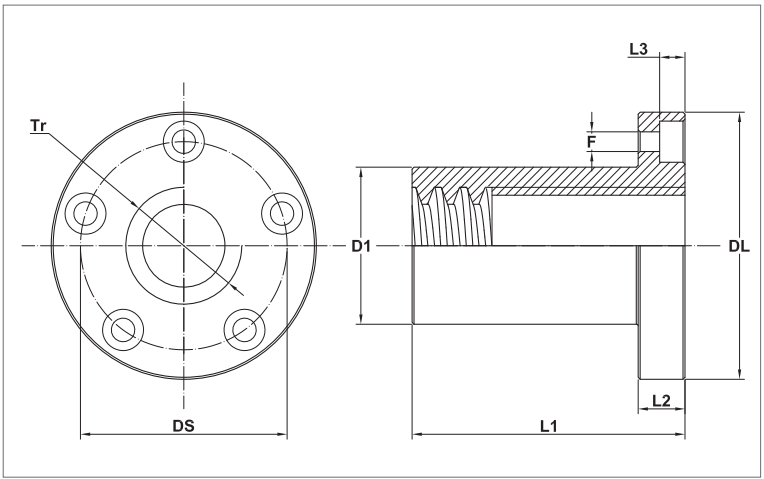
	Code Item	Thread	Orientation	A mm	L mm	mass g	Support surface in mm²
R	MPQ20041D	Tr20x04	right	40	60	300	1696.46
R	MPQ20041S	Tr20x04 LH	left	40	60	395	1696.46
R	MPQ25051D	Tr25x05	right	40	60	400	2120.57
R	MPQ25051S	Tr25x05 LH	left	40	60	395	2120.57
R	MPQ30061D	Tr30x06	right	40	60	520	2544.69
R	MPQ30061S	Tr30x06 LH	left	40	60	515	2544.69

S Available stock
R Available on request

Full nuts
Polyamide nuts
PA6 + solid lub. flanged range

Technical features	
Raw material	PA6 polyamide + solid lubricants
Thread starts	1 - 2
Bushing tolerances	
D1	h9
DL,DS,L1,L2,L3	± 0.1 mm

Good resistance to wear and self-lubricating properties. Extra long. Suitable for handling also for 2-start screws. Pre-drilled flange for assembly with Allen screws.



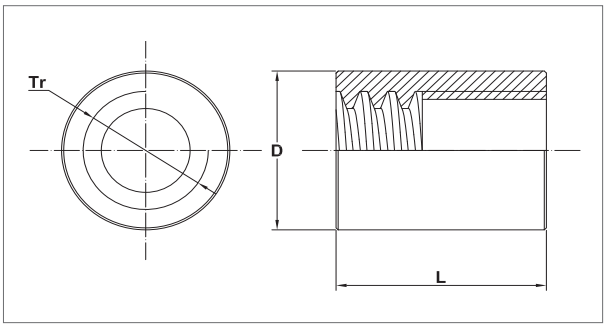
	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²
R	MPA2FXL16041D	Tr16x04	right	22	45	32	48	16	6	4	M 5	35	1055.58
R	MPA2FXL16041S	Tr16x04 LH	left	22	45	32	48	16	6	4	M 5	35	1055.58
R	MPA2FXL16082D	Tr16x08 (P4)	right	22	45	32	48	16	6	4	M 5	35	1055.58
R	MPA2FXL20041D	Tr20x04	right	30	52	40	60	20	6	5	M 5	68	1696.46
R	MPA2FXL20041S	Tr20x04 LH	left	30	52	40	60	20	6	5	M 5	68	1696.46
R	MPA2FXL20082D	Tr20x08 (P4)	right	30	52	40	60	20	6	5	M 5	68	1696.46
R	MPA2FXL25051D	Tr25x05	right	35	62	48	75	25	6.5	5	M 6	95	2650.72
R	MPA2FXL25051S	Tr25x05 LH	left	35	62	48	75	25	6.5	5	M 6	95	2650.72
R	MPA2FXL25102D	Tr25x10 (P5)	right	35	62	48	75	25	6.5	5	M 6	95	2650.72
R	MPA2FXL30061D	Tr30x06	right	40	68	53	90	30	6.5	5	M 6	140	3817.04
R	MPA2FXL30061S	Tr30x06 LH	left	40	68	53	90	30	6.5	5	M 6	140	3817.04
R	MPA2FXL30122D	Tr30x12 (P6)	right	40	68	53	90	30	6.5	5	M 6	140	3817.04
R	MPA2FXL40071D	Tr40x07	right	55	84	68	120	40	6.5	6	M 6	255	6880.09
R	MPA2FXL40071S	Tr40x07 LH	left	55	84	68	120	40	6.5	6	M 6	255	6880.09
R	MPA2FXL40142D	Tr40x14 (P7)	right	55	84	68	120	40	6.5	6	M 6	255	6880.09

S Available stock
R Available on request

Full nuts
Polyamide nuts
PA6 + MoS2 cylindrical range

Technical features	
Raw material	Polyamide PA6 + MoS2
Thread starts	1
Bushing tolerances	
D	h9
L	± 0.1 mm

Good resistance to wear with low-medium loads. Recommended for use in environments not exposed to humidity and with precision rolled RATHCP type screws. Requires lubrication.



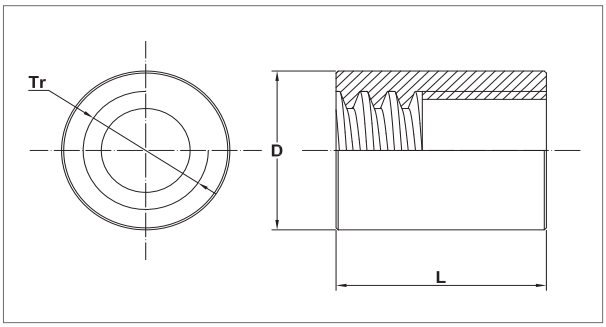
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²
R	MPA3C16041D	Tr16x04	right	36	32	30	703.71
R	MPA3C16041S	Tr16x04	left	36	32	30	703.71
R	MPA3C20041D	Tr20x04	right	45	40	63	1130.97
R	MPA3C20041S	Tr20x04 LH	left	45	40	63	1130.97
R	MPA3C25051D	Tr25x05	right	50	50	90	1767.14
R	MPA3C25051S	Tr25x05 LH	left	50	50	90	1767.14
R	MPA3C30061D	Tr30x06	right	60	60	155	2544.69
R	MPA3C30061S	Tr30x06 LH	left	60	60	155	2544.69
R	MPA3C40071D	Tr40x07	right	80	80	360	4586.72
R	MPA3C40071S	Tr40x07 LH	left	80	80	360	4586.72

S Available stock
R Available on request

Full nuts
Polyacetal nuts
MPC cylindrical range

Technical features	
Raw material	Polyacetals (POM-C)
Thread starts	1 - 2
Bushing tolerances	
D	h9
L	± 0.1 mm

Material with excellent performance, good hygroscopic and self-lubricating properties.



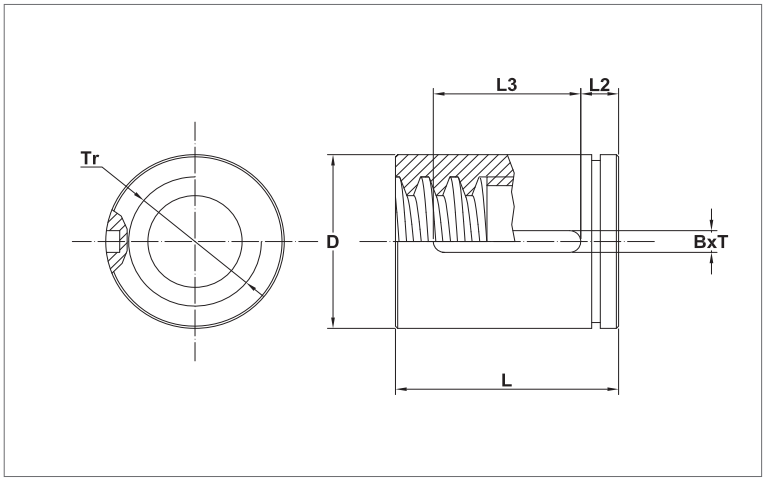
	Code Item	Thread	Orientation	D mm	L mm	mass g	Support surface in mm²
R	MPC16041D	Tr16x04	right	28	34	27	747.69
R	MPC16041S	Tr16x04 LH	left	28	34	27	747.69
R	MPC16082D	Tr16x08 (P4)	right	28	34	27	747.69
R	MPC18041D	Tr18x04	right	28	34	21	854.51
R	MPC18041S	Tr18x04 LH	left	28	34	21	854.51
R	MPC18082D	Tr18x08 (P4)	right	28	34	21	854.51
R	MPC20041D	Tr20x04	right	32	34	35	961.32
R	MPC20041S	Tr20x04 LH	left	32	34	35	961.32
R	MPC20082D	Tr20x08 (P4)	right	32	34	35	961.32
R	MPC22051D	Tr22x05	right	32	34	30	1041.43
R	MPC22051S	Tr22x05 LH	left	32	34	30	1041.43
R	MPC22102D	Tr22x10 (P5)	right	32	34	30	1041.43

S Available stock
R Available on request

Full nuts
Polyacetal nuts
MPCC cylindrical range

Technical features	
Raw material	Polyacetals (POM-C)
Thread starts	1 - 2
Bushing tolerances	
D	h9
L	± 0.1 mm

Material with excellent performance, good hygroscopic and self-lubricating properties. Supplied with pre-machining for keyway and seeger.



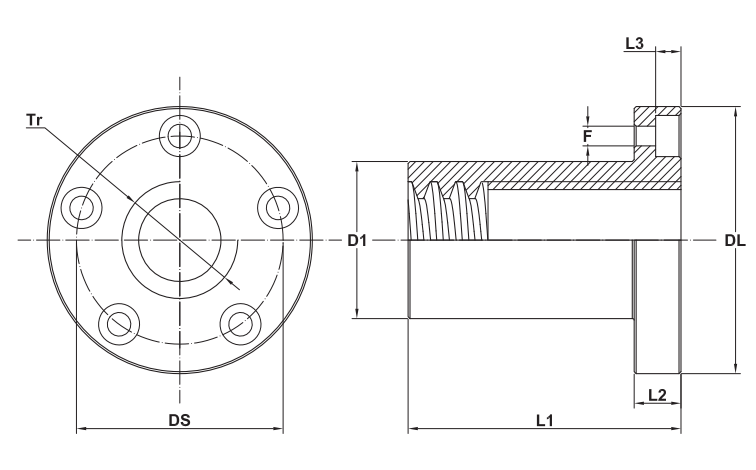
	Code Item	Thread	Orientation	D mm	L mm	L2 mm	L3 mm	B x T mm	mass g	Support surface in mm²
R	MPCC16041D	Tr16x04	right	28	34	7	20	5 x 2.9	27	747.69
R	MPCC16041S	Tr16x04 LH	left	28	34	7	20	5 x 2.9	27	747.69
R	MPCC16082D	Tr16x08 (P4)	right	28	34	7	20	5 x 2.9	27	747.69
R	MPCC18041D	Tr18x04	right	28	34	7	20	5 x 2.9	21	854.51
R	MPCC18041S	Tr18x04 LH	left	28	34	7	20	5 x 2.9	21	854.51
R	MPCC18082D	Tr18x08 (P4)	right	28	34	7	20	5 x 2.9	21	854.51
R	MPCC20041D	Tr20x04	right	32	34	7	20	5 x 2.9	35	961.32
R	MPCC20041S	Tr20x04 LH	left	32	34	7	20	5 x 2.9	35	961.32
R	MPCC20082D	Tr20x08 (P4)	right	32	34	7	20	5 x 2.9	35	961.32
R	MPCC22051D	Tr22x05	right	32	34	7	20	5 x 2.9	30	1041.43
R	MPCC22051S	Tr22x05 LH	left	32	34	7	20	5 x 2.9	30	1041.43
R	MPCC22102D	Tr22x10 (P5)	right	32	34	7	20	5 x 2.9	30	1041.43

S Available stock
R Available on request

Full nuts
Polyacetal nuts
XL flanged range

Technical features	
Raw material	Polyacetals (POM-C)
Thread starts	1 - 2
Bushing tolerances	
D1	h9
DL, DS, L1, L2, L3	± 0.1 mm

Material with excellent performance, good hygroscopic and self-lubricating properties. Extra long thread, ideal for use in quiet and efficient operation. Pre-drilled flange for assembly with Allen screws.



	Code Item	Thread	Orientation	D1 mm	DL mm	Ds mm	L1 mm	L2 mm	L3 mm	holes	screws Allen 8.8	mass g	Support surface in mm²
R	MPFXL16041D	Tr16x04	right	22	45	32	48	16	5.2	4	M 5	30	1055.58
R	MPFXL16041S	Tr16x04 LH	left	22	45	32	48	16	5.2	4	M 5	30	1055.58
R	MPFXL16082D	Tr16x08 (P4)	right	22	45	32	48	16	5.2	4	M 5	30	1055.58
R	MPFXL20041D	Tr20x04	right	30	52	40	60	20	5.2	5	M 5	57	1696.46
R	MPFXL20041S	Tr20x04 LH	left	30	52	40	60	20	5.2	5	M 5	57	1696.46
R	MPFXL20102D	Tr20x10 (P5)	right	35	62	48	75	25	6.5	6	M 6	57	1696.46
R	MPFXL25051D	Tr25x05	right	35	62	48	75	25	6.5	6	M 6	95	2650.72
R	MPFXL25051S	Tr25x05 LH	left	35	62	48	75	25	6.5	6	M 6	95	2650.72
R	MPFXL25102D	Tr25x10 (P5)	right	35	62	48	75	25	6.5	6	M 6	95	2650.72
R	MPFXL30061D	Tr30x06	right	40	68	53	90	30	6.5	6	M 6	132	3817.04
R	MPFXL30061S	Tr30x06 LH	left	40	68	53	90	30	6.5	6	M 6	132	3817.04
R	MPFXL40071D	Tr40x07	right	55	84	68	120	40	6.5	6	M 6	295	6880.09
R	MPFXL40071S	Tr40x07 LH	left	55	84	68	120	40	6.5	6	M 6	295	6880.09

S Available stock
R Available on request

Construction and performance characteristics

The Swap modular nut screw is designed to differentiate the construction material of the bushing from that of the threaded portion in contact with the screw. The structural needs of the nuts are independent from those of efficiency in handling and positioning work. The threaded interior is available in different materials and is easily replaceable when worn. Maximum strength to twisting guaranteed by the quality of the project.

Recommended uses

Swap FA B
Nut with stainless steel flanged bushing and CuSn12 bronze threaded interior. Suitable for maneuvering and handling. Flexible and economical solution compared to all bronze material nuts.

Swap FAP
Nut with steel flanged bush and threaded interior in self-lubricating POM-C acetal copolymer resin. Excellent performance in handling with low 1- and 2-start loads.

SWAP FI
Nut with AISI 304 stainless steel flanged bushing and plastic threaded interior. Recommended for use in combination with stainless steel screws. The use of stainless steel screws and SWAP FI modular nut screws creates a nut-screw system completely resistant to oxidation and chemical aggression (Stainless steel System).

SWAPIN
Internal thread for Swap nut screws. Available in CuSn12 bronze and differentiated plastic materials according to needs.

Mechanical characteristics of raw material

11SMnPb37 1.0737 Steel

Material used for the FA Swap Flange Bushing.

AISI 304 1.4301 stainless steel

Material used for the Swap FI flange bushing.

UNI 7013-72 CuSn12

Bronze used for the threaded interior of the FAB Swaps.

Polyacetals (POM-C)

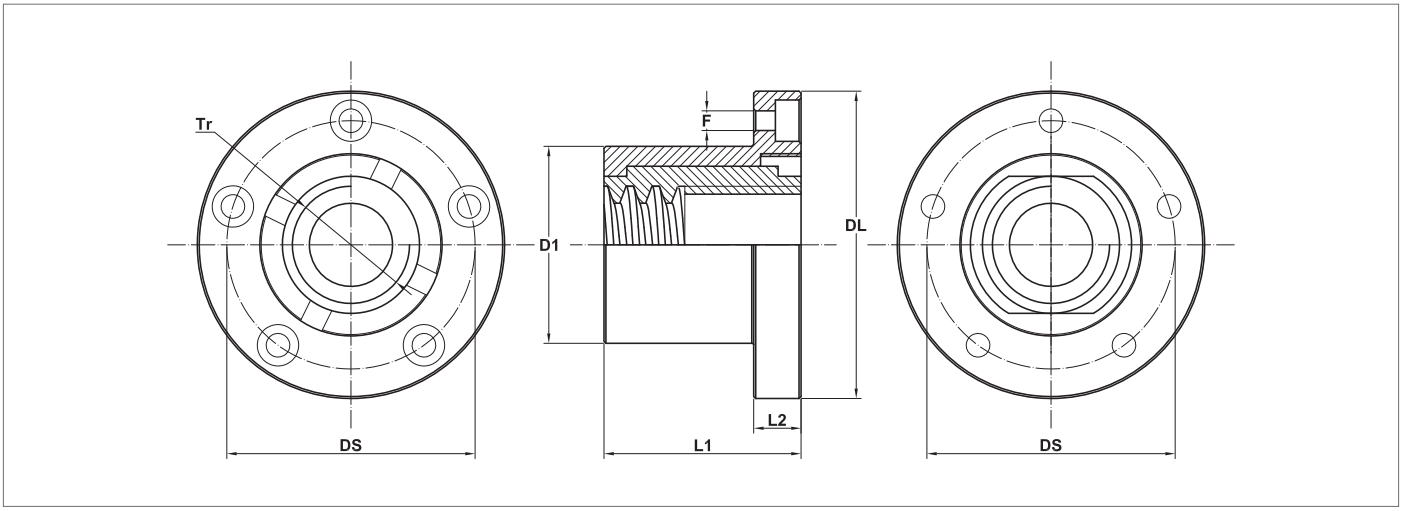
Plastic material used for the threaded interior in Swap FAP and Swap FIP.

Technical data	FAB-FAP-FIP Swap ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
1-start thread	16 - 50 mm
2-start thread	16 - 40 mm
Available pitches:	
1-start thread	4 - 8 mm
2-start thread	8 - 14 mm
Direction of rotation:	right
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 mm in progression on the diameters

Modular nuts
Flanged steel swaps
FAB range: bronze threaded interior.

Technical features	
Raw material	UNI 7013-72 CuSn12 bronze threaded interior
Thread starts	1 - 2
Bushing tolerances	
D1	h7
DL, DS, L1, L2, L3	± 0.1 mm

Suitable for manual maneuvering and handling. Flexible and economical solution compared to all bronze material nuts.



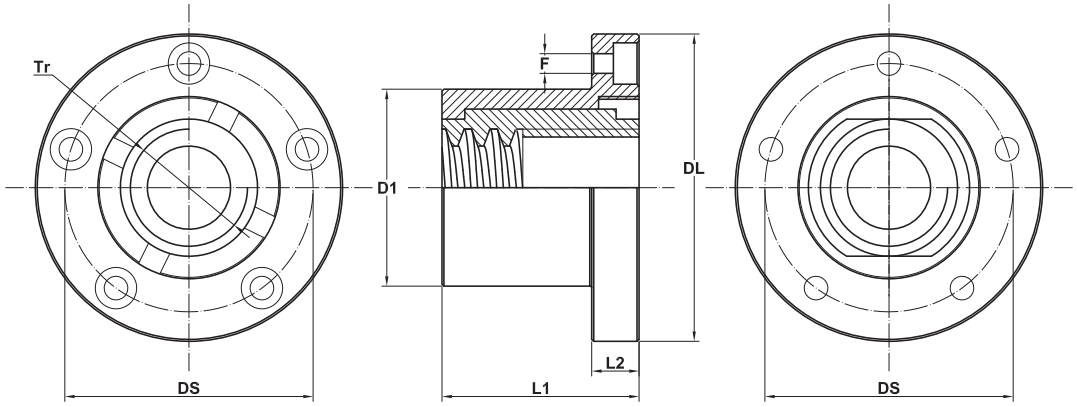
	Code Item	Thread	Orientation	DL mm	D1 mm	L1 mm	DS mm	L2 mm	holes	screws Allen 8.8	ring	mass g	Support surface in mm²
S	SWAPFABT16041D	Tr16x04	right	68	40	40	53	12	5	M 6	M 36x1.5	510	879.65
S	SWAPFABT16082D	Tr16x08 (P4)	right	68	40	40	53	12	5	M 6	M 36x1.5	510	879.65
S	SWAPFABT20041D	Tr20x04	right	68	40	40	53	12	5	M 6	M 36x1.5	500	1130.97
S	SWAPFABT20082D	Tr20x08 (P4)	right	68	40	40	53	12	5	M 6	M 36x1.5	510	1130.97
S	SWAPFABT25051D	Tr25x05	right	78	50	50	63	12	6	M 6	M 46 x 1.5	775	1767.15
S	SWAPFABT25102D	Tr25x10 (P5)	right	78	50	50	63	12	6	M 6	M 46 x 1.5	775	1767.15
S	SWAPFABT30061D	Tr30x06	right	78	50	50	63	12	6	M 6	M 46 x 1.5	760	2120.58
S	SWAPFABT30122D	Tr30x12 (P6)	right	78	50	50	63	12	6	M 6	M 46 x 1.5	760	2120.58
S	SWAPFABT40071D	Tr40x07	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3040	4586.73
S	SWAPFABT40142D	Tr40x14 (P7)	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3040	4586.73
S	SWAPFABT50081D	Tr50x08	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3020	5780.53

S Available stock
R Available on request

Modular nuts
Flanged steel swaps
FAP range: POM-C threaded interior

Technical features	
Raw material	Polyacetal (POM-C) threaded interior
Thread starts	1 - 2
Bushing tolerances	
D1	h7
DL, DS, L1, L2, L3	± 0.1 mm

Suitable with 1- and 2- start loads.
Flexible and economical solution compared to full POM-C nuts.



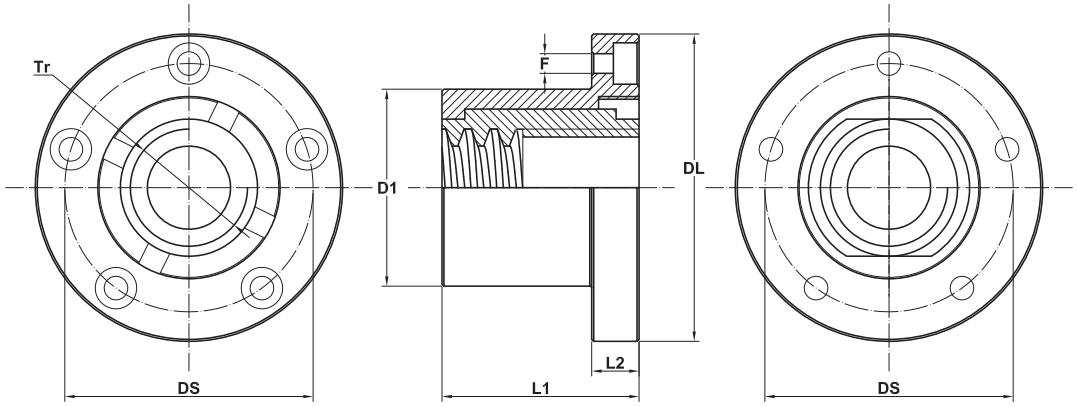
	Code Item	Thread	Orientation	DL mm	D1 mm	L1 mm	DS mm	L2 mm	holes	screws Allen 8.8	ring	mass g	Support surface in mm²
S	SWAPFAPT16041D	Tr16x04	right	68	40	40	53	12	5	M 6	M 36x1.5	510	879.65
S	SWAPFAPT16082D	Tr16x08 (P4)	right	68	40	40	53	12	5	M 6	M 36x1.5	510	879.65
S	SWAPFAPT20041D	Tr20x04	right	68	40	40	53	12	5	M 6	M 36x1.5	500	1130.97
S	SWAPFAPT20082D	Tr20x08 (P4)	right	68	40	40	53	12	5	M 6	M 36x1.5	510	1130.97
S	SWAPFAPT25051D	Tr25x05	right	78	50	50	63	12	6	M 6	M 46 x 1.5	775	1767.15
S	SWAPFAPT25102D	Tr25x10 (P5)	right	78	50	50	63	12	6	M 6	M 46 x 1.5	775	1767.15
S	SWAPFAPT30061D	Tr30x06	right	78	50	50	63	12	6	M 6	M 46 x 1.5	760	2120.58
S	SWAPFAPT30122D	Tr30x12 (P6)	right	78	50	50	63	12	6	M 6	M 46 x 1.5	760	2120.58
S	SWAPFAPT40071D	Tr40x07	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3040	4586.73
S	SWAPFAPT40142D	Tr40x14 (P7)	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3040	4586.73
S	SWAPFAPT50081D	Tr50x08	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3020	5780.53

S *Available stock*
R *Available on request*

Modular nuts
AISI 304 stainless steel flanged swaps
FIP range: POM-C threaded interior

Technical features	
Raw material	Polyacetal (POM-C) threaded interior
Thread starts	1 - 2
Bushing tolerances	
D1	h7
DL, DS, L1, L2, L3	± 0.1 mm

Handling with 1- and 2- start loads.
Recomended for use in combination with stainless steel screws.
Completely resistant to oxidation and chemical aggrression (Stainless steel system)



	Code Item	Thread	Orientation	DL mm	D1 mm	L1 mm	DS mm	L2 mm	holes	screws Allen 8.8	ring	mass g	Support surface in mm²
S	SWAPFIP T16041D	Tr16x04	right	68	40	40	53	12	5	M 6	M 36x1.5	510	879.65
S	SWAPFIP T16082D	Tr16x08 (P4)	right	68	40	40	53	12	5	M 6	M 36x1.5	510	879.65
S	SWAPFIP T20041D	Tr20x04	right	68	40	40	53	12	5	M 6	M 36x1.5	500	1130.97
S	SWAPFIP T20082D	Tr20x08 (P4)	right	68	40	40	53	12	5	M 6	M 36x1.5	510	1130.97
S	SWAPFIP T25051D	Tr25x05	right	78	50	50	63	12	6	M 6	M 46 x 1.5	775	1767.15
S	SWAPFIP T25102D	Tr25x10 (P5)	right	78	50	50	63	12	6	M 6	M 46 x 1.5	775	1767.15
S	SWAPFIP T30061D	Tr30x06	right	78	50	50	63	12	6	M 6	M 46 x 1.5	760	2120.58
S	SWAPFIP T30122D	Tr30x12 (P6)	right	78	50	50	63	12	6	M 6	M 46 x 1.5	760	2120.58
S	SWAPFIP T40071D	Tr40x07	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3040	4586.73
S	SWAPFIP T40142D	Tr40x14 (P7)	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3040	4586.73
S	SWAPFIP T50081D	Tr50x08	right	120	75	80	95	20	6	M 10	M 72 x 1.5	3020	5780.53

S *Available stock*
R *Available on request*

Construction and performance characteristics

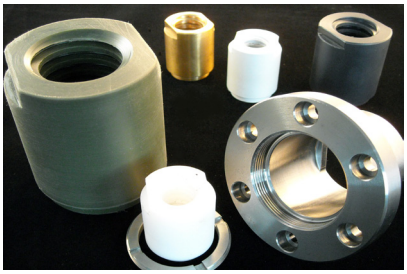
The threaded interior for Swap nuts allows selecting the material of the threaded portion that is most suitable for the action of the system. Different materials are available for maneuvering and handling. Maximum strength to twisting guaranteed by the quality of the project.

Recommended uses

SwapIN B
CuSn12 bronze threaded interior. Suitable for maneuvering and handling. Excellent resistance to wear provided by CuSn12 bronze.

SwapIN P
POM-C acetal copolymer resin threaded interior. Self-lubricating with excellent performance for handling tasks with low 1- and 2-start loads.

A1 SwapINP nuts
Polyamide PA6 threaded interior + oil. Self-lubricating. Excellent resistance to wear. Suitable for maneuvering and positioning of medium-high loads at low speeds.



A2 SwapINP
Polyamide PA6 + MoS2 threaded interior. Good resistance to wear. Suitable for maneuvering and positioning of medium-low loads in dry environments. Requires lubrication.

A3 SwapINP
Polyamide PA6 + solid lubricants threaded interior. Great for "P x V" improvement. Suitable for 2-start screws. Self-lubricating.

Mechanical characteristics of raw material

UNI 7013-72 CuSn12

Material used for the FA Swap Flange Bushing.

Polyacetal (POM-C)

Plastic material used for SwapINP interiors

PA6 + oil

Polyamide used for SwapINP A1 interiors

PA6 + MoS2

Polyamide used for SwapINP A2 interiors

PA6 + solid lubricants

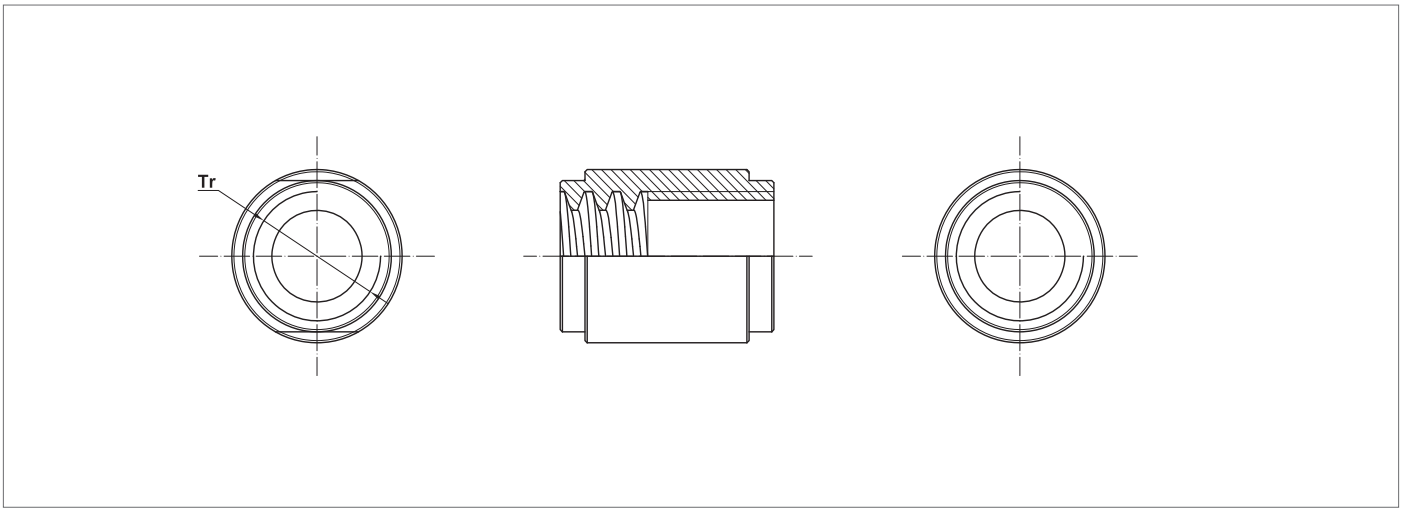
Polyamide used for SwapINP A3 interiors

Technical data	FAB-FAP-FIP Swap ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
1-start thread	16 - 50 mm
2-start thread	16 - 40 mm
Available pitches:	
1-start thread	4 - 8 mm
2-start thread	8 - 14 mm
Direction of rotation:	right
Coupling tolerances:	within the ranges foreseen by 7e (screw) and 7H (nut screw) thread tolerances
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 mm in progression on the diameters

Modular nuts
SwapIn: Swap threaded interior
Bronze SwapInB

Technical features	
Raw material	UNI 7013-72 CuSn12
Thread starts	1 - 2

Suitable for manual maneuvering and handling.

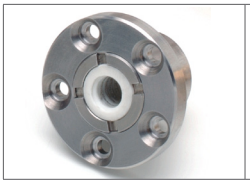


	Code Item	Thread	Orientation	Support surface in mm²
S	SWAPIN BT16041D	Tr16x04	right	879.65
S	SWAPIN BT16082D	Tr16x08 (P4)	right	879.65
S	SWAPIN BT20041D	Tr20x04	right	1130.97
S	SWAPIN BT20082D	Tr20x08 (P4)	right	1130.97
S	SWAPIN BT25051D	Tr25x05	right	1767.15
S	SWAPIN BT25102D	Tr25x10 (P5)	right	1767.15
S	SWAPIN BT30061D	Tr30x06	right	2120.58
S	SWAPIN BT30122D	Tr30x12 (P6)	right	2120.58
S	SWAPIN BT40071D	Tr40x07	right	4586.73
S	SWAPIN BT40142D	Tr40x14 (P7)	right	4586.73
S	SWAPIN BT50081D	Tr50x08	right	5780.53

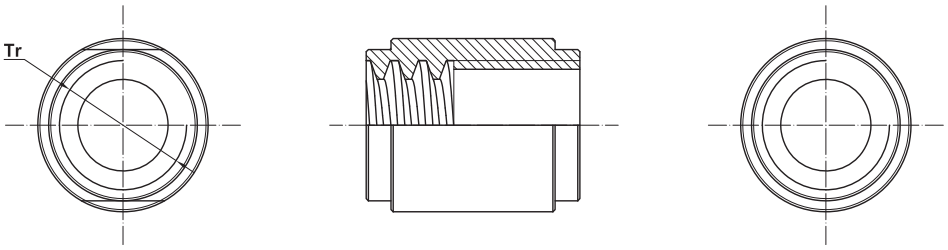
S *Available stock*
R *Available on request*

Modular nuts
SwapIn: Swap threaded interior
Polyacetal SwapINP

Technical features	
Raw material	Polyacetal (POM-C)
Thread starts	1 - 2



Handling with 1- and 2- start loads.



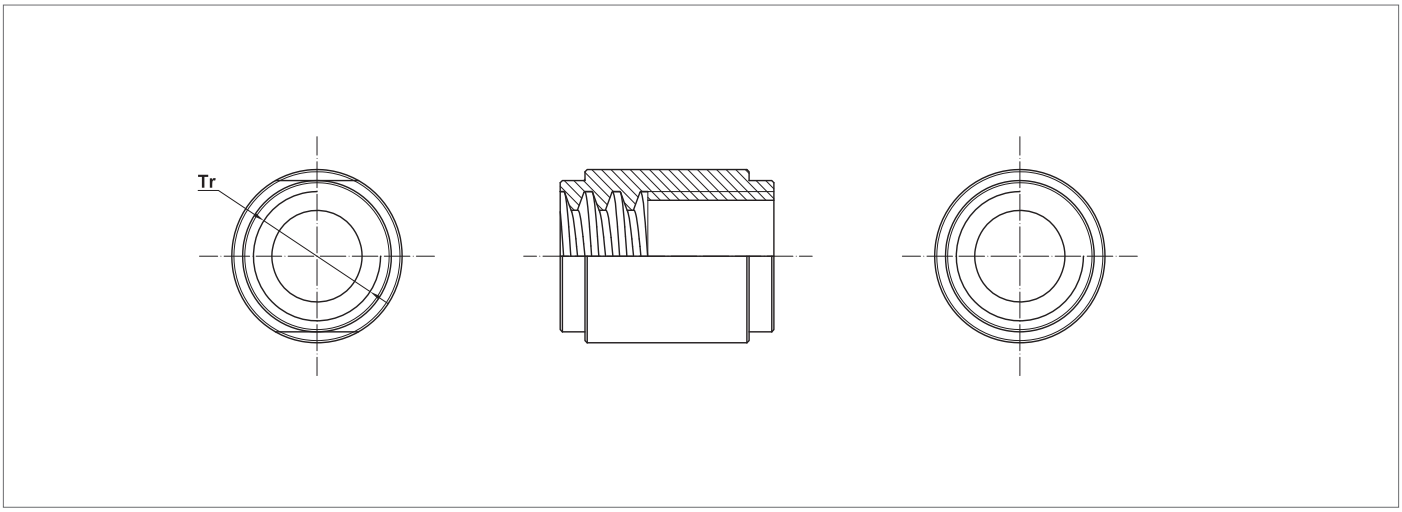
	Code Item	Thread	Orientation	Support surface in mm²
S	SWAPIN PT16041D	Tr16x04	right	879.65
S	SWAPIN PT16082D	Tr16x08 (P4)	right	879.65
S	SWAPIN PT20041D	Tr20x04	right	1130.97
S	SWAPIN PT20082D	Tr20x08 (P4)	right	1130.97
S	SWAPIN PT25051D	Tr25x05	right	1767.15
S	SWAPIN PT25102D	Tr25x10 (P5)	right	1767.15
S	SWAPIN PT30061D	Tr30x06	right	2120.58
S	SWAPIN PT30122D	Tr30x12 (P6)	right	2120.58
S	SWAPIN PT40071D	Tr40x07	right	4586.73
S	SWAPIN PT40142D	Tr40x14 (P7)	right	4586.73
S	SWAPIN PT50081D	Tr50x08	right	5780.53

S *Available stock*
R *Available on request*

Modular nuts
SwapIn: Swap threaded interior
Polyamide PA6 + oil SwapINP

Technical features	
Raw material	Polyamide PA6 + Oil
Thread starts	I

Good resistance to wear and excellent friction coefficient. Suitable for maneuvering and handling work at low speed and with mediun-high loads.



	Code Item	Thread	Orientation	Support surface in mm²
R	SWAPINPA I T25051D	Tr25x05	right	1767.15
R	SWAPINPA I T30061D	Tr30x06	right	2120.58
R	SWAPINPA I T40071D	Tr40x07	right	4586.73
R	SWAPINPA I T50081D	Tr50x08	right	5780.53

S Available stock
R Available on request

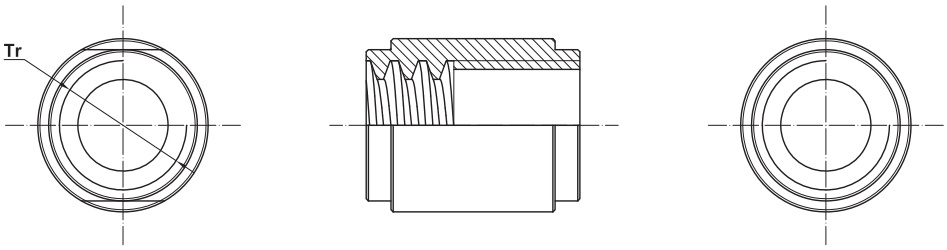
Modular nuts

SwapIn: Swap threaded interior

Polyamide PA6 + MoS2 SwapINP

Technical features	
Raw material	Polyamide PA6 + MoS2
Thread starts	1

Good resistance to wear with low-medium loads. Recommended for use in environments not exposed to humidity and with precision rolled RATHCP type screws. Requires lubrication. Suitable with 1- and 2- start loads. Flexible and economical solution compared to full POM-C nuts.



	Code Item	Thread	Orientation	Support surface in mm²
R	SWAPINPA2T16041D	Tr16x04	right	879.65
R	SWAPINPA2T20041D	Tr20x04	right	1130.97
R	SWAPINPA2T25051D	Tr25x05	right	1767.15
R	SWAPINPA2T30061D	Tr30x06	right	2120.58
R	SWAPINPA2T40071D	Tr40x07	right	4586.73
R	SWAPINPA2T50081D	Tr50x08	right	5780.53

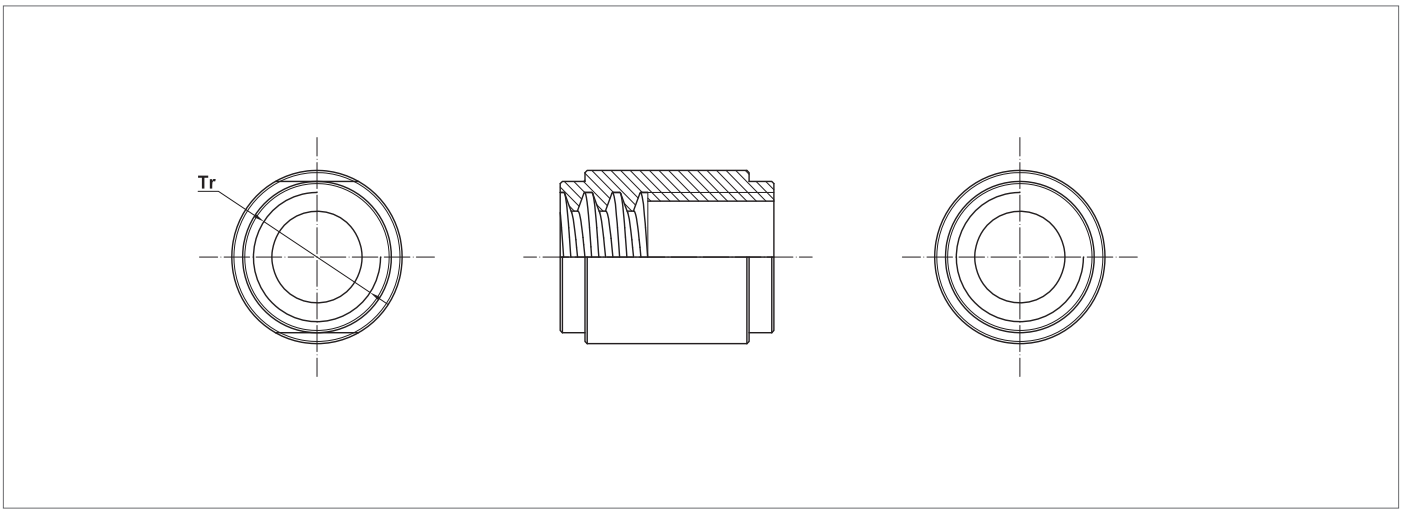
S Available stock
R Available on request

Modular nuts

SwapIn: Swap threaded interior

Polyamide PA6 + solid lubricants SwapINP

Technical features	
Raw material	PA6 polyamide + solid lubricants
Thread starts	2
	Good resistance to wear and self-lubricating properties. Suitable for handling for 2-start screws.



	Code Item	Thread	Orientation	Support surface in mm²
R	SWAPINPA3T16082D	Tr16x08 (P4)	right	879.65
R	SWAPINPA3T20082D	Tr20x08 (P4)	right	1130.97
R	SWAPINPA3T25102D	Tr25x10 (P5)	right	1767.15
R	SWAPINPA3T30122D	Tr30x12 (P6)	right	2120.58
R	SWAPINPA3T40142D	Tr40x14 (P7)	right	4586.73

S Available stock
R Available on request

Construction and performance characteristics

The T-Nose support nuts are designed to offer a large support surface to the mounting flange. The latter is made of burnished steel. The steel flange is screwed to the threaded bush and mechanically locked. Excellent alternative to nuts made entirely of bronze material for saving precious material where it is not needed. Easy to replace when worn. Maximum strength in twisting motion.

Recommended uses

MTNB range
Support nut with CuSn12 bronze threaded element and burnished steel flange. The flange is pre-drilled to house Allen fixing screws. High-quality bronze with excellent resistance to wear and 90-100 degree HB hardness. Economical and practical solution for maneuvering and handling medium-high loads at low speed.

MTNLR range
Support nut with CuSn5Zn5Pb5 copper alloy thread and burnished steel flange. The flange is pre-drilled to house Allen fixing screws. Bronze with good resistance to wear and 65-80 degree HB hardness. Economical and practical solution for maneuvering and handling medium-low loads at low speeds.

Mechanical characteristics of raw material

11SMnPb37 1.0737 Steel

Material used for screw-on flanges. The flanges are made of burnished steel.

UNI 7013-72 CuSn12

Bronze used for the MTNB line nuts

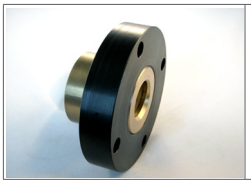
DIN 17656 CuSn5Zn5Pb5 Bronze

Bronze used for the MTNLR line nuts

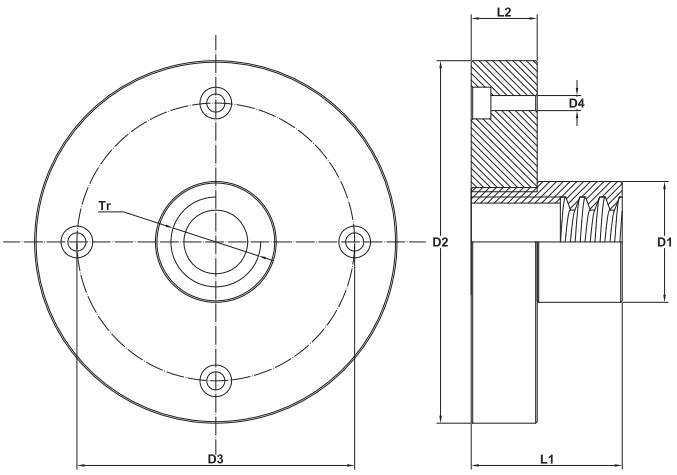
Technical data	FAB-FAP-FIP Swap ranges
Thread	DIN 103 ISO 2901-04 Trapezoid
Thread tolerance	7H
Number of start threads	1 - 2
Available diameters:	
1-start thread	20 - 30 mm
2-start thread	20 - 30 mm
Available pitches:	
1-start thread	4 - 6 mm
2-start thread	8 - 12 mm
Direction of rotation:	right - left
Coupling tolerances:	within the ranges foreseen by thread tolerances 7e (screw) and 7H (nut screw)
standard axial tolerance	0.10 mm
standard radial tolerance	from 0.10 mm to 0.30 mm in progression on the diameters

Modular nuts
Steel T-Nose Nut flange
CuSn12 bronze range

Technical features	
Raw material	UNI 7013-72 CuSn12
Thread starts	1 - 2
Bushing tolerances	
D1	h7
D2, D3, L1, L2, D4	± 0.1 mm



Economical and practical solution for maneuvering and handling medium-high loads at low speed.

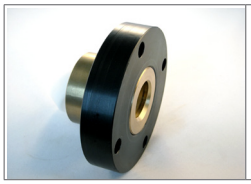


	Code Item	Thread	Orientation	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	D4 mm	mass g	Support surface in mm²
R	MTNB20041D	Tr20x04	right	28	66	53	32	13.2	6.75	480	723.82
R	MTNB20041S	Tr20x04 LH	left	28	66	53	32	13.2	6.75	480	723.82
R	MTNB20082D	Tr20x08 (P4)	right	28	66	53	32	13.2	6.75	480	723.82
R	MTNB25051D	Tr25x05	right	38	70	57.4	38	13.2	6.75	600	1343.08
R	MTNB25051S	Tr25x05 LH	left	38	70	57.4	38	13.2	6.75	600	1343.08
R	MTNB25102D	Tr25x10 (P5)	right	38	70	57.4	38	13.2	6.75	600	1343.08
R	MTNB30061D	Tr30x06	right	44.5	107	87.4	54	13.2	10	1270	2290.22
R	MTNB30061S	Tr30x06 LH	left	44.5	107	87.4	54	13.2	10	1270	2290.22
R	MTNB30122D	Tr30x12 (P6)	right	44.5	107	87.4	54	13.2	10	1270	2290.22

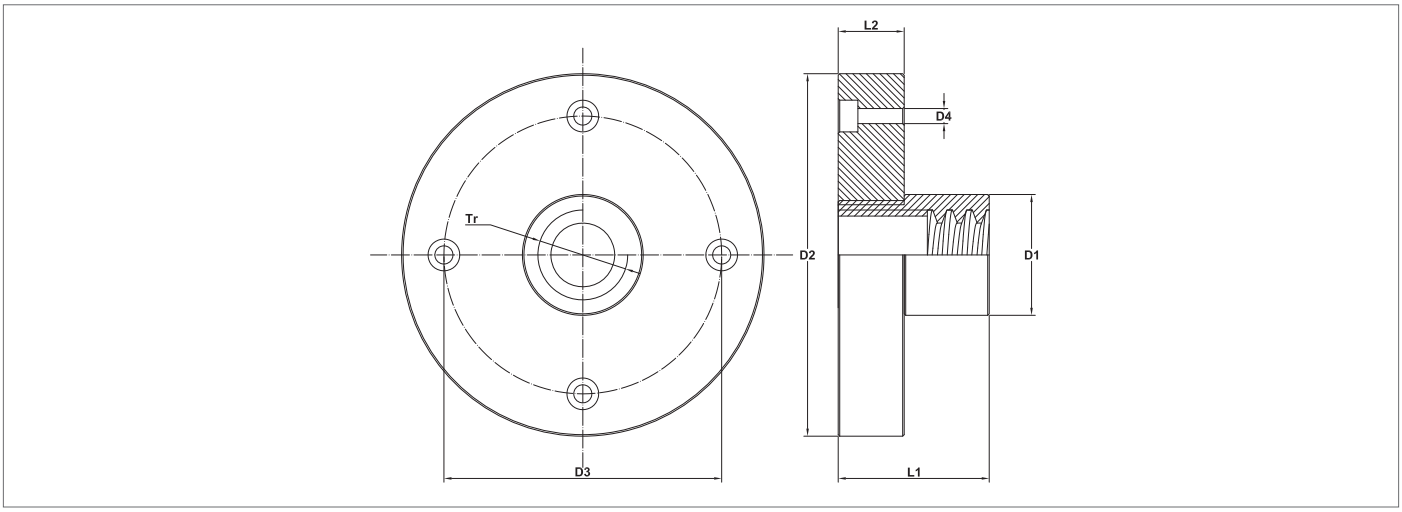
S Available stock
R Available on request

Modular nuts
Steel T-Nose Nut flange
Copper alloy range

Technical features	
Raw material	DIN 17656 CuSn5Zn5Pb5 Bronze
Thread starts	1 - 2
Bushing tolerances	
D1	h7
D2, D3, L1, L2, D4	± 0.1 mm



Economical and practical solution for maneuvering and handling medium-high loads at low speed.



	Code Item	Thread	Orientation	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	D4 mm	mass g	Support surface in mm²
R	MTNLR20041D	Tr20x04	right	28	66	53	32	13.2	6.75	480	723.82
R	MTNLR20041S	Tr20x04 LH	left	28	66	53	32	13.2	6.75	480	723.82
R	MTNLR20082D	Tr20x08 (P4)	right	28	66	53	32	13.2	6.75	480	723.82
R	MTNLR25051D	Tr25x05	right	38	70	57.4	38	13.2	6.75	600	1343.08
R	MTNLR25051S	Tr25x05 LH	left	38	70	57.4	38	13.2	6.75	600	1343.08
R	MTNLR25102D	Tr25x10 (P5)	right	38	70	57.4	38	13.2	6.75	600	1343.08
R	MTNLR30061D	Tr30x06	right	44.5	107	87.4	54	13.2	10	1270	2290.22
R	MTNLR30061S	Tr30x06 LH	left	44.5	107	87.4	54	13.2	10	1270	2290.22
R	MTNLR30122D	Tr30x12 (P6)	right	44.5	107	87.4	54	13.2	10	1270	2290.22

S Available stock
R Available on request

Screw Terminals Machining

The Montesi manoeuvring screws are supplied to commercial distribution in a standard solution, cut to size and with beveled tips.

They are also available in a more economical cut without chamfering (RATW) version.

The screws intended for maneuvering or handling are typically operated by means of a rotary transmission and, therefore, require machined elements to provide for their support by bearings, as well as pre-assembly for securing the transmission element by means of a key.

Montesi has a dedicated department to perform CNC numerical control machining for turning, drilling, boring, grinding, broaching and deep drilling.

There are different classes of machining quality and two types of key pre-assemblies (Italian and US).

Surface thread coatings

Montesi's experience in design work and in the supply of mechanical components submitted to thermal, chemical and galvanic treatments, allows identifying and finding reliable and professional suppliers.

In handling and manoeuvring screws, the issue of performance and efficiency of the nut-screw system is often a stumbling block which requires advice and consultancy.
The experience honed has allowed us to identify some types of high-tech surface treatments that can significantly reduce the friction coefficient between screw and nut.

The needs are analyzed individually on the basis of the data and characteristics of the system to be designed.

Removed - Milled Thread

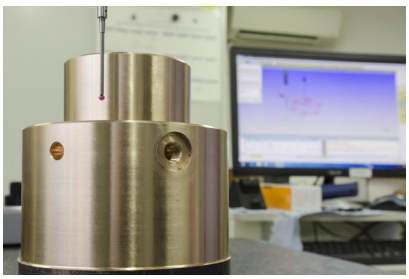
Manoeuvring screws with thread obtained by removal are available upon request. When there are size requirements related to the diameter of the shanks with respect to the average diameter of the rolled thread, the thread removed is an unavoidable choice.

Personalised nuts

The Montesi nut screws are designed in shapes and sizes to optimise performance and facilitate assembly and maintenance as much as possible.

However, nut screws with customised shapes and shapes are also available.

Materials and sizes can also be defined and customised according to the customer's needs.

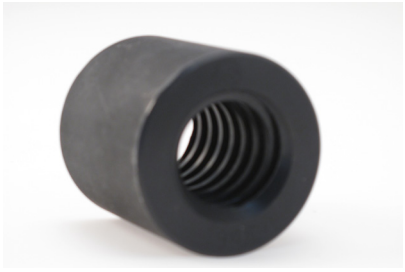


Customised radial slack

The characteristics of the internal geometry of the nut can be customised, in order to reduce the radial slack according to the design criteria requested by the customer.

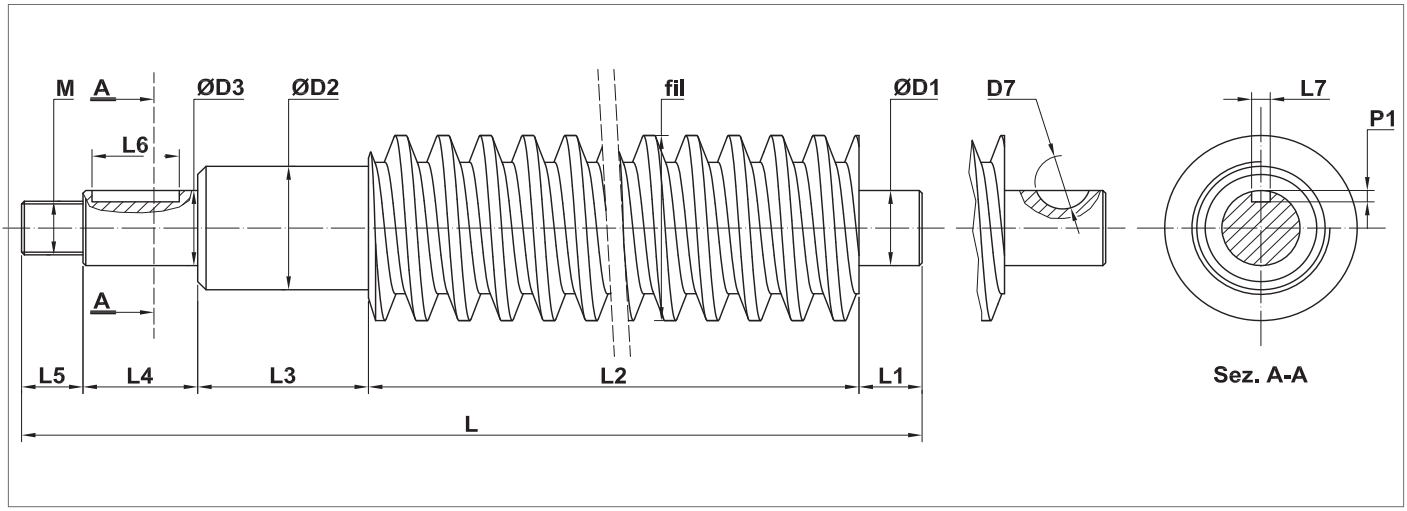
Nut surface coatings

Steel nut screws can be supplied with chemical and galvanic surface treatments (burnishing, nickel plating, zinc plating) to increase resistance to the elements or to improve their aesthetic impact.



Summary of standard processes

The drawing shows the machined parts typically present on manoeuvring screws, supported with bearings at the ends and operated by means of an element for the transmission of motion secured by a key.



Length table

L	Total length
L1	Bearing shank length on support side
L2	Length of threaded section
L3	Length of the power side bearing shank
L4	Transmission shank length
L5	Length of threaded closing shank M
L6	Length of transmission engagement key
L7	ITALIAN transmission engagement key width

Diameter table

ØD1	Support side shank diameter
fil	Thread diameter and pitch
ØD2	Transmission side shank diameter
ØD3	Transmission shank diameter
M	Diameter and pitch of threaded closing shank
P1	Transmission engagement key depth

D7	US key diameter

Machining codes table for different machining qualities and key types

Machining code	Machining quality class	Key type
LT01	STANDARD	ITALIAN
LT02	ACCURACY	ITALIAN
LT03	ACCURACY	US

Size tolerances

The length sizes are tolerated according to the deviations for linear dimensions EN 22768-1 and 2 with designation **m** (medium) and **f** (fine) for dimensional tolerances, and **K** for geometric tolerances.

	Size tolerances by type	LT01	LT02	LT03
L1	Bearing shank length on support side	f	f	f
L2	Length of threaded section	m	m	m
L3	Length of the power side bearing shank	f	f	f
L4	Transmission shank length	m	f	f
L5	Length of threaded closing shank M	m	m	m
L6	Length of transmission engagement key	m	f	f
L7	Length of transmission engagement key	m	f	f
D1	Support side shank diameter	h7	j6	j6
D2	Transmission side shank diameter	h7	j6	j6
R	Roughness of bearing shanks ØD1 - ØD2	Ra 1.6	Ra 0.8	Ra 0.8
D3	Transmission shank diameter	h8	h7	h7
L6	Transmission engagement key depth	+ 0.1	+ 0.1	+ 0.1

Below: example of order string

Order string	L	L1	D1	L2	Tr screw thread	L3	D2	L4	D3	L5	M	L6	L7	P1
LT01-RAT30061D	1118	20	10	1000	Tr30x06 dx	60	25	40	15	8	10	25	5	5

Manoeuvring screws lubricants

The Montesi experience in the direct supply to manufacturers of industrial systems and automation has allowed us to search for special products for the lubrication of nut-screw systems.

As far as manoeuvring screws, correct lubrication is the basis of the efficiency of the system, but, above all, it protects the nuts from the negative effects of wear. Bronze or copper alloy nut screws, which require a low-coefficient friction as the thread flanks slide, are typically used for maneuvering tasks.

For this reason, it is important to apply a specific lubricant on the screw, in order to improve the tribological effect, without weighing the screw down with a thick "grease" layer that sometimes attracts foreign particles, which, in turn become an abrasive paste that increases wear rather than protecting the nuts.

Linea Montesi Grease

Prodotti specifici per la lubrificazione dei sistemi Vite - Madrevite

MG - L01

PTFE-based lubricant product with excellent anti-seize properties. Applied pure or diluted with other mineral products, it has special properties of efficacy and duration over time.

MG - D01

PTFE-based lubricant. Suitable for applications subject to long micro-vibrations. Excellent lubricating property to prevent stick-slip phenomena.
Useful for maneuvering applications with small diameter screws where quite operation is required, and with the possibility of recovering the nut screw slack.

Adapter supports for the radial fixing of flanged nut screws

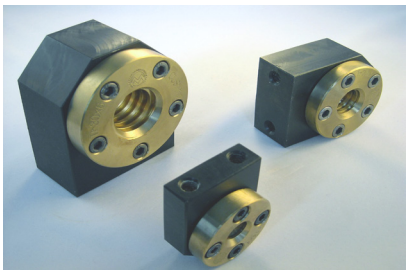
Burnished steel supports for radial fixing of flanged nut screws.

Different sizes are available to house nut screws for trapezoidal manoeuvring screws in the main diameters.

Pre-drilled for securing nut screw and support.

Very useful in prototyping.

Can be combined with bronze and steel nut screws.

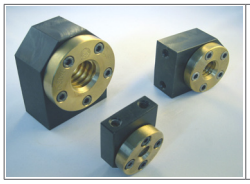


MG - L01	Compound with LTFE. Excellent anti-seize properties. Effective and lasting lubrication
MG - D01	Product enhanced with LTFE. Formulated for applications subject to vibrations. Excellent corrosion protection, lubricating capacity, reduction of nut slack, noise cancellation

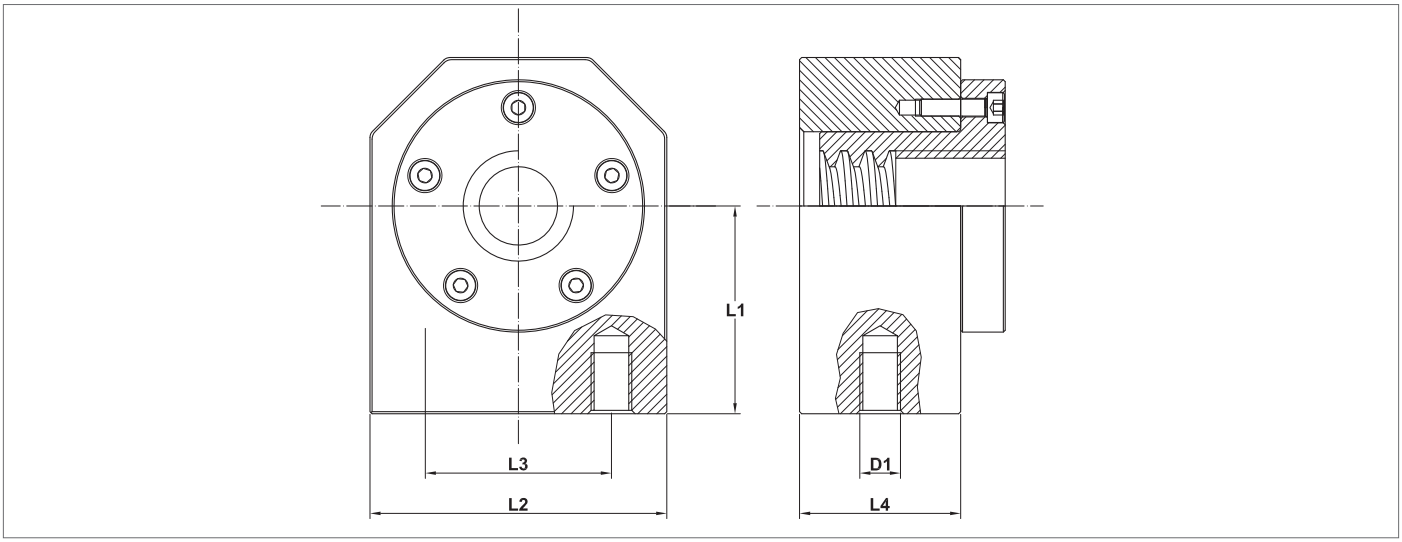
Item code	Description	Packaging
MG - L01	Montesi-Grease product with lubricating properties	30 g pack
MG - D01	Montesi-Grease product with damping properties	30 g pack

Accessories
Adapter supports for nuts flanged

Technical Characteristics of Supports	
Raw material	11SMnPb37 1.0737 steel
Treatment	Burnishing
Bushing tolerances	± 0.1 mm



Suitable for the radial fixing of flanged nut screws. Very useful in prototyping.



	Code Item	Compatibility of flanged nut screws with Tr thread diameter	L1 mm	L2 mm	L3 mm	L4 mm	D1 fixing screws
S	SAFR 1	Tr10 - Tr12	31	44	27.5	15	M8
S	SAFR 2	Tr14	31	44	27.5	15	M8
S	SAFR 3	Tr16	31	44	27.5	15	M8
S	SAFR 4	Tr18	37.5	54	37.5	29.5	M10
S	SAFR 5	Tr20 - Tr22	37.5	54	37.5	29.5	M10
S	SAFR 6	Tr25	49.5	70	52	38	M12
S	SAFR 7	Tr28 - Tr30	49.5	70	52	38	M12

S *Available stock*
R *Available on request*

Screws with trapezoidal thread

The production of threads by rolling allows performing precision external threads in large series and at low costs. It differs from traditional production methods with cutting tools in that it works by plastic deformation of the material by means of a rolling lamination process achieved with the use of threaded rollers.
The effect of the process is a modification of the crystalline structure of the metal, which becomes fiber-like that seamlessly follow the geometry of the thread, becoming thicker at the core and the flank, precisely where the thread is most stressed.

The benefits of the rolling process vis-à-vis the chip-removal process can be summarised as follows:

- greater resistance of the thread to mechanical stresses thanks to the continuity of the fibres of the material;
- greater resistance to wear, as the rolling process hardens and smooths the thread flanks by increasing the surface hardness and decreasing the friction coefficient;
- possibility of working at high working speeds in nut screw mechanisms thanks to the reduced value of the friction coefficient and to high resistance to wear;
- cheaper product than the product obtained by chip removal.

In conclusion, trapezoid profile screws obtained with the rolling process, particularly when coupled with bronze nut screws, allow obtaining side-shift systems that have considerably better efficiency, smoothness, noiselessness and reliability compared to those made with screws obtained by chip removal.

Screw materials

The materials used for the production of MONTESI screws are accompanied by a quality certificate attesting to the chemical and mechanical properties of the individual batches delivered by our suppliers.
After evaluating the different characteristics of the materials available on the market, we settled for C20 carbon steel (W. No. 1.0402) and AISI-SAE 304 stainless steel (W. No. 1.4301).
C20 carbon steel offers a very good compromise between the workability of the screws as a semi-finished product and the mechanical characteristics of the finished product, allowing to obtain screws with an excellent surface finish and with good mechanical properties.
AISI-SAE 304 stainless steel is an austenitic stainless steel with technological characteristics comparable to those of C20 steel, offering, at the same time, good resistance to corrosion.
For this reason, the MONTESI screws are an excellent semi-finished product for subsequent processing, thanks to the excellent characteristics of weldability and workability for chip removal of C20 and AISI 304 steels.

Cylindrical and flanged nuts

MONTESI nut screws are produced in cylindrical and flanged versions; the latter considerably simplifies assembly operations thanks to the presence of fixing holes for housing metric cylindrical head screws (UNI 5931).
The nut screws are made with a high length/diameter ratio in order to ensure limited values of surface contact pressure between the teeth of the threads at the gripping point (the surface contact pressure is given by the ratio between the axial force applied to the nut-screw system and the support area of the threads of the nut screw on those of the screw).
The nuts in any material, shape and size, bear information like thread diameter and direction (if left, with the initials SX) engraved on the edge. In this way, identification by the retailer and the end user is easier, thus neutralising any risk of error.

Nut Screw materials

MONTESI nut screws are made of AVPB leaded steel (W. no. 1.0737) and of bronze UNI 7013 G.CuSn12): all the materials used are accompanied by certificates issued by the manufacturer attesting to the chemical and mechanical properties of the supply.
Bronze is an alloy of COPPER and TIN. In the common industrial-use bronze there are also secondary binding agents, such as zinc and lead, which decrease its purity. G-CuSn12 bronze is a Binary bronze. This means that it has only a single binding agent - tin - and, therefore, is extremely pure.
Compared to normal industrial-use bronzes, G-CuSn12 bronze has high quality characteristics. The particular purity properties of the alloy give it significantly better resistance-to-wear properties, which, in the case of bronze nuts, translates into the greater resistance of the threads to wear resulting from friction by contact with the screw threads. Steel nuts have a remarkable mechanical resistance and bronze nuts have a good resistance to wear and a low friction coefficient at the screw-nut coupling; therefore, they are particularly suitable for all applications where frequent movement between screw and nut is required, even at relatively high speeds.

Selection of nut-screw couple

The choice of the components of the nut-screw system must be made by carefully evaluating all the parameters that affect the functionality, reliability and durability of the system.

Therefore, it is necessary to make some

considerations for the correct selection of:
- screw;
- nut;
- nut-screw couple

Screw selection

To choose the screw correctly, it is necessary to consider
- work environment;
- positioning accuracy required by the nut-screw system;
- possible need for motion irreversibility.

In normal working environments, in the absence of particular corrosive or oxidising agents, carbon steel screws can be used without particular precautions.

When the working environment is characterised by the presence of particularly aggressive agents, or when absolute chemical stability of the screw is required, the use of stainless steel screws is recommended.

The latter are particularly suitable for:
- environments with high humidity or immersed in water, especially in the presence of aggressive dissolved salts;
- environments characterised by high operating temperatures, as austenitic stainless steel retains good mechanical characteristics and high resistance to corrosion and oxidation, even at relatively high temperatures;
- environments characterised by the presence of corrosive agents;
- environments in which it is essential to avoid contamination of process products (food, medical, pharmaceutical industries, etc.).

When the nut-screw pair is used as a positioning system, it is necessary to determine whether the accuracy of the screw pitch guarantees the required accuracy.

MONTESI screws are produced under the continuous control of the pitch by means of numerical control instrumentation that reports out-of-tolerance items in real time.

Our screws are produced with Class 100 pitch accuracy, that is, with a maximum error on the positioning of 0.100 mm every 300 mm of threaded section. This accuracy is more than sufficient for common applications; when greater positioning accuracy is required, we recommend the use of our screws obtained by chip removal.

The reversibility of the motion of the nut-screw system depends on the efficiency of the mechanism which, in turn, depends on the coefficient of friction between surfaces in contact and on the inclination angle of the helix.

Theoretically, for a mechanism to be irreversible it is sufficient that it has an direct motion efficiency of less than 0.5; in the case of the nut-screw system, if it is necessary to guarantee the absolute irreversibility of the motion even in the presence of vibrations, we recommend opting for screws with an efficiency lower than 0.30 ÷ 0.35.

Nut selection

Nuts must be selected by considering:
- work environment;
- system operation;
- assembly needs.

As regards the conditions of the working environment, the same considerations for the selection of screws apply to steel nuts, while bronze nuts can also be used in oxidising or slightly corrosive environments.

If the system has to operate in particularly aggressive environments due to the presence of highly corrosive agents, solutions can be studied with special materials or with specific surface protective treatments.

Steel nuts are particularly suitable as fastening elements, thanks to their exceptional mechanical strength, or as components of systems characterised by limited speed and moderate loads, or when anti-seize properties must ben maintained.

Bronze cylindrical nuts are particularly suitable for all those applications in which the mechanism is subject to motion in the presence of a load; in these cases, the performance of the system, in terms of efficiency, reliability and duration, is ensured by an effective lubrication system.

When the working temperature becomes high (>130°), it is important to pay particular attention to the lubricant used.

Flanged nuts, compared to bronze cylindrical nuts, offer an additional benefit for the simplicity of assembly, given the pre-drilled holes for cylindrical head screws with recessed hexagon (UNI 5931).

Sizing of the nut-screw pair

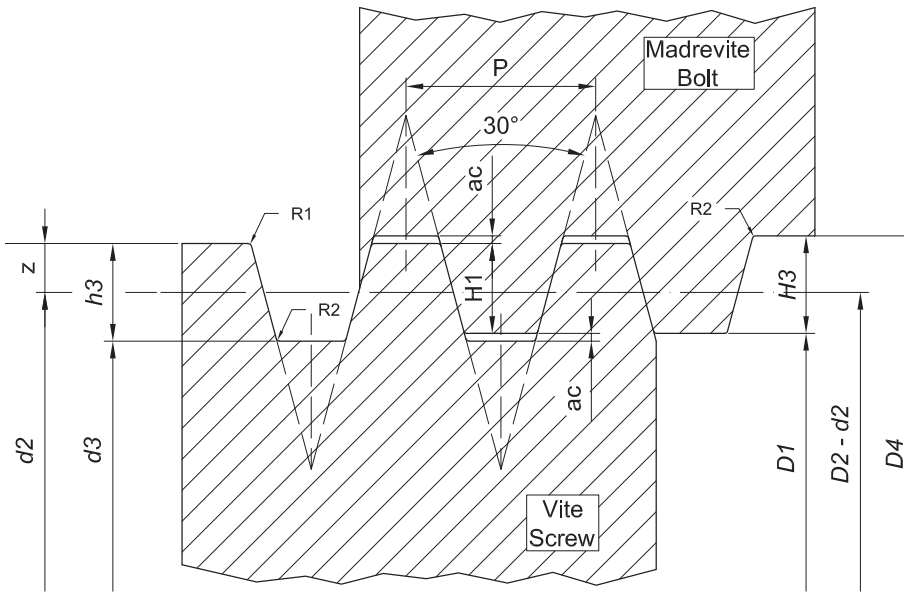
A correct sizing of the nut-screw system must take into account the possible operating conditions of the mechanism; therefore it must consider:
1. sizing for axial tensile or compressive loads;
2. sizing for operation at critical speed;
3. sizing for wear.

The system is not suitable for withstanding bending or shear stresses which, if any, must be balanced by other devices.

For applications where a considerable

mechanical resistance is required with modest or zero relative speed, sizing based on the values of the admissible loads in traction or compression may be sufficient, while in all other cases it is necessary to consider all three of the above points.

When a considerable ratio between side-shift speed and rotation speed is required, it is possible to use multi-start screws and left-hand threaded screws, as warranted by special operating requirements.



d:	screw external diameter	P:	pitch
d2:	average screw diameter	ac:	bottom slack
d3:	screw internal diameter	H1:	0.5 • P
D1:	nut internal diameter	h3/H4:	H1 + ac = 0.5 • P + ac
D2:	average nut diameter	z:	0.25 • P = H1/2
D4:	nut external diameter	d3:	d - 2 • h3
		d2/D2:	d - 2 • z = d - 0.5 • P
		D1:	d - H1 = d - P
		D4:	d + 2 • ac
		R1:	0.5
		R2:	0.5

Sizing under axial tensile and compressive loads

When the screw is axially loaded it is necessary to take into account not only the limitations for maximum permissible unit load (tensile stress or compressive stress on screws of limited length compared to the diameter), but also limitations for buckling load (compressive load on slender structures).

The permissible tensile load depends solely on the material and the resistant section of the screw or the nut.

Table 1 shows the experimental data of tests carried out by an independent authorised laboratory.

The tests were carried out by applying the traction force to two nuts engaged on a piece of screw; the data shown represent the load at which the breakage of the screw or nut screw occurred.

It is important to note that for nominal thread diameters lower than 40 mm, the screw broke even with a bronze nut; this occurred thanks to the size of the nuts which, guaranteeing a high number of simultaneous gripping threads, prevent the thread from being "shelled out" even at extreme loads.

The table values refer to experimental tests carried out on C-20 carbon steel screws.

To determine the maximum permissible operating load, it is necessary to divide the table value by an adequate safety factor whose value must be determined by the designer (generally between 3 and 6).

Table 1: Tensile breaking load of nut-screw systems

Screw	N	Kgf
Tr12x3 - Tr12x6	55,400	5,649
Tr14x4 - Tr14x8	67,500	6,883
Tr16x4 - Tr16x8	89,200	9,095
Tr18x4 - Tr18x8	107,200	10,931
Tr20x4 - Tr20x8	159,500	16,264
Tr22x5 - Tr22x10	182,000	18,559
Tr25x5 - Tr25x10	191,500	19,527
Tr28x5	244,500	24,932
Tr30x6 - Tr30x12	271,700	27,705
Tr35x6	378,200	38,565
Tr40x7 - Tr40x14	487,100	49,670
Tr45x8	589,800	60,142
Tr50x8	752,400	76,723
Tr55x9	890,400	90,795
Tr60x9	1,079,650	110,093
Tr70x10	1,448,490	1,477,047

Table 1

Particular consideration must be made for stainless steel. The mechanical characteristics of tensile strength show that there are peculiarities of elastic limit and plastic deformation when a stainless steel screw is under tensile strength. In particular, austenitic steels (such as AISI 304) show a very particular deformation curve, unlike martensitic or ferritic steel.

Indeed, the latter have an elastic deformation limit, i.e., within certain limits the applied tensile strength does not generate permanent plastic deformations. Austenitic steel, on the other hand, has an entirely plastic deformation curve, with the consequence that once tensile strength is over, the material maintains a permanent elongation deformation. A conventional elasticity limit is used to define the unitary stress such that after suppression the metal maintains a given permanent elongation equal to 0.2% (Rp 0.2).
By virtue of these characteristics of the steel used for the production of stainless steel screws (austenitic steel), the application of significant tensile strength can cause elongation deformations that can compromise the functioning of the nut-screw system.

The evaluation of resistance to the tensile load must therefore be made by an apriori evaluation of the effects that forces could cause on the functioning of the system, due to plastic deformations.

When the screw has to withstand a compression load, a distinction must be made between stubby screws and slender screws: in the first case, the screw must be sized with the same criteria considered for screws subject to traction and always using the data in table 1; in the second case, however, the screw must be sized at a "peak load"; in other words, it is necessary to prevent screw instability due to lateral flexion caused by excessive loads.

In this case, the maximum allowable load depends not only on the resistant section and the nature of the material, but also on the end constraints and the free length of the screw.

Diagram 1 shows the maximum compressive loads for the different values of the nominal thread diameter as a function of the length of the screw and the nature of the supports.

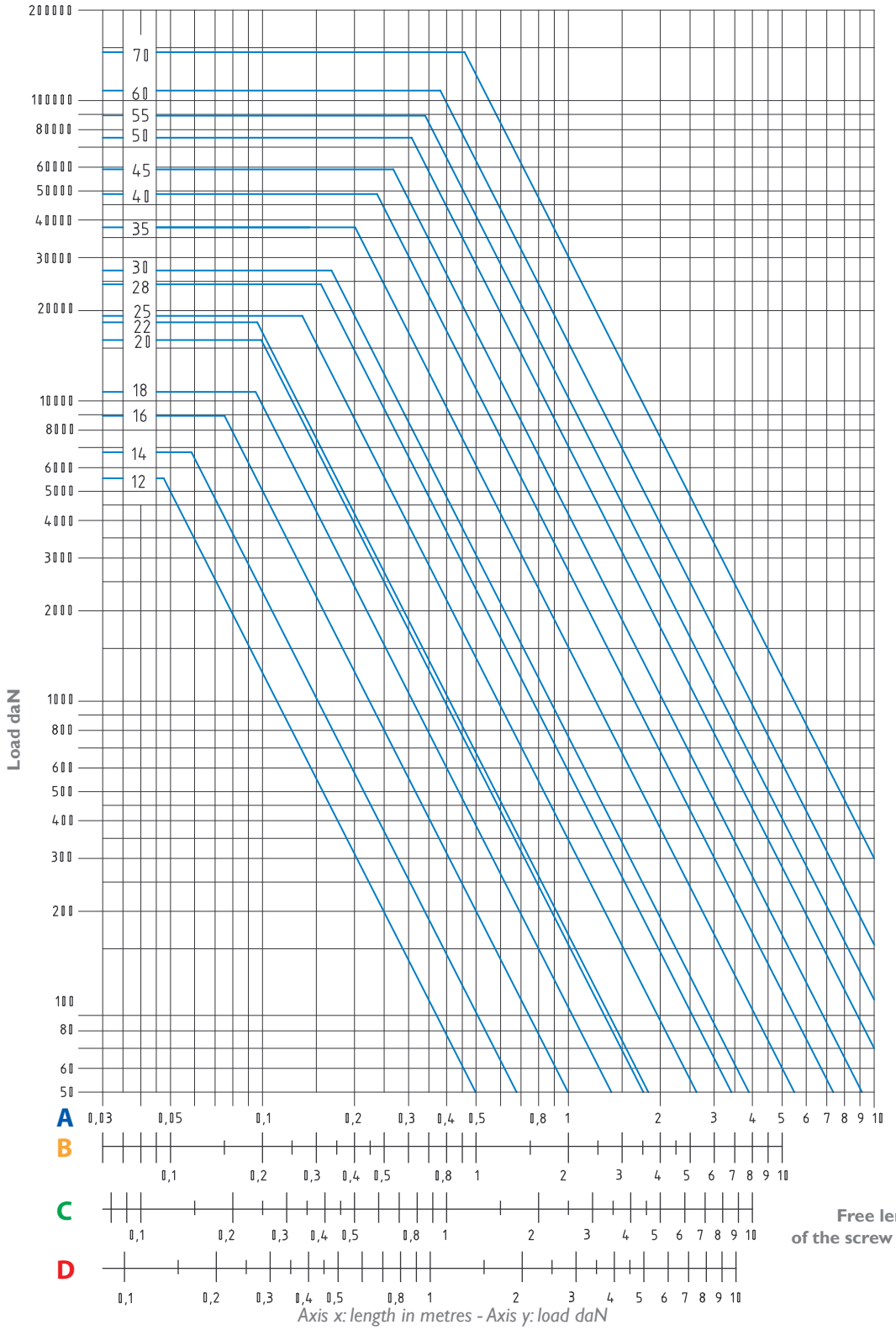


Diagram 1

The horizontal sections of the diagrams refer to stubby screws, that is, to screws for which the length is such that there is no danger of instability due to peak load and which, therefore, must be sized according to the resistant section.

To determine the maximum permissible operating load, it is necessary to divide the values taken from the diagram by an adequate safety factor whose value must be determined by the designer (generally >3).

Examples

Example 1

Determine the maximum axial compressive load that a Tr25 screw having length L=1500mm, supported by two bearings at each end, can withstand and applying a safety factor f=4.

From the diagram, recording the assigned free length value on the scale corresponding to the assigned constraint conditions, we obtain the following value Fmax = 1260daN, therefore, if the goal is to achieve a safety factor
f = 4, the value of the maximum allowable load is:

Famm = 315daN

Example 2

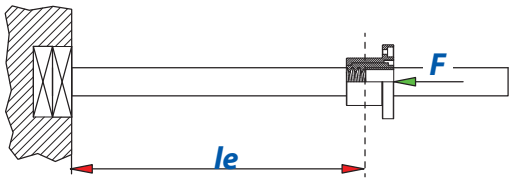
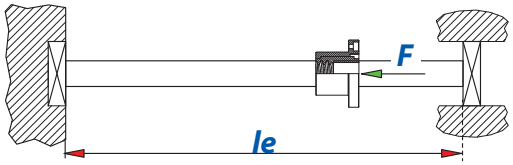
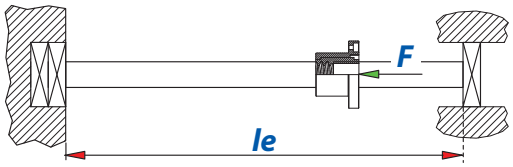
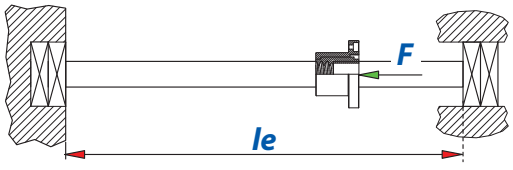
Determine the nominal diameter of a screw that must withstand an axial compression load F=800daN knowing that it has a length L=1250mm, is supported by a bearing at each end and a safety factor f=3 is required.

From the assigned values we obtain:

Fmax = 800x3 = 2400daN

By drawing a horizontal line in the diagram at Fmax = 2400daN and a vertical line corresponding to L = 1250 mm from the scale relative to the assigned constraint conditions (one bearing for each end - scale B), a point is determined between the diagrams relative to Tr30 and Tr28 screws, we select the screw closest to the point found or, when safety reasons require it, the screw with the largest diameter.

End constraints table

Scale	Constraints	
A	Screw supported by two bearings at one end	
B	Screw supported by a bearing at each end	
C	Screw supported by two bearings at one end and a bearing at the other end	
D	Screw supported by two bearings at both ends	

The critical speed is the rotation frequency beyond which vibration phenomena of the screw occur, with consequent serious operating errors that can compromise the stability of the system; this speed must therefore never be reached.

It depends on:

- screw diameter;
- nature of the end constraints of the screw, i.e., the number of support bearings;
- free length of the screw.

Diagram 2 shows, for the different values of the nominal thread diameter, the maximum number of revolutions as a function of the length of the screw and the nature of the supports.

To determine the maximum permissible operating speed, it is necessary to divide the values taken from the diagram by an adequate safety factor whose value must be determined by the designer (generally >1.5).

Examples

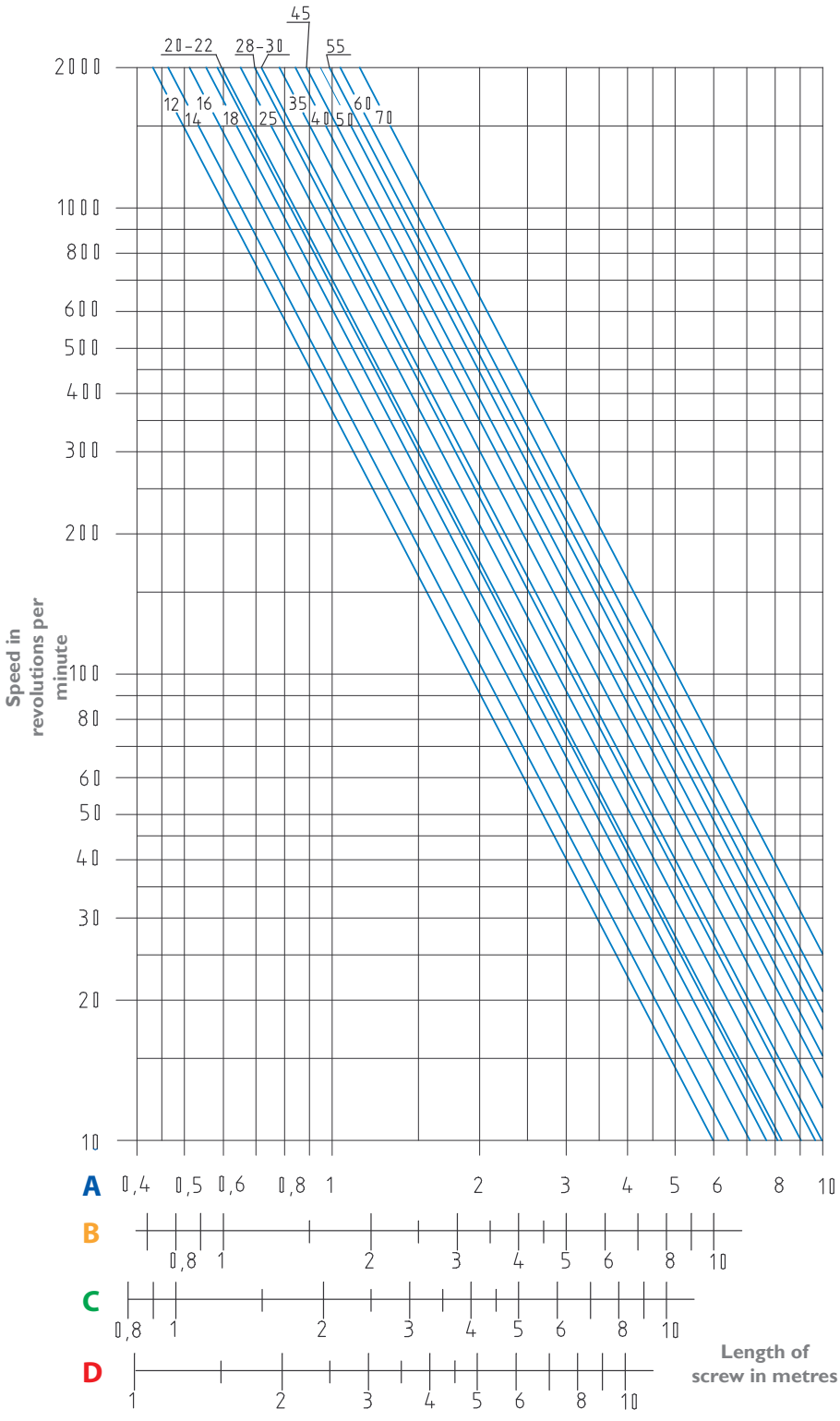
Example 3

Determine the maximum admissible rotation speed of a Tr25 screw having a free length L = 3000mm, supported by a bearing at one end and by a pair of bearings at the other end and applying a safety factor f = 2.

From the graph we obtain, in correspondence with the constraint conditions assigned (scale C), speed in revolutions per minute = 400; with the value assigned for the safety factor we obtain:

nmax = 400 revolutions per minute

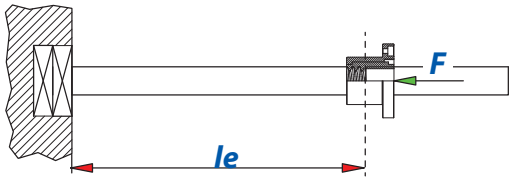
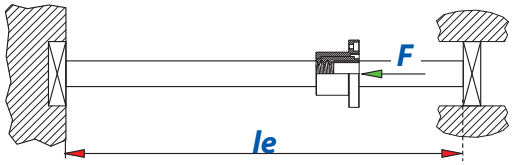
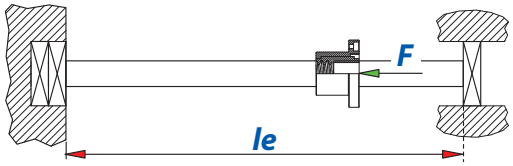
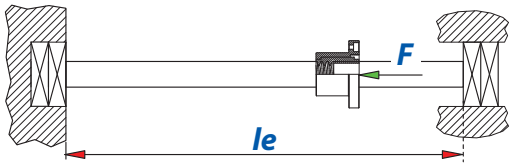
namm = 400/2 = 200 revolutions per minute



Axis x: length in metres - Axis y: critical speed in revolutions per minute

Diagram 2

End constraints table

Scale	Constraints	
A	Screw supported by two bearings at one end	
B	Screw supported by a bearing at each end	
C	Screw supported by two bearings at one end and a bearing at the other end	
D	Screw supported by two bearings at both ends	

The wear of the nut-screw system essentially depends on:

- friction coefficient between the surfaces in contact with screw and nut;
- ..... relative friction speed;
- surface contact pressure between the flanks of the threads;
- operating conditions (lubrication, presence of pollutants, operating temperature, etc.).

Wear is significantly influenced by the operating conditions; therefore, it is practically impossible to provide usable reference values for the life-long design of the nut; the evaluations reported below must therefore be considered for information purposes, as they take into account only some of the parameters that affect wear.

In any case, we recommend protecting the screw-nut system from dust and other foreign bodies which, as they build up on the thread flanks, can significantly increase wear even under standard working conditions; it is also advisable to pay particular attention to all those applications in which the working temperature can reach values such that the lubricant loses its characteristics.

For predetermined values of the coefficient of friction and under certain operating conditions, the parameters that influence wear are the surface contact pressure and the relative sliding speed.

The surface contact pressure depends solely on the dimensions of the nut and the axial load, while the friction speed depends on the angle of inclination of the helix and the speed of the axial side shift. The latter is connected to the rotation speed and the nut pitch by the following formula:

$$Va = \frac{n \cdot p}{1000}$$

Where:

Goes: axial side shift speed of the nut with respect to the screw in m/min;

p: helix pitch in mm;

n: rotation speed in rpm.

In determining the axial load on the screw, it is also necessary to evaluate the effect of the inertia forces generated during acceleration and deceleration; when it is not possible to evaluate the forces of inertia due to the variability of the motion, it is advisable to correct the load value with the multiplicative service factor provided in Table 2, according to the operating conditions.

Load nature	Service factor
Constant load with controlled acceleration and deceleration ramps	1 to 2
Constant load with abrupt starts and stops	2 to 3
Loads and speeds with accentuated variations	3 to 4
Operation in the presence of shocks and vibrations	4 to 6

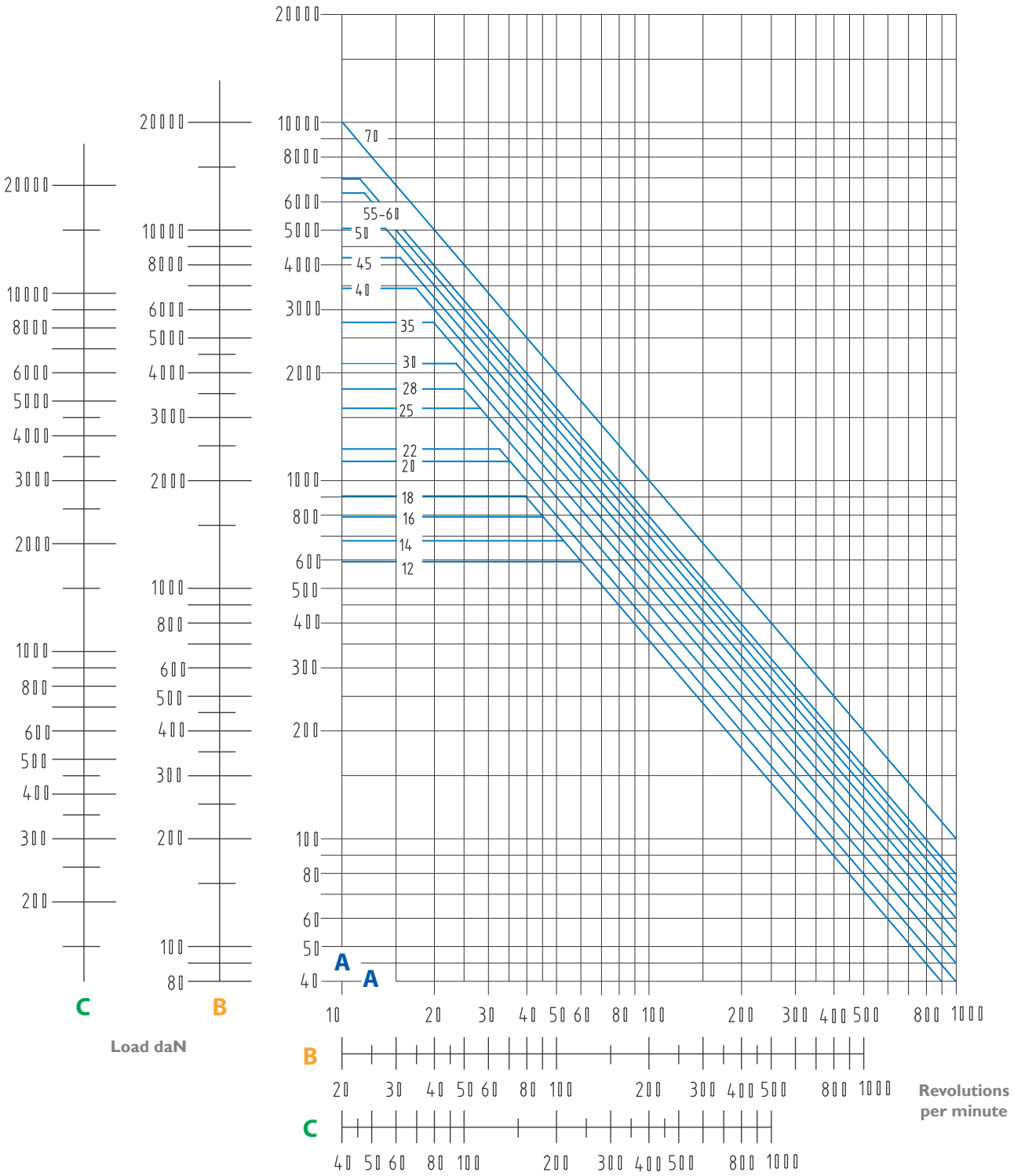
Table 2 Service factors for the forces of inertia

Diagrams 3 and 4 provide the data for the maximum sizing for wear for applications with good lubrication for 1- and 2-start bronze nuts; the diagrams indicate the axial load admissible as the number of revolutions varies, depending on the permitted operating conditions.

Scale A relates to "continuous service" use, with wear contained in modest values and good life of the nuts.

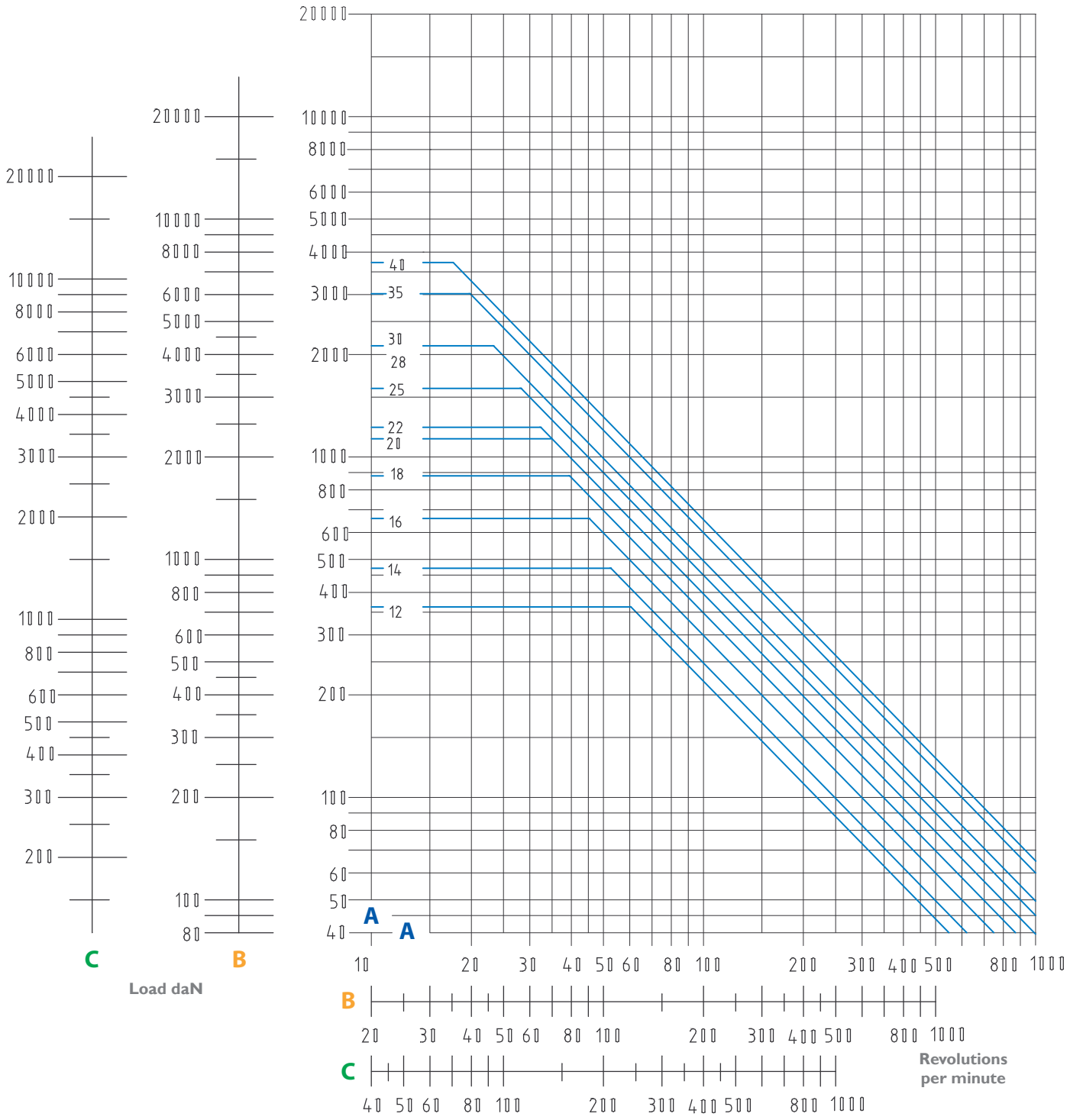
Scale B relates to use under sensitive yet acceptable wear conditions; however, good oil lubrication is essential.
"Continuous" operation must be limited to short periods of time to avoid nut overheating, with consequent loss of lubricant effectiveness.

Scale C relates to very severe conditions of use, even in the presence of abundant oil lubrication.
Operation under these conditions leads to a quick wear of the nut due to the high-surface pressure at the point of contact of screw-nut and the sensitive heating that compromises lubricant effectiveness.
Continuous operation is not permitted, even for short periods.



Axis x: rotation speed in revolutions per minute - Axis y: axial load in daN
Scale A: continuous use with limited wear and good nut life
Scale B: conditions of use with sensitive but acceptable wear; needs good lubrication; limit continuous use to short periods
Scale C: severe conditions of use even with good lubrication; very likely overheating; continuous service not permitted even for short periods

Diagram 3



Axis x: rotation speed in revolutions per minute - Axis y: axial load in daN
Scale A: continuous use with limited wear and good nut life
Scale B: conditions of use with sensitive but acceptable wear; needs good lubrication; limit continuous use to short periods
Scale C: severe conditions of use even with good lubrication; very likely overheating; continuous service not permitted even for short periods

Diagram 4

Examples

Example 4

To size a bronze cylindrical nut for wear, for continuous operation with limited wear (scale A), with inertia forces generated by abrupt starts and stops and subjected to a constant axial load of 1500N and to a motion with a translation speed of 0.5 m/min.

First of all, the axial load must be weighted with the appropriate service factor referred to the inertia forces that will characterise the operation of the nut-screw system.
In this case, since there are inertia forces generated by abrupt starts and stops in the presence of a constant load, a coefficient between 2 and 3 can be considered (see table 2)
The axial load for the sizing of the nut is determined from the values of the load applied to the nut and the service factor assumed to be equal to 2.5; in our case, we have:

Fa = 1500 • 2.5 = 3750 N

Attention: the diagram shows the unit of measurement in daN on the load value scale. We will therefore have to find the value divided by 10, that is 3750 N/10 = 375 daN

At this point, it is necessary to identify the best sized screw for the application on the graph in diagram 3. Knowing the side shift speed, which must be equal to 0.5 m/min, with the formula provided above, it is possible to obtain the value of the screw pitch to be seized

Side shift speed Va:

$$Va = \frac{n \cdot p}{1000}$$

Where:
p: screw pitch in mm
n: revolutions per minute
It follows therefore that:

0.5 = (p • n) /1000

From the evaluation of the straight lines of diagram 3, we can see that a Tr22x05 or Tr25x05 nut is correctly seized, since the 5 mm pitch requires a rotation speed equal to 100 revolutions per minute to obtain a side shift speed equal to the requested speed of 0.5 metres per minute.

Therefore, we can surmise that a Tr25x05-type bronze nut-screw system is sufficiently sized.

Example 5

Choose the most suitable bronze nut, seizing it for wear based on the application conditions with inertia forces generated by loads and speeds with possible variations and subject to an average axial load of 6000 N and a motion with a side shift of 0.25 m/min.

First of all, the axial load must be weighted with the appropriate service factor referred to the inertia forces that will characterise the operation of the nut-screw system.

In this case, since there are inertia forces generated by loads and speeds with possible accentuated variations, at least one coefficient 3 must be considered (see Table 2).

The axial load for the sizing of the nut is determined from the values of the load applied to the nut and the service factor assumed to be equal to 3; in our case, we have:

Fa = 6000 • 3 = 18,000 N

Attention: the diagram shows the unit of measurement in daN on the load value scale. We will therefore have to find the value divided by 10, that is 18,000 N/0 = 1800 daN
At this point, we need to identify the best sized screw for the application on the graph of diagram 3. Having the side shift speed, which must be equal to 0.25 m/min, with the formula previously illustrated it is possible to obtain the value of the screw pitch to be seized

Side shift speed Va:

$$Va = \frac{n \cdot p}{1000}$$

Where:
p: screw pitch in mm
n: revolutions per minute

It follows therefore that:

0.5 = (p • n)/1000

Now, for screws with different pitches, we will have a different required number of turns in order to obtain the same forward motion rate:

- for a 5 mm pitch screw, the number of turns will be: (0.25 • 1000)/5 = 50 rpm
- for a 8 mm pitch screw, the number of turns will be: (0.25 • 1000)/8 = 31 rpm approx.

For the range of screws with 5 mm pitch (Tr22x05, Tr25x05, Tr28x05) with a rotation speed of 50 revolutions per minute, there are no points that remain under the straight line. This means that the conditions of scale A are not found for these types of screws, while the Tr28x05 screw on scale B could be included.

For the range of screws with 8 mm pitch (Tr45x08, Tr50x08), with a rotation speed of 31 revolutions per minute, it is noted that the screws with this pitch are well above the crossing point between the number of revolutions and axial load; therefore, sizing is correct.

The relationships that considers performance, axial load, input moment and power are given by the following formulas:

Formula A - determination of the TORQUE MOMENT

$$M = \frac{Fa \cdot p}{\pi \cdot \eta \cdot 2000}$$

Formula B - determination of POWER by knowing the TORQUE MOMENT

$$MP = \frac{M \cdot n}{9{,}55}$$

Formula C - determination of POWER

$$P = \frac{Fa \cdot n \cdot p}{6000 \cdot \eta}$$

Where:

M: input torque in Nm;
Fa: axial load acting on the nut screw in N;
η: efficiency of the nut-screw system;
p: drive power of the screw in W; p: helix pitch in mm;
n: rotation speed in revolutions per minute.
π: 3.141592

The efficiency of the screw-nut system is shown in Tables 3, 4, 5 and 6, according to the material of the nut, the number of thread starts and the state of the contact surfaces.

The table data were obtained from laboratory tests carried out on the screw-nut system, measuring the torque necessary to operate the screw engaged on the relative nut, which is prevented from rotating and subjected to a constant axial load.

The table data clearly underscores that the highest performance is achieved with bronze nuts, with lubricated contact surfaces and with 2-start screws, thanks to the highest value of the angle of inclination of the helix.

Since the performance of a mechanism represents the fraction of useful energy, it is clear that, to the extent possible, it is necessary to opt for those solutions that can increase the mechanism; therefore, when the operating conditions allow it, it is preferable to use 2- or multi-start screws in order to dissipate the lower possible amount of energy.

Table 3	
Performance	1-start screw
η	Bronze nuts

Screw	Dynamic dry	Initial decoupling dry	Dynamic lubricated	Initial lubricated decoupling
Tr12x3	0.26	0.22	0.25	0.29
Tr14x4	0.34	0.28	0.37	0.31
Tr16x4	0.30	0.24	0.37	0.30
Tr18x4	0.27	0.20	0.34	0.29
Tr20x4	0.25	0.19	0.33	0.28
Tr22x5	0.25	0.20	0.29	0.24
Tr25x5	0.24	0.20	0.29	0.23
Tr28x5	0.24	0.19	0.28	0.21
Tr30x6	0.24	0.19	0.30	0.23
Tr35x6	0.21	0.18	0.27	0.21
Tr40x7	0.21	0.19	0.28	0.23
Tr45x8	0.23	0.19	0.28	0.22
Tr50x8	0.20	0.17	0.25	0.22
Tr55x9	0.21	0.18	0.26	0.22
Tr60x9	0.21	0.18	0.25	0.21
Tr70x10	0.18	0.15	0.24	0.19

Table 4	
Performance	1-start screw
η	Steel nuts

Screw	Dynamic dry	Initial decoupling dry	Dynamic lubricated	Initial lubricated decoupling
Tr12x3	0.24	0.21	0.34	0.29
Tr14x4	0.30	0.27	0.35	0.29
Tr16x4	0.28	0.23	0.32	0.26
Tr18x4	0.24	0.20	0.32	0.27
Tr20x4	0.22	0.18	0.25	0.21
Tr22x5	0.22	0.19	0.28	0.24
Tr25x5	0.24	0.20	0.26	0.21
Tr28x5	0.22	0.18	0.25	0.21
Tr30x6	0.21	0.18	0.26	0.22
Tr35x6	0.19	0.17	0.22	0.19
Tr40x7	0.21	0.18	0.24	0.20
Tr45x8	0.22	0.18	0.24	0.21
Tr50x8	0.19	0.16	0.24	0.21
Tr55x9	0.21	0.18	0.23	0.20
Tr60x9	0.20	0.18	0.23	0.20
Tr70x10	0.18	0.15	0.22	0.18

Table 5	
Performance	2-start screws
η	Bronze nuts

Screw	Dynamic dry	Initial decoupling dry	Dynamic lubricated	Initial lubricated decoupling
Tr12x6 (P3)	0.33	0.27	0.39	0.31
Tr14x8 (P4)	0.47	0.39	0.51	0.41
Tr16x8 (P4)	0.36	0.31	0.43	0.36
Tr18x8 (P4)	0.33	0.28	0.37	0.32
Tr20x8 (P4)	0.29	0.24	0.32	0.30
Tr22x10 (P5)	0.34	0.28	0.39	0.32
Tr25x10 (P5)	0.33	0.27	0.39	0.36
Tr30x12 (P6)	0.36	0.30	0.39	0.35
Tr40x14 (P7)	0.33	0.28	0.38	0.35

Table 6	
Performance	2-start screws
η	Steel nuts

Screw	Dynamic dry	Initial decoupling dry	Dynamic lubricated	Initial lubricated decoupling
Tr12x6 (P3)	0.31	0.26	0.41	0.29
Tr14x8 (P4)	0.44	0.36	0.49	0.40
Tr16x8 (P4)	0.34	0.28	0.38	0.35
Tr18x8 (P4)	0.33	0.28	0.37	0.31
Tr20x8 (P4)	0.29	0.24	0.36	0.30
Tr22x10 (P5)	0.34	0.28	0.40	0.31
Tr25x10 (P5)	0.33	0.27	0.38	0.32
Tr30x12 (P6)	0.33	0.27	0.36	0.32
Tr40x14 (P7)	0.33	0.27	0.38	0.33

Range of trapezoidal screw drives

The capacity of a trapezoidal screw generally depends on surface finish, material, wear condition, surface pressure, lubrication ratio, fraction speed, temperature, duration of insertion and possibilities of heat dispersion.

The surface pressure primarily depends on the friction of the screw drive. During handling operations, the surface pressure must not exceed 5 N/mm^2.
It is possible to calculate the speed allowed by the support surface of the nut (refer to the Tables with nut data sheets) and from the PV rating of the relevant nut material.

PV rating material	PV rating [N/mm 2 • m/min]
CuSn12	400
PET	100

Table 7

Support surface required

$$Anec = \frac{Fax}{Pmaxam}$$

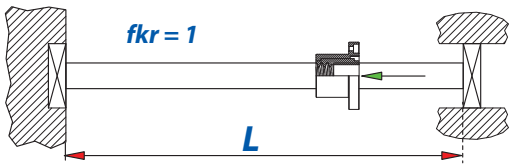
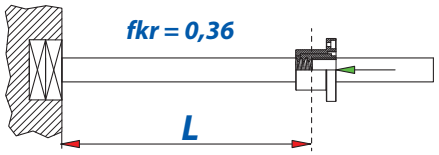
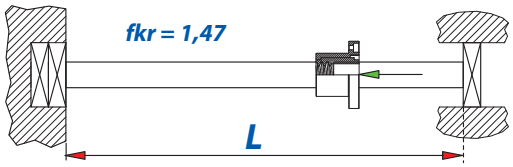
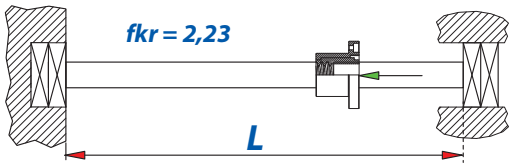
Where:
Anec: Support surface required [mm^2]
Fax: Axial force [N]
Pmaxam: Maximum permissible surface pressure = 5 N/mm 2

Maximum admissible friction speed

$$VGmaxam = \frac{Valore\ pv}{Pmaxam}$$

Where:
PV rating: see Table 7
VGmaxam: Maximum admissible friction speed [m/min]

End constraints table

Screw supported by a bearing at each end	
Screw supported by two bearings at one end	
Screw supported by two bearings at one end and a bearing at the other end	
Screw supported by two bearings at both ends	

Maximum permissible revolutions

$$nmaxam = \frac{VGmaxam \cdot 1000}{D \cdot \pi}$$

Where:

D: Average screw diameter [mm]

nmaxam: Max number of revolutions allowed [revolutions per minute]

Adr

$$smaxam = \frac{nmaxam \cdot P}{1000}$$

Where:

P: Screw pitch [mm]

Smaxam: Admissible forward motion speed [m/min]

Critical number of revolutions

In the presence of slender and rotating elements such as screws, there is a danger of resonance and oscillations.
The procedure described below allows evaluating the resonance frequency assuming that the installation is sufficiently rigid. In the case of revolutions close to the critical speed, the risk of lateral flexion increases equally. The critical speed must therefore also be evaluated in relation to the critical bending force.

Max number of revolutions allowed

$$nmax = 0{,}80 \cdot nkr \cdot fkr$$

Where:

nmax: Max number of revolutions allowed [1/min]

nkr: Theoretical critical speed [1/min], causing resonance, see diagram

fk: Correction factor that takes into account the way the screw is positioned. See Table 7.

Attention: The operating speed must represent a maximum of 80% of the maximum speed.

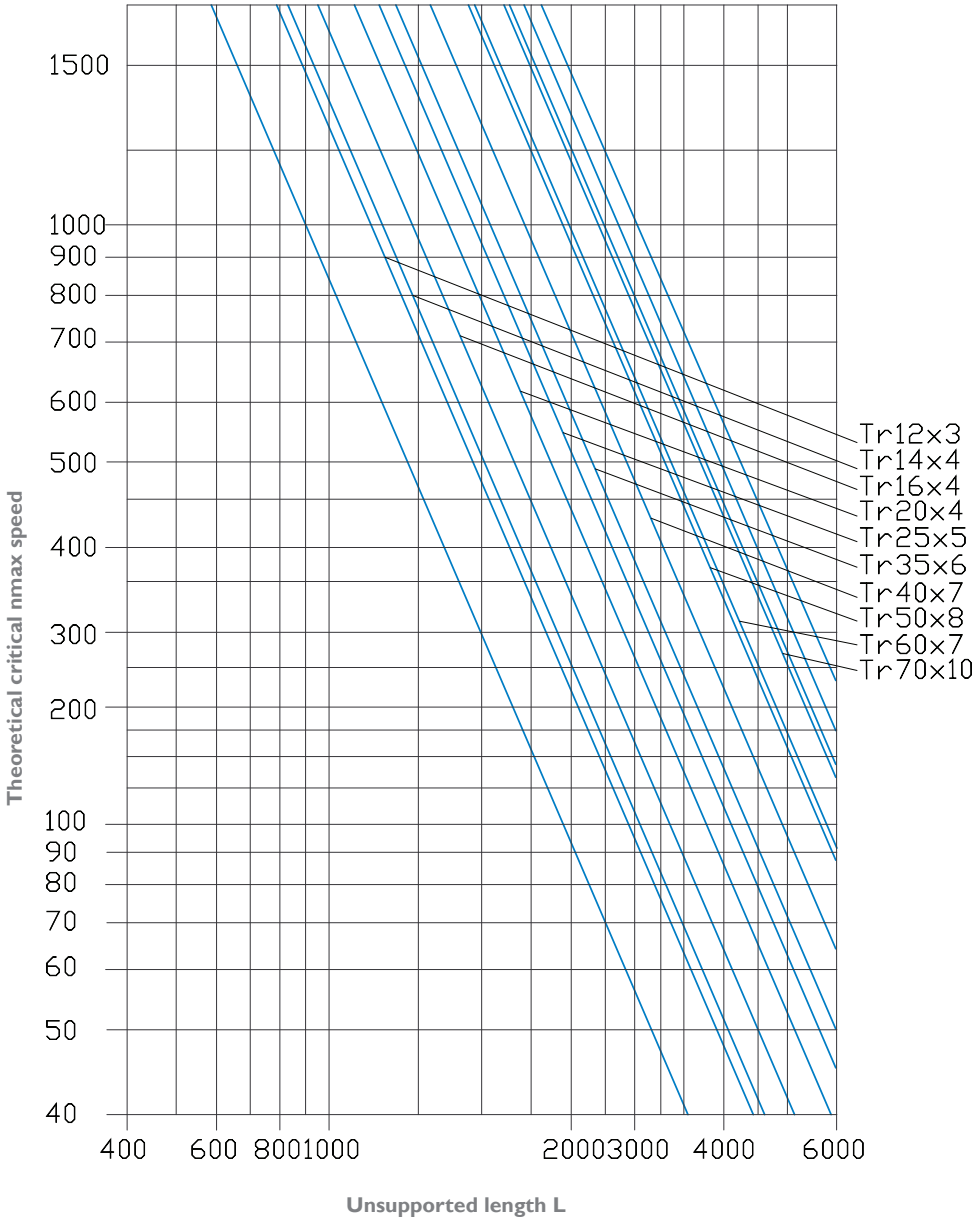


Diagram 5

Critical flexion under axial pressure (compression)

In the presence of slender elements such as screws, there is a danger of lateral bending due to axial pressure. The permissible axial force according to Euler can be determined with the procedure described below.
The safety factors relating to the system must be taken into consideration before determining the permissible pressure force.

Maximum permissible axial force

$$fmax = 0{,}80 \cdot Fkr \cdot fk$$

Where:

Fmax: Maximum permissible axial force [kN]

Fkr: Theoretical critical bending force [kN] (see diagram 6)

fk: Correction factor that takes into account the way the screw is positioned.
(see the explanatory drawings on the side)

The operating force must represent a maximum of 80% of the maximum permissible axial force.

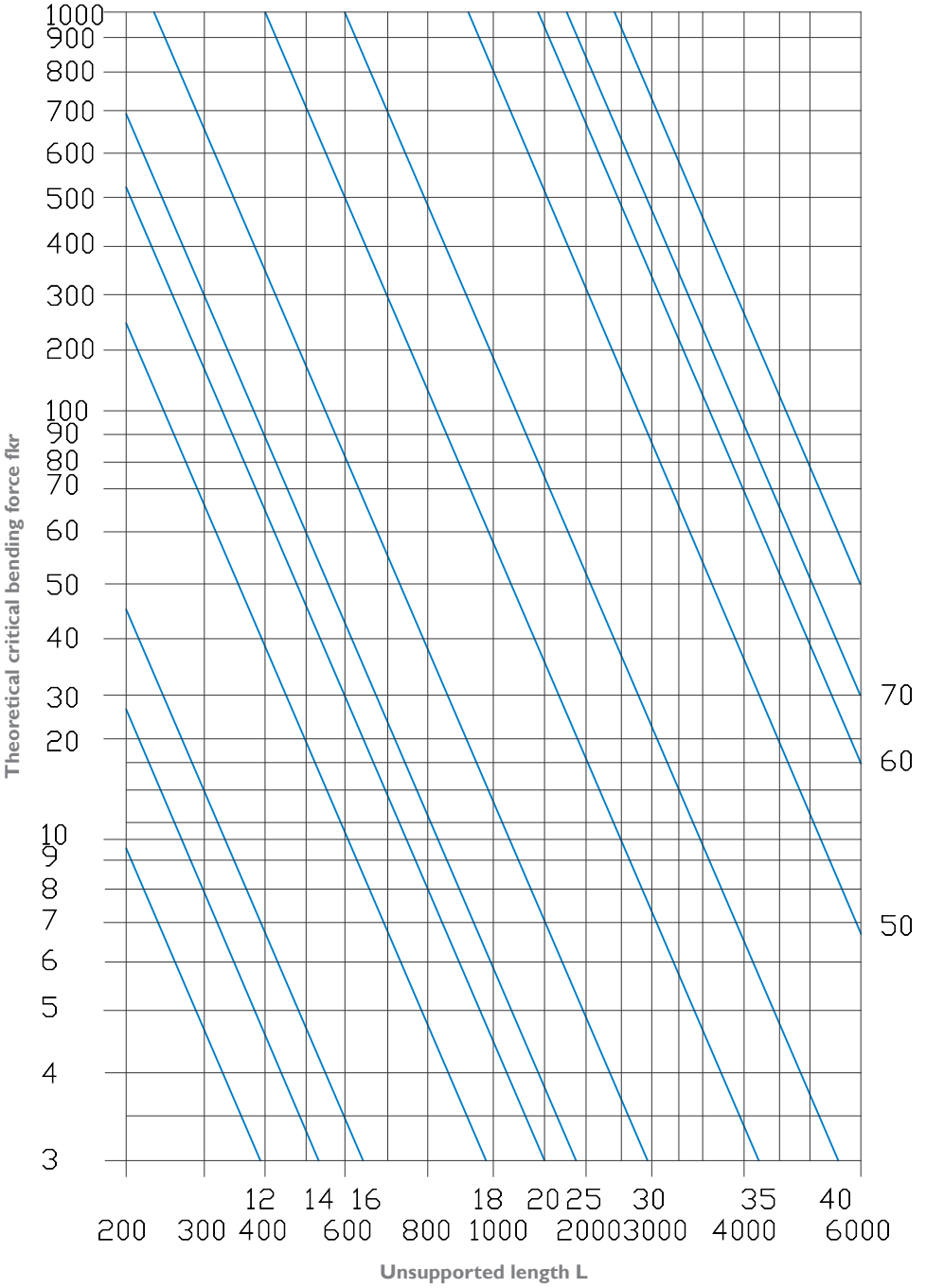
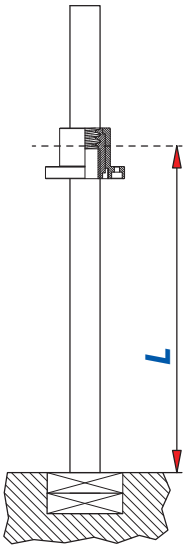
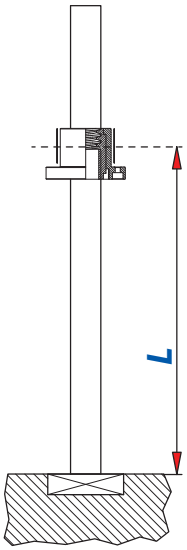
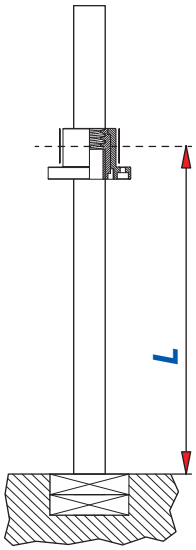
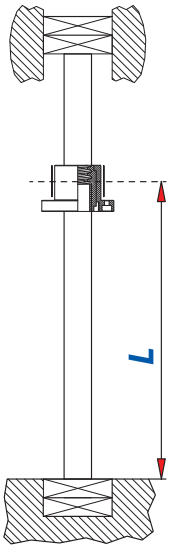


Diagram 6

End constraints table

Screw supported by two bearings at one end	Screw supported by two bearings at one end	Screw supported by two bearings at one end	Screw supported by two bearings at both ends
			
fk = 0,25	***fk = 1***	***fk = 2,05***	***fk = 4***

Bending of the screw due to weight

Even with regularly installed systems where forces are absorbed by external guides, the weight of the unsupported screw causes bending.
The formula elaborated below allows determining the maximum bending point of the screw.

Maximum screw bending

$$\text{fmax} = FB \cdot 0{,}061 \cdot \frac{m \cdot L}{IY}$$

Where:
fmax: Maximum screw bending [mm]
fB: Correction factor that takes into account the way the screw is positioned.
(see the drawings on the side)
IY: Surface moment of inertia [10 4 mm 4]
(see screw data sheet)
L: Free length of screw without support [mm]
m: Mass of the screw [kg/m].
(see screw data sheet)

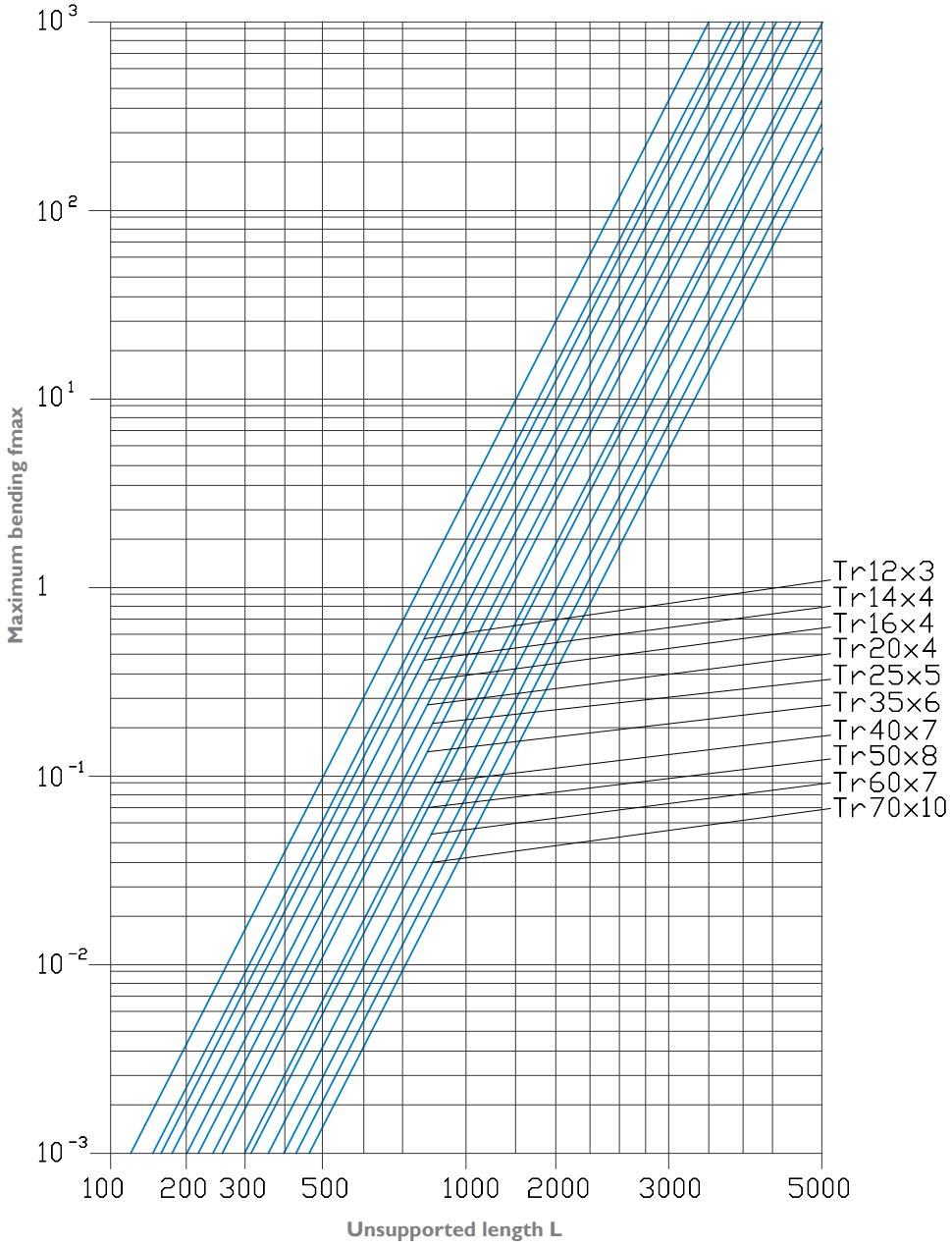
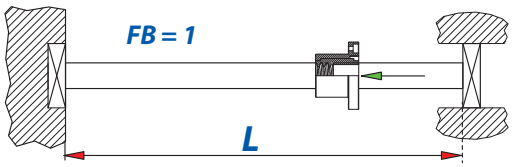
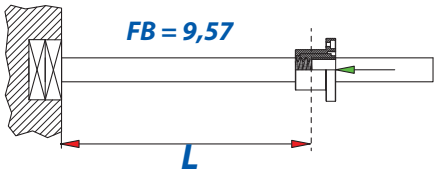
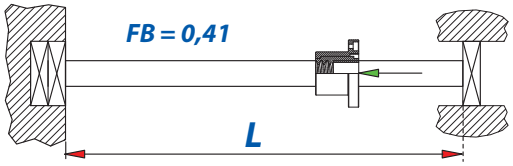
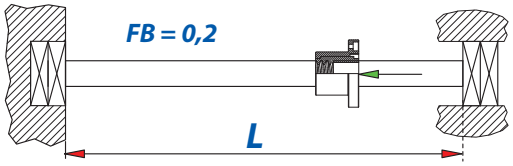


Diagram 7

End constraints table

Screw supported by a bearing at each end	
Screw supported by two bearings at one end	
Screw supported by two bearings at one end and a bearing at the other end	
Screw supported by two bearings at both ends	

Drive torque and drive power required

The required drive torque of a screw drive depends on axial load, screw pitch, screw drive efficiency and type of bearing. In the case of short acceleration times and high speeds, it is necessary to check the acceleration torque.
In principle, with trapezoidal screw drives, care must be taken to exceed the starting torque when starting.

Drive torque required

$$\mathrm{Md} = \frac{fax \cdot P}{2000 \cdot \pi \cdot \eta A} + Mrot$$

Where:
Fax: Total axial force [N] P=Screw pitch [mm]
ηA: Performance of the entire drive =ηscrew • ηCF • 4 CM • ηscrew (with friction coefficient μ = 0.1, see the screw data sheets)
ηCF (Stationary Bearing): = 0.9÷0.95
ηCM (Movable Bearing): 0.95
Md: Drive torque required [Nm]
Mrot: Rotary acceleration torque [Nm] =Jrot • a0
=7.7 • d4 • L • 10 -13
Jrot = Rotary mass moment of inertia [kgm²]
d: Screw internal diameter [mm]
L: Screw length [mm]
a0: Angular acceleration [1/s²]

Performance η for friction coefficients other than μ = 0.1

$$\eta = \frac{tan\alpha}{\tan(\alpha + \rho')}$$

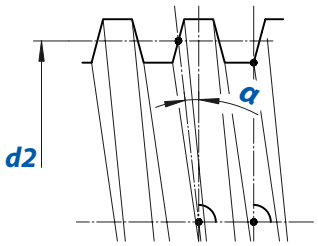
Where:
η: Performance of a rotary motion in a longitudinal motion
α: Turn angle of the screw (see the screws technical data sheets)

$$tan\alpha = \frac{P}{d2 \cdot \pi}$$

P: Screw pitch [mm]
d2: Average diameter [mm]
ρ': Friction angle of the screw
tanα: μ • 1.07 for trapezoidal screws
μ: Friction coefficient

	μ on startup		μ in motion	
	Dry	Lubricated	Dry	Lubricated
Metal nuts	0.3	0.1	0.1	0.03
Plastic nut	0.1	0.04	0.1	0.04

Table 8



Drive power required

$$Pa = \frac{Md \cdot n}{9.950}$$

Where:
Md: Drive torque required [Nm]
n: Screw revolutions speed [1/min]
Pa: Drive power required [kW]

Torque following an axial load

Trapezoidal screws, whose turn angle is α greater than the friction angle q', are not self-locking. This means that an axial load produces torque on the screw.
Efficiency η for the transformation of longitudinal motion into a rotary motion is lower than that necessary for the transformation of a rotary motion into a longitudinal one.
Stop torque required

$$\mathrm{Md'} = \frac{fax \cdot P \cdot \eta'}{2000 \cdot \pi} + Mrot$$

Where:
Fax: Total axial force [N]
P: Screw pitch [mm]
η: Efficiency for the transformation of a longitudinal motion into a rotary motion.

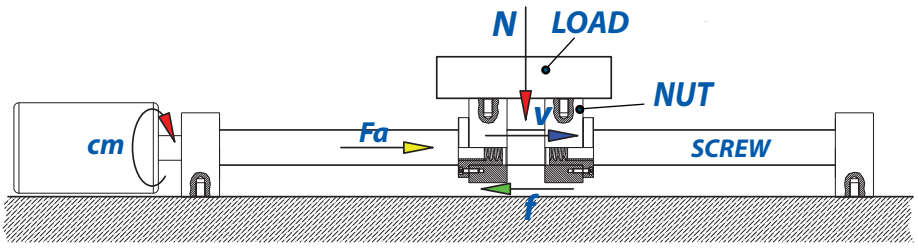
$$= \frac{\tan(\alpha - \rho')}{tan\alpha}$$
$$= 0{,}7 \cdot \eta$$

Md': Stop torque required [Nm]
Mrot: Rotary acceleration torque [Nm] = Jrot • a0
= 7.7 • d 4 • L • 10 -13
Jrot: Rotary mass moment of inertia [kgm²]
d: Screw internal diameter [mm]
L: Screw length [mm]
a0: Angular acceleration [1/s²]

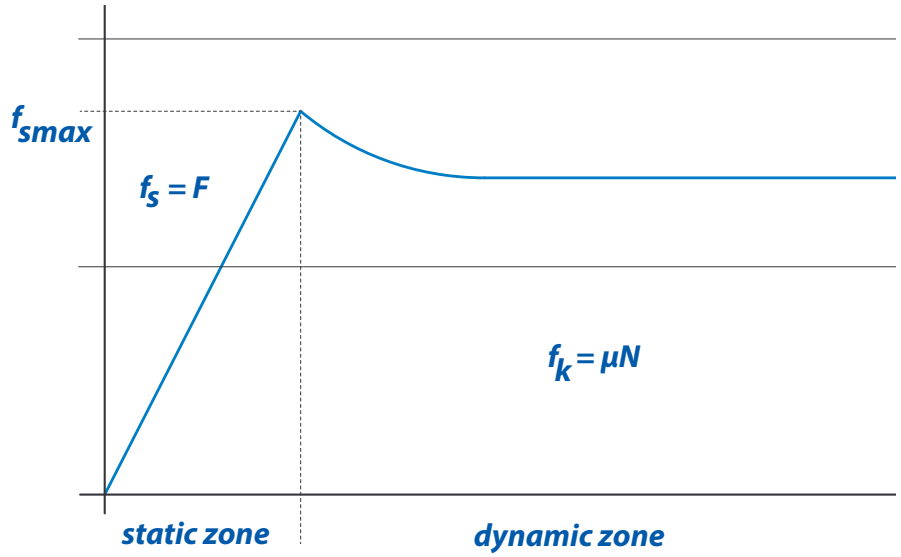
Calculation of the driving torque

The driving torque is the torque that

the motor must develop to move the nut subjected to a given load N. When the nut moves along the base it causes a friction force f opposite to the direction of motion, which depends on the load N and the type of friction surfaces.



To move the nut with a given acceleration it is necessary to impart a force Fa that must at least exceed the frictional force f.



At this point, the application of Newton's II law is immediate, therefore:

$$\sum F = ma \Rightarrow Fa - f = ma$$

The friction force f is proportional to the load N and is valid for fk = μk N if the nut is in motion. Otherwise, in order for the nut to start moving, it is necessary to apply a force Fa>fs, max=μs N, which is the static friction force.
μs and μk values are the static and dynamic friction constants and depend on the type of friction surfaces, are listed in the table and obtained experimentally:

Surface type	μs	μk
Steel on steel	0.74	0.57
Aluminium on steel	0.61	0.47
Rubber on concrete	1.00	0.80
Teflon on Teflon	0.04	0.04
Metal to metal (lubricated)	0.15	0.06

Table 9

We can therefore conclude that the equations that govern the motion of the nut are:

$$Fas = \mu sN \ \ per\ v = 0$$

$$Fak - \mu kN = m \cdot a \cdot Fak = \mu kN + m \cdot a$$

Where Fas Fak are respectively the force necessary to start and the force necessary for a given acceleration.
Returning to the nut-screw system, Fa is the tangential force to which the system is subjected; therefore, we use Fa to determine the torque to which the screw is subjected in order to impede the desired motion of the nut.
Indeed, it was shown earlier that this moment is valid

and gives u
Torque nee $M = \frac{Fa \cdot p}{2\pi\eta 1000}$

Torque $M_5 = \frac{Fa_5\, p}{2\pi \cdot \eta_5 \cdot 1000}$

$$M_{\&} = \frac{Fa_{\&}\, p}{2\pi \cdot \eta_{\&} \cdot 1000}$$

Example of calculation of the driving torque

Given a nut-screw system consisting of a two-start screw with a non-lubricated bronze nut with pitch p = 2x4 = 8 mm.
Given the load + nut assembly having a mass equal to m = 2Kg and moving to crawl on a lubricated metal surface, calculate

1. the force necessary for starting and the force necessary to impart an acceleration of amax = 4 m/s²;
2. the drive torque required for this drive;
3. the maximum speed of translation of the nut obtained using a motor at 1600 rpm max.

From Table 9 we get:
μs: 0.15
μk: 0.06
Fas: μs N = 0.15 • 19.62 N = 2,94N
Fak: μk N + m a = 0.04 x 19.62 N + 2Kg • 4m/s² = 8.8N

Table 9 shows the efficiency of the nut-screw system:
4s: 0.39
4k: 0.47

$$cm > \max(M) = \frac{}{2\pi \cdot 1000} max\left(\frac{}{\eta_5}; \frac{}{\eta_\&}\right)$$

from which:

$$Cm > 0{,}0013m\frac{'}{0{,}47} > 2{,}4Ncm$$

From the previous relations the speed of the nut is: V = np/(60 • 1000)

It is observed that the screw cannot exceed an ideal speed of 1100 revolutions per minute, at the risk of whiplash, therefore assuming a safety coefficient equal to 1.5 and obtaining

nmax = 1100/1.5=733 rpm
Vmax = 733rpm • 8 • 2/60000 = 0.1m/s

Taking care that the motor does not exceed the maximum rotation speed allowed by the screw n <733 rpm

Notes

Notes

Notes

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