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Information

Ball screw nuts supplied by isel Germany are high-quality, precise and wear-free (hardened and ground). Combined with ball screw spindles, ball screw nuts ensure that rotary motion is converted into linear motion at extremely low values of friction.

The ball screw nut is positioned and held in the clamping block using a stud screw. The ball screw nuts contain multiple circulating balls and an internal ball return mechanism.

Adjustment of the clamping block stud screw allows the ball screw spindle to move freely, without backlash.

Repeat accuracy is less than 0.01 mm on a length of 300 mm. The linear drive is lubricated via the grease nipple on the clamping block.

Ball screw spindles are roll manufactured using modern machines prior to hardening and polishing.

Our linear drives are technically advanced and have proven themselves over a period of more than 20 years of practical application.



Contract Manufacturing

With more than 1 million units soled, "isel" has created core competence in the area of ball screws. Our drives are technically mature and have proved themselves in many applications in practical use. The specialist skills of our highly qualified employees are a significant contributing factor on our path to creating technically perfect and economically successful solutions. isel Germany AG offers products to meet every special customer requirement. Thanks to our very modern manufacturing plants, we are able to carry out all work processes (rolling, hardening and polishing) efficiently and according to the customer's specifications. They precisely meet the special requirements that you give to us. Please get in contact with us or give us a call to discuss your area of application or individual case. You will find us an attentive and skilled partner. Our in-house design department checks all technical requirements and works in close collaboration with the production engineers to ensure your order can be quickly and flexibly integrated into the production process.

Visit us on our website and look at our current product video:



The company isel Germany AG has been manufacturing ball screw spindles on modern CNC controlled production machines also using robotics for over 25 years. Included amongst our long-standing clients are companies from the areas of

- machine and equipment construction
- electronics industry
- wood-working
- medical technology
- semiconductor industry
- training and other related areas



Ball screw spindles

Ø 12, 16, 20, 25 mm



Features

- rolled, hardened and polished
- Material CF 53, inductively hardened (HRC 60±2)
- Length up to 3,052 mm available (Special length on request!)
- End machining to isel standard or according to customers specifications

Available length Ø 12

Without end machining in a grid of 100 mm

- 252 up to 3,052 mm
- Two-sided end machining in a grid of 100 mm
- 252 mm up to 3,052 mm

Available length Ø 16

Without end machining in a grid of 100 mm

- 352 up to 3,052 mm
- Two-sided end machining in a grid of 100 mm
- 368 mm up to 3,068 mm

Available length Ø 20

Without end machining in a grid of 100 mm

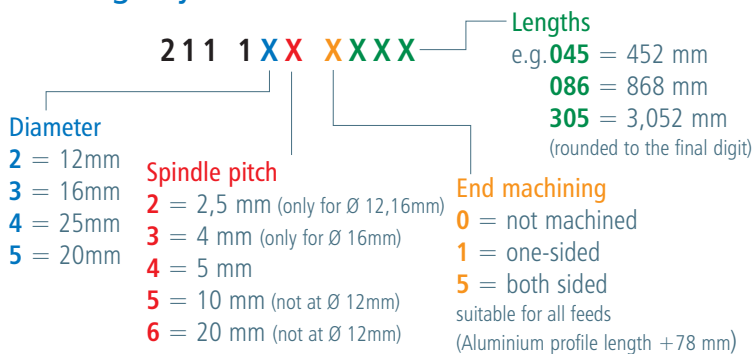
- 252 up to 3,052 mm
- Two-sided end machining in a grid of 100 mm
- 252 up to 3,052 mm

Available length Ø 25

Without end machining in a grid of 100 mm

- 500 up to 3,000 mm
- Two-sided end machining in a grid of 100 mm
- 295 up to 2,995 mm

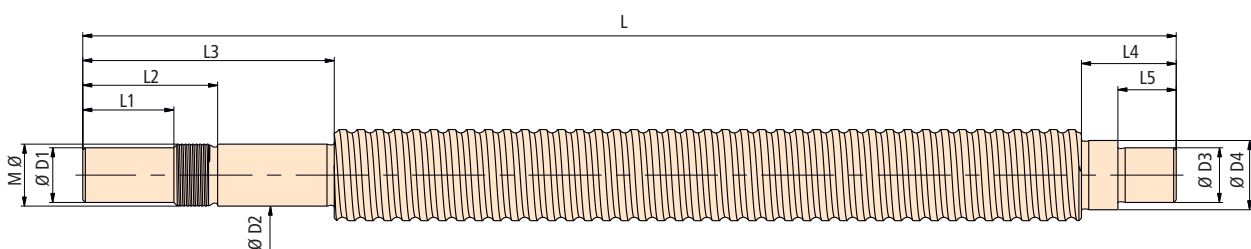
Ordering key



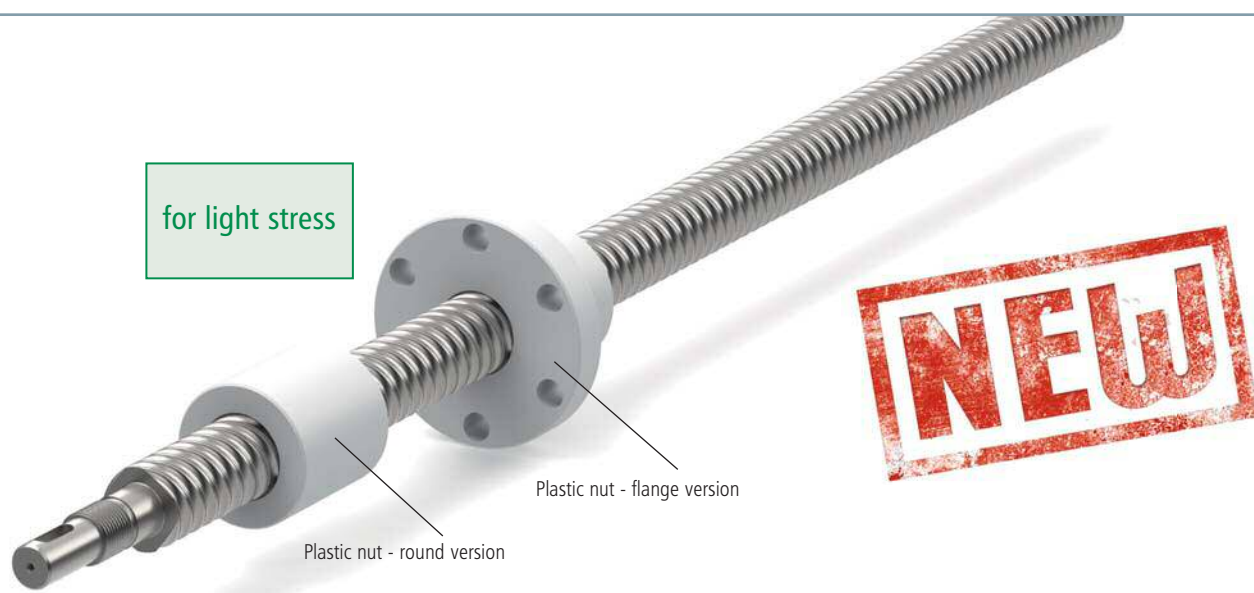
See „available length“ for permissible combinations!

Dimensioned drawing

	Spindle pitch	L [max.]	L1	L2	L3	L4	L5	M	D1	D2	D3	D4
Ø 12	2.5 / 5	3,052	10	19	34.5	19	-	M8x 1	6.35 h7	8 h6	7 h6	-
Ø 16	2.5 / 4 / 5 / 10 / 20	3,052	18	31	52	28	-	M10 x 0.75	8 h7	10 h6	12 h6	-
Ø 20	5 / 10 / 20	3,052	20	32	55	27.5	-	M12x 1	10 h7	12 h6	12/14 h6	-
Ø 25	5 / 10 / 20	3,052	25	37	69	26	16	M17x 1	15 h7	17 h6	15 j6	19 h11



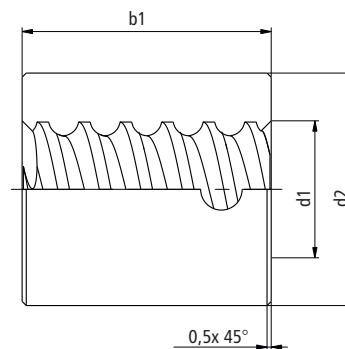
Plastic nuts round- or flange version for isel standard spindles



Technical data

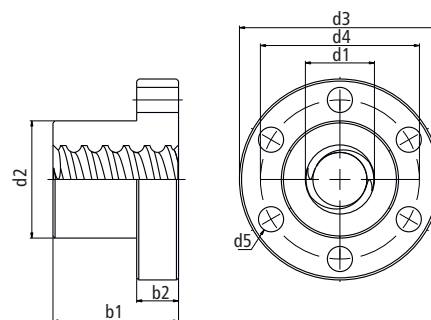
Round nut

Item-No.	thread d1 x P	b1	d2	F axial (at V _{max.}) [N]	V _{max.} [mm/s] [feed]
213612 0025	12 x 2,5	25	24	123	33
213612 0050	12 x 5	25	24	123	66
213616 0050	16 x 5	30	28	179	50
213616 0100	16 x 10	30	28	179	100
213616 0200	16 x 20	30	28	179	199
213620 0050	20 x 5	35	33	238	40
213620 0100	20 x 10	35	33	235	80
213620 0200	20 x 20	35	33	235	159
213625 0050	25 x 5	40	32	381	32
213625 0100	25 x 10	40	32	381	64
213625 0200	25 x 20	40	32	386	127



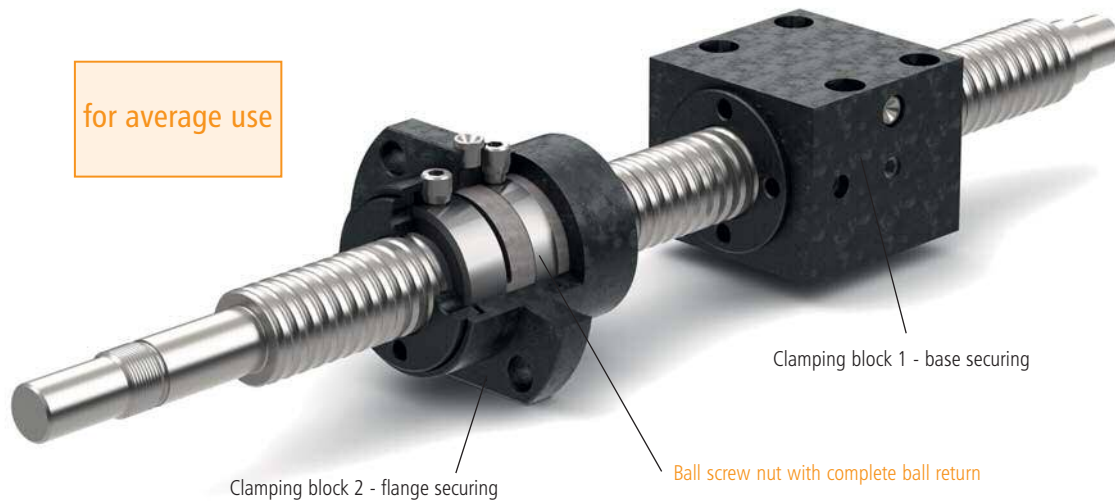
Flange nut

Item	thread d1 x P	d2	d3	d4	d5	b1	b2	F axial (at V _{max.}) [N]	V _{max.} [mm/s] [feed]
213812 0025	12 x 2,5	24	42	34	5	25	8	123	33
213812 0050	12 x 5	24	42	34	5	25	8	123	66
213816 0050	16 x 5	28	48	38	6	30	10	179	50
213816 0100	16 x 10	28	48	38	6	30	10	179	100
213816 0200	16 x 20	28	48	38	6	30	10	179	199
213820 0050	20 x 5	33	55	45	7	35	10	238	40
213820 0100	20 x 10	33	55	45	7	35	10	235	80
213820 0200	20 x 20	33	55	45	7	35	10	235	159
213825 0050	25 x 5	32	55	45	7	40	10	381	32
213825 0100	25 x 10	32	55	45	7	40	10	381	64
213825 0200	25 x 20	32	55	45	7	40	10	386	127



Ball screw nut with complete ball return

for average use



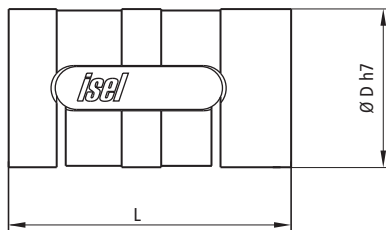
Clamping block 2 - flange securing

Clamping block 1 - base securing

Ball screw nut with complete ball return

Ordering data

Ø	Item-No.	spindle pitch	D	L	dynamic load [N]	static load [N]
12	213412 0003	2.5	24	37.5	3,000	1,900
	213412 0005	5	24	37.5	2,000	1,300
16	213503	2.5	28	50	3,500	5,500
	213514	4	28	50	4,600	7,200
	213505	5	28	50	4,600	7,200
	213510	10	28	50	4,200	6,500
	213520	20	28	50	2,500	1,900
20	213420 0005	5	33	50	9,000	5,000
	213420 0010	10	33	50	8,000	4,500
	213420 0020	20	33	50	3,500	2,200
25	213700 0005	5	38	50	5,100	12,600
	213700 0010	10	38	50	5,100	12,600
	213700 0020	20	38	70	3,570	8,800



Features ball screw nuts

- Material 16MnCr5, sharpened
- version as round and flange nuts
- pitches: 2.5 / 5 / 10 / 20 mm
- with integrated end-cap ball return
- the version with pitch 20 mm is supplied with scrapers

Features clamping blocks

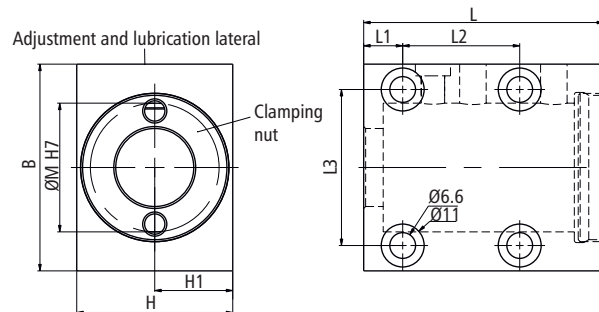
- Material steel, gunmetal finish
- versions for recirculating ball spindles Ø 12, 16, 20, 25 mm
- Nut pitches
 - 2.5 / 5 mm (Ø 12 mm)
 - 2.5 / 4 / 5 / 10 and 20 mm (Ø 16 mm)
 - 5 / 10 and 20 mm (Ø 20 mm)
 - 5 / 10 and 20 mm (Ø 25 mm)
- Clamping blocks for base and flange securing

... and suitable clamping blocks

Ordering data and dimensioned drawings of the clamping blocks

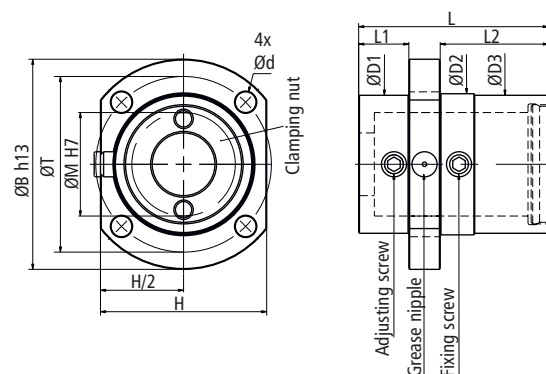
Base securing

	Item-No.	M	L	B	H	H1	L1	L2	L3	Clamping nut
Ø 12	213400	24	37.5	44	29	14.5	7	20	31	-
Ø 16	213500	28	54	47	33	16.5	14.5	25	35	-
Ø 20	213600	33	61.5	53	40	20	10	30	40	1x
Ø 25 - pitch 5/10	213700 9001	38	60	60	49.5	25	10	30	46	1x
Ø 25 - pitch 20	213700 9002	38	80	60	50	25	10	50	46	1x



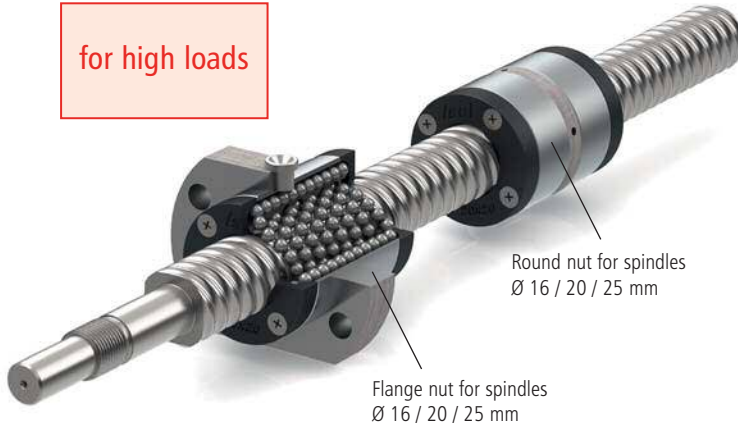
Flange securing

	Item-No.	M	L	B	H	d	T	D1	D2	D3	L1	L2	Clamping nut
Ø 12	213401	24	37.5	53	42	4.5	45	35	37 g6	35	3	24.5	-
Ø 16	213501	28	50	62	48	6.6	51	39	40 g6	39	11.6	28.4	-
Ø 20	213601	33	60.5	67	53	6.6	56	44	45 g6	44	16	34.5	1x
Ø 25 - pitch 5/10	213700 9003	38	60	80	62	9	65	49	50 f9	50 f9	32.25	17.75	1x
Ø 25 - pitch 20	213700 9004	38	80	80	62	9	65	49	50 f9	50 f9	52.25	17.75	1x



Ball screw nut with complete ball return

for high loads



Features

- Material 16MnCr5, sharpened
- version as round nut or flange nut
- pitch: 20 mm
- with integrated end-cap ball return

Dimensioned drawings

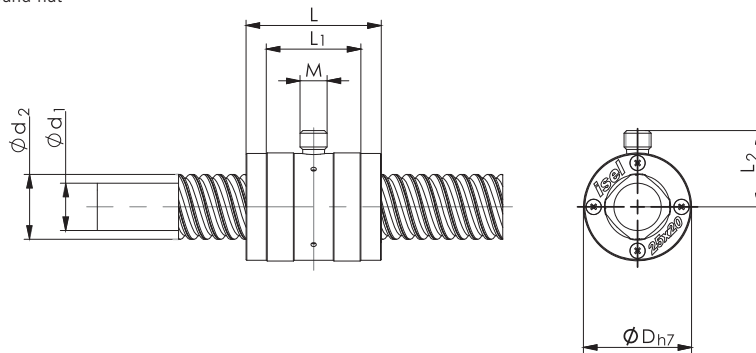
Round nut

Ø	Item-No.	pitch	d2	d1	Ø D _{h7}	L	L ₁	M	L ₂	dynamic load factor	static load factor
16	211336 0020	20	16	10	30	45,5	33,5	M8 x 0,75	22,5	13.000 N	29.000 N
20	211356 0020	20	20	14	35	46,5	34,5	M8 x 0,75	25,5	15.000 N	35.000 N
25	211346 0020	20	25	21	40	50	35	M10 x 0,75	28,3	16.000 N	40.000 N

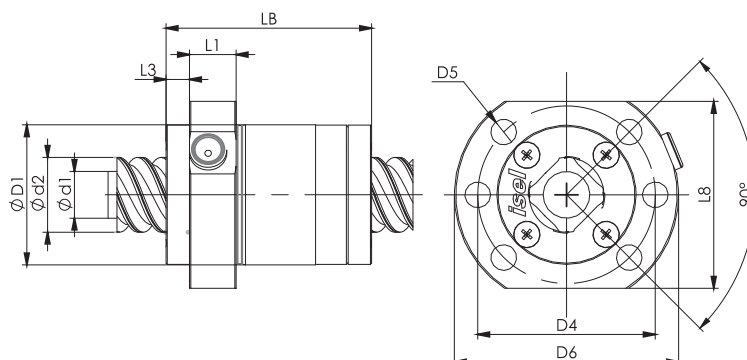
Flange nut

Ø	Item-No.	pitch	d2	d1	D1 g ₆	LB	L1	L3	L8 h ₁₃	D4	D6 h ₁₃	D5	dynamic load factor	static load factor
16	211236 0020	20	16	10	30	45,5	10	6	40	38	48	6x Ø5,5	13.000 N	29.000 N
20	211256 0020	20	20	14	35	46,5	10	11	44	47	58	4x Ø 6,6	15.000 N	35.000 N
25	211246 0020	20	25	21	40	50	10	12,5	48	51	62	4x Ø6,6	16.000 N	40.000 N

Round nut



Flange nut



Flange bearings



flange bearing - drive side



flange bearing - floating bearing side

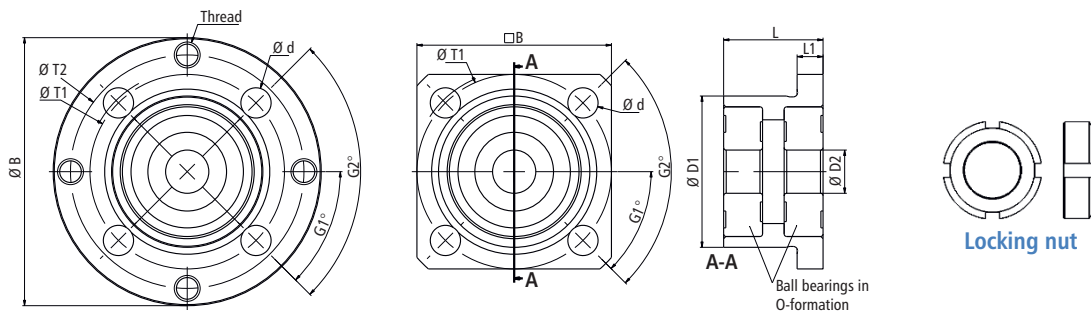
Features

- Bearing, spindle drive side(fixed bearing side) and the spindle floating bearing side
- Flange bearing, drive side: bushing with two pressed angular contact ball bearings in an O-configuration
- Flange bearing, floating bearing side (counter-bearing): bushing with pressed needle bearing

Ordering data and dimensioned drawings

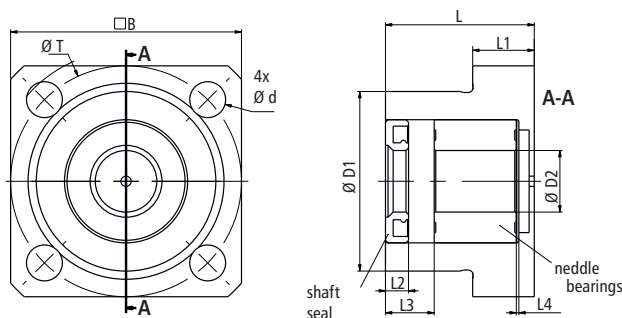
Drive side and locking nut

	Version	Item-No.	B	L	L1	D1	D2	T1	T2	G1	G2	d	Thread
Ø 12	angular	216504 0030	40	19.5	8	35	8	38.2	-	45°	90°	4x Ø 4.5	-
Ø 16	angular	216504 0001	45	23	6	35	10	45	-	45°	90°	4x Ø 12 x 4U / Ø 7	-
Ø 16	round	216504 0003	62	23	6	35	10	45	54	45°	90°	4x Ø 12 x 4U / Ø 7	4x M6
Ø 20	round	216504 0031	64	23	8	39.5	12	50	54	45°	90°	4x Ø 12 x 4U / Ø 7	4x M6
Ø 25	round	216504 0006	72	34	8	53	17	62	62	30°	60°	6x Ø 12 x 4U / Ø 7	6x M6



Floating bearing side

	Item-No.	B	L	L1	L2	L3	L4	D1	D2	T	d
Ø 12	216504 0032	35	20	8	6	6.5	0.5	28	7	38.2	Ø7.5 x 4U Ø4.5
Ø 16	216504 0002	45	29	12	4.5	9.5	0.5	35	12	45	Ø12 x 4U Ø7
Ø 20	216504 0033	50	29.5	12	4.5	5	1.5	35	12	50	Ø12 x 4U Ø7
Ø 25	216504 0005	45	29	12	8	10	0	35	15	45	Ø12 x 4U Ø7



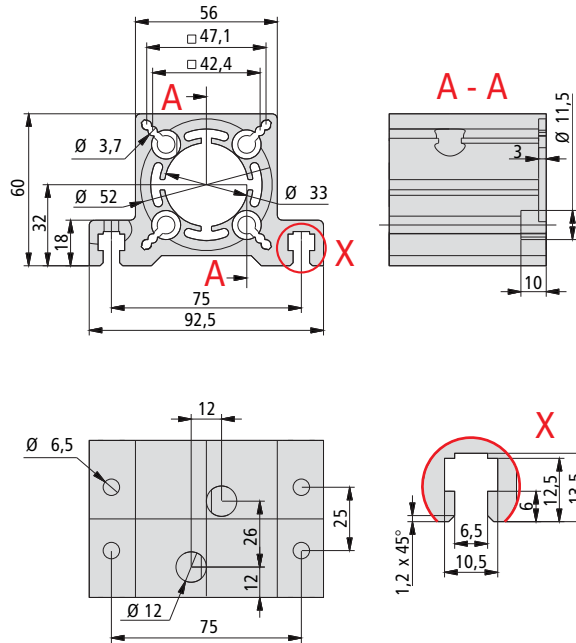
Bearing supports

Bearing support 1

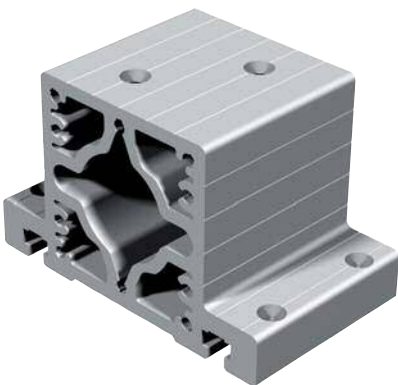


- Aluminium profile compliant with DIN EN 12020-2
- As a parallel connection between the flange bearing and motor flange
- Flat milled securing surfaces
- Version for recirculating ball spindle \varnothing 16 mm
- Universal securing options

Part no.: **216504 0007**

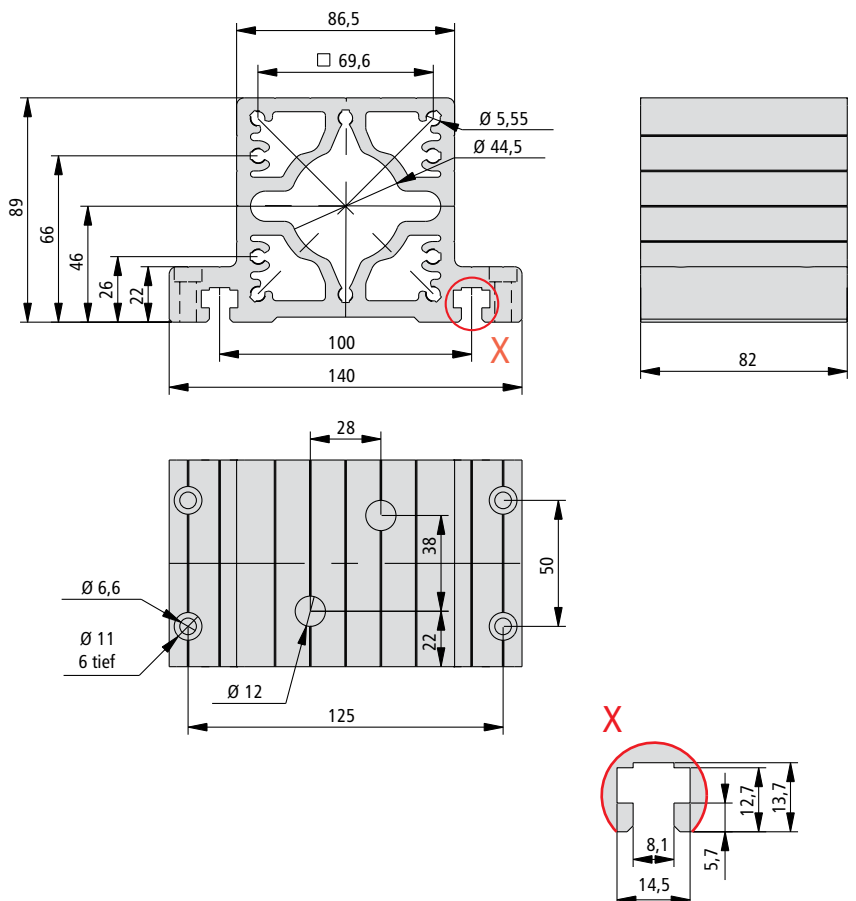


Bearing support 2

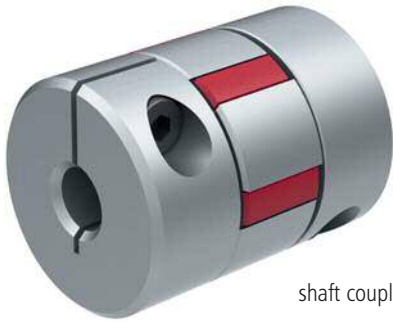


- Aluminium profile compliant with DIN EN 12020-2
- As a parallel connection between the flange bearing and motor flange
- Version for recirculating ball spindle \varnothing 25 mm
- Universal securing options

Part no.: **216504 0008**



Shaft couplings



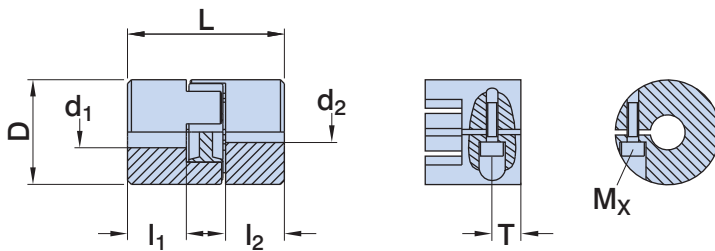
shaft couplings

Features

- Shaft couplings made of aluminium
- \varnothing 20, 30 or 40 mm
- Set of two shaft coupling halves, three PUR sprockets (86 °, 92 ° and 98 ° Shore hardness) and corresponding clamping screws

Ordering data

Coupling	Part-no.	Dimensions [mm]						Clamping screw		
		d ₁	d ₂	D	L	l ₁ / l ₂	d ₁ / d ₂	M _x	T	Screw torque [Nm]
20/30	218001 5060	5.0	6.0	20	30	10	4 - 7	M3	5	0.76
	218001 9999	from 4 to 7 mm								
30/40	218002 6380	6.35	8.0	30	40	14	6 - 13	M4	5	1.34
	218002 8080	8.0	8.0							
	218002 9999	from 6 to 13 mm								
40/60	218003 9580	9.52	8.0	40	60	22,5	8 - 18	M5	12	3.05
	218003 9999	from 8 to 18 mm								



Size	Shore hardness	Revolutions per minute V=30 m/s	Torque			Static torsion spring stiffness [Nm/rad]	Torsion spring stiffness [N/mm]	Mass moment of inertia [kgm ²]	
			T _{Ksp}	T _{KN}	T _{Kmax}			per hub	toothed rim
20/30	86	28.000	0,45	2,2	4,5	22,6	183	0,49 - 10 ⁻⁶	0,079 - 10 ⁻⁶
	92			3,0	6,0	31,5	262		
	98			5,0	10,0	51,6	518		
30/40	86	19.000	1,0	5,5	11,0	82,4	226	2,8 - 10 ⁻⁶	0,457 - 10 ⁻⁶
	92			7,5	15,0	114,6	336		
	98			12,5	25,0	171,9	604		
40/60	86	14.000	2,5	6,9	14,0	415,0	780	20,4 - 10 ⁻⁶	1,49 - 10 ⁻⁶
	92			10,0	20,0	573,0	1120		
	98			17,0	34,0	859,5	2010		