



Eichenberger Gewinde



NEW: Speedy and Rondo
partly available in aluminum

100% Swiss made 

Main Catalogue

- Carry ball screws
- Carry *Speedline* high-helix ball screws
- Speedy high-helix lead screws
- Rondo round thread lead screws

The choice is yours



Thread rolling is the core expertise of Eichenberger Gewinde AG. Not surprisingly, the Company utilizes this process to form the thread profiles of all the screws it makes. Thread rolling (often also referred to as thread milling) is the cold forming of the surface of round workpieces. The thread form is produced by causing a radial dynamic force to be exerted between the two rotating rolling dies that form the workpiece. As the roll die profile penetrates the workpiece surface, the material in cold state is pressed all the way down into the root diameter of the thread roll die and is therefore rolled according to nominal value.

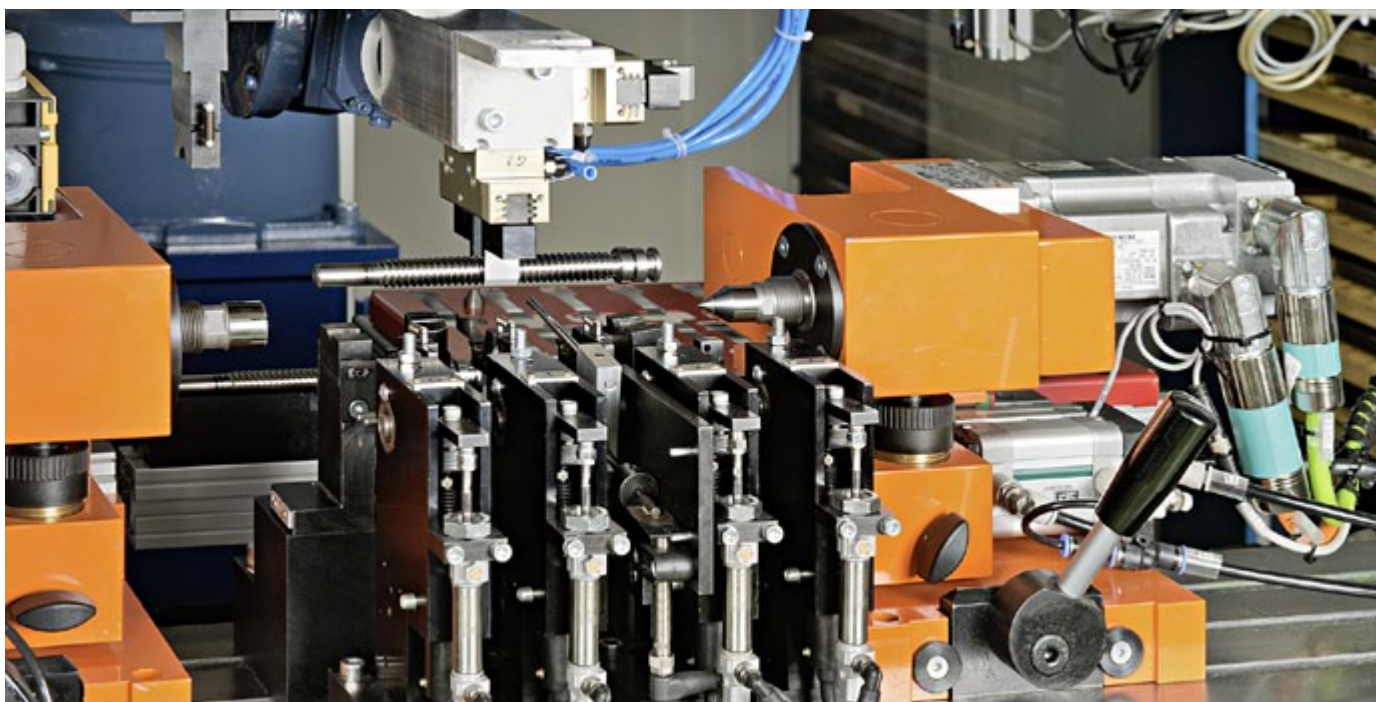
Advantages of thread rolling:

- significant increase in hardness through cold forming
- excellent surface smoothness on thread flanks and in ground radius
- reduced notch sensitivity
- no interrupted swalfe as in machine-ground threads
- excellent dimensional accuracy
- rational manufacturing process
- extremely cost-effective especially in large production batches



Even though all Eichenberger lead screws are made using the rational thread rolling process, individual model series feature distinct differences in design and performance. Product characteristics therefore need to be considered when selecting the right product.

Basic differences are shown in the summary description (opposite).





Carry ball screws

Due to their premium quality and precision, the rolled Carry ball screws are suitable for all linear applications where heavy loads need to be transferred with optimum efficiency.

- \varnothing 4–40 mm
- p 1–40 mm
- for high loads at medium moving speeds

pages 4/5 and 6–41



Carry Speed-line high-helix ball screws

The cold-rolled, wear-resistant Carry Speed-line are marked by an extremely high helix. They provide for high moving speeds and deliver an efficiency which is nothing short of impressive.

- \varnothing 8–25 mm
- p 10–50 mm
- for medium loads at high moving speeds

pages 4/5 and 42–51



Speedy high-helix lead screws

The Speedy high-helix lead screws with helix up to 6 x diameter provide for maximum moving speeds at low rotational speeds or efficient conversion of linear to rotary movements.

- \varnothing 4–36 mm
- p 4–200 mm
- for low loads at high moving speeds
- slide screw unit (steel, aluminium on request)

pages 52/53 and 54–77



Rondo round thread lead screws

The alternative to trapezoidal screws with remarkable efficiency.

- \varnothing 6–16 mm
- p 2–5 mm
- for medium loads at medium moving speeds
- slide screw unit (steel, aluminium on request)

pages 52/53 and 78–84

Contract work:

Thread rolling

pages 85/86

About the Company:

Eichenberger Gewinde AG

page 87

Ball screw product range

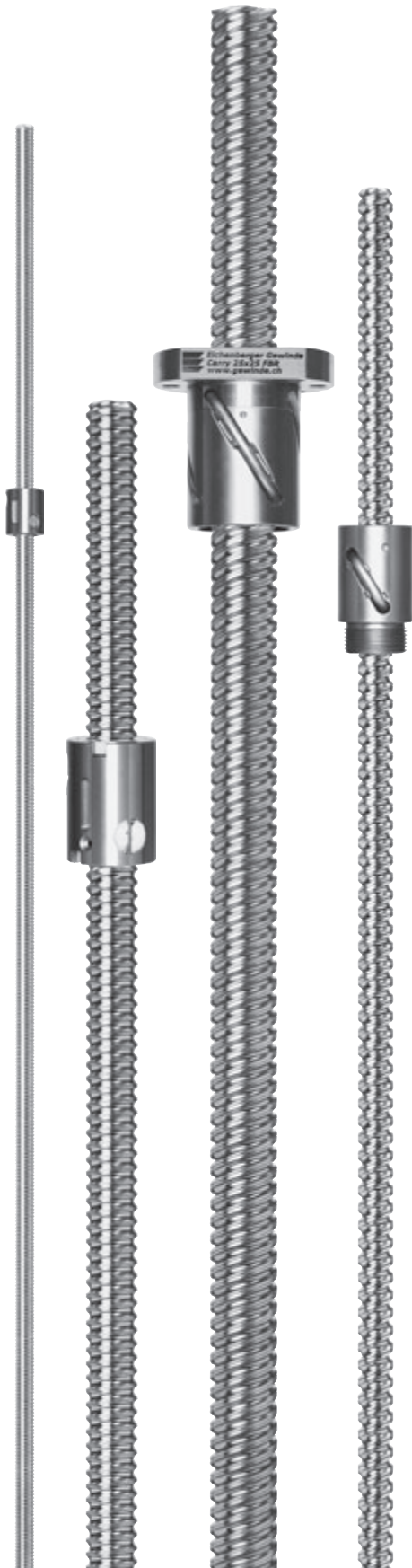


■ = standard range

● = ECONOMY range

²⁾ = also available with left-hand thread

Carry		Carry Speedline									
type	$d_0 \times p$	FBR	FBI	FGR	FGI	ZYR	ZYI	FBE	ZYE	type	$d_0 \times p$
	4 x 1		■				■				4 x 1
	5 x 2				●		■				5 x 2
	5 x 3				●						5 x 3
	6 x 1		■				■				6 x 1
	6 x 2			● ²⁾							6 x 2
	8 x 1		■		●		■				8 x 1
	8 x 1.5				●		■				8 x 1.5
	8 x 2		■		●		■				8 x 2
	8 x 2.5				●		■				8 x 2.5
	8 x 3				●		■				8 x 3
	8 x 5										8 x 5
	8 x 8										8 x 8
	8 x 12										8 x 12
	10 x 2				● ²⁾		■ ²⁾				10 x 2
	10 x 3				●						10 x 3
	10 x 4		■		●		■				10 x 4
	10 x 10										10 x 10
	12 x 2				● ²⁾		■ ²⁾				12 x 2
	12 x 3										12 x 3
	12 x 4				●		■				12 x 4
	12 x 5		■		●						12 x 5
	12 x 10										12 x 10
	12.7 x 12.7				●						12.7 x 12.7



Carry ball screws

- Order system Carry 7
- Carry type «ZYI»: cylindrical single nut with single-thread ball return 8–11
- Carry type «ZYR»: cylindrical single nut with tube type ball return 12/13
- Carry type «FGI»: nut with mounting thread and single-thread ball return . . . 14–17
- Carry type «FGR»: nut with mounting thread and tube type ball return 18–25
- Carry type «FBI»: flange nut with single-thread ball return 26–29
- Carry type «FBR»: flange nut with tube type ball return 30–35
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- Ball returns / Precision / Lubrication 37
- Factory length / Ball screw ends / Handling 38
- Design fundamentals
 - ...at dynamic loads: 39/40
 - «Suitability test» rotational speed characteristics
 - critical rotational speed
 - nominal service life
 - average axial load / average rotational speed
 - efficiency
 - driving torque / required power
 - ...at static loads: 41
 - permissible maximum load
 - permissible buckling force

Visit www.gewinde.ch for the latest on existing and/or new products.



	KGT	16x5	FGR	RH	1	S	350	G7	A	E	M
Example for complete ball screw _____											
Type of lead screw _____ KGT = Carry ball screw											
Nominal size (d₀ x p) [mm] _____											
Type of nut _____ ZYI = cylindrical single nut with single-thread ball return ZYR = cylindrical single nut with tube type ball return FGI = nut with mounting thread and single-thread ball return FGR = nut with mounting thread and tube type ball return FBI = flange nut with single-thread ball return FBR = flange nut with tube type ball return MSX = special design according to drawing											
Right-hand / left-hand thread _____ RH = right-hand thread (standard) LH = left-hand thread (→ see dimensional charts)											
Number of ball circulations _____ 1 = 1 ball circulation 2 = 2 ball circulations 3 = 3 ball circulations 4 = 4 ball circulations											
Wiper (Seal) _____ S = with wipers (plastic or brushes) N = without wipers											
Ball screw overall length [mm] _____											
Lead accuracy (class) _____ G9 = ≤ 0.1 mm/300 mm (standard) G7 = ≤ 0.052 mm/300 mm (on special request) G5 = ≤ 0.023 mm/300 mm (on special request)											
Backlash _____ A = standard backlash (see dimensional charts) R = reduced backlash upon specification											
Screw end machining _____ O = no end machining (cut by grinding, hardened ends; nut on mounting tube) E = end machining according to drawing											
Assembly _____ G = screw and nut separate M = screw and nut assembled according to drawing/specified orientation											
Example for screw only _____	KGT	16x5		RH		350		G7		O	G
Example for nut only _____	KGT	16x5	FGR	RH	1	S		A			M

Carry type «ZYI»



Cylindrical single nut with single-thread ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics.

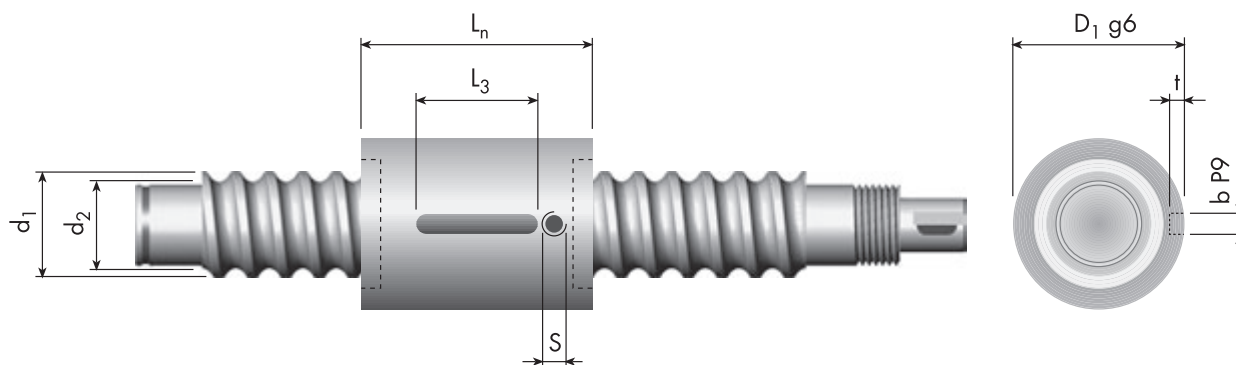
See page 39 for the appropriate calculations.

Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «ZYI» (1/2)



Carry type «ZYI» $d_0 \times p$ mm	Dimensions												Load rates		
	Screw		Nut		L_n	L_3	i	D_w	b P9	t	S	SA	T	C_{dyn}	C_{stat}
	d_1 mm	d_2 mm	D_1 g6 mm											N	
right-hand threads															
4 x 1	4.0	3.2	8	10	—	3x1	0.80	$\varnothing 2^{+0.1}$	1.0	—	—	0.03	430	580	
5 x 2	5.0	4.0	10	14	8	3x1	0.80	2	1.0	—	—	0.03	500	800	
6 x 1	6.0	5.0	12	14	8	3x1	0.80	2	1.2	—	—	0.03	600	1000	
8 x 1	8.0	7.0	14	14	8	3x1	0.80	2	1.2	—	—	0.03	700	1200	
8 x 1.5	8.0	6.7	14	14	8	3x1	1.20	2	1.2	—	—	0.04	800	1300	
8 x 2	8.0	6.5	16	20	8	3x1	1.59	2	1.2	—	—	0.05	1400	2000	
8 x 2.5	8.0	6.6	16	22	10	3x1	1.59	3	2.0	—	—	0.05	1400	2100	
8 x 2.5	8.0	6.6	16	22	10	3x1	1.59	3	2.0	$\varnothing 2$	K	0.05	1400	2100	
8 x 3	8.0	6.7	14	12	8	2x1	1.50	2	1.2	—	—	0.05	950	1500	
8 x 3 ³⁾	8.0	6.7	14	17	8	3x1	1.50	2	1.2	—	—	0.05	1400	2100	
10 x 2	9.7	8.2	18	14	10	2x1	1.59	3	1.2	—	—	0.06	1250	2100	
10 x 2 ³⁾	9.7	8.2	18	20	10	3x1	1.59	3	1.2	—	—	0.06	1750	3200	
10 x 4	10.0	7.5	18	35	10	4x1	2.50	3	1.2	—	—	0.07	4100	6700	
10 x 4	10.0	7.5	18	35	10	4x1	2.50	3	1.2	$\varnothing 2$	K	0.07	4100	6700	
12 x 2	12.0	10.6	20	15	10	2x1	1.59	3	1.2	—	—	0.06	1380	2500	
12 x 2 ³⁾	12.0	10.6	20	20	10	3x1	1.59	3	1.2	—	—	0.06	2000	4000	
left-hand threads															
10 x 2	9.7	8.2	18	14	10	2x1	1.59	3	1.2	—	—	0.06	1250	2100	
10 x 2 ³⁾	9.7	8.2	18	20	10	3x1	1.59	3	1.2	—	—	0.06	1750	3200	
12 x 2 ³⁾	12.0	10.6	20	20	10	3x1	1.59	3	1.2	—	—	0.06	2000	4000	

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «ZYI»



Cylindrical single nut with single-thread ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

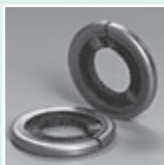
D_w = ball diameter [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

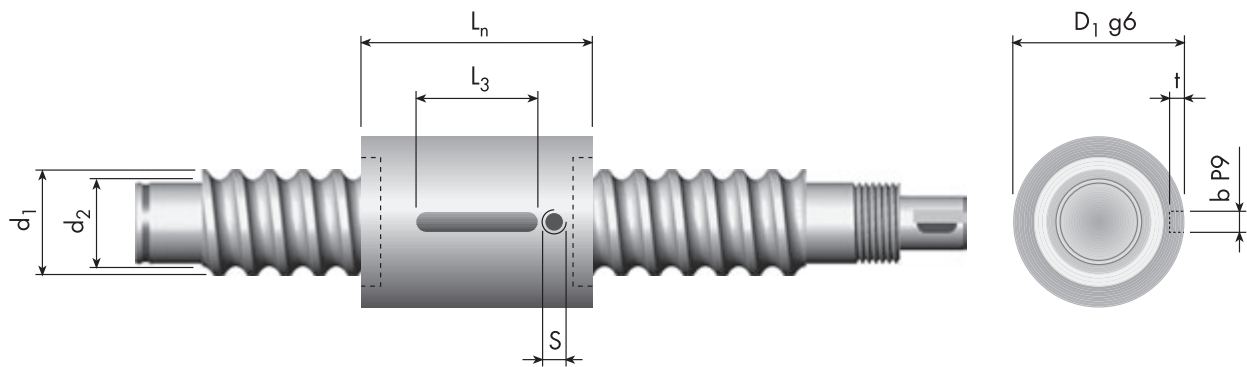
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «ZYI» (2/2)



Carry type «ZYI» $d_0 \times p$ mm	Dimensions												Load rates	
	Screw		Nut	L_n	L_3	i	D_w	b P9	t	S	SA	T	C_{dyn}	C_{stat}
	d_1 mm	d_2 mm	D_1 g6 mm										N	
right-hand threads														
14 x 4	14.0	11.5	25	24	10	3x1	2.78	4	2.5	—	—	0.07	5000	8800
14 x 4	14.0	11.5	25	32	10	3x1	2.78	4	2.5	ø 4	K	0.07	5000	8800
16 x 5	15.7	13.0	30	43	16	3x1	3.50	4	2.5	M5	K	0.07	9700	22000
20 x 5	19.2	16.5	33	45	20	3x1	3.50	4	2.5	M5	K	0.07	10800	25000
25 x 5	24.6	21.5	38	50	20	3x1	3.50	4	2.5	M5	K	0.07	11700	30000
32 x 5	31.6	28.5	48	48	20	4x1	3.50	5	3.0	M5	K	0.07	19000	54000
left-hand threads														
16 x 5	15.7	13.0	30	43	16	3x1	3.50	4	2.5	M5	K	0.07	9700	22000
20 x 5	19.2	16.5	33	45	20	3x1	3.50	4	2.5	M5	K	0.07	10800	25000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «ZJR»



Cylindrical single nut with tube type ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

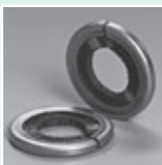
D_w = ball diameter [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

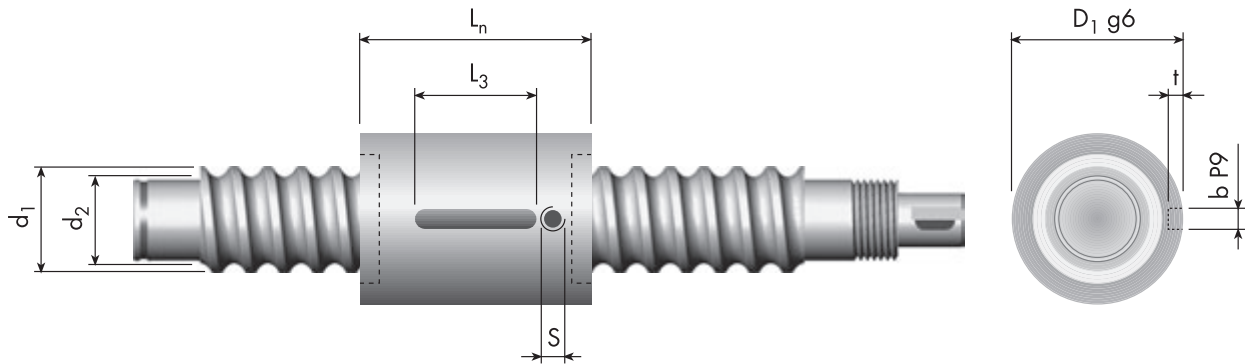
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
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Quality management ISO 9001:2008

Carry type «ZJR»



Carry type «ZJR» $d_0 \times p$	Dimensions												Load rates	
	Screw		Nut										C_{dyn}	C_{stat}
mm	d_1 mm	d_2 mm	D_1 g6 mm	L_n	L_3	i	D_w	b P9	t	S	SA	T	N	
right-hand threads														
8 x 2	8.0	6.5	18	14	8	1x3.5	1.59	2	1.2	—	—	0.06	2000	3200
8 x 2.5	8.0	6.6	18	16	10	1x3.5	1.59	3	2.0	—	—	0.06	2000	3200
8 x 5	8.0	6.7	18	19	10	2x2.5	1.50	3	2.0	—	—	0.06	1960	3470
10 x 3	9.9	7.8	22	24	10	1x3.5	2.00	3	2.0	—	—	0.06	2800	5000
10 x 3	9.9	7.8	22	24	10	1x3.5	2.00	3	2.0	∅ 3.5	K	0.06	2800	5000
10 x 10	9.8	7.9	23	26	10	2x1.5	2.00	3	2.0	—	—	0.06	2500	4500
12 x 4	12.0	9.8	26	24	10	1x3.5	2.50	3	1.8	—	—	0.07	5500	11000
12 x 4	12.0	9.8	26	32	10	1x3.5	2.50	3	1.8	∅ 4	K	0.07	5500	11000
14 x 4	14.0	11.5	29	24	16	1x3.5	2.78	4	2.5	—	—	0.07	8100	16000
14 x 4	14.0	11.5	29	32	16	1x3.5	2.78	4	2.5	∅ 4	K	0.07	8100	16000
16 x 10	15.7	13.0	32	45	16	2x2.5	3.50	4	2.5	—	—	0.07	17000	25000
16 x 10	15.7	13.0	32	45	16	2x2.5	3.50	4	2.5	∅ 4	K	0.07	17000	25000
left-hand threads														
10 x 3	9.9	7.8	22	24	10	1x3.5	2.00	3	2.0	—	—	0.06	2800	5000
10 x 3	9.9	7.8	22	24	10	1x3.5	2.00	3	2.0	∅ 3.5	K	0.06	2800	5000
14 x 4	14.0	11.5	29	24	16	1x3.5	2.78	4	2.5	—	—	0.07	8100	16000
14 x 4	14.0	11.5	29	32	16	1x3.5	2.78	4	2.5	∅ 4	K	0.07	8100	16000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FGI»



Nut with mounting thread and single-thread ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

B = pin wrench hole (position not defined) [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics.

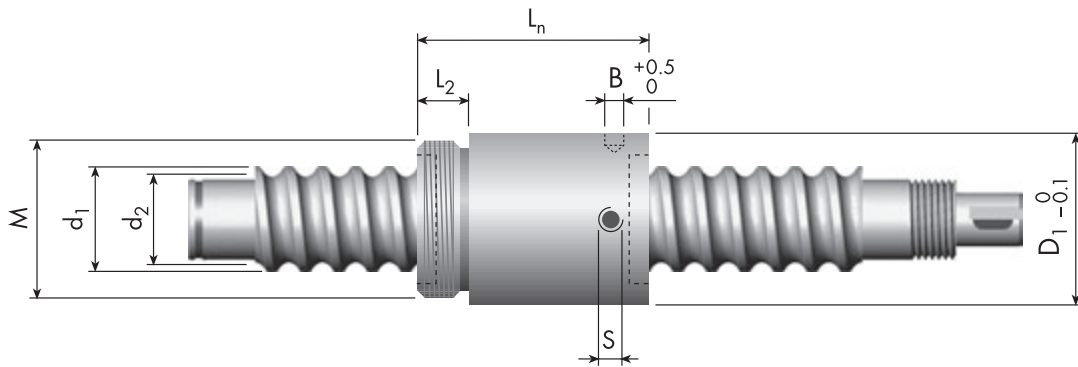
See page 39 for the appropriate calculations.

Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FGI» (1/2)



Carry type «FGI» $d_0 \times p$ mm	Dimensions													Load rates	
	Screw d_1 mm		Nut D_1 0/-0.1 mm	M	L_n	L_2	i	D_w	B +0.5/0	S	SA	T	C_{dyn}	C_{stat}	
right-hand threads															
5 x 2	5.0	4.0	10	M8x0.75	18	6	3x1	0.80	2.5	—	—	0.03	500	800	
5 x 3	5.0	4.2	10	M8x0.75	19	6	2x1	0.80	2.5	—	—	0.03	340	490	
5 x 3 ³⁾	5.0	4.2	10	M8x0.75	23	6	3x1	0.80	2.5	—	—	0.03	480	770	
8 x 1	8.0	7.0	16	M14x1	22	8	3x1	0.80	2.5	—	—	0.03	700	1200	
8 x 1.5	8.0	6.7	16	M14x1	22	8	3x1	1.20	2.5	—	—	0.04	800	1300	
8 x 2	8.0	6.5	16	M14x1	28	8	3x1	1.59	2.5	—	—	0.05	1400	2000	
8 x 2.5	8.0	6.6	16	M14x1	24	8	3x1	1.59	2.5	—	—	0.05	1400	2100	
8 x 3	8.0	6.7	16	M14x1	25	8	3x1	1.50	2.5	—	—	0.05	1400	2100	
10 x 2	9.7	8.2	18	M16x1	22	8	2x1	1.59	2.5	—	—	0.06	1250	2100	
10 x 2 ³⁾	9.7	8.2	18	M16x1	28	8	3x1	1.59	2.5	—	—	0.06	1750	3200	
10 x 3	9.9	7.8	20	M18x1	29	8	3x1	2.00	2.5	—	—	0.06	2400	4200	
10 x 3	9.9	7.8	20	M18x1	29	8	3x1	2.00	2.5	∅ 2	K	0.06	2400	4200	
10 x 4	10.0	7.5	20	M18x1	40	8	4x1	2.50	2.5	—	—	0.07	4100	6700	
10 x 4	10.0	7.5	20	M18x1	40	8	4x1	2.50	2.5	∅ 2	K	0.07	4100	6700	
12 x 2	12.0	10.6	20	M18x1	23	8	2x1	1.59	2.5	—	—	0.06	1380	2500	
12 x 2 ³⁾	12.0	10.6	20	M18x1	28	8	3x1	1.59	2.5	—	—	0.06	2000	4000	
12 x 4	12.0	9.8	24	M20x1	39	10	3x1	2.50	2.5	—	—	0.07	4000	6800	
12 x 4	12.0	9.8	24	M20x1	39	10	3x1	2.50	2.5	∅ 4	K	0.07	4000	6800	
12 x 5	12.0	9.5	23	M20x1	42	10	3x1	2.78	3.0	—	—	0.07	5000	8600	
12 x 5	12.0	9.5	23	M20x1	42	10	3x1	2.78	3.0	∅ 4	K	0.07	5000	8600	
left-hand threads															
10 x 2	9.7	8.2	18	M16x1	22	8	2x1	1.59	2.5	—	—	0.06	1250	2100	
10 x 2 ³⁾	9.7	8.2	18	M16x1	28	8	3x1	1.59	2.5	—	—	0.06	1750	3200	
12 x 2 ³⁾	12.0	10.6	20	M18x1	28	8	3x1	1.59	2.5	—	—	0.06	2000	4000	

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FGI»



Nut with mounting thread and single-thread ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

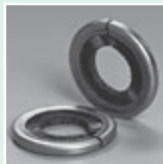
B = pin wrench hole (position not defined) [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics.

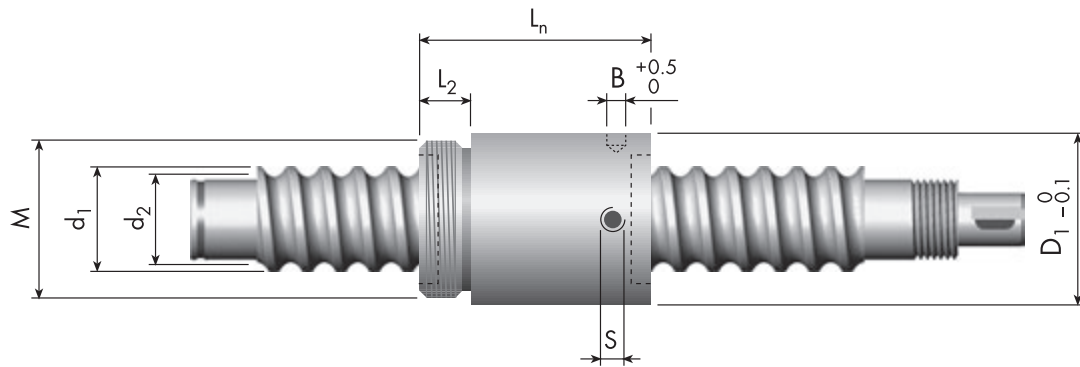
See page 39 for the appropriate calculations.

Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FGI» (2/2)



Carry type «FGI» $d_0 \times p$	Dimensions													Load rates	
	Screw		Nut	M	L_n	L_2	i	D_w	B +0.5/0	S	SA	T	C_{dyn}	C_{stat}	
d_1	d_2	D_1 0/-0.1	N												
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	N	N		
right-hand threads															
14 x 4	14.0	11.5	25	M22x1.5	34	10	3x1	2.78	2.5	—	—	0.07	5000	8800	
14 x 4	14.0	11.5	25	M22x1.5	38	10	3x1	2.78	2.5	ø 4	K	0.07	5000	8800	
16 x 5	15.7	13.0	30.2	M26x1.5	45	12	3x1	3.50	3.5	—	—	0.07	9700	22000	
16 x 5	15.7	13.0	30.2	M26x1.5	50	12	3x1	3.50	3.5	M5	K	0.07	9700	22000	
20 x 5	19.2	16.5	33	M30x1.5	47	12	3x1	3.50	4.0	M5	K	0.07	10800	25000	
25 x 5	24.6	21.5	40	M38x1.5	57	12	3x1	3.50	4.0	M5	K	0.07	11700	30000	
32 x 5	31.6	28.5	52	M48x1.5	55	15	4x1	3.50	4.0	M5	K	0.07	19000	54000	
left-hand threads															
16 x 2	16.0	14.5	25	M22x1.5	34	10	3x1	1.59	2.5	—	—	0.05	2400	5200	
16 x 5 ³⁾	15.7	13.0	30.2	M26x1.5	50	12	3x1	3.50	3.5	M5	K	0.07	9700	22000	
20 x 5	19.2	16.5	33	M30x1.5	47	12	3x1	3.50	4.0	M5	K	0.07	10800	25000	

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FGR»



Nut with mounting thread and tube type ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

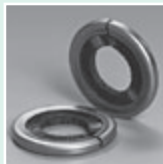
B = pin wrench hole (position not defined) [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics.

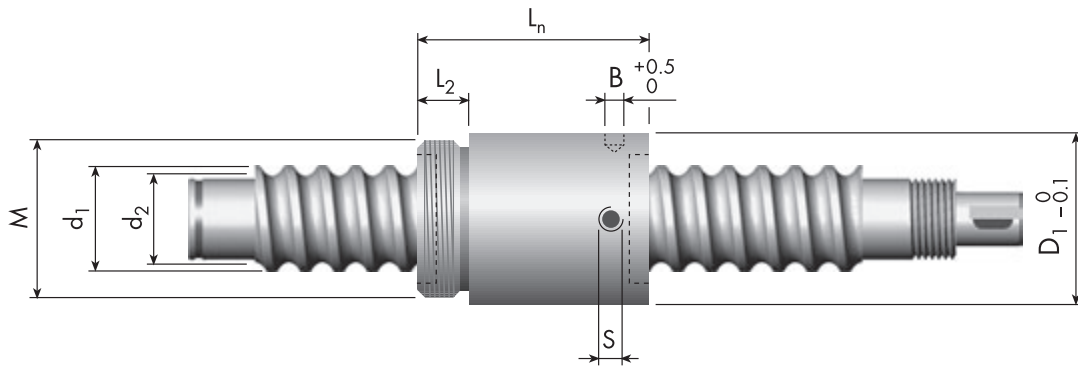
See page 39 for the appropriate calculations.

Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FGR» (1/4)



Carry type «FGR» $d_0 \times p$ mm	Dimensions												Load rates	
	Screw		Nut	M	L_n	L_2	i	D_w	B +0.5/0	S	SA	T	C_{dyn}	C_{stat}
d_1 mm	d_2 mm	D_1 0/-0.1 mm	N											

right-hand threads

6 x 2	5.7	4.6	16	M12x1	22	8	1x3.5	1.59	2.5	—	—	0.06	1700	2300
8 x 2	8.0	6.5	18	M14x1	24	8	1x3.5	1.59	2.5	—	—	0.06	2000	3200
8 x 2	8.0	6.5	18	M14x1	24	8	1x3.5	1.59	2.5	∅ 2	K	0.06	2000	3200
8 x 2.5	8.0	6.6	17.5	M15x1	24	8	1x3.5	1.59	2.5	—	—	0.06	2000	3200
8 x 2.5	8.0	6.6	17.5	M15x1	26	8	1x3.5	1.59	2.5	∅ 2	K	0.06	2000	3200
8 x 5	8.0	6.7	18	M14x1	25	8	2x1.5	1.50	2.5	—	—	0.06	1960	3470
8 x 8	8.0	6.6	18	M14x1	25	8	2x1.5	1.50	2.5	—	—	0.06	1500	2500
10 x 2	9.7	8.2	19.5	M17x1	22	7	1x3.5	1.59	2.5	—	—	0.06	2300	4000
10 x 2	9.7	8.2	19.5	M17x1	22	7	1x3.5	1.59	2.5	∅ 2	K	0.06	2300	4000
10 x 3	9.9	7.8	21	M18x1	29	9	1x3.5	2.00	3.0	—	—	0.06	2800	5000
10 x 3	9.9	7.8	21	M18x1	29	9	1x3.5	2.00	3.0	∅ 2	K	0.06	2800	5000
10 x 10	9.8	7.9	23	M18x1	35	9	2x1.5	2.00	3.0	—	—	0.06	2500	4500
10 x 10	9.8	7.9	23	M18x1	35	9	2x1.5	2.00	3.0	∅ 4	K	0.06	2500	4500

left-hand threads

6 x 2	5.7	4.6	16	M12x1	22	8	1x3.5	1.59	2.5	—	—	0.06	1700	2300
10 x 2	9.7	8.2	19.5	M17x1	22	7	1x3.5	1.59	2.5	—	—	0.06	2300	4000
10 x 3	9.9	7.8	21	M18x1	29	9	1x3.5	2.00	3.0	—	—	0.06	2800	5000
10 x 3	9.9	7.8	21	M18x1	29	9	1x3.5	2.00	3.0	∅ 2	K	0.06	2800	5000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FGR»



Nut with mounting thread and tube type ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

B = pin wrench hole (position not defined) [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

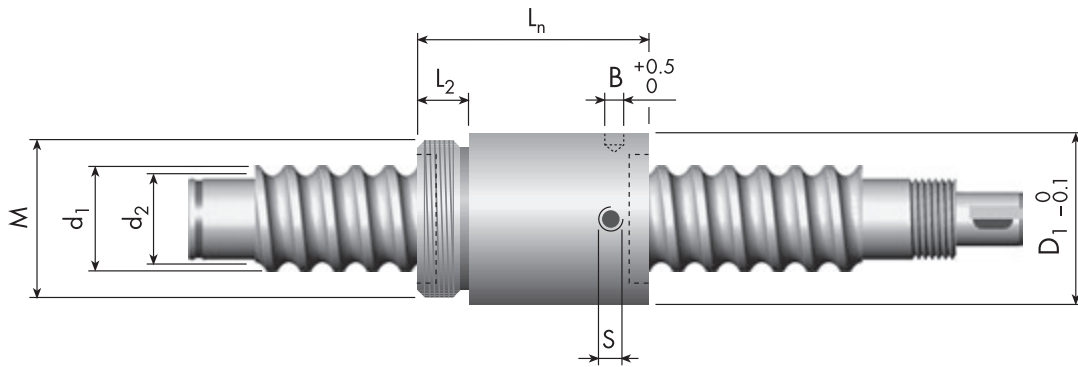
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FGR» (2/4)



Carry type «FGR» $d_0 \times p$ mm	Dimensions												Load rates	
	Screw		Nut	M	L_n	L_2	i	D_w	B	S	SA	T	C_{dyn}	C_{stat}
	d_1	d_2	D_1 0/-0.1 mm					+0.5/0					N	
right-hand threads														
12 x 4	12.0	9.8	26	M20x1	32	8	1x3.5	2.50	2.5	—	—	0.07	5 500	11 000
12 x 4	12.0	9.8	26	M20x1	34	10	1x3.5	2.50	2.5	∅ 4	K	0.07	5 500	11 000
12 x 5	12.0	9.5	26	M20x1	37	8	1x3.5	2.78	3.0	—	—	0.07	6 600	12 000
12 x 5	12.0	9.5	26	M20x1	37	8	1x3.5	2.78	3.0	∅ 4	K	0.07	6 600	12 000
12 x 10	11.9	9.7	26	M20x1	37	8	2x1.5	2.50	3.0	—	—	0.07	4 400	7 700
12.7 x 12.7	13.1	10.3	29.5	M25x1.5	50	12	2x1.5	3.50	3.0	—	—	0.07	8 000	15 500
12.7 x 12.7	13.1	10.3	29.5	M25x1.5	50	12	2x1.5	3.50	3.0	M5	B	0.07	8 000	15 500
14 x 2	14.0	12.5	26	M22x1.5	32	10	2x2.5	1.59	3.0	—	—	0.06	4 500	10 000
14 x 2	14.0	12.5	26	M22x1.5	32	10	2x2.5	1.59	3.0	∅ 2	K	0.06	4 500	10 000
14 x 4	14.0	11.5	29	M22x1.5	32	8	1x3.5	2.78	3.0	—	—	0.07	8 100	16 000
14 x 4	14.0	11.5	29	M22x1.5	38	10	1x3.5	2.78	3.0	∅ 4	K	0.07	8 100	16 000
left-hand threads														
12 x 5	12.0	9.5	26	M20x1	37	8	1x3.5	2.78	3.0	—	—	0.07	6 600	12 000
14 x 4	14.0	11.5	29	M22x1.5	32	8	1x3.5	2.78	3.0	—	—	0.07	8 100	16 000
14 x 4	14.0	11.5	29	M22x1.5	38	10	1x3.5	2.78	3.0	∅ 4	K	0.07	8 100	16 000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FGR»



Nut with mounting thread and tube type ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

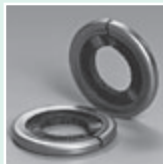
B = pin wrench hole (position not defined) [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics.

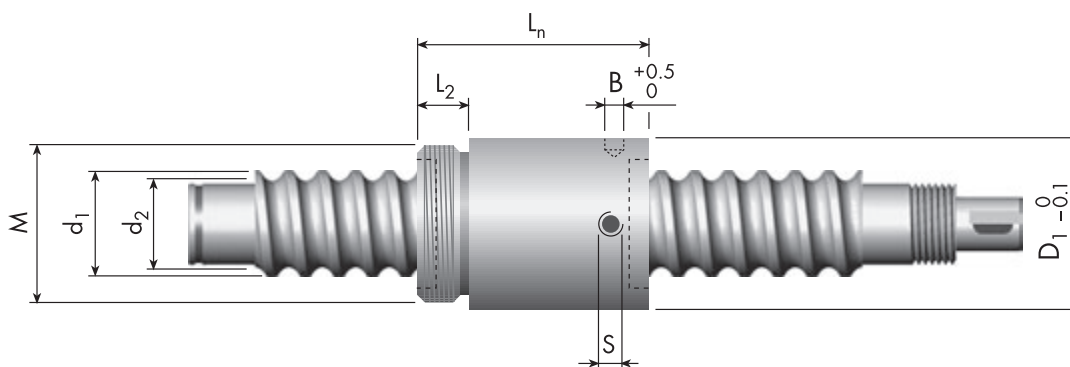
See page 39 for the appropriate calculations.

Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FGR» (3/4)



Carry type «FGR» $d_0 \times p$ mm	Dimensions												Load rates	
	Screw		Nut	M	L_n	L_2	i	D_w	B	S	SA	T	C_{dyn}	C_{stat}
	d_1	d_2	D_1 0/-0.1					+0.5/0					N	
right-hand threads														
16 x 2	16.0	14.5	30	M26x1.5	28	12	1x2.5	1.59	3.5	—	—	0.06	2500	5500
16 x 2	16.0	14.5	30	M26x1.5	28	12	1x2.5	1.59	3.5	∅ 2	K	0.06	2500	5500
16 x 5	15.7	13.0	32	M26x1.5	42	12	1x3.5	3.50	4.0	—	—	0.07	12000	25000
16 x 5	15.7	13.0	32	M26x1.5	47	12	1x3.5	3.50	4.0	M5	K	0.07	12000	25000
16 x 10	15.7	13.0	32	M26x1.5	47	12	1x2.5	3.50	4.0	—	—	0.07	8500	12500
16 x 10	15.7	13.0	32	M26x1.5	52	12	1x2.5	3.50	4.0	∅ 4	K	0.07	8500	12500
16 x 10	15.7	13.0	32	M26x1.5	47	12	2x2.5	3.50	4.0	—	—	0.07	17000	25000
16 x 10	15.7	13.0	32	M26x1.5	52	12	2x2.5	3.50	4.0	∅ 4	K	0.07	17000	25000
16 x 16	15.9	13.2	32	M26x1.5	47	12	3x1.5	3.00	4.0	—	—	0.07	9150	18750
20 x 2	20.0	18.5	36	M30x1.5	30	12	2x2.5	1.59	4.0	—	—	0.06	4600	15000
20 x 5	19.2	16.5	36	M30x1.5	42	12	1x3.5	3.50	4.0	—	—	0.07	13700	29900
20 x 5	19.2	16.5	36	M30x1.5	47	12	1x3.5	3.50	4.0	∅ 4	K	0.07	13700	29900
20 x 10	19.5	16.5	38	M35x1.5	58	19	2x2.5	3.50	4.0	—	—	0.07	21000	51000
20 x 10	19.5	16.5	38	M35x1.5	58	19	2x2.5	3.50	4.0	∅ 4	B	0.07	21000	51000
20 x 20	20.0	16.5	38	M35x1.5	58	19	2x1.5	3.50	4.0	—	—	0.07	10000	22000
20 x 20	20.0	16.5	38	M35x1.5	64	19	2x1.5	3.50	4.0	∅ 4	B	0.07	10000	22000
20 x 20	20.0	17.3	38	M35x1.5	58	19	4x1.5	3.00	4.0	—	—	0.07	14600	35000
left-hand threads														
16 x 5	15.7	13.0	32	M26x1.5	42	12	1x3.5	3.50	4.0	—	—	0.07	12000	25000
16 x 5	15.7	13.0	32	M26x1.5	47	12	1x3.5	3.50	4.0	M5	K	0.07	12000	25000
20 x 2	20.0	18.5	36	M30x1.5	30	12	2x2.5	1.59	4.0	—	—	0.06	4600	15000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FGR»



Nut with mounting thread and tube type ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

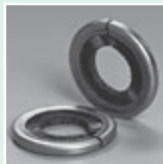
B = pin wrench hole (position not defined) [mm]

S = lubrication hole (position not defined) [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

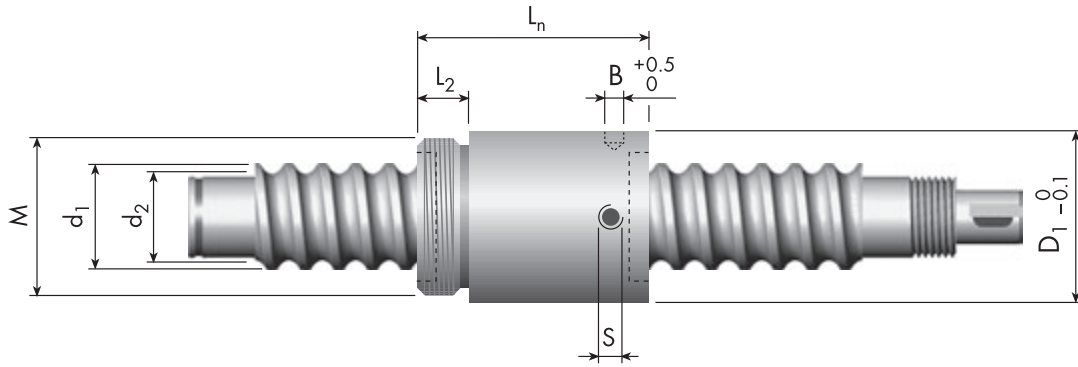
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FGR» (4/4)



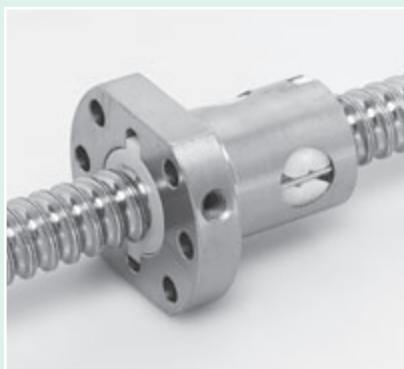
Carry type «FGR» $d_0 \times p$ mm	Dimensions												Load rates	
	Screw		Nut	M	L_n	L_2	i	D_w	B +0.5/0	S	SA	T	C_{dyn}	C_{stat}
d_1	d_2	D_1 0/-0.1	N											
right-hand threads														
25 x 5	24.6	21.5	44	M40x1.5	58	19	2x1.5	3.50	4.0	—	—	0.07	17 500	42 400
25 x 10	24.8	21.8	43	M40x1.5	58	19	2x2.5	3.50	4.0	—	—	0.07	21 000	54 000
25 x 10	24.8	21.8	43	M40x1.5	58	19	2x2.5	3.50	4.0	∅ 4	B	0.07	21 000	54 000
25 x 25	24.5	21.2	44	M40x1.5	72	20	2x1.5	3.50	4.0	∅ 4	B	0.08	10 000	24 000
25 x 25	24.5	21.2	44	M40x1.5	72	20	4x1.5	3.50	4.0	∅ 4	B	0.08	20 000	48 000
32 x 10	31.6	28.4	52	M48x1.5	62	19	2x2.5	3.50	4.0	∅ 4	B	0.07	20 000	55 000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FBI»



Flange nut with single-thread ball return (following DIN 69051: flange type B nut, master gauge 3)



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

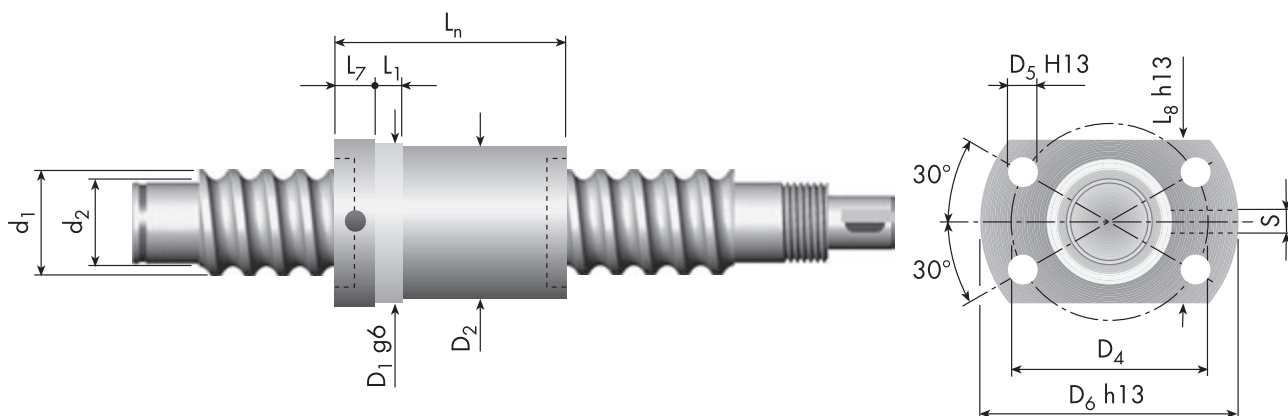
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FBI» (1/2)



Carry type «FBI» d ₀ x p mm	Dimensions																Load rates	
	Screw		Nut		D ₄ hole circle	D ₅ H13	D ₆ h13	L _n	L ₁	L ₇	L ₈ h13	i	D _w	S	SA	T	C _{dyn}	C _{stat}
d ₁ mm	d ₂ mm	D ₁ g6 mm	D ₂	D ₂														
right-hand threads																		
4 x 1	4.0	3.2	8	7.9	12	2.7	17	14	2	3	11	3x1	0.80	—	—	0.03	430	580
6 x 1	6.0	5.0	12	11.8	18	3.4	24	18	4	4	16	3x1	0.80	ø 2	K	0.03	600	1000
8 x 1	8.0	7.0	14	13.5	21	3.4	27	18	4	4	18	3x1	0.80	ø 2	K	0.03	700	1200
8 x 2	8.0	6.5	16	15.5	22	3.4	28	30	4	6	19	3x1	1.59	ø 4	K	0.05	1400	2000
10 x 4	10.0	7.5	18	17.8	28	4.5	36	38	6	6	23	4x1	2.50	—	—	0.07	4100	6700
10 x 4	10.0	7.5	18	17.8	28	4.5	36	38	6	6	23	4x1	2.50	ø 2	K	0.07	4100	6700
12 x 5	12.0	9.5	24	23.5	32	4.5	40	40	6	8	26	3x1	2.78	ø 4	K	0.07	5000	8600

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FBI»



Flange nut with single-thread ball return (following DIN 69051: flange type B nut, master gauge 1)



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

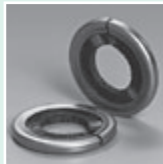
D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

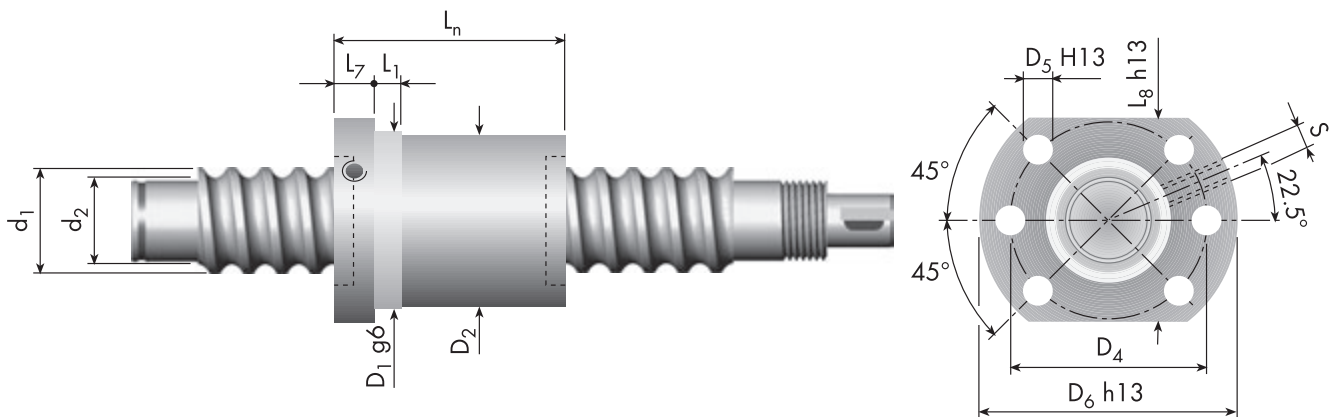
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FBI» (2/2)



Carry type «FBI» d ₀ x p	Dimensions																Load rates	
	Screw		Nut														C _{dyn}	C _{stat}
mm	d ₁ mm	d ₂ mm	D ₁ g6 mm	D ₂	D ₄ hole circle	D ₅ H13	D ₆ h13	L _n	L ₁	L ₇	L ₈ h13	i	D _w	S	SA	T	N	

right-hand threads

16 x 5	15.7	13.0	28	27.8	38	5.5	48	45	6	10	40	3x1	3.50	M6	K	0.07	9700	22000
20 x 5	19.2	16.5	36	35.5	47	6.6	58	50	10	10	44	3x1	3.50	M6	K	0.07	10800	25000
25 x 5	24.6	21.5	40	39.5	51	6.6	62	50	10	10	48	3x1	3.50	M6	K	0.07	11700	30000
25 x 5	24.6	21.5	40	39.5	51	6.6	62	55	10	10	48	4x1	3.50	M6	K	0.07	14000	35000
32 x 5	31.6	28.5	50	49.5	65	9.0	80	57	10	12	62	4x1	3.50	M6	K	0.07	19000	54000

left-hand threads

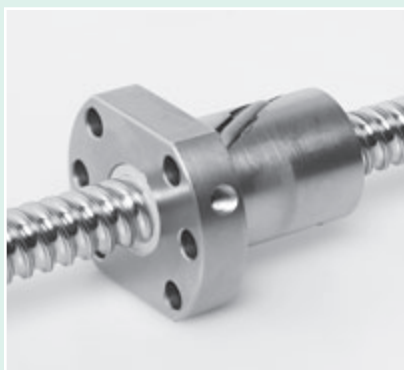
16 x 5	15.7	13.0	28	27.8	38	5.5	48	45	6	10	40	3x1	3.50	M6	K	0.07	9700	22000
20 x 5	19.2	16.5	36	35.5	47	6.6	58	50	10	10	44	3x1	3.50	M6	K	0.07	10800	25000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FBR»



Flange nut with tube type ball return (following DIN 69051: flange type B nut, master gauge 3)



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

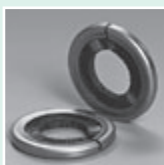
D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

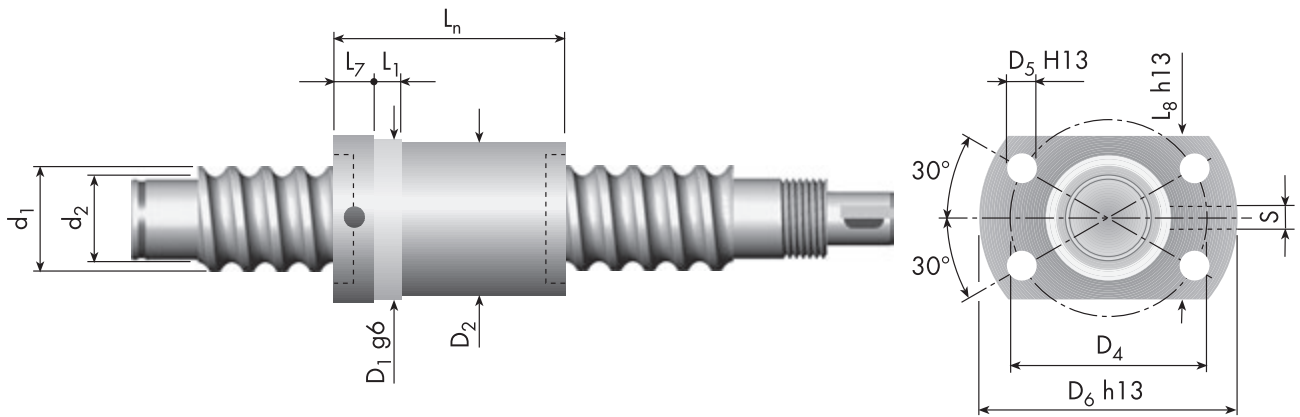
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FBR» (1/3)



Carry type «FBR» $d_0 \times p$ mm	Dimensions																Load rates		
	Screw		Nut														C_{dyn}	C_{stat}	
	d_1	d_2	D_1 g6 mm	D_2	D_4 hole circle	D_5 H13	D_6 h13	L_n	L_1	L_7	L_8 h13	i	D_w	S	SA	T	N		
right-hand threads																			
8 x 2	8.0	6.5	18	17.5	22	3.4	28	25	4	6	19	1x3.5	1.59	ø 4	K	0.06		2000	3200
8 x 8 ³⁾	8.0	6.6	18	17.5	22	3.4	28	30	4	6	19	2x1.5	1.50	—	—	0.06		1500	2500
10 x 10	9.8	7.9	23	22.5	29	4.5	37	40	6	8	24	2x1.5	2.00	M5	K	0.06		2500	4500
12 x 2	12.0	10.6	22	21.5	29	4.5	37	30	5	8	24	1x3.5	1.59	ø 4	K	0.06		2500	5100
12 x 3	12.3	10.2	24	23.5	32	4.5	40	36	5	8	26	2x2.5	2.00	—	—	0.06		5000	11000
12 x 4	12.0	9.8	26	25.5	32	4.5	39.5	36	5	8	28	1x3.5	2.50	M5	K	0.07		5500	11000
12 x 5	12.0	9.5	26	25.5	32	4.5	39.5	40	5	7	28	1x3.5	2.78	M5	K	0.07		6600	12000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FBR»



Flange nut with tube type ball return (following DIN 69051: flange type B nut, master gauge 1)



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

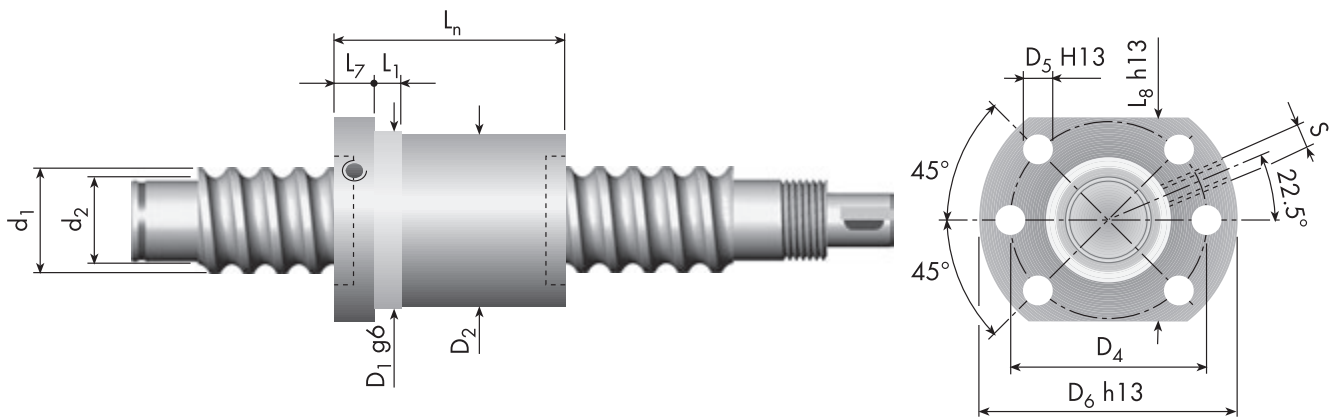
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FBR» (2/3)



Carry type «FBR» $d_0 \times p$ mm	Dimensions															Load rates			
	Screw		Nut													C_{dyn}	C_{stat}		
	d_1	d_2	D_1 g6 mm	D_2	D_4 hole circle	D_5 H13	D_6 h13	L_n	L_1	L_7	L_8 h13	i	D_w	S	SA	T	N		
right-hand threads																			
14 x 2	14.0	12.5	26	25.5	32	4.5	39.5	32	5	7	28	2x2.5	1.59	ø 4	K	0.06		4 500	10 000
14 x 4	14.0	11.5	29	28.6	38	5.5	48	40	6	8	36	1x3.5	2.78	M5	K	0.07		8 100	16 000
16 x 2	16.0	14.5	30	29.5	38	5.5	48	45	6	10	40	2x2.5	1.59	M6	K	0.06		4 500	11 000
16 x 2	16.0	14.5	30	29.5	38	5.5	48	45	6	10	40	3x2.5	1.59	M6	K	0.06		6 000	15 000
16 x 10	15.7	13.0	32	31.5	43	6.6	54	52	6	12	44	2x2.5	3.50	M6	K	0.07		17 000	25 000
20 x 10	19.5	16.5	38	37.5	50	6.6	62	55	7	10	48	2x2.5	3.50	M6	B	0.07		21 000	51 000
20 x 10 ³⁾	19.5	16.5	38	37.5	50	6.6	62	65	7	10	48	2x3.5	3.50	M6	B	0.07		26 000	65 000
20 x 20	20.0	16.5	36	35.5	47	6.6	58	58	7	10	44	2x1.5	3.50	M6	B	0.07		10 000	22 000
25 x 10	24.8	21.8	43	42.5	55	6.6	65	55	7	10	50	2x2.5	3.50	M6	B	0.07		21 000	54 000
25 x 25	24.5	21.2	44	43.5	56	6.6	70	67	10	12	52	2x1.5	3.50	M6	B	0.08		10 000	24 000
25 x 25	24.5	21.2	44	43.5	56	6.6	70	67	10	12	52	4x1.5	3.50	M6	B	0.08		20 000	48 000
32 x 10	31.6	28.4	52	51.5	67	9.0	82	62	10	12	64	2x2.5	3.50	M6	B	0.07		20 000	55 000
32 x 15	31.4	28.5	56	55.5	71	9.0	86	74	12	14	65	2x2.5	3.50	M6	B	0.07		19 900	55 100
32 x 32	31.5	28.5	56	55.5	71	9.0	86	86	12	14	65	4x1.5	3.50	M6	B	0.07		25 700	76 200
left-hand threads																			
14 x 4	14.0	11.5	29	28.6	38	5.5	48	40	6	8	36	1x3.5	2.78	M5	K	0.07		8 100	16 000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry type «FBR»



Flange nut with tube type ball return (following DIN 69051: flange type B nut, master gauge 2)



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers



K = plastic



B = brushes



F = felt rings (on request; in case of lifetime lubrication)

T = standard backlash [mm]

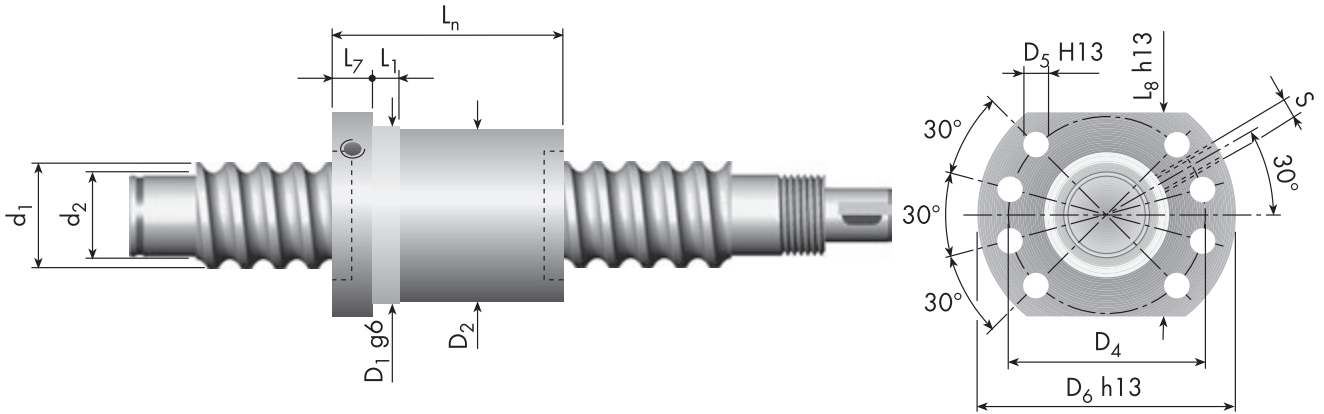
³⁾ = only on request

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry type «FBR» (3/3)



Carry type «FBR» d ₀ x p	Dimensions																Load rates	
	Screw		Nut														C _{dyn}	C _{stat}
mm	d ₁ mm	d ₂ mm	D ₁ g6 mm	D ₂	D ₄ hole circle	D ₅ H13	D ₆ h13	L _n	L ₁	L ₇	L ₈ h13	i	D _w	S	SA	T	N	
right-hand threads																		
40 x 5	39.8	36.9	65	64.5	78	9.0	93	75	12	14	70	2x3.5	3.50	M8x1	B	0.07	29 400	97 000
40 x 20	40.3	36.9	65	64.7	78	9.0	93	88	12	14	70	2x2.5	4.00	M8x1	B	0.07	25 500	77 400
40 x 40	39.8	36.4	66	65.5	80	9.0	95	98	12	14	75	4x1.5	4.00	M8x1	B	0.07	29 900	94 500

The CAD data corresponding to the types shown above are available at www.gewinde.ch



Basic design

Carry screws are manufactured by the highly economical cold-rolling process which offers both significant cost savings but also maintains a precision previously often only available with machine-ground screws. Carry screws are complemented by a range of single steel nuts produced in a special cost-cutting process.

Carry offers all the advantages of the inherent ball screw design:

- high efficiency, i.e.
 - low power input
 - low self-heating
- low frictional, stick-slip-free running
- maximum wear resistance, i.e. very good repetition accuracy with a constant positioning precision.
- high reliability and durability.

Materials

- standard: steel
 - 100Cr6 (1.3505)
 - and
 - Cf53 (1.1213)
- on request:
 - X46Cr13 (1.4034)
- other materials on request

Attention: The use of stainless steel results in lower load rates; details on request.

Nut designs

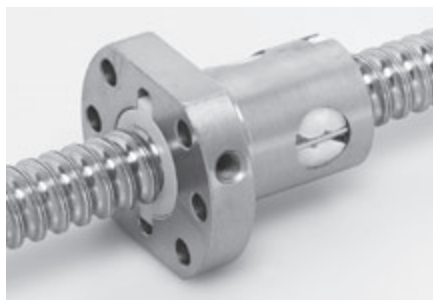
Standard are the following three types:



Cylindrical single nut type «ZY...»



Nut with mounting thread type «FG...»

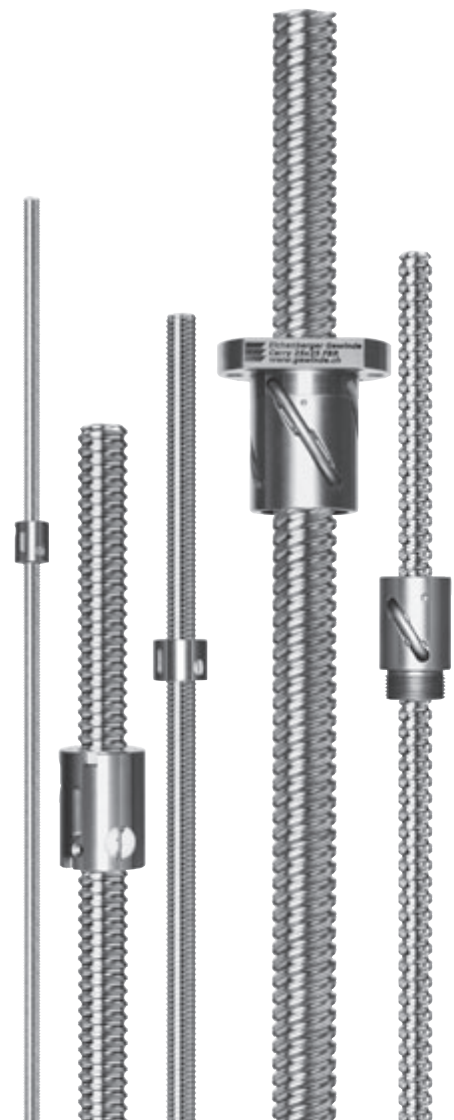


Flange nut type «FB...»

Of course, any other nut designs (such as those with integrated cardanic axis) are available upon request.

Thread profile

Used most commonly are gothic arc (ogival) profiles.





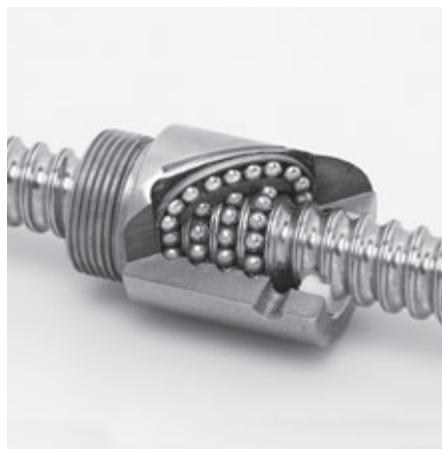
Ball return / Precision / Lubrication

Ball return

Nuts feature single-thread ball returns or tube type ball returns, both fully integrated into the nut shape.



Single-thread ball return, type «...I»



Tube type ball return, type «...R»

Operating temperatures

Regular applications: -20 to +80 °C.
Please ask about other operating temperatures.

Lead accuracy

Eichenberger ball screws feature the following lead accuracies according to DIN 69051:

Standard:

- G9 $\Delta \leq 0.1$ mm/300 mm

On request:

- G7 $\Delta \leq 0.052$ mm/300 mm

- G5 $\Delta \leq 0.023$ mm/300 mm



Reduced backlash

If necessary, reduced backlash up to ≤ 0.01 mm is available (only with paired or assembled screws).

Efficiency

The efficiency η for Carry ball screws is better than 0.9.

Wipers

Plastic (K) or brush (B) wipers are used, depending on nut type/dimension. Felt rings (F) available on request (in case of lifetime lubrication).

Lubrication

The usual specifications for lubricating ball bearings also apply to ball screws. However, lubrication applied only once but intended to last a lifetime is not sufficient in most cases. Regular lubrication is required to extend the service life of the ball screw.

Please note:

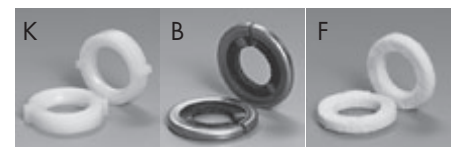
When shipped, screws simply have a protective film. Before mounting or operating the ball screw, units must be lubricated with the proper lubricant (through the lube hole for nuts with wipers; directly onto the screw for nuts without wipers).

Recommended all-purpose lubricant:

- Klüber Microlube GBU Y 131

When using another lubricant, please verify compatibility with anticorrosion agent; otherwise rinse ball screw unit prior to lubrication.

Caution: Do not use grease containing graphite or MoS.





Factory length

In general, Eichenberger screws are available as threaded rods, approx. 2.8 to 3 m long. Upon request, lengths up to 6 m are available, depending on diameter and supply market situation.

Ball screw ends

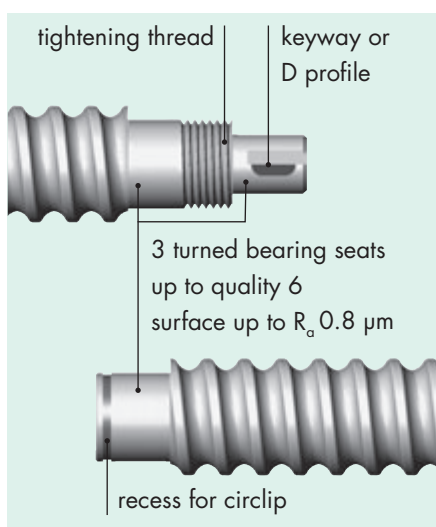
Ball screw ends are without any machining cut by grinding (standard).

Upon request, a so-called standard screw end journal with three turned bearing seats (see figure below) is available. Dimensions are as per customer specifications.

Screws may also be ordered with softened ends for subsequent finishing by the customer or with an application-specific end journal.

In each instance, a detailed drawing would be necessary.

Note also the links to the CAD data at www.gewinde.ch



Handling

Ball screws are precision parts and must be protected from shock, dirt or moisture when transported or stored. Please do not unpack until ready for use.

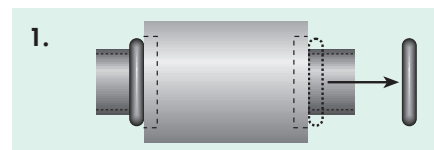
Please check for cleanness when mounting the ball screw. Dirt or foreign matter on the ball race – especially inside the nut – may cause increased wear and premature failure.

Please consult lubrication recommendation on page 33 before mounting or operating ball screws.

Radial loads and torque

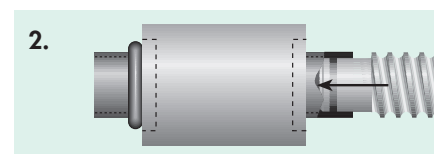
Radial loads or torque brought to bear upon the nut result in overload of individual contact surfaces, thus seriously affecting the service life of the ball screw assembly. Therefore it is important to properly mount the screw and to comply with all relevant form and positional tolerances.

Assembling

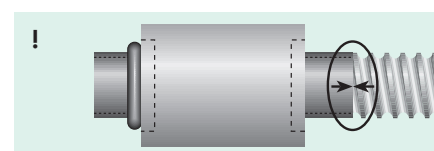


Remove transport lock (O-ring) on one side. Please keep sleeve and nut in horizontal position. Otherwise, the nut may slide from the sleeve and balls may fall out of the ball race.

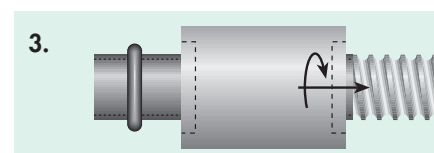
In the event such incident does occur, balls must be properly re-inserted to prevent damage to or blockage of the ball screw. If in doubt, please contact Eichenberger Gewinde AG.



Insert screw end into mounting sleeve.



Caution: Operator must be able to advance sleeve up to the thread intake. Otherwise, balls may fall out of the ball race and damage or block the unit.



Gently turn nut onto the screw.

The following are the relevant calculations which underly screw design and safe operation.

For detailed information on ball screw design, please refer to DIN 69051.

«Suitability test» rotational speed characteristics

When selecting a ball screw it is important to first ensure that the correct nut design for the ball return system required to support the maximum rotational speed demanded by the application is used (independent of the screw length).

The maximum rotational speed is based on the system's rotational speed characteristics and the outside screw diameter:

$$n_{\max} = \frac{\text{rotational speed characteristic}}{d_1} \quad [\text{min}^{-1}]$$

n_{\max} = maximum rotational speed [min^{-1}]

Rotational speed characteristics [-] for

- single-thread ball return: 60 000 (Carry «...I» types)
- tube type ball return: 80 000 (Carry «...R» types)
- end cap ball return: 80 000 (Carry Speedline «...E» types)

d_1 = outside screw diameter [mm]

Calculations at dynamic load:

Critical rotational speed n_{per}

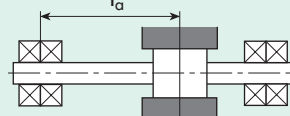
Permissible rotational speeds must differ substantially from the screw's own frequency.

$$n_{\text{per}} = K_D \cdot 10^6 \cdot \frac{d_2}{l_a^2} \cdot S_n \quad [\text{min}^{-1}]$$

- n_{per} = permissible rotational speed [min^{-1}]
- K_D = characteristic constant as a function of bearing configuration [-]
→ see below
- d_2 = core diameter [mm]
- l_a = bearing distances [mm]
→ see below
(always include maximum allowable l_a in calculation)
- S_n = safety factor
usually $S_n = 0.5 \dots 0.8$ [-]

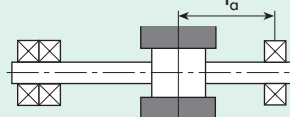
Configuration 1:

fixed – fixed
 $K_D = 276$



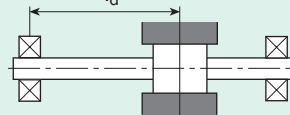
Configuration 2:

fixed – simple
 $K_D = 190$



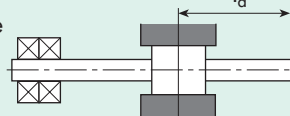
Configuration 3:

simple – simple
 $K_D = 122$



Configuration 4:

fixed – free
 $K_D = 43$



Nominal service life L_{10} or L_h

$$L_{10} = \left(\frac{C_{\text{dyn}}}{F_m} \right)^3 \cdot 10^6 \quad [\text{R}]$$

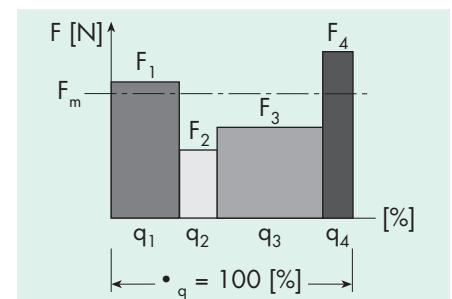
$$L_h = \frac{L_{10}}{n_m \cdot 60} \quad [\text{h}]$$

- L_{10} = service life in revolutions [R]
- L_h = service life in hours [h]
- C_{dyn} = dynamic load [N]
- F_m = average axial load [N]
- $F_{1\dots n}$ = load per cycle unit [N]
- n_m = average rotational speed [min^{-1}]
- $n_{1\dots n}$ = rotational speed per cycle unit [min^{-1}]
- $q_{1\dots n}$ = cycles [%]
- $100 = \sum_q (\text{sum of cycles } q_{1\dots n})$ [%]

Average axial load F_m

at constant rotational speed n_{const} and dynamic load C_{dyn}

$$F_m = \sqrt[3]{F_1^3 \frac{q_1}{100} + F_2^3 \frac{q_2}{100} + F_3^3 \frac{q_3}{100} + \dots} \quad [\text{N}]$$



$$\rightarrow L_{10} = \left(\frac{C_{\text{dyn}}}{F_m} \right)^3 \cdot 10^6 \quad [\text{R}]$$

$$\rightarrow L_h = \frac{L_{10}}{n_{\text{const}} \cdot 60} \quad [\text{h}]$$

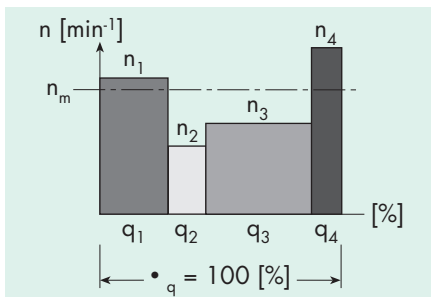


Calculations at dynamic load (continuation):

Average rotational speed n_m

at constant load F_{const}
and variable rotational speeds $n_{1...n}$

$$n_m = n_1 \frac{q_1}{100} + n_2 \frac{q_2}{100} + n_3 \frac{q_3}{100} + \dots [\text{min}^{-1}]$$



$$\rightarrow L_{10} = \left(\frac{C_{dyn}}{F_{const}} \right)^3 \cdot 10^6 [\text{R}]$$

$$\rightarrow L_h = \frac{L_{10}}{n_m \cdot 60} [\text{h}]$$

Average axial load F_m

at constant rotational speeds n_{const}
and dynamic load C_{dyn}

$$F_m = \sqrt[3]{F_1^3 \frac{q_1}{100} + F_2^3 \frac{q_2}{100} + F_3^3 \frac{q_3}{100} + \dots} [\text{N}]$$

$$n_m = n_1 \frac{q_1}{100} + n_2 \frac{q_2}{100} + n_3 \frac{q_3}{100} + \dots [\text{min}^{-1}]$$

$$\rightarrow L_{10} = \left(\frac{C_{dyn}}{F_m} \right)^3 \cdot 10^6 [\text{R}]$$

$$\rightarrow L_h = \frac{L_{10}}{n_m \cdot 60} [\text{h}]$$

Efficiency η (theoretical)

Depends upon the type of power transmission.

Case 1: torque \rightarrow linear movement

$$\eta \approx \frac{\tan \alpha}{\tan (\alpha + \rho)} [-]$$

Case 2: axial force \rightarrow torque

$$\eta' \approx \frac{\tan (\alpha - \rho)}{\tan \alpha} [-]$$

whereby

$$\tan \alpha \approx \frac{p}{d_0 \cdot \pi} [-]$$

η = efficiency [%]

η' = corrected efficiency [%]

p = pitch [mm]

d_0 = nominal screw diameter [mm]

ρ = angle of friction [°]

$$\rightarrow \rho = 0.30 \dots 0.60^\circ$$

Efficiency η_p (practical)

The efficiency η for Carry ball screws is better than 0.9.

Driving torque M

Depends upon the type of power transmission.

Case 1: torque \rightarrow linear movement

$$M_a = \frac{F_a \cdot p}{2000 \cdot \pi \cdot \eta} [\text{Nm}]$$

Case 2: axial force \rightarrow torque

$$M_e = \frac{F_a \cdot p \cdot \eta'}{2000 \cdot \pi} [\text{Nm}]$$

M_a = input torque [Nm], case 1

M_e = output torque [Nm], case 2

F_a = axial force [N]

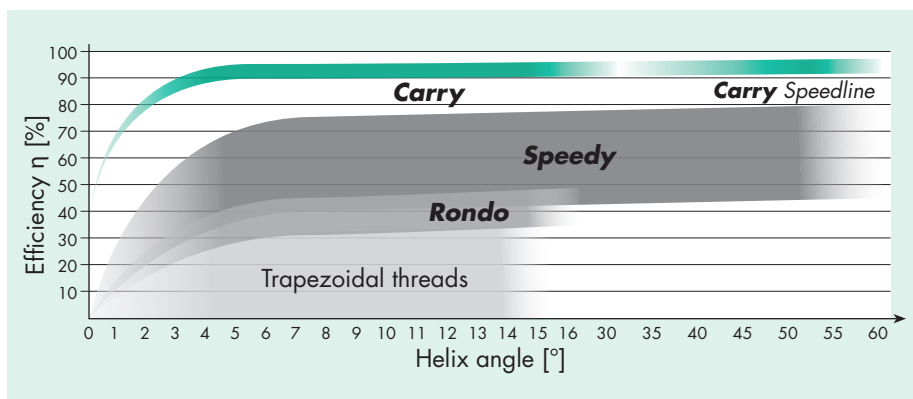
Input performance P

$$P = \frac{M_a \cdot n}{9550} [\text{kW}]$$

P = input performance [kW]

n = rotational speed [min^{-1}]

A safety margin of 20% is recommended when selecting drives.





Calculations at static load:

Permissible maximum load $F_{per.}$

$$F_{per.} = \frac{C_{stat}}{f_s} \text{ [N]}$$

C_{stat} = static load [N]

f_s = operating coefficient

→ normal operation: 1...2 [-]

→ shock load: 2...3 [-]

Permissible buckling force F_B

$$F_B = \frac{K_B}{S_B} \cdot \frac{d_2^4}{l_F^2} \cdot 10^3 \text{ [N]}$$

K_B = characteristic constant of load
(depends on design) [-]

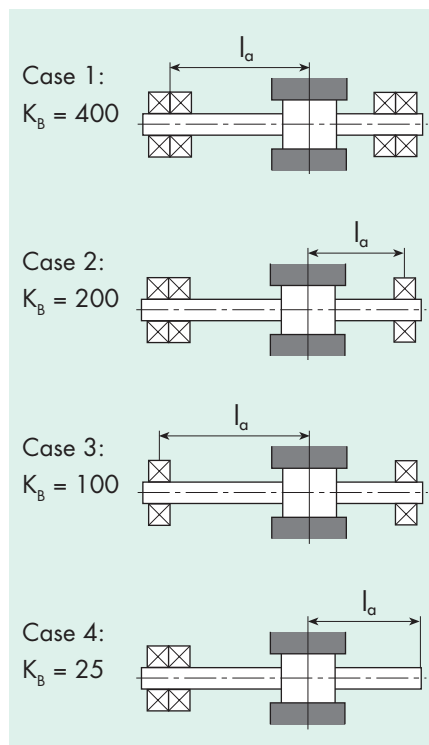
→ see below

d_2 = nominal screw diameter [mm]

l_F = force-transferring length [mm]

S_B = buckling safety factor

→ gen. $S_B = 2...4$ [-]





Carry *Speedline* high-helix ball screws

- Order system Carry *Speedline* 43
- Carry *Speedline* type «ZYE»: cylindrical nut with end cap ball return 44/45
- Carry *Speedline* type «FBE»: flange nut with end cap ball return 46–49
- Basic design / Materials 50
- Ball return / Precision 51
- Lubrication see Carry page 37
- Factory length / Ball screw ends / Handling /
Radial loads and torque / Assembling see Carry page 38
- Design fundamentals see Carry pages 39–41

Visit www.gewinde.ch for the latest on existing and/or new products.



<p>Example for complete ball screw _____</p> <p>Type of lead screw _____ KGE = Carry Speedline high-helix ball screw</p> <p>Nominal size (d₀ x p) [mm] _____</p> <p>Type of nut _____ ZYE = cylindrical nut with end cap ball return FBE = flange nut with end cap ball return MSX = special design according to drawing</p> <p>Right-hand / left-hand thread _____ RH = right-hand thread (standard)</p> <p>Number of ball circulations _____ 2 = 2 ball circulations 3 = 3 ball circulations 4 = 4 ball circulations</p> <p>Wipers _____ S = with wipers (plastic; integrated into end cap ball return)</p> <p>Ball screw overall length [mm] _____ standard steel quality: 100Cr6 (1.3505) ¹⁾</p> <p>Lead accuracy (class) _____ G9 = ≤ 0.1 mm/300 mm (standard) G7 = ≤ 0.052 mm/300 mm (on request; up to max. 1200 mm screw length) G5 = ≤ 0.023 mm/300 mm (on request; up to max. 1200 mm screw length)</p> <p>Backlash _____ A = standard backlash (see technical data) R = reduced backlash upon specification</p> <p>Screw end machining _____ O = no end machining (cut by grinding, hardened ends; nut on mounting tube) E = end machining according to drawing</p> <p>Assembly _____ G = screw and nut separate M = screw and nut assembled according to drawing/specified orientation</p> <p>¹⁾ other materials on request</p>	<p>KGE 16x50 FBE RH 3 S 450 G9 A E M</p> <p>for nut only</p> <p>for nut only</p> <p>for nut only</p> <p>for screw only</p> <p>for screw only</p> <p>for nut only</p> <p>for screw only</p>
<p>Example for screw only _____</p>	<p>KGE 16x50 RH 450 G9 O G</p>
<p>Example for nut only _____</p>	<p>KGE 16x50 FBE RH 3 S A G</p>

Carry Speedline type «ZYE»



Cylindrical nut with end cap ball return



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers

K = plastic

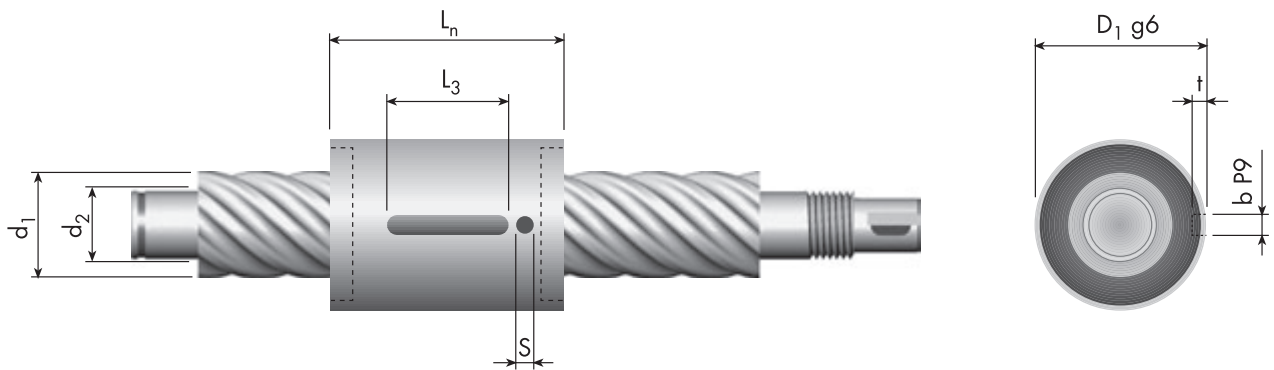
T = standard backlash

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry Speedline type «ZYE»



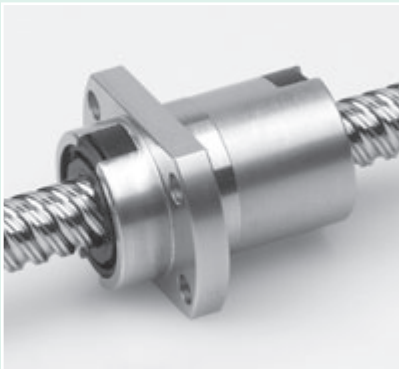
Carry Speedline type «ZYE» d ₀ x p mm	Dimensions												Load rates	
	Screw		Nut		i	D _w	b P9	t	S	SA	T	C _{dyn}	C _{stat}	
d ₁	d ₂	D ₁ g6	L _n	L ₃										N
right-hand threads														
8 x 12	8.0	6.7	18	28	8	2x1.5	1.50	2	1.2	ø 2	K	0.05	1 400	2 300
12.7 x 25.4	12.5	10.6	26	32	10	3x0.9	2.00	3	1.8	ø 4	K	0.05	2 300	4 500
16 x 10	16.0	13.4	28	42	16	2x2.9	3.00	4	2.5	ø 4	K	0.07	12 500	26 000
16 x 16	15.5	13.2	28	42	16	2x1.9	3.00	4	2.5	ø 3	K	0.07	7 800	15 500
16 x 50	16.0	13.2	28	55	16	3x0.9	3.00	4	2.5	ø 4	K	0.06	4 800	11 000
20 x 20	20.0	17.3	36	50	20	4x1.9	3.00	4	2.5	ø 4	K	0.06	17 900	44 600
25 x 25	24.5	21.2	40	60	20	4x1.9	3.50	4	2.5	ø 4	K	0.06	23 300	68 000

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry Speedline type «FBE»



Flange nut with end cap ball return (following DIN 69051: flange type B nut, master gauge 3))



Legend

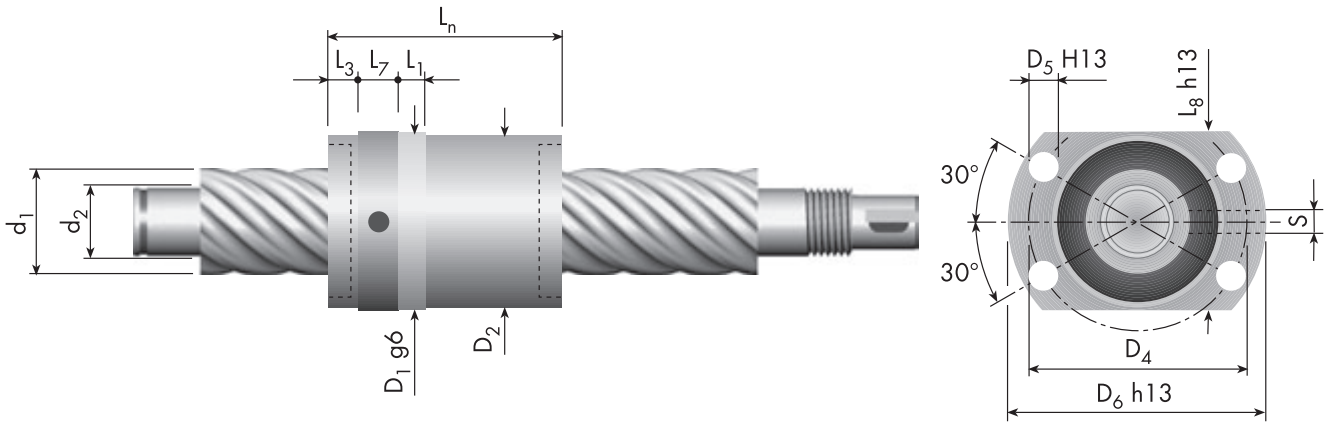
- d_0 = nominal screw diameter [mm]
- d_1 = outside screw diameter [mm]
- d_2 = core diameter [mm]
- p = pitch [mm]
- i = number of ball circulations [-]
- D_w = ball diameter [mm]
- S = lubrication hole [mm]
- SA = wipers
 - K = plastic
- T = standard backlash

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry Speedline type «FBE» (1/2)



Carry Speedline type «FBE» d ₀ x p mm	Dimensions																	Load rates		
	Screw		Nut		D ₂	D ₄	D ₅	D ₆	L _n	L ₁	L ₃	L ₇	L ₈	i	D _w	S	SA	T	C _{dyn}	C _{stat}
	d ₁	d ₂	D ₁ g6	D ₂	D ₄ hole circle	D ₅ H13	D ₆ h13						L ₈ h13							N
right-hand threads																				
8 x 12	8.0	6.7	18	17.8	25	3.4	30	28	4	6	4	20	2x1.5	1.50	ø 2	K	0.05		1 400	2 300
12.7 x 25.4	12.5	10.6	26	25.5	33	4.5	42	32	5	7	8	28	3x0.9	2.00	ø 4	K	0.05		2 300	4 500

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Carry Speedline type «FBE»



Flange nut with end cap ball return (following DIN 69051: flange type B nut, master gauge 1)



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

d_2 = core diameter [mm]

p = pitch [mm]

i = number of ball circulations [-]

D_w = ball diameter [mm]

S = lubrication hole [mm]

SA = wipers

K = plastic

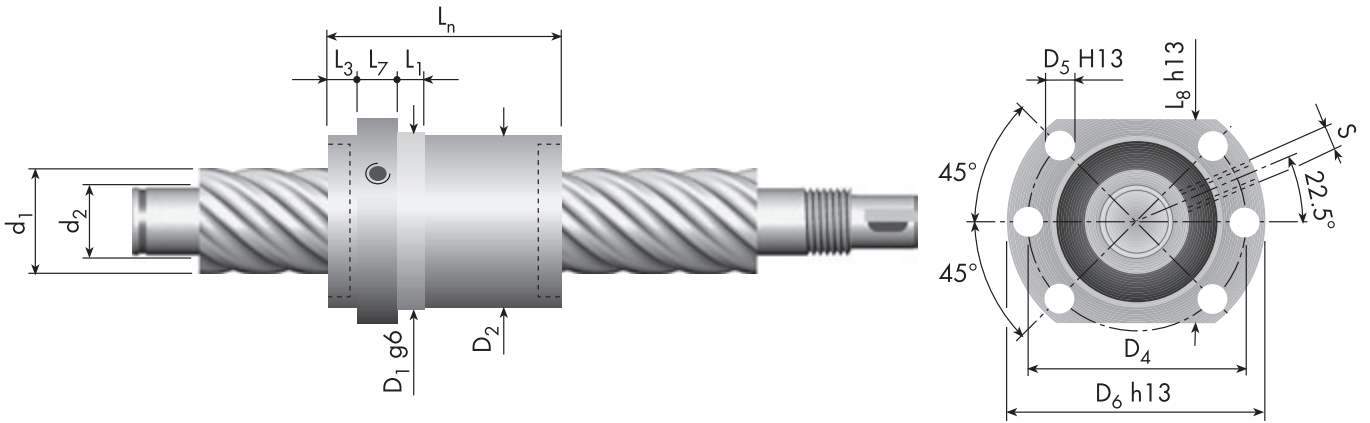
T = standard backlash

Warning! Note when selecting a ball screw that the maximum rotational speed depends on the system's rotational speed characteristics. See page 39 for the appropriate calculations.

Special designs available on request.
All specifications are subject to change without notice.

Quality management ISO 9001:2008

Carry Speedline type «FBE» (2/2)



Carry Speedline type «FBE» d ₀ x p mm	Dimensions																Load rates		
	Screw		Nut														C _{dyn}	C _{stat}	
	d ₁	d ₂	D ₁ g6	D ₂	D ₄ hole circle	D ₅ H13	D ₆ h13	L _n	L ₁	L ₃	L ₇	L ₈ h13	i	D _w	S	SA	T	N	

right-hand threads

16 x 10	16.0	13.4	28	27.8	38	5.5	48	42	10	10	10	40	2x2.9	3.00	ø 4	K	0.07	12 500	26 000
16 x 16	15.5	13.2	28	27.8	38	5.5	48	42	10	10	10	40	2x1.9	3.00	ø 4	K	0.07	7 800	15 500
16 x 50	16.0	13.2	28	27.8	38	5.5	48	55	10	10	10	40	3x0.9	3.00	ø 4	K	0.06	4 800	11 000
20 x 20	20.0	17.3	36	35.5	47	6.6	58	50	10	10	12	44	4x1.9	3.00	M6	K	0.06	17 900	44 600
25 x 25	24.5	21.2	40	39.8	51	6.6	62	60	10	10	10	48	4x1.9	3.50	ø 4	K	0.06	23 300	68 000

The CAD data corresponding to the types shown above are available at www.gewinde.ch



Basic design

Cold-rolled Carry *Speedline* ball screws feature an extremely high pitch. Designed to meet customer demand for a wear-free high-helix ball screw, they deliver a high transmission speed and an impressive efficiency.

Ball screws of the Carry *Speedline* are the product of the very economical cold-rolling process. They combine with single steel nuts produced in a unique specially developed process.

The design and production of this high-helix ball screws derives from our experience in making the Carry and Speedy screws. In other words, the Carry *Speedline* integrates the know-how of both technologies.

Carry *Speedline* offers all the advantages of the inherent ball screw design:

- high efficiency, i.e.
 - low power input
 - low self-heating
- low frictional, stick-slip-free running
- maximum wear resistance, i.e. very good repetition accuracy with a constant positioning precision.
- high reliability and durability.

Materials

- standard: steel 100Cr6 (1.3505)
- on request:
 - stainless steel X46Cr13 (1.4034)
- other materials on request

Attention: The use of stainless steel results in lower load rates; details on request.

Nut design

Standard are the following two types:



Cylindrical nut type «ZYE»



Flange nut type «FBE»

Other nut designs are available upon request.

Thread profile

A gothic arc (ogival) profile is used.



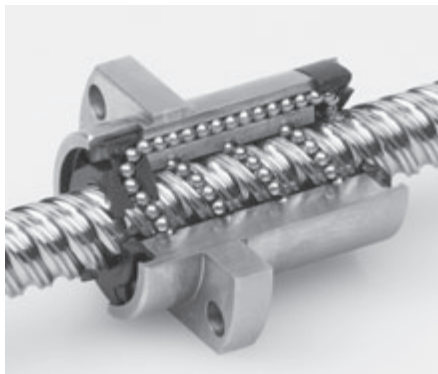


Ball return / Precision

Ball return

Nuts feature end cap ball returns, fully integrated into the nut shape and serving as wipers.

These nut end caps with integrated ball returns and wipers are made of plastic.



End cap ball return type «...E»

Operating temperatures

Regular applications: -20 to $+80$ °C.

Please ask about other operating temperatures.

Lead accuracy

Eichenberger high-helix ball screws feature the following lead accuracies according to DIN 69051:

Standard:

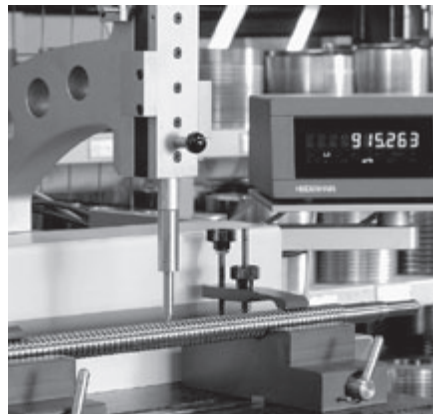
– G9 $\Delta \leq 0.1$ mm/300 mm

On request:

up to max. 1200 mm screw length

– G7 $\Delta \leq 0.052$ mm/300 mm

– G5 $\Delta \leq 0.023$ mm/300 mm



Reduced backlash

Reduced backlash up to ≤ 0.01 mm is available (only with paired or assembled screws).

Efficiency

The efficiency η for this Carry *Speedline* is an impressive 0.95.

Wipers

Depending on construction Carry *Speedline* features integrated wipers as part of the plastic end caps.

Lubrication

See Carry page 37.

Factory length

Ball screw ends

Handling

Radial loads and torque

Assembling

See Carry page 38.

Design fundamentals

See Carry pages 39–41.

Slide lead screw product range



▲ = standard range

* = on request

²⁾ = also available with left-hand thread

Rondo		Speedy		type	
round thread	inch thread	fine-pitch thread	standard thread	d_0 / p_0	
▲	▲	▲	▲	4 / 10	
		▲	▲	4.96 / 16.25	
		▲	▲	5 / 5	
		▲ ²⁾	▲	5 / 20	
		▲ ²⁾	▲	6 x 2	
		▲	▲	6 / 25	
	▲	▲	▲	6.35 / 6.35	
	▲	▲	▲	6.35 / 12.7	
	▲	▲	▲	6.35 / 25.4	
	▲	▲	▲	7.5 / 7.5	
	▲	▲	▲	7.94 / 12.7	
▲ ²⁾			▲	8 x 2	
			▲	8 / 4	
			▲ ²⁾	8 / 10	
			▲	8 / 12	
			▲	8 / 15	
		▲ ²⁾	▲	8 / 30	
			▲	9 / 20	
	▲ ²⁾		▲	9.7 / 25.4	
▲ ²⁾			▲	10 x 3	
		▲	▲	10 / 10	
		▲ ²⁾	▲	10 / 12	
		▲	▲	10 / 15	
		▲ ²⁾	▲	10 / 35	
		▲	▲ ²⁾	10 / 50	
		▲	▲	11 / 40	
		▲	▲	11 / 60	
	▲		▲	11.2 / 30.5	
		▲ ²⁾		12 x 3	
		▲ ²⁾		12 x 4	
		▲		12 x 5	
			▲ ²⁾	12 / 15	
			▲ ²⁾	12 / 25	
		▲ ²⁾		12 / 45	
		*		12.5 / 12.5	
	▲			12.8 / 35.6	
			▲	13 / 20	
			▲ ²⁾	13 / 70	

Speedy high-helix lead screws and Rondo round thread lead screws



14 x 3							
14 x 4	▲ ²⁾						14 x 4
14 / 8	▲ ²⁾						14 / 8
14 / 18						▲	14 / 18
14 / 30						▲ ²⁾	14 / 30
14.3 / 40.6			▲ ²⁾				14.3 / 40.6
15 / 20						▲ ²⁾	15 / 20
15 / 80						▲ ²⁾	15 / 80
16 x 4	▲						16 x 4
16 x 5	▲ ²⁾						16 x 5
16 / 21						▲ ²⁾	16 / 21
16 / 25						▲	16 / 25
16 / 35						▲	16 / 35
16.0 / 45.7			*				16.0 / 45.7
16 / 90						▲ ²⁾	16 / 90
17.6 / 50.8			▲				17.6 / 50.8
18 / 16						▲	18 / 16
18 / 24						▲ ²⁾	18 / 24
18 / 40						▲ ²⁾	18 / 40
18 / 100						▲ ²⁾	18 / 100
19 / 30						▲	19 / 30
20 / 12						▲	20 / 12
20 / 45						▲	20 / 45
21 / 27						▲	21 / 27
21 / 35						*	21 / 35
22 / 20						▲	22 / 20
22 / 50						▲	22 / 50
22 / 120						▲	22 / 120
23 / 30						▲ ²⁾	23 / 30
24 / 40						*	24 / 40
24 / 55						▲	24 / 55
25.7 / 76.2			▲ ²⁾				25.7 / 76.2
26 / 16						*	26 / 16
26 / 24						▲	26 / 24
26 / 60						▲	26 / 60
27 / 45						*	27 / 45
28 / 65						*	28 / 65
30 / 28						▲	30 / 28
30 / 50						▲	30 / 50
30 / 70						▲	30 / 70
32 / 20						*	32 / 20
32 / 75						*	32 / 75
32.0 / 96.5			▲ ²⁾				32.0 / 96.5
34 / 32						*	34 / 32
34 / 80						▲	34 / 80
36 / 200						▲	36 / 200
pages	80-83	70-73	68/69	56-67	pages		



Speedy high-helix lead screws

- Order system Speedy 55
- Speedy with standard thread and standard flange nut
non-preloaded/preloaded 56-67
- Speedy with fine-pitch thread and standard flange nut
non-preloaded/preloaded 68/69
- Speedy with inch thread and standard flange nut
non-preloaded/preloaded 70-73
- Basic design / Materials / Precision 74
- Factory length / Handling / Lubrication 75
- Design fundamentals
...at dynamic loads: 76/77
 - critical rotational speed
 - efficiency
 - driving torque / required power
- Basic calculations: 77
 - Maximum authorized load depending on speed



NEW: Speedy partly available
in aluminum

Visit www.gewinde.ch for the latest on existing and/or new products.

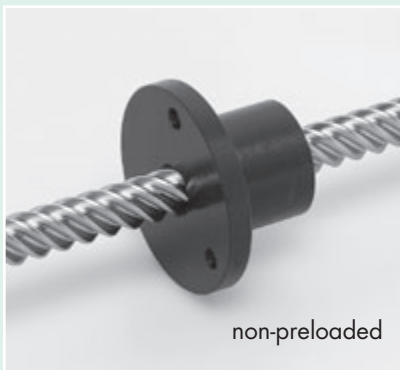


Example for complete high-helix lead screw _____	SGS	18/100	SFM	RH	350	G9	E	M
Type of lead screw _____ SGS = Speedy high-helix lead screw								
Nominal size (d_0 / p_0) [mm] _____								
Type of nut _____ SFM = standard flange nut, non-preloaded, made of POM-C black ¹⁾ SFV = standard flange nut, axial-preloaded, made of POM-C black ¹⁾ SFT = standard flange nut, torsion-preloaded, made of EX100 white ⁶⁾ SBM = standard flange nut, non-preloaded, made of bronze SBV = standard flange nut, axial-preloaded, made of bronze ³⁾ SBT = standard flange nut, torsion-preloaded, made of bronze ³⁾ MSX = special design according to drawing	for nut only							
Right-hand / left-hand thread _____ RH = right-hand thread (standard) LH = left-hand thread (→ see dimensional charts)	for screw only							
Lead screw overall length [mm] _____ standard steel quality: X20Cr13 (1.4021) ¹⁾	for screw only							
Lead accuracy (class) _____ G9 = ≤ 0.1 mm/300 mm (standard) GX = lead accuracy upon specification	for screw only							
End machining _____ O = no end machining (cut by grinding; screw and nut separate) E = end machining according to drawing	for screw only							
Assembly _____ G = screw and nut separate (standard) M = screw and nut assembled according to drawing/specified orientation								
¹⁾ other materials on request ³⁾ only on request ⁶⁾ available for square pitches and larger								
Example for screw only _____	SGS 18/100 RH 350 G9 O G							
Example for nut only _____	SGS 18/100 SFM RH G							

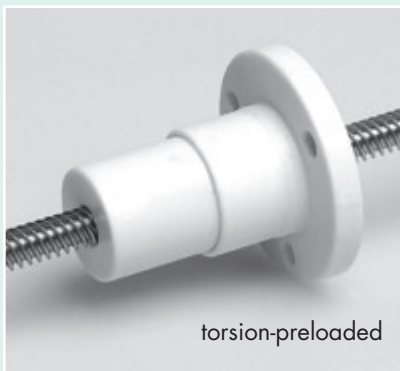
Speedy with standard thread



Standard flange nut, non-preloaded/preloaded



non-preloaded



torsion-preloaded

Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];

for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

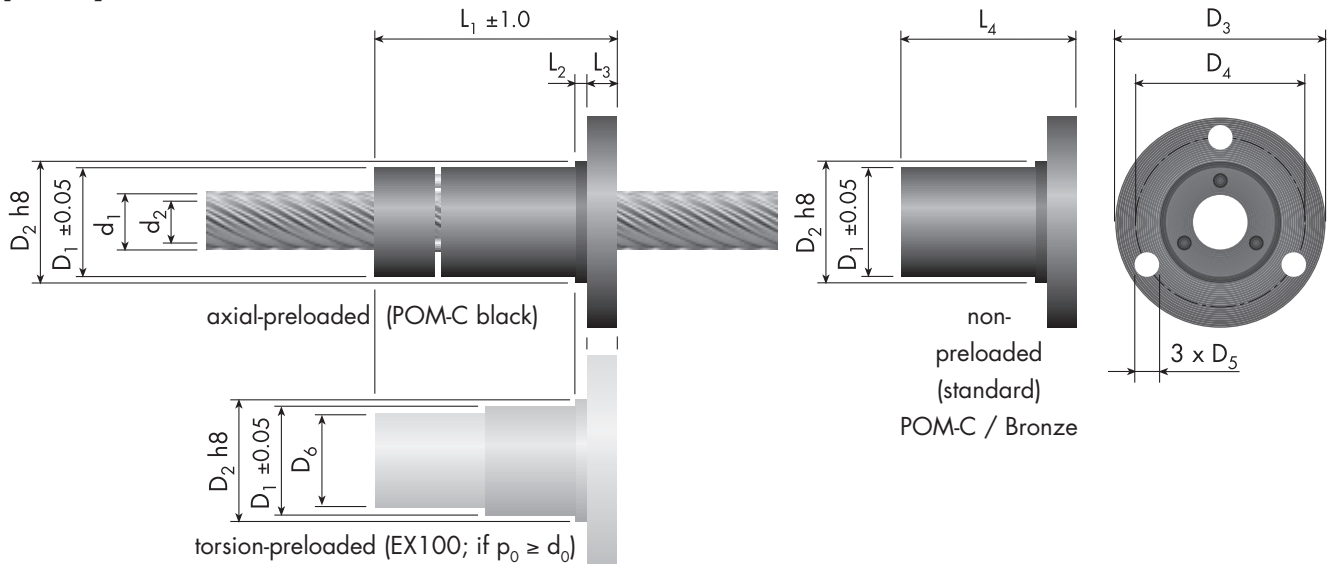
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with standard thread (1/6)



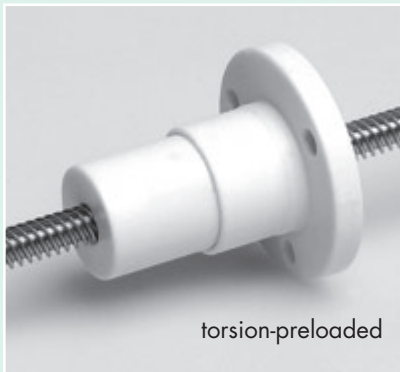
Speedy d_0 / p_0 mm	Dimensions											Load rates			
	Screw				Nut							C _{stat} for POM/EX100 N			
	d_1	d_2	p	i	D_1 ±0.05	D_2 h8	D_3	D_4 hole circle	D_5	D_6	L_1	L_2	L_3	L_4 POM / B	
right-hand threads															
8 / 4 ⁶⁾	7.9	5.5	4	2	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	950
8 / 10	8.2	5.5	10	4	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	800
8 / 12	8.0	5.9	12	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	800
8 / 15	8.0	5.9	15	6	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	850
9 / 20	8.9	5.8	20	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	850
10 / 12	10.0	7.1	12	4	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1200
10 / 15	10.0	7.4	15	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1200
12 / 15	12.2	9.2	15	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1400
12 / 25	11.9	8.0	25	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1500
left-hand threads															
8 / 10	8.2	5.5	10	4	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	800
10 / 12	10.0	7.1	12	4	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1200
12 / 15	12.2	9.2	15	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1400
12 / 25	11.9	8.0	25	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1500

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Speedy with standard thread



Standard flange nut, non-preloaded/preloaded



Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];

for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

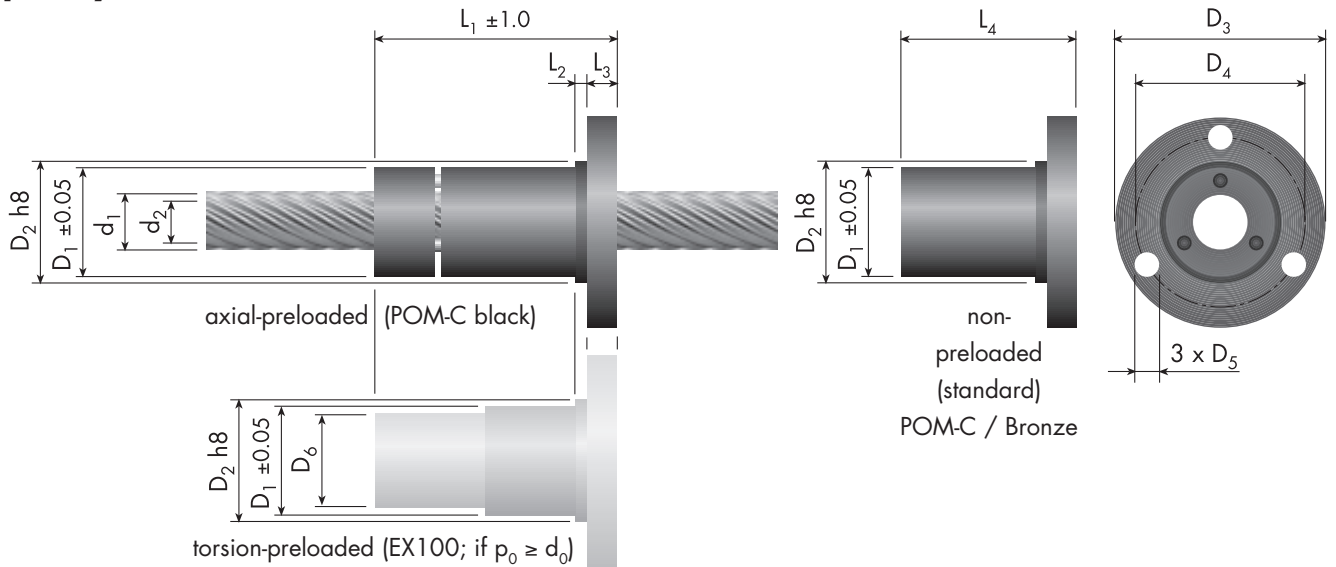
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with standard thread (2/6)



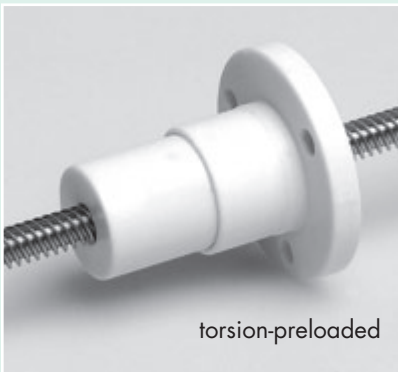
Speedy d_0 / p_0 mm	Dimensions										Load rates				
	Screw				Nut						Load rates				
	d_1	d_2	p	i	D_1 ± 0.05	D_2 h8	D_3	D_4 hole circle	D_5	D_6	L_1	L_2	L_3	L_4 POM / B	C_{stat} for POM/EX100 N
right-hand threads															
10 / 50	10.0	7.4	50	10	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1250
11 / 60	11.7	9.1	60	12	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1500
13 / 20	13.3	8.8	20	4	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1300
13 / 70	13.5	10.9	70	14	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1750
14 / 8 ⁶⁾	14.0	9.8	8	2	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	900
14 / 18	14.3	11.4	18	6	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1600
14 / 30	13.9	10.1	30	6	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1750
left-hand threads															
10 / 50	10.0	7.4	50	10	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1250
13 / 70	13.5	10.9	70	14	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1750
14 / 18	14.3	11.4	18	6	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1600
14 / 30	13.9	10.1	30	6	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1750

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Speedy with standard thread



Standard flange nut, non-preloaded/preloaded



Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];

for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

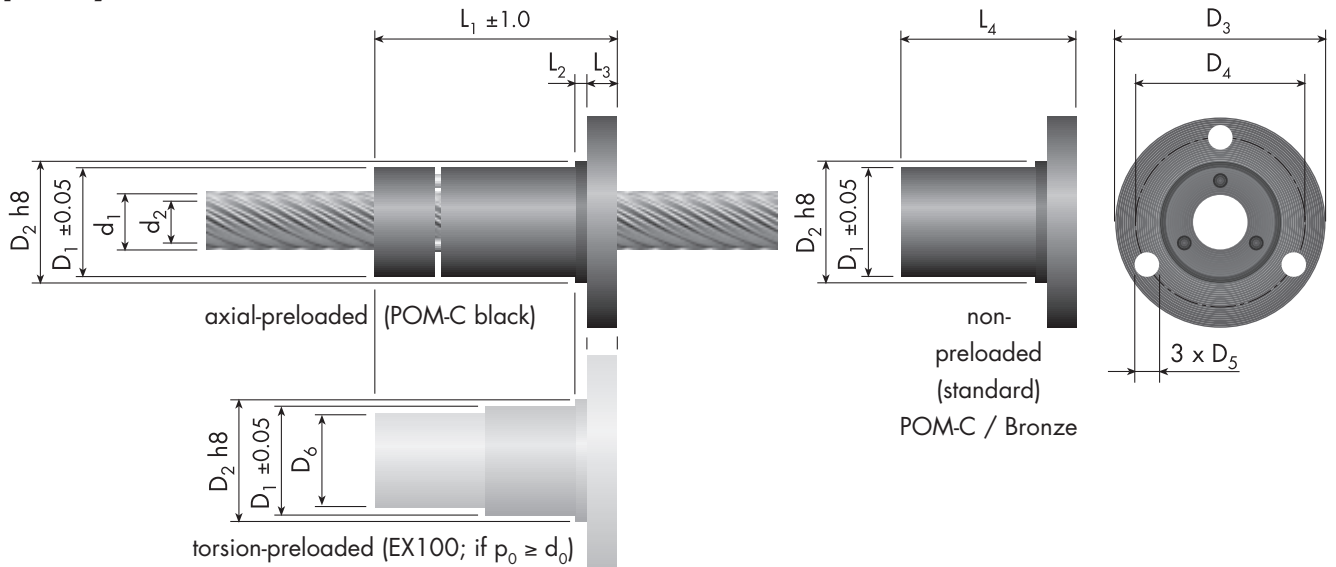
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with standard thread (3/6)



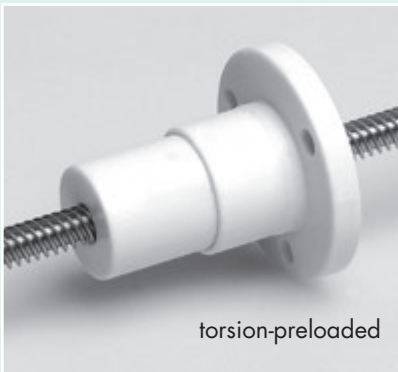
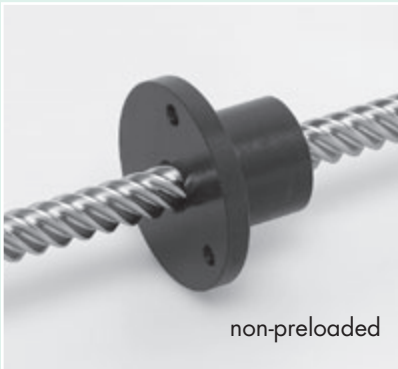
Speedy d_0 / p_0 mm	Dimensions											Load rates			
	Screw				Nut							C _{stat} for POM/EX100 N			
	d_1 mm	d_2 mm	p mm	i mm	D_1 ± 0.05 mm	D_2 h8 mm	D_3 mm	D_4 hole circle mm	D_5 mm	D_6 mm	L_1 mm	L_2 mm	L_3 mm	L_4 POM / B mm	
right-hand threads															
15 / 20	15.2	12.5	20	8	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 600
15 / 80	15.2	12.6	80	16	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 000
16 / 21	16.5	13.6	21	7	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 800
16 / 25	16.0	11.5	25	5	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 550
16 / 35	15.9	12.1	35	7	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 000
16 / 90	17.0	14.3	90	18	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 250
18 / 16	18.0	14.3	16	4	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 100
18 / 24	18.7	15.7	24	8	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 000
18 / 40	17.9	14.1	40	8	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 250
18 / 100	18.8	16.2	100	20	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 500
19 / 30	18.8	14.2	30	6	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 800
left-hand threads															
15 / 20	15.2	12.5	20	8	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 600
15 / 80	15.2	12.6	80	16	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 000
16 / 21	16.5	13.6	21	7	29.5	30	49	39	5.1	27	58	3	7	42 / 30	1 800
16 / 90	17.0	14.3	90	18	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 250
18 / 24	18.7	15.7	24	8	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 000
18 / 40	17.9	14.1	40	8	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 250
18 / 100	18.8	16.2	100	20	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2 500

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Speedy with standard thread



Standard flange nut, non-preloaded/preloaded



Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];
for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

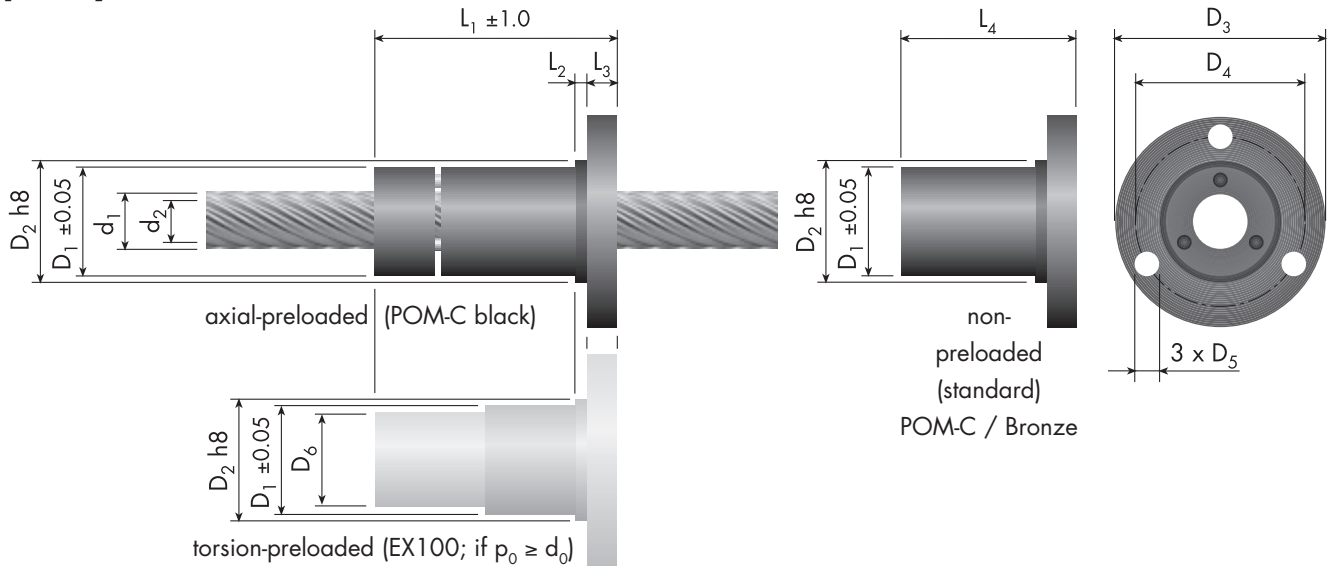
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with standard thread (4/6)



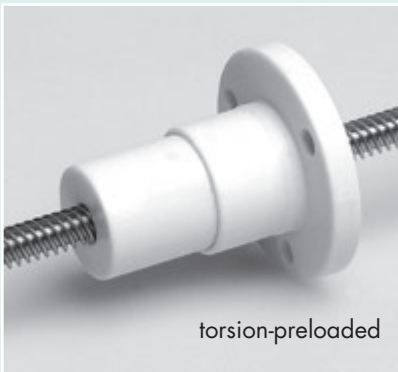
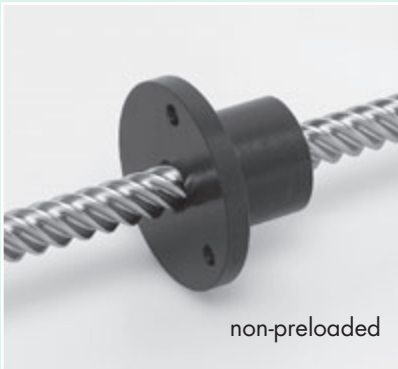
Speedy d_0 / p_0 mm	Dimensions										Load rates				
	Screw				Nut						Load rates				
	d_1	d_2	p	i	D_1 ± 0.05	D_2 h8	D_3	D_4 hole circle	D_5	D_6	L_1	L_2	L_3	L_4 POM / B	C_{stat} for POM/EX100 N
right-hand threads															
20 / 12 ⁶⁾	20.0	15.8	12	3	35.5	36	59	47	6.2	33	64	5	8	46 / 32	1 200
20 / 45	20.0	16.1	45	9	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 500
21 / 27	20.8	17.9	27	9	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 200
21 / 35 ³⁾	21.5	17.0	35	7	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 050
22 / 20	22.0	18.3	20	5	35.5	36	59	47	6.2	33	64	5	8	46 / 32	1 400
22 / 50	22.0	18.1	50	10	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 750
22 / 120	22.5	19.8	120	24	35.5	36	59	47	6.2	33	64	5	8	46 / 32	3 000
23 / 30	23.0	20.0	30	10	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 400
24 / 40 ³⁾	24.3	19.8	40	8	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 300
24 / 55	24.0	20.1	55	11	35.5	36	59	47	6.2	33	64	5	8	46 / 32	3 000
left-hand threads															
23 / 30	23.0	20.0	30	10	35.5	36	59	47	6.2	33	64	5	8	46 / 32	2 400

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Speedy with standard thread



Standard flange nut, non-preloaded/preloaded



Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];
for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

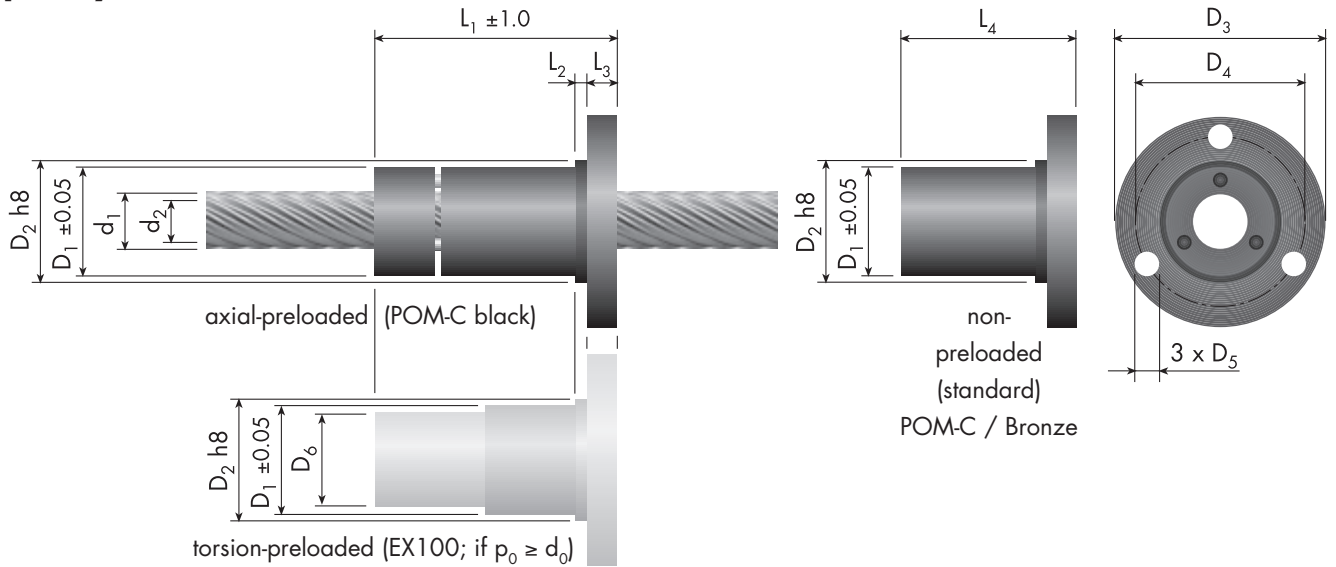
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with standard thread (5/6)



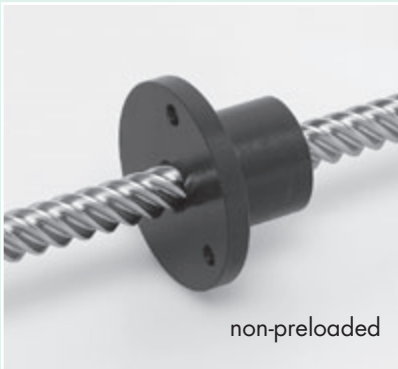
Speedy	Dimensions											Load rates				
	Screw				Nut							C _{stat}				
d ₀ / p ₀	d ₁	d ₂	p	i	D ₁ ±0.05	D ₂ h8	D ₃	D ₄ hole circle	D ₅	D ₆	L ₁	L ₂	L ₃	L ₄ POM / B	for POM/EX100 N	
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	N	
right-hand threads																
26/16 ^{3) 4)}	26.0	21.8	16	4	41.5	42	64	53	6.2	39	71	5	8	50 / 35	1 400	
26 / 24	26.0	22.3	24	6	41.5	42	64	53	6.2	39	71	5	8	50 / 35	2 000	
26 / 60	26.0	22.2	60	12	41.5	42	64	53	6.2	39	71	5	8	50 / 35	3 250	
27/45 ³⁾	27.0	22.5	45	9	41.5	42	64	53	6.2	39	71	5	8	50 / 35	2 550	
28/65 ³⁾	28.0	24.2	65	13	41.5	42	64	53	6.2	39	71	5	8	50 / 35	3 500	
30 / 28	30.0	26.5	28	7	41.5	42	64	53	6.2	39	71	5	8	50 / 35	2 000	
30 / 50	29.8	25.3	50	10	41.5	42	64	53	6.2	39	71	5	8	50 / 35	2 800	
30 / 70	30.0	26.2	70	14	41.5	42	64	53	6.2	39	71	5	8	50 / 35	3 750	

The CAD data corresponding to the types shown above are available at www.gewinde.ch

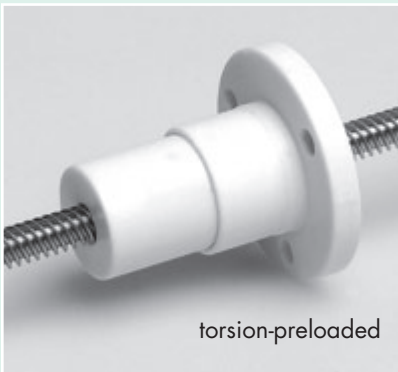
Speedy with standard thread



Standard flange nut, non-preloaded/preloaded



non-preloaded



torsion-preloaded

Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];

for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

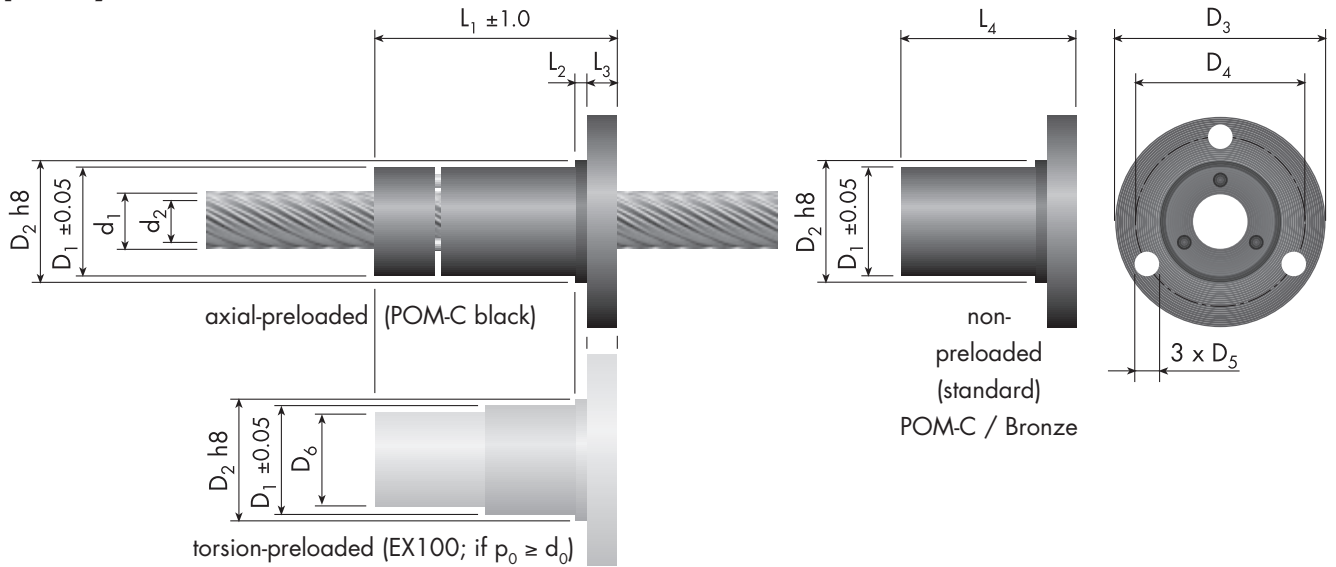
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with standard thread (6/6)



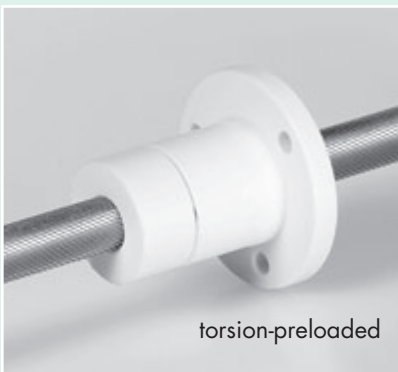
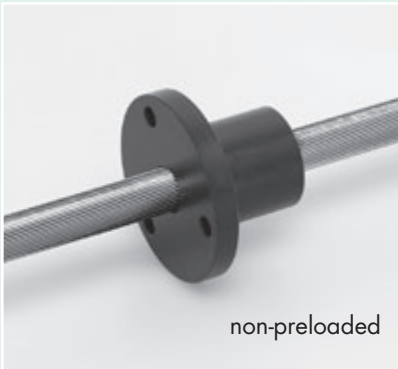
Speedy	Dimensions											Load rates			
	Screw				Nut							C _{stat}			
d ₀ / p ₀	d ₁	d ₂	p	i	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	L ₁	L ₂	L ₃	L ₄	for POM/EX100
mm	mm	mm	mm	mm	mm	h8	mm	hole circle	mm	mm	mm	mm	mm	POM / B	N
right-hand threads															
32 / 20 ³⁾	32.0	27.8	20	5	49.5	50	80	65	9.0	—	—	10	12	70 / 50	2000
32 / 75 ³⁾	32.0	28.2	75	15	49.5	50	80	65	9.0	—	—	10	12	70 / 50	4000
34 / 32 ³⁾	34.0	30.5	32	8	49.5	50	80	65	9.0	—	—	10	12	70 / 50	2300
34 / 80	34.0	30.2	80	16	49.5	50	80	65	9.0	—	—	10	12	70 / 50	4250
36 / 200	36.0	33.4	200	40	49.5	50	80	65	9.0	—	—	10	12	70 / 50	4500

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Speedy with fine-pitch thread



Standard flange nut, non-preloaded/preloaded



Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];
for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

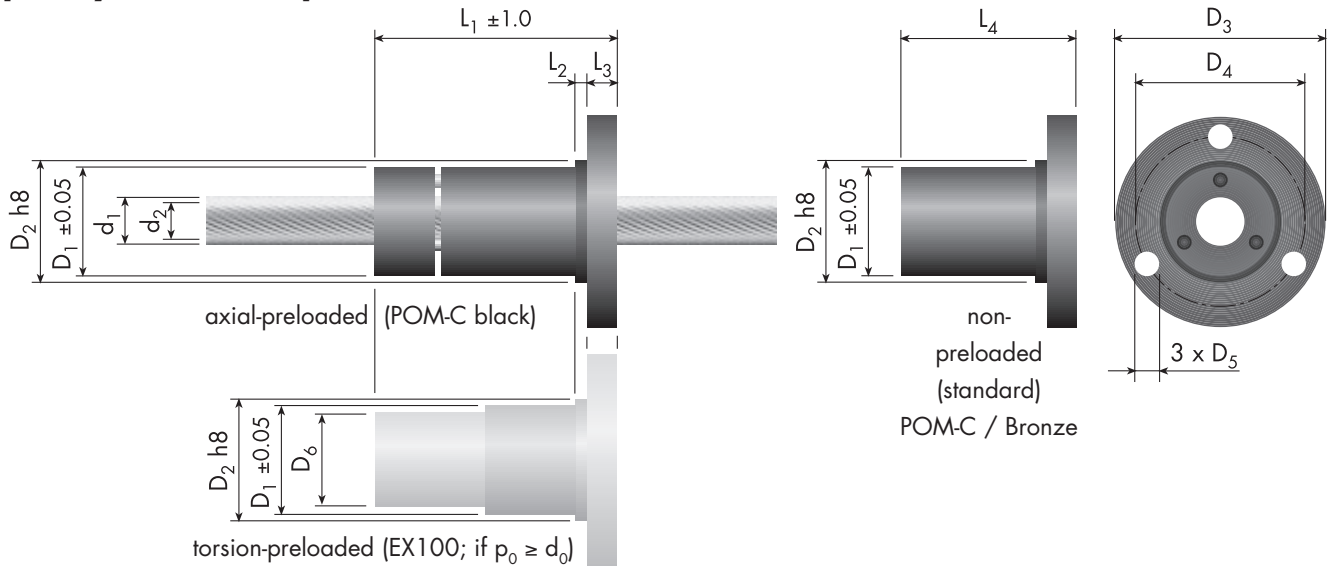
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with fine-pitch thread



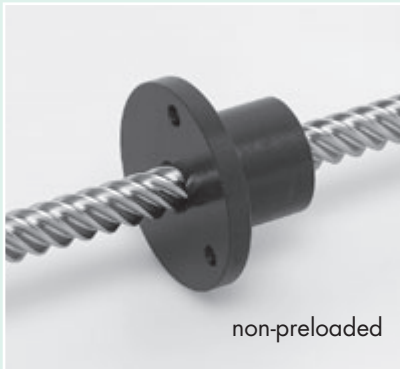
Speedy d_0 / p_0 mm	Dimensions											Load rates				
	Screw				Nut							POM / B				C_{stat} for POM/EX100 N
	d_1	d_2	p	i	D_1 ± 0.05	D_2 h8	D_3	D_4 hole circle	D_5	D_6	L_1	L_2	L_3	L_4		
right-hand threads																
4 / 10	4.0	3.0	10	8	11.5	12	28	18	3.2	—	—	3	4	20 / 15	150	
4.96 / 16.25	5.0	4.0	16.25	13	11.5	12	28	18	3.2	—	—	3	4	20 / 15	220	
5 / 5	5.4	3.6	5	4	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	300	
5 / 20	6.0	5.0	20	16	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	300	
6 / 25	7.4	6.3	25	20	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	400	
7.5 / 7.5	7.7	5.9	7.5	6	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	450	
8 / 30	8.6	7.5	30	24	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	500	
10 / 10	10.0	8.2	10	8	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	600	
10 / 35	10.1	8.9	35	28	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	600	
11 / 40	11.5	10.2	40	32	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	700	
12 / 45	12.8	11.4	45	36	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	800	
12.5 / 12.5 ³⁾	12.3	10.4	12.5	10	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	750	
left-hand threads																
5 / 20	6.0	5.0	20	16	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	300	
8 / 30	8.6	7.5	30	24	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	500	
10 / 35	10.1	8.9	35	28	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	600	
12 / 45	12.8	11.4	45	36	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	800	

The CAD data corresponding to the types shown above are available at www.gewinde.ch

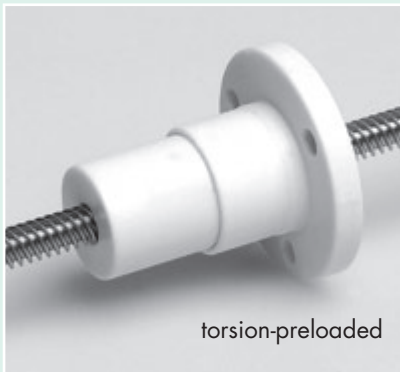
Speedy with inch thread



Standard flange nut, non-preloaded/preloaded



non-preloaded



torsion-preloaded

Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];

for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

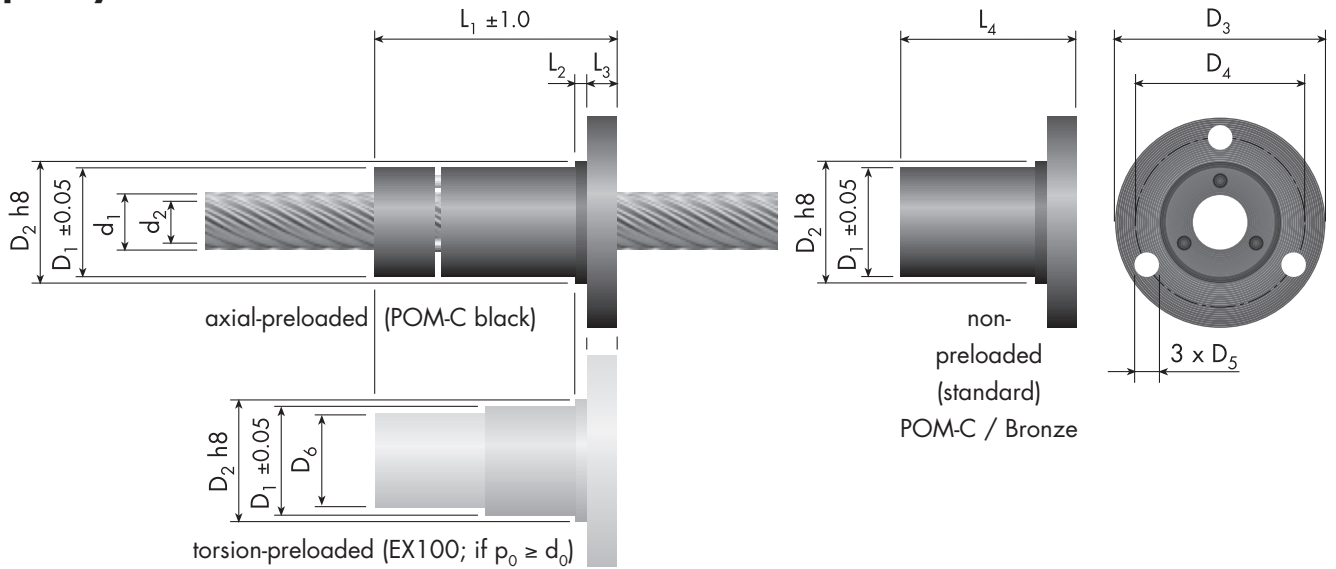
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with inch thread (1/2)



Speedy d_0 / p_0 mm	Dimensions											Load rates			
	Screw				Nut							C _{stat} for POM/EX100 N			
	d_1	d_2	p	i	D_1 ± 0.05	D_2 h8	D_3	D_4 hole circle	D_5	D_6	L_1	L_2	L_3	L_4 POM / B	
right-hand threads															
6.35 / 6.35	6.4	4.4	6.35	4	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	850
6.35 / 12.7	6.3	4.6	12.70	6	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	800
6.35 / 25.4	6.35	4.2	25.40	8	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	800
6.35 / 25.4	6.1	4.4	25.40	10	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	700
7.94 / 12.7	7.9	5.8	12.70	6	20.5	21	38	29	4.2	18.5	38	3	5	25 / 18	1100
9.7 / 25.4	9.7	6.4	25.40	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / —	1200
11.2 / 30.5	11.2	8.0	30.48	6	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1400
12.8 / 35.6	12.8	9.6	35.56	7	23.5	24	42	32	4.2	21.5	38	3	5	25 / 18	1600
14.3 / 40.6	14.4	11.2	40.64	8	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1800
16.0 / 45.7 ³⁾	16.0	12.8	45.72	9	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2000
17.6 / 50.8	17.6	14.4	50.80	10	29.5	30	49	39	5.1	27	58	3	7	42 / 30	2200
left-hand threads															
9.7 / 25.4	9.7	6.4	25.40	5	23.5	24	42	32	4.2	21.5	38	3	5	25 / —	1200
14.3 / 40.6	14.4	11.2	40.64	8	25.5	26	46	36	5.1	23.5	58	3	7	42 / 30	1800

The CAD data corresponding to the types shown above are available at www.gewinde.ch

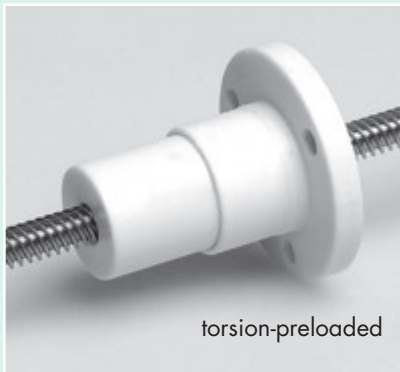
Speedy with inch thread



Standard flange nut, non-preloaded/preloaded



non-preloaded



torsion-preloaded

Legend

d_0 = nominal screw diameter [mm]

d_2 = core diameter [mm]

p_0 = nominal pitch [mm]

p = effective pitch [mm]

i = number of threads [-]

C_{stat} = static load rates for non-preloaded POM-C or preloaded EX100 nuts [N];

for higher load rates, bronze nuts must be used ($C_{stat\ bronze} = 1.3 \times C_{stat\ POM/EX100}$)

B = bronze CuSn12 (2.1052)

³⁾ = only on request

⁶⁾ = not available with torsion-preload

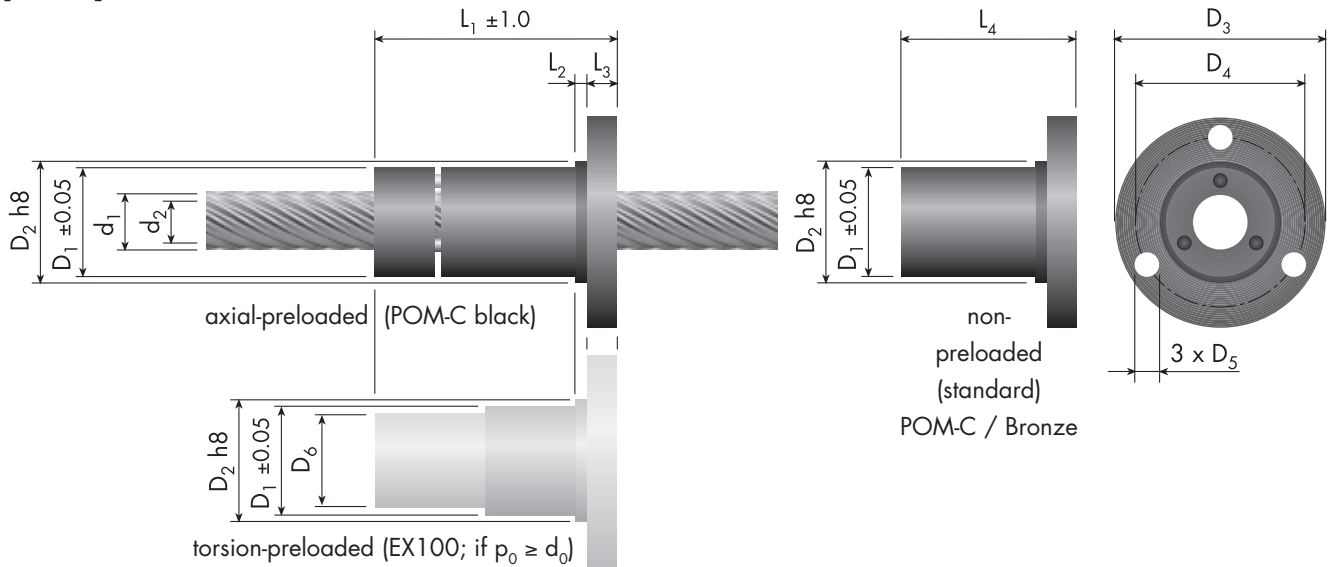
Special designs available on request.

All specifications are subject to change without notice.

Quality management ISO 9001:2008



Speedy with inch thread (2/2)



Speedy	Dimensions														Load rates
	Screw				Nut										
d_0 / p_0	d_1	d_2	p	i	D_1 ± 0.05	D_2 h8	D_3	D_4 hole circle	D_5	D_6	L_1	L_2	L_3	L_4 POM / B	C_{stat} for POM/EX100 N
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	N
right-hand threads															
25.7 / 76.2	25.7	24.0	76.20	15	41.5	42	64	53	6.2	39	71	5	8	50 / 35	2800
32.0 / 96.5	32.2	29.0	96.52	19	49.5	50	80	65	9.0	—	—	10	12	70 / 50	4600
left-hand threads															
25.7 / 76.2	25.7	24.0	76.20	15	41.5	42	64	53	6.2	39	71	5	8	50 / 35	2800
32.0 / 96.5	32.2	29.0	96.52	19	49.5	50	80	65	9.0	—	—	10	12	70 / 50	4600

The CAD data corresponding to the types shown above are available at www.gewinde.ch



Basic design

The Eichenberger high-helix lead screws are not called Speedy for nothing: never before have such high moving speeds been obtained at such low rotational speeds. The Eichenberger Speedy has made this possible by using a helix pitch unheard of before. High-helix lead screws are made of stainless steel and are formed by the cold-rolling process. They are coupled with high wear-resistant thermoplastic nuts in simple (standard, POM-C) or preloaded (POM-C or EX 100) designs. For higher loads or special applications, alternative plastic materials or bronze may be used for the nuts.

Materials

Screw

- standard: stainless steel X20Cr13 (1.4021)
- on request: other steel qualities, i.e. X2CrNiMo17-12-2 (1.4404) or X10CrNiS18-09 (1.4305)
- aluminium on request

Nut

- non-preloaded: POM-C black
- preloaded:
 - axial-preloaded: POM-C black
 - torsion-preloaded: EX100 white (if $p_0 \geq d_0$)
- on request: iglidur® J *
- bronze CuSn12 (2.1052)
- other materials on request

* iglidur® is a registered trademark of igus® GmbH

Nut design

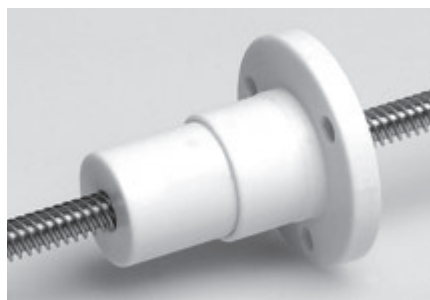
For all thread types a standard flange nut design has been defined, which is deliverable in the following types:



- Flange nut, non-preloaded
- type «SFM»: POM-C black
 - type «SBM»: bronze



- Flange nut axial-preloaded
- type «SFV»: POM-C black
 - type «SBV»: bronze (on request)



- Flange nut torsion-preloaded (for square pitches and larger)
- type «SFT»: EX100 white
 - type «SBT»: bronze (on request)

Of course, any other application-specific nut designs can be supplied on request including injection-molded solutions.

Temperature range

- POM-C / EX100 –40 to +60 °C
- iglidur® J –50 to +90 °C
- bronze –40 to +200 °C

Lead accuracy

Standard:

- $G9 \triangleq \leq 0.1 \text{ mm}/300 \text{ mm}$ (according to DIN 69051)

On request:

- other lead accuracies



Duty cycle

Load rates, lubrication notice and basic calculation with load factor f_L are based on a duty cycle of 10% for a Speedy with non-preloaded POM-C nut.

Efficiency

The efficiency η depends on the helix angle and reaches values from ~0.5 to 0.75 (see chart on page 76).



Factory length / Handling / Lubrication

Factory length

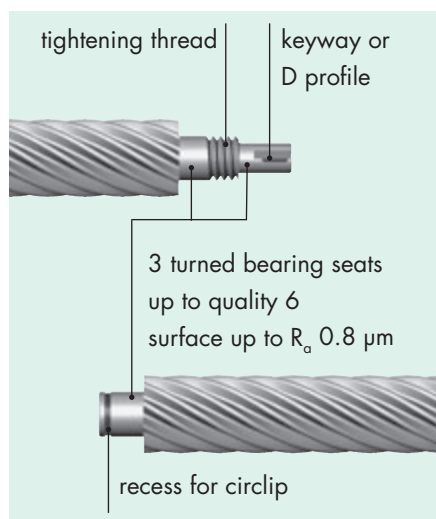
In general, Eichenberger screws are available as threaded rods, approx. 3 m long. Upon request, lengths up to 6 m are available, depending on diameter and supply market situation.

Lead screw ends

Speedy lead screws are cut to the desired length without special machining (standard).

Upon request, a so-called standard screw end journal with three turned bearing seats (see figure below) is available. Dimensions are as per customer specifications.

Note also the links to the CAD data at www.gewinde.ch



Handling

High-helix lead screws are precision parts (non-hardened) and must be protected from shock, dirt or moisture when transported or stored. Please do not unpack until ready for use.

Please check for cleanness when mounting the lead screw unit. Dirt or foreign matter on the thread may cause excessive wear.

Please consult lubrication recommendation before mounting or operating Speedy lead screws.

Radial loads and torque

Radial loads or torque brought to bear upon the nut result in overload of individual contact surfaces, thus seriously affecting the service life of the lead screw assembly. Therefore it is important to properly mount the screw and to comply with all relevant form and positional tolerances.

Lubrication

In some cases, a single lubrication with grease or oil is sufficient. However, any lubrication cycle depends on the application environment.

Bronze nuts have to be lubricated regularly.

Lubricant used by manufacturer:

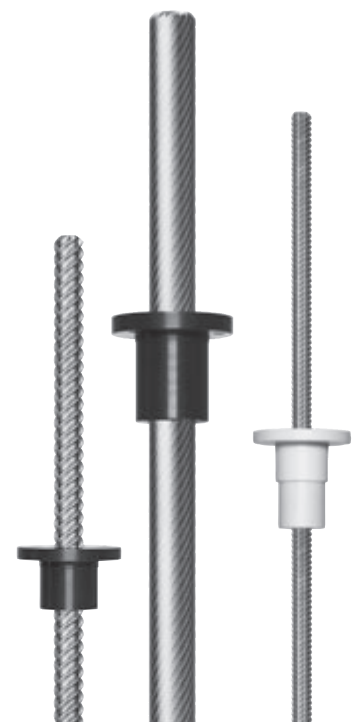
- Klüber Microlube GBU Y 131.

Applications

The Eichenberger high-helix lead screws are suitable for a variety of applications. For short strokes, they are a substitute for drive belts due to their low production cost. In addition, they are perfectly suitable as substitutes for hydraulic and pneumatic cylinders. Indeed, they allow low-friction acceleration as well as free positioning and operate without secondary energy sources. When appropriate, they are also ideal alternatives to trapezoidal or ball screws due to high efficiency and a convincing cost-performance ratio.

Typical applications are:

- Drives for doors, gates and windows
- Handling systems
- Graphics machinery
- Drives for valves and dampers
- Climate control systems
- Medical devices
- Textile machines
- Food and packaging industries
- Steering actuators
- Electronics industry etc.



Speedy high-helix lead screws



The following are the relevant calculations which underly high-helix screw design and safe operation.

Calculations at dynamic load:

Critical rotational speed n_{per}

Permissible rotational speeds must differ substantially from the screw's own frequency.

$$n_{per} = K_D \cdot 10^6 \cdot \frac{d_2}{l_a^2} \cdot S_n \text{ [min}^{-1}\text{]}$$

n_{per} = permissible rotational speed [min⁻¹]

K_D = characteristic constant as a function of bearing configuration

→ see below

d_2 = core diameter [mm]

l_a = bearing distances [mm]

→ see opposite

(always include maximum allowable l_a in calculation)

S_n = safety factor

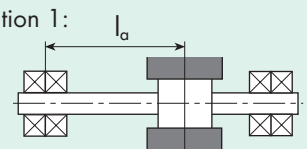
usually $S_n = 0.5 \dots 0.8$ [-]

Configuration 1:

fixed –

fixed

$K_D = 276$

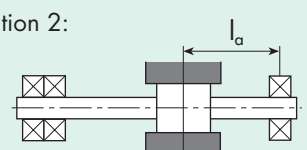


Configuration 2:

fixed –

simple

$K_D = 190$

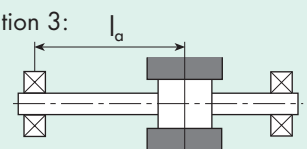


Configuration 3:

simple –

simple

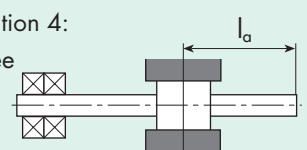
$K_D = 122$



Configuration 4:

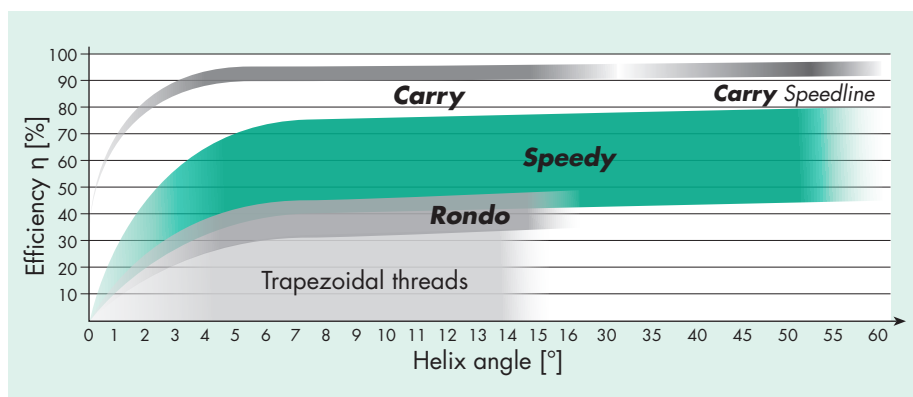
fixed – free

$K_D = 43$



Efficiency η_p (practical)

The efficiency η depends on the helix angle and reaches values from ~0.5 to 0.75.





Driving torque M

Depends upon the type of power transmission.

Case 1: torque → linear movement

$$M_a = \frac{F_a \cdot p}{2000 \cdot \pi \cdot \eta} \text{ [Nm]}$$

Case 2: axial force → torque

$$M_e = \frac{F_a \cdot p \cdot \eta'}{2000 \cdot \pi} \text{ [Nm]}$$

M_a = input torque [Nm]

M_e = output torque [Nm]

F_a = axial force [N]

η = efficiency [%]

η' = corrected efficiency [%]

p = pitch [mm]

Input performance P

$$P = \frac{M_a \cdot n}{9550} \text{ [kW]}$$

P = input performance [kW]

n = rotational speed [min^{-1}]

A safety margin of 20% is recommended when selecting drives.

Basic calculations

Maximum authorized load depending on speed

$$F_{\text{per.}} = C_0 \cdot f_L \text{ [N]}$$

C_0 = static load rate [N]

f_L = load factor [-] for POM-C nuts

circumferential speed v_C [m/min]	load factor f_L [-]
5	0.95
10	0.75
20	0.45
30	0.37
40	0.12
50	0.08

Example

Parameters:

Speedy 10/50 with non-preloaded POM-C nut, $d_0 = 10$ mm, $p = 50$ mm and $C_0 = 1250$ N; required moving speed $v_s = 200$ mm/sec.

We need to find: $F_{\text{per.}}$

We calculate n [min^{-1}],

$$n = \frac{v_s \text{ [mm/sec]} \cdot 60}{p \text{ [mm]}}$$

$$= \frac{200 \cdot 60}{50} = 240 \text{ min}^{-1}$$

circumferential speed v_C [m/min]

$$v_C = \frac{d_0 \text{ [mm]} \cdot \pi \cdot n \text{ [min}^{-1}\text{]}}{1000}$$

$$= \frac{10 \cdot \pi \cdot 240}{1000} = 7.53 \text{ m/min}$$

and find load factor f_L in above table:

f_L at v_C of 7.53 m/min ≈ 0.85 [-]

It follows:

$$F_{\text{per.}} = C_0 \cdot f_L = 1250 \cdot 0.85 = 1062.5 \text{ N}$$

In other words, the maximum load for a Speedy 10/50 at $v_s = 200$ mm/sec. ($\rightarrow n = 240 \text{ min}^{-1}$) is 1060 N.



Rondo round thread lead screws

- Order system Rondo 79
- Rondo with standard round thread and standard flange nut. 80–83
- Basic design / Materials / Precision 84
- Factory length / Handling / Lubrication see Speedy, page 75
- Design fundamentals
 - ...at dynamic loads: see Speedy, pages 76/77
 - critical rotational speed
 - efficiency
 - driving torque / required power
- Basic calculations: see Speedy, page 77
 - Maximum authorized load depending on speed



NEW: Rondo partly available
in aluminum

Visit www.gewinde.ch for the latest on existing and/or new products.

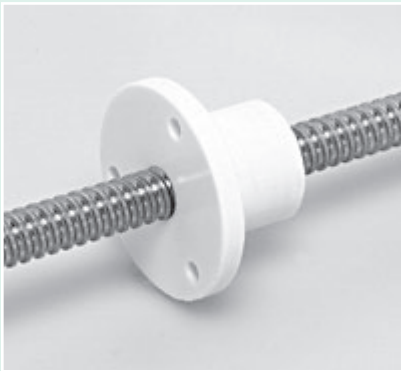


	RGS	10x3	RFM	RH	350	G9	E	M
Example for complete round thread lead screw _____								
Type of lead screw _____ RGS = Rondo round thread lead screw								
Nominal size (d₀ x p) [mm] _____								
Type of nut _____ RFM = standard flange nut, made of EX100 white ¹⁾ MSX = special design according to drawing			nut only					
Right-hand / left-hand thread _____ RH = right-hand thread (standard) LH = left-hand thread (on request)								
Lead screw overall length [mm] _____ standard steel quality: X20Cr13 (1.4021) ¹⁾					screw only			
Lead accuracy (class) _____ G9 = ≤ 0.1 mm/300 mm (standard) GX = lead accuracy upon specification						screw only		
End machining _____ O = no end machining (cut by grinding; screw and nut separate) E = end machining according to drawing							screw only	
Assembly _____ G = screw and nut separate (standard) M = screw and nut assembled according to drawing/specified orientation								
¹⁾ other materials on request								
Example for screw only _____	RGS	10x3		RH	350	G9	O	G
Example for nut only _____	RGS	10x3	RFM	RH				

Rondo with standard round thread



Standard flange nut



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

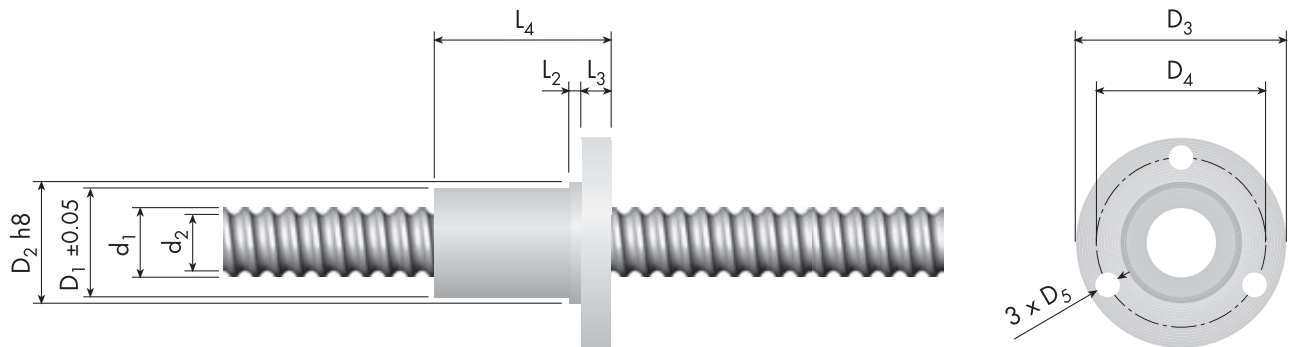
d_2 = core diameter [mm]

p = pitch [mm]

³⁾ = only on request

Special designs available on request.
All specifications are subject to change without notice.
Quality management ISO 9001:2008

Rondo with standard round thread (1/2)



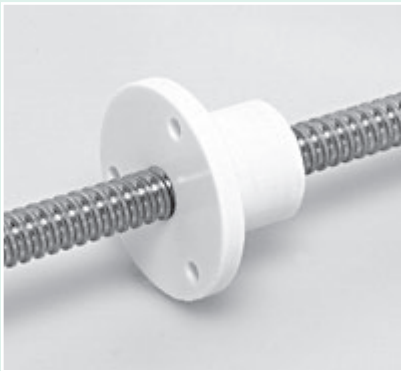
Rondo $d_0 \times p$ mm	Dimensions										Load rates C_{stat} N	
	Screw		Nut									
	d_1 mm	d_2	D_1 ± 0.05 mm	D_2 h8	D_3	D_4 hole circle	D_5	L_2	L_3	L_4		
right-hand threads												
6 x 2	5.9	4.5	20.5	21	38	29	4.2	3	5	25	600	
8 x 2	7.9	6.5	20.5	21	38	29	4.2	3	5	25	800	
10 x 3	9.9	7.8	23.5	24	42	32	4.2	3	5	25	1200	
12 x 3	12.0	9.9	25.5	26	46	36	5.1	3	7	42	2000	
12 x 4	12.0	9.8	25.5	26	46	36	5.1	3	7	42	2500	
12 x 5	12.3	9.4	25.5	26	46	36	5.1	3	7	42	2200	
14 x 3	14.0	12.0	25.5	26	46	36	5.1	3	7	42	2400	
14 x 4	14.0	11.5	25.5	26	46	36	5.1	3	7	42	3200	
left-hand threads												
6 x 2³⁾	5.9	4.5	20.5	21	38	29	4.2	3	5	25	600	
8 x 2	7.9	6.5	20.5	21	38	29	4.2	3	5	25	800	
10 x 3	9.9	7.8	23.5	24	42	32	4.2	3	5	25	1200	
12 x 3³⁾	12.0	9.9	25.5	26	46	36	5.1	3	7	42	2000	
12 x 4³⁾	12.0	9.8	25.5	26	46	36	5.1	3	7	42	2500	
14 x 3³⁾	14.0	12.0	25.5	26	46	36	5.1	3	7	42	2400	
14 x 4	14.0	11.5	25.5	26	46	36	5.1	3	7	42	3200	

The CAD data corresponding to the types shown above are available at www.gewinde.ch

Rondo with standard round thread



Standard flange nut



Legend

d_0 = nominal screw diameter [mm]

d_1 = outside screw diameter [mm]

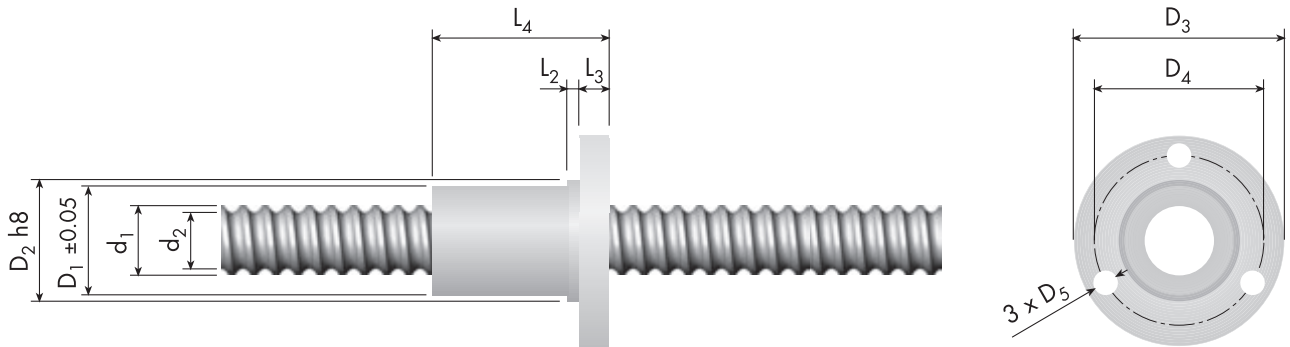
d_2 = core diameter [mm]

p = pitch [mm]

³⁾ = only on request

Special designs available on request.
All specifications are subject to change without notice.
Quality management ISO 9001:2008

Rondo with standard round thread (2/2)



Rondo $d_0 \times p$ mm	Dimensions										Load rates C_{stat} N
	Screw		Nut								
	d_1 mm	d_2 mm	D_1 ± 0.05 mm	D_2 h8	D_3	D_4 hole circle	D_5	L_2	L_3	L_4	
right-hand threads											
16 x 4	16.0	13.5	29.5	30	49	39	5.1	3	7	42	3900
16 x 5	15.7	13.0	29.5	30	49	39	5.1	3	7	42	5000
left-hand threads											
16 x 5	15.7	13.0	29.5	30	49	39	5.1	3	7	42	5000

The CAD data corresponding to the types shown above are available at www.gewinde.ch



Basic design

Rondo screws are a true alternative to conventional trapezoidal screws. They deliver outstanding efficiency and quiet running due to their round thread profile.

Made of steel, the lead screws are combined with plastic flange nuts (outer dimensions equal those of standard Speedy flange nuts).

Materials

Screw

- standard: stainless steel X20Cr13 (1.4021)
- on request: aluminium
- other materials on request

Nut

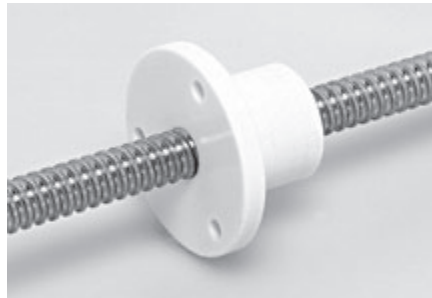
- standard: EX100 white
- on request: iglidur® J *
- other materials on request

Temperature range

- EX100 –40 to +60 °C
- iglidur® J –50 to +90 °C

Nut design

One standard nut design has been defined:

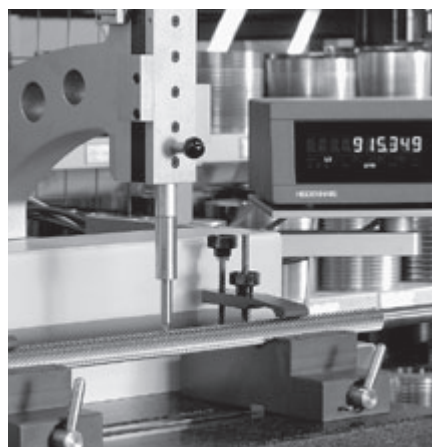


Flange nut type «RFM»

Of course, any other application-specific nut designs can be supplied on request including injection-molded solutions.

Lead accuracy

- Standard:
- $G9 \triangleq \leq 0.1 \text{ mm}/300 \text{ mm}$ (according to DIN 69051)
- On request:
- other lead accuracies



Duty cycle

Load rates, lubrication notice and basic calculation with load factor f_L are based on a duty cycle of 10% for a Rondo made of standard materials.

Factory length / Handling / Lubrication

See Speedy page 75.

Design fundamentals

See Speedy pages 76/77.



* iglidur® is a registered trademark of igus® GmbH



As our name suggests, thread rolling is the core business of Eichenberger Gewinde AG. Not only do the buyers of standard products benefit from our expert know-how but also those manufacturers who require economical cold rolled threads for their mechanical parts and components.



State-of-the-art production methods, extensive product expertise and access to more than 1000 machine tools, enable us to meet each and every demand for rolled threads – however exotic they may be:

- pitches up to 6 x diameter
- spindle length up to 6 m
- spindle diameter from 2 to 160 mm
- high-helix thread profiles
- ball screw thread profiles
- all standard profiles (M, Tr, UNC, UNF, UNEF, Whitworth)
- multiple start threads including left-hand/right-hand threads
- special profiles
- worm gears (quality and price advantages)
- serrations and knurlings

Quality Management ISO 9001:2008

What materials are suitable?

- all metals that feature an extension of at least 6% and do not exceed a tensile strength of 1300 N/mm²
- high-alloy, corrosion and acid-resistant steel
- special aluminium alloys
- riveting-quality brass
- copper alloys
- threads can be rolled on hollow bodies and tubes only if wall thickness is sufficient; this wall thickness depends upon the type and depth of intended profile as well as material used. Please call or write for assistance.

What materials are not suitable?

- extremely brittle material such as Ms58, cast iron, etc.
- extremely soft materials such as lead
- synthetics
- wood.

We look forward to your challenge!



The examples below illustrate the range of available cold-rolling applications. We may even inspire you to investigate innovative solutions. Indeed, we are convinced that rational cold-rolling solutions are available to solve your particular threading problem. Why not consider the benefits of cold rolling and profit from our know-how?

Trapezoidal thread
as per ground profile DIN 103
Flat trapezoidal thread as per DIN 380
Multiple trapezoidal thread,
incl. left/right



Ball screw profile
As a rule, ogival threaded profiles
are used

Special threads with special profiles
according to customer specifications



High-helix profiles
– multiple threads with pitch up to
 $6 \times$ diameter
– synthetic or brass nuts

Worm-gear profiles
as per basic profile DIN 3976
Single or multiple gears may be rolled



Milled edges as per DIN 82
– concentric
– left/right

Serrations as per DIN 5481

Threads on awkward parts

Conical threads





Development, Manufacturing and QM

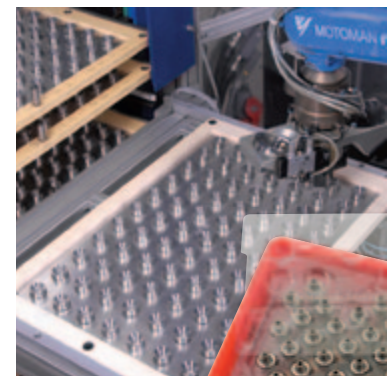
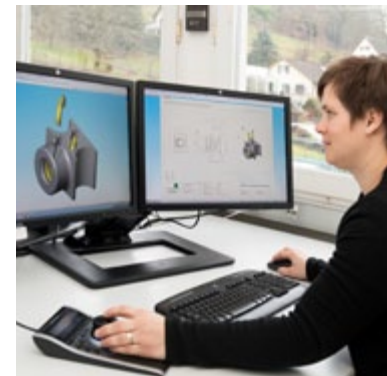
«Quality first»: As an ISO 9001:2008 certified company we leave nothing to chance – from development and manufacturing to distribution.

Efficient processes, modern production tools and qualified personnel with a sense of responsibility guarantee a standard of quality which has made us the preferred partner for many renowned companies around the world.

Ever since the company was founded in 1953, the name Eichenberger Gewinde AG has been synonymous with premium-quality threads. A leading supplier of innovative linear power transmission products and a complete line of cold rolled threads, Eichenberger offers its customers unique products and comprehensive know-how.

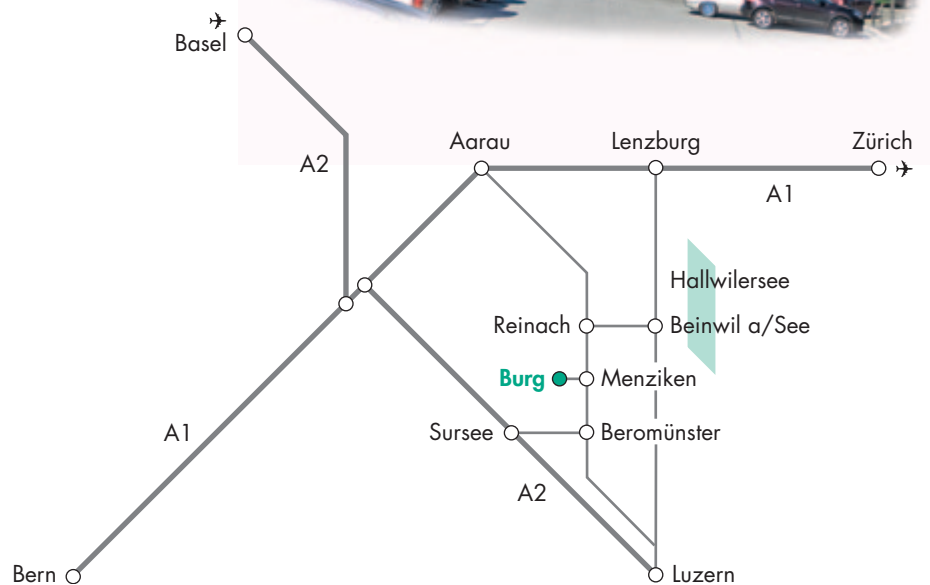
History

- 1953 Founding of a precision turning shop by Hans Eichenberger (sole proprietorship)
- 1976 Re-registering of the company as Eichenberger AG Tools and Machine Works
- 1986 Name change to Eichenberger Gewinde AG
- 1988 Development started on proprietary ball screws
- 1995 Replacement of individual fabrication by industrial production
- 1996 Kurt Husistein assumes leadership of the company
- 1998 Management buy out of Eichenberger Gewinde AG (APT Holding)
- 2004 Foundation of Eichenberger Motion AG (Automotive subsidiary)
- 2006 Opening of the production extension
- 2012 Office building ready to move in
- 2013 60th anniversary





Eichenberger Gewinde



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When in Burg, follow the signs to Eichenberger Gewinde.

Map and directions can be found on our website
www.gewinde.ch → Where to find us

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