EichenbergerGewinde

Main Catalogue

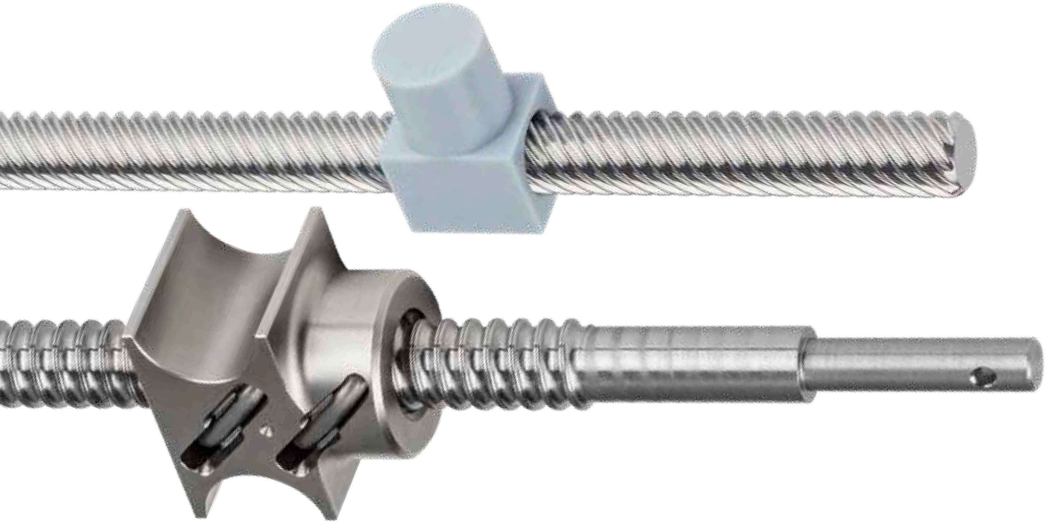
Ballscrews ■ Leadscrews

100% Swiss made

A company of the Festo Group

on the move. *worldwide*

Your partner for thread drive solutions – 100% Swiss-made



Cold-rolled thread drives for every requirement

Eichenberger Gewinde AG has been supplying customers all over the world with "100% Swiss-made" thread drives for more than 30 years.

Eichenberger thread drives are high-performance nut and shaft units that have been tried and tested in their millions in all sorts of applications in linear and drive technology. Cost-effective and with maximum reliability and service life, they are manufactured using the high-quality and extremely economical cold-rolling process and offer precise conversion of rotational movement into linear movement and vice versa.

We are constantly expanding our comprehensive standard range of ballscrews and leadscrews, providing you with efficient and economical solutions "off the shelf".

For complex projects with more advanced requirements, we can support you with expert advice at short notice during the development of individual drive solutions:

- customer-specific adjustments of Eichenberger standard thread drives
- unique, tailor-made special thread drives

Your tailor-made thread drive
Special requirements often demand tailor-made solutions. If our standard thread drives cannot fulfil your specs, we will offer a wide range of individualized options:

- application-specific nut shapes, including integrated additional features such as axles, mounting surfaces etc.
- individual thread profiles and customised ball sizes, e.g. for increased load ratings
- application-specific screw diameters and end machining
- special thread pitches
- customised number of ball circulations or number of carrying threads
- performance-optimised thread geometries
- special materials
- coating to improve sliding properties, to increase service life or as corrosion protection
- and much more.

Contact us with your revolutionary idea – we'll support you during development and provide YOUR tailor-made thread drive!

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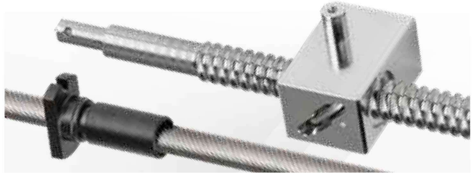
Eichenberger thread drives



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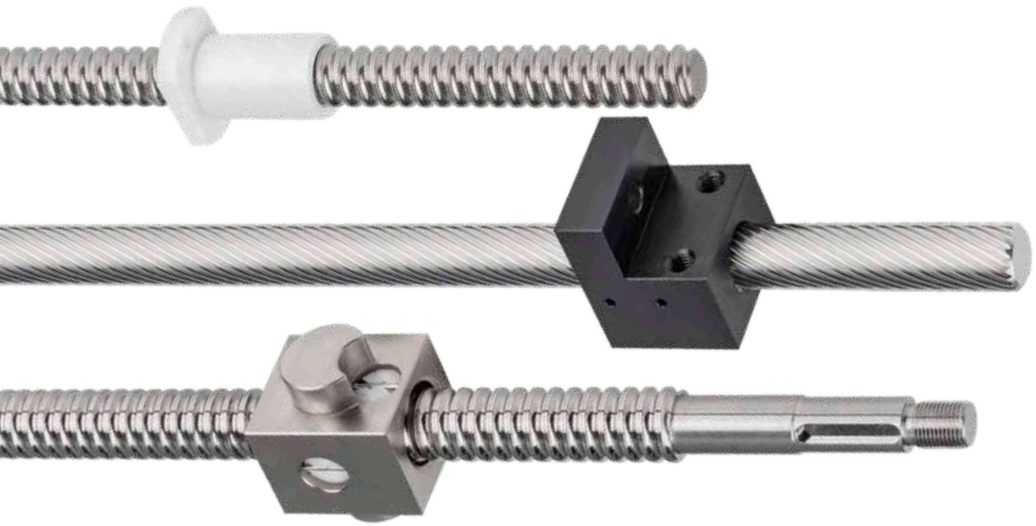
Individual tailor-made thread drives

100% Swiss made



Your revolutionary idea – our tailor-made solutions

Any nut shape

Innovative solutions often require special, application-specific nut shapes – sometimes the nut even has to be integrated directly into a component. Or specific measurement requirements or performance parameters have to be complied with where standard thread drives simply don't suffice.

Thanks to maximum adaptability during development as well as manufacture, Eichenberger is your perfect partner for tailor-made thread drives in any shape and design.

Any kind of end machining

Our speciality is any kind of application-specific end machining – for your application, too.

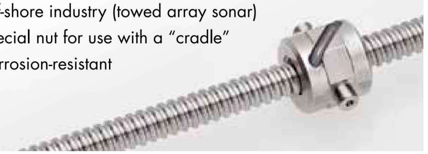
Contact us with your revolutionary idea – we'll support you during development and provide YOUR tailor-made thread drive!

Examples of customer-specific and application-specific solutions

Carry 6×1
- Medical technology
- Special nut with application-specific flange

Carry 9.3×2
- Electronics industry (building electric motors)
- Customer-specific screw diameter, special nut, ball recirculation made of high-temperature technopolymer

Carry 8×2.5 made of corrosion-resistant steel
- Off-shore industry (towed array sonar)
- Special nut for use with a "cradle"
- Corrosion-resistant



Carry 16×5
- Off-shore industry (oil drilling)
- "Safety nut"

Carry 8×3
- Medical technology
- Special nut with direct linear slide connection

Carry 25×5
- Development and Prototype
- Hollow screw with extremely large, continuous bore hole

Carry 12×4
- Automation
- Special nut; screw and nut with coating to reduce sliding friction

Carry 10×2
- Electrically operated manual device
- Load rating increased based on customer-specific adjustment of tube type ball returns

Carry 10×2
- Medical technology; large-scale production
- Nut polished on the outside, featuring adhesive grooves

Carry 16×7
- Motor racing
- Special pitch
- Special nut

Speedy 4/10
- Injected two-part technopolymer nut ready for preloading by the customer

Speedy 26/60
- Graphics industry
- Stop adjustment

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Standard range overview

100% Swiss made

Cold-rolled precision

The manufacturing core competency of Eichenberger Gewinde AG is thread rolling. That is why the thread profiles of Eichenberger screws are exclusively made using this highly precise process.

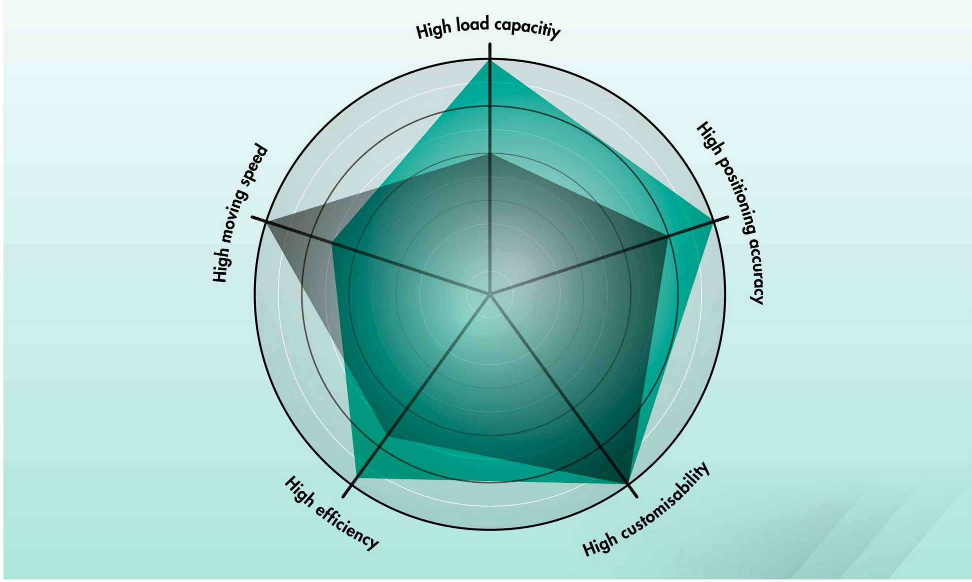
Thread rolling describes the cold-forming process of the surface of round components. A thread is created by deforming a part between two rotating rolling tools with radial dynamic force application. The rolling tool profiles penetrate the surface of the part. So when the material is cold, it is pressed into the base of the thread rolling tool and rolled to the nominal dimensions.

Advantages of thread rolling:
- significant increase in strength based on cold-forming
- very good roughness values on the edges of the thread and in the base radius
- reduced notch-sensitivity
- grain orientation is not interrupted as in machined threads
- high dimensional accuracy
- efficient and quick production
- particularly cost-effective for large quantities

Even though all Eichenberger thread drives are made in accordance with the thread rolling process, the two construction series of the Eichenberger standard range,
- ballscrews (recirculating ballscrews in accordance with the principle of ball bearings) and
- leadscrews (thread drives with nut and screw thread edges that slide onto each other),

have very different performance characteristics, which are demonstrated in the overview.

Thread drive types and their characteristics



Ballscrews

Eichenberger ballscrews are characterised by:

- high load ratings, and are therefore suitable for high static and dynamic loads
- medium to high travelling speeds thanks to over-square pitches ($p > d$)
- excellent efficiency ($\eta > 0.9$), therefore:
  - low drive power required
  - low energy consumption
  - low self-heating
- low-friction operation
- no stick-slip effect
- high accuracy for positioning and repetition
- high reliability and long service life with minimum need for maintenance
- wipers possible

- **Carry** ballscrews pages 8–39

Leadscrews

Eichenberger leadscrews are characterised by:

- small to medium load ratings, therefore suitable for low to medium loads
- very high travelling speeds, thanks to over-square pitches ($p \leq 6 \times d$)
- high efficiency (η ~0.5…0.8), thanks to the finest surface quality of the steel leadscrews and nuts made of high-performance technopolymer
- weight optimisation possible based on aluminium screws
- performance optimisation sometimes possible based on coating
- high reliability and long service life with marginal need for maintenance

Eichenberger's leadscrew range includes three types:

- **Speedy** high-helix leadscrews pages 40–57
- **Easy** light leadscrews pages 58–61
- **Rondo** round-thread leadscrews pages 62–65

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Carry ballscrews (KGT)

100% Swiss made

Design features

Carry screws are made using the highly economical cold-rolling process, offering – at a significant price advantage – precision that has so far only been achieved with ground screws.
Carry screws are combined with individual steel nuts which are produced in a unique, highly efficient process.

Carry ballscrews offer all the advantages that are characteristic of ballscrews, such as:
- high efficiency (η > 0.9), i.e.
  - low drive power
  - low self-heating
- high load ratings
- low-friction, stick-slip-free operation
- minimum wear, i.e. with consistent positioning precision, very good repeat accuracy is achieved
- high reliability and long service life

Load ratings C_{dyn} and C_{stat}

The dynamic and static load ratings of Eichenberger ballscrews are determined on commonly used and recognised DIN calculation bases.
According to our experience, higher values are usually achieved during practical applications.

Materials

- standard: steel
  - 1.3505 (100Cr6)
  - 1.1213 (Cf53)
- on request:
  - corrosion-resistant steel 1.4034 (X46Cr13)
  - other materials
- on request:
  - coating for corrosion protection

⚠ The use of corrosion-resistant steel results in lower load ratings! Details on request.

Lead accuracy

- standard:
  - G9 ≙ ≤0.1 mm/300 mm (in accordance with DIN 69051)
- on request:
  - G7 ≙ ≤0.052 mm/300 mm
  - G5 ≙ ≤0.023 mm/300 mm

Carry ballscrews – design features

Nut types (shapes)

Nut with mounting thread
Type FG…
- cost-effective standard nut
- outer diameter turned
- with pin wrench hole

Cylindrical nut
Type ZY…
- outer diameter ground
- with keyway

Flange nut
Type FB… / FA…
- mounting section and flange ground (Type FB…)
- drilling pattern 1/2/3 following DIN 69051
- flange type C on request

If required, any application-specific nut shapes can be manufactured.
Contact us with your revolutionary idea – we'll provide YOUR tailor-made ballscrew!

Reduced backlash

Reduced backlash up to ≤0.01 mm is possible, if required (only for paired screw and nut units or those that have been mounted).

Efficiency

Efficiency η for Carry ballscrews is more than 0.9
› also see calculations and diagram, page 14

Ball return systems

End cap ball returns
Type …E / …F
- also for over-square pitches ($p \geq d_0$)
- wipers firmly integrated into end caps
- made of high-performance technopolymer
- cost-effective

Tube ball return, fully integrated into nut body
Type …R
- for heavy loads
- can also be used in high temperatures
- space-saving in length

Single-thread ball return
Type …I
- space-saving in diameter
- made of high-performance technopolymer
- other materials (e.g. brass) on request

Operational temperatures

During normal use: –20 to +80 °C.
Different operational temperatures after consultation.

Wipers

Depending on the type, technopolymer wipers (K) or brush wipers (B) can be mounted. Felt rings (F) on request (for lifetime lubrication).

K

B

F


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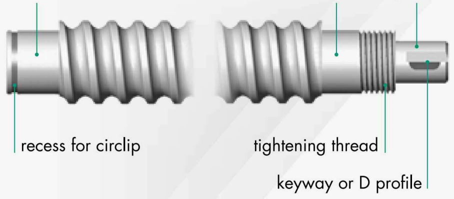
Production / Handling / Lubrication

Production lengths
In general, Eichenberger screws are produced as threaded rods with a length of 3 m.

Any kind of end machining
Ballscrew ends are without any machining cut by grinding (standard).
Upon request, a so-called standard screw end journal with three turned bearing seats is available. Dimensions are as per customer specifications. Note also the links to the CAD data at www.gewinde.ch

3 turned bearing seats up to quality 6, surface up to R_a 0.8 µm



Screws may also be ordered with softened ends for subsequent finishing by the customer.

Our speciality is any application-specific end machining: Tell us your requirements, and we'll provide YOUR tailor-made screw!

In each instance, a detailed drawing would be necessary.

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 ballscrew assembly. Therefore it is important to properly mount the screw and to comply with all relevant form and positional tolerances.

Handling
Ballscrews 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 ballscrew. Dirt or foreign matter on the ball race – especially inside the nut – may cause increased wear and premature failure.

Lubrication
The usual specifications for lubricating ball bearings also apply to ballscrews. 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 ballscrew.

⚠ When shipped, screws simply have a protective film. Before mounting or operating the ballscrew, 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

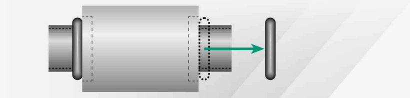
When using another lubricant, please verify compatibility with anticorrosion agent; otherwise rinse ballscrew unit prior to lubrication.

Do not use grease containing graphite or MoS!

Surface coatings
… possible on request:
- generally to reduce sliding friction
- if lubrication is not possible (e.g. in the food industry)
- as corrosion protection › also see Materials, page 8

Assembling of ballscrew units

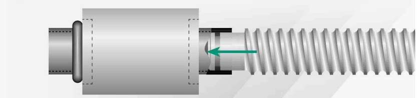
1.



Remove transport lock (O-ring) on one side.

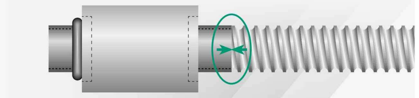
⚠ Please keep sleeve and nut in horizontal position. Otherwise, the nut may slide from the sleeve and balls may fall out of the ball race.
In the event such incident does occur, balls must be properly re-inserted to prevent damage to or blockage of the ballscrew. If in doubt, please contact Eichenberger Gewinde AG.

2.



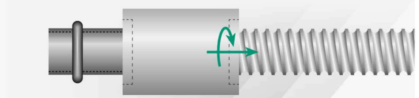
Insert screw end into mounting sleeve.

⚠



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.

3.



Gently turn nut onto the screw.

Please consult lubrication recommendation opposite before mounting or operating ballscrews.

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Design fundamentals

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

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

«Suitability test» rotational speed characteristics

When selecting a ballscrew 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 outer screw diameter:

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

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

d_1 = outer screw diameter [mm]

Rotational speed characteristic [–] for:

- single-thread ball return: 60 000 (Carry type **...I**)
- tube ball return: 80 000 (Carry type **...R**)
- end cap ball return: 80 000 (Carry type **...E**/**...F**)

Calculations at dynamic load

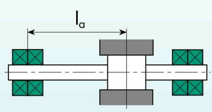
Critical rotational speed n_{per}

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

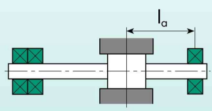
$$n_{per} = K_D \cdot 10^6 \cdot \frac{d_2}{l_a^2} \cdot S_n \ [\text{min}^{-1}]$$

n_{per} = permissible rotational speed [min^{-1}]
K_D = characteristic constant [–] as a function of bearing configuration › see below
d_2 = core screw 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 … 0.8

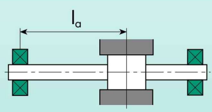
Config. 1: fixed – fixed
→ K_D = 276



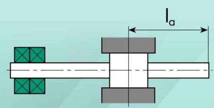
Config. 2: fixed – single
→ K_D = 190



Config. 3: simple – single
→ K_D = 122



Config. 4: fixed – free
→ K_D = 43



Nominal service life L_{10} or L_h

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

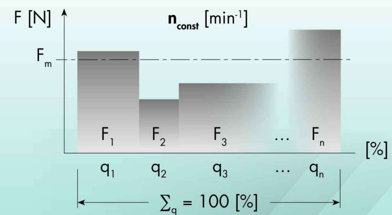
$$L_h = \frac{L_{10}}{n_m \cdot 60} \ [h]$$

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

Average axial load F_m

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

$$F_m = \sqrt[3]{F_1^3 \frac{q_1}{100} + F_2^3 \frac{q_2}{100} + \ldots + F_n^3 \frac{q_n}{100}} \ [N]$$



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

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

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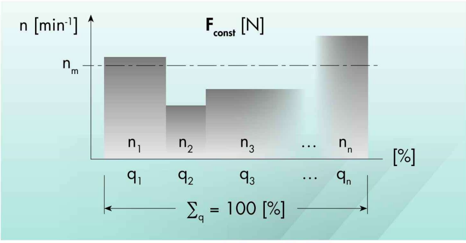
Calculations at dynamic load (continued)

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

$$n_m = n_1 \frac{q_1}{100} + n_2 \frac{q_2}{100} + \dots + n_n \frac{q_n}{100} \quad [min^{-1}]$$



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

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

Average axial load F_m
at constant rotational speeds $n_{1...n}$ and dynamic load C_{dyn}

$$F_m = \sqrt[3]{\frac{F_1^3 \cdot n_1 \cdot \frac{q_1}{100} + F_2^3 \cdot n_2 \cdot \frac{q_2}{100} + \dots + F_n^3 \cdot n_n \cdot \frac{q_n}{100}}{n_m}} \quad [N]$$

$$n_m = n_1 \frac{q_1}{100} + n_2 \frac{q_2}{100} + \dots + n_n \frac{q_n}{100} \quad [min^{-1}]$$

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

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

Efficiency η (theoretical)
depends upon the type of power transmission

- Case 1: torque → linear movement

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

- Case 2: axial force → torque

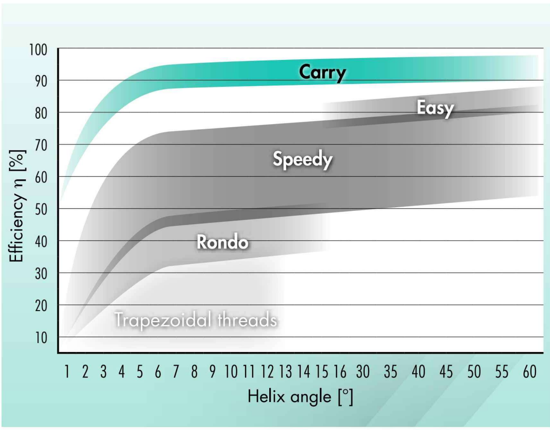
$$\eta' \approx \frac{\tan(\alpha - \rho)}{\tan \alpha} \quad [-]$$

whereby

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

η = efficiency [%]
η' = corrected efficiency [%]
p = pitch [mm]
d_0 = nominal screw diameter [mm]
ρ = angle of friction [°] → ρ = 0.30…0.60°

Efficiency η_p (practical)
The efficiency η for Carry ballscrews is better than 0.9



Driving torque M
depends upon the type of power transmission

- Case 1: torque → linear movement

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

- Case 2: axial force → torque

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

M_a = input torque [Nm], case 1
M_e = output torque [Nm], case 2
F_a = axial force [N]
p = pitch [mm]
η = efficiency [%]
η' = corrected efficiency [%]

Input performance P

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

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}

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

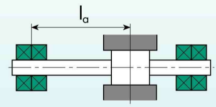
C_{stat} = static load rate [N]
f_s = operating coefficient
→ normal operation: 1…**2** [–]
→ shock load: 2…3 [–]

Permissible buckling force F_B

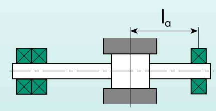
$$F_B = \frac{K_B}{S_B} \cdot \frac{d_2^4}{l_a^2} \cdot 10^3 \quad [N]$$

K_B = characteristic constant of load [–]
depends on design › see below
d_2 = core screw diameter [mm]
S_B = buckling safety factor [–] → usually S_B = 2…4
l_a = force-transferring screw length [mm]

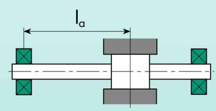
Case 1:
→ K_B = 400



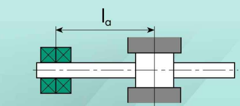
Case 2:
→ K_B = 200



Case 3:
→ K_B = 100



Case 4:
→ K_B = 25



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Order system – Carry ballscrews

Example for complete Carry ballscrew — KGT 16×5 FGR RH 1 S 350 G7 A E M

Type of thread drive
KGT = **Carry** ballscrew

Nominal size (d_0 × p) [mm]

Nut type:
- **Shape** — for nut only

ZY = cylindrical nut type ZY…
FG = nut with mounting thread type FG…
FB = flange nut type FB…
FA = flange nut type FA…
MS = special design according to drawing

- **Ball return system** (assignment to nut shapes acc. dimensional charts) — for nut only

I = single-thread ball return type …I
R = tube ball return type …R
E = end cap ball return type …E
F = end cap ball return type …F

Right-hand / left-hand thread — for nut only
RH = right-hand thread (standard)
LH = left-hand thread (availability see dimensional charts)

Number of ball circulations (i) — for nut only
1 = 1 ball circulation
2 = 2 ball circulations
3 = 3 ball circulations
4 = 4 ball circulations

Wipers (SA) — for nut only
S = with wipers (technopolymer or brush)
N = without wipers

Ballscrew overall length [mm] — for screw only

Lead accuracy (class) — for screw only
G9 = ≤0.1 mm/300 mm (standard)
G7 = ≤0.052 mm/300 mm (on request)
G5 = ≤0.023 mm/300 mm (on request)

Backlash (T_{max}) — for screw only
A = standard backlash (see dimensional charts)
R = reduced backlash upon specification

Screw end machining — for screw only
O = no end machining (cut by grinding, hardened ends)
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 16×5 RH 350 G7 O G

Example for nut only — KGT 16×5 FGR RH 1 S A G

Dimension map – Carry standard range

d_0 × p [mm]	Nominal diameter d_0 [mm]: 4	5	6	8	10	12	12.7	14	15	16	20	25	32	40
Pitch p [mm]: 1	■		■	■										
1.5				■										
2		■	■	■	■	■		■		■	■			
2.5				■										
3		■		■	■	■								
4					■	■		■						
5				■		■				■	■	■	■	■
6			■											
8				■										
10					■	■				■	■	■	■	
12				■		■								
12.7							■							
15													■	
16										■				
20									■		■			■
25												■		
25.4							■							
30												■		
32													■	
40														■
50										■				
Register	ø4/5/6			ø8	ø10	ø12	ø12.7	ø14	ø15/16		ø20	ø25	ø32	ø40
Pages	18/19			20/21	22/23	24/25	26/27	28/29	30/31		32/33	34/35	36/37	38/39

Carry

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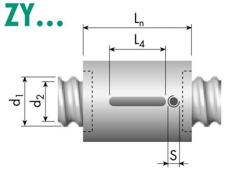
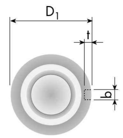
ø4/5/6

Cylindrical nut

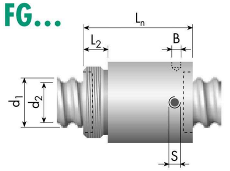
ZY...

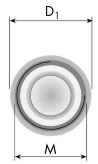




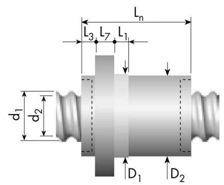
Nut with mounting thread

FG...

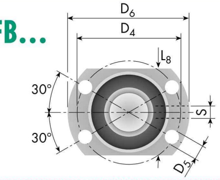




Flange nut



FB...



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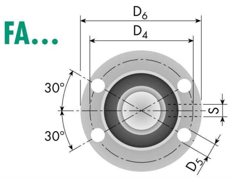

Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Dimensions [mm] Screw d_1	d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	Load rates [N] C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
Cylindrical nut																													
4×1	...I	€€€	RH / —	4.0	3.2	8 g6	—	—	—	—	—	10	—	—	—	—	—	—	3×1	0.80	—	ø2 +0.1/0	1.0	—	—	0.03	430	580	4×1
5×2	...I	€€€	RH / —	5.0	4.0	10 g6	—	—	—	—	—	14	—	—	—	8	—	—	3×1	0.80	—	2	1.0	—	—	0.03	500	800	5×2
6×1	...I	€€€	RH / —	6.0	5.0	12 g6	—	—	—	—	—	14	—	—	—	8	—	—	3×1	0.80	—	2	1.2	—	—	0.03	600	1000	6×1
Nut with mounting thread																													
5×2	...I	€€	RH / —	5.0	4.0	10 0/–0.1	—	—	—	—	M8×0.75	18	—	6	—	—	—	—	3×1	0.80	2.5	—	—	—	—	0.03	500	800	5×2
5×3	...I	€€	RH / —	5.0	4.2	10 0/–0.1	—	—	—	—	M8×0.75	19	—	6	—	—	—	—	2×1	0.80	2.5	—	—	—	—	0.03	340	490	5×3
5×3	...I	€€	RH / —	5.0	4.2	10 0/–0.1	—	—	—	—	M8×0.75	23	—	6	—	—	—	—	3×1	0.80	2.5	—	—	—	—	0.03	480	770	5×3
6×2	...R	€€	RH / LH	5.7	4.6	16 0/–0.1	—	—	—	—	M12×1	22	—	8	—	—	—	—	1×3.5	1.59	2.5	—	—	—	—	0.06	1700	2300	6×2
6×2	...F	€	RH / —	5.7	4.6	19 0/–0.1	—	—	—	—	M16×1	19	—	8	—	—	—	—	1×3.7	1.59	2.5	—	—	ø 2	K	0.05	1900	2800	6×2
6×6	...F	€	RH / —	5.9	4.6	19 0/–0.1	—	—	—	—	M16×1	19	—	8	—	—	—	—	2×1.6	1.50	2.5	—	—	ø 2	K	0.05	1700	2600	6×6
Flange nut																													
4×1	...I	€€€	RH / —	4.0	3.2	8 g6	7.9	12	2.7	17	—	14	2	—	—	—	3	11	3×1	0.80	—	—	—	—	—	0.03	430	580	4×1
6×1	...I	€€€	RH / —	6.0	5.0	12 g6	11.8	18	3.4	24	—	18	4	—	—	—	4	16	3×1	0.80	—	—	—	ø 2	K	0.03	600	1000	6×1
6×2	...F	€€	RH / —	5.7	4.6	18 –0.01/–0.05	17.5	26	3.4	34	—	19	4	—	4	—	4	—	1×3.7	1.59	—	—	—	ø 2	K	0.05	1900	2800	6×2
6×6	...F	€€	RH / —	5.9	4.6	18 –0.01/–0.05	17.5	26	3.4	34	—	19	4	—	4	—	4	—	2×1.6	1.50	—	—	—	ø 2	K	0.05	1700	2600	6×6

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Ball return systems (details > page 9)

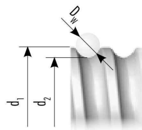
Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
3) = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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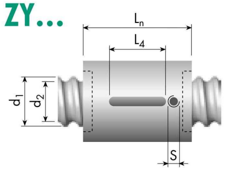
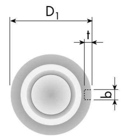
ø 8

Cylindrical nut

ZY…

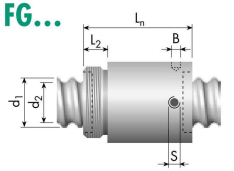


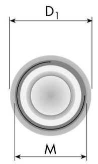


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
8×1	…I	€€€	RH/—	8.0	7.0	14 g6	—	—	—	—	—	14	—	—	—	8	—	—	3×1	0.80	—	2	1.2	—	—	0.03	700	1200	8×1
8×1.5	…I	€€€	RH/—	8.0	6.7	14 g6	—	—	—	—	—	14	—	—	—	8	—	—	3×1	1.20	—	2	1.2	—	—	0.04	800	1300	8×1.5
8×2	…I	€€€	RH/—	8.0	6.5	16 g6	—	—	—	—	—	20	—	—	—	8	—	—	3×1	1.59	—	2	1.2	—	—	0.05	1400	2000	8×2
8×2	…R	€€€	RH/—	8.0	6.5	18 g6	—	—	—	—	—	14	—	—	—	8	—	—	1×3.5	1.59	—	2	1.2	—	—	0.06	2000	3200	8×2
8×2.5	…I	€€€	RH/—	8.0	6.6	16 g6	—	—	—	—	—	22	—	—	—	10	—	—	3×1	1.59	—	3	2.0	—	—	0.05	1400	2100	8×2.5
8×2.5	…I	€€€	RH/—	8.0	6.6	16 g6	—	—	—	—	—	22	—	—	—	10	—	—	3×1	1.59	—	3	2.0	ø 2	K	0.05	1400	2100	8×2.5
8×2.5	…R	€€€	RH/—	8.0	6.6	18 g6	—	—	—	—	—	16	—	—	—	10	—	—	1×3.5	1.59	—	3	2.0	—	—	0.06	2000	3200	8×2.5
8×3	…I	€€€	RH/—	8.0	6.7	14 g6	—	—	—	—	—	12	—	—	—	8	—	—	2×1	1.50	—	2	1.2	—	—	0.05	950	1500	8×3
8×3 3)	…I	€€€	RH/—	8.0	6.7	14 g6	—	—	—	—	—	17	—	—	—	8	—	—	3×1	1.50	—	2	1.2	—	—	0.05	1400	2100	8×3 3)
8×5	…R	€€€	RH/—	8.0	6.7	18 g6	—	—	—	—	—	19	—	—	—	10	—	—	2×2.5	1.50	—	3	2.0	—	—	0.06	1960	3470	8×5
8×12	…E	€€€	RH/—	8.0	6.7	18 g6	—	—	—	—	—	28	—	—	—	8	—	—	2×1.5	1.50	—	2	1.2	ø 2	K	0.05	1400	2300	8×12

Nut with mounting thread

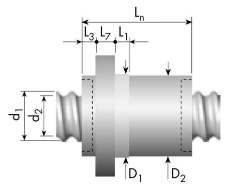
FG…





Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
8×1	…I	€€	RH/—	8.0	7.0	16 0/−0.1	—	—	—	—	M14×1	22	—	8	—	—	—	—	3×1	0.80	2.5	—	—	—	—	0.03	700	1200	8×1
8×1.5	…I	€€	RH/—	8.0	6.7	16 0/−0.1	—	—	—	—	M14×1	22	—	8	—	—	—	—	3×1	1.20	2.5	—	—	—	—	0.04	800	1300	8×1.5
8×2	…I	€€	RH/—	8.0	6.5	16 0/−0.1	—	—	—	—	M14×1	28	—	8	—	—	—	—	3×1	1.59	2.5	—	—	—	—	0.05	1400	2000	8×2
8×2	…R	€€	RH/—	8.0	6.5	18 0/−0.1	—	—	—	—	M14×1	24	—	8	—	—	—	—	1×3.5	1.59	2.5	—	—	—	—	0.06	2000	3200	8×2
8×2	…R	€€	RH/—	8.0	6.5	18 0/−0.1	—	—	—	—	M14×1	24	—	8	—	—	—	—	1×3.5	1.59	2.5	—	—	ø 2	K	0.06	2000	3200	8×2
8×2.5	…I	€€	RH/—	8.0	6.6	16 0/−0.1	—	—	—	—	M14×1	24	—	8	—	—	—	—	3×1	1.59	2.5	—	—	—	—	0.05	1400	2100	8×2.5
8×2.5	…R	€€	RH/—	8.0	6.6	17.5 0/−0.1	—	—	—	—	M15×1	24	—	8	—	—	—	—	1×3.5	1.59	2.5	—	—	—	—	0.06	2000	3200	8×2.5
8×2.5	…R	€€	RH/—	8.0	6.6	17.5 0/−0.1	—	—	—	—	M15×1	26	—	8	—	—	—	—	1×3.5	1.59	2.5	—	—	ø 2	K	0.06	2000	3200	8×2.5
8×3	…I	€€	RH/—	8.0	6.7	16 0/−0.1	—	—	—	—	M14×1	25	—	8	—	—	—	—	3×1	1.50	2.5	—	—	—	—	0.05	1400	2100	8×3
8×3	…F	€	RH/—	8.0	6.7	23 0/−0.1	—	—	—	—	M20×1	23	—	10	—	—	—	—	1×3.7	1.50	2.5	—	—	ø 2	K	0.05	1900	3300	8×3
8×5	…R	€€	RH/—	8.0	6.7	18 0/−0.1	—	—	—	—	M14×1	25	—	8	—	—	—	—	2×1.5	1.50	2.5	—	—	—	—	0.06	1960	3470	8×5
8×8	…R	€€	RH/—	8.0	6.6	18 0/−0.1	—	—	—	—	M14×1	25	—	8	—	—	—	—	2×1.5	1.50	2.5	—	—	—	—	0.06	1500	2500	8×8
8×8	…F	€	RH/—	8.0	6.6	23 0/−0.1	—	—	—	—	M20×1	23	—	10	—	—	—	—	2×1.7	1.50	2.5	—	—	ø 2	K	0.05	2000	3700	8×8

Flange nut



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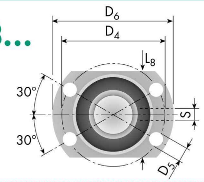

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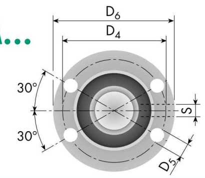

Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
8×1	…I	€€€	RH/—	8.0	7.0	14 g6	13.5	21	3.4	27	—	18	4	—	—	—	4	18	3×1	0.80	—	—	—	ø 2	K	0.03	700	1200	8×1
8×2	…I	€€€	RH/—	8.0	6.5	16 g6	15.5	22	3.4	28	—	30	4	—	—	—	6	19	3×1	1.59	—	—	—	ø 4	K	0.05	1400	2000	8×2
8×2	…R	€€€	RH/—	8.0	6.5	18 g6	17.5	22	3.4	28	—	25	4	—	—	—	6	19	1×3.5	1.59	—	—	—	ø 4	K	0.06	2000	3200	8×2
8×8 3)	…R	€€€	RH/—	8.0	6.6	18 g6	17.5	22	3.4	28	—	30	4	—	—	—	6	19	2×1.5	1.50	—	—	—	—	—	0.06	1500	2500	8×8 3)
8×12	…E	€€	RH/—	8.0	6.7	18 g6	17.8	25	3.4	30	—	28	4	—	6	—	4	20	2×1.5	1.50	—	—	—	ø 2	K	0.05	1400	2300	8×12
8×3	…F	€€	RH/—	8.0	6.7	20 −0.01/−0.05	19.5	28	3.4	36	—	23	4	—	5	—	4	—	1×3.7	1.50	—	—	—	ø 2	K	0.05	1900	3300	8×3
8×8	…F	€€	RH/—	8.0	6.6	20 −0.01/−0.05	19.5	28	3.4	36	—	23	4	—	5	—	4	—	2×1.7	1.50	—	—	—	ø 2	K	0.05	2000	3700	8×8

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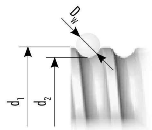
Ball return systems (details › page 9)

Single-thread ball return
Type …I

Tube ball return
Type …R

End cap ball return
Type …E / …F

Legend



- d_0 = nominal screw diameter [mm]
- d_1 = outer 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 * [mm]
- S = lubrication hole * [mm]
- SA = wipers (details › page 9)
  - K = technopolymer wipers
  - B = brush wipers
  - F = felt rings (on request)
- T_{max} = max. standard backlash [mm]
- 3) = only on request
- * position not defined

Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation › page 12

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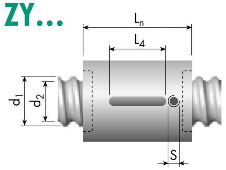
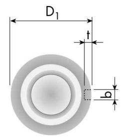
Cylindrical nut

ZY...

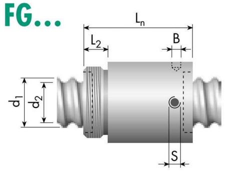


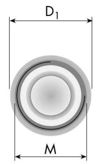


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
10×2	...I	€€€	RH / LH	9.7	8.2	18 g6	—	—	—	—	—	14	—	—	—	10	—	—	2×1	1.59	—	3	1.2	—	—	0.06	1 250	2 100	10×2
10×2 [3)]	...I	€€€	RH / LH	9.7	8.2	18 g6	—	—	—	—	—	20	—	—	—	10	—	—	3×1	1.59	—	3	1.2	—	—	0.06	1 750	3 200	10×2 [3)]
10×3	...R	€€€	RH / LH	9.9	7.8	22 g6	—	—	—	—	—	24	—	—	—	10	—	—	1×3.5	2.00	—	3	2.0	—	—	0.06	2 800	5 000	10×3
10×3	...R	€€€	RH / LH	9.9	7.8	22 g6	—	—	—	—	—	24	—	—	—	10	—	—	1×3.5	2.00	—	3	2.0	ø 3.5	K	0.06	2 800	5 000	10×3
10×4	...I	€€€	RH / —	10.0	7.5	18 g6	—	—	—	—	—	35	—	—	—	10	—	—	4×1	2.50	—	3	1.2	—	—	0.07	4 100	6 700	10×4
10×4	...I	€€€	RH / —	10.0	7.5	18 g6	—	—	—	—	—	35	—	—	—	10	—	—	4×1	2.50	—	3	1.2	ø 2	K	0.07	4 100	6 700	10×4
10×10	...R	€€€	RH / —	9.8	7.9	23 g6	—	—	—	—	—	26	—	—	—	10	—	—	2×1.5	2.00	—	3	2.0	—	—	0.06	2 500	4 500	10×10

Nut with mounting thread

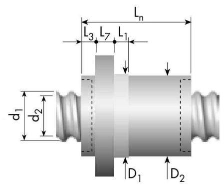
FG...



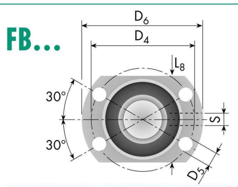


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
10×2	...I	€€	RH / LH	9.7	8.2	18 0/−0.1	—	—	—	—	M16×1	22	—	8	—	—	—	—	2×1	1.59	2.5	—	—	—	—	0.06	1 250	2 100	10×2
10×2 [3)]	...I	€€	RH / LH	9.7	8.2	18 0/−0.1	—	—	—	—	M16×1	28	—	8	—	—	—	—	3×1	1.59	2.5	—	—	—	—	0.06	1 750	3 200	10×2 [3)]
10×2	...R	€€	RH / LH	9.7	8.2	19.5 0/−0.1	—	—	—	—	M17×1	22	—	7	—	—	—	—	1×3.5	1.59	2.5	—	—	—	—	0.06	2 300	4 000	10×2
10×2	...R	€€	RH / —	9.7	8.2	19.5 0/−0.1	—	—	—	—	M17×1	22	—	7	—	—	—	—	1×3.5	1.59	2.5	—	—	ø 2	K	0.06	2 300	4 000	10×2
10×3	...I	€€	RH / —	9.9	7.8	20 0/−0.1	—	—	—	—	M18×1	29	—	8	—	—	—	—	3×1	2.00	2.5	—	—	—	—	0.06	2 400	4 200	10×3
10×3	...I	€€	RH / —	9.9	7.8	20 0/−0.1	—	—	—	—	M18×1	29	—	8	—	—	—	—	3×1	2.00	2.5	—	—	ø 2	K	0.06	2 400	4 200	10×3
10×3	...R	€€	RH / LH	9.9	7.8	21 0/−0.1	—	—	—	—	M18×1	29	—	9	—	—	—	—	1×3.5	2.00	3.0	—	—	—	—	0.06	2 800	5 000	10×3
10×3	...R	€€	RH / LH	9.9	7.8	21 0/−0.1	—	—	—	—	M18×1	29	—	9	—	—	—	—	1×3.5	2.00	3.0	—	—	ø 2	K	0.06	2 800	5 000	10×3
10×3	...F	€	RH / —	9.9	7.8	27 0/−0.1	—	—	—	—	M24×1.5	27	—	10	—	—	—	—	1×3.7	2.00	3.0	—	—	ø 2	K	0.06	3 500	6 300	10×3
10×4	...I	€€	RH / —	10.0	7.5	20 0/−0.1	—	—	—	—	M18×1	40	—	8	—	—	—	—	4×1	2.50	2.5	—	—	—	—	0.07	4 100	6 700	10×4
10×4	...I	€€	RH / —	10.0	7.5	20 0/−0.1	—	—	—	—	M18×1	40	—	8	—	—	—	—	4×1	2.50	2.5	—	—	ø 2	K	0.07	4 100	6 700	10×4
10×10	...R	€€	RH / —	9.8	7.9	23 0/−0.1	—	—	—	—	M18×1	35	—	9	—	—	—	—	2×1.5	2.00	3.0	—	—	—	—	0.06	2 500	4 500	10×10
10×10	...R	€€	RH / —	9.8	7.9	23 0/−0.1	—	—	—	—	M18×1	35	—	9	—	—	—	—	2×1.5	2.00	3.0	—	—	ø 4	K	0.06	2 500	4 500	10×10
10×10	...F	€	RH / —	9.9	7.9	27 0/−0.1	—	—	—	—	M24×1.5	27	—	10	—	—	—	—	2×1.7	2.00	3.0	—	—	ø 2	K	0.06	3 200	5 900	10×10

Flange nut

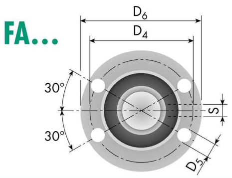


FB...



Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
10×4	...I	€€€	RH / —	10.0	7.5	18 g6	17.8	28	4.5	36	—	38	6	—	—	—	6	23	4×1	2.50	—	—	—	—	—	0.07	4 100	6 700	10×4
10×4	...I	€€€	RH / —	10.0	7.5	18 g6	17.8	28	4.5	36	—	38	6	—	—	—	6	23	4×1	2.50	—	—	—	ø 2	K	0.07	4 100	6 700	10×4
10×10	...R	€€€	RH / —	9.8	7.9	23 g6	22.5	29	4.5	37	—	40	6	—	—	—	8	24	2×1.5	2.00	—	—	—	M5	K	0.06	2 500	4 500	10×10

FA...



Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
10×3	...F	€€	RH / —	9.9	7.8	24 −0.01/−0.06	23.5	32	4.5	40	—	27	5	—	4	—	7	—	1×3.7	2.00	—	—	—	ø 3	K	0.06	3 500	6 300	10×3
10×10	...F	€€	RH / —	9.8	7.9	24 −0.01/−0.06	23.5	32	4.5	40	—	27	5	—	4	—	7	—	2×1.7	2.00	—	—	—	ø 4	K	0.06	3 200	5 900	10×10

> CAD data > www.gewinde.ch

Ball return systems (details > page 9)

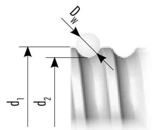
Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
3) = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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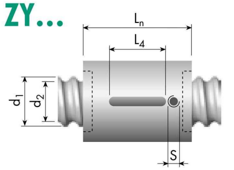
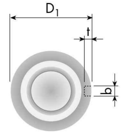
ø 12

Cylindrical nut

ZY…

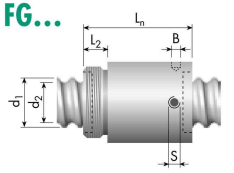


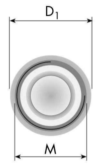


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
12×2	…I	€€€	RH / —	12.0	10.6	20 g6	—	—	—	—	—	15	—	—	—	10	—	—	2×1	1.59	—	3	1.2	—	—	0.06	1 380	2 500	12×2
12×2 [3)]	…I	€€€	RH / LH	12.0	10.6	20 g6	—	—	—	—	—	20	—	—	—	10	—	—	3×1	1.59	—	3	1.2	—	—	0.06	2 000	4 000	12×2 [3)]
12×4	…R	€€€	RH / —	12.0	9.8	26 g6	—	—	—	—	—	24	—	—	—	10	—	—	1×3.5	2.50	—	3	1.8	—	—	0.07	5 500	11 000	12×4
12×4	…R	€€€	RH / —	12.0	9.8	26 g6	—	—	—	—	—	32	—	—	—	10	—	—	1×3.5	2.50	—	3	1.8	ø 4	K	0.07	5 500	11 000	12×4

Nut with mounting thread

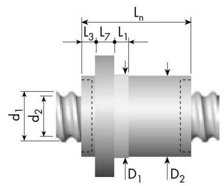
FG…





Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
12×2	…I	€€	RH / —	12.0	10.6	20 0/−0.1	—	—	—	—	M18×1	23	—	8	—	—	—	—	2×1	1.59	2.5	—	—	—	—	0.06	1 380	2 500	12×2
12×2 [3)]	…I	€€	RH / LH	12.0	10.6	20 0/−0.1	—	—	—	—	M18×1	28	—	8	—	—	—	—	3×1	1.59	2.5	—	—	—	—	0.06	2 000	4 000	12×2 [3)]
12×4	…I	€€	RH / —	12.0	9.8	24 0/−0.1	—	—	—	—	M20×1	39	—	10	—	—	—	—	3×1	2.50	2.5	—	—	—	—	0.07	4 000	6 800	12×4
12×4	…I	€€	RH / —	12.0	9.8	24 0/−0.1	—	—	—	—	M20×1	39	—	10	—	—	—	—	3×1	2.50	2.5	—	—	ø 4	K	0.07	4 000	6 800	12×4
12×4	…R	€€	RH / —	12.0	9.8	26 0/−0.1	—	—	—	—	M20×1	32	—	8	—	—	—	—	1×3.5	2.50	2.5	—	—	—	—	0.07	5 500	11 000	12×4
12×4	…R	€€	RH / —	12.0	9.8	26 0/−0.1	—	—	—	—	M20×1	34	—	10	—	—	—	—	1×3.5	2.50	2.5	—	—	ø 4	K	0.07	5 500	11 000	12×4
12×5	…I	€€	RH / —	12.0	9.5	23 0/−0.1	—	—	—	—	M20×1	42	—	10	—	—	—	—	3×1	2.78	3.0	—	—	—	—	0.07	5 000	8 600	12×5
12×5	…I	€€	RH / —	12.0	9.5	23 0/−0.1	—	—	—	—	M20×1	42	—	10	—	—	—	—	3×1	2.78	3.0	—	—	ø 4	K	0.07	5 000	8 600	12×5
12×5	…R	€€	RH / LH	12.0	9.5	26 0/−0.1	—	—	—	—	M20×1	37	—	8	—	—	—	—	1×3.5	2.78	3.0	—	—	—	—	0.07	6 600	12 000	12×5
12×5	…R	€€	RH / —	12.0	9.5	26 0/−0.1	—	—	—	—	M20×1	37	—	8	—	—	—	—	1×3.5	2.78	3.0	—	—	ø 4	K	0.07	6 600	12 000	12×5
12×5	…F	€	RH / —	12.0	9.5	32 0/−0.1	—	—	—	—	M28×1.5	30	—	12	—	—	—	—	1×3.7	2.78	3.5	—	—	ø 4	K	0.06	5 900	10 600	12×5
12×10	…R	€€	RH / —	11.9	9.7	26 0/−0.1	—	—	—	—	M20×1	37	—	8	—	—	—	—	2×1.5	2.50	3.0	—	—	—	—	0.07	4 400	7 700	12×10
12×10	…F	€	RH / —	11.9	9.7	32 0/−0.1	—	—	—	—	M28×1.5	38	—	12	—	—	—	—	2×2.4	2.50	3.5	—	—	ø 4	K	0.06	6 400	12 600	12×10
12×12	…F	€	RH / —	12.0	9.7	32 0/−0.1	—	—	—	—	M28×1.5	30	—	12	—	—	—	—	2×1.6	2.50	3.5	—	—	ø 4	K	0.06	4 600	8 500	12×12

Flange nut



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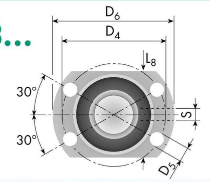

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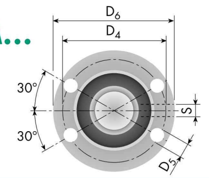


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
12×2	…R	€€€	RH / —	12.0	10.6	22 g6	21.5	29	4.5	37	—	30	5	—	—	—	8	24	1×3.5	1.59	—	—	—	ø 4	K	0.06	2 500	5 100	12×2
12×3	…R	€€€	RH / —	12.3	10.2	24 g6	23.5	32	4.5	40	—	36	5	—	—	—	8	26	2×2.5	2.00	—	—	—	—	—	0.06	5 000	11 000	12×3
12×4	…R	€€€	RH / —	12.0	9.8	26 g6	25.5	32	4.5	39.5	—	36	5	—	—	—	8	28	1×3.5	2.50	—	—	—	M5	K	0.07	5 500	11 000	12×4
12×5	…I	€€€	RH / —	12.0	9.5	24 g6	23.5	32	4.5	40	—	40	6	—	—	—	8	26	3×1	2.78	—	—	—	ø 4	K	0.07	5 000	8 600	12×5
12×5	…R	€€€	RH / —	12.0	9.5	26 g6	25.5	32	4.5	39.5	—	40	5	—	—	—	7	28	1×3.5	2.78	—	—	—	M5	K	0.07	6 600	12 000	12×5
12×5	…F	€€	RH / —	12.0	9.5	26 −0.01/−0.06	25.5	34	4.5	42	—	30	6	—	6	—	8	—	1×3.7	2.78	—	—	—	ø 4	K	0.06	5 900	10 600	12×5
12×10	…F	€€	RH / —	11.9	9.7	26 −0.01/−0.06	25.5	34	4.5	42	—	38	6	—	6	—	8	—	2×2.4	2.50	—	—	—	ø 4	K	0.06	6 400	12 600	12×10
12×12	…F	€€	RH / —	12.0	9.7	26 −0.01/−0.06	25.5	34	4.5	42	—	30	6	—	6	—	8	—	2×1.6	2.50	—	—	—	ø 4	K	0.06	4 600	8 500	12×12

> CAD data > www.gewinde.ch

Ball return systems (details > page 9)

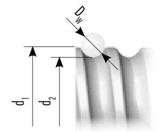
Single-thread ball return
Type …I

Tube ball return
Type …R

End cap ball return
Type …E / …F

Legend

- d_0 = nominal screw diameter [mm]
- d_1 = outer 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 * [mm]
- S = lubrication hole * [mm]
- SA = wipers (details > page 9)
  - K = technopolymer wipers
  - B = brush wipers
  - F = felt rings (on request)
- T_{max} = max. standard backlash [mm]
- 3) = only on request
- * position not defined

Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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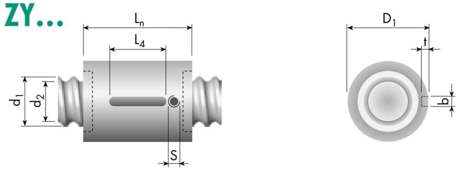
ø 12.7 (½″)

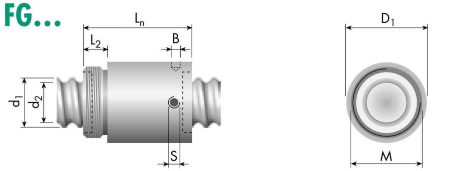
Cylindrical nut

ZY…

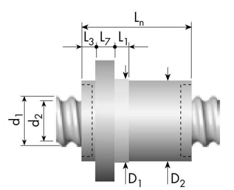


Nut with mounting thread

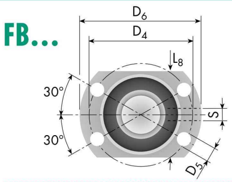
FG…



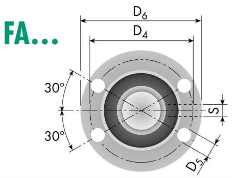
Flange nut



FB…



FA…



Nominal size $d_0 \times p$ [mm] (in)	Ball return Type		Relative cost	Right-/left-hand thread	Dimensions [mm] Screw d_1	d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	Load rates [N] C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
Cylindrical nut																														
12.7 × 25.4 (½″ × 1″)	…E	▭	€€€	RH / —	12.5	10.6	26 g6	—	—	—	—	—	32	—	—	—	10	—	—	3 × 0.9	2.00	—	3	1.8	ø 4	K	0.05	2 300	4 500	**12.7 × 25.4**
Nut with mounting thread																														
12.7 × 12.7 (½″ × ½″)	…R	⊘	€€	RH / —	13.1	10.3	29.5 0/−0.1	—	—	—	—	M25 × 1.5	50	—	12	—	—	—	—	2 × 1.5	3.50	3.0	—	—	—	—	0.07	8 000	15 500	**12.7 × 12.7**
12.7 × 12.7 (½″ × ½″)	…R	⊘	€€	RH / —	13.1	10.3	29.5 0/−0.1	—	—	—	—	M25 × 1.5	50	—	12	—	—	—	—	2 × 1.5	3.50	3.0	—	—	M5	B	0.07	8 000	15 500	**12.7 × 12.7**
Flange nut																														
12.7 × 25.4 (½″ × 1″)	…E	▭	€€	RH / —	12.5	10.6	26 g6	25.5	33	4.5	42	—	32	5	—	7	—	8	28	3 × 0.9	2.00	—	—	—	ø 4	K	0.05	2 300	4 500	**12.7 × 25.4**

› CAD data › www.gewinde.ch

Ball return systems (details › page 9)

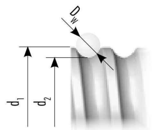
Single-thread ball return
Type **…I**

Tube ball return
Type **…R**

End cap ball return
Type **…E / …F**

Legend

- d_0 = nominal screw diameter [mm]
- d_1 = outer 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 * [mm]
- S = lubrication hole * [mm]
- SA = wipers (details › page 9)
  - K = technopolymer wipers
  - B = brush wipers
  - F = felt rings (on request)
- T_{max} = max. standard backlash [mm]
- 3) = only on request
- * position not defined

Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation › page 12

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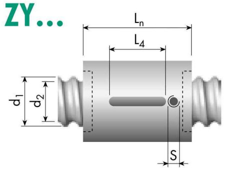
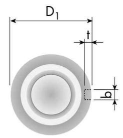
ø 14

Cylindrical nut

ZY...

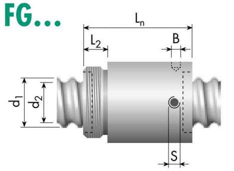


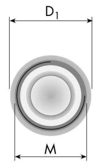


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	Load rates [N] C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
14×4	...I	€€€	RH / —	14.0	11.5	25 g6	—	—	—	—	—	24	—	—	—	10	—	—	3×1	2.78	—	4	2.5	—	—	0.07	5000	8800	14×4
14×4	...I	€€€	RH / —	14.0	11.5	25 g6	—	—	—	—	—	32	—	—	—	10	—	—	3×1	2.78	—	4	2.5	ø 4	K	0.07	5000	8800	14×4
14×4	...R	€€€	RH / LH	14.0	11.5	29 g6	—	—	—	—	—	24	—	—	—	16	—	—	1×3.5	2.78	—	4	2.5	—	—	0.07	8100	16000	14×4
14×4	...R	€€€	RH / LH	14.0	11.5	29 g6	—	—	—	—	—	32	—	—	—	16	—	—	1×3.5	2.78	—	4	2.5	ø 4	K	0.07	8100	16000	14×4

Nut with mounting thread

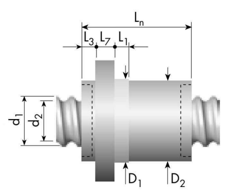
FG...



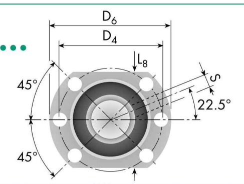


Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	Load rates [N] C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
14×2	...R	€€	RH / —	14.0	12.5	26 0/−0.1	—	—	—	—	M22×1.5	32	—	10	—	—	—	—	2×2.5	1.59	3.0	—	—	—	—	0.06	4500	10000	14×2
14×2	...R	€€	RH / —	14.0	12.5	26 0/−0.1	—	—	—	—	M22×1.5	32	—	10	—	—	—	—	2×2.5	1.59	3.0	—	—	ø 2	K	0.06	4500	10000	14×2
14×4	...I	€€	RH / —	14.0	11.5	25 0/−0.1	—	—	—	—	M22×1.5	34	—	10	—	—	—	—	3×1	2.78	2.5	—	—	—	—	0.07	5000	8800	14×4
14×4	...I	€€	RH / —	14.0	11.5	25 0/−0.1	—	—	—	—	M22×1.5	38	—	10	—	—	—	—	3×1	2.78	2.5	—	—	ø 4	K	0.07	5000	8800	14×4
14×4	...R	€€	RH / LH	14.0	11.5	29 0/−0.1	—	—	—	—	M22×1.5	32	—	8	—	—	—	—	1×3.5	2.78	3.0	—	—	—	—	0.07	8100	16000	14×4
14×4	...R	€€	RH / LH	14.0	11.5	29 0/−0.1	—	—	—	—	M22×1.5	38	—	10	—	—	—	—	1×3.5	2.78	3.0	—	—	ø 4	K	0.07	8100	16000	14×4

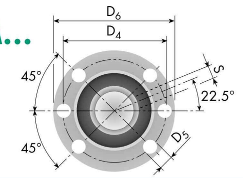
Flange nut



FB...



FA...



Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	Load rates [N] C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
14×2	...R	€€€	RH / —	14.0	12.5	26 g6	25.5	32	4.5	39.5	—	32	5	—	—	—	7	28	2×2.5	1.59	—	—	—	ø 4	K	0.06	4500	10000	14×2
14×4	...R	€€€	RH / LH	14.0	11.5	29 g6	28.6	38	5.5	48	—	40	6	—	—	—	8	36	1×3.5	2.78	—	—	—	M5	K	0.07	8100	16000	14×4

> CAD data > www.gewinde.ch

Ball return systems (details > page 9)

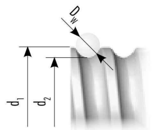
Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
3) = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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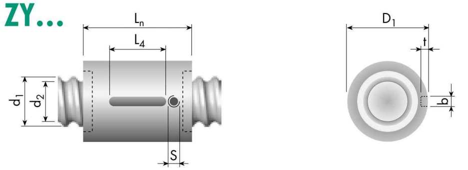
ø15/16

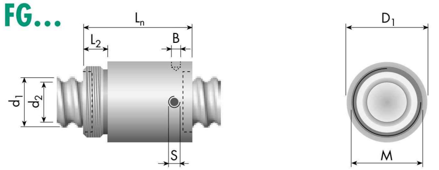
Cylindrical nut

ZY...



Nut with mounting thread

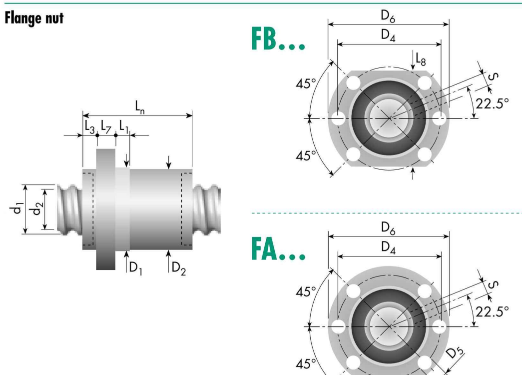
FG...



Flange nut

FB...

FA...



Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_w	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
Cylindrical nut – ZY...																													
16×5	...I	€€€	RH/LH	15.7	13.0	30 g6	—	—	—	—	—	43	—	—	—	16	—	—	3×1	3.50	—	4	2.5	M5	K	0.07	9700	22000	16×5
16×10	...R	€€€	RH/—	15.7	13.0	32 g6	—	—	—	—	—	45	—	—	—	16	—	—	2×2.5	3.50	—	4	2.5	—	—	0.07	17000	25000	16×10
16×10	...R	€€€	RH/—	15.7	13.0	32 g6	—	—	—	—	—	45	—	—	—	16	—	—	2×2.5	3.50	—	4	2.5	ø4	K	0.07	17000	25000	16×10
16×10	...E	€€€	RH/—	16.0	13.4	28 g6	—	—	—	—	—	42	—	—	—	16	—	—	2×2.9	3.00	—	4	2.5	ø4	K	0.07	12500	26000	16×10
16×16	...E	€€€	RH/—	15.5	13.2	28 g6	—	—	—	—	—	42	—	—	—	16	—	—	2×1.9	3.00	—	4	2.5	ø3	K	0.07	7800	15500	16×16
16×50	...E	€€€	RH/—	16.0	13.2	28 g6	—	—	—	—	—	55	—	—	—	16	—	—	3×0.9	3.00	—	4	2.5	ø4	K	0.06	4800	11000	16×50
Nut with mounting thread – FG...																													
15×20	...F	€	RH/—	14.9	12.0	36 0/−0.1	—	—	—	—	M33×1.5	46	—	19	—	—	—	—	2×1.7	3.00	4.0	—	—	ø4	K	0.07	7100	14700	15×20
16×2	...I	€€	—/LH	16.0	14.5	25 0/−0.1	—	—	—	—	M22×1.5	34	—	10	—	—	—	—	3×1	1.59	2.5	—	—	—	—	0.05	2400	5200	16×2
16×2	...R	€€	RH/—	16.0	14.5	30 0/−0.1	—	—	—	—	M26×1.5	28	—	12	—	—	—	—	1×2.5	1.59	3.5	—	—	—	—	0.06	2500	5500	16×2
16×2	...R	€€	RH/—	16.0	14.5	30 0/−0.1	—	—	—	—	M26×1.5	28	—	12	—	—	—	—	1×2.5	1.59	3.5	—	—	ø2	K	0.06	2500	5500	16×2
16×5	...I	€€	RH/—	15.7	13.0	30.2 0/−0.1	—	—	—	—	M26×1.5	45	—	12	—	—	—	—	3×1	3.50	3.5	—	—	—	—	0.07	9700	22000	16×5
16×5	...I	€€	RH/LH[3]	15.7	13.0	30.2 0/−0.1	—	—	—	—	M26×1.5	50	—	12	—	—	—	—	3×1	3.50	3.5	—	—	M5	K	0.07	9700	22000	16×5
16×5	...R	€€	RH/LH	15.7	13.0	32 0/−0.1	—	—	—	—	M26×1.5	42	—	12	—	—	—	—	1×3.5	3.50	4.0	—	—	—	—	0.07	12000	25000	16×5
16×5	...R	€€	RH/LH	15.7	13.0	32 0/−0.1	—	—	—	—	M26×1.5	47	—	12	—	—	—	—	1×3.5	3.50	4.0	—	—	M5	K	0.07	12000	25000	16×5
16×10	...R	€€	RH/—	15.7	13.0	32 0/−0.1	—	—	—	—	M26×1.5	47	—	12	—	—	—	—	1×2.5	3.50	4.0	—	—	—	—	0.07	8500	12500	16×10
16×10	...R	€€	RH/—	15.7	13.0	32 0/−0.1	—	—	—	—	M26×1.5	52	—	12	—	—	—	—	1×2.5	3.50	4.0	—	—	ø4	K	0.07	8500	12500	16×10
16×10	...R	€€	RH/—	15.7	13.0	32 0/−0.1	—	—	—	—	M26×1.5	47	—	12	—	—	—	—	2×2.5	3.50	4.0	—	—	—	—	0.07	17000	25000	16×10
16×10	...R	€€	RH/—	15.7	13.0	32 0/−0.1	—	—	—	—	M26×1.5	52	—	12	—	—	—	—	2×2.5	3.50	4.0	—	—	ø4	K	0.07	17000	25000	16×10
16×16	...R	€€	RH/—	15.9	13.2	32 0/−0.1	—	—	—	—	M26×1.5	47	—	12	—	—	—	—	3×1.5	3.00	4.0	—	—	—	—	0.07	9150	18750	16×16
16×16	...F	€	RH/—	15.5	13.2	36 0/−0.1	—	—	—	—	M33×1.5	41	—	19	—	—	—	—	2×1.6	3.00	4.0	—	—	ø4	K	0.07	6700	13700	16×16
Flange nut – FB...																													
16×2	...R	€€€	RH/—	16.0	14.5	30 g6	29.5	38	5.5	48	—	45	6	—	—	—	10	40	2×2.5	1.59	—	—	—	M6	K	0.06	4500	11000	16×2
16×2	...R	€€€	RH/—	16.0	14.5	30 g6	29.5	38	5.5	48	—	45	6	—	—	—	10	40	3×2.5	1.59	—	—	—	M6	K	0.06	6000	15000	16×2
16×5	...I	€€€	RH/LH	15.7	13.0	28 g6	27.8	38	5.5	48	—	45	6	—	—	—	10	40	3×1	3.50	—	—	—	M6	K	0.07	9700	22000	16×5
16×10	...R	€€€	RH/—	15.7	13.0	32 g6	31.5	43	6.6	54	—	52	6	—	—	—	12	44	2×2.5	3.50	—	—	—	M6	K	0.07	17000	25000	16×10
16×10	...E	€€	RH/—	16.0	13.4	28 g6	27.8	38	5.5	48	—	42	10	—	10	—	10	40	2×2.9	3.00	—	—	—	ø4	K	0.07	12500	26000	16×10
16×16	...E	€€	RH/—	15.5	13.2	28 g6	27.8	38	5.5	48	—	42	10	—	10	—	10	40	2×1.9	3.00	—	—	—	ø4	K	0.07	7800	15500	16×16
16×50	...E	€€	RH/—	16.0	13.2	28 g6	27.8	38	5.5	48	—	55	10	—	10	—	10	40	3×0.9	3.00	—	—	—	ø4	K	0.06	4800	11000	16×50
Flange nut – FA...																													
15×20	...F	€€	RH/—	14.9	12.0	32 −0.01/−0.07	31.5	42	5.5	52	—	46	10	—	10	—	10	—	2×1.7	3.00	—	—	—	ø4	K	0.07	7100	14700	15×20
16×16	...F	€€	RH/—	15.5	13.2	32 −0.01/−0.07	31.5	42	5.5	52	—	41	10	—	10	—	10	—	2×1.6	3.00	—	—	—	ø4	K	0.07	6700	13700	16×16

> CAD data > www.gewinde.ch

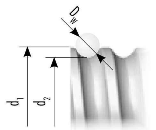
Ball return systems (details > page 9)

Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend



d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
[3] = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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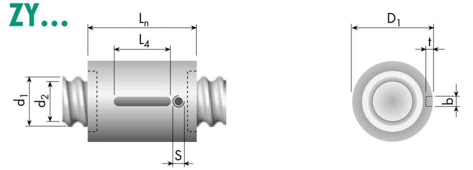
ø 20

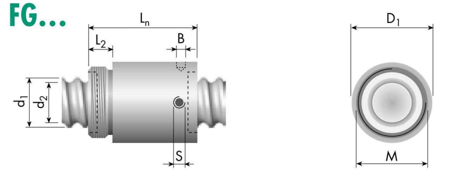
Cylindrical nut

ZY...



Nut with mounting thread

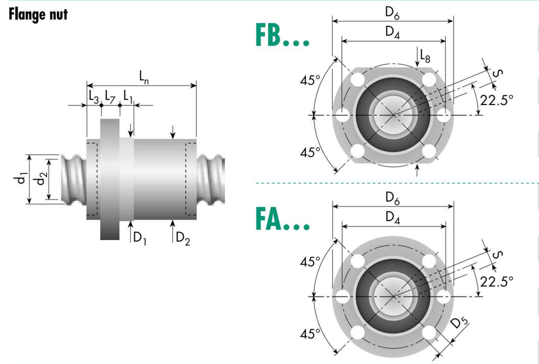
FG...



Flange nut

FB...

FA...



Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
Cylindrical nut – ZY...																													
20×5	...I	€€€	RH / LH	19.2	16.5	33 g6	—	—	—	—	—	45	—	—	—	20	—	—	3×1	3.50	—	4	2.5	M5	K	0.07	10 800	25 000	**20×5**
20×20	...E	€€€	RH / —	20.0	17.3	36 g6	—	—	—	—	—	50	—	—	—	20	—	—	4×1.9	3.00	—	4	2.5	ø 4	K	0.06	17 900	44 600	**20×20**
Nut with mounting thread – FG...																													
20×2	...R	€€	RH / LH	20.0	18.5	36 0/−0.1	—	—	—	—	M30×1.5	30	—	12	—	—	—	—	2×2.5	1.59	4.0	—	—	—	—	0.06	4 600	15 000	**20×2**
20×5	...I	€€	RH / LH	19.2	16.5	33 0/−0.1	—	—	—	—	M30×1.5	47	—	12	—	—	—	—	3×1	3.50	4.0	—	—	M5	K	0.07	10 800	25 000	**20×5**
20×5	...R	€€	RH / —	19.2	16.5	36 0/−0.1	—	—	—	—	M30×1.5	42	—	12	—	—	—	—	1×3.5	3.50	4.0	—	—	—	—	0.07	13 700	29 900	**20×5**
20×5	...R	€€	RH / —	19.2	16.5	36 0/−0.1	—	—	—	—	M30×1.5	47	—	12	—	—	—	—	1×3.5	3.50	4.0	—	—	ø 4	K	0.07	13 700	29 900	**20×5**
20×10	...R	€€	RH / —	19.5	16.5	38 0/−0.1	—	—	—	—	M35×1.5	58	—	19	—	—	—	—	2×2.5	3.50	4.0	—	—	—	—	0.07	21 000	51 000	**20×10**
20×10	...R	€€	RH / —	19.5	16.5	38 0/−0.1	—	—	—	—	M35×1.5	58	—	19	—	—	—	—	2×2.5	3.50	4.0	—	—	ø 4	B	0.07	21 000	51 000	**20×10**
20×20	...R	€€	RH / —	20.0	16.5	38 0/−0.1	—	—	—	—	M35×1.5	58	—	19	—	—	—	—	2×1.5	3.50	4.0	—	—	—	—	0.07	10 000	22 000	**20×20**
20×20	...R	€€	RH / —	20.0	16.5	38 0/−0.1	—	—	—	—	M35×1.5	64	—	19	—	—	—	—	2×1.5	3.50	4.0	—	—	ø 4	B	0.07	10 000	22 000	**20×20**
20×20	...R	€€	RH / —	20.0	17.3	38 0/−0.1	—	—	—	—	M35×1.5	58	—	19	—	—	—	—	4×1.5	3.00	4.0	—	—	—	—	0.07	14 600	35 000	**20×20**
Flange nut – FB... / FA...																													
20×5	...I	€€€	RH / LH	19.2	16.5	36 g6	35.5	47	6.6	58	—	50	10	—	—	—	10	44	3×1	3.50	—	—	—	M6	K	0.07	10 800	25 000	**20×5**
20×10	...R	€€€	RH / —	19.5	16.5	38 g6	37.5	50	6.6	62	—	55	7	—	—	—	10	48	2×2.5	3.50	—	—	—	M6	B	0.07	21 000	51 000	**20×10**
20×10 [3]	...R	€€€	RH / —	19.5	16.5	38 g6	37.5	50	6.6	62	—	65	7	—	—	—	10	48	2×3.5	3.50	—	—	—	M6	B	0.07	26 000	65 000	20×10 [3]
20×20	...R	€€€	RH / —	20.0	16.5	36 g6	35.5	47	6.6	58	—	58	7	—	—	—	10	44	2×1.5	3.50	—	—	—	M6	B	0.07	10 000	22 000	**20×20**
20×20	...E	€€	RH / —	20.0	17.3	36 g6	35.5	47	6.6	58	—	50	10	—	10	—	12	44	4×1.9	3.00	—	—	—	M6	K	0.06	17 900	44 600	**20×20**

› CAD data › www.gewinde.ch

Ball return systems (details › page 9)

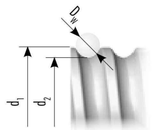
Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details › page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
[3] = only on request
* position not defined
Special designs available on request

When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation › page 12

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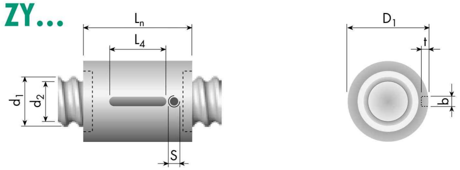
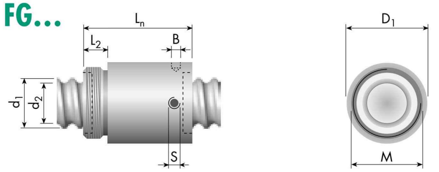
Cylindrical nut

ZY...



Nut with mounting thread

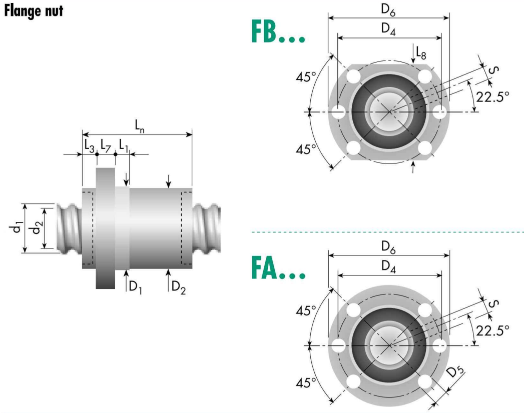
FG...



Flange nut

FB...

FA...



Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/ left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
Cylindrical nut – ZY...																													
25×5	...I	€€€	RH / —	24.6	21.5	38 g6	—	—	—	—	—	50	—	—	—	20	—	—	3×1	3.50	—	4	2.5	M5	K	0.07	11 700	30 000	25×5
25×25	...E	€€€	RH / —	24.5	21.2	40 g6	—	—	—	—	—	60	—	—	—	20	—	—	4×1.9	3.50	—	4	2.5	ø 4	K	0.06	23 300	68 000	25×25
Nut with mounting thread – FG...																													
25×5	...I	€€	RH / —	24.6	21.5	40 0/−0.1	—	—	—	—	M38×1.5	57	—	12	—	—	—	—	3×1	3.50	4.0	—	—	M5	K	0.07	11 700	30 000	25×5
25×5	...R	€€	RH / —	24.6	21.5	44 0/−0.1	—	—	—	—	M40×1.5	58	—	19	—	—	—	—	2×2.5	3.50	4.0	—	—	—	—	0.07	17 500	42 400	25×5
25×10	...R	€€	RH / —	24.8	21.8	43 0/−0.1	—	—	—	—	M40×1.5	58	—	19	—	—	—	—	2×2.5	3.50	4.0	—	—	—	—	0.07	21 000	54 000	25×10
25×10	...R	€€	RH / —	24.8	21.8	43 0/−0.1	—	—	—	—	M40×1.5	58	—	19	—	—	—	—	2×2.5	3.50	4.0	—	—	ø 4	B	0.07	21 000	54 000	25×10
25×10	...F	€	RH / —	24.9	22.3	49 0/−0.1	—	—	—	—	M45×1.5	52	—	19	—	—	—	—	2×2.7	3.00	4.0	—	—	ø 4	K	0.07	14 100	39 800	25×10
25×25	...R	€€	RH / —	24.5	21.2	44 0/−0.1	—	—	—	—	M40×1.5	72	—	20	—	—	—	—	2×1.5	3.50	4.0	—	—	ø 4	B	0.08	10 000	24 000	25×25
25×25	...R	€€	RH / —	24.5	21.2	44 0/−0.1	—	—	—	—	M40×1.5	72	—	20	—	—	—	—	4×1.5	3.50	4.0	—	—	ø 4	B	0.08	20 000	48 000	25×25
Flange nut – FB...																													
25×5	...I	€€€	RH / —	24.6	21.5	40 g6	39.5	51	6.6	62	—	50	10	—	—	—	10	48	3×1	3.50	—	—	—	M6	K	0.07	11 700	30 000	25×5
25×5	...I	€€€	RH / —	24.6	21.5	40 g6	39.5	51	6.6	62	—	55	10	—	—	—	10	48	4×1	3.50	—	—	—	M6	K	0.07	14 000	35 000	25×5
25×10	...R	€€€	RH / —	24.8	21.8	43 g6	42.5	55	6.6	65	—	55	7	—	—	—	10	50	2×2.5	3.50	—	—	—	M6	B	0.07	21 000	54 000	25×10
25×25	...R	€€€	RH / —	24.5	21.2	44 g6	43.5	56	6.6	70	—	67	10	—	—	—	12	52	2×1.5	3.50	—	—	—	M6	B	0.08	10 000	24 000	25×25
25×25	...R	€€€	RH / —	24.5	21.2	44 g6	43.5	56	6.6	70	—	67	10	—	—	—	12	52	4×1.5	3.50	—	—	—	M6	B	0.08	20 000	48 000	25×25
25×25	...E	€€	RH / —	24.5	21.2	40 g6	39.8	51	6.6	62	—	60	10	—	10	—	10	48	4×1.9	3.50	—	—	—	ø 4	K	0.06	23 300	68 000	25×25
25×30	...E	€€	RH / —	24.8	21.5	40 g6	39.8	51	6.6	62	—	70	10	—	10	—	10	48	4×1.9	3.50	—	—	—	ø 4	K	0.06	23 000	67 800	25×30
Flange nut – FA...																													
25×10	...F	€€	RH / —	24.9	22.3	42 −0.01/−0.08	41.5	53	6.6	64	—	52	10	—	10	—	10	—	2×2.7	3.00	—	—	—	ø 4	K	0.07	14 100	39 800	25×10

> CAD data > www.gewinde.ch

Ball return systems (details > page 9)

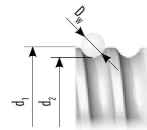
Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
3) = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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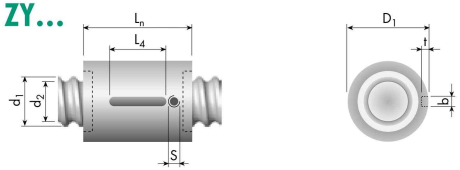
Nominal size $d_0 \times p$ [mm]	Ball return Type	Relative cost	Right-/left-hand thread	Screw d_1	Screw d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
Cylindrical nut – ZY…																													
32×5	…I	€€€	RH / —	31.6	28.5	48 g6	—	—	—	—	—	48	—	—	—	20	—	—	4×1	3.50	—	5	3.0	M5	K	0.07	19 000	54 000	32×5
Nut with mounting thread – FG…																													
32×5	…I	€€	RH / —	31.6	28.5	52 0/−0.1	—	—	—	—	M48×1.5	55	—	15	—	—	—	—	4×1	3.50	4.0	—	—	M5	K	0.07	19 000	54 000	32×5
32×10	…R	€€	RH / —	31.6	28.4	52 0/−0.1	—	—	—	—	M48×1.5	62	—	19	—	—	—	—	2×2.5	3.50	4.0	—	—	ø 4	B	0.07	20 000	55 000	32×10
Flange nut – FB… / FA…																													
32×5	…I	€€€	RH / —	31.6	28.5	50 g6	49.5	65	9.0	80	—	57	10	—	—	—	12	62	4×1	3.50	—	—	—	M6	K	0.07	19 000	54 000	32×5
32×10	…R	€€€	RH / —	31.6	28.4	52 g6	51.5	67	9.0	82	—	62	10	—	—	—	12	64	2×2.5	3.50	—	—	—	M6	B	0.07	20 000	55 000	32×10
32×15	…R	€€€	RH / —	31.4	28.5	56 g6	55.5	71	9.0	86	—	74	12	—	—	—	14	65	2×2.5	3.50	—	—	—	M6	B	0.07	19 900	55 100	32×15
32×32	…R	€€€	RH / —	31.5	28.5	56 g6	55.5	71	9.0	86	—	86	12	—	—	—	14	65	4×1.5	3.50	—	—	—	M6	B	0.07	25 700	76 200	32×32

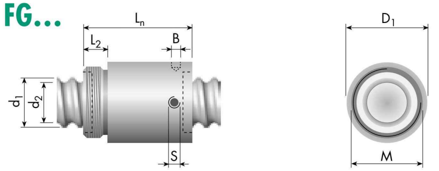
Cylindrical nut

ZY…

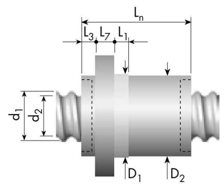


Nut with mounting thread

FG…



Flange nut



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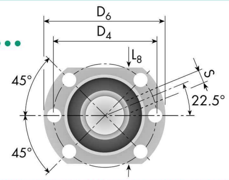
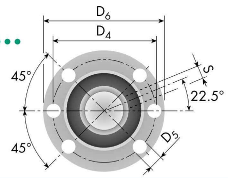


FA…



> CAD data > www.gewinde.ch

Ball return systems (details > page 9)

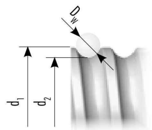
Single-thread ball return
Type …I

Tube ball return
Type …R

End cap ball return
Type …E / …F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
3) = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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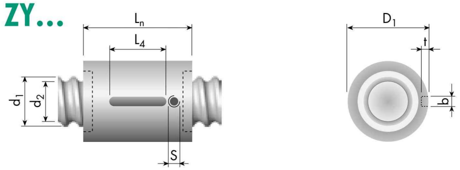
ø 40

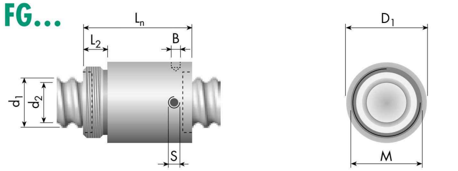
Cylindrical nut

ZY...

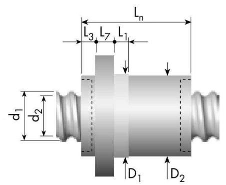


Nut with mounting thread

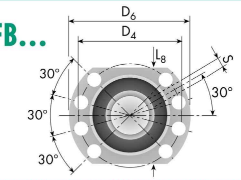
FG...



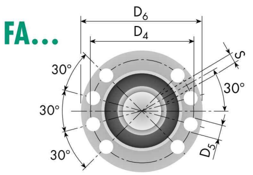
Flange nut



FB...



FA...



Nominal size $d_0 \times p$ [mm]	Ball return Type		Relative cost	Right-/left-hand thread	Dimensions [mm] Screw d_1	d_2	Nut D_1	D_2	D_4 TK	D_5 H13	D_6 h13	M	L_n	L_1	L_2	L_3	L_4	L_7	L_8 h13	i	D_W	B +0.5/0	b P9	t	S	SA	T_{max}	Load rates [N] C_{dyn}	C_{stat}	Nominal size $d_0 \times p$ [mm]
40×5	...R	▬	€€€	RH / —	39.8	36.9	65 g6	64.5	78	9.0	93	—	75	12	—	—	—	14	70	2×3.5	3.50	—	—	—	M8×1	B	0.07	29 400	97 000	40×5
40×20	...R	▬	€€€	RH / —	40.3	36.9	65 g6	64.7	78	9.0	93	—	88	12	—	—	—	14	70	2×2.5	4.00	—	—	—	M8×1	B	0.07	25 500	77 400	40×20
40×40	...R	▬	€€€	RH / —	39.8	36.4	66 g6	65.5	80	9.0	95	—	98	12	—	—	—	14	75	4×1.5	4.00	—	—	—	M8×1	B	0.07	29 900	94 500	40×40
40×40	...F	▭	€€	RH / —	39.8	36.4	62 −0.01/−0.09	61.5	78	9.0	93	—	90	12	—	12	—	12	—	4×1.7	4.00	—	—	—	ø 4	K	0.07	30 600	108 100	40×40

> CAD data > www.gewinde.ch

Ball return systems (details > page 9)

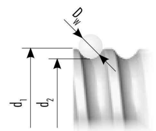
Single-thread ball return
Type ...I

Tube ball return
Type ...R

End cap ball return
Type ...E / ...F

Legend

d_0 = nominal screw diameter [mm]
d_1 = outer 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 * [mm]
S = lubrication hole * [mm]

SA = wipers (details > page 9)
K = technopolymer wipers
B = brush wipers
F = felt rings (on request)

T_{max} = max. standard backlash [mm]
3) = only on request
* position not defined
Special designs available on request

⚠ When selecting a ballscrew, always observe the maximum rotational speed dependent on the system-specific rotational speed characteristics!
Calculation > page 12

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