



STÖBER compact

2017

**System technology
for drives and
automation**

STOBER compact

System technology for drives and automation

STOBER drive technology for perfectionists

Sooner or later, design engineers never satisfied with the second-best solution end up at STOBER. That is because they can find everything here, with the broadest range of all imaginable drive technology components. Available with the highest level of design granularity for perfectly satisfying every requirement, however individualized it may be. And the result is a complete STOBER system, from the gear rack and geared motor to open-loop or closed-loop control to intuitive design software. Without interfaces and with reliable communication functionality between individual components. The STOBER system also includes an entire package of services and practical support. Find out more on the following pages.



You can put your trust in STOBER

STOBER has been building excellent drive technology for more than 80 years. As a medium-sized, owner-operated company, STOBER understands the needs of its customers. Our company is down-to-earth, innovative, dynamic and focused on the customer. Our customers can find certified experts in every area, whether in research and development, production, technical consultation or design support. This goes beyond the technical qualifications. It also includes an equal measure of dedication, dependability and friendly, clear communication.







STOBER in motion

Despite our sense of tradition, we always enjoy something new. We continue to push ourselves forward and to refine our products further. We do this by implementing suggestions from real-world use, giving due consideration to customer requests and constantly seeking out even better solutions. This is all made possible by the competitive spirit with which we face every exciting challenge. The strong STOBER team spirit provides for productive collaboration. Both at work and outside the company doors. Our customers benefit from the extraordinary constancy of our employee base. This provides the astounding result where we can provide contacts familiar with a customer's industry and who can identify with a customer's needs.





The team that works well together wins

STOBER supplies the complete system: controller, automation, geared motors

STOBER has its roots in developing and building geared motors. We have also been developing and manufacturing drive controllers for decades. These STOBER components form drive systems with dependable functionality thanks to their plug-and-play design. Electronics and mechanical systems that speak the same language are critical for this. They understand each other without any adapters. All of the system components can recognize each other by their "electronic nameplate."



Systematic quality assurance

We check every single component and how it works together with others. Mass-producers are not able to do that. We assume responsibility for the complete system. This means certified operational reliability and the highest machine availability are guaranteed.

Technical system advantages

The STOBBER system is flexible. One example is the freedom to choose between drive-based mode and controller-based mode. Or the feature allowing you to combine drive controllers in a multi-axis drive system and stand-alone controllers with special functions as you wish. This allows the modular design and free scalability of a drive system. This enables full utilization of capacity.



STOBBER engineering software

Our AS6 engineering software based on Codesys plays a leading role in the STOBBER system. The AS6 has a whole series of new and useful features integrated into it that make your work easier in every phase of the project. Comprehensive libraries provide direct access to STOBBER products from every level of the drive system. You can find detailed technical information and have ready access to presets for standard functions.



STOBBER is your partner

Our role does not end with the delivery of hardware and software. If you like, we will accompany and support you throughout your entire project. You can call on programming manpower at STOBBER. Our experienced Codesys professionals will be happy to handle tricky special tasks or help you find the right template. This is even possible if components from other manufacturers are part of the bigger picture. You have direct, one-on-one contact with your project engineer. Your personal contact understands your needs and works with you to find the ideal solution.



You receive quick, professional feedback using the 24-hour hotline. You are not a number—you are our priority. We at STOBBER do not have anything like a "service ticket."

Geographic proximity is also an intrinsic part of this personal contact. STOBBER has four customer support centers throughout Germany. Those support centers provide a high level of decision-making expertise for you. Your contacts have technical experience. And STOBBER is international. We have 10 subsidiaries across 3 continents. This is also a valuable part of being near to our customers.



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1 Selection tool

1.1 Servo gear units



Product chapter

P

PA

PE

C

F

Chapter number

[▶ 2.1\]](#)

[\[2.2\]](#)

[▶ 2.9\]](#)

[\[2.10\]](#)

[▶ 2.11\]](#)

Technical data

i	3 – 100	3 – 100	3 – 100	2 – 276	4.3 – 552
M _{2acc}	18 – 3000 Nm	50 – 1600 Nm	13 – 310 Nm	23 – 8000 Nm	50 – 1100 Nm
Δφ ₂	3 – 8 arcmin	1 – 3 arcmin	8 – 13 arcmin	10 – 20 arcmin	5 – 11 arcmin
η	≤ 95 – 97 %	≤ 95 – 97 %	≤ 95 – 97 %	≤ 96 – 97 %	≤ 96 – 97 %

Features

Power density	★★★★☆	★★★★☆	★★★☆☆	★★☆☆☆	★☆☆☆☆
Backlash	★★★★☆	★★★★★	★★★☆☆	★★☆☆☆	★★★☆☆
Price category	€€	€€€	€	€	€
Shaft load	★★★★☆	★★★★☆	★★★☆☆	★★☆☆☆	★★★☆☆
Smooth operation	★★★★☆	★★★★★	★★★☆☆	★★☆☆☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★☆☆	★★★☆☆	★★☆☆☆	★★★☆☆
Mass moments of inertia	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design					
Solid shaft with feather key	✓	✓	✓	✓	✓
Solid shaft without feather key	✓	✓	✓	C0 – C5: ✓ Starting at C6: Re- quest	✓
Hollow shaft with keyway					✓
Hollow shaft with shrink disk					✓
Bearing design					
Normal	✓		✓	✓	✓
Axially reinforced	✓	✓			
Radially reinforced	✓				
Maintenance-free	✓	✓	✓	C0 – C5: ✓	✓

1 Selection tool

1.1 Servo gear units



Product chapter

PH

PHA

PHQ

PHQA

PHV

PHVA

Chapter number

[▶ 2.3](#)

[▶ 2.4](#)

[▶ 2.5](#)

[▶ 2.6](#)

[▶ 2.7](#)

[▶ 2.8](#)

Technical data

i	4 – 100	4 – 100	5.5 – 600	5.5 – 600	61 – 121	61 – 121
M _{2acc}	50 – 7500 Nm	50 – 7500 Nm	170 – 43000 Nm	170 – 10000 Nm	4250 – 7500 Nm	4250 – 7500 Nm
Δφ ₂	3 – 4 arcmin	1 – 2 arcmin	3 arcmin	1 – 1.5 arcmin	3 arcmin	1 arcmin
η	≤ 93 – 96 %	≤ 93 – 96 %	≤ 90 – 96 %	≤ 90 – 96 %	≤ 90 %	≤ 90 %

Features

Power density	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆
Backlash	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★☆	★★★★★
Price category	€€€	€€€€	€€€€	€€€€€	€€€	€€€€
Shaft load	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★☆	★★★★★
Torsional stiffness	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆
Mass moments of inertia	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design						
Flange shaft	✓	✓	✓	✓	✓	✓
Bearing design						
Standard	✓	✓	✓	✓	✓	✓
Maintenance-free	✓	✓	✓	✓	✓	✓

1 Selection tool

1.1 Servo gear units



Product chapter

KS

PKX

PK

Chapter number

[▶ 2.12](#)

[▶ 2.13](#)

[▶ 2.14](#)

Technical data

i	6 – 200	3 – 300	12 – 561
M_{2acc}	90 – 400 Nm	18 – 3000 Nm	200 – 2700 Nm
$\Delta\phi_2$	4 – 6 arcmin	4 – 8.5 arcmin	3.5 – 5 arcmin
η	≤ 93 – 95 %	≤ 94 – 96 %	≤ 94 %

Features

Power density	★★★☆☆	★★★★☆	★★★☆☆
Backlash	★★★☆☆	★★★★☆	★★★★☆
Price category	€€€	€€€	€€€
Shaft load	★★★★★	★★★★☆	★★★★☆
Smooth operation	★★★★☆	★★★☆☆	★★★★☆
Torsional stiffness	★★★☆☆	★★★★☆	★★★★☆
Mass moments of inertia	★★★★☆	★★★☆☆	★★★★☆

Key: ★★☆☆☆☆ good | ★★★★★ excellent

Shaft design			
Solid shaft with feather key	✓	✓	✓
Solid shaft without feather key	✓	✓	✓
Hollow shaft with shrink disk	✓		
Flange hollow shaft	✓		
Bearing design			
Normal	✓	✓	✓
Axially reinforced		✓	✓
Radially reinforced		✓	✓
Maintenance-free	✓	✓	✓

1 Selection tool

1.1 Servo gear units



KS



PHKX



PHK



PHQK

Product chapter

Chapter number

[▶ 2.12\]](#)

[\[▶ 2.15\]](#)

[▶ 2.16\]](#)

[\[▶ 2.17\]](#)

Technical data

i	6 – 200	4 – 300	16 – 561	22 – 2242
M _{2acc}	90 – 400 Nm	50 – 7500 Nm	320 – 7500 Nm	316 – 43000 Nm
Δφ ₂	4 – 6 arcmin	3 – 6 arcmin	3.5 – 4.5 arcmin	3.5 – 4 arcmin
η	≤ 93 – 95 %	≤ 92 – 95 %	≤ 92 – 93 %	≤ 90 – 93 %

Features

Power density	★★★☆☆	★★★★★	★★★★☆	★★★★★
Backlash	★★★☆☆	★★★★☆	★★★★☆	★★★★☆
Price category	€€€	€€€€	€€€€	€€€€€
Shaft load	★★★★★	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★☆☆☆	★★★★☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★★☆	★★★★☆	★★★★★
Mass moments of inertia	★★★★☆	★★☆☆☆	★★★★☆	★★★★☆

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design				
Solid shaft with feather key	✓			
Solid shaft without feather key	✓			
Hollow shaft with shrink disk	✓			
Flange hollow shaft	✓			
Flange shaft		✓	✓	✓
Bearing design				
Standard	✓	✓	✓	✓
Maintenance-free	✓	✓	✓	✓

1 Selection tool

1.1 Servo gear units



KL



K



S

Product chapter

Chapter number

[▶ 2.18](#)

[▶ 2.19](#)

[▶ 2.20](#)

Technical data

i	4 – 32	4 – 381	6 – 683
M _{2acc}	22 – 65 Nm	47 – 13200 Nm	55 – 960 Nm
Δφ ₂	16 – 25 arcmin	1.5 – 12 arcmin	
η	≤ 97 %	≤ 94 – 97 %	≤ 61 – 91 %

Features

Power density	★★☆☆☆	★★☆☆☆	★★☆☆☆
Backlash	★★☆☆☆	★★★★☆	★★☆☆☆
Price category	€	€€	€
Shaft load	★★☆☆☆	★★★★☆	★★★★☆
Smooth operation	★★☆☆☆	★★★★☆	★★★★☆
Torsional stiffness	★★☆☆☆	★★★★☆	★★☆☆☆
Mass moments of inertia	★★★★☆	★★★★☆	★★★★☆

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design			
Solid shaft with feather key	✓	✓	✓
Solid shaft without feather key	✓	K1 – K4: ✓ Starting at K5: Request	
Solid shaft on both sides	✓	✓	✓
Hollow shaft with keyway	✓	✓	✓
Hollow shaft with shrink disk	✓	✓	✓
Accessories			
Flange	✓	✓	✓
Baseboards	✓	✓	✓
Torque arm		✓	✓
Bearing design			
Standard	✓	✓	✓
Maintenance-free			
	✓	K1 – K4: ✓	

1 Selection tool

1.2 Rack and pinion drives



Product chapter

ZTRSPH

ZTRPH

ZRPH

ZTRKS

ZRKS

Chapter number

[▶ 3.1](#)

[▶ 3.4](#)

[▶ 3.7](#)

[▶ 3.6](#)

[▶ 3.8](#)

Technical data

m_n	2 – 10	2 – 8	2 – 4	2 – 4	2 – 4
z	15 – 32	12 – 32	26 – 45	12 – 24	30 – 45
F_{2acc}	16 – 126 kN	3.8 – 67 kN	1.7 – 13 kN	3.8 – 16 kN	2.3 – 7.2 kN
$v_{f2maxZB}$	0.06 – 4.7 m/s	0.09 – 4.7 m/s	0.23 – 6.7 m/s	0.04 – 2.4 m/s	0.11 – 5 m/s
Δs	21 – 70 μm	11 – 45 μm	31 – 56 μm	15 – 35 μm	61 – 74 μm

Features

Power density	★★★★★	★★★★☆	★★★☆☆	★★★★☆	★★★☆☆
Linear clearance	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★☆☆
Price category	€€€€€	€€€€	€€€	€€€€	€€€
Smooth operation	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★★☆
Linear rigidity	★★★★★	★★★★☆	★★★☆☆	★★★★☆	★★★☆☆
Mass moment of inertia	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★★☆

Key: ★☆☆☆☆ good | ★★★★★ excellent

Pinion gearing					
Straight-cut gearing		✓		✓	
Helical gearing	✓	✓	✓	✓	✓

Accessories					
Adjustment plate	✓	✓	✓		
Adjustment plate with adjustment bar	✓	✓	✓		
Felt gear	✓	✓			

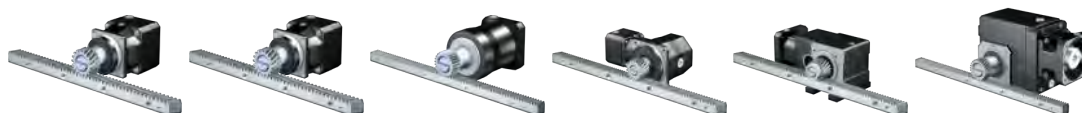
ATLANTA gear racks

All gear racks suitable for our products are available from our cooperation partner, Atlanta.

<http://atlantagmbh.de/>

1 Selection tool

1.2 Rack and pinion drives



Product chapter

ZVP

ZVPA

ZVPE

ZVKS

ZVKL

ZVK

Chapter number

[> 3.9]

[> 3.10]

[> 3.11]

[> 3.12]

[> 3.13]

[> 3.14]

Technical data

m_n	2 – 4	2 – 4	2 – 3	2 – 4	2	2 – 4
z	16 – 26	16 – 26	16 – 26	18 – 26	16 – 21	18 – 26
F_{f2acc}	1.7 – 16 kN	1.7 – 16 kN	1.7 – 6.4 kN	3.2 – 12 kN	1.3 – 3.1 kN	1.9 – 16 kN
$v_{f2maxZB}$	0.14 – 4.9 m/s	0.14 – 4.9 m/s	0.11 – 4.5 m/s	0.07 – 3 m/s	0.33 – 2.8 m/s	0.05 – 3.5 m/s
Δs	20 – 44 μm	8 – 22 μm	40 – 83 μm	37 – 44 μm	98 – 124 μm	11 – 111 μm

Features

Power density	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Linear clearance	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Price category	€€	€€€	€	€€€	€	€
Smooth operation	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Linear rigidity	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Mass moment of inertia	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆

Key: ★★★★★ good | ★★★★★ excellent

Pinion gearing						
Straight-cut gearing	✓	✓	✓	✓	✓	✓
Helical gearing	✓	✓	✓	✓	✓	✓
Accessories						
Adjustment plate	✓	✓	✓		✓	✓
Adjustment plate with adjustment bar	✓	✓	✓		✓	✓
Starter kit for decentralized lubrication	✓	✓	✓	✓	✓	✓
Felt gear	✓	✓	✓	✓	✓	✓

ATLANTA gear racks

All gear racks suitable for our products are available from our cooperation partner, Atlanta.

<http://atlantagmbh.de/>

1

Selection tool

1.3 Two-speed gearboxes



Product chapter	PS
Chapter number	▶ 4.1

Technical data

i	1 – 5.5
n_{1max}	2500 – 10000
$P_{N,GB}$	47 kW
M_{2max}	400 – 2200 Nm

Features

Power density	★★★★☆
Backlash	★★☆☆☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★☆☆☆
Mass moment of inertia	★★★★☆

Key: ★☆☆☆☆ good | ★★★★★ excellent

Housing design	
Short bearing distance	✓
Medium bearing distance	✓
Long bearing distance	✓
Shaft design	
Flange shaft	✓
Solid shaft without feather key	✓
Solid shaft with two feather keys	✓
Bearing design	
Deep-groove ball bearing	✓
Angular contact ball bearing	✓
Cylindrical roller bearing	✓
Lubrication	
Splash lubrication	✓
Circulating lubrication	✓

1 Selection tool

1.4 EZ synchronous servo geared motors



Product chapter

P

PA

PE

C

F

Chapter number

[▶ 5.1\]](#)

[\[5.2\]](#)

[▶ 5.9\]](#)

[\[5.10\]](#)

[▶ 5.11\]](#)

Technical data

i	3 – 100	3 – 100	3 – 28	2 – 270	4.3 – 274
M _{2acc}	11 – 3000 Nm	15 – 1600 Nm	11 – 310 Nm	8.3 – 6500 Nm	19 – 1100 Nm
Δφ ₂	3 – 8 arcmin	1 – 3 arcmin	8 – 10 arcmin	10 – 20 arcmin	5 – 11 arcmin
η	≤ 95 – 97 %	≤ 95 – 97 %	≤ 95 – 97 %	≤ 96 – 97 %	≤ 96 – 97 %

Features

Power density	★★★★☆	★★★★☆	★★★★☆	★★☆☆☆	★★☆☆☆
Backlash	★★★★☆	★★★★★	★★★★☆	★★☆☆☆	★★★★☆
Price category	€€	€€€	€	€	€
Shaft load	★★★★☆	★★★★☆	★★☆☆☆	★★☆☆☆	★★★★☆
Smooth operation	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Torsional stiffness	★★★★☆	★★★★☆	★★★★☆	★★☆☆☆	★★★★☆
Mass moment of inertia	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design					
Solid shaft with feather key	✓	✓	✓	✓	✓
Solid shaft without feather key	✓	✓	✓	C0 – C5: ✓ Starting at C6: Re-quest	✓
Hollow shaft with keyway					✓
Hollow shaft with shrink disk					✓
Bearing design					
Normal	✓		✓	✓	✓
Axially reinforced	✓	✓			
Radially reinforced	✓				
Maintenance-free	✓	✓	✓	C0 – C5: ✓	✓

1

Selection tool

1.4 EZ synchronous servo geared motors

						
Product chapter	PH	PHA	PHQ	PHQA	PHV	PHVA
Chapter number	▶ 5.3	[5.4]	▶ 5.5	[5.6]	▶ 5.7	[5.8]
Technical data						
i	4 – 100	4 – 100	5.5 – 600	5.5 – 600	61 – 121	61 – 121
M _{2acc}	24 – 7500 Nm	24 – 7500 Nm	84 – 22000 Nm	84 – 10000 Nm	1638 – 7500 Nm	1638 – 7500 Nm
Δφ ₂	3 – 4 arcmin	1 – 2 arcmin	3 arcmin	1 – 1.5 arcmin	3 arcmin	1 arcmin
η	≤ 93 – 96 %	≤ 93 – 96 %	≤ 90 – 96 %	≤ 90 – 96 %	≤ 90 %	≤ 90 %
Features						
Power density	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆
Backlash	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★☆	★★★★★
Price category	€€€	€€€€	€€€€	€€€€€	€€€	€€€€
Shaft load	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★☆	★★★★★
Torsional stiffness	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆
Mass moment of inertia	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Key: ★☆☆☆☆ good ★★★★★ excellent						
Shaft design						
Flange shaft	✓	✓	✓	✓	✓	✓
Bearing design						
Standard	✓	✓	✓	✓	✓	✓
Maintenance-free						
	✓	✓	✓	✓	✓	✓

1 Selection tool

1.4 EZ synchronous servo geared motors



Product chapter

KS

PKX

PK

Chapter number

[▶ 5.12](#)

[\[5.13\]](#)

[▶ 5.14](#)

Technical data

i	6 – 100	3 – 210	12 – 486
M _{2acc}	27 – 400 Nm	11 – 3000 Nm	68 – 2700 Nm
Δφ ₂	4 – 6 arcmin	4 – 8.5 arcmin	3.5 – 5 arcmin
η	≤ 93 – 95 %	≤ 94 – 96 %	≤ 94 %

Features

Power density	★★★☆☆	★★★★☆	★★★☆☆
Backlash	★★★☆☆	★★★★☆	★★★★☆
Price category	€€€	€€€	€€€
Shaft load	★★★★★	★★★★☆	★★★★☆
Smooth operation	★★★★☆	★★★☆☆	★★★★☆
Torsional stiffness	★★★☆☆	★★★★☆	★★★★☆
Mass moment of inertia	★★★★★	★★★★☆	★★★★★

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design			
Solid shaft with feather key	✓	✓	✓
Solid shaft without feather key	✓	✓	✓
Hollow shaft with shrink disk	✓		
Flange hollow shaft	✓		
Bearing design			
Normal	✓	✓	✓
Axially reinforced		✓	✓
Radially reinforced		✓	✓
Maintenance-free	✓	✓	✓

1 Selection tool

1.4 EZ synchronous servo geared motors



Product chapter

KS

PHKX

PHK

PHQK

Chapter number

[▶ 5.12\]](#)

[\[5.15\]](#)

[▶ 5.16\]](#)

[\[5.17\]](#)

Technical data

i	6 – 100	4 – 210	16 – 486	22 – 2242
M _{2acc}	27 – 400 Nm	26 – 7500 Nm	89 – 7500 Nm	123 – 43000 Nm
Δφ ₂	4 – 6 arcmin	3 – 6 arcmin	3.5 – 4.5 arcmin	3.5 – 4 arcmin
η	≤ 93 – 95 %	≤ 92 – 95 %	≤ 92 – 93 %	≤ 90 – 93 %

Features

Power density	★★★★☆	★★★★★	★★★★☆	★★★★★
Backlash	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Price category	€€€	€€€€	€€€€	€€€€€
Shaft load	★★★★★	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★☆☆☆	★★★★☆	★★☆☆☆
Torsional stiffness	★★★★☆	★★★★☆	★★★★☆	★★★★★
Mass moment of inertia	★★★★★	★★★☆☆	★★★★★	★★★★★

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design				
Solid shaft with feather key	✓			
Solid shaft without feather key	✓			
Hollow shaft with shrink disk	✓			
Flange hollow shaft	✓			
Flange shaft		✓	✓	✓
Bearing design				
Standard	✓	✓	✓	✓
Maintenance-free	✓	✓	✓	✓

1 Selection tool

1.4 EZ synchronous servo geared motors



Product chapter

KL

K

S

Chapter number

[▶ 5.18](#)

[\[5.19\]](#)

[▶ 5.20](#)

Technical data

i	4 – 32	4 – 381	6 – 548
M _{2acc}	11 – 65 Nm	23 – 13200 Nm	28 – 960 Nm
Δφ ₂	16 – 25 arcmin	1.5 – 12 arcmin	
η	≤ 97 %	≤ 94 – 97 %	≤ 62 – 91 %

Features

Power density	★★☆☆☆	★★☆☆☆	★★☆☆☆
Backlash	★★☆☆☆	★★☆☆☆	★★☆☆☆
Price category	€	€€	€
Shaft load	★★☆☆☆	★★☆☆☆	★★☆☆☆
Smooth operation	★★☆☆☆	★★☆☆☆	★★☆☆☆
Torsional stiffness	★★☆☆☆	★★☆☆☆	★★☆☆☆
Mass moment of inertia	★★★★★	★★★★★	★★★★★

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design			
Solid shaft with feather key	✓	✓	✓
Solid shaft without feather key	✓	K1 – K4: ✓ Starting at K5: Request	
Solid shaft on both sides	✓	✓	✓
Hollow shaft with keyway	✓	✓	✓
Hollow shaft with shrink disk	✓	✓	✓
Accessories			
Flange	✓	✓	✓
Baseboards	✓	✓	✓
Torque arm		✓	✓
Bearing design			
Standard	✓	✓	✓
Maintenance-free	✓	K1 – K4: ✓	

1 Selection tool

1.5 Asynchronous geared motors



Product chapter

C

F

Chapter number

[6.1]

[6.2]

Technical data

P_N	0.12 – 78 kW	0.12 – 16 kW
i	2 – 274	4.3 – 440
M_{2N}	2.5 – 8725 Nm	5.3 – 1353 Nm
$\Delta\phi_2$	10 – 20 arcmin	5 – 11 arcmin
η	$\leq 96 - 97 \%$	$\leq 96 - 97 \%$

Features

Power density	★☆☆☆☆	★☆☆☆☆
Backlash	★★☆☆☆	★★☆☆☆
Price category	€	€
Shaft load	★★☆☆☆	★★☆☆☆
Smooth operation	★★☆☆☆	★★☆☆☆
Torsional stiffness	★★☆☆☆	★★☆☆☆
Mass moment of inertia	★★★★★	★★★★★

Key: ★☆☆☆☆ good | ★★★★★ excellent

Shaft design		
Solid shaft with feather key	✓	✓
Solid shaft without feather key	C0 – C5: ✓ Starting at C6: Request	✓
Hollow shaft with keyway		✓
Hollow shaft with shrink disk		✓
Bearing design		
Standard	✓	✓
Maintenance-free	C0 – C5: ✓	✓

1 Selection tool

1.5 Asynchronous geared motors



Product chapter

K

S

Chapter number

[6.3]

[6.4]

Technical data

P_N	0.12 – 78 kW	0.12 – 9.5 kW
i	4 – 381	6 – 682
M_{2N}	6.7 – 14123 Nm	8.3 – 996 Nm
$\Delta\phi_2$	1.5 – 12 arcmin	
η	$\leq 94 - 97 \%$	$\leq 61 - 91 \%$

Features

Power density	★★★★☆	★★★★☆
Backlash	★★★★☆	★★★★☆
Price category	€€	€
Shaft load	★★★★☆	★★★★☆
Smooth operation	★★★★☆	★★★★☆
Torsional stiffness	★★★★☆	★★★★☆
Mass moment of inertia	★★★★★	★★★★★

Key: ★★★★★ good | ★★★★★ excellent

Shaft design		
Solid shaft with feather key	✓	✓
Solid shaft without feather key	K1 – K4: ✓ Starting at K5: Request	
Solid shaft on both sides	✓	✓
Hollow shaft with keyway	✓	✓
Hollow shaft with shrink disk	✓	✓
Bearing design		
Standard	✓	✓
Maintenance-free	K1 – K4: ✓	

1 Selection tool

1.6 Synchronous servo motors



EZ



EZHD

Product chapter

Chapter number

[▶ 7.1\]](#)

[\[7.2\]](#)

Technical data

M_N	0.89 – 77.2 Nm	1.9 – 24.6 Nm
M_0	0.95 – 94 Nm	2.6 – 31.1 Nm
Shaft design		
Solid shaft without feather key	✓	
Flange hollow shaft		✓
Encoder		
EnDat 2.2	✓	✓
EnDat 2.1	✓	✓
HIPERFACE DSL One Cable Solution (OCS)	✓	
Resolver	✓	
Cooling		
Convection cooling	✓	✓
Forced ventilation	✓	
Brake		
Permanent magnet holding brake	✓	✓
Marks and test symbols		
CE	✓	✓
cURus	✓	✓

1 Selection tool

1.6 Synchronous servo motors



Product chapter

EZM

EZS

Chapter number

[▶ 7.3\]](#)

[\[7.4\]](#)

Technical data

F_{ax}	751 – 21375 N	760 – 31271 N
Shaft design		
Direct drive of the threaded nut	✓	
Direct drive of the threaded spindle		✓
Encoder		
EnDat 2.2	✓	✓
EnDat 2.1	✓	✓
HIPERFACE DSL One Cable Solution (OCS)		✓
Resolver		✓
Cooling		
Convection cooling	✓	✓
Forced ventilation		✓
Brake		
Permanent magnet holding brake	✓	✓
Marks and test symbols		
CE	✓	✓
cURus	✓	✓

1 Selection tool

1.7 Asynchronous motors



Product chapter

IE3D

IE2D

D

Chapter number

[7.5]

[7.6]

[7.7]

Technical data

n_2	1440 – 1790	1430 – 1480	1360 – 1470
P_N	0.75 – 40 kW	0.75 – 45 kW	0.12 – 45 kW
M_N	5 – 237 Nm	5 – 291 Nm	0.84 – 292 Nm
I_N	1.7 – 67 A	1.7 – 87 A	0.44 – 81 A

Features

Efficiency	★★★★★	★★★★☆	★★★☆☆
Price category	€€€	€€	€
Shaft design			
IEC design	✓	✓	✓
Encoder			
Incremental encoder	✓	✓	✓
SSI multi-turn absolute encoder ¹	✓	✓	✓
Electrical connection			
Terminal box	✓	✓	✓
QuickFit connector box	✓	✓	✓
Cooling			
Self-ventilation	✓	✓	✓
Forced ventilation	✓	✓	✓
Brake			
Spring-loaded brake		✓	✓
Marks and test symbols			
CE	✓	✓	✓
cURus	✓	✓	✓
EISA CC number including cURus	✓		

¹ only in combination with forced ventilation

1 Selection tool

1.8 Electronics



Product chapter

MC6

Chapter number

▶ 8.1]

MC6 motion controllers

Hardware version	1	5
Processor	Intel Atom Dual-Core E3825, 2 × 1.33 GHz	Intel Core i3-3120ME, 2 × 2.4 GHz
L2 cache	1 MB	3 MB
Main memory	DDR3 RAM, 2 GB	DDR3 RAM, 2 GB
Mass storage	CFast card, 8 GB	CFast card, 8 GB
Non-volatile memory	128 kB nvRAM	128 kB MRAM
USB	3 USB 2.0 interfaces	4 USB 3.0 interfaces
EtherCAT	✓	✓
Ethernet	✓	✓
RS-232	✓	✓
CANopen	✓	✓
Video (DVI-D)	✓	✓
Version as control cabinet PC	✓	✓
Version with touch panel	✓	✓
Surrounding temperature (operation)	0 – 45 °C	0 – 45 °C
Storage temperature	–20 – 75 °C	–20 – 75 °C

1 Selection tool

1.8 Electronics



SI6



SD6

Product chapter

Chapter number

[▶ 8.2](#)

[▶ 8.3](#)

6th generation drive controller

Technical data

Nominal output current (4 kHz)	5 – 50 A	2,3 – 85 A
Maximum current (4 kHz)	10,5 – 105 A	4,2 – 153 A
Nominal output current (8 kHz)	4,5 – 40 A	1,7 – 60 A
Maximum current (8 kHz)	11,3 – 100 A	4,3 – 150 A

Motor types

Asynchronous motors	✓	✓
Synchronous servo motors	✓	✓
Linear motors		✓

Encoder interfaces

EnDat 2.1/2.2 digital	✓	✓
Incremental	✓	✓
SSI	✓	✓
Resolver	✓	(✓)
Pulse/direction signals	✓	(✓)
EnDat 2.1 sin/cos		(✓)
Sin/cos		(✓)
HIPERFACE DSL	✓	

(✓): Terminal module required

Communication

Isochronic system bus (IGB)		✓
CANopen		(✓)
EtherCAT	✓	(✓)
PROFINET	✓	(✓)
PROFIBUS DP		

(✓): Communication module required

Safety functions

STO, SS1 (SIL 3, PL e, category 4)	(✓)	(✓)
------------------------------------	-----	-----

(✓): Safety module required

Feature

Multi-axis drive system	✓	
Stand-Alone		✓
One Cable Solution	✓	

1 Selection tool

1.8 Electronics



FDS 5000



MDS 5000



SDS 5000

Product chapter

Chapter number

[▶ 8.6](#)

[▶ 8.5](#)

[▶ 8.4](#)

5th generation servo inverter

Technical data

Nominal output current (4 kHz)	1,3 – 16 A	2,3 – 85 A	2,3 – 85 A
Maximum current (4 kHz)	2,4 – 28,8 A	4,2 – 153 A	4,2 – 153 A
Nominal output current (8 kHz)	1 – 10 A	1,7 – 60 A	1,7 – 60 A
Maximum current (8 kHz)	2,5 – 25 A	4,3 – 150 A	4,3 – 150 A

Motor types

Asynchronous motors	✓	✓	✓
Synchronous servo motors		✓	✓
Linear motors			

Encoder interfaces

EnDat 2.1/2.2 digital	✓	✓	✓
Incremental	✓	✓	✓
SSI		✓	✓
Resolver		(✓)	(✓)
Pulse/direction signals	✓	(✓)	(✓)
EnDat 2.1 sin/cos		(✓)	(✓)
Sin/cos			
HIPERFACE DSL			

(✓): Terminal module required

Communication

Isochronic system bus (IGB)			✓
CANopen	(✓)	(✓)	(✓)
EtherCAT	(✓)	(✓)	(✓)
PROFINET	(✓)	(✓)	(✓)
PROFIBUS DP	(✓)	(✓)	(✓)

(✓): Communication module required

Safety functions

STO, SS1 (SIL 3, PL e, category 3)	(✓)	(✓)	(✓)
------------------------------------	-----	-----	-----

(✓): Safety module required

Features

Multi-axis drive system			
Stand-Alone	✓	✓	✓

1 Selection tool

1.8 Electronics



Product chapter

Cables

Chapter number

[▶ 8.7](#)

Power cables

Design	con.15	con.23	con.40	con.58
springtec quick lock	✓			
speedtec quick lock		✓	✓	
Screw technology		On request	On request	✓

HIPERFACE DSL One Cable Solution

Design	con.15	con.23	con.40
springtec quick lock	✓		
speedtec quick lock		✓	✓

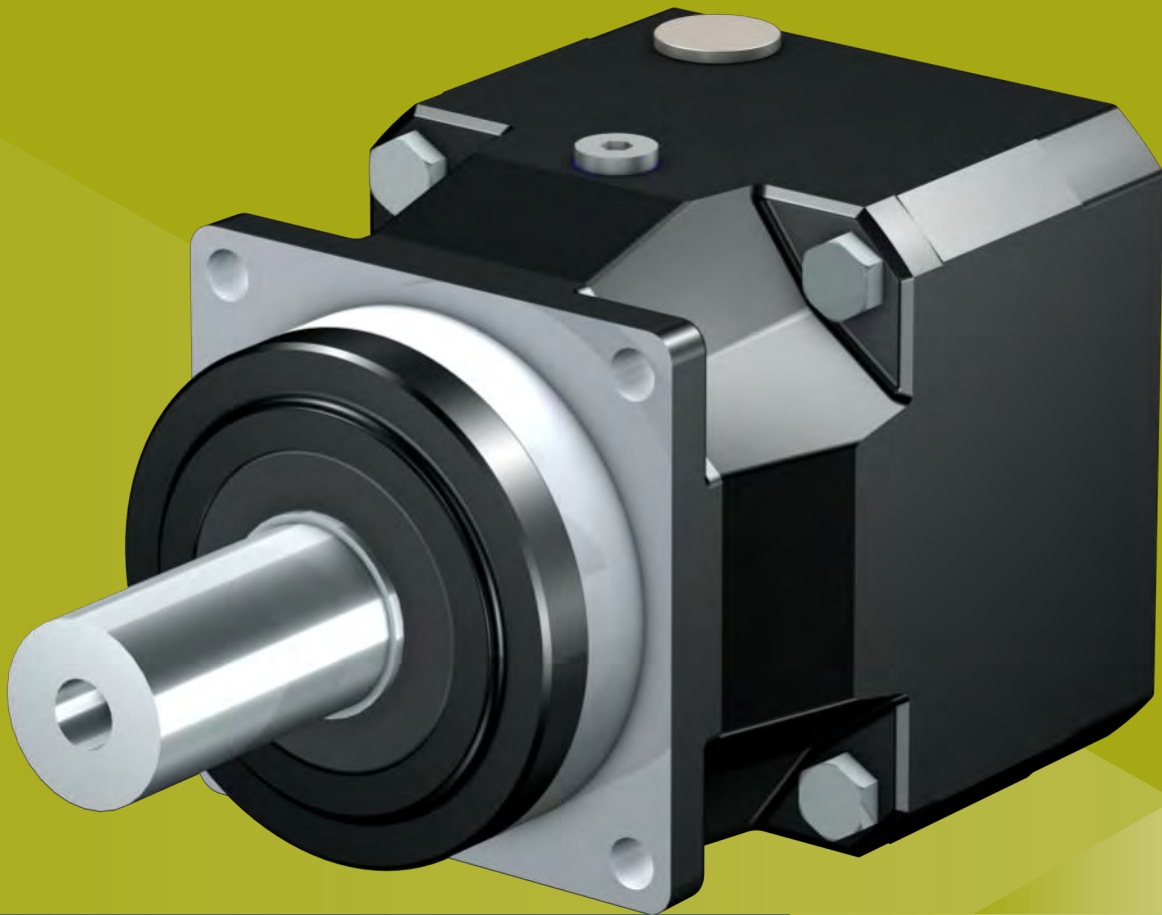
Encoder cables

Encoder	con.15	con.17	con.23	
			Synchronous	Asynchronous
EnDat 2.1/2.2 digital	✓	✓	On request	
Incremental (HTL)			On request	✓
SSI			On request	✓
Resolver	✓	✓	On request	
EnDat 2.1 sin/cos	✓	✓	On request	

2 Servo gear units

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2.1 Planetary gear units

P

Helical-geared precision planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★☆☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Reinforced output bearing	✓ (optional)
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

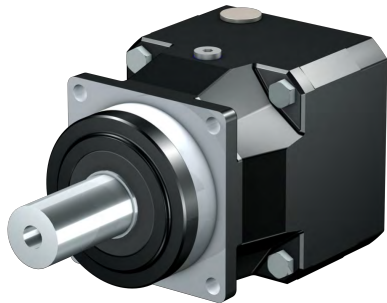
Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
P221	4 – 10	18 – 22	8000	6	1.6 – 1.9
P222	16 – 100	18 – 22	8000	8	1.6 – 1.8
P321	3 – 10	50 – 65	6000 – 8000	4	4 – 5.5
P322	12 – 100	50 – 65	8000	5	3.9 – 4.6
P421	3 – 10	100 – 120	5500 – 7000	4	8.9 – 12
P422	12 – 100	100 – 120	6500 – 8000	5	8.8 – 11
P521	3 – 10	200 – 300	4500 – 6500	3	25 – 33
P522	12 – 100	200 – 300	6000 – 7000	4	24 – 28
P721	3 – 10	500 – 700	3700 – 6000	3	49 – 59
P722	12 – 100	500 – 700	5000 – 6500	4	49 – 53
P821	3 – 10	1200 – 1600	3000 – 4500	3	149 – 202
P822	12 – 100	1200 – 1600	4500 – 6000	4	148 – 171
P921	4 – 10	2000 – 3000	3000 – 4000	3	258 – 349
P922	16 – 100	2000 – 3000	3500 – 4500	4	256 – 339

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓
Bearing design	
Standard	✓
Axially reinforced	✓
Radially reinforced	✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

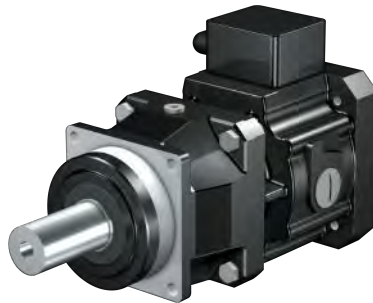
Input options

ME motor adapter for the attachment of synchronous servo motors

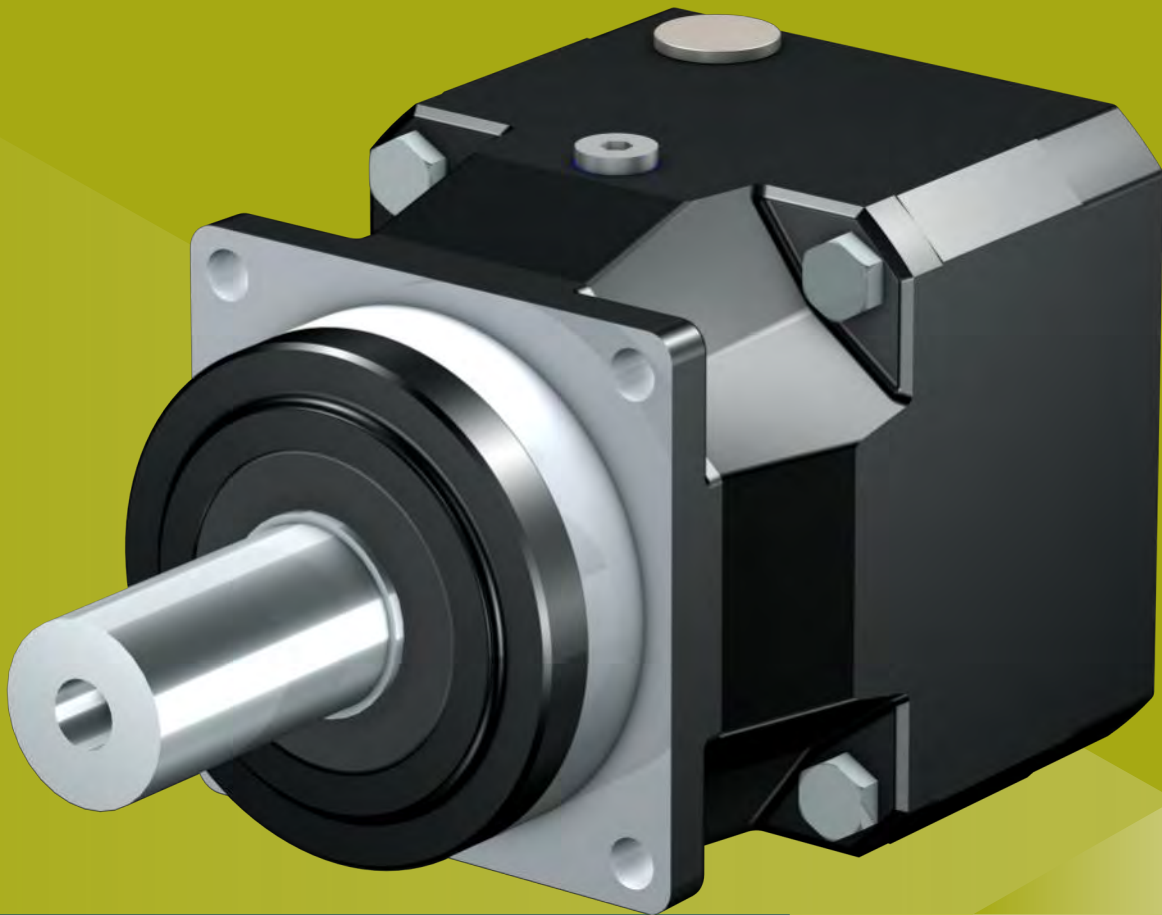


<http://www.stoeber.de/en/PME>

MB motor adapter with brake for the attachment of synchronous servo motors



<http://www.stoeber.de/en/PMB>



2.2 Planetary gear units

PA

Low-backlash, helical-gearred precision planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★★
Price category	€€€
Shaft load	★★★★☆
Smooth operation	★★★★★
Torsional stiffness	★★★☆☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM seal ring at the input and output)	✓
Axially reinforced output bearing, ideally suited for helical-gearred rack and pinion drives	✓
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PA321	3 – 10	50 – 65	6000 – 8000	2	4 – 5.5
PA322	12 – 100	50 – 65	8000	3	3.9 – 4.6
PA421	3 – 10	100 – 120	5500 – 7000	2	8.9 – 12
PA422	12 – 100	100 – 120	6500 – 8000	3	8.8 – 11
PA521	3 – 10	200 – 300	4500 – 6500	1	25 – 33
PA522	12 – 100	200 – 300	6000 – 7000	2	24 – 28
PA721	3 – 10	500 – 700	3700 – 6000	1	49 – 59
PA722	12 – 100	500 – 700	5000 – 6500	2	49 – 53
PA821	3 – 10	1200 – 1600	3000 – 4500	1	149 – 176
PA822	12 – 100	1200 – 1600	4500 – 6000	2	148 – 171

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

Bearing design

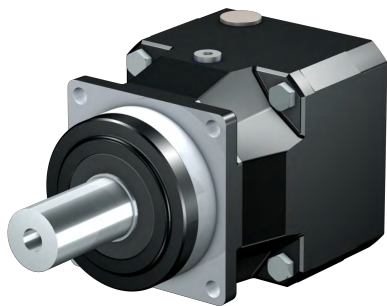
Axially reinforced

✓

You have the option of ordering the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

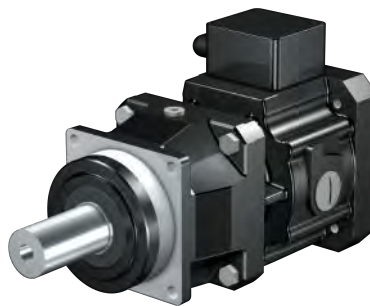
Input options

MF motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PAMF>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PAMB>



2.3 Planetary gear units

PH

High-performance precision planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
PH321	5 – 10	50 – 65	6000	4	11 – 15
PH322	20 – 100	50 – 65	8000	4	12 – 15
PH421	4 – 10	100 – 130	5000 – 6000	3	21 – 35
PH422	16 – 100	100 – 130	6500 – 8000	3	20 – 29
PH521	4 – 10	250 – 320	5000 – 6000	3	53 – 85
PH522	16 – 100	250 – 320	6000 – 7000	3	52 – 70
PH721	4 – 10	500 – 700	4000 – 5000	3	113 – 167
PH722	16 – 100	500 – 700	5000 – 6500	3	112 – 148
PH821	4 – 10	1200 – 1700	3500 – 4000	3	302 – 553
PH822	16 – 100	1200 – 2000	4500 – 6000	3	304 – 479
PH932	12 – 60	4500 – 5000	3000 – 4500	3	1046 – 1201
PH1032	18 – 60	6912 – 7500	3000 – 4500	3	1591 – 1743

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHME>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHMB>



2.4 Planetary gear units

PHA

Low-backlash, high-performance precision planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★★
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM seal ring at the input and output)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PHA321	5 – 10	50 – 65	6000	2	11 – 15
PHA322	20 – 100	50 – 65	8000	2	12 – 15
PHA421	4 – 10	100 – 130	5000 – 6000	1	21 – 35
PHA422	16 – 100	100 – 130	6500 – 8000	1	20 – 29
PHA521	4 – 10	250 – 320	5000 – 6000	1	53 – 85
PHA522	16 – 100	250 – 320	6000 – 7000	1	52 – 70
PHA721	4 – 10	500 – 700	4000 – 5000	1	113 – 167
PHA722	16 – 100	500 – 700	5000 – 6500	1	112 – 148
PHA821	4 – 10	1200 – 1700	3500 – 4000	1	302 – 433
PHA822	16 – 100	1200 – 2000	4500 – 6000	1	304 – 479
PHA932	12 – 60	4500 – 5000	3000 – 4500	1	1046 – 1142
PHA1032	18 – 60	6912 – 7500	3000 – 4500	1	1591 – 1686

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

Input options

MF motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHAMF>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHAMB>



2.5 Planetary gear units

PHQ

Quattro-Power for maximum power density

Features

Power density	★★★★★
Backlash	★★★★☆
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★★
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position (single/two stage)	✓
High power density	✓
(four-stage planetary system)	
Continuous operation without cooling	✓
(FKM sealing ring at the input)	
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PHQ421	5.5	170	6000	3	38 – 39
PHQ422	22 – 55	170	6500 – 8000	3	35 – 37
PHQ521	5.5	425	5500	3	92 – 99
PHQ522	22 – 55	425	6000 – 7000	3	87 – 94
PHQ721	5.5	950	5000	3	197 – 213
PHQ722	22 – 55	950	5000 – 6500	3	195 – 205
PHQ723	88 – 550	950	6000 – 7000	3	195 – 204
PHQ822	22 – 55	2600	4500 – 6000	3	611 – 649
PHQ823	88 – 550	2600	5000 – 6500	3	611 – 646
PHQ932	18 – 60	6000	3000 – 4500	3	1144 – 1220
PHQ933	72 – 600	6000	4500 – 6000	3	1144 – 1205
PHQ1032	24 – 60	10000	3000 – 4000	3	1970 – 2062
PHQ1033	96 – 600	10000	3500 – 4500	3	1969 – 2067
PHQ1132	24 – 60	26000	2800 – 3800	3	3460 – 3538
PHQ1133	96 – 300	26000	3500 – 4500	3	3489 – 3528
PHQ1232	24 – 42	50000	3000 – 3500	3	6236 – 6248
PHQ1233	96 – 420	44640 – 50000	3000 – 4000	3	6136 – 6271

Shaft design	
Flange shaft	✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of synchronous servo motors



<http://www.stoeber.de/en/PHQME>

MB motor adapter with brake for the attachment of synchronous servo motors



<http://www.stoeber.de/en/PHQMB>



2.6 Planetary gear units

PHQA

Quattro-Power for maximum power density

Features

Power density	★★★★★
Backlash	★★★★★
Price category	€€€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★★★
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position (single/two stage)	✓
High power density	✓
(four-stage planetary system)	
Continuous operation without cooling	✓
(FKM seal ring at the input and output)	
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PHQA421	5.5	170	6000	1	38 – 39
PHQA422	22 – 55	170	6500 – 8000	1	35 – 37
PHQA521	5.5	425	5500	1	92 – 99
PHQA522	22 – 55	425	6000 – 7000	1	87 – 94
PHQA721	5.5	950	5000	1	197 – 213
PHQA722	22 – 55	950	5000 – 6500	1	195 – 205
PHQA723	88 – 550	950	6000 – 7000	1	195 – 204
PHQA822	22 – 55	2600	4500 – 6000	1	611 – 649
PHQA823	88 – 550	2600	5000 – 6500	1	611 – 646
PHQA932	18 – 60	6000	3000 – 4500	1	1144 – 1192
PHQA933	72 – 600	6000	4500 – 6000	1	1144 – 1205
PHQA1033	96 – 600	10000	3500 – 4500	1.5	1969 – 2067

Shaft design	
Flange shaft	✓

You have the option of ordering the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

Input options

MF motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHQAMF>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHQAMB>



2.7 Planetary gear units

PHV

High-performance precision planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PHV933	61 – 121	4250	4500	3	804 – 848
PHV1033	61 – 91	7500	4500	3	1339 – 1368

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHVME>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHVMB>



2.8 Planetary gear units

PHVA

Low-backlash, high-performance precision planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★★
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM seal ring at the input and output)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PHVA933	61 – 121	4250	4500	1	804 – 848
PHVA1033	61 – 91	7500	4500	1	1339 – 1364

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

Input options

MF motor adapter for the attachment of
synchronous servo motors

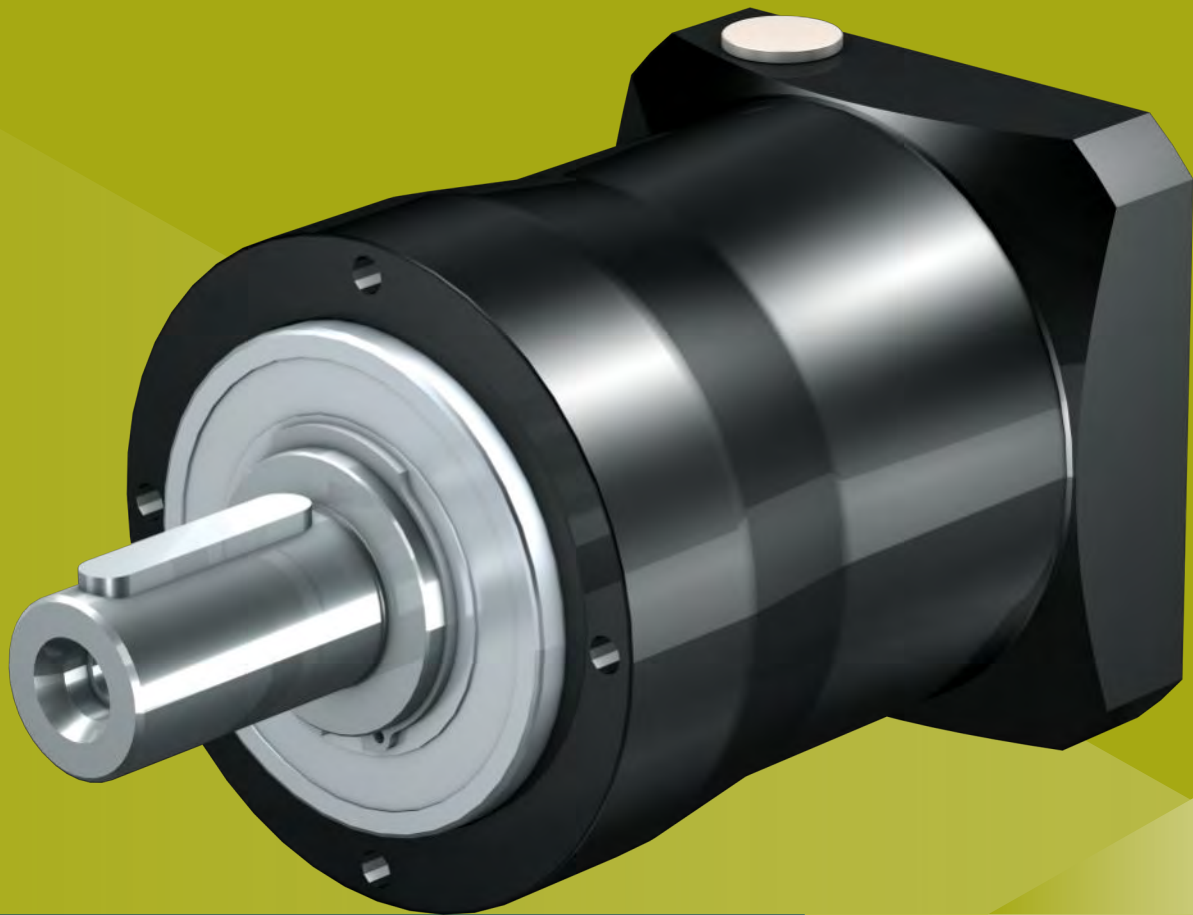


<http://www.stoeber.de/en/PHVAMF>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHVAMB>



2.9 Planetary gear units

PE

Cost-efficient, helical-geared planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Non-contact sealing at the input	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
PE211	4 – 10	13 – 15	8000	10	1.1 – 1.4
PE212	16 – 100	13 – 15	8000	13	1.1 – 1.4
PE311	3 – 10	37 – 42	6000	8	3.3 – 4.1
PE312	12 – 100	37 – 55	6000	10	3.4 – 4.2
PE411	3 – 10	90 – 100	5500 – 6000	8	10 – 13
PE412	12 – 100	90 – 120	5500 – 6000	10	10 – 14
PE511	3 – 10	180 – 250	4500 – 5000	8	27 – 33
PE512	12 – 100	220 – 310	4500 – 5000	10	27 – 35

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME/MEI motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PEME>



2.10 Helical gear units

C

Compact helical gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free (C0 – C5)	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★★★★★ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
C002	2 – 70	23 – 72	5000 – 6000	16 – 20	0.73 – 1.6
C102	2 – 70	23 – 138	4000 – 6000	15 – 18	1.1 – 3.9
C103	82 – 276	138	6000	15	3.9
C202	2 – 70	47 – 230	4000 – 6000	14 – 17	2.5 – 8.3
C203	80 – 275	230	5000 – 6000	14	8.3
C302	2 – 70	88 – 400	3500 – 5000	13 – 16	2.7 – 8.7
C303	80 – 274	350 – 400	5000 – 5500	13	8.7
C402	2 – 70	170 – 600	3500 – 5000	12 – 15	5.1 – 22
C403	81 – 270	550 – 600	5000	12	22
C502	2 – 70	202 – 920	3000 – 4500	12 – 14	5.4 – 23
C503	81 – 271	850 – 920	4500	12	23
C612	4.2 – 69	487 – 1650	2800 – 4000	10	23 – 74
C613	49 – 266	913 – 1650	4000	10	73 – 74
C712	4.3 – 70	496 – 2760	2600 – 3600	10	26 – 122
C713	51 – 223	2256 – 2760	3500 – 3600	10	121 – 122
C812	4.2 – 69	1229 – 4800	2500 – 3400	10	70 – 204
C813	49 – 270	2486 – 4800	3400	10	199 – 204
C912	4.1 – 70	2067 – 8000	2200 – 3000	10	117 – 392
C913	65 – 215	5628 – 8000	3000 – 3200	10	385 – 393

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	C0 – C5: ✓ Starting at C6: Request

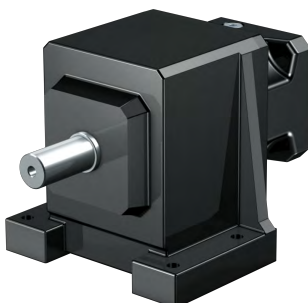
Housing design

Pitch circle diameter	✓
Round flange	✓
Square flange	C0 – C4: ✓
Base	✓
Base + pitch circle diameter	✓
Base + round flange	✓

You have the option of ordering the gear units with ME and MR motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of synchronous servo motors



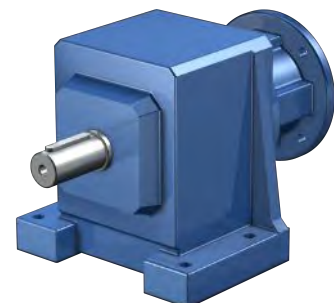
<http://www.stoeber.de/en/CME>

MB motor adapter with brake for the attachment of synchronous servo motors



<http://www.stoeber.de/en/CMB>

MR motor adapter for the attachment of asynchronous motors



<http://www.stoeber.de/en/CMR>



2.11 Offset helical gear units

F

Offset helical gear units with large axial distances

Features

Power density	★☆☆☆☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
FKM seal ring at the input	✓
Large axial distances, suitable for confined situations	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
F102	4.3 – 140	50 – 120	5000 – 6000	6 – 11	3.6 – 7.7
F202	4.7 – 141	54 – 270	4000 – 6000	6 – 11	6 – 18
F203	184 – 552	270	6000	7 – 11	18
F302	4.6 – 141	108 – 450	4000 – 6000	6 – 11	11 – 22
F303	182 – 551	450	5000 – 6000	7 – 11	22
F402	4.7 – 140	204 – 700	3500 – 5000	5 – 10	15 – 39
F403	182 – 547	700	5000 – 5500	6 – 10	39
F602	4.5 – 140	393 – 1100	3500 – 5000	5 – 10	25 – 77
F603	181 – 540	1100	5000	6 – 10	77

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

Housing design

Pitch circle diameter	✓
Round flange	✓
Square flange	✓
Pitch circle diameter + side fastening	✓
Round flange + side fastening	✓
Square flange + side fastening	✓

You have the option of ordering the gear units with ME and MR motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of synchronous servo motors



<http://www.stoeber.de/en/FME>

MB motor adapter with brake for the attachment of synchronous servo motors

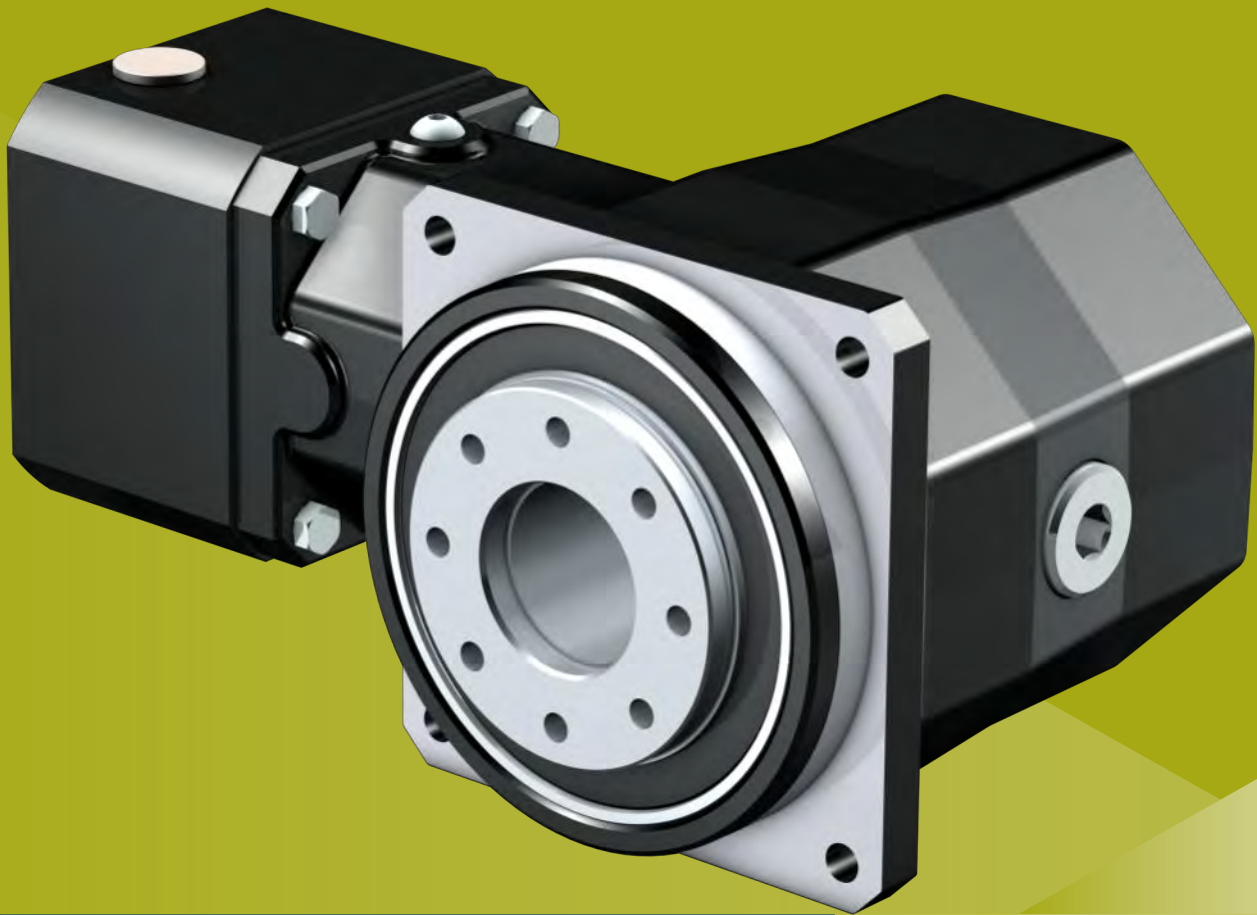


<http://www.stoeber.de/en/FMB>

MR motor adapter for the attachment of asynchronous motors



<http://www.stoeber.de/en/FMR>



2.12 Helical bevel gear units

KS

Precision right-angle servo gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
FKM seal ring at the input	✓
Pretensioned angular contact ball bearings at the output, ideally suited for helical-gear rack and pinion drives	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
KS402	6 – 20	90	6000	6	8.1 – 8.5
KS403	24 – 200	90	6000	6	8.5
KS502	6 – 20	200	5500 – 6000	5	16 – 17
KS503	24 – 200	200	6000	5	17
KS702	6 – 20	400	4500 – 6000	4	40 – 42
KS703	24 – 200	400	6000	4	42

Shaft design	
Flange hollow shaft	✓
Hollow shaft with shrink disk	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/KSME>



2.13 Planetary gear units

PKX

Helical-gear precision right-angle planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★☆
Smooth operation	★★★☆☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★☆☆
Helical gearing	✓
Maintenance-free	✓
Small installation space	✓
Continuous operation without cooling	✓
(FKM sealing ring at the input)	
Reinforced output bearing	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
P221_KX3_	4 – 30	18 – 22	4500 – 6000	7 – 8.5	1.5 – 1.7
P222_KX3_	32 – 300	18 – 22	4500 – 6000	8 – 8.5	1.6 – 1.8
P321_KX3_	3 – 30	38 – 63	4500 – 6000	5 – 7.5	2.5 – 3.7
P322_KX3_	32 – 300	50 – 65	4500 – 6000	5 – 5.5	3.9 – 4.5
P421_KX4_	3 – 30	73 – 120	4000 – 5500	5 – 7.5	5.2 – 8.4
P422_KX3_	32 – 300	100 – 120	4500 – 6000	5 – 5.5	8.8 – 10
P521_KX5_	3 – 30	183 – 300	3500 – 5000	4 – 6.5	14 – 23
P522_KX4_	32 – 300	250 – 300	4000 – 5500	4 – 4.5	24 – 27
P721_KX7_	3 – 30	364 – 650	3000 – 4000	4 – 6.5	37 – 49
P722_KX5_	32 – 300	500 – 700	3500 – 5000	4 – 4.5	48 – 52
P821_KX8_	3 – 30	800 – 1400	2000 – 3000	4 – 6.5	84 – 142
P822_KX7_	32 – 300	1200 – 1600	3000 – 4000	4 – 4.5	148 – 168
P922_KX8_	32 – 300	2000 – 3000	2000 – 3000	4 – 4.5	255 – 327

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓
Bearing design	
Standard	✓
Axially reinforced	✓
Radially reinforced	✓

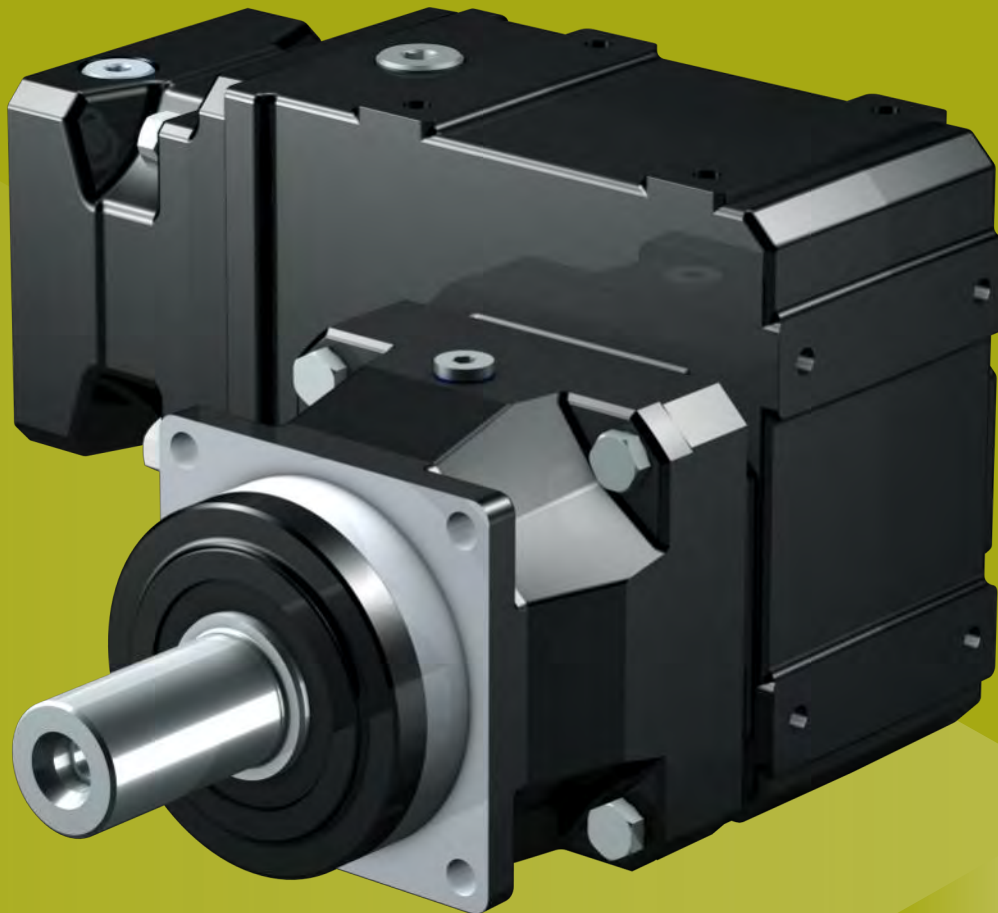
You have the option of ordering the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

Input options

MF motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PKXMF>



2.14 Planetary gear units

PK

Helical-gear precision right-angle planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Continuous operation without cooling	✓
Reinforced output bearing	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
P521_K1_	12 – 280	200 – 300	4500 – 6000	4 – 5	22 – 26
P721_K1_	28 – 561	407 – 650	4500 – 6000	3.5 – 4	46 – 47
P721_K2_	12 – 278	271 – 700	4000 – 5500	4 – 4.5	37 – 47
P821_K2_	28 – 555	632 – 1400	4000 – 5500	3.5	128 – 134
P821_K3_	12 – 279	677 – 1600	3800 – 5000	4 – 4.5	87 – 132
P921_K4_	28 – 485	1581 – 2700	3500 – 5000	3.5	267 – 271

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	✓

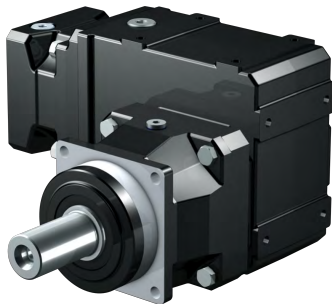
Bearing design

Standard	✓
Axially reinforced	✓
Radially reinforced	✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

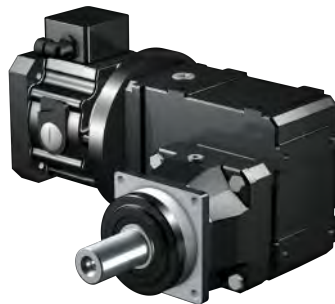
Input options

ME motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PKME>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PKMB>



2.15 Planetary gear units

PHKX

High-performance precision right-angle planetary gear units

Features

Power density	★★★★★
Backlash	★★★★☆
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★☆☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★☆☆
Helical gearing	✓
Maintenance-free	✓
Small installation space	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchro- nous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PH321_KX3_	5 – 30	50 – 62	4500 – 6000	5 – 6	7 – 9
PH322_KX3_	35 – 300	50 – 65	4500 – 6000	4 – 4.5	12 – 15
PH421_KX4_	4 – 30	96 – 120	4000 – 5500	4 – 5.5	11 – 19
PH422_KX3_	32 – 300	100 – 130	4500 – 6000	3 – 3.5	20 – 26
PH521_KX5_	4 – 30	242 – 302	3500 – 5000	4 – 5.5	28 – 47
PH522_KX4_	32 – 300	250 – 320	4000 – 5500	3 – 3.5	52 – 65
PH721_KX7_	4 – 30	480 – 650	3000 – 4000	4 – 5.5	83 – 119
PH722_KX5_	32 – 300	500 – 700	3500 – 5000	3 – 3.5	111 – 140
PH821_KX8_	4 – 30	1056 – 1600	2000 – 3000	4 – 5.5	174 – 288
PH822_KX7_	32 – 300	1200 – 2000	3000 – 4000	3 – 3.5	304 – 448
PH932_KX8_	12 – 180	3069 – 5000	2000 – 3000	3 – 4	788 – 1055
PH1032_KX8_	18 – 180	4604 – 7500	2000 – 3000	3 – 3.5	1302 – 1589

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

Input options

MF motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHKXMF>



2.16 Planetary gear units

PHK

High-performance precision right-angle planetary gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★☆☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Continuous operation without cooling	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PH521_K1_	16 – 280	320	4500 – 6000	4 – 4.5	50 – 60
PH721_K1_	28 – 561	403 – 650	4500 – 6000	3.5 – 4	99 – 108
PH721_K2_	16 – 278	358 – 700	4000 – 5500	4 – 4.5	84 – 109
PH821_K2_	28 – 555	626 – 1478	4000 – 5500	3.5	236 – 248
PH821_K3_	16 – 279	670 – 1848	3800 – 5000	4	181 – 238
PH931_K5_	33 – 466	3840 – 4500	3000 – 4500	4 – 4.5	520 – 730
PH1031_K6_	49 – 457	6275 – 7500	2900 – 4000	4	1201 – 1210

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

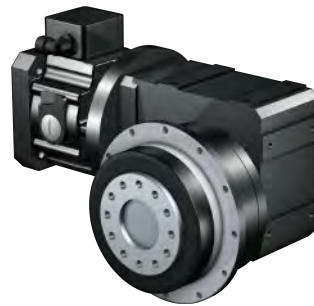
Input options

ME motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHKME>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHKMB>



2.17 Planetary gear units

PHQK

Quattro-Power precision right-angle planetary gear units

Features

Power density	★★★★★
Backlash	★★★★☆
Price category	€€€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★★
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
High power density	✓
(four-stage planetary system)	
Continuous operation without cooling	✓
(FKM sealing ring at the input)	
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PHQ521_K1_	22 – 385	316 – 425	4500 – 6000	4	69 – 70
PHQ721_K2_	22 – 382	492 – 950	4000 – 5500	4	130 – 136
PHQ821_K4_	22 – 381	1229 – 2600	3500 – 5000	3.5	387 – 400
PHQ931_K5_	44 – 580	4764 – 5760	3000 – 4500	4	766 – 771
PHQ1031_K7_	45 – 591	6663 – 10000	2700 – 3800	4	1543 – 1560
PHQ1131_K8_	45 – 583	6559 – 22000	2600 – 3600	4	2572 – 2623
PHQ1231_K9_	48 – 2242	13107 – 43000	2500 – 3400	4	4540 – 4665

Shaft design

Flange shaft

✓

You have the option of ordering the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

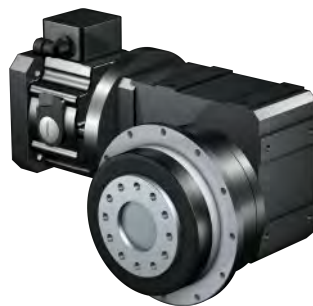
Input options

ME motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/PHQKME>

MB motor adapter with brake for the
attachment of synchronous servo motors



<http://www.stoeber.de/en/PHQKMB>



2.18 Helical bevel gear units

KL

Compact, helical-geared right-angle gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Small installation space	✓
FKM seal ring at the input	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★★★★★ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
KL102	4 – 32	22 – 32	5000 – 6000	20 – 25	0.99 – 1.8
KL202	4 – 32	47 – 65	5000 – 6000	16 – 20	1.8 – 3.9

Shaft design

Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓

Housing design

Pitch circle diameter	✓
Flange	✓
Base + pitch circle diameter	✓

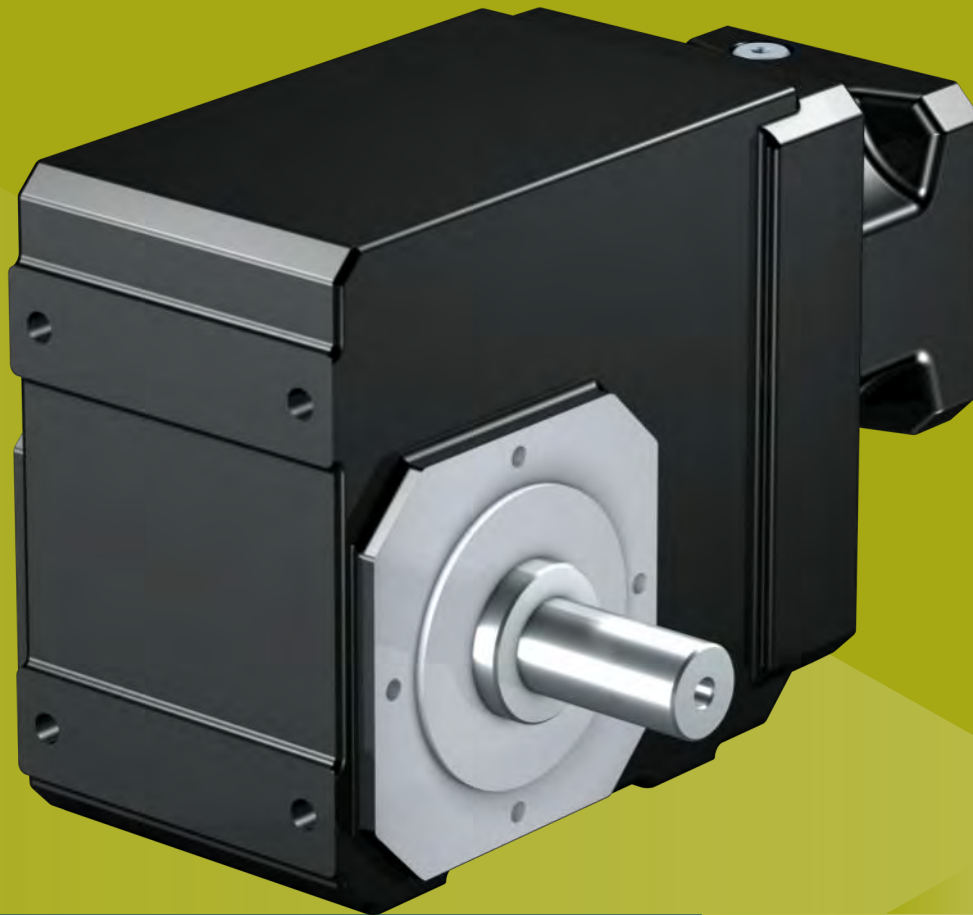
You have the option of ordering the gear units with MQ motor adapters in ATEX design (Directive 2014/34/EU).

Input options

MQ motor adapter for the attachment of
synchronous servo motors



<http://www.stoeber.de/en/KLMQ>



2.19 Helical bevel gear units

K

Highly rigid, helical-geared right-angle gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free (K1 – K4)	✓
FKM seal ring at the input	✓
Reinforced output bearing (K5 – K8)	✓ (on request)
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
K102	4 – 70	47 – 135	4500 – 6000	6 – 12	3.5 – 6.8
K202	4 – 69	47 – 220	4000 – 5500	1.5 – 10	4.2 – 11
K203	39 – 272	159 – 217	5500	2.5 – 10	10 – 11
K302	4 – 69	102 – 385	3800 – 5000	1.5 – 10	8.4 – 16
K303	33 – 272	246 – 379	5000	2.5 – 10	16
K402	4 – 69	175 – 600	3500 – 5000	1.5 – 10	11 – 31
K403	32 – 272	341 – 591	5000	2.5 – 10	30 – 31
K513	7.3 – 97	625 – 1000	3000 – 4500	2 – 10	33 – 50
K514	85 – 374	827 – 1000	4500	3 – 10	49 – 50
K613	7.3 – 95	738 – 1600	2900 – 4000	2 – 10	45 – 82
K614	84 – 369	1165 – 1600	4000	3 – 10	82 – 83
K713	7.6 – 99	868 – 2600	2700 – 3800	2 – 10	58 – 126
K714	89 – 381	1458 – 2600	3800	3 – 10	124 – 126
K813	7.4 – 97	854 – 4650	2600 – 3600	2 – 10	68 – 196
K814	67 – 311	3551 – 4650	3500 – 3600	3 – 10	194 – 196
K913	7.9 – 95	2275 – 7700	2500 – 3400	5 – 10	210 – 379
K914	92 – 374	2907 – 7700	3400	5 – 10	370 – 379
K1013	7.9 – 94	3902 – 13200	2200 – 3000	5 – 10	374 – 724
K1014	93 – 290	9045 – 13200	3000 – 3200	5 – 10	714 – 725

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	K1 – K4: ✓ Starting at K5: Request
Solid shaft on both sides	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

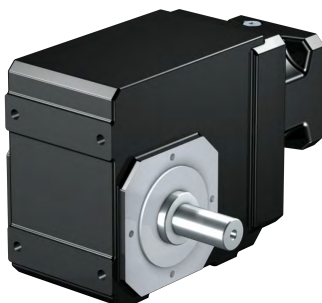
Housing design

Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm	K1 – K9: ✓
Base + pitch circle diameter + torque arm	K10: ✓
Base + pitch circle diameter	✓
Base + round flange	✓

You have the option of ordering the gear units with ME and MR motor adapters in ATEX design (Directive 2014/34/EU).

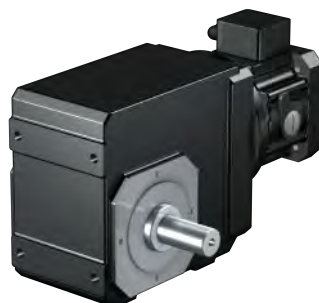
Input options

ME motor adapter for the attachment of synchronous servo motors



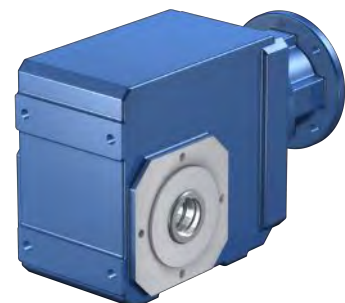
<http://www.stoeber.de/en/KME>

MB motor adapter with brake for the attachment of synchronous servo motors



<http://www.stoeber.de/en/KMB>

MR motor adapter for the attachment of asynchronous motors



<http://www.stoeber.de/en/KMR>



2.20 Helical worm gear units

S

Compact, helical-geared right-angle gear units

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)
Easy and reliable attachment to any synchronous servo motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	n _{1maxZB} [rpm]	C ₂ [Nm/arcmin]
S002	6 – 208	55 – 108	3700 – 4500	3.4 – 5.5
S102	9.2 – 361	96 – 192	4000 – 4500	5 – 7.6
S202	9.2 – 174	100 – 360	3900 – 4500	7.5 – 11
S203	136 – 683	360	4500	11
S302	9.3 – 174	186 – 660	3600 – 4000	17 – 26
S303	135 – 683	490 – 660	4000	26
S402	9.3 – 174	380 – 960	3200 – 4000	22 – 36
S403	135 – 682	728 – 960	4000	36

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	
Solid shaft on both sides	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

Housing design

Pitch circle diameter	S1 – S4: ✓
Round flange	S1 – S4: ✓
Pitch circle diameter + torque arm	S1 – S4: ✓
Base + pitch circle diameter + torque arm	S0: ✓
Base + pitch circle diameter	✓
Base + round flange	✓

You have the option of ordering the gear units with ME and MR motor adapters in ATEX design (Directive 2014/34/EU).

Input options

ME motor adapter for the attachment of synchronous servo motors



<http://www.stoeber.de/en/SME>

MB motor adapter with brake for the attachment of synchronous servo motors



<http://www.stoeber.de/en/SMB>

MR motor adapter for the attachment of asynchronous motors



<http://www.stoeber.de/en/SMR>

3 Rack and pinion drives

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3.1 Rack and pinion drives

ZTRSPH

High-performance precision planetary gear units with supporting bearing holder

Features

Power density	★★★★★
Linear clearance	★★★★☆
Price category	€€€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★★
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

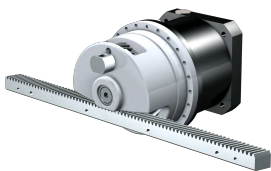
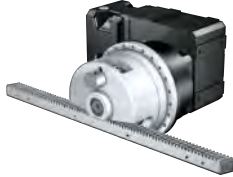
Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZTRS_PH721	3	17	18 – 20	1.4 – 2.8	24
ZTRS_PH721	2	23	16	1.3 – 2.6	21
ZTRS_PH722	3	17	18 – 20	0.18 – 0.89	24
ZTRS_PH722	2	23	16	0.17 – 0.8	21
ZTRS_PH821	5	16	28 – 40	1.8 – 3.9	37
ZTRS_PH821	4	20	28 – 40	1.8 – 3.9	37
ZTRS_PH821	3	26 – 32	24 – 28	1.7 – 4.7	36 – 44
ZTRS_PH822	5	16	28 – 43	0.27 – 1.3	37
ZTRS_PH822	4	20	28 – 45	0.27 – 1.3	37
ZTRS_PH822	3	26 – 32	24 – 28	0.26 – 1.5	36 – 44
ZTRS_PH932	8	15	58 – 79	0.5 – 1.7	56
ZTRS_PH932	6	16 – 20	58 – 77	0.4 – 1.7	44 – 56
ZTRS_PH932	5	20	70 – 77	0.42 – 1.4	46
ZTRS_PH1032	8	19	69 – 93	0.63 – 1.4	70
ZTRS_PH1032	10	15	70 – 94	0.63 – 1.4	69

Linear clearance	
Standard	✓
Reduced	On request
Pinion gearing	
Helical gearing	✓
Straight-cut gearing	On request
Accessories	
Adjustment plate	http://www.stoeber.de/en/ZTRSacc
Adjustment plate with adjustment bar	✓
Felt gear for lubrication	✓

Input options

ME motor adapter	KX right-angle input with MF motor adapter	K right-angle input with ME motor adapter	MB motor adapter	EZ synchronous servo motor
				
http://www.stoeber.de/en/ZTRSPHME	On request	On request	On request	On request



3.2 Rack and pinion drives

ZTRSPHQ

Quattro-Power precision planetary gear units with supporting bearing holder

Features

Power density	★★★★★
Linear clearance	★★★★☆
Price category	€€€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★★
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

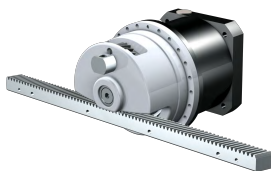
Technical data

Type	m_n	z	F_{f2acc} [kN]	$v_{f2maxZB}$ [m/s]	Δs [μm]
ZTRS_PHQ1032	8	19	124	0.56 – 1.1	70
ZTRS_PHQ1032	10	15	126	0.56 – 1	69
ZTRS_PHQ1033	8	19	124	0.06 – 0.31	70
ZTRS_PHQ1033	10	15	126	0.06 – 0.3	69

Linear clearance	
Standard	✓
Reduced	On request
Pinion gearing	
Helical gearing	✓
Straight-cut gearing	On request
Accessories	
	http://www.stoeber.de/en/ZTR-Sacc
Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Felt gear for lubrication	✓

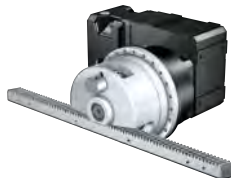
Input options

ME motor adapter



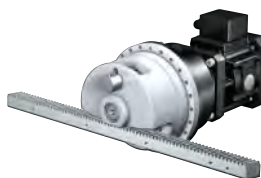
<http://www.stoeber.de/en/ZTRSPHQME>

K right-angle input with ME motor adapter



On request

MB motor adapter



On request

EZ synchronous servo motor



On request



3.3 Rack and pinion drives

ZTRSPHV

High-performance precision planetary gear units with supporting bearing holder

Features

Power density	★★★★★
Linear clearance	★★★★☆
Price category	€€€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★★
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

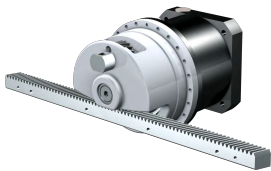
Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZTRS_PHV933	8	15	67	0.25 – 0.49	56
ZTRS_PHV933	6	16 – 20	61 – 67	0.2 – 0.49	44 – 56
ZTRS_PHV933	5	20	77	0.21 – 0.41	46
ZTRS_PHV1033	8	19	93	0.42 – 0.62	70
ZTRS_PHV1033	10	15	94	0.41 – 0.62	69

Linear clearance	
Standard	✓
Reduced	On request
Pinion gearing	
Helical gearing	✓
Straight-cut gearing	On request
Accessories	
	http://www.stoeber.de/en/ZTR-Sacc
Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Felt gear for lubrication	✓

Input options

ME motor adapter



<http://www.stoeber.de/en/ZTRSPHVME>

MB motor adapter



On request

EZ synchronous servo motor



On request



3.4 Rack and pinion drives

ZTRPH

High-performance precision planetary gear units with screwed flange pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZTR_PH421	2	12 – 17	3.8 – 6.7	0.8 – 2.2	11 – 15
ZTR_PH422	2	12 – 17	3.8 – 6.7	0.11 – 0.72	11 – 15
ZTR_PH521	2	12 – 24	6.7 – 10	0.8 – 3.2	11 – 21
ZTR_PH521	3	12 – 14	6.3 – 10	1.2 – 2.9	17 – 19
ZTR_PH522	2	12 – 24	6.7 – 10	0.09 – 0.96	11 – 21
ZTR_PH522	3	12 – 14	6.3 – 10	0.14 – 0.88	17 – 19
ZTR_PH721	2	12 – 24	6.7 – 15	0.67 – 2.6	11 – 21
ZTR_PH721	3	16 – 20	15 – 19	1.3 – 3.2	22 – 26
ZTR_PH721	4	12 – 13	12 – 19	1.3 – 2.7	22 – 23
ZTR_PH722	4	12 – 13	12 – 19	0.17 – 0.85	22 – 23
ZTR_PH722	2	12 – 24	6.7 – 15	0.09 – 0.8	11 – 21
ZTR_PH722	3	16 – 20	15 – 19	0.17 – 0.99	22 – 26
ZTR_PH821	4	17 – 21	28 – 40	1.5 – 3.9	31 – 37
ZTR_PH821	5	12 – 19	25 – 40	1.3 – 4.4	28 – 42
ZTR_PH821	6	15 – 16	25 – 36	2 – 4.4	42
ZTR_PH821	3	19 – 32	21 – 25	1.3 – 4.7	26 – 44
ZTR_PH822	3	19 – 32	21 – 25	0.19 – 1.5	26 – 44
ZTR_PH822	4	17 – 21	28 – 42	0.23 – 1.3	31 – 37
ZTR_PH822	5	12 – 19	25 – 47	0.2 – 1.4	28 – 42
ZTR_PH822	6	15 – 16	25 – 42	0.3 – 1.4	42
ZTR_PH932	5	18 – 20	46 – 67	0.38 – 1.3	42 – 44
ZTR_PH932	6	16 – 17	47 – 56	0.4 – 1.3	44 – 45
ZTR_PH1032	8	12 – 13	50 – 60	0.4 – 0.91	44 – 45
ZTR_PH1032	6	16	56	0.4 – 0.89	44

Linear clearance	
Standard	✓
Reduced	On request
Pinion gearing	
Helical gearing	✓
Straight-cut gearing	✓
Accessories	
	http://www.stoeber.de/en/ZTRacc
Adjustment plate	✓
Adjustment plate with adjustment bar	✓

Input options

ME motor adapter



<http://www.stoeber.de/en/ZTRPHME>

KX right-angle input with MF motor adapter



On request

K right-angle input with ME motor adapter



On request

MB motor adapter



On request

EZ synchronous servo motor



On request



3.5 Rack and pinion drives

ZTRPHV

High-performance precision planetary gear units with screwed flange pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZTR_PHV933	6	16 – 17	47 – 56	0.2 – 0.39	44 – 45
ZTR_PHV933	5	18 – 20	46 – 67	0.19 – 0.39	42 – 44
ZTR_PHV1033	8	12 – 13	50 – 60	0.26 – 0.4	44 – 45
ZTR_PHV1033	6	16	56	0.26 – 0.39	44

Linear clearance	
Standard	✓
Reduced	On request
Pinion gearing	
Helical gearing	✓
Straight-cut gearing	✓
Accessories	
	http://www.stoeber.de/en/ZTRacc
Adjustment plate	✓
Adjustment plate with adjustment bar	✓

Input options

ME motor adapter



<http://www.stoeber.de/en/ZTRPHVME>

MB motor adapter

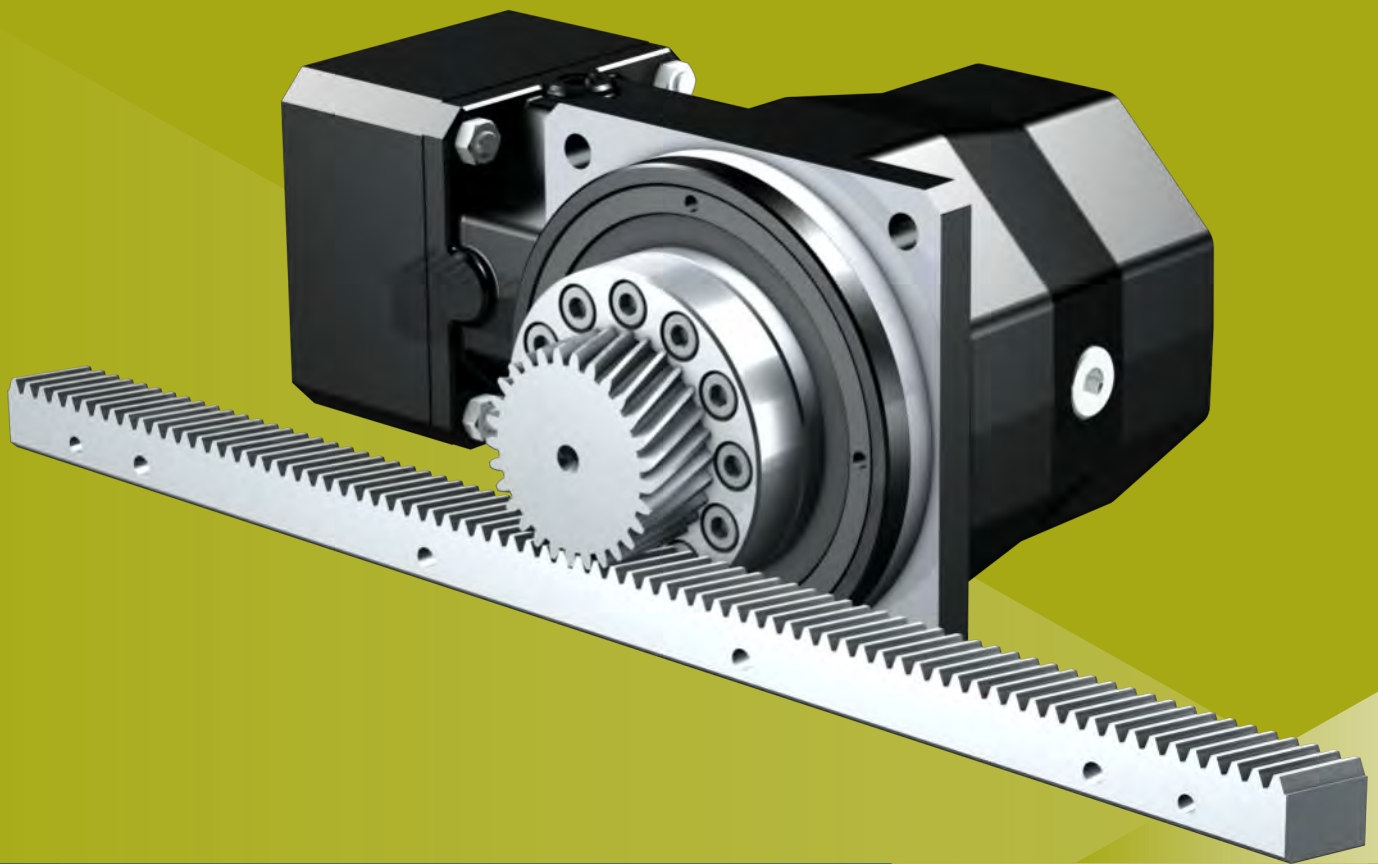


On request

EZ synchronous servo motor



On request



3.6 Rack and pinion drives

ZTRKS

Right-angle servo gear units with screwed flange pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZTR_KS402	2	12 – 17	3.8 – 6.7	0.4 – 1.8	22 – 30
ZTR_KS403	2	12 – 17	3.8 – 6.7	0.04 – 0.45	22 – 30
ZTR_KS502	3	12 – 14	6.3 – 10	0.6 – 2.1	28 – 32
ZTR_KS502	2	12 – 24	6.7 – 9.9	0.4 – 2.3	19 – 35
ZTR_KS503	3	12 – 14	6.3 – 10	0.06 – 0.58	28 – 32
ZTR_KS503	2	12 – 24	6.7 – 9.9	0.04 – 0.64	19 – 35
ZTR_KS702	4	12 – 13	12 – 16	0.8 – 2	30
ZTR_KS702	3	16 – 20	13 – 16	0.8 – 2.4	30 – 35
ZTR_KS702	2	12 – 24	6.7 – 15	0.4 – 1.9	15 – 28
ZTR_KS703	4	12 – 13	12 – 16	0.08 – 0.68	30
ZTR_KS703	3	16 – 20	13 – 16	0.08 – 0.79	30 – 35
ZTR_KS703	2	12 – 24	6.7 – 15	0.04 – 0.64	15 – 28

Pinion gearing

Helical gearing

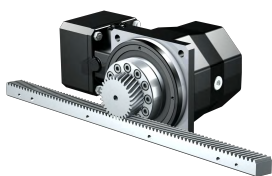
✓

Straight-cut gearing

✓

Input options

ME motor adapter

EZ synchronous servo
motor

[http://www.stoeber.de/
en/ZTRKSME](http://www.stoeber.de/en/ZTRKSME)

On request



3.7 Rack and pinion drives

ZRPH

High-performance precision planetary gear units with screwed pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{Zacc} [kN]	v_{ZmaxZB} [m/s]	Δs [μm]
ZR_PH321	2	26 – 27	1.7 – 2.2	1.7 – 3.6	32 – 33
ZR_PH322	2	26 – 27	1.7 – 2.2	0.23 – 1.2	32 – 33
ZR_PH421	2	33 – 37	2.5 – 3.7	2.2 – 5.1	31 – 34
ZR_PH422	2	33 – 37	2.5 – 3.7	0.29 – 1.7	31 – 34
ZR_PH521	3	30	5.2 – 6.7	3 – 6.3	42
ZR_PH521	2	40 – 45	5.2 – 7.5	2.7 – 6.3	37 – 42
ZR_PH522	3	30	5.2 – 6.7	0.35 – 1.9	42
ZR_PH522	2	40 – 45	5.2 – 7.5	0.31 – 1.9	37 – 42
ZR_PH721	4	30	7.9 – 11	3.3 – 6.7	56
ZR_PH721	3	35 – 40	7.9 – 13	2.9 – 6.7	49 – 56
ZR_PH722	4	30	7.9 – 11	0.43 – 2.1	56
ZR_PH722	3	35 – 40	7.9 – 13	0.38 – 2.1	49 – 56

Linear clearance

Standard	✓
Reduced	On request

Pinion gearing

Helical gearing	✓
-----------------	---

Accessories

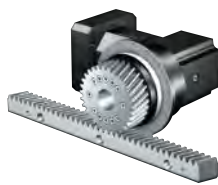
Adjustment plate	http://www.stoeber.de/en/ZRacc
Adjustment plate with adjustment bar	✓

Input options

ME motor adapter


<http://www.stoeber.de/en/ZRPHME>

KX right-angle input with MF motor adapter



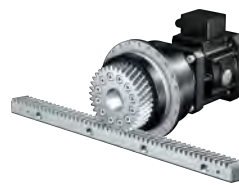
On request

K right-angle input with ME motor adapter



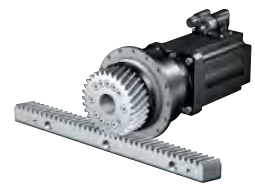
On request

MB motor adapter

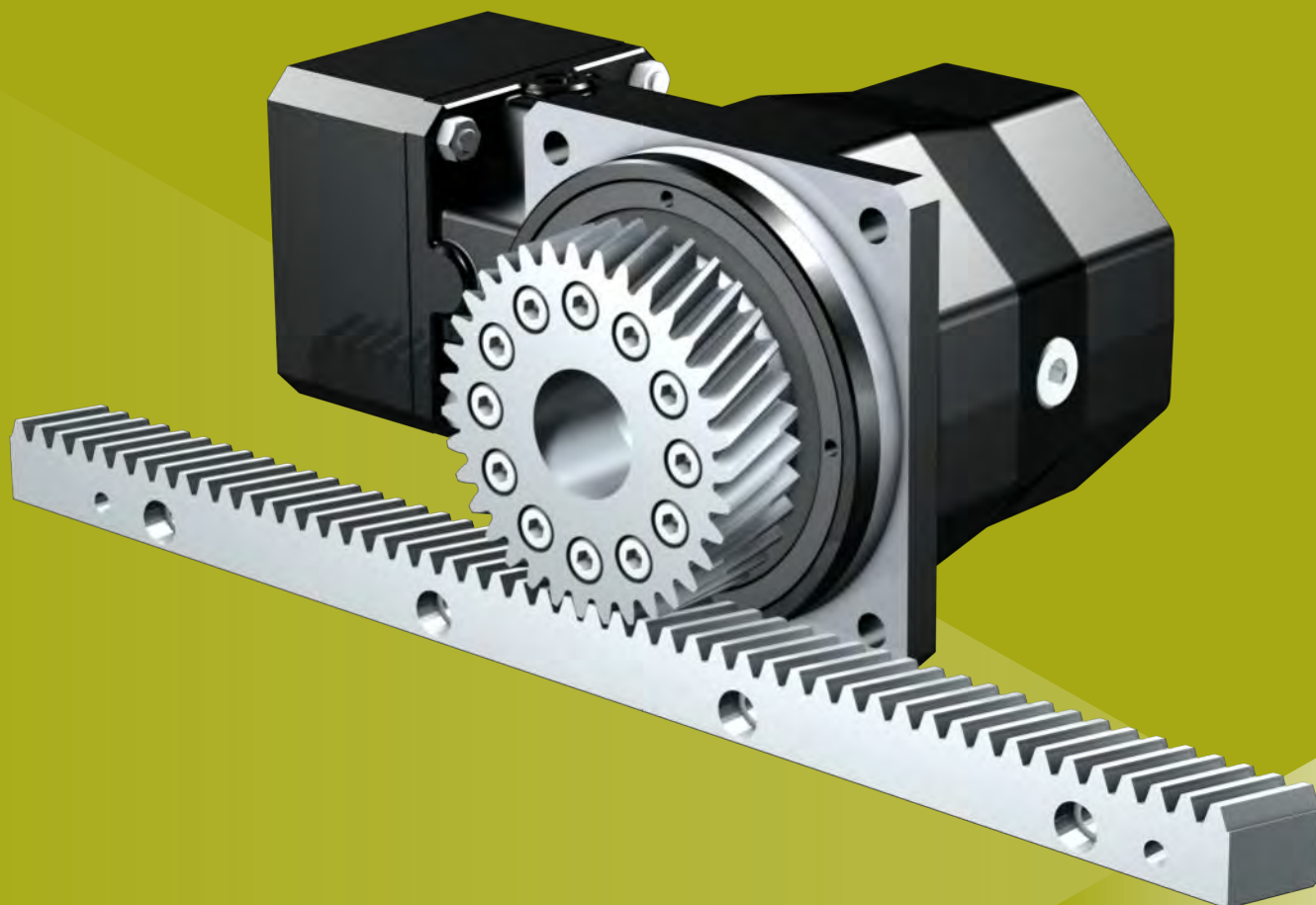


On request

EZ synchronous servo motor



On request



3.8 Rack and pinion drives

ZRKS

Right-angle servo gear unit with screwed pinion

Features

Power density	★★★★☆
Linear clearance	★★★☆☆
Price category	€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 5 (DIN 3962)	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

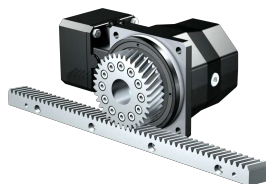
Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZR_KS402	2	33 – 37	2.3 – 2.6	1.1 – 4.1	61 – 69
ZR_KS403	2	33 – 37	2.3 – 2.6	0.11 – 1	61 – 69
ZR_KS502	3	30	4.2	1.5 – 4.6	69
ZR_KS502	2	40 – 45	4.2 – 4.7	1.3 – 4.6	62 – 69
ZR_KS503	3	30	4.2	0.15 – 1.3	69
ZR_KS503	2	40 – 45	4.2 – 4.7	0.13 – 1.3	62 – 69
ZR_KS702	4	30	6.3	2 – 5	74
ZR_KS702	3	35 – 40	6.3 – 7.2	1.8 – 5	65 – 74
ZR_KS703	4	30	6.3	0.2 – 1.7	74
ZR_KS703	3	35 – 40	6.3 – 7.2	0.18 – 1.7	65 – 74

Pinion gearing	
Helical gearing	✓

Input options

ME motor adapter

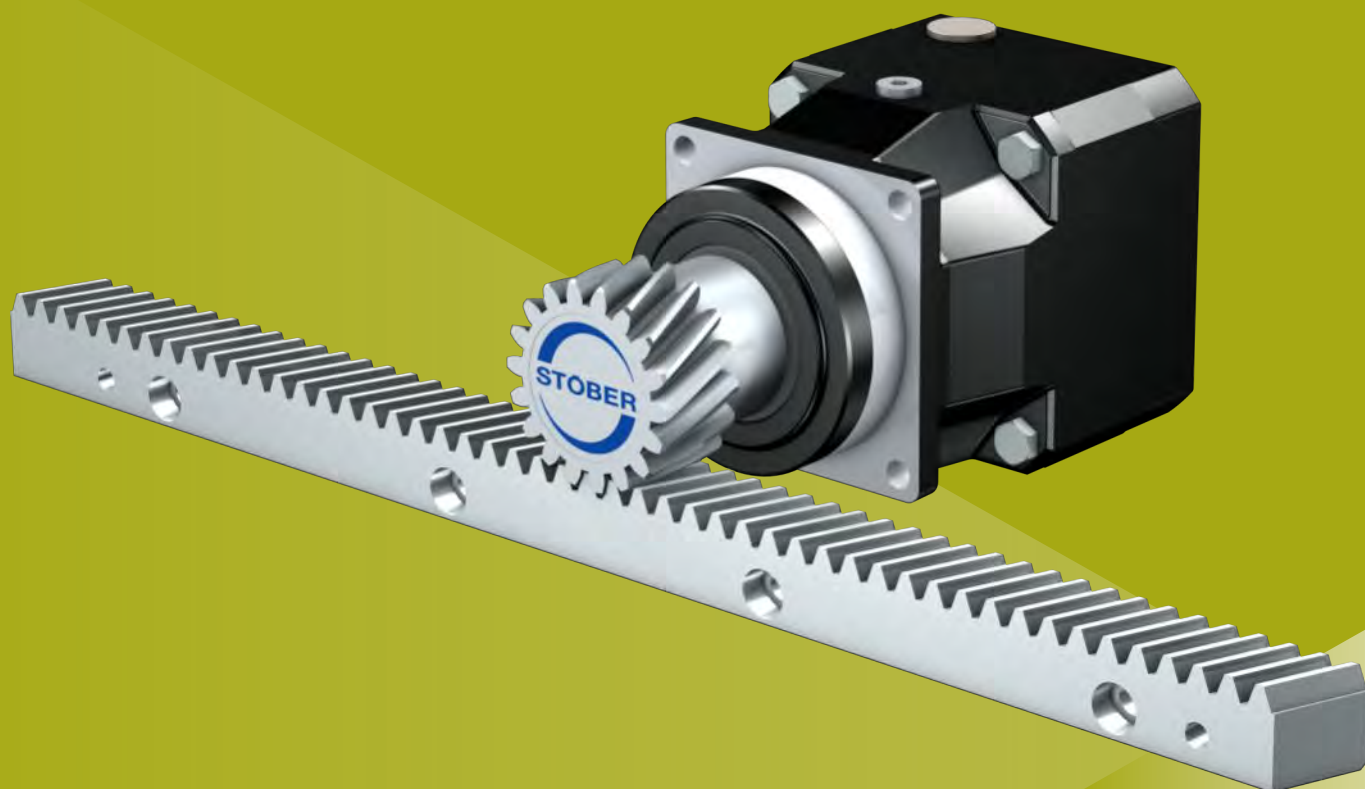


<http://www.stoeber.de/en/ZRKSME>

EZ synchronous servo motor



On request



3.9 Rack and pinion drives

ZVP

Precision planetary gear units with plug-on pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 7 (DIN 3962)	✓
Case-hardened and smoothed	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZV_P321	2	16 – 17	1.7 – 2.7	1.4 – 3.6	20
ZV_P322	2	16 – 17	1.7 – 2.7	0.14 – 1.2	25
ZV_P421	2	20 – 21	3.2 – 5.7	1.5 – 4.1	24 – 25
ZV_P422	2	20 – 21	3.2 – 5.7	0.18 – 1.2	31
ZV_P521	3	18 – 19	5.2 – 10	1.9 – 4.5	25
ZV_P521	2	25 – 26	5.1 – 9.6	1.8 – 4.2	23
ZV_P522	3	18 – 19	5.2 – 10	0.21 – 1.5	33
ZV_P522	2	25 – 26	5.1 – 9.6	0.19 – 1.4	30 – 31
ZV_P721	4	18 – 19	7.3 – 16	2.4 – 4.9	33
ZV_P721	3	22 – 23	7 – 14	2.2 – 4.5	30 – 31
ZV_P722	4	18 – 19	7.3 – 16	0.26 – 1.7	44
ZV_P722	3	22 – 23	7 – 14	0.24 – 1.5	40 – 41

Pinion gearing

Helical gearing	✓
Straight-cut gearing	✓

Accessories

Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Starter kit for decentralized lubrication	✓
Felt gear for lubrication	✓

<http://www.stoeber.de/en/ZVacc>

Input options

ME motor adapter


<http://www.stoeber.de/en/ZVPME>

KX right-angle input with MF motor adapter



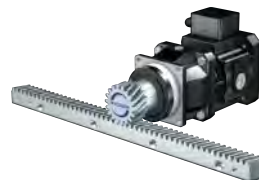
On request

K right-angle input with ME motor adapter



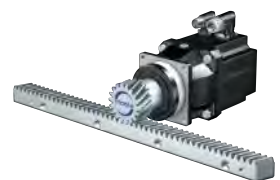
On request

MB motor adapter

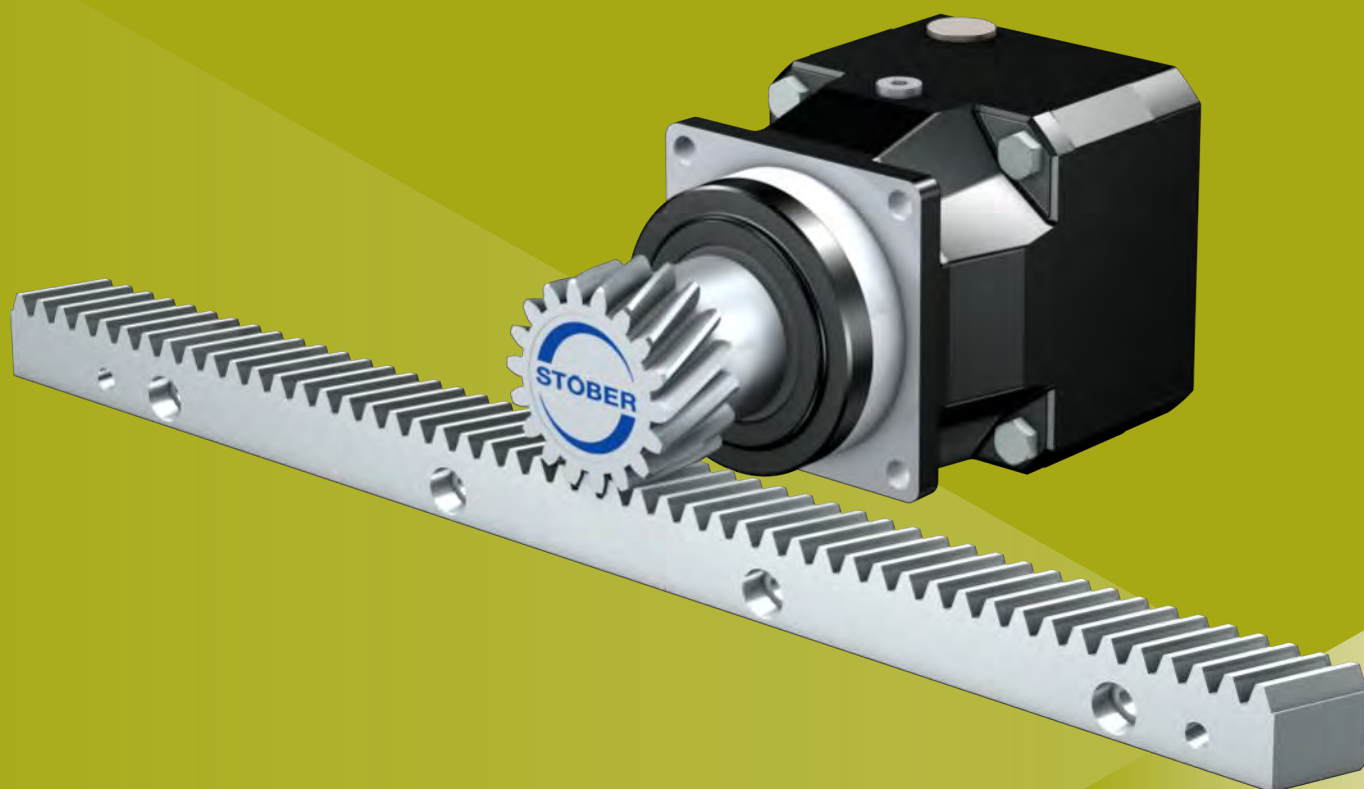


On request

EZ synchronous servo motor



On request



3.10 Rack and pinion drives

ZVPA

Low-backlash precision planetary gear units with plug-on pinion

Features

Power density	★★★★☆
Linear clearance	★★★★★
Price category	€€€
Smooth operation	★★★★★
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 7 (DIN 3962)	✓
Case-hardened and smoothed	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZV_PA321	2	16 – 17	1.7 – 2.7	1.4 – 3.6	10
ZV_PA322	2	16 – 17	1.7 – 2.7	0.14 – 1.2	15
ZV_PA421	2	20 – 21	3.2 – 5.7	1.5 – 4.1	12
ZV_PA422	2	20 – 21	3.2 – 5.7	0.18 – 1.2	18 – 19
ZV_PA521	3	18 – 19	5.2 – 10	1.9 – 4.5	8
ZV_PA521	2	25 – 26	5.1 – 9.6	1.8 – 4.2	8
ZV_PA522	3	18 – 19	5.2 – 10	0.21 – 1.5	17
ZV_PA522	2	25 – 26	5.1 – 9.6	0.19 – 1.4	15
ZV_PA721	4	18 – 19	7.3 – 16	2.4 – 4.9	11
ZV_PA721	3	22 – 23	7 – 14	2.2 – 4.5	10
ZV_PA722	4	18 – 19	7.3 – 16	0.26 – 1.7	22
ZV_PA722	3	22 – 23	7 – 14	0.24 – 1.5	20

Pinion gearing

Helical gearing	✓
Straight-cut gearing	✓

Accessories

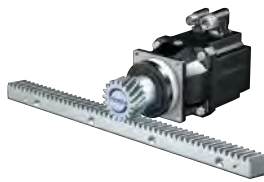
Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Starter kit for decentralized lubrication	✓
Felt gear for lubrication	✓

<http://www.stoeber.de/en/ZVacc>

Input options

MF motor adapter

MB motor adapter

EZ synchronous servo
motor
<http://www.stoeber.de/en/ZVPAMF>

On request

On request



3.11 Rack and pinion drives

ZVPE

Cost-efficient planetary gear units with plug-on pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 7 (DIN 3962)	✓
Case-hardened and smoothed	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZV_PE311	2	16 – 17	1.7 – 2.1	1.1 – 3.6	40
ZV_PE312	2	16 – 17	1.7 – 2.1	0.11 – 0.89	49
ZV_PE411	2	20 – 21	2.2 – 3	1.3 – 4.1	49
ZV_PE412	2	20 – 21	2.2 – 3	0.13 – 1	61 – 62
ZV_PE511	3	18 – 19	4 – 6.4	1.5 – 4.5	66 – 67
ZV_PE511	2	25 – 26	3.9 – 6.3	1.4 – 4.2	61 – 62
ZV_PE512	3	18 – 19	4 – 6.4	0.15 – 1.1	83
ZV_PE512	2	25 – 26	3.9 – 6.3	0.14 – 1	76 – 77

Pinion gearing

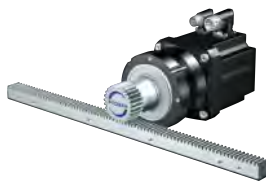
Helical gearing	✓
Straight-cut gearing	✓

Accessories

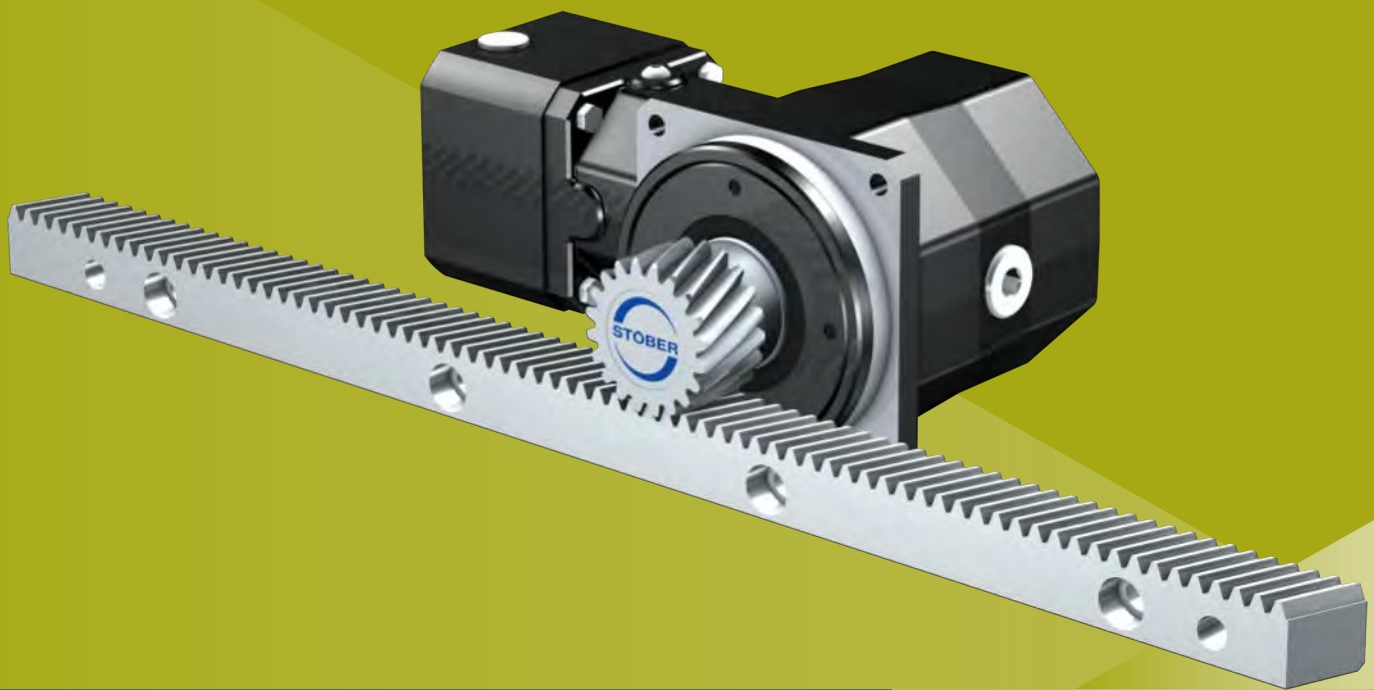
	http://www.stoeber.de/en/ZVacc
Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Starter kit for decentralized lubrication	✓
Felt gear for lubrication	✓

Input options

ME/MEI motor adapter

EZ synchronous servo
motor
<http://www.stoeber.de/en/ZVPEME>

On request



3.12 Rack and pinion drives

ZVKS

Right-angle servo gear units with plug-on pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€€€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 7 (DIN 3962)	✓
Case-hardened and smoothed	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZV_KS402	2	20 – 21	3.2 – 4.3	0.66 – 2.2	37
ZV_KS403	2	20 – 21	3.2 – 4.3	0.07 – 0.56	37
ZV_KS502	3	18 – 19	5.2 – 7	0.9 – 2.8	41 – 42
ZV_KS502	2	25 – 26	5 – 7.7	0.82 – 2.5	38 – 39
ZV_KS503	3	18 – 19	5.2 – 7	0.09 – 0.75	41 – 42
ZV_KS503	2	25 – 26	5 – 7.7	0.08 – 0.69	38 – 39
ZV_KS702	4	18 – 19	6.7 – 11	1.2 – 3	44
ZV_KS702	3	22 – 23	6.4 – 12	1.1 – 2.8	40 – 41
ZV_KS703	4	18 – 19	6.7 – 11	0.12 – 1	44
ZV_KS703	3	22 – 23	6.4 – 12	0.11 – 0.92	40 – 41

Pinion gearing	
Helical gearing	✓
Straight-cut gearing	✓

Input options

ME motor adapter

EZ synchronous servo
motor

[http://www.stoeber.de/
en/ZVKSME](http://www.stoeber.de/en/ZVKSME)

On request



3.13 Rack and pinion drives

ZVKL

Compact right-angle gear units with plug-on pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 7 (DIN 3962)	✓
Case-hardened and smoothed	✓

Key: ★★★★★ good | ★★★★★★ excellent

Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZV_KL102	2	16 – 17	1.3 – 1.7	0.33 – 2.2	99 – 124
ZV_KL202	2	20 – 21	2.2 – 3.1	0.41 – 2.8	98 – 123

Pinion gearing	
Helical gearing	✓
Straight-cut gearing	✓
Accessories	
Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Starter kit for decentralized lubrication	✓
Felt gear for lubrication	✓

<http://www.stoeber.de/en/ZVacc>

Input options

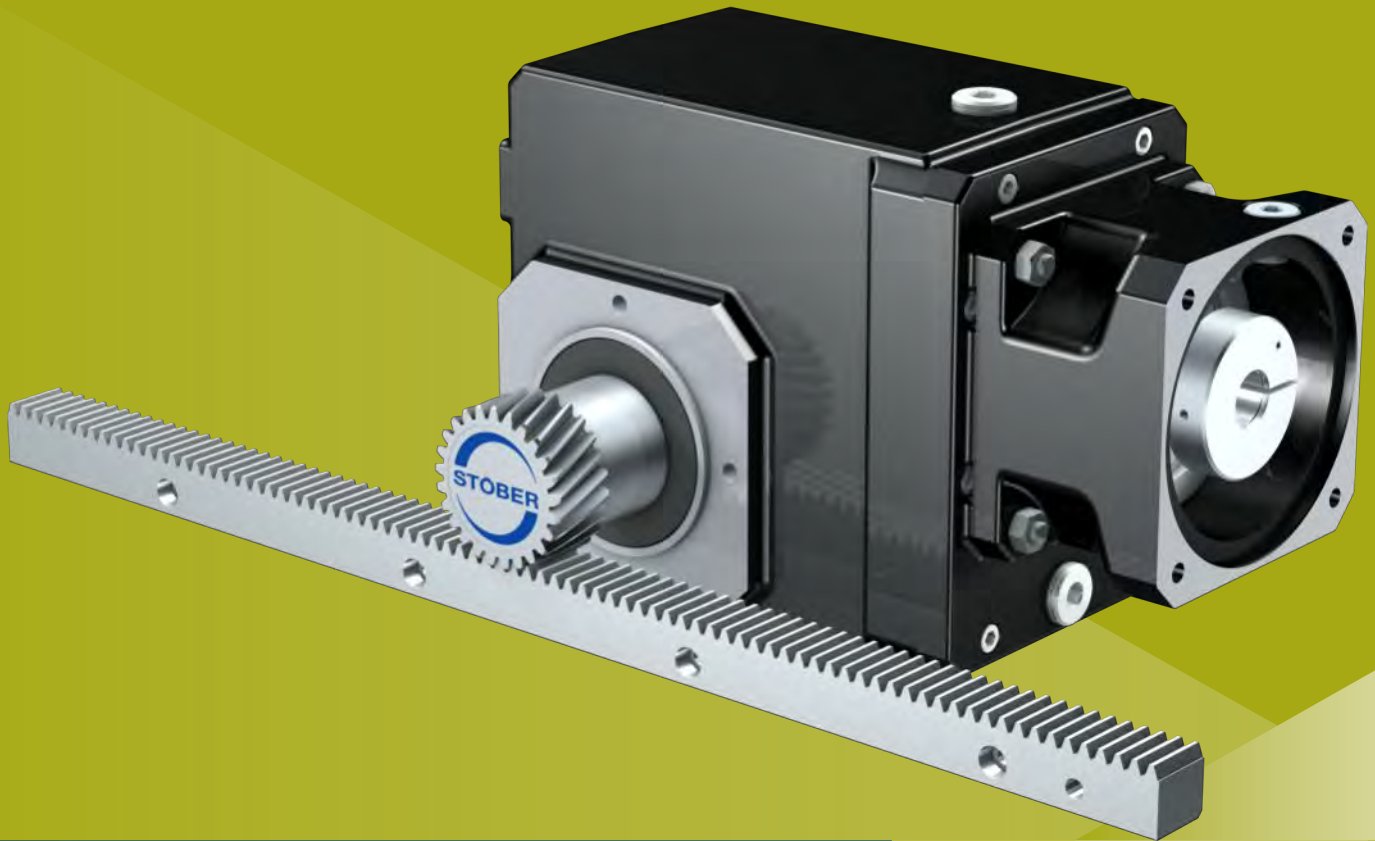
MQ motor adapter

EZ synchronous servo
motor



<http://www.stoeber.de/en/ZVKLMQ>

On request



3.14 Rack and pinion drives

ZVK

Highly rigid right-angle gear units with plug-on pinion

Features

Power density	★★★★☆
Linear clearance	★★★★☆
Price category	€
Smooth operation	★★★★☆
Linear rigidity	★★★★☆
Mass moment of inertia	★★★★☆
Ready-to-install drive solution	✓
Pinion gearing quality 7 (DIN 3962)	✓
Case-hardened and smoothed	✓

Key: ★★★★★ good | ★★★★★ excellent

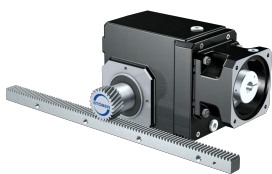
Technical data

Type	m_n	z	F_{t2acc} [kN]	$v_{t2maxZB}$ [m/s]	Δs [μm]
ZV_K102	2	20 – 21	2.6 – 6.4	0.19 – 2.5	37 – 74
ZV_K102	2	20 – 21	3.2 – 6.4	0.31 – 2.5	37 – 74
ZV_K202	2	25 – 26	2 – 8.5	0.22 – 2.8	11 – 77
ZV_K202	3	18 – 19	1.9 – 7.7	0.24 – 3	12 – 83
ZV_K202	2	25 – 26	5.2 – 8.5	0.3 – 2.8	11 – 77
ZV_K202	3	18 – 19	5.4 – 7.7	0.32 – 3	12 – 83
ZV_K202	2	25 – 26	5.2 – 8.5	0.47 – 2.8	11 – 77
ZV_K202	3	18 – 19	5.4 – 7.7	0.52 – 3	12 – 83
ZV_K203	2	25 – 26	5.2 – 8.3	0.06 – 0.39	19 – 77
ZV_K203	3	18 – 19	5.4 – 7.6	0.06 – 0.42	21 – 83
ZV_K302	2	25 – 26	2.2 – 10	0.2 – 2.4	11 – 77
ZV_K302	3	18 – 19	2.1 – 11	0.22 – 2.6	12 – 83
ZV_K302	3	18 – 19	5.3 – 11	0.27 – 2.9	12 – 83
ZV_K302	2	25 – 26	5.2 – 10	0.24 – 2.6	11 – 77
ZV_K302	3	18 – 19	5.3 – 11	0.43 – 2.9	12 – 83
ZV_K302	2	25 – 26	5.2 – 10	0.39 – 2.6	11 – 77
ZV_K303	2	25 – 26	5.2 – 10	0.05 – 0.28	19 – 77
ZV_K303	3	18 – 19	5.3 – 11	0.06 – 0.31	21 – 83
ZV_K303	2	25 – 26	5.2 – 10	0.08 – 0.43	19 – 77
ZV_K303	3	18 – 19	5.3 – 11	0.08 – 0.46	21 – 83
ZV_K402	3	22 – 23	4.5 – 15	0.26 – 3.2	15 – 102
ZV_K402	4	18 – 19	4.2 – 16	0.29 – 3.5	17 – 111
ZV_K402	3	22 – 23	6.6 – 15	0.42 – 3.2	15 – 102
ZV_K402	4	18 – 19	6.9 – 16	0.46 – 3.5	17 – 111
ZV_K402	3	22 – 23	6.6 – 15	0.54 – 3.2	15 – 102
ZV_K402	4	18 – 19	6.9 – 16	0.6 – 3.5	17 – 111
ZV_K403	3	22 – 23	6.6 – 15	0.07 – 0.28	25 – 102
ZV_K403	4	18 – 19	6.9 – 16	0.07 – 0.3	28 – 111
ZV_K403	4	18 – 19	6.9 – 16	0.09 – 0.62	28 – 111
ZV_K403	3	22 – 23	6.6 – 15	0.08 – 0.57	25 – 102

Pinion gearing	
Helical gearing	✓
Straight-cut gearing	✓
Accessories	http://www.stoeber.de/en/ZVacc
Adjustment plate	✓
Adjustment plate with adjustment bar	✓
Starter kit for decentralized lubrication	✓
Felt gear for lubrication	✓

Input options

ME motor adapter



<http://www.stoeber.de/en/ZVKME>

MB motor adapter



On request

EZ synchronous servo motor

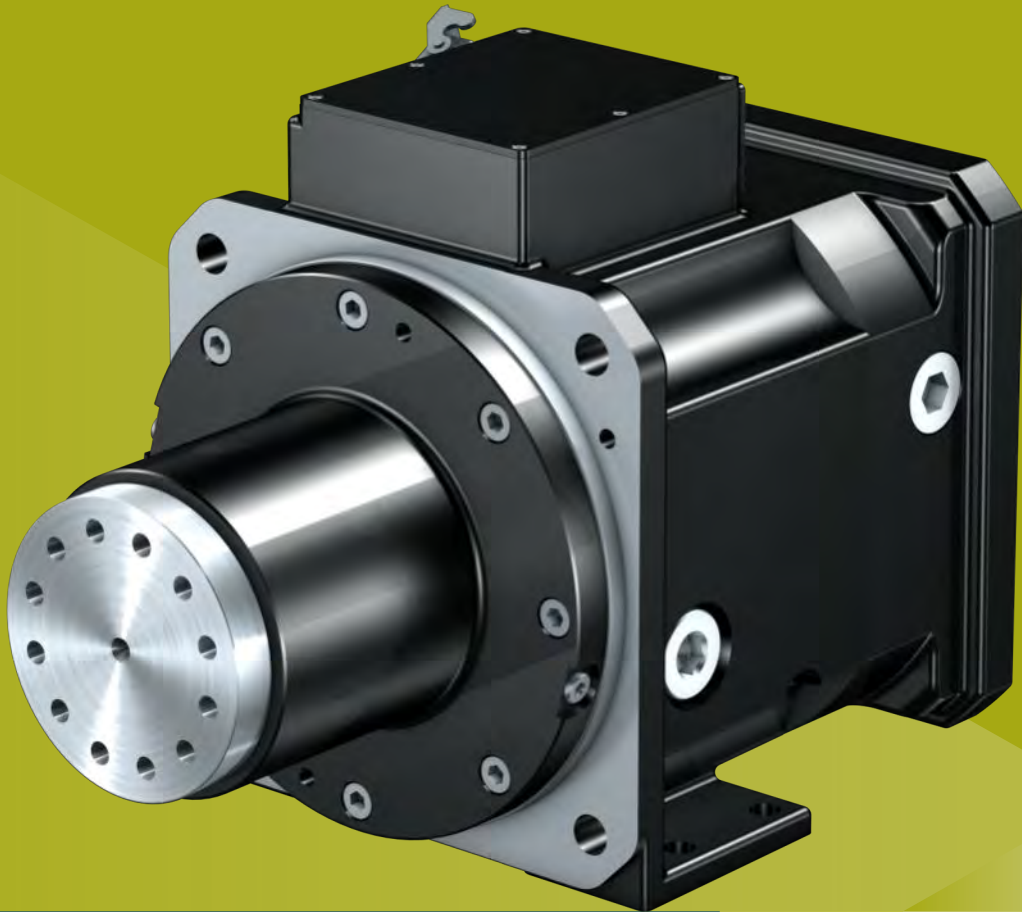


On request

4 **Two-speed gearboxes**

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4.1 PS two-speed gearboxes 104



4.1 Two-speed gearboxes

PS

PS two-speed gearboxes with loss-optimized direct drive

Features

Power density	★★★★☆
Backlash	★★★☆☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★☆☆
Mass moment of inertia	★★★★☆
Fast changeover between high speed and high torque	✓
High-precision, helical planetary gear unit	✓
Direct drive or neutral gear position optimized to reduce loss (optional)	✓
Splash lubrication or circulating lubrication (optional)	✓
Oil sight glass or oil level gauge (optional)	✓
Easy and reliable attachment to any main feed motor	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	n_{1max} [rpm]	$P_{N,GB}$ [kW]	M_{2max} [Nm]	M_{2N} [Nm]	$\Delta\varphi_2$ [arcmin]
PS2501	1 – 5.5	2500 – 10000	47	2200	1375	20 – 30
PS2501	1 – 4	2500 – 10000	47	1600	1200	20 – 30
PS3001	1 – 5.5	2500 – 10000	47	2200	1375	20 – 30
PS3001	1 – 4	2500 – 10000	47	1600	1200	20 – 30

Housing design	
Short bearing distance	✓
Medium bearing distance	✓
Long bearing distance	✓

Shaft design	
Flange shaft	✓
Solid shaft without feather key	✓
Solid shaft with two feather keys	✓

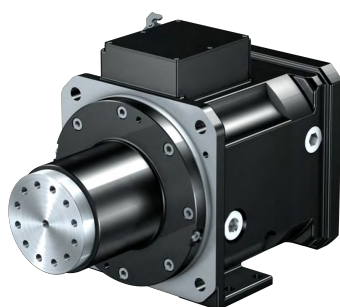
Bearing design	
Deep-groove ball bearing	✓
Angular contact ball bearing	✓
Cylindrical roller bearing	✓

Lubrication	
Splash lubrication	✓
Circulating lubrication	✓

Housing design	S	M	S	M	M	L
Shaft design	G		P		F	
Bearing design						
R	SGR	–	SPR	–	–	–
S	SGS	MGS	SPS	MPS	MFS	–
Z	–	MGZ	–	MPZ	MFZ	LFZ

Further information

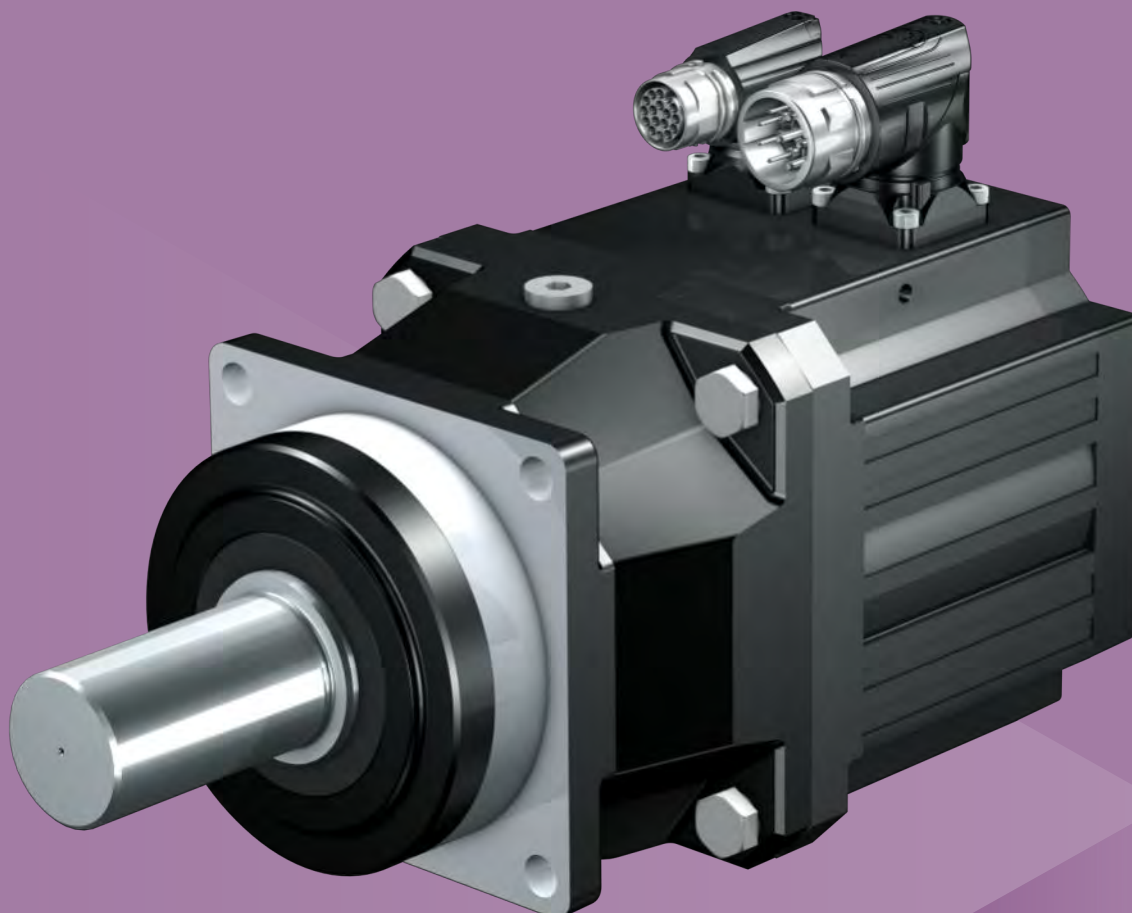
PS two-speed gearboxes


<http://www.stoeber.de/en/PS>

5EZ synchronous servo geared motors

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5.1 Planetary geared motors

P

Helical-geared precision planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★☆☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Reinforced output bearing	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
P221	4 – 10	11 – 22	3.7 – 11	8000	6	1.6 – 1.9
P222	16	22	14	8000	8	1.8
P321	3 – 10	15 – 65	4.9 – 43	6000 – 8000	4	4 – 5.7
P322	12 – 50	32 – 65	11 – 45	8000	5	4.1 – 4.6
P421	3 – 10	25 – 120	11 – 85	5500 – 7000	4	9 – 13
P422	12 – 80	32 – 120	11 – 89	6500 – 8000	5	9.2 – 11
P521	3 – 10	58 – 300	23 – 230	4500 – 6500	3	25 – 36
P522	12 – 70	97 – 300	32 – 229	6000 – 7000	4	25 – 28
P721	3 – 10	155 – 700	77 – 456	3700 – 6000	3	50 – 65
P722	12 – 80	182 – 700	66 – 532	5000 – 6500	4	52 – 54
P821	3 – 10	422 – 1392	194 – 729	3000 – 4500	3	153 – 220
P822	12 – 100	467 – 1600	219 – 1234	4500 – 6000	4	148 – 172
P922	16 – 50	1520 – 3000	705 – 2290	3500 – 4500	4	329 – 341

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	✓

Bearing design

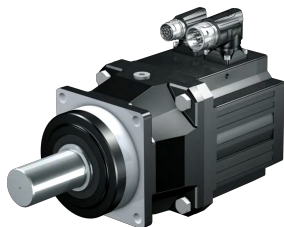
Standard	✓
Axially reinforced	✓
Radially reinforced	✓

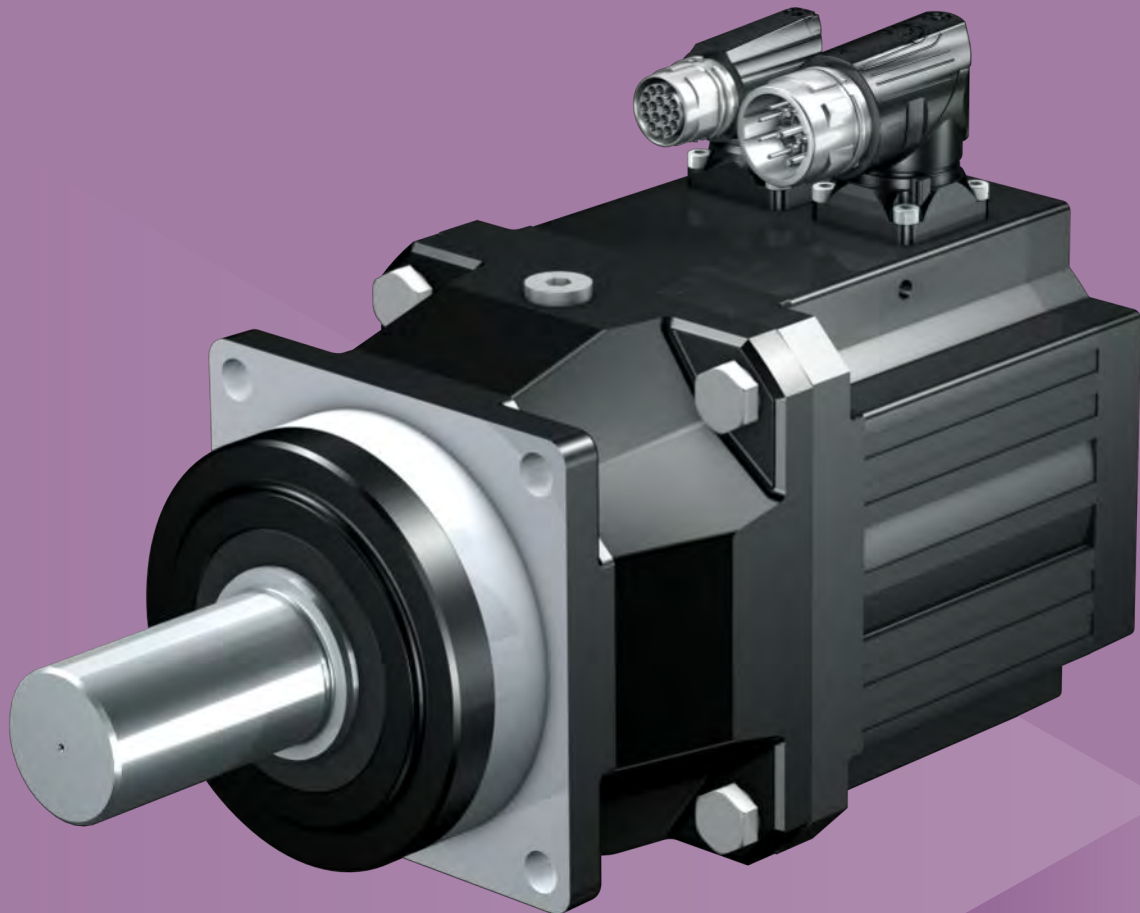
Motor design

[► 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PEZ>



5.2 Planetary geared motors

PA

Low-backlash helical-gearred precision planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★★
Price category	€€€
Shaft load	★★★★☆
Smooth operation	★★★★★
Torsional stiffness	★★★☆☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM seal ring at the input and output)	✓
Axially reinforced output bearing, ideally suited for helical-gearred rack and pinion drives	✓
Compact and highly dynamic due to direct mo- tor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PA321	3 – 10	15 – 65	4.9 – 43	6000 – 8000	2	4 – 5.7
PA322	12 – 50	32 – 65	11 – 45	8000	3	4.1 – 4.6
PA421	3 – 10	25 – 120	11 – 85	5500 – 7000	2	9 – 13
PA422	12 – 80	32 – 120	11 – 89	6500 – 8000	3	9.2 – 11
PA521	3 – 10	58 – 300	23 – 230	4500 – 6500	1	25 – 36
PA522	12 – 70	97 – 300	32 – 229	6000 – 7000	2	25 – 28
PA721	3 – 10	155 – 700	77 – 456	3700 – 6000	1	50 – 65
PA722	12 – 80	182 – 700	66 – 532	5000 – 6500	2	52 – 54
PA821	3 – 10	422 – 1392	194 – 729	3000 – 4500	1	153 – 220
PA822	12 – 100	467 – 1600	219 – 1234	4500 – 6000	2	148 – 172

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

Bearing design

Axially reinforced

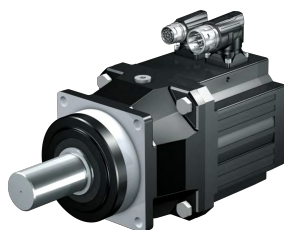
✓

Motor design

[> 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PAEZ>



5.3 Planetary geared motors

PH

High-performance precision planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct mo- tor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PH321	5 – 10	24 – 65	8.1 – 41	6000	4	11 – 16
PH322	20 – 50	52 – 65	18 – 44	8000	4	14 – 15
PH421	4 – 10	41 – 130	17 – 84	5000 – 6000	3	21 – 39
PH422	16 – 70	65 – 130	22 – 97	6500 – 8000	3	24 – 29
PH521	4 – 10	77 – 320	38 – 201	5000 – 6000	3	55 – 98
PH522	16 – 70	126 – 320	52 – 246	6000 – 7000	3	58 – 71
PH721	4 – 10	192 – 700	80 – 451	4000 – 5000	3	117 – 185
PH722	16 – 70	298 – 700	108 – 532	5000 – 6500	3	126 – 150
PH821	4 – 10	557 – 1378	254 – 902	3500 – 4000	3	317 – 634
PH822	16 – 100	521 – 1700	273 – 1302	4500 – 6000	3	305 – 484
PH932	12 – 60	1618 – 5000	744 – 2977	3000 – 4500	3	1057 – 1240
PH1032	18 – 60	2427 – 7500	1117 – 4196	3000 – 4500	3	1602 – 1778

Shaft design

Flange shaft

✓

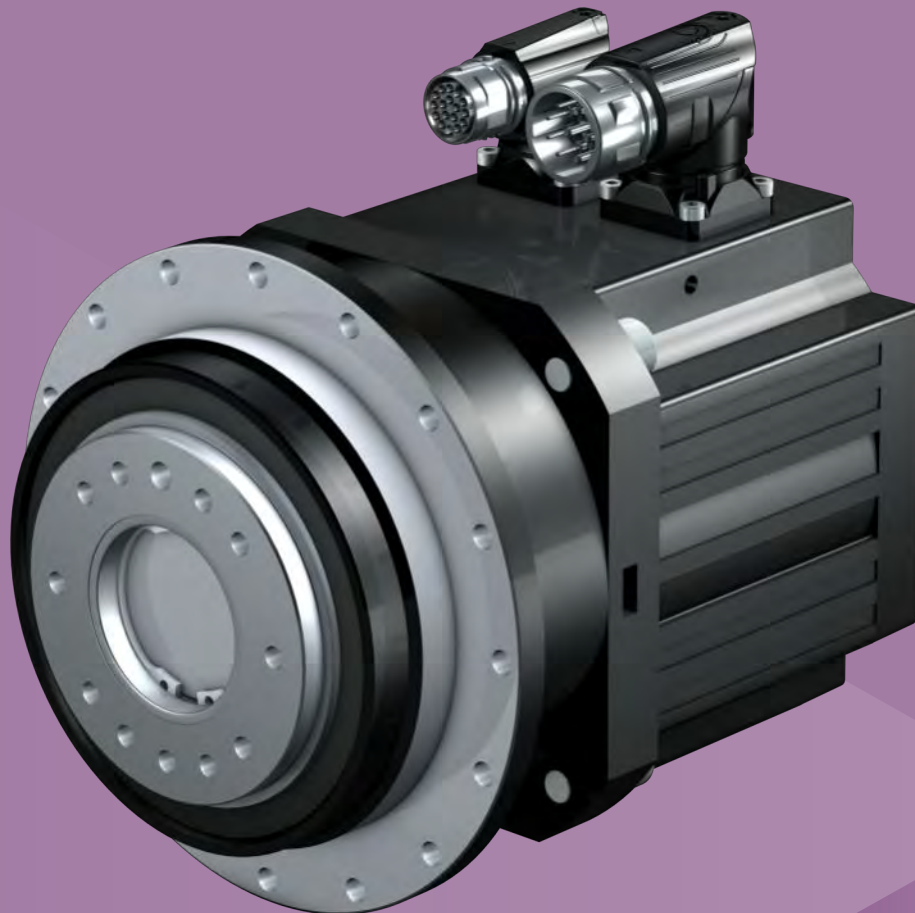
Motor design

[\[> 7.1 \]](#)

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PHEZ>



5.4 Planetary geared motors

PHA

Low-backlash high-performance precision planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★★
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM seal ring at the input and output)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct mo- tor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PHA321	5 – 10	24 – 65	8.1 – 41	6000	2	11 – 16
PHA322	20 – 50	52 – 65	18 – 44	8000	2	14 – 15
PHA421	4 – 10	41 – 130	17 – 84	5000 – 6000	1	21 – 39
PHA422	16 – 70	65 – 130	22 – 97	6500 – 8000	1	24 – 29
PHA521	4 – 10	77 – 320	38 – 201	5000 – 6000	1	55 – 98
PHA522	16 – 70	126 – 320	52 – 246	6000 – 7000	1	58 – 71
PHA721	4 – 10	192 – 700	80 – 451	4000 – 5000	1	117 – 185
PHA722	16 – 70	298 – 700	108 – 532	5000 – 6500	1	126 – 150
PHA821	4 – 10	557 – 1378	254 – 902	3500 – 4000	1	317 – 634
PHA822	16 – 100	521 – 1700	273 – 1302	4500 – 6000	1	305 – 484
PHA932	12 – 60	1618 – 5000	744 – 2977	3000 – 4500	1	1057 – 1240
PHA1032	18 – 60	2427 – 7500	1117 – 4196	3000 – 4500	1	1602 – 1778

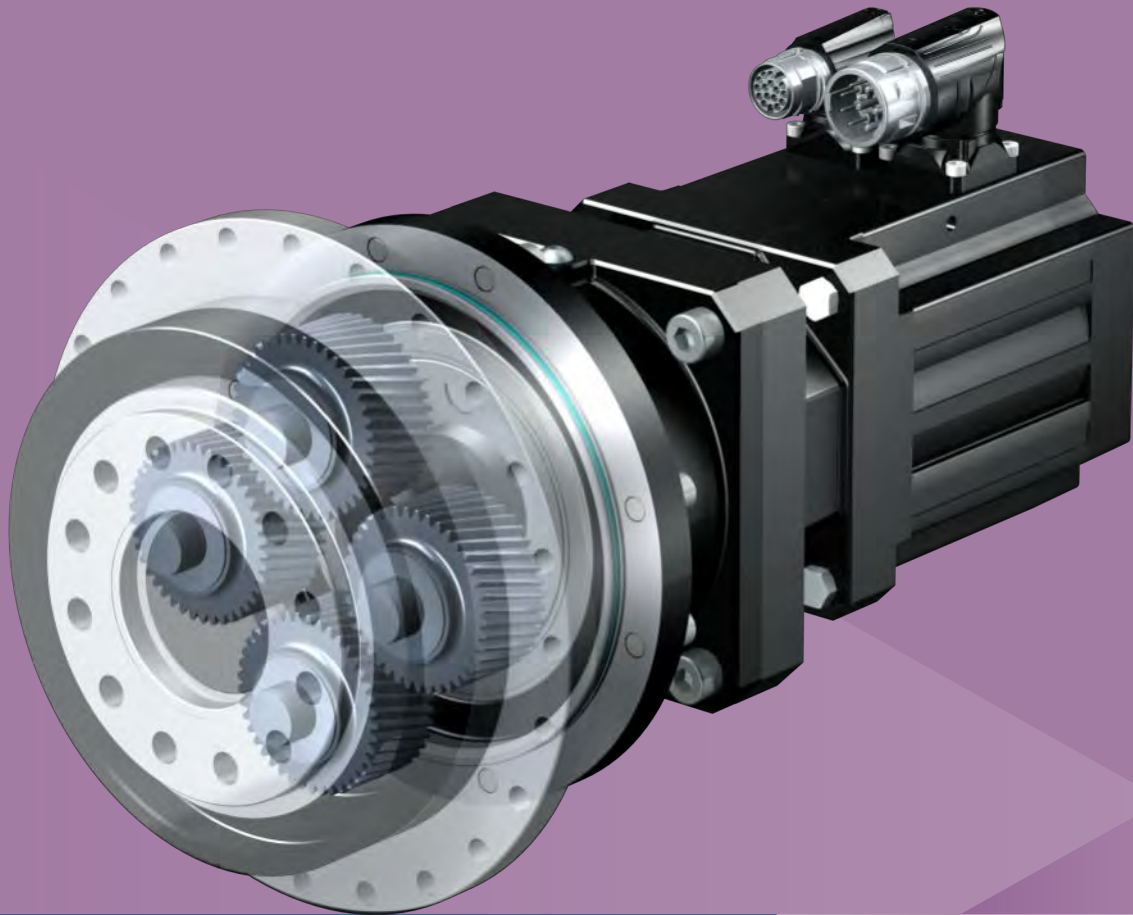
Shaft design	
Flange shaft	✓
Motor design	[> 7.1]

Input options

EZ synchronous servo motor



<http://www.stoeber.de/en/>
[PHAEZ](#)



5.5 Planetary geared motors

PHQ

Quattro-Power for maximum power density

Features

Power density	★★★★★
Backlash	★★★★☆
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★★
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position (single/two stage)	✓
High power density	✓
(four-stage planetary system)	
Continuous operation without cooling	✓
(FKM sealing ring at the input)	
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PHQ421	5.5	84 – 170	23 – 84	6000	3	42
PHQ422	22 – 55	100 – 170	34 – 125	6500 – 8000	3	35 – 37
PHQ521	5.5	216 – 425	76 – 159	5500	3	107
PHQ522	22 – 55	174 – 425	61 – 327	6000 – 7000	3	87 – 95
PHQ721	5.5	528 – 950	196 – 349	5000	3	235
PHQ722	22 – 55	409 – 950	164 – 731	5000 – 6500	3	195 – 207
PHQ723	88 – 275	673 – 950	222 – 693	6000 – 7000	3	202 – 204
PHQ822	22 – 55	1023 – 2600	404 – 1898	4500 – 6000	3	615 – 661
PHQ823	88 – 385	1267 – 2600	372 – 1996	5000 – 6500	3	635 – 647
PHQ932	24 – 60	3906 – 6000	1449 – 3688	3500 – 4500	3	1149 – 1225
PHQ933	72 – 600	2160 – 6000	896 – 4566	4500 – 6000	3	1145 – 1207
PHQ1033	96 – 240	8640 – 10000	3205 – 7452	3500 – 4500	3	2055 – 2068
PHQ1133	96 – 300	13500 – 22000	5009 – 14278	3500 – 4500	3	3491 – 3533

Shaft design

Flange shaft

✓

Motor design

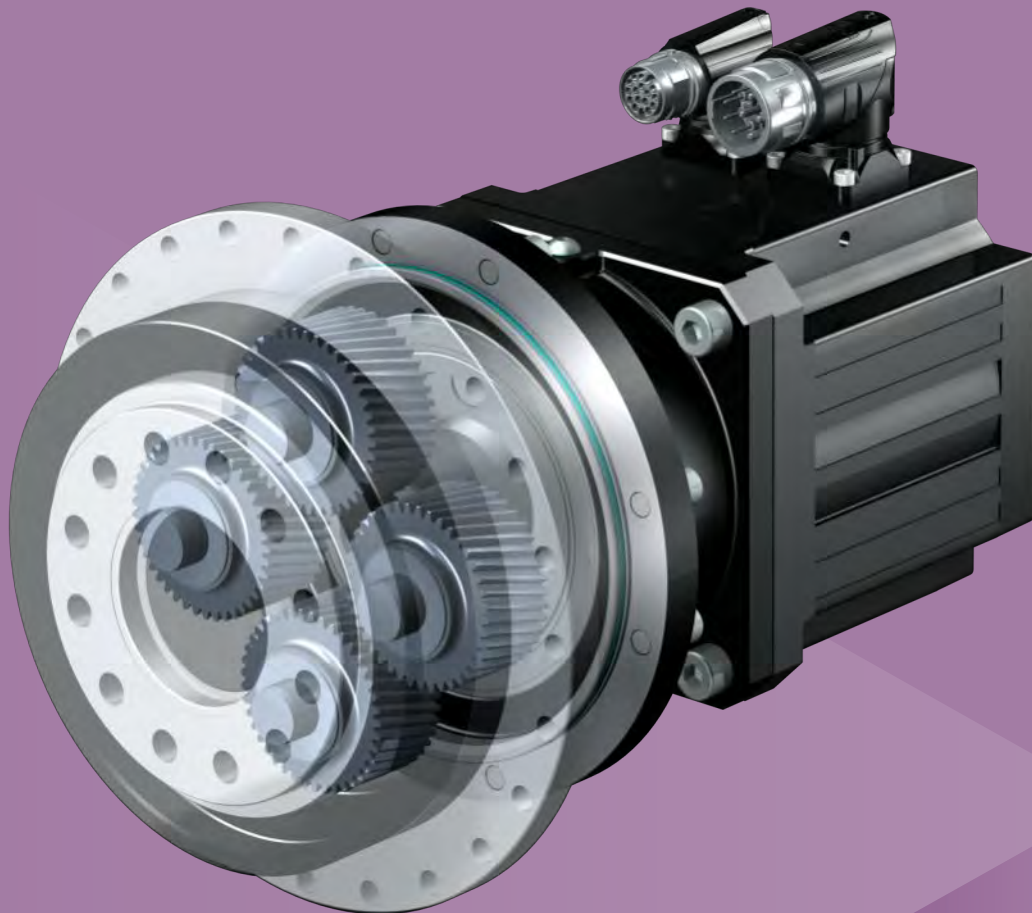
[> 7.1]

Input options

EZ synchronous servo motor



<http://www.stoeber.de/en/PHQEZ>



5.6 Planetary geared motors

PHQA

Quattro-Power for maximum power density

Features

Power density	★★★★★
Backlash	★★★★★
Price category	€€€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★★★
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position (single/two stage)	✓
High power density	✓
(four-stage planetary system)	
Continuous operation without cooling	✓
(FKM seal ring at the input and output)	
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PHQA421	5.5	84 – 170	23 – 84	6000	1	42
PHQA422	22 – 55	100 – 170	34 – 131	6500 – 8000	1	35 – 37
PHQA521	5.5	106 – 425	55 – 221	5500	1	107
PHQA522	22 – 55	174 – 425	61 – 327	6000 – 7000	1	87 – 95
PHQA721	5.5	528 – 950	196 – 496	5000	1	235
PHQA722	22 – 55	409 – 950	148 – 731	5000 – 6500	1	195 – 207
PHQA723	88 – 275	673 – 950	222 – 705	6000 – 7000	1	202 – 204
PHQA822	22 – 55	716 – 2600	376 – 1923	4500 – 6000	1	615 – 661
PHQA823	88 – 385	1267 – 2600	372 – 1996	5000 – 6500	1	635 – 647
PHQA932	18 – 60	2232 – 6000	1069 – 3722	3000 – 4500	1	1149 – 1237
PHQA933	72 – 600	1728 – 6000	896 – 4566	4500 – 6000	1	1145 – 1207
PHQA1033	96 – 240	8640 – 10000	3205 – 7452	3500 – 4500	1.5	2056 – 2068

Shaft design

Flange shaft

✓

Motor design

[\[> 7.1 \]](#)

Input options

EZ synchronous servo motor



<http://www.stoeber.de/en/>
[PHQAEZ](#)



5.7 Planetary geared motors

PHV

High-performance precision planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct mo- tor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PHV933	61 – 121	1638 – 4250	680 – 3267	4500	3	805 – 850
PHV1033	61 – 91	7500	2646 – 5414	4500	3	1342 – 1370

Shaft design

Flange shaft

✓

Motor design

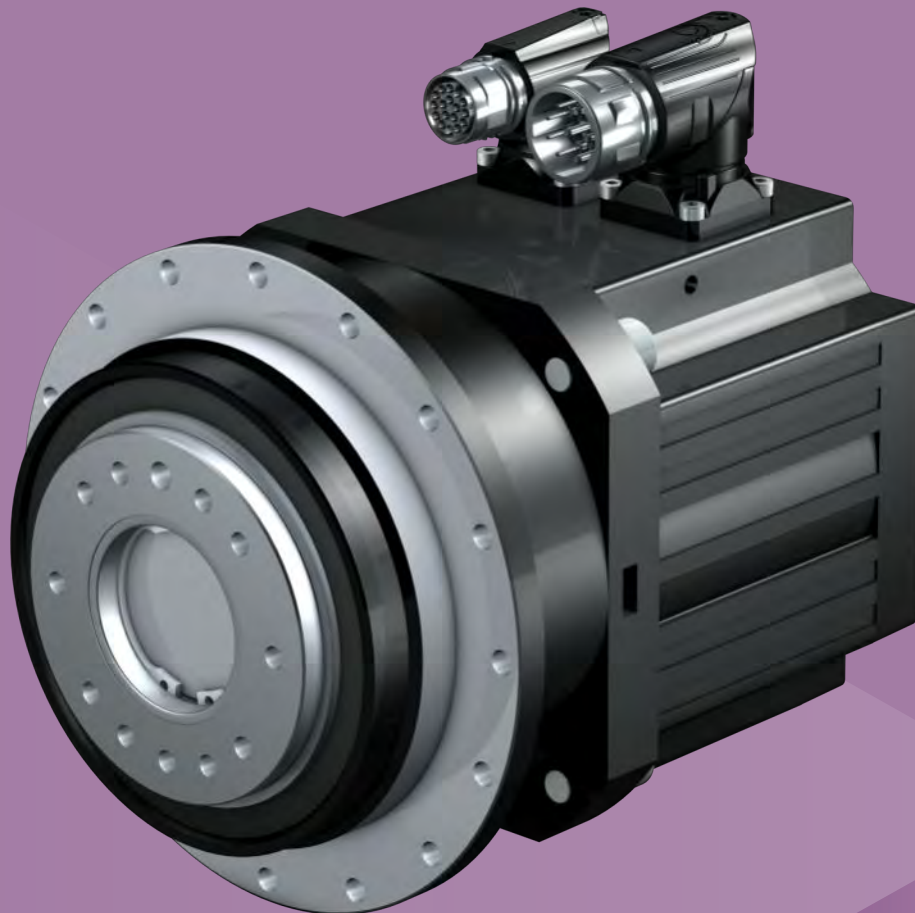
[> 7.1]

Input options

EZ synchronous servo motor



<http://www.stoeber.de/en/>
[PHVEZ](#)



5.8 Planetary geared motors

PHVA

Low-backlash high-performance precision planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★★
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★★
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Continuous operation without cooling (FKM seal ring at the input and output)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct mo- tor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PHVA933	61 – 121	1638 – 4250	680 – 3267	4500	1	805 – 850
PHVA1033	61 – 91	7500	2646 – 5414	4500	1	1342 – 1370

Shaft design

Flange shaft

✓

Motor design

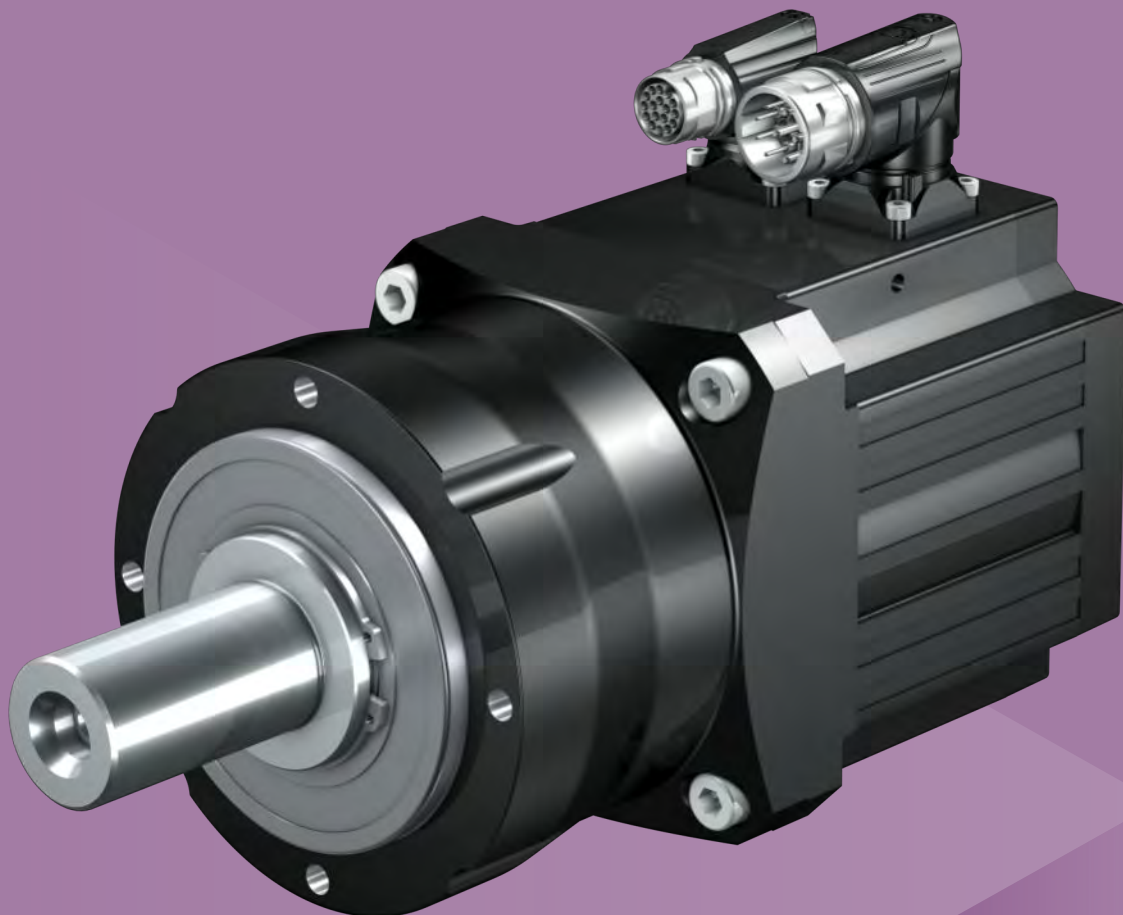
[> 7.1]

Input options

EZ synchronous servo motor



<http://www.stoeber.de/en/PH-VAEZ>



5.9 Planetary geared motors

PE

Cost-efficient helical-geared planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Non-contact sealing at the input	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PE211	4 – 5	11 – 14	3.7 – 4.6	8000	10	1.4
PE311	3 – 10	11 – 42	3.7 – 19	6000	8	3.4 – 4.2
PE312	12 – 28	32 – 55	11 – 34	6000	10	4 – 4.2
PE411	3 – 10	25 – 100	8.7 – 55	5500 – 6000	8	10 – 14
PE412	12 – 28	97 – 120	34 – 84	5500 – 6000	10	12 – 14
PE511	3 – 10	47 – 250	17 – 167	4500 – 5000	8	27 – 35
PE512	12 – 28	182 – 310	54 – 233	4500 – 5000	10	33 – 35

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

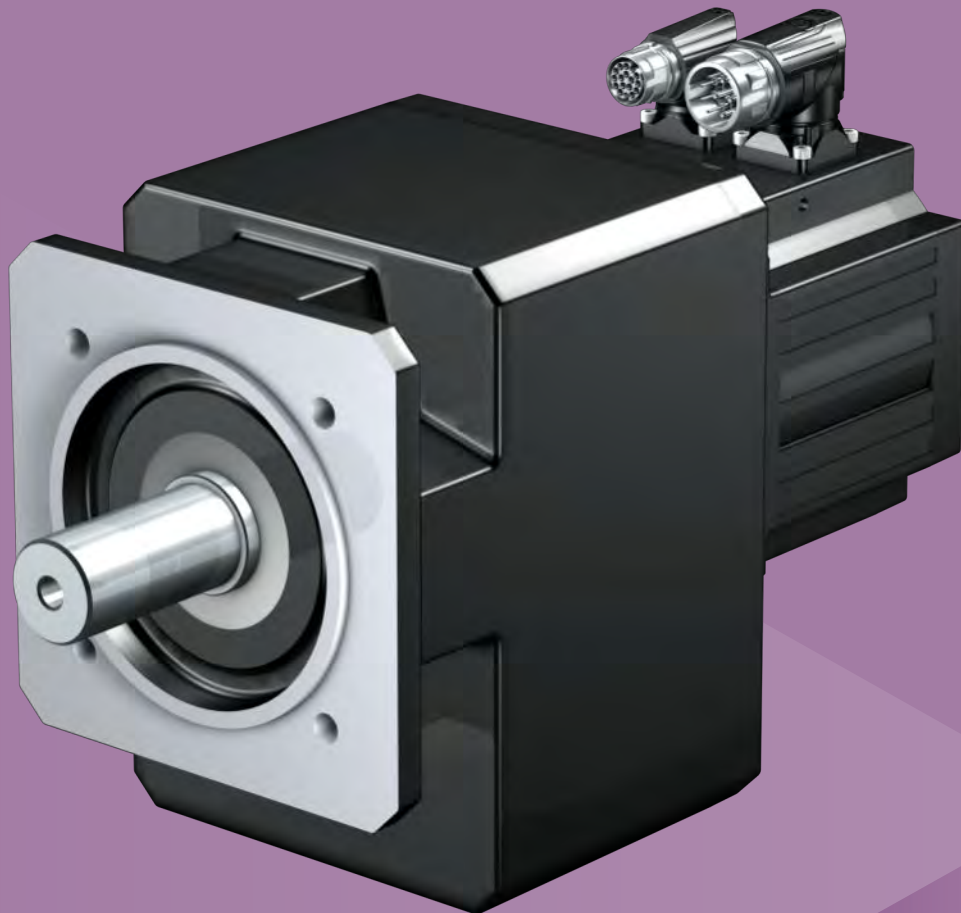
Motor design

[> 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PEEZ>



5.10 Helical geared motors

C

Compact helical geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free (C0 – C5)	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)
Compact and highly dynamic due to direct motor attachment	✓

Key: ★★★★★ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	M _{2,0} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
C002	2 – 50	8.3 – 72	2.8 – 55	6000	16 – 20	1.3 – 1.6
C102	2 – 70	15 – 138	5 – 106	5000 – 6000	15 – 18	3.1 – 3.9
C103	82 – 111	138	74 – 101	6000	15	3.9
C202	2 – 70	31 – 230	11 – 177	4500 – 6000	14 – 17	6 – 8.3
C203	81 – 92	230	129 – 173	6000	14	8.3
C302	2 – 62	31 – 400	11 – 309	4000 – 5500	13 – 16	7.1 – 8.7
C303	81 – 137	350 – 400	131 – 288	5500	13	8.7
C402	2 – 70	129 – 600	54 – 462	3500 – 5000	12 – 15	17 – 22
C403	81 – 90	550 – 600	363 – 448	5000	12	22
C502	2 – 70	184 – 920	65 – 709	3000 – 4500	12 – 14	21 – 23
C503	81 – 135	850 – 920	362 – 616	4500	12	23
C612	4.2 – 69	380 – 1650	200 – 1269	2800 – 4000	10	74
C613	49 – 213	913 – 1650	341 – 1274	4000	10	74
C712	4.3 – 70	491 – 2760	258 – 1918	2600 – 3600	10	122
C713	51 – 223	1548 – 2760	642 – 1829	3600	10	122
C812	4.2 – 69	840 – 4800	385 – 3062	2500 – 3400	10	145 – 204
C813	49 – 270	1517 – 4800	630 – 3600	3400	10	204
C913	78 – 139	5628 – 6500	2757 – 4926	3200	10	393

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

C0 – C5: ✓

Starting at C6: Request

Housing design

Pitch circle diameter

✓

Round flange

✓

Square flange

C0 – C4: ✓

Base

✓

Base + pitch circle diameter

✓

Base + round flange

✓

Motor design

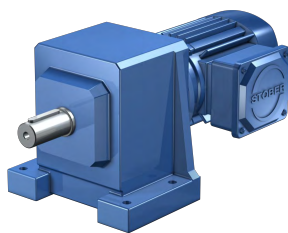
[► 7.1]

Input options

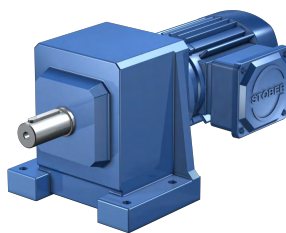
EZ synchronous servo motor



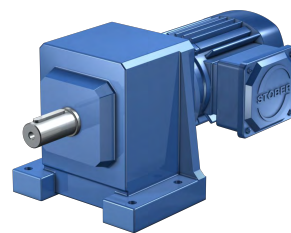
IE3D asynchronous motor

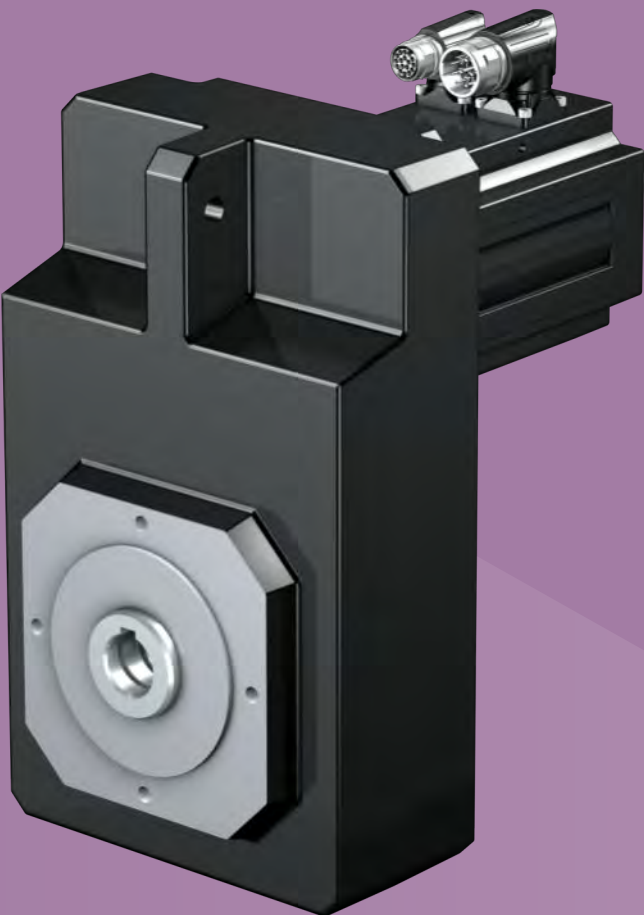


IE2D asynchronous motor



D asynchronous motor


<http://www.stoeber.de/en/CEZ>
<http://www.stoeber.de/en/CIE3D>
<http://www.stoeber.de/en/CIE2D>
<http://www.stoeber.de/en/CD>



5.11

Offset helical geared motors

F

Offset helical geared motors with large axial distances

Features

Power density	★☆☆☆☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
FKM seal ring at the input	✓
Large axial distances, suitable for confined situations	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	M _{2,0} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
F102	4.3 – 94	19 – 120	6.6 – 91	6000	6 – 11	6.5 – 7.7
F202	4.7 – 141	35 – 270	12 – 205	5000 – 6000	6 – 11	16 – 18
F203	184 – 222	270	167 – 202	6000	7 – 11	18
F302	4.6 – 141	72 – 450	26 – 345	4500 – 6000	6 – 11	20 – 22
F303	185	450	297	6000	7 – 11	22
F402	4.7 – 112	73 – 700	26 – 527	4000 – 5500	5 – 10	39
F403	184 – 274	700	295 – 527	5500	6 – 10	39
F602	4.5 – 140	358 – 1100	126 – 837	3500 – 5000	5 – 10	73 – 77
F603	181	1100	812	5000	6 – 10	77

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

Housing design

Pitch circle diameter	✓
Round flange	✓
Square flange	✓
Pitch circle diameter + side fastening	✓
Round flange + side fastening	✓
Square flange + side fastening	✓

Motor design

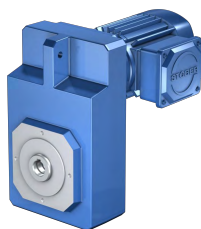
[> 7.1]

Input options

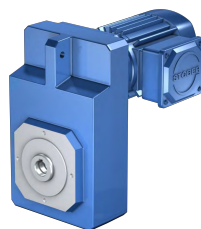
EZ synchronous servo motor



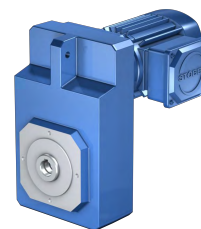
IE3D asynchronous motor

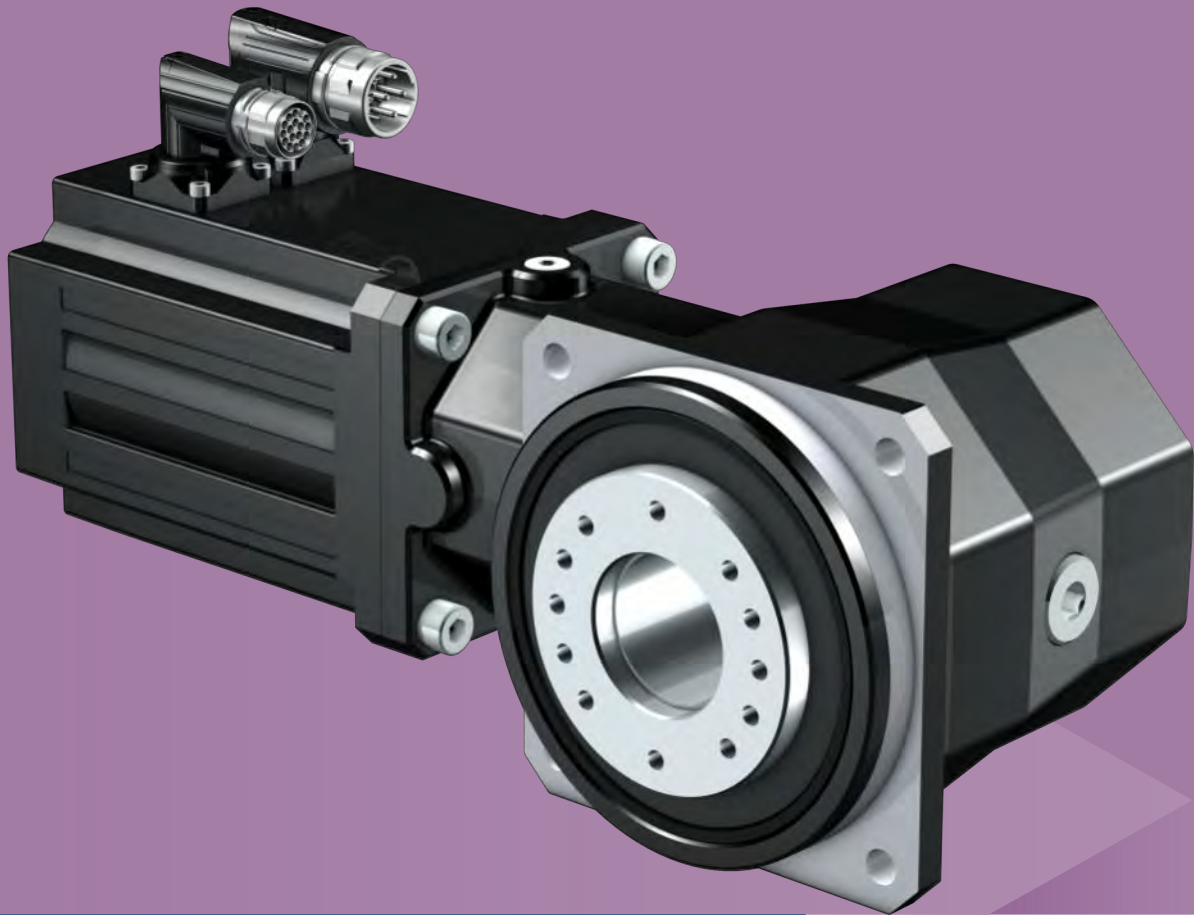


IE2D asynchronous motor



D asynchronous motor


<http://www.stoeber.de/en/FEZ>
<http://www.stoeber.de/en/FIE3D>
<http://www.stoeber.de/en/FIE2D>
<http://www.stoeber.de/en/FD>



5.12 Helical bevel geared motors

KS

Precision right-angle servo geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
FKM seal ring at the input	✓
Pretensioned angular contact ball bearings at the output, ideally suited for helical-gear rack and pinion drives	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
KS402	6 – 20	27 – 90	9 – 60	6000	6	8.5
KS403	24 – 50	62 – 90	21 – 50	6000	6	8.5
KS502	6 – 20	48 – 200	21 – 136	5500 – 6000	5	17
KS503	24 – 100	62 – 200	21 – 109	6000	5	17
KS702	6 – 20	114 – 400	42 – 285	4500 – 6000	4	42
KS703	24 – 70	190 – 400	62 – 237	6000	4	42

Shaft design

Flange hollow shaft	✓
Hollow shaft with shrink disk	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓

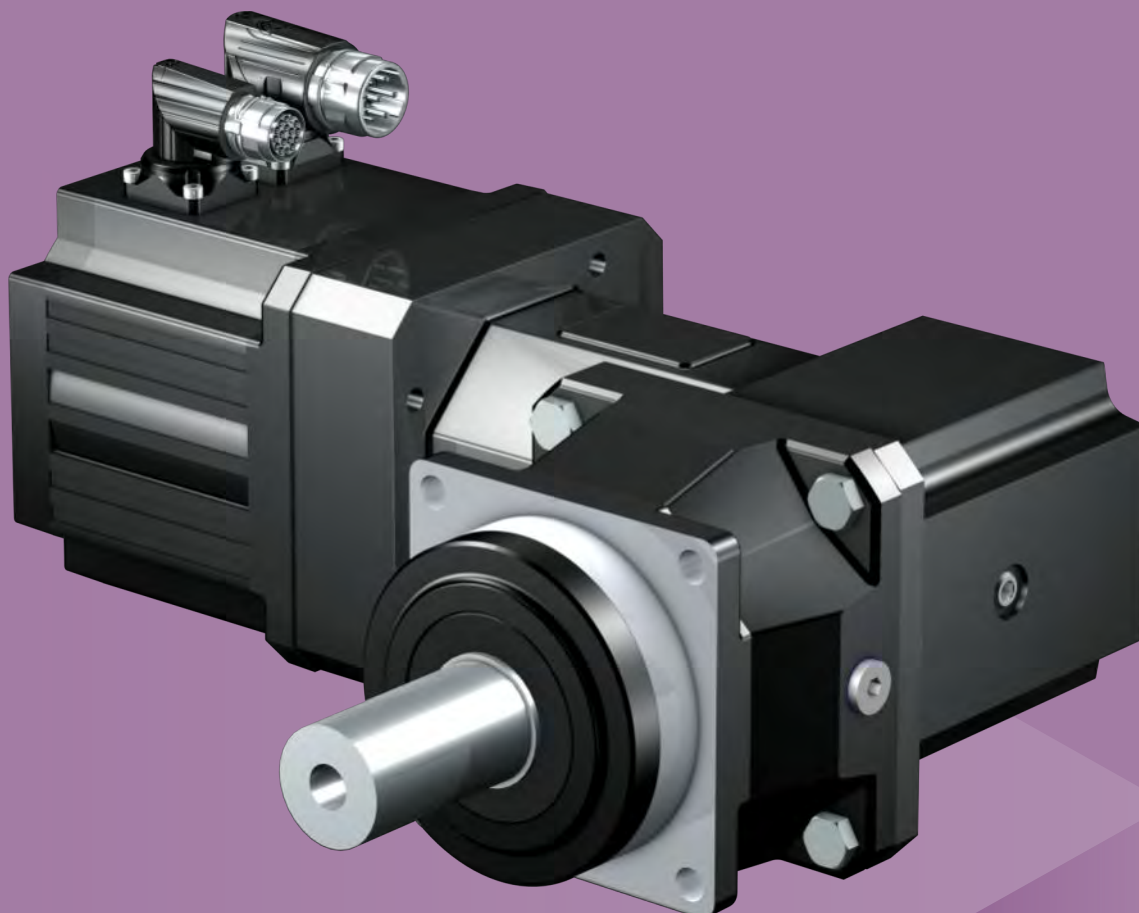
Motor design

[\[► 7.1\]](#)

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/KSEZ>



5.13 Planetary geared motors

PKX

Helical-gear precision right-angle planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★☆
Smooth operation	★★★☆☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★☆
Helical gearing	✓
Maintenance-free	✓
Small installation space	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Reinforced output bearing	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
P221_KX3_	4 – 15	11 – 22	3.6 – 17	4500 – 6000	7.5 – 8.5	1.5 – 1.7
P321_KX3_	3 – 30	16 – 63	5.4 – 45	4500 – 6000	5 – 7.5	2.5 – 3.7
P322_KX3_	32 – 50	65	28 – 44	4500 – 5500	5.5	4.4 – 4.5
P421_KX4_	3 – 30	24 – 120	11 – 90	4000 – 5500	5 – 7.5	5.2 – 8.4
P422_KX3_	32 – 84	84 – 120	28 – 90	4500 – 6000	5.5	9.1 – 10
P521_KX5_	3 – 30	57 – 300	23 – 229	3500 – 5000	4 – 6.5	14 – 23
P522_KX4_	32 – 210	131 – 300	44 – 225	4000 – 5500	4 – 4.5	25 – 27
P721_KX7_	3 – 30	115 – 650	60 – 496	3000 – 4000	4 – 6.5	37 – 49
P722_KX5_	32 – 150	255 – 700	98 – 487	3500 – 5000	4 – 4.5	49 – 52
P821_KX8_	3 – 30	459 – 1400	165 – 967	2000 – 3000	4 – 6.5	84 – 142
P822_KX7_	32 – 210	479 – 1600	174 – 1215	3000 – 4000	4 – 4.5	157 – 168
P922_KX8_	32 – 210	1123 – 3000	466 – 2201	2000 – 3000	4 – 4.5	313 – 327

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

Bearing design

Standard

✓

Axially reinforced

✓

Radially reinforced

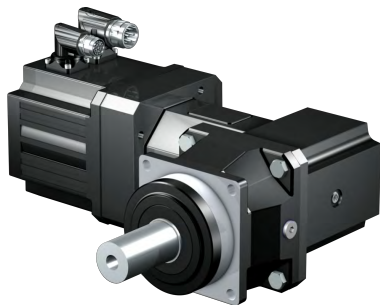
✓

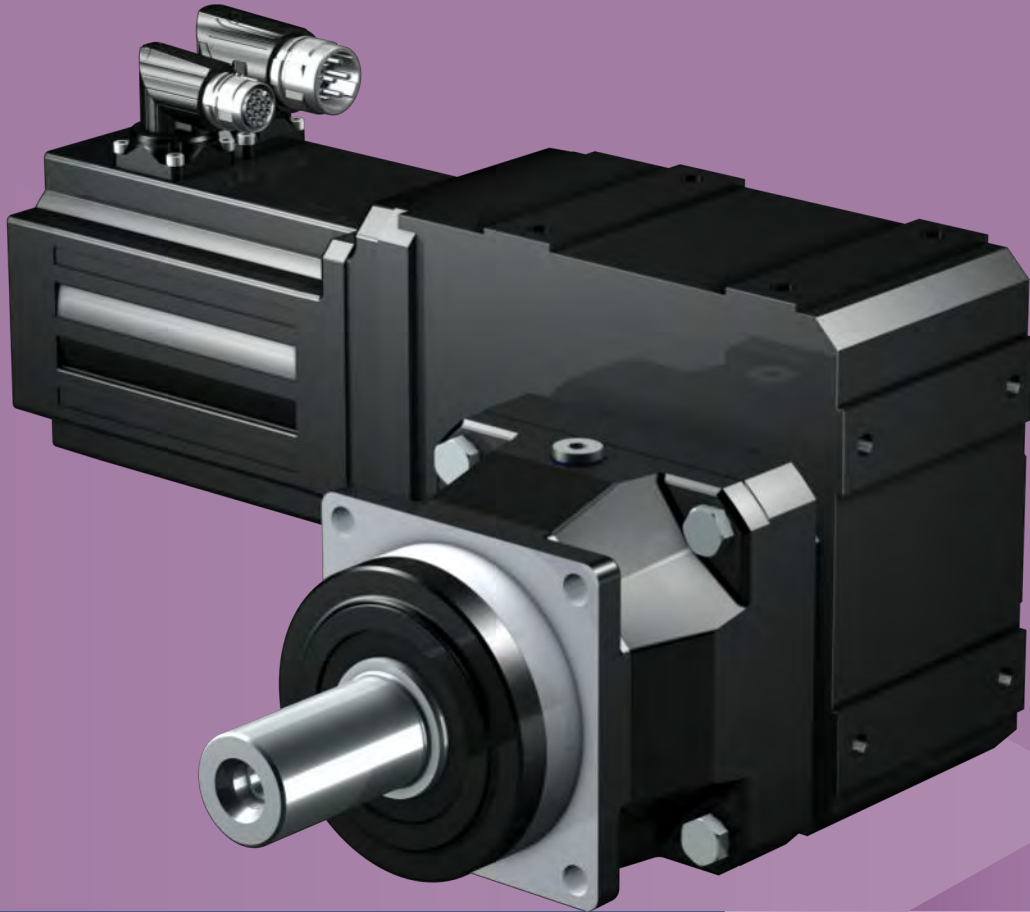
Motor design

[> 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PKXEZ>



5.14
Planetary geared motors

PK

Helical-gear precision right-angle planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Continuous operation without cooling	✓
Reinforced output bearing	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
P521_K1_	12 – 235	68 – 300	25 – 226	4500 – 6000	4 – 5	23 – 26
P721_K1_	28 – 393	158 – 650	58 – 484	4500 – 6000	3.5 – 4	46 – 47
P721_K2_	12 – 278	96 – 700	34 – 507	4000 – 5500	4 – 4.5	39 – 47
P821_K2_	28 – 486	224 – 1400	79 – 1071	4000 – 5500	3.5	132 – 134
P821_K3_	12 – 279	226 – 1600	119 – 1172	3800 – 5000	4 – 4.5	89 – 132
P921_K4_	28 – 390	460 – 2700	167 – 2053	3500 – 5000	3.5	271

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

Bearing design

Standard

✓

Axially reinforced

✓

Radially reinforced

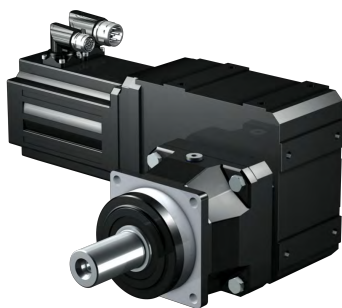
✓

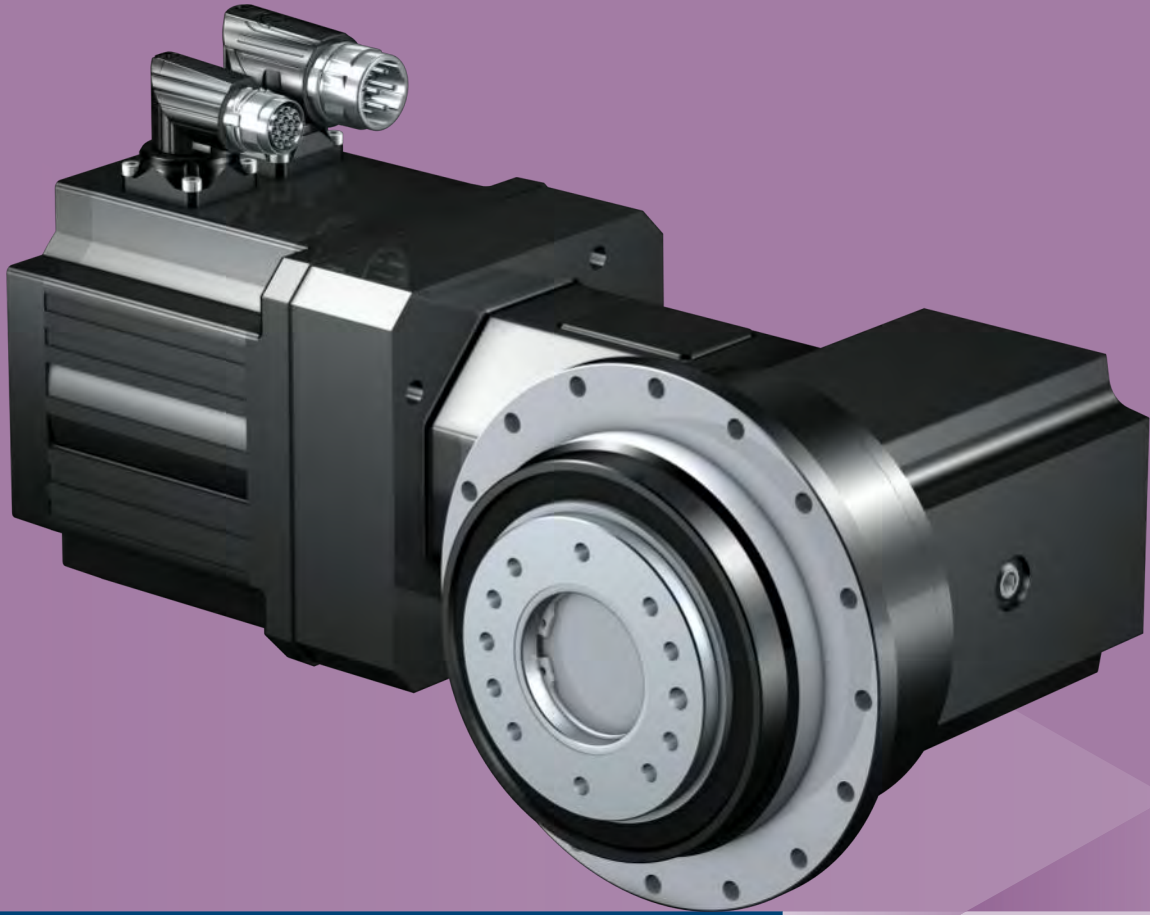
Motor design

[▶ 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PKEZ>



5.15 Planetary geared motors

PHKX

High-performance precision right-angle planetary geared motors

Features

Power density	★★★★★
Backlash	★★★★☆
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★☆☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★☆☆
Helical gearing	✓
Maintenance-free	✓
Small installation space	✓
Continuous operation without cooling (FKM sealing ring at the input)	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PH321_KX3_	5 – 30	26 – 62	9 – 45	4500 – 6000	5 – 6	7 – 9
PH322_KX3_	35 – 50	65	30 – 44	4500 – 5500	4.5	14
PH421_KX4_	4 – 30	40 – 120	17 – 89	4000 – 5500	4 – 5.5	11 – 19
PH422_KX3_	32 – 105	82 – 130	28 – 99	4500 – 6000	3 – 3.5	22 – 26
PH521_KX5_	4 – 30	76 – 302	39 – 227	3500 – 5000	4 – 5.5	28 – 47
PH522_KX4_	32 – 210	144 – 320	49 – 238	4000 – 5500	3 – 3.5	52 – 65
PH721_KX7_	4 – 30	151 – 650	79 – 491	3000 – 4000	4 – 5.5	83 – 119
PH722_KX5_	32 – 150	249 – 700	108 – 528	4500 – 5000	3 – 3.5	111 – 140
PH821_KX8_	4 – 30	465 – 1600	163 – 957	2000 – 3000	4 – 5.5	174 – 288
PH822_KX7_	32 – 210	586 – 2000	241 – 1536	3000 – 4000	3 – 3.5	304 – 448
PH932_KX8_	12 – 180	1319 – 5000	684 – 3446	2000 – 3000	3 – 4	788 – 1055
PH1032_KX8_	18 – 180	2028 – 7500	712 – 5563	2000 – 3000	3 – 3.5	1302 – 1589

Shaft design

Flange shaft

✓

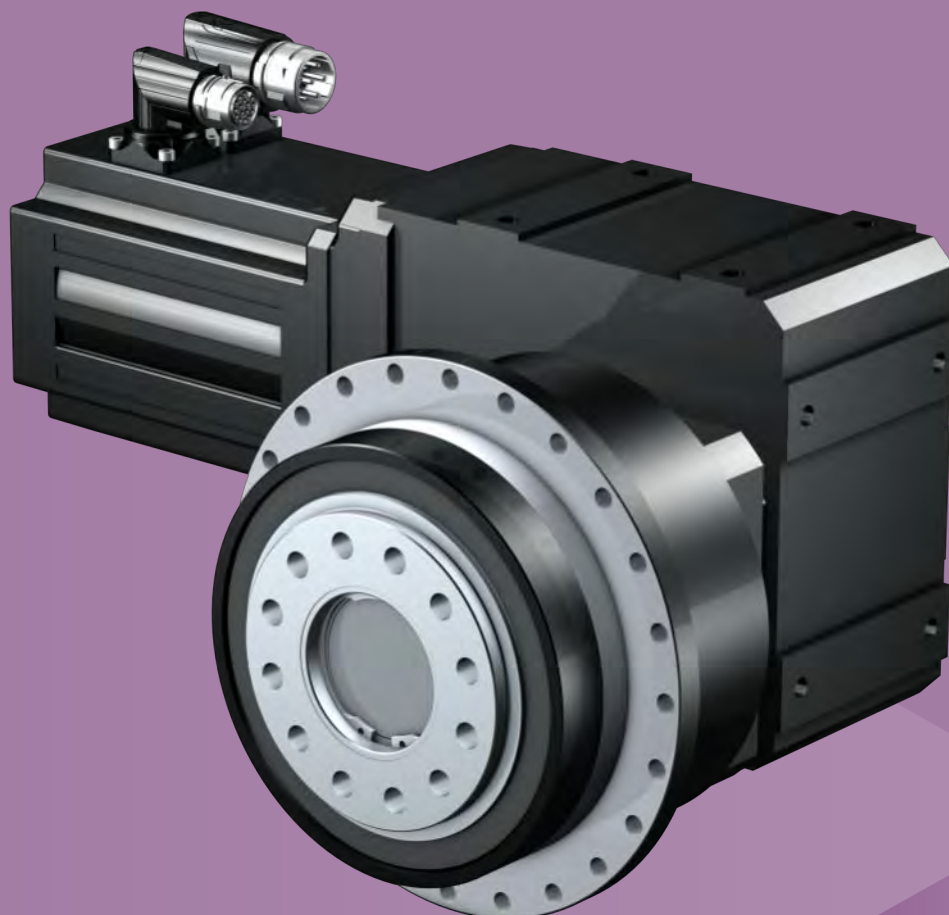
Motor design

[\[> 7.1 \]](#)

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PHKXEZ>



5.16 Planetary geared motors

PHK

High-performance precision right-angle planetary geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Continuous operation without cooling	✓
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\phi_2$ [arcmin]	C_2 [Nm/arcmin]
PH521_K1_	16 – 235	89 – 320	33 – 244	4500 – 6000	4 – 4.5	52 – 60
PH721_K1_	28 – 393	156 – 650	57 – 479	4500 – 6000	3.5 – 4	100 – 108
PH721_K2_	16 – 278	127 – 700	45 – 501	4000 – 5500	4 – 4.5	89 – 109
PH821_K2_	28 – 486	222 – 1478	78 – 1139	4000 – 5500	3.5	244 – 248
PH821_K3_	16 – 279	298 – 1848	156 – 1350	3800 – 5000	4	186 – 239
PH931_K5_	33 – 466	1772 – 4500	736 – 3434	3000 – 4500	4 – 4.5	525 – 730
PH1031_K6_	49 – 457	2092 – 7500	1098 – 5776	2900 – 4000	4	1210

Shaft design

Flange shaft

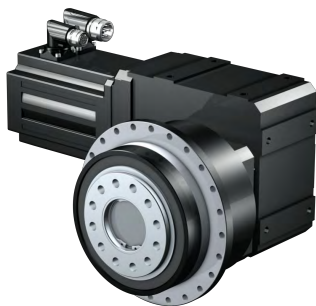
✓

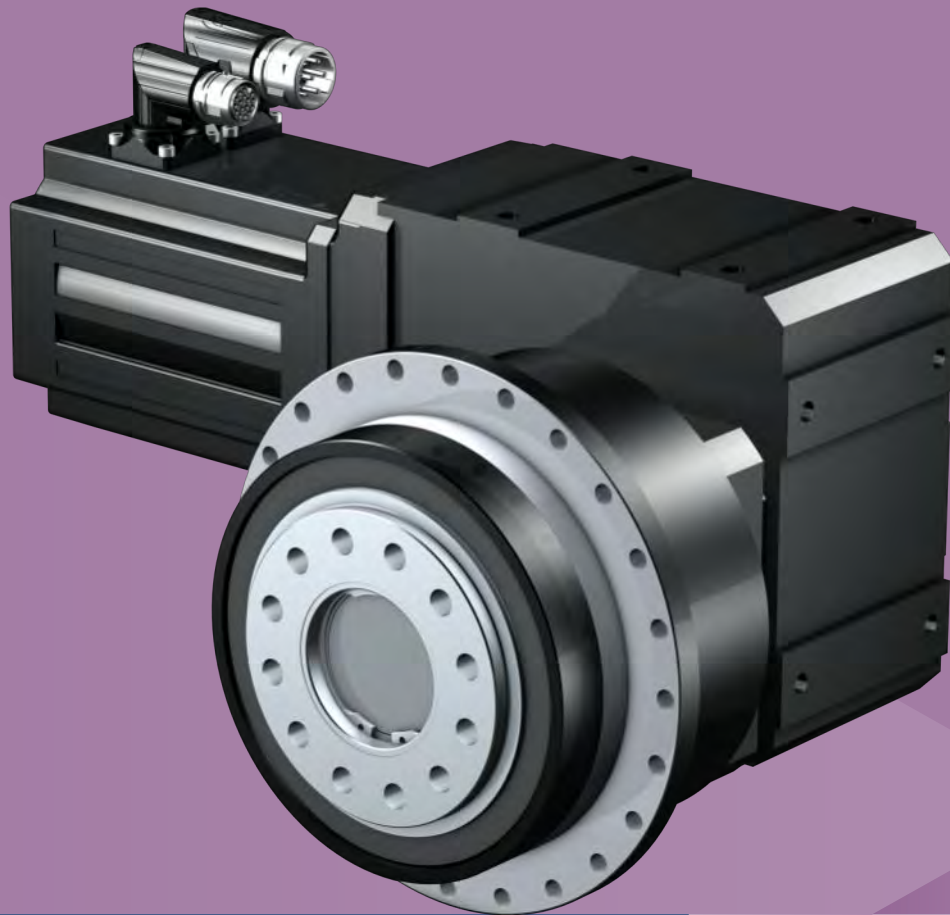
Motor design

[▶ 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PHKEZ>



5.17 Planetary geared motors

PHQK

Quattro-Power precision right-angle planetary geared motors

Features

Power density	★★★★★
Backlash	★★★★☆
Price category	€€€€€
Shaft load	★★★★★
Smooth operation	★★★★☆
Torsional stiffness	★★★★★
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
High power density	✓
(four-stage planetary system)	
Continuous operation without cooling	✓
(FKM sealing ring at the input)	
Pretensioned angular contact ball bearings at the output in an O-arrangement, ideally suited for helical-geared rack and pinion drives	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	$\Delta\varphi_2$ [arcmin]	C_2 [Nm/arcmin]
PHQ521_K1_	22 – 309	123 – 425	45 – 317	4500 – 6000	4	70
PHQ721_K2_	22 – 382	174 – 950	61 – 722	4000 – 5500	4	136
PHQ821_K4_	22 – 381	358 – 2600	130 – 1981	3500 – 5000	3.5	400
PHQ931_K5_	44 – 580	1601 – 5760	840 – 4413	3000 – 4500	4	771
PHQ1031_K7_	45 – 591	3225 – 10000	1482 – 7662	2700 – 3800	4	1561
PHQ1131_K8_	45 – 583	4873 – 22000	2558 – 16252	2600 – 3600	4	2623
PHQ1231_K9_	48 – 2242	8956 – 43000	4107 – 32363	2500 – 3400	4	4665

Shaft design

Flange shaft

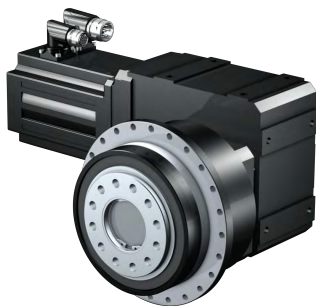
✓

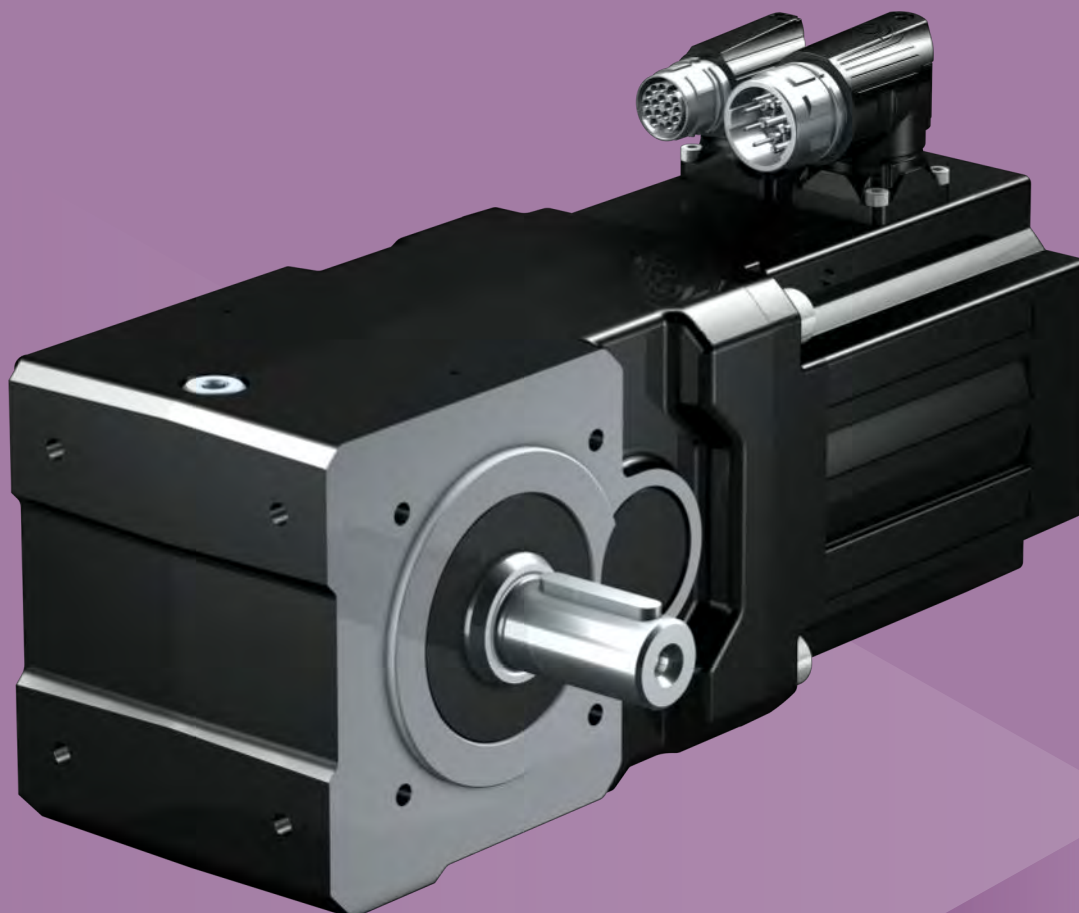
Motor design

[▶ 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/PHQKEZ>



5.18

Helical bevel geared motors

KL

Compact helical-gear right-angle geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
Any installation position	✓
Small installation space	✓
FKM seal ring at the input	✓
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	M _{2,0} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
KL102	4 – 16	11 – 30	3.7 – 17	5000 – 6000	20 – 25	1.3 – 1.8
KL202	4 – 32	22 – 65	7.4 – 43	5000 – 6000	16 – 20	2.4 – 4

Shaft design

Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓

Housing design

Pitch circle diameter	✓
Flange	✓
Base + pitch circle diameter	✓

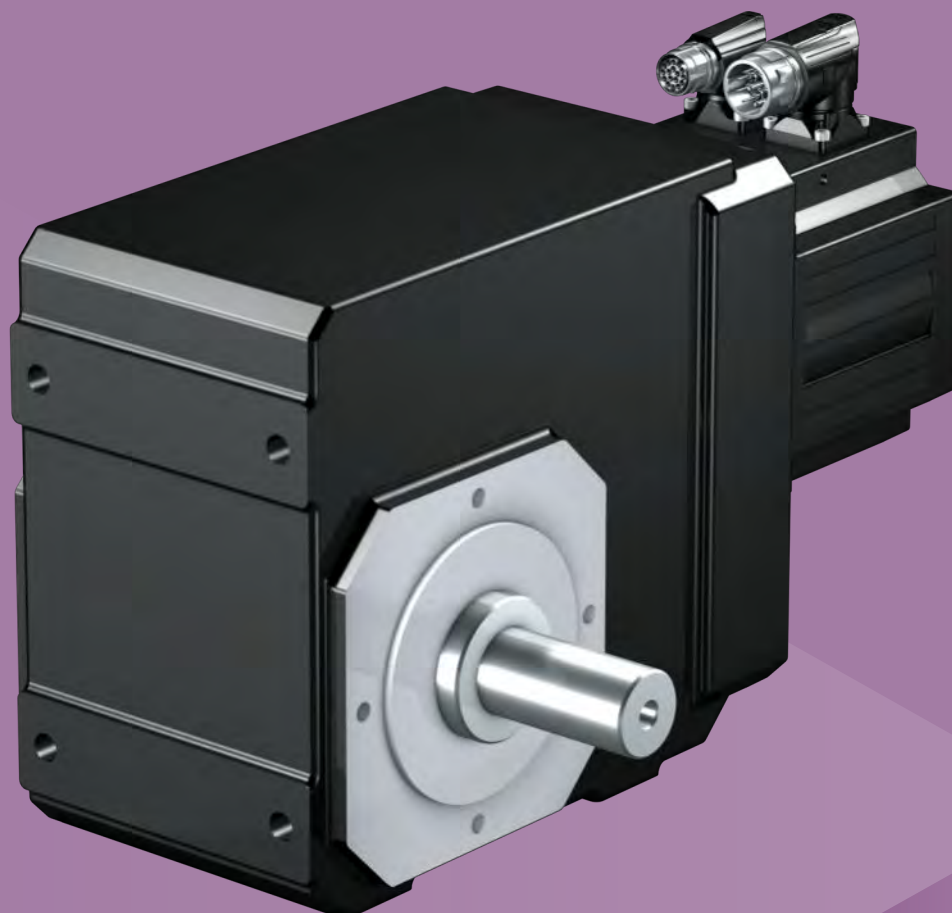
Motor design

[▶ 7.1]

Input options

EZ synchronous servo motor


<http://www.stoeber.de/en/KLEZ>



5.19 Helical bevel geared motors

K

Highly rigid helical-gearred right-angle geared motor

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free (K1 – K4)	✓
FKM seal ring at the input	✓
Reinforced output bearing (K5 – K8)	✓ (on request)
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M _{2acc} [Nm]	M _{2,0} [Nm]	n _{1maxZB} [rpm]	Δφ ₂ [arcmin]	C ₂ [Nm/arcmin]
K102	4 – 56	23 – 135	8.5 – 102	4500 – 6000	6 – 12	6.8
K202	4 – 69	33 – 220	12 – 170	4000 – 5500	1.5 – 10	11
K203	39 – 181	189 – 217	63 – 167	5500	2.5 – 10	11
K302	4 – 69	68 – 385	25 – 290	3800 – 5000	1.5 – 10	16
K303	33 – 181	235 – 379	79 – 291	5000	2.5 – 10	16
K402	4 – 69	68 – 600	25 – 459	3500 – 5000	1.5 – 10	31
K403	32 – 218	317 – 591	107 – 433	5000	2.5 – 10	31
K513	7.3 – 97	308 – 1000	156 – 766	3000 – 4500	2 – 10	50
K514	85 – 168	1000	376 – 744	4500	3 – 10	50
K613	7.3 – 95	459 – 1600	236 – 1228	2900 – 4000	2 – 10	83
K614	84 – 266	1167 – 1600	371 – 1214	4000	3 – 10	83
K713	7.6 – 99	678 – 2600	356 – 1993	2700 – 3800	2 – 10	126
K714	89 – 381	1458 – 2600	501 – 1984	3800	3 – 10	126
K813	7.4 – 97	846 – 4650	444 – 3304	2600 – 3600	2 – 10	196
K814	67 – 311	2156 – 4650	895 – 3485	3600	3 – 10	196
K913	7.9 – 95	1555 – 7700	713 – 5668	2500 – 3400	5 – 10	379
K914	92 – 374	1765 – 7700	927 – 5619	3400	5 – 10	379
K1014	122 – 290	9045 – 13200	4246 – 10136	3200	5 – 10	725

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	K1 – K4: ✓ Starting at K5: Request
Solid shaft on both sides	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

Housing design

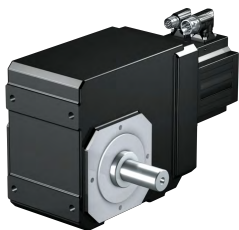
Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm	K1 – K9: ✓
Base + pitch circle diameter + torque arm	K10: ✓
Base + pitch circle diameter	✓
Base + round flange	✓

Motor design

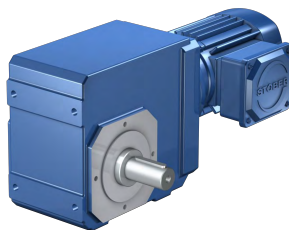
[▶ 7.1]

Input options

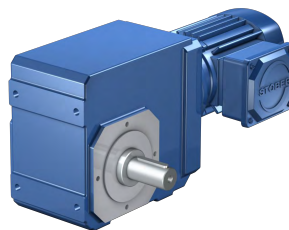
EZ synchronous servo motor



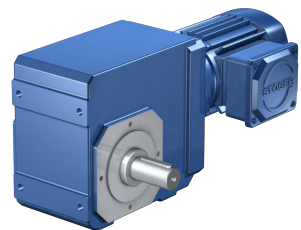
IE3D asynchronous motor

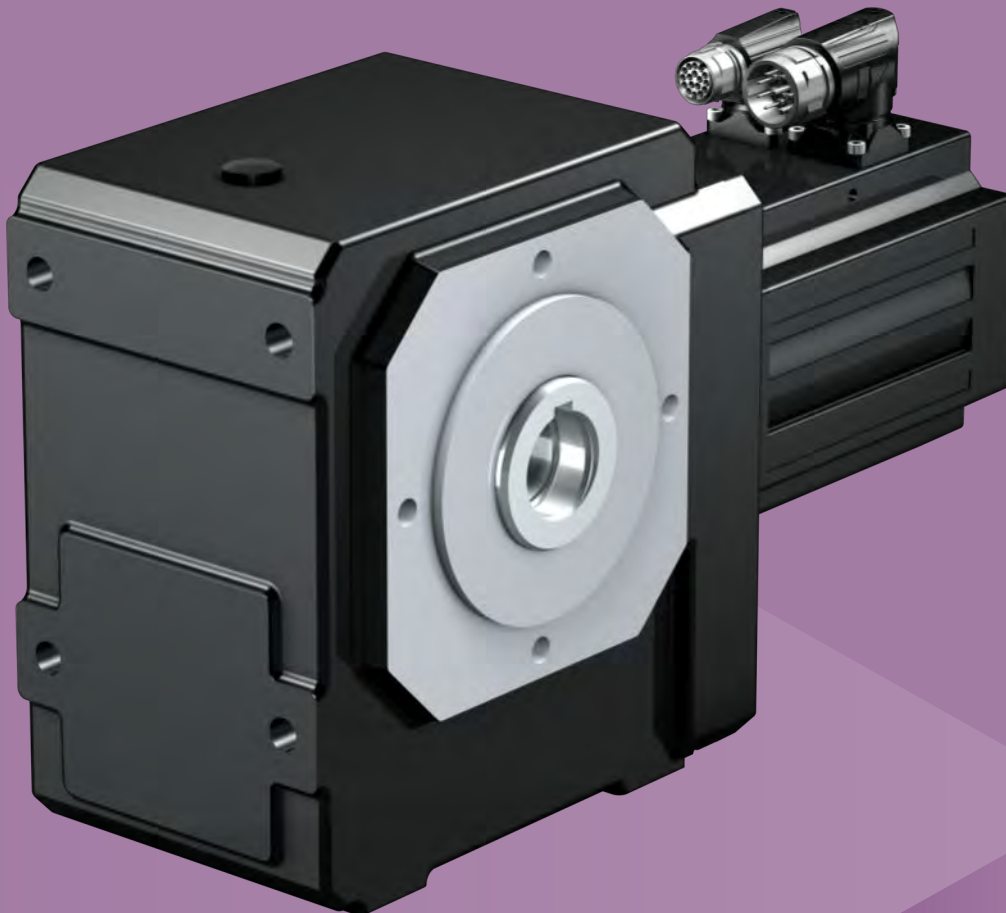


IE2D asynchronous motor



D asynchronous motor


<http://www.stoeber.de/en/KEZ>
<http://www.stoeber.de/en/KIE3D>
<http://www.stoeber.de/en/KIE2D>
<http://www.stoeber.de/en/KD>



5.20

Helical worm geared motors

S

Compact helical-geared right-angle geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)
Compact and highly dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	i	M_{2acc} [Nm]	$M_{2,0}$ [Nm]	n_{1maxZB} [rpm]	C_2 [Nm/arcmin]
S002	6 – 100	28 – 108	9.3 – 75	3700 – 4500	4.4 – 5.5
S102	9.2 – 242	42 – 192	14 – 147	4000 – 4500	5.8 – 7.6
S202	9.2 – 174	50 – 360	19 – 282	3900 – 4500	9.5 – 11
S203	136 – 340	360	169 – 250	4500	11
S302	9.3 – 174	106 – 660	35 – 504	3600 – 4000	20 – 26
S303	135 – 342	551 – 660	185 – 512	4000	26
S402	9.3 – 174	172 – 960	72 – 717	3200 – 4000	29 – 36
S403	135 – 548	728 – 960	302 – 722	4000	36

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	
Solid shaft on both sides	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

Housing design

Pitch circle diameter	S1 – S4: ✓
Round flange	S1 – S4: ✓
Pitch circle diameter + torque arm	S1 – S4: ✓
Base + pitch circle diameter + torque arm	S0: ✓
Base + pitch circle diameter	✓
Base + round flange	✓

Motor design

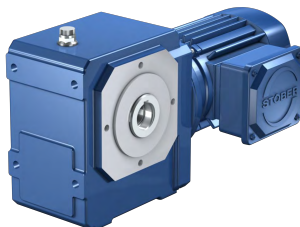
[▶ 7.1]

Input options

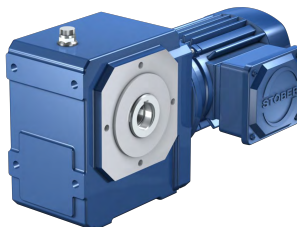
EZ synchronous servo motor



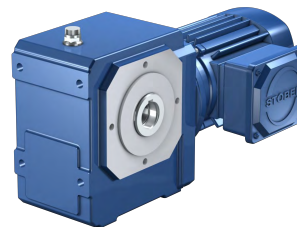
IE3D asynchronous motor



IE2D asynchronous motor



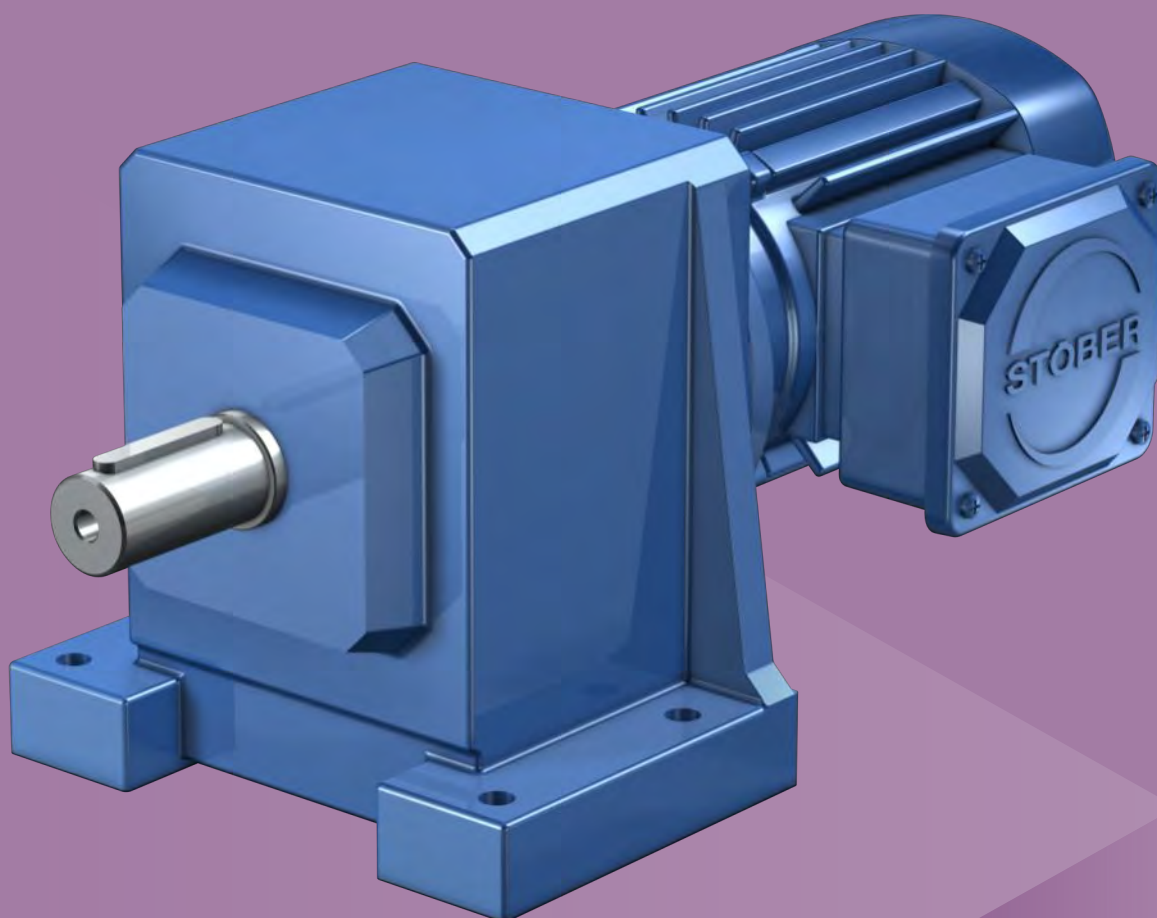
D asynchronous motor


<http://www.stoeber.de/en/SEZ>
<http://www.stoeber.de/en/SIE3D>
<http://www.stoeber.de/en/SIE2D>
<http://www.stoeber.de/en/SD>

6 **Asynchronous geared motors**

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6.1 Helical geared motors

C

Compact helical geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free (C0 – C5)	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)

Key: ★★★★★ good | ★★★★★ excellent

Technical data

Type	n_2 [rpm]	P_N [kW]	i	M_{2N} [Nm]
C002	20 – 2472	0.12 – 3.8	2 – 70	2.5 – 74
C102	19 – 2489	0.12 – 6.9	2 – 70	4.8 – 150
C103	7.5 – 29	0.12 – 0.43	82 – 184	66 – 148
C202	19 – 2029	0.25 – 6.9	2 – 70	16 – 245
C203	7.4 – 30	0.18 – 0.64	81 – 183	97 – 228
C302	20 – 1615	0.55 – 16	2 – 70	55 – 415
C303	5 – 30	0.18 – 1.3	80 – 274	134 – 394
C402	20 – 1621	0.55 – 16	2 – 70	62 – 677
C403	7.8 – 30	0.55 – 1.9	81 – 180	290 – 659
C502	20 – 1284	1.1 – 38	2 – 70	67 – 987
C503	5.2 – 30	0.55 – 2.6	81 – 271	289 – 970
C612	20 – 606	2.2 – 38	4.2 – 69	150 – 1751
C613	5.3 – 50	0.55 – 6.9	49 – 266	272 – 1808
C712	20 – 596	2.2 – 38	4.3 – 70	152 – 2867
C713	10 – 49	2.2 – 16	51 – 137	1153 – 2965
C812	21 – 601	5.5 – 52	4.2 – 69	496 – 4659
C813	5.2 – 51	2.2 – 16	49 – 270	1130 – 4756
C912	21 – 614	11 – 78	4.1 – 70	784 – 7481
C913	8.1 – 39	5.5 – 32	65 – 176	2739 – 8725

Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

C0 – C5: ✓
Starting at C6: Request

Housing design

Pitch circle diameter

✓

Round flange

✓

Square flange

C0 – C4: ✓

Base

✓

Base + pitch circle diameter

✓

Base + round flange

✓

Motor design

IE3D

[▶ 7.5](#)

IE2D

[▶ 7.6](#)

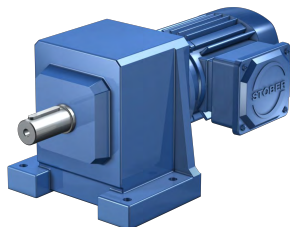
D

[▶ 7.7](#)

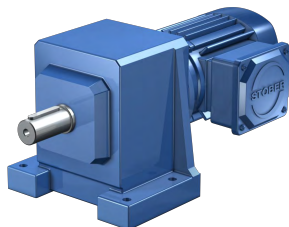
You have the option of ordering the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

Input options

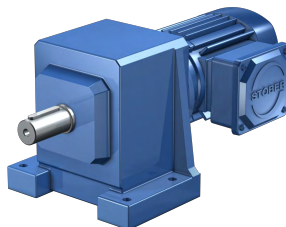
IE3D asynchronous motor



IE2D asynchronous motor

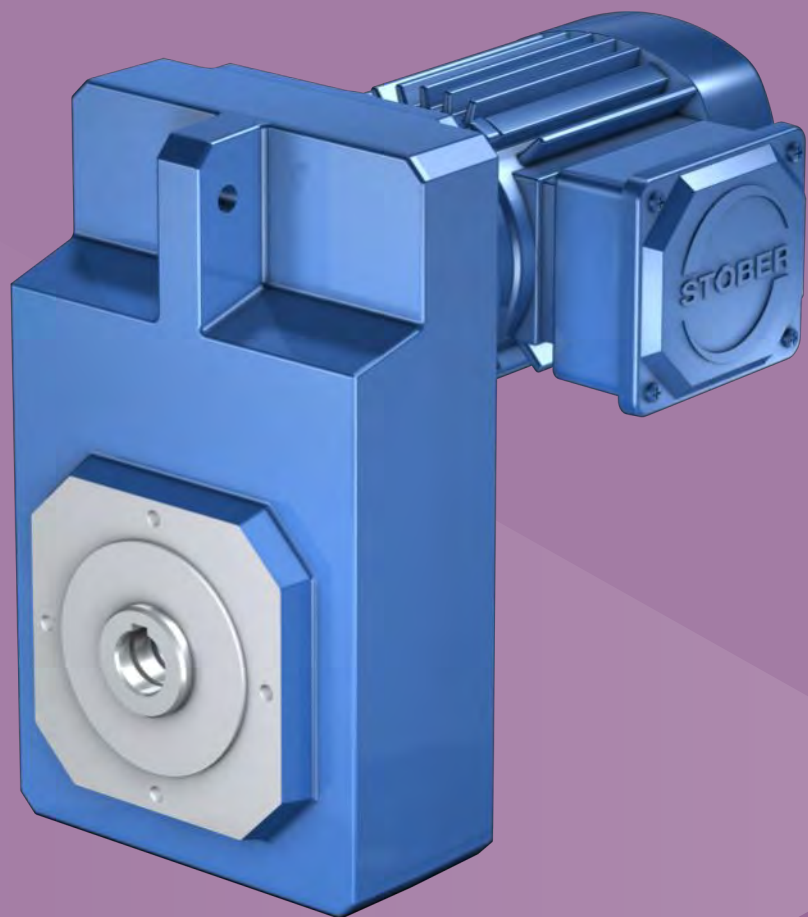


D asynchronous motor



EZ synchronous servo motor


<http://www.stoeber.de/en/CIE3D>
<http://www.stoeber.de/en/CIE2D>
<http://www.stoeber.de/en/CD>
<http://www.stoeber.de/en/CEZ>



6.2

Offset helical geared motors

F

Offset helical geared motors with large axial distances

Features

Power density	★☆☆☆☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free	✓
FKM seal ring at the input	✓
Large axial distances, suitable for confined situations	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

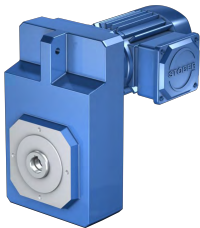
Type	n_2 [rpm]	P_N [kW]	i	M_{2N} [Nm]
F102	9.8 – 1146	0.12 – 3.8	4.3 – 140	5.3 – 140
F202	9.7 – 1073	0.18 – 6.9	4.7 – 141	12 – 282
F203	6.1 – 13	0.18 – 0.31	184 – 222	222 – 268
F302	9.7 – 1082	0.25 – 6.9	4.6 – 141	23 – 468
F303	3.7 – 13	0.18 – 0.64	185 – 367	223 – 456
F402	10 – 697	0.55 – 16	4.7 – 140	84 – 811
F403	3.2 – 13	0.25 – 0.95	182 – 440	302 – 776
F602	10 – 702	0.55 – 16	4.5 – 140	163 – 1353
F603	3.9 – 14	0.55 – 1.9	181 – 361	648 – 1318

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓
Housing design	
Pitch circle diameter	✓
Round flange	✓
Square flange	✓
Pitch circle diameter + side fastening	✓
Round flange + side fastening	✓
Square flange + side fastening	✓
Motor design	
IE3D	[> 7.5]
IE2D	[> 7.6]
D	[> 7.7]

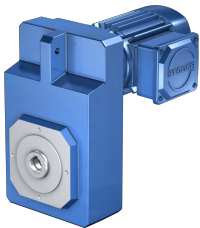
You have the option of ordering the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

Input options

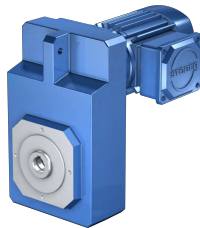
IE3D asynchronous motor



IE2D asynchronous motor



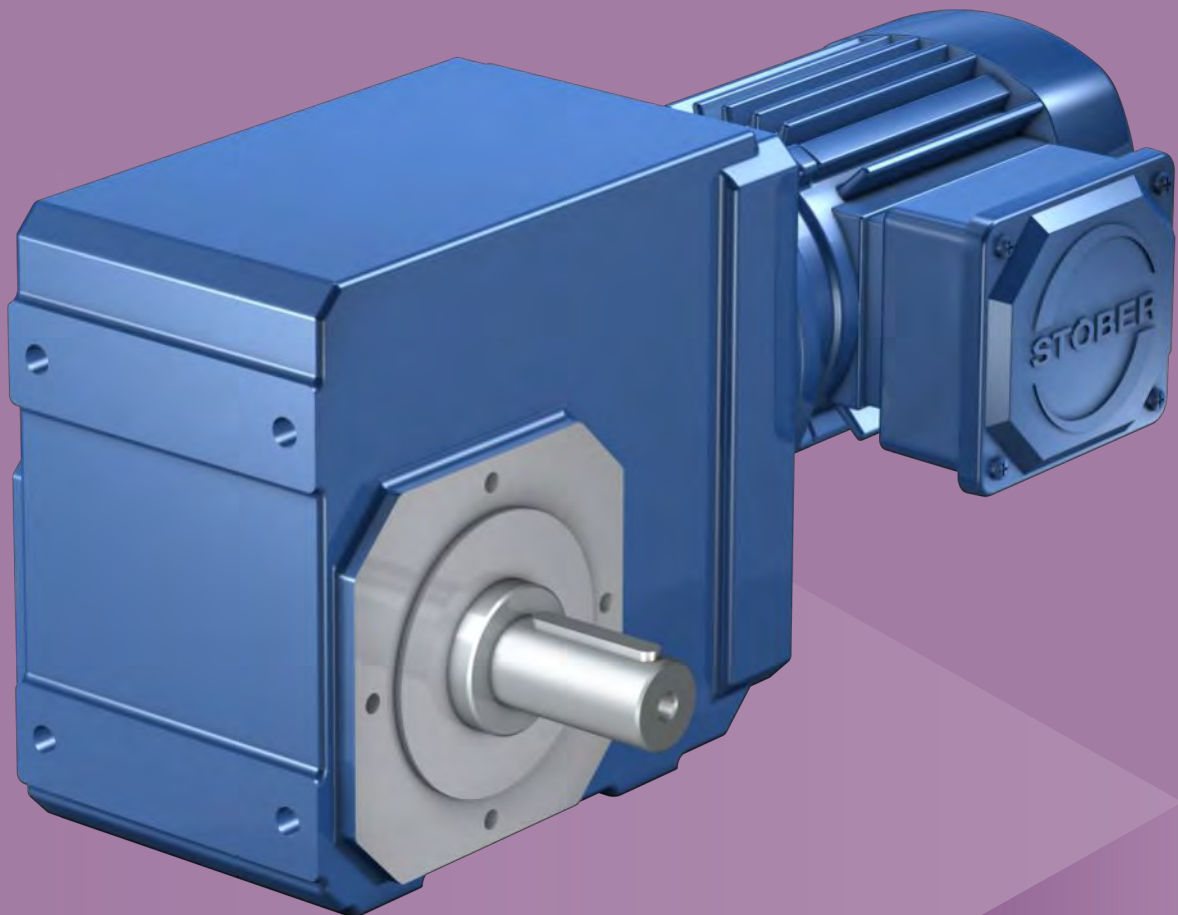
D asynchronous motor



EZ synchronous servo motor



<http://www.stoeber.de/en/FIE3D> <http://www.stoeber.de/en/FIE2D> <http://www.stoeber.de/en/FD> <http://www.stoeber.de/en/FEZ>



6.3

Helical bevel geared motors

K

Highly rigid helical-geared right-angle geared motor

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free (K1 – K4)	✓
FKM seal ring at the input	✓
Reinforced output bearing (K5 – K8)	✓ (on request)

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

Type	n_2 [rpm]	P_N [kW]	i	M_{2N} [Nm]
K102	19 – 1234	0.12 – 3.8	4 – 70	6.7 – 139
K202	20 – 1256	0.18 – 6.9	4 – 69	11 – 250
K203	7.5 – 61	0.18 – 0.64	39 – 181	48 – 224
K302	20 – 745	0.25 – 6.9	4 – 69	63 – 403
K303	6.2 – 75	0.18 – 2.6	33 – 218	59 – 387
K402	20 – 748	0.55 – 16	4 – 69	103 – 675
K403	5.1 – 75	0.25 – 2.6	32 – 272	116 – 658
K513	14 – 342	0.55 – 16	7.3 – 97	189 – 1116
K514	4.7 – 29	0.55 – 2.6	85 – 300	300 – 1086
K613	15 – 347	1.1 – 38	7.3 – 95	271 – 1813
K614	3.8 – 29	0.55 – 2.6	84 – 369	296 – 1777
K713	14 – 336	2.2 – 38	7.6 – 99	267 – 2909
K714	3.7 – 28	0.55 – 6.9	89 – 381	484 – 2934
K813	15 – 341	2.2 – 38	7.4 – 97	262 – 4940
K814	4.5 – 38	2.2 – 16	67 – 311	1607 – 5102
K913	15 – 320	5.5 – 52	7.9 – 95	844 – 8622
K914	3.8 – 27	2.2 – 16	92 – 374	1315 – 8438
K1013	15 – 321	11 – 78	7.9 – 94	1822 – 14123
K1014	4.9 – 27	5.5 – 38	93 – 290	4219 – 14086

Shaft design

Solid shaft with feather key	✓
Solid shaft without feather key	K1 – K4: ✓ Starting at K5: Request
Solid shaft on both sides	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓

Housing design

Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm	K1 – K9: ✓
Base + pitch circle diameter + torque arm	K10: ✓
Base + pitch circle diameter	✓
Base + round flange	✓

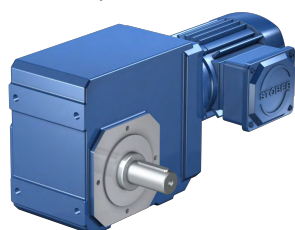
Motor design

IE3D	[► 7.5]
IE2D	[► 7.6]
D	[► 7.7]

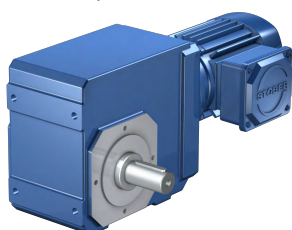
You have the option of ordering the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

Input options

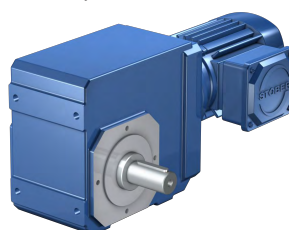
IE3D asynchronous motor



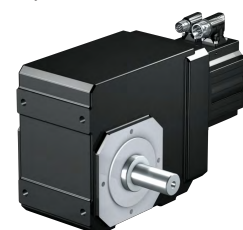
IE2D asynchronous motor



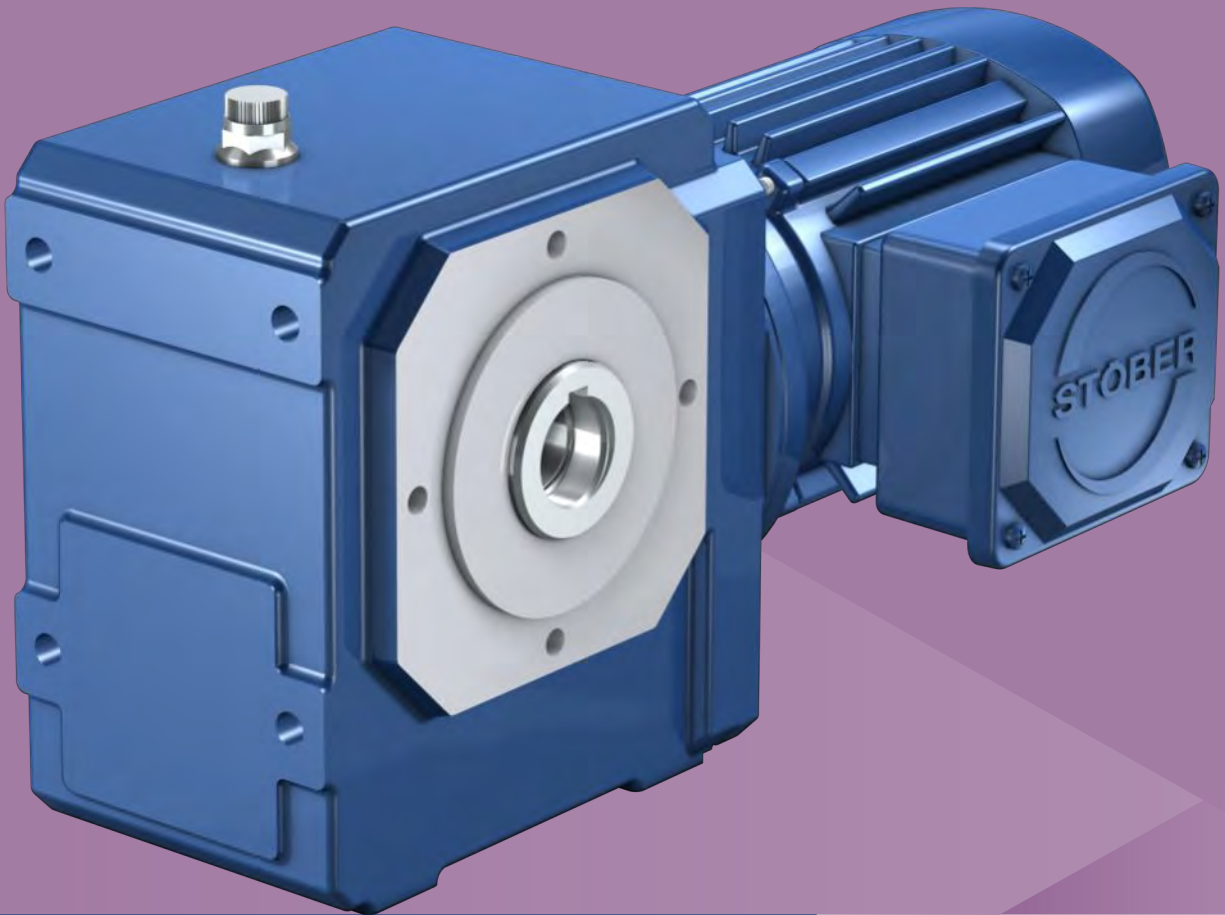
D asynchronous motor



EZ synchronous servo motor



<http://www.stoeber.de/en/KIE3D> <http://www.stoeber.de/en/KIE2D> <http://www.stoeber.de/en/KD> <http://www.stoeber.de/en/KEZ>



6.4

Helical worm geared motors

S

Compact helical-geared right-angle geared motors

Features

Power density	★★★★☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)

Key: ★☆☆☆☆ good | ★★★★★ excellent

Technical data

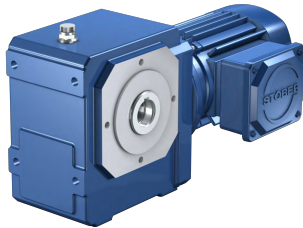
Type	n ₂ [rpm]	P _N [kW]	i	M _{2N} [Nm]
S002	8.8 – 510	0.12 – 1.9	6 – 155	8.3 – 97
S102	3.8 – 535	0.12 – 2.6	9.2 – 361	10 – 183
S202	7.8 – 357	0.18 – 5.2	9.2 – 174	39 – 345
S203	2.5 – 18	0.12 – 0.64	136 – 546	133 – 363
S302	7.9 – 359	0.25 – 6.9	9.3 – 174	63 – 583
S303	2.5 – 18	0.18 – 1.3	135 – 548	136 – 683
S402	8 – 268	0.55 – 9.5	9.3 – 174	126 – 964
S403	2 – 18	0.25 – 1.9	135 – 682	310 – 996

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	
Solid shaft on both sides	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink disk	✓
Housing design	
Pitch circle diameter	S1 – S4: ✓
Round flange	S1 – S4: ✓
Pitch circle diameter + torque arm	S1 – S4: ✓
Base + pitch circle diameter + torque arm	S0: ✓
Base + pitch circle diameter	✓
Base + round flange	✓
Motor design	
IE3D	▶ 7.5
IE2D	▶ 7.6
D	▶ 7.7

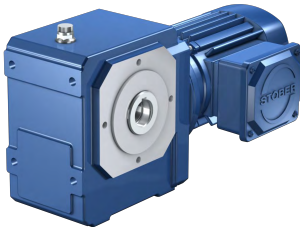
You have the option of ordering the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

Input options

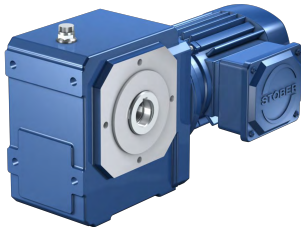
IE3D asynchronous motor



IE2D asynchronous motor



D asynchronous motor



EZ synchronous servo motor

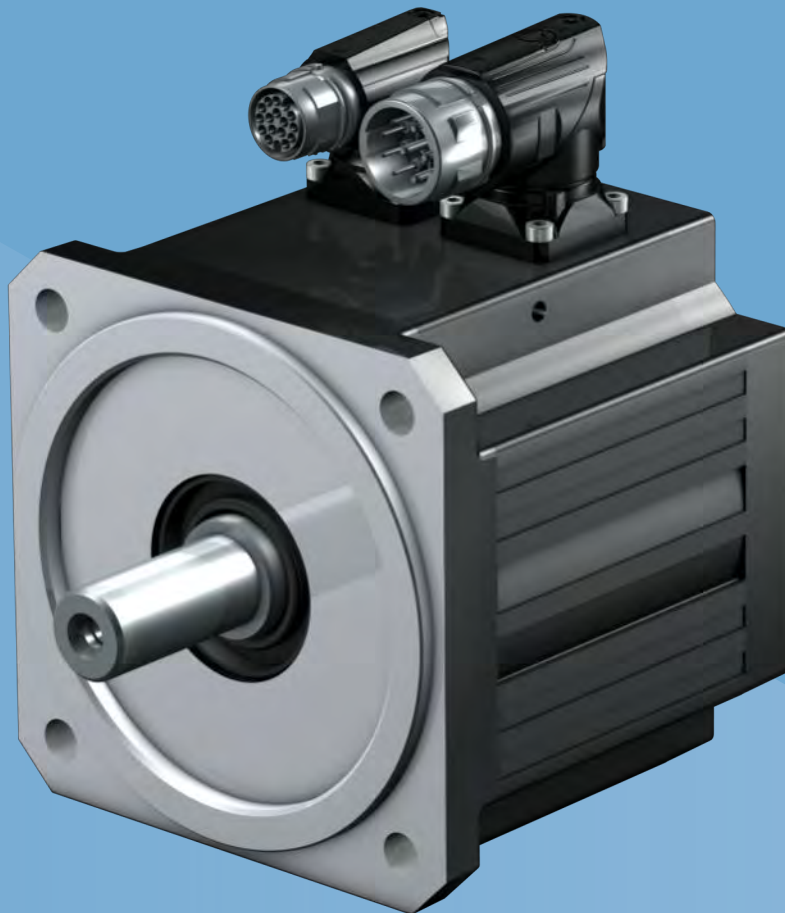


<http://www.stoeber.de/en/SIE3D> <http://www.stoeber.de/en/SIE2D> <http://www.stoeber.de/en/SD> <http://www.stoeber.de/en/SEZ>

7 **Motors**

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7.1 Synchronous servo motors EZ

Synchronous servo motors with single tooth winding

Features

High dynamics	✓
Short length	✓
Super compact due to tooth-coil winding method with the highest possible copper fill factor	✓
Backlash-free holding brake (optional)	✓
Electronic nameplate for fast and reliable commissioning	✓
Convection cooling or forced ventilation (optional)	✓
Optical, inductive EnDat absolute encoders or resolvers	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
One Cable Solution (OCS) with HIPERFACE DSL encoder (optional)	✓
Rotating plug connectors with quick lock	✓

Technical data

Type	n_N [rpm]	M_N [Nm]	I_N [A]	P_N [kW]	M_0 [Nm]	M_{max} [Nm]	J_{dyn} 10^{-4} [kgm ²]
EZ301	3000 – 6000	0.89 – 0.93	1.9 – 2	0.29 – 0.56	0.95	2.8	0.19
EZ302	3000 – 6000	1.5 – 1.6	1.6 – 3.2	0.5 – 0.94	1.7	5	0.29
EZ303	3000 – 6000	2 – 2.1	1.6 – 3.2	0.65 – 1.2	2.2 – 2.3	7	0.4
EZ401	3000 – 6000	2.3 – 3.4	2.7 – 5.6	0.88 – 1.8	2.8 – 3.7	8.5	0.93
EZ402	3000 – 6000	3.5 – 5.9	4.4 – 7.9	1.5 – 3.2	4.9 – 6.4	16	1.6
EZ404	3000 – 6000	5.8 – 10	5.8 – 10	2.2 – 5	8.4 – 11	29	3
EZ501	3000 – 6000	3.4 – 5.4	3.7 – 6.7	1.4 – 2.8	4.4 – 5.8	16	2.9
EZ502	3000 – 6000	5.2 – 10	5.5 – 11	2.3 – 5.2	7.8 – 11	31	5.2
EZ503	3000 – 6000	6.2 – 14	6.9 – 13	3.1 – 6.5	11 – 16	43	7.6
EZ505	3000 – 4500	9.5 – 20	8.8 – 16	4.2 – 7.7	15 – 23	67	12
EZ701	3000 – 6000	5.2 – 9.7	6.7 – 11	2.3 – 4.7	7.9 – 11	20	8.5
EZ702	3000 – 6000	7.2 – 17	8.2 – 17	3.8 – 7.9	14 – 19	41	14
EZ703	3000 – 4500	12 – 24	11 – 20	5.2 – 9.3	20 – 28	65	22
EZ705	3000 – 4500	16 – 34	14 – 25	6.7 – 13	30 – 42	104	34
EZ802	3000 – 4500	11 – 34	11 – 31	5 – 14	35 – 48	100	58
EZ803	3000	27 – 49	18 – 36	8.4 – 15	48 – 67	145	83
EZ805	2000	44 – 77	26 – 45	9.2 – 16	66 – 94	205	133

Shaft design

Solid shaft without feather key

✓

Encoder

EnDat 2.2 single-turn, multi-turn

✓

EnDat 2.1 single-turn, multi-turn

✓

HIPERFACE DSL One Cable Solution (OCS) multi-turn

✓

Resolver

✓

Cooling

Convection cooling

✓

Forced ventilation

✓

Brake

Permanent magnet holding brake

✓

Marks and test symbols

CE

✓

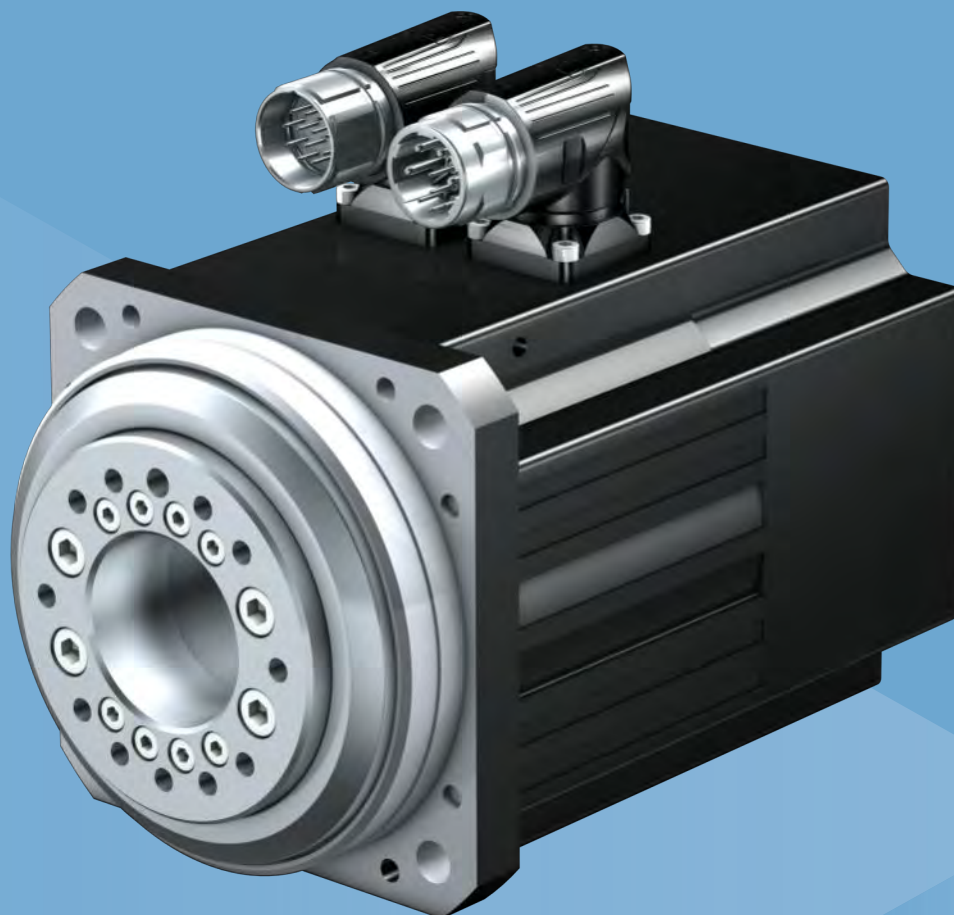
cURus

✓

Further information

EZ synchronous servo motors


<http://www.stoeber.de/en/EZ>



7.2

Synchronous servo motors with hollow shaft

EZHD

Synchronous servo motors with hollow shaft

Features

Continuous flange hollow shaft for conveying media	✓
Reinforced A-side bearing for absorbing radial forces	✓
Reinforced B-side bearing for absorbing axial forces	✓
High dynamics	✓
Super compact due to tooth-coil winding method with the highest possible copper fill factor	✓
Backlash-free holding brake (optional)	✓
Inductive EnDat absolute encoders	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
Electronic nameplate for fast and reliable commissioning	✓
Rotating plug connectors with quick lock	✓

Technical data

Type	n_N [rpm]	M_N [Nm]	I_N [A]	P_N [kW]	M_0 [Nm]	M_{max} [Nm]	J_{dyn} 10^{-4} [kgm ²]
EZHD0411	3000	1.9	2.4	0.6	2.6	8.5	9.4
EZHD0412	3000	4.2	4.3	1.3	5.1	16	10
EZHD0414	3000	7.7	6.3	2.4	8.5	29	12
EZHD0511	3000	3	3.3	0.94	4.1	16	22
EZHD0512	3000	7	5.6	2.2	7.8	31	25
EZHD0513	3000	8.3	7	2.6	11	43	28
EZHD0515	3000	14	9.5	4.4	16	67	34
EZHD0711	3000	7.3	7.5	2.3	7.9	20	64
EZHD0712	3000	12	8.2	3.6	14	41	72
EZHD0713	3000	18	13	5.6	20	65	81
EZHD0715	3000	25	17	7.7	31	104	100

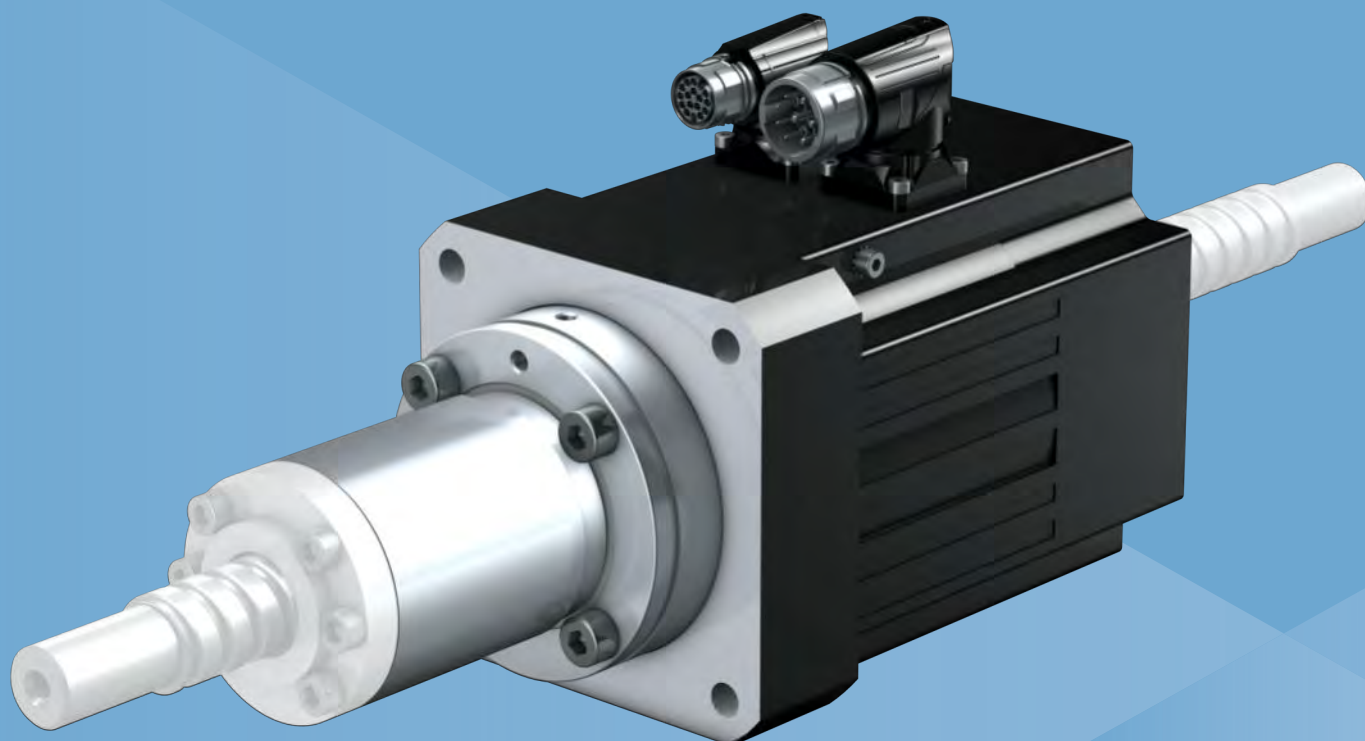
Shaft design	
Flange hollow shaft	✓
Encoder	
EnDat 2.2 multi-turn, single-turn	✓
EnDat 2.1 single-turn	✓
Cooling	
Convection cooling	✓
Brake	
Permanent magnet holding brake	✓
Marks and test symbols	
CE	✓
cURus	✓

Further information

EZHD synchronous servo motors



<http://www.stoeber.de/en/EZHD>



7.3

Synchronous servo motors for screw drives

EZM

Synchronous servo motor for screw drives (direct drive for threaded nut)

Features

- | | |
|---|---|
| Designed for driving the ball-threaded nut of ball screws in accordance with DIN 69051-2. | ✓ |
| Axial angular contact ball bearing acting on two sides for direct absorption of the threaded spindle forces | ✓ |
| Super compact due to tooth-coil winding method with the highest possible copper fill factor | ✓ |
| Backlash-free holding brake (optional) | ✓ |
| Convection cooling | ✓ |
| Inductive EnDat absolute encoders | ✓ |
| Elimination of referencing with multi-turn absolute encoders (optional) | ✓ |
| Electronic nameplate for fast and reliable commissioning | ✓ |
| Rotating plug connectors with quick lock | ✓ |

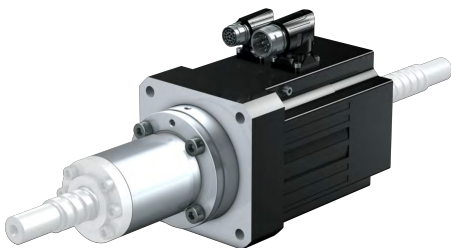
Technical data

Type	n_N [rpm]	M_N [Nm]	I_N [A]	P_N [kW]	M_0 [Nm]	M_{max} [Nm]	J_{dyn} 10^{-4} [kgm ²]
EZM511	3000	3.7	3.6	1.2	4.3	16	20
EZM512	3000	6.6	5.2	2.1	7.6	31	24
EZM513	3000	8.8	6.6	2.8	11	43	27
EZM711	3000	6.4	6.6	2	7.3	20	54 – 60
EZM712	3000	11	7.5	3.3	13	41	63 – 70
EZM713	3000	15	10	4.6	19	65	72 – 79

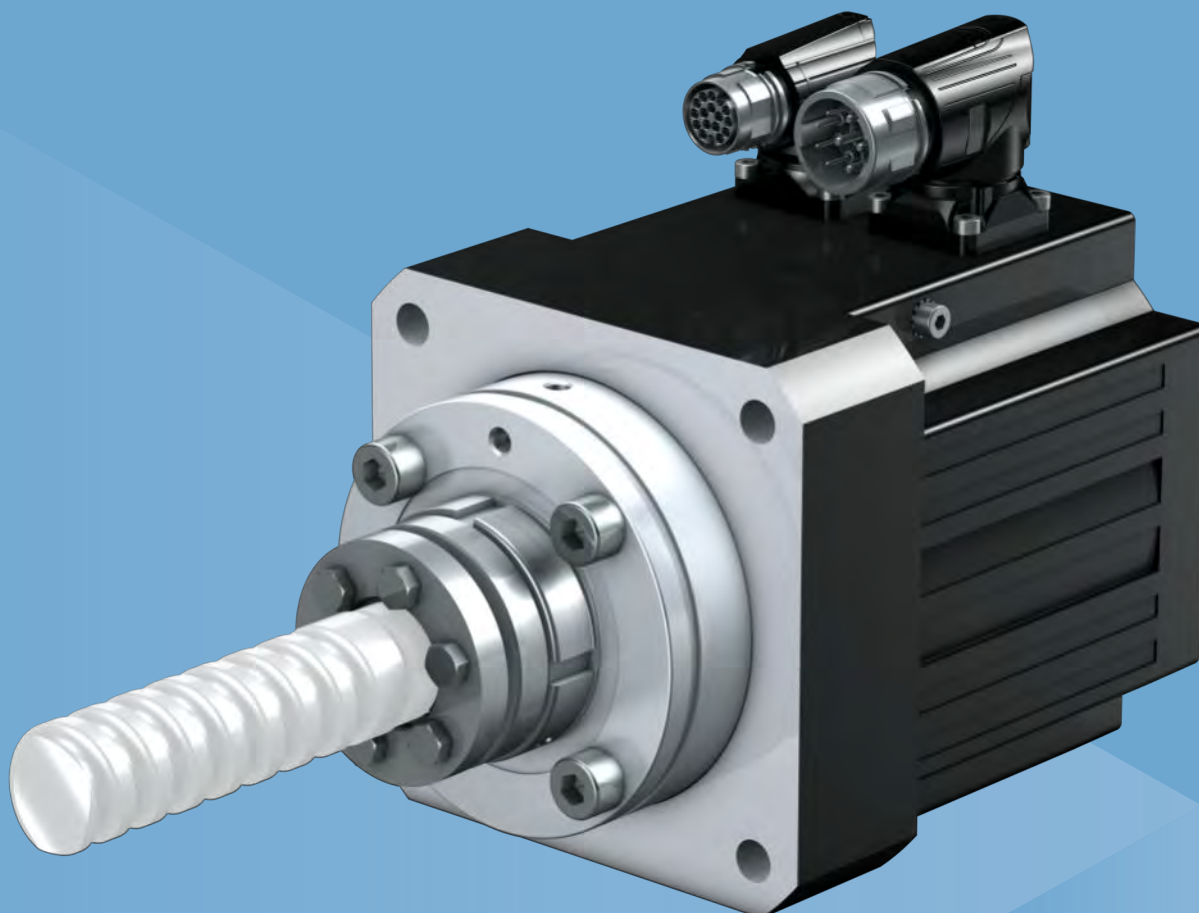
Shaft design	
Direct drive of the threaded nut	✓
Encoder	
EnDat 2.2 multi-turn, single-turn	✓
EnDat 2.1 single-turn	✓
Cooling	
Convection cooling	✓
Brake	
Permanent magnet holding brake	✓
Marks and test symbols	
CE	✓
cURus	✓

Further information

EZM synchronous servo motors



<http://www.stoeber.de/en/EZM>



7.4

Synchronous servo motors for screw drives

EZS

Synchronous servo motors for screw drives (direct drive for threaded spindle)

Features

Backlash-free connection with the threaded spindle using a clamping unit	✓
Axial angular contact ball bearing acting on two sides for direct absorption of the threaded spindle forces	✓
Super compact due to tooth-coil winding method with the highest possible copper fill factor	✓
Backlash-free holding brake (optional)	✓
Convection cooling or forced ventilation (optional)	✓
Optical, inductive EnDat absolute encoders or resolvers	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
One Cable Solution (OCS) with HIPERFACE DSL encoder (optional)	✓
Electronic nameplate for fast and reliable commissioning	✓
Rotating plug connectors with quick lock	✓

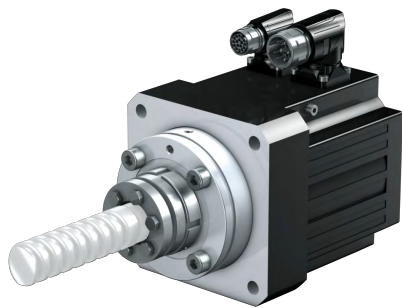
Technical data

Type	n_N [rpm]	M_N [Nm]	I_N [A]	P_N [kW]	M_0 [Nm]	M_{max} [Nm]	J_{dyn} 10^{-4} [kgm ²]
EZS501	3000	3.9 – 5.1	3.7 – 4.7	1.2 – 1.6	4.3 – 5.5	16	6.5
EZS502	3000	6.9 – 10	5.3 – 7.8	2.2 – 3.1	7.6 – 11	31	8.8
EZS503	3000	9.1 – 14	6.7 – 11	2.9 – 4.4	11 – 16	43	11
EZS701	3000	6.7 – 9.4	6.8 – 9.5	2.1 – 2.9	7.7 – 10	20	20
EZS702	3000	11 – 16	7.8 – 12	3.5 – 5.1	14 – 19	41	26
EZS703	3000	15 – 24	11 – 18	4.8 – 7.4	20 – 28	65	31

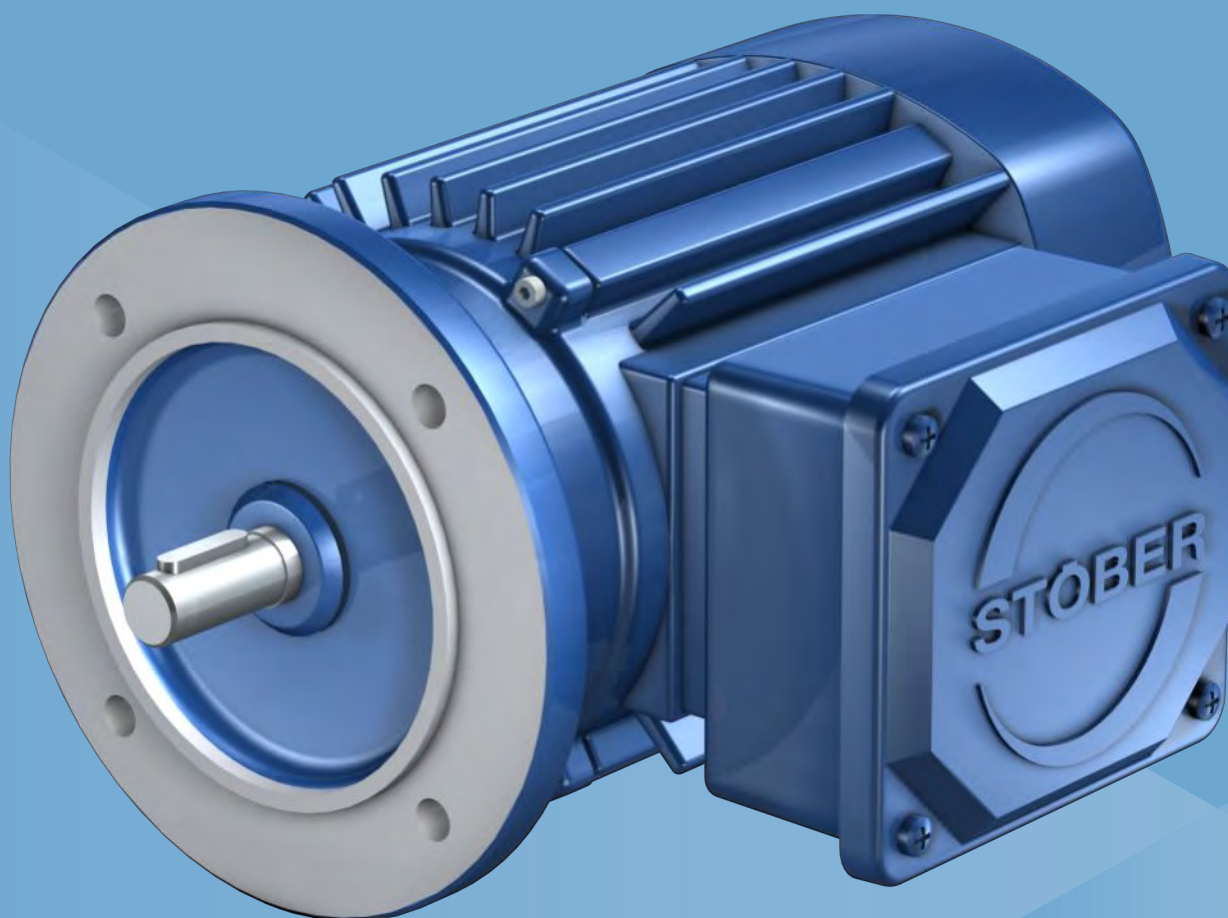
Shaft design	
Direct drive of the threaded spindle	✓
Encoder	
EnDat 2.2 single-turn, multi-turn	✓
EnDat 2.1 single-turn, multi-turn	✓
HIPERFACE DSL One Cable Solution (OCS) multi-turn	✓
Resolver	✓
Cooling	
Convection cooling	✓
Forced ventilation	✓
Brake	
Permanent magnet holding brake	✓
Marks and test symbols	
CE	✓
cURus	✓

Further information

EZS synchronous servo motors



<http://www.stoeber.de/en/EZS>



7.5 Asynchronous motors

IE3D

Asynchronous motors in energy efficiency class IE3

Features

Self-ventilation or forced ventilation (optional)	✓
Incremental encoder (optional) or SSI absolute encoder (optional)	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
Terminal box	✓
Energy efficiency class IE3 in accordance with EN 60034-30-1	✓

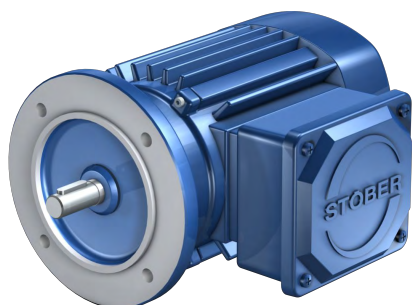
Technical data (400 V $\pm$ 10%, 50 Hz)

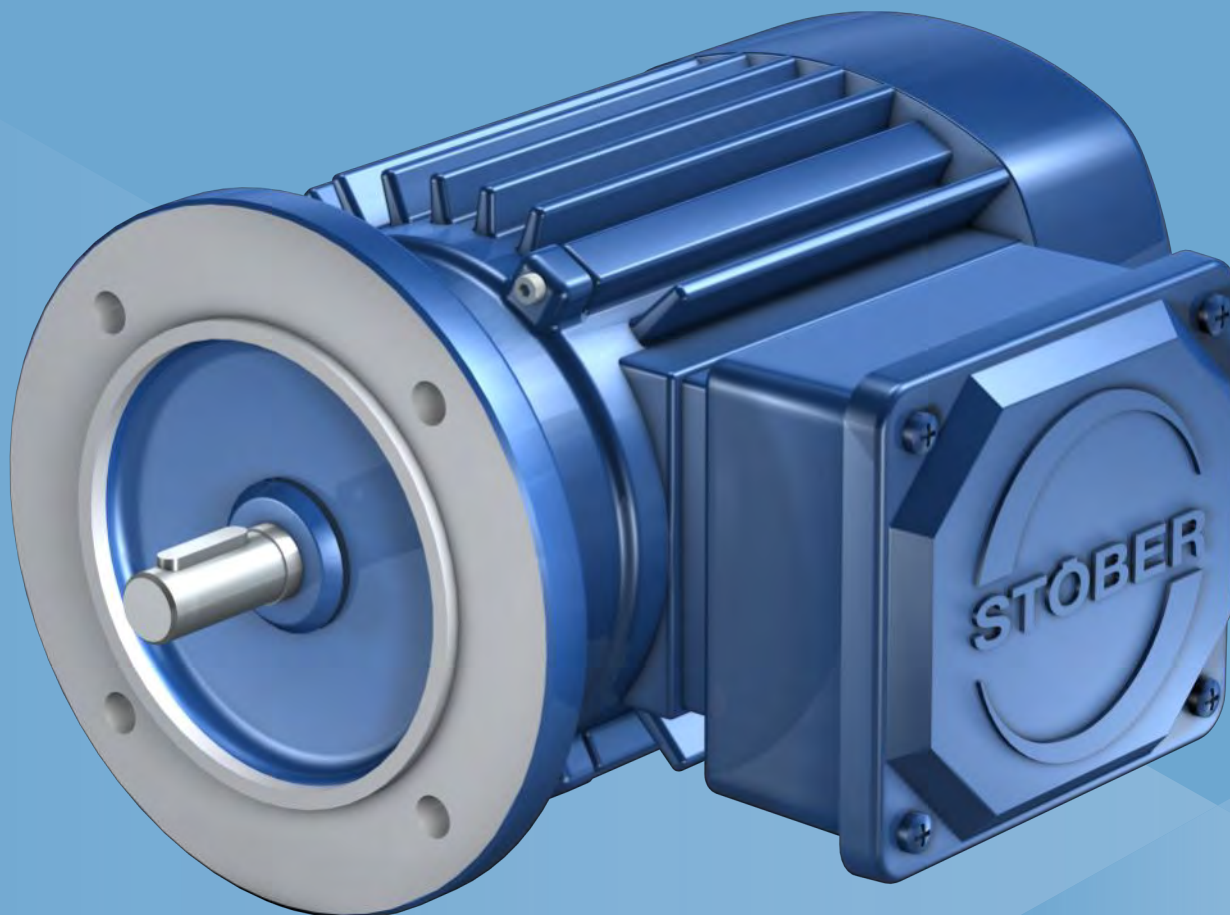
Type	Y/ Δ	n_N [rpm]	P_N [kW]	M_N [Nm]	I_N [A]	m [kg]
IE3D80L4	Y	1445	0.75	5	1.7	17
IE3D90L4	Y	1445	1.5	9.9	3.4	28
IE3D90S4	Y	1440	1.1	7.3	2.5	22.5
IE3D100K4	Y	1455	2.2	14	4.8	36
IE3D100L4	Y	1455	3	20	6.4	45
IE3D112M4	Δ	1460	4	26	8	56
IE3D112M4	Δ	1765	4.5	25	7.4	63
IE3D132M4	Δ	1767	9	49	15	105
IE3D132M4	Δ	1475	7.5	49	15	100
IE3D160L4	Δ	1790	17	89	27	170
IE3D160L4	Δ	1490	15	96	28	175
IE3D180L4	Δ	1480	22	142	41	240
IE3D180L4	Δ	1777	25	134	39	240
IE3D200L4	Δ	1485	30	193	55	327
IE3D200L4	Δ	1788	33	176	52	325
IE3D225S4	Δ	1785	40	213	63	390
IE3D225S4	Δ	1490	37	237	67	367

Shaft design	
IEC design	✓
Encoder	
Incremental encoder	✓
SSI multi-turn absolute encoder ¹	✓
Electrical connection	
Terminal box	✓
Cooling	
Self-ventilation	✓
Forced ventilation	✓
Marks and test symbols	
CE	✓
cURus	✓
EISA CC number including cURus (60 Hz, 265 V/460 V)	✓

Further information

IE3D asynchronous motors


<http://www.stober.de/en/IE3D>
¹ only in combination with forced ventilation



7.6 Asynchronous motors

IE2D

Asynchronous motors in energy efficiency class IE2

Features

Spring-loaded brake	✓
Self-ventilation or forced ventilation (optional)	✓
Incremental encoder (optional) or SSI absolute encoder (optional)	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
Terminal box or QuickFit connector box (optional)	✓
Energy efficiency class IE2 in accordance with EN 60034-30-1	✓

Technical data (400 V ± 5%, 50 Hz)

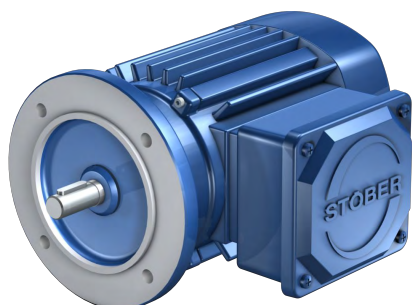
Type	Y/Δ	n _N [rpm]	P _N [kW]	M _N [Nm]	I _N [A]	m [kg]
IE2D80L4	Y	1430	0.75	5	1.7	17
IE2D90L4	Y	1445	1.5	9.9	3.4	24
IE2D90S4	Y	1435	1.1	7.3	2.4	23
IE2D100K4	Y	1455	2.2	14	4.8	36
IE2D100L4	Y	1455	3	20	6.5	45
IE2D112M4	Δ	1445	4	26	8.3	50
IE2D132M4	Δ	1470	7.5	49	15	92
IE2D132L4	Δ	1465	9	58	17	92
IE2D132K4	Δ	1450	5.5	36	11	65
IE2D160K4	Δ	1470	11	72	23	105
IE2D160L4	Δ	1470	15	97	28	160
IE2D180K4	Δ	1470	19	120	38	176
IE2D180L4	Δ	1475	22	142	42	215
IE2D200L4	Δ	1480	30	194	59	277
IE2D225S4	Δ	1475	37	240	69	313
IE2D225K4	Δ	1475	45	291	87	346

Technical data for 2-pin motors can be found in our catalog IE2 asynchronous geared motors, ID 442356.

Shaft design	
IEC design	✓
Encoder	
Incremental encoder	✓
SSI multi-turn absolute encoder ¹	✓
Electrical connection	
Terminal box	✓
QuickFit connector box	✓
Cooling	
Self-ventilation	✓
Forced ventilation	✓
Brake	
Spring-loaded brake	✓
Marks and test symbols	
CE	✓
cURus	✓

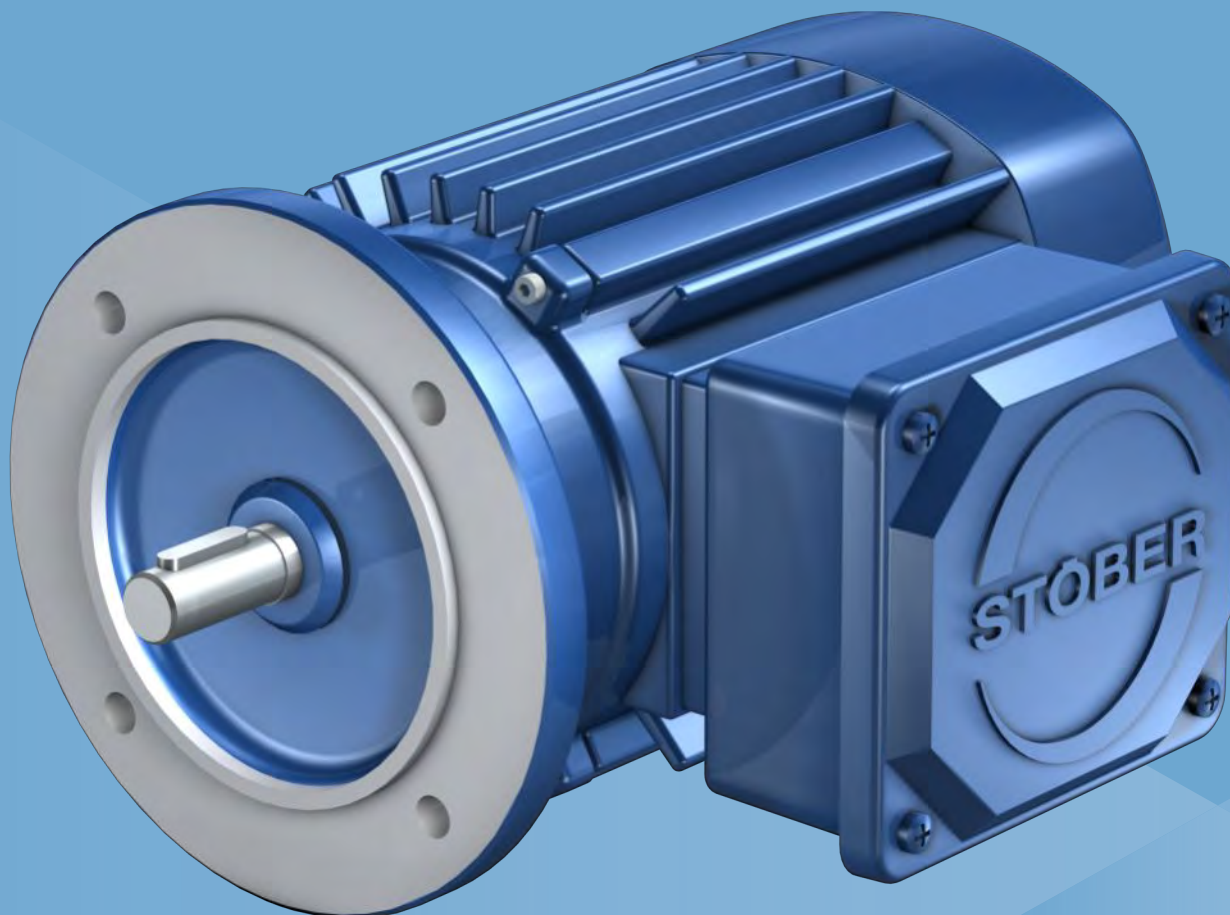
Further information

IE2D asynchronous motors



<http://www.stober.de/en/IE2D>

¹ only in combination with forced ventilation



7.7 Asynchronous motors

D

Asynchronous motors

Features

Spring-loaded brake	✓
Self-ventilation or forced ventilation (optional)	✓
Incremental encoder (optional) or SSI absolute encoder (optional)	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
Terminal box or QuickFit connector box (optional)	✓

Technical data (400 V $\pm$ 5%, 50 Hz)

Type	Y/ Δ	n_N [rpm]	P_N [kW]	M_N [Nm]	I_N [A]	m [kg]
D63M4	Y	1360	0.18	1.3	0.65	6.2
D63K4	Y	1370	0.12	0.84	0.44	5.8
D71K4	Y	1385	0.25	1.7	0.78	7.8
D71L4	Y	1370	0.37	2.6	1.1	8.8
D80K4	Y	1400	0.55	3.8	1.6	12.1
D80L4	Y	1400	0.75	5.1	2.1	13.2
D90L4	Y	1400	1.5	10	3.4	21
D90S4	Y	1410	1.1	7.5	2.6	18.5
D100L4	Y	1430	3	20	6.7	34.8
D100K4	Y	1410	2.2	15	5	28.3
D112M4	Δ	1435	4	27	8.8	42.6
D132L4	Δ	1440	9.2	61	19	70
D132M4	Δ	1450	7.5	50	15	70
D132K4	Δ	1425	5.5	37	12	47
D160L4	Δ	1465	15	98	28	120
D160M4	Δ	1450	11	72	21	92
D180L4	Δ	1465	22	143	42	170
D180M4	Δ	1460	19	121	35	136
D200L4	Δ	1465	30	195	56	200
D225S4	Δ	1470	37	240	67	270
D225M4	Δ	1470	45	292	81	300

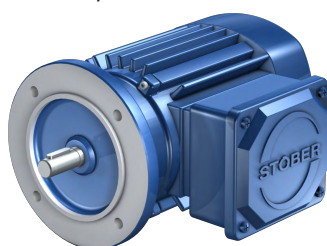
Technical data for 2, 6 and 8-pin motors can be found in our catalog Asynchronous geared motors, ID 441809.

Starting from a 0.75 kW power rating, motors may be delivered only in combination with a brake.

Shaft design	
IEC design	✓
Encoder	
Incremental encoder	✓
SSI multi-turn absolute encoder ¹	✓
Electrical connection	
Terminal box	✓
QuickFit connector box	✓
Cooling	
Self-ventilation	✓
Forced ventilation	✓
Brake	
Spring-loaded brake	✓
Marks and test symbols	
CE	✓
cURus	✓

Further information

D asynchronous motors



<http://www.stoeber.de/en/D>

¹ only in combination with forced ventilation

8 Electronics

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8.1 Motion controllers

MC6

The highest level of flexibility for industrial automation

Features

- MC6 motion controllers based on CODESYS V3
- AutomationControlSuite development environment for convenient program creation
- Up to 100 axes in synchronous operating mode
- IEC 61131-3-compliant programming with ST, AS, CFC, FUP, KOP, AWL
- Cam disk and cam functionality
- 3D CNC editor (dynamic G code)
- Robotics and transformations
- EtherCAT, CANopen, serial RS-232, TCP/IP, USB
- Different hardware versions
- Optional with touch panel
- CFast socket

Shorter cycle times and greater precision mean ever higher requirements for drive technology. Motion sequences are constantly becoming faster and must be coordinated to each other with extreme precision. That is why controller and drive technology are the central factors in increasing productivity and flexibility. A high-performance motion controller is the perfect foundation for reliable coordination of the motion and function sequence in a growing number of applications, in processes with high function complexity and even for very demanding applications. STÖBER has developed the MC6 motion controller to offer you completely standalone drive and motion control architecture in one solution.

Technical data

Hardware version	1	5
Processor	Intel Atom Dual-Core E3825, 2 × 1.33 GHz	Intel Core i3-3120ME, 2 × 2.4 GHz
L2 cache	1 MB	3 MB
Main memory	DDR3 RAM, 2 GB	DDR3 RAM, 2 GB
Mass storage	CFast card, 8 GB	CFast card, 8 GB
Non-volatile memory	128 kB nvRAM	128 kB MRAM
USB	3 USB 2.0 interfaces	4 USB 3.0 interfaces
Surrounding temperature (operation)	0 – 45 °C	0 – 45 °C
Storage temperature	–20 – 75 °C	–20 – 75 °C

Variants

Type	ID No.	Description
MC6C01CT	56564	MC6 motion controller Dual-Core (HW 1) with software version 3.5.9.30: • SoftMotion CNC • Target visualization
MC6C11CT	56565	MC6 motion controller Dual-Core (HW 1) with touch panel and software version 3.5.9.30: • SoftMotion CNC • Target visualization
MC6C01NT	56568	MC6 motion controller Dual-Core (HW 1) with software version 3.5.9.30: • Target visualization
MC6C05CT	56566	MC6 motion controller core i3 (HW 5) with software version 3.5.6.40: • SoftMotion CNC • Target and web visualization
MC6C15CT	56567	MC6 motion controller core i3 (HW 5) with 15" touch panel and software version 3.5.6.40: • SoftMotion CNC • Target and web visualization

Further information

MC6 motion controllers



Development environment
AutomationControlSuite



<http://www.stoeber.de/en/MC6>

<http://www.stoeber.de/en/AS6>



8.2 Drive controllers

SI6

Drive control in a multi-axis drive system

Features

- Control of rotary synchronous servo motors, asynchronous motors and torque motors
- HIPERFACE DSL One Cable Solution
- Electronic motor name plate via HIPERFACE DSL and EnDat 2.2 digital encoder interfaces
- Integrated EtherCAT communication
- STO safety technology using terminals or STO and SS1 using FSoE (Safety over EtherCAT): SIL 3, PL e, category 4
- Integrated holding brake controller
- Energy supply over Quick DC-Link connection
- Single-ended load on double-axis controllers for operation of motors with different power
- Variable feed-in power using supply modules that can be connected in parallel

The completely re-designed STÖBER multi-axis drive system consists of the SI6 drive controller and PS6 supply module combination. Matching Quick DC-Link modules handle the power supply for the networked drive controllers. The SI6 drive controller is available in four sizes as a single or double-axis controller with a nominal output current of up to 50 A. The PS6 supply module is available in two sizes with a nominal output of 10 kW or 20 kW. As an economically attractive system with a minimized device width, the SI6 opens a new dimension in multi-axis applications.

Technical data

Type	Dimensions	$I_{2N,PU}$ (4 kHz) [A]	I_{2maxPU} (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	I_{2maxPU} (8 kHz) [A]	Size [mm]
SI6A061	0	5	10.5	4.5	11.3	373 × 45 × 265
SI6A062	0	2 × 5	2 × 10.5	2 × 4.5	2 × 11.3	373 × 45 × 265
SI6A161	1	12	25.2	10	25	373 × 65 × 286
SI6A162	1	2 × 12	2 × 25.2	2 × 10	2 × 25	373 × 65 × 286
SI6A261	2	22	46.2	20	50	373 × 65 × 286
SI6A262	2	2 × 25	2 × 52.5	2 × 20	2 × 50	373 × 105 × 286
SI6A361	3	50	105	40	100	373 × 105 × 286

Applications

Controller-based motion control is recommended for the central motion control of complex machines.

Using the **CiA 402 controller based** application in the drive controller, you can implement applications with synchronized, cyclic assignment of reference values (csp, csv, cst, ip) by a motion controller, such as an MC6. In addition, the drive controllers can also independently handle motion tasks, such as referencing and jogging when commissioning.

STÖBER Drive Based and **CiA Drive Based** applications are also available for torque/power mode, speed mode or positioning mode.

Further information

SI6 drive controllers



PS6 supply module



<http://www.stoeber.de/en/SI6>

<http://www.stoeber.de/en/PS6>



8.3 Drive controllers

SD6

High performance and flexibility

Features

- Control of linear and rotary synchronous servo motors and asynchronous motors
- Multi-functional encoder interfaces
- Automatic motor parameterization from the electronic motor nameplate
- Isochronic system bus (IGB) for parameterization and multi-axis applications
- Communication over CANopen, EtherCAT or PROFINET
- Safe Torque Off (STO) safety technology in the standard version: SIL 3, PL e, category 4
- Digital and analog inputs and outputs
- Integrated: brake chopper, holding brake controller and line filter
- Flexible DC link connection using Quick DC-Link for multi-axis applications
- Convenient operating unit consisting of graphical display and sensor keys
- Paramodul removable data storage for commissioning and service

The SD6 drive controller from the the 6th STÖBER drive controller generation offers maximum precision and productivity for automation technology and machine manufacturing despite ever more complex functions. Highly dynamic drives ensure the shortest recovery times from fast changes in reference value and load jumps. There is also an option of connecting the drive controllers in a DC intermediate circuit for multi-axis applications, which improves the energy footprint of the entire system. The SD6 drive controller is available in four sizes with a nominal output current of up to 85 A.

Technical data

Type	Dimensions	$I_{2N,PU}$ (4 kHz) [A]	I_{2maxPU} (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	I_{2maxPU} (8 kHz) [A]	Size [mm]
SD6A02	0	4	7.2	3	7.5	300 × 70 × 194
SD6A04	0	2.3	4.2	1.7	4.3	300 × 70 × 194
SD6A06	0	4.5	8.1	3.4	8.5	300 × 70 × 194
SD6A14	1	10	18	6	15	300 × 70 × 284
SD6A16	1	16	28.8	10	25	300 × 70 × 284
SD6A24	2	22	39.6	14	35	300 × 105 × 284
SD6A26	2	32	57.6	20	50	300 × 105 × 284
SD6A34	3	44	79.2	30	75	382.5 × 190 × 303
SD6A36	3	70	126	50	125	382.5 × 190 × 303
SD6A38	3	85	153	60	150	382.5 × 190 × 303

Applications

Drive-based motion control is recommended for the decentralized motion control of sophisticated machines.

The drive-based application package from STÖBER is the right choice wherever universal and flexible solutions are needed. For the **STÖBER Drive Based** application, the PLCOPEN Motion Control command set provides a drive-based motion controller for positioning, velocity and torque/force. These standard commands have been combined into operating modes for different applications and supplemented with additional functions such as jerk limit, motion block linking, cams and much more. For the Command operating mode, all properties of the movements are specified directly by the controller. The properties of the movements in the drive are predefined in the motion block operating mode so that only a start signal is necessary to perform the movement. Linking can be used to define complete motion sequences. There is a separate operating mode available for applications controlled by velocity or torque/force such as pumps, fans or conveyor belts. This also allows for operation without a controller.

In addition, the following applications are available with CiA interfaces:

- **CiA Drive Based** for torque/power mode, velocity mode or positioning mode
- **CiA Controller Based** for interpolating mode

Further information

SD6 drive controller



<http://www.stoeber.de/en/SD6>



8.4 Servo inverters

POSIDYN SDS 5000

High dynamics for fully digital servo axes

Features

- Control of rotary synchronous servo motors and asynchronous motors
- EnDat 2.1/2.2 digital, SSI, incremental (HTL/TTL) or resolver encoder interfaces
- Automatic motor parameterization from the electronic motor nameplate
- Isochronic system bus (IGB) for parameterization and multi-axis applications
- Communication using PROFIBUS DP, PROFINET, CANopen, EtherCAT
- Safe Torque Off (STO) and Safe Stop 1 (SS1) safety functions: SIL 3, PL e, category 3
- Digital and analog inputs and outputs
- Integrated: brake chopper and line filter
- Brake management for two 24 V holding brakes
- Standard applications with speed, torque, positioning and master/slave functionality
- Convenient operating unit consisting of plain text display and keyboard
- Paramodul removable data storage for commissioning and service

The SDS 5000 servo inverter is the most powerful inverter of the 5th STÖBER inverter generation. It also offers the option of remote maintenance on par with on-site service work as well as a self-configuring isochronic system bus (IGB) for communication between up to 32 servo inverters. SDS 5000 can be ordered in four sizes with a nominal output current up to 85 A and a power range up to 45 kW.

Technical data

Type	Dimensions	$I_{2N,PU}$ (4 kHz) [A]	I_{2maxPU} (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	I_{2maxPU} (8 kHz) [A]	Size [mm]
SDS5007A	0	4	7.2	3	7.5	300 × 70 × 175
SDS5008A	0	2.3	4.2	1.7	4.3	300 × 70 × 175
SDS5015A	0	4.5	8.1	3.4	8.5	300 × 70 × 175
SDS5040A	1	10	18	6	15	300 × 70 × 260
SDS5075A	1	16	28.8	10	25	300 × 70 × 260
SDS5110A	2	22	39.6	14	35	300 × 105 × 260
SDS5150A	2	32	57.6	20	50	300 × 105 × 260
SDS5220A	3	44	79.2	30	75	382.5 × 190 × 276
SDS5370A	3	70	126	50	125	382.5 × 190 × 276
SDS5450A	3	85	153	60	150	382.5 × 190 × 276

Applications

Drive-based motion control is recommended for the decentralized motion control of sophisticated machines.

Standard drive-based applications are available for torque/force, velocity or positioning mode for series of the 5th STÖBER inverter generation. For multi-axis applications, master/slave mode is possible in the standard version. The electronic cam disk tailor-made application is available as an alternative.

Further information

SDS 5000 servo inverters



<http://www.stoeber.de/en/SDS5000>



8.5 Servo inverters

POSIDRIVE MDS 5000

The universal servo inverter for fully digital servo axes

Features

- Control of rotary synchronous servo motors and asynchronous motors
- EnDat 2.1/2.2 digital, SSI, incremental (HTL/TTL) or resolver encoder interfaces
- Automatic motor parameterization from the electronic motor nameplate
- Communication using PROFIBUS DP, PROFINET, CANopen or EtherCAT
- Safe Torque Off (STO) and Safe Stop 1 (SS1) safety functions: SIL 3, PL e, category 3
- Digital and analog inputs and outputs
- Integrated: brake chopper and line filter
- Standard applications with speed, torque, positioning and master/slave functionality
- Convenient operating unit consisting of plain text display and keyboard
- Paramodul removable data storage for commissioning and service

The MDS 5000 servo inverter from the 5th STÖBER inverter generation offers a functional housing design with modular hardware structure. Up to four axes can be controlled in sequence. Its performance and modular hardware structure make this servo inverter extremely versatile. MDS 5000 can be ordered in four sizes with a nominal output current up to 85 A and a power range up to 45 kW.

Technical data

Type	Dimensions	$I_{2N,PU}$ (4 kHz) [A]	I_{2maxPU} (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	I_{2maxPU} (8 kHz) [A]	Size [mm]
MDS5007A	0	4	7.2	3	7.5	300 × 70 × 175
MDS5008A	0	2.3	4.2	1.7	4.3	300 × 70 × 175
MDS5015A	0	4.5	8.1	3.4	8.5	300 × 70 × 175
MDS5040A	1	10	18	6	15	300 × 70 × 260
MDS5075A	1	16	28.8	10	25	300 × 70 × 260
MDS5110A	2	22	39.6	14	35	300 × 105 × 260
MDS5150A	2	32	57.6	20	50	300 × 105 × 260
MDS5220A	3	44	79.2	30	75	382.5 × 190 × 276
MDS5370A	3	70	126	50	125	382.5 × 190 × 276
MDS5450A	3	85	153	60	150	382.5 × 190 × 276

Applications

Drive-based motion control is recommended for the decentralized motion control of sophisticated machines.

Standard drive-based applications are available for torque/force, velocity or positioning mode for series of the 5th STÖBER inverter generation. For multi-axis applications, master/slave mode is possible in the standard version. The electronic cam disk tailor-made application is available as an alternative.

Further information

MDS 5000 servo inverters



<http://www.stoeber.de/en/MDS5000>



8.6 Frequency inverters

POSIDRIVE FDS 5000

The purpose-built asynchronous servo axis

Features

- Control of rotating asynchronous motors
- Interface for incremental encoder (HTL/TTL)
- Communication using PROFIBUS DP, PROFINET, CANopen or EtherCAT
- Safety functions Safe Torque Off and Safe Stop 1 in accordance with DIN EN ISO 13849-1 and DIN EN 61800-5-2
- Digital and analog inputs and outputs
- Integrated: brake chopper and line filter
- Standard applications with speed, torque, positioning and master/slave functionality
- Convenient operating unit consisting of plain text display and keyboard
- Paramodul removable data storage for commissioning and service

The FDS 5000 frequency inverter from the 5th STÖBER inverter generation was optimized for asynchronous geared motors and offers practical functionality for modern positioning and controller drives. It comes ready for fast fieldbus communication with different systems. FDS 5000 can be ordered in two sizes with a nominal output current up to 16 A and a power range up to 7.5 kW.

Technical data

Type	Dimensions	$I_{2N,PU}$ (4 kHz) [A]	I_{2maxPU} (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	I_{2maxPU} (8 kHz) [A]	Size [mm]
FDS5004A	0	1.3	2.4	1	2.5	300 × 70 × 157
FDS5007A	0	4	7.2	3	7.5	300 × 70 × 157
FDS5008A	0	2.3	4.2	1.7	4.3	300 × 70 × 157
FDS5015A	0	4.5	8.1	3.4	8.5	300 × 70 × 157
FDS5022A	1	5.5	9.9	4	10	300 × 70 × 242
FDS5040A	1	10	18	6	15	300 × 70 × 242
FDS5055A	1	12	21.6	7.5	18.8	300 × 70 × 242
FDS5075A	1	16	28.8	10	25	300 × 70 × 242

Applications

Drive-based motion control is recommended for the decentralized motion control of sophisticated machines.

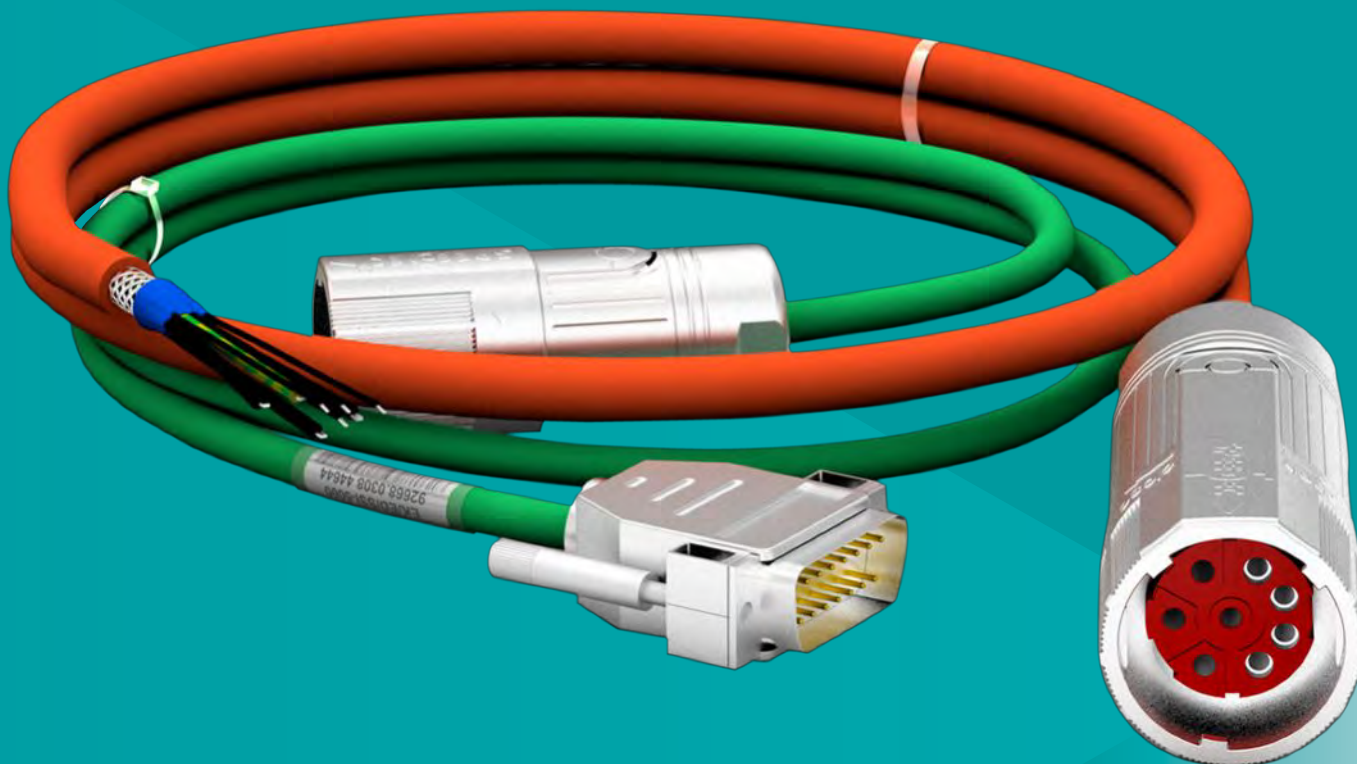
Standard drive-based applications are available for torque/force, velocity or positioning mode for series of the 5th STÖBER inverter generation. For multi-axis applications, master/slave mode is possible in the standard version. The electronic cam disk tailor-made application is available as an alternative.

Further information

FDS 5000 frequency inverter



<http://www.stoeber.de/en/FDS5000>



8.7 Connection method

Coordinated connection systems for STOBBER drive controllers

Features

- Torsional stress $\pm 30^\circ/\text{m}$
- Bending resistance
- Oil resistance
- Chemical resistance

A drive controller, cable and motor that are not coordinated with one another can lead to impermissibly high voltage peaks which may cause damage to the motor. Legal requirements for EMC (electromagnetic compatibility) must also be observed. STOBBER offers a coordinated cable program for the power connection and for the different encoder systems. The combination of STOBBER motors, STOBBER cables and STOBBER drive controllers ensures safety and reliability for the system and compliance with legal requirements. Using unsuitable connection cables may result in voiding of any claims made under the warranty. Cables are available in different lengths and are ready-made on both sides. They simply have to be connected or clamped to the motor or drive controller.

Power cables

Design	con.15	con.23	con.40	con.58
springtec quick lock	✓			
speedtec quick lock		✓	✓	
Screw technology		On request	On request	✓

Power cores	Brake	Temperature sensor	Cable Ø	Min. bending radius 1	Min. bending radius 2
4 × 1.0 mm ²	2 × 0.5 mm ²	2 × 0.34 mm ²	Max. 10.5 mm	105.0 mm	52.5 mm
4 × 1.5 mm ²	2 × 1.0 mm ²	2 × 0.5 mm ²	Max. 12.7 mm	127.0 mm	63.5 mm
4 × 2.5 mm ²	2 × 1.0 mm ²	2 × 1.0 mm ²	Max. 15.3 mm	153.0 mm	76.5 mm
4 × 4.0 mm ²	2 × 1.0 mm ²	2 × 0.75 mm ²	Max. 16.0 mm	160.0 mm	80.0 mm
4 × 6.0 mm ²	2 × 1.5 mm ²	2 × 1.0 mm ²	Max. 19.4 mm	194.0 mm	97.0 mm
4 × 10.0 mm ²	2 × 1.5 mm ²	2 × 1.0 mm ²	Max. 23.5 mm	235.0 mm	117.5 mm
4 × 16.0 mm ²	2 × 1.5 mm ²	2 × 1.5 mm ²	Max. 25.5 mm	255.0 mm	191.0 mm
4 × 25.0 mm ²	2 × 1.5 mm ²	2 × 1.5 mm ²	Max. 28.8 mm	288.0 mm	216.0 mm

Bending radius: 1 = free to move, 2 = fixed installation

Encoder cables

Encoder	con.15	con.17	con.23	
			Synchronous	Asynchronous
EnDat 2.1/2.2 digital	✓	✓	On request	
Incremental (HTL)			On request	✓
SSI			On request	✓
Resolver	✓	✓	On request	
EnDat 2.1 sin/cos	✓	✓	On request	

Encoder	Cable Ø	Bending radius 1	Bending radius 2
EnDat 2.1/2.2 digital	Max. 8.5 mm	85 mm	42.5 mm
Incremental (HTL)	Max. 8.5 mm	85 mm	42.5 mm
SSI	Max. 8.5 mm	85 mm	42.5 mm
Resolver	Max. 11.4 mm	114 mm	57.0 mm
EnDat 2.1 sin/cos	Max. 13.0 mm	130 mm	65.0 mm

Bending radius: 1 = free to move, 2 = fixed installation

HIPERFACE DSL One Cable Solution

Design	con.15	con.23	con.40
springtec quick lock	✓		
speedtec quick lock		✓	✓

Power cores	Brake	Signal line	Cable Ø	Min. bending radius 1	Min. bending radius 2
4 × 1.0 mm ²	2 × 0.75 mm ²	2 × AWG24	Max. 12.0 mm	84.0 mm	60.0 mm
4 × 1.5 mm ²	2 × 0.75 mm ²	2 × AWG22	Max. 13.5 mm	94.5 mm	67.5 mm
4 × 2.5 mm ²	2 × 1.0 mm ²	2 × AWG22	Max. 15.0 mm	105.0 mm	75.0 mm
4 × 4.0 mm ²	2 × 1.0 mm ²	2 × AWG22	Max. 16.6 mm	116.2 mm	83.0 mm

Bending radius: 1 = free to move, 2 = fixed installation

Further information

Power cables


<http://www.stoeber.de/en/powercable>

Encoder cables


<http://www.stoeber.de/en/encodercable>

One Cable Solution


<http://www.stoeber.de/en/ocs>

A world map in blue silhouette on an orange background. Overlaid on the map is a large white circle with a break in the top and bottom, containing the number '24' in blue, representing 24-hour service.

24

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10 Appendix

10.1 Explanation of the formula symbols

C_2	Nm/ arcmin	Torsional stiffness relative to the gear unit output
Δ	—	Delta connection
$\Delta\phi_2$	arcmin	Backlash at the output shaft with a blocked input
Δs	mm	Linear clearance
η	%	Efficiency
F_{ax}	N	Permitted axial force on the output
F_{f2acc}	kN	Permitted acceleration feed force at the gear unit output
i	—	Gear ratio
I_{2maxPU}	A	Maximum output current of the power unit
$I_{2N,PU}$	A	Nominal output current of the power unit
I_N	A	Nominal current
J_{dyn}	10^{-4} kgm^2	Mass moment of inertia of a motor in dynamic operation
m	kg	Weight
M_0	Nm	Stall torque: The continuous torque the motor is able to deliver at a speed of 10 rpm (tolerance $\pm 5\%$)
$M_{2,0}$	Nm	Stall torque on the gear unit output
M_{2acc}	Nm	Maximum permitted acceleration torque on the gear unit output
M_{2max}	Nm	Maximum torque at the gear unit output
M_{2N}	Nm	Nominal torque on the gear unit output (relative to n_{1N})
M_{max}	Nm	Maximum torque: the maximum permitted torque the motor is able to deliver over a short period (when accelerating or decelerating) (tolerance $\pm 10\%$)
m_n	—	Gearing module
M_N	Nm	Nominal torque: the maximum torque of a motor in S1 mode at nominal speed n_N (tolerance $\pm 5\%$)
n_{1max}	rpm	Maximum permitted input speed
n_{1maxZB}	min^{-1}	Maximum permitted input speed of the gear unit in cyclic operation
n_2	rpm	Speed at the gear unit output
n_N	rpm	Nominal speed: The speed for which the nominal torque M_N is specified
P_N	kW	Nominal power: the power the motor is able to deliver long term in S1 mode at the nominal point (tolerance $\pm 5\%$)
$P_{N,GB}$	kW	Nominal power of the two-speed gearbox
$v_{f2maxZB}$	m/s	Maximum feed velocity at the gear unit output at n_{1maxZB}
Y	—	Star connection
z	—	Number of teeth

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10.4 Publication details

STOBER compact catalog ID 442655_en.

You can find current versions of PDF files online at <http://www.stoeber.de/en/download>.



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ID 442655_en.00 07/2017

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