



# STÖBER compact

System technology  
for drives and  
automation



**STÖBER**



**STOBER compact**

**System technology for drives and automation**

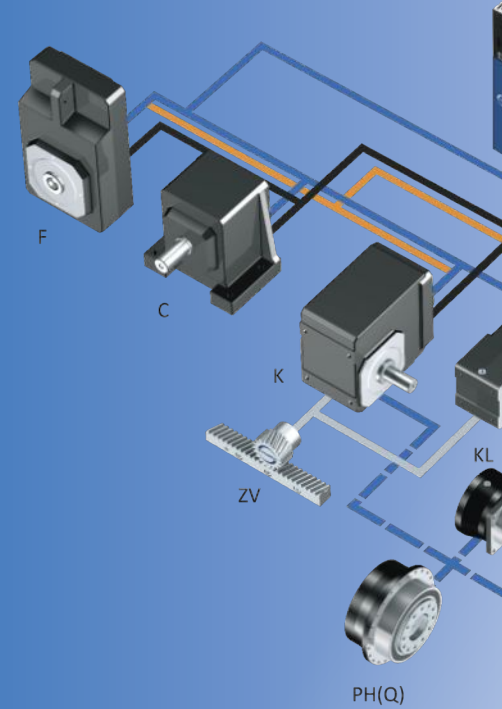
# One partner. All the possibilities.

STOBER has developed and produced excellent drive technology since 1934 and is active internationally with around 1000 employees at 13 locations. STOBER impresses machine manufacturers in wide-ranging industries and markets around the world with tailor-made, highly efficient drive systems for demanding movements.



"Together with our customers, we achieve perfect motion in a wide variety of applications with our precisely coordinated system. Whenever precision, dynamics and quality are required, we are at your side as a reliable partner."

Rainer Wegener, Chief Executive Officer, STÖBER Antriebstechnik



## STOBER compact – what you can expect!

Take a look at the entire STOBER product range and learn what's essential to the STOBER drive system for perfect motion. The latest STOBER electronics, precise high-performance gear units, highly dynamic motors and super compact geared motors – connected via ready-to-use STOBER cable technology. Everything from a single source! It could not be more convenient.

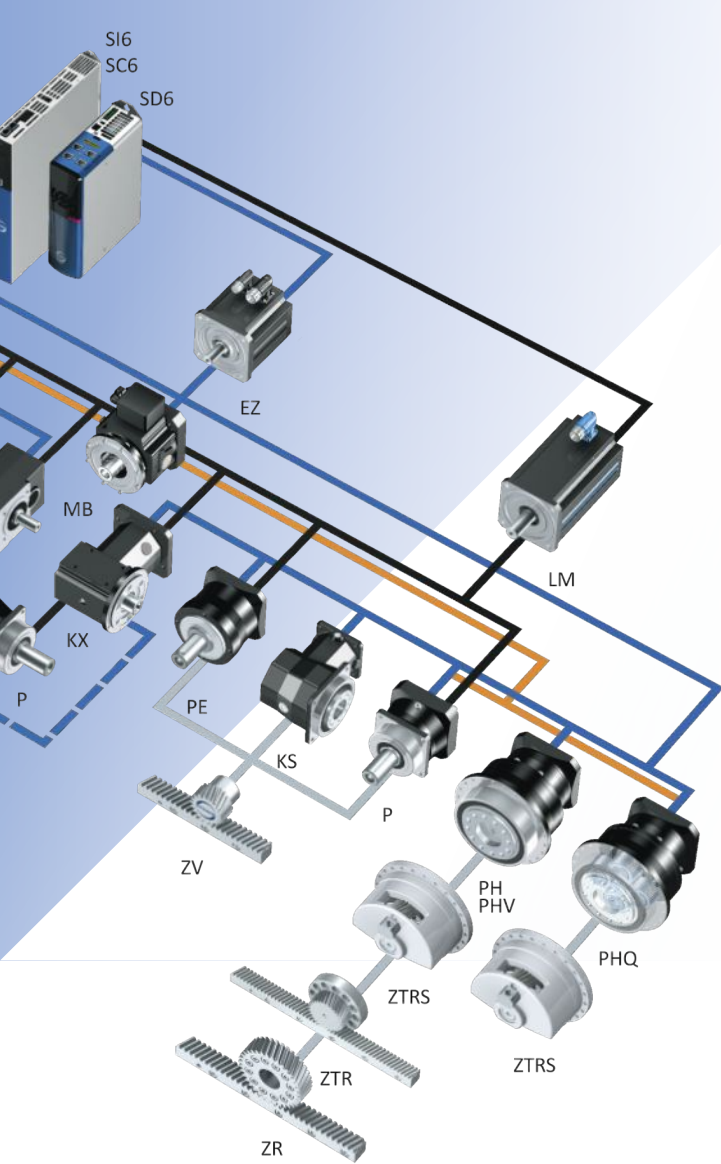
## At home in the world of demanding motion

Gear units

Geared motors

Motors

Cables and drive controllers



## Everything from a single source.

The STÖBER drive system consisting of gear units, motors, cables and drive controllers has a modular design and is freely scalable—for tailor-made, compact and powerful machine concepts. It can be adapted to your individual requirements and combined as needed in nearly all industries and applications areas.

We check every single component and how it works together with others, taking on the responsibility for the complete drive train. For you, this means that one contact partner, certified operating safety and maximum availability are guaranteed.

### Need special solutions?

Numerous one-of-a-kind product highlights and project-related adjustments make it possible. With a holistic approach to your specific task, we work together on individualized solutions that are optimally coordinated to your requirements. Dedicated and solution-oriented in the support of your visions and projects.

### STÖBER moves integrally and precisely.



"Versatile products, countless possibilities. Your perfect motion is what drives us!"

**Markus Graf, Chief Sales Officer, STÖBER Antriebstechnik**



## STOBER moves as a team and with personality.

As a family-owned company, it is very important to us to maintain close relationships and treat each other with trust. We put people first.

We are committed to the well-being of our employees, identify with the expectations of our customers, and show personal commitment to mutual success.



"We have installed gear units, motors and drive controllers from STOBER in nearly all our systems. STOBER supports us in new projects from the first stroke of a pencil in the design phase until commissioning. Our years of cooperation are shaped by openness and honesty and emanate a rather special spirit. The technical consulting, the support—that is real, experienced partnership"

**Jürgen Leicht, Managing Partner of Leicht Stanzautomation**



### **Working together. Worldwide. Successfully.**

With an eye to the future, STOBER is facing the challenges of digitalization and investing in integrated solutions and a strong global presence in production, sales and service. STOBER China was founded at the end of 2019. As a result, we are present in more than 40 countries around in the world at 12 locations and with 80 service partners.



**STOBER drives  
Systems technology  
Taicang, China.**



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# 1 Selection tool

## 1.1 Servo gear units



Product chapter

P

PE

C

F

PH

PHQ

PHV

Chapter number

[> 2.1]

[ 2.5]

[> 2.6]

[> 2.7]

[> 2.2]

[ 2.3]

[> 2.4]

### Technical data

i	3 – 100	3 – 100	2 – 276	4.3 – 552	4 – 100	5.5 – 600	61 – 121
$M_{2acc}$	21 – 3450 Nm	17 – 250 Nm	25 – 8000 Nm	53 – 1100 Nm	60 – 7500 Nm	200 – 43000 Nm	4250 – 7500 Nm
$\Delta\phi_2$	1 – 8 arcmin	8 – 13 arcmin	10 – 20 arcmin	5 – 11 arcmin	1 – 4 arcmin	1 – 3 arcmin	1 – 3 arcmin
$\eta_{get}$	95 – 97 %	95 – 97 %	96 – 97 %	96 – 97 %	93 – 96 %	90 – 96 %	90 %

An explanation of the formula symbols can be found in the chapter [\[> 10.1\]](#).

### Features

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

Key

★★★☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

<b>Shaft design</b>							
Solid shaft with feather key	✓	✓	✓	✓			
Solid shaft without feather key	✓		C0 – C5: ✓ Starting at C6: Request	✓			
Hollow shaft with keyway				✓			
Hollow shaft with shrink ring				✓			
Flange shaft					✓	✓	✓
<b>Bearing design</b>							
Standard	✓	✓	✓	✓	✓	✓	✓
Axially reinforced	✓						
Radially reinforced	✓						
Reinforced					✓ (PH3 – PH5)	✓ (PHQ4 – PHQ5)	
<b>Maintenance-free</b>	✓	✓	C0 – C5: ✓	✓	✓	✓	✓

# 1 Selection tool

## 1.1 Servo gear units



Product chapter

KS

PKX

PK

Chapter number

[\[ > 2.8\]](#)

[\[ > 2.9\]](#)

[\[ > 2.10\]](#)

### Technical data

$i$	6 – 200	3 – 300	12 – 561
$M_{2acc}$	90 – 400 Nm	21 – 3300 Nm	200 – 3105 Nm
$\Delta\phi_2$	4 – 6 arcmin	2 – 8.5 arcmin	1.5 – 5 arcmin
$\eta_{get}$	93 – 95 %	94 – 96 %	94 %

An explanation of the formula symbols can be found in the chapter [\[ > 10.1\]](#).

### Features

#### Features

Power density	★★★☆☆	★★★★☆	★★★☆☆
Backlash	★★★☆☆	★★★★★	★★★★★
Price category	€€€	€€€	€€€
Shaft load	★★★★★	★★★★☆	★★★★★
Smooth operation	★★★★☆	★★★☆☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★☆☆	★★★☆☆
Mass moment of inertia	★★★★☆	★★★☆☆	★★★★☆
Key	★★★☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium		

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

# 1 Selection tool

## 1.1 Servo gear units



Product chapter

KS

PHKX

PHK

PHQK

Chapter number

[ > 2.8]

[ > 2.11]

[ > 2.12]

[ > 2.13]

### Technical data

	KS	PHKX	PHK	PHQK
$i$	6 – 200	4 – 300	16 – 561	22 – 2242
$M_{2acc}$	90 – 400 Nm	60 – 6975 Nm	355 – 7500 Nm	316 – 43000 Nm
$\Delta\phi_2$	4 – 6 arcmin	1 – 6 arcmin	1.5 – 4.5 arcmin	1.5 – 4 arcmin
$\eta_{get}$	93 – 95 %	92 – 95 %	92 – 93 %	90 – 93 %

An explanation of the formula symbols can be found in the chapter [\[ > 10.1\]](#).

### Features

#### Features

Power density	★★★★☆	★★★★★	★★★★☆	★★★★★
Backlash	★★★★☆	★★★★★	★★★★★	★★★★★
Price category	€€€	€€€€	€€€€	€€€€€
Shaft load	★★★★★	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★☆☆☆	★★★★☆	★★☆☆☆
Torsional stiffness	★★★★☆	★★★★☆	★★★★☆	★★★★★
Mass moment of inertia	★★★★☆	★★☆☆☆	★★★★☆	★★★★☆
Key	★★★★☆☆ good   ★★★★★★ excellent € Economy   €€€€€ Premium			

Shaft design	KS	PHKX	PHK	PHQK
Solid shaft with feather key	✓			
Solid shaft without feather key	✓			
Hollow shaft with shrink ring	✓			
Flange hollow shaft	✓			
Flange shaft		✓	✓	✓
Bearing design	KS	PHKX	PHK	PHQK
Standard	✓	✓	✓	✓
Reinforced		✓ (PH3 – PH5)	✓ (PH5)	✓ (PHQ5)
Maintenance-free	KS	PHKX	PHK	PHQK
	✓	✓	✓	✓

# 1 Selection tool

## 1.1 Servo gear units



Product chapter

KL

K

Chapter number

[\[ > 2.14\]](#)

[\[ > 2.15\]](#)

### Technical data

$i$	4 – 32	4 – 381
$M_{2acc}$	22 – 65 Nm	50 – 13200 Nm
$\Delta\phi_2$	16 – 25 arcmin	1.5 – 12 arcmin
$\eta_{get}$	97 %	94 – 97 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

#### Features

Power density	★★★★☆	★★★★☆
Backlash	★★★★☆	★★★★☆
Price category	€	€€
Shaft load	★★★★☆	★★★★☆
Smooth operation	★★★★☆	★★★★☆
Torsional stiffness	★★★★☆	★★★★☆
Mass moment of inertia	★★★★☆	★★★★☆
Key	★★★★☆ good   ★★★★★ excellent € Economy   €€€€€ Premium	

<b>Shaft design</b>		
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 ring	✓	✓

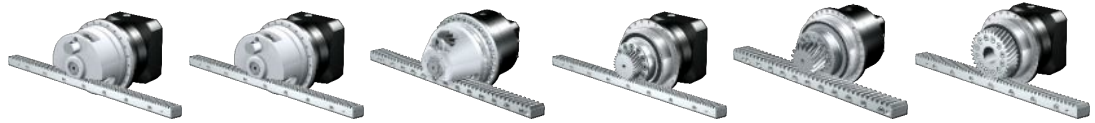
<b>Accessories</b>		
Flange	✓	✓
Foot plates	✓	✓
Torque arm bracket	KL2: ✓	✓

<b>Bearing design</b>		
Standard	✓	✓

<b>Maintenance-free</b>	✓	K1 – K4: ✓
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# 1 Selection tool

## 1.2 Rack and pinion drives



Product chapter	ZTRSPH	ZTRSPHQ	ZTRSPHV	ZTRPH	ZTRPHV	ZRPH
Chapter number	<a href="#">[&gt; 3.1]</a>	<a href="#">[&gt; 3.2]</a>	<a href="#">[&gt; 3.3]</a>	<a href="#">[&gt; 3.4]</a>	<a href="#">[&gt; 3.5]</a>	<a href="#">[&gt; 3.6]</a>

### Technical data

$m_n$	3 – 8 mm	8 mm	5 – 8 mm	2 – 6 mm	5 – 6 mm	2 – 4 mm
$z$	15 – 32	19	15 – 20	12 – 32	16 – 19	30 – 40
$F_{f2acc}$	20 – 79 kN	124 kN	67 – 77 kN	6.5 – 67 kN	56 – 67 kN	3.1 – 16 kN
$v_{f2maxZB}$	0.2 – 4.7 m/s	0.06 – 1.1 m/s	0.21 – 0.49 m/s	0.11 – 4.7 m/s	0.2 – 0.39 m/s	0.29 – 6.7 m/s
$\Delta s$	8 – 56 $\mu$ m	70 $\mu$ m	15 – 56 $\mu$ m	4 – 44 $\mu$ m	15 – 44 $\mu$ m	10 – 56 $\mu$ m

An explanation of the formula symbols can be found in the chapter [\[> 10.1\]](#).

### Features

Power density	★★★★★	★★★★★	★★★★★	★★★★☆	★★★★☆	★★★☆☆
Linear backlash	★★★★★	★★★★☆	★★★★☆	★★★★★	★★★★☆	★★★★★
Price category	€€€€€	€€€€€	€€€€€	€€€€	€€€€	€€€
Smooth operation	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Linear rigidity	★★★★★	★★★★★	★★★★★	★★★★☆	★★★★☆	★★★☆☆
Mass moment of inertia	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Key	★☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium					

<b>Pinion gearing</b>						
Helical gearing	✓	✓	✓	✓	✓	✓
Gearing quality	5	5	5	5	5	5
<b>Accessories</b>						
Felt gear	✓	✓	✓			

In the chapter [\[> 3.12\]](#), you can find the matching precision gear racks for our rack and pinion drives.

# 1 Selection tool

## 1.2 Rack and pinion drives



Product chapter	ZVP	ZVPE
Chapter number	<a href="#">▶ 3.7</a>	<a href="#">▶ 3.8</a>

### Technical data

$m_n$	2 – 4 mm	2 – 3 mm
$z$	16 – 25	16 – 25
$F_{f2acc}$	1.7 – 16 kN	1.7 – 6.1 kN
$V_{f2maxZB}$	0.14 – 5.3 m/s	0.14 – 4.5 m/s
$\Delta s$	8 – 44 $\mu$ m	40 – 83 $\mu$ m

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★★★☆	★★★★☆
Linear backlash	★★★★★	★★★★☆
Price category	€€	€
Smooth operation	★★★★☆	★★★★☆
Linear rigidity	★★★★☆	★★★★☆
Mass moment of inertia	★★★★☆	★★★★☆
Key	★★★★☆ good   ★★★★★ excellent € Economy   €€€€€ Premium	
<b>Pinion gearing</b>		
Helical gearing	✓	✓
Gearing quality	6	6
<b>Bearing design</b>		
Standard	✓	✓
Axially reinforced	✓	

In the chapter [▶ 3.12](#), you can find the matching precision gear racks for our rack and pinion drives.

# 1 Selection tool

## 1.2 Rack and pinion drives



Product chapter

ZVKS

ZVKL

ZVK

Chapter number

[▶ 3.9](#)

[▶ 3.10](#)

[▶ 3.11](#)

### Technical data

$m_n$	2 – 4 mm	2 mm	2 – 4 mm
$z$	18 – 25	16 – 20	18 – 25
$F_{f2acc}$	3.2 – 11 kN	1.3 – 2.7 kN	2.7 – 16 kN
$v_{f2maxZB}$	0.07 – 3 m/s	0.33 – 3.3 m/s	0.06 – 3.8 m/s
$\Delta s$	37 – 44 $\mu\text{m}$	99 – 123 $\mu\text{m}$	12 – 111 $\mu\text{m}$

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★★☆☆	★★☆☆☆	★☆☆☆☆
Linear backlash	★★★☆☆	★☆☆☆☆	★★★★☆
Price category	€€€	€	€
Smooth operation	★★★★☆	★★☆☆☆	★★★★☆
Linear rigidity	★★★☆☆	★☆☆☆☆	★☆☆☆☆
Mass moment of inertia	★★★★☆	★★★★☆	★★★★☆
Key	★☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium		
<b>Pinion gearing</b>			
Helical gearing	✓	✓	✓
Gearing quality	6	6	6

In the chapter [▶ 3.12](#), you can find the matching precision gear racks for our rack and pinion drives.

# 1 Selection tool

## 1.3 EZ synchronous servo geared motors



Product chapter

P

PE

C

F

Chapter number

[ > 4.1]

[ 4.5]

[ > 4.6]

[ 4.7]

### Technical data

	P	PE	C	F
$i$	3 – 100	3 – 50	2 – 270	4.3 – 440
$M_{2acc}$	10 – 3450 Nm	5.7 – 250 Nm	9.7 – 6500 Nm	21 – 1100 Nm
$\Delta\phi_2$	1 – 8 arcmin	8 – 13 arcmin	10 – 20 arcmin	5 – 11 arcmin
$\eta_{get}$	95 – 97 %	95 – 97 %	96 – 97 %	96 – 97 %

An explanation of the formula symbols can be found in the chapter [\[> 10.1\]](#).

### Features

Power density	★★★★☆	★★★☆☆	★★☆☆☆	★☆☆☆☆
Backlash	★★★★★	★★★☆☆	★★☆☆☆	★★★☆☆
Price category	€€	€	€	€
Shaft load	★★★★☆	★★☆☆☆	★★☆☆☆	★★★☆☆
Smooth operation	★★★★☆	★★★☆☆	★★★☆☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Mass moment of inertia	★★★★★	★★★★★	★★★★★	★★★★★
Key	★★☆☆☆☆ good   ★★★★★★ excellent € Economy   €€€€€ Premium			

Shaft design	P	PE	C	F
Solid shaft with feather key	✓	✓	✓	✓
Solid shaft without feather key	✓		C0 – C5: ✓ Starting at C6: Request	✓
Hollow shaft with keyway				✓
Hollow shaft with shrink ring				✓
Bearing design	P	PE	C	F
Standard	✓	✓	✓	✓
Axially reinforced	✓			
Radially reinforced	✓			
Maintenance-free	P	PE	C	F
	✓	✓	C0 – C5: ✓	✓



# 1 Selection tool

## 1.3 EZ synchronous servo geared motors



Product chapter

PH

PHQ

PHV

Chapter number

[▶ 4.2](#)

[\[ 4.3](#)

[▶ 4.4\]](#)

### Technical data

$i$	4 – 100	5.5 – 600	61 – 121
$M_{2acc}$	24 – 7500 Nm	72 – 22000 Nm	1638 – 7500 Nm
$\Delta\phi_2$	1 – 4 arcmin	1 – 3 arcmin	1 – 3 arcmin
$\eta_{get}$	93 – 96 %	90 – 96 %	90 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★★★☆	★★★★★	★★★★☆
Backlash	★★★★★	★★★★★	★★★★☆
Price category	€€€	€€€€	€€€
Shaft load	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★★★☆	★★★★☆
Torsional stiffness	★★★★☆	★★★★★	★★★★☆
Mass moment of inertia	★★★★★	★★★★★	★★★★★
Key	★☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium		
<b>Shaft design</b>			
Flange shaft	✓	✓	✓
<b>Bearing design</b>			
Standard	✓	✓	✓
Reinforced	✓ (PH3 – PH5)	✓ (PHQ4 – PHQ5)	
<b>Maintenance-free</b>	✓	✓	✓

# 1 Selection tool

## 1.3 EZ synchronous servo geared motors



Product chapter

KS

PKX

PK

Chapter number

[ > 4.8]

[ > 4.9]

[ > 4.10]

### Technical data

$i$	6 – 100	3 – 300	12 – 555
$M_{2acc}$	27 – 400 Nm	11 – 3300 Nm	68 – 3105 Nm
$\Delta\phi_2$	4 – 6 arcmin	2 – 8.5 arcmin	1.5 – 5 arcmin
$\eta_{get}$	93 – 95 %	94 – 96 %	94 %

An explanation of the formula symbols can be found in the chapter [\[ > 10.1\]](#).

### Features

Power density	★★★☆☆	★★★★☆	★★★☆☆
Backlash	★★★☆☆	★★★★★	★★★★★
Price category	€€€	€€€	€€€
Shaft load	★★★★★	★★★★☆	★★★★☆
Smooth operation	★★★★☆	★★★☆☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★☆☆	★★★☆☆
Mass moment of inertia	★★★★★	★★★☆☆	★★★★★
Key	★★★☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium		

<b>Shaft design</b>			
Solid shaft with feather key	✓	✓	✓
Solid shaft without feather key	✓	✓	✓
Hollow shaft with shrink ring	✓		
Flange hollow shaft	✓		
<b>Bearing design</b>			
Standard	✓	✓	✓
Axially reinforced		✓	✓
Radially reinforced		✓	✓
<b>Maintenance-free</b>	✓	✓	✓

# 1 Selection tool

## 1.3 EZ synchronous servo geared motors



Product chapter

KS

PHKX

PHK

PHQK

Chapter number

[ > 4.8]

[ 4.11]

[ ▶ 4.12]

[ 4.13]

### Technical data

	KS	PHKX	PHK	PHQK
$i$	6 – 100	4 – 210	16 – 555	22 – 2242
$M_{2acc}$	27 – 400 Nm	26 – 6975 Nm	89 – 7500 Nm	123 – 43000 Nm
$\Delta\phi_2$	4 – 6 arcmin	1 – 6 arcmin	1.5 – 4.5 arcmin	1.5 – 4 arcmin
$\eta_{get}$	93 – 95 %	92 – 95 %	92 – 93 %	90 – 93 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★★☆☆	★★★★★	★★★★☆	★★★★★
Backlash	★★★☆☆	★★★★★	★★★★★	★★★★★
Price category	€€€	€€€€	€€€€	€€€€€
Shaft load	★★★★★	★★★★★	★★★★★	★★★★★
Smooth operation	★★★★☆	★★☆☆☆	★★★★☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★★☆	★★★★☆	★★★★★
Mass moment of inertia	★★★★★	★★★☆☆	★★★★★	★★★★★
Key	★★☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium			

Shaft design	KS	PHKX	PHK	PHQK
Solid shaft with feather key	✓			
Solid shaft without feather key	✓			
Hollow shaft with shrink ring	✓			
Flange hollow shaft	✓			
Flange shaft		✓	✓	✓
Bearing design	KS	PHKX	PHK	PHQK
Standard	✓	✓	✓	✓
Reinforced		✓ (PH3 – PH5)	✓ (PH5)	✓ (PHQ5)
Maintenance-free	KS	PHKX	PHK	PHQK
	✓	✓	✓	✓

# 1 Selection tool

## 1.3 EZ synchronous servo geared motors



Product chapter

KL

K

Chapter number

[ > 4.14]

[ 4.15]

### Technical data

i	4 – 32	4 – 381
$M_{2acc}$	10 – 65 Nm	23 – 12750 Nm
$\Delta\phi_2$	16 – 25 arcmin	1.5 – 12 arcmin
$\eta_{get}$	97 %	94 – 97 %

An explanation of the formula symbols can be found in the chapter [ > 10.1].

### Features

Power density	★★☆☆☆	★★☆☆☆
Backlash	★★☆☆☆	★★☆☆☆
Price category	€	€€
Shaft load	★★☆☆☆	★★☆☆☆
Smooth operation	★★☆☆☆	★★☆☆☆
Torsional stiffness	★★☆☆☆	★★☆☆☆
Mass moment of inertia	★★★★★	★★★★★
Key	★★☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium	

<b>Shaft design</b>		
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 ring	✓	✓

<b>Accessories</b>		
Flange	✓	✓
Foot plates	✓	✓
Torque arm bracket	KL2: ✓	✓

<b>Bearing design</b>		
Standard	✓	✓

<b>Maintenance-free</b>	✓	K1 – K4: ✓
-------------------------	---	------------

# 1 Selection tool

## 1.4 LM Lean geared motors



Product chapter

P

PE

C

F

Chapter number

[▶ 5.1](#)

[\[ 5.2\]](#)

[▶ 5.3](#)

[\[ 5.4\]](#)

### Technical data

$i$	3 – 70	3 – 35	2 – 212	4.3 – 366
$M_{2acc}$	13 – 1840 Nm	13 – 250 Nm	8.7 – 4140 Nm	19 – 1100 Nm
$\Delta\phi_2$	1 – 5 arcmin	8 – 10 arcmin	10 – 20 arcmin	5 – 11 arcmin
$\eta_{get}$	95 – 97 %	95 – 97 %	96 – 97 %	96 – 97 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★★★☆	★★★☆☆	★★☆☆☆	★☆☆☆☆
Backlash	★★★★☆	★★★☆☆	★★☆☆☆	★★★☆☆
Price category	€€	€	€	€
Shaft load	★★★★☆	★★☆☆☆	★★☆☆☆	★★★☆☆
Smooth operation	★★★★☆	★★★☆☆	★★★☆☆	★★★☆☆
Torsional stiffness	★★★☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Mass moment of inertia	★★★★★	★★★★★	★★★★★	★★★★★
Key	★★☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium			

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 ring				✓
Bearing design				
Standard	✓	✓	✓	✓
Axially reinforced	✓			
Radially reinforced	✓			
Maintenance-free				
	✓	✓	C0 – C5: ✓	✓

# 1 Selection tool

## 1.4 LM Lean geared motors



Product chapter

PKX

KL

K

Chapter number

[▶ 5.5](#)

[\[ 5.6\]](#)

[▶ 5.7](#)

### Technical data

i	3 – 210	4 – 16	4 – 294
$M_{2acc}$	13 – 3300 Nm	35 – 60 Nm	17 – 6820 Nm
$\Delta\phi_2$	2 – 8.5 arcmin	16 – 20 arcmin	1.5 – 12 arcmin
$\eta_{get}$	94 – 96 %	97 %	94 – 97 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★★★☆	★★★☆☆	★★☆☆☆
Backlash	★★★★☆	★★★☆☆	★★★★☆
Price category	€€€	€	€€
Shaft load	★★★★☆	★★★☆☆	★★★★☆
Smooth operation	★★★☆☆	★★★☆☆	★★★★☆
Torsional stiffness	★★★☆☆	★★★☆☆	★★★☆☆
Mass moment of inertia	★★★☆☆	★★★★★	★★★★★
Key	★★★☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium		

<b>Shaft design</b>			
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 ring		✓	✓

<b>Accessories</b>			
Flange		✓	✓
Foot plates		✓	✓
Torque arm bracket			✓

<b>Bearing design</b>			
Standard	✓	✓	✓
Axially reinforced	✓		
Radially reinforced	✓		

<b>Maintenance-free</b>	✓	✓	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 – 30 kW	0.12 – 7.5 kW
$i$	2 – 274	4.3 – 547
$M_{2N}$	2.3 – 8677 Nm	5.1 – 1338 Nm
$\eta_{\text{get}}$	96 – 97 %	96 – 97 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★☆☆☆☆	★☆☆☆☆
Price category	€	€
Shaft load	★★☆☆☆	★★☆☆☆
Smooth operation	★★★★☆	★★★★☆
Torsional stiffness	★★☆☆☆	★★☆☆☆
Mass moment of inertia	★★★★★	★★★★★
Key	★☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium	
<b>Shaft design</b>		
Solid shaft with feather key	✓	✓
Solid shaft without feather key	C0 – C5: ✓ Starting at C6: Request	
Hollow shaft with keyway		✓
Hollow shaft with shrink ring		✓
<b>Bearing design</b>		
Standard	✓	✓
Maintenance-free	C0 – C5: ✓	✓

# 1 Selection tool

## 1.5 Asynchronous geared motors



Product chapter

K

Chapter number

[▶ 6.3](#)

### Technical data

$P_N$	0.12 – 30 kW
$i$	4 – 381
$M_{2N}$	6.5 – 13970 Nm
$\eta_{\text{get}}$	94 – 97 %

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Power density	★★☆☆☆
Price category	€€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★☆☆☆
Mass moment of inertia	★★★★★
Key	★★☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium
<b>Shaft design</b>	
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 ring	✓
<b>Bearing design</b>	
Standard	✓
<b>Maintenance-free</b>	K1 – K4: ✓



# 1 Selection tool

## 1.6 Synchronous servo motors



Product chapter

EZ

Chapter number

[▶ 7.1](#)

### Technical data

$M_N$	0.4 – 91 Nm
$M_0$	0.44 – 100 Nm

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Efficiency	★★★★★
Price category	€€€€
Key	★☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium

### Shaft design

Solid shaft without feather key	✓
---------------------------------	---

### Encoder

EnDat 3 One Cable Solution (OCS)	✓
EnDat 2.2	✓
EnDat 2.1	✓
Resolvers	✓

### Cooling

Convection cooling	✓
Forced ventilation	✓

### Brake

Permanent magnet holding brake	✓
--------------------------------	---

### Marks and test symbols

CE	✓
cURus	✓
UKCA	✓

# 1 Selection tool

## 1.7 Lean motors



LM

Product chapter

Chapter number

[▶ 7.2\]](#)

### Technical data

$M_N$	2.25 – 25.7 Nm
$M_0$	2.43 – 29.8 Nm

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#)].

### Features

Efficiency	★★★★★
Price category	€€€
Key	☆☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium
<b>Shaft design</b>	
Solid shaft with feather key	✓
<b>Cooling</b>	
Convection cooling	✓
<b>Brake</b>	
Spring-loaded holding brake	✓
<b>Marks and test symbols</b>	
CE	✓
UKCA	✓
cURus	✓

# 1 Selection tool

## 1.8 Asynchronous motors



Product chapter

**Asynchronous motors**

Chapter number

[▶ 7.3](#)

### Technical data

$n_2$	1400 – 1480 min
$P_N$	0.12 – 30 kW
$M_N$	0.82 – 194 Nm
$I_N$	0.35 – 54 A

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

Efficiency	★★★★☆
Price category	€€
Key	★☆☆☆☆ good   ★★★★★ excellent € Economy   €€€€€ Premium
<b>Shaft design</b>	
IEC design	✓
<b>Encoder</b>	
Incremental encoders	✓
SSI multi-turn absolute encoders <sup>1</sup>	✓
<b>Electrical connection</b>	
Terminal box	✓
QuickFit connector box	✓
<b>Cooling</b>	
Self-ventilation	✓
Forced ventilation	✓
<b>Brake</b>	
Spring-loaded brake	✓
<b>Marks and test symbols</b>	
CE	✓
cURus	✓
EISA CC number including cURus	Request

<sup>1</sup> only in combination with forced ventilation

# 1 Selection tool

## 1.9 Drive controller



SC6



SI6



SD6

Product chapter

Chapter number

[▶ 8.1](#)

[▶ 8.2](#)

[▶ 8.3](#)

### Technical data

	SC6	SI6	SD6
$I_{2N,PU}$	4.5 – 19 A	5 – 50 A	2.3 – 85 A
$I_{2N,PU}$	4 – 15 A	4.5 – 40 A	1.7 – 60 A
$I_{2maxPU}$	9.5 – 39.9 A	10.5 – 105 A	4.2 – 153 A
$I_{2maxPU}$	10 – 37.5 A	11.3 – 100 A	4.3 – 150 A

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

#### Optimal application area

	SC6	SI6	SD6
Number of axes	1 – 4	> 4	1 – 8
Application	Drive Based	CiA 402, PROFIdrive	Drive Based Synchronous

#### Motor types

	SC6	SI6	SD6
Lean motors	✓	✓	
Asynchronous motors	✓	✓	✓
Synchronous servo motors	✓	✓	✓
Linear motors	✓	✓	✓
Torque motors	✓	✓	✓

#### Communication

	SC6	SI6	SD6
Isochronic system bus (IGB motion bus)			✓
CANopen			(✓)
EtherCAT	✓	✓	(✓)
PROFINET	✓	✓	(✓)
PROFIBUS DP			

(✓): Communication module required

#### Safety functions

	SC6	SI6	SD6
STO, SS1: SIL 3, PL e (cat. 3)			
STO, SS1: SIL 3, PL e (cat. 4)	(✓)	(✓)	(✓)
SS2, SLS, SBC, SBT, SDI, SLI: SIL 3, PL e (cat. 4)			(✓)

(✓): Safety module required

#### Features

	SC6	SI6	SD6
Multi-axis drive system		✓	
Stand-alone	✓		✓
One Cable Solution	✓	✓	
Double-axis controller available	✓	✓	

# 1 Selection tool

## 1.9 Drive controller



FDS 5000



SDS 5000

Product chapter

Chapter number

[▶ 8.5](#)

[▶ 8.4](#)

### Technical data

$I_{2N,PU}$	1.3 – 16 A	2.3 – 85 A
$I_{2N,PU}$	1 – 10 A	1.7 – 60 A
$I_{2maxPU}$	2.4 – 28.8 A	4.2 – 153 A
$I_{2maxPU}$	2.5 – 25 A	4.3 – 150 A

An explanation of the formula symbols can be found in the chapter [▶ 10.1](#).

### Features

#### Optimal application area

Number of axes	1 – 4	1 – 8
Application	Drive Based	Drive Based Synchronous

#### Motor types

Lean motors		
Asynchronous motors	✓	✓
Synchronous servo motors		✓
Linear motors		
Torque motors		

#### Communication

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

(✓): Communication module required

#### Safety functions

STO, SS1: SIL 3, PL e (cat. 3)	(✓)	(✓)
STO, SS1: SIL 3, PL e (cat. 4)		
SS2, SLS, SBC, SBT, SDI, SLI: SIL 3, PL e (cat. 4)		

(✓): Safety module required

#### Features

Multi-axis drive system		
Stand-alone	✓	✓
One Cable Solution		
Double-axis controller available		

# 1 Selection tool

## 1.10 Connection method



Product chapter

Cables

Chapter number

[▶ 8.6](#)

### Power cables

Design	Motor plug connector size		
	con.15	con.23	con.40
Quick lock	✓		
speedtec quick lock		✓	✓

### Encoder cables

Design	Motor plug connector size		
	con.15	con.17	con.23
Quick lock	✓		
speedtec quick lock		✓	✓

Encoder	Motor plug connector size			
	con.15	con.17	con.23 synchronous	con.23 asynchronous
EnDat 2.1/2.2 digital	✓	✓	On request	
Incremental (HTL)				✓
SSI				✓
Resolver	✓	✓	On request	
EnDat 2.1 sin/cos	✓	✓	On request	

### One Cable Solution EnDat 3

Design	Motor plug connector size		
	con.23		
speedtec quick lock		✓	

## 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 mounting position	✓
Continuous operation without cooling	✓
Reinforced output bearing	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium



## Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
P231	4 – 10	21 – 25	8000	6	1.6 – 1.9
P232	16 – 100	21 – 25	8000	8	1.6 – 1.8
P331	3 – 10	50 – 80	7000 – 8000	2 – 4	4.4 – 5.4
P332	12 – 100	50 – 75	8000	3 – 5	4.3 – 5.2
P431	3 – 10	100 – 145	6000 – 8000	2 – 4	9.1 – 13
P432	12 – 100	100 – 139	7000 – 8000	3 – 5	9 – 12
P531	3 – 10	200 – 385	5000 – 7000	1 – 3	25 – 34
P532	12 – 100	200 – 364	6000 – 8000	2 – 4	25 – 33
P731	3 – 10	500 – 840	4000 – 6000	1 – 3	54 – 67
P732	12 – 100	500 – 805	5000 – 7000	2 – 4	54 – 65
P831	3 – 10	1200 – 2000	3000 – 4500	1 – 3	149 – 181
P832	12 – 100	1200 – 2000	4500 – 6000	2 – 4	148 – 177
P931	4 – 10	2300 – 3450	3000 – 4000	3	323 – 407
P932	16 – 100	2200 – 3450	3500 – 4500	4	321 – 406

## Shaft design

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

## Bearing design

Standard	✓
Axially reinforced	✓
Radially reinforced	✓

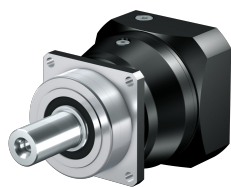
## Motor adapter design

Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME and MF motor adapters in ATEX design (Directive 2014/34/EU).

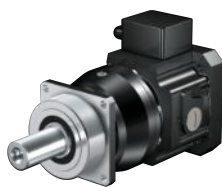
## Input options

Motor adapter for attaching synchronous servo motors



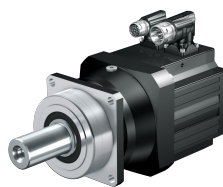
Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



Catalog ID 443234\_en

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.2 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 mounting position	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PH331	5 – 10	60 – 85	8000	2 – 4	9.1 – 15
PH332	20 – 100	60 – 85	8000	2 – 4	8.9 – 14
PH431	4 – 10	115 – 189	5000 – 7000	1 – 3	21 – 36
PH432	16 – 100	110 – 174	8000	1 – 3	20 – 32
PH531	4 – 10	288 – 400	5000 – 6500	1 – 3	53 – 91
PH532	16 – 100	288 – 400	7000 – 8000	1 – 3	52 – 85
PH731	4 – 10	575 – 924	4000 – 5000	1 – 3	123 – 219
PH732	16 – 100	550 – 908	6000 – 7000	1 – 3	121 – 200
PH831	4 – 10	1392 – 2300	3500 – 4000	1 – 3	338 – 561
PH832	16 – 100	1380 – 2300	4500 – 6000	1 – 3	333 – 521
PH942	12 – 60	4600 – 5000	3000 – 4500	1 – 3	1064 – 1223
PH1042	18 – 60	6900 – 7500	3000 – 4500	3	1611 – 1748

<b>Shaft design</b>	
Flange shaft	✓
<b>Bearing design</b>	
Standard	✓
Reinforced (PH3 – PH5)	✓
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME and MF motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

Motor adapter for attaching synchronous servo motors



Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



Catalog ID 443234\_en

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.3 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 mounting position (single/two stage)	✓
High power density	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PHQ4 – PHQ5)	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PHQ431	5.5	200 – 220	6000	1 – 3	42
PHQ432	22 – 55	200 – 247	8000	1 – 3	38 – 40
PHQ531	5.5	550	5000	1 – 3	101 – 102
PHQ532	22 – 55	480 – 562	7000 – 8000	1 – 3	95 – 102
PHQ731	5.5	1050	5000	1 – 3	216 – 222
PHQ732	22 – 55	900 – 1050	6000 – 7000	1 – 3	213 – 224
PHQ733	88 – 550	1050	6000 – 7000	1 – 3	214 – 224
PHQ831	5.5	2800 – 3300	4000	1 – 3	621 – 652
PHQ832	22 – 55	2700 – 3300	4500 – 6000	1 – 3	669 – 713
PHQ833	88 – 550	2700 – 3300	5000 – 6500	1 – 3	672 – 711
PHQ942	18 – 60	6000 – 6600	3000 – 4500	1 – 3	1147 – 1223
PHQ943	72 – 600	6600	4500 – 6000	1 – 3	1145 – 1206
PHQ1042	24 – 60	10000	3000 – 4000	3	1972 – 2072
PHQ1043	96 – 600	10000	3500 – 4500	3	1969 – 2067
PHQ1142	24 – 60	22000	2800 – 3800	3	3460 – 3538
PHQ1143	96 – 300	22000	3500 – 4500	3	3489 – 3529
PHQ1242	24 – 42	43000	3000 – 3500	3	6236 – 6248
PHQ1243	96 – 420	43000	3000 – 4000	3	6136 – 6277

Shaft design	
Flange shaft	✓
Bearing design	
Standard	✓
Reinforced (PHQ4 – PHQ5)	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME and MF motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

Motor adapter for attaching synchronous servo motors



Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



Catalog ID 443234\_en

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.4 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 mounting position	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

### Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PHV943	61 – 121	4250	4500	1 – 3	805 – 849
PHV1043	61 – 91	7500	4500	3	1341 – 1368

Shaft design	
Flange shaft	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓

On request, you can receive the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

### Input options

Motor adapter for attaching syn-  
chronous servo motors



Catalog ID 443054\_en

EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.5 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 mounting position	✓
Non-contact sealing at the input	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium



## Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PE221	4 – 10	17 – 20	8000	10	1.2 – 1.4
PE222	16 – 100	17 – 20	8000	13	1.2 – 1.4
PE321	3 – 10	40 – 53	6000 – 7000	8	3.4 – 4.4
PE322	16 – 100	44 – 50	8000	10	3.6 – 4.2
PE421	3 – 10	90 – 109	5500 – 6000	8	10 – 14
PE422	16 – 100	90 – 104	7000	10	10 – 13
PE521	3 – 10	180 – 250	4500 – 5000	8	27 – 35
PE522	16 – 100	220 – 250	6000	10	27 – 33

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

## Motor adapter design

Motor adapter with EasyAdapt coupling (ME/MEL)

✓

On request, you can receive the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

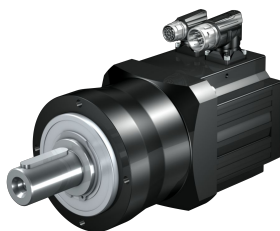
## Input options

ME motor adapter for attaching  
synchronous servo motors



Catalog ID 443054\_en

EZ synchronous servo motor



Catalog ID 442437\_en

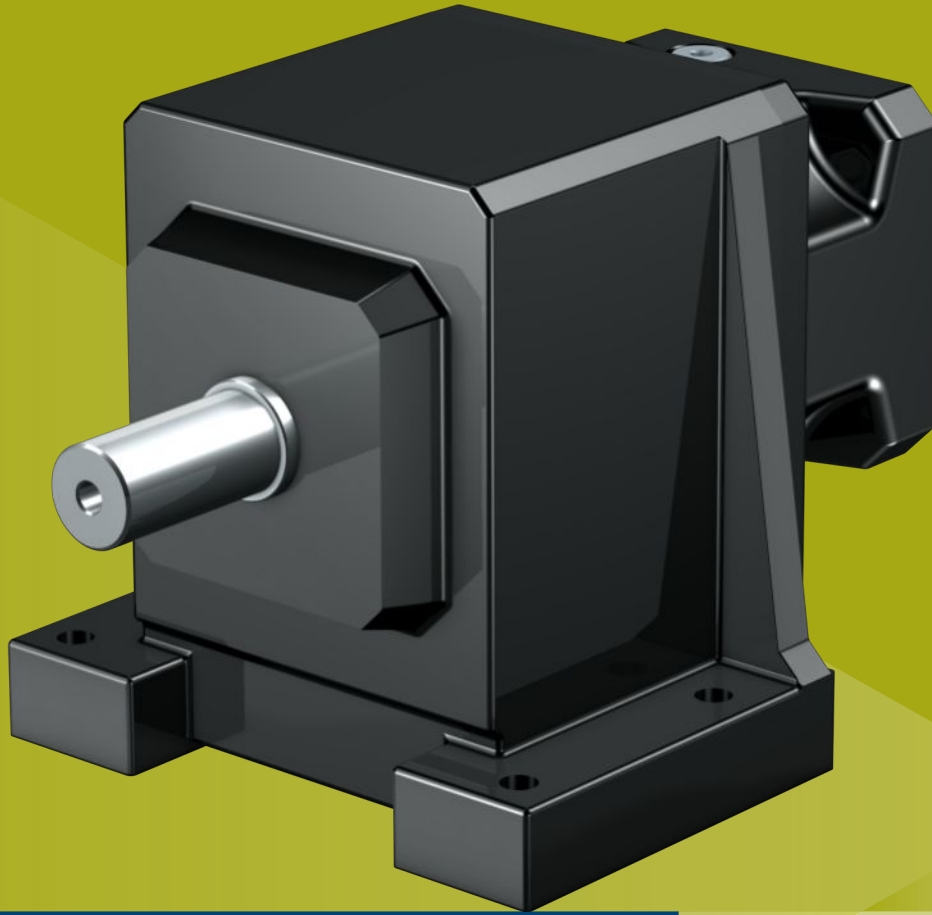
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.6 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  
 € Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
C002	2 – 70	47 – 72	6000 – 7000	16 – 20	1.2 – 1.6
C102	2 – 70	47 – 138	5000 – 6500	15 – 18	2.8 – 3.9
C103	82 – 276	138	6500	15	3.9
C202	2 – 70	91 – 230	4500 – 6500	14 – 17	5.6 – 8.3
C203	80 – 275	230	6000 – 6500	14	8.3
C302	2 – 70	181 – 400	4000 – 6000	13 – 16	6.9 – 8.7
C303	80 – 274	350 – 400	6000	13	8.7
C402	2 – 70	227 – 600	3500 – 5500	12 – 15	16 – 22
C403	81 – 270	550 – 600	5500	12	22
C502	2 – 70	269 – 920	3200 – 5000	12 – 14	20 – 23
C503	81 – 216	850 – 920	5000	12	23
C612	4.2 – 69	1012 – 1650	3000 – 4500	10	70 – 74
C613	49 – 266	913 – 1650	4500	10	74
C712	4.3 – 70	1240 – 2760	2800 – 4500	10	112 – 122
C713	51 – 223	2257 – 2760	4500	10	122
C812	6.7 – 69	1942 – 4800	3500 – 4300	10	139 – 204
C813	49 – 270	2486 – 4800	4300	10	203 – 204
C912	20 – 70	5520 – 7211	4000	10	260 – 392
C913	65 – 215	5630 – 8000	4000	10	392 – 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: ✓

Foot

✓

## Motor adapter design

Motor adapter with EasyAdapt coupling (ME)

✓

Motor adapter with curved tooth coupling (MR)

✓

Motor adapter with plug-in coupling (MQ)

✓

Motor adapter with ServoStop brake (MB)

✓

On request, you can receive the gear units with ME, MQ and MR motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

ME motor adapter for  
attaching synchro-  
nous servo motors



Catalog ID 443054\_en

MB motor adapter for  
attaching synchro-  
nous servo motors



Catalog ID 443234\_en

MR motor adapter for  
attaching asynchro-  
nous motors



On request

EZ synchronous servo  
motor



Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo  
motor



Catalog ID 443311\_en

LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.7 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

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
F102	4.3 – 140	100 – 120	6000 – 7000	6 – 11	6.2 – 7.7
F202	4.7 – 141	109 – 270	5000 – 6500	6 – 11	14 – 18
F203	184 – 552	270	6500	7 – 11	18
F302	4.6 – 141	209 – 450	4500 – 6500	6 – 11	20 – 22
F303	182 – 551	450	6000 – 6500	7 – 11	22
F402	4.7 – 140	419 – 700	4000 – 6000	5 – 10	38 – 39
F403	182 – 547	700	6000	6 – 10	39
F602	4.5 – 140	524 – 1100	3500 – 5500	5 – 10	69 – 77
F603	181 – 540	1100	5500	6 – 10	77

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓
Hollow shaft with keyway	✓
Hollow shaft with shrink ring	✓
Housing design	
Pitch circle diameter	✓
Round flange	✓
Square flange	✓
Pitch circle diameter + side fastening	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME)	✓
Motor adapter with curved tooth coupling (MR)	✓
Motor adapter with plug-in coupling (MQ)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME, MQ and MR motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

ME motor adapter for  
attaching synchro-  
nous servo motors



Catalog ID 443054\_en

MB motor adapter for  
attaching synchro-  
nous servo motors



Catalog ID 443234\_en

MR motor adapter for  
attaching asynchro-  
nous motors



On request

EZ synchronous servo  
motor



Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo  
motor



Catalog ID 443311\_en

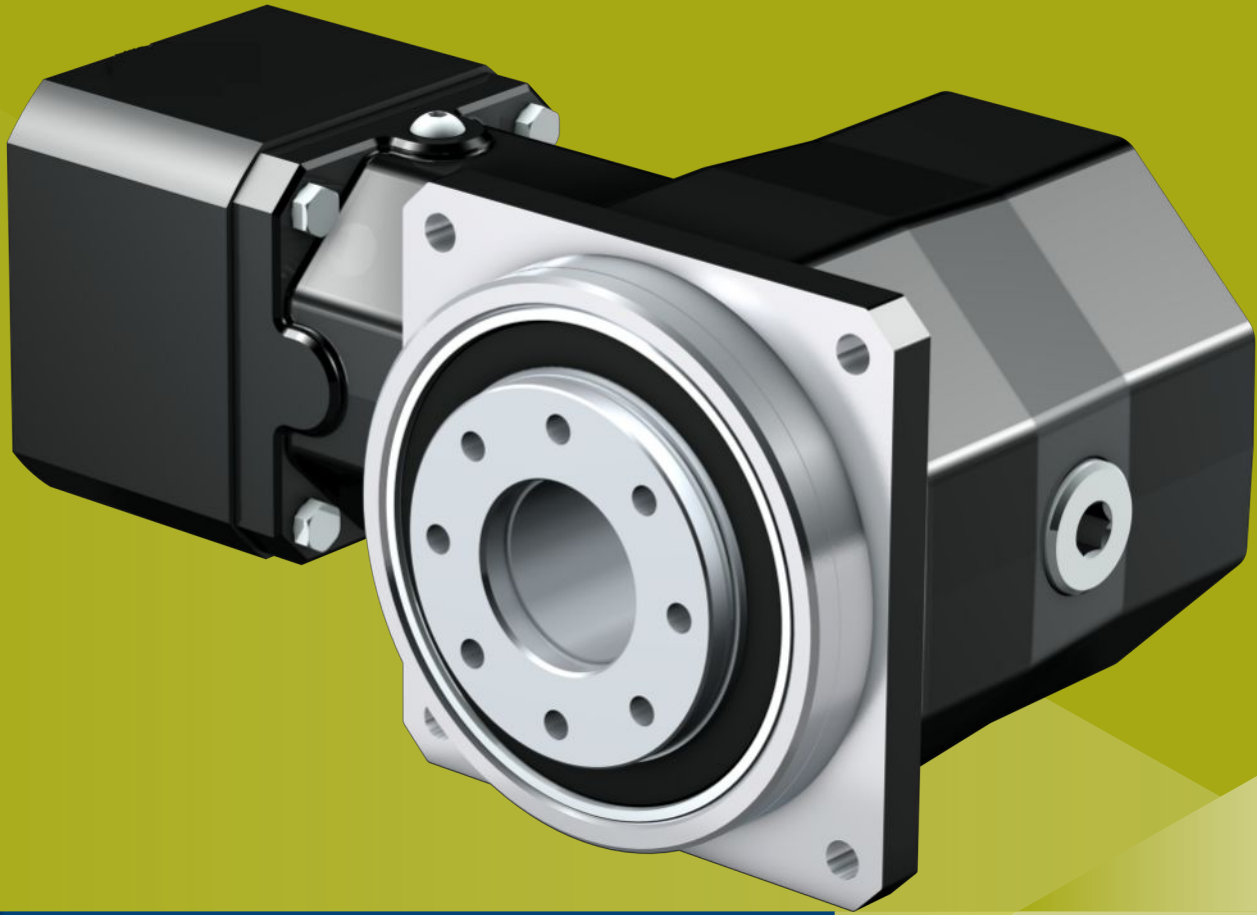
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.8

# Right-angle servo 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	✓
Stiff output bearings due to pretension	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

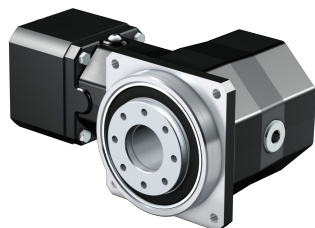
Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
KS402	6 – 20	90	6000	6	8.1 – 8.5
KS403	24 – 200	90	6000	6	8.5
KS502	6 – 20	200	5500 – 6000	5	16 – 17
KS503	24 – 200	200	6000	5	17
KS702	6 – 20	400	4500 – 6000	4	40 – 42
KS703	24 – 200	400	6000	4	42

Shaft design	
Flange hollow shaft	✓
Hollow shaft with shrink ring	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓

On request, you can receive the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

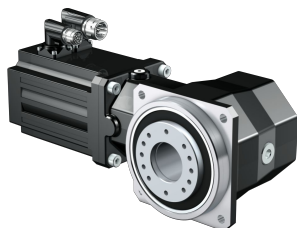
## Input options

ME motor adapter for attaching  
synchronous servo motors



Catalog ID 443054\_en

EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.9 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	✓
Reinforced output bearing	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium



## Technical data

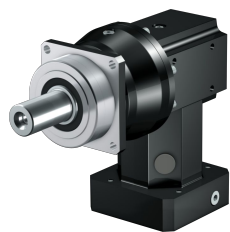
Type	i	$M_{zacc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
P231KX	4 – 30	21 – 25	4500 – 6000	7 – 8.5	1.5 – 1.7
P232KX	35 – 300	21 – 25	4500 – 6000	8 – 8.5	1.6 – 1.8
P331KX	3 – 30	38 – 75	4500 – 6000	3 – 7.5	2.4 – 4.2
P332KX	32 – 300	60 – 75	4500 – 6000	3 – 5.5	4.3 – 5.2
P431KX	3 – 30	73 – 143	4000 – 5500	3 – 7.5	5.3 – 9.2
P432KX	32 – 300	110 – 139	4500 – 6000	3 – 5.5	9 – 12
P531KX	3 – 30	183 – 380	3500 – 5000	2 – 6.5	13 – 25
P532KX	32 – 300	288 – 364	4000 – 5500	2 – 4.5	25 – 32
P731KX	3 – 30	364 – 840	3000 – 4000	2 – 6.5	38 – 54
P732KX	32 – 300	550 – 805	3500 – 5000	2 – 4.5	54 – 62
P831KX	3 – 30	364 – 1213	3000 – 4000	2 – 6.5	59 – 130
P832KX	32 – 300	1320 – 2000	3000 – 4000	2 – 4.5	148 – 173
P932KX	16 – 300	1900 – 3300	3000 – 4000	4 – 4.5	320 – 393

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓
Bearing design	
Standard	✓
Axially reinforced	✓
Radially reinforced	✓
Motor adapter design	
Motor adapter with FlexiAdapt coupling (MF)	✓

On request, you can receive the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

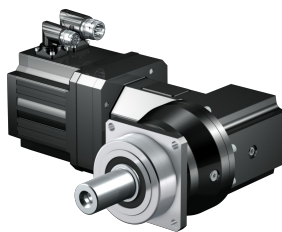
## Input options

MF motor adapter for attaching  
synchronous servo motors



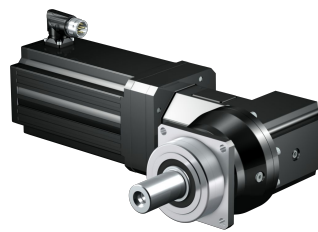
Catalog ID 443054\_en

EZ synchronous servo motor



Catalog ID 442437\_en

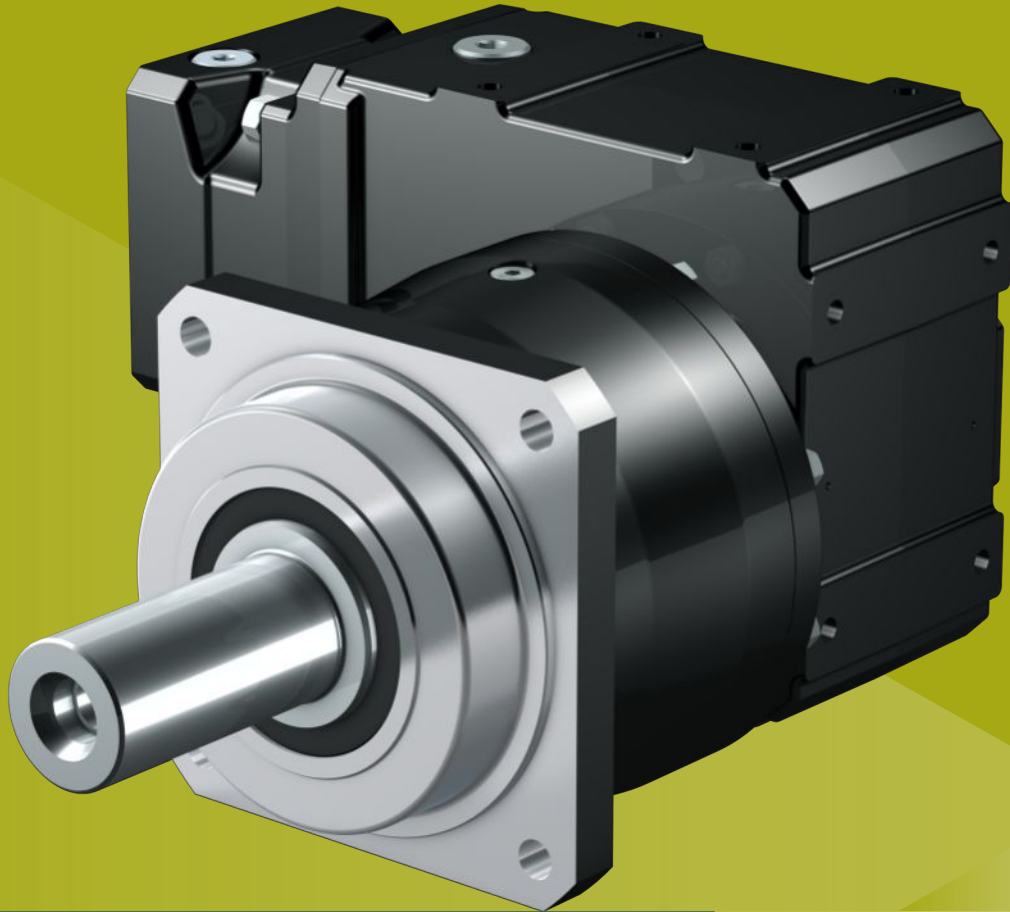
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.10 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  
 € Economy | €€€€€ Premium

## Technical data

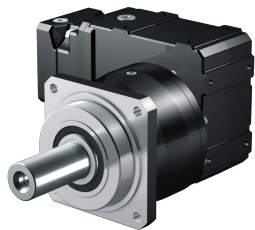
Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
P531K	12 – 280	200 – 385	5000 – 7000	2 – 5	22 – 29
P731K	12 – 561	407 – 840	4500 – 7000	1.5 – 4.5	39 – 53
P831K	12 – 555	677 – 1867	4000 – 6500	1.5 – 4.5	81 – 132
P931K	28 – 485	2196 – 3105	3800 – 5500	3.5	303 – 305

Shaft design	
Solid shaft with feather key	✓
Solid shaft without feather key	✓
Bearing design	
Standard	✓
Axially reinforced	✓
Radially reinforced	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME)	✓
Motor adapter with plug-in coupling (MQ)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

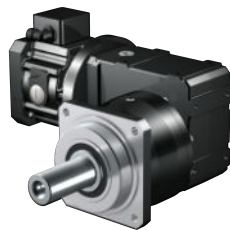
## Input options

ME motor adapter for attaching synchronous servo motors



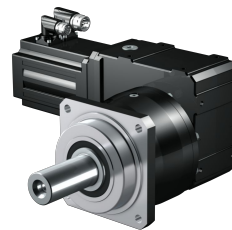
Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



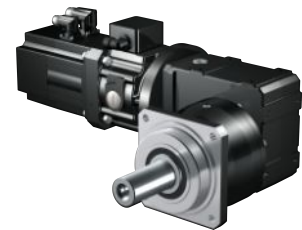
Catalog ID 443234\_en

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.11 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	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★★★☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PH331KX	5 – 30	60 – 77	4500 – 6000	3 – 6	6.9 – 8.4
PH332KX	35 – 300	60 – 85	4500 – 6000	2 – 4.5	8.8 – 13
PH431KX	4 – 30	96 – 168	4000 – 5500	2 – 5.5	11 – 19
PH432KX	32 – 300	110 – 174	4500 – 6000	1 – 3.5	20 – 30
PH531KX	4 – 30	242 – 387	3500 – 5000	2 – 5.5	28 – 46
PH532KX	32 – 300	288 – 400	4000 – 5500	1 – 3.5	52 – 78
PH731KX	4 – 30	480 – 840	3000 – 4000	2 – 5.5	94 – 122
PH732KX	32 – 300	550 – 908	3500 – 5000	1 – 3.5	121 – 176
PH831KX	4 – 30	480 – 1200	3000 – 4000	2 – 5.5	122 – 253
PH832KX	32 – 300	1380 – 2300	3500 – 4000	1 – 3.5	332 – 489
PH942KX	12 – 180	1395 – 5000	3000 – 4000	1 – 4	655 – 1035
PH1042KX	18 – 180	2093 – 6975	3000 – 4000	3 – 3.5	1127 – 1545

Shaft design	
Flange shaft	✓
Bearing design	
Standard	✓
Reinforced (PH3 – PH5)	✓
Motor adapter design	
Motor adapter with FlexiAdapt coupling (MF)	✓

On request, you can receive the gear units with MF motor adapters in ATEX design (Directive 2014/34/EU).

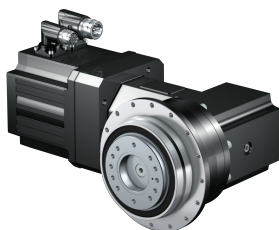
## Input options

MF motor adapter for attaching  
synchronous servo motors



Catalog ID 443054\_en

EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.12 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	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PH531K	16 – 280	355 – 400	5000 – 7000	2 – 4.5	50 – 62
PH731K	16 – 561	403 – 924	4500 – 7000	1.5 – 4.5	99 – 117
PH831K	16 – 555	683 – 1848	4000 – 6500	1.5 – 4	180 – 260
PH941K	33 – 466	3840 – 5000	3200 – 5000	2 – 4.5	520 – 730
PH1041K	49 – 457	6273 – 7500	3000 – 4500	4	1201 – 1210

<b>Shaft design</b>	
Flange shaft	✓
<b>Bearing design</b>	
Standard	✓
Reinforced (PH3 – PH5)	✓
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME)	✓
Motor adapter with plug-in coupling (MQ)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

ME motor adapter for attaching synchronous servo motors



Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



Catalog ID 443234\_en

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.13 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	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PHQ4 – PHQ5)	✓ (optional)
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium



## Technical data

Type	i	$M_{2acc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PHQ531K	22 – 385	316 – 550	5000 – 7000	2 – 4	69 – 70
PHQ731K	22 – 382	536 – 1050	4500 – 6500	2 – 4	131 – 136
PHQ831K	22 – 381	1708 – 3168	3800 – 5500	1.5 – 3.5	394 – 400
PHQ941K	44 – 580	4765 – 5760	3200 – 5000	2 – 4	766 – 771
PHQ1041K	45 – 591	10000	2700 – 4200	4	1545 – 1560
PHQ1141K	45 – 583	12299 – 22000	2600 – 4000	4	2578 – 2623
PHQ1241K	75 – 2242	16676 – 43000	2800 – 3800	4	4614 – 4665

Shaft design	
Flange shaft	✓
Bearing design	
Standard	✓
Reinforced (PHQ4 – PHQ5)	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME)	✓
Motor adapter with plug-in coupling (MQ)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

ME motor adapter for attaching synchronous servo motors



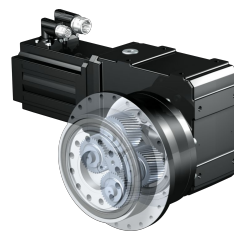
Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



Catalog ID 443234\_en

EZ synchronous servo motor



Catalog ID 442437\_en

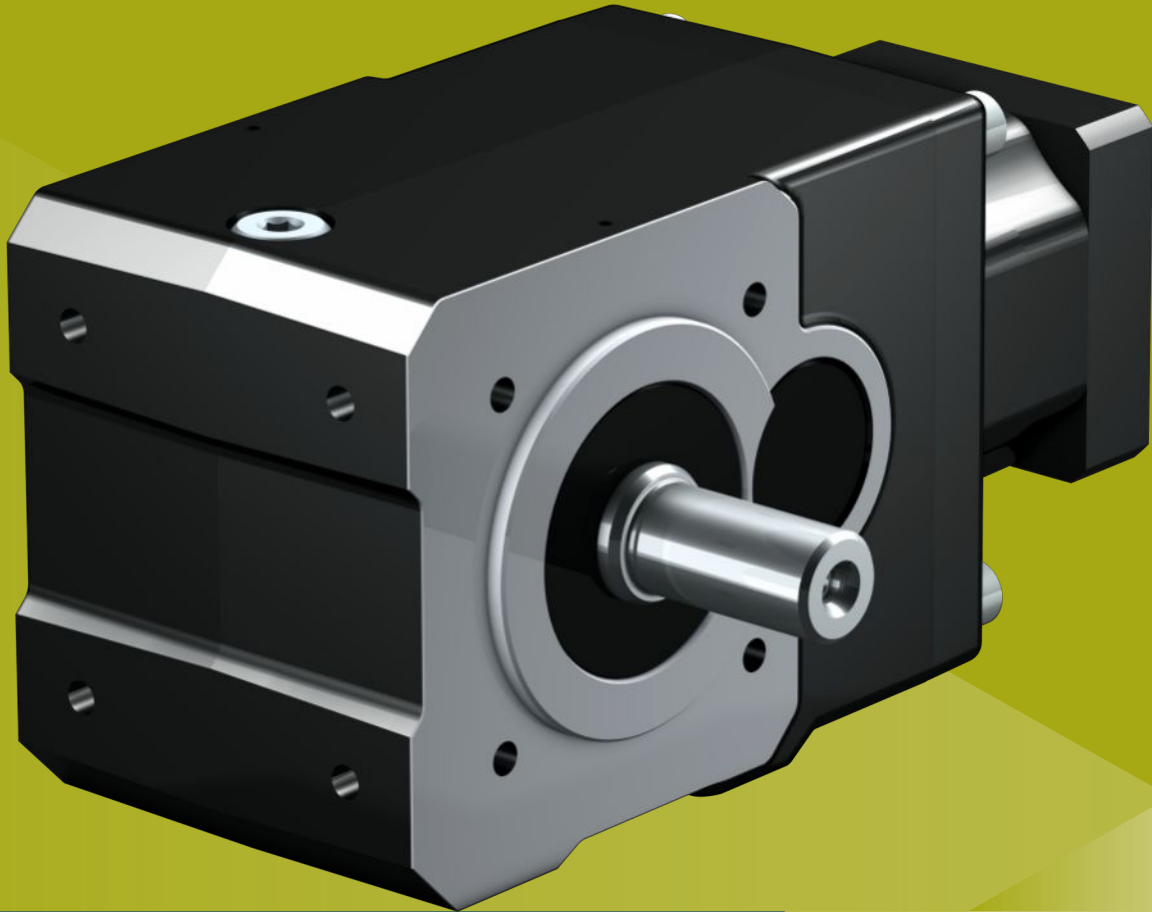
MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.14 Helical bevel gear units

KL

Compact, helical-gear 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 mounting position	✓
Small installation space	✓
FKM seal ring at the input	✓
Easy and reliable attachment to any synchronous servo motor	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{zacc}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
KL102	4 – 32	22 – 32	6000	20 – 25	0.99 – 1.8
KL202	4 – 32	50 – 65	6000	16 – 20	1.8 – 3.9

Shaft design	
Hollow shaft with keyway	✓
Hollow shaft with shrink ring	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓
Housing design	
Pitch circle diameter	✓
Flange	✓
Foot + pitch circle diameter	✓
Pitch circle diameter + torque arm bracket	KL2: ✓
Motor adapter design	
Motor adapter with plug-in coupling (MQ)	✓

On request, you can receive the gear units with MQ motor adapters in ATEX design (Directive 2014/34/EU).

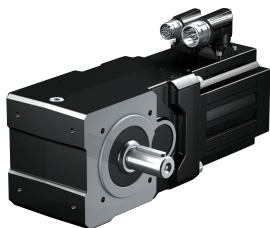
## Input options

MQ motor adapter for attaching  
synchronous servo motors



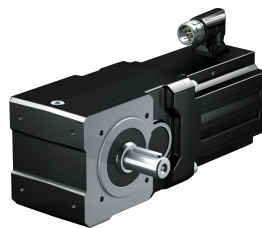
Catalog ID 443054\_en

EZ synchronous servo motor



Catalog ID 442437\_en

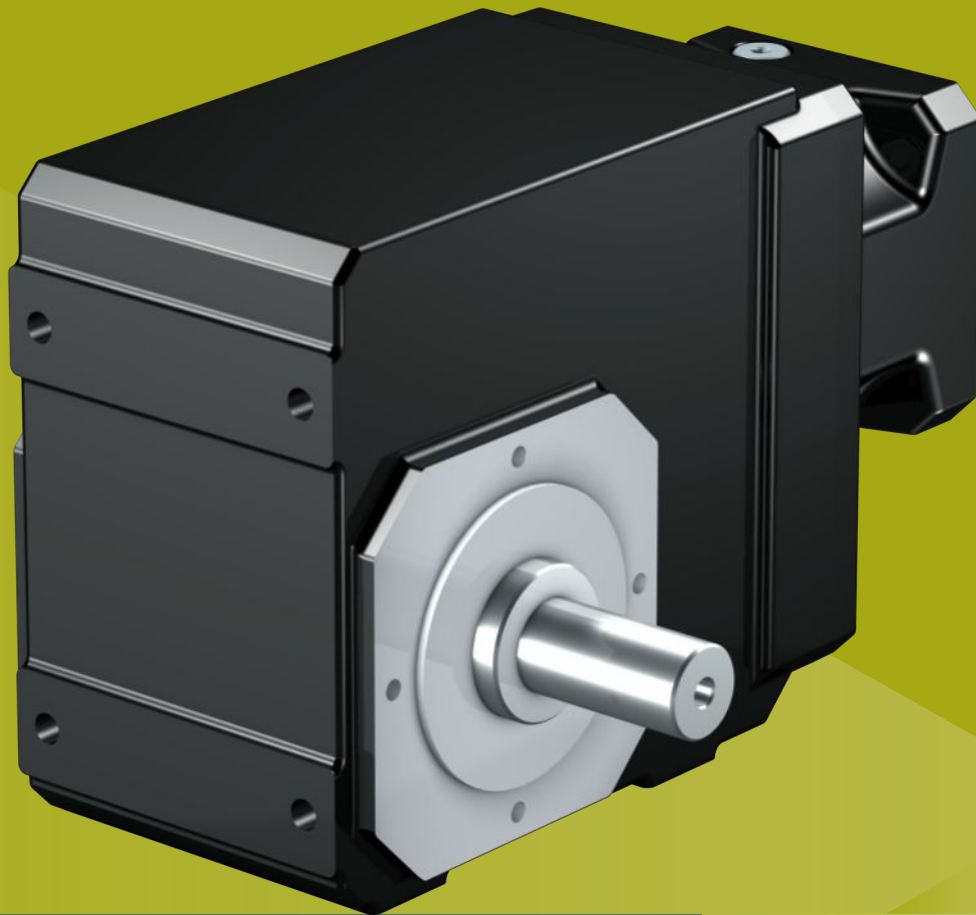
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 2.15 Helical bevel gear units

# K

Highly rigid, helical-gear 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  
 € Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>zacc</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
K102	4 – 70	60 – 135	5000 – 7000	6 – 12	6.3 – 6.8
K202	4 – 69	102 – 220	4500 – 6500	1.5 – 10	9.7 – 11
K203	39 – 272	159 – 220	6500	2.5 – 10	11
K302	4 – 69	173 – 385	4000 – 6000	1.5 – 10	16
K303	33 – 272	238 – 385	6000	2.5 – 10	16
K402	4 – 69	323 – 600	3800 – 5500	1.5 – 10	30 – 31
K403	32 – 272	340 – 600	5500	2.5 – 10	31
K513	7.3 – 97	827 – 1000	3200 – 5000	2 – 10	49 – 50
K514	85 – 374	827 – 1000	5000	3 – 10	49 – 50
K613	7.3 – 95	984 – 1600	3000 – 4500	2 – 10	81 – 82
K614	111 – 294	1448 – 1600	4500	3 – 10	82 – 83
K713	7.6 – 99	1802 – 2600	2700 – 4200	2 – 10	122 – 126
K714	89 – 381	1626 – 2600	4200	3 – 10	126
K813	7.4 – 97	2135 – 4650	2600 – 4000	2 – 10	187 – 196
K814	67 – 311	3537 – 4650	4000	3 – 10	196
K913	13 – 95	3592 – 7700	2800 – 3800	5 – 10	367 – 379
K914	92 – 374	2895 – 7700	3800	5 – 10	379
K1013	39 – 94	7330 – 13200	3500	5 – 10	722 – 724
K1014	93 – 290	10621 – 13200	3500	5 – 10	724 – 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 ring	✓
Housing design	
Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm bracket	K1 – K9: ✓
Foot + pitch circle diameter + torque arm bracket	K10: ✓
Foot + pitch circle diameter	✓
Foot + round flange	✓
Motor adapter design	
Motor adapter with EasyAdapt coupling (ME)	✓
Motor adapter with curved tooth coupling (MR)	✓
Motor adapter with plug-in coupling (MQ)	✓
Motor adapter with ServoStop brake (MB)	✓

On request, you can receive the gear units with ME, MQ and MR motor adapters in ATEX design (Directive 2014/34/EU).

## Input options

ME motor adapter for attaching synchronous servo motors



Catalog ID 443054\_en

MB motor adapter for attaching synchronous servo motors



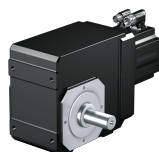
Catalog ID 443234\_en

MR motor adapter for attaching asynchronous motors



On request

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter + EZ synchronous servo motor



Catalog ID 443311\_en

LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

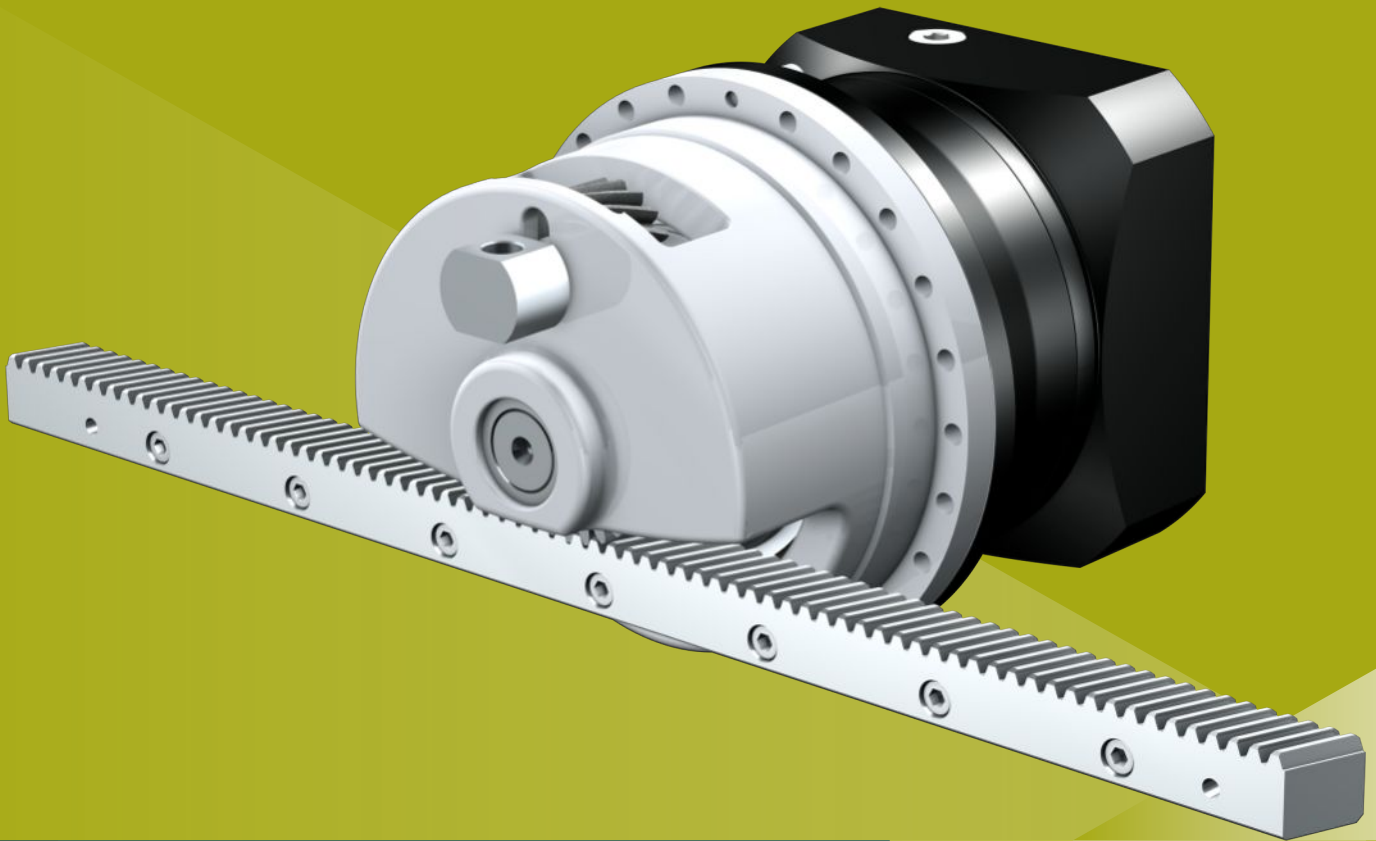
Enter the ID of the catalog in the Search term field.



## 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)	✓
Helical gearing	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

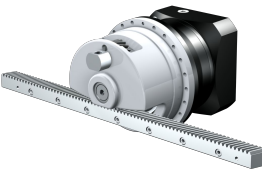

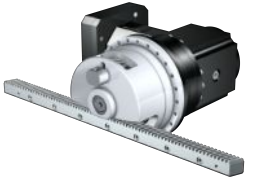




## Technical data

Type	$m_n$ [mm]	$z$	$F_{fzacc}$ [kN]	$v_{fzmaxZB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZTRS3_PH731	3	17	20	1.4 – 2.8	8 – 24
ZTRS3_PH732	3	17	20	0.2 – 1.1	8 – 24
ZTRS5_PH831	5	16	33 – 49	1.8 – 3.9	12 – 37
ZTRS4_PH831	4	20	33 – 45	1.8 – 3.9	12 – 37
ZTRS3_PH831	3	32	27 – 28	2.1 – 4.7	15 – 44
ZTRS5_PH832	5	16	33 – 49	0.27 – 1.3	12 – 37
ZTRS4_PH832	4	20	33 – 45	0.27 – 1.3	12 – 37
ZTRS3_PH832	3	32	27 – 28	0.32 – 1.5	15 – 44
ZTRS8_PH942	8	15	72 – 79	0.5 – 1.7	19 – 56
ZTRS6_PH942	6	20	72 – 77	0.5 – 1.7	19 – 56
ZTRS5_PH942	5	20	77	0.42 – 1.4	15 – 46

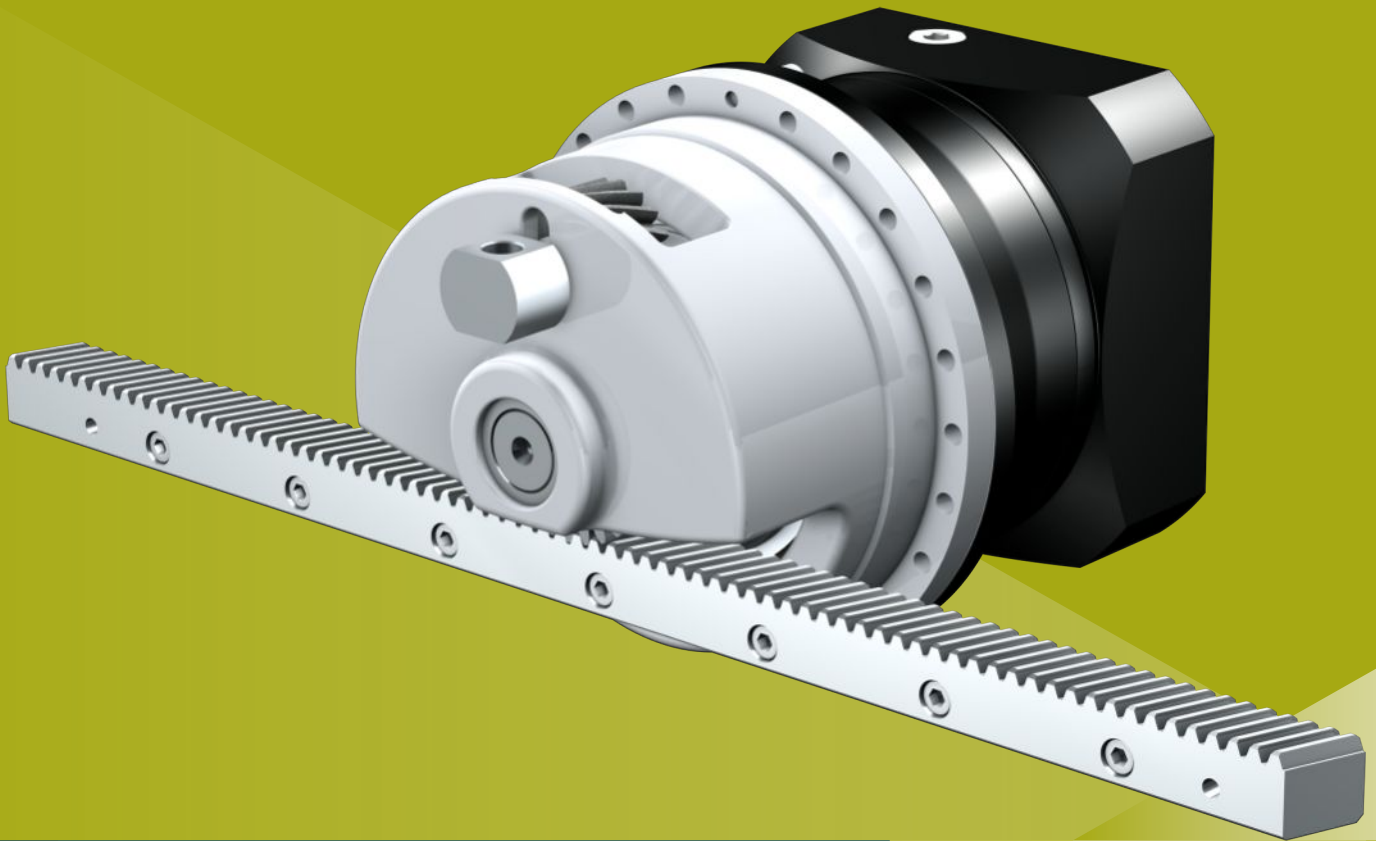
<b>Linear backlash</b>	
Standard	✓
Reduced	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Accessories</b>	
Felt gear for lubrication	✓
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

## Input options

Motor adapter	EZ synchronous servo motor	KX right-angle input with MF motor adapter	K right-angle input with ME motor adapter	MB motor adapter
				
Catalog ID 443137_en	Catalog ID 443286_en	On request	On request	On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 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)	✓
Helical gearing	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

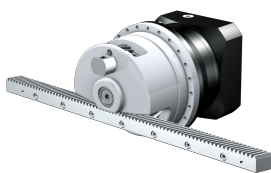
## Technical data

Type	$m_n$ [mm]	$z$	$F_{t2acc}$ [kN]	$v_{fzmaxZB}$ [m/s]	$\Delta s$ [μm]
ZTRS8_PHQ1042	8	19	124	0.56 – 1.1	70
ZTRS8_PHQ1043	8	19	124	0.06 – 0.31	70

<b>Linear backlash</b>	
Standard	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Accessories</b>	
Felt gear for lubrication	✓
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with ServoStop brake (MB)	✓

## Input options

Motor adapter



Catalog ID 443137\_en

EZ synchronous servo motor



Catalog ID 443286\_en

K right-angle input with ME motor adapter



On request

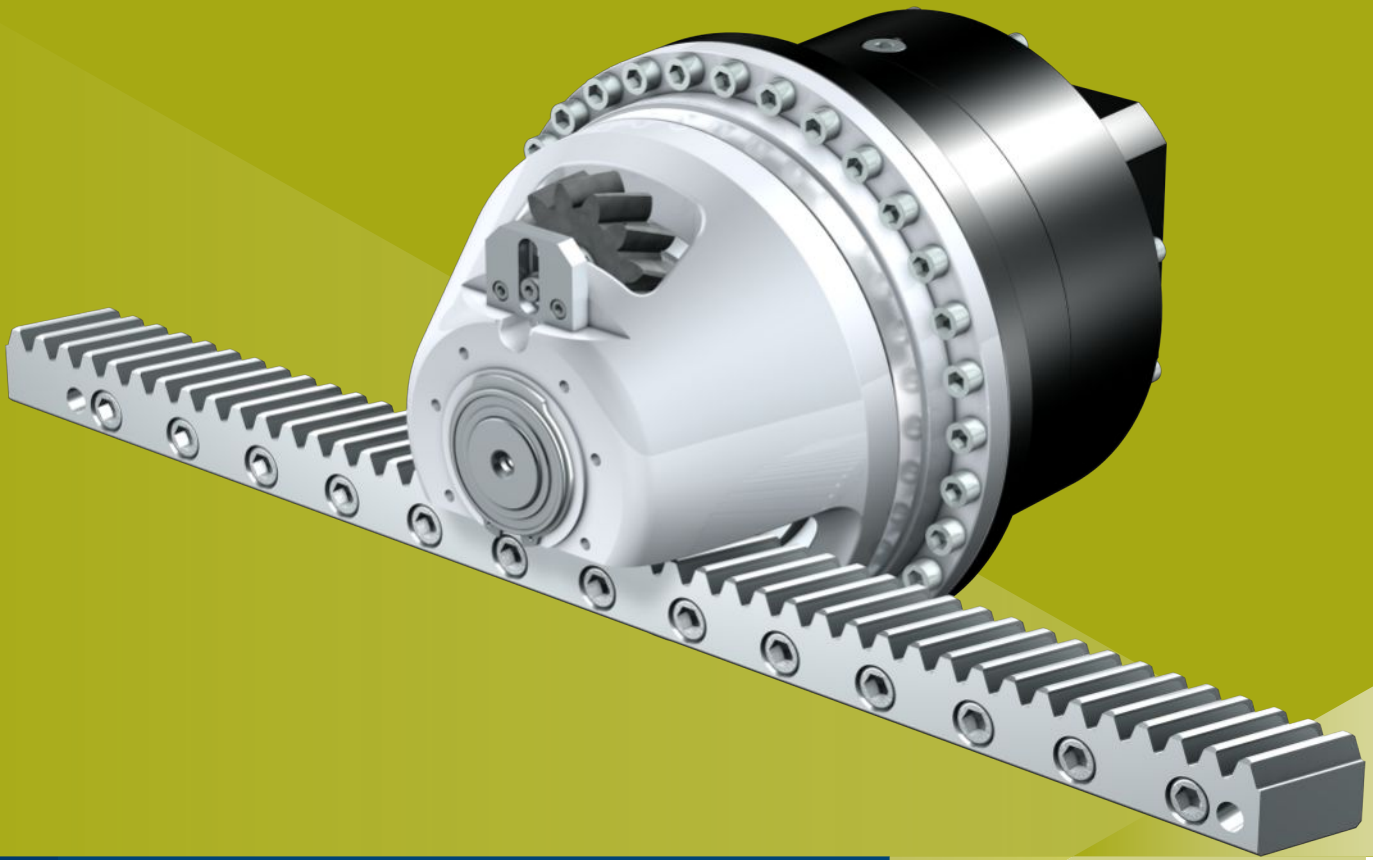
MB motor adapter



On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 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)	✓
Helical gearing	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

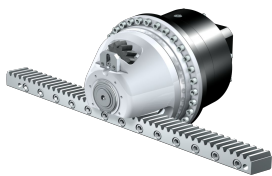
Type	$m_n$ [mm]	z	$F_{t2acc}$ [kN]	$v_{t2maxZB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZTRS8_PHV943	8	15	67	0.25 – 0.49	19 – 56
ZTRS6_PHV943	6	20	67	0.25 – 0.49	19 – 56
ZTRS5_PHV943	5	20	77	0.21 – 0.41	15 – 46

<b>Linear backlash</b>	
Standard	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Accessories</b>	
Felt gear for lubrication	✓
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓

## Input options

Motor adapter

EZ synchronous servo motor

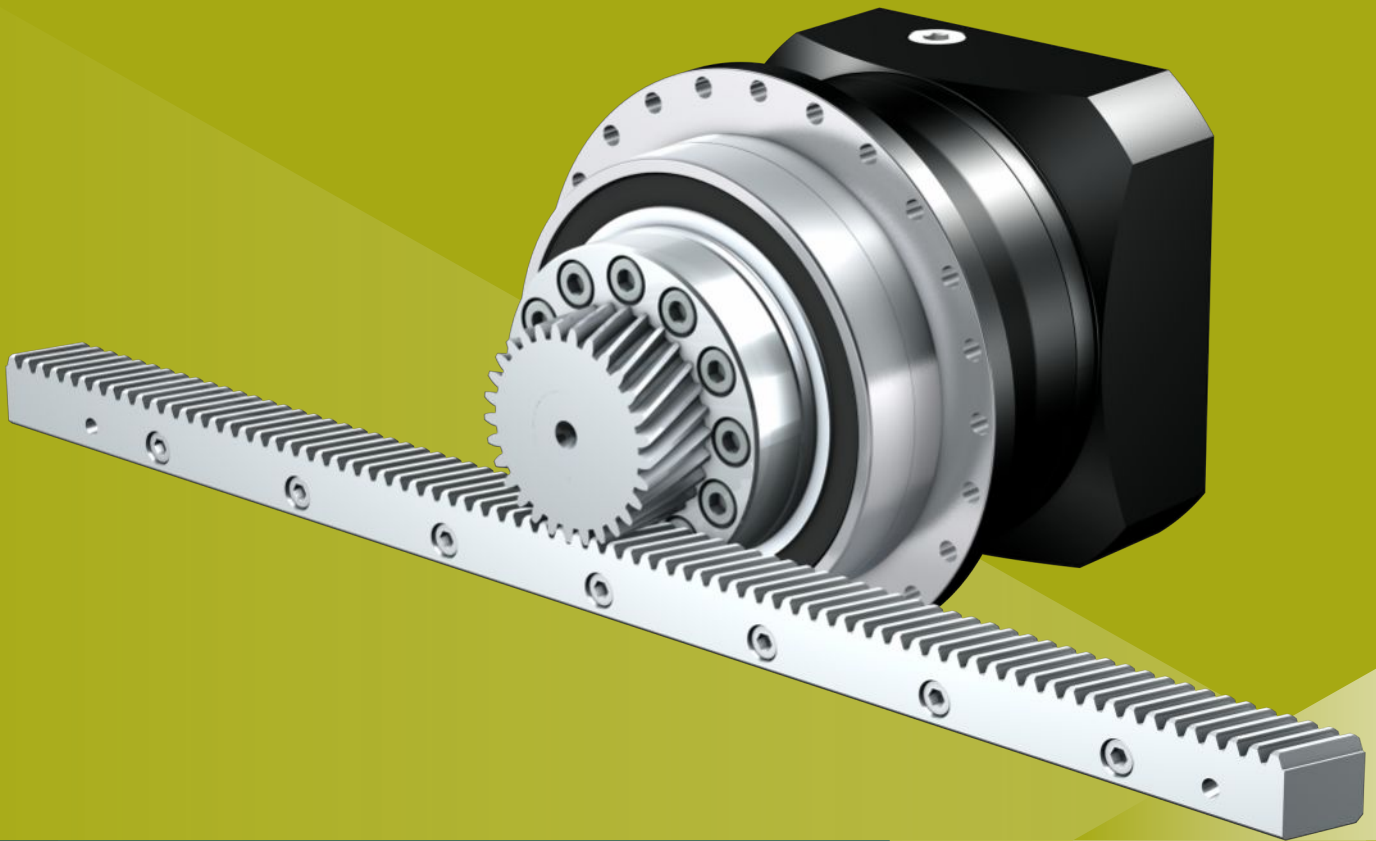


Catalog ID 443137\_en

Catalog ID 443286\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 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)	✓
Helical gearing	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)

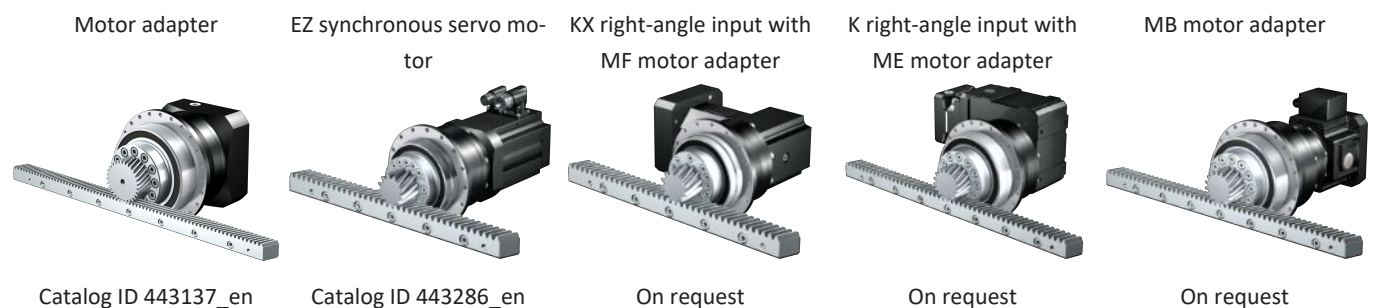
Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	$m_n$ [mm]	$z$	$F_{zacc}$ [kN]	$v_{zmaxZB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZTR2_PH431	2	12 – 16	6.7	0.93 – 2.2	4 – 15
ZTR2_PH432	2	12 – 16	6.5 – 6.7	0.11 – 0.89	4 – 15
ZTR2_PH531	2	19 – 23	10 – 11	1.4 – 3.2	6 – 21
ZTR3_PH531	3	14	9.9	1.5 – 2.9	6 – 19
ZTR2_PH532	2	19 – 23	10 – 11	0.17 – 1.1	6 – 21
ZTR3_PH532	3	14	9.9	0.19 – 1	6 – 19
ZTR2_PH731	2	23	15	1.3 – 2.6	7 – 21
ZTR3_PH731	3	16 – 19	17 – 19	1.3 – 3.2	7 – 26
ZTR4_PH731	4	12	18	1.3 – 2.7	7 – 22
ZTR4_PH732	4	12	18	0.19 – 1	7 – 22
ZTR3_PH732	3	16 – 19	17 – 19	0.19 – 1.2	7 – 26
ZTR2_PH732	2	23	15	0.18 – 0.96	7 – 21
ZTR3_PH831	3	32	25	2.1 – 4.7	15 – 44
ZTR4_PH831	4	17 – 20	33 – 36	1.5 – 3.9	10 – 37
ZTR5_PH831	5	18	29 – 34	2 – 4.4	14 – 42
ZTR6_PH831	6	15	29 – 33	2 – 4.4	14 – 42
ZTR3_PH832	3	32	25	0.32 – 1.5	15 – 44
ZTR4_PH832	4	17 – 20	33 – 36	0.23 – 1.3	10 – 37
ZTR5_PH832	5	18	29 – 34	0.3 – 1.4	14 – 42
ZTR6_PH832	6	15	29 – 33	0.3 – 1.4	14 – 42
ZTR6_PH942	6	16	56	0.4 – 1.3	15 – 44
ZTR5_PH942	5	19	67	0.4 – 1.3	15 – 44

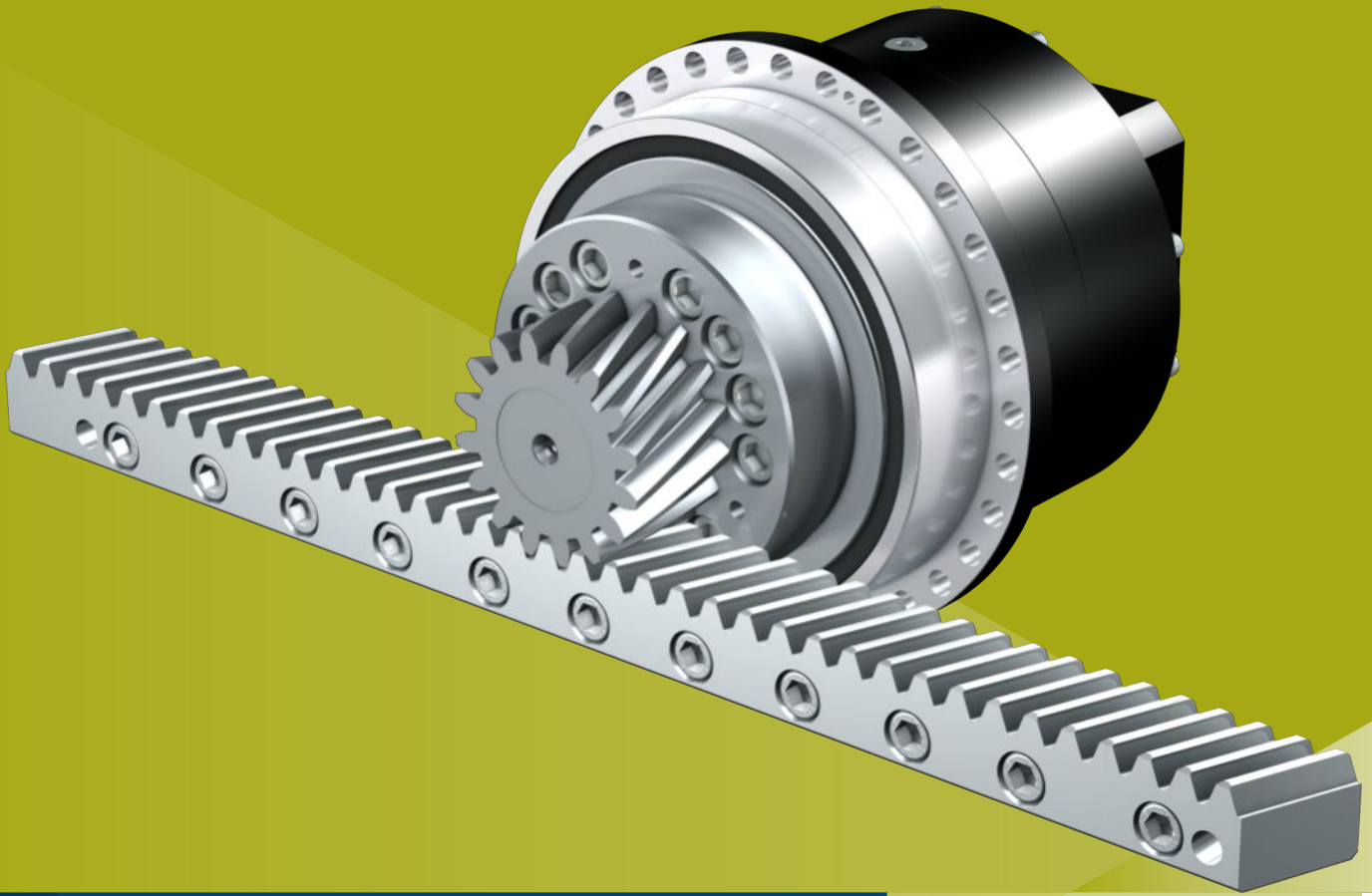
<b>Linear backlash</b>	
Standard	✓
Reduced	✓
<b>Bearing design</b>	
Standard	✓
Reinforced (PH3 – PH5)	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

## Input options



The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 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)	✓
Helical gearing	✓
Case-hardened and smoothed	✓
Radial runout ≤ 10 µm (optional)	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium



## Technical data

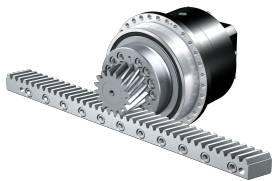
Type	$m_n$ [mm]	z	$F_{r2acc}$ [kN]	$v_{r2maxZB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZTR6_PHV943	6	16	56	0.2 – 0.39	15 – 44
ZTR5_PHV943	5	19	67	0.2 – 0.39	15 – 44

<b>Linear backlash</b>	
Standard	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓

## Input options

Motor adapter

EZ synchronous servo motor

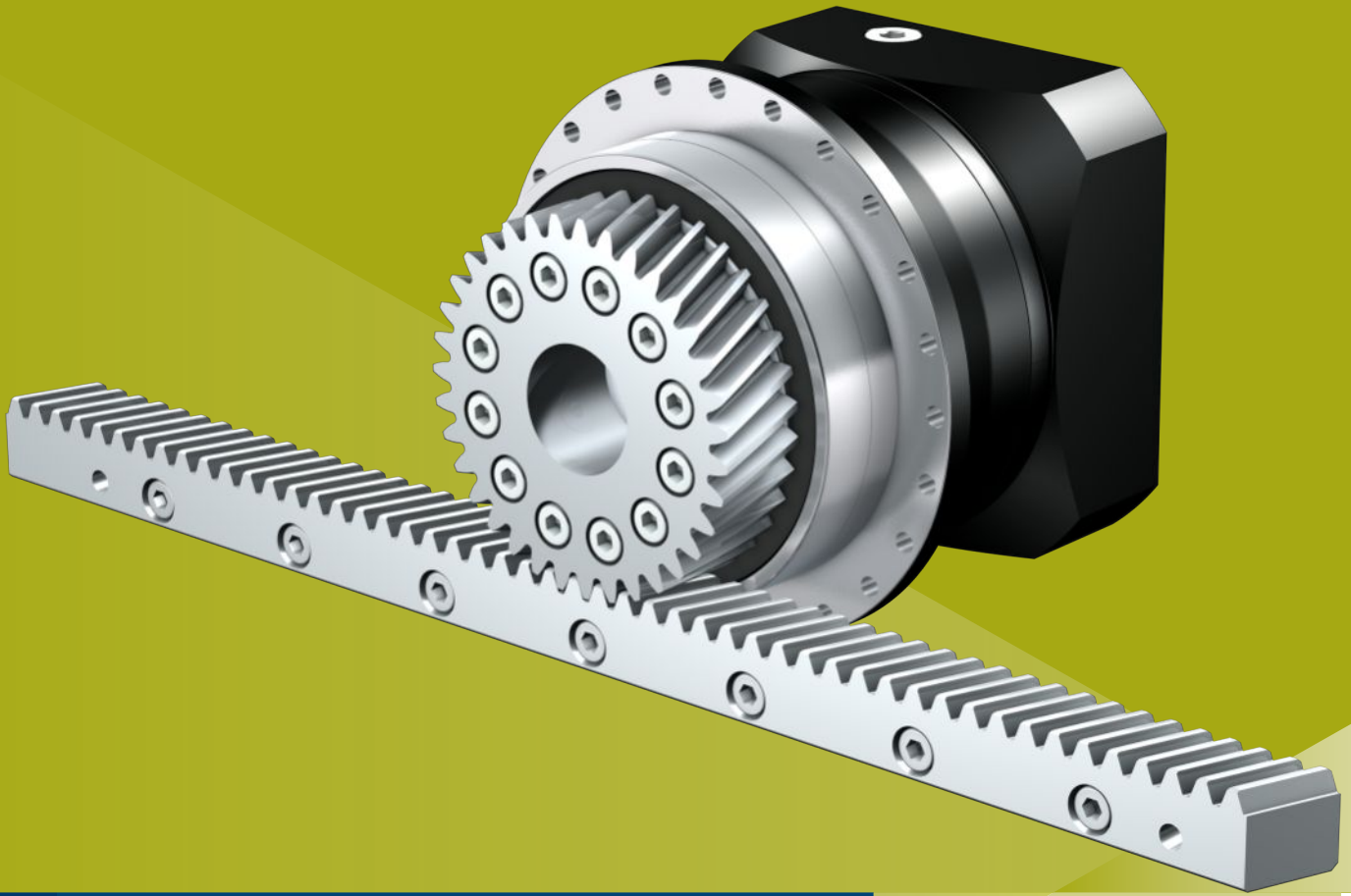


Catalog ID 443137\_en

Catalog ID 443286\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 3.6 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)	✓
Helical gearing	✓
Case-hardened and smoothed	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

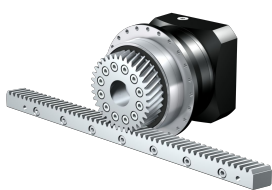
## Technical data

Type	$m_n$ [mm]	$z$	$F_{fzacc}$ [kN]	$v_{fzmaxZB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZR2_PH431	2	33	3.3 – 4.9	2.6 – 4.6	10 – 31
ZR2_PH432	2	33	3.1 – 4.6	0.29 – 1.8	10 – 31
ZR3_PH531	3	30	6 – 7.7	3.3 – 6.3	14 – 42
ZR2_PH531	2	40	6.8 – 8.1	2.9 – 5.6	12 – 37
ZR3_PH532	3	30	6 – 7.7	0.4 – 2.2	14 – 42
ZR2_PH532	2	40	6.8 – 8.1	0.36 – 1.9	12 – 37
ZR4_PH731	4	30	9 – 14	3.3 – 6.7	19 – 56
ZR3_PH731	3	35 – 40	9 – 16	2.9 – 6.7	16 – 56
ZR4_PH732	4	30	8.6 – 14	0.47 – 2.5	19 – 56
ZR3_PH732	3	35 – 40	8.6 – 16	0.41 – 2.5	16 – 56

<b>Linear backlash</b>	
Standard	✓
Reduced	✓
<b>Bearing design</b>	
Standard	✓
Reinforced (PH3 – PH5)	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

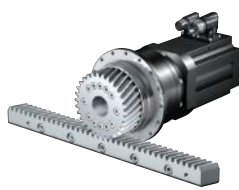
## Input options

Motor adapter



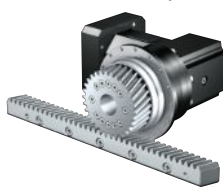
Catalog ID 443137\_en

EZ synchronous servo motor



Catalog ID 443286\_en

KX right-angle input with MF motor adapter



On request

K right-angle input with ME motor adapter



On request

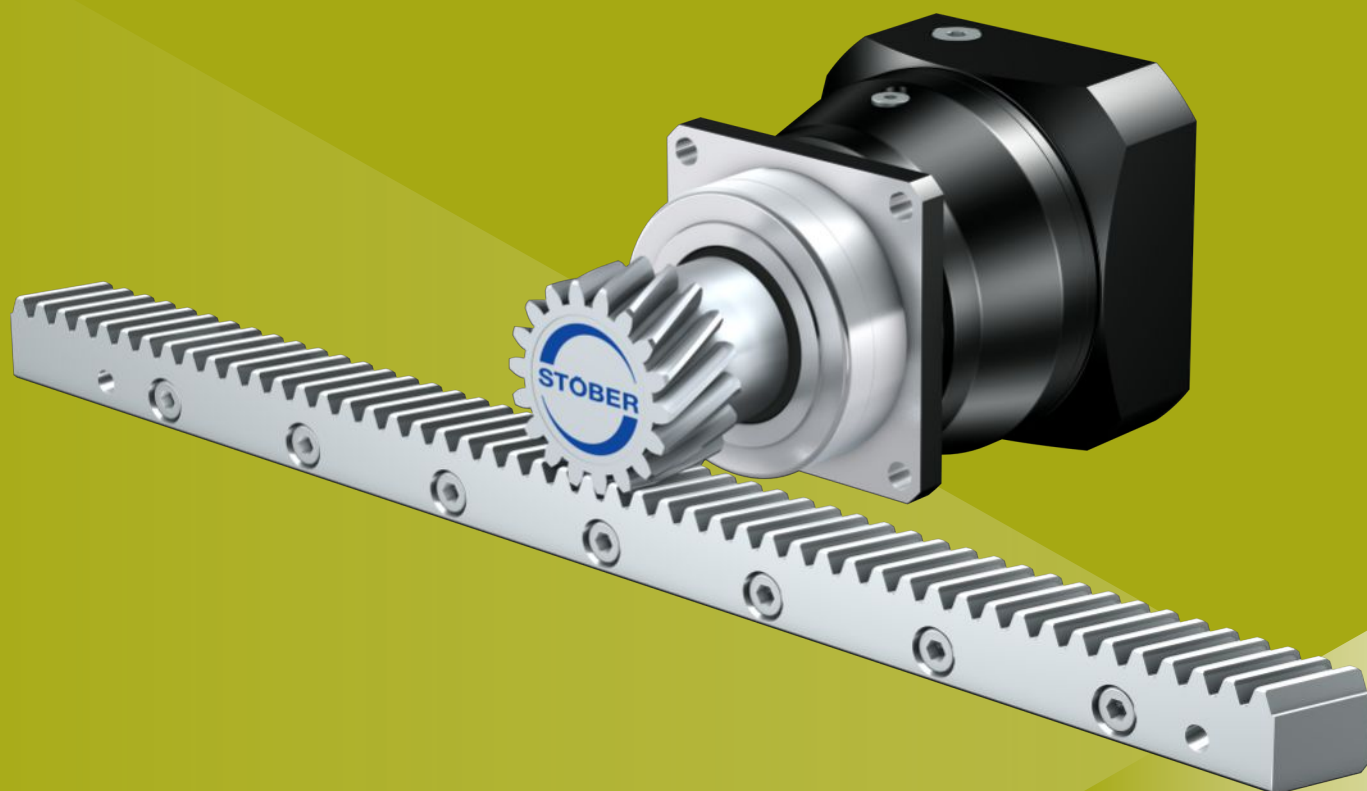
MB motor adapter



On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 3.7 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 6 (DIN 3962)	✓
Helical gearing	✓
Case-hardened and smoothed	✓

Key ★☆☆☆☆ good | ★★★★★ excellent





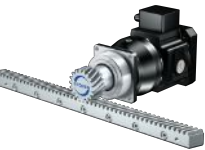

€ Economy | €€€€€ Premium

## Technical data

Type	$m_n$ [mm]	z	$F_{fzacc}$ [kN]	$v_{fzmaxzB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZV2_P331	2	16	1.7	1.4 – 4.1	10 – 20
ZV2_P331	2	16	2	1.4 – 4.1	10 – 20
ZV2_P332	2	16	2	0.14 – 1.2	15 – 25
ZV2_P332	2	16	1.7	0.14 – 1.2	15 – 25
ZV2_P431	2	20	4.7 – 4.8	1.8 – 4.4	12 – 25
ZV2_P431	2	20	3.2	1.8 – 4.4	12 – 25
ZV2_P432	2	20	4.7 – 4.8	0.18 – 1.3	19 – 31
ZV2_P432	2	20	3.2	0.18 – 1.3	19 – 31
ZV3_P531	3	18	7 – 11	2.1 – 5	8 – 25
ZV2_P531	2	25	7.5 – 9.5	1.9 – 4.6	8 – 23
ZV2_P531	2	25	5.1	1.9 – 4.6	8 – 23
ZV3_P531	3	18	5.2	2.1 – 5	8 – 25
ZV2_P532	2	25	7.5 – 9.5	0.22 – 1.4	15 – 31
ZV3_P532	3	18	7 – 11	0.24 – 1.5	17 – 33
ZV3_P532	3	18	5.2	0.24 – 1.5	17 – 33
ZV2_P532	2	25	5.1	0.22 – 1.4	15 – 31
ZV3_P731	3	22	14 – 16	2.2 – 4.9	10 – 31
ZV4_P731	4	18	13 – 15	2.4 – 5.3	11 – 33
ZV4_P731	4	18	7.3	2.4 – 5.3	11 – 33
ZV3_P731	3	22	7	2.2 – 4.9	10 – 31
ZV4_P732	4	18	7.3	0.28 – 1.7	22 – 44
ZV4_P732	4	18	13 – 15	0.28 – 1.7	22 – 44
ZV3_P732	3	22	14 – 16	0.26 – 1.5	20 – 41
ZV3_P732	3	22	7	0.26 – 1.5	20 – 41

<b>Linear backlash</b>	
Standard	✓
Reduced	✓
<b>Bearing design</b>	
Standard	✓
Axially reinforced	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓
Motor adapter with FlexiAdapt coupling (MF)	✓
Motor adapter with ServoStop brake (MB)	✓

## Input options

Motor adapter	EZ synchronous servo motor	KX right-angle input with MF motor adapter	K right-angle input with ME motor adapter	MB motor adapter	LM Lean motor
					
Catalog ID 443137_en	Catalog ID 443286_en	On request	On request	On request	On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 3.8 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 6 (DIN 3962)	✓
Helical gearing	✓
Case-hardened and smoothed	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	$m_n$ [mm]	$z$	$F_{f2acc}$ [kN]	$v_{f2maxZB}$ [m/s]	$\Delta s$ [μm]
ZV2_PE321	2	16	1.7	1.2 – 3.6	40
ZV2_PE321	2	16	1.9	1.2 – 3.6	40
ZV2_PE322	2	16	1.9	0.14 – 0.89	49
ZV2_PE322	2	16	1.7	0.14 – 0.89	49
ZV2_PE421	2	20	2.1	1.3 – 4.1	49
ZV2_PE421	2	20	2.7	1.3 – 4.1	49
ZV2_PE422	2	20	2.1	0.16 – 0.97	62
ZV2_PE422	2	20	2.7	0.16 – 0.97	62
ZV3_PE521	3	18	3.9	1.5 – 4.5	67
ZV2_PE521	2	25	3.8	1.4 – 4.2	62
ZV3_PE521	3	18	5.8	1.5 – 4.5	67
ZV2_PE521	2	25	6.1	1.4 – 4.2	62
ZV3_PE522	3	18	5.8	0.18 – 1.1	83
ZV3_PE522	3	18	3.9	0.18 – 1.1	83
ZV2_PE522	2	25	3.8	0.17 – 1	77
ZV2_PE522	2	25	6.1	0.17 – 1	77

<b>Linear backlash</b>	
Standard	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓

## Input options

ME motor adapter



Catalog ID 443137\_en

EZ synchronous servo motor



Catalog ID 443286\_en

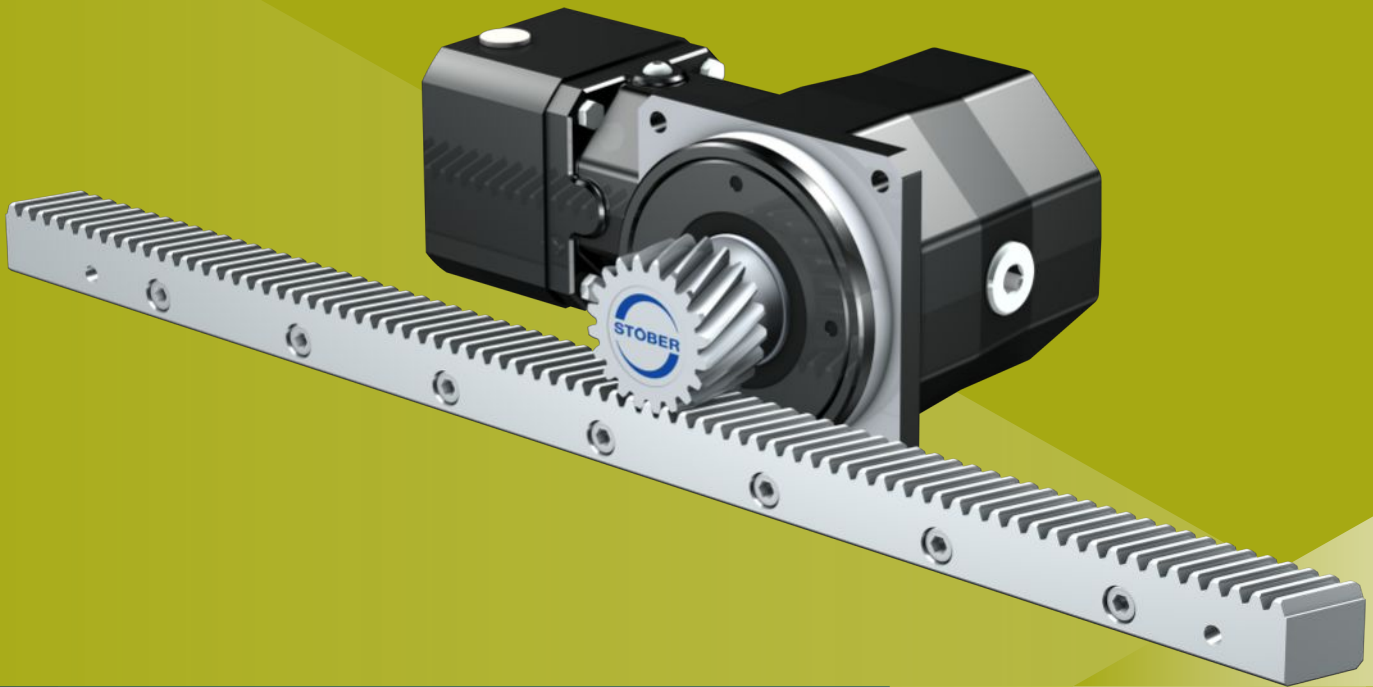
LM Lean motor



On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 3.9 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 6 (DIN 3962)	✓
Helical gearing	✓
Case-hardened and smoothed	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium



## Technical data

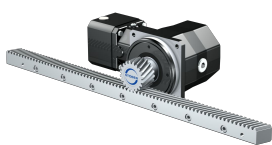
Type	$m_n$ [mm]	z	$F_{r2acc}$ [kN]	$v_{r2maxZB}$ [m/s]	$\Delta s$ [μm]
ZV2_KS402	2	20	3.2	0.67 – 2.2	37
ZV2_KS402	2	20	4.2	0.67 – 2.2	37
ZV2_KS403	2	20	4.2	0.07 – 0.56	37
ZV2_KS403	2	20	3.2	0.07 – 0.56	37
ZV3_KS502	3	18	5.2	0.9 – 2.8	42
ZV2_KS502	2	25	7.5	0.83 – 2.5	39
ZV3_KS502	3	18	7	0.9 – 2.8	42
ZV2_KS502	2	25	5	0.83 – 2.5	39
ZV2_KS503	2	25	7.5	0.08 – 0.69	39
ZV3_KS503	3	18	7	0.09 – 0.75	42
ZV2_KS503	2	25	5	0.08 – 0.69	39
ZV3_KS503	3	18	5.2	0.09 – 0.75	42
ZV3_KS702	3	22	11	1.1 – 2.8	41
ZV4_KS702	4	18	10	1.2 – 3	44
ZV4_KS702	4	18	6.7	1.2 – 3	44
ZV3_KS702	3	22	6.4	1.1 – 2.8	41
ZV4_KS703	4	18	6.7	0.12 – 1	44
ZV4_KS703	4	18	10	0.12 – 1	44
ZV3_KS703	3	22	11	0.11 – 0.92	41
ZV3_KS703	3	22	6.4	0.11 – 0.92	41

<b>Linear backlash</b>	
Standard	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with EasyAdapt coupling (ME/MEL)	✓

## Input options

ME motor adapter

EZ synchronous servo motor

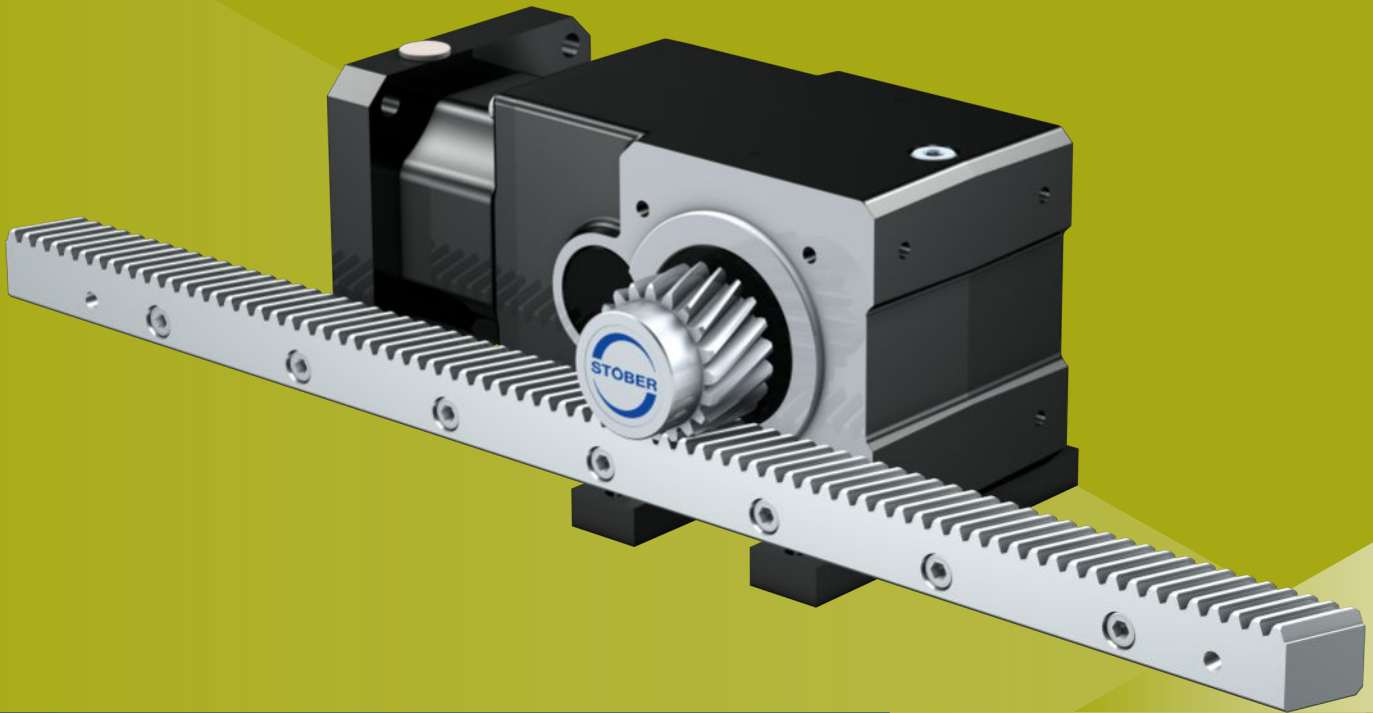


Catalog ID 443137\_en

Catalog ID 443286\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 3.10 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 6 (DIN 3962)	✓
Helical gearing	✓
Case-hardened and smoothed	✓

Key ★★★★★ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	$m_n$ [mm]	z	$F_{f2acc}$ [kN]	$v_{f2maxZB}$ [m/s]	$\Delta s$ [ $\mu$ m]
ZV2_KL102	2	16	1.3 – 1.5	0.33 – 2.7	99 – 123
ZV2_KL102	2	16	1.3 – 1.5	0.33 – 2.7	99 – 123
ZV2_KL202	2	20	2.3 – 2.7	0.42 – 3.3	99 – 123
ZV2_KL202	2	20	2.3 – 2.5	0.42 – 3.3	99 – 123

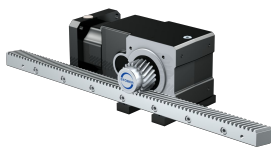
<b>Linear backlash</b>	
Standard	✓
<b>Pinion gearing</b>	
Helical gearing	✓
<b>Gear rack</b>	
STOBER precision gear rack	<a href="#">▶ 3.12</a>
<b>Motor adapter design</b>	
Motor adapter with plug-in coupling (MQ)	✓

## Input options

MQ motor adapter

EZ synchronous servo motor

LM Lean motor



Catalog ID 443137\_en



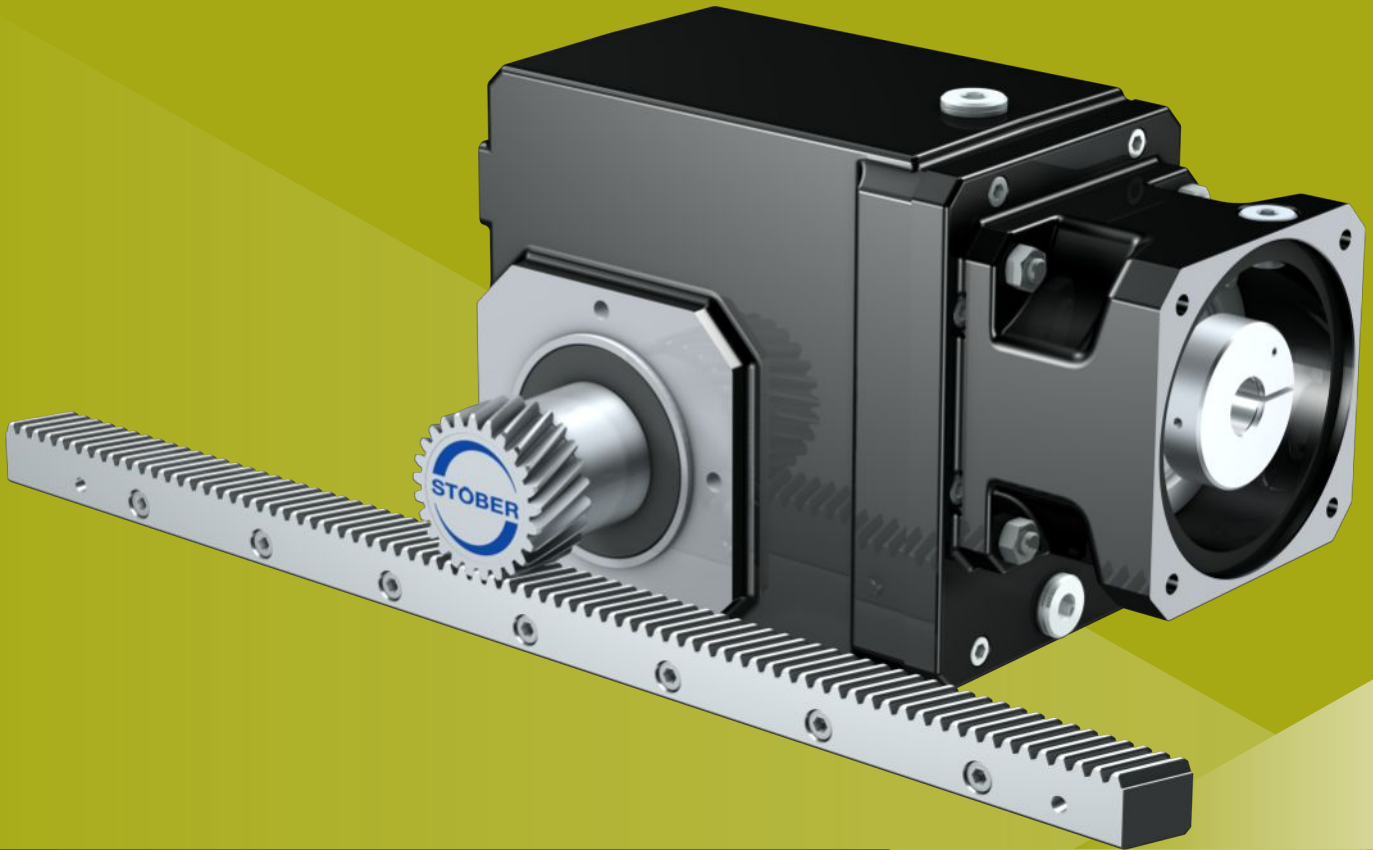
Catalog ID 443286\_en



On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 3.11 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 6 (DIN 3962)	✓
Helical gearing	✓
Case-hardened and smoothed	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	$m_n$ [mm]	z	$F_{fzacc}$ [kN]	$v_{fzmaxZB}$ [m/s]	$\Delta s$ [μm]
ZV2_K102	2	20	2.8 – 3.2	0.22 – 2.8	37 – 74
ZV2_K102	2	20	2.8 – 4.9	0.22 – 2.8	37 – 74
ZV3_K202	3	18	2.7 – 7.7	0.28 – 3.4	12 – 83
ZV2_K202	2	25	3 – 8.3	0.26 – 3.1	12 – 77
ZV2_K202	2	25	3 – 5.2	0.26 – 3.1	12 – 77
ZV3_K202	3	18	2.7 – 5.4	0.28 – 3.4	12 – 83
ZV3_K203	3	18	5.4	0.07 – 0.49	21 – 83
ZV2_K203	2	25	6 – 8.3	0.07 – 0.46	19 – 77
ZV3_K203	3	18	5.5 – 7.7	0.07 – 0.49	21 – 83
ZV2_K203	2	25	5.2	0.07 – 0.46	19 – 77
ZV2_K302	2	25	5 – 10	0.24 – 2.8	12 – 77
ZV3_K302	3	18	4.7 – 11	0.26 – 3	12 – 83
ZV3_K302	3	18	4.7 – 5.3	0.26 – 3	12 – 83
ZV2_K302	2	25	5 – 5.2	0.24 – 2.8	12 – 77
ZV3_K303	3	18	8.3 – 11	0.07 – 0.55	21 – 83
ZV2_K303	2	25	9 – 10	0.06 – 0.51	19 – 77
ZV3_K303	3	18	5.3	0.07 – 0.55	21 – 83
ZV2_K303	2	25	5.2	0.06 – 0.51	19 – 77
ZV3_K402	3	22	6.4 – 16	0.29 – 3.5	15 – 102
ZV4_K402	4	18	5.9 – 15	0.32 – 3.8	17 – 111
ZV4_K402	4	18	5.9 – 6.9	0.32 – 3.8	17 – 111
ZV3_K402	3	22	6.4 – 6.6	0.29 – 3.5	15 – 102
ZV4_K403	4	18	6.9	0.08 – 0.68	28 – 111
ZV4_K403	4	18	8.9 – 15	0.08 – 0.68	28 – 111
ZV3_K403	3	22	9.7 – 16	0.07 – 0.62	25 – 102
ZV3_K403	3	22	6.6	0.07 – 0.62	25 – 102

## Linear backlash

Standard

✓

Reduced

✓

## Pinion gearing

Helical gearing

✓

## Gear rack

STOBER precision gear rack

▶ 3.12

## Motor adapter design

Motor adapter with EasyAdapt coupling (ME)

✓

Motor adapter with plug-in coupling (MQ)

✓

Motor adapter with ServoStop brake (MB)

✓

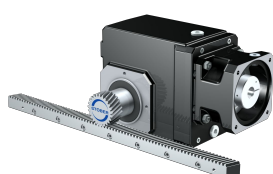
## Input options

ME motor adapter

EZ synchronous servo motor

MB motor adapter

LM Lean motor



Catalog ID 443137\_en

Catalog ID 443286\_en

On request

On request

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.



## 3.12 Gear racks

ZS

Precisely coordinated: Precision gear racks for STOBER drives

### Features

- Helical gearing ✓
- Heat-treatable steel in accordance with STOBER specification ✓
- Hardened and smoothed ✓
- Gearing quality 6 in accordance with DIN 3962-1 ✓
- Length 500 and 1000 mm ✓

## Technical data

$m_n$ [mm]	$l_{zs}$ [mm]	Type	$F_{f,max}$ [kN]	$F_{sv}$			m [kg]
				LA12SPIN [kN]	LA62,5 [kN]	LA62,5PIN [kN]	
2	500.00	ZS2S0500SQ6VG	12.6	8.5	8.0	12.5	1.9
2	1000.00	ZS2S1000SQ6VG	12.6	13.5	18.0	22.0	3.9
3	500.00	ZS3S0500SQ6VG	22.5	16.0	15.5	23.0	2.7
3	1000.00	ZS3S1000SQ6VG	22.5	25.0	33.5	41.0	5.4
4	506.67	ZS4S0500SQ6VG	38.7	31.0	25.0	42.0	5.1
4	1000.00	ZS4S1000SQ6VG	38.7	45.5	55.0	71.5	10
5	500.00	ZS5S0500SQ6VG	60.0	38.5	38.5	55.0	5.8
5	1000.00	ZS5S1000SQ6VG	60.0	61.0	83.0	99.5	12
6	500.00	ZS6S0500SQ6VG	83.1	72.5	75.0	105.5	8.5
6	1000.00	ZS6S1000SQ6VG	83.1	116.0	163.0	192.5	17

Design of the gear rack	
Helical gearing	✓
Heat-treatable steel in accordance with STOBBER specification	✓
Double bores every 62.5 mm	✓
Pinning optional	✓
Hardened and smoothed	✓
Gearing quality 6 in accordance with DIN 3962-1	✓
Length 500 and 1000 mm	✓
Accessories	
Mounting gear rack	✓

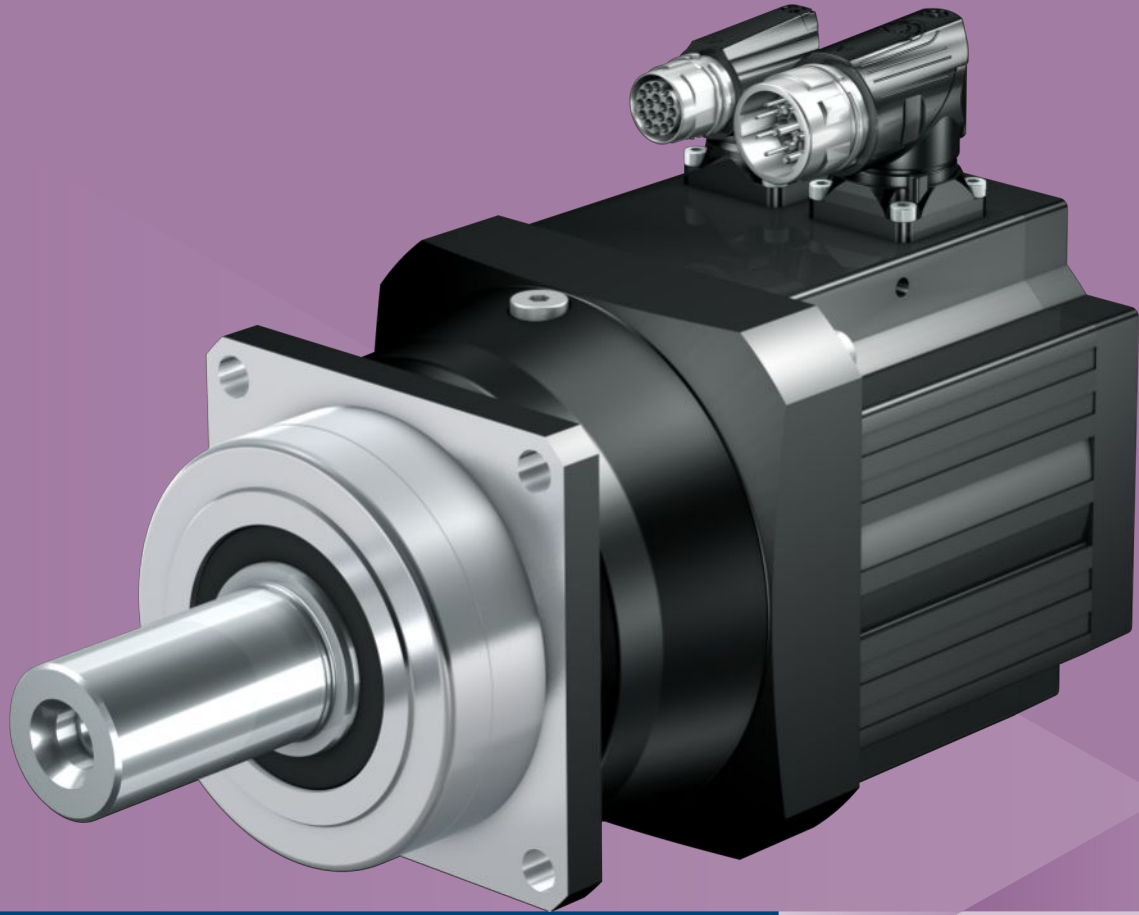




## 4 EZ synchronous servo geared motors

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## 4.1 Planetary geared motors

P

Helical-gear 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 mounting position	✓
Continuous operation without cooling	✓
Reinforced output bearing	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
P231	4 – 10	10 – 25	2.7 – 11	8000	6	1.6 – 1.9
P232	16 – 35	21 – 25	6.7 – 15	8000	8	1.7 – 1.8
P331	3 – 10	15 – 78	4.9 – 38	7000 – 8000	2 – 4	4.4 – 5.5
P332	12 – 80	31 – 75	7.9 – 52	8000	3 – 5	4.5 – 5.3
P431	3 – 10	47 – 145	13 – 104	6000 – 8000	2 – 4	9.1 – 13
P432	12 – 80	32 – 139	11 – 116	7000 – 8000	3 – 5	9.6 – 13
P531	3 – 10	58 – 385	23 – 234	5000 – 7000	1 – 3	25 – 35
P532	12 – 80	97 – 364	32 – 363	6000 – 8000	2 – 4	25 – 33
P731	3 – 10	194 – 840	77 – 521	4000 – 6000	1 – 3	55 – 69
P732	12 – 80	228 – 805	91 – 798	5000 – 7000	2 – 4	57 – 65
P831	3 – 10	582 – 1500	200 – 667	3000 – 4500	1 – 3	150 – 190
P832	12 – 100	608 – 2000	237 – 2232	4500 – 6000	2 – 4	148 – 177
P932	16 – 70	2128 – 3450	665 – 4465	3500 – 4500	4	372 – 407

## Shaft design

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

## Bearing design

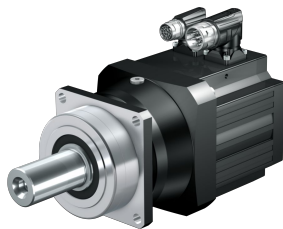
Standard	✓
Axially reinforced	✓
Radially reinforced	✓

## Motor design

[ &gt; 7.1]

## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

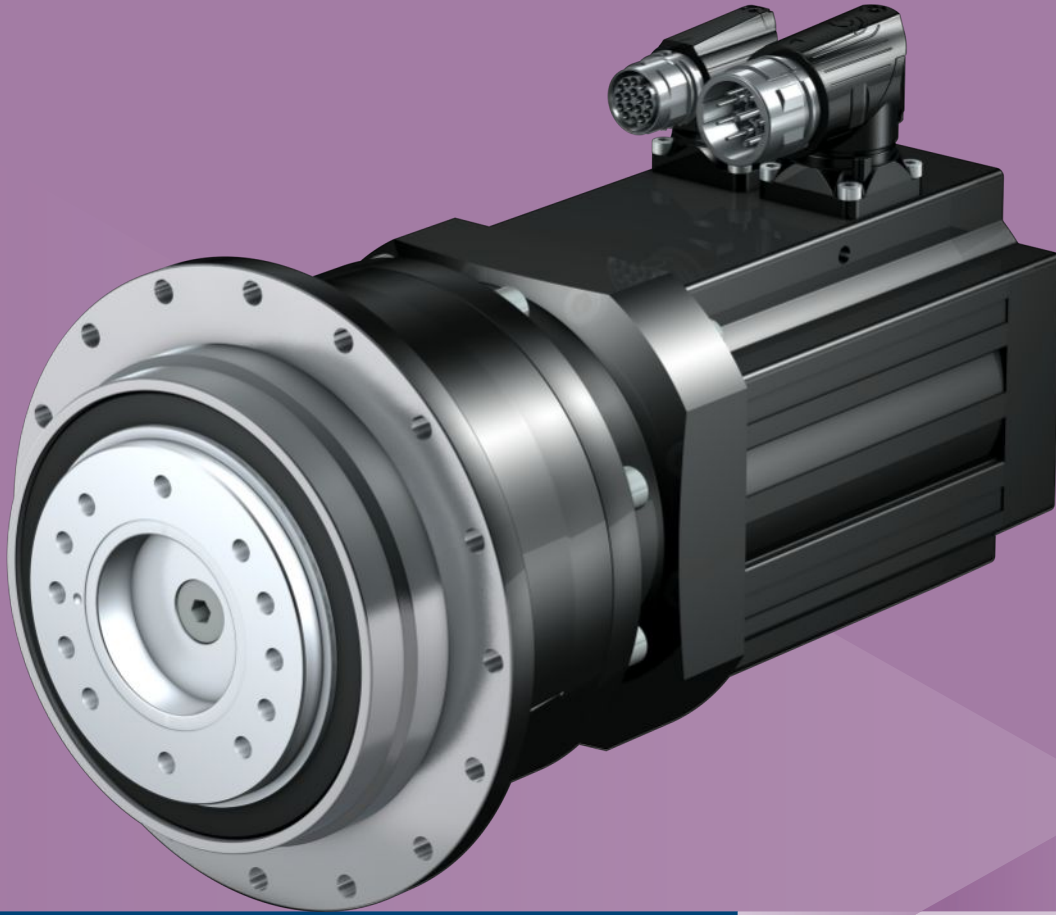
Catalog ID 443311\_en

LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.



## 4.2 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 mounting position	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PH331	5 – 10	24 – 77	8.1 – 35	8000	2 – 4	9.2 – 15
PH332	20 – 70	34 – 85	10 – 51	8000	2 – 4	9 – 14
PH431	4 – 10	57 – 189	18 – 103	5000 – 7000	1 – 3	21 – 39
PH432	16 – 70	65 – 174	22 – 114	8000	1 – 3	27 – 32
PH531	4 – 10	134 – 400	42 – 203	5000 – 6500	1 – 3	53 – 100
PH532	16 – 70	158 – 400	52 – 356	7000 – 8000	1 – 3	70 – 86
PH731	4 – 10	192 – 924	80 – 645	4000 – 5000	1 – 3	125 – 243
PH732	16 – 70	298 – 908	115 – 781	6000 – 7000	1 – 3	154 – 202
PH831	4 – 10	768 – 1392	264 – 660	3500 – 4000	1 – 3	344 – 620
PH832	16 – 100	744 – 2300	294 – 2185	4500 – 6000	1 – 3	333 – 526
PH942	12 – 60	2232 – 5000	732 – 3837	3000 – 4500	1 – 3	1065 – 1256
PH1042	18 – 60	3348 – 7500	1151 – 3837	3000 – 4500	3	1615 – 1778

## Shaft design

Flange shaft

✓

## Bearing design

Standard

✓

Reinforced (PH3 – PH5)

✓

## Motor design

[ ▶ 7.1 ]

## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.3 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 mounting position (single/two stage)	✓
High power density	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PHQ4 – PHQ5)	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

**Technical data**

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PHQ431	5.5	84 – 220	23 – 84	6000	1 – 3	44
PHQ432	22 – 55	72 – 247	24 – 125	8000	1 – 3	38 – 41
PHQ531	5.5	216 – 549	76 – 159	5000	1 – 3	107
PHQ532	22 – 55	174 – 562	57 – 391	7000 – 8000	1 – 3	95 – 103
PHQ731	5.5	739 – 1050	231 – 363	5000	1 – 3	235
PHQ732	22 – 55	409 – 1050	158 – 1074	6000 – 7000	1 – 3	213 – 226
PHQ733	88 – 220	673 – 1050	222 – 840	6000 – 7000	1 – 3	222 – 224
PHQ832	22 – 55	1023 – 3300	425 – 3434	4500 – 6000	1 – 3	670 – 720
PHQ833	88 – 385	1267 – 3300	372 – 2477	5000 – 6500	1 – 3	699 – 712
PHQ942	18 – 60	3125 – 6600	976 – 3837	3000 – 4500	1 – 3	1149 – 1237
PHQ943	72 – 600	2657 – 6600	933 – 9064	4500 – 6000	1 – 3	1145 – 1207
PHQ1043	96 – 240	10000	3778 – 14502	3500 – 4500	3	2055 – 2068
PHQ1143	96 – 300	12096 – 22000	3778 – 18128	3500 – 4500	3	3490 – 3533

<b>Shaft design</b>	
Flange shaft	✓
<b>Bearing design</b>	
Standard	✓
Reinforced (PHQ4 – PHQ5)	✓
<b>Motor design</b>	<a href="#">[ ▶ 7.1 ]</a>

**Input options**

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor



Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.4 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 mounting position	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium



## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
PHV943	61 – 121	1638 – 4250	680 – 3289	4500	1 – 3	805 – 850
PHV1043	61 – 91	7500	2399 – 5499	4500	3	1342 – 1370

## Shaft design

Flange shaft

✓

## Motor design

[ ▶ 7.1 ]

## Input options

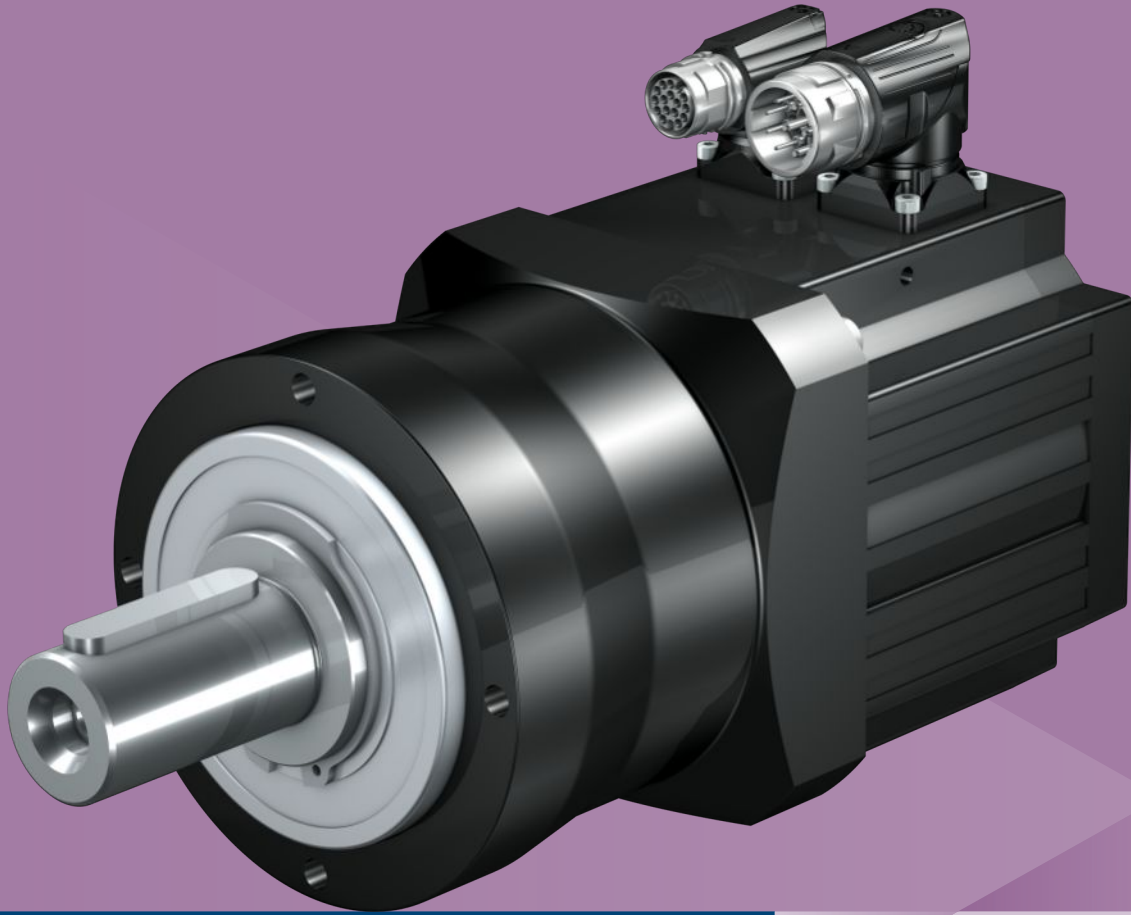
EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.5 Planetary geared motors

PE

Cost-efficient helical-gear planetary geared motors

### Features

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

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PE221	4 – 10	5.7 – 19	1.7 – 6.5	8000	10	1.2 – 1.5
PE222	16	19	6.7	8000	13	1.4
PE321	3 – 10	11 – 50	3.7 – 21	6000 – 7000	8	3.5 – 4.5
PE322	16 – 40	22 – 50	6.7 – 23	8000	10	3.9 – 4.2
PE421	3 – 10	25 – 109	8.7 – 59	5500 – 6000	8	10 – 14
PE422	16 – 50	43 – 104	14 – 52	7000	10	13
PE521	3 – 10	58 – 250	23 – 146	4500 – 5000	8	27 – 37
PE522	16 – 40	129 – 250	43 – 161	6000	10	33

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

## Motor design

[ &gt; 7.1 ]

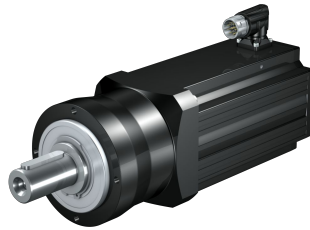
## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

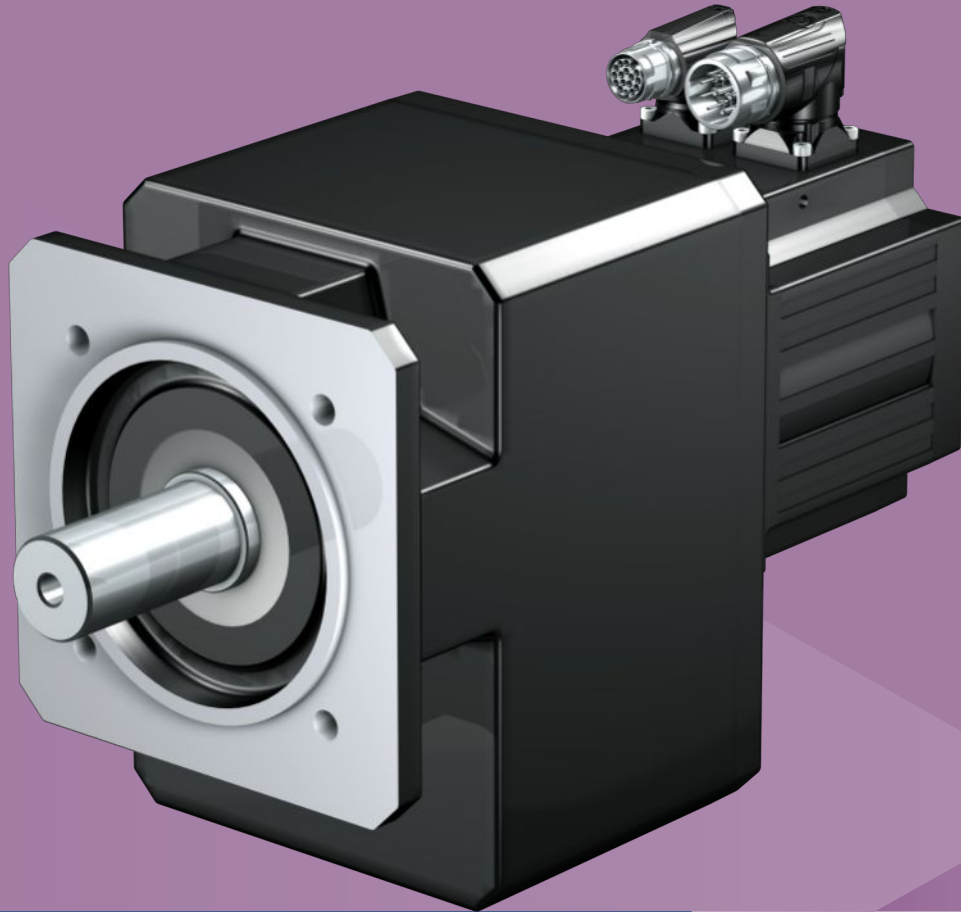
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.6 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

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
C002	2 – 70	9.7 – 72	3.3 – 68	6000 – 7000	16 – 20	1.3 – 1.6
C102	2 – 70	19 – 138	6.3 – 195	5000 – 6500	15 – 18	3.1 – 3.9
C103	82 – 137	138	74 – 131	6500	15	3.9
C202	2 – 70	52 – 230	22 – 392	4500 – 6500	14 – 17	6 – 8.3
C203	81 – 138	230	129 – 221	6500	14	8.3
C302	2 – 70	114 – 400	43 – 606	4000 – 6000	13 – 16	7.1 – 8.7
C303	80 – 220	350 – 400	131 – 393	6000	13	8.7
C402	2 – 70	186 – 600	58 – 1361	3500 – 5500	12 – 15	17 – 22
C403	81 – 108	550 – 600	363 – 484	5500	12	22
C502	2 – 70	184 – 920	65 – 1830	3200 – 5000	12 – 14	21 – 23
C503	81 – 181	850 – 920	362 – 855	5000	12	23
C612	4.2 – 69	629 – 1650	216 – 2952	3000 – 4500	10	74
C613	49 – 266	913 – 1650	341 – 2054	4500	10	74
C712	7.4 – 70	796 – 2760	330 – 3700	2800 – 4500	10	122
C713	51 – 223	1548 – 2760	642 – 5118	4500	10	122
C812	13 – 69	2473 – 4800	850 – 4486	3800 – 4300	10	145 – 204
C813	49 – 270	1517 – 4800	630 – 8748	4300	10	204
C913	78 – 215	5630 – 6500	3247 – 13823	4000	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: ✓

Foot

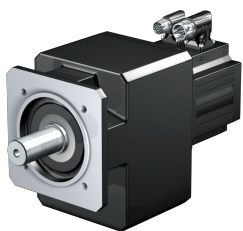
✓

## Motor design

[▶ 7.1]

## Input options

EZ synchronous servo motor

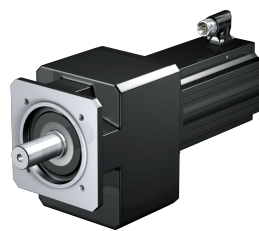


Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

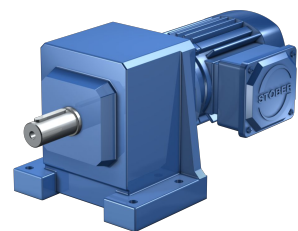
Catalog ID 443311\_en

LM Lean motor



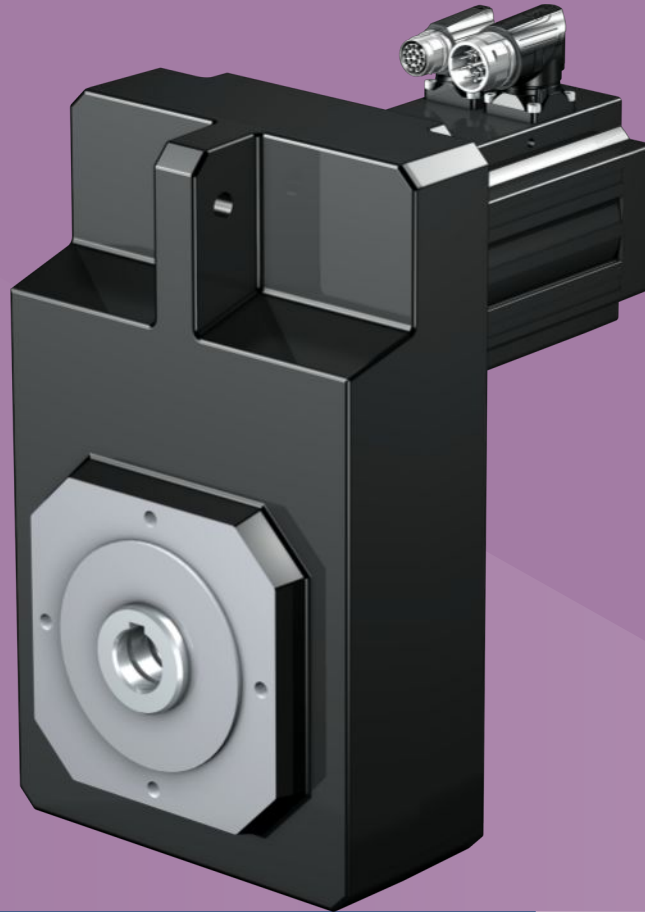
Catalog ID 443016\_en

Asynchronous motor



Catalog ID 443136\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.



## 4.7

# 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

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
F102	4.3 – 140	21 – 120	7 – 119	6000 – 7000	6 – 11	6.5 – 7.7
F202	4.7 – 141	44 – 270	15 – 270	5000 – 6500	6 – 11	16 – 18
F203	184 – 222	270	167 – 202	6500	7 – 11	18
F302	4.6 – 141	111 – 450	46 – 539	4500 – 6500	6 – 11	20 – 22
F303	185 – 276	450	297 – 443	6500	7 – 11	22
F402	4.7 – 140	263 – 700	101 – 1154	4000 – 6000	5 – 10	39
F403	182 – 440	700	295 – 786	6000	6 – 10	39
F602	4.5 – 140	524 – 1100	140 – 2293	3500 – 5500	5 – 10	73 – 77
F603	181 – 215	1100	812 – 968	5500	6 – 10	77

## Shaft design

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

## Housing design

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

## Motor design

[ ▶ 7.1 ]

## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

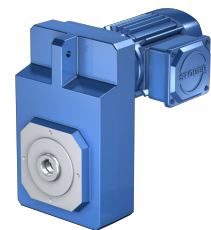
Catalog ID 443311\_en

LM Lean motor



Catalog ID 443016\_en

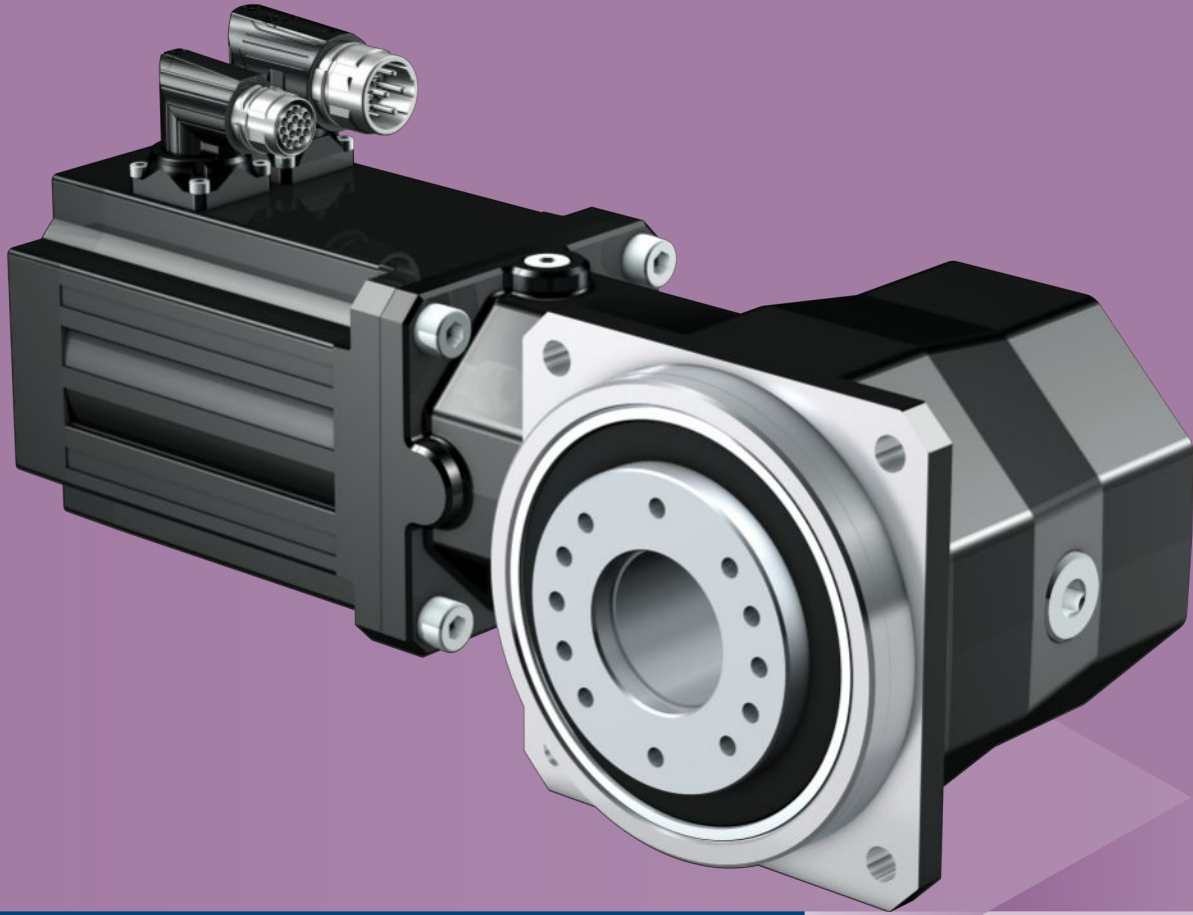
Asynchronous motor



Catalog ID 443136\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



4.8

## Right-angle servo 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	✓
Stiff output bearings due to pretension	✓
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium



## 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 – 100	33 – 90	9.8 – 50	6000	6	8.5
KS502	6 – 20	65 – 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

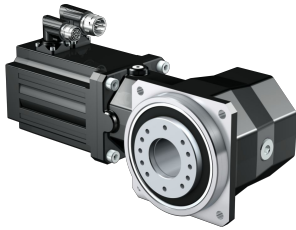
Flange hollow shaft	✓
Hollow shaft with shrink ring	✓
Solid shaft without feather key	✓
Solid shaft with feather key	✓

## Motor design

[\[ > 7.1\]](#)

## Input options

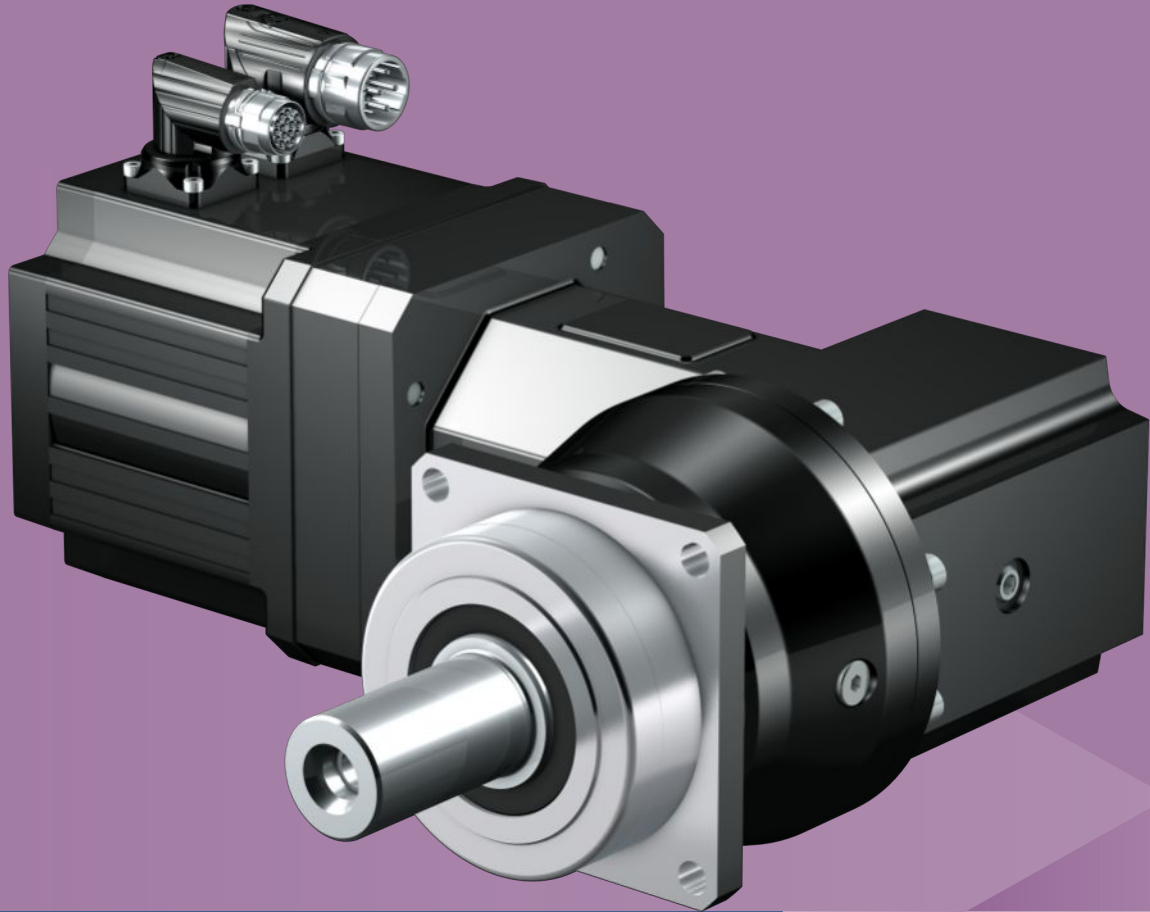
EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.9 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	✓
Reinforced output bearing	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
P231KX	4 – 15	11 – 25	3.6 – 17	4500 – 6000	7.5 – 8.5	1.5 – 1.7
P331KX	3 – 30	16 – 75	5.4 – 45	4500 – 6000	3 – 7.5	2.4 – 4.2
P332KX	32 – 60	65 – 75	28 – 53	4500 – 6000	3.5 – 5.5	5 – 5.2
P431KX	3 – 30	40 – 143	13 – 94	4000 – 5500	3 – 7.5	5.3 – 9.2
P432KX	32 – 105	84 – 139	28 – 102	4500 – 6000	3 – 5.5	9.4 – 12
P531KX	3 – 30	57 – 380	23 – 307	3500 – 5000	2 – 6.5	13 – 25
P532KX	32 – 210	147 – 364	50 – 282	4000 – 5500	2 – 4.5	25 – 32
P731KX	3 – 30	229 – 840	64 – 962	3000 – 4000	2 – 6.5	38 – 54
P732KX	32 – 210	318 – 805	112 – 802	3500 – 5000	2 – 4.5	56 – 62
P831KX	3 – 30	229 – 1213	64 – 1924	3000 – 4000	2 – 6.5	59 – 130
P832KX	32 – 210	599 – 2000	240 – 1978	3000 – 4000	2 – 4.5	148 – 173
P932KX	16 – 300	1123 – 3300	332 – 5277	3000 – 4000	4 – 4.5	320 – 393

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

## Bearing design

Standard

✓

Axially reinforced

✓

Radially reinforced

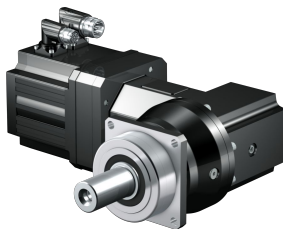
✓

## Motor design

[\[ > 7.1 \]](#)

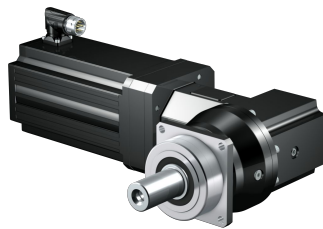
## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

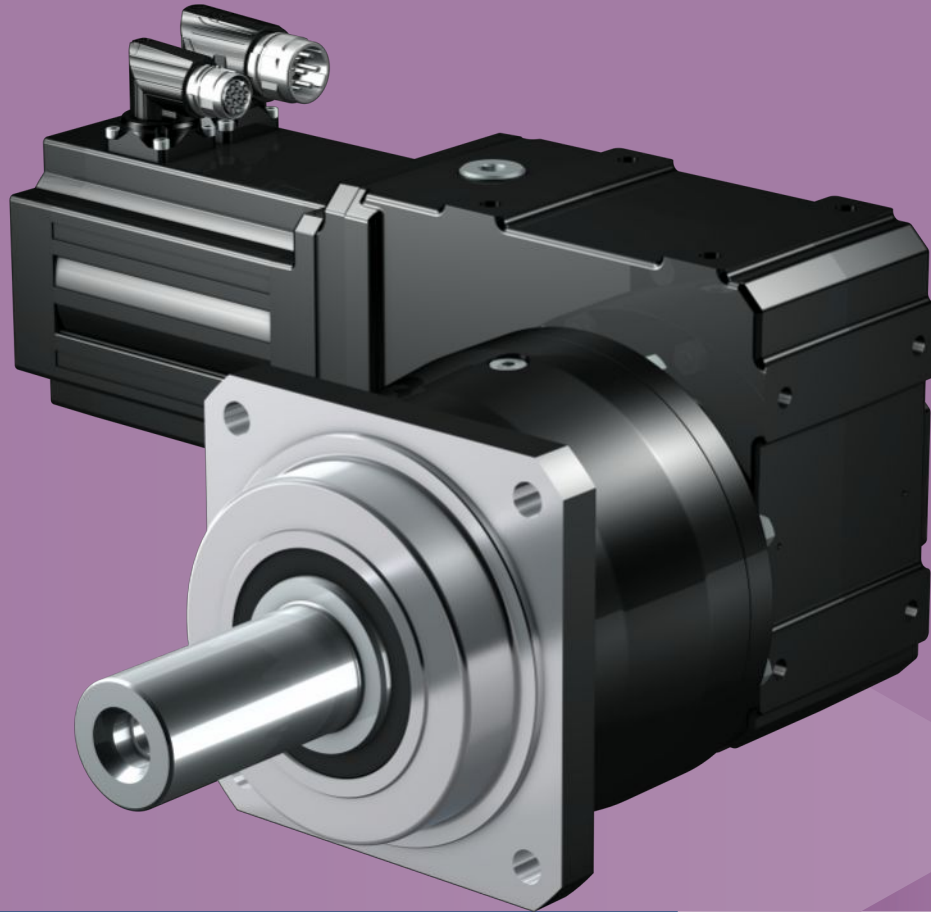
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.10 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

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
P531K	12 – 235	68 – 385	25 – 269	5000 – 7000	2 – 5	22 – 29
P731K	12 – 490	158 – 840	58 – 661	4500 – 7000	1.5 – 4.5	40 – 53
P831K	12 – 555	332 – 1867	121 – 1876	4000 – 6500	1.5 – 4.5	83 – 132
P931K	28 – 485	1217 – 3105	505 – 5093	3800 – 5500	3.5	305

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

## Bearing design

Standard

✓

Axially reinforced

✓

Radially reinforced

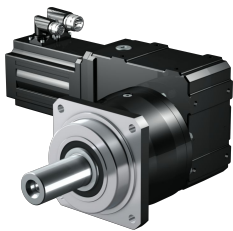
✓

## Motor design

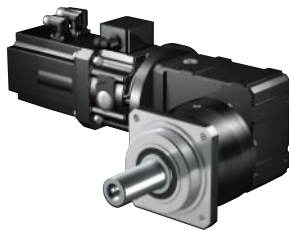
[\[> 7.1\]](#)

## Input options

EZ synchronous servo motor



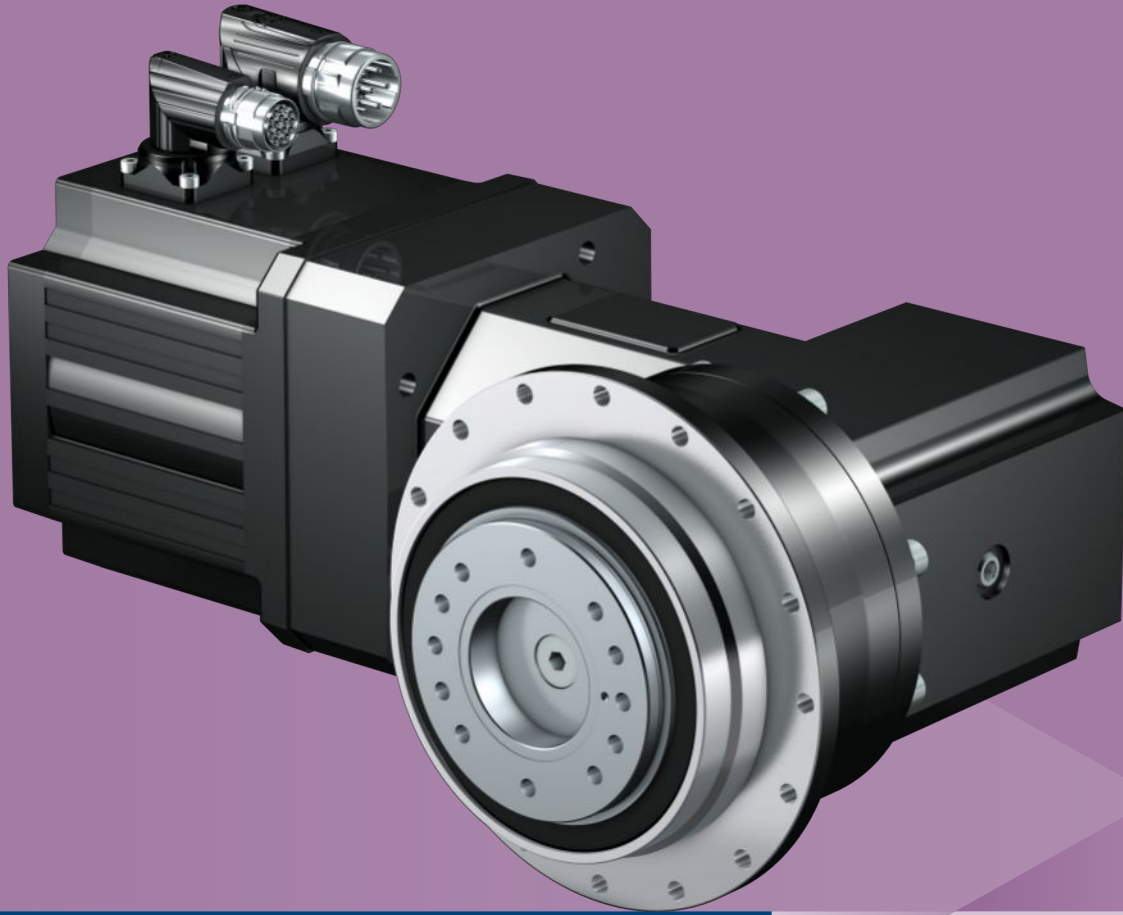
Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.11 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	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★★★☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PH331KX	5 – 30	26 – 77	9 – 45	4500 – 6000	3 – 6	6.9 – 8.4
PH332KX	35 – 56	75 – 85	30 – 49	4500 – 5500	2.5 – 4.5	12 – 13
PH431KX	4 – 30	53 – 168	17 – 93	4000 – 5500	2 – 5.5	11 – 19
PH432KX	32 – 140	82 – 174	28 – 122	4500 – 6000	1 – 3.5	25 – 30
PH531KX	4 – 30	121 – 387	39 – 304	3500 – 5000	2 – 5.5	28 – 46
PH532KX	32 – 210	147 – 400	49 – 301	4000 – 5500	1 – 3.5	52 – 78
PH731KX	4 – 30	227 – 840	84 – 952	3000 – 4000	2 – 5.5	94 – 122
PH732KX	32 – 210	311 – 908	110 – 785	3500 – 5000	1 – 3.5	152 – 176
PH831KX	4 – 30	227 – 1200	84 – 1905	3000 – 4000	2 – 5.5	122 – 253
PH832KX	32 – 210	733 – 2300	241 – 1937	3500 – 4000	1 – 3.5	332 – 489
PH942KX	12 – 180	901 – 5000	244 – 8857	3000 – 4000	1 – 4	655 – 1035
PH1042KX	18 – 180	989 – 6975	366 – 11071	3000 – 4000	3 – 3.5	1127 – 1545

## Shaft design

Flange shaft

✓

## Bearing design

Standard

✓

Reinforced (PH3 – PH5)

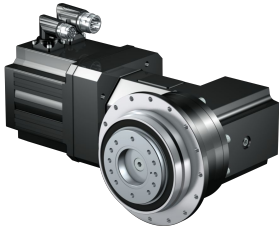
✓

## Motor design

[ ▶ 7.1 ]

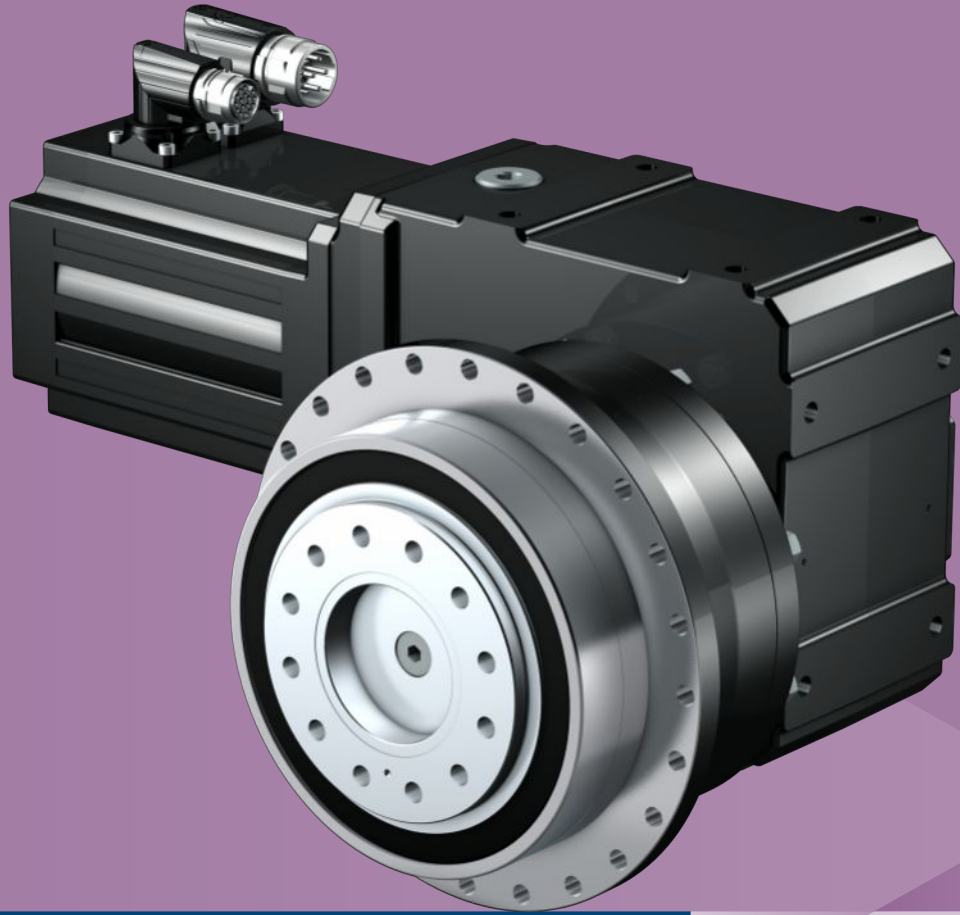
## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.



## 4.12 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	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PH3 – PH5)	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium



## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PH531K	16 – 235	89 – 400	33 – 266	5000 – 7000	2 – 4.5	52 – 62
PH731K	16 – 490	157 – 924	57 – 655	4500 – 7000	1.5 – 4.5	100 – 117
PH831K	16 – 555	328 – 1848	120 – 1856	4000 – 6500	1.5 – 4	185 – 260
PH941K	33 – 466	1772 – 5000	736 – 7155	3200 – 5000	2 – 4.5	525 – 730
PH1041K	49 – 457	3508 – 7500	1348 – 11777	3000 – 4500	4	1210

<b>Shaft design</b>	
Flange shaft	✓
<b>Bearing design</b>	
Standard	✓
Reinforced (PH3 – PH5)	✓
<b>Motor design</b>	<a href="#">[ ▶ 7.1 ]</a>

## Input options

EZ synchronous servo motor



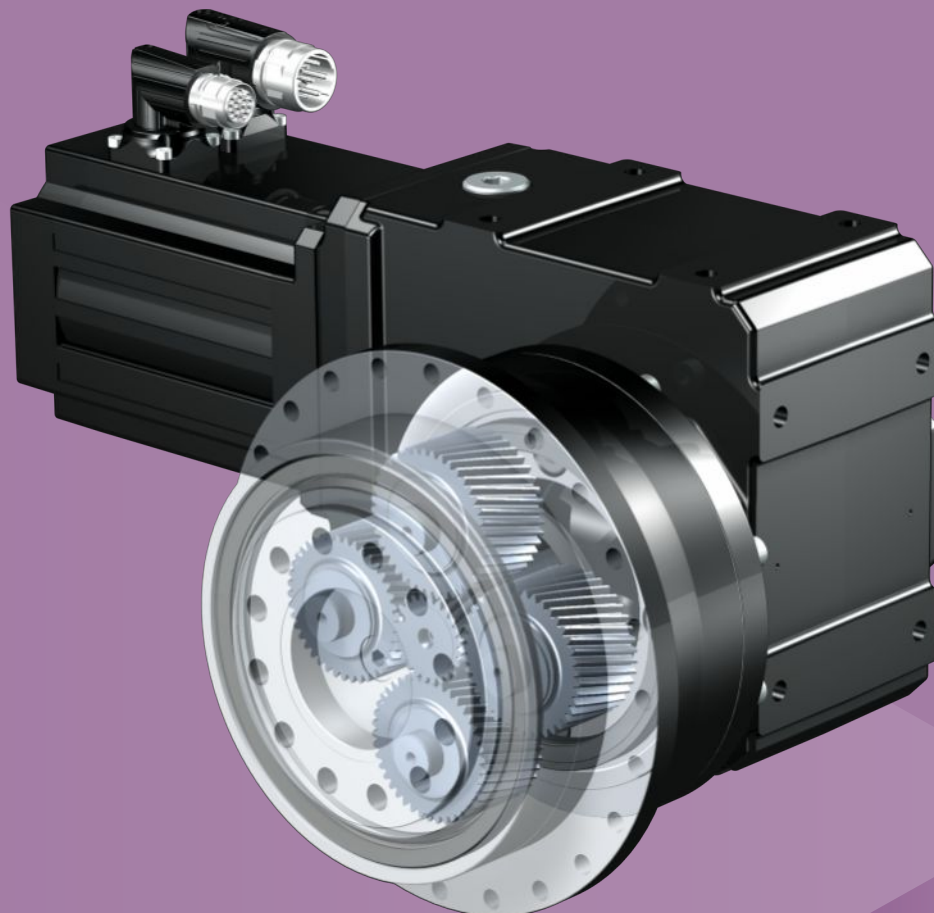
Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.13 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	✓
Continuous operation without cooling	✓
Stiff output bearings due to pretension	✓
Reinforced output bearing (PHQ4 – PHQ5)	✓ (optional)
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PHQ531K	22 – 309	123 – 550	45 – 410	5000 – 7000	2 – 4	70
PHQ731K	22 – 305	258 – 1050	94 – 789	4500 – 6500	2 – 4	136
PHQ831K	22 – 306	858 – 3168	356 – 3472	3800 – 5500	1.5 – 3.5	400
PHQ941K	44 – 580	2131 – 5760	885 – 9002	3200 – 5000	2 – 4	771
PHQ1041K	45 – 591	3903 – 10000	1620 – 16657	2700 – 4200	4	1561
PHQ1141K	49 – 583	7897 – 22000	3121 – 29349	2600 – 4000	4	2623
PHQ1241K	114 – 2242	13636 – 43000	5659 – 29167	3300 – 3800	4	4665

## Shaft design

Flange shaft

✓

## Bearing design

Standard

✓

Reinforced (PHQ4 – PHQ5)

✓

## Motor design

[\[ > 7.1 \]](#)

## Input options

EZ synchronous servo motor



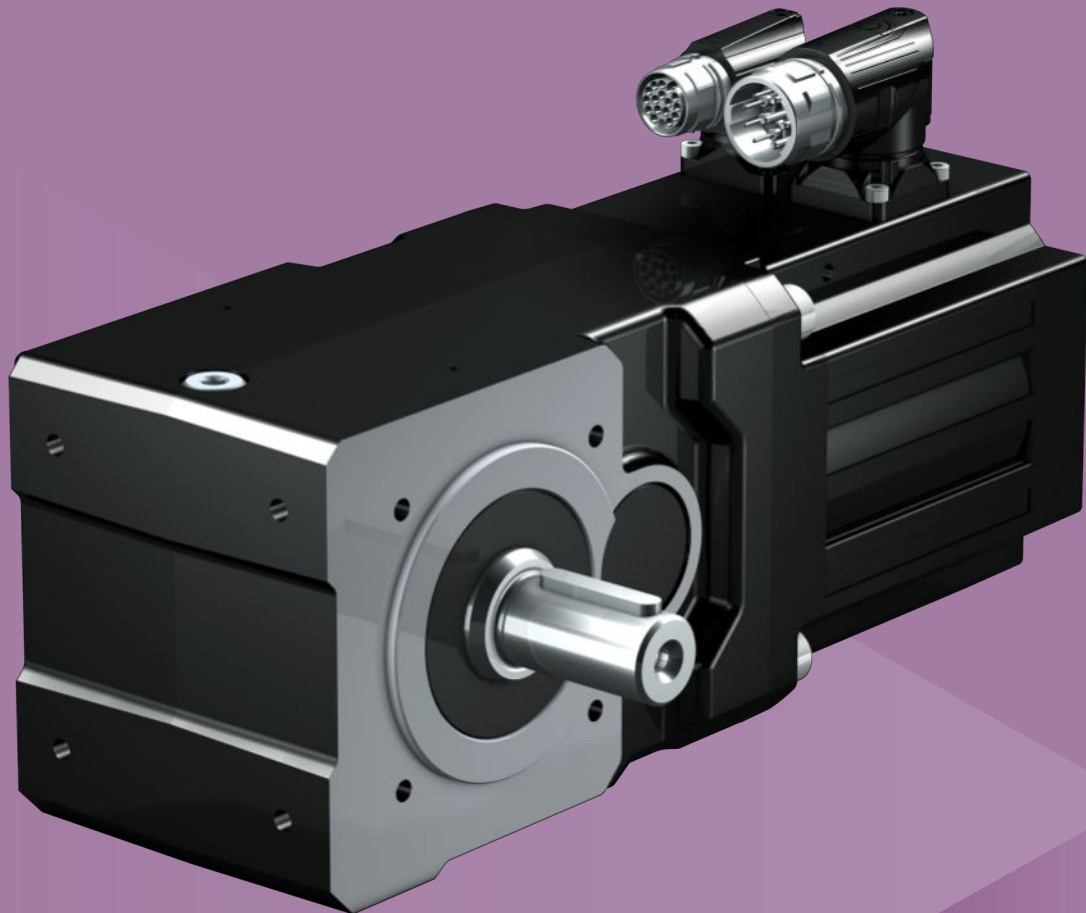
Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.14 Helical bevel geared motors

KL

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	✓
Maintenance-free	✓
Any mounting position	✓
Small installation space	✓
FKM seal ring at the input	✓
Compact and highly dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
KL102	4 – 32	10 – 32	2.7 – 26	6000	20 – 25	1.3 – 1.8
KL202	4 – 32	22 – 65	7.4 – 47	6000	16 – 20	2.4 – 4

## Shaft design

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

## Housing design

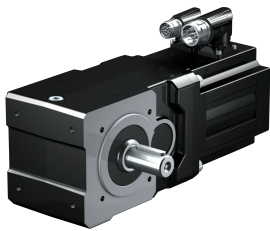
Pitch circle diameter	✓
Flange	✓
Foot + pitch circle diameter	✓
Pitch circle diameter + torque arm bracket	KL2: ✓

## Motor design

[ ▶ 7.1 ]

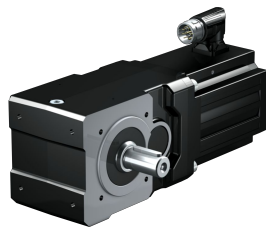
## Input options

EZ synchronous servo motor



Catalog ID 442437\_en

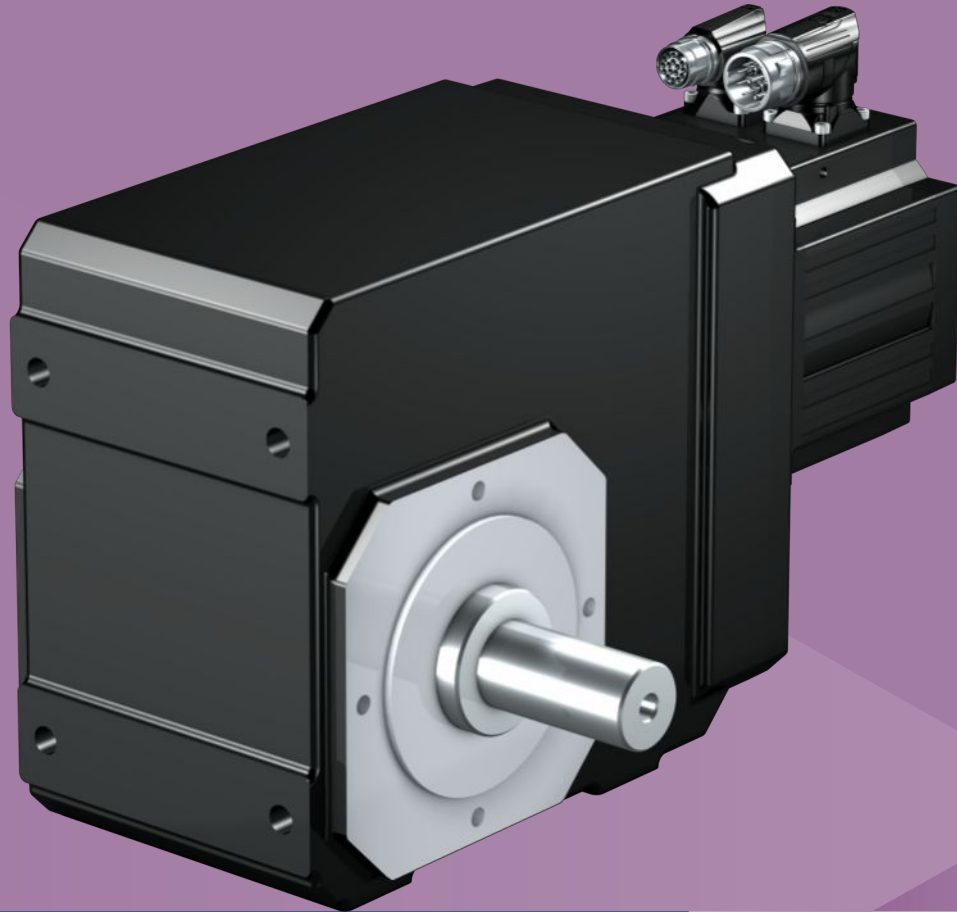
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 4.15 Helical bevel geared motors

# K

Highly rigid helical-gear 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

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
K102	4 – 70	23 – 135	8.5 – 102	5000 – 7000	6 – 12	6.8
K202	4 – 69	49 – 220	18 – 234	4500 – 6500	1.5 – 10	11
K203	39 – 181	189 – 220	63 – 243	6500	2.5 – 10	11
K302	4 – 69	104 – 385	43 – 475	4000 – 6000	1.5 – 10	16
K303	33 – 181	235 – 385	79 – 493	6000	2.5 – 10	16
K402	4 – 69	179 – 600	74 – 824	3800 – 5500	1.5 – 10	31
K403	32 – 218	317 – 600	107 – 570	5500	2.5 – 10	31
K513	7.3 – 97	466 – 1000	193 – 2074	3200 – 5000	2 – 10	50
K514	85 – 186	1000	376 – 983	5000	3 – 10	50
K613	7.3 – 95	662 – 1600	211 – 2460	3000 – 4500	2 – 10	83
K614	111 – 294	1448 – 1600	492 – 1548	4500	3 – 10	83
K713	7.6 – 99	1012 – 2600	316 – 4162	2700 – 4200	2 – 10	126
K714	89 – 381	1626 – 2600	606 – 3008	4200	3 – 10	126
K813	9.3 – 97	1371 – 4650	569 – 5095	2600 – 4000	2 – 10	196
K814	67 – 311	2156 – 4650	895 – 10783	4000	3 – 10	196
K913	24 – 95	4578 – 7700	1574 – 6272	3300 – 3800	5 – 10	379
K914	92 – 374	2367 – 7700	982 – 8015	3800	5 – 10	379
K1014	149 – 237	10621 – 12750	6127 – 9770	3500	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 ring	✓

## Housing design

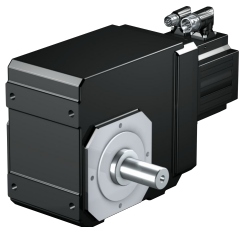
Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm bracket	K1 – K9: ✓
Foot + pitch circle diameter + torque arm bracket	K10: ✓
Foot + pitch circle diameter	✓
Foot + round flange	✓

## Motor design

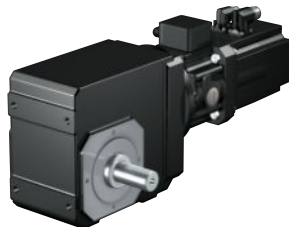
[ ▶ 7.1 ]

## Input options

EZ synchronous servo motor

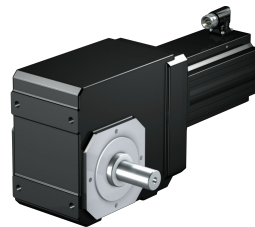


Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

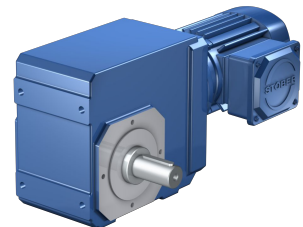
Catalog ID 443311\_en

LM Lean motor



Catalog ID 443016\_en

Asynchronous motor



Catalog ID 443136\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.

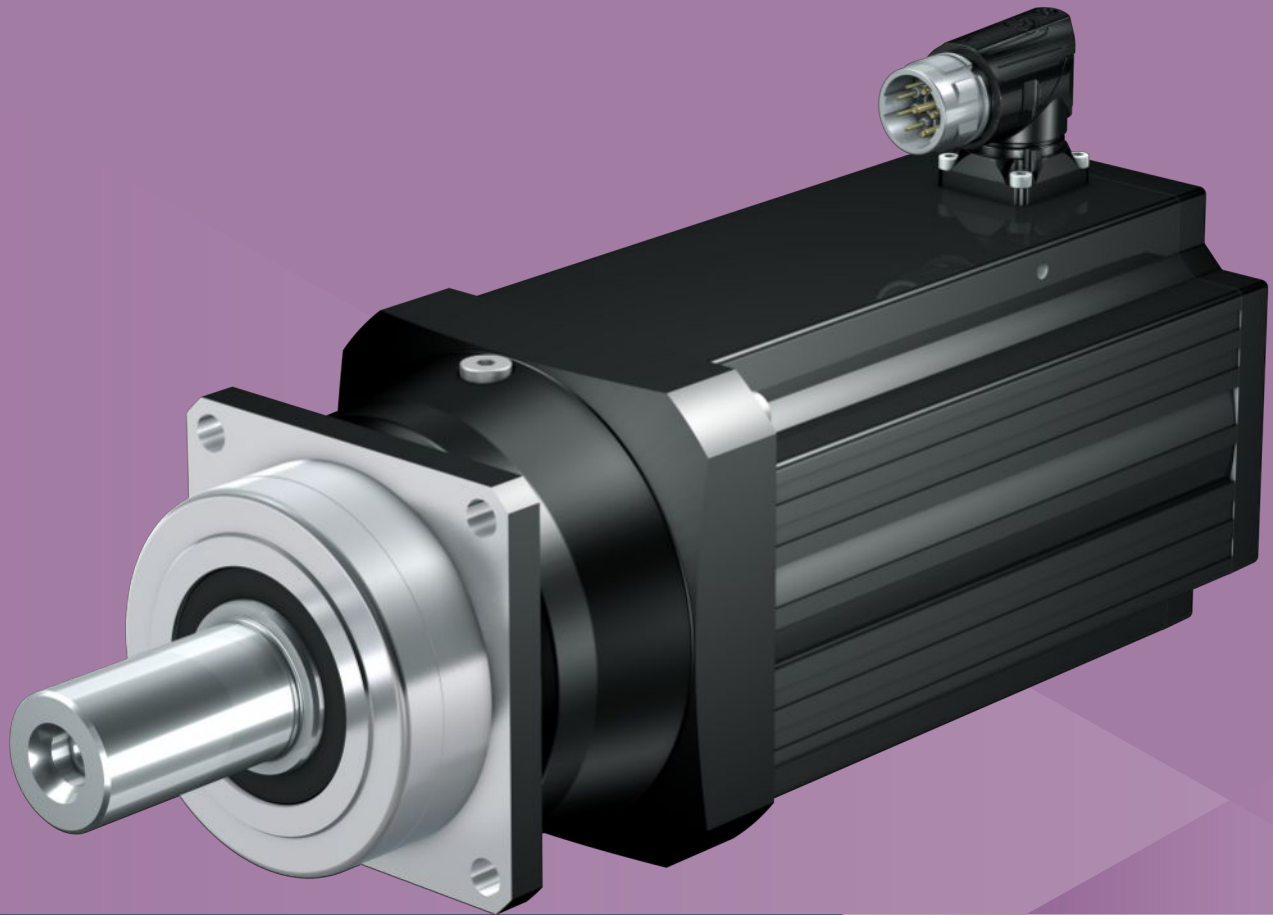




## 5 LM Lean geared motors

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## 5.1 Planetary geared motors

P

Helical-gear 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 mounting position	✓
Continuous operation without cooling	✓
Reinforced output bearing	✓ (optional)
Compact and dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
P331	3 – 10	13 – 66	7.1 – 35	7000 – 8000	2 – 4	4.4 – 5.5
P431	3 – 10	28 – 145	13 – 78	6000 – 8000	2 – 4	9.1 – 13
P432	12 – 50	51 – 139	28 – 120	7000 – 8000	3 – 5	9.6 – 13
P531	3 – 10	59 – 380	29 – 231	5000 – 7000	1 – 3	25 – 35
P532	12 – 70	111 – 364	51 – 335	6000 – 8000	2 – 4	25 – 33
P731	3 – 10	120 – 575	62 – 289	4000 – 6000	1 – 3	55 – 69
P732	12 – 70	232 – 805	115 – 735	5000 – 7000	2 – 4	57 – 65
P832	12 – 70	469 – 2000	242 – 1416	4500 – 6000	2 – 4	159 – 177

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

## Bearing design

Standard

✓

Axially reinforced

✓

Radially reinforced

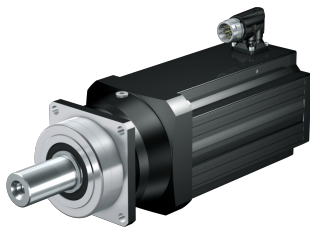
✓

## Motor design

[ &gt; 7.2]

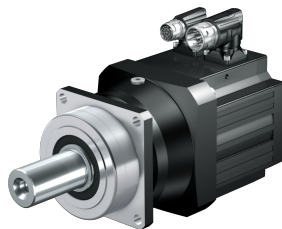
## Input options

LM Lean motor



Catalog ID 443016\_en

EZ synchronous servo motor



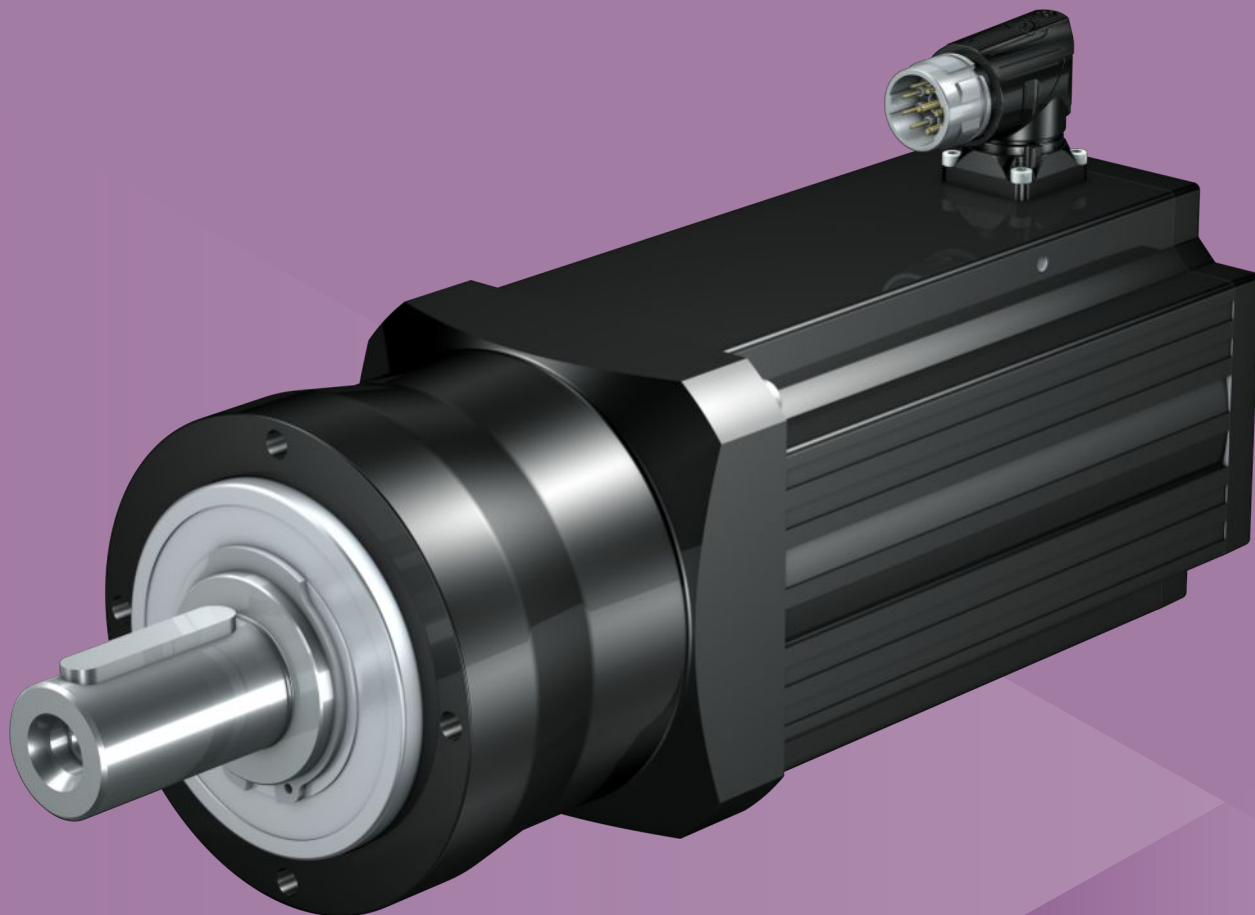
Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 5.2 Planetary geared motors

PE

Cost-efficient helical-gear planetary geared motors

### Features

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

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
PE321	3 – 10	13 – 47	7.1 – 24	6000 – 7000	8	3.5 – 4.5
PE421	3 – 10	28 – 100	13 – 60	5500 – 6000	8	10 – 14
PE422	16 – 28	69 – 103	37 – 65	7000	10	13
PE521	3 – 10	59 – 250	29 – 145	4500 – 5000	8	27 – 37
PE522	16 – 35	147 – 250	68 – 153	6000	10	33

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

## Motor design

[\[ ▶ 7.2 \]](#)

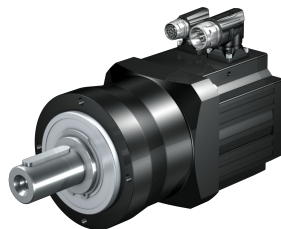
## Input options

LM Lean motor



Catalog ID 443016\_en

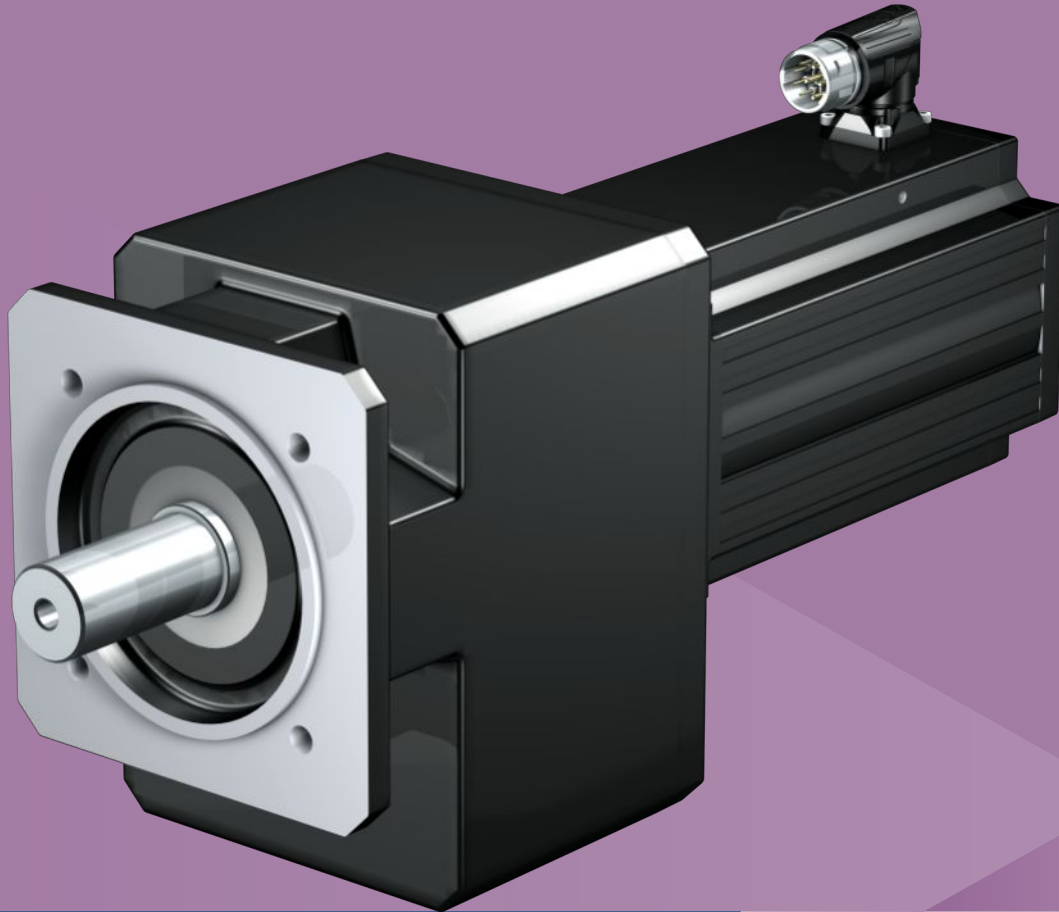
EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 5.3 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 dynamic due to direct motor attachment	✓

Key ★★★★★ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
C002	2 – 31	8.7 – 72	4.7 – 76	6000 – 7000	16 – 20	1.3 – 1.6
C102	2 – 62	17 – 138	9.2 – 156	5000 – 6500	15 – 18	3.1 – 3.9
C202	2 – 70	48 – 230	23 – 263	4500 – 6500	14 – 17	6 – 8.3
C203	81 – 111	230	187 – 257	6500	14	8.3
C302	3.1 – 47	124 – 400	64 – 466	4800 – 6000	13 – 16	7.1 – 8.7
C303	81 – 183	350 – 400	189 – 425	6000	13	8.7
C402	3.9 – 70	156 – 600	80 – 753	4500 – 5500	12 – 15	17 – 22
C502	4.6 – 70	185 – 920	95 – 1050	4500 – 5000	12 – 14	21 – 23
C503	81 – 109	850 – 920	776 – 1046	5000	12	23
C612	20 – 69	783 – 1380	404 – 1593	4500	10	74
C613	49 – 175	913 – 1650	730 – 1984	4500	10	74
C712	25 – 70	1011 – 2116	522 – 2010	4500	10	122
C713	81 – 132	2257 – 2760	1646 – 2690	4500	10	122
C813	79 – 212	2486 – 4140	1613 – 4311	4300	10	204

## 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: ✓

Foot

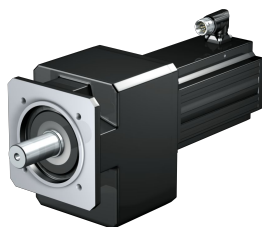
✓

## Motor design

[ ▶ 7.2 ]

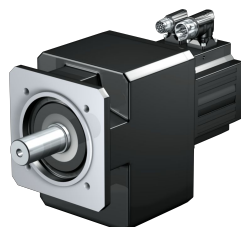
## Input options

LM Lean motor



Catalog ID 443016\_en

EZ synchronous servo motor

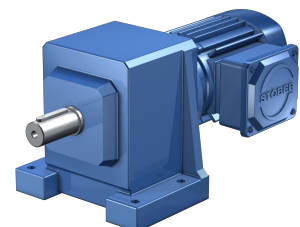


Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

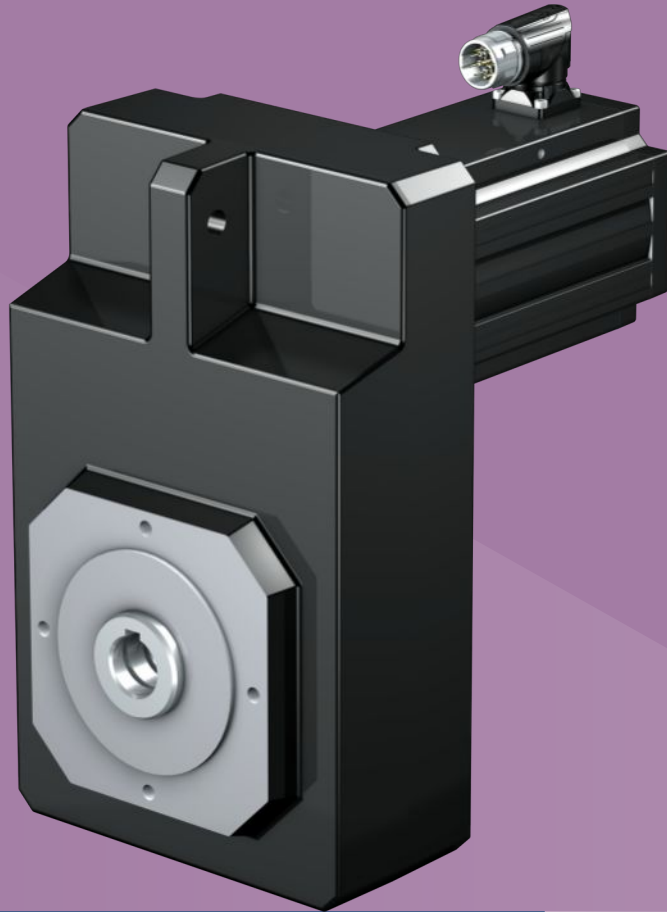
Catalog ID 443311\_en

Asynchronous motor



Catalog ID 443136\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.



## 5.4

# 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 dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium



## Technical data

Type	i	M <sub>2acc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
F102	4.3 – 56	19 – 120	10 – 132	6000 – 7000	6 – 11	6.5 – 7.7
F202	4.7 – 113	39 – 270	21 – 306	5000 – 6500	6 – 11	16 – 18
F302	4.6 – 141	112 – 450	54 – 493	4500 – 6500	6 – 11	20 – 22
F303	185 – 221	450	429 – 514	6500	7 – 11	22
F402	7.2 – 93	288 – 700	149 – 912	4800 – 6000	5 – 10	39
F403	184 – 366	700	427 – 849	6000	6 – 10	39
F602	9 – 140	359 – 1100	185 – 1436	4500 – 5500	5 – 10	73 – 77

## Shaft design

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

## Housing design

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

## Motor design

[ ▶ 7.2 ]

## Input options

LM Lean motor



Catalog ID 443016\_en

EZ synchronous servo motor

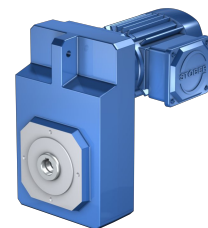


Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

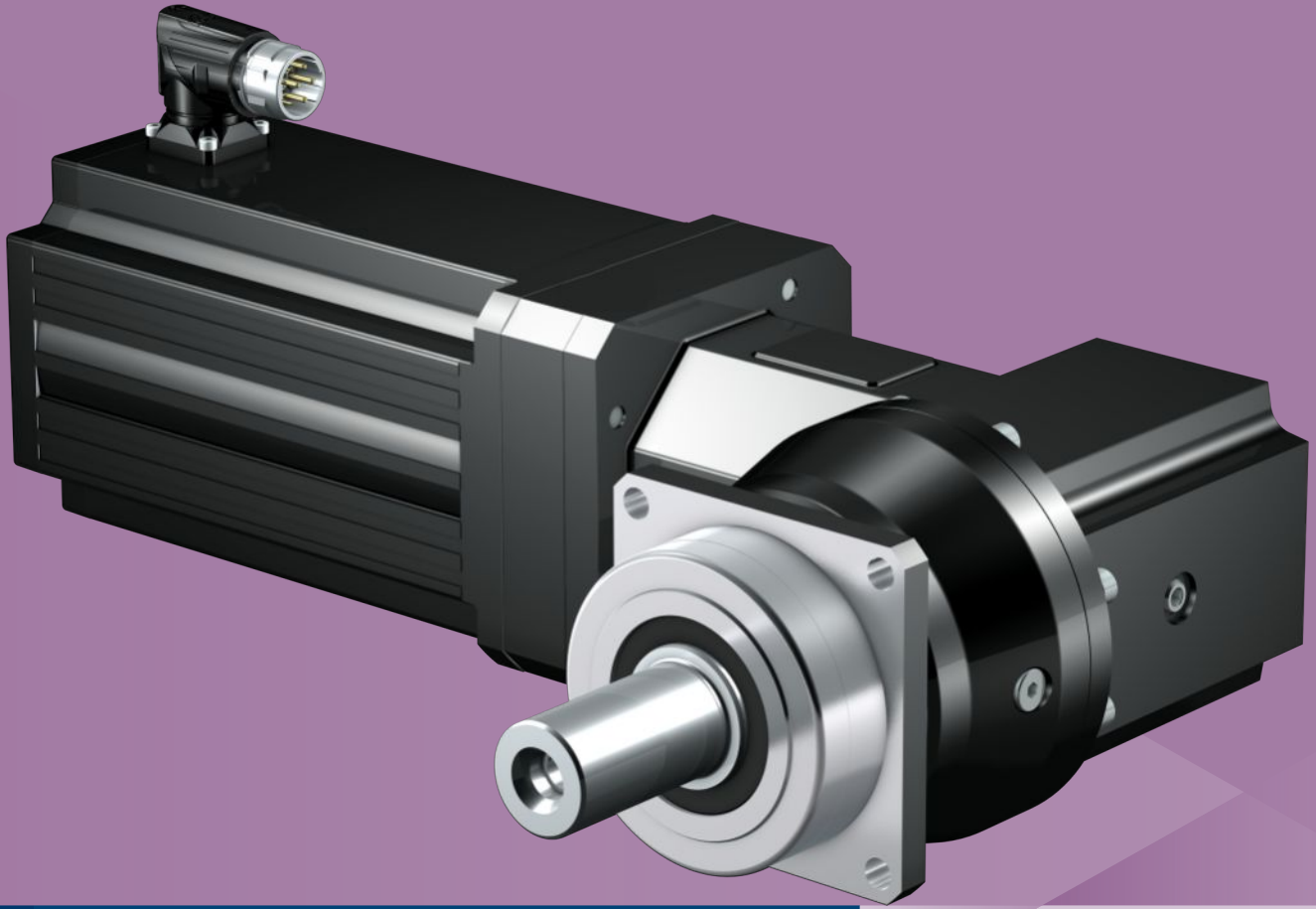
Asynchronous motor



Catalog ID 443136\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 5.5 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	✓
Reinforced output bearing	✓ (optional)
Compact and dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{2acc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\varphi_2$ [arcmin]	$C_2$ [Nm/arcmin]
P231KX	4 – 8	17 – 25	9.3 – 19	4500 – 5500	7.5 – 8.5	1.5 – 1.7
P331KX	3 – 21	13 – 75	7 – 49	4500 – 6000	3 – 7.5	2.4 – 4.2
P431KX	3 – 30	26 – 143	13 – 103	4000 – 5500	3 – 7.5	5.3 – 9.2
P432KX	32 – 56	130 – 139	73 – 127	4500 – 5500	3.5 – 5.5	11 – 12
P531KX	3 – 30	56 – 380	26 – 285	3500 – 5000	2 – 6.5	13 – 25
P532KX	32 – 150	135 – 364	73 – 341	4000 – 5500	2 – 4.5	25 – 32
P731KX	3 – 30	117 – 840	58 – 598	3000 – 4000	2 – 6.5	38 – 54
P732KX	32 – 210	211 – 805	114 – 696	3500 – 5000	2 – 4.5	54 – 62
P831KX	3 – 30	117 – 1213	58 – 854	3000 – 4000	2 – 6.5	59 – 130
P832KX	32 – 150	610 – 2000	302 – 1952	3000 – 4000	2 – 4.5	157 – 173
P932KX	16 – 210	610 – 3300	302 – 3040	3000 – 4000	4 – 4.5	320 – 393

## Shaft design

Solid shaft with feather key

✓

Solid shaft without feather key

✓

## Bearing design

Standard

✓

Axially reinforced

✓

Radially reinforced

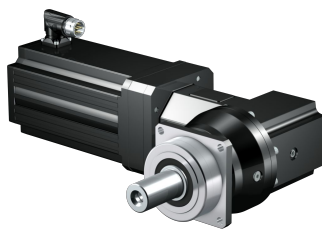
✓

## Motor design

[ &gt; 7.2]

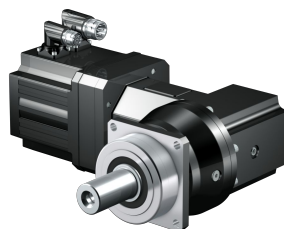
## Input options

LM Lean motor



Catalog ID 443016\_en

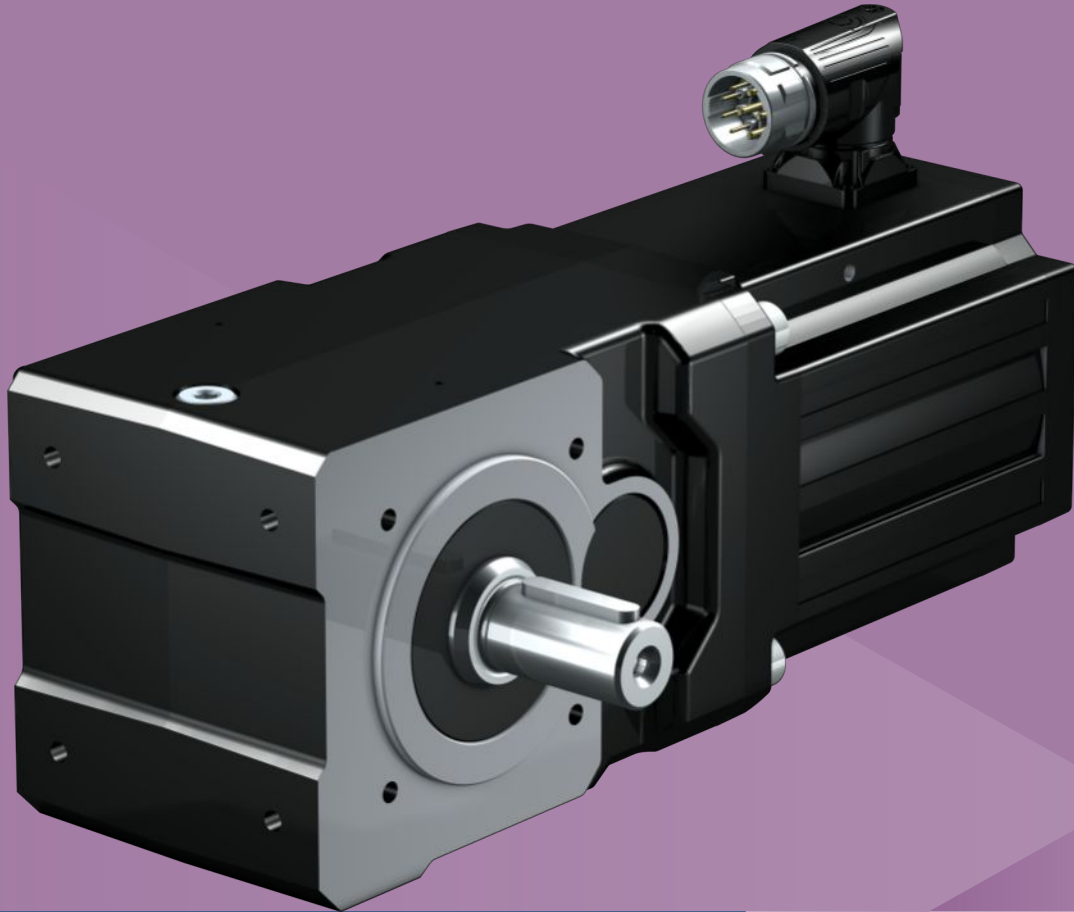
EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 5.6 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 mounting position	✓
Small installation space	✓
FKM seal ring at the input	✓
Compact and dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	$M_{zacc}$ [Nm]	$M_{2,0}$ [Nm]	$n_{1maxZB}$ [rpm]	$\Delta\phi_2$ [arcmin]	$C_2$ [Nm/arcmin]
KL202	4 – 16	35 – 60	17 – 48	6000	16 – 20	2.4 – 4

## Shaft design

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

## Housing design

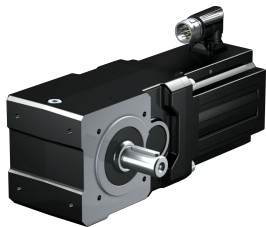
Pitch circle diameter	✓
Flange	✓
Foot + pitch circle diameter	✓
Pitch circle diameter + torque arm bracket	KL2: ✓

## Motor design

[\[ ▶ 7.2 \]](#)

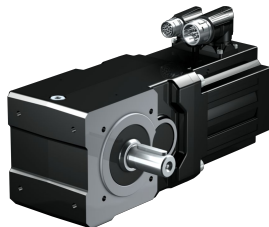
## Input options

LM Lean motor



Catalog ID 443016\_en

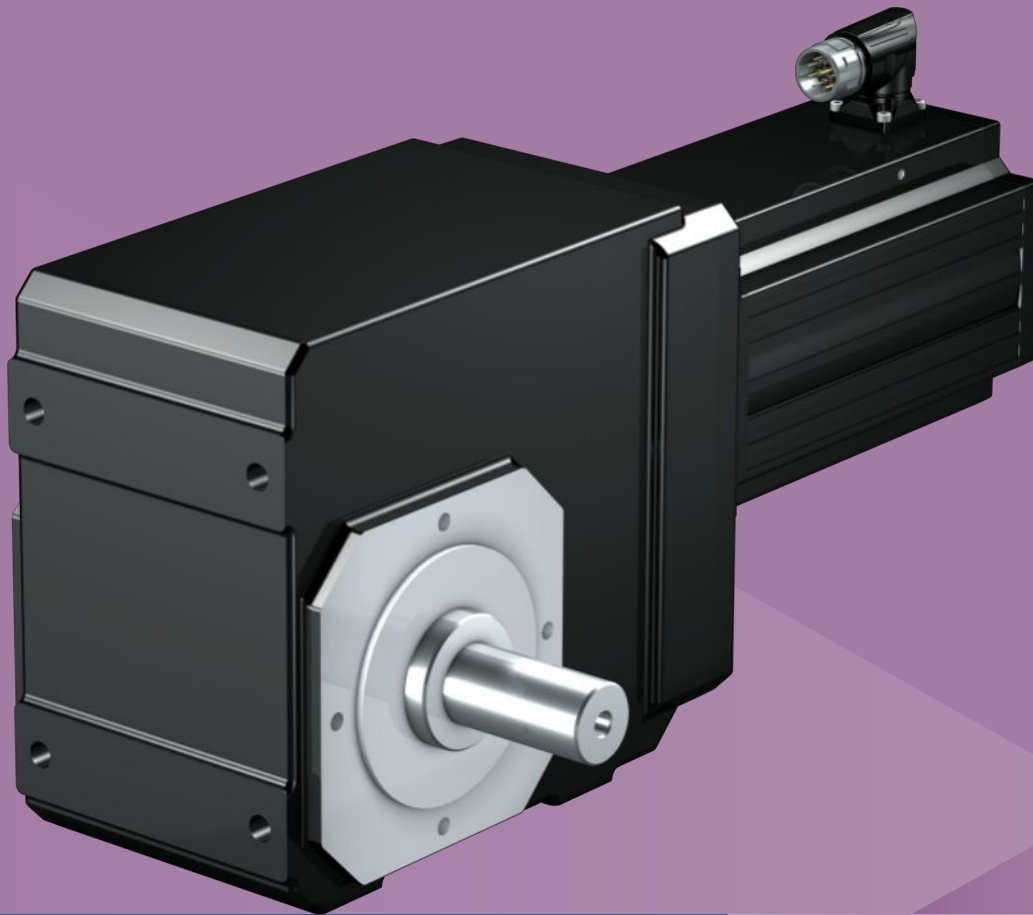
EZ synchronous servo motor



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 5.7 Helical bevel geared motors

# K

Highly rigid helical-gear 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 dynamic due to direct motor attachment	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	i	M <sub>zacc</sub> [Nm]	M <sub>2,0</sub> [Nm]	n <sub>1maxZB</sub> [rpm]	Δφ <sub>2</sub> [arcmin]	C <sub>2</sub> [Nm/arcmin]
K102	4 – 47	17 – 135	9.4 – 122	5000 – 7000	6 – 12	6.8
K202	4 – 69	37 – 220	20 – 207	4500 – 6500	1.5 – 10	11
K203	39 – 109	170 – 220	92 – 254	6500	2.5 – 10	11
K302	4 – 69	105 – 385	51 – 452	4000 – 6000	1.5 – 10	16
K303	33 – 181	212 – 385	114 – 432	6000	2.5 – 10	16
K402	6.7 – 56	268 – 600	139 – 695	4500 – 5500	1.5 – 10	31
K403	32 – 218	286 – 600	154 – 724	5500	2.5 – 10	31
K513	15 – 97	572 – 1000	295 – 1239	3600 – 5000	2 – 10	50
K514	85 – 125	1000	806 – 1238	5000	3 – 10	50
K613	17 – 95	675 – 1600	349 – 1815	4000 – 4500	2 – 10	83
K614	111 – 185	1448 – 1600	1054 – 1793	4500	3 – 10	83
K713	35 – 99	1395 – 2514	720 – 2246	4200	2 – 10	126
K714	89 – 251	1626 – 2600	1298 – 3216	4200	3 – 10	126
K813	44 – 97	1742 – 2913	899 – 2768	4000	2 – 10	196
K814	115 – 256	3537 – 4650	2292 – 5125	4000	3 – 10	196
K914	94 – 294	2895 – 6820	1876 – 5877	3800	5 – 10	379

## 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 ring	✓

## Housing design

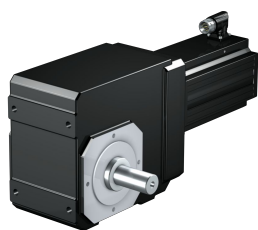
Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm bracket	K1 – K9: ✓
Foot + pitch circle diameter + torque arm bracket	K10: ✓
Foot + pitch circle diameter	✓
Foot + round flange	✓

## Motor design

[▶ 7.2](#)

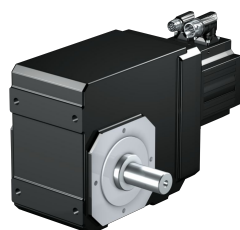
## Input options

LM Lean motor

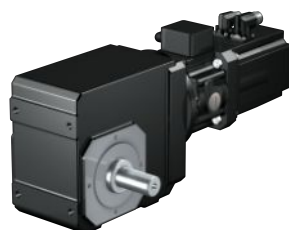


Catalog ID 443016\_en

EZ synchronous servo motor

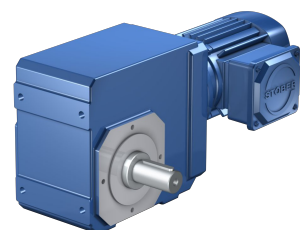


Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

Asynchronous motor



Catalog ID 443136\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.

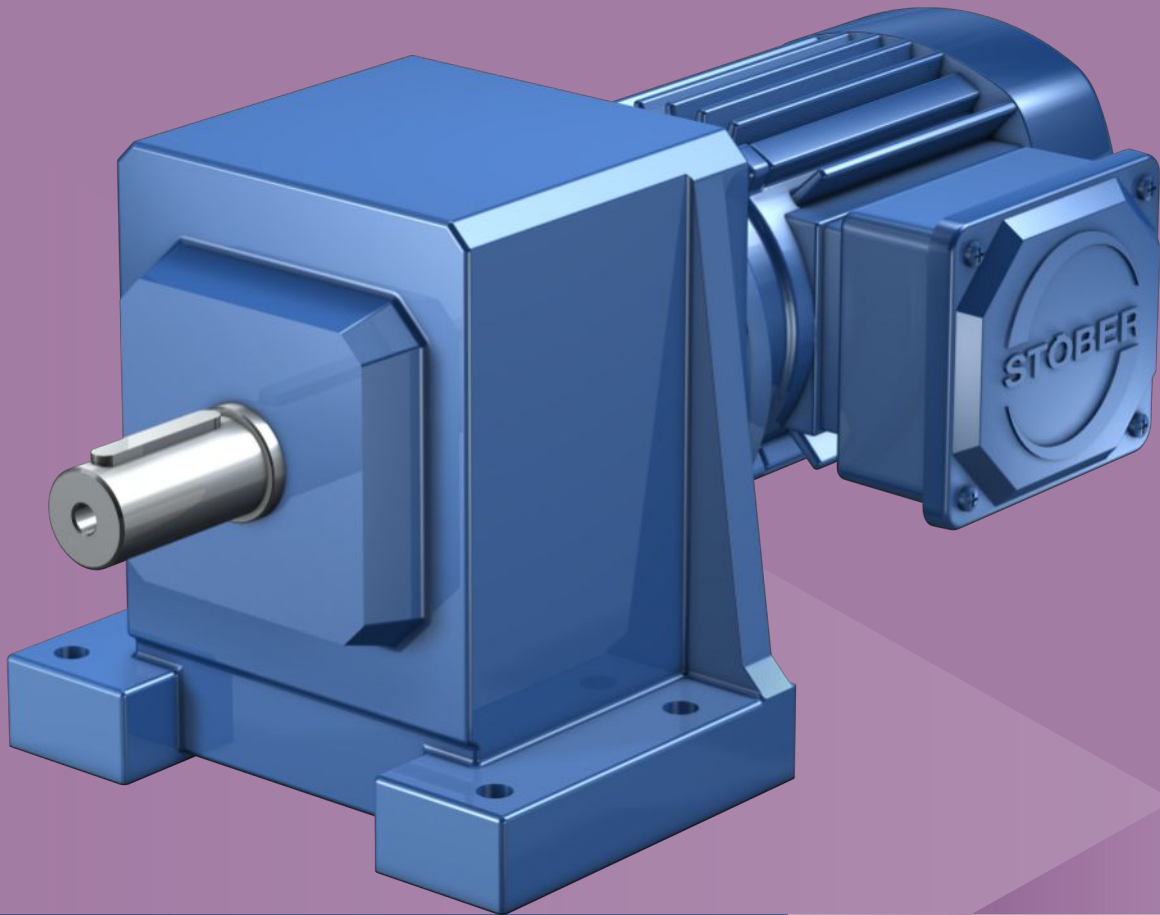




## 6 Asynchronous geared motors

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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)
Energy efficiency class IE3 in accordance with EN 60034-30-1	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

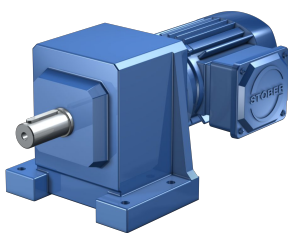
Type	$n_2$ [rpm]	$P_N$ [kW]	$i$	$M_{2N}$ [Nm]
C002	20 – 729	0.12 – 1.5	2 – 70	2.3 – 73
C102	20 – 726	0.12 – 4	2 – 70	4.6 – 149
C103	7.6 – 18	0.12 – 0.25	82 – 184	64 – 147
C202	20 – 729	0.18 – 4	2 – 70	25 – 249
C203	7.7 – 18	0.18 – 0.37	81 – 183	93 – 221
C302	21 – 728	0.55 – 7.5	2 – 70	64 – 437
C303	5.2 – 18	0.25 – 0.75	80 – 274	130 – 437
C402	21 – 747	0.55 – 7.5	2 – 70	94 – 669
C403	8 – 18	0.55 – 1.1	81 – 180	282 – 644
C502	21 – 746	0.55 – 22	2 – 70	65 – 991
C503	6.7 – 18	0.55 – 1.5	81 – 216	281 – 944
C612	21 – 353	2.2 – 22	4.2 – 69	228 – 1741
C613	5.4 – 30	0.55 – 4	49 – 266	265 – 1759
C712	21 – 346	2.2 – 22	4.3 – 70	346 – 2847
C713	11 – 29	2.2 – 7.5	51 – 137	1122 – 2744
C812	21 – 350	5.5 – 30	4.2 – 69	597 – 4626
C813	5.4 – 30	2.2 – 7.5	49 – 270	1100 – 4708
C912	21 – 179	11 – 30	8.3 – 70	1560 – 6775
C913	6.8 – 23	5.5 – 19	65 – 215	2675 – 8677

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: ✓
Foot	✓
Motor design	
Asynchronous motor	<a href="#">▶ 7.3</a>

On request, you can receive the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

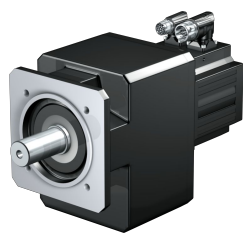
## Input options

Asynchronous motor



Catalog ID 443136\_en

EZ synchronous servo motor

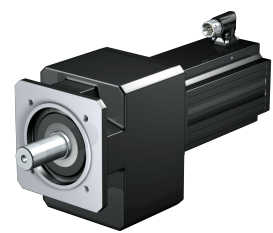


Catalog ID 442437\_en

MB motor adapter +  
EZ synchronous servo motor

Catalog ID 443311\_en

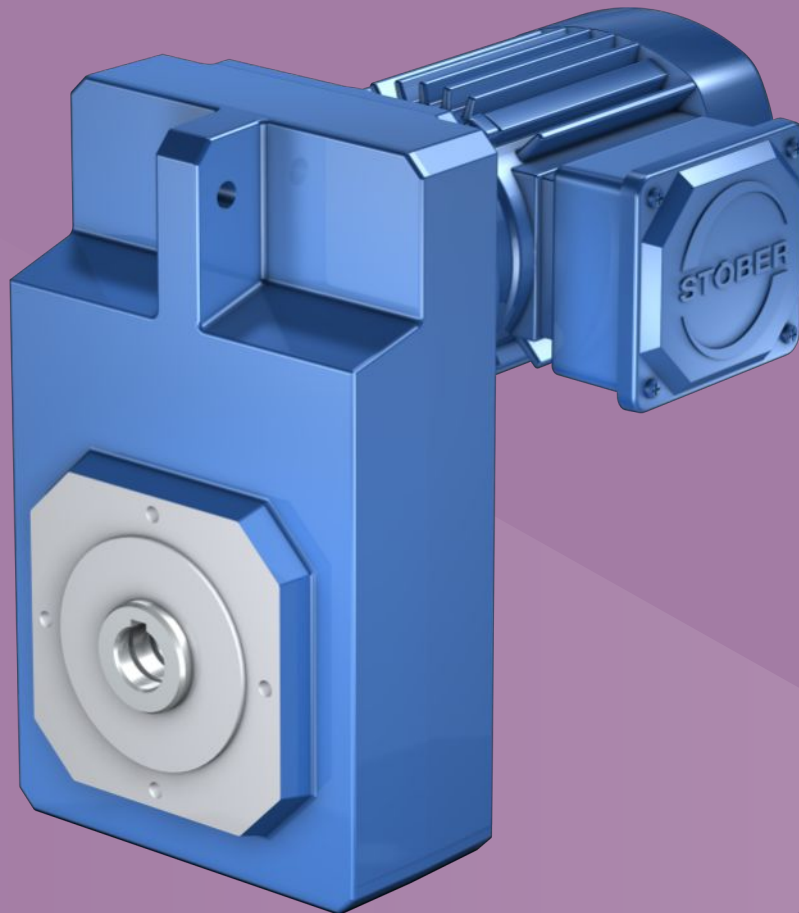
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 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	✓
Energy efficiency class IE3 in accordance with EN 60034-30-1	✓

Key ★☆☆☆☆ good | ★★★★★ excellent

€ Economy | €€€€€ Premium

## Technical data

Type	$n_2$ [rpm]	$P_N$ [kW]	$i$	$M_{2N}$ [Nm]
F102	10 – 338	0.12 – 1.5	4.3 – 140	5.1 – 137
F202	10 – 313	0.18 – 4	4.7 – 141	15 – 275
F203	6.4 – 7.8	0.18 – 0.25	184 – 222	213 – 294
F302	10 – 315	0.18 – 4	4.6 – 141	65 – 498
F303	3.9 – 7.7	0.18 – 0.37	185 – 367	214 – 442
F402	10 – 314	0.55 – 7.5	4.7 – 140	138 – 811
F403	2.6 – 8	0.25 – 0.75	182 – 547	294 – 874
F602	10 – 323	0.55 – 7.5	4.5 – 140	159 – 1338
F603	4 – 8	0.55 – 1.1	181 – 361	630 – 1287

## Shaft design

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

## Housing design

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

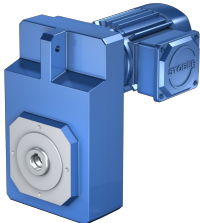
## Motor design

Asynchronous motor	<a href="#">▶ 7.3</a>
--------------------	-----------------------

On request, you can receive the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

## Input options

Asynchronous motor



Catalog ID 443136\_en

EZ synchronous servo motor



Catalog ID 442437\_en

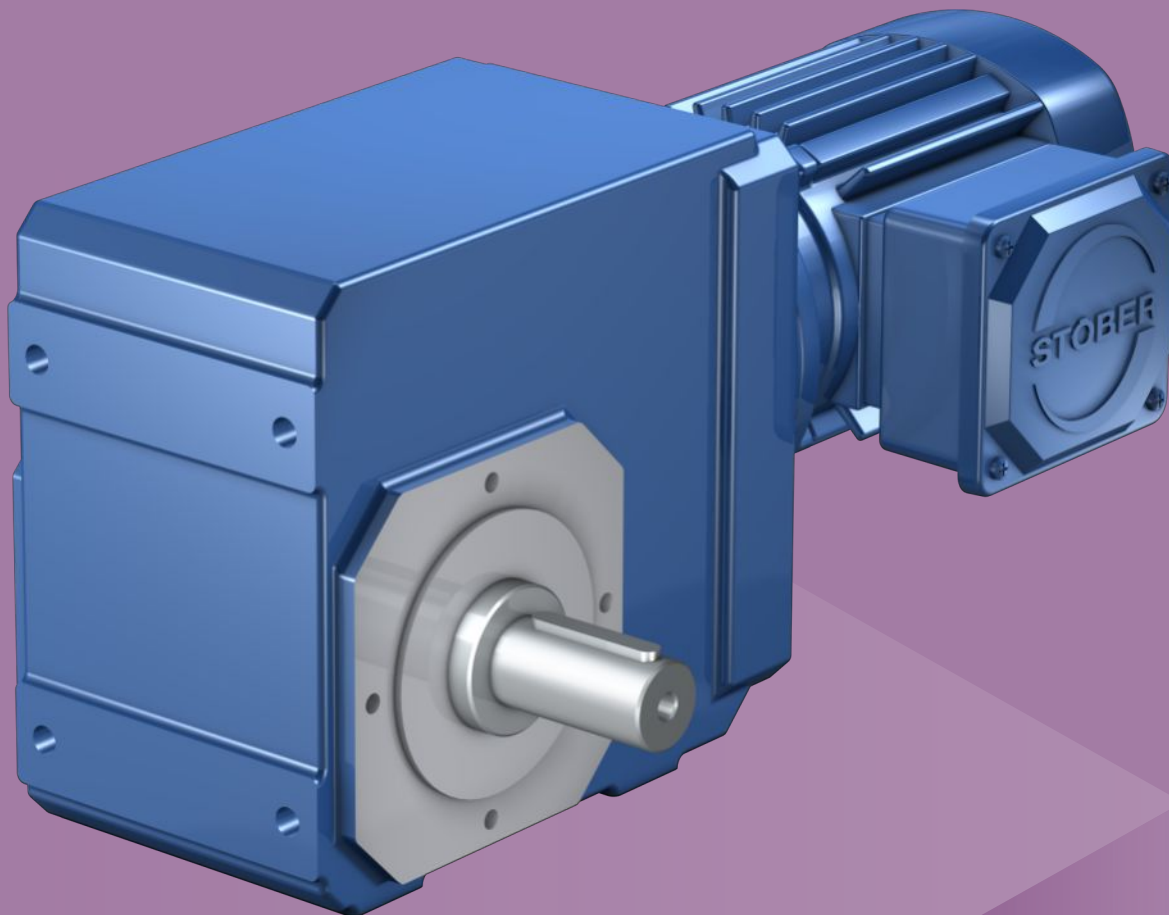
LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 6.3 Helical bevel geared motors

# K

Highly rigid helical-gear 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)
Energy efficiency class IE3 in accordance with EN 60034-30-1	✓

Key ★☆☆☆☆ good | ★★★★★ excellent  
 € Economy | €€€€€ Premium

## Technical data

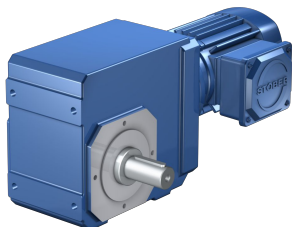
Type	$n_2$ [rpm]	$P_N$ [kW]	$i$	$M_{2N}$ [Nm]
K102	20 – 364	0.12 – 1.5	4 – 70	6.5 – 136
K202	20 – 366	0.18 – 4	4 – 69	15 – 245
K203	7.8 – 36	0.18 – 0.37	39 – 181	46 – 217
K302	20 – 366	0.18 – 4	4 – 69	61 – 392
K303	6.5 – 45	0.18 – 1.5	33 – 218	79 – 430
K402	21 – 368	0.55 – 7.5	4 – 69	129 – 668
K403	5.3 – 45	0.25 – 1.5	32 – 272	113 – 642
K513	15 – 200	0.55 – 7.5	7.3 – 97	152 – 1112
K514	4.8 – 17	0.55 – 1.5	85 – 300	292 – 1061
K613	15 – 201	0.55 – 22	7.3 – 95	240 – 1795
K614	4.9 – 13	0.55 – 1.5	111 – 294	382 – 1702
K713	15 – 195	2.2 – 22	7.6 – 99	405 – 2744
K714	3.8 – 16	0.55 – 4	89 – 381	471 – 2863
K813	15 – 198	2.2 – 22	7.4 – 97	596 – 4906
K814	4.7 – 22	2.2 – 7.5	67 – 311	1563 – 5228
K913	15 – 187	5.5 – 30	7.9 – 95	824 – 8562
K914	3.9 – 16	2.2 – 7.5	92 – 374	1280 – 8703
K1013	16 – 93	11 – 30	16 – 94	2944 – 11416
K1014	5 – 16	5.5 – 22	93 – 290	5044 – 13970

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 ring	✓
Housing design	
Pitch circle diameter	K1 – K9: ✓
Round flange	K1 – K9: ✓
Pitch circle diameter + torque arm bracket	K1 – K9: ✓
Foot + pitch circle diameter + torque arm bracket	K10: ✓
Foot + pitch circle diameter	✓
Foot + round flange	✓
Motor design	
Asynchronous motor	<a href="#">▶ 7.3</a>

On request, you can receive the asynchronous geared motors in ATEX design (Directive 2014/34/EU).

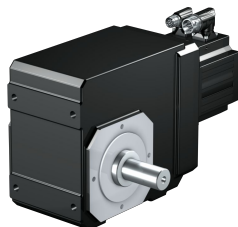
## Input options

Asynchronous motor



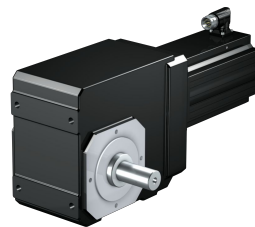
Catalog ID 443136\_en

EZ synchronous servo motor



Catalog ID 442437\_en

LM Lean motor



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.

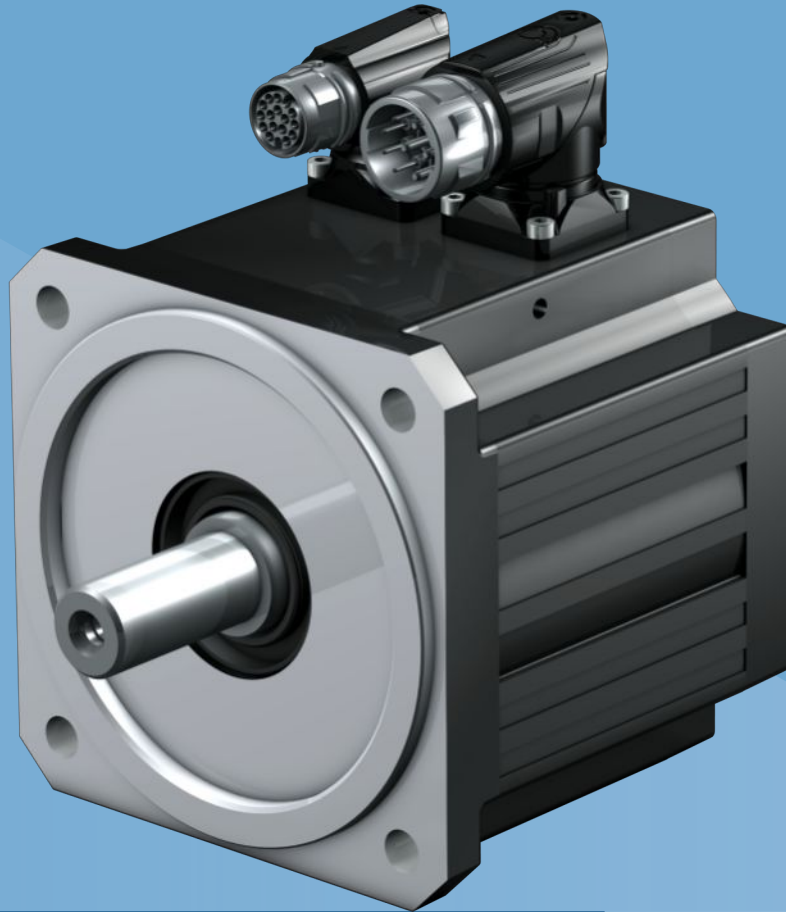




# 7 Motors

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## 7.1 Synchronous servo motors

EZ

Synchronous servo motors with 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 EnDat 3 encoder (optional)                                    | ✓ |
| Rotatable plug connectors with quick lock   | ✓ |

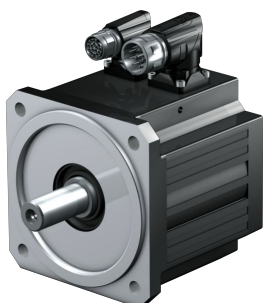
## Technical data

Type	$n_N$ [rpm]	$M_N$ [Nm]	$I_N$ [A]	$P_N$ [kW]	$M_0$ [Nm]	$M_{max}$ [Nm]	$J_{dyn}$ [kgcm <sup>2</sup> ]
EZ202	6000	0.4	0.99	0.25	0.44	1.48	0.13
EZ203	6000	0.61	1.54	0.38	0.69	2.7	0.17
EZ301	3000 – 6000	0.89 – 0.93	1.93 – 1.99	0.29 – 0.56	0.95	2.8	0.19
EZ302	3000 – 6000	1.5 – 1.59	1.6 – 3.18	0.5 – 0.94	1.68	5	0.29
EZ303	3000 – 6000	1.96 – 2.07	1.63 – 3.17	0.65 – 1.2	2.19 – 2.25	7	0.4
EZ401	3000 – 6000	2.3 – 3.4	2.74 – 5.62	0.88 – 1.8	2.8 – 3.7	8.5	0.93
EZ402	3000 – 6000	3.5 – 5.9	4.4 – 7.88	1.5 – 3.2	4.9 – 6.4	16	1.63
EZ404	3000 – 6000	5.8 – 10.2	5.8 – 9.98	2.2 – 5	8.4 – 11.2	29	2.98
EZ501	3000 – 6000	3.4 – 5.4	3.74 – 6.7	1.4 – 2.8	4.4 – 5.8	16	2.9
EZ502	3000 – 6000	5.2 – 10.3	5.46 – 11.4	2.3 – 5.2	7.8 – 11.2	31	5.2
EZ503	3000 – 6000	6.2 – 14.4	6.9 – 13.5	3.1 – 6.5	10.6 – 15.9	43	7.58
EZ505	3000 – 4500	9.5 – 20.2	8.8 – 16.4	4.2 – 7.7	15.3 – 23.4	67	12.2
EZ701	3000 – 6000	5.2 – 9.7	6.68 – 10.6	2.3 – 4.7	7.9 – 10.5	20	8.5
EZ702	3000 – 6000	7.2 – 16.6	8.2 – 16.7	3.8 – 7.9	14.3 – 19.3	41	13.7
EZ703	3000 – 4500	12.1 – 24	11.4 – 20.3	5.2 – 9.3	20 – 28	65	21.6
EZ705	3000 – 4500	16.4 – 33.8	14.2 – 25.4	6.7 – 13	30 – 41.8	104	34
EZ813	2000 – 4000	25.2 – 57.3	14.9 – 38.1	8.1 – 21	43.7 – 62.9	140	104
EZ815	2000 – 4000	26.1 – 91	20.9 – 56.2	11 – 31	67.1 – 100	200	167

<b>Shaft design</b>	
Solid shaft without feather key	✓
<b>Encoder</b>	
EnDat 3 One Cable Solution (OCS) multi-turn	✓
EnDat 2.2 single-turn, multi-turn	✓
EnDat 2.1 single-turn, multi-turn	✓
Resolvers	✓
<b>Cooling</b>	
Convection cooling	✓
Forced ventilation	✓
<b>Brake</b>	
Permanent magnet holding brake	✓
<b>Marks and test symbols</b>	
CE	✓
cURus	✓
UKCA	✓

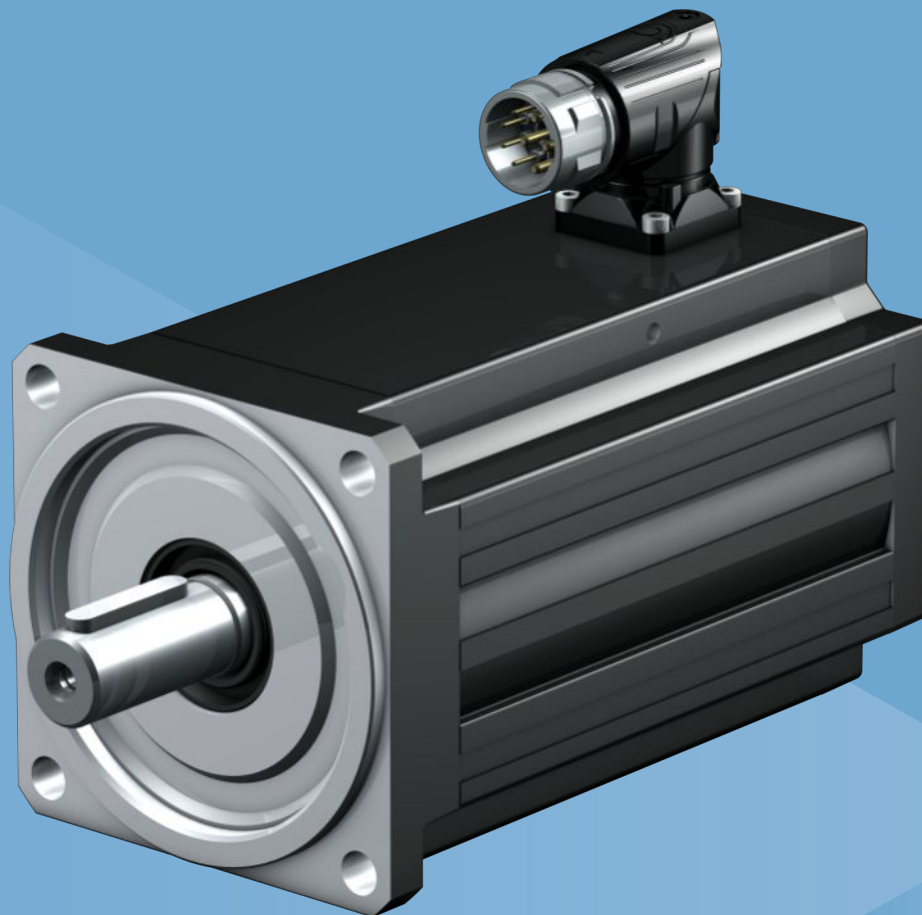
## Further information

EZ synchronous servo motors



Catalog ID 442437\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>Enter the ID of the catalog in the Search term field.



## 7.2 Lean motors

LM

### High-efficiency synchronous motors

#### Features

- Higher energy efficiency than comparable IE4 asynchronous motors ✓
- Energy efficiency IE5 in accordance with IEC/TS 60034-30-2 ✓
- Higher acceleration performance than asynchronous motors ✓
- Substantially lighter and more compact than comparable asynchronous motors ✓
- Rugged thanks to absence of the encoder ✓
- Wiring reduced to the power connection cable ✓
- Rotatable plug connector with quick lock ✓

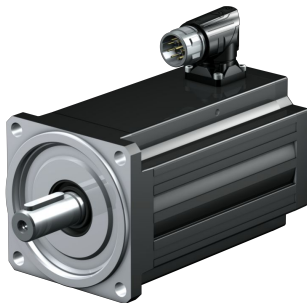
## Technical data

Type	$n_N$ [rpm]	$M_N$ [Nm]	$I_N$ [A]	$P_N$ [kW]	$M_0$ [Nm]	$M_{max}$ [Nm]	J [kgcm <sup>2</sup> ]
LM401	3000	2.25	1.59	0.71	2.43	4.51	1.67
LM402	3000	4.41	2.88	1.4	4.5	9.7	3.01
LM403	3000	6.06	3.92	1.9	6.19	12.8	4.31
LM503	3000	9.48	5.62	3	10.1	20.4	10.4
LM505	3000	13.7	7.83	4.3	15.5	32.1	16.8
LM704	3000	19.3	10.6	6.1	21.3	41.2	36.5
LM706	3000	25.7	14.7	8.1	29.8	61.4	53.8

<b>Shaft design</b>	
Solid shaft with feather key	✓
<b>Cooling</b>	
Convection cooling	✓
<b>Brake</b>	
Spring-loaded holding brake	✓
<b>Marks and test symbols</b>	
CE	✓
cURus	✓
UKCA	✓

## Further information

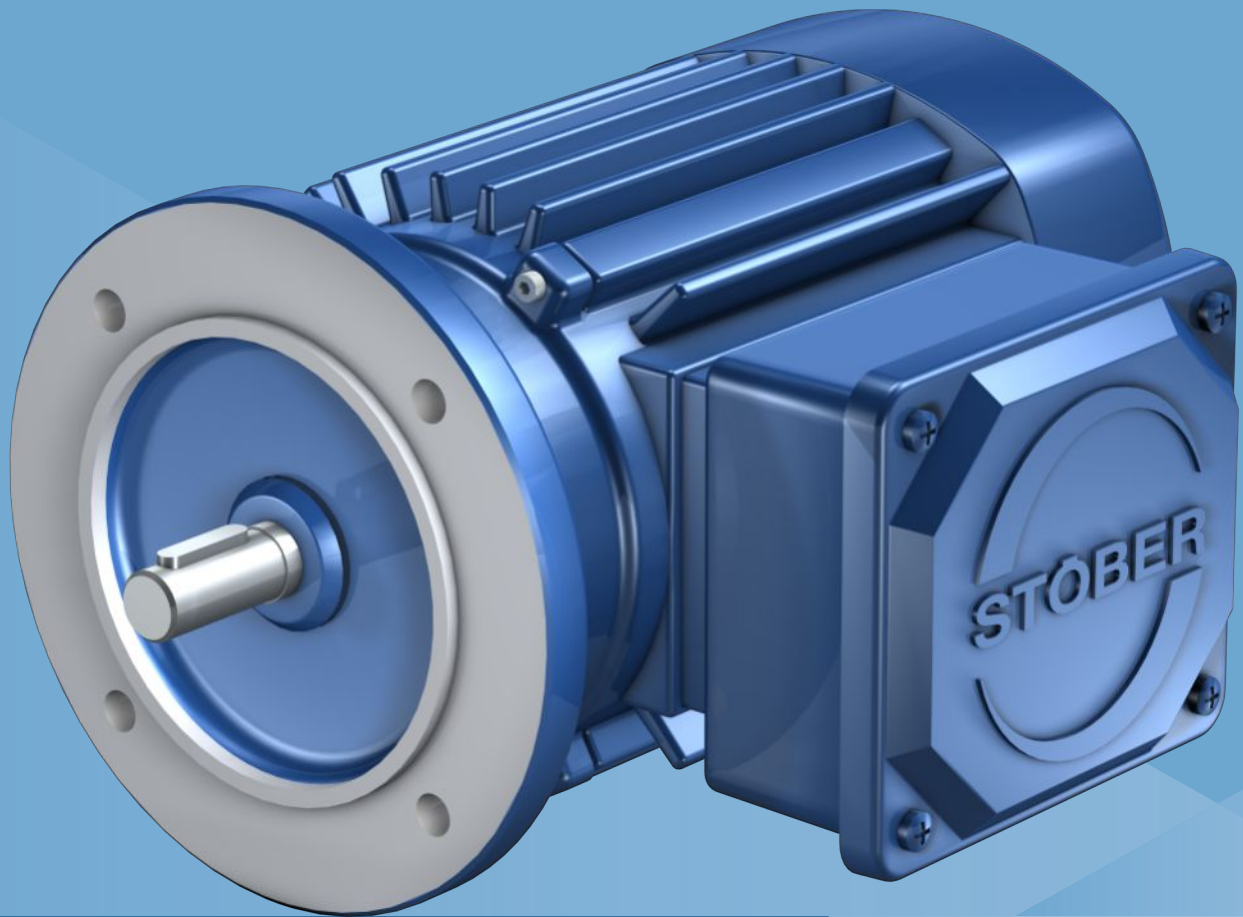
LM Lean motors



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.



## 7.3 Asynchronous motors

### Asynchronous motors

#### Features

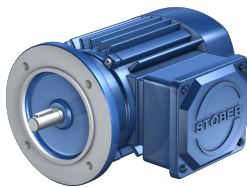
Self-ventilation or forced ventilation (optional)	✓
Spring-loaded brake (optional)	✓
Incremental encoder (optional) or SSI absolute encoder (optional)	✓
Elimination of referencing with multi-turn absolute encoders (optional)	✓
Terminal box	✓
Energy efficiency class IE3 in accordance with EN 60034-30-1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

## Technical data (400 V ± 10%, 50 Hz)

Type	Y/Δ	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	M <sub>N</sub> [Nm]	I <sub>N</sub> [A]	m [kg]
IE3D063K	Y	1400	0.12	0.82	0.35	6.3
IE3D063M	Y	1415	0.18	1.21	0.55	7.1
IE3D071K	Y	1430	0.25	1.67	0.66	9.9
IE3D071L	Y	1430	0.37	2.5	0.98	11
IE3D080K	Y	1440	0.55	3.65	1.3	15
IE3D080L	Y	1445	0.75	5	1.7	17
IE3D090LX	Y	1455	1.5	9.8	3.4	31
IE3D090S	Y	1440	1.1	7.3	2.5	23
IE3D100KX	Y	1450	2.2	14.5	4.6	45
IE3D100LX	Y	1450	3	19.8	6.4	50
IE3D112M	Δ	1465	4	26.1	7.9	56
IE3D132MX	Δ	1470	7.5	49	16	88
IE3D132SX	Δ	1465	5.5	36	10	90
IE3D160LX	Δ	1475	15	97	28	165
IE3D160MX	Δ	1465	11	72	21	105
IE3D180LX	Δ	1475	22	142	41	206
IE3D180MX	Δ	1475	19	120	35	160
IE3D200LX	Δ	1480	30	194	54	304
<b>Shaft design</b>						
IEC design						✓
<b>Encoder</b>						
Incremental encoder						✓
SSI multi-turn absolute encoder <sup>1</sup>						✓
<b>Electrical connection</b>						
Terminal box						✓
<b>Cooling</b>						
Self-ventilation						✓
Forced ventilation						✓
<b>Marks and test symbols</b>						
CE						✓
cURus						✓
EISA CC number including cURus (60 Hz, 265 V/460 V)						Request

## Further information / Alternatives

Asynchronous motors



Catalog ID 443136\_en

LM Lean motors



Catalog ID 443016\_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>

Enter the ID of the catalog in the Search term field.

<sup>1</sup> only in combination with forced ventilation





# 8 Electronics

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## 8.1 Drive controllers

# SC6

The innovative one for economical application concepts

### Features

- Sensorless position control of Linear motors
- Control of rotary synchronous servo motors and asynchronous motors
- Control of linear and torque motors
- One Cable Solution EnDat 3
- Electronic motor nameplate via EnDat encoder interfaces
- Integrated EtherCAT or PROFINET communication
- STO safety technology using terminals or STO and SS1 using FSoE or PROFIsafe: SIL 3, PL e (Cat. 4)
- Integrated brake control
- Single-ended nominal power consumption on double-axis controllers for operation of motors with different power
- Energy supply through direct power feed-in
- Flexible DC link connection for multi-axis applications
- Available EPLAN macros in the EPLAN Data Portal

The stand-alone SC6 drive controller enables extremely economical system designs due to its integrated power supply and slim design. The SC6 series is ideal for combination with the innovative Lean motor – for example, for energy-efficient transport systems. Another benefit is that the Lean motor and SC6 run completely without an encoder! However, the SC6 can also be used in combination with asynchronous motors or synchronous servo motors with encoders (e.g. the EZ series). SC6 is available in three sizes with a nominal output current of up to 19 A: Sizes 0 and 1 as a double-axis controller, size 2 as a single-axis controller.

#### Technical data

Type	Baugröße	$I_{2N,PU}$ (4 kHz) [A]	$I_{2maxPU}$ (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	$I_{2maxPU}$ (8 kHz) [A]	Dimensions [mm]
SC6A062	0	2 × 4.5	2 × 9.5	2 × 4	2 × 10	373 × 45 × 265
SC6A162	1	2 × 10	2 × 21	2 × 9	2 × 22.5	373 × 65 × 286
SC6A261	2	19	39.9	15	37.5	373 × 65 × 286

#### Applications

A drive-based application 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. The Drive Based application provides drive-based motion control for positioning, velocity and torque/force with the PLCopen Motion Control command set. These standard commands have been combined into operating modes for different applications and supplemented with additional functions such as 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 CiA 402 and PROFIdrive applications are also available, which include both the controller-based and drive-based operating modes and application classes. For example, standard telegrams 1, 2 and 3 as well as telegrams 102 and 111 are available for standard drives according to PROFIdrive in application class 1 and for decentralized positioning control according to application class 3. Based on these telegrams, the drive controllers can be used with the SpeedAxis and BasicPos (EPos) technology objects.

Furthermore, programming based on IEC 61131-3 with CFC can be used to create new applications or expand existing ones.

#### Encoder interfaces

- EnDat 3 (OCS)
- EnDat 2.2 digital
- Incremental
- SSI
- Resolver
- Pulse/direction signals

#### Further information

SC6 drive controllers



Manual ID 442790

The corresponding manual can be found at <http://www.stoerber.de/en/downloads/>.

Enter the ID of the manual in the Search term field.



## 8.2 Drive controllers

# SI6

The slim one for multi-axis drive systems

### Features

- Control of rotary synchronous servo motors and asynchronous motors
- Sensorless position control of Lean motors
- Control of linear and torque motors
- One Cable Solution EnDat 3
- Electronic motor nameplate via EnDat encoder interfaces
- Integrated EtherCAT or PROFINET communication
- STO safety technology using terminals or STO and SS1 using FSoE or PROFIsafe: SIL 3, PL e (Cat. 4)
- Integrated brake control
- Energy supply over DC link connection
- Single-ended nominal power consumption 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 multi-axis drive system is designed for multi-axis applications and consists of the SI6 drive controller and PS6 supply module combination. The most striking feature is its extremely compact design! Each SI6 is connected to the central PS6 supply module. Additional fuses and cabling for each individual axis are not required. They thus reduce material and operating costs. The SI6 drive controller also offers a lot for acceleration: Together with an EZ series synchronous servo motor, it can go from 0 to 3000 rpm in 10 ms. Matching Quick DC-Link modules handle the energy supply for the drive controllers in the group. 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 three sizes with a nominal output power of 10 kW to 50 kW.

#### Technical data

Type	Baugröße	$I_{2N,PU}$ (4 kHz) [A]	$I_{2maxPU}$ (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	$I_{2maxPU}$ (8 kHz) [A]	Dimensions [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

A controller-based application is recommended for the central motion control of complex machines.

With the controller-based operating modes of the CiA 402 application (csp, csv, cst, ip) or controller-based application class 4 of the PROFIdrive application, you can implement applications with synchronized, cyclic set value specification by a motion controller. In addition, the drive controllers can also independently handle motion tasks, such as referencing and jogging during commissioning. Standard telegrams 3 and 5 as well as telegram 105 are available for controller-based motion control according to PROFIdrive in application class 4. Based on these telegrams, the drive controllers can be used with the PositioningAxis, SynchronousAxis, OutputCam and Kinematics technology objects from TIA Portal.

The Drive Based drive-based applications, the drive-based operating modes of the CiA 402 application (pp, vl, pv, pt) and drive-based application classes 1 and 3 of the PROFIdrive application are also available.

Furthermore, programming based on IEC 61131-3 with CFC can be used to create new applications or expand existing ones.

#### Encoder interfaces

- EnDat 3 (OCS)
- EnDat 2.2 digital
- Incremental
- SSI
- Resolver
- Pulse/direction signals

#### Further information

SI6 drive controller



Manual ID 442728

PS6 supply module



Manual ID 442728

The corresponding manual can be found at <http://www.stoeber.de/en/downloads/>.

Enter the ID of the manual in the Search term field.



## 8.3 Drive controllers

# SD6

The high performer for customized solutions

### Features

- Control of rotary synchronous servo motors and asynchronous motors
- Control of linear and torque motors
- Multi-functional encoder interfaces
- Automatic motor parameterization from the electronic motor nameplate
- Isochronic system bus (IGB motion bus) for parameterization and multi-axis applications
- Communication over CANopen, EtherCAT or PROFINET
- Safe Torque Off (STO) in the standard version, extended safety technology (SS1, SS2, SLS, etc.) as an option
- Digital and analog inputs and outputs as an option
- Brake chopper, brake control and line filter
- Energy supply through direct power supply
- Flexible DC link connection for multi-axis applications
- Convenient operating unit consisting of graphical display and buttons
- Paramodul removable data storage for quick commissioning and service
- Available EPLAN macros in the EPLAN Data Portal

Controlling servo axes precisely and quickly is its game. Due to its high computing power, the SD6 recalculates the position, speed and torque/force control of the servo axes every 62.5  $\mu$ s. This enables extraordinarily high dynamics and precision for the drives with very short recovery times and also fast reactions to set value changes and load jumps. The SD6 drive controller is available in four sizes with a nominal output current of up to 85 A. There is also an option of connecting the drive controllers in a DC link for multi-axis applications, which improves the energy footprint of the entire system.

#### Technical data

Type	Baugröße	$I_{2N,PU}$ (4 kHz) [A]	$I_{2maxPU}$ (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	$I_{2maxPU}$ (8 kHz) [A]	Dimensions [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

A drive-based application is recommended for the decentralized motion control of sophisticated machines.

The drive-based application package from STOBER is the right choice wherever universal and flexible solutions are needed. The Drive Based Synchronous application provides drive-based motion control for synchronous operation, positioning, velocity and torque/force with the PLCopen Motion Control command set. These standard commands have been combined into operating modes for different application cases and supplemented with additional functions such as motion block linking or cams. 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.

In addition, the CiA 402 application is also available, which includes both the controller-based and drive-based operating modes (csp, csv, cst, ip, pp, vl, pv, pt).

Furthermore, programming based on IEC 61131-3 with CFC can be used to create new applications or expand existing ones.

#### Encoder interfaces (standard)

- EnDat 2.1/2.2 digital
- Incremental
- SSI

#### Encoder interfaces (optionally available)

- Resolver
- Pulse/direction signals
- EnDat 2.1 sin/cos
- Sin/cos

#### Extended safety option

In addition to the safe stop functions Safe Stop 1 (SS1) and Safe Stop 2 (SS2), additional safety functions such as Safely-Limited Speed (SLS), Safe Brake Control (SBC), Safe Brake Test (SBT), Safe Direction (SDI) and Safely-Limited Increment (SLI) are also available.

#### Further information

SD6 drive controllers



Manual ID 442426

The corresponding manual can be found at <http://www.stoeber.de/en/downloads/>.

Enter the ID of the manual in the Search term field.



## 8.4 Servo inverters

# POSIDYN SDS 5000

High dynamics for fully digital servo axes

### Features

- Control of rotary synchronous servo motors and asynchronous motors
- Multi-functional encoder interfaces
- Automatic motor parameterization from the electronic motor nameplate
- Isochronic system bus (IGB motion bus) for parameterization and multi-axis applications
- Communication using PROFIBUS DP, PROFINET, CANopen or EtherCAT
- Safe Torque Off (STO) and Safe Stop 1 (SS1) safety functions: SIL 3, PL e (cat. 3)
- Digital and analog inputs and outputs as an option
- Brake chopper, brake control and line filter
- Convenient operating unit consisting of plain-text display and buttons
- Paramodul removable data storage



The SDS 5000 servo inverter is the most powerful inverter of the 5th STOBBER 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 motion bus) 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	Baugröße	$I_{2N,PU}$ (4 kHz) [A]	$I_{2maxPU}$ (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	$I_{2maxPU}$ (8 kHz) [A]	Dimensions [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

A drive-based application 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 STOBBER 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.

#### Encoder interfaces (standard)

- EnDat 2.1/2.2 digital
- Incremental
- SSI

#### Encoder interfaces (optionally available)

- Resolver
- Pulse/direction signals
- EnDat 2.1 sin/cos

#### Further information

SDS 5000 servo inverter



Manual ID 442277

The corresponding manual can be found at <http://www.stoeber.de/en/downloads/>.

Enter the ID of the manual in the Search term field.



## 8.5 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
- Safe Torque Off (STO) and Safe Stop 1 (SS1) safety functions: SIL 3, PL e (cat. 3)
- Digital and analog inputs and outputs
- Brake chopper and line filter
- Convenient operating unit consisting of plain-text display and buttons
- Paramodul removable data storage for quick 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	Baugröße	$I_{2N,PU}$ (4 kHz) [A]	$I_{2maxPU}$ (4 kHz) [A]	$I_{2N,PU}$ (8 kHz) [A]	$I_{2maxPU}$ (8 kHz) [A]	Dimensions [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

A drive-based application 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.

#### Encoder interfaces

- Incremental
- Pulse/direction signals

#### Further information

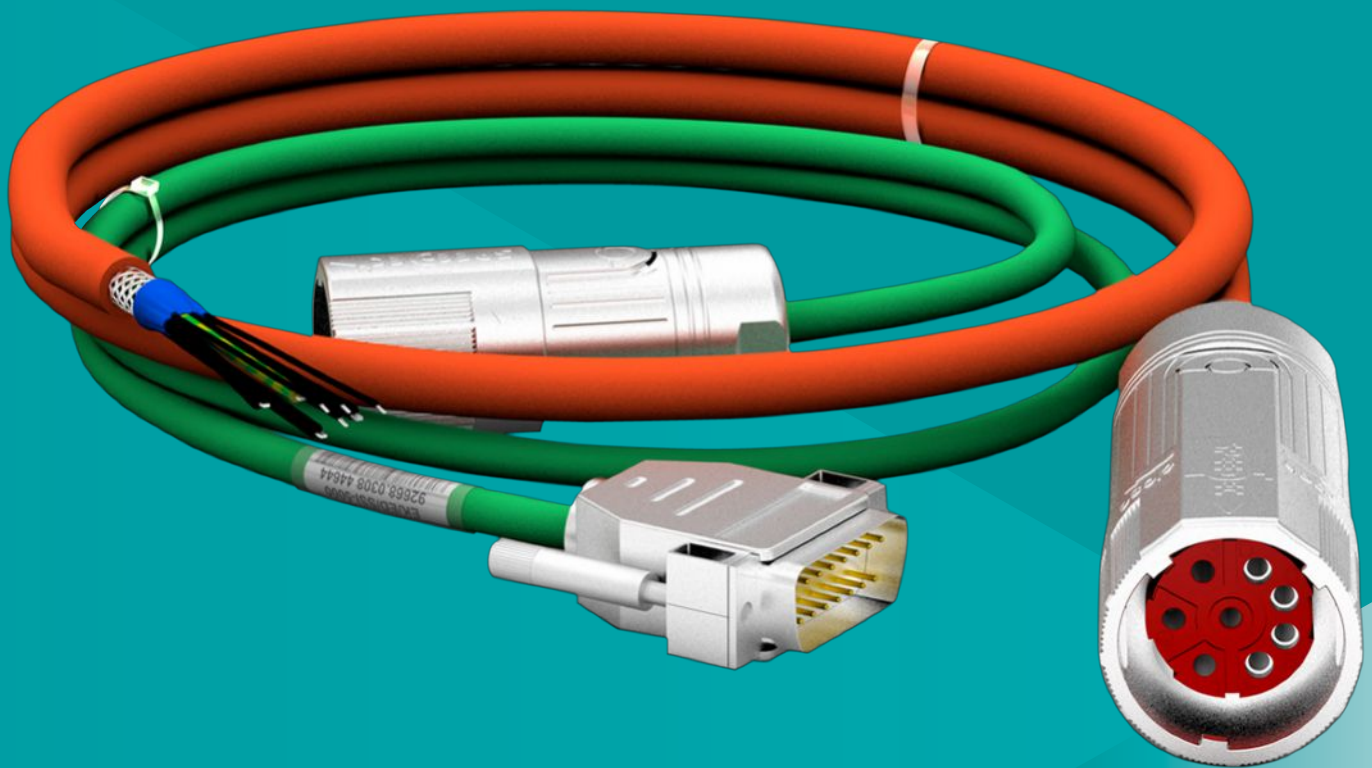
FDS 5000 frequency inverter



Manual ID 442269

The corresponding manual can be found at <http://www.stoeber.de/en/downloads/>.

Enter the ID of the manual in the Search term field.



## 8.6 Connection method

### Coordinated connection technology

#### Features

- One Cable Solution EnDat 3 available
- 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 in the drive system, which may cause damage to the motor. The legal requirements of (EMC) Directive 2014/30/EU must also be observed.

The combination of STOBBER motors with STOBBER cables and STOBBER drive controllers ensures compliance with legal requirements.

STOBBER offers a range of cables to match. Cables are available in different lengths and are ready-made on both ends.

The connection between motor and drive controller influences the long-term functional safety and reliability of your system axis. Therefore, remain uncompromising in terms of quality and benefit from coordinated drive components. Whether separate power and encoder cables or the One Cable Solution: We offer ready-made solutions!

### One Cable Solution EnDat 3

Design		Motor plug connector size			
		<b>con.23</b>			
speedtec quick lock		✓			
Power cores (3 + PE)	Brake cores	Pilot cores	Cable Ø	Bending radius 1 (min.)	Bending radius 2 (min.)
<b>OCS-Basic (up to max. 12.5 m)</b>					
4 × 1.0 mm <sup>2</sup>	2 × 0.75 mm <sup>2</sup>	2 × AWG22	Max. 13.6 mm	136.0 mm	68.0 mm
4 × 1.5 mm <sup>2</sup>	2 × 1.0 mm <sup>2</sup>	2 × AWG22	Max. 13.7 mm	137.0 mm	68.5 mm
<b>OCS-Advanced (up to 100 m)</b>					
4 × 1.5 mm <sup>2</sup>	2 × 0.75 mm <sup>2</sup>	2 × AWG22	Max. 14.7 mm	147.0 mm	73.5 mm
4 × 2.5 mm <sup>2</sup>	2 × 0.75 mm <sup>2</sup>	2 × AWG22	Max. 16.8 mm	168.0 mm	84.0 mm
Bending radius: 1 = free to move, 2 = fixed installation					

### Power cables

Design		Motor plug connector size			
		<b>con.15</b>	<b>con.23</b>	<b>con.40</b>	
Quick lock		✓			
speedtec quick lock			✓	✓	
Power cores (3 + PE)	Brake cores	Temperature sensor cores	Cable Ø	Bending radius 1 (min.)	Bending radius 2 (min.)
4 × 1.0 mm <sup>2</sup>	2 × 0.5 mm <sup>2</sup>	2 × 0.34 mm <sup>2</sup>	Max. 10.1 mm	101.0 mm	50.5 mm
4 × 1.5 mm <sup>2</sup>	2 × 1.5 mm <sup>2</sup>	2 × 0.5 mm <sup>2</sup>	Max. 12.2 mm	122.0 mm	61.0 mm
4 × 2.5 mm <sup>2</sup>	2 × 1.0 mm <sup>2</sup>	2 × 1.0 mm <sup>2</sup>	Max. 15.1 mm	151.0 mm	75.5 mm
4 × 4.0 mm <sup>2</sup>	2 × 1.0 mm <sup>2</sup>	2 × 1.0 mm <sup>2</sup>	Max. 16.8 mm	168.0 mm	84.0 mm
4 × 10.0 mm <sup>2</sup>	2 × 1.5 mm <sup>2</sup>	2 × 1.0 mm <sup>2</sup>	Max. 22.3 mm	223.0 mm	111.5 mm
Bending radius: 1 = free to move, 2 = fixed installation					

### Encoder cables

Design		Motor plug connector size		
		<b>con.15</b>	<b>con.17</b>	<b>con.23</b>
Quick lock		✓		
speedtec quick lock			✓	✓
Encoder	Motor plug connector size			
	<b>con.15</b>	<b>con.17</b>	<b>con.23 synchronous</b>	<b>con.23 asynchronous</b>
EnDat 2.1/2.2 digital	✓	✓	On request	
Incremental (HTL)				✓
SSI				✓
Resolver	✓	✓	On request	
EnDat 2.1 sin/cos	✓	✓	On request	

Encoder	Supply cores	Pilot cores	Cable Ø	Bending radius 1 (min.)	Bending radius 2 (min.)
EnDat 2.1/2.2 digital	2 × 0.25 mm <sup>2</sup>	3 × 2 × 0.14 mm <sup>2</sup>	Max. 6.7 mm	67.0 mm	33.5 mm
Incremental (HTL)	2 × 0.25 mm <sup>2</sup>	3 × 2 × 0.14 mm <sup>2</sup>	Max. 6.7 mm	67.0 mm	33.5 mm
SSI	2 × 0.25 mm <sup>2</sup>	3 × 2 × 0.14 mm <sup>2</sup>	Max. 6.7 mm	67.0 mm	33.5 mm
Resolvers	2 × 0.25 mm <sup>2</sup>	3 × 2 × 0.25 mm <sup>2</sup>	Max. 10.3 mm	103.0 mm	51.5 mm
EnDat 2.1 sin/cos	2 × 0.34 mm <sup>2</sup>	2 × 2 × 0.25 mm <sup>2</sup> + 4 × 2 × 0.14 mm <sup>2</sup>	Max. 8.7 mm	87.0 mm	43.5 mm

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

**Further information**

One Cable Solution



Manual ID 443102

Encoder cables



Manual ID 443102

Power cables



Manual ID 443102

The corresponding manual can be found at <http://www.stoeber.de/en/downloads/>.

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# 10 Appendix

## 10.1 Formula symbols

$C_2$	Nm/ arcmin	Torsional stiffness relative to the gear unit output
$\Delta$	–	Delta connection
$\Delta\phi_2$	arcmin	Backlash at the output shaft with a blocked input
$\Delta s$	mm	Linear backlash resulting from the backlash of the gear unit
$\eta$	%	Efficiency
$F_{ax}$	N	Permitted axial force on the output
$F_{f2acc}$	kN	Permitted acceleration feed force at the gear unit output
$F_{f,max}$	kN	Maximum permitted feed force
$F_{svLA125PIN}$	kN	Transmittable feed force of the screw connection with 125 mm hole spacing, pinned
$F_{svLA62.5}$	kN	Transmittable feed force of the screw connection with 62.5 mm hole spacing
$F_{svLA62.5PIN}$	kN	Transmittable feed force of the screw connection with 62.5 mm hole spacing, pinned
$i$	–	Gear ratio
$I_{2maxPU}$	%	Maximum output current of the power unit (in relation to the nominal output current)
$I_{2N,PU}$	A	Nominal output current of the power unit
$I_N$	A	Nominal current
$J_{dyn}$	kgcm <sup>2</sup>	Mass moment of inertia of a motor in dynamic operation
$l_{zS}$	mm	Gear rack length
$m$	kg	Weight (for gear units without lubricant)
$M_0$	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
$M_{2N}$	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 $\pm 10\%$ )
$m_n$	mm	Normal module
$M_N$	Nm	Nominal torque: the maximum torque of a motor in S1 mode at nominal speed $n_N$ (tolerance $\pm 5\%$ )
$n_{1maxZB}$	min <sup>-1</sup>	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 $\pm 5\%$ )
$v_{f2maxZB}$	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

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

## 10.5 Explanation of product abbreviations

### Gear units

Series/Product	Product designation
C	Helical gear unit
F	Offset helical gear unit
K	Helical bevel gear unit
KL	Compact helical bevel gear unit
KS	Right-angle servo gear unit
P	Planetary gear unit
PE	Cost-efficient planetary gear unit
PH	Planetary gear unit with flange shaft
PHK	Right-angle planetary gear unit with flange shaft
PHKX	Planetary gear unit with flange shaft and single-stage helical bevel gear unit
PHQ	Planetary gear unit with flange shaft and 4-planet system
PHQK	Right-angle planetary gear unit with flange shaft and 4-planet system
PHV	Planetary gear unit with large gear ratio
PK	Right-angle planetary gear units
PKX	Planetary gear unit with single-stage helical bevel gear unit
ZRPH	PH planetary gear unit rack and pinion drive with screwed pinion
ZTRPH	PH planetary gear unit rack and pinion drive with screwed flange pinion
ZTRPHV	PHV planetary gear unit rack and pinion drive with screwed flange pinion
ZTRSPH	PH planetary gear unit rack and pinion drive with supporting bearing holder
ZTRSPHQ	PHQ planetary gear unit rack and pinion drive with supporting bearing holder
ZTRSPHV	PHV planetary gear unit rack and pinion drive with supporting bearing holder
ZVK	K helical bevel gear unit rack and pinion drive with plug-on pinion
ZVKL	KL compact helical bevel gear unit rack and pinion drive with plug-on pinion
ZVKS	KS right-angle servo gear unit rack and pinion drive with plug-on pinion
ZVP	P planetary gear unit rack and pinion drive with plug-on pinion
ZVPE	PE cost-efficient planetary gear unit rack and pinion drive with plug-on pinion
ZS	Gear rack

### Motor adapter / input shaft

Series/Product	Product designation
MB	Motor adapter with ServoStop brake
ME	Motor adapter with EasyAdapt coupling
MEL	Motor adapter with EasyAdapt coupling for large motors
MF	Motor adapter with FlexiAdapt coupling
MQ	Motor adapter with backlash-free plug-in coupling
MR	Round motor adapter with curved tooth coupling

### Motors

Series/Product	Product designation
EZ	Synchronous servo motor
LM	Lean motor
IE3D	Asynchronous motor in energy efficiency class IE3

## Electronics

Series/Product	Product designation	Product affiliation
AES	Absolute Encoder Support; battery module for buffering the supply voltage when using encoders with battery-buffered multi-turn stage	Drive controllers of 5th/6th gen.
AP6	Adapter in various designs for connecting encoder cables	Drive controllers of 6th gen.
ASP 5001	Safety module for STO over terminals	Drive controllers of 5th gen.
AX 5000	POSISwitch axis switcher for sequential operation of up to 4 synchronous servo motors	MDS 5000, SDS 5000
BRM 5000	Brake module for controlling a brake and for connecting to the shield of the power cable	FDS 5000, MDS 5000
BRS 5001	Brake module for controlling up to 2 brakes and for connecting to the shield of the power cable	SDS 5000
CA6	Communication module for the CANopen connection	SD6
CAN 5000	Communication module for the CANopen connection	Drive controllers of 5th gen.
Control box	Operating device for parameterization and configuration of inverters	Inverters of the 4th gen., FDS 5000, MDS 5000
DL6A	Quick DC-Link rear section module for the DC link connection	SD6
DL6B	Quick DC-Link rear section module for the DC link connection	SC6, SI6, PS6
DP 5000	Communication module for the PROFIBUS connection	Drive controllers of 5th gen.
DS6	DriveControlSuite; project configuration and commissioning software for drive controllers	Drive controllers of 6th gen.
EC6	Communication module for the EtherCAT connection	SD6
ECS 5000	Communication module for the EtherCAT connection	Drive controllers of 5th gen.
EM 5000	EMC shield plate for connecting to the shield of the power cable	Drive controllers of 5th gen.
EM6	EMC shield plate for connecting to the shield of the power cable	SD6
FDS 5000	POSIDRIVE frequency inverter of the 5th generation for operating asynchronous motors	
HT6	Adapter for level conversion from HTL signals to TTL signals	SC6, SI6
IO6	Terminal module for connecting analog and digital signals	SD6
LEA 5000	Terminal module for connecting digital signals	FDS 5000
Paramodul	Removable data storage for quick commissioning and service	Drive controllers of 5th/6th gen.
PN 5000	Communication module for the PROFINET connection	Drive controllers of 5th gen.
PN6	Communication module for the PROFINET connection	SD6
POSITool	Project configuration und commissioning software for drive controllers	Drive controllers of 5th gen.
PS6	Supply module for multi-axis drive systems	SI6
QDL6C	Cover for type DL6B Quick DC-Link modules	SC6, SI6, PS6
RB 5000	Rear section braking resistor	Drive controllers of the 5th gen., SD6
REA 5001	Terminal module for connecting analog and digital signals as well as encoders and resolvers	MDS 5000, SDS 5000
RI6	Terminal module for connecting analog and digital signals as well as encoders and resolvers	SD6
SC6	Compact drive controller of the 6th generation for operating synchronous and asynchronous servo axes (with power feed-in and additional control modes for Lean motors and linear motors)	

SD6	High-performance drive controller of the 6th generation with modular interface concept for operating synchronous and asynchronous servo axes (with power supply and additional control mode for linear motors)	
SDS 5000	Powerful POSIDYN servo inverter of the 5th generation	
SE6	Safety module for extended safety technology (speed and position functions, safe brake management)	SD6
SEA 5001	Terminal module for connecting analog and digital signals	MDS 5000, SDS 5000
SI6	Compact multi-axis drive controller of the 6th generation for operating synchronous and asynchronous servo axes (with DC feed-in and additional control modes for Lean motors and linear motors)	
SR6	Safety module for STO over terminals, electronic and free of wear	SC6, SI6
ST6	Safety module for STO over terminals, electronic and free of wear	SD6
SU6	Safety module for STO and SS1 using PROFIsafe, electronic and free of wear	SC6, SI6
SY6	Safety module for STO and SS1 using FSoE, electronic and free of wear	SC6, SI6
SZ6	Option module without safety functions for bridging the safety-relevant interface of the drive controller	SC6, SI6
XEA 5001	Expanded terminal module for connecting analog and digital signals as well as encoders	MDS 5000, SDS 5000
XI6	Expanded terminal module for connecting analog and digital signals as well as encoders	SD6







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