EZ/EZF Synchronous Servo Motors

A new motor system –
super compact and flexible

STÖBER

Power density re-defined

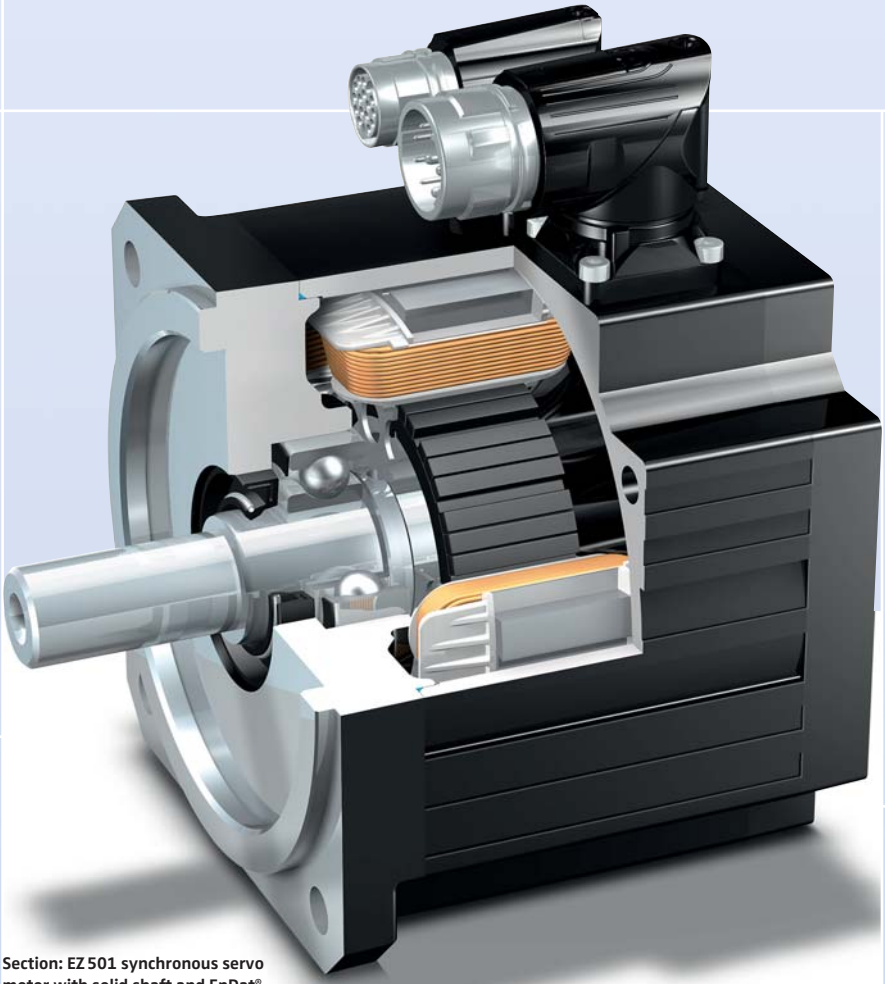
The high quality servo motor system for the solutions of tomorrow

Super compact design, maximum torque, combined with high dynamic performance; these are the special characteristics of the EZ and EZF motor series.

The prerequisite for the supershort design of the new series was the industrial implementation of a tooth winding using orthocyclic linear winding technology. This feature makes it possible to manufacture the stator windings with the highest possible copper fill factor. The winding technology increases the motor power output by approx. 80 %. For this reason it is possible to shorten the length of the motor by almost half without reducing the power output.

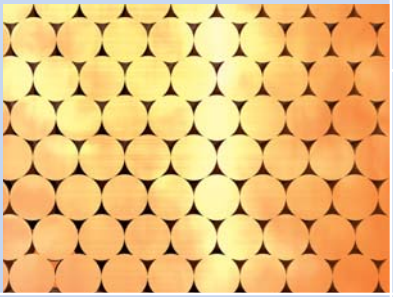
Due to the new structural design of all components and a series of further computer-based fine tuning methods, it was possible to achieve balanced motor behavior with powerful torque, high dynamic performance and precise constant speed running.

If necessary, the dynamic behavior can be modified



Section: EZ 501 synchronous servo motor with solid shaft and EnDat® inductive absolute encoder in multiturn design as a digital feedback system

Section: EZ 505 synchronous servo motor (5 rotor segments) with view of the epoxy-coated permanent magnets



Enlarged image of a orthocyclically linear-wound motor coil.

This complex precision winding technology is used by STOBER for the series production of the EZ and EZF synchronous servo motors

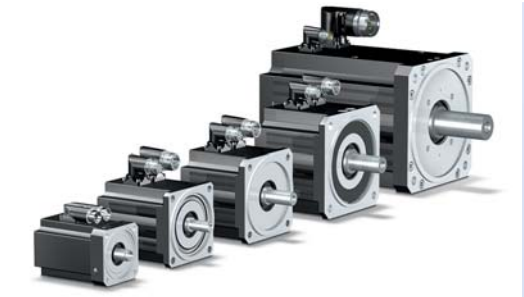
Open to your requirements

System variety for specific needs

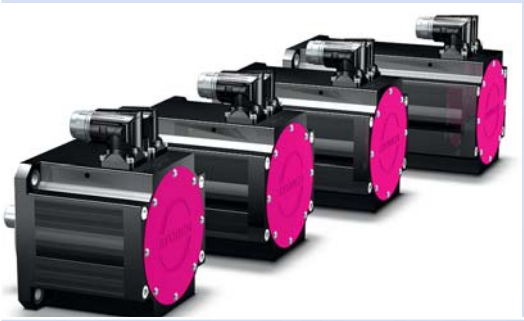
The features of this new design also impress in relation to the variety and the interfaces available with the various options.

Developed from the know-how of the experienced motor and system manufacturer

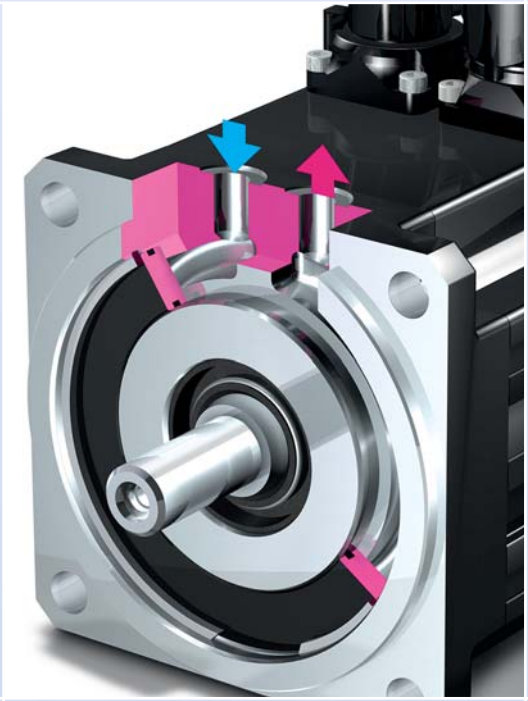
The design and manufacture of this advanced generation of motors is based on extensive application experience, a rigorous focus on the future and mechatronic production know-how from decades of experience in the manufacture of reliable servo motors.



EZ synchronous servo motors are available in sizes EZ3, EZ4, EZ5, EZ7 and EZ8

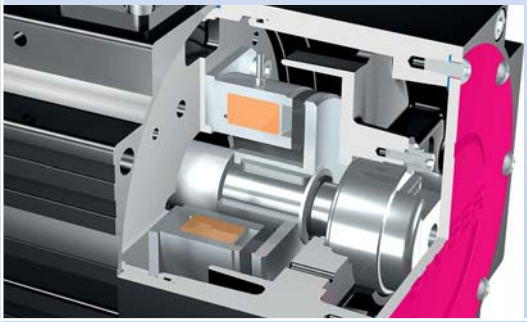


All motors are available in various lengths depending on the torque



As an option, the front cover on the motor can be supplied with a cooling channel for liquid cooling. For increased energy efficiency, the heat dissipated can be utilized using heat exchangers

For the attachment of ServoFit® gear units, the output shaft is designed as a hollow bore for fitting the STOBER gear unit pinion



The motor b-side is designed as a universal interface. On the left the section shows the optional permanent magnet holding brake and on the right an inductive multiturn encoder as a feedback unit.

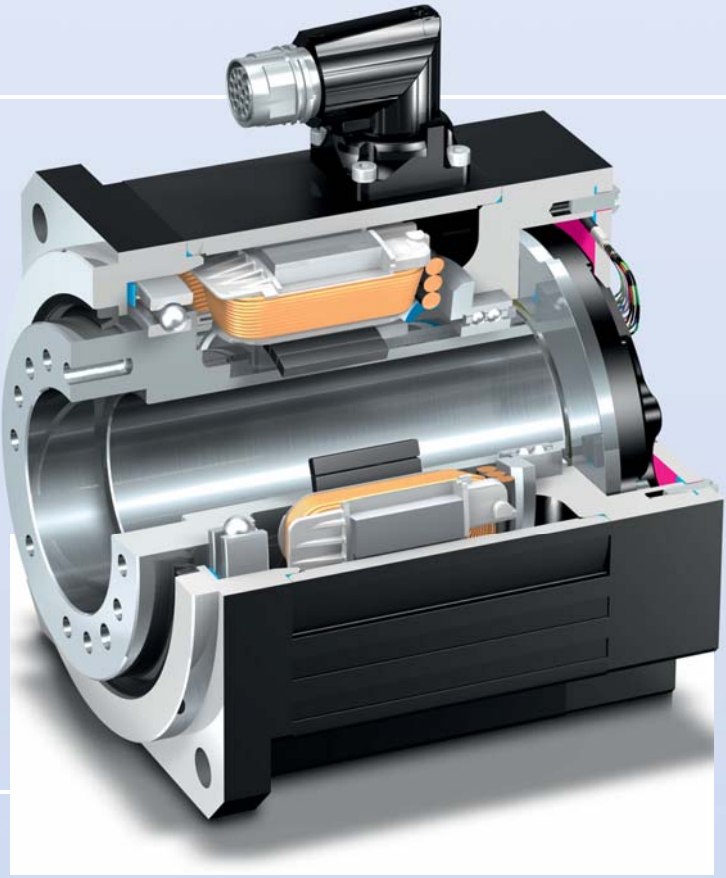
As an option, it is also possible to fit optical encoders with EnDat® or Hiperface® protocol

EZ synchronous servo motor

Size			EZ301	EZ302	EZ303	EZ401	EZ402	EZ404	EZ501	EZ502	EZ503	EZ505	EZ701	EZ702	EZ703	EZ705	EZ802	EZ803	EZ805
Length housing		[mm]	116.0	138.0	160.0	118.5	143.5	193.5	109.0	134.0	159.0	209.0	121.0	146.0	171.0	226.0	222.0	263.0	345.0
Length with brake		[mm]	156.0	178.0	200.0	167.0	192.0	242.0	163.5	188.5	213.5	263.5	180.0	205.0	230.0	285.0	299.0	340.0	422.0
Static torque M_0		[Nm]	0.95	1.68	2.19	3.0	5.2	8.6	4.7	8.0	11.1	16.0	8.3	14.4	20.8	30.2	37.1	48.2	66.1
Rated torque M_N		[Nm]	0.93	1.59	2.07	2.8	4.7	6.9	4.3	7.4	9.7	13.5	7.4	12.0	16.5	21.3	22.3	26.6	43.7
Power rating P_N		[kW]	0.29	0.5	0.65	0.88	1.5	2.2	1.4	2.3	3.1	4.2	2.3	3.8	5.2	6.7	7.0	8.36	9.15
Mass moment of inertia J	dynamic	[10^{-4} kgm^2]	0.19	0.29	0.4	0.93	1.63	2.98	2.9	5.2	7.58	12.2	8.5	13.7	21.6	34.0	58.04	83.45	132.68
Weight		[kg]	1.5	2.1	2.6	4.0	5.1	7.2	5.0	6.5	8.0	10.9	8.3	10.8	12.8	18.3	31.6	32.7	51.8
Mass moment of inertia J	mass-related	[10^{-4} kgm^2]	–	–	–	1.13	2.03	3.78		6.3	9.58	16.3		18.1	27.9	47.6	72.91	105.76	169.86
Weight		[kg]	–	–	–	4.08	5.25	7.51		6.72	8.43	11.77		11.21	13.61	19.9	32.9	39.6	55.0

Performance data at rated speed 3 000 rpm (convection cooling) except EZ 805 (2 000 rpm) | Higher torques using liquid cooling or external fan

Version with flange mount hollow bore



The brilliant implementation of a groundbreaking idea

With its unusually larger opening, this synchronous servo motor with hollow shaft covers a variety of applications for which in the past it was difficult to find a standard solution.

The EZF synchronous servo motor with hollow shaft is part of the completely new PipeDrive system. The figure on the left shows the design: the motor is used as a direct drive.

EZF 501 synchronous servo motor with hollow shaft with EnDat® multi-turn absolute encoder

Section: View of the b-side of the EZF 501 synchronous servo motor with hollow shaft with EnDat® absolute encoder digital feedback system

The EZF synchronous servo motors with hollow shaft are available in the sizes EZF 5 and EZF 7

EZF 505 synchronous servo motor with hollow shaft with five rotor segments

EZF synchronous servo motor with hollow shaft

Size		EZF501	EZF502	EZF503	EZF505	EZF701	EZF702	EZF703	EZF705
Length housing	[mm]	121.5	146.5	171.5	221.5	119.0	144.0	169.0	224.0
Static torque M_0	[Nm]	4.3	7.55	10.6	15.5	7.3	12.9	18.9	27.6
Rated torque M_N	[Nm]	3.7	6.5	8.6	12.1	6.3	10.5	14.5	18.9
Rated current I_N	[A]	3.4	5.0	6.3	8.0	6.5	7.4	10.3	12.8
Mass moment of inertia J Flange mount hollow bore	[10^{-4} kgm^2]	15.8	18.5	21.3	26.9	39.5	48.9	58.3	77.8
Inside-Ø hollow bore	[mm]	42	42	42	42	45	45	45	45
Weight	[kg]	6.1	7.24	9.28	12.4	9.8	12.4	14.9	21.0

Performance data at rated speed 3 000 rpm (convection cooling)

The complete servo axis

Optimized drive technology

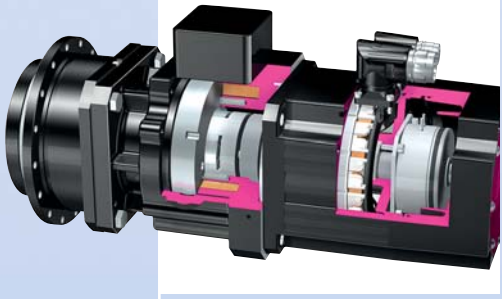
As a system manufacturer, STOBER can offer a product range which comprises the control system and all servo axis components.
It includes motors with cables, gear units and digital drive controllers with modular software for programming and commissioning.

**The complete package:
MC6 motion controller,
SD6 drive controller and
SMS synchronous servo geared motor
PHA 5 EZ 501**

**SMS PY 5 EZH 501 planetary geared motor with hollow shaft (PipeDrive)
The new flange mount hollow bore drive with fully integrated planetary gear was developed for feeding through energy and media (ratios from 3 to 27)**

In many applications in which media and energy are fed through the motor, the usual right-angle drives can be replaced with the new, extremely compact flange mount hollow bore PipeDrive

Motor adaptation (EZ 502) on the SMS K 202 helical bevel gear unit. The gear unit has a square connecting flange for the direct attachment of the motor (without a coupling)



SMS PH...EZ planetary geared motors with motor brake and with ServoStop gear unit brake. The two brakes act completely separately and together form a redundant brake system.

Both brakes are controlled using the brake management in the SD6 drive controller and POSIDYN® SDS 5000. This brake system complies with the requirements of the new Machinery directive 2006/42/EG

The new EZ synchronous servo motors are in general suitable for direct attachment to all SMS axial gear units and ServoFit® right-angle gear units manufactured by STOBER

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Energy-efficiency in drive technology

The basis for successful energy efficiency is the clarification of the exact requirement for mechanical power. During the design of the synchronous servo geared motor, an excessive 'safety margin' should not be applied.

If motors with over-dimensioned power reserves are used, they will continuously operate below their power rating. In the context of energy efficiency this situation is counter-productive. In addition to the low efficiency with unutilized power consumption there are poor control characteristics, higher procurement costs and possibly unnecessary problems with excessive weight.

STOBER experts would be pleased to advise you on the dimensioning of your drive axes.

Energy optimized processes

Motion control and axis regulation are to be included in a holistic energy efficiency assessment of a machine or automation system.

Specific knowledge of inverter functionality and software functionality as provided at STOBER seminars makes it possible to finely tune the axis control to exploit all the efficiency potential.

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Service

The STOBER service system comprises 38 expert partners in Germany and more than 80 companies in the STOBER SERVICE NETWORK worldwide.

This service concept guarantees local expertise and availability when needed.

The concept is supplemented by the remote maintenance concept for the servo inverters in the POSIDYN® SDS 5000 series.

In general, the service specialists can be reached at any time via a 24/7 service hotline.

When necessary, a problem can be addressed immediately.

24/7 service hotline
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