



Vogel & Plötscher

Traction Drives

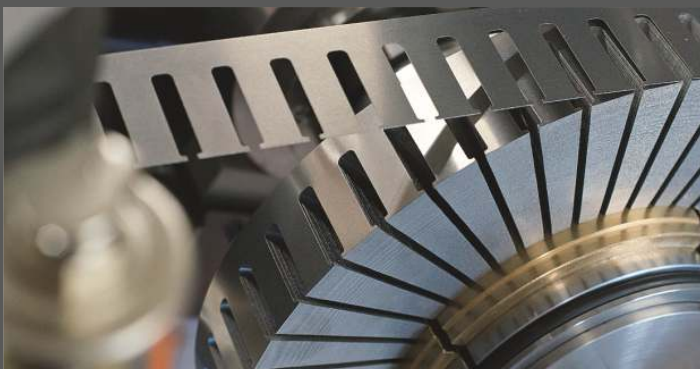
In axial flux technology



Lightweight

Compact

Efficient



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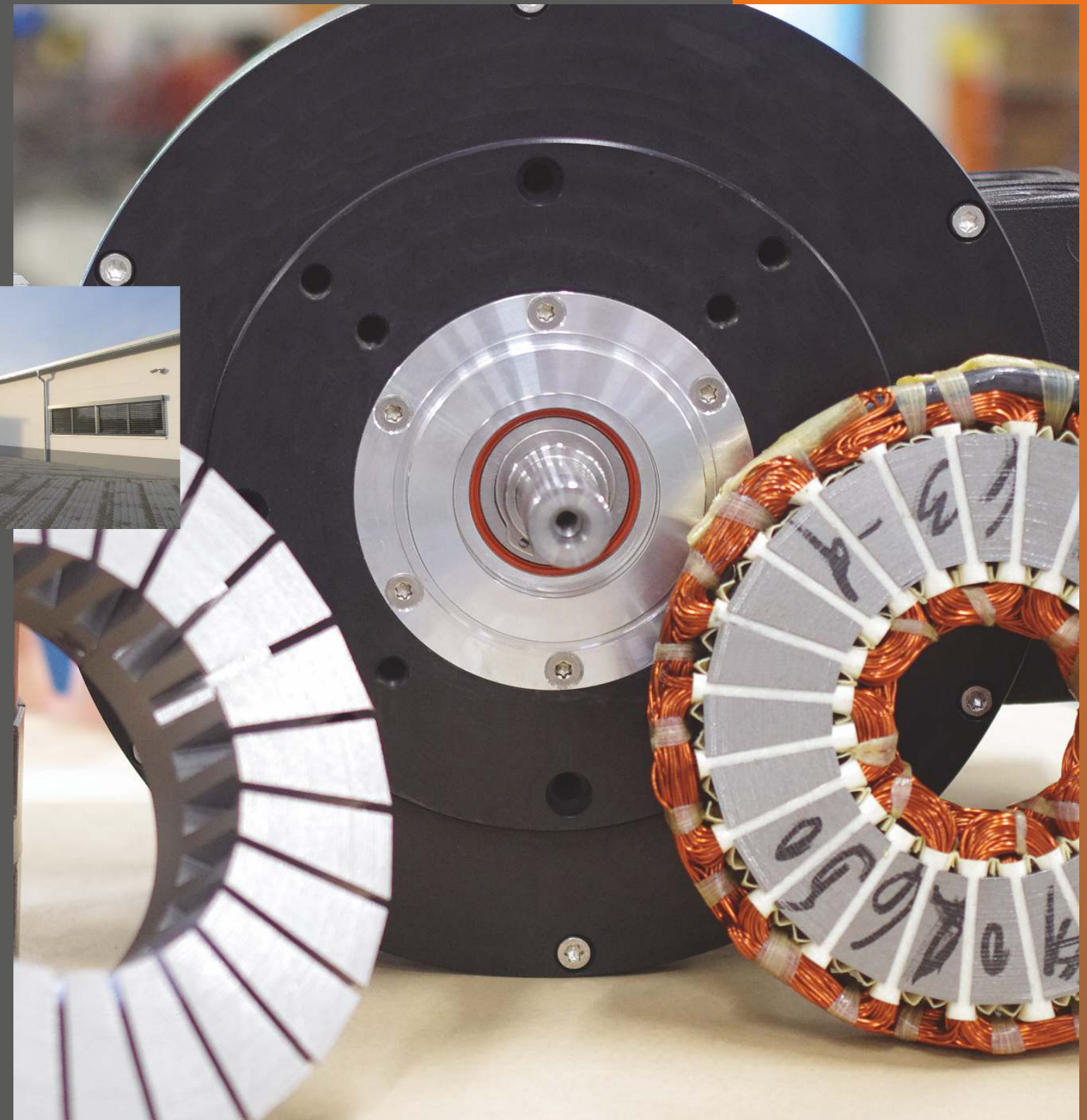
Vogel & Plötscher

is a medium-sized and owner-run company in southern Germany.

The manufacture and sale, among other things, of pancake motors, wheel hub motors as well as punching and winding machines are part of the company's core area of expertise.

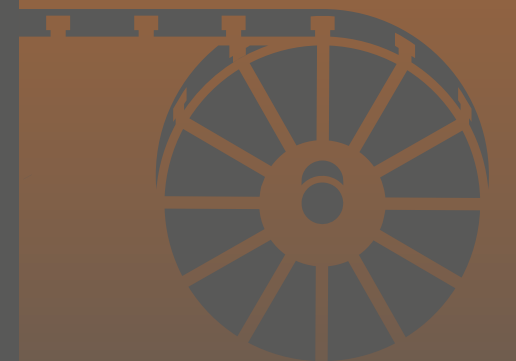
High production depth, independent electronic development and software programming furthermore ensure a high level of flexibility and also enable the implementation of customised (special) solutions.

On the following pages, we will present our pancake motors in detail. Our drive solutions impress by perfection in every component.



Axial Flux Technology

... is the basis for the pancake motors. Our competence in the production and development of these motors has ripened over the years and has been continuously expanded.



Pancake Motors

A good drive is characterised by the fact that it is not defined by appearance, but rather by reliably fulfilling its function. Like a "Kraftwerk" (literally power plant in German), it continuously provides power, and the machine powered by it always works reliably and exactly as you would expect it to day after day.

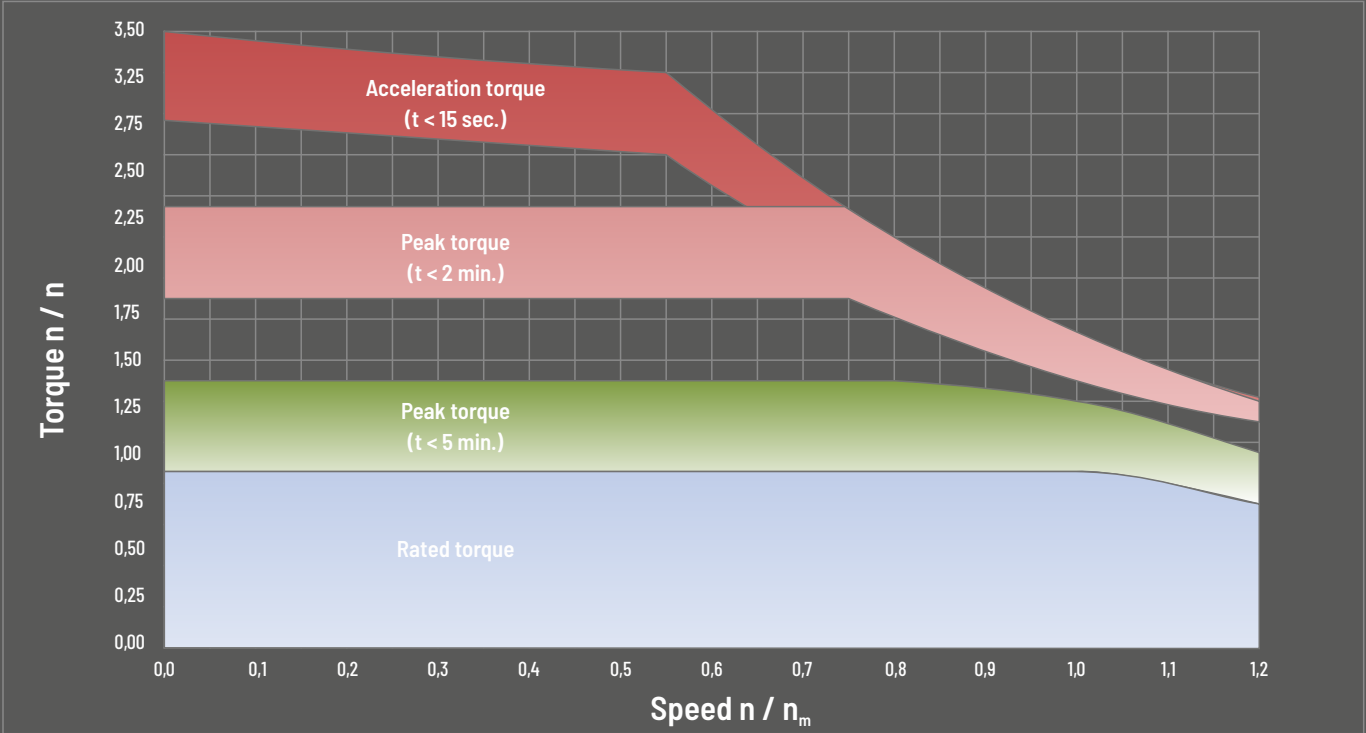
All pancake motors from Vogel & Plötscher also impress by their compact, lightweight – but robust – and efficient design.



Application examples

Our pancake motors (permanent magnet synchronous motors in axial-flux technology) are excellently suitable for a wide range of applications and are particularly popular as traction drives.

Torque speed diagram



Technical data / Features

Model	AC permanent magnet excited synchronous motor (Axial magnetic flux motor design)
Operating mode	S1 (continuous operation)
Cooling	Air-cooled; Forced cooling with min. 5 m/s
Magnets	NdFeB - neodymium iron boron
Model flange	IM B14 (customisable on request)
IP protection class	IP 54 higher protection classes possible
Thermal class	Insulation class F (155°C) - IEC 60034
Dielectric strength	in accordance with IEC EN 60034
Ambient conditions	Operating temperature range (-10 °C to +40°C), transport (-20°C to + 60°C)
Motor protection (temperature sensor)	KTY 84 - 130 series
Connections	standard with cable - length ~1m (optional) plug
Motor Feedback (depending on motor controller)	- 8-bit encoder with sin/cos output - Resolver Re15 (1 pole pair)(optionnal)
Motor shaft	- shaft with feather key groove - Tooth shaft in accordance with DIN 5480 or more



AGRICULTURE /
MUNICIPAL



CONSTRUCTION
MACHINERY



LOGISTIC



FIREFIGHTING



AUTOMOTIVE



AVIONICS



FAN



CUSTOMIZED
APPLICATIONS



- + High power density
- + Compact design
- + Low moment of inertia for rapid acceleration
- + Smooth running even at low speeds

The TDS motors at a glance

The TDS series includes 5 sizes in air-cooled design. Some sizes are also available as water-cooled versions.

Optionally available, integrated wheel hub gears complete the motor to the drive axle and enable a wide range of variants in two frame sizes and countless transmission ratios.

TDS 130FA air cooled

Diameter: 194 mm, forced cooled

Voltage	Rated speed	Maximum speed	Traction power	Rated torque	Max. torque (2min)	Weight	Cooling
24 - 320 VDC	3000 - 6000 rpm	up to 6300 rpm	1,7 - 2,7 kW	3,1 - 5,7 Nm	8,1 - 13,5 Nm	6,9 kg	Air 5 m/s

TDS 150FA air cooled

Diameter: 216 mm, forced cooled

Voltage	Rated speed	Maximum speed	Traction power	Rated torque	Max. torque (2min)	Weight	Cooling
24 - 320 VDC	3000 - 5500 rpm	up to 6000 rpm	2,5 - 3,6 kW	6 - 8 Nm	13 - 15 Nm	10,2 kg	Air 5 m/s

TDS 172FA air cooled

Diameter: 242 mm, forced cooled

Voltage	Rated speed	Maximum speed	Traction power	Rated torque	Max. torque (2min)	Weight	Cooling
48 - 96 VDC	3000 - 5500 rpm	up to 6000 rpm	5,2 - 7 kW	10 - 16,5 Nm	28 - 41 Nm	15,7 kg	Air 6 m/s

TDS 192FA air cooled

Diameter: 282 mm, forced cooled

Voltage	Rated speed	Maximum speed	Traction power	Rated torque	Max. torque (2min)	Weight	Cooling
72 - 560 VDC	3000 - 5500 rpm	up to 6000 rpm	8,3 - 15 kW	22,5 - 27,3 Nm	71 - 82 Nm	28,2 kg	Air 6 m/s

TDS 192W water cooled

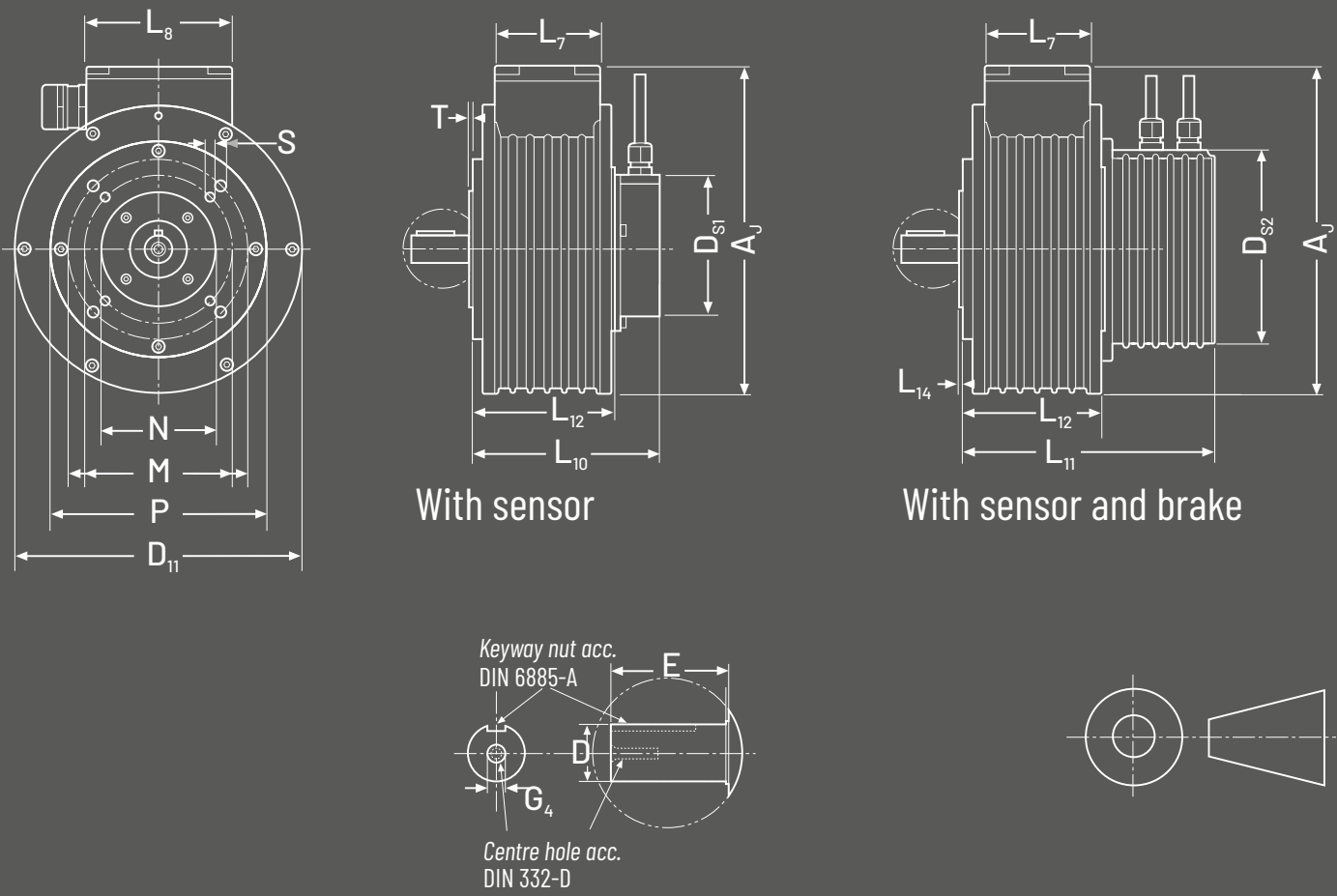
Diameter: 284 mm, water cooled

Voltage	Rated speed	Maximum speed	Traction power	Rated torque	Max. torque (2min)	Weight	Cooling
72 - 560 VDC	3000 - 5500 rpm	up to 6000 rpm	12 - 19 kW	31,8 - 42,4 Nm	70 - 82 Nm	33,5 kg	Water 8L/Min



If the size you need is not listed, please contact us!

Dimensions



- + High power density
- + Individually configurable
- + High protection class
- + Specially adapted software

		TDS 130FA	TDS 150FA	TDS 172FA	TDS 192FA	TDS 172W	TDS 192W
N	Ø (j6)	70	70	70	120	70	120
M	Ø	100	150	115/150	150	115/150	150
S		4xM6 (10 mm)	4xM6 (12 mm)	4xM8 (18 mm)	4xM8 (15 mm)	4xM8 (12 mm)	4xM8 (10 mm)
P	Ø	120	120	165	200	-	-
AC	Ø	194	216	242	280	245	282
AJ		217	241	270	322	270	322
DS1	Ø	103	103	103	103	103	103
DS2	Ø	135	135	135	135	-	-
L7		70	70	82	110	82	110
L8		98	98	124	155	124	155
L10		125	126	145	187	165	200
L11		169	172	190	230	-	-
L12		87	97	115	154	137	167
T		3,5	3,5	3,5	4	3,5	5,5
D	Ø (k6)	19	19	19	28	19	28
E		40	40	40	40	40	40
G4	(DIN 332-D)	M6 (16 mm)	M6 (16 mm)	M6 (16 mm)	M10 (20 mm)	M10 (20 mm)	M10 (20 mm)
					4		3,5
Other							
Water connection		n/a	n/a	n/a	n/a	Ø 13	Ø 13
Power connection		1 UVW each	1 UVW each	1 UVW each	2 UVW each	1 UVW each	2 UVW each
Keyway nut acc. DIN 6885-A							
Centre hole acc. DIN 332-D							

Teamplayer. The ACS motor controllers.

The ACS inverters have been designed to be optimally equipped in mobile applications. The firmware is specially adapted for use with our axial flux motors.

With voltages between 24 and 96 V and power levels from 100 to 440 A, they are the ideal partner for our motors.

Together, they use their full potential. The high-power density, CAN bus communication and high adaptability complete the flexibility of our drives.

Wheel hub drives

Our customers benefit from the compact, integrated gears with wheel bearings and mounting flange for the rim. You can therefore also purchase a modular version of the driven axle as a complete drive set from us as a single supplier.

- + Compact
- + Efficient
- + Durable
- + Maintenance free

NEW:
Other sizes are available.
Some of the gears can also be provided in disengagable versions.
Contact us.

Technical data

		PGR 500			PGR 1500			
Wheel load		700			2100			[kg]
Stages		1	2	3	1	2	3	[%]
Ratio ⁷	i	4 ⁹	16 ⁹	96 ⁹	5 ⁹	25 ⁹	100 ⁹	
		7	24 ⁹	144 ⁹	8	40 ⁹	150 ⁹	
		42	42	252 ⁹		64 ⁹	240 ⁹	
				504			384	
Efficiency	η	96	94	93	96	94	93	[kg]
Approx. mass	m	6,9	7,3	8,4	14	15,5	17,5	[Nm]
Rated output torque	T _{2N}	160			800			[Nm]
Acceleration output torque	T _{2A}	450			1600			[Nm]
Peak output torque ¹	T _{2S}	500			2000			[min ⁻¹]
Permissible average drive speed ²	n _{IN}	3000			3000			[min ⁻¹]
Maximum speed ³	n _{Imax}	6000			6000			[N]
Axial force ⁴	F _{2A max}	2500			5000			[N]
Radial force ⁴	F _{2R max}	7000			21000			[h]
Operational lifetime ^{5,6}	L _h	20000			20000			
Oper. noise emission at n1 =3000 min ⁻¹	L _p	<65			<68			[dB(A)]
Direction of rotation - input/output				counter-rotating				
Lubrication		lubricated for live						
Mounting position				horizontal				
Ambient temperature	T	-20 – +50						[°C]
Max. permissible case temperature	T	90						[°C]
Protection class		up to IP67 – depending on the motor						
Surface finish				cathodic dip-paint coated				
Casing colour ⁷		similar to RAL 9005						

¹ Permitted fewer than 1000 times

² At 20°C ambient temperature

³ briefly

⁴ Referenced to the rim flange area at n2=100 min-1

⁵ Referenced ton2=100 min-1, KA=1

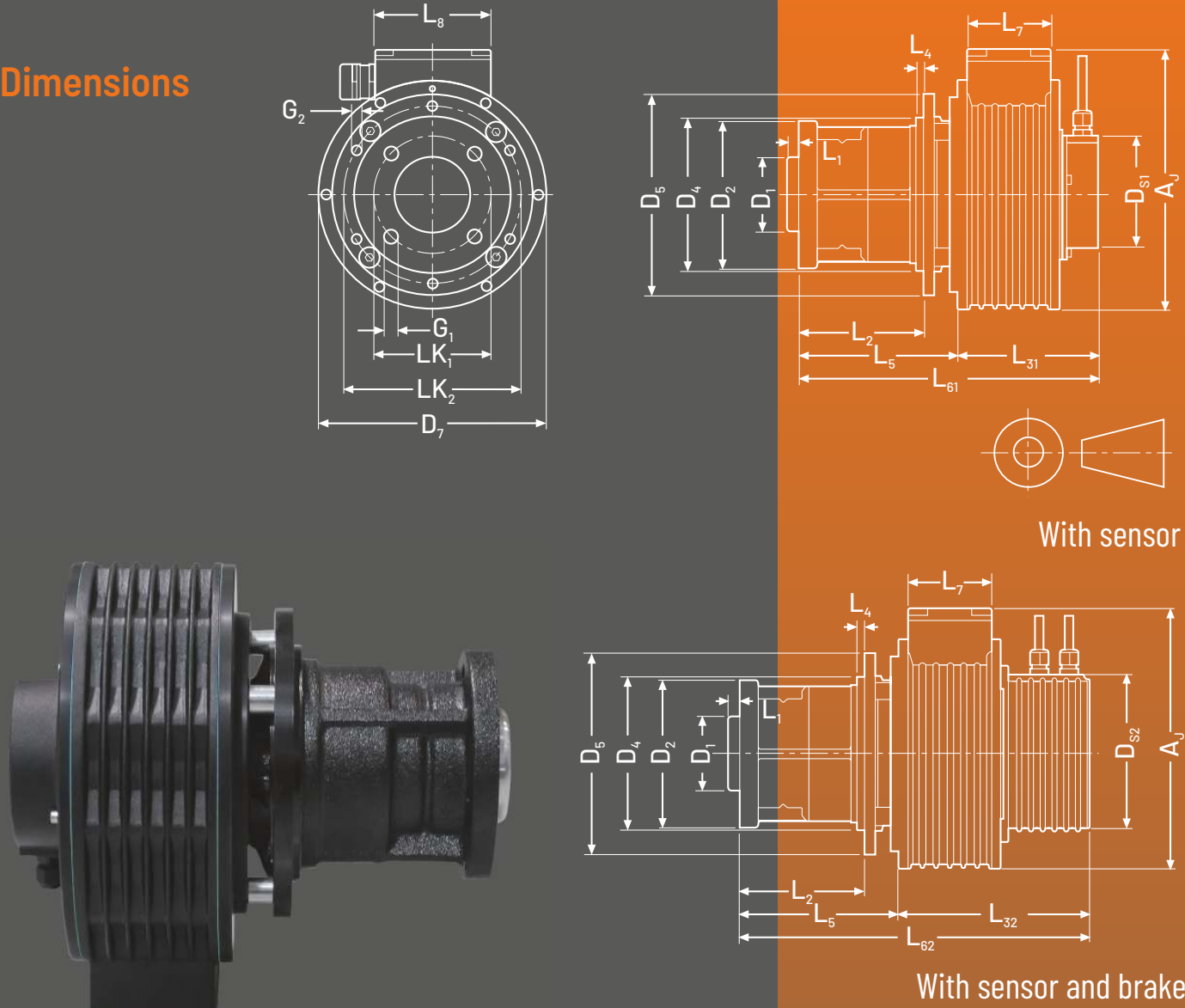
⁶ Application dependent

⁷ Others on request

⁸ Depending on the motor

⁹ Declutch optionally

Dimensions



TDSG 130 forced air-cooled				TDSG 150 forced air-cooled				TDSG 170 forced air-cooled				
700 (1-2 stages)	700 (3 stages)	2100 (1-2 stages)	2100 (3 stages)	700 (1-2 stages)	700 (3 stages)	2100 (1-2 stages)	2100 (3 stages)	700 (1-2 stages)	700 (3 stages)	2100 (1-2 stages)	2100 (3 stages)	
D1	63		80		63		80		63		80	mm
D2	128		158		128		158		128		158	mm
L1	10			10				10				mm
Lk1	100		130		100		130		100		130	mm
G1	M12 1,5		M14 1,5		M12 1,5		M14 1,5		M12 1,5		M14 1,5	
D4	130		160		130		160		130		160	mm
L4	5			5				5				mm
D5	170		200		170		200		170		200	mm
Lk2	150	60	180	150	150	60	180	150	150	60	180	150 mm
G2	M10 (6x)	M10 (4x)	M10 (8x)	M10 (8x)	M10 (6x)	M10 (4x)	M10 (8x)	M10 (8x)	M10 (6x)	M10 (4x)	M10 (8x)	M10 (8x)
D7	194			216				245				mm
L2	105		138		105		138		105		138	mm
L31	123,7			126				144,5				mm
L32	167			168,5				185				mm
L5	128	155	169	200	128	155	169	200	128	155	169	200 mm
L61	251,7	278,7	292,7	323,7	254	281	295	326	254	281	313,5	344,5 mm
L62	295	322	336	367	296,5	323,5	337,5	368,5	296,5	323,5	354	385 mm
L7				69,5				84				mm
L8				98				120				mm
DS1	103			103				103				mm
DS2	135			135				135				mm
Aj	220			241				274				mm

We reserve the right of error and technical modifications. Please ask for binding dimensional drawings or models.



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