SERVO MOTORS TA

SERVO GEARED MOTORS

EN

KEB

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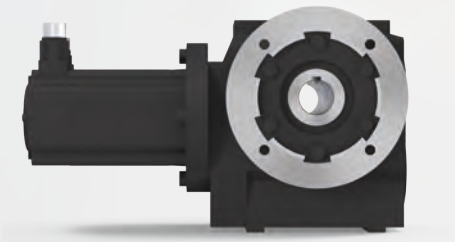
PORTFOLIO

Automation with drive

Support and reinforcement – this is what the term "servo" stands for. KEB takes up exactly here and offers a strong "helper" with the permanent magnet synchronous motors of the TA series.

With their compact dimensions and high dynamic torques, the TA servomotors are particularly suitable for precise positioning and powerful driving. As a important component, they fit into varius applications with the highest efficiency and variety of uses.

HELICAL GEAR: the classic type, with high power density and a wide range of gear ratio up to 13,600 Nm

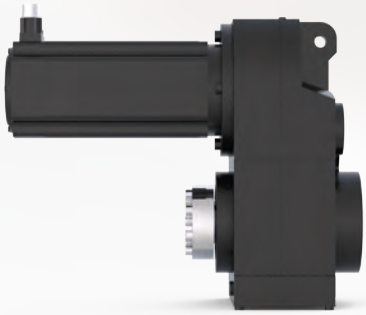


HELICAL WORM GEAR: the right-angle gearbox with a high gear ratio of up to 1,160 Nm

MOTOR: TA servo motor, from 0.5 - 90 Nm with a high variety of options (brake, encoder ...)

HELICAL BEVEL GEAR UNITS: the right-angle gearbox with high efficiency up to 12,200 Nm

PLANETARY GEAR UNITS:
the compact gear with high precision



SHAFT MOUNTED HELICAL GEAR UNITS:
the gearbox for easy mounting up to 8,900 Nm

SOLUTIONS FOR MACHINES AND PLANTS

WOODWORKING

Core applications in woodworking machines involve edge and surface processing, drilling and milling technology, and assembly systems as well as the COMPLETE MACHINING AND PROCESSING of solid wood.

METALWORKING

Metal processing requires stable drives for robust machines, POWERFUL COMPONENTS FOR DYNAMIC MOVEMENTS, as an auxiliary unit or main drive. KEB System of Gearmotors serves exactly this target area.

PLASTICS TECHNOLOGY

PRECISION, PERFORMANCE AND QUALITY – the strength of the KEB systems are shown especially on plastic machines, one of KEB`s main fields of application.

TEXTILE PROCESSING

Winders and spools are operated in wide speed ranges, PROTECTED DRIVES work in bleaching, dyeing and washing plants with the full range of available motor options.

VISUALISATION

CONTROL & AUTOMATION

DRIVES

MOTORS & GEARS

BRAKES & CLUTCHES

INTRALOGISTICS

Conveying, transporting and lifting for CONTINUOUS AND CYCLICAL PROCESSES.
Applications with the highest variance and diverse support are in the KEB portfolio.

THEATER TECHNOLOGY

The theater and stage area require PRECISION AND SAFETY – our motors and gears provide this for a perfect performance.

MEDICAL SYSTEMS

EFFICIENT, PRECISE DRIVE SOLUTIONS in medical technology help in diagnostics treating patients more gently.

FOOD & BEVERAGE PROCESSING

High degree of protection, durable corrosion protection, smooth surfaces and few undercut elements - suitable for the food industry. SPECIAL SERVO MOTORS with their smooth design fit perfectly into these applications.

PACKAGING

High dynamics with compact dimensions. The highly integrated, directly COMBINED SERVO GEAR MOTORS reduce the space requirement and minimise wear.

TA SERIES

Permanent synchronous servomotors, optimised as a drive system in combination with the COMBIVERT drive controller.

Standard version:

- Protection standard IP54
- Temperature class 155°C
- PTC thermistor sensor
- Nominal voltage U_n=400 V or U_n=230 V
- Number of poles: 6-pole

The motors correspond to the following standards:

- DIN EN 60034 Rotating electrical machines, rating and performance
- DIN 42948 Mounting flanges for electrical machines

The type designation for gear units / motors describes the construction of the unit starting from the output side.

TA	43	V30	ER TW
RANGE	**FRAME SIZE**	**TYPE OF MOTOR WINDING**	**OPTIONS**

BP.. - Brake	FS.. - functional safety
Z - Additional inertia	F - Forced ventilation
ER - Resolver	TW - PTC thermistor sensor
EN.. - Absolute encoder	

Sample
TA42 V30 EN01 TW

VARIATIONS TABLE

FLANGE	TA1 58/Ø63/Ø40	TA2 75/Ø75/Ø60	TA3 90/Ø100/Ø80	TA4 116/Ø130/Ø110 116/Ø115/Ø95	TA5 145/Ø165/Ø130	TA6 188/Ø215/Ø180
Output shaft with / without key	Ø9x20	Ø11x23 Ø14x30	Ø14x30 Ø19x40	Ø19x40 Ø24x50	Ø24x50 Ø32x58	Ø32x58 Ø38x80
Motor connection						
right angle plug connector, turnable	M23	M23	M23	M23	M23	M40
plug connector radial	M23	M23	M23	M23	M23	M40
terminal box 1xM32+2xM16				●	●	●
Brake	BP03 2 Nm	BP03 2 Nm	BP05 4.5 Nm	BP06 9 Nm	BP07 18 Nm	
			BF02 7 Nm	BF03 16 Nm	BF04 36 Nm	BF05 70 Nm
Additional inertia	-	-	●	●	●	●
Encoder system						
ER – Resolver	●	●	●	●	●	●
EN01 – Absolute encoder multiturn BiSS-C	●	●	●	●	●	●
EN02 – Absolute encoder singleturn BiSS-C	●	●	●	●	●	●
EN05 – Absolute encoder multiturn Hiperface	●	●	●	●	●	●
EN06 – Absolute encoder singleturn Hiperface	●	●	●	●	●	●
without encoder	●	●	●	●	●	●
Encoder system functional safety						
ER FS01 ER + SIL2/PLd	●	●	●	●	●	●
EN05 FS02 EN05 + SIL2/PLd	●	●	●	●	●	●
EN06 FS02 EN06 SIL2/PLd	●	●	●	●	●	●
Forced ventilation	-	-	-	●	●	●
UL-Version	●	●	●	●	●	●
dust- and water protection IP65	●	●	●	●	●	●

SERVO MOTOR WITH SELF COOLING

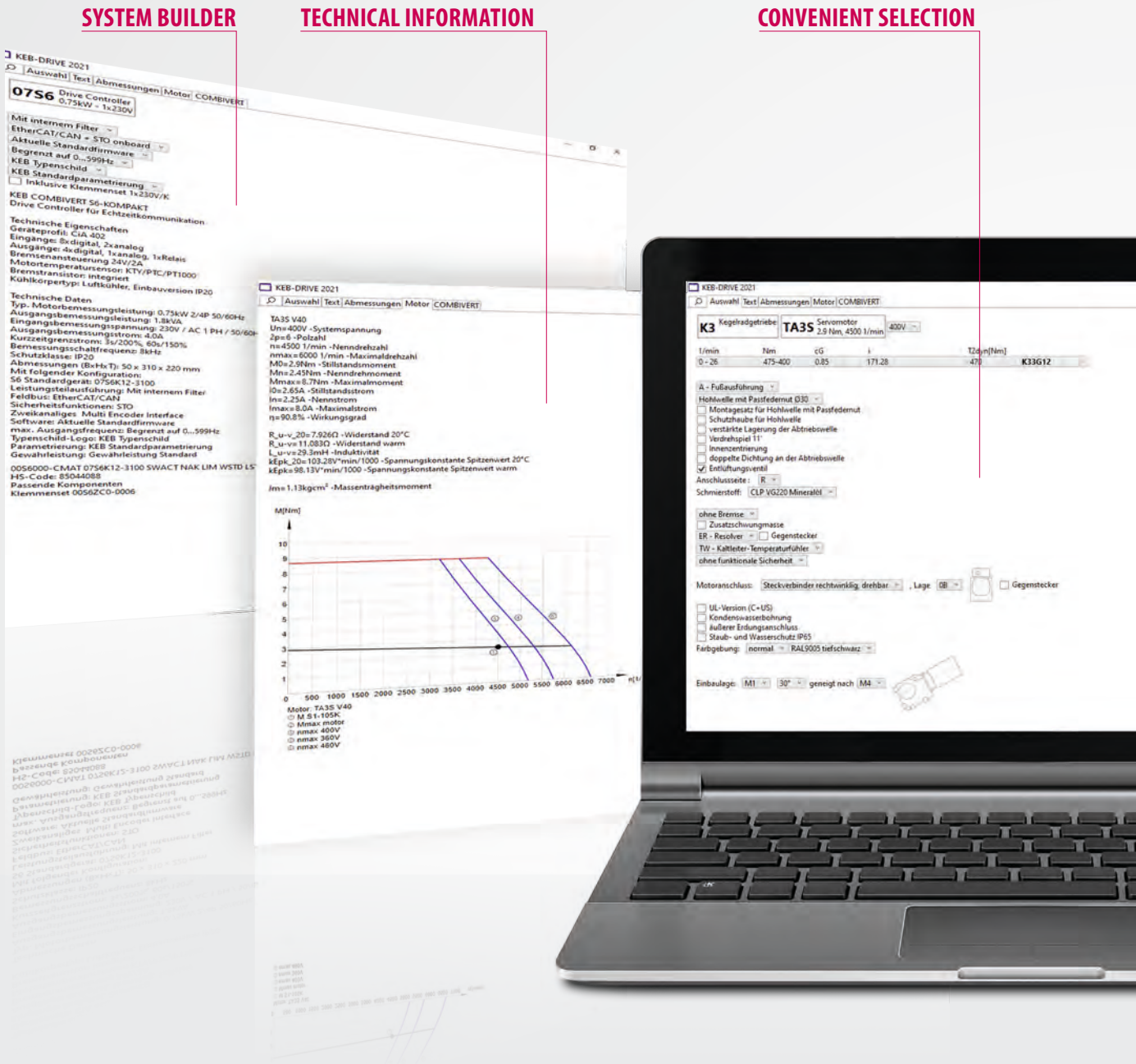
MOTOR	T_0 [Nm]	T_{max} [Nm]	T_n [Nm]				
			1500 1/min	2000 1/min	3000 1/min	4500 1/min	6000 1/min
TA1S	0.5	1.5				0.49	0.48
TA1M	1	3				0.99	0.98
TA2S	1.4	4.2				1.39	1.38
TA2M	2.4	7.2				2.2	2
TA2L	3.3	9.9				3	2.6
TA3S	2.9	8.7			2.6	2.45	2.25
TA3M	4.95	14.85			4.5	4	3.3
TA3L	6.8	20.4			5.7	4.7	
TA41	6.9	20.7		6.6	6.3	5.7	
TA42	9.2	27.6		8.6	8.1	7.1	
TA43	11.7	35.1		10.8	10.1	8.6	
TA51	11.5	34.5		10.8	10.2	9	
TA52	16.1	48.3		14.7	13.5	11.3	
TA53	20	60		17.7	16.1	10.4	
TA61	34.5	103.5	31.5	30	26		
TA62	50	150	44	41	33		
TA63	64	192	55	50	37		

SERVO MOTOR WITH FORCED VENTILATION

MOTOR	T_0 [Nm]	T_{max} [Nm]	T_n [Nm]			
			1500 1/min	2000 1/min	3000 1/min	4500 1/min
TA41F	10.35	20.7		9.9	9.45	8.55
TA42F	13.8	27.6		12.9	12.15	10.65
TA43F	17.55	35.1		16.2	15.15	12.9
TA51F	16	34.5		15	14	12.5
TA52F	22	48.3		20	18	15.4
TA53F	30	60		27	24	15.5
TA61F	48	103.5	43.5	41.5	36	
TA62F	70	150	61	57	46	
TA63F	90	192	82	75	55	

T_0 Stall torque *T_{max} Maximum torque* *T_n Nominal torque S1*

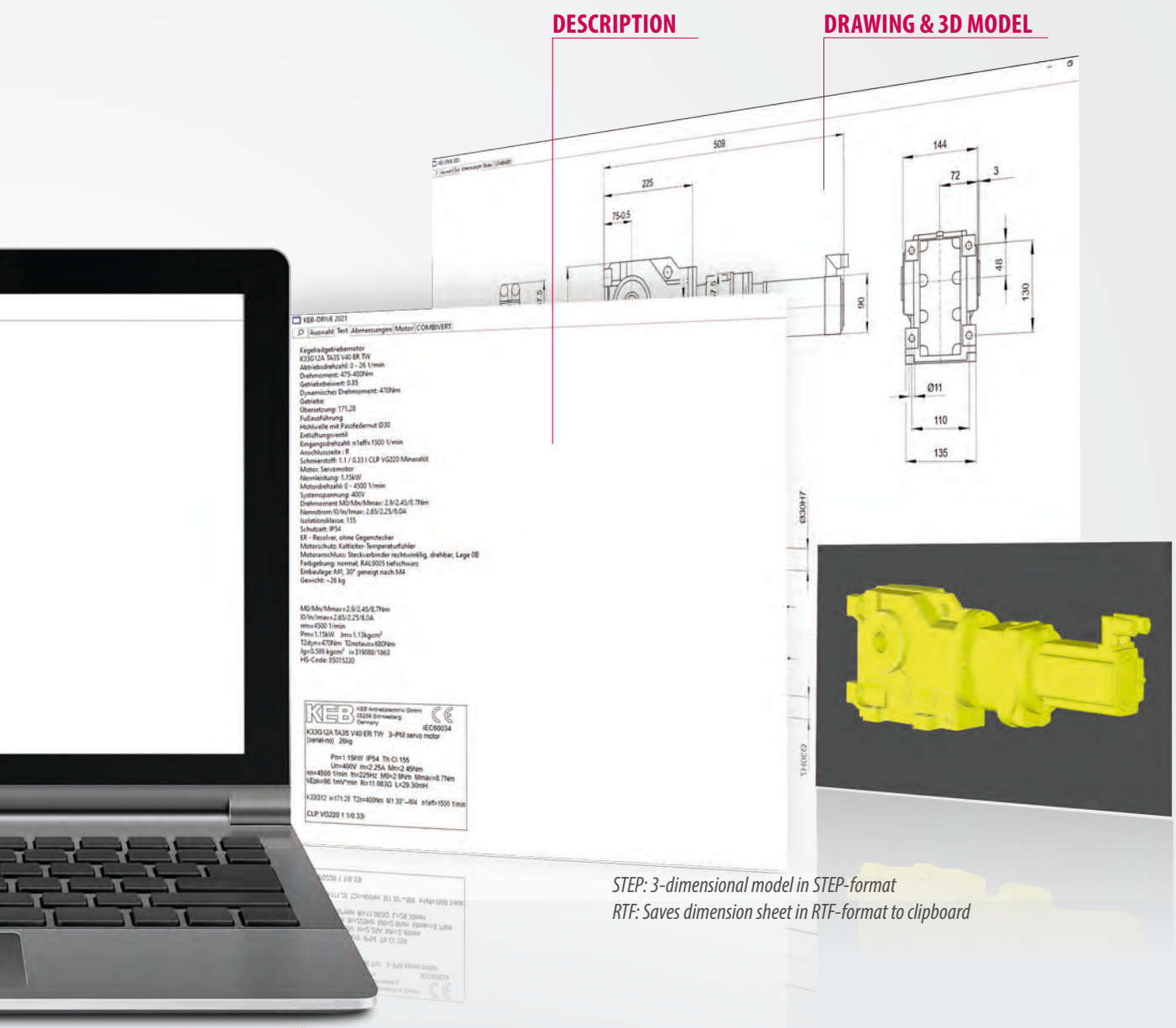
SOFTWARE KEB-DRIVE



Put together the suitable drive package quickly, make the selection of prepared options, this is exactly what the KEB DRIVE configuration software offers and much more ...

- Detailed product descriptions with data tables
- 2D drawings and 3D models
- Universal search with direct product suggestions
- Hardware and software components for system building Motor / DRIVE CONTROLLER
- Direct export functions, e.g. into the ERP-system

Load KEB DRIVE and immediately call up the advantages of the configuration software for your own development process – efficient and simple. For OEM users additional program packages are prepared for the digital connection of logistics.



STEP: 3-dimensional model in STEP-format
RTF: Saves dimension sheet in RTF-format to clipboard

KEB DRIVE

- Fast configuration and selection of KEB gearboxes and motors
- Exact description and data available IMMEDIATELY
- 2D and 3D geometric data can be called up directly
- System building with further KEB components

Download product selection software for KEB Gears & Motors: **www.keb-drive.de**

DRIVE SELECTION

NOMINAL TORQUE T_n

The values given in the tables are valid for the following conditions:

- Duty cycle S1
- Maximum ambient temperature +40° C

Reduced motor torque at ambient temperature 40° C < θ ≤ 80° C:
Installation altitude up to 1000m above mean sea level

$$T_{TH} = T_n * \left(\frac{145°C - \theta}{105°C} \right)$$

SELECTION CONDITIONS AT PERIODICAL LOAD

$$T_a = \sqrt{\frac{1}{t} * \sum_i T_{ai}^{\,2} * t_i} \le T_n$$

$$T_{amax} = \max(T_{ai}) \le T_{max}$$

T_n	[Nm]	Nominal torque Servo motor
T_{max}	[Nm]	Maximum torque Servo motor
T_a	[Nm]	Actual average load torque
T_{amax}	[Nm]	Maximum load torque
T_{ai}	[Nm]	Load torque of cycle i
t_i	[s]	Duration of cycle i
t	[s]	Total time $t = \sum_i t_i$

RADIAL FORCE ON OUTPUT SHAFT

$$F_R = \frac{T_{ab} * 2000}{d_0} * f_z$$

TRANSMISSION ELEMENT	f_z	REMARKS
Gears	1.1	<17 teeth
Sprockets	1.4	<13 teeth
	1.2	<20 teeth
V-belt pulleys	1.7	Influence of preload
Flat belt pulleys	2.5	Influence of preload

F_R	[N]	Radial force on output shaft
T_{ab}	[Nm]	Torque on the shaft
d_0	[mm]	Effective diameter of fitted drive element
f_z		Incremental factor (see table)

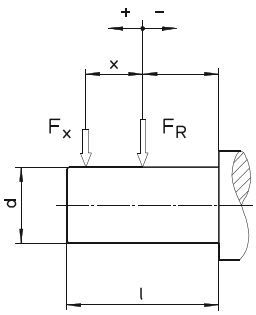
The determined radial force must not exceed the permissible radial force.

BEARING TYPES USED

SERVO MOTOR	D - Bearing	ND - Bearing
TA1	6201-2Z	6000-2Z
TA2	6202-2Z	6000-2Z
TA3	6204-2Z	6201-2Z
TA4	6205-2Z	6203-2Z
TA5	6207-2Z	6204-2Z
TA6	6308-2Z	6206-2Z

PERMISSIBLE RADIAL FORCES FOR THE OUTPUT SHAFT

If there are radial loads on the output shaft, they should be compared with the permissible values for radial forces.



The values in the table for the permissible radial forces apply under the following conditions:

- constant load in continuous operation
- no axial forces

MOTOR	Output shaft d * l [mm]	K_1 [mm]	F_{R1}[N] 1500 [1/min]	2000 [1/min]	3000 [1/min]	4500 [1/min]	6000 [1/min]
TA1S	9x20	111	430	390	340	295	270
TA1M	9x20	141	455	410	360	315	285
TA2S	14x30	134.5	470	425	370	325	295
TA2M	14x30	174.5	500	455	395	345	310
TA2L	14x30	214.5	515	470	410	355	320
TA3S	19x40	153	775	700	610	535	485
TA3M	19x40	203	830	750	660	570	520
TA3L	19x40	253	860	780	680	595	540
TA41	24x50	221.5	890	810	710	610	560
TA42	24x50	256.5	920	830	720	630	570
TA43	24x50	291.5	930	850	740	640	580
TA51	32x58	241.5	1620	1460	1280	1110	1010
TA52	32x58	276.5	1660	1500	1310	1140	1030
TA53	32x58	311.5	1690	1530	1330	1160	1050
TA61	38x80	340.5	2550	2310	2010	1750	1580
TA62	38x80	410.5	2630	2380	2060	1790	1620
TA63	38x80	480.5	2670	2420	2090	1810	1640

If the radial force is not applied to the middle of the shaft, use the following formula for the conversion of the permissible radial force:

$$F_{Rx1} = F_{R1} * \frac{1}{1 + \frac{x}{K_1}}$$

F_{R1}	[N]	permissible radial force for bearing lifetime application at middle of output shaft (table)
K_1	[mm]	Constant (table)
x	[mm]	Distance (subject to directional sign, see sketch)
F_{Rx1}	[N]	permissible radial force for bearing lifetime application at point x

SELECTION TABLE

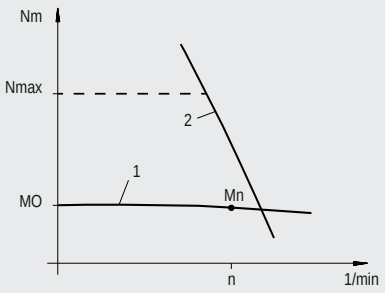
SERVO MOTOR WITH SELF COOLING

MOTOR						400 V						230 V					
	T_0 [Nm]	T_n [Nm]	T_{max} [Nm]	m [~kg]	J_m [kgcm^2]	V	I_0 [A]	I_{max} [A]	R_u-v [Ω]	L_u-v [mH]	kE_{pk} [mV*min]	V	I_0 [A]	I_{max} [A]	R_u-v [Ω]	L_u-v [mH]	kE_{pk} [mV*min]
1500 1/min																	
TA61	34.5	31.5	103.5	33	77.71	V10	11.1	33.5	2.323	19.643	278.64	VA0	21.5	65	0.635	5.417	145.43
TA62	50	44	150	44	113.71	V10	16.4	49	1.2	12.32	273.51	VA0	31	93	0.345	3.478	145.89
TA63	64	55	192	54	149.7	V10	21.5	65	0.783	8.51	267.65	VA0	39.5	119	0.232	2.578	145.9
2000 1/min																	
TA41	6.9	6.6	20.7	7.5	5.65	V20	3.15	9.4	13.812	43.418	198.16	VB0	6.2	18.6	3.601	8.499	100.46
TA42	9.2	8.6	27.6	10.3	8.15	V20	4	12	8.388	28.562	205.81	VB0	8	24	2.096	5.905	102.86
TA43	11.7	10.8	35.1	13	10.65	V20	5	15	5.554	20.336	209.53	VB0	10.4	31	1.309	4.79	101.12
TA51	11.5	10.8	34.5	13.3	14.9	V20	5	15	7.336	31.114	205.42	VB0	11	33	1.521	6.279	93.88
TA52	16.1	14.7	48.3	16.7	21.53	V20	6.9	20.5	4.114	21.148	210.74	VB0	15.8	47.5	0.828	3.979	91.4
TA53	20	17.7	60	21	28.15	V20	8.7	26	2.553	14.876	206.64	VB0	19.2	58	0.513	3.091	93.84
TA61	34.5	30	103.5	33	77.71	V20	15.1	45.5	1.259	10.949	206.2	VB0	30	91	0.31475	2.737	103.1
TA62	50	41	150	44	113.71	V20	22.5	68	0.649	6.187	200.37	VB0	45	135	0.16225	1.547	100.185
TA63	64	50	192	54	149.7	V20	29.5	89	0.413	4.619	194.54	VB0	59	177	0.10325	1.155	97.27
3000 1/min																	
TA3S	2.9	2.6	8.7	3.7	1.13	V30	1.81	5.4	24.755	59.82	141.33	VC0	3.45	10.4	6.606	16.64	73.99
TA3M	4.95	4.5	14.85	5	1.95	V30	3	9	11.606	28.1	144.769	VC0	5.8	17.3	3.105	7.75	75.737
TA3L	6.8	5.7	20.4	6.3	2.76	V30	4	12	7.04	20	149.596	VC0	8	24	1.826	4.86	76.236
TA41	6.9	6.3	20.7	7.5	5.65	V30	4.45	13.3	6.995	21.248	139.96	VC0	9.1	27.5	1.674	4.996	68.26
TA42	9.2	8.1	27.6	10.3	8.15	V30	5.9	17.7	3.727	13.344	140.55	VC0	11.8	35.5	0.955	3.14	70.28
TA43	11.7	10.1	35.1	13	10.65	V30	7.3	22	2.611	10.404	144.54	VC0	14.6	44	0.654	2.183	72.25
TA51	11.5	10.2	34.5	13.3	14.9	V30	7.4	22	3.441	15.411	140.06	VC0	14.8	44.5	0.86025	3.853	70.03
TA52	16.1	13.5	48.3	16.7	21.53	V30	10.3	31	1.815	9.308	140.47	VC0	20.5	62	0.45375	2.327	70.235
TA53	20	16.1	60	21	28.15	V30	12.8	38.5	1.279	6.687	140.83	VC0	26.5	80	0.259	1.445	68.23
TA61	34.5	26	103.5	33	77.71	V30	21.5	65	0.635	5.417	145.43	VC0	43	129	0.15875	1.354	72.715
TA62	50	33	150	44	113.71	V30	31	93	0.345	3.478	145.89	VC0	62	186	0.08625	0.87	72.945
TA63	64	37	192	54	149.7	V30	39.5	119	0.232	2.578	145.9						

MOTOR						400 V						230 V					
	T_0 [Nm]	T_n [Nm]	T_{max} [Nm]	m [~kg]	J_m [kgcm²]	V	I_0 [A]	I_{max} [A]	R_u-v [Ω]	L_u-v [mH]	kE_{pk} [mV*min]	V	I_0 [A]	I_{max} [A]	R_u-v [Ω]	L_u-v [mH]	kE_{pk} [mV*min]
4500 1/min																	
TA1S	0.5	0.49	1.5	1.5	0.136	V40	0.62	1.86	138.339	113.2	81.911	VD0	1.13	3.4	39.952	28.8	41.599
TA1M	1	0.99	3	1.9	0.2	V40	1	3	73.082	57	90.686	VD0	1.99	6	17.055	14.58	45.795
TA2S	1.4	1.39	4.2	2.2	0.391	V40	1.29	3.85	40.535	59.4	97.828	VD0	2.6	7.8	10.715	13.59	48.256
TA2M	2.4	2.2	7.2	2.9	0.66	V40	2.15	6.4	18.504	26.6	99.123	VD0	4.3	12.9	4.37	6.53	49.703
TA2L	3.3	3	9.9	3.6	0.927	V40	2.95	8.9	10.846	19.07	99.241	VD0	5.8	17.4	2.635	4.5	51.103
TA3S	2.9	2.45	8.7	3.7	1.13	V40	2.65	8	11.083	29.3	98.13	VD0	5.3	15.9	2.781	6.397	49.225
TA3M	4.95	4	14.85	5	1.95	V40	4.45	13.3	4.965	12.84	100.189	VD0	9.1	27.5	1.292	3.08	48.689
TA3L	6.8	4.7	20.4	6.3	2.76	V40	6.2	18.5	2.885	8.27	100.264	VD0	12.3	37	0.773	2.05	50.025
TA41	6.9	5.7	20.7	7.5	5.65	V40	6.5	19.5	3.165	10.217	95.05	VD0	13.3	40	0.76	1.835	46.73
TA42	9.2	7.1	27.6	10.3	8.15	V40	8.5	25.5	1.766	6.237	97.35	VD0	17	51	0.446	1.324	48.68
TA43	11.7	8.6	35.1	13	10.65	V40	11.2	33.5	1.12	4.368	93.94	VD0	24.5	74	0.233	0.804	43.36
TA51	11.5	9	34.5	13.3	14.9	V40	11	33	1.521	6.279	93.88	VD0	22	66	0.38025	1.57	46.94
TA52	16.1	11.3	48.3	16.7	21.53	V40	15.8	47.5	0.828	3.979	91.4	VD0	31.5	95	0.207	0.995	45.7
TA53	20	10.4	60	21	28.15	V40	19.2	58	0.513	3.091	93.84	VD0	38.5	115	0.12825	0.773	46.92
6000 1/min																	
TA1S	0.5	0.48	1.5	1.5	0.136	V60	0.72	2.15	103.019	67.5	64.433	VF0	1.27	3.8	23.458	18.32	33.264
TA1M	1	0.98	3	1.9	0.2	V60	1.26	3.8	43.072	34.9	70.757	VF0	2.75	8.3	11.423	8.9	35.227
TA2S	1.4	1.38	4.2	2.2	0.391	V60	1.75	5.3	23.385	30.4	73.406	VF0	3.5	10.5	5.842	7.64	37.076
TA2M	2.4	2	7.2	2.9	0.66	V60	2.8	8.5	9.997	15.28	76.021	VF0	5.8	17.4	2.214	4.3	38.174
TA2L	3.3	2.6	9.9	3.6	0.927	V60	3.95	11.9	5.451	9.91	76.575	VF0	7.7	23	1.484	2.57	39.25
TA3S	2.9	2.25	8.7	3.7	1.13	V60	3.5	10.6	6.606	16.64	73.99	VF0	7.2	21.5	1.769	3.59	35.166
TA3M	4.95	3.3	14.85	5	1.95	V60	6	18	3.105	7.75	75.737	VF0	12.2	36.5	0.836	1.773	37.591

n Nominal speed
T_0 Stall torque
T_n Nominal torque S1
T_{max} Maximum torque
m Weight
J_m Inertia
V Type of motor winding
I_0 Current at stall torque
I_{max} Current at maximum torque

R_u-v Winding resistance
L_u-v Winding inductance
kE_{pk} Voltage constant, Peak value
mV*min = V/(1000 1/min)
Effective value kE=kEpk/√2
n_{max} Maximum speed
n≤2000 1/min → n_{max}=3000 1/min
n=3000 1/min → n_{max}=4500 1/min
n≤6000 1/min → n_{max}=6000 1/min



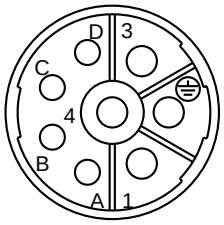
1 - Characteristic curve for S1-duty cycle
2 - Voltage limit curve 400 V or 230 V

SELECTION TABLE

SERVO MOTOR WITH FORCED VENTILATION

MOTOR						400 V						230 V					
	T_0 [Nm]	T_n [Nm]	T_{max} [Nm]	m [~kg]	J_m [kgcm^2]	V	I_0 [A]	I_{max} [A]	R_u-v [Ω]	L_u-v [mH]	kE_{pk} [mV*min]	V	I_0 [A]	I_{max} [A]	R_u-v [Ω]	L_u-v [mH]	kE_{pk} [mV*min]
1500 1/min																	
TA61F	48	43.5	103.5	36	77.71	V10	15.4	33	2.323	19.643	278.64	VA0	30	65	0.635	5.417	145.43
TA62F	70	61	150	47	113.71	V10	23	49.5	1.2	12.32	273.51	VA0	43.5	93	0.345	3.478	145.89
TA63F	90	82	192	57	149.7	V10	30	64	0.783	8.51	267.65	VA0	55	117	0.232	2.578	145.9
2000 1/min																	
TA41F	10.35	9.9	20.7	10.5	5.65	V20	4.7	9.4	13.812	43.418	198.16	VB0	9.3	18.6	3.601	8.499	100.46
TA42F	13.8	12.9	27.6	13.3	8.15	V20	6	12	8.388	28.562	205.81	VB0	12	24	2.096	5.905	102.86
TA43F	17.55	16.2	35.1	16	10.65	V20	7.5	15	5.554	20.336	209.53	VB0	15.6	31	1.309	4.79	101.12
TA51F	16	15	34.5	16.3	14.9	V20	7	15.1	7.336	31.114	205.42	VB0	15.3	33	1.521	6.279	93.88
TA52F	22	20	48.3	19.7	21.53	V20	9.4	20.5	4.114	21.148	210.74	VB0	21.5	47	0.828	3.979	91.4
TA53F	30	27	60	24	28.15	V20	13.1	26	2.553	14.876	206.64	VB0	29	58	0.513	3.091	93.84
TA61F	48	41.5	103.5	36	77.71	V20	21	45.5	1.259	10.949	206.2	VB0	42	91	0.31475	2.737	103.1
TA62F	70	57	150	47	113.71	V20	31.5	68	0.649	6.187	200.37	VB0	63	135	0.16225	1.547	100.185
TA63F	90	75	192	57	149.7	V20	41.5	89	0.413	4.619	194.54						
3000 1/min																	
TA41F	10.35	9.45	20.7	10.5	5.65	V30	6.7	13.4	6.995	21.248	139.96	VC0	13.6	27.5	1.674	4.996	68.26
TA42F	13.8	12.15	27.6	13.3	8.15	V30	8.8	17.7	3.727	13.344	140.55	VC0	17.7	35.5	0.955	3.14	70.28
TA43F	17.55	15.15	35.1	16	10.65	V30	11	22	2.611	10.404	144.54	VC0	22	44	0.654	2.183	72.25
TA51F	16	14	34.5	16.3	14.9	V30	10.3	22	3.441	15.411	140.06	VC0	20.5	44.5	0.86025	3.853	70.03
TA52F	22	18	48.3	19.7	21.53	V30	14.1	31	1.815	9.308	140.47	VC0	28	62	0.45375	2.327	70.235
TA53F	30	24	60	24	28.15	V30	19.2	38.5	1.279	6.687	140.83	VC0	40	80	0.259	1.445	68.23
TA61F	48	36	103.5	36	77.71	V30	30	65	0.635	5.417	145.43	VC0	60	129	0.15875	1.354	72.715
TA62F	70	46	150	47	113.71	V30	43.5	93	0.345	3.478	145.89						
TA63F	90	55	192	57	149.7	V30	55	117	0.232	2.578	145.9						
4500 1/min																	
TA41F	10.35	8.55	20.7	10.5	5.65	V40	9.8	19.5	3.165	10.217	95.05	VD0	20	40	0.76	1.835	46.73
TA42F	13.8	10.65	27.6	13.3	8.15	V40	12.8	25.5	1.766	6.237	97.35	VD0	25.5	51	0.446	1.324	48.68
TA43F	17.55	12.9	35.1	16	10.65	V40	16.8	33.5	1.12	4.368	93.94	VD0	37	74	0.233	0.804	43.36
TA51F	16	12.5	34.5	16.3	14.9	V40	15.3	33	1.521	6.279	93.88	VD0	30.5	66	0.38025	1.57	46.94
TA52F	22	15.4	48.3	19.7	21.53	V40	21.5	47	0.828	3.979	91.4	VD0	43	94	0.207	0.995	45.7
TA53F	30	15.5	60	24	28.15	V40	29	58	0.513	3.091	93.84	VD0	58	115	0.12825	0.773	46.92

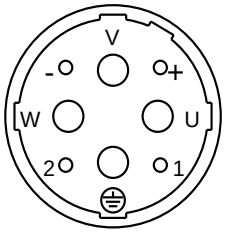
MOTOR TA2 ... TA5



Power connector size 1, 8pole
Optional: TA1 ... TA5 – Counterplug 00EKQS2-0002

Pin	1	⏚	3	4	A	B	C	D
Signal	U	PE	W	V	Brake+	Brake-	TW	TW

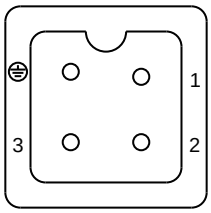
MOTOR TA6



Power connector size 1.5, 8pole
Optional: TA6 – Counterplug 00EKQS2-0001

Pin	U	V	W	⏚	+	-	1	2
Signal	U	V	W	PE	Brake+	Brake-	TW	TW

F – FORCED VENTILATION



Power connector 4pole, Counterplug included
Voltage/Frequency: 3 ~ 400 V 50 Hz
Rated current of forced ventilation: 0.14 A

Pin	1	2	3	⏚
Signal	U	V	W	PE

SUITABLE COMPONENTS

For the simple connection of the TA motors to the drive controller COMBIVERT S6 / F6, the following pre-assembled motor cables for the limited flexible installation are available:

TA1 ... TA5: power cable SpeedTec size 1 / M23
4x1.5 mm^2+2x(2x0.75 mm^2): **00S4519-00**___, length from 1 m to 50 m
4x2.5 mm^2+2x(2x0.75 mm^2): **00S4619-00**___, length from 1m to 50 m

TA6: power cable SpeedTec size 1.5 / M40
4x4 mm^2+2x(2x0.75 mm^2): **00S4719-00**___, length from 1 m to 50 m

SERVOSYSTEM

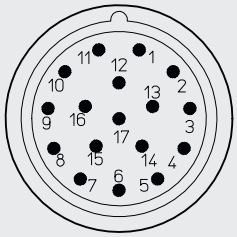
FROM THE MOTOR TO THE SERVO SYSTEM

After selecting the appropriate motor size, with / without encoder system, various options and gear types for individual optimisation in the application, the COMBIVERT S6 / F6 drive controllers provide the electrical supply and control / regulation.

We at KEB call these compact and universal electronic drives, **DRIVE CONTROLLERS**. Using software settings they are ready for synchronous or asynchronous motors, with or without the defined encoder systems and offer flexibility with serial connection to control level via CAN, EtherCAT, Profinet, Powerlink, VARAN or Modbus.

Use the suggestion type from KEB DRIVE or select the one for special tasks and requirements suitable combination in the power range from 0.75 to 450 kW.

EN01 - ABSOLUTE ENCODER MULTITURN, BISS-C
EN02 – ABSOLUTE ENCODER SINGLETURN, BISS-C



- Resolution singleturn: 19 bit
- Resolution multiturn (EN01): 12 bit (4096 rev)
- Code type: BiSS, binary code
- Supply voltage: 5 V_{DC} ± 5%
- Current consumption: max. 50 mA singleturn / 100mA multiturn
- Permissible load / channel: ± 20 mA
- Encoder system position KEB: 0

Signal connector 17pole,
Optional: Counterplug **00EKQI1-Z042**

Pin	10	7	8	9	14	17
Signal	0V	+V	clock	/clock	data	/data

ENCODER CABLES

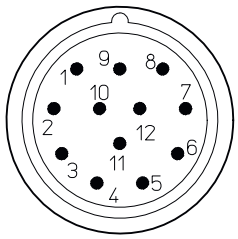
Plug and play - ready made cables for connecting the TA motors to the drive controller COMBIVERT S6 / F6.
Encoder cable BiSS, SpeedTec, size 1 / M23:

- **00S6L51-20**___, length from 1 m to 50 m

ER – RESOLVER

- Type: BRX 2-pole
- Voltage: 7 V_{AC}
- Frequency: 10 kHz
- Transformation factor: 0.5 ± 5 %
- Encoder system position:
  +⟶ U,-⟶ V
  Rotor 330°- electrical offset 15° = 315° KEB: 57344

FS optional: Execution functional safety



Signal connector 12pole, size A
Optional: Counterplug **00EKQI1-Z040**

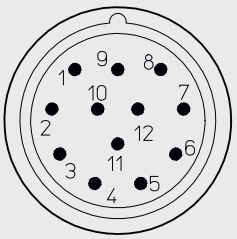
Pin	1	2	5	7	10	11
Signal	/sin	/cos	/sin-ref	sin-ref	sin	cos

ENCODER CABLES

Plug and play - ready made cables for connecting the TA motors to the drive controller COMBIVERT S6 / F6.
Encoder cable Resolver, SpeedTec, size 1 / M23:

- **00S6L50-10**___, length from 1 m to 50 m

EN05 - ABSOLUTE ENCODER MULTITURN, HIPERFACE
EN06 - ABSOLUTE ENCODER SINGLETURN, HIPERFACE



- Resolution singleturn: 12 bit
- Resolution multiturn (EN05): 12 bit (4096 rev)
- Code type: HIPERFACE
- Sin/Cos-periods: 128ppr 1Vpp
- Supply voltage: 7 ... 12 VDC (recommended: 8 VDC)
- Current consumption: max. 60 mA
- Permissible load / channel: ± 20 mA
- Encoder system position KEB: 11000

FS optional: Execution functional safety

Signal connector 12pole, size A
Optional: Mating connector **00EKQI1-Z040**

Pin	4	5	6	7	8	9	10	11
Signal	/sin	/cos	data	/data	sin	cos	+V	0V

ENCODER CABLES

Plug and play - ready made cables for connecting the TA motors to the drive controller COMBIVERT S6 / F6.
Encoder cable Hiperface, SpeedTec, size 1 / M23:

- **00S6L55-10**___, length from 1 m to 50 m

BRAKES

BRAKE BP - COMBIPERM

- Permanent magnet holding brake with emergency stop function
- Standard voltages: 24 VDC
- Insulation class: F

Connection with power connector

MOTOR	Brake	T_{br} [Nm]	J_B [kgcm^2]	P_{20} [W]	t2 [ms]	t1 [ms]	t11 [ms]	$W_{R0.1}$ [J*10^6]	W_{Rmax} [J*10^3]	m [~kg]
TA1	BP03	2	0.068	11	25	6	2	0.41	5.3	0.2
TA2	BP03	2	0.068	11	25	6	2	0.41	5.3	0.2
TA3	BP05	4.5	0.18	12	35	7	2	0.58	8	0.4
TA4	BP06	9	0.54	18	40	7	2	0.89	11	0.6
TA5	BP07	18	1.66	24	50	10	3	1.29	14	1.0

BRAKE BF - COMBISTOP

- Spring-set dual surface spring-applied
- Standard voltages: 24 V_{DC}
- Insulation class: F

Connection with power connector

MOTOR	Brake	T_{br} [Nm]	J_B [kgcm²]	P_{20} [W]	t2 [ms]	t1 [ms]	$W_{R0.1}$ [J*10^6]	W_{Rmax} [J*10^3]	m [~kg]
TA3	BF02	7	0.3	18	≤ 90	≤ 25	7.5	4.8	1.5
TA4	BF03	16	0.7	20	≤ 150	≤ 60	12.5	6.1	2.5
TA5	BF04	36	1.4	25	≤ 220	≤ 120	19.1	10.6	4.8
TA6	BF05	70	3.5	30	≤ 420	≤ 60	28.8	32	8.3

T_{br} Static braking torque after completed run-in phase (20° C)
J_B Inertia
P_{20} Excitation rating at 20° C
t2 Release time, time from connecting the current to the beginning of torque decrease
t1 Engaging time: Time from disconnecting the current until the rated torque is attained
t11 Engaging delay time: Time from disconnecting the current until the torque rises
$W_{R0.1}$ Friction work until 0.1 mm abrasion
W_{Rmax} Permissible friction work for emergency stop from 3000 1/min

The specified switching times apply to nominal clearance and nominal torque. It relates to average values and depends on the type of rectification and coil temperature.

MOTOR PROTECTION

The following motor protection can be supplied:
TW - PTC thermistor sensor
PT - PT1000 sensor

ADDITIONAL INERTIA

To improve the control characteristics of the servo system with high external masses, the servomotors TA can be equipped with an additional inertia.

MOTOR	J_z [kgcm²]
TA3S, TA3M	2.6
TA41, TA42	11
TA51, TA52	28
TA61, TA62	130

TA SERVO GEARED MOTORS

HELICAL GEARED MOTORS

Mounting versions for flange, foot or combined flange / foot mounting with fine speed gradations and controllability down to speed 0 for optimal adaptation of output torque and speed with low backlash and high overload capacity.

GEAR SIZE	T2 [Nm]	Ratio	Servo motor					
			TA1	TA2	TA3	TA4	TA5	TA6
G0	60	3.46 - 72.52	●	●	●			
G1	117	3.37 - 115.34		●	●	●		
G2	235	3.49 - 153.41			●	●	●	
G3	480	3.56 - 177.27			●	●	●	●
G4	875	3.61 - 210.05				●	●	●
G5	1630	3.85 - 186.77					●	●
G6	2800	3.96 - 221.95					●	●
G7	4880	4.34 - 250.97						●

FLAT GEARED MOTORS

The design for direct attachment in slip-on or flange mounting with shaft, hollow shaft or toothed hollow shaft.
Optional: with reduced backlash, rubber buffers and in demanding environments with special coating.

GEAR SIZE	T2 [Nm]	Ratio	Servo motor					
			TA1	TA2	TA3	TA4	TA5	TA6
F2	245	3.37 - 170.20		●	●	●		
F3	470	3.70 - 190.26		●	●	●	●	
F4	885	3.20 - 235.25		●	●	●	●	
F5	1580	3.80 - 205.64			●	●	●	●
F6	2800	4.08 - 242.63				●	●	●
F7	4880	4.32 - 274.23				●	●	●
F8	8900	6.09 - 200.61					●	●

HELICAL WORM GEARED MOTORS

With a focus on the lower power range, helical worm gear units with integrated Servo motor are the economical and efficient solution for right-angled output. The universal mounting form and variants with shaft, hollow shaft and flange create ideal suitability and flexible customisation.

GEAR SIZE	T2 [Nm]	Ratio	Servo motor					
			TA1	TA2	TA3	TA4	TA5	TA6
S0	55	5.09 - 189.0	●	●	●			
S1	162	7.00 - 168.00		●	●	●		
S2	295	6.85 - 207.20			●	●	●	
S3	540	13.33 - 271.60			●	●	●	●
S4	1160	14.07 - 247.58				●	●	●

HELICAL BEVEL GEARED MOTORS

For applications with the highest degree of efficiency with lateral output, the gearboxes have a particularly rigid bearing of the shaft or hollow shaft, thus also transferring high radial forces with alternating loads in clocking systems.

GEAR SIZE	T2 [Nm]	Ratio	Servo motor					
			TA1	TA2	TA3	TA4	TA5	TA6
K0	58	3.46 - 72.52	●	●	●			
K1	110	3.38 - 54.60		●	●	●		
K2	205	5.07 - 102.27		●	●	●		
K3	400	5.14 - 120.13			●	●	●	
K4	745	5.16 - 151.92			●	●	●	●
K5	1430	5.69 - 138.94				●	●	●
K6	2550	6.35 - 160.53					●	●
K7	4880	7.29 - 183.21					●	●
K8	7960	8.11 - 144.66						●

PLANETARY GEARED MOTORS

The solution for particularly dynamic applications, can be used universally in all installation positions with compact design, high rigidity, minimised backlash and high efficiency.

GEAR SIZE	T2 [Nm]	Ratio	Servo motor					
			TA1	TA2	TA3	TA4	TA5	TA6
PR1	13	3 – 32	●	●				
PR2	30	3 - 40	●	●	●			
PR3	82	3 – 40		●	●	●		
PR4	172	3 – 100		●	●	●	●	
PR5	445	3 – 100				●	●	●
PP2	40	3 – 100	●	●	●			
PP3	80	3 – 100	●	●	●	●		
PP4	175	3 – 100		●	●	●	●	
PP5	405	3 – 100			●	●	●	●
PP6	950	3 – 100				●	●	●

T2 [Nm] Nominal output torque gear unit

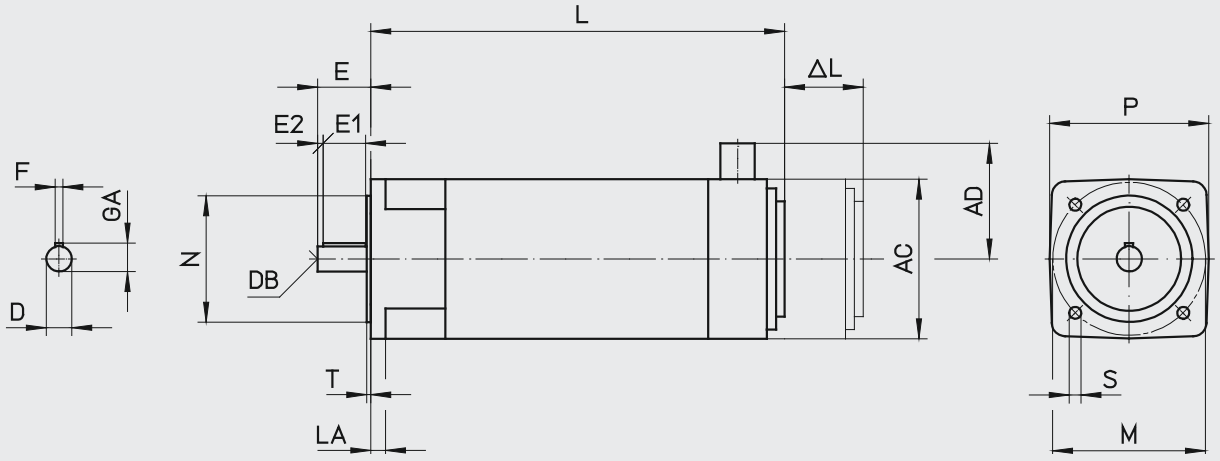
HIGHLIGHTS TA SERVO MOTORS

- From 0.5 to 90 Nm standstill torque with up to 200 Nm peak torque
- Encoder variants: Resolver, BISS, Hiperface incl. FS (functional safety)
- Permanent magnet or spring-applied brakes
- Servo geared motors in combination with helical, flat, helical worm, helical bevel or planetary gear series – all components are form-locking connected

DIMENSIONS

	TA1	TA2	TA3	TA4	TA5	TA6
LA	7	8	8	9	12	14
M	Ø 63	Ø 75	Ø 100	Ø 130 / Ø 115	Ø 165	Ø 215
N	Ø 40	Ø 60	Ø 80	Ø 110 / Ø 95	Ø 130	Ø 180
P	58	75	90	116 / 116	145	188
S	Ø 5.5	Ø 5.5	Ø 6.8	Ø 9	Ø 11	Ø 14
T	2.5	2.5	3	3	3.5	4
D	Ø 9k6	Ø 11k6 / Ø 14k6	Ø 14k6 / Ø 19k6	Ø19k6 / Ø 24k6	Ø 24k6 / Ø 32k6	Ø 32k6 / Ø 38k6
DB	M3	M4 / M5	M5 / M6	M6 / M8	M8 / M12	M12 / M12
E	20	23 / 30	30 / 40	40 / 50	50 / 58	58 / 80
E1	14	16 / 22	22 / 32	32 / 40	40 / 50	50 / 70
E2	3	3.5 / 4	4	4 / 5	5 / 4	4 / 5
F	3	4 / 5	5 / 6	6 / 8	8 / 10	10 / 10
GA	10.2	12.5 / 16	16 / 21.5	21.5 / 27	27 / 35	35 / 41
AC	58	75	90	116	145 F:158	185 F:198
AD	73	80	88	102	115,5	158
L	S:134 M:164	S:153 M:193 L:253	S:166 M:216 L:263	1:232 2:267 3:302	1:252 2:287 3:322	1:343 2:413 3:483
ΔL	**Additional lengths per version** (ER – Resolver or without Encoder: ΔL=0)					
B_	35	25	50	45	55	60
EN_	27	27	27	27	27	27
B_ EN_	62	52	77	72	82	87
F					156	163.5
B_ F					211	223.5
B_ F EN_					211	223.5

B_ Brake BP or BF *EN_ Absolute encoder..* *F Forced ventilation*



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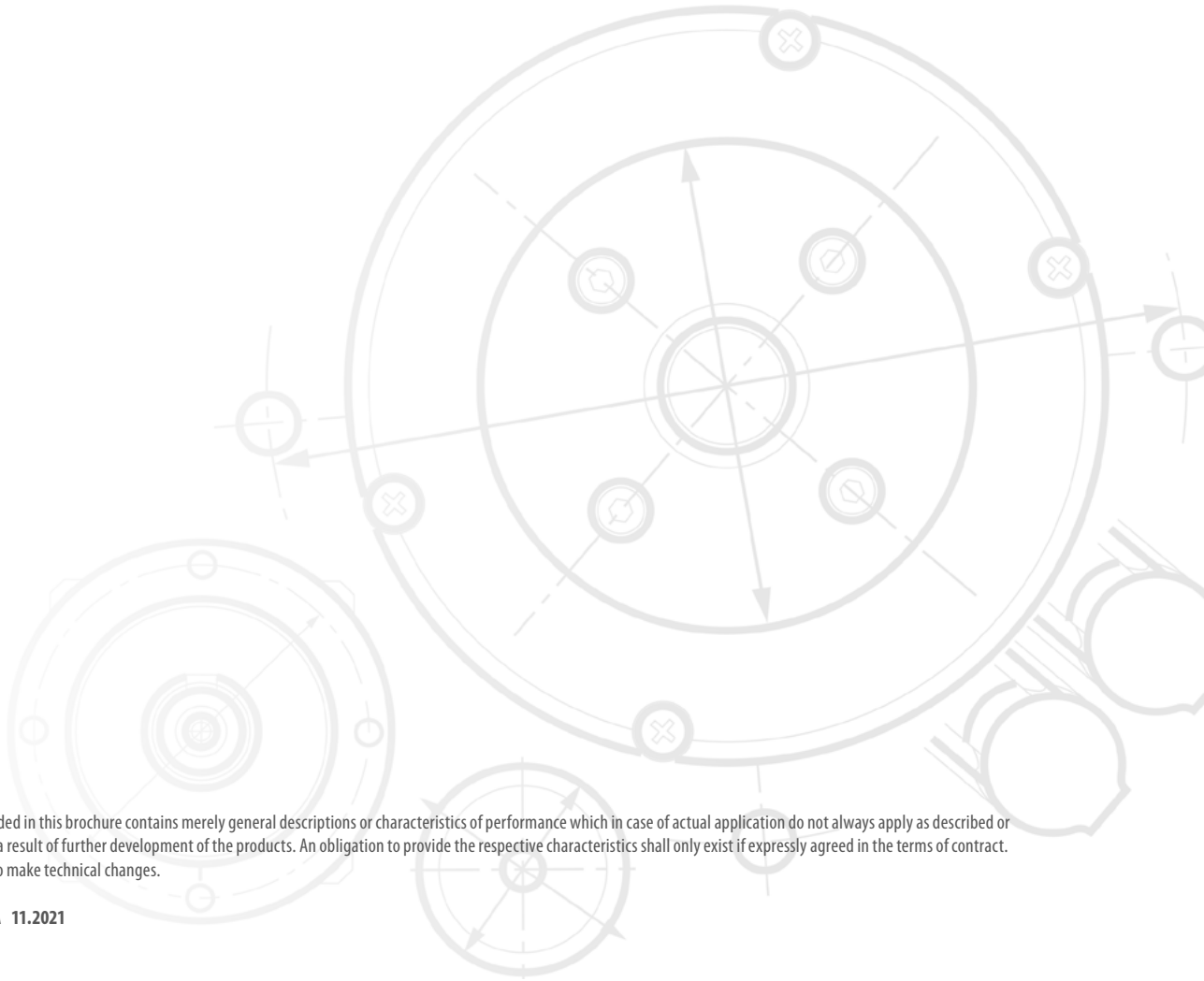
KEB'S GLOBAL PARTNER NETWORK



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