Holding brake

Function description, refer to Chapter 2.2, General information on AC servomotors AL S.

Table 1-4 Technical data of the holding brakes used with 1FK6 motors

Motor type	Brake type	Holding torque M_4 [Nm]		Dyn. torque M_{1m} [Nm]	DC current	Power drain	Opening time	Closing time	Moment of inertia, brake	Highest switching power 1)2)
		20 °C	120 °C	120 °C	[A]	[W]	[ms]	[ms]	[10^{-4} kgm^2]	[J]
1FK6032	EBD 0.13BS	1.5	1.1	0.8	0.4	9.5	30	10	0.08	13
1FK604□	EBD 0.3B	3.9	3.2	2.1	0.6	13.5	35	10	0.2	68
1FK606□	EBD 0.8B	12	10	7	0.7	15.6	55	15	0.6	318
1FK608□	EBD 1.4BV	22	18	8	0.9	21	150	30	2.6	535
1FK6100	EBD 2 BY	28	20	12	0.9	22.3	100	30	8.6	1135
1FK6101 1FK6103	EBD 3.8B	50	36	17	0.9	22.3	180	25	10.3	1233

1) per emergency stop with n = 3000/min.
2) $\omega = 1/2 \cdot J_{tot} \cdot \omega^2$; J_{tot} [kgm^2]; ω [1/s]; ω [W];

Basic braking characteristics

Refer to Chapter 2, General information on AC servomotors AL S.

M_{1m}	[Nm]	=	Average dynamic torque defined by the slip time t_3
M_4	[Nm]	=	Torque which is transmitted, taking into account the max. solenoid temperature, friction value fluctuations and production tolerances.

Forced ventilation

Not available

Connector outlet direction

The customer can rotate the connector (refer to the dimension drawing)

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Order Designations

2

1FK6

Order designation

1 F K 6 . . . – . A . 7 1 – 1 . . .

Electric motor
Synchronous motor
AC servomotor
Series
Frame size
Length
Pole No.
7 = High Dynamic (HD)
Non–ventilated
Rated speed
F = 3000 RPM
H= 4500 RPM
K = 6000 RPM
Encoder system

A	Incremental encoder, 1 Vpp	1)
E	Absolute value encoder	1)
G	Basic absolute value encoder	1)
T	Resolver 2–pole	
S	Resolver Multi–pole	2)

	Shaft end[1)]	Radial eccentricity	Holding brake
A =	with keyway	N	without
B =	with keyway	N	with
G =	without keyway	N	without
H =	without keyway	N	with

Degree of protection
0 = IP 64
2 = IP 65 and additional DE flange IP67

1) not for shaft height 36
2) encoder pole number corresponds to that of the motor

■

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Table 3-6 Standard motor 1FK6080

1FK6080				
Technical data	**Code**	**Units**	**–6AF7**	
Engineering data				
Rated speed	n_{rated}	RPM	3000	
Rated torque	$M_{rated\ (100\ K)}$	Nm	6.8	
Rated current	I_{rated}	A	5.2	
Stall torque	$M_{0\ (60\ K)}$	Nm	6.6	
Stall torque	$M_{0\ (100\ K)}$	Nm	8.0	
Stall current	$I_{0\ (60\ K)}$	A	4.6	
Stall current	$I_{0\ (100\ K)}$	A	5.8	
Moment of inertia (with brake)	J_{mot}	10^{-4} kgm^2	18.7	
Moment of inertia (without brake)	J_{mot}	10^{-4} kgm^2	16.1	
Limit data				
Max. speed	n_{max}	RPM	4800	
Max. torque	M_{max}	Nm	25	
Peak current	I_{max}	A	19	
Limiting torque	M_{limit}	Nm	23	
Limiting current	I_{limit}	A	18	
Physical constants				
Torque constant	k_T	Nm/A	1.39	
Voltage constant	k_E	V/1000 RPM	92	
Winding resistance	R_{ph}	Ohm	1.3	
Three–phase inductance	L_D	mH	10	
Electrical time constant	T_{el}	ms	7.7	
Mechanical time constant	T_{mech}	ms	3.2	
Thermal time constant	T_{th}	min	30	
Thermal resistance	R_{th}	W/K	0.2	
Weight with brake	m	kg	13.7	
Weight without brake	m	kg	12.5	

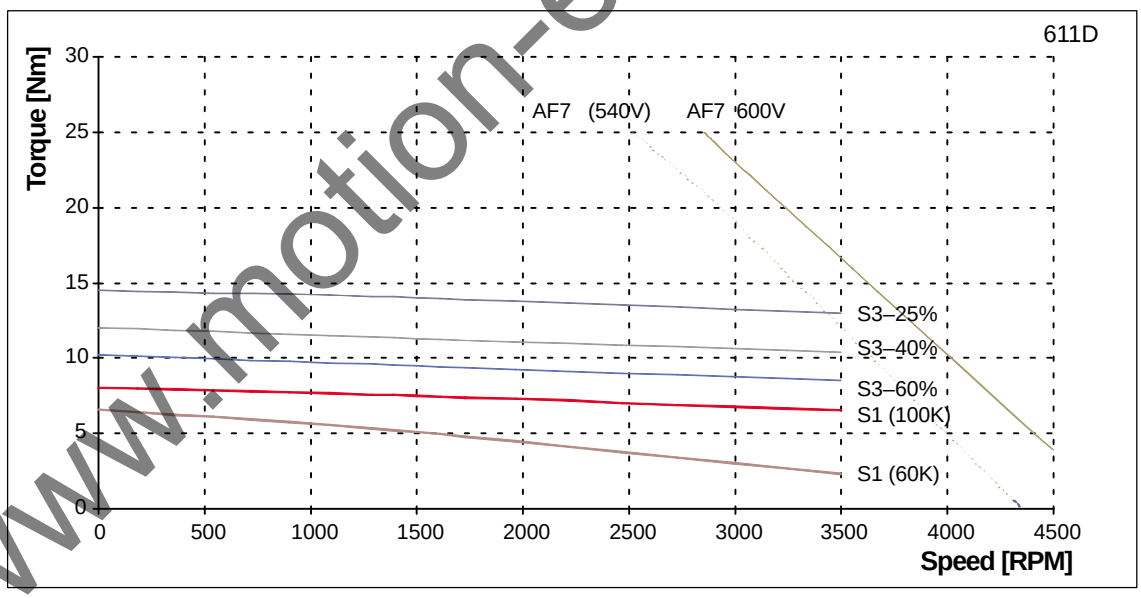

Fig. 3-6 Speed–torque diagram 1FK6080

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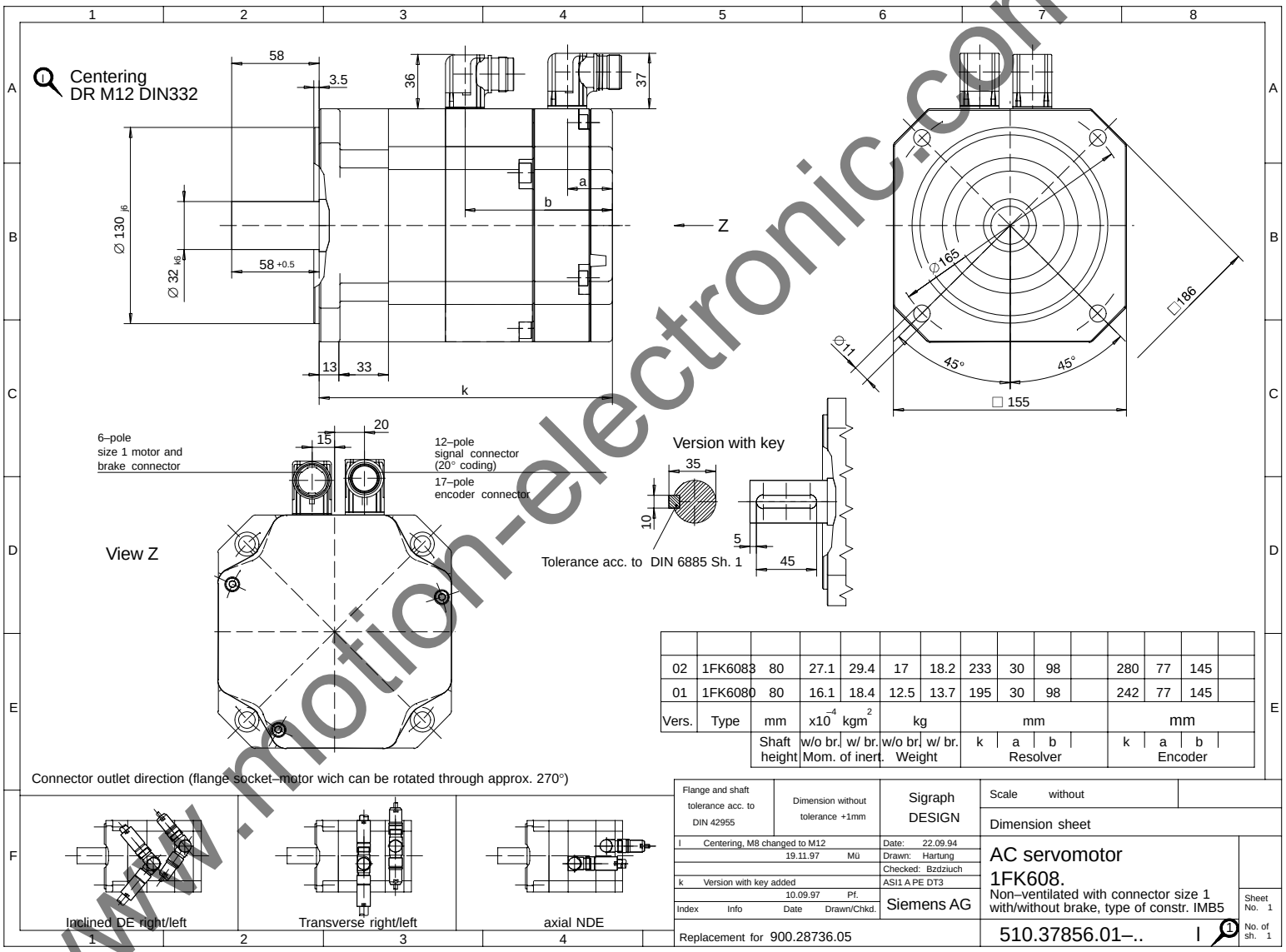

Vers.	Type	mm	x10⁻⁴ kgm²		kg		mm				mm			
		Shaft height	w/o br. Mom. of inert.	w/ br.	w/o br. Weight	w/ br.	k	a	b		k	a	b	
							Resolver				Encoder			
02	1FK6083	80	27.1	29.4	17	18.2	233	30	98		280	77	145	
01	1FK6080	80	16.1	18.4	12.5	13.7	195	30	98		242	77	145	

Fig. 4-6 1FK608□ non–ventilated with connector, size 1

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