

Servo Motors for SIMOVERT MASTERDRIVES

Mounted Parts

Holding Brakes

Technical Data for Built-In Holding Brakes (Brake Supply Voltage 24 V DC ± 10%)

Size	Motor Type	Brake Type	Holding Torque	DC Current	Opening Time with Varistor	Closing Time with Varistor	Moment of Inertia	Maximum Switched Energy per Brake Operation from $n = 3,000$ rpm
			Nm (lb _f -ft)	A	ms	ms	10 ⁻⁴ kgm ² (lb _f -in-s ²)	J (lb _f -in)
For 1FK7 CT Motors								
28	1FK7 022	EBD 0.11 BN	1.1 (0.8)	0.3	25	15	0.07 (0.00006)	8 (70.8)
36	1FK7 032	EBD 0.13 BN	1.3 (1)	0.4	45	25	0.08 (0.00071)	17 (150.5)
48	1FK7 04.	EBD 0,3 BV	3.8 (2.8)	0.6	70	20	0.72 (0.00064)	74 (655)
63	1FK7 06.	EBD 0,8 BK	13.2 (9.7)	0.8	90	20	2.25 (0.00199)	350 (3097.9)
80	1FK7 080	EBD 1.5 BN	10 (7.3)	0.7	90	20	3.1 (0.00274)	400 (3540.4)
80	1FK7 083	EBD 2 BY	22 (16.2)	0.9	125	65	8.6 (0.00761)	1400 (12391.4)
100	1FK7 100	EBD 2 BY	22 (16.2)	0.9	125	65	8.6 (0.00761)	1400 (12391.4)
100	1FK7 101/103/105	EBD 3.5 BV	41 (30.2)	1.0	250	70	13.5 (0.01195)	3000 (26550)
For 1FK7 HD Motors								
36	1FK7 033	1EB 14	1.3 (1)	0.45	70	35	0.12 (0.00011)	14 (123.9)
48	1FK7 04.	1EB 20	4 (3)	0.6	110	40	0.13 (0.00012)	96 (849.6)
63	1FK7 06.	1EB 28	12 (8.9)	0.8	150	45	0.34 (0.00030)	230 (2035.5)
80	1FK7 08.	1EB 35	22 (16.2)	1.2	190	50	2.0 (0.00177)	700 (6195)
For 1FT6 Motors								
28	1FT6 02.	EBD 0.11 B	1.2 (0.9)	0.3	20	10	0.07 (0.00006)	34 (300.9)
36	1FT6 03.	EBD 0.15 B	2 (1.5)	0.4	30	15	0.12 (0.00011)	27 (238.9)
48	1FT6 04.	EBD 0.4 BA	5 (3.7)	0.8	30	15	1.06 (0.00094)	126 (1115.1)
63	1FT6 06.	EBD 1.5 BN	22 (16.2)	0.7	130	20	3.2 (0.00283)	321 (2840.9)
80	1FT6 081/082	EBD 1.2 B	12 (8.9)	0.8	70	35	3.2 (0.00283)	740 (6549)
80	1FT6 084/086	EBD 3.5 BN	28 (20.7)	0.9	180	35	13.5 (0.01195)	1640 (14514)
100	1FT6 10.	EBD 4 B	80 (59)	1.4	180	20	32 (0.02832)	2150 (19027.5)
132	1FT6 13.	EBD 8 B	140 (103.3)	1.7	260	70	76 (0.06726)	9870 (87349.5)

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Holding Brakes

Built-On Holding Brakes for 1PH7 Motors (continued)

Technical Data for Built-On Holding Brakes with Emergency Stop Function (Brake Supply Voltage 230 V AC, 50 to 60 Hz/ 24 V DC +5% –10%)

Shaft Height	Motor Type	Brake Type	Holding Torque (Tolerance ±20%)	Speed $n_{\max}$.	Per-miss. Single Switched Energy W_S	Life-time Switched Energy $W_{\max}$.	No. Emergency Stops before Lining Change from $n_{\max}$. at J z	Coil Current AC DC		Flange Dia-meter DIN 42 948	Shaft End Dia-meter DIN 748 Ø Length	Per-miss. Cantilever Force (3000 rpm, $x_{\max}$.)	Moment of Inertia of Brake	Brake Weight	Open-ing Time	Clos-ing Time	
			Nm (lb _f -ft)	rpm	kJ (lb _f -ft x 10 ³)	MJ (lb _f -ft x 10 ⁶)	–	kgm ² (lb _f -in-s ²)	A A		mm (in)	mm (in)	N (lb _f)	kgm ² (lb _f -in-s ²)	kg (lb)	ms	ms

For 1PH7 Motors with Brake Supply Voltage of 230 V AC, 50 to 60 Hz

100	1PH710. Size 19		60 to 150 (44 to 111)	5500	25 (18.4)	90 (66.4)	8700 0.062 (0.5487)	1.0 4.7	A250	38 (1.5)	80 (3.1)	2300 (517)	0.005 (0.0442)	21 (46)	255	60
132	1PH713. Size 24		140 to 310 (103 to 229)	4500	40 (29.5)	226 (166.7)	9400 0.208 (1.8407)	1.3 6.3	A350	42 (1.7)	110 (4.3)	2000 (450)	0.015 (0.1327)	46 (101)	330	95
160	1PH716. Size 29		280 to 500 (207 to 369)	3700	60 (44.3)	401 (295.8)	11900 0.448 (3.9646)	1.35 6.7	A400	55 (2.2)	110 (4.3)	6800 (1528)	0.028 (0.2478)	66 (145)	350	450
180	1PH7184 NFE 60		600 (443)	3500	69 (50.9)	154 (113.6)	2230 1.02 (9.0265)	0.9 – –		90 (3.5)	90 (3.5)	2800 (629)	0.027 (0.2389)	55 (121)	400	160
	1PH7186 NFE 60/80		800 (590)		91 (67.1)	56 (41.3)	620 1.36 (12.0364)						0.026 (0.2301)			
225	1PH7224 NFE 100		1000 (738)	3100	158 (116.5)	153 (112.9)	970 3 (26.5487)	1.3 – –		100 (3.9)	100 (3.9)	2800 (629)	0.041 (0.3628)	75 (165)	460	200
	1PH7226 NFE 100		1000 (738)		206 (151.9)	109 (80.4)	530 3.9 (24.5133)						0.041 (0.3628)			
	1PH7228 NFE 100/140		1400 (1033)		248 (182.9)	32 (23.6)	130 4.7 (41.59)						0.041 (0.3628)			

Holding torque in Nm: For motors with a shaft height of 100 to 160, a setting ring is used for infinite adjustment of the holding torque within the specified range. The dynamic braking torque is approximately 0.7 to 0.8 x the holding torque.

Speed $n_{\max}$: Maximum permissible rotational speed at which an emergency stop is possible.

Permissible single switched energy W_S in kJ: Permissible switched energy during an emergency stop, $W_S = J_{\text{total}} \times n^2 / 182.5 \times 10^{-3}$ (J in kgm², n in rpm) ($W_S = J_{\text{total}} \times n^2 / 1.6151 \times 10^{-3}$; J in lb_f-in-s², n in rpm).

Lifetime switched energy $W_{\max}$ in MJ: Maximum possible switched energy of the brake (during an emergency stop) before the brake linings must be replaced, $W_{\max} = W_S \times z$.

No. of emergency stops z : The specified number of emergency stops relates to the following conditions: Braking from speed $n_{\max}$, $J_{\text{total}} = 2 \times J_{\text{mot}}$. The following conversion can be made for different conditions: Number of emergency stops $z = W_{\max} / W_S$.

Coil current in A: Current required to keep the brake in a released state. For NFE brakes: Release current = 2 x holding current.

Permissible cantilever force in N: Motors with a shaft height of 100 to 160 can have both coupling drives and belt drives, but motors with an axis height of 180 or 255 can only have coupling drives.

Opening time in ms: Separation time before the brake opens (specified values refer to maximum braking torque).

Closing time in ms: Connection time before the brake closes (specified values refer to maximum braking torque).

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Holding Brakes

Order Number Key for 1PH7 Shaft Heights 100, 132, and 160 for Built-On Holding Brake with Emergency Stop Function

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	P	H	7	.	.	.	-	.	.	.	.	-	K	.	.
Without brake													0			
Brake supply voltage: 230 V AC, 50 – 60 Hz																
With brake (brake supply voltage: 230 V AC, 50–60 Hz)													1			
With brake (brake includes microswitch)													2			
With brake (brake includes manual release)													3			
With brake (brake includes microswitch and manual release)													4			
Brake supply voltage: 24 V DC																
With brake (brake supply voltage: 24 V DC)													5			
With brake (brake includes microswitch)													6			
With brake (brake includes manual release)													7			
With brake (brake includes microswitch and manual release)													8			

Models with brake are only available in the following combinations:

- Vibration severity grade N, shaft and flange accuracy N (“**K**” in position 14)
- Shaft end on brake module with key and half-key balancing (“**A**” or “**B**” in position 15) or keyless shaft end (“**J**” or “**K**” in position 15)
- Type IM B5 (only for sizes 100 and 132; “**2**” in position 12) or IM B35 (“**3**” in position 12; foot-mounting type IM B3 is available)
- and “**0**”, “**3**”, or “**6**” in position 16.

Order Number Key for 1PH7 Shaft Heights 180 and 225 for Built-On Holding Brake with Emergency Stop Function

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	P	H	7	.	.	.	-	.	.	.	.	0	-	A	A
Without brake													0			
With brake (brake includes microswitch and emergency release screw)													2			
With brake (brake includes microswitch and manual release)													4			

Models 2 and 4 are only available as construction type IM B3, i.e.:

- Only “**0**” in position 12
- Only “**A**” in position 14
- Only “**A**” in position 15
- Only “**0**”, “**3**”, or “**6**” in position 16 possible.