

3. CHARACTERISTICS OF FANUC DC SERVO MOTORS

3.1 Motor Models and Specifications

The next table shows model numbers of DC servo motors and their specifications.

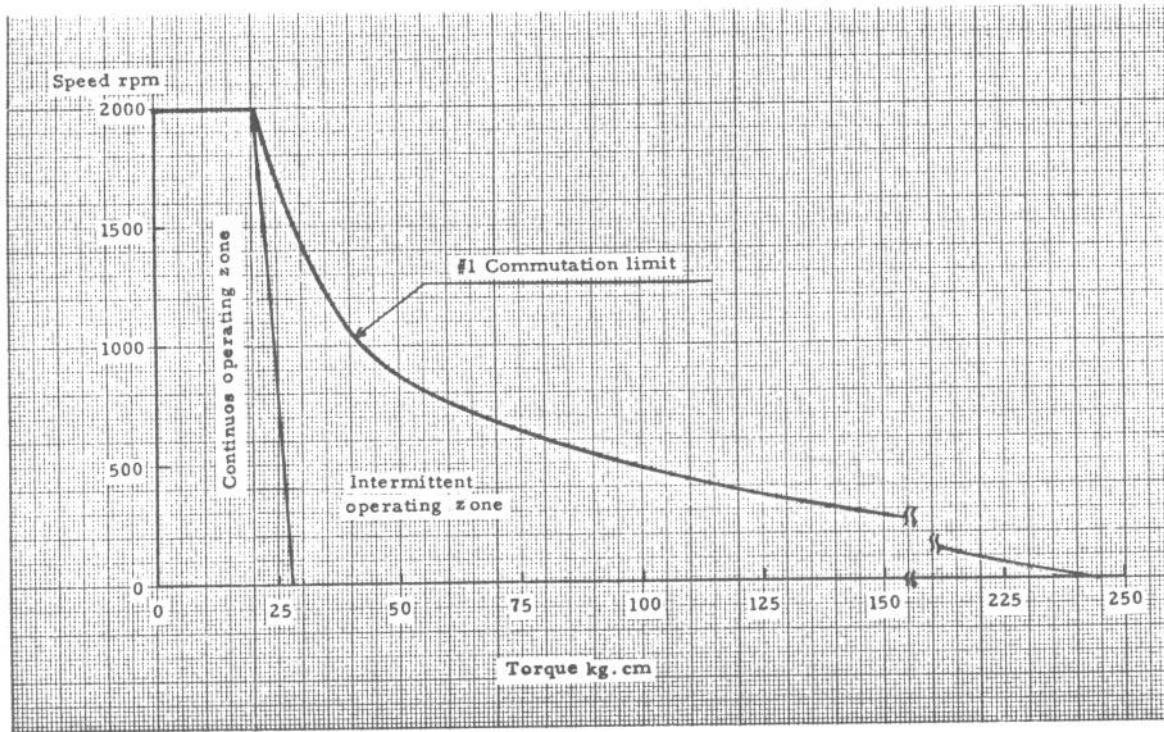
Item	Model	FANUC DC Servo Motors			GETTYS-FANUC DC Servo Motors							FANUC DC Servo Motors						
		00	0	5	10	10H*	20	20H*	30	30H*	40	50	60	60H*	OL	5L	7L(H)*	10L(H)*
Output Power	KW (HP)	0.15 (0.2)	0.4 (0.5)	0.8 (1)	1.1 (1.5)	1.5 (2)	1.8 (2.5)	3.1 (4)	2.8 (4)	4.6 (6)	5 (7)	10 (14)	15 (20)	22 (30)	0.3 (0.4)	3.0 (4)	6 (8)	
Rated Torque	kg-cm	10	28	55	120	200	230	400	385	600	330	670	1,000	1,500	25	250	500	
Max. Torque	kg-cm	35	240	480	1,160	1,160	2,460	2,460	3,680	3,680	2,500	5,200	8,000	8,000	125	750	1,500	
Max. Speed	rpm	2,000	2,000	2,000	1,500	1,500	1,500	1,500	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,500	2,000	
Rotor Inertia	kg-cm ²	0.0071	0.029	0.05	0.20	0.22	0.33	0.39	0.44	0.50	1.2	1.9	2.8	3.0	0.009	0.09	0.15	
Back EMF Constant	V/krpm	18	25	50	56.6	56.6	79.5	79.5	120	120	70	72	110	110	21.4	42.8	85.5	
Torque Constant	kg-cm/ Amp	1.5	2.44	4.87	5.54	5.54	7.77	7.77	11.7	11.7	6.8	7.0	10.7	10.7	4.17	4.19	8.34	
Mechanical Time Constant	msec	9	25	15	19	21	14	17	10	12	24	15	12	13	7	11	7	
Thermal Time Constant	min	16	50	55	100	35	105	35	110	40	120	120	120	35	15	20	10	
Weight	kg	2.7	12	16	25	30	36	45	46	55	90	125	160	180	10	15	47	66

*H: With Heart Pipe

Note: FANUC DC SERVO MOTOR-MODEL 0L, 5L, 7L and 10L are suited for special machine tool slide drives in which the high frequent start and stop operation is needed such as turret punch press and printed circuit board drilling machine.

Torque-Speed Characteristics

Model 0 (Three phase full wave thyristor drive)

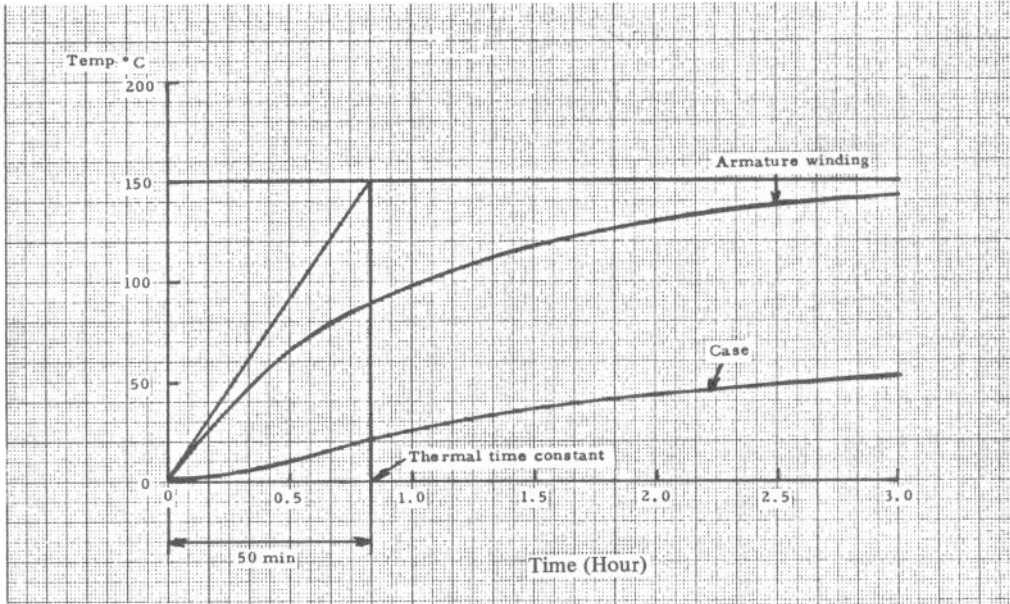


DATA SHEET: MODEL 0

PARAMETER	SYMBOL	VALUE	UNITS
Weight		12	kg
Rotor Inertia	Jm	0.029	kg-cm-sec ²
Mechanical Time Constant	tm	0.025	sec
Static Friction	Tf	3.0	kg-cm
Maximum Theoretical Acceleration	$\ddot{\theta}$ max	7500	rad/sec ²
Back EMF Constant $\pm 10\%$	Ke	25	V/1000rpm
	Kv	0.239	V-sec/rad
Torque Constant $\pm 10\%$	Kt	2.44	kg-cm/Amp
Armature D.C. Resistance; (less brushes) $\pm 10\%$ (including brushes) $\pm 10\%$	Ra	0.36	Ohm
	Rm	0.50	
Armature Inductance	La	0.0016	henry
Electrical Time Constant	te	0.0032	sec
Thermal Time Constant	tt	50	min
Viscous Damping Coefficient (Zero Z source)	Fo	0.121	kg-cm-min/rev
		1.16	kg-cm-sec/rad
Continuous Rated RMS Current at Stall TENV	Ic	12	Amps
Absolute Maximum Current Before Demagnetization	Im	100	Amps
Continuous Rated Torque at Stall TENV	Ts	28	kg-cm
Maximum Winding Temperature Rise	θ m	155	$^{\circ}$ C
Tachometer Generator			
Voltage sensitivity $\pm 10\%$	Ke	6.0	V/1000rpm
	Kv	0.0573	V-sec/rad
Ripple		1.0	% pk-av
Armature Resistance	Rg	120	ohm
Armature Inductance	La	0.013	henry
Minimum Recommended Load Impedance		10000	ohm

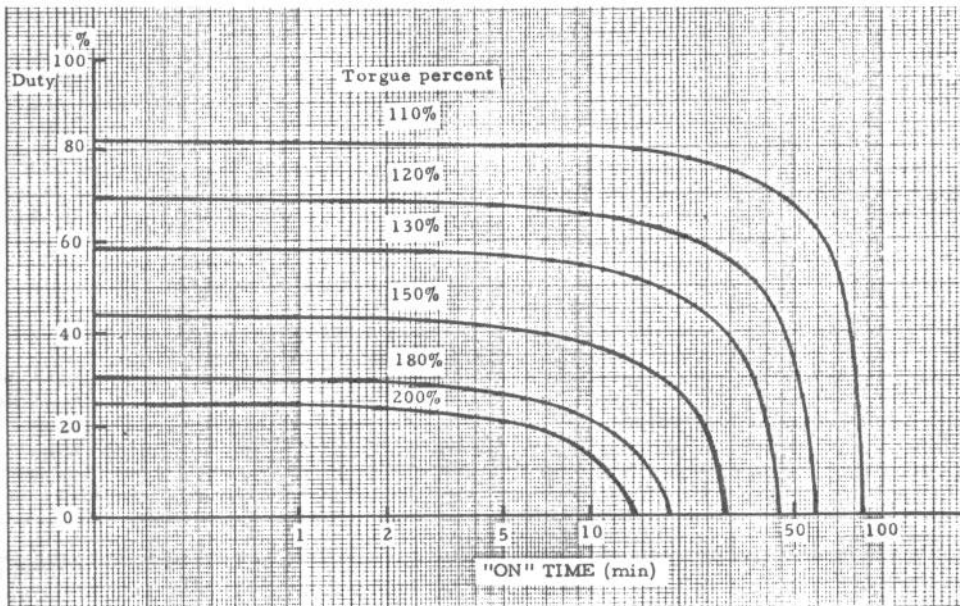
Model 0 Temperature Rise

Operating Condition: 12 Amps av. of three phase full wave thyristor drive
40 rpm, 40°C Ambient



Model 0 Duty Characteristics

Operating Condition: 40°C Ambient



- Note 1. Concerning 100% torque value, refer to rated torque value in respective drive method.
2. This characteristic can be limited by the characteristics of thermal relay.

