Model Designations

SGM7J - 01 A 7 D 6 1

1st+2nd digits	3rd digit	4th digit	5th digit	6th digit	7th digit

Σ-7 Series Servomotors: SGM7J

1st+2nd digits Rated Output

Code	Specification
A5	50 W
01	100 W
C2	150 W
02	200 W
04	400 W
06	600 W
08	750 W

3rd digit Power Supply Voltage

Code	Specification
A	200 VAC
D	400 VAC

4th digit Serial Encoder

Code	Specification
7	24-bit absolute
F	24-bit incremental

5th digit Design Revision Order

D: Global design revision (200 V)
F: Global design revision (400 V)

6th digit Shaft End

Code	Specification
2	Straight without key
6	Straight with key and tap
B	With two flat seats

7th digit Options

Code	Specification
1	Without options
C	With holding brake (24 VDC)
E	With oil seal and holding brake (24 VDC)
S	With oil seal

■ Non Stock Items

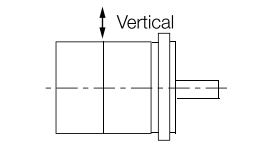
Specifications and Ratings

Specifications (200 V Models)

Voltage		200 V						
Model SGM7J-		A5A	01A	C2A	02A	04A	06A	08A
Time Rating		Continuous						
Thermal Class		UL: B, CE: B						
Insulation Resistance		500 VDC, 10 MΩ min.						
Withstand Voltage		1,500 VAC for 1 minute						
Excitation		Permanent magnet						
Mounting		Flange-mounted						
Drive Method		Direct drive						
Rotation Direction		Counterclockwise (CCW) for forward reference when viewed from the load side						
Vibration Class*1		V15						
Environmental Conditions	Surrounding Air Temperature	0°C to 40°C (With derating, usage is possible between 40°C and 60°C.)*4						
	Surrounding Air Humidity	20% to 80% relative humidity (with no condensation)						
	Installation Site	• Must be indoors and free of corrosive and explosive gases. • Must be well-ventilated and free of dust and moisture. • Must facilitate inspection and cleaning. • Must have an altitude of 1,000 m or less. (With derating, usage is possible between 1,000 m and 2,000 m.)*5 • Must be free of strong magnetic fields.						
	Storage EnviroNment	Store the Servomotor in the following enviroNment if you store it with the power cable disconnected. Storage Temperature: -20°C to 60°C (with no freezing) Storage Humidity: 20% to 80% relative humidity (with no condensation)						
Shock Resistance*2	Impact Acceleration Rate at Flange	490 m/s^2						
	Number of Impacts	2 times						
Vibration Resistance*3	Vibration Acceleration Rate at Flange	49 m/s^2						
Applicable SERVOPACKs	SGD7S-	R70A	R90A	1R6A		2R8A	5R5A	
	SGD7W-	1R6A*6, 2R8A*6		1R6A, 2R8A*6		2R8A 5R5A*6 7R6A*6	5R5A, 7R6A	

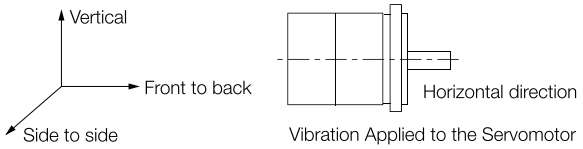
*1. A vibration class of V15 indicates a vibration amplitude of 15 μm maximum on the Servomotor without a load at the rated motor speed.

*2. The shock resistance for shock in the vertical direction when the Servomotor is mounted with the shaft in a horizontal position is given in the above table.



Shock Applied to the Servomotor

*3. The vertical, side-to-side, and front-to-back vibration resistance for vibration in three directions when the Servomotor is mounted with the shaft in a horizontal position is given in the above table. The strength of the vibration that the Servomotor can withstand depends on the application. Always check the vibration acceleration rate that is applied to the Servomotor with the actual equipment.



*4. If the surrounding air temperature will exceed 40°C, refer to the following section.

☞ *Applications Where the Surrounding Air Temperature of the Servomotor Exceeds 40 ℃* (page 25)

*5. If the altitude will exceed 1,000 m, refer to the following section.

☞ *Applications Where the Altitude of the Servomotor Exceeds 1,000 m* (page 26)

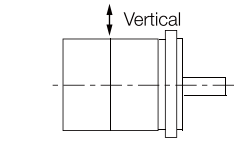
*6. If you use the Servomotor together with a Σ-7W SERVOPACK, the control gain may not increase as much as with a Σ-7S SERVOPACK and other performances may be lower than those achieved with a Σ-7S SERVOPACK.

Specifications (400 V Models)

Voltage		400 V			
Model SGM7J-		02D	04D	08D	15D
Time Rating		Continuous			
Thermal Class		UL: B, CE: B			
Insulation Resistance		500 VDC, 10 MΩ min.			
Withstand Voltage		1,800 VAC for 1 minute			
Excitation		Permanent magnet			
Mounting		Flange-mounted			
Drive Method		Direct drive			
Rotation Direction		Counterclockwise (CCW) for forward reference when viewed from the load side			
Vibration Class*1		V15			
Envi-roN•mental Conditions	Surrounding Air Temperature	0°C to 40°C (With derating, usage is possible between 40°C and 60°C.)*4			
	Surrounding Air Humidity	20% to 80% relative humidity (with no condensation)			
	Installation Site	• Must be indoors and free of corrosive and explosive gases. • Must be well-ventilated and free of dust and moisture. • Must facilitate inspection and cleaning. • Must have an altitude of 1,000 m or less. (With derating, usage is possible between 1,000 m and 2,000 m.)*5 • Must be free of strong magnetic fields.			
	Storage EnviroN•ment	Store the Servomotor in the following enviroN•ment if you store it with the power cable disconnected. Storage Temperature: -20°C to 60°C (with no freezing) Storage Humidity: 20% to 80% relative humidity (with no condensation)			
Shock Resistance*2	Impact Acceleration Rate at Flange	490 m/s^2			
	Number of Impacts	2 times			
Vibration Resistance*3	Vibration Acceleration Rate at Flange	49 m/s^2			
Applicable SERVO-PACKs	SGDV--	1r9		3R5	5R4

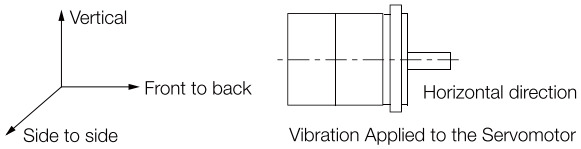
*1. A vibration class of V15 indicates a vibration amplitude of 15 μm maximum on the Servomotor without a load at the rated motor speed.

*2. The shock resistance for shock in the vertical direction when the Servomotor is mounted with the shaft in a horizontal position is given in the above table.



Shock Applied to the Servomotor

*3. The vertical, side-to-side, and front-to-back vibration resistance for vibration in three directions when the Servomotor is mounted with the shaft in a horizontal position is given in the above table. The strength of the vibration that the Servomotor can withstand depends on the application. Always check the vibration acceleration rate that is applied to the Servomotor with the actual equipment.



Vibration Applied to the Servomotor

*4. If the surrounding air temperature will exceed 40°C, refer to the following section.

☞ *Applications Where the Surrounding Air Temperature of the Servomotor Exceeds 40 °C* (page 25)

*5. If the altitude will exceed 1,000 m, refer to the following section.

☞ *Applications Where the Altitude of the Servomotor Exceeds 1,000 m* (page 26).

Ratings of Servomotors (200 V Models)

Voltage		200 V						
Model SGM7J-		A5A	01A	C2A	02A	04A	06A	08A
Rated Output*1	W	50	100	150	200	400	600	750
Rated Torque*1, *2	N•m	0.159	0.318	0.477	0.637	1.27	1.91	2.39
Instantaneous Maximum Torque*1	N•m	0.557	1.11	1.67	2.23	4.46	6.69	8.36
Rated Current*1	Arms	0.55	0.85	1.6	1.6	2.5	4.2	4.4
Instantaneous Maximum Current*1	Arms	2.0	3.1	5.7	5.8	9.3	15.3	16.9
Rated Motor Speed*1	min^{-1}	3000						
Maximum Motor Speed*1	min^{-1}	6000						
Torque Constant	N•m/Arms	0.316	0.413	0.321	0.444	0.544	0.493	0.584
Motor Moment of Inertia	$\times 10^{-4}$ $kg•m^2$	0.0395 (0.0475)	0.0659 (0.0739)	0.0915 (0.0995)	0.263 (0.333)	0.486 (0.556)	0.800 (0.870)	1.59 (1.77)
Rated Power Rate*1	kW/s	6.40 (5.32)	15.3 (13.6)	24.8 (22.8)	15.4 (12.1)	33.1 (29.0)	45.6 (41.9)	35.9 (32.2)
Rated Angular Acceleration Rate*1	rad/s^2	40200 (33400)	48200 (43000)	52100 (47900)	24200 (19100)	26100 (22800)	23800 (21900)	15000 (13500)
Derating Rate for Servomotor with Oil Seal	%	80	90			95		
Heat Sink Size (Aluminum)	mm	200 × 200 × 6	250 × 250 × 6					
Protective Structure*3		Totally enclosed, self-cooled, IP67						

Voltage			200 V						
Model SGM7J-			A5A	01A	C2A	02A	04A	06A	08A
Holding Brake Specifications*4	Rated Voltage	V	24 VDC±10%						
	Capacity	W	5.5			6		6.5	
	Holding Torque	N•m	0.159	0.318	0.477	0.637	1.27	1.91	2.39
	Coil Resistance	Ω (at 20°C)	104.8±10%			96±10%		88.6±10%	
	Rated Current	A (at 20°C)	0.23			0.25		0.27	
	Time Required to Release Brake	ms	60					80	
	Time Required to Brake	ms	100						
Allowable Load Moment of Inertia (Motor Moment of Inertia Ratio)			35 times			15 times	10 times	20 times	12 times
Allowable Shaft Loads*5	LF	mm	20			25			35
	Allowable Radial Load	N	78			245			392
	Allowable Thrust Load	N	54			74			147

Note: The values in parentheses are for Servomotors with Holding Brakes.

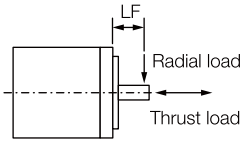
*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.

*2. The rated torques are the continuous allowable torque values at a surrounding air temperature of 40°C with an aluminum heat sink of the dimensions given in the table.

*3. This does not apply to the shaft opening. Protective structure specifications apply only when the special cable is used.

*4. Observe the following precautions if you use a Servomotor with a Holding Brake.
- The holding brake cannot be used to stop the Servomotor.
- The time required to release the brake and the time required to brake depend on which discharge circuit is used. Confirm that the operation delay time is appropriate for the actual equipment.
- The 24-VDC power supply is not provided by Yaskawa.

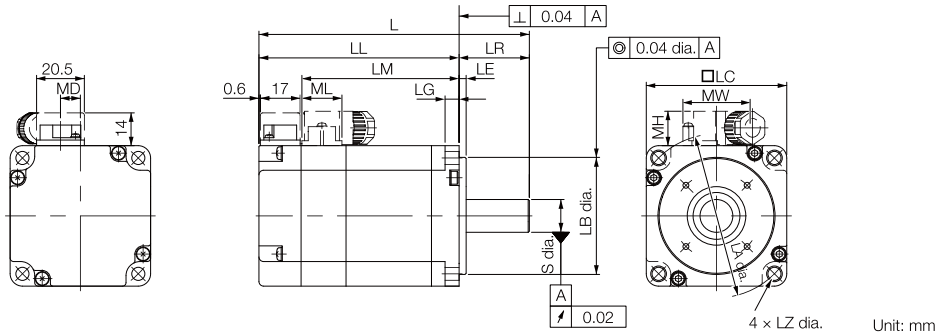
*5. The allowable shaft loads are illustrated in the following figure. Design the mechanical system so that the thrust and radial loads applied to the Servomotor shaft end during operation do not exceed the values given in the table.



Ratings of Servomotors (400 V Models)

Voltage		400 V			
Model SGM7J-		02D	04D	08D	15D
Rated Output*1	W	200	400	750	1500
Rated Torque*1, *2	N•m	0.637	1.27	2.39	4.77
Instantaneous Maximum Torque*1	N•m	2.23	4.46	8.36	14.3
Rated Current*1	Arms	1.5	1.4	2.2	4.5
Instantaneous Maximum Current*1	Arms	5.5	5.3	8.2	14.0
Rated Motor Speed*1	min^{-1}	3000			
Maximum Motor Speed*1	min^{-1}	6000			
Torque Constant	N•m/Arms	0.461	0.965	1.17	1.13
Motor Moment of Inertia	$\times 10^{-4}$ $kg•m^2$	0.263 (0.333)	0.486 (0.556)	1.59 (1.77)	4.02 (4.90)
Rated Power Rate*1	kW/s	15.4 (12,1)	33.1 (29.0)	35.9 (32.2)	56.6 (46.6)

◆ 200 V Models: SGM7J-02, -04, -06, and -08



Unit: mm

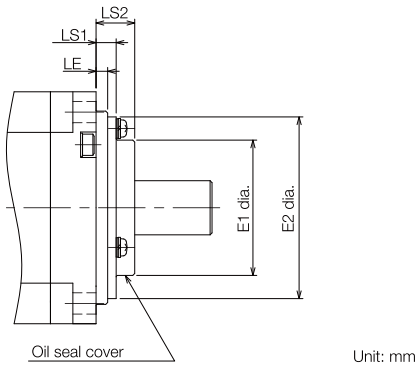
Model SGM7J-	L	LL	LM	Flange Dimensions							S
				LR	LE	LG	LC	LA	LB	LZ	
02A□A2□	99.5 (140)	69.5 (110)	51.2	30	3	6	60	70	50 $^{0}_{-0.025}$	5.5	14 $^{0}_{-0.0}$
04A□A2□	115.5 (156)	85.5 (126)	67.2	30	3	6	60	70	50 $^{0}_{-0.025}$	5.5	14 $^{0}_{-0.0}$
06A□A2□	137.5 (191.5)	107.5 (161.5)	89.2	30	3	6	60	70	50 $^{0}_{-0.025}$	5.5	14 $^{0}_{-0.0}$
08A□A2□	137 (184)	97 (144)	78.5	40	3	8	80	90	70 $^{0}_{-0.03}$	7	19 $^{0}_{-0.0}$

Model SGM7J-	MD	MW	MH	ML	Approx. Mass [kg]
02A□A2□	8.5	28.7	14.7	17.1	0.8 (1.4)
04A□A2□	8.5	28.7	14.7	17.1	1.1 (1.7)
06A□A2□	8.5	28.7	14.7	17.1	1.6 (2.2)
08A□A2□	13.6	38	14.7	19.3	2.2 (2.8)

Note: 1. The values in parentheses are for Servomotors with Holding Brakes.
2. Refer to the following section for detailed shaft end specifications.
☞ *400 V Models: SGM7J-□B, -04* (page 29)

■ Specifications of Options

• Oil Seal



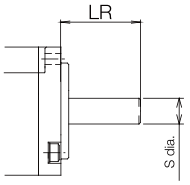
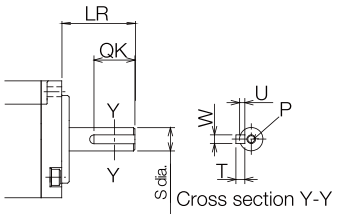
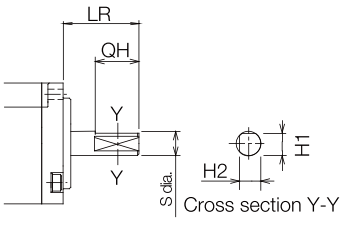
Unit: mm

Model SGM7J-	Dimensions with Oil Seal			
	E1	E2	LS1	LS2
02A, 04A, 06A	35	47	5.2	10
08A	47	61	5.5	11

Shaft End Specifications

◆ SGM7J-□□□□□□□

Code	Specification
2	Straight without key
6	Straight with key and tap for one location (Key slot is JIS B1301-1996 fastening type.)
B	With two flat seats

Shaft End Details		Servomotor Model SGM7J-						
		A5	01	C2	02	04	06	08
Code: 2 (Straight without Key)								
	LR	25			30			40
	S	8 $^{0}_{-0.0(}$			14 $^{0}_{-0.0\cdot}$			19 $^{0}_{-0.0\cdot}$
Code: 6 (Straight with Key and Tap)								
	LR	25			30			40
	QK	14			14			22
	S	8 $^{0}_{-0.0(}$			14 $^{0}_{-0.0\cdot}$			19 $^{0}_{-0.0\cdot}$
	W	3			5			6
	T	3			5			6
	U	1.8			3			3.5
	P	M3 × 6L			M5 × 8L			M6 × 10L
Code: B (with Two Flat Seats)								
	LR	25			30			40
	QH	15			15			22
	S	8 $^{0}_{-0.0(}$			14 $^{0}_{-0.0\cdot}$			19 $^{0}_{-0.0\cdot}$
	H1	7.5			13			18
	H2	7.5			13			18