

Model Designations

SGMCS - 02 B 3 C 1 1 - E

Direct Drive Servomotors 1st + 2nd 3rd 4th 5th 6th 7th 8th digit

1st + 2nd digit - Rated Output

Code	Specification	Code	Specification
Small-capacity Series, coreless		Medium-capacity Series, with core	
02	2 Nm	45	45 Nm
04	4 Nm	80	80 Nm
05	5 Nm	1A	110 Nm
07	7 Nm	1E	150 Nm
08	8 Nm	2Z	200 Nm
10	10 Nm		
14	14 Nm		
16	16 Nm		
17	17 Nm		
25	25 Nm		
35	35 Nm		

3rd digit - Servomotor Outer Diameter

Code	Specification
B	135 mm dia.
C	175 mm dia.
D	230 mm dia.
E	290 mm dia.
M	280 mm dia.
N	360 mm dia.

4th digit - Serial Encoder

Code	Specification
3	20-bit single-turn absolute encoder
D	20-bit incremental encoder

5th digit - Design Revision Order

Code	Specification
A	Model with servomotor outer diameter code M or N
B	Model with servomotor outer diameter code E
C	Model with servomotor outer diameter code B, C, or D

6th digit - Flange

Code	Mounting	Servomotor Outer Diameter Code (3rd digit)					
		B	C	D	E	M	N
1	Non-load side	✓	✓	✓	✓	—	—
	Load side	—	—	—	—	✓	✓
3	Non-load side	—	—	—	—	✓	✓
4	Non-load side (with cable on side)	✓	✓	✓	✓	—	—

7th digit - Options

Code	Specification
1	Without options

8th digit

Code	Specification
E	RoHS II Suffix

Note:
 1. Direct Drive Servomotors are not available with holding brakes.
 2. This information is provided to explain model numbers. It is not meant to imply that models are available for all combinations of codes.

Manufactured Models

Rated Torque [Nm]	Servomotor Outer Diameter					
	B (135 mm dia.)	C (175 mm dia.)	D (230 mm dia.)	E (290 mm dia.)	M (280 mm dia.)	N (360 mm dia.)
2	SGMCS-02B	—	—	—	—	—
4	—	SGMCS-04C	—	—	—	—
5	SGMCS-05B	—	—	—	—	—
7	SGMCS-07B	—	—	—	—	—
8	—	—	SGMCS-08D	—	—	—
10	—	SGMCS-10C	—	—	—	—
14	—	SGMCS-14C	—	—	—	—
16	—	—	—	SGMCS-16E	—	—
17	—	—	SGMCS-17D	—	—	—
25	—	—	SGMCS-25D	—	—	—
35	—	—	—	SGMCS-35E	—	—
45	—	—	—	—	SGMCS-45M	—
80	—	—	—	—	SGMCS-80M	SGMCS-80N
110	—	—	—	—	SGMCS-1AM	—
150	—	—	—	—	—	SGMCS-1EN
200	—	—	—	—	—	SGMCS-2ZN

Note:
 The above table shows combinations of the rated torque and outer diameter. The fourth through seventh digits have been omitted.

Ratings and Specifications

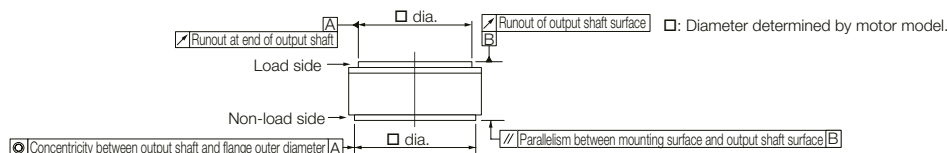
Small-Capacity Coreless Servomotors: Specifications

Voltage		200 V										
Model SGMCS-		02B	05B	07B	04C	10C	14C	08D	17D	25D	16E	35E
Time Rating		Continuous										
Thermal Class		A										
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 run reference when viewed from the load side										
Vibration Class *1		V15										
Absolute Accuracy		±15 s										
Repeatability		±1.3 s										
Protective Structure *2		Totally enclosed, self-cooled, IP42										
Environmental Conditions	Ambient Air Temperature		0°C to 40°C (without freezing)									
	Ambient Air Humidity		20% to 80% relative humidity (without condensation)									
	Installation Site		<ul style="list-style-type: none"> • 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. • 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 (without freezing) Storage Humidity: 20% to 80% relative humidity (without condensation)									
Mechanical Tolerances *3	Runout of Output Shaft Surface	mm	0.02									
	Runout at End of Output Shaft	mm	0.04									
	Parallelism between Mounting Surface and Output Shaft Surface	mm	0.07								0.08	
	Concentricity between Output Shaft and Flange Outer Diameter	mm	0.07								0.08	
Shock Resistance *4	Impact Acceleration Rate at Flange		490 m/s ²									
	Number of Impacts		2 times									
Vibration Resistance *5	Vibration Acceleration Rate at Flange		49 m/s ²									
	Applicable SERVOPACKs	SGD7S-	2R8A, 2R1F				2R8A, 2R8F				5R5A	
SGD7W-		2R8A										
SGD7C-												

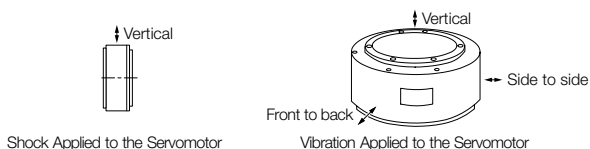
*1. A vibration class of V15 indicates a vibration amplitude of 15 μm maximum on the Servomotor without a load at the rated motor speed.

*2. The hollow hole section, motor mounting surface, output shaft surface, and gap around the rotating part of the shaft are excluded. Protective structure specifications apply only when the special cable is used.

*3. Refer to the following figure for the relevant locations on the Servomotor. Refer to the dimensional drawings of the individual Servomotors for more information on tolerances.



*4. The given values are for when the Servomotor shaft is mounted horizontally and shock or vibration is applied in the directions shown in the following figures. The strength of the vibration that the Servomotor can withstand depends on the application. Check the vibration acceleration rate.



Small-Capacity Coreless Servomotors: Ratings

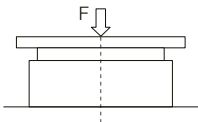
Voltage		200 V											
Model SGMCS-		02B	05B	07B	04C	10C	14C	08D	17D	25D	16E	35E	
Rated Output *1	W	42	105	147	84	209	293	168	356	393	335	550	
Rated Torque *1, *2	Nm	2.00	5.00	7.00	4.00	10.0	14.0	8.0	17.0	25.0	16.0	35.0	
Instantaneous Maximum Torque *1	Nm	6.0	15.0	21.0	12.0	30.0	42.0	24.0	51.0	75.0	48.0	105.0	
Stall Torque *1	Nm	2.05	5.15	7.32	4.09	10.1	14.2	8.23	17.4	25.4	16.6	35.6	
Rated Current *1	A	1.8	1.7	1.4	2.2		2.8	1.9	2.5	2.6	3.3	3.5	
Instantaneous Maximum Current *1	A	5.4	5.1	4.1	7.0		8.3	5.6	7.5	8.0	9.4	10.0	
Rated Motor Speed *1	min ⁻¹	200			200			200		150	200	150	
Maximum Motor Speed *1	min ⁻¹	500			500	400	300	500	350	250	500	250	
Torque Constant	Nm/A	1.18	3.17	5.44	2.04	5.05	5.39	5.10	7.79	10.8	5.58	11.1	
Motor Moment of Inertia	×10 ⁻⁴ kg·m ²	28.0	51.0	77.0	77.0	140	220	285	510	750	930	1430	
Rated Power Rate *1	kW/s	1.43	4.90	6.36	2.08	7.14	8.91	2.25	5.67	8.33	2.75	8.57	
Rated Angular Acceleration Rate *1	rad/s ²	710	980	910	520	710	640	280	330		170	240	
Heat Sink Size	mm	350 x 350 x 12			450 x 450 x 12			550 x 550 x 12			650 x 650 x 12		
Allowable Load Moment of Inertia (Motor Moment of Inertia Ratio)		10 times				5 times		3 times					
Allowable Load *3	Allowable Thrust Load	N			1,500			3,300			4,000		11,000
	Allowable Moment Load	Nm		40	50	64	70	75	90	93	103	135	250

*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.

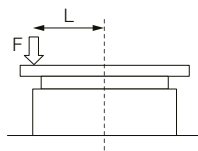
*2. The rated torques are the continuous allowable torque values at a surrounding air temperature of 40°C with a steel heat sink of the dimensions given in the table.

*3. To externally connect dynamic brake resistor, select hardware option specification 020 for the SERVOPACK. However, you cannot externally connect dynamic brake resistor if you use the following SERVOPACKs (maximum applicable motor capacity: 400 W).
 SGD7S-R70□□□A020 to -2R8□□□A020
 SGD7W-1R6A20A020 to -2R8A20A020
 SGD7C-1R6MAA020 to -2R8MAA020

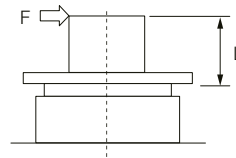
*4. The thrust loads and moment loads that are applied while a Servomotor is operating are roughly classified into the following patterns. Design the machine so that the thrust loads or moment loads will not exceed the values given in the table.



Where F is the external force,
 Thrust load = F + Load mass
 Moment load = 0



Where F is the external force,
 Thrust load = F + Load mass
 Moment load = F × L



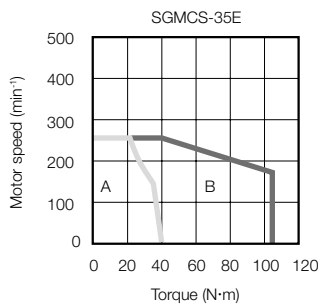
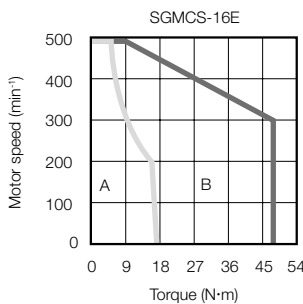
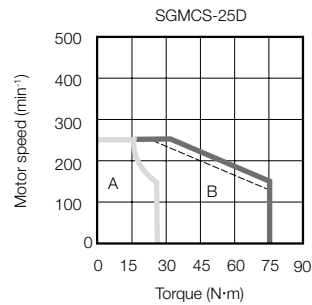
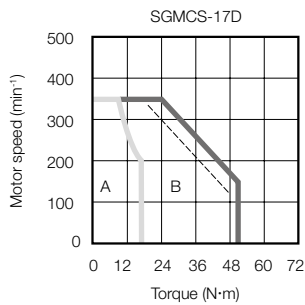
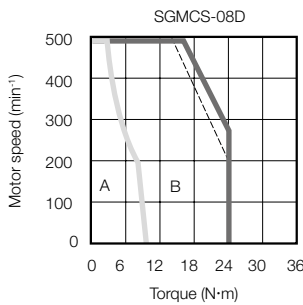
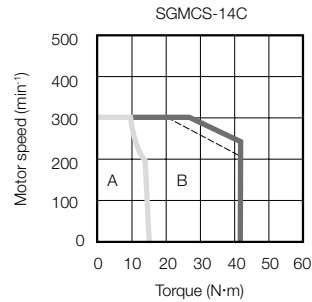
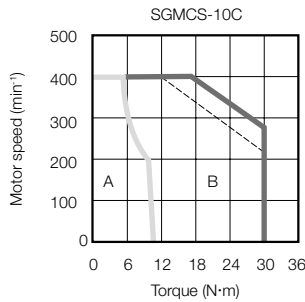
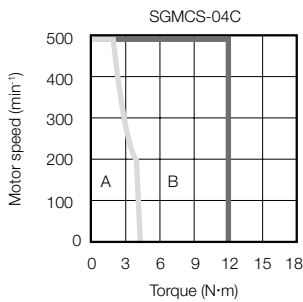
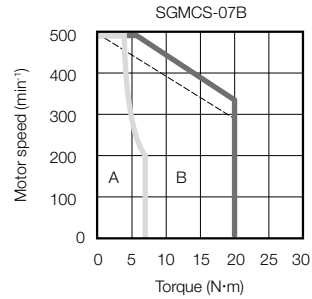
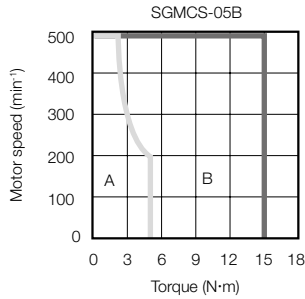
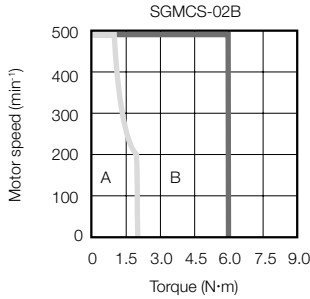
Where F is the external force
 Thrust load = Load mass
 Moment load = F × L

Note:

For the bearings used in these Servomotors, the loss depends on the bearing temperature. The amount of heat loss is higher at low temperatures.

Small-Capacity Coreless Servomotors: Torque-Motor Speed Characteristics

A : Continuous duty zone — (solid lines): With three-phase 200-V input
B : Intermittent duty zone - - - (dotted lines): With single-phase 100-V input

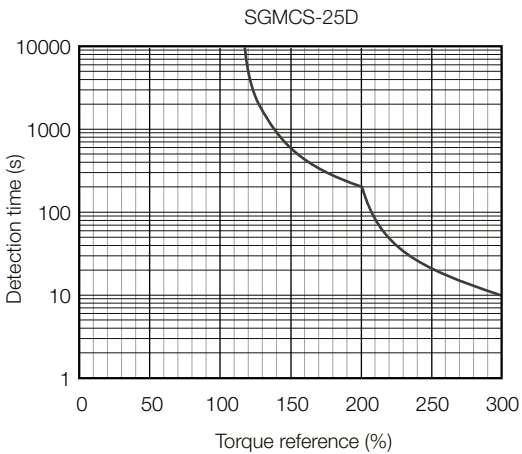
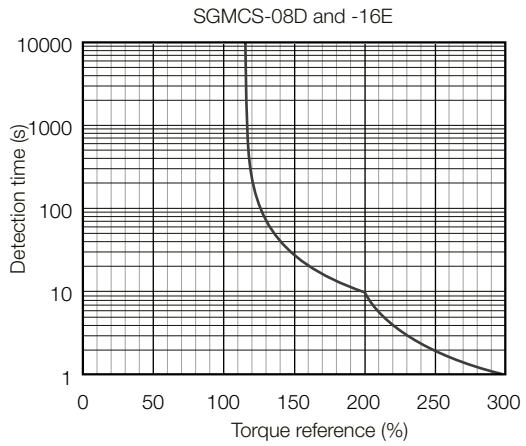
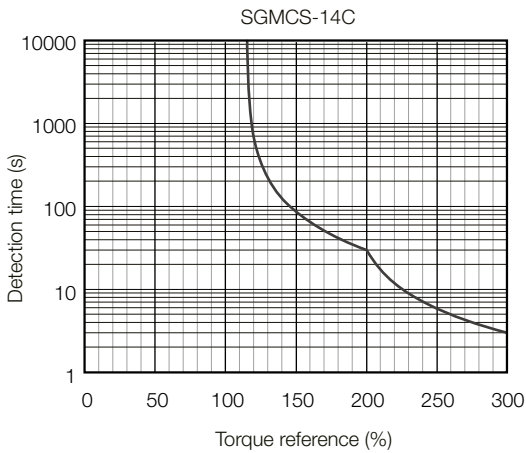
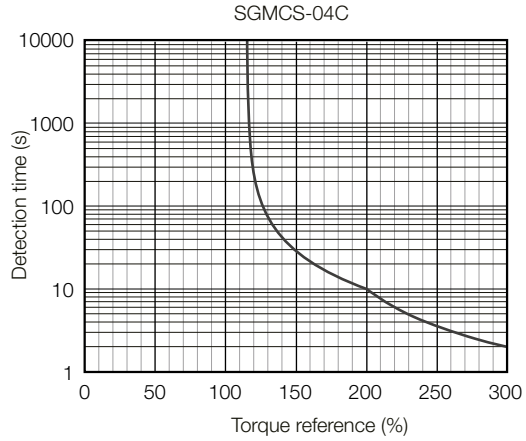
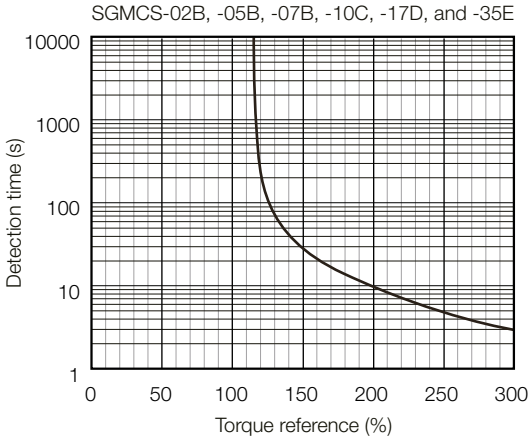


Note:

1. These values (typical values) are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C.
2. The characteristics in the intermittent duty zone depend on the power supply voltage.
3. If the effective torque is within the allowable range for the rated torque, the Servomotor can be used within the intermittent duty zone.
4. If you use a Servomotor Main Circuit Cable that exceeds 20 m, the intermittent duty zone in the torque-motor speed characteristics will become smaller because the voltage drop increases.

Small-Capacity, Coreless Servomotors: Servomotor Overload Protection Characteristics

The overload detection level is set for hot start conditions with a Servomotor ambient air temperature of 40°C.



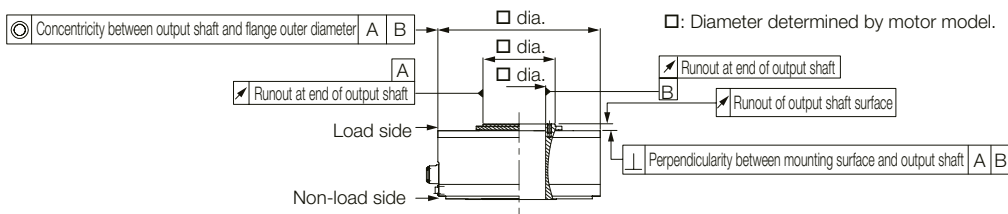
Note:
The above overload protection characteristics do not mean that you can perform continuous duty operation with an output of 100% or higher. Use the Servomotor so that the effective torque remains within the continuous duty zone given in Small Capacity, Coreless Servomotors: Torque-Motor Speed Characteristics.

Voltage		200 V					
Model SGMCS-		45M	80M	1AM	80N	1EN	2ZN
Time Rating		Continuous					
Thermal Class		F					
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 run reference when viewed from the load side					
Vibration Class *1		V15					
Absolute Accuracy		±15 s					
Repeatability		±1.3 s					
Protective Structure *2		Totally enclosed, self-cooled, IP44					
Environmental Conditions	Ambient Air Temperature	0°C to 40°C (without freezing)					
	Ambient Air Humidity	20% to 80% relative humidity (without condensation)					
	Installation Site	<ul style="list-style-type: none"> • 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. • 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 (without freezing) Storage Humidity: 20% to 80% relative humidity (without condensation)					
Mechanical Tolerances *3	Runout of Output Shaft Surface	mm	0.02				
	Runout at End of Output Shaft	mm	0.04				
	Parallelism between Mounting Surface and Output Shaft Surface	mm	-				
	Concentricity between Output Shaft and Flange Outer Diameter	mm	0.08				
	Perpendicularity between Mounting Surface and Output Shaft	mm	0.08				
Shock Resistance *4	Impact Acceleration Rate at Flange	490 m/s ²					
	Number of Impacts	2 times					
Vibration Resistance *5	Vibration Acceleration Rate at Flange	24.5 m/s ²					
Applicable SERVOPACKS	SGD7S-	7R6A	120A	180A	120A	200A	
	SGD7W-	7R6A			-		

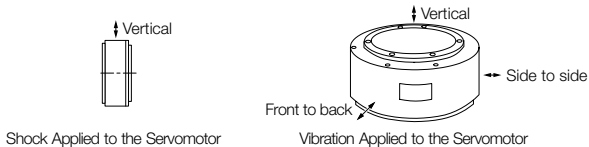
*1. A vibration class of V15 indicates a vibration amplitude of 15 μm maximum on the Servomotor without a load at the rated motor speed.

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

*3. Refer to the following figure for the relevant locations on the Servomotor. Refer to the dimensional drawings of the individual Servomotors for more information on tolerances.



*4. The given values are for when the Servomotor shaft is mounted horizontally and shock or vibration is applied in the directions shown in the following figures. The strength of the vibration that the Servomotor can withstand depends on the application. Check the vibration acceleration rate.



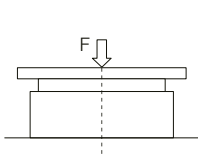
Medium-Capacity Servomotors with Cores: Ratings

Voltage		200 V					
Model SGMCS-		45M	80M	1AM	80N	1EN	2ZN
Rated Output *1	W	707	1260	1730	1260	2360	3140
Rated Torque *1, *2	Nm	45	80	110	80	150	200
Instantaneous Maximum Torque *1	Nm	135	240	330	240	450	600
Stall Torque *1	Nm	45	80	110	80.0	150	200
Rated Current *1	A	5.8	9.7	13.4	9.4	17.4	18.9
Instantaneous Maximum Current *1	A	17	28	42.0	28	56	56
Rated Motor Speed *1	min ⁻¹	150		150			
Maximum Motor Speed *1	min ⁻¹	300		300	250		
Torque Constant	Nm/A	8.39	8.91	8.45	9.08	9.05	11.5
Motor Moment of Inertia	× 10 ⁻⁴ kg·m ²	388	627	865	1360	2470	3060
Rated Power Rate *1	kW/s	52.2	102	140	47.1	91.1	131
Rated Angular Acceleration Rate *1	rad/s ²	1,160	1,280	1270	588	607	654
Heat Sink Size	mm	750 x 750 x 45					
Allowable Load Moment of Inertia (Motor Moment of Inertia Ratio)		3 times					
Allowable Load *3	A	mm	33		37.5		
	Allowable Thrust Load	N	9,000		16,000		
	Allowable Moment Load	Nm	180		350		

*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 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 a steel heat sink of the dimensions given in the table.

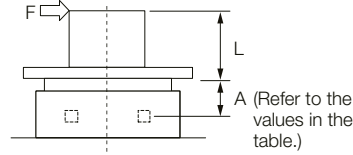
*3. The thrust loads and moment loads that are applied while a Servomotor is operating are roughly classified into the following patterns. Design the machine so that the thrust loads or moment loads will not exceed the values given in the table.



Where F is the external force,
 Thrust load = F + Load mass
 Moment load = 0



Where F is the external force,
 Thrust load = F + Load mass
 Moment load = F × L



Where F is the external force,
 Thrust load = Load mass
 Moment load = F × (L + A)

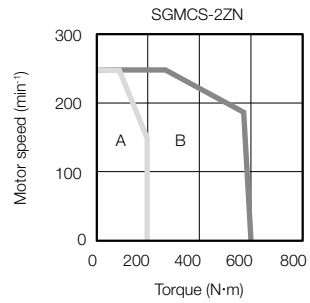
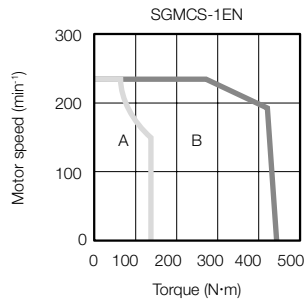
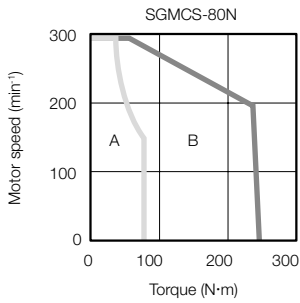
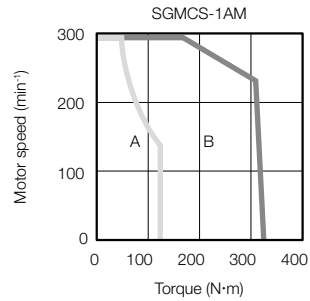
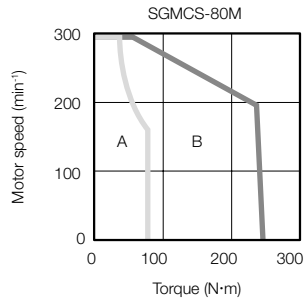
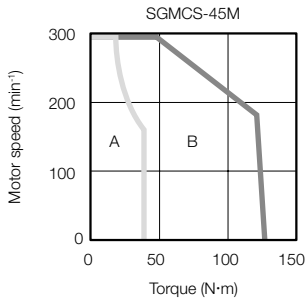
Note:

For the bearings used in these Servomotors, the loss depends on the bearing temperature. The amount of heat loss is higher at low temperatures.

Medium-Capacity Servomotors with Cores: Torque-Motor Speed Characteristics

A : Continuous duty zone

B : Intermittent duty zone

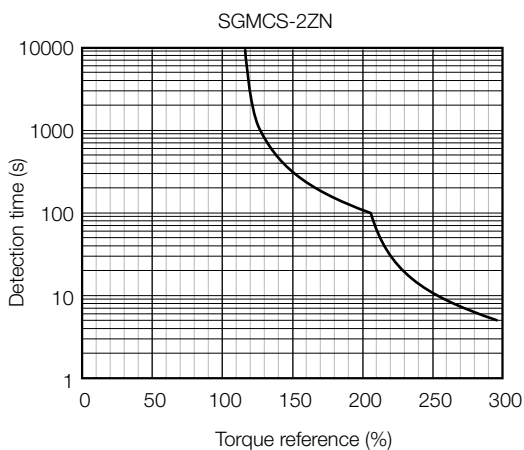
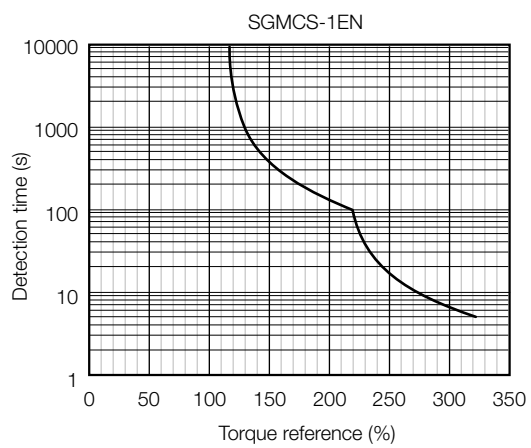
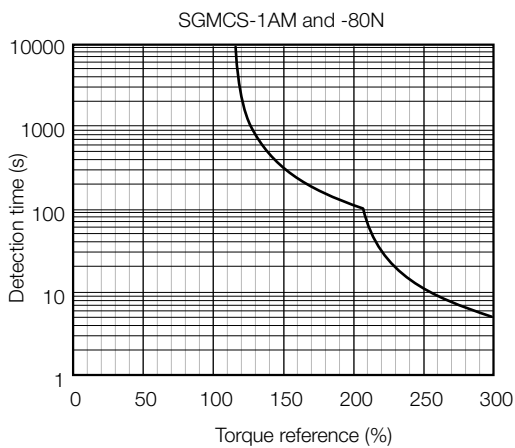
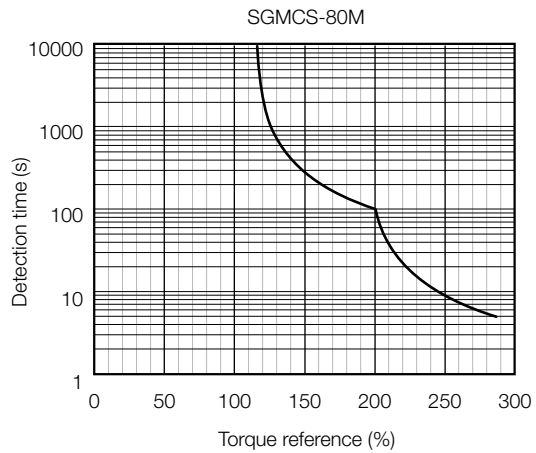
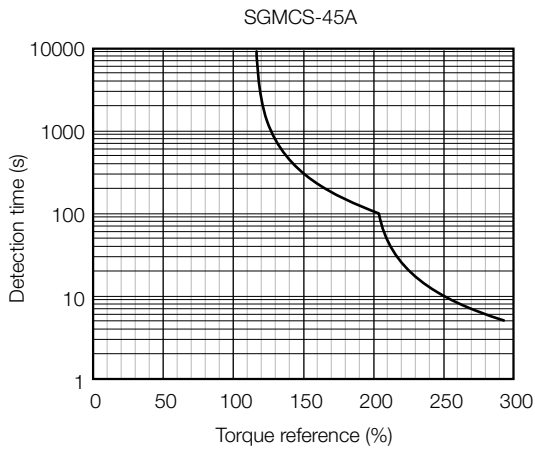


Note:

1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C. These are typical values.
2. If the effective torque is within the allowable range for the rated torque, the Servomotor can be used within the intermittent duty zone.
3. If the length of the Servomotor Main Circuit Cable exceeds 20 m, the intermittent duty zone in the torque-motor speed characteristics will become smaller because the voltage drop increases.

Medium-Capacity Servomotors with Cores: Servomotor Overload Protection Characteristics

The overload detection level is set for hot start conditions with a Servomotor ambient air temperature of 40°C.



Note:
The above overload protection characteristics do not mean that you can perform continuous duty operation with an output of 100% or higher. Use the Servomotor so that the effective torque remains within the continuous duty zone given in Medium-Capacity Servomotors with Cores: Torque-Motor Speed Characteristics.

Allowable Load Moment of Inertia

The allowable load moments of inertia (motor moment of inertia ratios) for the Servomotors are given in the Ratings section. The values are determined by the regenerative energy processing capacity of the SERVOPACK and are also affected by the drive conditions of the Servomotor. Perform the required Steps for each of the following cases.

Use the SigmaSize+ AC Servo Drive Capacity Selection Program to check the driving conditions. Contact your YASKAWA representative for information on this program.

Exceeding the Allowable Load Moment of Inertia

Use one of the following measures to adjust the load moment of inertia to within the allowable value.

- Reduce the torque limit.
- Reduce the deceleration rate.
- Reduce the maximum motor speed.

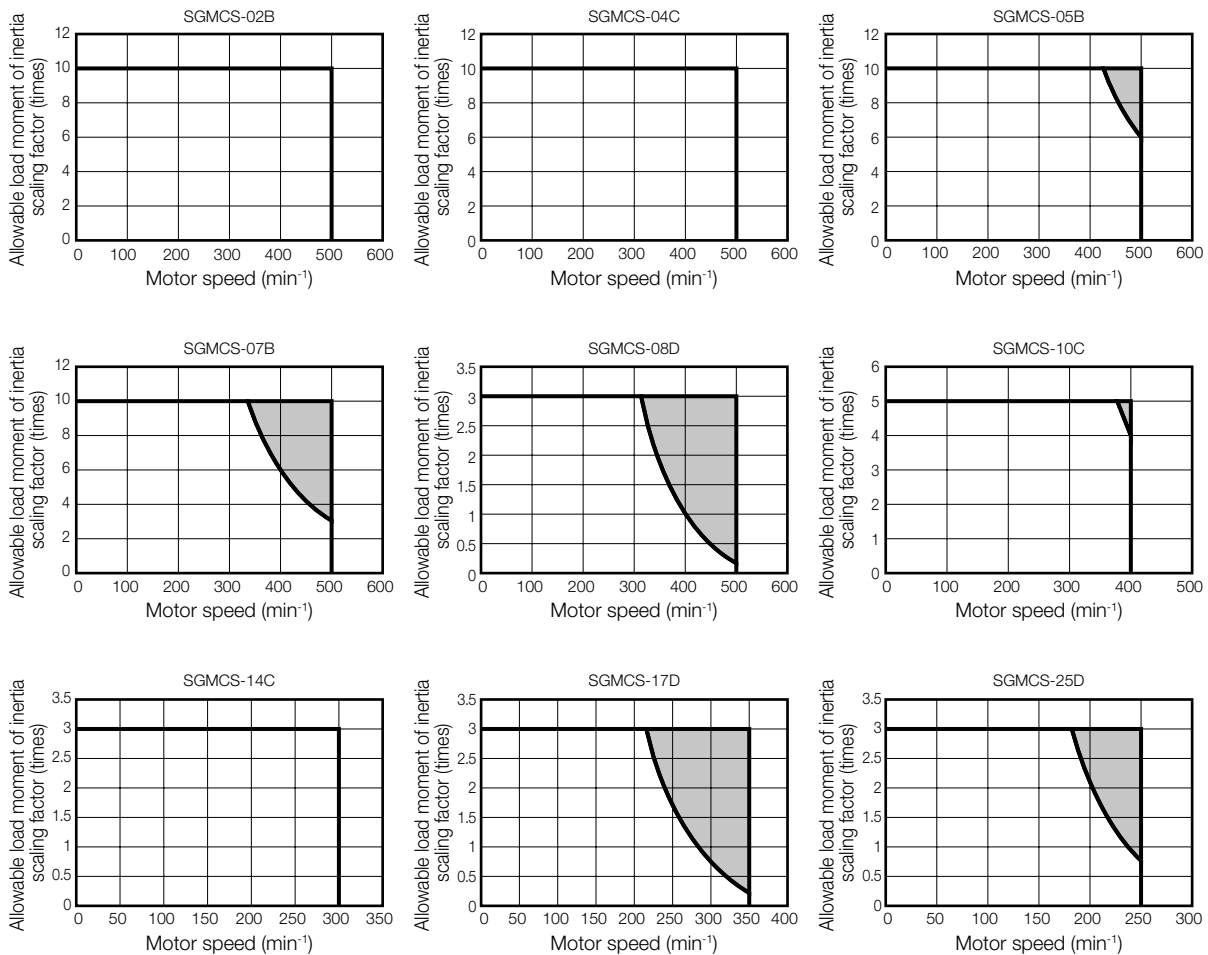
If the above steps are not possible, install an external regenerative resistor.

Information

An Overvoltage Alarm (A.400) is likely to occur during deceleration if the load moment of inertia exceeds the allowable load moment of inertia. SERVOPACKs with a built-in regenerative resistor may generate a Regenerative Overload Alarm (A.320). Refer to "Built-In Regenerative Resistor" for the regenerative power (W) that can be processed by the SERVOPACKs. Install an External Regenerative Resistor when the built-in regenerative resistor cannot process all of the regenerative power.

Allowable Load Moment of Inertia Scaling Factor for SERVOPACKs without built-in Regenerative Resistors

The following graph shows the allowable load moment of inertia scaling factor of the motor speed (reference values for deceleration operation at or above the rated torque). Application is possible without an external regenerative resistor within the allowable value. However, an External Regenerative Resistor is required in the shaded areas of the graphs.



When an external Regenerative Resistor is required

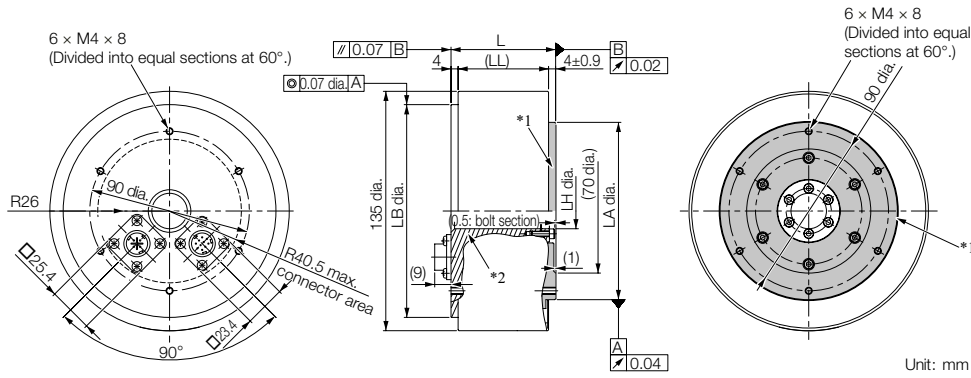
Install the External Regenerative Resistor. Refer to the External Regenerative Resistors section for the recommended products.

External Dimensions SGMCS

Small-Capacity, Coreless Servomotors

SGMCS-□□B

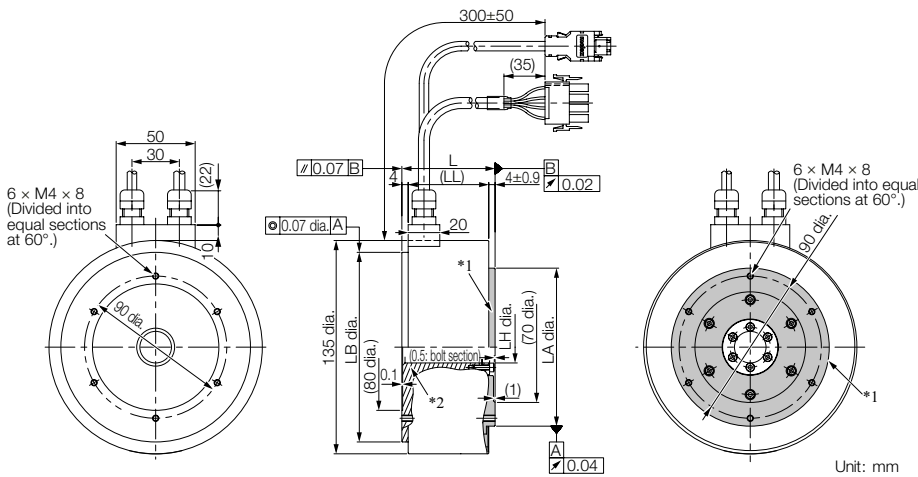
Flange Specification 1



*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
02B□C11	59	51	120 ⁰ _{-0.035}	20 ^{+0.4} ₀	100 ⁰ _{-0.035}	4.8
05B□C11	88	80	120 ⁰ _{-0.035}	20 ^{+0.4} ₀	100 ⁰ _{-0.035}	5.8
07B□C11	128	120	120 ⁰ _{-0.035}	20 ^{+0.4} ₀	100 ⁰ _{-0.035}	8.2

Flange Specification 4



*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

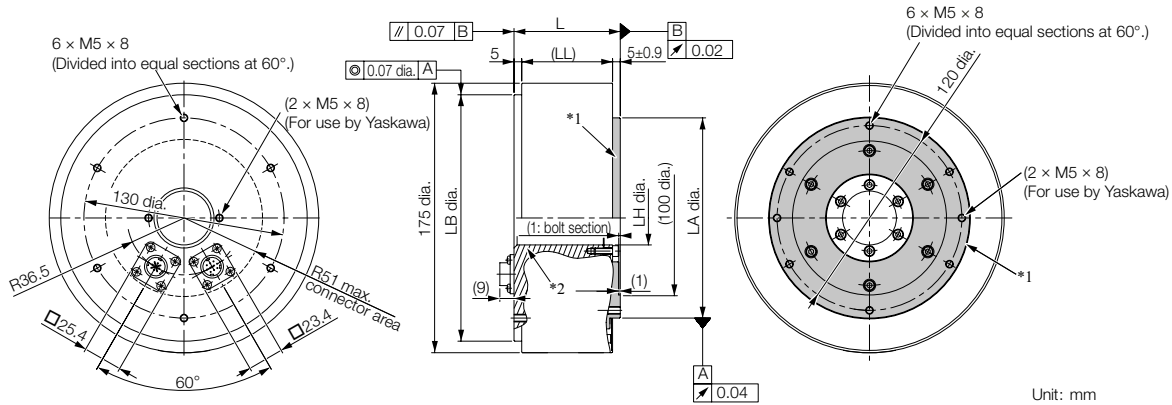
Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
02B□C41	59	51	120 ⁰ _{-0.035}	20 ^{+0.4} ₀	100 ⁰ _{-0.035}	4.8
05B□C41	88	80	120 ⁰ _{-0.035}	20 ^{+0.4} ₀	100 ⁰ _{-0.035}	5.8
07B□C41	128	120	120 ⁰ _{-0.035}	20 ^{+0.4} ₀	100 ⁰ _{-0.035}	8.2

Refer to the Connector Specifications section for information on connectors.

Direct Drive Servomotors SGMCS

SGMCS-□□C

Flange Specification 1

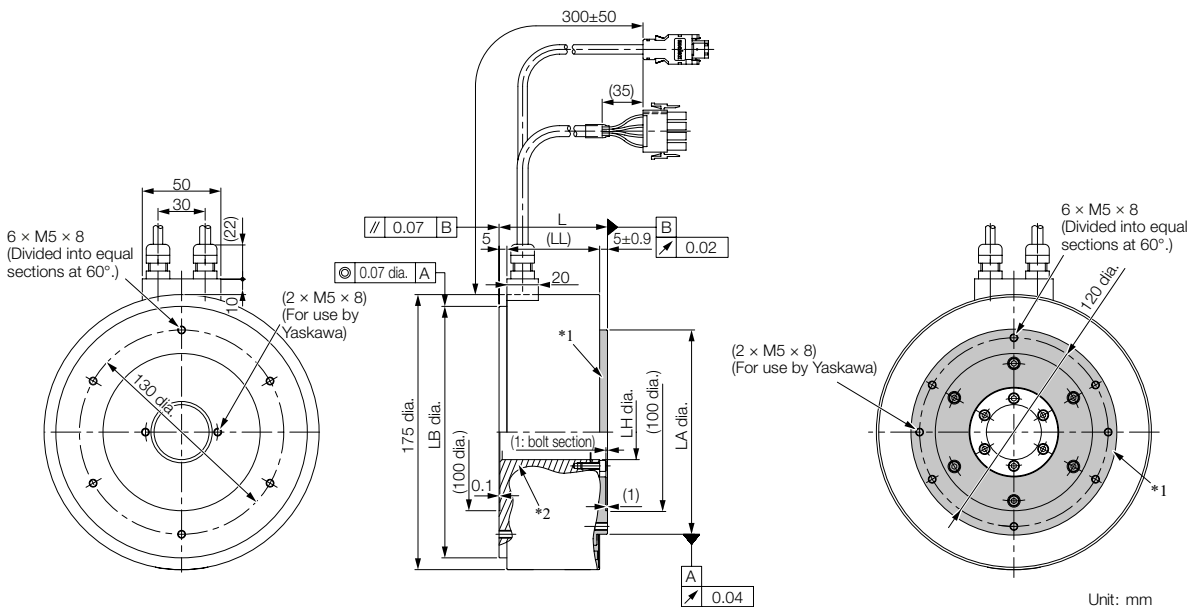


Unit: mm

*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
04C□C11	69	59	160 ⁰ _{-0.040}	35 ^{+0.4} ₀	130 ⁰ _{-0.040}	7.2
10C□C11	90	80	160 ⁰ _{-0.040}	35 ^{+0.4} ₀	130 ⁰ _{-0.040}	10.2
14C□C11	130	120	160 ⁰ _{-0.040}	35 ^{+0.4} ₀	130 ⁰ _{-0.040}	14.2

Flange Specification 4



Unit: mm

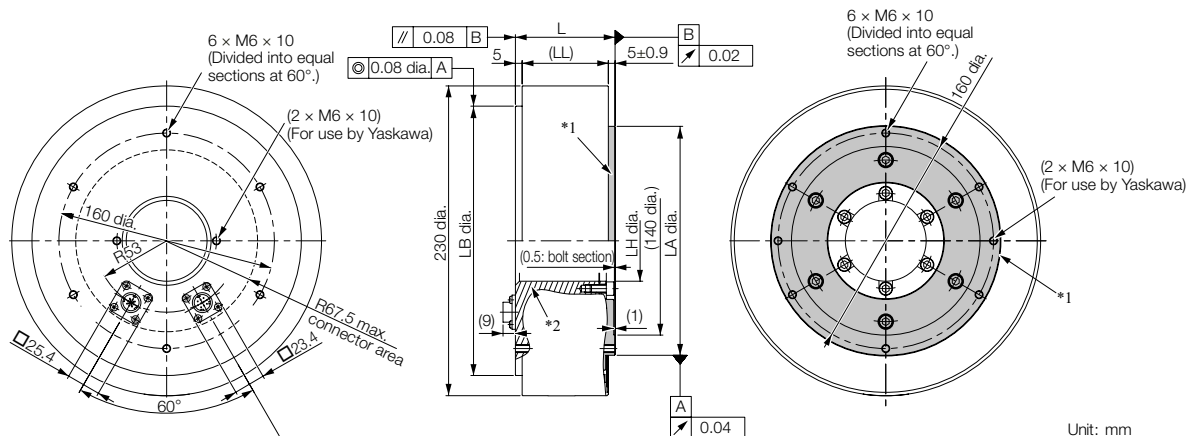
*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
04C□C41	69	59	160 ⁰ _{-0.040}	35 ^{+0.4} ₀	130 ⁰ _{-0.040}	7.2
10C□C41	90	80	160 ⁰ _{-0.040}	35 ^{+0.4} ₀	130 ⁰ _{-0.040}	10.2
14C□C41	130	120	160 ⁰ _{-0.040}	35 ^{+0.4} ₀	130 ⁰ _{-0.040}	14.2

Refer to the following section for information on connectors in Connector Specifications.

SGMCS-□□□

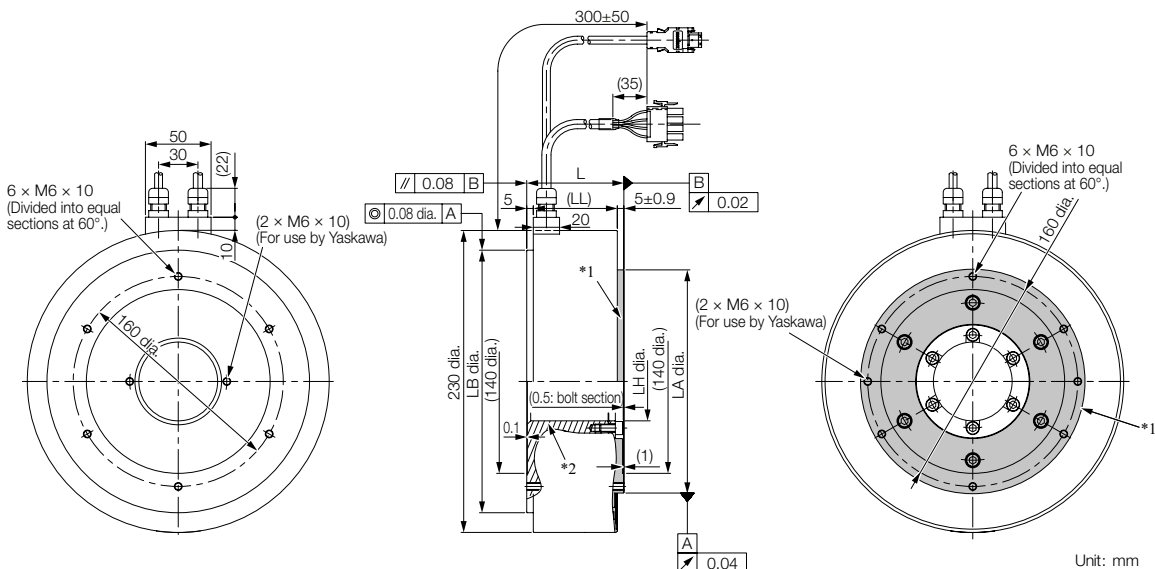
Flange Specification 1



*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
08D□C11	74	64	200 ⁰ _{-0.046}	60 ^{+0.4} ₀	170 ⁰ _{-0.040}	14.0
17D□C11	110	100	200 ⁰ _{-0.046}	60 ^{+0.4} ₀	170 ⁰ _{-0.040}	22.0
25D□C11	160	150	200 ⁰ _{-0.046}	60 ^{+0.4} ₀	170 ⁰ _{-0.040}	29.7

Flange Specification 4



*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

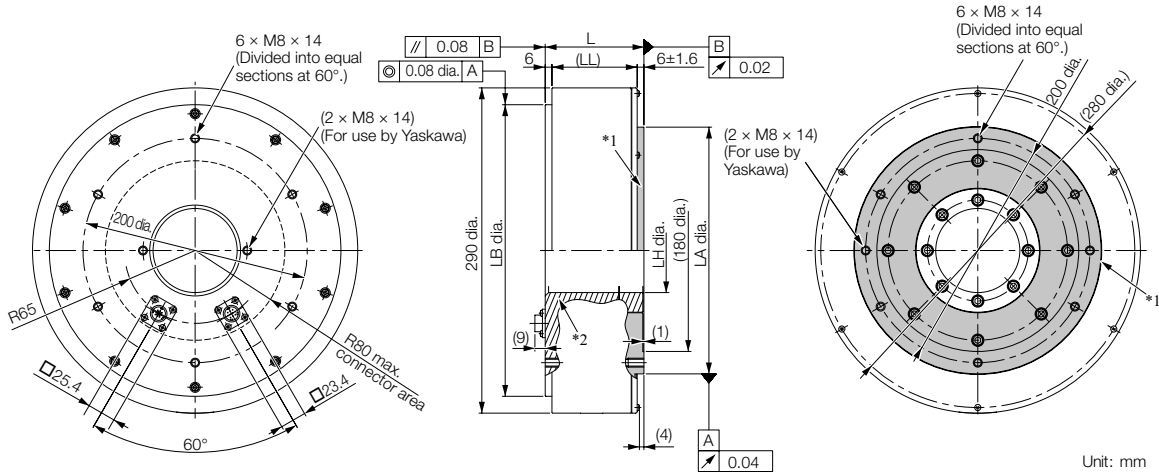
Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
08D□C41	74	64	200 ⁰ _{-0.046}	60 ^{+0.4} ₀	170 ⁰ _{-0.040}	14.0
17D□C41	110	100	200 ⁰ _{-0.046}	60 ^{+0.4} ₀	170 ⁰ _{-0.040}	22.0
25D□C41	160	150	200 ⁰ _{-0.046}	60 ^{+0.4} ₀	170 ⁰ _{-0.040}	29.7

Refer to the following section for information on connectors in Connector Specifications.

Direct Drive Servomotors SGMCS

SGMCS-□□□

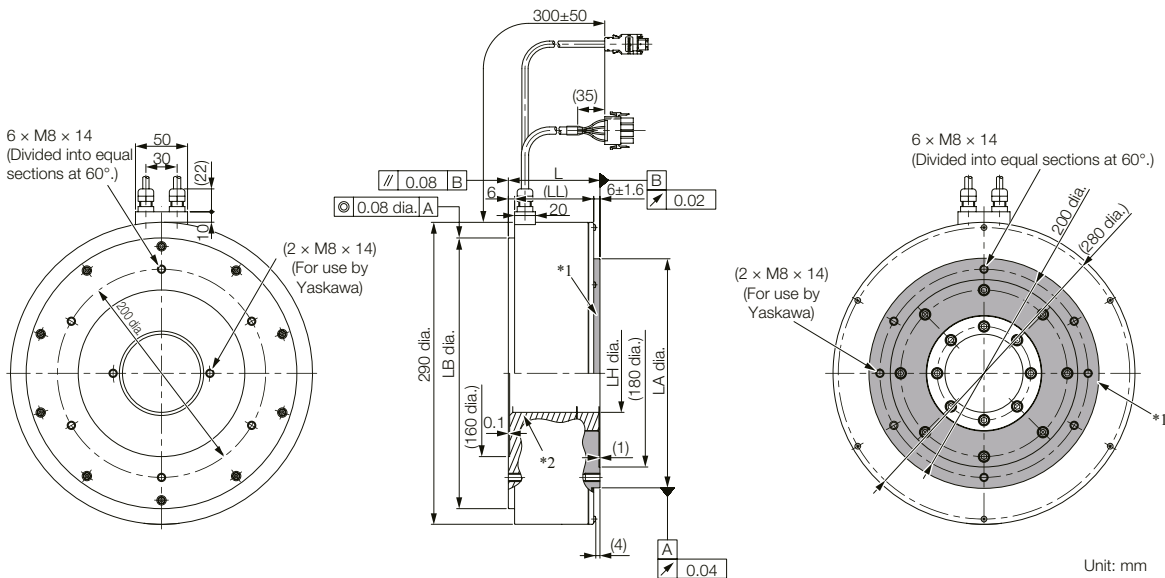
Flange Specification 1



*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
16E□B11	88	76	260 ⁰ _{-0.052}	75 ^{+0.4} ₀	220 ⁰ _{-0.046}	26.0
35E□B11	112	100	260 ⁰ _{-0.052}	75 ^{+0.4} ₀	220 ⁰ _{-0.046}	34.0

Flange Specification 4



*1. The shaded section indicates the rotating parts.
 *2. The hatched section indicates the non-rotating parts.
 Note: Values in parentheses are reference dimensions.

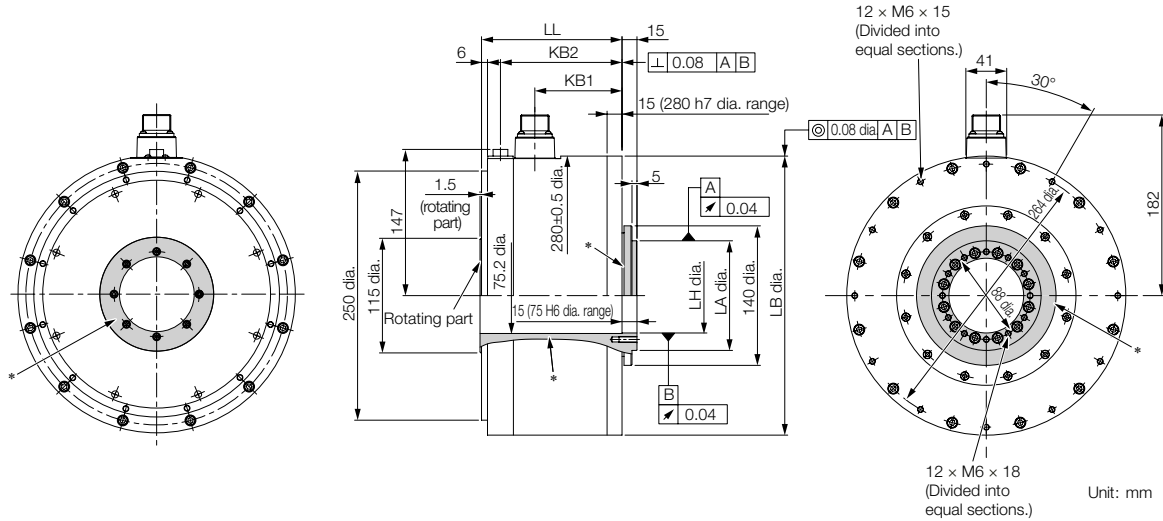
Model SGMCS-	L	(LL)	LB	LH	LA	Approx. Mass [kg]
16E□B41	88	76	260 ⁰ _{-0.052}	75 ^{+0.4} ₀	220 ⁰ _{-0.046}	26.0
35E□B41	112	100	260 ⁰ _{-0.052}	75 ^{+0.4} ₀	220 ⁰ _{-0.046}	34.0

Refer to the following section for information on connectors in Connector Specifications.

Medium-Capacity Motors with Cores

SGMCS-□□□

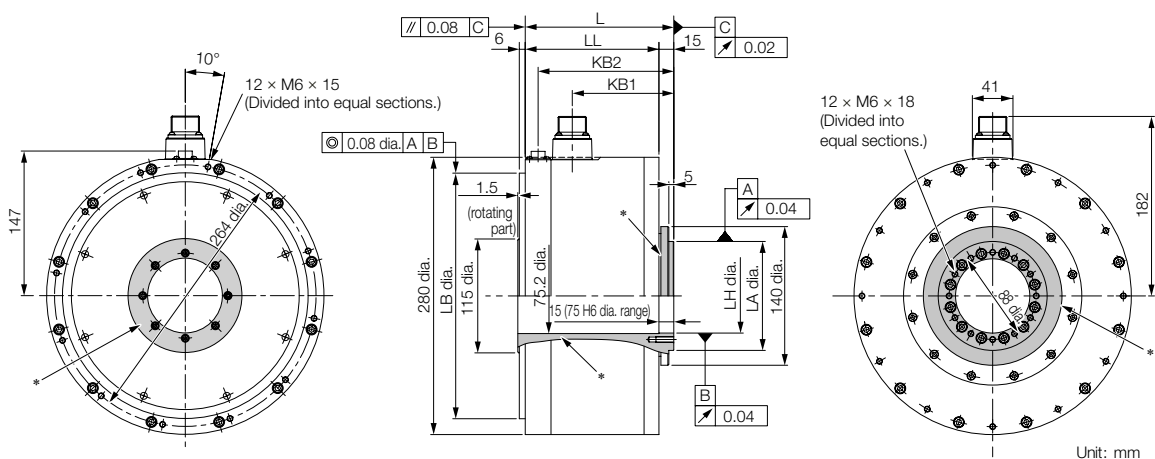
Flange Specification 1



* The shaded section indicates the rotating parts.

Model SGMCS-	L	KB1	KB2	LB	LH	LA	Approx. Mass [kg]
45M□A11	141	87.5	122	280 ⁰ _{-0.052}	75 ^{+0.019} ₀	110 ⁰ _{-0.035}	38
80M□A11	191	137.5	172	280 ⁰ _{-0.052}	75 ^{+0.019} ₀	110 ⁰ _{-0.035}	45
1AM□A11	241	187.5	222	280 ⁰ _{-0.052}	75 ^{+0.019} ₀	110 ⁰ _{-0.035}	51

Flange Specification 3



* The shaded section indicates the rotating parts.

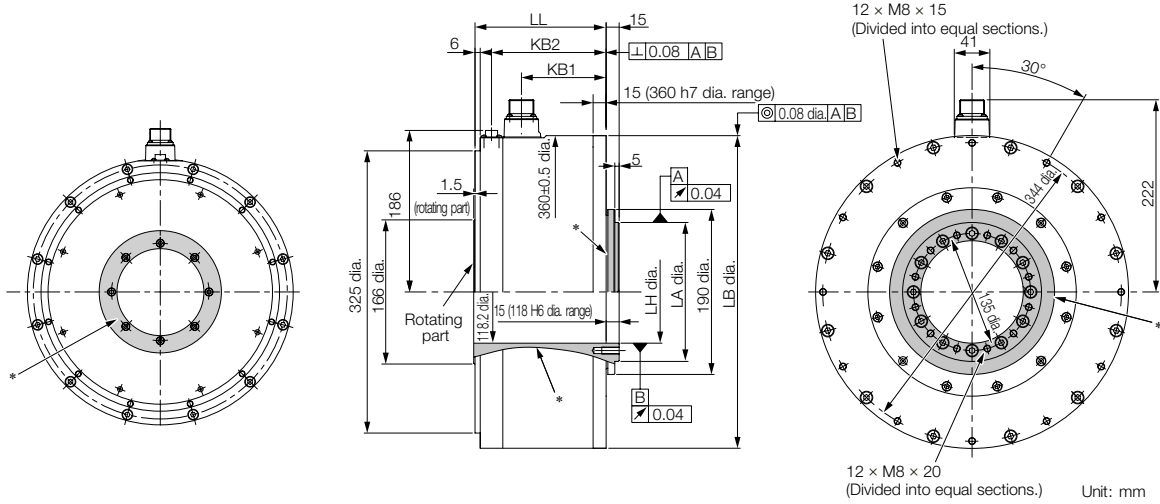
Model SGMCS-	L	LL	KB1	KB2	LB	LH	LA	Approx. Mass [kg]
45M□A31	150	135	102.5	137	248 ⁰ _{-0.046}	75 ^{+0.019} ₀	110 ⁰ _{-0.035}	38
80M□A31	200	185	152.5	187	248 ⁰ _{-0.046}	75 ^{+0.019} ₀	110 ⁰ _{-0.035}	45
1AM□A31	250	235	202.5	237	248 ⁰ _{-0.046}	75 ^{+0.019} ₀	110 ⁰ _{-0.035}	51

Refer to the following section for information on connectors in Connector Specifications.

Direct Drive Servomotors SGMCS

SGMCS-□□□

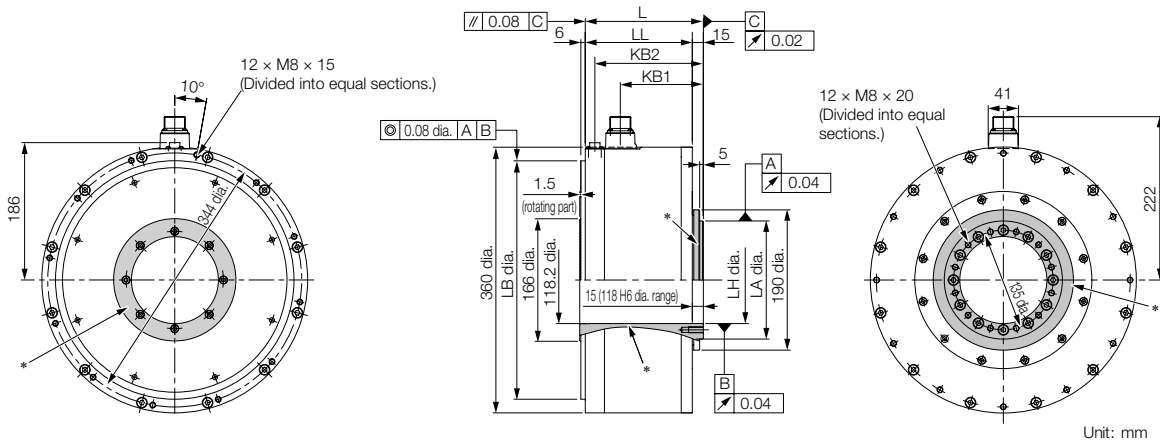
Flange Specification 1



* The shaded section indicates the rotating parts.

Model SGMCS-	L	KB1	KB2	LB	LH	LA	Approx. Mass [kg]
80N□A11	151	98	132	360 ⁰ _{-0.057}	118 ^{+0.022} ₀	160 ⁰ _{-0.040}	50
1EN□A11	201	148	182	360 ⁰ _{-0.057}	118 ^{+0.022} ₀	160 ⁰ _{-0.040}	68
2ZN□A11	251	198	232	360 ⁰ _{-0.057}	118 ^{+0.022} ₀	160 ⁰ _{-0.040}	86

Flange Specification 3



* The shaded section indicates the rotating parts.

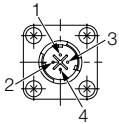
Model SGMCS-	L	LL	KB1	KB2	LB	LH	LA	Approx. Mass [kg]
80N□A31	160	145	113	147	323 ⁰ _{-0.057}	118 ^{+0.022} ₀	160 ⁰ _{-0.040}	50
1EN□A31	210	195	163	197	323 ⁰ _{-0.057}	118 ^{+0.022} ₀	160 ⁰ _{-0.040}	68
2ZN□A31	260	245	213	247	323 ⁰ _{-0.057}	118 ^{+0.022} ₀	160 ⁰ _{-0.040}	86

Refer to the following section for information on connectors in Connector Specifications.

Connector Specifications SGMCS

SGMCS-□□B, -□□C, -□□D, or -□□E with Flange Specification 1

Servomotor Connector

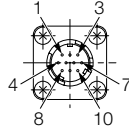


1	Phase U
2	Phase V
3	Phase W
4	FG (frame ground)

Model: JN1AS04MK2R
 Manufacturer: Japan Aviation Electronics Industry, Ltd.

Mating Connector: JN1DS04FK1
 (Not provided by YASKAWA)

Encoder Connector



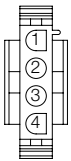
1	PS
2	/PS
3	—
4	PG5V
5	—
6	—
7	FG (frame ground)
8	—
9	PG0V
10	—

Model: JN1AS10ML1-R
 Manufacturer: Japan Aviation Electronics Industry, Ltd.

Mating connector: JN1DS10SL1
 (Not provided by YASKAWA)

SGMCS-□□B, -□□C, -□□D, or -□□E with Flange Specification 4

Servomotor Connector

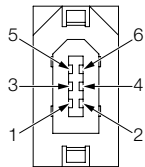


1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG (frame ground)	Green (yellow)

Models
 • Plug: 350779-1
 • Pins: 350561-3 or 350690-3 (No.1 to 3)
 • Ground pin: 350654-1 or 350669-1 (No. 4)
 Manufacturer: Tyco Electronics Japan G.K.

Mating Connector
 • Cap: 350780-1
 • Socket: 350570-3 or 350689-3

Encoder Connector



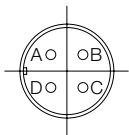
1	PG5V
2	PG0V
3	—
4	—
5	PS
6	/PS
Connector Case	FG (frame ground)

Model: 55102-0600
 Manufacturer: Molex Japan LLC

Mating Connector: 54280-0609

SGMCS-□□M or -□□N with Flange Specification 1 or 3

Servomotor Connector

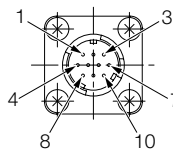


A	Phase U
B	Phase V
C	Phase W
D	FG (frame ground)

Model: CE05-2A18-10PD
 Manufacturer: DDK Ltd.

Mating Connector
 Plug: CE05-6A18-10SD-B-BSS
 Cable clamp: CE3057-10A-□(D265)

Encoder Connector



1	PS
2	/PS
3	—
4	PG5V
5	—
6	—
7	FG (frame ground)
8	—
9	PG0V
10	—

Model: JN1AS10ML1
 Manufacturer: Japan Aviation Electronics Industry, Ltd.

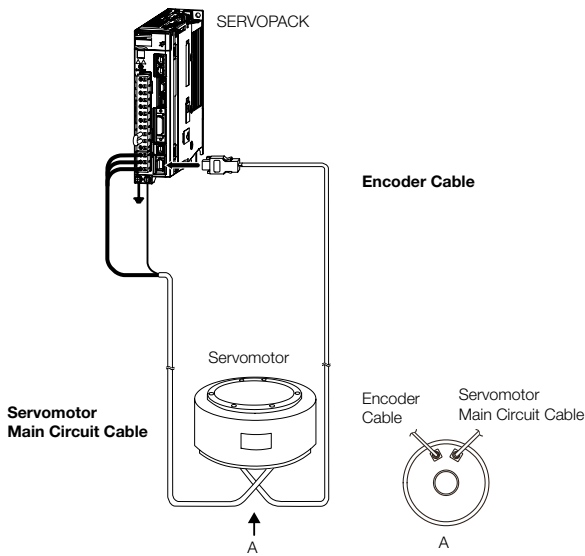
Mating connector: JN1DS10SL1
 (Not provided by YASKAWA)

Selecting Cables SGMCS

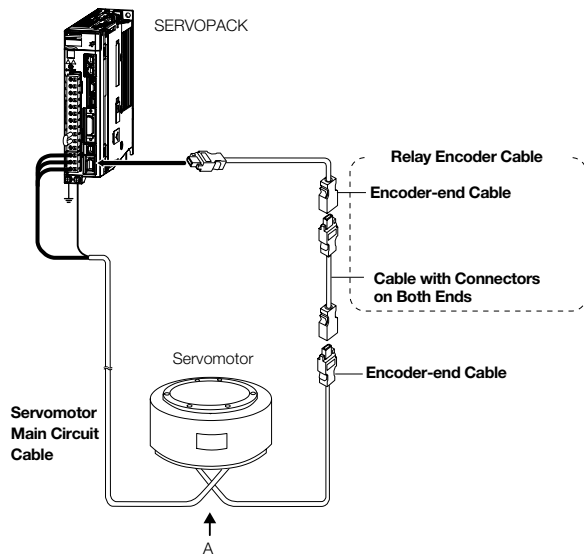
Cable Configurations

The cables shown below are required to connect a Servomotor to a SERVOPACK.

Encoder Cable of 20 m or less



Encoder Cable of 30 m to 50 m (Relay Cable)



Note:

1. If the Encoder Cable length exceeds 20 m, be sure to use a Relay Encoder Cable.
2. If you use a Servomotor Main Circuit Cable that exceeds 20 m, the intermittent duty zone in the torque/speed characteristics will become smaller because the voltage drop increases.
3. Refer to the following manual for the following information.
 - Cable dimensional drawings and cable connection specifications
 - Order numbers and specifications of individual connectors for cables
 - Order numbers and specifications for wiring materials: Sigma-7-Series AC Servo Drive Peripheral Device Selection Manual (Manual No.: S1EP S800001 32)

Servomotor Main Circuit Cables

Servomotor Model	Length	Order Number		Appearance
		Standard Cable	Flexible Cable ¹	
SGMCS-□□B SGMCS-□□C SGMCS-□□D SGMCS-□□E Flange Specification: 1 ² Non-load side installation	3 m	JZSP-CMM60-03-E	JZSP-CSM60-03-E	
	5 m	JZSP-CMM60-05-E	JZSP-CSM60-05-E	
	10 m	JZSP-CMM60-10-E	JZSP-CSM60-10-E	
	15 m	JZSP-CMM60-15-E	JZSP-CSM60-15-E	
	20 m	JZSP-CMM60-20-E	JZSP-CSM60-20-E	
SGMCS-□□B SGMCS-□□C SGMCS-□□D SGMCS-□□E Flange Specification: 4 ² Non-load side installation (with cable on side)	3 m	JZSP-CMM00-03-E	JZSP-CMM01-03-E	
	5 m	JZSP-CMM00-05-E	JZSP-CMM01-05-E	
	10 m	JZSP-CMM00-10-E	JZSP-CMM01-10-E	
	15 m	JZSP-CMM00-15-E	JZSP-CMM01-15-E	
	20 m	JZSP-CMM00-20-E	JZSP-CMM01-20-E	

Continued on next page.

Servomotor Model	Length	Order Number		Appearance
		Standard Cable	Flexible Cable*1	
SGMCS-□□M SGMCS-□□N □□: 45 □□: 80	3 m	JZSP-USA101-03-E	JZSP-USA121-03-E	
	5 m	JZSP-USA101-05-E	JZSP-USA121-05-E	
	10 m	JZSP-USA101-10-E	JZSP-USA121-10-E	
	15 m	JZSP-USA101-15-E	JZSP-USA121-15-E	
	20 m	JZSP-USA101-20-E	JZSP-USA121-20-E	
	3 m	JZSP-USA102-03-E	JZSP-USA122-03-E	
	5 m	JZSP-USA102-05-E	JZSP-USA122-05-E	
	10 m	JZSP-USA102-10-E	JZSP-USA122-10-E	
	15 m	JZSP-USA102-15-E	JZSP-USA122-15-E	
	20 m	JZSP-USA102-20-E	JZSP-USA122-20-E	
SGMCS-□□M SGMCS-□□N □□: 1A	3 m	JZSP-USA301-03-E	JZSP-USA321-03-E	
	5 m	JZSP-USA301-05-E	JZSP-USA321-05-E	
	10 m	JZSP-USA301-10-E	JZSP-USA321-10-E	
	15 m	JZSP-USA301-15-E	JZSP-USA321-15-E	
	20 m	JZSP-USA301-20-E	JZSP-USA321-20-E	
	3 m	JZSP-USA302-03-E	JZSP-USA322-03-E	
	5 m	JZSP-USA302-05-E	JZSP-USA322-05-E	
	10 m	JZSP-USA302-10-E	JZSP-USA322-10-E	
	15 m	JZSP-USA302-15-E	JZSP-USA322-15-E	
	20 m	JZSP-USA302-20-E	JZSP-USA322-20-E	
SGMCS-□□M SGMCS-□□N □□: 1E □□: 2Z	3 m	JZSP-USA501-03-E	JZSP-USA521-03-E	
	5 m	JZSP-USA501-05-E	JZSP-USA521-05-E	
	10 m	JZSP-USA501-10-E	JZSP-USA521-10-E	
	15 m	JZSP-USA501-15-E	JZSP-USA521-15-E	
	20 m	JZSP-USA501-20-E	JZSP-USA521-20-E	
	3 m	JZSP-USA502-03-E	JZSP-USA522-03-E	
	5 m	JZSP-USA502-05-E	JZSP-USA522-05-E	
	10 m	JZSP-USA502-10-E	JZSP-USA522-10-E	
	15 m	JZSP-USA502-15-E	JZSP-USA522-15-E	
	20 m	JZSP-USA502-20-E	JZSP-USA522-20-E	

*1. Use Flexible Cables for moving parts of machines, such as robots. The recommended bending radius of the Flexible Cables are given in the following table.

Order Number	Recommended Bending Radius (R)	Order Number	Recommended Bending Radius (R)
JZSP-CSM60-□□-E	55 mm min.	JZSP-USA321-□□-E	113 mm min.
JZSP-CMN01-□□-E		JZSP-USA322-□□-E	
JZSP-USA121-□□-E	96 mm min.	JZSP-USA521-□□-E	150 mm min.
JZSP-USA122-□□-E		JZSP-USA522-□□-E	

*2. Refer to Flange Specifications.
 Note: Direct Drive Servomotors are not available with holding brakes.

Direct Drive Servomotors SGMCS

Encoder Cables of 20 m or less

Servomotor Model	Description	Length	Order Number		Appearance
			Standard Cable	Flexible Cable ^{*1}	
SGMCS-□□ Flange Specification: 1 or 3 ^{*2}	For incremental/ absolute encoder	3 m	JZSP-CMP60-03-E	JZSP-CSP60-03-E	
		5 m	JZSP-CMP60-05-E	JZSP-CSP60-05-E	
		10 m	JZSP-CMP60-10-E	JZSP-CSP60-10-E	
		15 m	JZSP-CMP60-15-E	JZSP-CSP60-15-E	
		20 m	JZSP-CMP60-20-E	JZSP-CSP60-20-E	
SGMCS-□□ Flange Specification: 4 ^{*2}	For incremental/ absolute encoder	3 m	JZSP-CMP00-03-E	JZSP-CMP10-03-E	
		5 m	JZSP-CMP00-05-E	JZSP-CMP10-05-E	
		10 m	JZSP-CMP00-10-E	JZSP-CMP10-10-E	
		15 m	JZSP-CMP00-15-E	JZSP-CMP10-15-E	
		20 m	JZSP-CMP00-20-E	JZSP-CMP10-20-E	

*1. Use Flexible Cables for moving parts of machines, such as robots. The recommended bending radius (R) is 68 mm or larger.

*2. Refer to the Model Designations section for the flange specifications.

Relay Encoder Cables of 30 m to 50 m

Servomotor Model	Description	Length	Order Number ^{*1}	Appearance
SGMCS-□□ Flange specification: 1 or 3 ^{*2}	Encoder-end Cable (for incremental or absolute encoder)	0.3 m	JZSP-CSP15-E	
SGMCS-□□ Flange specification: 1, 3 or 4 ^{*2}	Cables with Connectors on Both Ends (for incremental or absolute encoder)	30 m	JZSP-UCMP00-30-E	
		40 m	JZSP-UCMP00-40-E	
		50 m	JZSP-UCMP00-50-E	

*1. Flexible Cables are not available.

*2. Refer to the Model Designations section for the flange specifications.