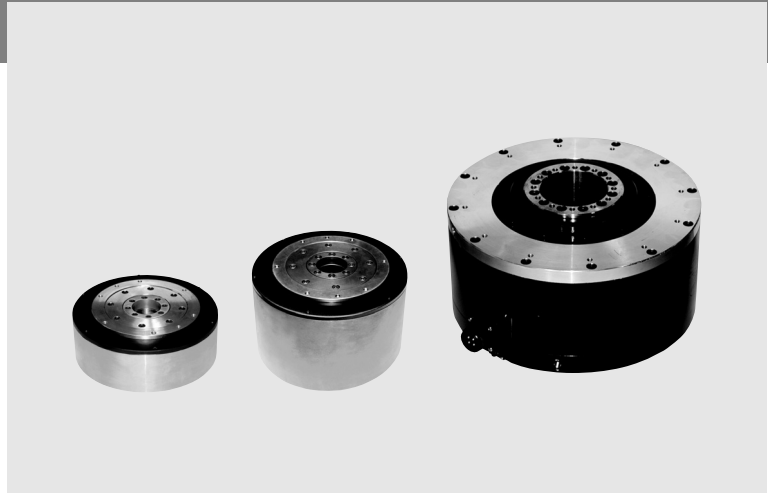


SGMCS-□

Sigma direct drive motors

High torque motor for direct coupling to load

- High dynamic performance
- Gearless. Reduction of mechanic components
- Improved positioning accuracy
- No maintenance for lubrication
- Backlash free operation
- Automatic motor recognition by servo drive
- Peak torque 300% of nominal during 3 seconds
- Hollow structure construction
- High-precision. Resolution of 1,000,000 points per revolution
- Absolute encoder as standard

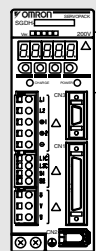


Ratings

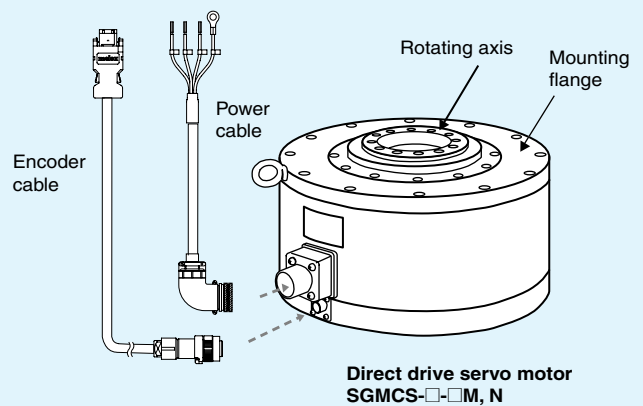
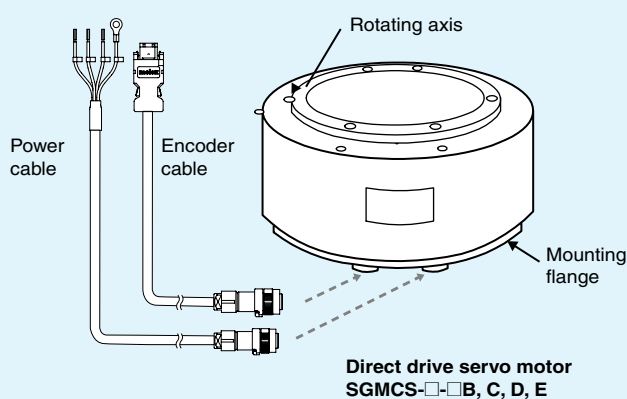
- 230 VAC from 42 W to 1260 W
(Rated torque from 2.00 to 80 Nm)

System configuration


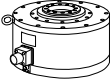
(Refer to Servo Drive chapter)



Sigma-II Servo Drive



Servomotor / servo drive combination

Sigma-II rotary servo motor				Sigma-II servo drive		
	Voltage	Rated torque	Capacity	Model	230 V (1-phase)	
	230 V	2.00 Nm	42 W	SGMCS-02B□	SGDH-02AE-OY	
		5.00 Nm	105 W	SGMCS-05B□	SGDH-02AE-OY	
		7.00 Nm	147 W	SGMCS-07B□	SGDH-02AE-OY	
		4.00 Nm	84 W	SGMCS-04C□	SGDH-04AE-OY	
		10.0 Nm	209 W	SGMCS-10C□	SGDH-04AE-OY	
		14.0 Nm	293 W	SGMCS-14C□	SGDH-04AE-OY	
		8.00 Nm	168 W	SGMCS-08D□	SGDH-04AE-OY	
		17.0 Nm	356 W	SGMCS-17D□	SGDH-04AE-OY	
		25.0 Nm	393 W	SGMCS-25D□	SGDH-04AE-OY	
		16.0 Nm	335 W	SGMCS-16E□	SGDH-08AE-S-OY	
		35.0 Nm	550 W	SGMCS-35E□	SGDH-08AE-S-OY	
			45.0 Nm	707 W	SGMCS-45M□	SGDH-15AE-S-OY
			80.0 Nm	1260 W	SGMCS-80M□	SGDH-15AE-S-OY
80.0 Nm	1260 W		SGMCS-80N□	SGDH-15AE-S-OY		

Type designation

Servo motor

SGMCS—02 B 3 B 1 1

Σ Series SGMCS servo motor

Rated torque (N·m)		Motor outer diameter (mm)					
Code	Specifications	B (φ135)	C (φ175)	D (φ230)	E (φ290)	M (φ280)	N (φ360)
02	2.0	○					
04	4.0		○				
05	5.0	○					
07	7.0	○					
08	8.0			○			
10	10.0		○				
14	14.0		○				
16	16.0				○		
17	17.0			○			
25	25.0			○			
35	35.0				○		
45	45.0					○	
80	80.0					○	○

Brake specifications	
Code	Specifications
1	Without brake

Flange specifications	
Code	Specifications
1	C face

Design revision order	
Code	Specifications
A	45 to 80 N·m
B	2 to 35 N·m

Serial encoder specifications		
Code	Specifications	Remarks
3	20-bit absolute (without multiturn data)	Standard
D	20-bit incremental	Option

Specifications

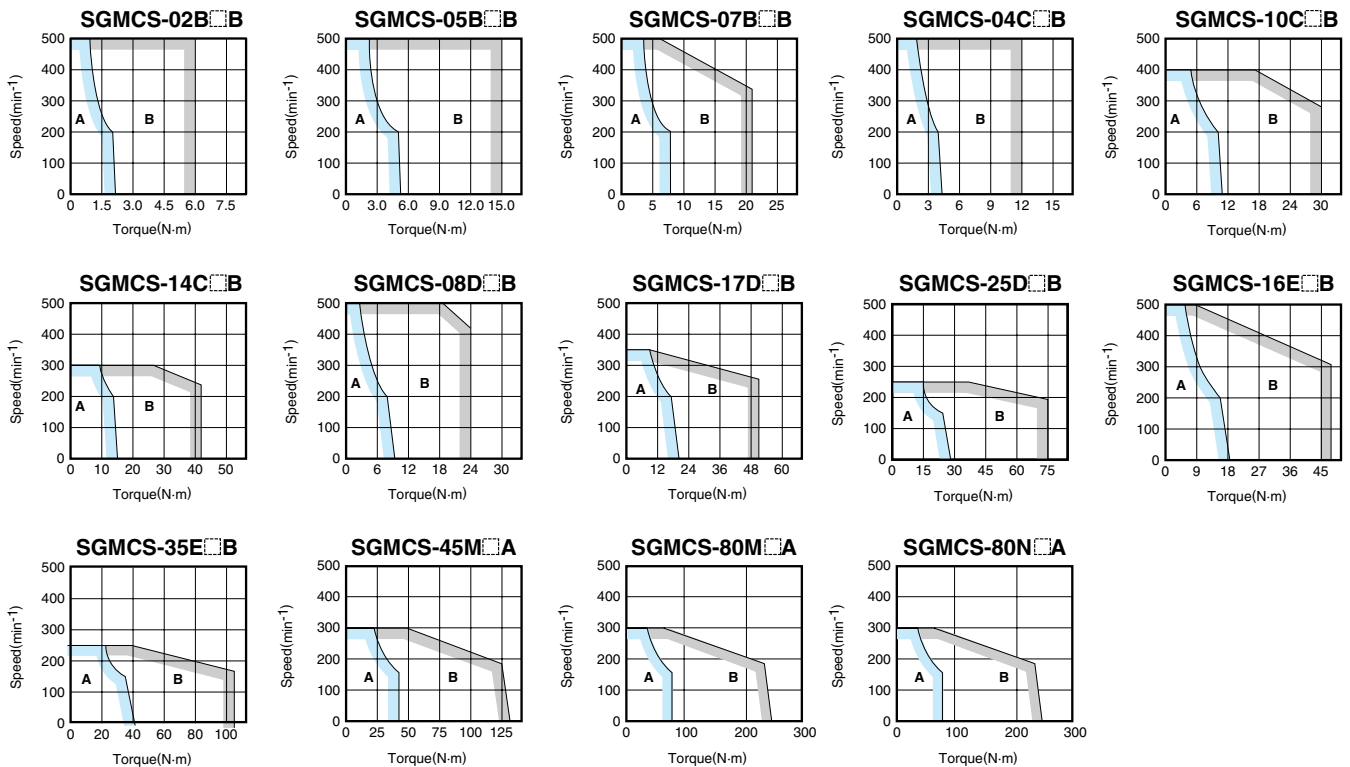
Ratings and specifications

Applied voltage		230 V														
Servomotor model SGMCS-□		02B□□	05B□□	07B□□	04C□□	10C□□	14C□□	08D□□	17D□□	25D□□	16E□□	35E□□	45M□□	80M□□	80N□□	
Rated output*1	W	42	105	147	84	209	293	168	356	393	335	550	707	1260	1260	
Rated torque*1,*2	N·m	2.00	5.00	7.00	4.00	10.0	14.0	8.00	17.0	25.0	16.0	35.0	45	80	80	
Instantaneous peak torque*1	N·m	6.00	15.0	21.0	12.0	30.0	42.0	24.0	51.0	75.0	48.0	105	135	240	240	
Stall torque*1	N·m	2.05	5.15	7.32	4.15	10.4	14.9	8.64	19.2	27.2	17.6	38.3	45	80	80	
Rated current*1	A _{rms}	1.8	1.8	1.4	2.1	2.0	2.0	2.0	2.3	2.7	3.3	3.5	5.80	9.74	9.35	
Instantaneous max. current*1	A _{rms}	5.1	5.1	4.1	6.0	5.8	5.9	5.9	6.6	7.9	9.4	10.0	17	28	28	
Rated speed*1	min ⁻¹	200			200			200			150	200	150	150		
Max. speed*1	min ⁻¹	500			500			400	300	500	350	250	500	250	300	
Torque constant	N·m/A _{rms}	1.28	3.12	5.51	2.16	5.56	7.60	4.46	8.28	10.3	5.58	11.1	8.39	8.91	9.08	
Rotor moment of inertia	kg·m ² ×10 ⁻⁴	25.0	51.0	77.0	77.0	140	220	285	510	750	930	1430	388	627	1360	
Rated power rate*1	KW/s	1.60	4.90	6.36	2.08	7.14	8.91	2.25	5.67	8.33	2.75	8.57	52.2	102	47.1	
Rated angular acceleration*1	rad/s ²	800	980	910	520	710	640	280	330	330	170	240	1160	1280	588	
Absolute accuracy	second	±15			±15			±15			±15			±15		
Repeatability	second	±1.3			±1.3			±1.3			±1.3			±1.3		
Applicable encoder	Standard	Absolute encoder (20 bits)														
	Option	Incremental encoder (20 bits)														
Basic specifications	Time rating	Continuous														
	Thermal class	Class A											Class F			
	Ambient temperature	0 to +40 °C														
	Ambient humidity	20 to 80% (non-condensing)														
	Vibration class	15µm or below														
	Enclosure	Totally-enclosed, self-cooled														
	Mounting	IP42											IP44			

Note: 1. The items marked with an *1 and the torque/speed characteristics listed here are representative of the values obtained when the motor is driven from the servo drive and the coil temperature is at 100 °C (20 °C for servo motors SGMCS-45M to 80 N). All others are for a coil temperature of 20 °C.
 2. The values marked with an *2 for rated torques are continuous allowable torque with the following heatsinks at an ambient temperature of 40 °C.
 Heatsink dimensions : 350x350x12 mm : SGMCS-□□B 450x450x12 mm : SGMCS-□□C 550x550x12 mm : SGMCS-□□D
 650x650x12 mm : SGMCS-□□E 750x750x45 mm : SGMCS-□□M/N

Torque-speed characteristics

(A : Continuous duty zone B : Intermittent duty zone)

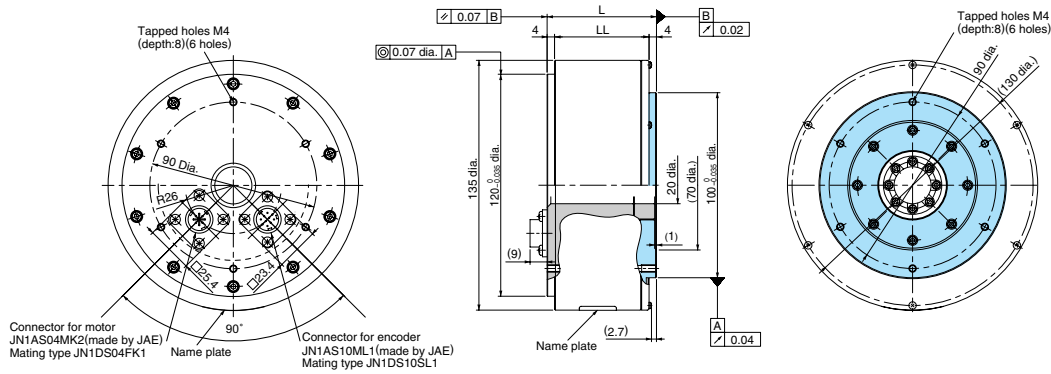


Dimensions

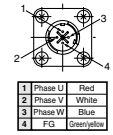
SGMCS-02/05/07B□B11 (Ø135 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-02B□B11	59	51	5.0
SGMCS-05B□B11	88	80	6.2
SGMCS-07B□B11	128	120	8.6

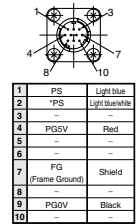
Rotating part: Non rotating part:



Motor connector



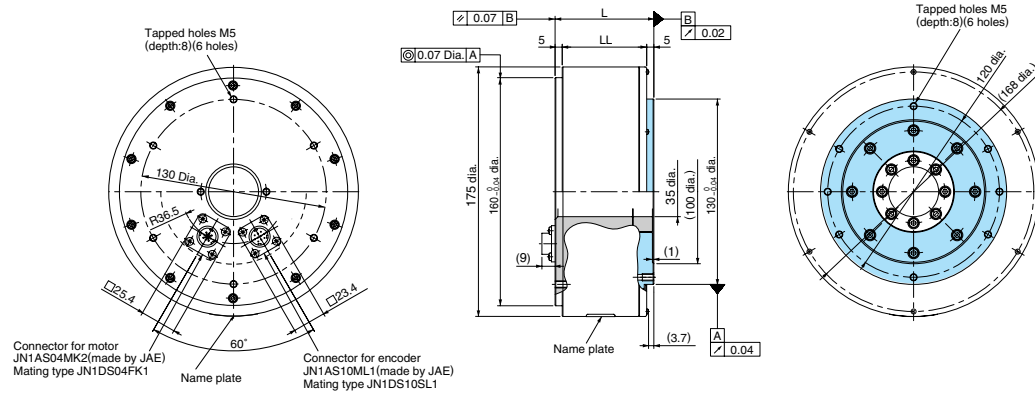
Encoder connector



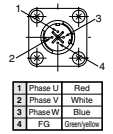
SGMCS-04/10/14C□B11 (Ø175 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-04C□B11	69	59	7.2
SGMCS-10C□B11	90	80	10.2
SGMCS-14C□B11	130	120	14.2

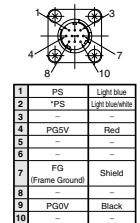
Rotating part: Non rotating part:



Motor connector



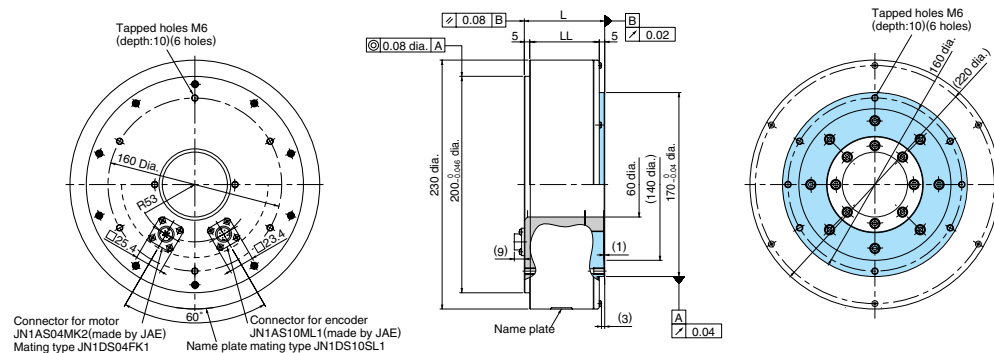
Encoder connector



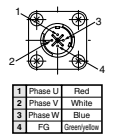
SGMCS-08/17/25D□B11 (Ø230 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-08D□B11	74	64	14.0
SGMCS-17D□B11	110	100	22.0
SGMCS-25D□B11	160	150	29.7

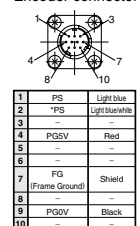
Rotating part: Non rotating part:



Motor connector



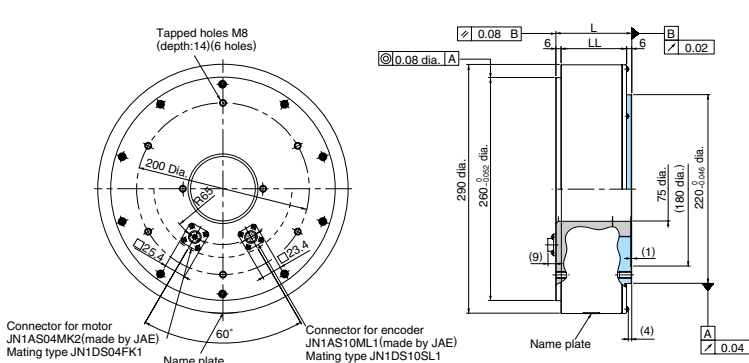
Encoder connector



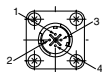
SGMCS-16/35E□B11 (Ø290 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-16E□B11	88	76	26.0
SGMCS-35E□B11	112	100	34.0

Rotating part: Non rotating part:

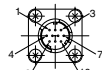


Motor connector



1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG	Green/White

Encoder connector

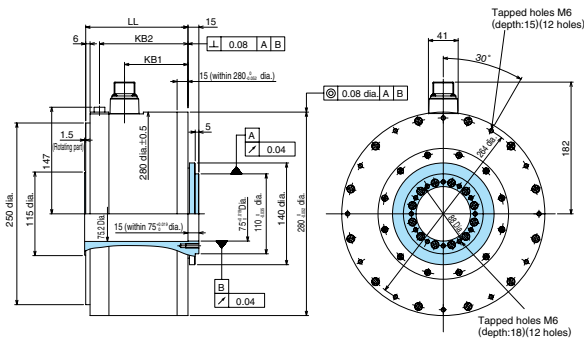


1	PS	Light Blue
2	*PS	Light Blue/White
3	-	-
4	PGSV	Red
5	-	-
6	-	-
7	FG	Shield
8	-	-
9	PGOV	Black
10	-	-

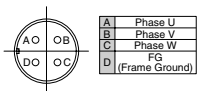
SGMCS-45/80M□A11 (Ø280 models)

Model	Dimensions (mm)			Approx. mass (kg)
	L	KB1	KB2	
SGMCS-45M□A11	141	87.5	122	38
SGMCS-80M□A11	191	137.5	172	45

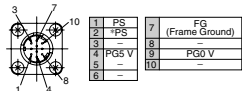
Rotating part:



Motor connector
Model: CE05-2A18-10PD
(made by DDK Electronics, Inc.)



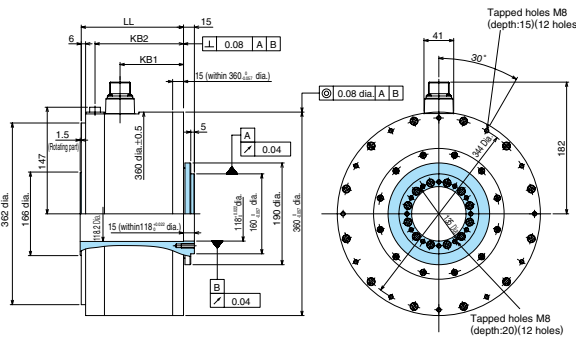
Encoder connector
Model: JN1AS10ML1
(made by Japan Aviation Electronics Industry, Ltd.)



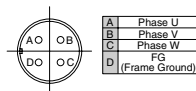
SGMCS-80N□A11 (Ø360 models)

Model	Dimensions (mm)			Approx. mass (kg)
	L	KB1	KB2	
SGMCS-80N□A11	151	98	132	50

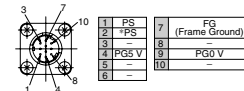
Rotating part:



Motor connector
Model: CE05-2A18-10PD
(made by DDK Electronics, Inc.)



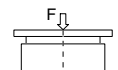
Encoder connector
Model: JN1AS10ML1
(made by Japan Aviation Electronics Industry, Ltd.)



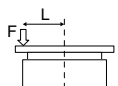
Load capacity

The following figures show the load capacity during motor operation.

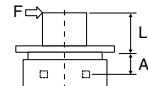
Design motors so as not to exceed the values in the table for thrust and moment loading.



Force: F
Thrust loading: $F_a = F + \text{Load's mass}$
Moment loading: $M = 0$



Force: F
Thrust loading: $F_a = F + \text{Load's mass}$
Moment loading: $M = F \times L$



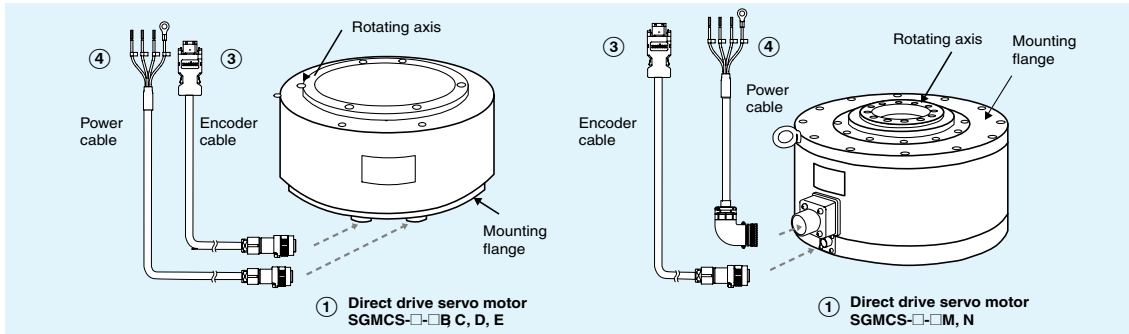
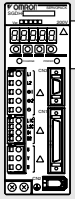
Force: F
Thrust loading: $F_a = \text{Load's mass}$
Moment loading: $M = F \times (L+A)$

Servomotor model SGMCS- □		02B□□	05B□□	07B□□	04C□□	10C□□	14C□□	08D□□	17D□□	25D□□	16E□□	35E□□	45M□A	80M□A	80N□A
Dimension of "A"	mm	0	0	0	0	0	0	0	0	0	0	0	33	33	37.5
Allowable moment load F_a	N		1500			3300			4000		11000		9000	16000	
Allowable thrust load M	N·m	40	50	64	70	75	90	93	103	135	250	320	180	350	

Ordering information

(Refer to Servo Drive chapter)

② Sigma-II Servo Drive



Symbol	Specifications				Servo motor model	Compatible servo drive ② Sigma-II
	Voltage	Encoder and design	Rated torque	Capacity		
 	230 V	Absolute encoder (20 bit)	2.00 Nm	42 W	SGMCS-02B3B11	SGDH-02AE-OY
			5.00 Nm	105 W	SGMCS-05B3B11	SGDH-02AE-OY
			7.00 Nm	147 W	SGMCS-07B3B11	SGDH-02AE-OY
			4.00 Nm	84 W	SGMCS-04C3B11	SGDH-04AE-OY
			10.0 Nm	209 W	SGMCS-10C3B11	SGDH-04AE-OY
			14.0 Nm	293 W	SGMCS-14C3B11	SGDH-04AE-OY
			8.00 Nm	168 W	SGMCS-08D3B11	SGDH-04AE-OY
			17.0 Nm	356 W	SGMCS-17D3B11	SGDH-04AE-OY
			25.0 Nm	393 W	SGMCS-25D3B11	SGDH-04AE-OY
			16.0 Nm	335 W	SGMCS-16E3B11	SGDH-08AE-S-OY
			35.0 Nm	550 W	SGMCS-35E3B11	SGDH-08AE-S-OY
			Incremental encoder (20 bit)	2.00 Nm	42 W	SGMCS-02BDB11
		5.00 Nm		105 W	SGMCS-05BDB11	SGDH-02AE-OY
		7.00 Nm		147 W	SGMCS-07BDB11	SGDH-02AE-OY
		4.00 Nm		84 W	SGMCS-04CDB11	SGDH-04AE-OY
		10.0 Nm		209 W	SGMCS-10CDB11	SGDH-04AE-OY
		14.0 Nm		293 W	SGMCS-14CDB11	SGDH-04AE-OY
		8.00 Nm		168 W	SGMCS-08DDB11	SGDH-04AE-OY
		17.0 Nm		356 W	SGMCS-17DDB11	SGDH-04AE-OY
		25.0 Nm		393 W	SGMCS-25DDB11	SGDH-04AE-OY
		16.0 Nm		335 W	SGMCS-16EDB11	SGDH-08AE-S-OY
		35.0 Nm		550 W	SGMCS-35EDB11	SGDH-08AE-S-OY
		Absolute encoder (20 bit)		45.0 Nm	707 W	SGMCS-45M3A11
			80.0 Nm	1260 W	SGMCS-80M3A11	SGDH-15AE-S-OY
80.0 Nm	1260 W		SGMCS-80N3A11	SGDH-15AE-S-OY		
Incremental encoder (20 bit)	45.0 Nm	707 W	SGMCS-45MDA11	SGDH-15AE-S-OY		
	80.0 Nm	1260 W	SGMCS-80MDA11	SGDH-15AE-S-OY		
	80.0 Nm	1260 W	SGMCS-80NDA11	SGDH-15AE-S-OY		

Encoder cables

Symbol	Specifications	Model	Appearance	
③	Encoder cable for SGMCS-direct drive servo motors	3 m	JZSP-CMP60-03	
		5 m	JZSP-CMP60-05	
		10 m	JZSP-CMP60-10	
		15 m	JZSP-CMP60-15	
		20 m	JZSP-CMP60-20	
④	Power cable for servo motors SGMCS-□□B/-□□C/-□□D/-□□E	3 m	JZSP-CMM60-03	
		5 m	JZSP-CMM60-05	
		10 m	JZSP-CMM60-10	
		15 m	JZSP-CMM60-15	
		20 m	JZSP-CMM60-20	
	Power cable for servo motors SGMCS-□□M/-□□N	3 m	R88A-CAWC003S-E	
		5 m	R88A-CAWC005S-E	
		10 m	R88A-CAWC010S-E	
		15 m	R88A-CAWC015S-E	
		20 m	R88A-CAWC020S-E	

Servo drive

② Refer to Sigma-II servo drive chapter for detailed drive specifications and selection of drive accessories.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.