



SGMCS Direct Drive Sigma Series Servo Product Catalog

Introduction



For your ideal machine, you need a compact servo drive with high torque and high accuracy. Your dream can come true with Yaskawa's gearless, Direct Drive Sigma Series.

Use a direct drive to supply high torque at low speeds, obtain precise positioning at high speeds without any slippage and backlash. Simplify your machine's configuration and maintenance requirements by eliminating the drivetrain. Use Yaskawa's Sigma Series of gearless Direct Drives to make your ideal machine a reality.

Applications

With a wide variety of products in our lineup, you have an expanded range of applications from which to choose.

Plastic Machinery

- Dial tables
- Die actuators
- Stretch wrap carousel
- Clamps
- Side-action tools
- Rotational casting mandrel

Semiconductor Manufacturing

- Integrated circuit inspection
- Liquid crystal screen manufacture
- Electronic parts assembly
- IC handling
- Manipulators

Machine Tools

- Transfer stations
- Dial tables
- Tool changer carousels
- Table drives

Packaging Machinery

- Part unloaders
- Actuators
- Rotary tables
- Material handling

Converting Equipment

- Print registration stands

More Powerful with Higher Positioning Accuracy

High Torque and High Speed

- A high-torque operation is realized without gears. Instantaneous peak torque: 6 to 600 Nm
- A high-speed operation reduces cycle time. Maximum motor speed: 250 to 500 RPM

High Precision

- High-precision indexing with over 1,000,000 PPR is standard
- Absolute accuracy of ± 15 arc seconds or less, repeatability of ± 1.3 arc seconds or less
- No backlash means that a high-precision, high-speed operation with shorter settling times is possible
- A current control algorithm with conversions for the d-q axis realizes higher accuracy in torque control

Simplified Machine Structure, Adjustment, and Maintenance

Compact

- The size of the machine's drive section is reduced because of the unique motor design
- The hollow space in the motor center can be used for wiring and piping

Easy

- Smooth and noiseless drive
- Use of serial encoder reduces the amount of wiring
- Parameters are used to change the type of control being used: speed control, torque control, or positioning control

Direct Drive System - Technical Improvements

- Simplified machine construction
- Improved positioning accuracy
- Direct connection to load increases torsional stiffness
- Backlash free operation
- High dynamic load reversals without damaging components
- Low noise
- No maintenance for lubrication - ideal for clean room applications
- Compact design for reduced space requirement
- Easy wiring and piping using the motor's hollow design
- Provides programmable motion profiles
- Delivers holding torque at zero speed – direct drive motors can provide 300% of continuous torque
- Includes integral I/O control

Product Lineup

- Small-capacity



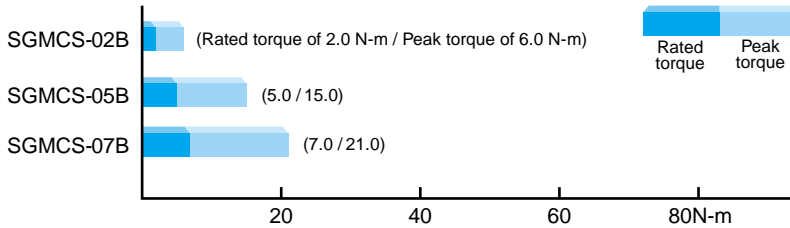
SGMCS Servomotor



SGDH
SERVOPACK

Outer diameter: 135 mm, Inner diameter: 20 mm

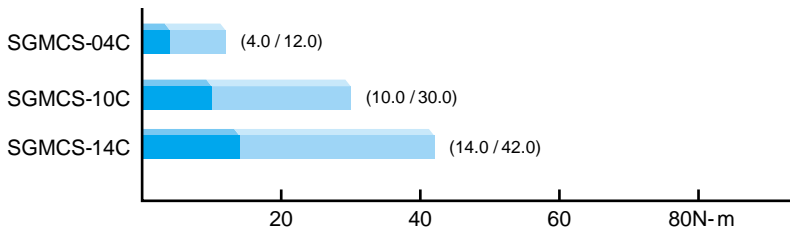
Single-phase 200V



SGDH-02
(200W)

Outer diameter: 175 mm, Inner diameter: 35 mm

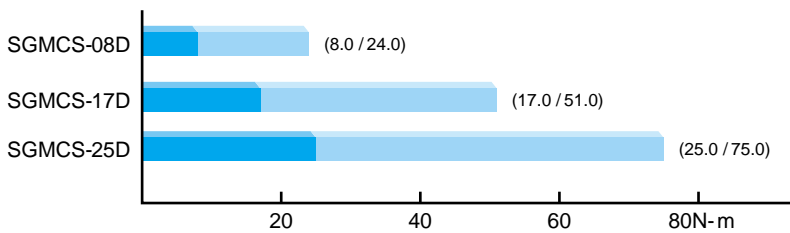
Single-phase 200V



SGDH-04
(400W)

Outer diameter: 230 mm, Inner diameter: 60 mm

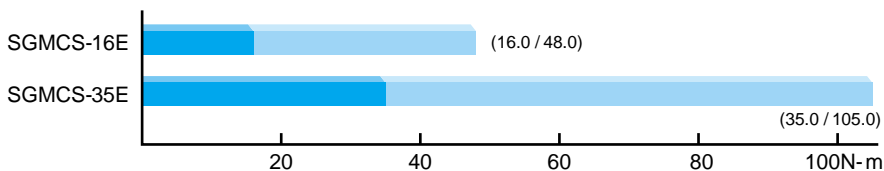
Single-phase 200V



SGDH-04
(400W)

Outer diameter: 290 mm, Inner diameter: 75 mm

Three-phase 200V



SGDH-08
(750W)

- Medium-capacity



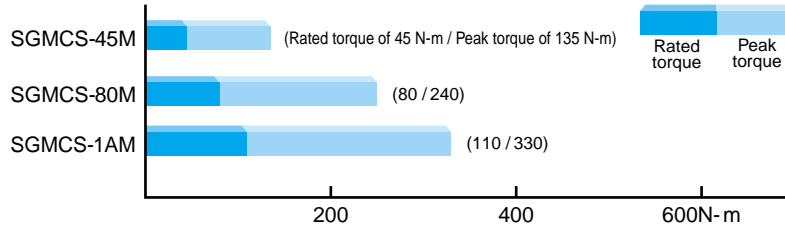
SGMCS Servomotor



SGDH SERVOPACK

Outer diameter: 280 mm, Inner diameter: 75 mm

Three-phase 200V



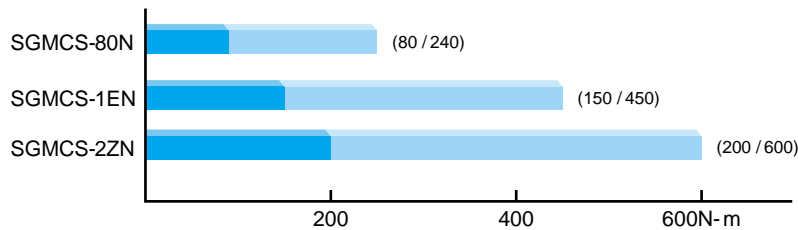
SGDH-10 (1.0kW)

SGDH-15 (1.5kW)

SGDH-20 (2.0kW)

Outer diameter: 360 mm, Inner diameter: 118 mm

Three-phase 200V



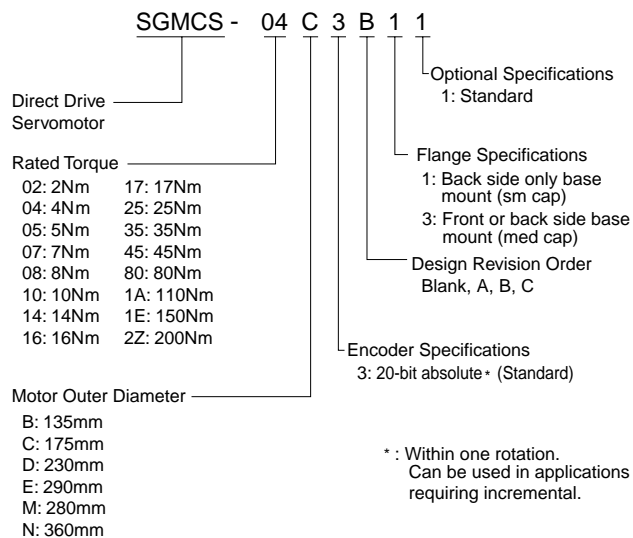
SGDH-15 (1.5kW)

SGDH-30 (3.0kW)

SGDH-30 (3.0kW)

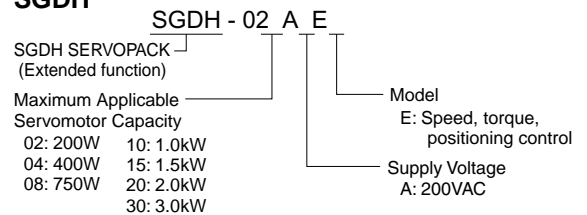
Type Designation

Servomotor



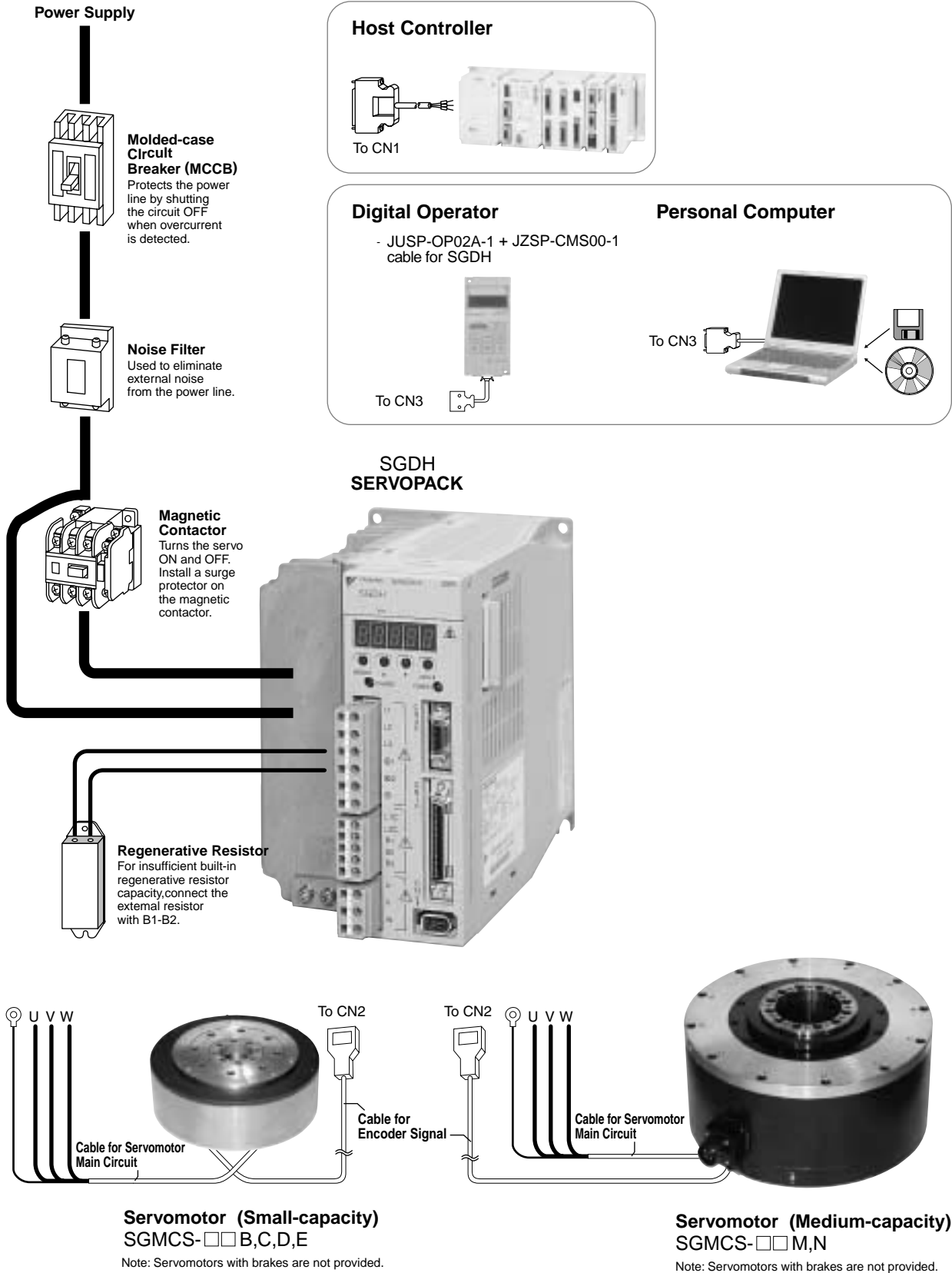
SERVOPACK

SGDH



System Configuration

Refer to pages 20 to 24 for details of peripheral devices, connectors, and cables.



Servomotors (Small-capacity)



- Ratings and Specifications

Time Rating	Continuous	Ambient Temperature	0 to +40°C
Thermal Class	A	Ambient Humidity	20 to 80% RH (non-condensing)
Withstand Voltage	1500VAC, 1min	Excitation Format	Permanent magnet
Insulation Resistance	500VDC, 10MΩ or more	Drive Method	Direct drive
Enclosure	Totally-enclosed, self-cooled	Mounting Method	Flange-mounted
Vibration Resistance	V15	Enclosure Rating	IP42

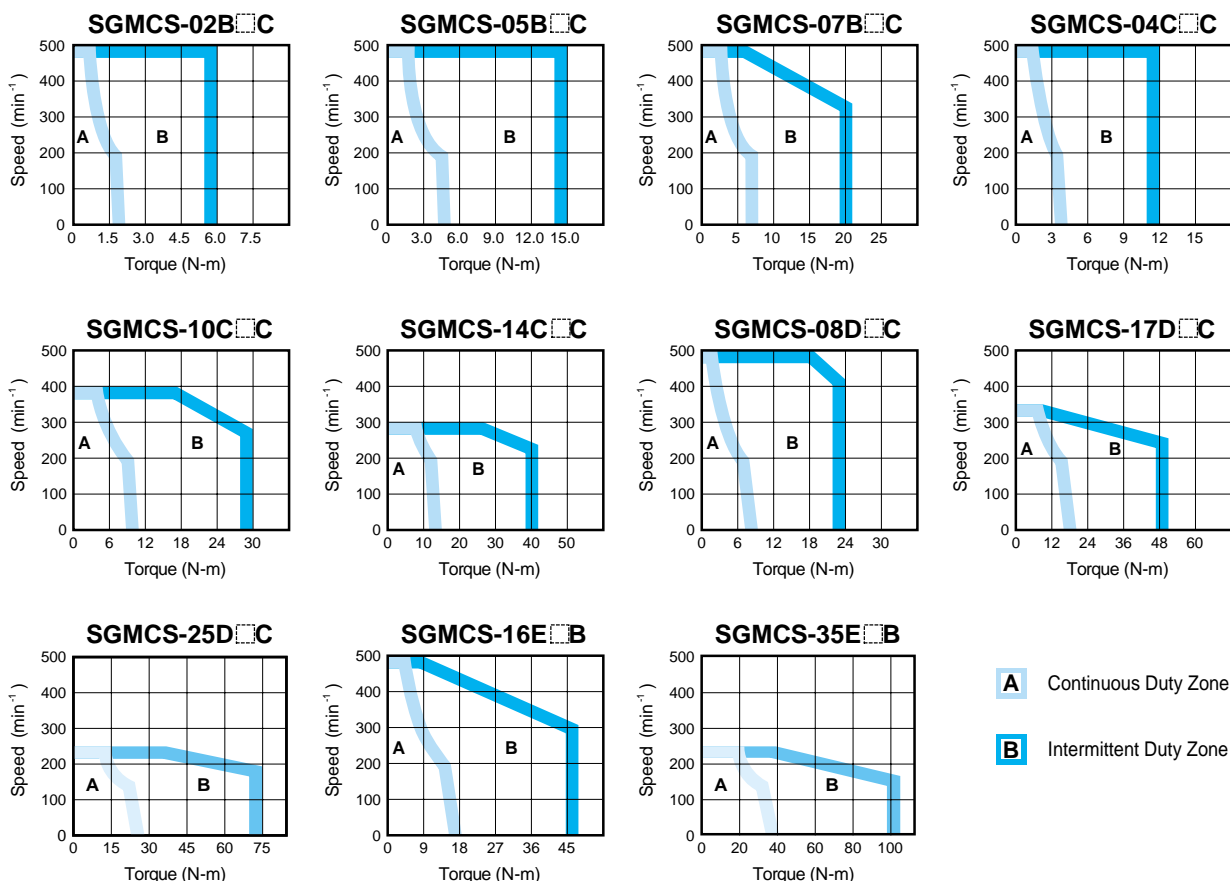
Servomotor Type		SGMCS-02B□C			SGMCS-05B□C			SGMCS-07B□C			SGMCS-04C□C		
		02	05	07	04	10	14	08	17	25	16	35	
Rated Output ^{*1}	W	42	105	147	84	209	293	168	356	393	335	550	
Rated Torque ^{*1 *2}	N-m	2.00	5.00	7.00	4.00	10.0	14.0	8.00	17.0	25.0	16.0	35.0	
Instantaneous Peak Torque ^{*1}	N-m	6.00	15.00	21.0	12.0	30.0	42.0	24.0	51.0	75.0	48.0	105	
Stall torque ^{*1} (60min ⁻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	
Rated Current ^{*1}	Arms	1.8	1.8	1.4	2.1	2.0	2.0	2.0	2.3	2.7	3.3	3.5	
Instantaneous Max. Current ^{*1}	Arms	5.1	5.1	4.1	6.0	5.8	5.9	5.9	6.6	7.9	9.4	10.0	
Rated Speed ^{*1}	min ⁻¹	200			200			200			150	200	150
Max. Speed ^{*1}	min ⁻¹	500			500	400	300	500	350	250	500	250	
Torque Constant	N-m/Arms	1.28	3.12	5.51	2.16	5.56	7.60	4.46	8.28	10.3	5.58	11.1	
Rotor Moment of Inertia	kg·m ² × 10 ⁻⁴	25.0	51.0	77.0	77.0	140	220	285	510	750	930	1430	
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	
Rated Angular Acceleration ^{*1}	rad/s ²	800	980	910	520	710	640	280	330	330	170	240	
Absolute Accuracy	arc-sec	± 15			± 15			± 15			± 15		
Repeat Accuracy	arc-sec	± 1.3			± 1.3			± 1.3			± 1.3		

*1 These values and the Torque/Speed characteristics listed here are representative of the values obtained when the motor is driven from the SERVOPACK and the coil temperature is at 100°C. All others are for a coil temperature of 20°C

*2 These values for the Rated Torque are for the continuous allowable torque with the following heatsinks at an ambient temperature of 40°C.

Heatsink dimensions: SGMCS-02B□C 350 x 350 x 12mm, SGMCS-05B□C 450 x 450 x 12mm,
SGMCS-07B□C 550 x 550 x 12mm, SGMCS-04C□C 650 x 650 x 12mm

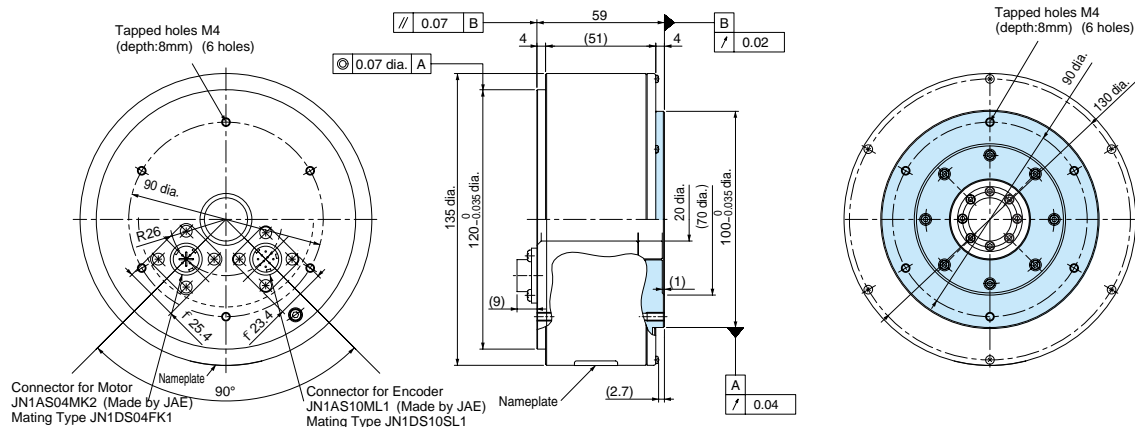
- Torque / Speed Characteristics



- Dimensions Units : mm

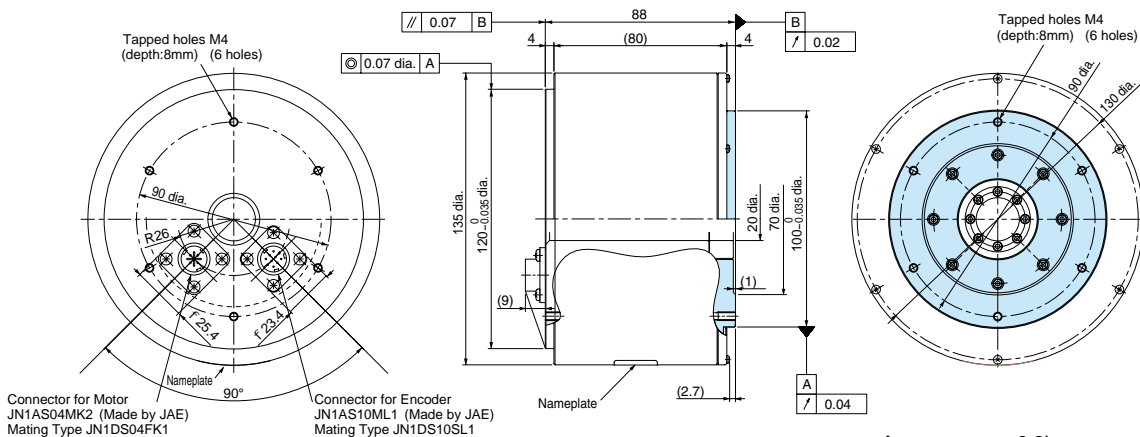
Rotating part

SGMCS-02B□C



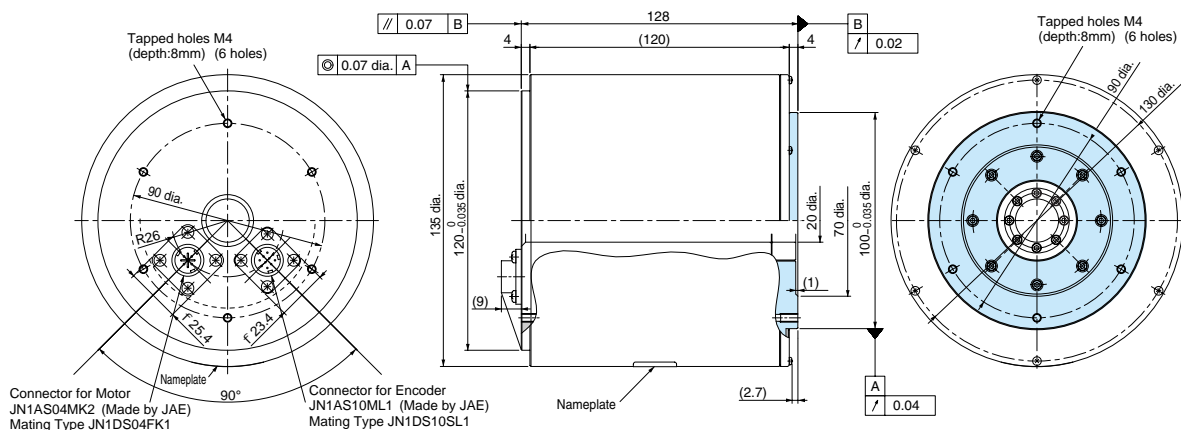
Approx.mass: 5.0kg

SGMCS-05B□C



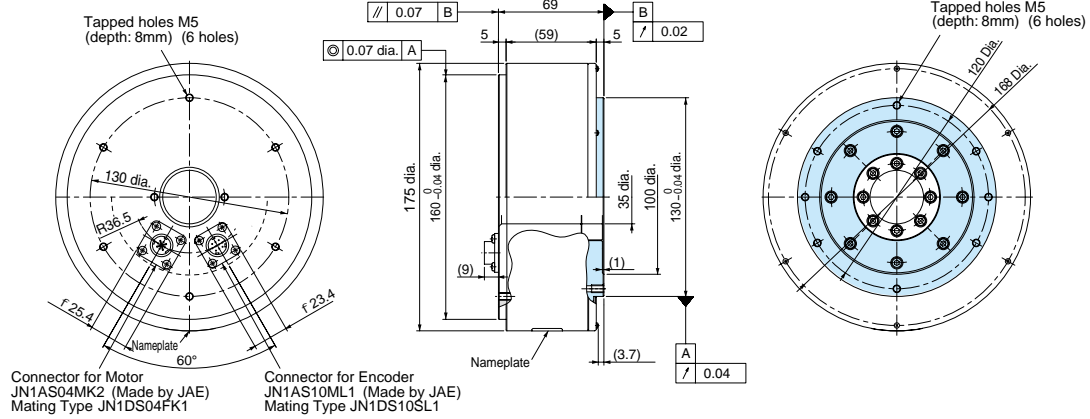
Approx.mass: 6.2kg

SGMCS-07B□C



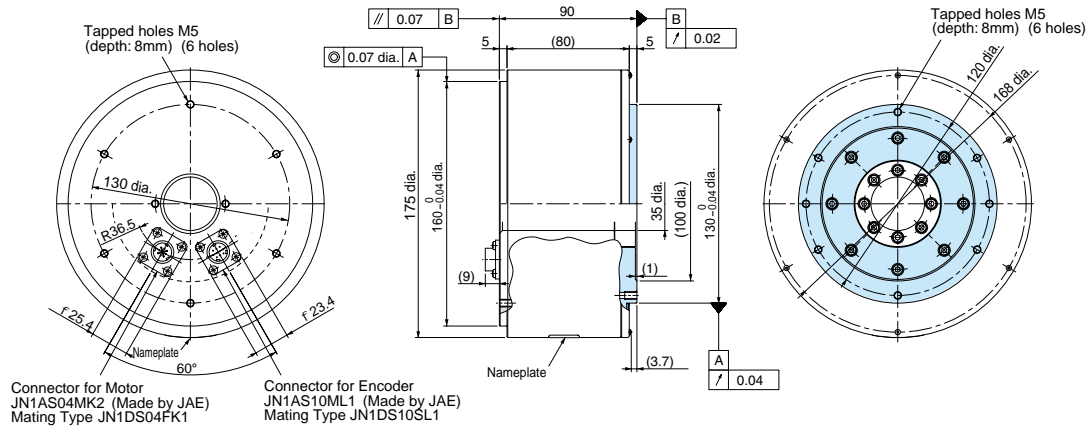
Approx.mass: 8.6kg

SGMCS-04C



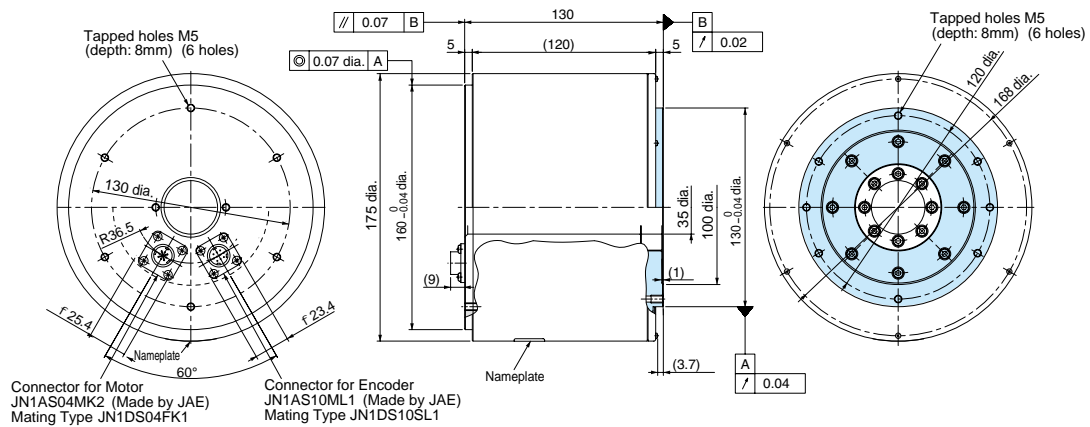
Approx.mass: 7.2kg

SGMCS-10C



Approx.mass: 10.2kg

SGMCS-14C

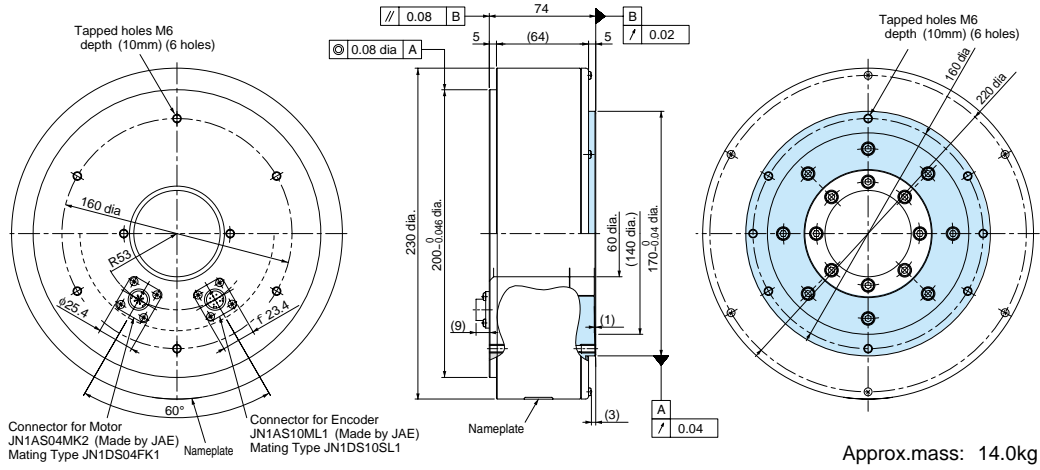


Approx.mass: 14.2kg

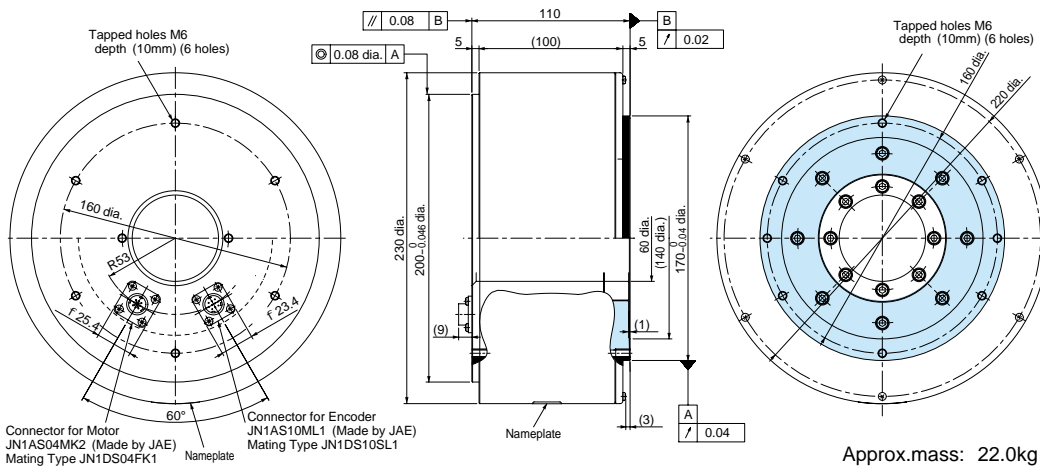
- Dimensions Units : mm

Rotating part:

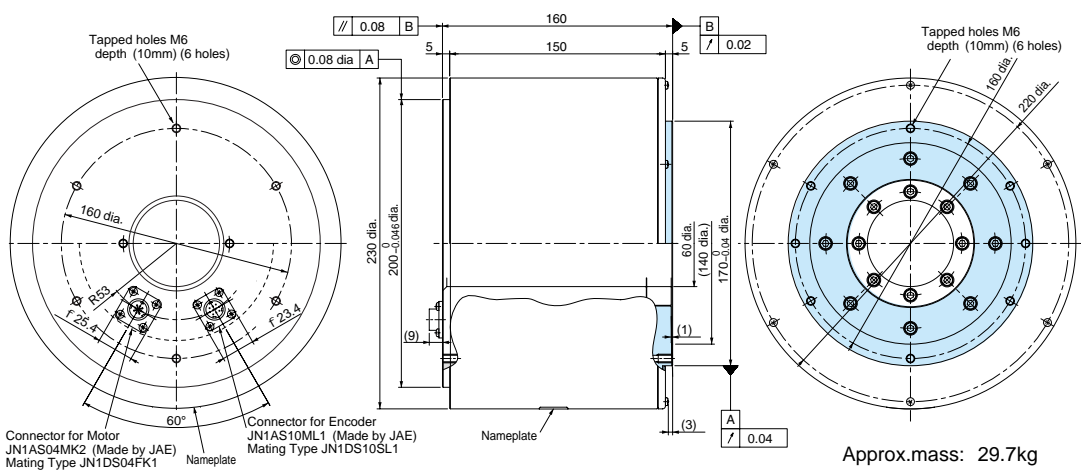
SGMCS-08D□□C



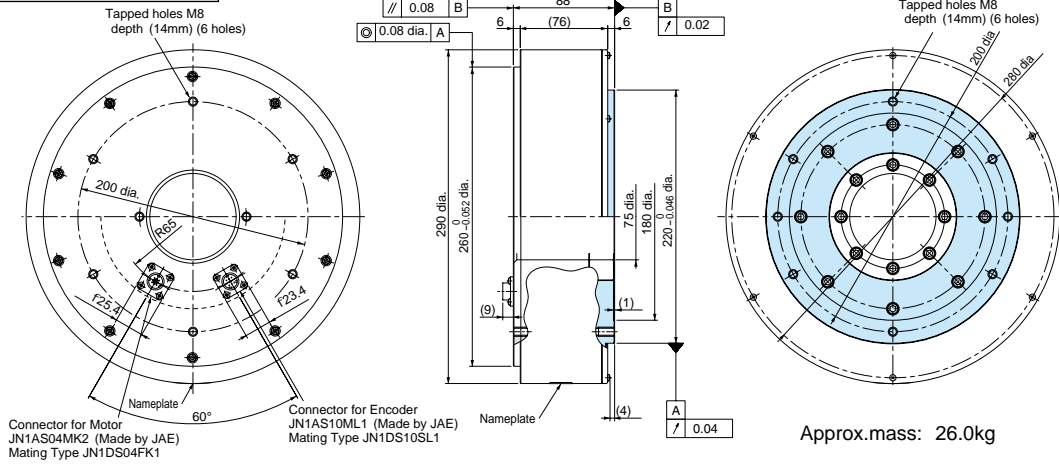
SGMCS-17D□□C



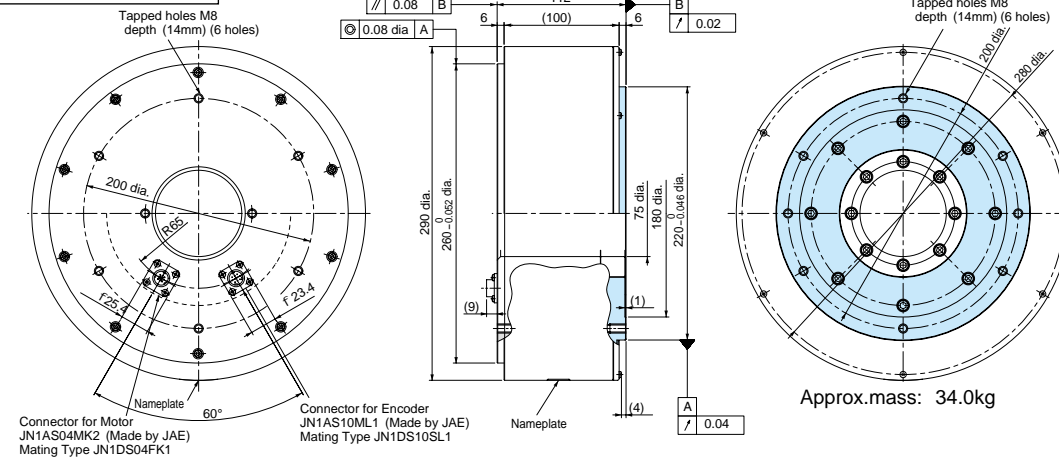
SGMCS-25D□□C



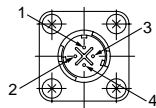
SGMCS-16E□B



SGMCS-35E□B

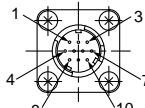


Motor connector (for small-capacity series)



1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG (Frame Ground)	Green (Yellow)

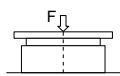
Encoder connector (for small-capacity series)



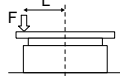
1	PS	Light Blue
2	*PS	Light Blue White
3	—	—
4	PG5V	Red
5	—	—
6	—	—
7	FG (Frame Ground)	Shield
8	—	—
9	PG0V	Black
10	—	—

Load Capacity

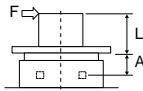
The following figures show the load capacity during motor operation. Design motors so as not to exceed the values in the table for thrust and moment loading.



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: $M = F \times (L + A)$

(See the table below for height of A.)

Servomotor Type SGMCS-□□	02B□C	05B□C	07B□C	04C□C	10C□C	14C□C	08D□C	17D□C	25D□C	16E□B	35E□B
Dimension A	mm	16.5	56.5	96.5	15.0	55.0	95.0	19.0	69.0	119.0	73.5
Allowable Thrust Load F_a	N	1500			3300			4000			11000
Allowable Moment Load M	N·m	40	50	64	70	75	90	93	103	135	320

Servomotors (Medium-capacity)



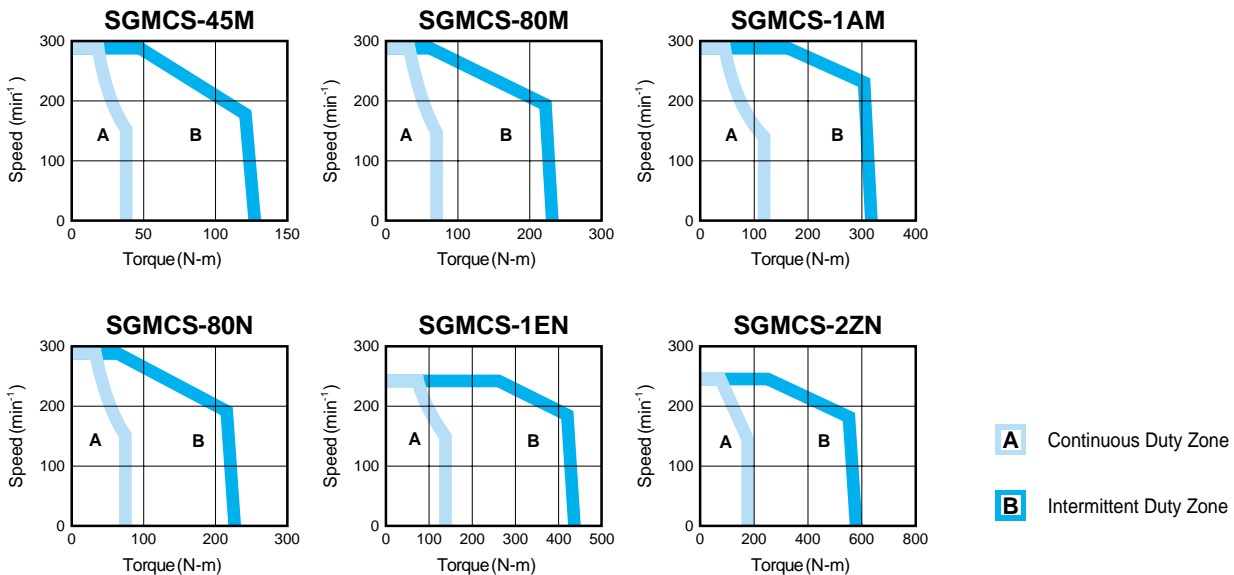
- Ratings and Specifications

Time Rating	Continuous	Ambient Temperature	0 to +40°C
Thermal Class	F	Ambient Humidity	20 to 80% RH (non-condensing)
Withstand Voltage	1500VAC, 1min	Excitation Format	Permanent magnet
Insulation Resistance	500VDC, 10MW or more	Drive Method	Direct drive
Enclosure	Totally-enclosed, self-cooled	Mounting Method	Flange-mounted
Vibration Resistance	V15	Enclosure Rating	IP42

Servomotor Type		SGMCS-□□□□					
		45M	80M	1AM	80N	1EN	2ZN
Rated Output*	W	707	1260	1730	1260	2360	3140
Rated Torque*	N-m	45	80	110	80	150	200
Instantaneous Peak Torque*	N-m	135	240	330	240	450	600
Stall torque*	N-m	45	80	110	80	150	200
Rated Current*	Arms	5.80	9.74	13.4	9.35	17.4	18.9
Instantaneous Max.Current*	Arms	17	28	42	28	56	56
Rated Speed*	min ⁻¹	150	150	150	150	150	150
Max. Speed*	min ⁻¹	300	300	300	300	250	250
Torque Constant	N-m/Arms	8.39	8.91	8.45	9.08	9.05	11.5
Rotor Moment of Inertia	kg-m ² x 10 ⁻⁴	388	627	865	1360	2470	3060
Rated Power Rate*	kW/s	52.2	102	140	47.1	91.1	131
Rated Angular Acceleration	Rad/s ²	1160	1280	1270	588	607	654
Absolute Accuracy	arc-sec	±15			±15		
Repeat Accuracy	arc-sec	±1.3			±1.3		

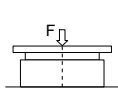
* These values and the Torque/Speed characteristics listed here are representative of the values obtained when the motor is driven from the SERVOPACK and the coil temperature is at 20°C
The values listed here are representative of the values obtained when a steel-plate heatsink (750 x 750 x 45mm) is used for cooling.

- Torque / Speed Characteristics

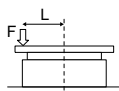


Load Capacity

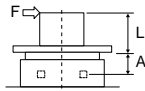
The following figures show the load capacity during motor operation. Design motors so as not to exceed the values in the table for thrust and moment loading.



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: $M = F \times (L + A)$

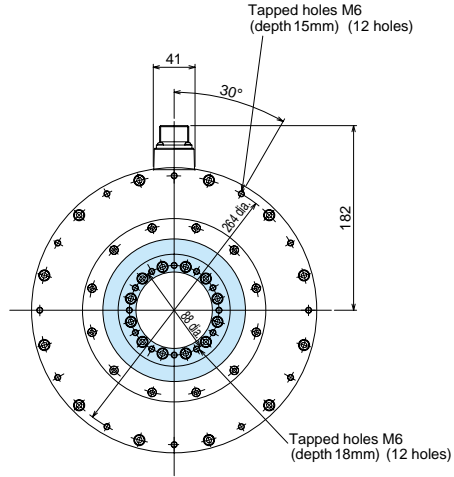
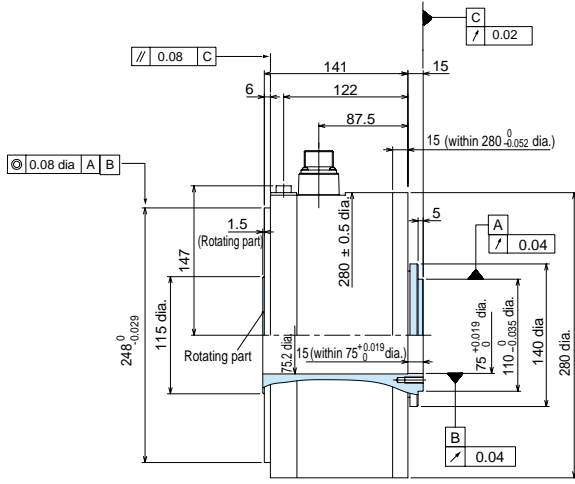
(See the table on the right for height of A.)

Servomotor Type	45M	80M	1AM	80N	1EN	2ZN
Dimension A	mm	33	37.5			
Allowable Thrust Load F_a	N	9000	16000			
Allowable Moment Load M	N-m	180	350			

- Dimensions Units : mm

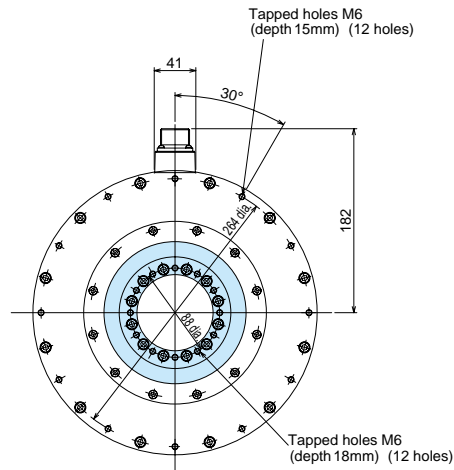
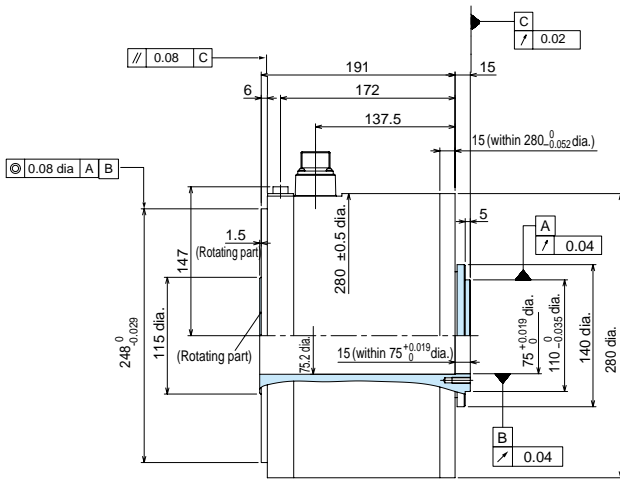
(Rotating part)

SGMCS-45M



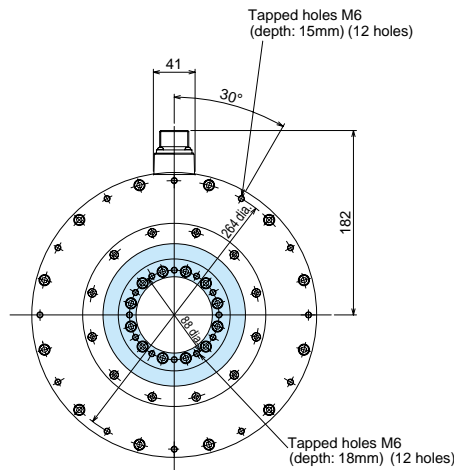
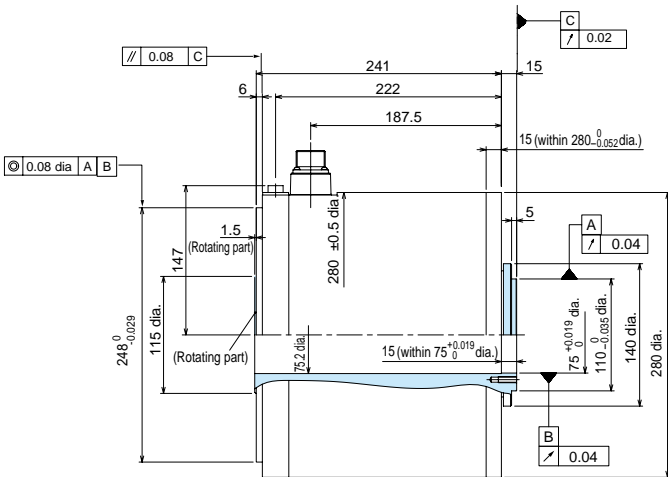
Approx.mass: 38kg

SGMCS-80M



Approx.mass: 45kg

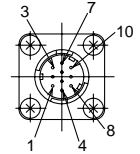
SGMCS-1AM



Approx.mass: 51kg

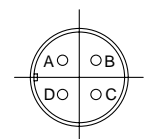
Encoder connector

Model: JN1AS10ML1
(Made by Japan Aviation Electronics Industry, Ltd.)



1	PS
2	*PS
3	—
4	PG5V
5	—
6	—
7	FG (Frame Ground)
8	—
9	PG0V
10	—

Motor connector

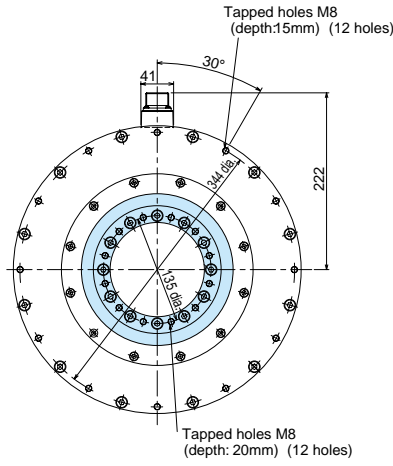
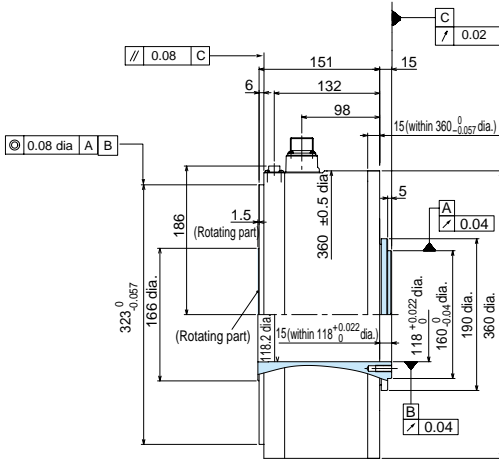


A	Phase U
B	Phase V
C	Phase W
D	FG (Frame Ground)

- Dimensions Units : mm

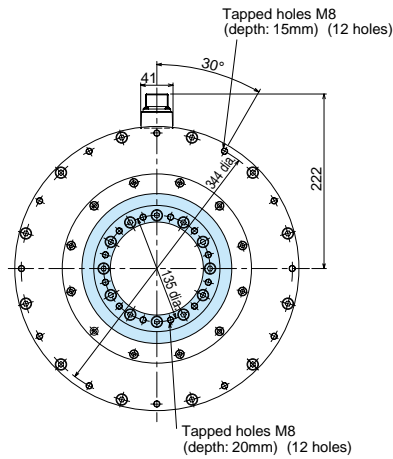
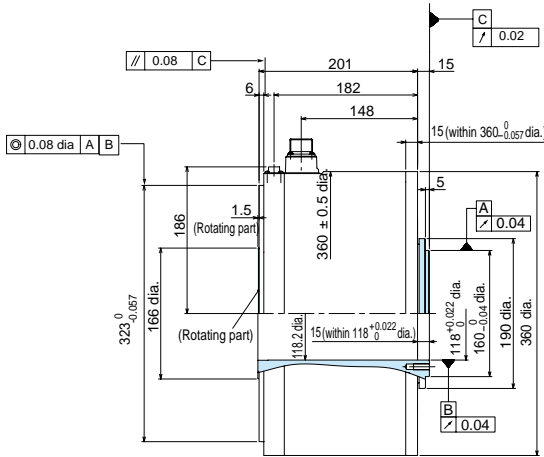
Rotating part:

SGMCS-80N



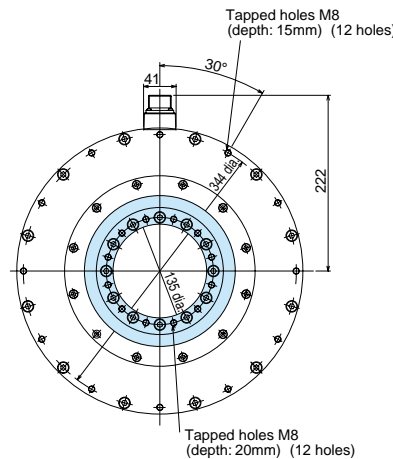
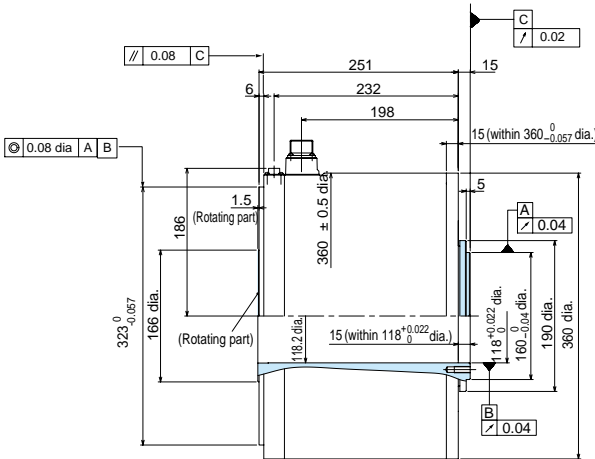
Approx.mass: 50kg

SGMCS-1EN



Approx.mass: 68kg

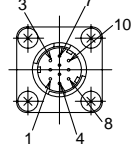
SGMCS-2ZN



Approx.mass: 86kg

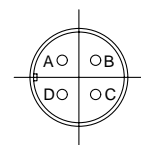
Encoder connector

Model: JN1AS10ML1
(Made by Japan Aviation Electronics Industry, Ltd.)



1	PS
2	*PS
3	—
4	PG5V
5	—
6	—
7	FG (Frame Ground)
8	—
9	PG0V
10	—

Motor connector



A	Phase U
B	Phase V
C	Phase W
D	FG (Frame Ground)

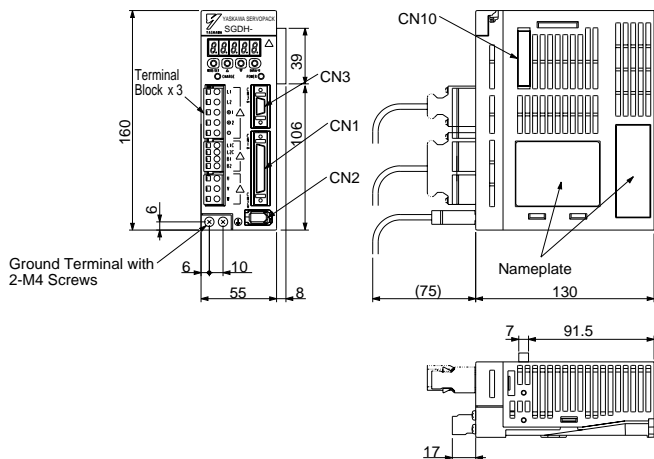
- Ratings and Specifications

SGDH

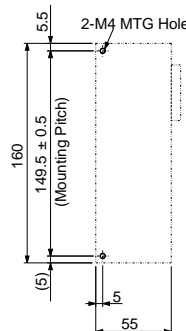
SERVOPACK Type	SGDH-□□□□	02AE	04AE	08AE	10AE	15AE	20AE	30AE		
Applicable Servomotor Type	SGMCS-□□□□	02B, 05B, 07B	04C, 10C, 14C, 08D, 17D, 25D	16E, 35E	45M	80M, 80N	1AM	1EN, 2ZN		
Max. Applicable Servomotor Capacity	kW	0.2	0.4	0.75	1.0	1.5	2.0	3.0		
Continuous Output Current	Arms	2.1	2.8	5.7	7.6	11.6	18.5	24.8		
Max. Output Current	Arms	6.2	8.5	13.9	17	28	42	56		
Input Power Supply	Main Circuit	Single-phase 200 to 230 VAC +10 to -15% 50/60Hz			Three-phase 200 to 230 VAC +10 to -15% 50/60Hz					
	Control Circuit	Single-phase 200 to 230VAC +10 to -15% 50/60Hz								
Control Method		Single-phase full-wave rectification, IGBT, PWM control, Sine wave power drive system			Three-phase full-wave rectification, IGBT, PWM control, Sine wave power drive system					
Feedback		20-bit serial encoder (incremental/absolute)								
Structure		Base-mounted type (Rack-mounted type is also available.)								
Approx. Mass	kg	0.8	1.1	1.7	1.7	2.8	3.8	3.8		
Basic Specifications	Conditions	Usage/Storage Temperature	Usage Temperature : 0 to +55°C / Storage Temperature: -20 to +85°C							
		Usage/Storage Humidity	90% RH or less (non-condensing)							
		Altitude	1000m or less							
		Vibration/Shock Resistance	Vibration Resistance: 4.9m/s ² and Shock Resistance : 19.6m/s ²							
Speed/Torque Control Mode	Performance	Speed Control Range	1 : 5000 (The lower limit is within the range not to stop at the torque load.)							
		Speed Regulation	Load Regulation	0 to 100% load : ±0.01% max. (at rated speed)						
			Voltage Regulation	Rated voltage ±10% : 0% max. (at rated speed)						
			Temperature Regulation	25 ±25°C : ±0.1% max. (at rated speed)						
		Frequency Characteristics	400 Hz (at JL = JM)							
	Torque Control Tolerance(Repeatability)	±2								
	Soft Start Time Setting	0 to 10s (Acceleration or deceleration can be set.)								
	Input Signals	Speed Reference	Reference Voltage	±6 VDC (Forward rotation if positive reference) / Rated speed Factory settings						
			Input Impedance	Variable setting range : ±2 VDC to ±10 VDC/ Rated speed, Allowable input voltage : 12V max.						
			Circuit Time Constant	Approx. 47 s						
Torque Reference		Reference Voltage	±3 VDC (Forward rotation if positive reference) / Rated speed: Factory settings							
		Input Impedance	Variable setting range ±1 VDC to ±10 VDC/ Rated speed, Allowable input voltage : 12V max.							
		Circuit Time Constant	Approx. 47 s							
Positioning Control Mode	Performance	Bias Setting	0 to 450 min ⁻¹ (setting resolution 1 min ⁻¹)							
		Feed Forward	0 to 100% (setting resolution: 1%)							
		Positioning Completion Width Setting	0 to 450 reference unit (setting resolution: 1 reference unit)							
	Input Signals	Reference Pulse	Pulse Type	Select one signal from: sign+pulse train, CCW+CW pulse train, and 90°phase difference 2-phase pulse (phase A + phase B)						
			Pulse Form	Line driver (+5V level), Open collector (+5V or +12V level)						
Pulse Frequency	0 kpps to 250 kpps, 200 kpps max. when an open collector is used.									
Control Signal	CLEAR (An input pulse form is identical to a reference pulse.)									
I/O Signals	Position Output	Phase A, phase B, or phase C (phase S used only with an absolute encoder): Line driver output								
	Sequence Input Signal	Servo ON, P control (or control mode switching, zero clamp, or reference pulse inhibit), forward/reverse run prohibit(P-OT/N-OT), alarm reset forward/reverse current limit (or internal speed switching)								
	Sequence Output Signal	Servo alarm, alarm code (3-bit output): Output terminal for CN1 is fixed. Select three signals: servo ready, positioning completion (speed coincidence), running current limit, speed limit, brake release, warning, or NEAR signal.								
Integrated Functions	Communications	Interface	Digital operator (hand-held) RS-422A port for PCs (RS-232C port can be used under some conditions)							
		1: N communications	N may be as high as 14 when an RS-422A port is used.							
		Axis Address Setting	Set by parameters.							
	Functions	Status display, parameter settings, monitor display, alarm traceback display, JOG run, autotuning, and graphing for speed or torque reference signal								
	Autotuning	Position/speed loop gain and integral time constant can be automatically set.								
	Dynamic Brake (DB)	Automatic built-in DB is activated at main power OFF, servo alarm, servo OFF, and overtravel								
	Regeneration	External regenerative resistor (option): 200W to 400W: Built-in regenerative resistor: 750W to 3kW								
	Overtravel(OT) Prevention	DB stop, deceleration stop, or coast to stop at P-OT or N-OT								
	Encoder Divider	The number of pulses that can be set is limited.								
	Electronic Gear	0.01 < A/B < 100								
	Internal Speed Setting	Three speeds may be internally set.								
	Protective Functions	Overcurrent, overvoltage, undervoltage, regeneration error, main circuit detection error, heatsink overheating, power phase loss, overflow, overspeed, encoder error, overrun protection, CPU error, parameter error, etc								
	Analog Monitor	Analog monitor connector for supervision of speed and torque reference signals, etc. integrated								
Indicators (LED Display)	CHARGE, POWER, 7segment-LED x 5 (Integrated digital operator function)									
Others	Reverse connection, zero search, DC reactor for suppressing high harmonic waves, automatic motor discrimination function									

- Dimensions Units : mm

SGDH-02

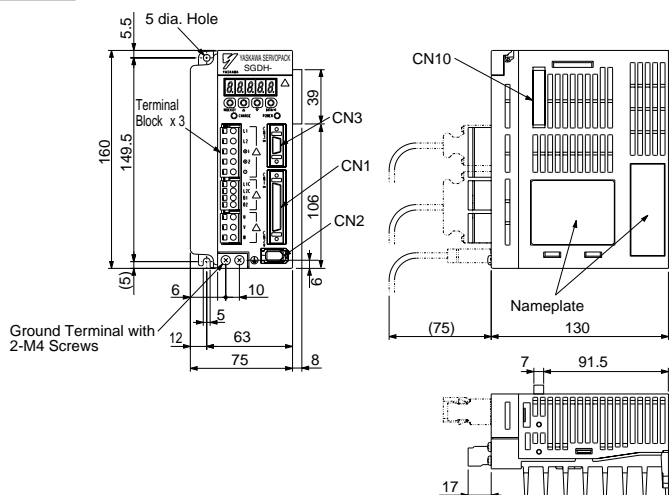


Mounting Hole Diagram

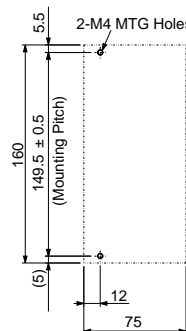


Approx.mass: 0.8kg

SGDH-04

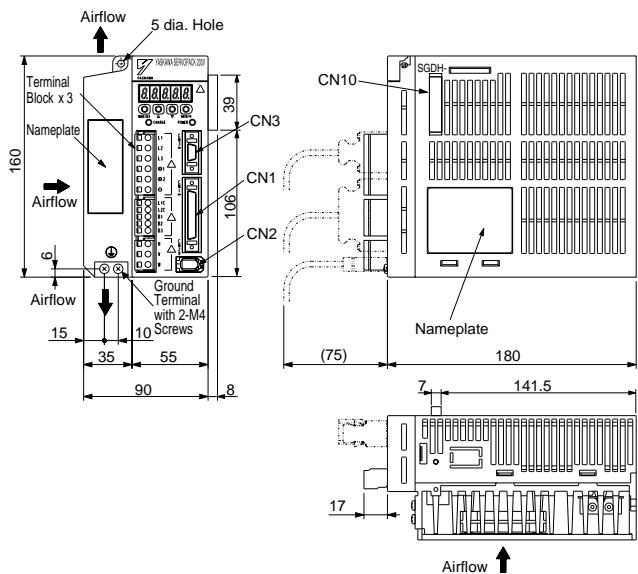


Mounting Hole Diagram

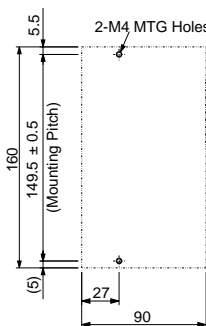


Approx.mass: 1.1kg

SGDH-08, -10

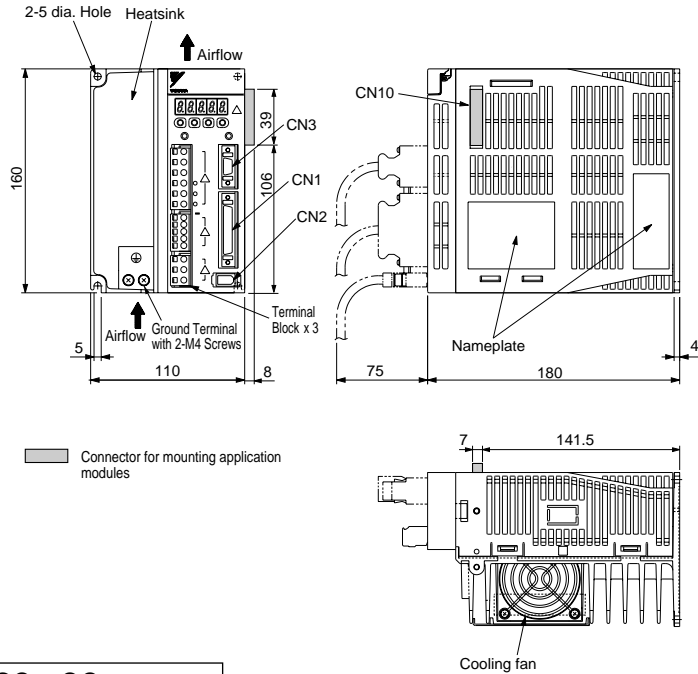


Mounting Hole Diagram

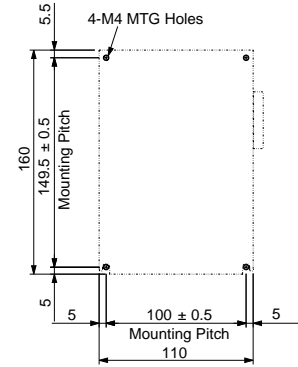


Approx.mass: 1.7kg

SGDH-15

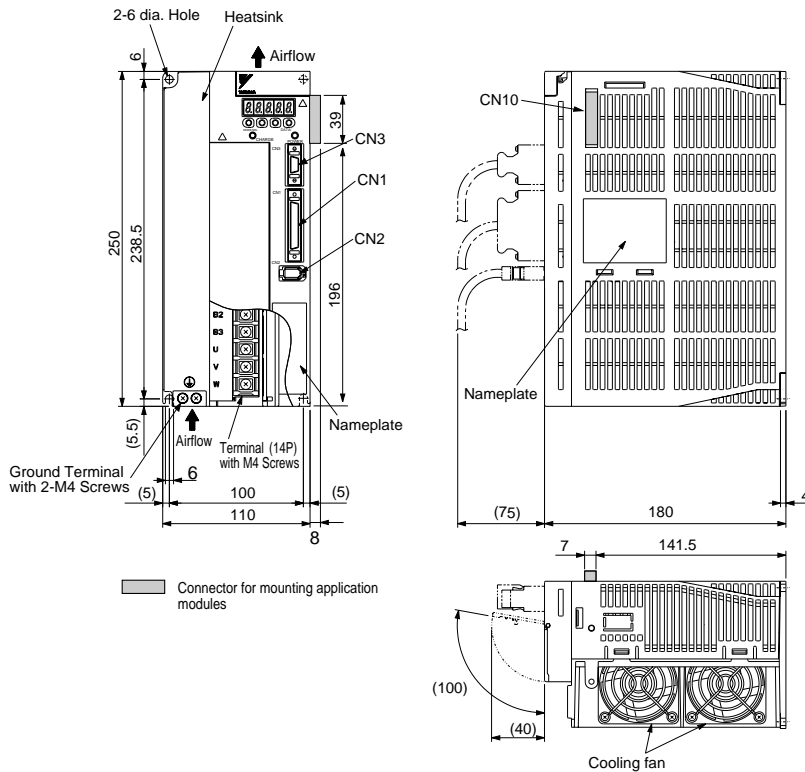


Mounting Hole Diagram

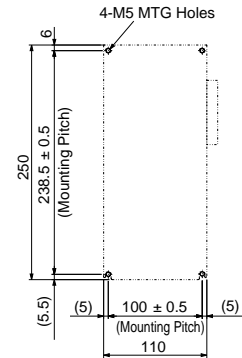


Approx.mass: 2.8kg

SGDH-20, -30



Mounting Hole Diagram



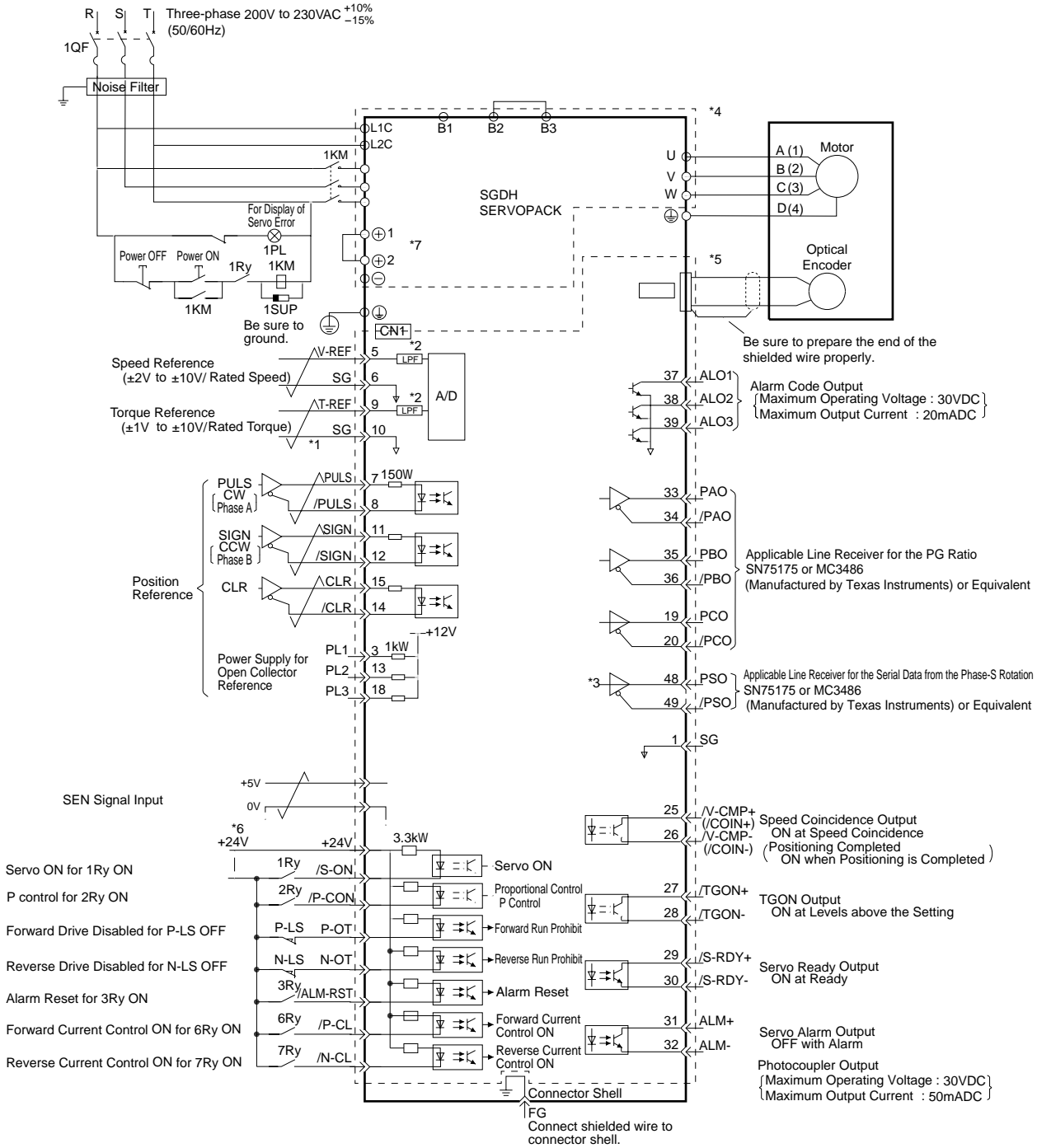
Approx.mass: 3.8kg

Connectors on SERVOPACK Side (Common for all types)

Connector Code	Type	Manufacturer
CN1	10250-52A2JL	SUMITOMO 3M Ltd.
CN2	53460-0611	Molex Japan Co., Ltd.
CN3	10214-52A2JL	SUMITOMO 3M Ltd.

Note: Use connectors above or equivalent.

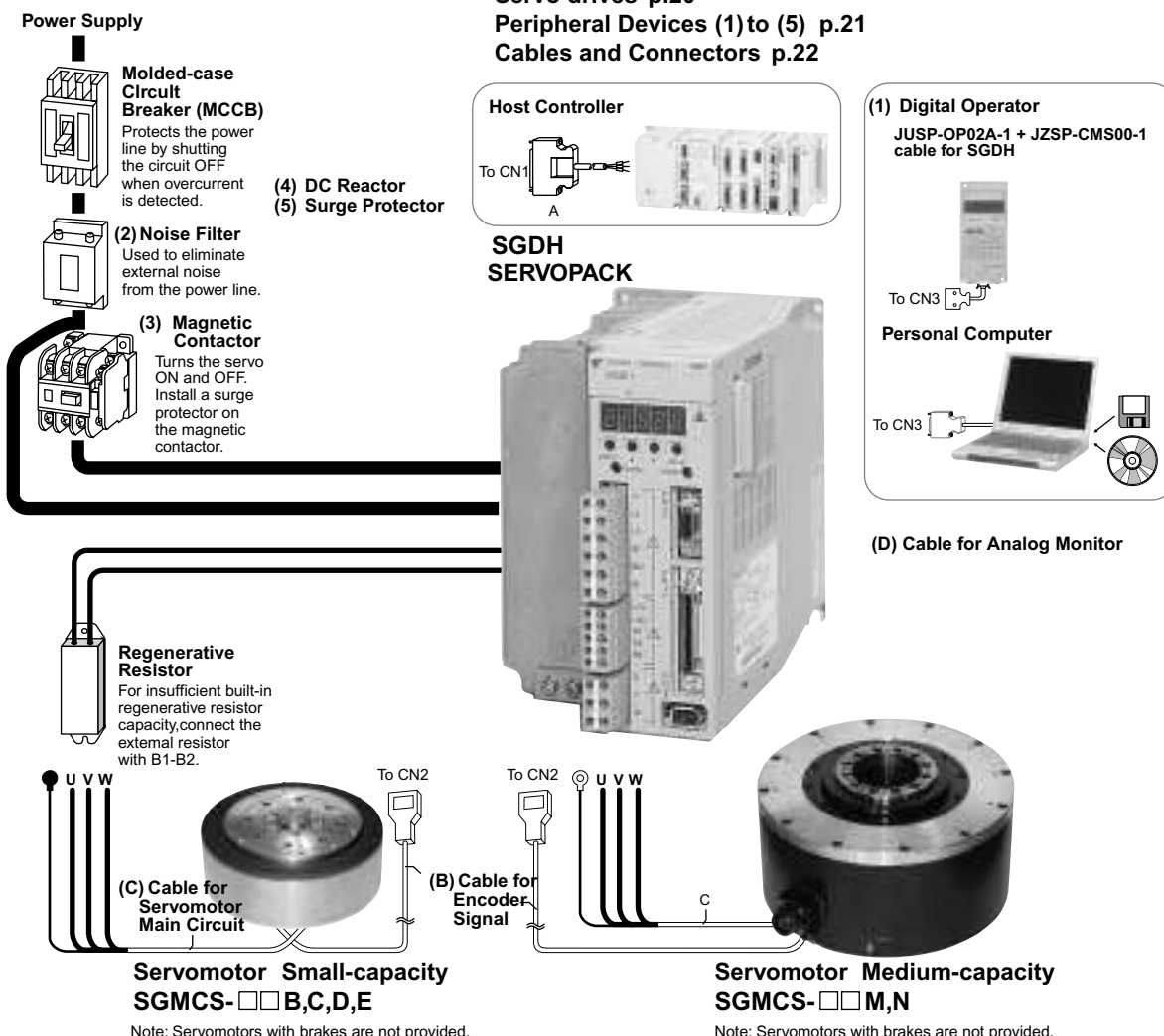
- Three-phase 200VAC (When using SGDH SERVOPACK)



*1: represents twisted-pair wire.
 *2: Primary filter. The time constant is 47 ms
 *3: For use with an absolute encoder
 *4: This circuit is electrically separated from the outside to prevent electrical shock.
 *5: This is a SELV circuit separated from other circuit by double insulation or reinforced insulation.
 *6: Use a double insulated 24VDC power supply.
 *7: Place a DC reactor between terminals @1 and @2 to suppress high harmonic waves.

Ordering Reference

- System Configuration



- Order List




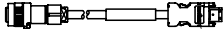
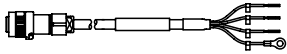
Servo Drives

Servomotor			SERVOPACK		Qty.
Series	Type SGMCS-	Rated Torque	SGDH-		
			Single-phase 200V	Three-phase 200V	
Small-capacity	Outer diameter: 135mm	02B3C11	2 N·m	02AE	
		05B3C11	5 N·m	02AE	
		07B3C11	7 N·m	02AE	
	Outer diameter: 175mm	04C3C11	4 N·m	04AE	
		10C3C11	10 N·m	04AE	
		14C3C11	14 N·m	04AE	
	Outer diameter: 230mm	08D3C11	8 N·m	04AE	
		17D3C11	17 N·m	04AE	
		25D3C11	25 N·m	04AE	
Outer diameter: 290mm	16E3B11	16 N·m		08AE	
	35E3B11	35 N·m		08AE	
Medium-capacity	Outer diameter: 280mm	45M3A31	45 N·m		10AE
		80M3A31	80 N·m		15AE
		1AM3A31	110 N·m		20AE
	Outer diameter: 360mm	80N3A31	80 N·m		15AE
		1EN3A31	150 N·m		30AE
		2ZN3A31	200 N·m		30AE

Peripheral Devices

Name	Part Number	Specifications		Dimensions P.26	Qty.
(1) Digital Operator	JUSP-OP02A-1	SGDH- Requires cable below			
	Cable	(JZSP-CMS00-1)	1m Required when a JUSP-OP02A-1 digital operator for the Sigma series is used. (When using SGDH SERVOPACK)		
(2) Noise Filter (Made by Schaffner EMC Inc.)	FN2070-6/07	Power supply voltages and capacities for applicable SERVOPACKs	Single-phase 200 V 200W	B	
	FN2070-10/07		Single-phase 100 V 200W Single-phase 200 V 400W		
	FN2070-16/07		Single-phase 100 V 400W Single-phase 200 V 750W		
	FN258L-16/07		Three-phase 200 V 0.75kW to 2kW		
	FN258L-30/07		Three-phase 200 V 3 W		
(4) DC reactor for suppressing high harmonic waves	X5070	Power supply voltages and capacities for applicable SERVOPACKs	Single-phase 200V 200W	C	
	X5069		Single-phase 200V 400W		
	X5061		Three-phase 200V 750W		
	X5060		Three-phase 200V 1.5kW 2kW		
	X5059		Three-phase 200V 3kW		
Monitoring and Setup Software (requires interface cable)	TBD	For SGDH amp (compatible with Windows 95, 98, NT; on a CD ROM)			
Software Interface Cable	YS12	Pre-wired 2.0m cable with 9 pin connector			

Cables and Connectors

Name		Part Number	Specifications	Dimensions (P.26, 27)	Qty.
(A) For I/O Signals CN 1	Connector to Terminal Conversion Unit	JUSP-TA50P	Terminal block and cable (0.5 m) 	D	
	Cable with Single Connector (SGDH)	JZSP-CKI01-1(A)	1m		E
		JZSP-CKI01-2(A)	2m		
		JZSP-CKI01-3(A)	3m		
Connector Kit for CN1	JZSP-CKI9	SGDH	Connector and Case 	F	
(B) CN 2 Encoder	Cable with Both End Connectors	JZSP-CMP60-03	3m		G
		JZSP-CMP60-05	5m		
		JZSP-CMP60-10	10m		
		JZSP-CMP60-15	15m		
		JZSP-CMP60-20	20m		
		JZSP-CSP60-03(A)	3m	With Right Angle Motor Connector	-
		JZSP-CSP60-05(A)	5m		
		JZSP-CSP60-10(A)	10m		
		JZSP-CSP60-15(A)	15m		
		JZSP-CSP60-20(A)	20m		
(C) Terminals on SERVOPACK Motor	Cable for Servomotor Main circuit Type SGMCS-□□B -□□C -□□D -□□E	JZSP-CMM60-03	3m		H
		JZSP-CMM60-05	5m		
		JZSP-CMM60-10	10m		
		JZSP-CMM60-15	15m		
		JZSP-CMM60-20	20m		
		JZSP-CSM60-03(A)	3m	With Right Angle Motor Connector	-
		JZSP-CSM60-05(A)	5m		
		JZSP-CSM60-10(A)	10m		
		JZSP-CSM60-15(A)	15m		
		JZSP-CSM60-20(A)	20m		
	Cable for Servomotor Main circuit Type SGMCS-□□M -□□N	B1E-03(A)	3m		J
		B1E-05(A)	5m		
		B1E-10(A)	10m		
		B1E-15(A)	15m		
		B1E-20(A)	20m		
(D) CN 5	Cable for Analog Monitor	DE9404559	1m	I	

● Dimensions for Peripheral Devices and Cables Units : mm

Ⓑ Noise Filter (Screw-terminal model)

Available from Schaffner EMC Inc.

(www.schaffner.com)

Figure 1

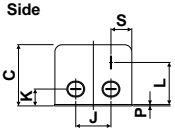
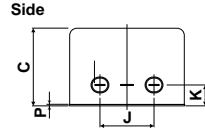
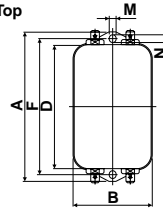


Figure 2



Top



Top

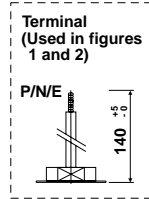
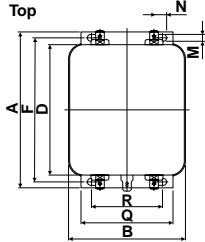
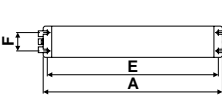
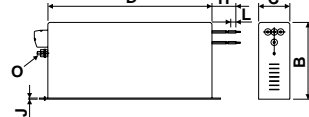


Figure 3

Bottom



Front/Side

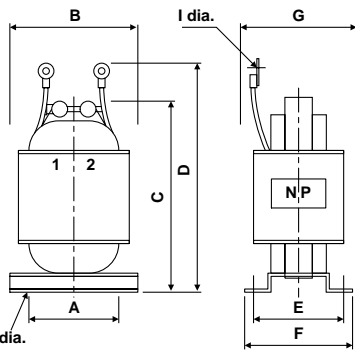


Code	Tolerances	Type		
		FN2070-6/07	FN2070-10/07	FN2070-16/07
		Figure 1		Figure 2
A	±1	113.5	156	119 ±0.5
B	±1	57.5		85.5
C		45.4 ±1.2		57.6
D	±1	94	130.5	98.5
F	±0.3	103	143	109
J	±0.2	25		40
K	±0.5	8.4		8.6
L	±0.5	32.4		
M	±0.1	4.4	5.3	4.4
N	±0.1	6		7.4
P	±0.1	0.9		1.2
Q	±0.3	66		
R	±0.2	51		
S	±0.5	38		
Spec. ^{*1}		250VAC 6A	250VAC 10A	250VAC 16A

Code	Tolerances	Type	
		FN258L-16/07	FN258L-30/07
		Figure 3	
A	±1	305	335
B		142 ±0.8	150 ±1
C	±0.6	55	60
D	±1	275 ±0.8	305
E	±0.5	290	320
F	±0.3	30	35
G	±0.2	6.5	6.5
H	±10	300	400
J	±0.2	1 ±0.1	1.5
L	±1	9	12
O		M5	M6
P		AWG14	AWG10
Spec. ^{*2}		480VAC 16A	480VAC 30A

*1 The rated current is +40°C
*2 The rated current is +50°C

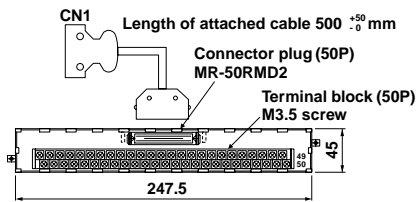
Ⓒ DC Reactor for Suppressing High Harmonic Waves



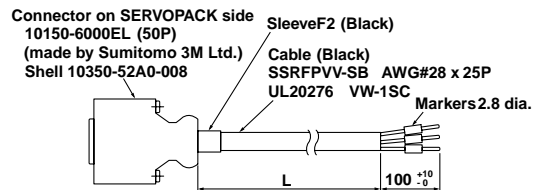
Reactor Type*	Inductance mH	Rated Current A	Dimensions (mm)									Mass (kg)
			A	B	C	D	E	F	G	H	I	
X5070	20.0	1.65	40	59	100	120	35	45	50	4	4.3	0.8
X5069	10.0	3.3	40	59	105	125	45	60	65	4	4.3	1.0
X5061	2.0	4.8	35	52	80	95	35	45	50	4	4.3	0.5
X5060	1.5	8.0	40	59	105	125	45	60	65	4	4.3	1.0
X5059	1.0	14.0	50	74	125	140	35	45	60	5	5.3	1.1

* Type used for orders from the Yaskawa Electric Corporation.

Ⓓ Connector to Terminal Conversion Unit (for CN1)

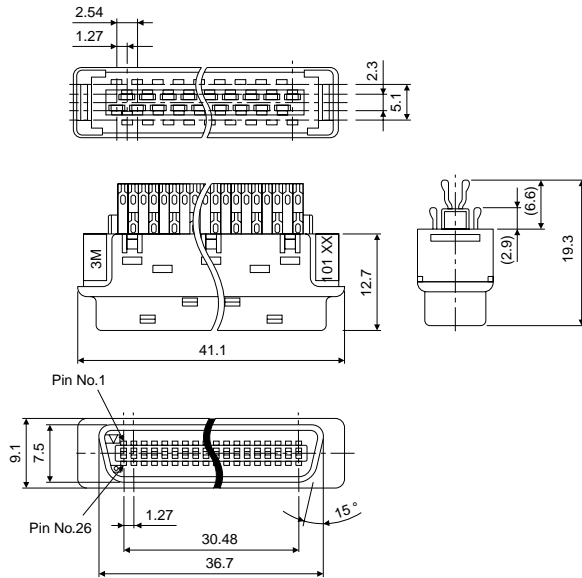


Ⓔ Cable with Single Connector (for CN1)

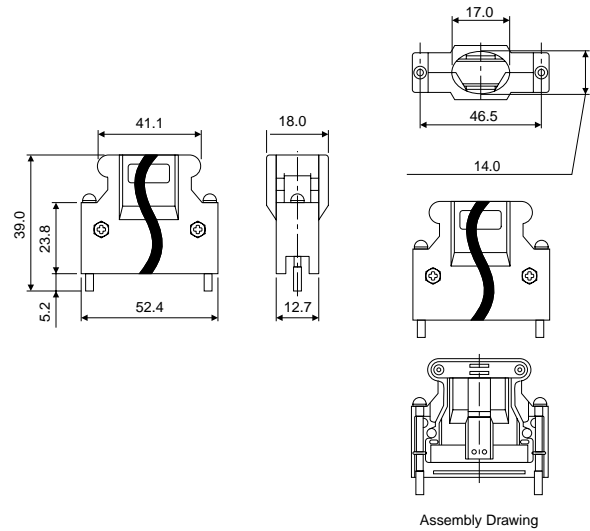


**F Connector Kit for I/O Signals (for CN1)
JZSP-CKI9**

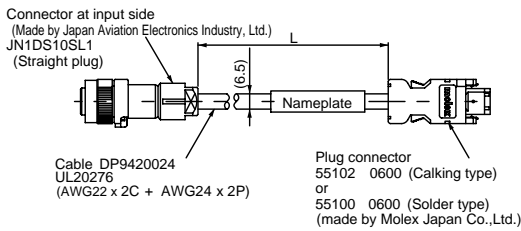
Connector 10150-3000VE (3M Part Number)



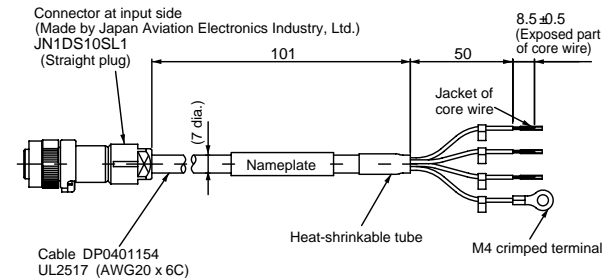
Case: 10350-52A0-008 (3M Part Number)



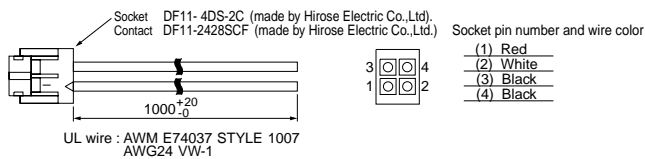
**G Cable with Both End Connectors (for CN2)
JZSP-CMP60-XX**



**H Cable for Servomotor Main Circuit
JZSP-CMM60-XX (Sm. Cap. Only)**



**I Cable for Analog Monitor
DE9404559**



**J Cable for Servo Motor Main Circuit
B1E-XX (A) (Med. Cap. Only)**

Contact Sales Representative for construction details.

YASKAWA ELECTRIC AMERICA, INC.

2121 Norman Drive South, Waukegan, IL 60085, U.S.A.
Phone: (847) 887-7000 Fax: (847) 887-7310 Internet: <http://www.yaskawa.com>

MOTOMAN INC.

805 Liberty Lane, West Carrollton, OH 45449, U.S.A.
Phone: (937) 847-6200 Fax: (937) 847-6277 Internet: <http://www.motoman.com>

YASKAWA ELETRICO DO BRASIL COMERCIO LTDA.

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