

Rotary Servomotors

SGMAV



Model Designations

● Without Gears

SGMAV - 01 A D A 2 1

Σ-V Series
Servomotor
SGMAV

1st+2nd
digits

3rd
digit

4th
digit

5th
digit

6th
digit

7th
digit

1st+2nd digits Rated Output

Code	Specifications
A5	50 W
01	100 W
C2	150 W
02	200 W
04	400 W
06	550 W
08	750 W
10	1.0 kW

5th digit Design Revision Order

Code	Specifications
A	Standard

6th digit Shaft End

Code	Specifications
2	Straight without key (standard)
6	Straight with key and tap (optional)
B	With two flat seats (optional)

7th digit Options

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

3rd digit Power Supply Voltage

Code	Specifications
A	200 VAC

4th digit Serial Encoder

Code	Specifications
3	20-bit absolute (standard)
D	20-bit incremental (standard)

Features

- Super high power rate (Extremely low inertia)
- Instantaneous peak torque (300% of rated torque)
- Mounted high-resolution serial encoder: 20 bits
- Maximum speed: 6,000 min⁻¹
- Wide selection: 50 W to 1.0 kW capacity, holding brake and gear options

Application Examples

- Semiconductor equipment
- Chip mounters
- PCB drilling stations
- Robots
- Material handling machines
- Food processing equipment

● With Gears

SGMAV - 01 A D A H 1 2 1

Σ-V Series Servomotor SGMVA

1st+2nd digits 3rd digit 4th digit 5th digit 6th digit 7th digit 8th digit 9th digit

1st+2nd digits Rated Output

Code	Specifications
A5	50 W
01	100 W
C2	150 W
02	200 W
04	400 W
06	550 W
08	750 W
10	1.0 kW

3rd digit Power Supply Voltage

Code	Specifications
A	200 VAC

4th digit Serial Encoder

Code	Specifications
3	20-bit absolute (standard)
D	20-bit incremental (standard)

5th digit Design Revision Order

Code	Specifications
A	Standard

6th digit Gear Type

Code	Specifications
H	HDS planetary low-backlash gear

7th digit Gear Ratio

Code	Specifications
B	1/11 (Not available: 50 W)
C	1/21
1	1/5
2	1/9 (Only 50 W)
7	1/33

8th digit Shaft End

Code	Specifications
0	Flange output
2	Straight without key
6	Straight with key and tap

9th digit Options

Code	Specifications
1	Without options
C	With holding brake (24 VDC)

Ratings and Specifications

Time Rating: Continuous

Vibration Class: V15

Insulation Resistance: 500 VDC, 10 MΩ min.

Ambient Temperature: 0 to 40°C

Excitation: Permanent magnet

Mounting: Flange-mounted

Thermal Class: B

Withstand Voltage: 1500 VAC for one minute

Enclosure: Totally enclosed, self-cooled, IP65
(except for shaft opening)

Ambient Humidity: 20% to 80% (no condensation)

Drive Method: Direct drive

Rotation Direction: Counterclockwise (CCW) with forward run
reference when viewed from the load side

Voltage		200 V							
Servomotor Model: SGMV-□□□		A5A	01A	C2A	02A	04A	06A	08A	10A
Rated Output*1	W	50	100	150	200	400	550	750	1000
Rated Torque*1, *2	N·m	0.159	0.318	0.477	0.637	1.27	1.75	2.39	3.18
Instantaneous Peak Torque*1	N·m	0.477	0.955	1.43	1.91	3.82	5.25	7.16	9.55
Rated Current*1	Arms	0.66	0.91	1.3	1.5	2.6	3.8	5.3	7.4
Instantaneous Max. Current*1	Arms	2.1	2.8	4.2	5.3	8.5	12.2	16.6	23.9
Rated Speed*1	min ⁻¹	3000							
Max. Speed*1	min ⁻¹	6000							
Torque Constant	N·m/Arms	0.265	0.375	0.381	0.450	0.539	0.496	0.487	0.467
Rotor Moment of Inertia	×10 ⁻⁴ kg·m ²	0.0242 (0.0389)	0.0380 (0.0527)	0.0531 (0.0678)	0.116 (0.180)	0.190 (0.254)	0.326 (0.403)	0.769 (0.940)	1.20 (1.41)
Rated Power Rate*1	kW/s	10.4	26.6	42.8	35.0	84.9	93.9	74.1	84.3
Rated Angular Acceleration*1	rad/s ²	65800	83800	89900	54900	67000	53700	31000	26500
Applicable SERVOPACK	SGDV-□□□□	R70□	R90□	1R6A,2R1F		2R8□	5R5A	5R5A	120A

*1: These items and torque-motor speed characteristics quoted in combination with an SGDV SERVOPACK are at an armature winding temperature of 100°C. Other values quoted are at 20°C.

*2: Rated torques are continuous allowable torque values at 40°C with an aluminum heat sink of the following dimensions attached.

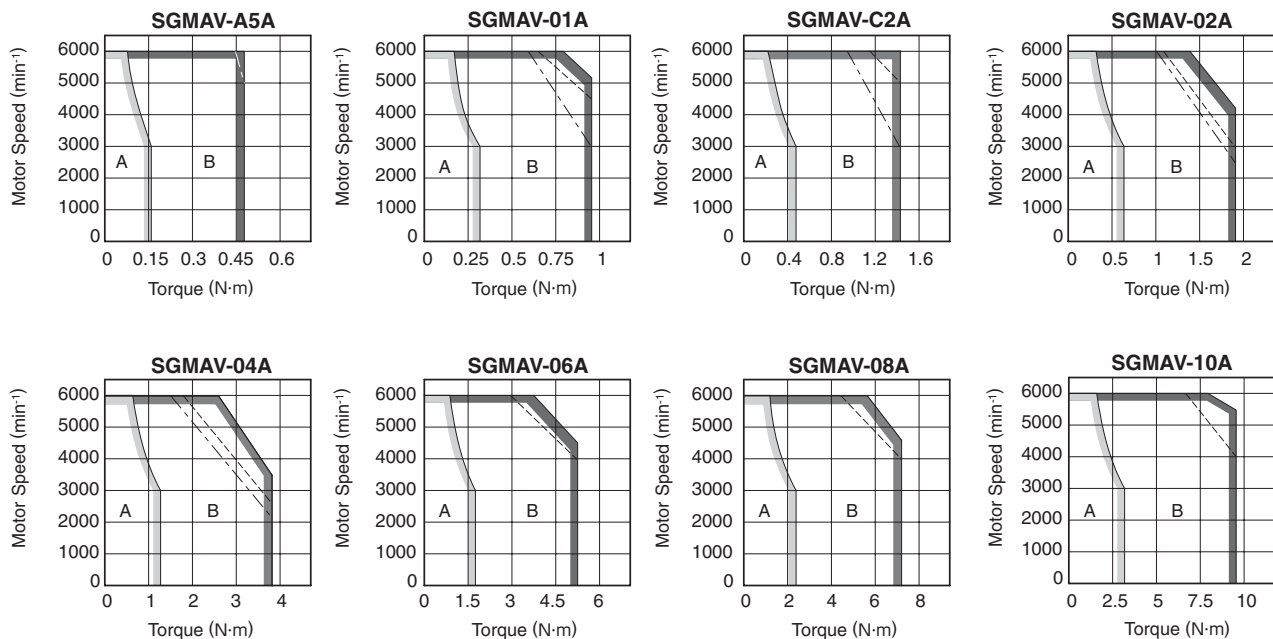
SGMAV-A5A, -01A: 200 mm×200 mm×6 mm

SGMAV-C2A, -02A, -04A, -06A, -08A: 250 mm×250 mm×6 mm

SGMAV-10A: 300 mm×300 mm×12 mm

Note: The values in parentheses are for servomotors with holding brakes.

● Torque-Motor Speed Characteristics A: Continuous Duty Zone B: Intermittent Duty Zone



Notes: 1 The characteristics of the intermittent duty zone differ depending on the supply voltages. The solid, dotted, and dashed-dotted lines of the intermittent duty zone indicate the characteristics when a servomotor runs with the following combinations:

·The solid line: With a three-phase 200 V or a single-phase 230 V SERVOPACK

·The dotted line: With a single-phase 200 V SERVOPACK

·The dashed-dotted line: With a single-phase 100 V SERVOPACK

An SGMV-A5A servomotor combined with a single-phase 200 V SERVOPACK has the same characteristics as one combined with a three-phase 200 V SERVOPACK.

2 When the effective torque is within the rated torque, the servomotor can be used within the intermittent duty zone.

3 When the main circuit cable length exceeds 20 m, note that the intermittent duty zone of the *Torque-Motor Speed Characteristics* will shrink as the line-to-line voltage drops.

Ratings and Specifications

● Derating Rate for Servomotor Fitted with an Oil Seal

When a motor is fitted with an oil seal, use the following derating rate because of the higher friction torque.

Servomotor Model SGMAV-	A5A	01A	C2A	02A	04A	06A	08A	10A
Derating Rate %	80	90			95			

● Holding Brake Electrical Specifications

Holding Brake Rated Voltage	Servomotor Model	Servomotor Rated Output W	Holding Brake Specifications					
			Capacity W	Holding Torque N·m	Coil Resistance Ω (at 20°C)	Rated Current A(at 20°C)	Brake Release Time ms	Brake Operation Time ms
24 VDC $^{+10\%}_0$	SGMAV-A5A	50	5.5	0.159	103	0.23	60	100
	SGMAV-01A	100		0.318				
	SGMAV-C2A	150	5.1	0.477	114	0.21	60	100
	SGMAV-02A	200	6	0.637	97.4	0.25	60	100
	SGMAV-04A	400		1.27				
	SGMAV-06A	550	8	1.75	74.3	0.32	80	100
	SGMAV-08A	750	6.5	2.39	87.7	0.27	80	100
	SGMAV-10A	1000	7	3.18	82.8	0.29	80	100

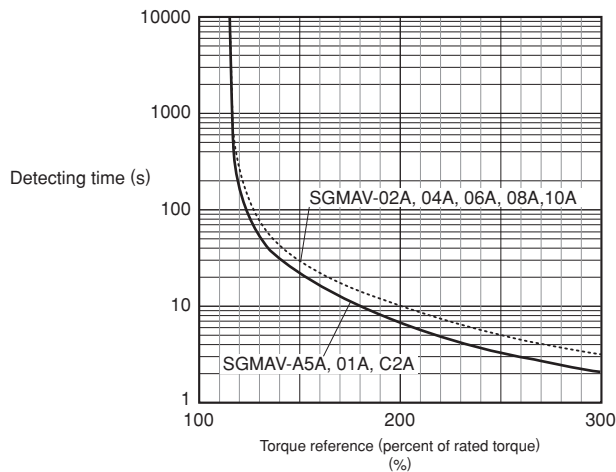
Notes: 1 The holding brake is only used to hold the load and cannot be used to stop the servomotor.

2 The holding brake open time and holding brake operation time vary depending on which discharge circuit is used. Make sure holding brake open time and holding brake operation time are correct for your servomotor.

3 A 24-VDC power supply is not included.

● Overload Characteristics

The overload detection level is set under hot start conditions at a servomotor ambient temperature of 40°C.



Note: Overload characteristics shown above do not guarantee continuous duty of 100% or more output. Use a servomotor with effective torque within the continuous duty zone of *Torque-Motor Speed Characteristics*.

Ratings and Specifications

● Allowable Load Moment of Inertia at the Motor Shaft

The rotor moment of inertia ratio is the value for a servomotor without a gear and a brake.

Servomotor Model		Servomotor Rated Output	Allowable Load Moment of Inertia (Rotor Moment of Inertia Ratio)
SGMAV-	A5A, 01A, C2A, 02A	50 to 200 W	30 times
	04A, 06A, 08A	400 to 750 W	20 times
	10A	1000 W	10 times

● Load Moment of Inertia

The larger the load moment of inertia, the worse the movement response.

The allowable load moment of inertia (J_L) depends on the motor capacity, as shown above. This value is provided strictly as a guideline and results may vary depending on servomotor drive conditions.

Use the AC servo drive capacity selection program SigmaJunmaSize+ to check the operation conditions. The program can be downloaded for free from our web site (<http://www.e-mechatronics.com/>).

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). Take one of the following steps if this occurs.

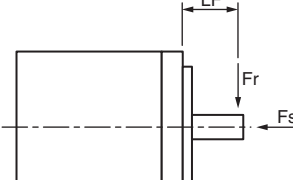
- Reduce the torque limit.
- Reduce the deceleration rate.
- Reduce the maximum speed.
- Install an external regenerative resistor if the alarm cannot be cleared using the steps above. Refer to *Regenerative Resistors* on page 351.

Regenerative resistors are not built into SERVOPACKs for 400 W motors or less.

External regenerative resistors are required when this condition is exceeded or if the allowable loss capacity (W) of the built-in regenerative resistor is exceeded due to regenerative drive conditions when a regenerative resistor is already built in.

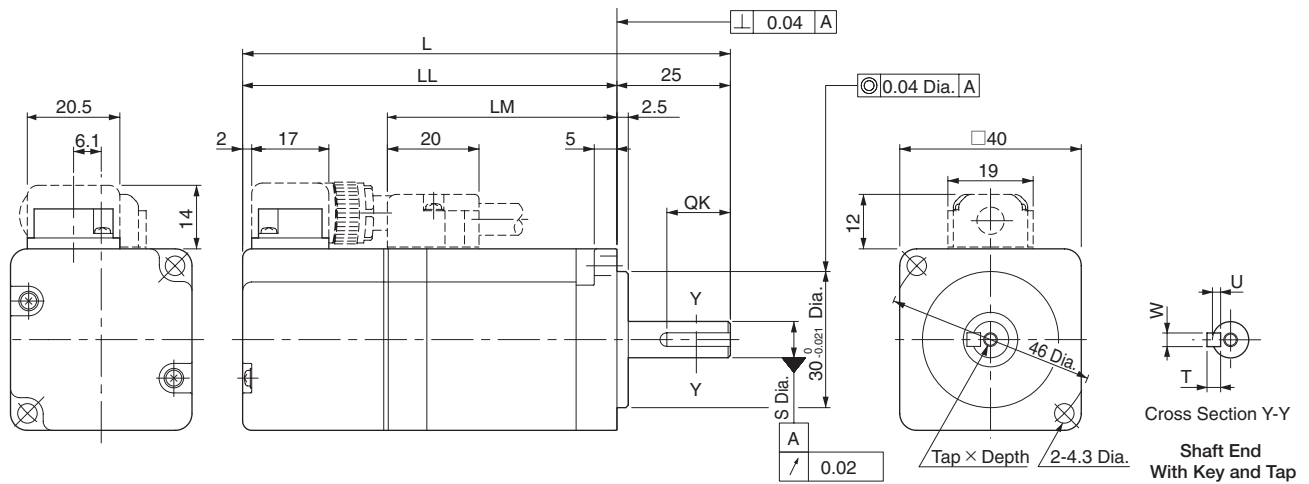
● Allowable Radial and Thrust Loads

Design the mechanical system so thrust and radial loads applied to the servomotor shaft end during operation fall within the ranges shown in the table.

Servomotor Model		Allowable Radial Load (Fr) N	Allowable Thrust Load (Fs) N	LF mm	Reference Diagram
SGMAV-	A5A	78	54	20	
	01A				
	C2A				
	02A	245	74	25	
	04A				
	06A				
	08A	392	147	35	
	10A				

External Dimensions Units: mm

(1) 50 to 150 W



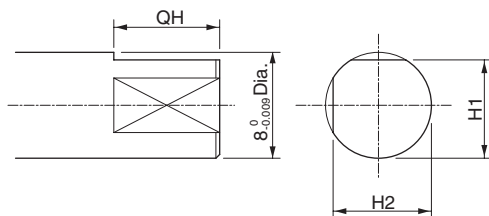
Model SGMAV-	L	LL	LM	S	Tap x Depth	Key Dimensions				Approx. Mass kg
						QK	U	W	T	
A5A□A21 (A5A□A2C)	95.5 (140.5)	70.5 (115.5)	38.5	8 ⁰ _{-0.009} *	No tap	No key				0.3 (0.6)
A5A□A61 (A5A□A6C)					M3 x 6L	14	1.8	3	3	
01A□A21 (01A□A2C)	107.5 (152.5)	82.5 (127.5)	50.5	8 ⁰ _{-0.009}	No tap	No key				0.4 (0.7)
01A□A61 (01A□A6C)					M3 x 6L	14	1.8	3	3	
C2A□A21 (C2A□A2C)	119.5 (164.5)	94.5 (139.5)	62.5	8 ⁰ _{-0.009}	No tap	No key				0.5 (0.8)
C2A□A61 (C2A□A6C)					M3 x 6L	14	1.8	3	3	

Note: The models and values in parentheses are for servomotors with holding brakes.

*: When you need the same shaft diameter as the conventional servomotors, contact your Yaskawa representative.

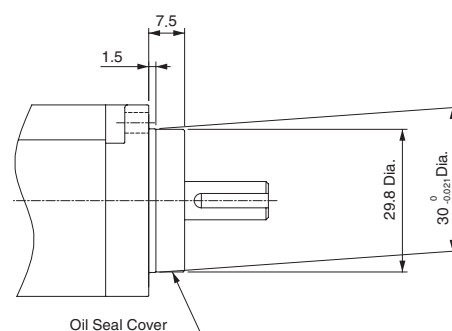
〈Shaft End and Other Options〉

●With Two Flat Seats



Model SGMAV-	Dimensions of Servomotor with Two Flat Seats		
	QH	H1	H2
A5A□AB□	15	7.5	7.5
01A□AB□			
C2A□AB□			

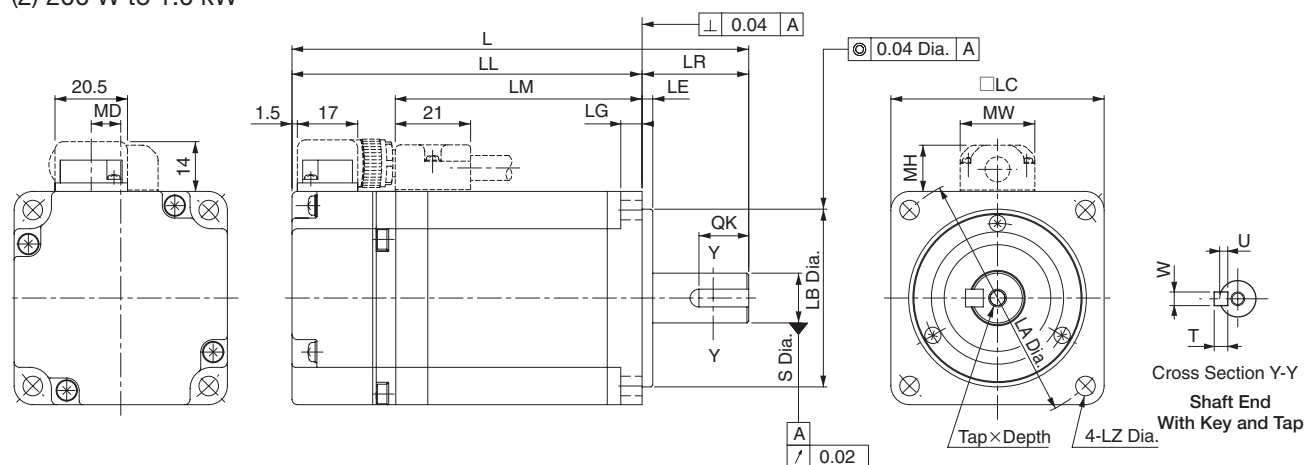
●With an Oil Seal



Note: The 7th digit of the model designation is "S" or "E."
The key dimensions are the same as those in the table above.

External Dimensions Units: mm

(2) 200 W to 1.0 kW



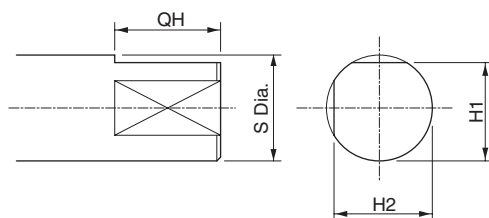
Model SGMAV-	L	LL	LM	Flange Face Dimensions								S	Tap × Depth	Key Dimensions				MD	MW	MH	Approx. Mass kg
				LR	LE	LG	LC	LA	LB	LZ	QK			U	W	T					
02A□A21 (02A□A2C)	110 (150)	80 (120)	51	30	3	6	60	70	50 ⁰ _{0.025}	5.5	14 ⁰ _{0.011}	No tap	No key				8.5	21	13	0.9 (1.5)	
02A□A61 (02A□A6C)												M5×8L	14	3	5	5					
04A□A21 (04A□A2C)	128.5 (168.5)	98.5 (138.5)	69.5	30	3	6	60	70	50 ⁰ _{0.025}	5.5	14 ⁰ _{0.011}	No tap	No key				8.5	21	13	1.2 (1.8)	
04A□A61 (04A□A6C)												M5×8L	14	3	5	5					
06A□A21 (06A□A2C)	154.5 (200.5)	124.5 (170.5)	95.5	30	3	6	60	70	50 ⁰ _{0.025}	5.5	14 ⁰ _{0.011}	No tap	No key				8.5	21	13	1.7 (2.4)	
06A□A61 (06A□A6C)												M5×8L	14	3	5	5					
08A□A21 (08A□A2C)	155 (200)	115 (160)	85	40	3	8	80	90	70 ⁰ _{0.030}	7	19 ⁰ _{0.013} *	No tap	No key				13.8	27	15	2.6 (3.2)	
08A□A61 (08A□A6C)												M6×10L	22	3.5	6	6					
10A□A21 (10A□A2C)	185 (235)	145 (195)	115	40	3	8	80	90	70 ⁰ _{0.030}	7	19 ⁰ _{0.013} *	No tap	No key				13.8	27	15	3.6 (4.6)	
10A□A61 (10A□A6C)												M6×10L	22	3.5	6	6					

Note: The models and values in parentheses are for servomotors with holding brakes.

*: When you need the same shaft diameter as the conventional servomotors, contact your Yaskawa representative.

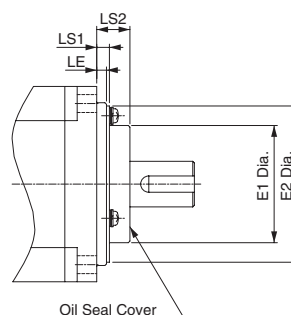
<Shaft End and Other Options>

●With Two Flat Seats



Model SGMAV-	Dimensions of Servomotor with Two Flat Seats			
	QH	S	H1	H2
02A□AB□	14	14 ⁰ _{0.011}	13	13
04A□AB□				
06A□AB□				
08A□AB□	22	19 ⁰ _{0.013}	18	18
10A□AB□				

●With an Oil Seal



Model SGMAV-	Dimensions of Servomotor with an Oil Seal			
	E1	E2	LS1	LS2
02A, 04A, 06A	36	48	4	10
08A, 10A	49	66	6	11

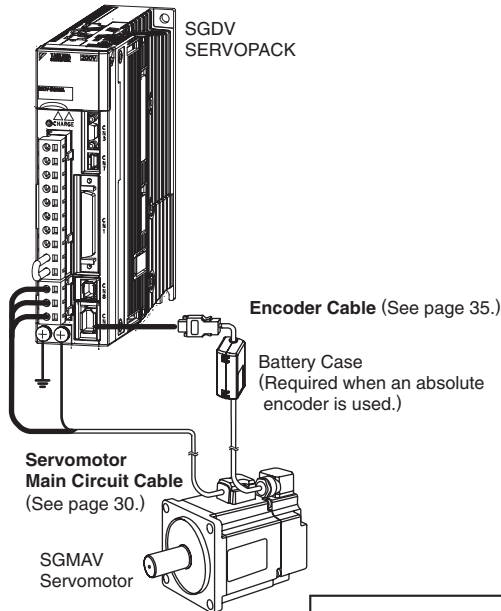
Note: The 7th digit of the model designation is "S" or "E."

The key dimensions are the same as those in the table above.

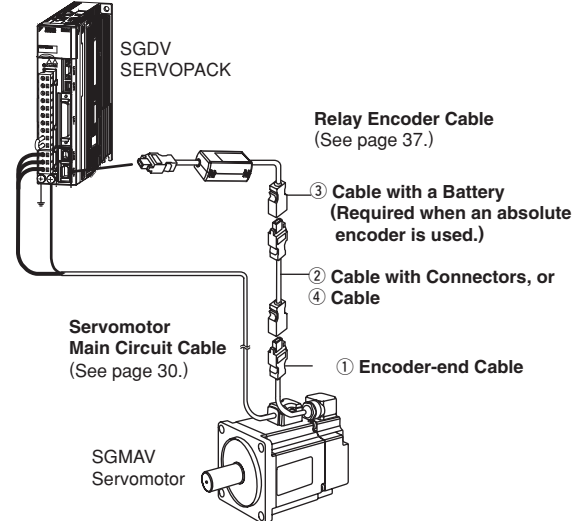
Selecting Cables

● Cables Connections

- Standard Wiring (Max. encoder cable length: 20 m)



- Encoder Cable Extension from 30 to 50 m (Example) (See page 37.)



⚠ CAUTION

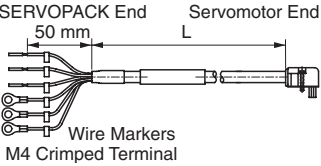
- Separate the servomotor main circuit cable wiring from the I/O signal cable and encoder cable at least 30 cm, and do not bundle or run them in the same duct.
- When the cable length exceeds 20 m, be sure to use a relay encoder cable.
- When the main circuit cable length exceeds 20 m, note that the intermittent duty zone of the *Torque-Motor Speed Characteristics* will shrink as the line-to-line voltage drops.

● Servomotor Main Circuit Cable

Name	Servomotor Rated Output	Length	Order No.		Specifications	Details
			Standard Type	Flexible Type*		
For Servomotor without Holding Brakes	50 to 150 W	3 m	JZSP-CSM01-03-E	JZSP-CSM21-03-E		(1)
		5 m	JZSP-CSM01-05-E	JZSP-CSM21-05-E		
		10 m	JZSP-CSM01-10-E	JZSP-CSM21-10-E		
		15 m	JZSP-CSM01-15-E	JZSP-CSM21-15-E		
		20 m	JZSP-CSM01-20-E	JZSP-CSM21-20-E		
		30 m	JZSP-CSM01-30-E	JZSP-CSM21-30-E		
		40 m	JZSP-CSM01-40-E	JZSP-CSM21-40-E		
		50 m	JZSP-CSM01-50-E	JZSP-CSM21-50-E		
	200 to 550 W	3 m	JZSP-CSM02-03-E	JZSP-CSM22-03-E		
		5 m	JZSP-CSM02-05-E	JZSP-CSM22-05-E		
		10 m	JZSP-CSM02-10-E	JZSP-CSM22-10-E		
		15 m	JZSP-CSM02-15-E	JZSP-CSM22-15-E		
		20 m	JZSP-CSM02-20-E	JZSP-CSM22-20-E		
		30 m	JZSP-CSM02-30-E	JZSP-CSM22-30-E		
		40 m	JZSP-CSM02-40-E	JZSP-CSM22-40-E		
		50 m	JZSP-CSM02-50-E	JZSP-CSM22-50-E		
	750 W, 1.0 kW	3 m	JZSP-CSM03-03-E	JZSP-CSM23-03-E		
		5 m	JZSP-CSM03-05-E	JZSP-CSM23-05-E		
		10 m	JZSP-CSM03-10-E	JZSP-CSM23-10-E		
		15 m	JZSP-CSM03-15-E	JZSP-CSM23-15-E		
		20 m	JZSP-CSM03-20-E	JZSP-CSM23-20-E		
		30 m	JZSP-CSM03-30-E	JZSP-CSM23-30-E		
		40 m	JZSP-CSM03-40-E	JZSP-CSM23-40-E		
		50 m	JZSP-CSM03-50-E	JZSP-CSM23-50-E		

(Cont'd)

Selecting Cables

Name	Servomotor Rated Output	Length	Order No.		Specifications	Details
			Standard Type	Flexible Type*		
For Servomotor with Holding Brakes	50 to 150 W	3 m	JZSP-CSM11-03-E	JZSP-CSM31-03-E		(2)
		5 m	JZSP-CSM11-05-E	JZSP-CSM31-05-E		
		10 m	JZSP-CSM11-10-E	JZSP-CSM31-10-E		
		15 m	JZSP-CSM11-15-E	JZSP-CSM31-15-E		
		20 m	JZSP-CSM11-20-E	JZSP-CSM31-20-E		
		30 m	JZSP-CSM11-30-E	JZSP-CSM31-30-E		
		40 m	JZSP-CSM11-40-E	JZSP-CSM31-40-E		
		50 m	JZSP-CSM11-50-E	JZSP-CSM31-50-E		
	200 to 550 W	3 m	JZSP-CSM12-03-E	JZSP-CSM32-03-E		
		5 m	JZSP-CSM12-05-E	JZSP-CSM32-05-E		
		10 m	JZSP-CSM12-10-E	JZSP-CSM32-10-E		
		15 m	JZSP-CSM12-15-E	JZSP-CSM32-15-E		
		20 m	JZSP-CSM12-20-E	JZSP-CSM32-20-E		
		30 m	JZSP-CSM12-30-E	JZSP-CSM32-30-E		
		40 m	JZSP-CSM12-40-E	JZSP-CSM32-40-E		
		50 m	JZSP-CSM12-50-E	JZSP-CSM32-50-E		
	750 W, 1.0 kW	3 m	JZSP-CSM13-03-E	JZSP-CSM33-03-E		
		5 m	JZSP-CSM13-05-E	JZSP-CSM33-05-E		
		10 m	JZSP-CSM13-10-E	JZSP-CSM33-10-E		
		15 m	JZSP-CSM13-15-E	JZSP-CSM33-15-E		
		20 m	JZSP-CSM13-20-E	JZSP-CSM33-20-E		
		30 m	JZSP-CSM13-30-E	JZSP-CSM33-30-E		
		40 m	JZSP-CSM13-40-E	JZSP-CSM33-40-E		
		50 m	JZSP-CSM13-50-E	JZSP-CSM33-50-E		
Servomotor- end Connector Kit	50 to 150 W		JZSP-CSM9-1-E		Crimped Type (A crimp tool is required.) 	(3)
	200 to 550 W		JZSP-CSM9-2-E			(4)
	750 W, 1.0 kW		JZSP-CSM9-3-E			(5)
Cables	50 to 550 W	5 m	JZSP-CSM90-05-E	JZSP-CSM80-05-E		(6)
		10 m	JZSP-CSM90-10-E	JZSP-CSM80-10-E		
		15 m	JZSP-CSM90-15-E	JZSP-CSM80-15-E		
		20 m	JZSP-CSM90-20-E	JZSP-CSM80-20-E		
		30 m	JZSP-CSM90-30-E	JZSP-CSM80-30-E		
		40 m	JZSP-CSM90-40-E	JZSP-CSM80-40-E		
		50 m	JZSP-CSM90-50-E	JZSP-CSM80-50-E		
	750 W, 1.0kW	5 m	JZSP-CSM91-05-E	JZSP-CSM81-05-E		(7)
		10 m	JZSP-CSM91-10-E	JZSP-CSM81-10-E		
		15 m	JZSP-CSM91-15-E	JZSP-CSM81-15-E		
		20 m	JZSP-CSM91-20-E	JZSP-CSM81-20-E		
		30 m	JZSP-CSM91-30-E	JZSP-CSM81-30-E		
		40 m	JZSP-CSM91-40-E	JZSP-CSM81-40-E		
		50 m	JZSP-CSM91-50-E	JZSP-CSM81-50-E		

*: Use flexible cables for movable sections such as robot arms.

Selecting Cables

(1) Wiring Specifications for Servomotors without Holding Brakes (2) Wiring Specifications for Servomotor with Holding Brakes

SERVOPACK-end Leads		Servomotor-end Connector	
Wire Color	Signal	Signal	Pin No.
Green/yellow	FG	FG	1
Blue	Phase W	Phase W	2
White	Phase V	Phase V	3
Red	Phase U	Phase U	4
		—	5
		—	6

SERVOPACK-end Leads		Servomotor-end Connector	
Wire Color	Signal	Signal	Pin No.
Green/yellow	FG	FG	1
Blue	Phase W	Phase W	2
White	Phase V	Phase V	3
Red	Phase U	Phase U	4
Black	Brake	Brake	5
Black	Brake	Brake	6

Note: No polarity for connection to a holding brake.

(3) Servomotor-end Connector Kit Specifications: For 50 to 150 W Servomotors

Items	Specifications	External Dimensions mm
Order No.	JZSP-CSM9-1-E (Cables are not included.)	
Applicable Servomotors	SGMAV-A5A, -01A, -C2A	
Manufacturer	J.S.T. Mfg. Co., Ltd.	
Receptacle	J17-06FMH-7KL-1-CF	
Electrical Contact	SJ1F-01GF-P0.8	
Applicable Wire Size	AWG20 to 24	
Outer Diameter of Insulating Sheath	1.11 dia. to 1.53 dia. mm	
Mounting Screw	M2 Pan-head screw	
Applicable Cable Outer Diameter	7±0.3 dia. mm	

Note: A crimp tool (Model no.: YRS-8841) is required. Contact the respective manufacturer for more information.

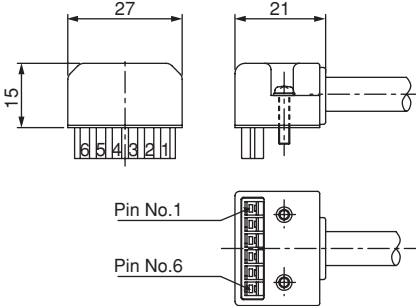
Selecting Cables

(4) Servomotor-end Connector Kit Specifications: For 200 to 550 W Servomotors

Items	Specifications	External Dimensions mm
Order No.	JZSP-CSM9-2-E (Cables are not included.)	
Applicable Servomotors	SGMAV-02A, -04A, -06A	
Manufacturer	J.S.T. Mfg. Co., Ltd.	
Receptacle	J27-06FMH-7KL-1-CF	
Electrical Contact	SJ2F-01GF-P1.0	
Applicable Wire Size	AWG20 to 24	
Outer Diameter of Insulating Sheath	1.11 dia. to 1.53 dia. mm	
Mounting Screw	M2 Pan-head screw	
Applicable Cable Outer Diameter	7±0.3 dia. mm	

Note: A crimp tool (Model no.: YRS-8861) is required. Contact the respective manufacturer for more information.

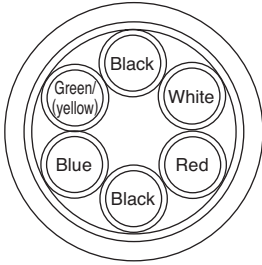
(5) Servomotor-end Connector Kit Specifications: For 750 W, 1.0 kW Servomotors

Items	Specifications		External Dimensions mm	
Order No.	JZSP-CSM9-3-E (Cables are not included.)			
Applicable Servomotors	SGMAV-08A, -10A			
Manufacturer	J.S.T. Mfg. Co., Ltd.			
Receptacle	J37-06FMH-8KL-1-CF			
Cable Type	Standard			
Electrical Contact	SJ3F-41GF-P1.8 (For power terminals)	SJ3F-01GF-P1.8 (For holding brake terminals)		
Applicable Wire Size	AWG16 to 20	AWG20 to 24		
Outer Diameter of Insulating Sheath	1.53 dia. to 2.5 dia. mm	1.11 dia. to 1.86 dia. mm		
Mounting Screw	M2.5 Pan-head screw			
Applicable Cable Outer Diameter	8±0.3 dia. mm			

Note: The following crimp tools are required.
 For power terminals: Model no. YRF-880
 For brake terminals: Model no. YRF-881
 Contact the respective manufacturer for more information.

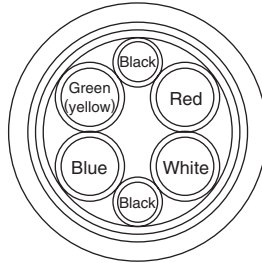
Selecting Cables

(6) Cable Specifications: For 50 to 550 W Servomotors

Items	Standard Type	Flexible Type
Order No.*	JZSP-CSM90-□□-E (50 m max.)	JZSP-CSM80-□□-E (50 m max.)
Specifications	UL2517 (Rating temperature: 105°C) AWG20×6C For power line: AWG20 (0.52 mm ²) Outer diameter of insulating sheath: 1.53 dia. mm For holding brake line: AWG20 (0.52 mm ²) Outer diameter of insulating sheath: 1.53 dia. mm	UL2517 (Rating temperature: 105°C) AWG22×6C For power line: AWG22 (0.33 mm ²) Outer diameter of insulating sheath: 1.37 dia. mm For holding brake line: AWG22 (0.33 mm ²) Outer diameter of insulating sheath: 1.37 dia. mm
Finished Dimensions	7±0.3 dia. mm	
Internal Configuration and Lead Color		
Yaskawa Standard Specifications (Standard Length)	Cable length: 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	

*: Specify the cable length in □□ of order no.
Example: JZSP-CSM90-05-E (5 m)

(7) Cable Specifications: For 750 W, 1.0 kW Servomotors

Items	Standard Type	Flexible Type
Order No.*	JZSP-CSM91-□□-E (50 m max.)	JZSP-CSM81-□□-E (50 m max.)
Specifications	UL2517 (Rating temperature: 105°C) AWG16×4C, AWG20×2C For power line: AWG16 (1.31 mm ²) Outer diameter of insulating sheath: 2.15 dia. mm For holding brake line: AWG20 (0.52 mm ²) Outer diameter of insulating sheath: 1.6 dia. mm	UL2517 (Rating temperature: 105°C) AWG16×4C, AWG22×2C For power line: AWG16 (1.31 mm ²) Outer diameter of insulating sheath: 2.35 dia. mm For holding brake line: AWG22 (0.33 mm ²) Outer diameter of insulating sheath: 1.37 dia. mm
Finished Dimensions	8±0.3 dia. mm	
Internal Configuration and Lead Color		
Yaskawa Standard Specifications (Standard Length)	Cable length: 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	

*: Specify the cable length in □□ of order no.
Example: JZSP-CSM91-15-E (15 m)

Selecting Cables

●Encoder Cables (Length: 20 m or less)

Name	Length	Order No.		Specifications	Details
		Standard Type	Flexible Type*1		
Cable with Connectors (For Incremental Encoder)	3 m	JZSP-CSP01-03-E	JZSP-CSP21-03-E		(1)
	5 m	JZSP-CSP01-05-E	JZSP-CSP21-05-E		
	10 m	JZSP-CSP01-10-E	JZSP-CSP21-10-E		
	15 m	JZSP-CSP01-15-E	JZSP-CSP21-15-E		
	20 m	JZSP-CSP01-20-E	JZSP-CSP21-20-E		
Cable with Connectors*2 (For Absolute Encoder, with a Battery Case)	3 m	JZSP-CSP05-03-E	JZSP-CSP25-03-E		(2)
	5 m	JZSP-CSP05-05-E	JZSP-CSP25-05-E		
	10 m	JZSP-CSP05-10-E	JZSP-CSP25-10-E		
	15 m	JZSP-CSP05-15-E	JZSP-CSP25-15-E		
	20 m	JZSP-CSP05-20-E	JZSP-CSP25-20-E		
SERVOPACK-end Connector Kit		JZSP-CMP9-1-E		Soldered 	(3)
Encoder-end Connector Kit		JZSP-CSP9-2-E		Crimped Type (A crimp tool is required.) 	
Cables	3 m	JZSP-CMP09-03-E	JZSP-CSP39-03-E		(4)
	5 m	JZSP-CMP09-05-E	JZSP-CSP39-05-E		
	10 m	JZSP-CMP09-10-E	JZSP-CSP39-10-E		
	15 m	JZSP-CMP09-15-E	JZSP-CSP39-15-E		
	20 m	JZSP-CMP09-20-E	JZSP-CSP39-20-E		

*1: Use flexible cables for movable sections such as robot arms.

*2: When the battery is connected to the host controller, no battery case is required. If so, use a cable for incremental encoders.

(1) Wiring Specifications for Cable with Connectors (For incremental encoder)

• Standard Type

SERVOPACK End		Encoder (Servomotor) End	
Pin No.	Signal	Pin No.	Wire Color
6	/PS	5	Light blue/white
5	PS	4	Light blue
4	BAT (-)	8	Orange/white
3	BAT (+)	9	Orange
2	PG 0V	3	Black
1	PG 5V	6	Red
Shell	FG	Shell	FG

Shield Wire

• Flexible Type

SERVOPACK End		Encoder (Servomotor) End	
Pin No.	Signal	Pin No.	Wire Color
6	/PS	5	Black/pink
5	PS	4	Red/pink
4	BAT (-)	8	Black/light blue
3	BAT (+)	9	Red/light blue
2	PG 0V	3	Green
1	PG 5V	6	Orange
Shell	FG	Shell	FG

Shield Wire

(2) Wiring Specifications for Cable with Connectors (For absolute encoder, with a battery case)

• Standard Type

SERVOPACK End		Encoder (Servomotor) End	
Pin No.	Signal	Pin No.	Wire Color
6	/PS	5	Light blue/white
5	PS	4	Light blue
4	BAT (-)	8	Orange/white
3	BAT (+)	9	Orange
2	PG 0V	3	Black
1	PG 5V	6	Red
Shell	FG	Shell	FG

Shield Wire

Battery Case	
Pin No.	Signal
2	BAT (-)
1	BAT (+)

• Flexible Type

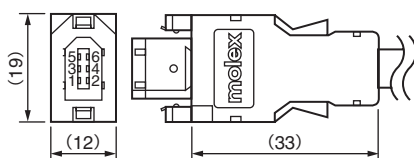
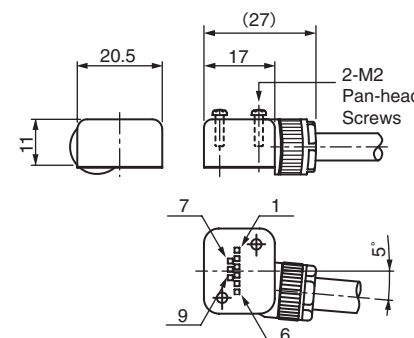
SERVOPACK End		Encoder (Servomotor) End	
Pin No.	Signal	Pin No.	Wire Color
6	/PS	5	Black/pink
5	PS	4	Red/pink
4	BAT (-)	8	Black/light blue
3	BAT (+)	9	Red/light blue
2	PG 0V	3	Green
1	PG 5V	6	Orange
Shell	FG	Shell	FG

Shield Wire

Battery Case	
Pin No.	Signal
2	BAT (-)
1	BAT (+)

Selecting Cables

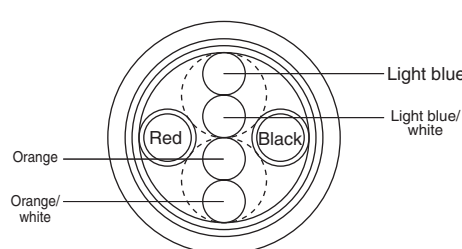
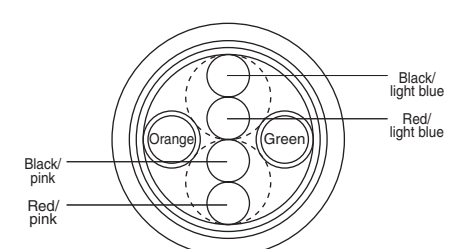
(3) SERVOPACK-end/Encoder-end Connector Kit Specifications

Items	SERVOPACK-end Connector Kit	Encoder-end Connector Kit
Order No.	JZSP-CMP9-1-E (Cables are not included.)	JZSP-CSP9-2-E (Cables are not included.)
Manufacturer	Molex Japan Co., Ltd.	Molex Japan Co., Ltd.
Specifications	55100-0670 (soldered) Product Specification: PS-54280	54346-0070 (crimped)* Mounting screw: M2 pan-head screw (×2) Outer diameter of applicable cable: 6.3 dia. to 7.7 dia. mm Applicable wire size: AWG22 to 26 Outer diameter of insulating sheath: 1.05 dia. to 1.4 dia. mm Application Specification: AS-54992 Crimping Specification: CS-56161
External Dimensions mm		

*: A crimp tool is required.

The following crimp tool is applicable for the cables provided by Yaskawa. When using other wire sizes, contact the respective manufacturer for crimp tools.
Applicable crimp tool for Yaskawa's wire size: Hand Tool Model No. 57175-5000

(4) Cable Specifications

Items	Standard Type	Flexible Type
Order No.*	JZSP-CMP09-□□-E	JZSP-CSP39-□□-E
Cable Length	20 m max.	
Specifications	UL20276 (Rating temperature: 80°C) AWG22×2C+AWG24×2P AWG22 (0.33 mm ²) Outer diameter of insulating sheath: 1.15 dia. mm AWG24 (0.20 mm ²) Outer diameter of insulating sheath: 1.09 dia. mm	UL20276 (Rating temperature: 80°C) AWG22×2C+AWG24×2P AWG22 (0.33 mm ²) Outer diameter of insulating sheath: 1.35 dia. mm AWG24 (0.20 mm ²) Outer diameter of insulating sheath: 1.21 dia. mm
Finished Dimensions	6.5 dia. mm	6.8 dia. mm
Internal Configuration and Lead Color		
Yaskawa Standards Specifications (Standard Length)	Cable length: 5 m, 10 m, 15 m, 20 m	

*: Specify the cable length in □□ of order no.
Example: JZSP-CMP09-05-E (5 m)

Selecting Cables

● Relay Encoder Cables (For extending from 30 to 50 m)

Name	Length	Order No. Standard Type	Specifications	Details
① Encoder-end Cables (For incremental and absolute encoder)	0.3 m	JZSP-CSP11-E	SERVOPACK End 0.3 m Encoder End Plug Connector (Crimped) (Molex Japan Co., Ltd.) Connector (Molex Japan Co., Ltd.)	(1)
② Cable with Connectors (For incremental and absolute encoder)	30 m	JZSP-UCMP00-30-E	SERVOPACK End L Encoder End Plug Connector (Crimped) (Molex Japan Co., Ltd.) Socket Connector (Soldered) (Molex Japan Co., Ltd.)	(2)
	40 m	JZSP-UCMP00-40-E		
	50 m	JZSP-UCMP00-50-E		
③ Cable with a Battery Case (Required when an absolute encoder is used*.)	0.3 m	JZSP-CSP12-E	SERVOPACK End 0.3 m Encoder End Plug Connector (Crimped) (Molex Japan Co., Ltd.) Battery Case (Battery attached) Socket Connector (Soldered) (Molex Japan Co., Ltd.)	(3)
④ Cables	30 m	JZSP-CMP19-30-E		(4)
	40 m	JZSP-CMP19-40-E		
	50 m	JZSP-CMP19-50-E		

*: Not required when connecting a battery to the host controller.

(1) Wiring Specifications for Encoder-end Cable

SERVOPACK End		Encoder (Servomotor) End	
Pin No.	Signal	Pin No.	Wire Color
6	/PS	5	Light blue/white
5	PS	4	Light blue
4	BAT (-)	8	Orange/white
3	BAT (+)	9	Orange
2	PG 0V	3	Black
1	PG 5V	6	Red
Shell	FG	Shell	FG

Shield Wire

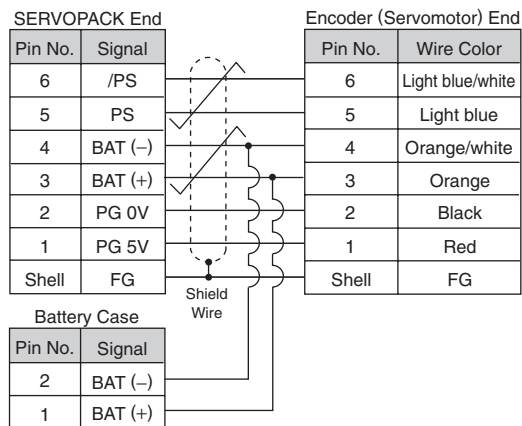
(2) Wiring Specifications for Cable with Connectors

SERVOPACK End		Encoder (Servomotor) End	
Pin No.	Signal	Pin No.	Wire Color
6	/PS	6	Light blue/white
5	PS	5	Light blue
4	BAT (-)	4	Orange/white
3	BAT (+)	3	Orange
2	PG 0V	2	Black
1	PG 5V	1	Red
Shell	FG	Shell	FG

Shield Wire

Selecting Cables

(3) Wiring Specifications for Cable with a Battery Case



(4) Cable Specifications

Item	Standard Type
Order No.*	JZSP-CMP19-□□-E
Cable Length	50 m max.
Specifications	UL20276 (Rating temperature: 80°C) AWG16×2C+AWG26×2P AWG16 (1.31 mm ²) Outer diameter of insulating sheath: 2.0 dia. mm AWG26 (0.13 mm ²) Outer diameter of insulating sheath: 0.91 dia. mm
Finished Dimensions	6.8 dia. mm
Internal Configuration and Lead Colors	
Yaskawa Standard Specifications (Standard Length)	Cable length: 30 m, 40 m, 50 m

*: Specify the cable length in □□ of order no.
Example: JZSP-CMP19-30-E (30 m)

With Low-backlash Gears

Ratings and Specifications

Time Rating: Continuous

Insulation Resistance: 500 VDC, 10 MΩ min.

Ambient Temperature: 0 to 40°C

Excitation: Permanent magnet

Mounting: Flange-mounted

Gear Mechanism: Planetary gear mechanism

Thermal Class: B

Withstand Voltage: 1500 VAC for one minute

Enclosure: Totally enclosed, self-cooled, IP55
(except for shaft opening)

Ambient Humidity: 20% to 80% (no condensation)

Drive Method: Direct drive

Rotation Direction: Counterclockwise (CCW) with forward run
reference when viewed from the load side

Servomotor Model SGMAV-	Servomotor					Gear					
	Rated Output W	Rated Speed min ⁻¹	Max. Speed min ⁻¹	Rated Torque N·m	Instantaneous Peak Torque N·m	Gear Ratio	Lost Motion arc-min	Rated Torque / Efficiency*1 N·m / %	Instantaneous Peak Torque N·m	Rated Speed min ⁻¹	Max. Speed min ⁻¹
A5A□AH1□	50	3000	6000	0.159	0.477	1/5	3 max.	0.433/64*2	1.98	600	1200
A5A□AH2□						1/9		1.12/78	3.8	333	667
A5A□AHC□						1/21		2.84/85	9.0	143	286
A5A□AH7□						1/33		3.68/70	13.4	91	182
01A□AH1□	100	3000	6000	0.318	0.955	1/5	3 max.	1.06/78*2	4.20	600	1200
01A□AHB□						1/11		2.52/72	9.0	273	545
01A□AHC□						1/21		5.35/80	17.8	143	286
01A□AH7□						1/33		7.35/70	27.4	91	182
C2A□AH1□	150	3000	6000	0.477	1.43	1/5	3 max.	1.68/83*2	6.45	600	1200
C2A□AHB□						1/11		3.53/79*2	13.9	273	545
C2A□AHC□						1/21		6.3/70*2	26.2	143	286
C2A□AH7□						1/33		11.2/79*2	42.5	91	182
02A□AH1□	200	3000	6000	0.637	1.91	1/5	3 max.	2.39/75	8.31	600	1200
02A□AHB□						1/11		5.74/82	18.7	273	545
02A□AHC□						1/21		10.2/76	35.7	143	286
02A□AH7□						1/33		17.0/81	57.4	91	182
04A□AH1□	400	3000	6000	1.27	3.82	1/5	3 max.	5.35/84	17.2	600	1200
04A□AHB□						1/11		11.5/82	38.2	273	545
04A□AHC□						1/21		23.0/86	74.6	143	286
04A□AH7□						1/33		34.0/81	115	91	182
06A□AH1□	550	3000	6000	1.75	5.25	1/5	3 max.	6.9/79	23.6	600	1200
06A□AHB□						1/11		16.6/86	53.7	273	545
06A□AHC□						1/21		29.4/80	100	143	286
06A□AH7□						1/33		49.1/85	159	91	182
08A□AH1□	750	3000	6000	2.39	7.16	1/5	3 max.	10.0/84	32.9	600	1200
08A□AHB□						1/11		23.1/88	73.3	273	545
08A□AHC□						1/21		42.1/84	138	143	286
08A□AH7□						1/33		69.3/88	220	91	182
10A□AH1□	1000	3000	6000	3.18	9.55	1/5	3 max.	13.7/86	44.4	600	1200
10A□AHB□						1/11		29.1/83	96.6	273	545
10A□AHC□						1/21		58.2/87	186	143	286
10A□AH7□						1/33		94.5/90	296	91	182

*1: Gear output torque is expressed using the following equation.

$$(\text{Gear output torque}) = (\text{Servomotor output torque}) \times \frac{1}{(\text{gear ratio})} \times (\text{efficiency})$$

Gear efficiency depends on operating conditions such as output torque, motor speed, and temperature etc. The values in the table are representative values with rated torque, rated speed, and an ambient temperature of 25°C, and are not guaranteed values.

*2: When using SGMAV-A5A, -01A, -C2A servomotors with a gear ratio of 1/5, or an SGMAV-C2A servomotor with a gear ratio of 1/11, maintain an 85% max. effective load ratio. For an SGMAV-C2A servomotor with a gear ratio of 1/21 or 1/31, maintain a 90% max. effective load ratio.

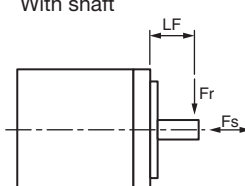
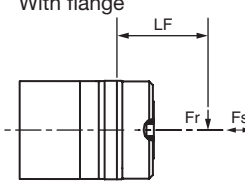
Notes: 1 The gear mounted to our servomotor has not been broken in. Break in the servomotor if necessary. First, run the motor at low speed with no load. If no problems arise, gradually increase the speed and load.

2 The no-load torque for a servomotor with a gear is high immediately after the servomotor starts, and it then decreases and becomes stable a few minutes later. This is a common phenomenon caused by grease being circulated in the gear and not by a faulty gear.

IMPORTANT The SERVOPACK speed control range is 5000:1. When using servomotors at extremely low speeds (0.02 min⁻¹ at gear output shaft), or when using servomotors with 1 pulse feed reference for extended periods etc., the gear bearing lubrication may be insufficient. That may cause deterioration of bearing or increase the load ratio.
Contact your Yaskawa representative if you are using your servomotor under these conditions.

With Low-backlash Gears Ratings and Specifications

● Moment of Inertia and Allowable Radial and Thrust Loads

Servomotor Model SGMAV-	Moment of Inertia × 10 ⁻⁴ kg · m ²				Servomotors with Low-backlash Gears			Reference Diagram
	Motor + Gear	Gear	Flange Output		Allowable Radial Load (Fr) N	Allowable Thrust Load (Fs) N	LF mm	
			Motor + Gear	Gear				
A5A□AH1□	0.0302	0.006	0.0292	0.005	95	431	37	With shaft  With flange 
A5A□AH2□	0.0272	0.003	0.0272	0.003	113	514	37	
A5A□AHC□	0.0282	0.004	0.0282	0.004	146	663	37	
A5A□AH7□	0.0692	0.045	0.0692	0.045	267	1246	53	
01A□AH1□	0.0430	0.005	0.0420	0.004	95	431	37	
01A□AHB□	0.0980	0.060	0.0970	0.059	192	895	53	
01A□AHC□	0.0880	0.050	0.0880	0.050	233	1087	53	
01A□AH7□	0.1030	0.065	0.1020	0.064	605	2581	75	
C2A□AH1□	0.0581	0.005	0.0571	0.004	95	431	37	
C2A□AHB□	0.1131	0.060	0.1121	0.059	192	895	53	
C2A□AHC□	0.1631	0.110	0.1611	0.108	528	2254	75	
C2A□AH7□	0.1181	0.065	0.1171	0.064	605	2581	75	
02A□AH1□	0.323	0.207	0.317	0.201	152	707	53	
02A□AHB□	0.309	0.193	0.308	0.192	192	895	53	
02A□AHC□	0.606	0.490	0.604	0.480	528	2254	75	
02A□AH7□	0.566	0.450	0.565	0.449	605	2581	75	
04A□AH1□	0.397	0.207	0.391	0.201	152	707	53	
04A□AHB□	0.760	0.570	0.750	0.560	435	1856	75	
04A□AHC□	0.680	0.490	0.678	0.488	528	2254	75	
04A□AH7□	0.810	0.620	0.800	0.610	951	4992	128	
06A□AH1□	1.026	0.700	0.986	0.660	343	1465	75	
06A□AHB□	0.896	0.570	0.886	0.560	435	1856	75	
06A□AHC□	1.166	0.840	1.146	0.820	830	4359	128	
06A□AH7□	0.946	0.620	0.936	0.610	951	4992	128	
08A□AH1□	1.469	0.700	1.429	0.660	343	1465	75	
08A□AHB□	1.369	0.600	1.359	0.590	435	1856	75	
08A□AHC□	3.77	3.000	3.75	2.980	830	4359	128	
08A□AH7□	3.57	2.800	3.56	2.790	951	4992	128	
10A□AH1□	1.90	0.700	1.86	0.660	343	1465	75	
10A□AHB□	4.60	3.400	4.54	3.340	684	3590	128	
10A□AHC□	4.20	3.000	4.18	2.980	830	4359	128	
10A□AH7□	4.00	2.800	3.99	2.790	951	4992	128	

IMPORTANT

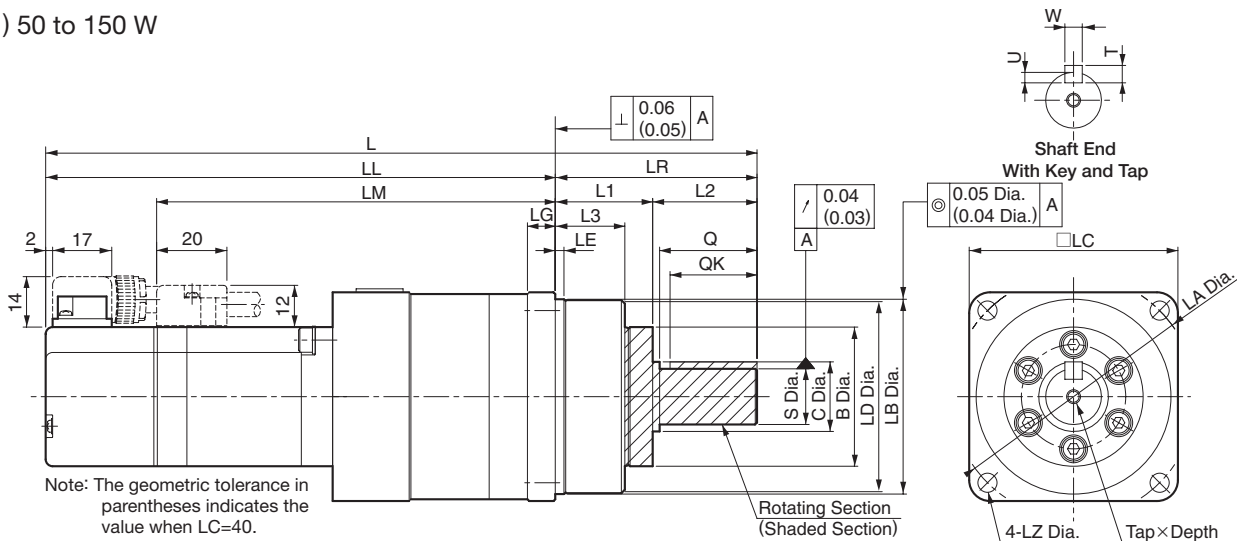
The gear generates the loss at gear mechanism and oil seal. The loss varies with torque and motor speed conditions. The temperature rise depends on heating conditions. Always check the actual gear and motor temperature. If the temperature is high, take the measures shown below.

- Decrease the load ratio.
- Change the heating conditions.
- Cool the motor with a cooling fan etc.

Rated Output W	Heat Sink Size			
	1/5	1/9 or 1/11	1/21	1/33
50	A			
100				
150				
200	B			
400				
550				
750	C			
1000				

A : 250 mm×250 mm×6 mm, aluminum
 B : 300 mm×300 mm×12 mm, aluminum
 C : 350 mm×350 mm×12 mm, aluminum

(1) 50 to 150 W



Model SGMAV-	Gear Ratio	L	LL	LM	Flange Face Dimensions								
					LR	LE	LG	B	LD	LB	LC	LA	LZ
A5A□AH1※1 (A5A□AH1※C)	1/5	152 (197)	110 (155)	78	42	2.2	5	29	39.5	40 ⁰ _{-0.025}	40	46	3.4
A5A□AH2※1 (A5A□AH2※C)	1/9												
A5A□AHC※1 (A5A□AHC※C)	1/21	161 (206)	119 (164)	87									
A5A□AH7※1 (A5A□AH7※C)	1/33	192.5 (237.5)	134.5 (179.5)	102.5	58	2.5	8	40	55.5	56 ⁰ _{-0.030}	60	70	5.5
01A□AH1※1 (01A□AH1※C)	1/5	164 (209)	122 (167)	90	42	2.2	5	29	39.5	40 ⁰ _{-0.025}	40	46	3.4
01A□AHB※1 (01A□AHB※C)	1/11	204.5 (249.5)	146.5 (191.5)	114.5	58	2.5	8	40	55.5	56 ⁰ _{-0.030}	60	70	5.5
01A□AHC※1 (01A□AHC※C)	1/21												
01A□AH7※1 (01A□AH7※C)	1/33	229 (274)	149 (194)	117	80	7.5	10	59	84	85 ⁰ _{-0.035}	90	105	9
C2A□AH1※1 (C2A□AH1※C)	1/5	176 (221)	134 (179)	102	42	2.2	5	29	39.5	40 ⁰ _{-0.025}	40	46	3.4
C2A□AHB※1 (C2A□AHB※C)	1/11	216.5 (261.5)	158.5 (203.5)	126.5	58	2.5	8	40	55.5	56 ⁰ _{-0.030}	60	70	5.5
C2A□AHC※1 (C2A□AHC※C)	1/21	241 (286)	161 (206)	129	80	7.5	10	59	84	85 ⁰ _{-0.035}	90	105	9
C2A□AH7※1 (C2A□AH7※C)	1/33												

Model SGMAV-	Flange Face Dimensions			Q	C	S	Tap × Depth	Key Dimensions				Approx. Mass kg
	L1	L2	L3					QK	U	W	T	
A5A□AH1※1 (A5A□AH1※C)	22	20	14.6	-	-	10 ⁰ _{-0.015}	M3×6L	15	2.5	4	4	0.6 (0.9)
A5A□AH2※1 (A5A□AH2※C)												0.7 (1.0)
A5A□AHC※1 (A5A□AHC※C)												
A5A□AH7※1 (A5A□AH7※C)	28	30	20	28	20	16 ⁰ _{-0.018}	M4×8L	25	3	5	5	1.3 (1.6)
01A□AH1※1 (01A□AH1※C)	22	20	14.6	-	-	10 ⁰ _{-0.015}	M3×6L	15	2.5	4	4	0.7 (1.0)
01A□AHB※1 (01A□AHB※C)	28	30	20	28	20	16 ⁰ _{-0.018}	M4×8L	25	3	5	5	1.4 (1.7)
01A□AHC※1 (01A□AHC※C)												
01A□AH7※1 (01A□AH7※C)	36	44	26	42	32	25 ⁰ _{-0.021}	M6×12L	36	4	8	7	2.8 (3.1)
C2A□AH1※1 (C2A□AH1※C)	22	20	14.6	-	-	10 ⁰ _{-0.015}	M3×6L	15	2.5	4	4	0.8 (1.1)
C2A□AHB※1 (C2A□AHB※C)	28	30	20	28	20	16 ⁰ _{-0.018}	M4×8L	25	3	5	5	1.5 (1.8)
C2A□AHC※1 (C2A□AHC※C)	36	44	26									
C2A□AH7※1 (C2A□AH7※C)												
				42	32	25 ⁰ _{-0.021}	M6×12L	36	4	8	7	2.9 (3.2)

※: The asterisk (*) describes the values of the 8th digit of the model designation, "shaft end code 6 (straight with key and tap)." If a key or tap is not necessary, order a servomotor with "shaft end code 2 (without key and tap)."

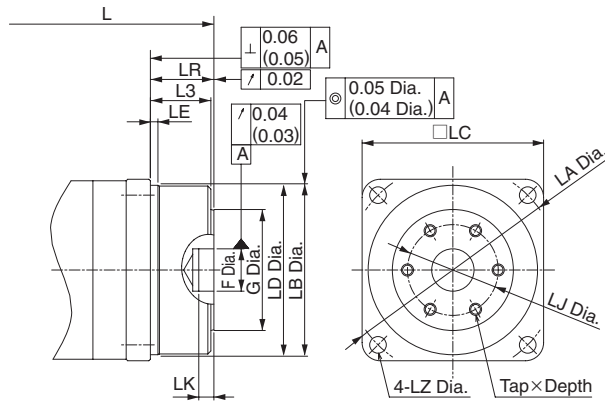
Notes: 1 The models and values in parentheses are for servomotors with holding brakes.

2 Please note that gear dimensions are different from those of Σ-I, Σ-II, and Σ-III series.

With Low-backlash Gears

External Dimensions Units: mm

● Flange Output Face



Note: The geometric tolerance in parentheses indicates the value when LC=40.

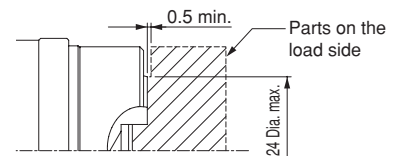
Model SGMAV-	Gear Ratio	L	LR	LJ	F	G	LK	No. of pcs Tap x Depth	Approx. Mass kg
A5A□AH101 (A5A□AH10C)	1/5	125 (170)	15	18	5 ^{+0.012} ₀	24	3	3-M4×6L	0.6 (0.9)
A5A□AH201 (A5A□AH20C)	1/9								
A5A□AHC01 (A5A□AHC0C)	1/21	134 (179)							
A5A□AH701 (A5A□AH70C)	1/33	155.5 (200.5)	21	30	14 ^{+0.018} ₀	40	5	6-M4×7L	1.2 (1.5)
01A□AH101 (01A□AH10C)	1/5	137 (182)	15	18	5 ^{+0.012} ₀	24	3	3-M4×6L	0.7 (1.0)
01A□AHB01 (01A□AHB0C)	1/11	167.5 (212.5)	21	30	14 ^{+0.018} ₀	40	5	6-M4×7L	1.3 (1.6)
01A□AHC01 (01A□AHC0C)	1/21								
01A□AH701 (01A□AH70C)	1/33	176 (221)	27	45	24 ^{+0.021} ₀	59	5	6-M6×10L	2.4 (2.7)
C2A□AH101 (C2A□AH10C)	1/5	149 (194)	15	18	5 ^{+0.012} ₀	24	3	3-M4×6L	0.8 (1.1)
C2A□AHB01 (C2A□AHB0C)	1/11	179.5 (224.5)	21	30	14 ^{+0.018} ₀	40	5	6-M4×7L	1.4 (1.7)
C2A□AHC01 (C2A□AHC0C)	1/21	188 (233)	27	45	24 ^{+0.021} ₀	59	5	6-M6×10L	2.5 (2.8)
C2A□AH701 (C2A□AH70C)	1/33								

Notes: 1 The models and values in parentheses are for servomotors with holding brakes.

2 The dimensions not given on the table above are the same as those in the table on the previous page.

IMPORTANT

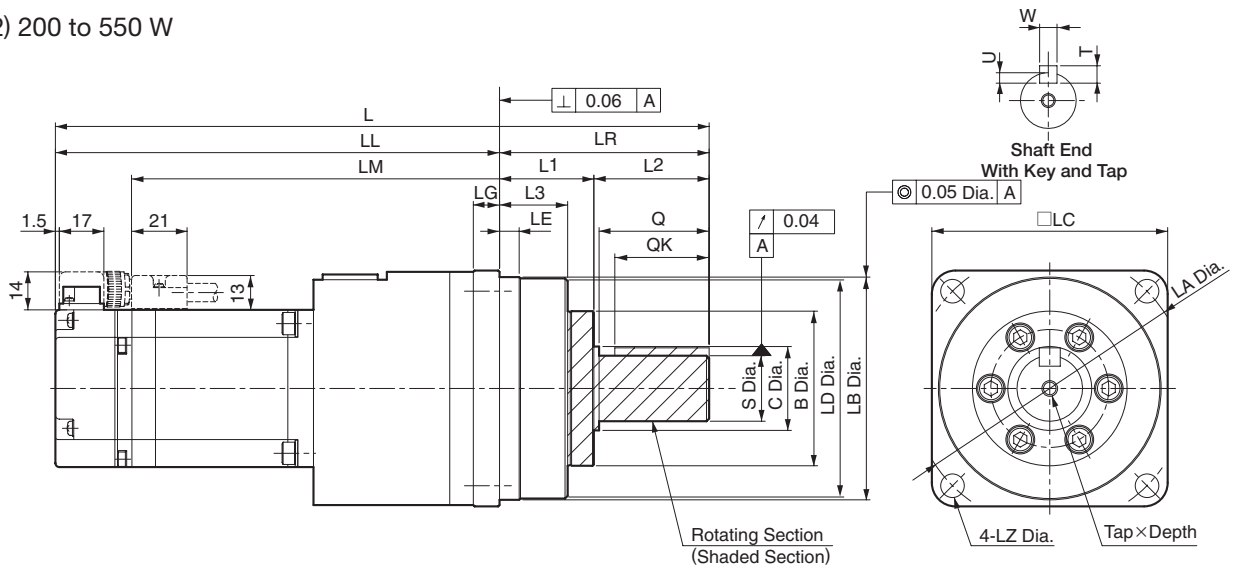
Regarding the flange output type shaft end, when the flange "LC" is 40 mm, we recommend designing a servomotor with the dimensions shown in the diagram on the right, in order to secure the gap between the gear oil seal and the parts on the load side.



With Low-backlash Gears

External Dimensions Units: mm

(2) 200 to 550 W



Model SGMAV-	Gear Ratio	L	LL	LM	Flange Face Dimensions								
					LR	LE	LG	B	LD	LB	LC	LA	LZ
02A□AH1※1 (02A□AH1※C)	1/5	202 (242)	144 (184)	115	58	2.5	8	40	55.5	56 ⁰ _{-0.030}	60	70	5.5
02A□AHB※1 (02A□AHB※C)	1/11												
02A□AHC※1 (02A□AHC※C)	1/21	231 (271)	151 (191)	122	80	7.5	10	59	84	85 ⁰ _{-0.035}	90	105	9
02A□AH7※1 (02A□AH7※C)	1/33												
04A□AH1※1 (04A□AH1※C)	1/5	220.5 (260.5)	162.5 (202.5)	133.5	58	2.5	8	40	55.5	56 ⁰ _{-0.030}	60	70	5.5
04A□AHB※1 (04A□AHB※C)	1/11	249.5 (289.5)	169.5 (209.5)	140.5	80	7.5	10	59	84	85 ⁰ _{-0.035}	90	105	9
04A□AHC※1 (04A□AHC※C)	1/21												
04A□AH7※1 (04A□AH7※C)	1/33	335.5 (375.5)	202.5 (242.5)	173.5	133	12.5	13	84	114	115 ⁰ _{-0.035}	120	135	11
06A□AH1※1 (06A□AH1※C)	1/5	275.5 (321.5)	195.5 (241.5)	166.5	80	7.5	10	59	84	85 ⁰ _{-0.035}	90	105	9
06A□AHB※1 (06A□AHB※C)	1/11												
06A□AHC※1 (06A□AHC※C)	1/21	361.5 (407.5)	228.5 (274.5)	199.5	133	12.5	13	84	114	115 ⁰ _{-0.035}	120	135	11
06A□AH7※1 (06A□AH7※C)	1/33												

Model SGMAV-	Flange Face Dimensions						Tap × Depth	Key Dimensions				Approx. Mass kg
	L1	L2	L3	Q	C	S		QK	U	W	T	
02A□AH1※1 (02A□AH1※C)	28	30	20	28	20	16 ⁰ _{-0.018}	M4×8L	25	3	5	5	1.9 (2.5)
02A□AHB※1 (02A□AHB※C)												2.0 (2.6)
02A□AHC※1 (02A□AHC※C)												
02A□AH7※1 (02A□AH7※C)	36	44	26	42	32	25 ⁰ _{-0.021}	M6×12L	36	4	8	7	3.8 (4.4)
04A□AH1※1 (04A□AH1※C)	28	30	20	28	20	16 ⁰ _{-0.018}	M4×8L	25	3	5	5	2.2 (2.8)
04A□AHB※1 (04A□AHB※C)	36	44	26	42	32	25 ⁰ _{-0.021}	M6×12L	36	4	8	7	4.1 (4.7)
04A□AHC※1 (04A□AHC※C)												
04A□AH7※1 (04A□AH7※C)												
06A□AH1※1 (06A□AH1※C)	48	85	33	82	44	40 ⁰ _{-0.025}	M10×20L	70	5	12	8	8.7 (9.3)
06A□AHB※1 (06A□AHB※C)	36	44	26	42	32	25 ⁰ _{-0.021}	M6×12L	36	4	8	7	4.4 (5.1)
06A□AHC※1 (06A□AHC※C)												4.6 (5.3)
06A□AH7※1 (06A□AH7※C)												
06A□AH7※1 (06A□AH7※C)	48	85	33	82	44	40 ⁰ _{-0.025}	M10×20L	70	5	12	8	9.2 (9.9)

※: The asterisk (*) describes the values of the 8th digit of the model designation, "shaft end code 6 (straight with key and tap)." If a key or tap is not necessary, order a servomotor with "shaft end code 2 (without key and tap)."

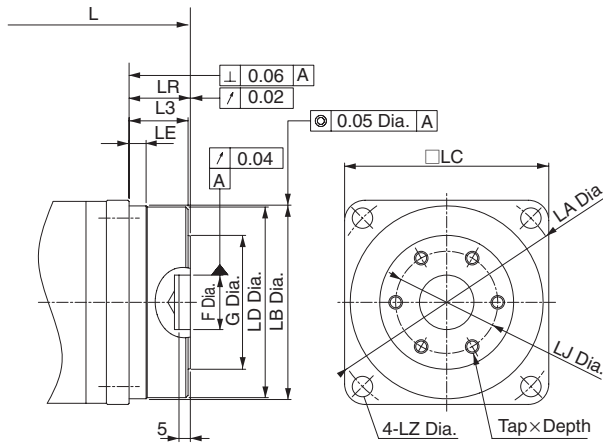
Notes: 1 The models and values in parentheses are for servomotors with holding brakes.

2 Please note that gear dimensions are different from those of Σ-I, Σ-II, and Σ-III series.

With Low-backlash Gears

External Dimensions Units: mm

● Flange Output Face



Model SGMAV-	Gear Ratio	L	LR	LJ	F	G	No. of pcs Tap x Depth	Approx. Mass kg
02A□AH101 (02A□AH10C)	1/5	165 (205)	21	30	14 ^{+0.018} ₀	40	6-M4×7L	1.8 (2.4)
02A□AHB01 (02A□AHB0C)	1/11							1.9 (2.5)
02A□AHC01 (02A□AHC0C)	1/21	178 (218)	27	45	24 ^{+0.021} ₀	59	6-M6×10L	3.4 (4.0)
02A□AH701 (02A□AH70C)	1/33							
04A□AH101 (04A□AH10C)	1/5	183.5 (223.5)	21	30	14 ^{+0.018} ₀	40	6-M4×7L	2.1 (2.7)
04A□AHB01 (04A□AHB0C)	1/11	196.5 (236.5)	27	45	24 ^{+0.021} ₀	59	6-M6×10L	3.7 (4.3)
04A□AHC01 (04A□AHC0C)	1/21							
04A□AH701 (04A□AH70C)	1/33	237.5 (277.5)	35	60	32 ^{+0.025} ₀	84	6-M8×12L	7.3 (7.9)
06A□AH101 (06A□AH10C)	1/5	222.5 (268.5)	27	45	24 ^{+0.021} ₀	59	6-M6×10L	4.0 (4.7)
06A□AHB01 (06A□AHB0C)	1/11							4.2 (4.9)
06A□AHC01 (06A□AHC0C)	1/21	263.5 (309.5)	35	60	32 ^{+0.025} ₀	84	6-M8×12L	7.8 (8.5)
06A□AH701 (06A□AH70C)	1/33							

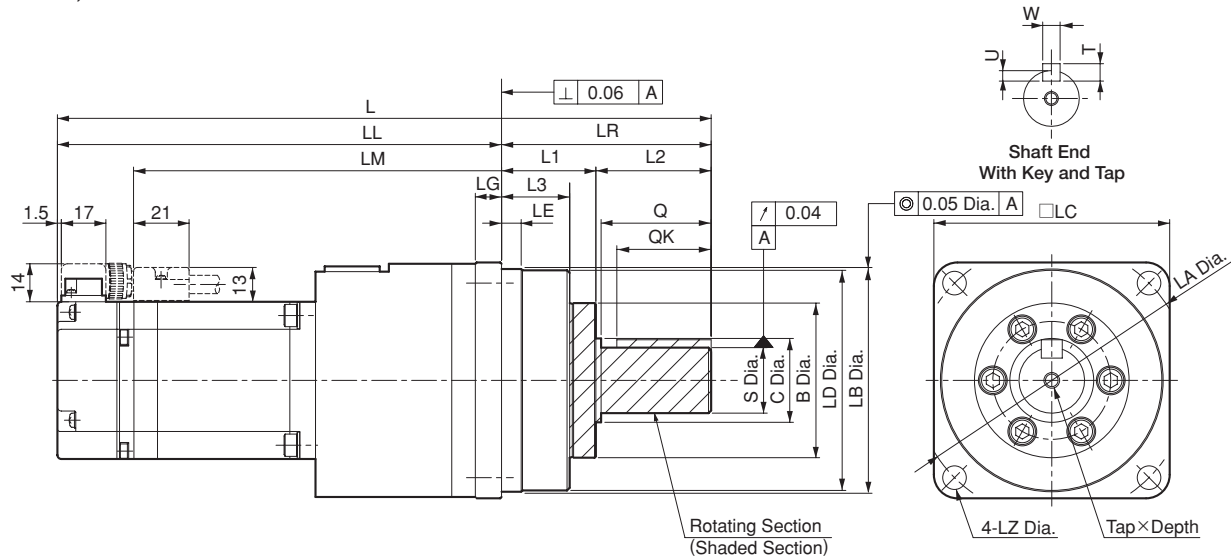
Notes: 1 The models and values in parentheses are for servomotors with holding brakes.

2 The dimensions not given on the table above are the same as those in the table on the previous page.

With Low-backlash Gears

External Dimensions Units: mm

(3) 750 W, 1.0 kW



Model SGMAV-	Gear Ratio	L	LL	LM	Flange Face Dimensions								
					LR	LE	LG	B	LD	LB	LC	LA	LZ
08A□AH1※1 (08A□AH1※C)	1/5	273 (318)	193 (238)	163	80	7.5	10	59	84	85	90	105	9
08A□AHB※1 (08A□AHB※C)	1/11												
08A□AHC※1 (08A□AHC※C)	1/21	352 (397)	219 (264)	189	133	12.5	13	84	114	115	120	135	11
08A□AH7※1 (08A□AH7※C)	1/33												
10A□AH1※1 (10A□AH1※C)	1/5	303 (353)	223 (273)	193	80	7.5	10	59	84	85	90	105	9
10A□AHB※1 (10A□AHB※C)	1/11												
10A□AHC※1 (10A□AHC※C)	1/21	382 (432)	249 (299)	219	133	12.5	13	84	114	115	120	135	11
10A□AH7※1 (10A□AH7※C)	1/33												

Model SGMAV-	Flange Face Dimensions			Q	C	S	Tap × Depth	Key Dimensions				Approx. Mass kg
	L1	L2	L3					QK	U	W	T	
08A□AH1※1 (08A□AH1※C)	36	44	26	42	32	25	M6×12L	36	4	8	7	5.2 (6.1)
08A□AHB※1 (08A□AHB※C)												5.4 (6.3)
08A□AHC※1 (08A□AHC※C)	48	85	33	82	44	40	M10×20L	70	5	12	8	10.1 (11)
08A□AH7※1 (08A□AH7※C)												
10A□AH1※1 (10A□AH1※C)	36	44	26	42	32	25	M6×12L	36	4	8	7	6.5 (7.5)
10A□AHB※1 (10A□AHB※C)	48	85	33	82	44	40	M10×20L	70	5	12	8	11.4 (12.4)
10A□AHC※1 (10A□AHC※C)												
10A□AH7※1 (10A□AH7※C)												

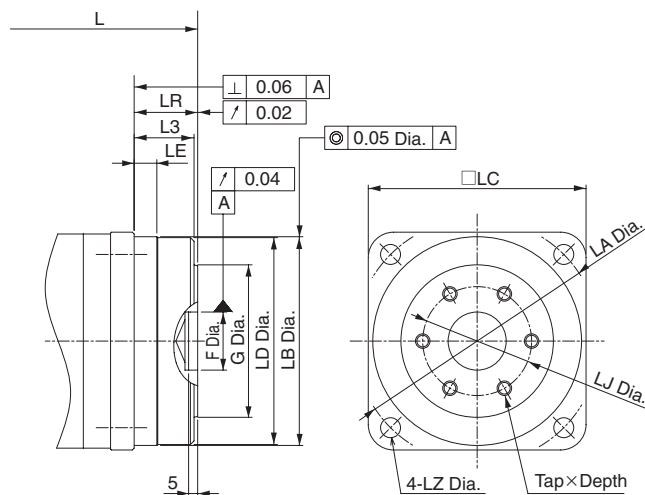
※: The asterisk (※) describes the values of the 8th digit of the model designation, "shaft end code 6 (straight with key and tap)." If a key or tap is not necessary, order a servomotor with "shaft end code 2 (without key and tap)."

Notes: 1 The models and values in parentheses are for servomotors with holding brakes.

2 Please note that gear dimensions are different from those of Σ-I, Σ-II, and Σ-III series.

With Low-backlash Gears External Dimensions Units: mm

● Flange Output Face



Model SGMAV-	Gear Ratio	L	LR	LJ	F	G	No. of pcs Tap × Depth	Approx. Mass kg
08A□AH101 (08A□AH10C)	1/5	220 (265)	27	45	24 ^{+0.021} ₀	59	6-M6×10L	4.8 (5.7)
08A□AHB01 (08A□AHB0C)	1/11							5.0 (5.9)
08A□AHC01 (08A□AHC0C)	1/21	254 (299)	35	60	32 ^{+0.025} ₀	84	6-M8×12L	8.7 (9.6)
08A□AH701 (08A□AH70C)	1/33							
10A□AH101 (10A□AH10C)	1/5	250 (300)	27	45	24 ^{+0.021} ₀	59	6-M6×10L	6.1 (7.1)
10A□AHB01 (10A□AHB0C)	1/11							
10A□AHC01 (10A□AHC0C)	1/21	284 (334)	35	60	32 ^{+0.025} ₀	84	6-M8×12L	10.0 (11.0)
10A□AH701 (10A□AH70C)	1/33							

Notes: 1 The models and values in parentheses are for servomotors with holding brakes.

2 The dimensions not given on the table above are the same as those in the table on the previous page.