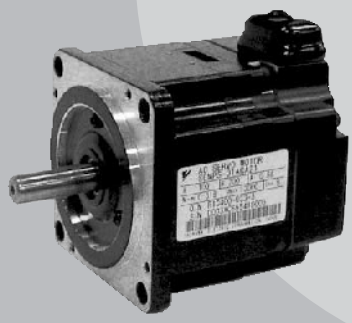
Rotary Servomotors

SGMPS



Model Designations

●Without Gears

SGMPS - 01 A C A 2 1 - E

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

Σ-Ⅲ Series Servomotor SGMPS

1st+2nd digits Rated Output

Code	Specifications
01	100 W
02	200 W
04	400 W
08	750 W
15	1.5 kW

3rd digit Power Supply Voltage

Code	Specifications
A	200 VAC

4th digit Serial Encoder

Code	Specifications
2	17-bit absolute (standard)
C	17-bit incremental (standard)

5th digit Design Revision Order

Code	Specifications
A	IP55 (standard)
E	IP67 (optional)

6th digit Shaft End

Code	Specifications
2	Straight without key (standard)
6	Straight with key and tap (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

8th digit RoHS Directive

Code	Specifications
E	RoHS Compliant

Features

- Medium inertia
- Flat type
- Mounted high-resolution serial encoder: 17 bits
- Maximum speed: 6,000 min^{-1}
- Wide selection: 100 W to 1.5 kW capacity, holding brake and gear options
- Standard protection level: IP55 (IP67 available on request)

Application Examples

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

●With Gears

SGMPS - 01 A 2 A H B 0 1 - E

Σ-Ⅲ Series Servomotor SGMPS	1st+2nd digits	3rd digit	4th digit	5th digit	6th digit	7th digit	8th digit	9th digit	10th digit

1st+2nd digits Rated Output

Code	Specifications
01	100 W
02	200 W
04	400 W
08	750 W
15	1.5 kW

3rd digit Power Supply Voltage

Code	Specifications
A	200 VAC

4th digit Serial Encoder

Code	Specifications
2	17-bit absolute (standard)
C	17-bit incremental (standard)

5th digit Design Revision Order

Code	Specifications
A	IP55 (standard)

6th digit Gear Type

Code	Specifications
H	HDS planetary low-backlash gear

7th digit Gear Ratio

Code	Specifications
B	1/11
C	1/21
1	1/5
7	1/33

8th digit Shaft End

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

9th digit Options

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

10th digit RoHS Directive

Code	Specifications
E	RoHS Compliant

Ratings and Specifications

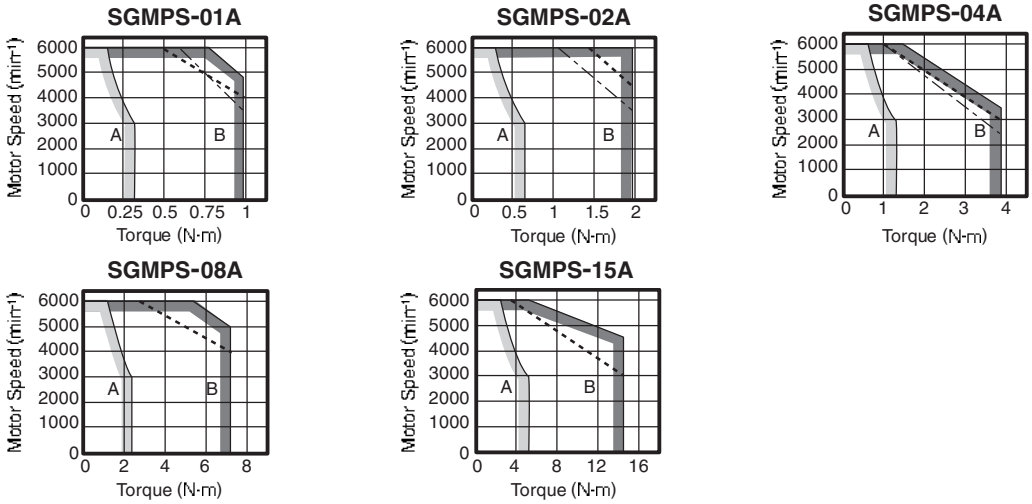
Time Rating: Continuous
Vibration Class: V15
Insulation Resistance: 500 VDC, 10 MΩ min.
Ambient Temperature: 0 to 40℃
Excitation: Permanent magnet
Mounting: Flange-mounted
Thermal Class: B

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

Voltage		200 V				
Servomotor Model: SGMPS-□□□		01A	02A	04A	08A	15A
Rated Output*1	W	100	200	400	750	1500
Rated Torque*1, *2	N•m	0.318	0.637	1.27	2.39	4.77
Instantaneous Peak Torque*1	N•m	0.955	1.91	3.82	7.16	14.3
Rated Current*1	Arms	0.86	2.0	2.6	5.4	9.2
Instantaneous Max. Current*1	Arms	2.8	6.4	8.4	16.5	28.0
Rated Speed*1	min^{-1}	3000				
Max. Speed*1	min^{-1}	6000				
Torque Constant	N•m/Arms	0.401	0.361	0.524	0.476	0.559
Rotor Moment of Inertia	$\times10^{-4}$ kg•m^2	0.0592 (0.0892)	0.263 (0.415)	0.409 (0.561)	2.10 (2.98)	4.02 (4.90)
Rated Power Rate*1	kW/s	17.1	15.4	39.6	27.2	56.6
Rated Angular Acceleration*1	rad/s^2	53700	24200	31100	11400	11900
Applicable SERVOPACK	SGDV-□□□□	R90□	2R8A, 2R1F	2R8□	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℃. Other values quoted are at 20℃.
✻2: Rated torques are continuous allowable torque values at 40℃ with an aluminum heat sink of the following dimensions attached.
SGMPS-01, 02, 04 : 250 mm×250 mm×6 mm
SGMPS-08, 15 : 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 voltage. 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

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 SGMPS-	01A	02A	04A	08A	15A
Derating Rate %	90		95		

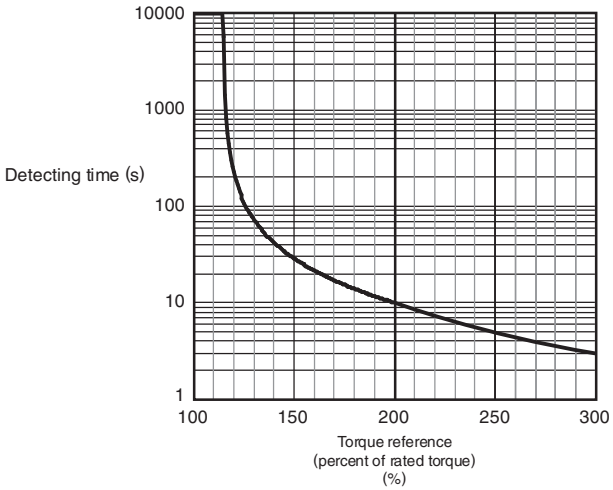
●Holding Brake Electrical Specifications

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$^{+10\%}_{0}$	SGMPS-01A	100	7.8	0.318	71.6	0.34	20	100
	SGMPS-02A	200	7.6	0.637	74.2	0.32	40	100
	SGMPS-04A	400	8.2	1.27	70.9	0.32	40	100
	SGMPS-08A	750	7.5	2.39	58	0.31	20	100
	SGMPS-15A	1500	10	4.77	57.6	0.31	20	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.

●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 holding brake.

Servomotor Model		Servomotor Rated Output	Allowable Load Moment of Inertia (Rotor Moment of Inertia Ratio)
SGMPS-	01	100 W	25 times
	02	200 W	15 times
	04	400 W	7 times
	08	750 W	5 times
	15	1500 W	

●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/).

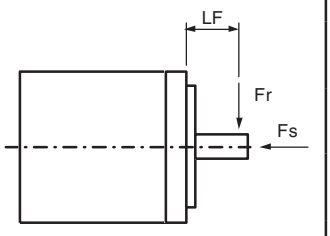
An overvoltage alarm (A.400) is likely to occur during deceleration if the load moment of inertia exceeds the allowable load moment of inertia. SERVOPACKs with a built-in regenerative resistor may generate a regenerative overload alarm (A.320). Take one of the following steps if this occurs.

- 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 391.

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.

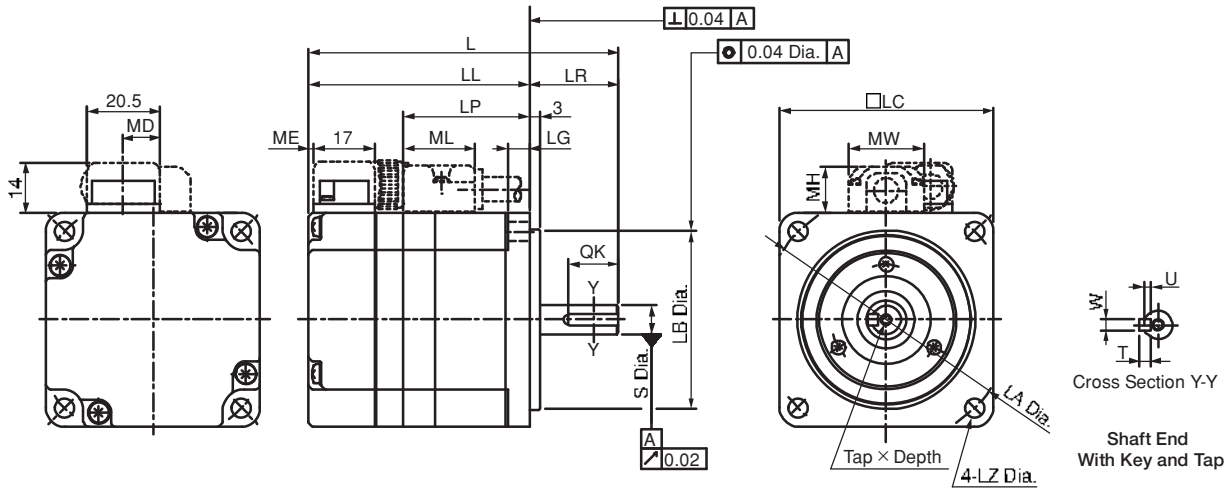
●Allowable Radial and Thrust Loads

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
SGMPS-	01A	78	49	20	
	02A	245	68	25	
	04A				
	08A	392	147	35	
	15A	490	147	35	

External Dimensions Units: mm

(1) 100 to 400 W

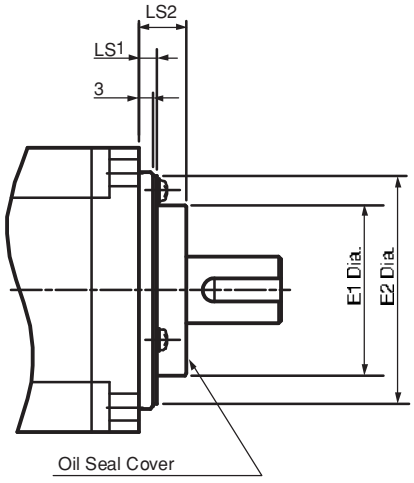


Model SGMPS-	L	LL	LP	LR	LC	LA	LB	LZ	LG	S	Tap × Depth	Key Dimensions QK	U	W	T	MD	ME	MH	ML	MW	Approx. Mass kg
01A□A21-E (01A□A2C-E)	87 (115)	62 (90)	36	25	60	70	$50^{0}_{-0.025}$	5.5	6	$8^{0}_{-0.009}$	No tap	No key				9	1	12	20	19.8	0.5 (0.7)
01A□A61-E (01A□A6C-E)											M3×6L	14	1.8	3	3						
02A□A21-E (02A□A2C-E)	97 (128.5)	67 (98.5)	43	30	80	90	$70^{0}_{-0.030}$	7	8	$14^{0}_{-0.011}$	No tap	No key				14	1.5	13	21	21	1.1 (1.6)
02A□A61-E (02A□A6C-E)											M5×8L	16	3	5	5						
04A□A21-E (04A□A2C-E)	107 (138.5)	77 (108.5)	53	30	80	90	$70^{0}_{-0.030}$	7	8	$14^{0}_{-0.011}$	No tap	No key									1.4 (1.9)
04A□A61-E (04A□A6C-E)											M5×8L	16	3	5	5						

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

〈Option〉

●With an Oil Seal

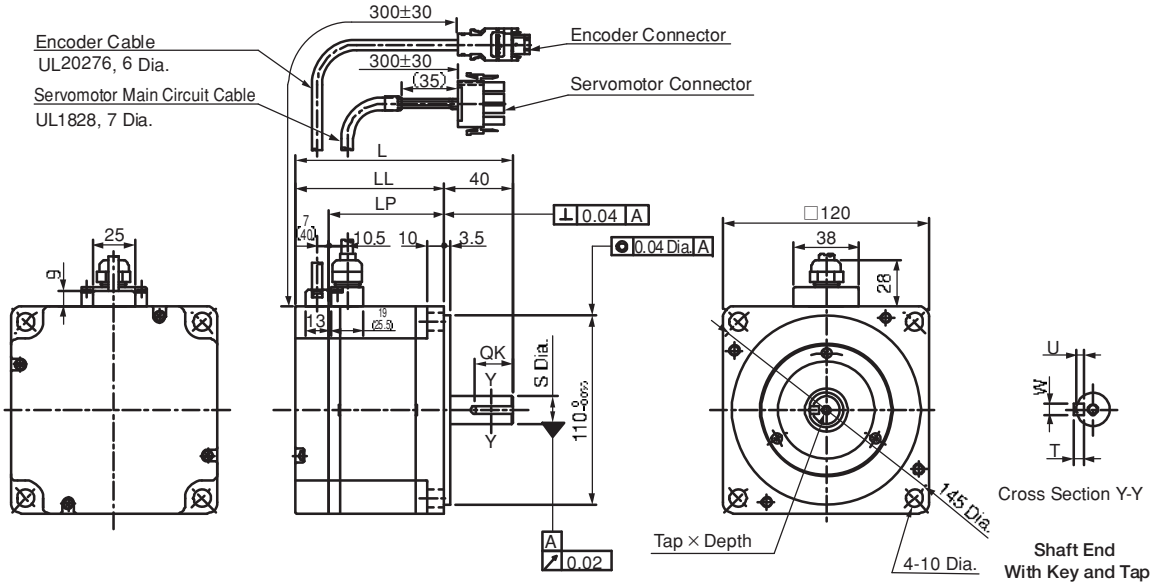


Model SGMPS-	Dimensions of Servomotor with an Oil Seal E1	E2	LS1	LS2
01A	22	39	3.5	7
02A,04A	35	49	6.5	10

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) 750 W, 1.5 kW

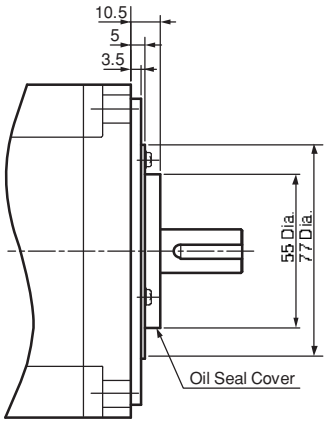


Model SGMPS-	L	LL	LP	S	Tap × Depth	Key Dimensions				Approx. Mass kg
						QK	U	W	T	
08A□A21-E (08A□A2C-E)	126.5 (160)	86.5 (120)	66.7	16 $^{0}_{-0.011}$	No tap	No key				4.2 (5.7)
08A□A61-E (08A□A6C-E)					M5×8L	22	3	5	5	
15A□A21-E (15A□A2C-E)	154.5 (187.5)	114.5 (147.5)	94.7	19 $^{0}_{-0.013}$	No tap	No key				6.6 (8.1)
15A□A61-E (15A□A6C-E)					M6×10L	22	3.5	6	6	

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

〈Option〉

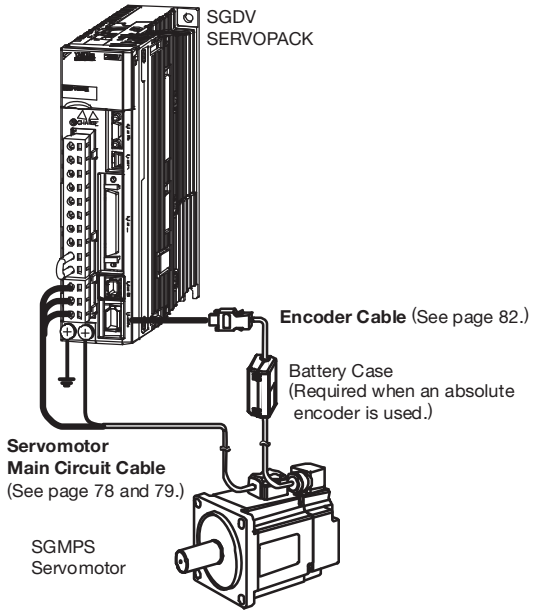
●With an Oil Seal



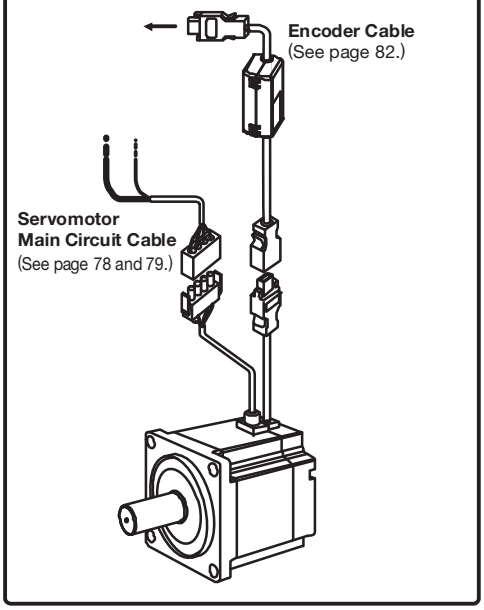
Selecting Cables

●Cables Connections

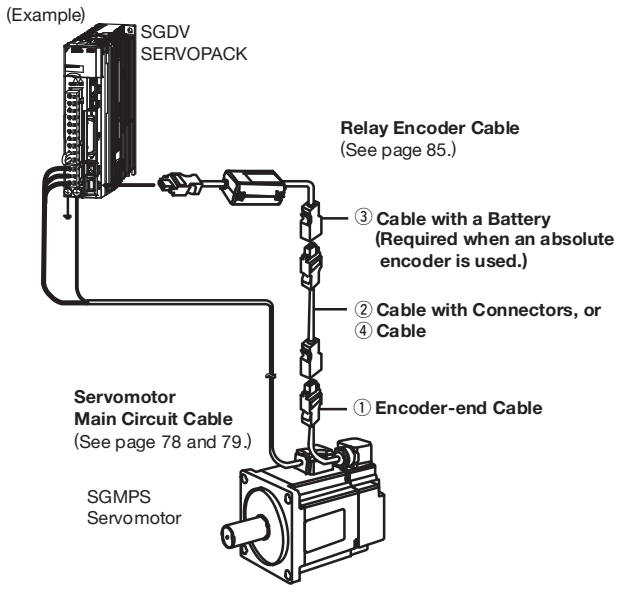
●Standard Wiring (Max. encoder cable length: 20 m)



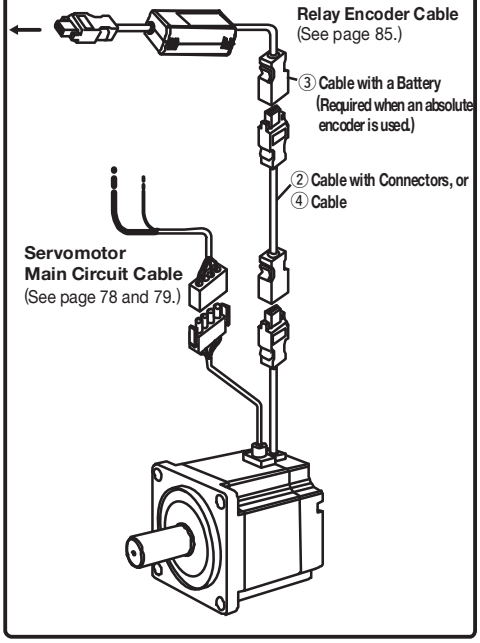
SGMPS-08, -15 (750 W, 1.5 kW) Servomotors



●Encoder Cable Extension from 30 to 50 m (See page 85.)



SGMPS-08, -15 (750 W, 1.5 kW) Servomotors

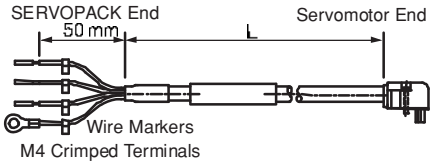
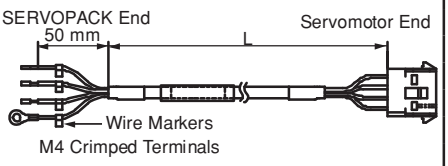
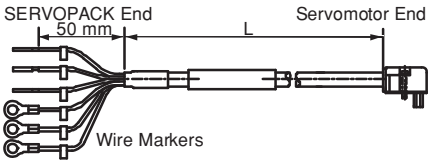
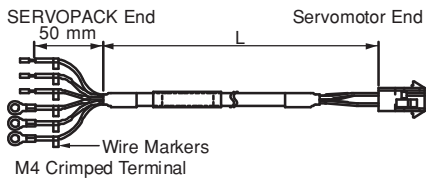


⚠ CAUTION

- 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.

Selecting Cables

●Servomotor Main Circuit Cable

Name	Servomotor Rated Output	Length	Order No.		Specifications	Details
			Standard Type	Flexible Type*		
For Servomotor without Holding Brakes	100 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 W, 400 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	3 m	JZSP-CMM00-03-E	JZSP-CMM01-03-E		(2)
		5 m	JZSP-CMM00-05-E	JZSP-CMM01-05-E		
		10 m	JZSP-CMM00-10-E	JZSP-CMM01-10-E		
		15 m	JZSP-CMM00-15-E	JZSP-CMM01-15-E		
		20 m	JZSP-CMM00-20-E	JZSP-CMM01-20-E		
		30 m	JZSP-CMM00-30-E	JZSP-CMM01-30-E		
		40 m	JZSP-CMM00-40-E	JZSP-CMM01-40-E		
		50 m	JZSP-CMM00-50-E	JZSP-CMM01-50-E		
	1.5 kW	3 m	JZSP-CMM20-03-E	—		
		5 m	JZSP-CMM20-05-E	—		
		10 m	JZSP-CMM20-10-E	—		
		15 m	JZSP-CMM20-15-E	—		
		20 m	JZSP-CMM20-20-E	—		
For Servomotor with Holding Brakes	100 W	3 m	JZSP-CSM11-03-E	JZSP-CSM31-03-E		(3)
		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 W, 400 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	3 m	JZSP-CMM10-03-E	JZSP-CMM11-03-E		(4)
		5 m	JZSP-CMM10-05-E	JZSP-CMM11-05-E		
		10 m	JZSP-CMM10-10-E	JZSP-CMM11-10-E		
		15 m	JZSP-CMM10-15-E	JZSP-CMM11-15-E		
		20 m	JZSP-CMM10-20-E	JZSP-CMM11-20-E		
		30 m	JZSP-CMM10-30-E	JZSP-CMM11-30-E		
		40 m	JZSP-CMM10-40-E	JZSP-CMM11-40-E		
		50 m	JZSP-CMM10-50-E	JZSP-CMM11-50-E		
	1.5 kW	3 m	JZSP-CMM30-03-E	—		
		5 m	JZSP-CMM30-05-E	—		
		10 m	JZSP-CMM30-10-E	—		
		15 m	JZSP-CMM30-15-E	—		
		20 m	JZSP-CMM30-20-E	—		

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

(Cont'd)

Selecting Cables

●Servomotor Main Circuit Cable (cont'd)

Name	Servomotor Rated Output	Length	Order No. Standard Type	Order No. Flexible Type*	Specifications	Details
Servomotor-end Connector Kit	100 W		JZSP-CSM9-1-E		Crimped Type (A crimp tool is required.) 	(5)
	200 W, 400 W		JZSP-CSM9-2-E			(6)
	750 W, 1.5 kW (Without holding brake)		JZSP-CMM9-3-E		Crimped Type (A crimp tool is required.) 	(7)
	750 W, 1.5 kW (With holding brake)		JZSP-CSM9-5-E		Crimped Type (A crimp tool is required.) 	
Cables	100 to 400 W	5 m	JZSP-CSM90-05-E	JZSP-CSM80-05-E		(8)
		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, 1.5 kW	5 m	JZSP-CSM91-05-E	JZSP-CSM81-05-E		(9)
		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.

(1) Wiring Specifications for Servomotors without Holding Brakes: 100 to 400 W

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

(2) Wiring Specifications for Servomotors without Holding Brakes: 750 W, 1.5 kW

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

(3) Wiring Specifications for Servomotor with Holding Brakes: 100 to 400 W

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

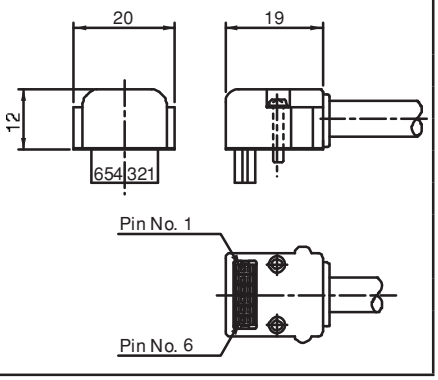
Note: No polarity for connection to a holding brake.

(4) Wiring Specifications for Servomotor with Holding Brakes: 750 W, 1.5 kW

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

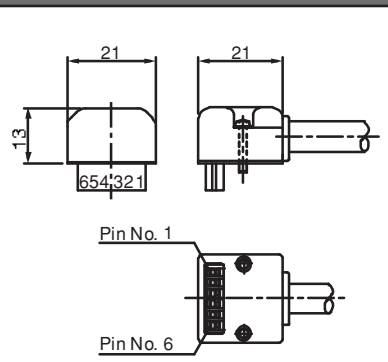
Note: No polarity for connection to a holding brake.

(5) Servomotor-end Connector Kit Specifications: For 100 W Servomotors

Items	Specifications	External Dimensions mm
Order No.	JZSP-CSM9-1-E (Cables are not included.)	
Applicable Servomotors	SGMPS-01A	
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	

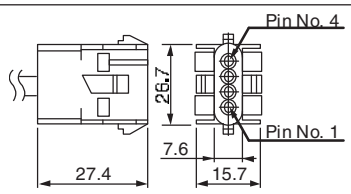
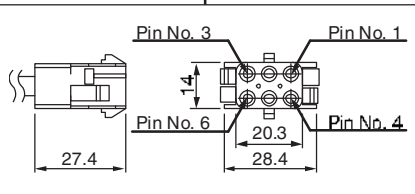
Note: A crimp tool (Model no.: YRS-8841) is required. Contact the respective manufacturer for more information.

(6) Servomotor-end Connector Kit Specifications: For 200, 400 W Servomotors

Items	Specifications	External Dimensions mm
Order No.	JZSP-CSM9-2-E (Cables are not included.)	
Applicable Servomotors	SGMPS-02A, -04A	
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.

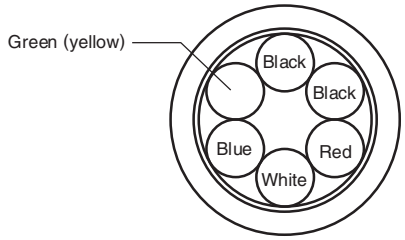
(7) Servomotor-end Connector Kit Specifications: For 750 W, 1.5 kW Servomotors

Items	Specifications		
	For Servomotors without Holding Brakes	For Servomotors with Holding Brakes	
		For power line	For brake line
Order No.	JZSP-CMM9-3-E	JZSP-CSM9-5-E	
Applicable Servomotors	SGMPS-08A, -15A		
Manufacturer	Tyco Electronics Japan G.K.		
Cap	350780-1	350781-1	
Socket	350550-6	350550-6	350689-3
Applicable Wire Size	AWG20 to 14	AWG20 to 14	AWG24 to 18
External Dimensions mm			

Note: The following crimp tools are required.
For use with servomotors without holding brakes or servomotors with holding brakes and power lines: Model no. 90296-2
For use with servomotors with holding brakes and brake lines: Model no. 90300-2.
Contact the respective manufacturer for more information.

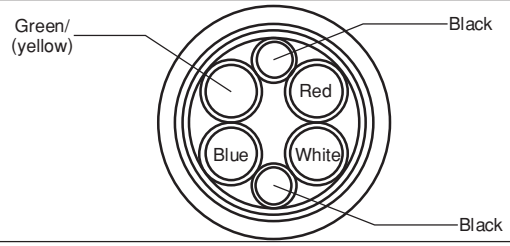
Selecting Cables

(8) Cable Specifications: For 100 to 400 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 mm²) Outer diameter of insulating sheath: 1.53 dia. mm For holding brake line: AWG20 (0.52 mm²) Outer diameter of insulating sheath: 1.53 dia. mm	UL2517 (Rating temperature: 105°C) AWG22×6C For power line: AWG22 (0.33 mm²) Outer diameter of insulating sheath: 1.37 dia. mm For holding brake line: AWG22 (0.33 mm²) 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)

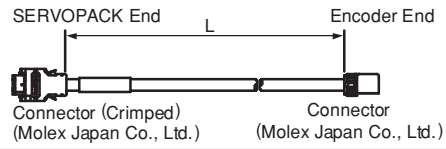
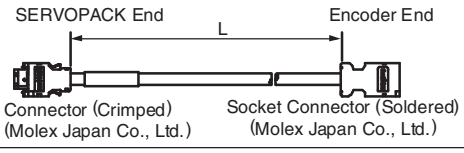
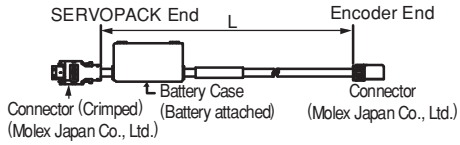
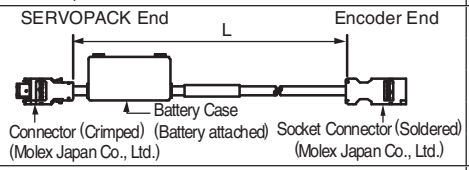
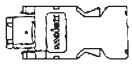
(9) Cable Specifications: For 750 W, 1.5 kW Servomotors

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 mm²) Outer diameter of insulating sheath: 2.15 dia. mm For holding brake line: AWG20 (0.52 mm²) Outer diameter of insulating sheath: 1.6 dia. mm	UL2517 (Rating temperature: 105°C) AWG16×4C, AWG22×2C For power line: AWG16 (1.31 mm²) Outer diameter of insulating sheath: 2.35 dia. mm For holding brake line: AWG22 (0.33 mm²) 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-CSM91-05-E (5 m)

Selecting Cables

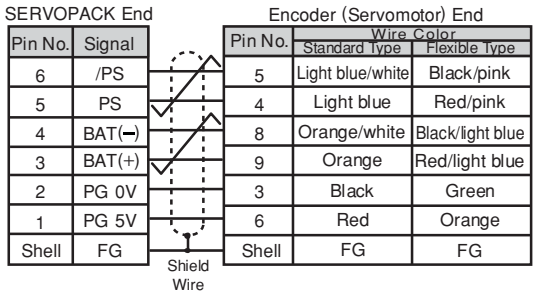
●Encoder Cables (Length: 20 m or less)

Name	Servo motor Capacity	Length	Order No. Standard Type	Order No. Flexible Type*1	Specifications	Details
Cable with Connectors (For Incremental Encoder)	100 to 400 W	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		
	750 W, 1.5 kW	3 m	JZSP-CMP00-03-E	JZSP-CMP10-03-E		(2)
		5 m	JZSP-CMP00-05-E	JZSP-CMP10-05-E		
		10 m	JZSP-CMP00-10-E	JZSP-CMP10-10-E		
		15 m	JZSP-CMP00-15-E	JZSP-CMP10-15-E		
		20 m	JZSP-CMP00-20-E	JZSP-CMP10-20-E		
Cable with Connectors*2 (For Absolute Encoder, with a Battery Case)	100 to 400 W	3 m	JZSP-CSP05-03-E	JZSP-CSP25-03-E		(3)
		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		
	750 W, 1.5 kW	3 m	JZSP-CSP19-03-E	JZSP-CSP29-03-E		(4)
		5 m	JZSP-CSP19-05-E	JZSP-CSP29-05-E		
		10 m	JZSP-CSP19-10-E	JZSP-CSP29-10-E		
		15 m	JZSP-CSP19-15-E	JZSP-CSP29-15-E		
		20 m	JZSP-CSP19-20-E	JZSP-CSP29-20-E		
SERVOPACK-end Connector Kit	100 W to 1.5 kW		JZSP-CMP9-1-E		Soldered 	(5)
Encoder-end Connector Kit	100 to 400 W		JZSP-CSP9-2-E		Crimped Type (A crimp tool is required.) 	
	750 W, 1.5 kW		JZSP-CMP9-2-E		Soldered 	
Cables		5 m	JZSP-CMP09-05-E	JZSP-CSP39-05-E	20 m Max. 	(6)
		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.

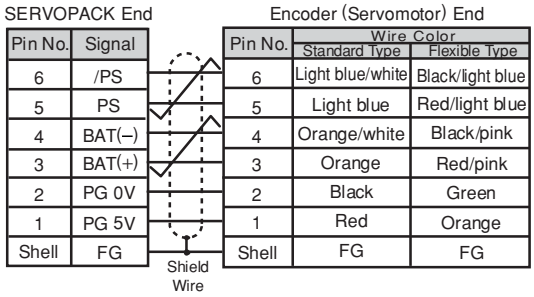
Selecting Cables

(1) Wiring Specifications for Cable with Connectors: 100 to 400 W (For incremental encoder)



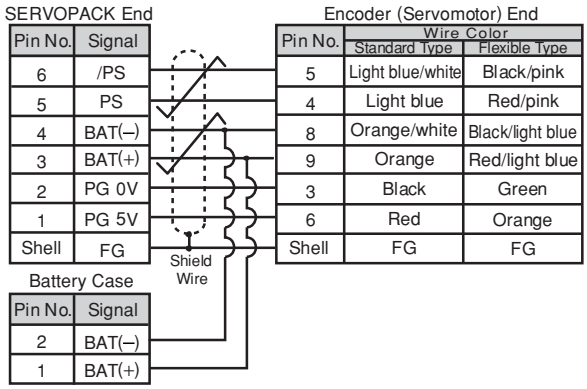
SERVOPACK End			Encoder (Servomotor) End		
Pin No.	Signal		Pin No.	Wire Color: Standard Type	Wire Color: Flexible Type
6	/PS		5	Light blue/white	Black/pink
5	PS		4	Light blue	Red/pink
4	BAT(–)		8	Orange/white	Black/light blue
3	BAT(+)		9	Orange	Red/light blue
2	PG 0V		3	Black	Green
1	PG 5V		6	Red	Orange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

(2) Wiring Specifications for Cable with Connectors: 750 W, 1.5 kW (For incremental encoder)



SERVOPACK End			Encoder (Servomotor) End		
Pin No.	Signal		Pin No.	Wire Color: Standard Type	Wire Color: Flexible Type
6	/PS		6	Light blue/white	Black/light blue
5	PS		5	Light blue	Red/light blue
4	BAT(–)		4	Orange/white	Black/pink
3	BAT(+)		3	Orange	Red/pink
2	PG 0V		2	Black	Green
1	PG 5V		1	Red	Orange
Shell	FG	Shield Wire	Shell	FG	FG

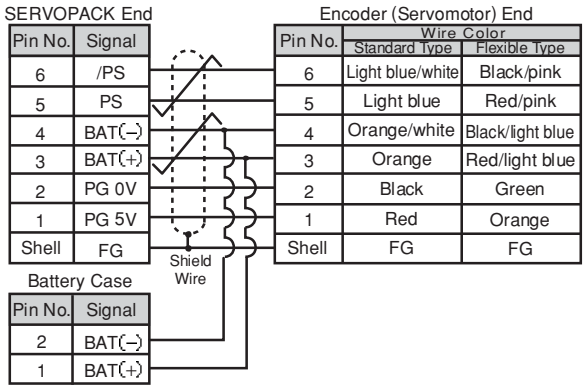
(3) Wiring Specifications for Cable with Connectors: 100 to 400 W (For absolute encoder, with a battery case)



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

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

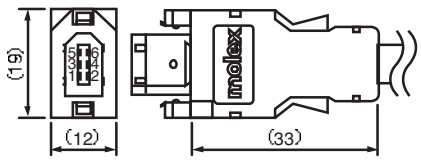
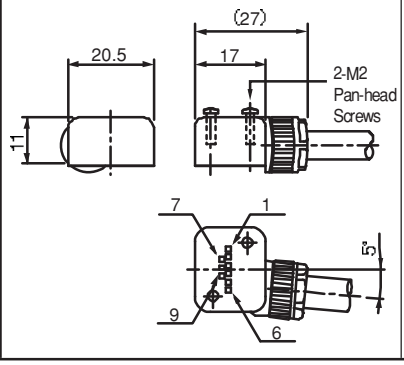
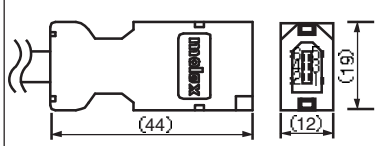
(4) Wiring Specifications for Cable with Connectors: 750 W, 1.5 kW (For absolute encoder, with a battery case)



SERVOPACK End			Encoder (Servomotor) End		
Pin No.	Signal		Pin No.	Wire Color: Standard Type	Wire Color: Flexible Type
6	/PS		6	Light blue/white	Black/pink
5	PS		5	Light blue	Red/pink
4	BAT(–)		4	Orange/white	Black/light blue
3	BAT(+)		3	Orange	Red/light blue
2	PG 0V		2	Black	Green
1	PG 5V		1	Red	Orange
Shell	FG	Shield Wire	Shell	FG	FG

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

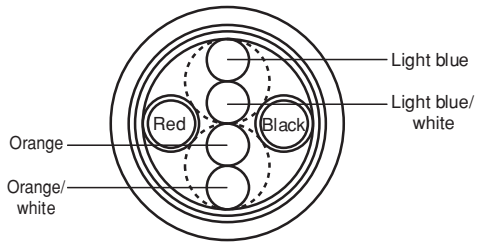
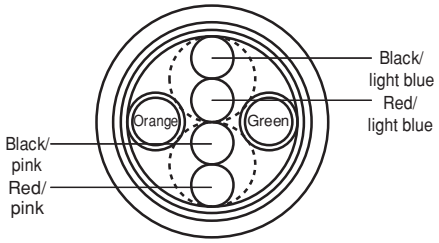
(5) SERVOPACK-end/Encoder-end Connector Kit Specifications

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.)	JZSP-CMP9-2-E (Cables are not included.)
Manufacturer	Molex Japan Co., Ltd.	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	54280-0609 (soldered) Product Specification: PS-54280
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

Selecting Cables

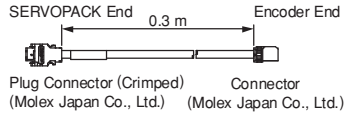
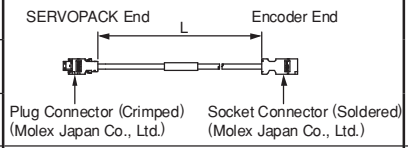
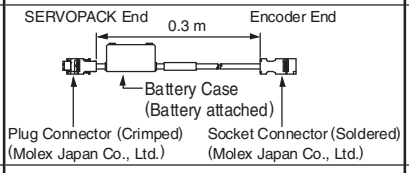
(6) Cable Specifications

Items	Standard Type	Flexible Type
Order No.*	JZSP-CMP09-□□-E	JZSP-CSP39-□□-E
Cable Length	20 m max.	
Specifications	UL20276 (Rating temperature: 80℃) 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℃) 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
①Encoder-end Cables (For incremental and absolute encoder)	0.3 m	JZSP-CSP11-E		(1)
②Cable with Connectors (For incremental and absolute encoder)	30 m	JZSP-UCMP00-30-E		(2)
	40 m	JZSP-UCMP00-40-E		
	50 m	JZSP-UCMP00-50-E		
③Cable with a Battery Case (Required when an absolute encoder is used*)	0.3 m	JZSP-CSP12-E		(3)
④Cables	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

Pin No.	Signal
6	/PS
5	PS
4	BAT (–)
3	BAT (+)
2	PG 0V
1	PG 5V
Shell	FG

Shield Wire

Encoder (Servomotor) End

Pin No.	Wire Color
5	Light blue/white
4	Light blue
8	Orange/white
9	Orange
3	Black
6	Red
Shell	FG

(2) Wiring Specifications for Cable with Connectors

SERVOPACK End

Pin No.	Signal
6	/PS
5	PS
4	BAT (–)
3	BAT (+)
2	PG 0V
1	PG 5V
Shell	FG

Shield Wire

Encoder (Servomotor) End

Pin No.	Wire Color
6	Light blue/white
5	Light blue
4	Orange/white
3	Orange
2	Black
1	Red
Shell	FG

(3) Wiring Specifications for Cable with a Battery Case

SERVOPACK End

Pin No.	Signal
6	/PS
5	PS
4	BAT (–)
3	BAT (+)
2	PG 0V
1	PG 5V
Shell	FG

Shield Wire

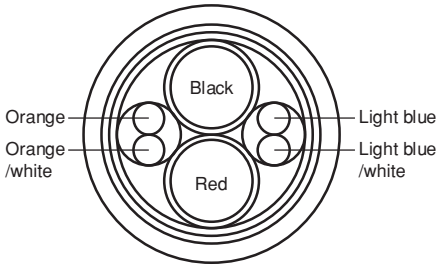
Encoder (Servomotor) End

Pin No.	Wire Color
6	Light blue/white
5	Light blue
4	Orange/white
3	Orange
2	Black
1	Red
Shell	FG

Battery Case

Pin No.	Signal
2	BAT (–)
1	BAT (+)

(4) Cable Specifications

Item	Standard Type
Order No.*	JZSP-CMP19-□□-E
Cable Length	50 m max.
Specifications	UL20276 (Rating temperature: 80℃) AWG16×2C+AWG26×2P AWG16 (1.31 mm²) Outer diameter of insulating sheath: 2.0 dia. mm AWG26 (0.13 mm²) 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℃
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 SGMPS-	Servomotor			Gear					
	Rated Output W	Rated Speed min^{-1}	Rated 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*2 min^{-1}
01A□AH1□	100	3000	0.318	1/5	3 max.	1.27/80	4.34	600	800
01A□AHB□				1/11		2.80/80	9.55	273	363
01A□AHC□				1/21		5.34/80	18.2	143	190
01A□AH7□				1/33		8.40/80	28.7	91	121
02A□AH1□	200	3000	0.637	1/5	3 max.	2.55/80	8.40	600	800
02A□AHB□				1/11		5.96/85	19.3	273	363
02A□AHC□				1/21		11.4/85	37.3	143	190
02A□AH7□				1/33		17.9/85	58.6	91	121
04A□AH1□	400	3000	1.27	1/5	3 max.	5.40/85	17.6	600	800
04A□AHB□				1/11		11.9/85	39.1	273	363
04A□AHC□				1/21		22.7/85	72.2	143	190
04A□AH7□				1/33		33.5/80	115	91	121
08A□AH1□	750	3000	2.39	1/5	3 max.	10.2/85	33.3	600	800
08A□AHB□				1/11		22.3/85	71.0	273	363
08A□AHC□				1/21		42.7/85	140	143	190
08A□AH7□				1/33		67.0/85	206	91	121
15A□AH1□	1500	3000	4.77	1/5	3 max.	20.3/85	65.9	600	800
15A□AHB□				1/11		44.6/85	148	273	363
15A□AHC□				1/21		80.1/80	270	143	190
15A□AH7□				1/33		126/80	353*3	91	121

✻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 rated output, motor speed, and temperature etc. The values in the table are representative values with rated output, rated speed, and an ambient temperature of 25℃, and are not guaranteed values.

✻2: Max. speed is up to 4000 min^{-1} at the shaft.

✻3: The instantaneous peak torque values indicated with ✻3 are limited by the gear, so use the following servomotor instantaneous peak torque. In this case, set torque limit parameters Pn402 and 403 for the SERVOPACK at 250%

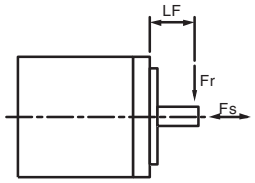
Notes: 1 The gear mounted to our servomotor has not been broken in. Break in the servomotor if necessary. First, run the motor at low speed with no load. If no problems arise, gradually increase the speed and load.

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 SGMPS-	Moment of Inertia ×10^{-4} kg·m^2		Servomotors with Low-backlash Gears			Reference Diagram
	Motor + Gear	Gear	Allowable Radial Load (Fr) N	Allowable Thrust Load (Fs) N	LF mm	
01A□AH1□	0.152	0.093	167	147	55	
01A□AHB□	0.107	0.048	216			
01A□AHC□	0.102	0.043	392	235	69	
01A□AH7□	0.092	0.033	431			
02A□AH1□	0.623	0.360	245	235	69	
02A□AHB□	0.351	0.088	323			
02A□AHC□	0.373	0.110	549	294	79	
02A□AH7□	0.328	0.065	608			
04A□AH1□	0.769	0.360	245	235	69	
04A□AHB□	0.604	0.195	441	294	79	
04A□AHC□	0.604	0.195	568	314	100	
04A□AH7□	0.582	0.173	657			
08A□AH1□	2.87	0.765	343	294	79	
08A□AHB□	2.62	0.523	451	314	100	
08A□AHC□	2.76	0.663	813	490	137	
08A□AH7□	2.56	0.455	921			
15A□AH1□	5.56	1.540	353	314	137	
15A□AHB□	6.11	2.090	647	490		
15A□AHC□	6.00	1.980	1274	882	151	
15A□AH7□	5.14	1.116				

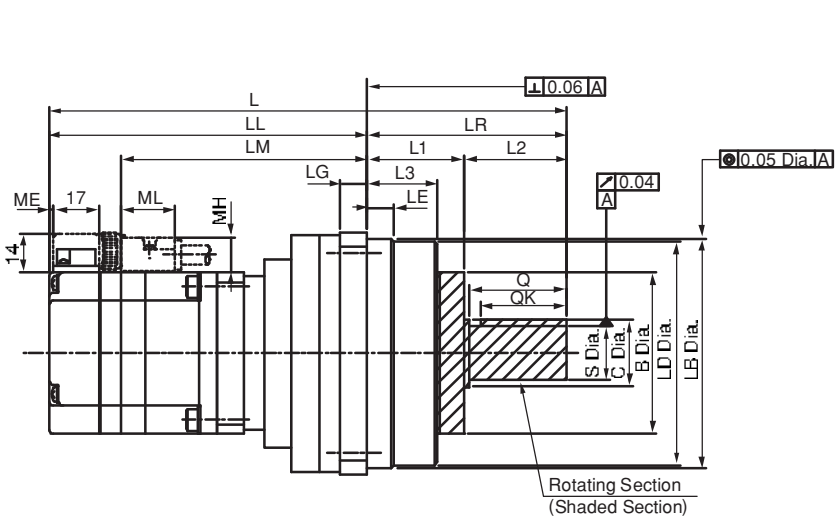
IMPORTANT The gear generates the loss at gear mechanism and oil seal. The loss varies with torque and motor speed conditions. The temperature rise depends on heating conditions. Always check the actual gear and motor temperature. If the temperature is high, take the measures shown below.

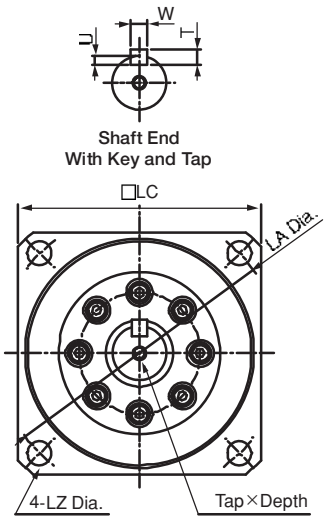
- Decrease the load ratio.
- Change the heating conditions.
- Cool the motor with a cooling fan etc.

Rated Output W	Heat Sink Size			
	1/5	1/11	1/21	1/33
100	C	B	A	
200				
400				
750				
1500				

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) 100 to 400 W



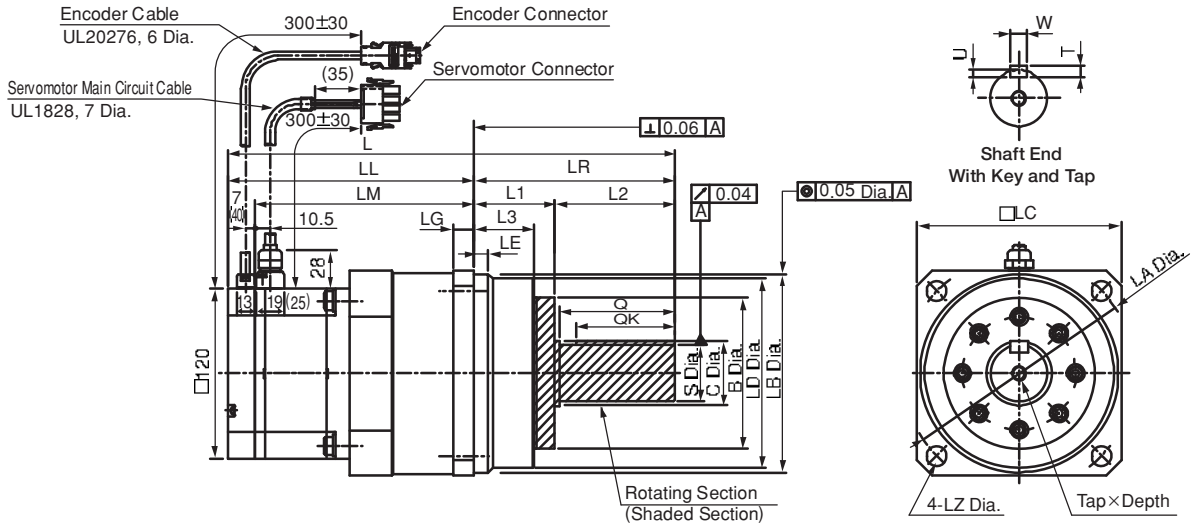


Model SGMPS-	Gear Ratio	L	LL	LM	LR	LE	LG	B	C	LD	LB	LC	LA	LZ	L1	L2	L3	Q	S	Tap× Depth	Key Dimensions QK	U	W	T	ME	MH	ML	Approx. Mass kg
01A□AH1✻1-E (01A□AH1✻C-E)	1/5	168 (196)	108 (136)	82	60	8	9	40	20	64.5	$65^{0}_{-0.030}$	70	80	6.6	30	30	22	28	$16^{0}_{-0.018}$	M4×8L	25	3	5	5	1	12	20	1.3 (1.5)
01A□AHB✻1-E (01A□AHB✻C-E)	1/11																											
01A□AHC✻1-E (01A□AHC✻C-E)	1/21	191 (219)	117 (145)	91	74	7.5	10	59	26	84	$85^{0}_{-0.035}$	90	105	9	36	38	26	36	$20^{0}_{-0.021}$	M5×10L	32	3.5	6	6	1	12	20	2.8 (3.0)
01A□AH7✻1-E (01A□AH7✻C-E)	1/33																											
02A□AH1✻1-E (02A□AH1✻C-E)	1/5	197 (228.5)	123 (154.5)	99	74	7.5	10	59	26	84	$85^{0}_{-0.035}$	90	105	9	36	38	26	36	$20^{0}_{-0.021}$	M5×10L	32	3.5	6	6	1.5	13	21	3.2 (3.7)
02A□AHB✻1-E (02A□AHB✻C-E)	1/11																											3.5 (4.0)
02A□AHC✻1-E (02A□AHC✻C-E)	1/21	215 (246.5)	131 (162.5)	107	84	12	12	59	32	96	$100^{0}_{-0.035}$	105	120	9	40	44	29	42	$25^{0}_{-0.021}$	M6×12L	36	4	8	7	1.5	13	21	3.8 (4.3)
02A□AH7✻1-E (02A□AH7✻C-E)	1/33																											
04A□AH1✻1-E (04A□AH1✻C-E)	1/5	207 (238.5)	133 (164.5)	109	74	7.5	10	59	26	84	$85^{0}_{-0.035}$	90	105	9	36	38	26	36	$20^{0}_{-0.021}$	M5×10L	32	3.5	6	6	1.5	13	21	3.5 (4.0)
04A□AHB✻1-E (04A□AHB✻C-E)	1/11	225 (256.5)	141 (172.5)	117	84	12	12	59	32	96	$100^{0}_{-0.035}$	105	120	9	40	44	29	42	$25^{0}_{-0.021}$	M6×12L	36	4	8	7	1.5	13	21	4.1 (4.6)
04A□AHC✻1-E (04A□AHC✻C-E)	1/21	253 (284.5)	148 (179.5)	124	105	14	13	59	40	112	$115^{0}_{-0.035}$	120	135	11	45	60	33	58	$32^{0}_{-0.025}$	M8×16L	50	5	10	8	1.5	13	21	4.5 (5.0)
04A□AH7✻1-E (04A□AH7✻C-E)	1/33	254 (285.5)	149 (180.5)	125	105	12.5	13	84	40	114	$115^{0}_{-0.035}$	120	135	11	45	60	33	58	$32^{0}_{-0.025}$	M8×16L	50	5	10	8	1.5	13	21	7.0 (7.5)

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

With Low-backlash Gears — External Dimensions Units: mm

(2) 750 W, 1.5 kW



Model SGMPS-	Gear Ratio	L	LL	LM	LR	LE	LG	B	C	LD	LB	LC	LA	LZ	L1	L2	L3	Q	S	Tap× Depth	Key Dimensions QK	U	W	T	Approx. Mass kg
08A□AH1✻1-E (08A□AH1✻C-E)	1/5	234.5 (268)	150.5 (184)	131	84	12	12	59	32	96	100 0 -0.035	105	120	9	40	44	29	42	25 0 -0.021	M6×12L	36	4	8	7	6.9 (8.4)
08A□AHB✻1-E (08A□AHB✻C-E)	1/11	263.5 (297)	158.5 (192)	139	105	14	13	59	40	112	115 0 -0.035	120	135	11	45	60	33	58	32 0 -0.025	M8×16L	50	5	10	8	8.0 (9.5)
08A□AHC✻1-E (08A□AHC✻C-E)	1/21	316.5 (350)	174.5 (208)	155	142	10	15	84	44	134	140 0 -0.040	145	165	14	57	85	40	82	40 0 -0.025	M10× 20L	70	5	12	8	11.0 (12.5)
08A□AH7✻1-E (08A□AH7✻C-E)	1/33																								
15A□AH1✻1-E (15A□AH1✻C-E)	1/5	291.5 (325)	186.5 (220)	167	105	12.5	13	84	40	114	115 0 -0.035	120	135	11	45	60	33	58	32 0 -0.025	M8×16L	50	5	10	8	13.1 (10.7)
15A□AHB✻1-E (15A□AHB✻C-E)	1/11	344.5 (378)	202.5 (236)	183	142	10	15		44	134	140 0 -0.040	145	165	14	57	85	40	82	40 0 -0.025	M10× 20L	70		12		11.3 (12.8)
15A□AHC✻1-E (15A□AHC✻C-E)	1/21	364.5 (398)	208.5 (242)	189	156	16	16	135	51	163	165 0 -0.040	170	190		70	86	51		45 0 -0.025			5.5	14	9	23.6 (25.1)
15A□AH7✻1-E (15A□AH7✻C-E)	1/33																								

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

Time Rating: Continuous
Insulation Resistance: 500 VDC, 10 MΩ min.
Ambient Temperature: 0 to 40℃
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 SGMPS-	Servomotor			Gear					
	Rated Output W	Rated Speed min^{-1}	Rated 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*2 min^{-1}
01A□AH10	100	3000	0.318	1/5	3 max.	1.27/80	4.32	600	800
01A□AHB0				1/11		2.80/80	9.5	273	363
01A□AHC0				1/21		5.34/80	18.1	143	190
01A□AH70				1/33		8.40/80	27.0	91	121
02A□AH10	200	3000	0.637	1/5	3 max.	2.55/80	8.6	600	800
02A□AHB0				1/11		5.62/80	18.9	273	363
02A□AHC0				1/21		10.7/80	36.1	143	190
02A□AH70				1/33		16.8/80	48.0*3	91	121
04A□AH10	400	3000	1.27	1/5	3 max.	5.08/80	17.2	600	800
04A□AHB0				1/11		11.2/80	35.0	273	363
04A□AHC0				1/21		21.3/80	72.2	143	190
04A□AH70				1/33		33.5/80	93.0*3	91	121
08A□AH10	750	3000	2.39	1/5	3 max.	9.56/80	32.0	600	800
08A□AHB0				1/11		21.0/80	56.0*3	273	363
08A□AHC0				1/21		40.2/80	134	143	190
08A□AH70				1/33		63.1/80	156*3	91	121
15A□AH10	1500	3000	4.77	1/5	3 max.	19.1/80	64.4	600	800
15A□AHB0				1/11		42.0/80	142	272	363
15A□AHC0				1/21		80.1/80	270	143	190
15A□AH70				1/33		126/80	353*3	91	121

✻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 rated output, motor speed, and temperature etc. The values in the table are representative values with rated output, rated speed, and an ambient temperature of 25℃, and are not guaranteed values.

✻2: Max. speed is up to 4000 min^{-1} at the shaft.

✻3: The instantaneous peak torque values indicated with ✻3 are limited by the gear, so use the following servomotor instantaneous peak torque. In this case, set torque limit parameters Pn402 and 403 for the SERVOPACK at 250%

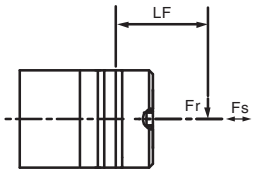
Notes: 1 The gear mounted to our servomotor has not been broken in. Break in the servomotor if necessary. First, run the motor at low speed with no load. If no problems arise, gradually increase the speed and load.

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.

Flange-type With Low-backlash Gears | Ratings and Specifications

●Moment of Inertia and Allowable Radial and Thrust Loads

Servomotor Model SGMPS-	Moment of Inertia ×10^{-4} kg・m^2		Servomotors with Low-backlash Gears			Reference Diagram
	Motor + Gear	Gear	Allowable Radial Load (Fr) N	Allowable Thrust Load (Fs) N	LF mm	
01A□AH10	0.144	0.085	167	147	55	
01A□AHB0	0.100	0.041	216			
01A□AHC0	0.102	0.043	392	235	69	
01A□AH70	0.085	0.026	431			
02A□AH10	0.543	0.280	245	235	69	
02A□AHB0	0.364	0.101	323			
02A□AHC0	0.351	0.088	549	294	79	
02A□AH70	0.317	0.054	608			
04A□AH10	0.689	0.280	245	235	69	
04A□AHB0	0.636	0.227	441	294	79	
04A□AHC0	0.628	0.219	568	314	100	
04A□AH70	0.545	0.136	657			
08A□AH10	2.72	0.616	343	294	79	
08A□AHB0	2.65	0.552	451	314	100	
08A□AHC0	2.65	0.552	813	490	137	
08A□AH70	2.43	0.327	921			
15A□AH10	5.59	1.57	353	314	137	
15A□AHB0	5.58	1.56	647	490		
15A□AHC0	5.9	1.88	1274	882	151	
15A□AH70	5.1	1.08				

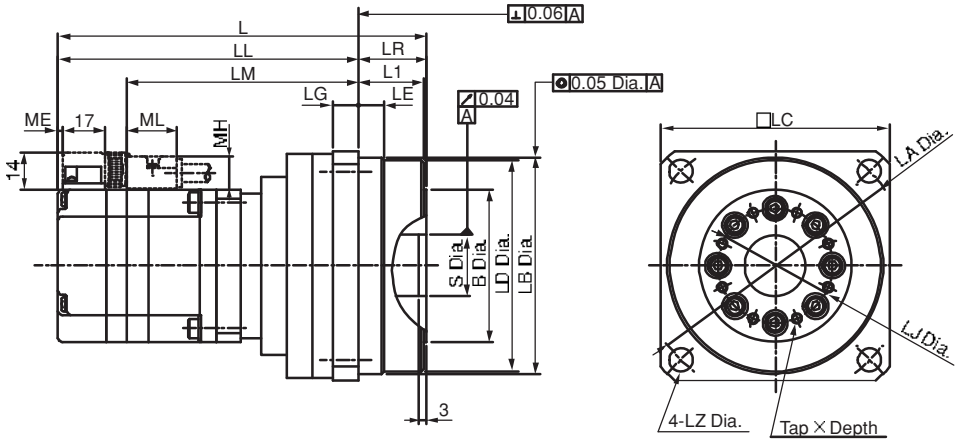
IMPORTANT The gear generates the loss at gear mechanism and oil seal. The loss varies with torque and motor speed conditions. The temperature rise depends on heating conditions. Always check the actual gear and motor temperature. If the temperature is high, take the measures shown below.

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

Rated Output W	Heat Sink Size			
	1/5	1/11	1/21	1/33
100	C		A	
200				
400		B		
750				
1500				

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) 100 to 400 W

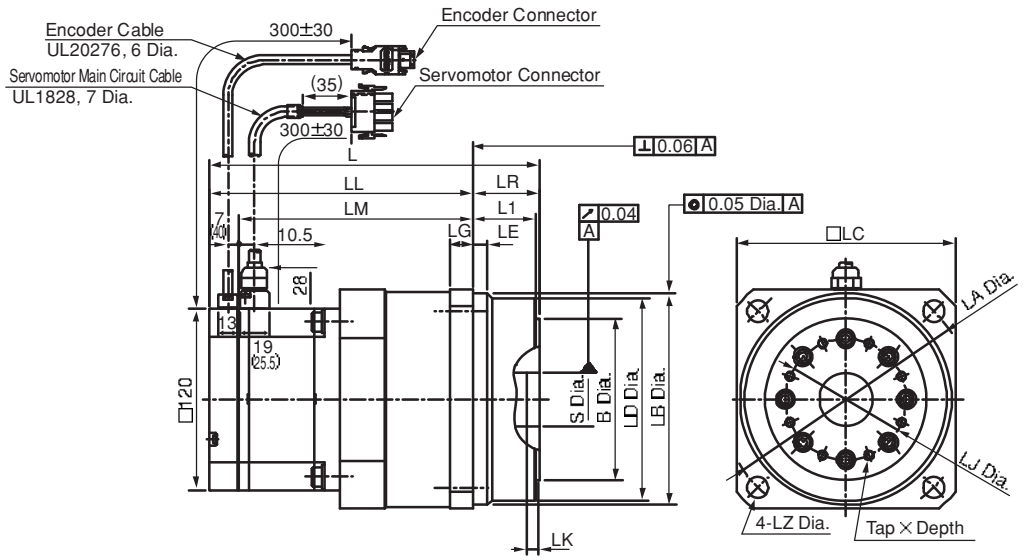


Model SGMPS-	Gear Ratio	L	LL	LM	LR	LE	LG	B	LD	LB	LC	LA	LZ	L1	S	Tap × Depth	LJ	ME	MH	ML	Approx. Mass kg
01A□AH101-E (01A□AH10C-E)	1/5	132 (160)	109 (137)	83	23	8	9	50	64.5	$65^{0}_{-0.030}$	70	80	6.6	22	$19^{+0.021}_{0}$	M3×6L	35	1	12	20	1.3 (1.5)
01A□AHB01-E (01A□AHB0C-E)	1/11																				1.4 (1.6)
01A□AHC01-E (01A□AHC0C-E)	1/21	145 (173)	118 (146)	92	27	10	10	60	83	$85^{0}_{-0.035}$	90	105	9	26	$24^{+0.021}_{0}$	M4×7L	45	1	12	20	2.4 (2.6)
01A□AH701-E (01A□AH70C-E)	1/33																				
02A□AH101-E (02A□AH10C-E)	1/5	150 (181.5)	123 (154.5)	99	27	10	10	60	83	$85^{0}_{-0.035}$	90	105	9	26	$24^{+0.021}_{0}$	M4×7L	45	1.5	13	21	2.9 (3.4)
02A□AHB01-E (02A□AHB0C-E)	1/11																				3.0 (3.5)
02A□AHC01-E (02A□AHC0C-E)	1/21	162 (193.5)	131 (162.5)	107	31	12	12	70	96	$100^{0}_{-0.035}$	105	120	9	29	$28^{+0.021}_{0}$	M5×8L	55	1.5	13	21	4.1 (4.6)
02A□AH701-E (02A□AH70C-E)	1/33																				
04A□AH101-E (04A□AH10C-E)	1/5	160 (191.5)	133 (164.5)	109	27	10	10	60	83	$85^{0}_{-0.035}$	90	105	9	26	$24^{+0.021}_{0}$	M4×7L	45	1.5	13	21	3.2 (3.7)
04A□AHB01-E (04A□AHB0C-E)	1/11	172 (203.5)	141 (172.5)	117	31	12	12	70	96	$100^{0}_{-0.035}$	105	120	9	29	$28^{+0.021}_{0}$	M5×8L	55	1.5	13	21	4.4 (4.9)
04A□AHC01-E (04A□AHC0C-E)	1/21	184 (215.5)	149 (180.5)	125	35	14	13	90	112	$115^{0}_{-0.035}$	120	135	11	33	$32^{+0.025}_{0}$	M5×8L	70	1.5	13	21	5.8 (6.3)
04A□AH701-E (04A□AH70C-E)	1/33																				

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

Flange-type With Low-backlash Gears | External Dimensions Units: mm

(2) 750 W, 1.5 kW



Model SGMPS-	Gear Ratio	L	LL	LM	LR	LE	LG	B	LD	LB	LC	LA	LZ	L1	LJ	LK	S	Tap × Depth	Approx. Mass kg
08A□AH101-E (08A□AH10C-E)	1/5	181.5 (215)	150.5 (184)	131	31	12	12	70	96	$100^{0}_{-0.035}$	105	120	9	29	55	3	$28^{+0.021}_{0}$	M5×8L	6.9 (8.4)
08A□AHB01-E (08A□AHB0C-E)	1/11	193.5 (227)	158.5 (192)	139	35	14	13	90	112	$115^{0}_{-0.035}$	120	135	11	33	70	3	$32^{+0.025}_{0}$	M5×8L	8.6 (10.1)
08A□AHC01-E (08A□AHC0C-E)	1/21	218.5 (252)	174.5 (208)	155	44	10	15	107	134	$140^{0}_{-0.040}$	145	165	14	42	80	4	$35^{+0.025}_{0}$	M6×10L	12.2 (13.7)
08A□AH701-E (08A□AH70C-E)	1/33																		
15A□AH101-E (15A□AH10C-E)	1/5	221.5 (255)	186.5 (220)	167	35	12.5	13	90	112	$115^{0}_{-0.035}$	120	135	11	33	70	3	$32^{+0.025}_{0}$	M5×8L	11.6 (13.1)
15A□AHB01-E (15A□AHB0C-E)	1/11	246.5 (280)	202.5 (236)	183	44	10	15	107	134	$140^{0}_{-0.040}$	145	165	14	42	80	4	$35^{+0.025}_{0}$	M6×10L	15.8 (17.3)
15A□AHC01-E (15A□AHC0C-E)	1/21	261.5 (295)	208.5 (242)	189	53	16	16	135	163	$165^{0}_{-0.040}$	170	190		51	100	6	$47^{+0.025}_{0}$	M8×12L	20.5 (22.0)
15A□AH701-E (15A□AH70C-E)	1/33																		

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