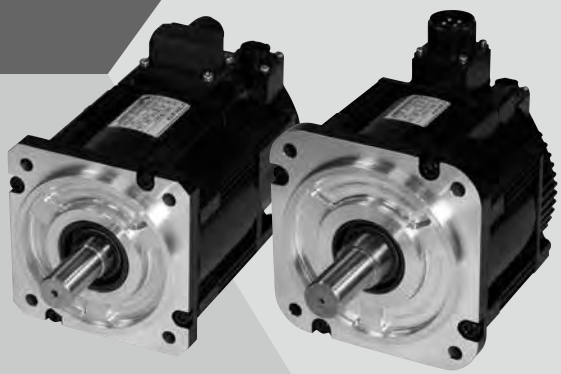
Rotary Servomotors

SGMGV



Model Designations

SGMGV - 03 A D A 2 1

Σ-V Series Servomotor SGMGV	1st+2nd digits	3rd digit	4th digit	5th digit	6th digit	7th digit

1st+2nd digits Rated Output

Cade	Specifications
03	300 W
05	450 W
09	850 W
13	1.3 kW
20	1.8 kW
30	2.9 kW
44	4.4 kW
55	5.5 kW
75	7.5 kW
1A	11 kW
1E	15 kW

3rd digit Power Supply Voltage

Code	Specifications
A	200 VAC
D	400 VAC

4th digit Serial Encoder

Code	Specifications
3	20-bit absolute
D	20-bit incremental

5th digit Design Revision Order

Code	Specifications
A	Standard

6th digit Shaft End

Code	Specifications
2	Straight without key
6	Straight with key and tap

7th digit Options

Code	Specifications
1	Without options
B	With holding brake (90 VDC)
C	With holding brake (24 VDC)
D	With oil seal and holding brake (90 VDC)
E	With oil seal and holding brake (24 VDC)
S	With oil seal

Limited Stock Items Non-Stock Items

Features

- High-speed driving of feed shafts for various machines
- Wide selection: 300 W to 15 kW capacity, holding brake option
- Mounted serial encoder: 20 bits, high resolution
- Protective structure: IP67

Application Examples

- Machine tools
- Transfer machines
- Material handling machines
- Food processing equipment

Configurations of connectors for the main circuit vary depending on servomotor capacity.

SGMGV-03/-05

- The connectors are used only for Yaskawa servomotors. Order the connectors specified by Yaskawa.
- Both protective structure IP67 and European Safety Standards compliant connectors are available.

SGMGV-09 to -1E

- The connectors for these models are round. The connectors specified by Yaskawa are required. Note that the connectors vary depending on the operation environment of servomotors.
- Two types of connectors are available.
  - Standard connectors
  - Protective structure IP67 and European Safety Standards compliant connectors.

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: F

Withstand Voltage: 1500 VAC for one minute (200-V Class)
1800 VAC for one minute (400-V Class)
Enclosure: Totally enclosed, self-cooled, IP67
(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

200 V Class

Servomotor Model: SGMGV-□□□		03A	05A	09A	13A	20A	30A	44A	55A	75A	1AA	1EA
Rated Output*1	kW	0.3	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5	11	15
Rated Torque*1	N·m	1.96	2.86	5.39	8.34	11.5	18.6	28.4	35.0	48.0	70.0	95.4
Instantaneous Peak Torque*1	N·m	5.88	8.92	13.8	23.3	28.7	45.1	71.1	87.6	119	175	224
Rated Current*1	A_{rms}	2.8	3.8	6.9	10.7	16.7	23.8	32.8	42.1	54.7	58.6	78
Instantaneous Max. Current*1	A_{rms}	8	11	17	28	42	56	84	110	130	140	170
Rated Speed*1	min^{-1}	1500										
Max. Speed*1	min^{-1}	3000									2000	
Torque Constant	$N·m/A_{rms}$	0.776	0.854	0.859	0.891	0.748	0.848	0.934	0.871	0.957	1.32	1.37
Rotor Moment of Inertia	$\times10^{-4}$ kg·m²	2.48 (2.73)	3.33 (3.58)	13.9 (16)	19.9 (22)	26 (28.1)	46 (54.5)	67.5 (76.0)	89.0 (97.5)	125 (134)	242 (261)	303 (341)
Rated Power Rate*1	kW/s	15.5 (14.1)	24.6 (22.8)	20.9 (18.2)	35.0 (31.6)	50.9 (47.1)	75.2 (63.5)	119 (106)	138 (126)	184 (172)	202 (188)	300 (283)
Rated Angular Acceleration*1	rad/s²	7900 (7180)	8590 (7990)	3880 (3370)	4190 (3790)	4420 (4090)	4040 (3410)	4210 (3740)	3930 (3590)	3840 (3580)	2890 (2680)	3150 (2960)
Applicable SERVOPACK	SGDV-□□□□	3R8A	3R8A	7R6A	120A	180A	330A 200A*2	330A	470A	550A	590A	780A

*1: These items and torque-motor speed characteristics quoted in combination with a SERVOPACK are at an armature winding temperature of 20°C.
*2: Some restrictions apply when using an SGDV-200A SERVOPACK in combination with an SGMGV-30A servomotor.
Notes: 1 The values in parentheses are for servomotors with holding brakes.
2 The above specifications show the values under the cooling condition when the following heat sinks are mounted on the servomotors.
SGMGV-03A/-05A: 250 mm × 250 mm × 6 mm (aluminum)
SGMGV-09A/-13A/-20A: 400 mm × 400 mm × 20 mm (iron)
SGMGV-30A/-44A/-55A/-75A: 550 mm × 550 mm × 30 mm (iron)
SGMGV-1AA/-1EA: 650 mm × 650 mm × 35 mm (iron)

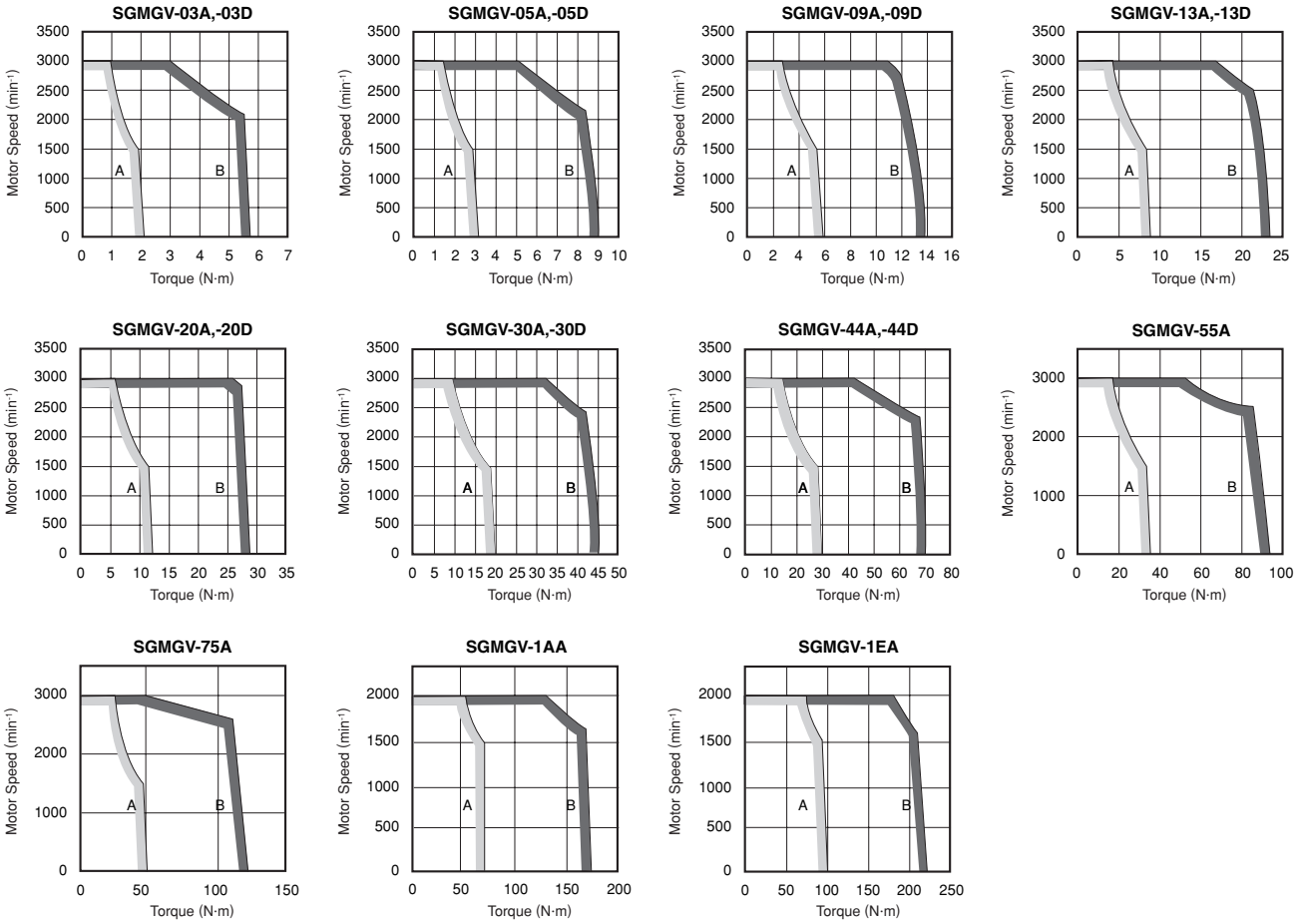
400 V Class

Servomotor Model: SGMGV-□□□		03D	05D	09D	13D	20D	30D	44D	55D	75D	1AD	1ED
Rated Output*	kW	0.3	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5	11	15
Rated Torque*	N·m	1.96	2.86	5.39	8.34	11.5	18.6	28.4	35.0	48.0	70.0	95.4
Instantaneous Peak Torque*	N·m	5.88	8.92	13.8	23.3	28.7	45.1	71.1	87.6	119	175	224
Rated Current*	A_{rms}	1.4	1.9	3.5	5.4	8.4	11.9	16.5	20.8	25.7	28.1	37.2
Instantaneous Max. Current*	A_{rms}	4	5.5	8.5	14	20	28	40.5	52	65	70	85
Rated Speed*	min^{-1}	1500										
Max. Speed*	min^{-1}	3000									2000	
Torque Constant	$N·m/A_{rms}$	1.55	1.71	1.72	1.78	1.50	1.70	1.93	1.80	1.92	2.64	2.74
Rotor Moment of Inertia	$\times10^{-4}$ kg·m²	2.48 (2.73)	3.33 (3.58)	13.9 (16)	19.9 (22)	26 (28.1)	46 (54.5)	67.5 (76.0)	89.0 (97.5)	125 (134)	242 (261)	303 (341)
Rated Power Rate*	kW/s	15.5 (14.1)	24.6 (22.8)	20.9 (18.2)	35.0 (31.6)	50.9 (47.1)	75.2 (63.5)	119 (106)	138 (126)	184 (172)	202 (188)	300 (283)
Rated Angular Acceleration*	rad/s²	7900 (7180)	8590 (7990)	3880 (3370)	4190 (3790)	4420 (4090)	4040 (3410)	4210 (3740)	3930 (3590)	3840 (3580)	2890 (2680)	3150 (2960)
Applicable SERVOPACK	SGDV-□□□□	1R9D	1R9D	3R5D	5R4D	8R4D	120D	170D	210D	260D	280D	370D

*: These items and torque-motor speed characteristics quoted in combination with a SERVOPACK are at an armature winding temperature of 20°C.
Notes: 1 The values in parentheses are for servomotors with holding brakes.
2 The above specifications show the values under the cooling condition when the following heat sinks are mounted on the servomotors.
SGMGV-03D/-05D: 250 mm × 250 mm × 6 mm (aluminum)
SGMGV-09D/-13D/-20D: 400 mm × 400 mm × 20 mm (iron)
SGMGV-30D/-44D/-55D/-75D: 550 mm × 550 mm × 30 mm (iron)
SGMGV-1AD/-1ED: 650 mm × 650 mm × 35 mm (iron)

Ratings and Specifications

●Torque-Motor Speed Characteristics (200 V/400 V) A: Continuous Duty Zone B: Intermittent Duty Zone Note1



Notes: 1 When the effective torque during intermittent duty is within the rated torque, the servomotor can be used within the intermittent duty zone.
2 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.

●Holding Brake Electrical Specifications

Servomotor Model	Servomotor Rated Output kW	Holding Brake Specifications				
		Holding Torque N·m	Rated Voltage 24 VDC		Rated Voltage 90 VDC	
			Capacity W	Rated Current A (at 20˚C)	Capacity W	Rated Current A (at 20˚C)
SGMGV-03	0.3	4.5	10	0.42	10	0.11
SGMGV-05	0.45	4.5	10	0.42	10	0.11
SGMGV-09	0.85	12.7	10	0.41	10	0.11
SGMGV-13	1.3	19.6	10	0.41	10	0.11
SGMGV-20	1.8	19.6	10	0.41	10	0.11
SGMGV-30	2.9	43.1	18.5	0.77	18.5	0.21
SGMGV-44	4.4	43.1	18.5	0.77	18.5	0.21
SGMGV-55	5.5	72.6	25	1.05	25	0.28
SGMGV-75	7.5	72.6	25	1.05	25	0.28
SGMGV-1A	11	84.3	32	1.33	32	0.36
SGMGV-1E	15	114.6	35	1.46	35	0.39

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 provided by customers.

●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)
SGMGV-03 to -1E	0.3 to 1.5 kW	5 times

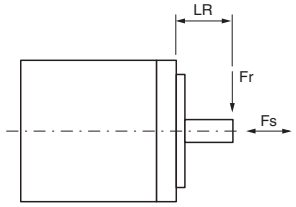
●Load Moment of Inertia

- The larger the load moment of inertia, the worse the movement response of the load.
- The allowable load moment of inertia (JL) depends on 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 386.

●Allowable Radial and Thrust Loads

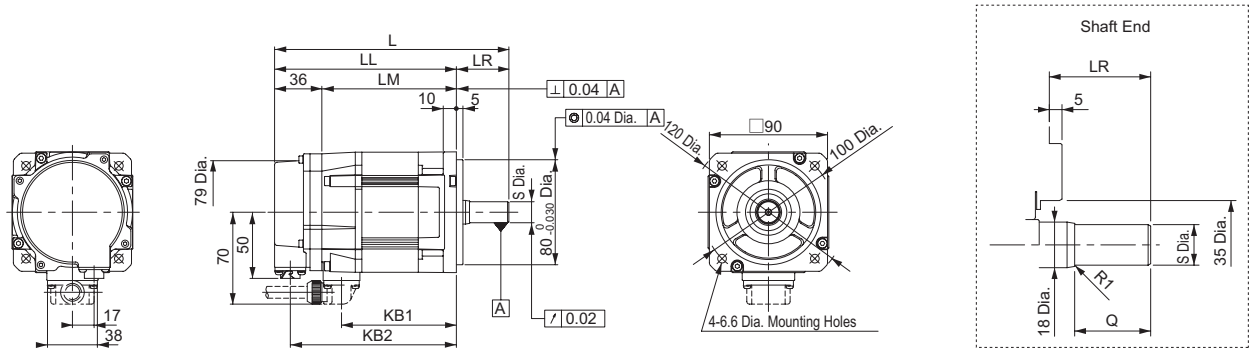
Design the mechanical system so thrust and radial loads applied to the servomotor shaft end during operation fall within the ranges shown in the table.

Servomotor Model		Allowable Radial Load (Fr) N	Allowable Thrust Load (Fs) N	LR mm	Reference Diagram
SGMGV-	03□□A21	490	98	37	
	05□□A21	490	98	40	
	09□□A21	490	98	58	
	13□□A21	686	343	58	
	20□□A21	980	392	58	
	30□□A21	1470	490	79	
	44□□A21	1470	490	79	
	55□□A21	1764	588	113	
	75□□A21	1764	588	113	
	1A□□A21	1764	588	116	
	1E□□A21	4998	2156	116	

External Dimensions Units: mm

●Without Holding Brakes

(1) 300 W, 450 W

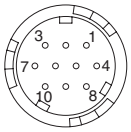


Note: For the specifications of the other shaft ends, refer to page 58.

Model SGMGV-	L	LL	LM	LR	KB1	KB2	Shaft End Dimensions		Approx. Mass kg
							S	Q	
03□□A21	163	126	90	37	75	114	$14^{0}_{-0.011}$	25	2.6
05□□A21	179	139	103	40	88	127	$16^{0}_{-0.011}$	30	3.2

Note: Models with oil seals are of the same configuration.

· Cable Specifications for Encoder-end Connector (20-bit Encoder)



Receptacle: CM10-R10P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP10S-□-D (Angle)
CM10-SP10S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

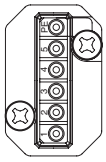
With an Absolute Encoder

1	PS	6	BAT (+)
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	BAT (–)	10	FG (Frame ground)

With an Incremental Encoder

1	PS	6	–
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	–	10	FG (Frame ground)

· Cable Specifications for Servomotor-end Connector

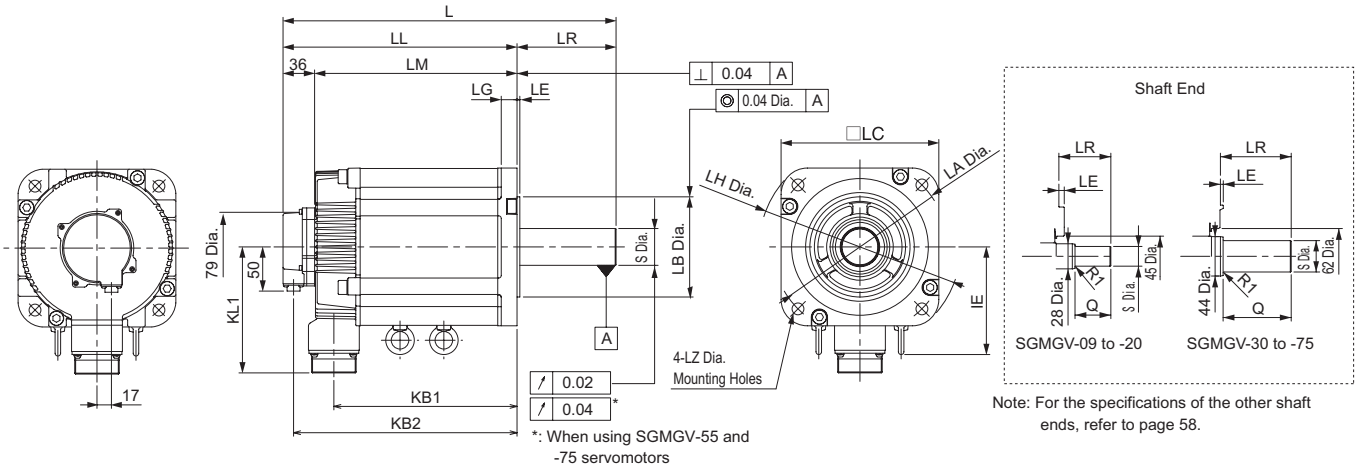


PE	FG (Frame ground)
5	–
4	–
3	Phase U
2	Phase V
1	Phase W

Manufacturer: Japan Aviation Electronics Industry,Ltd.

External Dimensions Units: mm

(2) 850 W to 7.5 kW



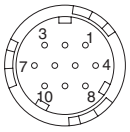
*: When using SGMGV-55 and -75 servomotors

Note: For the specifications of the other shaft ends, refer to page 58.

Model SGMGV-	L	LL	LM	LR	KB1	KB2	IE	KL1	Flange Face Dimensions							Shaft End Dimensions		Approx. Mass
									LA	LB	LC	LE	LG	LH	LZ	S	Q	kg
09□□A21	195	137	101	58	83	125	–	104	145	$110^{0}_{-0.035}$	130	6	12	165	9	$19^{0}_{-0.013}$	40	5.5
13□□A21	211	153	117	58	99	141	–	104	145	$110^{0}_{-0.035}$	130	6	12	165	9	$22^{0}_{-0.013}$	40	7.1
20□□A21	229	171	135	58	117	159	–	104	145	$110^{0}_{-0.035}$	130	6	12	165	9	$24^{0}_{-0.013}$	40	8.6
30□□A21	239	160	124	79	108	148	–	134	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$35^{+0.01}_{0}$	76	13.5
44□□A21	263	184	148	79	132	172	–	134	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$35^{+0.01}_{0}$	76	17.5
55□□A21	334	221	185	113	163	209	123	144	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$42^{0}_{-0.016}$	110	21.5
75□□A21	380	267	231	113	209	255	123	144	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$42^{0}_{-0.016}$	110	29.5

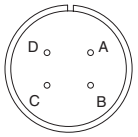
Note: Models with oil seals are of the same configuration.

· Cable Specifications for Encoder-end Connector (20-bit Encoder)



Receptacle: CM10-R10P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP10S-□-D (Angle)
CM10-SP10S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

· Cable Specifications for Servomotor-end Connector



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

Manufacturer: DDK Ltd.

With an Absolute Encoder

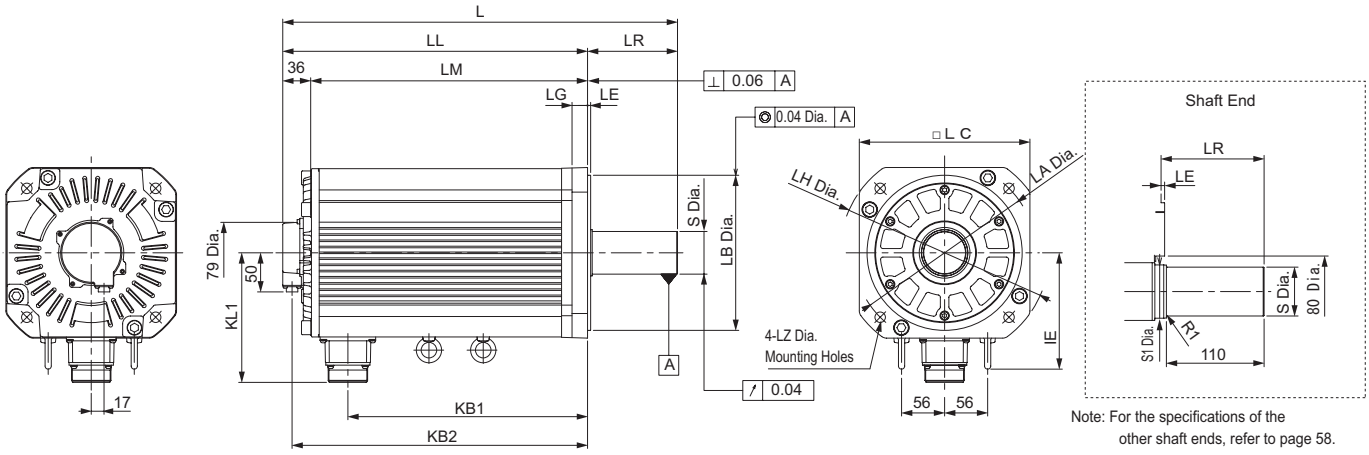
1	PS	6	BAT (+)
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	BAT (–)	10	FG (Frame ground)

With an Incremental Encoder

1	PS	6	–
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	–	10	FG (Frame ground)

External Dimensions Units: mm

(3) 11 kW, 15 kW

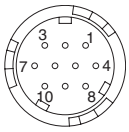


Note: For the specifications of the other shaft ends, refer to page 58.

Model SGMGV-	L	LL	LM	LR	KB1	KB2	IE	KL1	Flange Face Dimensions							Shaft End Dimensions		Approx. Mass kg
									LA	LB	LC	LE	LG	LH	LZ	S	S1	
1A□□A21	447	331	295	116	247	319	150	168	235	$200^{0}_{-0.046}$	220	4	20	270	13.5	$42^{0}_{-0.016}$	50	57
1E□□A21	509	393	357	116	309	381	150	168	235	$200^{0}_{-0.046}$	220	4	20	270	13.5	$55^{+0.030}_{+0.011}$	60	67

Note: Models with oil seals are of the same configuration.

· Cable Specifications for Encoder-end Connector (20-bit Encoder)



Receptacle: CM10-R10P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP10S-□-D (Angle)
CM10-SP10S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

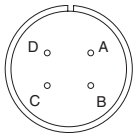
With an Absolute Encoder

1	PS	6	BAT (+)
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	BAT (–)	10	FG (Frame ground)

With an Incremental Encoder

1	PS	6	–
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	–	10	FG (Frame ground)

· Cable Specifications for Servomotor-end Connector



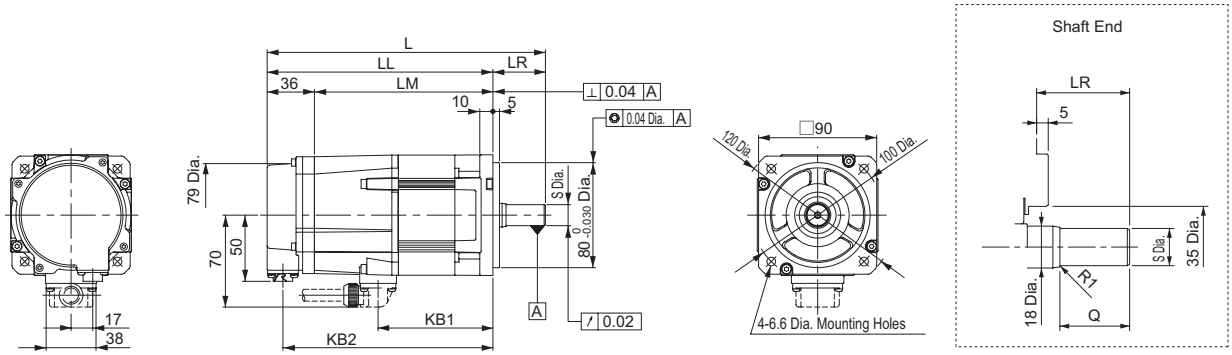
A	Phase U
B	Phase V
C	Phase W
D	FG (Frame ground)

Manufacturer: DDK Ltd.

External Dimensions Units: mm

●With Holding Brakes

(1) 300 W, 450 W

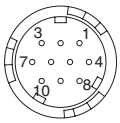


Note: For the specifications of the other shaft ends, refer to page 58.

Model SGMGV-	L	LL	LM	LR	KB1	KB2	Shaft End Dimensions		Approx. Mass
							S	Q	kg
03□□A2□	196	159	123	37	75	147	$14^{0}_{-0.011}$	25	3.6
05□□A2□	212	172	136	40	88	160	$16^{0}_{-0.011}$	30	4.2

Note: Models with oil seals are of the same configuration.

· Cable Specifications for Encoder-end Connector (20-bit Encoder)



Receptacle: CM10-R10P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP10S-□-D (Angle)
CM10-SP10S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

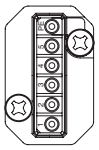
With an Absolute Encoder

1	PS	6	BAT (+)
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	BAT (–)	10	FG (Frame ground)

With an Incremental Encoder

1	PS	6	–
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	–	10	FG (Frame ground)

· Cable Specifications for Servomotor-end Connector

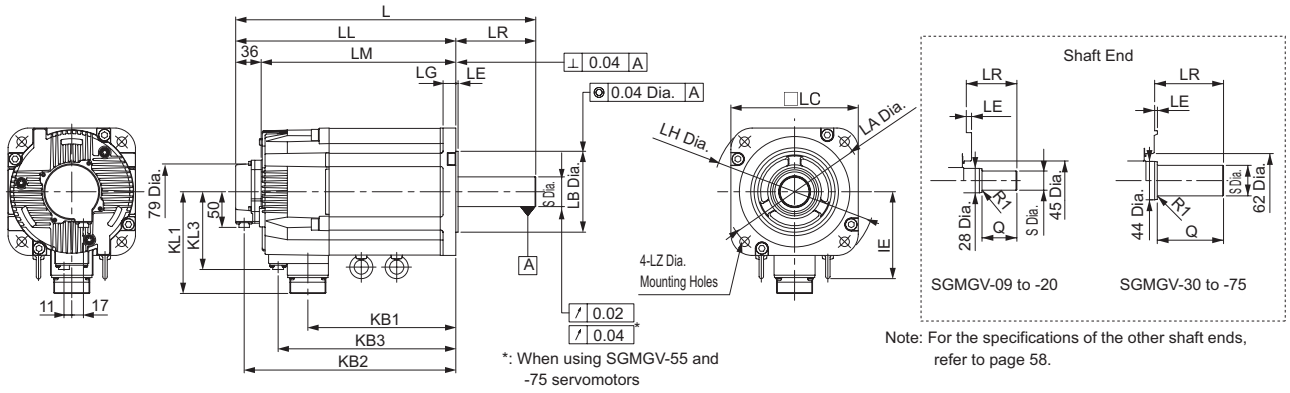


PE	FG (Frame ground)
5	Brake terminal
4	Brake terminal
3	Phase U
2	Phase V
1	Phase W

Manufacturer: Japan Aviation Electronics Industry,Ltd.

External Dimensions Units: mm

(2) 850 W to 7.5 kW



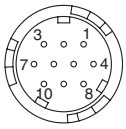
*: When using SGMGV-55 and -75 servomotors

Note: For the specifications of the other shaft ends, refer to page 58.

Model SGMGV-	L	LL	LM	LR	KB1	KB2	KB3	IE	KL1	KL3	Flange Face Dimensions							Shaft End Dimensions		Approx. Mass kg
											LA	LB	LC	LE	LG	LH	LZ	S	Q	
09□□A2□	231	173	137	58	83	161	115	–	104	80	145	$110^{0}_{-0.035}$	130	6	12	165	9	$19^{0}_{-0.013}$	40	7.5
13□□A2□	247	189	153	58	99	177	131	–	104	80	145	$110^{0}_{-0.035}$	130	6	12	165	9	$22^{0}_{-0.013}$	40	9.0
20□□A2□	265	207	171	58	117	195	149	–	104	80	145	$110^{0}_{-0.035}$	130	6	12	165	9	$24^{0}_{-0.013}$	40	11.0
30□□A2□	287	208	172	79	108	196	148	–	134	110	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$35^{+0.01}_{0}$	76	19.5
44□□A2□	311	232	196	79	132	220	172	–	134	110	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$35^{+0.01}_{0}$	76	23.5
55□□A2□	378	265	229	113	163	253	205	123	144	110	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$42^{0}_{-0.016}$	110	27.5
75□□A2□	424	311	275	113	209	299	251	123	144	110	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	$42^{0}_{-0.016}$	110	35

Note: Models with oil seals are of the same configuration.

· Cable Specifications for Encoder-end Connector
(20-bit Encoder)



Receptacle: CM10-R10P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP10S-□-D (Angle)
CM10-SP10S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

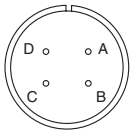
With an Absolute Encoder

1	PS	6	BAT (+)
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	BAT (–)	10	FG (Frame ground)

With an Incremental Encoder

1	PS	6	–
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	–	10	FG (Frame ground)

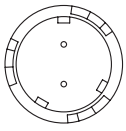
· Cable Specifications for Servomotor-end Connector



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

Manufacturer: DDK Ltd.

· Cable Specifications for Brake-end Connector



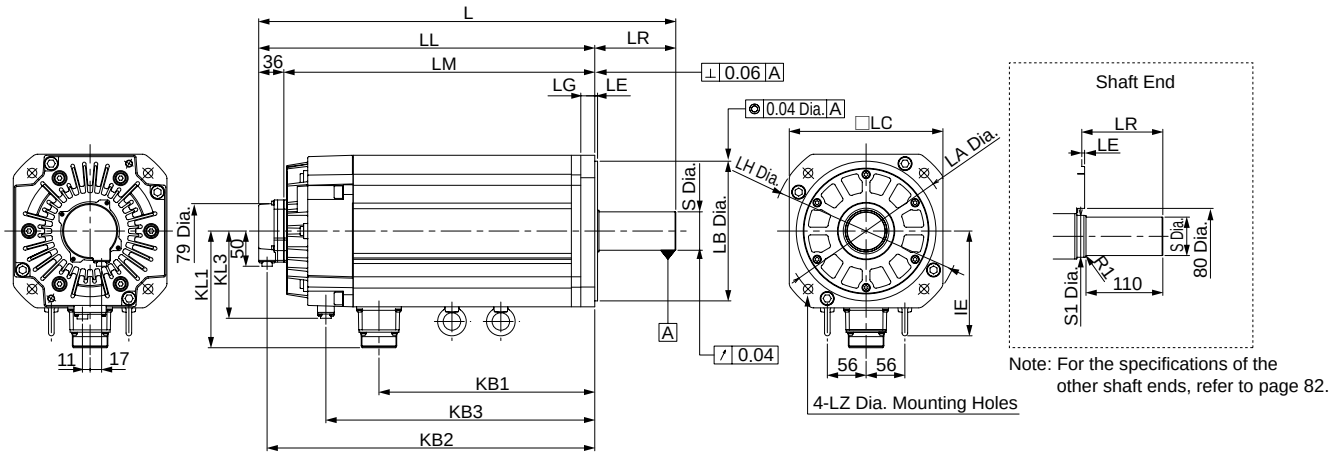
Receptacle: CM10-R2P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP2S-□-D (Angle)
CM10-SP2S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

Brake terminal
Brake terminal

Note: No polarity for connection to the brake terminals

External Dimensions Units: mm

(3) 11 kW, 15 kW

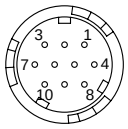


Note: For the specifications of the other shaft ends, refer to page 82.

Model SGMGV-	L	LL	LM	LR	KB1	KB2	KB3	IE	KL1	KL3	Flange Face Dimensions							Shaft End Dimensions		Approx. Mass
											LA	LB	LC	LE	LG	LH	LZ	S	S1	kg
1A□□A2□	498	382	346	116	247	370	315	150	168	125	235	$200^{0}_{-0.046}$	220	4	20	270	13.5	$42^{0}_{-0.016}$	50	65
1E□□A2□	598	482	446	116	309	470	385	150	168	125	235	$200^{0}_{-0.046}$	220	4	20	270	13.5	$55^{+0.030}_{+0.011}$	60	85

Note: Models with oil seals are of the same configuration.

· Cable Specifications for Encoder-end Connector (20-bit Encoder)



Receptacle: CM10-R10P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP10S-□-D (Angle)
CM10-SP10S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

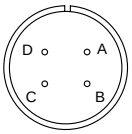
With an Absolute Encoder

1	PS	6	BAT (+)
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	BAT (–)	10	FG (Frame ground)

With an Incremental Encoder

1	PS	6	–
2	/PS	7	–
3	–	8	–
4	PG 5V	9	PG 0V
5	–	10	FG (Frame ground)

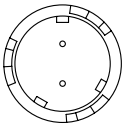
· Cable Specifications for Servomotor-end Connector



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

Manufacturer: DDK Ltd.

· Cable Specifications for Brake-end Connector



Receptacle: CM10-R2P-D
Applicable plug (To be provided by the customer)
Plug: CM10-AP2S-□-D (Angle)
CM10-SP2S-□-D (Straight)
(Boxes (□) indicate a value that varies, depending on cable size.)
Manufacturer: DDK Ltd.

Brake terminal
Brake terminal

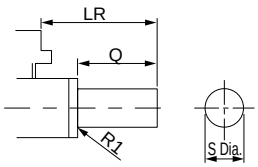
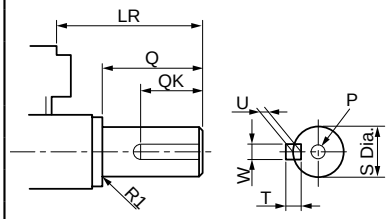
Note: No polarity for connection to the brake terminals

External Dimensions Units: mm

● Shaft End

SGMGV - □□□□□□□

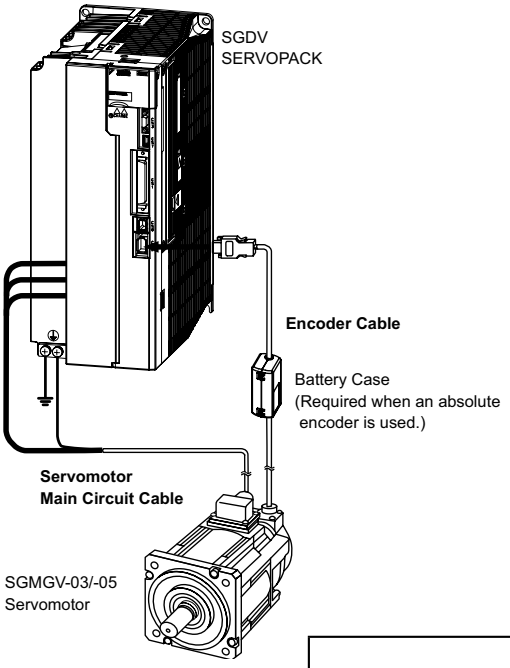
Code	Specifications	Remarks
2	Straight without key	Standard
6	Straight with key and tap for one location (Key slot is JIS B1301-1996 fastening type)	Optional

Shaft End		Model SGMGV-								
		03	05	09	13	20	30/44	55/75	1A	1E
Code: 2 (Straight without Key)										
	LR	37	40	58	58	58	79	113	116	116
	Q	25	30	40	40	40	76	110	110	110
	S	$14^{\ 0}_{-0.011}$	$16^{\ 0}_{-0.011}$	$19^{\ 0}_{-0.013}$	$22^{\ 0}_{-0.013}$	$24^{\ 0}_{-0.013}$	$35^{+0.01}_{\ 0}$	$42^{\ 0}_{-0.016}$	$42^{\ 0}_{-0.016}$	$55^{+0.030}_{+0.011}$
Code: 6 (Straight with Key and Tap)										
	LR	37	40	58	58	58	79	113	116	116
	Q	25	30	40	40	40	76	110	110	110
	QK	15	20	25	25	25	60	90	90	90
	S	$14^{\ 0}_{-0.011}$	$16^{\ 0}_{-0.011}$	$19^{\ 0}_{-0.013}$	$22^{\ 0}_{-0.013}$	$24^{\ 0}_{-0.013}$	$35^{+0.01}_{\ 0}$	$42^{\ 0}_{-0.016}$	$42^{\ 0}_{-0.016}$	$55^{+0.030}_{+0.011}$
	W	5	5	5	6	8	10	12	12	16
	T	5	5	5	6	7	8	8	8	10
	U	3	3	3	3.5	4	5	5	5	6
	P	M4 Screw, Depth 10	M5 Screw, Depth 12				M12 Screw, Depth 25	M16 Screw, Depth 32		M20 Screw, Depth 40

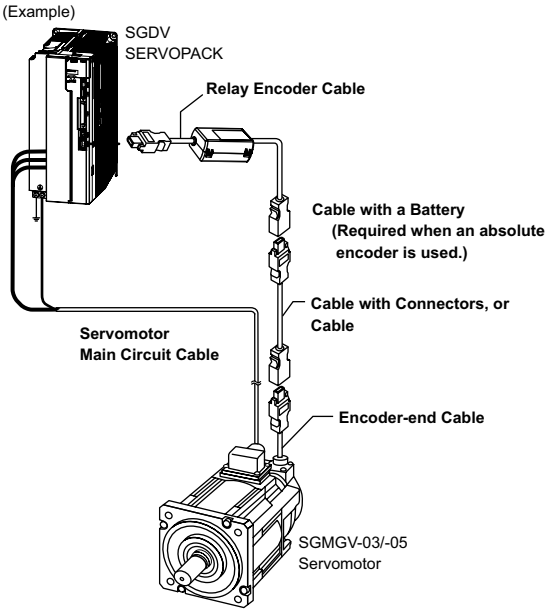
Selecting Main Circuit Cables (SGMGV-03 / -05)

●Cables Connections

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



●Encoder Cable Extension from 30 to 50 m



⚠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 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.

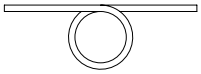
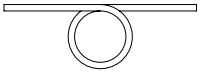
●Servomotor Main Circuit Cable (Applicable with 200V and 400V Power Supply Voltages)

Servomotor Rated Output	Name	Length	Order No. Standard (Flexible) Type*	Order No. Premium (Flex + Shield) Type	Specifications	Details
0.3 kW 0.45 kW	For Servomotor without Holding Brakes	3 m	JZSP-CVM21-03-E	YEA-CVM21-03(A)-E	SERVOPACK End — Servomotor End 50 mm, L Wire Markers M4 Crimped Terminals	(1)
		5 m	JZSP-CVM21-05-E	YEA-CVM21-05(A)-E		
		10 m	JZSP-CVM21-10-E	YEA-CVM21-10(A)-E		
		15 m	JZSP-CVM21-15-E	YEA-CVM21-15(A)-E		
		20 m	JZSP-CVM21-20-E	YEA-CVM21-20(A)-E		
		30 m	JZSP-CVM21-30-E	-		
		40 m	JZSP-CVM21-40-E	-		
		50 m	JZSP-CVM21-50-E	-		
	For Servomotor with Holding Brakes	3 m	JZSP-CVM41-03-E	YEA-CVM41-03(A)-E	SERVOPACK End — Servomotor End 50 mm, L Wire Markers M4 Crimped Terminals	(2)
		5 m	JZSP-CVM41-05-E	YEA-CVM41-05(A)-E		
		10 m	JZSP-CVM41-10-E	YEA-CVM41-10(A)-E		
		15 m	JZSP-CVM41-15-E	YEA-CVM41-15(A)-E		
		20 m	JZSP-CVM41-20-E	YEA-CVM41-20(A)-E		
		30 m	JZSP-CVM41-30-E	-		
		40 m	JZSP-CVM41-40-E	-		
		50 m	JZSP-CVM41-50-E	-		
	Servomotor-end Connector Kit	–	JZSP-CVM9-1-E	-	Crimping Type (A crimp tool is required.)	(3)

*: These flexible cables are provided as standard equipment.

(Cont'd)

Selecting Main Circuit Cables (SGMGV-03 / -05)

Servomotor Rated Output	Name		Length	Order No. Standard (Flexible) Type*	Specifications	Details
0.3 kW 0.45 kW	Cables	For Servomotor without Holding Brakes (4 wires)	5 m	JZSP-CVM29-05-E		(4)
			10 m	JZSP-CVM29-10-E		
			15 m	JZSP-CVM29-15-E		
			20 m	JZSP-CVM29-20-E		
			30 m	JZSP-CVM29-30-E		
			40 m	JZSP-CVM29-40-E		
			50 m	JZSP-CVM29-50-E		
		For Servomotor with Holding Brakes (6 wires)	5 m	JZSP-CVM49-05-E		(4)
			10 m	JZSP-CVM49-10-E		
			15 m	JZSP-CVM49-15-E		
			20 m	JZSP-CVM49-20-E		
			30 m	JZSP-CVM49-30-E		
			40 m	JZSP-CVM49-40-E		
			50 m	JZSP-CVM49-50-E		

(1) Wiring Specifications for Servomotors without Holding Brakes

Standard Type

SERVOPACK-end Leads / Servomotor-end Connector

Wire Color	Signal	Signal	Pin No.
Green/yellow	FG	FG	PE
Blue	Phase W	Phase W	1
White	Phase V	Phase V	2
Red	Phase U	Phase U	3
		–	4
		–	5

Premium Type

SERVOPACK-end Leads / Shield Wire / Servomotor-end Connector

Wire Color	Signal	Signal	Pin No.
Green	FG	FG	PE
Blue	Phase W	Phase W	1
White	Phase V	Phase V	2
Red	Phase U	Phase U	3
		–	4
		–	5

(2) Wiring Specifications for Servomotor with Holding Brakes

Standard Type

SERVOPACK-end Leads / Servomotor-end Connector

Wire Color	Signal	Signal	Pin No.
Green/yellow	FG	FG	PE
Blue	Phase W	Phase W	1
White	Phase V	Phase V	2
Red	Phase U	Phase U	3
Black	Brake	Brake	4
Black	Brake	Brake	5

Note: No polarity for connection to a holding brake

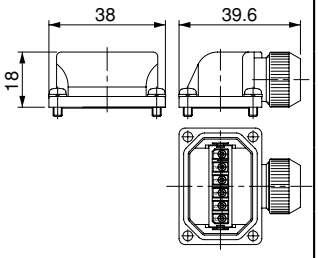
Premium Type

SERVOPACK-end Leads / Shield Wire / Servomotor-end Connector

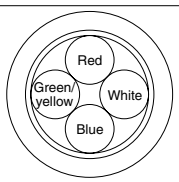
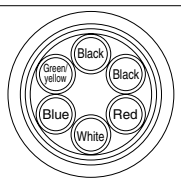
Wire Color	Signal	Signal	Pin No.
Green	FG	FG	PE
Blue	Phase W	Phase W	1
White	Phase V	Phase V	2
Red	Phase U	Phase U	3
Black	Brake	Brake	4
Black	Brake	Brake	5

Note: No polarity for connection to a holding brake

(3) Servomotor-end Connector Kit Specifications

Items		Specifications	External Dimensions mm
Order No.		JZSP-CVM9-1-E (Cables are not included.)	
Applicable Servomotors		SGMGV-03/-05	
Manufacturer		Japan Aviation Electronics Industry, Ltd.	
Plug		JNYFX06SJ3	
Electrical Contact		ST-TMH-S-C1B	
Applicable Wire Size		AWG18 to 22	
Outer Diameter of Insulating Sheath		1.3 dia. to 1.8 dia.	
Crimp Tool	Hand tool	CT160-3-TMH5B	
	Applicator	350-TMH5B-2B	
Mounting Screw		M3 Pan head screw	
Applicable Cable Outer Diameter		6.9 dia. to 8.3 dia.	

(4) Cable Specifications

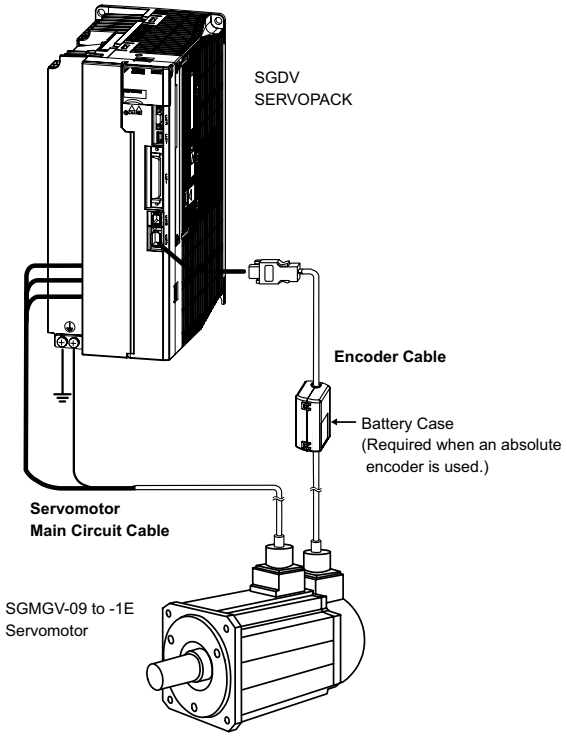
Items	For Servomotor without Holding Brakes (4 wires)	For Servomotor with Holding Brakes (6 wires)
Order No.*	JZSP-CVM29-□□-E	JZSP-CVM49-□□-E
Cable Length	50 m max.	
Specifications	UL2586 (Max. operating temperature: 105°C) AWG20×4C For power line: AWG20 (0.55 mm²) Outer diameter of insulating sheath: 1.77 dia.	UL2586 (Max. operating temperature: 105°C) AWG20×6C For power line: AWG20 (0.55 mm²) Outer diameter of insulating sheath: 1.77 dia. For holding brake line: AWG20 (0.55 mm²) Outer diameter of insulating sheath: 1.77 dia.
Finished Dimensions	7.3±0.3 dia.	7.4±0.3 dia.
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 [JZSP-CVM29-□□-05-E (5 m)]

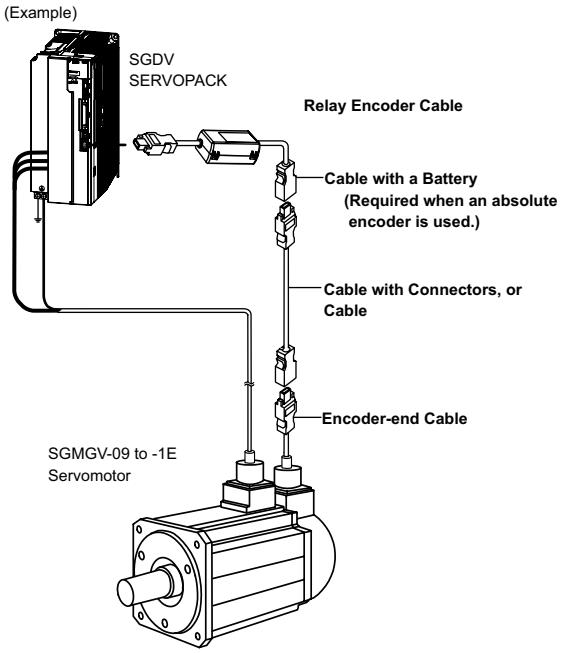
Selecting Main Circuit Cables (SGMGV-09 to -1E)

●Cables Connections

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



●Encoder Cable Extension from 30 to 50 m

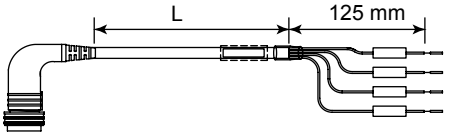
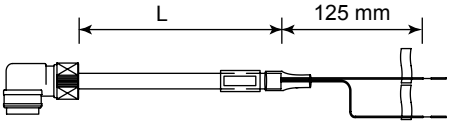
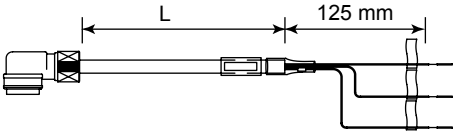


⚠CAUTION

- 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 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 Main Circuit Cables (SGMGV-09 to -1E)

●Servomotor Main Circuit Cables

Voltage	Servomotor Rated Output	Name	Length	Order No.		Specifications	Details
				Value Type	Premium Type *2		
200V	850W, 1.3kW	Servomotor Power Cable *1	3 m	B1EV-03(A)-E	B1EP-03(A)-E		(1)
			5 m	B1EV-05(A)-E	B1EP-05(A)-E		
			10 m	B1EV-10(A)-E	B1EP-10(A)-E		
			15 m	B1EV-15(A)-E	B1EP-15(A)-E		
			20 m	B1EV-20(A)-E	B1EP-20(A)-E		
	2.0kW		3 m	B2EV-03(A)-E	B2EP-03(A)-E		
			5 m	B2EV-05(A)-E	B2EP-05(A)-E		
			10 m	B2EV-10(A)-E	B2EP-10(A)-E		
			15 m	B2EV-15(A)-E	B2EP-15(A)-E		
			20 m	B2EV-20(A)-E	B2EP-20(A)-E		
	3.0 to 4.4kW		3 m	B4EV-03(A)-E	B4EP-03(A)-E		
			5 m	B4EV-05(A)-E	B4EP-05(A)-E		
			10 m	B4EV-10(A)-E	B4EP-10(A)-E		
			15 m	B4EV-15(A)-E	B4EP-15(A)-E		
			20 m	B4EV-20(A)-E	B4EP-20(A)-E		
	5.5 to 7.5kW		3 m	B6EV-03(A)-E	B6EP-03(A)-E		
			5 m	B6EV-05(A)-E	B6EP-05(A)-E		
			10 m	B6EV-10(A)-E	B6EP-10(A)-E		
			15 m	B6EV-15(A)-E	B6EP-15(A)-E		
			20 m	B6EV-20(A)-E	B6EP-20(A)-E		
	11 to 15kW		3 m	B7EV-03(A)-E	B7EP-03(A)-E		
			5 m	B7EV-05(A)-E	B7EP-05(A)-E		
			10 m	B7EV-10(A)-E	B7EP-10(A)-E		
			15 m	B7EV-15(A)-E	B7EP-15(A)-E		
			20 m	B7EV-20(A)-E	B7EP-20(A)-E		
400V	850W, 1.3kW, 2.0kW		3 m	B1EV-03(A)-E	B1EP-03(A)-E		
			5 m	B1EV-05(A)-E	B1EP-05(A)-E		
			10 m	B1EV-10(A)-E	B1EP-10(A)-E		
			15 m	B1EV-15(A)-E	B1EP-15(A)-E		
			20 m	B1EV-20(A)-E	B1EP-20(A)-E		
	3.0 to 4.4kW		3 m	B3EV-03(A)-E	B3EP-03(A)-E		
			5 m	B3EV-05(A)-E	B3EP-05(A)-E		
			10 m	B3EV-10(A)-E	B3EP-10(A)-E		
			15 m	B3EV-15(A)-E	B3EP-15(A)-E		
			20 m	B3EV-20(A)-E	B3EP-20(A)-E		
	5.5 to 7.5kW		3 m	B5EV-03(A)-E	B5EP-03(A)-E		
			5 m	B5EV-05(A)-E	B5EP-05(A)-E		
			10 m	B5EV-10(A)-E	B5EP-10(A)-E		
			15 m	B5EV-15(A)-E	B5EP-15(A)-E		
			20 m	B5EV-20(A)-E	B5EP-20(A)-E		
	11 to 15kW		3 m	B6EV-03(A)-E	B6EP-03(A)-E		
			5 m	B6EV-05(A)-E	B6EP-05(A)-E		
			10 m	B6EV-10(A)-E	B6EP-10(A)-E		
			15 m	B6EV-15(A)-E	B6EP-15(A)-E		
			20 m	B6EV-20(A)-E	B6EP-20(A)-E		
200V and 400V	850W to 15kW	Holding Brake Cable	3 m	BBEV-03(A)-E	-		(2)
			5 m	BBEV-05(A)-E	-		
			10 m	BBEV-10(A)-E	-		
			15 m	BBEV-15(A)-E	-		
			20 m	BBEV-20(A)-E	-		
	850W to 15kW		3 m	-	BBEP-03(A)-E		(3)
			5 m	-	BBEP-05(A)-E		
			10 m	-	BBEP-10(A)-E		
			15 m	-	BBEP-15(A)-E		
			20 m	-	BBEP-20(A)-E		

*1 Servomotors with holding brakes require a holding brake cable in addition to a power cable.

*2 Premium cables have a braided shield and are intended for use in applications that require CE. B1EP through B5EP have a continuous flex and are intended for use in movable sections such as robot arms.

Selecting Main Circuit Cables (SGMGV-09 to -1E)

(1) Wiring Specifications for Servomotors with and without Holding Brakes*

● Value Type

SERVOPACK-end Leads / Servomotor-end Connector

Wire Label	Signal	Signal	Pin No.
G	FG	FG	D
W	Phase W	Phase W	C
V	Phase V	Phase V	B
U	Phase U	Phase U	A

*For servomotors with holding brakes, the holding brake cable must also be wired.

● Premium Type

SERVOPACK-end Leads / Servomotor-end Connector

Wire Label	Signal	Signal	Pin No.
G	FG	FG	D
W	Phase W	Phase W	C
V	Phase V	Phase V	B
U	Phase U	Phase U	A

*For servomotors with holding brakes, the holding brake cable must also be wired.

(2) Wiring Specifications for the Value Type Brake Cable

SERVOPACK-end Leads / Servomotor-end Connector

Wire Color	Signal	Signal	Pin No.
Black	Brake	Brake	1
White	Brake	Brake	2

Note: No polarity for connection to a holding brake.

(3) Wiring Specifications for the Premium Type Brake Cable

SERVOPACK-end Leads / Servomotor-end Connector

Wire Color	Signal	Signal	Pin No.
Black	Brake	Brake	1
Blue	Brake	Brake	2
Green/Yellow	Shield		

Shield Wire

Note: No polarity for connection to a holding brake.

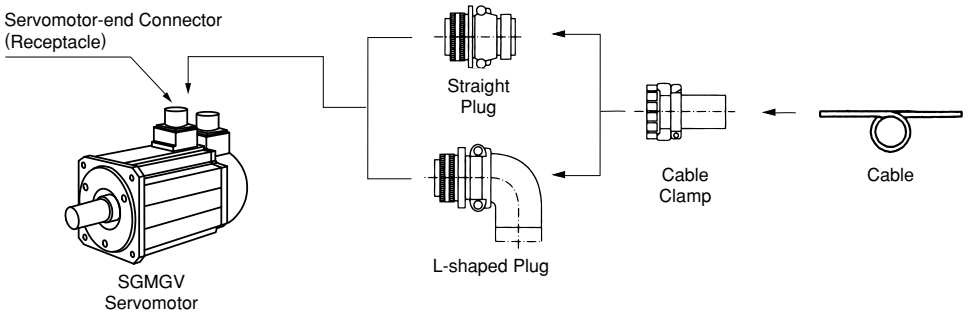
● Customer Cable Assembly

- Customers may assemble the servomotor's main circuit cables and attach connectors to connect the SERVOPACKs and the SGMGV servomotors.
- The connectors specified by Yaskawa are required. Note that the connectors vary depending on the operation environment of servomotors.
- Two types of connectors are available.
  - Standard connectors
  - Protective structure IP67 and European Safety Standards compliant connectors
- Yaskawa does not specify which cables to use. Use appropriate cables for the connectors.

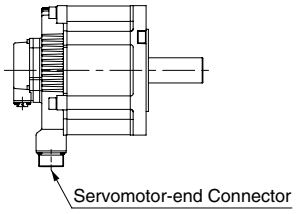
Selecting Main Circuit Cables (SGMGV-09 to -1E)

●Standard Connectors

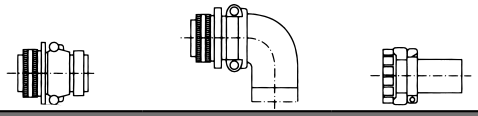
● Connector Configuration



(1) Without Holding Brakes



Servomotor-end Connector
For 0.85 to 15 kW

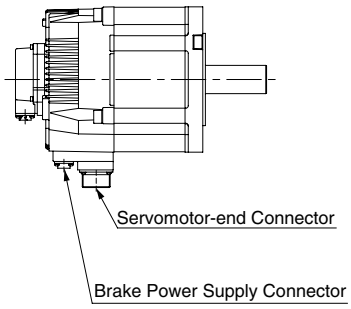


Capacity kW	Servomotor-end Connector (Receptacle)	Cable-end Connector (Not provided by Yaskawa)		
		Straight Plug	L-shaped Plug	Cable Clamp
0.85 1.3 1.8	MS3102A18-10P	MS3106B18-10S	MS3108B18-10S	MS3057-10A
2.9 4.4	MS3102A22-22P	MS3106B22-22S	MS3108B22-22S	MS3057-12A
5.5 to 15	MS3102A32-17P	MS3106B32-17S	MS3108B32-17S	MS3057-20A

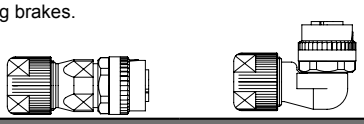
Note: Servomotor-end connectors (receptacles) are RoHS-compliant. Contact the respective connector manufacturers for RoHS-compliant cable-end connectors (not provided by Yaskawa).

(2) With Holding Brakes

0.85 to 15 kW servomotors require servomotor-end connector and brake power supply connector.
The servomotor-end connector is the same as is used for servomotors without holding brakes.



Brake Power Supply Connector
0.85 to 15 kW



Capacity kW	Servomotor-end Connector (Receptacle)	Cable-end Connector (Not provided by Yaskawa)		
		Straight Plug	L-shaped Plug	Manufacturer
0.85 to 15	CM10-R2P-D	CM10-SP2S-S-D Applicable Cable: 4.0 dia. to 6.0 dia.	CM10-AP2S-S-D Applicable Cable: 4.0 dia. to 6.0 dia.	DDK Ltd.
		CM10-SP2S-M-D Applicable Cable: 6.0 dia. to 9.0 dia.	CM10-AP2S-M-D Applicable Cable: 6.0 dia. to 9.0 dia.	
		CM10-SP2S-L-D Applicable Cable: 9.0 dia. to 11.6 dia.	CM10-AP2S-L-D Applicable Cable: 9.0 dia. to 11.6 dia.	

To order a brake power supply connector kit (0.85 to 15 kW) with the order no. below, contact your Yaskawa representative.

JZSP - CVB9 - S M S2 - E

- Connector Type
  - S: Straight plug
  - A: L-shaped plug
- Bush Size*1
  - S : Size S (4.0 dia. to 6.0 dia.)
  - M : Size M (6.0 dia. to 9.0 dia.)
  - L : Size L (9.0 dia. to 11.6 dia.)
- Contact Pin Size
  - S2: Soldered
  - C3: Crimping type*2

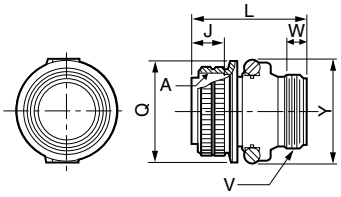
*1: A size-M connector kit is available as a standard equipment.
*2: A crimp tool (model: 357J-50448T) by DDK Ltd. is required.

Selecting Main Circuit Cables (SGMGV-09 to -1E) Units: mm

● Cable-end Connectors

(1) MS3106B□□-□□S :

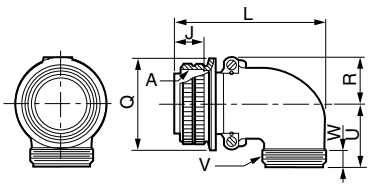
Straight Plug



Shell Size	Joint Screw A	Length of Joint Portion J±0.12	Overall Length L max.	Outer Diameter of Joint Nut $Q^{+0}_{-0.38}$	Cable Clamp Set Screw V	Effective Screw Length W min.	Maximum Width Y max.
18	1-1/8-18UNEF	18.26	52.37	34.13	1-20UNEF	9.53	42
22	1-3/8-18UNEF	18.26	55.57	40.48	1-3/16-18UNEF	9.53	50
32	2-18UNS	18.26	61.92	56.33	1-3/4-18UNS	11.13	66

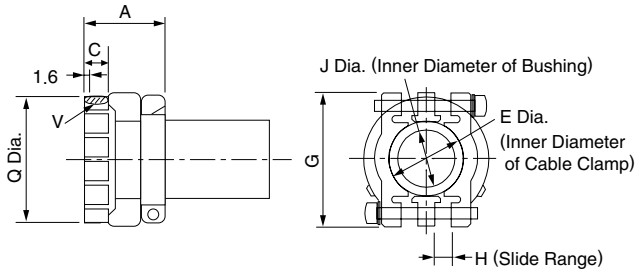
(2) MS3108B□□-□□S :

L-shaped Plug



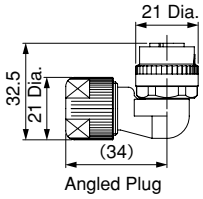
Shell Size	Joint Screw A	Length of Joint Portion J±0.12	Overall Length L max.	Outer Diameter of Joint Nut $Q^{+0}_{-0.38}$	R ±0.5	U ±0.5	Cable Clamp Set Screw V	Effective Screw Length W min.
18	1-1/8-18UNEF	18.26	68.27	34.13	20.5	30.2	1-20UNEF	9.53
22	1-3/8-18UNEF	18.26	76.98	40.48	24.1	33.3	1-3/16-18UNEF	9.53
32	2-18UNS	18.26	95.25	56.33	32.8	44.4	1-3/4-18UNS	11.13

(3) MS3057-□□A : Cable Clamp with Rubber Bushing

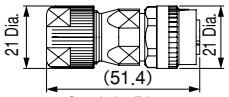


Cable Clamp Type	Applicable Connector Shell Size	Overall Length A±0.7	Effective Screw Length C	E Diameter	G±0.7	H	J Diameter	Set Screw V	Outer Diameter Q±0.7 Dia.	Attached Bushing
MS3057-10A	18	23.8	10.3	15.9	31.7	3.2	14.3	1-20UNEF	30.1	AN3420-10
MS3057-12A	20□22	23.8	10.3	19	37.3	4	15.9	1-3/16-18UNEF	35.0	AN3420-12
MS3057-20A	32	27.8	11.9	31.7	51.6	6.3	23.8	1-3/4-18UNS	51.6	AN3420-20

● Dimensional Drawings of Brake Power Supply



Angled Plug



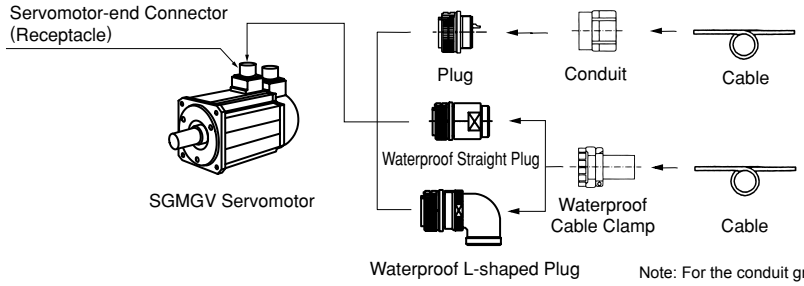
Straight Plug

Items	Specifications
Connector Order No.	CM10-□P2S-□-D (Cables are not included.)
Protective Structure	IP67
Manufacturer	DDK Ltd.
Instructions	Angled plug (CM10-AP2S-□-D): TC-573, Straight plug (CM10-SP2S-□-D): TC-583
Electrical Contact Order No.	Electrical contact (100 pcs in one bag) □Crimping type: CM10-#22SC(C3)-100, Wire size: AWG16 to 20, Outer diameter of sheath: 1.87 to 2.45 dia., Hand tool: 357J-50448T □Soldered type: CM10-#22SC (S2)-100, Wire size: AWG16 max. Real contact (4000 pcs on one reel) □Crimping type: CM10-#22SC(C3)-4000, Wire size: AWG 16 to 20, Outer diameter of sheath: 1.87 to 2.45 dia., Semi-automatic tool: AP-A50541T (product name for one set), AP-A50541T-1 (product name for applicator) Note: The product name of the semi-automatic tool refers to the product name of the press and applicator (crimper) as a set.

Selecting Main Circuit Cables (SGMGV-09 to -1E)

●Protective Structure IP67 and European Safety Standards Compliant Connector

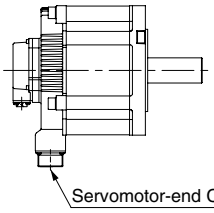
● Connector Configuration



Note: For the conduit grounding, contact the manufacturer of the conduit being used.

(1) Without Holding Brakes

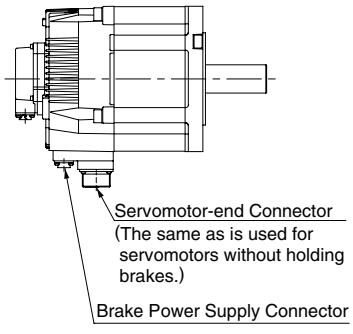
Servomotor-end Connector
For 0.85 to 15 kW



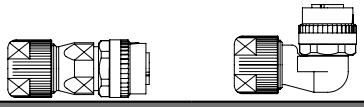
Capacity kW	Servomotor-end Connector (Receptacle)	Cable-end Connector (Not Provided by Yaskawa)				
		Straight Plug	L-shaped Plug	Cable Clamp	Applicable Cable Diameter (For Reference)	Manufacturer
0.85 1.3 1.8	CE05-2A18-10PD-D	CE05-6A18-10SD-D-BSS	CE05-8A18-10SD-D-BAS	CE3057-10A-1-D	10.5 dia. to 14.1 dia.	DDK Ltd.
				CE3057-10A-2-D	8.5 dia. to 11.0 dia.	
				CE3057-10A-3-D	6.5 dia. to 8.7 dia.	
2.9 4.4	CE05-2A22-22PD-D	CE05-6A22-22SD-D-BSS	CE05-8A22-22SD-D-BAS	CE3057-12A-1-D	12.5 dia. to 16.0 dia.	
				CE3057-12A-2-D	9.5 dia. to 13.0 dia.	
				CE3057-12A-3-D	6.8 dia. to 10.0 dia.	
				CE3057-12A-7-D	14.5 dia. to 17.0 dia.	
5.5 to 15	CE05-2A32-17PD-D	CE05-6A32-17SD-D-BSS	CE05-8A32-17SD-D-BAS	CE3057-20A-1-D	22 dia. to 23.8 dia.	
				CE3057-20A-2-D	24 dia. to 26.6 dia.	
				CE3057-20A-3-D	22 dia. to 22.5 dia.	

(2) With Holding Brakes

0.85 to 15 kW servomotors require servomotor-end connector and brake power supply connector.
The servomotor-end connector is the same as is used for servomotors without holding brakes.



Brake Power Supply Connector
0.85 to 15 kW



Capacity kW	Servomotor-end Connector (Receptacle)	Cable-end Connector (Not provided by Yaskawa)		
		Straight Plug	L-shaped Plug	Manufacturer
0.85	CM10-R2P-D	CM10-SP2S-S-D Applicable Cable: 4.0 dia. to 6.0 dia.	CM10-AP2S-S-D Applicable Cable: 4.0 dia. to 6.0 dia.	DDK Ltd.
to		CM10-SP2S-M-D Applicable Cable: 6.0 dia. to 9.0 dia.	CM10-AP2S-M-D Applicable Cable: 6.0 dia. to 9.0 dia.	
15		CM10-SP2S-L-D Applicable Cable: 9.0 dia. to 11.6 dia.	CM10-AP2S-L-D Applicable Cable: 9.0 dia. to 11.6 dia.	

To order a brake power supply connector kit (0.85 to 15 kW) with the order no. below, contact your Yaskawa representative.

JZSP - CVB9 - S M S2 - E

- Connector Type: S: Straight plug; A: L-shaped plug
- Bush Size*1: S : Size S (4.0 dia. to 6.0 dia.); M : Size M (6.0 dia. to 9.0 dia.); L : Size L (9.0 dia. to 11.6 dia.)
- Contact Pin Size: S2: Soldered; C3: Crimping type*2

*1: A size-M connector kit is available as a standard equipment.
*2: A crimp tool (model: 357J-50448T) by DDK Ltd. is required.

Selecting Encoder Cables

●Encoder Cables (Max. length: 20 m)

■ Non-Stock Items

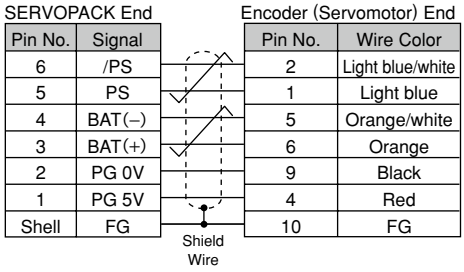
Name	Length (L)	Order No. Standard Type	Order No. Flexible Type*	Specifications	Details
Encoder Cable with Connectors (For Incremental Encoder)	3 m	JZSP-CVP01-03-E	JZSP-CVP11-03-E	SERVOPACK End — L — Encoder End Connector (Crimped) (Molex Japan Co., Ltd.) — CM10-SP10S-□-D (DDK Ltd.)	(1)
	5 m	JZSP-CVP01-05-E	JZSP-CVP11-05-E		
	10 m	JZSP-CVP01-10-E	JZSP-CVP11-10-E		
	15 m	JZSP-CVP01-15-E	JZSP-CVP11-15-E		
	20 m	JZSP-CVP01-20-E	JZSP-CVP11-20-E		
	3 m	JZSP-CVP02-03-E	JZSP-CVP12-03-E	SERVOPACK End — L — Encoder End Connector (Crimped) (Molex Japan Co., Ltd.) — CM10-AP10S-□-D (DDK Ltd.)	
	5 m	JZSP-CVP02-05-E	JZSP-CVP12-05-E		
	10 m	JZSP-CVP02-10-E	JZSP-CVP12-10-E		
	15 m	JZSP-CVP02-15-E	JZSP-CVP12-15-E		
	20 m	JZSP-CVP02-20-E	JZSP-CVP12-20-E		
Encoder Cable with Connectors (For Absolute Encoder, with a Battery Case)	3 m	JZSP-CVP06-03-E	JZSP-CVP26-03-E	SERVOPACK End — L — Encoder End Battery Case (Battery Attached) Connector (Crimped)(Molex Japan Co., Ltd.) — CM10-SP10S-□-D (DDK Ltd.)	(2)
	5 m	JZSP-CVP06-05-E	JZSP-CVP26-05-E		
	10 m	JZSP-CVP06-10-E	JZSP-CVP26-10-E		
	15 m	JZSP-CVP06-15-E	JZSP-CVP26-15-E		
	20 m	JZSP-CVP06-20-E	JZSP-CVP26-20-E		
	3 m	JZSP-CVP07-03-E	JZSP-CVP27-03-E	SERVOPACK End — L — Encoder End Battery Case (Battery Attached) Connector (Crimped)(Molex Japan Co., Ltd.) — CM10-AP10S-□-D (DDK Ltd.)	
	5 m	JZSP-CVP07-05-E	JZSP-CVP27-05-E		
	10 m	JZSP-CVP07-10-E	JZSP-CVP27-10-E		
	15 m	JZSP-CVP07-15-E	JZSP-CVP27-15-E		
	20 m	JZSP-CVP07-20-E	JZSP-CVP27-20-E		
SERVOPACK-end Connector Kit		JZSP-CMP9-1-E		Soldered (Molex Japan Co., Ltd.)	(3)
Encoder-end Connectors for Protective Structure IP67 Straight Plug		JZSP-CVP9-1-E		Connector Specifications: Plug: CM10-SP10S-M-D; Electrical Contact: (Crimped)** CM10-#22SC(C4)-100; Applicable Cable Diameter: 6.0 dia. to 9.0 dia.	Straight plug + Electrical Contact (DDK Ltd.)	-
		JZSP-CVP9-3-E		Connector Specifications: Plug: CM10-SP10S-M-D; Electrical Contact: (Soldered) CM10-#22SC(S1)-100; Applicable Cable Diameter: 6.0 dia. to 9.0 dia		
Encoder-end Connectors for Protective Structure IP67 L-shaped Plug		JZSP-CVP9-2-E		Connector Specifications: Plug: CM10-AP10S-M-D; Electrical Contact: (Crimped)** CM10-#22SC(C4)-100; Applicable Cable Diameter: 6.0 dia. to 9.0 dia.	L-shaped plug + Electrical Contact (DDK Ltd.)	-
		JZSP-CVP9-4-E		Connector Specifications: Plug: CM10-AP10S-M-D; Electrical Contact: (Soldered) CM10-#22SC(S1)-100; Applicable Cable Diameter: 6.0 dia. to 9.0 dia		
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			

* Use flexible cables for movable sections such as robot arms.
** A crimp tool (357J-52667T) is required

Selecting Encoder Cables

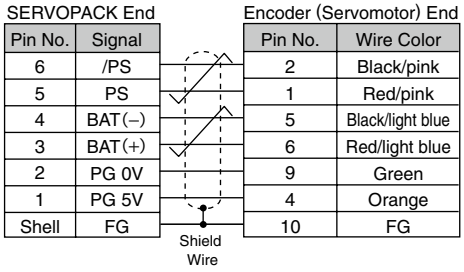
(1) Wiring Specifications for Cable with Connectors (For incremental encoder)

· Standard Type



SERVOPACK End			Encoder (Servomotor) End	
Pin No.	Signal		Pin No.	Wire Color
6	/PS		2	Light blue/white
5	PS		1	Light blue
4	BAT(–)		5	Orange/white
3	BAT(+)		6	Orange
2	PG 0V		9	Black
1	PG 5V		4	Red
Shell	FG	Shield Wire	10	FG

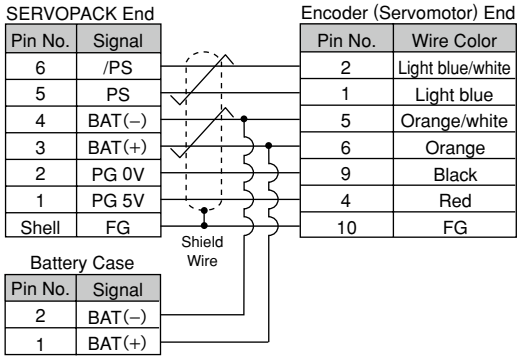
· Flexible Type



SERVOPACK End			Encoder (Servomotor) End	
Pin No.	Signal		Pin No.	Wire Color
6	/PS		2	Black/pink
5	PS		1	Red/pink
4	BAT(–)		5	Black/light blue
3	BAT(+)		6	Red/light blue
2	PG 0V		9	Green
1	PG 5V		4	Orange
Shell	FG	Shield Wire	10	FG

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

· Standard Type

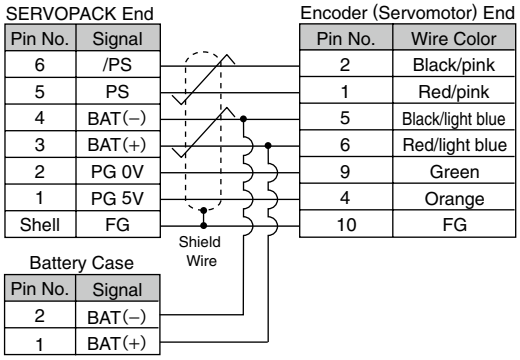


SERVOPACK End			Encoder (Servomotor) End	
Pin No.	Signal		Pin No.	Wire Color
6	/PS		2	Light blue/white
5	PS		1	Light blue
4	BAT(–)		5	Orange/white
3	BAT(+)		6	Orange
2	PG 0V		9	Black
1	PG 5V		4	Red
Shell	FG	Shield Wire	10	FG

Battery Case

Pin No.	Signal
2	BAT(–)
1	BAT(+)

· Flexible Type

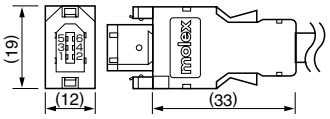


SERVOPACK End			Encoder (Servomotor) End	
Pin No.	Signal		Pin No.	Wire Color
6	/PS		2	Black/pink
5	PS		1	Red/pink
4	BAT(–)		5	Black/light blue
3	BAT(+)		6	Red/light blue
2	PG 0V		9	Green
1	PG 5V		4	Orange
Shell	FG	Shield Wire	10	FG

Battery Case

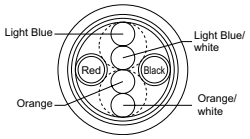
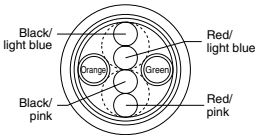
Pin No.	Signal
2	BAT(–)
1	BAT(+)

(3) SERVOPACK-end Connector Kit Specifications

Items	Specifications
Order No.	JZSP-CMP9-1-E
Manufacturer	Molex Japan Co., Ltd.
Connector Model (For standard)	55100-0670 (soldered)
External Dimensions (Units: mm)	

Note: The mating connector model on SERVOPACK: 54280-800
The mating connector model on servomotor: 55102-0600

(4) Cable Specifications

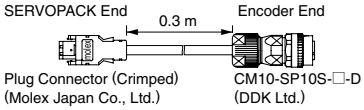
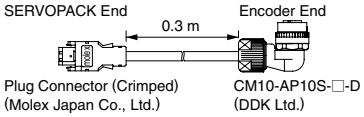
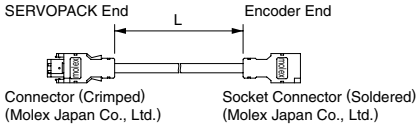
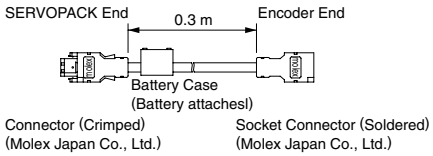
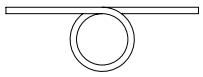
Items	Standard Type	Flexible Type
Order No.*	JZSP-CMP09-□□-E	JZSP-CSP39-□□-E
Cable Length	20 m max.	
Specifications	UL20276 (Max. operating temperature: 80˚C) AWG22×2C + AWG24×2P AWG22 (0.33 mm^2) Outer diameter of insulating sheath: 1.15 dia. AWG24 (0.20 mm^2) Outer diameter of insulating sheath: 1.09 dia.	UL20276 (Max. operating temperature: 80˚C) AWG22×2C + AWG24×2P AWG22 (0.33 mm^2) Outer diameter of insulating sheath: 1.35 dia. AWG24 (0.20 mm^2) Outer diameter of insulating sheath: 1.21 dia.
Finished Dimensions	6.5 dia.	6.8 dia.
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 Encoder Cables

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

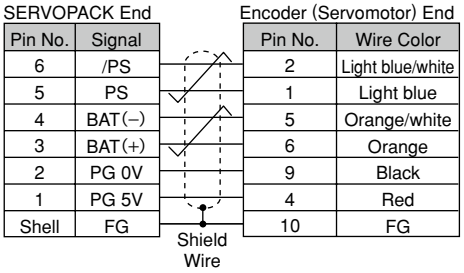
Limited Stock Items

Name	Length	Order No.	Specifications	Datails
① Encoder-end Cables (For incremental and absolute encoder)	0.3 m	JZSP-CVP01-E		(1)
		JZSP-CVP02-E		
② Cable 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		
③ Cable with a Battery Case (Required when an absolute encoder is used.)	0.3 m	JZSP-CSP12-E*		(3)
④ Cables	30 m	JZSP-CMP19-30-E		(4)
	40 m	JZSP-CMP19-40-E		
	50 m	JZSP-CMP19-50-E		

*: When using an incremental encoder or using an absolute encoder with a battery connected to the host controller, no battery case is required.

Selecting Encoder Cables

(1) Wiring Specifications for Encoder-end Cable
(For incremental and absolute encoder)

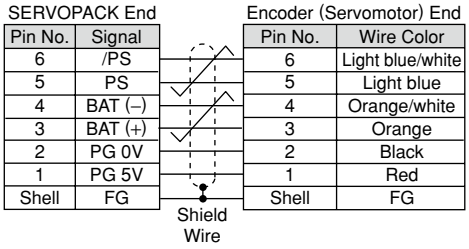


Pin No.	Signal
6	/PS
5	PS
4	BAT(–)
3	BAT(+)
2	PG 0V
1	PG 5V
Shell	FG

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

Note: The signals BAT(+) and BAT(–) are used when using an absolute encoder.

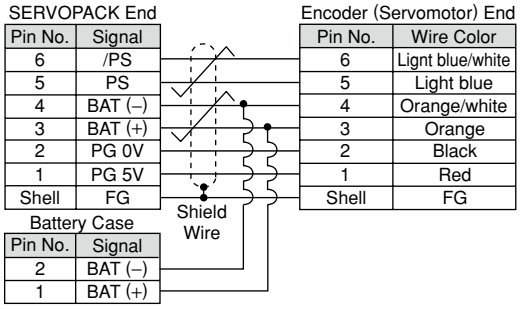
(2) Wiring Specifications for Cable with Connectors
(For incremental and absolute encoder)



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

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
(For absolute encoder)

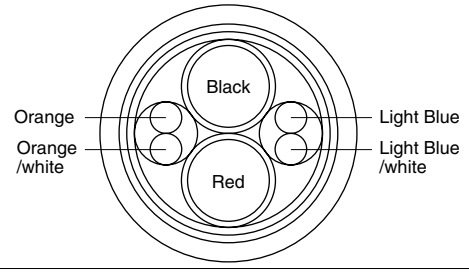


Pin No.	Signal
6	/PS
5	PS
4	BAT (–)
3	BAT (+)
2	PG 0V
1	PG 5V
Shell	FG

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

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 (Max. operating temperature: 80˚C) AWG16×2C+AWG26×2P AWG16 (1.31 mm²) Outer diameter of insulating sheath: 2.0 dia. AWG26 (0.13 mm²) Outer diameter of insulating sheath: 0.91 dia.
Finished Dimensions	6.8 dia.
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)