# **Linear Servomotors**

# **SGLGW**

(Coreless Type)



# Model Designations

# Moving Coil

S G L Linear  $\Sigma$  Series

G

W digit digit

30

3rd+4th digits

digit

Α

8th digits

050

digit

C

digit

P

1st digit Servomotor Type

Linear Servomotor

Code	Specifications
G	Coreless

2nd digit Moving Coil/ Magnetic Way Moving Coil

3rd+4th digits Magnet Height

5th digit Voltage

Code	Specifications
Α	200 VAC

6th+7th+8th digits Length of Moving Coil

9th digit Design Revision Order A, B, C...

10th digit Hall Sensor/Cooling Method

Code	Specifications	Applicable Model
Р	With hall sensor	All models
С	Forced cooling	SGLGW
Н	With hall sensor and forced cooling	-40A, -60A, -90A
Blank	Without hall sensor	All models

11th digit Connector for Main Circuit Cable

Code	Specifications	Applicable Model
Blank	Connector by Tyco Electronics AMP K.K.	All models
D	Connector by Interconnectron GmbH	SGLGW -30A,-40A,-60A

All models

SGLGM-40, -60

# Magnetic Way

S G

G

M

30

108

Α

**Options** 

standard

High force

Linear  $\Sigma$  Series Linear Servomotor 1st digit

digits

7th digits

Blank

1st digit Servomotor Type (Same as that of the moving coil)

2nd digit Moving Coil/ Magnetic Way

Magnetic Way М

3rd+4th digits Magnet Height

5th+6th+7th digits Length of Magnetic Way

8th digit Design Revision Order

A, B, C\*...

T.

• •
*: The coreless linear servomotor has revision CT
C = without mounting holes on the bottom
CT = with mounting holes on the bottom

# **Features**

- Direct-feed mechanism for high-speed and high-precision positioning.
- Lack of magnetic attraction force helps extend the life of linear motion guides and minimizes noise.
- Zero cogging for minimal force ripple.

# **Application Examples**

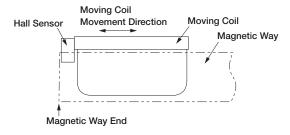
- Feeders and loaders
- Semiconductor equipment
- LCD manufacturing equipment

# Precautions on Moving Coil with Hall Sensor

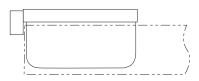
When using a moving coil with a hall sensor, the magnetic way must completely cover the bottom of the hall sensor. Refer to the example showing the correct installation.

When determining the length of the moving coil's stroke or the length of the magnetic way, consider the total length of the moving coil and the hall sensor unit. Refer to the following table.

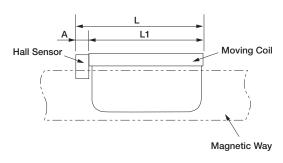
## <Correct>



#### <Incorrect>



The total length of moving coil with hall sensor



Moving Coil Model	Length of Moving Coil	Length of Hall Sensor Unit	Total Length
SGLGW-	L1 (mm)	A (mm)	L (mm)
30A050□P□	50	0	50
30A080□P□	80	(Included in the length of moving coil)	80
40A140□P□	140		156
40A253□P□	252.5	16	268.5
40A365□P□	365		381
60A140□P□	140		156
60A253□P□	252.5	16	268.5
60A365□P□	365		381
90A200□P□	199	0	199
90A370□P□	367	(Included in the length of	367
90A535□P□	535	moving coil)	535

# **Ratings and Specifications**

Time Rating: Continuous

Insulation Resistance: 500 VDC, 10  $\mbox{M}\Omega$  min.

Ambient Temperature: 0 to 40°C Excitation: Permanent magnet

Withstand Voltage: 1500 VAC for one minute

Enclosure: Self-cooled, air-cooling (Only self-cooled type available for SGLGW-30A linear servomotor)

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

Allowable Winding Temperature: 130°C (Thermal class B)

# With Standard-force Magnetic Ways

Linear Servomotor		30	)A	40A				60A			90A	
Model SGLGW-		050C	080C	140C	253C	365C	140C	253C	365C	200C	370C	535C
Peak Speed*	m/s	5	5	5	5	5	4.8	4.8	4.8	4	4	4
Rated Force*	N	12.5	25	47	93	140	70	140	210	325	550	750
Rated Current	Arms	0.51	0.79	0.8	1.6	2.4	1.2	2.2	3.3	4.4	7.5	10.2
Peak Force*	N	40	80	140	280	420	220	440	660	1300	2200	3000
Peak Current*	Arms	1.62	2.53	2.4	4.9	7.3	3.5	7.0	10.5	17.6	30.0	40.8
Moving Coil Mass	kg	0.10	0.15	0.34	0.60	0.87	0.42	0.76	1.10	2.15	3.6	4.9
Force Constant	N/Arms	26.4	33.9	61.5	61.5	61.5	66.6	66.6	66.6	78.0	78.0	78.0
BEMF Constant	V/(m/s)	8.8	11.3	20.5	20.5	20.5	22.2	22.2	22.2	26.0	26.0	26.0
Motor Constant	N/√W	3.7	5.6	7.8	11.0	13.5	11.1	15.7	19.2	26.0	36.8	45.0
Electrical Time Constant	ms	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	1.4	1.4	1.4
Mechanical Time Constant	ms	7.30	4.78	5.59	4.96	4.77	3.41	3.08	2.98	3.18	2.66	2.42
Thermal Resistance (With heat sink)	K/W	5.19	3.11	1.67	0.87	0.58	1.56	0.77	0.51	0.39	0.26	0.22
Thermal Resistance (Without heat sink)	K/W	8.13	6.32	3.02	1.80	1.23	2.59	1.48	1.15	1.09	0.63	0.47
Magnetic Attraction	N	0	0	0	0	0	0	0	0	0	0	0
Applicable SERVOPACK	SGDV-	R70A	R90A	R90A	1R6A	2R8A	1R6A	2R8A	5R5A	120A	180A	200A

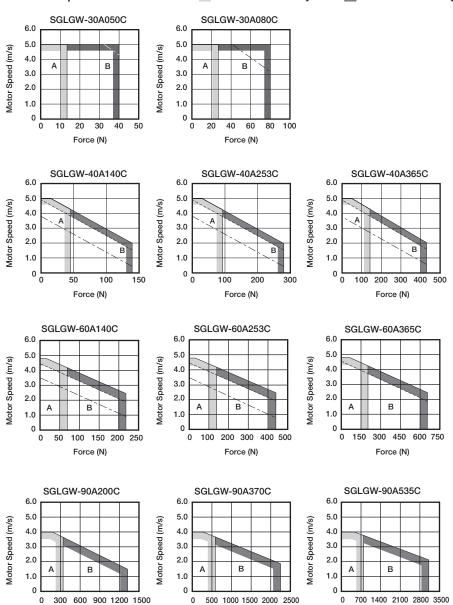
Notes: 1 The items marked with an \* and Force and Speed Characteristics (the table on the next page) are the values at a motor winding temperature of 100°C during operation in combination with a SERVOPACK. The others are at 20°C.

300 mm × 400 mm × 12 mm : SGLGW-40A253C, -60A253C 400 mm × 500 mm × 12 mm : SGLGW-40A365C, -60A365C

800 mm × 900 mm × 12 mm : SGLGW-90A200C, -90A370C, -90A535C

<sup>2</sup> The above specifications show the values under the cooling condition when a heat sink (aluminum board) listed in the following table is mounted on the moving coil.

• Force and Speed Characteristics A: Continuous Duty Zone B: Intermittent Duty Zone



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

The solid line: With a three-phase 200 V SERVOPACK

Force (N)

- The dotted line: With a single-phase 200 V SERVOPACK
- The dashed-dotted line: With a single-phase 100 V SERVOPACK

SGLGW-30A050C and SGLGW-30A080C servomotors combined with single-phase 200 V SERVOPACKs have the same characteristics as those combined with three-phase ones.

Force (N)

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

Force (N)

# **Ratings and Specifications**

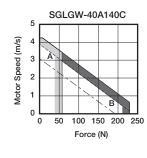
#### With High-force Magnetic Ways

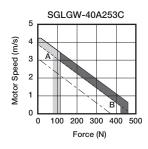
Linear Servomotor		40A			60A			
Model SGLGW-		140C	253C	365C	140C	253C	365C	
Peak Speed*	m/s	4.2	4.2	4.2	4.2	4.2	4.2	
Rated Force*	N	57	114	171	85	170	255	
Rated Current	Arms	0.8	1.6	2.4	1.2	2.2	3.3	
Peak Force*	N	230	460	690	360	720	1080	
Peak Current	Arms	3.2	6.5	9.7	5.0	10.0	14.9	
Moving Coil Mass	kg	0.34	0.60	0.87	0.42	0.76	1.10	
Force Constant	N/Arms	76.0	76.0	76.0	77.4	77.4	77.4	
BEMF Constant	V/(m/s)	25.3	25.3	25.3	25.8	25.8	25.8	
Motor Constant	N/√W	9.6	13.6	16.7	12.9	18.2	22.3	
Electrical Time Constant	ms	0.4	0.4	0.4	0.5	0.5	0.5	
Mechanical Time Constant	ms	3.69	3.24	3.12	2.52	2.29	2.21	
Thermal Resistance (With heat sink)	K/W	1.67	0.87	0.58	1.56	0.77	0.51	
Thermal Resistance (Without heat sink)	K/W	3.02	1.80	1.23	2.59	1.48	1.15	
Magnetic Attraction	N	0	0	0	0	0	0	
Applicable SERVOPACK	SGDV-	1R6A	2R8A	3R8A	1R6A	3R8A	7R6A	

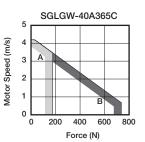
Notes: 1 The items marked with an \* and Force and Speed Characteristics (the table on the next page) are the values at a motor winding temperature of 100°C during operation in combination with a SERVOPACK. The others are at 20°C.

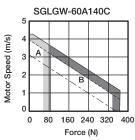
2 The above specifications show the values under the cooling condition when a heat sink (aluminum board) listed in the following table is mounted on the moving coil.

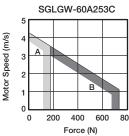
#### ● Force and Speed Characteristics A: Continuous Duty Zone B: Intermittent Duty Zone

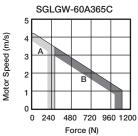












Notes: 1 The characteristics of the intermittent duty zone differ depending on the supply voltages. The solid, dotted, and dashed-dotted lines of the intermittent duty zone indicate the characteristics when a servomotor runs with the following combinations:

- The solid line: With a three-phase 200 V 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 force is within the rated force, the servomotor can be used within the intermittent duty zone.

#### Mechanical Specifications

- (1) Impact Resistance
  - Impact acceleration: 196 m/s²
     Impact occurrences: twice
- (2) Vibration Resistance

The linear servomotors will withstand the following vibration acceleration in three directions: Vertical, side to side, and front to back.

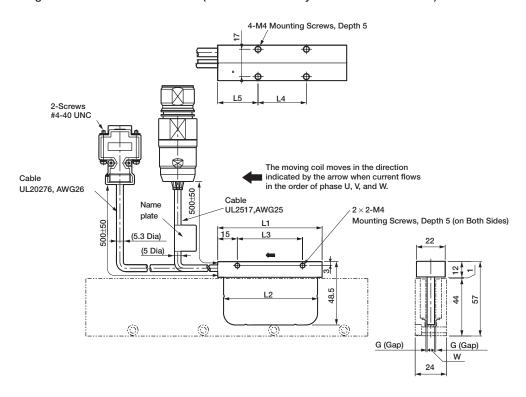
· Vibration acceleration: 49 m/s²

**SGLGW** (Coreless Type)

# External Dimensions Units: mm

#### (1) SGLGW-30

● Moving Coil: SGLGW-30A□□□C□D (With a connector by Interconnectron GmbH)



	Moving Coil Model SGLGW-	L1	L2	L3	L4	L5	W	G (Gap)	Approx. Mass* kg
	30A050C□D	50	48	30	20	20	5.9	0.85	0.14
Ì	30A080C□D	80	72	50	30	25	5.7	0.95	0.19

<sup>\*:</sup> The values indicate the mass of moving coil with a hall sensor unit.



Pin Connector : 17JE-23090-02 (D8C)

The Mating Connector Socket Connector: 17JE-13090-02 (D8C) Stud: 17L-002C or 17L-002C1

#### 9 1 +5V (Power supply) 2 Phase U 3 Phase V 4 Phase W 5 0V (Power supply) by DDK Ltd. 6 Not used 7 Not used

8

9

Not used

Not used

### Linear Servomotor

Connector Specifications

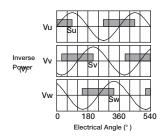


Extension: SROC06.IMSCN169 : 021.423.1020 Pin by Interconnectron GmbH

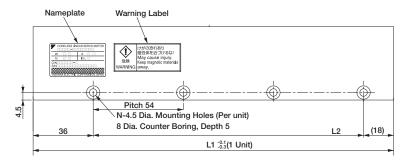
The Mating Connector : SPUC06KFSDN236 Plug Socket: 020.030.1020

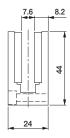
Pin No.	Signal	Wire Color		
1	Phase U	Red		
2	Phase V	White		
3	Phase W	Blue		
4	Not used	-		
5	Not used	-		
6	FG	Green		

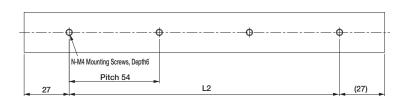
Hall Sensor Output Signals When the moving coil moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.



# ■ Magnetic Way: SGLGM-30□□□A





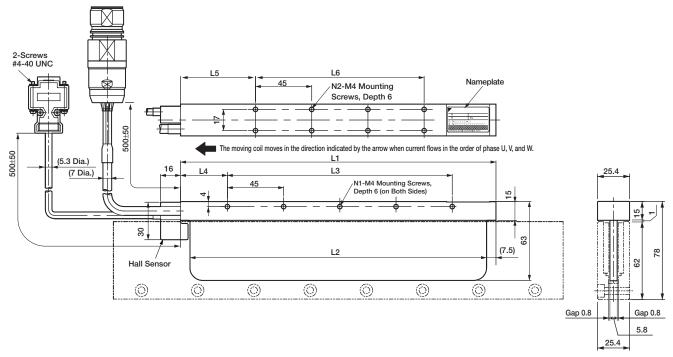


Magnetic Way Model SGLGM-	L1	L2	N	Approx. Mass kg
30108A	108	54	2	0.6
30216A	216	162	4	1.1
30432A	432	378	8	2.3

Note: If you have a pacemaker or any other electronic medical device, do not go near the magnetic way of the linear servomotor.

#### (2) SGLGW-40

● Moving Coil: SGLGW-40A□□□C□D (With a connector by Interconnectron GmbH)



Moving Coil Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass* kg
40A140C□D	140	125	90	30	52.5	45	3	4	0.40
40A253C□D	252.5	237.5	180	37.5	60	135	5	8	0.66
40A365C□D	365	350	315	30	52.5	270	8	14	0.93

<sup>\*:</sup> The values indicate the mass of moving coil with a hall sensor unit.

Hall Sensor Connector Specifications



Pin Connector: 17JE-23090-02 (D8C) by DDK Ltd.

The Mating Connector Socket Connector : 17JE-13090-02 (D8C) Stud : 17L-002C or 17L-002C1

Pin No.	Signal
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Linear Servomotor

Connector Specifications

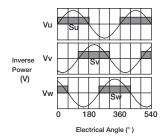


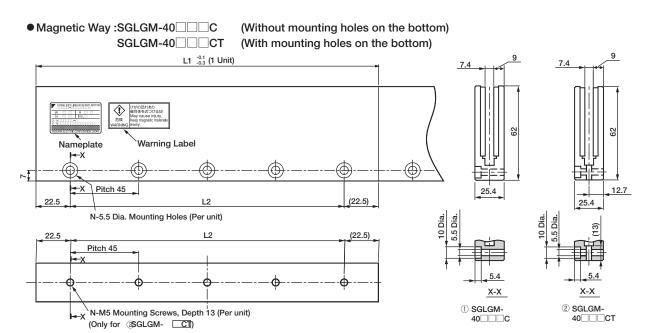
Extension: SROC06JMSCN169 : 021.423.1020 Pin by Interconnectron GmbH

The Mating Connector Plug : SPUC06KFSDN236 Socket: 020.030.1020

Pin No.	Signal	Wire Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	-
5	Not used	-
6	FG	Green

Hall Sensor Output Signals When the moving coil moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below

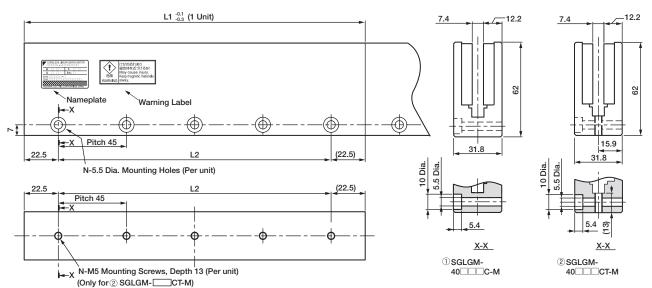




Туре	Standard-force Magnetic Way Model SGLGM-	L1	L2	N	Approx. Mass kg
Standard Force	40090C or 40090CT	90	45	2	0.8
	40225C or 40225CT	225	180	5	2.0
	40360C or 40360CT	360	315	8	3.1
	40405C or 40405CT	405	360	9	3.5
	40450C or 40450CT	450	405	10	3.9

Note: If you have a pacemaker or any other electronic medical device, do not go near the magnetic way of the linear servomotor.

● High-force Magnetic Way : SGLGM-40 □ □ C-M (Without mounting holes on the bottom) SGLGM-40 □ □ CT-M (With mounting holes on the bottom)



40090C-M or 40090CT-M 90 45 2 1.0 40225C-M or 40225CT-M 5 180 2.6 High 40360C-M or 40360CT-M 360 315 8 4.1 Force 40405C-M or 40405CT-M 405 360 9 4.6 40450C-M or 40450CT-M 450 10 5.1

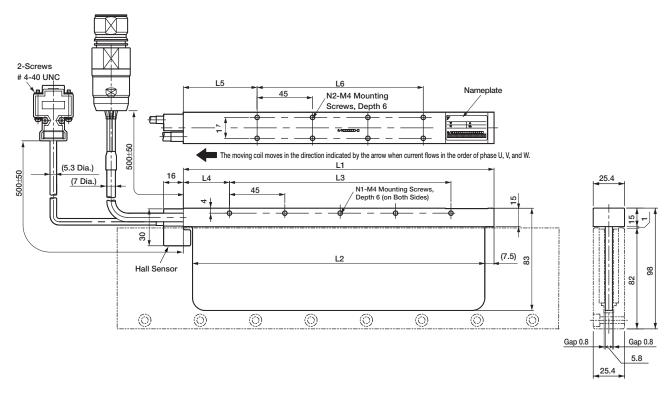
Note: If you have a pacemaker or any other electronic medical device, do not go near the magnetic way of the linear servomotor.

SGLGW (Coreless Type)

# External Dimensions Units: mm

#### (3) SGLGW-60

● Moving Coil: SGLGW-60A□□□C□D (With a connector by Interconnectron GmbH)



Moving Coil Model SGLGW-	Lt	L2	L3	L4	L5	L6	N1	N2	Approx. Mass <sup>*</sup>
60A140C□D	140	125	90	30	52.5	45	3	4	0.48
60A253C□D	252.5	237.5	180	37.5	60	135	5	8	0.82
60A365C□D	365	350	315	30	52.5	270	8	14	1.16

<sup>\*:</sup> The values indicate the mass of moving coil with a hall sensor unit.

Hall Sensor Connector Specifications



Pin Connector : 17JE-23090-02 (D8C) by DDK Ltd.

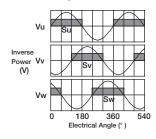
The Mating Connector

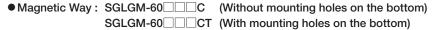
Socket Connector:
17JE-13090-02 (D8C)
Stud: 17L-002C or
17L-002C1

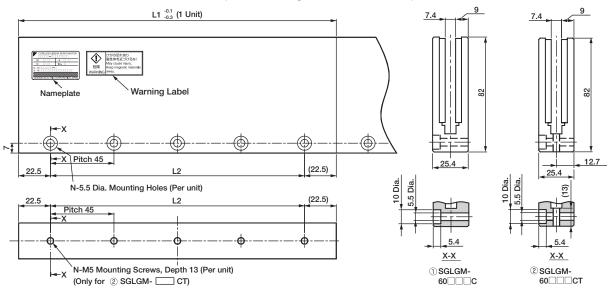
Pin No.	Signal
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Pin No.	Signal	Wire Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	-
5	Not used	-
6	FG	Green

Hall Sensor Output Signals When the moving coil moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.





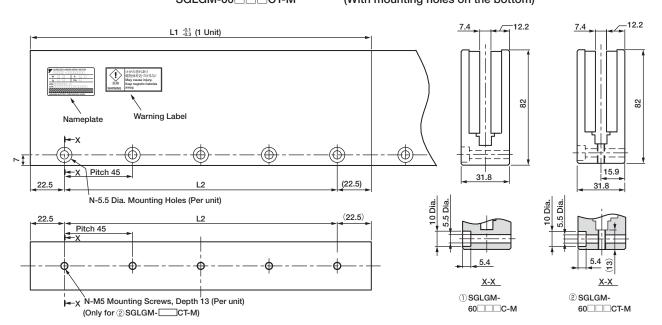


Туре	Standard-force Magnetic Way Model SGLGM-	L1	L2	N	Approx. Mass kg
Standard Force	60090C or 60090CT	90	45	2	1.1
	60225C or 60225CT	225	180	5	2.6
	60360C or 60360CT	360	315	8	4.1
	60405C or 60405CT	405	360	9	4.6
	60450C or 60450CT	450	405	10	5.1

Note: If you have a pacemaker or any other electronic medical device, do not go near the magnetic way of the linear servomotor.

● High-force Magnetic Way: SGLGM-60□□□C-M (Without mounting holes on the bottom)

SGLGM-60□□□CT-M (With mounting holes on the bottom)

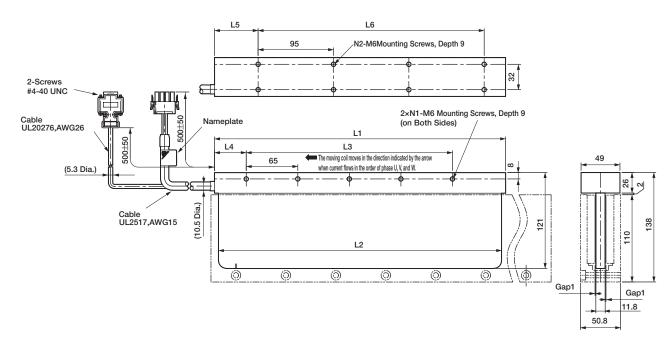


Туре	High-force Magnetic Way Model SGLGM-	L1	L2	N	Approx. Mass kg
High 60325C-M 60360C-M 60405C-M	60090C-M or 60090CT-M	90	45	2	1.3
	60225C-M or 60225CT-M	225	180	5	3.3
	60360C-M or 60360CT-M	360	315	8	5.2
	60405C-M or 60405CT-M	405	360	9	5.9
	60450C-M or 60450CT-M	450	405	10	6.6

Note: If you have a pacemaker or any other electronic medical device, do not go near the magnetic way of the linear servomotor.

#### (4) SGLGW-90

● Moving Coil: SGLGW-90A □ □ C (With a connector by Tyco Electronics AMP K.K.)



Moving Coil Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass <sup>*</sup>
90A200C□	199	189	130	40	60	95	3	4	2.2
90A370C□	367	357	260	40	55	285	5	8	3.65
90A535C□	535	525	455	40	60	380	8	10	4.95

 $<sup>\</sup>ensuremath{^{\star}}\xspace$  The values indicate the mass of moving coil with a hall sensor unit.

Hall Sensor **Connector Specifications** 



Pin Connector: 17JE-23090-02 (D8C) by DDK Ltd.

The Mating Connector Socket Connector : 17JE-13090-02 (D8C) Stud: 17L-002C or 17L-002C1

Pin No.	Signal			
1	+5V (Power supply)			
2	Phase U			
3	Phase V			
4	Phase W			
5	0V (Power supply)			
6	Not used			
7	Not used			
8	Not used			
9	Not used			

Linear Servomotor **Connector Specifications** 



Plug: 350779-1 Pin: 350218-3 or 350547-3 (No.1 or 3) 350654-1 350669-1 (No.4)

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he Mating Connector	
Cap : 350780-1	
Socket : 350536-3 or	
350550-3	



Phase U

Phase V

Phase W

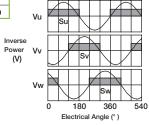
FG

Green

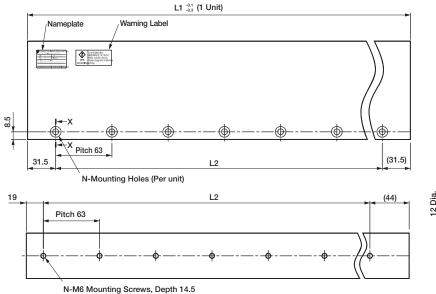
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3

Hall Sensor Output Signals When the moving coil moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.



## ■ Magnetic Way: SGLGM-90□□□A



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50.8	3	
6.6 Dia.	Ţ	] -

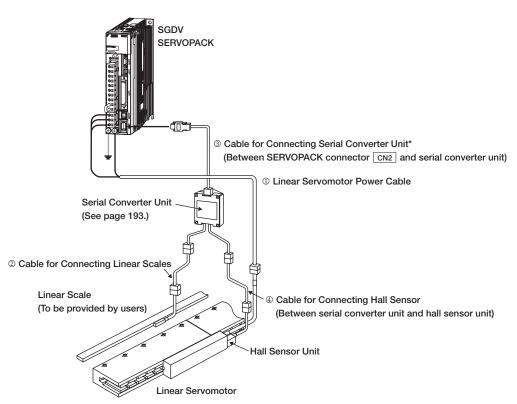


Note: If you have a pacemaker or any other electronic medical device, do not go near the magnetic way of the linear servomotor.

Magnetic Way SGLGM-	L1	L2	N	Approx. Mass kg
90252A	252	189	4	7.3
90504A	504	441	8	14.7

# Selecting Cables

#### Cables Connections



<sup>\*:</sup> A serial converter unit can be connected directly to an absolute linear scale.

#### Cables

Name	Applicable Linear Servomotor Model	Length	Order No.	Specifications	Details
		1 m	JZSP-CLN11-01-E		
		3 m	JZSP-CLN11-03-E	SERVOPACK End Linear Servomotor End	
	COLOW 20 40 60	5 m	JZSP-CLN11-05-E		(4)
	SGLGW-30, -40, -60	10 m	JZSP-CLN11-10-E		(1)
		15 m	JZSP-CLN11-15-E		
		20 m	JZSP-CLN11-20-E	*1	
		1 m	JZSP-CLN21-01-E		
0		3 m	JZSP-CLN21-03-E	SERVOPACK End Linear Servomotor End	
Linear Servomotor	001 0141 00	5 m	JZSP-CLN21-05-E		(0)
Power Cables	SGLGW-90	10 m	JZSP-CLN21-10-E		(2)
		15 m	JZSP-CLN21-15-E		
		20 m	JZSP-CLN21-20-E	*1	
	COL CW	3 m	DP9325252-03G	SERVOPACK End Linear Servomotor End	
	SGLGW	5 m	DP9325252-05G	SERVOPACK End Linear Servomotor End	
	-30 D	10 m	DP9325252-10G		(3)
	-40 D D	15 m	DP9325252-15G		
	-60 D	20 m	DP9325252-20G	*2	

<sup>\*1:</sup> Connector by Tyco Electronics AMP K.K.

Note: The digit "#" of the order number represents the design revision.

(Cont'd)

<sup>\*2:</sup> Connector by Interconnectron GmbH

# **Selecting Cables**

#### Cables

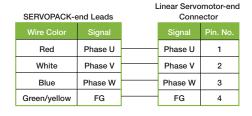
Name	Applicable Linear Servomotor Model	Length	Order No.	Specifications	Details
		1 m	JZSP-CLL00-01-E-G#	Serial Converter Linear Scale End	
2		3 m	JZSP-CLL00-03-E-G#	Unit End	
Cables for Connecting Linear	All models	5 m	JZSP-CLL00-05-E-G#		(4)
Scales*		10 m	JZSP-CLL00-10-E-G#	▎╙ <u></u> ╵ <u>┩</u> ┛┈┶╼╼╩╩	
		15 m	JZSP-CLL00-15-E-G#		
		1 m	JZSP-CLP70-01-E-G#		
3		3 m	JZSP-CLP70-03-E-G#	SERVOPACK End Serial Converter Unit End	
	All maddala	5 m	JZSP-CLP70-05-E-G#		<b>(E)</b>
Cables for Connecting Serial	All models	10 m	JZSP-CLP70-10-E-G#		(5)
Converter Units		15 m	JZSP-CLP70-15-E-G#		
		20 m	JZSP-CLP70-20-E-G#		
		1 m	JZSP-CLL10-01-E-G#	Serial Converter Hall Sensor	
•		3 m	JZSP-CLL10-03-E-G#	Unit End Unit End	
Cables for Connecting Hall	All models	5 m	JZSP-CLL10-05-E-G#		(6)
Sensors		10 m	JZSP-CLL10-10-E-G#		
		15 m	JZSP-CLL10-15-E-G#		

<sup>\*:</sup> When using serial converter unit JZDP-G00 \[ \subseteq \subseteq \]. E, the maximum cable length is 3 m. Note: The digit "#" of the order number represents the design revision.

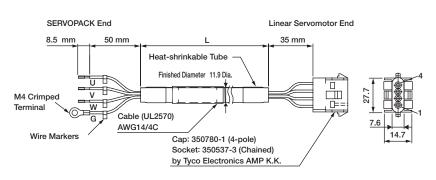
#### (1) Linear Servomotor Power Cables: JZSP-CLN11- \_\_\_\_-E

#### SERVOPACK End Linear Servomotor End 8.5 mm 50 mm 35 mm Heat-shrinkableTube Finished Diameter 6.8 Dia M4 Crimped V Terminal w Cable (UL2464) AWG18/4C Wire Markers Cap: 350780-1 (4-pole) 14.7 Socket: 350536-3 (Chained) by Tyco Electronics AMP K.K.

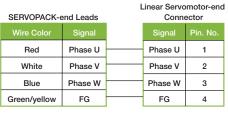
#### Wiring Specifications



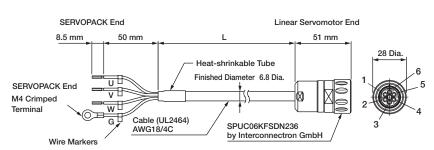
#### (2) Linear Servomotor Power Cables: JZSP-CLN21- -E



## Wiring Specifications



#### (3) Linear Servomotor Power Cables: DP9325252- G



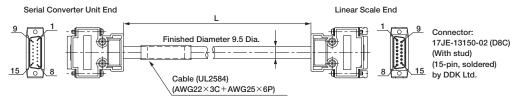
#### Wiring Specifications

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

# **Selecting Cables**



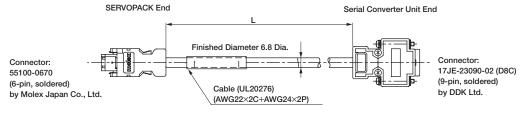




Wiring Specifications

Serial Converter Unit End			Linear Scale End		
Pin No.	Signal	( <sup>-</sup> )		Signal	
1	/Cos (V1-)		1	/Cos (V1-)	
2	/Sin (V2-)	<del>                                     </del>	2	/Sin (V2-)	
3	Ref (V0+)		3	Ref (V0+)	
4	+5V		4	+5V	
5	5Vs		5	5Vs	
6	BID		6	BID	
7	Vx		7	Vx	
8	Vq		8	Vq	
9	Cos (V1+)		9	Cos (V1+)	
10	Sin (V2+)		10	Sin (V2+)	
11	/Ref (V0+)		11	/Ref (V0-)	
12	0V		12	ov	
13	0Vs		13	0Vs	
14	DIR		14	DIR	
15	Inner	\ <u>\</u>	15	Inner	
Case	Shield	•	Case	Shield	

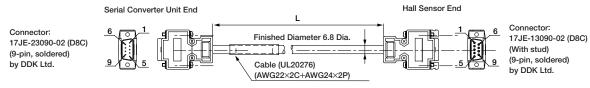
#### (5) Cables for Connecting Serial Converter Units: JZSP-CLP70- \_\_\_\_--E-G#



Wiring Specifications

S	ERVOPACK End			Seri	al Converter Uni	t End
Pin No.	Signal	Wire Color	/**\			Wire Color
1	PG5V	Red		1	+5V	Red
2	PG0V	Black		5	0V	Black
3	-	-		3	-	-
4	-	-		4	-	-
5	PS	Light blue	1 1	2	Phase S output	Light blue
6	/PS	Light blue/white		6	Phase /S output	Light blue/white
Shell	Shield	-	<del></del>	Case	Shield	-
				7	ı	-
				8	ı	-
				9	-	-

#### (6) Cables for Connecting Hall Sensors: JZSP-CLL10- -E-G#



Wiring Specifications

Serial Co	nverter Unit End		Hall S	ensor End
		100		Signal
1	+5V		1	+5V
2	Phase U input		2	Phase U input
3	Phase V input		3	Phase V input
4	Phase W input		4	Phase W input
5	0V		5	0V
6	-		6	-
7	-		7	-
8	-		8	-
9	-		9	-
Case	Shield	<del></del>	Case	Shield