

## Super High Power Rate Series

# SGM Servomotors - With Incremental / Absolute Encoder

Rated Output : 30W, 50W, 100W,  
200W, 300W, 400W,  
750W



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## Design Features

### 1. Compact

- Small sized motor  
Six frame sizes: up to 1,010 oz. in. peak torque.  
Smaller installation space for more compact machine designs.

### 2. High Speed

- High power rating  
High power is achieved by minimizing the inertia of the motor.  
This increases the acceleration/deceleration rate and reduces positioning time.
- Maximum rotation speed of 4500 rpm  
Increases maximum rotation speed and shortens positioning time.
- Rated speed of 3000 rpm

### 3. Encoders

- 2048 PPR incremental encoder standard
- 1024 PPR absolute encoder (option)

### 4. Enclosure

- Totally enclosed, self-cooled IP42 (not including shaft)

### 5. Application Emphasis

- Compact, high torque to inertia ratio
- Chip mounters
- PCB drilling machines
- Robots
- Conveyors
- Packaging

### 6. Low Noise

- Adopting the IGBT power element eliminates irritating "metallic" sounds.

### 7. Certified International Standards

- UL Recognized (File #: E165827), CE compliance (option)

# Servomotor Ratings and Specifications

Time Rating: Continuous

Insulation: Class B

Vibration: 15µm or less

Withstand Voltage: 1500VAC

Insulation Resistance: 500VDC

10MΩ or more

Enclosure: Totally-enclosed, self-cooled

Ambient Temperature: 0 to 40°C

Ambient Humidity: 20 to 80%

(non-condensing)

Rated Rotation Speed: 3000 rpm

Max. Rotation Speed: 4500 rpm

Excitation: Permanent magnet

Drive Method: Direct drive

Mounting: Flange-mounted

Applicable Encoder: Incremental

encoder 2048PPR, Absolute

encoder 12-bit 1024PPR

SGM

Applied Voltage	MOTORS: SGM-	Rated Output	Rated Torque		Instantaneous Peak Torque		Continuous Output Current <sup>3</sup>	Maximum Output Current <sup>3</sup>	Rated Angular Acceleration	Rated Power Rating <sup>1</sup>
		W	N·m	oz·in	N·m	oz·in	A (rms)	A (rms)	rad/s <sup>2</sup>	KW/s
200VAC	A3□	30 (0.04)	0.095	13.5	0.29	40.5	0.42	1.3	45200	4.36
	A5□	50 (0.07)	0.159	22.6	0.48	67.7	0.6	1.9	61200	9.63
	01□	100 (0.13)	0.318	45.1	0.96	135	0.87	2.8	79500	25.4
	02□	200 (0.27)	0.637	90.1	1.91	270	2.0	6.0	51800	32.8
	04□	400 (0.53)	1.27	181	3.82	542	2.6	8.0	66600	84.6
	08□	750 (1.01)	2.39	338	7.1	1010	4.4	13.9	35800	85.1
100VAC	A3□	30 (0.04)	0.095	13.5	0.29	40.5	0.63	2.0	45200	4.36
	A5□	50 (0.07)	0.159	22.6	0.48	67.7	0.9	2.9	61200	9.63
	01□	100 (0.13)	0.318	45.1	0.96	135	2.2	7.1	79500	25.4
	02□	200 (0.27)	0.637	90.1	1.91	270	2.7	8.4	51800	32.8
	03□	300 (0.40)	0.95	135	3.72	527	3.7	14.8	49700	47.3

Applied Voltage	MOTORS: SGM-	Moment of Inertia (JM) <sup>*1</sup>								Allowable Load Inertia	
		Incremental Encoder w/o Brake		Incremental Encoder w/Brake		Absolute Encoder w/o Brake		Absolute Encoder w/Brake		<sup>*1</sup>	<sup>*2</sup>
		(GD <sup>2</sup> /M/4) kg·m <sup>2</sup>	oz·in·s <sup>2</sup>	(GD <sup>2</sup> /M/4) kg·m <sup>2</sup>	oz·in·s <sup>2</sup>	(GD <sup>2</sup> /M/4) kg·m <sup>2</sup>	oz·in·s <sup>2</sup>	(GD <sup>2</sup> /M/4) kg·m <sup>2</sup>	oz·in·s <sup>2</sup>	(=GD <sup>2</sup> L/4) kg·m <sup>2</sup>	(=GD <sup>2</sup> L/4) oz·in·s <sup>2</sup>
200VAC	A3□	0.021 × 10 <sup>-4</sup>	0.288 × 10 <sup>-3</sup>	0.030 × 10 <sup>-4</sup>	0.408 × 10 <sup>-3</sup>	0.046 × 10 <sup>-4</sup>	0.640 × 10 <sup>-3</sup>	0.055 × 10 <sup>-4</sup>	0.760 × 10 <sup>-3</sup>	0.63 × 10 <sup>-4</sup>	8.8 × 10 <sup>-3</sup>
	A5□	0.026 × 10 <sup>-4</sup>	0.368 × 10 <sup>-3</sup>	0.035 × 10 <sup>-4</sup>	0.488 × 10 <sup>-3</sup>	0.051 × 10 <sup>-4</sup>	0.720 × 10 <sup>-3</sup>	0.060 × 10 <sup>-4</sup>	0.840 × 10 <sup>-3</sup>	0.78 × 10 <sup>-4</sup>	11.0 × 10 <sup>-3</sup>
	01□	0.040 × 10 <sup>-4</sup>	0.576 × 10 <sup>-3</sup>	0.049 × 10 <sup>-4</sup>	0.696 × 10 <sup>-3</sup>	0.065 × 10 <sup>-4</sup>	0.928 × 10 <sup>-3</sup>	0.074 × 10 <sup>-4</sup>	1.05 × 10 <sup>-3</sup>	1.20 × 10 <sup>-4</sup>	17.0 × 10 <sup>-3</sup>
	02□	0.123 × 10 <sup>-4</sup>	1.74 × 10 <sup>-3</sup>	0.181 × 10 <sup>-4</sup>	2.56 × 10 <sup>-3</sup>	0.148 × 10 <sup>-4</sup>	2.09 × 10 <sup>-3</sup>	0.206 × 10 <sup>-4</sup>	2.91 × 10 <sup>-3</sup>	3.69 × 10 <sup>-4</sup>	52.2 × 10 <sup>-3</sup>
	04□	0.191 × 10 <sup>-4</sup>	2.71 × 10 <sup>-3</sup>	0.249 × 10 <sup>-4</sup>	3.53 × 10 <sup>-3</sup>	0.216 × 10 <sup>-4</sup>	3.06 × 10 <sup>-3</sup>	0.274 × 10 <sup>-4</sup>	3.88 × 10 <sup>-3</sup>	3.82 × 10 <sup>-4</sup>	54.1 × 10 <sup>-3</sup>
	08□	0.671 × 10 <sup>-4</sup>	9.52 × 10 <sup>-3</sup>	0.811 × 10 <sup>-4</sup>	11.5 × 10 <sup>-3</sup>	0.696 × 10 <sup>-4</sup>	9.87 × 10 <sup>-3</sup>	0.836 × 10 <sup>-4</sup>	11.9 × 10 <sup>-3</sup>	13.4 × 10 <sup>-4</sup>	189 × 10 <sup>-3</sup>
100VAC	A3□	0.021 × 10 <sup>-4</sup>	0.288 × 10 <sup>-3</sup>	0.030 × 10 <sup>-4</sup>	0.408 × 10 <sup>-3</sup>	0.046 × 10 <sup>-4</sup>	0.640 × 10 <sup>-3</sup>	0.055 × 10 <sup>-4</sup>	0.760 × 10 <sup>-3</sup>	0.63 × 10 <sup>-4</sup>	8.8 × 10 <sup>-3</sup>
	A5□	0.026 × 10 <sup>-4</sup>	0.368 × 10 <sup>-3</sup>	0.035 × 10 <sup>-4</sup>	0.488 × 10 <sup>-3</sup>	0.051 × 10 <sup>-4</sup>	0.720 × 10 <sup>-3</sup>	0.060 × 10 <sup>-4</sup>	0.840 × 10 <sup>-3</sup>	0.78 × 10 <sup>-4</sup>	11.0 × 10 <sup>-3</sup>
	01□	0.040 × 10 <sup>-4</sup>	0.576 × 10 <sup>-3</sup>	0.049 × 10 <sup>-4</sup>	0.696 × 10 <sup>-3</sup>	0.065 × 10 <sup>-4</sup>	0.928 × 10 <sup>-3</sup>	0.074 × 10 <sup>-4</sup>	1.05 × 10 <sup>-3</sup>	1.20 × 10 <sup>-4</sup>	17.0 × 10 <sup>-3</sup>
	02□	0.123 × 10 <sup>-4</sup>	1.74 × 10 <sup>-3</sup>	0.181 × 10 <sup>-4</sup>	2.56 × 10 <sup>-3</sup>	0.148 × 10 <sup>-4</sup>	0.209 × 10 <sup>-3</sup>	0.206 × 10 <sup>-4</sup>	2.91 × 10 <sup>-3</sup>	3.69 × 10 <sup>-4</sup>	52.2 × 10 <sup>-3</sup>
	03□	0.191 × 10 <sup>-4</sup>	2.71 × 10 <sup>-3</sup>	0.249 × 10 <sup>-4</sup>	3.53 × 10 <sup>-3</sup>	0.216 × 10 <sup>-4</sup>	3.06 × 10 <sup>-3</sup>	0.274 × 10 <sup>-4</sup>	3.88 × 10 <sup>-3</sup>	5.73 × 10 <sup>-4</sup>	81.1 × 10 <sup>-3</sup>

\*1 Values show the types with incremental encoder without brake. When "with absolute encoder and brake" type is applied, values may be varied.

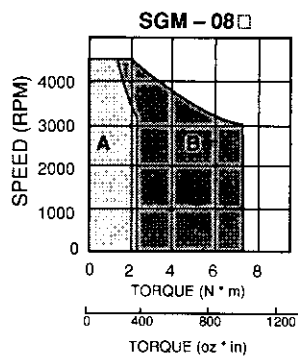
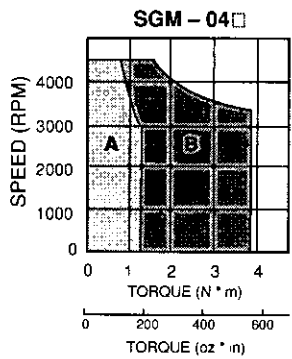
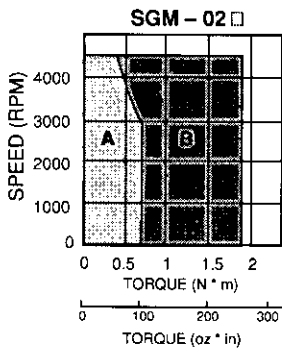
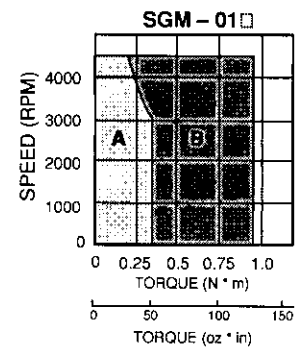
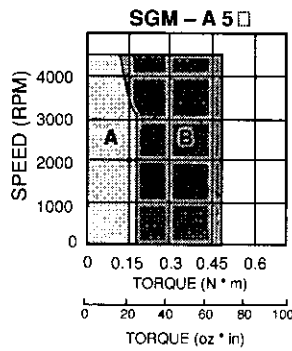
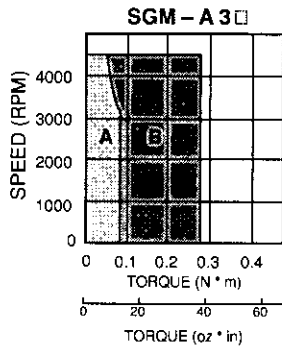
\*2 JL (allowable load inertia) shows the range requiring no exterior regenerative unit. When these values are exceeded, application may be restricted or a regenerative unit may be required.

\*3 Values when SERVOMOTOR is combined with SGDA Servo Amplifier.

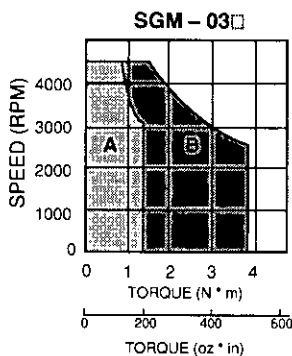
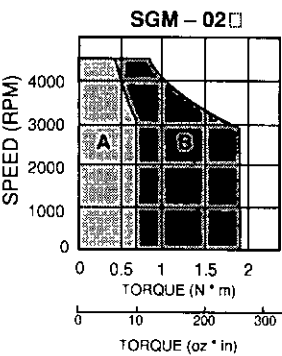
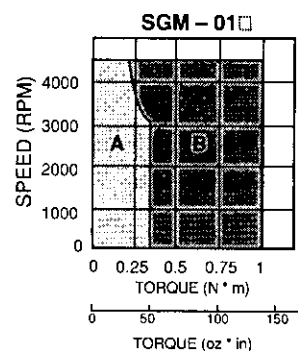
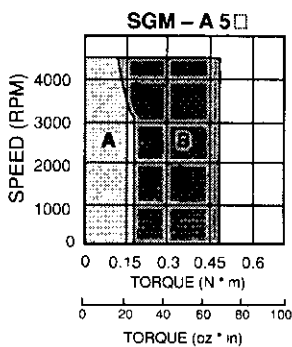
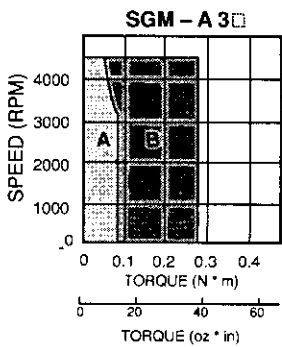
# Speed / Torque Curves



200V



100V



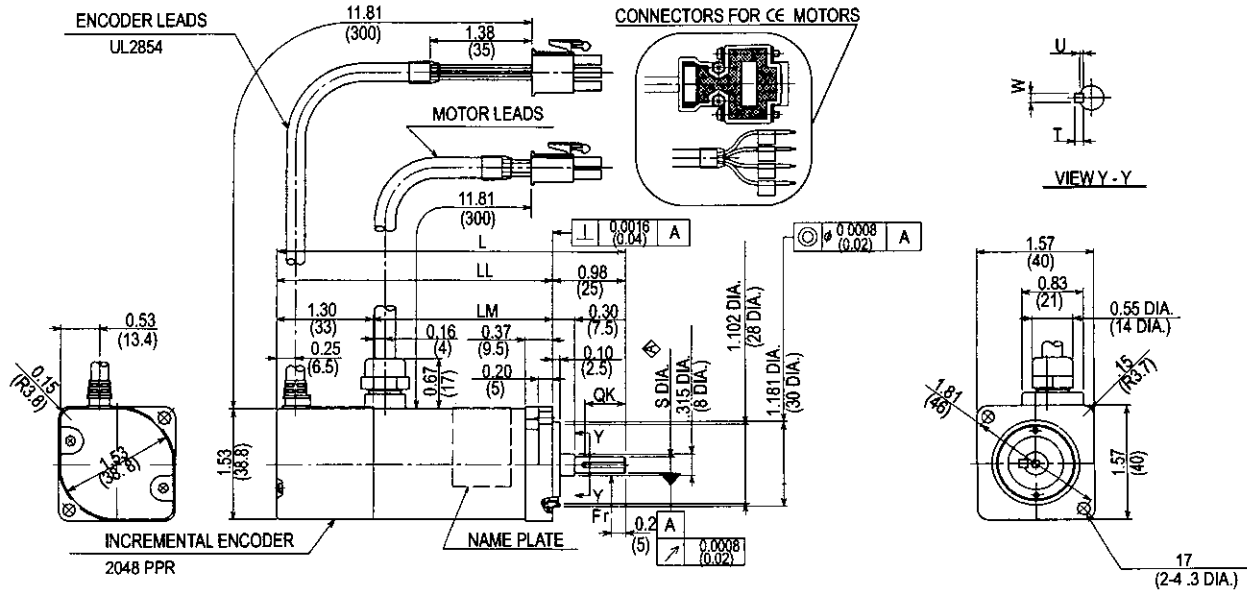
**A**: CONTINUOUS DUTY ZONE      **B**: INTERMITTENT DUTY ZONE

# Dimensions in inches (mm)

## (1) 2048 PPR Incremental Encoder, without Brake

- 30W (0.04HP), 50W (0.07HP), 100W (0.13HP)

SGM

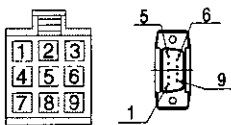


Type SGM-	L	LL	LM	S	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
A3□3B2L	3.72 (94.5)	2.74 (69.5)	1.44 (36.5)	0.24 (6)	Without Keyway				30 (0.04)	0.66 (0.3)	15 (68)	12 (54)
A3□3B4L					0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)				
A5□3B2L	4.02 (102)	3.03 (77)	1.73 (44)	0.24 (6)	Without Keyway				50 (0.07)	0.88 (0.4)	15 (68)	12 (54)
A5□3B4L					0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)				
01□3B2L	4.7 (119.5)	3.72 (94.5)	2.42 (61.5)	8 (0.31)	Without Keyway				100 (0.13)	1.10 (0.5)	17 (78)	12 (54)
01□3B4L					0.55 (14)	0.07 (1.8)	0.12 (3)	0.12 (3)				

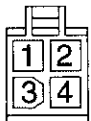
\*Tolerance (S)

Dimensions	mm	6.8
	in	0.24, 0.31
Tolerance	mm	0 to -0.008
	in	0 to -0.0003

### Connector Specifications



Plug: 172169-1 (Made by AMP)  
 Pin: 170359-1 or 170363-1  
 CE connector: 17JE-23090-02 (D8A)  
 (Made by DDK Ltd)

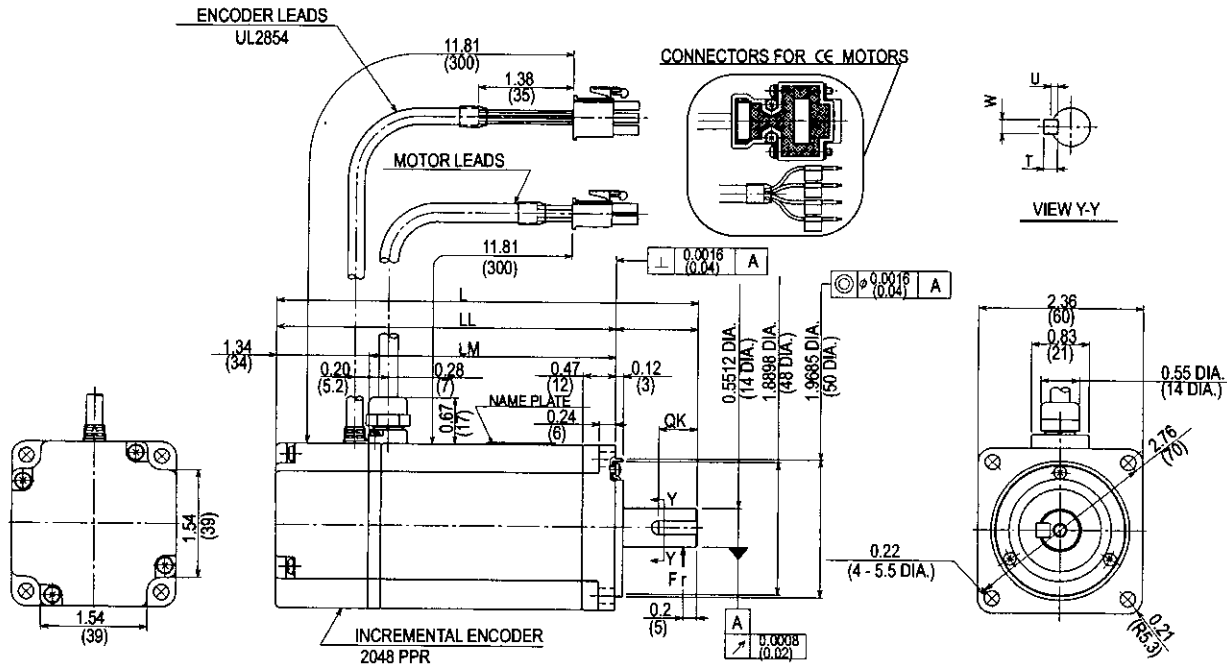


Plug: 172167-1 (Made by AMP)  
 Pin: 170359-1 or 170363-1

Incremental Encoder Connection		
1	Channel A Output	Blue
2	Channel A Output	Blue/Black
3	Channel B Output	Yellow
4	Channel B Output	Yellow/Black
5	Channel C Output	Green
6	Channel C Output	Green/Black
7	0V (Power Supply)	Grey
8	+5V (Power Supply)	Red
9	FG (Frame Ground)	Orange

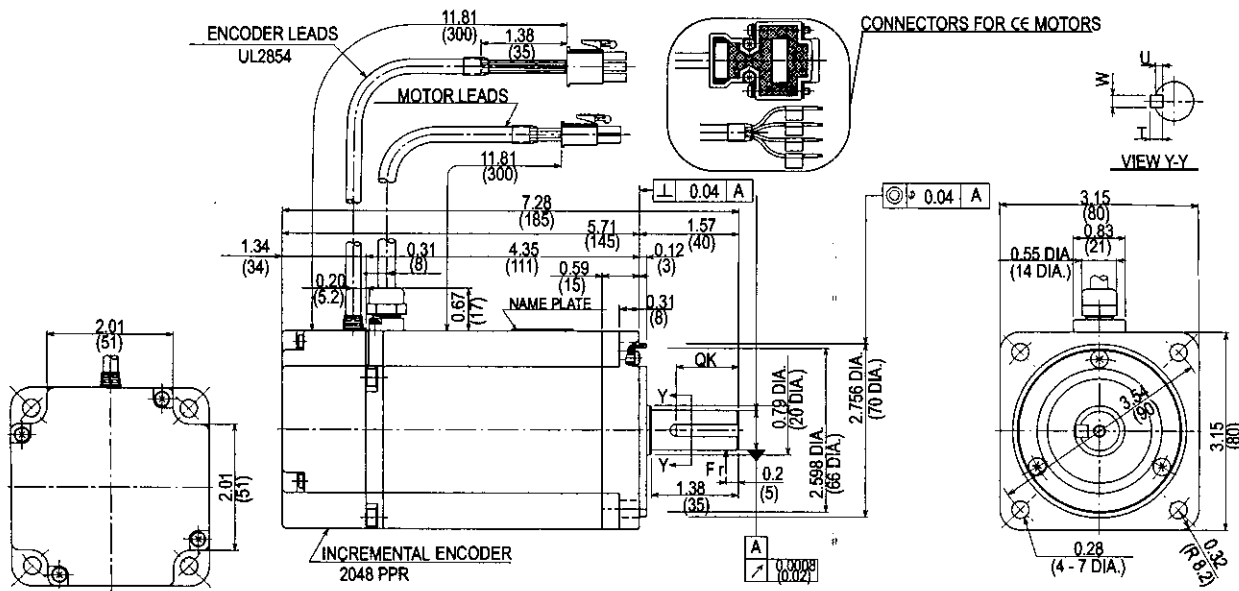
Motor Connection		
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG (Frame Ground)	Green

## • 200W (0.27HP), 300W (0.4HP), 400W (0.53HP)



Type SGM-	L	LL	LM	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
02□3B2L	4.98	3.8	2.46	Without Keyway				200	2.43	55 (245)	17 (74)
02□3B4L	(126.5)	(96.5)	(62.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.27)	(1.1)		
03□3B2L	6.08	4.9	3.56	Without Keyway				300	3.75	55 (245)	17 (74)
03□3B4L	(154.5)	(124.5)	(90.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.40)	(1.7)		
04□3B2L	6.08	4.9	3.56	Without Keyway				400	3.75	55 (245)	17 (74)
04□3B4L	(154.5)	(124.5)	(90.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.53)	(1.7)		

## • 750W (1.01HP)

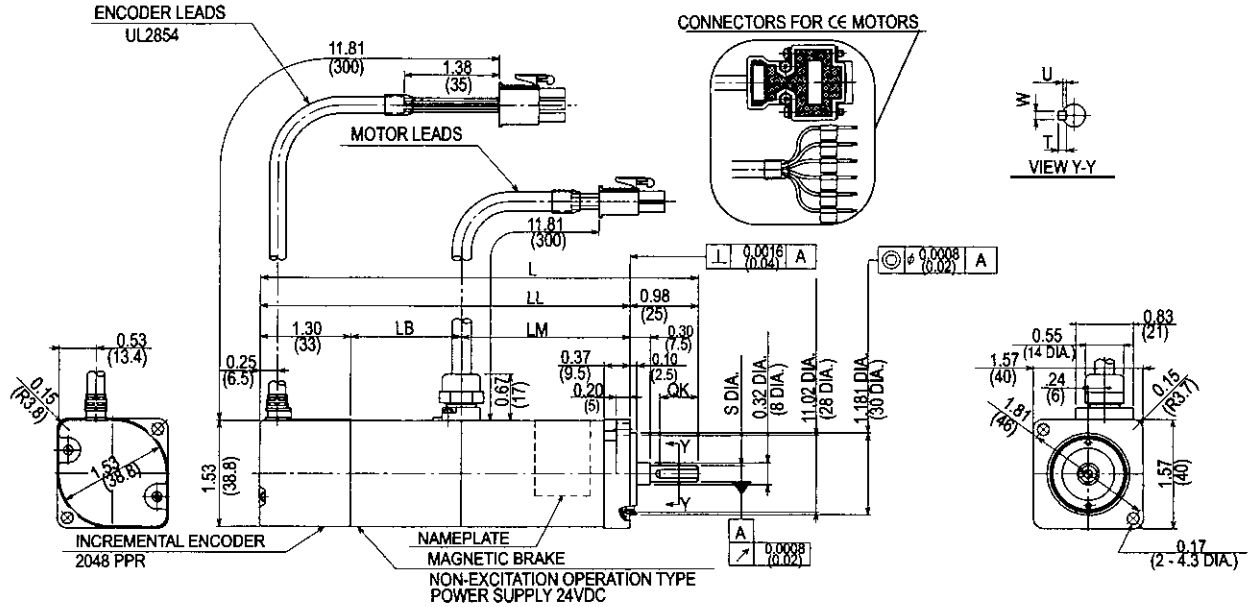


Type SGM-	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
08□3B2L	Without Keyway				750	7.5	88 (392)	33 (147)
08□3B4L	0.98 (25)	0.12 (3)	0.2 (5)	0.2 (5)	(1.01)	(3.4)		



## (2) 2048 PPR Incremental Encoder, with Brake

- 30W (0.04HP), 50W (0.07HP), 100W (0.13HP)

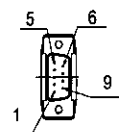
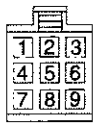


Type SGM-	L	LL	LM	LB	S	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
A3□3B2CL	4.96	3.98	1.44	1.24	0.24	Without Keyway				30 (0.04)	1.32 (0.6)	15 (68)	12 (54)
A3□3B4CL	(126)	(101)	(36.5)	(31.5)	(6)	0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)				
A5□3B2CL	5.26	4.27	1.73	1.24	0.24	Without Keyway				50 (0.07)	1.54 (0.7)	15 (68)	12 (54)
A5□3B4CL	(133.5)	(108.5)	(44.0)	(31.5)	(6)	0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)				
01□3B2CL	6.3	5.31	2.42	1.59	0.32	Without Keyway				100 (0.13)	1.76 (0.8)	18 (78)	12 (54)
01□3B4CL	(160)	(135)	(61.5)	(40.5)	(8)	0.55 (14)	0.07 (1.8)	0.12 (3)	0.12 (3)				

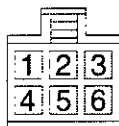
\*Tolerance (S)

Dimensions	mm	6.8
	in	0.24, 0.31
Tolerance	mm	0 to -0.008
	in	0 to -0.0008

### Connector Specifications



Plug: 172169-1 (Made by AMP)  
Pin: 170359-1 or 170363-1  
CE connector: 17JE-23090-02 (D8A)  
(Made by DDK Ltd)

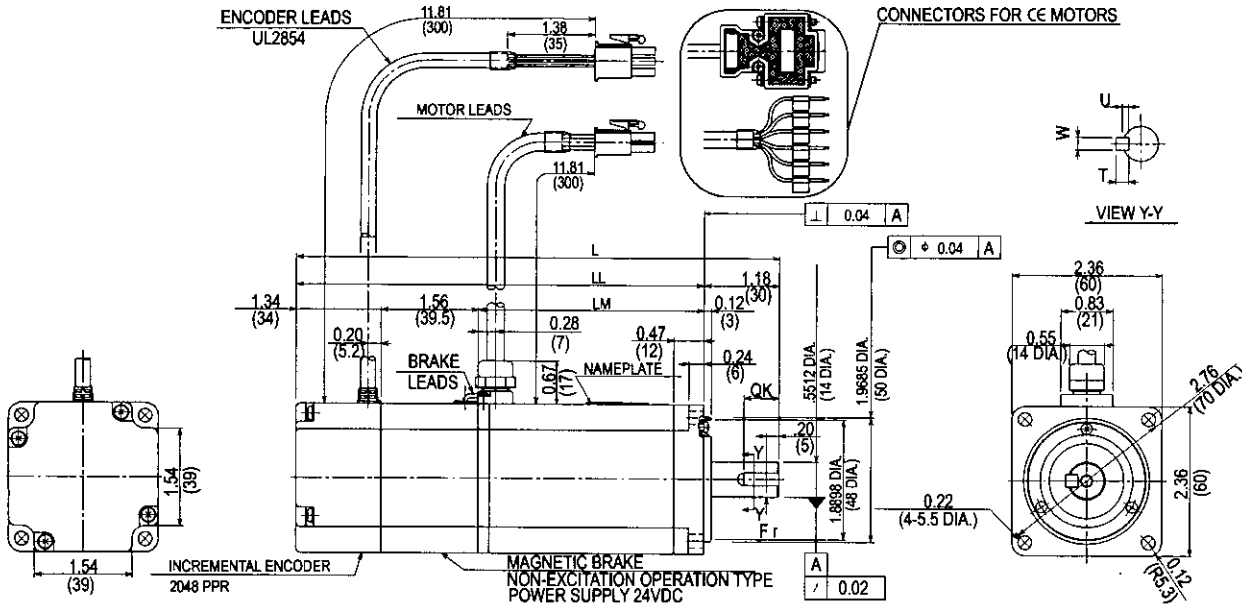


Plug: 172168-1 (Made by AMP)  
Pin: 170359-1 or 170363-1

Incremental Encoder Connection		
1	Channel A Output	Blue
2	Channel A Output	Blue/Black
3	Channel B Output	Yellow
4	Channel B Output	Yellow/Black
5	Channel C Output	Green
6	Channel C Output	Green/Black
7	0V (Power Supply)	Grey
8	+5V (Power Supply)	Red
9	FG (Frame Ground)	Orange

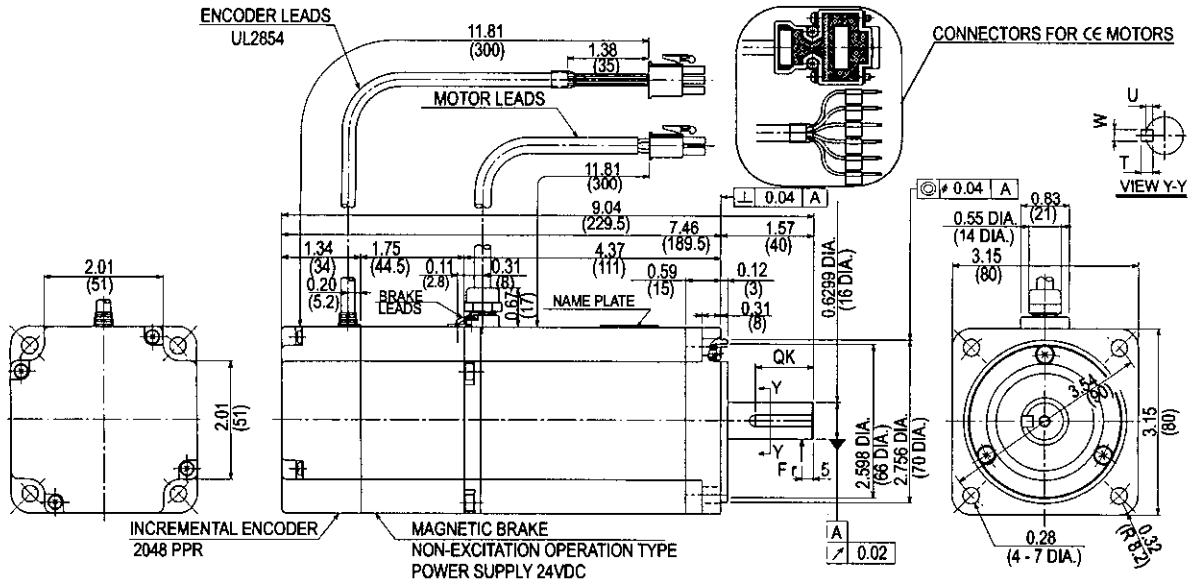
Motor Connection		
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG (Frame Ground)	Green
5	Brake Terminal	Red
6	Brake Terminal	Black

## • 200W (0.53HP), 300W (0.40HP), 400W (0.27HP)



Type SGM-	L	LL	LM	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
02□3B2CL	6.54	5.35	2.46	Without Keyway				200	3.53	55 (245)	17 (74)
02□3B4CL	(166)	(136)	(62.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.27)	(1.6)		
03□3B2CL	7.64	6.46	3.56	Without Keyway				400	4.85	55 (245)	17 (74)
03□3B4CL	(194)	(164)	(90.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.40)	(2.2)		
04□3B2CL	7.64	6.46	3.56	Without Keyway				400	4.85	55 (245)	17 (74)
04□3B4CL	(194)	(164)	(90.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.53)	(2.2)		

## • 750W (1.01HP)

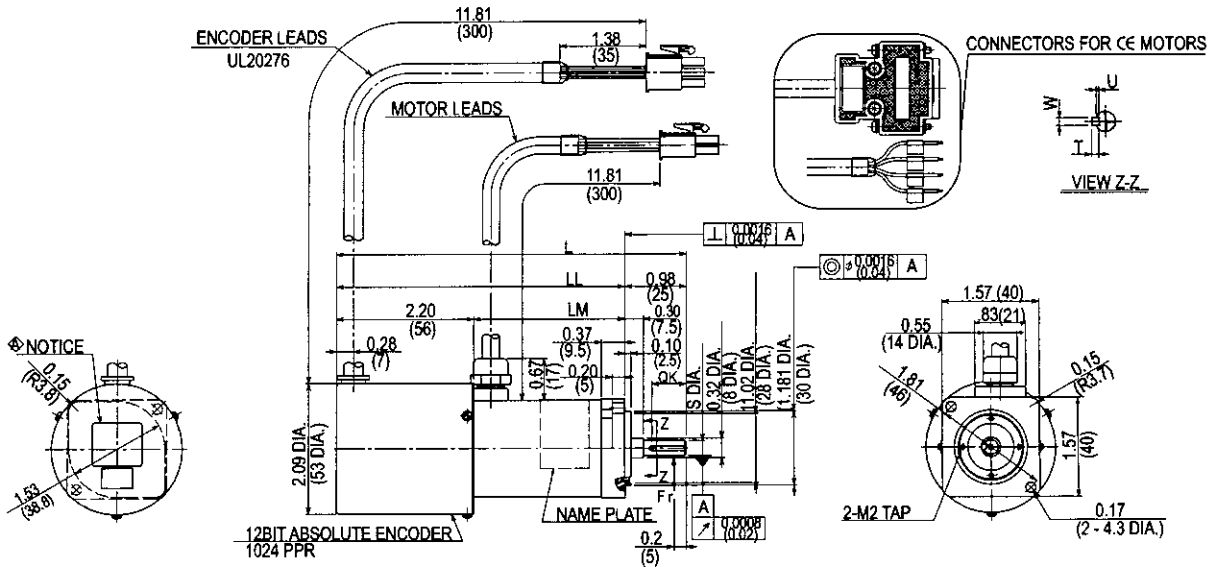


Type SGM-	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
08□3B2CL	Without Keyway				750	9.48	88 (392)	33 (147)
08□3B4CL	0.98 (25)	0.12 (3)	0.2 (5)	0.2 (5)	(1.01)	(4.3)		



## (3) 1024 PPR Absolute Encoder (12 bit), without Brake

- 30W (0.04HP), 50W (0.07HP), 100W (0.13HP)

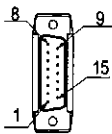
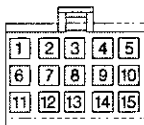


Type SGM	L	LL	LM	S	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
A3□WB2L	4.63 (117.5)	3.64 (92.5)	1.44 (36.5)	0.24 (6)	Without Keyway				30 (0.04)	0.99 (0.45)	15.3 (68)	12.1 (54)
A3□WB4L					0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)				
A5□WB2L	4.92 (125)	3.94 (100)	1.73 (44)	0.24 (6)	Without Keyway				50 (0.07)	1.21 (0.55)	15 (68)	12.1 (54)
A5□WB4L					0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)				
01□WB4L	5.61 (142.5)	4.63 (117.5)	2.42 (61.5)	0.31 (8)	Without Keyway				100 (0.13)	1.21 (0.65)	17.5 (78)	12.1 (54)
01□WB4L					0.55 (14)	0.07 (1.8)	0.12 (3)	0.12 (3)				

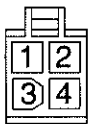
\*Tolerance (S)

Dimensions	mm	6.8
	in	0.24, 0.31
Tolerance	mm	0 to -0.008
	in	0 to -0.0003

### Connector Specifications



Plug: 172171-1 (Made by AMP)  
Pin: 170359-1 or 170363-1  
CE Connector: 17JE-23150-02 (D8A)



Plug: 172167-1 (Made by AMP)  
Pin: 170359-1 or 170363-1

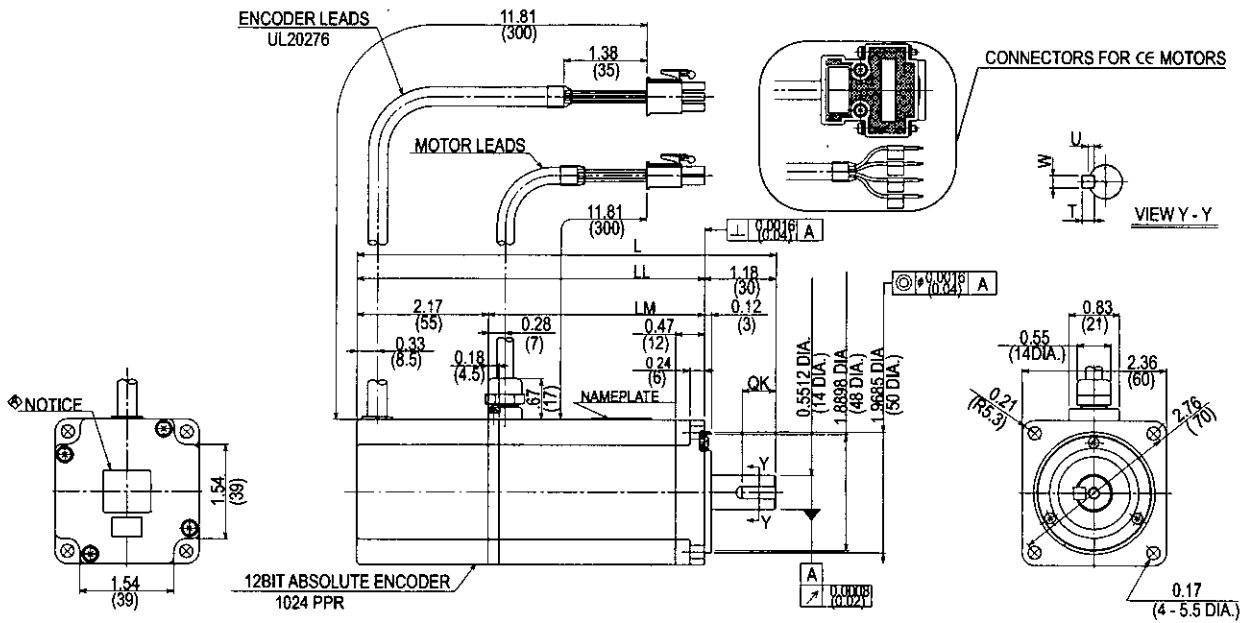
Absolute Encoder Connection		
1	Channel A Output	Blue
2	Channel A Output	White/Blue
3	Channel B Output	Yellow
4	Channel B Output	White/Blue
5	Channel C Output	Green
6	Channel C Output	White/Green
7	0V (Power Supply)	Black
8	+5V (Power Supply)	Red
9	FG (Frame Ground)	Green/Yellow
10	Channel S Output	Purple
11	Channel S Output	White/Purple
* 12	(Capacitor)	(Grey)
13	Reset	White/Grey
14	0V (Battery)	White/Orange
15	3.6V (Battery)	Orange

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

\* Do not use this terminal since this is used for the capacitor discharge terminal at shipment.

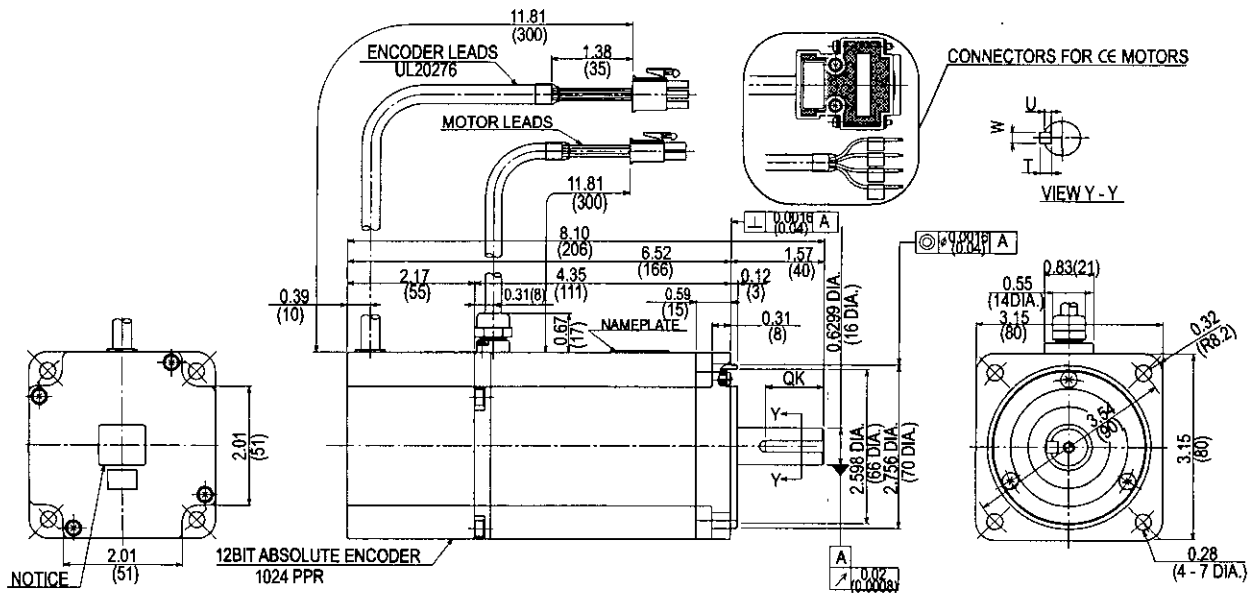


• 200W (0.27HP), 300W (0.40HP), 400W (0.53HP)



Type SGM-	L	LL	LM	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
02□WB2L	5.81	4.63	2.46	Without Keyway				200	2.65	55 (245)	16.6 (74)
02□WB4L	(147.5)	(117.5)	(62.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.27)	(1.2)		
03□WB2L	6.91	5.73	3.56	Without Keyway				300	3.97	55 (245)	16.6 (74)
03□WB4L	(175.5)	(145.5)	(90.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.40)	(1.8)		
04□WB2L	6.91	5.73	3.56	Without Keyway				400	3.97	55 (245)	16.6 (74)
04□WB4L	(175.5)	(145.5)	(90.5)	0.55 (14)	0.12 (3)	0.2 (5)	0.2 (5)	(0.53)	(1.8)		

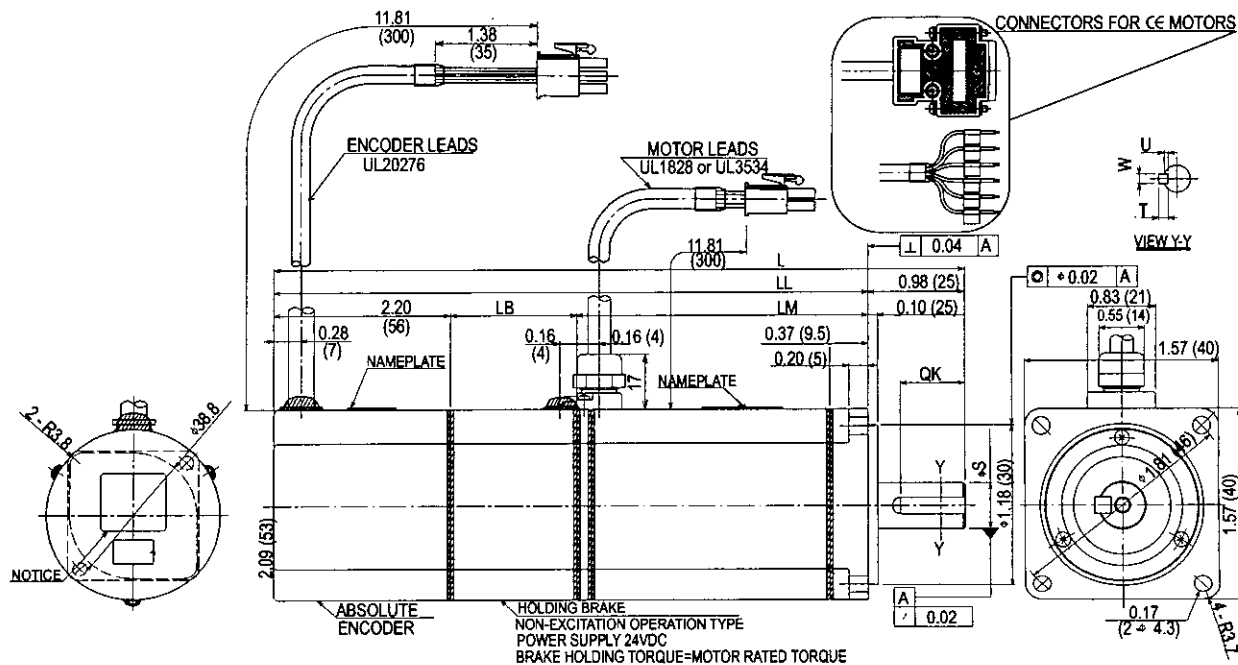
• 750W (1.01HP)



Type SGM-	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
08□WB2L	Without Keyway				750	7.72	77 (343)	22 (98)
08□WB4L	0.98 (25)	0.12 (3)	0.2 (5)	0.2 (5)	(1.01)	(3.5)		

## (4) 1024 PPR Absolute Encoder (12 bit), with Brake

- 30W (0.04HP), 50W (0.07HP), 100W (0.13HP)

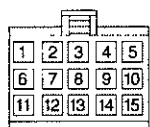


Type SGM-	L	LL	LM	LB	QK	U	W	T	S	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
A3□WB2CL	5.89 (149.5)	4.9 (124.5)	1.26 (32)	1.12 (28.5)	Without Keyway				0.24 (6)	30 (0.04)	1.65 (0.75)	11 (49)	4 (19)
A3□WB4CL					0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)					
A5□WB2CL	6.18 (157)	5.2 (132)	1.56 (39.5)	1.12 (28.5)	Without Keyway				0.24 (6)	50 (0.07)	1.87 (0.85)	15 (68)	4 (19)
A5□WB4CL					0.55 (14)	0.05 (1.2)	0.08 (2)	0.08 (2)					
01□WB2CL	7.22 (183.5)	6.24 (158.5)	2.24 (57)	1.48 (37.5)	Without Keyway				0.31 (8)	100 (0.13)	2.09 (0.95)	15 (68)	4 (19)
01□WB4CL					0.55 (14)	0.07 (1.8)	0.12 (3)	0.12 (3)					

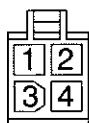
\*Tolerance (S)

Dimensions mm	6.8
in	0.24, 0.31
Tolerance mm	0 to -0.008
in	0 to -0.0003

### Connector Specifications



Plug: 172171-1 (Made by AMP)  
Pin: 170359-1 or 170363-1  
CE Connector: 17JE-23150-02 (D8A)



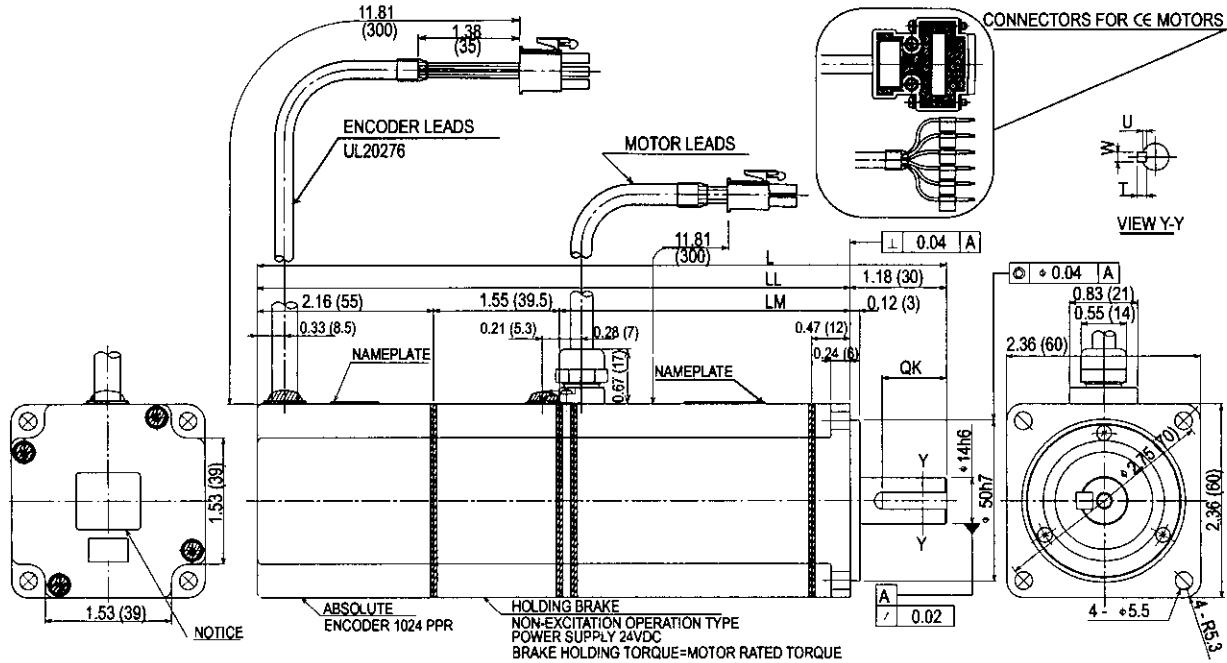
Plug: 172168-1 (Made by AMP)  
Pin: 170359-1 or 170363-1

Absolute Encoder Connection		
1	Channel A Output	Blue
2	Channel A Output	White/Blue
3	Channel B Output	Yellow
4	Channel B Output	White/Blue
5	Channel C Output	Green
6	Channel C Output	White/Green
7	0V (Power Supply)	Black
8	+5V (Power Supply)	Red
9	FG (Frame Ground)	Green/Yellow
10	Channel S Output	Purple
11	Channel S Output	White/Purple
12	(Capacitor)	(Grey)
13	Reset	White/Grey
14	0V (Battery)	White/Orange
15	3.6V (Battery)	Orange

Motor Connection		
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG (Frame Ground)	Green
5	Brake Terminal	Red
6	Brake Terminal	Black

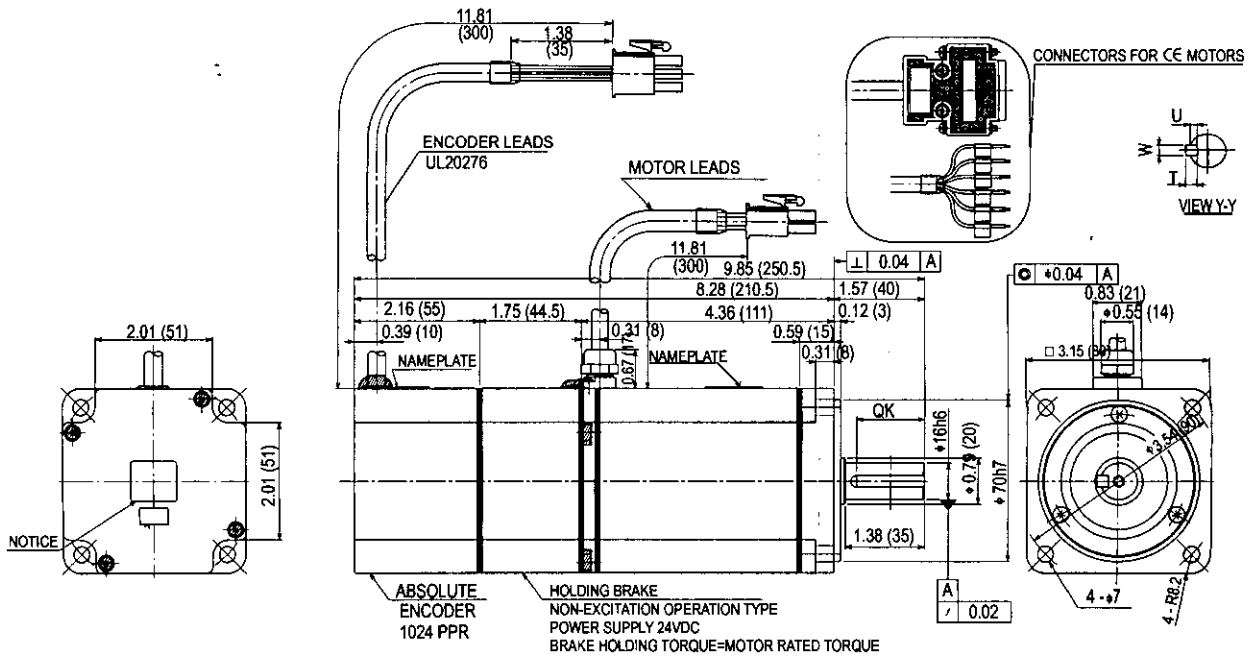
\* Do not use this terminal since this is used for the capacitor discharge terminal at shipment.

• 200W (0.27HP), 300W (0.40HP), 400W (0.53HP)



Type SGM-	L	LL	LM	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
02□WB2CL	7.36	6.18	2.46	Without Keyway				200	3.75	55 (245)	16.6 (74)
02□WB4CL	(187)	(157)	(62.5)	0.79 (20)	0.12 (3)	0.2 (5)	0.2 (5)	(0.27)	(1.7)		
03□WB2CL	8.46	7.28	3.56	Without Keyway				300	5.07	55 (245)	16.6 (74)
03□WB4CL	(215)	(185)	(90.5)	0.79 (20)	0.12 (3)	0.2 (5)	0.2 (5)	(0.40)	(2.3)		
04□WB2CL	8.46	7.28	3.56	Without Keyway				400	5.07	55 (245)	16.6 (74)
04□WB4CL	(215)	(185)	(90.5)	0.79 (20)	0.12 (3)	0.2 (5)	0.2 (5)	(0.53)	(2.3)		

• 750W (1.01HP)

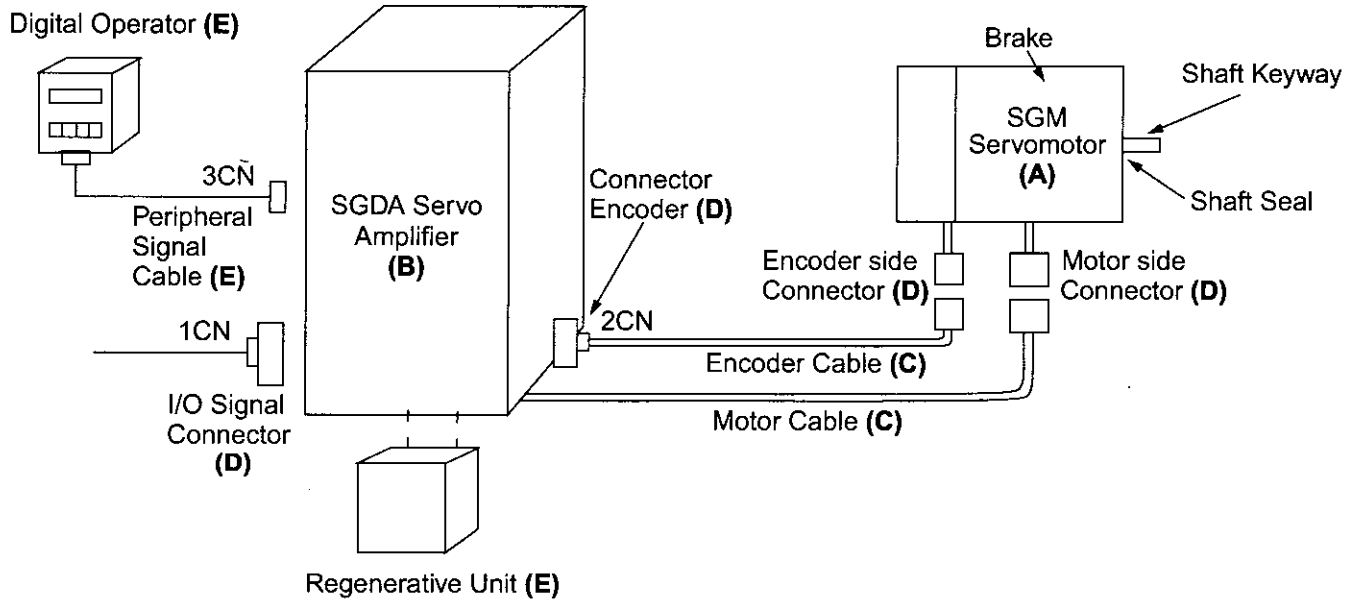


Type SGM-	QK	U	W	T	Output W (HP)	Approx Mass lb (kg)	Allowable Radial Load lb (N)	Allowable Thrust Load lb (N)
08□WB2CL	Without Keyway				750	9.92	88 (392)	33 (147)
08□WB4CL	1.18 (30)	0.12 (3)	0.2 (5)	0.2 (5)	(1.01)	(4.5)		

# Selecting Your SGM Sigma Servo System

Use the diagram below to locate and identify the components of your system. Each item is letter-coded and cross-referenced in the option tables on the following pages.

## System Configuration



## Model Number Designation

**SGM - 01 U 3 B 4 [ L ] [ ]**

Sigma Servomotor Type

Rated Output

- A3: 30W (0.04HP)
- A5: 50W (0.07HP)
- 01: 100W (0.13HP)
- 02: 200W (0.25HP)
- 03: 300W (0.4HP)
- 04: 400W (0.5HP)
- 08: 750W (1HP)

Power Supply

- U: 200V UL Recognized
- L: 100V UL Recognized

Accessories

- L: Standard
- CL: Standard with 24VDC Brake
- SL: Standard with Shaft Seal
- EL: Standard with Brake & Shaft Seal

Shaft Specifications

- 4: Straight Shaft with Keyway
- 2: Straight Shaft without Keyway

Revision Level

Encoder Specifications

- 3: 2048PPR Incremental Encoder
- W: 1024PPR Absolute Encoder

Note: **Bold** items are Stock Products usually available from inventory. Contact your Yaskawa representative for delivery on all other items. Model number designation is provided for reference only.

## Servomotor & Amplifier Selection

Use the table below to select the recommended SGM Sigma Servomotor and Amplifier.

Description	Peak Torque (oz. in.)	Rated Torque (oz. in.)	Motor Inertia (oz.in.sec <sup>2</sup> ×10 <sup>-3</sup> )	Motor MODEL # (A)	Amplifier MODEL # (B)*			Motor & Amplifier Item Class
					Analog Input SGDA-	Digital Input SGDA-	Analog/Digital Input SGDB-	
200V 1-Phase, 2048 PPR Incremental Encoder, Straight Shaft with Keyway	40.5	13.5	0.288	SGM-A3U3B4L	A3AS	A3AP	-	Non-Stock
			0.416	SGM-A3U3B4CL				
	67.7	22.6	0.368	SGM-A5U3B4L	A5AS	A5AP	-	
			0.496	SGM-A5U3B4CL				
	135	45.1	0.567	SGM-01U3B4L	01AS	01AP	-	Stock
			0.688	SGM-01U3B4CL				
	270	90.1	1.74	SGM-02U3B4L	02AS	02AP	-	
			2.58	SGM-02U3B4CL				
	542	181	2.7	SGM-04U3B4L	04AS	04AP	05ADG	
			3.52	SGM-04U3B4CL				
	1010	338	9.52	SGM-08U3B4L	08AS	08AP	10ADG	
			11.5	SGM-08U3B4CL				
100V 1-Phase, 2048 PPR Incremental Encoder, Straight Shaft without Keyway	40.5	13.5	0.288	SGM-A3L3B2L	A3BS	A3BP	-	Non-Stock
			0.416	SGM-A3L3B2CL				
	67.7	22.6	0.368	SGM-A5L3B2L	A5BS	A5BP	-	
			0.496	SGM-A5L3B2CL				
100V 1-Phase, 2048 PPR Incremental Encoder, Straight Shaft with Keyway	135	45.1	0.567	SGM-01L3B4L	01BS	01BP	-	Stock
			0.688	SGM-01L3B4CL				
	270	90.1	1.74	SGM-02L3B4L	02BS	02BP	-	
			2.58	SGM-02L3B4CL				
	542	181	2.7	SGM-03L3B4L	03BS	03BP	-	
			3.52	SGM-03L3B4CL				

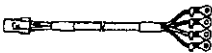
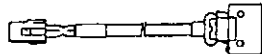
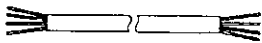
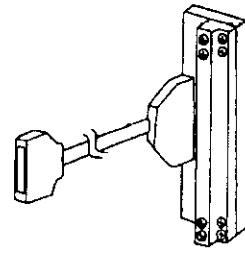
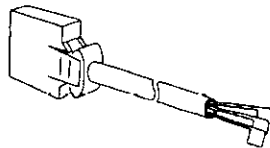
Notes: 24VDC brakes for SGM Sigma servomotors are standard. Contact a local source for 24VDC power supplies. Motor power and encoder cables are factory pre-wired with approximately 13" lead length with amplifier mating connectors. Use the tables on the following page to specify mating connectors or pre-wired cables available in various lengths. For technical information, request manual number TSE-S800-15 from your Yaskawa representative.

\* For more detailed SGDA amplifier specifications and dimensions, refer to page 69.



## Pre-wired Cable Selection

Use the table below to select Pre-wired Cables for your SGM Sigma Servomotor.

Cable Description (C)		Motor Size (kW)	Part Number	Comments	Item Class
Power Cable without Brake		All	DP9320081-□	Use the following key to specify required cable length (last digit of part #): 1: 3 meters 2: 5 meters 3: 10 meters (standard) 4: 15 meters 5: 20 meters	Stock *
Power Cable with Brake			DP9320083-□		
Encoder Cable (incremental)			DP9320089-□		
Encoder Cable (absolute)			DP9320088-□		
Encoder Cable Only for Solder Connections			DP8409123		
Encoder Cable Only for Solder Connections			DP8409179	Over 70 feet; splice cable to accommodate connector.	Stock
Input/Output 1CN Cable & Transition Terminal Block			JUSP-TA36P	35 mm din rail mountable; the cable length is 0.5 meters.	Non-Stock
Input/Output 1CN Cable with Pigtail Leads			DE9404859-□	Use the following key to specify required cable length (last digit of part #): 1: 1 meter (standard) 2: 2 meters 3: 3 meters	Stock *

\* Standard cable lengths are Stock items; non-standard cable lengths are Limited Stock items.

## Connector Selection

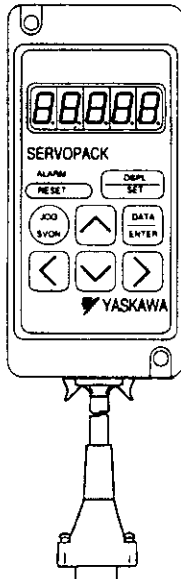
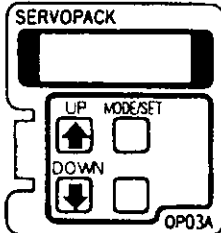
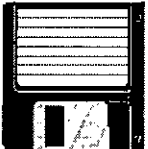
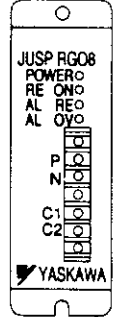
Use the table below to select Mating Connectors or Kits for your SGM Sigma Servomotor.

Connector Description (D)	Motor Size (kW)	Part Number	Comments	Item Class
Motor (without Brake) and Incremental Encoder	All	DP9420006-1	These connector kits include mating connectors for motor power and motor encoder, and the amplifier 2CN encoder mating connector.	Stock
Motor (with Brake) and Incremental Encoder		DP9420006-2		
Motor (without Brake) and Absolute Encoder		DP9420006-3		
Motor (with Brake) and Absolute Encoder		DP9420006-4		
1CN Mating Connector		DP9420007		



## Peripheral Device Selection

Use the table below to select Peripheral Devices for your SGM Sigma Servomotor.

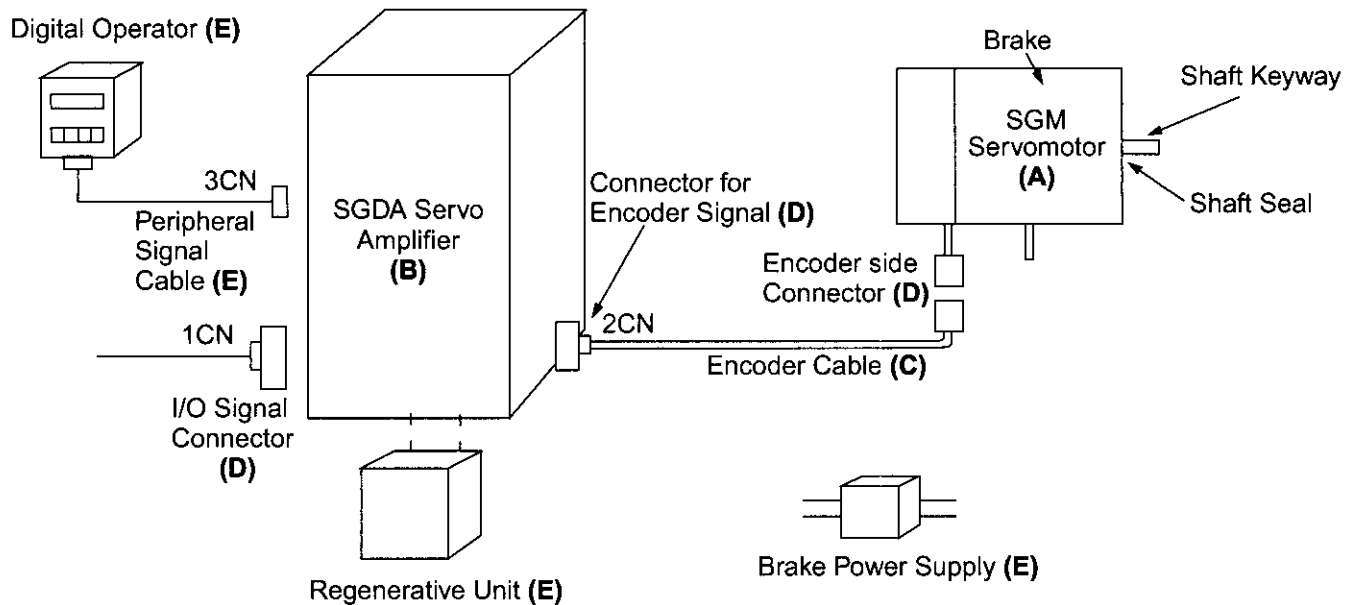
Component Description (E)	Part Number	Comments	Item Class
Hand-held Digital Operator Panel		JUSP-OP02A-1 Portable unit with built-in cable	Stock
Digital Operator Panel		JUSP-OP03A Plugs into front of amplifier	Non-Stock
SVMON Software		SVMON Programming software for DOS 3.3 on a 3.5" floppy disk	
Software Interface Cable		YS-11 Pre-wired 1.5 meter cable with 9-pin connector	
Regenerative Unit		JUSP-RG08 60W capacity	Stock
NEMA Flange Adapter		SGM-N23 For 30, 50 and 100W SGM only to NEMA 23 mounting standard	Limited Stock



# Selecting Your SGM Sigma Servo System

Use the diagram below to locate and identify the components of your system. Each item is letter-coded and cross-referenced in the option tables on the following pages.

## System Configuration



## Model Number Designation

**SGM - 01 V 3 1 4 [B]**

<p><b>Sigma Servomotor Type</b></p> <p><b>Rated Output</b></p> <p>A3: 30W (0.04HP)</p> <p>A5: 50W (0.07HP)</p> <p>01: 100W (0.13HP)</p> <p>02: 200W (0.25HP)</p> <p>03: 300W (0.4HP)</p> <p>04: 400W (0.5HP)</p> <p>08: 750W (1HP)</p> <p><b>Power Supply</b></p> <p>V: 200V CE Specification</p> <p>W: 100V CE Specification</p>	<p><b>Accessories</b></p> <p>B: 90VDC Brake</p> <p>S: Shaft Seal</p> <p>D: Brake &amp; Shaft Seal</p> <p><b>Shaft Specifications</b></p> <p>4: Straight Shaft with Keyway</p> <p>2: Straight Shaft without Keyway</p> <p><b>Revision Level</b></p> <p><b>Encoder Specifications</b></p> <p>3: 2048PPR Incremental Encoder</p> <p>W: 1024PPR Absolute Encoder</p>
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## Servomotor & Amplifier Selection

Use the table below to select the appropriate SGM Sigma Servomotor and Amplifier.

Description	Peak Torque (oz. in.)	Rated Torque (oz. in.)	Motor Inertia (oz.in.sec <sup>2</sup> ×10 <sup>-3</sup> )	Motor MODEL # (A)	Amplifier MODEL # (B)*			Motor Item Class	
					Analog Input SGDA-	Digital Input SGDA-	Analog/Digital Input SGDB-		
200V 1-Phase, 2048 PPR Incremental Encoder, Straight Shaft with Keyway	40.5	13.5	0.288	SGM-A3V314	A3VS (Non-Stock)	A3VP (Non-Stock)	-	Non-Stock	
			0.416	SGM-A3V314B					
	67.7	22.6	0.368	SGM-A5V314	A5VS (Non-Stock)	A5VP (Non-Stock)	-		
			0.496	SGM-A5V314B					
	135	45.1	0.567	SGM-01V314	01VS (Limited Stock)	01VP (Non-Stock)	-	Limited Stock	
			0.688	SGM-01V314B				Non-Stock	
	270	90.1	1.74	SGM-02V314	02VS (Limited Stock)	02VP (Non-Stock)	-	Limited Stock	
			2.58	SGM-02V314B				Non-Stock	
	542	181	2.7	SGM-04V314	04VS (Limited Stock)	04VP (Non-Stock)	05VD (Limited Stock)	Limited Stock	
			3.52	SGM-04V314B				Non-Stock	
	1010	338	9.52	SGM-08V314	08VS (Limited Stock)	08VP (Non-Stock)	10VD (Limited Stock)	Limited Stock	
			11.5	SGM-08V314B				Non-Stock	
	100V 1-Phase, 2048 PPR Incremental Encoder, Straight Shaft without Keyway	40.5	13.5	0.288	SGM-A3W312L	A3WS (Non-Stock)	A3WP (Non-Stock)	-	Non-Stock
				0.416	SGM-A3W312B				
67.7		22.6	0.368	SGM-A5W312L	A5WS (Non-Stock)	A5WP (Non-Stock)	-		
			0.496	SGM-A5W312B					
100V 1-Phase, 2048 PPR Incremental Encoder, Straight Shaft with Keyway	135	45.1	0.567	SGM-01W314	01WS (Limited Stock)	01WP (Non-Stock)	-	Limited Stock	
			0.688	SGM-01W314B				Non-Stock	
	270	90.1	1.74	SGM-02W314	02WS (Limited Stock)	02WP (Non-Stock)	-	Limited Stock	
			2.58	SGM-02W314B				Non-Stock	
	542	181	2.7	SGM-03W314	03WS (Limited Stock)	03WP (Non-Stock)	-	Limited Stock	
			3.52	SGM-03W314B				Non-Stock	

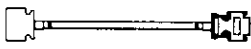
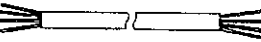
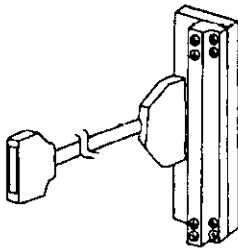
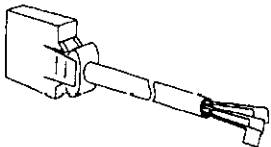
Notes: 90VDC Brakes for CE specification SGM Sigma servomotors are standard. Refer to the Peripheral Device Selection table (following page) to specify 90VDC power supplies.

Use the tables on the following page to specify encoder pre-wired cables and connectors.

For technical information, request technical document numbers PI-6022 and DE9409784 from your Yaskawa representative.

# Pre-wired Cable Selection

Use the table below to select Pre-wired Cables for your SGM Sigma Servomotor.

Cable Description (C)		Motor Size (kW)	Part Number	Comments	Item Class
Encoder Cable (incremental)		All	SMI-□	Use the following key to specify required cable length (last digit of part #): 1: 3 meters 2: 5 meters 3: 10 meters 4: 15 meters 5: 20 meters	Stock *
Encoder Cable (absolute)			SMA-□		Limited Stock
Encoder Cable Only for Solder Connections			DP8409123	Up to 70 feet; for use with mating connector.	Stock
Encoder Cable Only for Solder Connections			DP8409179	Over 70 feet; splice cable to accommodate connector.	Stock
Input/Output 1CN Cable & Transition Terminal Block			JUSP-TA36P	35 mm din rail mountable; the cable length is 0.5 meters.	Non-Stock
Input/Output 1CN Cable with Pigtail Leads			DE9404859-□	Use the following key to specify required cable length (last digit of part #): 1: 1 meter (standard) 2: 2 meters 3: 3 meters	Stock *


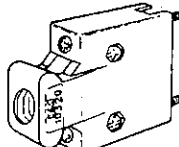
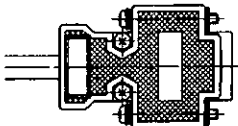


Notes: CE spec SGM servomotors come standard with 12" Pigtail power leads.

\* Standard cable lengths are Stock items; non-standard cable lengths are Limited Stock items.

## Mating Connector Selection

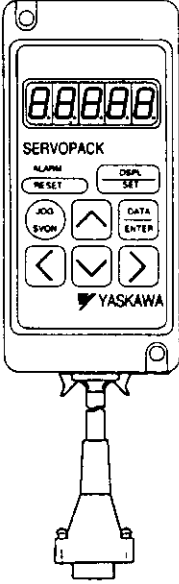
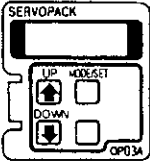
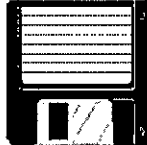
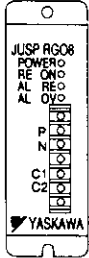
Use the table below to select Mating Connectors for your SGM Sigma Servomotor.

Connector Description (D)		Motor Size (kW)	Part Number	Comments	Item Class
1CN Mating Connector		All	DP9420007	Solder type with cover	Stock
2CN Encoder Cable Connector				Solder type connector case	
Incremental Encoder Cable Connector			17JE-13090-02 (D8A) + 17L-002A (x2)	Manufactured by Daichi Denshi Kogyo	
Absolute Encoder Cable Connector			17JE-13150-02 (D8A) + 17L-002A (x2)		

SGM

# Peripheral Device Selection

Use the table below to select Peripheral Devices for your SGM Sigma Servomotor.

Component Description (E)	Part Number	Comments	Item Class
<p>Hand-held Digital Operator Panel</p> 	<p>JUSP-OP02A-1</p>	<p>Portable unit with built-in cable</p>	<p>Stock</p>
<p>Digital Operator Panel</p> 	<p>JUSP-OP03A</p>	<p>Plugs into front of amplifier</p>	<p>Non-Stock</p>
<p>SVMON Software</p> 	<p>SVMON</p>	<p>Programming software for DOS 3.3 on a 3.5" floppy disk</p>	<p>Stock</p>
<p>Software Interface Cable</p>	<p>YS-11</p>	<p>Pre-wired 1.5 meter cable with 9-pin connector</p>	
<p>Regenerative Unit</p> 	<p>JUSP-RG08</p>	<p>60W capacity</p>	<p>Stock</p>
<p>100VDC Induction Brake Power Supply</p>	<p>LPDE-1H01</p>	<p>100 VAC Input</p>	<p>Stock</p>
<p>NEMA Flange Adapter</p>	<p>SGM-N23</p>	<p>For 30, 50 and 100W SGM only to NEMA 23 mounting standard</p>	<p>Limited Stock</p>



**NOTES**

