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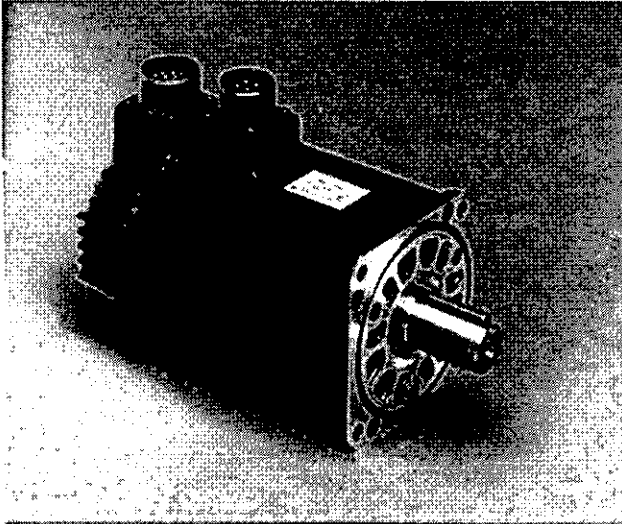
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## Super High Power Rate Series

# SGMS Servomotors (3000rpm) - With Incremental / Absolute Encoder

Rated Output: 1.0kW, 1.5kW, 2.0kW,  
3.0kW, 4.0kW, 5.0kW



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## Design Features

### 1. Compact

- Small sized motor
- Six frame sizes: up to 140 in. lb. RMS - torque.

### 2. High Speed

- Rated Speed: 3000 RPM
- Maximum Speed: 4500 RPM

### 3. Encoders

- 4095 PPR incremental encoder standard
- 8192 PPR absolute encoder (option)

### 4. Enclosure

- Totally enclosed, self-cooled IP67 (excluding shaft)
- IP67 with shaft seal (option)

### 5. Application Emphasis

- High torque-to inertia ratio
- Chip mounters
- PCB drilling machines
- Robots
- Conveyors
- Packaging

### 6. Certified International Standards

- UL Recognized and c-UL pending (File # E165827), CE compliance (option)



# Servomotor Ratings and Specifications

Time Rating: Continuous  
 Insulation: Class F  
 Vibration: 15µm or less  
 Withstand Voltage: 1500VAC  
 Insulation Resistance: 500VDC  
 10MΩ min.

Enclosure: Totally-enclosed, self-cooled  
 IP67 (except for shaft opening)  
 Ambient Temperature: 0 to 40°C  
 Ambient Humidity: 20 to 80%  
 (non-condensing)  
 Rated Speed: 3000 rpm  
 Instantaneous Max Speed: 4500 rpm

Excitation: Permanent magnet  
 Drive Method: Direct drive  
 Mounting: Flange-mounted  
 Painting Color: Muncell notation  
 N1.5

| MOTORS:<br>SGMS- | Rated Output* | Rated Torque* |                | Instantaneous Peak Torque* |                | Rated Current* | Instantaneous Max Current* |
|------------------|---------------|---------------|----------------|----------------------------|----------------|----------------|----------------------------|
|                  | kW (HP)       | N·m           | kgf·cm (lb·in) | N·m                        | kgf·cm (lb·in) | A (rms)        | A (rms)                    |
| 10A□A            | 1.0 (1.3)     | 3.18          | 32.4 (28.2)    | 9.54                       | 97.2 (84.4)    | 5.7            | 17                         |
| 15A□A            | 1.5 (2.0)     | 4.9           | 50 (43)        | 14.7                       | 150 (130)      | 9.5            | 28                         |
| 20A□A            | 2.0 (2.7)     | 6.36          | 65 (56.4)      | 19.1                       | 195 (169)      | 12.4           | 42                         |
| 30A□A            | 3.0 (4.0)     | 9.8           | 100 (87)       | 29.4                       | 300 (260)      | 18.8           | 56                         |
| 40A□A            | 4.0 (5.4)     | 12.6          | 129 (112)      | 37.8                       | 387 (336)      | 24.3           | 77                         |
| 50A□A            | 5.0 (6.7)     | 15.8          | 161 (140)      | 47.6                       | 486 (422)      | 28.2           | 84                         |

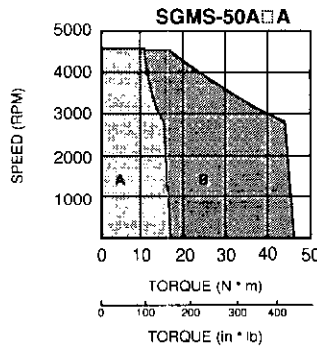
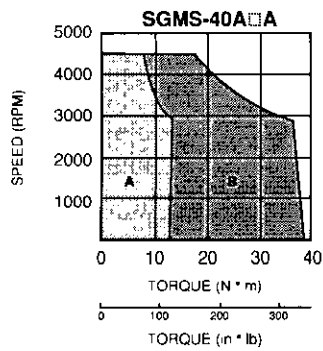
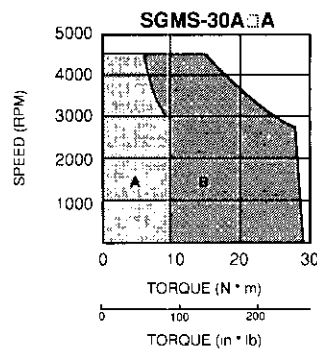
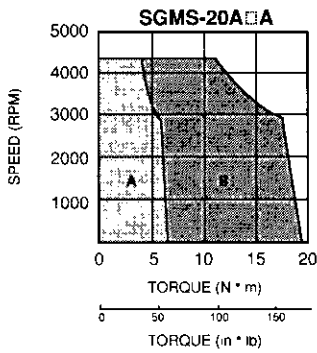
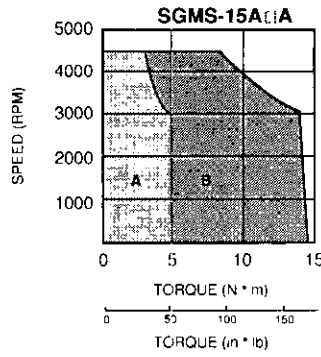
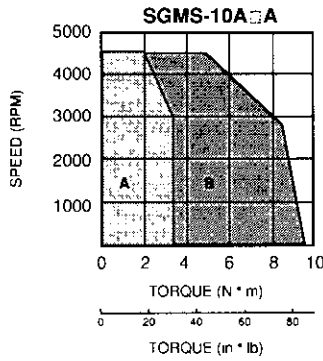
| MOTORS:<br>SGMS- | Torque Constant |                                | Moment of Inertia                       |   | Holding<br>Brake<br>Torque | Holding Brake Inertia                   |   | Allowable<br>Load Inertia            | Rated<br>Power<br>Rate* | Rated<br>Angular<br>Acceleration* | Inertia<br>Time<br>Constant | Inductive<br>Time<br>Constan. |
|------------------|-----------------|--------------------------------|---|---|----------------------------|---|---|--------------------------------------|-------------------------|-----------------------------------|-----------------------------|-------------------------------|
|                  | N·m/A<br>(rms)  | kgf·cm/A<br>(lb·in/A)<br>(rms) | kg·m <sup>2</sup> ×<br>10 <sup>-4</sup> | gf·cm·s <sup>2</sup><br>(lb·in·s <sup>2</sup><br>× 10 <sup>-3</sup> ) | N·m                        | kg·m <sup>2</sup> ×<br>10 <sup>-4</sup> | gf·cm·s <sup>2</sup><br>(lb·in·s <sup>2</sup><br>× 10 <sup>-3</sup> ) | kg·m <sup>2</sup> × 10 <sup>-4</sup> | kW/s                    | rad/s <sup>2</sup>                | ms                          | ms                            |
| 10A□A            | 0.64            | 6.5 (5.6)                      | 1.74                                    | 1.78 (1.54)   | 7.84                       | 0.215                                   | 0.219<br>(0.190)  | 1.74                                 | 57.9                    | 18250                             | 0.87                        | 7.1                           |
| 15A□A            | 0.57            | 5.8 (5.1)                      | 2.47                                    | 2.52 (2.19)   |                            |   |   | 2.47                                 | 97.2                    | 19840                             | 0.71                        | 7.7                           |
| 20A□A            | 0.56            | 5.7 (5.0)                      | 3.19                                    | 3.26 (2.82)   |                            |   |   | 3.19                                 | 127                     | 19970                             | 0.58                        | 8.3                           |
| 30A□A            | 0.57            | 5.8 (5.1)                      | 7.00                                    | 7.14 (6.20)   | 2.0                        | 1.85                                    | 1.89<br>(1.64)  | 7.0                                  | 137                     | 14000                             | 0.74                        | 13.0                          |
| 40A□A            | 0.55            | 5.6 (4.9)                      | 9.60                                    | 9.80 (8.50)   |                            |   |   | 9.6                                  | 166                     | 13160                             | 0.60                        | 14.1                          |
| 50A□A            | 0.61            | 6.2 (5.4)                      | 12.3                                    | 12.6 (10.9)   |                            |   |   | 12.3                                 | 202                     | 12780                             | 0.57                        | 14.7                          |

\* These items and torque-speed characteristics quoted in combination with an SGDB Servo Amplifier at an armature winding temperature of 20°C.

Note: These characteristics can be obtained when the following heat sinks (steel plates) are used for cooling purposes:

Type 10A□A to 20A□A: 300 × 300 × 12 (mm) (11.81 × 11.81 × 0.47 (in))  
 Type 30A□A to 50A□A: 400 × 400 × 20 (mm) (15.75 × 15.75 × 0.79 (in))

# Speed / Torque Curves



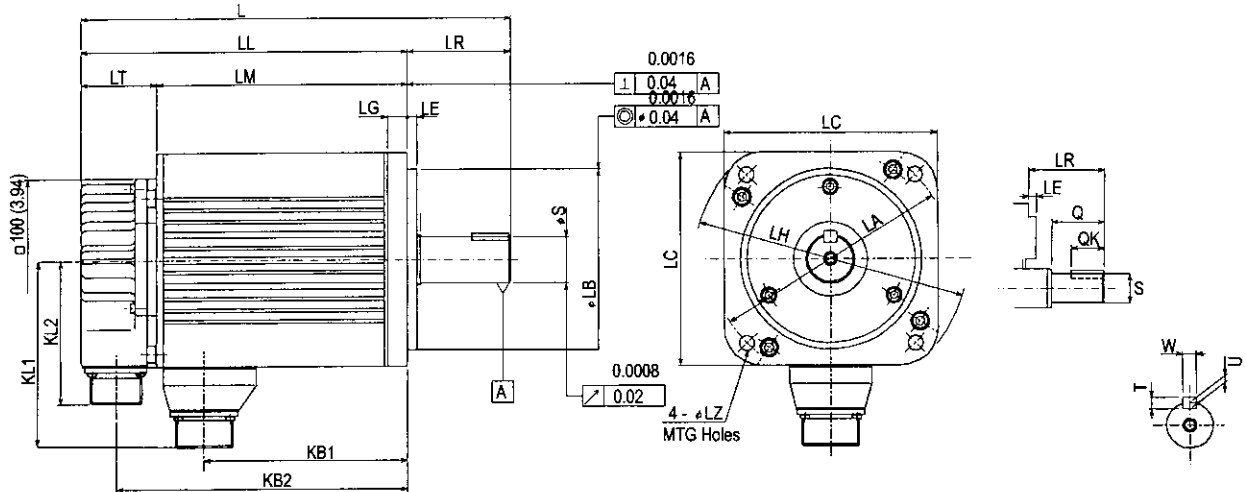
**A** : CONTINUOUS DUTY ZONE

**B** : INTERMITTENT DUTY ZONE



## Dimensions in inches (mm)

### (1) 4096 PPR Incremental Encoder

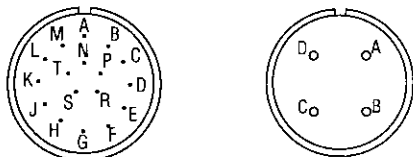


| Type<br>SGMS | L              | LL             | LM            | LR           | LT           | KB1           | KB2            | KL1           | KL2          | Flange Dimensions |                            |               |          |              |               |              | Shaft End Dimension |                          | Approx. Mass<br>b (kg) |            |
|--------------|----------------|----------------|---------------|--------------|--------------|---------------|----------------|---------------|--------------|-------------------|----------------------------|---------------|----------|--------------|---------------|--------------|---------------------|--------------------------|------------------------|------------|
|              |                |                |               |              |              |               |                |               |              | LA                | LB                         | LC            | LE       | LG           | LH            | LJ           | LZ                  | S                        |                        | Q          |
| 10A6AB       | 7.64<br>(194)  | 5.87<br>(149)  | 4.06<br>(103) | 1.77<br>(45) | 1.81<br>(46) | 2.99<br>(76)  | 5.04<br>(128)  | 3.78<br>(96)  | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95) $\pm 0.035$   | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7)            | 0.94<br>(24) $\pm 0.013$ | 1.57<br>(40)           | 10.1 (4.6) |
| 15A6AB       | 8.66<br>(220)  | 6.89<br>(175)  | 5.08<br>(129) | 1.77<br>(45) | 1.81<br>(46) | 4.02<br>(102) | 6.06<br>(154)  | 3.78<br>(96)  | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95) $\pm 0.035$   | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7)            | 0.94<br>(24) $\pm 0.013$ | 1.57<br>(40)           | 12.8 (5.8) |
| 20A6AB       | 9.57<br>(243)  | 7.8<br>(198)   | 5.98<br>(152) | 1.77<br>(45) | 1.81<br>(46) | 4.92<br>(125) | 6.97<br>(177)  | 3.78<br>(96)  | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95) $\pm 0.035$   | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7)            | 0.94<br>(24) $\pm 0.013$ | 1.57<br>(40)           | 15.4 (7.0) |
| 30A6AB       | 10.31<br>(262) | 7.83<br>(199)  | 6.02<br>(153) | 2.48<br>(63) | 1.81<br>(46) | 4.8<br>(122)  | 7.01<br>(178)  | 4.49<br>(114) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110) $\pm 0.035$  | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9)            | 1.1<br>(28) $\pm 0.013$  | 2.17<br>(55)           | 24.3 (11)  |
| 40A6AB       | 11.77<br>(299) | 9.29<br>(236)  | 7.48<br>(190) | 2.48<br>(63) | 1.81<br>(46) | 6.26<br>(159) | 8.46<br>(215)  | 4.49<br>(114) | 3.43<br>(87) | 5.71<br>(145)     | 110<br>(4.33) $\pm 0.0014$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9)            | 1.1<br>(28) $\pm 0.013$  | 2.17<br>(55)           | 30.9 (14)  |
| 50A6AB       | 13.35<br>(339) | 10.87<br>(276) | 9.06<br>(230) | 2.48<br>(63) | 1.81<br>(46) | 7.83<br>(199) | 10.04<br>(255) | 4.49<br>(114) | 3.43<br>(87) | 5.71<br>(145)     | 110<br>(4.33) $\pm 0.0014$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9)            | 1.1<br>(28) $\pm 0.013$  | 2.17<br>(55)           | 37.5 (17)  |

- Note:
1. Incremental Encoder (4096 PPR) is used as a detector.
  2. Dimensions are the same when using other incremental encoders.
  3. Tolerances on the dimensions LB of flange type and S of shaft extensions are based on JIS (Japanese Industrial Standard) B0401 "Limits and Fits for Engineering."
  4. There are no dimensional changes on the CE products.

#### Connector Specifications

Receptacle: MS3102A20-29P  
 Applicable Plug: (To be prepared by customer)  
 Plug: MS3108B20-29S (L Type)  
 MS3106B20-29S (Straight Type)  
 Cable Clamp: MS3057-12A

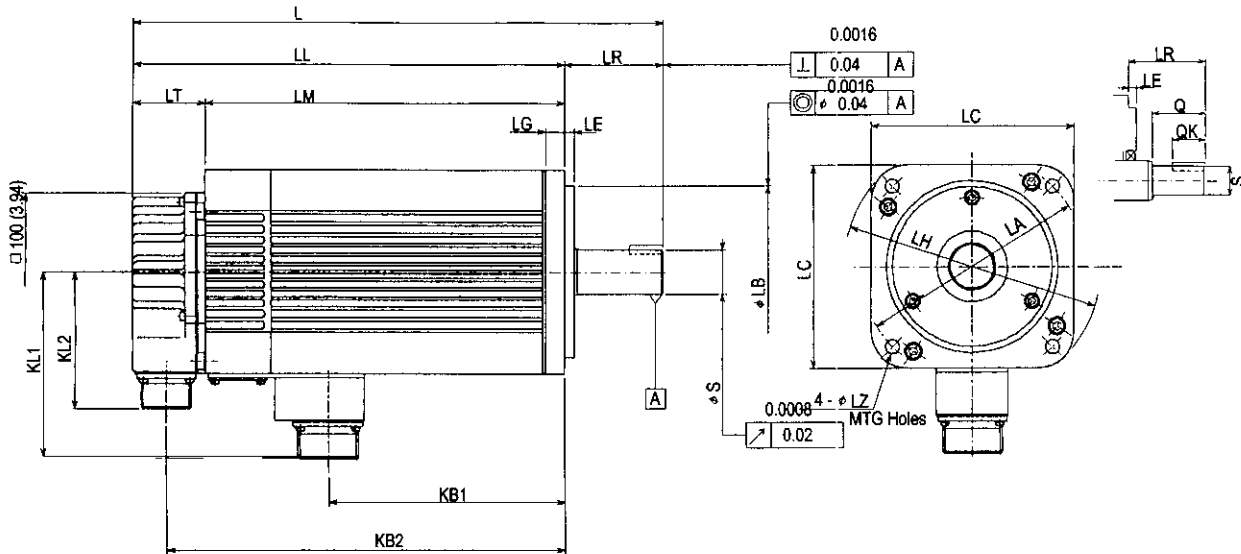


| Pin | Signal            | Terminal |
|-----|-------------------|----------|
| A   | Channel A Output  | K        |
| B   | Channel A Output  | L        |
| C   | Channel B Output  | M        |
| D   | Channel B Output  | N        |
| E   | Channel C Output  | P        |
| F   | Channel C Output  | R        |
| G   | 0V                | S        |
| H   | +5 VDC            | T        |
| J   | FG (Frame Ground) |          |

|   |                 |
|---|-----------------|
| A | U Phase         |
| B | V Phase         |
| C | W Phase         |
| D | Ground Terminal |

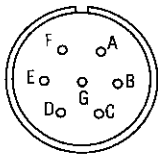
Note: The above-mentioned detector side specifications are common to all the motors with incremental encoders.

## (2) 4096 PPR Incremental Encoder, with Brake



| Type SGMS- | L              | LL             | LM             | LR           | LT           | KB1           | KB2            | KL1           | KL2          | Flange Dimensions |                           |               |          |              |               |              | Shaft End Dimension |                          | Approx. Mass<br>b (kg) |            |
|------------|----------------|----------------|----------------|--------------|--------------|---------------|----------------|---------------|--------------|-------------------|---------------------------|---------------|----------|--------------|---------------|--------------|---------------------|--------------------------|------------------------|------------|
|            |                |                |                |              |              |               |                |               |              | LA                | LB                        | LC            | LE       | LG           | LH            | LJ           | LZ                  | S                        |                        | Q          |
| 10A6ABC    | 9.37<br>(238)  | 7.6<br>(193)   | 5.79<br>(147)  | 1.77<br>(45) | 1.81<br>(46) | 2.64<br>(67)  | 6.77<br>(172)  | 3.94<br>(100) | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95) $\pm 0.035$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7)            | 0.94<br>(24) $\pm 0.013$ | 1.57<br>(40)           | 13.2 (6.0) |
| 15A6ABC    | 10.39<br>(264) | 8.62<br>(219)  | 6.81<br>(173)  | 1.77<br>(45) | 1.81<br>(46) | 3.66<br>(93)  | 7.8<br>(198)   | 3.94<br>(100) | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95) $\pm 0.035$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7)            | 0.94<br>(24) $\pm 0.013$ | 1.57<br>(40)           | 16.5 (7.5) |
| 20A6ABC    | 11.3<br>(287)  | 9.53<br>(242)  | 7.72<br>(196)  | 1.77<br>(45) | 1.81<br>(46) | 4.57<br>(116) | 8.7<br>(221)   | 3.94<br>(100) | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95) $\pm 0.035$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7)            | 0.94<br>(24) $\pm 0.013$ | 1.57<br>(40)           | 18.7 (8.5) |
| 30A6ABC    | 11.81<br>(300) | 9.33<br>(237)  | 7.52<br>(191)  | 2.48<br>(63) | 1.81<br>(46) | 4.45<br>(113) | 8.5<br>(216)   | 4.69<br>(119) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110) $\pm 0.035$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9)            | 1.1<br>(28) $\pm 0.013$  | 2.17<br>(55)           | 30.9 (14)  |
| 40A6ABC    | 13.27<br>(337) | 10.79<br>(274) | 8.98<br>(228)  | 2.48<br>(63) | 1.81<br>(46) | 5.91<br>(150) | 9.96<br>(253)  | 4.69<br>(119) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110) $\pm 0.035$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9)            | 1.1<br>(28) $\pm 0.013$  | 2.17<br>(55)           | 37.5 (17)  |
| 50A6ABC    | 13.27<br>(377) | 12.36<br>(314) | 10.55<br>(268) | 2.48<br>(63) | 1.81<br>(46) | 7.48<br>(190) | 11.54<br>(293) | 4.69<br>(119) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110) $\pm 0.035$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9)            | 1.1<br>(28) $\pm 0.013$  | 2.17<br>(55)           | 44.1 (20)  |

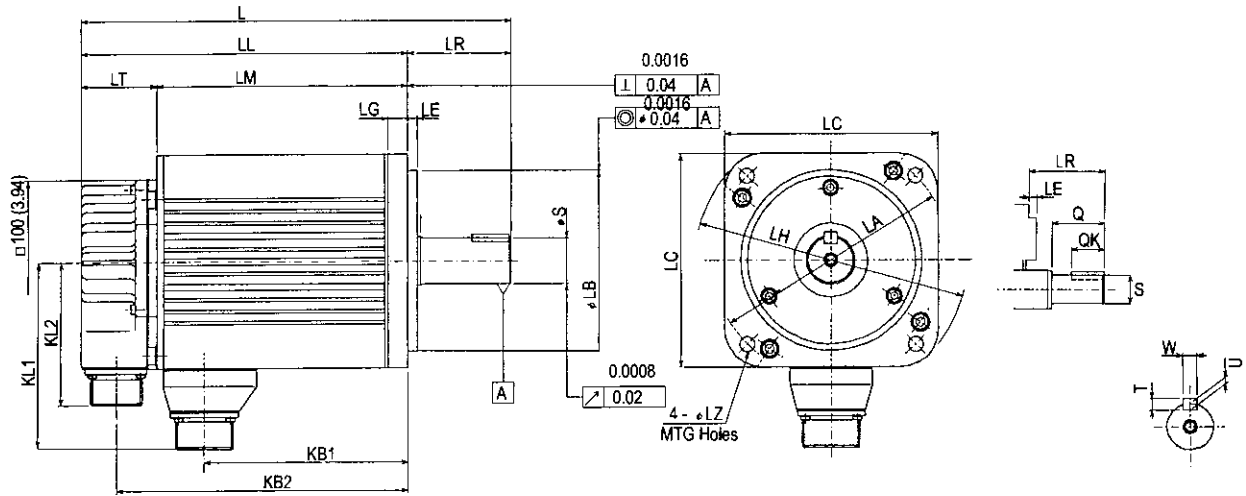
- Note:
1. Incremental Encoder (4096 PPR) is used as a detector.
  2. Dimensions are the same when using other incremental encoders.
  3. Tolerances on the dimensions LB of flange type and S of shaft extensions are based on JIS (Japanese Industrial Standard) B0401 "Limits and Fits for Engineering."
  4. There are no dimensional changes on the CE products.



| Connector Wiring on the Motor Side |                 |   |                |
|------------------------------------|-----------------|---|----------------|
| A                                  | U Phase         | E | Brake Terminal |
| B                                  | V Phase         | F | Brake Terminal |
| C                                  | W Phase         | G | -              |
| D                                  | FG Frame Ground |   |                |



## (3) 8192 PPR Absolute Encoder (15 bit)

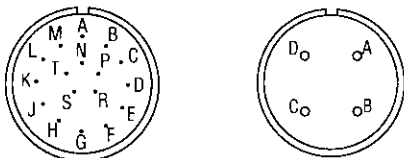


| Type<br>SGMS- | L              | LL             | LM            | LR           | LT           | KB1           | KB2            | KL1           | KL2          | Flange Dimensions |  |               |          |              |               |              |          | Shaft End Dimension                   |              | Approx. Mass<br>lb (kg) |
|---------------|----------------|----------------|---------------|--------------|--------------|---------------|----------------|---------------|--------------|-------------------|--|---------------|----------|--------------|---------------|--------------|----------|---------------------------------------|--------------|-------------------------|
|               |                |                |               |              |              |               |                |               |              | LA                | LB                                     | LC            | LE       | LG           | LH            | LJ           | LZ       | S                                     | Q            |                         |
| 10ASAB        | 8.19<br>(208)  | 6.42<br>(163)  | 4.06<br>(103) | 1.77<br>(45) | 2.36<br>(60) | 2.99<br>(76)  | 5.59<br>(142)  | 3.78<br>(96)  | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95)<br>$\frac{0.035}{0.005}$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7) | 0.94<br>(24)<br>$\frac{0.013}{0.005}$ | 1.57<br>(40) | 11 (5.0)                |
| 15ASAB        | 9.21<br>(234)  | 7.44<br>(189)  | 5.08<br>(129) | 1.77<br>(45) | 2.36<br>(60) | 4.02<br>(102) | 6.61<br>(168)  | 3.78<br>(96)  | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95)<br>$\frac{0.035}{0.005}$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7) | 0.94<br>(24)<br>$\frac{0.013}{0.005}$ | 1.57<br>(40) | 13.7 (6.2)              |
| 20ASAB        | 10.12<br>(257) | 8.35<br>(212)  | 5.98<br>(152) | 1.77<br>(45) | 2.36<br>(60) | 4.92<br>(125) | 7.52<br>(191)  | 3.78<br>(96)  | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95)<br>$\frac{0.035}{0.005}$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7) | 0.94<br>(24)<br>$\frac{0.013}{0.005}$ | 1.57<br>(40) | 16.3 (7.4)              |
| 30ASAB        | 10.87<br>(276) | 8.39<br>(213)  | 6.02<br>(153) | 2.48<br>(63) | 2.36<br>(60) | 4.8<br>(122)  | 7.56<br>(192)  | 4.49<br>(114) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110)<br>$\frac{0.035}{0.005}$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9) | 1.1<br>(28)<br>$\frac{0.013}{0.005}$  | 2.17<br>(55) | 25.4 (11.5)             |
| 40ASAB        | 12.32<br>(313) | 9.84<br>(250)  | 7.48<br>(190) | 2.48<br>(63) | 2.36<br>(60) | 6.26<br>(159) | 9.02<br>(229)  | 4.49<br>(114) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110)<br>$\frac{0.035}{0.005}$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9) | 1.1<br>(28)<br>$\frac{0.013}{0.005}$  | 2.17<br>(55) | 32 (14.5)               |
| 50ASAB        | 13.9<br>(353)  | 11.42<br>(290) | 9.06<br>(230) | 2.48<br>(63) | 2.36<br>(60) | 7.83<br>(199) | 10.59<br>(269) | 4.49<br>(114) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110)<br>$\frac{0.035}{0.005}$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(12) | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9) | 1.1<br>(28)<br>$\frac{0.013}{0.005}$  | 2.17<br>(55) | 38.6 (17.5)             |

- Note:
1. Incremental Encoder (81926 PPR) is used as a detector.
  2. Dimensions are the same when using other incremental encoders.
  3. Tolerances on the dimensions LB of flange type and S of shaft extensions are based on JIS (Japanese Industrial Standard) B0401 "Limits and Fits for Engineering."
  4. There are no dimensional changes on the CE products.

### Connector Specifications

Receptacle: MS3102A20-29P  
 Applicable Plug: (To be prepared by customer)  
 Plug: MS3108B20-29S (L Type)  
 MS3106B20-29S (Straight Type)  
 Cable Clamp: MS3057-12A

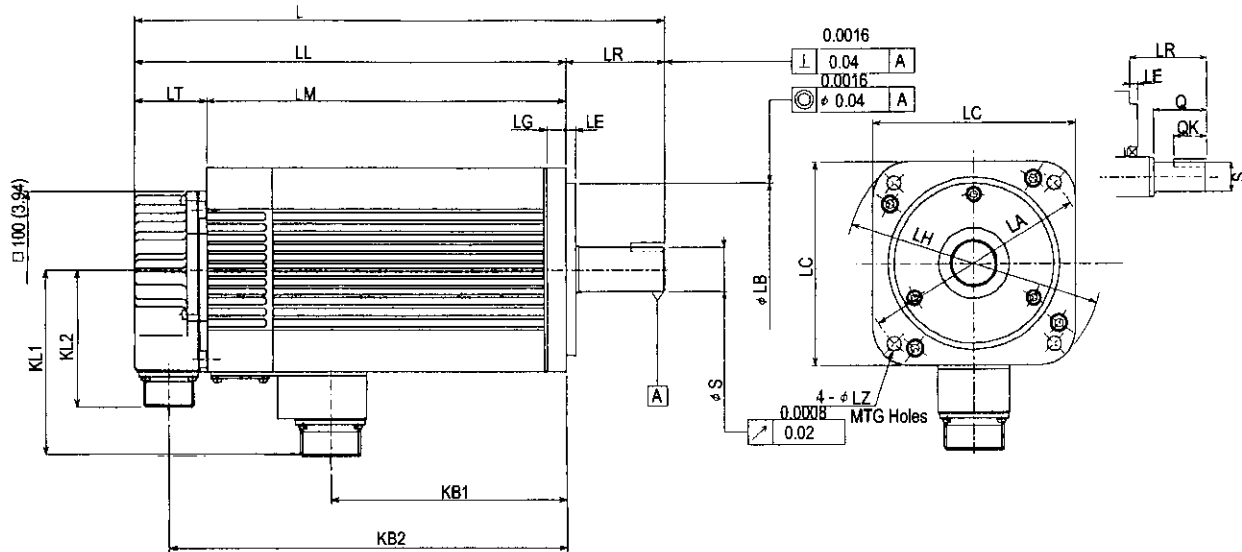


| Connector Wiring on the Incremental Encoder<br>(When using 8192 PPR (15 bits)) |                      |   |                |
|--|----------------------|---|----------------|
| A  | Channel A Output     | K | -              |
| B  | Channel A Output     | L | -              |
| C  | Channel B Output     | M | -              |
| D  | Channel B Output     | N | -              |
| E  | Channel Z (C) Output | P | -              |
| F  | Channel Z (C) Output | R | Reset          |
| G  | 0V                   | S | 0V (battery)   |
| H  | +5 VDC               | T | 3.6V (battery) |
| J  | FG (Frame Ground)    |   |                |

| Connector Wiring on the Motor Side |                   |
|------------------------------------|-------------------|
| A                                  | U Phase           |
| B                                  | V Phase           |
| C                                  | W Phase           |
| D                                  | FG (Frame Ground) |

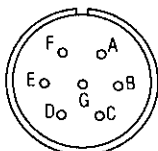
Note: The above-mentioned detector side specifications are common to all the motors with incremental encoders.

## (4) 8192 PPR Absolute Encoder (15 bit), With Brake



| Type<br>SGMS | L              | LL             | LM             | LR           | LT           | KB1           | KB2            | KL1           | KL2          | Flange Dimensions |                                     |               |          |              |               |              |          | Shaft End Dimension                |              | Approx. Mass<br>b (kg) |
|--------------|----------------|----------------|----------------|--------------|--------------|---------------|----------------|---------------|--------------|-------------------|-------------------------------------|---------------|----------|--------------|---------------|--------------|----------|------------------------------------|--------------|------------------------|
|              |                |                |                |              |              |               |                |               |              | LA                | LB                                  | LC            | LE       | LG           | LH            | LJ           | LZ       | S                                  | Q            |                        |
| 10ASABC      | 9.92<br>(252)  | 8.15<br>(207)  | 5.79<br>(147)  | 1.77<br>(45) | 2.36<br>(60) | 2.64<br>(67)  | 7.32<br>(186)  | 3.94<br>(100) | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95)<br>$\frac{0}{-0.035}$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7) | 0.94<br>(24)<br>$\frac{0}{-0.013}$ | 1.57<br>(40) | 14.3 (65)              |
| 15ASABC      | 10.94<br>(278) | 9.17<br>(233)  | 6.81<br>(173)  | 1.77<br>(45) | 2.36<br>(60) | 3.66<br>(93)  | 8.35<br>(212)  | 3.94<br>(100) | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95)<br>$\frac{0}{-0.035}$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7) | 0.94<br>(24)<br>$\frac{0}{-0.013}$ | 1.57<br>(40) | 17.6 (8.0)             |
| 20ASABC      | 11.85<br>(301) | 10.08<br>(256) | 7.72<br>(196)  | 1.77<br>(45) | 2.36<br>(60) | 4.57<br>(116) | 9.25<br>(235)  | 3.94<br>(100) | 3.43<br>(87) | 4.53<br>(115)     | 3.74<br>(95)<br>$\frac{0}{-0.035}$  | 3.94<br>(100) | 0.12 (3) | 0.39<br>(10) | 5.12<br>(130) | 1.77<br>(45) | 0.28 (7) | 0.94<br>(24)<br>$\frac{0}{-0.013}$ | 1.57<br>(40) | 19.8 (9.0)             |
| 30ASABC      | 12.36<br>(314) | 9.88<br>(251)  | 7.52<br>(191)  | 2.48<br>(63) | 2.36<br>(60) | 4.45<br>(113) | 9.06<br>(230)  | 4.69<br>(119) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110)<br>$\frac{0}{-0.035}$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(2)  | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9) | 1.1<br>(28)<br>$\frac{0}{-0.013}$  | 2.17<br>(55) | 32 (14.5)              |
| 40ASABC      | 13.82<br>(351) | 11.34<br>(288) | 8.98<br>(228)  | 2.48<br>(63) | 2.36<br>(60) | 5.91<br>(150) | 10.51<br>(267) | 4.69<br>(119) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110)<br>$\frac{0}{-0.035}$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(2)  | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9) | 1.1<br>(28)<br>$\frac{0}{-0.013}$  | 2.17<br>(55) | 38.6 (17.5)            |
| 50ASABC      | 15.39<br>(391) | 12.91<br>(328) | 10.55<br>(268) | 2.48<br>(63) | 2.36<br>(60) | 7.48<br>(190) | 12.09<br>(307) | 4.69<br>(119) | 3.43<br>(87) | 5.71<br>(145)     | 4.33<br>(110)<br>$\frac{0}{-0.035}$ | 5.12<br>(130) | 0.24 (6) | 0.47<br>(2)  | 6.5<br>(165)  | 1.77<br>(45) | 0.35 (9) | 1.1<br>(28)<br>$\frac{0}{-0.013}$  | 2.17<br>(55) | 45.2 (20.5)            |

- Note:
1. Incremental Encoder (8192 PPR) is used as a detector.
  2. Dimensions are the same when using other incremental encoders.
  3. Tolerances on the dimensions LB of flange type and S of shaft extensions are based on JIS (Japanese Industrial Standard) B0401 "Limits and Fits for Engineering."
  4. There are no dimensional changes on the CE products.



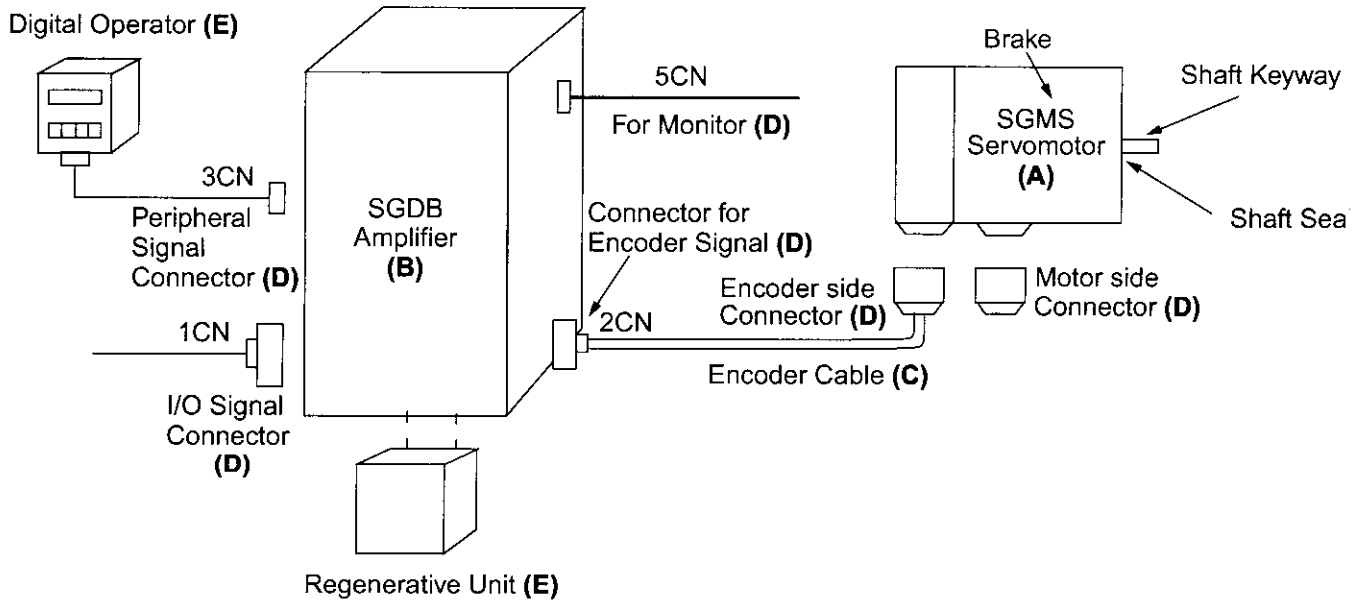
| Connector Wiring on the Motor Side |                   |   |                |
|------------------------------------|-------------------|---|----------------|
| A                                  | U Phase           | E | Brake Terminal |
| B                                  | V Phase           | F | Brake Terminal |
| C                                  | W Phase           | G | -              |
| D                                  | FG (Frame Ground) |   |                |



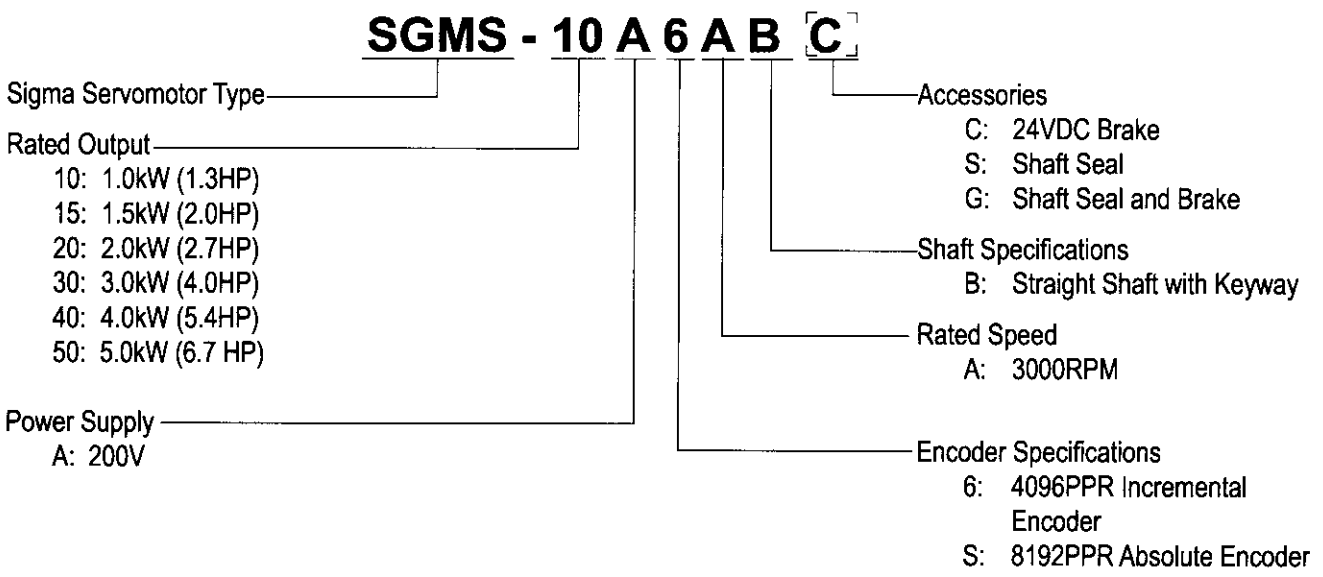
# Selecting Your SGMS Sigma Servo System

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



Note: **Bold** items are Stock Products usually available from inventory. Contact your Yaskawa representative for delivery on all other items.

## Servomotor & Amplifier Selection

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

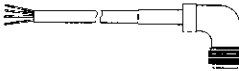
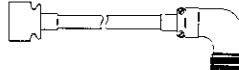
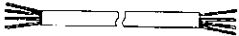
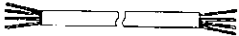
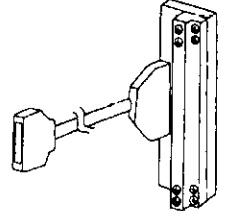
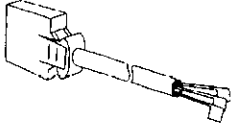
| Description                        | Peak Torque<br>(in. lb.) | Rated Torque<br>(in. lb.) | Motor Inertia<br>(in. lb. sec <sup>2</sup> x<br>10 <sup>-3</sup> ) | Motor<br>MODEL # (A) | Amplifier<br>MODEL # (B)*<br>Analog/Digital Input<br>SGDB- | Motor &<br>Amplifier<br>Item Class |
|------------------------------------|--------------------------|---------------------------|--|----------------------|--|------------------------------------|
|                                    | 84.4                     | 28.2                      | 1.54   | SGMS-10A6AB          | 10ADG  | Stock                              |
|                                    |                          |                           |  | SGMS-10A6ABC         |  |                                    |
| 200V<br>3-Phase                    | 130                      | 43                        | 2.19   | SGMS-15A6AB          | 15ADG  |                                    |
|                                    |                          |                           |  | SGMS-15A6ABC         |  |                                    |
| 4096 PPR<br>Incremental<br>Encoder | 169                      | 56.4                      | 2.82   | SGMS-20A6AB          | 20ADG  |                                    |
|                                    |                          |                           |  | SGMS-20A6ABC         |  |                                    |
| Straight Shaft<br>with<br>Keyway   | 260                      | 87                        | 6.2  | SGMS-30A6AB          | 30ADG  |                                    |
|                                    |                          |                           |  | SGMS-30A6ABC         |  |                                    |
| MS Connectors                      | 336                      | 112                       | 8.5  | SGMS-40A6AB          | 44ADG  |                                    |
|                                    |                          |                           |  | SGMS-40A6ABC         |  |                                    |
|                                    | 422                      | 140                       | 11   | SGMS-50A6AB          |  |                                    |
|                                    |                          |                           |  | SGMS-50A6ABC         |  |                                    |

Note: 24VDC brakes for SGMS Sigma servomotors are standard. Contact a local source for 24VDC power supplies.  
For technical information, request manual number TSE-S800-16 from your Yaskawa representative.

\* For more detailed SGDB amplifier specifications and dimensions, refer to page 127.

## Pre-wired Cable Selection

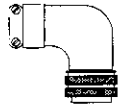
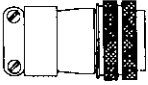
Use the table below to select Pre-wired Cables for your SGMS Sigma Servomotor.

| Cable Description (C)   | Motor Size (kW) | Part Number   |            | Comments  | Item Class |
|---|-----------------|---------------|------------|---|------------|
|   |                 | without Brake | with Brake |   |            |
| Power Cable with L-type Connectors<br>                   | 1.0, 1.5, 2.0   | B1E-□         | B1BE-□     | Use the following key to specify required cable length (last digit of part #):<br>1: 3 meters<br>2: 5 meters<br>3: 10 meters (standard)<br>4: 15 meters<br>5: 20 meters |            |
|   | 3.0             | B2E-□         | B2BE-□     |   |            |
|   | 4.0, 5.0        | B3E-□         | B3BE-□     |   |            |
| Encoder Cable (incremental or absolute)<br>              | All             | DE9407237-□E  |            |   |            |
| Encoder Cable Only for Solder Connections<br>          |                 | DP8409123     |            | Up to 70 feet; for use with mating connector.   |            |
| Encoder Cable Only for Solder Connections<br>          |                 | DP8409179     |            | Over 70 feet; splice cable to accommodate connector.  | Stock *    |
| Input/Output 1CN Cable & Transition Terminal Block<br> |                 | JUSP-TA50P    |            | 35 mm din rail mountable; the cable length is 0.5 meters.   |            |
| Input/Output 1CN Cable with Pigtail Leads<br>          |                 | DE9406969-□   |            | Use the following key to specify required cable length (last digit of part #):<br>1: 1 meter (standard)<br>2: 2 meters<br>3: 3 meters                                   |            |

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

## Mating Connector Selection

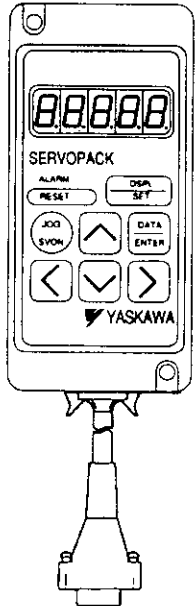
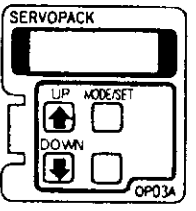

Use the table below to select Mating Connectors for your SGMS Sigma Servomotor.

| Connector Description (D)   | Motor Size (kW)  | Part Number                        |                             | Comments  | Item Class |
|---|--|------------------------------------|-----------------------------|---|------------|
|   |  | without Brake                      | with Brake                  |   |            |
| MS Connector for Motor Power Cable *  | <br>1.0, 1.5, 2.0 | MS3106B18-10S                      | MS3106B20-15S               | Straight-type connector<br>L-type connector<br>Cable clamp      | Stock      |
|   |  | MS3108B18-10S<br>MS3057-10A        | MS3108B20-15S<br>MS3057-12A |   |            |
|   | 3.0, 4.0, 5.0  | MS3106B22-22S                      | MS3106B24-10S               | Straight-type connector<br>L-type connector<br>Cable clamp      |            |
|   |  | MS3108B22-22S<br>MS3057-12A        | MS3108B24-10S<br>MS3057-16A |   |            |
| MS Connector for Encoder Cable (incremental or absolute encoder)                  | All  | MS3106B20-29S                      |                             | Straight-type connector<br>L-type connector<br>Cable clamp      |            |
|  |  | MS3108B20-29S<br>MS3057-12A        |                             |   |            |
| 1CN Mating Connector  |  | DE9406970                          |                             | Can use 1CN for analog speed and torque monitor service checks. |            |
| 2CN Encoder Mating Connector  |  | DE9406973                          |                             | -   |            |
| 3CN Peripheral Mating Connector   |  | Stock 9-pin male D-shell connector |                             | Source locally.   | -          |
| 5CN Connector and 1m Cable with Pigtails  |  | DE9404559                          |                             | -   | Stock      |

\* Choose either a straight or L-type connector and the associated cable clamp for a complete assembly. For example, L-type connector MS3108B18-10S is compatible with cable clamp MS3057-10A.

## Peripheral Device Selection

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

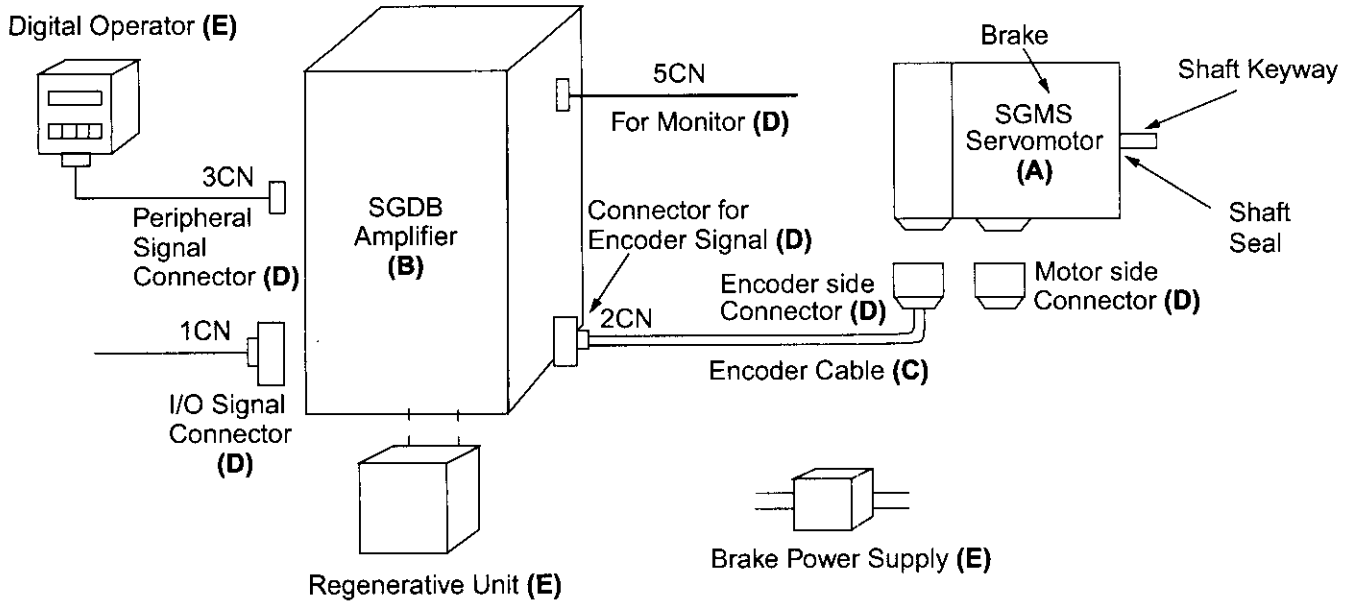
| Component (E)                    | Image   | Part Number  | Description  | Item Class |
|----------------------------------|---|--------------|--|------------|
| Hand-held Digital Operator Panel |    | JUSP-OP02A-1 | Portable unit with built-in cable                      | Stock      |
| Digital Operator 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 | Stock      |
| Software Interface Cable         |   | YS-11        | Pre-wired 1.5 meter cable with 9-pin connector         |            |



# Selecting Your SGMS 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.

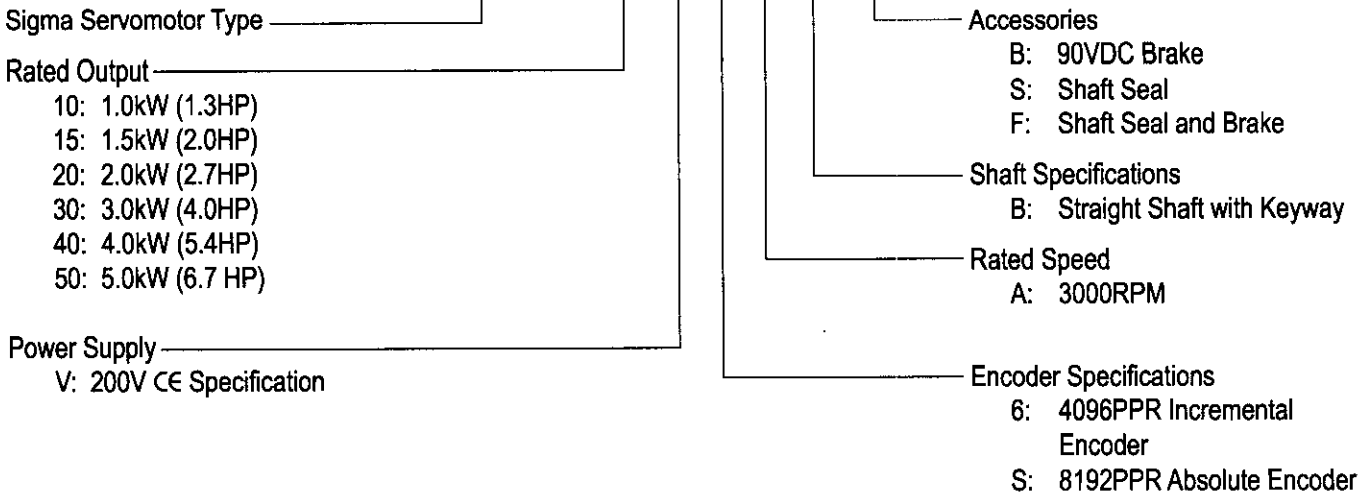
## System Configuration



## Model Number Designation



### SGMS - 10 V 6 A B B



## Servomotor & Amplifier Selection

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

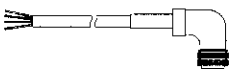
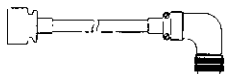
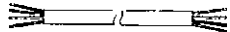
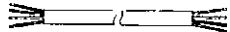
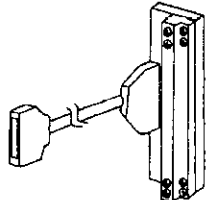
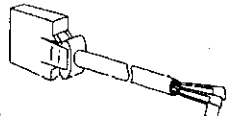
| Description  | Peak Torque<br>(in. lb.) | Rated Torque<br>(in. lb.) | Motor Inertia<br>(in. lb. sec <sup>2</sup> × 10 <sup>-3</sup> ) | Motor<br>MODEL # (A) | Amplifier<br>MODEL # (B)*<br>Analog/Digital Input<br>SGDB- | Motor<br>Item<br>Class |
|--|--------------------------|---------------------------|---|----------------------|--|------------------------|
| 200V<br>3-Phase<br><br>4096 PPR<br>Incremental<br>Encoder<br><br>Straight Shaft<br>with<br>Keyway<br><br>MS Connectors | 84.4                     | 28.2                      | 1.54  | SGMS-10V6AB          | 10VD<br>(Limited Stock)                                    | Limited<br>Stock       |
|  |                          |                           |   | SGMS-10V6ABB         |  | Non-Stock              |
|  | 130                      | 43                        | 2.19  | SGMS-15V6AB          | 15VD<br>(Limited Stock)                                    | Limited<br>Stock       |
|  |                          |                           |   | SGMS-15V6ABB         |  | Non-Stock              |
|  | 169                      | 56.4                      | 2.82  | SGMS-20V6AB          | 20VD<br>(Limited Stock)                                    | Limited<br>Stock       |
|  |                          |                           |   | SGMS-20V6ABB         |  | Non-Stock              |
|  | 260                      | 87                        | 6.2   | SGMS-30V6AB          | 30VD<br>(Limited Stock)                                    | Limited<br>Stock       |
|  |                          |                           |   | SGMS-30V6ABB         |  | Non-Stock              |
|  | 336                      | 112                       | 8.5   | SGMS-40V6AB          | 60VDY6<br>(Limited Stock)                                  | Limited<br>Stock       |
|  |                          |                           |   | SGMS-40V6ABB         |  | Non-Stock              |
|  | 422                      | 140                       | 11  | SGMS-50V6AB          | 60VDY7<br>(Limited Stock)                                  | Limited<br>Stock       |
|  |                          |                           |   | SGMS-50V6ABB         |  | Non-Stock              |

Note: 90VDC brakes for SGMS Sigma servomotors (CE) are standard. See Peripheral Device Selection in this section to order a power supply.  
For technical information, request technical document numbers PI-6021 and DE9409784 from your Yaskawa representative.

\* For more detailed SGDB amplifier specifications and dimensions, refer to page 127.

Pre-wired Cable Selection

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

| Cable Description (C)   | Motor Size (kW) | Part Number   |            | Comments  | Item Class    |   |
|---|-----------------|---------------|------------|---|---------------|---|
|   |                 | without Brake | with Brake |   |               |   |
| Power Cable with Connectors<br>                          | 1.0, 1.5, 2.0   | B1CE-□        | B1BCE-□    | Use the following key to specify required cable length (last digit of part #):<br>1: 3 meters<br>2: 5 meters<br>3: 10 meters (standard)<br>4: 15 meters<br>5: 20 meters | Limited Stock |   |
|   | 3.0             | B2CE-□        | B2BCE-□    |   |               |   |
|   | 4.0, 5.0        | B3CE-□        | B3BCE-□    |   |               |   |
| Encoder Cable (incremental or absolute)<br>              | All             | A1CE-□        |            | Up to 70 feet; for use with mating connector.<br><br>Over 70 feet; splice cable to accommodate connector.   | Limited Stock |   |
| Encoder Cable Only for Solder Connections<br>          |                 | DP8409123     |            |   | Stock *       |   |
| Encoder Cable Only for Solder Connections<br>          |                 | DP8409179     |            |   |               |   |
| Input/Output 1CN Cable & Transition Terminal Block<br> |                 | JUSP-TA50P    |            |   |               | 35 mm din rail mountable; the cable length is 0.5 meters. |
| Input/Output 1CN Cable with Pigtail Leads<br>          |                 | DE9406969-□   |            |   |               |   |

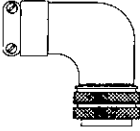


\* Standard cable lengths are Stock items; non-standard cable lengths are Limited Stock items.





## Mating Connector Selection

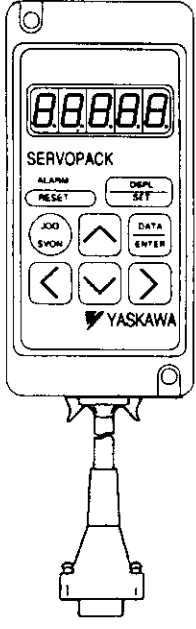
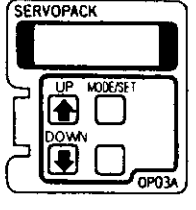

Use the table below to select Mating Connectors for your SGMS Sigma Servomotor.

| Connector Description (D)                                     |   | Motor Size (kW) | Part Number                            |                                       | Comments  | Item Class    |               |
|---|---|-----------------|--|---------------------------------------|---|---------------|---------------|
|   |   |                 | without Brake                          | with Brake                            |   |               |               |
| Connector for Motor Power Cable *                             |    | 1.0, 1.5, 2.0   | JL04V-8A18-10SE-EB<br>JL04-18CK(13)    | JL04V-8A20-15SE-EB<br>JL04-2022CK(14) | L-type connector<br>Cable clamp                                 | Limited Stock |               |
|   |   | 3.0, 4.0, 5.0   | JL04V-8A22-22SE-EB<br>JL04-2022CK(14)  | JL04V-8A24-10SE-EB<br>JL04-2428CK(17) | L-type connector<br>Cable clamp                                 |               |               |
| Connector for Encoder Cable (incremental or absolute encoder) |   | All             | JA08A-20-29S-J1-EB<br>JL04-2022CKE(12) |                                       | L-type connector<br>Cable clamp                                 |               |               |
| 1CN Mating Connector  |   |                 | DE9406970                              |                                       | Can use 1CN for analog speed and torque monitor service checks. |               |               |
| 2CN Encoder Mating Connector                                  |  |                 | DE9406973                              |                                       | -   |               |               |
| 3CN Peripheral Mating Connector                               |   |                 | Stock 9-pin male D-shell connector     |                                       | Source locally.   |               | -             |
| 5CN Connector and 1m Cable with Pigtails                      |   |                 | DE9404559                              |                                       | -   |               | Limited Stock |

\* Choose the connector and the associated cable clamp for a complete assembly.

Peripheral Device Selection

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

| Component (E)                           | Part Number   | Description         | 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>                      |



**NOTES**





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