

# SGMGH Gearmotors (1500rpm) - With Incremental Encoder

Rated Output: 0.45kW, 0.85kW,  
1.3kW



## Design Features

### 1. Compact

- Fits in limited mounting space
- High torque to inertia ratio

### 2. Torque

- 383 to 3540in·lb peak torque
- Uses time-proven, Sigma motor technology

### 3. Encoders

- 17-Bit incremental encoder (standard)

### 4. Enhanced Environmental Resistance

- Totally enclosed, self-cooled IP67 (not including shaft)

### 5. Application Emphasis

- Machine tools, woodworking machines, and thermoforming machines
- Roll feeders
- Press automation
- Gantry robots
- PCB drilling machines
- Packaging machines

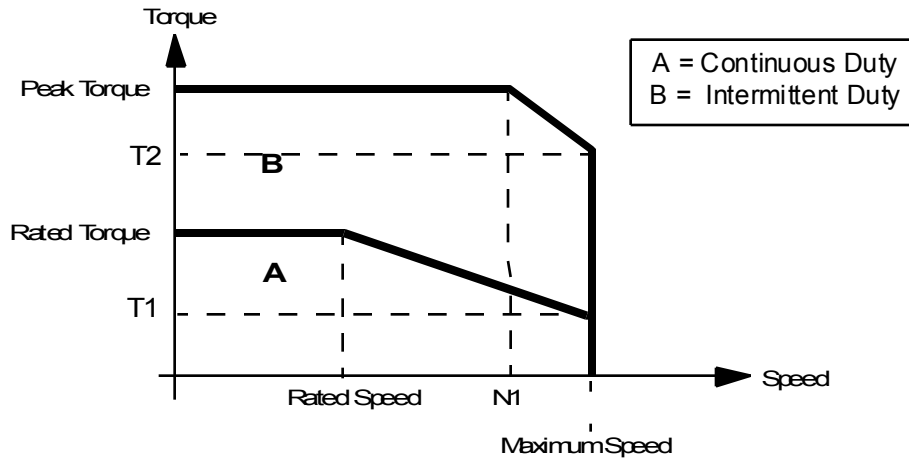
### 6. Certified International Standards

- cUL recognized (File #: E165827), CE compliance

## Gearmotor Ratings and Specifications

GEARMOTOR Part Number	Rated Torque* (in · lb)	Peak Torque* (in · lb)	Rated Speed* (rpm)	Maximum Speed* (rpm)	Speed N1 (rpm)	Torque T1 (in · lb)	Torque T2 (in · lb)
Standard SGMGH Gearmotors							
SG05SA-GA05AC	122	383	300	600	440	61	206
SG10SA-GA05AC	244	637	150	300	220	122	412
SG25SA-GA05AC	597	1770	60	120	88	298	1009
SG50SA-GA05AC	1194	3540	30	60	44	597	2018
SG05SA-GA09AC	231	592	300	600	560	116	498
SG10SA-GA09AC	463	1,185	150	300	280	232	996
SG25SA-GA09AC	1133	2901	60	120	112	568	2438
SG50SA-GA09AC	2266	3540	30	60	60	1135	3540
SG05SA-GA13AC	358	1000	300	600	550	179	721
SG10SA-GA13AC	716	1593	150	300	275	358	1442
SG25SA-GA13AC	1753	3540	60	120	110	877	3531

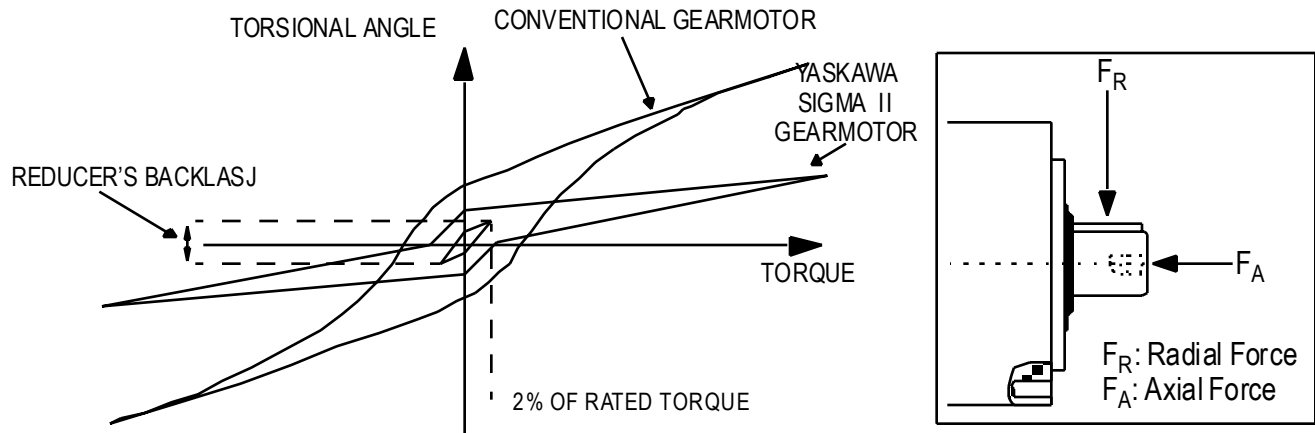
\* To achieve the speed/torque performance listed, use only the gearmotor/amp combinations and system supply as specified on page 6



SGMGH Gearmotors

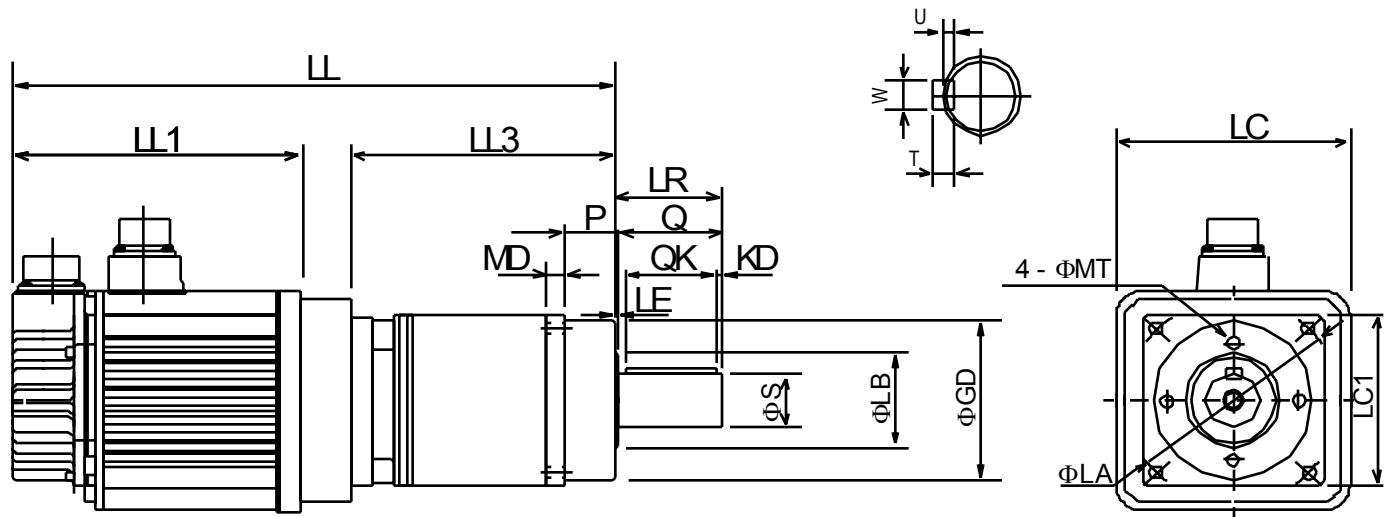
# Gearmotor Mechanical Ratings

GEARMOTOR Part Number	Gearhead Backlash (arc min)	Gearhead Maximum Radial Load (lbf)	Gearhead Maximum Axial Load (lbf)	Gearhead Inertia (lb · n · s <sup>2</sup> )	Gearmotor Weight (lb)	
Standard SGMGH Gearmotors						
SG05SA-GA05AC	<10	540	428	0.0016	21.14	
SG10SA-GA05AC		1035	900	0.0049	36.80	
SG25SA-GA05AC		1687	1350	0.0047	58.30	
SG05SA-GA09AC		540	428	0.0016	25.84	
SG10SA-GA09AC		1035	900	0.0048	36.65	
SG25SA-GA09AC		1687	1350	0.0047	63.00	
SG05SA-GA13AC		1035	900	0.0048	41.05	
SG10SA-GA13AC		1687	1350	0.047	67.40	
SG25SA-GA13AC						



SGMGH Gearmotors

## Dimensions in inches (mm)



### • Standard SGMGH Gearmotors

GEARMOTOR	LL1	LL3	LL	LE	LR	ΦLB	ΦGD	ΦS	P	LC	LC1	ΦLA	ΦMT*	MD*	Q	QK	KD	W	T	U				
SG05SA-GA05AC	5.43 (138)	3.15 (80)	10.63 (270)	0.20 (5)	1.81 (46)	2.68 (68)	3.54 (90)	0.87 (22)	N/A	5.12 (130)	N/A	3.15 (80)	M6 x 1.0	0.47 (12)	1.42 (36)	1.26 (32)	0.08 (2)	0.24 (6)	0.24 (6)	0.14 (3.5)				
SG10SA-GA05AC		4.25 (108)	12.62 (320.5)	0.24 (6)	2.76 (70)	3.54 (90)	4.72 (120)	1.26 (32)				M8 x 1.25	0.63 (16)	2.28 (58)	1.97 (50)	0.16 (4)	0.39 (10)	0.32 (8)	0.20 (5)					
SG25SA-GA05AC		6.02 (153)	13.35 (339)	0.32 (8)	3.82 (97)	4.72 (120)	6.10 (155)	1.58 (40)				M10 x 1.5	0.79 (20)	3.23 (82)	2.76 (70)	0.24 (6)	0.47 (12)							
SG05SA-GA09AC	6.34 (161)	3.15 (80)	11.54 (293)	0.20 (5)	1.81 (46)	2.68 (68)	3.54 (90)	0.87 (22)				N/A	5.12 (130)	N/A	3.15 (80)	M6 x 1.0	0.47 (12)	1.42 (36)	1.26 (32)	0.08 (2)	0.24 (6)	0.24 (6)	0.14 (3.5)	
SG10SA-GA09AC		4.02 (102)	12.24 (311)	0.24 (6)	2.76 (70)	3.54 (90)	4.72 (120)	1.26 (32)							M8 x 1.25	0.63 (16)	2.28 (58)	1.97 (50)	0.16 (4)	0.39 (10)	0.32 (8)	0.20 (5)		
SG25SA-GA09AC		6.02 (153)	14.25 (362)	0.32 (8)	3.82 (97)	4.72 (120)	6.10 (155)	1.58 (40)							M10 x 1.5	0.79 (20)	3.23 (82)	2.76 (70)	0.24 (6)	0.47 (12)				
SG05SA-GA13AC	7.28 (185)	4.02 (102)	13.19 (335)	0.24 (6)	2.76 (70)	3.54 (90)	4.72 (120)	1.26 (32)							N/A	5.12 (130)	N/A	4.25 (108)	M8 x 1.25	0.63 (16)			2.28 (58)	1.97 (50)
SG10SA-GA13AC		5.51 (140)	15.20 (386)	0.32 (8)	3.82 (97)	4.72 (120)	6.10 (155)	1.58 (40)										M10 x 1.5	0.79 (20)	3.23 (82)	2.76 (70)	0.24 (6)	0.47 (12)	
SG25SA-GA13AC		6.02 (153)	15.20 (386)	0.32 (8)	3.82 (97)	4.72 (120)	6.10 (155)	1.58 (40)										M10 x 1.5	0.79 (20)	3.23 (82)	2.76 (70)	0.24 (6)	0.47 (12)	

**Note:**\* For Standard (SG) Gearmotors only: 4 x ΦMT threaded holes to a depth of dimension MD, set 90° apart.

### Specified Tolerances for Standard (SG) Gearmotor Models:

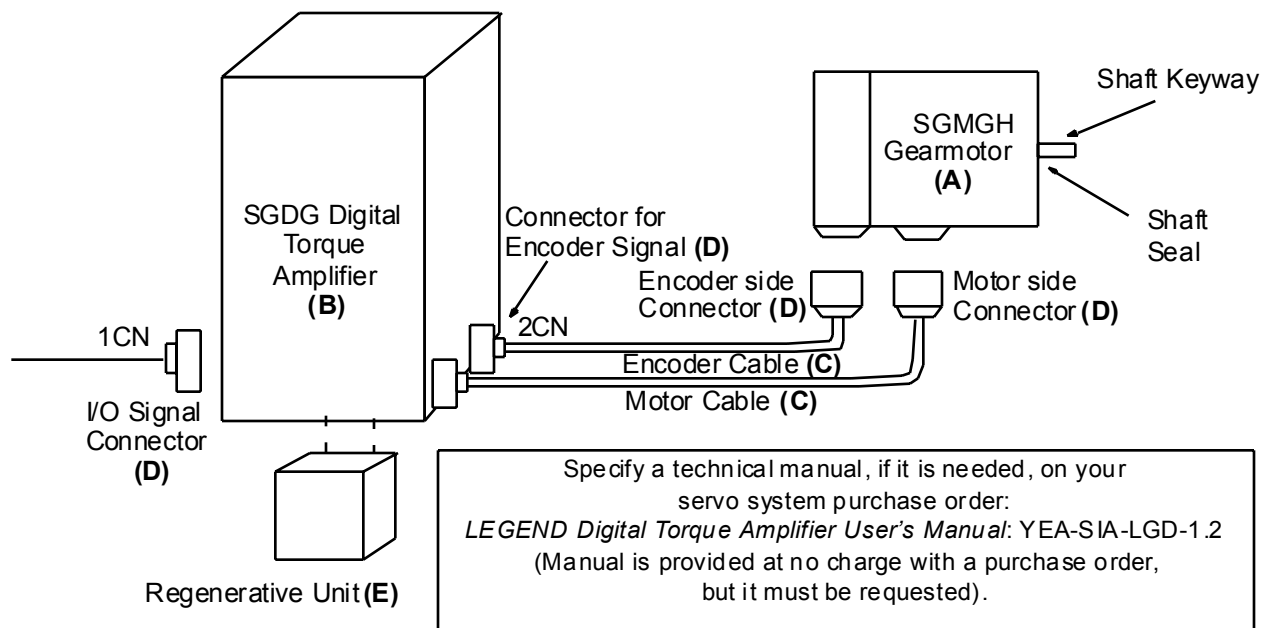
Dimension	ΦS		ΦLB		W	
	Diameter	Tolerance	Diameter	Tolerance	Width	Tolerance
in	0.866	+0.00059 +0.00008	2.677	+0.00000 -0.00075	236	+0.00000 -0.00118
	1.260, 1.575	+0.00071 +0.00008	3.54331, 4.72441	+0.00000 -0.00087	0.39370 0.47244	+0.00000 -0.00142 +0.00000 -0.00169
	mm	22	+0.015 +0.002	68	+0.000 -0.019	6
32, 40		+0.018 +0.002	90, 20	+0.000 -0.022	10 12	+0.000 -0.036 +0.000 -0.043

## Selecting Your SGMGH Gearmotor System

First, select the AC gearmotor suited for your application using SigmaSize: the Yaskawa servomotor sizing software, available at no charge. (Request SigmaSize software via e-mail, at: literature@yaskawa.com).

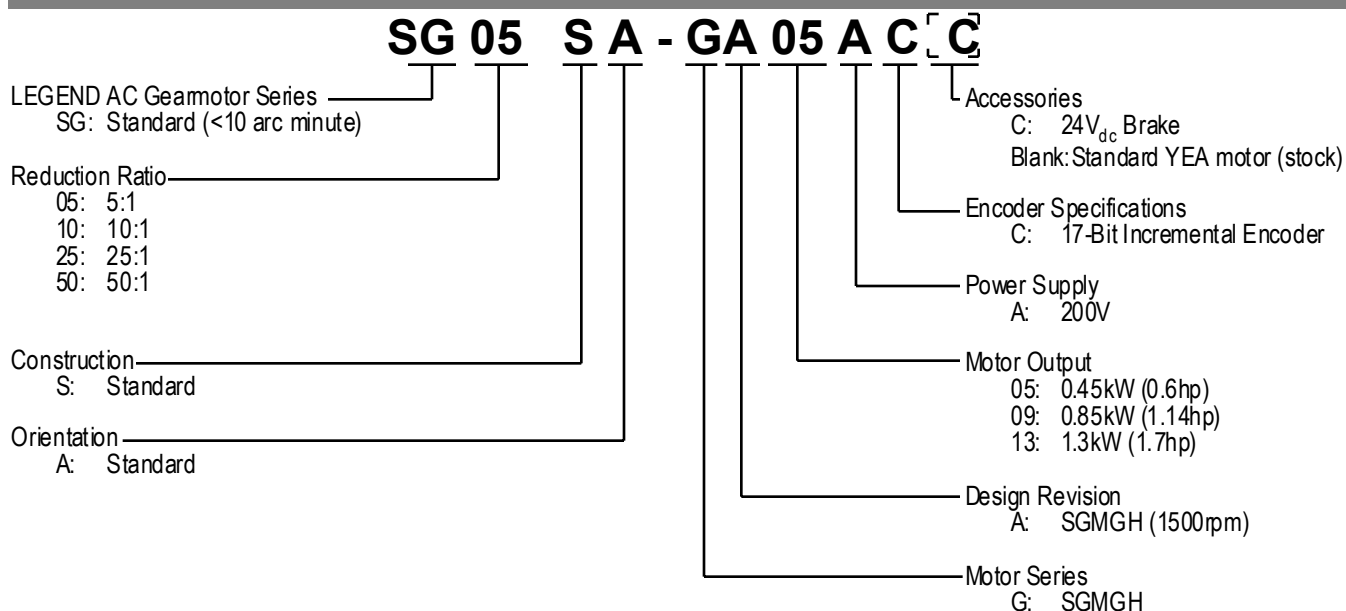
Use the diagram below to locate and identify the components of your system. Each item is letter-coded and cross-referenced in the option tables on the following pages.

### System Configuration



SGMGH Gearmotors

### Model Number Designation



## Gearmotor & Amplifier Selection

Use this table below to select the appropriate SGMGH AC gearmotor and amplifier. See notes on page 75.

Description	Rated Torque* (in • lb)	Peak Torque* (in • lb)	Rated Speed* (rpm)	Maximum Speed* (rpm)	Gear Ratio	Gearmotor Model Number (A)	Amplifier MODEL # SGDG- (B)	Motor and Amplifier Item Class
200V* 17-bit Incremental Encoder  Straight Shaft with Keyway  MS connectors	122	383	300	600	5:1	SG05SA-GA05AC	10GT**	Gear Motor: 3-5 Week Leadtime for Assembly
	244	637	150	300	10:1	SG10SA-GA05AC		
	597	1770	60	120	25:1	SG25SA-GA05AC		
	1194	3540	30	60	50:1	SG50SA-GA05AC		
	231	592	300	600	5:1	SG05SA-GA09AC		
	463	1185	150	300	10:1	SG10SA-GA09AC		
	1133	2901	60	120	25:1	SG25SA-GA09AC		
	2266	3540	30	60	50:1	SG50SA-GA09AC		
	358	1000	300	600	5:1	SG05SA-GA13AC	15GT**	Amplifier: Stock
716	1593	150	300	10:1	SG10SA-GA13AC			

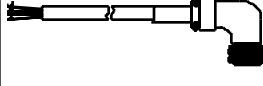
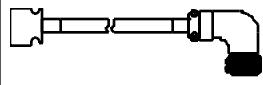
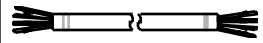
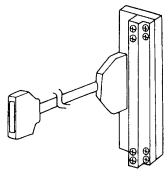
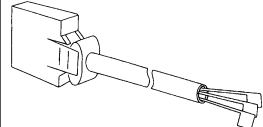
Notes: 1. These performance ratings apply when duty cycles are 60% or less, and when the gearmotor runs for 1,000 cycles per hour or less.

Contact your Yaskawa representative when duty cycles exceed 60%, and when the gearmotor runs for more than 1,000 cycles per hour.

- Rated Speed is at 20°C ambient temperature. Reduce Rated Speed by 20% at 40°C ambient temperature.
  - For right-angle gearmotors, please consult the factory for availability.
  - 24V<sub>DC</sub> brakes for SGMGH LEGEND AC gearmotors are standard. Contact a local source for 24V<sub>DC</sub> power supplies.
  - For technical information, request Yaskawa manual number YEA-SIA-LGD-1.2.
- \* To achieve the speed/torque performance listed above, use only with 200-230VAC 3 phase 10%-15% systems.

## Pre-wired Cable Selection

Use the table below to select pre-wired cables for your SGMGH AC gearmotor.

Cable Description (C)		Motor Size (kW)	Part Number*		Comments	Item Class
			without Brake	with Brake		
Power Cable with Connectors (IP67)		0.5, 0.9, 1.3	B1E-□□(A)	B1BE-□□(A)	Use the following key to specify needed cable length (last two digits of the part number): 03: 3m 05: 5m 10: 10m (standard) 15: 15m 20: 20m	Stock**
Encoder Cable		All	JZSP-CMP02-□□(B)		These cables are available in five lengths. Use two digits in the part number's last place: 03: 3m 05: 5m 10: 10m (standard) 15: 15m 20: 20m	
Encoder Cable (for applications up to 20m) Only for Solder Connections			FR-RMCT-SB	These cables are available in any length.  For example: to order one FR-RMCT-SB cable, 16m long, specify: quantity: 16 part no.: FR-RMCT-SB.		
Encoder Cable (for applications from >20 to <50m) Only for Solder Connections			UL20276-SB			
Input/Output 1CN Cable & Transition Terminal Block			JUSP-TA36P	35 mm DIN rail mountable; the cable length is 0.5m.		
Input/Output 1CN Cable with Pigtail Leads			CKI-SGDG-□□	Use the following key to specify needed cable length (last digit of part number): 01: 1m (standard) 02: 2m 03: 3m		

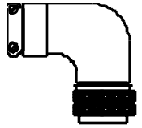
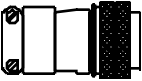


**SGMGH**  
Gearmotors

\* The "(A)" at the end of the cable number indicates the revision level. The revision level may be subject to change prior to this catalog's reprinting.

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

## Connector Selection

Use the table below to select mating connectors for your SGMGH AC gearmotor.

Connector Description (D)		Motor Size (kW)	Part Number		Comments	Item Class
			without Brake	with Brake		
MS Connector for Motor Power Cable *		0.5, 0.9, 1.3	MS3106B18-10S	MS3106B20-15S	Straight-type connector	Stock
			MS3108B18-10S	MS3108B20-15S	L-type connector	
			MS3057-10A	MS3057-12A	Cable clamp	
MS Connector for Encoder Cable		All	MS3106B20-29S		Straight-type connector	
			MS3108B20-29S		L-type connector	
			MS3057-12A		Cable clamp	
1CN Mating Connector			DP9420007		Can use 1CN for analog speed and torque monitor service checks.	
2CN Encoder Mating Connector			JZSP-CMP9-1		—	

\* 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

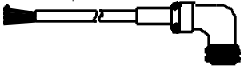
Use the table below to select peripheral devices for your SGMGH AC gearmotor.

Component Description (E)		Part Number	Comments	Item Class
External Regenerative Unit*	50Ω 120 watt for 1.0 amp	RH120 50ohmJ	This is a general purpose regenerative unit.	Stock
	25Ω 300 watt for 1.5 amp	RH500N25_ohmK	<b>Caution:</b> Proper set-up is necessary to avoid equipment damage.	

\* For an alternate solution, specify the individual resistor part number RH500N25\_OHMK in necessary series or parallel connection. Refer to the *LEGEND Digital Torque Amplifier User's Manual (YEA-SIA-LGD-1.2)* for proper resistor sizing guidelines.

## CE Pre-wired Cable Selection



Use the table below to select shielded pre-wired power cables for your SGMGH AC gearmotor.

Cable Description (C)		Motor Size (kW)	Part Number*		Comments	Item Class
			without Brake	with Brake		
Power Cable with Connectors (IP67)		0.5, 0.9, 1.3	B1CE-□□(A)	B1BCE-□□(A)	Use the following key to specify needed cable length (last two digits of the part number): 03: 3m 05: 5m 10: 10m (standard) 15: 15m 20: 20m	Limited Stock

\* The "A" at the end of the cable number indicates the revision level. The revision level may be subject to change prior to this catalog's reprinting.

## CE Connector Selection

Use the table below to select mating connectors for your SGMGH AC gearmotor.

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	CE05-8A18-10SD-B-BAS CE3057-10A-1(D265)	CE05-8A20-15SD-B-BAS CE3057-12A-1(D265)	L-type connector Cable clamp	Limited Stock
Connector for Encoder Cable			CE02-6A20-29NSW and CE20BA-S and CE3057-12A-3(D265)		L-type connector (plug and back shell) and Cable clamp (diameters 0.265 to 0.394in)	Limited Stock

\* Choose the connector and the associated cable clamp for a complete assembly. The connectors listed in the table are suitable for IP67 environments.

\*\* Connectors are manufactured by DDK and listed here with the largest standard cable clamp available.