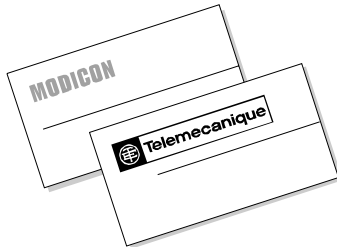


# Modicon Cyberline S and R Series Servo Motors Reference Guide

890 USE 135 00 Volume I Version 2.0



**GROUPE SCHNEIDER**

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■ Merlin Gerin ■ Modicon ■ Square D ■ Telemecanique

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# Modicon Cyberline S and R Series Servo Motors Reference Guide

December 1998



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■ Merlin Gerin ■ Modicon ■ Square D ■ Telemecanique

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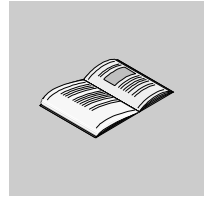
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# Motor Specification

# 1

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This chapter is divided into two sections.

- Six pole motors ..... page 11
- Eight pole motors ..... page 40



**Note:** You will notice that the data given in this manual and the data given on the motor nameplate differ. This is because Modicon motors have received Canadian Standards Association (CSA) approval.

The motor data nameplate is affixed to each motor, as required by Canadian law. The motor nameplate data indicates the motors have passed the minimum test specifications demanded by the CSA for that particular motor type. It does not indicate the motor's true performance levels.

The motor performance data presented in this manual is achieved only when these motors are used with Modicon Servo Drive systems. We cannot guarantee this performance with other drive systems.

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*Continued on next page*

## Overview of Servo Motors

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### At a Glance

This manual gives the electrical and performance specifications and speed/torque curve chart for Modicon Cyberline S and R series brushless servo motors. The information is presented in the form of tables – one table and one (or more) speed/torque curve chart(s) for each motor family.

Chapter 1 lists motor performance parameters. Chapter 2 lists motor, drive, and cable combinations.



**Note:** All performance data is rated at 104 degrees F (40 degrees C) mean temperature.



**Note:** Speed/torque performance curves are for Modicon motor and drive combinations. All conditions are nominal and presume that the system has been optimally configured.

The motor speed or torque is sometimes limited by the drive or controller used to govern it. For example, Each motor has a rated maximum torque parameter. However, if the drive is configured to send less current than required for the motor to develop maximum torque, the motor torque potential will be limited by the drive's output current and therefore may be less than its rated output.

**Please read the speed/torque chart, given with each table. The table gives the motor's rated potential, but the speed/torque chart indicates the practical value when used with Schneider Automation drives.**

You may also want:



## Six Pole Motors

### Subject

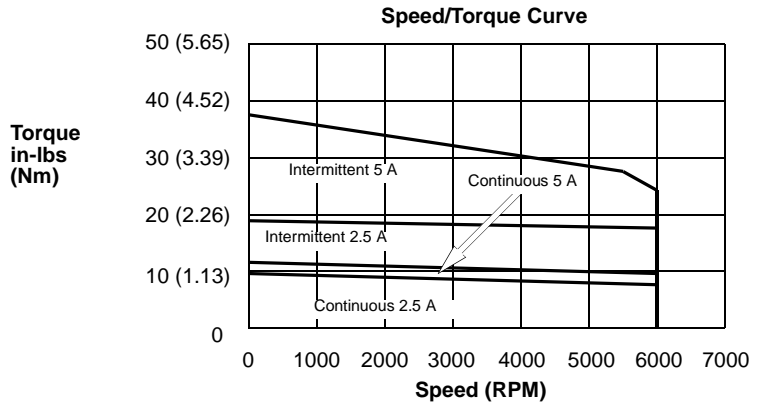
This section provides electrical specifications and torque curves for Cyberline S series six pole motor families – CGC05, CGC06, CGC07, CGC09, CGC12, CGC13, CGC14, CGD18, CGC19, CGC20, CGD21, CGP24, CGP27, and CGP29.

**Table 1: S31N (CGC05)**

Description	Specification SAE (METRIC)
Continuous Rated Stall Torque	12.22 in-lbs (1.38 Nm)
Continuous Rated Stall Current	3.10 Amps RMS
Maximum Current	14.50 Amps RMS
Maximum Continuous Power	0.80 HP (0.60 KW)
Current at Maximum Power	2.79 Amps RMS
Speed at Maximum Power	5500 RPM (576 rad/sec)
Maximum Continuous Speed (Without Phase Advance)	6933 RPM (726 rad/sec)
Rotor Inertia	0.0006 in-lbs-s <sup>2</sup> (7.0E-05 Kg-m <sup>2</sup> )
Rotor Inertia with Brake	0.00077 in-lbs-s <sup>2</sup> (8.7E-05 Kg-m <sup>2</sup> )
Torque Constant at 311°F (155°C)	3.94 in-lbs/Amp (0.45 Nm/Amp)
BEMF Constant (L-L RMS) at 77°F (25°C)	30.00 V/KRPM (0.29 V-sec/rad)
Mechanical Time Constant	2.91 msec
Electrical Time Constant	1.43 msec
Thermal Time Constant	30.00 minutes
Stator Resistance (L-L at 77°F (25°C))	5.30 Ohms
Stator Inductance (L-L at 77°F (25°C))	7.60 mH
Static Friction	0.52 in-lbs (0.06 Nm)
Motor Weight - Approximate	8.60 lb (3.90 Kg)
Brake Torque - Standard	40.00 in-lbs (4.52 Nm)
Brake Voltage	24Vdc ±10%
Brake Current	0.45 Amps

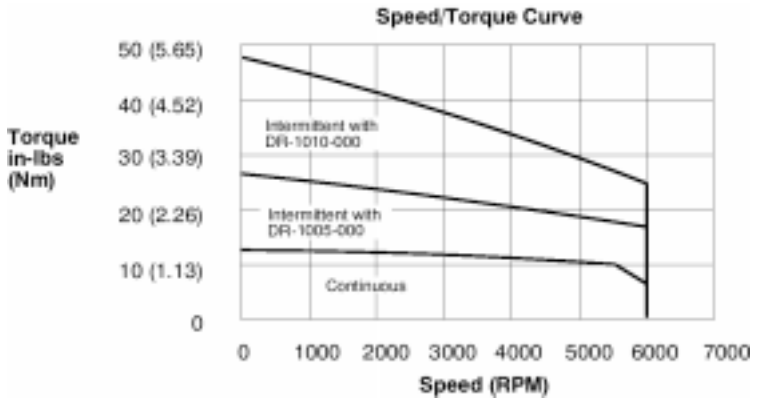
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231 (Optional)	610Mxx20531 (Preferred)	610Mxx21031	610Mxx22031

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

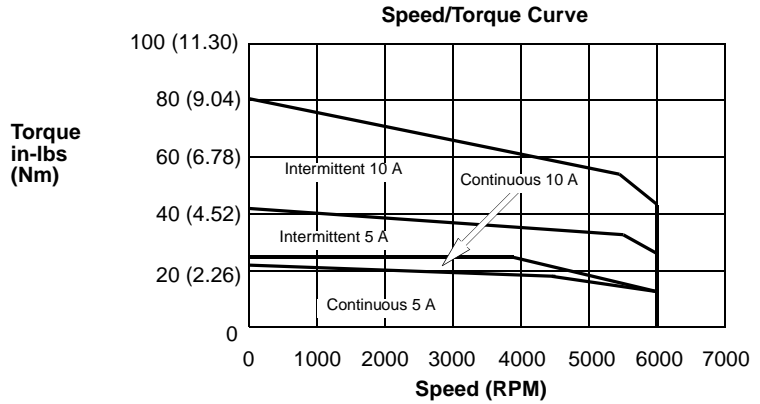
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
Drive Options	DR-x005-000 (Preferred), DR-x010-000 (Optional)			

**Table 2: S32N (CGC06)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	24.44 in-lbs (2.76 Nm)
<b>Continuous Rated Stall Current</b>	5.80 Amps RMS
<b>Maximum Current</b>	21.75 Amps RMS
<b>Maximum Continuous Power</b>	1.16 HP (0.86 KW)
<b>Current at Maximum Power</b>	5.22 Amps RMS
<b>Speed at Maximum Power</b>	5500 RPM (576 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	6933 RPM (726 rad/sec)
<b>Rotor Inertia</b>	0.0011 in-lbs-s <sup>2</sup> (1.2E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0013 in-lbs-s <sup>2</sup> (1.4E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	4.21 in-lbs/Amp (0.48 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	30.00 V/KRPM (0.29 V-sec/rad)
<b>Mechanical Time Constant</b>	1.78 msec
<b>Electrical Time Constant</b>	1.79 msec
<b>Thermal Time Constant</b>	30.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	1.95 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	3.50 mH
<b>Static Friction</b>	0.52 in-lbs (0.06 Nm)
<b>Motor Weight - Approximate</b>	11.30 lb (5.12 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

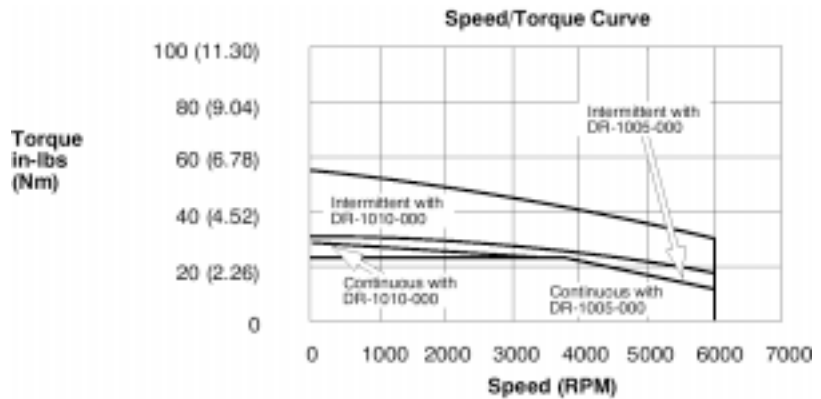
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531 (Optional)	610Mxx21031 (Preferred)	610Mxx22031

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

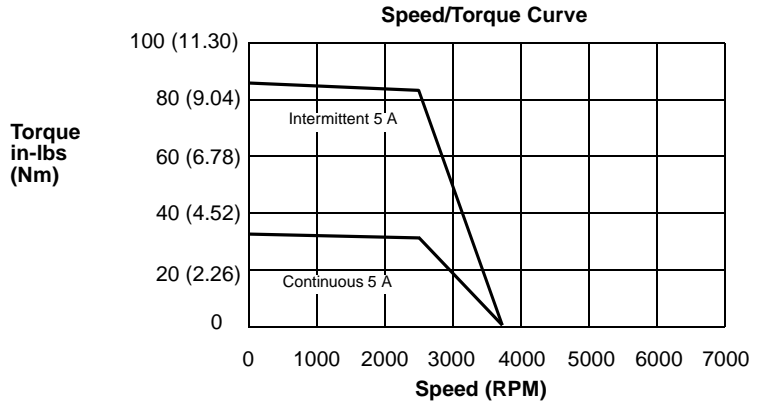
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
<b>Drive Options</b>	DR-x010-000 (Preferred), DR-x005-000 (Optional)			

**Table 3: S33F (CGC07)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	32.90 in-lbs (3.72 Nm)
<b>Continuous Rated Stall Current</b>	4.51 Amps RMS
<b>Maximum Current</b>	16.92 Amps RMS
<b>Maximum Continuous Power</b>	1.28 HP (0.95 KW)
<b>Current at Maximum Power</b>	4.06 Amps RMS
<b>Speed at Maximum Power</b>	2500 RPM (262 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	3250 RPM (340 rad/sec)
<b>Rotor Inertia</b>	0.0015 in-lbs-s <sup>2</sup> (1.7E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0016 in-lbs-s <sup>2</sup> (1.8E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	7.29 in-lbs/Amp (0.82 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	64.00 V/KRPM (0.61 V-sec/rad)
<b>Mechanical Time Constant</b>	1.48 msec
<b>Electrical Time Constant</b>	2.24 msec
<b>Thermal Time Constant</b>	30.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	4.41 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	9.90 mH
<b>Static Friction</b>	0.52 in-lbs (0.06 Nm)
<b>Motor Weight - Approximate</b>	12.20 lb (5.53 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

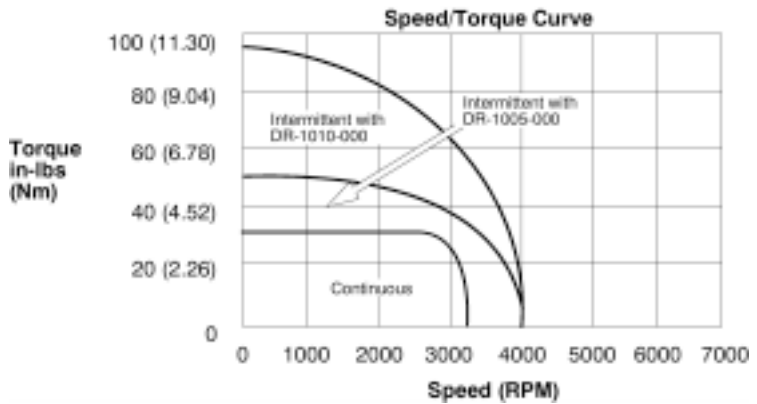
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531 (Preferred)	610Mxx21031	610Mxx22031

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
Drive Options	DR-x005-000 (Preferred), DR-x010-000 (Optional)			

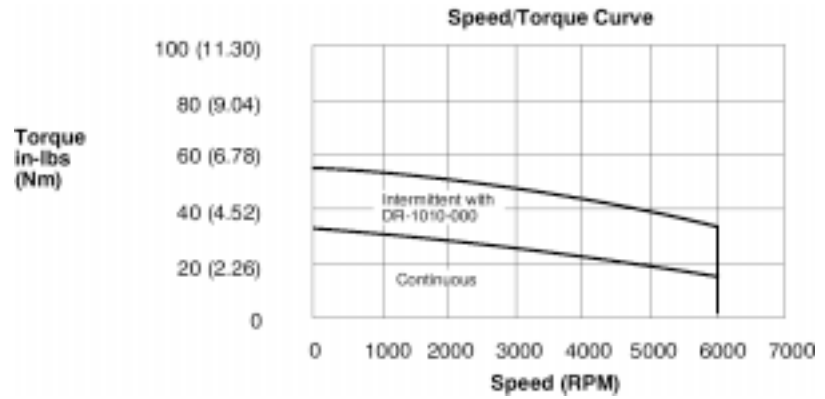


**Table 4: S33M (CGC09)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	32.90 in-lbs (3.72 Nm)
<b>Continuous Rated Stall Current</b>	8.27 Amps RMS
<b>Maximum Current</b>	31.02 Amps RMS
<b>Maximum Continuous Power</b>	1.71 HP (1.28 KW)
<b>Current at Maximum Power</b>	7.44 Amps RMS
<b>Speed at Maximum Power</b>	5000 RPM (523 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	6933 RPM (726 rad/sec)
<b>Rotor Inertia</b>	0.0015 in-lbs-s <sup>2</sup> (1.7E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0016 in-lbs-s <sup>2</sup> (1.8E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	3.98 in-lbs/Amp (0.45 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	30.00 V/KRPM (0.29 V-sec/rad)
<b>Mechanical Time Constant</b>	1.41 msec
<b>Electrical Time Constant</b>	1.68 msec
<b>Thermal Time Constant</b>	30.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	1.07 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	1.80 mH
<b>Static Friction</b>	0.52 in-lbs (0.06 Nm)
<b>Motor Weight - Approximate</b>	12.20 lb (5.53 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

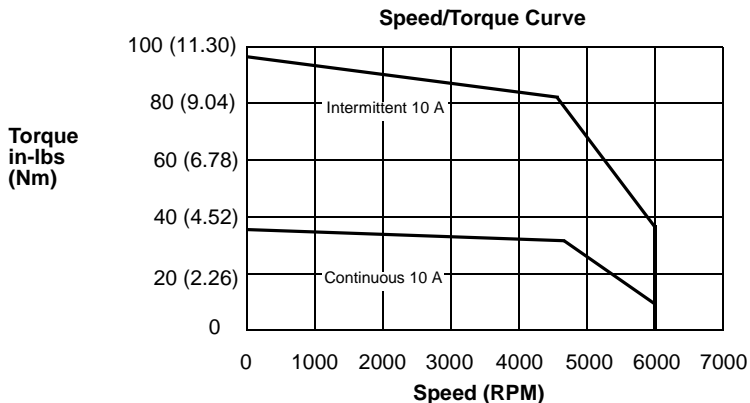
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
<b>Drive</b>	DR-x010-000			

**Table 5: S42K (CGC12)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	36.66 in-lbs (4.14 Nm)
<b>Continuous Rated Stall Current</b>	6.96 Amps RMS
<b>Maximum Current</b>	26.09 Amps RMS
<b>Maximum Continuous Power</b>	1.97 HP (1.47 KW)
<b>Current at Maximum Power</b>	6.26 Amps RMS
<b>Speed at Maximum Power</b>	4500 RPM (471 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	5714 RPM (598 rad/sec)
<b>Rotor Inertia</b>	0.0036 in-lbs-s <sup>2</sup> (4.1E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0038 in-lbs-s <sup>2</sup> (4.2E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	5.27 in-lbs/Amp (0.60 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	36.40 V/KRPM (0.35 V-sec/rad)
<b>Mechanical Time Constant</b>	2.22 msec
<b>Electrical Time Constant</b>	3.01 msec
<b>Thermal Time Constant</b>	30.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	1.13 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	3.40 mH
<b>Static Friction</b>	1.30 in-lbs (0.15 Nm)
<b>Motor Weight - Approximate</b>	16.10 lb (7.30 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

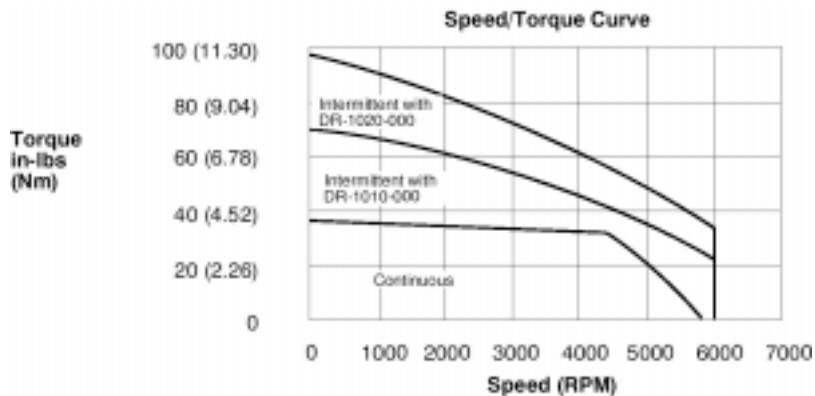
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531	610Mxx21031 (Preferred)	610Mxx22031

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

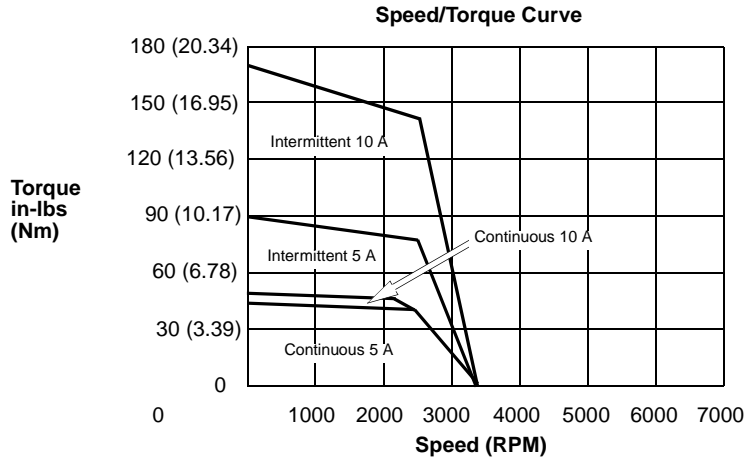
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
Drive Options	DR-x010-000 (Preferred), DR-x020-000 (Optional)			

**Table 6: S43E (CGC13)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	48.88 in-lbs (5.52 Nm)
<b>Continuous Rated Stall Current</b>	5.45 Amps RMS
<b>Maximum Current</b>	20.45 Amps RMS
<b>Maximum Continuous Power</b>	1.58 HP (1.18 KW)
<b>Current at Maximum Power</b>	4.91 Amps RMS
<b>Speed at Maximum Power</b>	2500 RPM (262 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	2942 RPM (308 rad/sec)
<b>Rotor Inertia</b>	0.0045 in-lbs-s <sup>2</sup> (5.1E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0047 in-lbs-s <sup>2</sup> (5.3E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	8.97 in-lbs/Amp (1.01 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	70.70 V/KRPM (0.68 V-sec/rad)
<b>Mechanical Time Constant</b>	1.91 msec
<b>Electrical Time Constant</b>	3.39 msec
<b>Thermal Time Constant</b>	35.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	2.57 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	8.70 mH
<b>Static Friction</b>	1.30 in-lbs (0.15 Nm)
<b>Motor Weight - Approximate</b>	19.60 lb (8.89 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

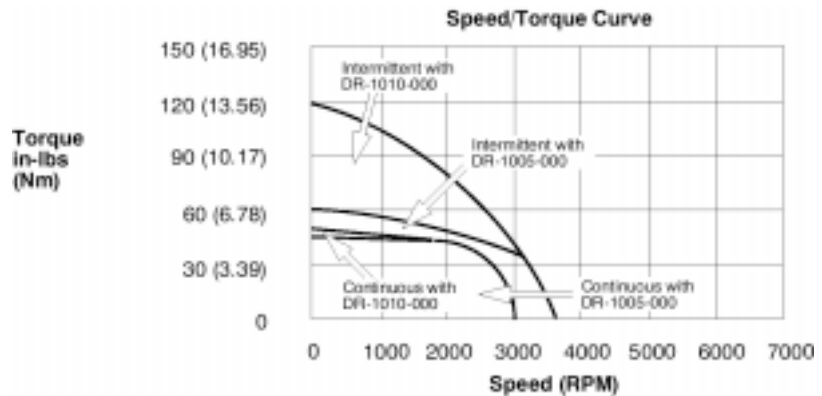
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531 (Optional)	610Mxx21031 (Preferred)	610Mxx22031

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

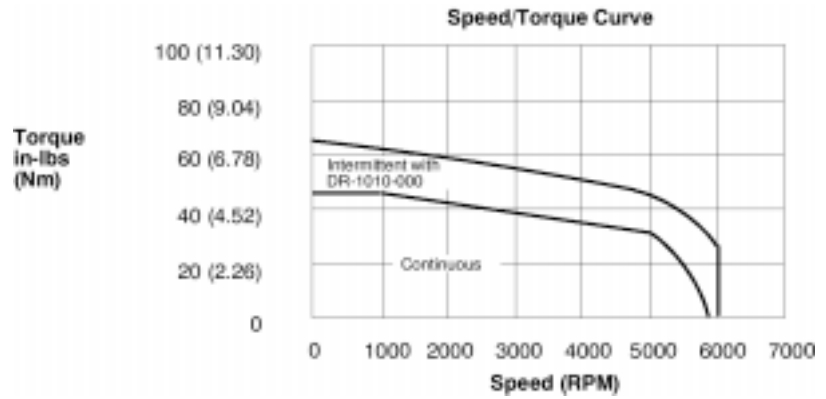
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
Drive Options	DR-x010-000 (Preferred), DR-x005-000 (Optional)			

**Table 7: S43K (CGC14)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	48.88 in-lbs (5.52 Nm)
<b>Continuous Rated Stall Current</b>	10.72 Amps RMS
<b>Maximum Current</b>	40.19 Amps RMS
<b>Maximum Continuous Power</b>	2.37 HP (1.77 KW)
<b>Current at Maximum Power</b>	9.64 Amps RMS
<b>Speed at Maximum Power</b>	5000 RPM (523 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	5810 RPM (608 rad/sec)
<b>Rotor Inertia</b>	0.0045 in-lbs-s <sup>2</sup> (5.1E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0047 in-lbs-s <sup>2</sup> (5.3E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	4.56 in-lbs/Amp (0.52 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	35.80 V/KRPM (0.34 V-sec/rad)
<b>Mechanical Time Constant</b>	1.82 msec
<b>Electrical Time Constant</b>	3.17 msec
<b>Thermal Time Constant</b>	40.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.63 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	2.00 mH
<b>Static Friction</b>	1.30 in-lbs (0.15 Nm)
<b>Motor Weight - Approximate</b>	19.60 lb (8.89 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

*Continued on next page*

**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
<b>Drive</b>	DR-x010-000			

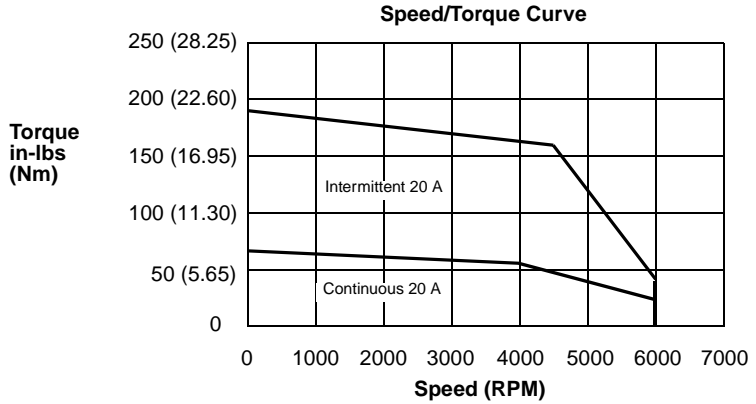


**Table 8: S44K (CGD18)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	68.62 in-lbs (7.75 Nm)
<b>Continuous Rated Stall Current</b>	13.00 Amps RMS
<b>Maximum Current</b>	48.75 Amps RMS
<b>Maximum Continuous Power</b>	3.00 HP (2.24 kW)
<b>Current at Maximum Power</b>	11.70 Amps RMS
<b>Speed at Maximum Power</b>	4500 RPM (471 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	5386 RPM (564 rad/sec)
<b>Rotor Inertia</b>	0.0056 in-lbs-s <sup>2</sup> (6.3E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0058 in-lbs-s <sup>2</sup> (6.5E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	5.28 in-lbs/Amp (0.60 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	38.62 V/KRPM (0.37 V-sec/rad)
<b>Mechanical Time Constant</b>	1.41 msec
<b>Electrical Time Constant</b>	4.02 msec
<b>Thermal Time Constant</b>	40.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.49 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	1.97 mH
<b>Static Friction</b>	1.30 in-lbs (0.15 Nm)
<b>Motor Weight - Approximate</b>	23.10 lb (10.48 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

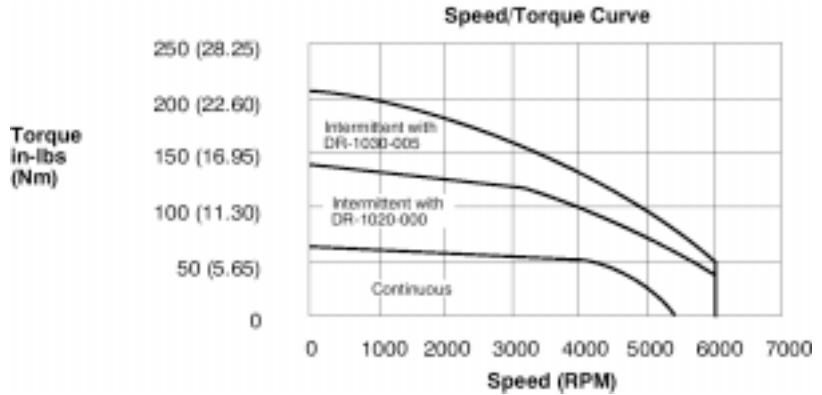
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531	610Mxx21031	610Mxx22031 (Preferred)

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

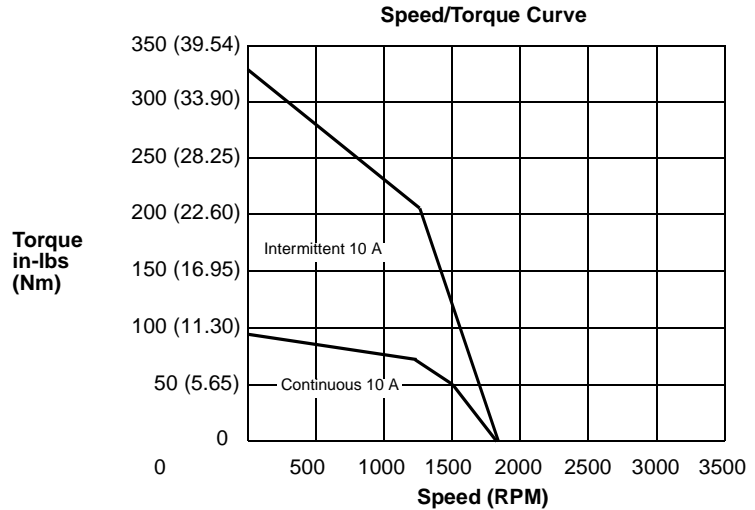
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-DSSA	MC-DW0A	MC-SSSA	MC-SW0A	MC-DS0A-KIT
Drive Options	DR-x020-000 (Preferred), DR-x030-005 (Optional)			

**Table 9: S46B (CGC19)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	97.20 in-lbs (10.98 Nm)
<b>Continuous Rated Stall Current</b>	5.60 Amps RMS
<b>Maximum Current</b>	21.00 Amps RMS
<b>Maximum Continuous Power</b>	1.35 HP (1.01 kW)
<b>Current at Maximum Power</b>	3.90 Amps RMS
<b>Speed at Maximum Power</b>	1250 RPM (131 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	1606 RPM (168 rad/sec)
<b>Rotor Inertia</b>	7.1E-03 in-lbs-s <sup>2</sup> (8.0E-04 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	7.3E-03 in-lbs-s <sup>2</sup> (8.2E-04 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	17.36 in-lbs/Amp (1.96 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	129.50 V/KRPM (1.24 V-sec/rad)
<b>Mechanical Time Constant</b>	1.02 msec
<b>Electrical Time Constant</b>	4.67 msec
<b>Thermal Time Constant</b>	50.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	3.09 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	14.43 mH
<b>Static Friction</b>	1.30 in-lbs (0.15 Nm)
<b>Motor Weight - Approximate</b>	30.10 lb (13.65 Kg)
<b>Brake Torque - Standard</b>	40.00 in-lbs (4.52 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.45 Amps

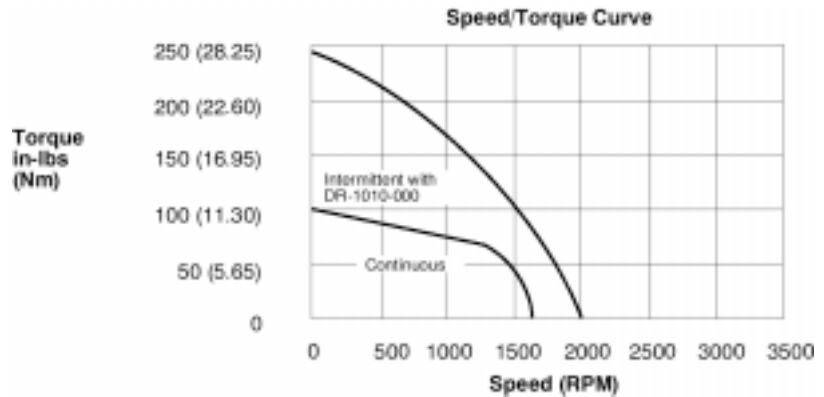
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**Speed/Torque Curve Chart for M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531	610Mxx21031 (Preferred)	610Mxx22031

**Speed/Torque Curve Chart for CL1000 family Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

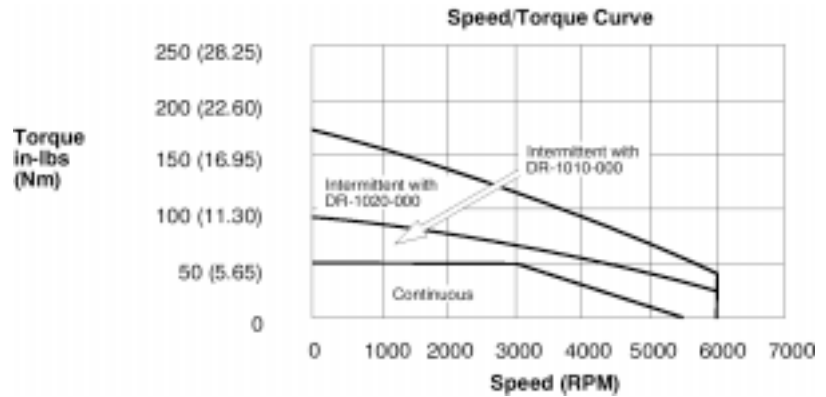
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
Drive	DR-x010-000			

**Table 10: S61G (CGC20)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	50.76 in-lbs (5.74 Nm)
<b>Continuous Rated Stall Current</b>	7.61 Amps RMS
<b>Maximum Current</b>	30.46 Amps RMS
<b>Maximum Continuous Power</b>	2.35 HP (1.75 KW)
<b>Current at Maximum Power</b>	6.85 Amps RMS
<b>Speed at Maximum Power</b>	3000 RPM (314 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	3962 RPM (415 rad/sec)
<b>Rotor Inertia</b>	0.0110 in-lbs-s <sup>2</sup> (1.2E-03 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0120 in-lbs-s <sup>2</sup> (1.4E-03 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	6.67 in-lbs/Amp (0.75 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	52.50 V/KRPM (0.50 V-sec/rad)
<b>Mechanical Time Constant</b>	6.15 msec
<b>Electrical Time Constant</b>	7.97 msec
<b>Thermal Time Constant</b>	30.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	1.87 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	14.90 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	24.00 lb (10.88 Kg)
<b>Brake Torque - Standard</b>	175.00 in-lbs (19.80 Nm)
<b>Brake Torque - Optional</b>	290.00 in-lbs (32.80 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.56 Amps standard / 0.62 Amps optional

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

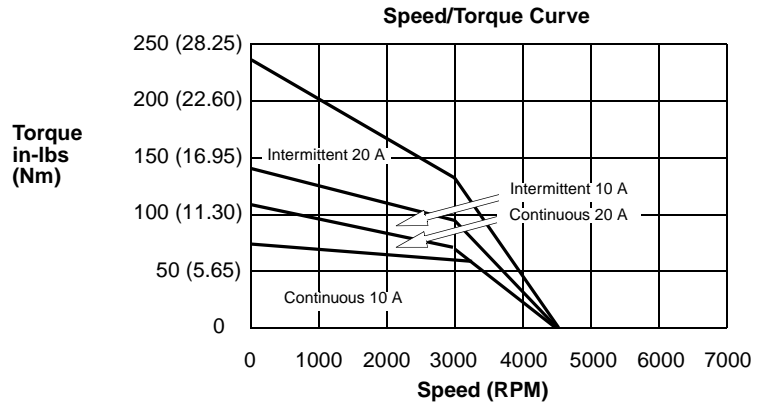
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-CSSA	MC-CW0A	MC-SSSA	MC-SW0A	MC-CS0A-KIT
<b>Drive Options</b>	DR-x010-000 (Preferred), DR-x020-000 (Optional)			

**Table 11: S62G (CGD21)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	108.10 in-lbs (12.21 Nm)
<b>Continuous Rated Stall Current</b>	14.95 Amps RMS
<b>Maximum Current</b>	59.78 Amps RMS
<b>Maximum Continuous Power</b>	3.65 HP (2.72 KW)
<b>Current at Maximum Power</b>	13.45 Amps RMS
<b>Speed at Maximum Power</b>	3000 RPM (314 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	3992 RPM (418 rad/sec)
<b>Rotor Inertia</b>	0.0180 in-lbs-s <sup>2</sup> (2.03E-03 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0190 in-lbs-s <sup>2</sup> (2.15E-03 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	7.23 in-lbs/Amp (0.82 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	52.10 V/KRPM (0.50 V-sec/rad)
<b>Mechanical Time Constant</b>	3.30 msec
<b>Electrical Time Constant</b>	10.26 msec
<b>Thermal Time Constant</b>	35.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.66 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	6.77 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	34.00 lb (15.42 Kg)
<b>Brake Torque - Standard</b>	175.00 in-lbs (19.80 Nm)
<b>Brake Torque - Optional</b>	290.00 in-lbs (32.80 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.56 Amps standard / 0.62 Amps optional

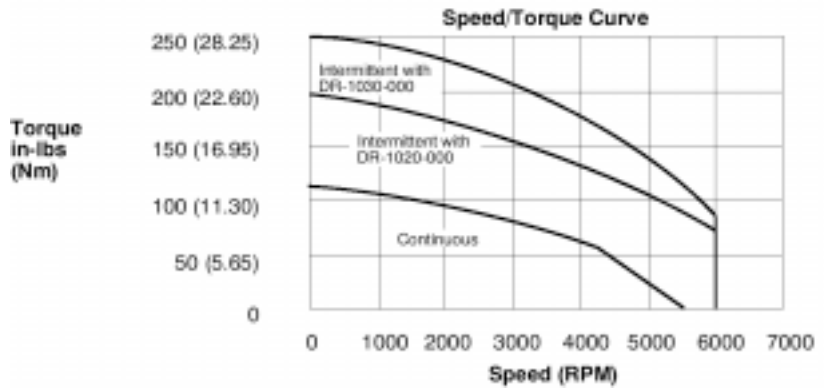
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**Speed/Torque  
Curve Chart for  
M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531	610Mxx21031 (Optional)	610Mxx22031 (Preferred)

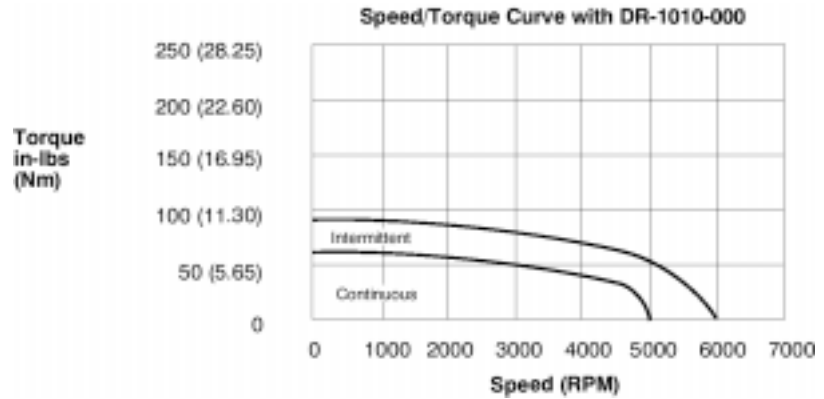
**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

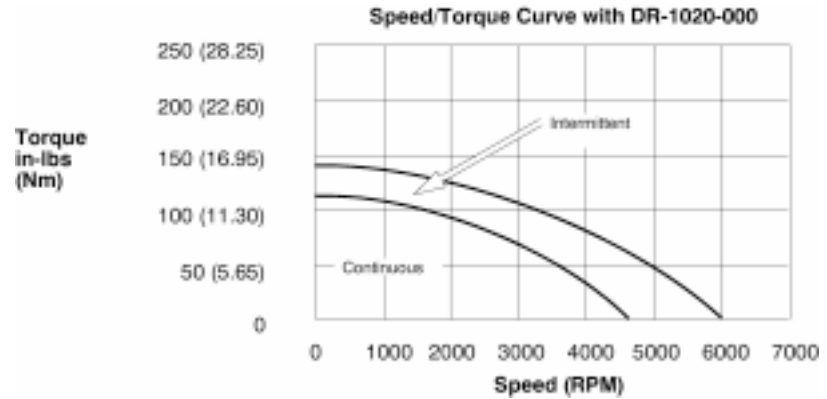
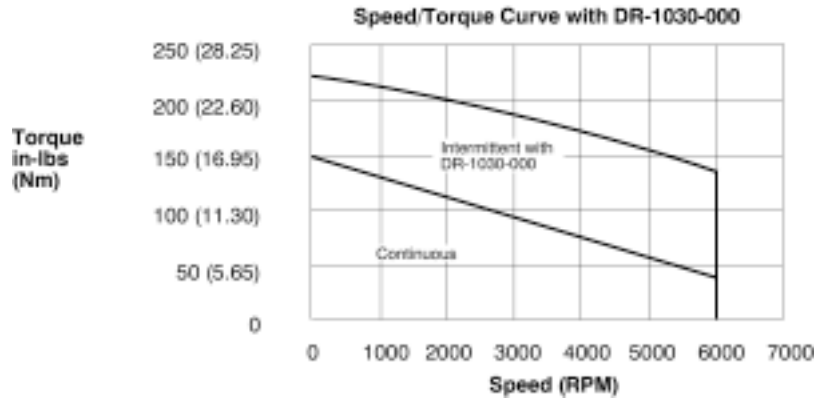
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-DSSA	MC-DW0A	MC-SSSA	MC-SW0A	MC-DS0A-KIT
<b>Drive Options</b>	DR-x020-000 (Preferred), DR-x030-000 (Optional), DR-x010-000 (Optional)			

**Table 12: S63K (CGP24)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	154.16 in-lbs (17.42 Nm)
<b>Continuous Rated Stall Current</b>	29.05 Amps RMS
<b>Maximum Current</b>	116.18 Amps RMS
<b>Maximum Continuous Power</b>	4.23 HP (3.16 KW)
<b>Current at Maximum Power</b>	26.14 Amps RMS
<b>Speed at Maximum Power</b>	3500 RPM (367 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	5389 RPM (564 rad/sec)
<b>Rotor Inertia</b>	0.0250 in-lbs-s <sup>2</sup> (2.82E-03 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0260 in-lbs-s <sup>2</sup> (2.94E-03 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	5.31 in-lbs/Amp (0.60 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	38.60 V/KRPM (0.37 V-sec/rad)
<b>Mechanical Time Constant</b>	2.30 msec
<b>Electrical Time Constant</b>	15.44 msec
<b>Thermal Time Constant</b>	45.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.18 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	2.78 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	38.00 lb (17.23 Kg)
<b>Brake Torque - Standard</b>	175.00 in-lbs (19.80 Nm)
<b>Brake Torque - Optional</b>	290.00 in-lbs (32.80 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.56 Amps standard / 0.62 Amps optional

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

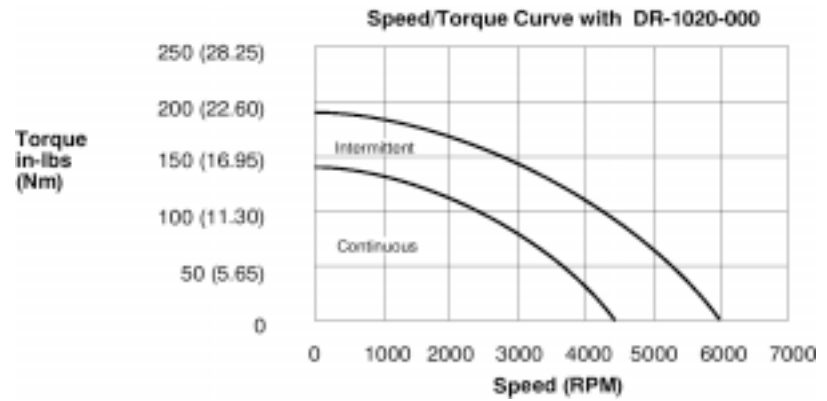
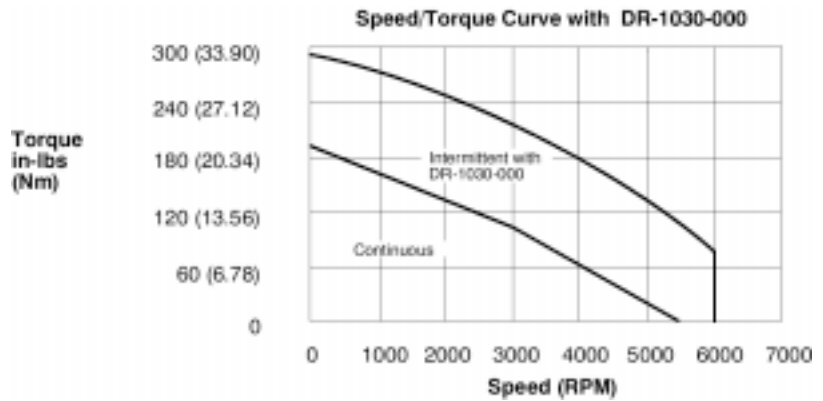
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-000 (Preferred), DR-x020-000 (Optional)			

**Table 13: S64G (CGP27)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	193.64 in-lbs (21.88 Nm)
<b>Continuous Rated Stall Current</b>	27.26 Amps RMS
<b>Maximum Current</b>	109.04 Amps RMS
<b>Maximum Continuous Power</b>	4.82 HP (3.60 KW)
<b>Current at Maximum Power</b>	24.53 Amps RMS
<b>Speed at Maximum Power</b>	2500 RPM (262 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	4023 RPM (421 rad/sec)
<b>Rotor Inertia</b>	0.0320 in-lbs-s <sup>2</sup> (3.61E-03 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0330 in-lbs-s <sup>2</sup> (3.73E-03 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	7.10 in-lbs/Amp (0.80 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	51.70 V/KRPM (0.49 V-sec/rad)
<b>Mechanical Time Constant</b>	2.10 msec
<b>Electrical Time Constant</b>	13.22 msec
<b>Thermal Time Constant</b>	47.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.23 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	3.04 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	45.00 lb (20.41 Kg)
<b>Brake Torque - Standard</b>	175.00 in-lbs (19.80 Nm)
<b>Brake Torque - Optional</b>	290.00 in-lbs (32.80 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.56 Amps standard / 0.62 Amps optional

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

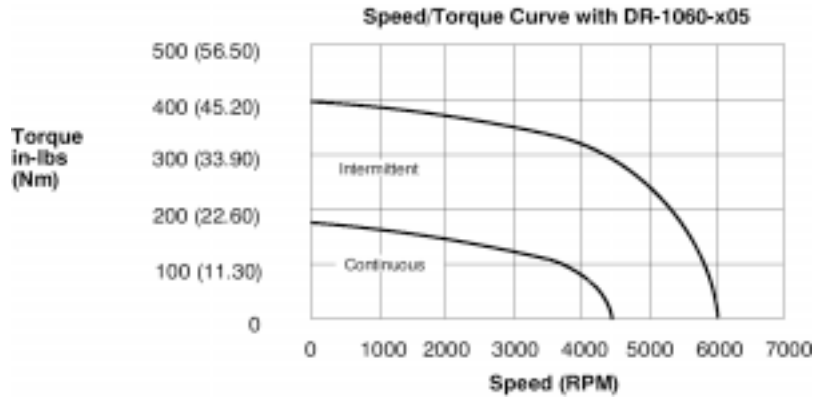
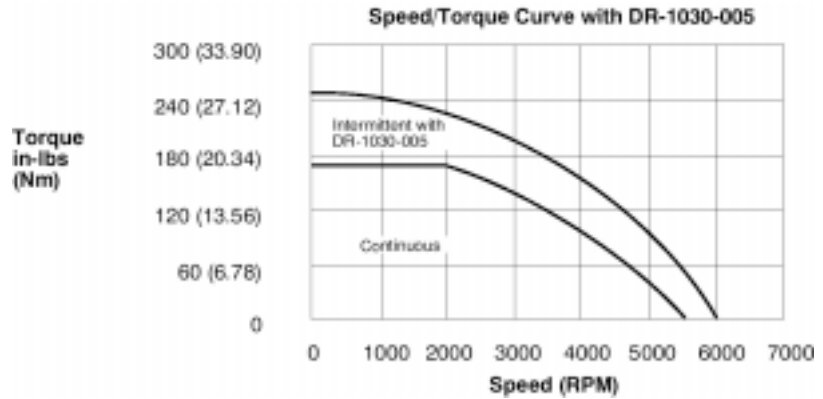
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-000 (Preferred), DR-x020-000 (Optional)			

**Table 14: S65H (CGP29)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	219.96 in-lbs (24.85 Nm)
<b>Continuous Rated Stall Current</b>	38.16 Amps RMS
<b>Maximum Current</b>	152.64 Amps RMS
<b>Maximum Continuous Power</b>	7.00 HP (5.22 KW)
<b>Current at Maximum Power</b>	34.34 Amps RMS
<b>Speed at Maximum Power</b>	3000 RPM (314 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	5025 RPM (523 rad/sec)
<b>Rotor Inertia</b>	0.0390 in-lbs-s <sup>2</sup> (0.0044 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0400 in-lbs-s <sup>2</sup> (0.0045 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	5.76 in-lbs/Amp (0.65 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	41.39 V/KRPM (0.40 V-sec/rad)
<b>Mechanical Time Constant</b>	2.05 msec
<b>Electrical Time Constant</b>	15.20 msec
<b>Thermal Time Constant</b>	53.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.12 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	1.82 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	52.00 lb (23.60 Kg)
<b>Brake Torque - Standard</b>	175.00 in-lbs (19.80 Nm)
<b>Brake Torque - Optional</b>	290.00 in-lbs (32.80 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.56 Amps standard / 0.62 Amps optional

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-005 (Preferred), DR-x060-x05 (Optional)			

## Eight Pole Motors

### Subject

This section provides electrical specifications and torque curves for Cyberline S and R series eight pole motor families – CGD31, CGP32, CGP34, CGX35, CGP37, CGX39, CGP41, CGX44, and CGX47

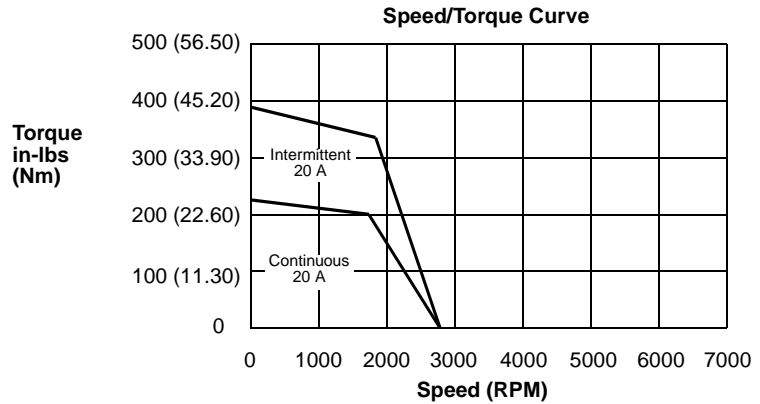
**Table 15: S74D (CGD31)**

Description	Specification SAE (METRIC)
Continuous Rated Stall Torque	225.4 in-lbs (25.42 Nm)
Continuous Rated Stall Current	20.10 Amps RMS
Maximum Current	80.40 Amps RMS
Maximum Continuous Power	5.43 HP (4.05 KW)
Current at Maximum Power	18.09 Amps RMS
Speed at Maximum Power	1800 RPM (188 rad/sec)
Maximum Continuous Speed (Without Phase Advance)	2433 RPM (255 rad/sec)
Rotor Inertia	0.0659 in-lbs-s <sup>2</sup> (7.44E-03 Kg-m <sup>2</sup> )
Rotor Inertia with Brake	0.0670 in-lbs-s <sup>2</sup> (7.61E-03 Kg-m <sup>2</sup> )
Torque Constant at 356°F (180°C)	11.19 in-lbs/Amp (1.26 Nm/Amp)
BEMF Constant (L-L RMS) at 77°F (25°C)	85.50 V/KRPM (0.82 V-sec/rad)
Mechanical Time Constant	3.09 msec
Electrical Time Constant	5.79 msec
Thermal Time Constant	45.00 minutes
Stator Resistance (L-L at 77°F (25°C))	0.43 Ohms
Stator Inductance (L-L at 77°F (25°C))	2.48 mH
Static Friction	10.00 in-lbs (1.13 Nm)
Motor Weight - Approximate	60.00 lb (27.21 Kg)
Brake Torque - Standard	354.00 in-lbs (40.00 Nm)
Brake Voltage	24Vdc ±10%
Brake Current	0.62 Amps

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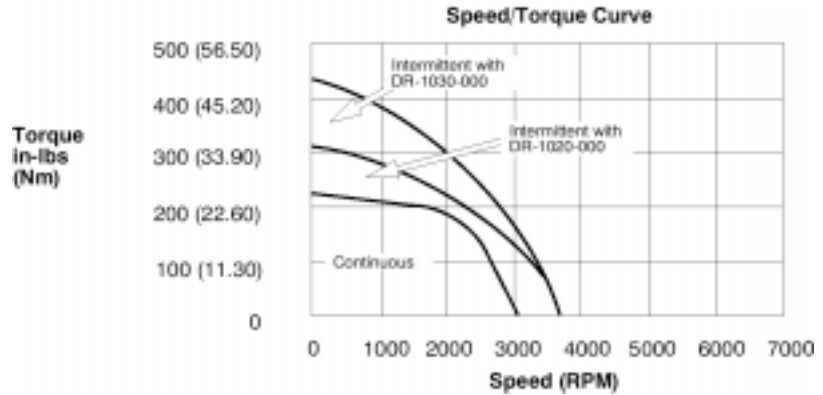


**Speed/Torque  
Curve Chart for  
M100 Drives**



M100	2.5A	5A	10A	20A
Part Number	610Mxx20231	610Mxx20531	610Mxx21031	610Mxx22031 (Preferred)

**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

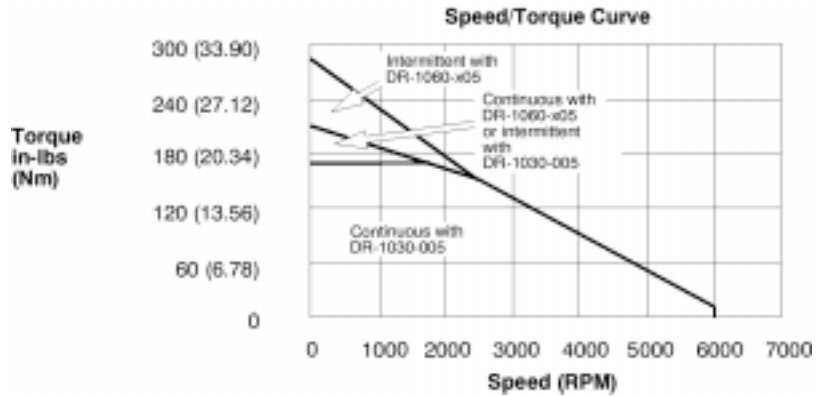
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-DSSA	MC-DW0A	MC-SSSA	MC-SW0A	MC-DS0A-KIT
Drive Options	DR-x020-000 (Preferred), DR-x030-000 (Optional)			

**Table 16: S74H (CGP32)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	212.44 in-lbs (24.00 Nm)
<b>Continuous Rated Stall Current</b>	39.68 Amps RMS
<b>Maximum Current</b>	158.72 Amps RMS
<b>Maximum Continuous Power</b>	5.76 HP (4.30 KW)
<b>Torque at Maximum Power</b>	145.21 in-lbs (16.41 Nm)
<b>Current at Maximum Power</b>	35.71 Amps RMS
<b>Speed at Maximum Power</b>	2500 RPM (262 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	4865 RPM (506 rad/sec)
<b>Rotor Inertia</b>	0.0659 in-lbs-s <sup>2</sup> (7.44E-03 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.0670 in-lbs-s <sup>2</sup> (7.61E-03 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	5.35 in-lbs/Amp (0.60 Nm/Amp)
<b>Torque Constant at 77°F (25°C)</b>	6.25 in-lbs/Amp (0.71 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	42.75 V/KRPM (0.41 V-sec/rad)
<b>Mechanical Time Constant</b>	3.24 msec
<b>Mechanical Time Constant with Brake</b>	3.32 msec
<b>Electrical Time Constant</b>	5.78 msec
<b>Thermal Time Constant</b>	45.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.11 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	0.62 mH
<b>Static Friction</b>	10.00 in-lbs (1.13 Nm)
<b>Motor Weight - Approximate</b>	60.00 lb (27.21 Kg)
<b>Brake Torque - Standard</b>	354.00 in-lbs (40.00 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.62 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

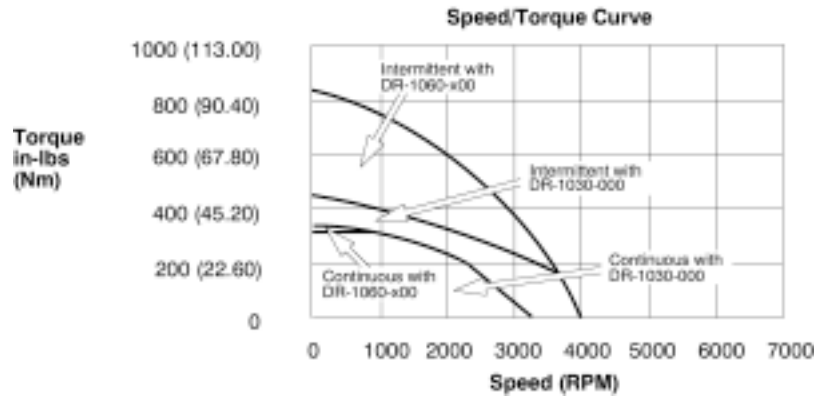
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-005 (Preferred), DR-x060-x05 (Optional)			

**Table 17: S76D (CGP34)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	328.06 in-lbs (37.07 Nm)
<b>Continuous Rated Stall Current</b>	31.48 Amps RMS
<b>Maximum Current</b>	125.92 Amps RMS
<b>Maximum Continuous Power</b>	6.90 HP (5.15 KW)
<b>Current at Maximum Power</b>	28.33 Amps RMS
<b>Speed at Maximum Power</b>	2000 RPM (209 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	2595 RPM (272 rad/sec)
<b>Rotor Inertia</b>	0.0909 in-lbs-s <sup>2</sup> (1.03E-02 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.092 in-lbs-s <sup>2</sup> (1.0E-02 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	10.42 in-lbs/Amp (1.18 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	80.16 V/KRPM (0.77 V-sec/rad)
<b>Mechanical Time Constant</b>	2.57 msec
<b>Electrical Time Constant</b>	6.19 msec
<b>Thermal Time Constant</b>	55.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.23 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	1.40 mH
<b>Static Friction</b>	10.00 in-lbs (1.13 Nm)
<b>Motor Weight - Approximate</b>	80.00 lb (36.28 Kg)
<b>Brake Torque - Standard</b>	354.00 in-lbs (40.00 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.62 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

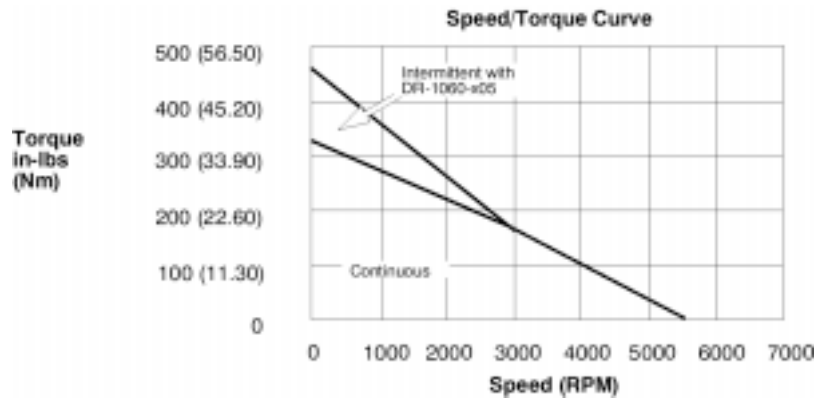
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-005 (Preferred), DR-x060-x00 (Optional)			

**Table 18: S76G (CGX35)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	328.06 in-lbs (37.07 Nm)
<b>Continuous Rated Stall Current</b>	50.70 Amps RMS
<b>Maximum Current</b>	202.80 Amps RMS
<b>Maximum Continuous Power</b>	7.22 HP (5.39 KW)
<b>Torque at Maximum Power</b>	151.68 in-lbs (17.14 Nm)
<b>Current at Maximum Power</b>	45.63 Amps RMS
<b>Speed at Maximum Power</b>	3000 RPM (314 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	4324 RPM (453 rad/sec)
<b>Rotor Inertia</b>	0.0909 in-lbs-s <sup>2</sup> (1.03E-02 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.092 in-lbs-s <sup>2</sup> (1.04E-02 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	6.47 in-lbs/Amp (0.73 Nm/Amp)
<b>Torque Constant at 77°F (25°C)</b>	7.04 in-lbs/Amp (0.80 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	48.10 V/KRPM (0.46 V-sec/rad)
<b>Mechanical Time Constant</b>	2.61 msec
<b>Mechanical Time Constant with Brake</b>	2.65 msec
<b>Electrical Time Constant</b>	5.90 msec
<b>Thermal Time Constant</b>	55.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.09 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	0.50 mH
<b>Static Friction</b>	10.00 in-lbs (1.13 Nm)
<b>Motor Weight - Approximate</b>	80.00 lb (36.28 Kg)
<b>Brake Torque - Standard</b>	354.00 in-lbs (40.00 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.62 Amps

*Continued on next page*

**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-XSSA	MC-XW0A	MC-SSSA	MC-SW0A	MC-XS0A-KIT
Drive	DR-x060-x05			

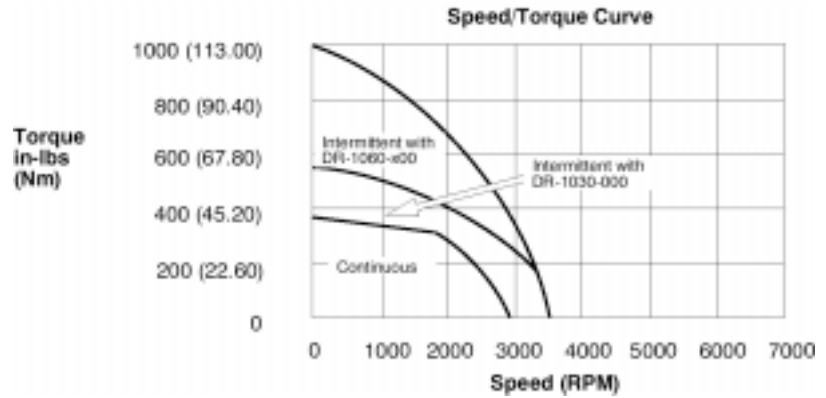
**Table 19: S77C (CGP37)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	372.24 in-lbs (42.06 Nm)
<b>Continuous Rated Stall Current</b>	28.95 Amps RMS
<b>Maximum Current</b>	115.81 Amps RMS
<b>Maximum Continuous Power</b>	8.08 HP (6.03 KW)
<b>Current at Maximum Power</b>	26.06 Amps RMS
<b>Speed at Maximum Power</b>	1500 RPM (157 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	2222 RPM (233 rad/sec)
<b>Rotor Inertia</b>	0.1060 in-lbs-s <sup>2</sup> (1.2E-02 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.1080 in-lbs-s <sup>2</sup> (1.21E-02 Kg-m <sup>2</sup> )
<b>Torque Constant at 311°F (155°C)</b>	12.86 in-lbs/Amp (1.45 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	93.60 V/KRPM (0.89 V-sec/rad)
<b>Mechanical Time Constant</b>	2.40 msec
<b>Electrical Time Constant</b>	6.31 msec
<b>Thermal Time Constant</b>	60.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.26 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	1.64 mH
<b>Static Friction</b>	10.00 in-lbs (1.13 Nm)
<b>Motor Weight - Approximate</b>	90.00 lb (40.82 Kg)
<b>Brake Torque - Standard</b>	354.00 in-lbs (40.00 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	1.46 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

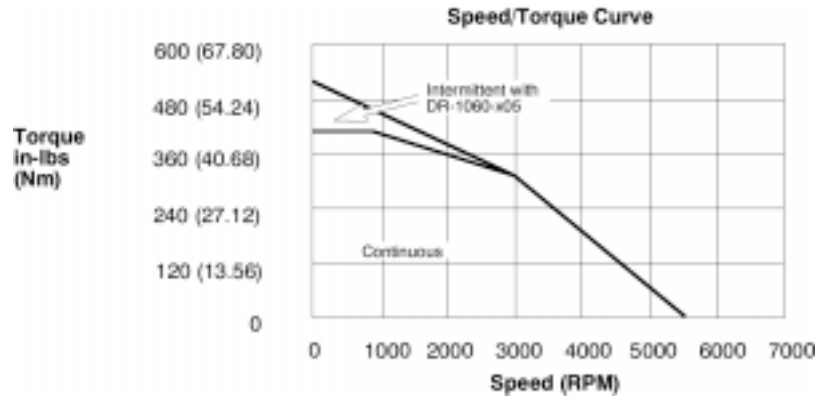
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-000 (Preferred), DR-x060-x00 (Optional)			

**Table 20: S79G (CGX39)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	440.41 in-lbs (49.76 Nm)
<b>Continuous Rated Stall Current</b>	64.50 Amps RMS
<b>Maximum Current</b>	258.00 Amps RMS
<b>Maximum Continuous Power</b>	14.30 HP (10.67 KW)
<b>Torque at Maximum Power</b>	300.42 in-lbs (33.95 Nm)
<b>Current at Maximum Power</b>	58.05 Amps RMS
<b>Speed at Maximum Power</b>	3000 RPM (314 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	4324 RPM (452 rad/sec)
<b>Rotor Inertia</b>	0.1363 in-lbs-s <sup>2</sup> (1.54E-02 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.138 in-lbs-s <sup>2</sup> (1.56E-02 Kg-m <sup>2</sup> )
<b>Torque Constant at 356°F (180°C)</b>	6.83 in-lbs/Amp (0.77 Nm/Amp)
<b>Torque Constant at 77°F (25°C)</b>	7.04 in-lbs/Amp (0.80 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	48.10 V/KRPM (0.46 V-sec/rad)
<b>Mechanical Time Constant</b>	2.30 msec
<b>Mechanical Time Constant with Brake</b>	2.32 msec
<b>Electrical Time Constant</b>	6.16 msec
<b>Thermal Time Constant</b>	70.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.05 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	0.33 mH
<b>Static Friction</b>	10.00 in-lbs (1.13 Nm)
<b>Motor Weight - Approximate</b>	110.00 lb (49.89 Kg)
<b>Brake Torque - Standard</b>	354.00 in-lbs (40.00 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	0.62 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

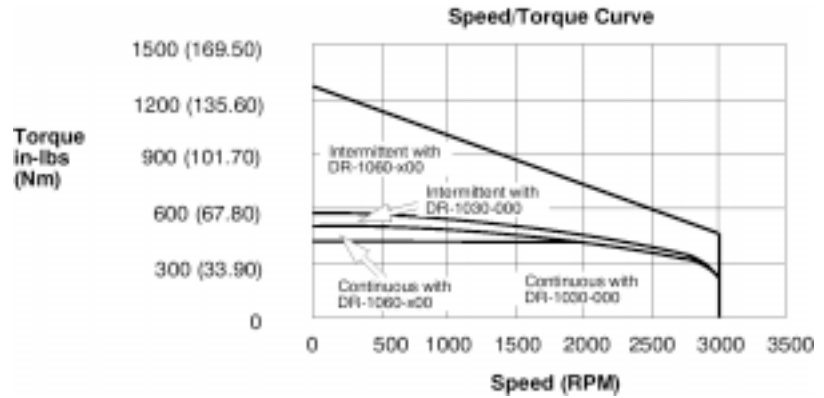
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-XSSA	MC-XW0A	MC-SSSA	MC-SW0A	MC-XS0A-KIT
Drive	DR-x060-x05			

**Table 21: R41 (CGP41)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	485.00 in-lbs (54.80 Nm)
<b>Continuous Rated Stall Current</b>	36.00 Amps RMS
<b>Maximum Current</b>	74.00 Amps RMS
<b>Maximum Continuous Power</b>	11.7 HP (8.80 KW)
<b>Torque at Maximum Power</b>	372.00 in-lbs (42.04 Nm)
<b>Current at Maximum Power</b>	26.96 Amps RMS
<b>Speed at Maximum Power</b>	2100 RPM (219.80 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	1915 RPM (200 rad/sec)
<b>Rotor Inertia</b>	0.294 in-lbs-s <sup>2</sup> (0.0332 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.33 in-lbs-s <sup>2</sup> (0.0373 Kg-m <sup>2</sup> )
<b>Torque Constant at 77°F (25°C)</b>	13.80 in-lbs/Amp (1.56 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	108.60 V/KRPM (1.04 V-sec/rad)
<b>Mechanical Time Constant</b>	4.50 msec
<b>Electrical Time Constant</b>	14.30 msec
<b>Thermal Time Constant</b>	75.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.30 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	4.32 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	195.00 lb (89.00 Kg)
<b>Brake Torque - Standard</b>	600.00 in-lbs (67.8 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	1.426 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

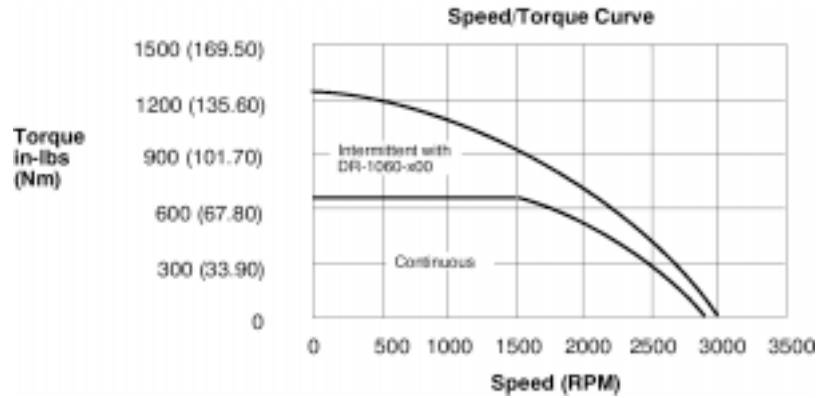
Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-PSSA	MC-PW0A	MC-SSSA	MC-SW0A	MC-PS0A-KIT
<b>Drive Options</b>	DR-x030-000 (Preferred), DR-x060-x00 (Optional)			

**Table 22: R44 (CGX44)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	660.00 in-lbs (74.60 Nm)
<b>Continuous Rated Stall Current</b>	56.00 Amps RMS
<b>Maximum Current</b>	119.00 Amps RMS
<b>Maximum Continuous Power</b>	17.20 HP (12.80 KW)
<b>Torque at Maximum Power</b>	560.00 in-lbs (63.28 Nm)
<b>Current at Maximum Power</b>	47.46 Amps RMS
<b>Speed at Maximum Power</b>	1900 RPM (198.87 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	2660 RPM (278 rad/sec)
<b>Rotor Inertia</b>	0.387 in-lbs-s <sup>2</sup> (0.0437 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.423 in-lbs-s <sup>2</sup> (0.0478 Kg-m <sup>2</sup> )
<b>Torque Constant at 77°F (25°C)</b>	11.80 in-lbs/Amp (1.33 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	98.30 V/KRPM (0.94 V-sec/rad)
<b>Mechanical Time Constant</b>	3.50 msec
<b>Electrical Time Constant</b>	15.00 msec
<b>Thermal Time Constant</b>	90.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.15 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	2.20 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	240.00 lb (109.00 Kg)
<b>Brake Torque - Standard</b>	600.00 in-lbs (67.8 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	1.426 Amps

*Continued on next page*

**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-XSSA	MC-XW0A	MC-SSSA	MC-SW0A	MC-XS0A-KIT
Drive	DR-x060-x00			

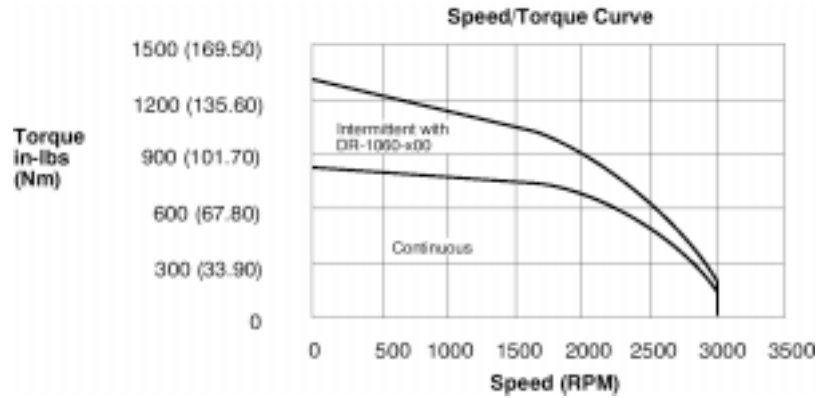
**Table 23: R47 (CGX47)**

<b>Description</b>	<b>Specification SAE (METRIC)</b>
<b>Continuous Rated Stall Torque</b>	845.00 in-lbs (95.5 Nm)
<b>Continuous Rated Stall Current</b>	60.00 Amps RMS
<b>Maximum Current</b>	127.00 Amps RMS
<b>Maximum Continuous Power</b>	22.30 HP (16.60 KW)
<b>Torque at Maximum Power</b>	600.00 in-lbs (67.80 Nm)
<b>Current at Maximum Power</b>	42.55 Amps RMS
<b>Speed at Maximum Power</b>	2100 RPM (219.80 rad/sec)
<b>Maximum Continuous Speed (Without Phase Advance)</b>	1957 RPM (205 rad/sec)
<b>Rotor Inertia</b>	0.479 in-lbs-s <sup>2</sup> (0.0541 Kg-m <sup>2</sup> )
<b>Rotor Inertia with Brake</b>	0.515 in-lbs-s <sup>2</sup> (0.058 Kg-m <sup>2</sup> )
<b>Torque Constant at 77°F (25°C)</b>	14.10 in-lbs/Amp (1.59 Nm/Amp)
<b>BEMF Constant (L-L RMS) at 77°F (25°C)</b>	106.30 V/KRPM (1.02 V-sec/rad)
<b>Mechanical Time Constant</b>	2.90 msec
<b>Electrical Time Constant</b>	16.90 msec
<b>Thermal Time Constant</b>	105.00 minutes
<b>Stator Resistance (L-L at 77°F (25°C))</b>	0.12 Ohms
<b>Stator Inductance (L-L at 77°F (25°C))</b>	1.96 mH
<b>Static Friction</b>	5.00 in-lbs (0.56 Nm)
<b>Motor Weight - Approximate</b>	295.00 lb (134.00 Kg)
<b>Brake Torque - Standard</b>	600.00 in-lbs (67.8 Nm)
<b>Brake Voltage</b>	24Vdc ±10%
<b>Brake Current</b>	1.426 Amps

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**Speed/Torque  
Curve Chart for  
CL1000 family  
Drives**



The table below shows typical cables and drives for this motor. See Chapter 2 for details.

Power Cable	Power Wire	Feedback Cable	Feedback Wire	Connector Kit
MC-XSSA	MC-XW0A	MC-SSSA	MC-SW0A	MC-XS0A-KIT
Drive	DR-x060-x00			

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# Motor, Drive, and Cable Combinations

# 2

- Motor/Drive Combinations ..... page 60
- Motor/Cable Matching..... page 62
- Connector Kits and Wire Reels..... page 64

**CAUTION**

Cable connector damage will result from an improper tightening procedure.

Do not use tools of any kind to tighten the cable connectors. Hand tighten only.

Failure to observe this precaution can result in equipment damage.



**Note:** All Modicon cables meet or exceed the requirements of the following specifications:

- Standard duty signal cables adhere to all CSA AWM Class 1, 300V, 176° F (80° C).
- Standard duty power cables adhere to all CSA SOW, 600V, 194° F (90° C).
- Heavy duty power and signal cables adhere to all CSA AWM Class I/II, Group A/B, 600V, 221° F (105° C), FTI, with additional approvals for:
  - Oil immersion per C22.2, No. 210.2-M90 C1 8.8.8,
  - Insulation resistance at elevated temperature per C22.2, No. 210.2-M90 C1 7.6.10
  - Weather resistance per C22.2, No. 49-92 C1 10.1.10 (ref. type STOOW).



**Note:** Modicon cables are not intended for flexible track operation.

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## Motor/Drive Combinations

### Cyberline M100 Drives

The following table matches a preferred M100 drive and an optional M100 drive for each family of Modicon Cyberline servo motors.

**Table 1: Motor/M100 Drive Combinations**

Part No.	Motor Family	Preferred	Optional
S31N	CGC05	610Mxx20531	610Mxx20231
S32N	CGC06	610Mxx21031	610Mxx20531
S33F	CGC07	610Mxx20531	
S33M	CGC09		
S42K	CGC12	610Mxx21031	
S43E	CGC13	610Mxx21031	610Mxx20531
S43K	CGC14		
S44K	CGD18	610Mxx22031	
S46B	CGC19	610Mxx21031	
S61G	CGC20		
S62G	CGD21	610Mxx22031	610Mxx21031
S63K	CGP24		
S64G	CGP27		
S65H	CGP29		
S74D	CGD31	610Mxx22031	
S74H	CGP32		
S76D	CGP34		
S76G	CGX35		
S77C	CGP37		
S79G	CGX39		
R41	CGP41		
R44	CGX44		
R47	CGX47		

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**Cyberline  
CL1000 Drives**

The following table matches a preferred Cyberline drive and an optional Cyberline drive for each family of Modicon Cyberline servo motors. It also indicates whether the motor family is compatible with Modicon's 410 servo positioner.

**Table 2: Motor/CL1000 Drive Combinations**

Part No	Motor Family	Preferred Drive	Optional Drive	410 Compatible*
S31N	CGC05	DR-x005-000	DR-x010-000	yes
S32N	CGC06	DR-x010-000	DR-x005-000	
S33F	CGC07	DR-x005-000	DR-x010-000	yes
S33M	CGC09	DR-x010-000	None recommended	
S42K	CGC12	DR-x010-000	DR-x020-000	
S43E	CGC13	DR-x010-000	DR-x005-000	yes
S43K	CGC14	DR-x010-000	None recommended	
S44K	CGD18	DR-x020-000	DR-x030-005	
S46B	CGC19	DR-x010-000	None recommended	
S61G	CGC20	DR-x010-000	DR-x020-000	yes
S62G	CGD21	DR-x020-000	DR-x030-000, DR-x010-000	yes
S63K	CGP24	DR-x030-000	DR-x020-000	yes
S64G	CGP27	DR-x030-000	DR-x020-000	yes
S65H	CGP29	DR-x030-005	DR-x060-x05**	
S74D	CGD31	DR-x020-000	DR-x030-000	yes
S74H	CGP32	DR-x030-005	DR-x060-x05**	
S76D	CGP34	DR-x030-000	DR-x060-x00**	yes
S76G	CGX35	DR-x060-x05**	None recommended	
S77C	CGP37	DR-x030-000	DR-x060-x00**	yes
S79G	CGX39	DR-x060-x05**	None recommended	
R41	CGP41	DR-x030-000	DR-x060-x00**	yes
R44	CGX44	DR-x060-x00**	None recommended	yes
R47	CGX47	DR-x060-x00**	None recommended	yes

\* The motors marked as 410 compatible are also compatible with older CL1000 drives.

\*\* x in part number indicates various mounting selections.

## Motor / Cable Matching

**Feedback Cables** This section matches motor feedback devices with compatible feedback cables.

All sizes and families of motors use the same feedback cable selection. Motors with single or dual resolver feedback use the cable listed. Motors with triple resolver feedback need both a single and a dual resolver cable. Motors with encoders need a single resolver cable and an encoder cable.



**Note:** All the base cable numbers shown below should have a dash and three digits added to the end of the part number, indicating the required cable length – 10, 25, 50, 75, 100, or 150 feet. For example, MC-SHSA-010.

**Table 3: Feedback Cables**

	Standard Duty	Heavy Duty	Standard Duty	Heavy Duty	Standard Duty	Heavy Duty
Feedback Type	Straight	Straight	Right Angle (towards shaft)	Right Angle (towards shaft)	Right Angle (away from shaft)	Right Angle (away from shaft)
Single Resolver	MC-SSSA	MC-SHSA	MC-SSRA	MC-SHRA	MC-SSEA	MC-SHEA
Dual Resolver	MC-TSSA	MC-THSA	MC-TSRA	MC-THRA	MC-TSEA	MC-THEA
Encoder	MC-ESSA	MC-EHSA	MC-ESRA	MC-EHRA	MC-ESEA	MC-EHEA

*Continued on next page*

**Power Cables**

This section matches motor families with compatible power cables.



**Note:** All the base cable numbers shown below should have a dash and three digits added to the end of the part number, indicating the required cable length – 10, 25, 50, 75, 100, or 150 feet. For example, MC-CSSA-025.

**Table 4: Power Cables**

Part No.	Motor Family	Standard Duty	Heavy Duty	Standard Duty	Heavy Duty	Standard Duty	Heavy Duty
		Straight	Straight	Right Angle (towards shaft)	Right Angle (towards shaft)	Right Angle (away from shaft)	Right Angle (away from shaft)
S31N	CGC05	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S32N	CGC06	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S33F	CGC07	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S33M	CGC09	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S42K	CGC12	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S43E	CGC13	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S43K	CGC14	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S44K	CGD18	MC-DSSA	MC-DHSA	MC-DSRA	MC-DHRA	MC-DSEA	MC-DHEA
S46B	CGC19	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S61G	CGC20	MC-CSSA	MC-CHSA	MC-CSRA	MC-CHRA	MC-CSEA	MC-CHEA
S62G	CGD21	MC-DSSA	MC-DHSA	MC-DSRA	MC-DHRA	MC-DSEA	MC-DHEA
S63K	CGP24	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
S64G	CGP27	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
S65H	CGP29	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
S74D	CGD31	MC-DSSA	MC-DHSA	MC-DSRA	MC-DHRA	MC-DSEA	MC-DHEA
S74H	CGP32	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
S76D	CGP34	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
S76G	CGX35	MC-XSSA	MC-XHSA	MC-XSRA	MC-XHRA	MC-XSEA	MC-XHEA
S77C	CGP37	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
S79G	CGX39	MC-XSSA	MC-XHSA	MC-XSRA	MC-XHRA	MC-XSEA	MC-XHEA
R41	CGP41	MC-PSSA	MC-PHSA	MC-PSRA	MC-PHRA	MC-PSEA	MC-PHEA
R44	CGX44	MC-XSSA	MC-XHSA	MC-XSRA	MC-XHRA	MC-XSEA	MC-XHEA
R47	CGX47	MC-XSSA	MC-XHSA	MC-XSRA	MC-XHRA	MC-XSEA	MC-XHEA

## Connector Kits and Wire Reels



### CAUTION

**Do not construct cables longer than 150 feet.**

**Cables longer than 150 feet are not approved for use with Modicon Servo Systems**

**Failure to observe this precaution can result in equipment damage.**



**Note:** Modicon does not sell heavy duty cable kits because there are sealing and structural considerations which require factory tooling for manufacture.

Standard duty cables can be assembled in the field using the parts listed below.

Each connector kit contains all the parts needed to assemble and label either a straight or a right angle cable.

### Connector Kits

**Table 5: Connector Kits**

<b>CGC Power Connector Kit</b>	MC-CS0A-KIT
<b>CGD Power Connector Kit</b>	MC-DS0A-KIT
<b>CGP Power Connector Kit</b>	MC-PS0A-KIT
<b>CGX Power Connector Kit</b>	MC-XS0A-KIT
<b>CG Resolver Feedback Connector Kit</b>	MC-SS0A-KIT
<b>CG Dual Resolver Feedback Connector Kit</b>	MC-TS0A-KIT
<b>CG Encoder Feedback Connector Kit</b>	MC-ES0A-KIT

### Wire Reels

**Table 6: Wire Reels**

<b>CGC Power Cable, 250 Feet</b>	MC-CW0A-999
<b>CGD Power Cable, 250 Feet</b>	MC-DW0A-999
<b>CGP Power Cable, 250 Feet</b>	MC-PW0A-999
<b>CGX Power Cable, 250 Feet</b>	MC-XW0A-999
<b>CG Single Feedback Cable, 250 Feet</b>	MC-SW0A-999
<b>CG Dual Resolver Feedback Cable 250 Feet</b>	MC-TW0A-999



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