CARTRIDGE Direct Drive Rotary™ Motors
S300/S600 Direct Drive Systems

KOLLMORGEN®

Because Motion Matters™

Table of Contents

Why Direct Drive?

Simplification. Performance. Productivity.

With a Direct Drive Solution your machine design is simplified, eliminating noisy mechanical transmissions and the performance limitations that go with them. Direct coupling of the torque motor to the load allows improvements in machine throughput that would never be achievable with a compliance ridden mechanical transmission. Expensive maintenance can also be eliminated since no belts or pulleys need to be adjusted, no gearboxes need to be lubricated – your machine keeps running, providing the throughput your customers demand from your machine!

Why Cartridge DDR?

The Cartridge DDR is the next step in the evolution of Direct Drive solutions! The advantages of direct drive can now be applied in even more applications with greater ease. Multiple bearing alignments are not a concern as the Cartridge design makes it even easier to integrate onto your machine, utilizing your existing bearing structure! Now you can realize the benefits of direct drive in a package that mounts just like a conventional servomotor.

Conventional Motor Systems

Conventional servo systems with mechanical transmissions limit servo performance and reliability. They typically suffer from bulkier designs due to use of transmissions, belt / pulley adjustments and replacements, and more extensive maintenance – all of which costs time and money.

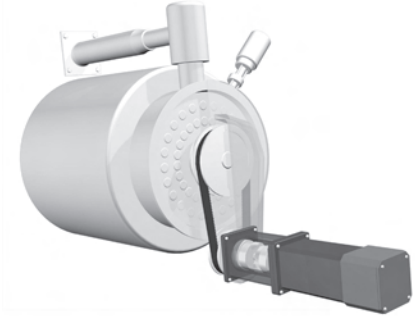
Integration Costs

- Positioning inaccuracy from transmission compliance
- Mounting and alignment of gearbox / belt / bracket
- Servo tuning difficulties caused by compliance and backlash
- Pulley installation and tensioning
- Oversize motor for inertia matching
- Extra components – clutch, output shaft feedback device
- Motor / gearbox mounting bracket
- High parts count
  - Purchasing and BOM
  - Inventory and Inspection
  - Coordinate multiple lead times

Life Cycle Costs

- Machine maintenance
  - Belt tensioning and replacement
  - Gearbox lubrication and replacement
- Increasing backlash due to wearing gears
- Costs to support field failures
- Unscheduled down time
  - Belt breakage
  - Belt slippage
  - Gearbox failure
- Reduced throughput due to compliance and settling time

Conventional Motor Systems



CARTRIDGE DDR™ Solution

The Direct Drive Rotary (DDR) Story

What is direct drive? Very simply it is the direct coupling of a torque motor to the driven load. This configuration results in a very stiff mechanical connection to the load, thus, eliminating problems associated with couplings, belts and gearboxes.

DDR Advantages:

- √ **Increased bandwidth -** Allowing greater machine throughput
- √ **Increased quality -** Up to 50 times more accurate
- √ **Simplified design -** Elimination of parts, faster build cycle
- √ **Increased machine run time -** Elimination of belts and pulleys
- √ **Decreased maintenance -** No gearboxes to lubricate/leak
- √ **Quiet operation -** Reduction of machine noise, perception of quality!

Kollmorgen: The DDR Birthplace

In the early 1950's Kollmorgen Inland Motor, in cooperation with MIT developed the original torque motor. This brush DC motor was used on stabilized platforms for inertial guidance systems. The large diameter, thin ring design was ideal for this light weight, high torque application. Over the years, Kollmorgen has designed torque motors for applications from missiles and tank turrets to medical imaging, machine tools, injection molding, converting, and semiconductor processing machines. Our product range covers from 0.03 to over 20,000 N-m of torque and over 3 meters in diameter.

Financial and Operational Stability

Kollmorgen is part of Danaher Corporation, our $13B parent company. A key driver in the growth of all Danaher divisions is the Danaher Business Systems, which relies on the principle of "kaizen" or continuous improvement. Using world-class tools, cross-disciplinary teams of exceptional people evaluate processes and develop plans that result in superior performance.

Three DDR Product Categories

Kollmorgen's 50 years of electromagnetic and electromechanical design expertise combined with a focus on exceptional quality and service, allowed us to refine and expand DDR technology into three product categories for easy installation, use, and short lead times. The three product categories are Frameless DDR, Housed GOLDLINE® DDR, and the CARTRIDGE DDR™. This allows you to select the right DDR solution for your application.

F Series Frameless DDR

Frameless motors include a rotor and stator as separate components which are integrated into, ride on the bearings of, and become a part of the driven load. Frameless motors offer the most compact and light weight DDR solution available. The "F" series are Kollmorgen's latest Frameless DDR product. They provide excellent torque/volume with the use of a proprietary neodymium-iron magnet rotor structure and skewed armature assembly. The F series is the first UL recognized parts set available on the market. This provides machinery manufacturers the benefits of UL component ratings for easier agency approval on their machine.

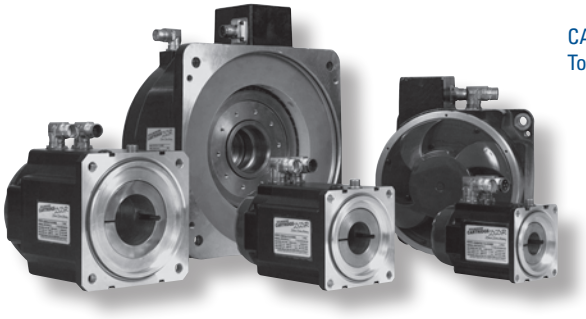
GOLDLINE® DDR

The GOLDLINE® DDR is a housed motor assembly featuring a factory aligned high-resolution feedback device and precision bearings that allow it to function as the core of rotary indexing and rate table applications. The system can also be used as a flexible indexer, providing programmable, rapid indexing far exceeding the throughput and accuracy of conventional mechanical or variable reluctance technology indexers.

CARTRIDGE DDR™ (Patented)

The CARTRIDGE DDR™ motor is the first in the industry to combine the space-saving and performance advantages of Frameless DDR technology with the ease of installation of a full-frame motor. Consisting of a rotor, stator, and factory-aligned high-resolution feedback device, the CARTRIDGE DDR™ motor uses the machine's bearings to support the rotor. An innovative compression coupling engages the rotor to the load and the frame of the CARTRIDGE DDR™ mounts to the machine with a bolt circle and pilot diameter just like a conventional servo motor saving space and design time and simplifying the overall system.

Frameless Torque Motors



CARTRIDGE DDR™ Torque Motor

GOLDLINE® DDR Housed Torque Motors

DDR Applications	
DDR Format	**Where Used**
Frameless DDR	Applications where size and weight must be absolutely minimized
Housed **GOLD**LINE® DDR	Applications where the load rides on the motor's bearings such as indexing or rate tables
CARTRIDGE DDR™ (patented)	Any application with existing bearings

What is a CARTRIDGE DDR™ Motor?

The CARTRIDGE DDR™ motor is the newest addition to the Kollmorgen line of DDR products. The CARTRIDGE DDR™ motor does not have bearings. It mounts to a machine using the machine's existing bearings to support the motor's rotor. The frame of the CARTRIDGE DDR™ motor mounts to a pilot and bolt circle on the machine frame much like a conventional motor. The rotor engages to the load using an innovative compression coupling, which effectively makes the motor's rotor and the load one piece, eliminating any compliance between the motor and the load.

The CARTRIDGE DDR™ motor brings a quantum leap in cost effectiveness and ease of application when compared to any other direct drive configuration. Compared to the months of engineering and days of installation of a frameless motor and feedback device, the CARTRIDGE DDR™ requires a simple shaft and pilot configuration and as little as 5 minutes from shipping container to operation. Thanks to the CARTRIDGE DDR™ motor, a significantly broader range of motion applications will benefit from the performance and reliability advantages of direct drive.

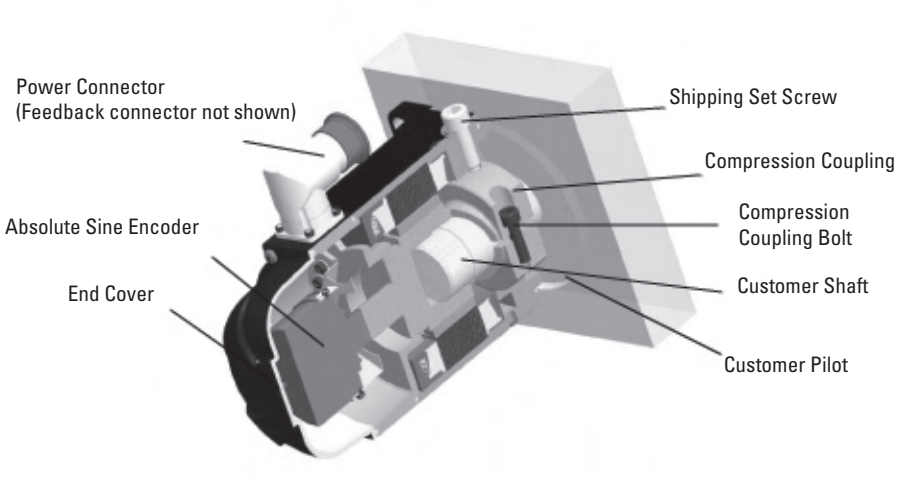
How does the CARTRIDGE DDR™ Mount to a Machine?

It is a simple and quick procedure to mount a CARTRIDGE DDR™ motor to a machine:

- Slide the CARTRIDGE DDR™ motor onto machine shaft
- Bolt CARTRIDGE DDR™ motor housing to machine frame
- Torque compression coupling
- Remove/store shipping hardware
- Connect cables and run the motor!

CARTRIDGE DDR™ Standard Features:

- Assembles as quickly as 5 minutes
- 5 frame sizes, multiple lengths
- Continuos torque from 4.6 to 510 N-m
- Peak torque from 11.3 to 1017 N-m
- Absolute position sine encoder with maximum resolution of 2,097,152 counts per revolution
- System configuration with SERVOSTAR 300/600 digital drives
- UL and CE agency certification
- Proprietary electromagnetic design provides higher torque per volume



CARTRIDGE DDR™ Options:

- 230/400/480 VAC windings available
- High and low speed windings
- Hollow shaft available on C09x and C13x models, provides a 1.26 inch (32mm) through bore to allow process or wiring to run through the center of the motor. Provision for mounting a rotary union to the shaft and housing is included. See pages 23 to 26 for details.

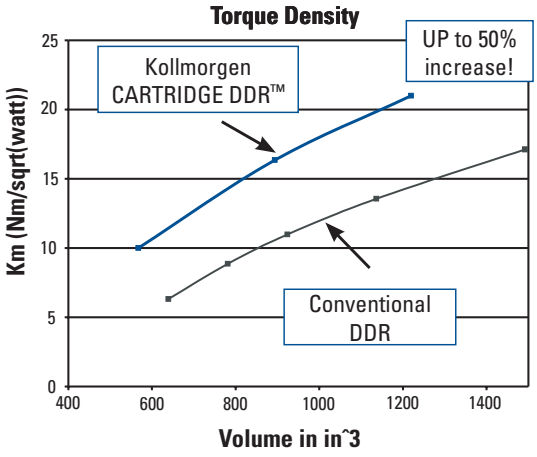
CARTRIDGE DDR™ Application Considerations:

Inertia matching

Since the CARTRIDGE DDR™ motor is directly connected to the machine, inertial matching is not required as it is on a conventional motor. With direct drive, inertia miss match of 250 to 1 is common and miss match of 1000 to 1 has been demonstrated.

Mounting Orientation

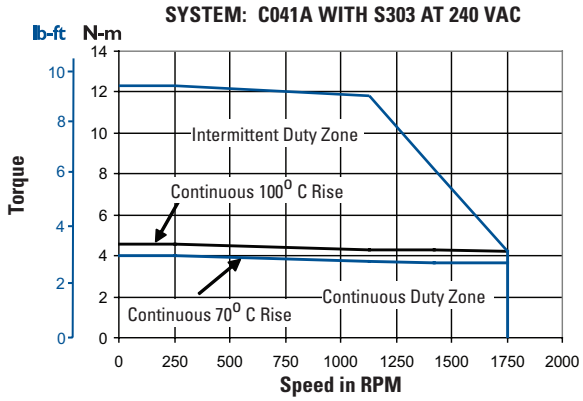
The CARTRIDGE DDR™ motor can be mounted with any orientation including either a horizontal or vertical shaft.

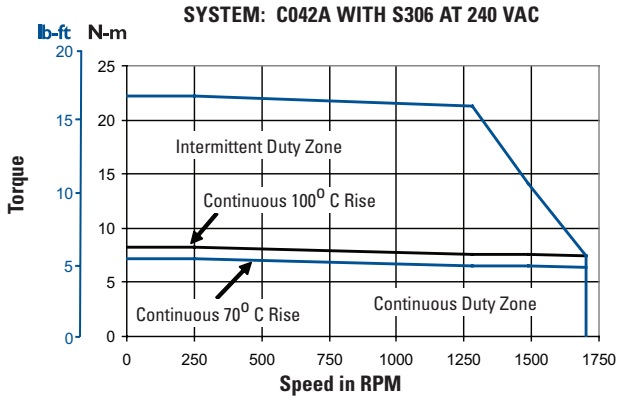


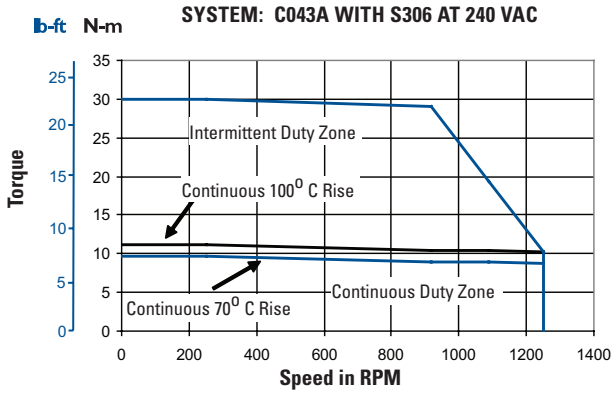
Proprietary electromagnetic design gives CARTRIDGE DDR™ motors more torque per volume than conventional DDR technology.

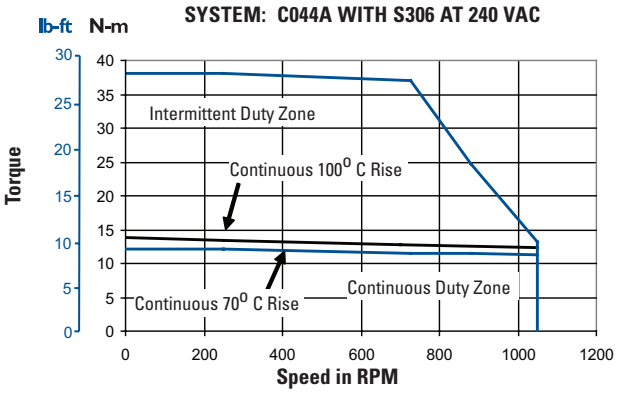
System Performance at 240 VAC C04xA CARTRIDGE DDR™ Motor with S300 Series Drive Amplifier

System Performance	Symbol	Units	C041A	C042A	C043A	C044A
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	3.37 4.57	6.08 8.25	8.20 11.1	10.3 13.9
Cont. Line Current	Ic	amps RMS	2.73	4.68	4.73	4.91
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	2.93 3.97	5.30 7.19	7.14 9.68	9.14 12.4
Cont. Line Current	---		2.38	4.08	4.13	4.37
Peak Torque	Tp	lb-ft N-m	9.09 12.3	16.4 22.2	22.1 30.0	27.6 37.4
Peak Line Current	Ip	amps RMS	8.20	14.0	14.2	14.7
Maximum Speed	N max	RPM	1750	1700	1250	1050
Weight	Wt	lb kg (f)	9.00 4.08	12.5 5.67	16.0 7.26	19.5 8.84
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	0.083 5.86	0.126 8.87	0.168 11.9	0.211 14.9





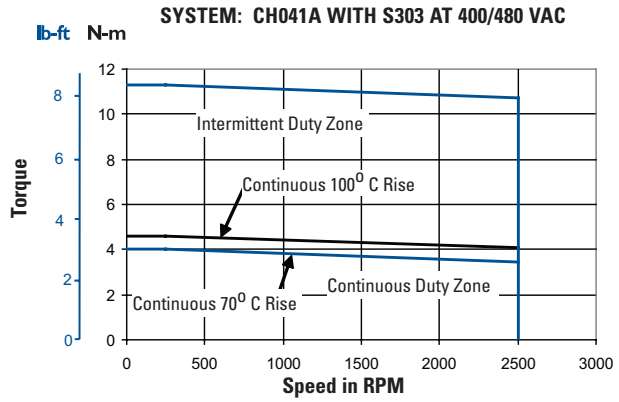


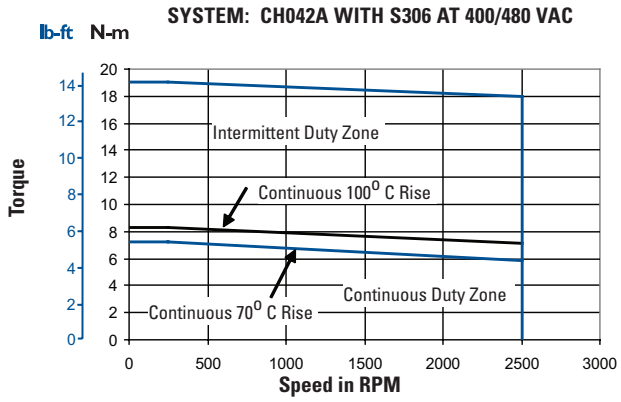


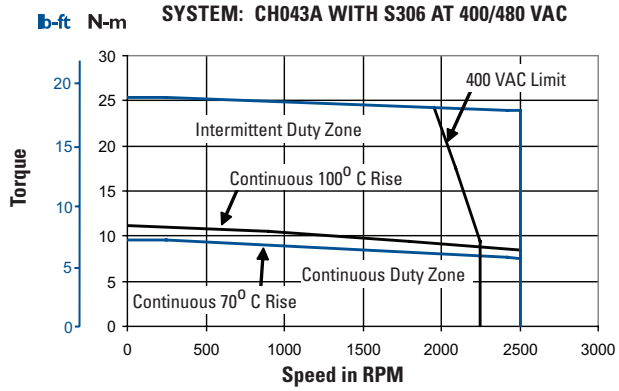
Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 12 x 12 x 0.50 inch Aluminum mounting plate or equivalent.

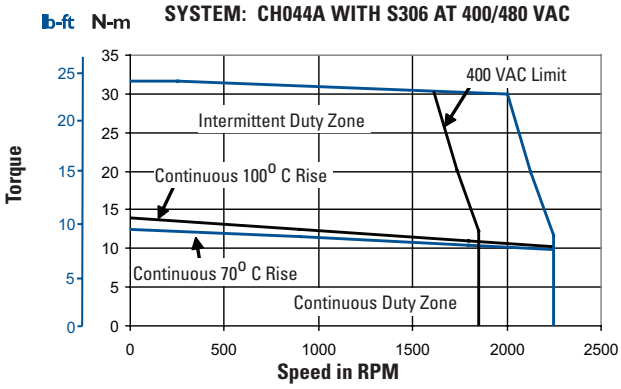
System Performance at 400/480 VAC CH04xA CARTRIDGE DDR™ Motor with S300 Series Drive Amplifier

System Performance	Symbol	Units	CH041A	CH042A	CH043A	CH044A
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	3.37 4.56	6.09 8.26	8.20 11.1	10.2 13.9
Cont. Line Current	Ic	amps RMS	2.73	4.68	4.73	4.90
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	2.93 3.97	5.30 7.19	7.14 9.68	9.14 12.4
Cont. Line Current	---		2.38	4.08	4.13	4.30
Peak Torque	Tp	lb-ft N-m	8.33 11.3	14.0 19.0	18.7 25.3	23.3 31.6
Peak Line Current	Ip	amps RMS	7.50	12.0	12.0	12.0
Maxumum Speed (400 V) Maxumum Speed (480 V)	N max	RPM	2500 2500	2500 2500	2250 2500	1850 2250
Weight	Wt	lb kg (f)	9.00 4.08	12.5 5.67	16.0 7.26	19.5 8.84
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	0.083 5.86	0.126 8.87	0.168 11.9	0.211 14.9





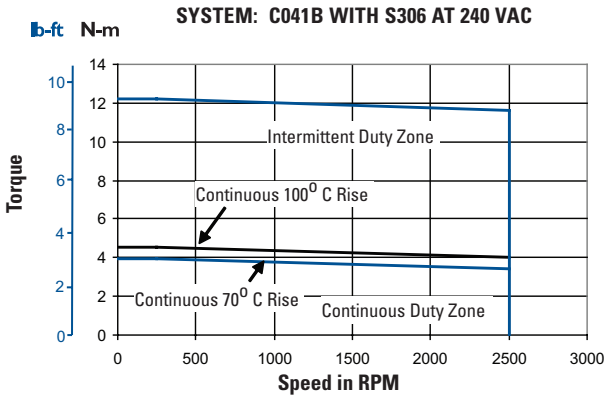


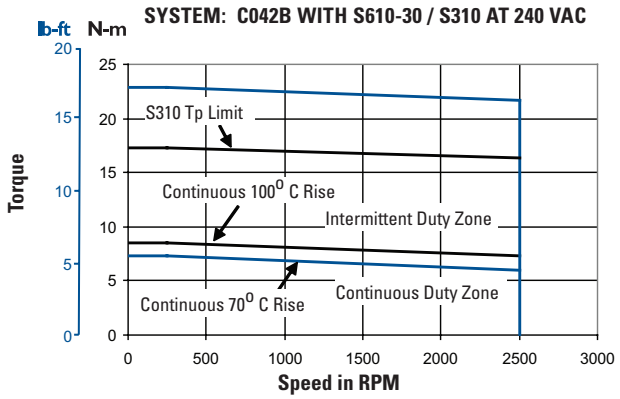


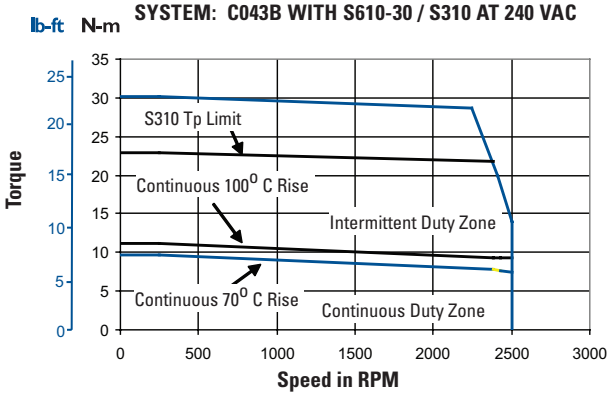
Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 12 x 12 x 0.50 inch Aluminum mounting plate or equivalent.

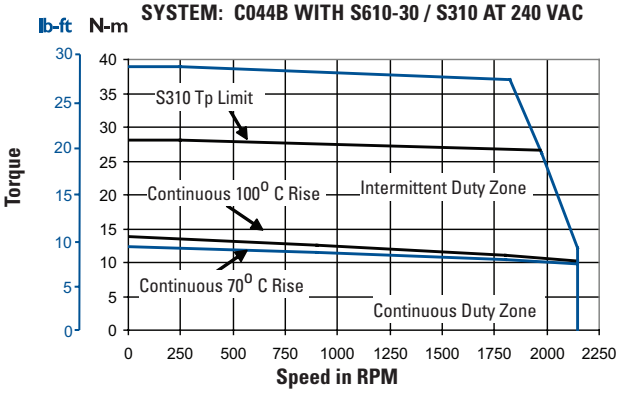
System Performance at 240 VAC C04xB CARTRIDGE DDR™ Motor (High Speed Winding) with S300 / S600 Series Drive Amplifiers

System Performance	Symbol	Units	C041B	C042B	C043B	C044B
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	3.33 4.52	6.23 8.45	8.23 11.2	10.4 14.1
Cont. Line Current	Ic	amps RMS	4.69	9.19	9.15	9.53
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	2.91 3.94	5.43 7.36	7.17 9.73	9.22 12.5
Cont. Line Current	---		4.09	8.01	7.98	8.50
Peak Torque (S300)	Tp	lb-ft N-m	9.01 12.2	12.8 17.3	16.9 22.9	20.6 28.0
Peak Torque (S600)	Tp	lb-ft N-m		16.8 22.8	22.2 30.2	28.0 37.9
Peak Line Current	Ip	amps RMS	14.1	27.6	27.5	28.6
Maximum Speed	N max	RPM	2500	2500	2500	2150
Weight	Wt	lb kg (f)	9.00 4.08	12.5 5.67	16.0 7.26	19.5 8.84
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	0.083 5.86	0.126 8.87	0.168 11.9	0.211 14.9





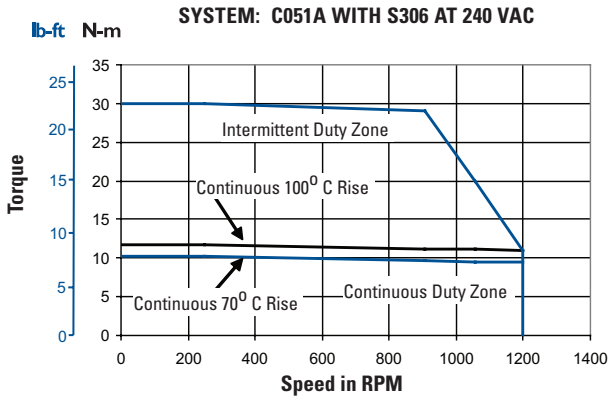


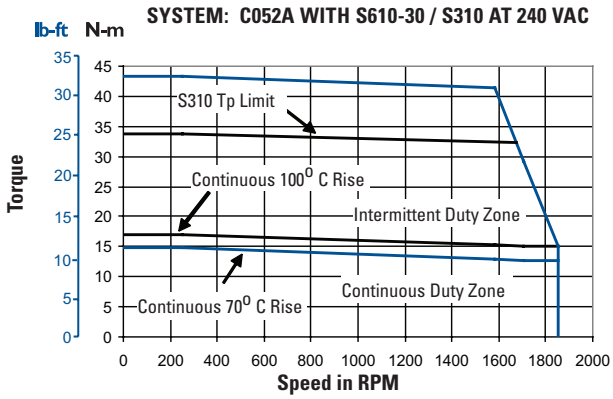


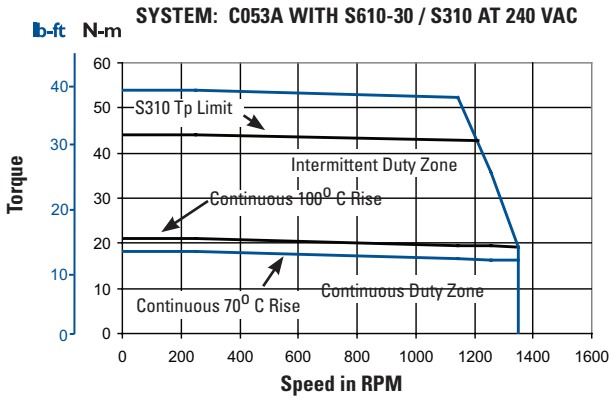
Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 12 x 12 x 0.50 inch Aluminum mounting plate or equivalent.

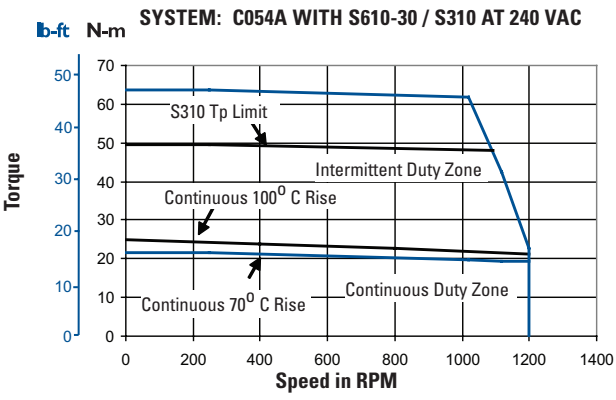
System Performance at 240 VAC C05xA CARTRIDGE DDR™ Motor with S300 / S600 Series Drive Amplifiers

System Performance	Symbol	Units	C051A	C052A	C053A	C054A
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	8.66 11.7	12.5 17.0	15.5 21.0	18.4 24.9
Cont. Line Current	Ic	amps RMS	4.78	9.94	9.28	9.82
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	7.54 10.2	10.9 14.8	13.5 18.3	16.1 21.8
Cont. Line Current	---		4.17	8.67	8.10	8.62
Peak Torque (S300)	Tp	lb-ft N-m	22.3 30.2	24.8 33.6	32.4 43.9	36.3 49.2
Peak Torque (S600)	Tp	lb-ft N-m		32.1 43.5	39.9 54.1	47.1 63.8
Peak Line Current	Ip	amps RMS	12.9	26.8	25.1	26.5
Maximum Speed	N max	RPM	1200	1850	1350	1200
Weight	Wt	lb kg (f)	18.5 8.39	23.5 10.7	29.0 13.2	34.0 15.4
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	0.388 27.4	0.508 35.9	0.628 44.3	0.748 52.8







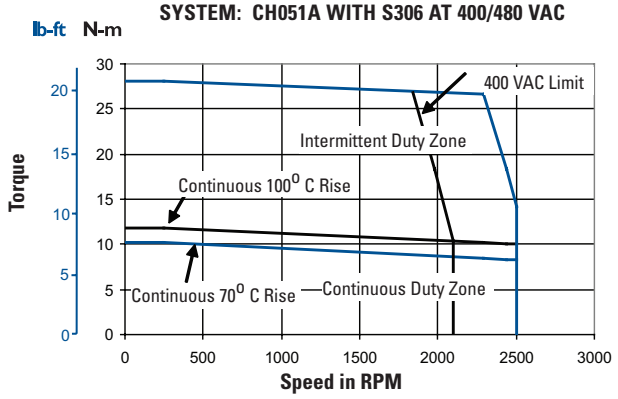


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 18 x 18 x 0.50 inch Aluminum mounting plate or equivalent.

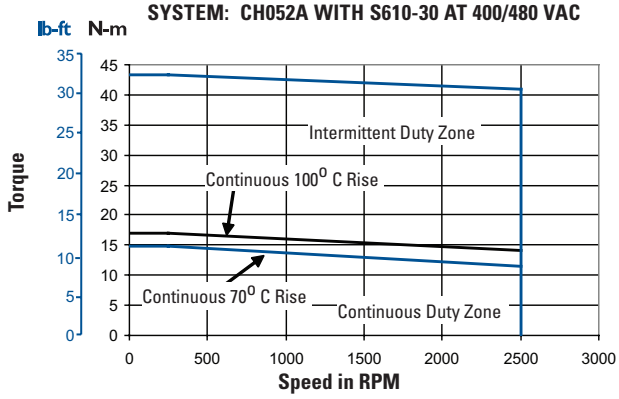
System Performance at 400/480 VAC CH05xA CARTRIDGE DDR™ Motor with S300 / S600 Series Drive Amplifiers

System Performance	Symbol	Units	CH051A	CH052A	CH053A	CH054A
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	8.66 11.7	12.5 17.0	15.5 21.0	18.4 24.9
Cont. Line Current	Ic	amps RMS	4.78	9.94	9.28	9.82
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	7.54 10.2	10.9 14.8	13.5 18.3	16.1 21.8
Cont. Line Current	---		4.17	8.67	8.10	8.62
Peak Torque (S300)	Tp	lb-ft N-m	20.7 28.0			
Peak Torque (S600)	Tp	lb-ft N-m		32.1 43.5	39.9 54.1	47.1 63.8
Peak Line Current	Ip	amps RMS	12.0	26.8	25.1	26.5
Maxumum Speed (400 V) Maxumum Speed (480 V)	N max	RPM	2100 2500	2500 2500	2350 2500	2100 2500
Weight	Wt	lb kg (f)	18.5 8.39	23.5 10.7	29.0 13.2	34.0 15.4
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	0.388 27.4	0.508 35.9	0.628 44.3	0.748 52.8

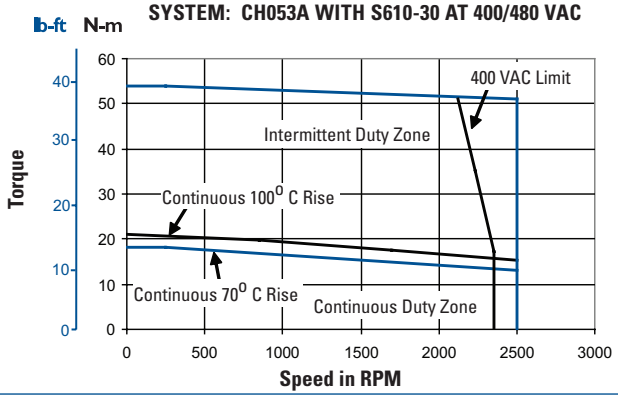
SYSTEM: CH051A WITH S306 AT 400/480 VAC



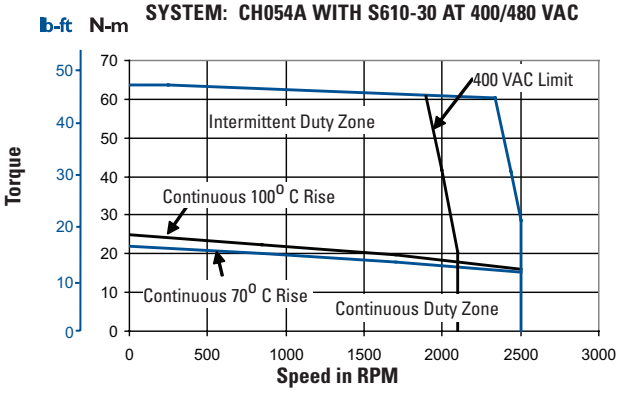
SYSTEM: CH052A WITH S610-30 AT 400/480 VAC



SYSTEM: CH053A WITH S610-30 AT 400/480 VAC



SYSTEM: CH054A WITH S610-30 AT 400/480 VAC

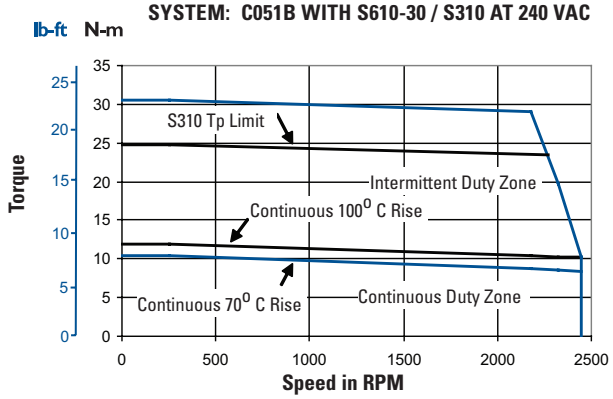


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 18 x 18 x 0.50 inch Aluminum mounting plate or equivalent.

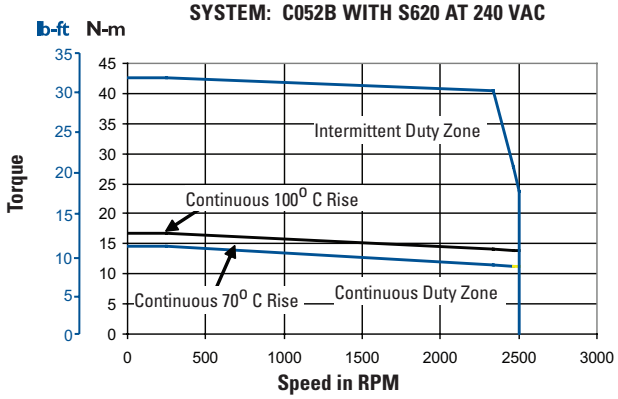
System Performance at 240 VAC C05xB CARTRIDGE DDR™ Motor (high speed winding) with S300 / S600 Series Drive Amplifiers

System Performance	Symbol	Units	C051B	C052B	C053B	C054B
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	8.77 11.9	12.3 16.7	14.9 20.2	17.6 23.8
Cont. Line Current	Ic	amps RMS	9.34	13.6	18.4	17.4
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	7.63 10.4	10.7 14.5	12.9 17.6	15.4 20.9
Cont. Line Current	---		8.15	11.9	16.0	15.3
Peak Torque (S300)	Tp	lb-ft N-m	18.2 24.6			
Peak Torque (S600)	Tp	lb-ft N-m	22.6 30.6	31.5 42.7	31.3 42.5	39.0 52.8
Peak Line Current	Ip	amps RMS	25.2	36.7	40.0	40.0
Maximum Speed	N max	RPM	2450	2500	2500	2350
Weight	Wt	lb kg (f)	18.5 8.39	23.5 10.7	29.0 13.2	34.0 15.4
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	0.388 27.4	0.508 35.9	0.628 44.3	0.748 52.8

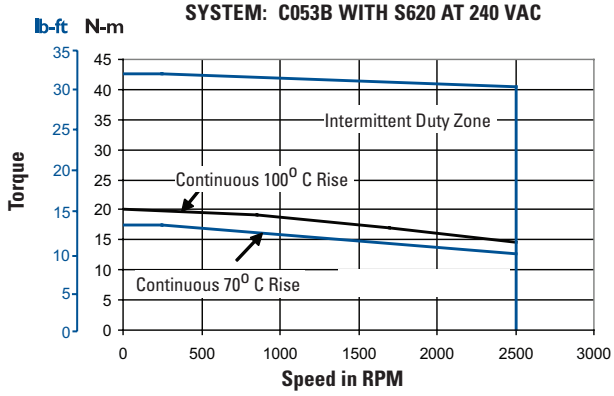
SYSTEM: C051B WITH S610-30 / S310 AT 240 VAC



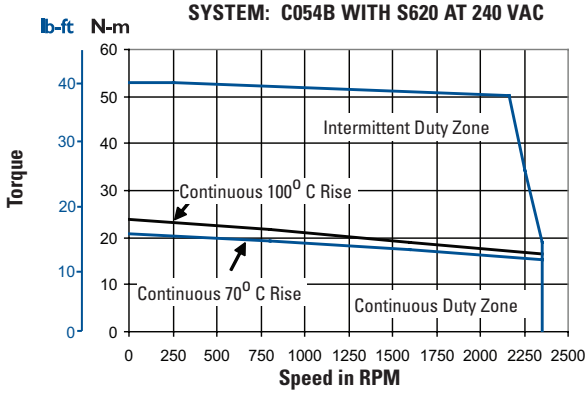
SYSTEM: C052B WITH S620 AT 240 VAC



SYSTEM: C053B WITH S620 AT 240 VAC



SYSTEM: C054B WITH S620 AT 240 VAC

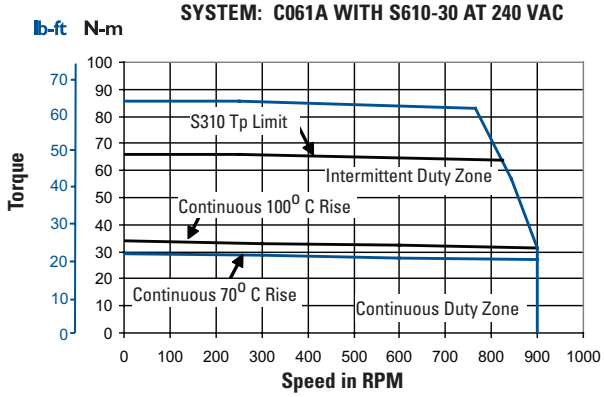


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 18 x 18 x 0.50 inch Aluminum mounting plate or equivalent.

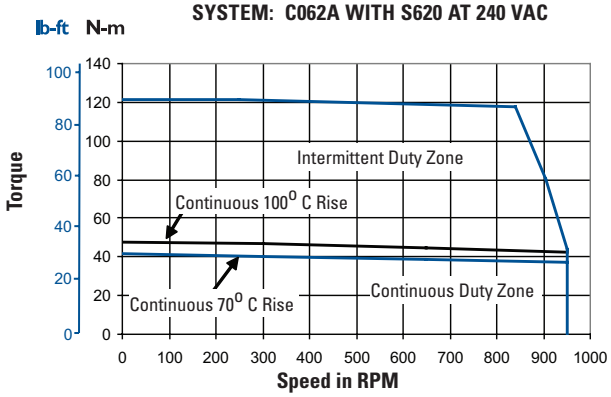
System Performance at 240 VAC C06xA CARTRIDGE DDR™ Motor with S300 / S600 Series Drive Amplifiers

System Performance	Symbol	Units	C061A	C062A	C063A
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	24.9 33.8	35.3 47.8	45.0 61.0
Cont. Line Current	Ic	amps RMS	10.0	14.7	14.1
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	21.7 29.4	30.7 41.7	39.2 53.2
Cont. Line Current	---		8.72	12.9	12.3
Peak Torque (S300)	Tp	lb-ft N-m	48.5 65.7		
Peak Torque (S600)	Tp	lb-ft N-m	64.1 86.8	90.7 123	116 157
Peak Line Current	Ip	amps RMS	27.0	39.8	38.0
Maximum Speed	N max	RPM	900	950	700
Weight	Wt	lb kg (f)	41.0 18.6	52.0 23.6	63.0 29.0
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	1.33 94.1	1.78 126	2.23 157

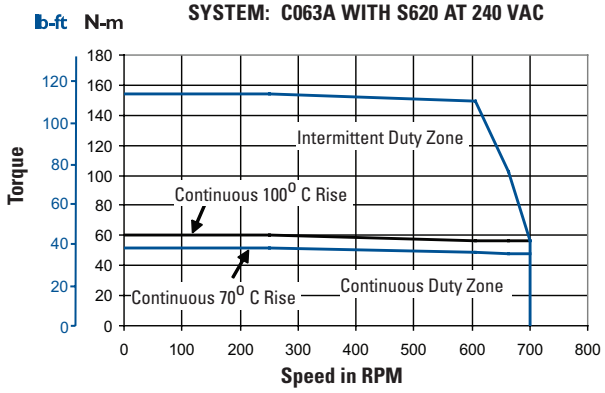
SYSTEM: C061A WITH S610-30 AT 240 VAC



SYSTEM: C062A WITH S620 AT 240 VAC



SYSTEM: C063A WITH S620 AT 240 VAC

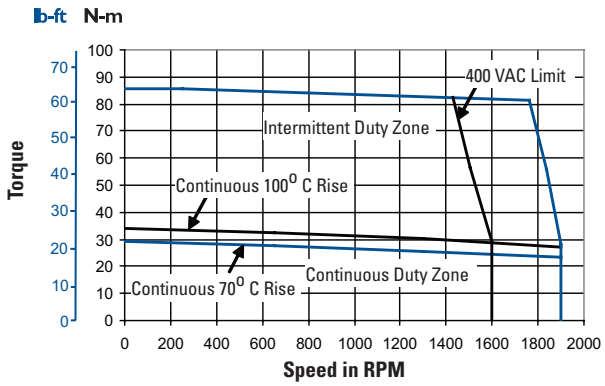


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 18 x 18 x 0.50 inch Aluminum mounting plate or equivalent.

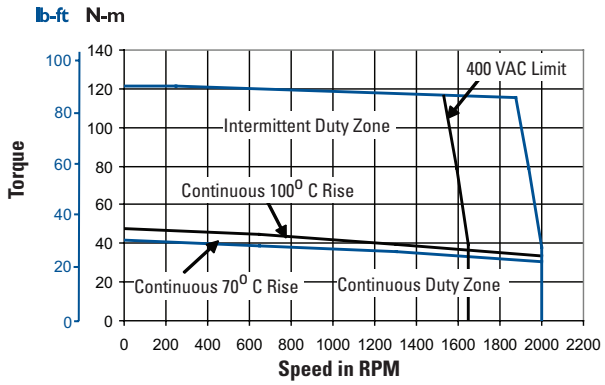
System Performance at 400 / 480 VAC CH06x CARTRIDGE DDR™ Motor with S600 Series Drive Amplifier

System Performance	Symbol	Units	CH061A	CH062A	CH063A	CH063B
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	24.9 33.8	35.3 47.8	45.0 61.0	43.5 59.0
Cont. Line Current	Ic	amps RMS	10.0	14.7	14.1	19.8
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	21.7 29.4	30.7 41.7	39.2 53.2	37.9 51.4
Cont. Line Current	---		8.72	12.9	12.3	17.3
Peak Torque (S600)	Tp	lb-ft N-m	64.1 86.8	90.7 123	116 157	84.9 115
Peak Line Current	Ip	amps RMS	27.0	39.8	38.0	40.0
Maxumum Speed (400 V) Maxumum Speed (480 V)	N max	RPM	1600 1900	1650 2000	1250 1500	1850 2200
Weight	Wt	lb kg (f)	41.0 18.6	52.0 23.6	63.0 29.0	63.0 29.0
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	1.33 94.1	1.78 126	2.23 157	2.23 157

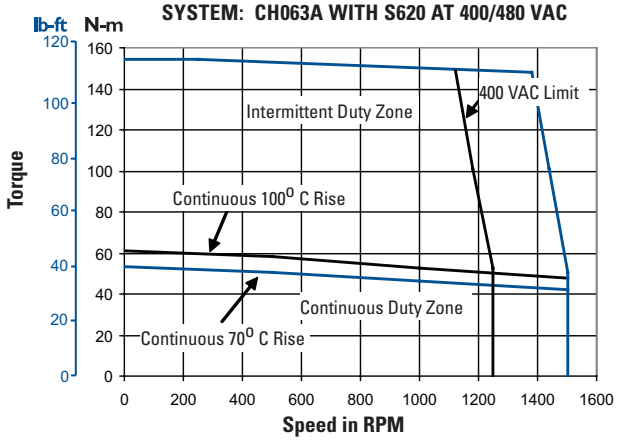
SYSTEM: CH061A WITH S610-30 AT 400/480 VAC



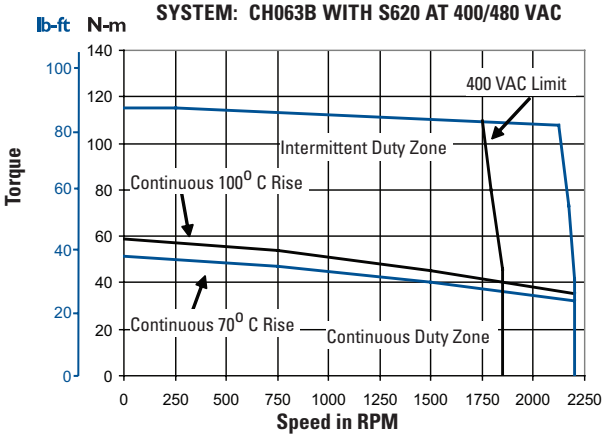
SYSTEM: CH062A WITH S620 AT 400/480 VAC



SYSTEM: CH063A WITH S620 AT 400/480 VAC



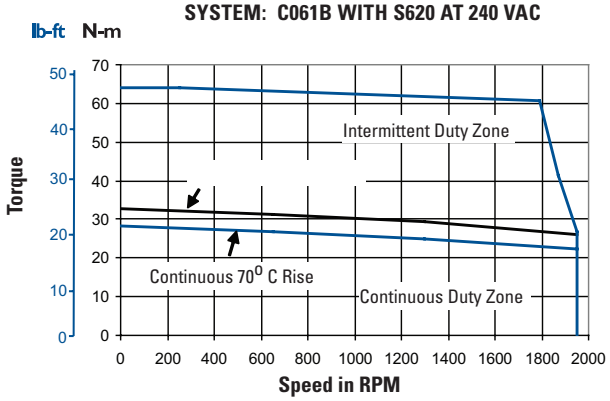
SYSTEM: CH063B WITH S620 AT 400/480 VAC

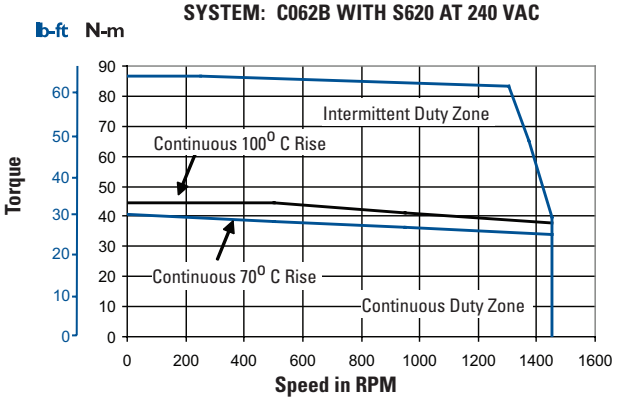


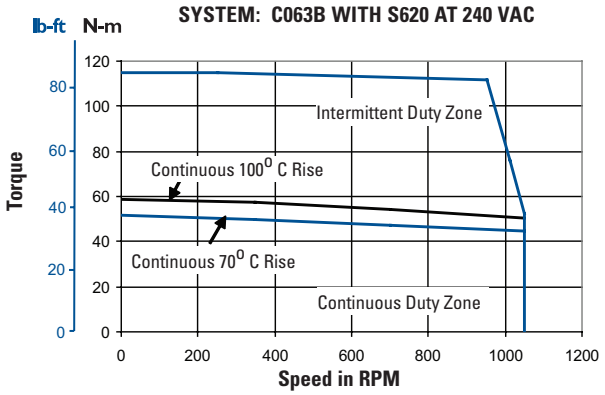
Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 18 x 18 x 0.50 inch Aluminum mounting plate or equivalent.

System Performance at 240 VAC C06xB CARTRIDGE DDR™ Motor (high speed winding) with S600 Series Drive Amplifier

System Performance	Symbol	Units	C061B	C062B	C063B
Continuous Torque 100°C Rise[123]	Tc	lb-ft N-m	24.1 32.6	32.9 44.7	43.5 59.0
Cont. Line Current	Ic	amps RMS	19.7	20.0	19.8
Continuous Torque 70°C Rise[123]	Tc	lb-ft N-m	21.0 28.4	29.9 40.5	37.9 51.4
Cont. Line Current	---		17.2	18.2	17.3
Peak Torque (S600)	Tp	lb-ft N-m	47.3 64.1	64.1 86.9	84.9 115
Peak Line Current	Ip	amps RMS	40.0	40.0	40.0
Maximum Speed	N max	RPM	1950	1450	1050
Weight	Wt	lb kg (f)	41.0 18.6	52.0 23.6	63.0 29.0
Rotor Inertia	Jm	oz-in-sec^2 kg-cm^2	1.33 94.1	1.78 126	2.23 157





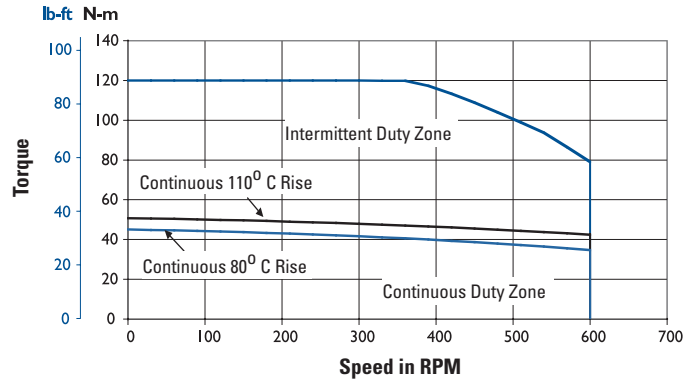


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 18 x 18 x 0.50 inch Aluminum mounting plate or equivalent.

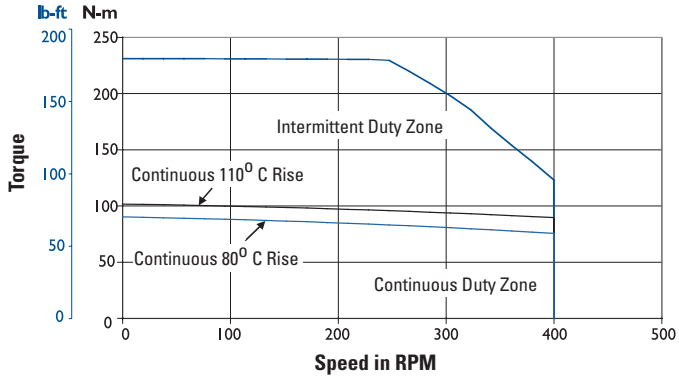
System Performance at 230 VAC C09xA CARTRIDGE DDR™ Motor with S620 Drive Amplifiers

System Performance	Symbol	Units	C091A	C092A	C093A
Continuous Torque 110°C Rise	Tc	lb-ft N-m	37.0 50.2	74.8 101	107 145
Cont. Line Current	Ic	amps RMS	12.8	15.3	17.4
Continuous Torque 80°C Rise	Tc	lb-ft N-m	33.0 44.7	66.6 90.2	95.0 129
Cont. Line Current	---		11.4	13.7	15.6
Peak Torque	Tp	lb-ft N-m	88.2 120	170 231	228 309
Peak Line Current	Ip	amps RMS	40.0	40.0	40.0
Maximum Speed	N max	RPM	600	400	300
Weight	Wt	lb kg (f)	61.0 27.7	91.0 41.3	120 54.4
Rotor Inertia	Jm	lb-ft-sec2 kg-m2	0.021 0.028	0.035 0.047	0.049 0.066

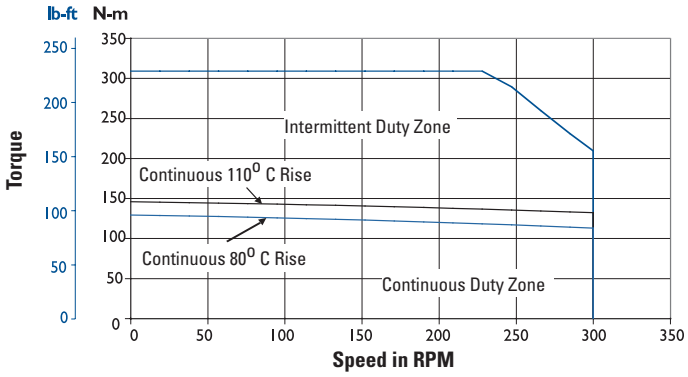
SYSTEM: C091A WITH S620 AT 230 VAC



SYSTEM: C092A WITH S620 AT 230 VAC



SYSTEM: C093A WITH S620 AT 230 VAC

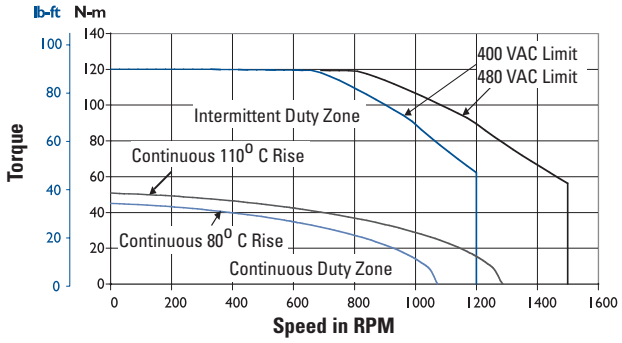


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 16 x 16 x 0.75 inch Aluminum mounting plate or equivalent.

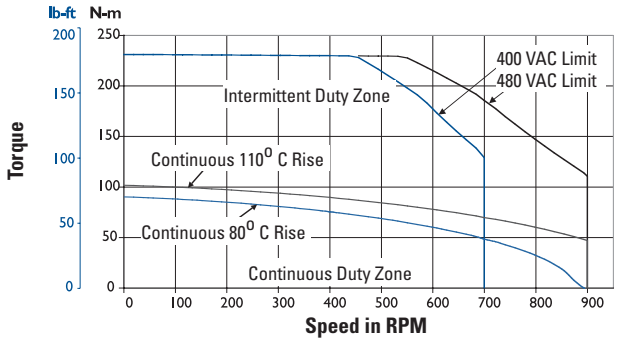
System Performance at 400 /480 VAC CH09xA CARTRIDGE DDR™ Motor with S620 Drive Amplifier

System Performance	Symbol	Units	CH091A	CH092A	CH093A
Continuous Torque 110°C Rise	Tc	lb-ft N-m	37.0 50.2	74.8 101	107 145
Cont. Line Current	Ic	amps RMS	12.8	15.3	17.4
Continuous Torque 80°C Rise	Tc	lb-ft N-m	33.0 44.7	66.6 90.2	95.0 129
Cont. Line Current	---		11.4	13.7	15.6
Peak Torque	Tp	lb-ft N-m	88.2 120	170 231	228 309
Peak Line Current	Ip	amps RMS	40.0	40.0	40.0
Maximum Speed (400V) Maximum Speed (480V)	N max	RPM	1200 1500	700 900	550 650
Weight	Wt	lb kg (f)	61.0 27.7	91.0 41.3	120 54.4
Rotor Inertia	Jm	lb-ft-sec2 kg-m2	0.021 0.028	0.035 0.047	0.049 0.066

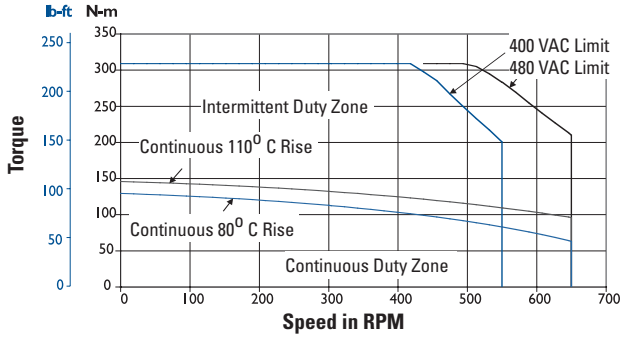
SYSTEM: CH091A WITH S620 AT 400/480 VAC



SYSTEM: CH092A WITH S620 AT 400/480 VAC



SYSTEM: CH093A WITH S620 AT 400/480 VAC

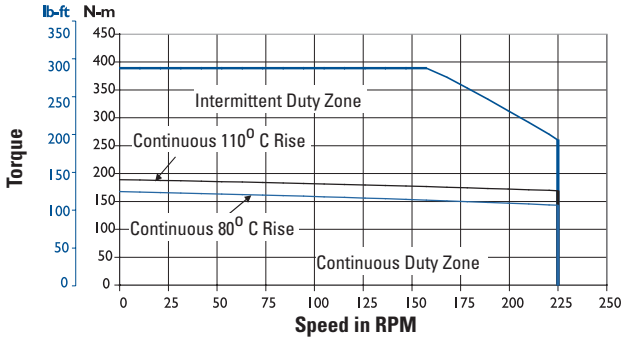


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 16 x 16 x 0.75 inch Aluminum mounting plate or equivalent.

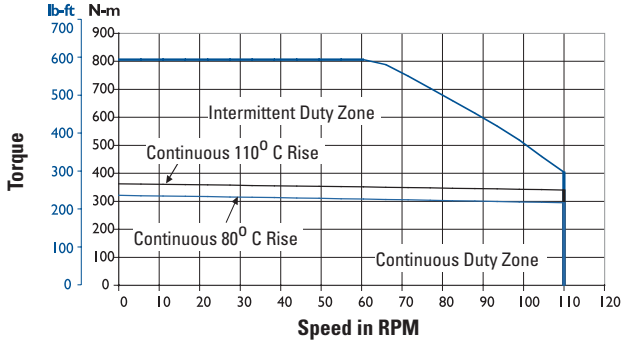
System Performance at 230 VAC C13xA CARTRIDGE DDR™ Motor with S620 Drive Amplifier

System Performance	Symbol	Units	C131A	C132A	C133A
Continuous Torque 110°C Rise	Tc	lb-ft N-m	139 188	266 361	372 504
Cont. Line Current	Ic	amps RMS	15.6	13.9	16.8
Continuous Torque 80°C Rise	Tc	lb-ft N-m	123 167	236 320	330 447
Cont. Line Current	---		13.8	12.4	14.9
Peak Torque	Tp	lb-ft N-m	287 389	595 805	750 1016
Peak Line Current	Ip	amps RMS	40.0	40.0	40.0
Maximum Speed	N max	RPM	225	110	90
Weight	Wt	lb kg (f)	140 63.5	223 101	292 132
Rotor Inertia	Jm	lb-ft-sec2 kg-m2	0.091 0.124	0.166 0.225	0.223 0.302

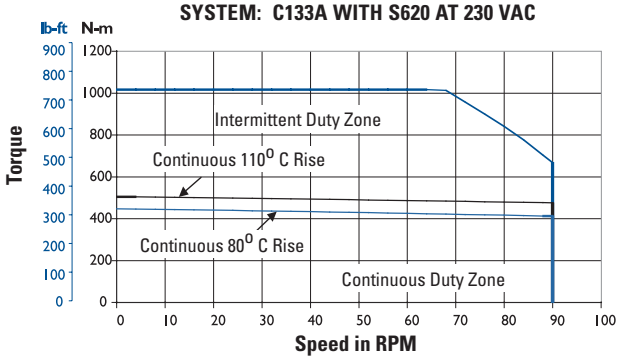
SYSTEM: C131A WITH S620 AT 230 VAC



SYSTEM: C132A WITH S620 AT 230 VAC



SYSTEM: C133A WITH S620 AT 230 VAC

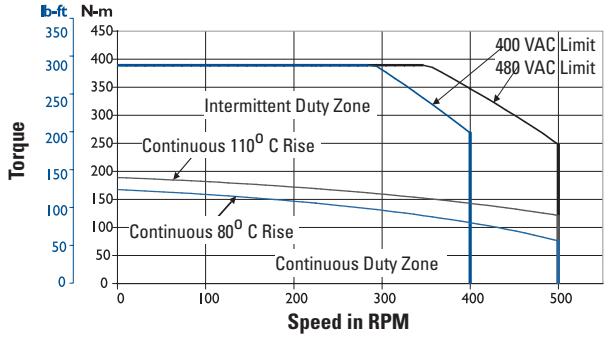


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 20 x 20 x 0.75 inch Aluminum mounting plate or equivalent.

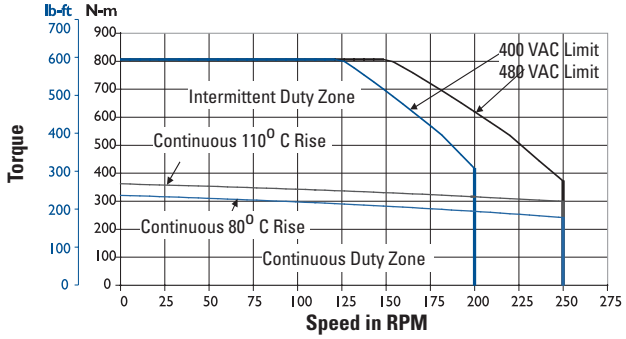
System Performance at 400 /480 VAC CH13xA CARTRIDGE DDR™ Motor with S620 Drive Amplifier

System Performance	Symbol	Units	CH131A	CH132A	CH133A
Continuous Torque 110°C Rise	Tc	lb-ft N-m	139 188	266 361	372 504
Cont. Line Current	Ic	amps RMS	15.6	13.9	16.8
Continuous Torque 80°C Rise	Tc	lb-ft N-m	123 167	236 320	330 447
Cont. Line Current	---		13.8	12.4	14.9
Peak Torque	Tp	lb-ft N-m	287 389	595 806	750 1016
Peak Line Current	Ip	amps RMS	40.0	40.0	40.0
Maximum Speed (400V) Maximum Speed (480V)	N max	RPM	400 500	200 250	160 200
Weight	Wt	lb kg (f)	140 63.5	223 101	292 132
Rotor Inertia	Jm	lb-ft-sec2 kg-m2	0.091 0.124	0.166 0.225	0.223 0.302

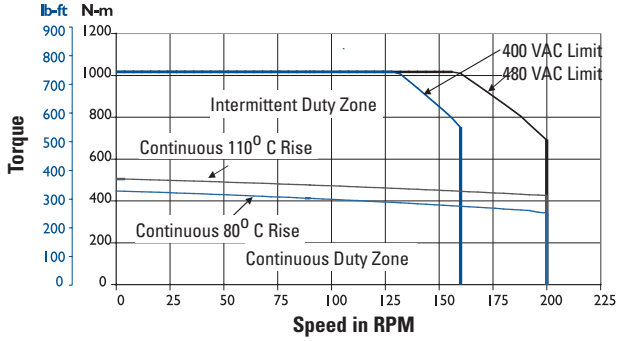
SYSTEM: CH131A WITH S620 AT 400/480 VAC



SYSTEM: CH132A WITH S620 AT 400/480 VAC



SYSTEM: CH133A WITH S620 AT 400/480 VAC

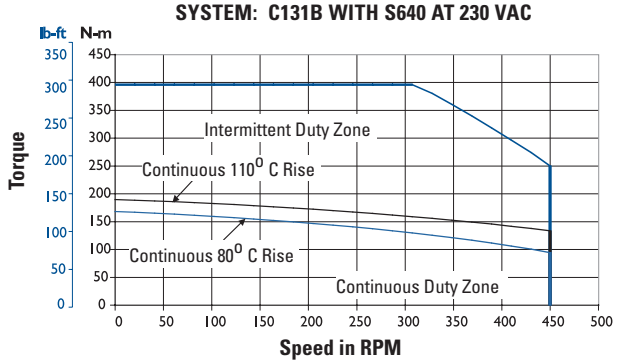


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 20 x 20 x 0.75 inch Aluminum mounting plate or equivalent.

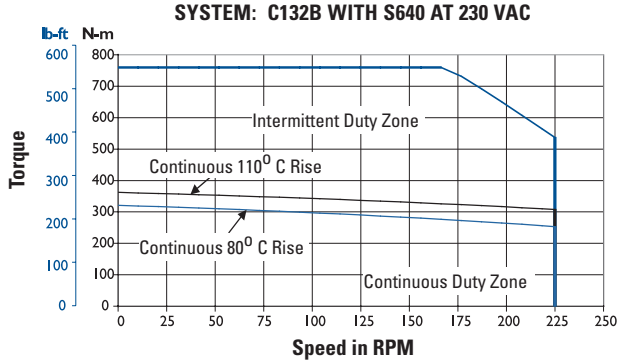
System Performance at 230 VAC C13xB CARTRIDGE DDR™ Motor (High Speed Winding) with S640 Drive Amplifier

System Performance	Symbol	Units	C131B	C132B	C133B
Continuous Torque 110°C Rise	Tc	lb-ft N-m	140 190	266 361	376 510
Cont. Line Current	Ic	amps RMS	29.2	29.6	32.7
Continuous Torque 80°C Rise	Tc	lb-ft N-m	124 168	236 320	333 451
Cont. Line Current	---		25.9	26.3	29.0
Peak Torque	Tp	lb-ft N-m	292 396	560 759	750 1017
Peak Line Current	Ip	amps RMS	80.0	80.0	80.0
Maximum Speed	N max	RPM	450	225	175
Weight	Wt	lb kg (f)	140 63.5	223 101	292 132
Rotor Inertia	Jm	lb-ft-sec2 kg-m2	0.091 0.124	0.166 0.225	0.223 0.302

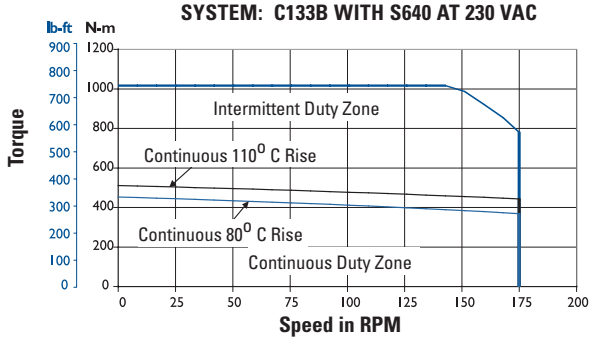
SYSTEM: C131B WITH S640 AT 230 VAC



SYSTEM: C132B WITH S640 AT 230 VAC



SYSTEM: C133B WITH S640 AT 230 VAC

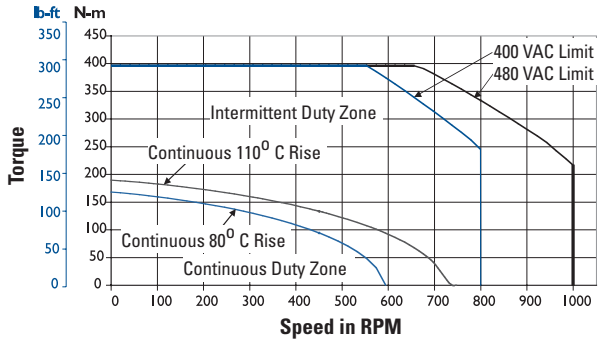


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 20 x 20 x 0.75 inch Aluminum mounting plate or equivalent.

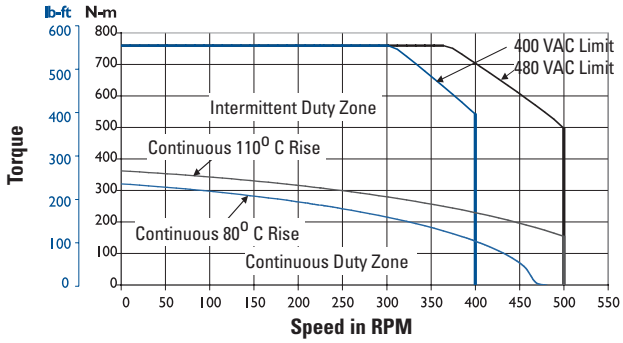
System Performance at 400 /480 VAC CH13xB CARTRIDGE DDR™ Motor (High Speed Winding) with S640 Drive Amplifier

System Performance	Symbol	Units	CH131B	CH132B	CH133B
Continuous Torque 110°C Rise	Tc	lb-ft N-m	140 190	266 361	372 510
Cont. Line Current	Ic	amps RMS	29.2	29.6	32.7
Continuous Torque 80°C Rise	Tc	lb-ft N-m	124 168	236 320	333 451
Cont. Line Current	---		25.9	26.3	29.0
Peak Torque	Tp	lb-ft N-m	292 396	560 759	750 1017
Peak Line Current	Ip	amps RMS	80.0	80.0	80.0
Maximum Speed (400V) Maximum Speed (480V)	N max	RPM	800 1000	400 500	350 400
Weight	Wt	lb kg (f)	140 63.5	223 101	292 132
Rotor Inertia	Jm	lb-ft-sec2 kg-m2	0.091 0.124	0.166 0.225	0.223 0.302

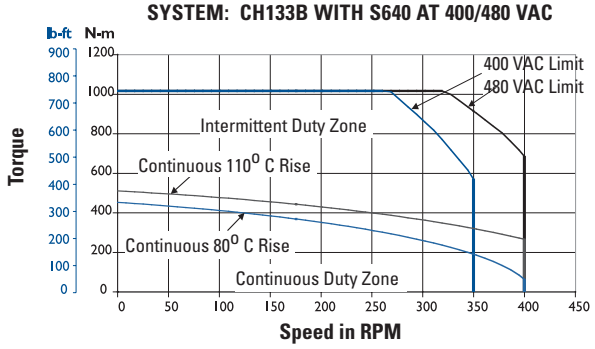
SYSTEM: CH131B WITH S640 AT 400/480 VAC



SYSTEM: CH132B WITH S640 AT 400/480 VAC

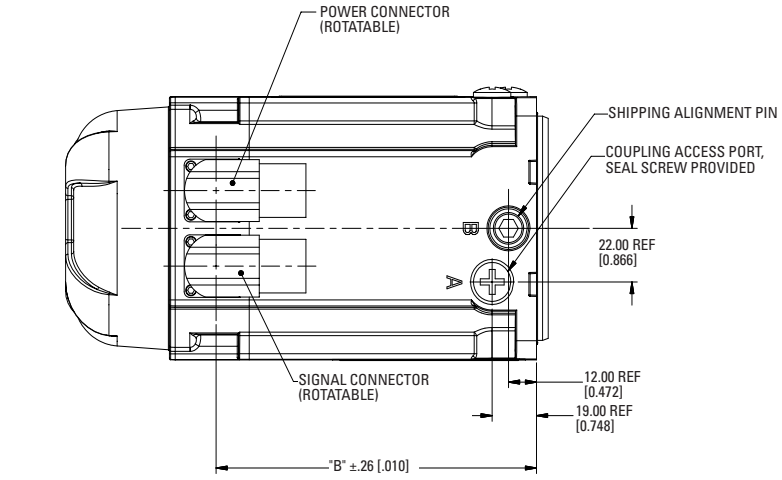


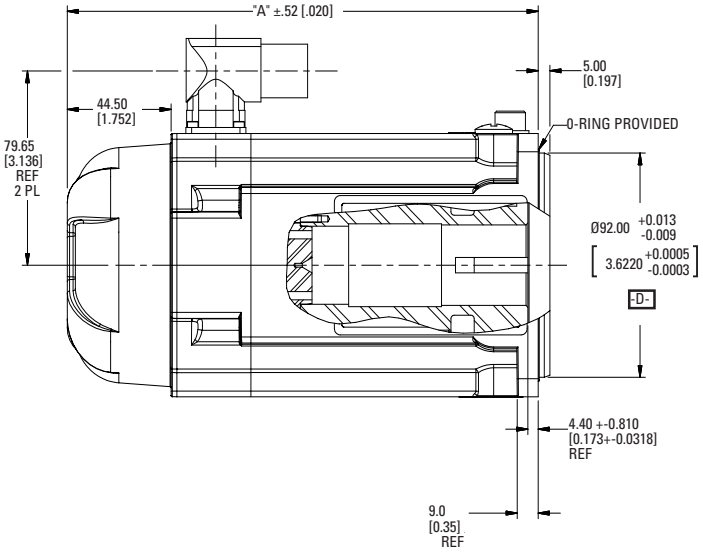
SYSTEM: CH133B WITH S640 AT 400/480 VAC

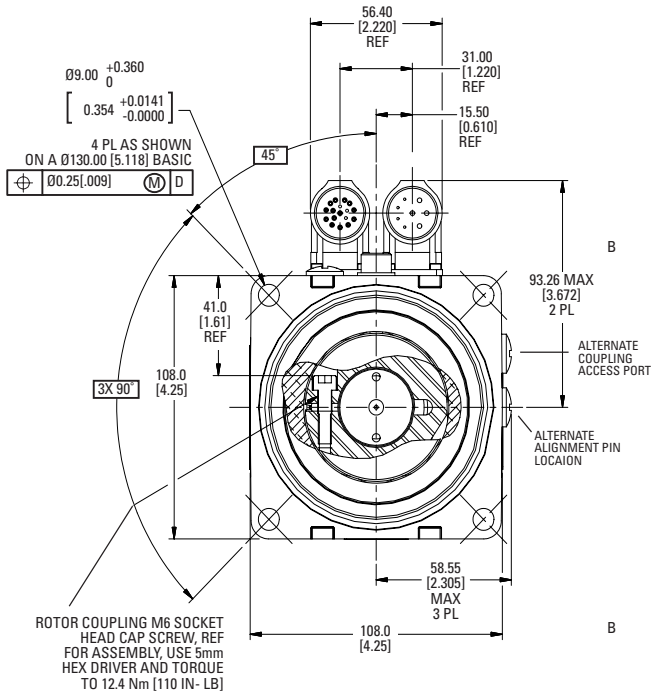


Notes:
1. At 40°C Ambient.
2. Increase Tc by 1.06 times for 25°C Ambient.
3. Temperature rise assumes a 20 x 20 x 0.75 inch Aluminum mounting plate or equivalent.

C04X



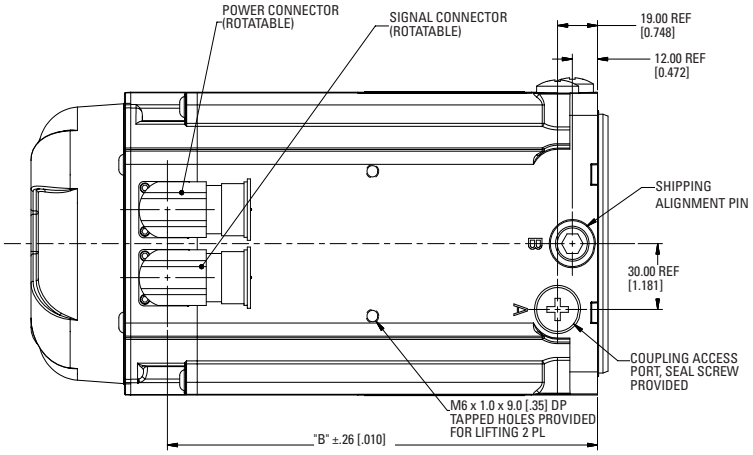


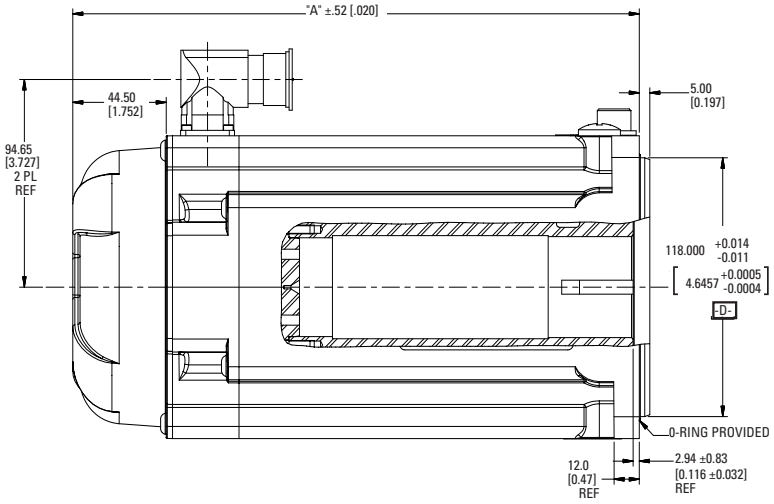


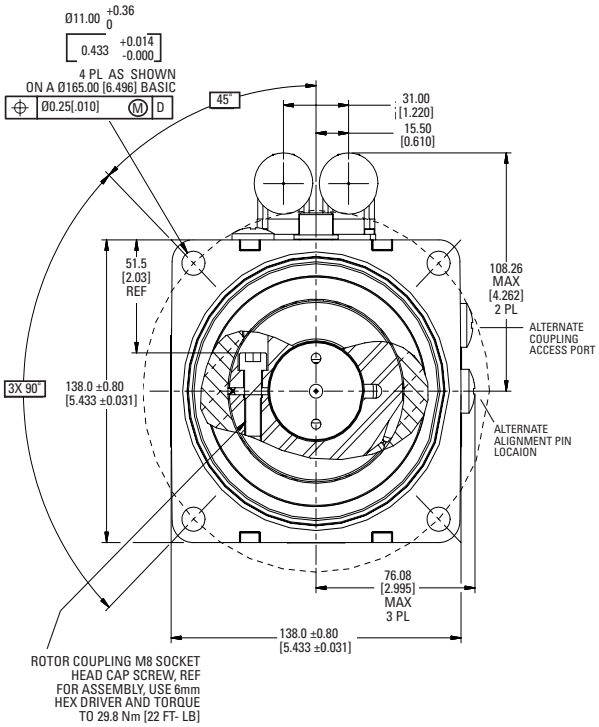
		C041	C042	C043	C044
Dim A	mm [inches]	171 [6.72]	202 [7.94]	233 [9.16]	264 [10.4]
Dim B	mm [inches]	107 [4.22]	138 [5.44]	169 [6.66]	200 [7.88]

For machine interface detail, see page 27

C05X



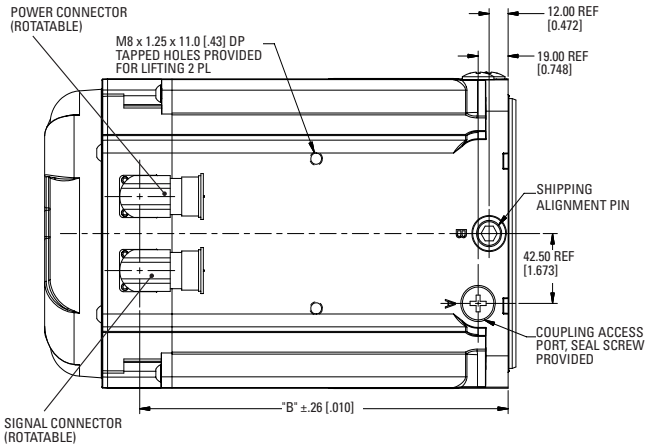


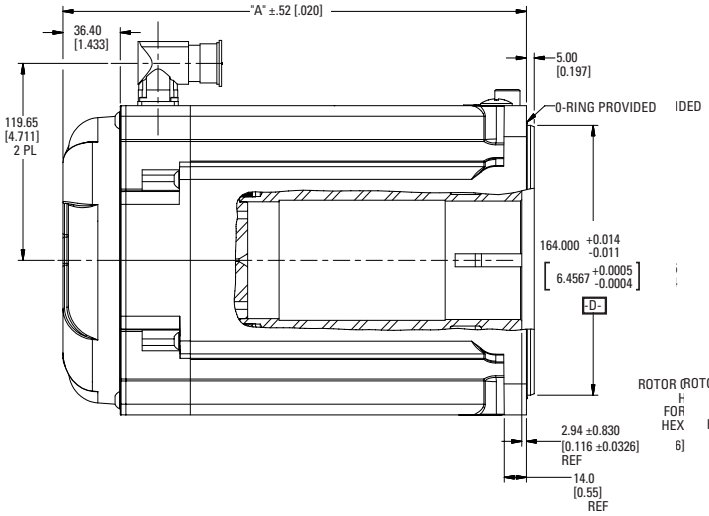


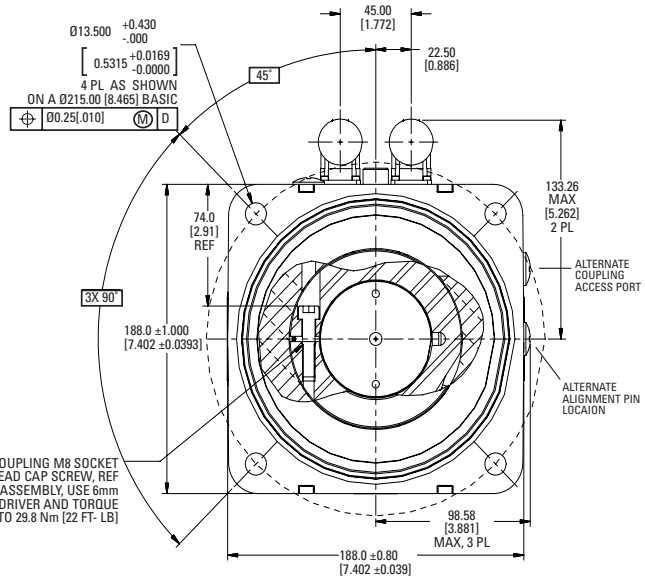
		C051	C052	C053	C054
Dim A	mm [inches]	195 [7.67]	220 [8.65]	245 [9.63]	270 [10.6]
Dim B	mm [inches]	131 [5.14]	156 [6.12]	181 [7.11]	206 [8.09]

For machine interface detail, see page 27

C06X



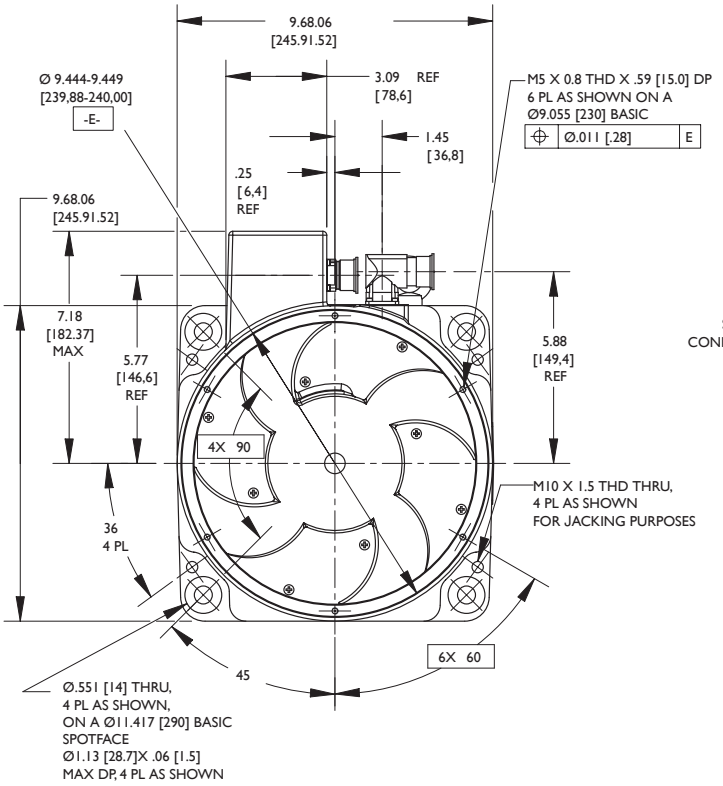


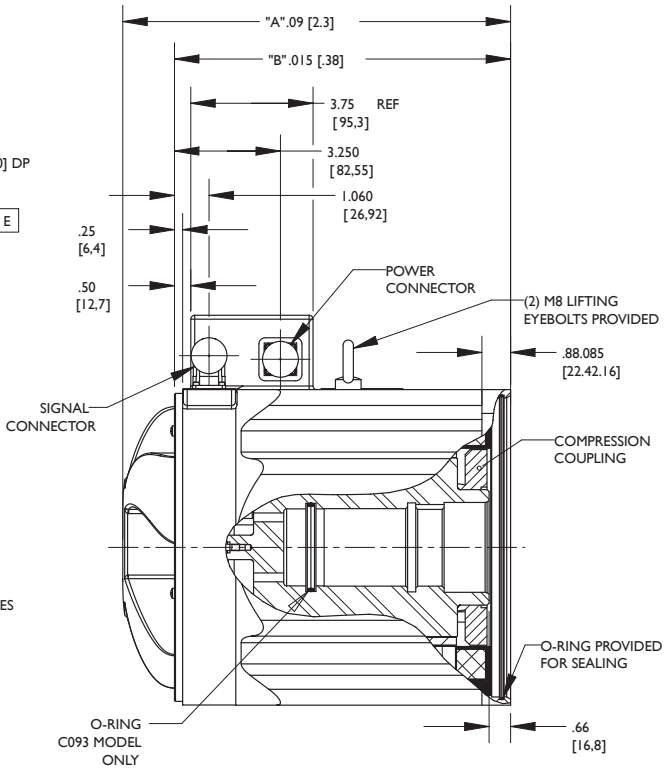


		C061	C062	C063
Dim A	mm [inches]	226 [8.90]	260 [10.2]	294 [11.6]
Dim B	mm [inches]	166 [6.52]	200 [7.86]	234 [9.20]

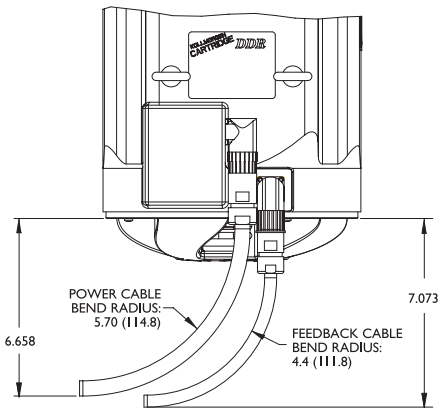
For machine interface detail, see page 27

C(H)09X without Through Bore

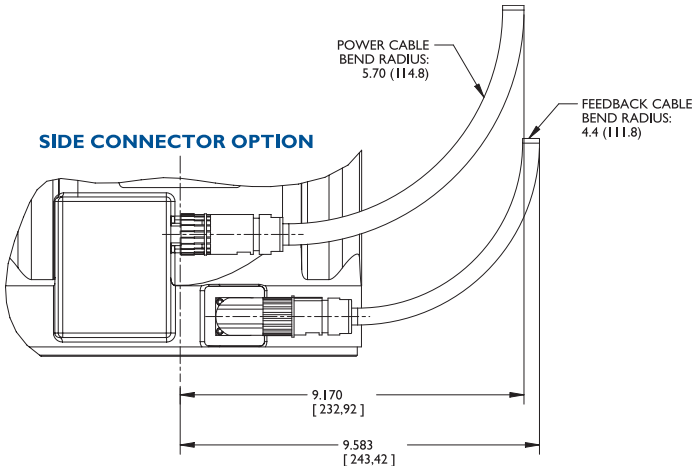




REAR CONNECTOR OPTION



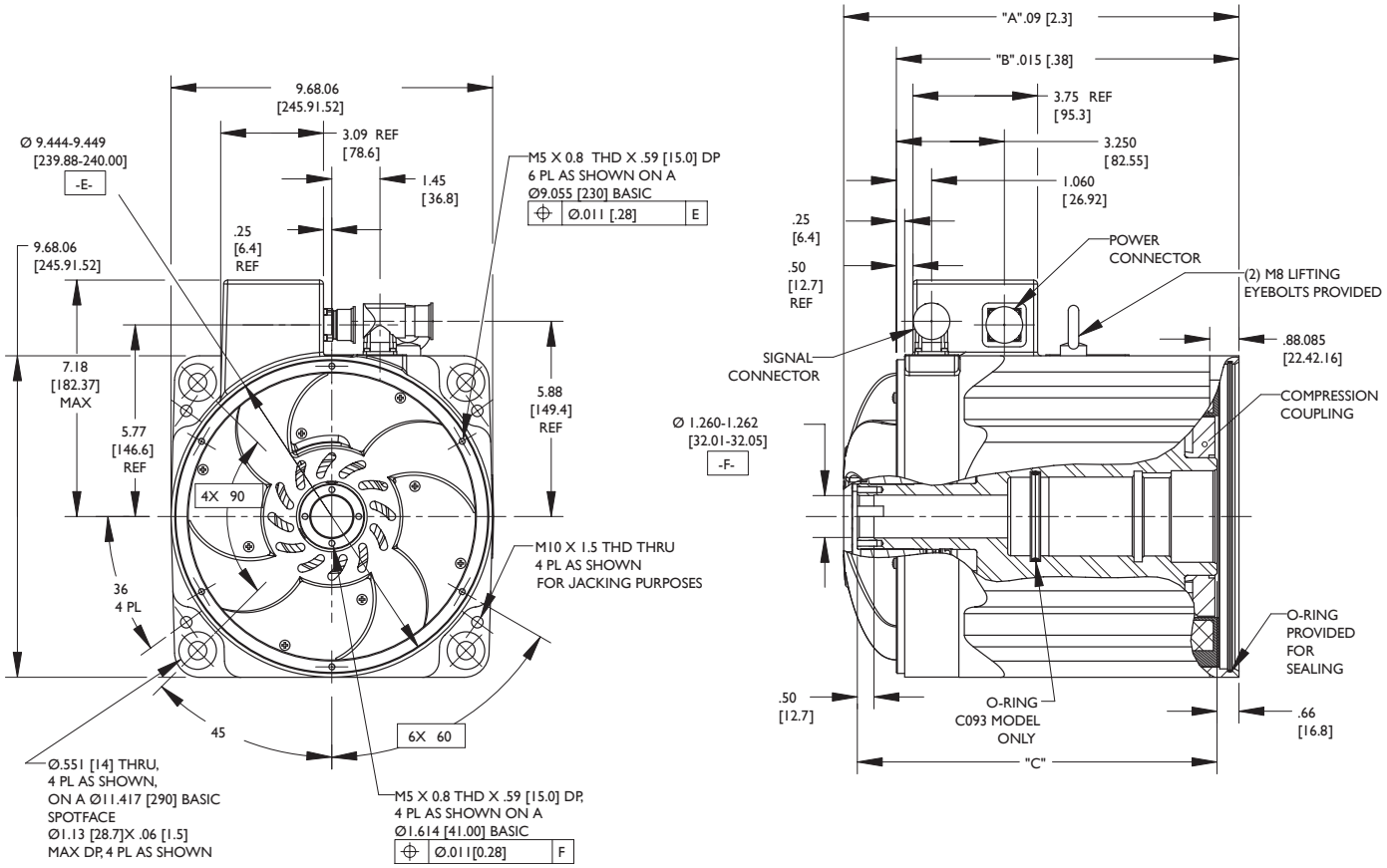
SIDE CONNECTOR OPTION



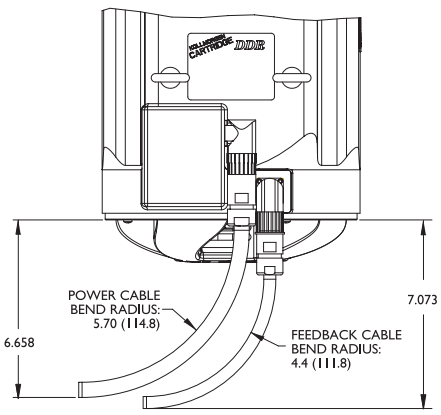
		C(H)091	C(H)092	C(H)093
Dim A	mm [inches]	204 [7.99]	253 [9.94]	302 [11.9]
Dim B	mm [inches]	163 [6.40]	212 [8.36]	262 [10.3]

For machine interface detail, see page 28

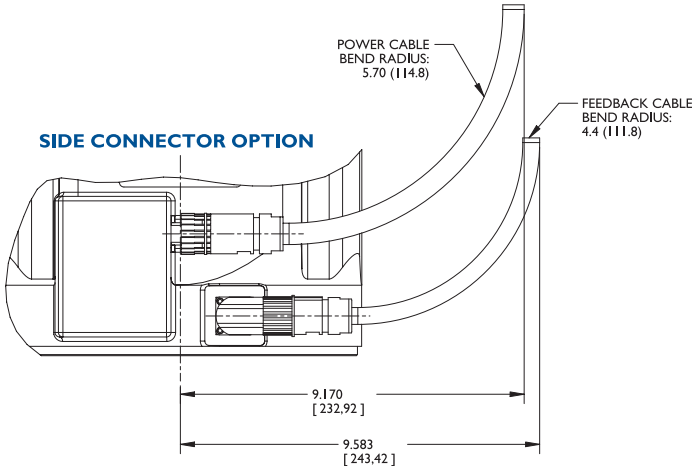
C(H)09X with Through Bore



REAR CONNECTOR OPTION



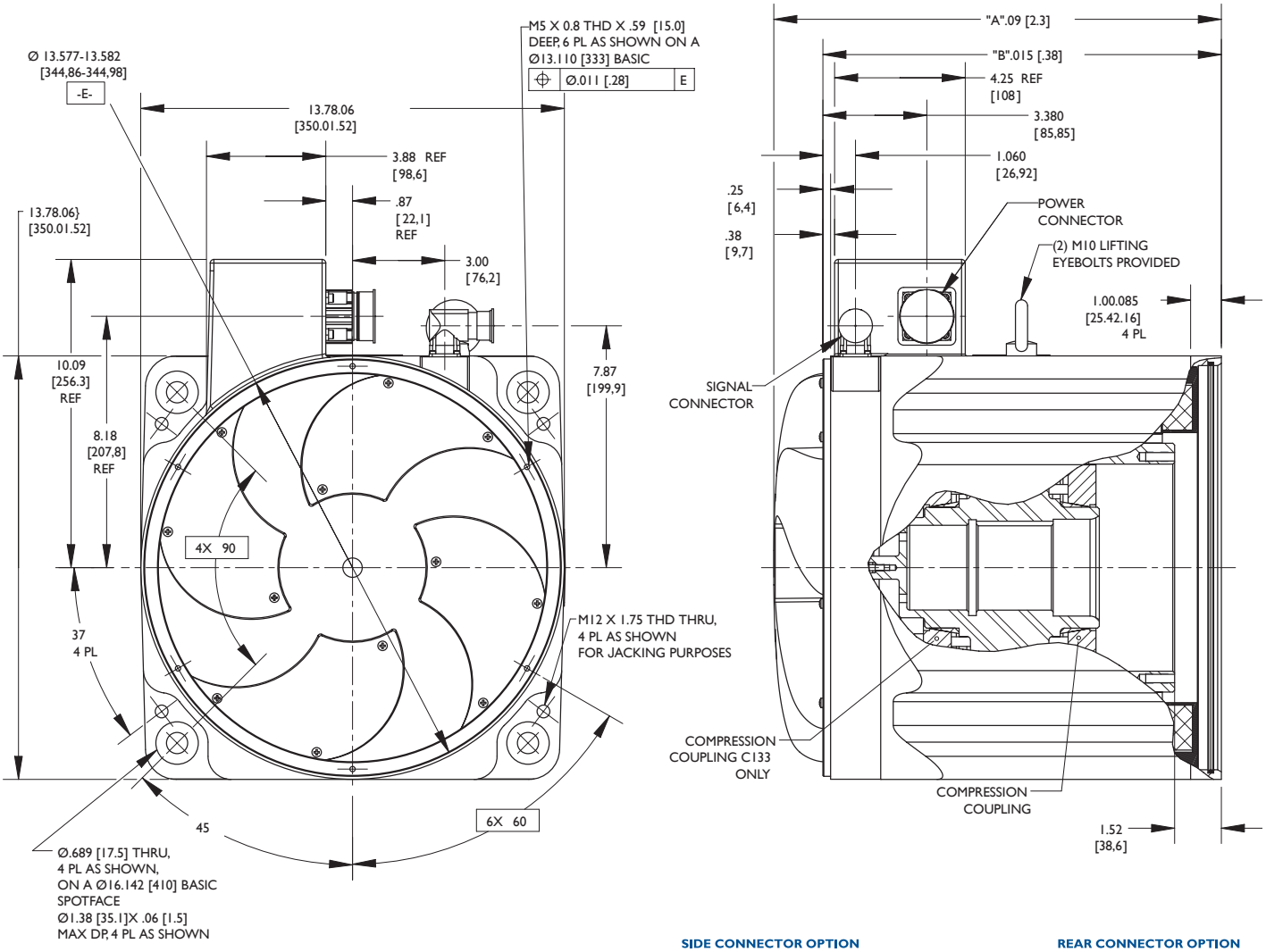
SIDE CONNECTOR OPTION



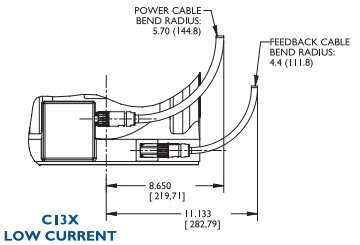
		C(H)091	C(H)092	C(H)093
Dim A	mm [inches]	204 [7.99]	253 [9.94]	302 [11.9]
Dim B	mm [inches]	163 [6.40]	212 [8.36]	262 [10.3]
Dim C	mm [inches]	176 [6.92]	225 [8.87]	275 [10.8]

For machine interface detail, see page 28

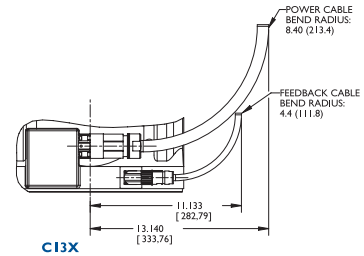
C(H)13X without Through Bore



SIDE CONNECTOR OPTION

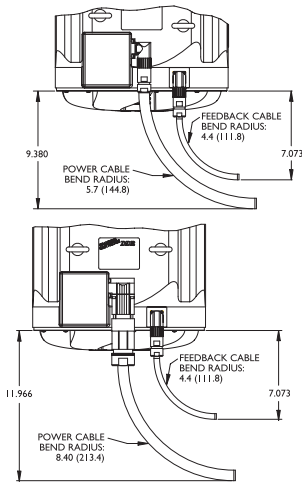


C13X
LOW CURRENT



C13X
HIGH CURRENT

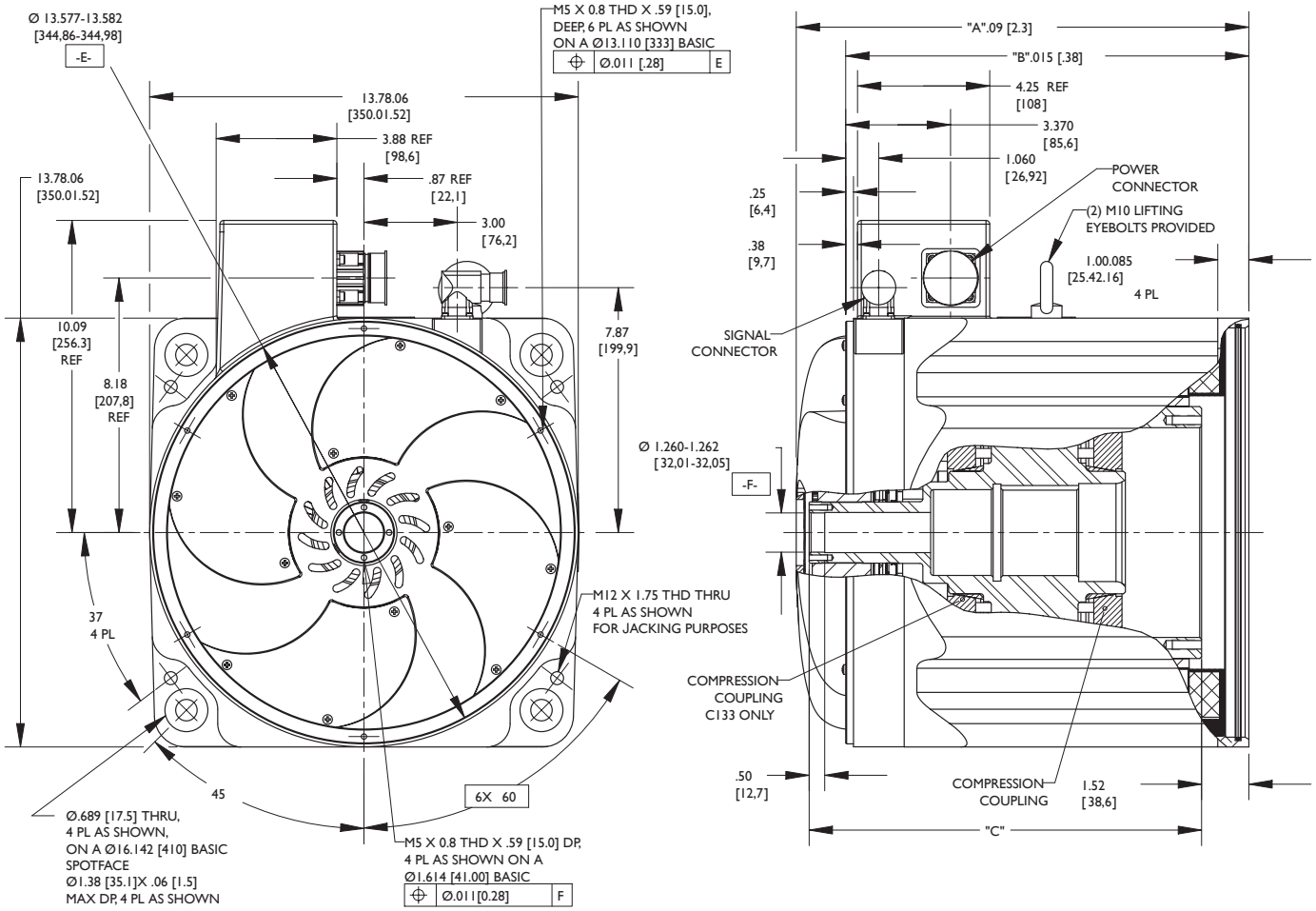
REAR CONNECTOR OPTION



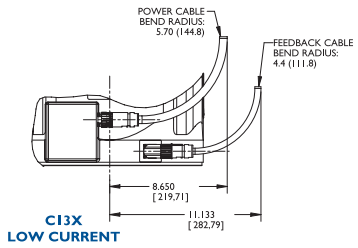
		C(H)131	C(H)132	C(H)133
Dim A	mm [inches]	231 [9.11]	301 [11.8]	302 [11.9]
Dim B	mm [inches]	191 [7.52]	260 [10.2]	329 [13.0]

For machine interface detail, see page 28

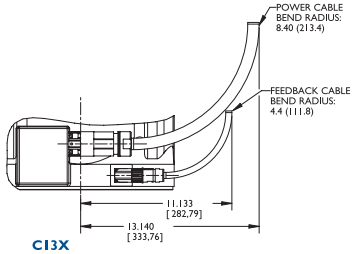
C(H)13X with Through Bore



SIDE CONNECTOR OPTION

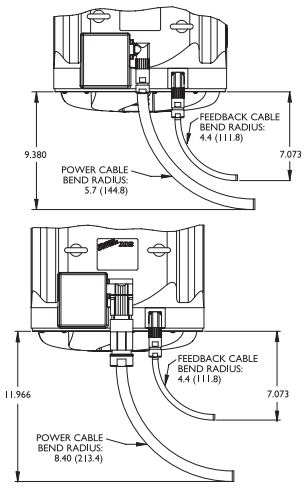


C13X
LOW CURRENT



C13X
HIGH CURRENT

REAR CONNECTOR OPTION



		C(H)131	C(H)132	C(H)133
Dim A	mm [inches]	231 [9.11]	301 [11.8]	302 [11.9]
Dim B	mm [inches]	191 [7.52]	260 [10.2]	329 [13.0]
Dim C	mm [inches]	182 [7.18]	251 [9.90]	320 [12.6]

For machine interface detail, see page 28

Machine Mounting Requirements for C04x, C05x and C06x

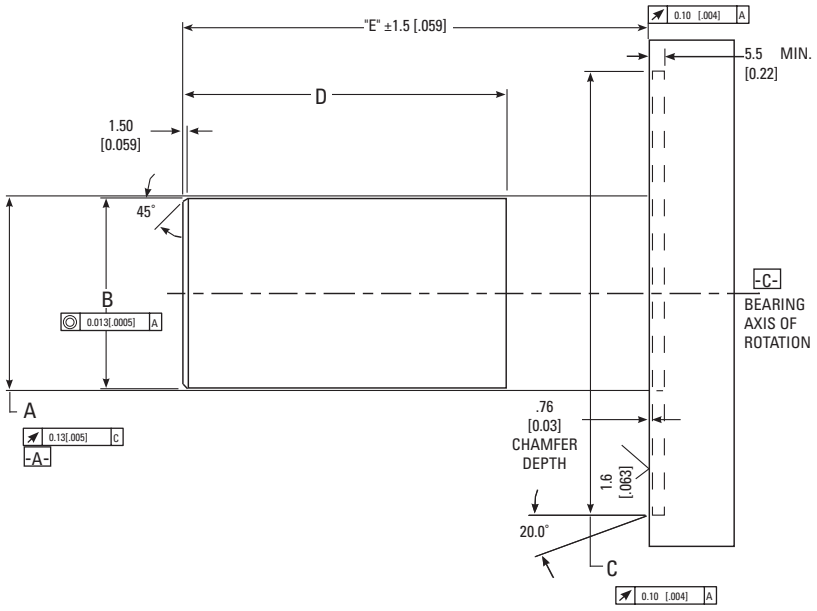
This drawing details the machine interface configuration for mounting the C04, C05, and C06 Cartridge DDR™ motors. It is important to maintain specified tolerance, concentricity and run out to insure proper operation and longevity of the Cartridge DDR™ motor.

Axial Shaft Movement

During operation, the shaft which the Cartridge DDR™ motor is mounted to shall not move axially more than +/- 0.13 mm [0.005 inch].

Shaft Material

The shaft material can be steel or stainless steel.



Machine Dimensions

Model	Dimensions				
	A Min. Max.	B Min. Max	C Min. Max	D Min. Max.	E Min. Max.
C(H)041	32.985 - 33.000 [1.2987 - 1.2992]	31.985 - 32.000 [1.2593 - 1.2598]	92.040 - 92.090 [3.6237 - 3.6255]	16.6 - 17.4 [0.655 - 0.685]	59.8 - 62.8 [2.351 - 2.469]
C(H)042	32.985 - 33.000 [1.2987 - 1.2992]	31.985 - 32.000 [1.2593 - 1.2598]	92.040 - 92.090 [3.6237 - 3.6255]	47.6 - 48.4 [1.875 - 1.905]	90.8 - 93.8 [3.571 - 3.689]
C(H)043	32.985 - 33.000 [1.2987 - 1.2992]	31.985 - 32.000 [1.2593 - 1.2598]	92.040 - 92.090 [3.6237 - 3.6255]	78.6 - 79.4 [3.095 - 3.125]	121.8 - 124.8 [4.791 - 4.909]
C(H)044	32.985 - 33.000 [1.2987 - 1.2992]	31.985 - 32.000 [1.2593 - 1.2598]	92.040 - 92.090 [3.6237 - 3.6255]	109.6 - 110.4 [4.315 - 4.345]	152.8 - 155.8 [6.011 - 6.129]
C(H)051	45.985 - 46.000 [1.8105 - 1.8110]	44.985 - 45.000 [1.7712 - 1.7717]	118.040 - 118.090 [4.6473 - 4.6492]	34.6 - 35.4 [1.365 - 1.395]	80.5 - 83.5 [3.171 - 3.289]
C(H)052	45.985 - 46.000 [1.8105 - 1.8110]	44.985 - 45.000 [1.7712 - 1.7717]	118.040 - 118.090 [4.6473 - 4.6492]	59.6 - 60.4 [2.345 - 2.375]	105.5 - 108.5 [4.151 - 4.269]
C(H)053	45.985 - 46.000 [1.8105 - 1.8110]	44.985 - 45.000 [1.7712 - 1.7717]	118.040 - 118.090 [4.6473 - 4.6492]	84.6 - 85.4 [3.335 - 3.365]	130.5 - 133.5 [5.141 - 5.259]
C(H)054	45.985 - 46.000 [1.8105 - 1.8110]	44.985 - 45.000 [1.7712 - 1.7717]	118.040 - 118.090 [4.6473 - 4.6492]	109.6 - 110.4 [4.315 - 4.345]	155.5 - 158.5 [6.121 - 6.239]
C(H)061	71.985 - 72.000 [2.8341 - 2.8346]	70.985 - 71.000 [2.7948 - 2.7953]	164.040 - 164.090 [6.4583 - 6.4602]	48.6 - 49.4 [1.915 - 1.945]	102.5 - 105.5 [4.031 - 4.149]
C(H)062	71.985 - 72.000 [2.8341 - 2.8346]	70.985 - 71.000 [2.7948 - 2.7953]	164.040 - 164.090 [6.4583 - 6.4602]	82.6 - 83.4 [3.255 - 3.285]	136.5 - 139.5 [5.371 - 5.489]
C(H)063	71.985 - 72.000 [2.8341 - 2.8346]	70.985 - 71.000 [2.7948 - 2.7953]	164.040 - 164.090 [6.4583 - 6.4602]	116.6 - 117.4 [4.595 - 4.625]	170.5 - 173.5 [6.711 - 6.829]

Dimensions are in Millimeters / [Inches]

Machine Mounting Requirements for C09x and C13x

These drawings detail the machine interface configuration for mounting the CARTRIDGE DDR™ motor. It is important to maintain specified tolerance, concentricity, and run out to insure proper operation and longevity of the CARTRIDGE DDR™ motor.

Axial Shaft Movement

Note there is a static and dynamic call out for axial length. The static tolorance is the allowable variance of the shaft before the motor is mounted. The dynamic tolarance is the allowable movement of the shaft after the motor is mounted and during operation.

Shaft Material

The shaft material must have a minimum yield strength of 55,000 PSI. This suggests the material shall be cold rolled steel with a minimum 0.30% carbon content.

Shaft Key

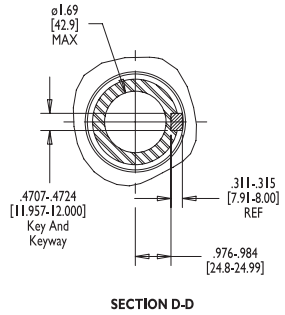
The C09x and C13x CARTRIDGE DDR™ motors are provided with a key. If the materials and dimensions on this page and the compression coupling torque procedure are strictly followed, then the key is not needed. The key is provided as a safety precaution to avoid severe damage to the CARTRIDGE DDR™ motor and to the machine it is mounted to that can result if the compression coupling is not properly engaged during operation. No key is used on the C04x, C05x and C06x.

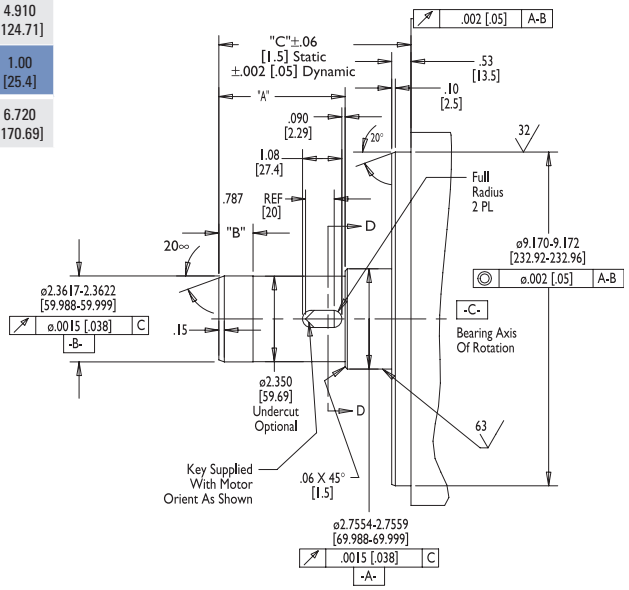
Heat Dissipation

The CARTRIDGE DDR™ motor is a source of heat connected directly to the machine frame. For applications which are sensitive to heat generation, the continuous torque rating of the CARTRIDGE DDR™ must be reduced. To facilitate heat sensitive applications, CARTRIDGE DDR™ motors have dual continuous torque ratings, 110°C rise for maximum capacity and 80°C rise for de-rated capacity.

C(H)09x

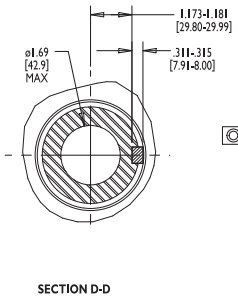
		C(H)091	C(H)092	C(H)093
Dim A	inches [mm]	1.730 [43.94]	3.470 [88.14]	4.910 [124.71]
Dim B	inches [mm]	.38 [9.7]	.94 [23.9]	1.00 [25.4]
Dim C	inches [mm]	3.540 [89.92]	5.280 [134.11]	6.720 [170.69]

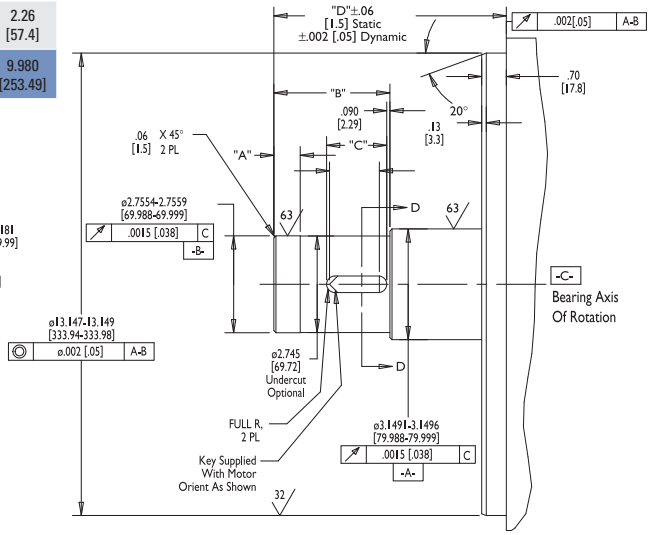




C(H)13x

		C(H)131	C(H)132	C(H)133
Dim A	inches [mm]	.37 [9.4]	.75 [19.1]	1.6 [40.6]
Dim B	inches [mm]	1.590 [40.39]	3.300 [83.82]	4.670 [118.62]
Dim C	inches [mm]	1.08 [27.4]	1.71 [43.4]	2.26 [57.4]
Dim D	inches [mm]	4.490 [114.05]	6.610 [167.89]	9.980 [253.49]

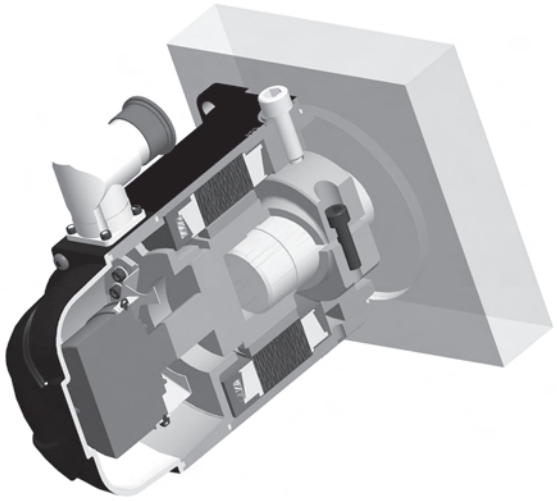




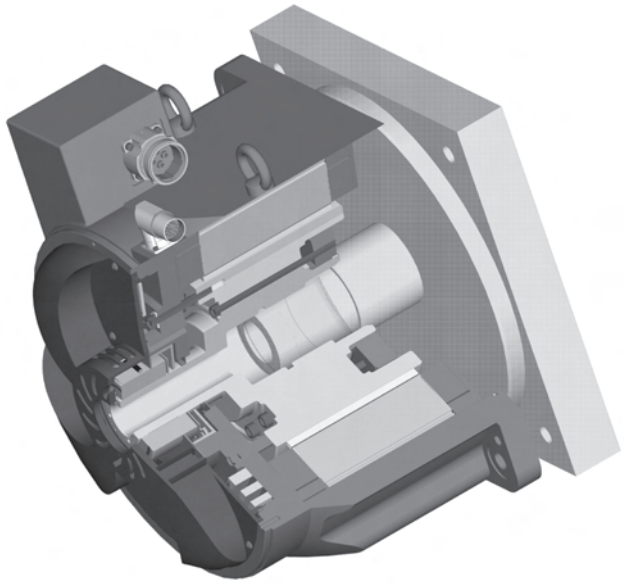
Cartridge DDR™ Machine Interface Summary

Due to the large range of continuous and peak torques for the CDDR series, the mechanical mounting and coupling to the machine varies. The chart below provides a quick summary.

Cross Section of C04x, C05x, C06x



Cross Section of C09x, C13x



Parameter	C04x, C05x, C06x	C09x, C13x
Coupling Technology	Single bolt split hub, access front motor	Multi-bolt compression, access from rear of motor
Mounting Requirements Shaft TIR	.005" [.13mm]	.0015" [.038mm]
Perpendicularity of Machine Mounting Face	.004" [.10mm]	.002" [.051mm]
Concentricity of Machine Pilot to Shaft	.004" [.10mm]	.002" [.051mm]
Shipping Hardware	Alignment bolt & cap screw	4 set screws & 4 shipping bolts
Mounting Procedure	Procedure # M-RT-S19-07	Procedure # M-RT-019-07

CDDR System Summary

			Performance Chart Page	S300 Drives					S600 Drives			Performance				
				S30361	S30661	S31061	S30301	S30601	S610-30	S620	S640	Cont. Torque		Peak Torque		Maximum Speed
												N-m	(lb-ft)	N-m	(lb-ft)	
Cartridge DDR™ Motors	240 Volt Systems	C041A	5	•			•					4.57	3.37	12.3	9.09	1750
		C041B	7		•			•				4.52	3.33	12.2	9.01	2500
		C042A	5		•			•				8.25	6.08	22.2	16.4	1700
		C042B	7			•			•			8.45	6.23	22.8[1]	16.8[1]	2500
		C043A	5		•			•				11.1	8.20	30.0	22.1	1250
		C043B	7			•			•			11.2	8.23	30.2[1]	22.2[1]	2500
		C044A	5		•			•				13.9	10.3	37.4	27.6	1050
		C044B	7			•			•			14.1	10.4	37.9[1]	28.0[1]	2150
		C051A	8		•			•				11.7	8.66	30.2	22.3	1200
		C051B	10			•			•			11.9	8.77	30.6[1]	22.6[1]	2450
		C052A	8			•			•			17.0	12.5	43.5[1]	32.1[1]	1850
		C052B	10							•		16.7	12.3	42.7	31.5	2500
		C053A	8			•			•			21.0	15.5	54.1[1]	39.9[1]	1350
		C053B	10							•		20.2	14.9	42.5	31.3	2500
		C054A	8			•			•			24.9	18.4	63.8[1]	47.1[1]	1200
		C054B	10							•		23.8	17.6	52.8	39.0	2350
		C061A	11			•			•			33.8	24.9	86.8[1]	64.1[1]	900
		C061B	13							•		32.6	24.1	64.1	47.3	1950
		C062A	11							•		47.8	35.3	123	90.7	950
		C062B	13							•		44.7	32.9	86.9	64.1	1450
		C063A	11							•		61.0	45.0	157	116	700
		C063B	13							•		59.0	43.5	115	84.9	1050
		C091A	14							•		50.2	37.0	120	88.2	600
		C092A	14							•		101	74.8	231	170	400
		C093A	14							•		145	107	309	228	300
		C131A	16							•		188	139	389	287	225
		C131B	18								•	190	140	396	292	450
		C132A	16							•		361	266	805	595	110
		C132B	18								•	361	266	759	560	225
		C133A	16							•		504	372	1016	750	90
		C133B	18								•	510	376	1017	750	175
	400 / 480 Volt Systems	CH041A	6				•					4.56	3.37	11.3	8.33	2500
		CH042A	6					•				8.26	6.09	19.0	14.0	2500
		CH043A	6					•				11.1	8.20	25.3	18.7	2500[2]
		CH044A	6					•				13.9	10.2	31.6	23.3	2250[2]
		CH051A	9					•				11.7	8.66	28.0	20.7	2500[2]
		CH052A	9						•			17.0	12.5	43.5	32.1	2500
		CH053A	9						•			21.0	15.5	54.1	39.9	2500[2]
		CH054A	9						•			24.9	18.4	63.8	47.1	2500[2]
		CH061A	12						•			33.8	24.9	86.8	64.1	1900[2]
		CH062A	12							•		47.8	35.3	123	90.7	2000[2]
		CH063A	12							•		61.0	45.0	157	116	1500[2]
		CH063B	12							•		59.0	43.5	115	84.9	2200[2]
		CH091A	15							•		50.2	37.0	120	88.2	1500[2]
		CH092A	15							•		101	74.8	231	170	900[2]
		CH093A	15							•		145	107	309	228	650[2]
		CH131A	17							•		188	139	389	287	500[2]
		CH131B	19								•	190	140	396	292	1000[2]
		CH132A	17							•		361	266	05	595	250[2]
		CH132B	19								•	361	266	759	560	500[2]
		CH133A	17							•		504	372	1016	750	200[2]
		CH133B	19								•	510	376	1017	750	400[2]
Cables	CS-SS-S3HR1HE-xx[3]			•	•	•						Notes:				
	CS-SS-S3HG1HE-xx[3]						•	•	•			[1] Peak torque with S610-30. For peak torque with S310 see performance curve.				
	CS-SS-S3HG2HE-xx[3]									•		[2] Maximum speed at 480 Vac. For maximum speed at 400 Vac see performance curve.				
	CS-SS-S3HM4JE-xx[3]										•	[3] xx is cable length in meters				

CARTRIDGE DDR™ Ordering Guide

C 09 1 A - 1 1 - 1 1 0 5 S - xxx

Product Family
C=230 Volt
CH=400/480 Volt

Frame Size Field
04 = 4.25" Sq. Housing
05 = 5.43" Sq. Housing
06 = 7.40" Sq. Housing
09 = 9.68" Sq. Housing
13 = 13.78" Sq. Housing

Stack Length Field
1 = Short Stack
2 = Mid Stack
3 = Long Stack
4 = Extra Long Stack
(04 and 05 Frame sizes only)

Winding Letter Field
A = Standard Winding
B = High Speed Winding
(Only availabe on C04x, C05x, C06x, CH063, C13x, CH13x)

Mounting Option Field
1 = Std. Flange Mount

Connector Option Field
1 = Side Connector Option (09 and 13 Frame sizes only)
2 = Rear Connector Option (09 and 13 Frame sizes only)
3 = 90° Rotatable Connectors (04, 05 and 06 Frame sizes only)

Sequential number for specials
(Unique description within a frame size)

Agency Certification Option Field
Blank = UL/CE Certification
S = Non-UL

Unit Seal Option Field
5 = Sealed
(Shaft Option "1" - IP64 Rating when customer seals interface side)
(Shaft Option "2" or "3" - IP65 Rating when customer seals interface side)

Bearing Option Field
0 = No Bearing Design
(Standard - Integral Shipping Clamp Provided)

Feedback Option Field
1 = Sine Encoder (C09 and C13)
3 = Sine Encoder (C04, C05 and C06)

Shaft Field
1 = Hollow with Compression Coupling and Key (09 and 13 Frame sizes only)
2 = Solid with Compression Coupling, and Key (09 and 13 Frame sizes only)
3 = Solid with Split Ring Coupling, and no Key (04, 05, and 06 Frame sizes only)

S300/S600 Ordering Guide

S 3 03 0 1 - NA

SERVOSTAR® Family

Series
3 = S300
6 = S600

Current Rating (Cont. Arms per Phase)
03 = 3.0 amps
06 = 6.0 amps
10 = 10.0 amps
20 = 20.0 amps (S600 only)
40 = 40.0 amps (S600 only)

Option
NA = No option card
DN = DeviceNet option card installed
EI = Extended I/O option card installed
MN = Single axis controller option card installed
PB = PROFIBUS option card installed
SE = SERCOS option card installed

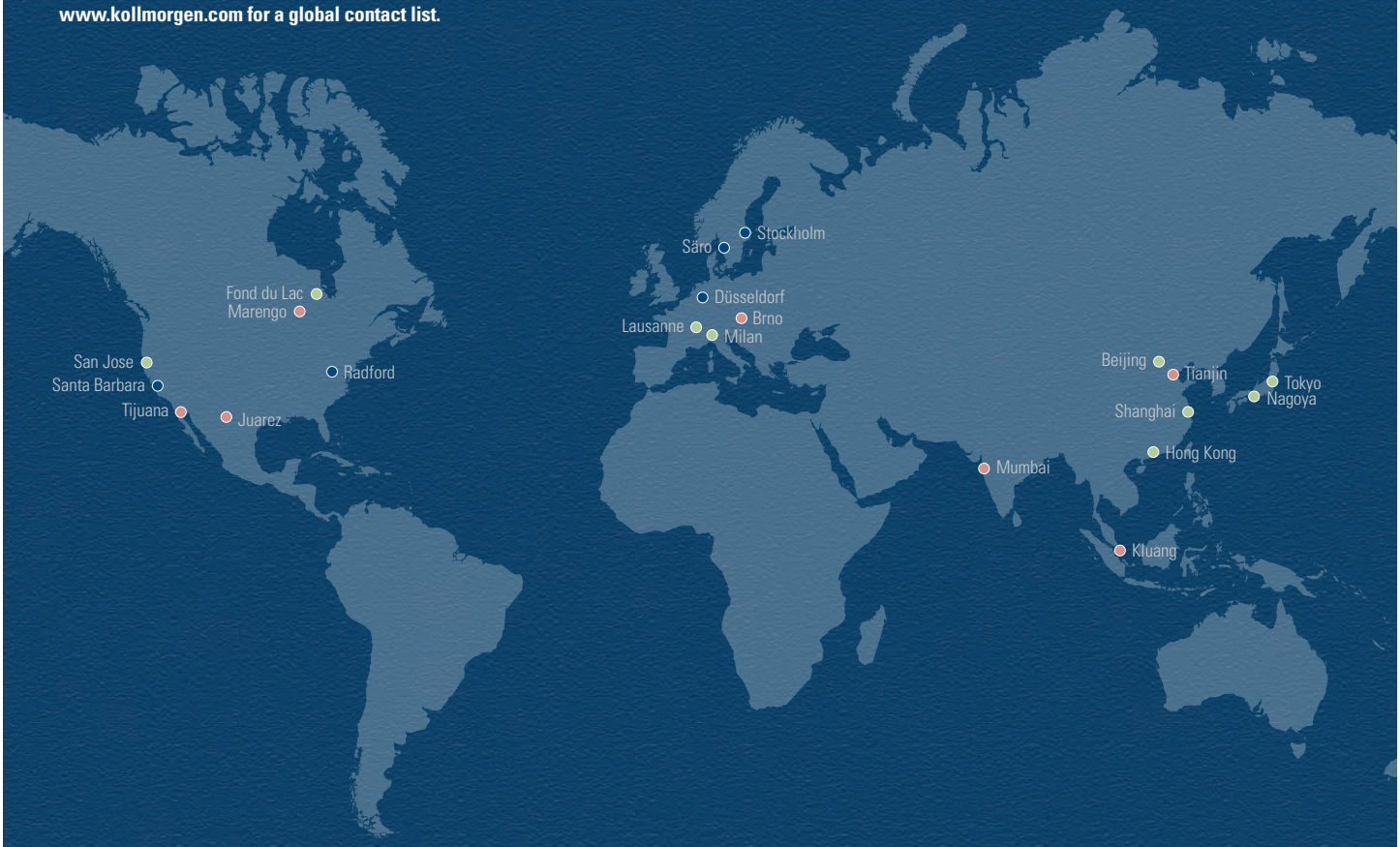
Configuration
0 = Standard (Not available on S300 or S640)
1 = AS option (Safety Relay) (Standard on S300 and S640)

Voltage Option
0 = 208/480 (Not available with S310)
6 = 120/240 (S300 only)

About Kollmorgen

Kollmorgen is a leading provider of motion systems and components for machine builders. Through world-class knowledge in motion, industry-leading quality and deep expertise in linking and integrating standard and custom products, Kollmorgen delivers breakthrough solutions that are unmatched in performance, reliability and ease-of-use, giving machine builders an irrefutable marketplace advantage.

For assistance with your application needs in North America, contact us at: 540-633-3545, contactus@kollmorgen.com or visit www.kollmorgen.com for a global contact list.



KOLLMORGEN

Because Motion Matters™

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