

KOLLMORGEN GOLDLINE® DDR

September 2004

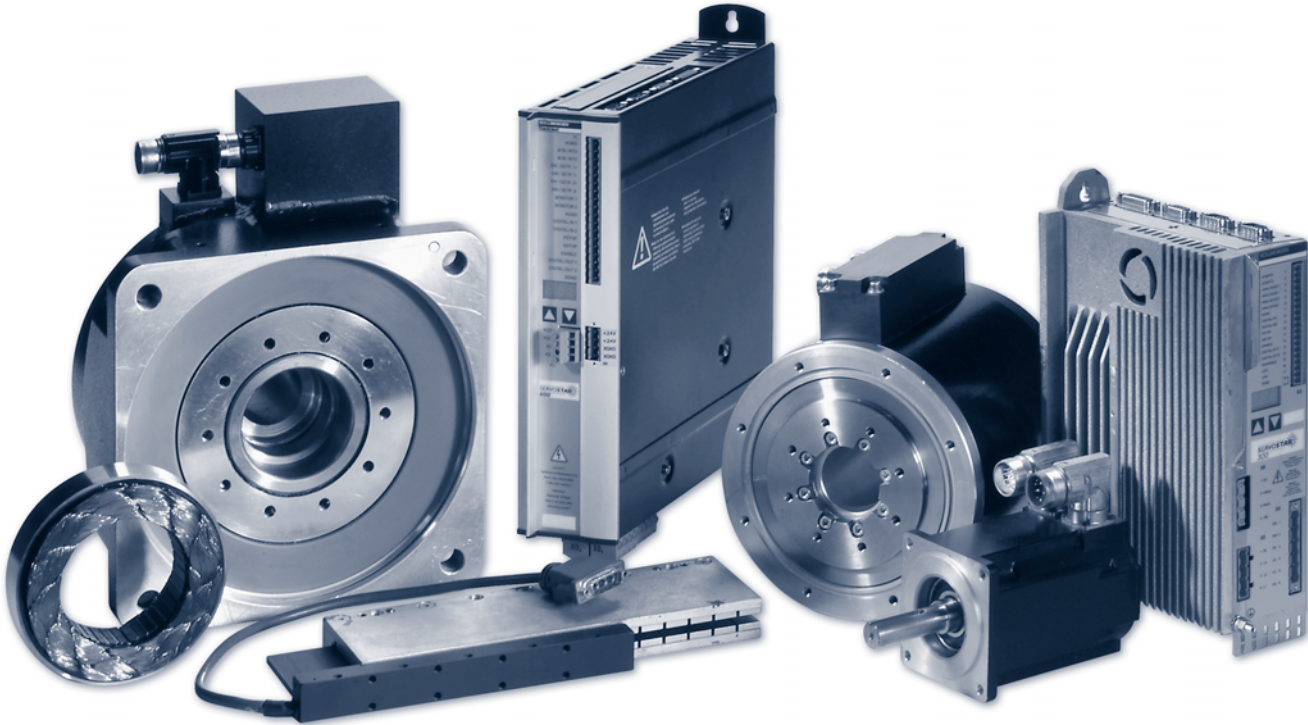
www.DanaherMotion.com

Direct Drive Rotary motors with SERVOSTAR® CD & S600 Drives

- ZERO maintenance
- No belts/pulleys, no belt adjustment/replacement
- No gearboxes, no lubrication required
- Zero backlash and compliance
- Flat, compact drive solution
- One part number for mechanical drive motor (clean mechanical assembly)
- Very quiet
- Hollow shaft

KOLLMORGEN

 Solutions by
DANAHER
MOTION



New Name, Established Brands

Danaher Motion's wide range of motion control systems and components offer customers an unprecedented choice in selecting the right solution to match their particular application requirements. Our product innovations have been improving the efficiency and productivity of complex manufacturing operations for over 60 years through trusted brand names such as Dover, Kollmorgen, Pacific Scientific, Portescap and Thomson in industries as diverse as semiconductor, aerospace and defense, mobile-off-highway, packaging, medical and robotics.

In addition, Danaher Motion, through Motion Engineering (MEI), offers powerful integrated motion control solutions with its industry-leading, multi-axis motion platforms and SynqNet™ communications network for ultra-reliable machine performance. From software and controller, through the communications network to drives and I/O devices, to mechanical and electro-mechanical products, Danaher Motion differentiates itself in the marketplace by designing standard and custom solutions to satisfy the most demanding application requirements.

Our growing family of leading motion control products and application expertise tells only half the story. With a worldwide service and support infrastructure, our field service engineers and support teams are available to assist whenever they are needed. It is part of Danaher Corporation's unrelenting focus on its customer. That's why more and more design engineers are turning to Danaher Motion to meet their motion control requirements.

Danaher Motion Values

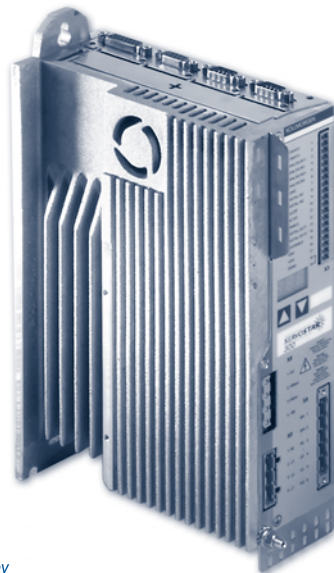
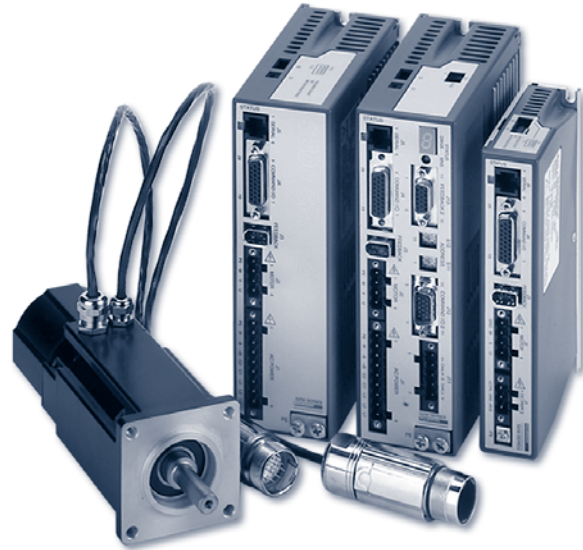
- Application Expertise
- Broad & Innovative Motion Control Products and Systems
- Customer Focus
- Customizable Products and Services
- Motion Control Pioneers with Global Staying Power
- Operational Excellence

Continuous Improvement – It's the Danaher Way

At Danaher, we are passionate about continually improving our operations to bring increasing value to our customers. The Danaher Business System (DBS) helps us improve the efficiency of our manufacturing and product development processes. DBS is a team-based approach based on the principles of Kaizen that lets us continuously and aggressively eliminate waste in every aspect of our business operations. The DBS focuses our entire organization on achieving breakthrough results that create competitive advantage in quality, delivery and performance – advantages that we pass on to you, our customer.

Whatever your motion control requirements may be, Danaher Motion has a solution that is right for you. Our unsurpassed product selection and service means faster time to market, higher reliability and increased productivity. Let the experts at Danaher Motion put a world of motion control solutions at your fingertips.

Your World in Motion. Control It.



 Solutions by
DANAHER
MOTION

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What is direct drive? Very simply it is the direct coupling of the torque motor (such as the Kollmorgen **GOLDLINE®** DDR motor) to the driven load. This configuration results in a very stiff coupling to the load, thus, eliminating problems associated with belts and gearboxes.

The DDR Benefits:

- ZERO maintenance
- No belts/pulleys, no belt adjustment/replacement
- No gearboxes, no lubrication required
- Zero backlash and compliance
- Flat, compact drive solution
- One part number for mechanical drive motor (clean mechanical assembly)
- Very quiet
- Hollow shaft

This technology has been refined into the Kollmorgen **GOLDLINE** DDR product line for easy installation and use and is available at short leadtimes.

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 machine tools, injection molding machines, and semiconductor processing machines. Our product range covers from oz-in of torque to over 20,000 N-m of torque and over 10 feet in diameter.

Kollmorgen's 50 years of electromagnetic and electromechanical design expertise is packed into the Kollmorgen brushless **GOLDLINE** DDR product line. We achieve very high torque density through both large diameter, short length, and high number of magnetic poles. Couple this with a very high resolution feedback device (up to 2,097,152 counts per revolution) and the Kollmorgen **GOLDLINE** DDR becomes a high performance, zero maintenance, servo solution.

The Kollmorgen **GOLDLINE** DDR is the latest in a series of product innovations from the worldwide leader in DDR motor products....Kollmorgen.



Kollmorgen Large Diameter Torque Motors

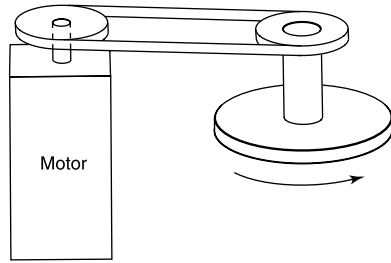


Kollmorgen RBE Frameless Torque Motors

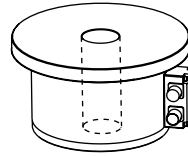


Kollmorgen GOLDLINE DDR Housed Torque Motors

Application Problem



Solution

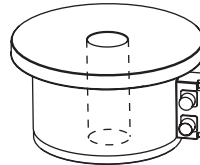
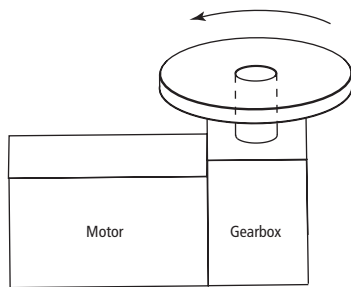


DDR

Benefits

Belt/pulley

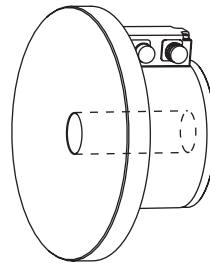
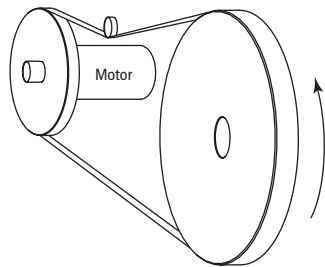
- Zero maintenance
- No belt adjustment/replacement
- No belt compliance
- Better servo performance
- Clean mechanical assembly
- Flat profile
- Quiet
- Reduced number of parts
- Hollow shaft



DDR

Gearmotors/right angle/in-line

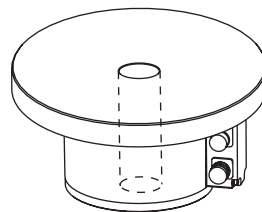
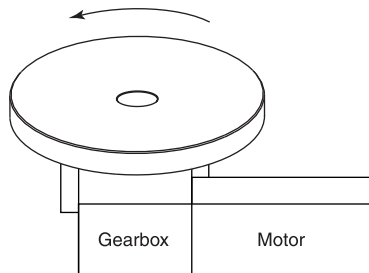
- Zero maintenance
- No gearbox lubrication
- No gearbox backlash
- Better servo performance
- Flat Profile
- Quiet
- Hollow shaft



DDR

Large Vertical Wheel

- Zero maintenance
- No belt adjustment/replacement
- No belt compliance
- Better servo performance
- Faster index times
- Clean mechanical assembly
- Quiet
- Reduced number of parts
- Hollow shaft

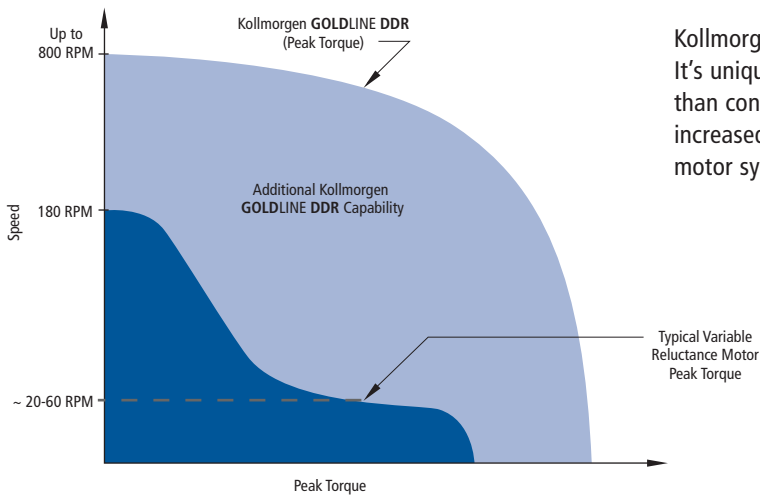


DDR

Rotary Indexer

- Zero maintenance
- No gearbox lubrication
- No gearbox backlash
- Better servo performance
- Quiet
- Reduced number of parts
- Hollow shaft

Peak Torque vs. Speed



Kollmorgen's **GOLDLINE DDR** is designed for very high torque density. Its unique electromagnetic design provides much more speed/torque area than conventional variable reluctance motors. This curve shows the increased speed and torque available from a Kollmorgen **GOLDLINE DDR** motor system. This results in faster indexing times and higher throughput.

SERVOSTAR®: The Common Drive Design Solution

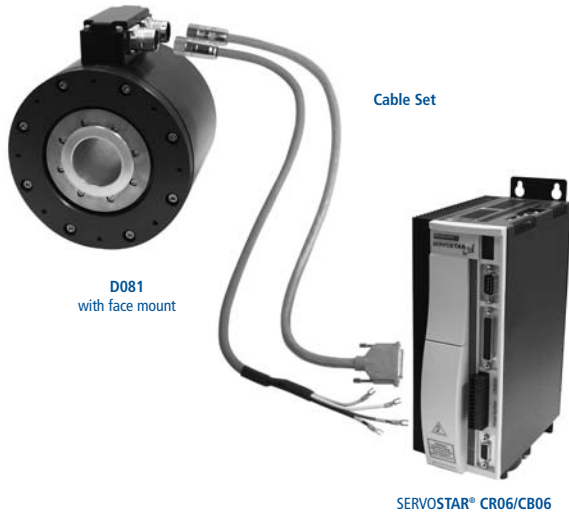
**One drive....
Many types of motors....**

The Kollmorgen **SERVOSTAR** line of digital amplifiers provides you with the ultimate in flexibility and simplicity. Now, you have the freedom to design the best solution, whether rotary or linear, for your specific application. No need to match the motor to the amplifier. No custom electronics required. No hassles with learning, stocking, and supporting several drive types. Get outstanding system performance while saving time and money.

Kollmorgen offers the broadest range of motor technologies in the industry and a common drive platform that makes using the best electromechanical solution easy for you. Use **SERVOSTAR** amplifiers with the Kollmorgen **GOLDLINE® DDR**, **PLATINUM® DDL** linear, **RBE** frameless direct drive or the industry-standard Kollmorgen **GOLDLINE® XT** or **B** series rotary servos.

The common drive design solution will make your life a little easier. Only from Kollmorgen.



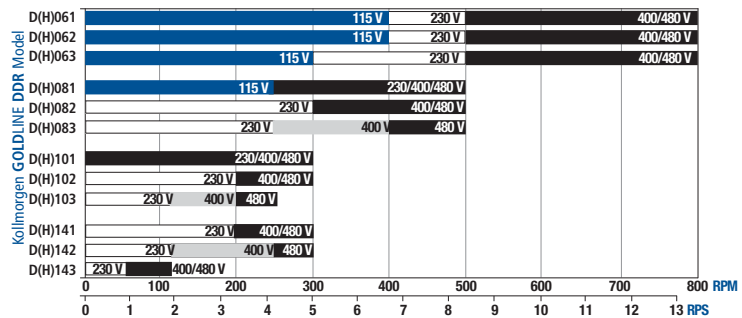


D081 with face mount

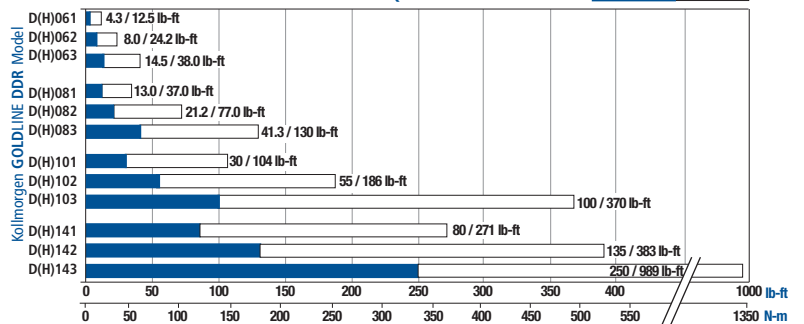
Cable Set

SERVOSTAR® CR06/CB06

MAXIMUM SPEED BY MODEL



PEAK AND CONTINUOUS TORQUE BY MODEL



Kollmorgen GOLDLINE® DDR Series Motors

Features

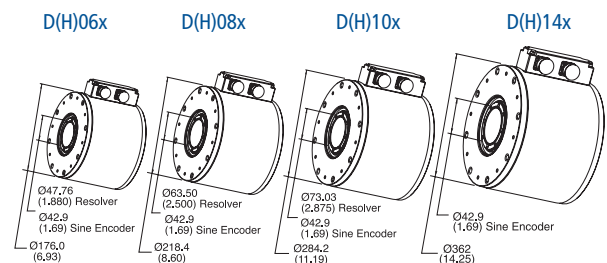
Benefits

Elimination of gearbox	Zero maintenance, smoother velocity, higher bandwidth, quiet (reduced, audible noise)
Elimination of belts	Zero maintenance, higher bandwidth
High torque density permanent magnet design provides more speed and torque vs variable reluctance motors	Faster indexing, lower heat generation
Large through bore	Run process fluids, pneumatics, and electrical through center of motor
Speeds up to 800 rpm	More than just an indexer, DDR can be used for continuous velocity applications
High Position Resolution (up to 2,097,152 counts per revolution)	Repeatability down to ±0.62 arc.sec
Wide range of size and torque	Cover any DDR application
Peak torque up to 990 lb-ft	Rapid indexing of large inertia loads
Axial loading up to 12,700 lbs	Can carry heavy loads for indexing
Moment loading up to 472 lb-ft	Operate motor with significant offset loads
Mix/match motors/drives	No serial number matching of motor/drive

Recommended Motor/Drive Systems

ServoDrive	Standard Motor Systems	Cable Set (Resolver)	Cable Set (Sine Encoder)
SERVOSTAR CD 6 amp	D061, D062, D063, D081, D082, D083, D101	CS-SS-RHAHE-xx	CS-SS-S3HA1HE-xx
SERVOSTAR CD 10 amp	D102, D103		
SERVOSTAR 600 10 amp	DH061, DH062, DH063, DH081, DH082, DH083, DH101, DH102	CS-SS-RHG1HE-xx	CS-SS-S3HG1HE-xx
SERVOSTAR 600 14 amp	D141, D142, DH103, DH141, DH142	CS-SS-RHG2HE-xx	CS-SS-S3HG2HE-xx
SERVOSTAR 600 20 amp	D143, DH143		

MOTOR OUTSIDE / INSIDE DIAMETERS BY MODEL

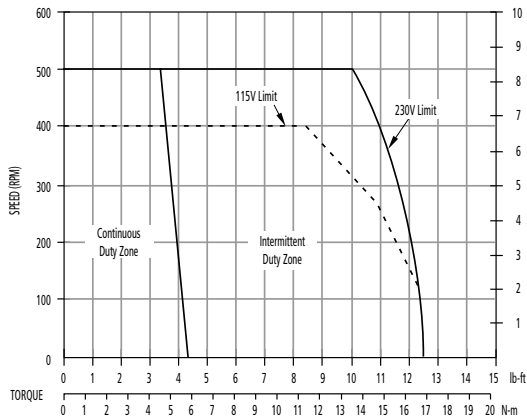


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115 and 230 VAC

System Performance:		Symbols	Units	D061A/D061M	D062A/D062M	D063A/D063M
Peak Torque		Tp	lb-ft N-m	12.5 16.9	24.2 32.8	38.0 51.5
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	3.9 5.3	7.2 9.8	13.1 17.7
	Resolver	Tc	lb-ft N-m	4.3 5.8	8.0 10.8	14.5 19.7
Max. Operating Speed 230/115 V Single Phase		N max	rpm rps	500/400 8.3/6.7	500/400 8.3/6.7	500/300 8.3/5.0
Sine Encoder System	Resolution	–	counts/rev	2,097,152	2,097,152	2,097,152
	Repeatability	–	arc/sec	±0.62	±0.62	±0.62
	Accuracy	–	arc/sec	±26	±26	±26
Resolver System	Resolution ⁽³⁾	–	counts/rev	524,288	524,288	524,288
	Repeatability	–	arc/sec	±2.48	±2.48	±2.48
	Accuracy	–	arc/sec	±270	±270	±270
Mechanical:						
Weight		Wt	lb kg	20.8 9.4	25.0 11.3	30.5 13.8
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	0.0045 0.0061	0.0052 0.0071	0.0064 0.0086
Static Friction adder for sealed units		Tf	lb-ft N-m	1.8 2.4	1.8 2.4	1.8 2.4
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	4,500 2,040	4,500 2,040	4,500 2,040

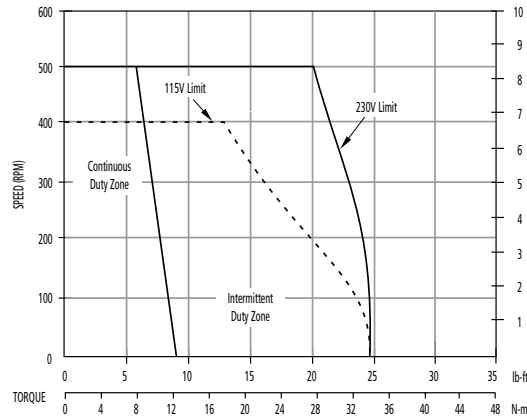
SYSTEM: D061A/D061M with SERVOSTAR CR06/CB06



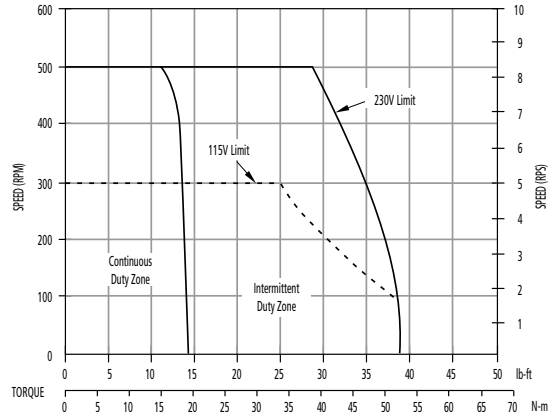
Notes:

- ① For 25°C ambient, multiply Tc by 1.06.
- ② Curves for 230V applicable to single or three phase input power.
- ③ Drive resolver-to-digital converter and encoder equivalent output limits max resolution to 524,288 counts per rev up to 187 rpm, and 131,072 counts per rev above 187 rpm.
- ④ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

SYSTEM: D062A/D062M with SERVOSTAR CR06/CB06



SYSTEM: D063A/D063M with SERVOSTAR CR06/CB06

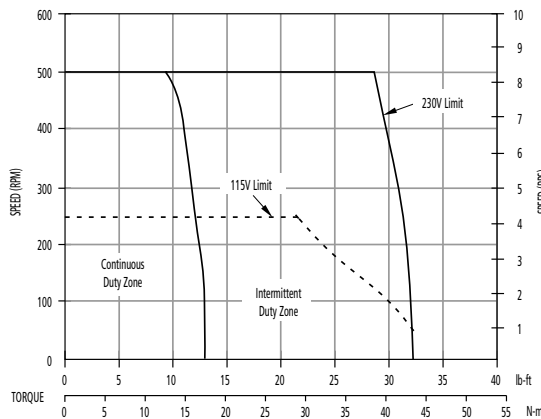


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115 and 230 VAC

System Performance:		Symbols	Units	D081A/D081M	D082A/D082M	D083A/D083M
Peak Torque		Tp	lb-ft N-m	32.0 43.4	68.0 92.2	118 160
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	11.7 15.9	19.1 25.9	37.2 50.4
	Resolver	Tc	lb-ft N-m	13.0 17.6	21.2 28.7	41.3 56.0
Max. Operating Speed 230/115 V Single Phase		N max	rpm rps	500/250 8.3/4.2	300/NA 5.0/NA	250/NA 4.2/NA
Sine Encoder System	Resolution	–	counts/rev	2,097,152	2,097,152	2,097,152
	Repeatability	–	arc/sec	±0.62	±0.62	±0.62
	Accuracy	–	arc/sec	±26	±26	±26
Resolver System	Resolution ⁽³⁾	–	counts/rev	786,432	786,432	786,432
	Repeatability	–	arc/sec	±1.65	±1.65	±1.65
	Accuracy	–	arc/sec	±140	±140	±140
Mechanical:						
Weight		Wt	lb kg	39.5 17.9	47.5 21.5	63.6 28.8
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	0.0106 0.0144	0.0143 0.0194	0.0222 0.0301
Static Friction adder for sealed units		Tf	lb-ft N-m	2.0 2.7	2.0 2.7	2.0 2.7
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	7,400 3,360	7,400 3,360	7,400 3,360

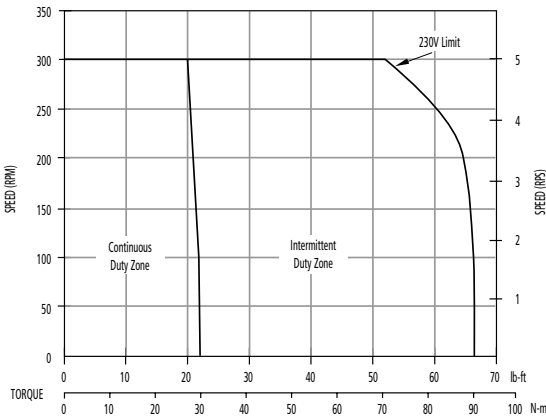
SYSTEM: D081A/D081M with SERVOSTAR CR06/CB06



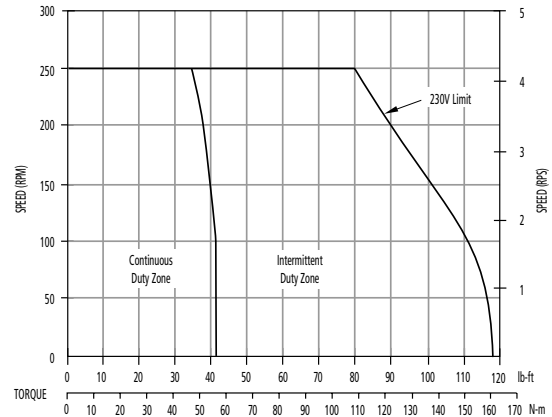
Notes:

- ① For 25°C ambient, multiply Tc by 1.06.
- ② Curves for 230V applicable to single or three phase input power.
- ③ Drive resolver-to-digital converter and encoder equivalent output limits max resolution to 786,532 counts per rev up to 125 rpm, and 196,608 counts per rev above 125 rpm.
- ④ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

SYSTEM: D082A/D082M with SERVOSTAR CR06/CB06



SYSTEM: D083A/D083M with SERVOSTAR CR06/CB06

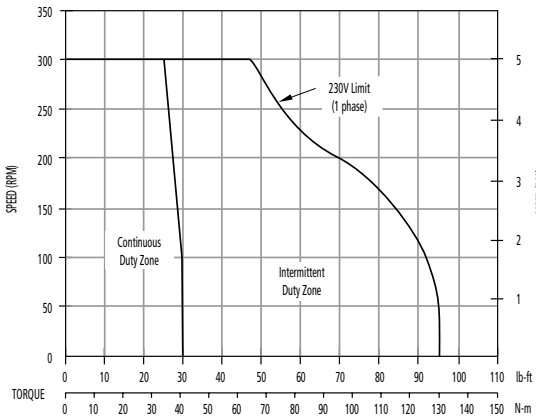


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230 VAC

System Performance:		Symbols	Units	D101A/D101M	D102A/D102M	D103A/D103M
Peak Torque		Tp	lb-ft N-m	95.0 129	155 210	225 305
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	25.5 34.6	46.8 63.4	85.0 115.3
	Resolver	Tc	lb-ft N-m	30.0 40.7	55.0 74.6	100 136
Max. Operating Speed 230V		N max	rpm rps	300 5.0	200 3.3	120 2.0
Sine Encoder System	Resolution	–	counts/rev	2,097,152	2,097,152	2,097,152
	Repeatability	–	arc/sec	±0.62	±0.62	±0.62
	Accuracy	–	arc/sec	±26	±26	±26
Resolver System	Resolution ⁽³⁾	–	counts/rev	1,048,576	1,048,576	1,048,576
	Repeatability	–	arc/sec	± 1.24	± 1.24	± 1.24
	Accuracy	–	arc/sec	± 135	± 135	± 135
Mechanical:						
Weight		Wt	lb kg	69.5 31.5	96.5 43.8	134 60.8
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	0.0511 0.0693	0.0732 0.0992	0.129 0.175
Static Friction adder for sealed units		Tf	lb-ft N-m	2.6 3.5	2.6 3.5	2.6 3.5
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	11,700 5,300	11,700 5,300	11,700 5,300

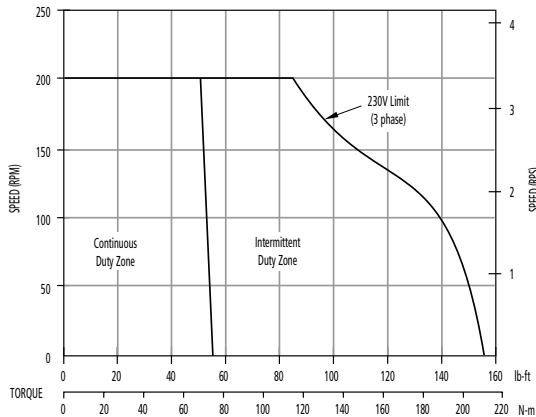
SYSTEM: D101A/D101M with SERVOSTAR CR10/CB10



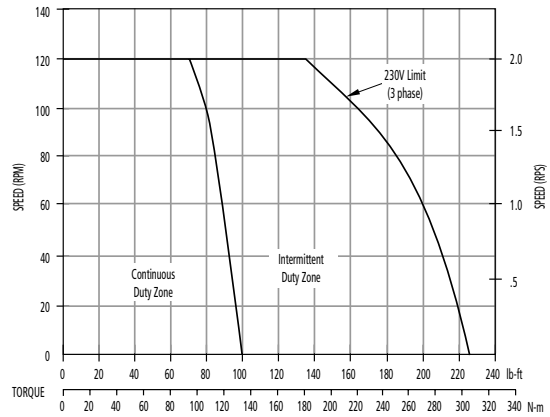
Note:

- ① For 25°C ambient, multiply Tc by 1.06.
- ② Curves for D101, 230V applicable to single or three phase input power. Curves for D102 and D103, 230V require three phase input power.
- ③ Drive resolver-to-digital converter and encoder equivalent output limits max resolution to 1,048,576 counts per rev up to 93 rpm, and 262,144 counts per rev above 94 rpm.
- ④ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

SYSTEM: D102A/D102M with SERVOSTAR CR10/CB10



SYSTEM: D103A/D103M with SERVOSTAR CR10/CB10

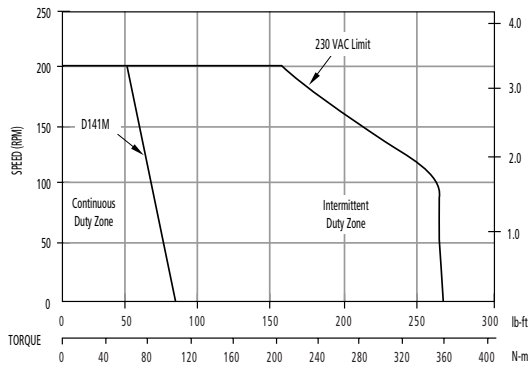


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230 VAC

System Performance:		Symbols	Units	D141M	D142M	D143M
Peak Torque		Tp	lb-ft N-m	271 367	383 519	989 1341
Continuous (1) Torque 40°C	Sine Encoder	Tc	lb-ft	80	135	250
			N-m	108	183	339
Max. Operating Speed 230 V 3 Phase		N max	rpm	200	120	60
			rps	3.3	2.0	1.0
Sine Encoder System	Resolution	–	counts/rev	1,048,576	1,048,576	1,048,576
	Repeatability	–	arc/sec	±1.24	±1.24	±1.24
	Accuracy	–	arc/sec	±27	±27	±27
Mechanical:						
Weight		Wt	lb	131	191	323
			kg	59.4	86.6	146
Rotor Inertia		Jm	lb-ft-sec ²	.120	.202	.400
			kg-m ²	.163	.274	.542
Static Friction adder for sealed units		Tf	lb-ft	2.6	2.6	2.6
			N-m	3.5	3.5	3.5
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf	12,700	12,700	12,700
			kg	5,760	5,760	5,760

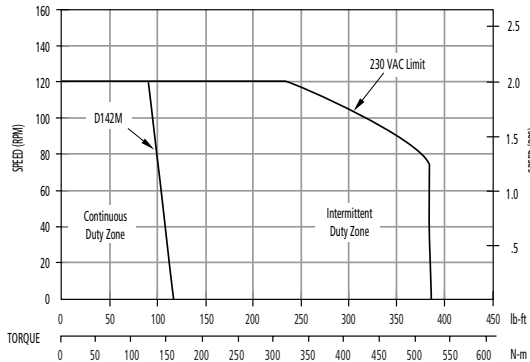
SYSTEM: D141M with SERVOSTAR S614



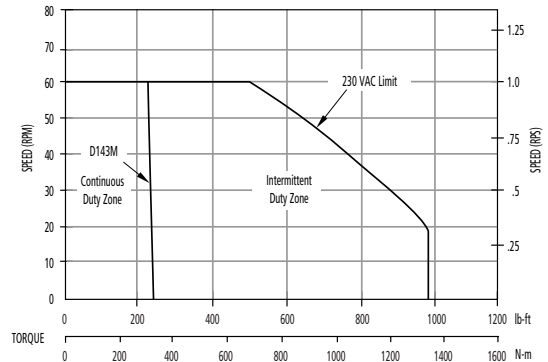
Notes:

- ① For 25°C ambient, multiply by 1.06.
- ② All curves assume three phase input power to SERVOSTAR 600.
- ③ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

SYSTEM: D142M with SERVOSTAR S614



SYSTEM: D143M with SERVOSTAR S620

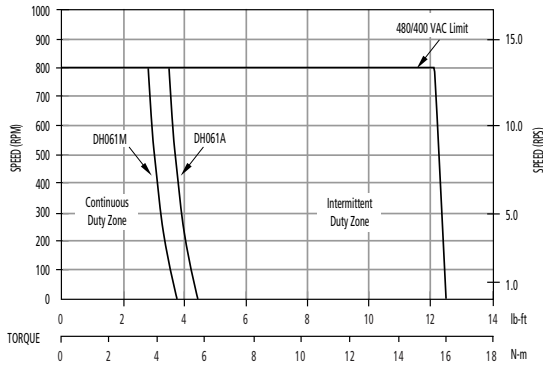


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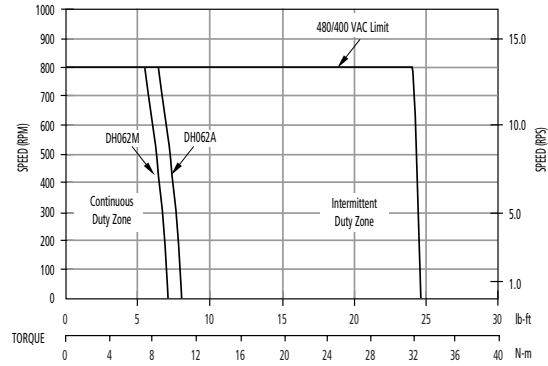
480/400 VAC

System Performance:		Symbols	Units	DH061A/DH061M	DH062A/DH062M	DH063A/DH063M
Peak Torque		Tp	lb-ft N-m	12.5 16.9	24.2 32.8	47.5 64.4
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	3.9 5.3	7.2 9.8	13.1 17.7
	Resolver	Tc	lb-ft N-m	4.3 5.8	8.0 10.8	14.5 19.7
Max. Operating Speed 480/400 V 3 Phase		N max	rpm rps	800 13.3	800 13.3	800 13.3
Sine Encoder System	Resolution	–	counts/rev	1,048,576	1,048,576	1,048,576
	Repeatability	–	arc/sec	± 1.24	± 1.24	± 1.24
	Accuracy	–	arc/sec	± 27	± 27	± 27
Resolver System	Resolution	–	counts/rev	131,072	131,072	131,072
	Repeatability	–	arc/sec	± 10	± 10	± 10
	Accuracy	–	arc/sec	± 270	± 270	± 270
Mechanical:						
Weight		Wt	lb kg	20.8 9.4	25.0 11.3	30.5 13.8
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	0.0045 0.0061	0.0052 0.0071	0.0064 0.0086
Static Friction adder for sealed units		Tf	lb-ft N-m	1.8 2.4	1.8 2.4	1.8 2.4
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	4,500 2,040	4,500 2,040	4,500 2,040

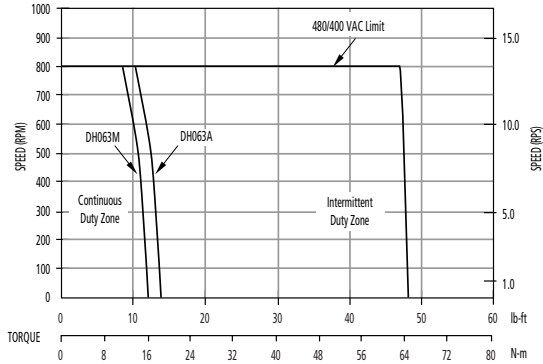
SYSTEM: DH061A/DH061M with SERVOSTAR S610



SYSTEM: DH062A/DH062M with SERVOSTAR S610



SYSTEM: DH063A/DH063M with SERVOSTAR S610



Notes:

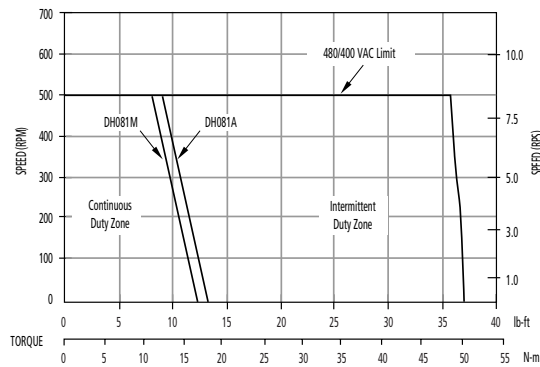
- ① For 25° ambient, multiply Tc by 1.06
- ② All curves assume three phase 400/480 input power.
- ③ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

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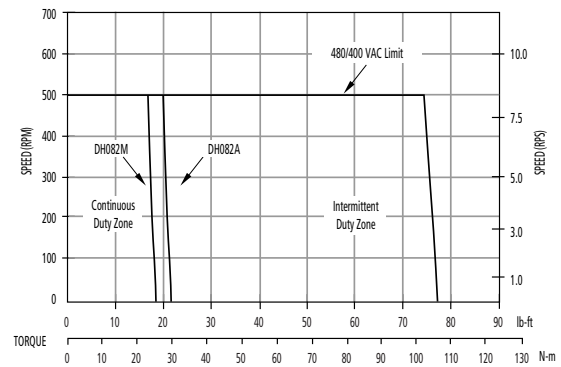
480/400 VAC

System Performance:		Symbols	Units	DH081A/DH081M	DH082A/DH082M	DH083A/DH083M
Peak Torque		Tp	lb-ft N-m	37.6 51.0	77 104	130 177
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	11.7 15.9	19.1 25.9	37.2 50.4
	Resolver	Tc	lb-ft N-m	13.0 17.6	21.2 28.7	41.3 56.0
Max. Operating Speed 230/115 V Single Phase		N max	rpm rps	500/500 8.3/8.3	500/500 8.3/8.3	500/400 8.3/6.7
Sine Encoder System	Resolution	–	counts/rev	1,048,576	1,048,576	1,048,576
	Repeatability	–	arc/sec	± 1.24	± 1.24	± 1.24
	Accuracy	–	arc/sec	± 27	± 27	± 27
Resolver System	Resolution	–	counts/rev	196,608	196,608	196,608
	Repeatability	–	arc/sec	± 6.6	± 6.6	± 6.6
	Accuracy	–	arc/sec	± 140	± 140	± 140
Mechanical:						
Weight		Wt	lb kg	39.5 17.9	47.5 21.5	63.6 28.8
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	0.0106 0.0144	0.0143 0.0194	0.0222 0.0301
Static Friction adder for sealed units		Tf	lb-ft N-m	2.0 2.7	2.0 2.7	2.0 2.7
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	7,400 3,360	7,400 3,360	7,400 3,360

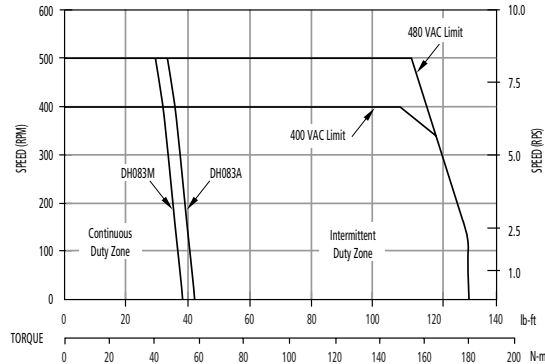
SYSTEM: DH081A/DH081M with SERVOSTAR S610



SYSTEM: DH082A/DH082M with SERVOSTAR S610



SYSTEM: DH083A/DH083M with SERVOSTAR S610



Notes:

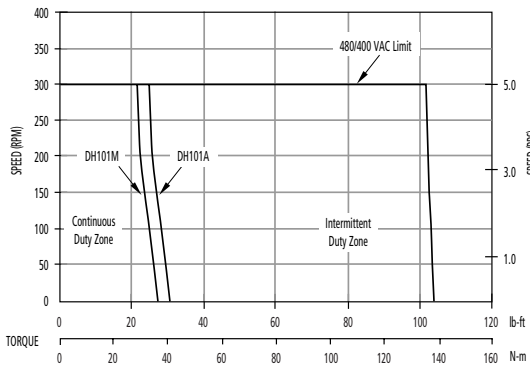
- ① For 25° ambient, multiply Tc by 1.06
- ② All curves assume three phase 400/480 input power.
- ③ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

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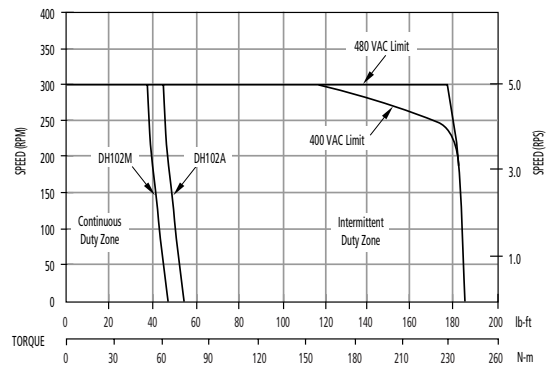
480/400 VAC

System Performance:		Symbols	Units	DH101A/DH101M	DH102A/DH102M	DH103A/DH103M
Peak Torque		Tp	lb-ft N-m	104 141	186 252	370 501
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	25.5 34.6	46.8 63.4	85.0 115.3
	Resolver	Tc	lb-ft N-m	30.0 40.7	55.0 74.6	100 136
Max. Operating Speed 230V		N max	rpm rps	300/300 5.0/5.0	300/300 5.0/5.0	250/200 4.2/3.3
Sine Encoder System	Resolution	–	counts/rev	1,048,576	1,048,576	1,048,576
	Repeatability	–	arc/sec	± 1.24	± 1.24	± 1.24
	Accuracy	–	arc/sec	± 27	± 27	± 27
Resolver System	Resolution ⁽³⁾	–	counts/rev	262,144	262,144	262,144
	Repeatability	–	arc/sec	± 5.0	± 5.0	± 5.0
	Accuracy	–	arc/sec	± 135	± 135	± 135
Mechanical:						
Weight		Wt	lb kg	69.5 31.5	96.5 43.8	134 60.8
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	0.0511 0.0693	0.0732 0.0992	0.129 0.175
Static Friction adder for sealed units		Tf	lb-ft N-m	2.6 3.5	2.6 3.5	2.6 3.5
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	11,700 5,300	11,700 5,300	11,700 5,300

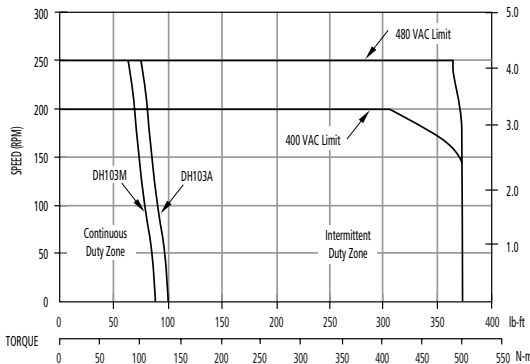
SYSTEM: DH101A/DH101M with SERVOSTAR S610



SYSTEM: DH102A/DH102M with SERVOSTAR S610



SYSTEM: DH103A/DH103M with SERVOSTAR S614



Notes:

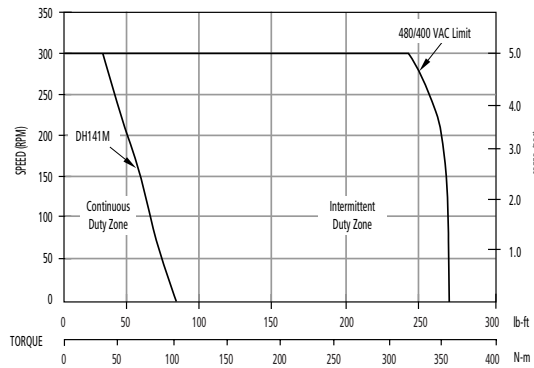
- ① For 25° ambient, multiply Tc by 1.06
- ② All curves assume 3 phase 400/480 input power.
- ③ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

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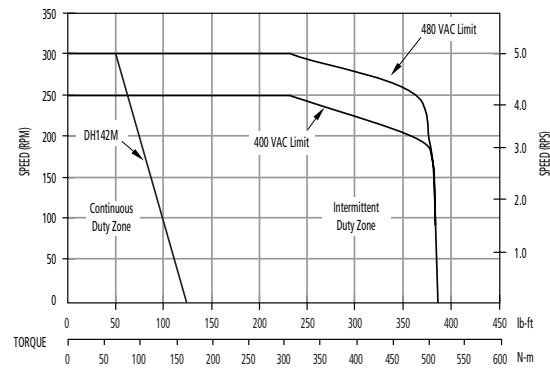
480/400 VAC

System Performance:		Symbols	Units	DH141M	DH142M	DH143M
Peak Torque		Tp	lb-ft N-m	271 367	383 519	989 1341
Continuous ⁽¹⁾ Torque 40°C	Sine Encoder	Tc	lb-ft N-m	80 108	135 183	250 339
Max. Operating Speed 230 V 3 Phase		N max	rpm rps	300/300 5/5	300/250 5/4.2	120/120 2/2
Sine Encoder System	Resolution	–	counts/rev	1,048,576	1,048,576	1,048,576
	Repeatability	–	arc/sec	± 1.24	± 1.24	± 1.24
	Accuracy	–	arc/sec	± 27	± 27	± 27
Mechanical:						
Weight		Wt	lb kg	131 59.4	191 86.6	323 146
Rotor Inertia		Jm	lb-ft-sec ² kg-m ²	.120 .163	.202 .274	.400 .542
Static Friction adder for sealed units		Tf	lb-ft N-m	2.6 3.5	2.6 3.5	2.6 3.5
Max. Dynamic Axial Compression Load (See page 20 for details)		–	lbf kg	12,700 5,760	12,700 5,760	12,700 5,760

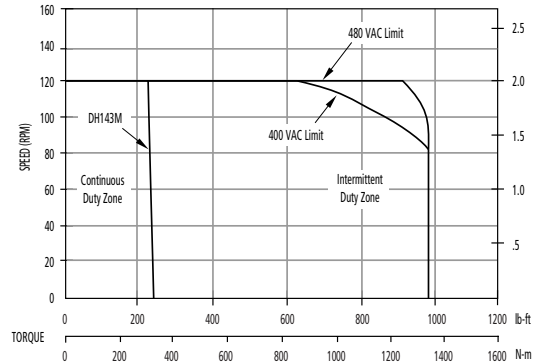
SYSTEM: DH141M with SERVOSTAR S614



SYSTEM: DH142M with SERVOSTAR S614



SYSTEM: DH143M with SERVOSTAR S620

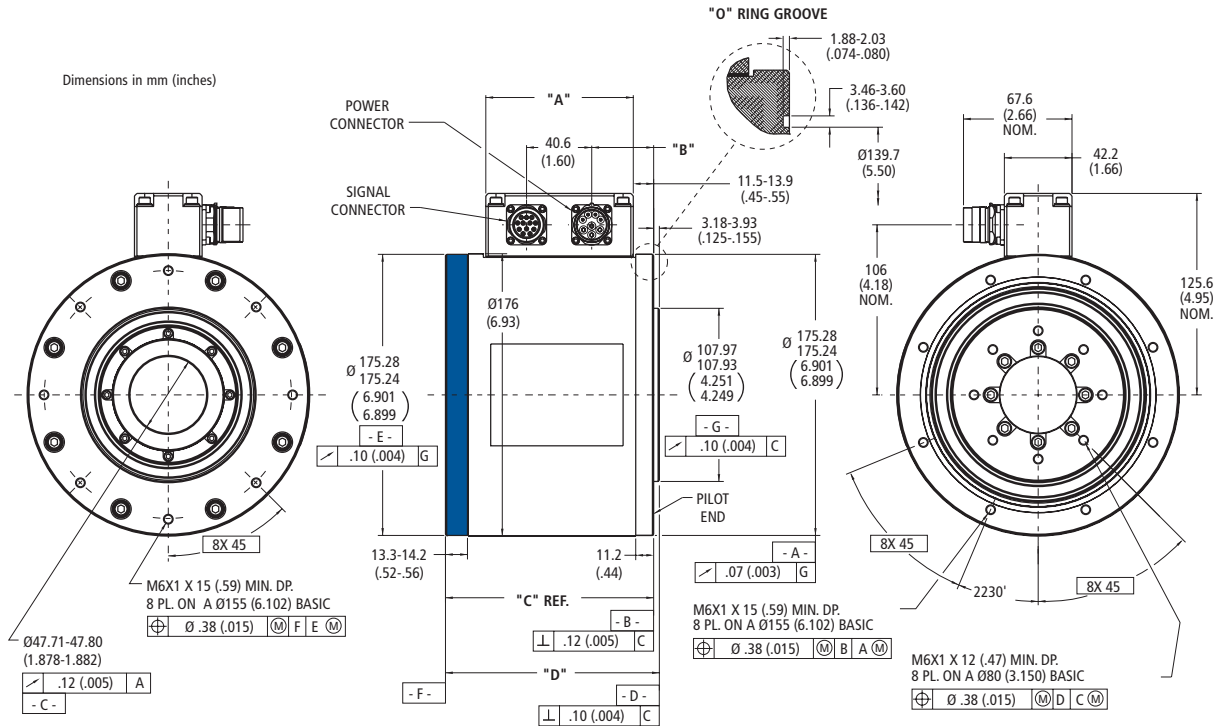


Notes:

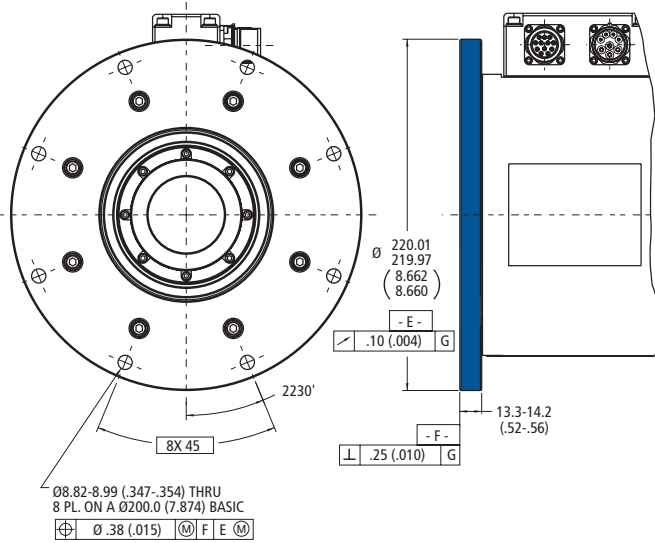
- ① For 25°C ambient, multiply by 1.06.
- ② All curves assume three phase 400/480V input power.
- ③ As with any Kollmorgen product, if there are any questions regarding this information or application of this product, please consult Customer Support and we will be glad to assist you.

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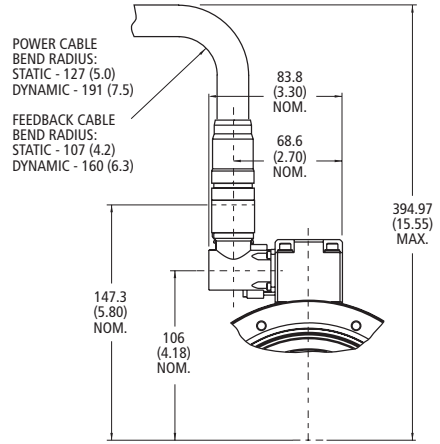
Dimensions in mm (inches)



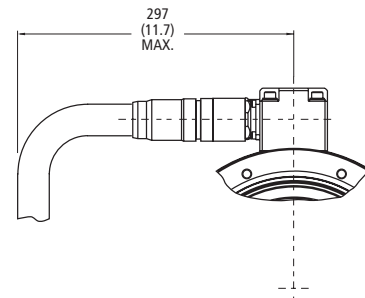
FLANGE OPTION



90 CONNECTOR OPTION



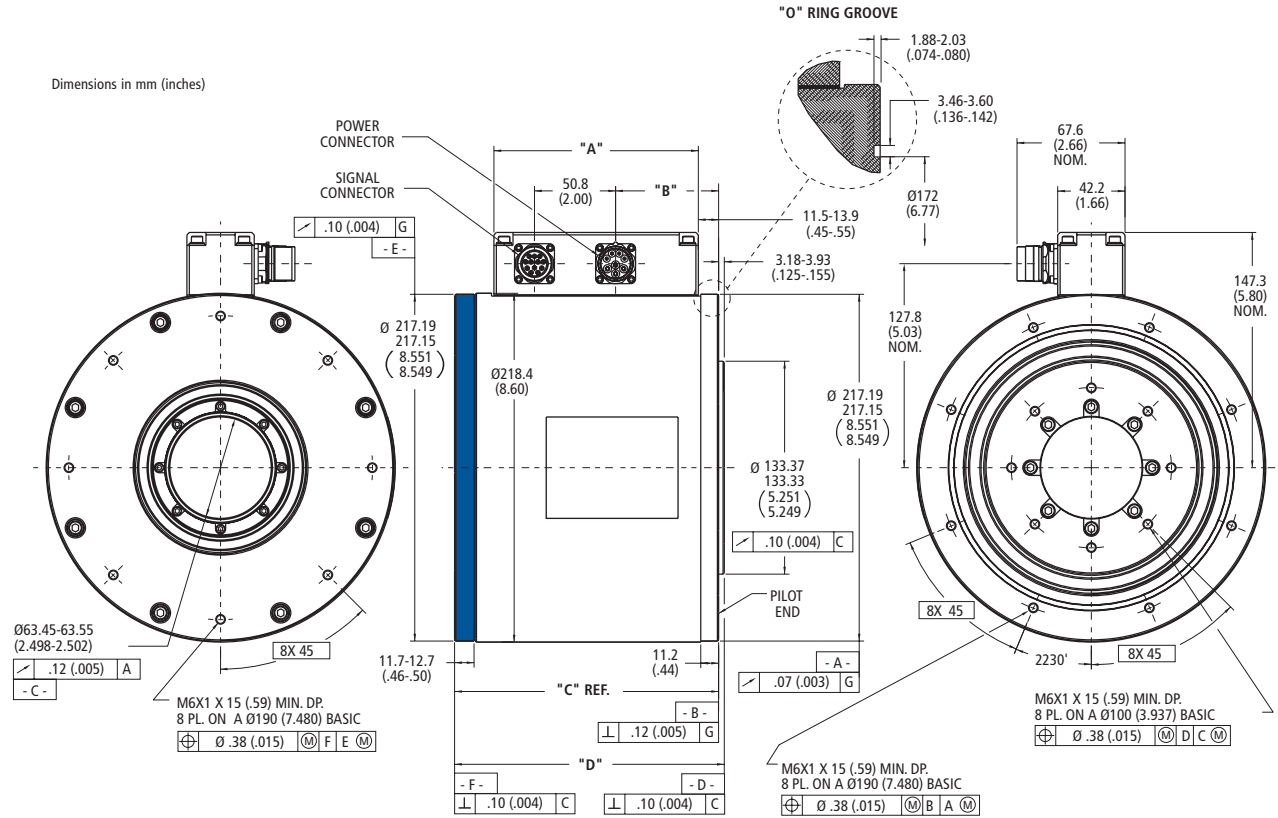
STRAIGHT CONNECTOR OPTION



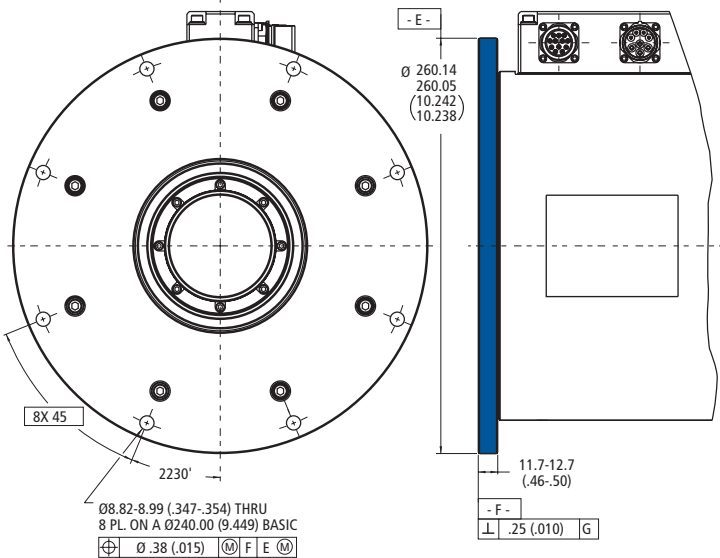
Model	"A"	"B"	"C"	"D"	"E"	
D061	91.9 (3.62)	37.1-40.1 (1.46-1.58)	129.42-130.171 (5.095-5.125)	32.59-134.11 (5.220-5.280)	Resolver	Sine Encoder
D062	103.4 (4.07)	48.6-51.5 (1.91-2.03)	140.85-141.601 (5.545-5.575)	44.02-145.54 (5.660-5.730)	Ø47.71-47.80 (1.878-1.882)	Ø42.88-42.98 (1.688-1.692)
D063	126.2 (4.97)	71.4-74.4 (2.81-2.93)	163.71-164.46 (6.445-6.475)	166.88-168.40 (6.570-6.630)		

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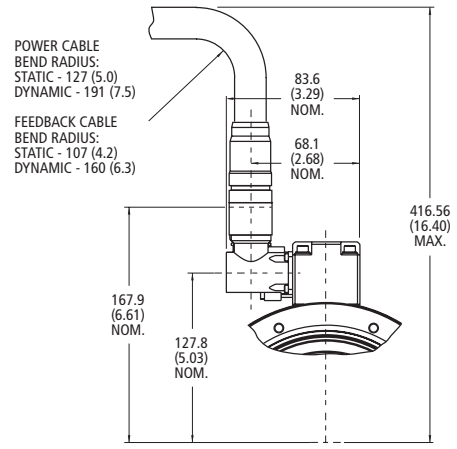
Dimensions in mm (inches)



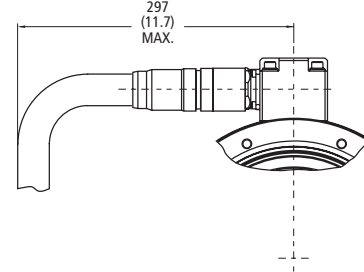
FLANGE OPTION



90 CONNECTOR OPTION



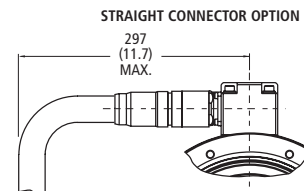
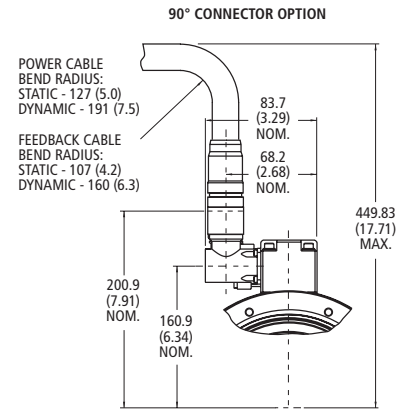
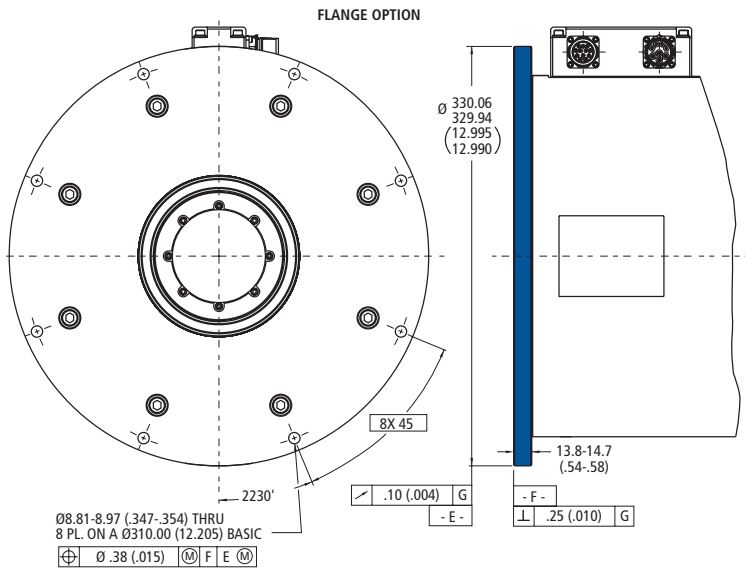
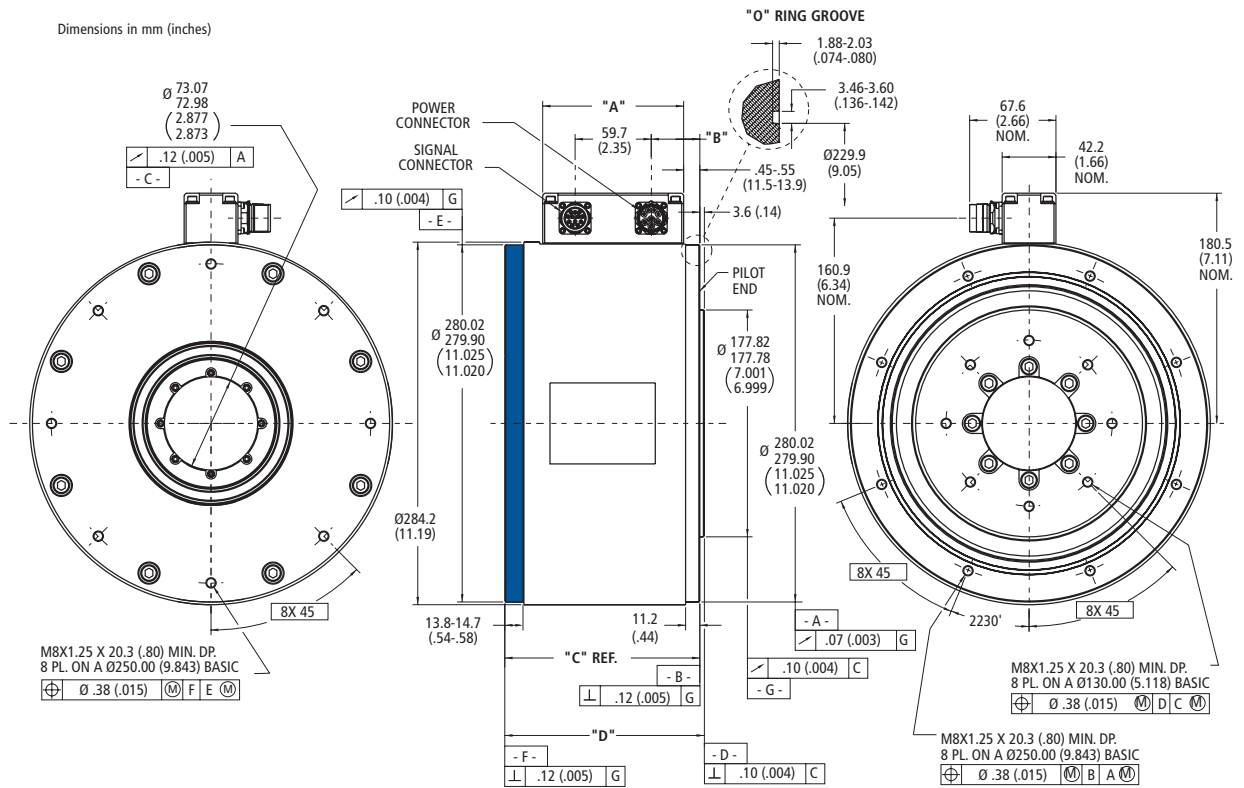
STRAIGHT CONNECTOR OPTION



Model	"A"	"B"	"C"	"D"	"E"	
D081	107.7 (4.24)	42.7-45.7 (1.68-1.80)	144.66-145.41 (5.695-5.725)	147.83-149.35 (5.820-5.880)	Resolver	Sine Encoder
D082	128.0 (5.04)	63.0-66.0 (2.48-2.60)	164.98-165.73 (6.495-6.525)	168.15-169.67 (6.620-6.680)	Ø63.45-63.55 (2.498-2.502)	Ø42.88-42.98 (1.688-1.692)
D083	168.7 (6.64)	71.4-74.4 (4.08-4.20)	163.71-164.46 (8.095-8.125)	166.88-168.40 (8.220-8.280)		

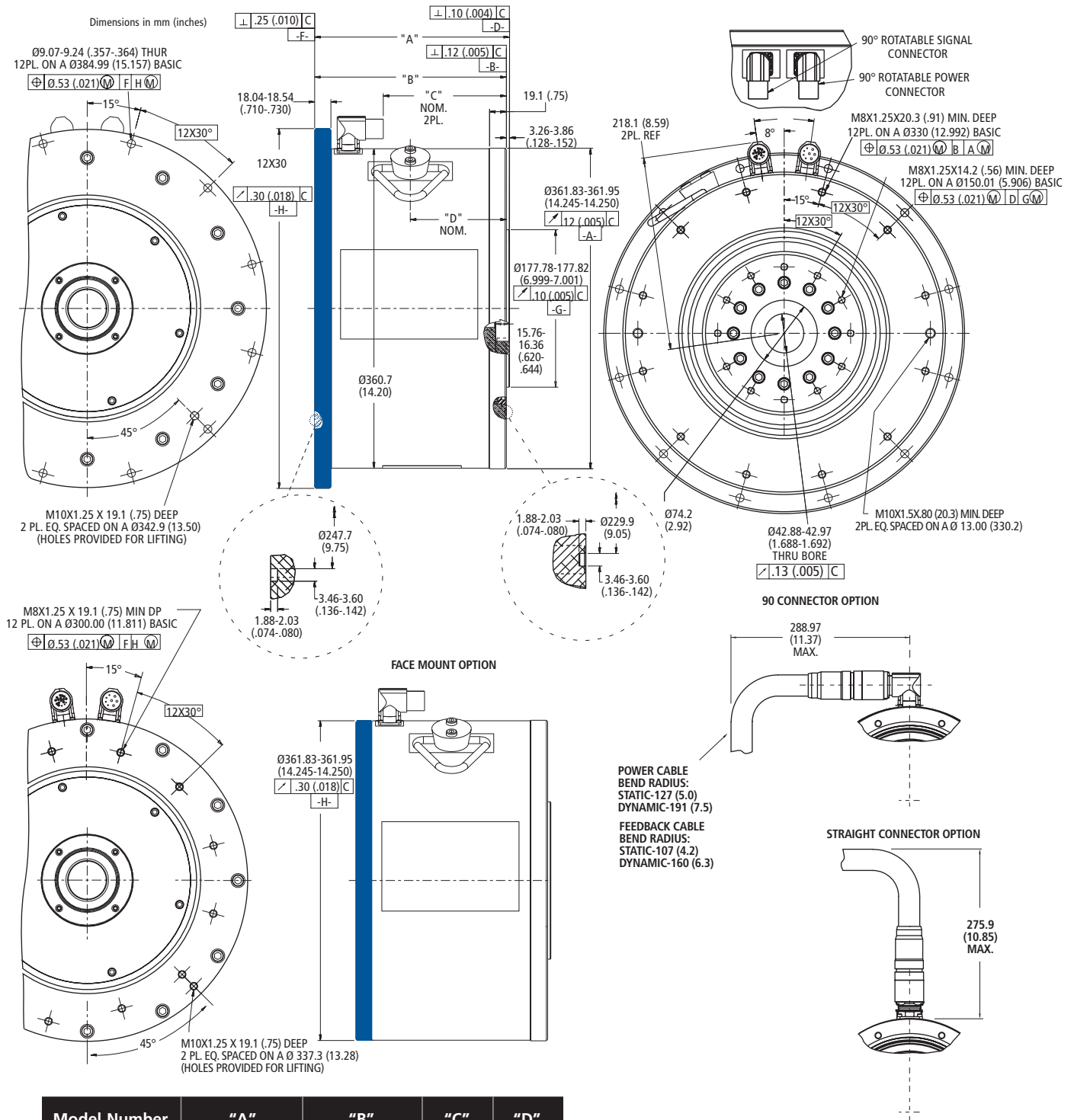
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Dimensions in mm (inches)



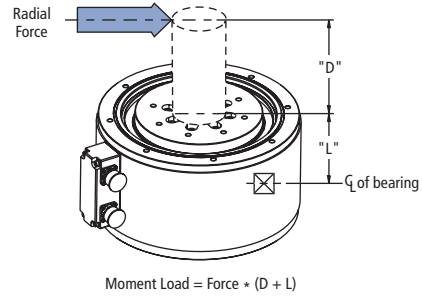
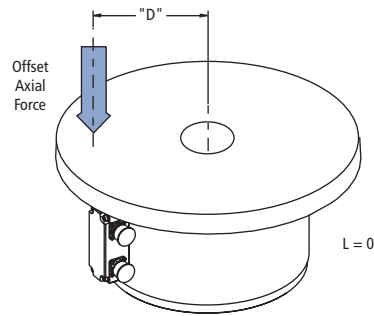
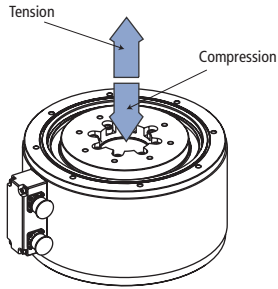
Model	"A"	"B"	"C"	"D"	"E"	
D101	110.5 (4.35)	36.6-39.6 (1.44-1.56)	152.53-153.28 (6.005-6.035)	155.71-157.22 (6.130-6.190)	Resolver	Sine Encoder
D102	142.2 (5.60)	68.4-71.3 (2.69-2.81)	184.28-185.03 (7.255-7.285)	187.46-188.97 (7.380-7.440)	Ø73.07-72.98 (2.877-2.873)	Ø42.88-42.98 (1.688-1.692)
D103	205.7 (8.10)	131.9-134.8 (5.19-5.31)	247.78-248.53 (9.755-9.785)	250.96-252.47 (9.880-9.940)		

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Model Number	"A"	"B"	"C"	"D"
D141	155.92-157.02 (6.138-6.182)	152.66-153.16 (6.010-6.030)	75.5 (2.97)	76.7 (3.02)
D142	219.42-220.52 (8.638-8.682)	216.16-216.66 (8.510-8.530)	138.9 (5.47)	108.5 (4.27)
D143	346.42-347.52 (13.638-13.682)	343.16-343.66 (13.510-13.530)	266.0 (10.47)	172.0 (6.77)

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Maximum Moment Load

Model	Single Bearing		Dual Bearing	
	lb-ft	N-m	lb-ft	N-m
D061	53.3	72.3	71.7	97.2
D062	47.5	64.4	79.5	107.8
D063	43.4	58.9	87.2	118.2
D081	62.6	84.9	113.8	154.3
D082	52.3	70.9	130.6	177.1
D083	39.3	53.3	174.3	236.4
D101	141.9	192.4	322.4	437.2
D102	107.7	146	278.5	377.6
D103	72.6	98.4	304.8	413.3
D141	234	317	472	640
D142	134	182	409	555
D143	N/A	N/A	391	530

Maximum Axial Load Ratings

	lbs	kg
Compression Tension	4500 932	2040 423
	7400 819	3360 371
Compression Tension	11700 1405	5300 637
	11700 1405	5300 637

Application notes:

- ① Axial load ratings **dynamic values** based on an L10 life rating when motor is mounted on a rigid base and running under normal operating conditions. For L10 life ratings for applications where high rotational accuracy is desired or operation during vibration or shock, please contact Customer Support.
- ② Moment load ratings are limited by shaft deflection at the resolver; for sine encoder units please contact Customer Support.
- ③ Standard motor is not designed for repetitive small angle oscillations less than ± 13°. Please contact Customer Support for additional options.
- ④ Motor is not intended to be directly coupled to a load which has it's own two bearing system. A flexible coupling is advised to prevent premature bearing failure in these applications.
- ⑤ Motor may be mounted in any orientation provided the axial (both tension and compression) limits are observed. All applications having moment loads in tension should be reviewed by Customer Support.
- ⑥ All bolts for mounting load and base should be used to ensure stiff coupling.

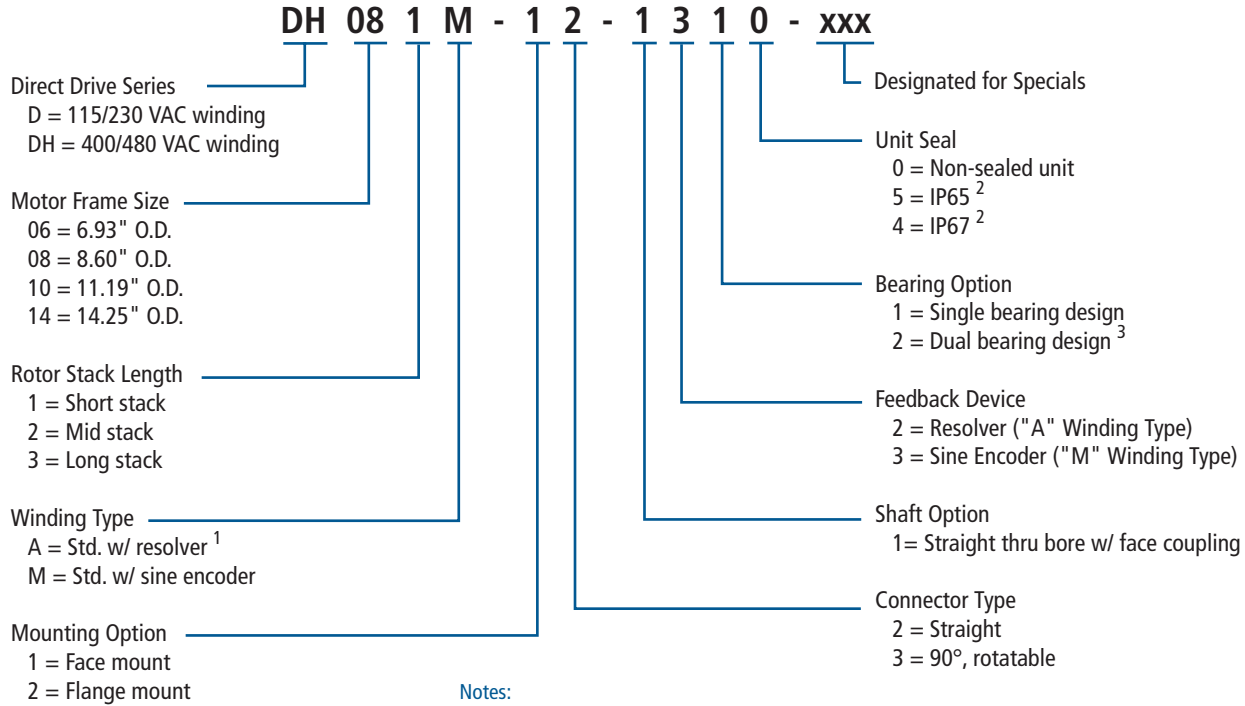
Model	Dim. "L" (in)
D(H)06x	(1.05)
D(H)08x	(1.21)
D(H)10x	(1.58)
D(H)14x	(1.44)

System Cable Sets with SERVOSTAR®

Drive	Sine Encoder	Resolver
SERVOSTAR CD	CS-SS-SHA1HE-xx	CS-SS-RHA1HE-xx
SERVOSTAR S610	CS-SS-S3HG1HE-xx	CS-SS-RHG1HE-xx
SERVOSTAR S614 & S620	CS-SS-S3HG2HE-xx	CS-SS-RHG2HE-xx

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*The Kollmorgen GOLDLINE® DDR system is comprised of three part numbers; motor, drive, and cable set. When ordering, please specify each part number.



Notes:

¹ All models except D14x & DH14x. ² Resolver models only. ³ Standard on D143 & DH143 models.

SERVOSTAR® CD Amplifier Ratings

Model CR/CB	Output Continuous Current Per Phase (RMS/phase) @ 45°C Ambient	Output Peak Current Per Phase (RMS/Phase)	AC Input Line Voltage	Rated Input Power kW	Rated Input Power (kVA) @ 480V	Regen. Option
06	6	18 (.5 sec.)	115 / 230 (1 phase)	1.1	1.4 / 2.8	ERH-26
10	10	20 (2 sec.)	230 (3 phase)	3.7	4.7	ERH-26

SERVOSTAR® 600 Amplifier Ratings

Model	Output Continuous Current Per Phase (RMS/phase)	Output Peak Current Per Phase (5 sec)	Internal Power Dissipation (Watts)	AC Input Line Voltage (3 phase)	Rated Input Power (kVA) @ 480V	Continuous Internal Regen Power (Watts)	Continuous External Regen Power (Watts)
S610	10	20	90	480/400	8.1	200	1,500
S614	14	28	160		11.6	200	1,500
S620	20	40	200		16.6	200	1,500

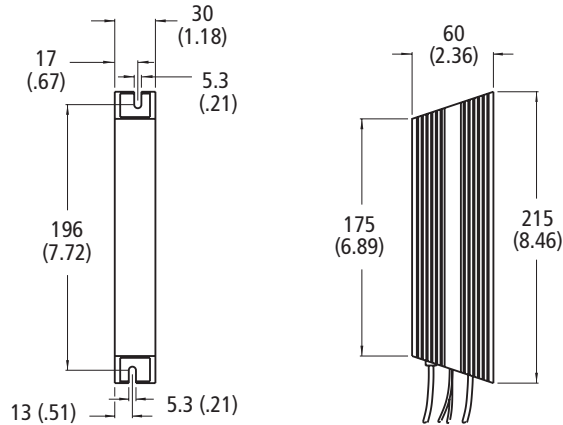
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Resistive Regeneration Sizing

Shunt regeneration is required to dissipate energy that is pumped back into the DC bus during load deceleration. The amount of shunt regeneration required is a function of the sum of simultaneously decelerating loads. The loads need to be defined in terms of system inertia, maximum speed, and deceleration time. In addition, the duty cycle must be known. Application Note A-SU-001-H details a calculation method to determine proper regeneration sizing.

Model	Watts	Ohms
ERH-26	200	20



Transformer Sizing (Required only for voltage matching)

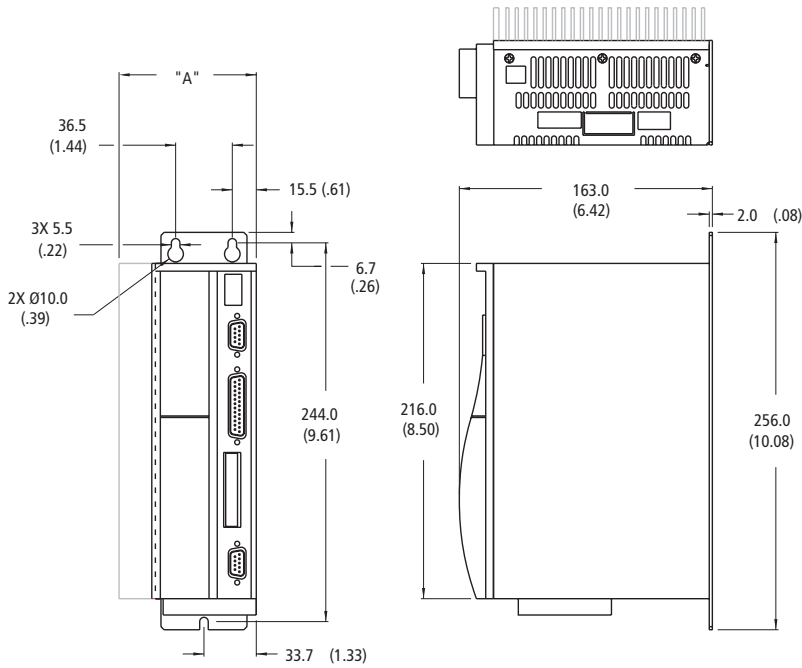
The SERVOSTAR CD can be connected to a line. Built-in soft-start circuitry protects power supply components and eliminates nuisance tripping of breakers or fuse blowing due to large in-rush currents. Transformers are only required for voltage matching purposes. In this case, the transformer should have a 115 or 230 VAC secondary depending on the operating voltage. The kVA rating of the transformer should take into account not only the servo output load requirements but also losses in the system and power factor. For single phase operated systems such as these, the transformer kVA ratings should be two times the CD amplifier output power rating. For three phase systems, the transformer kVA should be 1.5 times the CD amplifier output power rating.

Model CR/CB	Transformer kVA rating
06	4.4 (1 phase)
10	5.6 (3 phase)

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CR/CB - 06/10 Dimensions

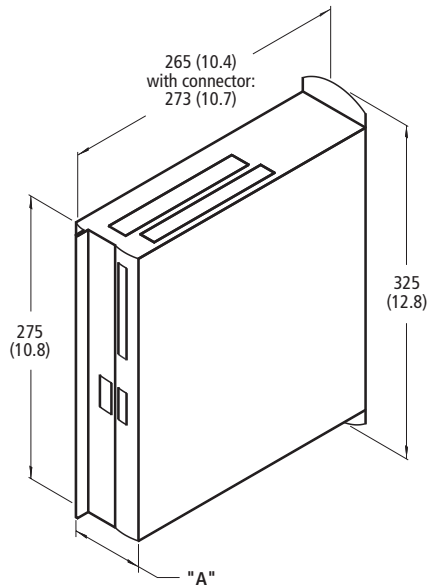
Dimensions in mm (inches)



Size	Dim. "A"
6 AMP	88.4 (3.48)
10 AMP	99.0 (3.90)

S610, S614 & S620 Dimensions

Dimensions in mm (inches)



Model	Size	Dim "A"
S610	10 AMP	70 (2.8)
S614	14 AMP	100 (3.9)
S620	20 AMP	120 (4.7)

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