

INTRODUCTION BENEFITS OF USING DDR (DIRECT DRIVE ROTARY) TECHNOLOGY

Kollmorgen GOLDLINE® DDR SERIES MOTORS

Kollmorgen's 50 years of electromagnetic and electromechanical design expertise is packed into the 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 DDR becomes a high performance, zero maintenance, servo solution.

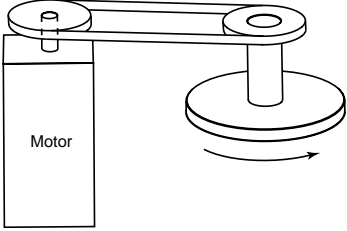
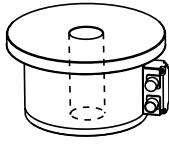
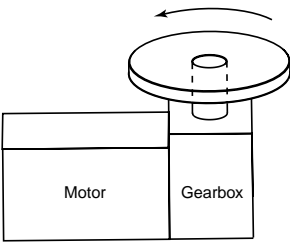
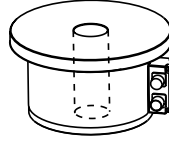
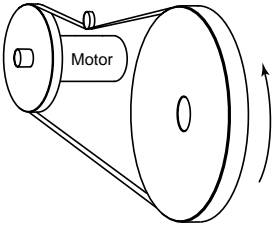
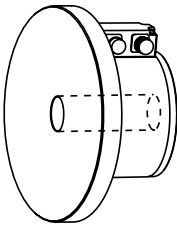
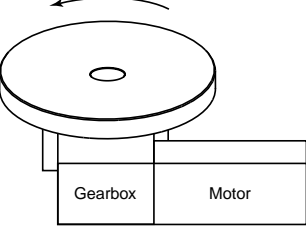
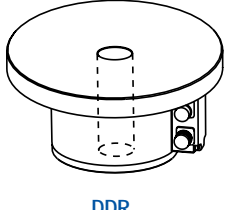
The DDR can be used as a flexible indexer, providing programmable, rapid, indexing far exceeding the throughput of conventional mechanical or variable reluctance technology indexers.

It can be used for replacing mechanical transmissions such as gearboxes, timing belts, and rack and pinion reducers. DDR combines the high torque of a Direct Drive Rotary design with the high speed of conventional servos. This opens up a wide range of applications not previously available to Direct Drive Rotary technology.

The DDR is the latest in a series of product innovations from the worldwide leader in Direct Drive Rotary motor products....Kollmorgen.

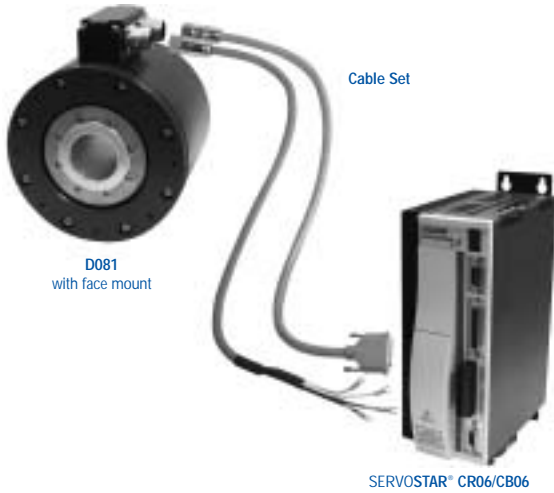
DIRECT DRIVE ROTARY

BENEFITS OF USING DDR (DIRECT DRIVE ROTARY) TECHNOLOGY

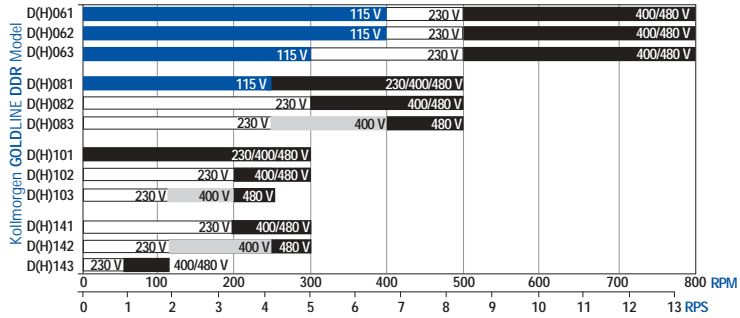
APPLICATION PROBLEM	SOLUTION	BENEFITS
 <p>Motor</p>	 <p>DDR</p>	<p>Belt/pulley</p> <ul style="list-style-type: none"> • Zero maintenance • No belt adjustment/replacement • No belt compliance • Better servo performance • Clean mechanical assembly • Flat profile • Quiet • Reduced number of parts • Hollow shaft
 <p>Motor Gearbox</p>	 <p>DDR</p>	<ul style="list-style-type: none"> • Zero maintenance • No gearbox lubrication • No gearbox backlash • Better servo performance • Flat Profile • Quiet • Hollow shaft
 <p>Motor</p>	 <p>DDR</p>	<p>Large Vertical Wheel</p> <ul style="list-style-type: none"> • 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
 <p>Gearbox Motor</p>	 <p>DDR</p>	<p>Rotary Indexer</p> <ul style="list-style-type: none"> • Zero maintenance • No gearbox lubrication • No gearbox backlash • Better servo performance • Quiet • Reduced number of parts • Hollow shaft

DDR SYSTEM

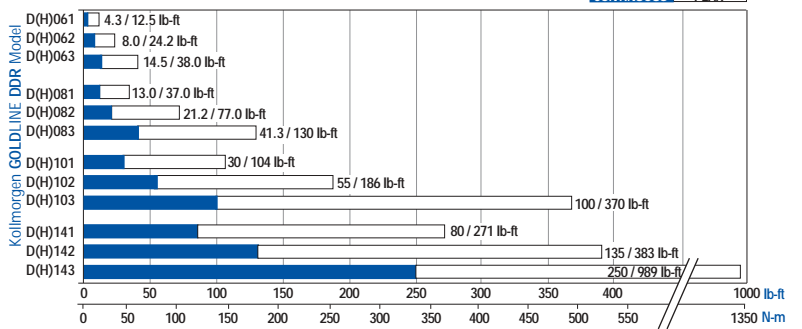
Kollmorgen GOLDLINE® DDR Series Motor Systems



MAXIMUM SPEED BY MODEL



PEAK AND CONTINUOUS TORQUE BY MODEL



Features

Kollmorgen GOLDLINE® DDR Series Motors

Elimination of gearbox

Elimination of belts

High torque density permanent magnet design provides more speed and torque vs variable reluctance motors

Large through bore

Speeds up to 800 rpm

High Position Resolution (up to 2,097,152 counts per revolution)

Wide range of size and torque

Peak torque up to 990 lb-ft

Axial loading up to 12,700 lbs

Moment loading up to 472 lb-ft

Mix/match motors/drives

Benefits

Zero maintenance, smoother velocity, higher bandwidth, quiet (reduced, audible noise)

Zero maintenance, higher bandwidth

Faster indexing, lower heat generation

Run process fluids, pneumatics, and electrical through center of motor

More than just an indexer, DDR can be used for continuous velocity applications

Repeatability down to ±0.62 arc.sec

Cover any DDR application

Rapid indexing of large inertia loads

Can carry heavy loads for indexing

Operate motor with significant offset loads

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		

Note:
Refer to pages 28-29 for SERVOSTAR CD information.
Refer to pages 34-35 for SERVOSTAR 600 information.

RATINGS AND CHARACTERISTICS, 115 and 230 VAC

D06X & D08X SERIES MOTORS	PARAMETER		SYMBOL	UNITS	D061A/061M	D062A/062M	D063A/063M	D081A/081M	D082A/082M	D083A/083M
	Peak Torque		T _p	N-m (lb-ft)	16.9 (12.5)	32.8 (24.2)	51.5 (38)	43.4 (32)	92.2 (68)	160 (118)
	Continuous ^① Sine Encoder		T _c	N-m (lb-ft)	5.3 (3.9)	9.8 (7.2)	17.7 (13.1)	15.9 (11.7)	25.9 (19.1)	50.4 (37.2)
	Torque 40°C	Resolver	T _c	N-m (lb-ft)	5.8 (4.3)	10.8 (8.0)	19.7 (14.5)	17.6 (13.0)	28.7 (21.2)	56 (41.3)
	Max Operating Speed									
	230/115 V Single Phase ^②		N _{MAX}	rps-rpm	8.3/6.7-500/400	8.3/6.7-500/400	8.3/5.0-500/300	8.3/4.2-500/250	5.0/NA-300/NA	4.2/NA-250/NA
	Sine Encoder	Resolution	-	counts/rev	2,097,152	2,097,152	2,097,152	2,097,152	2,097,152	2,097,152
	System	Repeatability	-	arc • sec	±0.62	±0.62	±0.62	±0.62	±0.62	±0.62
		Accuracy	-	arc • sec	±26	±26	±26	±26	±26	±26
		Resolver	Resolution ^③	-	counts/rev	524,288	524,288	524,288	786,432	786,432
System	Repeatability	-	arc • sec	±2.48	±2.48	±2.48	±1.65	±1.65	±1.65	
	Accuracy	-	arc • sec	±270	±270	±270	±140	±140	±140	
MECHANICAL DATA										
Weight		W _T	kg (lb)	9.4 (20.8)	11.3 (25.0)	13.8 (30.5)	17.9 (39.5)	21.5 (47.5)	28.8 (63.6)	
Rotor Inertia		J _M	kg-m ² (lb-ft-s ²)	0.0061 (0.0045)	0.0071 (0.0052)	0.0086 (0.0064)	0.0144 (0.0106)	0.0194 (0.0143)	0.0301 (0.0222)	
Static Friction										
adder for sealed units		T _F	N-m (lb-ft)	2.4 (1.8)	2.4 (1.8)	2.4 (1.8)	2.7 (2.0)	2.7 (2.0)	2.7 (2.0)	
Max. Dynamic Axial										
Compression Load		-	kg (lbf)	2,040 (4,500)	2,040 (4,500)	2,040 (4,500)	3,360 (7,400)	3,360 (7,400)	3,360 (7,400)	
D10X & D14X SERIES MOTORS	PARAMETER		SYMBOL	UNITS	D101A/101M	D102A/102M	D102A/102M	D141M	D142M	D143M
	Peak Torque		T _p	N-m (lb-ft)	129 (95)	210 (155)	305 (225)	367 (271)	519 (383)	1341 (989)
	Continuous ^① Sine Encoder		T _c	N-m (lb-ft)	34.6 (25.5)	63.4 (46.8)	115.3 (85)	108 (80)	183 (135)	339 (250)
	Torque 40°C	Resolver	T _c	N-m (lb-ft)	40.7 (30)	74.6 (55)	136 (100)	-	-	-
	Max Operating Speed									
	230 V Single Phase ^②		N _{MAX}	rps-rpm	5.0-300	3.3-200	2.0-120	3.3-200	2.0-120	1.0-60
	Sine Encoder	Resolution	-	counts/rev	2,097,152	2,097,152	2,097,152	1,048,576	1,048,576	1,048,576
	System	Repeatability	-	arc • sec	±0.62	±0.62	±0.62	±1.24	±1.24	±1.24
		Accuracy	-	arc • sec	±26	±26	±26	±27	±27	±27
		Resolver	Resolution ^③	-	counts/rev	1,048,576	1,048,576	1,048,576	-	-
System	Repeatability	-	arc • sec	±1.24	±1.24	±1.24	-	-	-	
	Accuracy	-	arc • sec	±135	±135	±135	-	-	-	
MECHANICAL DATA										
Weight		W _T	kg (lb)	31.5 (69.5)	43.8 (96.5)	60.8 (134)	131-59.4	86.6 (191)	146 (323)	
Rotor Inertia		J _M	kg-m ² (lb-ft-s ²)	0.0693 (0.0511)	0.0992 (0.0732)	0.175 (0.129)	0.146 (0.108)	0.248 (0.183)	0.477 (0.352)	
Static Friction										
adder for sealed units		T _F	N-m (lb-ft)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	
Max. Dynamic Axial										
Compression Load		-	kg (lbf)	5,300 (11,700)	5,300 (11,700)	5,300 (11,700)	5,760 (12,700)	5,760 (12,700)	5,760 (12,700)	

RATINGS AND CHARACTERISTICS, 400 and 480 VAC

DH06X & DH08X SERIES MOTORS	PARAMETER		SYMBOL	UNITS	DH061A/DH061M	DH062A/DH062M	DH063A/DH063M	DH081A/DH081M	DH082A/DH082M	DH083A/DH083M
	Peak Torque		T _p	N-m (lb-ft)	16.9 (12.5)	32.8 (24.2)	64.4 (47.5)	51.0 (37.6)	104 (77)	177 (130)
	Continuous ^① Sine Encoder		T _c	N-m (lb-ft)	5.3 (3.9)	9.8 (7.2)	17.7 (13.1)	15.9 (11.7)	25.9 (19.1)	50.4 (37.2)
	Torque 40°C	Resolver	T _c	N-m (lb-ft)	5.8 (4.3)	10.8 (8.0)	19.7 (14.5)	17.6 (13.0)	28.7 (21.2)	56 (41.3)
	Max Operating Speed									
	400/480 V Single Phase ^②		N _{MAX}	rps-rpm	13.3-800	13.3-800	13.3-800	8.3/8.3-500/500	8.3/8.3-500/500	8.3/6.7-500/400
	Sine Encoder	Resolution	-	counts/rev	1,048,576	1,048,576	1,048,576	1,048,576	1,048,576	1,048,576
	System	Repeatability	-	arc • sec	±1.24	±1.24	±1.24	±1.24	±1.24	±1.24
		Accuracy	-	arc • sec	±27	±27	±27	±27	±27	±27
		Resolver	Resolution ^③	-	counts/rev	131,072	131,072	131,072	196,608	196,608
System	Repeatability	-	arc • sec	±10	±10	±10	±6.6	±6.6	±6.6	
	Accuracy	-	arc • sec	±270	±270	±270	±140	±140	±140	
MECHANICAL DATA										
Weight		W _T	kg (lb)	9.4 (20.8)	11.3 (25.0)	13.8 (30.5)	17.9 (39.5)	21.5 (47.5)	28.8 (63.6)	
Rotor Inertia		J _M	kg-m ² (lb-ft-s ²)	.0061 (0.0045)	0.0071 (0.0052)	0.0086 (0.0064)	0.0144 (0.0106)	0.0194 (0.0143)	0.0301 (0.0222)	
Static Friction										
adder for sealed units		T _F	N-m (lb-ft)	2.4 (1.8)	2.4 (1.8)	2.4 (1.8)	2.7 (2.0)	2.7 (2.0)	2.7 (2.0)	
Max. Dynamic Axial										
Compression Load		-	kg (lbf)	2,040 (4,500)	2,040 (4,500)	2,040 (4,500)	3,360-7,400	3,360-7,400	3,360-7,400	
DH10X & DH14X SERIES MOTORS	PARAMETER		SYMBOL	UNITS	DH101A/DH101M	DH102A/DH102M	DH103A/DH103M	DH141M	DH142M	DH143M
	Peak Torque		T _p	N-m (lb-ft)	141 (104)	252 (186)	501 (370)	367 (271)	519 (383)	1341 (989)
	Continuous ^① Sine Encoder		T _c	N-m (lb-ft)	34.6 (25.5)	63.4 (46.8)	115.3 (85)	108 (80)	183 (135)	339 (250)
	Torque 40°C	Resolver	T _c	N-m (lb-ft)	40.7 (30)	74.6 (55)	136 (100)	-	-	-
	Max Operating Speed									
	400/480 V Single Phase ^②		N _{MAX}	rps-rpm	5.0/5.0-300/300	5.0/5.0-300/300	4.2/3.3-250/200	5/5-300/300	5/4.2-300/250	2/2-120/120
	Sine Encoder	Resolution	-	counts/rev	1,048,576	1,048,576	1,048,576	1,048,576	1,048,576	1,048,576
	System	Repeatability	-	arc • sec	±1.24	±1.24	±1.24	±1.24	±1.24	±1.24
		Accuracy	-	arc • sec	±27	±27	±27	±27	±27	±27
		Resolver	Resolution ^③	-	counts/rev	262,144	262,144	262,144	-	-
System	Repeatability	-	arc • sec	±5.0	±5.0	±5.0	-	-	-	
	Accuracy	-	arc • sec	±135	±135	±135	-	-	-	
MECHANICAL DATA										
Weight		W _T	kg (lb)	31.5 (69.5)	43.8 (96.5)	60.8 (134)	53.5 (118)	76.2 (168)	123 (272)	
Rotor Inertia		J _M	kg-m ² (lb-ft-s ²)	0.0693 (0.0511)	0.0992 (0.0732)	0.175 (0.129)	0.146 (0.108)	0.248 (0.183)	0.477 (0.352)	
Static Friction										
adder for sealed units		T _F	N-m (lb-ft)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	3.5 (2.6)	
Max. Dynamic Axial										
Compression Load		-	kg (lbf)	5,300 (11,700)	5,300 (11,700)	5,300 (11,700)	5,760 (12,700)	5,760 (12,700)	5,760 (12,700)	

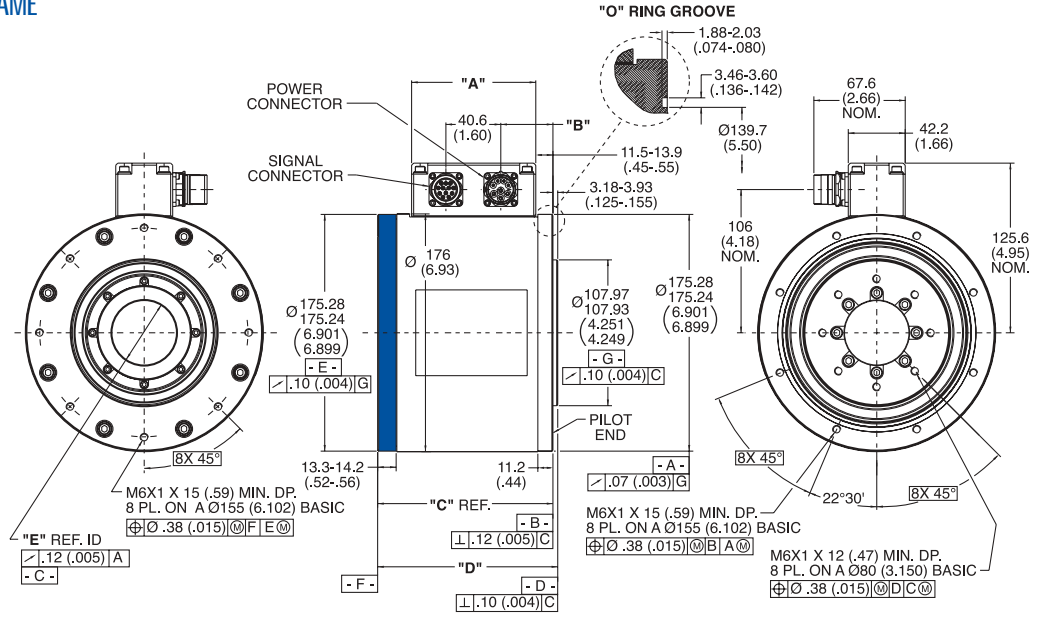
Note:

① For 25° ambient, multiply T_c by 1.06 | ② Curves for D101, 230 V applicable to single or three phase input power. Curves for D102 and D103, 230 V 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 with Danaher Motion Customer Support and we will be glad to assist you.

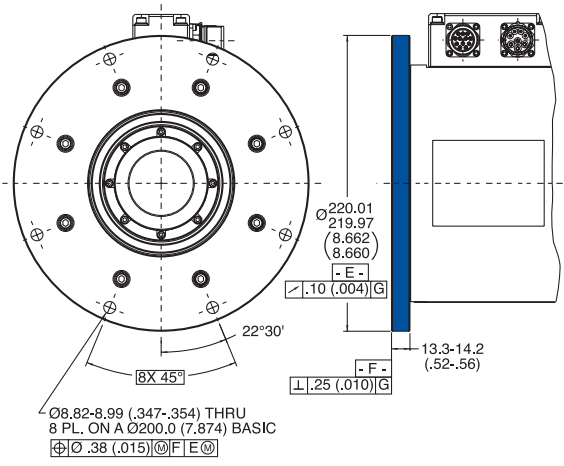
DDR-D(H)06x FRAME

Kollmorgen GOLDLINE® DDR Series Motors

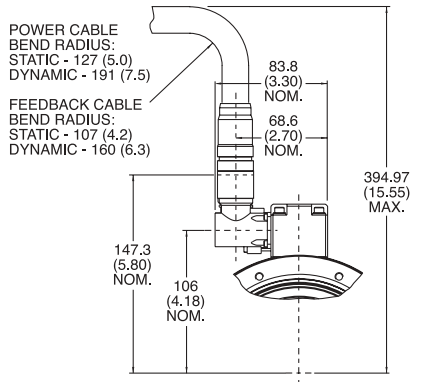
D(H)06x FRAME
mm (in)



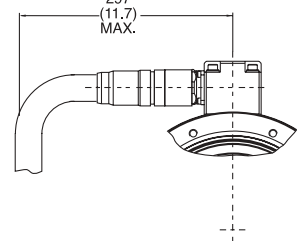
FLANGE OPTION



90° CONNECTOR OPTION

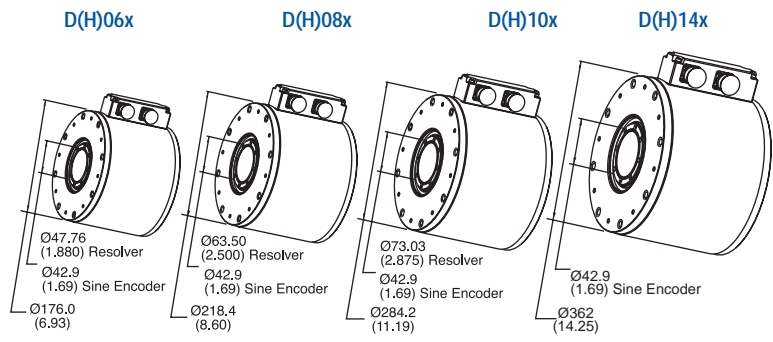


STRAIGHT CONNECTOR OPTION



Model	"A"	"B"	"C"	"D"	"E"	
					Resolver	Sine Encoder
D(H)061	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)		
D(H)062	103.4 (4.07)	48.6-51.5 (1.91-2.03)	140.85-141.601 (5.545-5.575)	44.02-145.54 (5.670-5.730)	Ø47.71-47.80 (1.878-1.882)	Ø42.88-42.98 (1.688-1.692)
D(H)063	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)		

MOTOR OUTSIDE / INSIDE DIAMETERS BY MODEL

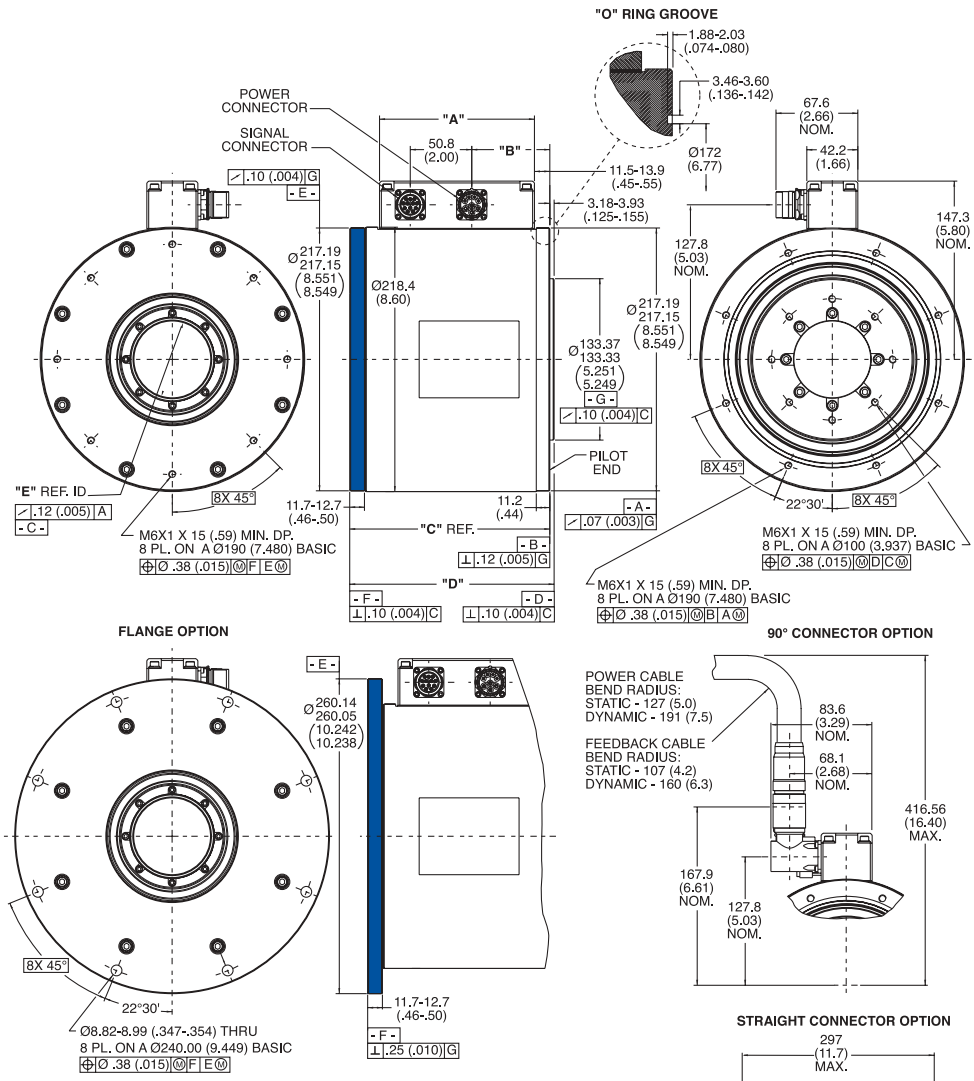


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DDR-D(H)08x FRAME

Kollmorgen GOLDLINE® DDR Series Motors

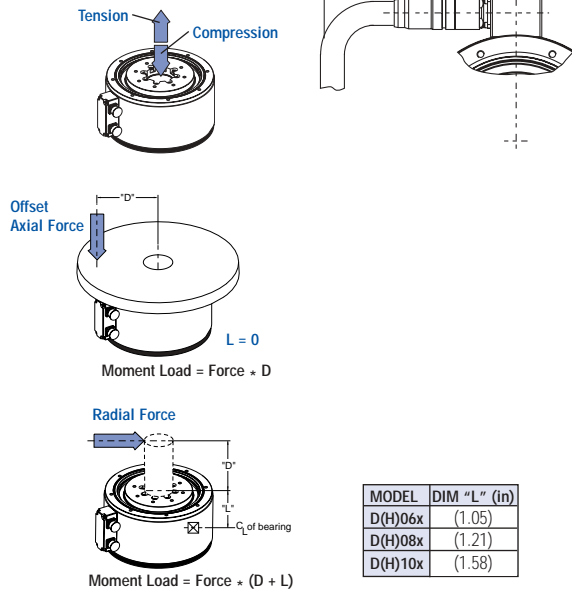
D(H)08x FRAME
mm (in)



Model	"A"	"B"	"C"	"D"	"E"	
					Resolver	Sine Encoder
D(H)081	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)		
D(H)082	128.0 (5.04)	63-66 (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 (1.688-1.6920)
D(H)083	168.7 (6.64)	103.7-106.6 (4.08-4.20)	205.62-206.37 (8.095-8.125)	208.79-210.31 (8.220-8.280)		

Model	Maximum Moment Load		Maximum Axial Load Ratings	
	Single Bearing N-m (lb-ft)	Dual Bearing N-m (lb-ft)	Compression	Tension
061	72.3 (53.3)	97.2 (71.7)	2040 (4500)	423 (932)
062	64.4 (47.5)	107.8 (79.5)		
063	58.9 (43.4)	118.2 (87.2)		
081	84.9 (62.6)	154.3 (113.8)	3360 (7400)	371 (819)
082	70.9 (52.3)	177.1 (130.6)		
083	53.3 (39.3)	236.4 (174.3)		
101	192.4 (141.9)	437.2 (322.4)	5300 (11,700)	637 (1,405)
102	146 (107.7)	377.6 (278.5)		
103	98.4 (72.6)	413.3 (304.8)		
141	317 (234)	640 (472)	5,760 (12,700)	812 (1,790)
142	182 (134)	555 (409)		
143	N/A (N/A)	530 (391)		

All numbers are based on L10 life rating.

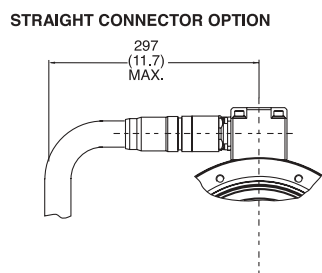
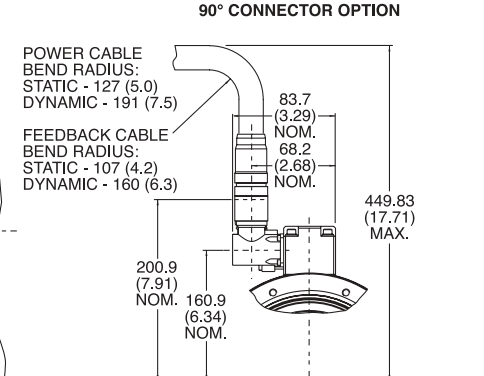
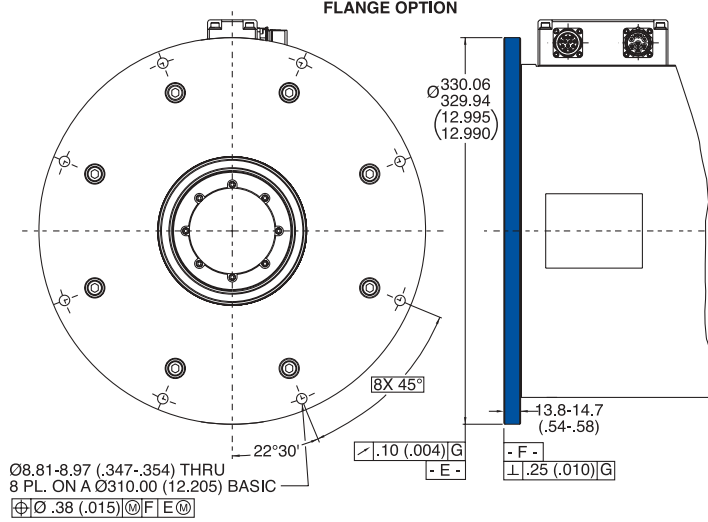
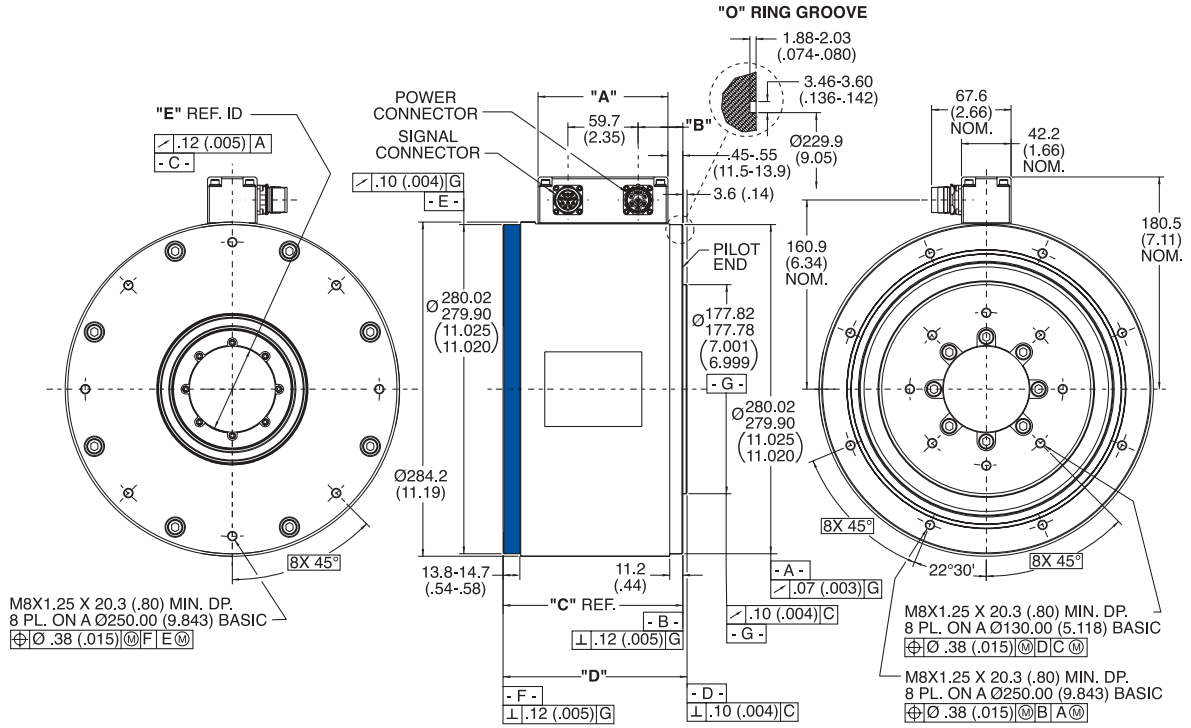


DDR-D(H)10x FRAME

Kollmorgen GOLDLINE® DDR Series Motors

D(H)10x FRAME

mm (in)



Model	"A"	"B"	"C"	"D"	"E"	
					Resolver	Sine Encoder
D(H)101	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)		
D(H)102	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)
D(H)103	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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INTRODUCTION BENEFITS OF USING DDL (DIRECT DRIVE LINEAR) TECHNOLOGY

THE DIRECT DRIVE LINEAR (DDL) STORY

What is direct drive? Very simply it is the direct coupling of a linear motor (such as the Kollmorgen **PLATINUM**® DDL) to the driven load. With this configuration, all mechanical transmissions, such as ball/lead screws, rack & pinions, belts/pulleys, and gearboxes disappear. This in turn eliminates backlash and compliance and other problems associated with these mechanisms.

Kollmorgen **PLATINUM** DDL motors have been reviewed, tested, and are in conformance with the following standards: EN 60034, EN 60204-1, IEC 34-1. Products have been reviewed per EN 60950, EN 60529, IEC 721-3, NEMA MG7, UL1004, UL547, and UL674.

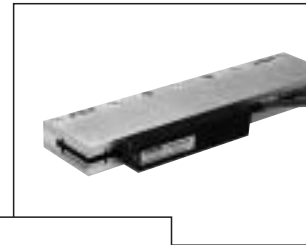
These motors comply with the Low Voltage Directive 73/23/EEC for installation in a machine. Safety depends upon installing and configuring the motor per the manufacturer's recommendations. The machine in which this product is to be installed must conform to the provisions of EC directive 89/336/EEC. The installer is responsible for ensuring that the end product complies with all the relevant laws in the country where the equipment is installed.

PRODUCT OVERVIEW

PLATINUM® DDL SERIES MOTORS



PLATINUM® DDL family with SERVOSTAR CD



Ironless Motor



Ironcore Motor

PLATINUM® DDL & SERVOSTAR CD AND SERVOSTAR S

Combining the PLATINUM DDL motors with Kollmorgen SERVOSTAR digital drives completes the full linear motor servo system. The SERVOSTAR drive family covers the entire PLATINUM DDL linear motor product line, both ironless core and ironcore motors.

- SERVOSTAR CD: 3, 6, 10 amps continuous. SEE PAGES 28-29
- SERVOSTAR Sx: 3, 6, 10, 20, 30, 55, 85 amps continuous. SEE PAGES 42-43
- MOTIONLINK® set up/tuning software PC "Oscilloscope" for analysis
- Sine Encoder option

STANDARD FEATURES:

Ironless:

- Peak force 60 to 1600 N (13.6 to 360 lb-ft)
- Continuous force 21 to 450 N (4.6 to 101 lb-ft)
- Zero cogging
- Zero attractive force
- Smooth motion for speed as low as 1 micron/second (0.00004 in/sec)
- Low mass coil assembly for high acceleration

Ironcore:

- Peak force IC series: 190 to 15625 N (43 to 3513 lb-ft)
- Continuous force IC series: 73 to 12023 N (16 to 2703 lb-ft)
- Peak force ICD series: 170 to 1130 N (38 to 254 lb-ft)
- Continuous force ICD series: 57 to 315 N (13 to 71 lb-ft)
- Patented anti-cogging technique for reduced cogging without magnet skewing
- High motor constant (Km)
- High force density
- ICD Series Advantage:
 - Very low profile
 - Low attraction force
 - Suitable to replace many Ironless applications

All Motors:

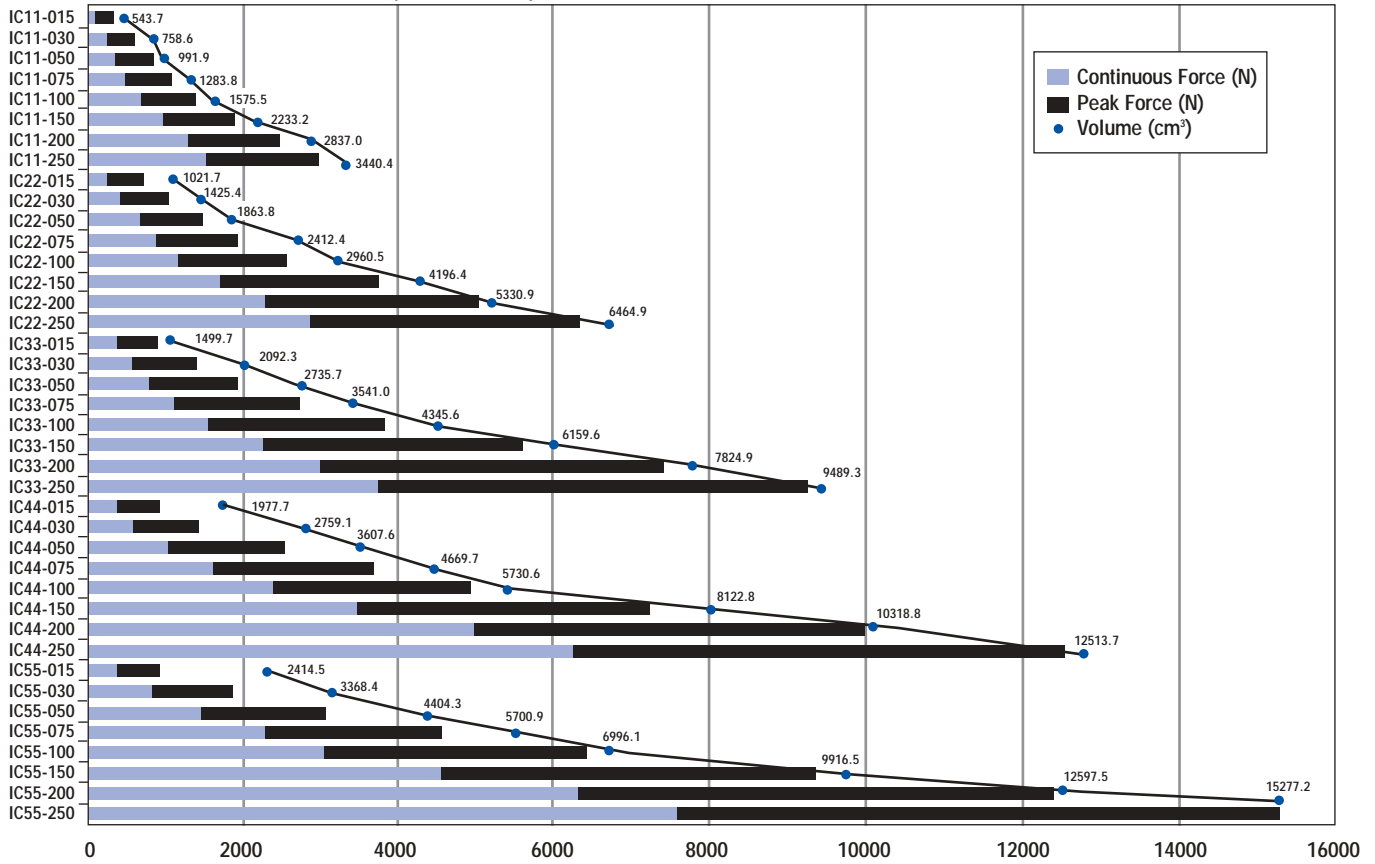
- Zero contact, zero maintenance, brushless design
- 3 phase sinusoidal commutation
- Peak accelerations easily above 10 g's
- High position accuracy and resolution
- Very low settling time
- Low thermal losses
- Modular magnet design

Standard Options:

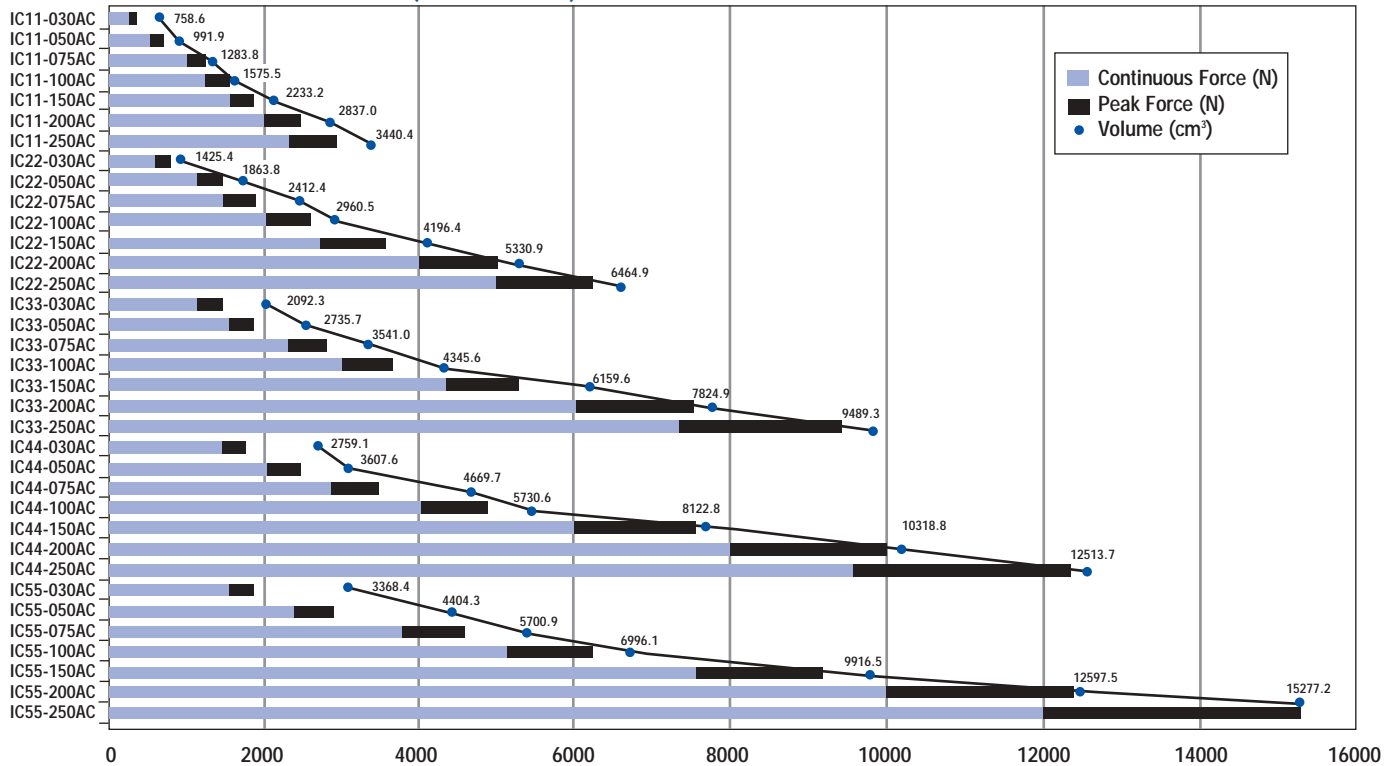
- Hall effect feedback
- Thermal protection
 - Thermistor
 - Thermostat (Ironcore)
- Supplemental air or water cooling (Ironcore)
- Cable options
- Magnet way covers for easy cleaning (Ironcore)
- FM approved, hazardous environment

PLATINUM® IRONCORE SERIES MOTORS

IC SERIES IRONCORE MOTORS (NON-COOLED)



IC SERIES IRONCORE MOTORS (WATER-COOLED)



RATINGS & CHARACTERISTICS

PLATINUM® IRONCORE SERIES MOTORS

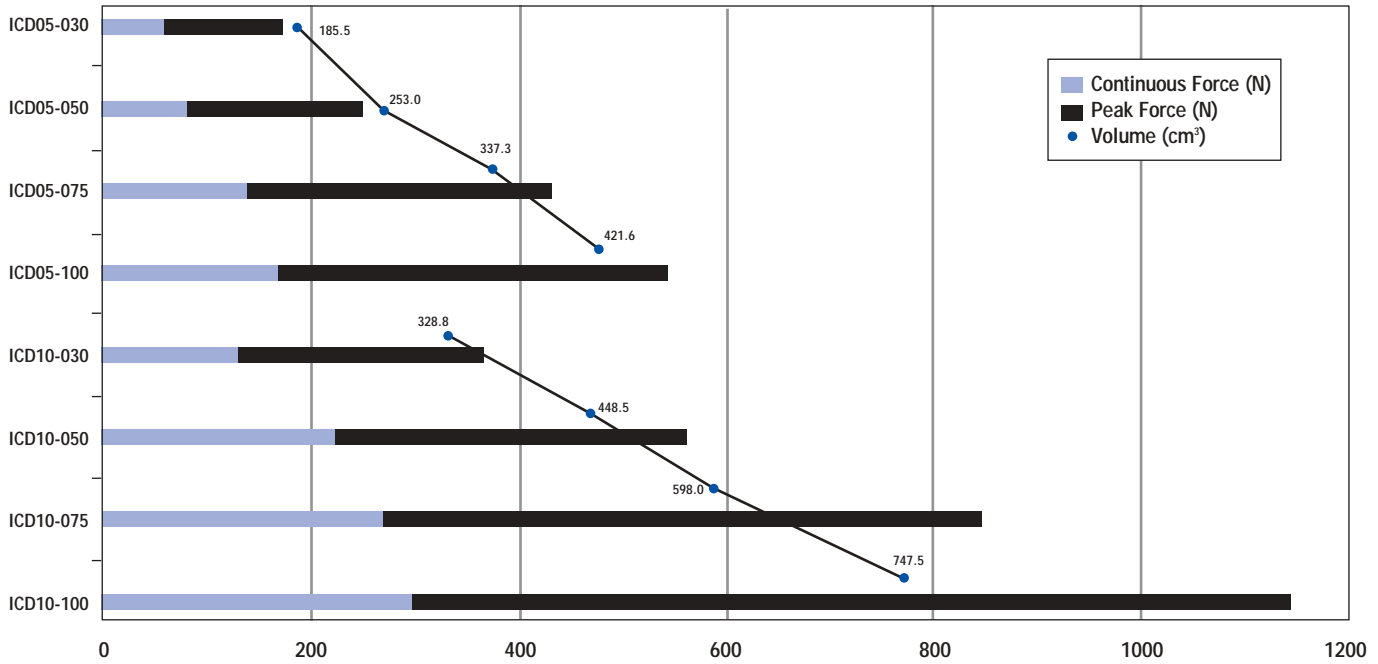
PLATINUM® DDL Motor Model	Peak Force F _P N (lb-f)	Continuous Force @130°C F _c N (lb-f)	Motor Constant @130°C K _M N (lb-f)/√w	Coil Assembly Mass m _c kg (lbs)	Motor Volume cm ³ (in ³)	Magnet Way
PLATINUM® IC Series Ironcore Motors (Non-Cooled)						
IC11-015	190 (43)	73 (16)	11.0 (2.5)	1.7 (3.7)	543.7 (33.2)	MC015
IC11-030	375 (84)	151 (34)	18.9 (4.2)	2.5 (5.5)	758.6 (46.3)	MC030
IC11-050	625 (141)	276 (62)	26.9 (6.0)	3.6 (7.9)	991.9 (60.5)	MC050
IC11-075	940 (211)	435 (98)	34.8 (7.8)	5 (11.0)	1283.8 (78.3)	MC075
IC11-100	1250 (281)	599 (135)	41.3 (9.3)	6.5 (14.3)	1575.5 (96.1)	MC100
IC11-150	1875 (422)	905 (203)	52.2 (11.7)	9.4 (20.7)	2233.2 (136.3)	MC150
IC11-200	2500 (562)	1255 (282)	61.4 (13.8)	12.3 (27.1)	2837.0 (173.1)	MC200
IC11-250	3125 (703)	1496 (336)	66.9 (15.0)	15.2 (33.5)	3440.4 (209.9)	MC250
IC22-015	375 (84)	143 (32)	15.3 (3.4)	3.2 (7.1)	1021.7 (62.4)	MC015
IC22-030	750 (169)	298 (67)	26.4 (5.9)	4.8 (10.6)	1425.4 (87.0)	MC030
IC22-050	1250 (281)	548 (123)	37.7 (8.5)	6.9 (15.2)	1863.8 (113.7)	MC050
IC22-075	1875 (422)	864 (194)	48.8 (11.0)	9.6 (21.2)	2412.4 (147.2)	MC075
IC22-100	2500 (562)	1198 (269)	58.5 (13.1)	12.5 (27.6)	2960.5 (180.7)	MC100
IC22-150	3750 (843)	1810 (407)	73.9 (16.6)	18.1 (39.9)	4196.4 (256.1)	MC150
IC22-200	5000 (1124)	2513 (565)	87.0 (19.6)	23.7 (52.2)	5330.9 (325.3)	MC200
IC22-250	6250 (1405)	3000 (674)	94.9 (21.3)	29.3 (64.6)	6464.9 (394.5)	MC250
IC33-015	565 (127)	216 (49)	18.8 (4.2)	4.99 (11.0)	1499.7 (91.5)	MC015
IC33-030	1125 (253)	450 (101)	32.4 (7.3)	7.3 (16.1)	2092.3 (127.7)	MC030
IC33-050	1875 (422)	824 (185)	46.3 (10.4)	10.4 (22.9)	2735.7 (166.9)	MC050
IC33-075	2815 (633)	1301 (292)	59.9 (13.5)	14.4 (31.7)	3541.0 (216.1)	MC075
IC33-100	3750 (843)	1796 (404)	71.6 (16.1)	18.9 (41.7)	4345.6 (265.2)	MC100
IC33-150	5625 (1265)	2718 (611)	90.7 (20.4)	27.3 (60.2)	6159.6 (375.9)	MC150
IC33-200	7500 (1686)	3765 (846)	106.5 (23.9)	35.7 (78.7)	7824.9 (477.5)	MC200
IC33-250	9375 (2108)	4496 (1011)	116.1 (26.1)	44.1 (97.2)	9489.3 (579.1)	MC250
IC44-015	750 (169)	286 (64)	21.6 (4.9)	6.4 (14.1)	1977.7 (120.7)	MC015
IC44-030	1500 (337)	597 (134)	37.3 (8.4)	9.6 (21.2)	2759.1 (168.4)	MC030
IC44-050	2500 (562)	1096 (246)	53.3 (12.0)	13.9 (30.6)	3607.6 (220.2)	MC050
IC44-075	3750 (843)	1732 (389)	69.3 (15.6)	19.2 (42.3)	4669.7 (285.0)	MC075
IC44-100	5000 (1124)	2397 (539)	82.7 (18.6)	25 (55.1)	5730.6 (349.7)	MC100
IC44-150	7500(1686)	3617 (813)	104.7 (23.5)	36.2 (79.8)	8122.8 (495.7)	MC150
IC44-200	10000 (2248)	5025 (1130)	123.1 (27.7)	47.4 (104.5)	10318.8 (629.7)	MC200
IC44-250	12500 (2810)	6029 (1355)	134.2 (30.2)	58.5 (129.0)	12513.7 (763.6)	MC250
IC55-015	940 (211)	359 (81)	24.3 (5.5)	8 (17.6)	2414.5 (147.3)	MC015
IC55-030	1875 (422)	748 (168)	41.8 (9.4)	12 (26.5)	3368.4 (205.6)	MC030
IC55-050	3125 (703)	1374 (309)	59.7 (13.4)	17.3 (38.1)	4404.3 (268.8)	MC050
IC55-075	4690 (1054)	2164 (486)	77.3 (17.4)	23.9 (52.7)	5700.9 (347.9)	MC075
IC55-100	6250 (1405)	2989 (672)	92.3 (20.7)	31.2 (68.8)	6996.1 (426.9)	MC100
IC55-150	9375 (2108)	4532 (1019)	117.0 (26.3)	45.1 (99.4)	9916.5 (605.1)	MC150
IC55-200	12500 (2810)	6303 (1417)	137.5 (30.9)	59 (130.1)	12597.5 (768.7)	MC200
IC55-250	15625 (3513)	7496 (1685)	149.9 (33.7)	73 (160.9)	15277.2 (932.3)	MC250
PLATINUM® IC Series Ironcore Motors (Water Cooled)						
IC11-030AC	375 (84)	296 (66)	16.6 (3.7)	2.5 (5.5)	758.6 (46.3)	MC030
IC11-050AC	625 (141)	502 (113)	24.1 (5.4)	3.6 (7.9)	991.9 (60.5)	MC050
IC11-075AC	940 (211)	754 (169)	31.4 (7.1)	5 (11.0)	1283.8 (78.3)	MC075
IC11-100AC	1250 (281)	1006 (226)	37.4 (8.4)	6.5 (14.3)	1575.5 (96.1)	MC100
IC11-150AC	1875 (422)	1490 (335)	46.9 (10.5)	9.4 (20.7)	2233.2 (136.3)	MC150
IC11-200AC	2500 (562)	1991 (448)	55.3 (12.4)	12.3 (27.1)	2837.0 (173.1)	MC200
IC11-250AC	3125 (703)	2410 (542)	60.4 (13.6)	15.2 (33.5)	3440.4 (209.9)	MC250
IC22-030AC	750 (169)	603 (136)	23.8 (5.4)	4.8 (10.6)	1425.4 (87.0)	MC030
IC22-050AC	1250 (281)	1005 (226)	34.1 (7.7)	6.9 (15.2)	1863.8 (113.7)	MC050
IC22-075AC	1875 (422)	1493 (336)	43.9 (9.9)	9.6 (21.2)	2412.4 (147.2)	MC075
IC22-100AC	2500 (562)	1995 (448)	52.6 (11.8)	12.5 (27.6)	2960.5 (180.7)	MC100
IC22-150AC	3750 (843)	2996 (674)	66.7 (15.0)	18.1 (39.9)	4196.4 (256.1)	MC150
IC22-200AC	5000 (1124)	4023 (904)	78.5 (17.7)	23.7 (52.2)	5330.9 (325.3)	MC200
IC22-250AC	6250 (1405)	4806 (1080)	85.2 (19.2)	29.3 (64.6)	6464.9 (394.5)	MC250
IC33-030AC	1125 (253)	896 (202)	29.0 (6.5)	7.3 (16.1)	2092.3 (127.7)	MC030
IC33-050AC	1875 (422)	1492 (335)	41.4 (9.3)	10.4 (22.9)	2735.7 (166.9)	MC050
IC33-075AC	2815 (633)	2240 (504)	54.0 (12.1)	14.4 (31.7)	3541.0 (216.1)	MC075
IC33-100AC	3750 (843)	3014 (677)	64.4 (14.5)	18.9 (41.7)	4345.6 (265.2)	MC100
IC33-150AC	5625 (1265)	4464 (1004)	81.5 (18.3)	27.3 (60.2)	6159.6 (375.9)	MC150
IC33-200AC	7500 (1686)	5990 (1347)	96.0 (21.6)	35.7 (78.7)	7824.9 (477.5)	MC200
IC33-250AC	9375 (2108)	7216 (1622)	104.5 (23.5)	44.1 (97.2)	9489.3 (579.1)	MC250
IC44-030AC	1500 (337)	1201 (270)	33.6 (7.5)	9.6 (21.2)	2759.1 (168.4)	MC030
IC44-050AC	2500 (562)	1990 (446)	47.8 (10.8)	13.9 (30.6)	3607.6 (220.2)	MC050
IC44-075AC	3750 (843)	2980 (669)	62.3 (14.0)	19.2 (42.3)	4669.7 (285.0)	MC075
IC44-100AC	5000 (1124)	4015 (902)	74.3 (16.7)	25 (55.1)	5730.6 (349.7)	MC100
IC44-150AC	7500 (1686)	5990 (1343)	94.0 (21.1)	36.2 (79.8)	8122.8 (495.7)	MC150
IC44-200AC	10000 (2248)	8035 (1806)	110.9 (24.9)	47.4 (104.5)	10318.8 (629.7)	MC200
IC44-250AC	12500 (2810)	9620 (2165)	120.6 (27.1)	58.5 (129.0)	12513.7 (763.6)	MC250
IC55-030AC	1875 (422)	1497 (336)	37.5 (8.4)	12 (26.5)	3368.4 (205.6)	MC030
IC55-050AC	3125 (703)	2511 (564)	53.7 (12.1)	17.3 (38.1)	4404.3 (268.8)	MC050
IC55-075AC	4690 (1054)	3773 (848)	69.9 (15.7)	23.9 (52.7)	5700.9 (347.9)	MC075
IC55-100AC	6250 (1405)	5001 (1124)	83.1 (18.7)	31.2 (68.8)	6996.1 (426.9)	MC100
IC55-150AC	9375 (2108)	7446 (1674)	105.3 (23.7)	45.1 (99.4)	9916.5 (605.1)	MC150
IC55-200AC	12500 (2810)	10033 (2256)	123.9 (27.8)	59 (130.1)	12597.5 (768.7)	MC200
IC55-250AC	15625 (3513)	12023 (2703)	134.8 (30.3)	73 (160.9)	15277.2 (932.3)	MC250

Note:

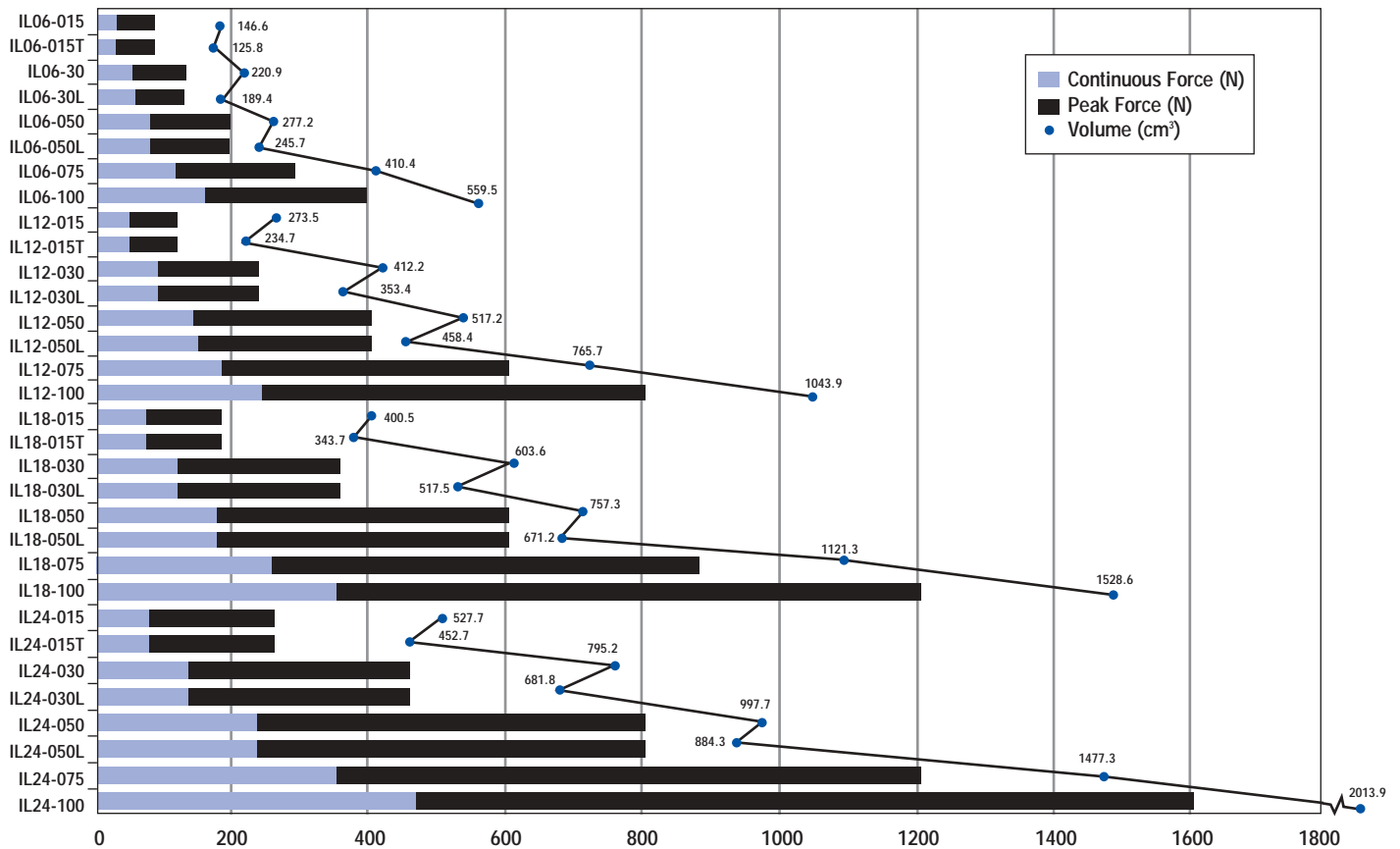
- ① The motor continuous rated force is measured with the motor coils achieving the motor maximum allowable temperature T_{max}. At this operating point the number of watts being dissipated by the coil assembly is equal to the maximum continuous power dissipation P_c. The heat load can be limited to a value below P_c by limiting the continuous rated output force of the motor to a value equal to: F_c = K_m x Square Root (P_w); where P_w = the acceptable heat load, in watts, and must be a value below P_c. The RMS current needed to produce this force is simply F_c divided by the force constant K_f. See specific product information for more details.

PLATINUM[®] IRONCORE & IRONLESS SERIES MOTORS

ICD SERIES LOW-PROFILE IRONCORE MOTORS



IL SERIES IRONLESS MOTORS



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PLATINUM® IRONCORE & IRONLESS SERIES MOTORS

RATINGS & CHARACTERISTICS

PLATINUM® DDL Motor Model	Peak Force F _p N (lb-f)	Continuous Force @130°C F _c N (lb-f)	Motor Constant @130°C K _m N (lb-f) / √w	Coil Assembly Mass m _c kg (lbs)	Motor Volume cm ³ (in ³)	Magnet Way
PLATINUM® ICD Series Low-Profile Ironcore Motors (Non-Cooled)						
ICD05-030	170 (38)	57 (13)	10.3 (2.3)	0.62 (1.4)	185.5 (11.3)	MCD030
ICD05-050	280 (63)	87 (20)	14.5 (3.3)	0.95 (2.1)	253.0 (15.4)	MCD050
ICD05-075	425 (96)	125 (28)	18.6 (4.2)	1.36 (3.0)	337.3 (20.6)	MCD075
ICD05-100	550 (124)	157 (35)	22.0 (4.9)	1.71 (3.8)	421.6 (25.7)	MCD100
ICD10-030	340 (76)	104 (23)	14.6 (3.3)	1.13 (2.5)	328.8 (20.1)	MCD030
ICD10-050	560 (126)	171 (38)	20.5 (4.6)	1.86 (4.1)	448.5 (27.4)	MCD050
ICD10-075	850 (191)	246 (55)	26.4 (5.9)	2.67 (5.9)	598.0 (36.5)	MCD075
ICD10-100	1130 (254)	315 (71)	31.3 (7.0)	3.42 (7.5)	747.5 (45.6)	MCD100
PLATINUM® IL Series Ironless Motors						
IL06-015	60 (13.6)	21 (4.6)	2.8 (0.6)	0.23 (0.5)	146.6 (8.9)	MW015
IL06-015T	60 (13.6)	21 (4.6)	2.8 (0.6)	0.23 (0.5)	125.8 (7.7)	MW015
IL06-030	120 (27)	38 (9)	4.7 (1.1)	0.27 (0.6)	220.9 (13.5)	MW030
IL06-030L	120 (27)	38 (9)	4.7 (1.1)	0.27 (0.6)	189.4 (11.6)	MW030
IL06-050	200 (45)	61 (14)	6.7 (1.5)	0.32 (0.7)	277.2 (16.9)	MW050
IL06-050L	200 (45)	61 (14)	6.7 (1.5)	0.32 (0.7)	245.7 (15.0)	MW050
IL06-075	300 (68)	87 (19)	8.6 (1.9)	0.38 (0.8)	410.4 (25.0)	MW075
IL06-100	400 (90)	113 (25)	10.2 (2.3)	0.45 (1.0)	559.5 (34.1)	MW100
IL12-015	120 (27)	41 (9)	4.0 (0.9)	0.35 (0.8)	273.5 (16.7)	MW015
IL12-015T	120 (27)	41 (9)	4.0 (0.9)	0.35 (0.8)	234.7 (14.3)	MW015
IL12-030	240 (54)	76 (17)	6.6 (1.5)	0.42 (0.9)	412.2 (25.2)	MW030
IL12-030L	240 (54)	76 (17)	6.6 (1.5)	0.42 (0.9)	353.4 (21.6)	MW030
IL12-050	400 (90)	122 (28)	9.5 (2.1)	0.52 (1.1)	517.2 (31.6)	MW050
IL12-050L	400 (90)	122 (28)	9.5 (2.1)	0.52 (1.1)	458.4 (28.0)	MW050
IL12-075	600 (135)	174 (39)	12.2 (2.7)	0.65 (1.4)	765.7 (46.7)	MW075
IL12-100	800 (180)	226 (51)	14.5 (3.3)	0.77 (1.7)	1043.9 (63.7)	MW100
IL18-015	180 (40)	62 (14)	4.9 (1.1)	0.46 (1.0)	400.5 (24.4)	MW015
IL18-015T	180 (40)	62 (14)	4.9 (1.1)	0.46 (1.0)	343.7 (21.0)	MW015
IL18-030	360 (81)	114 (26)	8.2 (1.8)	0.57 (1.3)	603.6 (36.8)	MW030
IL18-030L	360 (81)	114 (26)	8.2 (1.8)	0.57 (1.3)	517.5 (31.6)	MW030
IL18-050	600 (135)	184 (41)	11.6 (2.6)	0.72 (1.6)	757.3 (46.2)	MW050
IL18-050L	600 (135)	184 (41)	11.6 (2.6)	0.72 (1.6)	671.2 (41.0)	MW050
IL18-075	900 (202)	260 (59)	14.9 (3.4)	0.91 (2.0)	1121.3 (68.4)	MW075
IL18-100	1200 (270)	338 (76)	17.7 (4.0)	1.10 (2.4)	1528.6 (93.3)	MW100
IL24-015	240 (54)	83 (19)	5.6 (1.3)	0.57 (1.3)	527.7 (32.2)	MW015
IL24-015T	240 (54)	83 (19)	5.6 (1.3)	0.57 (1.3)	452.7 (27.6)	MW015
IL24-030	480 (108)	152 (34)	9.4 (2.1)	0.72 (1.6)	795.2 (48.5)	MW030
IL24-030L	480 (108)	152 (34)	9.4 (2.1)	0.72 (1.6)	681.8 (41.6)	MW030
IL24-050	800 (180)	245 (55)	13.4 (3.0)	0.92 (2.0)	997.7 (60.9)	MW050
IL24-050L	800 (180)	245 (55)	13.4 (3.0)	0.92 (2.0)	884.3 (54.0)	MW050
IL24-075	1200 (270)	348 (78)	17.3 (3.9)	1.17 (2.6)	1477.3 (90.1)	MW075
IL24-100	1600 (360)	450 (101)	20.5 (4.6)	1.42 (3.1)	2013.9 (122.9)	MW100

Note:

① The motor continuous rated force is measured with the motor coils achieving the motor maximum allowable temperature T_{max}. At this operating point the number of watts being dissipated by the coil assembly is equal to the maximum continuous power dissipation P_c. The heat load can be limited to a value below P_c by limiting the continuous rated output force of the motor to a value equal to: F_c = K_m x Square Root (P_w); where P_w = the acceptable heat load, in watts, and must be a value below P_c. The RMS current needed to produce this force is simply F_c divided by the force constant K_f. See specific product information for more details.

DDL MAGNET WAYS

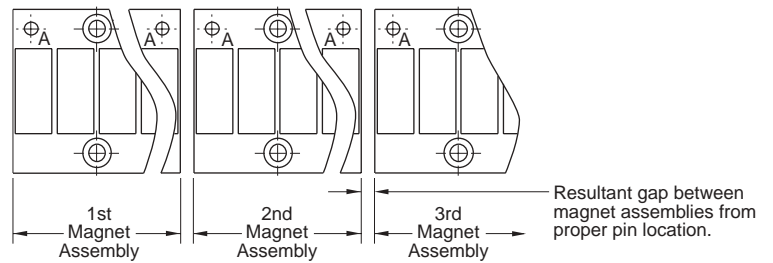
Kollmorgen PLATINUM® DDL SERIES MOTORS



PLATINUM® Ironcore Motor Magnet Way with cover

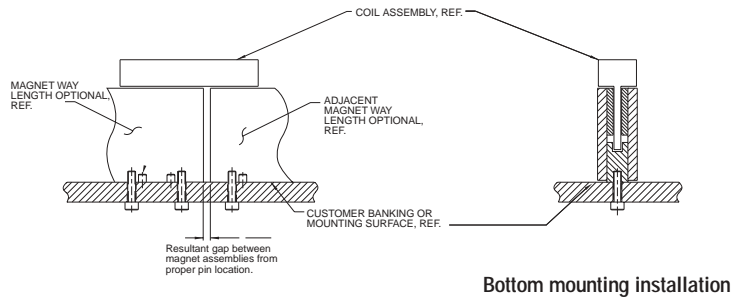
Magnet Way widths correspond to the mating coil assembly width. Magnet Way assemblies are modular and come in standard lengths: 64, 128, 256, 512, 1024 mm. Multiple magnet assemblies can be installed to obtain the desired length. Shown above is the method to mount multiple assemblies.

TYPICAL INSTALLATION OF MULTIPLE IRONCORE MAGNET ASSEMBLIES

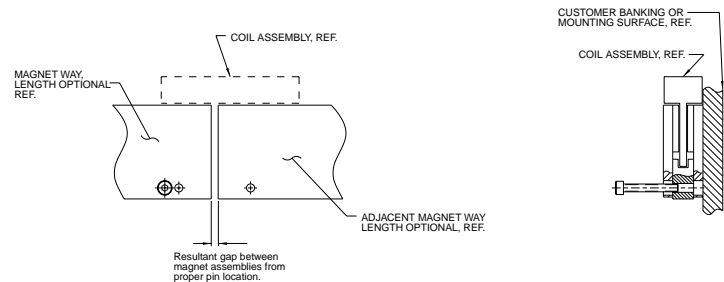


PLATINUM® Ironless Motor Magnet Way

TYPICAL INSTALLATION OF MULTIPLE IRONLESS MAGNET ASSEMBLIES



Bottom mounting installation

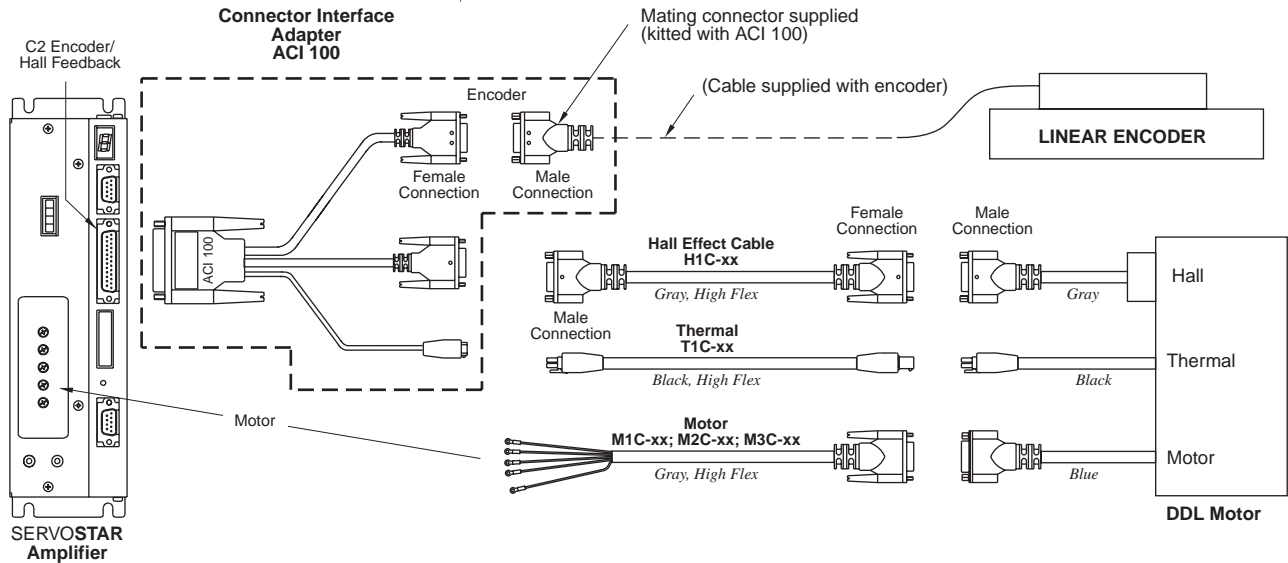


Side mounting installation

DDL CABLES

Kollmorgen PLATINUM® DDL & SERVOSTAR® CD

HIGH FLEX CABLES FOR USE WITH SERVOSTAR



FEATURES:

- High Flex cable designed for dynamic, continuous flexing applications
- Cable track compatible
- Molded, high reliability connectors
- Oil resistant PVC jacket
- 105°C/600 V motor cable, 105°C / 300 V Hall Effect and Thermal Sensor cable
- CE compliant, fully shielded low impedance cable and connectors
- Fully tested, color coded, shipped with schematics
- Complete cable system for simple and reliable Plug-and-Play installation

Standard lengths of 1, 3, 6, 9, 12 and 15 meters are offered. For other lengths, consult a Danaher Motion representative.

Bulk High Flex Cable is available (without connectors) in 3 meter increments. Consult a Danaher Motion representative for specifications. High Flex Cable is also available for other amplifiers.

Note:

Cables are designed for minimum life of millions of cycles under ideal conditions. Actual field applications may or may not yield the cable life described here. Minimum recommended dynamic bend radius is 15x the largest cable diameter used in cable track; use a large bend radius whenever possible.



MOTIONEERING® CD-ROM

For more detailed product and selection information, see the **MOTIONEERING** CD-ROM inside the back cover of this catalog or visit our website at www.DanaherMotion.com.

THE FRAMELESS ADVANTAGE

Housed motors have a traditional configuration including a frame, bearings and a shaft. In use, the housed motor shaft is coupled to the systems element being driven. Housed motors are ideal for use in harsh environments or other applications requiring totally closed units.

The frameless motor concept was developed to meet the need for motors with a large hole through the center. This need is still one of the main reasons that the large diameter, narrow width frameless configuration is often selected over the traditional housed configuration. The large rotor bore can be used as a route for lead wires, as a mounting area for other hardware such as tachometer generators or resolvers, or as an optical path.

Frameless motors are built to be "designed in" as an integral part of the system hardware. The frameless motor can be integrated into the customer hardware rather than coupling a motor shaft to the element being driven. This allows significant savings in space and weight over housed motors by eliminating the motor housings, bearings and shaft. Also, since the frameless motor can be mounted on the driven shaft, the coupling stiffness is improved and torsional play minimized, improving dynamic performance. The backlash normally associated with couplings or gear trains is eliminated from the drive system, improving precision.

FRAMELESS MOTOR CONSTRUCTION

The frameless motor construction is supplied as two separate components:

- Rotor (Field): rotating permanent magnet component
- Stator (Armature): stationary, wound component

The customer is typically supplying the shaft, bearings, housings, and end bells for the motor. Kollmorgen can help in the design of these for the customer, as well as recommend and supply the feedback and drive amplifier to complete the servo system.

The armature consists of a low-loss, laminated and bonded core, wound with a three phase copper winding. This slotted structure is electrically insulated prior to insertion of the copper windings. A three-wire output for connection to the amplifier is provided.

The field assembly, or rotor, consists of permanent magnets bonded to a flux-carrying yoke ring. The magnet material selected will depend on the application. Both Neodymium-iron-boron and Samarium cobalt alloys are used. Rotor banding with composite materials is also provided to ensure reliability, particularly at high speeds.

RBE SERIES DDR BRUSHLESS MOTORS

The Kollmorgen RBE series brushless motors feature high-energy rare earth magnets, resulting in high continuous and peak torque ratings. With over 500,000 motors in the field, this design has become the standard in frameless motor technology and reliability.

- 10 frame sizes from 21 mm to 240 mm (0.82 to 9.45 in) diameter
- Peak torque from 0.025 N-m to 197 N-m (0.018 to 145 lb-ft)

F SERIES DDR BRUSHLESS MOTORS

This new line of frameless motors incorporates the latest in rare earth magnet materials and extends the standard frameless product offering.

- 4 frame sizes from 160 mm to 350 mm (6.3 to 13.8 in) diameter
- Peak torque from 16.9 N-m to 1350 N-m (12.5 to 996 lb-ft)



Kollmorgen Large Diameter Torque Motors



Kollmorgen RBE Frameless Torque Motors



Custom Brand DC torque motors



Kollmorgen's motors power the latest implantable hearts



Kollmorgen custom motor eliminates need for elevator machine room



Custom motors and actuators

THE CUSTOM SOLUTION

Kollmorgen has excelled for over 50 years at creating custom motor solutions for OEM customers in a wide variety of applications. Most motor companies do mechanical variants only, but Kollmorgen designs and manufactures unique electromagnetic solutions in addition to the mechanical specials to tailor the package and performance to the application.

Kollmorgen's electromagnetics expertise can be found in:

- Implantable heart pump motors providing the ultimate in reliability
- CT scan machines using our DDR technology to increase throughput and decrease footprint of the machines
- Both commercial and military aircraft platforms using our custom actuators and motors for performance, weight savings, and size reduction
- New commercial elevators using our DDR technology to lower the total cost
- Semiconductor tools using DDR technology to increase performance, decrease package size, and provide zero maintenance operation

In addition to the basic motor technology, Kollmorgen provides the full package of development capability including:

- Program management to oversee project completion
- Worldwide supply chain management including low cost region manufacturing
- Design-to-cost tools from the DBS (Danaher Business System) portfolio
- Rapid prototyping capability for new, custom motor and mechanical assemblies

Our goal is to ensure the total success of the customer program. Combining world-class technology with these supporting elements is a key value to our OEM customers.