

## Megaflux Housed Brushless Torque Motors

*Brushless torque motor, feedback, bearing system, connections*

Housed Megaflux brushless torque motors are a cost-effective alternative to component (frameless) torque motor solutions.

Housed Megaflux motors enable easier installation and commissioning by packaging a high performance brushless torque motor, bearing system, and encoder in one compact, rugged housed unit.

The foundation of the Housed Megaflux series is our proven Megaflux frameless torque motors, so you are assured of the highest performance available in a housed brushless torque motor.

Housed Megaflux torque motors are ideal for applications in semiconductor fabrication equipment, telescopes and other pointing/tracking applications, robotics, and high load rotary tables for production automation and research applications.

These motors can be customized to meet special application needs.

### Features & Benefits

- Dual bearings for high normal and side loading capacities
- Standard MS style connectors for secure, rugged connections
- Large through bore—allows passage of air, water, or vacuum lines, optical beams, and/or electrical/signal wiring
- Integrated Hall devices for commutation
- IP43 protection rating

### Options & Accessories

- Incremental encoder with up to 8192 PPR
- IP65 protection level
- Power and signal cables to specified length with mating MS connectors
- Application-matched brushless servo drive



- Fully integrated brushless torque motor, bearing system, feedback
- High peak speed rating of up to 2663 RPM (278.9 rad/s)
- High peak torque rating of up to 760 lb-ft (1031 Nm)

## SPECIFICATION SUMMARY

Model	Units	MF0150	MF0210	MF0310
<b>Max cont. Stall Torque</b>	lb-ft	2.87 - 21.5	7.0 - 64.7	16.5 - 157.4
	Nm	3.89 - 29.15	9.49 - 87.72	22.37 - 213.41
<b>Design Voltage</b>	VDC	150, 300		
<b>No Load Speed</b>	RPM	Up to 2663	Up to 1884	Up to 1274
	rad/s	Up to 278.9	Up to 197.3	Up to 133.4
<b>Motor Inertia</b>	lb-ft-s <sup>2</sup>	0.003 - 0.0096	0.016 - 0.051	0.118 - 0.259
	kg-m <sup>2</sup>	0.004 - 0.013	0.033 - 0.069	0.16 - 0.351
<b>Diameter (Outer)</b>	in	7.322	9.055	10.827
	mm	186	230	275

# Torque Motors

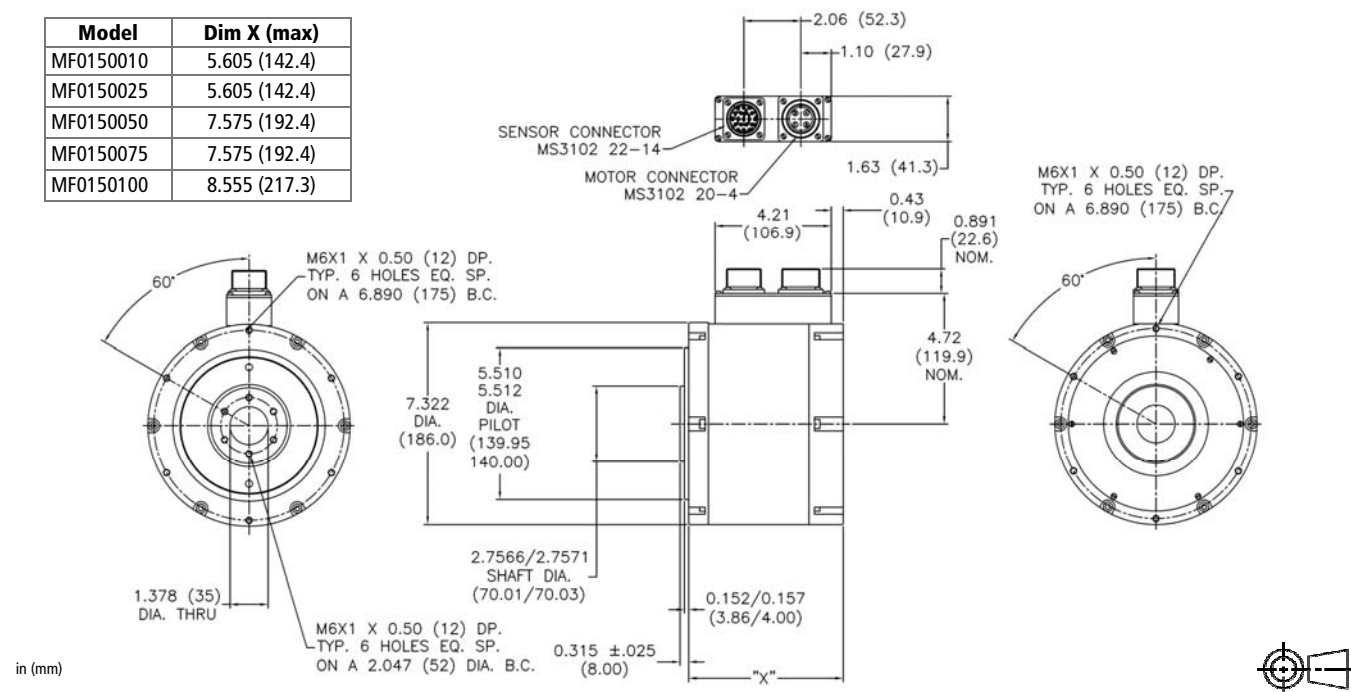
## MF150 Series Housed Brushless Torque Motors

### SPECIFICATIONS

Model No.		MF0150010	MF0150025	MF0150050	MF0150075	MF0150100					
<b>Motor Constants</b>											
Max Stall Torque (continuous)	lb-ft	2.87	7.71	12.2	16.7	21.5					
	Nm	3.89	10.5	16.5	22.6	29.1					
Peak Torque ( $\pm 25\%$ )	lb-ft	14.3	37.5	86.8	129.9	172.6					
	Nm	19.4	50.9	117.7	176.1	234.0					
Motor Constant	lb-ft/ $\sqrt{W}$	0.33	0.73	1.07	1.38	1.64					
	Nm/ $\sqrt{W}$	0.45	0.99	1.45	1.87	2.22					
Elect. Time Constant	ms	2.13	3.5	3.56	3.89	4.08					
Mech. Time Constant	ms	16.6	3.68	3.06	1.96	1.91					
Thermal Resistance	$^{\circ}C/W$	1.06	0.72	0.60	0.53	0.45					
Viscous Damping	lb-ft/RPM	4.97E-05	1.40E-04	2.80E-04	4.30E-04	6.00E-04					
	Nm/RPM	6.74E-05	1.90E-04	3.80E-04	5.83E-04	8.14E-04					
Cogging Torque (max.)	lb-ft	0.18	0.46	0.88	1.2	1.79					
	Nm	0.24	0.62	1.19	1.63	2.43					
<b>Mechanical Constants</b>											
Motor Inertia	lb-ft-s <sup>2</sup>	0.003	0.0037	0.0063	0.0072	0.0096					
	kg-m <sup>2</sup>	0.004	0.005	0.0085	0.0098	0.013					
Motor Weight	lb	24	27	39	45	55					
	kg	10.89	12.25	17.69	20.41	24.95					
Poles	-	24									
<b>Winding Constants</b>											
Design Voltage	V	B	C	B	C	B	C	B	C	B	C
Peak Current	A	150	300	150	300	150	300	150	300	150	300
Torque Constant ( $\pm 10\%$ )	lb-ft/A	27.7	17.7	65.2	48.7	131	81.9	145.4	109	145.3	109
	Nm/A	0.519	0.808	0.575	0.767	0.662	1.06	0.894	1.191	1.188	1.584
No Load Speed	RPM	0.704	1.096	0.780	1.040	0.898	1.437	1.212	1.615	1.611	2.148
	rad/s	1973	2533	1775	2663	1544	1930	1144	1716	860	1291
BEMF Constant ( $\pm 10\%$ )	V/kRPM	206.6	265.3	185.9	278.9	161.7	202.1	119.8	179.7	90.1	135.2
	V/rad/s	73.63	114.7	81.67	108.9	94.04	150.46	126.87	169.16	168.69	224.92
Terminal Resistance ( $\pm 12\%$ )	Ohm	0.703	1.095	0.780	1.040	0.898	1.437	1.212	1.615	1.611	2.148
Terminal Inductance ( $\pm 30\%$ )	mH	2.52	5.93	0.615	1.084	0.36	0.988	0.414	0.736	0.521	0.926
		5.24	12.71	2.15	3.83	1.346	3.445	1.612	2.865	2.128	3.783

### DIMENSIONS

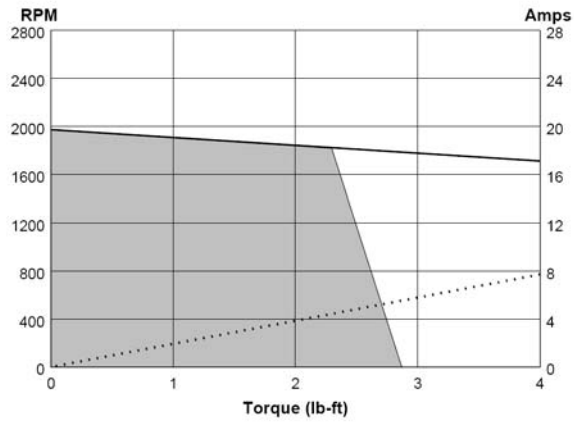
Model	Dim X (max)
MF0150010	5.605 (142.4)
MF0150025	5.605 (142.4)
MF0150050	7.575 (192.4)
MF0150075	7.575 (192.4)
MF0150100	8.555 (217.3)



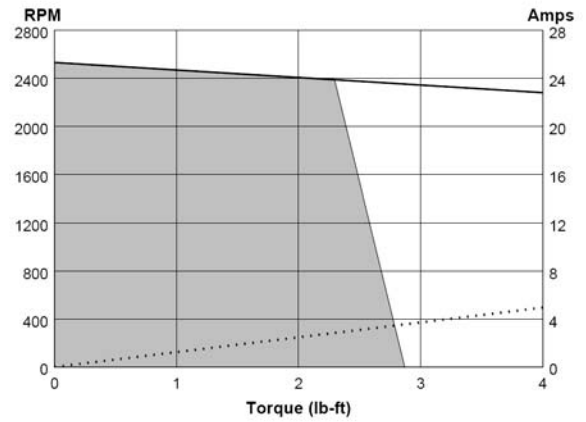
## MF150 Series Housed Brushless Torque Motors

### PERFORMANCE

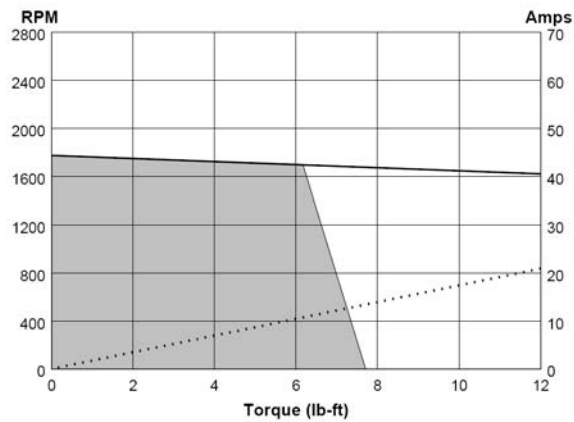
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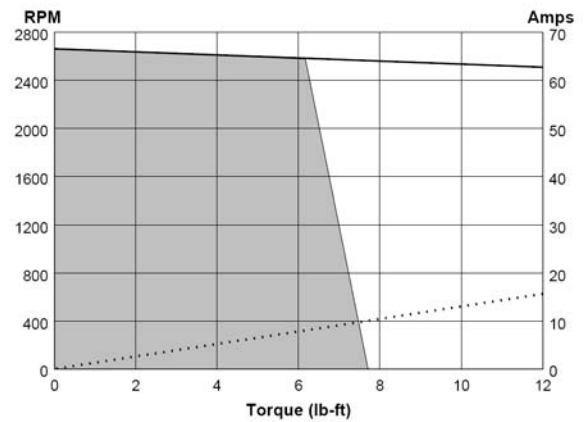
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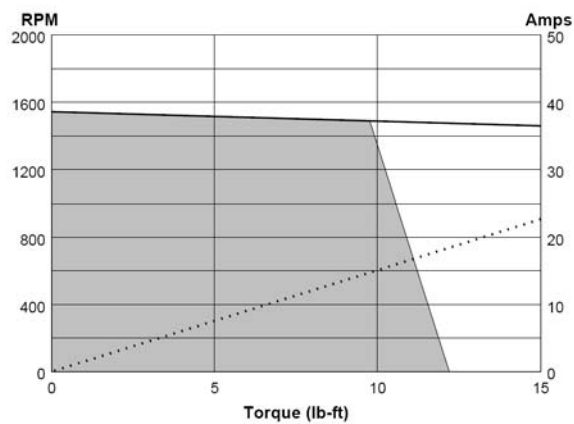
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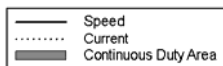
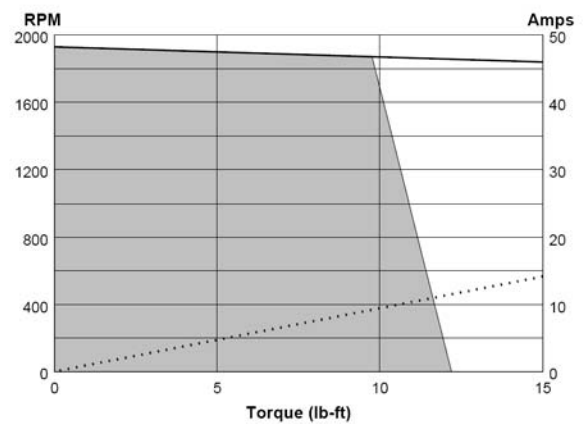
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MF0150050-C00-H

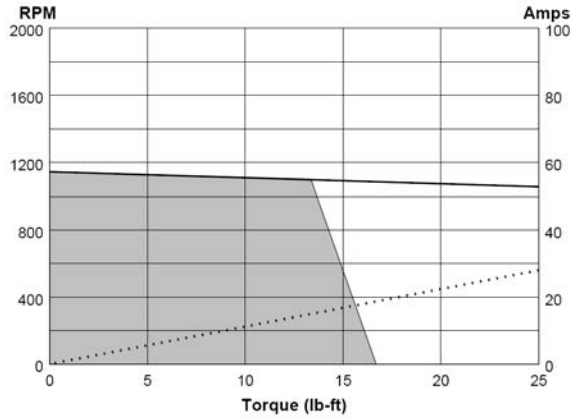


# Torque Motors

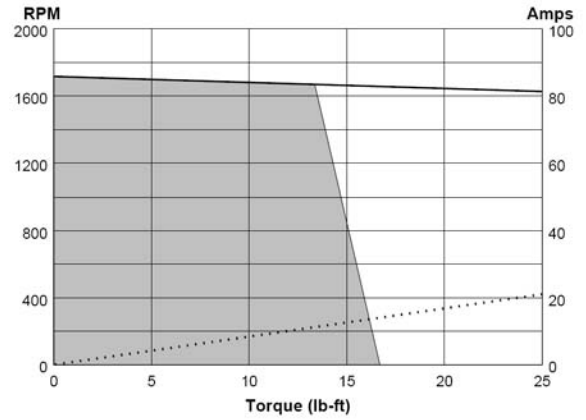
## MF150 Series Housed Brushless Torque Motors

### PERFORMANCE

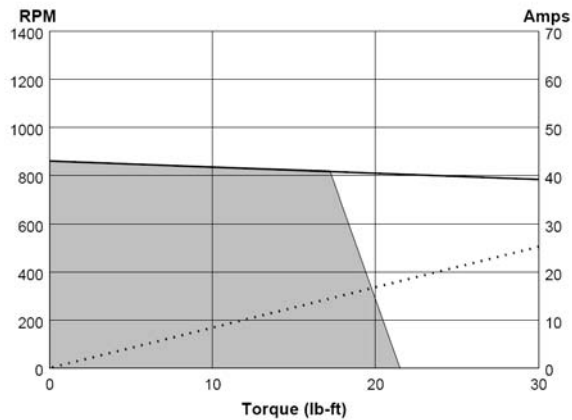
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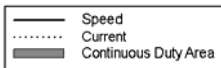
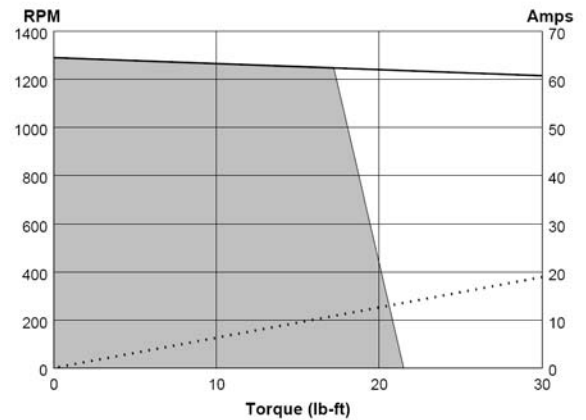
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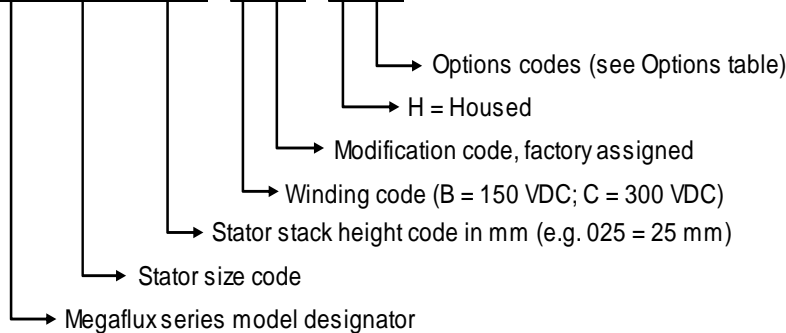


MF0150100-C00-H



### MODEL NUMBERING

MF0150025 - B00 - HEZ



Options	
E	Encoder
I	IP65 protection level
R	Resolver
Z	RoHS compliant

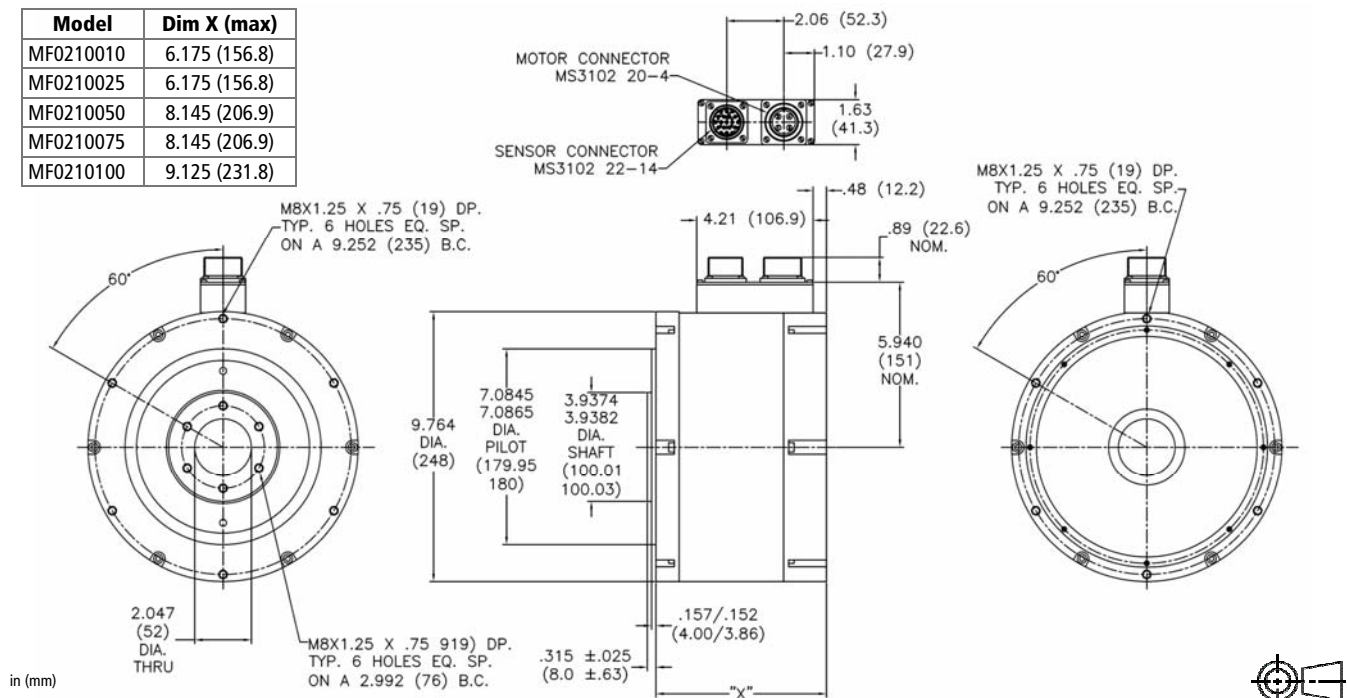
## MF210 Series Housed Brushless Torque Motors

### SPECIFICATIONS

Model No.		MF0210010	MF0210025	MF0210050	MF0210075	MF0210100					
<b>Motor Constants</b>											
Max Stall Torque (continuous)	lb-ft	7.0	17.5	32.3	51.3	64.7					
	Nm	9.49	23.73	43.79	69.55	87.72					
Peak Torque	lb-ft	43.7	114.6	225.5	337.2	447.7					
	Nm	59.3	155.4	305.7	457.2	607.1					
Motor Constant	lb-ft/√W	0.71	1.51	2.45	3.14	3.72					
	Nm/√W	0.96	2.04	3.32	4.27	5.05					
Elect. Time Constant	ms	3.10	4.64	5.89	6.405	6.698					
Mech. Time Constant	ms	23.6	5.95	4.46	2.79	2.73					
Thermal Resistance	°C/W	0.79	0.58	0.44	0.288	0.252					
Viscous Damping	lb-ft/RPM	1.7E-4	4.8E-4	7.7E-4	1.5E-3	2.1E-3					
	Nm/RPM	2.4E-4	6.5E-4	1.0E-3	2.0E-3	2.9E-3					
Cogging Torque (max.)	lb-ft	0.27	0.72	1.36	1.99	2.76					
	Nm	0.36	0.97	1.83	2.68	3.72					
<b>Mechanical Constants</b>											
Motor Inertia	lb-ft-s <sup>2</sup>	0.016	0.018	0.033	0.037	0.051					
	kg-m <sup>2</sup>	0.022	0.024	0.047	0.050	0.069					
Motor Weight	lb	51	59	86	99	123					
	kg	23.13	26.76	39.01	44.91	55.79					
Poles	-	32									
<b>Winding Constants</b>											
Design Voltage	V	B	C	B	C	B	C	B	C	B	C
Peak Current	A	150	300	150	300	150	300	150	300	150	300
Torque Constant (±10%)	lb-ft/A	54.8	40.5	106.9	82.6	165.6	140.1	303.1	202.0	302.8	227.1
	Nm/A	0.798	1.080	1.072	1.387	1.362	1.609	1.113	1.669	1.479	1.972
No Load Speed	RPM	1.082	1.464	1.453	1.881	1.846	2.182	1.508	2.263	2.005	2.673
	rad/s	1275	1884	950	1469	748	1266	915	1221	689	1033
BEMF Constant (±10%)	V/kRPM	133.5	197.3	99.5	153.8	78.3	132.61	95.90	127.87	72.16	108.24
	V/rad/s	113.35	153.36	153.17	196.93	193.34	228.49	157.96	236.95	209.93	279.91
Terminal Resistance (±12%)	Ohm	1.082	1.464	1.453	1.881	1.846	2.182	1.508	2.263	2.005	2.673
Terminal Inductance (±30%)	mH	1.257	2.274	0.488	0.839	0.309	0.458	0.130	0.275	0.165	0.307
		3.931	7.195	2.423	4.058	1.820	2.543	0.799	1.799	1.055	1.875

### DIMENSIONS

Model	Dim X (max)
MF0210010	6.175 (156.8)
MF0210025	6.175 (156.8)
MF0210050	8.145 (206.9)
MF0210075	8.145 (206.9)
MF0210100	9.125 (231.8)

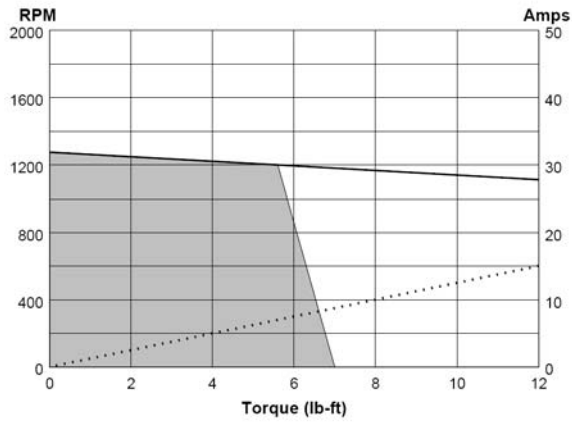


# Torque Motors

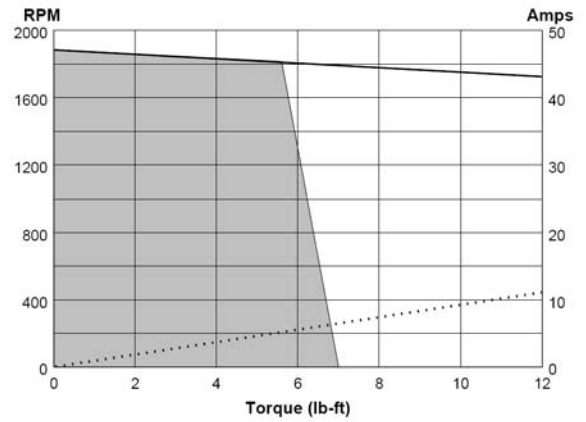
## MF210 Series Housed Brushless Torque Motors

### PERFORMANCE

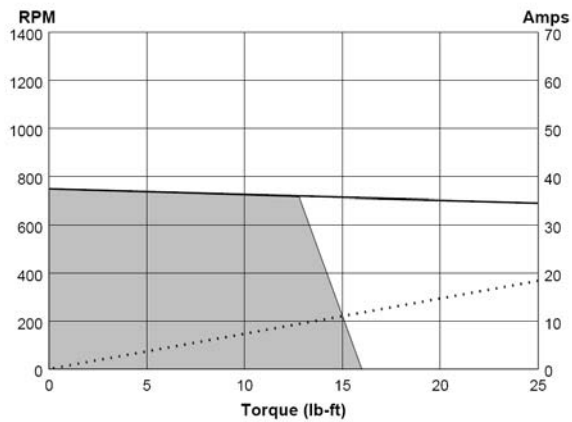
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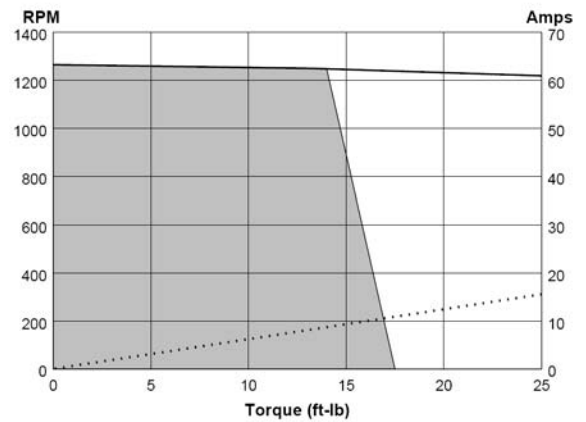
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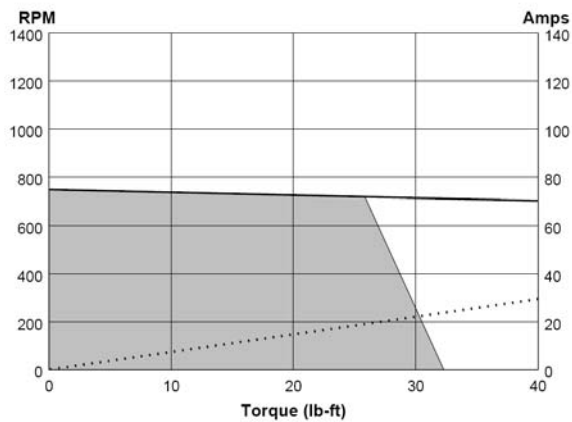
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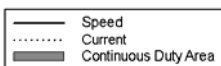
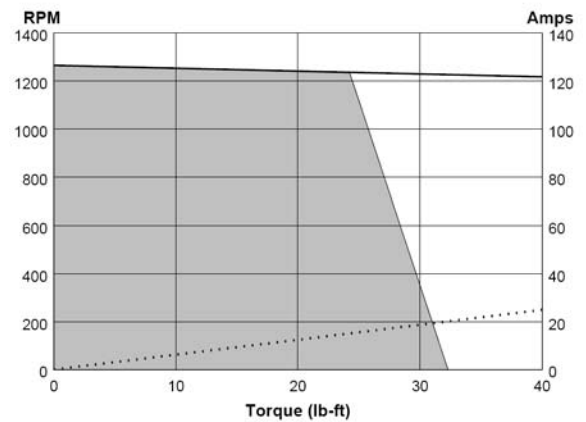
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MF0210050-B00-H



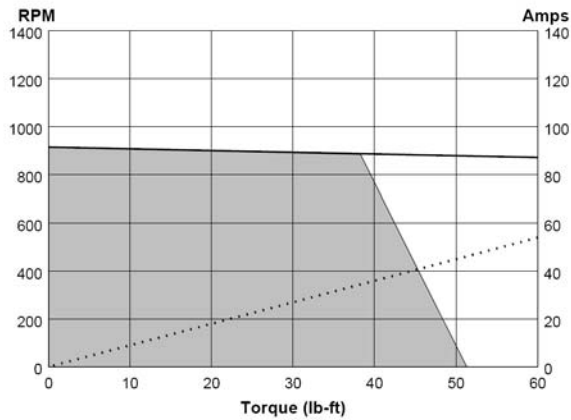
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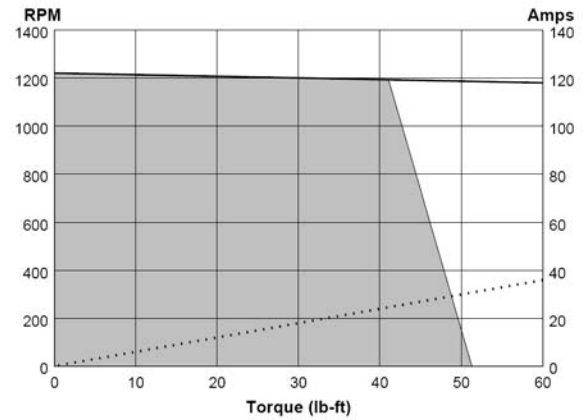
## MF210 Series Housed Brushless Torque Motors

### PERFORMANCE

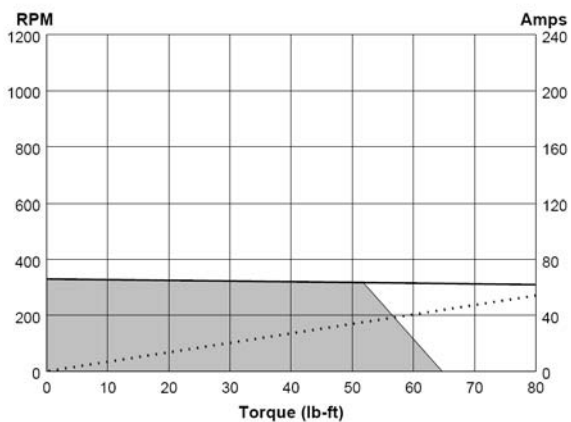
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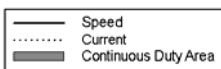
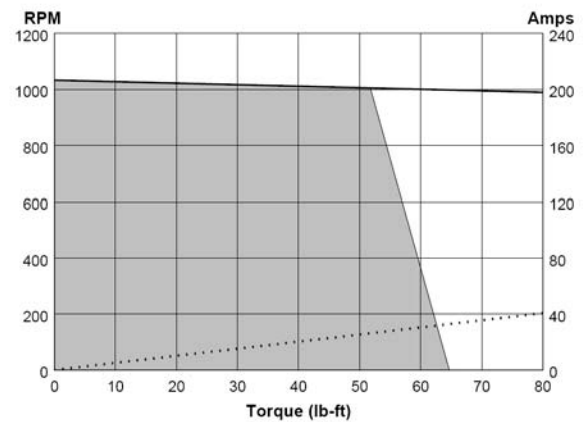
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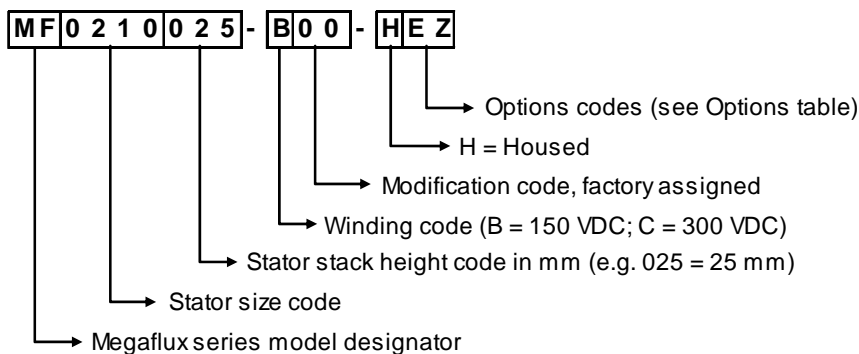
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MF0210100-C00-H



### MODEL NUMBERING



Options
E = Encoder
I = IP65 protection level
R = Resolver
Z = RoHS compliant

# Torque Motors

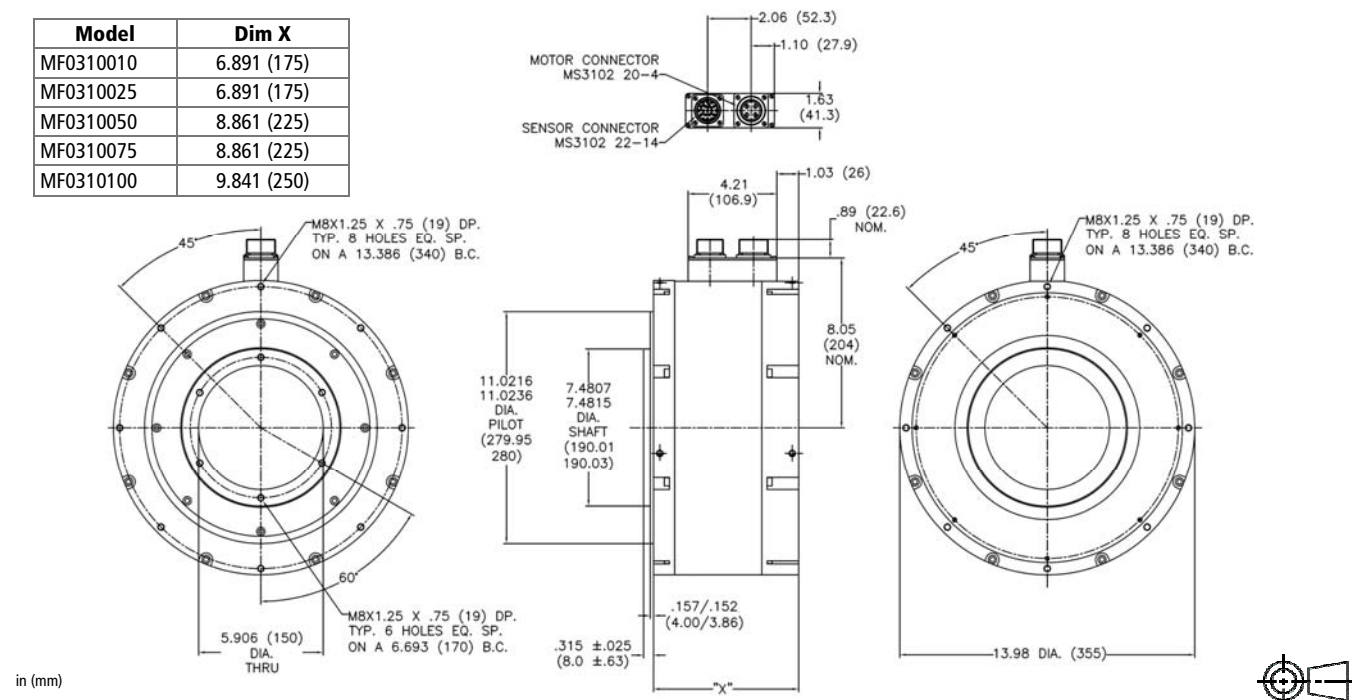
## MF310 Series Housed Brushless Torque Motors

### SPECIFICATIONS

Model No.		MF0310010	MF0310025	MF0310050	MF0310075	MF0310100					
<b>Motor Constants</b>											
Max Stall Torque (continuous)	lb-ft	16.5	39.2	79.6	117.8	157.4					
	Nm	22.37	53.15	107.92	159.72	213.41					
Peak Torque	lb-ft	74.4	194.6	381.4	569.9	760.1					
	Nm	100.9	263.8	517.1	772.6	1030.6					
Motor Constant	lb-ft/√W	1.49	3.12	5.10	6.56	7.788					
	Nm/√W	2.03	4.23	6.92	8.89	10.560					
Elect. Time Constant	ms	4.95	7.22	9.46	10.318	10.822					
Mech. Time Constant	ms	38.9	9.59	5.76	3.68	3.13					
Thermal Resistance	°C/W	0.638	0.485	0.317	0.239	0.189					
Viscous Damping	lb-ft/RPM	6.8E-4	1.9E-3	4.2E-3	6.8E-3	0.010					
	Nm/RPM	9.2E-4	2.6E-3	5.7E-3	9.3E-3	0.014					
Cogging Torque (max.)	lb-ft	0.30	0.80	1.43	2.14	3.05					
	Nm	0.41	1.08	1.93	2.91	4.11					
<b>Mechanical Constants</b>											
Motor Inertia	lb-ft-s <sup>2</sup>	0.118	0.127	0.203	0.215	0.259					
	kg-m <sup>2</sup>	0.16	0.172	0.275	0.291	0.351					
Motor Weight	lb	94	103	143	157	185					
	kg	42.64	46.72	64.86	71.21	83.91					
Poles	-	48									
<b>Winding Constants</b>											
Design Voltage	V	150	300	150	300	150	300	150	300	150	300
Peak Current	A	84.8	46.51	117.8	74.4	175.7	117.1	233.7	175.3	175.1	140.1
Torque Constant (±10%)	lb-ft/A	0.878	1.601	1.652	2.615	2.171	3.256	2.438	3.250	4.339	5.424
	Nm/A	1.190	2.171	2.240	3.546	2.943	4.415	3.305	4.407	5.883	7.354
No Load Speed	RPM	1161	1274	617	779	469	626	418	627	235	376
	rad/s	121.6	133.4	64.6	81.7	49.2	65.6	43.8	65.7	24.6	39.3
BEMF Constant (±10%)	V/kRPM	124.65	227.30	234.52	371.32	308.21	462.32	346.10	461.74	616.06	770.07
	V/rad/s	1.190	2.171	2.240	3.546	2.943	4.415	3.305	4.407	5.883	7.354
Terminal Resistance (±12%)	Ohm	0.394	1.166	0.263	0.691	0.181	0.407	0.138	0.262	0.310	0.485
Terminal Inductance (±30%)	mH	1.702	5.658	2.022	5.070	1.711	3.849	1.423	2.531	3.359	5.248

### DIMENSIONS

Model	Dim X
MF0310010	6.891 (175)
MF0310025	6.891 (175)
MF0310050	8.861 (225)
MF0310075	8.861 (225)
MF0310100	9.841 (250)

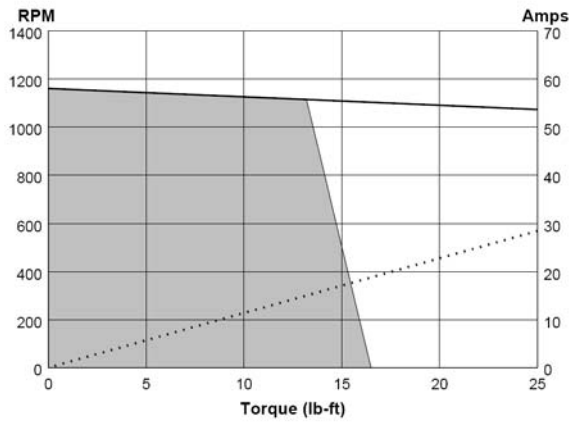




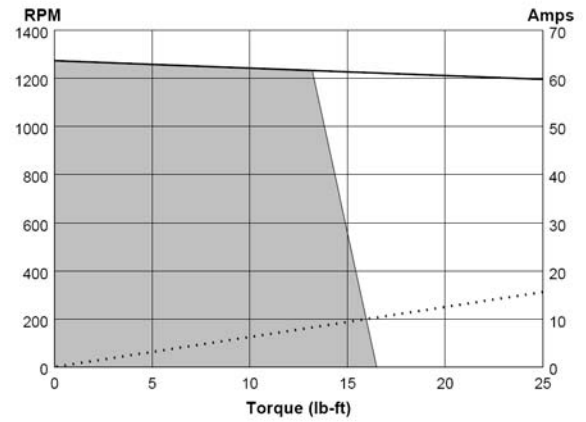
## MF310 Series Housed Brushless Torque Motors

### PERFORMANCE

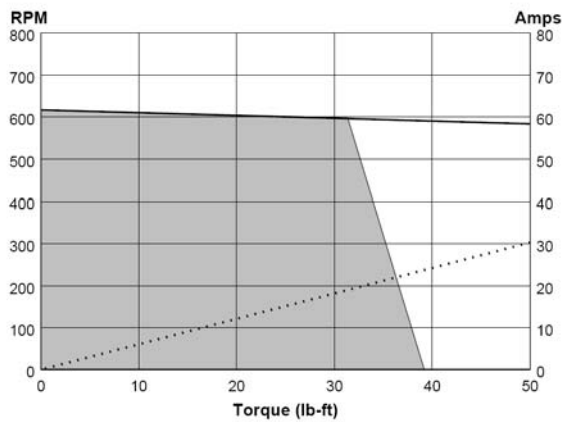
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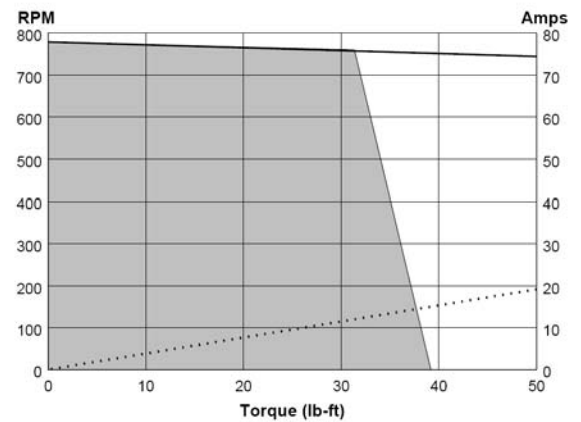
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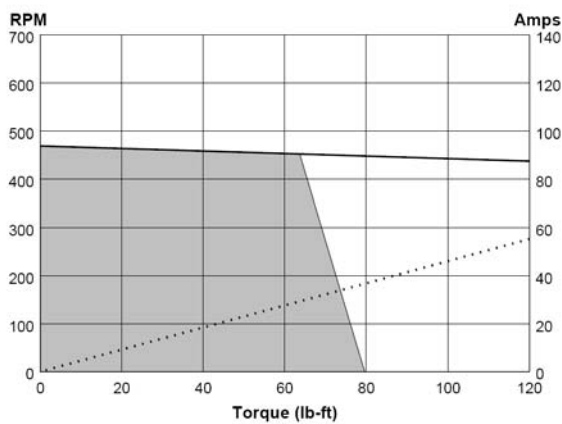
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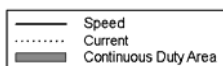
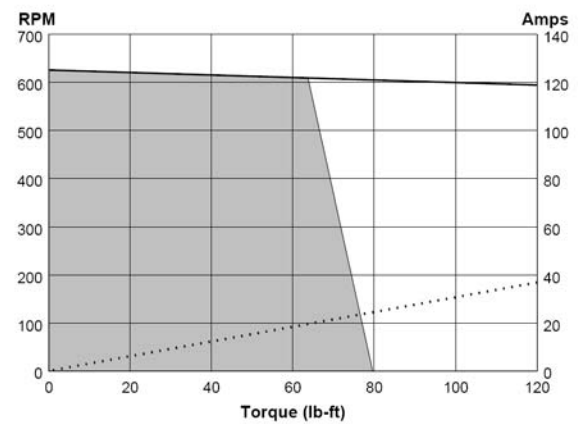
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MF0310050-B00-H



MF0310050-C00-H

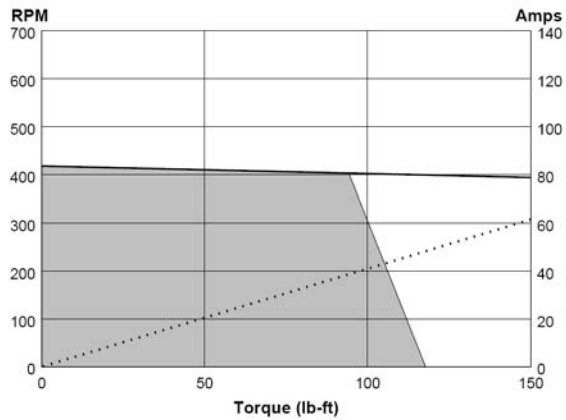


# Torque Motors

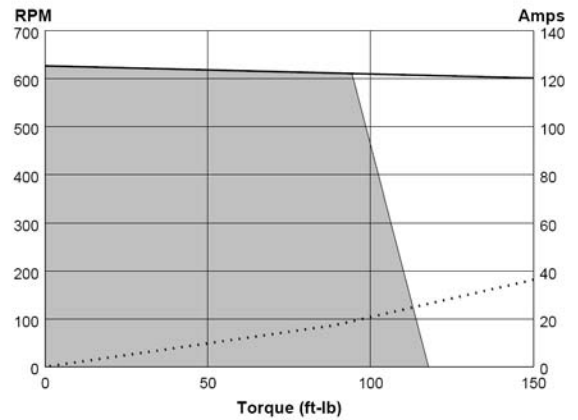
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### PERFORMANCE

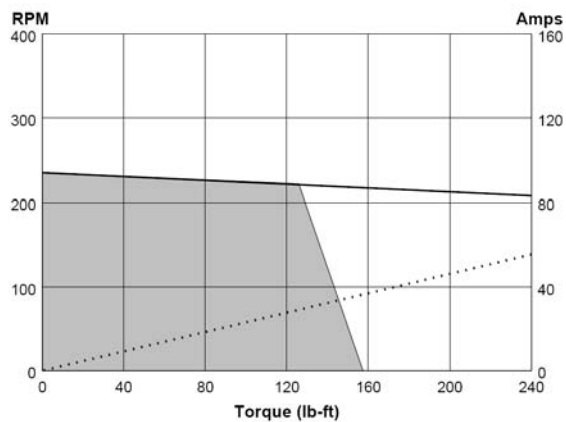
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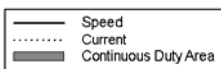
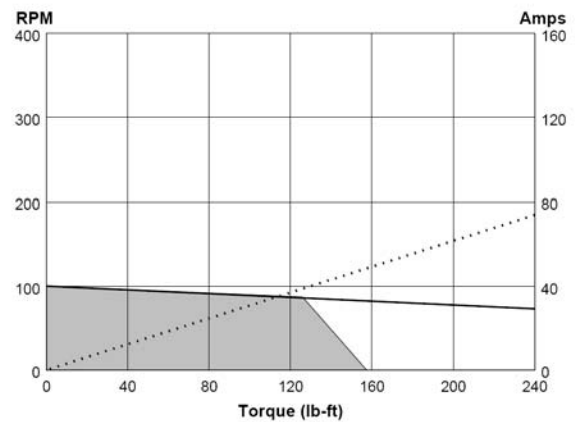
MF0310075-C00-H



MF0310100-B00-H

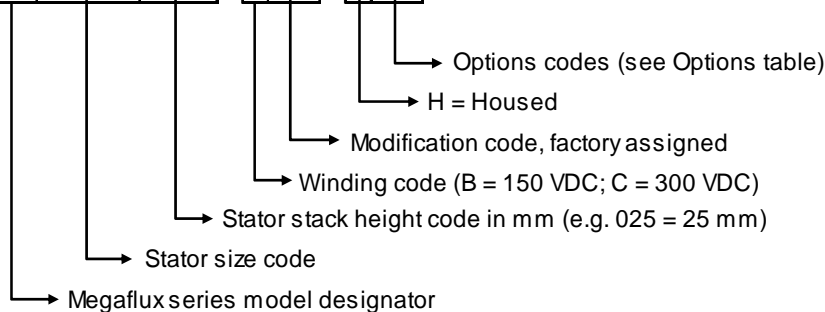


MF0310100-C00-H



### MODEL NUMBERING

**MF0310025-B00-HEZ**



Options
E = Encoder
I = IP65 protection level
R = Resolver
Z = RoHS compliant

## NOTES

**Customer Assistance – Allied Motion “Speaks Your Language”**



**Allied Motion’s** application engineering and customer service teams are available to assist you with all aspects of the selection and purchase of our products, including:

- Detailed product information and documentation
- Application analysis assistance
- Standard product selection
- Product customization and options guidance
- Specification development for special-designed products
- Price quotations
- Ordering and order status information
- Logistics assistance

For assistance with all of your motion applications, call or email us using the contact information below.

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