

2796 Culver Ave., Dayton, Ohio 45429  
 PH: 937/294-1041 FAX: 294-8336  
 www.motortech.com

**DC PERMANENT MAGNET MOTORS  
 MILITARY QUALITY**

**MODEL FML  
 BULLETIN 225A105**

**ELECTRICAL SPECIFICATIONS**

**Rating:** 0.13 hp continuous duty.

**Voltage:** 12, 27, 50, 115 and 180 VDC are standard. Other voltages are available if required.

**Speed:** Standard speeds, 2540 rpm to 6900 rpm. Higher and lower variations upon request.

**Connection Method:** Double conductor shielded cables, #18 AWG per MIL-W-16878, type E.

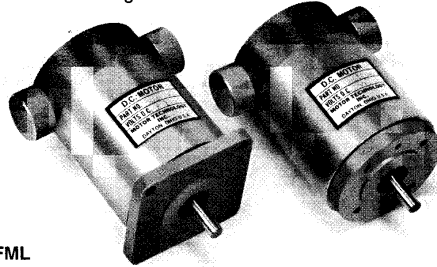
**Rotation:** Counter clockwise, with red lead plus (+) and black lead minus (-), viewing from shaft end.

**Reversibility:** Unit reverses rotation when voltage is reversed.

The Model FML is particularly suitable for military and high quality industrial applications with extremely high power requirements and severe space limitations. Special magnets contribute greatly to this motor's superior efficiency. Its torque/speed curve is quite flat, and its servo response characteristics are excellent.

Major uses of the FML model include valve drives and various aircraft actuators, including pumps and aerodynamic surfaces.

Motor Technology engineers can customize the FML motor to deliver the exact performance you need. Standard modification options include pinions, filters, D.C. series or parallel brakes, flanges, lubricants, gear reductions, etc. See Bulletin 226A120/132 for gear ratios available.



**MODEL FML**

**MECHANICAL SPECIFICATIONS**

**Frame:** Steel tubing with machined aluminum end-bells.

**Armature:** Varnish impregnated, precision balanced, with diamond turned commutator. Inertia is  $4.85 \times 10^{-3}$  oz. in. sec.<sup>2</sup> (max.).

**Magnet:** Samarium-Cobalt segments with 24 million energy product.

**Bearings:** Double shielded, life lubricated, ABEC-1 ball bearings.

**Lubrication:** Grease per MIL-G-3278. Other lubricants available.

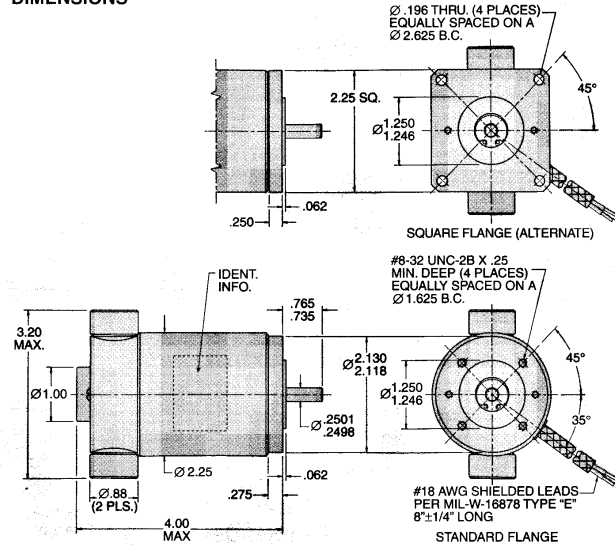
**Brush-holder:** Cartridge type, molded of Durez 1544 with brass insert. Holder is protected by surrounding end-bell casting.

**Shaft:** Precision ground stainless 17-4 PH, heat treated H-900.

**Mounting Method:** Four tapped holes are standard.

**Weight:** 2.10 lb. (max.).

**DIMENSIONS**



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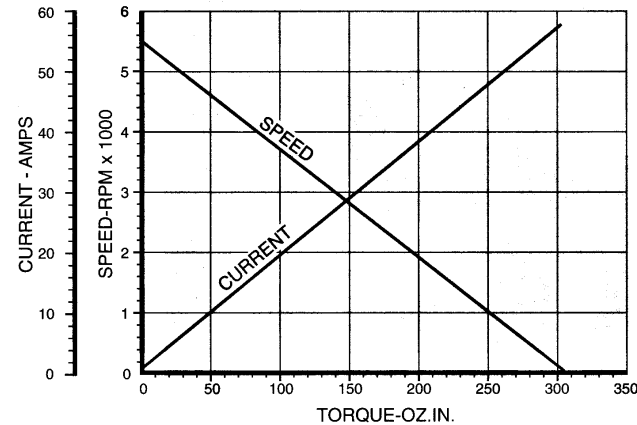
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**BASIC MOTOR DATA — STANDARD PART NUMBERS**

INPUT VOLTAGE DC	NO-LOAD SPEED* RPM	RATED TORQUE OZ.IN.	STALL TORQUE* OZ.IN.	NO-LOAD CURRENT* AMPS	RATED TORQUE CURRENT* AMPS	STALL CURRENT* AMPS	STANDARD FML PART NUMBERS
12	3855	25	215	1.0	8.39	64.6	225A105-1
27	6900	19	382	.77	5.28	91.5	225A105-2
27	5465	25	303	.61	5.31	57.6	225A105-3
27	4340	33	241	.48	5.38	36.3	225A105-4
27	3445	35	191	.38	4.51	22.9	225A105-5
50	5060	26	281	.30	2.70	26.7	225A105-6
50	4015	35	223	.24	2.84	16.8	225A105-7
50	3185	35	177	.19	2.20	10.6	225A105-8
115	5815	23	323	.15	1.22	15.3	225A105-9
115	4615	30	256	.12	1.24	9.65	225A105-10
115	3665	35	203	.095	1.12	6.08	225A105-11
180	4690	30	260	.078	.782	6.18	225A105-12
180	3800	35	212	.063	.711	3.99	225A105-13
180	3090	35	172	.051	.563	2.57	225A105-14
180	2540	28	141	.042	.365	1.67	225A105-15

\* The standard production tolerance on no-load speed, stall torque and stall current is ±10%.  
 The tolerance on no-load current is +25%.  
 The tolerance on current at rated torque is +15%.

**TYPICAL PERFORMANCE CURVES  
 225A105-3 at 27 VDC**



For complete engineering information on plotting speed/torque and current/torque curves for other armatures, see Bulletin E-1. For servo data, see Bulletin E-2.

**ORDERING**

For standard motors, simply order by using the part number listed above corresponding to the performance required.

Special modifications to the FML motor are available and are ordered as follows:

1. Reference the closest standard P/N in your order.
2. Call out all the special requirements by stating exactly what is required.

We will then assign a special part number to identify your motor. For quick and accurate processing of future orders, just refer to this number.