

2796 Culver Ave., Dayton, Ohio 45429
513/294-1041

**GEARMOTORS
DC PERMANENT MAGNET
MILITARY QUALITY**

**MODEL CML
BULLETIN 121A200/283**

ELECTRICAL SPECIFICATIONS

Voltage: 6, 12, 27, 50 and 75 VDC are standard. Other voltages available. Reverse side of sheet shows complete CML gearmotor data.

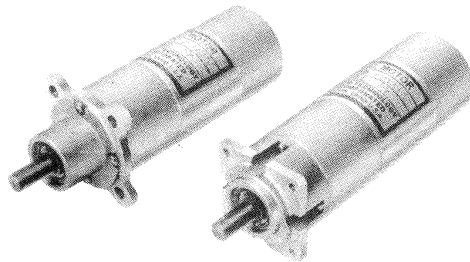
Speed: Motor input speeds up to 17,300 RPM can be used to drive this precision planetary geartrain, of ratios from 3.81 to 19,841.

Connection Method: Double conductor shielded cables, #22 AWG per MIL-W-16878, type E.

Rotation: Counter clockwise when viewed from shaft end, when positive lead (red) is plus and negative lead (black) is minus.

Reversibility: Unit reverses rotation when voltage is reversed.

Designed and constructed for tough military environments, the Motor Technology CML planetary gearmotors are available with 1-1/4" or 1-7/16" flange mountings and with 1/4" or 5/16" shafts. Choose from 21 standard speed reduction ratios — selected for low noise and high efficiency. For pinions, RFI filters, brakes or any modifications you may need, consult with our application engineers. See Bulletin 120A105/106 for additional CML motor information.



MODEL CML GEARMOTOR

MECHANICAL SPECIFICATIONS

Rating: 1/60 hp with torques to 1250 oz. in.

Gears: Precision manufactured and heat treated steel.

Bearings: Ball bearings (2) support the .250 diameter output shaft. Needle bearings are used on the .312 diameter shaft.

Backlash: Less than 3°.

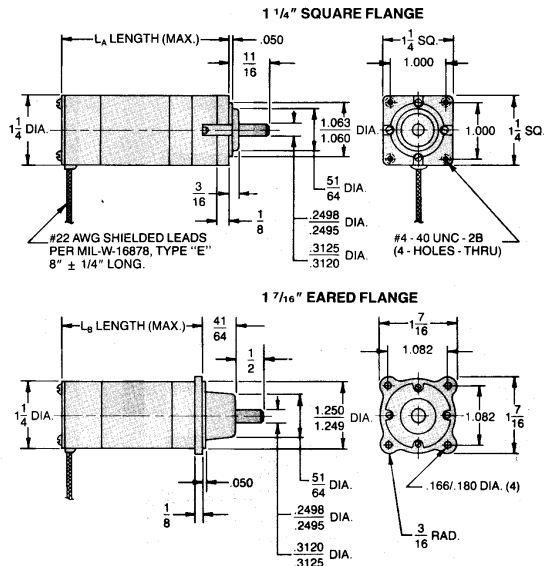
Shaft: Precision ground 416 stainless steel, case hardened, with black oxide finish.

Protection: Aluminum parts finished per MIL-C-5541A. Ring gear cadmium plated per QQ-P-416, type 2, class 2.

Lubrication: Motor bearings life lubricated per MIL-G-3278. Gearbox lubricated with grease per MIL-G-23827A. Special lubes are available.

Weight: 8 to 15 ounces, depending on ratios.

DIMENSIONS



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BASIC GEARMOTOR DATA — STANDARD PART NUMBERS

SPEED REDUCTION RATIO	MAXIMUM CONT. DUTY TORQUE OZ.IN.	TORQUE MULTIPLIER	LENGTH 1-1/4" FLANGE L _A DIMENSION	LENGTH 1-7/16" FLANGE L _B DIMENSION	STANDARD CML GEARMOTOR PART NUMBERS (Add armature dash number to part number; see below.)			
					1-1/4" FLANGE		1-7/16" FLANGE	
					1/4" SHAFT	5/16" SHAFT	1/4" SHAFT	5/16" SHAFT
3.81 5.54	5.2 7.5	3.1 4.4	3.29 3.29	2.84 2.84	121A200- 121A201-	121A221- 121A222-	121A242- 121A243-	121A263- 121A264-
14.5 21.1 30.7	15.8 23.0 33.4	9.3 13.5 19.5	3.50 3.50 3.50	3.05 3.05 3.05	121A202- 121A203- 121A204-	121A223- 121A224- 121A225-	121A244- 121A245- 121A246-	121A265- 121A266- 121A267-
55.3 80.3 117 170	48.4 70.2 102 148	28.5 41.3 60 87	3.71 3.71 3.71 3.71	3.26 3.26 3.26 3.26	121A205- 121A206- 121A207- 121A208-	121A226- 121A227- 121A228- 121A229-	121A247- 121A248- 121A249- 121A250-	121A268- 121A269- 121A270- 121A271-
306 445 647 940	215 311 451 656	126 183 265 386	4.13† 4.13† 4.13† 4.13†	3.68† 3.68† 3.68† 3.68†	121A209- 121A210- 121A211- 121A212-	121A230- 121A231- 121A232- 121A233-	121A251- 121A252- 121A253- 121A254-	121A272- 121A273- 121A274- 121A275-
1,694 2,464 3,582	947 1250** 1250**	558 808 1180	4.34† 4.34† 4.34†	3.89† 3.89† 3.89†	121A213- 121A214- 121A215-	121A234- 121A235- 121A236-	121A255- 121A256- 121A257-	121A276- 121A277- 121A278-
4,439 6,455 9,385 13,646 19,841	1250** 1250** 1250** 1250** 1250**	1180 1700 2470 3580 5200	4.55† 4.55† 4.55† 4.55† 4.55†	4.10† 4.10† 4.10† 4.10† 4.10†	121A216- 121A217- 121A218- 121A219- 121A220-	121A237- 121A238- 121A239- 121A240- 121A241-	121A258- 121A259- 121A260- 121A261- 121A262-	121A279- 121A280- 121A281- 121A282- 121A283-

† This rating is for gearbox only. To determine output of any motor-gearbox combination, multiply motor torque by the torque multiplier for that ratio. Do not use the .250 dia. shaft for continuous duty above 700 oz. in. Consult factory.

‡ Torque multiplier ratio is the gear ratio multiplied by its efficiency.
** Consult factory when exceeding 1250 oz. in.
† For applications below 200 oz. in., continuous duty, length L_A and L_B can be reduced by .210 in. Consult factory.

BASIC CML ARMATURE DATA

INPUT VOLTAGE DC	NO-LOAD SPEED RPM	RATED TORQUE OZ.IN.	STALL TORQUE OZ.IN.	NO-LOAD CURRENT AMPS MAX.	RATED TORQUE CURRENT AMPS	STALL CURRENT AMPS	ARMATURE DASH NUMBER
6*	14,500	1.0	14.5	1.78	3.6	34	-1
6*	12,200	1.2	12.2	1.50	3.5	24	-2
6*	9,500	1.7	9.5	1.18	3.3	14.5	-3
12	15,100	1.1	15.1	.94	2.0	18.4	-4
12	12,200	1.5	12.2	.77	2.0	12.0	-5
12	9,700	2.0	9.7	.62	2.0	7.6	-6
27	17,300	1.0	17.3	.49	.95	10.7	-7
27	14,300	1.2	14.3	.40	.80	7.4	-8
27	11,200	1.6	11.2	.32	.85	4.5	-9
27	9,050	1.8	9.1	.26	.70	2.9	-10
27	7,100	1.5	7.1	.20	.50	1.8	-11
27	5,800	1.5	5.8	.17	.40	1.2	-12
50	8,500	1.6	8.5	.13	.33	1.4	-13
50	6,900	1.5	6.9	.10	.26	.92	-14
75	7,800	1.6	7.8	.08	.20	.78	-15
75	6,300	1.5	6.3	.06	.15	.51	-16
75	4,900	1.3	4.9	.05	.10	.31	-17

‡ For complete CML motor data and tolerances see Bulletin 120A105/106.
* Intermittent duty at rated load; consult factory for ratings for your application.

HOW TO SELECT A UNIT

The complete part number must include a standard CML gearmotor part number (above) plus an applicable CML armature dash number from the basic motor data chart (left). Use the following trial and error technique to start:

1. Assume motor speed of 10,000 RPM and divide it by the required output speed to get approximate ratio.
2. From ratios charted above, select closest one.
3. Check maximum torque rating of that ratio with your actual requirement. Adjust ratio and motor speed up or down as needed.
4. Calculate output torque by multiplying motor torque by the "torque multiplier" of the ratio selected.
5. Select armature from voltage, load and speed required.
6. Select shaft size and flange configuration for your application and determine correct gearmotor part number.

HOW TO ORDER: Order by standard part number (example: 121A251-11), making sure to include the armature dash number. Note any modifications as exceptions to the standard.