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

GEARMOTORS
DC PERMANENT MAGNET
MILITARY QUALITY

MODEL CMR
BULLETIN 121A100/183

ELECTRICAL SPECIFICATIONS

Voltage: 3, 6, 12, 27, and 50 VDC are standard. Other voltages available. Reverse side of sheet shows complete CMR gearmotor data.

Speed: Motor input speeds up to 24,000 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 CMR 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 120A100/101 for additional CMR motor information.
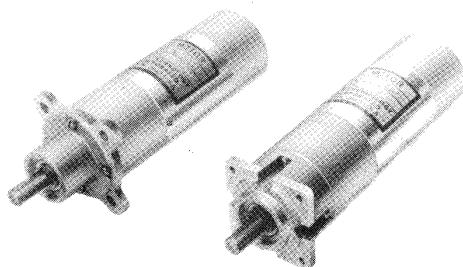
MODEL CMR GEARMOTOR

MECHANICAL SPECIFICATIONS

Rating: 1/100 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: 7 to 12 ounces, depending on ratios.

DIMENSIONS

1 1/4″ SQUARE FLANGE

1 7/16″ EARED FLANGE
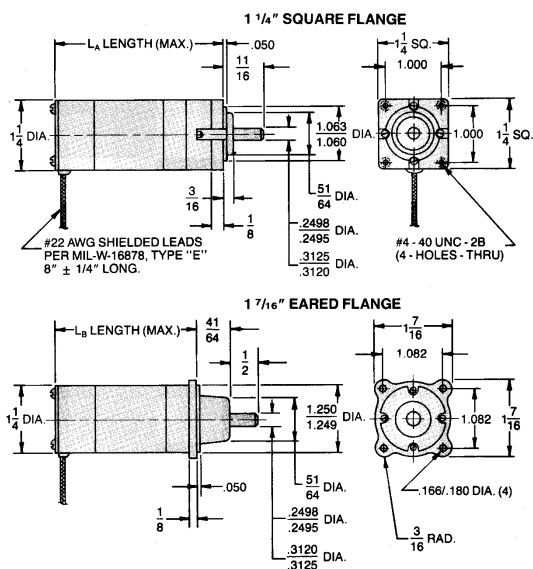
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BASIC GEARMOTOR DATA — STANDARD PART NUMBERS

| SPEED REDUCTION RATIO | MAXIMUM [1] CONT. DUTY TORQUE OZ.IN. | TORQUE [2] 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	5.2	3.1	2.97	2.52	121A100-	121A121-	121A142-	121A163-
5.54	7.5	4.4	2.97	2.52	121A101-	121A122-	121A143-	121A164-
14.5	15.8	9.3	3.18	2.73	121A102-	121A123-	121A144-	121A165-
21.1	23.0	13.5	3.18	2.73	121A103-	121A124-	121A145-	121A166-
30.7	33.4	19.5	3.18	2.73	121A104-	121A125-	121A146-	121A167-
55.3	48.4	28.5	3.39	2.94	121A105-	121A126-	121A147-	121A168-
80.3	70.2	41.3	3.39	2.94	121A106-	121A127-	121A148-	121A169-
117	102	60.0	3.39	2.94	121A107-	121A128-	121A149-	121A170-
170	148	87.0	3.39	2.94	121A108-	121A129-	121A150-	121A171-
306	215	126	3.81†	3.36†	121A109-	121A130-	121A151-	121A172-
445	311	183	3.81†	3.36†	121A110-	121A131-	121A152-	121A173-
647	451	265	3.81†	3.36†	121A111-	121A132-	121A153-	121A174-
940	656	386	3.81†	3.36†	121A112-	121A133-	121A154-	121A175-
1,694	947	558	4.02†	3.57†	121A113-	121A134-	121A155-	121A176-
2,464	1250**	808	4.02†	3.57†	121A114-	121A135-	121A156-	121A177-
3,582	1250**	1180	4.02†	3.57†	121A115-	121A136-	121A157-	121A178-
4,439	1250**	1180	4.23†	3.78†	121A116-	121A137-	121A158-	121A179-
6,455	1250**	1700	4.23†	3.78†	121A117-	121A138-	121A159-	121A180-
9,385	1250**	2470	4.23†	3.78†	121A118-	121A139-	121A160-	121A181-
13,646	1250**	3580	4.23†	3.78†	121A119-	121A140-	121A161-	121A182-
19,841	1250**	5200	4.23†	3.78†	121A120-	121A141-	121A162-	121A183-

[1] 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.

[2] 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, lengths L_A and L_B can be reduced by .210 in. Consult factory.

BASIC CMR ARMATURE DATA [3]

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
3*	12,200	1.0	5.7	1.85	4.8	21	-1
3*	10,400	1.0	4.8	1.50	3.9	15	-2
6	15,900	0.7	7.4	1.16	2.5	17.8	-3
6	12,600	1.0	5.8	.92	2.4	11.1	-4
12	20,300	0.5	9.4	.74	1.3	14.6	-5
12	16,300	0.7	7.6	.60	1.3	9.4	-6
12	12,800	1.0	5.9	.47	1.25	5.8	-7
27	24,000	0.4	11.0	.390	.65	9.1	-8
27	18,500	0.6	8.6	.296	.65	5.3	-9
27	15,100	0.7	7.0	.250	.60	3.6	-10
27	11,800	1.0	5.5	.187	.50	2.2	-11
27	9,700	1.0	4.5	.156	.40	1.5	-12
27	7,700	1.0	3.5	.125	.33	.92	-13
50	11,500	1.0	5.3	.100	.25	1.11	-14
50	8,700	1.0	4.0	.076	.20	.64	-15
50	7,000	0.8	3.2	.061	.14	.42	-16
50	5,500	0.7	2.5	.048	.10	.26	-17

[3] For complete CMR motor data and tolerances see Bulletin 120A100/101.
* 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 CMR gearmotor part number (above) plus an applicable CMR 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: 121A130-11), making sure to include the armature dash number. Note any modifications as exceptions to the standard.