



GM8712-31

Lo-Cog® DC Gearmotor

| Assembly Data | Symbol | Units | Value | |
|---------------------------------------|------------------|---|---------|------------|
| Reference Voltage | E | V | 19.1 | |
| No-Load Speed | S _{NL} | rpm (rad/s) | 128 | (13.4) |
| Continuous Torque (Max.) ¹ | T _C | oz-in (N-m) | 46 | (3.2E-01) |
| Peak Torque (Stall) ² | T _{PK} | oz-in (N-m) | 201 | (1.4E+00) |
| Weight | W _M | oz (g) | 7.1 | (202) |
| Motor Data | | | | |
| Torque Constant | K _T | oz-in/A (N-m/A) | 3.06 | (2.16E-02) |
| Back-EMF Constant | K _E | V/krpm (V/rad/s) | 2.27 | (2.16E-02) |
| Resistance | R _T | Ω | 10.8 | |
| Inductance | L | mH | 5.40 | |
| No-Load Current | I _{NL} | A | 0.14 | |
| Peak Current (Stall) ² | I _P | A | 1.76 | |
| Motor Constant | K _M | oz-in/√W (N-m/√W) | 0.93 | (6.57E-03) |
| Friction Torque | T _F | oz-in (N-m) | 0.35 | (2.5E-03) |
| Rotor Inertia | J _M | oz-in-s ² (kg-m ²) | 1.3E-04 | (9.2E-07) |
| Electrical Time Constant | τ _E | ms | 0.50 | |
| Mechanical Time Constant | τ _M | ms | 21.5 | |
| Viscous Damping | D | oz-in/krpm (N-m-s) | 0.009 | (5.9E-07) |
| Damping Constant | K _D | oz-in/krpm (N-m-s) | 0.64 | (4.3E-05) |
| Maximum Winding Temperature | θ _{MAX} | °F (°C) | 311 | (155) |
| Thermal Impedance | R _{TH} | °F/watt (°C/watt) | 75.9 | (24.4) |
| Thermal Time Constant | τ _{TH} | min | 7.8 | |
| Gearbox Data | | | | |
| Reduction Ratio | | | 60.5 | |
| Efficiency | | | 0.66 | |
| Maximum Allowable Torque | | oz-in (N-m) | 100 | (0.71) |
| Encoder Data | | | | |
| | | | | |
| | | | | |

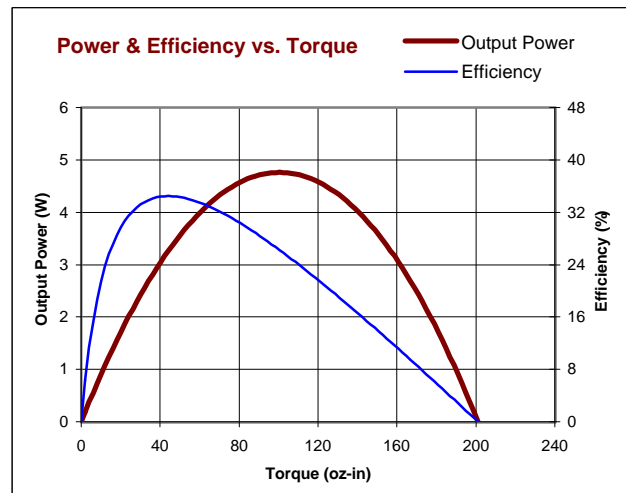
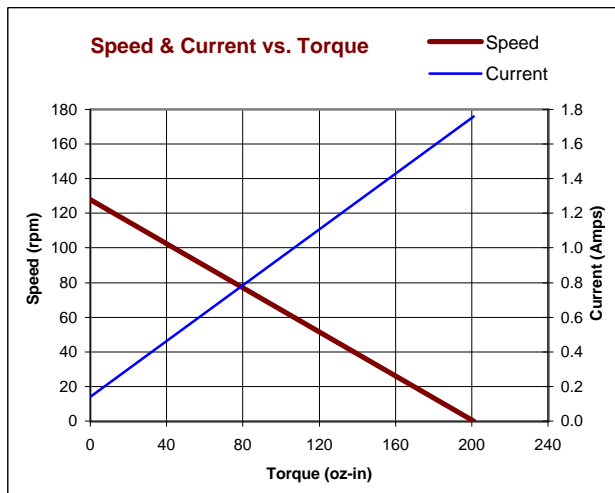
Included Features

- 2-Pole Stator
- Ceramic Magnets
- Heavy-Gauge Steel Housing
- 7-Slot Armature
- Silicon Steel Laminations
- Stainless Steel Shaft
- Copper-Graphite Brushes
- Diamond Turned Commutator
- Motor Sleeve Bearings
- Output Sleeve Bearing
- Standard Gears

Customization Options

- Alternate Winding
- Sleeve or Ball Bearings
- Modified Output Shaft
- Custom Cable Assembly
- Special Brushes
- EMI/RFI Suppression
- Alternate Gear Material
- Special Lubricant
- Optional Encoder
- Fail-Safe Brake

1 - Specified at max. winding temperature at 25°C ambient without heat sink. 2 - Theoretical values supplied for reference only.

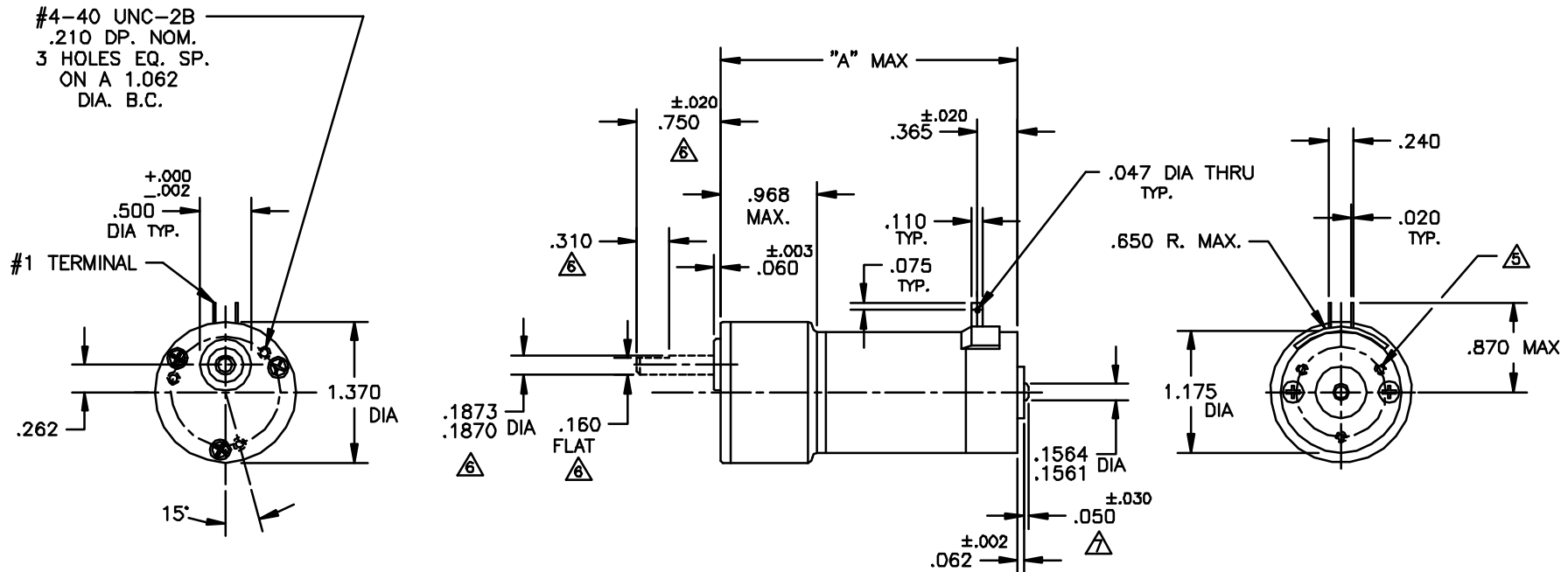


All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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| REVISIONS | | | | |
|-----------|----------------------------------|-----------|---------|------|
| LTR | DESCRIPTION | DRFT/ENGR | DATE | APPR |
| H | REDRAWN, UPDATED TO CURRENT STD. | DLF | 6/28/94 | JVM |
| J | UPDATED TO CURRENT STD. | RJS/RJS | | |



NOTES:

- SHAFT ROTATION IS SHOWN WHILE VIEWING MOUNTING END, WITH POSITIVE (+) VOLTAGE APPLIED TO # 1 TERMINAL.
 - TERMINALS ARE PLATED FOR SOLDERING.
 - MAX. GEARBOX TORQUE RATING IS 100 OZ.IN., STANDARD SINTERED GEARS. MAX. GEARBOX TORQUE RATING IS 160 OZ.IN., CUT STEEL GEARS.
 - ENDPLAY .020 MAX. ON OUTPUT SHAFT, .015 MAX. ON MOTOR SHAFT.
- △ OPTIONAL MOUNTING PATTERN #2-56 UNC-2B, (3) HOLES EQUALLY SPACED ON A .875 DIA. B.C., .125 MAX. THREAD DEPTH.
 △ ALL SHAFT DIMENSIONS SHOWN ARE STD. (10-385). FOR ALL OTHER CONFIGURATIONS REFER TO DATA SHEET FOR PART NUMBERS.
 △ OPTIONAL REAR SHAFT EXTENSIONS AVAILABLE.

| GEAR RATIO | DIRECTION | | |
|------------|-----------|----------|-----------|
| 187/96:1 | CCW | 3.285 | GM87X4 |
| 60.5/31:1 | CW | 3.035 | GM87X3 |
| 19.5/10:1 | CCW | 2.910 | GM87X2 |
| 6.3:1 | CW | "A" MAX. | MODEL NO. |

| | | | | |
|--|----------------|--------|----------|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTION DECIMAL ANGLES ±1/64 .0015 ±1° XX ±.010 XXX ±.005 BREAK ALL SHARP EDGES | FILE: | 150/28 | | |
| | DRAFTED BY: | DLF | | DATE: |
| MATERIAL: | ENGINEERED BY: | DLF | 6/24/94 | |
| | APPROVED BY: | JVM | 6/28/94 | |
| FINISH: | NEXT ASSY: | | TITLE: | OUTLINE & MOUNTING DIMENSIONS GM87XX STD. GEARBOX |
| | USED ON: | | DWG. NO. | 150-28 |
| | | | SCALE: | D.N.S. |
| | | | SHEET | 1 OF 1 |