# CM GEARMOTORS

DC Permanent Magnet Planetary Gearmotors

# A-1930

## general design specification

**torque rating:** Up to 600 oz. in. maximum torque

**weight:** 3.4 to 4.0 ounces depending on ratio

**gears:** Planetary gearing system. All gears are heat treated for consistently reliable performance and long life

**shaft:** Precision-ground, No. 416 nitrided stainless steel. Options: length, smaller diameter, flats, pinions, gears, holes (through or tapped), threaded ends and tapers. Type of steel used may change depending upon variation selected

**backlash:** Varies with reduction but average unit will have less than 3°

**gearmotor inertia:** 2.5 x $10^{-5}$ oz. in. $sec.^2$

**bearings:** Double-shielded, life-lubricated ball bearings for -55°C to +85°C operation.

**cables/leads:** 12" leads #26 AWG per MIL-W-16878/4

**mounting flange:** Aluminum

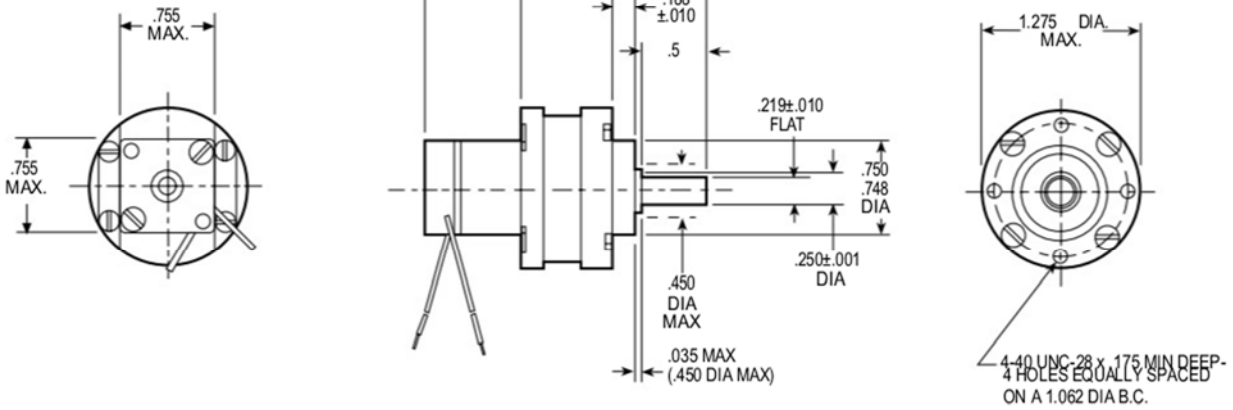
**marking:** Per MIL-STD-130

**typical no load torque:** 0.30 oz.in.

**winding temperature rise:** 24°C per watt

**maximum allowable winding temperature:** 180°C

## Dimensions





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## Standard Part Numbers and Data

| SPEED REDUCTION RATIO | MAXIMUM CONTINUOUS TORQUE (oz. in.) | TORQUE MULTIPLIER RATIO | L MAX (in.) | STANDARD PART NUMBER PREFIX* |
|---|---|---|---|---|
| 18.78:1 | 10.4 | 13 | 1.373 | 477A100 |
| 27.94:1 | 15.2 | 19 | 1.373 | 477A101 |
| 81.37:1 | 37.6 | 47 | 1.506 | 477A102 |
| 121.10:1 | 56.8 | 71 | 1.506 | 477A103 |
| 147.70:1 | 68.8 | 86 | 1.506 | 477A104 |
| 352.60:1 | 138.4 | 173 | 1.639 | 477A105 |
| 524.60:1 | 206.4 | 258 | 1.639 | 477A106 |
| 639.90:1 | 252.0 | 315 | 1.639 | 477A107 |
| 780.60:1 | 307.0 | 384 | 1.639 | 477A108 |

.250" dia. shaft units limited to 600 oz.in. maximum torque.
Max rated torque of motor selected x torque multiplier ratio must not exceed maximum continuous torque
Gearbox Efficiency = Torque Multiplier Ratio divided by Speed Reduction Ratio x 100

## *When You Order

Each of the basic motor armature windings (bottom chart) can be used with any of the gear ratios listed above. To order, state the gear train standard part number prefix, plus a motor armature winding dash number. EXAMPLE: 477A100-1 is an 18.78:1 gearmotor with a "-1" armature winding, 6 volts, 4,300 rpm, .8 oz. in. torque, etc.

## Basic Motor Data

| VOLTAGE (VDC) | ±15% SPEED no load (rpm) | TORQUE | | CURRENT | | | CONSTANTS | | ARMATURE WINDING DASH NUMBER* |
|---|---|---|---|---|---|---|---|---|---|
| | | max rated (oz. in.) | nominal stall (oz. in.) | nominal no load (amps) | nominal rated load (amps) | nominal stall (amps) | $K_T$ (oz. in./ amp) | R (ohms) | |
| 6 | 4,300 | .8 | 1.7 | .19 | .69 | 1.26 | 1.6 | 4.6 | -1 |
| 12 | 4,400 | .8 | 1.7 | .09 | .35 | .66 | 3.17 | 18.0 | -2 |
| 24 | 4,500 | .8 | 1.7 | .05 | .18 | .33 | 6.15 | 72.7 | -3 |

No load current in this chart applies to the gearmotor