Molon CEM-1205-1M

Molon CEM-1205-1M PMDC Gearmotor Instruction Manual

Model: CEM-1205-1M

Introduction

This manual provides essential information for the safe and effective installation, operation, and maintenance of your Molon CEM-1205-1M Permanent Magnet DC (PMDC) Gearmotor. Please read this manual thoroughly before attempting to install or operate the gearmotor. Retain this manual for future reference.

The Molon CEM-1205-1M is a robust 12 Volt PMDC gearmotor designed to deliver 120 in.-lb. of torque at 5 RPM, suitable for various industrial and scientific applications requiring precise and reliable low-speed, high-torque motion.

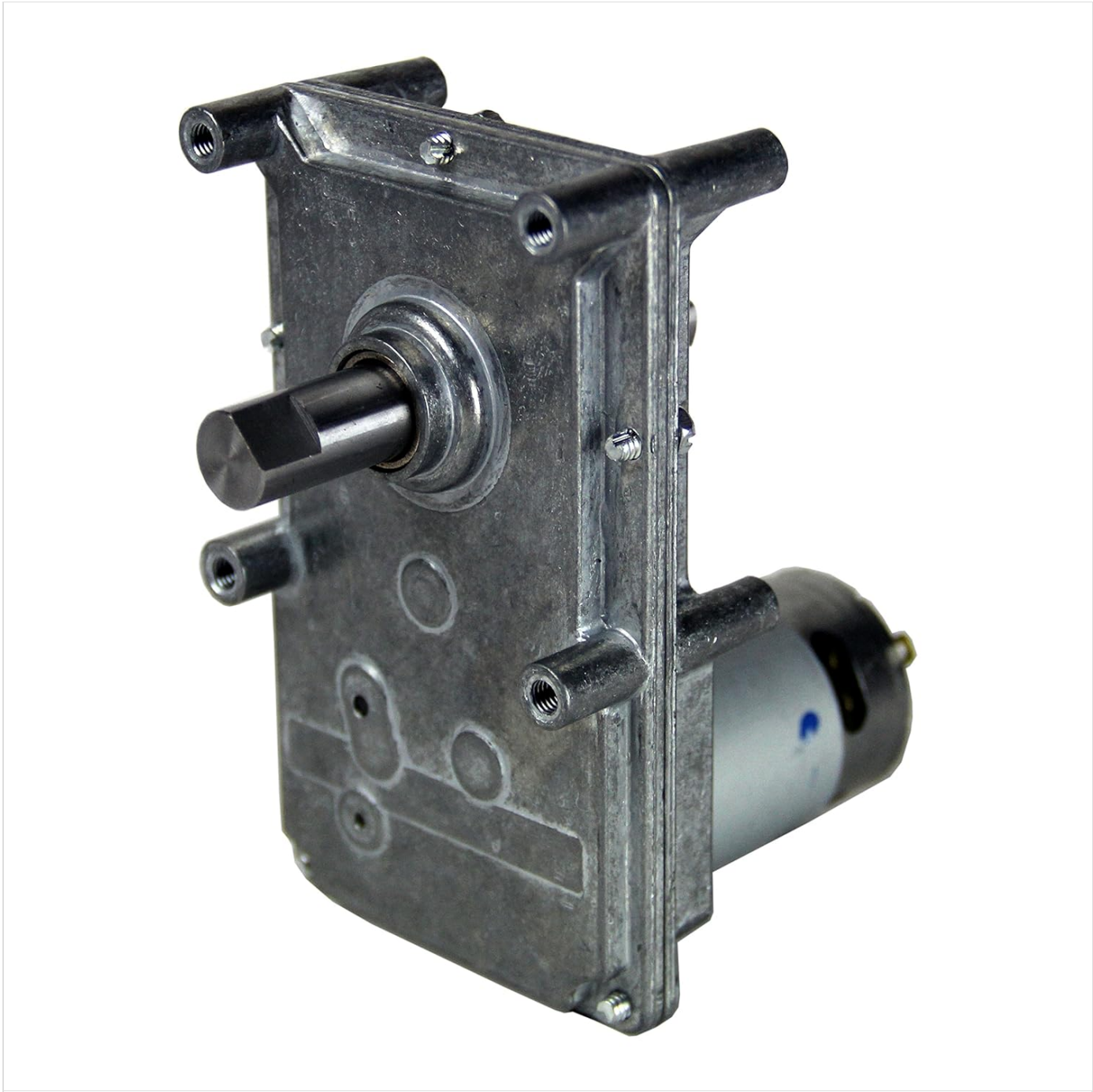

Figure 1: Molon CEM-1205-1M PMDC Gearmotor, showing the gearbox and motor assembly.

Safety Information

Always observe the following safety precautions to prevent injury or damage to the equipment:

- **Disconnect Power:** Always disconnect power before performing any installation, maintenance, or troubleshooting.
- **Qualified Personnel:** Installation and wiring should only be performed by qualified personnel familiar with electrical systems and motor applications.
- **Proper Voltage:** Ensure the power supply voltage matches the motor's rated voltage (12 Volts DC). Incorrect voltage can cause damage or malfunction.
- **Overload Protection:** Implement appropriate overload protection in your circuit to prevent motor damage from excessive loads.
- **Moving Parts:** Keep hands, clothing, and tools clear of moving parts during operation.
- **Ventilation:** Ensure adequate ventilation around the motor to prevent overheating.
- **Environmental Conditions:** Do not expose the gearmotor to excessive moisture, dust, or corrosive environments

unless specifically rated for such conditions.

Setup

Unpacking

Carefully remove the gearmotor from its packaging. Inspect for any visible damage that may have occurred during shipping. If damage is found, contact your supplier immediately.

Mounting

The gearmotor can be mounted using the four tapped holes through the gearbox and four tapped holes through the cover. Refer to the technical drawing for precise dimensions and mounting hole locations.

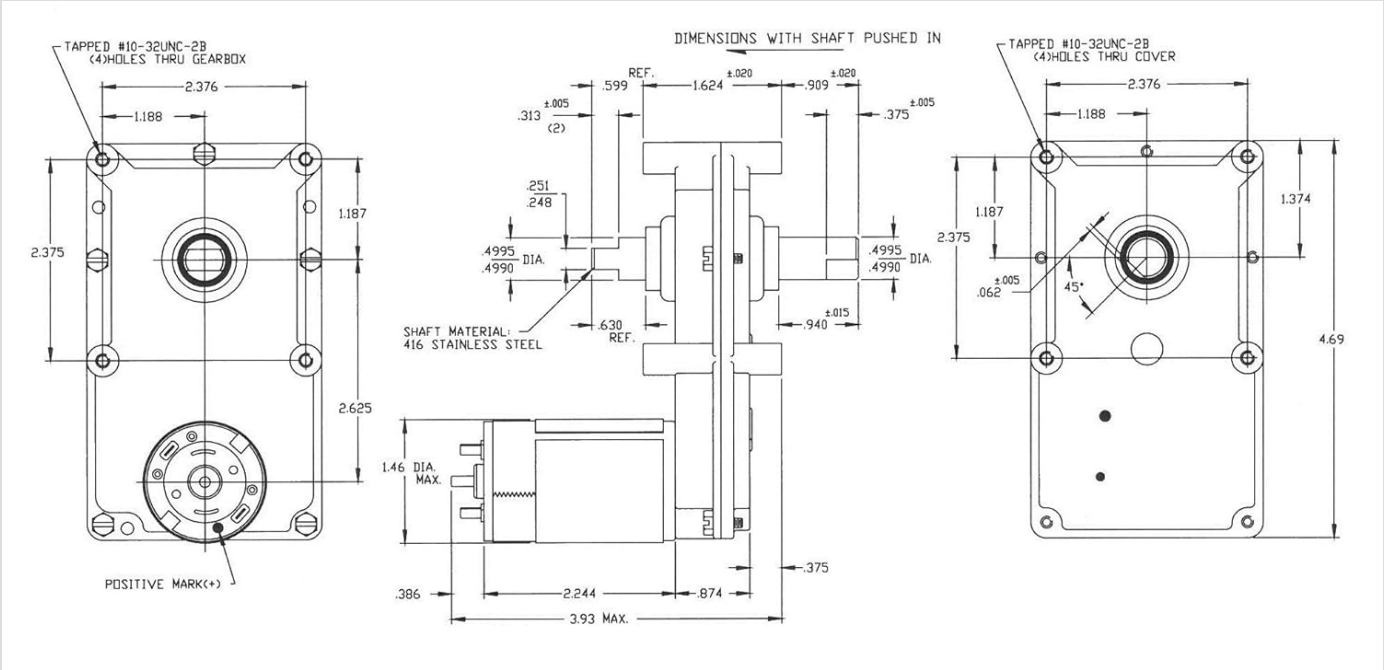

Figure 2: Technical drawing showing mounting dimensions and shaft details. Note the tapped #10-32UNC-2B holes for mounting.

- Ensure the mounting surface is flat and rigid to prevent vibration and misalignment.
- Use appropriate fasteners (e.g., #10-32UNC screws) that are long enough to engage sufficient threads without bottoming out.
- Avoid applying excessive force to the motor shaft during mounting or when attaching loads.

Electrical Connections

The Molon CEM-1205-1M operates on 12 Volts DC. Observe proper polarity when connecting the power supply.

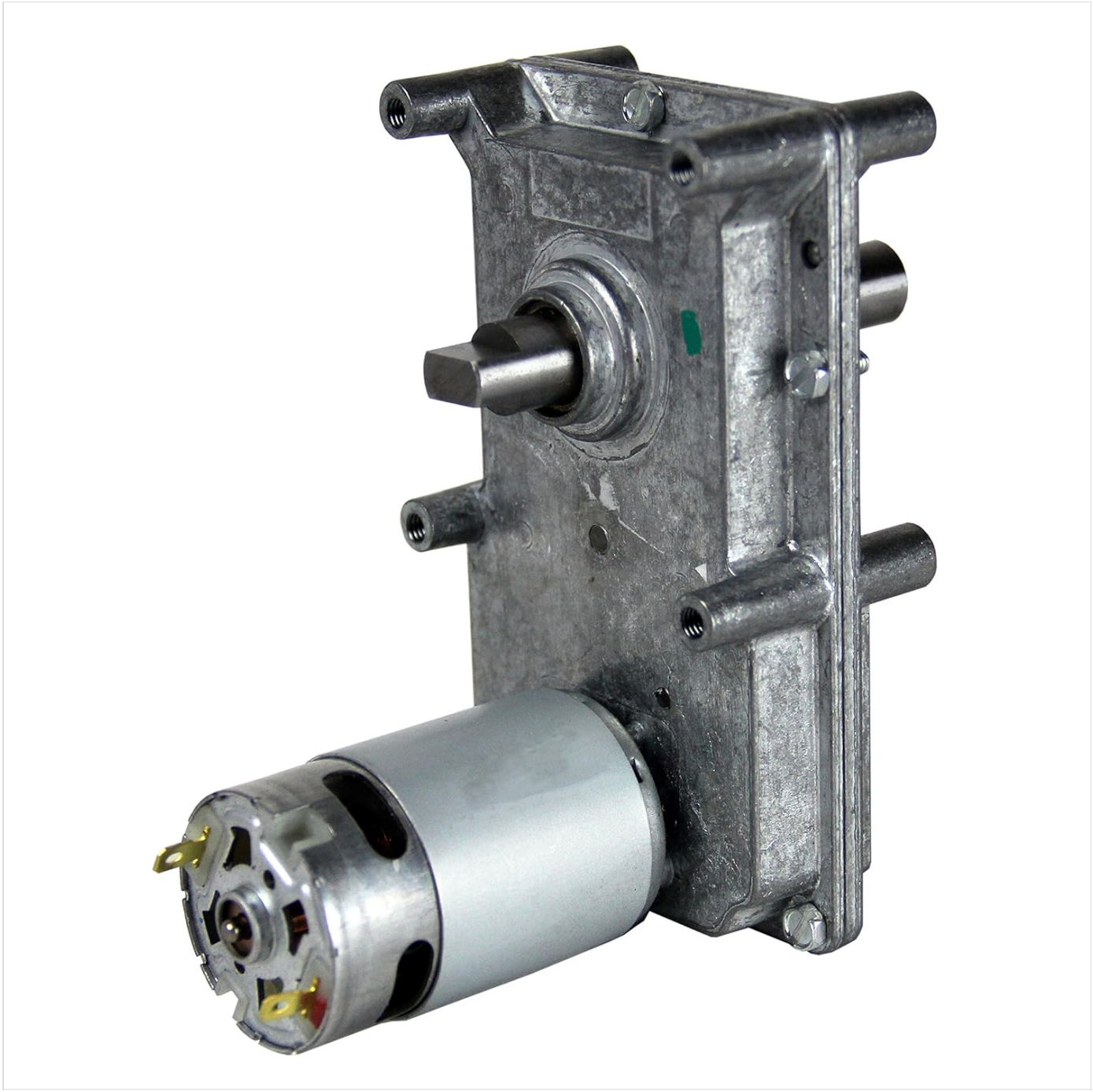

Figure 3: Molon CEM-1205-1M PMDC Gearmotor, showing the motor's electrical terminals.

- Connect the positive (+) terminal of your 12V DC power supply to the positive terminal of the motor (often marked with a red dot or '+' symbol).
- Connect the negative (-) terminal of your 12V DC power supply to the negative terminal of the motor.
- Reversing polarity will reverse the direction of rotation.
- Ensure all connections are secure and insulated to prevent short circuits.

Operating

Basic Operation

Once properly mounted and wired, the gearmotor will begin to rotate when power is applied. The motor is designed for continuous duty within its specified ratings.

- **Rated Speed:** The gearmotor operates at a nominal speed of 5 RPM under rated load conditions.
- **Rated Torque:** It is capable of delivering 120 in.-lb. of torque. Avoid exceeding this torque rating to prevent motor

damage or premature wear.

- **Load Application:** Apply loads smoothly and avoid sudden impacts or excessive shock loads on the output shaft.

Torque and Speed Considerations

The actual speed and torque delivered by the gearmotor will vary depending on the applied load and input voltage. Operating the motor significantly above its rated torque or voltage can lead to overheating and reduced lifespan.

- For applications requiring variable speed, a compatible DC motor speed controller can be used.
- Monitor the motor's temperature during initial operation to ensure it remains within safe limits.

Maintenance

The Molon CEM-1205-1M gearmotor is designed for low maintenance. However, periodic inspection and general care will ensure optimal performance and longevity.

- **Cleaning:** Keep the exterior of the gearmotor clean and free of dust, dirt, and debris. Use a dry cloth or soft brush. Do not use solvents or abrasive cleaners.
- **Inspection:** Periodically inspect the mounting bolts for tightness and the electrical connections for security and signs of corrosion.
- **Lubrication:** The gearbox is factory-lubricated and sealed. No user lubrication is typically required for the life of the unit under normal operating conditions. Avoid opening the gearbox as this can compromise the seal and lubrication.
- **Shaft Condition:** Check the output shaft for any signs of bending or excessive play.

Troubleshooting

If you encounter issues with your Molon CEM-1205-1M gearmotor, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Motor does not run	No power supply; Incorrect wiring; Blown fuse/tripped breaker; Motor overload; Damaged motor.	Check power source; Verify wiring polarity and connections; Check and replace fuse/reset breaker; Reduce load; Contact support if motor is damaged.
Motor runs slowly or with reduced torque	Low input voltage; Excessive load; Worn brushes (less common for PMDC); Internal damage.	Verify 12V DC input; Reduce mechanical load; Contact support.
Excessive noise or vibration	Improper mounting; Misaligned load; Damaged bearings or gears; Loose components.	Check mounting for tightness and flatness; Ensure load is properly aligned; Contact support if internal damage is suspected.
Motor overheats	Continuous overload; Insufficient ventilation; Incorrect voltage.	Reduce load; Ensure adequate airflow around motor; Verify input voltage is 12V DC.

If the problem persists after attempting these solutions, contact Molon customer support or your supplier.

Specifications

The following are the key specifications for the Molon CEM-1205-1M PMDC Gearmotor:

Model: CEM-1205-1M

Brand: Molon

Voltage: 12 Volts DC

Speed: 5 RPM (Revolutions Per Minute)

Torque: 120 in.-lb. (Inch-Pounds)

Material: Copper (referring to motor windings)

Manufacturer: Molon Motor & Coil Corporation

Package Dimensions: Approximately 6 x 5 x 4 inches

ASIN: B0763YRLXT

Warranty and Support

For specific warranty terms and conditions, please refer to the documentation provided at the time of purchase or contact Molon Motor & Coil Corporation directly. Warranty information is not included in this general instruction manual.
For technical support, service, or parts inquiries, please contact your authorized Molon distributor or the manufacturer. Contact details are typically available on the Molon Motor & Coil Corporation official website.