

## NC 103-5287 1109458

# Starter Motor Instruction Manual

Model: 103-5287 1109458

## 1. PRODUCT OVERVIEW

This manual provides essential information for the installation, operation, and maintenance of the Starter Motor, part numbers **103-5287** and **1109458**. This starter motor is designed for specific Caterpillar CAT Engine 4M40 Excavator models.

### Key Features:

- Direct replacement for part numbers 103-5287 and 1109458.
- Compatible with Caterpillar CAT Engine 4M40.
- Suitable for Excavator models 307, 306, and 307B.

## 2. SAFETY INFORMATION

Always observe safety precautions when working with automotive electrical systems and heavy machinery. Failure to do so may result in serious injury or damage to equipment.

- Disconnect the battery's negative terminal before beginning any work on the electrical system.
- Wear appropriate personal protective equipment (PPE), including safety glasses and gloves.
- Ensure the vehicle or equipment is stable and properly supported before working underneath it.
- Avoid contact with hot engine components.
- Consult a qualified technician if you are unsure about any installation steps.

## 3. INSTALLATION GUIDE

This section outlines the general steps for replacing a starter motor. Specific procedures may vary depending on the exact model of Caterpillar excavator. Refer to your excavator's service manual for detailed instructions.

### 3.1 Tools Required

- Socket wrench set
- Open-end wrench set
- Battery terminal cleaner

- Wire brush
- Torque wrench (recommended)

### 3.2 Removal of Old Starter Motor

1. **Prepare the Vehicle:** Ensure the excavator is turned off, the parking brake is engaged, and the battery's negative terminal is disconnected.
2. **Locate the Starter Motor:** Identify the starter motor, typically mounted on the engine block near the flywheel.
3. **Disconnect Wiring:** Carefully disconnect the main battery cable and the solenoid wire(s) from the starter motor. Note their positions for reinstallation.
4. **Remove Mounting Bolts:** Loosen and remove the mounting bolts that secure the starter motor to the engine block. Support the starter motor as bolts are removed to prevent it from falling.
5. **Remove Old Starter:** Carefully maneuver and remove the old starter motor from its mounting position.

### 3.3 Installation of New Starter Motor

1. **Inspect Mounting Surface:** Clean the mounting surface on the engine block to ensure a proper fit.
2. **Position New Starter:** Carefully align the new starter motor with the mounting holes on the engine block.
3. **Install Mounting Bolts:** Insert and hand-tighten the mounting bolts. Once all bolts are in place, tighten them to the manufacturer's specified torque (refer to excavator service manual).
4. **Connect Wiring:** Reconnect the main battery cable and solenoid wire(s) to the appropriate terminals on the new starter motor. Ensure connections are clean and secure.
5. **Reconnect Battery:** Reconnect the battery's negative terminal.
6. **Test Operation:** Attempt to start the engine to verify proper operation of the new starter motor. Listen for unusual noises and ensure the engine cranks smoothly.

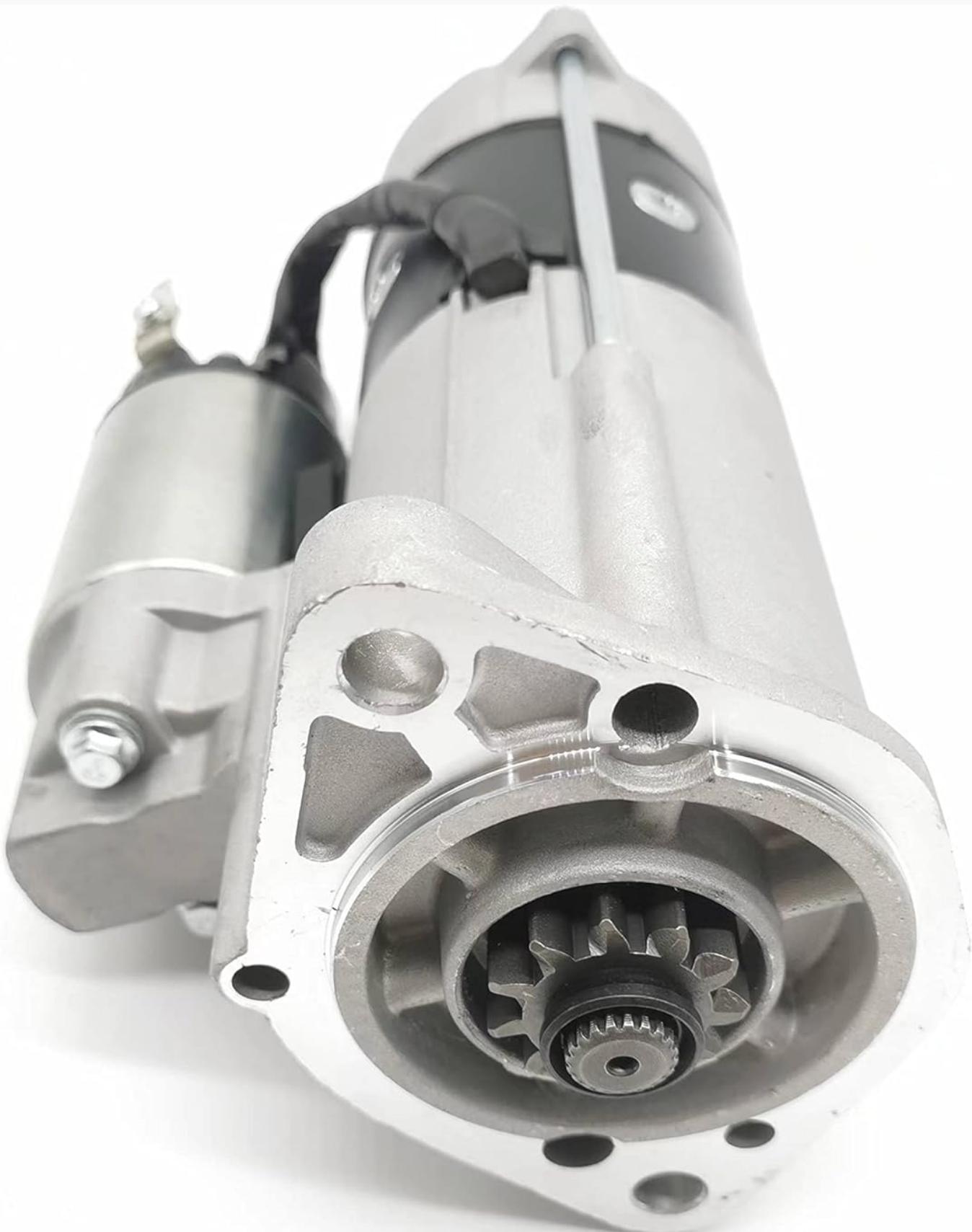
## 4. PRODUCT VISUALS

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**Figure 4.1:** Front view of the starter motor, highlighting the solenoid and main electrical terminals. The 24V marking is visible on the solenoid.



**Figure 4.2:** View of the starter motor's drive end, showing the pinion gear and the mounting flange with bolt holes. This part engages with the engine's flywheel.



**Figure 4.3:** Side profile of the starter motor, illustrating its overall length and the relative positioning of the main body and solenoid.



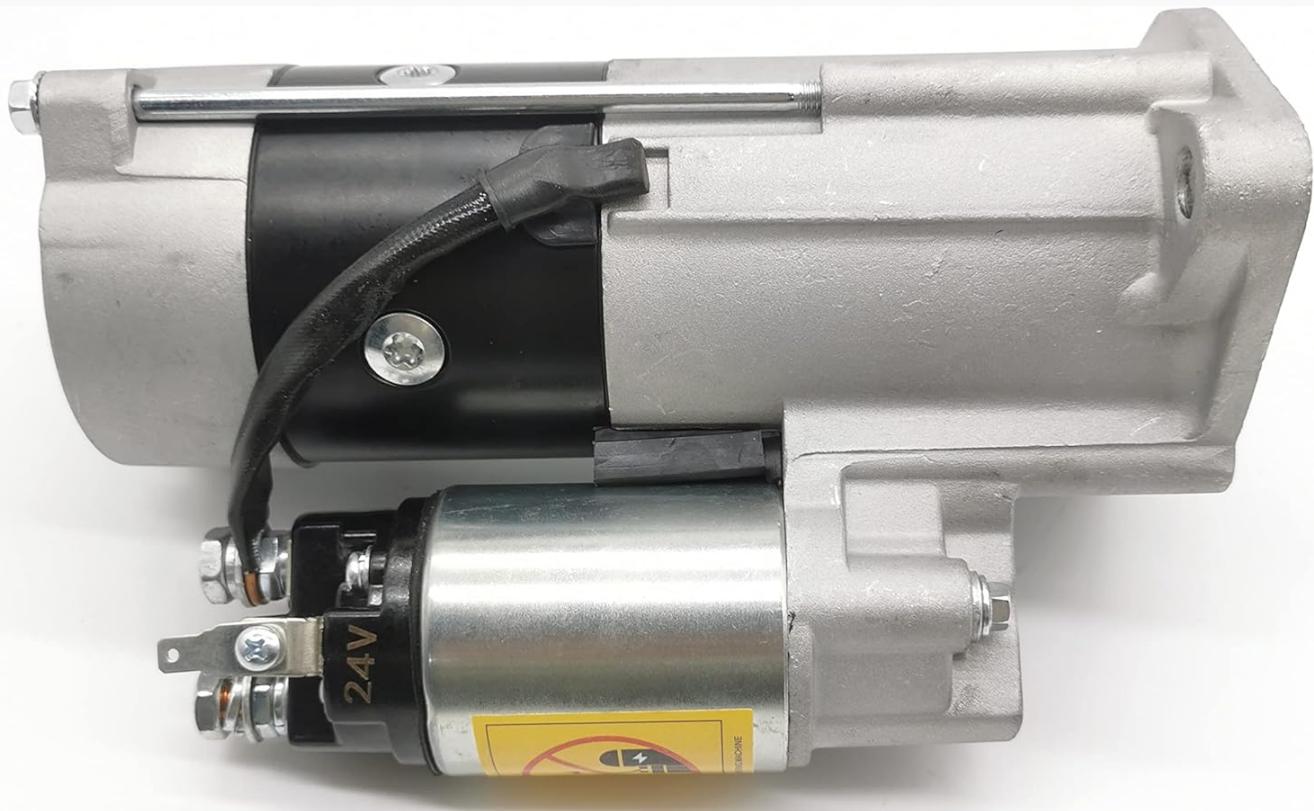
**Figure 4.4:** Top-down perspective of the starter motor, providing a clear view of the motor casing and the solenoid assembly.



**Figure 4.5:** Angled view of the starter motor, emphasizing the mounting points and the drive gear end.



**Figure 4.6:** Rear view of the starter motor, showing the back end of the motor casing and the 24V label on the solenoid.



**Figure 4.7:** Detailed view of the electrical connection terminals on the solenoid, including the main battery post and the smaller control wire terminal.



**Figure 4.8:** Another angled view focusing on the drive gear (pinion) and the mounting flange, providing a different perspective of the engagement mechanism.

## 5. MAINTENANCE

Starter motors are generally low-maintenance components. However, periodic checks can extend their lifespan and ensure reliable operation.

- Electrical Connections:** Periodically inspect all electrical connections to the starter motor for corrosion or looseness. Clean terminals with a wire brush and battery terminal cleaner if necessary.
- Mounting Bolts:** Check that the starter motor mounting bolts remain tight. Vibration can cause them to loosen over time.
- Battery Condition:** Ensure the vehicle's battery is in good condition and fully charged. A weak battery can put excessive strain on the starter motor.

## 6. TROUBLESHOOTING

| Symptom   | Possible Cause   | Solution  |
|---|--|---|
| Engine does not crank or cranks slowly.         | Weak or dead battery; Loose or corroded battery cables; Faulty starter solenoid; Faulty starter motor. | Check battery charge and terminals; Clean and tighten battery cables; Test starter solenoid; Test or replace starter motor. |
| Starter motor clicks but engine does not crank. | Low battery voltage; Faulty starter solenoid; Loose electrical connections.                            | Charge or replace battery; Check and tighten all electrical connections; Test or replace starter solenoid.                  |
| Grinding noise during cranking.                 | Damaged starter pinion gear or flywheel teeth; Misalignment of starter motor.                          | Inspect pinion gear and flywheel; Re-align or replace starter motor if necessary.   |

## 7. SPECIFICATIONS

- Part Numbers:** 103-5287, 1109458
- Application:** Caterpillar CAT Engine 4M40 Excavator 307, 306, 307B
- Brand:** NC
- Material:** Metal
- Voltage:** 24V (as indicated on product images)

## 8. WARRANTY AND SUPPORT

For warranty information or technical support, please contact your point of purchase or the manufacturer directly. Keep your purchase receipt as proof of purchase.

Manufacturer: NC