



INSTALLATION & OPERATING INSTRUCTIONS

HUB MOTOR



EV

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1. INTRODUCTION

This manual provides a comprehensive guide for the installation and verification of hub motor systems in electric bikes and scooters. It includes mechanical and electrical checkpoints, diagnostic procedures, and wiring standards.

2. TOOLS & MATERIALS REQUIRED

Tools:

- Torque wrench
- Allen key set
- Socket wrench set
- Screwdrivers (Phillips & flat)
- Cable ties
- Wire strippers
- Crimping tool
- Multi-meter (Digital/Analog)
- Continuity tester (optional)

3. PRE-INSTALLATION INSPECTION CHECKLIST

Mechanical:

- Rim free from cracks or warping
- Axle threads clean and intact
- Torque arms compatible and undamaged
- Frame slots aligned and free from damage
- Frame has enough clearance, for motor and cables.

Electrical:

- Phase wires are clean and undamaged.
- Hall sensor wires undamaged
- Connectors clean and fit securely
- Battery fully charged and within system specs
- Controller voltage and current ratings match motor

4. WINDING CONTINUITY AND IR CHECK SOP

Purpose:

To confirm motor windings are not shorted or open before installation.

Tools Needed:

Digital multi-meter (with continuity modes)

Pin Reference: Refer GAD

Step-by-Step SOP

Step 1: Safety

- Ensure the motor is **not connected** to the controller or battery.
- Turn your multi-meter to continuity mode.

Step 2: Check Phase-to-Phase Continuity

Use multi-meter probes on:

- **U ↔ V**
- **U ↔ W**
- **V ↔ W**

Expected Result:

- **Continuity present**

Step 3: Test for insulation breakdown b/w motor winding and metal casing.

- Put one probe on **each phase wire**.
- Touch the other probe to the **motor casing (metal)**.

Expected Result:

No continuity

Here continuity means winding short to ground — motor is faulty.

Common Fault Symptoms & Fixes

| Symptom | Likely Cause | Solution |
|------------------------------|---------------------|-------------------------|
| No continuity phase-to-phase | Broken coil or wire | Replace or repair motor |
| Continuity to motor shell | Ground fault | Replace or repair motor |

5. MECHANICAL INSTALLATION**Step 1: Install Hub Motor Wheel**

- Insert motor axle into frame slots.
- Ensure cables aren't pinched.
- Use torque arms to both sides.
- Use washers, then torque axle nuts as per specified values in GAD.

Step 2: Wheel & Brake Alignment

- Spin wheel freely.
- Ensure axle aligns correctly.

6. ELECTRICAL INSTALLATION**Controller Wiring**

- Connect **phase wires** (U/V/W) to motor as per color coding given in GAD.
- Connect **6-pin hall sensor** as per color coding given in GAD.

Cable Management

- Use cable sleeves and zip ties.
- Avoid sharp bends and contact with sharp edges and moving parts.

7. HALL SENSOR 6-PIN CONNECTION SOP**Purpose:**

To establish proper signal and power connections between motor and controller for smooth operation.

Refer GAD for pin-out table.

SOP Steps:

1. **Turn off all power.**
2. **Inspect connectors.** Ensure no bent or corroded pins.
3. **Align key notch** and **connect securely.** Do not force.
4. **Reconnect battery**, power on system, and **test rotation.**
5. **Common Issues & Fixes:**

| Issue | Cause | Solution |
|----------------------|---------------------------|---|
| Motor jerks/stutters | Hall wires mismatched | Verify and realign wire colors |
| No motor response | Sensor or connector fault | Check for continuity & reinsert connector |

8. MAINTENANCE SCHEDULE

| MAINTENANCE SCHEDULE | | | | | | | | | | | |
|----------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|
| COMPONENT /PART | Repeat the Instructions After Distance Covered in Kilometres /Month Time Period in Service (Whichever is Earlier) | | | | | | | | | | |
| | 1000 Km/1 Month | 2000 Km/2 Months | 3000 Km/3 Months | 4000 Km/4 Months | 5000 Km/5 Months | 6000 Km/6 Months | 7000 Km/7 Months | 8000 Km/8 Months | 9000 Km/9 Months | 10000 Km/10 Months | 11000 Km/11 Months |
| 1) OIL SEAL | | | | | | | | | | | ✓ |

9. TECHNICAL SPECIFICATION

Refer GAD for Technical specification as per motor rating.

10. SINGLE LINE DIAGRAM

