SelfPoweredBike MA01

Repair & Maintenance Manual



BEYOND MOTOR TECHNOLOGIES, INC

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1. Preface

In this maintenance manual, you will find detailed information about the repair and maintenance of electric-assist bicycles. Please read and follow the instructions in this manual carefully to ensure that your bicycle operates safely and in good working condition.

2. Safety Instructions

Before performing any maintenance or servicing work, please make sure to adhere to the following safety instructions:

- > Ensure that the bicycle is parked on a flat and stable surface.
- > Use appropriate personal protective equipment, such as gloves and safety goggles.
- Turn off the electric-assist system and remove the battery.
- Before making any adjustments or replacing components, ensure that the bicycle is completely stationary and secure the frame on a stand.

3. List of Tools for Maintenance

- Set of wrenches (different sizes)
- Allen wrenches
- Screwdrivers (different types and sizes)
- Nut wrench
- Chain lock
- Bicycle pump
- > Pliers
- Lubricating oil
- Cleaning agent
- Gloves and safety goggles

4. Common Issues and Troubleshooting

4.1 Battery Not Charging

If your electric-assist bicycle battery is not charging, you can try the following steps for troubleshooting:

4.1.1 Check Power Connection:

- Ensure that the power socket is functioning properly by trying to connect other devices to verify its functionality.
- Check the connection of the battery charger's plug and socket to ensure they are secure and not loose or detached.

4.1.2 Check Battery Connection:

- Ensure that the battery is securely connected to the bicycle. Check the battery connectors and interfaces for cleanliness and ensure they are free from rust or damage.
- If there are issues with the connection, try reconnecting the battery and ensure that the plug is inserted in the correct position.

4.1.3 Check Charger Malfunction:

- If you have ruled out issues with the power source and battery connection, it is possible that the charger itself is experiencing a malfunction.
- Try using another charger (compatible with your electric-assist bicycle) to charge the battery and observe if it charges properly.
- If another charger works correctly, then your original charger may require repair or replacement.

4.1.4 Contact Customer Support:

If you have followed the above steps and are still unable to resolve the issue of the battery not charging, we recommend contacting the customer support.

Provide them with detailed information about the problem and follow their advice for further troubleshooting steps.

Remember to always ensure that the power to the electric-assist bicycle is turned off and the battery is disconnected before performing any repairs or troubleshooting to avoid the risk of electric shock. If you are unsure about repairing the battery or charger, seek assistance from a professional technician.

4.2 **Power Assist System Failure**

If the power assist system of your electric-assist bicycle fails, it can affect the bike's performance and riding experience. Here are some common power assist system failure scenarios and their possible solutions:

4.2.1 No Response from Power Assist System:

- Firstly, ensure that the power assist system is turned on and in proper working condition. Check the battery level and ensure a secure battery connection.
- If everything appears normal, but the power assist system still doesn't respond, check if any error codes or warning messages are displayed on the power assist system controller or display. Refer to the user manual for troubleshooting solutions.

4.2.2 Weak or Unstable Power Assist:

- If you experience weak or unstable power assist, ensure that the battery has sufficient charge. Check if the battery needs charging or replacement.
- Review the settings and adjustments of the power assist system. Some electric-assist bicycles may have different assist modes and levels, so ensure that you have selected the appropriate mode and level.

4.2.3 Noise from the Power Assist System:

- If abnormal noises are coming from the power assist system, start by checking the drivetrain for proper functioning. Inspect components such as gears, chain, and derailleur for any adjustments or replacements needed.
- Verify that the motor and power assist system connections are secure and free from loose screws or interfaces.

Please note that before performing any repairs or troubleshooting, always ensure that the power to the electric-assist bicycle is turned off and the battery is disconnected to avoid the risk of electric shock. If you are uncertain about repairing the power assist system, seek assistance from a professional technician.

4.3 Brake Failure

If the brakes on your electric-assist bicycle fail, it can lead to dangerous situations. Brake failure can compromise your riding safety and control. It is crucial to take the following steps to troubleshoot brake failure issues:

4.3.1 Inspect the Brake System:

- First, check if the brake levers are operating correctly, ensuring that they can be fully squeezed to engage the brakes.
- Observe the brake cables for any signs of significant wear, breakage, or detachment. If any issues are detected, replace the brake cables immediately.
- Check the brake pads for excessive wear, and replace them promptly if needed.

4.3.2 Check Brake System Adjustments:

- Ensure that the brake system is properly adjusted. Check the tension of the brake cables and adjust them as necessary.
- Verify that the brake pads make even contact with the wheel's surface. If uneven, make the appropriate adjustments.

4.3.3 Inspect Brake System Components:

- Check if the brake cables are binding or caught on any other components, ensuring that they can move freely.
- Inspect the brake calipers for looseness or damage. If any looseness or damage is present, perform the necessary adjustments or replacements.

4.3.3 Lubricate the Brake System:

Apply appropriate brake lubricant to the moving parts of the brake system, such as the brake levers and calipers.

If you still encounter brake failure issues after performing the above checks and adjustments, it is strongly recommended to cease riding immediately and contact the customer support department or the manufacturer's support team. Brake system failure may require the intervention of a professional technician for further inspection and repair.

4.4 Gear Shifting Adjustment Issues

When it comes to gear shifting adjustment on an electric-assist bicycle, several common issues may arise. It's important to address these problems promptly to ensure smooth and accurate gear shifting. Below are some common gear shifting adjustment issues and their potential solutions:

4.4.1 Slow or Delayed Gear Shifting:

- Check the gear cables for any signs of wear, fraying, or corrosion. Replace them if necessary.
- Adjust the cable tension to ensure proper shifting response.
- Inspect the derailleur for any misalignment or damage that may impede gear shifting. Make necessary adjustments or repairs.

4.4.2 Skipping or Slipping Gears:

- Ensure the derailleur hanger is properly aligned. Misalignment can cause gears to skip or slip.
- Check the condition of the cassette or freewheel. Worn teeth or a damaged cassette may require replacement.
- Adjust the derailleur limit screws to ensure precise gear engagement.

4.4.3 Chain Rubbing or Noise:

- Verify that the front and rear derailleurs are properly aligned with the chainrings and cassette/freewheel.
- Adjust the derailleur position to eliminate chain rub against adjacent gears.
- Inspect the chain for wear and replace if necessary.

4.4.4 Inconsistent Shifting Across Gears:

- Check the gear indexing by shifting through all gears and ensuring smooth transitions.
- Fine-tune the cable tension using barrel adjusters for precise gear shifting across the range.
- Inspect and clean the gear cables and housing to eliminate any friction or resistance.

If you encounter persistent gear shifting adjustment issues despite attempting these solutions, it is recommended to seek assistance from a professional bike mechanic or contact the customer support team of the electric-assist bicycle manufacturer. They will provide expert guidance and further assistance to resolve the gear shifting problems effectively.

5. Maintenance and Care Guide

In this maintenance and care guide, you will find detailed information on how to properly maintain and care for your electric-assist bicycle. Please read and follow the instructions in this guide carefully to ensure that your bike operates safely and effectively.

5.1 Regular Inspection:

- Before each ride, inspect the overall condition of the bicycle, including the frame, handlebars, brakes, tires, and lights. Look for any signs of damage or wear that may require attention or replacement.
- Check the tire pressure and ensure it is within the recommended range. Inflate or deflate the tires as necessary.
- Examine the brake pads for wear and ensure they make proper contact with the braking surface. Replace worn brake pads promptly.
- Inspect the chain for any signs of dirt, rust, or excessive wear. Clean and lubricate the chain regularly.

5.2 Cleaning and Lubrication:

- Clean the bicycle regularly using a mild detergent and water. Pay attention to areas that accumulate dirt and debris, such as the chain, gears, and brake assemblies.
- After cleaning, thoroughly dry the bike to prevent moisture-related issues, such as rust formation.
- Lubricate the moving parts of the bicycle, including the chain, derailleur, and brake levers, using a suitable lubricant. Wipe off any excess lubricant to avoid attracting dirt.

5.3 Battery Care:

- Follow the manufacturer's instructions for charging and storing the battery. Avoid overcharging or exposing the battery to extreme temperatures.
- Periodically inspect the battery connections for any signs of corrosion or loose connections. Clean and tighten them as necessary.
- > If the battery is removable, store it in a cool and dry place when not in use.

5.4 Brake Adjustment:

- Regularly check the brake performance and adjust the brake pads if needed. Ensure that the brakes engage smoothly and provide sufficient stopping power.
- If you are unsure about brake adjustment or experience persistent issues, consult a professional bike mechanic for assistance.

5.5 Regular Maintenance:

Schedule regular maintenance at a qualified bike shop to ensure that your electric-assist bicycle is properly serviced. This may include tasks such as wheel truing, gear adjustment, and bearing lubrication.

Always prioritize your safety when performing maintenance or repairs on your electric-assist bicycle. If you are unsure about any aspect of maintenance, consult the user manual or seek assistance from a knowledgeable bike technician.

6. Component Replacement and Adjustment

6.1 Chain Replacement and Adjustment

The chain on your electric-assist bicycle may require occasional replacement or adjustment to ensure smooth and efficient gear shifting. Here are the steps to follow for chain replacement and adjustment:

6.1.1 Chain Replacement:

- Determine if your chain needs replacement by checking for signs of excessive wear, such as elongation, rust, or stiff links. If the chain shows significant wear, it is recommended to replace it.
- To replace the chain, first, shift the gears to the smallest chainring and smallest rear cog. This relieves tension on the chain and makes it easier to remove.
- Use a chain tool or quick link pliers to break the chain at any link. Carefully remove the old chain from the bicycle.
- Install the new chain by threading it through the derailleur pulleys and around the chainrings and rear cogs. Ensure proper alignment and engagement with the teeth.
- Reconnect the chain by using a chain connector or joining pin according to the manufacturer's instructions.
- Check the chain tension and adjust it if necessary. The chain should have a slight amount of sag but should not be too loose or too tight.

6.1.2 Chain Adjustment:

- If your chain is skipping gears, not shifting smoothly, or causing excessive noise, it may require adjustment.
- Start by shifting the gears to the smallest chainring and smallest rear cog.
- Use the barrel adjuster on the rear derailleur to fine-tune the shifting. Turn the adjuster clockwise to move the derailleur towards the larger cogs and counterclockwise to move it towards the smaller cogs.
- Test the shifting by smoothly pedaling through all the gears. Make additional adjustments if necessary until the chain shifts cleanly and accurately.
- If the chain still does not shift properly, it may be necessary to adjust the limit screws on the derailleur or seek assistance from a professional bike mechanic.

6.2 Brake Pad Replacement and Adjustment

Proper brake pad adjustment and replacement are essential for ensuring effective braking performance on your electric assist bicycle. If you experience brake issues such as reduced stopping power or squeaking, it may be necessary to adjust or replace the brake pads. Here are the steps for brake pad replacement and adjustment:

6.2.1 Brake Pad Adjustment:

- Place your bicycle on a stable surface or bike stand.
- Depending on the type of brakes on your electric assist bicycle, refer to the user manual for specific instructions on brake pad adjustment.
- Inspect the brake pads for excessive wear or damage. If the brake pads are worn down beyond their recommended thickness, it is time to replace them.
- ➤ Use the appropriate tools to adjust the brake pads. This may involve loosening or tightening the brake pad mounting bolts to achieve the desired position and alignment.
- Ensure that the brake pads are properly aligned with the braking surface of the wheel. They should make even contact and not rub against the tire or rim.

6.2.2 Brake Pad Replacement:

- > If the brake pads are worn out or damaged beyond adjustment, they need to be replaced.
- Refer to the user manual or consult a professional technician for specific instructions on brake pad replacement, as the process may vary depending on the brake system of your electric assist bicycle.
- Remove the old brake pads by loosening the mounting bolts and sliding them out.
- Install the new brake pads by aligning them with the brake arms or caliper and securing them in place with the mounting bolts.
- Make sure the new brake pads are properly positioned and aligned with the braking surface.

Always remember to test your brakes after adjusting or replacing the brake pads. Perform a few controlled stops to ensure that the brakes engage smoothly and provide sufficient stopping power. If you encounter any difficulties or uncertainties during the process, seek assistance from a professional technician or an experienced bicycle mechanic.

Regular inspection and maintenance of your brake pads are crucial for safe and reliable braking performance. Monitor the wear of the brake pads and replace them as needed to maintain optimal braking efficiency and rider safety.

6.3 Gear Adjustment and Replacement

Proper gear adjustment and timely replacement of worn-out gears are essential for optimal shifting performance on your electric assist bicycle. If you experience gear shifting issues such as difficulty in changing gears or skipping gears, it may be necessary to adjust or replace the gears. Here are the steps for gear adjustment and replacement:

6.3.1 Gear Adjustment:

- > Place your bicycle on a stable surface or bike stand.
- Refer to the user manual specific to your electric assist bicycle model for detailed instructions on gear adjustment.
- Inspect the gears for any signs of damage, excessive wear, or misalignment. If the gears are severely worn or damaged, they may need to be replaced.
- Use the appropriate tools to adjust the gears. This may involve adjusting the derailleur's limit screws, cable tension, or indexing.
- Follow the manual's instructions to fine-tune the gear adjustments, ensuring smooth and precise shifting.
- Test the gear shifting by riding the bicycle and cycling through the gears. Make sure the gears engage smoothly and accurately.

6.3.2 Gear Replacement:

- If the gears are worn out, damaged, or unable to be adjusted properly, they may need to be replaced.
- Consult the user manual or seek professional assistance to determine the compatible replacement gears for your electric assist bicycle.
- Remove the old gears by loosening the mounting bolts or using specialized tools as instructed in the manual.
- Install the new gears, aligning them correctly with the derailleur or gear system, and secure them in place with the mounting bolts.
- Follow the manual's guidelines to fine-tune the gear adjustments and ensure optimal shifting performance.

Regular maintenance and inspection of your gears are crucial for smooth gear shifting and overall riding experience. Monitor the condition of your gears and replace them when necessary to maintain reliable and efficient gear shifting performance. If you encounter difficulties or uncertainties during the gear adjustment or replacement process, it is recommended to seek assistance from a professional bicycle technician or a knowledgeable bike shop.

6.4 Pedal Replacement

Replacing the pedals on your electric assist bicycle is necessary if the existing pedals are worn, damaged, or no longer meet your preferences. Here are the steps for pedal replacement:

Preparation:

- > Place your bicycle on a stable surface or bike stand.
- Determine the type of pedals installed on your electric assist bicycle (e.g., platform pedals, clipless pedals).
- Obtain the appropriate replacement pedals that are compatible with your bicycle's pedal system.

Removal of Old Pedals:

- Use a pedal wrench or an Allen key, depending on the pedal type, to loosen and remove the pedal from the crank arm.
- > Turn the wrench or key in a counterclockwise direction to unscrew the pedal.
- > Repeat the process for the other pedal.

Installation of New Pedals:

- > Identify the right and left pedals. Most pedals are labeled "R" for right and "L" for left.
- Apply a small amount of grease or anti-seize compound to the pedal threads to prevent seizing or corrosion.
- Align the pedal threads with the crank arm threads and start screwing the pedal by hand in a clockwise direction.
- Use the pedal wrench or Allen key to tighten the pedal securely. Ensure it is snug but not over-tightened to avoid damage.

Test and Final Adjustments:

- Spin the pedals by hand to verify smooth rotation and ensure they are securely attached.
- Stand on the bicycle and test the pedals by applying pressure and pedaling to ensure they feel comfortable and stable.
- If necessary, make minor adjustments to the pedal position by loosening the pedal and repositioning it before tightening it again.

6.5 Tire Replacement and Inflation

Proper maintenance of your electric assist bicycle's tires is essential for optimal performance, safety, and comfort during your rides. When it comes to tire replacement and inflation, follow these steps:

6.5.1 Tire Replacement:

- Determine the appropriate tire size and type for your electric assist bicycle. Refer to the user manual or consult a professional for guidance.
- Ensure you have the necessary tools for tire removal and installation, such as tire levers and a pump.
- Place your bicycle on a stable surface or bike stand.
- Use tire levers to carefully remove the old tire from the rim, starting from one side and working your way around. Be cautious to avoid damaging the inner tube.
- Clean the rim and inspect it for any signs of damage or debris that could affect the new tire's installation.
- Install the new tire by aligning one side of the tire bead with the rim edge. Use your hands or tire levers to work the other side of the tire onto the rim, taking care not to pinch the inner tube.
- Inflate the tire to the recommended pressure (indicated on the tire sidewall or in the user manual) using a bicycle pump. Ensure the tire is seated evenly on the rim.

6.5.2 Tire Inflation:

- Regularly check the tire pressure using a pressure gauge. Maintain the recommended pressure range for your specific tire, as underinflated or overinflated tires can affect ride quality and safety.
- Unscrew the valve cap and attach the pump nozzle securely to the valve.
- Inflate the tire gradually, periodically checking the pressure with the gauge. Add or release air as needed until the desired pressure is reached.
- > Once inflated, replace the valve cap to protect the valve from dust and debris.

Remember to regularly inspect your tires for signs of wear, damage, or punctures. Replace tires that have excessive wear or visible damage to ensure safe and reliable riding. Additionally, monitor the tire pressure before each ride or as recommended by the manufacturer to maintain optimal performance.

6.6 Headlight and Taillight Replacement

Proper functioning headlights and taillights are crucial for your safety when riding your electric assist bicycle, especially during low-light conditions or at night. Follow these steps to replace the headlight and taillight:

Headlight Replacement:

- Identify the correct headlight model and type for your electric assist bicycle. Refer to the user manual or consult a professional if needed.
- Ensure you have the necessary tools for the replacement, such as a screwdriver or Allen wrench.
- Locate the headlight assembly on your bicycle. It is typically mounted on the handlebar or front fork.
- Remove any screws or fasteners securing the existing headlight to the bicycle frame.
- Disconnect the electrical connectors or wires connected to the headlight, taking note of their arrangement for reconnection.
- Carefully remove the old headlight from its mounting bracket or holder.
- Install the new headlight by aligning it with the mounting bracket or holder. Make sure it is securely attached.
- Reconnect the electrical connectors or wires according to the manufacturer's instructions.
- > Test the new headlight by turning it on and verifying that it illuminates properly.

Taillight Replacement:

- Determine the appropriate taillight model and type for your electric assist bicycle. Consult the user manual or seek professional advice if necessary.
- Sather the required tools, including a screwdriver or Allen wrench.
- Locate the taillight assembly on your bicycle. It is usually positioned on the rear fender or seat post.
- Remove any screws or fasteners holding the existing taillight in place.
- Disconnect the electrical connectors or wires from the taillight, making note of their arrangement for reconnection.
- Gently remove the old taillight from its mounting bracket or holder.
- Install the new taillight by aligning it with the mounting bracket or holder and securing it firmly.
- Reconnect the electrical connectors or wires following the manufacturer's instructions.
- > Test the new taillight by turning it on and ensuring it functions properly.

It's essential to choose headlights and taillights that comply with local laws and regulations regarding brightness, visibility, and installation requirements. Additionally, regularly inspect your lights for any signs of damage, such as cracks or moisture intrusion, and replace them promptly if necessary.

7. Riding Techniques and Safety Tips

To ensure a safe and enjoyable riding experience with your electric assist bicycle, it's important to follow these riding techniques and safety tips:

7.1 Helmet and Protective Gear:

- > Always wear a properly fitting helmet to protect your head in case of a fall or collision.
- Consider wearing additional protective gear such as knee and elbow pads, gloves, and reflective clothing for enhanced visibility.

7.2 Riding Posture and Balance:

- Maintain an upright riding posture with relaxed shoulders and a firm grip on the handlebars.
- Keep your body balanced and centered over the bicycle, distributing your weight evenly.
- > Use your core muscles to maintain stability and control while riding.

7.3 Braking and Stopping:

- Familiarize yourself with the brake system of your electric assist bicycle, knowing the location and function of both front and rear brakes.
- Apply both brakes evenly for smooth and controlled braking, especially during emergency situations.
- Practice braking techniques to gradually slow down or come to a complete stop, avoiding sudden and excessive force on the brakes.

7.4 Turning and Cornering:

- Signal your intentions by using hand signals to indicate your direction of turn.
- Approach corners and turns at an appropriate speed, allowing for proper control and stability.
- Lean your body and bike into the turn while keeping your eyes focused on the path ahead.

7.5 Obey Traffic Laws and Regulations:

- > Follow all local traffic laws, including traffic signals, signs, and right-of-way rules.
- > Ride in the designated bicycle lanes or on the right side of the road, flowing with the

direction of traffic.

> Yield to pedestrians and give them sufficient space when passing.

7.6 Awareness and Visibility:

- Stay alert and aware of your surroundings, anticipating potential hazards or obstacles.
- > Use rearview mirrors if available to monitor traffic behind you.
- Enhance your visibility by wearing brightly colored or reflective clothing, especially during low-light conditions.

7.7 Maintenance and Inspections:

- Regularly inspect your electric assist bicycle for any signs of wear, damage, or loose components.
- > Keep the tires properly inflated, and check for tread wear or punctures.
- Maintain a clean and well-lubricated chain, ensuring smooth gear shifting and efficient power transmission.

7.8 Weather Conditions:

- Adjust your riding style and speed according to the weather conditions, especially in wet or slippery conditions.
- Be cautious of reduced visibility during rain, fog, or darkness.

7.9 Ride Responsibly:

- Ride within your skill level and comfort zone, gradually building confidence and experience over time.
- Respect other road users, pedestrians, and cyclists, practicing courtesy and sharing the road.

By following these riding techniques and safety tips, you can enhance your riding skills, reduce the risk of accidents, and enjoy a safe and pleasurable journey with your electric assist bicycle.