



Buzzaround Extreme Service Guide



**This Service Guide contains:
Troubleshooting
Replacement Instructions
Multi-meter Instructions**

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BUZZAROUND EXTREME NOMENCLATURE

- | | |
|--|--|
| 1 - Seat Assembly with arms | 11 - Tiller |
| 2 - Control Panel | 12 - Front Basket |
| 3 - Battery packs | 13 - Seat Post |
| 4 - Rear Section | 14 - Bolt, Arc Washer, and Nut |
| 5 - Freewheel Lever | 15 - Lockup Handle |
| 6 - Drive Wheel | 16 - LED Headlight |
| 7 - Front Section | 17 - Tiller Adjustment Knob |
| 8 - Controller (located under floor panel) | 18 - Tiller Lock Knob |
| 9 - Removable Anti-Slip Floor Panels (Gray/Textured) | 19 - LED Taillight |
| 10 - Front Wheel | 20 - Drive Train (Transaxle, Motor, and Brake) |

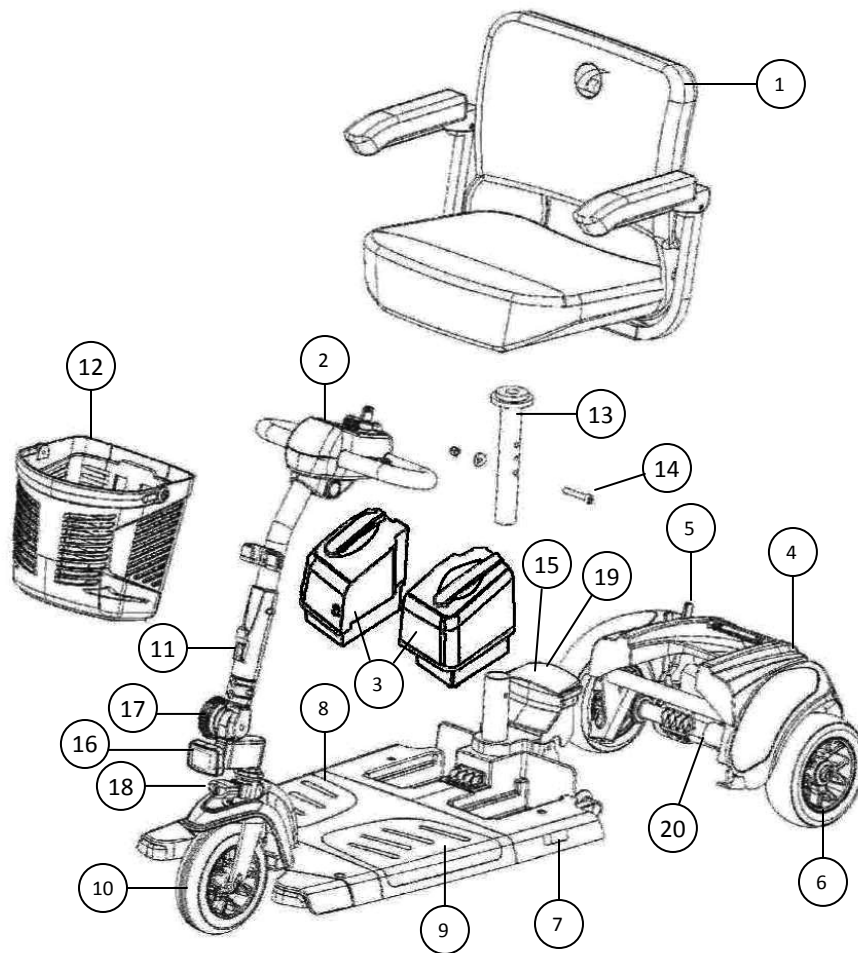


Figure 1. Buzzaround Extreme (Model GB118EX)

Contact Information
Golden Technologies
401 Bridge Street
Old Forge, PA 18518

Toll-free: 800-624-6374
Mobility Tech: x501
Lift Chair: x502
VA Tech: x505
Fax: 800-628-5165
Email: parts@goldentech.com

This service guide provides you with the information necessary to troubleshoot the Golden Technologies Buzzaround Extreme GB118EX/GB148EX. The troubleshooting scenarios in this manual consist of procedures that enable you to systematically trace and correct faults in the system. Appendices A and B include instructions on how to measure voltage and continuity with a multimeter.

Before troubleshooting, check the following:

- ✓ ***Make sure that the circuit breaker is reset.***
- ✓ ***Visually check terminals for corrosion. Check wires for missing insulation.***
- ✓ ***Make sure the battery terminals are securely tightened.***
- ✓ ***Make sure that the batteries are fully charged and are in good working order.*** When possible, keep sets of known good batteries of various ratings in your shop at all times. The Buzzaround Extreme uses two (2) U1 batteries. Problems that surface during troubleshooting are often due to the fact that the batteries are not fully charged or can not hold their charge.
- ✓ ***Make sure that the electrical connections are secure.*** Unplug the connectors and make sure all the pins in the connectors are seated securely. If necessary, push any unseated pins back into their connector housings to securely seat them.

NOTICE

If you get to a point during troubleshooting where you cannot continue, call Technical Support at 800-624-6374.

BUZZAROUND EXTREME COMPONENTS

The Buzzaround Extreme is a battery-operated scooter with a controller that monitors the system and beeps when it detects a fault in the system. The Buzzaround Extreme was designed to operate within a range of between 18 - 24 volts (V) of direct current (DC).

NOTICE

The Buzzaround Extreme control system is made up of the components listed below. Each of these components is designated by its assigned number. Refer to the wiring diagram on page 11.

- Circuit Breaker (1)
- 12V Batteries (2 and 3)
- Battery Harnesses (4)
- Power Harness (5)
- Dynamics R-Series Controller (6)
- Main Harness (7)
- Front Intermediate Harness (8)
- Rear Intermediate Connector (9)
- Motor/Brake Assembly (10)
- Brake (11)
- Control Panel - includes Speed Pot (12), Key Switch (13), Horn Button, and Battery Meter
- Throttle Pot (14)
- Charger Harness (15)
- Off-Board Battery Charger – (*Not shown*)

NOTICE

Parts and service must be authorized by the Golden Technologies Service Department. Unauthorized parts or service may void the warranty. For more information, contact the Golden Technologies Service Department at 800-624-6374 or parts@goldentech.com.

Component: Circuit Breaker - #1

Location: Mounted on the right-side battery pack. **See figure 2.**

Function: Protects battery circuit from current overload. When the current draw exceeds the breaker rating, the circuit breaker will open.

Connections: The circuit breaker is connected to the positive (+) terminal on one battery and the negative (-) terminal on the other. (Note: Both circuit breaker wires are orange in color.)

Failure Signs: Opens repeatedly. May indicate failed circuit breaker or short in the wiring. May also open if the motors are overloaded (from excessive weight, excessive uphill driving, etc).

Test: Measure the resistance across the circuit breaker and the wires that connect the circuit breaker to the batteries.

Expected reading: Less than 10 ohms.

Serviceable: 40 amp circuit breaker must be replaced with exact current rating.

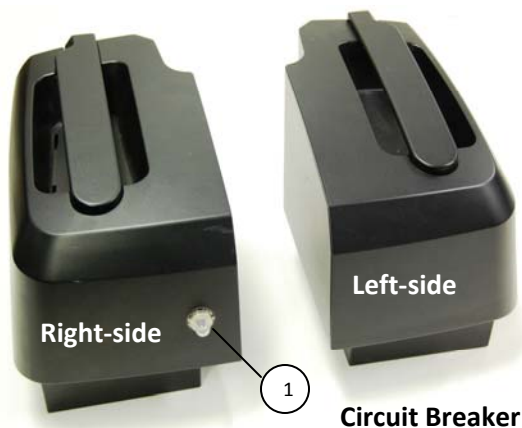


Figure 2. Battery packs (Qty. 2)

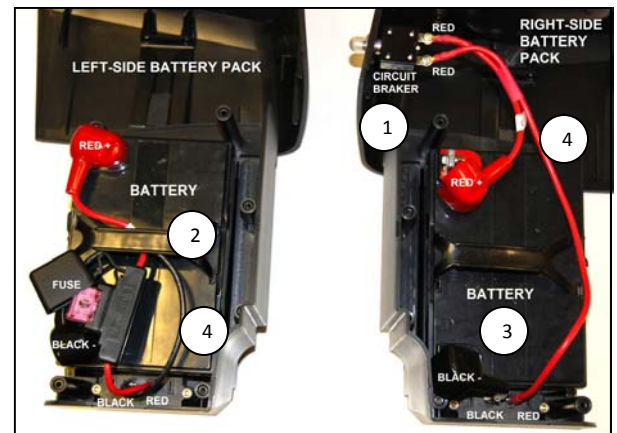


Figure 3. Inside Battery packs

Component: 2-12VDC Batteries - #2 and #3

Location: Inside the Battery packs. **See figure 3.**

Function: Supply 24VDC to the motor and/or accessories (12VDC x 2).

Connections: Connected in series. The positive (+) terminal of one battery is connected to the negative (-) of the other (red wires) through the circuit breaker (1). The most positive and negative terminals are connected to the (red and black wires) to the controller through the power harness (5). Refer to the wiring diagram on page 11.

Failure Signs: Batteries drain quickly. Scooter runs slowly or not at all. Batteries will not charge, but charger is working properly. Beep Code #1 or #2.

Tests: Fully charge the batteries first and load test. Make sure the contacts are not corroded. See figure 4 below and figure 16 on page 14.

Expected Readings: 12 - 14VDC each when fully charged.

Serviceable: Replace batteries as necessary.

Component: Battery Harness - #4

Location: Inside the Battery packs. **See figure 3.**

Function: Connects the batteries to the Power Harness (5). Provides short circuit protection through a 100-amp inline fuse, located on the left-side battery harness only.

Connections: Connected to the power harness, batteries, and battery fuse. Refer to the wiring diagram on page 11.

Failure Signs: Corroded wires may cause the batteries not to work properly. Make sure connector pins are seated properly. Batteries will not charge if the inline fuse is blown.

Tests: Test the harness for continuity. Test the fuse for continuity.

Expected Readings: Less than 10 ohms.

Serviceable: Replace the harness as necessary. **Replace inline fuse with exact type and rating. See figure 3.**

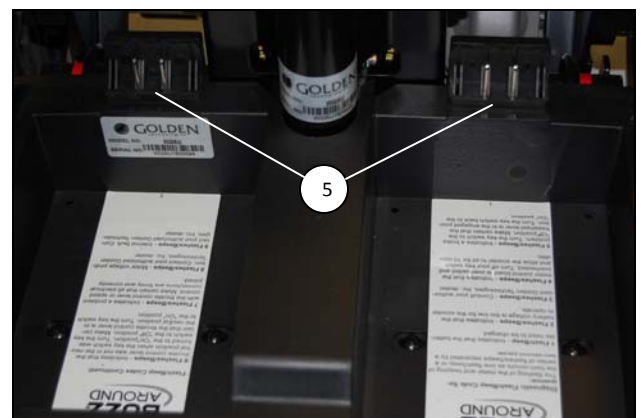


Figure 4. Scooter Battery Connection

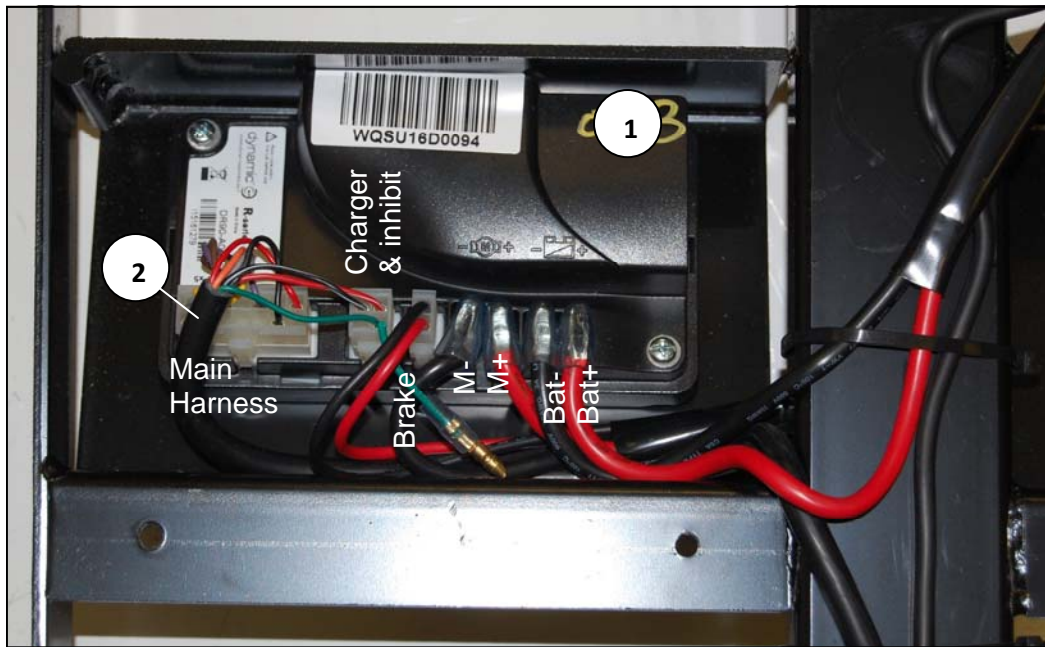


Figure 5. Controller

Component: Power Harness - #5

Location: Mounted to the front frame – located under the battery packs. See #5, figure 4 on page 6.

Function: Connects the Battery packs to the controller.

Connections: Connects the battery packs to the controller (Bat -) and (Bat +) connections.

Refer to the wiring diagram on page 11.

Failure Signs: Scooter will not power up. The controller is not receiving the correct battery voltage.

Tests: Test harnesses for continuity. Check connectors. Make sure the contacts are not corroded and are seated properly. Slide a quarter into each of the four contacts to test the spring tension. Each one should retain the quarter, not allowing it to fall out.

Expected Readings: Continuity (less than 10 ohms).

Serviceable: Replace as necessary.

Component: Controller - #6

Location: Mounted to the front frame - under the floor shroud. See #1 on figure 5.

Function: Controls and monitors the system. Uses a series of beeps/flashes when something in the system is out of range.

Connections: Connected to the main harness, charger & inhibit, brake, motor (M-M+), battery (B-B+). See figure 5.

Refer to the wiring diagram on page 11.

Failure Signs: Beep Code #9. No power to the control panel or the motor.

Tests: Test for voltage coming into and out of the controller.

Expected readings: Battery voltage.

Serviceable: Replace as necessary.

Component: Main Harness - #7

Location: Inside the tiller and under the frame. See #2 on figure 5.

Function: Provides connectivity for the tiller components and the controller.

Connections: Connected to the controller, and control panel. Refer to the wiring diagram on page 11.

Failure Signs: Scooter will not run.

Tests: Test for voltage and continuity. Check connectors. Make sure the pins are not corroded and are seated properly.

Expected readings: Battery voltage. Continuity (less than 10 ohms).

Serviceable: Replace as necessary.

Component: Front Intermediate Harness - #8

Location: Mounted on the front frame. **See figure 6.**

Function: Provides connectivity between the motor/brake and the controller.

Connections: Connected to the rear intermediate connector (9) and the controller (6). Refer to the wiring diagram on page 11.

Failure Signs: Scooter will run slowly or not at all.

Tests: Test for voltage and continuity. Check connectors. Make sure the pins are not corroded and are seated properly.

Expected readings: Continuity (less than 10 ohms).

Serviceable: Replace as necessary.

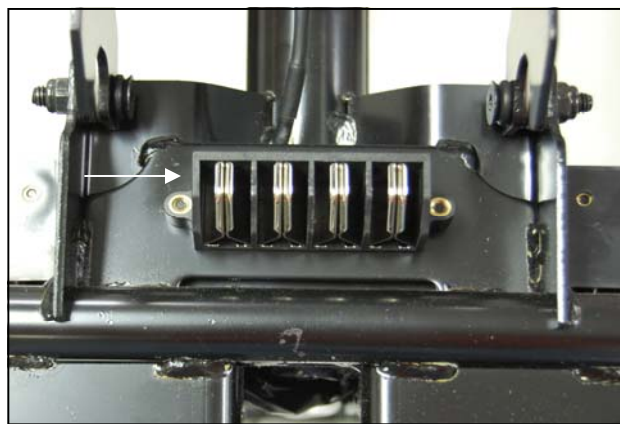


Figure 6. Front Intermediate Harness

Component: Rear Intermediate Connector - #9

Location: Mounted on the rear frame. **See figure 7.**

Function: Provides connectivity between the motor/brake and the controller.

Connections: Connected to the front intermediate harness (8) and the motor/brake assembly (10). Refer to the wiring diagram on page 11.

Failure Signs: Scooter will run slowly or not at all.

Tests: Test for voltage and continuity. Check connectors. Make sure the contacts are not corroded.

Expected readings: Continuity (less than 10 ohms).

Serviceable: Replace as necessary.

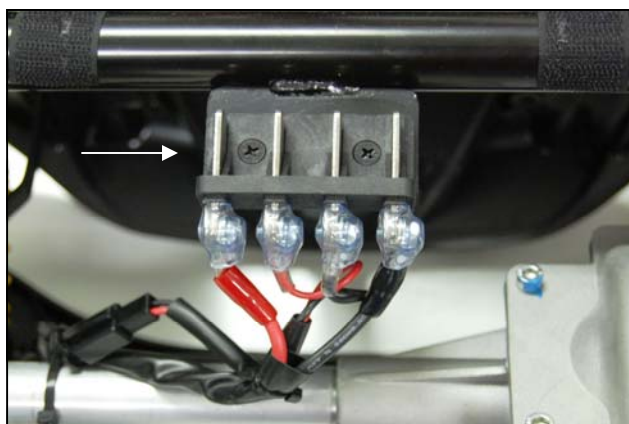


Figure 7. Rear Intermediate Connector

Component: Motor/Brake Assembly - #10

Location: Mounted on the transaxle. **See #1 on figure 8.**

Function: Drives the scooter.

Connections: Connected to the rear intermediate connector (9) and the brake (11). Refer to the wiring diagram on page 11.

Failure Signs: Scooter runs slowly or not at all.

Tests: Test for internal resistance in motor. Test motor wires for continuity. See Beep Codes #5 and #8.

Expected readings: Internal motor resistance is 0.8 ohms – 1.5 ohms. Brake resistance is 45 ohms – 52 ohms.

Serviceable: Replace the motor/brake assembly.

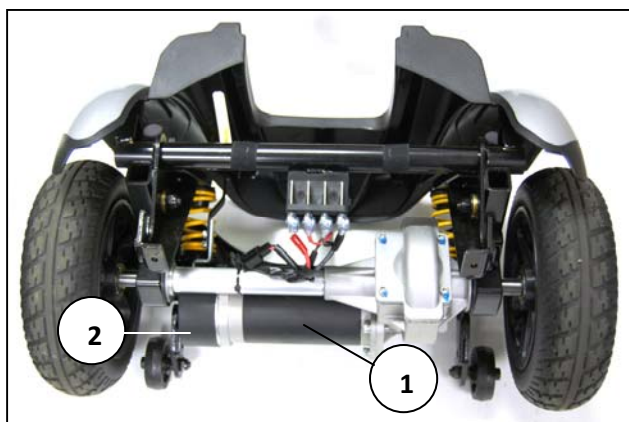


Figure 8. Motor/Brake Assembly

Component: Brake - #11

Location: Mounted on the end of the motor. **See #2 on figure 8.**

Function: Keeps the motor from moving when the power is off.

Connections: Connected to the rear intermediate connector (9). Refer to the wiring diagram on page 11.

Failure Signs: Scooter runs slowly or not at all.

Tests: Test for internal resistance. See Beep Code #5 on page 16 and Beep Code #8 on page 19.

Expected readings: Brake resistance is 45 ohms – 52 ohms.

Serviceable: Replace the motor/brake assembly.

Component: Speed Pot (Potentiometer) - #12

Location: Mounted on the control panel. **See #1 on figure 9.**

Function: The speed pot uses variable resistance to control the speed of the scooter.

Connections: Connected to the main harness through the control panel harness.

Failure Signs: Beep Code #7

Tests: Call Tech Support

Expected readings: Depends on speed pot position.

Serviceable: Yes. Replace the speed pot.

Component: Key Switch - #13

Location: Mounted on the control panel. **See #2 on figure 9.**

Function: Completes the circuit to provide power to the motor.

Connections: Connected to the main harness through the control panel harness.

Failure Signs: No power when the key is in the “ON” position.

Tests: Continuity when the key is in the “ON” position. Make sure the connector pins are seated properly.

Expected readings: Less than 10 ohms.

Serviceable: Yes. Replace the key switch.

Component: Throttle Pot (Potentiometer) - #14

Location: Below the control panel. **See #1 on figure 10.**

Function: The throttle pot uses variable resistance to control speed and direction of travel by varying voltage.

Connections: Connected to the main harness (7) and 1amp in-line fuse. Refer to the wiring diagram on page 11.

Failure Signs: Beep Codes #6 and #7.

Tests: Test resistance across pins 1, 2, and 3 on the throttle pot.

Expected readings: Depends on direction of deflection.

Serviceable: Replace as necessary.

Component: Charger Harness - #15

Location: Left-side of tiller below the control panel. **See #15 on figure 11 on page 11.**

Function: Connects the charger to the batteries.

Connections: Connected to the controller (6), and the charger not shown. Refer to the wiring diagram on page 11.

Failure Signs: Batteries will not charge.

Tests: Test for voltage and continuity. Check connectors. Make sure the pins are not corroded and are seated properly.

Expected readings: Continuity (less than 10 ohms).

Serviceable: Replace the harness as necessary.

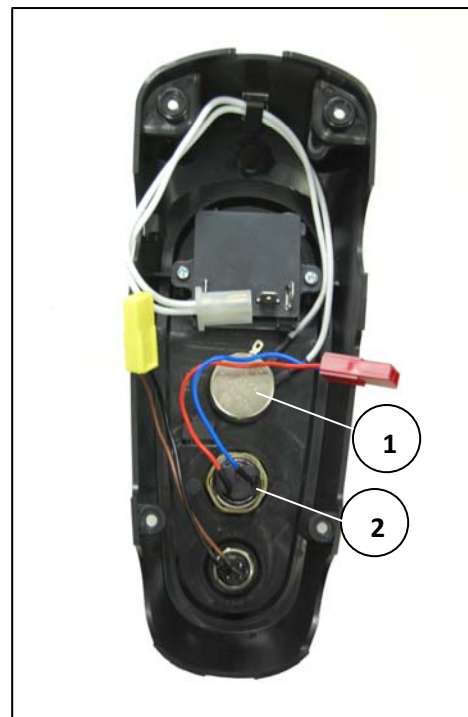


Figure 9. Control Panel (Back)

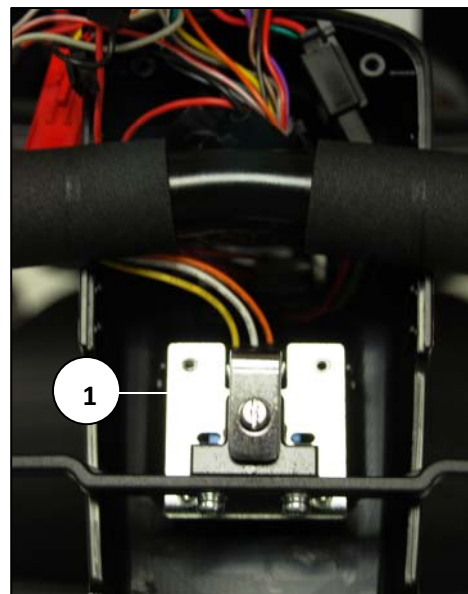


Figure 10. Throttle Pot

Component: Off-Board Charger (*Not shown*)

Location: Stored inside a pouch on the seatback.

Function: Recharges batteries.

Connections: Connects to the charger port on the tiller. **Refer to the wiring diagram on page 11.**

Failure Signs: Charger power LED does not go on. Batteries will not charge.

Tests: With the charger connected to the charger port, measure voltage across the most negative (black wire) and most positive (red wire) battery terminals. While observing the voltage reading, plug the charger into the wall outlet and make sure the voltage reading increases.

Expected readings: Battery voltage first, approximately 27 volts when fully charged. Then voltage should increase to approximately 29.5 volts with the charger connected and plugged into the wall outlet. Also, refer to the charger test on page 13. Test charger harness and fuse for continuity.

Serviceable: Replace if necessary.



WARNING

Only use the charge that was supplied with the scooter. The charger was specifically designed and tested for the product it came with.

NOTICE

*Some Off-Board Battery Chargers may have a switch that enables them to be used with either 110 VAC or 230 VAC. This switch is typically located on the end of the charger. Some may also have a removable glass fuse. *Fuses must be replaced with exact type and rating.**

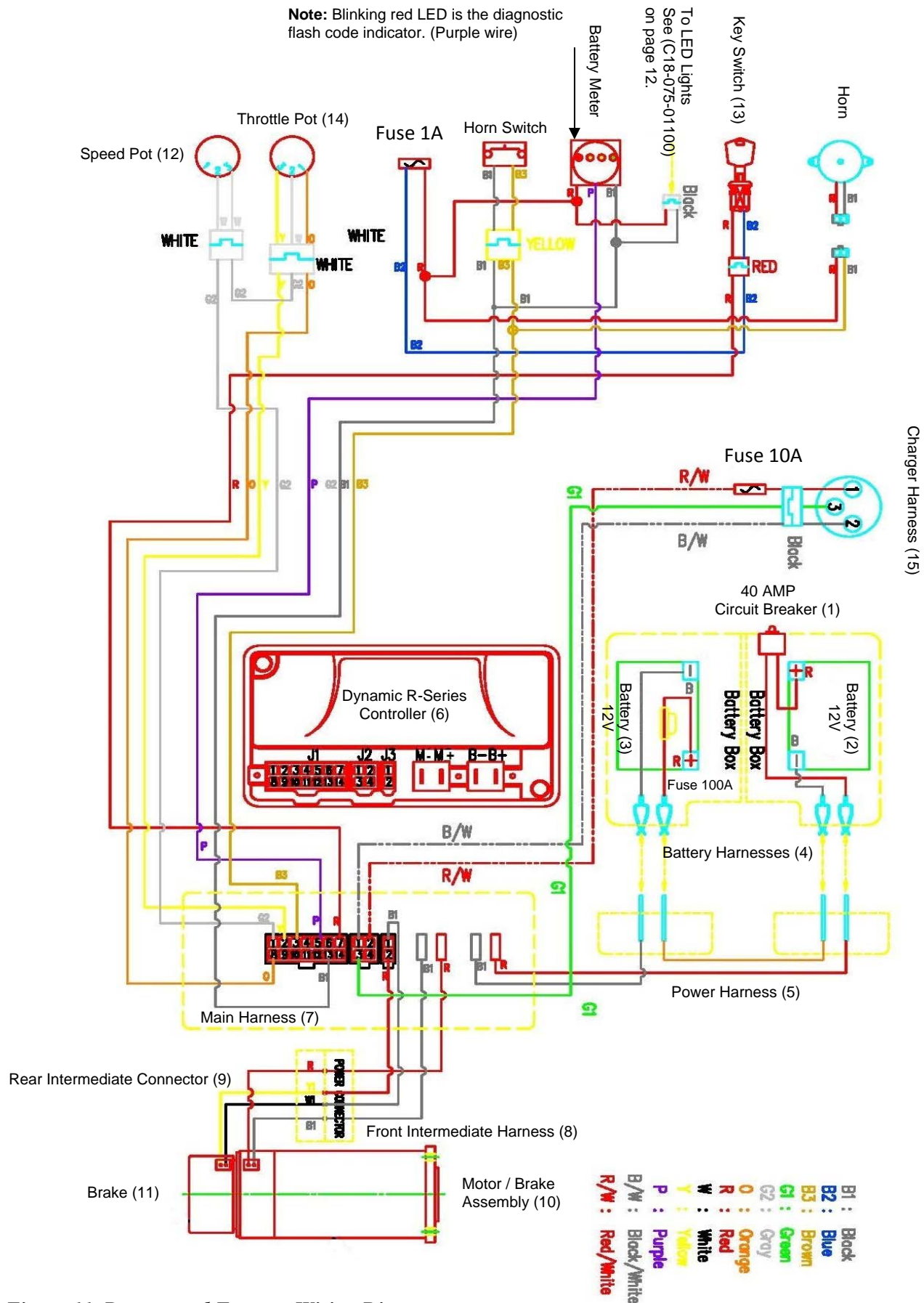


Figure 11. Buzzaround Extreme Wiring Diagram

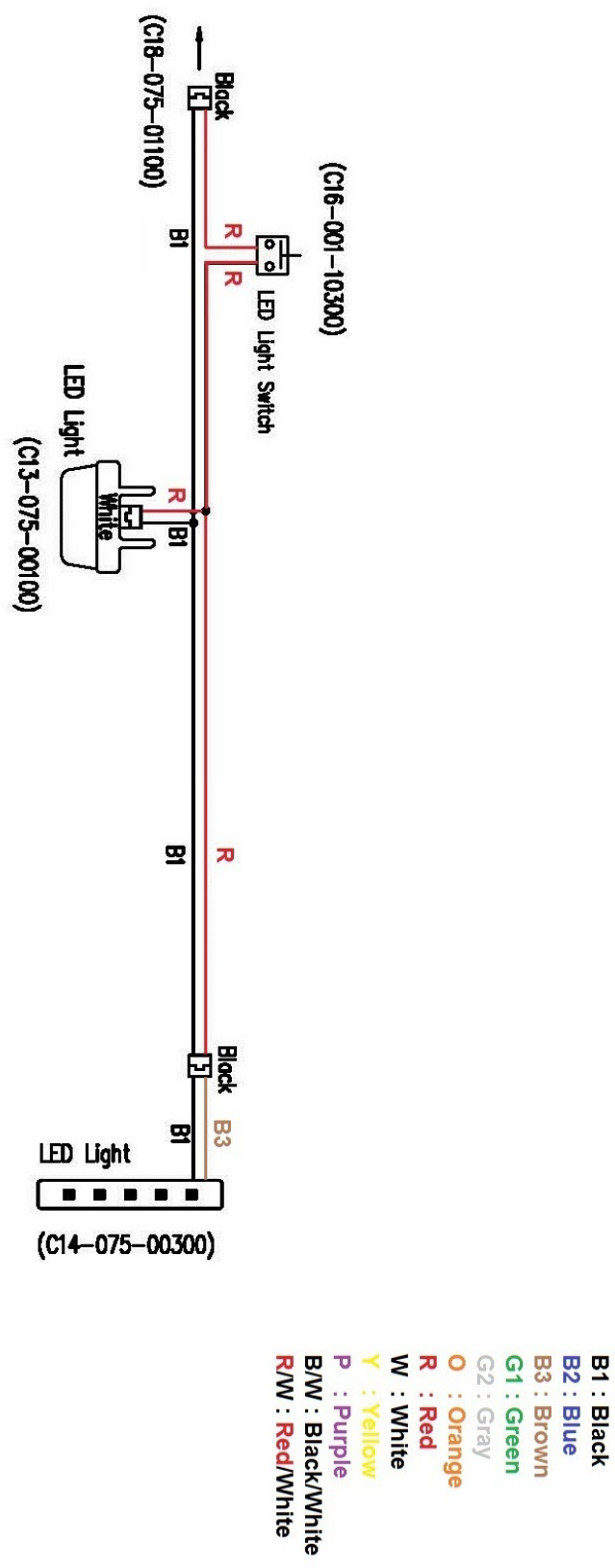



Figure 11a. Buzzaround Extreme Wiring Diagram

SCENARIO 1: TURN THE KEY TO THE ON POSITION AND NO POWER

Put the key into the key switch and turn to the on position. There is no power to the control panel. The horn does not work and the battery condition meter does not work. Battery voltage travels from the batteries, through the controller and the key switch. The test below will verify that there is battery voltage at the batteries, the controller, the main harness, and the key switch.

Make sure that the batteries are fully-charged and connected properly. Refer to the battery connection diagram inside the battery packs. You can also refer to the wiring diagram on page 11. If the batteries will not charge, go to “Scenario 2: Batteries will not charge.”

 **WARNING** If you are unsure of the correct way to measure voltage or resistance, refer to Appendix A and B in this manual before proceeding.

Check Battery Voltage at Battery packs.

1. Remove the battery packs.
2. Measure voltage across the two inside terminals on the connector of each battery pack. **See figure 12.**
 - 12VDC (or battery voltage on each pack?) - Go to the next step.
 - More than 8VDC on each pack? - Try to recharge the batteries. Load test and replace if necessary.
 - 0VDC? - Check main circuit breaker (1) and battery harnesses (4) for continuity.

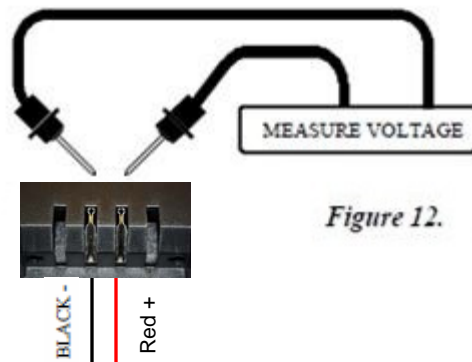


Figure 12.

Check Voltage at Power Harness.

3. Remove the two gray floor panels by pushing them up from the underside of the scooter frame.
4. Remove the four screws fastening the floor shroud.
5. Disconnect the power harnesses (5) from the controller.
6. Reinstall the two battery packs.
7. Measure voltage across the red B+ and black B- wires. **See figure 13.**
 - 24VDC (or battery voltage?) - Go to the next step.
 - 0VDC? - Check power harness for continuity. Replace as necessary.

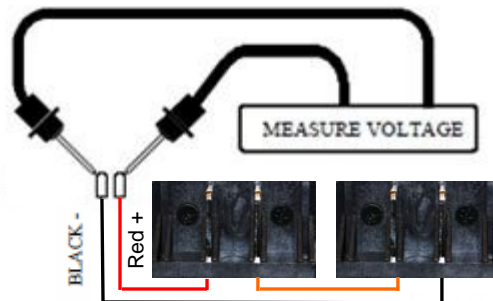


Figure 13.

Check Voltage Out of Controller.

8. Reconnect the power harness to the controller.
9. Insert the multimeter probes into the terminal with the red wire (pin 7) and the terminal with the black wire (pin 13) on the back of the main harness connector (7). **See figure 14.**
 - 24VDC (or battery voltage?) - Go to the next step.
 - 0VDC? - Replace the controller.

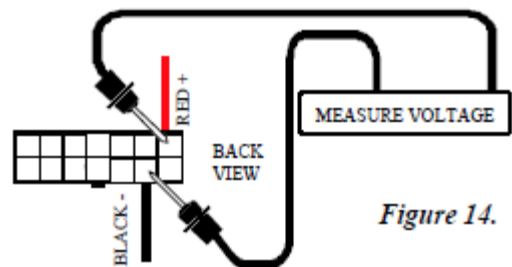


Figure 14.

Check Voltage at Main Harness.

10. Open the control panel.
11. Disconnect the red key switch connector harness (13).
12. Measure voltage across the two pins on the male connector (red and blue wires). **See figure 15.**
 - 24VDC (or battery voltage?) - Check continuity across the key switch. No continuity? - Replace key switch. Continuity? - Replace the control panel.
 - 0VDC? - Check the fuse for continuity. No continuity? - Replace the 1 amp fuse. Refer to the wiring diagram on page 11. Continuity? - Replace the main harness (7).

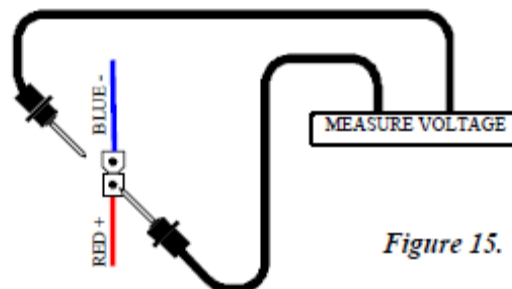


Figure 15.

SCENARIO 2: BATTERIES WILL NOT CHARGE

Most battery chargers need to “see” at least 16VDC at the charger port. Otherwise, they may not send a charging current to the batteries. This test will ensure that the battery voltage is making it to the charger port. You will need to check battery voltage and wiring harness continuity inside the battery packs.



WARNING

If you are unsure of the correct way to measure voltage or resistance, refer to Appendix A and B in this manual before proceeding.

Check Battery Charger Voltage.

1. Separate the front and rear halves of the scooter.
2. Plug the charger into the charger port and then into a wall outlet.
3. Measure voltage across the two outside terminals on the back-side of battery harness connector (4). **See figure 16 and figure 16a.**

Does the voltage increase?

- Yes? - Load test the batteries and replace as necessary.
- No? - But there is voltage. If the voltage is lower than 16VDC, then replace the batteries. If the voltage is 16VDC or greater, then replace the charger.
- No? - And there is no voltage. Open the right-side battery pack and check the circuit breaker, and battery harness for continuity. Open the left-side battery pack and check the 100 amp fuse and battery harness for continuity. Replace the individual components as necessary. If all continuity readings are good, go to the next step.

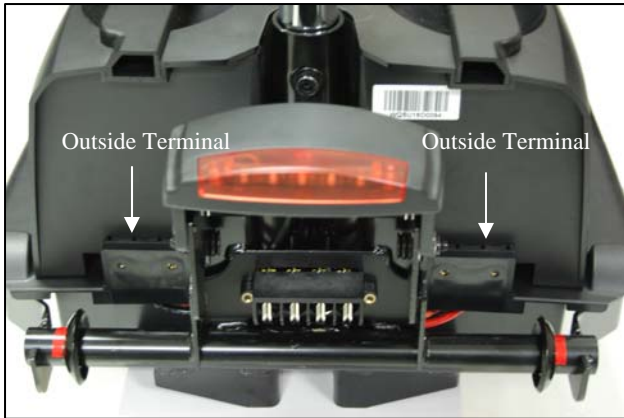


Figure 16. Connector 4

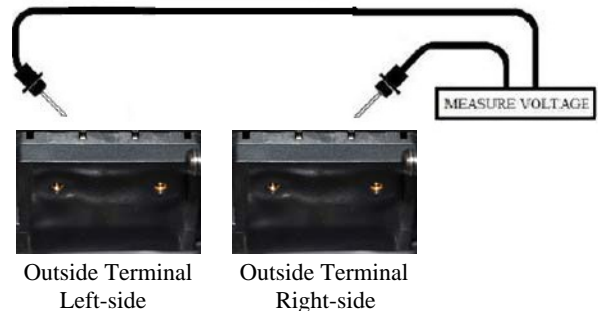


Figure 16a. Connector Close up

4. Open the control panel.
5. Check the charger harness (15) and fuse for continuity.
 - Less than 10 ohms? – Go to the next step.
 - Open? – Replace the 10 amp fuse or the charger harness as necessary. **See figure 17. Also, refer to the wiring diagram on page 11.**

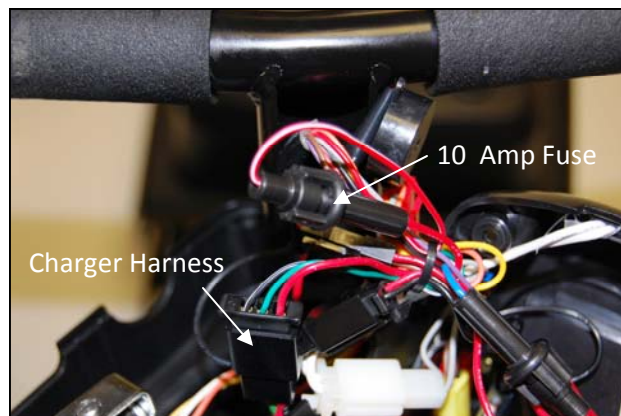


Figure 17. Charger Harness and Fuse


6. If both the charger harness and fuse continuity readings are correct, replace the main harness (7).

BEEP/FLASH CODES

The controller uses audible beeps/flashes to indicate the status of the system. When the controller notices that there is a malfunction in the system, it will beep/flash a code when the power is on. For example, when it beeps/flashes five times and stops that indicates beep/flash code #5 – Brake Fault.

The following beep/flash codes are used to help diagnose system errors:

- Beep/Flash Code #1 – Batteries Low (Scooter will operate)
- Beep/Flash Code #2 – Batteries Very Low (Scooter will not operate)
- Beep/Flash Code #3 – High Battery Voltage
- Beep/Flash Code #4 – Current limit timeout
- Beep/Flash Code #5 – Brake Fault
- Beep/Flash Code #6 – Paddle Fault (out of neutral)
- Beep/Flash Code #7 – Throttle Pot/Speed Pot Fault
- Beep/Flash Code #8 – Motor Voltage Fault (Open/Shorted)
- Beep/Flash Code #9 – Controller Fault

 **WARNING** If you are unsure of the correct way to measure voltage or resistance, refer to Appendix A and B in this manual before proceeding.

BEEP/FLASH CODE #1 – BATTERIES LOW (SCOOTER MAY DRIVE SLOWLY)

This Beep/Flash Code occurs when the battery voltage drops below a certain level. Recharge the batteries immediately. If the batteries will not recharge, then load test them or refer to “Scenario 2: Batteries will not Charge”, on page 14.

BEEP/FLASH CODE #2 – BATTERIES LOW (SCOOTER WILL NOT OPERATE)

This Beep/Flash Code occurs when the battery voltage drops lower than Beep Code #1. Recharge the batteries immediately. If the batteries will not recharge, load test them or refer to “Scenario 2: Batteries will not Charge”, on page 14.

BEEP/FLASH CODE #3 - HIGH BATTERY VOLTAGE

This Beep/Flash Code occurs when the battery voltage climbs above 26VDC.

1. Insert the key into the key switch and turn it to the on position. Allow the battery level to drop. Do not allow the battery voltage to fall into the red area on the battery meter.
2. Check the battery charger. Make sure it is an approved charger.

BEEP/FLASH CODE #4 - CURRENT LIMIT TIMEOUT

This Beep/Flash Code occurs when the motor has been exceeding its maximum current rating for too long. This may be due to a faulty motor, poor battery condition, excessive uphill driving, or excessive weight. First turn off the scooter and allow it to cool for ten minutes. If this does not work, use the following procedure.

Inspect Motor/Brake and Rear Intermediate Connector.

1. Remove the seat.
2. Remove the battery packs.
3. Separate the front and rear halves of the scooter, and inspect the connection between the motor/brake assembly (10) and the rear intermediate connector (9). Is there visible damage, discolored or melted wires? Refer to the wiring diagram on page 11.
 - Yes? - Replace the motor/brake assembly or rear intermediate connector as necessary.
 - No? - Go to the next step.

Check Motor Resistance at Motor.

4. Measure resistance across the two outside pins on connector (9) that have the thick black wire and the thick red wire. (Internal resistance of the motor). **See figure 18.**
 - 0.8 ohms – 1.5 ohms but not shorted? – Go to the next step.
 - Out of that range, or open? – Replace the motor/brake assembly.

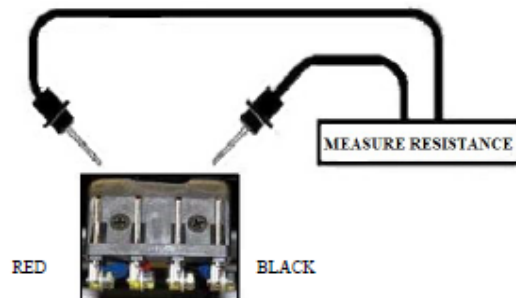


Figure 18. Connector 9

Check for Continuity on the Front Intermediate Harness.

5. Remove the two gray floor panels by pushing them up from the underside of the scooter frame.
6. Remove the four screws fastening the floor shroud.
7. Disconnect the front intermediate harness (8) from the controller. Refer to the wiring diagram on page 11.
8. Make sure that the pins are not damaged or discolored. On the front intermediate harness, check the continuity between the M- and M+ (thick black and red) wires and the two outside pins on connector 8.
 - 10 ohms or less? – Replace the controller.
 - Open? – Go the next step.
9. Inspect the front intermediate harness (8) and rear intermediate connector (9). Refer to the wiring diagram on page 11.

Are they discolored, corroded, or damaged?

 - Yes? - Replace as necessary.
 - No? - Go to the next step.
10. Take a quarter and slide into each contact on the front intermediate harness connector (8). **See figure 19.**

Does each contact hold the quarter firmly in place?

 - No? - Replace the front intermediate harness (8).
 - Yes? - Go to the next step.
11. Check the rear intermediate connector (9) and the motor/brake harnesses connected to connector (9).
 - No damage or discoloration? – Replace the controller.
 - Damaged or discolored? – Replace as necessary.

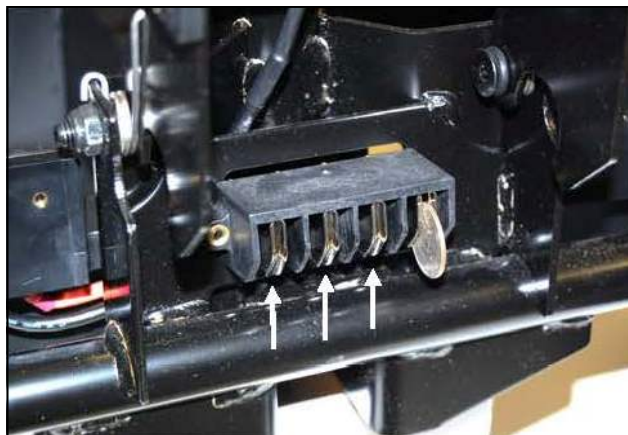


Figure 19. Quarter Test (Connector 8)

BEEP/FLASH CODE #5 - BRAKE FAULT

This Beep/Flash Code occurs because the park brake release switch is active or the park brake may be faulty.

Check the Park Brake Position

1. Turn the key to the off position.
2. Disengage and then re-engage the park brake.
3. Turn the key to the on position. Did the beep code clear?
 - Yes? - OK.
 - No? - Go to the next step.

Check Park Brake Resistance at the Controller.

4. Remove the seat.
5. Remove the battery packs.
6. Remove the two gray floor panels by pushing them up from the underside of the scooter frame.
7. Remove the four screws fastening the floor shroud.
8. Disconnect the (J3) connector of the front intermediate harness (8) from the controller. Refer to the wiring diagram on page 11.
9. Make sure that the pins on J3 are seated properly. Measure resistance across (J3) pin 1 and pin 2 on the front intermediate harness (8) **with the park brake engaged. See figure 20.**
 - 45 ohms – 52 ohms? – Replace the controller.
 - Shorted or open? – Go to the next step.

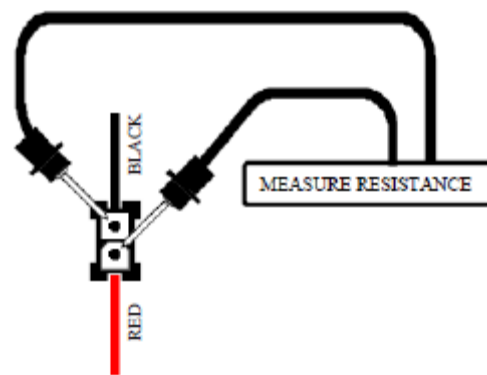


Figure 20. Connector J3

Check for Continuity on the Front Intermediate Harness.

10. Separate the front and rear halves of the scooter.

11. Measure resistance from the connector (J3) pin 1 and pin 2 to the two middle pins on the connector of the front intermediate harness (8).

- 10 ohms or less? – Go to the next step.
- Open? – Replace the front intermediate harness (8).

12. Inspect the front intermediate harness (8) and rear intermediate connector (9). Refer to the wiring diagram on page 11.

Are they discolored, corroded, or damaged?

- Yes? - Replace harness(es) as necessary.
- No? - Go to the next step.

13. Take a quarter and slide into each contact on the front intermediate harness connector (8). **See figure 19 on page 16.**

Does each contact hold the quarter firmly in place?

- No? - Replace the front intermediate harness (8).
- Yes? - Go to the next step.

Check Resistance at Park Brake.

14. Measure resistance across the two inside pins on the rear intermediate harness connector (9) **with park brake engaged**. **See figure 21.**

- 45 ohms – 52 ohms? – Replace the controller.
- Out of range? – Replace the motor/brake assembly.
- Open? – Check the connections at connector (9).
- Shorted? – Replace the motor/brake assembly.

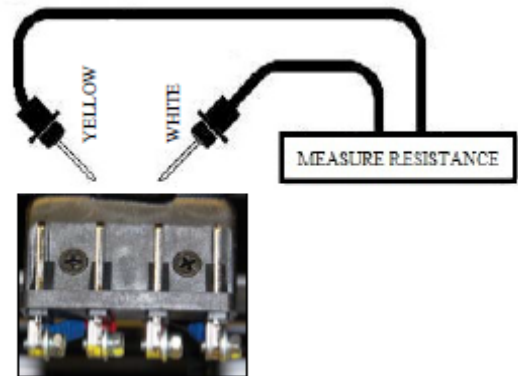


Figure 21. Connector 9

BEEP/FLASH CODE #6 - PADDLE FAULT (OUT OF NEUTRAL)

This Beep/Flash Code means that the throttle control lever was not in the neutral position when the key is turned to the on position.

1. Turn the key to the off position.

2. Make sure that the paddle pot is not obstructed and it can return to the neutral (center) position.

3. Move the throttle pot forward and then reverse. Make sure that it is not obstructed. Does it spring back to the neutral position?

- Yes? – Go to the next step.
- No? – Check for obstructions. Adjust if necessary. Replace if the adjustment does not work or if there are no obstructions.

4. Turn the key to the on position. Does the code return?

- No? – OK
- Yes? – Go to Beep CODE #7 to test the paddle pot.

BEEP/FLASH CODE #7 - THROTTLE POT/SPEED CONTROL FAULT

This Beep/Flash Code occurs because there is a fault with the throttle pot, speed pot, or the associated wiring.

Check Throttle Pot Resistance at Controller.

1. Remove the seat.
2. Remove the battery packs.
3. Remove the two gray floor panels by pushing them up from the underside of the scooter frame.
4. Remove the four screws fastening the floor shroud.
5. Turn the speed pot to **full rabbit**.
6. Set your multimeter to measure resistance.
7. Disconnect the main harness (7) from the controller. Refer to the wiring diagram on page 11.
8. Insert multimeter probes into the main harness connector 7 at pin 8 and pin 2 (orange wire and yellow wire).

See figure 22.

- 5k ohm $\pm 10\%$? – Replace the controller.
- Outside that range? - Go to the next step.

9. Insert the multimeter probes into the main harness connector 7 at pin 1 and pin 8 (gray wire and orange wire). See figure 23. Note the resistance reading. Insert the multimeter probe into the main harness connector at pin 1 and pin 2 (gray wire and yellow wire). See figure 24. Note the resistance reading.

- Are both readings within 500 ohms of each other? - Replace the controller.
- Are either of the readings outside that range? - Go to the next step.

Check Throttle Pot Resistance at Throttle Pot.

10. Open the control panel.
11. Disconnect the main harness (7) from the throttle pot (14). Note: This is a red connector with three wires, yellow, white, and orange.
12. Insert multimeter probes into the throttle pot connector (14) at the yellow wire and the orange wire (outside two pins). See figure 25.

- 5k ohm $\pm 10\%$? - go to the next step.
- Outside that range? - Replace the throttle pot.

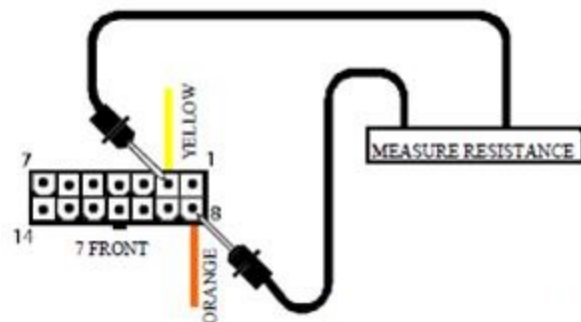


Figure 22. Connector 7

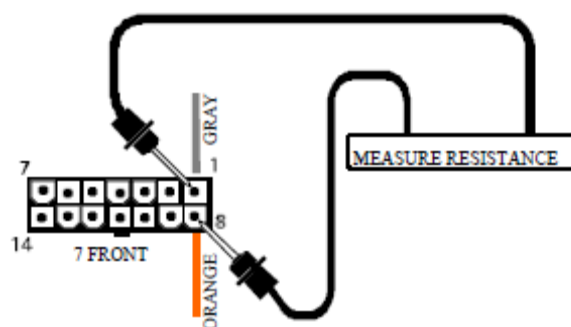


Figure 23. Connector 7

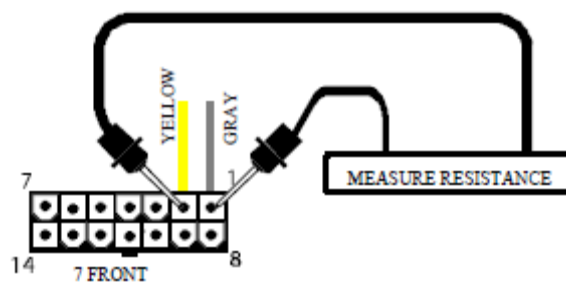


Figure 24. Connector 7

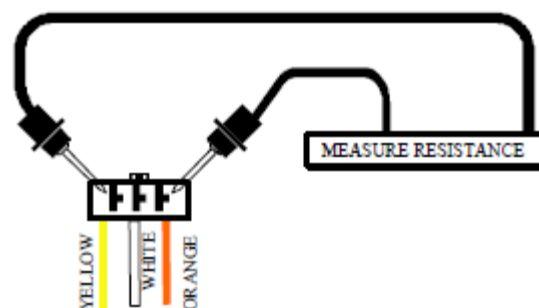


Figure 25. Connector 14

13. Insert the multimeter probes into the throttle pot connector (14) at the orange wire and the white wire. **See figure 26.** Note the resistance reading. Insert the multimeter probes into the throttle pot connector (14) at the yellow wire and the white wire. **See figure 27.** Note the resistance reading.

- Are both readings within 500 ohms of each other? - Go to the next step.
- Are either of the readings outside that range? – Replace the throttle pot.

14. Check the orange, gray, and yellow wires on the main harness (7) for continuity.

- 10 ohms or less on each one? - Replace the speed pot.
- Open on any wire? - Replace the main harness.

BEEP/FLASH CODE #8 - MOTOR VOLTAGE FAULT (OPEN)

This Beep/Flash Code occurs when there is an internal problem with the motor or its wiring.

Check Motor Resistance at Controller.

1. Remove the seat.
 2. Remove the battery packs.
 3. Remove the two gray floor panels by pushing them up from the underside of the scooter frame.
 4. Remove the four screws fastening the floor shroud.
 5. Disconnect the (M- and M+) connections on the front intermediate harness (8) from the controller.
- Refer to the wiring diagram on page 11.
6. Measure resistance across the front intermediate harness (M- and M+). **See figure 28.**

- 45 ohms – 52 ohms? – replace the controller.
- Out of that range? – Go to the next step.

Check for Continuity on the Front Intermediate Harness.

7. Separate the front and rear halves of the scooter.
8. Inspect the front intermediate harness connector (8). Discolored, corroded, or damaged?

- Yes? - Replace as necessary.
- No? - Go to the next step.

9. Check the continuity between M- and connector 8, and M+ and connector 8.

Refer to the wiring diagram on page 11.

- 10 ohms or less? – Go to the next step.
- Open? – Replace the front intermediate harness (8).

10. Take a quarter and slide into each contact on the front intermediate harness connector (8). See figure 19 on page 16.

Does each contact hold the quarter firmly in place?

- No? - Replace the front intermediate harness (8).
- Yes? - Go to the next step.

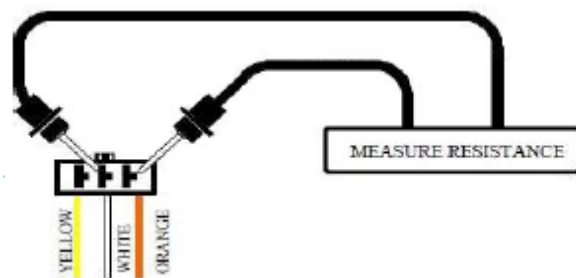


Figure 26. Connector 14

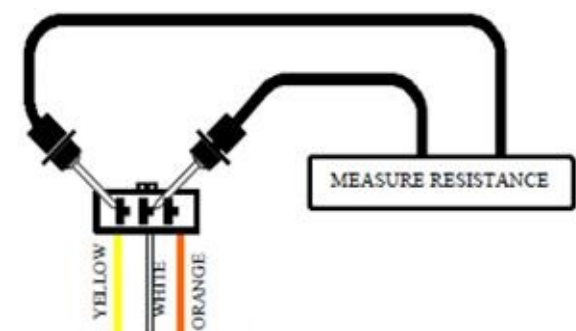


Figure 27. Connector 14

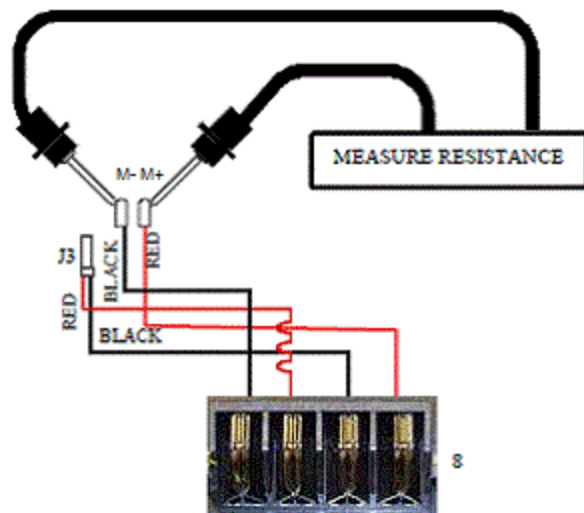


Figure 28. Connectors M-M+, J3, and 8

Check Motor Resistance at Motor.

11. Measure resistance across the two outside pins on connector (9) that have the thick black wire and the thick red wire. (Internal resistance of the motor). **See figure 29.**

- 0.8 ohms – 1.5 ohms? – Replace the controller.
- Out of range? – Replace the motor/brake assembly.
- Open? – Check the connections at connector (9).
- Shorted? – Replace the motor/brake assembly.

BEEP/FLASH CODE #9 - CONTROLLER FAULT

This Beep/Flash Code means that the controller has an internal fault.

1. Remove the key from the key switch and allow the controller to cool down. If the code continues, then replace the controller.

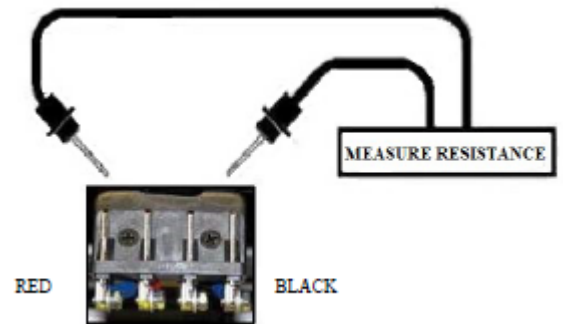


Figure 29. Connector 9

BUZZAROUND EXTREME REPLACEMENT INSTRUCTIONS

DRIVEWHEEL REPLACEMENT

Tools needed: 13mm socket, frame blocks.

1. Place the freewheel lever into the engaged position.
2. Remove the key from the key switch.
3. Place the rear of the scooter onto blocks.
4. Remove the center cap.
5. Remove the bolt, split washer, and washer that fasten the wheel to the axle. ***Make sure you retain the axle key.*** See figure 30.
6. Place a new wheel onto the axle. ***Make sure that the axle key is reinstalled in its original position.***
7. Reinstall the hardware removed in step 5 and tighten securely.
8. Reinstall the center cap.



Figure 30. Drive Wheel Axle Key

DRIVETRAIN REPLACEMENT

Tools needed: 13mm Socket, 6mm Allen wrench

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Loosen the drive wheel nuts on both the left and right sides, which fasten the wheels to the axle.
6. Separate the front and rear frames.
7. Remove the drive wheels. ***Make sure you retain the axle keys.***
8. Remove the drive train from the rear frame.
9. Install the drive wheels onto the new drive train.
10. Install the new drive train onto the rear frame.
11. Connect the rear and front frames.
12. Reinstall the battery packs.
13. Reinstall the seat.

THROTTLE POT REPLACEMENT

Tools needed: Slotted screwdriver, Phillips screwdrivers

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Use a slotted screwdriver to remove the control panel cover.
4. Separate the control panel halves by removing the (4) Phillips screws.

NOTICE

At this point the plastic paddle can be replaced by removing (2) screws. See figure 31.

5. Unplug the throttle pot harness.
6. Remove the (2) screws that fasten the throttle pot assembly.
7. Install the new throttle pot assembly.
8. Connect the throttle pot harness.
9. Reassemble the control panel halves.
10. Install the control panel cover.

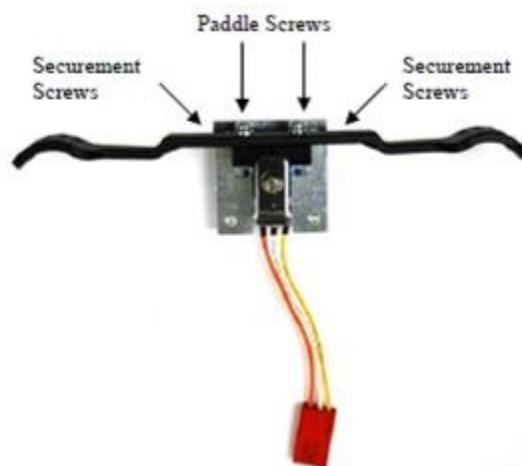


Figure 31. Throttle Pot

BATTERY REPLACEMENT

Tools needed: Phillips screwdriver, 8mm wrench

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery pack(s).
5. Position the battery pack(s) so that the screw heads are facing up. **See figure 32.**
6. Remove the (8) screws that fasten each battery pack together. **See figure 32.**
7. Turn the battery pack(s) over so that the screw holes are facing down and remove the top of the of the battery pack(s). **See figure 33.**



Figure 32. Battery packs (bottom side)

CAUTION

Note the position of the batteries and the battery wires. Make sure that you position them in the exact same place during assembly.

9. Remove the (-) black and (+) red wires from one battery.
10. Remove the battery from the pack.
11. Repeat steps 9 and 10 for the opposite battery.
12. Place a new battery into the bottom half of the battery pack. Make sure that the terminals are facing as shown. **See figure 33.**
13. Connect the (-) black and (+) red wires and tighten securely.
14. Repeat steps 12 and 13 for the opposite battery pack. **See figure 33.**

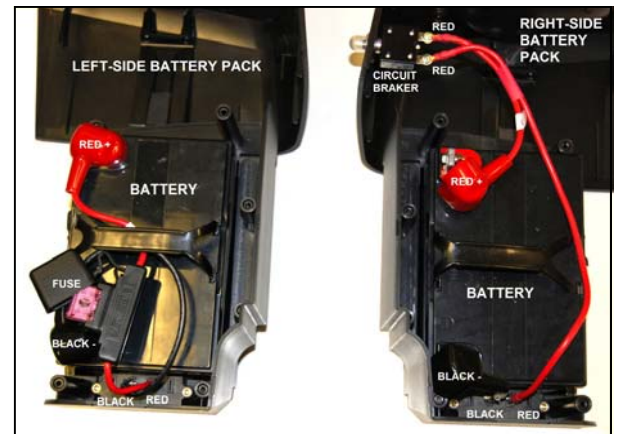


Figure 33. Inside Battery packs



WARNING

Prevent a short circuit!

Make sure that you connect the batteries according to the battery diagram. See figure 34.

15. Connect the (-) black and (+) red wires and tighten securely.
16. Place the top half of the battery pack onto the bottom.
17. Turn the battery pack over.
18. Reinstall the (8) screws that fasten the top and bottom halves of the battery pack together.
19. Repeat steps 15 - 18 for the opposite battery pack.
19. Reinstall the battery pack(s).

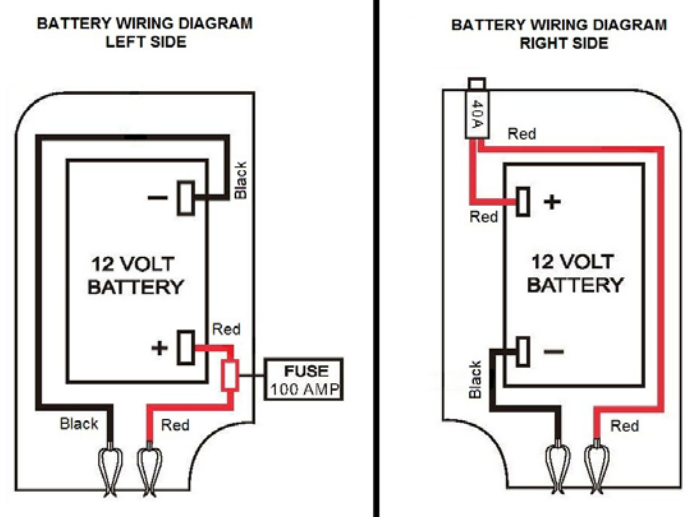


Figure 34. Battery Diagram

CIRCUIT BREAKER REPLACEMENT

Tools needed: Phillips screwdriver, 17mm socket

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the right-side battery pack.
4. Remove the (8) screws that fasten the battery pack together.
5. Open the battery pack.
6. Remove the circuit breaker cover and pull the breaker from the plastic cover.
7. Remove the (2) wires connected to the circuit breaker.
8. Install the new circuit breaker.
9. Reassemble the battery pack halves together.
10. Reinstall the battery pack.

BATTERY HARNESS FUSE REPLACEMENT

Tools needed: Phillips screwdriver

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the left-side battery pack.
4. Remove the (8) screws that fasten the battery pack together.
6. Remove the fuse from the fuse holder.
8. Install a new fuse into the fuse holder.

NOTICE

Fuse(s) must be replaced with exact type and rating. Refer to the wiring diagram on page 11.

9. Reassemble the battery pack halves together.
10. Reinstall the battery packs.

CONTROLLER REPLACEMENT

Tools needed: Phillips screwdriver

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Remove the (2) gray textured floor inserts by lifting them up from each side of the floor shroud.
6. Remove the floor shroud by removing the (4) screws securing it to the frame.
7. Remove the battery tray by removing the (4) screws securing it to the frame.
8. Unplug all harnesses from the controller.
9. Remove the (2) screws that attach the controller to the frame.
10. Install the new controller onto the frame.
11. Reconnect all harnesses to the new controller.

See figure 36.

CAUTION

Wire placement is critical! If you are unsure of the placement, refer to the wiring diagram on page 11.

12. Reinstall the battery tray.
13. Reinstall the floor shroud.
14. Reinstall the (2) gray textured floor inserts.
15. Reinstall the battery packs.
16. Reinstall the seat.

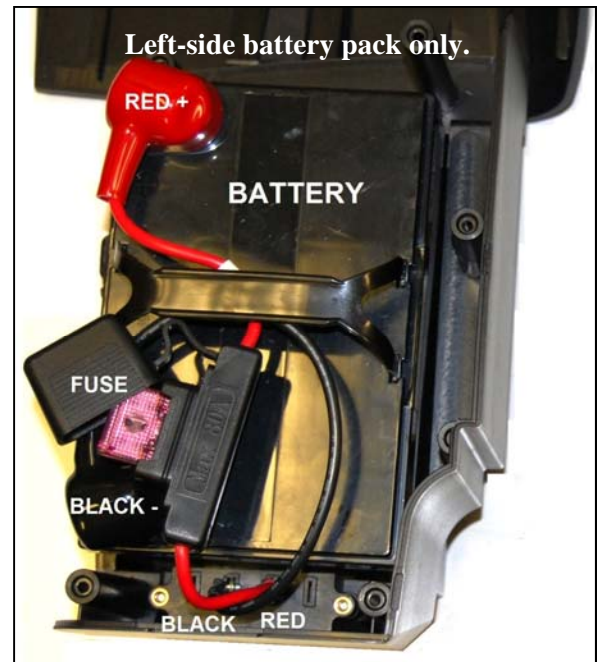


Figure 35. Battery Harness Fuse

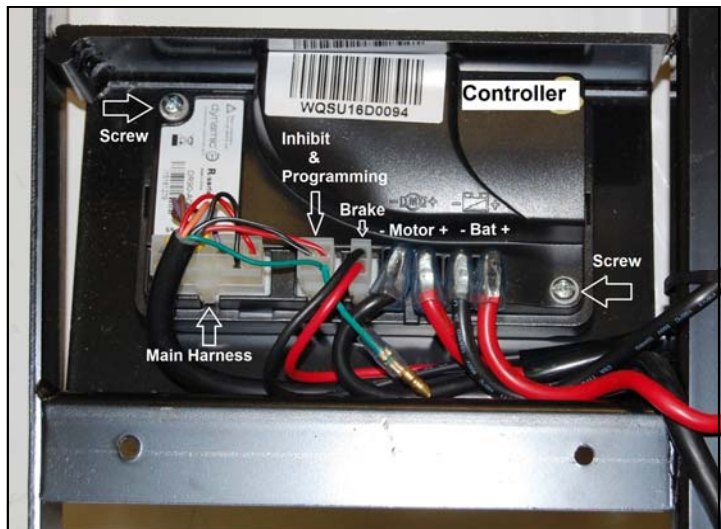


Figure 36. Controller

CONTROL PANEL REPLACEMENT

Tools needed: Phillips screwdriver and slotted screwdriver

1. Engage the park brake.
2. Remove the key from the key switch.
3. Remove the control panel shroud. **See figure 37.**
4. Remove the (4) screws that fastens the control panel halves together **See figure 38.**
5. Disconnect the control panel from the main harness.
6. Connect the new control panel to the main harness.
7. Reassemble the new control panel halves.
8. Reinstall the control panel shroud.



Figure 37. Control Panel Shroud

MAIN HARNESS REPLACEMENT

Tools needed: Slotted screwdriver, Phillips screwdriver, Cutters

1. Engage the park brake.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Remove the control panel shroud. **See figure 37.**
6. Remove the (4) screws that fasten the control panel halves together. **See figure 38.**
7. Disconnect the main harness (all connections) from the control panel. Refer to the wiring diagram on page 11.
8. Remove the (2) gray textured floor inserts by lifting them up from each side of the floor shroud.
9. Remove the floor shroud by removing the (4) screws securing it to the frame.
10. Disconnect the main harness connections from the controller.
11. For a 3-wheel scooter, remove the (2) screws securing the front shroud located towards the front of the shroud.
For a 4-wheel scooter, remove the (2) screws securing the front shroud located in the front bumper. This will allow you to move the front shroud.
12. Cut any zip ties securing the main harness.
13. Fish the main harness up through the opening in the tiller, and then up through the tiller to the console to remove. **See figure 39.**
14. Fish the new main harness through the tiller.
15. Connect the new main harness to the control panel and the controller.
16. Reassemble the (2) halves of the control panel.
17. Reinstall the control panel shroud.
18. Reinstall the front shroud.
19. Reinstall the floor shroud.
20. Reinstall the (2) gray textured floor inserts.
21. Reinstall the battery packs.
22. Reinstall the seat.



Figure 38. Control Panel Removal



Figure 39. Tiller Opening

MOTOR/BRAKE ASSEMBLY REPLACEMENT

Tools needed: Phillips screwdriver, 5mm Allen wrench, Cutters

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Separate the front and rear frames.
6. Remove the rear color panels by lifting them up.
7. Remove the (4) screws securing the rear shroud to the frame.
Note: Two of the screws are located under the rear Golden logo.
8. Remove the (2) Phillips head screws connecting the rear intermediate connector to the frame.
9. Cut the zip tie securing the wire harness to the transaxle.
10. Remove the (4) bolts that fasten the motor/brake to the transaxle. **See figure 40.**
11. Remove the motor/brake assembly.

Make sure you retain the motor key.

12. Align and place the new motor/brake onto the transaxle.
13. Fasten the new motor/brake onto the transaxle with the four bolts removed in step 10.
14. Secure the rear intermediate connector to the frame with the (2) screws removed in step 8.
14. Install the rear shroud.
15. Reinstall the color panels.
16. Connect the front and rear frames.
17. Reinstall the battery packs.
18. Reinstall the seat.

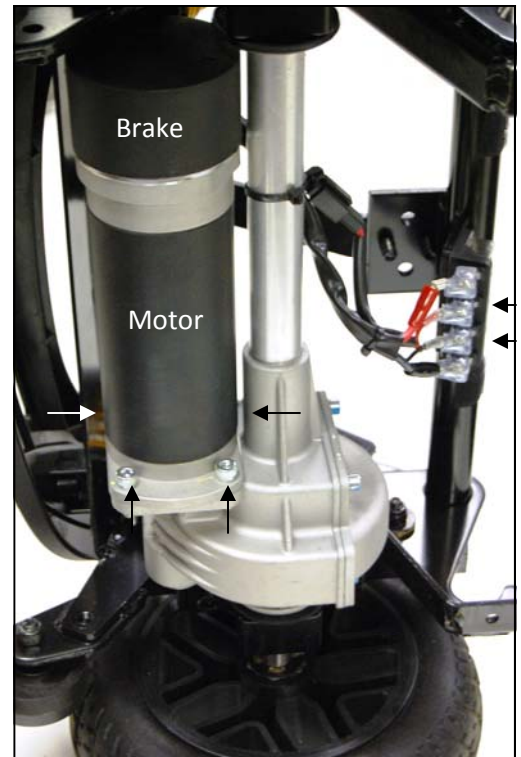


Figure 40. Motor/Brake Removal

FRONT INTERMEDIATE HARNESS REPLACEMENT

Tools needed: Phillips screwdriver, 7mm wrench

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Separate the front and rear frames.
6. Remove the (2) gray textured floor inserts by lifting them up from each side of the floor shroud.
7. Remove the floor shroud by removing the (4) screws securing it to the frame.
8. Remove the battery tray by removing the (2) screws securing it to the frame.
Note: This will allow access to the hardware/connections at the back side of the connector.
9. Remove the (2) screws from (back side of connector) securing the connector to the frame.

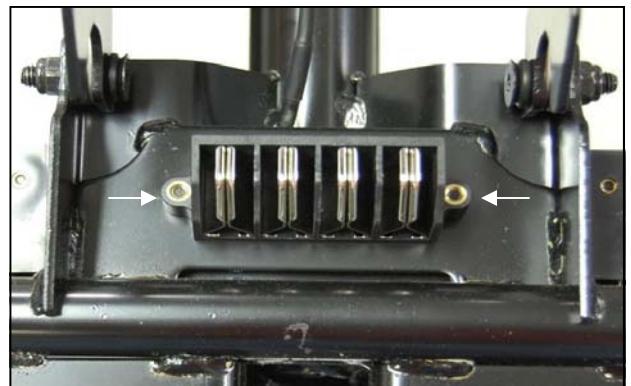


Figure 41. Connector (Front View)



Please note the placement of all wiring prior to removal.

NOTICE

At this time the entire harness can be removed by simply disconnecting the red and black motor wires and the 2-pin red/black connector from the controller.

NOTICE

At this time to replace only the connector or harness separately, continue to step 10.

10. Remove the (4) bolts securing the wires to the back of the connector.
11. Install either the new connector or the new harness/connector.

CAUTION

Wire placement is critical. If you are unsure of the placement, refer to the wiring diagram on page 11.

17. Reinstall the battery tray.
18. Reinstall the floor shroud.
19. Reinstall the two gray textured floor inserts.
20. Reconnect the front and rear frames.
22. Reinstall the battery packs.
23. Reinstall the seat.

REAR INTERMEDIATE CONNECTOR REPLACEMENT

Tools needed: Phillips screwdriver, 7mm wrench



Figure 42. Connector (Front View)

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Separate the front and rear frames.

CAUTION

Please note the placement of all wiring prior to removal.

6. Remove the (4) bolts connecting the harness to the connector.
7. Remove the (2) screws securing the connector to the frame.
8. Install the new connector.

CAUTION

Wire placement is critical. If you are unsure of the placement, refer to the wiring diagram on page 11.

9. Reconnect the harness to the connector.
10. Reconnect the front and rear frames.
11. Reinstall the battery packs.
12. Reinstall the seat.

POWER HARNESS AND CONNECTOR REPLACEMENT

Tools needed: Phillips screwdriver, 7mm wrench

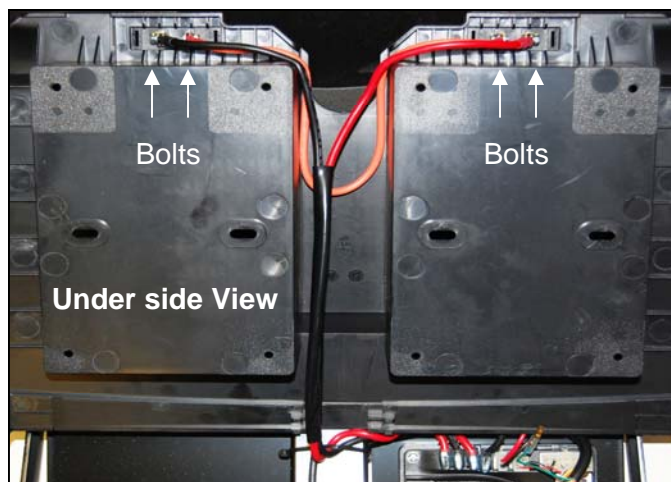
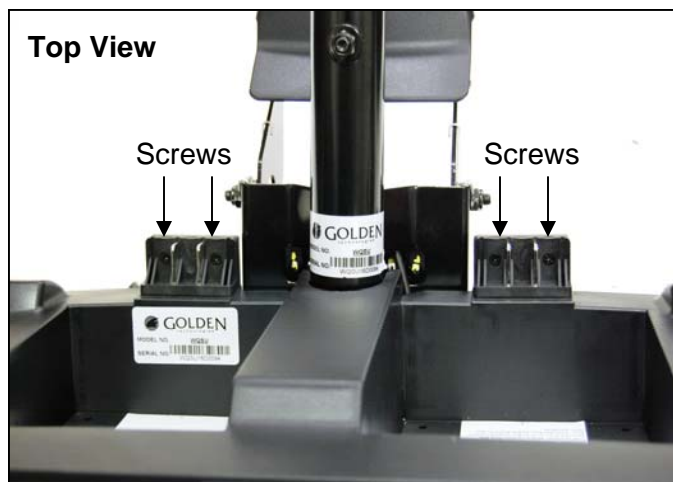


Figure 43. Power Harness or Connector Replacement

1. Place the freewheel lever in the engaged position.
2. Remove the key from the key switch.
3. Remove the seat.
4. Remove the battery packs.
5. Separate the front and rear frames.
6. Remove the (2) gray textured floor inserts by lifting them up from each side of the floor shroud.
7. Remove the floor shroud by removing the (4) screws securing it to the frame.
8. Remove the battery tray by removing the (2) screws securing it to the frame.

CAUTION

Please note the placement of all wiring prior to removal.

9. **For harness replacement only:** Disconnect the red and black wires from the controller. Use the 7mm wrench to remove the (4) bolts on the underside of the battery tray, which connect the red, black, and orange battery wires.
 9. **For connector replacement only:** Use the 7mm wrench to remove the (2) bolts on the back side of the connector being replaced. Access them from the underside of the battery tray. Remove the (2) screws that secure the connector being replaced to the battery tray.
10. Install either the new connector(s) or the new harness(es).

CAUTION

Wire placement is critical. If you are unsure of the placement, refer to the wiring diagram on page 11.

11. Reinstall the battery tray.
12. Reinstall the floor shroud.
13. Reinstall the two gray textured floor inserts.
14. Reconnect the front and rear frames.
15. Reinstall the battery packs.
16. Reinstall the seat.

APPENDIX A - HOW TO USE A VOLTMETER

Step 1

Plug the probes into the meter. Red goes to the positive (+) and black to the negative (-).

Step 2

Turn the selector dial or switch to the type of measurement you want. To measure direct current - a battery, for example - use DCV. To measure alternating current, such as a wall outlet, use ACV.

Step 3

Choose the range setting. The dial may have options from 5 to 1000 on the DCV side and 10 to 1000 on the ACV side. The setting should be the top end of the voltage you are reading. Not all voltmeters have this setting.

Step 4

Turn the meter on.

Step 5

Hold the probes by the insulated handles and touch the red probe to the positive side of a DC circuit or either side of an AC circuit. Touch the other side with the black probe.

Step 6

Read the digital display or analog dial.



Figure 44. Multimeter (Set to DC Volts)

APPENDIX B - HOW TO USE AN OHM METER

Ohm's law breaks down into the basic equation: Voltage = Current x Resistance. Current is generally measured in amps, and resistance in ohms. Testing the resistance on an electrical circuit in your home or car can help you diagnose problems with that circuit. You can use a simple ohmmeter for this task, but most professionals now use the ohmmeter function of a multimeter (also called multimeter or VOM, for volt/ohmmeter). Read on for instructions on how to use an ohmmeter and test for resistance.

- Ohmmeter or Multimeter (Volt/ohmmeter)
- Circuit to test (with all power OFF)
- Service manual

Step 1

Disconnect completely and/or turn OFF all power to the circuit you are testing. You must have a completely dead wire or circuit in order to ensure accuracy in measurement, as well as your own safety. Your ohmmeter will supply the voltage and current for your circuit so NO other power is necessary. Testing a powered circuit can "cause damage to the meter, circuit, and *you*."

Step 2

Connect testing wires to the ohmmeter. The black wire goes to the ground (common) outlet, the red wire to the volt/ohms outlet.

Step 3

Consult a service manual for the normal range of resistance for the circuit you are testing.

Step 4

Set the dial to the "ohms" setting with a multimeter. On an individual ohmmeter, you may have to set a range for the readings, in ohms, kilohms or megohms. Use the range you located in your service manual to set the dial.



Figure 45. Multimeter (Set to Ohms)



GB118EX



GB148EX



Golden Technologies
401 Bridge Street
Old Forge, PA 18518
www.goldentech.com