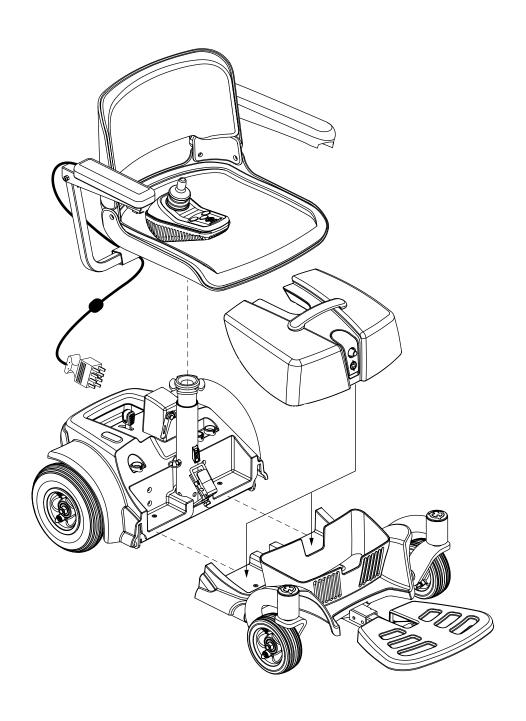




# TECHNICAL TROUBLESHOOTING GUIDE



Pride Mobility Products Corp.

800-800-8586 (U.S.) 888-570-1113 (Canada) www.pridemobility.com

# SAFETY GUIDELINES

The symbols below are used throughout this troubleshooting guide to identify warnings and important information. It is very important for you to read what follows the symbols and understand it completely.



WARNING! Failure to follow designated procedures can cause either personal injury, component damage, or malfunction (black symbol on yellow triangle with black border).



MANDATORY! These actions should be performed as specified. Failure to perform mandatory actions can cause injury to personnel and/or damage to equipment (white symbol on blue dot).



PROHIBITED! These actions are prohibited. These actions should not be performed at any time or in any circumstances. Performing a prohibited action can cause injury to personnel and/or damage to equipment (black symbol with red circle and red slash).

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# INTRODUCTION:

# GO-CHAIR TECHNICAL TROUBLESHOOTING GUIDE

This technical troubleshooting guide covers diagnostic and repair scenarios for the Go-Chair with PG Drives VSI electronics.

This guide is divided into two sections:

- Section 1 No Power
- Section 2 Flash Code Diagnosis

# How to use this Guide...

The troubleshooting procedures in the manual are keyed to the wiring diagrams. Each wiring harness and each connector used in the wiring diagrams are numbered. The numbers correspond with the component (harness, board, etc.) and the component connector. Components are numbered 1, 2, 3, etc. Connectors are numbered 1a, 2a, 3a, etc. The diagrams are located on the insert. **See figure 1.** 

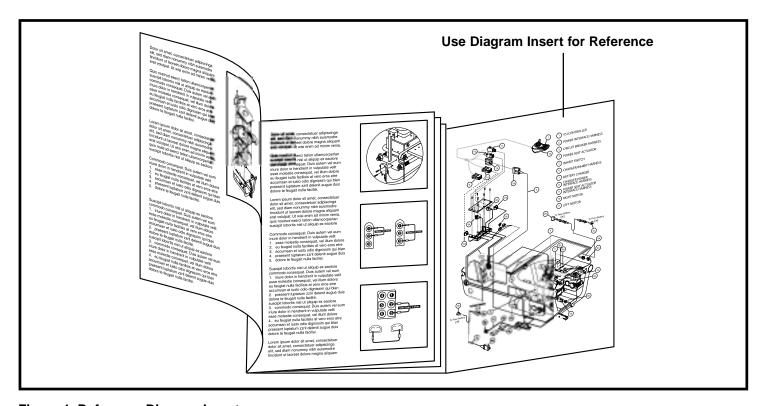


Figure 1. Reference Diagram Insert

# System Retest

When a procedure specifies to replace a component, you must retest the system after replacing that component.

## To retest the system:

- 1. Replace the component.
- 2. Reconnect any harnesses that were disconnected.
- 3. Reconnect the batteries (if disconnected).
- 4. Power on the controller.
- 5. Operate the seat or power base.
- If the power chair system operates normally, then reassemble the power chair.
- If another problem has surfaced, then go to that procedure in this guide.

# SECTION 1 - NO POWER

# **Symptoms:**

- The batteries are fully charged.
- All electrical components are connected correctly.
- The on/off key is pressed and the power does not come on.

#### **Diagnosis:**

The power has been interrupted somewhere in the system.

#### **Solution:**

Use the following procedure to find the source of the interruption:

- 1. Locate the off-board charging socket (1a) on the front of the VSI controller (1). **See diagram 1.**
- 2. Measure voltage across pin 1 (B+) and pin 2 (B-) on connector 1a. **See figure 2.**
- If your multimeter indicates about 25VDC, then replace the VSI controller (1) and retest the system.
- If your multimeter indicates OVDC, then go to the next step.
- If your multimeter indicates 18VDC or less (but not 0VDC), then recharge the batteries and retest the system.
- 3. Remove the battery box from the Go-Chair. Refer to the Go-Chair owner's manual.
- 4. Measure voltage across the negative and positive battery contact pads (5e and 6d) on the underside of the battery box. **See diagram 2.**
- If your multimeter indicates more than 18VDC, then go to step 9.
- If your multimeter indicates 18VDC or less (but not 0VDC), then recharge the batteries and retest the system.
- If your multimeter indicates OVDC, then go to the next step.
- 5. Remove the hardware from the bottom of the battery box and open the battery box. **See figure 3.**
- 6. Measure voltage across the two outermost battery terminals. **See figure 4.**
- *If your multimeter indicates more than 0VDC*, then replace the battery contact pads (5d, 5e, and 6d) and retest the system.
- If your multimeter indicates OVDC, then go to the next step.

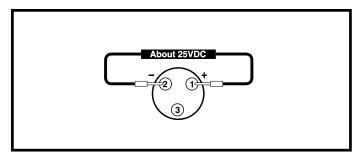


Figure 2. Connector 1a

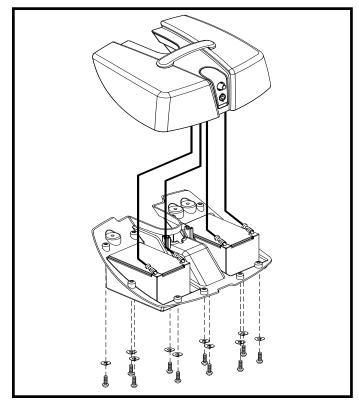
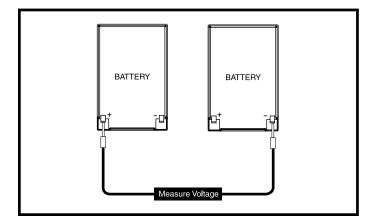


Figure 3. Battery Box Disassembly



**Figure 4. Outermost Battery Terminals** 

- 7. Measure resistance across the two inside battery terminals. **See figure 5.**
- *If your multimeter indicates less than 1 ohm*, then replace the batteries (5 and 6) and retest the system.
- If your multimeter indicates more than 1 ohm, then go to the next step.

WARNING! Battery posts, terminals, and related accessories contain lead and lead compounds. Wash hands after handling.



WARNING! Always protect the batteries from freezing and never charge a frozen battery. Charging a frozen battery may result in personal injury and/or damage to the battery.

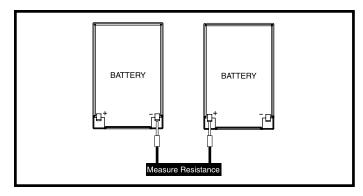


MANDATORY! RED (+) cables must be connected to positive (+) battery terminals/posts. BLACK (-) cables must be connected to negative (-) battery terminals/posts. Failure to connect the battery cables and harnesses in the proper manner may result in personal injury and/or damage to the power chair. REPLACE cables immediately if damaged.

- 8. Measure resistance across pin 1 and pin 2 of the circuit breaker (4e). **See figure 6.**
- *If your multimeter indicates less than 1 ohm*, then replace the off-board charger/battery breaker harness (3) and retest the system.
- *If your multimeter indicates more than 1 ohm*, then replace the circuit breaker (4e) and retest the system.

#### (from step 4)

- 9. Place the battery box back onto the Go-Chair. Refer to the Go-Chair owner's manual.
- 10. Unplug connector 1b from connector 2a. See diagram 1.
- 11. Measure voltage from pin 6 (B+) to pin 8 (B-) and from pin 7 (B-) to pin 5 (B+) on connector 2a. **See figure 7.**
- If your multimeter indicates more than 18VDC, then replace the VSI controller (1) and retest the system.
- *If your multimeter indicates less than 18VDC*, then replace the power interface harness (2) and retest the system.



**Figure 5. Innermost Battery Terminals** 

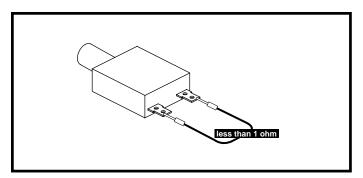


Figure 6. Circuit Breaker (4e)

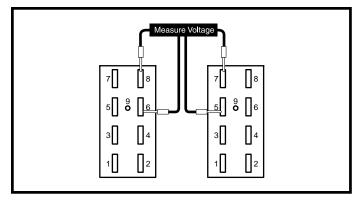


Figure 7. Connector 2a

# SECTION 2 - FLASH CODE DIAGNOSIS

Flash Code - Steady Flash of Speed/Profile LEDs

## **Symptom:**

Steady Flash of Speed/Profile LEDs

# **Diagnosis:**

This is an indication of the "LOW ENABLE, NO DRIVE AWAY" feature set up on the VSI controller. This feature keeps the unit from driving while an onboard battery charger is plugged into an electrical outlet. This feature is not applicable to this model as the Go-Chair uses an off-board charger only.

#### **Solution:**

— If the VSI controller indicates a low enable, no drive away fault, then replace the VSI controller (1) and retest the system.

Flash Code - Battery Condition Meter LEDs Scroll Left-to-Right

#### **Symptoms:**

Battery Condition Meter LEDs Scroll Left-to-Right

#### **Diagnosis:**

This is an indication of the "INHIBIT ACTIVE" feature set up on the VSI controller. This feature keeps the Go-Chair from driving while the off-board charger is plugged into the VSI controller.

#### **Solution:**

— If the VSI controller indicates an inhibit active fault and there is no off-board charger plugged into connector 1a, then replace the VSI controller (1) and retest the system.

Flash Code #1 - Low Battery Voltage

#### **Symptoms:**

One Red Battery Condition Meter LED Flashing

#### **Diagnosis:**

The battery voltage to the VSI controller is low. This is most likely due to batteries that are not getting charged properly or at all. The VSI controller will indicate this fault when the voltage to the VSI is lower than 22 volts.

#### **Solution:**

- 1. Measure voltage across pin 1 (B+) and pin 2 (B-) on connector 1a. **See figure 8.**
- If your multimeter indicates less than 22VDC and the chair is charged through the joystick, then go to the next step.
- If your multimeter indicates less than 22VDC and the chair is charged through the battery box, then go to **step 4**.
- If your multimeter indicates more than 22VDC, then replace the VSI controller (1) and retest the system.

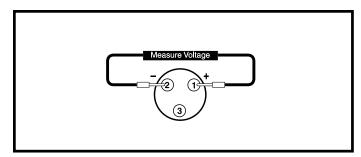


Figure 8. Connector 1a

- 2. Plug the off-board charger into connector 1a on the VSI.
- 3. Plug the off-board charger into a standard electrical outlet and observe the lights on the charger.
- If the power light on the off-board charger does not light up, then verify that the electrical outlet is live.
- If the electrical outlet is live, then replace the off-board charger power cord (10) and retest the system.
- If the power light is green, then replace the off-board charger (9) and retest the system.
- *If the power light is red*, then the batteries are charging. Pride recommends that you let the batteries charge for 8-14 hours.



PROHIBITED! Never use an extension cord to plug in your battery charger. Plug the charger directly into a properly wired standard electrical outlet.



PROHIBITED! Removal of the grounding prong can create an electrical hazard. If necessary, properly install an approved 3-pronged adapter to an electrical outlet having 2-pronged plug access. Failure to heed could result in personal injury and or property damage.

# (from step 1)

- 4. Remove the battery box from the Go-Chair. Refer to the Go-Chair owner's manual.
- 5. Plug the off-board charger into the off-board charger port on the battery box (connector 3a), then plug the off-board charger into an electrical outlet.
- 6. Measure voltage across the negative and positive battery contact pads (5e and 6d) on the underside of the battery box. **See diagram 2.**
- *If the voltage increases from the reading in step 1*, then the batteries are charging. Pride recommends that you let the batteries charge for 8-14 hours.
- If the voltage decreases or stays the same as the reading in step 1, then go to the next step.
- 7. Measure voltage across pin 1 and pin 2 on connector 3a. **See figure 9.**
- If your multimeter indicates OVDC, then go to the next step.
- *If your multimeter indicates more than 0VDC*, then replace the off-board charger (9) and retest the system.
- 8. Remove the screws from the bottom of the battery box and open the battery box. **See figure 3.**
- 9. Remove the charger fuse (3g) from its holder and measure resistance across the fuse blades. **See diagram 2 and figure 10.**
- *If your multimeter indicates less than 1 ohm*, then replace the off-board charger/battery breaker harness (3) and retest the system.
- *If your multimeter indicates an open*, then replace the offboard charger (9) and retest the system.

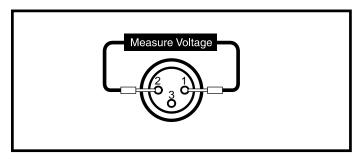


Figure 9. Connector 3a

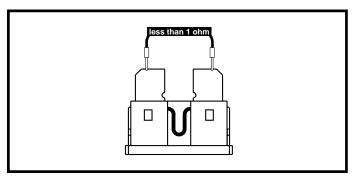


Figure 10. Fuse 3g

#### Flash Code #2 - Left Motor Disconnected

#### **Symptoms:**

Two Red Battery Condition Meter LEDs Flashing

# **Diagnosis:**

There is a communication problem between the left motor (7) and the VSI controller (1).

#### **Solution:**

- 1. Unplug connector 1b from connector 2a. See diagram 1.
- 2. Measure resistance from pin 3 to pin 4 on connector 2a. **See figure 11.**
- *If your multimeter indicates about 0.5-1.5 ohms*, then replace the VSI controller (1) and retest the system.
- If your multimeter does not indicate about 0.5-1.5 ohms, then go to the next step.
- 3. Remove the seat and battery box. Refer to the Go-Chair owner's manual.
- 4. Remove the rear shroud, making sure not to pull out any connected wires. **See figure 12.**
- 5. Unplug connector 2e from connector 7a. See diagram 1.
- 6. Measure resistance across pin 1 (red) and pin 2 (black) on connector 7a. **See figure 13.**
- *If your multimeter indicates about 0.5-1.5 ohms*, then replace the power interface harness (2) and retest the system.
- If your multimeter does not indicate about 0.5-1.5 ohms, then replace the left motor (7) and retest the system.

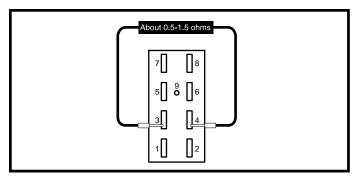


Figure 11. Connector 2a

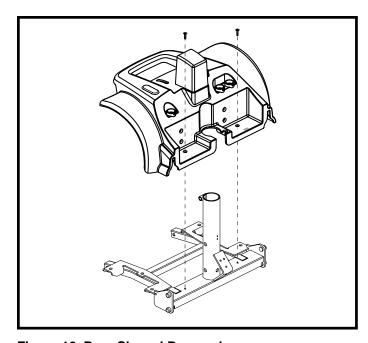


Figure 12. Rear Shroud Removal

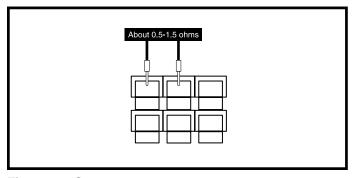


Figure 13. Connector 7a

# Flash Code #3 - Left Motor Wiring Fault

#### **Symptoms:**

Three Red Battery Condition Meter LEDs Flashing

#### **Diagnosis:**

There is a wiring fault between the left motor (7) and brake (7b). This can indicate a wiring problem between the motor and the brake or possibly a short from the motor to the most negative battery terminal (one side of each brake).

#### **Solution:**

- 1. Unplug connector 1b from connector 2a. See diagram 1.
- 2. Measure resistance from pin 3 to pin 9 and pin 3 to pin 7 on connector 2a. **See figure 14.**
- *If your multimeter indicates an open for each test*, then replace the VSI controller (1) and retest the system.
- If your multimeter indicates a short or a relatively low resistance (less than 1M ohm) for either test, then go to the next step.
- 3. Remove the seat and battery box. Refer to the Go-Chair owner's manual.
- 4. Remove the rear shroud, making sure not to pull out any connected wires. **See figure 12.**
- 5. Unplug connector 2e from connector 7a. See diagram 1.
- 6. Measure resistance from pin 1 (red) to pin 4 (white) then from pin 1 (red) to pin 5 (white) on connector 7a. **See figure 15.**
- *If your multimeter indicates an open for each test*, then replace the power interface harness (2) and retest the system.
- If your multimeter indicates a short or a relatively low resistance (less than 1M ohm) for either test, then replace the left motor (7) and retest the system.

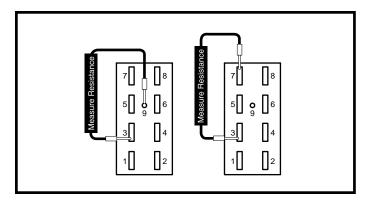


Figure 14. Connector 2a

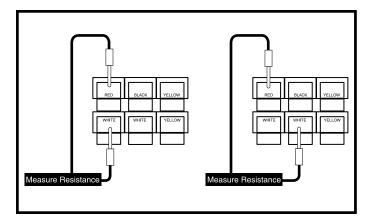


Figure 15. Connector 7a

# Flash Code #4 - Right Motor Disconnected

#### **Symptoms:**

- Four Battery Condition Meter LEDs Flashing
- Three Red LEDs and One Yellow LED

#### **Diagnosis:**

There is a communication problem between the right motor (8) and the VSI controller (1).

#### **Solution:**

- 1. Unplug connector 1b from connector 2a. See diagram 1.
- 2. Measure resistance across pin 1 and pin 2 on connector 2a. **See figure 16.**
- *If your multimeter indicates about 0.5 1.5 ohms*, then replace the VSI controller (1) and retest the system.
- If your multimeter does not indicate about 0.5 1.5 ohms, then go to the next step.
- 3. Remove the seat and battery box. Refer to the Go-Chair owner's manual.
- 4. Remove the rear shroud, making sure not to pull out any connected wires. **See figure 12.**
- 5. Unplug connector 2d from connector 8a. See diagram 1.
- 6. Measure resistance across pin 1 (red) and pin 2 (black) on connector 8a. **See figure 17.**
- *If your multimeter indicates about 0.5-1.5 ohms*, then replace the power interface harness (2) and retest the system.
- If your multimeter does not indicate about 0.5-1.5 ohms, then replace the right motor (8) and retest the system.

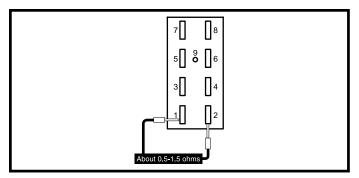


Figure 16. Connector 2a

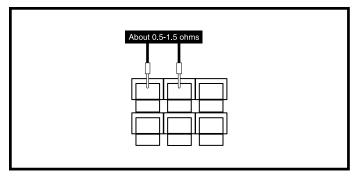


Figure 17. Connector 8a

# Flash Code #5 - Right Motor Wiring Fault

#### **Symptoms:**

- Five Battery Condition Meter LEDs Flashing
- Three Red LEDs and Two Yellow LEDs

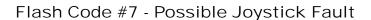
#### **Diagnosis:**

There is a wiring fault between the right motor (8) and brake (8b).

#### **Solution:**

Use the following procedure to find the source of the fault:

- 1. Unplug connector 1b from connector 2a. See diagram 1.
- 2. Measure resistance from pin 1 to pin 9 and pin 1 to pin 7 on connector 2a. **See figure 18.**
- *If your multimeter indicates an open for each test*, then replace the VSI controller (1) and retest the system.
- If your multimeter indicates a short or a relatively low resistance (less than 1M ohm) for either test, then go to the next step.
- 3. Remove the seat and battery box. Refer to the Go-Chair owner's manual.
- 4. Remove the rear shroud, making sure not to pull out any connected wires. **See figure 12.**
- 5. Unplug connector 2d from connector 8a. See diagram 1.
- 6. Measure resistance from pin 1 (red) to pin 4 (white), then from pin 1 (red) to pin 5 (white) on connector 8a. **See figure 19.**
- *If your multimeter indicates an open for each test*, then replace the power interface harness (2) and retest the system.
- If your multimeter indicates a short or a relatively low resistance (less than 1M ohm) for either test, then replace the right motor (8) and retest the system.



# **Symptoms:**

- Seven Battery Condition Meter LEDs Flashing
- Three Red LEDs and Four Yellow LEDs

#### **Diagnosis:**

- The VSI controller (1) has a problem with the joystick (gimble).
- The joystick was out of the neutral (center) position when powered up. The battery condition meter LEDs will ripple side-to-side twice, then display seven flashing LEDs.

NOTE: If the battery condition meter is showing seven flashing LEDs, make sure there is no physical damage to the joystick keeping it from returning to the neutral (center) position.

#### **Solution:**

Use the following procedure to correct the fault:

- 1. Turn the VSI off. Make sure the joystick is not being depressed in any directions.
- 2. Turn the VSI back on.
- If the VSI still displays this fault, replace the VSI controller (1) and retest the system.

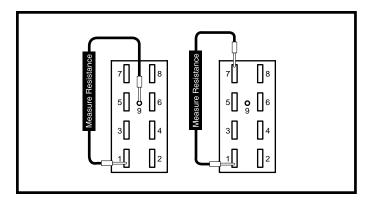


Figure 18. Connector 2a

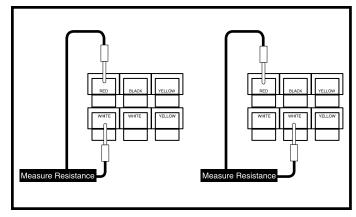


Figure 19. Connector 8a

#### Flash Code #8 - Possible Controller Fault

#### **Symptoms:**

- Eight Battery Condition Meter LEDs Flashing
- Three Red LEDs, Four Yellow LEDs, and One Green LED

#### **Diagnosis:**

This is an indication that there is a problem with the VSI controller.

— *If this fault occurs*, replace the VSI controller (1) and retest the system.

#### Flash Code #9 - Solenoid Brake Fault

#### **Symptoms:**

- Nine Battery Condition Meter LEDs Flashing
- Three Red LEDs, Four Yellow LEDs, and Two Green LEDs

# **Diagnosis:**

There is a communication problem between the motor brakes and the VSI controller (1).

NOTE: This fault will occur if either motor is in freewheel mode at start up. Make sure both freewheel levers are in the drive position before starting up your Go-Chair. Refer to the Go-Chair owner's manual for more information.

#### **Solution:**

- 1. Unplug connector 1b from connector 2a. See diagram 1.
- 2. Measure resistance across pin 9 and either pin 7 or pin 8 on connector 2a. **See figure 20.**
- If your multimeter indicates about 30 ohms, then replace the VSI controller (1) and retest the system.
- *If your multimeter indicates an open,* then go to the next step.
- 3. Remove the seat and battery box. Refer to the Go-Chair owner's manual.
- 4. Remove the rear shroud, making sure not to pull out any connected wires. **See figure 12.**
- 5. Unplug connector 2d from connector 8a and connector 2e from connector 7a. **See diagram 1.**
- 6. Measure resistance across pin 3 (yellow) and pin 6 (yellow) on connectors 7a and 8a. **See figure 21.**
- If your multimeter indicates less than 1 ohm for both readings, then go to the next step.
- If your multimeter indicates an open for either reading, then replace the corresponding brake (7b or 8b) and retest the system.

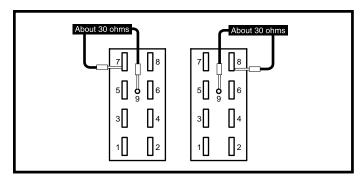


Figure 20. Connector 2a

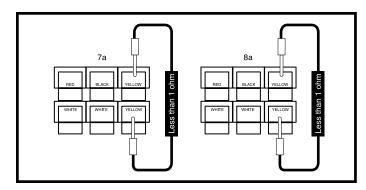


Figure 21. Connectors 7a and 8a

- 7. Measure resistance across pin 4 (white) and pin 5 (white) on connectors 7a and 8a. **See figure 22.**
- If your multimeter indicates about 60 ohms for each test, then replace the power interface harness (2) and retest the system.
- If your multimeter does not indicate about 60 ohms for either test, then replace the corresponding brake (7b or 8b) and retest the system.

Flash Code #10 - High Battery Voltage

# 7a 8a RED BLACK VELLOW WHITE WHITE VELLOW About 60 ohms About 60 ohms

Figure 22. Connectors 7a and 8a

# **Symptoms:**

- Ten Battery Condition Meter LEDs Flashing
- Three Red LEDs, Four Yellow LEDs, Three Green LEDs

#### **Diagnosis:**

The total battery voltage is over 32VDC. This only appears if the output of the charger is over 32VDC.

#### **Solution:**

Use the following procedure to find the source of the fault:

NOTE: Make sure the only chargers used on the Go-Chair are Pride Mobility chargers. All of Pride's chargers are "smart chargers," meaning when the batteries are fully charged the charger stops charging them. If a non-Pride charger was used, the batteries may be overcharged.

- 1. Remove the battery box. Refer to the Go-Chair owner's manual.
- 2. Plug the off-board charger into the off-board charger port (connector 3a) on the battery box. See diagram 2.
- 3. Measure voltage across the positive and negative battery contact pads (5e and 6d) on the underside of the battery box. **See diagram 2.**
- If your multimeter indicates less than 32VDC, then replace the VSI controller (1) and retest the system.
- If your multimeter indicates more than 32VDC, then replace the off-board charger (9) and retest the system.

VSI CONTROLLER LEFT BATTERY OFF-BOARD CHARGER CHARGER POWER CORD POWER INTERFACE HARNESS RIGHT BATTERY OFF-BOARD CHARGER/ LEFT MOTOR BATTERY BREAKER HARNESS CIRCUIT BREAKER HARNESS RIGHT MOTOR

**Diagram 1. Main Component Connection Diagram** 

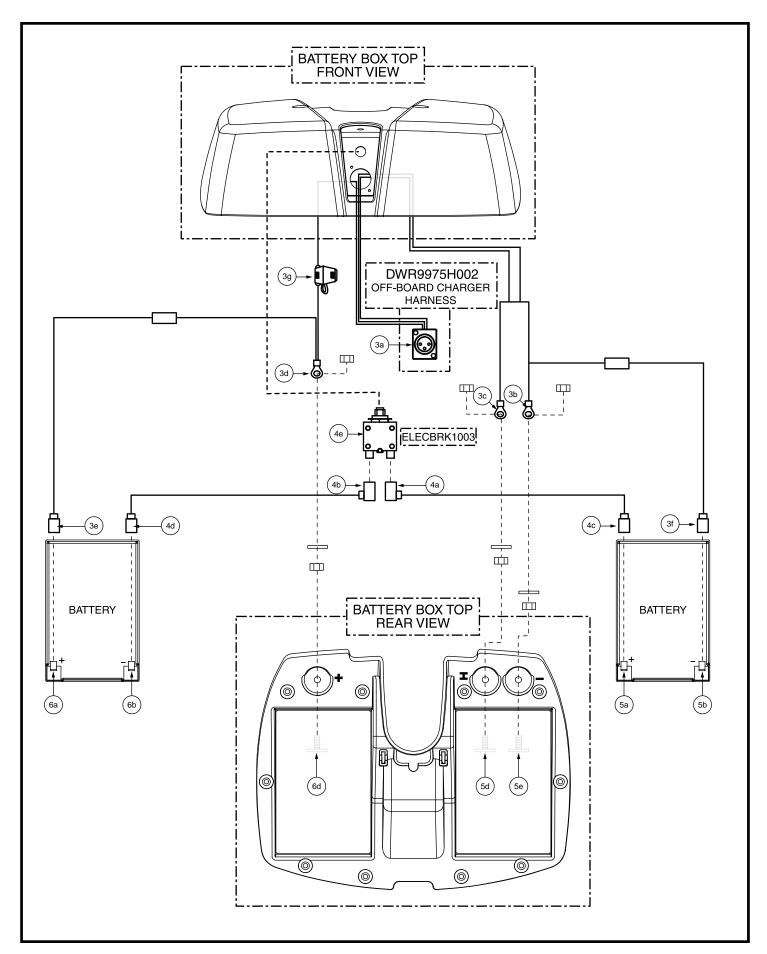


Diagram 2. Go-Chair 2-D Battery Box Wiring Diagram

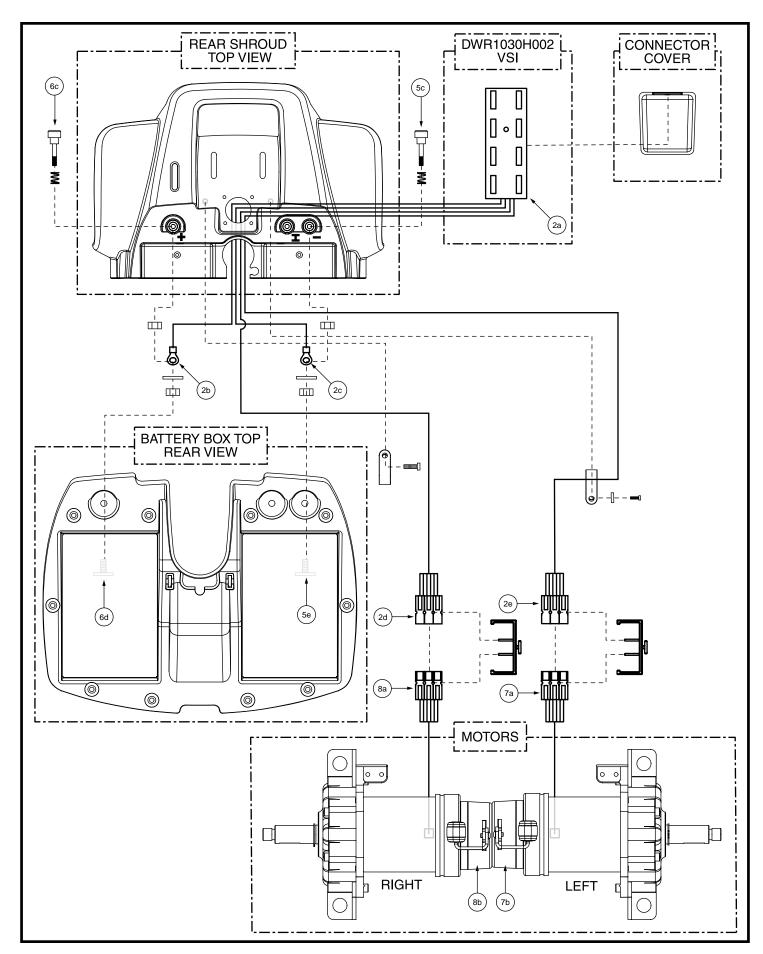
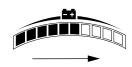


Diagram 3. Go-Chair 2-D Rear Electronics Wiring Diagram

#### **BATTERY CONDITION METER LEDS SCROLL LEFT-TO-RIGHT**



DIAGNOSIS Inhibit Active

SOLUTION See Flash Code - Battery Condition Meter LEDs Scroll Left-to-Right.

#### FIVE BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS Right Motor Wiring Fault.

SOLUTION See Flash Code #5

#### ONE BATTERY CONDITION METER LED FLASHING



DIAGNOSIS Low Battery Voltage

SOLUTION See Flash Code #1.

#### SEVEN BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS Possible Joystick Fault

SOLUTION See Flash Code #7.

#### TWO BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS Left Motor Disconnected

SOLUTION See Flash Code #2.

#### **EIGHT BATTERY CONDITION METER LEDS FLASHING**



DIAGNOSIS Possible Controller Fault

SOLUTION See Flash Code #8.

#### THREE BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS Left Motor Wiring Fault

SOLUTION See Flash Code #3.

#### NINE BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS Solenoid Brake Fault.

SOLUTION See Flash Code #9.

#### FOUR BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS Right Motor Disconnected.

SOLUTION See Flash Code #4.

#### TEN BATTERY CONDITION METER LEDs FLASHING



DIAGNOSIS High Battery Voltage.

SOLUTION See Flash Code #10.

Table 1. Go-Chair VSI Flash Codes





Pride Mobility Products Corporation 182 Susquehanna Ave. Exeter, PA 18643

# **Contact Information**

Main Toll Free Number Local Phone Number	800.800.8586 570.655.5574
Internet Address for Product Information Internet Address for Service Information "Live Chat" available 8:30 — 5:00 EST	www.pridemobility.com www.prideservice.com
Toll Free Service Hotline	877.800.1248 (Dealers Only)
	Press 7 for Technical Service, then Press 1 for Help Desk or Press 2 for Quantum Rehab Tech or Press 3 for Power Chair Tech or Press 4 for Scooter Tech or Press 5 for Lift Chair Tech
Parts Order Fax	866.800.1011

Technical Assistance is available Monday — Friday 8:30 a.m. — 7:00 p.m. EST\* \*Skeleton Staff from 5:30 p.m. — 7:00 p.m.