

# Quickie Prelude Service Manual



## QUICKIE PRELUDE



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## Introduction

Please read and follow instructions in this service manual before attempting to troubleshoot or repair this product for the first time. If there is anything in this Service Manual that is not clear, or if you require additional Technical assistance, contact Sunrise Medical at: (800) 333-4000 option 2, then option 1.

Safely troubleshooting and/or repair of this product depends on your diligence in following the instructions within this manual. Sunrise Medical is not responsible for injuries or damage resulting from a person's failure to exercise good judgement and/or common sense.



There are warning symbols used in this document to focus attention on any hazard that could effect the safety of the individual troubleshooting the chairs covered in this Service Manual.



This Service Manual is intended as a troubleshooting guide for the Quickie Prelude. Photographs and content may differ from the actual products in some cases due to changes in specifications and other factors.

This Service Manual is intended for use by persons with a basic working knowledge and the skills required in servicing and maintaining Power Wheelchairs. Persons without a General Working knowledge and expertise in the servicing of this product should not carry out troubleshooting procedures. This can result in problems with future servicing, and/or damage to the unit.

Parts and configuration or specifications of Products included in this Service Manual are subject to change without prior notice.

# VR2 Controller



## VR2 Controller Buttons

### Battery Gauge

A series of ten LED's, which indicate charge level.



**On/Off Key-** Press to power on or off the power chair or Controller.

**Horn Key-** Activates a warning horn.



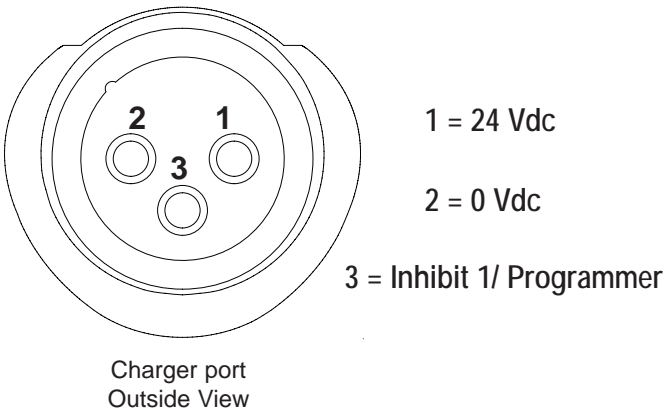
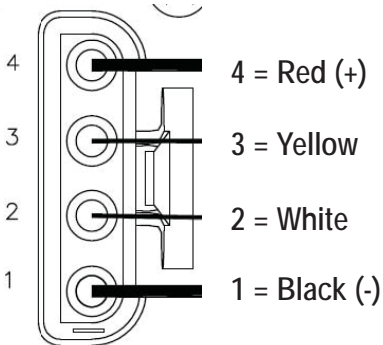
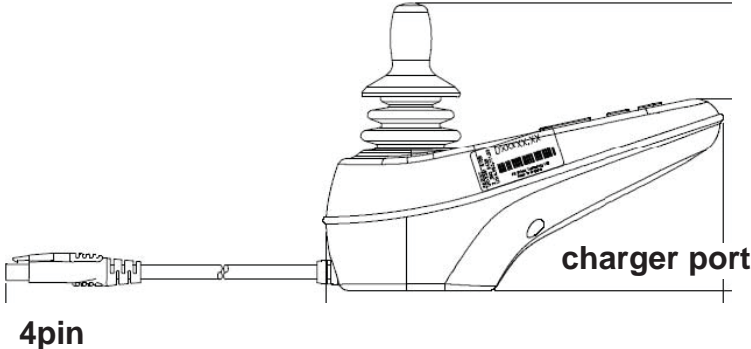
**Speed/Profile indicator-** A series of five LED's, which display speed and profile settings

**Speed/ Profile Decrease.** Used to decrease the Speed/ Profile setting.



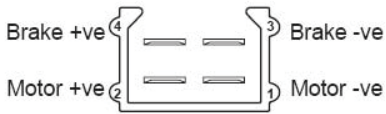
**Speed/ Profile Increase.** Used to Increase the Speed/ Profile setting.

# Plugs/Connectors

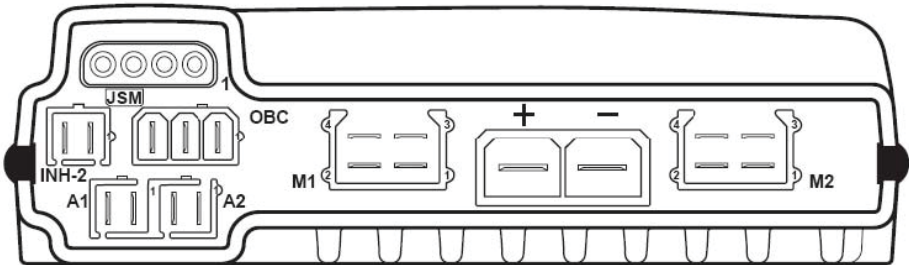


## Motor Plug

MOTOR 1



## VR2 Controller



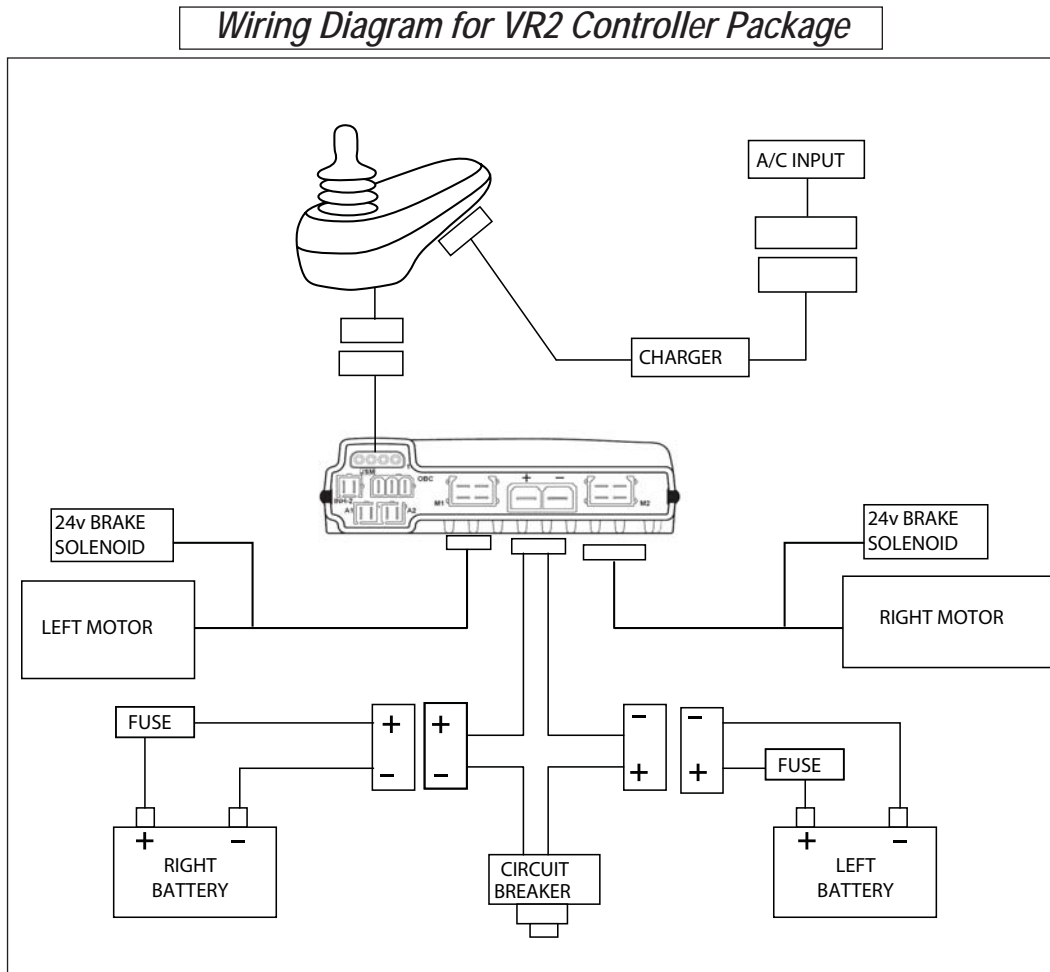
M1 = RIGHT SIDE MOTOR  
M2 = LEFT SIDE MOTOR  
JSM = JOYSTICK MODULE  
INH-2 = INHIBIT 2  
A1 = ACTUATOR 1  
A2 = ACTUATOR 2  
+ - = BATTERY

# Basic Tool List & Main Wiring Diagram

## Basic Tool List

The following list of tools should enable any task to be dealt with. Some will only occasionally be needed, but it is advisable to own or have access to them.

- 17mm Deep Socket wrench
- 13mm combination wrench
- Cutter for zip-tie
- Needle nose pliers
- 5mm Allen wrench
- 3/8 combination wrench
- Phillips screwdriver #2
- 18mm combination wrench
- Flat blade screwdriver
- 19mm socket wrench
- 5mm socket wrench



# Section 1

## Troubleshooting: No Power

### 1.1 Circuit Breaker Reset

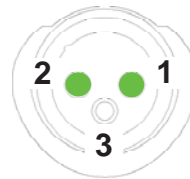
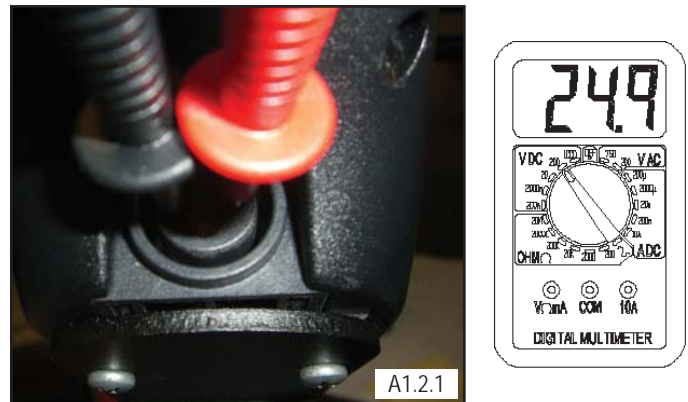
If On/off button is pressed and no light or bar is shown, check for tripped circuit breaker (see figure A1.1.1) and make sure all connections are clean and tight (including the batteries). If the problem persists, then perform the following diagnostics.



### 1.2 Test Joystick

Check that voltage is going to the controller. Set the meter to DC volts and take a voltage reading using the red lead in pin 1 and the black lead in pin 2 of the charger port on the VR2 joystick. (See figure A1.2.1) If the voltage meter reads approximately 24 volts, try replacing the joystick. If the meter reads 12 volts or less, proceed to the next step.

Note: Make sure the polarity is correct. If polarity is reversed proceed to step 1.5



### 1.3 Battery Test

Check that the batteries are fully charged and in good working condition. Remove the seat and battery cover. Use a volt meter to check the voltage across the battery terminals. (See figure a1.3.1) The batteries should measure within 2 or 3 tenths of a volt of each other. If the batteries are not within 2-3 tenths of a volt, load test the batteries and replace if necessary.

If the batteries measure below 10 volts, replace the batteries or remove the batteries and charge with a 12 volt charger. Batteries must be connected in parallel to charge with a 12 volt charger. Connect the positive terminal of the first battery to the positive terminal of the second battery as well as connecting the negative terminal of the first battery to the negative terminal of the second battery. Charge batteries until the voltage in each battery measures approximately 12 volts. Connect batteries back into chair and complete charge with standard on-board or off board charger.



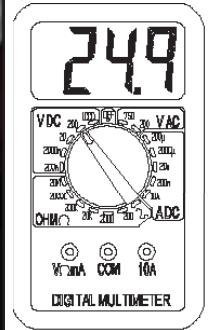
● If the voltage meter reads below 12 volts, charge the batteries.

# Section 1

## Troubleshooting: No Power (cont.)

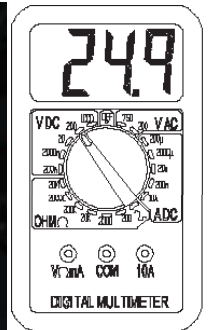
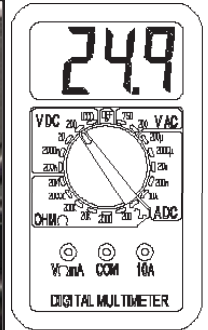
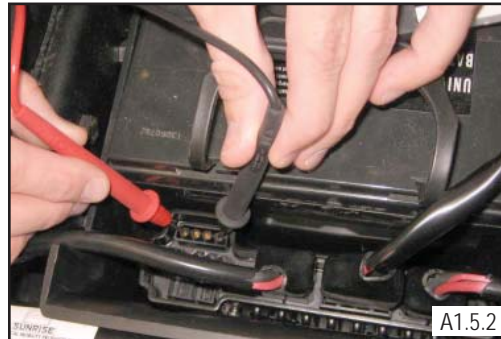
### 1.4 Battery Connection Test

Check that the female VR2 control cable has voltage. Unplug joystick from control cable. Set the volt meter to DC volts and measure the voltage using the red lead in port 1 and the black lead in port 4 as shown in (figure 1.5.1.)



If the voltage meter reads approximately 24 volts, then replace the joystick. If the voltage reads 12 volts or less, measure the corresponding pins on the VR2 controller as shown in (figure 1.5.3.) If the voltage meter reads full voltage, then replace the jumper cable.

If the voltage meter reads approximately 24 volts, replace the control cable. If the voltage reads 12 volts or less then proceed to measure the voltage from the battery harness plugging into the controller. If the voltage measures approximately 24 volts, replace the controller. If it reads 12 volts or less proceed to the next step.



- *If all of the measurements read full voltage, then replace the controller.*



## Troubleshooting: No Power (cont.)

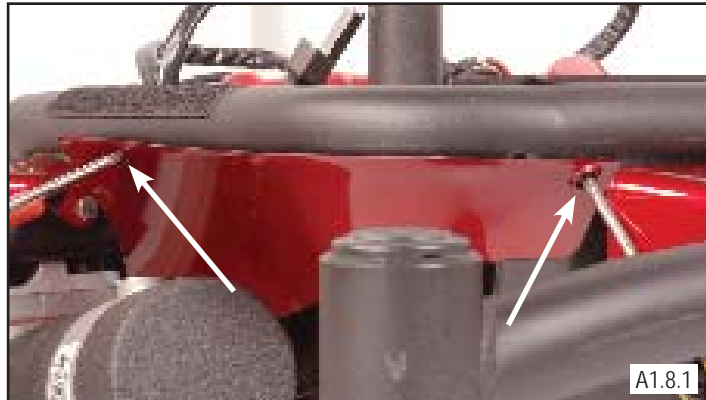
- *If the meter reads more than one ohm, change the Battery harness.*



### 1.5 Circuit Breaker Test



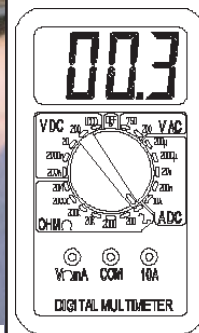
To check the circuit breaker, remove the left rear shroud by unscrewing the two Phillips head screws (figure A1.8.1). Set the meter to ohms and measure the resistance or check for a "tone" (continuity). If you are not getting a "tone" or the resistance measures more than 1 ohm, replace the circuit breaker. If meter gives a "tone" or resistance measures less than 1 ohm, proceed to next step.



A1.8.1



A1.8.2



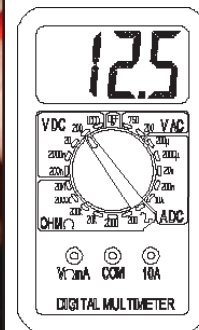
- *If the meter reads more than 1 ohm, then change the circuit breaker.*

### 1.6 Check Battery Wire Harness

Check that the battery wire harness has the polarity correct. Set the meter to DC volts and measure the voltage with the red lead in the white connector and the black lead in the black connector as shown in (figure 1.6.1.) If both wiring harnesses have approximately 12 volts and polarity is correct, replace the main battery harness plugging into the controller. If voltage is less than 10 volts proceed to section 1.3.



A1.6.1



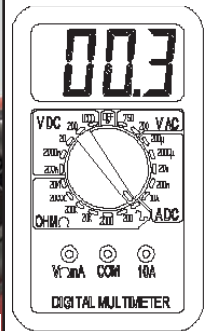
- *If polarity is reversed correct battery wiring.*

# Section 1

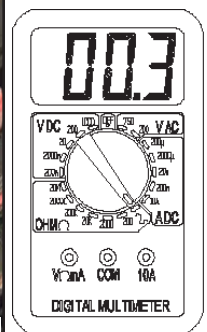
## Troubleshooting: No Power (cont.)

### 1.7 Main Harness

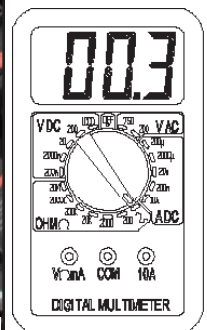
If the previous steps did not correct the problem, check the main harness. Disconnect the main harness from the front and rear battery harness. Check the continuity between the white rear connector (figure 1.9.1) and the black front connector.



Next check the continuity between the black rear connector (figure 1.9.2) and the left contact on the controller plug.



Next check the continuity between the white rear connector (figure 1.9.3) and the right contact on the controller plug. If the meter reads more than 1 ohm in any of the above tests replace the main harness.

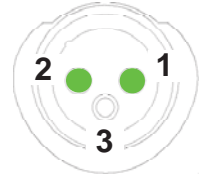
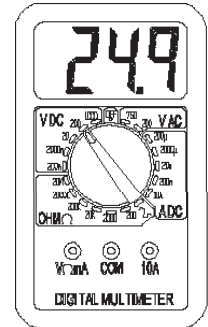


## Section 2

### Chair is not Charging

#### 2.1 Not Charging

If the chair is not charging through the charging port, Insure that the three pin charger socket is properly connected and in good condition. Then test the voltage coming out of the joystick (refer to section 1.2) If voltage at joystick charger socket on the VR2 joystick is less then 18 volts (refer to section 1.3.) If the voltage is greater then 18 volts refer to you charger troubleshooting manual.



- *If all of the measurements read full voltage, then replace the controller.*

## Section 3

### ***Understanding VR2 Controller Display***

#### ***3.1 The Speed/Profile Indicator Ripples Up and Down***

Indicates that the wheelchair is locked. To unlock the wheelchair, deflect the joystick forwards until the control system chirps. Then deflect the joystick in reverse until the control system chirps. Release the joystick, there will be a long beep. The wheelchair is now unlocked. To lock the wheelchair, while the control system is switched on, depress and hold the on/off button. After 1 second, the control system will chirp. Now release the on/off button, deflect the joystick forwards until the control system chirps, and deflect the joystick in reverse until the control system chirps. Release the joystick, there will be a long beep. The wheelchair is now locked.

#### ***3.2 The Speed Indicator Flashes***

This indicates that the chair is charging via on-board charger. The chair will be ready to drive as soon as the charger is unplugged.

#### ***3.3 Battery Gauge is Steady***

This indicates the battery level and that all is well and chair is ready to drive.

#### ***3.4 Battery Indicator Ripples up and off.***

Indicates the wheelchair batteries are being charged with the offboard charger. You will not be able to drive the wheelchair until the charger is disconnected and you have reset the control system by switching off the power and then powering up again.

#### ***3.5 Battery Gauge Blinks Once Every 2.5 Seconds***

The control system has "gone to sleep" because the wheelchair has not been driven for a period of time. The time period depends on the programming of the system. To re-start, reset the system by switching off the power and then powering up again.

#### ***3.6 Battery Gauge Flashes Rapidly***

Make sure the Joystick is completely released. The control system safety circuits have been activated and the control system has been prevented from moving the wheelchair. This indicates a system trip, i.e. the VR2 has detected a problem somewhere in the wheelchair's electrical system. Please refer to Section 3 (VR2 Controller Diagnostics).

## Section 4

### Understanding VR2 Controller Diagnostics Codes

#### 4.1 One Bar - Low Battery Voltage )

This code could indicate discharged batteries, failed batteries, or poor battery connections. Begin by recharging the batteries and then refer to Section 1 to check batteries and connections.

#### 4.2 Two Bars – Right motor Disconnect / Low battery voltage

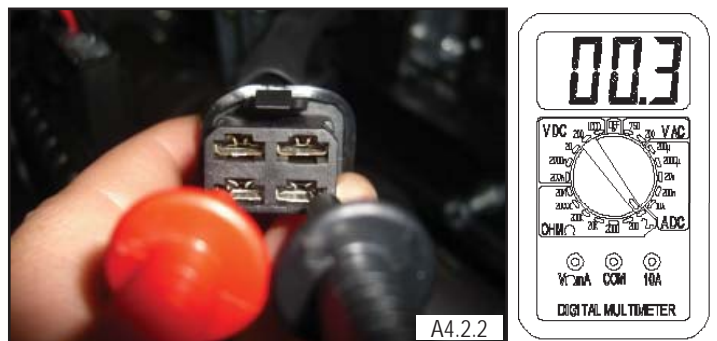
- *Programmer will indicate left motor fault. Motor faults are reversed on this unit.*

If the chair runs while two bars are flashing, chair indicates low battery voltage. Refer to section 4.1.

If the chair does not run while flashing two bars check the connections from the right motor to the controller, look for a loose or damaged connector.

Use a volt meter to check the resistance across the two bottom contacts with connector for plug on upside of plug as shown in (figure a4.2.2). If the meter reads between 0-1.5 then proceed by swapping the motor leads into the controller. Turn unit off and back on and if two bar flash is still present, replace the controller.

If the meter does not read between 0 – 1.5 proceed by swapping the motor leads into the controller. Turn unit off and back on, if two bar flash becomes a four bar flash, replace the right motor.



- *If none of the above corrects the problem, replace the left motor.*
- *If the meter reads between 0 to 1.5 ohms, then replace the controller.*

## Section 4

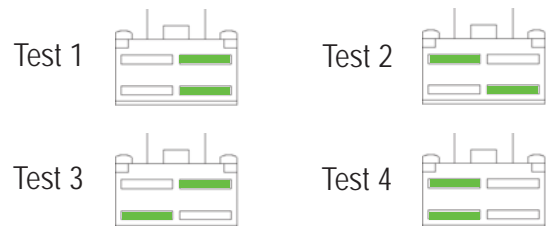
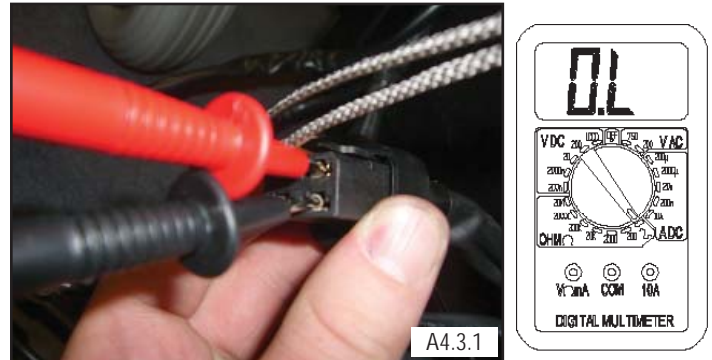
### Understanding VR2 Controller Diagnostics Codes (cont.)

#### 4.3 Three bars – Right Motor Wiring Trip / Low battery voltage.

- Programmer will indicate left motor fault. Motor faults are reversed on this unit.

Check that the batteries are fully charged and in good condition; and check all cables and connections. Check the connections to the left motor, look for a loose or damaged connector.

Measure the resistance from the bottom contact of the red thick wire on the 4-pin left motor connector to each of the top contacts of the connector see (figure A4.3.1). Measure the resistance from the bottom contact of the black thick wire on the 4-pin left motor connector to each of the top contacts of the connector see (below right). If all of the readings are open, then replace the controller. If any of the readings are short, then replace the left motor.



- If all of the readings are open, then replace the controller.
- If any of the readings are short, then replace the left motor.

## Section 4

### Understanding VR2 Controller Diagnostics Codes (cont.)

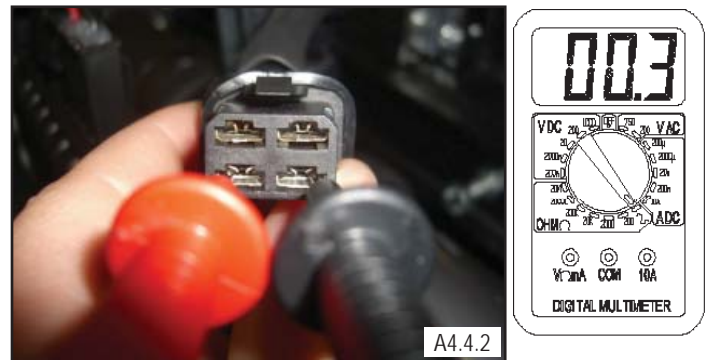
#### 4.4 Four Bars- Left Motor Disconnected

- Programmer will indicate right motor fault. Motor faults are reversed on this unit.

Check the connections from the left motor to the controller, look for a loose or damaged connector. Use a volt meter to check the resistance across the two bottom contacts with connector for plug on upside of plug as shown in (figure a4.4.2). If the meter reads between 0-1.5 then proceed by swapping the motor leads into the controller. Turn unit off and back on and if four bar flash is still present, replace the controller.



If the meter does not read between 0 – 1.5 proceed by swapping the motor leads into the controller. Turn unit off and back on, if four bar flash becomes a two bar flash, replace the left motor.



- If the meter reads between 0 and 1.5 ohms, then replace the controller. If this does not correct the problem, then replace the right motor.

## Section 4

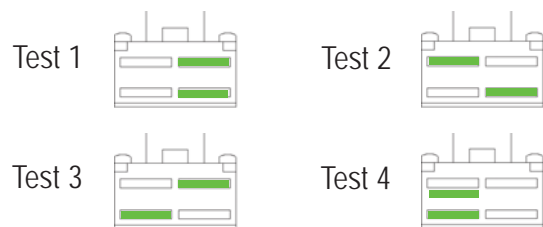
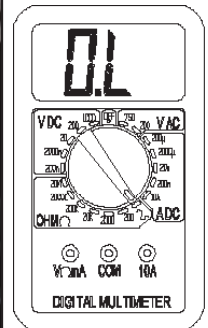
### Understanding VR2 Controller Diagnostics Codes (cont.)

#### 4.5 Five Bars - Left Motor Wiring Trip

- *Programmer will indicate right motor fault. Motor faults are reversed on this unit.*

Check that the batteries are fully charged and in good condition; and check all cables and connections. Check the connections to the right motor, look for a loose or damaged connector.

Measure the resistance from the bottom contact of the red thick wire on the 4-pin right motor connector to each of the top contacts of the connectors see (figure A4.5.1). Measure the resistance from the bottom contact of the black thick wire on the 4-pin right motor connector to each the top contacts of the connector (below right). If all of the readings are open, then replace the controller. If any of the readings are short, then replace the right motor.



- *If all of the readings are open, then replace the controller.*
- *If any of the readings are short, then replace the right motor.*

#### 4.6 Six Bars - Inhibit Active

The wheelchair is being prevented from driving by an external signal. One possibility is the battery charger is connected, or possibly an actuator inhibit.

#### 4.7 Seven Bars - A Joystick Trip is Indicated

Seven bar flash with speed indicator flashing. Inspect wiring between joystick module and main controller. Replace the control cable first and then try a joystick module. If the problem persists replace the controller. Make sure that the joystick is in the center position before switching on the control system. Examine the joystick for damage. This fault can be caused by a joystick that fails to center itself due to being dirty, bent or broken. If this is the case, replace the joystick

- *If the joystick fails to center because it is bent or broken, replace the joystick module.*

#### 4.8 Eight Bars - Possible Control System Trip

**Controller Fault** - A control system trip is indicated. Make sure that all connections are secure. Check that the batteries are fully charged and in good condition, and check all joystick connections and cables. If this does not correct the problem, then replace the controller.

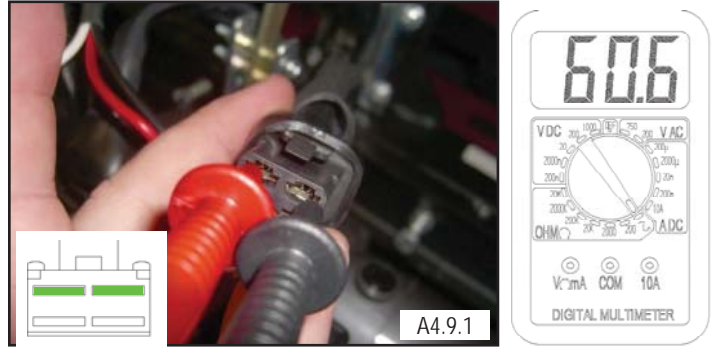


## Section 4

### Understanding VR2 Controller Diagnostics Codes (cont.)

#### 4.9 Nine Bars - Solenoid Brake Trip

The parking brakes have a bad connection. Check the parking break and motor connections. Make sure the control system connections are secure. Measure the two small contacts on the four-pin motor connector (fig 4.9.1). If both motor connectors read approximately 60 ohms, then replace the controller. Otherwise replace the motor that does not read approximately 60 ohms.



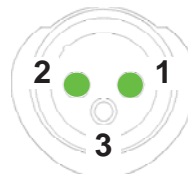
- *If both motor connectors read approximately 60 ohms, then replace the controller. Otherwise, replace the motor that does not read approximately 60 ohms.*

#### 4.10 Ten Bars - High Battery Voltage

An excessive voltage has been applied to the control system. This is usually caused by a poor battery connection. Check the battery connections.

##### Battery Fault

Check that the batteries are fully charged, the correct voltage and in good condition. Take a voltage reading from pin 1 and pin 2 of the charger port of the VR2 controller, see (figure A4.10.1) If the meter reads more than 30 volts, then check the charger. Otherwise, replace your controller.



- *If the meter reads more than 30 volts replace the charger,*
- *If the Batteries, connections, and voltage level are correct replace the controller.*

## Section 5

### *Disassembly/Reassembly, and Adjustment*

#### **Step 1 - Seat removal**

##### Disassembly

1. Unplug joystick at the base of the chair. (figure s1.1).  
Note: Remember to lay cables on the seat otherwise they may become tangled when taking off the seat.
2. Unlatch the seat and rotate slightly (figure s1.2).
3. Lift the seat vertically to remove (figure s1.3).



## Section 5

### *Disassembly/Reassembly, and Adjustment*

#### **Step 2 - Footrest adjustment and removal**

To adjust footplate position

1. Remove the two attachment bolt ( fig s2.1)
2. Slide footrest assembly up or down to desired position and reinsert attachment bolts.



To adjust footplate angle

1. turn screw in or out ( fig s2.3)



## Section 5

### *Disassembly/Reassembly, and Adjustment (cont)*

#### **Step 3 - Shroud removal**

Main shroud:

1. Remove seat post pin and lift out the seat post (fig s3.1).
2. Lift the shroud from the velcro and remove (fig.s3.2)..



Fender shroud

1. Loosen and remove the two philips screws holding the fender shroud in place.(fig. s3.3).
2. Remove fender shroud .



Rear shroud

1. Loosen and remove the two philips screws holding the rear shroud in place.(fig. s3.4).
2. Remove rear shroud .



## Section 5

### *Disassembly/Reassembly, and Adjustment (cont)*

#### **Step 4 - Battery removal**

1. Remove seat (step 3).
2. Remove main shroud (step 3).
3. Disconnect battery harnesses (fig s4.1)



4. Carefully lift batteries and remove (fig s4.2).



#### **Step 5 - Controller removal**

1. Remove main shroud (step 3).
2. Disconnect battery harnesses (fig s4.1) .
3. Remove front battery.
4. Gently remove controller from velcro inside battery tray( fig s5.1).
5. Unplug all connectors from the controller.
6. Remove controller from battery tray.



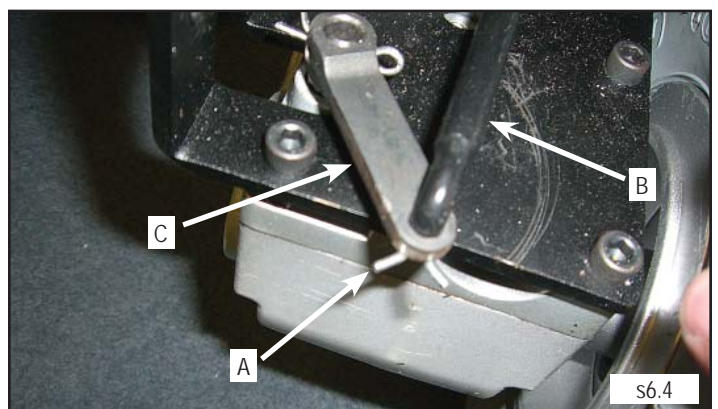
## Section 5

### Step 6 - Motor removal

1. Complete steps 1,3-5, removal of seat, shrouds batteries and controller.
2. Unplug the motor connector from the controller and remove any zip ties holding the cable harness to the frame.
3. Remove battery tray from velcro.(fig. s6.1)
4. Use a 17mm socket wrench to remove the drive wheel (fig s6.2).
5. Using two 13mm wrenches, remove the four bolts and nuts ( s6.3) holding motor plate to the frame.
6. Remove the cotter pin (A) (fig s6.4) holding the cog release handle (B) to the cog release lever arm (C).



*Warning-If motor plate is removed from the gear box the gear box plate may come off.*



## Section 5

### *Disassembly/Reassembly, and Adjustment (cont)*

#### **Step 7 - Caster Fork removal**

1. Remove caster cap (fig s7.1)
2. Use a 19mm socket wrench to remove the caster nut (fig s7.2)



#### **Step 8 - Changing Drive Tire**

1. Support the wheel chair base.
2. Use a 17mm socket wrench to remove the nylock nut, washer and drive wheel (fig s8.1)
3. Use two 13mm socket wrenches to remove the three wheel hub fasteners (fig s8.2)
4. Separate the wheel hubs and remove the tire.

Reassembly:

Ensure the Motor Shaft Key is properly inserted and reverse above instructions

