

# Yamaha G14-G16 (YJN4-01, 02, 03)

This sheet is provided to aid in the installation of your remanufactured Yamaha G14/G16 controller. Upon installation, you may encounter problems that may, or may not, be due to a faulty controller. The following steps must be taken to help diagnose a possible cart fault or faulty controller. An analog or digital volt ohm meter (VOM) will be needed to perform these checks.



## **WARRANTY WILL BE VOID** **If These Steps are Not Performed Before Installing the Control**

➔ STEPS TO PERFORM **BEFORE** CONTROL INSTALLATION ➔

### **BEFORE INSTALLATION:**

- Place rear wheels on jack stands (wheels off the ground)
- Use proper eye protection and tools when working with electrical equipment
- Disconnect the batteries

### **CHECK MOTOR WINDINGS:**

- Set your VOM to RESISTANCE ( $\Omega$ ).
- With your motor disconnected, measure A1 to A2. This must measure BETWEEN  $.3\Omega$  and  $1\Omega$ .
- With your motor disconnected, measure S1 to S2. This must measure BETWEEN  $1\Omega$  and  $2\Omega$ .
- With your motor disconnected, measure A1 to S1. This must measure OPEN.
- With your motor disconnected, measure S1 to motor case. This must measure greater than  $5M\Omega$ .

### **CHECK MAIN SOLENOID:**

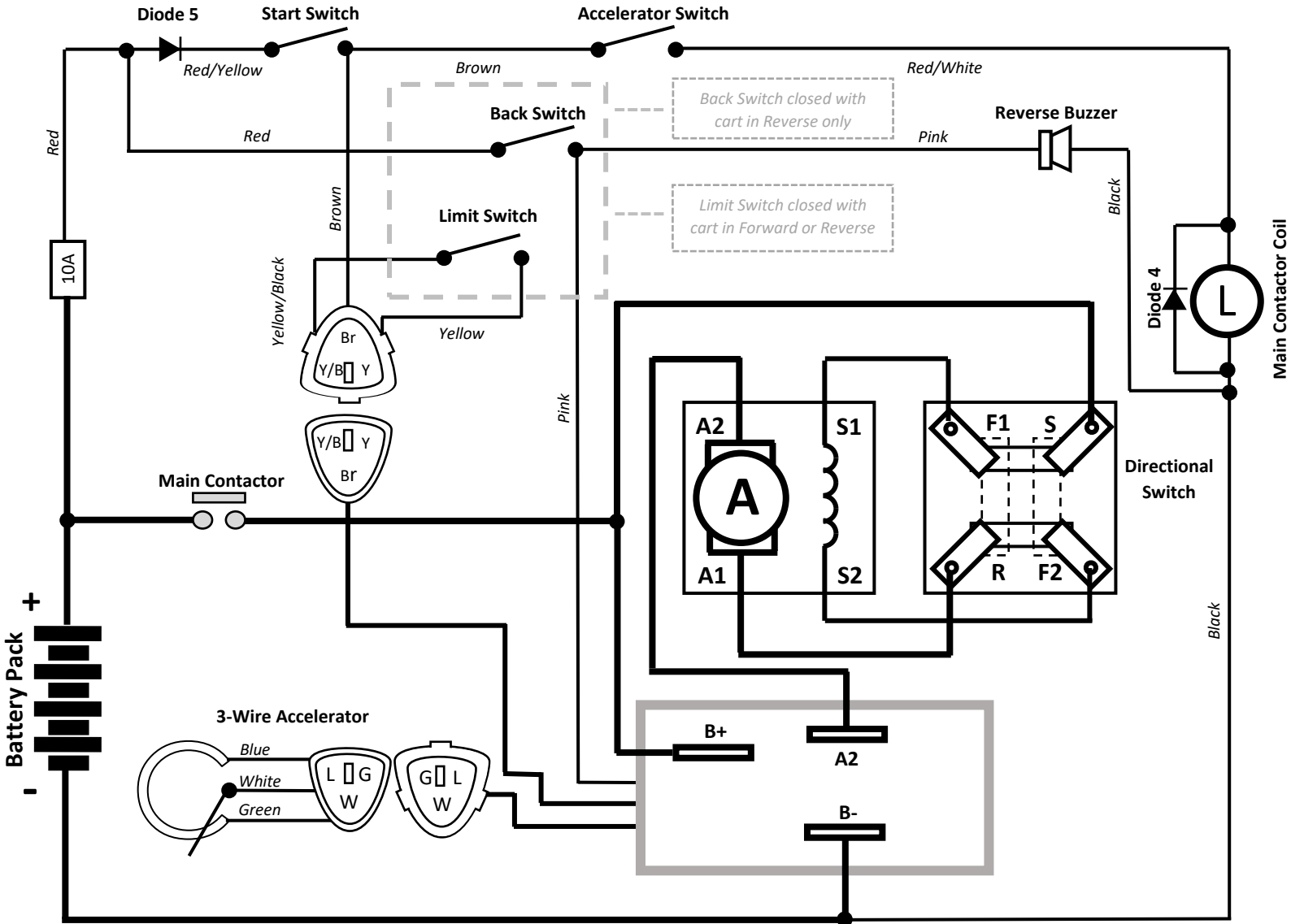
- Disconnect all wires from the main solenoid.
- Set your VOM to RESISTANCE ( $\Omega$ ).
- Measure the solenoid coil. This must measure NO LESS than  $180\Omega$ .
- Connect VOM leads to the main solenoid lugs.
- Attach jumpers from main battery positive and negative to the coil (small terminals).
- Meter must jump from infinity to LESS THAN  $.3\Omega$ .
- Remove jumpers and reconnect solenoid wiring from the harness. (Ensure suppression diode has the non-banded side going to the Black wire)

**CHECK THE CART WIRE HARNESS:**

- Check the connectors on the wire harness for corrosion, loose, broken, burnt or missing pins.
- Repair or replace pins as necessary.

**IF ANY OF THE ABOVE ITEMS ARE NOT WITHIN THE SPECIFIED RANGES THE CONTROLLER WILL FAIL. THESE ITEMS MUST BE CORRECTED BEFORE THE CONTROLLER IS INSTALLED OR WARRANTY WILL BE VOID.**

It is recommended to replace your solenoid at the time of controller replacement. FSIP now stocks popular replacement White Rodgers solenoids for your convenience.



**Directional Switch Table**

	S	F2	F1	R
<b>Forward</b>	○—○		○—○	
<b>Reverse</b>	○—○	○—○		○—○

# Yamaha YJN4 Troubleshooting Sequence

## **FOR SAFETY, ALWAYS LIFT THE DRIVE WHEELS OFF THE GROUND WHEN TROUBLESHOOTING!**

ALL TESTS ARE CONDUCTED WITH A GOOD BATTERY PACK VOLTAGE MEASUREMENT. ALSO, THE CONNECTOR MUST BE ATTACHED TO THE CONTROLLER WHEN MAKING THESE CHECKS. YOU WILL NEED TO 'BACK PROBE' THE PINS FROM THE WIRE SIDE OF THE CONNECTOR. USE A PAPERCLIP IF NECESSARY.

Attach voltmeter negative (-) lead to main battery – for the following tests

Use the following sequence when checking individual pins (don't skip steps). **If you find a fault, do not move on to the next step until the fault is corrected:**

- Measure the voltage at the main battery positive post (let's call it Pack Voltage)
- With the Start Switch engaged** – must equal pack voltage on Brown wire of triangular harness
  - *If not pack voltage check the following components:*
    - Test 10a Fuse coming from the battery pack
    - Test Diode 5, Start switch, and wiring for open/shorted condition
- With the Accelerator Switch engaged (pedal down)** – must equal pack voltage on the Red/White wire at the solenoid coil, and contactor should engage
  - *If not pack voltage and solenoid does not engage, check the following components:*
    - Test Accelerator switch, Solenoid coil, and wiring for open/short condition
    - Test Diode 4 for open/shorted condition and ensure non-banded side is going to black wire
- With the cart set in Neutral position, and the Limit Switch NOT engaged** – must equal approximately 22v on the Yellow wire of the triangular harness
  - *If not approximately 22v, check the following components:*
    - Test directional switch for open/shorted condition.
    - Also check controller has good Main B+ connection. If this connection is good, controller may be defective
- With the cart set in Forward or Reverse, and the Limit Switch IS engaged** – must equal approximately 0v on the Yellow wire of the triangular harness
  - *If not 0v, check the following components:*
    - Test Limit Switch, Forward/Reverse switch, and wiring for an open/shorted condition
    - Test Yellow/Black wire for ground signal from controller
- With the cart set in Reverse, and the Back Switch IS engaged** – must equal approximately Pack Voltage on the Pink wire, and ½ speed in reverse should be seen with the Reverse Buzzer sounding
  - *If not approximately Pack Voltage, check the following components:*
    - Test Back Switch, Forward/Reverse switch, and wiring for an open/shorted condition
    - Test for Reverse Buzzer for open/shorted condition
- With the Start Switch, Accelerator Switch, and Limit Switch Engaged** – must equal approximately 5v on the Blue wire from the 3-Wire Accelerator harness
  - *If not approximately 5v, check the following components:*
    - Test Accelerator assembly and wiring for open/short condition. If wiring is good, controller may be defective

- **With the Start Switch, Accelerator Switch, and Limit Switch Engaged** – must equal approximately 0v on the Green wire from the 3-Wire Accelerator harness
  - *If not approximately 0v, check the following components:*
    - *Test Accelerator assembly and wiring for open/short condition. If wiring is good, controller may be defective*
- **With the Pedal depressed enough to make Solenoid Engage** - must equal approximately 0v on the White wire from the 3-Wire Accelerator harness
  - *If not approximately 0v, check the following components:*
    - *Test Accelerator assembly and wiring for open/short condition.*
- **With the Pedal fully depressed** - voltage should transition from 0 to 5v as the pedal is slowly depressed, reading 5v once pedal is fully depressed.
  - *If not approximately 5v, check the following components:*
    - *Test Accelerator assembly and wiring for open/short condition.*
- **A2 Post – With Accelerator slightly depressed, just where the solenoid first clicks, verify A2 post reads battery voltage. Then, as the accelerator continues to be depressed to full throttle, A2 voltage reading should drop to 0v, with the motor running at full speed.**
  - *If A2 post does not show B+ voltage when solenoid first energizes, check the wiring to/from the Main Contactor, thru the Motor Armature winding, thru the F&R switch and the motor field winding as shown on the wiring diagram.*

## Helpful Hints

- **DO NOT UNDER ESTIMATE THE IMPORTANCE OF MOTOR RESISTANCE CHECKS AND MAIN SOLENOID CHECKS. MANY CART ISSUES ARE CAUSED BY BURNT/DAMAGED BRUSHES THAT WILL BE FOUND AS PART OF THE ARMATURE RESISTANCE CHECK. ALSO A SHORTED ARMATURE AND FIELD WITHIN THE MOTOR WILL DAMAGE THIS CONTROLLER.**

Flight Systems Industrial Products also offers the following Technical Support options ...



Troubleshooting Manuals / Codes  
[www.shop.fsip.biz/en/content/technical-documents](http://www.shop.fsip.biz/en/content/technical-documents)



Live Tech Support Chat  
[www.fsip.biz](http://www.fsip.biz)



Technical Support Forum  
[fsip.websitetoolbox.com](http://fsip.websitetoolbox.com)

Phone Support  
 1-800-333-1194 (Option 4)

**PRE-INSTALLATION  
 INSTRUCTIONS MUST BE  
 FOLLOWED OR WARRANTY  
 WILL BE VOID**

**IMPORTANT!**

**TROUBLESHOOTING INFORMATION  
 INCLUDED IN THIS PACKET**