



3-Phase Regulator Rectifier RR12V-8 - General Guide Japanese & European Machines

Rex's are electrical specialists, our solid state regulator/rectifier is designed and correctly rated to reliably control 3-Phase, permanent magnet alternators up to 250 watts (average) output. Lithium batteries must not be used with this regulator-rectifier (RR12V-8).

Fitting guide

There are two versions of this guide, the other is intended for British motorcycles where owners may encounter positive earth wiring and ammeters. Both are available on the product page and on our tech support page. Fitting is straightforward providing you follow some basic guidelines. Wiring must be done to high standards using the correct tooling for forming any crimped connections. Nothing in this guide overrides any safety precautions given in the shop manual.

Warning: Incorrectly connecting your new solid state unit to the battery will destroy it in a second. Units returned with burnt out rectifiers caused by incorrect polarity connection or short circuiting will not be replaced as defective under warranty. Basic precautions and thorough checks are your friends here.

The red wire is positive. The black wire is negative.

1. Disconnect and remove the battery while working on the machine.
2. You should identify the wiring coming from the stator and decide where you wish to mount the solid state unit.

The three yellow wires from the solid state unit connect in any order to the alternator wires.

Once connection to the alternator stator has been made, connect the DC wires. The red wire is connected to positive. The black wire is connected to negative. Double check you have made these connections correctly before re-connecting the battery.

Please ensure you have access to the bike's wiring diagram or shop manual to look up wire colours. We do not hold a library for the hundreds of different bikes made.

Testing

Refit the battery. To test the system is working correctly simply measure the battery voltage at its terminals, with the engine running, using a suitable multimeter. The voltage should be observed to rise above the battery's terminal voltage and settle between 13.8 and 14.7 volts.

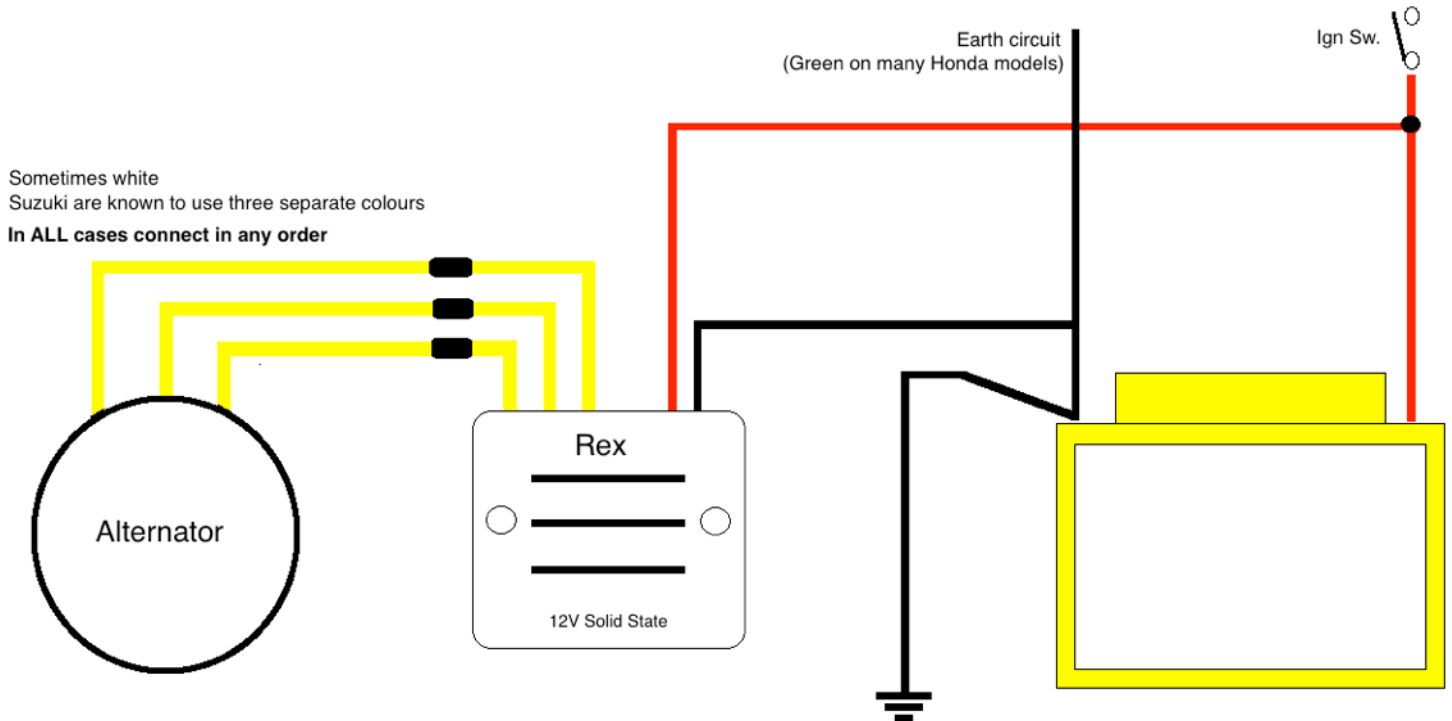
An ideal figure is 14.2 volts +/- 0.5V. The exact figure will depend on the alternator's power output, the load on the system, the condition and state of charge of the battery.

Excessive charging is over 14.7 volts. Under charging is below 13.8 volts.

Running with a battery eliminator (capacitor) and no battery will cause higher readings, 15 volts with the lights off is not uncommon. This is because the capacitor stores surges caused by the piston accelerating on the power stroke. There is little that can be done about this other than putting a load on the system to reduce this figure, putting the lights on is the most obvious and commonly employed solution.

Note: A slight drift away from ideal is never caused by a faulty solid state unit. You will see a marked departure from the nominal value if there is a fault. Alternator output, battery charge state or load on the system causes variations in observed voltage readings. Defective or low quality wiring is also a cause of many system problems.

Wiring RR12V-8 - Negative Earth



Voltage sensing wires

Some models have an additional wire to the regulator rectifier, this can safely be left disconnected if its purpose is to allow additional voltage sensing. Rex's regulator rectifier can sense the voltage accurately on the red wire so it has no use for an additional sense wire.

You can identify a voltage sense wire as it becomes live only when the ignition switch is in the 'on' position. Honda often use black, Yamaha and Kawasaki often use brown. On the bike's wiring diagram this wire will be seen running throughout the circuit connected to the lighting via the headlamp switch and all the other services.

If you are not using this wire be sure that it is insulated - it will become live when the ignition is selected 'on'.

Tips

-NEVER interrupt the DC connections between the solid state unit and the battery while the engine is turning. This will damage the regulator circuit inside the unit.

-Non standard or custom made looms: Fit a fuse of 15 to 20 amps between the battery and ignition switch. This will protect your electrical system in the event of a fault developing.

-Use a quality battery such as Motobatt. This brand receives very positive feedback from customers year after year. Motobatts have a long life when not used, provided correctly maintained. A normal motorcycle charger can be used to charge sealed, AGM and gel types.

- Avoid lithium batteries. Your solid state regulator/rectifier is not designed for them.

For further advice email: tech@rexs-speedshop.com