SP370, SP400 & GN400 12 Volt Conversion Guide

12 Volt Conversion

Skill Rating: Mechanic

The SP/GN 12 volt conversion has been designed to be a simple plug in up-grade, very few changes are needed, however you should have a basic understanding of motorcycle electrics. You may wish to have someone who understands motorcycle wiring to have a look over the connections if you are not sure yourself. Before starting we also recommend that a physical check of the headlamp bulb is made by the owner, different bulbs are commonly found. Technical help is via help sheets or e-mail only.

The ignition is not changed. Use the same HT coil and CDi unit.

Before undertaking this work it is important to check that all lights work and fix any that don't. The conversion will not fix any pre-existing electrical problems in wiring or with indicators etc. We have been converting bikes to 12 volt for over a decade, our conversions are thoroughly checked that they work on each model and the parts are all tested before they are sent.

This kit is has been designed to plug in to a standard SP/GN wiring loom with minimum wiring to do. Be advised, as with all old motorcycles, it may be found that some connectors have been changed in the past, particularly at the rectifier. We include some extra terminals in the kit so any found to be incorrect can be replaced.

There are three stages to this conversion; First, remove the 6V resistor and rectifier then fit the 12 V regulator rectifier (RR) in their place. This is a simply plugs in to standard connectors on the bike's loom. Next replace the battery and bulbs for 12 volt items. The third and final part is to check all the lights and electrics work as normal and the charge rate is correct.

Kit 12VC-SP kit contents: 12V regulator (RR unit), regulator loom, opposite terminal pack.

Other parts needed

We offer packs with 12 volt indicator relay, horn and 12 volt bulbs as "Accessory Packs". Pack 1 has no battery and we can export this worldwide. Pack 4 has the same basic parts one plus the correct 12V battery. **Important** - Select a headlamp bulb separately as these do not come in accessory packs!

12 volt replacements sold in Accessory Packs (Acc-Packs) or individually as listed here:			
Item	**Rex's P/N**	**Item**	**Rex's P/N**
Battery	MR12-1.2A	Headlamp Bulb (UK) Owners must check.	APF12V 40/45W
Indicator relay	IR-E12V	Instrument bulb	BA9-12V
Horn	HTR-1	Tail	12V 21/5W
Fuse	15A	Indicators	12V 18 or 21W

FAQs:

- Do I need a new ignition coil? NO, the ignition is not changed and still uses the same coil & CDi unit.

- Can I use an LED headlamp? No, this system needs to run AC power to the headlamp, LED bulbs will fail if used on AC. LEDS are OK for the indicators and other positions powered by the DC circuit.

- Can I use a Lithium battery? No, the regulator is for designed for lead acid technology batteries only.

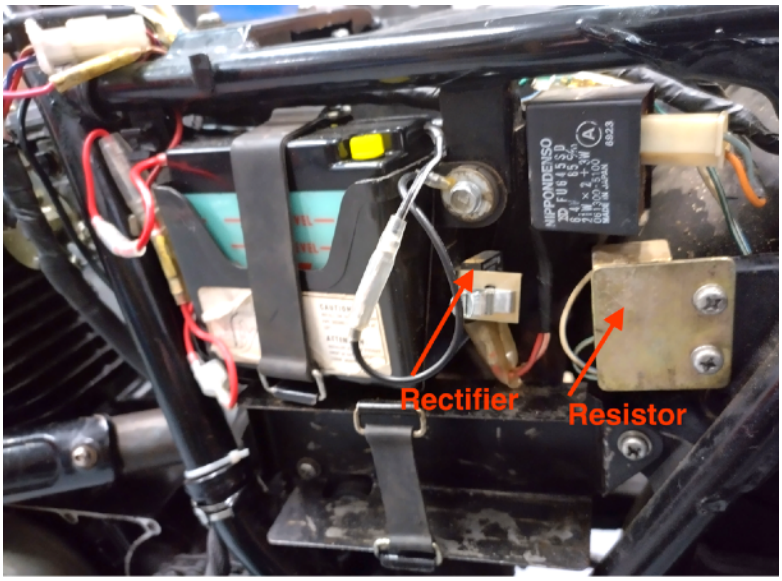
-What Fuse should I use? = Standard rating, 15 amp is the correct fuse.

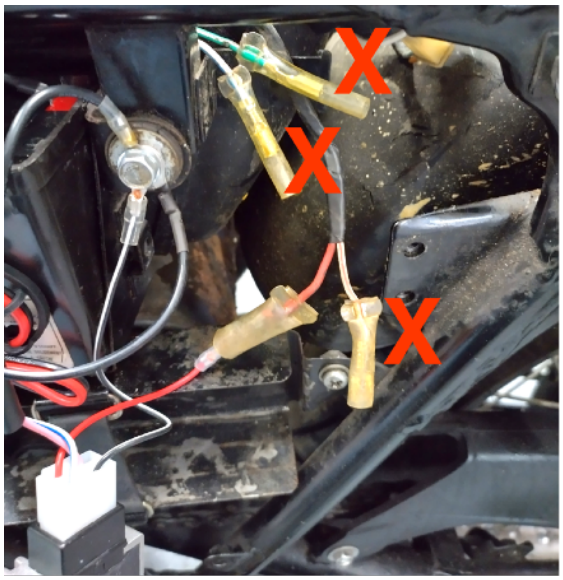
Warning: Serious injury and/or damage to your motorcycle can result if you apply 12 volts to a 6 volt battery. Batteries can explode or leak acid if the wrong voltage is applied to them. Battery acid is highly corrosive and toxic. We recommend only AGM or sealed lead/acid batteries, to reduce the possibility of injury and/or damage to equipment.

We removed the seat and fuel tank for clarity but this may not be required to access the generator connections. Wiring is altered only at the generator connections, the resistor & rectifier (next to the battery).

Getting started

Get access to the wiring from the generator where it connects to the main wiring loom and battery under the left side panel.

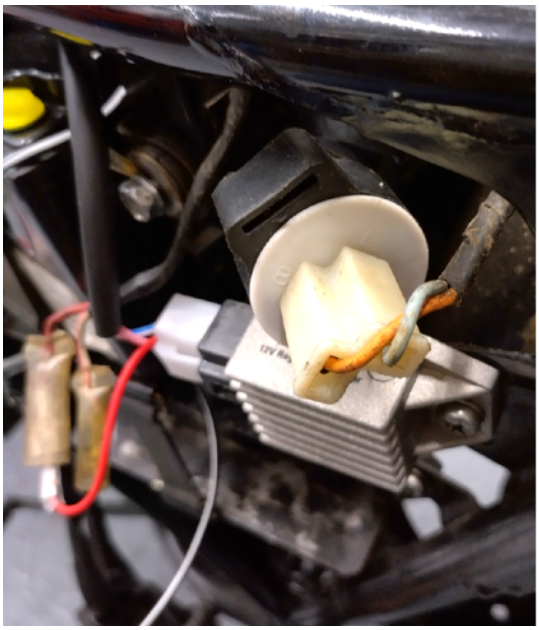




Locate and remove the rectifier and charge resistor, these are to the right of the battery.

Connect the new 12V RR unit to the red wire that was connected to the rectifier. Place the black/white under the battery earth bolt. Fix the RR unit to the resistor mounting point.

Wires left disconnected: White/red - Rectifier, white/blue & green/white - resistor.

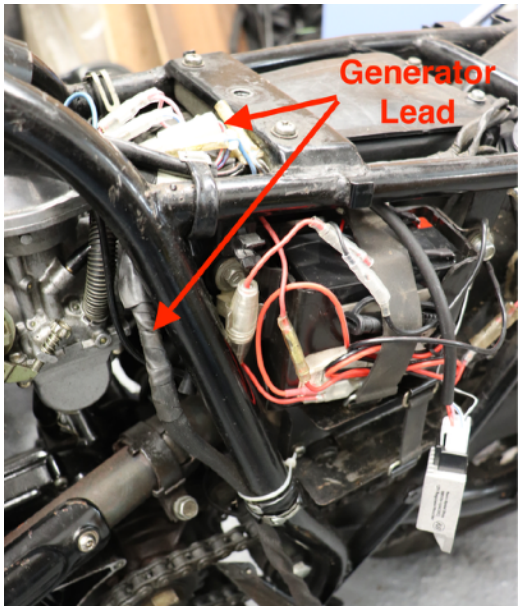


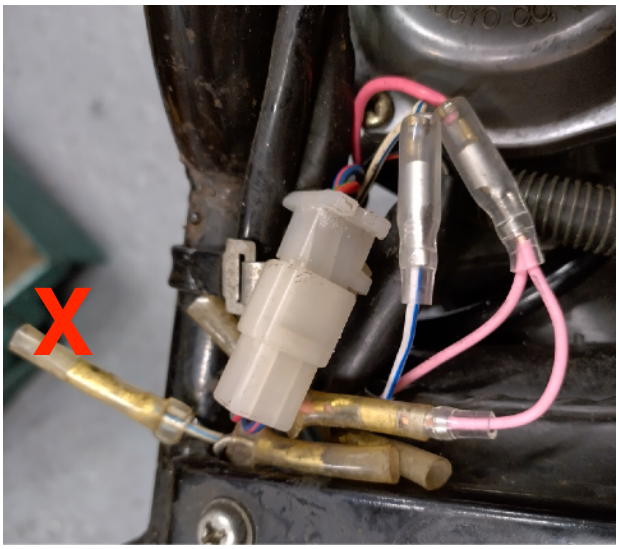
12V RR unit fitted to resistor mount.

(Indicator relay - orange wire goes to the "B" pin)

Wires in black sleeve - route over the battery, along the frame to the generator connections

Distinguish between the generator loom and the main ‘bike side’ wires





Locate the generator connectors.

Note: The generator wire is the one that runs vertically up the frame to the connection point.

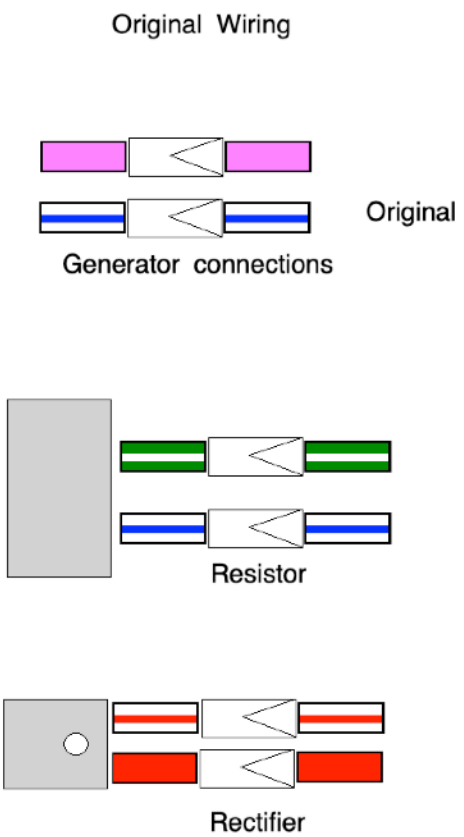
Care required. Identify wires correctly

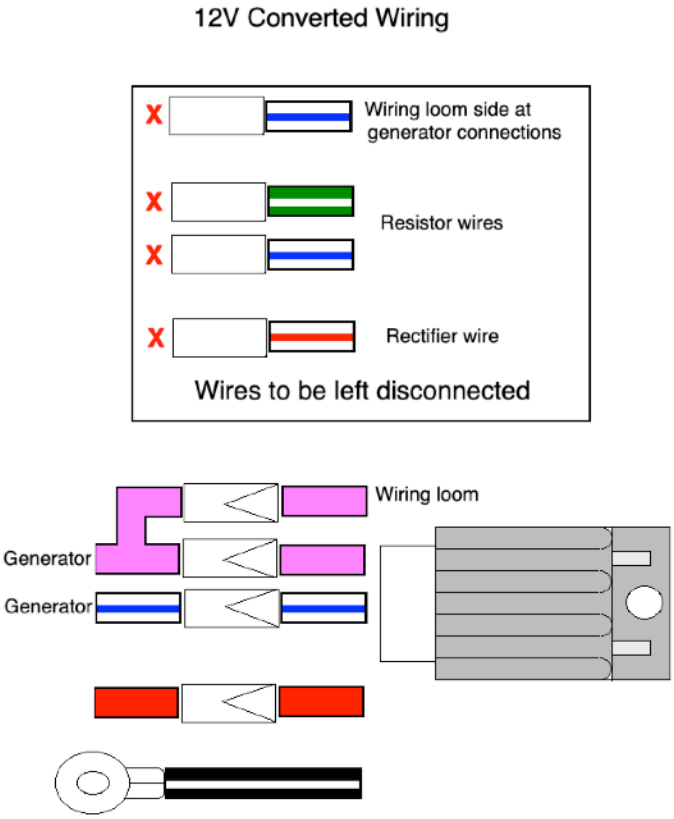
The PINK from the 12V RR unit connects in line to both generator and the bike’s main wiring loom.

The WHITE/BLUE from the 12V RR connects to the same colour from the GENERATOR wires only.

The white/blue from the main wiring loom is left disconnected.

Wiring Diagram





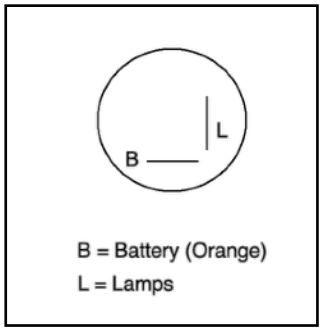
Take great care to ensure you have correctly made the connections at the generator connection point. Refer to the wiring diagram and the photos.

Caution: If you are not able to decide if you connected the wires correctly, have a motorcycle electrician look at the wires for you.

Once this has been done, replace the battery, indicator relay, horn and all bulbs with 12 volt items.

We use a small 12V battery (MR12-1.2A) which is of the correct capacity for the converted charging system. Place the spacer (provided with the battery) in the bottom of the battery holder and the battery on top of this. Connect using the lead that come with the battery. Use the same value of fuse.

12 Volt indicator relay connection detail



Re-assemble the machine following the shop manual.

If it is safe to do so, start the engine and check all the lights work. Measure the voltage at the battery and check it is at 14.2V +/ 0.5V at 2,500 RPM.

Troubleshooting

- Because the wiring system has not been changed except at the generator and loom connections, refer to the shop manual for issues such as lighting not working. The 12 volt conversion makes no changes to the machine's general wiring.

- **General:** Various lights not working. Carefully check your connections, check the bulbs are properly seated. It is easy to disturb other wires in the area you have been working. Remember wire colours fade over time. If you have been working in the headlamp go through the wires one by one.

- B**attery not charging.** Battery voltage doesn't rise when the engine is revved. Go back and carefully check the connections you made at the generator. Pay close attention to the white/blue wire.

- **Charging voltage slightly high:** Possible causes are: Incorrect battery technology, poor earthing, use of a battery eliminator in place of a battery. This system's output is measured at 2,500 RPM with the headlamp on at the battery connections. Battery must be fully charged.

- **Charging voltage slightly low:** Rear brake light stuck on, headlamp bulb too high wattage (recommended 45 watt max). Battery too large (max 2.5 amp/hour). Accessories fitted, heated grips etc taking too much power.

For technical help e-mail: tech@rexs-speedshop.com