The Wiring-Cinderella?

The pages of the magazines are invariable littered with very tidy bikes, good painting, bright shiny ally, polished chrome yet often the wiring is quite casual and shows a very poor attitude. Being in the trade for some 40 years here-with some points to hopefully keep you safe and tidy.
First we do not use sticky tape or RED or BLUE (or even Yellow) Connectors. Neither of these were put on the machine when new so there is no reason to put them on at any other time.

But let us start at wiring colours-why are they thus? Well from the early 60s Rists and a few others in the motoring electrical world decided to standardise the cable colours so that we all know where we are when working on the machine. The colours are not there to make it look pretty! So the first thought when fixing or rewiring your bike is to obtain the right colours. Failure to follow this point won't stop the bike working but the next time you or the next owner has a problem the job will take X times as long and be fraught with unnecessary confusion and puzzlement to say nothing of frayed temper and if you are really lucky loads of time off the road trying to sort the problem. There are several suppliers of said coloured cables along with decent electrical connectors and other widgets for the electrical system so there is no excuse. A few Metres of cable is very cheap. If you are note sure of the colours get a copy of the original wiring diagram and follow it. If you really are a 'cheap skate' then get an old loom and use the wires from that but beware of the 'black death'. What's that you ask, well when you bare off the end of the cable to show the bright shiny copper to connect to you are disappointed in that the copper is more black than copper, this is when the cable is tarnished beyond use. If you are stuck by the side of the road with this problem, then scraping with your pocket knife might get you a connection, but if you are repairing at home, get a decent bit of wire.

If you are rewiring the bike and it is supposed to be standard ie most of the electrical parts are in the same position that the manufacturer put them and you are a bit frightened by this electrical stuff, then a remanufactured loom might be the answer. BUT be prepared to find several differences to sort out and it still taking some time to pour over the diagram and the bike, and have to modify. Any significant changes in position or type of electrical fittings will of course need a custom wiring job, which often can take less time and be less confusing than the 'standard' loom. If you can read a map you can follow a wiring diagram. So you have bought the right colour wires and laid all of them on the bike, nominal in the right place and nominally the right length! I often find that the extra 6" I left disappears to not a lot so even a foot isn't too much to leave initially. Covering! We do NOT cover with sticky tape! It goes sticky and messy and falls off. The manufacturer often uses a non sticky tape (because it is cheap) but even tying the ends often doesn't work too well. Plastic tubing is your best easy bet. Not heat shrink tubing-it is often too tight, it is thinner protection than PVC tubing and it costs a lot more, and if you leave a wire out there is no way you will get another wires down inside. Heat shrink is quite good as a short

insulator for things like live ring terminals Don't have it too tight especially around the steering head, making sure the wires in the tubing does not inhibit the bike and the bike does not hinder the wires.
Do not bother fitting connectors until you have run all the wires, one job at a time I find the best way to proceed. I like to start rewiring a bike from the rear light-sort the rear mudguard, sort the rear stop light maybe pick up wires from the battery area and head for the headlamp. I run all the wires first. Then start at the back again connecting, ending up at the headlamp. It is always a nice time when you sit down on your stool with your coffee and the diagram (if you need it!) and sort out those dozen or more wires in headlamp! (Well I think it is a nice time) Often when fitting bits like rear lights, it is best to stick a battery on the wire that is at the head light to test it before you close the lens. It also helps to sort stop from tail (stop is BROWN tail is BROWN/GREEN) I will come to pattern parts shortly!

We have all our wires in the sleeving lying in place, we start to connect. Another area that needs to be done properly. Solder or crimp? Soldering is a bit of a magic art that needs learning and practicing. You also need a bit more time and electricity! Heat damage to the wire is also to be avoided. Crimping is easier, quicker to do and learn, (but can still be done wrong) Reliability I think is about the same, either process done wrong will fail, and even though crimps will eventually corrode the wiring and the connector will corrode just as quick. Decent correct tools are also a good starting point; would you use a 50P spanner? So why use a 50P crimp tool? It has been said to crimp the connectors on and then run a little solder into the joint. OK but I do not think very much is gained in most cases. (Occasionally there is something to be gained ie the big Zener connector on the British motorcycle from the 60s).
So what system do I recommend? There is a system called 'F' crimps that have separate clear plastic covers as used by the last of the British Motorcycle manufacturers. The DIY tool for these costs under £10 and does a decent job. An easier job can be done with a £20 tool.
Now some pointers in no specific order, when fitting a connector think what can happen if it falls apart in use? Can a live part touch earth? Can this be avoided by a cover? Or the sleeved item being live not the bullet. Do remember to push the bullet fully up in to the snap connector, there is a Ripaults 'closing' tool, but it usually costs over £20. Or use a small instrument screw driver behind the bullet.

Now let us consider why we have a loom? It is to connect all the bits together! Yes but there is a manufacturing consideration such that the manufacturer does not want several looms, bits of wiring. So he will tie all the wires together as a one piece entity if and where he can. (yes the MkIII Norton Commando has a headlamp sub loom, easy of construction is the reason) If for any reason you find that some wires run in a separate sub loom then no problem.
Now why do we actually have a connector? To be able to easily change a part ie a rear light. So if you are heading towards having connectors in odd places ask yourself why that connector is there-perhaps you don't need it. The Boyer pickup plate is a good place to question this. If the pickup wires were soldered on to the

board could you still remove the board as and when you need to? If yes than you don't need the connectors.
Why do we have a fuse? It stops all the power from the battery being used at once to make a fire! Hence as long as this basic is covered then all is well. There is little reason for fusing every thing in sight, and in the case of most electronics their failure time is often less than the fuse failure time! What fuse value, my own rule of thumb is-work out how many amps you expect to flow, this includes both headlight beams on at once, then add 50% ish. For the average British alternator bike this is often in the 17/20Amps area. For a dynamo bike maybe 15 amps is enough.

While mentioning batteries-a few basics. The Automotive vehicle is mostly based around the lead acid battery. But these days there are a few apparent alternatives that might just not be right to use. First for bikes over 250cc and using the Lucas alternator or Lucas dynamo then 5amps hours should be considered a minimum. Size. Greater Ahr is not a problem, although a 'car' battery (in the chair) might not get fully charged in the long run. Sealed batteries could be a problem. Sealed batteries with spade terminals (known as dry fit from the burglary alarm world) are NOT to be used with a charging system as is on the bike. You could use them for total loss racing with a special charger. A modern sealed battery (cylindrical) known as a Cyclon is usable on dynamo machines only as long as the charge voltage is under proper control. Which it is not with 6V alternators machines as made/used in the late 50s -60s. If there is any doubt about what type of battery you are purchasing get a receipt that states 'for automotive use'.

Reproduction light units-there is quite a lot of these about now, rear lights, headlamp connectors, indicators, dip/horn switches etc. The wire colouring and the connectors on these are totally Chinese, ie they bear no relation to any British motorcycle. Red and black on rear lights, Green as an earth light on a head lamp connector? By the way they are mostly fitted with 3.5mm bullets connectors, only Honda use these, so don't expect to readily buy the socket for them. Why do we the British buying public put up with such poor products? You tell me.