TECH TIPS

Lucas Wiring - What the Colors Mean

Mike McPhail, the president of the South Texas Austin-Healey Club, published the following article in the July issue of ***Regional Rumblings****, the Club's newsletter. Lessons on Lucas are always helpful! This covers more than you will ever need to know for a Healey, but more is always better, right? The article is reprinted with Mike's permission.*

When remembering the outstanding scientists and inventors of yore, several great names immediately come to mind; Edison, Bell, Tesla. But then, there is Lucas…the Prince of Darkness. This man is singularly famous for turning electrical science into a black art. When it comes to Lucas electrics, it's really all about preventing the smoke from escaping the wiring harness.

It may be helpful to compare electricity in your LBC to the water in your household plumbing. The water pressure is like the voltage in your battery, and the wires like pipes. In the case of Lucas electrics, the electricity is in the form of smoke, which must not be allowed to escape the system! When examining the typical British car wiring diagram, one might be overwhelmed by the complexity. The trick is not to view things as a whole, but concentrate on the individual circuit. Learning the basic color code will make things easier:

Black wires are earth (aka ground) and connect one side of the battery and all electrical components to the car chassis.
Brown wires are direct from the other battery post and always hot.
Purple wires are the same as brown, only with a fuse.
White wires are hot only when the ignition switch is on.
Green wires are the same as white, only with a fuse.
Note that on very early cars, there are just the two fuses!
There is more:
Blue wires feed the dimmer switch and are hot (typically not fused!) when the headlight switch is on.
Blue with white stripe, and blue with red stripe are the high and low beams from the dimmer switch to the headlights.
Red wires feed the running lights and are hot (typically not fused!) when the switch is on.
Red with white stripe wires are the same as red, only with a fuse and feed the dash lights.
Green with white stripe and green with red stripe are the turn signal wires.

It gets worse.

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Pretty soon they ran out of combinations and began reversing the main color/stripe color combinations. For instance, white with a red stripe is the lead from the ignition switch to the starter solenoid, not to be confused with the dash lights.

The important thing to remember is that in most cases the main color of any striped wire indicates its origin. For instance, a purple wire with a stripe going to the horn lets you know that this circuit is fed by a fused wire that is always hot. Similarly, the green with stripe wires in the brake light, wiper, or gauge circuit is fed by the fused ignition switch. See, it is all very simple! On later cars, more colors were added. See the color code chart below and on the following pages.

In the United Kingdom the British Standard BS-AU7 determines color coding of automobile wiring. Lucas use a 7 color set in which plain colors - purple, green, blue, red, white, brown and green are supplemented by a further group using a base color with a thin line trace of a different color, thus:

Black	**Earth (ground) connections**
Green	**Feeds to auxiliary devices controlled by the ignition switch, eg wipers, flashers, etc**
White	**Base color for ignition circuits**
Red	**Sidelights (parking lights) and rear lights**
Blue	**With white trace main beam headlamp with red trace - dip (meeting) beam headlamp**
Purple	**Auxiliary devices not fed via the ignition switch, eg horn, interior light**
Brown	**Main battery feed**

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Other colors are used, according to equipment specifications, eg light green, pink, slate. Handbooks are usually printed in black and white only, so the cable colors are identified by a lettering code, such as:

B	Black	P	Purple
U	Blue	G	Green
N	Brown	S	Slate
R	Red	W	White

When a cable has a base color and a second color spiral trace the code is two letters, for example: WG = White with green trace

Main	Tracer	Destination
Black		**All earth connections**
Black	Blue	**Tachometer generator to tachometer**
Black	Brown	**Tachometer generator to tachometer**
Black	Green	**Screenwiper switch to screenwiper (single speed) relay to radiator fan motor**
Black	L. Green	**Vacuum brake switch to warning light and/or buzzer**
Black	Orange	**Radiator fan motor to thermal switch**
Black	Pink	
Black	Purple	
Black	Red	**Electric speedometer**

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Black	Slate	
Black	White	**Brake fluid level warning light to switch and handbrake switch**
Black	Yellow	**Electric speedometer**
Blue		**Lighting switch (head) to dipper switch**
Blue	Black	
Blue	Brown	
Blue	Green	
Blue	L. Green	**Screenwiper motor to switch**
Blue	Orange	
Blue	Pink	**Headlamp dip beam fuse to left hand headlamp (when independently fused)**
Blue	Purple	
Blue	Red	**Dipper switch to headlamp dip beam. Headlamp dip beam fuse to right-hand headlamp (when independently fused)**
Blue	Slate	**Headlamp main beam fuse to left hand headlamp or inboard headlamps (when independently fused)**
Blue	White	**Dipper switch to main beam (subsidiary circuit – headlamp flasher relay to headlamp). Headlamp main beam fuse to right-hand headlamp (when independently fused). Headlamp main beam fuse to outboard headlamps (when outboard headlamps independently fused). Dipper switch to main beam warning light**
Blue	Yellow	**Long range driving switch to lamp.**
Brown		**Main battery feed**
Brown	Black	**Alternator warning light, negative side**
Brown	Blue	**Control box (compensated voltage control only) to ignition and ignition switch, eg wipers, flashers, etc lighting switch (feed)**

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Brown	Green	Dynamo 'F' to control box 'F' Alternator field 'F' to control box 'F'
Brown	L. Green	Screenwiper motor to switch
Brown	Orange	
Brown	Pink	
Brown	Purple	Alternator regulator feed
Brown	Red	Compression ignition starting aid to switch. Main battery feed to double pole ignition switch (a.c. alt. system)
Brown	Slate	
Brown	White	Ammeter to control box. Ammeter to main alternator terminal
Brown	Yellow	Dynamo 'D' to control box 'D'and ignition warning light. Alternator neutral point
Green		Accessories fused via ignition switch (subsidiary circuit fuse A4 to hazard switch (terminal 6))
Green	Black	Fuel gauge to fuel tank unit or changeover switch
Green	Blue	Water temperature gauge to temperature unit
Green	Brown	Reverse lamp to switch
Green	L. Green	Hazard flasher unit to hazard pilot lamp
Green	Orange	Low fuel level warning light
Green	Pink	Choke solenoid to choke switch (when fused)
Green	Purple	Stop lamps to stop lamp switch
Green	Red	Left-hand flasher lamps
Green	Slate	Heater motor to switch (or to fast)(on 2-speed motor)
Green	White	Right-hand flasher lamps

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Green	Yellow	**Heater motor to switch, single speed (or to 'slow' on two-speed motor)**
L. Green		**Instrument voltage stabilizer to instruments**
L. Green	Black	**Screen jet switch to screen jet motor**
L. Green	Blue	**Flasher switch to left-hand flasher warning light**
L. Green	Brown	**Flasher switch to flasher unit 'L'**
L. Green	Green	
L. Green	Orange	
L. Green	Pink	**Flasher unit 'L' to emergency switch (simultaneous flashing)**
L. Green	Purple	**Flasher unit 'F' to flasher warning light**
L. Green	Red	**Fuel tank changeover switch to right-hand tank unit**
L. Green	Slate	**Fuel tank changeover switch to left-hand tank unit**
L. Green	White	
L. Green	Yellow	**Flasher switch to right-hand flasher warning light**
Purple		**Accessories fused direct from battery**
Purple	Black	**Horn or horn relay to horn push**
Purple	Blue	
Purple	Brown	**Horn fuse to horn relay (when horn is fused separately)**
Purple	Green	
Purple	L. Green	
Purple	Orange	**Aerial lift motor switch DOWN**

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Purple	Pink	
Purple	Red	**Boot light switch to boot light**
Purple	Slate	**Aerial lift motor to switch UP**
Purple	White	**Interior light to switch (subsidiary circuit—door safety lights to switch)**
Purple	Yellow	**Horn to horn relay**
Red		**Parking switch to left-hand side lamp**
Red	Black	
Red	Blue	
Red	Brown	**Variable intensity panel lights (when used in addition to normal panel lights)**
Red	Green	**Lighting switch to side and tail lamp fuse (when fused)**
Red	L. Green	**Screenwiper motor to switch**
Red	Orange	**Parking light switch to right-hand sidelamp**
Red	Pink	
Red	Purple	**Map light switch to map light**
Red	Slate	
Red	White	**Panel light switch to panel lights**
Red	Yellow	**Fog lamp switch to fog lamp**
Slate		**Window lift**
Slate	Black	**Window lift**
Slate	Blue	**Window lift**

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Slate	Brown	**Window lift**
Slate	Green	**Window lift**
Slate	L. Green	**Window lift**
Slate	Orange	**Window lift**
Slate	Pink	**Window lift**
Slate	Purple	**Window lift**
Slate	Red	**Window lift**
Slate	White	**Window lift**
Slate	Yellow	**Window lift**
White		**Ignition control circuit (unfused) (ignition switch to ballast resistor)**
White	Black	**Ignition coil CB to distributor contact breaker. Rear heated window to switch or fuse TAC ignition**
White	Blue	**Choke switch to choke solenoid (unfused). Rear heater fuse unit to switch. Electronic ignition TAC ignition unit to resistance.**
White	Brown	**Oil pressure switch to warning light or gauge**
White	Green	**Fuel pump No. 2 or left-hand to change-over switch**
White	L. Green	**Screenwiper motor to switch**
White	Orange	**Hazard warning feed (to switch)**
White	Pink	**Radio from ignition switch**
White	Purple	**Fuel pump No. 1 or right-hand to change-over switch**
White	Red	**Solenoid starter switch to starter push or inhibitor switch**
White	Slate	**Tachometer to ignition coil**

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White	Yellow	**Starter inhibitor switch to starter push. Ballast resistor to coil. Starter solenoid to coil**
Yellow		**Overdrive**
Yellow	Black	
Yellow	Blue	**Overdrive**
Yellow	Brown	**Overdrive**
Yellow	Green	**Overdrive**
Yellow	L. Green	**Screenwiper motor to switch**
Yellow	Orange	
Yellow	Pink	
Yellow	Purple	**Overdrive**
Yellow	Red	**Overdrive**
Yellow	Slate	
Yellow	White	