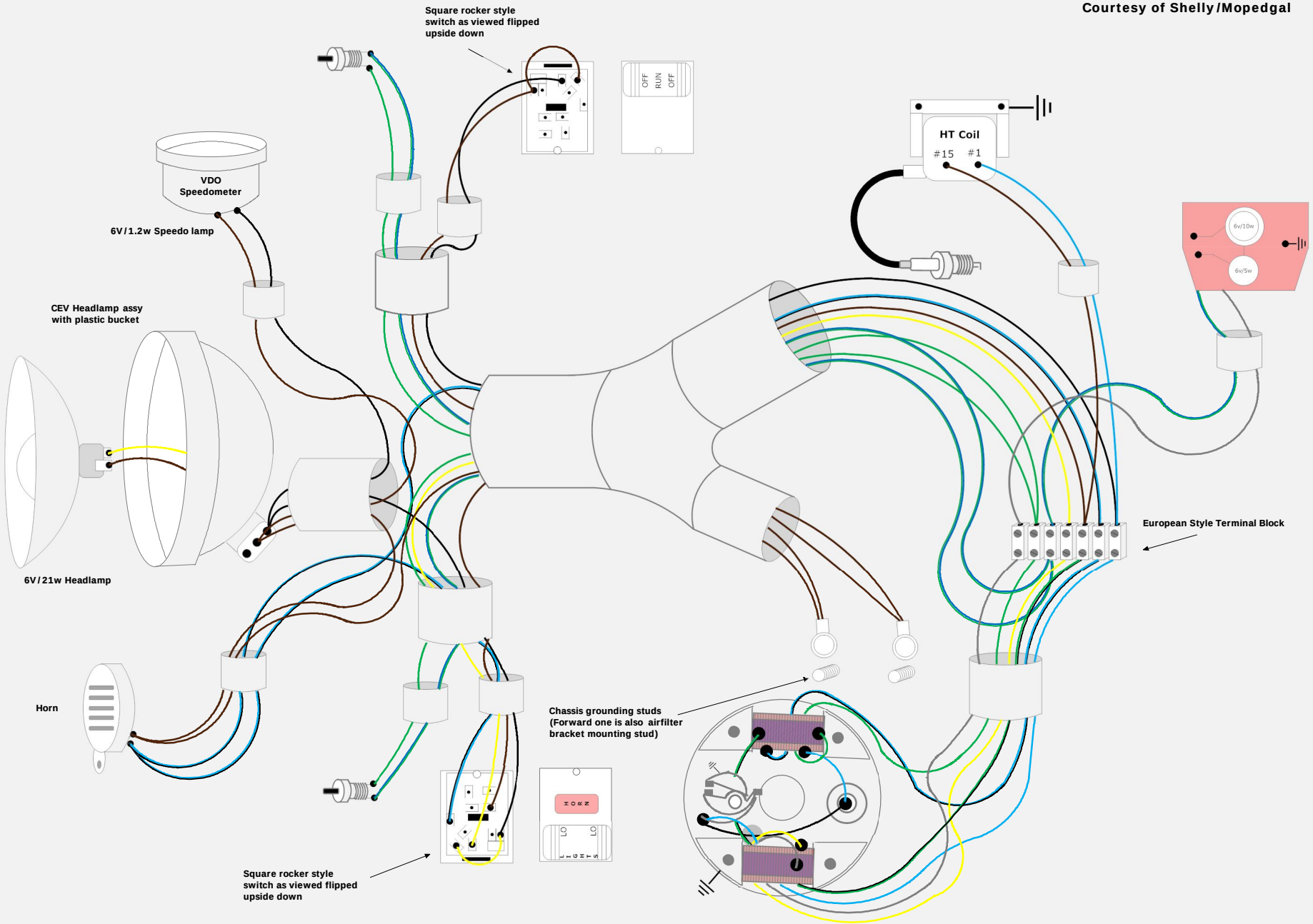
1978 Puch Magnum XK Wiring Diagram

Courtesy of Shelly/Mopedgal



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RH Brake Light Switch
Switch is a NO type (normally on) in it's relaxed state
(Position when brake lever is squeezed)

Square rocker style switch as viewed flipped upside down

Head Light Circuit

The headlight circuit receives it's voltage from the yellow wire coming out of the magneto assy. Power is directed to the terminal block and then up to the light switch. When the switch is turned on, voltage is then sent up to the headlight via the black wire. The black wire also pigtails from the headlight connection and sends voltage up to the speedo bulb via a black wire also.

VDO Speedometer

6V/1.2w Speedo lamp

CEV Headlamp assy with plastic bucket

6V/21w Headlamp

Horn

LH Brake light Switch
Switch is a NO type (normally on) in it's relaxed state
(Position when brake lever is squeezed)

Square rocker style switch as viewed flipped upside down

Engine "Kill" or shutoff works by grounding out the ignition via the black wire

OFF RUN OFF

Ground Wiring Circuit

The brown wires throughout the harness assy. are ground wires. The brown ground wires all originate at the terminal block while drawing a grounding point through the green w/black wire coming out of the magneto.

Brake Light Circuit

The brake light circuit gets it's energy from the green wire coming out of the magneto assy. The green wire spits in two at the terminal block and sends power to both brake light switches. When either switch is activated, power is sent back to the terminal block via the blue w/green wires. The two blue w/green wires connect to a single blue w/green wire which is routed to the brake lamp

HT Coil
#15 #1

Tail Light Circuit

The tail light circuit gets it's power from the gray wire coming out of the magneto assy. This circuit is very simple because the gray wire goes directly from the terminal block to the tail lamp. The headlight circuit must be energized for the tail light coil to function. When the headlight is turned off, the tail light will also go off.

Typical "Superman" style taillight assy with common ground to mounting stud

6v/10w
6v/5w

European Style Terminal Block

NOTE ON BLUE W/BLACK IGNITION WIRE:
The Blue w/Black wire serves as a return path for AC current being generated by the primary coil that it is a part of. Puch uses this 6th wire (Bosch 5 wire magnetos don't use this wire and instead are internally grounded) to supply current to the horn which can cause problems if the horn is faulty. This wire must have an uninterrupted path from a ground source. If you feel that the horn is causing issues with the inability of your Puch to start, move the Blue W/Black wire at the terminal block to the same terminal as the Green W/Black wire. This will bypass the horn circuit to a direct grounding point.

Chassis grounding studs (Forward one is also airfilter bracket mounting stud)

Ignition Primary Coil

Points

Headlight Coil

Brake Light Coil

Condenser

Taillight Coil

HORN
LO LIGHTS LO

Yellow (Jumper Wire)

The horn gets it's power supply from the Blue w/Black wire coming out of the AC magneto ignition coil. **See "Puch horn circuit explained" on the last page for a clearer understanding of this most misunderstood Puch electrical issue.**

Ignition/Horn Circuit

Bosch 6 wire magneto

4 coil/armature assys. with externally grounded ignition primary coil
Blue Wire-ignition
Blue w/Black Wire-ignition (return path/ground)
Green Wire-Brake Light
Yellow Wire-Head Light, Speedo Light and Horn
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Green w/Black Wire-Ground Wire For Brake Light

- The headlight and taillight coils are directly grounded through the stator plate/chassis.
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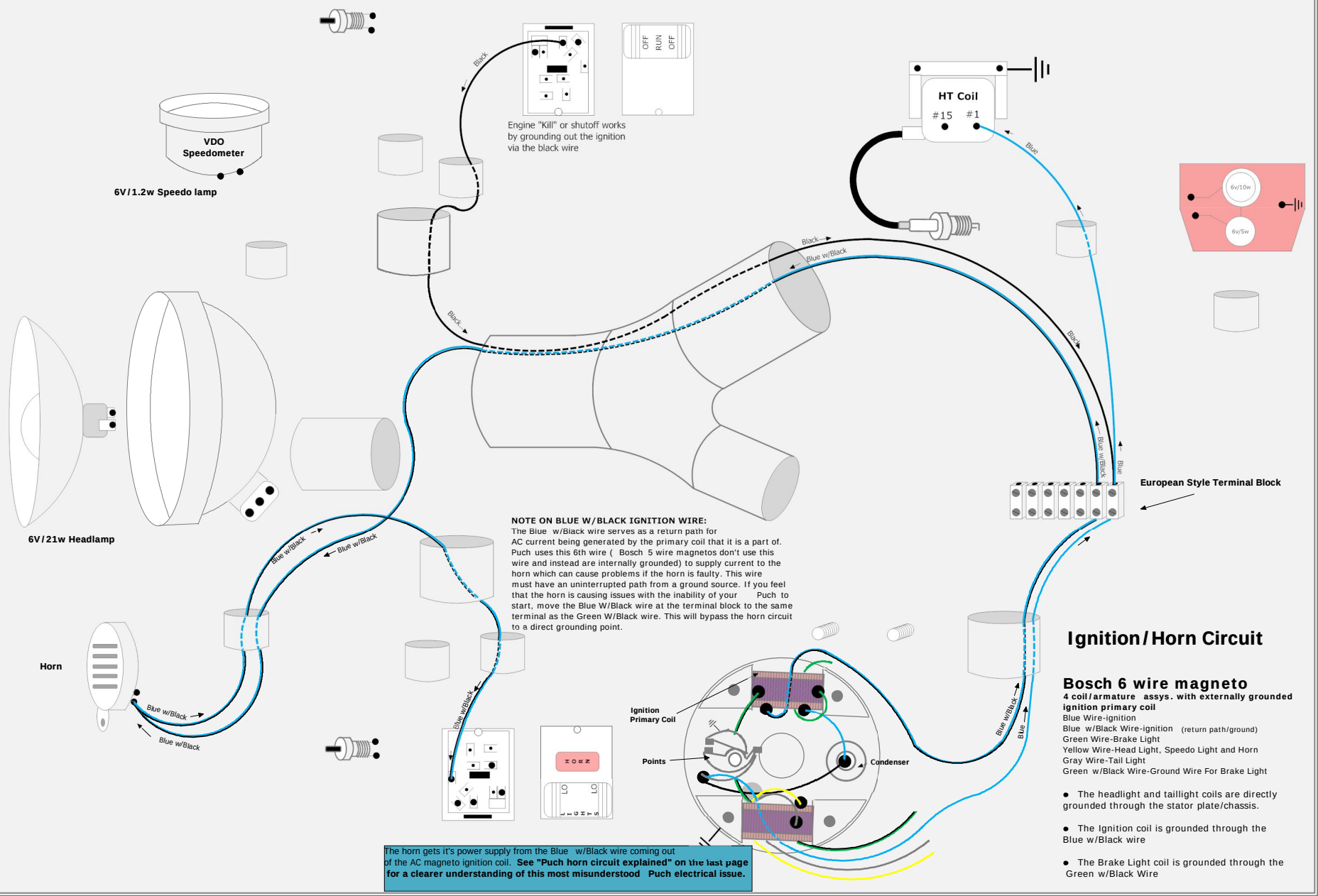

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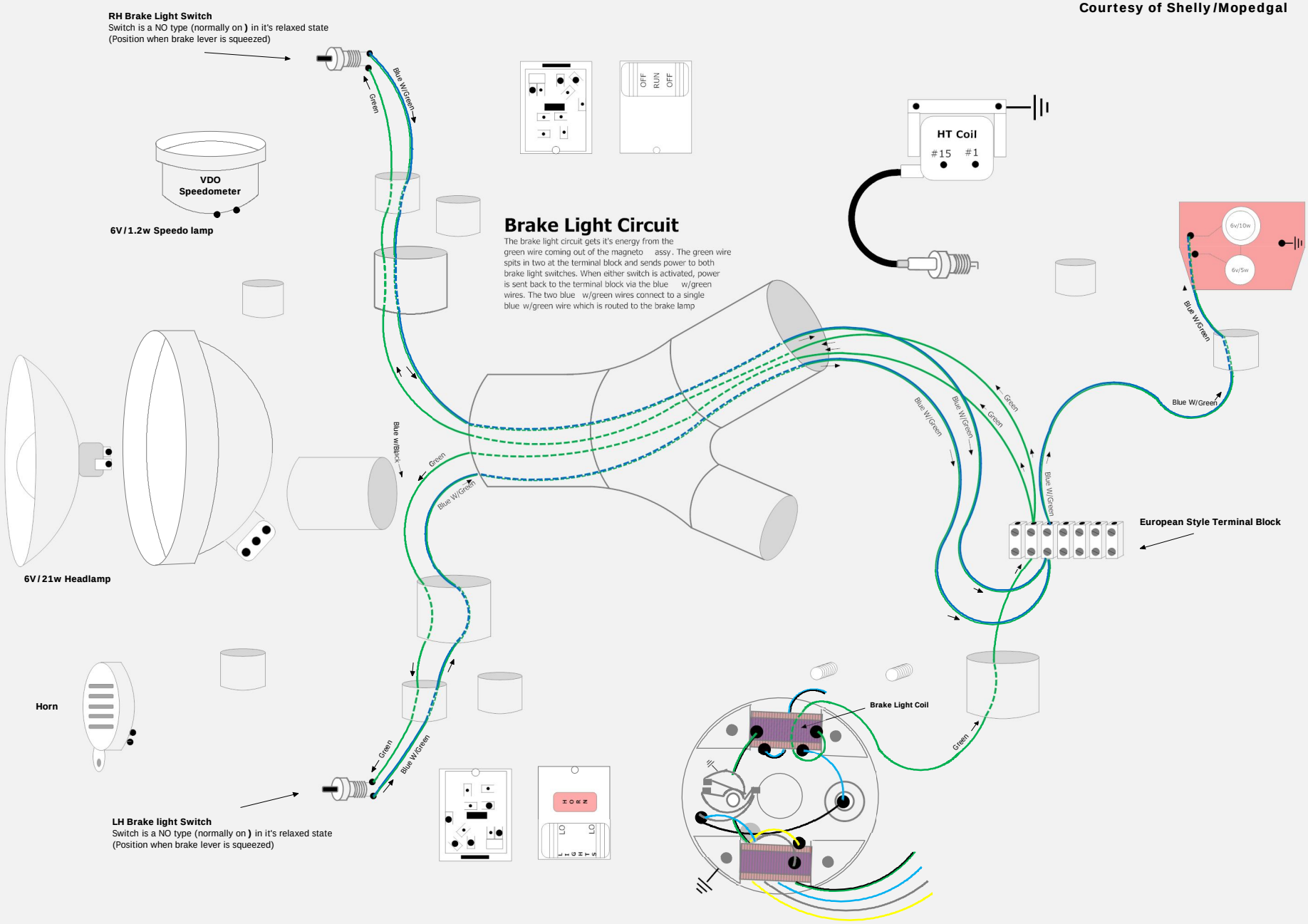

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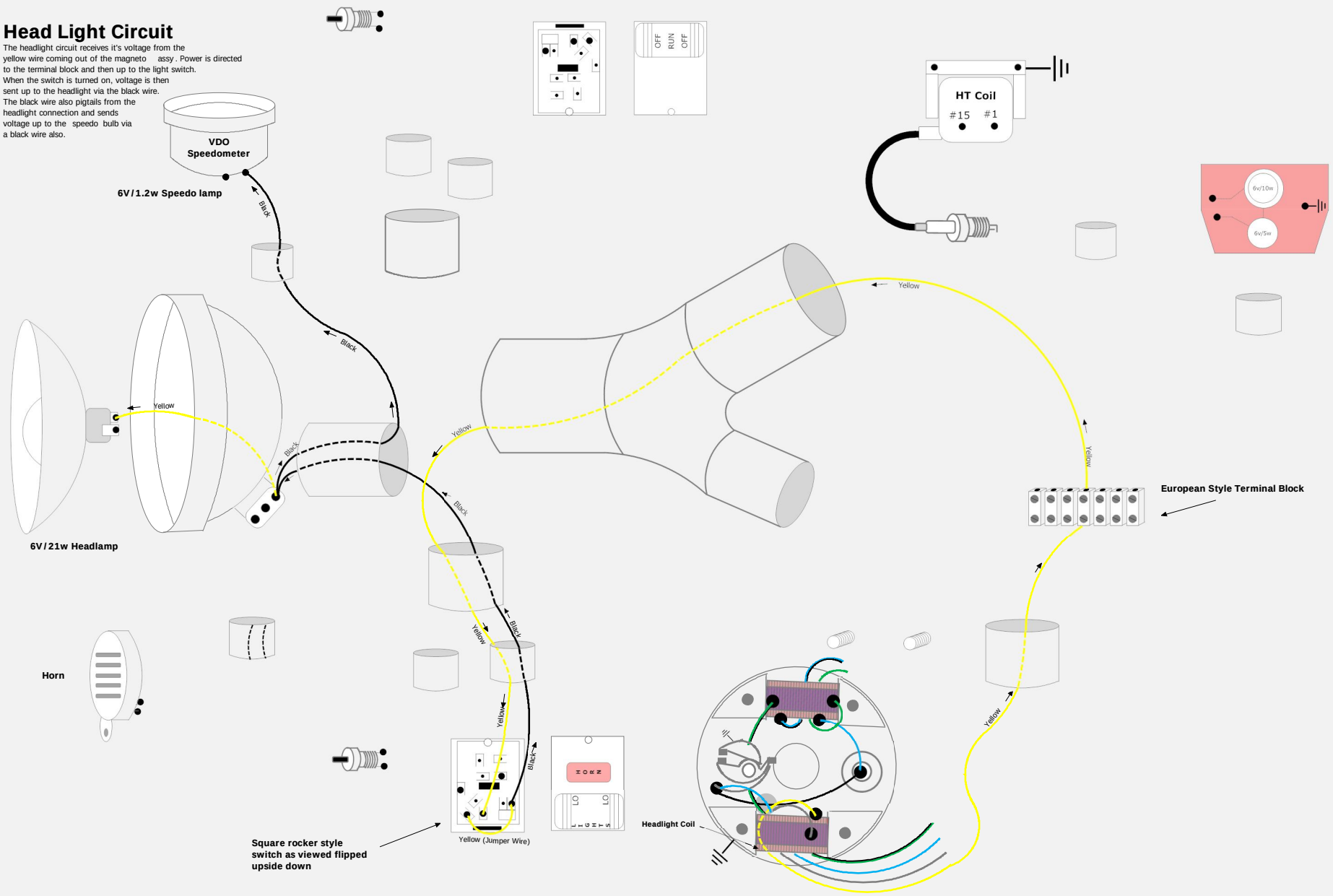

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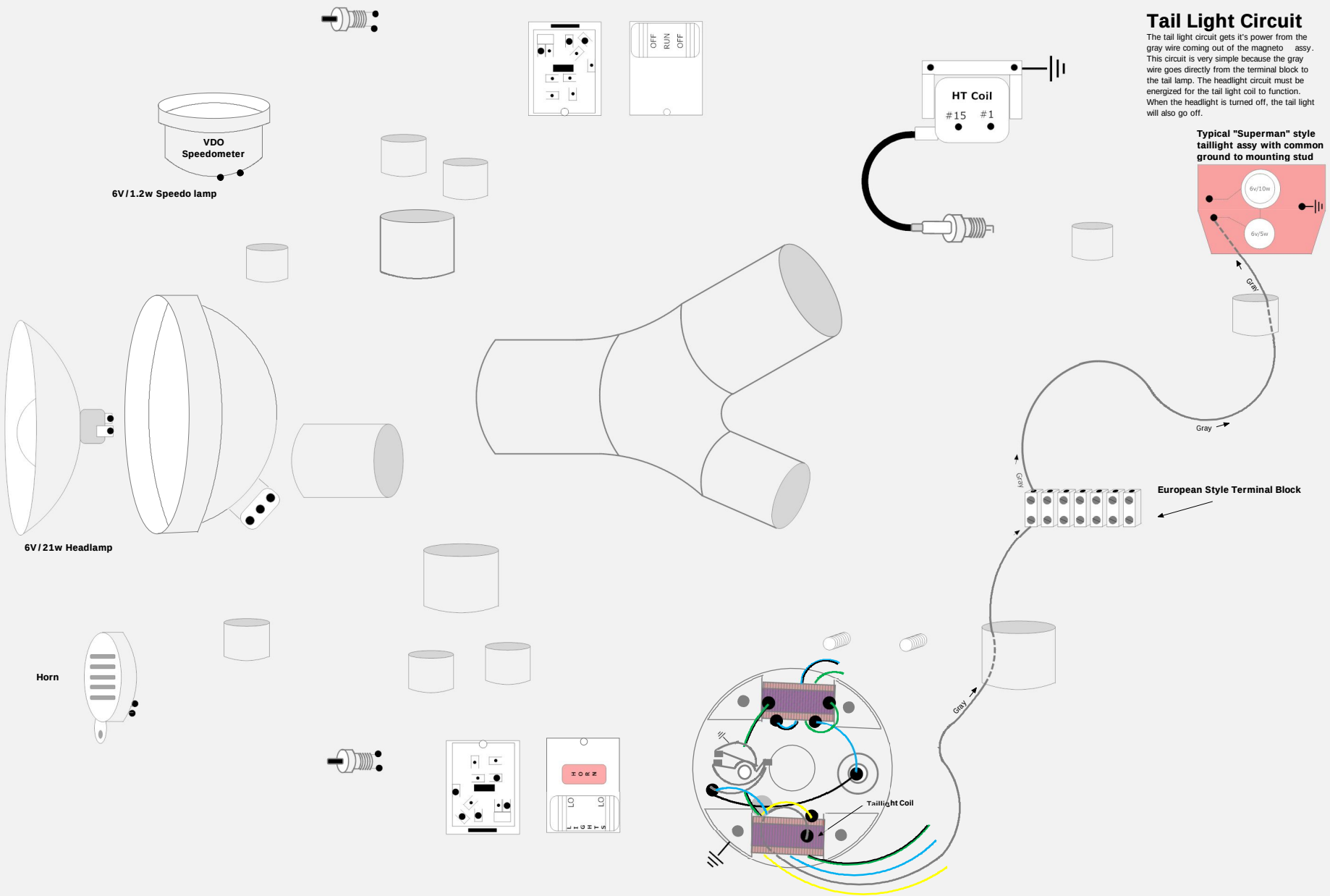

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Typical "Superman" style taillight assy with common ground to mounting stud

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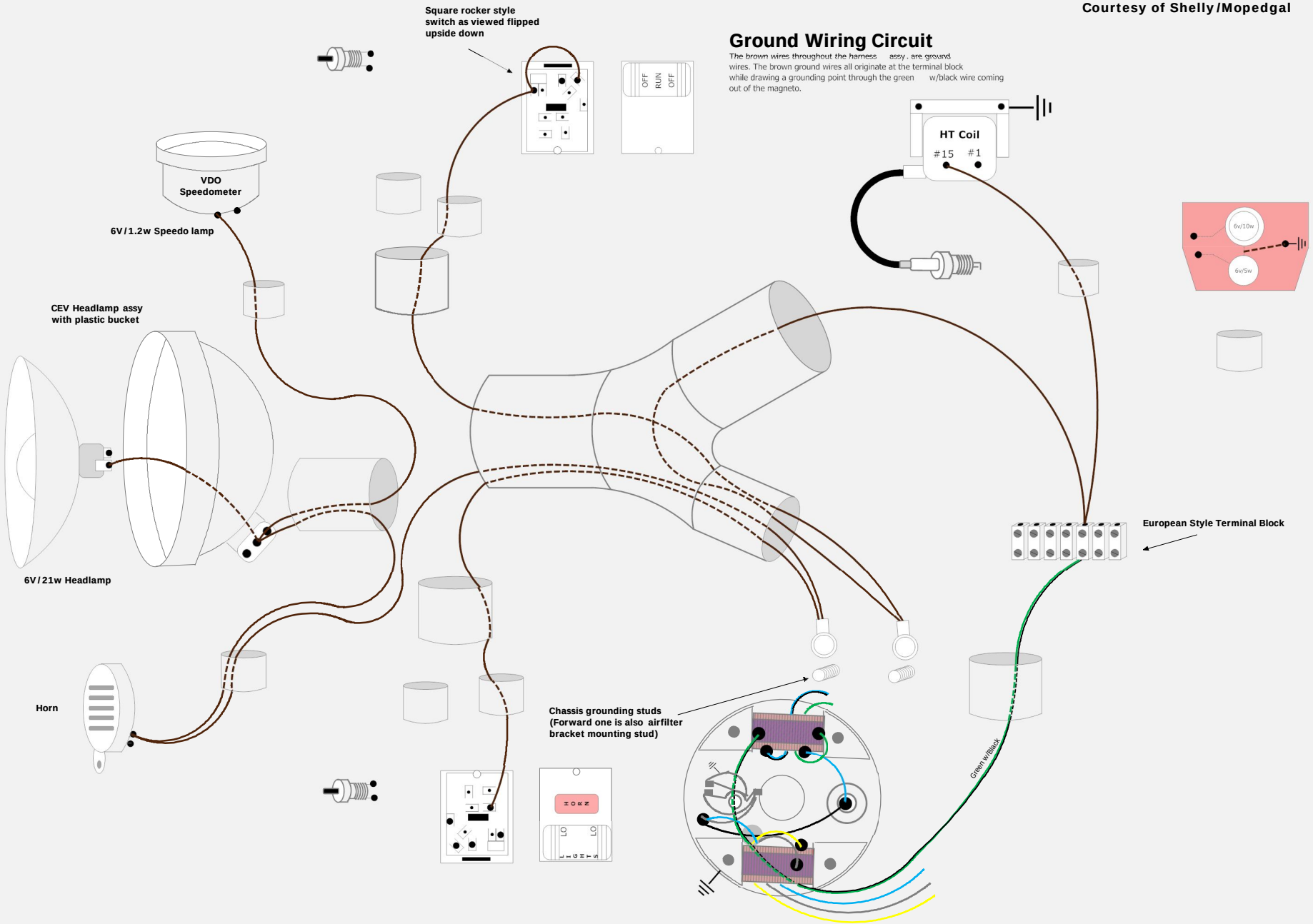

Puch horn circuit explained

Understanding how a Puch horn circuit works

Most Puch mopeds built after the later half of 1977 through the mid 80's used a 6 wire Bosch magneto and generator assembly consisting of 4 coil and armature assemblies to supply AC current to the different circuits on the bike.

(If you have an internally grounded primary ignition coil/5 wire magneto, this diagram will NOT apply. The circuits are different. You can identity it because it does not have the Blue w/Black wire coming out of the magneto assy.)

Why is the magneto and generator putting out AC voltage and not DC

- Most generators produce power in raw AC form. Most vintage mopeds do not use a battery so there is not a lot of reasons to have it rectified into a DC form. In order to charge a battery, energy must flow into it in a single direction(DC), hence the reason for a rectifier.

How come my moped doesn't use a voltage regulator like most motorcycles?

- The two main reasons are that 1st, your stock Puch moped has a very limited RPM range, meaning you usually won't over-supply your generated power at top speed. 2nd, the voltage regulator itself consumes amps and there is not a lot of extra power available at low rpm's like at idle.

Where does the horn get it's voltage from?

- The voltage is supplied to the horn through the Blue w/Black wire which is also the voltage return/ground wire for the ignition coil.

Why does the horn use the ignition coil instead of the headlight coil?

- The coils in the magneto/generator assy have an output of only so many watts. If you were to hook the horn in parallel with the headlight and speedo bulbs, every time the horn was activated, the lights would dim dramatically, which would be a safety issue. The ignition coil has enough capacity to power both.

How can a ground wire like the Blue w/Black supply voltage?

- Because the ignition coil is externally grounded; meaning the coil is isolated from all other chassis grounds, the 6th wire/Blue with Black will serve first off as a grounding source or return lead to the coil. As long as this wire has an uninterrupted pathway to a chassis ground, the wire will remain energized back to the coil.

So how does this supply voltage to the horn?

- Just like the solid Blue wire, the Blue w/Black wire has voltage coming through it but is directed to a ground source.
- The Blue w/Black wire goes from the magneto coil to the terminal block
- The Blue w/Black then routes to the horn (See the diagram)
- The horn then has a chassis ground wire attached to the opposite side. (see diagram)
- If no switch was installed at this point, the engine would run but the horn would be blowing the entire time. That is because the horn is being supplied with voltage (Blue w/Black wire) and the ignition is also being supplied with a ground source through the horn. If you think of the horn as having a light bulb filament inside, the energy flowing through Blue w/Black wire has a pathway through the horn and then to the grounding source with allows the engine to run.

How does the horn button play into the circuit?

- Since the Blue w/Black wire going to the horn is already energized, the horn button will actually serve to shut off the horn rather than feed it voltage. This is done by splitting the Blue w/Black wire at the terminal entrance to the horn and sending an energized lead to the switch.
- The horn button in it's relaxed state (not being pushed) is actually making contact to a chassis ground. This in turn grounds out the energy flowing through the Blue w/Black wire. This prevents the horn from blowing but allows the engine to still run.
- When the button is pushed, it releases the ground contact at the switch, which allows energy to flow to the horn making it sound. When the button is pushed, the engine doesn't die because it is now finding it's ground path through the horn (think light filament again) (see diagram)

What is the problem if when I start my moped, the horn also blows continually ?

- The problem more than likely resides in the switch itself. The switch is not allowing the circuit to be grounded out.
- Test this by removing the switch and connect a wire to a good ground on the chassis. Start the engine. The horn will be blowing.
- Touch the ground wire now to the Blue w/black wire terminal on the back of the switch. If the horn stops blowing, your switch is faulty

What is the problem if my moped won't run with the horn connected?

- The horn itself is bad. Either replace the horn or do one of the following:

  -Move the Blue w/Black wire form the magneto side of the terminal block and move it to the same terminal as the Green W/Black wire

  -Tape or connect all the wires from the horn terminals together.

Bosch 6 wire Magneto/Generator
4 coil/armature assys. with externally grounded ignition primary coil

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