

## Car Electrical Systems

*An article in the most recent Haggerty Drivers Club Magazine indicated that electrical fires are the major total loss factor with classic cars, like our LBC's.*

### Typical Electrical Fire Causes

- Degraded wire insulation causes shorting, overheating of wires and wire insulation fires.
- Servicing electrical systems with battery connected resulting in short and overheated wires.
- No or limited system relays allowing full current through switches which ark, and burn.
- Adding halogen head lights without upgrading wiring and adding relays.
- Overcharging battery, boiling off electrolyte, resulting in a battery hydrogen gas explosion. Hydrogen gas emitted from battery is explosive from 4% to 92% in air and only takes 0.017mj of energy to ignite. Remember the potential static charge from your finger is 80mj.

### Fixes

- Choose the correct battery type. AGM and Gell lead acids may not be compatible with your battery charger and car charging system.
- Keep the battery terminals clean.
- Provide a quick disconnect from your battery. Typically, this is on the negative terminal. Always disconnect when working on the electrical system and parking for the day. My LBC has a FOB that disconnects the battery that I activate when I shut the engine off, No trust in Lucas Electronics Here!
- Consider adding relays to lighting, heater and fuel pump circuits to limit current through switches.

### Electrical Fires

Use ABC or BC rated extinguisher. Disconnect battery or fire may easily reignite.

## Gasoline Flammable Properties

FLASH POINT -45 degrees F

The Minimum Temperature at which gasoline will generate flammable vapors.

AUTOIGNITION TEMPERATURE – 530 degrees F

Yes, spilling gasoline on a hot exhaust manifold can ignite.

LOWER EXPLOSIVE LIMIT – 1.4%

Simply, 1.4% of gasoline vapors in air is sufficient to explode

UPPER EXPLOSIVE LIMIT – 7.6%

Concentration of gasoline vapors on air at 7.6% or greater is too rich to explode. Remember as the vapors reduce it passes through the explosive range.

VAPOR DENSITY – 3 to 4 times that of air

Gasoline vapors are heavier than air and will seek low points and possibly stay there.

SPECIFIC GRAVITY – 0.7, water is 1.0

Gasoline is lighter than water and will float on water's surface.

Additionally, it is not easily soluble (dilutable) in water, so water is not a good extinguishing agent.

MINIMUM IGNITION ENERGY – 0.8mj

The amount of energy it takes to ignite gasoline vapors. The static energy (spark) from your finger can be 100 times that or 80mj.

### Gasoline Key Issues for Our LBC

- GAS & VAPOR LEAKS

Our older cars do not have sealed fuel systems like modern cars.

Vapors can emanate from fill pipes, carburetors, fuel pumps, degraded gas tanks, degraded fuel hoses and poor connectors. For Fuel Hose use only for SAE J30R7 for carbureted engines (max 50 psi) and J30R9 for fuel injected (max 100 psi). Both are good for high heat under hoods. Better yet use SAE J527 or J780 that are US Coast Guard approved and fire resistant.

- APPROPRIATE FIRE EXTINGUISHERS

Class A Ordinary Combustible: Class B Flam. Liq.: Class C Live Elect.

Garage Area:

Dry Chemical ABC with 2A:5B:C

Effective as 2.5gal water: 5sqft flam. Liq. spill & live electrical

Carbon Dioxide – 10BC Rated

Aerosols – Too small for garage, Good for kitchen, Ok for LBC but since it's a pressurized spray can do not store inside a hot compartment.