

# The Importance of Battery Maintenance

*Courtesy of John H. Twist*

All Post war MGs have a 12-volt electrical system, but the location, connections, and polarity of the system differs markedly from their distant American cousins. As each MG model differs from another, battery access, applications, and terminal types are discussed in this article prior to the details of battery and primary circuit attention.

## Battery Access

Modern Midgets have the more up-to-date and convenient single 12-volt battery of smaller size.

MGB/MGC: As the MGA, loosen the hood and fold it forward. Remove the carpet over the battery cover, then loosen the five Dzus screws. It is usually necessary to shake the cover while pulling upwards. If the cover is bent, straighten it (hammer and block of wood) prior to reinstallation.

Midget: Although it's sometimes possible to extract the battery with the bonnet in place, the ease afforded by bonnet removal is dramatic. Eight ¼ in. UNF bolts (7/16 wrench) hold the hinges to the bonnet (later models use only four). Notice the pilot holes in the hinges prior to removal—these are used to re-align the bonnet. Protect the rear edge of the bonnet and forward side of the top shroud with rags or towels. This is a two person operation! Store the bonnet standing upright against a wall, out of the way.

## Battery Applications

Through 1967, all MGs were positive earth (positive ground), making the negative terminal the “hot” lead. From 1968 through 1980, all MGs were negative earth, common with virtually all automotive electrical systems. Whether the change in polarity was due to the recent British Leyland reorganisation, an attempt to standardise with the rest of the world, or to avoid the greater corrosion that positive earth vehicles seem to promote, is all a matter of conjecture.

Because of space restraints, the MGA model was introduced with a twin, six-volt battery installation. At the time (1955), batteries were still large and unwieldy. Some autos from the continent were on a six-volt system (VW), and the ease in fitting the twin sixes outweighed redesign or the sacrifice of boot or engine space. MG kept this design until the introduction of the Mark III MGB in 1974 ½ (rubber bumpers). Finally, a single twelve-volt was installed behind the passenger seat. Now that battery sizes have been dramatically reduced, a single modern Group 26 twelve-volt battery can easily be installed in the MGA, MGB, and MGC - one example would be model 21-36 from Interstate Batteries. Fortunately, many batteries are constructed without embossing, therefore, the stickers are easily removed and Lucas stickers (available from a number of sources) positioned in their place. This gives the MG a much more “original” look, but warranties are void, of course, if the actual labels are lost.

## Terminal Types

*Lucas Helmet Type:* Used from the T types until about the 1976 MGBs and Midgets, the Lucas helmet battery clamps work well, but they DO require regular, proper servicing. At least annually the terminals must be removed, scraped clean, and refitted with new screws. Use a flat file or knife to clear the excess metal, as the helmet clamp should make contact along all its edges, not just at the top. Scrape the inside top of the helmet terminal too. Clean the conical post and inside of the clamp with a battery cleaning brush. Prior to refitting, position a new post pad, which provides insulation and an anti-corrosion barrier.

With both terminal and clamp cleaned to bright metal, push down, rotating back and forth. DO NOT use a hammer! A dab of grease on the screws helps to remove them the next year, and allows easier fitting. Fix the screw as tightly as possible.

If a new battery is fitted, each post must first be center drilled. The hole must not be too deep - mark the drill with a piece of tape to prevent boring too deeply into the post. Prior to replacing the battery or fitting the terminal, wind the screw into the post to establish threads. Blow out the excess metal, or re-drill if the screw fits with difficulty.

*Clamp Type:* Wrap-around clamps, tightened with a transverse bolt, are inexpensive, easy to service, and the preferred clamp. It is advised to fit new ones annually. Ensure that the posts and clamps are cleaned brightly- the dull finish of the lead does not conduct as well as the shiny, cleaned surfaces.

The wires fitted to the clamps must be clean, too. Often, especially at the positive post, the copper wire turns green and develops a damp white growth of anhydrous acid. Clean the wire with baking soda and water. Ensure a better connection by cleaning the battery cables to copper brilliance with coarse sandpaper.

In many instances, the helmet type clamps have been removed and American style clamps fitted. If the helmet clamps were melted from the wires, then the wires are long enough to reach the new clamps. But, if an overly eager mechanic has snipped the wire, leaving it too short, only stretching or replacement are options. The main cable may be extended only an inch or so on the MGA/MGB/MGC. Start at the front of the car, pulling the cable rearwards with vise-grips, from support to support.

### **Battery Service**

1. Remove the cover to expose the battery. Loosen the earth connection first, then twist and lift off from the battery post. Remove the "hot" lead second. Be careful when using larger wrenches about the battery compartment as it is easy to touch the terminals together and dead short the battery.  
*Helmet terminals:* Bear down on the center screw with a good screwdriver to allow the screw to break free. Once the screw is removed, gently twist the clamp with pliers to free it.  
*Clamp Terminals:* Remove the wire from the clamp prior to removing the clamp from the battery. (original MG clamps are fixed to the wires). Loosen the clamping nut, spread the halves with a large screwdriver, and twist free. Rarely are the clamps stuck fast, but if so, completely remove the bolt and nut, then spread the halves further apart. If there is a problem with space, consider removing the clamps after the battery is out of the car. NEVER use a hammer or twist violently with pliers!
2. Remove the battery hold downs. If the threads on the battery rods are frozen with corrosion, spray down with WD-40 or similar penetrate and allow to thoroughly soak then try again. Once removed, clean the brackets and rods on a wire wheel. Paint the brackets and rods with heavy enamel, such as Rustoleum. If the brackets are missing or cannot be salvaged, purchase new ones! A loose battery has a short life.
3. Remove the battery(ies) from the car, grip each post tightly with vise-grips and lift up and away or use a battery sling. Place the battery in an area that is easy to flush, such as utility sink or even the driveway. Wash down the battery with baking soda and water solution with a brush. The acid deposits will hiss and bubble. Ensure that NONE of the baking soda gets inside the battery - it will shorten the life of the cells. Flush with clean water and allow to dry.
4. Inspect the battery, look for cracks, top off the cells with distilled water ONLY. Check the specific gravity with a battery hydrometer, if available - the maximum variation from cell to cell is 0.40. It is normal to find the batteries about 1.250, which is fully charged. If distilled water has just been added, the gravity reading will obviously be very low. Trickle charge the batteries, if time permits, then check the gravity again.
5. Remove the battery pads or tray at the bottom of the battery compartment. Wash these, too, in baking soda and water. Finally, scrape the rust, corrosion, and goo from the base of the battery box. If time permits, and if the battery box is clean enough to accept paint, then use the same type of paint as used on the rods and brackets.
6. Prior to battery replacement, lightly grease the box, rubber supports, trays, rods and brackets, etc with Vaseline to slow discharge and corrosion. Use post pads prior to replacing clamps, and if the American style clamps are used, fix them to the battery prior to fixing the wire to the clamp.

## **Primary Circuit Connections**

As important as the clamps on the battery, are the number of connections between the battery and solenoid or starter/solenoid. Interestingly, the factory workshop manuals hardly discuss or describe the importance of series of connections. Unlike the American automobile, the battery of which is grounded directly to the engine (then the engine to the frame), the MGs connect the battery to the body or frame, then connect the body or frame to the engine. These, and other connections, are suspect in many electrical malfunctions, and all require regular, annual attention.

Despite appearing clean and tight, a connection may not be passing enough current. In most cases, disconnecting the cable, cleaning the mating surfaces, and renewing the bolt and nut satisfy the low resistance requirements.

### **Battery to Earth**

T-Type: the left battery post is connected to the battery box using ¼ " BSF bolt. This is a real source of problems. Ensure that it is CLEAN.

MGA: The leftmost post of the twin battery installation should be connected to the frame, just to the left of the battery box. It is often wound round and round, and has been seen connected to the rear axle!

MGB/MGC: The left post of the twin battery installation is fastened to the body at the top left rear of the battery box until 1974½ when the single battery was introduced. This new battery earth's at the top right rear of the battery box.

Midget: The midget earth connection is the easiest of all MGs as it bolts to the firewall with a 5/16" UNF bolt.

### **Battery to Battery**

MGA/MGB/MGC: sheathed in a metal casing, the cable is secured to the top of the driveshaft tunnel. However, careless replacement finds the cable routed between the batteries without a clamp, allowing a short out on the driveshaft - or over the top of the battery compartments in the MGB/MGC, eventually shorting out against the battery cover.

### **Earth to Engine**

T-type: The important, often missing or loose cable fits between the gearbox clutch housing (about 8:00) and the left scuttle upright, next to the end of the oil draught tube. It is fastened on the gearbox end with a 8 x 1.00 x 30 metric (or Nuffield) bolt, and on the body end with a 5/16 " BSF x ¾ in. bolt into the right front bolt of the left upright.

MGA/MGB/MGC: Until 1974½, this connection is made around the left front engine mount from the engine to the frame. From 1974½ until 1979, the connection is between the right rear bolt of the gearbox runner mounts and the gearbox crossmember. In 1980 the strap was moved to a position on the firewall to the engine backing plate

Midget: Until 1975, this connection is made between the top bolt of the slave cylinder (3/8" UNC) and a 3/8" UNF bolt beneath the passenger (RH) floor. In 1975 it was moved to the right of the engine, around the right front motor mount.

### **Starter to Battery**

On all models this is made through a starter solenoid (which rarely fails). The solenoid may be mechanically operated (T types and MGA) or electric as in the MGB. It is mounted either on the firewall, or is part of the starter assembly. The connections between the solenoid and battery, and between the solenoid and starter must be clean and tight.

### **Conclusion**

An annual inspection and cleaning of the battery and primary circuit is necessary for reliable faultless operation. It requires an afternoon's work and a few basic tools. A regular programme of inspection, adjustment, lubrication and general maintenance is a prerequisite for dependable motoring.