

MAINTAINING YOUR LARYNGOSCOPE

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If laryngoscopes are looked after they will last for many years. Most are simply specialised torches with a handle containing the batteries and a blade which holds the bulb (figure 1). The electrical current flows from the battery to the bulb through an insulated contact at the top of the handle. When the blade is opened for use the bulb lights because the contact in the handle makes a circuit with another contact in the blade which is connected to the bulb with a wire. The current flows back from the bulb to the battery via the metal of the blade and handle.

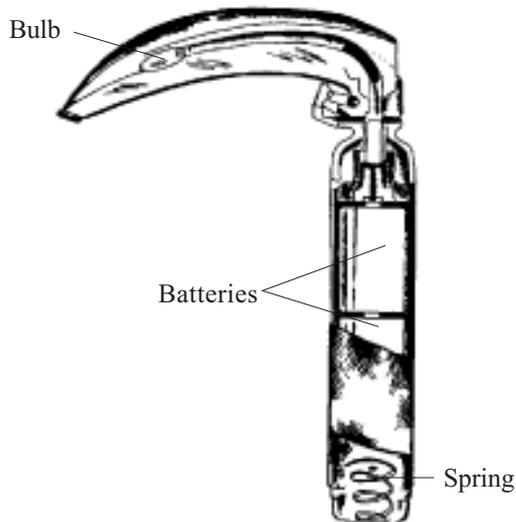


Figure 1. Laryngoscope

General care. Always clean your laryngoscope blade as soon as possible after use. Ideally use hot soapy water to remove secretions and then soak the blade in an antiseptic solution to disinfect it. A nailbrush will help you clean the blade.

Remove the batteries if the laryngoscope is not to be used for a few days as they may corrode the inside of the handle and cause severe damage. The only exception to this is if you use rechargeable (Nickel Cadmium or Nicad) batteries. Rechargeable batteries last for a long time and are a good investment provided you have a suitable charger and supply of electricity.

At regular intervals clean the handle and blade including the electrical contacts at the base of the blade and handle.

Problems with Laryngoscopes

No light. This may be caused by a loose bulb, a faulty bulb, flat batteries or a break somewhere in the electrical pathway between the batteries and the bulb. The instructions below will help you locate the problem. Follow them in order until your laryngoscope is working again.

1. Check with your fingers that the bulb is firmly screwed in.
2. Insert fresh batteries.
3. Replace the bulb with a new one.

4. If the laryngoscope is still not working the electrical pathway should be checked. An electrical meter is the best way to do this but if you don't have access to one you can make a suitable testing device as follows. Get a piece of wire about 6 inches long and strip back the ends of the insulation. Wrap one of the bare ends round a torch bulb and tape it in place as shown in figure 2. With this device you will be able to isolate and bypass each part of the electrical circuit. The bulb will light if current passes through it.

a) First demonstrate that the device works by holding the base of the bulb against the top (positive terminal) of the batteries whilst pressing the bare wire against the bottom (negative terminal) of the batteries. Hold the batteries firmly together while doing this. If the batteries are fresh and the torch bulb is working, it will light (figure 1).

Figure 1.

Figure 2.

b) Take a second piece of wire and confirm the laryngoscope bulb is working by wrapping one end of the wire around the bulb and checking it as described above (figure 2). After these two tests the batteries and bulb have each been demonstrated to be working and you should reassemble the laryngoscope and check whether it now works. If it does not, proceed with the rest of the checking procedure.

c) Replace the batteries and screw on the base of the scope. Hold the end of the bulb against the contact at the top of the handle and the other end of the wire against the body of the scope. If the bulb lights the contacts in the handle are working but if the scope does not work with the blade in place there is a fault in the blade. Test this as described in (d). If, however, the bulb does not work there is a fault in the contacts with the batteries in the handle. Remove the batteries and inspect the base of the handle. Remove and clean the spring and check where it contacts the body of the laryngoscope. Clean off any corrosion with fine sandpaper. Clean both the outside and inside ends of the contact at the top of the handle (use sandpaper wrapped around a screwdriver) and then replace the batteries and recheck as explained at the start of this section. If the bulb still does not light then you should remove the contact at the top of the handle using a correctly sized screwdriver. Inspect this and check that the insulation is intact and clean off any corrosion and then replace the contact. Note that this contact is sprung to help keep a good contact with the batteries.

The bulb should now light and you should try it with the laryngoscope blade in place. If the scope still does not work there is a fault in the electric pathway in the blade.

d). The contact on the blade is an insulated pin soldered to the wire going to the bulb. The contact point is formed by a blob of solder on top of the pin. The wire contacts the bulb via an insulated pin with a spring to help hold the bulb.

First clean the contact on the blade and check that it makes good contact with the handle. If the contact is worn it can be reformed using a soldering iron.

Using your testing equipment hold the positive end of the batteries to the blade contact whilst connecting the other end of the batteries to the wire which should be attached to the body of the blade. If the bulb does not light it indicates that the wire within the blade or its final contact with the bulb has failed. (You must be certain that the bulb is a good one and has been screwed in properly).

If the bulb contact or wire has failed it should be replaced by soldering a piece of telephone wire in its place. The wire is firstly detached from the blade contact and removed from the bulb end of the blade. It can then be replaced. Ensure that you relace the insulating sleeve accurately.

Peeling chrome. If this happens to the blade on your laryngoscope it may cut a patient. Ease off loose chrome with a scalpel blade and then rub over the edge of the remaining chrome with some fine sandpaper. Use some water on the blade to do this. When you have finished check the chrome edge is smooth by running cotton wool over it (it will catch on any rough edges).

Corroded batteries. If the batteries are stuck in the handle try boiling the handle in a pan for a while. If this does not loosen them the batteries must be removed using a large drill. However do not go too deeply or you will damage the contact at the top of the handle. Clean the inside up as well as you can after this problem.