

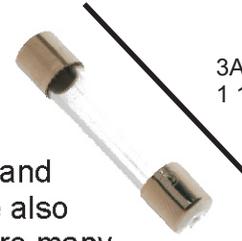
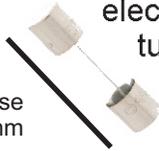
Fuses

A fuse is basically just a short piece of wire, carefully chosen in terms of its diameter and composition so that it will conduct current continuously up to a certain level, but melt if the current rises significantly above that level. It is also designed to become an open circuit when it does blow, automatically switching off the current before any serious damage is done.

Fuses used in mobile equipment are usually one of two types:

Cartridge Fuses - In this type, a wire is mounted in a small glass or ceramic tube with metal end caps which form the electrical connections to the rest of the circuit. The tube forms a physical guard for the fuse, so that when it does blow the melted wire can't fly out and cause damage or injury. The clear glass tube also lets you see when the fuse has blown. There are many

M205 Fuse
20mm



3AG Fuse
1 1/4 inches

sizes of cartridge fuse, but two are commonly used in mobile electronics. The larger is a 3AG size and measures 1/4 x 1 1/4 inches. A similar but smaller fuse is 5 x 20 mm and is referred to as an M205.

Blade Fuses - In this style fuse, the wire is encased in a flat translucent plastic enclosure with two flat terminals protruding through one end.

The internal fuse wire is typically visible through the side of the fuse case. Blade fuses come in several sizes. From smallest to largest they are: Micro, Mini, ATO and Maxi, with the Mini and ATO being the most common.

Mini Fuse
0.42 inches



ATO Fuse
0.75 inches



Current Rating - Fuses are marked with the current level they are designed to carry on a continuous basis before the fuse will blow. As a general practice, a fuse should be chosen with a rating about a third larger than the normal current in the circuit to be protected. If the normal current, for example is 3 Amps, a 4 Amp fuse would be a good choice. Keep in mind however, that many electrical circuits (including solenoids) have a large startup "surge" current. If a fuse with too low a rating is used, the fuse may blow because of this momentary surge of electricity. Cartridge fuses have their current and voltage ratings marked on one of the end caps. Blade fuses have their current ratings marked on the top of the fuse. Additionally, blade fuses are color coded: Black = 1A, Grey = 2A, Violet = 3A, Pink = 4A, Tan = 5A, Brown = 7.5A, Red = 10A, Blue = 15A, Yellow = 20A, Clear = 25A, Green = 30A

Fast Vs. Slow - Cartridge fuses also come in several versions which have different time-current relationships. The two most common types are the standard (or fast acting), and the Slow Blow (or time delay). Slow blow fuses are designed to withstand a short high inrush "surge" current without blowing, and are often a good choice for applications involving incandescent lights, solenoids or other inductive loads. All blade type fuses are fast acting types.