Info Sheet

Quick Guide to Fuses for Commercial Vehicles

For over 85 years Littelfuse has been at the forefront of innovation of fuse technology, and is the world's largest manufacturer of fuses. Littelfuse also makes many types of fuses used in automobiles (not shown here) including the innovative HEV fuse for electric and hybrid cars. Littelfuse Commercial Vehicle Products specializes in circuit protection products, and switches marketed under the Cole Hersee brand.

Table of Contents

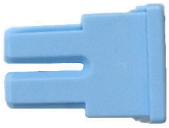
1. Comparative Fuse sizes

Low Profile MINI Blade Fuse

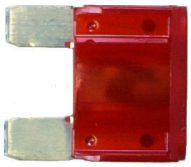
MINI Blade Fuse

ATO Blade Fuse

JCASE Cartridge Fuse



PAL Fuse



MAXI Blade Fuse

MIDI Bolt-Down Fuse

MEGA Bolt-Down Fuse

2. Fuse Trends

There are several important trends to which Littelfuse is responding with new fuse types:

System voltage.
Vehicles started off in 6V, then moved to 12V. Now there's a trend to higher voltages because batteries and motors are generally more efficient. Additionally, low currents (associated with higher voltages) have less power loss in the connecting cables.

Miniaturization.
There are a lot more electrical circuits on today's vehicles – for example, windows aren't hand-cranked any more. We have GPS and all kinds of gadgets hooked up. There are more 'hotel loads' in sleeper cabs. School buses used to have no ancillary equipment – now they have GPS, cameras and much more. Police cruisers used to have radio and extra lights; now they have computers, cameras, GPS, battery chargers and more lights than ever. More circuits necessitate more fuses. Since space is at a premium, we need smaller fuse boxes and smaller fuse types. Littelfuse introduced the ATO and the even newer, smaller MICRO2 and the 'two in one' MICRO3.

Pre-Fusing.
There has been a greater realization that the heavy cable carrying a high-amp current from the battery and alternator to the power distribution center should be better protected. Previously there might have been no circuit protection, or there were fusible links, which can self-destruct explosively, and are not very precise. Littelfuse introduced the MIDI and MEGA fuses for added and precise protection. EVs and Hybrids. Electric vehicles and hybrids have different batteries. Littelfuse designed fuse types for them, introducing the HEV fuse.

Better design.
The blade fuses that Littelfuse introduced were a big improvement over the glass fuse style. However, in a fuse to fusebox connection the part that loosens first is the female part that accepts the fuse terminals. Looser connections caused by repeated removal and replacement of fuses means diminished electrical continuity. Littelfuse cleverly moved the female part of the connection into the new MCASE and JCASE fuses, and improved reliability.

Protection against the elements.
Fuse boxes aren't always located in the dry areas of a cab or engine compartment. Some need to be installed near the battery, or other places that need to withstand roadsplash, or pressure washing. Littelfuse designed innovative inline fuseholders and sealed Power Distribution Modules to protect fuses, breakers and relays. See the new FLEC and HWB18 boxes.

3. Blade Fuses

Since Littelfuse designed the first blade fuse (the ATO®), our fuse engineers have responded to the need for special applications by designing multiple types for all applications.

MICRO2™ and MICRO3™ Fuses

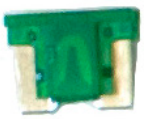
For vehicle voltages up to 32V and amperages 5A to 30A.
The smallest of all fuses – protecting many circuits within a small space. The innovative MICRO3™ has three blades and has two fuse circuits in one body.

MINI® Fuses

For vehicle voltages up to 32V and amperages 2A to 30A.
A type that's rapidly becoming the standard for electrical protection, with an exceptionally wide operating temperature range of -40°F to 250°F

Low Profile MINI® Fuses

For vehicle voltages up to 58V and amperages 2A to 30A. Same performance at MINI, but with a smaller body height.

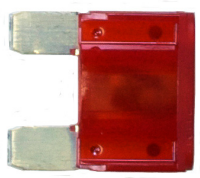


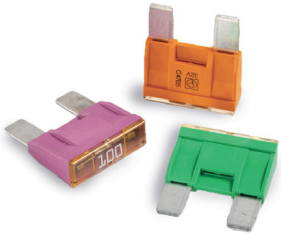
ATO® Fuses

The very popular two-blade fuse originated and patented by Littelfuse in 1976. For vehicle voltages up to 32V and amperages 1A to 40A. Also available in SmartGlow® "It glows when it blows"

MAXI® Fuses

For vehicle voltages up to 32V and amperages 20A to 80A. Also available in SmartGlow® “It glows when it blows”



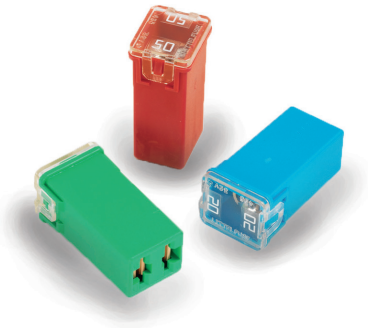


4. Cartridge Fuses

Cartridge fuses are compact and incorporate a design advantage over blade fuses: Over time the spring clips that hold blade fuses will weaken. In cartridge fuses, the weaker female part is designed into the disposable fuse so that the grip and electrical connection will never weaken.

JCASE® Fuses

For vehicle voltages up to 32V and amperages 20A to 60A



PAL® Fuses

For vehicle voltages up to 32V and amperages up to 14A. There are several types of PAL fuse

Series 0 PAL fuse.
20A to 100A

Series 1 PAL fuse.
30A to 120A

Series 2 PAL fuse.
20A to 140A.

Series 3 PAL fuse.
20A to 80A

5. Glass Fuses

Glass tubes with metal end caps that enclose the fusible element. An older type of fuse which ceased to be installed in US passenger cars in 1981. Fuses vary in length and diameter according to amperage.

SFE Glass Fuses

Fuses originally designed to the specs of the SFE (Society of Fuse Engineers). All are ¼" diameter, but vary in length according to amp rating. For vehicle voltages up to 32V

AG Series Glass Fuses

AG originally stood for 'All Glass'. There are several series of various lengths and diameters: AGA series is also known as 1AG; AGC as 3AG; AGU as 5AG; AGW as 7AG and AGX as 8AG.

6. Bolt-Down Fuses

These fuses protect the heavy current cables on the vehicle and are important in pre-fusing. CF8 is a unique type which bolts onto battery terminals.

MEGA® Fuses

For vehicle voltages up to 32V and amperages 40A to 500A.
Ideal for protection of heavy electrical cables that connect the battery and alternator. Designed to replace Fusible Links, which have less precise parameters, and which can cause potentially dangerous thermal events when they blow. MEGA fuses are more reliable, and can be readily replaced, whereas Fusible Links need to be cut out and soldered back in place.

MIDI® Fuses

For vehicle voltages up to 32V and amperages 30A to 200A. Also available in SmartGlow® "It glows when it blows"

CF8 Battery Terminal Fuses

Main fuse for mounting on battery posts. For vehicle voltages up to 58V and amperages from 50A to 300A.

7. Boxes and Power Distribution Modules

Boxes and PDMs safely enclose fuses and other plug-in components, and protect from roadsplash.

HWB18 and HWB60 Hardwired boxes accept bladed fuses, relays, etc.

2+2 Box accepts MINI blade and JCASE cartridge fuses together.

FLEC Electrical Center is highly versatile, and accepts many different types of component.

8. Fuseholders

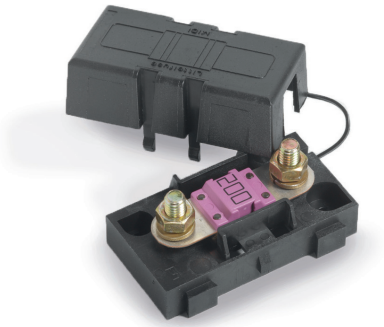
Fuseholders are a simple way to add circuit protection to an existing circuit.

MINI inline splashproof fuseholders accept MINI fuses and diodes. Available with 12AWG (orange) rated for 30A, or 14AWG (black) wires, rated for 20A.

ATO inline splashproof fuseholders accept ATO fuses. Available with 12AWG (orange) rated for 30A, or 16AWG (black) wires, rated for 20A.

ATO inline fuseholders accept ATO fuses. Available with 12AWG (orange) rated for 30A, or 16AWG (black) wires, rated for 20A.

JCASE inline fuseholders accept JCASE fuses. Available in two types (with or without brackets) with 8AWG or 10AWG wire.



MIDI fuseholders accept MIDI fuses up to 200A. Snap-on protective cover. Fuseholders interlock side by side.

MIDI fuseholders accept MIDI fuses up to 200A, and may be used with heatshrink to provide splash resistance. Rounded corners ensure that heatshrink will not split.

MIDI-Flex fuseholders accept MIDI fuses up to 200A. Flexible cover permits connecting wires to approach from any angle. Fuseholders interlock side by side.

MEGA-Flex fuseholders accept MEGA fuses up to 500A. Fuseholders interlock side by side, and can easily be secured back to back with cable ties to create a high power distribution block. Flexible cover permits connecting wires to approach from any angle.

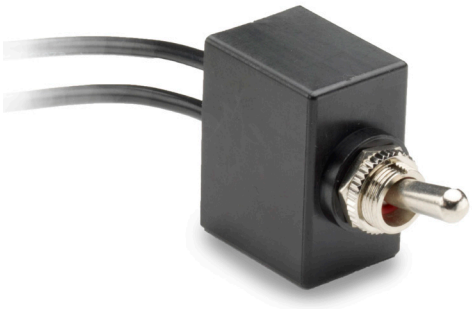
9. Littelfuse Commercial Vehicle Products also manufactures Cole Hersee brand switches

Cole Hersee

95060 Series Sealed Ignition Switches

75920 Master Battery Disconnect Switch

58312 Series Wide Lens LED Rocker Switches



585025 Series Sealed Toggle Switches

48514 Low Voltage Disconnect Switches (up to 250 Amps)