

Info Sheet

The MEGA® fuse and the importance of Pre-Fusing

Pre-fusing is a fairly new term that you need to know if you use or work on heavy vehicles.

High amp circuits need big electrical cables. It's a fact of life that you'll find the biggest wires on a vehicle near the alternator and the battery, where they conduct the highest current load on the vehicle. Naturally, vehicle designers make these cable runs as short as they possibly can because these wires have lots of copper in them (they're expensive!), and because they are big, somewhat rigid, and are difficult to route among the other wiring, and through bulkheads. Added to that, if these wires melt down, there could be 'a thermal event' as the engineers say. To the rest of us that means a damaging under-hood electrical fire that can be very difficult to extinguish.

In the past, big cables have been protected with fusible links, essentially a soldered-in or crimped-in length of unprotected heavy duty fuse wire such as 14AWG or 16AWG gauges. When these wires are overloaded they can drip molten solder-like metal into the engine compartment or battery compartment. At worst the hot metal can splatter, destroy the insulation of nearby cables, immobilize equipment such as a starter motor, or cause an onboard fire. But pre-fusing technology has changed to a safer alternative...



Typical vehicles that carry ancillary equipment

The MEGA® fuse



MEGA bolt-down fuse

The MEGA Fuse is designed for high current applications in vehicles, up to 500A. Engineered and patented by Littelfuse, the MEGA fuse is ideal for battery and alternator protection, and for heavy gauge cables requiring ultra-high current protection. The fuse is an alternative to a fusible link, and provides better safety, performance and efficiency.

Since its introduction by Littelfuse in 1991, the MEGA fuse has become the industry standard for high current protection, providing a wide range of amperage options at voltages up to 32V: 40A, 60A, 80A, 100A, 125A, 150A, 175A, 200A, 225A, 250A and 500A. The bolt-down design facilitates easy installation and replacement.

The function of the MEGA fuse is to protect heavy gauge wire from thermal damage cause by current overloads when a device is drawing more current than the circuit was designed to handle; and to protect against short circuits caused by a fault in the wiring system. Unlike a fusible link, the MEGA fuse opens non-destructively.

The MEGA fuse is 'slow-blow' – it is engineered to allow high-inrush currents without opening the fuse. OEM engineers spec the fuse in high current main circuits, to protect the main feed of the battery or alternator, and in systems where the alternator is not located near the battery or power distribution center and a long cable is used to connect them. MEGA fuses are also used to protect remotely-mounted batteries and battery banks.

MEGA fuse provides an important level of protection to circuits in heavy vehicles that carry additional motors or lighting, such as utility trucks, cranes, emergency and construction vehicles, forestry and agricultural equipment, as well as snow plows and salt/sanding spreaders.

Replacing Fusible Links with MEGA Fuses

Upon failure, fusible links can spray hot molten metal in the engine compartment, potentially causing collateral damage and even fire. MEGA fuses are innately safer because they remain intact. They are more versatile and can be attached to the new electrical centers like the Littelfuse FLEC (Flexible Electrical Center)



Predictability

The MEGA fuse has very predictable opening characteristics, with a very tight tolerance. This predictability make the MEGA fuse easier for engineers to design-in, because they are working with a reliably precise component. On the other hand, Fusible Links are relatively unpredictable, and may open under a wider range of currents.

Safety

Fusible Links have unpredictable opening characteristics that can cause safety hazards. Thermal incidents can be caused by spitting of molten metal. The MEGA fuse is designed for safety, and causes no hazards upon opening.

Serviceability

The MEGA fuse is far easier to replace than a Fusible Link, which must be welded or soldered. A failed Fusible Link needs to be cut out to be removed; a MEGA fuse replacement is simply bolted in. Removal of a Fusible Link may entail removing the old cable and re-routing a new one – a time-consuming process. MEGA fuse replacement is quick and reliable, requiring less of a vehicle technician's time.

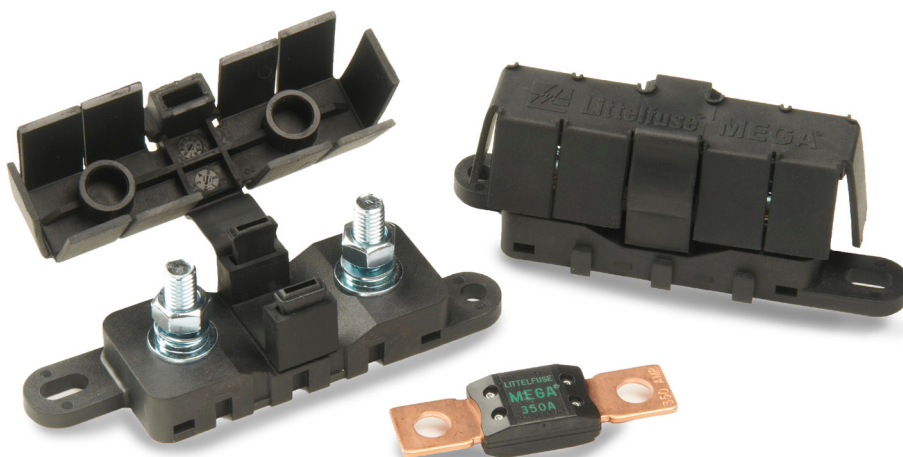
Selection

The MEGA fuse offers a greater range of current ratings to work with, from 80A to 500A, whereas fusible links are available in only a few wire gauges.

Part Number	Current Rating	Typ Voltage Drop	Cold Resistance
0298040_	40A	132mV	2.510mΩ
0298060_	60A	119mV	1.504mΩ
0298080_	80A	87mV	0.720mΩ
0298100_	100A	87mV	0.423mΩ
0298150_	150A	92mV	0.352mΩ
0298175_	175A	86mV	0.294mΩ
0298200_	200A	83mV	0.257mΩ
0298225_	225A	82mV	0.222mΩ
0298250_	250A	82mV	0.201mΩ
0298300_	300A	74mV	0.167mΩ
0298350_	350A	68mV	0.138mΩ
0298400_	400A	64mV	0.126mΩ
0298450_	450A	60mV	0.112mΩ
0298500_	500A	58mV	0.092mΩ

MEGA® fuseholders

Fuseholder with protective cover.
Part number 02981001ZXT



MEGA-Flex fuseholder.
Part numbers:
02981028HXFC with zinc-plated steel studs and hardware.
02981028HXFC-SS with stainless steel studs and hardware.