Fuses for Forklifts

Forklift Fuse - A fuse is made up of a metal strip or a wire fuse element of small cross-section compared to the circuit conductors, and is typically mounted between a couple of electrical terminals. Normally, the fuse is enclosed by a non-conducting and non-combustible housing. The fuse is arranged in series capable of carrying all the current passing through the protected circuit. The resistance of the element produces heat due to the current flow. The size and the construction of the element is empirically determined to be able to make sure that the heat produced for a standard current does not cause the element to reach a high temperature. In cases where too high of a current flows, the element either rises to a higher temperature and melts a soldered joint within the fuse that opens the circuit or it melts directly.

An electric arc forms between the un-melted ends of the element when the metal conductor parts. The arc grows in length until the voltage required in order to sustain the arc becomes higher compared to the obtainable voltage within the circuit. This is what truly causes the current flow to become terminated. When it comes to alternating current circuits, the current naturally reverses direction on each and every cycle. This particular process significantly improves the speed of fuse interruption. Where current-limiting fuses are concerned, the voltage required in order to sustain the arc builds up fast enough to basically stop the fault current prior to the first peak of the AC waveform. This particular effect greatly limits damage to downstream protected units.

The fuse is usually made out of aluminum, zinc, copper, alloys or silver as these allow for predictable and stable characteristics. The fuse ideally, would carry its current for an undetermined period and melt rapidly on a small excess. It is vital that the element should not become damaged by minor harmless surges of current, and must not oxidize or change its behavior after potentially years of service.

To be able to increase heating effect, the fuse elements could be shaped. In large fuses, currents can be separated between multiple metal strips. A dual-element fuse may have a metal strip which melts immediately on a short circuit. This particular kind of fuse could even comprise a low-melting solder joint which responds to long-term overload of low values as opposed to a short circuit. Fuse elements can be supported by steel or nichrome wires. This ensures that no strain is placed on the element but a spring could be included to increase the speed of parting the element fragments.

It is common for the fuse element to be surrounded by materials which are meant to speed the quenching of the arc. Silica sand, air and non-conducting liquids are a few examples.