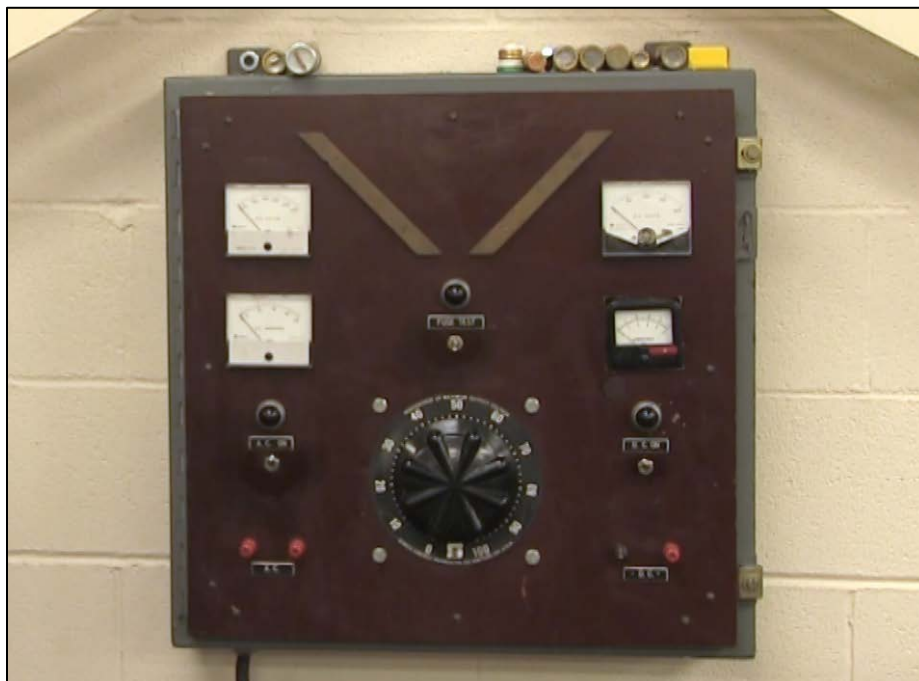


# Variac and Fuses

A handout containing the highlights of the video titled *Variac and Fuses*

## The Variac

A variac (variable alternating current) testing machine is used to determine if the fuse is good or bad. It has an AC scale and AC amperes scale. The rheostat controls the alternating current that goes through the fuse when the fuse is placed on the busbar for testing.





CAPTION 1. A PHOTO OF A VARIAC MACHINE USED FOR TESTING A FUSE TO DETERMINE IF IT IS STILL IN WORKING CONDITION.

## Types of Fuses



There are different types of fuses, and the ones listed here are the types discussed in the video.

Fuses serve as over-current protection devices that determine if there is an excessive amount of amperage. The fuse act as a protective means of opening up the circuit to keep that surge of power from continuing and causing a fire.

The table lists the different types of fuse, as well as a short description and a photo.

Fuse type	Photo
<p><b>Edison base fuse:</b></p> <ul style="list-style-type: none"> <li>• Has a screw-in base</li> <li>• Usually used in old fuse boxes.</li> <li>• 15-30 amp rating.</li> </ul>	 <p><i>CAPTION 2. A CLOSE-UP PHOTO OF AN EDISON BASE TYPE FUSE WITH A 30 AMP RATING.</i></p>
<p><b>Type S fuse:</b></p> <ul style="list-style-type: none"> <li>• Has a narrower screw-in base</li> <li>• Made out of ceramic material</li> <li>• 15-30 amp rating</li> <li>• Provides slow-blow protection. Slow-blow protection means if there's an excessive amount of current flowing in the circuit that's beyond the fuse's rating, this fuse will have additional time before the fuse blows, acting as a time-delay fuse.</li> </ul>	 <p><i>CAPTION 3. COMBINED CLOSE-UP PHOTOS OF THE TYPE S FUSE. THE IMAGE ON THE RIGHT SHOWS THE FUSE'S AMPERE RATING (15 AMP), AND THE IMAGE ON THE LEFT SHOWS THE INSTRUCTOR POINTING AT THE SCREW-IN BASE OF THE FUSE.</i></p>

Fuse type	Photo
<p><b>Ferrule type cartridge fuses:</b></p> <ul style="list-style-type: none"> <li>Comes in different sizes</li> </ul>	<div> </div> <p>CAPTION 4. A FERRULE TYPE CARTRIDGE FUSE RATED AT 30 AMPS.</p> <div> </div> <p>CAPTION 5. ANOTHER FERRULE TYPE CARTRIDGE FUSE RATED AT 1/2 AMP.</p>

Fuse type	Photo
	 <p>CAPTION 6. A BIGGER SIZED FERRULE TYPE FUSE RATED AT 60 AMPS. AMPERE RATINGS FROM 60 ONWARDS IS USUALLY USED FOR HEAVIER EQUIPMENT.</p>  <p>CAPTION 8. A FERRULE TYPE CARTRIDGE FUSE, ALSO CALLED A BLADE FERRULE TYPE FUSE. THIS FUSE HAS A 100 AMP RATING.</p>

## Testing the fuse

To test and check if a fuse is still in good condition, use a variac testing machine. With the machine on, simply place the fuse on the copper busbar on the variac machine. Make sure both ends of the fuse touch the copper busbar. If it's in good condition, the light bulb by the fuse test area on the machine turns on.



*CAPTION 7. THE INSTRUCTOR TESTS A FERRULE CARTRIDGE TYPE FUSE. THE LIGHT IS ON, SIGNALLING THAT THE FUSE IS IN GOOD CONDITION AND IS WORKING PROPERLY.*

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