COMMITTEE G: Education & Training
Communication & Signal Section, AAR

A-4 Resistor

Approved January 1972

Definition: A resistor is a device that reduces the flow of current in an electrical circuit.

Symbol:

Description: A resistor may be a mass of material, such as carbon, with connecting wires at both ends, Figure 1.

A resistor may be a length of wire wound around an insulator, Figure 2.

The wirewound resistors, when used in signal circuits, are often of the variable type. A variable resistor has an adjustable contact mounted on a metal slide bar attached to the binding posts of the unit, Figure 3. One end of the slide bar is insulated from the binding post but the other end is not. When the contact is moved away from the insulated end, the resistance is increased, Figure 4a. When the contact is moved toward the insulated end, the resistance is decreased, Figure 4b.

Figure 1

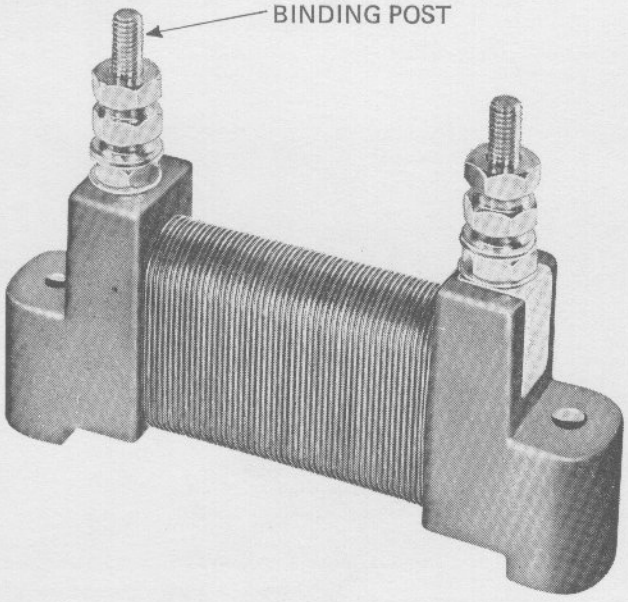

Figure 2

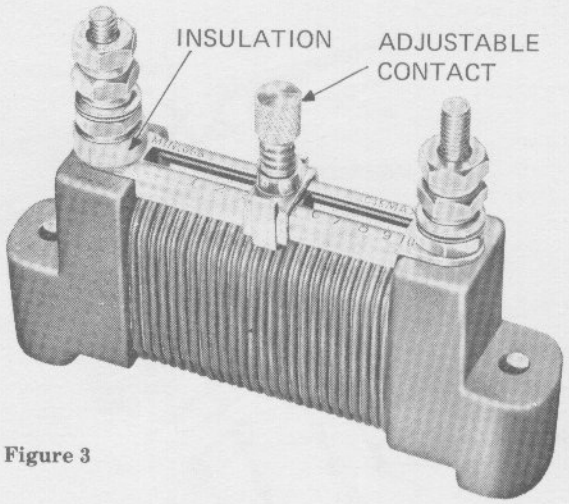

Figure 3

Figure 4a

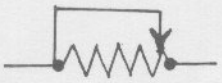

Figure 4b

Purpose & Application: The primary use of resistors in signal circuits is that of limiting current. In this application, a resistor reduces the current to the value required by the load. For example, in Figure 5a, a lamp is connected to a battery. In this example, the current flowing from the battery to the lamp may be too high. In Figure 5b, a resistor is inserted in series with the lamp to reduce the current to the required value.

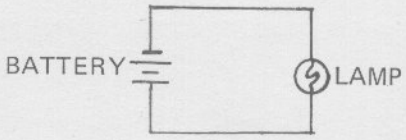

Figure 5a

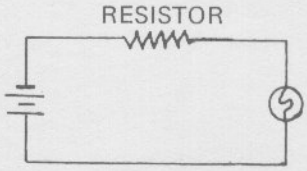

Figure 5b

General Information: Many railroads have instructions outlining installation, maintenance, and inspection procedures with regard to resistors. It is most important that you become familiar with your company's requirements.

Detailed Operation: None.