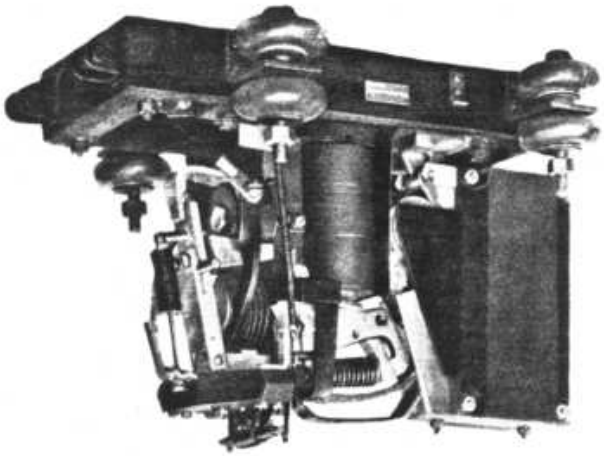
G-E LINE BREAKER EQUIPMENT

DB-986-A Line Breaker



DB-986-A Line Breaker, Cover Removed

The G-E line breaker and G-E line breaker control device for car equipments are of vital importance because they not only eliminate a large percentage of the arcing that ordinarily occurs in the controller, but also protect the equipment from short circuits or overloads above predetermined values. By minimizing arcing in controllers, the annoyance of short circuits and of noises incident to heavy arcing is removed from the car platform; and the life of the fingers, segments, and insulation shields is greatly increased, resulting in a material reduction in maintenance costs.

The G-E line breaker equipment consists of a combinedcontactor and overload trip, combined control switch and fuse, and a control device for installation on the controller cap plate. The line breaker proper, comprising the contactor element and overload trip together with the necessary resistance, is mounted in a metal box for installation underneath the car. The illustration on page 3 shows the method of connecting the various devices in the control circuit.

THE G-E LINE BREAKER

1. Increases Safety of Operation.
2. Prevents Improper Acceleration.
3. Removes Arcing from Platform.
4. Permits Interlocking to Prevent Moving of Car with Doors Open.
5. Reduces Maintenance.

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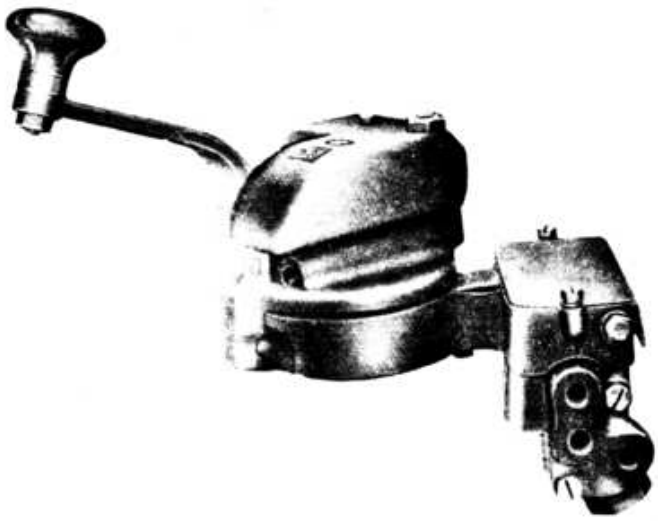
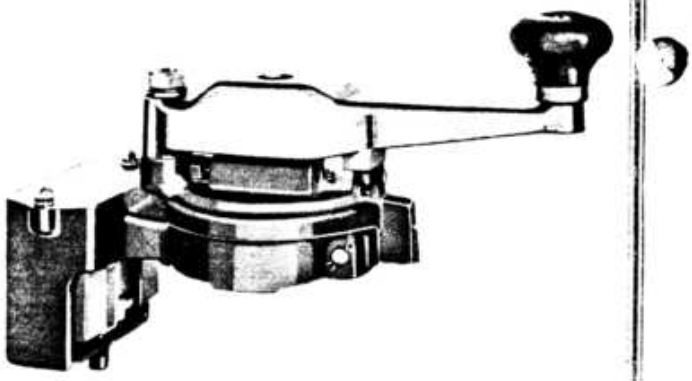
LINE BREAKER

The line breaker is magnetically operated and is provided with contact tips that can easily and economically be renewed. A powerful magnetic blowout coil with an adequate arc chute insures the rupturing of the arc under all service conditions. The trip, which causes the line breaker to open the main motor circuit on overload, or short circuit, has a wide calibration range, thereby permitting a setting at almost any desired overload value. The line breaker operates over a large variation in trolley voltage.



LB-4 Control Device for Cars Equipped with Safety Air Features

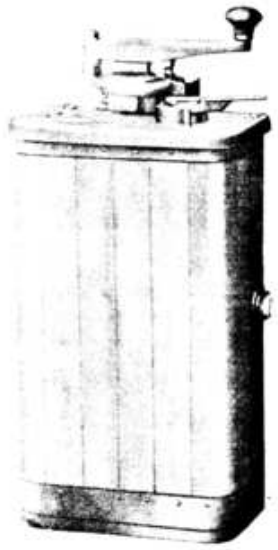


LB-2 Control Device for Cars without Safety Air Features

The line breaker, which weighs but 75 lb., is compactly designed and is enclosed in a sheet metal box equipped with a cover which can easily be removed. Its small dimensions permit its installation in a limited space and on cars having small wheels.

There are two standard types—the DB986-A Line Breaker for ordinary car equipments not employing safety air features, and the DB987-A for equipments using the safety air features. The DB987-A is the same as the DB986-A except that it is provided with an air cylinder for tripping the relay armature to apply the brakes and is controlled by air valve in the LB-4 control device.

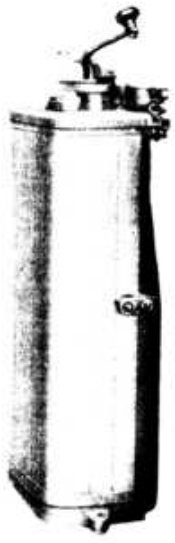
LINE BREAKER CONTROL DEVICE



Type K-75 Controller with LB-2 Control Device

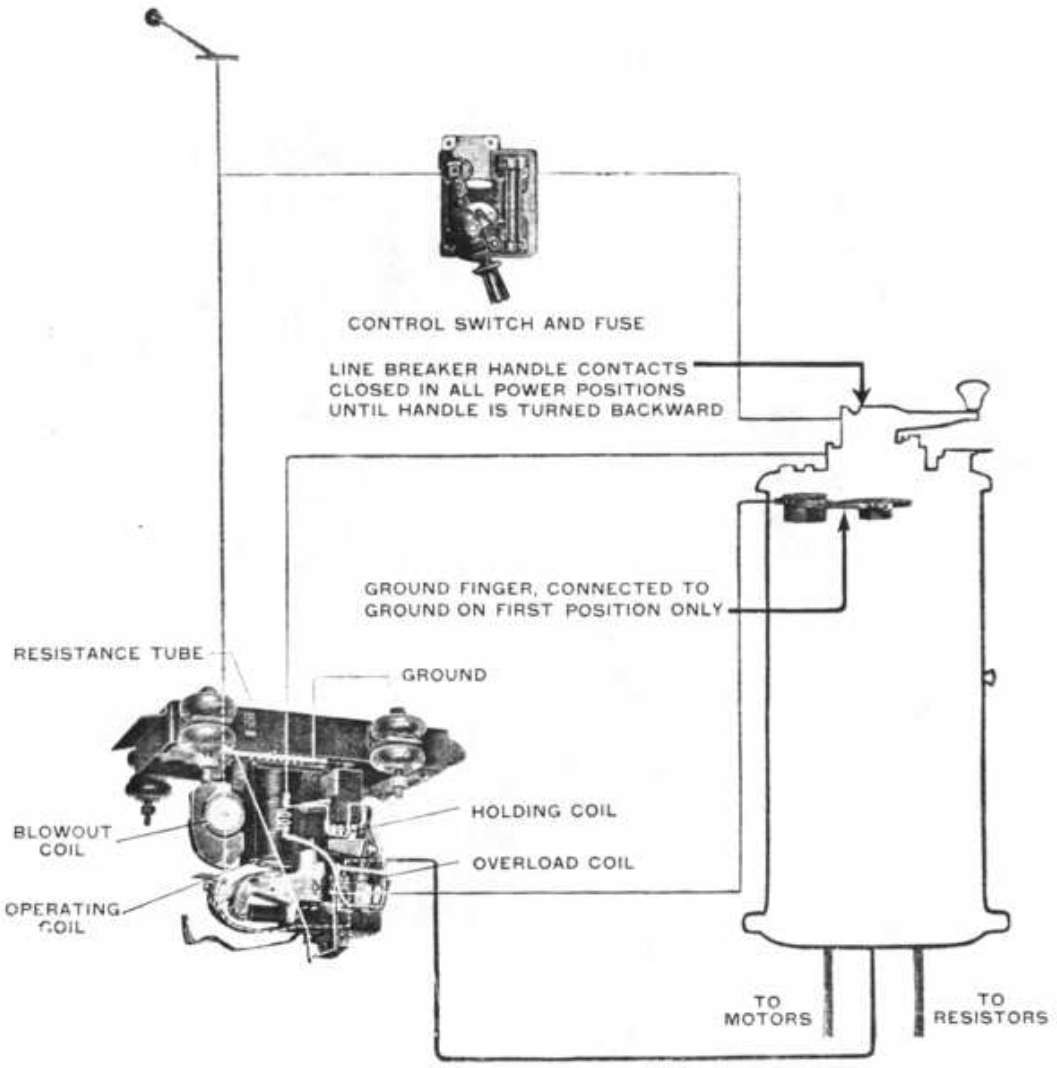
The operating handle, known as the *line breaker control device*, is designed to turn the controller cylinder and operate the line breaker for drum controller equipments. This device replaces the usual main operating handle of the controller, as well as the ratchet switch, slip-ring, or cam-operated contacts which formerly were placed inside the controller.

The important characteristic of the device is that the movement of the handle and the opening or closing of the control contacts take place before the controller drum is moved. This is accomplished by providing a small amount of lost motion between the operating lever to which the knob is attached and the shroud which is keyed to the controller shaft. In this way the motor circuit is opened by the line breaker rather than by the controller cylinder contacts.



Type K-35 Controller with LB-4 Control Device

The LB-2 control device has a fixed handle and is designed for use on cars not equipped with safety air features. The LB-4 control device is similar to the LB-2 except that it has a small pilot valve which actuates the safety features of the standard safety car equipment and employs operating handle Cat. No. 234199 which is identical with that used with the standard safety car equipment.



Schematic Wiring Diagram of Line Breaker Equipment

INSTALLATION

Provision is made for mounting the line breaker box on iron straps attached to the under side of the car. Porcelain bolt insulators are furnished with each line breaker for insulating the box from the supporting straps.

The line breaker control device has been designed for installation on top of the controller with the minimum amount of work. Standard controllers are now drilled and tapped for its reception.

An enclosed-type MS-46-H combined control switch and fuse is shown in the diagram and should be installed in the cab within easy reach of the motorman. Connection of the control-circuit and power cables should conform to the arrangement shown in the diagram.

G-E LINE BREAKER EQUIPMENT

OPERATION

When the control handle is turned toward the first point, contacts in the base of the device close. This completes the circuit through the operating coil to the ground finger of the controller. The ground finger makes contact with its segment on the first point only, and cuts out resistance so that the contactor will pick up and establish the main circuit to the motors. The car is now ready for accelerating by notching up the controller.

Should the control device be moved in the "off" direction from any position of acceleration or running, the control contacts immediately open and before the controller main drum is moved, thereby de-energizing the line breaker coil and breaking the motor circuit. It is then necessary to turn the controller to the "off" position before the line breaker can again be closed.

The line breaker equipment can also be used with rheostatic braking controllers with slight modifications of the control device.

With a braking controller, however, the line breaker protects the motors in the power position of the controller only; that is, in accelerating and running. In the braking positions of the controller, the line breaker is inoperative, so that the motors can be used for braking, even though the power supply at the car is interrupted.

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