EMD MAINTENANCE INSTRUCTION

SERVICE DEPARTMENT · ELECTRO-MOTIVE DIVISION · GENERAL MOTORS · LA GRANGE, ILLINOIS

ELECTROMAGNETIC REVERSING AND BRAKING CONTACTORS 8247200, 8284392, AND 8286127

DESCRIPTION

The primary purpose of the above listed contactors is to reverse current flow through traction motor fields, thereby reversing the direction of locomotive travel. One model, 8284392, may also be used to establish and interrupt the circuit to the traction motor fields during dynamic braking. These two-pole double-throw contactors, of the type shown in Fig. 1, are equipped with two pairs of normally open and two pairs of normally closed main contacts. The normally open contacts are equipped with line-magnetic type arc blowout in combination with chimney type arc barriers. The normally closed contacts are not equipped to interrupt high current. The arc barriers are removable for servicing and inspection, but they should always be installed when the equipment is in operation. Knife-edge, rocker-type bearings are provided for both the armature and the contact fingers. A return spring acting in coordination with finger springs and gravity action insure that the contacts will open quickly when the coil is de-energized. The spring arrangement also allows armature overtravel with resulting contact wipe and allowance for wear.

Silver alloy main contact tips are fused to base metal. The contact surfaces make their own contour irregularities after a short period of operation. It is during this initial period that most contact wear and discoloration occurs. Irregularity of surface and discoloration is a normal condition that does not adversely affect contactor operation. Regardless of contact appearance no buffing or filing should be done, as it will merely reduce the service life of the contacts.

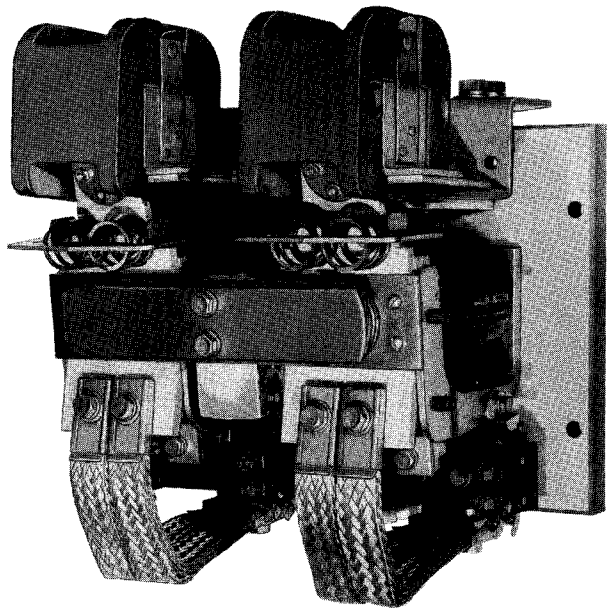

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Fig. 1 — Contactor 8286127

Each contactor is equipped with two interlock (auxiliary contact) assemblies that are activated by levers on the contactor armature. The auxiliary contact assembly is arranged for activation simultaneous with main contact pickup and dropout. Fig. 2 shows a wiring diagram for each contactor.

MAINTENANCE

Very little maintenance is required to keep the contactor in condition to give reliable service. It should, however, be inspected at intervals specified in the applicable Scheduled Maintenance Instruction. Fig. 3 is a drawing of a typical contactor.

No lubrication is necessary, and the contact tips require no dressing or filing. It

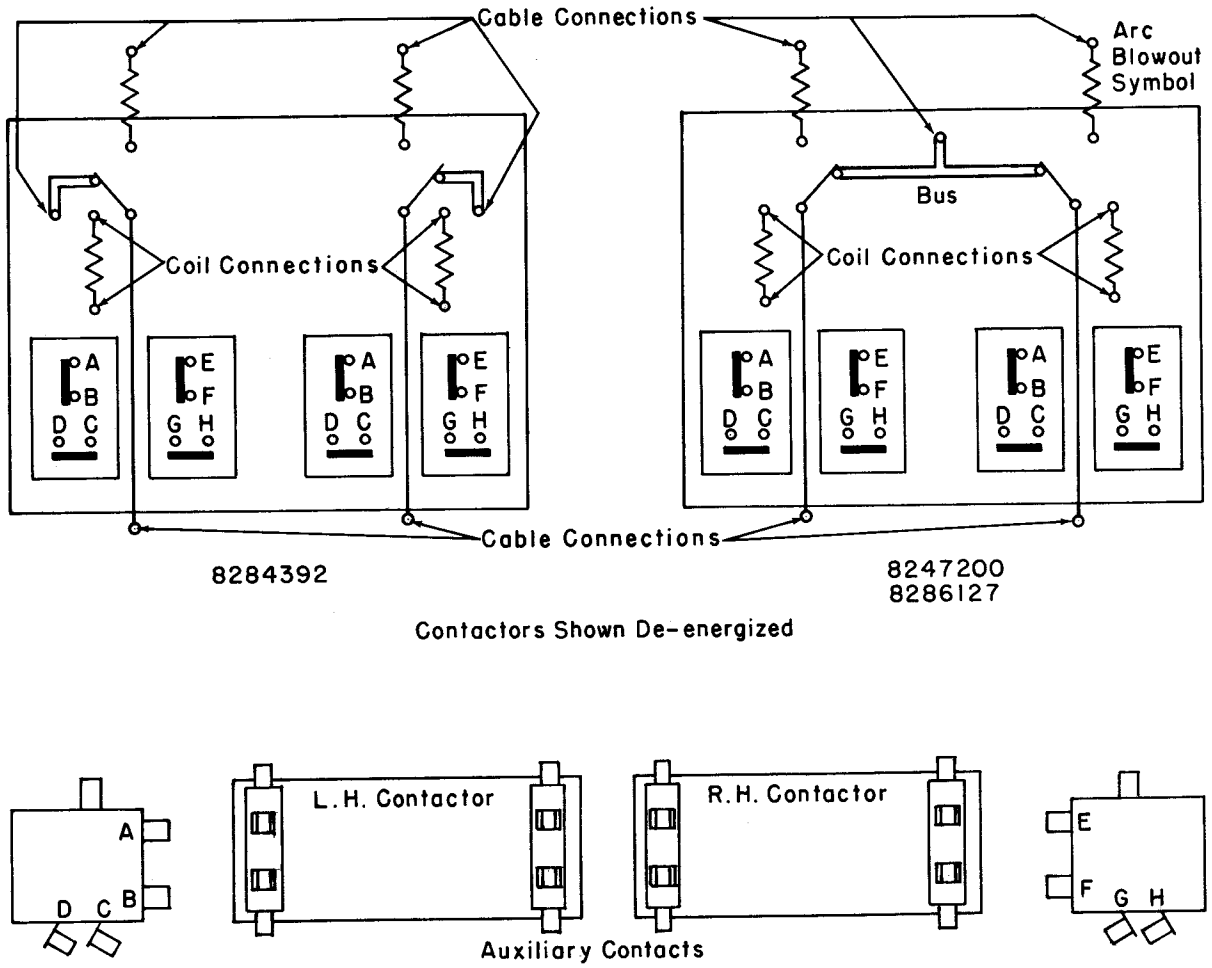


Fig. 2 — Cable And Interlock Connection Diagram 12017

is not necessary to adjust the contact tips because of wear, as there is enough armature overtravel to compensate for allowable wear. Wear is considered excessive when the alloy has worn enough to expose base metal.

MAIN CONTACT REPLACEMENT

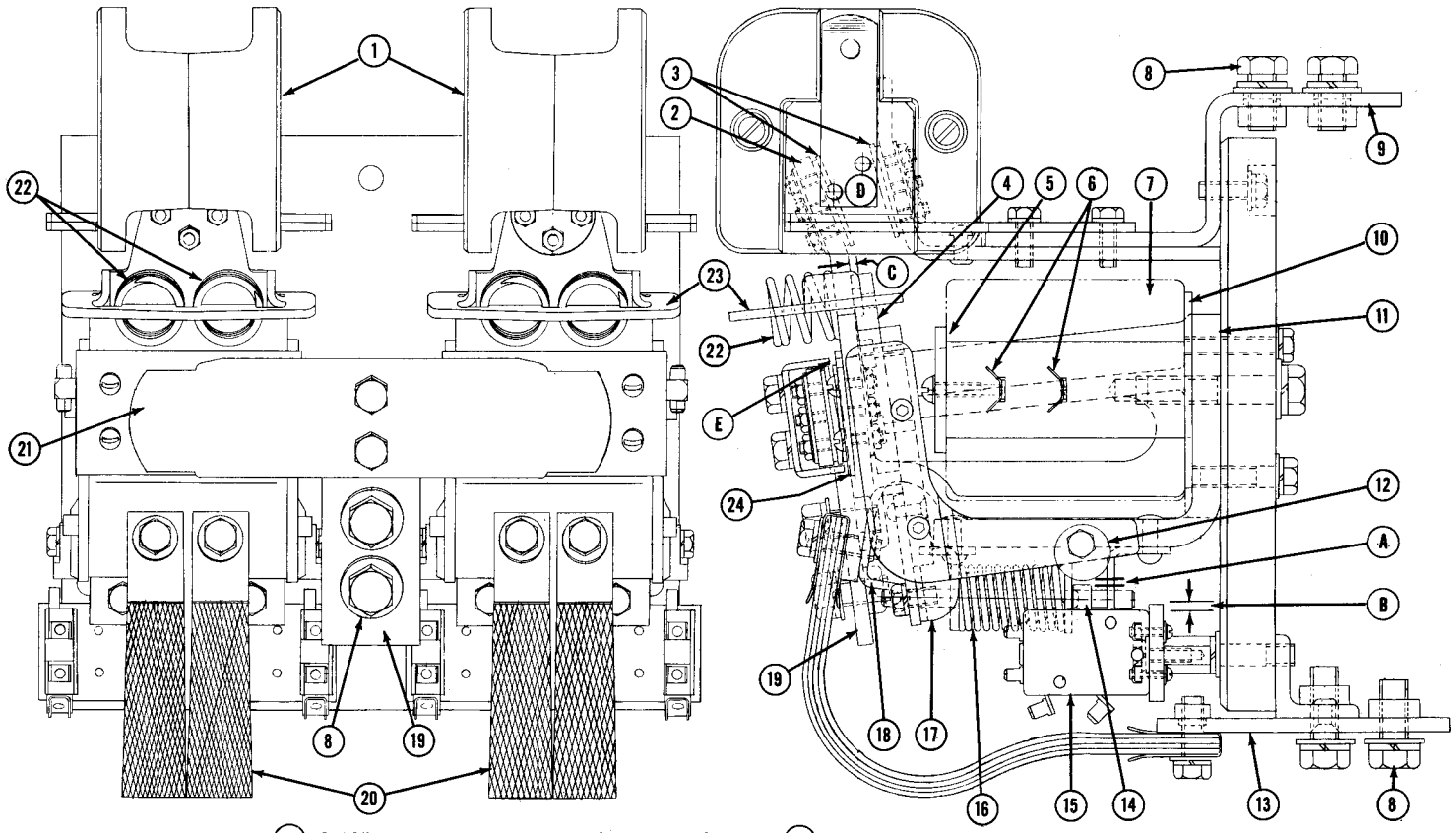
The main contact tips are easily unbolted and replaced with new tips. Care should be taken when replacing tips to make certain that they are level, making good contact between the stationary and movable tips.

INTERLOCK ASSEMBLY REPLACEMENT

Interlock contacts are double break, silver to silver. These contacts do not corrode and, since they are in a sealed enclosure, they never require cleaning. If electrical tests indicate that the assembly is defective, or if it sustains physical damage or excess wear, it is merely necessary to remove the old assembly and replace it with a new one.

After replacing interlock assemblies, make the following checks:

1. With contactor energized and armature sealed, the electrical interlock button should be depressed so that its top is 5/32" to 7/32" from the upper surface of the interlock.
2. With the contactor de-energized there should be a minimum of 1/16" clearance between the end of the interlock button and the electrical interlock operator. This is merely a check to



1. Arc Barriers
2. Contact Finger Assembly
3. Contact Tip Assembly
4. Armature Assembly
5. Pole Face Assembly
6. Coil Connections
7. Magnet Coil
8. Cable Connection
9. Support Assembly
10. Felt Washer
11. Magnet Frame Assembly
12. Electrical Interlock Operator
13. Load Terminal
14. Interlock Plunger
15. Interlock Assembly
16. Spring, Pin, And Washer Assembly
17. Catch
18. Finger Hinge
19. Terminal
20. Flexible Connector Assembly
21. Contact Bar And Magnetic Latch Assembly
22. Contact Spring
23. Spring Guide
24. Magnetic Latch

Fig. 3 — Contactor Components

be sure that the normally closed contacts will have adequate follow-up as the tips wear.

Adjustment of the electrical interlocks in the energized position is made by moving the electrical interlock on its mounting plate (or if necessary by moving the mounting plate itself). It should be noted that this adjustment is to be made with the armature sealed. It is not sufficient to merely have the normally open power contacts touch, as could possibly happen if the contactor was operated manually.

MAGNET COIL REPLACEMENT

The electrical characteristics of the magnet coil are given in the Maintenance Data Table provided in this publication. If it becomes necessary to replace a bad coil with a new coil, the contactor can be disassembled and reassembled with little difficulty.

MAINTENANCE DATA

Contacts	Rating
Main Contacts	1000 Amperes
2 Normally open with interrupting capacity	
2 Normally closed without interrupting capacity	
Interlocks	5 Amperes
2 Normally open — 2 Normally closed on each pole	
Coil Resistance	123 Ohms $\pm$ 10% @ 20° C.
Operation at 20° C.	
Working Voltage	74 VDC
Pickup	48 VDC Max.
Dropout	5-28 VDC Min.
Hi-Pot	
Magnet Coil to Contacts	2400 V RMS 60 cy. 1 min.
Magnet Coil to Interlocks	2400 V RMS 60 cy. 1 min.
Interlock to Interlock	2400 V RMS 60 cy. 1 min.

Litho in U.S.A.