



# MAINTENANCE INSTRUCTION

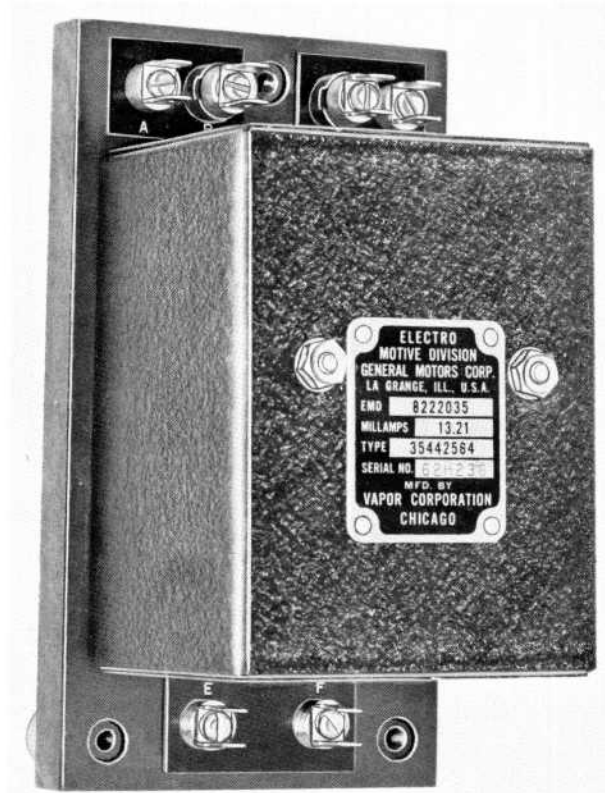
## WHEEL OR SPROCKET SLIP RELAY 8179505, 8187958, 8222035, 8284597

### DESCRIPTION

The slip relay, Fig. 1, because of its sturdy construction and dust-tight cover, will function without frequent attention. A periodic visual inspection and an occasional cleaning can be done in a short time. The relay is designed for panel mounting with front connections and uses cadmium plated parts for resistance to corrosion. The electrical contacts are of a silver alloy material requiring no filing or dressing throughout their service life.

The four relays listed above are of similar construction, but differ in the number and arrangement of contacts and in the amount of current required to actuate the relay. Contact arrangements are shown in Fig. 2, and pickup values are shown in the Maintenance Data table at the back of this instruction.

The magnet coil, item (14), Fig. 3, is mounted on the base (1) of the relay assembly; it is held in place by a screw through the base. The armature assembly (8) supports the movable contacts (3) and is held in place by a tension spring (10). It is also supported by the knife edge of the magnet frame (12) which acts as a pivot. The inward movement of the armature when the relay is energized is limited by the armature stop screw (7). The released movement of the armature is limited by an adjusting screw (6) on the armature limiting bar. The tension spring (10) is adjusted to control movement of the armature, by turning the tension adjusting nut (9). Current to energize the



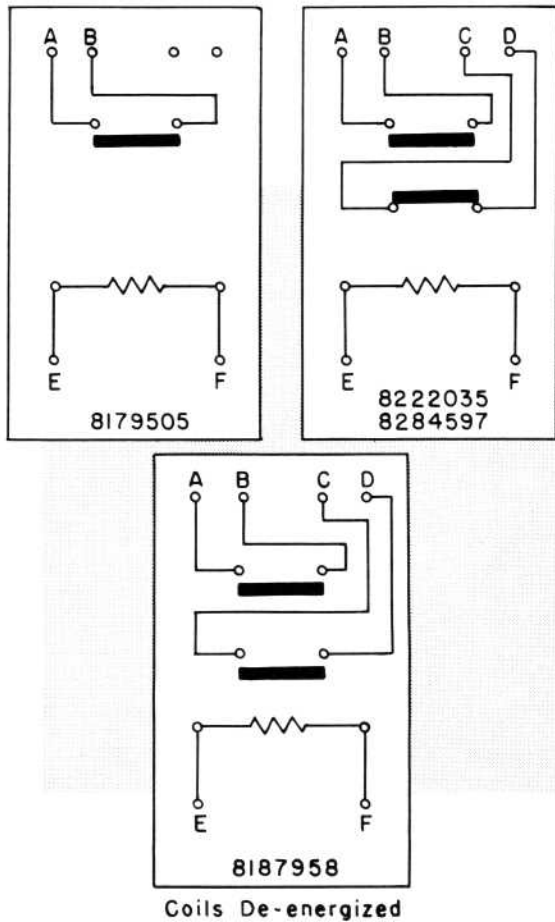
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Fig. 1 — Slip Relay

magnet coil is supplied through tabs (11) and leads (13). External connection for movable contacts (3) and stationary contacts (15) is supplied at tabs (2).

The relay is connected in a bridge circuit, Fig. 4, between motors and fixed resistors. The relay is energized when slip causes an unbalance in the bridge circuit, causing current to flow through the operating coil of the relay. When the operating coil is energized, its contacts establish circuits to bring about full or partial unloading of the power plant and automatic sanding at locomotive driving wheels.

\* This bulletin is revised and supersedes previous issues of this number.



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Fig. 2 — Contact Arrangements

### MAINTENANCE

Due to the design of this relay, little maintenance is required. The cover should be removed periodically for inspection. Examine electrical connections for good tight contacts; inspect the magnet coil for burns or discoloration from high temperature operation.

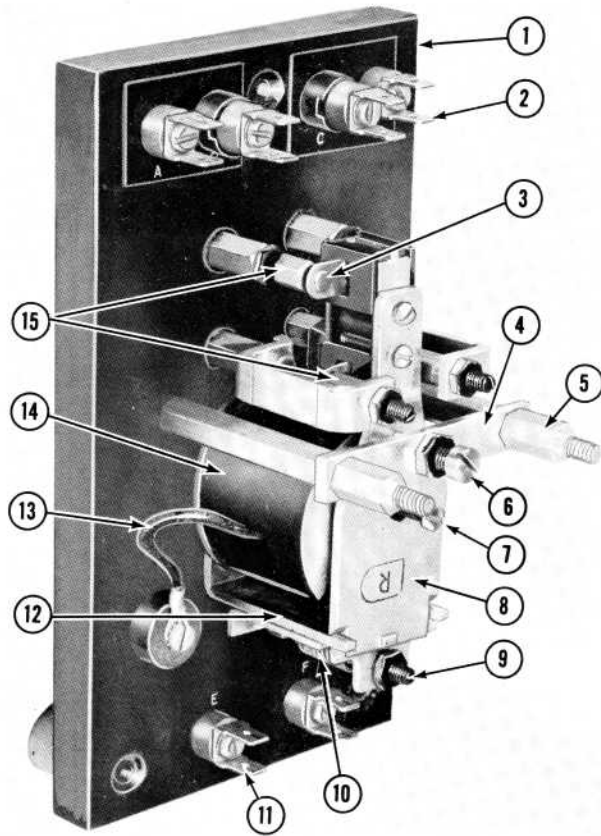
Check the contact points; replace the contacts when they are worn to a point where limits can not be maintained as shown on the Maintenance Data table. Do not use lubricant on any part of the relay. A soft brush or low air pressure may be used to remove any dust.

If the relay is being inspected because of a definite malfunction, first ascertain that no loose metal such as a nut or screw has

dropped behind the relay base to short out the soldered connections at the back of the base.

If at the time of inspection, it is found that either the magnet coil or the contacts must be replaced, they may be removed and replaced in the following manner. (Refer to Fig. 3).

1. Disconnect all leads from the relay.
2. Remove relay from panel.

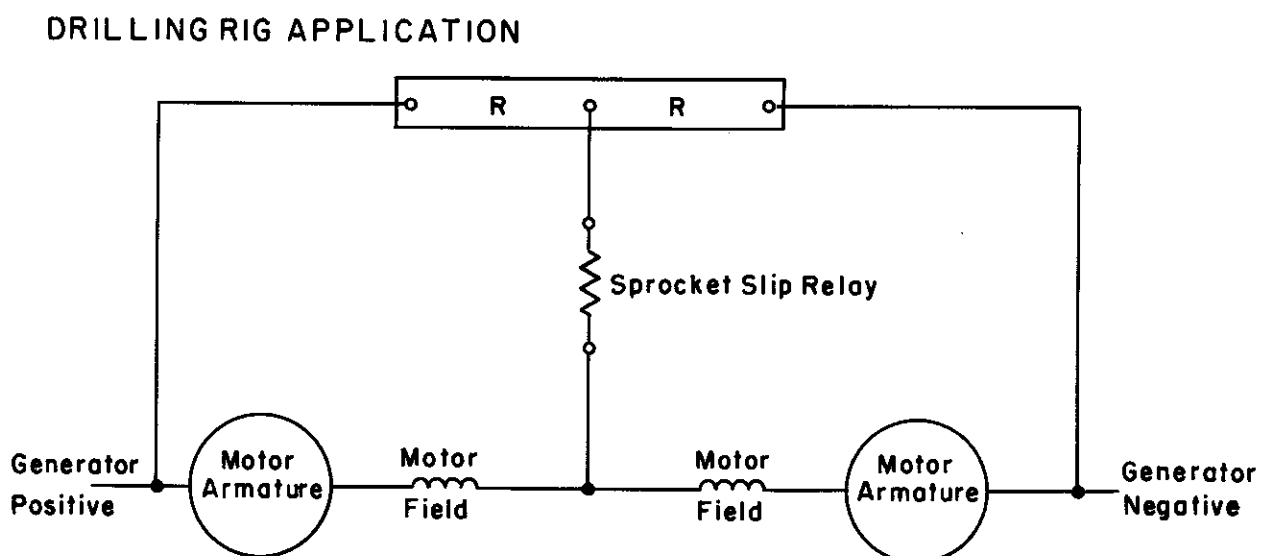
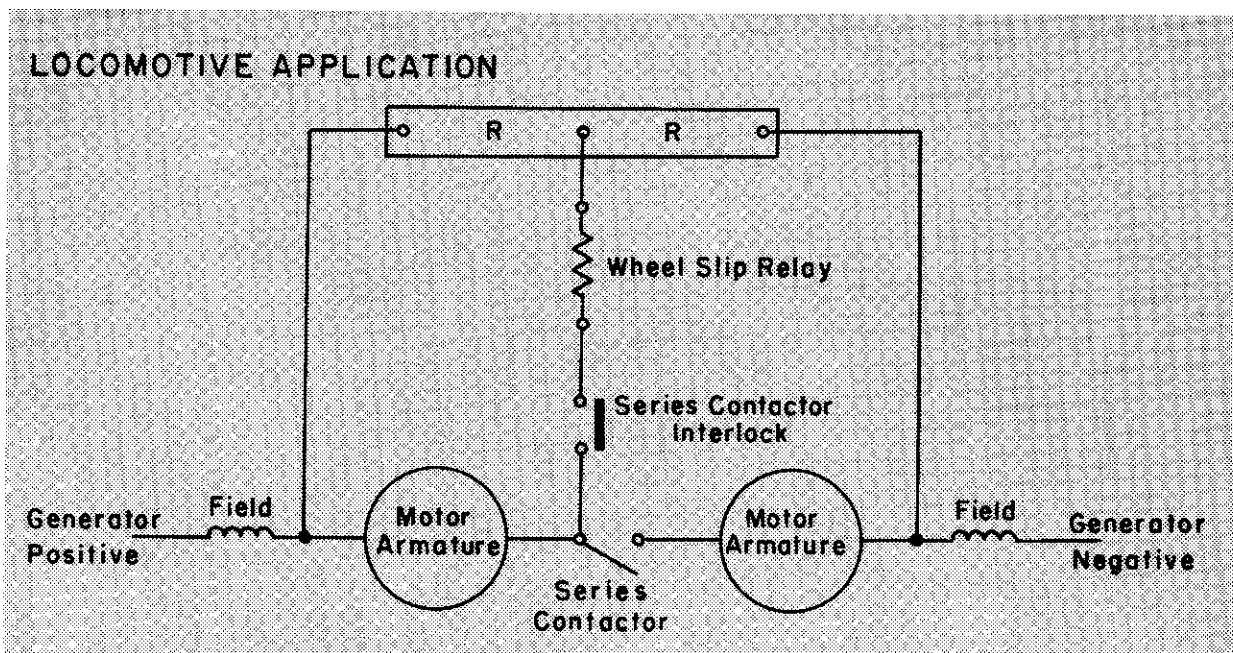


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1. Base Assembly
2. Contact Connection Tab
3. Movable Contacts
4. Armature Limit Bar
5. Cover Adapter Stud
6. Armature Limit Adjusting Screw
7. Armature Stop Screw
8. Armature
9. Tension Adjusting Nut
10. Tension Spring
11. Coil Connection Tabs
12. Magnet Frame
13. Coil Leads
14. Magnet Coil
15. Stationary Contact Post

Fig. 3 — Identification Of Parts

3. Break the safety wire and remove the two nuts and washers holding the cover in place; take the cover off and remove the metal and rubber washers from the studs (5), Fig. 3, to avoid loss.
4. Loosen the tension adjusting nut (9), and release the tension spring from the lug on the spring retaining bracket.
5. Unscrew the cover adapter studs (5) so that the armature limit bar (4) can be removed.
6. Lift the armature assembly (8) free of the relay.
7. If the coil is to be removed, loosen the two screws and remove the coil leads (13).
8. At the back of the relay base, remove the screw that holds the coil in place.
9. Remove the coil core and retaining washer from the coil, and save for application with new coil.



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Fig. 4 — Slip Relay Bridge Circuit Application

10. If movable contacts (3) are to be replaced, remove the two screws holding the contact assembly to the armature. Carefully observe how the contact assembly is put together.
11. Unscrew the stationary contact posts from their studs.

Clean and inspect all parts for reassembly. Use methyl ethyl ketone to remove old cement from adjusting screws and nuts. Use new parts as needed. Assemble as follows:

1. Install the stationary contact posts, using new posts if the old ones are pitted, burned, or worn. Do not tighten locking nuts until the stationary contacts are adjusted. See adjustment section of this instruction for settings.
2. Check resistance of coil, reassemble coil core and retainer washer to coil, and attach coil to base.
3. Assemble and apply the movable contacts to the armature, replacing any worn or burned contacts with new ones and securing the assembly with the two screws removed during dismantling.
4. Place the armature assembly in position, engaging the knife edge of the frame.
5. Apply the armature limit bar and hold in place with the stud cover adapters.
6. Assemble the tension spring, and adjust as instructed in article on adjustments.

## TEST EQUIPMENT

In order to perform the recommended tests, the following equipment must be available:

1. Power Supply, 0-20 Volts DC.
2. Wheatstone Bridge with accuracy of 0.2%.

3. DC ammeter, 0.0 - 0.0299 amperes, with 0.0002 graduations and accuracy of 0.5%
4. Test light box.
5. Dial indicating micrometer.

## TEST PROCEDURE

1. Mount the relay in a vertical position.
2. Measure the coil resistance. See Maintenance Data table for coil resistance.
3. Measure the pickup and dropout of the relay by slowly increasing the current to the coil. The action of the relay should be positive and without hesitation on either stroke.
4. Connect test lights across terminals A-B and C-D.

## ADJUSTMENTS

1. Back out armature stop screw, (7) Fig. 3, and armature limit adjustment screw (6).
2. Adjust the height of the stationary posts for normally open contacts so the contacts make simultaneously with their mating movable contacts. The height of the posts should be such that movement of the armature to bottom against the coil core results in over-travel greater than 1/64 inch. Tighten locknuts finger tight.
3. If the relay contains two sets of normally open contacts raise the height of one set of contacts to obtain the make point specified in the note under the Maintenance Data table. Tighten locknuts finger tight.
4. If the relay contains a set of normally closed contacts, adjust the height of

the stationary contact posts so the contacts make simultaneously with their mating movable contacts. The height of the posts should be such that the contacts will open at the point specified in the note under the Maintenance Data table.

5. Adjust the armature stop screw (7) so that the gap between open pairs of normally closed contacts is within limits specified in the table. Verify that the overtravel of adjacent normally open contacts is greater than the minimum specified. Tighten stop screw locknut finger tight.
6. Position the armature adjusting screw (6) so that the overtravel of normally

closed contacts is within limits specified. Verify that the gap of adjacent normally open contacts is greater than the specified minimum. Tighten locknut finger tight.

7. Adjust tension spring (10) by turning adjusting nut (9) to obtain proper pickup and dropout values.
8. Check all air gap and overtravel dimensions. If correct, tighten all locknuts and seal with cement. (Duco household cement 110-CH-25).

NOTE: Duco cement may be removed with lacquer thinner, but methyl ethyl ketone is required to remove red insulating paint such as Glyptol.

### MAINTENANCE DATA

EMD Part No.	Interlock Gap		Interlock Overtravel		Resistance	Magnet Coil	
	AB	CD	AB	CD		Pickup	Dropout
8179505	1/32" Min.	—	1/64" Min.	—	1060 Ohms ± 10% @ 20° C.	12.72 to 13.69 Milliamps	60% Min. Of Pickup Current
8187958	1/64" Min.	1/64" Min.	1/64" Min.	1/64" Min.	1060 Ohms ± 10% @ 20° C.	12.72 to 13.69 Milliamps	60% Min. Of Pickup Current
8222035	.045" Min.	.015" to .030"	1/64" Min.	.005" to .015"	1060 Ohms ± 10% @ 20° C.	12.72 to 13.69 Milliamps	60% Min. Of Pickup Current
8284597	.045" Min.	.015" to .030"	1/64" Min.	.005" to .015"	1060 Ohms ± 10% @ 20° C.	18.3 to 19.7 Milliamps	60% Min. Of Pickup Current

NOTE: Relay 8187958 A-B contacts must close at least .005" before contacts C-D close. Relay 8222035 and 8284597 C-D contacts must open at least .005" before A-B contacts make. There must be no overlap.

#### High Potential Test (Relays 8179505 and 8187958)

1. 1200 V RMS 60 cycles 1 minute
  - a. Contacts to coil
  - b. Coil to magnet frame
2. 600 V RMS 60 cycles 1 minute from contacts to magnet frame

#### High Potential Test (Relays 8222035 and 8284597)

1. 2400 V RMS 60 cycle 1 minute
  - a. Coil to contacts
  - b. Coil to frame
2. 600 V RMS 60 cycle 1 minute
  - a. Contacts to contacts
  - b. Contacts to frame