ELECTRO-MOTIVE DIVISION • GENERAL MOTORS CORPORATION
SERVICE DEPARTMENT

MAINTENANCE INSTRUCTION

MICROPOSITIONER

DESCRIPTION

The micropositioner, Fig. 1, is an ultra-sensitive, polarized DC relay which functions as a single-pole double-throw switch. The same amount of current in either direction will pick up the relay to make associated contacts. The two contacts of the relay are open when the operating and auxiliary coils are de-energized.

The micropositioner is a single unit relay equipped with faston terminals located on either side of cover for ease in connecting.

The micropositioner is used on many Electro-Motive products, a few examples are:

1. Load Regulator Positioner (LRP) on locomotives.
2. Load Regulator Positioner (LRP) on drilling rigs.
3. Hump Control Relay (HCR).
4. Direction Relay (DR).
5. Lockout Relay (LOR).
6. Increase Resistance Relay (IRR).
7. Decrease Resistance Relay (DRR).
8. Brake Directional Relay (BDR).

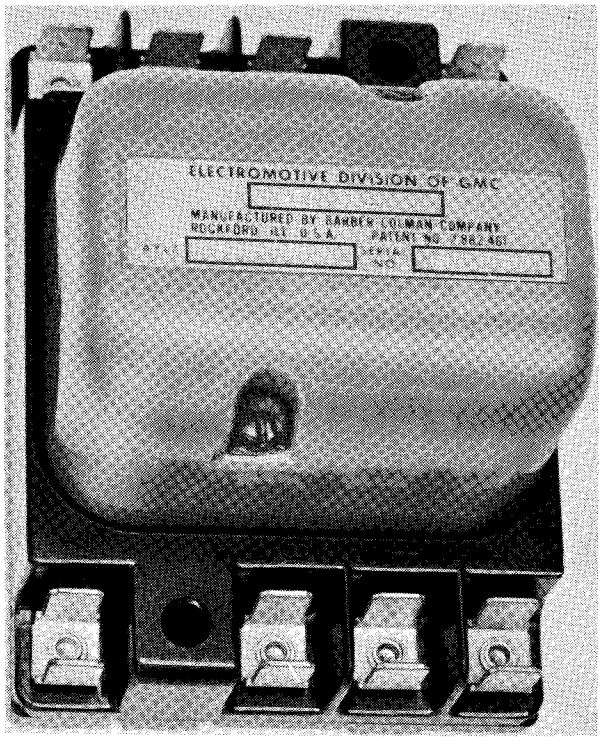

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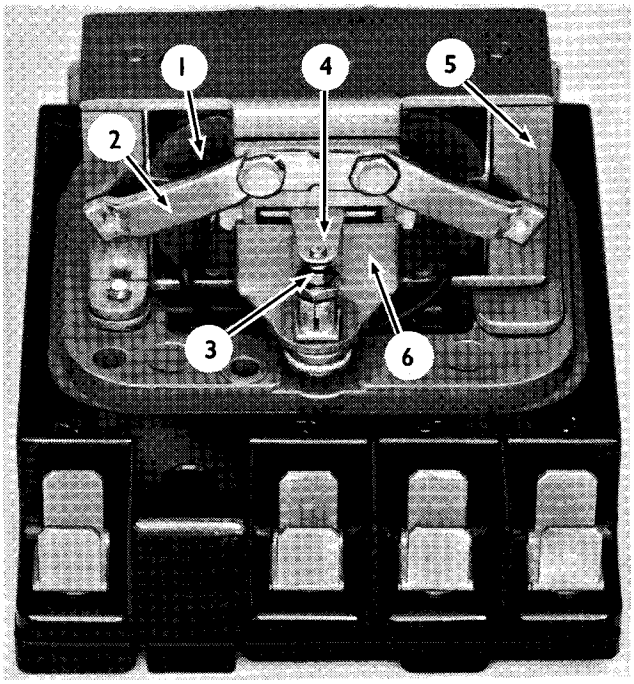
Fig. 1 — Typical Micropositioner

OPERATION

Two alnico magnets, Fig. 2, and symmetrical pole pieces form a permanent magnet flux path across identical air gaps. Contacts are mounted on each end of the armature, which is centered in the air gaps, and divides each into two arms of a magnetic bridge circuit. When the relay coil is energized, a magnetic potential difference is established between the ends of the armature. The resulting magnetic forces rotate the armature against the restoring force of its torsional supporting spring. Which of two contact circuits will close depends on the polarity of the coil input signal. Four symmetrically located magnet shunts provide for calibrating the relay to various operating values.

Refer to wiring diagram, Fig. 3. When current flows through the operating coil from terminal 1 to terminal 3, terminal 8 is connected to 6. An opposite flow of current through the operating coil causes

*NOTE: Information contained herein is applicable to equipment being produced as of the date of publication.



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1. Relay Coils
2. Magnet Shunts
3. Contacts
4. Armature
5. Alnico Magnets
6. Pole Piece

Fig. 2 — Typical Micropositioner, Cover Removed

terminal 8 to connect to terminal 2. Current flow through terminals 6 and 7 aids the operating coil when terminals 7 and 3 are the same polarity.

MAINTENANCE

Past experience has shown that there should be little or no maintenance involved

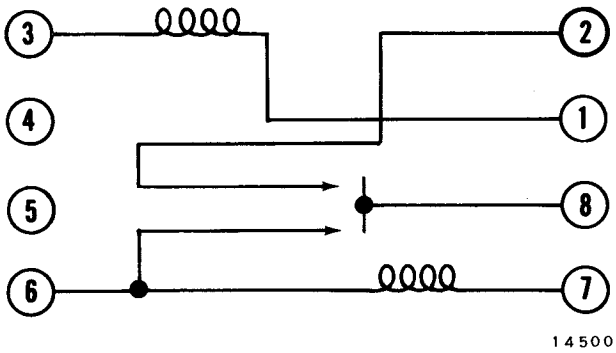

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Fig. 3 — Typical Wiring Diagram

on the micropositioner at any time. Several units have been life tested far in excess of what they will receive in actual operation with most satisfactory results.

The units have been factory adjusted and are not to be opened. Adjustments and calibration of the micropositioner require highly specialized technicians and equipment. If faulty micropositioner operation is evident or suspected, the entire unit should be replaced.

During routine electrical inspection, check the electrical connections for tightness and continuity.

Litho in U.S.A.

SPECIFICATIONS

	8277647	8327263	8331302	8334925	8334954	8346622	8348553
Operating Coil Pickup (Amperes)	.00023 ± 30%	.00023 ± 30%	.0002 - .0003		.00023 ± 30%	.18MA ± 25%	.00023 ± 30%
Pickup (Voltage)	.5 volts	.5 volts	.5 volts	1.5 volts	.5 volts	.24 volts	.5 volts
Dropout	85 to 100% of pickup	85 to 100% of pickup			85 to 100% of pickup	85 to 100% of pickup	85 to 100% of pickup
Max. Operating Voltage	80 volts	80 volts	30 volts	80 volts	80 volts	80 volts	80 volts
Resistance (Ohms)	2140 ± 10% @ 20° C.	2140 ± 10% @ 20° C.	2000 ± 10% @ 20° C.	2300 ± 10% @ 20° C.	2140 ± 10% @ 20° C.	1340 ± 10% @ 20° C.	2140 ± 10% @ 20° C.
Terminals	1 and 3	1 and 3	4 and 5	1 and 3	4 and 5	1 and 3	1 and 3
Auxiliary Coils Resistance (Ohms)	110 ± 10% @ 20° C.	110 ± 10% @ 20° C.				.70 ± 10% @ 20° C.	
Terminals	6 and 7	6 and 7				7 and 5	
Contact Rating Single-Pole Double-Throw	1/2 Amp. @ 75 V.D.C.	1/2 Amp. @ 75 V.D.C.	1/2 Amp. @ 75 V.D.C.	1/2 Amp. @ 75 V.D.C.	1/2 Amp. @ 75 V.D.C.	1/2 Amp. @ 75 V.D.C.	1/2 Amp. @ 75 V.D.C.

The above micropositioner units may be returned to Electro-Motive for Rebuild and Return Service.