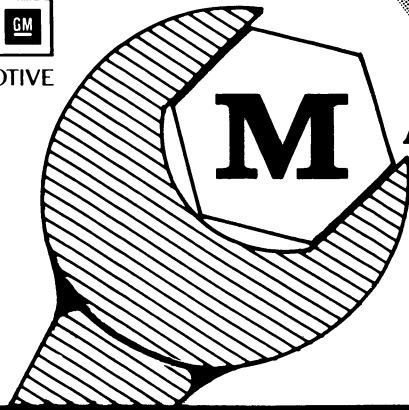




M.I. 9650
*Rev. A



MAINTENANCE INSTRUCTION

MODERNIZATION RECOMMENDATION DYNAMIC BRAKE GRID PROTECTION

PRICES NOT
APPLICABLE
IN CANADA

PURPOSE: To provide instructions for the addition of dynamic brake grid protection in the event of a blower motor failure.

APPLICATION: Six-axle pre Dash-2 locomotives with 0.86 ohm grids and extended range dynamic brake; including SD39DE, SD40DE, SD45DE, and F45DE model locomotives.

REFERENCE: Use the applicable locomotive schematic diagram in conjunction with the figures in this publication as a guide in implementing this modification.

DISCUSSION: In the event of a blower motor failure, an unnecessary grid failure will result if no type of protective circuitry is provided. With grid protection applied, a motor failure will be sensed and the unit will automatically lock out of dynamic brake.

With the new system, strategic voltages are sensed in the grid circuit; a magsense comparator on the DG14 panel then interprets these signals to determine the condition of the grid cooling system. If one or both motors fail to operate, the module locks the unit out of dynamic brake until reset via a switch on the panel faceplate. An indicating light on the panel indicates blower failure. Note that complete control during power operation is maintained.

**MATERIAL
REQUIRED:**

ITEM	QUANTITY/UNIT	DESCRIPTION	PART NO.
1	1	DG14 Panel	9520367
2	1	DGX Relay	8363168
3	30 Ft. (Approx.)	No. 14 Wire/500 Ft.	8472022
4	150 Ft. (Approx.)	XE Cable/500 Ft.	8468611
5	42	Faston Receptacle	8250906
6	6	1/2" Lug	8137872

**APPROXIMATE
COST:**

The approximate price of new material per locomotive is \$1,225.00. This price is for job estimating purposes only. Material will be billed according to prices in effect at time of shipment.

EMD has a limited amount of stock available. Any large order could deplete the existing inventory. Therefore we strongly recommend that you notify an EMD Parts Service Representative as far in advance as possible of your intent to order. This will allow sufficient time to procure the necessary material.

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

PROCEDURE

1. Select a convenient location in the high voltage cabinet; mount and label DGX relay.
2. Mount the DG14 panel assembly on the contactor mounting channel located in the lower half of the high voltage cabinet.
3. Refer to Fig. 1 and add the following XE wires:

<u>TAG</u>	<u>FROM</u>	<u>TO</u>
BB34	*RE Grid 3 - Term 1	TB38L8
BB33	TB 38L8	DG-7
BM14	*RE Grid 3 - Term 4	TB38L9
BM13	TB38L9	DG-8
BKG14	*RE Grid 3 - Term 2	TB38L10
BKG13	TB38L10	DG-9
BKE24	*RE Grid 4 - Term 2	TB38R10
BKE23	TB38R10	DG-11
BM24	*RE Grid 4 - Term 4	TB38R9
BM23	TB38R9	DG-12
BR44	*RE Grid 4 - Term 1	TB38R8
BR43	TB38R8	DG-10

*These wires run from the electrical cabinet to connections on the grids. Terminals on TB70, in the grid hatch, should be used if available.

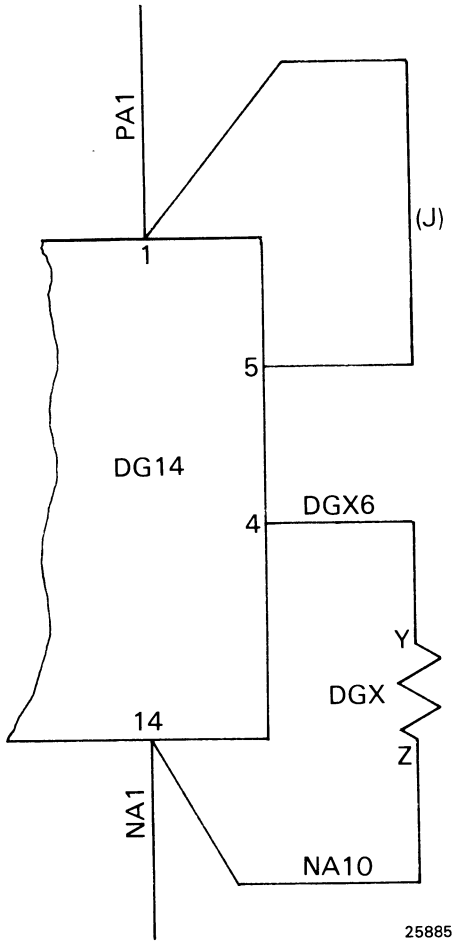
4. Refer to Fig. 2 and add the following No. 14 wires:

<u>TAG</u>	<u>FROM</u>	<u>TO</u>
PA1	DG-1	TB30R1
J	DG-1	DG-5
NA1	DG-14	TB30L2
NA10	DG-14	DGX-Z/Coil
DGX6	DG-4	DGX-Y/Coil

5. Step a. refers to units with a circuit similar to that indicated in Fig. 3.

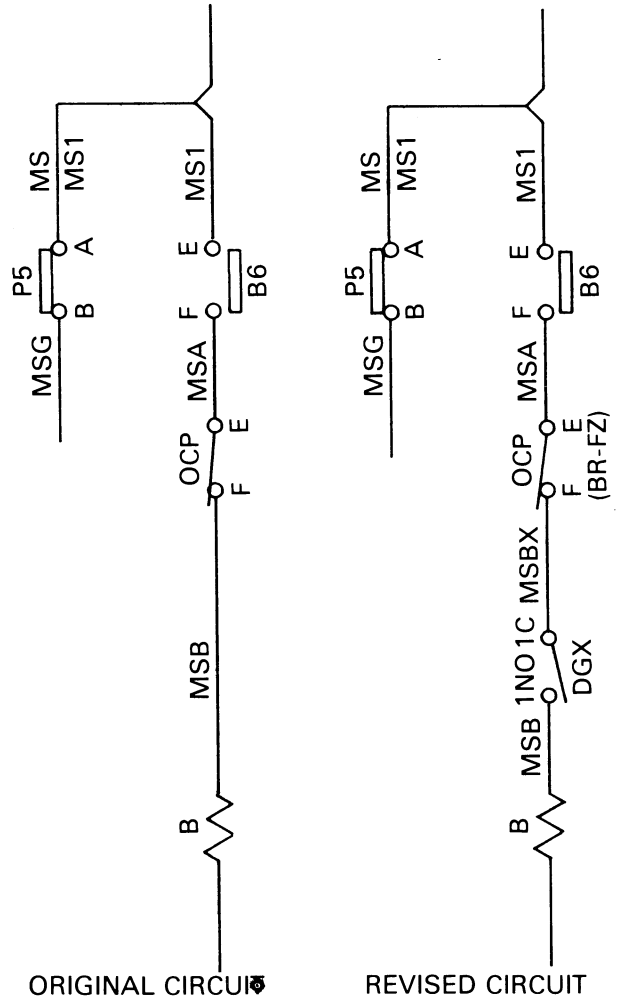
Step b. refers to units with a circuit similar to that indicated in Fig. 4.

- a.
 1. Move MSB wire from OCP-F to DGX-1NO.
 2. Add a new No. 14 wire from OCP-F to DGX-1C and label as MSBX.
- b.
 1. Move MSZ9 wire from BR-F1 to DGX-1C.
 2. Add a new No. 14 wire from BR-F1 to DGX-1NO and label as MZZA.



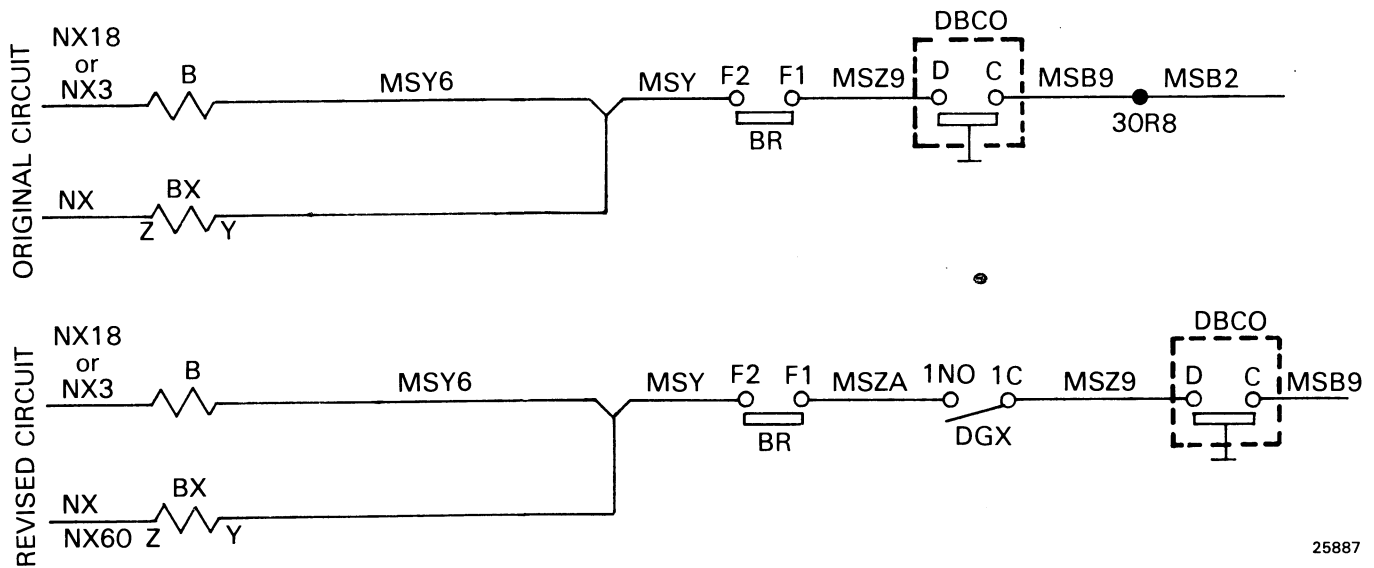
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Fig.2 - Modified Module Control Circuit



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Fig.3 - Control Circuitry, Step 5a.



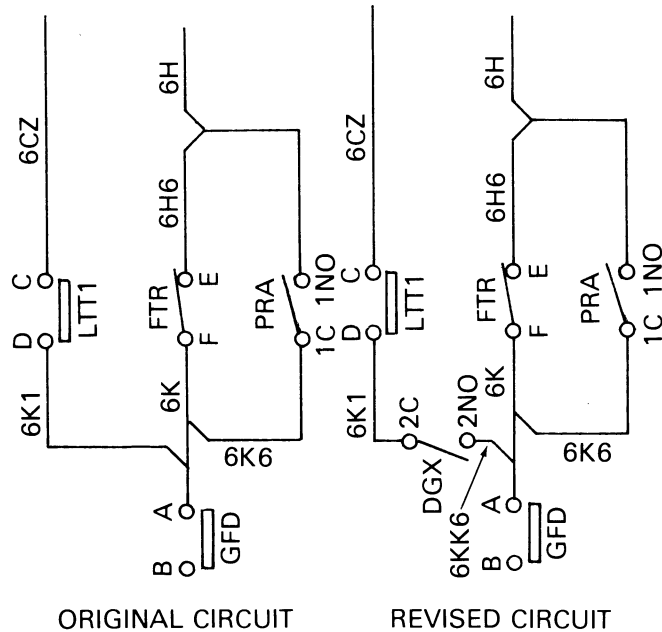
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Fig.4 - Control Circuitry, Step 5b.

6. On units equipped with self load test make the following additional changes; refer to Fig. 5.
 - a. Move 6K1 wire from GFD-A to DGX-2C.
 - b. Add a new No. 14 wire from DGX-2NO to GFD-A and label as 6KK6.

**TESTING
PROCEDURE:**

1. Engine running, controls and switches set up for dynamic brake.
2. With brake handle at No. 4 position, operate and hold the DG test switch in the test position.
3. After 1 to 15 seconds, B, GFC, and GFX drop out and the failure indicating light on the module will come on.
4. Release test switch.
5. Return brake handle to set up and operate the DG module reset switch. Failure indicating light goes out.



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**Fig.5 - DGX Relay Interlocks, Units Equipped
With Self Load Test**