

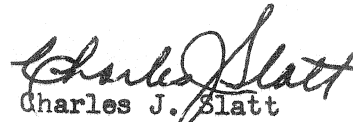
SUBSTATION MAINTENANCE STANDARD	TITLE MECHANISM SERVICE, G.E. TYPE MA OPERATING MECHANISM	Page
		No. 6408 026 1
Date July 23, 1965		

TRANSMITTAL LETTER NO. S-(S)-66-1

Subject: Mechanism service, G.E. Type MA operating mechanism

Attached is Maintenance Standard No. 6408-026-1, covering the mechanism service of a General Electric Type MA operating mechanism.

The purpose of this standard is to outline the principle steps necessary when performing service on this type operating mechanism.


 Charles J. Blatt
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SUBSTATION MAINTENANCE STANDARD	TITLE MECHANISM SERVICE, G.E. TYPE MA OPERATING MECHANISM	Page 1
		No. 6408 026 1
Date July 23, 1965		

I. PURPOSE:

To specify the principle steps in a mechanism service of a General Electric Type MA oil circuit breaker operating mechanism.

II. GENERAL:

A scheduled mechanism service shall be performed at an interval determined by engineering judgment based on evaluation of standard schedules, diagnostic tests, and operating conditions. Unscheduled services may be required as a result of abnormal duty or indication of distress in the equipment.

III. MAINTENANCE PROCEDURE:

The work to be done after obtaining clearance and taking the other necessary precautionary measures shall include:

	<u>Maintenance</u>	<u>Report Reference</u>
	<u>BPA Form</u>	<u>Line</u>
1. Record counter reading (as found) and breaker operations since last complete service and last mechanism service.	730	
2. Measure insulation resistance (megger) of each phase with breaker closed. If any reading is less than 10,000 megohms at 68° F., or has changed significantly from last measurement, measure insulation resistance of each bushing and contact with breaker open.	731	1
3. Measure contact resistance (millivolt drop)	731	2
a. request removal of differential relays from service		
b. perform test		
c. request restoration of differential relays to normal		
4. Test oil for dielectric strength, water, carbon, and other contaminants.	731	3-7
5. Check resistance of resistors. (Grading resistors on interrupters)	731	8

SUBSTATION MAINTENANCE STANDARD	TITLE MECHANISM SERVICE, G.E. TYPE MA OPERATING MECHANISM	Page 2
		No. 6408 026 1
Date July 23, 1965		

6. Perform the following:
 - a. open electrical controls
 - b. apply safety device to prevent tripping
 - c. close air shut-off valves
 - d. bleed off pressure from operating valves

7. Make the following closed-position measurements:
(Note measurements)
 - a. bell crank 731 10
 - b. lift rod stops 731 11
 - c. mechanism dashpot 731 70

8. Clean and inspect compressor, filters, motor, belts, etc. 731 17-23
 - a. replace oil in compressor
 - b. lubricate motor

9. Remove, service, and replace main control valve. (Check condition and adjustment of pilot armature when servicing valve.) 731 26-27

10. Service and inspect the following:
 - a. Auxiliary control valve. (Check condition and adjustment of pilot armature when servicing valve.) 731 29-30
 - b. Check valve 731 33
 - c. Air strainers 731 35

11. Clean and lubricate mechanism linkage. 731 38-44

12. Check latch clearance and latch wipe. 731 38-44

13. Check thermostats and heaters. 731 46, 49

14. Lubricate main piston. 731 24

15. Check adjustment and operation of auxiliary (aa-1, aa-2, bd, and ac) switches and relays. MA-19 does not have aa-2 switch. 731 50-58

16. Test pressure switches. 731 61-66

SUBSTATION MAINTENANCE STANDARD	TITLE MECHANISM SERVICE, G. E. TYPE MA OPERATING MECHANISM	Page 3
		No. 6408 026 1
Date July 23, 1965		

- | | | |
|---|----------------|-------|
| 17. Check pump-up time of compressor from cut-in to cut-out. Note time and pressures. | 731 | 61-66 |
| 18. Inspect safety valves. | 731 | 34 |
| 19. Inspect closing dashpot. | 731 | 70 |
| 20. Inspect all wiring. | 731 | 71 |
| 21. Restore all control circuits to normal. | | |
| 22. Make final inspection. | | |
| 23. Test-operate breaker. | | |
| 24. Record counter reading (as left) when breaker is returned to service, or clearance is released. | 730 | |
| 25. Complete maintenance report. | 730, 731, 731A | |

IV. SPECIAL:

The following are examples of recurring trouble in this equipment. Special attention should be given these items when performing service on this type breaker.

1. Grooving and deterioration of pilot armature seals in main and auxiliary control valves (orifice restricted), delaying breaker closing operation. This delay may result in destruction of grading resistors and burning of contacts. The permanent magnet may also suffer damage.
2. Excessive rust or corrosion in air receivers.
3. Rust in air lines and valves resulting in clogging of screens in main air lines, misoperation of valves, and slow closing of the breaker with resultant resistor and contact damage.
4. Cracked main piston and rings due to bottoming of piston in main cylinder.
5. Failure to latch or slow closing due to items 1 or 3 above which may cause severe damage to interrupters.