EMD MAINTENANCE INSTRUCTION

SERVICE DEPARTMENT · ELECTRO-MOTIVE DIVISION · GENERAL MOTORS · LAGRANGE, ILLINOIS

SCHEDULED MAINTENANCE PROGRAM GP38 AND SD38

INTRODUCTION

This Maintenance Instruction comprises average recommendations which we believe will ensure satisfactory locomotive operation and economical maintenance cost where average load factors and average climatic conditions are encountered. It is intended to serve as a basis which owners of GP38 and SD38 locomotives can use to establish maintenance schedules that will meet the particular requirements of their own operation.

These recommendations are based on the following conditions:

1. All work scheduled will be done in a workmanlike manner under qualified supervision with the proper tools, and adequate facilities.

2. Fuel oil used will meet the specifications of Maintenance Instruction 1750.

3. All engine and governor lubricating oil will meet the specifications of Maintenance Instruction 1752. Other lubricants are specified in Maintenance Instruction 1756.

4. Lubricating oil filters will be changed in accordance with Item 2, at one month or 10,000 mile intervals, and filters must be of quality equal to original equipment.

5. Lubricating oil will be changed in accordance with Item 8, at three months or 30,000 mile intervals.

ONE MONTH OR 10,000 MILES	REMARKS
1. ENGINE LUBE OIL	
a. Take sample for analysis	The services of a competent laboratory may help to monitor the suitability of the oil for continued use.
2. LUBE OIL FILTER — 7-ELEMENT	
a. Change filter elements b. Clean lube oil strainer	Filter elements must be of a quality equal to original equipment. The interval of change is influenced by the load factor, kind of lubricating oil, type of operation and climatic conditions.
3. GENERATOR PIT DRAIN ASPIRATOR	
a. Inspect and clean if necessary	
4. OIL BATH AIR FILTER	
a. Check oil level with engine shut down.	Add SAE 10 non-detergent low-additive mineral oil to middle of sight glass if necessary. Check for cause of loss of oil if frequent additions are required.
5. BATTERIES	
a. Check water level b. Check gravity	
6. ENGINE PROTECTOR	
a. Test operation	Engine must be running.

TWO MONTHS OR 20,000 MILES	REMARKS
7. FUEL FILTER	
a. Change rack mounted fuel filter b. Clean suction strainer c. Change engine mounted filter	Use only approved filter elements.

THREE MONTHS OR 30,000 MILES	REMARKS
8. ENGINE LUBE OIL	
a. Change b. Clean oil suctions screens c. Clean scavenging oil screens d. Clean oil pan e. Change filter elements f. Clean filter housing g. Remove oil filter relief valve, clean and replace	Evaluation of engine and oil condition should dictate the frequency. Type of service, type of oil, quality of filter elements and condition of engine will influence the frequency of oil change.
9. ENGINE	
a. Inspect crankcase b. Inspect pistons and piston rings c. Inspect cylinder liners d. Inspect cylinder head mechanism with engine idling and at operating temperature e. Inspect engine fuel lines and connections for leaks f. Inspect engine water system for leaks	Engine Maintenance Manual
10. COOLING WATER	
a. Check inhibitor concentration	Engine Maintenance Manual
11. FUEL TANK	
a. Drain condensate from fuel tank	More frequently in rapid temperature changes.
12. TRACTION MOTORS	
a. Inspect and replace brushes when required. Replace in sets	Experience should govern the frequency of this item. Brush life will range from 3 to 6 months, depending on the type of service and operating conditions.
13. INERTIAL FILTER BLOWER MOTOR	
a. Check operation	
14. AIR FILTERS — ENGINE	
a. Change oil	Drain and refill only. Sump need not be cleaned.

SIX MONTHS OR 60,000 MILES	REMARKS
15. AIR COMPRESSOR	
a. Clean pre-filter (2" impingement only)	Do not oil.
16. MAIN GENERATOR	
a. Replace brushes	Experience with individual operations will dictate the frequency of this item. Brush life will vary from six to nine months depending on type of service and operating conditions. M.I. 3302.
17. RADIATORS	
a. Clean air passages	Use clean dry air. Operating conditions will determine frequency of cleaning.

ONE YEAR OR 120,000 MILES	REMARKS
18. LUBE OIL COOLER	
a. Check temperature differential between lube oil and cooling water into engine	Clean oil cooler if required.
19. LOCOMOTIVE SYSTEMS	
a. Visually inspect for leaks (1) Cooling system (2) Fuel oil system (3) Lube oil system (4) Exhaust system	
20. AIR FILTERS	
a. Carbody (Inertial) (1) Remove and clean (2) Check condition of hoses b. Engine (1) Change oil and clean sump (2) Check operation of variflow valves (3) Check condition of hoses	
21. AUXILIARY GENERATOR	
a. Replace complete set of brushes	M.I. 3701

22. ALTERNATOR

a. Replace slip ring brushes	M.I. 3306

TWO YEARS OR 240,000 MILES	REMARKS
23. PROTECTION AND SAFETY DEVICES	
a. Check calibration and operation of:	
(1) High temperature	
(2) Low oil pressure	Engine Maintenance Manual
(3) High oil suction	Engine Maintenance Manual
(4) No voltage	
(5) Overspeed trip	Engine Maintenance Manual
(6) Ground relay	
(7) Wheel slip relay	
24. BATTERIES	
a. Grease terminals and wash out battery boxes	
25. DYNAMIC BRAKE GRIDS	
a. Clean	Use clean dry air.
26. ELECTRICAL CABINET	
a. Visually inspect contact tips of all contactors and replace where required	Contact tips should be carefully inspected to ascertain whether they are pitted or just discolored. If the tips are badly pitted and burned, the contactor assembly should be replaced and locomotive checked to determine cause of burned tips. Refer to Sept. 22, 1965 Pointers.
27. VOLTAGE REGULATOR	
a. Check operation	
28. DYNAMIC BRAKE REGULATOR	
a. Check operation	M.I. 4508
29. LOW VOLTAGE SYSTEM	
a. Check for grounds	

30. GOVERNOR

a. Renew diaphragm	Engine Maintenance Manual
b. Check low oil pressure switch	
c. Check high oil suction switch	Governor should be requalified for further use.
d. Check speed settings	

31. AIR COMPRESSOR

a. Recondition suction and discharge valves	M.I. 1110

32. AUTOMATIC TRANSITION CIRCUIT

a. Check setting of relays	M.I. 5497, Charts and Graphs Drawing

33. LOAD REGULATOR

a. Clean commutator and replace brushes	M.I. 4504

34. FUEL PUMP AND FUEL PUMP MOTOR

a. Recondition	

35. DYNAMIC BRAKE BLOWER MOTOR

a. Renew brushes	M.I. 4104

THREE YEARS OR 360,000 MILES	REMARKS

36. CYLINDER ASSEMBLIES

a. Recondition	Engine Maintenance Manual
(1) Replace grommets, all-metal gaskets, upper and lower liner seals	Take compression lead readings of all cylinders when reapplied to engine. Maintain records.
(2) Renew piston rings	
(3) Clean top deck, air box, and oil pan	

37. INJECTORS

a. Replace or recondition	Replacement injectors should be the equivalent of EMD Unit Exchange and must have passed leak-off and calibration test.

38. WATER PUMPS

a. Replace or recondition	
b. Replace seals and all worn parts	

39. BATTERY BOXES

a. Clean and paint

FOUR YEARS OR 480,000 MILES	REMARKS

40. ENGINE

a. Install new thrust collars and new lower main bearings — Engine Maintenance Manual

41. ENGINE BLOWERS

a. Recondition or replace

42. TRACTION MOTORS

a. Recondition or replace

43. GOVERNOR

a. Recondition or replace

SIX YEARS OR 720,000 MILES	REMARKS

44. AUXILIARY GENERATOR

a. Recondition or replace

45. AUXILIARY MOTORS

a. Replace or recondition
(1) Dynamic brake blower motor
(2) Cooling fan motors
(3) Inertial air filter motor

46. AIR COMPRESSOR ASSEMBLY

a. Recondition or replace — M.I. 1110

47. FUEL TANK

a. Clean and inspect

TWELVE YEARS OR 1,440,000 MILES	REMARKS

48. ENGINE ASSEMBLY

a. Unit exchange

49. MAIN GENERATOR AND ALTERNATOR ASSEMBLY

a. Unit exchange	

50. HIGH VOLTAGE CABLE

a. Renew	It is recognized that this work may not be required at this particular time or mileage. However, shop efficiency may require this operation at time of engine and generator exchange.

51. LOW VOLTAGE WIRING

a. Renew	It is recognized that this work may not be required at this particular time or mileage. However, shop efficiency may require this operation at time of engine and generator exchange.

52. CARBODY

a. Clean and recondition	

NON-SCHEDULED MECHANICAL AND ELECTRICAL MAINTENANCE

A definite schedule for the items listed below cannot be established due to variation in wheel life and truck overhaul periods. This rework to be performed at wheel change time or when truck is removed for reconditioning.

1. AXLES, AXLE AND PINION GEARS

a. Magnaflux (remove inner race from axle)	

2. TRACTION MOTORS

a. Check armature bearings	Whenever truck assembly is removed from locomotive, check traction motors for any unusual bearing noise or heat at not less than 1500 RPM. M.I. 3900.

3. JOURNAL BOXES

a. Clean and recondition	M.I. 1552

LUBRICATION SCHEDULE

ONE MONTH OR 10,000 MILES	REMARKS
1. TRACTION MOTOR SUPPORT BEARINGS	M.I. 1756 and 3900.
2. TRACTION MOTOR GEAR CASE	Jet lube or equivalent. M.I. 1756 and 3900.
3. BELL RINGER	
4. SHUTTER LINKAGE	
5. JOURNAL BOX - ROLLER BEARING	Maintain at fill plug level.
THREE MONTHS OR 30,000 MILES	**REMARKS**
6. SPEED RECORDER AND DRIVE CABLE	SAE #10 oil. This item not required for grease lubricated recorders. Refer to manufacturer's bulletin.
7. HAND BRAKE WHEEL	Light oil.
8. BRAKE SLACK ADJUSTER SCREWS	Use graphite grease.
9. MARS HEADLIGHT	
10. WINDSHIELD WIPER MOTORS	
11. DOOR AND WINDOW HARDWARE	
ONE YEAR OR 120,000 MILES	**REMARKS**
12. AIR COMPRESSOR UNLOADER - (ALL METAL TYPE)	Light machine oil Lubricate parts when valves are inspected and cleaned. M.I. 1110.
13. ENGINE GOVERNOR	
a. Change oil	M.I. 1752
14. AIR COMPRESSOR	
a. Change oil	M.I. 1756
15. TRUCK CENTER BEARING	Add two quarts of oil.

SIX YEARS OR 720,000 MILES	REMARKS

16. MAIN GENERATOR BEARING

a. Repack as follows:
   (1) Remove bearing cover
   (2) Remove old grease from cover and exposed portions of bearing
   (3) Inspect exposed portions of bearing for signs of distress, metal chips, etc.
   (4) Repack bearing solidly with approved grease
   (5) Repack cover and apply

Use Cyprina RA grease - Grade #3

Capacity (New) - D22 or D32 Generator:

Bearing	14 oz.
Cap	18 oz.
Cover	18 oz.

Litho in U.S.A.