



M AINTENANCE I NSTRUCTION

M.I. 1713
* Rev. A

SCHEDULED MAINTENANCE PROGRAM – GP20, SD24

INTRODUCTION

Maintenance Instruction 1713 comprises average recommendations which we believe will insure satisfactory locomotive operation and economical maintenance cost where average load factors and average climatic conditions are encountered.

The recommendations assume that the following conditions will apply:

1. All work scheduled will be done in a workmanlike manner, which assumes that the proper tools, facilities and supervision will be available.
2. Fuel oil used should meet the specifications of Maintenance Instruction 1750.
3. Lubricating oil MUST be qualified for use in D2 and D3 engines.
4. Lubricating oil filters should be changed in accordance with Item 6, at one (1) month or 15,000 mile intervals, and filters must be of quality equal to original equipment.
5. Lubricating oil should be changed in accordance with Item 13, at four (4) months or 60,000 mile intervals.

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

MECHANICAL AND ELECTRICAL MAINTENANCE SCHEDULE

ONE MONTH OR 15,000 MILES

REMARKS

1. CARBODY AIR FILTERS
 - a. Change or clean
2. ANALYZE LUBE OIL SAMPLE

Condemning limits minimum
Ph 4.0 or a total base number of
no less than 0.10.
3. CHECK LEVEL OF OIL IN OIL BATH
AIR FILTERS
 - a. Engine M.I. 431
 - b. Air compressor M.I. 1110
4. CHECK BATTERY WATER LEVEL
AND GRAVITY
5. CLEAN TURBOCHARGER OIL FILTERS
 - a. Turbo supply Use fixture - 8315844
 - b. Soak back pump Use fixture - 8315754
6. LUBE OIL FILTER - 7-ELEMENT

EMD Approved type elements.

 - a. Change filter elements
 - b. Clean lube oil strainer

THREE MONTHS OR 45,000 MILES

7. CHANGE OR CLEAN FUEL FILTER
ELEMENTS
 - a. Michiana fuel filter - change
 - b. Suction - clean
 - c. Engine mounted - change
8. INSPECT ENGINE

Engine Maintenance Manual

 - a. Crankcase
 - b. Pistons and piston rings
 - c. Cylinder liners
 - d. Cylinder head engine mechanism
with engine idling and at operating
temperature
9. CHECK COOLING WATER INHIBITOR

Engine Maintenance Manual

THREE MONTHS OR 45,000 MILES**REMARKS****10. DRAIN CONDENSATE FROM FUEL TANK**

Engine Maintenance Manual

More frequently in rapid temperature changes.

11. TRACTION MOTOR BRUSHES

Experience with individual operations will dictate the frequency of this item. Brush life will vary from three (3) to six (6) months, depending on the type of service and operating conditions.

M.I. 3900

12. OIL BATH AIR FILTERS - CLEAN FILTER SUMP AND CHANGE OIL

- a. Engine
- b. Air compressor

M.I. 431, 440

M.I. 1110

FOUR MONTHS OR 60,000 MILES**13. CHANGE ENGINE LUBE OIL**

Engine Maintenance Manual

- a. Clean oil suction screen
- b. Clean scavenging oil screens
- c. Clean oil pan
- d. Change filter elements
- e. Clean filter housing
- f. Clean and inspect oil filter relief valves

Performance of the lube oils qualified for use in turbocharged engines has been such that "Lube Oil" change period should be four months or 60,000 miles maximum. However, the condemning limit for oxidation of qualified oils is a minimum Ph of 4.0 or a total base number of no less than 0.10.

SIX MONTHS OR 90,000 MILES**14. MAIN GENERATOR BRUSHES**

Experience with individual operations will dictate the frequency of this item. Brush life will vary from six (6) to nine (9) months, depending on the type of service and operating conditions. M.I. 3302

ONE YEAR OR 180,000 MILES

REMARKS

- | | |
|---|---|
| 15. VISUALLY INSPECT FOR LEAKS | Locomotive Operating Manual |
| a. Cooling system | |
| b. Fuel piping and connections | |
| c. Lube oil piping and connections | |
| 16. REPLACE BRUSHES | |
| a. Auxiliary generator - (replace complete set) | M.I. 3701 |
| b. Alternator slip ring brushes | M.I. 3306 |
| 17. CHECK CALIBRATION AND OPERATION OF PROTECTION AND SAFETY SWITCHES | |
| a. High temperature | M.I. 5511 |
| b. Low oil pressure | Engine Maintenance Manual |
| c. High oil suction | Engine Maintenance Manual |
| d. No voltage | M.I. 5323 |
| e. Overspeed trip | Engine Maintenance Manual |
| f. Ground relay | M.I. 5384 |
| g. Wheel slip relay | M.I. 5353 |
| h. Engine protector | |
| 18. WASH OUT BATTERY BOXES AND GREASE TERMINALS | |
| 19. CLEAN DYNAMIC BRAKE GRIDS | Use clean dry air. |
| 20. ELECTRICAL CABINETS | M.I.'s 5300, 5373, 5398, 5380, 5427, 5428, 5375, 5364, 5374 |
| a. Visually inspect contact tips of all contactors and replace where required | |
| 21. CHECK OPERATION OF VOLTAGE REGULATOR | Must be at operating temperature.
M.I. 4510 |
| 22. CHECK OPERATION OF DYNAMIC BRAKE REGULATOR | M.I. 4508 |
| 23. CHECK LOW VOLTAGE SYSTEMS FOR GROUNDS | |
| 24. RENEW GOVERNOR DIAPHRAGM | Engine Maintenance Manual |

TWO YEARS OR 360,000 MILES	REMARKS
25. UNIT EXCHANGE TURBOCHARGER	Engine Maintenance Manual
26. LUBE OIL COOLER a. Check temperature differential between lube oil and cooling water into engine.	Clean oil cooler if required.
27. CHECK SETTINGS OF RELAYS IN AUTOMATIC TRANSITION CIRCUIT	M.I. 6829, 5497
28. LOAD REGULATOR a. Clean commutator and replace brushes	M.I. 4504
29. UNIT EXCHANGE a. Fuel pump b. Fuel pump motor	
30. RENEW BRUSHES a. Dynamic brake blower motor	M.I. 4104
THREE YEARS OR 540,000 MILES	
31. UNIT EXCHANGE CYLINDER ASSEMBLIES a. Replace grommets, all-metal gasket, and liner seals b. Renew piston rings c. Clean top deck and oil pan	Engine Maintenance Manual Take compression lead readings of all cylinders when reapplied to engine. Maintain records.
32. UNIT EXCHANGE a. Injectors b. Water pumps c. Aftercooler assemblies (SD24 only)	Engine Maintenance Manual
33. REMOVE BATTERIES, CLEAN AND PAINT BATTERY BOXES	
FOUR YEARS OR 720,000 MILES	
34. UNIT EXCHANGE SOAK BACK PUMP MOTOR	
35. INSTALL NEW THRUST COLLARS AND NEW LOWER MAIN BEARINGS	Engine Maintenance Manual
36. UNIT EXCHANGE TRACTION MOTORS	
37. UNIT EXCHANGE GOVERNOR	Engine Maintenance Manual

SIX YEARS OR 1,080,000 MILES**REMARKS**

38. UNIT EXCHANGE

- a. Auxiliary generator
- b. Dynamic brake blower motor
- c. Traction motor blower motors
- d. Cooling fans

39. RECONDITION AIR COMPRESSOR
ASSEMBLY

M.I. 1110

40. CLEAN AND INSPECT FUEL TANK

TWELVE YEARS OR 2,160,000 MILES

41. UNIT EXCHANGE ENGINE ASSEMBLY

42. UNIT EXCHANGE MAIN GENERATOR
AND ALTERNATOR ASSEMBLY

43. RENEW HIGH VOLTAGE CABLE

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.

44. RENEW LOW VOLTAGE WIRING

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.

45. CLEAN AND RECONDITION ENTIRE
CARBODY**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.

REMARKS

1. MAGNAFLUX

M.I. 1518

- a. Pinion gears
- b. Axle gears
- c. Axles with inner races removed

- | | |
|--|--|
| 2. CHECK TRACTION MOTOR 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. CLEAN AND RECONDITION HYATT JOURNAL BOXES | M.I. 1552 |

LUBRICATION SCHEDULE

ONE MONTH OR 15,000 MILES	REMARKS
1. TRACTION MOTOR SUPPORT BEARINGS	Fill to 6-1/2" mark. Capacity 12-1/2 pints.
2. TRACTION MOTOR GEAR CASE	Jet Lube or equivalent. M.I. 3900
3. WATER PUMPS	Fill cup on pumps. M.I. 1752
4. BELL RINGER	
5. SHUTTER LINKAGE	
6. JOURNAL BOX - ROLLER BEARING	Maintain to fill plug level.
THREE MONTHS OR 45,000 MILES	
7. LUBRICATE SPEED RECORDER AND DRIVE CABLE	SAE #10 oil. This item not required for grease lubricated recorders.
8. HAND BRAKE WHEEL	Light oil.
9. BRAKE SLACK ADJUSTER SCREWS	Use graphite grease.
10. LUBRICATE:	
a. Mars headlight	
b. Windshield wiper motors	
c. Door and window hardware	
ONE YEAR OR 180,000 MILES	
11. AIR COMPRESSOR UNLOADER - (ALL METAL TYPE)	Light machine oil. Lubricate parts when valves are inspected and cleaned. M.I. 1110
12. CHANGE OIL IN ENGINE GOVERNOR	M.I. 1752
13. CHANGE OIL IN AIR COMPRESSOR	M.I. 1752

FIVE YEARS OR 900,000 MILES**REMARKS****14. MAIN GENERATOR BEARING**

Use Cyprina RA grease - Grade #3.

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

Capacity (New) - D22 Generator:

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