



# *MAINTENANCE INSTRUCTION*

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## **SCHEDULED MAINTENANCE PROGRAM SW1000, SW1001 AND SW1500**

### **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 SW1000 and SW1500 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 filter elements will be changed at one month intervals, and elements must be of quality equal to original equipment.
5. Lubricating oil will be changed at six month intervals.

\*NOTE: Information contained herein is applicable to the equipment being manufactured or used as of the date of publications.

FIRST WEEK

REMARKS

MECHANICAL

CHECK "V" BELT TENSION

FIRST MONTH

REMARKS

MECHANICAL

1. CHECK "V" BELT TENSION
2. RETORQUE EXHAUST MANIFOLD BOLTS      Engine Maintenance Manual

ONE MONTH

REMARKS

MECHANICAL

1. CHECK ENGINE LUBE OIL FOR DILUTION OR WATER      Engine Maintenance Manual  
M.I. 1752
2. CHECK ENGINE COOLING SYSTEM      Engine Maintenance Manual  
M.I. 1748
  - a. Water inhibitor
  - b. Cooling fans
  - c. Shutter operation (including temperature switches)
3. CHANGE LUBE OIL FILTER ELEMENTS      More frequent maintenance will  
Clean lube oil strainers      be required if fuel and lube oil  
used do not meet EMD specifica-  
tions - M.I. 1750 and 1752
4. CLEAN OR CHANGE CARBODY AIR FILTERS
5. BLOW DIRT OUT OF RADIATOR AIR PASSAGES      With fans running and shutters  
open
6. ENGINE AIR FILTER (PANEL TYPE OIL BATH)  
Check oil level - add if required
7. CHANGE FUEL FILTERS      More frequent maintenance will  
be required if fuel used does  
not meet EMD specifications -  
M.I. 1750
  - a. Engine mounted
  - b. Suction

ELECTRICAL

WASH OUT BATTERY BOXES AND  
GREASE BATTERY TERMINALS

Check battery water level and gravity

If battery gravity is low or water  
usage is high, check operation of  
voltage regulator

THREE MONTHS	REMARKS
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MECHANICAL

## 1. INSPECT ENGINE

Engine Maintenance Manual

a. Crankcase

b. Pistons and liners

c. Cylinder head mechanism with engine idling

2. ENGINE AIR FILTERS (PANEL TYPE  
OIL BATH)

M.I. 440

a. Remove and clean panels

b. Change oil

## 3. DRAIN CONDENSATE FROM FUEL TANK

## 4. CHECK OPERATION AND ADJUSTMENT

Engine Maintenance Manual

a. Overspeed trip

b. Valve lash adjusters

ELECTRICAL1. INSPECT LEADS AND REPLACE BRUSHES  
IN SETS, IF NECESSARY

a. Main and auxiliary generators

b. Traction motors

Be certain that locomotive will  
operate until next inspection  
period before brush condemning  
limit is reached

## 2. INSPECT AND CLEAN LOAD REGULATOR

3. CHECK OPERATION OF AIR COMPRESSOR  
CONTROL SWITCHES4. MAKE SEQUENCE CHECK OF CONTROL  
CIRCUIT

## 5. CHECK OPERATION OF VOLTAGE REGULATOR

6. VISUALLY INSPECT AND CLEAN  
WHERE REQUIRED

M.I. 4312, 5300, and 5374

a. Controller

b. Equipment in electrical cabinet

SIX MONTHS	REMARKS
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MECHANICAL

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|--|---|
| <p>1. CHANGE ENGINE LUBE OIL</p> <p>a. Clean lube oil strainers<br/>b. Clean scavenging oil screens<br/>c. Clean oil pan<br/>d. Change oil filter elements<br/>e. Clean filter housing<br/>f. Clean and inspect oil filter relief valves</p> <p>2. ENGINE AIR FILTERS (PANEL TYPE OIL BATH)</p> <p>Clean panels and change oil</p> <p>3. CHECK "V" BELT TENSION</p> <p>4. CHECK COMPRESSOR AIR FILTER DEPRESSION</p> | <p>Engine Maintenance Manual - More frequent maintenance will be required if fuel and lube oil used do not meet EMD specifications - M.I. 1750 and 1752</p> <p>M.I. 440</p> |
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ONE YEAR	REMARKS
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MECHANICAL

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|---|---|
| <p>1. TAKE COMPRESSION LEAD READINGS OF ALL CYLINDERS</p> <p>2. CHECK ENGINE CONTROL ADJUSTMENTS</p> <p>3. LUBE OIL COOLER CORE</p> <p>a. Check temperature differential between lube oil and cooling water into engine<br/>b. Clean oil cooler core, if required</p> <p>4. RADIATOR HEADER SCREENS</p> <p>Clean or renew</p> <p>5. CLEAN AND INSPECT SPEED RECORDER (IF USED)</p> <p>6. AIR COMPRESSOR</p> <p>a. Change oil<br/>b. Change filter</p> <p>7. RECONDITION ENGINE PROTECTOR DEVICE (IF USED)</p> | <p>Engine Maintenance Manual</p> <p>Readjust pilot valve setting if engine speed is changed</p> <p>M.I. 927</p> <p>M.I. 259</p> |
|---|---|

ELECTRICAL

1. CHECK WHEEL SLIP AND GROUND RELAY OPERATION M.I. 5353
2. CHECK SETTINGS OF RELAYS IN AUTOMATIC TRANSITION CIRCUIT
3. CHECK LOW VOLTAGE ELECTRICAL SYSTEM FOR GROUNDS
4. CHECK OPERATION AND CALIBRATION
  - Alarm devices
    - High temperature
    - Low oil
  - Shutter control

TWO YEARS

REMARKS

MECHANICAL

1. RENEW OIL PRESSURE AND SUCTION DIAPHRAGMS IN ENGINE GOVERNOR
2. REMOVE BATTERIES, AND PAINT BOXES

THREE YEARS

REMARKS

MECHANICAL

1. RENEW "V" BELTS
2. INSPECT AND CLEAN AIR COMPRESSOR VALVES M.I. 1110

SIX YEARS

REMARKS

MECHANICAL

1. UNIT EXCHANGE INJECTORS
2. RECONDITION AIR COMPRESSOR CYLINDER ASSEMBLIES M.I. 1110
3. RECONDITION WATER AND FUEL PUMPS Engine Maintenance Manual M.I. 4110

- 4. RECONDITION ALL CYLINDER ASSEMBLIES      Engine Maintenance Manual
  - a. Replace grommets, gaskets, and liner seals
  - b. Renew piston rings
  - c. Clean crankcase top deck, air box, and oil pan
- 5. INSTALL NEW THRUST COLLARS AND NEW LOWER MAIN BEARINGS      Engine Maintenance Manual
- 6. UNIT EXCHANGE ENGINE GOVERNOR
- 7. UNIT EXCHANGE ENGINE BLOWERS
- 8. RENEW COOLING FAN BEARINGS

TWELVE YEARS	REMARKS
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MECHANICAL

- 1. UNIT EXCHANGE ENGINE ASSEMBLY
- 2. UNIT EXCHANGE MAIN GENERATOR
- 3. UNIT EXCHANGE TRACTION MOTORS
- 4. UNIT EXCHANGE AUXILIARY GENERATOR
- 5. RECONDITION ENTIRE AIR COMPRESSOR ASSEMBLY      M.I. 1110
- 6. CLEAN AND RECONDITION HOOD AND CAB
- 7. CLEAN AND RECONDITION
  - a. Fuel tank
  - b. Battery boxes
- 8. RENEW HIGH VOLTAGE CABLE
- 9. RENEW LOW VOLTAGE WIRING

**NON-SCHEDULED 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. MAGNAFLUX      M.I. 1518
  - a. Pinion gears
  - b. Axle gears
  - c. Axles with inner races removed

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| 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 JOURNAL BOXES    | M.I. 1552  |

### LUBRICATION SCHEDULE

ONE MONTH	REMARKS
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|------------------------------------|--|
| 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 BOXES                   | Maintain to proper level                   |

THREE MONTHS	REMARKS
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| 1. SPEED RECORDER AND DRIVE CABLE (WHERE USED) | SAE No. 10 oil. This item is not required for grease lubricated recorders. Refer to manufacturer's bulletin |
| 2. HAND BRAKE WHEEL                            | Light oil   |
| 3. BRAKE SLACK ADJUSTER SCREWS                 | Use graphite grease   |
| 4. MARS HEADLIGHT (WHERE USED)                 |   |
| 5. WINDSHIELD WIPER MOTORS                     |   |
| 6. DOOR AND WINDOW HARDWARE                    |   |

SIX MONTHS	REMARKS
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CHANGE ENGINE LUBE OIL

ONE YEAR	REMARKS
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| 1. AIR COMPRESSOR UNLOADER<br>(ALL METAL TYPE) | Light machine oil. Lubricate parts when valves are inspected and cleaned. M.I. 1110 |
| 2. ENGINE GOVERNOR<br>Change oil               | M.I. 1752   |
| 3. AIR COMPRESSOR<br>Change oil                | M.I. 1756   |
| 4. TRUCK CENTER BEARING                        | Fill 1/8" above wear plate  |

SIX YEARS	REMARKS
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MAIN GENERATOR BEARING

Repack as follows:

Use Cyprina RA grease - Grade #3

- a. Remove bearing cover
- b. Remove old grease from cover and exposed portions of bearing
- c. Inspect exposed portions of bearing for signs of distress and metal chips
- d. Repack bearing solidly with approved grease
- e. Repack cover and apply

M.I. 3302 (D32) or M.I. 3304 (D25)