M.I.1793

MAINTENANCE INSTRUCTION

ELECTRO-MOTIVE
General Motors

EMISSIONS-RELATED MAINTENANCE
On EMD Locomotives
Equipped with Model 645 Turbocharged Engines
Compliant with 40 CFR Part 92

92.211(b)(1) Statement: Maintenance, replacement, or repair of the emissions control devices and systems on EMD locomotives may be performed by any locomotive or locomotive engine repair establishment or individual.

December 11, 2001

INTRODUCTION

This Maintenance Instruction is published in accordance with the requirements of the United States Code of Federal Regulations 40 CFR 92.211. Instructions supplied herein supersede any contained in any other Maintenance Instructions affecting the same components of the same locomotives. Locomotive owners and operators are required by 40 CFR 92.1004 and 40 CFR 92.1103(a)(3)(iii) to carry out these instructions and to create and maintain sufficient records to show that they have been carried out. Not to do so may incur civil penalties as described in 40 CFR 92.1106(a)(1) and 92.1106(a)(3).

The scheduled inspection and maintenance items defined herein are specific to GMLG freight and passenger locomotives as a general class of motive power. Component renewal provisions are consistent with traditional "In-Carbody" engine overhaul procedures.

Nothing in this Maintenance Instruction or in the engine and locomotive service publications referenced herein is to be construed as requiring the use of brand-name parts or a service facility employed by or under the control of General Motors to maintain in force an emissions warranty in violation of Section 92.211(b)(1) and (2) or Section 92.1103(a)(4)(iv) of 40 CFR 92.

NOTES:

Publications, as referenced in abbreviation examples listed below, will be followed for inspections, tightening, and maintenance procedures.

LOM	means Locomotive Operator's Manual
LSM	means Locomotive Service Manual
EMM	means Engine Maintenance Manual
M.I.	means Maintenance Instruction
CTG	means Computer And Troubleshooting Guide
FRA	means Federal Railway Administration standards Ref: Title 49 CFR-Transportation (parts200 -399)
AAR	means Association of American Railroads Manual of Standards and Recommended Practices.

90-DAY INTERVALS

Check air box drains for flow; clean if necessary.	
Engine Air Filters	
Paper – Take manometer readings. Replace elements if necessary	LSM. Use elements equal to original equipment.
Fiberglass – renew NOTE: Engine air filters can be changed at the six-month interval if the extended life (180 day) filter has been applied.	LSM. Use elements equal to original equipment.

SIX-MONTH INTERVALS

Visually inspect crankcase, aftercooler duct mounting flanges, and air box for air leaks; repair as necessary.	EMM.
Inspect condition of power assemblies for scuffs, broken rings, or broken valves. Replace any failed assemblies. If broken rings or valves are found, remove exhaust manifold inspection plate, if equipped, and inspect screen trap. If foreign objects are found in trap, remove screen to inspect turbine vanes.	EMM
Engine Air Filters	
Fiberglass – renew NOTE: This applies only to the extended life (180 day) filter. All other engine air filters must be changed at the 90-day interval.	LSM. Use elements equal to original equipment.

ONE YEAR INTERVALS

Inspect radiator air passages; clean if necessary.	LSM and M.I. 549. Note: Operation in areas and in periods of airborne seeds and leaves can require more frequent cleaning.
Set injector timing and rack length.	EMM.
Check air pressure drop across aftercoolers; clean aftercooler cores if necessary.	EMM.
Check proper operation of radiator shutter system.	LSM and MI 1756 for lubricant specifications.
On locomotives equipped with mechanical temperature switches, check temperature switch function and settings.	LSM.

ONE-YEAR INTERVALS (continued)

Perform self-load test after engine work, and before releasing unit, confirm the following: – Proper loading at each throttle notch. – Jacket cooling water temperature is within specified range. – Check engine speeds and governor balance point. If tests indicate that the horsepower is out of specification, check injectors and load control. If engine speeds are out of specification, reset, rebuild, or replace governor.	LSM and EMM.

THREE-YEAR INTERVALS

Renew injectors; replace with new or remanufactured.	EMM.
Check exhaust valve timing. If timing is found to be out of specification, check camshaft drive gear train for wear or failure. Make repairs as necessary.	EMM.

AFTER END OF EPA USEFUL LIFE

Renew turbocharger.	EMM.
Renew power assembly components. – Apply new or remanufactured heads, liners, and pistons. – Apply new piston rings. – Apply new head seat rings. – Apply new lower liner inserts. – Apply new or remanufactured rocker arms and rocker arm bushings. – Apply new or remanufactured valve bridges and lash adjusters.	EMM.