EMD MAINTENANCE INSTRUCTION

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

LUBRICANT SPECIFICATIONS

I. INTRODUCTION

The necessity for correctly lubricating any piece of apparatus with moving parts is so apparent that further comment should be unnecessary. This instruction is therefore confined to listing specifications for particular lubricants which we have learned from experience are best suited to the application.

II. ALL PURPOSE LUBRICATING OIL

1. Oil Uses

   a. Traction motor armature bearings
   b. Traction motor support bearings
   c. Axle journal bearings
   d. Truck center bearings

2. Oil Properties

Method Of Test	ASTM Designation	Limits
Viscosity - Saybolt Universal	D88 or D446	
a. Seconds at 100° F.		300 Minimum 600 Maximum
b. Seconds at 210° F.		50 Minimum
Flash Point, °F.	D92	325° Minimum
Pour Point, ° F.	D97	0° Maximum
Tarry Matter, Dirt and Water		0.10% Maximum

3. General Comments

   a. For extremely cold weather operation in some northern areas the maximum pour point must be lowered accordingly. However, we do not believe it advisable to permit the pour point to go above 0° F. even when the weather is warm because this defeats the main advantage of having a single all purpose lubricating oil. Where extremes in temperature are likely to be encountered it is apparent that two different all purpose oils must be used seasonally.

   b. The lubricating oil may be a straight mineral or a turbine type. The use of oxidation inhibitors is preferred since the oil should have a high resistance to oxidation. The use of additional additives for pour point depression, anti-foam or extreme pressure is entirely optional. No filler or graphites shall be employed in the oil. Depending somewhat on the nature of the lubricating oil employed, the lubricant may be classed either as an SAE 20 or 30.

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

III. AIR COMPRESSOR LUBRICATING OIL

Properties

1. Deep Crankcase Type Air Compressor

Method Of Test	ASTM Designation	Limits
Viscosity - Saybolt Universal Seconds at 210° F.	D88 or D2161	42 Minimum 45 Maximum
Pour Point	D97	0° F. Maximum
Rusting - Distilled Water	D665	No Rust

This defines a SAE 10 turbine type of oil containing anti-rust, anti-oxidation, and anti-foam inhibitors. None of these additives are to contain polar-type additives which will prevent piston rings from seating rapidly. Some deep crankcase compressors used SAE 30 oil. The SAE 10 oil may be applied to these deep crankcase compressors provided the compressor can be qualified as one with good cylinders, pistons and rings. However, a compressor originally started on SAE 10 oil should not be changed to another grade.

2. All Other Than The Deep Crankcase Type Air Compressor

Method Of Test	ASTM Designation	Limits
Viscosity - Saybolt Universal Seconds at 210° F.	D88 or D2161	50 Minimum* 70 Maximum
Pour Point	D97	0° F. Maximum*
Rusting - Distilled Water	D665	No Rust

*The pour point and viscosity limits specified are suitable for average temperature conditions. If low ambient temperatures (zero degrees F. or below) are normally encountered, a lubricant having a lower pour point and viscosity should be used.

Seasonal changes may be required. This precaution is particularly important if locomotives are normally shut down for long periods of time with no provision for keeping the air compressor warm.

The viscosity limitation includes oils which could be classified as SAE 30 oil or heavy SAE 20. Air compressor lubricating oil should be a straight mineral type product having rust and oxidation inhibitors similar to a turbine type oil. Detergent type oils or oils containing polar type additives should not be employed.

IV. AXLE DRIVE GEAR UNITS (SPICER TYPE)

1. Gear Boxes

The lubricant used in the gear boxes should comply with all the requirements of the Society Of Automotive Engineers for SAE 90 Mild-Type Extreme Pressure (EP) Gear Lubricant. The oil should be changed at intervals specified in M.I. 1704.

2. Drive Shafts

The lubricant used for the drive shaft assembly should comply with all requirements of the Society Of Automotive Engineers for SAE 250 Regular Type Gear Lubricant. For further details see M.I. 1704.

V. GENERAL LUBRICATION RECOMMENDATIONS

The following general lubrication information is intended to be used in instances where no other specific Maintenance Instruction Bulletin covering the part is available. Such specific bulletins should be consulted where available, since they provide more detailed information on maintenance periods and requirements. Particular attention is called to applicable Scheduled Maintenance Program Instruction which should be used in conjunction with this bulletin.

Item	Lubricant	Remarks
1. Air Compressor Crankcase Oil	Item III of this M.I.	Refer to specific Maintenance Instruction for complete information.
Unloader	Light Oil	Oil piston when disassembled.
2. Battery Terminals	Petroleum jelly	Maintain a liberal coating on terminals.
3. Bell		
King Type	SAE 10 oil and air engine grease	Refill reservoir every month. Capacity 1/2 pint. Use air engine grease 8227283 on plunger at assembly.
Viloco	SAE 10 oil and air engine grease	Add few drops of oil monthly. Use air engine grease 8227283 on plunger at assembly.
Prime Salem	Lithium NLGI No. 2	Grease "O" rings lightly.
4. Blower		
Traction motor - electric	Chevron Grease BRB-2	Sealed grease bearings. Replace at overhaul or Unit Exchange.
Traction motor - chain drive	SAE 40 oil	Check level and add oil as required.
Traction motor - belt driven	Ball bearing grease	Add small quantity to shaft bearings every 3 months.

5. Dynamic Brake Motor	Chevron Grease BRB-2	Sealed grease bearings. Replace at overhaul or Unit Exchange.
6. Brake Cylinder	Brake cylinder grease	AAR-M914-42
7. Center Bearing - Truck (Phenolic and Metal)	All purpose lubricating oil. See Item II of this M.I.	Apply oil to 1/8" above wear plate at truck application. Soak waste in reservoir of switcher locomotives.
8. Control Stand Cam type Movable cams to shafts	Low flow, high melt grease 8196886	Apply to shafts on reassembly.
9. Defroster Motor	Chevron Grease BRB-2	Replace bearings at overhaul or Unit Exchange.
10. Engine (Diesel)		
Crankcase	See M.I. 1752	Capacity depends on engine size.
Governor	See M.I. 1752	Maintain oil level at mark on sight glass. See engine manual.
Linkage	Light oil	Oil sparingly.
11. Fans - Cooling Electric drive		
Grease lubricated	Chevron Grease BRB-2	Replace sealed bearings at overhaul or Unit Exchange.
Oil lubricated	See M.I. 1752	Same oil as used in the engine. Add oil to top of filler pipe.
Mechanical drive		
Grease lubricated	Ball Bearing Grease	Add small amount of grease monthly.
Oil lubricated	See M.I. 1752	Same oil as used in the engine. Fill to overflow plug. Check level monthly.
12. Fan Drive (Export Locomotive)		
Gear box	SAE 40 oil	Maintain level in sight glass. Replace oil every 3 months.
Rotor seal	Light oil	Every 3 months remove knurled oiler and add 4 to 5 drops oil.

Bearings	Sealed grease	Lower bearings lubricated by splash. Replace sealed bearings at 3 year overhaul.
13. Speed Increaser	SAE 40 oil	Refer to Scheduled Maintenance Program Instruction for complete information.
14. Gear Case - Traction Motor	Sinclair Jet Lube TM or equivalent. (Minimum viscosity of oil component is 1750 S.S.U. at 210° F.)	All weather gear lubricant. Maintain lubricant in gear case to prevent bright gear teeth.
Felt seals	SAE 30 oil	Saturate seals on assembly.
15. Generators Auxiliary	Chevron Grease BRB-2	Replace packed bearings at overhaul or Unit Exchange.
Main Generator DC (EMD design)	Shell Cyprina RA-3 grease	Refer to specific Maintenance Instruction for complete information.
16. Hand Brake	Light oil	Apply small amounts as required.
17. Hardware (General)	Light oil	Oil sparingly as necessary.
18. Heaters (Cooling and Lube Oil Systems) Pump motor (ball bearing)	Ball bearing grease	Once a year clean and repack bearings.
Sleeve bearing	SAE 10 oil	Apply oil to sleeve bearings every 3 months.
Drive	Cup grease and SAE 20 oil	Every month apply grease to Zerk fitting. Fill gear case to 2-1/4" below shaft opening or to center of gauge using SAE 20 oil. Add oil as required.
19. Journal Boxes Roller bearings oil lubricated	All year car oil or oil given in Item II of this M.I.	Maintain to fill plug level or use gauge 8084927 (domestic locomotives) or 8229173 (export locomotives).
Friction bearing	All year car oil or oil given in Item II of this M.I.	Keep waste soaked in oil.

20. Motors		
Traction motor armature bearing Sealed Grease	Shell Cyprina RA grease only	See specific Maintenance Instruction for complete information on traction motors.
Support bearings (Suspension Bearings)	All year car oil or oil given in Item II of this M.I.	See specific Maintenance Instruction for complete information on traction motors.
Cab heater motor	Chevron Grease BRB-2	Replace at overhaul or Unit Exchange.
Defroster motor	Sealed grease bearings	
Dynamic brake motor	Sealed grease bearings	
Fan motor	Sealed grease bearings	
Traction motor blower	Sealed grease bearings	
Fuel pump motor	Sealed grease bearings	
Train control motor - generator	Sealed grease bearings	
21. Recorder - Speed		See Manufacturer's Bulletins for complete details.
Chicago Pneumatic		
Hydraulic pump	C.P. Recorder Circulating Oil	Maintain at level mark on sight glass.
Worm gear box	Light grease	Refill at 1 year inspection.
Reversing mechanism	Light grease	Inspect monthly. Add to level of plug opening.
Right angle drive and flexible cable	Standard Oil Industrial Grease No. 31	Inspect quarterly, add as required.
Barco		
Recorder instrument	SAE 10 oil	Except SER model which has prelubricated bearings. Maintain oil level as required.
Link and cable shaft	Standard Oil Industrial Grease No. 31	Inspect quarterly and lubricate.
Wheel diameter compensator box	SAE 90 oil	Inspect monthly. Add oil if necessary.
Axle drive head	SAE 90 oil	Fill to level of filler opening.

22. Shutter Linkage	Light oil	Apply sparingly to moving pins and bearings.
23. Shutter Air Cylinder	Lithium base grease	Apply to cylinder walls at overhaul.
24. Throttle Linkage	Light oil	Apply sparingly every 3 months.
25. Windshield Wiper	Low flow, high melt grease 8196884	Apply to cylinder walls sparingly at overhaul.

VI. LUBRICANT REFERENCE

Name	Part No.	Quantity	Part No.	Quantity
Regal Starfax #2 Grease	8079816	35 lbs.		
Journal Oil	8039278	5 gal.		
Lubrico M-6	8122383	1 qt.	8122384	5 gal.
N.L.G.I. #3 Grade Grease	8102585	5 lbs.	8102587	35 lbs.
Shock Absorber Fluid	043046	1 gal.		
Clock Oil	8067552	1 gal.		
Speed Recorder Oil	8082436	1 gal.		
Petroleum Jelly	8099452	1 lb.		
Sinclair Jet Lube TM	8188793	35 lbs.	8188794	120 lbs.
Chevron Grease BRB-2	8398924	5 lbs.		
Low Flow, High Melt Grease	8196884	1 lb.		
Non Flow, High Melt Grease	8196886	1 lb.		
Torque Motor Bearing Oil	8198167	6 oz.		
Shell Cyprina RA Grease	8249819	35 lbs.	8249820	120 lbs.
Air Engine Grease	8227283	1 gal.		
Shell Alvania Grease				
Gargoyle A No. 0				
Standard Oil Industrial Grease #31	8388664			
Graphite	8122392	5 lbs.	8398610	35 lbs.