



ELECTRO-MOTIVE DIVISION • GENERAL MOTORS CORPORATION

MAINTENANCE INSTRUCTION

LUBRICANT SPECIFICATIONS

(Excluding Engines And Governor)

INTRODUCTION

The necessity for correctly lubricating the moving parts of any piece of apparatus is apparent. This instruction is therefore confined to listing specifications for particular lubricants, excluding engine and governor oils, which are best suited to the referenced applications.

ALL-PURPOSE LUBRICATING OIL (All Year Car Oil)

OIL USES

1. Traction motor support bearings
2. Axle journal bearings
3. Truck center bearings

OIL PROPERTIES

| <u>Method Of Test</u> | <u>ASTM Designation</u> | <u>Limits</u> |
|-------------------------------|-------------------------|----------------------------|
| Viscosity - Saybolt Universal | D88 | |
| 1. Seconds at 100° F. | | 300 Minimum 600 Maximum |
| 2. Seconds at 210° F. | | 50 Minimum |
| Flash Point, °F. | D92 | 350° Minimum |
| Pour Point, °F. | D97 | -20° Maximum |
| Pentane Insolubles | D893 | .15% Maximum |

GENERAL COMMENTS

1. 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.
2. 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.

AIR COMPRESSOR LUBRICATING OIL**PROPERTIES****1. Deep Crankcase Type Air Compressor**

| <u>Method Of Test</u> | <u>ASTM Designation</u> | <u>Limits</u> |
|---|-------------------------|--------------------------|
| 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 an 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

| <u>Method Of Test</u> | <u>ASTM Designation</u> | <u>Limits</u> |
|---|-------------------------|---------------------------|
| Viscosity - Saybolt Universal Seconds at 210° F. | D88 or D2161 | 58 Minimum* 70 Maximum |
| Pour Point | D97 | 10° 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.

AXLE DRIVE GEAR UNITS (SPICER TYPE)**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 the applicable Scheduled Maintenance Program.

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.

GENERAL LUBRICATION RECOMMENDATIONS

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

| <u>Item</u> | <u>Lubricant</u> | <u>Remarks</u> |
|---|--|--|
| 1. Air Compressor Crankcase Oil | Reference this M.I. | Refer to specific Maintenance Instruction for complete information. |
| Unloader | Petrolatum | Apply when disassembled |
| 2. Battery Terminals | Petrolatum | Maintain a liberal coating on terminals. |
| 3. Bell King Type | SAE 10 oil and air engine grease | Refill reservoir. 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. 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 SRI-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 Drive) | Ball bearing grease | Add small quantity to shaft bearings. |
| 5. Dynamic Brake Motor | | |
| Upper, fan end bearing | Chevron Grease SRI-2 | Sealed grease bearings. Replace at overhaul or Unit Exchange. |
| Lower, Commutator end bearing | Standard Oil Supermil M-125 grease | |
| 6. Air Brake Equipment | | |
| Brake Cylinder | Brake Cylinder Grease | AAR-M914-42 |
| O-rings, Packing Rings | Silicone Lubricant | MIL-G-4343B |
| Piston Rings, Slide Valves | Triple Valve Oil | |
| 7. Center Bearing - Truck (Phenolic and Metal) | All purpose lubricating oil referenced in this M.I. | Apply oil to 1/8" above wear plate at truck application. |
| 8. Control Stand Cam-type Movable cams to shafts | Electrical equipment grease | Apply to shafts on reassembly. |

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| 9. Defroster Motor (Electric Cab Heater) | Chevron Grease SRI-2 | Replace bearings at overhaul or Unit Exchange. |
| 10. Fans - Cooling | | |
| Electric drive | | |
| Grease lubricated | Chevron Grease SR1-2 | Replace sealed bearings at overhaul or Unit Exchange. |
| Oil lubricated | Engine Oil | Same oil as used in the engine. Add oil to top of filler pipe. |
| Mechanical drive | | |
| Grease lubricated | N.L.G.I. No. 2 E.P. Lithium Grease | Add small amount of grease. |
| Oil lubricated | Engine Oil | Same oil as used in engine. Fill to overflow plug. |
| 11. Fan Drive (Export Locomotive) | | |
| Gear box | SAE 40 oil or SAE30 air compressor oil | Maintain level in sight glass. |
| Rotor seal (Oil type) | Light oil | Remove knurled oiler and add 4 to 5 drops oil. |
| Bearings | Sealed | Lower bearings lubricated by splash. Replace sealed bearings at overhaul. |
| 12. Traction Motor | | |
| Gear Case | Texaco TMGL 7500 (Brookfield Viscosity 5000-10,000 CP; No. 3 Spindle, 4 RPM, 200° F) | Lithium soap thickened gear lubricant. Maintain lubricant level in gear case at full tooth dip to prevent bright gear teeth. Under low ambient temperatures where excessive channelling occurs, thin with car oil as required. |
| Felt seals | SAE 30 oil | Saturate seals on assembly. |
| 13. Generators | | |
| Auxiliary | Chevron Grease SRI-2 | Replace packed bearings at overhaul or Unit Exchange. |
| Main Generator (EMD design) | Shell Cyprina RA-3 Grease | Refer to specific Maintenance Instruction for complete in- formation. |
| 14. Hand Brake | Light oil | Apply small amounts as required. |
| 15. Hardware (General) | Light oil | Oil sparingly as necessary. |
| 16. High Voltage Cabinet Door Seals | Silicone grease | Apply sparingly to seals. |
| 17. Heaters (Cooling and Lube Oil Systems) | | |
| Pump motor | | |
| Ball bearing type | Ball bearing grease | Clean and repack bearings. |
| Sealed bearing type | Sealed | |
| Sleeve bearing | SAE 10 oil | Apply oil to sleeve bearings. |

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| Drive | Cup grease and SAE 20 oil | 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. |
| 18. Journal Boxes | | |
| Roller bearings, oil lubricated | All purpose lubricating oil referenced in this M.I. | Maintain to fill plug level or use gauge. |
| Roller bearings, grease lubricated | ARCO L-300 or Rocolube RR No. 1 (Formula LB1014) Humble- Arapen RB 300 Texaco - No. 1909-H | See specific Maintenance Instruction for complete information. |
| Friction bearing | All purpose lubricating oil referenced in this M.I. | Keep waste soaked in oil. |
| 19. Motors | | |
| Traction motor armature bearing, sealed grease | Shell Cyprina RA-3 Grease only | See specific Maintenance Instruction for complete information on traction motors. |
| Support bearings (Suspension Bearings) | All purpose lubricating oil referenced in this M.I. | See specific Maintenance Instruction for complete information on traction motors. |
| Hot water cab heater motor | Chevron Grease SRI-2 | Replace at overhaul or Unit Exchange. |
| Layover cab heater blower motor | SAE 20 oil | Oil sparingly (6 to 7 drops). |
| Fuel pump motor | Chevron Grease SRI-2 | Replace bearings at overhaul or Unit Exchange. |
| Train control motor - generator | Chevron Grease SRI-2 | Replace bearings at overhaul or Unit Exchange. |
| 20. Recorder - Speed | | |
| Chicago Pneumatic Hydraulic pump | C.P. Recorder Circulating Oil | See Manufacturer's Bulletins for complete details. Maintain at level mark on sight glass. |
| Worm gear box | Light grease | Refill. |
| Reversing mechanism | Light grease | Add to level of plug opening. |
| Right angle drive and flexible cable | Low temperature grease | 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 | Low temperature grease | Lubricate as required. |
| Wheel diameter compensator box | SAE 90 oil | Add oil if necessary. |
| Axle drive head | SAE 90 oil | Fill to level of filler opening. |

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| 21. Shutter Linkage | Light oil | Apply sparingly to moving pins and bearings. |
| 22. Shutter Air Cylinder | Graphite or silicone base lubricant | Apply to cylinder walls at overhaul. |
| 23. Throttle Linkage | Light oil | Apply sparingly. |
| 24. Windshield Wiper | Special air push grease | Apply to cylinder walls sparingly at overhaul. |
| 25. Head End Drive Gear Box | SAE 30 Air Compressor Oil | Maintain level in center of sight glass. (18 Gal. Nominal). |
| 26. Head End Generator Rear Bearing | SAE 30 Air Compressor Oil | Lubrication supplied by gear box. |

LUBRICANT REFERENCE

| <u>Name</u> | <u>Part No.</u> | <u>Quantity</u> |
|---|-----------------|-----------------|
| All Purpose Lubricating Oil (All Year Car Oil) | 8211926 | 55 gals. |
| | 8039278 | 5 gals. |
| Speed Recorder Oil | 8082436 | 1 gal. |
| | 8082434 | 1 qt. |
| Petroleum Jelly (Petrolatum) | 8499254 | 35 lbs. |
| Texaco TMGL 7500 | 8493729 | 1 lb. |
| | 9320633 | 2 lbs. |
| Chevron Grease SRI-2 | 8490018 | 8 lbs. |
| Shell Cyprina RA-3 Grease | 8249819 | 35 lbs. |
| | 8249820 | 120 lbs. |
| Air Engine Grease | 8227283 | 1 gal. |
| Low Temperature Grease | 8388664 | |
| Electrical Equipment Grease | 8196886 | 14 ozs. |
| N.L.G.I. No. 2 E.P. Lithium Grease | 8413019 | 14-1/2 ozs. |
| Special Air Push Grease | 8102474 | 1/2 oz. |
| Silicone Grease | 8425724 | 8 ozs. |
| | 8425725 | 10 lbs. |
| | 8425726 | 50 lbs. |
| Silicone Lubricant MIL-G-4343B | 9317859 | 8 oz. |
| Triple Valve Oil | 8242479 | 1 gal. |
| Molybdenum disulfide/graphite Base Lubricant | 9316707 | 16 ozs. |
| Standard Oil Supermil M-125 | 9318549 | 1 lb. |
| Humble - Arapen RB300 | | |
| Texaco - No. 1909-H | | |
| ARCO-L-300 or Rocolube RR No. 1 (Formula LB 1014) | | |