

Maintenance Instruction

Technical Publications



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 Seconds at 210° F	D445	50 Minimum
Flash Point, °F *	D92	350° Minimum
Pour Point, °F	D97	-20° Maximum
Pentane Insolubles	D893	.10% 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.
Areas of change are indicated by vertical bars.

AIR COMPRESSOR LUBRICATING OIL

PROPERTIES:

1. Deep Crankcase Type Air Compressor

WLN [WBO] and WLO [WXO] with crankcase capacities of 10-1/2 gallons.
WLG [WBG] with crankcase capacity of 17-1/2 gallons.

Grade ISO 32 (Formerly SAE10, ASTM 150)

Properties

Viscosity (ASTM D88, D2422 or D446)	
Centistokes at 40° C	28.8 – 35.2
Centistokes at 104° C	4.79 – 5.71
SUS at 100° F	136 – 165
SUS at 210° F	42 – 45
Pour Point (ASTM D97) Maximum 0° F, - 18° C	

2. All Other Than The Deep Crankcase Type Air Compressor

WLG [WBG], WHL [WXG], WLJ [ADJ], WLP [ABOV], WLQ [ADJV],
WLR [WXOV] and WLS [ADJV] compressors and combination compressor-
exhausters with crankcase capacities of 14 quarts.

WLE [WXE], WLN [WBO] and WLO [WXO] compressors with crankcase capacities
of 10-1/2 quarts.

Grade ISO100 (Formerly SAE30, ASTM 465)

Properties

Viscosity (ASTM D88, D2422 or D446)	
Centistokes at 40° C	90 – 110
Centistokes at 104° C	9.66 – 12.96
SUS at 100° F	417 – 510
SUS at 210° F	58 – 70
Pour Point (ASTM D97) Maximum 15° F, - 9.4° C	

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. A lubricant should be selected that does not have a viscosity of above 10,000 Saybolt Universal Seconds when the lube oil in the compressor crankcase is at the lowest temperature expected when in normal service.

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.

In general, a highly refined mineral type oil with high oxidation and chemical stability through the normal operating temperature range of the compressors and the additives recommended below will give satisfactory service provided oil is maintained within the run or full areas (green background) on the oil level gage and the correct viscosity [or SAE number] is used.

RECOMMENDED ADDITIVES:

Anti-rust, Anti-oxidation, and Anti-foam inhibitors.

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.
Compressor Clutch Bearings	Exxon Unirex N3	Repack when clutch is disassembled.
Compressor Clutch Seals	Parker Super O-lube	Repack when clutch is 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	Sealed grease bearings. Replace at overhaul or Unit Exchange.

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 approximately 1/8" above wear plate at truck application. See specific M.I. for complete information.

8. Control Stand - Cam-type (Movable cams to shafts) Electrical equipment grease Apply to shafts on reassembly.

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 SRI-2 Replace sealed bearings at overhaul or Unit Exchange.

"Q"-Fan

Upper Bearing All Fans Chevron grease SRI-2 Replace sealed bearings at overhaul or Unit Exchange.

Lower Bearing 4, 6, & 8-Blade Fans (Single Speed Only) Chevron Grease SRI-2 Replace sealed bearings at overhaul or Unit Exchange.

Lower Bearing 9-Blade Fan (Single Speed) And All 2-Speed Fans Standard Oil Supermil M-125 grease 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 SAE 30 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 "Code No. 1963 TMGL Premium" (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 channeling occurs, thin with car oil as required.
D87 Gear Case	Anglamol 99	For initial break-in only of newly installed final drive gearing, add 14 fluid ounces per gear case in addition to Texaco "Code No. 1963 TMGL Premium."
Felt seals	SAE 30 oil	Saturate seals on assembly.

13. Generators

Auxiliary	Chevron grease SRI-2	Replace packed bearings at overhaul Unit Exchange.
Main Generator (EMD design)		Refer to Specific Maintenance Instruction for complete information.
Sealed Grease	Exxon Unirex N-2	
Additive Type	Lubrico M-6	

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.
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 filler cap to full level or use gauge.
Roller Bearings, Grease Lubricated	ARCO L-300 or Rocolube RR NO. 1 (Formula LB1014) Humble-Arapen RB300 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.
AEM-7 (SKF Spherical Roller Bearing)	SKF Alexol HUB EP2 (LGEP-2) Grease or Exxon LIDOK EP-2 or Mobilux EP2	New bearing quantities 6 lbs. 3 ozs. plain brg. 5 lbs. 8 ozs. grd. brush brg.

19. Motors

Traction Motor Armature Bearing		See specific Maintenance Instruction for complete information on traction motors.
Sealed Grease	Shell Cyprina RA-3 grease only	
Oil Lubricated	All purpose lubricating oil referenced in this M.I.	
Support Bearings (Suspension Bearings)	All purpose lubricating oil referenced in this M.I.	
Cab Heater Motor Ball Bearing Type Sealed Bearing	Chevron Grease SRI-2 Sealed	Replace bearings at overhaul or Unit Exchange.
Layover Cab Heater Blower Motor	SAE 20 oil	Oil sparingly (6 to 7 drops).

19. Motors (Cont'd)

Fuel Pump Motor And Turbo Soakback 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.
Operating Motor For Transfer Switches	Gear - Master or Siemens Motor - Lubriplate MAG-00	2 ounces per motor. (2.28 Fluid Oz.)

20. Recorder - Speed

See Manufacturer's Bulletins for complete details.

Chicago Pneumatic

Oil Lube Type

Hydraulic Pump	C.P. Recorder circulating oil	Maintain at level mark on sight glass.
Worm Gear Box	SAE 10 or 20 oil	Refill as necessary.
Reversing Gear	SAE 10 or 20 oil	Refill as necessary.
Intermediate Shaft	Light grease	Cover shaft.
Axle Drive	SAE 10 or 20 oil	Add as required.
Drive shaft	High temperature grease	Coat 1/8" thick.

Grease Lube Type

Hydraulic Pump	C.P. Recorder circulating oil	Maintain at level mark on sight glass.
Worm Gear Box	High temperature grease	Refill to centerline of horizontal shaft.
Reversing Gear	High temperature grease	Add to level of plug opening.
Intermediate Shaft	High temperature grease	Coat shaft.
Axle Drive	Light grease	Add as required.
Drive Shaft	High temperature grease	Add as required with min. 1/8" coating.

20. Recorder - Speed (Cont'd)

Barco

Oil Lube Type - DPC

Recorder Instrument	SAE 10 oil	Add oil as necessary.
Wheel Diameter Compensator	SAE 90 oil	Add oil as necessary.
Link And Cable Asm.	High temperature grease	Coat 1/8" thick.
Axle Drive	SAE 90 oil	Fill to level of filler opening.

Factory Lubricated
DPC-FL

Recorder Instrument	None	
Wheel Diameter Compensator	None	
Link And Cable Asm.	High temperature grease	Coat 1/8" thick.
Axle Drive	SAE 90 oil	Fill to level of filler opening.
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	Mobil oil SHC 634 synthetic oil	With the engine shut down, oil level should be maintained at the center of the minimum and maximum markings on the sight glass.
26. Head End Generator Rear Bearing	Mobil oil SHC 634 synthetic oil	Lubrication supplied by gear box.
27. Cab Seats	Lubriplate 630-2	Apply to center post.

LUBRICANT REFERENCE

<u>Name</u>	<u>Part No.</u>	<u>Quantity</u>
All Purpose Lubricating Oil (All Year Car Oil)	8211926	55 gals.
Speed Recorder Oil	8082435	1/2 gal. ■
	8082436	1 gal. ■
	8082433	1 pint ■
Petroleum Jelly (Petrolatum)	8499254	35 lbs.
Texaco "Code No. 1963 TMGL Premium"	9569938	1 lb
	9569939	2 lbs.
Chevron Grease SRI-2	9327352	35 lbs.
Shell Cyprina RA-3 Grease	8249819	35 lbs.
	8249820	114 lbs. ■
Air Engine Grease	8227283	1 gal. ■
Low Temperature Grease	8388664	400 lbs. ■
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	5.3 ozs. ■
Silicone Lubricant MIL-G-4343B	9317859	8 oz.
Triple Valve Oil	9517921	1 pint ■
Molybdenum disulfide/graphite Base Lubricant	9316707	16 ozs.
Standard Oil Supermil M-125	9318549	1 lb.
Lubricant Bonded Coat	9339834	13 ozs.
Exxon Unirex N-2	9507146	35 lbs.
	9507147	120 lbs.
	8485142	7 oz.
	8485143	5 oz.
Lubriplate - MAG-00	9576966	2 lbs.
Aero Lubriplate, Low-flow, High Melt	8196884	14 oz.
Anglamol 99	40000052	5 gals.
Esso Beacon EP-2 grease	9571830	400 lbs. ■
Lubriplate 630-2	8196886	1 lb.
Lubrico M-6	8102583	1 lb.
	8102584	10 lbs.
	8068104	25 lbs.
	8102808	120 lbs. ■