

PRELIMINARY MAINTENANCE INSTRUCTION

Increased Capacity Traction Motor Gear CasesDescription

The increased capacity gear case incorporates improved sealing to minimize the amount of lubricant leakage and also incorporates reservoirs in the gear to increase the gear lubricant capacity of the gear case. These improvements permit greater intervals between lubrication periods.

The exterior appearance of the gear case has not been changed nor has the gear case been enlarged. All of the improvements have been confined to the inside of the case and to the gear.

The upper half of the gear case contains large removable gutters over the axle bores to divert the lubricant away from the felt seals and into the reservoirs in the gear. A filler cap has also been incorporated into the top half of the gear case to facilitate adding lubricant since the lubricant level can be above the opening of the bottom filler and inspection cap.

The bottom half of the gear case contains stop blocks located so that when the gear case is assembled these stop blocks hold the removable gutter in place in the gutter retainer in the top half of the gear case. The lower gear case also contains the return duct which channels the lubricant from the drain slot in the pinion end armature bearing cover back into the gear case instead of being discharged to the roadbed, Reference M. I. 9523.

The gear case assembly incorporates metal backed felt seals in all the gear case bores and a gasket cord 8301945 is wedged into the parting line channel to minimize leakage in these areas.

The reservoirs in the gear are constructed by adding doughnut shaped discs to each side of the gear within the rim which then collects the lubricant as it drips from the gutters. Centrifugal force holds some of the lubricant within the rotating gear thereby removing it from circulation. By this method the capacity of the gear case can be increased and still maintain an operating level nearly the same as with earlier style gear cases.

Maintenance

In order to fully realize the advantages of the increased capacity gear case it is important that the proper lubricant be used. Sinclair Jet Lube TM or TM-H, Continental Cogrease or their equivalent should be used. Asphalt base lubricants should not be used due to their low oxidation stability. If an asphalt base lubricant is used it must be watched to determine if oxidation is taking place. If oxidation occurs additional lubricant must be added. If the new cases with asphalt base lubricants will not be watched for oxidation, it is recommended that the lubricant be added according to the schedule used for old style gear cases.

A new or clean gear case is initially charged with 12 pounds of lubricant. When the lubricant level drops to a level as shown in the following table for a particular gear ratio, four pounds of lubricant should be added to the case.

RECOMMENDED MINIMUM OPERATING LEVEL

<u>Medium Case Gear Ratio</u>	<u>8301948 Upper 8302644 Lower Level</u>	<u>Small Case Gear Ratio</u>	<u>8301946 Upper 8302645 Lower Level</u>
15/62	11/16	20/57	5/8
16/61	7/8	21/56	13/16
17/60	1 1/8	22/55	1
18/59	1 3/8	25/52	1 11/16
19/58	1 5/8	<u>Large Case Gear Ratio</u>	<u>8301947 Upper 8302646 Lower</u>
20/57	1 13/16	<u>12/65</u>	<u>9/16</u>
21/56	1 15/16		

Although the lubrication intervals can be greatly extended, the actual interval will depend on the type of service etc. Each railroad should establish their own lubrication schedule. This should be done by conducting a test with several locomotives, sealing or locking the gear cases to prevent unauthorized lubricant additions. These cases should then be inspected at intervals of approximately 4,000 miles. The lubricant should be checked while still warm to permit the grease to drain to the bottom, but allowing the unit to stand at least 30 minutes before checking. As long as gears are well lubricated and the lubricant level is above the minimum it is not necessary to add lubricant. The gear will still dip 1/4" into the lubricant when at the minimum level.

Interchangeability

The new gear case assembly can be used with the previous style gear (without reservoirs) with no adverse affect. In such instances the initial charge of lubricant as well as make up lubricant should be the same as with the previous style gear case. That is, the initial charge should be 10 pounds and additions of 3 pounds made when required.

The new style gear, (with reservoirs) can also be used with the previous design (off set seal) gear case. Once again the initial charge of 10 pounds and make up quantity of 3 pounds should be observed.

Intermixing of gear case halves between the off set seal gear case and the new increase capacity gear case is limited to the following:

1. The new lower half of the gear case can be used with the earlier style upper halves without any difficulty.
2. In an emergency the lower half of the earlier style gear case can be used with the upper half of the new gear cases. When this is done, however, the removable gutters in the top half must not be installed due to the fact that the lower half of the case will not have the stop blocks to hold the gutter in place. If the gutters were installed in this instance, they would fall out in service resulting in possible damage to the gears, etc. Some leakage at the felt seals can also be expected since the gutter to carry the lubricant around the seals is not present. This particular gear case combination also results in the felt seal channels in both upper and lower gear case halves lining up with each other. This could allow the metal backed felt seals to rotate unless seal stop blocks are installed as shown in Pointers dated November 11, 1960.

Assembly & Disassembly

Due to the removable gutters extending into the gears, special assembly practices are necessary. The gear case should be cleaned, and the channels at the parting lines as well as those for the felt seals should not be damaged or closed in since this would cause interference at assembly.

New metal-backed felt seals should be installed and a gasket cord 8301945 should be wedged into the parting line channel of the upper half gear case, and cemented at the ends with permatex. Remove the gutters from the upper half of the gear case and apply the upper half to the motor, wheel and gear assembly in the normal manner.

The removable gutters are then rolled into place in the gutter retainers in the upper half. A light oil film on the gutter will help to facilitate this procedure. The gutter is first fitted inside the gear and then rotated thru the channel retainer. As the gutter nears its final location the fit should be snug and will require tapping with a mallet to complete the assembly. The gutters are off set and one side has been bent over at the ends to prevent installing this side in the retainer channel.

The lower half of the gear case is then installed in the normal manner. Check to see that the return duct gasket did not shift during this assembly. Apply the clamping bolts using elastic stop nuts 8032750 and flat washers 8134750.

Torque the bolts to 425-450 foot pounds. The initial charge of twelve pounds of gear lube can be added during assembly of the lower half of the gear case or after final assembly depending on convenience.

Standard gear case removal practice can be employed in removing the gear case. The removable gutters will drop out when the top half is lifted off; they do not have to be rolled out.

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