

**STATE RAIL AUTHORITY OF NSW**



## **Electric Locomotives**

# **MECHANICAL INSPECTION SCHEDULES**

46 Class: 2700 kW (3600 HP)

85 Class: 2700 kW (3600 HP)

86 Class: 2700 kW (3600 HP)

Second Edition (includes 86 Class) - Reprinted August 2003

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STATE RAIL AUTHORITY OF NEW SOUTH WALES.

ELECTRIC LOCOMOTIVES.

MECHANICAL INSPECTIONS

'TRIP' INSPECTIONS - 7 Days

'A' INSPECTIONS - 45 Days

'B' INSPECTIONS - 135 Days

'C' INSPECTIONS - 270 Days

OCTOBER, 1982

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 AND 85 CLASS ELECTRIC LOCOMOTIVES.

SEQUENCE CHART

AFTER INTRODUCTION TO SERVICE OR AFTER AN EQUIPMENT CHANGE OR GENERAL OVERHAUL THE SEQUENCE BELOW IS TO BE FOLLOWED.

- A INSPECTION - 60 days
- A INSPECTION - 120 days
- B INSPECTION - 180 days
- A INSPECTION - 240 days
- A INSPECTION - 300 days
- C INSPECTION - 360 days

INSPECTION	TRIP	A	B	C
DAYS	7	60	180	360
Drivers Cab & Machine Room	1 to 9	1 to 16	1 to 22	1 to 29
Underneath Locomotive	30 to 39	30 to 45	30 to 50	30 to 54
Lubrication	55 to 61	55 to 70	55 to 74	55 to 89
Air Brake	90 to 94	90 to 99	90 to 106	90 to 115

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

ELECTRIC LOCOMOTIVES.

MECHANICAL INSPECTION SCHEDULE - TRIP INSPECTION.

LOCO. NO. \_\_\_\_\_ DEPOT \_\_\_\_\_  
DATE \_\_\_\_\_ KILOMETRAGE \_\_\_\_\_

NO.	ITEM	FITTER'S NAME PRINTED
<u>Driver's Cabins and Machine Room Section.</u>		
1.	Sands whistles.	_____
2.	Log book report, gauges, wipers and washers.	_____
3.	Hasler speedometer.	_____
4.	Physical inspection.	_____
5.	Panto pans and condition of pantograph.	_____
6.	Spare equipment box and seals.	_____
7.	Spare "Trip" Inspection.	_____
8.	Spare "Trip" Inspection.	_____
9.	Spare "Trip" Inspection.	_____
<u>Underneath Locomotive Section.</u>		
30.	Traction motor cooling air flow.	_____
31.	Traction motor nose suspension.	_____
32.	Hasler transmitter and speed generators.	_____
33.	Bolster mounting pads.	_____
34.	Wheel examination.	_____
35.	Shock absorber.	_____
36.	Examine bogies.	_____
37.	Spare "Trip" Inspection.	_____
38.	Spare "Trip" Inspection.	_____
39.	Spare "Trip" Inspection.	_____
<u>Lubrication Section.</u>		
55.	Air compressor oil level.	_____
56.	Traction motor gearcases.	_____
57.	Grease bogie.	_____
58.	Suspension bearing oil level.	_____
59.	Spare "Trip" Inspection.	_____
60.	Spare "Trip" Inspection.	_____
61.	Spare "Trip" Inspection.	_____

Air Brake Section.

90. Vigilance Control Equipment.

\_\_\_\_\_

91. Air brake equipment.

\_\_\_\_\_

92. Spare "Trip" Inspection.

\_\_\_\_\_

93. Spare "Trip" Inspection.

\_\_\_\_\_

94. Spare "Trip" Inspection.

\_\_\_\_\_

REMARKS AND/OR REPAIRS

REPAIRS EFFECTED

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature of Foreman on completion of Trip Inspection

\_\_\_\_\_

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

ELECTRIC LOCOMOTIVES.

MECHANICAL INSPECTION SCHEDULE.

This sheet issued for A, B and C Inspections.

<u>INSPECTION SCHEDULE</u>	<u>ITEM NO.</u>	<u>FITTER'S NAME PRINTED</u>
<u>"A" Inspection.</u>		
Drivers Cabins and Machine Room.	1 to 16	_____
Underneath Locomotive.	30 to 45	_____
Lubrication.	55 to 70	_____
Air Brakes.	90 to 99	_____

Signature of Foreman on completion of "A" Inspection \_\_\_\_\_

<u>"B" Inspection.</u>		
Drivers Cabins and Machine Room.	1 to 22	_____
Underneath Locomotive.	30 to 50	_____
Lubrication.	55 to 74	_____
Air Brakes.	90 to 106	_____

Signature of Foreman on completion of "B" Inspection \_\_\_\_\_

<u>"C" Inspection.</u>		
Drivers Cabins and Machine Room.	1 to 29	_____
Underneath Locomotive.	30 to 54	_____
Lubrication.	55 to 89	_____
Air Brakes.	90 to 115	_____

Signature of Foreman on completion of "C" Inspection \_\_\_\_\_

<u>REMARKS AND/OR REPAIRS</u>	<u>REPAIRS EFFECTED</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Signature of Foreman on completion of repairs. \_\_\_\_\_

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 AND 85 CLASS LOCOMOTIVES.

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NUMERICAL INDEX.

DRIVERS CABINS AND ENGINE ROOM SECTION.

- T1. Sands and Whistles.
- T2. Log Book Report, Gauges, Wipers and Washers.
- T3. Hasler Speedometer.
- T4. Physical Inspection.
- T5. Pantograph, Condition of.
- T6. Inspect Spare Equipment Box and Seals.  
Check Detonator Container and Seals.
- T7. Spare 'T' Inspection.
- T8. Spare 'T' Inspection.
- T9. Spare 'T' Inspection.
- A10. Doors and Windows, etc.
- All. Ablution Tank.
- A12. Pantograph Insulators.
- A13. Vortacool Refrigerator.
- A14. Spare 'A' Inspection.
- A15. Spare 'A' Inspection.
- A16. Spare 'A' Inspection.
- B17. Pantograph Spring Pressure and Operation.
- B18. Pantograph Hand/Foot pump.
- B19. Raise and Lower Valve.
- B20. Spare 'B' Inspection.
- B21. Spare 'B' Inspection.
- B22. Spare 'B' Inspection.
- C23. Holding Down Bolts.
- C24. Traction Motor Blower Impellers.
- C25. Vortacool Refrigerator.
- C26. Panto 3 Way Cock.
- C27. Spare 'C' Inspection.
- C28. Spare 'C' Inspection.
- C29. Spare 'C' Inspection.

UNDERNEATH LOCOMOTIVE SECTION.

- T30. Traction Motor Cooling Air Flow.
- T31. Traction Motor Nose Suspension.
- T32. Hasler Transmitter and Speed Generator.
- T33. Bolster Mounting Pads.
- T34. Wheel Examination.
- T35. Shock Absorbers.
- T36. Examine Bogies for Loose or Broken Parts.
- T37. Spare 'T' Inspection.
- T38. Spare 'T' Inspection.
- T39. Spare 'T' Inspection.
- A40. Automatic Couplers.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 AND 85 CLASS LOCOMOTIVES.

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NUMERICAL INDEX CONT'D.

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- A41. Shock Absorbers.
- A42. Compressor Seals and Flexible Drives.
- A43. Spare 'A' Inspection.
- A44. Spare 'A' Inspection.
- A45. Spare 'A' Inspection.
- B46. Bogies.
- B47. Air compressor mountings.
- B48. Spare 'B' Inspection.
- B49. Spare 'B' Inspection.
- B50. Spare 'B' Inspection.
- C51. Suspension Bearing Bolts.
- C52. Spare 'C' Inspection.
- C53. Spare 'C' Inspection.
- C54. Spare 'C' Inspection.

LUBRICATION SECTION.

- T55. Air Compressor Oil Level.
- T56. Traction Motor Gear Cases.
- T57. Grease Bogie as Required.
- T58. Suspension Bearings Oil Level.
- T59. Spare 'T' Inspection.
- T60. Spare 'T' Inspection.
- T61. Spare 'T' Inspection.
- A62. Door and Window Hardware.
- A63. Air Cocks at Headstock.
- A64. Brake Rigging.
- A65. Brake Slack Adjusters.
- A66. Grease Pantographs.
- A67. Lubricate D.B.V. and I.B.V.
- A68. Spare 'A' Inspection.
- A69. Spare 'A' Inspection.
- A70. Spare 'A' Inspection.
- B71. Handbrake.
- B72. Suspension Bearing Lubricator Pads.
- B73. Spare 'B' Inspection.
- B74. Spare 'B' Inspection.
- C75. Windscreen Wipers.
- C76. Drivers and Observers Seats.
- C77. Peacock Handbrake.
- C78. Brake Cylinders.
- C79. Hasler Speedometer Transmitter.
- C80. Air Compressor Oil Filter.
- C81. Air Compressor Oil Change.
- C82. Air Compressor Motor.
- C83. Brake Slack Adjuster Bush.
- C84. Axle Box Roller Bearings (every 2nd C inspection)
- C85. Traction Motor Bearings (every 2nd C inspection)
- C86. Motor Alternator Bearings (every 2nd C inspection)
- C87. Spare 'C' Inspection.
- C88. Spare 'C' Inspection.
- C89. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 AND 85 CLASS LOCOMOTIVES.

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- T91. Air Brake Equipment.
- T92. Spare 'T' Inspection.
- T93. Spare 'T' Inspection.
- T94. Spare 'T' Inspection.
- A95. Safety Valves.
- A96. Air Compressor Air Intake Filters.
- A97. Spare 'A' Inspection.
- A98. Spare 'A' Inspection.
- A99. Spare 'A' Inspection.
- B100. Main Reservoir Auto Drain Valve Check.
- B101. Check P and C Pressure.
- B102. Compressor Governor.
- B103. Control Governor.
- B104. Spare 'B' Inspection.
- B105. Spare 'B' Inspection.
- B106. Spare 'B' Inspection.
- C107. Air Compressor Valves.
- C108. Air Compressor Breather.
- C109. Air Compressor Air Intake Filters.
- C110. Air Compressor Intercooler Auto Drain Valve.
- C111. Gauges.
- C112. Air Strainers.
- C113. Spare 'C' Inspection.
- C114. Spare 'C' Inspection.
- C115. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 AND 85 CLASS LOCOMOTIVES.

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MECHANICAL INSPECTION SCHEDULE.

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STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

T1. SANDS WHISTLES.

Check the operation of the following outside the shop:-

- (a) Sanders: Sand discharge per pipe 0.5 kg to 0.7 kg (1-1 1/2 lbs) per minute. Check pipe alignment - 40 m.m. (1 1/2") above rail level.
- (b) Whistles: Test both sides of cabs.

T2. LOG BOOK REPORT, GAUGES, WIPERS AND WASHERS.

In Driver's Cab, check:-

- (a) Log Book entries.  
Attend to bookings as recorded by the Driver.
- (b) All gauge readings.
- (c) All windscreen wipers operation.
- (d) All windscreen washers operation, top up water container.

T3. HASLER SPEEDOMETER.

Wind clock and set hands if necessary.

Blue dot indicates p.m.

Check locomotive log book for kilometrage run since the last diagram roll change (anticipated life 3500 km). Change if required.

When installing or removing the roll, mark on the roll and in the top right hand corner of the Log Book the Locomotive number, Time, Date and relevant details.

NOTE: Reduce brake pipe pressure to zero with the automatic brake valve before closing the instrument case after installing a new roll to ensure the stylus for the brake line is correctly positioned.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

T4. PHYSICAL INSPECTION.

Examine locomotive internally and externally for defects and fractures. Report any findings to Foreman.

T5. PANTO PANS AND CONDITION OF PANTOGRAPH.

Check the following:-

- (a) Shunts on pan knuckle and frame for tightness, overheating or damage.
- (b) Alignment of pans for twist.
- (c) Springs for breakage or weakness.
- (d) Pan supports for fracture.
- (e) Pistons for blow-by.
- (f) Saddles for loose pins and fractures.
- (g) Air hoses for leaking or signs of failure.
- (h) Check all insulators for damage.

Changing of Pans.

Change carbon strips when wear has occurred to 5/16" thickness from pan surface or if the strips are deeply grooved, severely chipped or securing bolts are loose.

T6. INSPECT SPARE EQUIPMENT BOX & SEALS, CHECK DETONATOR CONTAINERS & SEALS.

Replace if necessary using standard seal and sealing pliers.

T7. Spare 'T' Inspection.

T8. Spare 'T' Inspection.

T9. Spare 'T' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

A10. DOORS AND WINDOWS, ETC.

Check all cab, machine room and bulkhead doors; locks, hinges, seals, window frames.

Repair where required.

A11. ABLUTION TANK.

NOT APPLICABLE.

A12. PANTOGRAPH INSULATION.

Clean pantograph insulators using a cloth dampened in solvent. Do not use abrasive material.

A13. VORTACOOOL REFRIGERATOR.

NOT APPLICABLE.

A14. Spare 'A' Inspection.

A15. Spare 'A' Inspection.

A16. Spare 'A' Inspection.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

B17. PANTOGRAPH SPRING PRESSURE AND OPERATION.

Pantograph spring pressure is measured with a spring balance and should be 9.8 kg (22 lbs). Adjustment is made by increasing or decreasing, the length of the two main springs (equally on both sides).

The time of raising the pantograph should not exceed 20 seconds with a 3 foot maximum lift. If the time is exceeded, adjust the speed control which is located adjacent to the pantograph air cylinder.

When lowering the pantograph the quick release valve should function so that the pantograph leaves the wire quickly to reduce the effect of arcing. At a height of about 6" from the down position a cushioning effect should check the speed of the pantograph. If the cushioning occurs too soon or too late then adjustment is carried out by means of the fitting at the centre of the pressure head of the air cylinder.

B18. PANTOGRAPH HAND/FOOT PUMP.

Drain all air from main reservoirs, check operation of hand pump by using pump to raise pantograph. Replace pump if defective.

B19. RAISE AND LOWER VALVE.

Check that latch tongue and ledge are clean and sharp with no undue wear.

Adjustment.

- (1) Push rod should protrude 0.8 m.m. (1/32") below armature plate when latched up. Renew push rod when less than 0.4 m.m. (1/64").
- (2) Manually push horizontal armature fully up and check clearance of 0.4 m.m. (1/64") between the armature edge and the brass latching ledge on vertical armature.
- (3) Manually push the vertical armature to the right and check the clearance of 0.4 m.m. (1/64") between the falling armature and the brass plate. Correct 2 and 3 by packing under the appropriate hinge plate.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

B20. Spare 'B' Inspection.

B21. Spare 'B' Inspection.

B22. Spare 'B' Inspection.

C23. HOLDING DOWN BOLTS.

Check the tightness of the following:-

Traction motor blower housing.

C24. TRACTION MOTOR BLOWER IMPELLERS.

Inspect impeller for defects.

Remove any deposits on the impellers, if necessary. Clean in situ. Cover lower blades with cleaning cloths and exercise care in not allowing foreign matter into the air passages.

C25. VORTACOOOL REFRIGERATION.

NOT APPLICABLE.

C26. PANTO 3 WAY COCK.

Lower pantographs, remove cap from back of cock, check spring and test that air release hole in cap is free. Remove handle and barrel, clean inside of barrel with cloth dipped in kerosine, dry with clean dry cloth. Lubricate with Lithium Base Grease No.3, Stores Item 5285EA. Re-assemble and check that cock operates freely.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

C27. Spare 'C' Inspection.

C28. Spare 'C' Inspection.

C29. Spare 'C' Inspection.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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UNDERNEATH LOCOMOTIVE SECTION.

T30. TRACTION MOTOR COOLING AIRFLOW.

Check the cooling air flow from the traction motors.

Check the cooling air flow through the air compressor cylinder heads.

Examine the air bellows, wear plates and arms for alignment, leakage and damage. Ensure setscrews are tight.

T31. TRACTION MOTOR NOSE SUSPENSION.

Check the traction motor nose suspension assemblies and wear plates.

Refer to Item 11 in Appendix A, Page AX20.

T32. HASLER TRANSMITTER AND SPEED GENERATORS.

Check the security of the Hasler transmitter.

T33. BOLSTER MOUNTING PADS.

NOT APPLICABLE

T34. WHEEL EXAMINATION.

All wheel flanges to be examined for arrised condition and corrected if required.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

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46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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UNDERNEATH LOCOMOTIVE SECTION.

T35. SHOCK ABSORBER.

NOT APPLICABLE.

T36. EXAMINE BOGIES FOR LOOSE OR BROKEN PARTS.

Check coil and leaf springs, compensating link pins and associated equipment for breakage, misalignment, etc.

T37. Spare 'T' Inspection.

T38. Spare 'T' Inspection.

T39. Spare 'T' Inspection.

T40. AUTOMATIC COUPLERS.

Check auto coupler height 865 m.m. +/- 25 m.m. (34" +/-1") measured from rail level to the centre line of the coupler knuckle.

Refer to Item 13 in Appendix A, Page AX23.

Gauge auto couplers at both ends.

T41. SHOCK ABSORBERS.

NOT APPLICABLE.

T42. COMPRESSOR SEALS AND FLEXIBLE DRIVES.

Check compressor seals for leaking, replace compressor if leak is excessive. Examine flexible drives for wear or deterioration of rubber inserts, replace if necessary.

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UNDERNEATH LOCOMOTIVE SECTION.

A43. Spare 'A' Inspection.

A44. Spare 'A' Inspection.

A45. Spare 'A' Inspection.

B46. BOGIES.

Check:-

- (a) Side bearer clearance - 1/32"
- (b) Bogie side check clearance
- (c) End bearers for condition, inspect under metal dust covers and check oil level.
- (d) Motor nose brackets and lateral link bolts and pins.
- (e) Suspension bearing bolts.
- (f) Bottom yoke plate.
- (g) Draw gear rubber (Waughgould gear) check for loose plates and deteriorating rubber.
- (h) Spring stirrup alignment (must be kept from wearing inside of bogie frame). Misalignment may be caused by excessive wear in axle box guides.
- (i) Coil springs are not broken or compressed.
- (j) Articulating gear pins and beam for wear.

B47. AIR COMPRESSOR MOUNTINGS.

Check security of compressor mountings.

B48. Spare 'B' Inspection.

B49. Spare 'B' Inspection.

B50. Spare 'B' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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UNDERNEATH LOCOMOTIVE SECTION.

C51. SUSPENSION BEARING BOLTS.

Tighten bolts with tension wrench set at 1084 Joules (800 ft/lb).

C52. Spare 'C' Inspection.

C53. Spare 'C' Inspection.

C54. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

T55. AIR COMPRESSOR OIL LEVEL.

With the compressor stopped, check the air compressor's lube oil level. Replenish with SAE.30 lube oil, Item 5255C.

Check gaskets and inspection covers for oil leaks.

T56. TRACTION MOTOR GEARCASES.

Add lubricant as necessary to maintain a heavy film on gear teeth.

For gearcases with inspection plugs or covers, maintain lubricant level at the bottom of the inspection plug hole.

Use Caltex Gear Lube T.M. 7500, M.I. 26819904, in 450g (1 lb.) white polyethylene bags.

T57. GREASE BOGIE AS REQUIRED.

- (a) Axle box guides.
- (b) Draw bar pins.
- (c) Spring hanger pins, and guides.
- (d) Brake hanger pins.
- (e) Compensating beam pins.
- (f) Brake shaft bearings, with Lithium Base Grease No.3, Stores Item 5285EA.

T58. SUSPENSION BEARING OIL LEVEL.

Inspect and top up if required. Level in bearings, Max - to bottom of filling pipe, Min - 1 1/2" below maximum. Quantity between maximum and minimum - 3 1/2 pints. Gauges are provided for checking oil level. Bearings - Red Axle Oil, Stores Item 6482B.

T59. Spare 'T' Inspection.

T60. Spare 'T' Inspection.

T61. Spare 'T' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

A62. DOOR AND WINDOW HARDWARE.

Lightly lubricate hinges, lock, slides, etc.

Use Rocol M.I. 15514201.

A63. AIR COCKS AT HEADSTOCK.

Check all cocks for freedom of movement and that there is some resistance to movement. Grease where necessary with multi-purpose grease, Item 5285E.

NOTE: Springs on 18 m.m. (3/4") and 25 m.m. (1") cocks are to have 4.5 m.m. (3/16") compression. Springs on 12.5 m.m. (1/2") cocks are to have 3 m.m. (1/8") compression. Ball type cocks are not to be fitted.

A64. BRAKE RIGGING.

Lightly lubricate pins and bushings with hand oiler. Use SAE.30 lube oil, Item 5255C.

A65. BRAKE SLACK ADJUSTERS.

NOT APPLICABLE.

A66. GREASE PANTOGRAPHS.

All nipples on the following items must be greased. Pan support mechanism top and bottom frame hinges, equalising links, main ball bearings, main outer spring support points, push down spring spherical bearings at fixed ends, lever end of push rod, push rod roller, cylinder piston rod guide, piston lubricator on cylinder. (Total nipples : 53 per pantograph), Lithium Base Grease No.3, Stores Item 5285EA.

A67. LUBRICATE D.B.V. AND I.B.V.

As per Westinghouse instructions.

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MECHANICAL INSPECTION SCHEDULE.

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LUBRICATION SECTION.

A68. Spare 'A' Inspection.

A69. Spare 'A' Inspection.

A70. Spare 'A' Inspection.

B71. HANDBRAKE.

Lightly lubricate the handbrake pulley pivot pins with the hand oiler, using SAE.30 lube oil, Item 5255C.

B72. SUSPENSION BEARING LUBRICATOR PADS.

- (a) Clean around lubricator pad cover plate, remove cover.
- (b) Examine condition of pads, replace if required.
- (c) Replace cover using new cover plate gasket.

B73. Spare 'B' Inspection.

B74. Spare 'B' Inspection.

C75. WINDSCREEN WIPERS.

Lubricate parts in the air chamber with multi-purpose grease, Item 5285E.

C76. DRIVERS AND OBSERVERS SEATS.

Adjust mechanism and grease with Rocol Dry Lube M.I. 15514201.

C77. PEACOCK HANDBRAKE.

Remove cover, blow out dust and lightly lubricate with SAE.30 lube oil, Item 5255C. Lubricate handle mechanism.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

C78. BRAKE CYLINDERS.

Grease all brake cylinder with grease gun. 12 pumps on pressure head and 2 pumps on gland end. Use Multi-purpose grease, Item 5285E.

C79. HASLER SPEEDOMETER TRANSMITTER.

Add multi-purpose grease, Item 5285E to both nipples. Remove the front cover of the gearbox to ensure sufficient grease has passed through the bearings and that adequate lubricant is contained in the gearbox.

C80. AIR COMPRESSOR OIL FILTER.

Remove element and thoroughly clean the filter bowl with clean lintless cloths. Ensure that no cloths are left in the filter bowl.

C81. AIR COMPRESSOR OIL CHANGE.

Drain sump and re-fill with SAE.30 lube oil, Item 5225C. Capacity 7.5 litres (13 pints).

After refilling, run the machine for a few minutes then top up the sump, if necessary, to make good the oil drawn into the filter and oilways.

C82. AIR COMPRESSOR MOTOR - (every second C Inspection).

Add four (4) pumps of Lithium Grease No.3, Item 5293A to motor bearings using a grease gun. DO NOT OVER LUBRICATE. Grease must not be allowed to enter the motor and any that passes the inner bearing cap must be carefully removed.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

C83. BRAKE SLACK ADJUSTER BUSH.

NOT APPLICABLE.

C84. AXLE BOX ROLLER BEARINGS.

Grease roller bearing axlebox packaged units using a power operated grease gun filled with No.3 Lithium base grease, item 5293A. (Spec. No. L343/69).

Apply 450g (16 ounces) of grease per axlebox.

Grease nipples - Lincoln Part No. 5715 (1/2" N.P. thread), M.I. 47206065.

C85. TRACTION MOTOR SUSPENSION BEARING.

NOT APPLICABLE.

C86. MOTOR ALTERNATOR BEARING.

NOT APPLICABLE.

C87. Spare 'C' Inspection.

C88. Spare 'C' Inspection.

C89. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

---

AIR BRAKE SECTION.

NOTE: Items marked with an Asterisk (\*) must also be performed after each Inspection.

T90. \*VIGILANCE CONTROL EQUIPMENT.

Test vigilance control equipment in accordance with Circular No.41/66. Check that all seals are intact. Rectify and/or bring under notice of the Foreman any defects found during test.

T91. \*AIR BRAKE EQUIPMENT.

Check:-

- (a) All brakeshoes must be 6 m.m. (1/4") above condemning.
- (b) Brake piston travel to be adjusted to minimum in accordance with Circular No.14/78.
- (c) Air compressor operation. main reservoir pressure to be maintained between 700-800 kPa (105-120 p.s.i.). Notify Foreman if it takes longer than ??????? to pump between those pressures.
- (d) Function of automatic and independent brake valves and flowmeters. See Circular No.95/61 as regards flowmeters.
- (e) Security of brake equipment, rectify all defects.
- (f) Leakage at piping and equipment, rectify all defects.
- (g) Drain condensate from all main reservoirs.
- (h) Check operation of handbrake. The Peacock ratchet handbrake must be operated with quick movements, to ensure function under emergency conditions.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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AIR BRAKE SECTION.

T92. Spare 'T' Inspection.

T93. Spare 'T' Inspection.

T94. Spare 'T' Inspection.

A95. SAFETY VALVES.

Check the operation and setting of the main reservoir safety valves.

Check all safety valves on the main reservoir and compressor intercooler for tightness.

A96. AIR COMPRESSOR AIR INTAKE FILTERS.

NOT APPLICABLE

A97. Spare 'A' Inspection.

A98. Spare 'A' Inspection.

A99. Spare 'A' Inspection.

A100. MAIN RESERVOIR AUTO DRAIN VALVE CHECK.

NOT APPLICABLE.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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AIR BRAKE SECTION.

B101.CHECK P AND C PRESSURE.

490 kPa (70 lb./in) adjusted by reducing valve between M.R. supply and P and C reservoir.

B102.COMPRESSOR GOVERNOR.

Clean and adjust to close at 105 lb./in<sup>2</sup> and open at 120 lb./in<sup>2</sup>. Compressor Governor Adjustment.

1. Set the higher pressure by adjusting the position of the top cap on the main (large) spring with the two vertical screws (keeping the plate horizontal), lowering the cap to increase the pressure setting.
2. The lower pressure is next set with the toggle spring, increasing the tension of the spring to increase the difference between the settings. As the bearings wear the amount of tension required in the toggle spring for the 15 lb./in<sup>2</sup> pressure difference will be reduced. This will reduce the tendency for the contacts to "snap" open and closed. When the toggle spring extension from free length is less than 1/16", wear in the mechanism is excessive and the governor is to be returned to Chullora for repair.

B103.CONTROL GOVERNOR.

Clean contacts and adjust to open at 50 lb./in<sup>2</sup> and close at 60 lb./in<sup>2</sup> check to see that contacts do not re-open as pressure builds up further.

B104.Spare 'B' Inspection.

B105.Spare 'B' Inspection.

B106.Spare 'B' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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AIR BRAKE SECTION.

C107.AIR COMPRESSOR VALVES.

Remove valves, dismantle, clean and inspect.

Renew components where necessary. Replace reconditioned air compressor valves.

C108.AIR COMPRESSOR BREATHER.

Dismantle crankcase breather by removing the outer strainer plate, curled hair and inner strainer plate. Inspect plates, replace if necessary. Clean hair and re-assemble.

C109.AIR COMPRESSOR AIR FILTER.

Clean air compressor air intake strainer.

C110.COMPRESSOR INTERCOOLER AUTO DRAIN VALVE.

NOT APPLICABLE

C111.GAUGES.

Check calibration to a standard test gauge of:-

- (a) Control air pressure.
- (b) Air brake duplex (MR and ER) and (BP and B.Cyl.)
- (c) Flow meter gauge.

C112.AIR STRAINERS.

Remove and clean elements of air strainers in vigilance control, whistle valve, compressor governor control air, sanders and pantograph control air.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

46 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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AIR BRAKE SECTION.

C113.Spare 'C' Inspection.

C114.Spare 'C' Inspection.

C115.Spare 'C' Inspection.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

T1. SANDS WHISTLES.

Check the operation of the following outside the shop:-

- (a) Sanders: Sand discharge per pipe 0.5 kg to 0.7 kg (1-1 1/2 lbs) per minute. Check pipe alignment - 40 m.m. (1 1/2") above rail level.
- (b) Whistles: Test both sides of cabs.

T2. LOG BOOK REPORT, GAUGES, WIPERS AND WASHERS.

In Driver's Cab, check:-

- (a) Log Book entries.  
Attend to bookings as recorded by the Driver.
- (b) All gauge readings.
- (c) All windscreen wipers operation.
- (d) All windscreen washers operation, top up water container.

T3. HASLER SPEEDOMETER.

Wind clock and set hands if necessary.

Blue dot indicates p.m.

Check locomotive log book for kilometrage run since the last diagram roll change (anticipated life 3500 km). Change if required.

When installing or removing the roll, mark on the roll and in the top right hand corner of the Log Book the Locomotive number, Time, Date and relevant details.

NOTE: Reduce brake pipe pressure to zero with the automatic brake valve before closing the instrument case after installing a new roll to ensure the stylus for the brake line is correctly positioned.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

T4. PHYSICAL INSPECTION.

Examine locomotive internally and externally for defects and fractures. Report any findings to Foreman.

T5. PANTO PANS AND CONDITION OF PANTOGRAPH.

Check the following:-

- (a) Shunts on pan knuckle and frame for tightness, overheating or damage.
- (b) Alignment of pans for twist.
- (c) Springs for breakage or weakness.
- (d) Pan supports for fracture.
- (e) Pistons for blow-by.
- (f) Saddles for loose pins and fractures.
- (g) Air hoses for leaking or signs of failure.
- (h) Check all insulators for damage.

Changing of Pans.

Change carbon strips when wear has occurred to 5/16" thickness from pan surface or if the strips are deeply grooved, severely chipped or securing bolts are loose.

T6. INSPECT SPARE EQUIPMENT BOX & SEALS.

NOT APPLICABLE.

T7. Spare 'T' Inspection.

T8. Spare 'T' Inspection.

T9. Spare 'T' Inspection.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

A10. DOORS AND WINDOWS, ETC.

Check all cab, machine room and bulkhead doors; locks, hinges, seals, window frames.

Repair where required.

A11. ABLUTION TANK.

Fill tank.

NOTE: 85 class locomotives are equipped with stainless steel tanks and do not require any water treatment.

A12. PANTOGRAPH INSULATION.

Clean pantograph insulators using a cloth dampened in solvent. Do not use abrasive material.

A13. VORTACOOOL REFRIGERATOR.

Drain air filter on refrigerator air supply line. Pet cock located at the base of filter.

A14. Spare 'A' Inspection.

A15. Spare 'A' Inspection.

A16. Spare 'A' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

B17. PANTOGRAPH SPRING PRESSURE AND OPERATION.

Pantograph spring pressure is measured with a spring balance and should be 9.8 kg (22 lbs). Adjustment is made by increasing or decreasing, the length of the two main springs (equally on both sides).

The time of raising the pantograph should not exceed 20 seconds with a 3 foot maximum lift. If the time is exceeded, adjust the speed control which is located adjacent to the pantograph air cylinder.

When lowering the pantograph the quick release valve should function so that the pantograph leaves the wire quickly to reduce the effect of arcing. At a height of about 6" from the down position a cushioning effect should check the speed of the pantograph. If the cushioning occurs too soon or too late then adjustment is carried out by means of the fitting at the centre of the pressure head of the air cylinder.

B18. PANTOGRAPH HAND/FOOT PUMP.

Drain all air from main reservoirs, check operation of hand pump by using pump to raise pantograph. Replace pump if defective.

B19. RAISE AND LOWER VALVE.

NOT APPLICABLE.

B20. Spare 'B' Inspection.

B21. Spare 'B' Inspection.

B22. Spare 'B' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

C23. HOLDING DOWN BOLTS.

Check the tightness of the following:-

Traction motor blower housing.

C24. TRACTION MOTOR BLOWER IMPELLERS.

Inspect impeller for defects.

Remove any deposits on the impellers, if necessary. Clean in situ.  
Cover lower blades with cleaning cloths and exercise care in not  
allowing foreign matter into the air passages.

C25. VORTACOOOL REFRIGERATION.

Remove and clean filter bowl.

Fit new sintered bronze filter element (M.I. 13009253)

Renew filter bowl gasket (M.I. 13176052)

C26. PANTO 3 WAY COCK.

NOT APPLICABLE.

C27. Spare 'C' Inspection.

C28. Spare 'C' Inspection.

C29. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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UNDERNEATH LOCOMOTIVE SECTION.

T30. TRACTION MOTOR COOLING AIRFLOW.

Check the cooling air flow from the traction motors.

Check the cooling air flow through the air compressor cylinder heads.

Examine the air bellows, wear plates and arms for alignment, leakage and damage. Ensure setscrews are tight.

T31. TRACTION MOTOR NOSE SUSPENSION.

Check the traction motor nose suspension assemblies and wear plates.

Refer to Item 11 in Appendix A, Page AX20.

T32. HASLER TRANSMITTER AND SPEED GENERATORS.

Check the security of the Hasler transmitter and speed generators on the axlebox cover.

T33. BOLSTER MOUNTING PADS.

Visually check the condition of the bolster mounting pads rubber and steel laminations.

T34. WHEEL EXAMINATION.

All wheel flanges to be examined for arrised condition and corrected if required.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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UNDERNEATH LOCOMOTIVE SECTION.

T35. SHOCK ABSORBER.

Check condition of shock absorbers and anchor points.

T36. EXAMINE BOGIES FOR LOOSE OR BROKEN PARTS.

NOT APPLICABLE.

T37. Spare 'T' Inspection.

T38. Spare 'T' Inspection.

T39. Spare 'T' Inspection.

T40. AUTOMATIC COUPLERS.

Check auto coupler height 865 m.m. +/- 25 m.m. (34" +/-1") measured from rail level to the centre line of the coupler knuckle.

Refer to Item 13 in Appendix A, Page AX23.

Gauge auto couplers at both ends.

T41. SHOCK ABSORBERS.

Check bolts for tightness. Renew rubbers on bolts if worn or badly spread.

T42. COMPRESSOR SEALS AND FLEXIBLE DRIVES.

NOT APPLICABLE.

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MECHANICAL INSPECTION SCHEDULE.

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UNDERNEATH LOCOMOTIVE SECTION.

A43. Spare 'A' Inspection.

A44. Spare 'A' Inspection.

A45. Spare 'A' Inspection.

B46. BOGIES.

Check all nuts for tightness and that all split pins and cotters are split.

B47. AIR COMPRESSOR MOUNTINGS.

Examine Silentbloc Mountings on air compressor.

B48. Spare 'B' Inspection.

B49. Spare 'B' Inspection.

B50. Spare 'B' Inspection.

C51. SUSPENSION BEARING BOLTS.

NOT APPLICABLE.

C52. Spare 'C' Inspection.

C53. Spare 'C' Inspection.

C54. Spare 'C' Inspection.

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LUBRICATION SECTION.

T55. AIR COMPRESSOR OIL LEVEL.

With the compressor stopped, check the air compressor's lube oil level. Replenish with SAE.30 lube oil, Item 5255C.

Check gaskets and inspection covers for oil leaks.

T56. TRACTION MOTOR GEARCASES.

Add lubricant as necessary to maintain a heavy film on gear teeth.

For gearcases with inspection plugs or covers, maintain lubricant level at the bottom of the inspection plug hole.

Use Caltex Gear Lube T.M. 7500, M.I. 26819904, in 450g (1 lb.) white polyethylene bags.

T57. GREASE BOGIE AS REQUIRED.

NOT APPLICABLE.

T58. SUSPENSION BEARING OIL LEVEL.

NOT APPLICABLE.

T59. Spare 'T' Inspection.

T60. Spare 'T' Inspection.

T61. Spare 'T' Inspection.

A62. DOOR AND WINDOW HARDWARE.

Lightly lubricate hinges, lock, slides, etc.

Use Rocol M.I. 15514201.

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85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

A63. AIR COCKS AT HEADSTOCK.

Check all cocks for freedom of movement and that there is some resistance to movement. Grease where necessary with multi-purpose grease, Item E.

NOTE: Springs on 18 m.m. (3/4") and 25 m.m. (1") cocks are to have 4.5 m.m. (3/16") compression. Springs on 12.5 m.m. (1/2") cocks are to have 3 m.m. (1/8") compression. Ball type cocks are not to be fitted.

A64. BRAKE RIGGING.

Lightly lubricate pins and bushings with hand oiler. Use SAE.30 lube oil, Item 5255C.

A65. BRAKE SLACK ADJUSTERS.

Clean brake slack adjusters with wire brush and renew defective split pins. Split at 45°.

Apply Rocol Dry Film, M.I. 70019005, to screw thread.

A66. GREASE PANTOGRAPHS.

Grease as required.

A67. LUBRICATE D.B.V. AND I.B.V.

NOT APPLICABLE.

A68. Spare 'A' Inspection.

A69. Spare 'A' Inspection.

A70. Spare 'A' Inspection.

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

B71. HANDBRAKE.

Lightly lubricate the handbrake pulley pivot pins with the hand oiler, using SAE.30 lube oil, Item 5255C.

B72. SUSPENSION BEARING LUBRICATOR PADS.

NOT APPLICABLE.

B73. Spare 'B' Inspection.

B74. Spare 'B' Inspection.

C75. WINDSCREEN WIPERS.

Lubricate parts in the air chamber with multi-purpose grease, Item 5285E.

C76. DRIVERS AND OBSERVERS SEATS.

Adjust mechanism and grease with Rocol Dry Lube M.I. 15514201.

C77. PEACOCK HANDBRAKE.

Remove cover, blow out dust and lightly lubricate with SAE.30 lube oil, Item 5255C. Lubricate handle mechanism.

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---

LUBRICATION SECTION.

C78. BRAKE CYLINDERS.

Grease all brake cylinder with grease gun. 12 pumps on pressure head and 2 pumps on gland end. Use Multi-purpose grease, Item 5285E.

C79. HASLER SPEEDOMETER TRANSMITTER.

Add multi-purpose grease, Item 5285E to both nipples. Remove the front cover of the gearbox to ensure sufficient grease has passed through the bearings and that adequate lubricant is contained in the gearbox.

C80. AIR COMPRESSOR OIL FILTER.

Remove element and thoroughly clean the filter bowl with clean lintless cloths. Ensure that no cloths are left in the filter bowl.

Renew the filter element M.I. 20313250.

C81. AIR COMPRESSOR OIL CHANGE.

Drain sump and re-fill with SAE.30 lube oil, Item 5225C. Capacity 7.5 litres (13 pints).

After refilling, run the machine for a few minutes then top up the sump, if necessary, to make good the oil drawn into the filter and oilways.

C82. AIR COMPRESSOR MOTOR - (every second C Inspection).

Add four (4) pumps of Lithium Grease No.3, Item 5293A to motor bearings using a grease gun. DO NOT OVER LUBRICATE. Grease must not be allowed to enter the motor and any that passes the inner bearing cap must be carefully removed.

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---

LUBRICATION SECTION.

C83. BRAKE SLACK ADJUSTER BUSH.

Grease brake slack adjuster bush.

Use multi-purpose grease, Item 5285E.

C84. AXLE BOX ROLLER BEARINGS.

Grease roller bearing axlebox packaged units using a power operated grease gun filled with No.3 Lithium base grease, item 5293A. (Spec. No. L343/69).

Apply 450g (16 ounces) of grease per axlebox.

Grease nipples - Lincoln Part No. 5715 (1/2" N.P. thread), M.I. 47206065.

C85. TRACTION MOTOR SUSPENSION BEARING - (every second C inspection).

Gear side. Grease with Shell Alvania Grease No.3 - 0.3 kg Item 5293A.

Commutator Side. Grease with Shell Alvania Grease No.3 - 0.3 kg Item 5293A.

C86. MOTOR ALTERNATOR BEARING - (every second C inspection).

Gear side. Grease with Shell Alvania Grease No.3 - 50 grams Item 5293A.

Commutator Side. Grease with Shell Alvania Grease No.3 - 50 grams Item 5293A.

C87. Spare 'C' Inspection.

C88. Spare 'C' Inspection.

C89. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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AIR BRAKE SECTION.

NOTE: Items marked with an Asterisk (\*) must also be performed after each Inspection.

T90. \*VIGILANCE CONTROL EQUIPMENT.

Test vigilance control equipment in accordance with Circular No.41/66. Check that all seals are intact. Rectify and/or bring under notice of the Foreman any defects found during test.

T91. \*AIR BRAKE EQUIPMENT.

Check:-

- (a) All brakeshoes must be 6 m.m. (1/4") above condemning.
- (b) Brake piston travel to be adjusted to minimum in accordance with Circular No.14/78.
- (c) Air compressor operation. main reservoir pressure to be maintained between 700-800 kPa (105-120 p.s.i.). Notify Foreman if it takes longer than ??????? to pump between those pressures.
- (d) Function of automatic and independent brake valves and flowmeters. See Circular No.95/61 as regards flowmeters.
- (e) Security of brake equipment, rectify all defects.
- (f) Leakage at piping and equipment, rectify all defects.
- (g) Drain condensate from all main reservoirs.
- (h) Check operation of handbrake. The Peacock ratchet handbrake must be operated with quick movements, to ensure function under emergency conditions.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

---

AIR BRAKE SECTION.

T92. Spare 'T' Inspection.

T93. Spare 'T' Inspection.

T94. Spare 'T' Inspection.

A95. SAFETY VALVES.

Check the operation and setting of the main reservoir safety valves.

Check all safety valves on the main reservoir and compressor intercooler for tightness.

A96. AIR COMPRESSOR AIR INTAKE FILTERS.

Remove excessive dirt from filter element by tapping gently against a clean solid object.

A97. Spare 'A' Inspection.

A98. Spare 'A' Inspection.

A99. Spare 'A' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

---

AIR BRAKE SECTION.

B100. MAIN RESERVOIR AUTO DRAIN VALVE CHECK.

Check operation of automatic drain valves on main reservoir.

B101. CHECK P AND C PRESSURE.

NOT APPLICABLE.

B102. COMPRESSOR GOVERNOR.

NOT APPLICABLE.

B103. CONTROL GOVERNOR.

NOT APPLICABLE.

B104. Spare 'B' Inspection.

B105. Spare 'B' Inspection.

B106. Spare 'B' Inspection.

C107. AIR COMPRESSOR VALVES.

Remove valves, dismantle, clean and inspect.

Renew components where necessary. Replace reconditioned air compressor valves.

C108. AIR COMPRESSOR BREATHER.

Dismantle crankcase breather by removing the outer strainer plate, curled hair and inner strainer plate. Inspect plates, replace if necessary. Clean hair and re-assemble.

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MECHANICAL INSPECTION SCHEDULE.

85 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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AIR BRAKE SECTION.

C109.AIR COMPRESSOR AIR FILTER.

Clean air compressor air intake filter element, M.I. 20314373.

C110.COMPRESSOR INTERCOOLER AUTO DRAIN VALVE.

Remove and dismantle auto drain valve. Clean all parts paying particular attention to the nipple and strainer assembly. Examine all parts for signs of wear or damage, renew parts as necessary. Inspect spring for sign of corrosion or having taken a permanent set. Free height of spring when new 37.3 m.m. (1 and 15/32").

C111.GAUGES.

Check calibration to a standard test gauge of:-

- (a) Control air pressure.
- (b) Air brake duplex (MR and ER) and (BP and B.Cyl.)
- (c) Flow meter gauge.

C112.AIR STRAINERS.

Remove and clean elements of air strainers in vigilance control, whistle valve, compressor governor control air, sanders and pantograph control air.

C113.Spare 'C' Inspection.

C114.Spare 'C' Inspection.

C115.Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

86 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

T1. SANDS WHISTLES.

Check the operation of the following outside the shop:-

- (a) Sanders: Sand discharge per pipe 0.5 kg to 0.7 kg (1-1 1/2 lbs) per minute. Check pipe alignment - 40 m.m. (1 1/2") above rail level.
- (b) Whistles: Test both sides of cabs.

T2. LOG BOOK REPORT, GAUGES, WIPERS AND WASHERS.

In Driver's Cab, check:-

- (a) Log Book entries.  
Attend to bookings as recorded by the Driver.
- (b) All gauge readings.
- (c) All windscreen wipers operation.
- (d) All windscreen washers operation, top up water container.

T3. HASLER SPEEDOMETER.

Wind clock and set hands if necessary.

Blue dot indicates p.m.

Check locomotive log book for kilometrage run since the last diagram roll change (anticipated life 3500 km). Change if required.

When installing or removing the roll, mark on the roll and in the top right hand corner of the Log Book the Locomotive number, Time, Date and relevant details.

NOTE: Reduce brake pipe pressure to zero with the automatic brake valve before closing the instrument case after installing a new roll to ensure the stylus for the brake line is correctly positioned.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

T4. PHYSICAL INSPECTION.

Examine locomotive internally and externally for defects and fractures. Report any findings to Foreman.

T5. PANTO PANS AND CONDITION OF PANTOGRAPH.

Check the following:-

- (a) Shunts on pan knuckle and frame for tightness, overheating or damage.
- (b) Alignment of pans for twist.
- (c) Springs for breakage or weakness.
- (d) Pan supports for fracture.
- (e) Pistons for blow-by.
- (f) Saddles for loose pins and fractures.
- (g) Air hoses for leaking or signs of failure.
- (h) Check all insulators for damage.

Changing of Pans.

Change carbon strips when wear has occurred to 5/16" thickness from pan surface or if the strips are deeply grooved, severely chipped or securing bolts are loose.

T6. INSPECT SPARE EQUIPMENT BOX & SEALS.

NOT APPLICABLE.

T7. Spare 'T' Inspection.

T8. Spare 'T' Inspection.

T9. Spare 'T' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

A10. DOORS AND WINDOWS, ETC.

Check all cab, machine room and bulkhead doors; locks, hinges, seals, window frames.

Repair where required.

A11. ABLUTION TANK.

Fill tank.

NOTE: 86 class locomotives are equipped with stainless steel tanks and do not require any water treatment.

A12. PANTOGRAPH INSULATION.

Clean pantograph insulators using a cloth dampened in solvent. Do not use abrasive material.

A13. VORTACOOOL REFRIGERATOR.

Drain air filter on refrigerator air supply line. Pet cock located at the base of filter.

A14. Spare 'A' Inspection.

A15. Spare 'A' Inspection.

A16. Spare 'A' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

86 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

B17. PANTOGRAPH SPRING PRESSURE AND OPERATION.

Pantograph spring pressure is measured with a spring balance and should be 9.8 kg (22 lbs). Adjustment is made by increasing or decreasing, the length of the two main springs (equally on both sides).

The time of raising the pantograph should not exceed 20 seconds with a 3 foot maximum lift. If the time is exceeded, adjust the speed control which is located adjacent to the pantograph air cylinder.

When lowering the pantograph the quick release valve should function so that the pantograph leaves the wire quickly to reduce the effect of arcing. At a height of about 6" from the down position a cushioning effect should check the speed of the pantograph. If the cushioning occurs too soon or too late then adjustment is carried out by means of the fitting at the centre of the pressure head of the air cylinder.

B18. PANTOGRAPH HAND/FOOT PUMP.

Drain all air from main reservoirs, check operation of hand pump by using pump to raise pantograph. Replace pump if defective.

B19. RAISE AND LOWER VALVE.

NOT APPLICABLE.

B20. Spare 'B' Inspection.

B21. Spare 'B' Inspection.

B22. Spare 'B' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

86 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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DRIVERS CABINS AND ENGINE ROOM SECTION.

C23. HOLDING DOWN BOLTS.

Check the tightness of the following:-

Traction motor blower housing.

C24. TRACTION MOTOR BLOWER IMPELLERS.

Inspect impeller for defects.

Remove any deposits on the impellers, if necessary. Clean in situ.  
Cover lower blades with cleaning cloths and exercise care in not  
allowing foreign matter into the air passages.

C25. VORTACOOOL REFRIGERATION.

Remove and clean filter bowl.

Fit new sintered bronze filter element (M.I. 13009253)

Renew filter bowl gasket (M.I. 13176052)

C26. PANTO 3 WAY COCK.

NOT APPLICABLE.

C27. Spare 'C' Inspection.

C28. Spare 'C' Inspection.

C29. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

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UNDERNEATH LOCOMOTIVE SECTION.

T30. TRACTION MOTOR COOLING AIRFLOW.

Check the cooling air flow from the traction motors.

Check the cooling air flow through the air compressor cylinder heads.

Examine the air bellows, wear plates and arms for alignment, leakage and damage. Ensure setscrews are tight.

T31. TRACTION MOTOR NOSE SUSPENSION.

Check the traction motor nose suspension assemblies and wear plates.

Refer to Item 11 in Appendix A, Page AX20.

T32. HASLER TRANSMITTER AND SPEED GENERATORS.

Check the security of the Hasler transmitter and speed generators on the axlebox cover.

T33. BOLSTER MOUNTING PADS.

Visually check the condition of the bolster mounting pads rubber and steel laminations.

T34. WHEEL EXAMINATION.

All wheel flanges to be examined for arrised condition and corrected if required.

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MECHANICAL INSPECTION SCHEDULE.

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UNDERNEATH LOCOMOTIVE SECTION.

T35. SHOCK ABSORBER.

Check condition of shock absorbers and anchor points.

T36. EXAMINE BOGIES FOR LOOSE OR BROKEN PARTS.

NOT APPLICABLE.

T37. Spare 'T' Inspection.

T38. Spare 'T' Inspection.

T39. Spare 'T' Inspection.

T40. AUTOMATIC COUPLERS.

Check auto coupler height 865 m.m. +/- 25 m.m. (34" +/-1") measured from rail level to the centre line of the coupler knuckle.

Refer to Item 13 in Appendix A, Page AX23.

Gauge auto couplers at both ends.

T41. SHOCK ABSORBERS.

Check bolts for tightness. Renew rubbers on bolts if worn or badly spread.

T42. COMPRESSOR SEALS AND FLEXIBLE DRIVES.

NOT APPLICABLE.

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MECHANICAL INSPECTION SCHEDULE.

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UNDERNEATH LOCOMOTIVE SECTION.

A43. Spare 'A' Inspection.

A44. Spare 'A' Inspection.

A45. Spare 'A' Inspection.

B46. BOGIES.

Check all nuts for tightness and that all split pins and cotters are split.

B47. AIR COMPRESSOR MOUNTINGS.

Examine Silentbloc Mountings on air compressor.

B48. Spare 'B' Inspection.

B49. Spare 'B' Inspection.

B50. Spare 'B' Inspection.

C51. SUSPENSION BEARING BOLTS.

NOT APPLICABLE.

C52. Spare 'C' Inspection.

C53. Spare 'C' Inspection.

C54. Spare 'C' Inspection.

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MECHANICAL INSPECTION SCHEDULE.

86 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

T55. AIR COMPRESSOR OIL LEVEL.

With the compressor stopped, check the air compressor's lube oil level. Replenish with compressor oil medium, ISO 100, Item 5268.

Check gaskets and inspection covers for oil leaks.

T56. TRACTION MOTOR GEARCASES.

Add lubricant as necessary to maintain a heavy film on gear teeth.

For gearcases with inspection plugs or covers, maintain lubricant level at the bottom of the inspection plug hole.

Use Caltex Gear Lube T.M. 7500, M.I. 26819904, in 450g (1 lb.) white polyethylene bags.

T57. GREASE BOGIE AS REQUIRED.

NOT APPLICABLE.

T58. SUSPENSION BEARING OIL LEVEL.

NOT APPLICABLE.

T59. Spare 'T' Inspection.

T60. Spare 'T' Inspection.

T61. Spare 'T' Inspection.

A62. DOOR AND WINDOW HARDWARE.

Lightly lubricate hinges, lock, slides, etc.

Use Rocol M.I. 15514201.

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MECHANICAL INSPECTION SCHEDULE.

86 CLASS - 2700 KW (3600 HP) ELECTRIC LOCOMOTIVES.

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LUBRICATION SECTION.

A63. AIR COCKS AT HEADSTOCK.

Check all cocks for freedom of movement and that there is some resistance to movement. Grease where necessary with multi-purpose grease, Item 5285E.

NOTE: Springs on 18 m.m. (3/4") and 25 m.m. (1") cocks are to have 4.5 m.m. (3/16") compression. Springs on 12.5 m.m. (1/2") cocks are to have 3 m.m. (1/8") compression. Ball type cocks are not to be fitted.

A64. BRAKE RIGGING.

Lightly lubricate pins and bushings with hand oiler. Use SAE.30 lube oil, Item 5255C.

A65. BRAKE SLACK ADJUSTERS.

Clean brake slack adjusters with wire brush and renew defective split pins. Split at 45°.

Apply Rocol Dry Film, M.I. 70019005, to screw thread.

A66. GREASE PANTOGRAPHS.

Grease as required.

A67. LUBRICATE D.B.V. AND I.B.V.

NOT APPLICABLE.

A68. WHEEL FLANGE LUBRICATORS

- (a) Top up all lubricant reservoirs.
- (b) Clean all nozzles with a wire brush, rag and solvent.
- (c) Clean water separator and filter (air supply).
- (d) Check spray nozzle adjustment distances using correct gauge. If these are more than 10 m.m. different from those indicated on gauge adjust accordingly.

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MECHANICAL INSPECTION SCHEDULE.

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LUBRICATION SECTION.

- (e) Check operation of lubricators by setting the "Test Switch" of the control unit on "Test" position. Ensure that oil is coming from each nozzle and that the oil spray pattern is well located on the flange.

NOTE: Do not forget to reset the test switch to "Normal" position.

- (f) Check all air and oil pipes for leaks (pay particular attention to flexible hoses and connections).

A69. Spare 'A' Inspection.

A70. Spare 'A' Inspection.

B71. HANDBRAKE.

Lightly lubricate the handbrake pulley pivot pins with the hand oiler, using SAE.30 lube oil, Item 5255C.

B72. SUSPENSION BEARING LUBRICATOR PADS.

NOT APPLICABLE.

B73. Spare 'B' Inspection.

B74. Spare 'B' Inspection.

C75. WINDSCREEN WIPERS.

Lubricate parts in the air chamber with multi-purpose grease, Item 5285E.

C76. DRIVERS AND OBSERVERS SEATS.

Adjust mechanism and grease with Rocol Dry Lube M.I. 15514201.

C77. PEACOCK HANDBRAKE.

Remove cover, blow out dust and lightly lubricate with SAE.30 lube oil, Item 5255C. Lubricate handle mechanism.

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LUBRICATION SECTION.

C78. BRAKE CYLINDERS.

Grease all brake cylinder with grease gun. 12 pumps on pressure head and 2 pumps on gland end. Use Multi-purpose grease, Item 5285E.

C79. HASLER SPEEDOMETER TRANSMITTER.

Add multi-purpose grease, Item 5285E to both nipples. Remove the front cover of the gearbox to ensure sufficient grease has passed through the bearings and that adequate lubricant is contained in the gearbox.

C80. AIR COMPRESSOR OIL FILTER.

Remove element and thoroughly clean the filter bowl with clean lintless cloths. Ensure that no cloths are left in the filter bowl.

Renew the filter element M.I. 20313250.

C81. AIR COMPRESSOR OIL CHANGE.

Drain sump and re-fill with compressor oil medium, ISO 100, Item 5268. Capacity 7.5 litres (13 pints).

After refilling, run the machine for a few minutes then top up the sump, if necessary, to make good the oil drawn into the filter and oilways.

C82. AIR COMPRESSOR MOTOR - (every second C Inspection).

Add four (4) pumps of Lithium Grease No.3, Item 5293A to motor bearings using a grease gun. DO NOT OVER LUBRICATE. Grease must not be allowed to enter the motor and any that passes the inner bearing cap must be carefully removed.

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LUBRICATION SECTION.

C83. BRAKE SLACK ADJUSTER BUSH.

Grease brake slack adjuster bush.

Use multi-purpose grease, Item 5285E.

C84. AXLE BOX ROLLER BEARINGS.

Grease roller bearing axlebox packaged units using a power operated grease gun filled with No.3 Lithium base grease, item 5293A. (Spec. No. L343/69).

Apply 450g (16 ounces) of grease per axlebox.

Grease nipples - Lincoln Part No. 5715 (1/2" N.P. thread), M.I. 47206065.

C85. TRACTION MOTOR SUSPENSION BEARING - (every second C inspection).

Gear side. Grease with Shell Alvania Grease No.3 - 0.3 kg Item 5293A.

Commutator Side. Grease with Shell Alvania Grease No.3 - 0.3 kg Item 5293A.

C86. MOTOR ALTERNATOR BEARING - (every second C inspection).

Gear side. Grease with Shell Alvania Grease No.3 - 50 grams Item 5293A.

Commutator Side. Grease with Shell Alvania Grease No.3 - 50 grams Item 5293A.

C87. SPRING PARKING BRAKE.

Grease all spring parking brake cylinders with grease gun. 12 pumps on pressure head and two pumps on gland end. Use multi-purpose grease, Item 5285E.

C88. Spare 'C' Inspection.

C89. Spare 'C' Inspection.

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AIR BRAKE SECTION.

NOTE: Items marked with an Asterisk (\*) must also be performed after each Inspection.

T90. \*VIGILANCE CONTROL EQUIPMENT.

Test vigilance control equipment in accordance with Circular No.41/66. Check that all seals are intact. Rectify and/or bring under notice of the Foreman any defects found during test.

T91. \*AIR BRAKE EQUIPMENT.

Check:-

- (a) All brakeshoes must be 6 m.m. (1/4") above condemning.
- (b) Brake piston travel to be adjusted to minimum in accordance with Circular No.14/78.
- (c) Air compressor operation. main reservoir pressure to be maintained between 700-800 kPa (105-120 p.s.i.). Notify Foreman if it takes longer than ??????? to pump between those pressures.
- (d) Function of automatic and independent brake valves and flowmeters. See Circular No.95/61 as regards flowmeters.
- (e) Security of brake equipment, rectify all defects.
- (f) Leakage at piping and equipment, rectify all defects.
- (g) Drain condensate from all main reservoirs.
- (h) Check operation of handbrake. The Peacock ratchet handbrake must be operated with quick movements, to ensure function under emergency conditions.

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AIR BRAKE SECTION.

T92. Spare 'T' Inspection.

T93. Spare 'T' Inspection.

T94. Spare 'T' Inspection.

A95. SAFETY VALVES.

Check the operation and setting of the main reservoir safety valves.

Check all safety valves on the main reservoir and compressor intercooler for tightness.

A96. AIR COMPRESSOR AIR INTAKE FILTERS.

Remove excessive dirt from filter element by tapping gently against a clean solid object.

A97. Spare 'A' Inspection.

A98. Spare 'A' Inspection.

A99. Spare 'A' Inspection.

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AIR BRAKE SECTION.

B100. MAIN RESERVOIR AUTO DRAIN VALVE CHECK.

Check operation of automatic drain valves on main reservoir.

B101. CHECK P AND C PRESSURE.

NOT APPLICABLE.

B102. COMPRESSOR GOVERNOR.

NOT APPLICABLE.

B103. CONTROL GOVERNOR.

NOT APPLICABLE.

B104. Spare 'B' Inspection.

B105. Spare 'B' Inspection.

B106. Spare 'B' Inspection.

C107. AIR COMPRESSOR VALVES.

Remove valves, dismantle, clean and inspect.

Renew components where necessary. Replace reconditioned air compressor valves.

C108. AIR COMPRESSOR BREATHER.

Dismantle crankcase breather by removing the outer strainer plate, curled hair and inner strainer plate. Inspect plates, replace if necessary. Clean hair and re-assemble.

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AIR BRAKE SECTION.

C109.AIR COMPRESSOR AIR FILTER.

Clean air compressor air intake filter element, M.I. 20314373.

C110.COMPRESSOR INTERCOOLER AUTO DRAIN VALVE.

Remove and dismantle auto drain valve. Clean all parts paying particular attention to the nipple and strainer assembly. Examine all parts for signs of wear or damage, renew parts as necessary. Inspect spring for sign of corrosion or having taken a permanent set. Free height of spring when new 37.3 m.m. (1 and 15/32").

C111.GAUGES.

Check calibration to a standard test gauge of:-

- (a) Control air pressure.
- (b) Air brake duplex (MR and ER) and (BP and B.Cyl.)
- (c) Flow meter gauge.

C112.AIR STRAINERS.

Remove and clean elements of air strainers in vigilance control, whistle valve, compressor governor control air, sanders and pantograph control air.

C113.Spare 'C' Inspection.

C114.Spare 'C' Inspection.

C115.Spare 'C' Inspection.