

FRONZ / ONTRACK
APPROVED CODE OF PRACTISE
FOR
HERITAGE NETWORK OPERATORS

Mechanical Supplementary Code
B3.5.2.01

Electric Headlights, Generators, and
Equipment on Steam Locomotives

Issue	Prepared (P), Reviewed (R), Amended (A)	Approved by	Effective Date
1	P McCallum (P)	Heritage Technical Committee	27 June 2006

Reference Material

Source	Description	Date
NZ Railways	Mechanical Branch Code No 23, Issue 3	1/5/1947

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Amendment History

Version	Section	Amendment

Electric Headlights, Generators, and Equipment on Steam Locomotives

1 Introduction

This Supplementary Code relates to:-

B3.1.1.01 - Mechanical Code Of Practice, Section 3.19.1 - Lighting

It contains:-

- NZ Railways Mechanical Branch Code No 23 - Electric Headlights, Generators, and Equipment on Steam Locomotives; Issue 3 of 1/5/1947

which contains information relevant to the maintenance of electric equipment on steam locomotives. Operators are to use those sections that are relevant to their operation.

NEW ZEALAND GOVERNMENT RAILWAYS	ELECTRIC HEADLIGHTS, GENERATORS, AND EQUIPMENT ON STEAM LOCOMOTIVES	CODE No. 23
MECHANICAL BRANCH		Issue No 3 Date Issued 1/5/47

(1) EXAMINATION AND OVERHAUL

Turbo generators must be dismantled and overhauled when locomotives are shopped for Class "A" repairs.

The generator castings must be cleaned in the lye vats and examined for possible defects. Governor valves, valve cages, anti-friction rings, packing rings, ball bearings, and hub packings must be cleaned and examined, and defective components replaced or repaired. Field coils and armatures must be cleaned and painted with an approved insulation compound preparatory to testing.

Armatures and commutators must be assembled, the commutators trued up if necessary, and the mica undercut not more than $\frac{1}{64}$ in.

Running repairs only may be undertaken at Locomotive Depots, and on no account must the truing up of commutators be attempted unless a good lathe operated by a turner is available.

All commutators in electric headlight generators must be removed from service when worn to $1\frac{7}{8}$ [$1\frac{31}{32}$] in. diameter.

[C.M.E. 44/730/28L of 13.12.61
[C.M.E. 24/563 of 9 January 1952]

(2) ARMATURES AND BRUSHES

Armatures must be tested for earths and short circuits, and in the event of coils being renewed, the leads must be soldered to the commutator bars, and the armatures balanced when repairs are completed.

Brushes must be examined and reconditioned so that they fit perfectly on the commutators.

The spring tension on the brushes should be adjusted to give 1 to $1\frac{1}{2}$ pounds measured at the tips of the springs in the position at which they rest on the brushes.

(3) TURBINE ROTORS

Turbine rotors must be cleaned and examined for possible defects, and all defective rotor blades replaced. The rotors must be tested for balance and alignment when repairs are completed.

(4) TESTING TURBO-GENERATORS

When repairs are completed, the generators must be assembled and subjected to bench tests, during which either steam or compressed air may be used. The generators are designed to deliver 32 volts at approximately 3,600 revolutions per minute when operated at a pressure of not less than 125 lb. per square inch, and if the voltmeter readings taken during the bench tests vary by less than 5 per cent. with the rated output at the requisite speed, the generators may be placed in service without further governor adjustment.

The manner in which governor adjustments are made is contained in the "Book of Instructions" published by Pyle National Company.

Final governor adjustments must be made when the generators are in position on the locomotives, with the boilers at full working pressure.

(5) WIRING

All wiring must be withdrawn from the conduit, examined, and defective wiring replaced when locomotives are shopped for overhaul.

Connections in junction boxes provided with screwed terminals, should be tagged to indicate the circuits to which they belong.

Slow-burning or flame-resisting wire approved by the Chief Mechanical Engineer is to be used throughout the system.

(6) CONDUIT

After all wiring has been withdrawn, the conduit must be blown out with air to remove rust accumulation, and burrs or sharp edges liable to injure the insulation must be removed before final assembly.

Conduit must be clipped securely when re-assembled to prevent undue vibration and consequent chafing of the insulation.

(7) LAMP FITTINGS

All lamp receptacles and fittings must be cleaned, examined, and repaired when necessary. The interiors of the head and tail lamps must be painted white and the reflectors replated if tarnished or showing signs of wear. Glass fronts and doors must be tight fitting to prevent steam or smoke tarnishing the reflectors. Metal polish must not be used for cleaning reflectors.

(8) MAINTENANCE AND INSPECTIONS

Locomotive Foremen must arrange inspection at regular intervals by depot-staff of electric-light equipment on locomotives and ensure that the instructions set out in the Engine-drivers, Firemen, and Cleaners' Handbook are carried out.

Electric-light equipment on locomotives must be in accordance with the drawings or specifications, and no alterations to equipment may be carried out without written authority from the Chief Mechanical Engineer.