

NEW ZEALAND GOVERNMENT RAILWAYS MECHANICAL BRANCH	WHEELS & TIRES Cancelled by Issue 4, 1/6/72	CODE No. 15 Page No. 1 of 3 Issue No 3 Date Issued 15/5/50
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EXISTING LOCO. CODES TO BE CANCELLED: 106, 127, 128, 129, 131, 249

(1) DIAMETER OF WHEELS AT TREAD

- (a) When tires of locomotives, rolling stock, electric coaches, and rail cars are turned or new tires fitted, wheels on the same axle must be of equal diameter.
- (b) All coupled wheels under any one locomotive must be of equal diameter.
- (c) All driving wheel sets on any one "Ed" locomotive should, as far as possible, be the same diameter and the maximum variations in diameter of any sets which will be permitted under one locomotive are as follows
 - (i) When passed out of workshops: ¼ in.
 - (ii) In service: 3/8 in
- (d) Wheel sets under any one bogie should be approximately the same diameter, except where otherwise determined by design. All wheel sets under four-wheel and bogie stock (whether self-propelled or hauled) should be approximately the same diameter.
- [(e) Wheel sets where the tread has not been turned must not be placed under rolling stock if the difference in diameter of the wheels exceeds 1/16".]

[24/563 of 3.5.1967]

(2) WHEELS, Gauging for Width

The standard distance between the backs of tires on every pair of wheels is 3 ft. 3¼ in.

When pressing old wheels on to new axles, a variation of 1/32 in. above the standard distance may be permitted.

~~A pair of wheels found out of gauge in service will be allowed to run, [to nearest suitable depot] provided the distance between the back of the tires is not at any point greater than 3 ft. 3 5/16 in. or less than 3 feet 3 3/16 in.~~

[An wagon with wheels out of gauge [wheelset] is permitted to run to a suitable Depot for attention provided the distance between the back of the tyres is not at any point greater than 3 feet 3-5/16 inches or less than 3 feet 3-3/16 inches.

Code (3) Clause (8) will apply if the distance between the back of the tyres does not fall within these limits.]

[24/563 of 10.3.1961 and 30.10.1962]

(3) GAUGES-WHEEL, Tire Profile

Only gauges to drawing Y.35412 (all stock except rail cars) and drawing W.16278 (rail cars) may be used in gauging wheels and tires.

Master wheel and tire profile gauges will be held by Works Managers. Works Foremen and other officers will be supplied with duplicates.

All duplicate gauges must be forwarded to the nearest main workshops in March each year for testing and standardizing, after which they are to be returned promptly to the forwarding officer and certified correct, the test date being stated.

(4) TIRES, Material for

Tires will be made from special tire steel to the specifications shown in group 2 on drawing W.16298 (material used for locomotive work, &c.). For tire sections see drawing Y.7600 and Y.20885.

(5) TIRES, Turning and Boring of

Drawing. Y.20067 (all stock except rail cars) and Y.20886 (rail cars) must be worked to for turning tire profiles.

Tires that will not clean up to the last turning size must be condemned.

In turning tires, no deep tool marks are to be left at finish. The tread of all tires on electric locomotives and coaches are to be turned smooth to ensure good electrical contact with the rails.

The bore of tires is to be turned to a smooth finish.

(6) TIRES, Shrinkage Allowance for

The shrinkage allowance for tires is to be 1/1000 in per inch diameter of wheel-centre (see drawing W.15050). The machining tolerances for turning the bore of all tires are as follows:

Bore of Tire In.	Machining Tolerance In
18.0 and under 34.0	0.000
	-0.005
34.0 and under 46.0	0.000
	-0.006
46.0 to 60.0	0.000
	-0.007

i.e. for a wheel-centre of mean diameter 30 in, the tire must be bored between the limits 29.965 in- and 29.970 in. diameter.

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(7) TIRES, Shrinking on to Wheel-centres

Tires are to be heated uniformly to a temperature not exceeding 550°F. Temperature indicating salts (Tempilstiks or their equivalent) are to be used to determine the temperature of the tires.

As each tire is fitted, it should be allowed time to contract before moving. Under no circumstances may forced cooling be adopted or water be introduced to the surface of a hot tire. Excessive hammering is not permitted. Tires are to be shrunk on new wheel-centres before the centres are pressed on to axles.

(8) TIRES, Shimming of Loose

Loose or oversize tires may, at the discretion of the officer-in charge, be shrunk on wheel-centres with the aid of shimming. Shims must be in single thickness only and cut from good steel sheet.

The maximum permissible thickness of a shim is No.16 S.W.G. for locomotive driving-wheel tires and No.24 S.W.G. for all other tires-

Shims are to be 1/8 in. narrower than the shrinkage surface and must not overlap or be more than 2 in. apart at the ends. No more than three are to be used to make up the circumference of the wheel-centre.

(9) TIRES, Building Up by Welding

The building-up by electric or gas welding on tires is not permitted.

(10) TIRES, Flats or Skids on

When tires develop flats which exceed the lengths quoted below, they must be taken out of service and re-turned

Locomotive driving-wheels over 4 ft. in diameter, flat not to exceed 2½ in. in length.

Locomotive driving-wheels 4 ft. in diameter and under, flat not to exceed 2 in. in length.

Locomotive bogie and tender wheels, electric coach, rail car, and car and wagon wheels, flat not to exceed 1½ in. in length.

When tires containing flats are permitted to remain in service, the raised metal at the end of the flats must be dressed off.

(11) TIRES, Removing from Wheel-centres

Condemned tires may be removed from wheel-centres by cutting through the tire section with an oxy-acetylene-torch flame, every care being taken not to damage surface of wheel-centre rim.

When tires are fitted with "Gibson" retaining-rings, that portion of the flange which is rolled over the ring is to be turned off in order to release the ring before the tire section is cut through with the oxy-acetylene flame.

(12) TIRES, Examination of

All wheels removed from locomotives and rolling-stock are to be thoroughly examined to ensure that tires are sound and tight on wheel-centres. Loose or defective tires must not be permitted to return to service.

When excessive wear develops on one flange of any pair of bogie wheels, the officer in charge must arrange for the bogie to be checked to ensure that the axles are parallel and square with the framing and the wheel diameters are correct.

[Wagons are not to be passed out following a lift unless the tyres have a chamfer of at least

$$\frac{1}{2}'' \times \frac{1}{8}''$$

$$\frac{1}{4}'' \times \frac{1}{4}''$$

[CME 24/562 of 24.11.55]

[CME memo of 30.7.59?]

(13) TIRES, Reporting Defective.

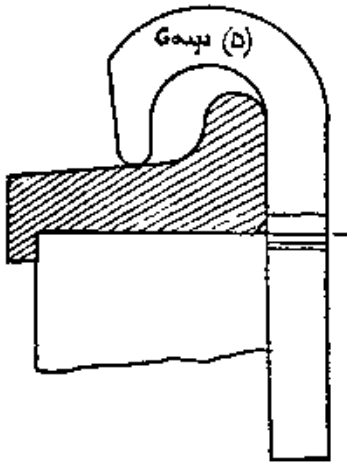
Car and Wagon Inspectors and Locomotive Foremen must report all tire failures on a Loco. 90 form to the District Mechanical Engineer, who will endorse and forward it to the Chief Mechanical Engineer.

Works Managers, Works Foremen, and Stationmaster in Charge, Nelson, are to report any defective tires direct to the Chief Mechanical Engineer.

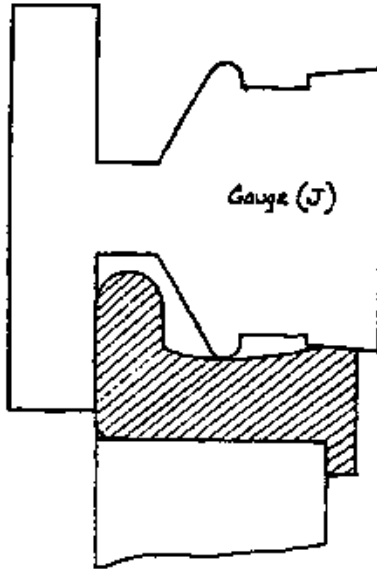
(14) TIRES, Forwarding Defective Pieces for Examination

All defective tires are to be forwarded to the nearest workshops, where the defective portions are to be cut out and sent to the District Mechanical Engineer for inspection. The defective portions are to bear all brands relative to the tire they are cut from.

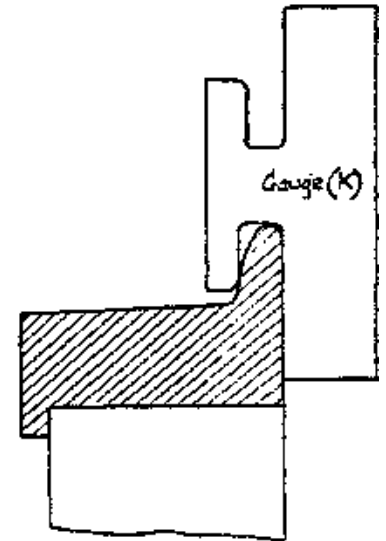
The District Mechanical Engineer will dispose of the portions as instructed by the Chief Mechanical Engineer.



(D) When the engraved line on gauge corresponds with tyre seat diameter, the tyre must be taken out of service and condemned



(J) When two projections on the gauge touch tread the tyre must be immediately taken out of service for re-turning or condemning.



(K) When gauge seats completely down on flange the tyre must be immediately taken out of service for re-turning or condemning.

Illustrating use of Gauges D, J, and K on Drawing Y. 35412