

Document Name:	Wheel Inspections
Document No:	SMS-12-OS-0500

Wheel Inspections

1. Introduction

This Operator-Specific (OS) Procedure relates to the inspection of wheels on all operational locomotives and hauled rolling stock.

This procedure is approved by the THNSW Fleet Manager.

2. Responsibilities

This procedure outlines all workers responsibilities in regards to the inspection of wheels on all operational locomotives and hauled rolling stock.

The Fleet and Infrastructure Manager has the overall responsibility for the work that is carried out on the operational rolling stock.

The Workshop Manager has the responsibility for ensuring that inspection procedures are carried out by competent persons as set down in the maintenance schedule for each item of rolling stock.

Workshop staff and volunteers are responsible for ensuring that this procedure is followed.

3. Related Documents

ESR 0331	Wheel/Axles Reference Manual (RailCorp Eng Std) May 2013
SMS-12-FM-1303	Wheelset Inspection form
SMS-12-FM-1201	Annual Inspection - Steam Locomotive
SMS-12-FM-1207	Annual Inspection - Diesel Electric Locomotive
SMS-12-FM-1212	Annual Car-Wagon Inspection - Hauled Rolling Stock
SMS-12-FM-1217	Annual Inspection - Railcar-Railmotor

4. Scope

A full wheel inspection is required for each item of rolling stock at each annual inspection, or at any time when:

- a pre-trip inspection detects a possible defect in the wheels
- a failure has occurred that might suggest a defect in the wheels
- any incident has occurred (such as a derailment) that might have caused damage to the wheels.

5. Wheel Gauges

Wheel gauges and wheel inspection sheets are available from the Workshop Manager.
Before use, each wheel gauge must be inspected for:

1. drawing number and identification number marked on the gauge
2. worn or illegible markings
3. nicks or dents in the measuring faces
4. wear in the measuring faces
5. any other general damage to the gauges that might render them inaccurate.

Damaged or defective wheel gauges, or wheel gauges without an identification number, are to be returned to the Workshop Manager immediately, and these gauges are to be destroyed and discarded immediately.

5.1. Universal Wheel Tread Gauge

Description:

The universal measuring gauge (shown in Fig 1)
is designed to gauge and measure the following dimensions:

- tread thickness
- rim thickness
- flange height
- flange width
- depth or height of wheel defects
- length of deformities
- tread hollowing.

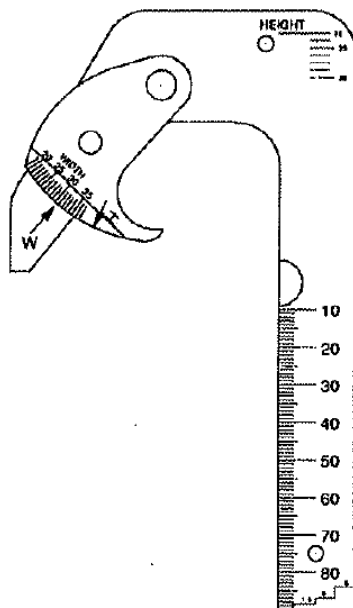


FIG 1. Universal Tread Gauge

6. Procedure

6.1. Measuring Flange Height

The flange height is the vertical distance from the tread line (70 mm from the rim back) to the highest point on the flange.

1. Set the gauge so that the line marked H on the moving finger is positioned just below the 28mm mark on the 'height' scale.
2. Hold the gauge on the rim back, as shown in the figure below, so that the bottom is pointing to the centre of the wheel and the tip of the arm is above the tread line.
3. Move the gauge parallel to the rim back towards the centre of the wheel until the tip of the arm touches the tread.
4. The flange height is the reading adjacent to the H arrow on the moving arm. Record this on the wheel inspection sheet.

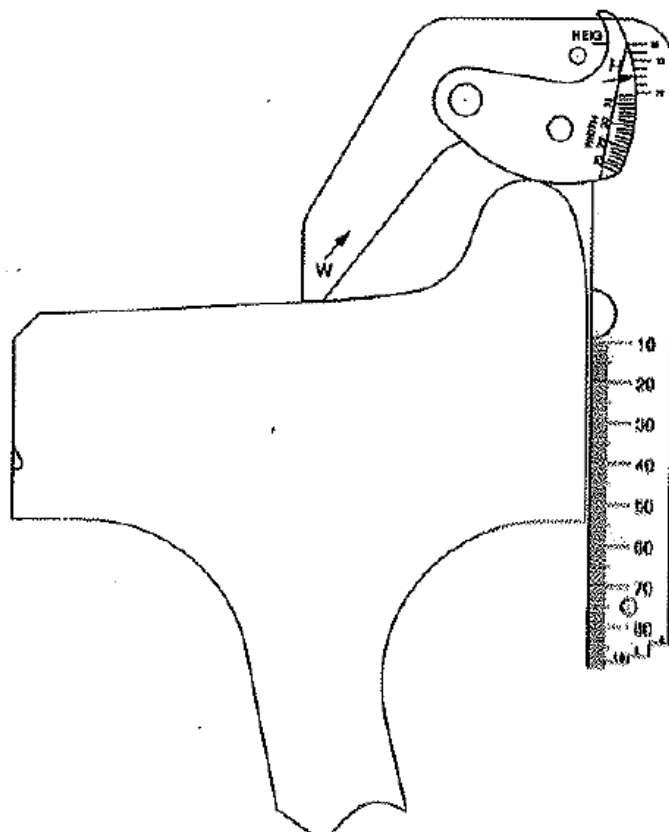


FIG 2. Measuring the flange height. (In this example, the flange height is 30mm.)

6.2. Measuring Flange Width

The flange width is the distance across the flange measured at a set distance above the tread line.

1. Hold the gauge as shown in FIG 3 below, against the rim back so that the bottom of the gauge is pointing towards the centre of the wheel and the tip of the arm is touching the wheel tread.
2. Rotate the moving finger so that the fingertip touches the inside of the flange.
3. The flange width is the reading adjacent to the W arrow on the gauge arm. Record this measurement on the wheel inspection sheet.

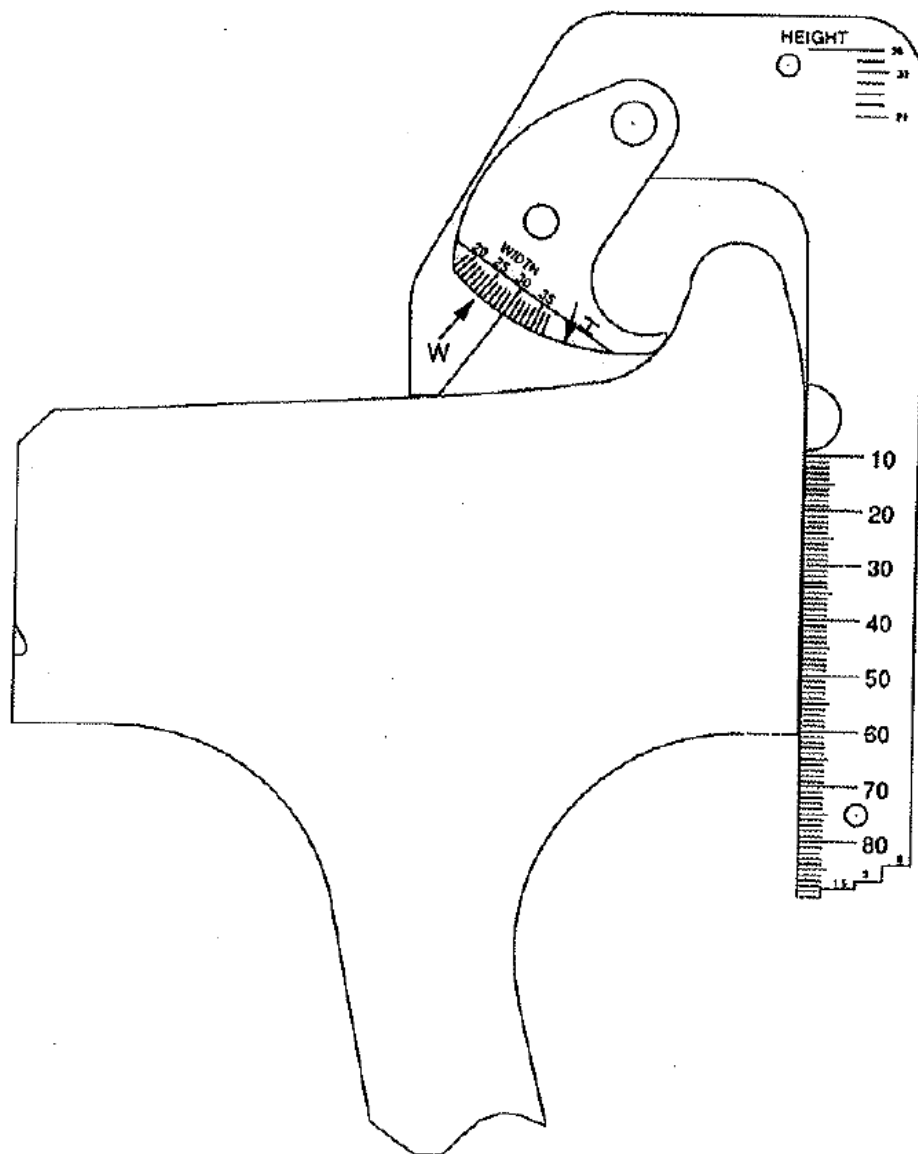


FIG 3. Measuring the flange width. (In this example, the flange width is 25mm.)

6.3. Measuring Rim Thickness

The rim thickness is the amount of material between the wheel rim edge diameter and the measured tread diameter, at the tread line.

1. Hold the gauge on the rim face or rim back, as shown in Fig 4 below, so that the bottom of the gauge is pointing towards the centre of the wheel and the tip of the arm is touching the wheel tread.
2. The point where the rim back edge aligns with the gauge scale is the measured rim thickness. This measurement is not usually required for an annual wheel inspection; its inclusion here is for information only.

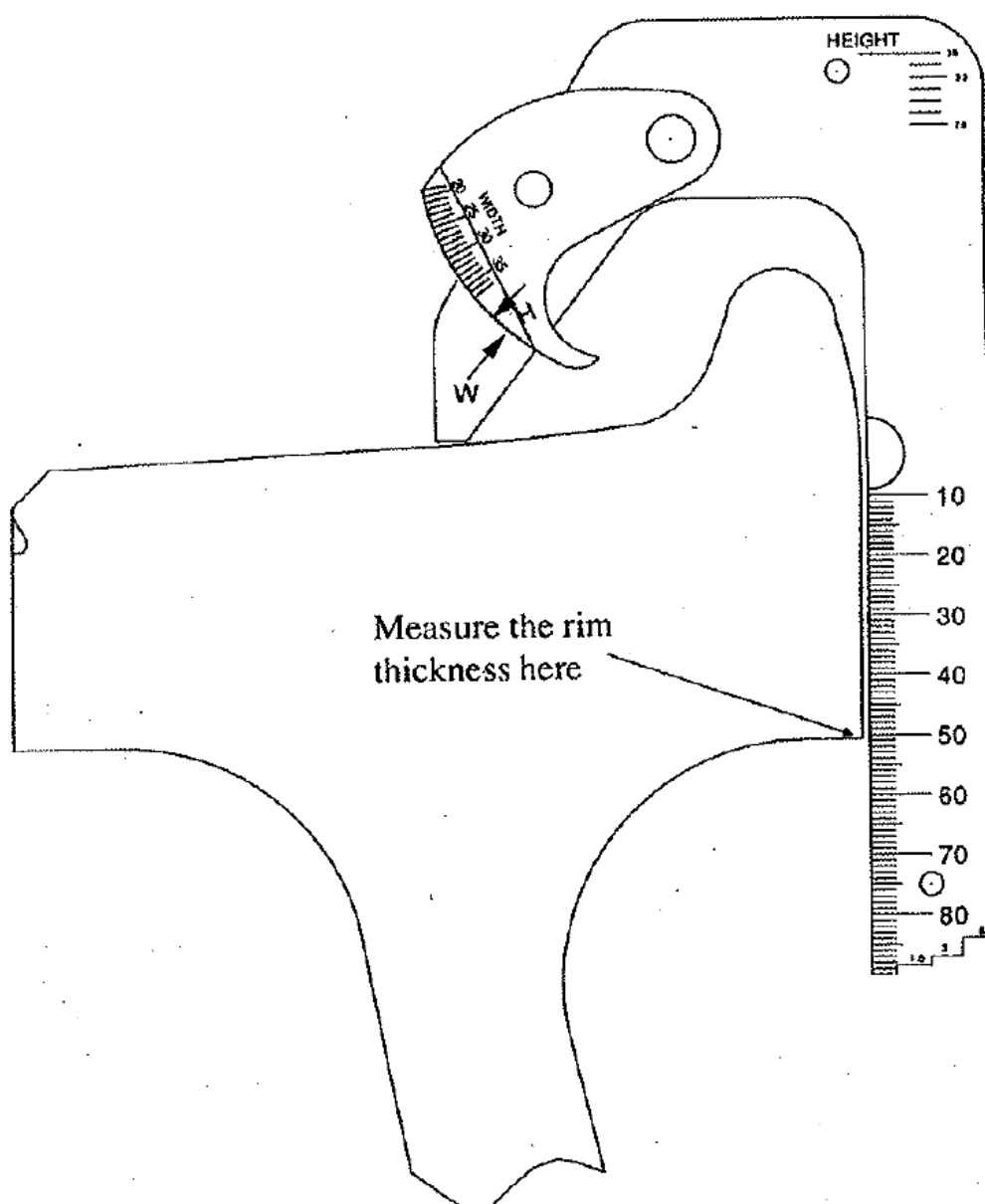


FIG 4. Measuring rim thickness. (In this example, the rim thickness is 51mm.)

6.4. Measuring tread thickness

The tread thickness is the amount of material between the bottom of the wheel condemn groove and the tread.

1. Hold the gauge against the rim face, as shown in Fig 5 below, so the arm is touching the wheel tread.
2. The point where the bottom of the condemning groove aligns with the gauge scale is the measured tread thickness. Record this measurement on the wheel inspection sheet.

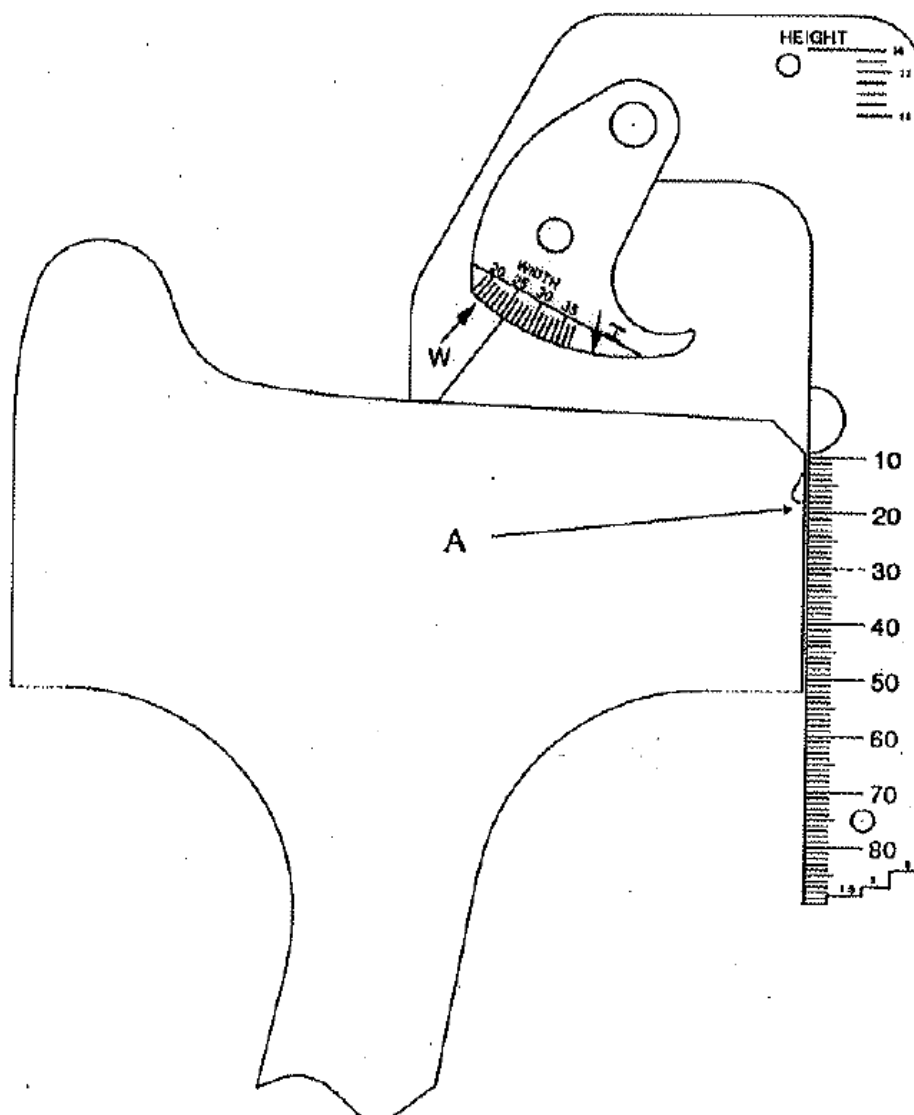


FIG 5. Measuring tread thickness from the condemning groove.
(In this example, the tread thickness is 18mm.)

6.5. Defect depth or height

The stepped graduations on the gauge can be used to measure wheel defect depth (such as spalling) or the height of defects (such as arisses or scale). This measurement is usually only required following a failure or incident.

1. Place the end of the gauge into of next to the defect, as shown in Fig. 6, below.
2. From the stepped graduations on the gauge, estimate the defect depth or height.

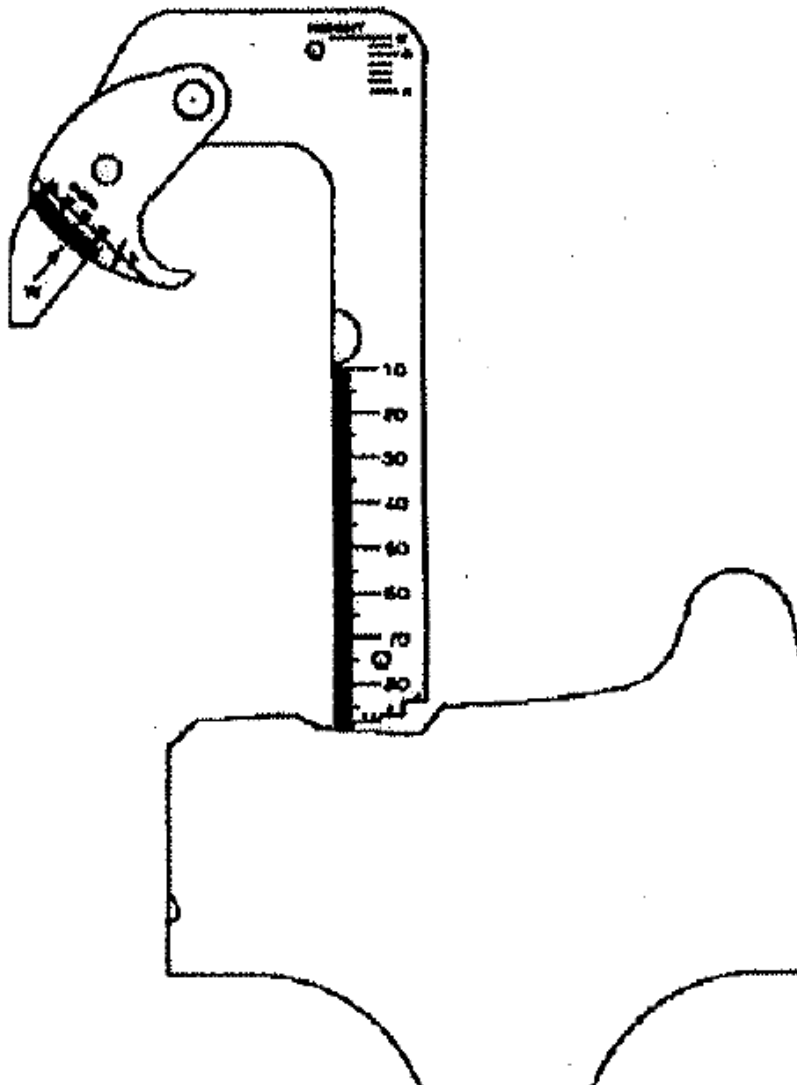


FIG 6. Measuring the depth of a defect

6.6. Measuring tread hollowing

The amount of hollowness in a tread can be measured using the universal gauge and a ruler.

1. Line up the 90mm mark on the ruler with the outside edge of the wheel tread, as shown in Fig. 7 below.
2. Hold the gauge at 90 degrees to the ruler.
3. Use the stepped graduations to measure the maximum depth of the tread hollowing across the tread, and record this information on the wheel inspection sheet.

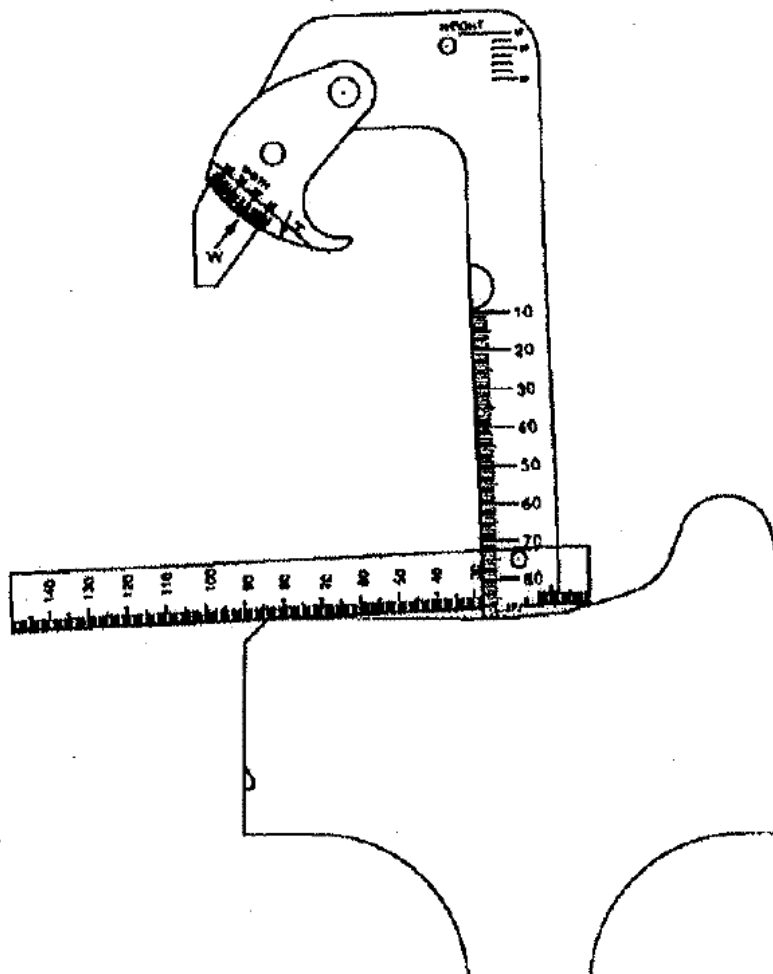


FIG. 7 Measuring tread hollowing.

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