

ARTC Straightedge Specification

ETA-01-02

Applicability

ARTC Network Wide

SMS

Publication Requirement

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Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	29 Sep 06		First Issue
1.1	10 Nov 24		<ul style="list-style-type: none">Transferred the content to the new template.Table 1 has been removed, with a reference to ETS-01-00, Table 1-10 added in its place.Minor changes to the wording.

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1 Introduction

This Specification has been prepared by ARTC to define straightedges for use by Welders, Track Maintenance Staff, Managers and Track Auditors as a setup tool, and to assess rail weld geometry against acceptance tolerances.

The straightedges defined by this Specification will be referred to as the ARTC Finishing Straightedge, with a 0.5mm Nib, and the ARTC Setup Straightedge, with a 1.8mm Nib.

This Specification is for mild steel straight edges that will be used in field and workshop environments where rail welding takes place to achieve tolerances, see ETS-01-00, Table 1-10.

Procurement of this equipment is to be arranged through the Procurement Coordinator (Major Track Materials) only.

1.1 Scope

This specification relates to the ARTC Finishing Straightedge with a 0.5mm nib and the ARTC Setup Straightedge with a 1.8mm nib. It defines the requirements for dimensional accuracy, materials, quality, finish, marking, packaging, and appropriate design features.

1.2 Document Owner

The Manager Engineering Services is the Document Owner. Queries should be directed to standards@artc.com.au in the first instance.

1.3 Reference Documents

The following documents support this procedure:

- ETS-01-00 Section 1: Rail

1.4 Definitions

The following terms and acronyms are used within this document:

Term or acronym	Description
ARTC	Australian Rail Track Corporation Ltd.
Flatness Tolerance	Flatness tolerance is the maximum permissible distance between two imaginary parallel planes which just enclose the surface under consideration.
Squareness Tolerance	Squareness tolerance is the maximum permissible distance between 2 imaginary parallel planes which just enclose the surface under consideration, and which are normal to the surface taken as datum.
Parallelism Tolerance	Parallelism tolerance is the maximum permissible variation in the distance separating the surfaces under consideration.
Bearing Surface	The bearing surface is the surface established by higher spots on the surface under consideration.

2 Method of use of ARTC finishing straightedge

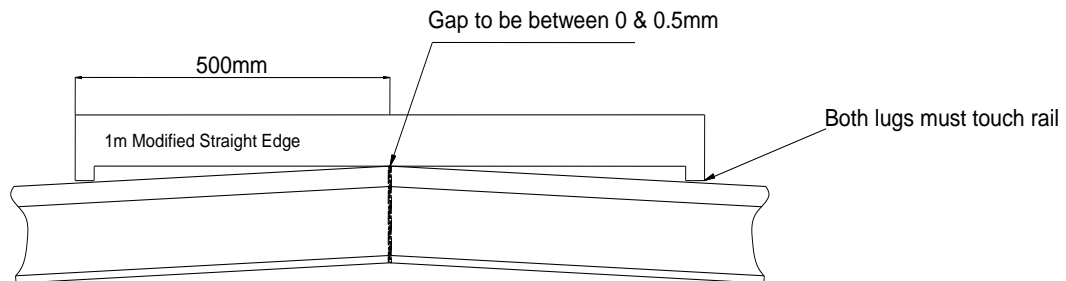


Figure 1: Both lugs making simultaneous contact with the rail.

The weld is considered out of tolerance in the vertical plane (peaking) when both lugs are unable to make simultaneous contact with the rail, as illustrated in Figure 1.

Additionally, the weld does not meet the required tolerance in the vertical plane if any dip is detected when using the flat face of the modified straightedge, as shown in Figure 2 below.

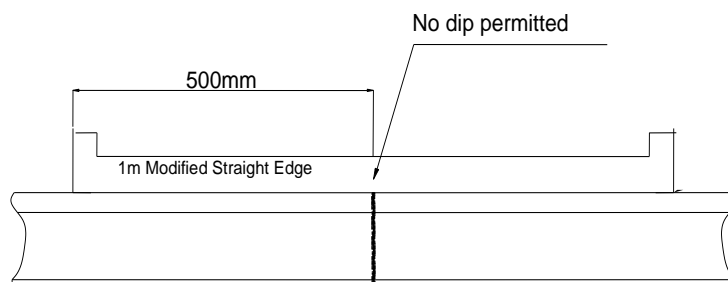


Figure 2: 1-meter modified straightedge demonstrating that no dip is permitted.

3 Dimensions

- The straight edge shall be rectangular in section with the following dimensions: 1000mm length (0.2mm tolerance), 45mm in height (0.2mm tolerance), and 6mm in thickness (0.2mm tolerance).
- For the Finishing Straightedge a nib measuring 5mm long (0.2mm tolerance), and 0.5mm high (tolerance +0, -0.05mm), shall be provided at each end of one of the two working edges. The working edges are the opposite thin edges on the longest lengths of the straightedge.
- For the Setup Straightedge a nib measuring 5mm long (0.2mm tolerance), and 1.8mm high (tolerance +0, -0.05mm), shall be provided at each end of one of the two working edges.
- A 5mm diameter hole through the straightedge must be provided centred 500mm from each end of the straightedge and 22.5mm from each working edge of the straightedge, with a tolerance of 0.2mm.
- A notch 30mm long and 3mm deep shall be located centrally on the same working edge as the nibs for the Setup Straightedge to enable the straightedge to clear the rail ends.

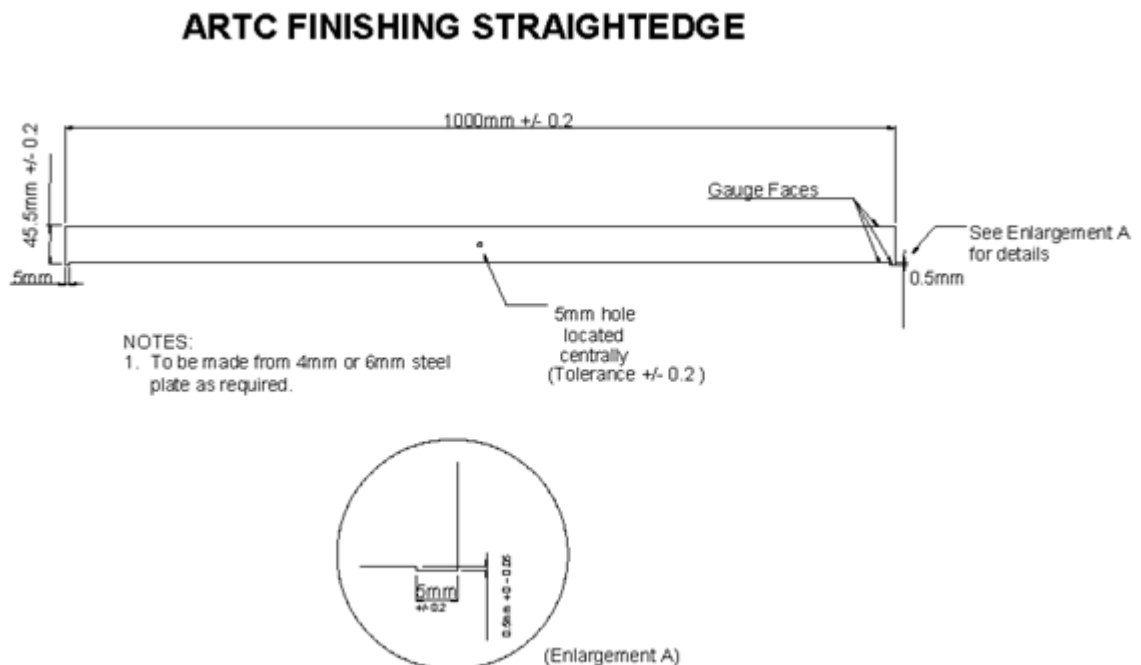


Figure 3: ARTC Finishing Straightedge

ARTC SETUP STRAIGHTEDGE

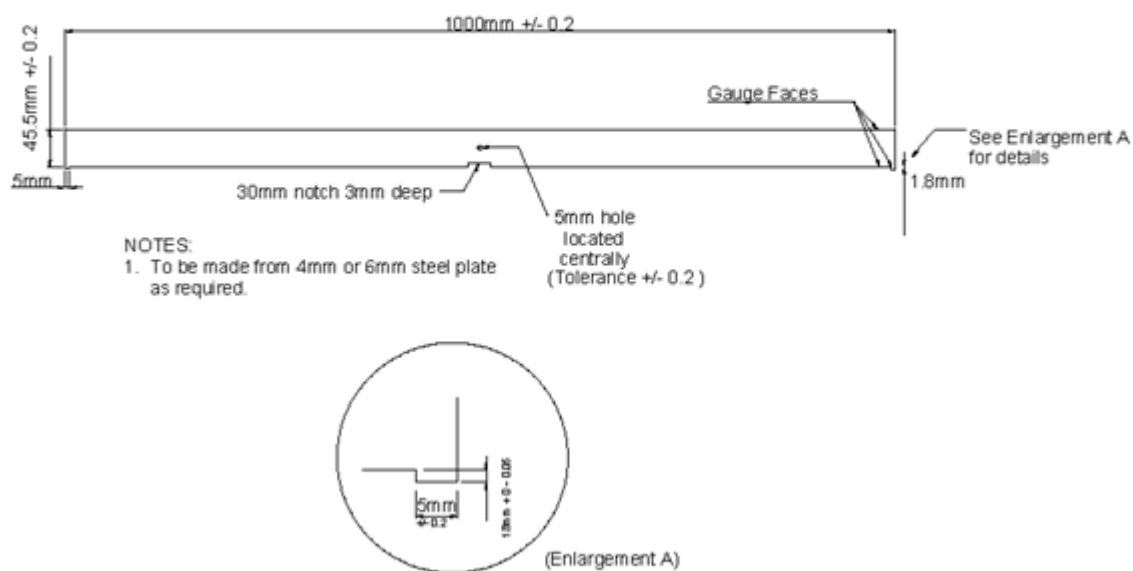


Figure 4: ARTC Setup Straightedge

4 Side Faces and Corners

The side faces and corners of the straight edge must be reasonably straight, flat and square to the working faces, and the side faces must be reasonably parallel. The faces must also meet the tolerance requirements of Clause 9.

All sharp edges and corners must be slightly rounded or chamfered for safety and handling purposes.

5 Marking

Each straightedge must be legibly and permanently marked as follows:

Finishing Straightedge

- Manufacturers mark or trademark
- Title "ARTC Finishing Straightedge – 0.5mm Nib"
- Year of Manufacture
- Serial Number

Example Mark: TRADEMARK, ARTC Finishing Straightedge – 0.5mm Nib, 2005, SN 1336

Setup Straightedge

- Manufacturers mark or trademark
- Title "ARTC Setup Straightedge – 1.8mm Nib"
- Year of Manufacture
- Serial Number

Example Mark: TRADEMARK, ARTC Setup Straightedge – 1.8mm Nib, 2005, SN 2336

6 Testing

The straightedges must be tested and certified by the manufacturer to ensure conformity with this Specification in accordance with a testing plan approved by ARTC.

7 Protection

- All surfaces that have not been machined must be painted with clear POR Rust Preventative Paint or similar.
- Protection for transport and storage must be provided as follows.
 - All unpainted surfaces must be coated in fine oil or grease in order to reduce the likelihood of corrosion.
 - A protective container approved by ARTC must be provided for each straightedge.
 - A protective container may be fabricated from 65mm PVC pipe, capped at both ends with a threaded 65mm cap.
 - The protective container sides and caps shall be securely lined with carpet off cuts or other approved material to protect the straightedge from damage.

8 Material

- Straight edges must be made from high quality rolled steel with welded nibs.
- Steel used must comply with AS 1442, AS 1444, AS 1447, AS/NZS 3679.1 or other approved Standard.

9 Finish

The working faces of the straightedge must be finished by grinding or lapping to the following tolerances.

- **Flatness of Working Surfaces:** Flatness of working surfaces must be within a tolerance of 0.05mm.
- **Flatness of Side Faces:** Flatness of side faces must be within 0.2mm.
- **Squareness of Side Faces:** Side faces of the straightedge must be square to the working edges within 0.5mm.
- **Parallel Working Faces:** Working faces on opposite sides of the straightedge must be parallel within 0.5mm
- **Parallel Side Faces:** Side faces of the straightedge shall be mutually parallel within 0.5mm.