

**PROCEDURE FOR SEMI-GUIDED WRAP BEND FIXTURE FOR TESTING AND ANALYSIS OF THE BENDABILITY OF ALUMINUM SHEET****Application**

This procedure describes the method for bend testing aluminum sheet with a semi-guided wrap bend test fixture and the analysis of test results. A standard bend test specimen of sheet is bent over the radius of a mandrel by a roller rotating about the mandrel. The resulting convex surface of the bend is rated as a function of the amount of damage incurred due to bending about the mandrel. Bend rating and maximum acceptable r/t (radius / sheet thickness) shall be prescribed in the material specification. This test procedure shall be used to identify the maximum mandrel producing the prescribed bend rating. Results are quantified in terms of the bend radius divided by the sheet thickness and shall be denoted as $r/t_{(\text{prescribed rating \#})}$.

Apparatus and Materials Required**Semi-Guided Bend Test Fixture**

Alcan International developed the semi-guided wrap bend fixture (Figure 1a & 1b) described within this document. The fixture was developed for bendability evaluation and quality control of aluminum sheet and conforms to ASTM Standard E290-97a. The fixture clamps one end of an aluminum sheet specimen in place with the mandrel contacting the inside surface of the specimen at the location of the bend. The bending arm pivots about the radius of the mandrel and the roller applies the bending force against the opposite side of the specimen. The specimen is thus made to wrap around the mandrel producing a bend conforming to the mandrel's radius.

Mandrel Radii

All bendability testing shall use the following bend mandrel radii:

(in)	(mm)
0.090	2.29
0.080	2.03
0.070	1.78
0.060	1.52
0.050	1.27
0.040	1.02
0.032	0.813
0.028	0.711
0.024	0.610
0.020	0.508
0.018	0.457
0.016	0.406
0.014	0.356
0.012	0.305
0.010	0.254
0.008	0.203
0.006	0.152
0.004	0.102
0.002	0.051

Date	Action	Revisions	Rev. 1
2014 06 27	Revised	See Summary of Revisions	C. Macna, NA
2013 11 20	Released		C. Macna, NA

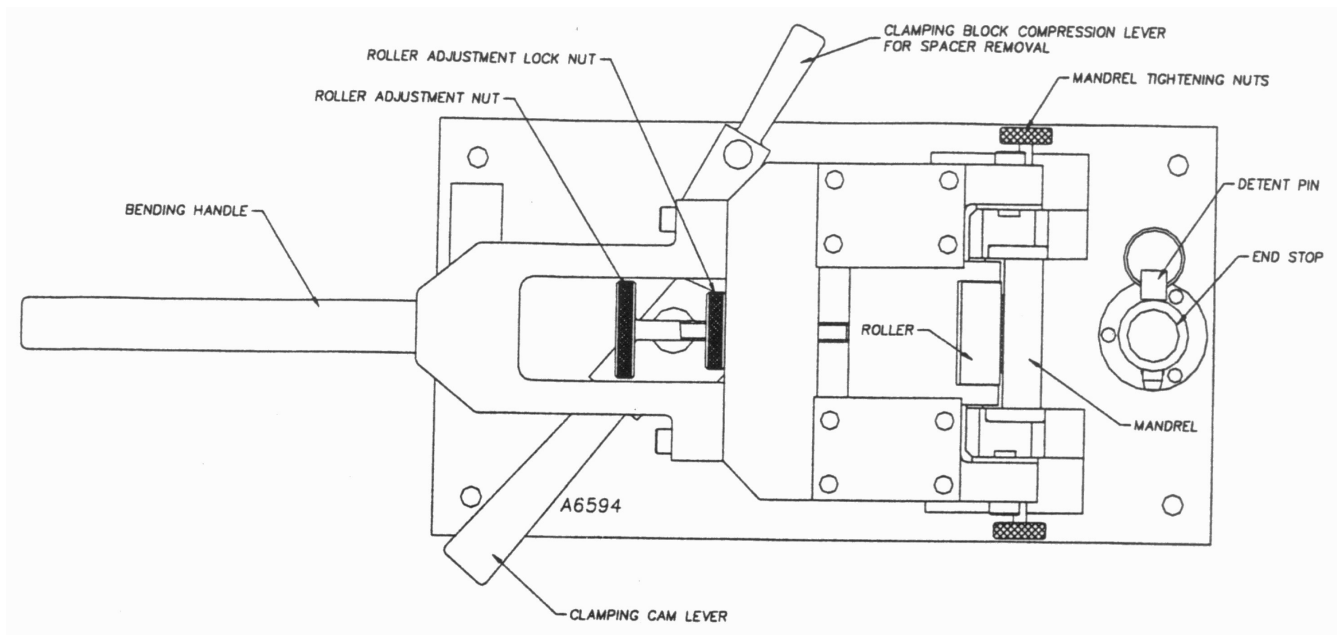


Figure 1a - Guided wrap bend fixture schematic

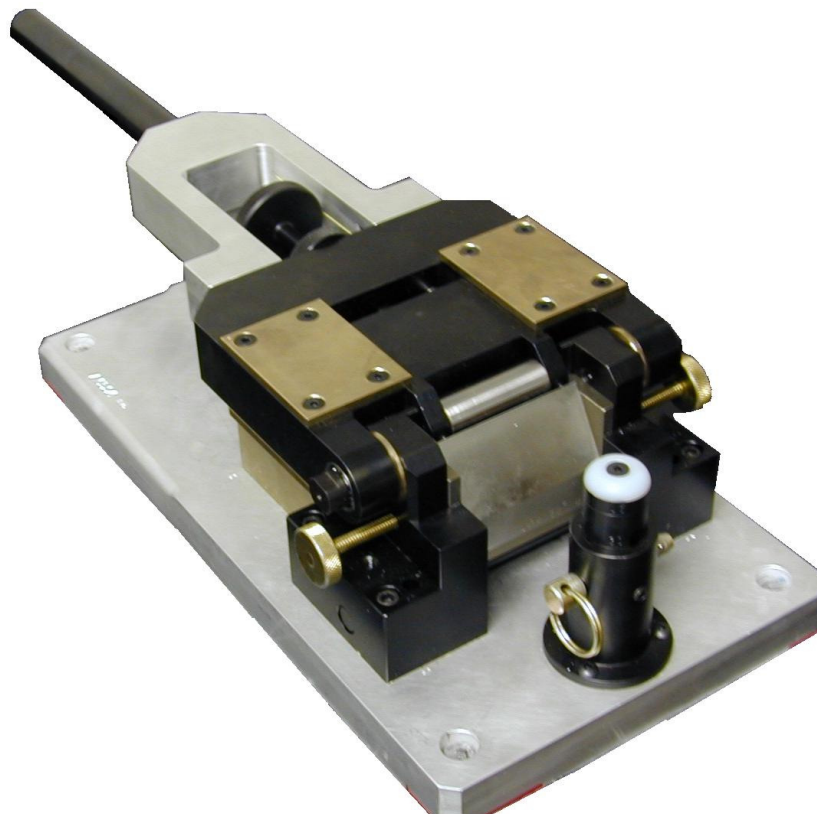


Figure 1b - Guided wrap bend fixture