STANDARD

SAE 1123a

APPROVED AS ANSI/SAE J1123a-1978
BY AMERICAN NATIONAL
STANDARDS INSTITUTE

Leaf Springs for Motor Vehicle Suspension—Metric Bar Sizes —SAE J1123a

SPONSORED BY:
SOCIETY OF AUTOMOTIVE ENGINEERS, INC.

PUBLISHED BY:
SOCIETY OF AUTOMOTIVE ENGINEERS, INC., 400 Commonwealth Drive, Warrendale, PA 15096

LEAF SPRINGS FOR MOTOR VEHICLE SUSPENSION—METRIC BAR SIZES—SAE J1123a

SAE Standard

Report of Spring Committee approved November 1975 and last revised January 1977.

This SAE Standard is limited for the present to the presentation of metric bar sizes and tolerances. They are not identical with those in SAE J510, but the sizes as well as the tolerances follow an analogous pattern. The Spring Committee is now engaged in writing a new MANUAL ON DESIGN AND APPLICATION OF LEAF SPRINGS IN SI (METRIC) UNITS (which will eventually replace SAE J788), and as this work progresses the new Standard will be expanded and will eventually replace SAE J510.

TABLE 1—CROSS SECTION TOLERANCES, mm

Width	Width Tolerance	Tolerance In Thickness (±)[a] And In Flatness (−)[b]			Maximum Difference In Thickness[c]		
		For Thickness			For Thickness		
	Minus 0.00	5.00 to 9.50	10.00 to 21.20	22.40 to 37.50	5.00 to 9.50	10.00 to 21.20	22.40 to 37.50
40.0	+0.75	0.13	0.15	—	0.05	0.05	—
45.0	+0.75	0.13	0.15	—	0.05	0.05	—
50.0	+0.75	0.13	0.15	—	0.05	0.05	—
56.0	+0.75	0.13	0.15	—	0.05	0.05	—
63.0	+0.75	0.13	0.15	—	0.05	0.05	—
75.0	+1.15	0.15	0.20	0.30	0.08	0.10	0.15
90.0	+1.15	0.15	0.20	0.30	0.08	0.10	0.15
100.0	+1.15	0.15	0.20	0.30	0.08	0.10	0.15
125.0	+1.65	0.18	0.25	0.40	0.10	0.13	0.20
150.0	+2.30	—	0.30	0.50	—	0.15	0.25

[a] Thickness measurements shall be taken at the edge of the bar where the flat surfaces intersect the rounded edge.

[b] This tolerance represents the maximum amount by which the thickness at the center of the bar may be less than the thickness at the edges. Thickness at the center may never exceed the thickness at the edges.

[c] Maximum difference in thickness between the two edges of each bar.

As with all leaf spring bars for automotive springs adopted as SAE standard since 1938, the metric bars shall be of flat rolled steel having two flat surfaces and two rounded (convex) edges. They are subject to the tolerances shown in Table 1. These cross section tolerances permit the two flat surfaces to be slightly concave. When that occurs, the radii of the arcs of the two concave surfaces shall be of approximately equal length.

The rounding of the convex edges shall be an arc with a radius of curvature that may vary from 65% to 85% of the thickness of the bar.

Bars shall be substantially straight and free from physical characteristics known as "kinks" or "twists" which render them unsatisfactory for spring manufacturing purposes.

Distortions due to a bar being bent about either major axis of section shall be measured with the bar against a flat checking surface so as to make contact with this surface near both bar ends. Gaps between the bar and the checking surface shall not exceed 4.0 mm/1 m of bar length out of contact with the checking surface when this bar length is greater than 1 m. Also, a gap between the bar and a straight edge 1 m long applied along any portion of the surface or edge of the bar shall not exceed 4.0 mm.

It is recommended that all leaf spring bars which have been cold straightened be identified by the steel mill so that the spring manufacturer can use them selectively.

The bars which are generally provided in alloy steel shall be specified and rolled in the following mm widths and thicknesses:

Widths		Thicknesses					
40.0	75.0	5.00	7.10	10.00	14.00	20.00	28.00
45.0	90.0	5.30	7.50	10.60	15.00	21.20	30.00
50.0	100.0	5.60	8.00	11.20	16.00	22.40	31.50
56.0	125.0	6.00	8.50	11.80	17.00	23.60	33.50
63.0	150.0	6.30	9.00	12.50	18.00	25.00	35.50
		6.70	9.50	13.20	19.00	26.50	37.50

It should be noted that all the widths and thicknesses are "Preferred Numbers" in accordance with American National Standard ANSI Z17.1-1973.