UDC 669.14 : 620.17

Ref. No.: ISO/R 88 - 1959 (E)

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 88

REVERSE BEND TESTING OF STEEL SHEET AND STRIP LESS THAN 3 mm THICK

1st EDITION
February 1959

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 88, *Reverse Bend Testing of Steel Sheet and Strip Less than 3 mm Thick*, was drawn up by Technical Committee ISO/TC 17, *Steel*, the Secretariat of which is held by the British Standards Institution (B.S.I.).

The drawing up of an ISO Recommendation concerning this test was decided on at the second meeting of ISO/TC 17, held in New York, in June 1952. The Technical Committee instructed its Working Group No. 1, *Methods of Mechanical Testing for Steel*, to prepare a draft proposal which was circulated to the members of the Technical Committee in March 1954.

The comments of the Member Bodies were considered by the Working Group which submitted, in August 1954, a revised draft proposal to the members of ISO/TC 17. The revised draft proposal was discussed at the fourth meeting of the full Committee, held in Stockholm, in June 1955, along with the comments received, and was adopted, with a number of small amendments, as a Draft ISO Recommendation.

On 31 January 1957, the Draft ISO Recommendation (No. 153) was submitted to all the ISO Member Bodies and, subject to a few modifications, was approved by the following Member Bodies:

Austria	Hungary	Portugal
Belgium	*Ireland	Romania
*Bulgaria	Italy	Spain
*Canada	Japan	Sweden
Denmark	Mexico	United Kingdom
Finland	Norway	U.S.S.R.
Germany	Pakistan	
*Greece	Poland	

One Member Body opposed the approval of the Draft: France.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in February 1959, to accept it as an ISO RECOMMENDATION.

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* These Member Bodies stated that they had no objection to the Draft being approved.

ISO Recommendation R 88 February 1959

REVERSE BEND TESTING OF STEEL SHEET AND STRIP LESS THAN 3 mm THICK

1. PRINCIPLE OF TEST

1.1 The test consists of repeated bending through 90°, in opposite directions, of a rectangular test piece held at one end, each bend being over a support having a specified radius.

1.2 One "reverse bend" consists of bending the test piece through an angle of 90° and then returning it to its original position (see Fig. 1).

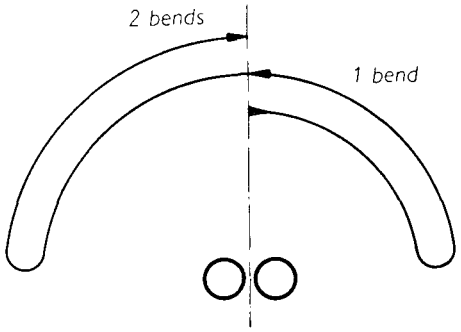

FIG. 1. **Method of counting reverse bends**

2. SYMBOLS AND DESIGNATIONS

Number	Symbol	Designation
1	*a*	Thickness of test piece
2	*b*	Width of test piece
3	*R*	Radius of curvature of blocks
4	*h*	Distance from top of blocks to bottom face of guide
5	*Nb*	Number of bends

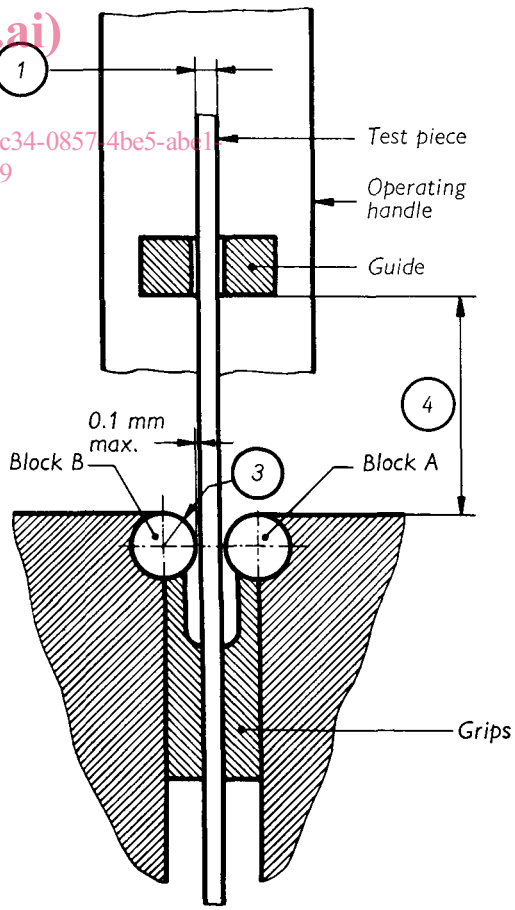

FIG. 2. **Reverse bend testing of sheet and strip**

3. TEST PIECE

3.1 The thickness of the test piece is that of the sheet from which the sample is taken, the skins remaining intact.

3.2 The width of the test piece is 20 mm $^{+0}_{-5}$ mm (13/16 in $^{+0}_{-3/16}$ in).

3.2.1 Strip material of a smaller width may be tested with the full width as supplied.

3.3 The test piece is prepared so that the edges are free from burrs and cracks. Cold-worked zones may be removed by machining or filling.

4. PROCEDURE

4.1 The common method of carrying out the test includes the following operations :

4.1.1 Hold one end of the test piece between two blocks *A* and *B*, each of which is rounded to the specified radius, as shown in Figure 2, page 3.

4.1.2 Bend the protruding portion of the test piece through 90° over block *A* and then bring it back to its original position.

4.1.3 Then bend the test piece in the reverse direction over block *B* and again return it to its original position.

4.2 This procedure is repeated as often as necessary. This description of the method of procedure does not imply that the test piece is to be stopped entirely after each bend.

4.3 Bending is at a rate such that the heating does not affect the result of the test, but in any case the rate shall not exceed one bend per second.

5. TESTING MACHINE

5.1 The axes of the blocks should be parallel. A plane determined by the axes of the blocks should be perpendicular to the direction of the axis of the test piece. The clearance between the test piece and each block should be measured and should not be greater than 0.1 mm.

5.1.1 The radius *R* of curvature of the blocks should be one of the following:

1 2.5 5.0 7.5 10 mm

5.1.2 The dimension *h* should be 25 to 50 mm (1 to 2 in).

6. TEST REQUIREMENTS

6.1 The test is carried out at ambient temperature, unless otherwise specified.

6.2 The interpretation of the result of the test is a matter for the material specification.

6.2.1 The following applies, unless otherwise stated in that specification.

6.2.2 The test is stopped when a crack or cracks extend more than approximately half way through the thickness of the test piece; the test piece is then considered as having failed.

6.2.3 The test report states that the test piece has withstood the specified number of reverse bends or it states the number of reverse bends after which the test piece failed.

Date of the first printing:
June 1960

Price: Sw. fr. 3.—