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[NOT INTENDED FOR TRANSPORT.]

(REVISED FEBRUARY, 1937.)

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Incorporated in 1918 as the British Engineering Standards Association.

BRITISH STANDARD SPECIFICATION

FOR

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[NOT INTENDED FOR TRANSPORT.]

(REVISED FEBRUARY, 1937.)

This Specification, having been approved by the Mechanical Industry Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council as a British Standard on 15th February, 1937.

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CONTENTS.

		PAGE
	Co-operating Organisations...	3
	Foreword	4
	DEFINITIONS.	
1.	Air Receiver	5
2.	Fusion Welded	5
	SPECIFICATION.	
3.	General	5
4.	Quality of Material	5
5.	Freedom from Defects	6
6.	Number of Tensile and Cold Bend Tests...	6
7.	Tensile Breaking Strength and Elongation	6
8.	Bend Test	6
9.	Heat Treatment of Test Pieces	6
10.	Number of Joints	7
11.	Type of Welded Joints	7
12.	Method of Making Welded Joints	9
13.	Thickness of Cylindrical Shell Plate	11
14.	Lacing Straps	11
15.	End Plates	14
16.	Dishing and Flanging of End Plates	16
17.	Method of Fixing the Ends...	16
18.	Welding Rods and Electrodes	17
19.	Bend Test on a Butt-welded Specimen	17
20.	Compensation for Manholes	18
21.	Inlet and Outlet Connections	20
22.	Access	22
23.	Drainage	22
24.	Heat Treatment of Receivers	22
25.	Circularity	22
26.	Hydraulic Test	23
27.	Marking	23
28.	Inspection	23
29.	Testing Facilities	23
	APPENDICES.	
A.	Forms of British Standard Tensile Test Pieces	24
B.	Bend Test for Weakness at Junctions and Soundness of Weld Metal	27

CO-OPERATING ORGANISATIONS.

The Mechanical Industry Committee, under whose supervision this Specification was prepared, consists of representatives from the following Government Departments and Scientific and Industrial Organisations :—

*Admiralty.
Crown Agents for the Colonies.
Department of Scientific and Industrial Research.
*High Commissioner for India.
H.M. Office of Works.
*Home Office.
Ministry of Transport.
*War Office.
*Agricultural Engineers' Association.
*British Chemical Plant Manufacturers' Association.
*British Electrical and Allied Manufacturers' Association.
*British Engineers' Association.
*British Marine Oil Engine Manufacturers' Association.
*Engineering Insurance Companies.
*Institute of Marine Engineers.
Institution of Automobile Engineers.
Institution of Gas Engineers.
Institution of Heating and Ventilating Engineers.
*Institution of Mechanical Engineers.
Locomotive Manufacturers' Association.
Machine Tool Trades Association.
National Federation of Iron and Steel Manufacturers.
Railway Companies of Great Britain.

The Government Departments and Scientific and Industrial Organisations marked with an asterisk in the above list, together with the following, were directly represented on the Committees entrusted with the preparation of this Specification.

Air Ministry.
Board of Trade.
British Corporation and Register of Shipping and Aircraft.
Bureau Veritas.
Diesel Engine Users' Association.
Institution of Engineers and Shipbuilders in Scotland.
Institution of Mining Engineers.
Institution of Naval Architects.
Lloyds Register of Shipping and Aircraft.
Manufacturers of Air Receivers.
Mines Department.
National Physical Laboratory.
North-East Coast Institution of Engineers and Shipbuilders.

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FOREWORD.

This Specification forms part of a series * of British Standard Specifications for Steel Air Receivers, the preparation of which was authorised by the Mechanical Industry Committee.

A recent examination by the Committee of the Specification issued in 1933 showed that it had worked very well in practice and that no important changes were necessary. Accordingly, it was decided to incorporate only those modifications necessary to bring the Specification into line with other current British Standards.

This Specification requires reference to the following British Standard Specifications :—

B.S.S. No. 18.—Forms of Tensile Test Pieces.

B.S.S. No. 639.—Covered Electrodes for Metal Arc Welding Wrought Iron and Mild Steel.

B.S.S. No. 709.—Methods of Making a Cold Bend Test on Fusion Welded Joints.

In order to keep abreast of progress in the Industries concerned, the British Standard Specifications are subjected to periodical review.

Suggestions for improvements, addressed to the British Standards Institution, 28 Victoria Street, London, S.W.1, will be welcomed at all times. They will be recorded, and in due course brought to the notice of the Committees charged with the revision of the Specifications to which they refer.

* B.S.S. No. 428—Forge Welded Steel Air Receivers.
B.S.S. No. 429—Riveted Steel Air Receivers.
B.S.S. No. 430—Solid Drawn Steel Air Receivers.
B.S.S. No. 487—Fusion Welded Steel Air Receivers.

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NOTE.—*The Institution desires to call attention to the fact that this Specification is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to include all the necessary provisions of a contract.*

BRITISH STANDARD SPECIFICATION FOR FUSION WELDED STEEL AIR RECEIVERS.*

[NOT INTENDED FOR TRANSPORT.]

(REVISED FEBRUARY, 1937.)

DEFINITIONS.

Air Receiver.

1. The term " Air Receiver " shall, for the purposes of this Specification, mean any vessel intended to contain air or inert gas above atmospheric pressure.

Fusion Welded.

2. The term " Fusion Welded " shall, for the purposes of this Specification, apply to all air receivers made by the oxy-acetylene or the oxy-hydrogen process, the metal-arc process with covered electrodes (*see* Clause 18), or other electric arc process in which protection against atmospheric contamination is provided during welding.

SPECIFICATION.

General.

3. British Standard fusion welded steel air receivers shall conform in all respects to the requirements for the quality of material, construction and tests herein laid down.

Material.

Quality of Material.

4. The material used in the construction of a receiver shall be mild steel made by the acid or basic open hearth process. The

* This Specification shall not apply to air or vacuum vessels used on railways.

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cast from which the plates are rolled shall not contain more than 0·05 per cent of sulphur or of phosphorus.

Freedom from Defects.

5. The finished material shall be free from cracks, surface flaws, and laminations. It shall have a workmanlike finish and shall not have been hammer-dressed, but slight scale or shell may be removed by the use of chisel, file, buff, or sand or shot blast.

Number of Tensile and Cold Bend Tests.

6. One tensile and one cold bend test shall be taken from each plate as rolled. For plates exceeding 2½ tons in weight one tensile and one cold bend test shall be taken from each end.

Tensile Breaking Strength and Elongation.

7. The tensile breaking strength and elongation shall be determined on British standard test piece A (*see* Appendix A), cut lengthwise or crosswise from the plates. The tensile breaking strength shall be not less than 24 and not more than 30 tons per square inch, but there shall not be a range of more than 4 tons per square inch in the tensile breaking strength of the material used in the construction of the shell of any one receiver.

The elongation shall be not less than 23 per cent for plates ⅜ inch in thickness and above, and not less than 20 per cent for plates below ⅜ inch in thickness.

Bend Test.

8. Bend test pieces shall be sheared lengthwise or crosswise from plates, and shall be not less than 1½ inches wide. The rough edge caused by shearing may be removed by filing or grinding and test pieces 1 inch in thickness and above may have the edges machined but shall receive no other preparation. The test piece shall withstand without fracture being doubled over cold until the internal radius is equal to 1½ times the thickness of the test piece and the sides are parallel.

The bend test may be made either by pressure or by a succession of blows.

Heat Treatment of Test Pieces.

9. The tensile and bend test pieces shall not be heat treated unless the material from which they are cut is heat treated, in which

case the test pieces of the material shall be similarly and simultaneously treated before test.

CONSTRUCTION.

Number of Joints.

10. Wherever it is reasonably practicable and the dimensions are within the usual limits of rolling mill practice the shell of the receiver shall be made from a single plate.

Where the dimensions are such that the shell cannot be made from a single plate it shall be made with the minimum number of joints.

Type of Welded Joints.

11. The type of welded joints used in the construction of the receiver shall be as follows :—

(*a*) *Longitudinal Seams.*—Longitudinal seams shall be made with butt welded joints of the vee type (*see* Figs. 1, 2, and 3).

Fig. 1.

Fig. 2.

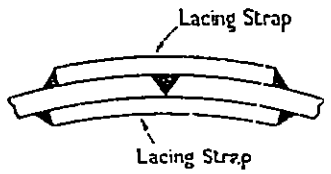

Fig. 3.

Forms of Butt Welded Joints for Circumferential Seams.

(*b*) *Circumferential Seams.*—Circumferential seams either in the shell or in an end of a receiver shall be made with any of the types of joint shown in Figs. 4 to 11. Where, however, the thickness of the cylindrical shell plate exceeds ½ inch the types shown in Figs. 10 and 11 shall not be used.

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