

TECHNICAL SPECIFICATION	TS251™	ISSUE 1
	Issued	2006-10
Manufacturing, Inspection and Qualification Requirements for Rivet, Blind, Self-Plugging, Flush-Break, Mechanically Locked Stem, Aluminium Alloy (2014A Material) AS64400 and AS64403 AS64400L and AS64403L		

NOTE: The issue status of this document remains unchanged as there have been no changes to the technical content.

SAE INDUSTRY TECHNOLOGIES CONSORTIA AEROSPACE STANDARDS AND PART QUALIFICATION PROGRAM

FOREWORD

On the 1st January 2015 the SAE Industry Technologies Consortia (SAE ITC) acquired the ADS Aerospace Standards, previously known as the Society of British Aerospace Companies (SBAC) Aerospace Standards. The SAE ITC established in 2003 operates as a trade association as part of the SAE International Enterprise providing a unique framework serving the automotive, aerospace, and commercial vehicle sectors. Clients include private companies, government agencies, individuals, and trade associations. Building consensus and breakthrough barriers to achieve solutions, and the ways by which those solutions take shape, are tailored to each client's individual needs.

The legal obligations and copyright authority of all Aerospace Standards that were issued by the ADS Group Limited are therefore assigned / transferred to the SAE ITC.

These Standards are produced by the SAE ITC with the assistance of, and for the benefit of the Aerospace Industry, as part of a continuous programme of Standardisation for Aerospace application under the control of the Technical Standards Committee (TSC) of the SAE ITC.

SAE ITC Standards are published as part of the series of SAE ITC Aerospace Industry Standards, and where appropriate, additional manufacturing and inspection requirements are issued as Reference Sheets (RS) or Technical Specifications (TS). It is the responsibility of those using or specifying a Standard to ensure the product, process, or manufacturer so used or specified, is appropriate for the task or role in question. The SAE ITC wishes to draw special attention to the fact Technical Specifications (TS) include testing and procedures by which a user or Design Authority can establish whether a particular manufacturer, prima facie, has the capability to produce hardware in accordance with the appropriate standards and related specifications.

The SAE ITC, its servants, or representatives accept no responsibility for the continued quality of hardware items produced against the relevant drawings and specifications; this responsibility remains with the user.

Whilst the SAE ITC takes all reasonable care in the preparation of its Standards, neither the SAE ITC, its officers, employees, servants, agents, or representatives, shall have any responsibility or liability whatsoever with respect to any act or omission (whether negligent or not) of whatsoever nature, or in connection with the preparation of the Standards or any part thereof. These responsibilities are those of the user or Design Authority. Users of SAE ITC Standards agree that any such liability on the part of the SAE ITC is excluded to the maximum extent permitted by law. SAE ITC Standards may be changed from time to time, and both users and manufacturers of these parts should ensure they are in possession of the latest issue of the Standards and supporting documentation before adoption or the commencement of production.

It is recommended that Technical Specification TS260, Metallic Materials List of Alternative Material Standards, be consulted prior to manufacture of SAE ITC products.

Each Standard is a facsimile or electronic reproduction of a master drawing and, therefore, any outline view scales stated are not necessarily reproduced accurately. A Master Index of all SAE ITC Aerospace Standards is published separately on the SAE ITC website.

All references to Standards include reference to RS and TS publications.

Details of this and any further information can be obtained from the SAE ITC.

SAE Industry Technologies Consortia provides that "This standard is published by SAE ITC to advance the state of technical and engineering sciences. The use of this standard is entirely voluntary and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."
Copyright © 2015 SAE ITC.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of SAE ITC.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-772-7545 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
<http://itc.sae.org/>

TECHNICAL SPECIFICATION

No. 251

MANUFACTURING, INSPECTION & QUALIFICATION
REQUIREMENTS FOR

RIVET, BLIND, SELF-PLUGGING, FLUSH-BREAK,
MECHANICALLY LOCKED STEM, ALUMINIUM ALLOY
(2014A MATERIAL)

AS64400 & AS64403
AS64400L & AS64403L

Issued by: Technical Standards Committee
The Society of British Aerospace Companies Ltd
Registered in England and Wales no. 143447

© 2006

Issue 1 October 2006

 **Documents**
Document Sharing Hub

SBAC TECHNICAL SPECIFICATION TS251

MANUFACTURING, INSPECTION & QUALIFICATION REQUIREMENTS FOR RIVET, BLIND, SELF-PLUGGING, FLUSH-BREAK, MECHANICALLY LOCKED STEM, ALUMINIUM ALLOY (2014A MATERIAL)

**AS64400 & AS64403
AS64400L & AS64403L**

CONTENTS

TITLE PAGE

FOREWARD

1. SCOPE
2. MANUFACTURING REQUIREMENTS
3. QUALIFICATION & INSPECTION REQUIREMENTS
4. INSTALLATION TESTS
5. SHEET TAKE - UP
6. SHEAR TESTS
7. TENSION TESTS
8. FATIGUE TESTS
9. METALLOGRAPHIC INSPECTION
10. LUBRICANT COATING CORROSION TESTS
11. RETESTS
12. IDENTIFICATION

APPENDICES

- A. INSTALLATION TEST PLATES
- B. SHEET TAKE-UP FIXTURE
- C. SHEAR TEST PLATES
- D. TENSION TEST PLATES
- E. FATIGUE TEST PLATES
- F. METALLOGRAPHIC INSPECTION REQUIREMENTS
- G. PRODUCTION & QUALIFICATION TESTING REQUIREMENTS

(Prepared by the Technical Standards Committee)
The Society of British Aerospace Companies Limited
Registered in England and Wales No. 143447

1. SCOPE

This specification covers the technical requirements for AS series, blind, Aluminium alloy rivets that are self-plugging and have a mechanically locked, flush break stem, in both the plain and Lock Creator versions.

2. MANUFACTURING REQUIREMENTS

2.1 Material

The material shall be as specified in the relevant AS standard.

2.2 Method of Manufacture

Bodies and stems shall be cold forged.

2.3 Dimensions

Bodies and stems shall be manufactured to the dimensions specified in the relevant AS standard.

2.4 Heat Treatment

Bodies and stems shall be heat treated to a sealed process to meet the performance requirements of this technical specification. The sealed process shall not be changed without the agreement of the SBAC TSC.

2.5 Surface Treatment

All surface treatments shall be as specified in the relevant AS standard.

2.6 Lubrication

To ensure proper function of the rivet it is permissible to lubricate. All lubricants used shall pass the Lubricant Coating Corrosion Test of paragraph 10 and shall not be changed without requalification as required by TS201.

3. QUALIFICATION AND INSPECTION REQUIREMENTS

3.1 Qualification

The Qualification procedure shall be as specified in TS202. For a summary of the tests required for qualification, see Appendix G, Table 13.

3.2 Qualification Authority

The Qualification Authority is the SBAC Technical Standards Committee.

3.3 Inspection

Sub-paragraphs 3.4 to 3.7 detail the inspection procedures and requirements that shall be met during both qualification and production.

3.4 Batches

A batch shall consist of the output of a continuous production run of one size of component, from one cast of material, heat treated at one time, free from any interruption or changes such as might be expected to result in a significant variation in the quality of the finished product.

A batch of rivets shall consist of bodies from only one batch, and stems from only one batch.

For a summary of the tests required for batch release, see Appendix G, Table 14.

3.5. Records

The manufacturer shall maintain batch records for a minimum of 5 years to show the results of the inspection and tests made to the requirements of this specification. The records shall show the batch quantity and the serial numbers of certificates covering acceptance of the material. The acceptance records shall be made available to the customer when required.

3.6. Dimensional Control during Manufacture

The manufacturer shall carry out dimensional checks during manufacture of each batch to a sampling plan in accordance with ISO2859 or ANSI/ASQC Z1.4, to ensure that the quality of the product satisfies the requirements of this Technical Specification.

3.7. Materials, Heat Treatments and Surface Treatments

The manufacturer shall ensure that all materials, heat treatments and surface treatments comply with the relevant requirements and that material identity has been maintained throughout all stages of manufacture.

3.8. Production Tests

In addition to the inspection requirements of sub-paragraph 3.3, production testing shall be carried out by the manufacturer on every batch of rivets produced and shall consist of the following tests:

- (a) Installation tests in accordance with paragraph 4.
- (b) Metallographic inspection, in accordance with paragraph 9, shall be carried out at the start and finish of each production batch run and at 2 hourly intervals during the batch run.
- (c) Shear tests and tension tests, in accordance with paragraphs 6 and 7 respectively, shall be carried out with sufficient frequency to ensure the quality of the rivet is maintained.

4. INSTALLATION TESTS

From each batch of rivets sufficient samples shall be withdrawn to satisfy the requirements of the following:

4.1. Stem Flushness

Rivet samples representing both the minimum grip/maximum hole size and the maximum grip/minimum hole size shall be installed in test plates which comply with Appendix A. The sampling frequency shall be in accordance with ISO2859 or ANSI/ASQC Z1.4, level S-3, AQL=4.0. The incidence of split or cracked bodies shall not exceed 1.5% of batch quantity being tested. The lock shall form satisfactorily in the head of the rivet during the placing operation and shall be flush within the limits of Table 1.

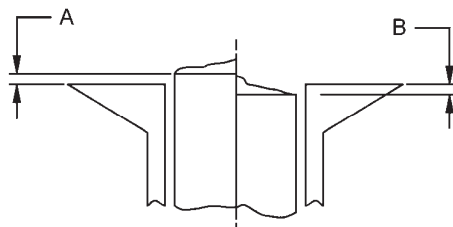


Figure 1

The position of the stem shall lie within the dimensions shown. These apply to both flush and protruding head rivets.

Note : All stem dimensions refer to the intersection of the breaker groove and stem surface. No reference is made to the uneven break surface.

Code	Rivet Nominal Diameter		See Figure 1 Dimension 'A'		See Figure 1 Dimension 'B'	
	mm	ins	mm	ins	mm	ins
4	3,2	.125	0,13	.005	0,38	.015
5	4	.156	0	.000	0,51	.020
6	4,8	.190	0	.000	0,76	.030

Table 1 - Stem Flushness Limits