INTERNATIONAL STANDARD

ISO 17057

First edition
1999-12-15

Aerospace — Rivets, solid — Test method

Aéronautique et espace — Rivets ordinaires — Méthode de contrôle et d'essai

Reference number
ISO 17057:1999(E)

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Printed in Switzerland

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 17057 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

Annex A forms a normative part of this International Standard.

Aerospace — Rivets, solid — Test method

1 Scope

This International Standard specifies the test method for solid rivets. It describes the test device and the method.

It applies to rivets intended for use in aerospace construction in conjunction with the relevant procurement specification, provided that the specification refers to this International Standard.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 7500-1:1999, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system.*

3 Double shear inspection and test

3.1 Apparatus

3.1.1 **Testing machine**, the accuracy of which shall be verified to the requirements of ISO 7500-1:1999, with class of testing machine range 1,0.

The test machine shall be calibrated as specified in annex A.

3.1.2 **Test fixture**, made of steel with a minimum hardness of 530 HV 30. The dimensions of the fixture shall be in conformity with those in Figure 1.

To minimize the possible effect of distortion of the fixture under load, fitted machined steel bolts shall be used.

The interfaces between the middle part and the leg part shall be well polished.

3.2 Procedure

3.2.1 Place the rivet or riveting wire in the test fixture so that contact is made with the full bearing surface.

3.2.2 Record the maximum load F to fracture.

Shear strength is:

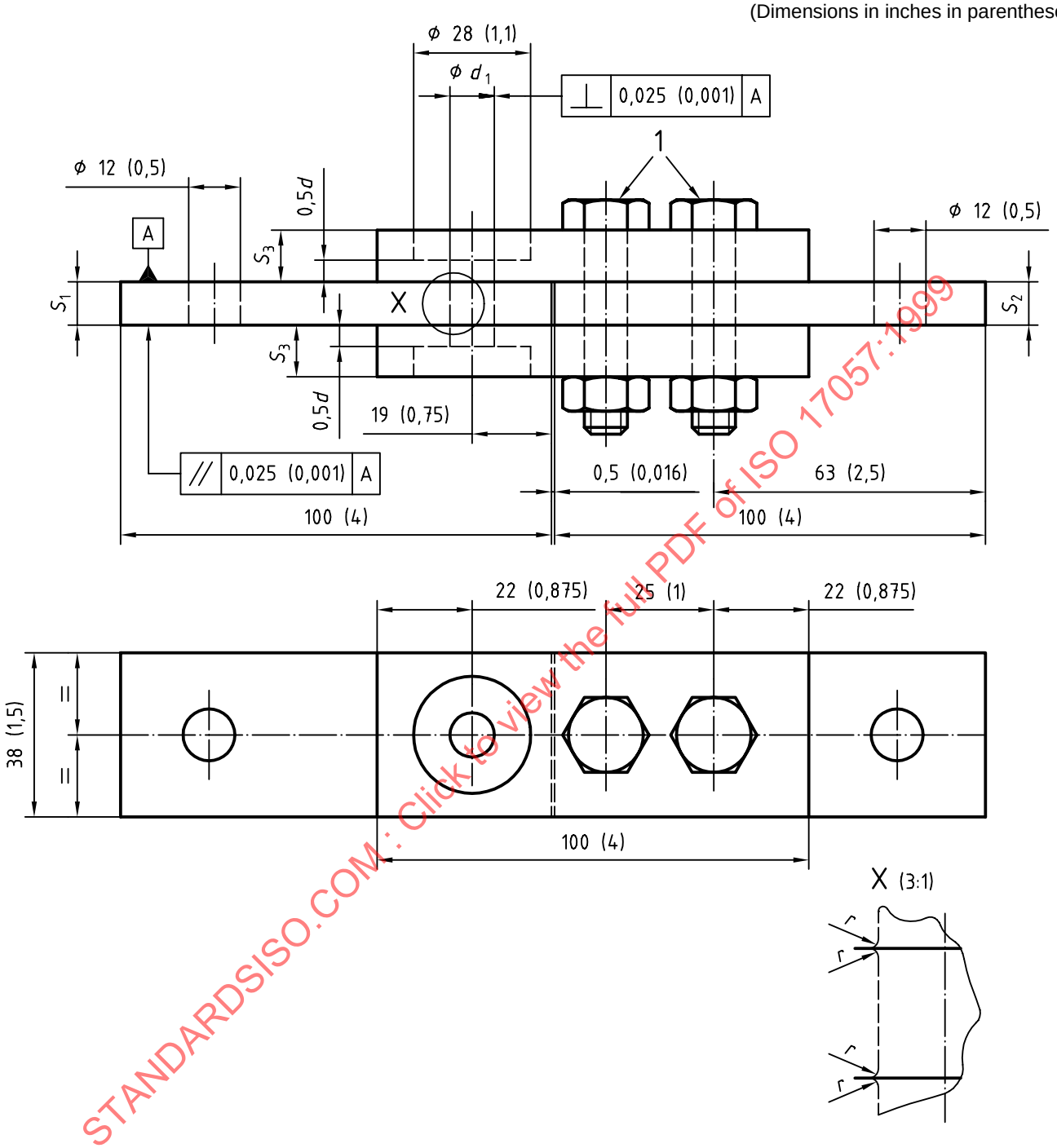
$$R_s = 0{,}5\frac{F}{\pi\left(\frac{d_a^2}{4}\right)} = \frac{2F}{\pi d_a^2}$$

where d_a is the actual diameter of the specimen at the shear zone.

3.2.3 The speed of testing shall be less than or equal to 20 mm/min (0,75 in/min).

3.2.4 The test may be discontinued without a complete shear failure once the required minimum ultimate test load has been achieved.

Dimensions in millimetres
(Dimensions in inches in parentheses)



d is the nominal diameter of wire or rivet

r is the resulting radius subsequent to wear of the edges of the diameter d_1 hole

$d_1 = 1{,}020\,d + 0{,}075$ mm ± 0,015 mm (0,003 in ± 0,000 6 in)

$r \leqslant$ 0,13 mm (0,005 in)

$S_1 = d\ {}^{0}_{-0{,}3\,\text{mm}}\ \left({}^{0}_{-0{,}012\,\text{in}}\right)$

$S_2 = S_1 \pm 0{,}025\ \text{mm}\ {}^{+0{,}03\,\text{mm}}_{0}\ \left(0{,}001\,\text{in}\ {}^{+0{,}0012\,\text{in}}_{0}\right)$

S_3 = 6 mm ± 0,4 mm (0,25 in ± 0,016 in) for
d = 1,5 mm (0,063 in) to 4 mm (0,156 in)
12 mm ± 0,4 mm (0,5 in ± 0,016 in) for
d = 5 mm (0,188 in) to 10 mm (0,375 in)

Tolerances on 0,5d: ${}^{+0{,}03\,\text{mm}}_{0}\ \left({}^{+0{,}0012\,\text{in}}_{0}\right)$

Key

1 Fitted M10 (0,375) steel bolts

Figure 1