

Specification for

Carbon steel worm drive clamps for aircraft*

ICS 49.035

*Index form of title: CLAMPS, WORM DRIVE, CARBON STEEL, FOR AIRCRAFT

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This British Standard, having been approved by the Aerospace Industry Standards Committee, was published under the authority of the Executive Board on 15 May 1973

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Published by BSI Standards Limited 2015

The following BSI references relate to the work on this standard:
Committee reference ACE/14
Drafts for comment 72/33600
DC 13/30273384

ISBN 978 0 580 81034 3

Amendments issued since publication

Amd. No.	Date	Comments
1541	September 1974	
2012	June 1976	
5903	September 1988	
A4	January 2015	See Foreword

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 11 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Foreword

Publishing information

BS 2SP 91-92:1973+A4:2015 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 January 2015. It was prepared by Technical Committee ACE/12, *Aerospace Fasteners and Fastening*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

BS 2SP 91-92:1973+A4:2015 supersedes BS 2SP 91-92:1973 (incorporating Amendments No.1, No.2 and No.3), which is withdrawn.

Information about this document

The standards specify dimensional requirements of carbon steel worm drive clamps for aircraft to ensure functional interchangeability, and include details of hydraulic and pneumatic tests to ensure adequate sealing when the clamps are used on hose connections. Provision is made for clamps with bands having serrations rolled or milled, without perforating the band, and for clamps having pierced serrations which penetrate through the band, each type being given a distinctive identification.

These standards represent the current thinking at the time of publication in the light of known or published or projected standards for inch based hoses or tubes, with equivalents inserted in order that clamps may be used for metric applications.

NOTE The values stated in inch units are to be regarded as the standard. Approximate metric units are shown alongside in parentheses or adjacent columns.

This document makes reference to the following standards:

British Standards:

BS 970-1, *Wrought steels in the form of blooms, billets, bars and forgings – Part 1: Carbon and carbon manganese steels, including free-cutting steels.*

BS 1449, *Steel plate, sheet and strip.*

BS 2F 67:1980, *Aerospace series – Specification for Hose for aviation fuel and engine lubricating oil for aeronautical purposes.*

BS EN 2133, *Aerospace series – Cadmium plating of steels with specified tensile strength $\leq 1\,450$ MPa, copper, copper alloys and nickel alloys.*

BS EN 10139, *Cold rolled uncoated mild steel narrow strip for cold forming – Technical delivery conditions.*

BS EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories.*

MoD Defence Equipment and Support Standard:

Def Stan 03-19, *Electro-Deposition of Cadmium*

The start and finish of text introduced or altered by Amendment No.4 is indicated in the text by tags **A4** **A4**. Minor editorial changes are not tagged. Previous amendments are not indicated.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 General requirements

1.1 Scope

These British Standards specify the dimensions, material, finish and test requirements for carbon steel worm drive clamps for aircraft.

⚠ CAUTION. BS SP 91 and SP 92 clamps have cadmium as a plating material, which has been restricted and/or banned for use in many countries owing to environmental and health concerns; they should not be used in new product designs. Local officials should be consulted about any concerns on using cadmium-plated parts. ⚠

1.2 General principles

The clamp shall consist of a band with serrations rolled, milled or pierced across the longitudinal axis and extending in from one end. A screw with a thread of the same pitch as the serrations shall be retained in a suitable housing attached to the other end of the band, so that when the band is formed as shown in Figure 1 it will engage with the serrations. The loop so formed shall be capable of being tightened and slackened when the screw is turned, and shall be capable of easy fitment and removal.

1.3 Materials

1.3.1 The clamps shall be manufactured from the materials specified in Figure 2 and certified as such by the material supplier.

1.3.2 The band material shall comply with the tests specified in 2.6.

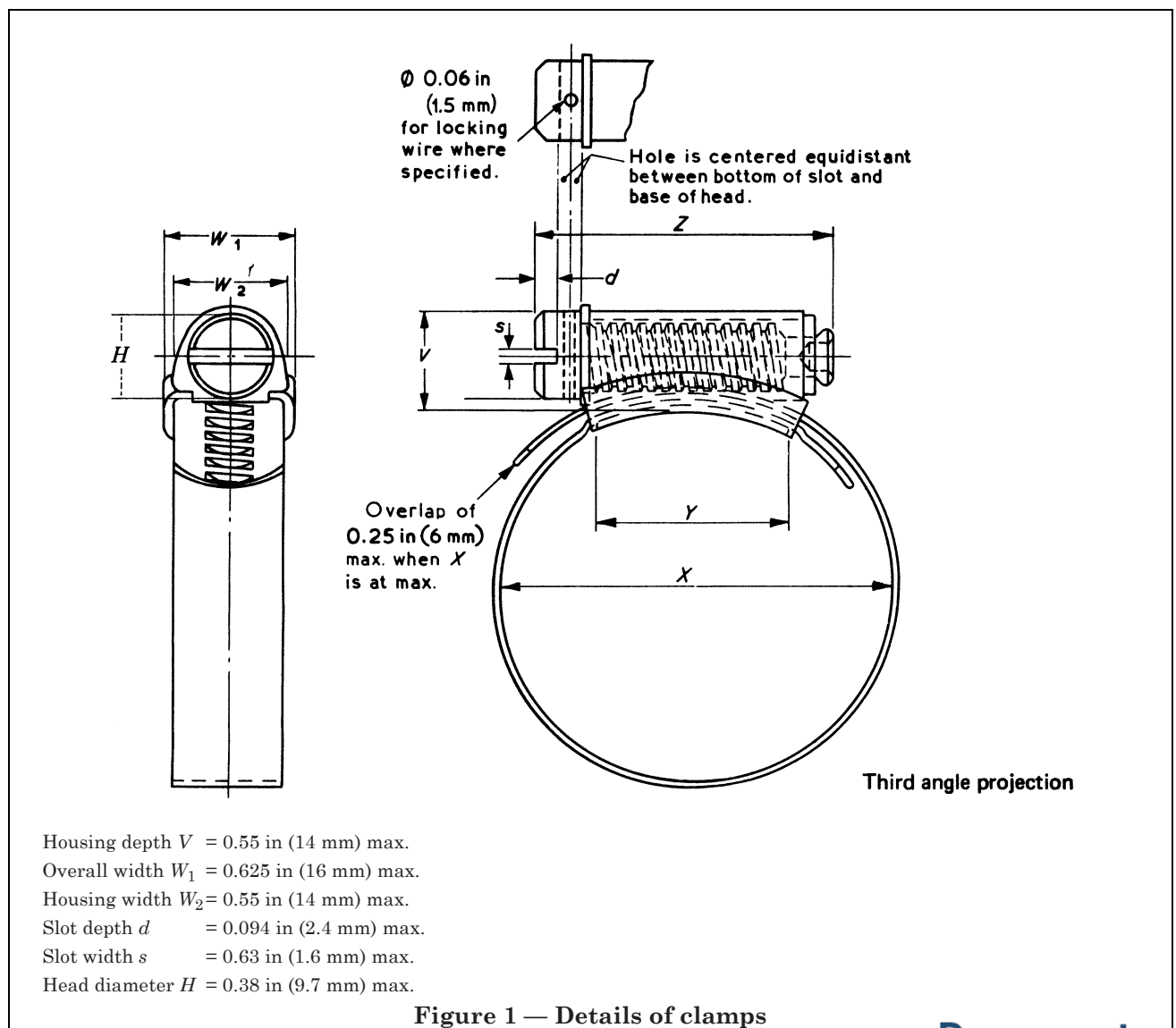


Figure 1 — Details of clamps

Table 1 — Dimensions of clamps

Clamp size	Working range diameter X				Housing length Y		Length Z	
	min.		max.		max.		max.	
	in	mm	in	mm	in	mm	in	mm
A	0.5	13	0.625	16	0.55	14	1.0	25
B	0.5	13	0.75	19	0.55	14	1.0	25
C	0.625	16	0.875	22	0.785	20	1.0	25
D	0.75	19	1.0	25	0.785	20	1.0	25
E	0.875	22	1.125	28	0.95	24	1.16	29
F	1.0	25	1.375	35	0.95	24	1.16	29
G	1.125	28	1.625	41	0.95	24	1.16	29
H	1.25	32	1.875	48	1.095	28	1.30	33
J	1.5	38	2.125	54	1.095	28	1.30	33
K	1.75	44	2.375	60	1.095	28	1.30	33
L	2.0	50	2.75	70	1.095	28	1.30	33
M	2.375	60	3.125	80	1.095	28	1.30	33
N	2.75	70	3.5	90	1.095	28	1.30	33
P	3.25	82	4.0	100	1.095	28	1.30	33
Q	3.75	95	4.5	115	1.095	28	1.30	33
R	4.125	105	5.0	125	1.095	28	1.30	33

NOTE Special sizes larger than the above range shall be designated by the MAXIMUM diameter in $\frac{1}{10}$ ths in, in increments of 0.5 in, e.g. 7 in (180 mm) will be Size 070 (see also 2.4.6) and the working diameter range of these larger sizes shall be 1.0 in (25.4 mm).

1.4 Range of sizes and overall dimensions

The range of sizes and overall dimensions of the clamps shall be in accordance with those specified in Figure 1 and Table 1.

1.5 Band

1.5.1 The band shall have suitable provision for attachment of the housing at one end and transverse centrally disposed serrations at the other end, commencing at the end and extending for a length (depending upon the size of clamp) sufficient to enable the clamp to be tightened on the smallest assembly for which it is designed.

1.5.2 For BS SP 91 clamps, the serrations shall be rolled or milled; they shall not penetrate through the band. The serrations and the metal between them shall be of equal width, and such that the screw forms an adequate key in them when engaged. The dimensions of the band shall conform to those given in Figure 3a.

1.5.3 For BS SP 92 clamps the serrations shall be pierced through the band. The serrations and the gaps between them shall be of the form and dimensions shown in Figure 3b, and shall be such that the screw forms an adequate key in them when engaged. The dimensions of the band shall conform to those given in Figure 3b.

1.5.4 The internal surface of the band shall be smooth and all surfaces shall be free from burrs, projections and sharp edges.

1.6 Tightening device

1.6.1 The tightening device shall consist of a cheese head screw permanently retained in a housing firmly attached to one end of the band.

1.6.2 The clamps shall be capable of being tightened or slackened only by means of a screwdriver slot.