

FORWORD

This standard sets forth a standard test method for determining the induced axial load (clamping force) for installation formed fasteners after installation.

TABLE OF CONTENTS

<u>Paragraph</u>		<u>Sheet</u>
1.	SCOPE	2
1.1	Applicability	2
2.	REFERENCED DOCUMENTS.....	2
2.1	Industry publications	2
3.	DEFINITIONS.....	2
4.	GENERAL REQUIREMENTS.....	2
4.1	Test apparatus	2
4.1.1	Load cell method.....	2
4.1.1.1	Load cell	2
4.1.1.2	Amplifying and recording equipment.....	2
4.1.1.3	System accuracy and repeatability.....	3
4.1.2	Paddle or split shim method.....	3
4.1.3	Test fixture	3
4.1.3.1	Hole features	3
4.1.3.2	Load direction	3
4.1.4	Testing machine	3
5.	DETAIL REQUIREMENTS.....	3
5.1	Test procedures	3
5.1.1	Assembly	3
5.1.2	Grip length.....	3
5.1.3	Number of tests	3
5.1.4	Load rate	3
6.	NOTES.....	4
6.1	Test reports	4

FIGURES

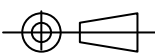
<u>Figure</u>		<u>Sheet</u>
1	Strain gage setup	5
2	Paddle test setup	6

TABLES

<u>Table</u>		<u>Sheet</u>
I	Loading rate	4

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THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-STD-1312-16A.
DESIGNATION FOR THIS TEST METHOD REMAINS MIL-STD-1312-16.

THIRD ANGLE PROJECTION		CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 1
PROCUREMENT SPECIFICATION NONE		TITLE FASTENER TEST METHODS ① METHOD 16 CLAMPING FORCE FOR INSTALLATION, FORMED FASTENERS	CLASSIFICATION STANDARD PRACTICE NAS 1312-16 SHEET 1 OF 6

1. SCOPE

- 1.1 Applicability. This test method provides a standardized method for determining the induced axial load (clamping force) for multiple-piece installation formed fasteners after installation and is not limited by configuration or size.

2. REFERENCED DOCUMENTS

- 2.1 Industry publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DoDISS shall be the issue of the nongovernment documents which are current on the date of the solicitation.

ASTM International

- ASTM E4 Standard Methods of Verification of Testing Machines
ASTM E74 Calibration of Force-Measuring Instruments for Varying the Load Indication of Testing Machines

Copies can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. www.astm.org

ASME International

- ASME B46.1 Surface Texture (Surface Roughness, Waviness and Lay)

Copies can be obtained from ASME, Three Park Ave., New York, NY 10016-5990. www.asme.org

NCSL International

- NCSL Z540.3 Requirements for the Calibration of Measuring and Test Equipment

Copies can be obtained from NCSL International, 2995 Wilderness Place, Suite 107, Boulder, CO 80301. www.ncsli.org

3. DEFINITIONS

Not applicable.

4. GENERAL REQUIREMENTS

4.1 Test apparatus

4.1.1 Load cell method

- 4.1.1.1 Load cell. The load cell used shall have been calibrated on a calibrated testing machine in accordance with NCSL Z540.3. A clamping force value that is repeatable and directly comparable for most fastener types can be determined by measuring the strain induced in a fastener by use of strain gages. The accuracy of the measurement of the clamping force depends upon proper alignment of strain gages, the rigidity of the structure and the squareness of the structure faces contacting the fastener. This method, however, necessitates clearance for strain gages in hole preparation, extremely delicate gage application when used with smaller diameter fasteners, and much time for instrumentation and test. These disadvantages eliminate its use with some fasteners, such as hole filling type, and make it impractical as a convenient, easily obtainable test (see Figure 1).

- 4.1.1.2 Amplifying and recording equipment. Applicable equipment suitable for the purpose and of suitable accuracy shall be used.

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SHEET 2

