

FOREWORD

This standard sets forth a standard test method for determining the ability of a fastener to restrict fluid (liquid or gas) leakage.

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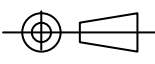
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THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-STD-1312-19A.
DESIGNATION FOR THIS TEST METHOD REMAINS MIL-STD-1312-19.

THIRD ANGLE PROJECTION		CUSTODIAN	REVISION
		NATIONAL AEROSPACE STANDARDS COMMITTEE	1
		TITLE	CLASSIFICATION SPECIFICATION
PROCUREMENT SPECIFICATION		FASTENER TEST METHODS METHOD 19 FASTENER SEALING	NAS 1312-19
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1. SCOPE

- 1.1 Applicability. The method covers the procedures and apparatus for determining a fastener's ability to restrict leakage of a fluid (liquid or gas) medium, under static conditions only. These fasteners are not externally or dynamically loaded.

2. REFERENCED DOCUMENTS

Not applicable.

3. DEFINITIONS

Not applicable.

4. GENERAL REQUIREMENTS

4.1 Test apparatus

- 4.1.1 Pressure pot. A typical pressure pot is illustrated on Figure 1. The pressure pot shall be connected to a suitable pressure source so that the test conditions of Section 5 are accomplished.

4.2 Test specimen

- 4.2.1 Test plate. The test plate to be used in conjunction with the pressure pot shall be in accordance with Figure 2; when fasteners with a diameter larger than .250 inches are to be tested, the number of specimens installed in each plate may be reduced. Grooved spacers which provide a leak path to the fastener shank shall be installed on the pressure side of the plate to provide for different grip lengths.

- 4.2.2 Fastener holes. Fastener holes shall be drilled perpendicular to the test plate surface within 1 degree. When countersinking is required, the countersink shall be concentric with the hole within .002 FIM, and the depth shall be such that the installed fastener is flush within +.005/-.000 inches. Unless otherwise specified in the product specification, hole diameters used in the preparation of the test plate shall be in accordance with Table I.

- 4.2.3 Assembly. All solid rivets, swaged collar fasteners, and blind fasteners shall be installed to meet the appropriate product specification requirements. Sealing type nuts shall be torqued to the minimum specified value for the particular bolt-nut combination. Unless otherwise specified, lubrication, except as part of the product specification shall not be applied.

- 4.2.3.1 Spacer usage. A spacer will be used to create leak paths to the fastener shank under test. When a sealing head or shank is under test, spacers will be placed under nut and the nut side pressurized. When a sealing nut is being tested, the spacer shall be used under the head of the mating bolt, and the pressure applied from the bolt head side. For installation of formed fasteners, no spacer will be required.

4.2.4 Surface finish

4.2.5 Cleaning

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TABLE I – HOLE LIMITS (DIAMETER)

Diameter Nominal size (Inch)	NAS618 Shank Type Fasteners		Solid Rivets		Sealing Nuts	
	Min	Max	Min	Max	Min	Max
.1380	.138	–	–	–	–	–
.1640	.164	.168	–	–	.167	.171
.1900	.190	.194	.193	.197	.193	.197
.2500	.250	.254	.253	.257	.253	.257
.3125	.312	.316	.316	.320	.316	.320
.3750	.375	.379	.378	.382	.378	.382
.4375	.438	.442	.442	.446	.441	.445
.5000	.500	.505	.504	.509	.503	.507
.5625	.562	.568	–	–	.566	.570
.6250	.625	.630	–	–	.628	.632
.7500	.750	.757	–	–	.753	.757
.8750	.875	.882	–	–	.878	.882
1.0000	1.000	1.010	–	–	1.003	1.007
1.1250	1.125	1.135	–	–	1.128	1.132
1.2500	1.250	1.260	–	–	1.253	1.257
1.3750	1.375	1.385	–	–	1.378	1.382
1.5000	1.500	1.510	–	–	1.503	1.507

5. DETAIL REQUIREMENTS

5.1 Test procedures

5.1.1 Leakage test. The test plate, Figure 2, shall be installed in the pressure pot, Figure 1, and the upper flange secured to the lower flange face. A typical installation is shown on Figure 3. The pressure pot shall be filled with the test medium as specified in the product specification. A fluorescent U.V. type dye shall be added to the test medium to permit detection of possible leakage. The test plate shall be cycled between the specified pressure limits. The test medium temperature shall be maintained within 20 °F throughout the test. The cyclic speed shall be 25-50 cycles per minute. When a gas medium is utilized, the plate shall be covered with a liquid which will not react with the gas medium.

5.1.1.1 Leak path verification. When testing sealed nuts, pre- and post- test leak path verification test cycles shall be performed. The pre-test verification cycle shall consist of cycling the pressure pot in accordance with the product specification before fully seating and torquing the nuts to be tested. The test medium shall be observed to leak through to the top of the test plate. After completion of the leakage test of the sealing nut under evaluation and with the pressure pot still holding the maximum test pressure, the tested nuts shall be loosened and the test medium shall again visibly leak through the top of the test plate. This will be the post-test leak path verification cycle. Safety precautions shall be observed in conducting the leak path verification tests, including a cover or encasement of the pressure pot.

5.1.2 Failure. Unless otherwise specified, the test shall be conducted to the pressure designated in the product specification. Failure shall be defined as visible leakage exhibited by the presence of the liquid medium on the test plate detected by means of an ultraviolet lamp, or bubbles of the gas medium in the liquid covering the test plate.

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