



Designation: F434 – 93 (Reapproved 2017)

## Standard Test Method for Blow-Out Testing of Preformed Gaskets<sup>1</sup>

This standard is issued under the fixed designation F434; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the determination of the resistance against blow-out of preformed gaskets. The test is conducted under ambient conditions and should be used for comparison purposes only to select suitable designs and constructions for specific applications.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

#### 2.1 ASTM Adjuncts:

Detailed Drawings of Test Unit<sup>2</sup>

### 3. Significance and Use

3.1 This test method is designed to compare all types of preformed gaskets under controlled conditions with respect to blow-out resistance. This test method may be used as a routine test when agreed upon between the purchaser and the seller.

### 4. Apparatus

4.1 *Pressure Supply*, capable of 7 MPa (1000 psi), preferably hydraulic, and with proper safety precautions, in the event of a rapid-gasket failure.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee F03 on Gaskets and is the direct responsibility of Subcommittee F03.20 on Mechanical Test Methods.

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<sup>2</sup> Available from ASTM International Headquarters. Order Adjunct No. ADJF0434.

4.2 *Test Unit*,<sup>3</sup> capable of withstanding 7 MPa (1000 psi) internal pressure under ambient conditions. Provisions should be made for valve and pressure gage mountings, as shown in Fig. 1. The gage shall read from 0 to 7 MPa (0 to 1000 psi) and be mounted so as to be visible at some distance.

4.3 *Booster Pump*—An air-operated hydraulic (water) pressure pump, capable of delivering  $1.1 \times 10^{-5} \text{ m}^3/\text{s}$  (40 in.<sup>3</sup>/min) against a back pressure of 35 MPa (5000 psi).

4.4 *Temperature Indicating Device*—A thermometer capable of reading 1°C (2°F) in the ambient temperature range.

### 5. Test Specimen

5.1 The specimen shall be a 102 mm (4-in.) nominal-size gasket 114 mm (4.5 in.) in inside diameter by 165 mm (6.5 in.) in outside diameter. The thickness of the test gasket will depend upon its expected usage and must be specified in the report, as results will vary accordingly.

### 6. Procedure

6.1 Assemble the specimen in the test unit.

6.2 The bolt threads should be well lubricated using molybdisulfide dry film or grease. Sanding the bottom of the bolt heads and the washers will reduce torque variable and ensure duplication of results.

6.3 Tighten the bolts, using the sequence shown in Fig. 2, increasing the torque loading in 25 % increments to the targeted torque, but do not exceed the rating on the bolts.

6.4 Fill the test unit with water, and bleed out all excess air by tilting until no further air bubbles are forthcoming.

6.5 Fill the oil reservoir (thermowell) three-quarters full of light oil. Allow 15 min for the temperature to stabilize, and insert the temperature sensor.

6.6 Before applying hydrostatic pressure, cover the entire test receptacle with a metal shield, leaving the gage exposed for the recording of data.

<sup>3</sup> The sole source of supply of the apparatus known to the committee at this time is the Pfadler Co., PO Box 1600, Rochester, NY 14603. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.

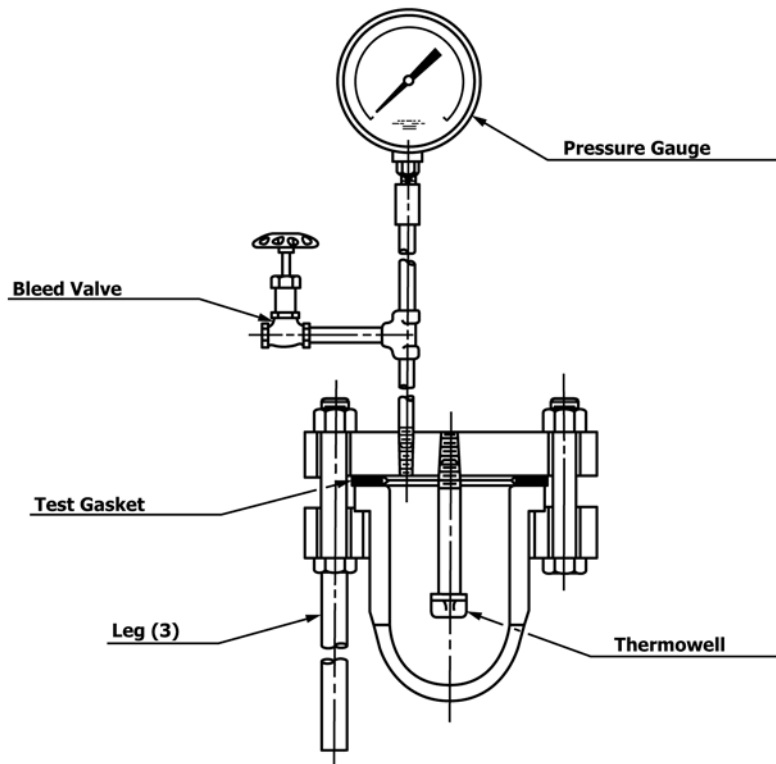
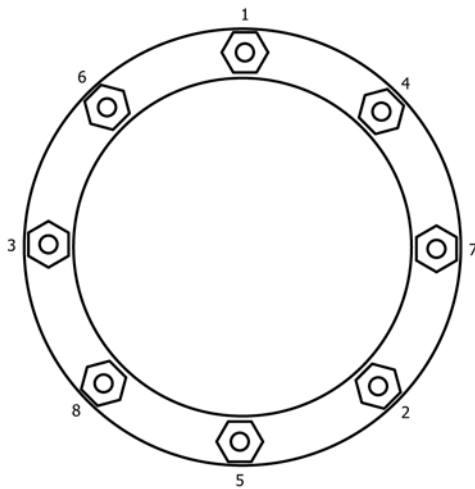


FIG. 1 Test Unit



NOTE 1—Tighten bolts evenly; follow numerical sequence.

FIG. 2 Bolt Tightening Progression

6.7 Attach a water hose from the booster pump, and gradually apply water pressure. This should be done under safe conditions, as follows:

6.7.1 The operator should be wearing suitable safety equipment,

6.7.2 The control valve should be located at a safe distance from the test area, and

6.7.3 Quick and violent pressure surges should be avoided.

6.8 Discontinue the application of pressure when 7 MPa (1000 psi) has been reached.

6.9 Should blow-out occur before the maximum test pressure is obtained, record the maximum gage pressure reached.

6.10 Close off the inlet valve, and allow the unit to stand at room temperature for 20 h. Record pressure gage readings at 1, 2, 3, 4, and 24 h intervals. Record temperatures along with pressure readings. Since a closed system results, the absolute pressure will be proportional to the absolute temperature.

6.11 Release the pressure before doing any work, such as dismantling, adjusting, etc. on the test unit.

## 7. Report

7.1 Report the following information.

7.1.1 Identification of gasket,

7.1.2 Specimen thickness,

7.1.3 Pressure at which blow-out occurred, if it occurred,

7.1.4 Indication that the test gasket withstood the maximum applied pressure, if this was the case,

7.1.5 Pressure readings versus time, if the entire test procedure was concluded, and

7.1.6 Temperature readings at the time the pressure figures were recorded.

## 8. Precision and Bias

8.1 Since the results of this test are reported as visual observations, no precision or bias statements are possible.

## 9. Keywords

9.1 gasket blow-out; hydrostatic pressure; preformed gaskets

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