Designation: D5969 – 21

Standard Test Method for Corrosion-Preventive Properties of Lubricating Greases in Presence of Dilute Synthetic Sea Water Environments[1]

This standard is issued under the fixed designation D5969; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This test method covers the determination of the corrosion-preventive properties of greases using grease-lubricated tapered roller bearings exposed to various concentrations of dilute synthetic sea water stored under wet conditions. It is based on Test Method D1743, which is practiced using a similar procedure and distilled water. The reported result is a pass or fail rating as determined by at least two of three bearings.

1.2 *Apparatus Dimensions*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *All Other Values*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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 Standards:*[2]

D665 Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water

D1193 Specification for Reagent Water

D1743 Test Method for Determining Corrosion Preventive Properties of Lubricating Greases

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *corrosion, n*—the chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties.

3.1.1.1 *Discussion*—In this test method, corrosion is manifested by red rust or black stains on the bearing race. Stains, through which the underlying metal surface is still visible, are not considered corrosion in Test Method D5969 and shall be ignored. **D1743**

4. Summary of Test Method

4.1 New, cleaned, and lubricated bearings are run under a light thrust load for 60 s ± 3 s to distribute the lubricant in a pattern that might be found in service. The bearings are exposed to a solution of synthetic sea water at some percentage in distilled water, then stored for 24 h ± ½ h at 52 °C ± 1 °C and 100 % relative humidity. After cleaning, the bearing cups are examined for evidence of corrosion.

5. Significance and Use

5.1 This test method differentiates the relative corrosion-preventive capabilities of lubricating greases under the test conditions.

6. Apparatus

6.1 *Bearings,* Timken bearing cone and roller assembly LM11949 and cup LM11910.[3]

6.2 *Motor,* 1750 r/min (approximate) speed, 1/15 hp (min).

6.3 *Bearing Holder,* (see Fig. 1) consists of a 1 kg ± 0.01 kg mass, upper and lower plastic collars for the bearing cone (Parts A and B), a metal screw, and a plastic collar for the cup (Part C).

6.4 *Plastic Test Jar,* as shown in Fig. 2.

[1] This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.G0.06 on Functional Tests - Contamination.

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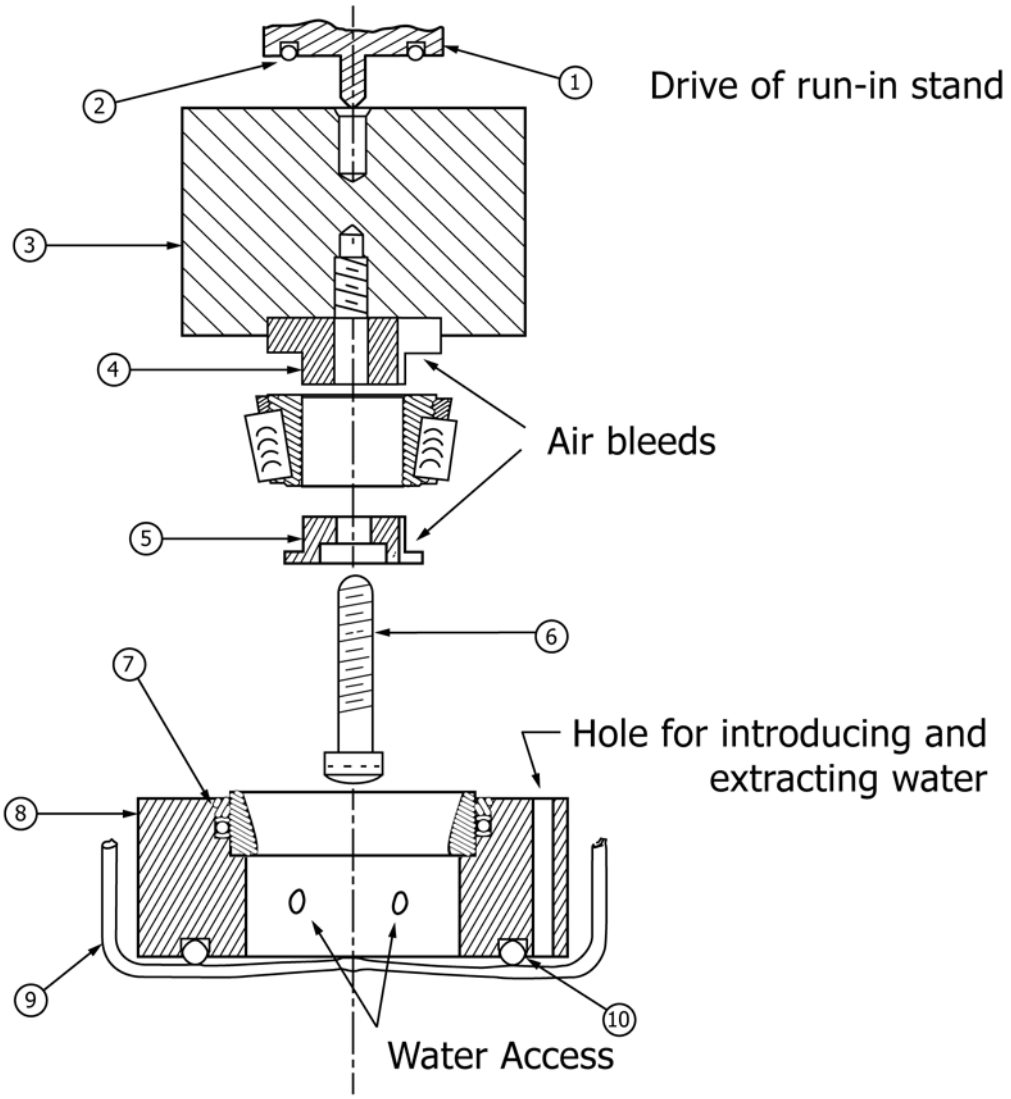
[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Manufactured by the Timken Co., Canton, OH 44706.

*A Summary of Changes section appears at the end of this standard



KEY	DESCRIPTION	QUANTITY
1	PISTON	1
2	O RING	1
3	WEIGHT	1
4	UPPER FLANGE	1
5	LOWER FLANGE	1
6	¼ – 20 × 1-¼ FILLISTER HD. MACH. SCREW S.S.	1
7	O RING	1
8	BEARING HOLDER	1
9	PLASTIC JAR	1
10	O RING	1

FIG. 1 Test Method D1743 Bearing Holder Assembly