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CAN/CGSB-3.0
No./N° 80.8-95

ICS 71.040.50

WITHDRAWAL

March 2005

Methods of Testing Petroleum and Associated Products

Performance of Lubricating Grease in Antifriction Bearings (Size 310)

This method is hereby withdrawn. As far as can be determined it is no longer being used in quantities that would warrant its continued maintenance.

RETRAIT

Mars 2005

Méthodes d'essai des produits pétroliers et produits connexes

Rendement de la graisse lubrifiante dans les roulements antifriction (cote 310)

Cette méthode est retirée par le présent avis. Dans la mesure où il est possible de le constater, elle n'est plus utilisée en quantité suffisante pour la maintenir en vigueur.

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No. 80.8-95

Methods of Testing Petroleum and Associated Products

Performance of Lubricating Grease in Antifriction Bearings (Size 310)

Withdrawn/Retirée

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NATIONAL STANDARD OF CANADA

CAN/CGSB-3.0
No. 80.8-95

METHODS OF TESTING PETROLEUM AND ASSOCIATED PRODUCTS

PERFORMANCE OF LUBRICATING GREASE IN ANTIFRICTION BEARINGS (SIZE 310)

Withdrawn/Retiree

This method supersedes issue of April 1988.

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Acknowledgment is made for the translation of this National Standard of Canada by the Translation Bureau of the Department of the Secretary of State.

National Standard of Canada

CGSB Ottawa Canada K1A 1G6	METHODS OF TESTING PETROLEUM AND ASSOCIATED PRODUCTS	CAN/CGSB-3.0
	Performance of Lubricating Grease in Antifriction Bearings (Size 310)	No. 80.8-95

Supersedes Issue of
April 1988

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1. SCOPE

1.1 This method covers the determination of the performance of greases in size 310 antifriction bearings.

1.2 The testing and evaluation of a product against this method may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this method has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any existing applicable regulatory requirements prior to its use.

2. REFERENCED PUBLICATIONS

2.1 The following publications are referenced in this method:

2.1.1 Canadian General Standards Board (CGSB)

CAN/CGSB-3.0 – Methods of Testing Petroleum and Associated Products:

No. 0 – Prologue to the Petroleum Test Methods and Table of Contents.

2.1.2 American Society for Testing and Materials (ASTM)

D 4057 – Manual Sampling of Petroleum and Petroleum Products.

2.1.3 U.S. Federal Specification

P-D-680 – Dry Cleaning Solvent.

2.2 A reference to a regulation is always to the latest issue. A dated reference is to the issue specified. An undated reference is to the latest issues, unless otherwise specified by the authority applying this method. The sources are given in the Notes section.

3. SUMMARY OF METHOD

3.1 A lubricated bearing size 310, confined in a fixed housing, is rotated under prescribed conditions of temperature, time and rest periods. The operating cycle is repeated until the bearing fails or until the specified minimum hours of operation have been reached.

4. SIGNIFICANCE AND USE

4.1 This method is intended as a screening test to help in selecting greases which have promise as a 310 antifriction bearing lubricant for use under temperature and time limitations described in the specification, in the method and/or by the manufacturer.

5. SAMPLING

5.1 Take the sample of grease for testing with a minimum of disturbance. Do not reincorporate any free oil that may have separated or include this oil when taking the sample for analysis. Sample in accordance with ASTM D 4057.

6. APPARATUS

6.1 The apparatus is shown in Figure 1. It consists of the following:

6.1.1 ***Test spindle:*** Supported in a cast-iron base by two auxiliary bearings.

6.1.2 ***Driving motor:*** Belted to the test spindle to give a spindle speed of 3600 ± 50 r/min.

Note: The motor should be protected with a suitable overload switch and relay system that can terminate the test.

6.1.3 ***Electrically heated oven:*** Thermostatically controlled to maintain the test bearing temperature within ±1.7°C of the specified temperature.

Note: An over-riding temperature sensing unit should be incorporated that will terminate the test if a pre-determined temperature rise occurs.

6.1.4 ***Test bearing:*** Single row, radial deep groove, unshielded bearing with pressed steel retainer, size 310, grade ABEC-1 and manufactured from SAE 52100 steel, grade ABEC-1. Details of the test bearing housing and the bearing housing cover are shown in Figures 2 and 3.

7. REAGENTS AND MATERIALS

7.1 **Dry-cleaning solvent:** Petroleum base dry-cleaning solvent in accordance with U.S. Federal Specification P-D-680.

7.2 **Petroleum Ether:** (63 to 75°C) (DANGER! – Extremely flammable. Harmful if inhaled. See CAN/CGSB-3.0 No. 0). Petroleum ether is also known as ligroin(e).

8. PREPARATION OF TEST BEARING

8.1 This test is to be performed in triplicate.

8.2 Wash the bearing[1] in dry-cleaning solvent, petroleum base, using fresh portions of solvent until it is free from all preservatives. Rinse the bearing thoroughly with clean petroleum ether and flash dry in an oven at 93°C just prior to packing the bearing for test.

8.3 Weigh the test bearing and pack it with 30 ± 0.1 g of the test grease, working the grease uniformly into both sides of the bearing with a narrow-blade spatula, ensuring that the grease does not extend beyond the faces of the races. Install the bearing in the housing and mount on the spindle, securing the clamp screw. Insert the thermocouple wires into the wells so that they are in contact with the outer race of the test bearing. Apply the 68.1 kg radial load.

9. PROCEDURE

9.1 Start the driving motors and heaters simultaneously and bring each test bearing to the specified test temperature within 2 h, being careful to avoid overheating the test grease beyond the specified test temperature.

Note: In the early stage of operating, the fixed and intermittent heaters shall be adjusted to compensate for bearing run-in and the grease distribution until equilibrium is reached (normally within 2 h). Similarly, at the end of the test it may be necessary to cut back the heat to maintain the bearing temperature at the specified level.

9.2 After 150 h of continuous operation including the heat-up period, turn off the heat, stop the spindle and shut the rig down for 18 h.

9.2.1 During the shut-down period, inspect the bearing housings and radial load rods for grease leakage and record.

9.3 Repeat the operating cycle (150 h on and 18 h off) until the bearing lubrication fails or until the specified minimum hours of operation have been reached.

9.3.1 Failure of bearing lubrication is indicated by:

a. locking of the test bearing and belt slippage

b. grease or oil flowing down the face of the test bearing housing or the radial load rod indicating excessive leakage

c. tripping of the motor thermal cut-out switch, indicating that the frictional torque has increased sufficiently to overload the motor.

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[1] *A solvent gun has been found suitable for application of dry-cleaning solvent, petroleum base. Care should be taken during preparation not to spin the bearing when clean and dry.*

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9.3.2 If the lubricating grease is not the cause for the premature ending of a run, disregard the results, correct the fault and repeat the run on that particular rig.

9.4 Repeat the test if two out of three runs fail to reach the specified minimum hours of operation. All three repeat runs must pass in order to obtain an overall pass rating for the grease.

10. REPORT

10.1 Report the following if hours to failure are determined:

10.1.1 The hours to failure for each individual run and the nature of the failure.

10.1.2 The arithmetic mean running time for all three runs.

10.1.3 Incidence of grease leakage and noisy or unusual operation.

10.2 Report the following if running to specified minimum hours of operation:

10.2.1 An overall pass rating if at least two out of three runs, or at least four out of six runs (if repeat runs were necessary), pass the test.

10.2.2 An overall fail rating if less than two out of three runs, or less than four out of six runs (if repeat runs were necessary), pass the test.

10.2.3 The nature of any failures or incidence of grease leakage and noisy or unusual operation.

11. PRECISION

11.1 The precision of the test has not been established.

12. NOTES

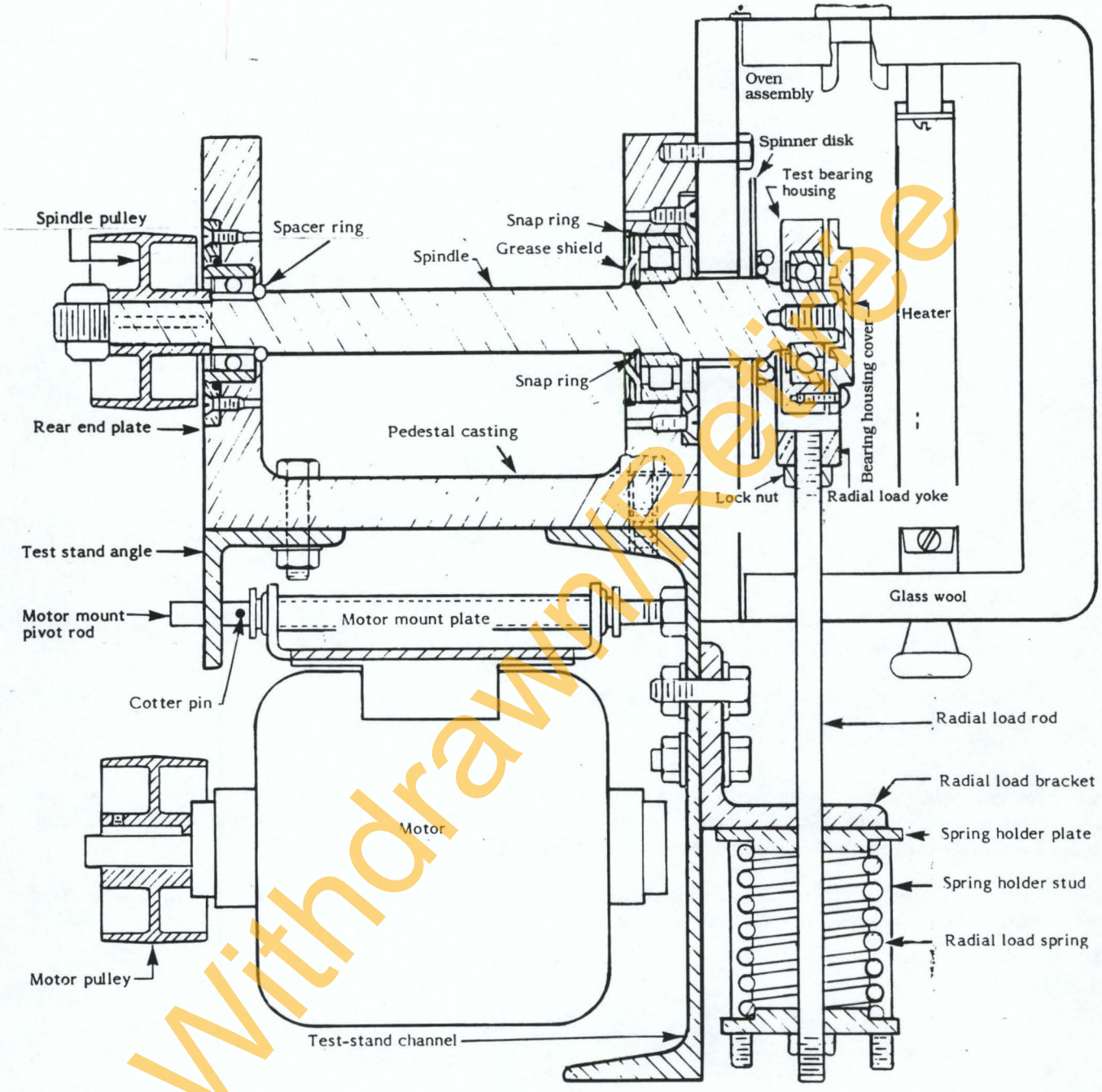
12.1 **Sources of Referenced Publications**

12.1.1 The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone (613) 941-8703 or 1-800-665-CGSB (Canada only). Fax (613) 941-8705.

12.1.2 The publication referred to in par. 2.1.2 may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, U.S.A., or from the Standards Council of Canada, Standards Sales Branch, 45 O'Connor Street, Suite 1200, Ottawa, Ontario K1P 6N7.

12.1.3 The publication referred to in par. 2.1.3 may be obtained from The Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, U.S.A.

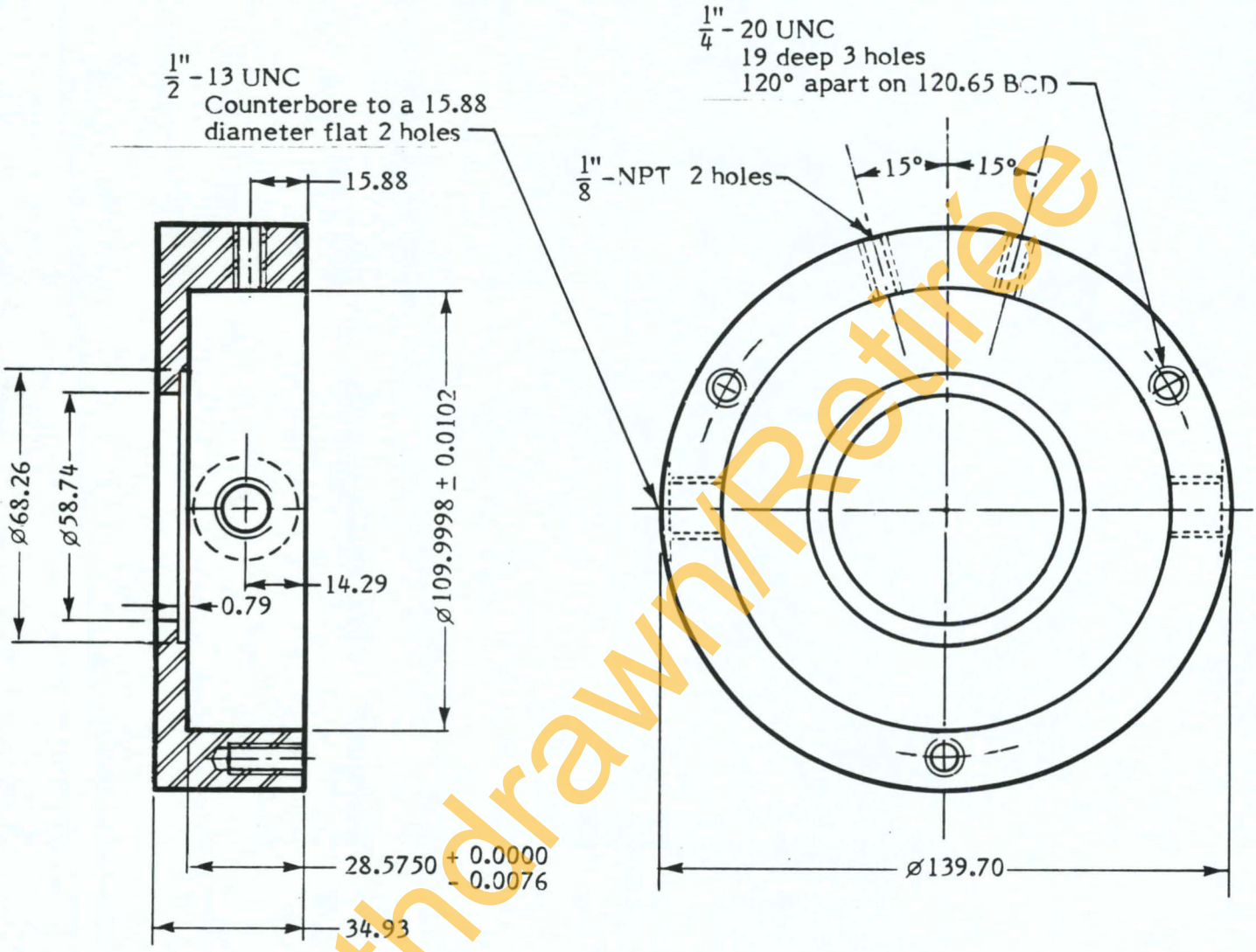
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FIGURE 1

Performance Tester for Electric Motor Greases

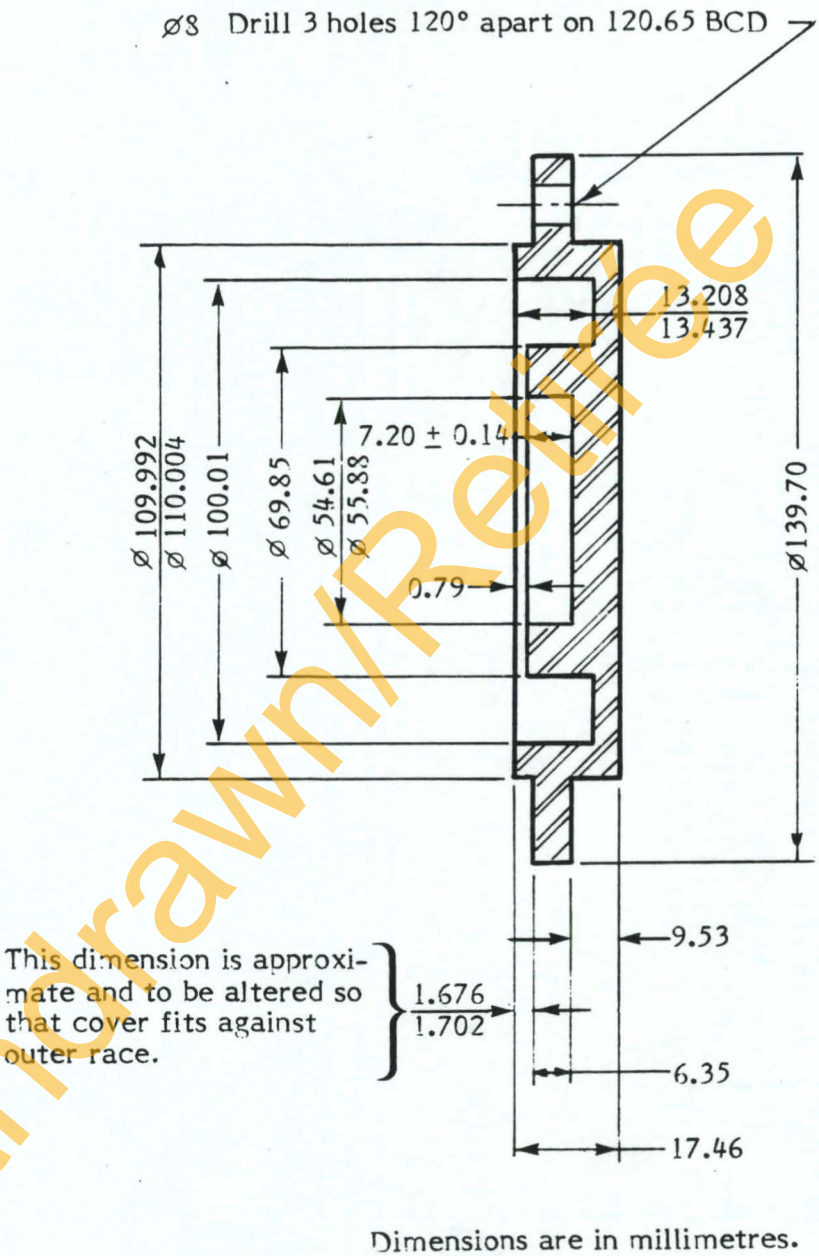


Dimensions in millimetres unless otherwise specified.

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FIGURE 2

310 Test Bearing Housing Caps



Dimensions are in millimetres.

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FIGURE 3

310 Bearing Housing Cover Caps