

Four Ball Tester (FBT-3)

Compact, powerful and robust. Complies with even the most demanding test standards.

The four-ball test is a fast, repeatable and an accurate way to test lubricants for their wear preventive, extreme pressure and frictional properties. With high levels of automation, the FBT-3 makes this test easy to run. Its simple interface hides powerful features and technologies.

A patented friction measurement system, automated scar prediction system and other features make four-ball testing more accurate and convenient than ever.

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A TESTER FOR THE MODERN LUBRICANTS LAB

Oils, Greases, Metal Working Fluids and Additives

Key Features

- Robust, tabletop instrument
- Extreme Pressure (EP) Tests
- Wear Preventive (WP) Tests

- Coefficient of Friction (COF) Tests
- Automatic Loading
- Built-In Touch Screen Interface
- Preset international test standards
- Custom test program mode
- Proven compliance with test standards

Technical Specifications

- Speed: 300 to 3000 rpm
- Load: 100 to 10,000 N
- Friction Force: 0 to 200 N
- Friction Torque: 0 to 16 Nm
- Temperature: Up to 90 deg C (200 deg C is optional)

Options

- High Temperature Attachment (ambient to 200 °C)
- MOOHA - Digital Lab Assistant
- AI Wear Scar Prediction and Materials Library

Test Standards

The FBT-3 complies with various international test standards for extreme pressure, wear preventive and coefficient of friction measurement tests. Other standards can also be met using specialized attachments that are available for the tester.

- ASTM D2266: Standard Test Method for Wear Preventive Characteristics of Lubricating Grease (Four-Ball Method)
- ASTM D2596: Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Grease (Four-Ball Method)
- ASTM D2783: Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Four-Ball Method)
- ASTM D4172: Standard Test Method for Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method)

- ASTM D5183: Standard Test Method for Determination of the Coefficient of Friction of Lubricants Using the Four-Ball Wear Test Machine
- DIN 51350-2: Testing of lubricants - Testing in the four-ball tester - Part 2: Determination of welding load of liquid lubricants
- DIN 51350-3: Testing of lubricants - Testing in the four-ball tester - Part 3: Determination of wearing characteristics of liquid lubricants
- DIN 51350-4: Testing of lubricants - Testing in the four-ball tester - Part 4: Determination of welding load of consistent lubricants
- DIN 51350-5: Testing of lubricants - Testing in the four-ball tester - Part 5: Determination of wearing characteristics for consistent lubricants
- IP 239: Determination of extreme pressure and anti-wear properties of lubricating fluids and greases - Four ball method (European conditions)
- ISO 20623:2017: Petroleum and related products — Determination of the extreme-pressure and anti-wear properties of lubricants — Four-ball method (European conditions)

Applications

- Determine extreme pressure (EP), wear preventive (WP), frictional and fatigue behavior of lubricants.
- Determine the incipient seizure and load wear index of lubricants.
Check out our article on [On the mechanism of lubricant additives using four ball tester](#)
- Bench mark the lubricants against the competitors in the market.
- Measure and compare the WP / EP of nanoparticles derived from carbon, metal oxide, sulphides, and nanocomposites.
Check out our article on [How to investigate nanoadditives by NIS USA?](#)
- Compare the performance of lubricants at different loads, temperatures, base oils, additives, suppliers, etc
- Compare and estimate the deterioration of lubricant quality by comparing fresh and used oil.
Check out our article on [Oil Aging: How to investigate the inevitable in the lab?](#)

- Investigate the performance of polymeric materials in lubricants used to achieve better shear stability and minimize viscosity loss.
- Lubrication efficacy of biodegradable/vegetable oils compared to mineral/synthetic base oils.

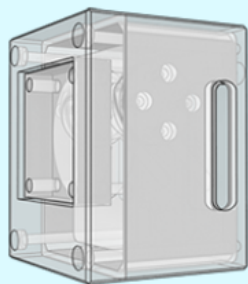
Product Features

TOUCHSCREEN INTERFACE AND DATA ACQUISITION

An inbuilt touch screen interface with an IP65 rating, coupled with state-of-the-art data acquisition hardware and electronics, the FBT-3 can effortlessly handle the most demanding testing applications.

Designed for full touch compatibility, pre-configured test protocols allow users with minimal training to set up ASTM and other standard tests easily. Custom test protocols can be set when your needs exceed the scope of standard test procedures.





STATE OF THE ART PATENTED TECHNOLOGY

Patented friction force measurement technology for unparalleled measurement accuracy. Rapidly increasing lubricant quality standards demand the use of more sensitive measurement techniques to evaluate lubricants, and FBT-3 delivers on this.

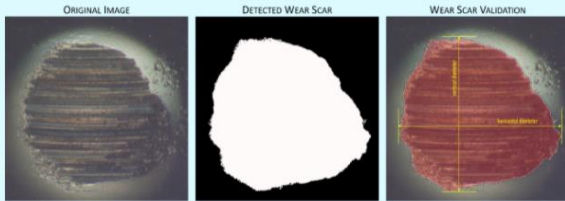
DIGITAL IMAGE ACQUISITION SYSTEM (IAS)

The inconvenience of removing each ball from the ball pot, followed by trial - error method to focus and measure the ball wear scar is made obsolete. The Image Acquisition System can house the entire ball pot after EP and WP tests. It comes complete with integrated camera, optics, lighting, and software.

The integrated smart scar measurement technology (available on select systems) can assist users in wear scar area calculation, greatly improving quality of measurements.



THE POWER OF ARTIFICIAL INTELLIGENCE (A.I.)



Every FBT-3 test is concluded by measuring the wear scar on the test specimens. It is the most manual aspect of any four ball testing and is prone to user errors and interpretation. Difficulty in visual observation of scars further increases the test variability.

With our proprietary automatic scar prediction software, you can now harness the power of Artificial Intelligence (A.I.) to **automatically make consistent and precise wear scar measurements**, overcoming the human error and greatly reducing the test variability.

Questions?

Our experienced and knowledgeable staff can help you.

[CONTACT US](#)

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