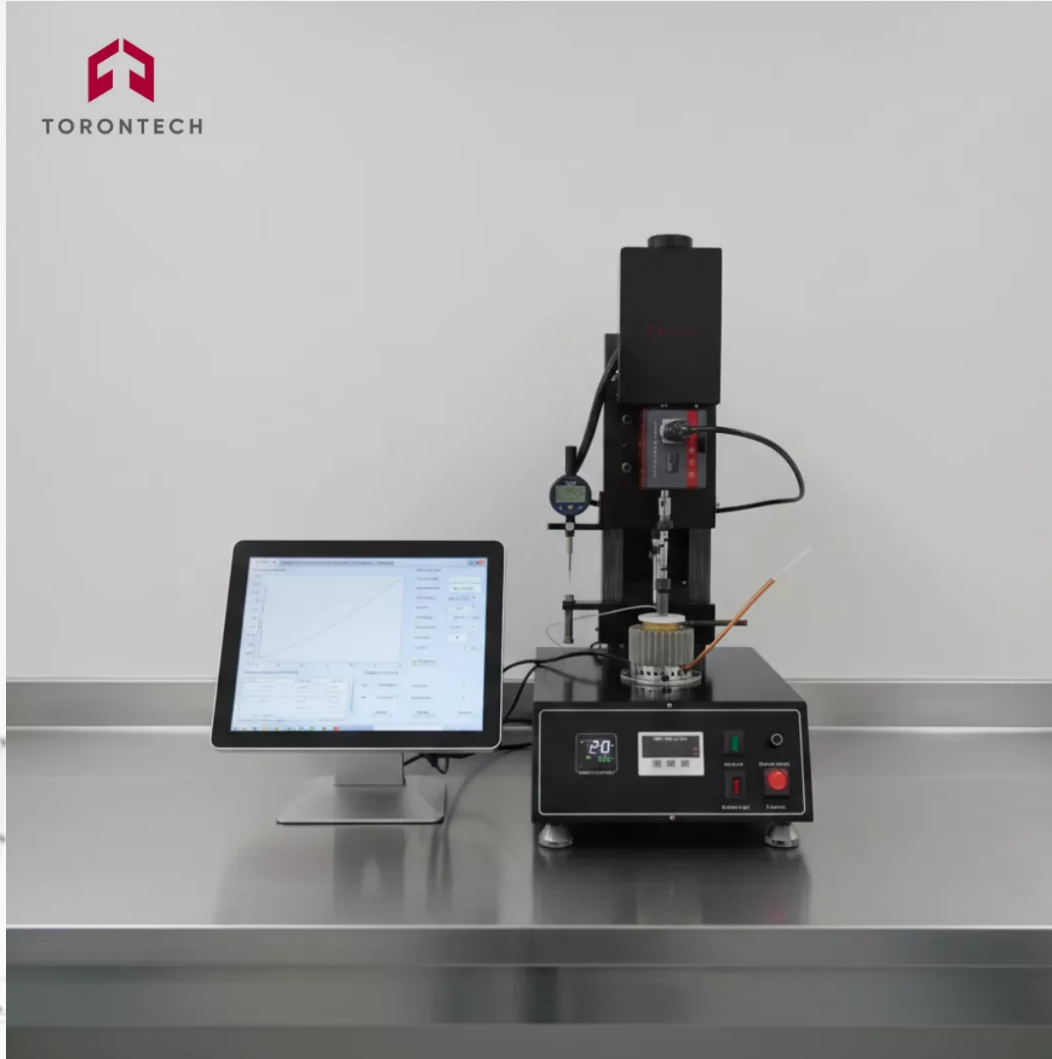


APPARATUS FOR VISCOSITY BY TBS



Apparatus for Viscosity by TBS TT-4683

Apparatus for Viscosity by TBS TT-4683 conforms to ASTM D4683 Standard Test Method for Measuring Viscosity of New and Used Engine Oils at High Shear Rate and High Temperature by Tapered Bearing Simulator Viscometer at 150 °C and ASTM D4741 Standard Test Method for Measuring Viscosity at High Temperature and High Shear Rate by Tapered-Plug Viscometer.

ASTM D4683 entails the laboratory determination of engine oil viscosity at 150°C and $1.0 \times 10^6 \text{ s}^{-1}$ utilizing a viscometer equipped with a slightly tapered rotor and stator, known as the Tapered Bearing Simulator (TBS) Viscometer.

APPLICATIONS

The primary application of the Apparatus for Viscosity by TBS TT-4683 is to determine the **viscosity of new and used engine oils under conditions of high temperature and high shear rate**, in compliance with standards like **ASTM D4683**. The test, performed using a Tapered Bearing Simulator (TBS) Viscometer at 150°C, is designed to measure a critical performance property known as HTHS (High-Temperature/High-Shear) viscosity. This measurement simulates the conditions within the tight clearances of a running engine, such as in the journal bearings, and is essential for predicting both fuel efficiency and wear protection.

Key Industries

- **Lubricant Manufacturing:** This is a mandatory test for lubricant blenders who formulate and certify modern, fuel-efficient engine oils. HTHS viscosity is a key specification required by organizations like API, ACEA, and ILSAC to ensure an oil provides the right balance of fuel economy and wear protection.
- **Automotive and Engine Manufacturing:** Automakers are a primary driver for this test. They rely on HTHS viscosity data to specify the correct engine oils that will help them meet fuel economy targets while ensuring long-term engine

durability.

- **Additive Manufacturing:** Chemical companies that develop and produce viscosity index (VI) improvers and friction modifier additives use the TBS viscometer extensively in their research and development to evaluate how their additives perform under the demanding high-temperature, high-shear conditions found inside a running engine.

FEATURES

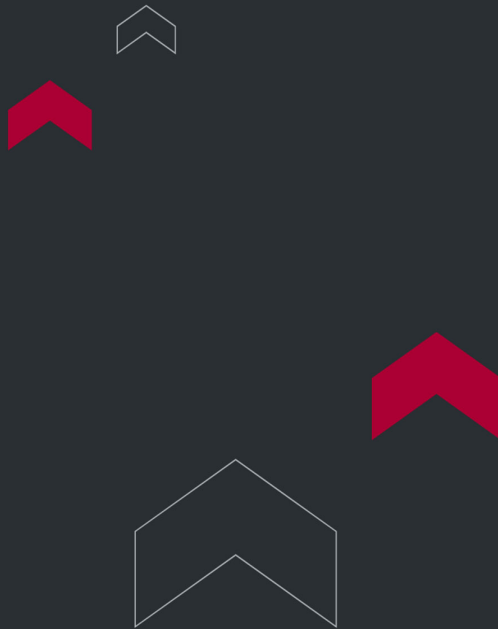
- Heating method: high-temperature oil bath.
- Test temperatures: 100°C, 150°C.
- Number of test stations: 5.
- Operating system: Windows 7.
- Results calculation: Utilizes dedicated software, with manual sampling allowing for 5 tests per hour.
- No solvent cleaning required, only a small amount of fresh sample needed for flushing.
- The software automatically calculates the calibration deviation of the standard oil.
- Capable of storing and printing the test results.

TECHNICAL SPECIFICATIONS

1. Rated voltage: 210~240V, 50Hz/60Hz. (110V also available)
2. Shear rate: Ranging from a minimum of $50000s^{-1}$ to a maximum of $7000000s^{-1}$ RPM (800~8000).
3. Safety control: Includes protection against overheating and programmable temperature limits.
4. Total power: 2.5KW.
5. Sample volume: 50ml.

6. Test time: 5~10 minutes per sample.

7. Bath temperature: Ranges from 40°C to 200°C, with an accuracy of $\pm 0.1^\circ\text{C}$.



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