

LOW-TEMPERATURE TORQUE TESTER



Low-Temperature Torque Tester TT-1478

Low-Temperature Torque Tester TT-1478 complies with ASTM D1478 Standard Test Method for Low-Temperature Torque of Ball Bearing Grease.

This method was devised using greases exhibiting very low torque characteristics at -54°C. It's common for greases of this kind to necessitate testing at such temperatures. For other grease types, testing may be required at temperatures ranging from -73°C to -18°C.

This testing approach has proven valuable in selecting greases for low-powered mechanisms, like instrument bearings in aerospace applications. However, the suitability of this method for other applications with varying greases, speeds, and temperatures should be assessed on a case-by-case basis.

APPLICATIONS

The Torontech TT-1478 is used to execute the ASTM D1478 test, which measures the torque required to rotate a bearing lubricated with grease at extremely low temperatures. This analysis is critical for determining a grease's suitability for low-power systems that must start and operate reliably in cold environments. It directly predicts whether a lubricant will allow a mechanism to function or cause it to fail due to excessive resistance.

This low-temperature performance evaluation is essential for ensuring reliability in:

- **Aerospace:** Qualifying greases for critical, low-power applications such as instrument bearings, satellite mechanisms, and control surface actuators that must function flawlessly in the extreme cold of high altitudes and space.
- **Defense & Military:** Ensuring the all-weather operational readiness of optical targeting systems, robotics, and avionic controls on equipment deployed in arctic or high-altitude theaters where failure is not an option.
- **Automotive:** Validating greases for small electric motors and electromechanical systems (e.g., door latches, mirror adjusters, ABS sensors) to guarantee their functionality during cold starts in winter climates.

- **Scientific Instrumentation:** Selecting lubricants for robotic arms, telescopes, and remote weather station equipment deployed in polar regions or other cryogenic environments where low starting torque is paramount.

FEATURES

- Test bearing includes eight 7.9mm balls, separated by a two-piece pressed steel cage, with a standard radial clearance of 0.008 to 0.018mm.
- Microcomputer temperature controller, with a range from ambient to -70°C.
- Pt100 temperature sensor, accurate to 0.1°C.
- Compound compressor for low noise operation.
- Driving motor utilizes a high-speed ratio of 1740/1 to maintain stable rotating speed.
- Low-temperature tank features dedicated insulating material, ensuring the ambient environment does not affect the inner temperature.
- Digital display indicates the pull-in torque and running torque.
- Brass grease cup strictly conforms to standard requirements.
- Digital display for working time, equipped with alarm function.
- Stainless steel air bath.

TECHNICAL SPECIFICATIONS

1. Cooling mode: Danfoss double-compressor cooling system.
2. Temperature range: Ambient to -70°C.
3. Timer: Digital display.
4. Rotating speed accuracy: ± 1 rpm.

5. Torque test: Digital ergometer.
6. Torque accuracy: 0.1%.
7. Total power consumption: 2000W.
8. Rated voltage: AC 220V, 50Hz. (110V also available)
9. Dimensions: 800*500*1300mm.



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