



GREASE TESTING EQUIPMENT

Grease Testing Equipment

Lubricating greases are among the most complex and application-critical products in the petroleum industry. Unlike fluid lubricants, greases must simultaneously retain their structural consistency under mechanical working, release base oil effectively at the lubrication point, resist water washout and spray, maintain performance across extreme temperature ranges, and protect metal surfaces from wear, corrosion, and fretting damage. The precise physical, chemical, and tribological characterization of lubricating greases is therefore essential for formulation development, quality control, and specification compliance.

Torontech's lubricating grease testing equipment portfolio is the most comprehensive available from a single petroleum testing specialist. With 32 dedicated instruments spanning consistency and penetration, dropping point, oxidation stability, oil separation, water resistance, evaporation loss, corrosion protection, tribological performance, bearing leakage, low-temperature torque, and particle contamination analysis, Torontech provides grease testing laboratories with a complete, standards-compliant analytical capability aligned with ASTM, IP, NLGI, and ISO requirements.

APPLICATIONS

Application

Torontech's lubricating grease testing instruments are applied across the full range of grease development, production, and quality assurance activities:

- NLGI grade certification: Cone penetration testing (TT-217 / TT-217Z, ASTM D217) combined with grease working (TT-217G / TT-217GS) determines NLGI consistency grade — the fundamental classification parameter for all lubricating greases from NLGI 000 to NLGI 6.
- Automotive wheel bearing greases: Dropping point (TT-566 / TT-2265 / TT-2265Z), water washout (TT-1264, ASTM D1264), water spray resistance (TT-4049, ASTM D4049), and bearing leakage (TT-1263, ASTM D1263 / TT-4290, ASTM D4290) testing for automotive chassis and wheel bearing grease qualification.
- High-temperature greases: High temperature dropping point apparatus (TT-2265, ASTM D2265) and wide temperature range evaporation loss tester (TT-2595, ASTM D2595) characterize complex soap, polyurea, and synthetic greases operating above 200°C.
- Extreme pressure and load-carrying performance: Four-ball wear and EP testing (TT-2783Z, ASTM D2266 / D2596), Timken OK load (TT-2509, ASTM D2509), and universal friction and wear testing define the tribological performance envelope of EP-grade industrial and automotive greases.
- Fretting wear protection: The TT-4170 fretting wear protection tester (ASTM D4170) evaluates grease performance under small-amplitude oscillatory motion — a critical parameter for greased rolling element bearings subject to vibration during transportation or standstill.
- EMCOR bearing rust protection: The EMCOR grease testing machine (TT-6138, IP 220) evaluates the rust-inhibiting properties of grease in rolling element bearings exposed to water contamination — a key test for industrial and automotive bearing grease approvals.
- Oil separation and bleed characterization: Three complementary oil separation instruments (TT-392, TT-6184, TT-1742) measure grease bleed rate under static and centrifuge conditions — a critical property for determining grease reservoir performance in sealed bearings.
- Particle contamination analysis: The ToronPQI™ particle quantifier instrument detects ferrous and non-ferrous particle contamination in used greases, supporting condition monitoring of grease-lubricated equipment.

Why Choose Torontech's Series for Your Grease Testing?

Torontech's lubricating grease testing portfolio is the most complete available for industrial and automotive grease laboratories:

- **Unrivalled Consistency Testing:** Three penetration instruments (manual TT-217, automatic TT-217Z) combined with two motorized grease worker models (TT-217G, TT-217GS) provide the most comprehensive NLGI penetration and worked stability testing platform available — essential for NLGI grade certification and quality control of the full consistency range from fluid greases to block greases.
- **Multi-Temperature Dropping Point:** Torontech offers three dropping point instruments spanning the full temperature range: standard TT-566 (ASTM D566, up to ~260°C), high-temperature TT-2265, and fully automatic TT-2265Z (ASTM D2265, up to 350°C+) — covering lithium, calcium, polyurea, and complex soap greases including modern high-performance synthetic grease formulations.
- **Complete Water Resistance Testing:** Water spray resistance (TT-4049), water washout (TT-1264), and moisture content by Karl Fischer titration (TT-6304 / TT-203) together provide a complete water resistance assessment for greases used in wet or wash-down environments.
- **Full Tribology Suite:** Four-ball (TT-2783Z), Timken (TT-2509), fretting wear (TT-4170), EMCOR bearing rust (TT-6138), and universal friction and wear (TT-LubeTW1000) — no other single supplier provides a more complete tribological grease testing capability under one portfolio.
- **Particle Monitoring Capability:** The ToronPQI™ particle quantifier adds in-service grease condition monitoring capability to the portfolio, enabling laboratories to combine manufacturing quality control with field equipment health monitoring services.

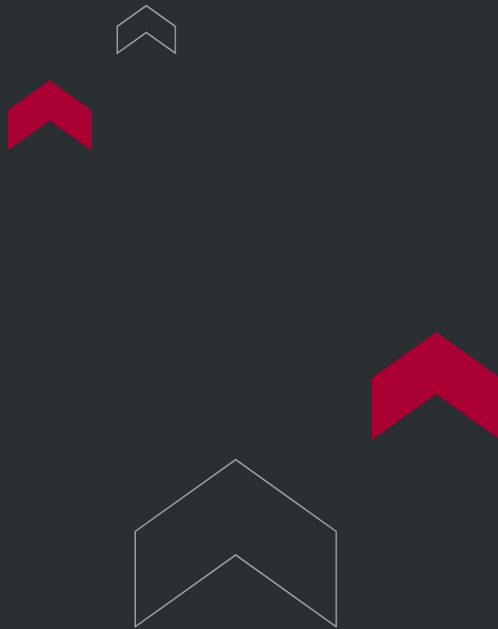
TECHNICAL SPECIFICATIONS

How to Choose: Grease Instrument Comparison

Use the table below to identify the Torontech instruments that match your lubricating grease testing needs:

Instrument	Model	Standard
Coulometric Karl-Fischer Titration Tester	TT-6304	ASTM D6304
Volumetric Karl Fischer Moisture Titrator	TT-203	ASTM D1533
Water Spray for Lubricating Grease	TT-4049	ASTM D4049
Water Washout Characteristics of Lubricating Grease	TT-1264	ASTM D1264
Greases Oxidation Stability Apparatus	TT-942Z	ASTM D942
X-ray Fluorescence Sulfur Content Apparatus	TT-4294	ASTM D4294
Evaporation Loss for Lubricating Grease	TT-972	ASTM D972
Grease Wide Temperature Range Evaporation Loss Tester	TT-2595	ASTM D2595
Corrosion Preventive Properties of Lubricating Greases	TT-1743	ASTM D1743
Lubricating Grease Dropping Point Tester	TT-566	ASTM D566
High Temperature Dropping Point Apparatus	TT-2265	ASTM D2265
Automatic High Temperature Dropping Point Apparatus	TT-2265Z	ASTM D2265
Grease Separation Apparatus	TT-392	ASTM D1742
Oil Separation Apparatus for Grease	TT-6184	IP 121
Oil Separation of Lubricating Grease	TT-1742	ASTM D1742
Manual Cone Penetration for Petroleum Products	TT-217	ASTM D217
Automatic Penetration Tester	TT-217Z	ASTM D217
Motorized Grease Worker	TT-217G	ASTM D217
Motorized Grease Worker	TT-217GS	ASTM D217

Instrument	Model	Standard
Roll Stability Apparatus for Lubricating Grease	TT-1831	ASTM D1831
Deleterious Particles Determination Apparatus	TT-1404	ASTM D1404
EMCOR Grease Testing Machine	TT-6138	IP 220
Universal Friction and Wear Tester	TT-LubeTW1000	ASTM G99
Fretting Wear Protection Tester	TT-4170	ASTM D4170
Timken Load Tester	TT-2509	ASTM D2509
Automatic Four Ball Wear Tester	TT-2783Z	ASTM D2266
ICP for Used Lube Oils	TT-5185	ASTM D5185
Flame Furnace Atomic Absorption Spectrophotometer	TT-AAS	ASTM D3120
Leakage Tendencies of Automotive Wheel Bearing Greases	TT-1263	ASTM D1263
Apparatus for Leakage Tendencies of Automotive Bearing Grease	TT-4290	ASTM D4290
Low-Temperature Torque Tester	TT-1478	ASTM D1478
Particle Quantifier Instrument ToronPQI™ Series	ToronPQI™	ISO 4406



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