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OIL PARTICLE COUNTER - TORONOPC™ VES

Oil Particle Counter ToronOPC™ VES accurately detects and measures particle contamination in oils and liquids using light-blocking technology and global standards.

APPLICATIONS

Oil Particle Counter - ToronOPC™ VES

Oil Particle Counter ToronOPC™ VES is a laboratory instrument designed to detect particle contaminants in liquids. It operates using the light-blocking principle to measure and count particle sizes, providing insights into particle distribution and contamination levels.

Equipped with pressurized and vacuum devices, it efficiently extracts high-viscosity liquids and removes microbubbles, ensuring accurate results. The instrument is ideal for analyzing particle contaminants in various liquid mediums, including hydraulic oil, lubricating oil, transformer insulation oil, gear oil, aviation kerosene, organic liquids, and polymer solutions.

Equipped with built-in standards for ISO VES, NAS 1638 particulate contamination levels. Supports customizable particle channel settings and integrates specific standards based on user requirements

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ToronOPC-VES
Positive and Negative Pressure Particle Sampler

Applications

The Oil Particle Counter ToronOPC™ VES is ideal for:

- Hydraulic Fluid Analysis – Detects wear and contamination in hydraulic systems to support predictive maintenance and system reliability.
- Lubrication & Gear Oil Monitoring – Measures particulate contamination in lubricants to optimize service life and prevent mechanical wear.
- Transformer & Power Equipment Oil Testing – Assesses dielectric fluids for particulate contamination that can impact electrical performance and safety.
- Aviation Fuel & Kerosene Quality Control – Monitors airborne particle contaminants that can affect fuel system performance and engine reliability.
- Chemical & Polymer Solutions – Provides particle contamination analysis in industrial chemical processes.

Standards

The Oil Particle Counter ToronOPC™ VES supports key international cleanliness and particle counting standards, enabling compliance and reporting in global industries:

- ISO VES – International fluid cleanliness coding for hydraulic oils.
- NAS 1638 – U.S. aerospace fluid contamination classification.
- SAE AS4059F – SAE aerospace and automotive fluid cleanliness standard.
- ISO 4402 / ISO 11171 – Calibration and verification methods for automatic particle counters.
- GOST 17216 – Russian particle contamination classification.

FEATURES

Oil Particle Counter - ToronOPC™ VES Key Features

- Advanced Counting Technology: Uses the photoresist (shading) counting principle as formulated by the International Hydraulic Standards Committee.
- High-Precision Sensor: Equipped with a laser sensor offering a wide testing range, stable performance, low noise, and high resolution.
- Flexible Sampling: Utilizes a high-pressure syringe pump for stable and accurate sampling. Sampling volume can be adjusted based on specific requirements.
- Dual Pressure Injection System: Positive and negative pressure injection ensures effective degassing, suitable for testing liquids with different viscosities.
- Built-in Pressure Sensor: Automatically monitors and controls air pressure for safe and reliable operations.
- Air Purification System: Integrated system prevents contamination and secondary pollution during testing.
- Multiple Calibration Curves: Compatible with various international standards, including ISO VES, NAS1638, SAE 4059F, and more.
- Customizable Testing: Supports user-defined test methods with naming and grading features.
- Simultaneous Testing Channels: Allows up to 64 test channels to operate simultaneously.
- Cleaning Detection: Real-time cleaning monitoring with auto-stop upon achieving target particle concentration.
- Integrated Sensor Module: Optional module for measuring viscosity, moisture content, and temperature during particle distribution analysis.Comprehensive Particle Size Analysis: Built-in analysis for nearly 10,000 particle sizes, with customizable size settings.
- Versatile Sampling Containers: Compatible with standard sampling bottles and sampling cups for diverse applications.
- User-Friendly Interface: 7-inch color touch screen with a folding button design for intuitive operation.
- Calibration Options: Manual, automatic, and semi-automatic calibration modes available.
- Data Connectivity: Equipped with RS232 and 485 ports for PC or laboratory platform integration.
- Data Storage and Export: Supports massive data storage, result printing, and direct USB flash disk export.
- User Account Management: Allows over five user accounts with customizable permission settings.

TECHNICAL SPECIFICATIONS

Oil Particle Counter - ToronOPC™ VES Technical Specifications

Model	ToronOPC™ VES
Light Source	Semiconductor laser
Particle Size Range	0.8 µm–600 µm (ACFTD 1–100 µm or ISO MTD 4–70 µm)
Detection Channels	8–64 channels (optional)
Sensitivity	0.8 µm (ISO 4402) / 3 µm (ISO 11171)
Resolution	< 10% (ISO 11171)
Repeatability	RSD < 2%
Sample Viscosity	≤ 650 cSt (heating or dilution possible)
Sampling Volume	0.2–6000 mL
Sampling Accuracy	± 0.5%
Sampling Speed	5–80 mL/min
Chamber Pressure	Vacuum: –0.08 MPa / Positive: 0.8 MPa
Max Particle Count	12,000–40,000 particles/mL
Temperature (Optional)	1–100 °C (± 1 °C)
Water Activity (Optional)	1–100% RH (± 1% RH)
Water Content (Optional)	1–360 ppm (± 1 ppm)
Sample Temp Range	0 °C–80 °C
Operating Temp	–20 °C–60 °C
Storage Temp	-30 °C–80 °C

Voltage	110–245 V AC, 50/60 Hz, 70 W
Dimensions	340 × 410 × 650 mm
Weight (Main Unit)	≤ 23 kg
Weight (Air Pump)	≤ 5.5 kg

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