TORONTECH

APPARATUS FOR CAVITATION CORROSION AND EROSION-CORROSION CHARACTERISTICS

Apparatus for Cavitation Corrosion and Erosion-Corrosion Characteristics TT-2809

Apparatus for Cavitation Corrosion and Erosion-Corrosion Characteristics TT-2809 complies with ASTM D2809 Standard Test Method for Cavitation Corrosion and Erosion-Corrosion Characteristics of Aluminum Pumps with Engine Coolants.

This test method distinguishes between coolants that cause cavitation corrosion and erosion-corrosion in aluminum automotive water pumps and those that do not. While the ratings from this test do not directly correlate to a specific number of miles in vehicle tests, some correlation has been observed with single-phase coolants in limited studies. Field tests under severe conditions are recommended for a comprehensive evaluation of a coolant's impact on cavitation corrosion and erosion-corrosion. With proper control of test variables, this method can also assess the effects of pump design, construction materials, and operating conditions on cavitation corrosion and erosion-corrosion damage.

APPLICATIONS

The Torontech TT-2809 is engineered to perform the ASTM D2809 test, a dynamic procedure that evaluates an engine coolant's ability to protect aluminum water pumps from the highly aggressive damage caused by cavitation and erosion-corrosion. This test provides a critical assessment of how well a coolant's inhibitor package can withstand severe fluid dynamic stresses, preventing premature pump failure and subsequent engine damage.

This specialized analysis is essential for ensuring component durability in:

- **Automotive & Engine OEMs:** A crucial validation test to approve coolants for factory-fill, ensuring the longevity of aluminum water pumps and protecting the integrity of the entire cooling system.
- **Coolant & Additive R&D:** Serves as a definitive performance benchmark for developing and qualifying advanced coolant formulations that offer superior protection against cavitation, a key market differentiator.

- **Heavy-Duty & Off-Road Equipment:** Used to select robust coolants capable of protecting the water pumps in hard-working diesel engines that operate under high loads and are more susceptible to cavitation damage.
- **Water Pump Manufacturing:** In R&D to assess how pump design, materials, and impeller geometry influence resistance to cavitation, leading to the development of more durable and reliable products.

FEATURES

- Motor: Drives the cooling liquid circulation and is connected to the water pump.
- Water Pump: Water pump that meets ASTM D2809 requirements.
- Vacuum Pressure Gauge: Digital display showing the real-time vacuum level at the pump inlet.
- Throttling Valve: Adjusts the water pump flow rate.
- Heater: Heats the cooling liquid to the test temperature.
- Liquid Storage Tank: Stores the cooling liquid for the pipeline system.
- Heat Exchanger: Supplies the test temperature of 35-38°C by exchanging heat with the cooling water.
- Regulating Valve: Includes three valves to adjust the vacuum level and test pressure.
- Pressure Gauge: Displays the real-time pressure value.
- Expansion Chamber: Steam expansion device.

TECHNICAL SPECIFICATIONS

1. Applicable Standard: ASTM D2809

2. Ambient Requirements: Temperature 20-25°C, Relative Humidity < 60%

3. Pump Body Rotation Speed: 0-4600 ± 100 r/min

4. Fuse: 20A

5. Temperature Control Range: < 650°C

6. Temperature Accuracy: ±0.1°C

7. Flow Rate Range: 0-20 ml/min

8. Flow Rate Control Accuracy: ±5%

9. Rated Voltage: AC 220V, 50Hz (110V also available)

10. Total Power: 6.5KW

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