

Iron Content Analyzer HST-PL-7



The main failure modes of mechanical equipment include wear, corrosion, and fracture. Wear failure accounts for 60%-80% of mechanical equipment malfunctions. Lubricating oil is the lifeblood of mechanical equipment, playing roles such as sealing, lubrication, cleaning, cooling, and corrosion prevention. Lubricating oil contains information about mechanical wear, namely the tribological characteristics of the friction pair surface materials. By monitoring the lubricating oil, both oil contamination and the wear condition of the machine can be detected. The concentration of ferromagnetic particles in the lubricating oil is one of the direct indicators of the wear degree of controlled equipment. Daily analysis of the ferromagnetic particle concentration in the oil in use can quickly identify abnormal wear levels in equipment, avoiding unplanned downtime.

In terms of detection methods, current iron content detection mainly includes atomic absorption spectrometry and atomic emission spectrometry. While atomic absorption spectrometry is accurate, it is slow and complex to operate. Atomic emission spectrometry is widely used, but it cannot effectively detect large wear particles (whether using rotating electrodes or inductively coupled plasma). Insensitive to large particles, this can sometimes be fatal in monitoring and diagnosis, as particles from normal wear in friction pairs are generally $<10\mu\text{m}$, while metal particles $>15\mu\text{m}$ are generated due to abnormal wear.

The portable ferromagnetic wear debris measuring instrument HST-PL-7 uses the principle of electromagnetic induction to measure the wear debris content by utilizing the change in the magnetic field of the sensor coil caused by ferromagnetic wear debris in the oil sample. It exhibits a good linear relationship with the iron debris content and particle size of the oil sample. It has high sensitivity, accuracy, and repeatability, requiring no sample pretreatment or organic solvents, and can measure the PQ index of ferromagnetic metal wear particles in various oil samples within seconds. The PQ index is a dimensionless quantitative number. It is widely used in defense, aerospace, shipbuilding, power, petrochemical, metallurgy, mining, and road transportation.

fields.

Feature:

- Quantitatively determines the total amount of large-size ferromagnetic particles in oil, with a data point measured every 5 seconds, offering high speed and repeatability.
- High sensitivity, resolution up to 1 PQ
- No sample pretreatment or organic solvents required
- Fast detection speed
- Can analyze iron filings in lubricating oil and grease samples
- Meets the needs of both industrial sites and oil monitoring laboratories
- Exceptionally easy to operate; can be mastered in minutes without professional training
- Selectable Chinese/English interface; Windows system includes data recording, querying, calibration, and trend analysis functions
- Error monitoring function; on-screen prompts indicate any operational errors.

Technical Parameter:

Functions	Parameters
Applications	Lubricating Oils and Greases
Outputs	Total Ferromagnetic Particle Content, Ferromagnetic Particle Concentration
Detection Method	ASTM D8120
Detection Range	0-15000 PQ
Detection Size	>1μm (Ferromagnetic Abrasives)
Resolution	1 PQ (Average Resolution 0.1 PQ)
Detection Accuracy	Measured on stable oil samples (e.g., 750 standard sample), repeated 100 times, 90% of data falling within $\pm 0.5\%$ or ± 3 PQ
Sampling Volume	2mL
Detection Speed	< 10 seconds
Rotary Speed	14s/revolution
Measurement Accuracy	$\pm 1\%$
Display	7-inch Touchscreen
Storage Space	32G
USB Connection	Type-A2.0 (for USB flash drive connection only)
Operating Temperature	0-50°C
Ambient Humidity	30%-80%
Main Unit Dimensions	388*260*180mm
Power Supply Voltage	AC 100V-240V 50Hz/60Hz
Weight (Net Weight)	4.5kg