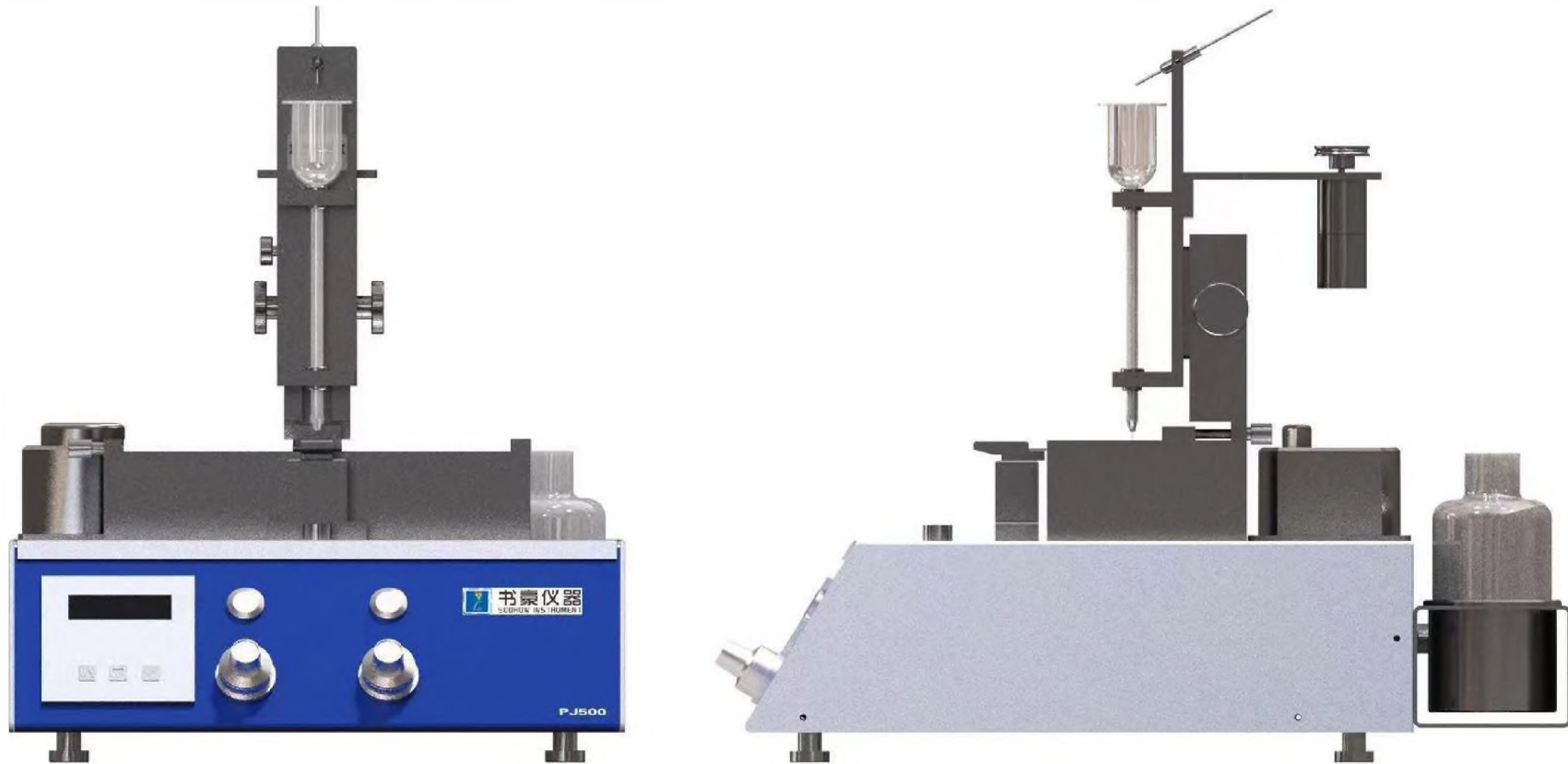


Introduction to PJ500 analytical ferrospectrometer



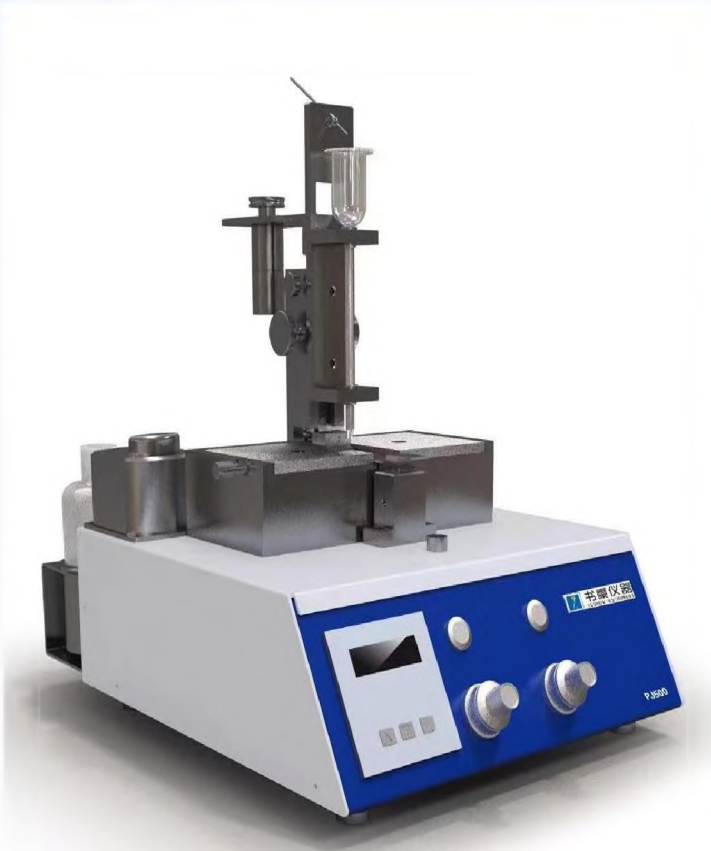
- ◆ The PJ500 is a complete ferrographic analysis system for the separation and evaluation of wear and contaminant particles in lubricating oil, hydraulic oil, coolant or fuel oil. It consists of a thistle tube spectrometer, two-color microscope (optional densitometer), camera, heating disk (optional) and image acquisition software.
- ◆ Under its own gravity, the oil flows through the ferrographic substrate at a constant speed directly through the thistle glass conduit. All the ferromagnetic particles in the oil sample were deposited on the ferrographic substrate under the action of magnetic field, and were analyzed after thorough washing and drying. It can effectively avoid the halo produced by the spectrum plate prepared by the ordinary iron spectrometer during the microscope observation.
- ◆ The PJ500 uses a two-color microscope to observe the particles deposited on the spectrum. Under a two-color microscope light source, images of red metal particles (metal particles reflect red light) and of green nonmetallic particles (green light passes through nonmetallic particles) are observed.

PJ500 thistle tube analytical iron spectrometer



Spectroscopic process of PJ500

- Install the spectrum piece: tilt the spectrum piece to the corresponding position of the iron spectrometer, and the black dot on the spectrum piece is placed at the lower left; Install the pipe for discharging the waste liquid; Adjust the height of the thistle tube so that the outlet is about 1mm away from the iron plate, and lock the positioning screw.
- Sample preparation (viscosity dilution) : Because the viscous resistance of the oil sample directly affects the deposition effect of the wear particle in the ferrograph, the dilution of the oil sample through the viscosity will accelerate the deposition process of the wear particle under the action of the magnetic field and the flow of the oil. The viscosity diluting solvent is generally tetrachloroethylene. The lubricating oil sample is usually diluted in a ratio of 3 parts oil to 1 (2 parts for high viscosity) solvent so that it can flow through the thistle tube at a flow rate of about 0.4ml/min.
- Make the spectrum: Pour the diluted sample into the thistle tube, and the sample will flow onto the spectrum in about 5 seconds; After all samples flow, press START/STOP to start timing rinsing. Under normal circumstances, rinse for 10 minutes, and the flow rate of the bleach solution is one drop every 5 seconds; After rinsing, raise the thistle tube to dry the spectrum as soon as possible, and pay attention to wipe the residual liquid at the drip mouth of the thistle tube to avoid damaging the spectrum; Lift the pipe to discharge the waste liquid; After the surface of the spectrum is dried, it is examined under a microscope.
- Heating analysis (optional) : Place the prepared spectrum on the heating plate, heat it for more than 90 seconds, and take it to the microscope for observation after heating.



500 analysis of the main features of the ferrospectrometer

Thistle tube type iron spectrometer

ASTM D7690 standard

Provide abrasion map

Abrasive analysis range 0–800um

The source, characteristics and distribution of wear particles were analyzed based on two-color microscope, heating disk and wear particle atlas

Efficient separation of abrasive and pollutant particles from oil samples

The spectrum production speed is fast

The process of making spectra does not cause deformation of abrasive particles

High magnetic field limit, to ensure that the iron wear particles neatly arranged to avoid accumulation phenomenon.

Less solvent required, no external compressed air required

Sampling of oil samples for ferrographic analysis

- ◆ Sampling is the extraction of a sample of lubricating oil (or hydraulic oil) from a line or tank with an oil taking tool. The sampling operation must ensure that the oil sample taken contains wear particles that can reflect the changes in the working condition of the machine, only in this way can the ferrographic analysis make a correct judgment. Therefore, the following principles should be followed when sampling:
- ◆ Try to choose before lubricating oil filtration and avoid sampling from dead corners and bottom;
- ◆ Should try to choose when the machine is running, or just stopped when sampling;
- ◆ The sample should always be taken at the same position, under the same conditions (after the same time if the machine is shut down) and under the same operating state (the same speed and load);
- ◆ The sampling period should be determined according to the nature of the machine and the requirements for condition detection. When the machine is newly put into operation or has just been disassembled and repaired, the sampling interval should be short, usually sampling once every few hours to monitor and analyze the entire running-in process; After the machine enters the normal operation stage, the sampling interval can be increased; Thereafter, when it is found that the wear develops rapidly, the sampling interval should be shortened.



Standard configuration

model	quantity	description
PJ500	1	PJ500 spectrometer host
	1	Spectral slice
	1	Small test tube
	1	Pipette head
	1	pipettor
	1	Spectrum placement box
	1	Thistle tube
	1	Wear pattern
	1	Operating instruction
	1	Spectrometer power cord