Spectro Scientific
Confidence in knowing

Spectro LNF Q200 Series

PARTICLE COUNTER, WEAR PARTICLE CLASSIFIER, FERROUS MONITOR

The LNF (LaserNetFines™) is the world's best particle counter technology for lubrication oils. The advanced design makes it so much more than a particle counter: The LNF also calculates free water in ppm, and differentiates contaminants (silica) from machine wear (metal).

It provides particle counts and codes, abnormal wear classification and ferrous wear measurement.

Sample preparation is efficient with the LNF – viscosities up to 320cSt can be processed without dilution due to the wide dynamic range. And unlike conventional light blockage particle counters there are no flow control valves that need adjusting when testing different sample viscosities.

With an intuitive, configurable GUI and no calibration required, the Q200 series is fast, accurate and easy to use.

The LNF features:

- Particle count for all particles from 4 to 100 µm.
- Highest saturation limit, up to 5,000,000 particles/ml with a coincidence error <2%.
- Viscosity range ISO15 to ISO320, undiluted.
- Images through dark fluids containing up to 2% soot with automatic laser gain control.
- Error corrections for water and air bubbles.
- Particle counts and codes per ISO 4406, NAS 1638, NAVAIR 01-1A-17, SAE AS 4059, GOST, ASTM D6786, HAL, and user defined bins.
- Data export formats include Spectrotrack and AMS Machinery Health Manager.™

Multiple configurations and options cover the needs of commercial laboratories and of industrial plants for contamination control and predictive maintenance. Options include:

Ferrous Monitor to measure ferrous content

Ferrous wear measurement is a critical requirement for monitoring machine condition. The high sensitivity magnetometer measures and reports ferrous content in ppm/ml, and provides ferrous particle count and size distribution for large ferrous particles >25 µm.

The in-line design of the magnetometer with the LNF flow cell enables measurement of both ferrous content and total particle count on the same sample, eliminating the need to measure Ferrous content on another instrument.

Classification of wear particle shape

The Q200 directly images wear particle silhouettes, and counts and classifies wear particles over 20 microns as cutting wear, sliding wear, fatigue wear, nonmetallic or fibers. This allows operators to determine the type of wear debris, wear mode and potential source from internal machinery components.
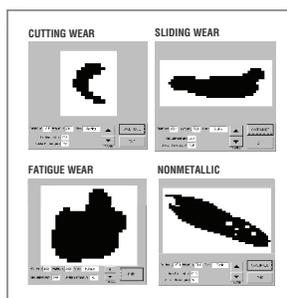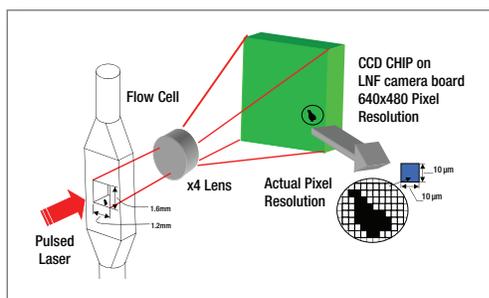
Dynamic viscosity measurement

The Q200 uses its laser and two transducers to measure viscosity, calculated from the fluid flow rate and pressure. The LNF calculates 40C kinematic viscosity from fluid density.

AutoSampler for high throughput sample processing

The Autosampler is a low cost solution for automatic and unattended processing of a batch of up to 24 samples and may be added to existing LNF installations by the end user with minimal setup.

Direct particle imaging with LNF

Flow Cell

CCD CHIP on LNF camera board 640x480 Pixel Resolution

x4 Lens

Actual Pixel Resolution

Pulsed Laser

1.6mm

1.2mm

10 µm

10 µm

CUTTING WEAR

SLIDING WEAR

FATIGUE WEAR

NONMETALLIC

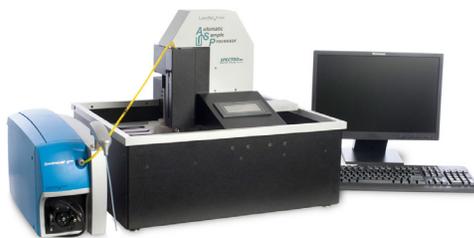# Spectro LNF Q200 Series Ordering Information

PART NUMBER	
SpectroLNF-Q210	LNF Particle counter. Requires SA1015 accessory kit and a PC.
SpectroLNF-Q220	LNF Particle counter with wear particle shape classifier. Requires SA1015 accessory kit and a PC.
SpectroLNF-Q230	LNF Particle counter, wear particle classifier, and ferrous monitor. Requires SA1016 accessory kit and a PC.
SA1015	Standard LNF Q210/Q220 accessories kit
SA1016	Standard LNF Q230 accessories kit
LNF-546	Dynamic viscosity measurement option

ACCESSORIES AND CONSUMABLES	
M97101A	Ultrasonic Cleaner 115V 50/60Hz
M97103	Ultrasonic Cleaner 230V 50/60Hz
LNF-901	Q200 series spares kit (tubing, screen, viscosity std and test dust)
LNF-903	Q200 series preventative maintenance kit
LNF-509	LNF particle counter validation fluid (PartiStan)
LNF-545	Magnetometer calibration fluid
P-10193	Electron solvent (1 Gallon)
LNF-902	Skydrol kit (Phosphate ester fluids)
ASP	Autosampler for Q200 series

PRODUCT INFORMATION	
Applications	Mineral and synthetic lubricants including gear, engine, hydraulic, turbine and distillate fuels
Output	Particle Count: ISO 4406, NAS 1638, NAVAIR 01-1A-17, SAE AS 4059, GOST, ASTM D6786, HAL and User Defined
	Free Water, ppm; Soot wt. %; Particle shape per LNF Method, Dynamic viscosity, cP (optional)
Methodology	ASTM D7596
Standard Analytical Range	Particles 4 µm - 100 µm, Viscosity between 15 to 320 cSt 40°C;
Calibration	Not Required

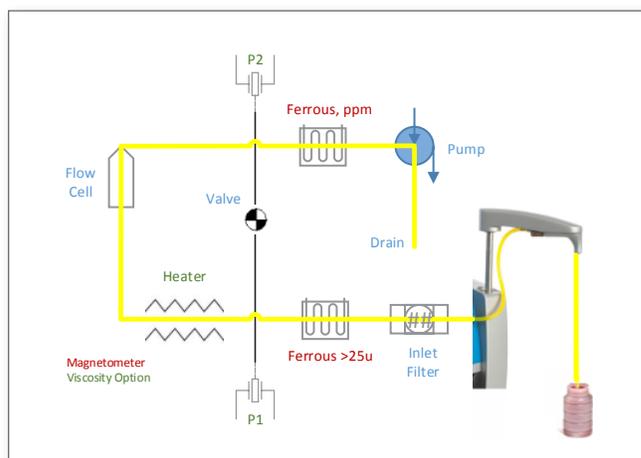| OPERATIONAL SPECIFICATIONS	
Sample Volume	5-30 mL, varies with viscosity
Solvents/Reagents	Odorless Kerosene or Electron Solvent (required for viscosity option)
Ambient Operating Temperature and Humidity	25°C to 35°C, 10% to 80%, non-condensing

USER INTERFACE SPECIFICATIONS	
Software/Operating System	Windows®7 Pro

POWER REQUIREMENTS	
Power	AC 110/240 V, 50/60 Hz, 10 Watts

MECHANICAL SPECIFICATIONS	
Dimensions	22.9 cm (H) x 17.8 cm (W) x 43.2 cm (D) (9 in x 7 in x 17 in)
Weight	7.65 kg (17 lbs)
Shipping Package Dimensions	35.6 cm (H) x 36.8 cm (W) x 78.7 cm (L) (14 in x 14.5 in x 31 in)
Shipping Package Weight	12.2 kg (27 lbs)

COMPLIANCE	
CE Mark: EMC Directive (2004/108/EC); RoHS, UL , CSA, ETL	

Q200 Series Comparison

	Q210	Q220	Q230
Total particle count & codes	✔	✔	✔
Non-metallic particles (sand/dirt)	✔	✔	✔
Free water measurement	✔	✔	✔
Air bubble/water droplet correction	✔	✔	✔
Wear particle classification		✔	✔
Ferrous content			✔
Ferrous particle count & size distribution			✔
Viscosity option	✔	✔	✔
Auto sampler option	✔	✔	✔

LNF Q200 with Autosampler option

Q200 series flow schematic