

ANALEX_{pp}

Ferrous Debris Monitors



Predict and prevent machinery failure
Fast. Simple. Consistent.

ANALEXpq

PQ[®] Technology Ferrous Debris Monitors



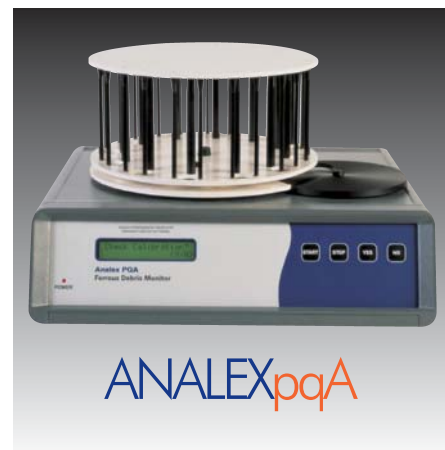
- Monitor lubricant condition
- Quickly identify wear trends
- Prevent potential problems
- Avoid expensive repairs
- Minimise equipment downtime
- Improve production efficiency
- Increase operational profitability

Lost production and expensive capital equipment replacement are major costs associated with any catastrophic failure of machinery, the prevention of which is crucial for optimal operational performance. Condition monitoring of machinery lubricants is the established method of predicting and avoiding impending machinery breakdown. Using Ferrous Debris Monitoring, worn parts can be identified early and replaced before any serious damage occurs. Production can be maintained, machinery life extended and the return on capital investment increased. ANALEXpq Ferrous Debris Monitors provide the most accurate means of detecting and measuring ferrous wear debris in lubricating oils, hydraulic oils and greases. These rugged, compact and stable monitors deliver retrievable data quickly and simply, ensuring fast, accurate and consistent management of lube condition samples.



With the ANALEXpq range, used oil samples are easy to prepare and with a short test turnaround, laboratory time is minimised. Once the samples have been loaded, the PQ Index measurement is delivered in less than 5 seconds!

In short, ANALEXpq Ferrous Debris Monitors will improve production efficiency and increase operational profitability wherever they are utilised.



ANALEXpqM

Manual operation

Process 5 samples per minute
Ideal for low/medium sample volumes



Step 1: Present the oil sample



Step 2: Enter the sample reference



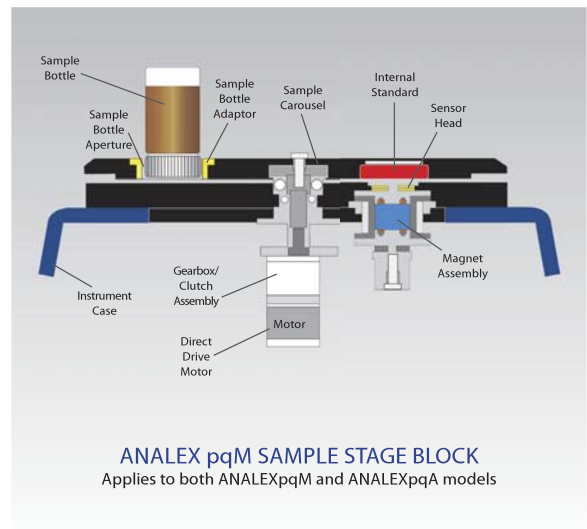
Step 3: Review the analysis result

The ANALEXpqM is a manually operated unit, ideal for testing and analysis of low to medium volumes of oil samples.

Lubricant samples can be processed at a rate of up to 5 samples per minute. For ease of use, samples may be presented for analysis in a variety of media including plastic pots, glass bottles, membrane filters or glass slides.

The front fascia panel of the pqM unit houses the electronic display, keypad and printer output. A keyboard may also be connected to the unit, allowing faster entry of sample identification numbers.

Data from each sample test is stored in the units' internal memory, which may then be transferred to a database on a host PC via an RS232 interface. Automatic recalibration is performed between each sample measurement.

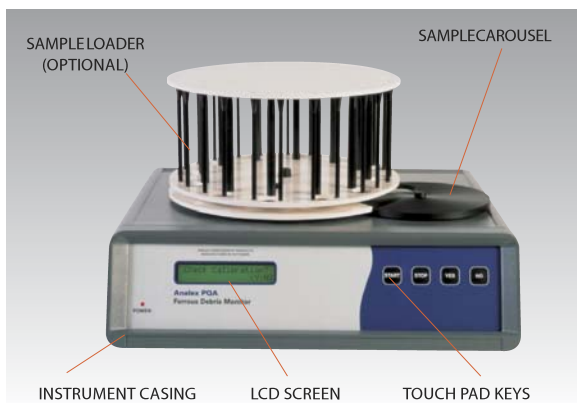


ANALEXpqA

Fully automated Simple 4 button operation or from remote PC keyboard

The ANALEXpqA unit enables the fully automated operation of batches of samples for measurement and analysis. The pqA can be operated from four keys placed on the front fascia panel of the unit or alternatively, it can be remotely operated from a connected PC.

Featuring an Alphanumeric electronic display, the pqA indicates both the current operational status of the unit and a local display of the PQ Index data for each measurement.



The pqA can be presented with three different types of sample: Batches of up to 144 disposable 2ml oil sample pots may be presented in a sample loader. After each measurement, the sample pots are delivered to a disposal chute. The total operation takes approximately 30 minutes to complete.

Up to 12 sample pots, without lids, may be loaded onto a specially designed tray fitted to the distribution carousel, which then transfers the samples automatically to the measurement sensor.

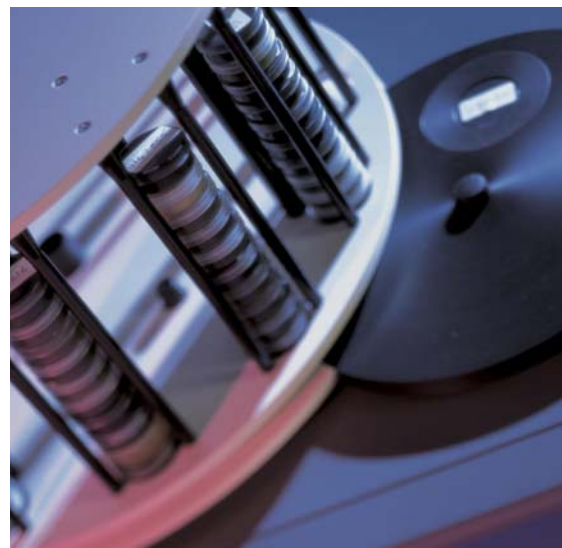
Oil samples may be measured directly in bottles. A suitable adaptor allows the bottle to be placed directly onto the measurement sensor. The unit can also be adapted for use with a laboratory robotics system (not supplied).

Data from each sample is stored in the internal memory, which may then be subsequently transferred to a database on a host PC via an RS232 interface.

Automatic recalibration is performed between each sample measurement.



Step 1: Fill the sample loader



Step 2: Samples presented automatically for measurement



Step 3: Review the analysis results



- Simple preparation of samples
- Fast measurement of debris
- Rapid display of PQ Index
- Internal data storage
- Automatic recalibration
- Easily repeatable measurements
- Simple data transfer facility

A PQ measurement is an essential tool in any used oil analysis program. Without any sample preparation, ANALEXpq Ferrous Debris Monitors can be used to identify the presence of larger ferrous particles (greater than 5-10 microns) missed by other more expensive analytical techniques.

Built around a sensitive magnetometer, Kittiwakes' unique ANALEXpq technology detects and measures the mass of ferrous wear debris within a lubricant sample irrespective of the size of the wear particles present. The result is displayed as a PQ Index. The PQ Index is a proprietary unit that can be trended with accepted linearity over a wide range of ferrous debris content and particle sizes.

Through consistent and regular sampling, the PQ Index highlights important trend indicators for the early detection of abnormal wear conditions and impending machinery failure. The Index can also provide a useful screening check to quickly identify samples that require further detailed analysis.

PQ technology measures the distortion of a magnetic flux field when a ferromagnetic sample (Iron or Nickel) is placed into the field. The resulting PQ Index can be compared with DL and DS ferromagnetic measurements or with the PPM output provided by other spectrographic techniques.

As wear debris in the tested sample settles, repeat readings will show an increasing PQ Index. A high rate of increase indicates the presence of large particles. For multi-element oil analysis on, for example diesel engines, PQ is invaluable in identifying larger particle releases often associated with 'filter breakthrough'.

ANALEXpq monitors can be operated remotely using bespoke WinPQBase software and a standard RS232 cable connection. PQ units can also be programmed to perform automatic repeat measurements if required.

ANALEXpq monitors are used by major corporations, laboratories and institutes worldwide. Users include: Fuchs, Caterpillar, Corus, Komatsu & SNCF



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ANALEX^{pq}

PQ[®] Technology Ferrous Debris Monitors

ANALEX^{pq} Ferrous Debris Monitors are constructed using sophisticated dual-coil magnetometers for greater measurement accuracy.

When no oil sample is present, the sample coil (sensor) and the reference coil are in balance. Both coils are designed to maintain this balance in conjunction with changes in the ambient temperature.

A sample of oil containing ferromagnetic debris is placed on the sensor, thus altering the balance between the coils. The resulting 'out-of-balance' signal is amplified, filtered and displayed as a PQ[®] Index, which relates directly to the mass of the ferromagnetic debris in the sample.

On-screen instructions provide a step-by-step guide to using the monitor and a printed user manual includes practical tips gathered from users worldwide.

CALIBRATION

A standard '750' calibration block is supplied with every ANALEX^{pq} unit, to ensure consistent and reliable measurements. This block is measured during the calibration routine and the units' internal calibration data is adjusted to a PQ Index of 750. Recalibration is required only when the unit gives consistent readings on the '750' standard which are not within the +/-1% permitted range.

| SPECIFICATIONS | ANALEX ^{pq} M | ANALEX ^{pq} A |
|-------------------------|---|---|
| AC power input | 115/230V ± 10% | 115/230V ± 10% |
| Supply frequency range | 47 to 63 Hz | 47 to 63 Hz |
| Power consumption | 75 watts | 15 watts |
| Ambient temperature | 20°C - 30°C | 20°C - 30°C |
| Electrical connection | IEC 6A 3-pin connector | IEC 6A 3-pin connector |
| Serial connector | 9-pin D (male plug required) | 9-pin D (male plug required) |
| Display | 4 line 76 x 25 mm back lit alphanumeric LCD | 2 line 11 mm back lit alphanumeric LCD |
| Dimensions | 360 x 360 x 140 mm | 560 x 205 x 470 mm excl. sample stacker or sample tray |
| Weight | 5.5 kgs | 12 kgs |
| Maximum sample diameter | 53 mm aperture of measurement carousel | 53 mm aperture of measurement carousel |
| Repeatability | Typically ± 4 PQ or 1% of average reading, whichever is greater | Typically ± 4 PQ or 1% of average reading, whichever is greater |



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