RMF SYSTEMS

PURE POWER

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PORTABLE LASER PARTICLE COUNTER

Portable Laser Particle Counter

Fluid analysis is a crucial component of any oil management program. Early detection of potential problems can prevent costly repairs and downtime. The Portable Laser Particle Counter (PLPC) is the most complete way to measure the contamination level of your system. With the PLPC you have the ability to measure, analyze and document your results immediately without the need of any additional equipment. The Portable Laser Particle Counter makes it possible to detect the ISO Cleanness levels of the hydraulic media.

EACH PLPC INCLUDES:

- ► 1x Portable laser particle counter
- ► 1x 2m waste hose
- ► 1x 1,5 m pressure hose
- ► 1x waste bottle
- ► 1x external power supply including cable with European, UK and USA plug adaptors
- ► 1x usb cable (1m)
- ► 1x software/manual CD
- ► 3 x thermal printer paper

CHARACTERISTICS

The Portable Laser Particle Counter feature a twin laser system and eight channels for different particle sizes in order to guarantee high accuracy and repeatability. This compact unit is easy to handle for mobile and inline applications for systems with pressures up to 400 bar.

PORTABLE LASER PARTICLE COUNTER

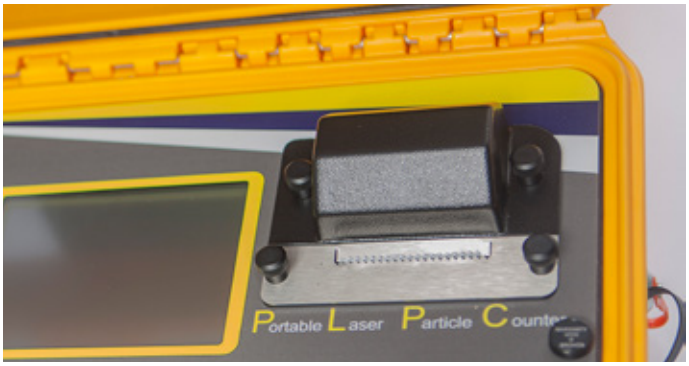
The PLPC is a fully equipped portable laser particle counter. It features a complete QWERTY keyboard, an integrated thermal printer, an internal rechargeable battery and a large LCD display.

The unit has an internal data memory and is available with the included Windows® based software package for reports and data downloads.

Features

USER FRIENDLY, FAST AND EASY OPERATION

The integrated complete QWERTY keyboard, a large LCD display and intuitive handling all lead to the easy and quick operation of the PLPC. The optimized flushing process of the PLPC is quick and effective, and allows for continuously accurate measurements.



INTEGRATED PRINTER

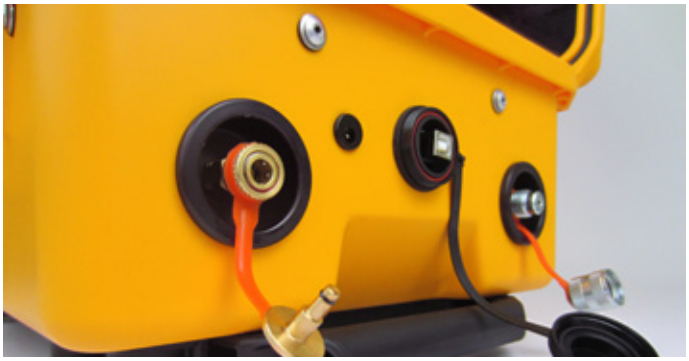
The integrated printer in the PLPC supports print-outs in the field, thus providing immediate documentation. Every printout confirms date and time of your measurement.

INDEPENDENT USE RECHARGEABLE BATTERY MODE

The integrated rechargeable battery of the PLPC allows the use of on site measurements, even in the event where access of an external power source is not available. The measuresments data is stored in the internal memory of the unit and can be transferred to a computer when required. The PLPC can run up to 100 tests before recharging is requied.

Option

Moisture results as relative humidity (RH%), temperatures in °C.



USB CONNECTION FOR CONNECTING TO A PC/LAPTOP

The measures data can be downloaded onto any PC or laptop computer via the USB connection.The PLPC software supports an easy download for data processing of the recorded measurements.

Several diagrams are available and are automatically generated to offer a very clear arrangement of all data for analyses. Data can also be easily exported to Microsoft Excel.

Features & Options

The PLPC and its accessories are supplied in a light -weight rugged industrial case.

This user friendly portable case is waterproof and resistant against all common fluids.

TWO LASERS, 100% ACCURACY

In the Portable Laser Particle Counter the fluid passes through the measuring cell and through a laser beam. The light from the laser is evaluated by a photo diode.

As the fluid passes through the laser beam the amount of light changes. These changes are directly proportional to size of the particles, and the total volume of particles. In many other particles counters only part of the measuring cell is lighted by the laser, thus only a part of the total amount of particles are registered, and the result is projected.
In contrast, the measuring cell of the PLPC is completely examined, and all particles are registered.

LASER 1

A single point high accuracy laser measures particles of contamination at 4 µm (c) and 6 µm (c) giving ultra accuracy with excellent repeatability.

LASER 2

Standard accuracy laser specifically designed for system contaminants between 6 µm (c) and 68 µm (c).

Additionally, the integrated booster cylinder allows very precisely dosage of the test fluids. This ensures a very high accuracy with excellent repeatability.

ISO 11171:1999

The PLPC is calibrated with ISO Medium Test Dust (MTD) based on the ISO 11171:1999 calibration standard.

The Portable Laser Particle Counter meets the new ISO 4406 cleanliness classification codes and provides results in the NAS 1638 and the SAE 4059 codes.

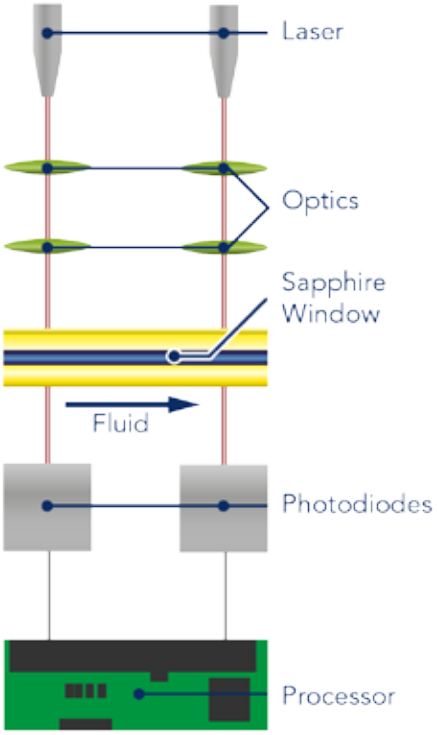
WORLDWIDE USAGE

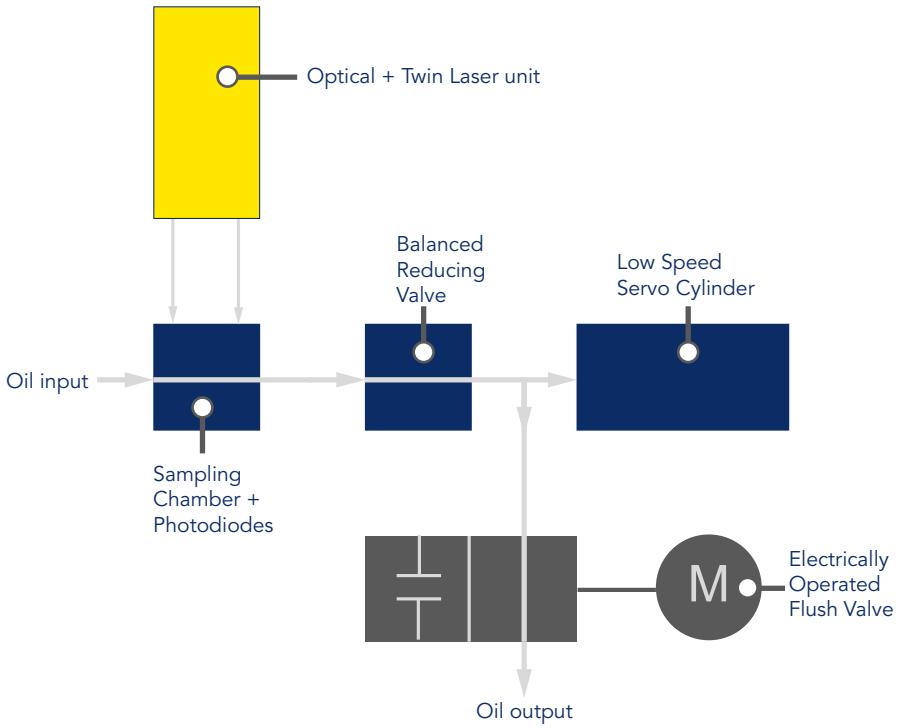
The external power supply unit provides most variable voltage ranges of 110...240 V AC. European, UK and US plug adapters ensure a worldwide applicability of the PLPC.

ALWAYS SECURE

The PLPC offers the opportunity to define different alarm levels.

It is possible to configure two separate contamination alarm levels (e.g. clean alarm level and dirt alarm level). When set, an alarm indicator is given to external devices (e.g. indicator light, offline-filter) if the alarm level is reached.





Operation process - Portable Laser Particle Counter

INTEGRATED CLOCK

An integrated rechargeable battery-operated clock provides the exact date and time which are shown on every printout.
In addition, every download of measured data is marked with date and time as well. The precise time of measurement is documented on all printouts and for all data stored.

SOFTWARE UPDATES

The USB interface ensures flexibility for future developments in terms of calibration, evaluation and output. Software updates can easily be installed onto the PLPC.

HIGH SPEED FLUSH VALVE

To ensure an accurate measurement is taken, the sensor must be cleaned before each test.
The Portable Laser Particle Counter achieves this by means of an electric operated flush valve. This valve can be opened on demand and between tests by simply depressing the flushing valve push button. The optimized design of the flush valve reduces the rinsing process to the minimum requirement, and ensures a quick restart of the next measurement.

COMPATIBILITY

The PLPC units are compatible with all mineral and petroleum based fluids. Phosphate ester (e.g. Skydrol) and water glycol compatible unit is available upon request. Please contact your Distributor or RMF Systems for details.

MOISTURE / TEMPERATURE SENSOR

The PLPC also offers the option of adding an integral moisture/temperature sensor.

This sensor measures the moisture content of the test fluids (displayed as relative humidity in RH%) and also indicates the current fluid temperature (in °C).

Please note that the moisture / temperature sensor is not compatible with Phosphate Ester (e.g. Skydrol) and water Glycol fluids.

Please contact your Distributor or RMF Systems for details.

BOTTLE SAMPLING UNIT

Highly aerated fluids may lead to inaccurate results.

Therefore a de-aeration facility has been incorporated into the optional bottle sampling unit. You will find more information about bottle sampling unit on
page 8.

Technical specification

POWER SUPPLY

- Voltage range: 110 ... 240 V, AC 12 ... 24 V DC
- European, UK and US power plug adaptors
- Pressure range: 2 ... 400 bar
- Viscosity range up to 400 cSt

CALIBRATION

- ISO Medium Test Dust (MTD) acc. to ISO 11171:1999
- Analysis range: ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12

LASER SENSORS

- High accuracy laser: 4 ... 6 µm(c)
- Standard accuracy laser: 6 ... 68 µm(c)
- Measured channels: 4, 6, 14, 21, 25, 38, 50, 68 µm(c)
- The maximum concentration is ISO 4406 Code 24 (160.000 p/ml)

HOSE CONNECTIONS

- Minimess M16x2

DATA OUTPUT

- Cumulative particle counts, as well as cleanliness classes acc. to ISO 4406 (1999) / SAE AS 4059 Rev.D (2001) and ISO 4406 (1191) / NAS 1638 (1964)

DATA STORAGE

- 600 tests

FLUID COMPATIBILITY

- Mineral Oil, Petroleum based fluids
- Phosphate Ester and Water Glycol compatible devices on request (see ordering code)

COMPUTER INTERFACE

- USB communication port

EXTERNAL ALARM

- External alarm socket with switching outputs max. 24 V DC/AC, 1 A

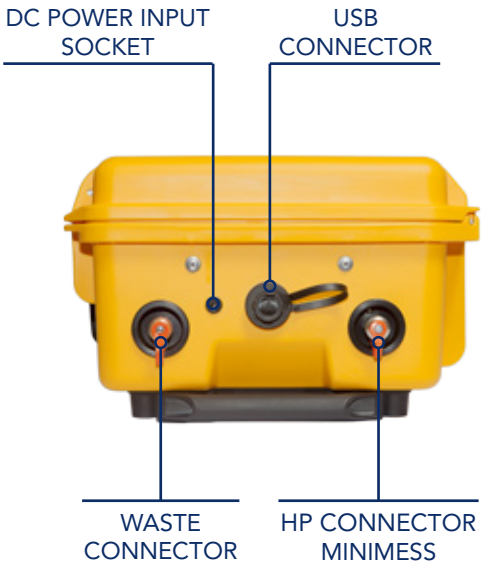
SOFTWARE

- Downloading and storage of the data with included “RMF View” software.

Dimensions


351 mm


550 mm
223 mm


DC POWER INPUT SOCKET
USB CONNECTOR
WASTE CONNECTOR
HP CONNECTOR MINIMESS

Bottle Sampling Unit

If a direct particle count on your system is not possible, the PLPC bottle sampler unit allows you to take measurement samples for analysis at a leter time.

FEATURES

- Easy to use
- De-aeration facility
- Large sample volume

CONDITIONING THE DE-AERATION FACILITY

A highly aerated fluid may lead to inaccurate results; therefore a de-aeration process has been incorporated into the bottle sampling unit.

By evacuating the air from the sampling chamber, aeration within the fluid is removed , and the fluid is properly conditioned prior to sampling.

The bottle sampler is compatible with Mineral oil and Petroleum based fluids; a phosphate ester (e.g. Skydrol) compatible unit is available on request. Please contact your Distributor or RMF Systems.

Please note that the moisture / temperature sensor does not work in combination with bottle sampler unit.

Moisture & Temperature sensor

SATURATION LEVELS

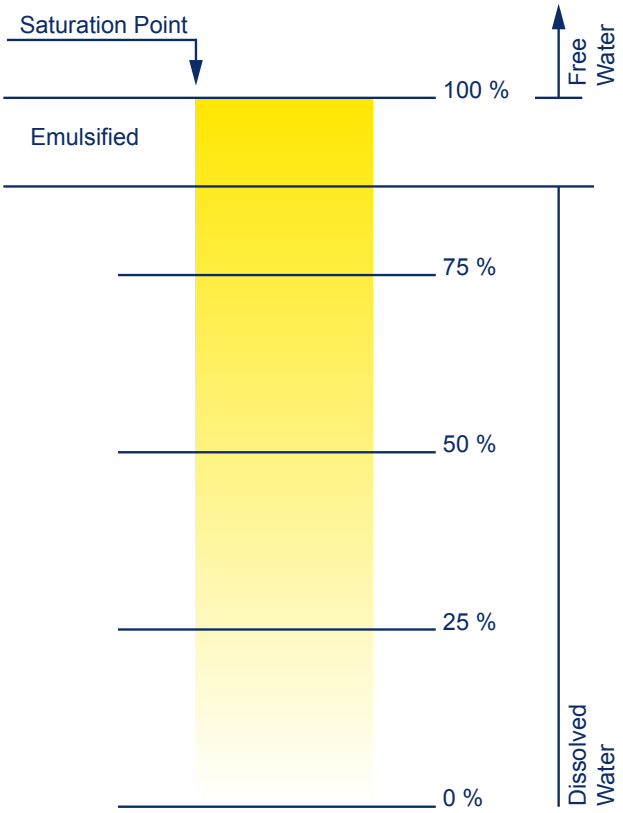
Since the effects to free (also emulsified) water are more harmful than those of dissolved water, water levels should remain always well below the saturation point.

However, even water in solutions can cause damage, and therefore every reasonable effort should be made to keep saturation levels as low as possible.

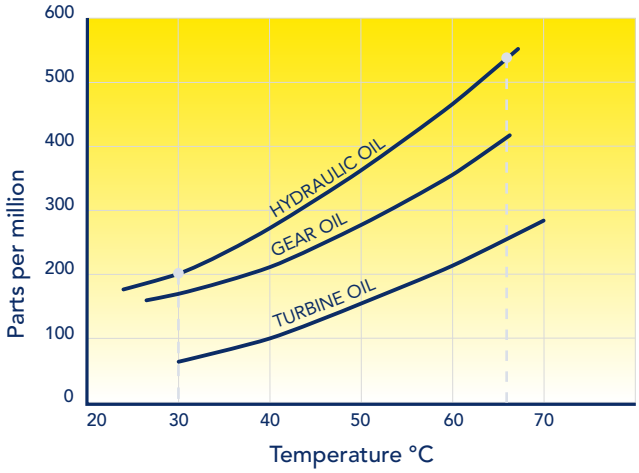
There is no such thing as too little water. As a guideline, we recomment maintaining saturation levels below 50% in all equipment.

Different oils have different saturation levels, and % saturation is the best and most practical measurement.

These results can be converted to ppm (part per million), if the oil type saturation / temperature characteristic is known.



WATER SATURATION LEVELS FOR NEW OILS



EXAMPLE

Hydraulic oil @ 30 °C = 200ppm = 100% saturation
Hydraulic oil @ 65 °C = 500ppm = 100% saturation

Ordering code

PORTABLE LASER PARTICLE COUNTER

YOUR PLPC ORDERING CODE				
TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5
PLPC			C	

TABLE 1 - BASIC CONFIGURATION	CODE
Portable Laser Particle Counter	PLPC

TABLE 2 - SENSOR OPTIONS	CODE
Moisture and temperature sensor option*	W
No sensor option	0

** Only Suitable for Mineral / Synthetic fluids (see table 3)!*

TABLE 3 - FLUID COMPATIBILITY	CODE
Mineral / Synthetic fluid compatibility	M
Offshore and selected water based fluids (Stainless steel with NBR seals)**	N
Phosphate ester and aggressive fluids (Stainless steel with FPM seals)**	S

*** Not available with Moisture and Temperature sensor (see table 2)!*

TABLE 4 - CASE OPTIONS	CODE
Standard Unit in Yellow Case	C

TABLE 5 - BOTTLE SAMPLING UNIT OPTIONS*	CODE
Without bottle sampling unit	0
110 ml Bottle Sampling Unit	A
500 ml Bottle Sampling Unit	B

**For complete ordering code see ordering code Bottle Sampling Units*

WARRANTY AND RECALIBRATION

The PLPC is guaranteed for 12 months from date of receipt and is recommended to be recalibrated every 12 months. Return to RMF Systems for recalibration.

CONTAMINATION MONITORING SENSOR (CMS)

The CMS In-line contamination monitor automatically measures and displays particulate contamination, moisture and temperature levels in various hydraulic fluids. It is designed specifically to be mounted directly to systems, where ongoing measuressment or analysis required, and where space and costs are limited.

OIL QUALITY SENSOR (OQS)

The Oil Quality Sensor puts you in control with real-time monitoring of contamination and water ingress. Expensive oil changes are now based on oil condition, not on historical schedule.

OIL QUALITY DISPLAY (OQD)

The OQD is a simple device which allows you to read the condition and temperature of the oil from the OQS without a PC.

RMF Systems offer complete fluid condition monitoring and measuring solutions ranging from individual sensors to complete systems.

CONTAMINATION MONITORING CENTER (CMC)

RMF Systems contamination monitoring center combines technology to enable sampling on low pressure hydraulic and lubrication systems where aeration can be an issue. The CMC supresses the air bubbles so they are no longer counted as particles.

OQS SAMPLE CASE

OQS Sample Case is the world's most advanced portable oil testing kit that enables accurate condition sample tests of any oil anywhere in seconds. From a small sample, advanced technology provides an instant readout of the oil's precise condition.

We're Here To Help You

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