

**KLEENOIL**

**FT**  
Filtertechnik



# FIRST FOR DIAGNOSIS

## **FS9V2: Portable oil and fuel cleanliness just got better**

Whether on-site or in the laboratory, the FS9V2 Particle Pal will provide instant cleanliness readings to allow you to fully understand the condition of your oils and fuels.

**A self contained system, complete with integral pump and controlled flow rate.**



**Portable Oil and Fuel Diagnosis**

# ENGINEERED ON AN **AWARD WINNING** REPUTATION

The FS9V2 is available in multiple configurations

## OILS



PARTICULATE



PARTICULATE AND WATER AS %RH



HIGH PRESSURE OPTIONS

## FUELS



PARTICULATE



PARTICULATE AND WATER AS PPM



PARTICULATE AND WATER AS PPM + DENSITY



**FS9V2** HAS A WIDE RANGE OF IMPROVEMENTS OVER THE FIRST GENERATION DESIGN.



### Single LCD Display showing all sensors connected

The new FS9V2 model has a single screen to display any combination of particulate, water (as %RH or genuine PPM depending on the internal sensor) or density depending on the model chosen. It can display ISO codes as a single reading e.g... 18/15/13. With options to include the 21 micron count and to show ISO, NAS or SAE cleanliness codes. Alarm levels can also be set via the LCD display.



### Diesel fuel testing

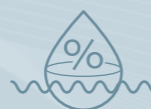
With a choice of three models for diesel fuel testing, Particle Pal is able to detect particulate levels in any diesel and oil sample.

For water analysis we've included an accurate, temperature compensated genuine Parts Per Million (PPM) sensor. Also available is a highly accurate density sensor to detect the slightest change in diesel fuels integrity, this can be useful to detect if fuel has been tampered with or substituted, for example, with water or kerosene.



### Laser counter

Precise laser for accurate, repeatable and consistent results.



### Water sensors

A water sensor can be included to provide an accurate reading of moisture content in the fluid. This can be shown as %RH for oils and PPM for diesel fuels.



### Improved fluid flow, pump feature set

We have adopted a high pressure internal gear pump throughout the range. The pump is protected via current draw/overload and temperature sensor/cut out. There is also a priming feature to evacuate air bubbles. All units can handle diesel through to oils up to 420 cSt viscosity. Common input can accept pressurised live feeds up to 350 Bar via a HP adaptor.



### Trending software

All versions are supplied with a quick start guide along with a memory stick which contains the data logging template, graphs, ROC trending software and user manual. This powerful trending software shows real time cleanliness data in a graphical format transferred live to a connected PC.



### Internal memory

We've included built in memory to capture results and store data, which can be easily transferred to a USB stick. Results show all sensors connected in a tabular and graphical format.



### Case design

Lightweight and heavy-duty, the outer casing is ideal for working in the field.



### Battery life

Complete with a rechargeable battery, giving 6 hours of continual use, fluid dependent, making Particle Pal perfect for field use.



## FIRST FOR DIAGNOSIS

**Prevention is the best cure.** The FS9V2 family of products allows you to identify problem oils and fuels early.



THE PARTICLE PAL **FS9V2** FAMILY OF PRODUCTS ARE SUITABLE FOR A **WIDE RANGE OF APPLICATIONS.**

Hydraulic, Lubrication and modern Diesel fuel systems knowing the particulate cleanliness and water content data can prevent serious system failures and component damage. By testing oil and diesel fuel cleanliness in real time, the necessary protection can be put in place to protect sensitive components.



PLANT HIRE



INJECTION MOULDING



DATA CENTRE FUEL TESTING



MANUFACTURING



AUTOMOTIVE INDUSTRY

## SPECIFICATION TABLE

FS9V2	FS9V2 -HP	FS9V2 -RH	FS9V2 -RH-HP	FS9V2 -PPM	FS9V2 -PPM -DEN
Particle Counting for oil and diesel.	Particle Counting for oil includes high pressure reducing valve for connection to a high pressure system (max 350 bar).	Particle Counting for oil with water sensor (%RH).	Particle Counting for oil with water sensor (%RH) includes high pressure reducing valve for connection to a high pressure system (max 350 bar).	Particle Counting for diesel with a water sensor displaying PPM.	Particle Counting for diesel with a water sensor displaying PPM and density sensor (kg/l).

### FLUID COMPATIBILITY

Mineral Oils	✓	✓	✓	✓	✗	✗
Organic Oils	✓	✓	✓	✓	✗	✗
Synthetic Oils	✓	✓	✓	✓	✗	✗
Diesel Fuel	✓	✗	✗	✗	✓	✓

### DISPLAYED INFORMATION

ISO 4406, SAE AS4059 & NAS 1638	✓	✓	✓	✓	✓	✓
Relative Humidity (RH%)	✗	✗	✓	✓	✗	✗
Water Parts Per Million (PPM)	✗	✗	✗	✗	✓	✓
Density (kg/l)	✗	✗	✗	✗	✗	✓

### MODES OF OPERATION

Bottle Sampling	✓	✓	✓	✓	✓	✓
Tank Sampling	✓	✓	✓	✓	✓	✓
High Pressure live system connection (up to 350 bar)	✗	✓	✗	✓	✗	✗

### MEMORY

Internal Memory 512 lines of data (8.5 hours)	✓	✓	✓	✓	✓	✓
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### TRENDING/SOFTWARE

Live trending via ROC software. All data can be exported to a .csv file.	✓	✓	✓	✓	✓	✓
USB Data Transfer	✓	✓	✓	✓	✓	✓

Also available is the Particle Pal Life. Monitoring Particulate, Water and Remaining Life of Oils. Over 500 oils profiled, sophisticated monitoring and off-site backup of all data.



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# FS9V2-RH & FS9V2-RH-HP

## TECHNICAL SPECIFICATION

Model	FS9V2-RH	FS9V2-RH-HP
Case	HPX® high performance resin construction with press & pull latches and durable soft-grip handles.	
Dimensions	411 mm (W) x 322 mm (D) x 170 mm (H)	
Weight	6.85 kg	
Nominal Battery Voltage	15.0 VDC	
Charge Voltage	16.8 VDC	
Capacity	5.2 Ah	
Charge time	2 hours (80%) 5 hours (100%)	
Modes of operation	Tank sampling Bottle sampling (200ml minimum sample bottle recommended)	
Cleanliness standards	ISO 4406, NAS 1638 and SAE AS4059 and % RH of water sample	
Pump type	Gear pump	
Duty cycle	Continuous	
Datalogging	Logging to internal memory transferred to USB stick as .csv file	
Viscosity Range	1-320 cSt	
Fluid compatibility	Oil (hydraulic, lubrication, mineral and synthetic)	Oil (hydraulic, lubrication, mineral and synthetic)
Fluid temperature	-10...55°C (oils)	
Connections	1604 minimes test points, with 0.6 long 8mm tubing	
Pressure	2.5 bar max	Up to 350 bar
Environmental:	Lid closed: IP67 Lid open: IP54	
Maximum humidity	97% relative humidity, non condensing	
Supplied	0.6m suction tube fitted with 270 micron strainer (8mm OD) 0.6m discharge tube (8mm OD) Battery charger (UK 3 pin plug) PC software USB data transfer cable Manual	
Certification	Factory calibration certificate CE declaration	
Verification frequency	12 months recommended	
PC requirements	Universal either Mac or PC, spreadsheet software (MS Excel)	

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