

# MDS 4500, the diagnostic system cylinder-by-cylinder

Health check for your engine

## Designed for

- Easy installation
- Maintenance-free use
- Remote access to data
- Retrofit systems
- Real-time monitoring
- Cylinder-by-cylinder diagnostics
- Early detection of engine failure
- Extension of engine lifespan



MDS 4500 can protect your engine... from this...

## The Engine Diagnostic Box

Containing an industrial PC with a special input card which has been designed to accept sensor signals directly from the speed sensors, the box presents itself as a robust, compact and easy installable item. The box also contains a binary I/O output card that can be assigned alarm functionality in order to deliver status information and alerts on the engine to be monitored. Possibilities to drive a local display or to deliver failure information through a GSM module to a remote control centre are features that can be added upon request. The detailed information is stored locally for later access by authorized specialists. Failure indication is based on an agreed list of detection criteria which can be displayed as a matrix of cylinder and specific defects. A green sign means “no problem”, yellow is highlighting a condition that needs some attention, whilst a red sign indicates a severe problem which justifies stopping the engine.

## Results

### Cylinder specific information such as:

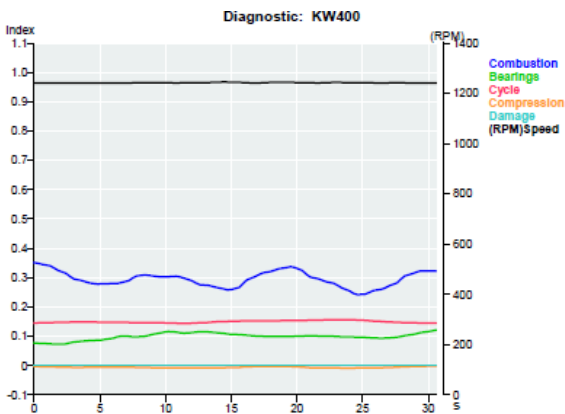
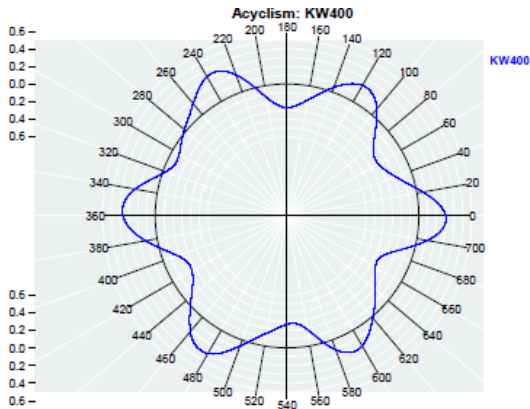
- Combustion / Compression
- Excessive fuel consumption, based on the consistency of the power contribution of the cylinders
- Cylinder specific injection problems (i.e. injectors)
- Cylinder specific low compression (i.e. piston rings)

## Software capabilities

The software analyses the condition of the engine and delivers information about combustion, compression, bearing condition, mechanical damage and cyclic events. It is able to show which of the cylinders are affected by defects and how this affects the power output and efficiency of the engine. In the case where speed sensors at both ends of the engine it is possible to trace and deliver instantaneous torque information from the torsional displacement. The software package runs under Windows and can be easily installed to every PC with a fast-enough processor speed.

- Torque measurement both static and dynamic
- Internal friction as a general condition of the engine, massive changes as an indication for up-coming major damages
- Real-time monitoring with regard of rapid friction changes
- Monitoring of auxiliary components such as TC

✓ **Healthy engine**

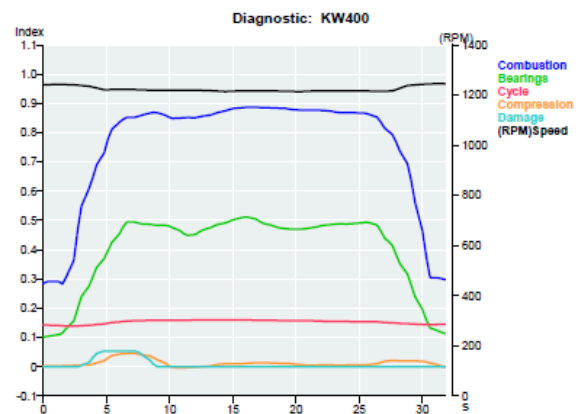
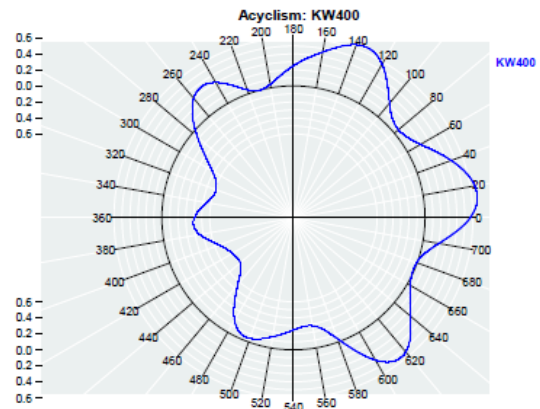


**6 Cylinder Volvo Diesel engine**

Speed: 1250 min-1  
Torque: 297 Nm  
Power: 39 kW

Currently running under normal condition. Combustion, bearing load, compression and a-cyclic behaviour of the mechanical components are all in normal range.

✗ **Problem engine**



**6 Cylinder Volvo Diesel engine**

Speed: 1250 min-1  
Torque: 297 Nm  
Power: 39 kW

Dramatically distorted combustion indication, as a consequence the bearing load is also effected, compression and a-cyclic behaviour of the mechanical components on the other hand are still in normal range.

**MDS 4500 packages**

**1. System checked by an expert**

Based on our PC program an expert will analyze your engine and deliver information about the condition and behavior of your motor with an informative and clear report.

**2. Service unit**

The engines of a project (fleet etc.) are prepared so that the system can be connected. Over time a database of stored information about the engines provides an excellent tool for monitoring health and maintenance of a vehicle fleet.

**3. Embedded diagnostic system MDS 4500**

Embedded systems monitor engines during normal operational use. They allow a driver to react quickly to alerts based on precise information and warning signals. The results can be delivered in various ways – depending on the monitoring and maintenance concept of the user.

## Swiss know-how and quality matched to your demands

JAQUET manufactures speed sensors in quantities from 1 to 200,000 per project per year. These typically customer specific solutions add value through being matched to individual applications.

**Since 1889, a spirit of excellence complementing tradition and innovation.**



### Automotive turbochargers

Turbocharger for trucks, passenger cars, construction equipment

- Speed of VG/VNT turbochargers
- Gearbox shaft and retarder speed



### Railway systems

- Optimum traction control
- WSP (wheel slide protection) systems
- Speed information for automatic train control



### Power generation

Gas, hydro, steam and wind turbines

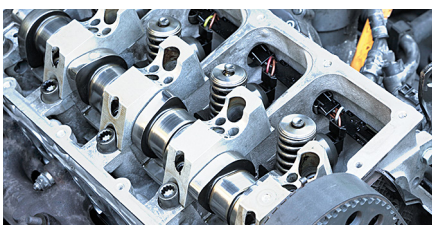
- Overspeed protection
- Speed measurement and control



### Hydraulics

Agricultural machinery, construction and mining equipment, cranes, ROV – remote operated vehicles

- Motors and pumps, flowrate measurement
- Position measurement, traction synchronization



### Diesel and gas engines

Large diesel and gas engines in marine, rail, off-road applications and power production.

- Cam and crank shaft for dynamic position
- Turbocharger speed, engine diagnostics

#### Quality systems

ISO TS 16949  
ISO 9001  
AS 9100  
IRIS



### Worldwide and local to you through

JAQUET Technology sales offices, subsidiaries and distributors.