



ALPHABOX – the smart diagnostic system for engines powered by VIB360™

ALPHABOX only requires the input signal from a crankshaft speed sensor to analyze torsional vibrations as an early indication of possible mechanical failure in your engine.

Designed for

- Quick return on your investment
- A cost efficient solution
- Easy to install and commission
- Maintenance-free use
- Remote and local access to data
- Ideally suited for retrofit engines
- Continuous monitoring and reporting
- Cylinder-by-cylinder diagnostics
- Early detection of engine problems
- Extension of engine lifespan
- Clear and concise report
- Entire fleet installation



No more unexpected breakdowns

Transport and logistic companies using diesel engine fleets are highly dependent on reliable and on timely delivery of the goods. Breakdowns of trains, vessels or trucks can lead to significant economic losses. JAQUET can help fleet owners to prevent such economic losses during its operation, by monitoring the engine with an ALPHABOX diagnostic system. The system is able to detect engine problems well in advance and gives you time to plan a maintenance cycle to prevent mechanical breakdowns.

Extended engine lifetime and quick return on your investment

ALPHABOX is a cost-effective engine diagnostic system with powerful functionality. It is easy to retrofit to combustion engines, providing a complete picture of the engine health including the effects of the whole power train. The ALPHABOX is based on analysis of the acoustical dynamic of the crankshaft. The system helps fleet owners to optimize maintenance cycles, extend engine life, avoid expensive breakdowns and reduce operational and maintenance costs.

Easy to install and put into operation

Only a single speed sensor is necessary to obtain the general engine health status. For a detailed cylinder-specific health analysis, two speed sensors are required, one on the crankshaft and one on the camshaft. The built in webserver allows easy configuration by a standard web browser (no software installation on your PC or other devices required).



Clear diagnostic reports

Major engine and power train parameters (combustion, compression, injection, bearings, ...) are indicated in green/yellow/red colors for clear interpretation. Green means "all ok", yellow highlights a condition that might need a follow-up in the next maintenance cycle and red indicates a severe problem which requires immediate intervention.

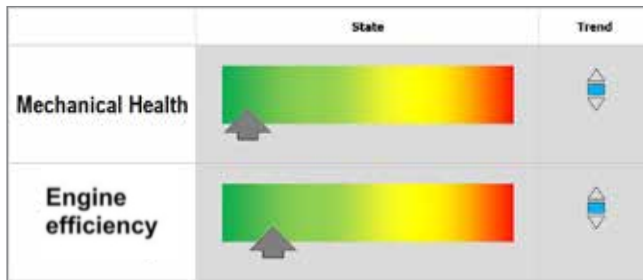
A modular concept

The ALPHABOX can be configured with various hardware modules (GSM and GPS, memory extension, I/O modules, bus connections etc.) to make it easy to integrate the diagnostic unit in an existing environment.

Features and Benefits

Product features	Customer benefits
Quick return of initial investment	Extended and optimized fleet lifetime Significant cost reduction by better targeted maintenance
Easy to install	Ideally suited for retrofit engines Customer can use the existing maintenance team Suitable for continuous or periodic measurement
Versatile usage	Used for inline, V-type and radial engines 2 stroke or 4 stroke engines Diesel or gasoline engines
Online data access	On-demand diagnostic results from control room possible Early detection of engine failures Extension of engine lifespan
Detailed diagnostics including cylinder-specific information	Easy for your maintenance team to track down failures You only fix what is broken Customer can plan maintenance cycles
Maintenance free	Once it runs – it runs indefinitely

✓ Healthy engine

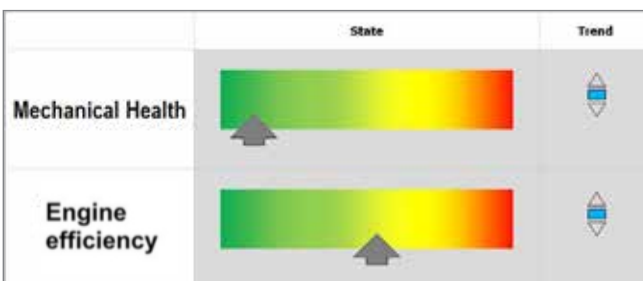


Color	Indicator	Alarm	Version	Comments	1	2	3	4	5	6
Green	Compression	OK	1.04		Green	Green	Green	Green	Green	Green
Green	Injection	OK	1.07		Green	Green	Green	Green	Green	Green
Green	Bearing	OK	1.09		Green	Green	Green	Green	Green	Green
Green	Combustion	OK	1.00		Green	Green	Green	Green	Green	Green
Green	Cam&Pumps	OK	1.07		Green	Green	Green	Green	Green	Green
Green	Friction	OK	1.00		Green	Green	Green	Green	Green	Green
Green	Irregularity	OK	1.00		Green	Green	Green	Green	Green	Green

6 Cylinder Volvo Diesel engine

This engine shows all indicators in the normal range.

✗ Problem engine



Color	Indicator	Alarm	Version	Comments	1	2	3	4	5	6
Green	Compression	OK	1.01		Green	Green	Green	Green	Green	Green
Red	Injection	ALARM	1.07		Green	Green	Green	Yellow	Red	Yellow
Green	Bearing	OK	1.07		Green	Green	Green	Green	Green	Green
Green	Combustion	OK	1.06		Green	Green	Green	Green	Green	Green
Green	Cam&Pumps	OK	1.07		Green	Green	Green	Green	Green	Green
Green	Friction	OK	1.00		Green	Green	Green	Green	Green	Green
Green	Irregularity	OK	1.00		Green	Green	Green	Green	Green	Green

6 Cylinder Volvo Diesel engine

This engine shows a dramatic injection issue. As a consequence, the bearing load is also affected. Compression is still within the normal range.

Technical data

Supply voltage range:	Nominal : 24 VDC Range: 17 to 33 VDC (according to EN50155)
Maximum Power:	20 W
Communication interfaces:	CAN 2.0B, Ethernet 10/100 Mbit/s, IEEE 802.3, USB
Operating system:	Linux
Number of digital input channels:	8
Number of digital output channels:	7
Number of speed sensor inputs:	4
Operating temperature:	-40°C to +70 °C
Environment:	Fully compliant with RoHS and REACH
Protection rating:	IP20
Certificates:	CE, FCC, KCC, cULus, UL HAZLOC Class I Division 2 (Zone 2), Ex EU 94/9/EC Zone 2, IECEx Zone 2 Fully compliant with RoHS and REACH, EN50155
Max number of engines to be measured with one box:	2

Swiss know-how and quality matched to your demands

JAQUET manufactures speed sensors in quantities from 1 to millions 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

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