



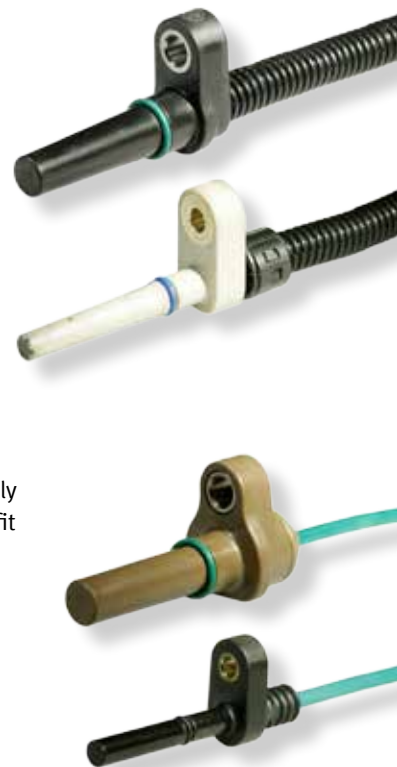
Speed sensors for automotive turbochargers

Boost turbocharger benefits

Increase and optimize turbochargers' efficiency and power performance.
Protect from catastrophic failure.
Synchronize performance with engines.

JAQUET speed sensors are designed for the extremely demanding turbocharging operating conditions of high rpm's, temperatures, vibration and electrical interference.

JAQUET speed sensors are attractively priced and configured for your roadmap to provide for increased performance, fuel efficiency and drivability. With over 7 million JAQUET turbocharger speed sensors currently in use – and 10 years of application knowledge - we are the ideal partner to provide you with a solution to fit your needs.





The challenge and opportunity

Improved fuel economy and reduction of engine emissions are the major factors which regulate today's automotive industry. Turbocharging has become the key enabling technology for not only meeting these regulatory standards but also for delivering the desired large engine performance from a smaller 'downsized' engine. To maximize performance of the turbocharger (and the engine) it is essential to accurately measure the rotational speed of the turbocharger's compressor wheel or axle and transfer this information to the engine control unit.

Why measure turbocharger speed?

Because it allows for:

- Optimised use of the entire compressor map, meaning that it
 - can run closer to the surge line for an increased low end torque
 - allows higher peak power through efficient control of maximum speed
 - enables safe use and protection of the turbo for brake mode application
- Faster adaptation of the turbocharger at changed engine conditions. Thanks to a speed sensor a smaller turbocharger can be used for the same efficiency
- Automatic adaptation of the turbocharger at different altitude levels since rpm is used as measuring value instead of pressure
- Synchronisation of bi-turbo configuration with V-Engines
- Various and optimized transition points between multi-compressor environments e.g.
 - dual turbo configuration
 - combination of compressor / turbocharger

Why choose JAQUET?

JAQUET is a Swiss family business built upon 125 years of experience and knowledge of fine engineering. We are an innovative global technology leader and ISO/TS 16949 accredited supplier of automotive speed sensing solutions. Over the last 10 years we have become worldwide experts in the measurement of turbocharger speed - having the most advanced solutions on the market.

JAQUET designs and manufactures the largest range of speed sensors available today for passenger car and truck segments. Most of the key turbocharger manufacturers rely on JAQUET speed sensors for their success. With over 7 million sensors currently in use, we are the ideal partner to provide custom quality solutions, as well as a range of existing off-the-shelf products. We provide technical excellence, understanding and flexibility to design and manufacture low and high volume solutions which meet the needs of your specific application.

3 different technology platforms with unlimited customized configuration

Artemis - Variable Reluctance Speed Sensors

- Used with combination of a ferromagnetic target, e.g. a flat on the turbo shaft.
- Potted PPS housing sensor up to 180° C
- Over-molded epoxy housing up to 220° C
- Potted steel housing up to 260° C
- Cable assembly up to 270° C

Hermes - Passive Blade Pass Sensor

- Speed sensor is mounted into the compressor cover and detects the pass of the aluminum compressor blades.
- Compressor blades are detected by a special coil system that detects eddy currents present in the blades. These are induced as the blades pass the permanent magnetic field of the sensor.
- Over-molded thermoplast or thermoset housings up to 230° C
- Cable assembly up to 270° C
- Electronics in the connector module up to 125° C

Apollo – Active Blade Pass Sensor

- Speed sensor is mounted into the compressor cover and an oscillating system detects the pass of the compressor blades – either aluminum or titanium – when they pass in front of the sensor tip.
- Over-molded thermoplast housing up to 230° C
- High temp ASIC electronics in the connector module up to 200° C
- Cable assembly up to 270° C

OR

- High temp ASIC electronics integrated in the sensor shaft up to 200° C
- Cable assembly up to 270° C

AND

- Sensor diagnostics and temperature information
- Configurable for different blade division

TurboTach for R&D

TurboTach is a lab application set with a sensor, a cable and a special indicator. Made to provide a direct speed indication, a proportional 4 .. 20 mA signal and an overspeed protection function for the use in your turbocharger R&D lab. Please see the TurboTach system brochure for more information.



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 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.