



JAQUET TurboTach System - from the leading supplier of turbocharger speed sensors.

Features

The TurboTach system is specifically designed for in-house testing of turbochargers.

The system combines proven speed sensors compatible with the popular turbo brands with a 5 digit auto ranging digital tachometer – at 100 krpm the indication changes from 99999 to 100.0. The tacho is scaleable for any compressor wheel or main shaft measurement and also features a fast analogue output proportional to speed along with a limit switch. The system comprises of a speed sensor, digital tacho, interconnection cables and PCT400 programming cable. Power is derived from 10...36 VDC. Sensor supply of 5 VDC is provided by the tacho. For detailed technical data on the tacho please refer to the JAQUET TurboTach specification.

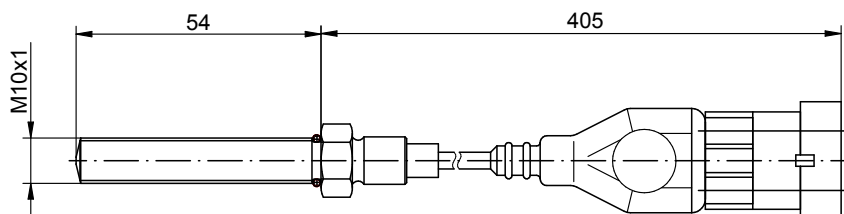
How to order the TurboTach system:

Where a speed sensor is already installed, please specify the turbo model number. Where no speed sensor exists, we provide a sensor for installation in the compressor wheel cover. A dimension drawing of the standard TurboTach sensor is shown overleaf. The PC software that comes free with each unit enables you to configure the tacho for any turbo-charger and to display instrument status.

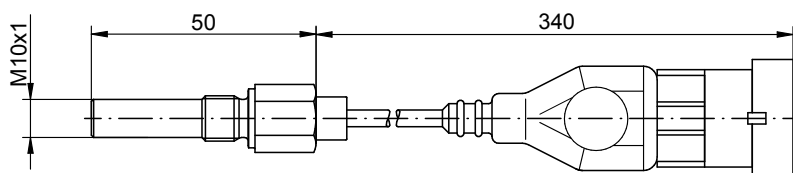
TurboTach Speed Sensors

Analog output sensors

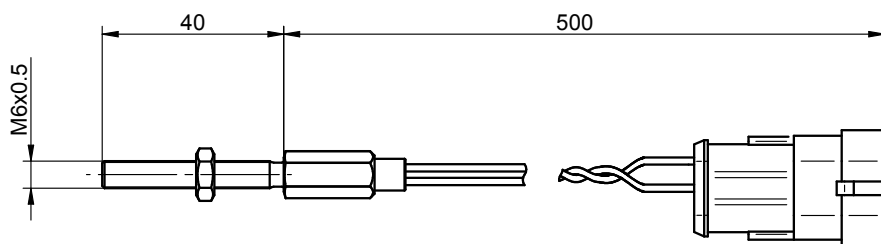
Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
304Z-05348	DSE 1010.02 PHZ S2	VR sensor	AMP Connector Series 1.5, 3 pins	Frequency & amplitude prop. to speed Sine wave output, 850 Ohm, 135 mH	①



Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
304Z-05019	DSE 1010.04 PHZ	VR sensor	AMP Connector Series 1.5, 3 pins	Frequency & amplitude prop. to speed Sine wave output, 850 Ohm, 135 mH	①

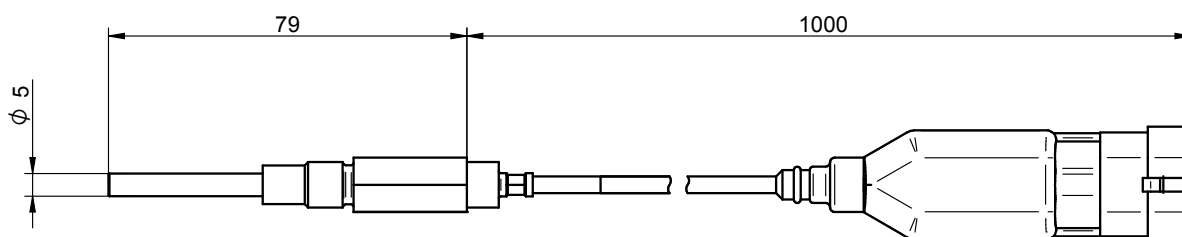


Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
304Z-05405	DSE 0603.02 THZ	Hermes Blade counting	AMP Connector Series 1.5, 3 pins	Frequency & amplitude prop. to speed Sine wave output, 320 Ohm, 10.1 mH	①



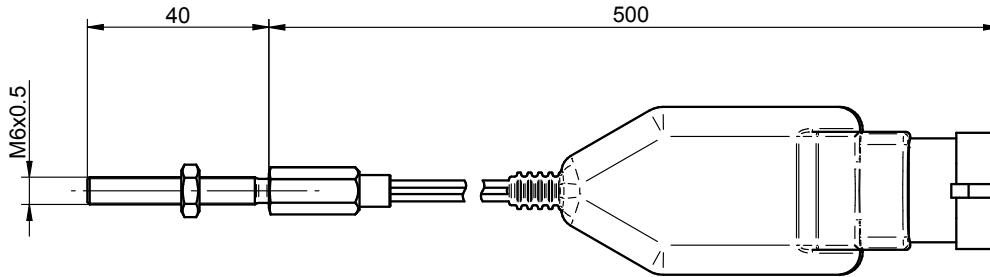
Amplified square wave output (5 V DC sensor supply)

Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
304Z-05704	DSE 0505.21 PHV	VR sensor	AMP Connector Series 1.5, 3 pins	Fixed-amplitude square wave signal with a frequency proportional to speed	①

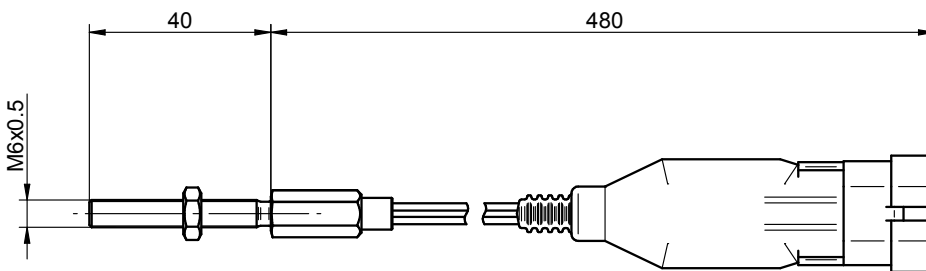


Amplified square wave output (5 V DC sensor supply)

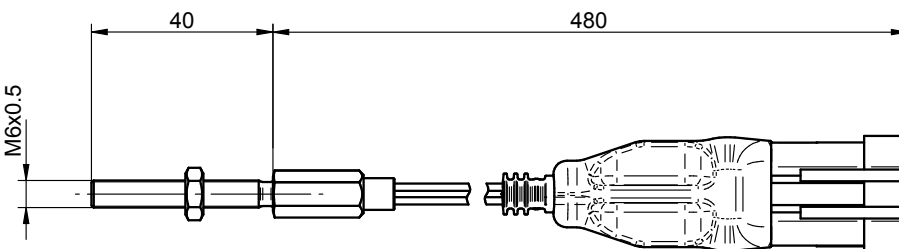
Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
304Z-05639	DSE 0603.02 T1HV	Hermes Blade counting	AMP Connector Series 1.5, 3 pins	Fixed-amplitude square wave signal with a duration of 110 µs and frequency prop. to speed	⑧



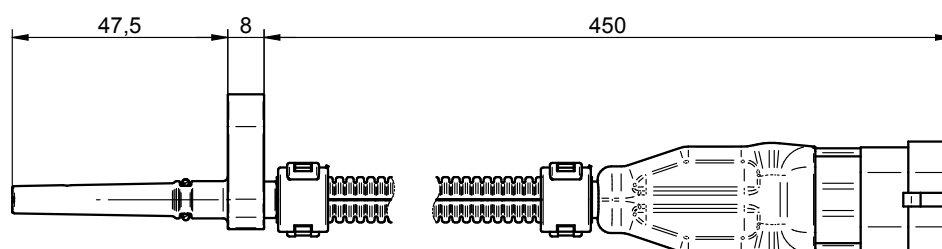
Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
304Z-05932	DSE 0603.02 T3HV	Hermes Blade counting	AMP Connector Series 1.5, 3 pins	Fixed-amplitude square wave signal with a frequency proportional to speed and 50% duty cyclespeed	⑧



Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
3042608741	DSE 0603.02 T5HV	Hermes Blade counting	AMP Connector Series 1.5, 3 pins	Fixed-amplitude square wave signal with a frequency proportional to speed and 50% duty cycle	②



Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
3042608956	DSE 0805.02 T1HV	Hermes Blade counting	AMP Connector Series 1.5, 3 pins	Fixed-amplitude square wave signal with a frequency prop. to speed and 50% duty cycle	⑧



TurboTach Tachometer

Single channel tachometers, with or without display; 0/4...20mA converter & speed switch in one; Relay & open collector frequency output.

Features

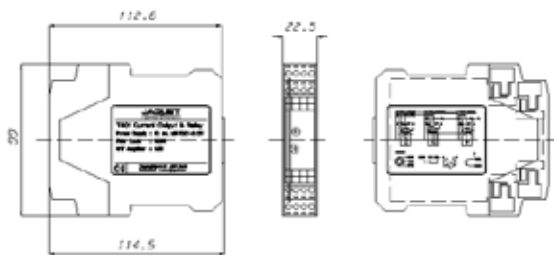
- 2 set points
- Adaptive trigger
- Fast response
- 2 / 3 wire sensor monitoring
- Plug-able terminals
- Accuracy 0.05% for set points
- 0.5% for analogue signals
- Configuration and status viewing via PC software
- ABS, Lloyds and EN50155 approval
- Speed and direction provided when used with JAUQUET DSY sensors

Functionality

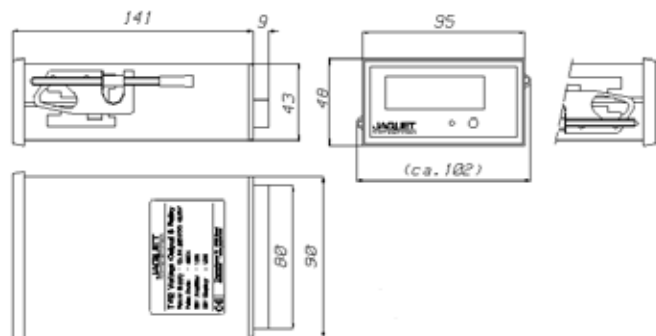
Frequency inputs	1; 0.01 Hz...35 kHz	Relays	1 change-over
Binary inputs	1 for parameter selection or relay control	Open collector outputs	1; isolated for frequency out
Parameter sets	2	Sensor supply	(5 VDC sensor supply)
Limits	2	Configuration	via RS232 and supplied software
Analog outputs	1	Voltage	10...36 VDC supply

Dimensions

T401/402



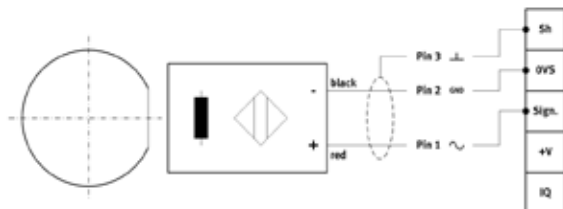
T411/412



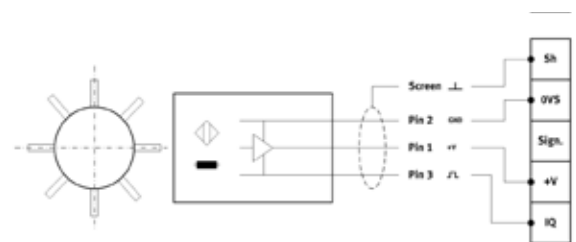
Part number	Model no.	Description
383Z-05671	T401.03	4...20mA output
383Z-05672	T402.03	2..10 V output

Part number	Model no.	Description	Display/status viewing
383Z-05595	T411.03	display; 4..20 mA output	5 digit LCD
383Z-05596	T412.03	display; 2..10 V output	5 digit LCD

Sensor - tachometer connection



Analog output sensors
(with or without screen)



Amplified square wave output
(with or without screen)

TurboTach cable harnesses

Part number	Description
304F-73569	Cable with AMP SuperSeal connector, 5 m
304F-73570	Cable with AMP SuperSeal connector, 10 m
8402609637	Cable with AMP SuperSeal connector, 15 m

Speed formula

$$M_{rpm} = \frac{p}{i \cdot 60} \quad M_{Hz} = \frac{p}{i}$$

M = Machine factor
p = Nr. of teeth
i = Sensor factor

APOLLO the advanced, cost-effective speed sensor for fast passenger car turbochargers



Downsizing of engines and minimizing the fuel consumption is the challenge of today's engine development. Whilst turbochargers are used in nearly 100% of all new developments of diesel engines, the turbocharger for petrol driven cars is still considered a premium feature. However the trend shows that the next generation of petrol engines will also profit from the extra boost of turbocharging. The benefits of an accurate, fast and reliable speed measurement for turbochargers are well known in diesel engine markets – and now acknowledged by petrol engine markets as well.

Speed measurement – more efficiency and protection

The key advantage of speed measurement is the regulation of the airflow in the engine which can be handled much faster and with more accuracy – enabling a better use of the given compressor map of a turbocharger. It is also the key element for an effective protection of the turbocharger against any catastrophic failures caused by overspeed conditions. Adjustments needed by the air density changes of different altitudes also benefit from speed measurement – as well as adaptive support of the quick changing driving conditions in today's traffic.

Speed as a source for diagnostic information

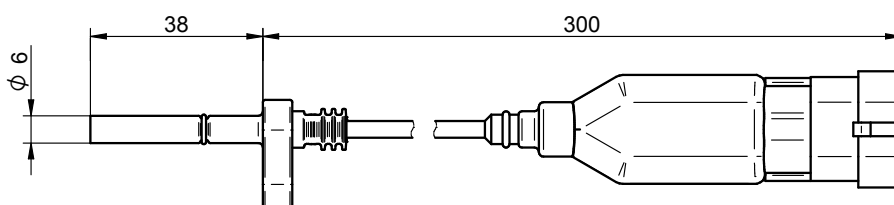
The prospect of utilizing speed measurement to gain diagnostic information is an exciting thought. The idea is based on gathering information on the turbocharger acceleration pattern caused by the engine exhaust boosts. Acceleration of the turbo takes place every time when a cylinder has fired and exhaust gases are pushed out. Between boosts a fast passenger car turbocharger easily spins 20 to 40 revolutions. This is enough time for a speed sensor to detect any missing or reduced acceleration impulse of the engine – therefore providing direct information on the engine performance itself.

APOLLO – specifically designed for passenger car market – with advanced capability with less cost.

Many engine designers have opted for the benefits of turbocharger speed measurement in both diesel and petrol driven units. The only challenges for the passenger car market, so far, have been the size of a speed sensor and its cost. Drawn from experience of being the key supplier for most of the turbocharger manufacturers and having over 6 million turbocharger sensors in traffic, JAUQUET's new APOLLO turbocharger sensor is specifically designed for the personal car market. It eliminates both of the obstacles – the sensor is extremely small, easily adaptable and economically priced.

APOLLO means more capability with less cost. The advanced features are based on high temperature ASIC, developed by JAUQUET for increasing underhood temperatures. The ASIC is built directly in the sensor body and provides performances and features unseen in this category of sensor elements; diagnostic functions, configuration capabilities, on board frequency division and a possibility to detect both aluminium and titanium blades. All of this is combined with a mechanical design which allows an easy assembly in the turbocharger. Depending on the specific application requirements and preference of a customer, an integral high temperature connector or a short cable with a standard connector can be selected.

Part number	Description	Sensor Technology	Connection	Electrical	Sensor factor
3812610896	DSH 0601.00 PHV	Apollo Blade counting	AMP Connector Series 1.5, 3 pins	Fixed-amplitude square wave signal with a duration of 110 µs and frequency prop. to speed	⑧



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.