USER MANUAL
AVL DITEST AUX 2000



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FUTURE SOLUTIONS FOR TODAY

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Warning and Safety Notices

This device manual contains important **warning and safety notices** that must be observed by the user.

The product is intended only for the highly specific use described in the user manual. The most important prerequisites and safety measures for the use and operation of the product are also described to ensure faultless operation.

No warranty can be given and no liability is assumed for applications beyond the described use, irrespective of observance of the necessary prerequisites and safety measures.

The product may only be used and operated by personnel who, based on their qualifications, are capable of adhering to the necessary safety measures during use and operation. Only accessories and consumables supplied by AVL DiTEST or approved by AVL DiTEST may be used. The measurement results obtained from the product in question depend not only on correct functioning of the product, but also on a series of general conditions. The results delivered by the product must therefore be evaluated by a specialist (e.g. plausibility check) before further measures are taken on the basis of a delivered measurement.

Settings and maintenance work on open devices while still live may only be performed by trained specialists who are aware of the associated danger.

The product may only be repaired in the factory of origin or by specialists specifically trained to perform such repair.

When using the product, it must be ensured by a specialist that the test object or test system is not brought into any operational state that could result in damage to goods or endangerment of people.

Summarized Safety Notices



DANGER

Danger to life by electric potential on vehicles with high voltage systems

Deadly high voltages are present on the HV energy store (HV battery) and on parts connected to it! Make sure no-one can come into contact with the connections on the HV battery, connecting cables of the HV battery or other parts under high voltage!



WARNING

Danger to life by electric potential on the ignition system

The ignition system carries a deadly high voltage!
Do not touch the ignition system while the motor is running!



WARNING

Danger to life by electric potential on vehicles with Xenon light

A lighting system that uses a xenon light carries a deadly high voltage!
Do not touch the components of the xenon light while the lighting is turned on!



WARNING

Danger from harmful or irritating substances

When performing measurements on the running motor in closed rooms (workshops, test halls, etc.), extract the vehicle exhaust gases and ventilate the rooms thoroughly!



WARNING

Risk of burns from hot parts

Measurements must be performed at normal motor operating temperature or according to the test specification! Do not touch hot parts such as the motor, motor components or any of the entire exhaust system! Use cooling fans if necessary!



WARNING

Risk of injury from rotating parts

Only ever perform work in the engine bay while the motor is not running and the ignition is turned off!
Do not touch any rotating parts such as alternator, radiator fan or their drives (e.g. drive belts)!
Make sure measurement cables are laid safely while the motor is running!



WARNING

Risk of injury from unsecured vehicle

Engage the handbrake or shift the gearshift to P (on automatics)!
Adequately secure the vehicle against rolling!



WARNING

Risk of explosions due to pyrotechnical setups and restraint systems

Testing and assembly work may only be performed by trained personnel!
Never test the igniter with a multimeter!
Only perform system tests with approved testing equipment!
Disconnect the battery when working on the airbag system!
When reconnecting the battery, the ignition must be turned off and there must be no person inside the vehicle.
Always store the airbag unit with the discharge side facing upwards or according to the storage specifications!
Never leave the airbag unit lying around unattended!
Protect the airbag unit against flying sparks, open fire and temperatures above 100°C!
Do not transport the airbag unit in the passenger space!
Do not allow the airbag unit to come into contact with oil, grease or cleaning agents!
An airbag unit that has been dropped from a height greater than 0.5 m must be renewed!
Dispose of untriggered airbag units!
Do not open or repair the airbag unit!

NOTICE

When maintaining the cut-off speed of diesel engines, observe the applicable manufacturer's specifications!

NOTICE

Always turn off the ignition before connecting or disconnecting the OBD connector or the various AVL DiTEST vehicle adapters!

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1 General

1.1 General Description

The AVL DiTEST AUX 2000 measures oil coolant temperature and speed. It is powered by an external desktop power supply or through the AVL DiTEST Gas 1000.

AVL DiTEST AUX 2000 connects to a PC via USB cable. Alternatively, it can be connected over a wireless Bluetooth connection.

The module features inputs for the following auxiliary variables:

- Temperature sensor (oil coolant measurement)
- Combo sensor (speed measurement)
- Connection for AVL DiSpeed 492 (speed measurement)

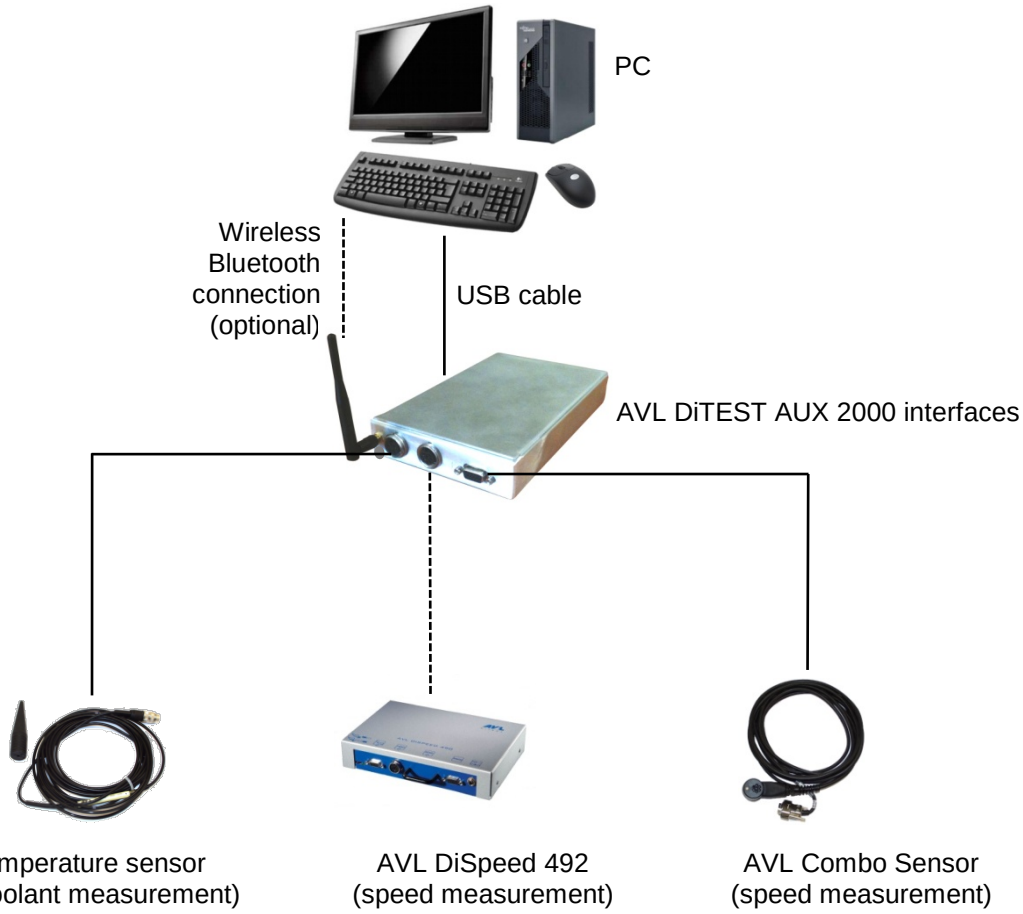


Fig. 1-1

1.2 AVL DITEST AUX 2000 Front View

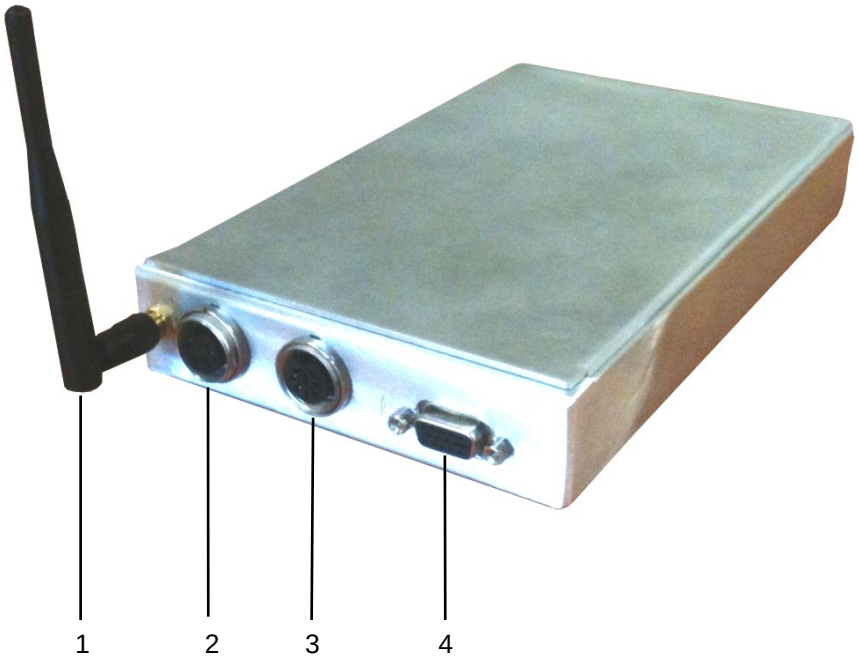


Fig. 1-2

1 Bluetooth antenna (optional)
2 Socket for temperature sensor, see also chapter 3.1.1.
3 Socket for external AVL DiSpeed 492, see also chapter 1.5 or the AVL DiSpeed 492 User Manual
4 Socket for combo sensor, see also chapter 3.2.

1.3 AVL DITEST AUX 2000 Rear and Side View



Fig. 1-3

1 Socket for power supply (external desktop power supply or connector cable to AVL Gas 1000)
2 USB port for connection to PC
3 External desktop power supply
4 Mains cable

1.4 AVL DiSpeed intern

Universal speed measurement for gasoline and diesel engines

- Built into AVL AUX 2000
- No need to set the number of cylinders
- For gasoline and diesel engines, with best coverage
- For stationary and dynamic speed measurements
- Automatic self-calibration and function monitoring
- Easy attachment with integrated permanent magnet
- Unique direct signal acquisition

1.5 AVL DiSpeed 492

Universal speed measurement for gasoline and diesel engines

- No need to set the number of cylinders
- For gasoline and diesel engines, with best coverage
- For stationary and dynamic speed measurements
- Automatic self-calibration and function monitoring
- Easy attachment with integrated permanent magnet
- Unique direct signal acquisition

Also observe the AVL DiSpeed 492 User Manual.



Fig. 1-4

2 Commissioning

2.1 AVL DITEST AUX 2000 Power Supply

Connect the AVL DiTEST AUX 2000 (1) to the mains using the external desktop power supply **BV7559** (2) as shown.

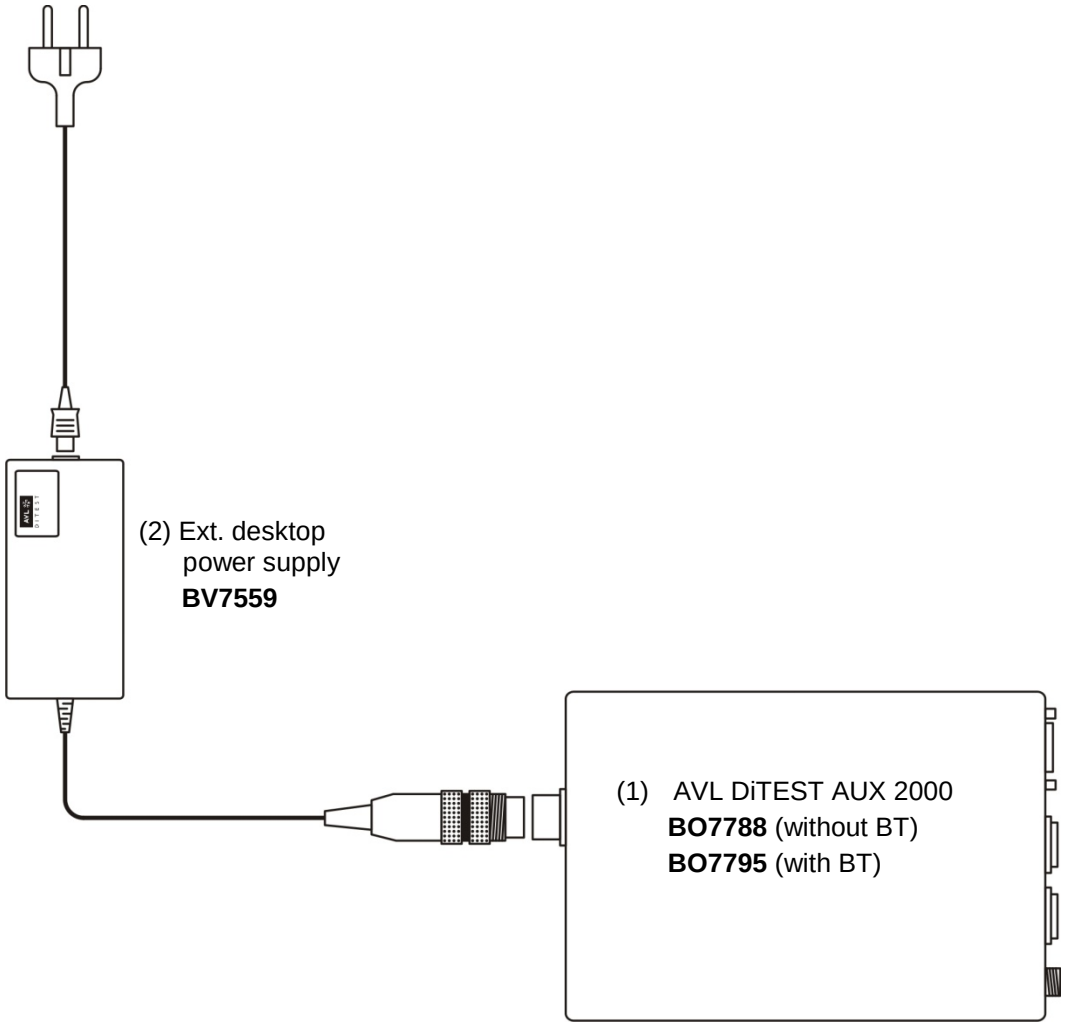


Fig. 2-1

If you are using an AVL Gas 1000 (4), then you can connect the power through the AVL Gas 1000. In this case, use the **BV8039** (4) cable to connect the AVL DiTEST AUX 2000 (1) to the AVL Gas 1000 as shown. (Then you do not need the ext. desktop power supply **BV7559** for AVL DiTEST AUX 2000).

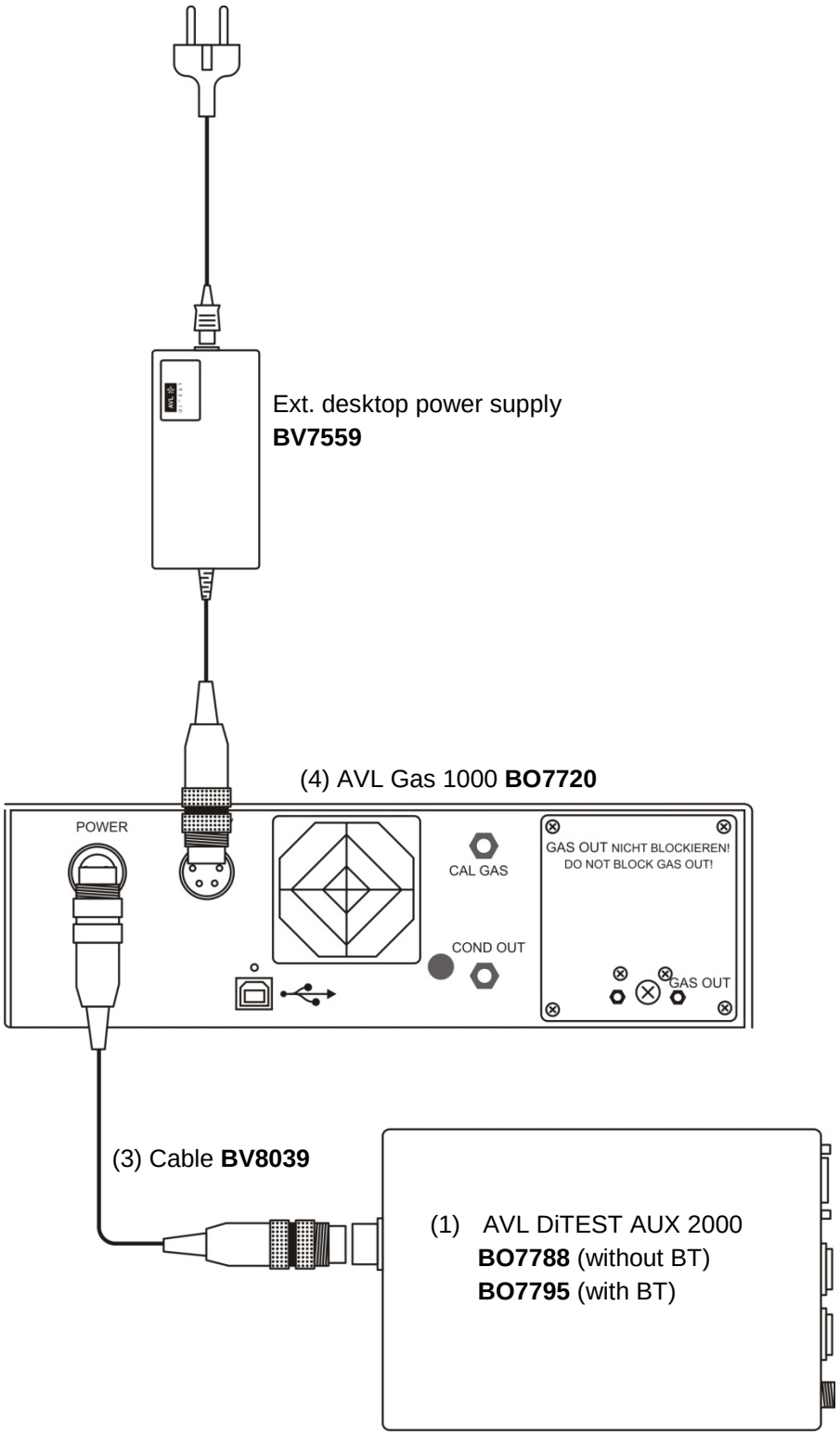


Fig. 2-2

2.2 AVL DITEST AUX 2000 - PC

Insert the **BO7146** (5) USB dongle into a free port on the PC (7).

Use the **EX7030** (6) cable to connect the AVL DiTEST AUX 2000 (1) to the PC (7) as shown.

The AVL DiTEST AUX 2000 can also be connected to the PC over a wireless Bluetooth connection. In this case, insert the Bluetooth stick (8) into a free USB port on the PC (7) and screw the Bluetooth antenna (9) onto the AVL DiTEST AUX 2000 (1). Make the necessary settings in the AVL DSS software.

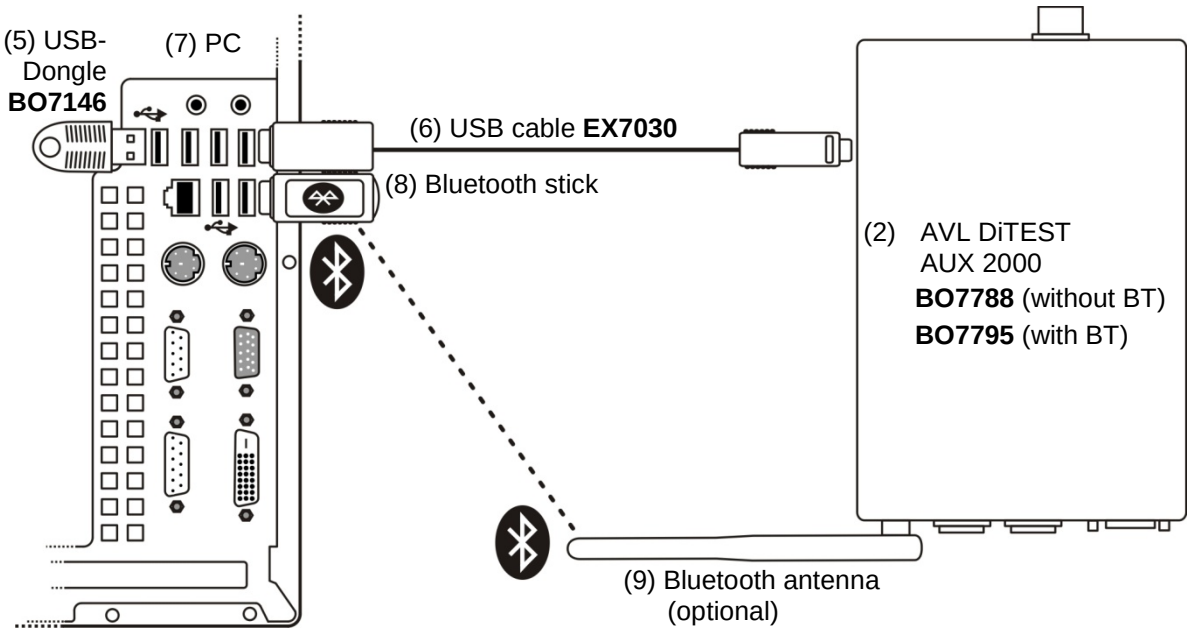


Fig. 2-3

2.3 Combo Sensor and Oil Temperature Sensor

Connect the **BO2338** (10) combo sensor and the **BV7007** (11) oil temperature sensor to the AVL DiTEST AUX 2000 (1) as shown.

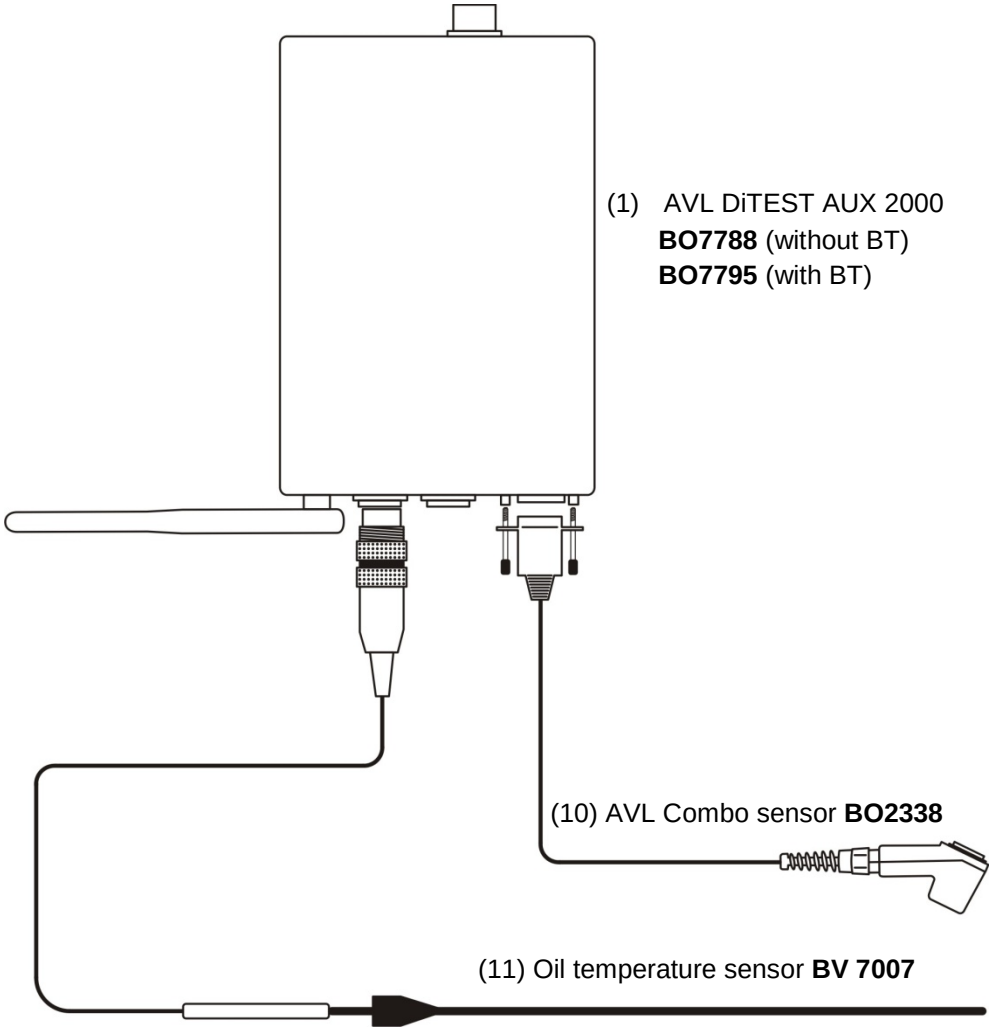


Abb. 2-4

2.4 AVL DiSpeed 492

Information

If you have an AVL DiSpeed 492 **BV7232** (12), then this can be connected to the AVL DiTEST AUX 2000 (1) using the **BV2111** (13) cable as shown.

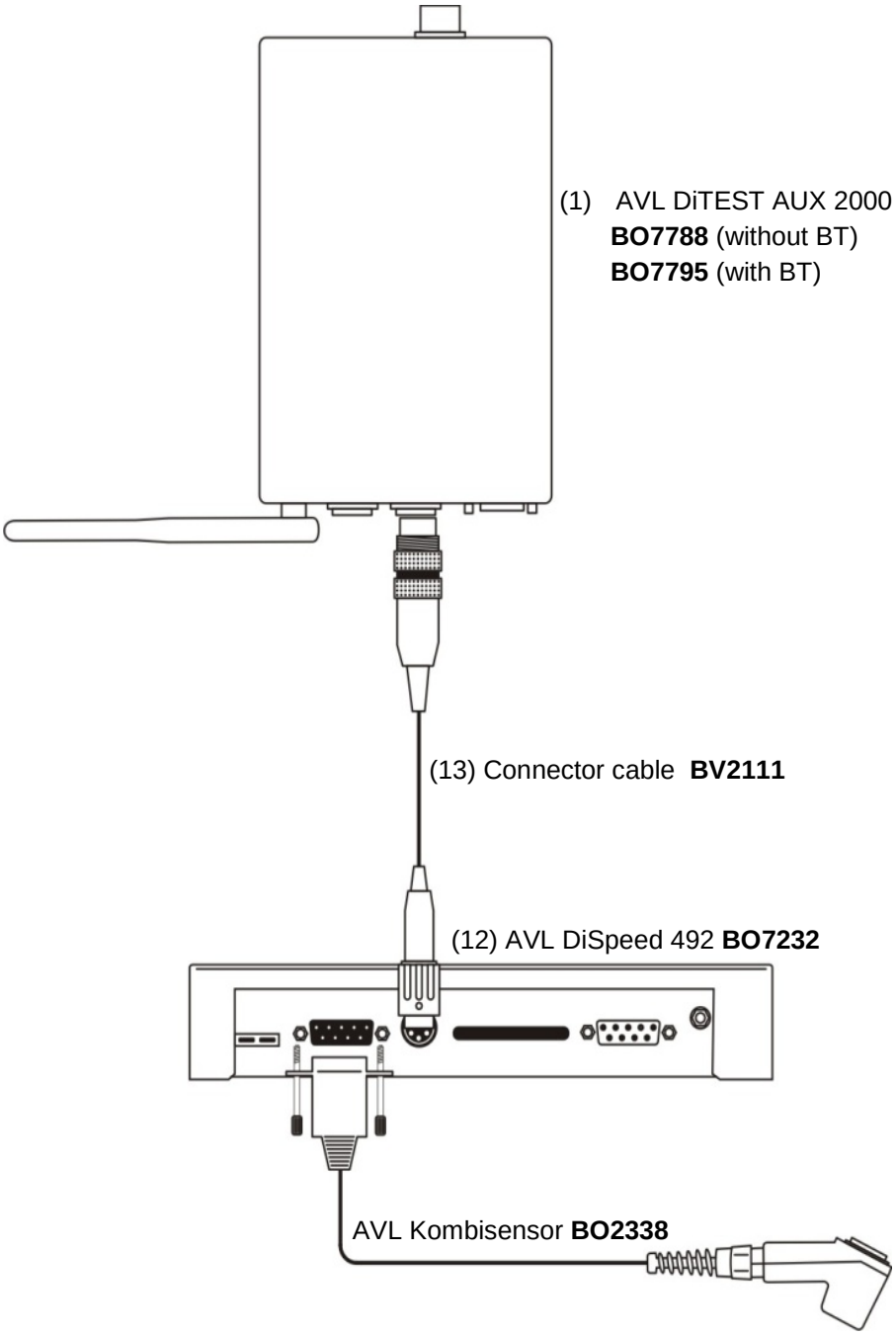


Fig. 2-5

2.5 Firmware Update

To update the AVL DiTEST AUX 2000 firmware, it must be connected to the PC by USB cable, or a wireless Bluetooth connection must be established with the PC. 2.2Refer to chapter 2.2 "*AVL DITEST AUX 2000 - PC"* for this.

Refer to your software documentation about the exact procedure for updating the firmware.

3 Adapting Cables and Probes

3.1 Measuring Speed

Connect the AVL Combo Sensor as shown.

The AVL Combo Sensor has a magnetic foot, and must therefore be attached to an iron part of the engine.
The best speed recording results are obtained when the engine vibrations are not dampened by rubber-cushioned parts between the engine and attachment point (engine suspension).
You can attach the AVL Combo Sensor while the engine is off or idling. As soon as the engine starts to idle, an LED on the Combo Sensor gives feedback as to whether the chosen attachment point is suitable or not (see chapter. 3.2.1).

NOTICE

If the AVL Combo Sensor is attached to the idling engine:

- Observe the warning notices at the beginning of the user manual
- The LED on the AVL Combo Sensor will show after 3 to 10 seconds whether the AVL DiTEST AUX 2000 has recorded the speed or not

The following engine parts are examples of where you can connect the AVL Combo Sensor:

Bolt heads:

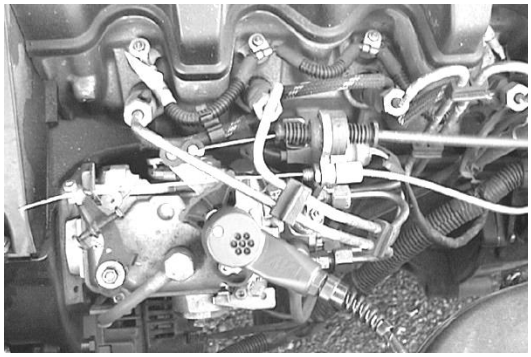


Fig. 3-1



Fig. 3-2

Flat sheet metal parts Mounting brackets:

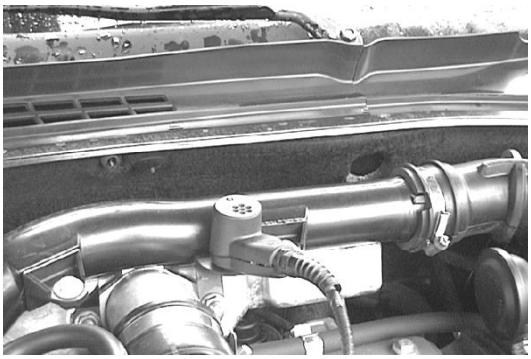


Fig. 3-3

(crane eyes for engine mounting):

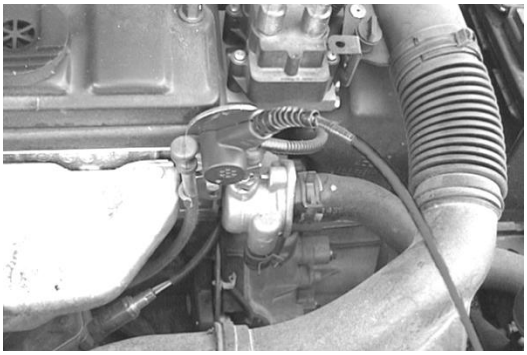


Fig. 3-4

Oil drain plug:

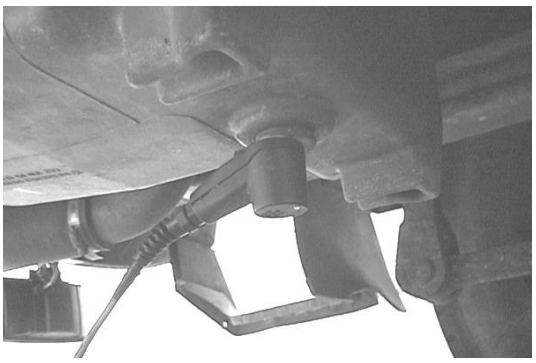


Fig. 3-5

Brake lever holder (motorcycle):



Fig. 3-6

Exhaust clamp, exhaust mounting points (be cautious of heat development!):



Fig. 3-7



Fig. 3-1

Heat shields and aggregate fastenings:

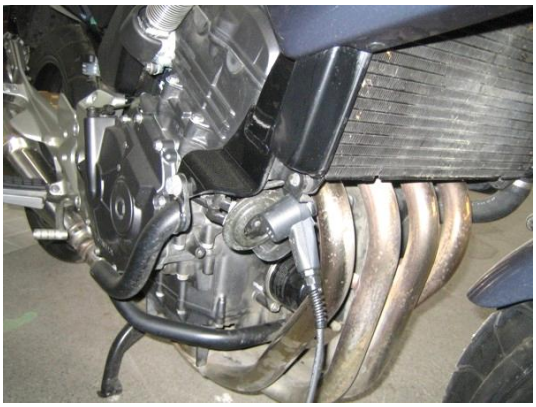


Fig. 3-9



Fig. 3-10

Hollow bolt of rear axle suspension mount:



Fig. 3-11



Fig. 3-12

Bolt on brake hose fastening of rear brake cylinder:



Fig. 3-2

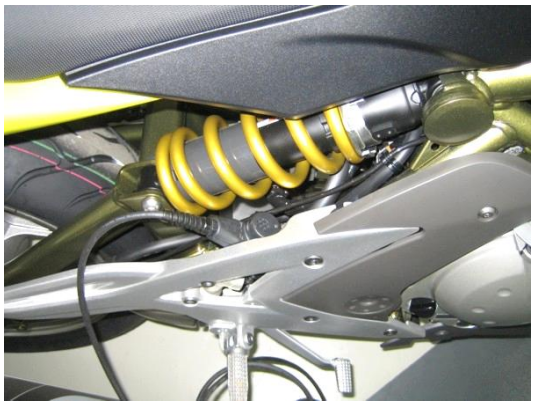


Fig. 3-14

3.1.1 Function Indications of the Status LED

The AVL Combo Sensor indicates various functions by an LED (red/yellow/green).

LEDs	Meaning
Green LED blinks twice	▪ 2-stroke motorcycle mode is selected
Green LED blinks four times	▪ 4-stroke motorcycle mode is selected
Red LED lights	▪ Self-test okay ▪ No speed signal recognized
Red LED blinks when you switch on the AVL DiTEST AUX 2000	▪ The self-test has detected an error. Please note the number of blink signals and contact the responsible AVL DiTEST Service.
Red and green LED light (red/green LED on Combo Sensor lights yellow)	▪ Idle speed recognized (first calibration point) The idle speed is typically recognized within 3 to maximum 10 seconds upon attaching the sensor If no speed signal is recognized during this time, then attach the AVL Combo Sensor in a different place. ▪ *Stationary* speed values are now measured.
Green LED lights	▪ The AVL DiTEST AUX 2000 has recognized the high speed (second calibration point) With this status, the AVL DiTEST AUX 2000 is also calibrated for dynamic speed measurements ▪ Now both *stationary* and *dynamic* measurements can be performed.

3.2 Oil/Coolant Temperature Measurement

3.2.1 Oil Temperature Sensor

With gasoline engines, make sure the oil temperature probe sealer seals tightly (leak air onto the oil dipstick influences the control circuit).

NOTICE

Before inserting the oil temperature sensor, dry the rubber cone on the probe and the counterpart on the engine.
You must adjust the length of the oil temperature probe to the length of the original dipstick.
An inadequate adjustment could cause damage to the engine and the oil temperature sensor!

With OBD vehicles, it is not necessary to measure the oil temperature using an oil temperature probe. The oil temperature is measured via the OBD connector of the vehicle.

4 Maintenance

4.1 AVL DITEST AUX 2000

The AVL DITEST AUX 2000 requires no special maintenance.

4.2 Oil Temperature Sensor

If necessary, make sure:

- the plug contacts are not bent
- oil temperature sensor is not polluted

4.3 Combo sensor

For the structure-borne sound to be measured correctly, the magnetic foot must be free of iron filings and dirt. The airborne sound inlets on the top of the AVL combo sensor must also be free.

Cleaning the combo sensor:

- with a mild cleaning product
- with a jet of compressed air directed flat over the side of the sensor

NOTICE

Do not clean the airborne sound inlets with a sharp object, or you run the risk of damaging the microphone!

Never direct a jet of compressed air straight at the top of the sensor – that would destroy the sealing membrane and the microphone!

5 Technical Data

Housing:	
Weight	Approx. 0.5 kg
Length	210 mm
Width	125 mm
Height	35 mm
Power supply from mains:	
Mains voltage	12–24 VDC from ext. desktop power supply (The device can also be powered through the AVL Gas 1000)
Power:	
Rated power	Approx. 5 VA power draw by AVL DiTEST AUX 2000 without connected AVL DiSpeed 492
Climatic conditions:	
Ambient temperature	
Operating temperature range	+ 0 to + 40 °C
Storage	− 20 to +55 °C
Relative air humidity	10 to 90 %, non-condensing
Measurement parameters:	
Rev. speed	Diesel engines: 400–6000 min^{-1} Gasoline engines: 400–6000 min^{-1} Search range, idle: 400–6000 min^{-1} Search range, high rev. speed: 1700–6000 min^{-1}
Oil temperature	-10 to 145 °C
Interfaces:	
USB 2.0	PC connection
POWER SUPPLY	Connection of ext. desktop power supply or AVL Gas 1000
COMBO SENSOR	Connection of AVL combo sensor
REV. SPEED	Connection of AVL DiSpeed 492 (optional)
OIL TEMP	Oil temperature sensor (PT1000)
BLUETOOTH (optional)	Bluetooth antenna connection; – communication between AVL DiTEST AUX 2000 and PC

Subject to technical change.

Compliance:	
CE	AVL DiTEST AUX2000 complies with the following standards or normative documents: EN 61326-1:06 Electrical equipment for measurement, control and laboratory use EMC requirements (Electrical equipment for measurement, control and laboratory use. EMC requirements) EN 61010-1:01 Safety requirements for electrical equipment for measurement, control and laboratory use (Safety requirements for electrical equipment for measurement, control and laboratory use) And thereby complies with the provisions of the following EU Directives in their prevailing versions: 2004/108/EC Electromagnetic compatibility (Electromagnetic compatibility) 2006/95/EC Low voltage directive (Low voltage directive) 1999/5/EG (EC) Radio and telecommunications terminal equipment (Radio and telecommunications terminal equipment – R&TTE)
Disposal:	
	This product of AVL DiTEST is a high-quality electrical and electronic device that may not be disposed of in the household waste. For disposal, it is essential to comply with local legal obligations!

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