Intake system

Throttle position (TP) sensor

Checking supply voltage - Fig. 7

Technical Data	
Terminals	**Voltage**
1 & 2	5 V approx.

- Ensure ignition switched OFF.
- Disconnect TP sensor multi-plug.
- Switch ignition ON.
- Check voltage between harness multi-plug terminals **Fig. 7** [1].

Checking - Fig. 7

Technical Data		
Terminals	**Condition**	**Voltage**
1 & 3	Throttle closed	0,2 V approx.
1 & 3	Throttle fully open	5 V approx.

- Ensure ignition switched OFF.
- Do not disconnect multi-plug. Access TP sensor multi-plug terminals.
- Switch ignition ON.
- Check voltage between multi-plug terminals.
- Operate throttle valve while checking voltage between terminals 1 and 3 **Fig. 7** [2].
- Voltage change should be smooth.

Manifold absolute pressure (MAP) sensor

Checking supply voltage - Fig. 8

Technical Data	
Terminals	**Voltage**
3 & earth	5 V approx.

- Ensure ignition switched OFF.
- Disconnect MAP sensor multi-plug.
- Switch ignition ON.
- Check voltage between harness multi-plug terminal and earth.

Checking operation - Fig. 8

Technical Data	
Terminals	**Voltage**
1 & 2	0,1-5 V (fluctuating)

- Ensure ignition switched OFF.
- Do not disconnect multi-plug. Access MAP sensor multi-plug terminals.
- Start engine.
- Allow to idle.
- Increase engine speed sharply.
- Check voltage between multi-plug terminals.

Intake air temperature (IAT) sensor

NOTE: Incorporated in throttle body.

Checking resistance - Fig. 9

Technical Data	
Temperature	**Resistance**
10°C	3530-4100 Ω
20°C	2350-2670 Ω
30°C	1585-1790 Ω
40°C	1085-1230 Ω
50°C	763-857 Ω
60°C	540-615 Ω
80°C	292-326 Ω
90°C	215-245 Ω

- Ensure ignition switched OFF.
- Disconnect IAT sensor multi-plug.
- Check ambient air temperature.
- Check resistance between IAT sensor terminals.

Idle air control (IAC) valve

Checking resistance - Fig. 10

Technical Data	
Terminals	**Resistance**
A & D	52-58 Ω
B & C	52-58 Ω

- Ensure ignition switched OFF.
- Disconnect IAC valve multi-plug.
- Check resistance between IAC valve terminals.

Throttle body heater

Checking resistance - Fig. 11

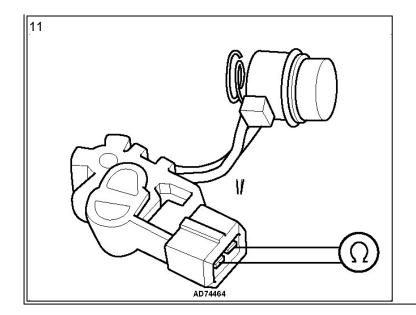| Technical Data	
Resistance	2 Ω approx.

- Ensure ignition switched OFF.
- Disconnect throttle body heater multi-plug.
- Check resistance between throttle body heater terminals.

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