





Hydraulic Test Program – Test (Testing Fuel System Pressure and Internal Leakage)

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		Fuel connections		Check for leakage.		
2.0		Check for ease of movement of air flow sensor plate (4) with lever (1) and control plunger (2) in fuel distributor (32, Figure 1).		<p>Switch on ignition briefly to build up fuel pressure.</p> <p>Depress air flow sensor plate (4) by hand (Figure 1).</p> <p>Release air flow sensor plate (4) quickly.</p>	<p>Uniform resistance should be felt during its entire travel.</p> <p>No resistance should be felt since the slow to react control plunger (2) lifts off the lever (1, Figure 1).</p>	<p>Center/replace air flow sensor plate, ⇒ 2.1.</p> <p>Replace air flow sensor.</p>


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2.1		Control plunger		Depress air flow sensor plate (4) by hand. Release air flow sensor plate (4) slowly.	Control plunger (2) should remain in contact with the lever (1).	Replace fuel distributor.
3.0		Check control plunger (2, Figure 1) in fuel distributor for leakage.		Press air flow sensor plate (4) completely down and hold in this position (illuminate intake with borescope).	Slight seepage (drops) is permissible.	Replace fuel distributor.
4.0		Fuel pressures		<p>Note to Test connection: Connect pressure gauge. Connect hose "A" to lower chamber using adaptor (044), connect hose "B" to upper chamber, 31, Figures 1 or 2.</p>  <p>When connecting pressure gauge, do not contact air flow sensor with wrench.</p>		



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4.1		System pressure		Engine: at Idle Valve on pressure gauge open.	6.2 – 6.4 bar	Check fuel pump, Replace diaphragm pressure regulator, Check fuel return line for restrictions.
4.2		Lower chamber pressure		Engine: at Idle and at operating temperature. Electrohydraulic actuator connector unplugged, valve on pressure gauge closed.	Approx. 0.4 bar below system pressure.	Replace electrohydraulic actuator (Y1)
5.0		Deceleration shut-off (Engine 104 only)		Note to Test connection: Pressure gauge. Engine: at Idle and at operating temperature. Raise engine speed to 2500 rpm and then close throttle valve.	Lower chamber pressure must increase to system pressure until combustion resumes.	Check deceleration shut-off, see 23 ⇒ 37.0.

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6.0		Acceleration enrichment		<p>Note to Test connection: Pressure gauge.</p> <p>Ignition: OFF ECT sensor (B11/2) unplugged. Using two resistance substitution units, simulate 2.5 kΩ resistance (+ 20°C) at sockets 2 and 4 as well as at sockets 1 and 3 (32, Figures 2 and 3).</p> <p>Engine: at Idle</p> <p>Rev engine abruptly.</p>	<p>Approx. 0.5 bar below system pressure</p> <p>Pressure in lower chamber must decrease to < 5.5 bar.</p>	<p>23 ⇒ 1.0, 23 ⇒ 10.0, 23 ⇒ 14.0.</p>
7.0		Fuel system leakage		<p>Note to Test connection: Pressure gauge.</p> <p>Engine: OFF</p>	<p>System pressure drops below opening pressure of injectors to approx. 3.5 bar.</p>	<p>If pressure drops immediately to 0 bar, replace check valve in fuel pump.</p> <p>If pressure drops slowly below 3.5 bar, ⇒ 7.1 – 7.4</p>

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7.1		Diaphragm pressure regulator		Disconnect fuel return line at diaphragm pressure regulator.	No fuel should flow out of diaphragm pressure regulator (slight seepage is permissible).  If fuel flows out of the fuel return line, plug line immediately.	Replace diaphragm pressure regulator.
7.2		Fuel accumulator		Note to Test connection: Pressure gauge. Pinch leak-off line on fuel accumulator.	Fuel pressure should no longer drop.	Replace fuel accumulator.
7.3		Start valve				33 or 34.
7.4		Fuel distributor		Test steps 7.1 – 7.3 ok		Replace fuel distributor.

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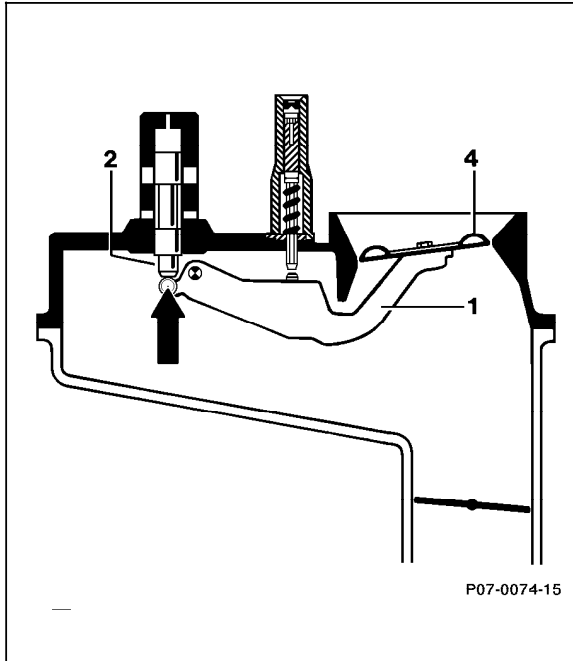
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.5		External leakage		Disconnect pressure gauge, wiping up any spilt fuel with a rag. Reconnect fuel lines. Engine: at Idle	All fuel connections must be tight (no leaks).	

Table I Fuel pressures

System pressure	with engine cold or at operating temperature		bar	6.2 – 6.4
Lower chamber pressure	with engine at operating temperature	below the previously measured system pressure	bar	approx. 0.4
	at a coolant temperature of + 20°C	at idle, below the previously measured system pressure	bar	approx. 0.5
	durind deceleration shut-off		bar	Lower chamber pressure equals system pressure
Sustained system pressure	30 minutes after shutting off engine		bar	minimum 2.8

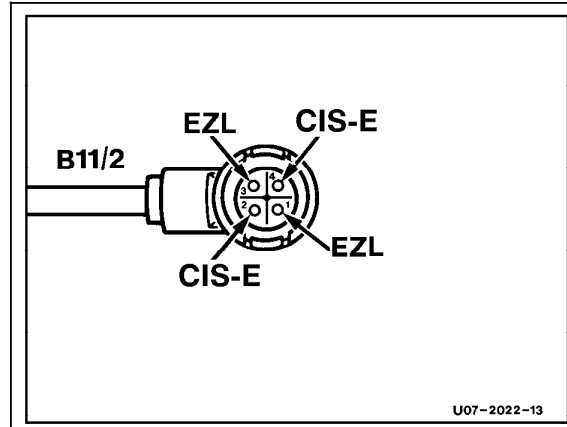
Electrical Test Program – Test



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Figure 1

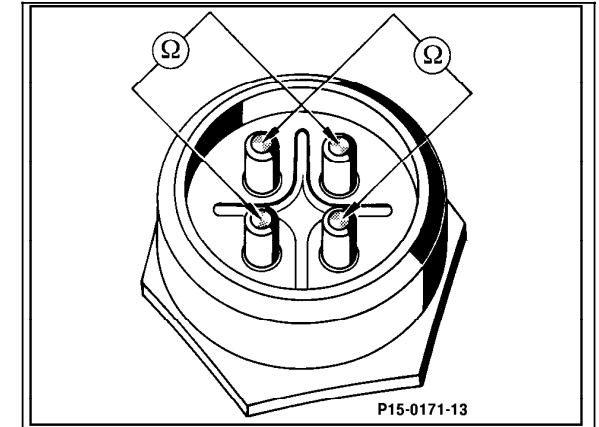
- 1 Lever
- 2 Control plunger
- 4 Air flow sensor plate



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Figure 2

B11/2 ECT sensor (4-pole)



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Figure 3

ECT sensor (4-pole)