



Refer to Parts Microfiche Gr. 54 to identify control modules.

Engine 120.980 starting 01/91
Engine 120.981 starting 03/92

Engine	120.980/981	
Models	140.057/076, 129.076	
LH-SFI system designation	4.1	
Closed throttle (idle) position, check, adjust SMS job No. 07-2053 or 07-2056		
Selector lever position	P/N	D
Engine coolant temperature	° C approx.	>80
Engine oil temperature	° C approx.	60 – 80
Engine speed	rpm	600 – 750 <600
Ignition timing with premium unleaded fuel (91 posted/95 RON)	°CKA	5 – 15 ¹⁾
On-off ratio coolant temperature < 70° C	%	50
coolant temperature > 70° C	%	50±10 ²⁾
Closed throttle contact (accelerator pedal not depressed)	HHT display	ON ³⁾

1) Refer to DI testing.

2) In case of complaint, lambda must be measured at idle speed and at 2500 rpm with purge line to engine disconnected and plugged.

3) Connecting harness to EA: -with open circuit or short to positive indicates OFF constantly.
 -with short to ground indicates OFF constantly.

Engine 120.980 starting 01/91

Engine 120.981 starting 03/92

Engine	120.980/981
Models	140.057/076, 129.076
LH-SFI system designation	4.1
Closed throttle (idle) position, check, adjust SMS job No. 07-1100	
Throttle valve angle	° 0.3 – 2
Engine coolant temperature	° C approx. >80
Engine oil temperature	° C approx. 60 – 80
Engine speed (selector lever in P/N position)	rpm 600 – 750
Injection duration	ms 2.8 – 3.2
Air mass	kg/h 14 – 20
Hot wire voltage	V 1.3 – 1.7
O2S voltage (oscillates around 300mV after 2 min.)	mV –200 to +1000
On-off ratio readout with ignition: ON	
Engine coolant temperature <70°C	% 50
Engine coolant temperature >70°C	% 50±10 ¹⁾
Self adaptation idle air	kg/h 0±1.5 ²⁾
Self adaptation factor upper/lower range of part load	0.85 – 1.15 ³⁾
Ignition timing with premium unleaded fuel (91 posted/95 RON)	°CKA 5 – 15 ⁴⁾
Air pump after start, max. 20 sec.	<40° C ON
Purging, >46° C intake air	HHT display ON
Exhaust gas recirculation. air mass > 130 kg/h	HHT display ON
Safety fuel shut off > 1100/min	HHT display OFF
Cylinder shut off/ignition miss	HHT display ⁵⁾

- 1) In case of complaint, lambda must be measured at idle speed and at 2500 rpm with purge line to engine disconnected and plugged.
- 2) Base setting idle, 0.0 kg/h (Bosch), mixture tendency **rich**, 0.0 kg/h, mixture tendency **lean** > 0.0 kg/h.
- 3) Base setting part load = 1.0, mixture tendency **rich** <1.0 mixture tendency **lean** > 1.0.
- 4) Refer to DI testing.
- 5) Defective cylinder is highlighted. Further tests to be carried out using engine tester.

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Engine	120.980/981
Models	140.057/076, 129.076
LH-SFI system designation	4.1
Closed throttle (idle) position, check, adjust SMS job No. 07-1100	
Engine coolant temperature	° C approx. >80
Engine oil temperature	° C approx. 60 – 80
Engine speed (selector lever in P/N position)	rpm 600 – 750
Intake air temperature	° C <30
Altitude	mbar check barometer
Ignition timing with premium unleaded fuel (91 posted/95 RON)	°CKA 5 – 15
Reference resistor DI	HHT display ¹⁾
Transmission overload protection switch (selector lever in P/N position) .	HHT display OFF
LH-SFI control module voltage circuit 30	V 11 – 14
Manifold absolute pressure	mbar 580-630
Knock sensing active	HHT display OFF
Knock retard/cylinder	°CKA 0.0
Combustion voltage/cylinder	V 25 – 70 ²⁾
Combustion duration/cylinder	ms 1.2 – 1.7 ²⁾
Combustion duration difference between cylinders	ms ≤0.3 ²⁾

1) Refer to DI reference resistors.
 2) Display only on Bosch control modules.



Engine 120.980 starting 01/91
Engine 120.981 starting 03/92

Engine	120.980/981
Models	140.057/076, 129.076
LH-SFI system designation	4.1
Cold start	
Engine coolant temperature ° C approx.	1) 1)
Engine rpm	1)
Starter signal circuit 50, during starting process HHT display	ON
After start enrichment < 70° C max. 20 sec. HHT display	ON
Closed throttle contact (accelerator pedal not depressed) HHT display	ON
LH-SFI control module voltage circuit 30 V	11 – 14 2)
Fuel pump HHT display	ON
Warmup	
Transmission selector lever position	P/N
Engine coolant temperature ° C approx.	-30 to +30
Closed throttle warmup speed rpm	850 ⁺¹⁰⁰ -50
Engine coolant temperature ° C approx.	>+30 to +80
Closed throttle warmup speed rpm	declines continuously to 600 – 750
Warmup HHT display	<70° C ON >70° C OFF
Closed throttle contact (accelerator pedal not depressed) HHT display	ON 2)
AIR pump after >20 sec. HHT display	OFF
Intake air temperature ° C	>20


1) Temperature at which complaint occurs.

2) Connecting harness to EA: -with open circuit or short to positive indicates OFF constantly.
 -with short to ground indicates OFF constantly.

Engine 120.980 starting 01/91 - 09/92, starting 10/92 2)
Engine 120.981 starting 03/92

Engine	120.980	120.981
Models	140.057/076	129.076
LH-SFI system designation	4.1	4.1
Engine performance 1)		
Engine speed rpm	3800/4000	4000
Ignition timing with premium unleaded gasoline (91 posted/95 RON) °CKA	18 – 22	18 – 22
Injection duration ms	12 – 17	12 – 17
Air mass kg/h	360 – 420	360 – 420
Hot wire voltage V	18 – 22	18 – 22
Altitude mbar	refer to barometer	refer to barometer
Wide open throttle recognition HHT display	ON	ON
Acceleration enrichment HHT display	ON	ON
Deceleration fuel shut off >2100 rpm HHT display	ON	ON
Camshaft timing adjustment >2000 rpm HHT display	OFF	OFF
Vehicle speed signal mph (km/h)	>62 (100)	>62 (100)
Raised shift point HHT display	OFF	OFF
Output, transmission range 3 hp	228/248 2) 	243 

1) These are minimum performance values. Do not exceed speed of 80 mph.

 Check performance only at simulated engine coolant temperature of 80 °C and intake air temperature of 20 °C (use 2 resistance substitution units).

2) Without wide open throttle enrichment.

Reference Resistor (DI)

Engine	Model	MB Part No.	Ignition adjustment ° CKA	Resistance Ω/kΩ
120.980 120.981	129.076 140.057	015 545 67 28	0	2.4 kΩ (premium unleaded 91 posted/95 RON)

Note: If the reference resistor is missing, the ignition is retarded 3° at wide open throttle.