



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

Engine 104.991/994/995 as of 06/96

Engine 104.941 as of 08/96

Engine	104.941/991/994/995	
Models	129.063 140.032 202.028 210.055	
ME-SFI system designation	2.1	
Closed throttle (idle) position, check, adjust		
Engine oil temperature	° C	>60
Selector lever position		P/N
Engine speed	rpm	600 – 800
CTP recognition (accelerator pedal not depressed)	HHT display	ON
On-off ratio before TWC	%	0±25 ¹⁾
Engine coolant temperature	° C approx.	>80

¹⁾ In case of complaint, on-off ratio must be measured at idle speed and at 2500 rpm with purge line to engine disconnected and plugged.

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ME-SFI system designation	2.1	
Engine, check, adjust		
Engine oil level	HHT display	OK
Fuel tank level	HHT display	OK
Engine oil temperature	° C	>60
Engine speed (selector lever in P/N position)	rpm	600 – 800
Air mass	kg/h	10 – 18
MAF voltage (increasing rpm = increasing voltage)	V	1.1 – 1.7
Ignition timing with premium unleaded gasoline (91 posted/95 RON) ¹⁾	° CKA	5 – 20
Injection duration	ms	2 – 4
Adjustable camshaft timing solenoid	HHT display	Off
Camshaft Hall-effect sensor, value jumps	HHT display	55-AA
ECT	° C	>80
Intake air temperature (IAT)	° C	>20
Purge valve on-off ratio	%	0 – 20
Battery voltage	V	10
Actuator		
Actual value potentiometer r1	V	4.0 – 4.6
Actual value potentiometer r2	V	0.3 – 0.9
Pedal value sensor		
Nominal value potentiometer r1	V	0.2 – 0.5
Nominal value potentiometer r2	V	0.1 – 0.4
CTP recognition (accelerator pedal not depressed)	HHT display	ON
WOT recognition	HHT display	OFF

¹⁾ In case of complaint, check ignition timing at full load.

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ME-SFI system designation	2.1	
Engine, check, adjust		
Torque	Nm	–
Throttle valve angle	°	0.8 – 2.5
Throttle valve stop learned	HHT display	YES
On-off ratio before TWC, ECT >70°C	%	0 ± 25 ²⁾ oscillates
O2S 1 voltage before TWC	mV	– 200 to + 1000 ¹²⁾
Self adaptation at partial load	Factor	0.68 – 1.32 ⁵⁾
Self adaptation at idle	ms	– 1 to + 1 ⁴⁾
Driving range (selector lever position)	HHT display	P/N
A/C compressor, EC pushbutton depressed	HHT display	OFF
Purge system	HHT display	OFF/ON
Safety fuel shut off	HHT display	OFF

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

⁴⁾ Base setting at idle, 0.0 kg/h (Bosch) or 0.0% (VDO). Mixture tendency "**rich**" < 0.0 kg/h or 0.0%. Mixture tendency "**lean**" > 0.0 kg/h or 0.0%.

⁵⁾ Base setting partial load = 1.0. Mixture tendency "**rich**" < 1.0, mixture tendency "**lean**" = > 1.0.

¹²⁾ Oscillates around 300 mV after 2 minutes at idle.

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ME-SFI system designation	2.1	
Cold start		
Engine oil level	HHT Display	OK
Fuel tank level	HHT Display	OK
Engine rpm while cranking	rpm	> 200
Battery voltage	V	10
Safety fuel shut off	HHT display	OFF
ECT	° C	⁷⁾
IAT	° C	⁷⁾
ECT at starting	° C	⁷⁾
CTP recognition (accelerator pedal not depressed)	HHT display	ON

⁷⁾ Proceed complaint related or temperature related.

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Warmup			
Warmup speed ¹²⁾ ECT < 40 °C	rpm	P/N: approx. 1300 ± 100	
Warmup speed ¹²⁾ ECT > 40 °C	rpm	P/N: approx. 800	
Engine rpm (raised idle speed temperature dependent)			
ECT approx. <0 °C	rpm	P/N: 940 ± 100	D: 850 ± 100
ECT approx. 0 to +30 °C	rpm	P/N: 880 ± 100	D: 830 ± 100
ECT approx. +30 ° to 40 °C	rpm	P/N: 840 ± 100	D: 770 ± 100
ECT approx. < 40 °C	rpm	P/N: 700 ± 100	D: 600 ± 100
CTP recognition (accelerator pedal not depressed)	HHT display	ON	
After start enrichment < 70 °C maximum 50 seconds	HHT display	ON	
TWC heating at idle < 30 °C maximum 50 seconds	HHT display	ON	
O2S 1 heater before TWC	V	-	
A/C compressor	HHT display	OFF	

¹²⁾ Raised idle speed for max. approx. 50 seconds after starting.

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Engine	104.941	104.991/994/995
Models	202.028	129.063 140.032 210.055
ME-SFI system designation	2.1	2.1
Engine performance ⁷⁾		
Engine oil level	HHT display	OK
Fuel tank level	HHT display	OK
Engine speed	rpm	5300
Air mass	kg/h	440 – 540
MAF sensor voltage	V	4.1 – 4.5
Ignition timing with premium unleaded gasoline (91 posted/95 RON)	°CKA	9 – 13
Injection duration	ms	14 – 17
Adjustable camshaft timing solenoid 4000 rpm	HHT display	ON
Adjustable camshaft timing solenoid > 4300 rpm	HHT display	OFF
Camshaft Hall-effect sensor, value jumps	HHT display	55 – AA
ECT	°C	80 – 100
IAT	°C	< 30
Purge valve on-off ratio	%	–
Battery voltage	V	10
Driving range 3	hp	135
Altitude (correction value)	Factor	–

⁷⁾ These are minimum performance values. Do not exceed speed of 80 mph.
 Simulating engine coolant temperature and intake air temperature is not possible with ME-SFI. When testing WOT position be sure to use an external cooling fan to ensure adequate engine cooling.

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Engine performance ⁷⁾	07-1203 or 1206	Page 2
Exhaust gas back pressure at 5300 rpm	mbar	<200
Actuator	Actual value potentiometer r1	V
	Actual value potentiometer r2	V
Pedal value sensor	Nominal value potentiometer r1	V
	Nominal value potentiometer r2	V
Throttle valve angle		° 80 – 83
CTP recognition	HHT display	OFF
WOT recognition	HHT display	ON
Torque	Nm	–
Knock control approved	HHT display	OFF/ON ¹⁴⁾
Knock ignition angle/cylinder	°CKA	0
Knock sensor	V	> 0.5
Driving range (selector lever position)	HHT display	R, D – 1
A/C compressor, EC pushbutton depressed	HHT display	OFF
Transmission overload protection	HHT display	OFF
Deceleration shut-off	HHT display	OFF
Front axle VSS	mph (km/h)	–
Rear axle VSS	mph (km/h)	> 62 (100)

⁷⁾ These are minimum performance values. Do not exceed speed of 80 mph.
 Simulating engine coolant temperature and intake air temperature is not possible with ME-SFI. When testing WOT position be sure to use an external cooling fan to ensure adequate engine cooling.

¹⁴⁾ HHT display ON if knock control is required.

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Engine	104.941/991/994/995
Models	129.063 140.032 202.028 210.055
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Cruise control Brake switch, brake pedal not depressed HHT display Stop lamp switch, brake pedal not depressed HHT display Move CC switch to corresponding position HHT display Safety contact, CC switch actuated HHT display Safety contact, CC switch not actuated HHT display Cruise control HHT display Maintain transmission range HHT display Cruise control shut-off, function HHT display Cruise control shut-off, safety HHT display	OFF OFF V/SP/B/A ON OFF – – – –
Drive authorization system (DAS) DAS and ME-SFI control modules compatible HHT display Engine control module identified HHT display Engine control module locked HHT display Drive authorization activated HHT display Vehicle locked with RCL HHT display Number of starts with not locked control module Number	YES YES YES YES NO 0

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Models	129.063 140.032 202.028 210.055
ME-SFI system designation	2.1
Idle Quality	
Rpm deviation/cylinder	revolution/s ² 1)
Rpm deviation cut out threshold	revolution/s ² 0.5 2)
Idle quality failure counter as of 02/96	Number 0
On-off ratio	
Idle speed	rpm 600 – 800
Engine speed	rpm 3200
On-off ratio at WOT and transmission selector lever position 3	% 0±25 constant
On-off ratio at upper partial load and transmission selector lever position “D”, 75 mph (120 km/h), 32 hp (24 kW)	% 0±25 oscillating
On-off ratio at lower partial load and transmission selector lever position “D”, 31 mph (50 km/h), 9 hp (7 kW),	% 0±25 oscillating
Exhaust gas back pressure	mbar <200

1) Entry if value is larger than cut out threshold.

2) Temporary test value.