



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

Engine 111.961 starting 02/93 until 02/94

| | |
|---|---------------------------|
| Engine | 111.961 |
| Models | 202.022 |
| HFM-SFI system designation | 3.4 |
| Closed throttle position (CTP), check, adjust (07-2053 or 07-2056) ⁹⁾ | |
| Selector lever position | P/N |
| ECT | >80 ° C approx. |
| Engine speed | 650 – 850 rpm |
| Ignition timing with premium unleaded fuel (91 posted/95 RON) | 5 – 13 ¹⁾ °CKA |
| On-off ratio | 0±10 ²⁾ % |
| CTP contact (accelerator pedal not depressed) | HHT display ON |

¹⁾ The ignition timing is also used for idle speed stabilization. In extreme cases the timing can briefly vary by $\pm 10^\circ$ from specification.

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.

⁹⁾ Time Guide operation no. and/or SMS job no.

Engine 111.961 starting 02/93 until 02/94

| | |
|---|---------------------------|
| Engine | 111.961 |
| Models | 202.022 |
| HFM-SFI system designation | 3.4 |
| Engine, check, adjust (07-1100) ⁹⁾ | |
| ECT | ° C approx. >80 |
| Engine speed (selector lever in P/N position) | rpm 650 – 850 |
| Injection duration | ms 3 – 5 |
| Air mass | kg/h 9 – 13 |
| O2S 1 voltage (oscillates around 300mV after 2 min.) | mV –200 to +1000 |
| O2S 2 voltage (oscillates around 300mV after 2 min.) | mV –200 to +1000 |
| On-off ratio | % 0±10 ²⁾ |
| Self adaptation idle air | kg/h ±2 ³⁾ |
| Self adaptation idle air | % ±15 ³⁾ |
| Self adaptation factor lower/upper range of part load | 0.85 – 1.15 ⁴⁾ |
| Ignition timing with premium unleaded fuel (91 posted/95 RON) | °CKA 5 – 13 ¹⁾ |
| Throttle valve angle | ° 1.0 – 1.8 |
| Deceleration shut-off > 2100 rpm | HHT display ON |
| Air pump after start, maximum of 20 seconds | <40° C ON |
| CTP contact (accelerator pedal not depressed) | HHT display ON |
| WOT contact (accelerator pedal in WOT) | HHT display ON |

¹⁾ The ignition timing is also used for idle speed stabilization. In extreme cases the timing can briefly vary by ±10° from specification.

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⁾ Base setting 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%.

⁴⁾ Base setting part load = 1.0, mixture tendency **rich** <1.0 mixture tendency **lean** > 1.0.

⁹⁾ Time Guide operation no. and/or SMS job no.

Engine 111.961 starting 02/93 until 02/94

| | | | |
|---|---------|--|--|
| Engine | 111.961 | | |
| Models | 202.022 | | |
| HFM-SFI system designation | 3.4 | | |
| Cold start, (07-2321) ⁹⁾ ECT ° C approx. ⁵⁾ Engine rpm ⁵⁾ Starter signal circuit 50, during cranking HHT display ON After start enrichment < 70° C maximum of 20 seconds HHT display ON CTP contact (accelerator pedal not depressed) HHT display ON | | | |
| Warmup, (07-2023) ⁹⁾ Transmission selector lever position P/N D Warmup speed (raised idle speed) time dependent ECT <+20° C for approximately 20 seconds after start rpm 1150±100 Warmup speed (raised idle speed) temperature dependent ECT <0° C rpm 1000±50 800±50 ECT 0 – 30° C rpm 850±50 700±50 ECT 30 – 40° C rpm 800±50 650±50 ECT >40° C rpm 750±50 600±50 Warmup HHT display <80° C ON / >80° C OFF CTP contact (accelerator pedal not depressed) HHT display ON Partial intake manifold preheater HHT display <70° C ON / >70° C OFF Selector lever position (P/N) HHT display OFF A/C compressor (not engaged) HHT display OFF IAT ° C >20 | | | |

⁵⁾ Temperature at which complaint occurs.

⁹⁾ Time Guide operation no. and/or SMS job no.

Engine 111.961 starting 02/93 until 02/94

| | |
|--|------------------------|
| Engine | 111.961 |
| Models | 202.022 |
| HFM-SFI system designation | 3.4 |
| Engine performance ⁶⁾ (07-1203 or 07-1206) ⁹⁾ | |
| Engine speed | rpm 5400 |
| Ignition timing with premium unleaded gasoline (91 posted/95 RON) | °CKA 18 – 21 |
| Injection duration | ms 14 – 16 |
| Air mass | kg/h 380 – 400 |
| WOT contact (accelerator pedal fully depressed) | HHT display ON |
| Camshaft timing adjustment <2000 rpm | HHT display OFF |
| Camshaft timing adjustment >2000 rpm | HHT display ON |
| Camshaft timing adjustment >4000 rpm | HHT display OFF |
| Output, 4-speed AT, TR 3 | hp 103 |
| VSS | mph (km/h) > 62 (100) |
| Deceleration shut-off >2100 rpm ⁸⁾ | HHT display ON |

⁶⁾ These are minimum performance values. Do not exceed speed of 80 mph. Do not exceed speed of 80 mph. It is not possible to simulate coolant and intake air temperature as these are determined by the HFM-SFI system. Provide adequate cooling using external fan when check wide open throttle performance.

⁸⁾ On model 202, deceleration fuel shut off cannot be tested on a chassis dynamometer.

⁹⁾ Time Guide operation no. and/or SMS job no.

Engine 111.961 starting 02/93 until 02/94

| | |
|---|-------------------|
| Engine | 111.961 |
| Models | 202.022 |
| HFM-SFI system designation | 3.4 |
| On-off ratio | |
| Idle speed | rpm 650 – 850 |
| Engine speed | rpm 3500 |
| On-off ratio at WOT and TR 3 | % 0 ± 10 constant |
| On-off ratio at upper partial load and TR "D", 75 mph (120 km/h), 32 hp (24 kW) | % ±10 oscillates |
| On-off ratio at upper partial load and TR "D", 31 mph (50 km/h), 9 hp (7 kW) | % ±10 oscillates |
| Exhaust gas back pressure | mbar < 300 |