

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|----------------------------------|------------|--------------------|--|--|---|---|-------------------|---|
| PCM INTERNAL COMMUNICATION CHECK | P0600 | SOFTWARE CHECK | N/A | N/A | N/A | 250mS CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE A |
| PCM HAS EEPROM FLASH ERROR | P0601 | SOFTWARE CHECK | CORRECT CHECKSUM | CHECKSUM DETECTION INCORRECT > 3 TIMES | N/A | IMMEDIATE | SOFTWARE CHECK | DTC TYPE A |
| O2S I NOT ENOUGH SWITCHES | P1133 | ANALOG | NORMAL OPERATION WHICH VARIES FROM 150mV - 850mV | O2S I SWITCH NUMBERS L/R < 15 CTS R/L < 10 CTS | 1600 - 2600 RPM EVAP > 50% PWM PLM > 191 TP BETWEEN 8% & 20 % NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 100 SEC ONCE AN IGNITION CYCLE | OXYGEN SENSOR | DTC TYPE B |
| EGR PINTLE POSITION (PART A) | P1406 | SOFTWARE CHECK | ACTUAL EGR CLOSED POSITION > 6 CTS | ACTUAL EGR CLOSED POSITION < 6 CTS | EGR ENABLED BATT > 11.7V NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO CKP SENSOR DTC'S NO EVAP LEAK DTC'S NO VSS DTC'S NO INTERNAL PCM COMMUNICATION ERROR DTC'S | 25 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE B |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|------------------------------|------------|--------------------|---|---|--|---|--------------------|---|
| EGR PINTLE POSITION (PART B) | P1406 | SOFTWARE CHECK | ACTUAL CLOSED EGR VS DESIRED CLOSED EGR <15 CTS | ACTUAL CLOSED EGR VS DESIRED CLOSED EGR >15 CTS | EGR ENABLED NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO CKP SENSOR DTC'S NO EVAP LEAK DTC'S NO VSS DTC'S NO INTERNAL PCM COMMUNICATION ERROR DTC'S | 20 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE B |
| EGR PINTLE POSITION (PART C) | P1406 | SOFTWARE CHECK | DESIRED EGR POS VS ACTUAL EGR POS < 9% | DESIRED EGR POS VS ACTUAL EGR POS > 9% | EGR ENABLED NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO CKP SENSOR DTC'S NO EVAP LEAK DTC'S NO VSS DTC'S NO INTERNAL PCM COMMUNICATION ERROR DTC'S | 20 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE B |
| PURGE VALVE LEAK | P1441 | ANALOG | 0.5 TO 4.5 V | VAC > 2.0 V | ENGINE RUNNING <i>NO MAP SENSOR DTC'S</i> <i>NO IAT SENSOR DTC'S</i> <i>NO ECT SENSOR DTC'S</i> <i>NO TP SENSOR DTC'S</i> <i>NO O2S 1 DTC'S</i> | 60 SEC ONCE PER IGNITION CYCLE | TANK VACUUM SENSOR | DTC TYPE A |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|---------------------|------------|--------------------|---|---|---|---|-------------------|---|
| O2S 1 RICH | P0132 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 1 >1042mV | ENGINE RUNNING > 25 SEC TP BETWEEN 8% & 50.2% ECT > 70°C A/F RATIO 14.5 & 14.7 ENGINE OPERATING IN "CLOSED LOOP" NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 599/600 CTS 125mS PER CT CONTINUOUS CHECK | OXYGEN SENSOR | DTC TYPE A |
| O2S 1 SLOW RESPONSE | P0133 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV THIS DTC DETERMINES IF THE O2S 1 IS FUNCTIONING PROPERLY BY CHECKING ITS RESPONSE TIME | AVG O2S 1 RESPONSE TIMES: R/L > 249mS L/R > 249mS RATIO OF L/R TO R/L IS >3.5 OR < 0.4 | TP BETWEEN 8% & 20% RPM BETWEEN 1600 & 2600 EVAP > 50% PWM PLM > 191 NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 100 SEC ONCE AN IGNITION CYCLE | OXYGEN SENSOR | DTC TYPE B |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|------------------|------------|--------------------|---|----------------------------------|--|---|-------------------|---|
| O2S 1 OPEN | P0134 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 1 > 399mV & < 499mV | ENGINE RUNNING > 30 SEC TP BETWEEN 8% & 54.7% ECT > 70°C NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 1199/1200 CTS 125mS PER CT CONTINUOUS CHECK | OXYGEN SENSOR | DTC TYPE A |
| O2S 2 LEAN | P0137 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 2 < 22mV | ENGINE RUNNING > 25 SEC TP BETWEEN 8% & 50.2% ECT > 40°C A/F RATIO BETWEEN 14.5 & 14.7 NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 599/600 CTS 125mS PER CT CONTINUOUS CHECK | OXYGEN SENSOR | DTC TYPE B |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|------------------|------------|--------------------|---|----------------------------------|---|--|-------------------|---|
| O2S 2 RICH | P0138 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 2 >1042 mV | ENGINE RUNNING > 25 SEC TP BETWEEN 8% & 50.2% ECT > 40°C A/F RATION BETWEEN 14.5 & 14.7 NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 599/600 CTS 125ms PER CT CONTINUOUS CHECK | OXYGEN SENSOR | DTC TYPE B |
| O2S 2 OPEN | P0140 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 2 BETWEEN 425 mV & 460 mV | ENGINE RUNNING > 30 SEC TP BETWEEN 4% & 54.7% ECT > 40°C NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 999/1000 CTS 125ms PER CT CONTINUOUS CHECK | OXYGEN SENSOR | DTC TYPE B |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|--------------------------------------|------------|--------------------|--|---|--|--|------------------------------|---|
| MANIFOLD PRESSURE SENSOR RATIONALITY | P0106 | ANALOG | 1.6V - 2.1V UNDER IDLE CONDITIONS | CHANGE OF MAP > .33V | RPM Δ < 150 IAC Δ < 10 CTS TP SENSOR Δ < 1% EGR Δ < 0% ABOVE CONDITIONS STABLE FOR AT LEAST 0.4 SECONDS NO MAP SENSOR HIGH/LOW DTC'S | 5/10 CTS 125 mS PER CT CONTINUOUS CHECK | PRESSURE DIFFERENTIAL SENSOR | DTC TYPE A |
| MANIFOLD PRESSURE TOO LOW | P0107 | ANALOG | NORMAL OPERATING RANGE OF .55V - 4.7V | MAP < .20V | RPM < 1200 TP SENSOR >15.2 % NO TP SENSOR HIGH/LOW DTC'S | 80/100 CTS 125mS PER CT CONTINUOUS CHECK | PRESSURE DIFFERENTIAL SENSOR | DTC TYPE A |
| MANIFOLD PRESSURE TOO HIGH | P0108 | ANALOG | NORMAL OPERATING RANGE OF .55V - 4.7V | MAP > 3.80V | TP SENSOR < 12% VSS < 1MPH ENGINE SHOULD RUN FOR AT LEAST 20 - 40 SEC BEFORE MALF ENABLE NO TP SENSOR HIGH/LOW DTC'S | 80/100 CTS 125mS PER CT CONTINUOUS CHECK | PRESSURE DIFFERENTIAL SENSOR | DTC TYPE A |
| MANIFOLD TEMPERATURE TOO HIGH | P0112 | ANALOG | NORMAL OPERATING RANGE OF -40°C - 128°C | IAT < 48 CTS (128°C) | VSS > 15 MPH ENGINE RUNNING > 320 SEC | 25/100 CTS 125mS PER CT CONTINUOUS CHECK | THERMISTER | DTC TYPE A |
| MANIFOLD TEMPERATURE TOO LOW | P0113 | ANALOG | NORMAL OPERATING RANGE OF -40°C - 128°C | IAT >253 CTS (-57°C) | VSS < 15MPH ENGINE RUNNING > 320 SEC | 25/100 CTS 125mS PER CT CONTINUOUS CHECK | THERMISTER | DTC TYPE A |
| HIGH COOLANT TEMPERATURE | P0117 | ANALOG | NORMAL OPERATING RANGE OF -40°C - 142°C | ECT < 4 CTS (HIGH R) (138°C) OR ECT < 36 CTS (LOW R) (142°C) | ENGINE RUNNING > 128 SEC | 50/100 CTS 125mS PER CT CONTINUOUS CHECK | THERMISTER | DTC TYPE A |
| LOW COOLANT TEMPERATURE | P0118 | ANALOG | NORMAL OPERATING RANGE OF -40°C - 142°C | ECT > 251 CTS (HIGH R) (-50°C) OR ECT > 252 CTS (LOW R) (-71°C) | ENGINE RUNNING > 60 SEC | 50/100 CTS 125mS PER CT CONTINUOUS CHECK | THERMISTER | DTC TYPE A |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|---------------------------|------------|--------------------|---|---|---|---|-------------------|---|
| TP SENSOR STUCK | P0121 | ANALOG | NORMAL OPERATING RANGE OF 0% TO 99.6% | TP VS RPM TABLE TP > 59.8% AT 1600 RPM TP > 76.6% AT 2400 RPM TP > 88.7% AT 3200 RPM TP > 99.6% AT 4000 RPM | MAP < 37.2 kPa TP SENSOR Δ < 2% NO MAP SENSOR HIGH/LOW DTC'S | 50/100 CTS 125mS PER CT CONTINUOUS CHECK | POTENTIOMETER | DTC TYPE B |
| TP SENSOR LOW | P0122 | ANALOG | NORMAL OPERATING RANGE OF .33V - 4.24V | TP SENSOR < .19V | ENGINE RUNNING | 50/200 CTS 125mS PER CT CONTINUOUS CHECK | POTENTIOMETER | DTC TYPE A |
| TP SENSOR HIGH (PART "A") | P0123 | ANALOG | NORMAL OPERATING RANGE OF .33V - 4.24V | TP SENSOR > 3.9V | ENGINE RUNNING RPM < 1500 MAP < 65 kPa | 110/200 CTS 125mS PER CT CONTINUOUS CHECK | POTENTIOMETER | DTC TYPE A |
| TP SENSOR HIGH (PART "B") | P0123 | ANALOG | NORMAL OPERATING RANGE OF .33V - 4.24V | TP SENSOR > 4.8V | N/A | 110/200 CTS 125mS PER CT CONTINUOUS CHECK | POTENTIOMETER | DTC TYPE A |
| TIME FOR CLOSED LOOP | P0125 | ANALOG | ECT NORMAL OPERATING RANGE OF -40°C - 142°C | ECT < 60°C | VSS > 5MPH IAT > 20°C | 363 SEC ONCE AN IGNITION CYCLE | THERMISTER | DTC TYPE B |
| O2S 1 LEAN | P0131 | ANALOG | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 1 < 43 mV | ENGINE RUNNING > 25 SEC TP BETWEEN 8% & 50.2% ECT > 70°C A/F RATIO BETWEEN 14.5 AND 14.7 ENGINE OPERATING IN "CLOSED LOOP" NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | 599/600 CTS 125mS PER CT CONTINUOUS CHECK | OXYGEN SENSOR | DTC TYPE A |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|----------------------------------|------------|--------------------|--|--|---|--|-------------------|---|
| O2S 2 HEATER CIRCUIT MALFUNCTION | P0141 | SOFTWARE CHECK | 11.5V - 13.6V | O2S 2 VOLTAGE CHANGES > 148mV FROM MEAN O2S 2 BIAS VOLTAGE | ECT AND IAT < 40°C DIFFERENCE IN ECT & IAT < 7°C TP MUST NOT BE >18% FOR >5 SEC. NO MAP LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO EGR POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO IAC VALVE DTC'S | TIME DETERMINED BY TABLE ONCE AN IGNITION CYCLE | SOFTWARE CHECK | DTC TYPE B |
| FUEL TRIM LEAN | P0171 | SOFTWARE CHECK | FUEL TRIM INDEX BETWEEN 110 AND 145 | FUEL TRIM INDEX > 165 | BARO > 70 kPa ECT > 60°C & < 115°C MAT > -25°C & < 115 °C MAP > 28kPa RPM BETWEEN 750 & 3400 VSS < 70MPH NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO O2S 1 DTC'S NO MISFIRE DTC'S NO KS DTC'S NO CKP SENSOR DTC'S NO CMP SENSOR DTC'S NO EGR DTC'S NO EVAP PURGE VALVE DTC'S NO VSS DTC'S NO IAC VALVE DTC'S NO FLASH MEMORY ERROR DTC'S | 4 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE B |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|--|---|--------------------|--|----------------------------------|---|--|--|---|
| FUEL TRIM RICH | P0172 | SOFTWARE CHECK | FUEL TRIM INDEX BETWEEN 110 AND 145 | FUEL TRIM INDEX < 70 | BARO > 70 kPa ECT > 60°C & < 115°C MAT > -25°C & < 115 °C MAP > 28kPa RPM BETWEEN 750 & 3400 VSS < 70MPH NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO O2S 1 DTC'S NO MISFIRE DTC'S NO KS DTC'S NO CKP SENSOR DTC'S NO CMP SENSOR DTC'S NO EGR DTC'S NO EVAP PURGE VALVE DTC'S NO VSS DTC'S NO IAC VALVE DTC'S NO FLASH MEMORY ERROR DTC'S | 16 SEC ONCE EVERY 250 SECONDS | SOFTWARE CHECK | DTC TYPE B |
| RANDOM MISFIRE CYLINDER 1 MISFIRE CYLINDER 2 MISFIRE CYLINDER 3 MISFIRE CYLINDER 4 MISFIRE | P0300 P0301 P0302 P0303 P0304 | DIGITAL | MISFIRE TOTAL (MTOT) = 0 | MTOT > 12 CTS | RPM BETWEEN 750 & 3300 ECT > -7°C & < 123°C NO MAP SENSOR LOW/RATIONALITY DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO O2S 1 DTC'S NO FUEL TRIM DTC'S NO KS DTC'S NO CKP SENSOR DTC'S NO CMP SENSOR DTC'S NO EGR DTC'S NO VSS DTC'S NO IAC VALVE DTC'S NO FLASH MEMORY ERROR DTC'S | 200 CRANKSHAFT REVOLUTIONS CONTINUOUS CHECK | CKP SENSOR FOR MISFIRE DETECTION CMP SENSOR FOR CYLINDER IDENTIFICATION | DTC TYPE B |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|-----------------------------------|------------|--------------------|--|--|---|--|------------------------------|---|
| ESC SENSOR OUTPUT LOW (PART "A") | P0325 | ANALOG | .04V - .14V AND VARIES WITH ENGINE SPEED | KNOCK PRESENT > 2.3 SECONDS | ENGINE RUNNING | 6 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE A |
| ESC SENSOR NOT PRESENT (PART "B") | P0325 | ANALOG | .04V - .14V AND VARIES WITH ENGINE SPEED | ESC < .19V OR > 4.99V | RPM BETWEEN 2200 & 6375 TP > 5% NO TP SENSOR HIGH/LOW DTC'S NO ECT SENSOR HIGH/LOW DTC'S | 5 SEC CONTINUOUS CHECK | ESC INPUT VOLTAGE | DTC TYPE A |
| CKP SENSOR POSITION RESYNC | P0335 | DIGITAL | 7X RESYNC COUNTER = 0 COUNTS | 7X RESYNC COUNTER > 15 COUNTS | ENGINE RUNNING NO CMP SENSOR DTC'S | 256 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE A |
| CMP SENSOR POSITION RESYNC | P0341 | DIGITAL | CAM RESYNC COUNTER = 0 COUNTS | CAM RESYNC COUNTER > 15 COUNTS | ENGINE RUNNING | 256 SECONDS CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE A |
| CMP SENSOR MISSING | P0342 | DIGITAL | 0 - 255 COUNTS | NO CHANGE IN CAM ACTIVITY > 16 CYCLES | ENGINE RUNNING | CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE A |
| EGR FLOW INSUFFICIENT | P0401 | SOFTWARE CHECK | OPERATES WHEN EGR IS USED EGR ENABLES WITH IAT > 5°C EGR DISABLES WITH IAT < 3°C MAP Δ > MAP CAL UNDER DECEL CONDITIONS | MAP Δ < MAP CAL UNDER DECEL CONDITIONS | RPM BETWEEN 1000 & 2200 VEHICLE SPEED > 20MPH NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO MISFIRE DTC'S NO CKP SENSOR DTC'S NO EVAP LEAK DTC'S NO VSS DTC'S NO INTERNAL PCM COMMUNICATION ERROR DTC'S | 15 TESTS PER TRIP AFTER NVM RESET OTHERWISE ONCE PER IGNITION CYCLE | PRESSURE DIFFERENTIAL SENSOR | DTC TYPE A |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|------------------------|------------|--------------------|---|----------------------------------|---|--|--------------------|---|
| CATALYST MONITOR | P0420 | DIGITAL | NORMAL OPERATING RANGE WHICH VARIES 150mV - 850mV | O2S 2 VARIES > 250mV | RPM BETWEEN 1700 & 3700 FLOW BETWEEN 12 - 29 GPS VEHICLE SPEED BETWEEN 30 - 80MPH NOT IN SERVICE MODE NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR HIGH/LOW DTC'S NO TP SENSOR DTC'S NO O2 SENSOR DTC'S NO FUEL TRIM DTC'S NO MISFIRE DTC'S NO EGR PINTLE POSITION DTC'S NO EVAP PURGE VALVE LEAKING DTC'S NO VSS DTC'S NO IAC VALVE DTC'S | 5 TESTS PER TRIP AFTER NVM RESET OTHERWISE ONCE PER IGNITION CYCLE | OXYGEN SENSOR | DTC TYPE A |
| EVAP SYSTEM LARGE LEAK | P0440 | ANALOG | 0.5 TO 4.5 V | VAC < 3.0 V | BARO >70kPa ECT BETWEEN 4°C & 30°C AT STARTUP IAT BETWEEN 4°C & 30°C AT STARTUP ECT AND IAT WITHIN 4°OF EACHOTHER TP SENSOR BETWEEN 9% & 35% ENGINE RUN TIME > 120 SEC EVAP SOLENOID ENABLED NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO O2S 1 DTC'S | 50 SEC ONCE PER IGNITION CYCLE | TANK VACUUM SENSOR | DTC TYPE A |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|----------------------------|------------|--------------------|--|--|--|---|-----------------------|---|
| EVAP SMALL LEAK DETECTED | P0442 | ANALOG | 0.5 TO 4.5 V | 0.024 - 0.10 V PER SEC DECAY VARIES WITH FUEL LEVEL | BARO >70kPa ECT BETWEEN 4°C & 30°C AT STARTUP IAT BETWEEN 4°C & 30°C AT STARTUP ECT AND IAT WITHIN 4°OF EACHOTHER TP SENSOR BETWEEN 9% & 35% EVAP SOLENOID ENABLED <i>NO MAP SENSOR DTC'S</i> <i>NO IAT SENSOR DTC'S</i> <i>NO ECT SENSOR DTC'S</i> <i>NO TP SENSOR DTC'S</i> <i>NO O2S I DTC'S</i> | 15 SEC ONCE PER IGNITION CYCLE | TANK VACUUM SENSOR | DTC TYPE A |
| EVAP CANISTER VENT BLOCKED | P0446 | ANALOG | 0.5 TO 4.5 V | VAC > 4.2V | BARO >70kPa ECT BETWEEN 4°C & 30°C AT STARTUP IAT BETWEEN 4°C & 30°C AT STARTUP ECT AND IAT WITHIN 4°OF EACHOTHER TP SENSOR BETWEEN 9% & 35% ENGINE RUN TIME > 120 SEC EVAP SOLENOID ENABLED <i>NO MAP SENSOR DTC'S</i> <i>NO IAT SENSOR DTC'S</i> <i>NO ECT SENSOR DTC'S</i> <i>NO TP SENSOR DTC'S</i> <i>NO O2S I DTC'S</i> | 300 SEC ONCE PER IGNITION CYCLE | TANK VACUUM SENSOR | DTC TYPE A |

1996 2.2L (LN2) J-Car (with Manual Transmission) Engine Diagnostic Parameters

96c22N_J_mE.doc

| SENSED PARAMETER | FAULT CODE | SENSOR SIGNAL TYPE | ACCEPTABLE OPERATING RANGE AND RATIONALITY | PRIMARY MALF DETECTION PARAMETER | SECONDARY MONITORING PARAMETERS AND CONDITIONS | MONITORING TIME LENGTH AND FREQUENCY OF CHECK | MONITORING METHOD | FAULT CODE STORAGE AND MIL ILLUMINATION |
|------------------|------------|--------------------|--|----------------------------------|--|---|-------------------|---|
| IDLE SPEED LOW | P0506 | SOFTWARE CHECK | 30 - 72 STEPS AT IDLE | IAC > 150 STEPS | ENGINE RUN TIME > 20 SEC BARO > 72kPa ECT > 40°C IDLE SPEED > 60 RPM OF DESIRED IDLE STABILIZED FOR 5 SEC NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO O2S 1 DTC'S NO INJECTOR DTC'S NO CKP SENSOR DTC'S NO CMP SENSOR DTC'S NO EGR DTC'S NO EVAP FLOW OR LEAKING DTC'S NO EVAP VENT BLOCKED DTC'S NO VSS DTC'S | 12.5 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE B |
| IDLE SPEED HIGH | P0507 | SOFTWARE CHECK | 30 - 72 STEPS AT IDLE | IAC < 2 STEPS | ENGINE RUN TIME > 20 SEC BARO > 72kPa ECT > 40°C IDLE SPEED > 60 RPM OF DESIRED IDLE STABILIZED FOR 5 SEC NO MAP SENSOR DTC'S NO IAT SENSOR DTC'S NO ECT SENSOR DTC'S NO TP SENSOR DTC'S NO O2S 1 DTC'S NO INJECTOR DTC'S NO CKP SENSOR DTC'S NO CMP SENSOR DTC'S NO EGR DTC'S NO EVAP FLOW OR LEAKING DTC'S NO EVAP VENT BLOCKED DTC'S NO VSS DTC'S | 12.5 SEC CONTINUOUS CHECK | SOFTWARE CHECK | DTC TYPE B |