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You can read the recommendations in the user guide, the technical guide or the installation guide for MITSUBISHI LANCER EVOLUTION-VIII. You'll find the answers to all your questions on the MITSUBISHI LANCER EVOLUTION-VIII in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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SECTION 13A

MPI (Multipoint Injection)

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@@Injector 2. ISC servo 3. Fuel pressure control solenoid valve 4. Waste gate solenoid valve 5. Purge control solenoid valve 6. Secondary air control solenoid valve · Engine control relay · Fuel pump relay 2,3 · A/C relay · Ignition coil · Fan controller · Condenser fan Relay (HI) · Condenser fan relay (LO) · Engine warning light · Diagnosis output · Alternator G terminal · Intercooler water spray relay · Intercooler water spray lamp · Tachometer Canister 5. Purge control solenoid valve 6. Secondary air control solenoid valve Check valve By-pass valve From fuel tank 5 4. Throttle position sensor 2. ISC servo Vacuum tank 3.

Fuel pressure control solenoid valve Secondary air valve 5 1. O2 sensor To fuel tank 5 7. Barometric pressure sensor 5 2. Air flow sensor 5 3. Intake air temp. sensor Fuel pressure regulator From fuel pump Intake 1. Injector 5 5. Cam position sensor 5 8. Water temp. sensor 5 9.

Knock sensor Waste gate actuator 4. Waste gate solenoid valve Catalytic converter 5 6. Crank angle sensor MPI SPECIAL TOOLS Special Tools Tool Number MB991502 Name MUT-II sub-ASSY Use MPI system inspection 13A-3 MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826 MUT-III sub-ASSY A:V.C.I. (Vehicle Communication Interface) B:USB cable C:MUT-III main harness B (for use on vehicles that have not adopted CAN communication) D:MUT-III main harness B (for use on vehicles that have not adopted CAN communication) E:Adapter for taking measurements F:Trigger harness MB991348 Test harness set Inspection using oscilloscope 13A-4 Tool MPI SPECIAL TOOLS Number MB991709 Name Test harness Use · Troubleshooting voltage measurement · Inspection using an oscilloscope MB991536 TPS adjustment check Troubleshooting voltage measurement harness MB991658 Test harness Inspection using an oscilloscope MB998464 Test harness (4P, square) Troubleshooting voltage measurement MD998478 Test harness (3P, triangular) · Troubleshooting voltage measurement · Inspection using an oscilloscope Red harness (for DLI) MB991223 White harness (for LC) Inspection harness set Terminal voltage measurement connector · Pin contact pressure inspection harness · Commercial tester connection probe (for general connector) MPI TROUBLESHOOTING TROUBLESHOOTING 1. Diagnosis Function 1-1. Engine warning light (engine check lamp) Engine warning light checks have been changed. Items that are linked to the engine warning light are: Engine ECU Air flow sensor (AFS) Intake air temperature sensor Throttle position sensor (TPS) Water temperature sensor Crank angle sensor Cam position sensor Injector Ignition coil (housing a power transistor) Barometric pressure sensor O2 sensor O2 sensor heater Fuel system abnormality Immobiliser system Knock sensor 13A-5 2. Table showing diagnosis codes Code No.

PO100 PO105 PO110 PO115 PO120 PO130 PO135 PO170 PO201 PO202 PO203 PO204 PO300 PO325 PO335 PO340 PO500 PO513 P1500 P1603 Diagnosis Items Air flow sensor (AFS) Barometric pressure sensor Intake air temperature sensor system Water temperature sensor system Throttle position sensor (TPS) system O2 sensor system O2 sensor heater Fuel system abnormality No.1 injector system No.2 injector system No.3 injector system No.4 injector system Ignition coil (housing a power transistor) system Knock sensor system Crank angle sensor system Cam position sensor system Vehicle speed sensor system Immobiliser system Alternator FR terminal system Battery back-up line system Page 13A-6 13A-8 13A-10 13A-11 13A-13 13A-16 13A-18 13A-19 13A-20 13A-21 13A-22 13A-23 13A-24 13A-25 13A-26 13A-28 13A-30 13A-31 13A-32 13A-33 13A-6 MPI TROUBLESHOOTING 3. CHECKING PROCEDURES BY DIAGNOSIS CODE Code No. P0100 Air Flow Sensor (AFS) Checking Procedure Inspection Conditions · Engine speed: at least 500rpm Evaluation conditions · Sensor output frequency to 3Hz or less for 4 seconds, or continue at 10Hz or less OK MUT-II/III service data · No.12 AFS (ref. p.13A-83) NG NG Check connector B-08 OK (1) NG B-08 AFS connector measurements · Undo connector, and take harness measurement (1) Voltage across 3 - earth (ignition switch: ON) OK: 4.

9 ~ 5.1V (2) Voltage across 4 - earth (ignition switch: ON) OK: battery voltage (3) Resistance across 5 - earth OK: 2 or less C-50 Engine ECU connector measurements · Measure engine ECU terminal voltage · Ignition switch: ON · Voltage across 61 - earth OK: 4.9 ~ 5.1V NG NG Check connector C-50 OK NG Check harness between AFS and Engine ECU · Check output wire short-circuit OK MUT-II/III service data · No.12 AFS (ref. P.13A-83) NG Replace engine ECU (2) NG Check connector B-19X OK Check and repair harness between AFS and Engine control relay · Check to see if power supply wire broken or short-circuit (3) NG Check connector C-49 OK NG Check harness between AFS and Engine ECU · Check for earth wire shortcircuit, any damage OK MUT-II/III service data · No.12 AFS (ref. P.13A-83) OK To next page OK Replace engine ECU NG Intermittent malfunction (ref.

Chapter 00 Intermittent Malfunctions) Repair NG Repair NG Repair OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair OK Check connector C50 OK NG Repair Check and repair harness between AFS ~ Engine ECU · Check to see if output wire is broken. Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Probable Causes · AFS malfunction · AFS circuit broken, short-circuit, or poor connector contact · Engine ECU malfunction MPI TROUBLESHOOTING From previous page OK NG B-08 AFS connector measurement · Using test harness (MB991709), connect to connector, and take measurement at pick up harness · Ignition switch: ON · Voltage across 7 - earth OK: 7 ~ 8 V Check connector C-49 OK Check harness between AFS and Engine ECU · Check for broken reset signal wire, any damage OK Replace AFS OK B-08 AFS connector measurement · Using test harness (MB991709), connect to connector, and take measurement at pick up harness · Voltage across 7 - earth OK: Engine idling 0 ~ 1V Engine: 3,000 rpm 6 ~ 9V NG Check connector C-49 OK Check harness between AFS and Engine ECU · Check for broken reset signal wire, any damage OK MUT-II/III service data · No.12 AFS (ref. P.13A-83) NG Replace engine ECU OK NG Measure output waveform at B-08 AFS connector (using an oscilloscope) · Using test harness (MB991709), fit to connector, and take measurement at pick up harness · Engine idling · Voltage across 3 - earth OK: Waveforms as for 'Checks carried using an oscilloscope' are output, and there is no noise in output waveforms Replace AFS OK Confirm fault symptoms NG Check connectors: C-49, C-50, B-19X OK NG Check harness between AFS and Engine ECU · Check for damage to power supply cable OK Check and repair harness between AFS and Engine ECU · Check for any damage to output wire · Check for any damage to earth wire OK MUT-II/III service data · No.

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12 AFS (ref. P.13A-83) NG Replace engine ECU OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair NG Repair Finish NG Repair NG Repair NG Repair NG Repair 13A-7 OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) 13A-8 MPI TROUBLESHOOTING Code No. P0105 Barometric Pressure Sensor System Probable causes · Barometric pressure sensor malfunction Inspection Conditions · Barometric pressure sensor circuit broken, short· Ignition switch ON circuit, or poor connector contact · Excluding a 2 second period after turning ignition switch to ON position, or · Engine ECU malfunction immediately after engine has fully started Evaluation conditions · Sensor output voltage at least 4.5V (equivalent to barometric pressure of at least 114kPa) or · Sensor output voltage 0.2V or less (equivalent to barometric pressure of 5kPa or less) OK MUT-II/III service data · No. 25 AFS: Barometric pressure sensor (ref. p.13A-83) NG Check connector B-08 OK (1) NG B-08 AFS connector measurements · Undo connector, and take harness measurement (1) Voltage across 1 - earth (ignition switch: ON) OK: 4.9 ~ 5.1V (2) Resistance across 5 - earth OK: 2 or less C-50 Engine ECU connector measurements · Measure engine ECU terminal voltage · Ignition switch: ON · Voltage across 42 - earth OK: 4. 9~5.1V NG Check connector C-50 OK NG Check harness between AFS and Engine ECU · Check power supply wire shortcircuit OK MUT-II/III service data · No.25 AFS Barometric pressure sensor (ref. P.13A-83) NG Replace engine ECU (2) NG Check connector C-49 OK NG Check harness between AFS and ECU · Check to see if earth wire is broken or damaged OK OK MUT-II/III service data · No.25 Barometric Pressure sensor (ref. P.13A-83) NG Replace engine ECU OK To next page Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair NG Repair OK Repair NG Repair OK Check connector C-50 OK NG Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) NG Intermittent malfunction (ref.

Chapter 00 Intermittent Malfunctions) Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) MPI TROUBLESHOOTING From previous page OK (1), (2) NG B-08 AFS connector measurement · Using test harness (MB991709), connect only to connector terminal Nos.1,.2, and 5, and take measurement at pick up harness · Ignition switch: ON (1) Voltage across 1 - earth OK: 4.9 ~ 5.1V (3) NG (2) Voltage across 5 - earth OK: 0.5V or less (3) Voltage across 2 - earth OK: Altitude 0m 3.8 ~ 4.2V Altitude 600m 3.5 ~ 3. 9V Altitude 1200m 3.3 ~ 3.7V Altitude 1800m 3.0 ~ 3.4V NG Check connector C-49, C-50 OK Check and repair harness between AFS and Engine ECU · Check for damage to power supply cable · Check for damage to earth wire NG Check connector C-50 OK Check harness between AFS and Engine ECU · Check for short-circuit or damage to output wire OK Replace AFS OK C-50 Engine ECU connector measurement · Engine ECU terminal voltage measurement · Ignition Switch: ON · Voltage across 51 - earth OK: Altitude 0m 3. 8 ~ 4.2V Altitude 600m 3.5 ~ 3.9V Altitude 1200m 3.3 ~ 3. 7V Altitude 1800m 3.0 ~ 3.4V OK Check connector C-50 OK MUT-II/III service data · No.25 AFS: Barometric pressure sensor (ref. p.13A-83) NG Replace engine ECU OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) NG Check connector C-50 NG Repair NG Repair Repair Repair 13A-9 OK Check and repair harness between AFS and Engine ECU · Check for short-circuit or damage to output wire NG Repair 13A-10 MPI TROUBLESHOOTING Probable causes · Air intake temperature sensor malfunction · Air intake temperature sensor circuit broken, short-circuit, or poor connector contact · Engine ECU malfunction Code No. P0110 Intake Air Temperature Sensor System Inspection Conditions · Ignition switch ON · Excluding a 2 second period after turning ignition switch to ON position, osor output voltage of at least 1.6V OK MUT-II/III service data · No.21 Water temperature sensor OK: about the same as ambient air temperature when cold.

When hot: 80 ~ 120ºC NG NG Check connector B-108 OK Next page Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) 13A-12 From previous page OK MPI TROUBLESHOOTING B-108 Water temperature sensor connector measurements · Undo connector and take harness measurement · Resistance across 1 2 OK: Water temp. -20ºC 14 ~ 17k Water temp. 0ºC 5.1 ~ 6.5 k Water temp. 20ºC 2.1 ~ 2.7 k Water temp. 40ºC 0. 9 ~ 1.3 k Water temp. 60ºC 0.48 ~ 0.68 k Water temp. 80ºC 0.26 ~ 0.36 k OK NG Replace water temperature sensor B-108 Water temperature sensor connector measurements · Undo connector, and take harness measurement (1) Voltage across 1 - earth (ignition switch: ON) OK: 4.5 ~ 4.9V (2) Resistance across 2 - earth OK: 2 or less (1) NG C-50 Engine ECU connector measurement · Engine ECU terminal voltage measurement · Undo B108 water temperature sensor connector · Ignition Switch ON · Voltage across 44 - earth OK: 4. 5 ~ 4.9V NG OK Check connector C-50 OK NG Repair Check and repair harness between water temp. sensor and Engine ECU · Check to see if output wire is broken NG Check connector C-50 OK Check harness between water temp. sensor and Engine ECU · Check to see if output wire has short-circuit OK MUT-II/III service data · No.21 Water temperature sensor OK: about the same as ambient air temperature when cold. When hot: 80 ~ 120ºC NG Replace engine ECU (2) NG Check connector C-50 OK NG Check harness between water temp. sensor and Engine ECU · Check to see if earth wire is broken or damaged OK MUT-II/III service data · No.21 Water temperature sensor OK: about the same as ambient air temperature when cold When hot: 80 ~ 120ºC NG Replace engine ECU OK To next page OK NG OK NG Repair Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) MPI TROUBLESHOOTING From previous page OK B-108 water temperature sensor connector measurement · Using test harness (MB991658), connect to connector, and take measurement at pick up harness · Ignition switch: ON · Voltage across 1 - earth OK: Water temp.

-20°C 3.9 ~ 4.5V Water temp. 0°C 3.2 ~ 3.8V Water temp. 20°C 2.3 ~ 2.9V Water temp. 40°C 1. 3 ~ 1.9V Water temp. 60°C 0.7 ~ 1.3 V Water temp. 80°C 0.3 ~ 0.9V OK MUT-II/III service data · No.21 Water temperature sensor OK: about same as ambient air temperature when cold When hot: 80 ~ 120°C NG Replace engine ECU OK Intermittent malfunction (ref.

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Chapter 00 Intermittent Malfunctions) NG Check connector C-50 OK Check and repair harness between water temp. sensor and Engine ECU · Check to see if output wire is damaged Check to see if earth wire is damaged NG Repair 13A-13 Code No. P0120 Throttle Position Sensor System Probable causes Inspection Conditions · TPS malfunction · Ignition switch: ON · TPS circuit broken, short-circuit, or poor · Excluding a 2 second period after turning ignition switch to ON position, or connector contact immediately after engine has fully started · Engine ECU malfunction Evaluation conditions · Sensor output voltage 0.2V or less for 2 seconds Inspection Conditions · Engine speed approx. 1000rpm or less · Volumetric efficiency 60% or less Evaluation conditions · Sensor output voltage at least 2.0V for 2 seconds MUT-II/III service data · No.14 TPS (ref. P.13A-83) NG Check connector B-06 OK TPS component check (ref. P.13D-113) OK Next page OK Intermittent malfunction (ref.*

*Chapter 00 Intermittent Malfunctions) Repair NG NG Replace TPS * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) 13A-14 From previous page OK MPI TROUBLESHOOTING (1) NG B-06 TPS connector measurements · Undo connector, and take harness measurement (1) Voltage across 1 - earth (ignition switch: ON) OK: 4.9 ~ 5.1V (2) Resistance across 4 - earth OK: 2 or less C-50 Engine ECU connector measurements · Measure engine ECU terminal voltage · Ignition switch: ON · Voltage across 42 - earth OK: 4.9 ~ 5.1V NG OK Check connector C50 OK NG Repair Check and repair harness between TPS ~ Engine ECU · Check to see if power supply cable is broken NG Check connector C-50 OK NG Check harness between TPS and Engine ECU · Check power supply wire shortcircuit OK OK MUT-II/III service data · No.14 TPS (ref. P.13A-83) NG Repair Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Replace engine ECU (2) NG Check connector C-50 OK NG Repair NG Check harness between TPS and ECU · Check to see if earth wire is broken or damaged OK OK MUT-II/III service data · No. 14 TPS (ref. P.13A-83) NG Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair OK To next page MPI TROUBLESHOOTING From previous page OK (1), (2) NG B-06 TPS connector measurement · Using test harness (MB991536), take measurement at pick up harness · Ignition switch: ON (1) Voltage across 1 - earth OK: 4.9 ~ 5. 1V (2) Voltage across 4 - earth OK: 0.5V or less (3) NG (3) Voltage across 2 - earth OK: Throttle pedal fully closed 0.535 ~ 0.735V Throttle pedal fully open 4.5V ~ 5. 0V Check connector C-50 OK Check and repair harness between TPS and Engine ECU · Check for damage to power supply cable · Check for damage to earth wire NG Adjust TPS (ref. P.13D-107) * OK Check connector C-51 OK Check harness between TPS and Engine ECU · Check for short-circuit or damage to output wire OK NG C-51 Engine ECU connector measurement · Engine ECU terminal voltage measurement · Ignition SW ON · Voltage across 78 - earth OK: Throttle pedal fully closed 0.535 ~ 0.735V Throttle pedal fully open 4.5V ~ 5.0V OK NG Check connector C-51 OK OK MUT-II/III service data · No.14 TPS: (ref. p.13A-83) NG Replace engine ECU Intermittent malfunction (ref.*

*Chapter 00 Intermittent Malfunctions) Repair Check connector C-51 OK Check and repair harness between TPS and Engine ECU · Check for short-circuit or damage to output wire NG Repair NG Repair Adjust NG Repair 13A-15 * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) 13A-16 MPI - TROUBLESHOOTING Probable causes · O2 sensor malfunction · O2 sensor circuit broken, short-circuit, or poor connector contact · Engine ECU malfunction Code No. P0130 O2 Sensor System Inspection Conditions · For at least 3 minutes after engine has fully started · Engine cooling water temperature at least 82ºC · Volumetric efficiency at least 25% · Engine speed at least 1200rpm Evaluation conditions · With O2 sensor output voltage 0.2V or less, and 5V applied to O2- sensor inside engine ECU, sensor output voltage at least 4.5V OK MUT-II/III service data No.11 O2 sensor (ref. P.13A-83) NG NG Check connector B-25 OK NG B-25 O2 sensor connector measurements · Undo connector, and take harness measurement · Resistance across 2 - earth OK: 2 or less Check connector C-50 OK NG Check and repair harness between O2 sensor and Engine ECU · Check to see if earth wire is broken or damaged. OK OK MUT-II/III service data · No.11: O2 sensor (ref. P.13A-83) NG Replace engine ECU OK (1) NG B-25 O2 sensor connector measurement · Using test harness (MB998464), connect to connector, then take measurement at pick up harness · After engine warmed up (1) Voltage across 2 - earth (Ignition switch: ON) OK: a least 0.5V (2) NG (2) Voltage across 4 - earth · When decelerating rapidly from 4000rpm OK: 200mV or less · When racing hard OK: 600 ~ 1,000mV NG Check connector C-50 OK Check and repair harness between O2 sensor and Engine ECU · Check to see if earth wire is damaged. NG Check O2 sensor component (ref. P. 13D-114)* OK Check connector C50 OK Check harness between O2 OK To next page * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) sensor and Engine ECU · Check to see if output wire is damaged. NG Repair NG Repair Replace O2 sensor Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair NG Repair Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) MPI TROUBLESHOOTING From previous page OK NG C-51 Engine UCU sensor connector measurement · Measure ECU terminal voltage · Engine warmed up · Voltage across 71 - earth · When decelerating rapidly from 4000rpm OK: 200mV or less · When racing hard OK: 600 ~ 1,000mV OK NG Check connector C-51 OK OK MUT-II/III service data No. 11 O2 sensor (ref. P.13A-83) NG Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Check connector C-51 OK Check and repair harness between O2 sensor and Engine ECU · Check to see if output wire is broken NG Repair 13A-17 13A-18 MPI TROUBLESHOOTING Probable causes · O2 sensor heater malfunction · O2 sensor heater circuit broken, short-circuit, or poor Code No. P0135 O2 Sensor Heater System Inspection Conditions · Engine cooling water temperature approx. 20ºC or more · O2 sensor heater ON connector contact · Engine speed at least 50rpm · Engine ECU malfunction · A/C relay: OFF, Radiator Fan: OFF · Battery voltage 11 ~ 16V Evaluation conditions · With O2 sensor heater current 0.*

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2A or less, or 3.5A or more, for 4 seconds NG Check connector B-25 OK B-25 O2 sensor connector measurements · Undo connector, and take measurement on sensor side · Resistance across 1 - 3 OK: 11 ~ 18 OK NG B-25 O2 sensor connector measurement · Undo connector, then take harness measurement · Ignition switch: ON · Voltage across 1 - earth OK: Battery voltage Check connector B-19X OK Check and repair harness between O2 sensor ~ Engine control relay · Check to see if power supply cable is broken or has short circuit. NG Check connector C49 OK NG Check harness between O2 sensor and Engine ECU · Check to see if earth wire is broken or has short circuit. OK Replace engine ECU OK NG Check connector C-49 OK NG Check harness between O2 sensor and Engine control relay · Check to see if power supply wire is damaged OK Check harness between O2 sensor and Engine ECU · Check to see if earth wire is damaged OK Confirm fault symptoms NG Replace engine ECU OK Intermittent malfunction (ref.

Chapter 00 Intermittent Malfunctions) NG Repair Repair Repair Repair NG Repair Repair NG Replace O2 sensor NG Repair OK C-49 Engine ECU connector measurements · Measure engine ECU terminal voltage · Ignition switch: ON · Voltage across 3 earth OK: Battery voltage MPI TROUBLESHOOTING Code No. P0170 Fuel System Abnormality Inspection Conditions · Engine Air-fuel ratio learning Evaluation conditions · At least 5 second duration when injected fuel correction value is abnormally low or · At least 5 second duration when injected fuel correction value is abnormally high YES MUT-II/III diagnosis codes · Have any diagnosis codes other than code no. P0170 been output? NO MUT-II/III service data · No.12 AFS · No.13 Intake air temp. sensor · No.21 Water temp. sensor · No.25 Atmospheric air pressure sensor (ref. P.
13A-83) <For reference> When all service data values are correct, proceed to OK. If there are one or more abnormal service data values, proceed to NG OK NG Check air being taken in via intake hose and inlet manifold OK NG Check for any exhaust gas leaks from the exhaust manifold OK NG Check for dirt on throttle body (in the area of throttle valve) OK NG MUT-II/III service data · No.11: O2 service data (ref. P.13A-83) OK Check purge control solenoid valve component (ref.
*Chapter 17 Emission Control) OK Check fuel pressure (ref. P.13D-109) * OK Replace injector NG Confirm fault symptoms OK Replace engine ECU * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) NG Replace purge control solenoid Check Code No.*
P0130: O2 Sensor System (ref. P.13A-19) Clean throttle body (area of throttle valve) (ref. P.13D-107) Repair Repair NG When abnormal service data values occur, go to the checking procedures relevant to the particular sensor diagnosis codes (ref. P.13A-5) Table showing diagnosis codes (ref. P.13A-8) Probable causes 13A-19 · Fuel supply system malfunction · O2 sensor malfunction · Intake air temperature sensor malfunction · Atmospheric air pressure sensor malfunction · Air flow sensor malfunction · Purge control solenoid valve malfunction · Engine ECU malfunction 13A-20 Code No.P0201 No.*

1 Injector System MPI TROUBLESHOOTING Probable causes · No.1 injector malfunction · No.1 injector circuit broken, has short circuit, or poor connector contact · Engine ECU malfunction Inspection Conditions · Engine speed: 50 ~ 1,000rpm · TPS output voltage 1.15V or less · Not during MUTII/III forced drive (actuator test) Evaluation conditions · Injector coil surge voltage not detected for a 2 second duration OK MUT-II/III actuator test · No.01: No.1 injector OK: Idle condition changes NG NG Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Check connector B-29 OK NG Repair B-29 No.1 Injector connector measurements · Undo connector, take measurement at harness · Resistance across 1 2 OK: 2 ~ 3 OK NG Replace No.1 injector NG Check connector B-19X, B-129, C-23 OK Check register (ref. P.
*13D-116) * OK NG Repair B-29 No.1 Injector connector measurements · Undo connector, take measurement at harness · Ignition switch: ON · Voltage across 1 earth OK: Battery voltage OK NG Check harness between No.1 injector and register (used for injectors) · Check for damage to power supply cable OK NG Repair Check harness between No.1 injector and register (used for injectors) · Check if power supply cable is broken or has short circuit OK Check and repair harness between register (used for injectors) and engine control relay · Check if power supply cable is broken or has short circuit Repair Check harness between register (used for injectors) and engine control relay · Check for damage to power supply cable OK NG Repair Check connector C-49 OK OK Repair NG C-49 Measure signal waveform at engine ECU connector (using an oscilloscope) · Engine idling · Voltage across 1 earth OK: Output waveform should be OK as explained in P.13A-92 (Instructions for checks done using oscilloscope) Check harness between No.*
*1 injector and engine ECU · Check if output wire is broken, has short circuit, or is damaged NG Repair Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) MPI TROUBLESHOOTING Code No.P0202 No.2 Injector System Inspection Conditions · Engine speed: 50 ~ 1,000rpm or less · TPS output voltage 1.*
15V or less · Not during MUTII/III forced drive (actuator test) Evaluation conditions · Injector coil surge voltage not detected for a 2 second duration OK MUT-II/III actuator test · No.02: No.2 injector OK: Idle condition changes NG NG Check connector B-28 OK NG B-28 No.2 Injector connector measurements · Undo connector, take measurement at harness · Resistance across 1 2 OK: 2 ~ 3 OK NG B-28 No.2 Injector connector measurements · Undo connector, take measurement at harness · Ignition switch: ON · Voltage across 1 earth OK: Battery voltage OK NG Check harness between No.2 injector and register (used for injectors) · Check for damage to power supply cable OK Check harness between register (used for injectors) and engine control relay · Check for damage to power supply cable OK NG Check connector C-49 OK OK Check harness between No.2 injector and engine ECU · Check if output wire is broken, has short circuit, or is damaged NG Repair C-49 Measure signal waveform at engine ECU connector (using an oscilloscope) · Engine idling · Voltage across 9 earth OK: Output waveform should be as explained in P.

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*13A-92 (Instructions for checks done using oscilloscope) NG Replace engine ECU Repair NG Repair Repair Check connectors B-19X, B129, C-23 OK NG Check register (ref. P.13D-116) * OK NG Check harness between No.*

*2 injector and register (used for injectors) · Check if power supply cable is broken or has short circuit OK Check and repair harness between register (used for injectors) and engine control relay · Check if power supply cable is broken or has short circuit NG Replace No.2 injector Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Probable causes 13A-21 · No.2 injector malfunction · No.2 injector circuit broken, has short circuit, or poor connector contact · Engine ECU malfunction Repair Repair Repair OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) 13A-22 Code No.P0203 No.3 Injector System MPI TROUBLESHOOTING Probable causes · No.3 injector malfunction · No.*

3 injector circuit broken, has short circuit, or poor connector contact · Engine ECU malfunction Inspection Conditions · Engine speed: 50 ~ 1,000rpm or less · TPS output voltage 1.15V or less · Not during MUTII/III forced drive (actuator test) Evaluation conditions · Injector coil surge voltage not detected for a 2 second duration OK MUT-II/III actuator test · No.03: No.3 injector OK: Idle condition changes NG NG Check connector B-27 OK NG B-27 No.3 Injector connector measurements · Undo connector, take measurement at harness · Resistance across 1 2 OK: 2 ~ 3 OK B-27 No.

3 Injector connector measurements · Undo connector, take measurement at harness · Ignition switch: ON · Voltage across 1 earth OK: Battery voltage OK NG Check harness between No.3 injector and register (used for injectors) · Check for damage to power supply cable OK NG Check harness between register (used for injectors) and engine control relay · Check for damage to power supply cable OK NG Check connector C-49 OK Check harness between No.3 injector and engine ECU · Check if output wire is broken, has short circuit, or is damaged NG Repair OK NG C-49 Measure signal waveform at engine ECU connector (using an oscilloscope) · Engine idling · Voltage across 24 earth OK: Output waveform should be as explained in P.13A-92 (Instructions for checks done using oscilloscope) Replace engine ECU Repair Repair Repair Check harness between No.3 injector and register (used for injectors) · Check if power supply cable is broken or has short circuit OK Check and repair harness between register (used for injectors) and engine control relay · Check if power supply cable is broken or has short circuit NG Check connector B-19X, B-129, C-23 OK NG Check register (ref.

*P.13D-116) * OK NG Repair Repair NG Repair Replace No.3 injector Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) MPI TROUBLESHOOTING Code No.P0204 No.4 Injector System Inspection Conditions · Engine speed: 50 ~ 1,000rpm or less · TPS output voltage 1.15V or less · Not during MUTII/III forced drive (actuator test) Evaluation conditions · Injector coil surge voltage not detected for a 2 second duration Probable causes 13A-23 · No.4 injector malfunction · No.*

*4 injector circuit broken, has short circuit, or poor connector contact · Engine ECU malfunction OK MUT-II/III actuator test · No.04: No.4 injector OK: Idle condition changes NG NG Check connector B-26 OK NG B-26 No.4 Injector connector measurements · Undo connector, take measurement at harness · Resistance across 1 2 OK: 2 ~ 3 OK NG B-26 No.4 Injector connector measurements · Undo connector, take measurement at harness · Ignition switch: ON · Voltage across 1 earth OK: Battery voltage OK Check harness between No.4 injector and register (used for injectors) · Check for damage to power supply cable OK Check harness between register (used for injectors) and engine control relay · Check for damage to power supply cable OK Check connector C-49 OK Check harness between No.4 injector and engine ECU · Check if output wire is broken, has short circuit, or is damaged NG Repair OK NG C-49 Measure signal waveform at engine ECU connector (using an oscilloscope) · Engine idling · Voltage across 2 earth OK: Output waveform should be OK as explained in P.13A-92 (Instructions for checks done using oscilloscope) Replace engine ECU NG NG NG Repair Check connector B-19X, B-129, C-23 OK Check register (ref. P.13D-116) * OK Check harness between No.*

*4 injector and register (used for injectors) · Check if power supply cable is broken or has short circuit OK Check and repair harness between register (used for injectors) and engine control relay · Check if power supply cable is broken or has short circuit NG Repair NG Repair NG Repair Replace No.4 injector Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) * Refer to '01 Lancer Evolution VII Workshop Manual (No.1036K02) 13A-24 MPI TROUBLESHOOTING Probable causes · · · · Ignition coil malfunction Spark plug malfunction Spark plug cable malfunction Ignition primary circuit broken, has a short circuit, or poor connector contact · Engine ECU malfunction Code No.*

P0300 Injection Coil (housing a power transistor) System Inspection Conditions · Engine speed: 1500 ~ 3,500rpm or less · Volumetric efficiency 40% - 80% · Not whilst engine is cranking Evaluation conditions · Detecting engine speed abnormalities caused by misfiring, using crank angle sensor (one of the two coils is for fuel) NG Check spark plug cable (ref. Chapter 16 Ignition System) OK Check spark plugs (ref. Chapter 16 Ignition System) OK Check ignition coil: B-119, B-123 OK Check ignition coil (re. Chapter 16 Ignition Systems) OK B-119, B-123 Ignition coil connector measurement · Undo connector, then take harness measurement (1) Voltage across 1 - earth (Ignition switch: ON) OK: Battery voltage (2) Voltage across 3 - earth (engine cranking) OK: 0.5 ~ 4. 0V (3) Resistance across 2 - earth OK: 2 or less (2) NG NG Replace ignition coil NG Repair NG Replace spark plugs Replace spark plug cable (1) NG Check connector B-17X OK · Check ignition coil relay (ref. Chapter 16 Electrical) OK Check and repair harness between ignition coil and Ignition coil relay · Check to see if power supply cable has short circuit.


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C-49 Engine ECU connector measurement · Measure engine ECU terminal voltage · Disconnect B-119, B-123 · Engine cranking (1) Voltage across 11, 12 - earth OK: 0.5 ~ 4.0V NG Check connector C-49 OK Check and repair harness between ignition coil and Engine ECU Check to see if power supply cable is broken. OK Confirm fault symptoms NG Replace engine ECU (3) NG Check and repair harness between ignition coil and body earth · Check for broken or damaged earth wire NG Repair NG Repair OK Check connector C-49 OK NG Repair Check and repair harness between ignition coil and Engine ECU Check to see if power supply cable has short circuit. NG Repair NG Repair OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) OK To next page MPI TROUBLESHOOTING From previous page 13A-25 NG Check harness between ignition coil and ignition coil relay · Check for damage to power supply cable OK Check harness between ignition coil and engine ECU · Check for damage to output cable OK Confirm fault symptoms NG Replace engine ECU NG Repair Repair OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Code No.P0325 Knock Sensor System Probable causes Inspection Conditions · Knock sensor malfunction · Ignition switch: ON · Knock sensor circuit broken, has a short circuit, or poor · Excluding a duration of 2 seconds after turning ignition to connector contact ON position, or immediately after engine has fully started up · Engine ECU malfunction · Engine speed approx.

2,500rpm or more · Volumetric efficiency at least 30% Evaluation conditions · For 200 continuous cycles, change in knock sensor output voltage (knock sensor peak value for each half turn of crank shaft) 0.06V or less NG Check connector B-106 OK NG B-106 Knock sensor connector measurement · Undo connector, then take harness measurement · Resistance across 2 earth OK: 2 or less OK NG Check connector C-51 OK NG Check harness between knock sensor and engine ECU · Check to see if output wire is broken, has short circuit, or is damaged OK OK Confirm fault symptoms NG Replace knock sensor Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair Check and repair harness between knock sensor and body earth · Check to see if earth wire is broken or damaged Repair OK Confirm fault symptoms NG Replace engine ECU Finish 13A-26 MPI TROUBLESHOOTING Probable causes · Crank angle sensor malfunction · Crank angle sensor circuit broken, has a short circuit, or poor connector contact · Engine ECU malfunction Code No.P0335 Crank Angle Sensor System Inspection Conditions · Engine cranking Evaluation conditions · No change in sensor output voltage for duration of 4 seconds (pulse signal is not input) OK MUT-II/III service data No.22 Crank angle sensor (ref. P.13A-83) NG Check connector B-122 OK (1) NG B-122 Crank angle sensor connector measurements · Undo connector, and take harness measurement (1) Voltage across 2 - earth (Ignition switch: ON) OK: 4.9 ~ 5.1V (2) Voltage across 3 - earth (Ignition switch: ON) OK: Battery voltage (3) Resistance across 1 earth OK: 2 or less NG Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) OK C50 Engine ECU connector measurement · Measure engine ECU terminal voltage · Undo B-122 · Ignition switch: OFF · Voltage across 43 earth OK: 4.
9 ~ 5.1V NG NG Check connector C-50 OK NG Check harness between crank angle sensor and Engine ECU · Check to see if output wire has short circuit OK MUT-II/III service data · No.22: Crank angle sensor (ref. P.13A-83) NG Replace engine ECU OK Intermittent malfunction (ref.
Chapter 00 Intermittent Malfunctions) Repair Repair Check connector C-50 OK NG Repair Check and repair harness between crank angle sensor and Engine ECU · Check to see if output wire is broken (2) NG Check connector B-19X OK Check and repair harness between crank angle sensor and Engine control relay · Check to see if power supply cable is damaged. (3) NG Check connector C-49 OK Check and repair harness between crank angle sensor and Engine ECU · Check for broken or damaged earth wire NG Repair NG Repair OK To next page MPI TROUBLESHOOTING From previous page OK NG B-122 Crank angle sensor connector output waveform measurement (using an oscilloscope) · Using test harness (MB998478), connect to connector, then take measurement at pick up harness · Engine idling · Voltage across 2 - earth OK: Output waveform should be as explained in P.13A-92 (Instructions for checks done using oscilloscope), max. value at least 4.8V, min.
value 0.6V or less. There should be no noise in the output waveform. Check connector B-19X OK NG Check harness between crank angle sensor and Engine control relay · Check to see if power supply cable is damaged. OK NG Check connector C-49, C-50 OK NG Check harness between crank angle sensor and Engine ECU · Check to see if output wire is damaged · Check to see if earth wire is damaged OK NG Check crank angle sensor vane OK OK Confirm fault symptoms NG Replace crank angle sensor OK OK MUT-II/III service data No.22 Crank angle sensor (ref. P.13B-83) NG Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair Repair 13A-27 NG Repair Replace crank angle sensor vane Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) 13A-28 MPI TROUBLESHOOTING Probable causes Code No.

P0340 Cam Position Sensor System Inspection Conditions · Cam position sensor malfunction · Ignition switch: ON · Cam position sensor circuit broken, has a short · Engine speed approx. 50rpm or more circuit, or poor connector contact Evaluation conditions · Engine ECU malfunction · No change in sensor output voltage for duration of 4 seconds (pulse signal is not input) NG Check connector B-115 OK (1) NG B-115 Cam position sensor connector measurements · Undo connector, and take harness measurement (1) Voltage across 3 - earth (Ignition switch: ON) OK: Battery voltage (2) Voltage across 2 - earth (Ignition switch: ON) OK: 4.9 ~ 5.1V (3) Resistance across 1 earth OK: 2 or less Check connector B-19X OK Check and repair harness between cam position sensor and Engine control relay · Check to see if power supply cable is broken or has short circuit (2) NG C-50 Engine ECU connector measurement · Measure engine ECU terminal voltage · Undo B-115 cam position sensor connector · Ignition switch: ON · Voltage across 50 earth OK: 4.9 ~ 5.1V NG NG Check connector C-50 OK NG Check harness between cam position sensor and Engine ECU · Check to see if output wire has short circuit OK OK Confirm fault symptoms NG Replace engine ECU (3) NG Check connector C-49 OK Check and repair harness between cam position sensor and Engine ECU · Check to see if earth wire is broken or damaged.

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NG Repair Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair OK Check connector C-50 OK NG Repair NG Repair Repair Check and repair harness between crank angle sensor and Engine ECU · Check to see if output wire is broken OK To next page MPI TROUBLESHOOTING From previous page OK NG B-115 Cam position sensor connector output waveform measurement (using an oscilloscope) · Using test harness (MB991709), connect to connector, then take measurement at pick up harness · Engine idling · Voltage across 2 - earth OK: Output waveform should be as explained in P.13A-92 (Instructions for checks done using oscilloscope), max. value at least 4.

8V, min. value 0.6V or less. There should be no noise in the output waveform. Check connector B-19X OK NG Check harness between cam position sensor and Engine control relay · Check to see if power supply cable is damaged.

OK NG Check connector C-49, C-50 OK NG Check harness between cam position sensor and Engine ECU · Check to see if output wire is damaged · Check to see if earth wire is damaged OK NG Check cam position sensing cylinder OK Confirm fault symptoms NG Replace cam position sensor OK OK Confirm fault symptoms NG Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) OK Repair Repair Repair NG Repair 13A-29 Replace cam position sensing cylinder Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) 13A-30 MPI TROUBLESHOOTING Probable causes Code No.P0500 Vehicle Speed Sensor System Inspection Conditions · Vehicle speed sensor malfunction · Ignition switch: ON · Vehicle speed sensor circuit broken, has a · After ignition switch has been turned to ON position, or after 2 seconds short circuit, or poor connector contact from the time the engine has fully started up · Engine ECU malfunction · Engine speed approx. 2,000~4,000 rpm Evaluation conditions · No change in vehicle speed signal for duration of 4 seconds (pulse signal is not input) NO Is speedometer working correctly? YES OK C-51 Engine ECU connector measurement · Connect connector · Voltage across 80 earth (ignition switch: ON) OK: When vehicle is pushed, repeated change 0 5V.

NG NG Check connector B-131, C-51 OK OK Confirm fault symptom OK Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Check connector C-51 OK Confirm fault symptom NG Replace engine ECU NG Repair Check vehicle speed sensor (ref. Chapter 54 Combi. Meter) MPI TROUBLESHOOTING Code No.P0513 Immobiliser System Inspection Conditions · Ignition switch: ON Evaluation conditions · Communication error between engine ECU and immobiliser detected. Probable causes 13A-31 · Circuit broken, has a short circuit, or poor connector contact · Immobiliser ECU malfunction · Engine ECU malfunction Remarks (1) When starting the engine, in cases where there are a number of registered ignition keys within close range, these codes could be displayed as a result of electrical interference. (2) These codes may be displayed at the time key ID codes are registered. NG Check connectors C-22, C-51, C-54 OK NG Check harness between immobiliser and Engine ECU OK OK Confirm fault symptom NG Replace immobiliser ECU OK OK Confirm fault symptom NG Replace engine ECU Finish Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair 13A-32 MPI TROUBLESHOOTING Probable causes Code No.P1500 Alternator FR Terminal System Inspection Conditions · Alternator FR terminal circuit broken · Engine speed: at least 50rpm · Engine ECU malfunction Evaluation conditions · For a 20 second duration, input voltage from the FR terminal, 4.

8 ~ 5.2V, or battery voltage NG Check connector B-21 OK B-21 Alternator intermediate connector measurement · Undo connector, take measurement at female connector side · Ignition switch: ON · Voltage across 5 earth OK: 4.9 ~ 5.1V NG Check connector C-50 OK Check harness between alternator intermediate connector and Engine ECU · Check if output wire has short circuit OK Confirm fault symptoms NG Replace engine ECU OK B-21 Alternator intermediate connector measurement · Using test harness (MB991658), connect to connector, then take measurement at pick up harness · Ignition switch: ON · Voltage across 5 - earth OK: 5 ~ 6V NG Check connector B-03 OK NG Check harness between alternator connector and alternator intermediate connector · Check if power supply cable has short circuit OK Replace alternator OK NG B-21 Alternator intermediate connector measurement · Using test harness (MB991658), connect to connector, then take measurement at pick up harness · Engine idling (after warming up) · Radiator fan: not operating · Voltage across 5 - earth OK: Voltage drops when headlamps go from OFF ON Check connectors B-03, C-50 OK NG Check harness between alternator and alternator intermediate connector · Check if power supply cable is damaged OK Check harness between alternator intermediate connector and Engine ECU · Check if power supply cable is damaged OK Confirm fault symptoms NG Replace alternator OK OK Confirm fault symptoms OK Replace engine ECU Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) NG Repair Repair NG Repair NG Repair OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) NG Repair Repair NG Repair MPI TROUBLESHOOTING Code No.P1603 Battery Back-up Line System Inspection Conditions · Ignition switch: ON Evaluation conditions · Back-up RAM information from the last time the ignition switch was turned OFF, has not been recorded Probable causes 13A-33 · Battery back-up line circuit is broken, has a short circuit, or connector contact is poor · Engine ECU malfunction YES Was battery terminal disconnected immediately before reading diagnosis code? NO YES MUT-II Timing Diagnosis Code · Has Code no.1603 been output? NO Finish Turn ignition switch to "LOCK" (OFF) position, wait 10 seconds, then turn to "ON" position again. NG C-50 Engine ECU connector measurement · Engine ECU terminal voltage measurement · Ignition switch: ON · Voltage across 60 earth OK: Battery voltage C-50 Engine ECU connector measurement · Undo connector, measure harness side · Voltage across 60 earth OK: Battery voltage NG Check connectors C-21, C-07, C-209, C-211, C-32 OK NG Repair Check and repair harness between battery and engine ECU · Check to see if power supply cable is broken or has short circuit OK OK Check connectors C-50, C-21, C-07, C-209, C-211, C-19, C-32 OK NG Repair Check and repair harness between battery and engine ECU Check for damage to power supply cable NG Check connector C-50 OK Repair OK Confirm fault symptoms NG Intermittent malfunction (ref.


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Chapter 00 Intermittent Malfunctions) Replace engine ECU 13A-34 4. List of Fault Symptoms MPI TROUBLESHOOTING ITEMS Communicatio n with MUT II/III Engine warning light Starting Fault Symptoms No communication between MUT-II/III and any other system Only MUT-II/III and Engine ECU can communicate The engine warning light does not come on immediately after turning ignition switch to "ON " position Engine warning light remains lit. Does not go off. Starting not possible (starter does not Starter does not function turn over) Starting not possible Starter functions and cranks, but there is no (starter turns over but no initial firing) combustion inside cylinders and engine does not start Starting not possible (fires, but not Combustion in cylinders, but engine stalls fully) immediately Poor starting (starting takes a long Engine starts, but cranking takes a long time time) Irregular idling During idle running, engine speed fluctuates. (rough idling, hunting) This can normally be seen in the tachometer needle swinging, and vibrations felt through the steering wheel, gear stick, and body Incorrect idling speed Does not idle at correct speed Engine stalls when idling During idling, the engine stalls irrespective of (dies out) whether the vehicle is moving Engine stalls when pulling away from When vehicle is idling and throttle pedal is standing (`pass out') depressed, or during operation, engine stalls Engine stalls during deceleration Engine stalls when decelerating.

Pulsating/discontinuous combustion When throttle pedal is depressed in order to (hesitation, sag) accelerate from certain speeds, vehicle response (engine speed) is delayed. Furthermore, during acceleration, (engine speed) drops momentarily. These symptoms are generally referred to as `hesitation'. Severe hesitation is referred to as `sag' Poor acceleration Driving at steady speeds is smooth, but when accelerating, the rate of acceleration does not respond to increased throttle. So highest speeds are not reached Stumble When pulling away from standing, engine speed responds slowly to initial throttle pedal movement Surge Driving at steady speeds, or when accelerating, the vehicle repeatedly jerks backwards and forwards Acceleration shock A major shock is generated on acceleration Deceleration shock A major shock is generated on deceleration Knocking Thudding noise like a dull hammering comes from cylinder walls during driving, resulting in rough driving.

Ignition mistiming Discrepancy between firing timing and standard values specified for timing. Run-on Engine continues to run after ignition switch is (dieseling/pinking) turned to "LOCK" (OFF) position. Smelly, white smoke, black smoke Exhaust fumes smell unusually strong. CO and HC densities are high when Exhaust is white or black. CO and HC idling densities are high when idling Flat battery Battery loses its charge immediately. Or battery charging capacity is low Overheating Engine cooling water temperature unusually high Radiator fan motor running abnormally Irrespective of engine cooling water temperature, when ignition switch is turn to the ON position, the fan motor starts running A/C not effective Air not cooled down. Or there is a discrepancy with temperature set. Checking procedures 1 2 3 4 5 6 7 Poor idling 8 Engine stall 9 10 11 Driving 12 13 14 15 16 17 Stopping Exhaust fumes Charging Cooling 18 19 20 A/C performance 21 MPI TROUBLESHOOTING 4-1. List of Fault Symptoms 13A-35 Check procedures 1 2 3 4 5 6 7 8 Check Items No communication between MUT-II/III and any other system Only MUT-II/III and Engine ECU can communicate The engine warning light does not come on immediately after turning ignition switch to "ON " position Engine warning light remains lit. Does not go off.

Starting not possible (starter does not turn over) Starting not possible (starter turns over but no initial firing) Starting not possible (fires, but not fully) Poor starting (starting takes a long time) Irregular idling (rough idling, hunting) Incorrect idling speed Engine stalls when idling (dies out) Page 13A-36 13A-37 13A-38 13A-39 13A-40 13A-42 13A-44 13A-46 9 10 11 Engine stalls when pulling away from standing (`pass out') Engine stalls during deceleration Pulsating/discontinuous combustion (hesitation, sag) Poor acceleration Stumble Surge 13A-49 13A-50 13A-50 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 Acceleration shock Deceleration shock Knocking Ignition mistiming Run-on (dieseling/pinking) Smelly, white smoke, black smoke CO and HC densities are high when idling Flat battery Overheating Radiator fan motor running abnormally A/C not effective Engine ECU power supply, engine control relay, ignition switch IG1 system Fuel pump system Radiator fan control relay system Condenser fan control relay system A/C switch system A/C compressor relay A/C load signal system Power steering fluid pressure switch system Purge solenoid valve system Fuel pressure control solenoid valve system Secondary air control solenoid valve Waste gate solenoid valve system Idle speed control (ISC) servo (stepper motor) system Intercooler water spray circuit system Intercooler water spray lamp system 13A-52 13A-53 13A-53 13A-54 13A-55 13A-55 13A-57 13A-58 13A-59 13A-60 13A-61 13A-63 13A-65 13A-67 13A-70 13A-71 13A-73 13A-74 13A-75 13A-76 13A-77 13A-78 13A-79 13A-80 13A-82 13A-36 6. Checking Procedure for each Fault Checking Procedure 1 MPI TROUBLESHOOTING No Communication between MUT-II/III and any other system The probable causes are noted right. Probable causes · Diagnosis connector malfunction · MUT-II/III malfunction Check connector C-122 OK C-122 Diagnosis connector measurement · Undo connector, then take measurement on harness side (1) Resistance across 4 - earth Resistance across 5 - earth OK: 2 or less (2) Voltage across 16 - earth OK: Battery voltage NG (1) NG Check and repair harness between diagnosis connector and body earth · Check for broken or damaged earth wire (2) NG Check connectors C212, C211, C-32 OK Check and repair harness between diagnosis connector and body earth · Check to see if power supply cable is broken or has short circuit NG Repair OK Replace MUTII/III OK Confirm fault symptoms NG Check connectors C212, C211, C-32 OK Check harness between diagnosis connector and battery · Check for damage to power supply cable OK Check connector C-107 OK Check and repair harness between diagnosis connector and body earth · Check for damage to earth wire Finish NG Repair NG Repair NG Repair MPI TROUBLESHOOTING Checking Procedure 2 13A-37 Only MUT-II/III and engine ECU can communicate The probable causes are noted right. Probable causes · Ignition switch malfunction · Engine control relay malfunction · Engine ECU malfunction NG Confirm engine warning light · Ignition switch: ON OK: Engine warning lamp lit OK NG Check connectors C-110, C-12 <vehicles fitted with MMCS> C-22, C-23, C-51, C-122 OK NG Check harness between diagnosis connector and engine ECU · Check for damage, short circuits, or damage to communication wiring OK OK Confirm fault symptoms NG Replace engine ECU Intermittent malfunction (ref.


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Chapter 00 Intermittent Malfunctions) Repair Repair Checking procedure 22: Check engine ECU power supply, engine control relay, ignition switch-IG1 system (ref. P.13A-65) 13A-38 Checking Procedure 3 MPI TROUBLESHOOTING The engine warning light does not come on immediately after turning ignition switch ON. To check whether the engine warning light bulb is broken or not, the engine ECU checks the engine warning light for a duration of 5 seconds immediately after the ignition switch is turned to the ON position. Probable causes · · · · Engine warning lamp bulb is broken Ignition switch malfunction Engine control relay malfunction Engine ECU malfunction Is it possible to start the engine? YES NO Checking procedure 22: Check engine ECU power supply, engine control relay, ignition switch-IG1 system (ref. P.

13A-65) Replace engine warning light NG Check to see if engine warning light is broken (ref. Chapter 54A Combi. Meter) OK Check connector C-106 OK NG C-106 Combi. meter connector measurement · Undo connector, then take measurement on harness side · Ignition switch ON · Voltage across 9 earth OK: Battery voltage OK NG Check connector C-49 OK C-49 Engine ECU measurement · Undo connector, then take measurement on harness side · Ignition switch ON · Voltage across22 earth OK: Battery voltage OK NG Check connectors C-212, C-210 OK Check and repair harness between combi. meter and ignition NG switch.

· Check for damage to power supply cable OK NG Check connector C-22 OK Check harness between combi. meter and engine ECU. · Check for damage to power supply cable OK Confirm fault symptoms NG Replace engine ECU NG Repair OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Repair Repair NG Check connectors C-22 OK Check and repair harness between combi. meter and ignition switch.

· Check to see if power supply cable is broken, or has short circuit Repair NG Repair Check connectors C-212, C-210 OK Check and repair harness between combi. meter and ignition switch. · Check to see if power supply cable is broken, or has short circuit NG Repair NG Repair MPI TROUBLESHOOTING Checking Procedure 4 Engine warning light stays lit (does not go off) When the engine ECU records the generation of the diagnosis code, it turns the engine warning light on. Probable causes · Engine ECU malfunction 13A-39 YES MUT-II/III Diagnosis Code · Has diagnosis code been output? NO NG Check connector C-49 OK OK C-49 Engine ECU measurement · Undo connector, then take measurement on harness side · Ignition switch ON · Voltage across 22 - earth OK: Battery voltage NG NG Check connector C-22 OK Check and repair harness between combi. meter and Engine ECU · Check to see if output cable for short circuit Repair Confirm fault symptoms NG Replace engine ECU OK Intermittent malfunction (ref. Chapter 00 Intermittent Malfunctions) Repair Diagnosis Code List (ref. P.13A-5) 13A-40 Checking Procedure 5 MPI TROUBLESHOOTING Probable causes · Battery malfunction · Ignition switch malfunction · Starter malfunction Replace battery NG Check connector B-14X OK B-14X Starter interlock relay connector measurement · Undo connector, then take measurement on harness side · Ignition switch: ST · Voltage across 2 earth · Voltage across 3 earth OK: Battery voltage NG Check connector C-201 OK Check ignition switch (ref. Chapter 54 Ignition Switch) OK NG Replace ignition switch Check connector C-21 OK NG Repair NG Starting not possible (starter does not turn over) The probable causes are noted right. Check battery (ref.

Chapter 54 Battery) OK MUT-II/III Service Data · No.18: cranking signal · Ignition switch: ST OK: ON · Ignition switch: ON OK: OFF OK To next page NG Repair Check and repair harness between ignition switch and starter interlock relay · Check to see if power supply cable is broken, or has a short OK NG Check starter interlock relay (ref. Chapter 16 Vehicle Servicing) OK Check connector C-127 OK C-127 Clutch switch connector measurement · Undo connector, then take measurement on harness side (1) Voltage across 2 - earth (Ignition switch: ST) OK: Battery voltage (2) Resistance across 2 earth OK: 2 or less (1) NG Check connector C-126, C-22 OK NG Repair Starter interlock relay NG Repair Check and repair harness between starter interlock relay and clutch switch · Check to see if power supply cable is broken or has a short (2) NG Check connectors C-126, C-107 OK NG Repair Check and repair harness between clutch switch and body earth · Check to see if earth wire is broken or damaged OK Check clutch switch (ref. Chapter 21 Clutch Pedal) OK Check connectors C-23, B-21, B-05 OK To next page NG Repair NG Replace clutch switch MPI TROUBLESHOOTING From previous page From previous page OK Check harness between starter interlock relay and starter interlock relay intermediate connector · Check to see if output wire is broken or has a short OK Check harness between starter interlock relay intermediate connector and starter · Check output wire for short circuit 13A-41 NG Repair OK Check connector C-42 OK NG Repair OK NG Check connector B-05 OK B-05 Starter connector measurement · Undo connector, then take measurement on harness side · Ignition switch: ST · Voltage across 1 earth OK: Battery voltage OK NG Check terminal: B-04 OK B-04 Starter terminal measurement · Voltage across 1 earth OK: Battery voltage OK Check connectors B-14X, C-21, C-201 OK Check harness between ignition switch and starter interlock relay · Check for damage to power supply cable OK Check connector B-21 OK Check harness starter interlock relay and starter · Check for damage to output wire OK Check connector C-22, C-126, C-127, C-107 OK Check harness between starter interlock relay and clutch switch · Check for damage to power supply cable OK Check harness between battery and starter · Check for damage to power supply cable OK Replace starter NG NG NG NG NG Repair NG Repair NG Check and repair harness between starter interlock relay intermediate connector and Engine ECU · Check output wire for short circuit Check connector B-21 OK Check and repair harness between starter interlock relay intermediate connector and starter · Check to see if output wire is broken Repair Check and repair harness between battery and starter · Check to see if power supply cable is broken or has a short Repair Repair NG Repair Repair NG Repair Repair NG Repair Repair 13A-42 Checking Procedure 6 MPI TROUBLESHOOTING Starting not possible (starter turns over but no initial firing) The probable causes are noted right.

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