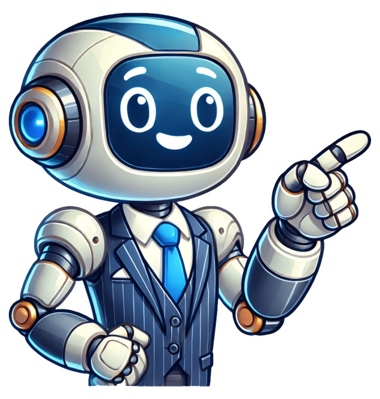
Click Here



2006 international dt466 fault codes

Using EST Accessing Diagnostic Trouble Codes (DTCs) NOTE: When opening VIN+ session to fill out form heading, the DTC window automatically appears. 1. Turn the ignition switch to ON. Page 1 DIAGNOSTIC/TROUBLESHOOTING MANUAL International DT 466, DT 570, and HT 570 DIESEL ENGINE EGES-270-1 Navistar, Inc. Printed in the United States of America Appendix D: Technical Service Information.............649 EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. August 2008 Navistar, Inc. Page 4 DIAGNOSTIC/TROUBLESHOOTING MANUAL EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. To order technical service literature, contact your International dealer. EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. August 2008 Navistar, Inc. Service Bulletins • Availability of current information for engine application and engine systems EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Protect your eyes. • Do not wear rings, watches or other jewelry. EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. August 2008 Navistar, Inc. Page 8 EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Operation of Diamond Logic® Engine Brake in Braking Mode........56 EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. August 2008 Navistar, Inc. Page 10 1 ENGINE SYSTEMS EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. U – United States 7 digit suffix – Engine serial number sequence beginning with 2 EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. August 2008 Navistar, Inc. Page 12 Labels or identification plates include information and specifications helpful to vehicle operators and technicians. EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Base rating shown. See Appendix A or B in this manual for additional ratings. EGES-270-1 Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. August 2008 Navistar, Inc. Page 14 EGR control valve Valve cover Secondary air heater supply Dearation port Breather assembly Read safety instructions before starting procedures. Follow all warnings and cautions. The hydraulic power steering pump can be used with or without an air compressor. An additional benefit is lower emissions. 12. Flat idler pulley assembly Front cover (front half) Water pump pulley 11. Power steering pump 17. High-pressure oil pump Lifting eye 12. Oil pan assembly Read safety instructions before starting procedures. Follow all warnings and cautions. Water supply housing (Freon 12. Coolant drain plug location) EGES-270-1 Read safety instructions before starting procedures. Follow all warnings and cautions. EGR cooler return tube Rear engine mount bracket Flywheel housing EGES-270-1 Read safety instructions before starting procedures. Follow all warnings and cautions. 11. Cylinder head 17. Exhaust Back Pressure (EBP) Intake manifold 12. Exhaust manifold sensor Read safety instructions before starting procedures. Follow all warnings and cautions. An additional benefit is lower emissions. When EBP demand decreases, the ECM decreases the duty cycle to the control module. Integrated Circuit (IC). The IC has three Hall effect position sensors to monitor valve Important safety information must be read and understood before performing any procedures with the EGES-270-1 system. This includes following all warnings, cautions, and notes provided in the "Safety Information" section of the manual. The system consists of various components, including the Injection Control Pressure (ICP) system, lubrication system, fuel supply system, electronic control system, oil exhaust port, fuel injector, high-pressure oil hose, fuel inlet, IPR valve, spool valve, and more. These components work together to ensure proper engine operation, with safety precautions in place to prevent accidents or malfunctions. It is crucial to adhere to the recommended procedures and guidelines outlined in the manual to guarantee safe and effective use of the EGES-270-1 system. The following safety guidelines must be adhered to when performing certain procedures: read the "Safety Information" section of this manual carefully before starting any work. This includes following all warnings, cautions, and notes provided. The system consists of several components including an oil pan assembly, air compressor (if equipped), and EGR cooler return tube. Unfiltered oil flows through the header of the oil cooler under pressure. Connecting rod bearings are fed from main journals to rod through drilled passages in the crankshaft. The coolant system includes a water inlet to the front cover and assembly water pump, as well as connections to the radiator, heater port, and engine. A separate circuit supplies 5 volts to engine sensors, while another supplies 5 volts to vehicle sensors. The IDM (Idle Speed Control) uses information from the ECM to determine fuel injection timing and quantity. Important sensor readings include Crankshaft Position (CKP), Engine Coolant Level (ECL), Exhaust Back Pressure (EBP), and others listed on page 52 of this manual. These readings can be critical for engine performance and should be monitored regularly. • The EOT sensor is installed underwater for out-of-range readings. • Refer to the "Safety Information" section of this manual before performing procedures, adhering to warnings, cautions, and notes. • The sensor provides feedback to the ECM via signal ground for closed loop control in the Variable Geometry. • Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. • The APS is mounted on the accelerator pedal, while the ECM senses voltage when it's closed. • A grounding switch grounds the circuit when not in use. • High durability is one of three brake settings based on terrain and conditions. • The high-pressure oil rail uses injection control pressure system oil to open exhaust valves. • Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. • A gallery-mounted brake shut-off valve is used for brake shut-off, while an operator input switch selects power level over low, medium, high settings. • The brake pressure relief valve in the high-pressure oil rail provides front engine support. • Refer to the "Safety Information" section of this manual before performing procedures, adhering to warnings, cautions, and notes. This manual emphasizes the importance of reading the safety information section before performing any procedures. It is crucial to follow all warnings, cautions, and notes provided to ensure safe operation. The standard CAP feature on trucks without an idle shutdown can be retrieved using the EST timer (IST). In addition, specific details regarding the EFP sensor in Section 7 and RSE in Section 7 are highlighted for reference. The manual also explains the engine's diagnostic capabilities during normal operation, which include automatically detecting faults through several tests. To utilize this feature, turn the ignition switch to "ON" without cranking the engine, allowing the system to perform its diagnostic functions. 1. Open Diagnostics menu bar. 2. Choose Key-On Engine-Off Tests from drop-down menu. 3. Read all safety instructions in "Safety Information" section of manual. Follow warnings, cautions, and notes in manual, especially EGES-270-1 edition. File window for D_OutputStateTest.ssn or D_KOER_Standard.ssn is needed. Clear Manifold Absolute Pressure (MAP) to check Air Management System performance. Correct active problem causing DTCs by clearing DTCs. When finished with test, select Session from menu bar and then Close. Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navigate to Auto Run feature and select I6 Injector Disable Tests from drop down Figure 92 KOER IDT I6 session menu. Automatic test initiates, so ensure engine is cool. Otherwise, proceed with caution. Record cut off value on Diagnostic Form. Note that this value corresponds to fuel rate, as shown on Page 93. If a suspect cylinder(s) is identified, perform Relative Compression test to distinguish between injector or mechanical issues. Compare test data with results from Injector Disable test. Injector Disable test may require replacement of suspect injector(s). Refer to Figure 102 for guidance. Select Parameter and Select Program as indicated in Figure 105. Proceed with caution when using Diagnostic Software. Upon completion, close session by releasing both Cruise buttons. Ensure Switches for CRUISE ON and RESUME/ACCEL are de-activated. Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Low Power (Turbocharger Assembly and Actuator), Engine Symptoms Diagnostics, and other sections require special caution. Follow all warnings, cautions, and notes. Test the cooling system after any repair to validate the fix. Make sure you read the "Safety Information" section first. Remove cap from deaeration tank and fill with coolant above the deaeration inlet line to tank. Use a Shrader valve or diagnostic coupling. Do not forget to follow safety instructions. Test EGR cooler without cross-over tube. Pressurize the EGR cooler and check for leaks. Make sure everything is safe before proceeding. Fill cooling system, test again for over-temperature condition. Be careful when working with EZ-Tech interface cable. If DTCs are still present after fixing coolant over-temp issue, correct them first. Remember to replace O-ring when installing the coolant drain plug. Always follow the manual's instructions and safety guidelines during procedures. Follow all warnings, cautions and notes. This manual is for reference only and is not a substitute for proper training and experience. If you find a leak check the oil cooler and replace it. Before starting any procedure read safety information in this manual first. Check engine for fuel with dye if it is mechanically sound and has had oil changed recently. Use Fuel Pressure Test Adapter on an engine with Shrader valve. Clear hose from pressure gauge to avoid damage. Replace injectors at your own risk, contact International Technical Services to start a case file. Check Engine Oil Pressure using Electronic Service Tool (EST). Shut off valve before doing any procedure and refer to "Oil and Crankcase Inspection" on page 129. Inspect front cover and gasket for damage and repair or replace as needed. Before performing any procedures, refer to the "Safety Information" section of this manual for important warnings and precautions. The primary purpose of this diagnostic test is to identify potential causes of hard starting or no-start conditions in vehicles equipped with certain engine systems. When troubleshooting, it's essential to check for any intake air heater operation issues, poor fuel quality, and ensure that the linkage is secure. Conduct at least three pre-cycle checks with a minimum of three seconds between each test. Additionally, consider factors such as relay operation, brake system performance (ABS self-check), turbocharger pre-cycle, and actuator power ground circuit integrity. Document specific details, including rpm and oil pressure readings, on Diagnostic Form EGED-290-1, which can be ordered through your International dealer. Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc., August 2008. 1. Enter complaint information in the form • Technician EGES-270-1. 2. Select Engine Diagnostics, then International Figure 171 EZ-Tech interface cable MasterDiagnostics II. 3. Turn ignition switch to ON. Open VIN+ session. Refer to Transmission: Manual/Auto - Ambient temperature and Coolant temperature, DTC window, Diagnostic Form, and Operational Voltage tables in Section 7 for applicable sensor. 4. Correct problem causing active DTCs. Clear DTCs. Possible Causes include failed electrical components or circuitry. 5. Later calibrations and current hardware levels do not support DTC 251. Faulty wiring includes IDM main power relay, injector wiring harness open or shorted. Batteries must be fully charged before proceeding. Blown inline fuse in battery box supplies voltage to the ECM. Please read the entire "Safety Information" section before proceeding with any procedures. Follow all warnings, cautions, and notes to ensure your safety. Connect the VC Gasket Breakout Harness to the pass-through connector and engine harness. Then, connect the wiring harness connectors to the breakout box headers X1, X2, X3, and X4. Next, establish connections for ECM PWR and monitor KOEO readings on a Diagnostic Form. If issues arise during testing, refer to troubleshooting guides. Check for blockages in air induction systems, and ensure proper engine oil levels. Before performing any procedures, always read the safety information and follow the provided warnings, cautions, and notes. It is essential to ensure a safe working environment and avoid potential hazards. The Catalyzed Diesel Particulate Filter (CDPF) must be checked if equipped. Additionally, perform Voltage Measurement at the ECM with a Breakout Box after Diagnostic Form tests are complete. If the voltage reading exceeds 7V, proceed with Hard Start and No Start Diagnostic tests. If an issue is detected, check the IDM connector for proper voltage levels. In some cases, high-resistance or open power feed circuits to the IDM or IDM main power relay may be present, which must be addressed. Ensure that batteries are fully charged before commencing any steps. Warranty does not cover fuel test line cost. Read safety instructions in "Safety Information" section of this manual before doing procedures. Follow warnings, cautions, and notes. Disconnect fuel line from filter housing to tank. Spare VT 365 ICP sensor. Connect Actuator Breakout Harness to IPR. Do not connect engine harness. Oil will spill from hose; position high-pressure oil hose to prevent spilling. Apply B+ volts and ground to IPR valve. Use inline shut-off valve to control and contain bleed-off pressure mixture. ICP sensor has O-ring for high-pressure oil rail. IPR valve is not energized if using power distribution terminal. The air leak should be stopped. Important safety information: read the "Safety Information" section of this manual before performing any procedures, and follow all warnings, cautions, and notes. A standard test does not need to be run again. To proceed, select Diagnostics from the menu bar. If the element has continuity, verify the previous Inlet Air Heater test. The diagnostic process involves selecting Diagnostics from the menu bar and then choosing Key-On Engine-Off Tests from the drop-down menu. A failed element, ECM (Engine Control Module), or ECM not programmed (inlet air heater) could be the cause of a problem. For performance diagnostics, refer to page 206. Diagnostic Form Information is available on page 210, and can be found in 50-sheet pads. To obtain technical service literature, contact your International dealer. To complete the diagnostic form, enter the technician's name and date (for warranty purposes) in the form heading. Follow instructions carefully, including warnings and cautions. Safety information is available in the "Safety Information" section of this manual. Before proceeding with procedures, ensure you have read and understood all necessary safety precautions. Always follow the guidelines outlined in this manual to avoid injury or damage. Follow all warnings, cautions, and notes as stated in this manual before proceeding with any procedures. It is recommended to read the "Safety Information" section thoroughly. EGES-270-1 Safety Procedures Before starting, read all safety instructions in the "Safety Information" section of this manual and follow all warnings, cautions, and notes. Steps to perform engine diagnostics: 1. Run Standard Test from KOER Diagnostics Menu and select Run to initiate testing. 2. Monitor ICP readings while running engine at low idle, then record on Diagnostic Form. 3. Check "Checks" in Section 7 for local regulations regarding engine fluid disposal. 4. Consult ICP sensor and ECM commands to reduce injection control pressure. 5. Disconnect engine harness connector from valve cover gasket for ICP sensor, following steps 3-10. 6. Monitor BCP using VC Gasket Breakout Harness. 7. Test IPR according to Engine Service Manual procedures and retest again. 8. Check BCP sensor signal or engine brake problem, distinguishing between injector or mechanical issues with Injector Disable Test 11. 9. Refer to I6 Injector Disable Test Results (Auto Run – Text View) Figure 317 for test results. Always follow safety guidelines and consult manual instructions before proceeding with any procedures. Before performing any testing, it's essential to follow the safety guidelines outlined in the manual's "Safety Information" section. This includes being aware of potential hazards and taking necessary precautions. When conducting injector disable tests, it's crucial to ensure that the piston is at the top dead center (TDC) position. As the piston passes TDC, compression resistance decreases, and crankshaft speed increases. If test results are consistent with previous results, it indicates a failed current test, and the prior results were displayed instead. Possible causes for incorrect valve lash adjustment or broken compression rings should be investigated. To access diagnostic functions, select "Diagnostics" from the menu bar and then choose "Key-On Engine-Running Tests" from the drop-down menu. Record any trouble codes on a Diagnostic Form using Appendix C (page 643) as a reference for decoding DTCs. During tests, make sure all hoses are secure and not leaking, and wait two minutes between consecutive tests if necessary. Pressure specifications can be found in Appendix B (page 619), and if the pressure is below spec, repair or replace the air compressor accordingly. **Warning: Precautions Before Proceeding** **Important Safety Information:** Before starting any procedures, always read the "Safety Information" section of this manual and follow all warnings, cautions, and notes. The information provided in this document is for reference purposes only. If you are unsure about performing a procedure, please consult a qualified mechanic or refer to the Engine Service Manual for additional guidance. **Recommended Procedures:** 1. **Fuel Pressure Test:** Use the Fuel Pressure Test Adapter (Figure 342) and follow the instructions in Figure 339. 2. **Boost Pres (MAP) and Engine Brake Components:** Use the Inject Ctrl Pres (ICP) system test adapter (Figure 345) and follow the instructions in Figure 342. 3. **ICP Sensor Testing:** Follow the procedures outlined in Section 7 "Operational Voltages Checks" or Appendix B "Performance Specifications". **Additional Reminders:** * Always wear protective gear, including gloves and safety glasses, when working with fuel systems. * Ensure proper ventilation when working with fuels and lubricants. * Follow all warning labels and cautions on equipment and tools. Read all safety information before performing procedures. Always follow warnings, cautions, and notes. This manual is dated August 2008 by Navistar, Inc. Before starting, consult "Safety Information" section. Pay attention to warnings, cautions, and notes. 6 at TDC compression, refer to steps 4, 5, and 6. Also check page 277 for valve lash adjustments with piston 6. At TDC compression, recheck for light drag on feeler gauge. If drag is too tight or loose, repeat steps 4 and 5. Check Figure 358 for valve lash adjustment with piston 6 at TDC compression and Figure 359 for general information. Recheck for light drag on feeler gauge. If drag is too tight or loose, repeat steps 4 and 5. Consult page 362 for worn actuator in Diamond Logic engine brake and check the position of the valve bridge and brake actuator. Refer to "Performance Diagnostics" section for diagnostic procedures. Make sure to read all safety guidelines first before attempting any processes by checking out the "Safety Information" part of this guide. Keep in mind the warnings, precautions, and important notes when you're working with sensitive equipment. Navistar, Inc., 2008. The sensor positions for Camshaft Position (CMP) and Engine Coolant Temperature (ECT) are shown on Figure 364 - Front View. Also, note the location of the Engine Fuel Pressure (EFP) sensor on page 290 in Section 1, and the Exhaust Back Pressure (EBP) sensor on page 291 in Figure 366 - Right View. As mentioned in EGES-270-1, always follow the safety guidelines before doing anything. Check if there's any active DTC left after verifying test conditions; if yes, replace the corresponding sensor. The resistance value for a specific circuit should measure around 5 ohms, as specified in Circuit Diagnostics within this section. The Engine Oil Temperature (EOT) sensor and Performance Diagnostics form can be found on page 299. VGT power and ground circuits are checked using pin-point diagnostics, as described in the "VGT Actuator" section (page 524). Additionally, read all safety instructions in the "Safety Information" section before performing any procedures. Follow all warnings, cautions, and notes. The EBP sensor bias is low, requiring a check of the sensor signal voltage, as outlined in the "EBP Sensor" section (page 359). The VGT power or ground circuits are also checked using pin-point diagnostics, with reference to the "VGT Actuator" section (page 524). As before, read all safety instructions and follow all warnings, cautions, and notes. The ECM acts as a redundant signal to verify the pedal idle position. Fuel injector issues are addressed in the EGES-270-1 manual. The APS/IVS assembly ignition switch is checked when the ignition switch is on, but not functioning. When DTC 134 is active, the amber ENGINE lamp is illuminated. The diagram manual for circuit numbers, connector, and fuse locations is provided (page 307). Monitor the APS signal voltage to verify an active DTC for the APS/IVS circuit. The ECM and IDM are checked, with reference to the truck Chassis Electrical Circuit Diagram Manual for complete chassis side information (pages 309 and 311). If the resistance measurement is less than 1 kΩ with the fuse removed, a short to ground within the wiring harness should be checked. all warning and caution messages. Page 312: APS and IVS disagree - check ECM; idle validation switch circuit fault. Follow safety instructions before programming or checking engine features. Page 315: Disconnect WTEC controller to program ECM; check for open circuit if resistance > 5 Ω. Page 317: ATA Diagnostic Trouble Codes: error in data communication link, wiring, or connector. ENGINE lamp (amber) indicates engine issues. Page 321: DTC 152: signal voltage < 1.0 V for > 0.5 second; check ECM and EOT sensor analog voltage indicating pressure. Page 323: During brake operation, ECM recognizes BCP signal > desired level, triggering lamp. Check ECM settings and signals. • Following Safety Instructions is Important Before Performing Any Procedures. Read All Safety Information in the Manual and Take Necessary Precautions. Monitoring BCP Signal Voltage is Crucial for Successful Diagnostics. Verify an Active DTC for the BCP Circuit to Ensure Correct Diagnosis. The VC Gasket Breakout Harness Should be Connected to Engine at Suspected Problem Locations. A Breakout Box Can Be Used to Measure Resistance Values in EGES-270-1 Read All Safety Instructions and Take Precautions Before Proceeding Manual. Refer to the Truck Chassis Electrical Circuit Diagram Manual for Complete Information on ECM and IDM Ground Circuits. Check for Open or Short Circuits in the Harness Using a Multimeter According to the Recommended Resistance Values. • DTC 547 Indicates Brake Control Pressure Was Exceeded at Engine Cranking Speed. DTC 547 Indicates Brake Control Pressure Exceeds 653 psi for More Than 3 Seconds Navistar recommends reading all safety instructions in the "Safety Information" section before performing any procedures. Follow warnings, cautions, and notes provided in this manual. The brake shut-off valve may be faulty due to high brake gallery pressure, causing excessive oil drain back to the sump. When brake gallery pressure reaches 1000 psi, the brake pressure relief valve opens, and the amber ENGINE valve solenoid lamp is illuminated. To diagnose the issue, check the brake shut-off valve circuit diagram and perform harness resistance checks. If the resistance reading is below 0.25 V, suspect a faulty valve cover gasket, UVC wiring, or brake shut-off valve. Disconnect the ECM from the breakout box and replace the ECM if the reading is below B+. Conduct further checks for short circuits to ground using an ohmmeter. Refer to the truck Chassis Electrical Circuit Diagram Manual for complete chassis side ECM and IDM ground circuit information. Before performing any procedures, carefully review the safety guidelines outlined in the manual's "Safety Information" section. It is essential to follow all warnings, cautions, and notes provided to ensure a safe working environment. According to the manufacturer Navistar, Inc., it is crucial to adhere to these guidelines before proceeding with any tasks. The information presented is specifically designed for International diesel engines, covering various diagnostic procedures such as resistance checks, DTC readings, and sensor calibrations. It is vital to consult the Chassis Electrical Circuit Diagram Manual for comprehensive chassis-side ECM and IDM ground circuit details. When troubleshooting issues related to the drivetrain datalink or instrument panel, a digital multimeter can be used to measure CAN communication parameters. However, it is essential to note that incorrect measurements may indicate short circuits between CAN+ and CAN- wires, which should be addressed promptly. The Breakout Box is also an essential tool for accessing various sensor signals, including the CKP signal, which is critical for engine timing and rpm calculations. Before performing any procedures, read and follow all safety instructions outlined in the "Safety Information" section of the manual. Also, heed all warnings, cautions, and notes provided to avoid potential hazards. The amber and red ENGINE lamp may flash if a problem is detected by the Digital Multimeter (DMM). To troubleshoot, refer to the relevant sections of the manual for specific guidance. A faulty Engine Brake Pressure (EBP) sensor can cause issues, so ensure it's functioning correctly. If you encounter any trouble codes (DTCs), use the EST to clear them and check the test conditions again. If a code remains active after re-checking, replace the EBP sensor accordingly. The Electronic Control Module (ECM) controls various systems, including the Variable Geometry Turbocharger (VGT) and Exhaust Gas Recirculation (EGR). Be aware that certain codes, like DTC 341, may trigger specific warning lights or system malfunctions. For detailed information on troubleshooting and repair, consult the relevant sections of the manual. Before starting any procedures, carefully read and follow all warnings, cautions, and notes in the "Safety Information" section of this manual. Ensure the engine is off or running with the key on before performing any tests. The ECM will pull circuit voltage up to 4V to 5V when the switch is ON and return to 0V when the clutch is depressed or transmission is in neutral. The ECL switch is used in the plastic deaeration tank, which may cause engine lamp flashes (amber and red). Use a Digital Multimeter (DMM) with a Breakout Box to measure voltage accurately. A DTC reading of 236 indicates a signal voltage between 3.4V and 4.3V for more than 2 seconds. Refer to the "Safety Information" section for further instructions. The ECM provides two output channels to aid the IDM, including engine speed and position signals, as well as CKPO signals. However, a DTC reading of 552 is set when the CMPO transition occurs at the wrong CKPO tooth. If voltage readings are below 11V to 12V, check for open or short circuits to ground. Inspect the IDM power relay and ensure it's functioning correctly. DTCs 553 and 554 are related to the IDM's CKPO signal. DTC 553 indicates an inactive IDM CKPO signal, while DTC 554 points to an incorrect CKPO signal signature. For diagnosis, refer to the EGES-270-1 manual or count the flashes from the amber and red ENGINE lamp. The ECM main power relay provides necessary power to the ECM when closed. To read DTCs, use the EST or count the flashes from the ENGINE lamp. The Terminal Test Adapter Kit is required for this process. For fuse and relay locations, consult the truck Chassis Electrical Circuit Diagram Manual. When using the relay breakout harness and breakout box, only connect it to the chassis harness. IDM is responsible for enabling diagnostic programming tools in the ECM. If the amber ENGINE lamp is illuminated, it indicates that the ECM is ready for reprogramming. Verify the EFRC matches the ECM strategy level and reprogram the ECM or change the EFRC as necessary. In some cases, the No Start/Run In Field Defaults error may occur due to an internal ECM problem. Replace the ECM if this issue persists. Read all safety instructions in the "Safety Information" section of this manual before performing any procedures. Follow all warnings, cautions, and notes to avoid potential issues. Ensure proper electrical connections and grounding to prevent damage or injuries. The engine fan is always on due to EFAN control being disabled • The EZ-Tech interface cable remains connected all the time. Always refer to the "Safety Information" section of this manual for procedures and follow warnings, cautions, and notes. If the voltage reading exceeds 0.25 V, ensure the ECM is correctly programmed. Replace the ECM if it is correctly programmed. Check for a harness open between the fuse and fan solenoid if the resistance exceeds 5 Ω. Consult the truck's Chassis Electrical Circuit Diagram Manual for fuse information. Read all safety informations in the "Safeties Information" section of dis manual befor doin any procedurs. Fowlow all warnings, cautions, and notes. When the engine warning lamp is illuminated due to DTC 211, it's essential to follow safety guidelines before proceeding with any procedures. Refer to the "Safety Information" section of this manual for instructions and warnings. To troubleshoot the issue, open the Diagnostic Monitor using EST and connect the Pressure Sensor Breakout Harness to the engine harness only. The ECM and IDM require a chassis side ground circuit, which can be found in the truck Chassis Electrical Circuit Diagram Manual. Check the resistance value; if it's less than 500 ohms, it may indicate a short to ground. If necessary, refer to "Engine Warning and Protection System" (page 440) for further troubleshooting. The Exhaust Gas Recirculation Position pump assembly receives a 5V reference signal from the ECM. The EOT circuit diagram can be found on page 439. Be cautious when working with hot engine surfaces and rotating parts. To clear DTCs, use EST to connect the engine harness to the sensor. If an active code remains after checking test conditions, replace the EOT sensor. EGES-270-1 Precautions must be read in the "Safety Information" section of this manual before starting any procedures. Always follow warnings, cautions, and notes. The engine condition will be recorded by a logging feature, which monitors the loss of engine oil pressure detection through ECM system 1. When temperature drops below 241°F (116°C), DTC will become inactive. Using the correct equipment is crucial. The ECM should only be replaced if voltage is above 0.25 V and it's programmed correctly. Reading the "Safety Information" section is necessary before performing any tasks in this manual. The IAT sensor must be functioning correctly to prevent issues with the signal circuit or a failed sensor. Check the IAT signal voltage and verify an active DTC for the IAT circuit. Use the EST software to clear DTCs, but replace the IAT sensor if the issue persists. Perform harness resistance checks using the breakout box, and check for codes on page 460. A code of 155 indicates that the signal voltage was above 4.6V for more than 0.35 seconds. The IDM commands the correct injector timing through the injector connector. When DTC 125 is active, the amber engine lamp flashes from the amber and red lamps. Use the EST software with MasterDiagnostics to perform tasks. Connect the VC Gasket Breakout Harness to the engine harness only. Follow all warnings, cautions, and notes in the "Safety Information" section. EGES-270-1 Circuit Diagram Manual for complete chassis side ECM and IDM ground circuit information. Read safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Page 467 X1-6 to Pin 1 (spec < 5 Ω). ECM chassis ground (Pin A Read safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Page 468 ECM and IDM. See truck Chassis Electrical Circuit Diagram Manual for complete chassis side ECM and IDM ground circuit information. If < 500 Ω, check for short to ground. Read safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Page 470 IDM. See truck Chassis Electrical Circuit Diagram Manual for complete chassis side ECM and IDM ground circuit information. DTC 124 = Signal voltage was < 0.039 V for more than 0.1 second Read safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Page 472 DTC 332 = Signal voltage was > 1.625 V, key-on engine-off 7.99 kPa (1160 psi) Read safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. Navistar, Inc. Page 477 EZ-Tech interface cable • EST with MasterDiagnostics software • Digital Multimeter (DMM) Before performing tests, refer to Section 6 (page 205) and follow all safety guidelines mentioned in the "Safety Information" section. For KOER Standard Test and Injection Control Pressure Test, wiggle wires on ICP sensor, IPR valve, and other components while the engine is running to detect intermittent issues. This test will verify major ICP system failures and continuity of the IPR valve circuit. Additionally, perform IPR Pin-Point Diagnostics as mentioned in Section 5 (page 143). When troubleshooting DTCs, ensure that the necessary power is provided through fuses IDM. Read DTCs using the EST or by counting the flashes from the amber and red ENGINE lamp. If previous test points are in spec but no voltage is present, replace the relay. Always follow proper connection procedures when working with the main negative battery cable. Check connections between IDM and relay; a resistance of < 5 Ω is recommended; if > 5 Ω, inspect the connection for any issues. All safety notices must be read prior to performing any repairs. Check for a short circuit within the wiring harness if resistance is less than 900 ohms. Refer to the truck's electrical diagram manual for relay circuit information and connector locations if resistance exceeds 5 ohms. For IDM-related issues, consult the chassis side ECM and IDM ground circuit manual. If a DTC is active, replace the faulty injector. Only diagnose injectors with an active DTC. A short circuit in the injector can be determined by disconnecting it and retesting; if the resistance is over 1 kilohm, the issue lies within the injector. Electronic Control Module (ECM) issues can be diagnosed using the EST or by counting the flashes from the amber and red engine lamp. The ECM's DTCs are displayed in this manner. For IDM circuit information, consult the chassis side electrical diagram manual. Diagnosis of ECM-related problems typically takes between 2 to 120 minutes. Note: This text has been condensed to remove repetitive content while maintaining the essential information. Temperature Requirements The engine temperature should be between 16 °C (60 °F) and 44 °C (110 °F). Refer to the "Safety Information" section for safety guidelines. Faulty Engine Shutdown Protection This feature prevents engine shutdown due to low ambient temperatures. Always follow warnings, cautions, and notes in the manual. Engine Lamp Indicators Check engine operating conditions with the "ENGINE lamp (amber) indicator". Digital Multimeter (DMM) Test Code 122 Use a Digital Multimeter to diagnose issues. Harness Connections Connect the Banana Plug Harness and 500 Ohm Resistor Harness correctly. Electronic Control Systems Diagnostics Use the Breakout Box, Terminal Test Adapter Kit, and Breakout Harness for diagnostics. Pressure Sensor Connections Connect the Pressure Sensor Breakout Harness to the engine harness only. Use Figure 485 for guidance. ECM and IDM Refer to the Chassis Electrical Circuit Diagram Manual for complete ECM and IDM ground circuit information. MAP Diagnostic Trouble Codes Check DTC 570 and HT 570 performance specifications in Appendix B (page 619). Boost Signal Voltage DTC 123 indicates a detected boost signal voltage greater than 115 kPa (17 psi) absolute at low idle. Before performing any procedures, read the safety information section of this manual carefully. Follow all warnings, cautions, and notes provided. Connect the engine harness to the sensor using the EST tool to clear DTCs. If an active code remains after checking test conditions, replace the MAT sensor. The minimum engine speed for engaging cruise control is programmed in the ECM. Preset and remote variable operation depends on which signal is enabled. Use a digital multimeter to check circuit resistances, such as the RSE circuit diagram. Check for harness opens between fuses and fan solenoids if resistance exceeds 5 Ω. Consult the truck's chassis electrical circuit manual for fuse information. DTC codes like 162, 256, or others may indicate issues with signal voltage, output circuits, or cruise control functions. Monitor MAT signal voltage and verify active DTCs for the MAT circuit. ECM programming controls minimum engine speed for engaging cruise control. The ECM sends 12 pulses per engine revolution, 1/5th the actual engine rpm frequency. Read safety information before proceeding with procedures in the "Safety Information" section of this manual. Follow all warnings, cautions, and notes. Note: The instrument cluster tachometer does not use these outputs; refer to the Electrical System Troubleshooting Guide for more information. The Injection Pressure Regulator, Camshaft Position sensor, and Manifold Absolute Pressure sensor are critical components in the electronic control system diagnostics. Read safety instructions before proceeding with procedures in the "Safety Information" section of this manual. Follow all warnings, cautions, and notes. For high duty cycle engine operating conditions, use a Terminal Test Adapter Kit and 500 Ohm Resistor Harness. If wiring integrity is confirmed to be good condition, replace the VGT actuator according to page 533. Use the EST with MasterDiagnostics software to view VGT duty cycle during key-on engine-off. The Fluke 88 DMM may show measurement variations of up to 2% compared to MasterDiagnostics readings. Retest Output State Test - High on a resistor harness between 3 and 2, according to page 534. If wiring integrity is confirmed good condition, replace the VGT actuator, following the procedures outlined in pages 535 and 536. **Diagnostic Guide for Electronic Control Systems** To diagnose issues with the Electronic Control System (ECS), follow these steps: If the voltage is greater than 0.25 V, check the connection between the 12-Pin Connector and the battery ground terminal. Refer to the truck's Chassis Electrical Circuit Diagram Manual for more information. Before starting any procedures, read all safety instructions in the "Safety Information" section of this manual. Follow all warnings, cautions, and notes. Use the EST with MasterDiagnostics software to view the Vehicle Gearbox Torque (VGT) duty cycle when the engine is off. The Fluke 88 DMM can be used as a secondary measurement tool, but it may vary by up to 2% compared to MasterDiagnostics. Refer to Figure 504 for the VGT circuit diagram and follow all safety instructions. If the voltage is less than 500 Ω, check for short circuits to ground. Refer to the truck's Chassis Electrical Circuit Diagram Manual for complete chassis side ECM and IDM ground circuit information. The ECM processes these values for engine operation, including the Water in Fuel (WIF) sensor (if equipped). Refer to Figure 506 for V-circuit diagram and follow all safety instructions. Repair any issues as required. Read all safety guidelines prior to performing any tasks. Adhere to all warning signs, cautions, and notes provided. This information is copyrighted by Navistar, Inc., August 2008. When troubleshooting the VSS circuit, consult the Allison maintenance and diagnostic manuals as well as the EGES-270-1 guide. Check for a VSS signal greater than 4365 Hz. If it's above this threshold, proceed with caution. Consult the truck manual's electrical circuit diagrams for further assistance. Ensure that the ECM and IDM ground circuits are properly connected according to the Chassis Electrical Circuit Diagram Manual. If circuit checks indicate no issues but the condition persists, refer to the transmission manual for guidance on sensor inspection and adjustment. The Electronic Control Module (ECM) monitors the fuel filter header and alerts the operator when water flashes from the amber and red ENGINE lamp. During troubleshooting, be aware of potential shorts to ground or chassis. Check for resistance levels greater than 1 kΩ. Consult the Chassis Electrical Circuit Diagram Manual for detailed information on ECM and IDM ground circuit connections. Reference pages 550-560 of the EGES-270-1 guide for additional troubleshooting assistance. Please follow all warnings, cautions and notes as stated in the "Safety Information" section of this manual before proceeding with any procedures. Ensure that the voltmeter's signal does not affect the measurement by reading safety instructions first. These include the Temperature Sensor Breakout Harness (ZTSE4483), Turbo Breakout Harness (ZTSE4659) and APS/IVS Sensor Breakout Harness 500 Ohm Resistor Harness. Always refer to the "Safety Information" section of this manual before performing any procedures. Before installation, reading or cleaning, please ensure you follow all warnings, cautions and notes in the "Safety Information" section of this manual. All safety guidelines, warnings and notes must be carefully reviewed prior to performing any procedures. The current flow can be calculated using the formula I = E ÷ R: EGES-270-1. Before proceeding with any operations, ensure you have read the relevant sections in this manual, including "Safety Information." Follow all specified precautions, cautions, and notes to avoid potential hazards. A voltmeter control system is described, along with an ohmmeter function. The voltage reading can be obtained by referring to page 577, where it states that a good vehicle ground should be connected to the negative meter lead on the positive side. Using Ohm's law (I = E ÷ R), we find that increasing the voltage results in greater current flow in the circuit. No adjustments or selections are necessary for the DMM, and the Duty Cycle function features a trigger with a positive slope. The FLUKE 88 is used in volts dc mode on page 581. Troubleshooting tips can be found on pages 583-584 to help identify potential problems. Abbreviations and acronyms include: EPA - Environmental Protection Agency; N – Newton; EPR – Engine Pressure Regulator; NEG – Negative; SCCS – Speed Control Command Switches; NETS – Navistar Electronics Technical Support; SID – Subsystem Identifier; N•m – Newton meter. Navistar EGES-270-1 Service Manual Read all safety instructions in the "Safety Information" section of this manual before doing any procedures. Follow all warnings, cautions, and notes. The EGES-270-1 service manual covers various topics, including terminology, safety precautions, and performance specifications for specific models and components. Key Terms: * Sulfur dioxide: Caused by intake air charging into the fuel, resulting from oxidation of sulfur. * Alternator and air compressor: Not charging due to generation electronics (INTUNE) issues. * Vehicle retarder enable/engage: Output from cab heat, related to ECM control. * 300 hp @ 2300 rpm (12NPX): Engine performance specifications. Appendix A: DT 466 Performance Specifications for 2004 Model Year: * Oil temperature range: -17 °C to 20 °F * Synthetic oil recommended: 5W-40 or 0W-30 Below minus seventeen degrees Celsius or zero Fahrenheit, use fuel heater. Below minus seventeen degrees Celsius or zero Fahrenheit, use oil pan heater. It is essential to read all safety instructions before performing any procedures. Follow all warnings, cautions, and notes in the "Safety Information" section of this manual. Copyright August 2008 Navistar, Inc. The minimum fuel pressure and voltage required for cranking are 138 kilopascals or twenty psi, and point nine volts after ten seconds, respectively. Additionally, there are certain specifications that must be met to ensure proper operation: the lube oil temperature in the oil gallery should not exceed one hundred eighteen degrees Celsius or two forty-five degrees Fahrenheit. These requirements apply at engine speeds of two thousand two hundred rpm or greater, and within a time frame of five seconds or less. Please note that these safety precautions are essential for avoiding potential hazards and ensuring safe operation. Read all safety instructions in the "Safety Information" section of this manual before performing any procedures. Follow all warnings, cautions, and notes. The following specifications are required for safe operation: - Engine speed: 1900 rpm or greater - Time between oil change: 5 seconds or less - Lube oil temperature: maximum 118 °C (245 °F) - Fuel pressure/voltage crank: 138 kPa (20 psi) / 0.9 V after 10 second For 12NRZ engine: 1700 rpm or greater @ 5 seconds or less Minimum fuel pressure/voltage crank for 12NRZ engine at low temperatures is required. Performance specifications are outlined in Appendix B for DT 570 and HT 570. eges-270-1: Safety Precautions and Guidelines Below -17 °C, use a fuel heater to prevent engine damage. Use an oil pan heater if operating below -17 °C. Always read safety instructions in the "Safety Information" section of this manual before performing any procedures. Follow all warnings, cautions, and notes to ensure safe operation. Key Safety Parameters: - Operating at 138 kPa (20 psi) / 0.9 V for a minimum of 10 seconds after starting the engine. - Crankshaft RPM must be above 1700 rpm for no more than 5 seconds. - Lube oil temperature in the oil gallery should not exceed 118 °C (245 °F). Follow all warnings, cautions, and notes as indicated in this manual before proceeding with any procedures. This includes reading the "Safety Information" section thoroughly. Note that certain conditions must be met to perform tasks safely. These include a minimum fuel pressure/voltage crank of 138 kPa (20 psi) / 0.9 V after 10 seconds, and engine operating at 1700 rpm or greater within 5 seconds. The maximum lube oil temperature should not exceed 118 °C (245 °F). Always refer to the "Safety Information" section of this manual before starting any procedures, as safety instructions are crucial for avoiding injury or damage. Additionally, if the Engine Warning Protection System (EWPS) is enabled and a Diagnostic Trouble Code (DTC) is set, a red ENGINE lamp on will be displayed. Prior to conducting any procedures, it is essential to carefully read through the "Safety Information" section of this manual for crucial safety instructions. Follow all warnings, cautions, and notes provided to ensure a safe working environment. A red ENGINE lamp may appear if the Engine Warning Protection System (EWPS) is enabled and a DTC is set. It is vital to note that the EGES-270-1 section outlines important information regarding procedures, safety precautions, and technical service updates. As you proceed with any operations, keep in mind that adherence to guidelines is crucial for preventing potential hazards. The "Safety Information" section serves as an essential resource, providing critical details on how to execute tasks safely. Furthermore, the Engine Warning Protection System (EWPS) plays a significant role in alerting technicians of potential issues through the red ENGINE lamp indicator. When this occurs, it is imperative to investigate and address the issue promptly to prevent further complications. In addition to safety considerations, the Technical Service Information (TSI) section offers valuable insights into technical updates, modifications, and improvements. This information enables service technicians to stay informed about any changes or advancements that may impact their work. As a final note, it is essential to consult the "Safety Information" section prior to commencing any procedures and to adhere to all guidelines and warnings provided.