

26.1 HEAVY DUTY DIAGNOSTIC SOFTWARE COVERAGE HIGHLIGHTS



Volvo/Mack Diagnostic Coverage — Detailed Capability Descriptions

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VOLVO/MACK Vehicle Coverage: EPA '07, '10, '13, '17, '20 Conventional Aftertreatment and EPA '07 and '10 Spark Assist

Basic Functions:

Read Active Faults: Retrieve currently active trouble codes for immediate diagnostics.

Read and Clear Inactive Faults: Access stored inactive faults and clear them after repairs.

FT Band FTB Description: Provides detailed fault band and description across screens and reports.

View Diagnostic Parameters: Monitor real-time engine and aftertreatment parameters for troubleshooting.

Advanced Features and Special Tests (EPA '13, '17, '20):

DPF Regeneration: Performs a forced service regeneration of the Diesel Particulate Filter.

Aftertreatment Hydrocarbon Dosing: Activates doser to check spray pattern and fuel volume.

Hydrocarbon Doser Functionality Test: Validates AFT system component operation.

Exhaust AFT System Active Diagnostic Test: Monitors aftertreatment fuel pressure and valve sequencing.

SCR – Crystal Sublimation: Converts DEF crystals to vapor to correct catalyst crystallization.

SCR – DEF Hose Heating Resistors: Verifies DEF line heater resistor operation.

SCR – DEF Tank Heating Valve: Validates DEF tank heater valve.

SCR – DEF Dosing Tests (Large, Small, Prime): Checks DEF injection accuracy (196–240mL, 49–60mL, priming).

SCR – DEF Pressure Build: Pressurizes DEF system without engine running.

SCR – System Drain: Drains DEF from the SCR system for service.

NOx Conversion Test: Compares pre- and post-repair NOx sensor performance.

Aftertreatment DPF System Reset: Resets AFT hydrocarbon dosing adaptive factors.

SCR Exit Inducement Routine: Clears DTC P208E after dosing valve replacement.

Engine & Injector Related Tests:

Injector Cutout: Disables injectors for cylinder-specific diagnosis.

EGR Valve Control: Tests EGR valve movement and feedback.

Variable Geometry Turbo (VGT) Function Test: Validates turbo actuator and vane performance.

Cylinder Balancing: Reviews injector compensation for stable idle.

Cylinder Compression: Conducts compression measurement via cranking test.

Injector Click Test: Checks injector actuation when engine is off.

Piston Cooling Jet Valve Control: Activates piston cooling valve to check oil pressure response.

Fuel Pressure Test: Displays fuel pressure values with live graphing.

Intake & Exhaust System Check: Graphs manifold pressures to detect restrictions.

Boost Pressure Test Drive: Measures boost under full-load acceleration.

Compression Brake Test: Compares RPM drop with engine brake ON/OFF.

VGT Calibration: Installs and calibrates VGT replacement.

Engine Protection Data Routine: Displays logged engine protection events.

View & Reset All Trip Data: Clears trip metrics after service.

Configurable Parameters (EPA '13, '17, '20):

Injector Codes: Input injector trim codes.

Customer Road Speed Limit: Set max vehicle speed.

Road Speed Limit with Pedal: Pedal-based speed limiting.

Max Vehicle Speed in Next-to-Top Gear: Gear-specific speed control.

EPA '07 / EPA '10 — Conventional Aftertreatment Tests:

DPF Regeneration: Stationary regen to remove soot when driving regen fails.

Aftertreatment Fuel Valve Activation: Confirms valve opens properly.

DRV Activation: Tests discharge recirculation valve.

Aftertreatment Injector Flow Testing: Measures dosing volume.

AFT Injector Air Leak Test: Detects injector air leakage.

AFT Injector Adaptive Factor Reset: Resets injector learning after replacement.

Soot Level Reset: Used after DPF replacement or cleaning.

SCR Crystal Sublimation: Removes DEF crystals.

SCR Start-up Test: Builds SCR pressure.

DEF Hose Heater Test, Tank Heater Valve Test: Confirms DEF heating operation.

ACM Learned Data Reset: Resets AFT learned values.

Reset Learned Engine Data: Required after replacing EGR/boost/NOx sensors, VGT, injectors.

Spark Assist (EPA '07 / '10) Tests:

DPF Regeneration

Atomization Air Valve Test

DPF Air Shut-Off Valve Test

Combustion Air Valve Activation

Master Air Valve Activation

Ignition Coil Activation

Aftertreatment Fuel Pump Activation

Active Diagnostic Test for Spark-assist DPF regen

SCR Crystal Sublimation & Start-up tests

Volvo Transmission Tests:

Clutch Cylinder Procedure Test

Gear Activation (Installed/Removed)

Clutch Wear Check

Transmission Test (Removed)

Volvo OBD Support:

J1979-2 OBD-UDS scanning for multiple modules on VNL4 platforms.

VNL4 Engine Coverage (2012–2025):

Exhaust AFT Service Regeneration

Exit Inducement Routine

DPF System Reset

AFT System Active Diagnostic Test

Hydrocarbon Doser Functionality

Hydrocarbon Dosing

SCR Pressure Build

SCR Dosing

SCR System Drain

Injector Click & Cutout Tests

Boost Pressure Drive Test

Fuel Pressure

Intake/Exhaust System Checks

Piston Cooling Jet Valve

Engine Protection Data Routine

Cylinder Balance & Compression Brake Test

Injector Code Calibration

VNL4 Module Coverage:

ACM (Aftertreatment Control Module) – Faults & Data

VMCU (Vehicle Management Control Unit) – Faults & Data

TECU (Transmission Control Unit) – Faults & Data

EBS (Electronic Brake System) – Faults & Data

ABS Diagnostic Coverage

ABS Diagnostic Coverage

Comprehensive coverage across Bendix, WABCO, Eaton, Haldex, and Wabash ABS/Brake electronic systems — including supported platforms, core functions, special tests, calibrations, and PLC trailer notes.

BENDIX — Systems & Coverage

Supported systems: BlindSpotter; AutoVue FLC20; SafetyDirect Web Portal Processor; EC-80; TABS-6 Advanced; SmarTire TPMS; EC-60; TABS-6; EC-30T; EC-30; EC-17

Bendix — Basic Functions

Read Active Faults

Read and Clear Inactive Faults

View Brake Data

Note: PLC Converter required for trailer PLC (PN 604120)

Bendix EC-80 — Special Tests

Lamps — Activate/deactivate IC warning lamps and trailer ABS lamp

Sensor Sequence — Verify wheel sensor orientation/operation

Load Battery Voltage — Energize modulators and verify module supply voltage

Self Configuration — Rescan for sensors/modulators/ATC and rebuild configuration

Modulators — Individually cycle modulators twice; longer duration than “Chuff”

ATC Valve — Verify ATC valve operation (drive axle; ESP systems may add steer axle)

Engine Limiting — Verify engine control via J1939

Drag Torque — Verify torque increase function to overcome driveline inertia

HSA Solenoid — Energize hill-start assist solenoid (audible exhaust post-de-energize)

eTrack Solenoid — Energize eTrac solenoid for function check

Chuff Modulators — Sequence each modulator for ~1–2s to verify command

Calibrate Lateral Acceleration Sensor — 0 g \pm 0.03 g target

Calibrate Steering Angle Sensor — Straight-ahead 0° \pm 10°; \pm 90° \pm 10° at quarter turns

Bendix TABS-6 Advanced — Special Tests

Lamps

Sensor Sequence

Modulators

Chuff Modulators

Load Battery Voltage

Reset ECU — clear corrected fault (manual reset not available)

Bendix SmarTire TPMS — Special Tests

Axles Setup — Program axle count/type, Sensor IDs, CIP; used after tire/service changes or Gateway Receiver replacement

Bendix EC-60 — Special Tests

Lamps

Sensor Sequence

Load Battery Voltage

Reset ECU — clear corrected fault

Self Configuration

Modulators

Chuff Modulators

ATC Valve

Engine Limiting

Outputs — Individually activate circuits up to 1000 ms

Bendix TABS-6 — Special Tests

Lamps

Sensor Sequence

Modulators

Load Battery Voltage

Reset ECU

Self Configuration

Bendix EC-30 — Special Tests

Lamps

Sensor Sequence

Modulators (Pulse/Test modes)

Load Battery Voltage

Reset ECU

Self Configuration

Retarder Relay — Control retarder disable relay

Disable Traction Control — Temporarily disable then reactivate ATC

ATC Valve

Engine Limiting

Serial Retarder — Control retarder via J1922/J1939

Chuff Modulators

Bendix EC-17 — Special Tests

Lamps

Retarder Relay

Reset ECU (LED display reset; manual available)

Self Configuration

Disable Traction Control

Modulators (Pulse/Test modes)

ATC Valve

WABCO — Systems & Coverage

Air (Tractor & Trailer) and Hydraulic (Tractor) brake systems; ADAS: OnSide, OnLane, OnGuard

WABCO — Basic Functions

Read Fault Codes

Clear Fault Codes

View Brake Data

Note: Universal J560 PLC Adapter required for trailer PLC (PN 604120)

WABCO Air Brake — mBSP (Tractor) — Diagnostic Tests

Valve Test

Enable/Disable ATC

ESC End Of Line

WABCO Air Brake — E8 (Tractor) — Diagnostic Tests

Valve Test

ABS/ATC/Trailer/Hill Start Aid lamp tests

Retarder Relay

Engine Data Link

Enable/Disable ATC

Reset Memorized Components

WABCO Air Brake — 4.3 & 4.4 (Tractor) — Diagnostic Tests

Valve

Trailer Brake Valve (+ with ABS)

ABS/ATC/Trailer lamp tests

Relay

Engine Data Link

Enable/Disable ATC

Reset Memorized

Retarder

WABCO Air Brake — D & E (Tractor) — Diagnostic Tests

Lamp/Valve/Relay tests

Engine Data Link

Wheel Sensor Sequence

Trailer Brake Valve (+ with ABS)

Retarder Relay

WABCO iABS (Trailer) — Diagnostic Tests

Sensor Test

Wheel Sensor Sequence

Sensor Orientation (+ with Lift Axle)

WABCO SmartTrac Hydraulic — Diagnostic Functions & Tests

Actuate Valves

Pump Motor

Hydraulic Brake Tests

Actuate Outputs/Valves

Brake Bleed Procedure

Reconfigure Retarder

Actuate Lamps; Activate Retarder Relay

ATC Enable/Disable; Engine Datalink Test

Parking Brake Test

Retarder Datalink Test

Clear Counters

EATON ABS — Coverage & Functions

Supports Eaton GEN4 and GEN5 (SAE J1587)

EATON ABS — Basic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View Proprietary Parameters

View Brake Data

Note: PLC Converter required for trailer PLC (PN 604120)

Test Valves

Test Warning Lamp

EATON Trailer ABS with PLC Communications — Diagnostic Functions & Tests

ABS Tests

Sensor Test

Wheel Sensor Sequence

Sensor Orientation (+ Lift Axle)

Display/Change Parameters: Service Miles

Revs/Mile

EATON Brakes — Diagnostic Functions & Tests

Lamp

ATC Enable/Disable

Activate Valves

Retarder Relay Activation

Engine Datalink

Auto-detect ECU configuration

Read/clear current & historic faults

Actuate modulators/valves

Cycle brake retarder relays

Battery voltage test

Wheel sensor tests & traction disabling

Retrieve ECU info

Trailer ABS Warning Lamp

Read trailer odometer/trip distance

HALDEX ABS — Coverage & Functions

Supports Haldex PLC, PLC Plus, PLC Select (SAE J1587)

Haldex — Basic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View Proprietary Parameters

View Brake Data

Note: PLC Converter required for trailer PLC (PN 602020)

Haldex — Trailer ABS with PLC communications

Diagnostic Functions

Auto-detect ECU configuration

View/clear current & historic faults

Actuate modulators/valves

Cycle retarder relays

Battery voltage test

Wheel sensor tests & traction disabling

Retrieve ECU info

Trailer ABS Warning Lamp

Read trailer odometer/trip distance

Calibrations:

Tire Scale Factor

Distance to Service

Reset Trip Distance

Clear Configuration

Change ECU Units

Hallex ABS — Diagnostic Tests

Test Valves

Sensor Sequence Test

WABASH ABS — Coverage & Functions

Supports Wabash National MBS-1p and MBS-2 (SAE J1587)

Wabash — Basic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View Proprietary Parameters

View Brake Data

Note: PLC Converter required for trailer PLC systems (PN 602020)

Wabash Trailer ABS with PLC Communications — Diagnostic Functions & Tests

Auto-detect ECU configuration

View/clear current & historic faults

Actuate modulators/valves; cycle retarder relays

Battery voltage test

Wheel sensor tests & traction disabling

Retrieve ECU info

Trailer ABS Warning Lamp

Read trailer odometer/trip distance

Wabash ABS — Diagnostic Tests

ABS Warning Lamp Test

Backup Lamp Test

Trailer Warning Lamp Test

Allison Transmission Diagnostic Coverage

Allison Transmission Diagnostic Coverage

Comprehensive coverage for Allison 1K/2K, CEC 1, WTEC (3K/4K), GEN 4, GEN 5, and GEN 6 transmissions — including basic functions and advanced diagnostic features (as supported by each controller family).

Coverage Map

Allison 1K/2K: Diagnostic & testing capability for 1K/2K applications (GEN III controller focus).

Allison CEC 1: Commercial Electronic Control (CEC 1) — On/Off-Highway diagnostic capability.

Allison WTEC (World Transmission Electronic Control): Also known as 3K/4K — WTEC II & WTEC III supported.

Allison GEN 4: Diagnostic capability for GEN 4 (1K/2K and 3K/4K).

Allison GEN 5: Diagnostic capability for GEN 5 (1K/2K and 3K/4K).

Allison GEN 6: Diagnostic capability for GEN 6 (1K/2K and 3K/4K).

Basic Diagnostic Functions

Read Fault Codes

Clear Fault Codes

View Data Lists

Note: Calibrations are not supported (per family notes).

Allison 1K/2K — GEN III Controllers

Basic Functions: Read/clear faults; view data lists (no calibrations).

Advanced Features

Solenoid Test — Command and verify individual solenoid operation

Trans Fault Enable Test — Exercise fault-enable logic for diagnostics

Gear Commanded Test — Command specific gear states for verification

Display I/O Wire Assignments — Show input/output pin functions and enable states

View ECU EEPROM Calibration Info — Display stored identification & versioning

View Shift Inhibits — Display inhibited shift conditions

Allison CEC 1 — On/Off-Highway (CEC 1)

Basic Functions: Read/clear faults; view data lists. Special tests are not supported; diagnostic capability available only for CEC 1 controller.

Allison WTEC (3K/4K) — WTEC II & WTEC III

Basic Functions: Read/clear faults; view data lists (no calibrations).

Advanced Features

Activate Fast Adaptive Mode — Accelerate ECU adaptive learning to optimize shift characteristics

Clear Active & Inactive Codes — Full DTC clearing support

Display I/O Wire Assignments — Show input/output pin functions and enable states

Enable Clutch Test — Perform clutch pressure test or higher-gear stall test

Reset Auto Detect (WTEC III only) — Re-detect retarder, oil level sensor, throttle, coolant temp sources

Reset Throttle Calibration — Ensure proper TPS adjustment

Reset Unadapted Shifts — Restore initial factory shift calibration settings

View ECU EEPROM Calibration Info — Display stored identification & versioning

View Shift Inhibits — Display inhibited shift conditions

Allison GEN 4 — 1K/2K and 3K/4K

Basic Functions: Read/clear faults; view data lists (no calibrations).

Advanced Features

Gear Command Test — Command a selected gear for validation

Reset Throttle Calibration — Relearn throttle sensor values

Display I/O Wire Assignments — Show input/output functions and states

Solenoid Tests — Command/verify solenoid operation

Reverse Warning Lamp — Output test

Transmission Fault Lamp — Output test

Reset Auto-Config — Re-detect installed options & inputs

Shift Adapts Monitor — Observe adaptive shift parameters

Input/Output Functions Monitor — Live view of I/O activity

Allison GEN 5

Basic Functions: Read/clear faults; view data lists (no calibrations).

Advanced Features

Reset Adaptive Shift Parameters — Restore adaptive shift tables to baseline

Clear All Shift Adaptive Data — Wipe learned data for fresh adaptation

Reset Auto Detect Oil Level Sensor — Re-detect oil level sensor configuration

Output Tests — Exercise outputs for verification

Clutch Test Enabled — Enable clutch test routine

Lamp Tests — Transmission Fault / Neutral Start / Reverse Warning / Service Indicator

Reset Auto-Detect Retarder

Reset Oil Life

Reset Transmission Health Monitor

Output Test

Allison GEN 6 — 1K/2K and 3K/4K

Basic Functions: Read/clear faults; view data lists (no calibrations).

Advanced Features

Reset Transmission Health Monitor (1K/2K, 3K/4K) — Clear THM data

Clear All Shift Adaptive Data (1K/2K, 3K/4K) — Reset learned shift data

Reset Auto Detect Oil Level Sensor (3K/4K) — Re-detect oil level sensor

Reset Adaptive Shift Parameters (1K/2K, 3K/4K) — Restore adaptive shift parameters

Output Test

Caterpillar Diagnostic Coverage

Caterpillar Diagnostic Coverage

Comprehensive coverage for Caterpillar Electronic Engines (1990–2003) and CAT ACERT Engines (2003–2009), including basic functions, calibrations, diagnostic tests, special tests, troubleshooting settings, and configurable parameters.

Platform Overview & Coverage

CAT Engines with ACERT Technology: Vehicle Coverage: 2003–2009 — Reprogramming & diagnostics for CAT ACERT systems

Caterpillar Electronic Engines: Vehicle Coverage: 1990–2003 — Reprogramming & diagnostics for legacy Caterpillar systems (3116, 3126, 3176, 3406, C-9, C-10, C-12, C-15, C-16)

CAT Engines with ACERT Technology (2003–2009)

Basic Functions

Read Fault Codes

Clear Fault Codes

View/Reset Trip Data

View Engine Data

Advanced Features — Histograms

Engine RPM vs. Time (%)

MPH vs. Time (%)

Calibrations

Boost Calibration

Timing Calibration

Diagnostic Tests

Injector Solenoid Test

Injector Actuation Pressure Test

Intake Valve Actuator Solenoid Test

Cylinder Cutout Test

Special Tests

Injection Actuation Pressure Driver Test

Inlet Air Heater Enable Test

Turbo Wastegate Solenoid Test

Intake Valve Actuation Pressure Solenoid Test

Reset Fleet Trip Info

Timing Calibration

Monitor Throttle Position Sensor

PTO Throttle Position Sensor

On/Off Cooling Fan

Lockout Solenoid

Shift Solenoid

55 MPH VSP/Speedometer

Engine Running Output

Starting Aid Output

Retarder/Exhaust Brake

Warning Lamp

Low Oil Pressure Lamp

Low Coolant Level Lamp

High Coolant Temperature Lamp

PTO Active Output

Coolant Diverter Valve

Three Speed Fan Brake

System Troubleshooting Settings

Cooling Fan

Dyno Mode

Idle Shutdown Timer

Powertrain Data Link

Boost Calibration

Display & Change Configurable Parameters

Vehicle Speed

Cruise Control

Exhaust Brake

Engine Gear

Smart Idle

Output Selection

Passwords

ECU Rating

ECU Identification

Maintenance Parameters

System Parameters

Selected Engine Rating

Cruise Control Parameters

Parameter Lockout

Exhaust Brake Options

Unprogrammed Parameters

Security Access Parameters

Vehicle Speed Parameters

Data Link Parameters

Idle Parameters

Old PTO

Smart Idle Parameter

Vehicle Activity Report Parameters

Trip Parameters

Dedicated PTO Parameters

Timer Parameters

Engine Monitoring Parameters

Engine/Gear Parameters

Output Selections

Caterpillar Electronic Engines (1990–2003)

Supported Engines

3116

3126

3176

3406

C-9

C-10

C-12

C-15

C-16

Basic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View and Reset Trip Data

View Engine Data

Calibrations

Boost Calibration

Timing Calibration

RACK Sensor Calibration

Injector Code Calibration

Diagnostic Tests

Injector Solenoid Test

Injector Actuation Pressure Test

Cylinder Cutout

Special Tests

Injection Actuation Pressure Driver Test

55 MPH VSP/Speedometer Test

Inlet Air Heater Enable Test

RACK BTM Sweep Test

Injector Solenoid Test

Reset Driver Trip Info

Histogram: Engine RPM vs. Time (%)

Histogram: MPH vs. Time (%)

ECU Date/Time

Retarder/Exhaust

Shutoff Solenoid

Rack BTM Sweep

Timing BTM Sweep

Cylinder Cutout

Cooling Fan/Output #4 Driver Test

55 MPH VSP/Speedometer Test

Tachometer Circuit Test

Injection Actuation Pressure Test

Inlet Air Heater

MT/AT Transmission

Multi-Function Output #1 Test

Multi-Function Output #2 Test

Multi-Function Output #3 Test

ECU Date/Time

Booster Sensor

Timing Sensor

Rack Sensor

Monitor Throttle Position Sensor Injector Codes Calibration

Monitor PTO Throttle Position Sensor Fuel Temperature

Power Correction Idle Shutdown

Timer Powertrain Data Link

Cooling Fan

Display & Change Configurable Parameters

Vehicle Speed

Cruise Control

Exhaust Brake

Engine/Gear

Smart Idle

Output Selections

Passwords

Cruise Control

Data Link

Dedicated PTO

Driver Reward

Engine Monitoring

Maintenance Indicator

Rating Number

System

Trip

ECU Identification

ECU Rating

Unprogrammable Parameters

Parameter Lockout

Cummins Engines Diagnostic Coverage

Cummins Engines Diagnostic Coverage

Comprehensive coverage for Cummins on-highway engines (1994–Present) across Pre-EPA '07, EPA '07/'10/'13/'17/'20 and natural gas platforms — including basic functions, special tests, programmable parameters, and calibration support for EPA '13+.

Platform Overview & Coverage

Years Covered: 1994–Present

Regulatory Generations: Pre-EPA '07; EPA '07; EPA '10; EPA '13; EPA '17; EPA '20; Natural Gas engines

On-Highway Families: B6.7; L9; X12/X15; ISB; ISC; ISL; ISM; ISX; N14; M11; plus popular industrial Q-Series

Includes support for BNN (X15 CM2450 X142B) and BMF (X12 CM2450 X137B); EPA20 X12 CM2450, L9 CM2450, B6.7 CM2450; EPA17 X12 CM2350

Core Diagnostic Functions & Calibrations

Read Active Faults

Read and Clear Inactive Faults

Engine & Aftertreatment Support

Calibration support for EPA '13+ engines — program Mobile Regen Min Speed; program Engine Idle Speed; updated Freeze Frame data for all EPA '13+

Special Tests — EPA '13+ Additions (ECM-dependent)

AFT Intake NOx Test — Validate AT intake NOx sensor

AFT Outlet NOx Test — Validate AT outlet NOx sensor

Air Handling Performance Test — Override actuators; analyze pressure/flow against models

DEF Doser Count Reset — Monitor/reset DEF pump purge counts

DEF Pump Heater — Verify pump heater relay/coil and temperature sensors

EGR Delta Pressure Auto Zero — Run out-of-mission auto-zero for EGR ΔP troubleshooting

Special Tests — Comprehensive Suite

AFT DEF System Leak Test — Prime/pressurize regardless of temp; verify no leaks after repair

AFT DPF Regeneration — Clean DPF soot load (service regen)

AFT History — View last 10 regen events (complete/incomplete)

AFT Maintenance Filter Installation — Reset ECM for DOC/DPF maintenance (DOC maintenance & DPF reset options)

AFT Shutoff Valve & Injector Override — Dosing system, shutoff valve, and injector leak modes

AFT SCR Performance Test — Monitor SCR outlet NOx sensor & catalyst during soot-cleaning event

AFT SCR System Test — Monitor SCR outlet NOx sensor & catalyst status (non-regen)

Current-Based PM Sensor Regeneration (EPA '13+) — Clean PM sensor of soot

Cylinder Cutout Test — Manual/auto cylinder disable with adjustable dwell

DEF Doser Pump Override — Measure flow for fixed time

DEF Dosing Heater Relay Test — Verify heater and relay operation

DEF Line Heater Relay Test — Verify line heater/relay

DEF Tank Heater Control Valve Test — Verify control valve operation

DPF Restriction Test (EPA '13+) — Evaluate filter restriction

EGR Valve Test (EPA '04) — Command EGR open/close

Engine Abuse History (EPA '04+) — View over/under-limit operation history

Engine State Monitor — Observe control state & active derates/root causes

Fan Override Test — Force fan at full speed for set time

Fast Idle Warm-up (EPA '13+) — Raise engine temp quickly

Fuel Injector Performance Test — Exercise injectors at multiple rail pressures

Fuel Injector Reset (EPA '13+) — Clear injector adaptive learn values

Fuel Lift Pump Override (EPA '04) — Command in-tank pump on/off

Fuel System Leakage Test — Manual pressurization for leak diagnosis

Fuel System Table Reset (EPA '13+, CNG only) — Reset adaptive fuel table

Gas Throttle Control Test (EPA '13+, CNG only) — Exercise throttle plate

Intake Air Heater Override (EPA '13+) — Command IAH on/off

Maintenance Monitor (EPA '07+) — Reset maintenance interval

Reset DOC/DPF — Enable DPF regen after DOC/DPF service

Reset Trip Info — Clear resettable trip data

SCR Maintenance (EPA '13+) — Reset SCR adaptive tables after component replacement

Turbocharger Actuator Test (EPA '04) — Command VGT actuator position

VGT Electronic Actuator Installation & Calibration — Guided install/cal

VGT Hysteresis Test — Exercise VGT; measure range & motor effort; pass/fail evaluation

Programmable Parameters — Engine/Vehicle/PTO

Cruise Control Maximum Speed — Set max cruise speed

Cruise Control Enable/Disable — Toggle feature

Engine Idle Speed* — Set desired idle (ECM-supported)

Maximum Vehicle Speed — Limit vehicle speed on level ground

Maximum Accelerator Vehicle Speed — Limit accelerator-based speed

Mobile Regen Min Speed* — Minimum vehicle speed to initiate/continue mobile DPF regen

Idle Shutdown — Time-based idle shutdown; enable/disable

Injector Barcode Adjustment — Program injector codes after install/location change

PTO Additional Switch Speed — Engine speed for Additional preset (between PTO min/max)

PTO Cab — Enable remote cab-mounted PTO controls

PTO Ignore VSS — Disable VSS during PTO operation

PTO Maximum Engine Load — Limit torque during PTO (100–2500 ft-lb)

PTO Maximum Vehicle Speed — Above this, PTO cannot activate (0–15 mph)

PTO Maximum Speed — Limit engine speed during PTO (Idle Min to 2500 rpm)

PTO Minimum Speed — Minimum engine speed during PTO (Idle Min to 2500 rpm)

PTO Pump Mode — Enable pump mode; requires Max Vehicle Speed & VSS Override

PTO Pump Mode Maximum Vehicle Speed — Max speed while in PTO pump mode (0–15 mph)

PTO Pump Mode Vehicle Speed Override — Enable/disable VSS override for pump mode

PTO Ramp Rate — Rate of rpm change via SET/RESUME (100–2500 rpm/sec)

PTO Resume Switch Speed — Target rpm for RESUME

PTO Set Switch Speed — Target rpm for SET

PTO State — Enable advanced PTO speed control features

PTO Transmission Driven — Enable trans-driven PTO; configure type

PTO Transmission Driven Type — Engine Driven Steady / Trans Driven Steady / Trans Driven Irregular / Trans Driven Cyclic

Vehicle Speed Sensor Operation — Enable/disable VSS

Remote Accelerator Pedal or Lever — Enable remote accel device

Remote Accelerator Pedal or Lever Mode — Configure remote accel behavior

Detroit Diesel Diagnostic Coverage

Detroit Diesel Diagnostic Coverage

Overview of supported engines, platforms, modules, diagnostics, parameters, and data displays.

1. Supported Engine Families (1987–Present)

Detroit DDEC 6–20 systems

Detroit Series 60™, DD5™, DD8™, DD13™, DD15™, DD16™

Detroit MBE 900 and MBE 4000 (2001–2006)

Detroit CNG engines (DDEC II–V support)

2. Supported Vehicle Platforms

Detroit / Freightliner Chassis (2009–2024): Cascadia (Legacy + New), M2, B2, 5th Gen
Cascadia support

Freightliner Body & Chassis Modules:

Transmission Control Module (TCM)

Central Gateway

Maintenance System

HVAC (Front / Rear / ParkSmart)

SAMs (Single, Cabin, Chassis)

Instrument Cluster

Door Modules (Driver / Passenger)

Common Telematics Platform

Multi-Purpose Camera

Modular Switch Field

Radar Systems (Front / Side)

Steering Angle Sensor

Integrated Predictive Powertrain Control

Video Radar Decision Unit

3. Module Software Versions (Latest DDEC 20 Support)

MCM21T: v2A.1D, v2A.1F, v2B.1D, v2B.1F

CPC04T: v4.19

CPC501T: v31.10, v31.11

ACM301T: v03.65

ACM21T: v02.64, v02.5A

ACM: v03.66

4. Core Diagnostic Capabilities

Read/clear proprietary active & inactive fault codes

Display parameters associated with active faults

View live engine and vehicle data

Multi-ECU support

CNG engine support (DDEC II-V)

5. Supported Diagnostic Tests

Emissions & Aftertreatment:

DEF Quantity Test

DPF Ash Accumulator

DPF Regeneration

SCR Efficiency Test (Parked)

ATD Maximum Sensor Value Reset

Purge Hydrocarbon Doser

EGR System:

EGR Actuator Slow Learn

EGR Delta Pressure Sensor Recalibration

EGR Low Flow Test

Fuel & Injection:

Metering Unit Flood Routine

Injector Codes

Compression Test

Cylinder Cutout

Air & Engine Management:

Idle Speed Balance

Intake Throttle Valve Test

Engine Idle Shutdown

PLV Change

Pressure / Leak / Balance:

FIS Low Pressure Leak Test

Output Testing:

Activate Digital / Analog Output Pins & Functions (CPC, MCM)

6. DTNA Transmission Diagnostics (TCM01, TCM05T)

Tilt Sensor Calibration

TCM Release Lock

Countershaft Brake Test

Clutch Apply Leak Test

Transmission Learn Procedure

Gear / Range / Split Activation Procedures

7. Configurable Parameters (CPC / PGR Groups)

Speed Limiters (LIM0, LIM1, LIM2, AC)

Engine Brake

Cruise Control

Optimized Idle

PTO Control

Vehicle Speed Sensor

Engine Protection

Remote Accelerator Pedal

Predictive Cruise Control

Transmission Retarder

Fleet Management

Idle & PTO Shutdown

Fan Configuration

Inputs / Outputs

Maintenance Settings

Password-controlled parameter sets (PGR001–PGR055)

8. DDEC II–V Legacy Capabilities

Core Diagnostics:

Cylinder Cutout

Reset Trip Info

Reset Maintenance Systems (Oil, Air, Fuel Filters, Coolant Inhibitor)

Clear Maintenance Codes

Reset AFR Learn Table

Activate Digital / PWM Outputs

ECM Inputs / Outputs

EGR Differential Pressure Recalibration

Configurable Parameters:

Engine/Vehicle Options

Fuel Economy Incentive

Idle Options

Injector Calibration Codes

Variable Speed Governor

Progressive Shift

Engine HP Rating

Function Lockout

Engine Droop

Top 2 Transmission

9. Data Display (Live Telemetry)

Temperatures:

Coolant, Oil, Fuel, Air Inlet, Ambient, Intake Air

Intercooler, Turbo Inlet/Outlet

EGR Temperature A & B

Pressures:

Boost, Exhaust Backpressure

Fuel Differential & Main Pressure

Crankcase, Coolant

Air Filter Differential

Cylinder Boost Differential

Speeds:

Engine Speed, Idle Speed, Turbo Speed

Vehicle Speed, Cruise Set Speed

Variable Speed Governor Set Speed

Voltages:

Battery, Knock Sensor, RTC Backup

Sensor Supply Voltage

Mechanical / Misc:

Throttle Position / Counts

Torque %, Engine Load %

Fuel Economy & Fuel Flow

Active Governor, VSG Counts

Relative Humidity

Exhaust Air/Fuel Ratio

Natural Gas Loop Status

10. Engine Configuration Data

ECM Date / Time

Engine & ECM Serial Numbers

Model #, Certification #

Software Levels

HP Rating / Rated Speed

Peak Torque & RPM

Idle Speed

Transmission Type

Communications (J1922, J1939)

11. Engine Life Totals

Engine Hours

Fuel Used (Driving / Idle / Trip)

Idle Hours

Cruise Hours

Engine Brake Hours

Variable Governor Hours

Odometer

Optimized Idle (Fuel & Time Saved)

Preventative Maintenance A/B/C (% Remaining)

12. Trip Data

Average Engine Load

Fuel Economy

Time/Fuel Use (Idle & Driving)

Variable Speed Governor Hours

Cruise Hours

Brake Hours

Trip Time / Distance

13. Detroit ESS (Synchro-Shift) Transmission

Configuration:

Transmission Type

Late Gear Change

Second Chance Shift

Engine Brake Shift

Skip Shift

Performance Data:

Output Shaft Speed

Target vs Current Gear

Shift Knob Counts

Shift Intent

Solenoid/Harness Status

Trip Data:

Number of Shifts

Driver Shifts

Aborted Shifts

14. Additional Systems & Indicators

Natural Gas Loop Status

Coolant & Oil Level

Engine Brake Status

Active Governor

Knock Control

Idle Shutdown

Turbo Bleed Valve

Half-Engine Mode

Eaton – PACCAR Transmission Diagnostic Coverage

Eaton – PACCAR Transmission Diagnostic Coverage

Comprehensive coverage for Eaton automated/manual platforms and PACCAR-branded Endurant transmissions — including proprietary faults/parameters access and core diagnostic functions.

Platform Overview & Coverage

Application Scope: Provides proprietary faults and parameters for Eaton and PACCAR transmissions

Supported Transmission Families

Eaton

Endurant HD

Endurant XD

Fuller Advantage

Procision

Ultra Shift Plus

PACCAR (Endurant-based)

TX-12 (Endurant)

TX-18 (Endurant)

Core Diagnostic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View Transmission Data

Proprietary Faults & Parameters

OEM-Level Fault Access: Read manufacturer-specific DTCs for accurate triage (active & inactive)

Parameter Visibility: Monitor proprietary transmission parameters needed for diagnosis and repair validation

Notes & Applicability

Coverage and available parameters/tests may vary by model year, controller, and installed options.

TX-12 and TX-18 are PACCAR-branded variants of the Eaton Endurant platform.

Heavy-Duty Standard (HDS) and

Heavy-Duty Standard (HDS) and

OBD II / EOBD Diagnostic Coverage

Comprehensive coverage for HDS J1708, HDS J1939, and OBD II/EOBD applications — including supported systems, core functions, available data lists (engine, DPF, trip), protocol notes, and limitations.

HDS Overview & Positioning

What HDS Is: A generic, standards-based diagnostic application for SAE J1708/J1587 and SAE J1939 systems; and a generic OBD II/EOBD tool for light/medium vehicles

What HDS Is Not: HDS does not change parameters or run special tests; does not support Allison, Isuzu, or Hino in HDS modes

HDS J1708 — Coverage & Capabilities

Years: 1988 – Current

Scope: Generic diagnostics for SAE J1708/J1587 engines, transmissions, and brakes

Supported OEM Systems

Caterpillar

Cummins

Detroit Diesel

Mack

Navistar/International

Volvo

Bendix

Meritor WABCO

Eaton

ZF Meritor

HDS J1708 — Basic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View Non-proprietary Parameters

View Trip Information

HDS J1939 — Coverage & Capabilities

Years: 2007 – Current (EPA '07 and newer engines)

Scope: Generic diagnostics for most SAE J1939 electronic engines

Limitations: Cannot change parameters or run special tests; will not clear codes on Caterpillar electronic engines

HDS J1939 — Basic Functions

Read Active Fault Codes

Read and Clear Inactive Fault Codes

View Non-proprietary Parameters

View Trip Information

HDS J1939 — View Engine Data

Engine Speed

Injector Control Pressure

Fuel Delivery Pressure

Percent Load

Air Inlet Temperature

Inlet Air Mass Flow Rate

HDS J1939 — View Diesel Particulate Filter (DPF) Data

Aftertreatment 1 Regeneration Status

Aftertreatment 1 Total Number of Active Regeneration Inhibit Requests

Particulate Trap Regeneration Inhibit Switch

Particulate Trap Regeneration Force Switch

Particulate Trap Lamp Command

Exhaust System High Temperature Lamp Command

Particulate Trap Passive Regeneration Status

Particulate Trap Active Regeneration Status

Particulate Trap Status

HDS J1939 — View Trip Data

Trip Distance

Trip Group 1

Trip Group 2

Trip Average Fuel Rate

Trip Fuel Usage

Instantaneous Fuel Economy

Fuel Consumption Rate

OBD II / EOBD — Coverage & Capabilities

Scope: Generic OBD diagnostics for most foreign and domestic vehicles that meet SAE OBD II standards (includes EOBD)

OBD II/EOBD — Basic Functions

Read Engine Fault Codes (OBD II/EOBD)

Clear Fault Codes

View Non-proprietary Parameters

Display Freeze Frame Data

OBD II/EOBD — Supported Protocols

ISO 15765 (CAN 500 & GMLAN)

J1850 VPW (GM & Chrysler)

J1850 PWM (Ford)

ISO 9141 (Foreign)

Generic OBD-II System Data & Monitors

Calculated Engine Load %

Catalyst/Heated Catalyst status

Continuous & Non-Continuous Monitors

Generic & Proprietary codes; Pending codes

Malfunction Indicator Light (MIL) Status; number of DTCs; Readiness monitors

DTC that caused freeze frame; Freeze frame data

EGR System; Evaporative Purge; Secondary Air System

Engine Coolant Temp (°F/°C); Intake Air Temp (°F/°C)

Engine RPM; Vehicle Speed (MPH/KPH)

Fuel Pressure (gauge); Fuel System Status (banks)

MAP (kPa or inHg); MAF (g/s)

Short-/Long-Term Fuel Trim (banks)

O₂ Sensor / Heater test results (all banks/sensors)

Spark Advance (° for Cylinder #1)

A/C Refrigerant System (where available)

EOBD Application

Heavy-Duty Truck Engines: 2008–2015 PACCAR MX

2013–2015 Volvo Vehicles

Medium Duty: 2011–2015 Hino; 2011–2015 Fuso; 2010–2015 Isuzu; 2011–2015 UD

HINO Engines Diagnostic Coverage

HINO Engines Diagnostic Coverage

Comprehensive coverage for Hino medium-duty engines (2005–2021) — including supported platforms, core functions, engine diagnostic tests, aftertreatment & burner-system routines, DEF system tests, calibrations, and 300 Series brake diagnostics.

Platform Overview & Coverage

Vehicle Coverage: 2005–2021 — diagnostic capability for Hino electronic engines (medium-duty)

Supported Platforms: 600 Series Conventional (2005–2021); 300 Series Cab-Over (2012–2021); Brake; Transmission

Core Diagnostic Functions

Read Active Faults

Read and Clear Inactive Faults

View Engine Data

Engine Diagnostic Tests — Core Routines

DPF Regeneration — Force a stationary (parked) regen of the DPF

Injector Cutout — Disable injectors; monitor RPM, fuel rate, engine load/torque with min/avg/max results

Target RPM — Hold engine at user-selected RPM for verification

EGR Actuation — Command EGR valve position (0–100%)

VNT Actuation — Command Variable Nozzle Turbo position (0–100%)

Intake Throttle Valve Actuation — Command ITV position (0–100%)

Fuel Leak Inspection — Raise rail pressure to max to check for leaks & ECU command capability

Exhaust Brake Actuation — Engage/disengage exhaust brake for adjustment without engine running

Glow Plug Activation — Warm glow plugs via circuit activation

DEF/SCR Memory Resets — Clear persistent SCR/DPR hard codes (DEF SCR Related Memory Reset; SCR Memory Reset; DPR Related Memory Reset)

Burner Maintenance Distance Reset — After DPF replacement on MY2011–2014 trucks with burner system

Turbocharger Test — Verify intake pressure rise vs speed & demand

Pump Relearn — Start pump relearn after replacement

Hydrocarbon Injector Test — Verify AFT fuel injector electrical function & spray pattern

Common Rail Pressure — Compare Target vs Actual rail pressure for sensor/ECU verification

Trip Reset — Clear ECU trip history

Start Inhibit/Cranking Only — Disable injectors during cranking to prevent start

DEF Dosing — Verify 5 oz (150 cc) DEF dosing volume

DEF Leak Check — Check DEF circuit for leaks

DEF Pump Reverting Valve — Command valve to evacuate DEF lines at key-off

Coolant Shutoff Valve — Command coolant flow to DEF tank passages

DEF Heater Relay — Command DEF heaters via relay

Backflow Line Heater — Manually energize backflow line heater

Pressure Line Heater — Manually energize pressure line heater

Suction Line Heater — Manually energize suction line heater

Fuel Pump — Activate burner-system fuel pump

Atomizer Master Air Valve — Activate AMAV

Atomization Air Pressure Valve — Activate AAAV

Atomizer Injector Opening — Cycle atomizer injector

Injection Coil — Activate burner ignition coil

Combustion Air Valve — Actuate CAV

Atomizer Fuel Injection — Hold atomizer fuel injector open

Tachometer Display — Command instrument RPM (500–2500) to verify tach accuracy

Engine Calibrations

Maximum Vehicle Speed

Maximum Cruise Speed

Set Idle Shutdown Time

Enable Idle Shutdown

Injector Programming

Preset PTO Engine Speed (PTO Idle Speed; Increase Increment Adjustment)

DPF Soot Load

300 Series — Brake Diagnostic Tests

SH Valves — Turn on pressure-retention “Isolation” ABS valve

SR Valves — Turn on pressure-reducing “Dump” ABS valve

International Motors (Navistar) Diagnostic Coverage

International Motors (Navistar) Diagnostic Coverage

Comprehensive, professionally formatted coverage and detailed capability descriptions for International A26 (EPA17), Navistar MAXXFORCE (2007–2015), Navistar Body & Chassis systems, and legacy Navistar engines (1994–2006).

Vehicle & Platform Coverage

International A26 — EPA 2021: Read proprietary faults and view live engine/aftertreatment data for rapid triage and repair validation.

International A26 — EPA 2017: Full suite of guided tests and resets for emissions, fueling, air management, and service routines (detailed below).

International S13 Integrated Powertrain System: Faults and live data across all core powertrain modules; coordinated diagnosis.

Supported modules: ECM, ACM (Aftertreatment Control Module), PIM, GSM (Gear Shift Module), T14 Transmission

Legacy International Electronic Engines (1994–2006): Pre-EPA '07 platforms with faults, data, configurable parameters, and guided tests.

Navistar MAXXFORCE (2007–2015): EPA '07 & EPA '10 medium/heavy-duty engines, including Big Bore, with expanded SCR parameters/special tests.

Navistar Body & Chassis Systems: International 4200/4300/4000, 7000 (2005+), 8000 (2005+), CF (2005+); proprietary faults/parameters, KOEO/KOER, graphing, and snapshots.

International A26 — EPA 2017 - Guided Tests & Service Resets

Air Management Test: Assesses charge-air and EGR flow vs. targets.

DPF Regeneration: Commands stationary regen to reduce soot.

Cylinder Cutout Test: Disables a single cylinder to isolate issues.

Multiple Cylinder Cutout Test: Sequential cutouts for comparative diagnosis.

Cylinder Balance: Evaluates torque contribution at idle.

MAF Sensor Calibration: Re-calibrates MAF after service.

Dosing System Test (Flow Test): Measures AFT fuel dosing volume.

AFT Hydrocarbon Doser (Leak Test): Confirms HC doser sealing.

AFT Fuel Enabled Actuator (Leak Test): Validates fuel enable actuator sealing/operation.

Coolant System Flush: Guided flush procedure with monitoring.

DEF System Leak: Pressurizes DEF circuit to detect leaks.

DEF Dosing System Test: Verifies DEF injector output.

AFT Purge Air: Purges lines before/after service.

AFT Hydro Doser: Exercises HC doser for function check.

Reset Forced Active Regen: Clears forced-regen state.

AFT Fuel Enable: Tests enabling logic for AFT fuel.

AFT DEF Tank Heater Valve: Commands/validates tank heater valve.

AFT DEF Line Heaters: Verifies DEF line heater operation.

Reset: AFT Maintenance: Resets AFT service counters/learned values.

Reset: DPF Replacement: Resets soot/ash references post-service.

Reset Crankshaft Learn: Relearns CKP variation.

Reset Service Interval: Resets maintenance interval tracking.

Reset VGT Span Learn: Relearns VGT actuator span.

International A26 — EPA 2021- Faults & Data

Faults and Data: Read proprietary active faults; clear inactive; view associated parameters to speed repair verification.

Legacy International Engines (1994–2006) — Functions, Tests & Parameters

Basic Functions: Read/clear fault codes; view engine data.

Legacy Diagnostic Tests (Guided)

KOEO (Key On Engine Off): Static electrical/sensor checks with engine off.

KOER (Key On Engine Running): Dynamic checks of sensors/actuators while running.

Injector Buzz Test: Verifies HEUI injector coil/circuit.

Injector Contribution Test: Assesses each cylinder's influence on smoothness/power.

Cylinder Cutout Test (Dual-box ECMs): Momentary disable for misfire isolation.

Injector Disable Tests (Dual-box ECMs): Targeted injector disablement per cylinder.

Relative Compression Test (Dual-box ECMs): Cranking-based relative compression without component removal.

Legacy Configurable Parameters

Crank Inhibit

Fan Control

Idle Shutdown Timer

Warm-up Device

Warning & Protection System

Hydraulic Pressure Governor

PTO Control

Radiator Shutter

Vehicle Speed Limit

Vehicle Retarder

Two Speed Axle

Traction Control

Engine Signal Enables

Cruise Control

Engine Family / Transmission

Customer Password

Coolant Tank Selection

Engine Air/Gas Management

Navistar MAXXFORCE Engines (2007–2015) — Coverage & Features

Vehicle Coverage: EPA '07 and EPA '10 medium/heavy-duty Navistar MAXXFORCE engines, including Big Bore (2014–2015 coverage).

Version Enhancements: Support for 2015 engines; enhanced 2010–2014 coverage.

SCR Additions: New SCR parameters and new SCR special test for improved diagnosis.

Actuator Test: New special test added for component validation.

Basic Functions: Read fault codes; clear fault codes; view engine data.

Navistar Body & Chassis — Coverage, Functions & Diagnostic Tests

Vehicle Coverage: International 4200/4300/4000; International 7000 (2005+);
International 8000 (2005+); International CF (2005+).

Basic Functions: Read active faults; read/clear inactive faults; view proprietary parameters.

Diagnostic Functions: Expanded proprietary fault descriptions; connector pin info; timers;
parameter graphing; snapshots.

Navistar Body & Chassis — Advanced Diagnostic Tests

KOEO — Standard Test: General checks with engine off.

Relative Compression Test: Cranking-based compression comparison.

Injector Test: Actuation/verification of injector operation.

Output State — High/Low: Commands output drivers to high/low states for verification.

Output State — Air Heater Control / Intake Air Heater: Validates air-heater circuits and control.

Continuous Monitor Test / DSI Continuous Monitor: Ongoing monitoring routines under defined conditions.

Navistar Body & Chassis — KOER Tests

Standard Test: Dynamic checks with the engine running.

Cylinder Cutout Test: Cylinder isolation for balance/misfire checks.

Air Management Test: Intake/boost/EGR functional assessment.

Continuous Monitor Test: Dynamic monitoring under load.

VGT Output State — Low/Medium/High: Commands VGT actuation levels for functional testing.

MAF Sensor Calibration: Relearn of MAF sensor after service.

Navistar Body & Chassis — Aftertreatment & Additional

Onboard Filter Cleanliness: Assesses filter condition onboard.

Injector Disable Relative Compression: Combined disable/compression evaluation routine.

Navistar Body & Chassis — Configurable & Factory Parameters

Configurable Parameters:

- Fan Control
- Engine Idle Shutdown Control
- Idle Shutdown Timer
- Warm-up Device
- Warning & Protection System
- Hydraulic Pressure Governor
- PTO Control
- Radiator Shutter
- Vehicle Speed Limiting
- Vehicle Retarder
- Two Speed Axle
- Traction Control

Factory Programmed Parameters:

- Crank Inhibit
- Vehicle Configuration
- Engine Cold Weather Assist
- Radiator Shutter Mode
- Water in Fuel Enable
- Transmission Type
- Vehicle Type

Light & Medium Truck (LMT)

Light & Medium Truck (LMT)

Diagnostic Coverage

Comprehensive coverage for GM, Ford, Isuzu, Dodge/RAM, Navistar CV Truck, and Workhorse — including engines, brakes, transmissions, OBD-II support, special tests, and calibrations (1996–2025 where applicable).

Platform Overview

OEM Coverage: GM, Ford, Isuzu, Dodge/RAM, Navistar CV Truck, Workhorse

Diagnostics Scope: OEM proprietary + OBD-II for 1996+ compliant vehicles

Basic Functions: Read Fault Codes; Clear Inactive Fault Codes; Enhanced coverage for engines, brakes, transmissions; Generic OBD-II for foreign & domestic

FORD — Engines

2.7L (2017–2024)

3.0L Power Stroke (2018–2024)

3.3L (2018–2024)

7.3L Gas (2020–2024)

2.5L (2014–2021)

3.2L Power Stroke (2015–2019)

3.5L (2011–2021)

3.7L (2011–2018)

4.2L (2000–2008)

4.6L (2000–2014)

5.0L (2011–2021)

5.4L (2000–2016)

6.0L Power Stroke (2003–2010)

6.2L (2010–2021)

6.4L Power Stroke (2008–2010)

6.7L Power Stroke (2011–2021)

6.8L (2000–2019)

7.3L Power Stroke (2000–2003)

Ford — Special Tests

DPF Regeneration

SCR Tests

Injector Quantity Adjustment

Relative Compression (Power Balance)

KOEO

KOER

FORD — Brakes & Transmissions (2000–2024)

Transit

Transit Connect

E250–E450

F250–F750

ISUZU — Engines

6.6L Gas (2020–2021)

6.0L (2005–2020)

5.2L Engines (2022–2024)

5.2L Diesel (2005–2021)

3.0L (2011–2018)

Isuzu Diesel — Special Tests

Injector Cutout

DPF Normal/Slow Regeneration

Lamp Tests

Glow Plug Control

EGR Solenoid

Idle Shutdown Extension

Exhaust Differential Pressure Sensor Learn

Clear DPF Data

Clear ECM Learned Data

EGT Sensor 3 Reset

DEF Control Module Reset

Isuzu Diesel — Calibrations

Injector Flow Rates

PTO Settings

Cruise Control Settings

Vehicle Speed Limit

Engine Shutdown Settings

ISUZU — Brakes & Transmissions (2005–2024)

NPR/NF3

NQR/NRR

FTR

22–24 Series N (Diesel 5.2L)

Added faults & data for DEF and Mimamori (2023–2024) — 5.2L (1L5)

DODGE/RAM — Engines Coverage 2018–2024 with FCA Secure Gateway support

6.7L Cummins (2007–2024)*

5.9L Cummins (2006–2024)

5.7L HEMI (2006–2024)*

6.4L HEMI (2014–2024)*

3.6L V-6 VVT (2006–2024)

*Tests not available for 2018–2024 on starred engines

Dodge/RAM — Special Tests

Stationary Desoot (DPF Regen)

Engine Tests

Transmission Tests

ABS Tests

DODGE/RAM — Brakes, Transmissions, BCM

RAM 1500–5500 (2006–2024)

NAVISTAR CV TRUCK

6.6L Duramax — L5D (2019–2021)

Allison Transmission (faults only)

Body Control Module

Chassis

Glow Plug

Instrument Cluster

PTO

Brakes

Navistar CV Special Tests

DPF Tests

DPF Regeneration

DEF Tests

VGT Calibration

Cylinder Cutout

GM — Engines (Faults & Data up to MY2025; includes Global B)

2.7L (2019–2021)

3.0L (2019–2021)

4.3L (2014–2021)

4.8L (2011–2018)

5.2L (2004–2009; 2016–2021)

5.3L (2011–2021)

6.0L (1999–2020)

6.2L (2014–2021)

6.6L Gas (2020–2021)

8.1L (2000–2009)

2.8L Duramax (2019–2021)

6.6L Duramax (2001–2021)

7.8L Duramax (2004–2009)

GM — Brakes & Transmissions (2001–2019)

C1500–C7500

K1500–K3500

T4500–T7500

GM — Modules with Fault/Live Data (2017–2019)

Air Bag

Body

Chassis

Instrument Cluster

Remote Control Door Lock Receiver

Glow Plug

Power Take-Off

HVAC

HVAC Controls

GM (Duramax) — Special Tests

DPF Tests

DPF Regeneration

DEF Tests

VGT Calibration

Cylinder Cutout

WORKHORSE — Engine Coverage (Faults & Data)

3.9L (2004–2005)

4.3L (1999–2005)

4.8L (2004–2012)

5.0L (1999–2000)

5.7L (1999–2004)

6.0L (2003–2012)

6.5L Diesel (1999–2005)

6.5L Turbo Diesel (1999–2002)

6.6L Duramax (2005–2006)

7.4L (1999–2000)

8.1L (2001–2012)

PACCAR Engines & Chassis Diagnostic Coverage

PACCAR Engines & Chassis Diagnostic Coverage

Comprehensive coverage for PACCAR MX engines and Peterbilt/Kenworth body & chassis systems — including EPA '10/'13/'17/'21 engine support, module coverage, basic functions, guided tests, special routines, calibrations, and resets (2010–2024 engines; 2019–2024 body/chassis).

Platform Overview & Coverage

OEM Platforms: Peterbilt / Kenworth (PACCAR) — MX engines plus body & chassis systems

MX Engine Coverage: EPA '10, EPA '13, EPA '17, EPA '21 (2010–2024)

Body & Chassis Coverage: 2019–2024

Body & Chassis Modules: VECU, RHS, CMP, HVAC, MSM, SWS, DCD, DCP — Basic Functions only

Basic Diagnostic Functions

Read Active Faults

Read and Clear Inactive Faults

View Diagnostic Parameters

PACCAR MX — EPA '20 Engine Support: Guided Tests & Service Routines

Fuel System & Injection

Injector Cutout — Disable injectors to isolate cylinder performance/misfires (manual or automatic modes)

Check the injection system during cranking — Validate high-pressure system performance while cranking

Evaluate the injector back leakage — Determine internal leakage of injectors and rail pressure release valve

Check the fuel system health — System-level fuel delivery verification

Injector Code Programming — Program injector codes after replacement or location change

Injector Pump Code Programming — Program pump unit after replacement/location change

DEF / SCR Aftertreatment

Prime the system with the pump for DEF — Prime and pressurize system before testing

Activate the Pipe Heaters for DEF — Command line heaters

Activate the Tank Heaters for DEF — Command tank heater valve/elements

DEF Dosing Quantity — Command dosing valve to dispense a specified volume in a set time

DEF System Leak Test — Prime and hold pressure to verify no leaks after service

Evaluate the SCR System — Functional performance test of SCR catalyst

Evaluate the aftertreatment temperature sensors — Validate repairs to temperature-related DEFOI DTCs

Sensors & Emissions

Check the particulate matter sensor — Functional test while PM sensor is installed

Evaluate the NOx sensor before catalyst — Functional check while installed

Evaluate the NOx sensor after catalyst — Functional check with sensor removed (basic test)

Common Rail & Pressure Control

Check if the common rail pressure release valve is stuck closed

Reset the common rail pressure release valve — Clear stored current-control values

Turbocharger / VGT

Evaluate the turbo actuator functionality — Assess VTG nozzle ring movement

Check the turbo actuator span — Verify calibrated span

Install and calibrate the VGT turbocharger actuator — Installation preparation & sweep calibration

Reset the turbo actuator default position — Recover actuator with incorrect default position

DPF Service & Component Installation

Install a new DPF — Reset ECM data for new filter (de-greening may be required)

Install a cleaned DPF — Reset ECM data after cleaning; regen may be required to clear AFT DTCs

PACCAR MX — EPA '17 Engine Support: Guided Tests, Routines & Programming

Core Tests & Activations

Check the injector system during cranking

Evaluate the turbo actuator functionality

Check the turbo actuator span

Activate the mobile regeneration trigger — Set time-based trigger to perform a mobile regeneration

Activate the air shutoff valve

Activate the fuel dosing valve

Check the particulate matter sensor

Evaluate the NOx sensor after catalyst

Evaluate the NOx sensor before catalyst

Evaluate the SCR System

Evaluate the aftertreatment temperature sensors

Check if the common rail pressure release valve is stuck closed

Evaluate the injector back leakage

Install and calibrate the VGT turbocharger actuator

Controls, Programming & Resets

Disable DEF Derate — Temporarily restore full performance while resolving root cause

Reset the common rail pressure release valve

Program Injector Codes

Special Tests — PACCAR MX (EPA '17/'20)

DPF Regeneration — Initiate parked regeneration of the DPF

Activate the mobile regeneration trigger — Time-based trigger for mobile regeneration

Cleaned Filter — DPF Reinstallation — Reset ECM data after DPF cleaning; regen may be required to clear AFT faults

New Filter — DPF De-Greening — Place ECM in de-greening mode of operation

DPF Maintenance — Lower stored ECM soot level to allow stationary regeneration when otherwise inhibited

Dosing Injector Tests — Quantity test, Fuel Shutoff Valve test, Injector Leak test

DEF Line Heaters — Verify line heaters and relay

DEF Line Heater 1 (Pressure Line) — Verify pressure-line heaters and relay

DEF Line Heater 2 (Return Line) — Verify return-line heaters and relay

DEF Line Heater 3 (Inlet Line) — Verify inlet-line heaters and relay

DEF Pump Heater — Verify heater elements inside the pump module

DEF Tank Heater Control Valve — Verify DEF tank heating valve functionality

Additional Utilities & Information

Cylinder Compression Test — Cranking-based comparison of cylinder performance

Cylinder Contribution Test — Graphic representation of per-cylinder contribution

Cylinder Performance Test — Combined compression + injector cutout

Reset Trip Info — Reset accumulated trip data in ECM

Exhaust Back Pressure Valve (BPV) Actuator — Command and verify actuator (electro-pneumatic)

AFT History — View last 10 regeneration events (complete/incomplete)

Lamp Tests — Command dash warning lamps on/off

PACCAR Body & Chassis (Peterbilt/Kenworth) — Modules & Functions

Coverage: 2019–2024

Supported Modules: VECU, RHS, CMP, HVAC, MSM, SWS, DCD, DCP

Available Functions: Basic Functions only (Read Active Faults; Read/Clear Inactive Faults; View Diagnostic Parameters)

PSI Engines Diagnostic Coverage

PSI Engines Diagnostic Coverage

Comprehensive coverage for PSI engines using MT88 ECM, including gasoline, LPG, and CNG platforms with full diagnostic tests, programmable parameters, and fuel system controls.

Platform Overview & Supported Engines

Supported Engines

6.0L Gas

8.8L Gas

8.8L LPG

8.8L CNG

Core Diagnostic Functions

Change Vehicle Programmable Parameters

View Diagnostic Parameters

Read Active Faults

Read and Clear Inactive Faults

Special Tests — Fuel, Air, Emissions, EVAP, Sensors, Injectors

BLM Learn — enable/disable Block Learn Multiplier (long-term fuel trim)

BLM Reset — reset BLM to zero

Tooth Error Correction Learn — crank variation learn for misfire detection

Multiplicative Injection Time Correction — adjust injector PW per cylinder

O2 Sensor Heaters (Absolute Mode) — override heater duty cycle

O2 Sensor Heaters (Additive Mode) — additive override of heater duty cycle

Canister Shut-Off Valve (Leak Test) — open/close valve

Purge Solenoid Valve Opening — full open/closed control

Purge Solenoid Valve Additive — additive correction

EVAP Service Bay Diagnostic Test — complete EVAP system check

Cylinder Injector Disable — disable single injector

Engine Idle Target — override idle RPM

Fuel Open Loop Command — force ECM to open-loop fueling

Gas Fuel Pump Control — pump on/off

Gas Fuel Pump Control 2 — scavenge pump 2 control

VCPS Exhaust Desired Position — override cam phaser target

VCPS Exhaust Duty Cycle — override phaser OCV duty cycle

Fan Control — command e-fan on/off and speeds

TCIS Trip Reset — reset trip info

MIL Command — toggle MIL

LP Fuel Pump Control — LP pump 1 on/off

LP Fuel Pump 2 — LP pump 2 on/off

LP Tank Return Valve — open/close

LP Tank Supply Valve — open/close

LP Tank Supply Valve 2 — open/close

Wait to Start Lamp — toggle lamp

CNG Rail Valve — open/close

CNG Tank-1 and Tank-2 Valves — open/close

Programmable Vehicle Parameters

Unit Number

Tire Size

Axle Ratio

High Axle Ratio

Low Dual Axle Ratio

Input Dual Axle Source ID

Road Speed Governor

Reverse Speed Governor

Safety Derate Enable
A/C System Configuration
Fuel Tank Configuration
Coolant Level Switch Configuration
Body Controller Source ID
Crank Inhibit Configuration
Crank Inhibit Source ID
Remote Shutdown Enable
Remote Shutdown Source ID
Cruise Control Enable
Cruise Control Speed Units
Adaptive Cruise Control Enable
Cruise/PTO Switch Source ID
Service Brake Config (read-only)
Service Brake 2 Config (read-only)
Rough Road Multiplier (read-only)
Park Brake Source ID
PTO Park Brake
PTO Service Brake
PTO Park/Neutral
PTO Engine Torque Limit
PTO Max RPM
PTO Setpoint 1-4
PTO Ramp Rate
PTO Max Road Speed
PTO Max Road Speed Threshold

Remote PTO Enable

Remote PTO Park Brake

Remote PTO Service Brake

Remote PTO J1939 Source ID

Remote PTO Park/Neutral

Remote PTO Engine Torque Limit

Max Remote PTO RPM

Remote PTO Setpoints 1-2

Remote PTO Ramp Rate

Remote PTO Max Road Speed

Remote PTO Max Road Speed Threshold