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PRO-LINK®

**VEHICLE APPLICATION
GUIDE**



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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

HALDEX 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

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

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

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

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

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)

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

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

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)

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)

DTNA TRANSMISSION DIAGNOSTICS (TCMO1, TCMO5T)

- Tilt Sensor Calibration
- TCM Release Lock
- Countershaft Brake Test
- Clutch Apply Leak Test
- Transmission Learn Procedure
- Gear / Range / Split Activation Procedures

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)

DDEC II-V LEGACY CAPABILITIES

- 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
 - Progaressive Shift
 - Engine HP Rating
 - Function Lockout
 - Engine Droop
 - Top 2 Transmission

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

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)

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)

TRIP DATA

- Average Engine Load
- Fuel Economy
- Time/Fuel Use (Idle & Driving)
- Variable Speed Governor Hours
- Cruise Hours
- Brake Hours
- Trip Time / Distance

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

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

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 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

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

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) 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

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

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

VOLVO/MACK DIAGNOSTIC COVERAGE

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





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