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Test Cases for OBD-II Scan Tools and I/M Test Equipment

RATIONALE

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1. SCOPE

To define test cases for the OBD-II interface on external test equipment (such as an OBD-II Scan Tool, Inspection/Maintenance Tester, etc.) which can be used to verify compliance with the applicable standards such as SAE J1978 and SAE J1979 for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II).

1.1 Purpose

To provide guidance to Scan Tool Manufacturers, Vehicle OEMs, and Regulators (CARB, EPA, etc.) for qualifying the OBD-II interface on external test equipment that is used for vehicle diagnostics and/or I/M testing.

2. REFERENCES

This specification takes precedence over all conflicts in the documents cited in this section.

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1850	Class B Data Communications Network Interface
SAE J1930	Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms. This is equivalent to ISO/DIS 15031-2 - Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 2: Terms, definitions, abbreviations and acronyms.
SAE J1978	OBD II Scan Tool. This is equivalent to ISO/DIS 15031-4 - Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 4: External test equipment.
SAE J1979	E/E Diagnostic Test Modes. This is equivalent to ISO/DIS 15031-5 (April 30, 2002) - Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 5: Emissions-related diagnostic services.
SAE J2012	Diagnostic Trouble Code Definitions. This is equivalent to ISO/DIS 15031-6 (April 30, 2002) - Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 6: Diagnostic trouble code definitions.
SAE J2284/3	High-Speed CAN (HSC) for Vehicle Applications at 500 KBPS
SAE J2534	Recommended Practice for Pass-Thru Vehicle Programming

2.1.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 9141-2	Road vehicles - Diagnostic systems - Part 2: CARB requirements for interchange of digital information
ISO 14230-4	Road vehicles - Diagnostic systems - Part 4: KWP 2000 requirements for emission related systems

ISO/DIS 15031-2	Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 2: Terms, definitions, abbreviations and acronyms (equivalent to SAE J1930)
ISO/DIS 15031-3	Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 3: Diagnostic connector and related electrical circuits, specification and use (equivalent to SAE J1962)
ISO/DIS 15031-4	Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics (equivalent to SAE J1978)
ISO/DIS 15031-5	Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 5: Emissions-related diagnostic services (equivalent to SAE J1979)
ISO/DIS 15031-6	Communication Between Vehicle and External Equipment for Emissions-Related Diagnostics - Part 6: Diagnostic trouble code definitions (equivalent to SAE J2012)
ISO 15765-4	Road vehicles - Diagnostics on Controller Area Network (CAN) - Part 4: Requirements for emissions-related systems

2.2 Related Publications

The following publications are for information purposes only and are not a required part of this document.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1699-1 SAE J1850 Verification Test Procedures

SAE J1699-3 OBD II Compliance Test Cases

2.2.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 11898 Road vehicles, Interchange of Digital information, Controller Area Network (CAN) for High Speed Communication

ISO 14229 Road Vehicles, Diagnostic Systems, Specification of Diagnostic Services

2.2.3 Other Publications

CARB Regulation Title 13, California Code Regulations, Section 1968.2, Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II). Web address: <https://www.arb.ca.gov/msprog/obdprog/obdregs.htm>.

3. DEFINITIONS

3.1 Definition of Terms

The definitions of terms that are related to the use of this document may be found in the publications listed under 2.1, Applicable Documents.

3.2 Acronyms

The following are common acronyms used in this document:

- A/C Air Conditioning
- CAN Controller Area Network
- CALID Calibration Identification
- CID Component ID
- CVN Calibration Verification Number
- DLC Data Length Code (also Data Link Connector, e.g., SAE J1962 connector)
- DTC Diagnostic Trouble Code
- DTM Diagnostic Test Mode
- DUT Device Under Test (such as, a Generic Scan Tool, I/M Test Equipment, etc.)
- ECU Electronic Control Unit
- ECUSIM Electronic Control Unit Simulation (used to stimulate the DUT)
- HEV Hybrid Electric Vehicle
- HSC High Speed CAN
- ID Identification (number)
- I/M Inspection and Maintenance
- ISO International Standards Organization
- Kbps Kilobits per second
- KWP Key Word Protocol
- MIL Malfunction Indicator Lamp
- OBD-II On Board Diagnostics (level 2)
- OBDM On Board Diagnostic Monitor
- PCM Powertrain Control ECU
- PWM Pulse Width Modulation
- PID Parameter Identification (number)
- RPM Revolutions Per Minute (engine speed)
- SID Service ID
- TID Test ID
- VIN Vehicle Identification Number
- VPW Variable Pulse Width (modulation)

4. OVERVIEW

This document defines a set of compliance tests for OBD II Scan Tools and I/M Test Equipment. The test cases are designed to gain confidence that communications can be established and maintained with the vehicle. These tests will evaluate of a variety of characteristics including mechanical attributes, electrical attributes, adherence to required protocol standards, support for required network services, and presentation of vehicle data. The requirements for these test cases are drawn from a variety of documents, but mainly focus on OBD II communication for light and medium duty vehicles as specified in SAE J1979 (ISO 15031-5).

Since OBD II Scan Tools and I/M Test Equipment have a variety of different requirements, the specific set of test cases required to verify compliance will also need to vary. For example, I/M Test Equipment may have no need to make any SID \$06 requests and therefore the test cases for SID \$06 would not be applicable (and would not be part of that device's compliance test). This document contains a super-set of test cases, from which product specific test case subsets can be selected to verify compliance.

While this document only defines the test cases, it is expected that some level of automation will need to exist to perform the test cases as described. It is envisioned that this would consist of a PC, some instrumentation, a SAE J2534-2 Interface, and some custom software.

4.1 Documentation Conventions

This document details a number of test cases, which have been divided into sections for ease of testing. The test cases that have an expected positive (or successful) result start with the phrase “Verify”. Test cases that expect a failure (or result in something other than successful) start with the phrase “Test”. Each test case consists of one or more steps. Each step (labeled “ACTION”) has and an associated evaluation criteria (labeled “EVALUATION:”).

The phrase “ACTION” shall be followed by the specific device to be used. “ECUSIM” indicates that the associated action must be applied to the ECU Simulation Device. The ECU Simulation Device provides the network messages that would typically come from a vehicle. It is envisioned that this would consist of a PC, a SAE J2534-2 Interface, and some software to operate in the manner described in the test cases. “INST” indicates that the associated action must be applied to some piece of Instrumentation (like the Power Supply, Scope, DVOM, etc.). The Instrumentation hardware could also be part of the ECU Simulation Device. “DUT” indicates that the associated action must be applied to the Device Under Test.

The evaluation criteria (“EVALUATION:”) shall identify the expected results. In some instances, it is easier to identify the criteria for passing (for example, “Pass if ...”). In these cases, any result not listed as a pass shall be considered a failure. However, in some cases it will be easier to identify the criteria for failing (for example, “Fail if ...”). In these cases, any result not listed as a failure shall be considered a pass. A test case failure is defined as the results of an individual action that does not meet the associated evaluation criteria. If a test case has failed, any remaining actions for that test case need not be executed as continuing on may produce unpredictable results.

Each test case shall have an associated Test ID. This number shall be unique and shall not change. The Test ID shall be used when referencing a test case, as section numbers in the document may change in subsequent revisions. The Test IDs have been structured to aid in automation. The Test ID is a hexadecimal number that shall have the following format with each letter representing a single hex digit:

\$GRTFFCCC

where:

G indicates the test Group (a total of 16):

- 0 for Mechanical
- 1 for Electrical
- 2 for Protocol
- 3 for Network
- 4 for Presentation

R is RESERVED and must be 0

T indicates the Type of test (a total of 16):

- 0 for General Tests
- 1 for ISO 15765-4 Tests
- 2 for ISO 14230-4 Tests
- 3 for ISO 9141-2Tests
- 4 for SAE J1850 VPW Tests
- 5 for SAE J1850 PWM Tests

FF indicates the Feature to be tested (a total of 256):

When G = 0 (Mechanical)

- 00 for General
- 01 for Connector
- 02 for Cable

When G = 1 (Electrical)

- 00 for General
- 01 for Voltage
- 02 for Current
- 03 for Capacitance
- 04 for Impedance/Resistance
- 05 for Wave Shaping

When G = 2 (Protocol)

- 00 for General
- 01 for Bit Times
- 02 for Transport Protocol
- 03 for Initialization
- 10 for ETI Anomalies

When G = 3 (Network)

00 for General
01 for SID 1
02 for SID 2
03 for SID 3
04 for SID 4
05 for SID 5
06 for SID 6
07 for SID 7
08 for SID 8
09 for SID 9
0A for SID A
FF for ETI Anomalies

When G = 4 (Presentation)

00 for General
01 for SAE J1978

CCC indicates the specific test case number (a total of 4095)

In the body of the Test Cases, specific messages and timing parameters will be referred to by an alpha-numeric text in bold (for example, **SID\$01_PID\$00**). These references correspond to specific messages and parameter values are listed in various tables throughout Section 5.

All numbers are in decimal unless otherwise indicated. (Hexadecimal values shall have a leading '\$'; for example, \$7AF or \$800 are hexadecimal values.)

All references to protocol specific parameters that are specified in other documents will be in italics (for example, *W0*).

5. GENERAL TEST SET-UP

This section provides an overview of how the test equipment and the DUT should be setup. The 'Setup' section of each test case will describe the exact state of each piece of test equipment. Please note that not every piece of test equipment will be used in every test case. All testing shall be conducted at a temperature of 23 °C (± 5 °C) and between 25 and 95% relative humidity.

5.1 DUT Requirements

The DUT shall include all equipment required to operate in the manner described in the test cases. This shall include the mechanism used to attach to the vehicle's SAE J1962 connector.

5.2 Test Equipment Requirements

The following list of test equipment is suggested when executing the tests contained in this document. The suggested equipment will also aid in test automation. Please note that not every piece of test equipment will be required for every test.

- Dual Channel 1 GHz Oscilloscope or equivalent
- SAE J2534-2 Interface, capable of disabling CAN In-Frame Acknowledgements
- A generic PC running a Windows™ operating system and capable of executing WIN32 function calls
- Software that can run on the PC and interact with the SAE J2534-2 Interface in the manner described in the test cases (e.g., simulate the network messages that would typically come from a vehicle, etc.)
- A SAE J1962 Break-Out Box or OBD2 Splitter

- A current probe or current meter
- Calipers, a ruler, and a micrometer
- A +20 V DC (5 A) Variable Power Supply - This will provide power the ECUSIM and DUT during the tests. Additionally, this power supply shall provide power for a variety of electrical tests.

5.3 Typical Test Set-Up

Figure 1 outlines the typical set-up.

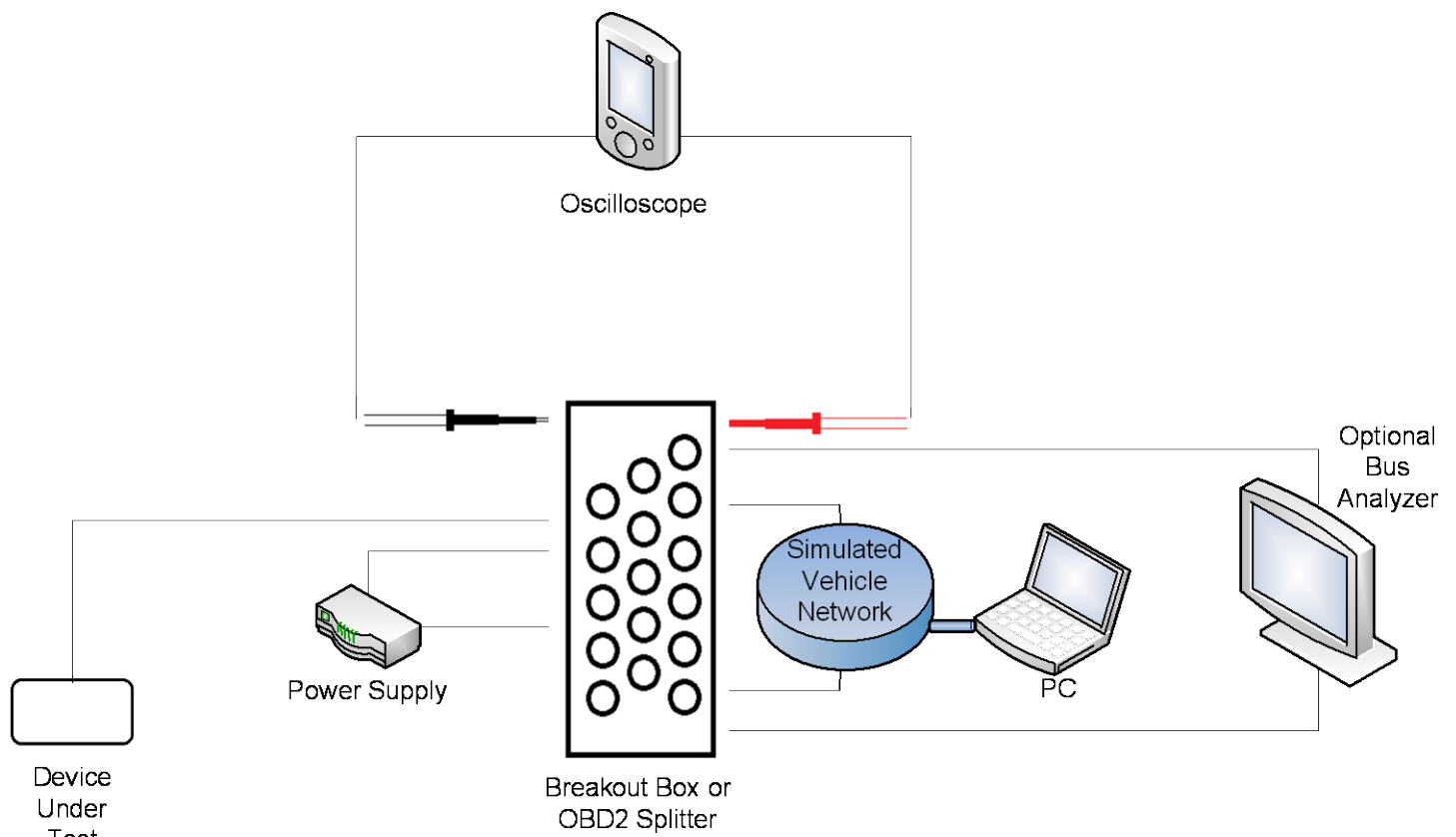


Figure 1 - Typical test set-up

5.4 Pre-Defined Messages, Message Timing, and Test Set-Up States

5.4.1 General States

5.4.1.1 Power On

The Power On state is immediately after power up when the device is connected, but there is no active OBD communication.

5.4.2 CAN

5.4.2.1 CAN Electrical Connections

Figure 2 outlines the typical set-up for CAN testing.

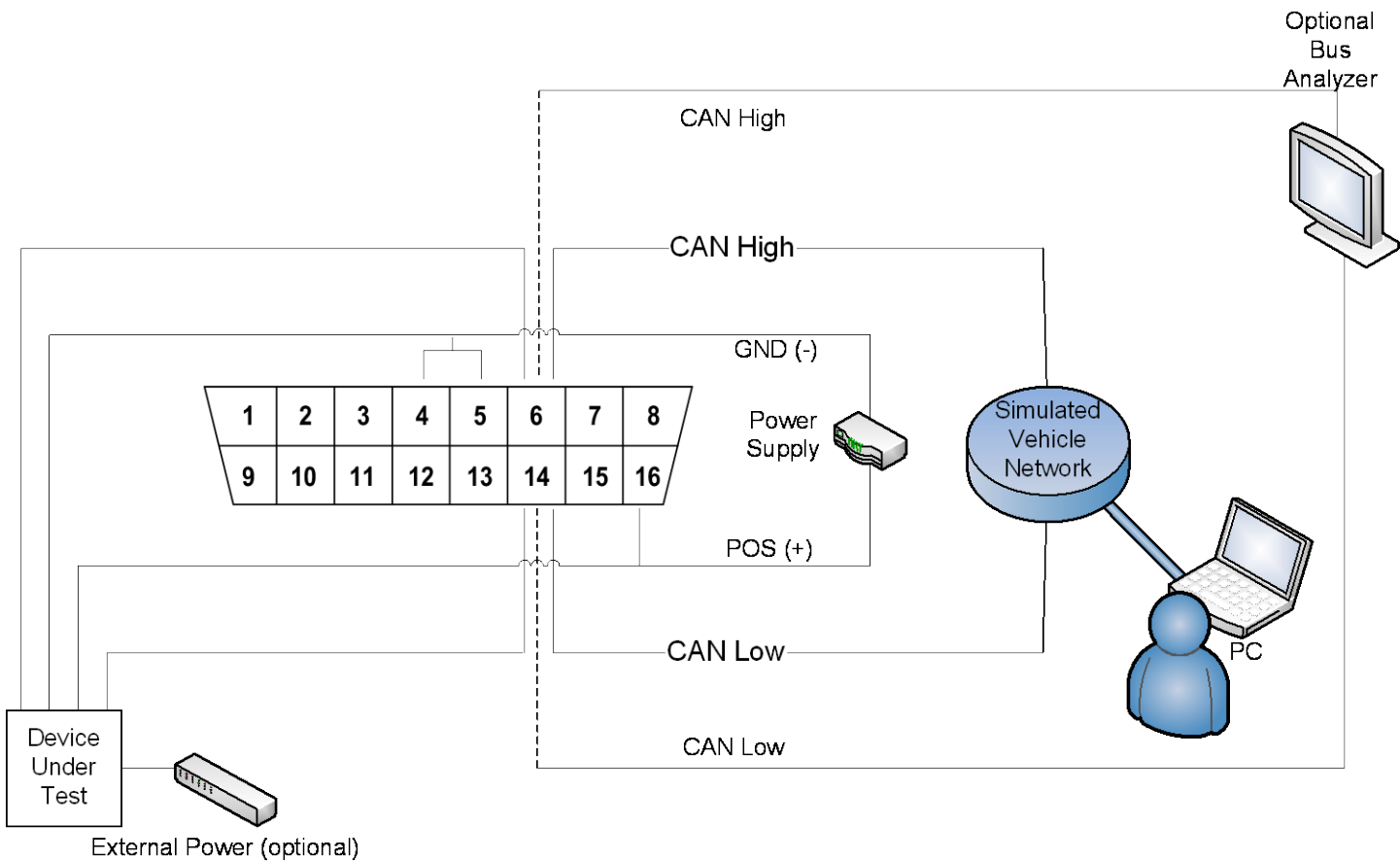


Figure 2 - Test set-up for CAN testing

5.4.2.2 CAN ECU Addresses

At this time, none have been defined.

5.4.2.3 CAN Messages

The following messages have been pre-defined for 11-bit CAN. For convenience, the test cases in this document will use the text in the 'Message Reference' column when referring to the specific set of message bytes, detailed in the 'Message Bytes' column of the table below.

Message Reference	Message Bytes
CAN 11 SID\$09 INF\$04	\$00 \$00 \$07 \$DF \$02 \$09 \$04
CAN 11 FC BS0 STMIN0	\$00 \$00 \$07 \$DF \$30 \$00 \$00
CAN 11 ECU1 SID\$09 INF\$04 FF	\$00 \$00 \$07 \$E8 \$10 \$13 \$49 \$04 \$01 \$31 \$32 \$35

The first four bytes are the CAN ID bits 28-24 first, followed by CAN ID bits 23-16, CAN ID bits 15-8, CAN ID bits 7-0.

Figure 3 - Pre-defined messages for CAN (11-bit)

5.4.2.4 CAN Message Timing

At this time, none have been defined.

5.4.2.5 CAN (11-bit, 500K) Connected State

The device shall initially be in the 'Power On' state, connected to the CAN network with the appropriate termination (as depicted in 5.4.3.1), then configured for 11-bit CAN Identifiers at a baud rate of 500000.

5.4.3 ISO 15765-4

5.4.3.1 ISO 15765-4 Electrical Connections

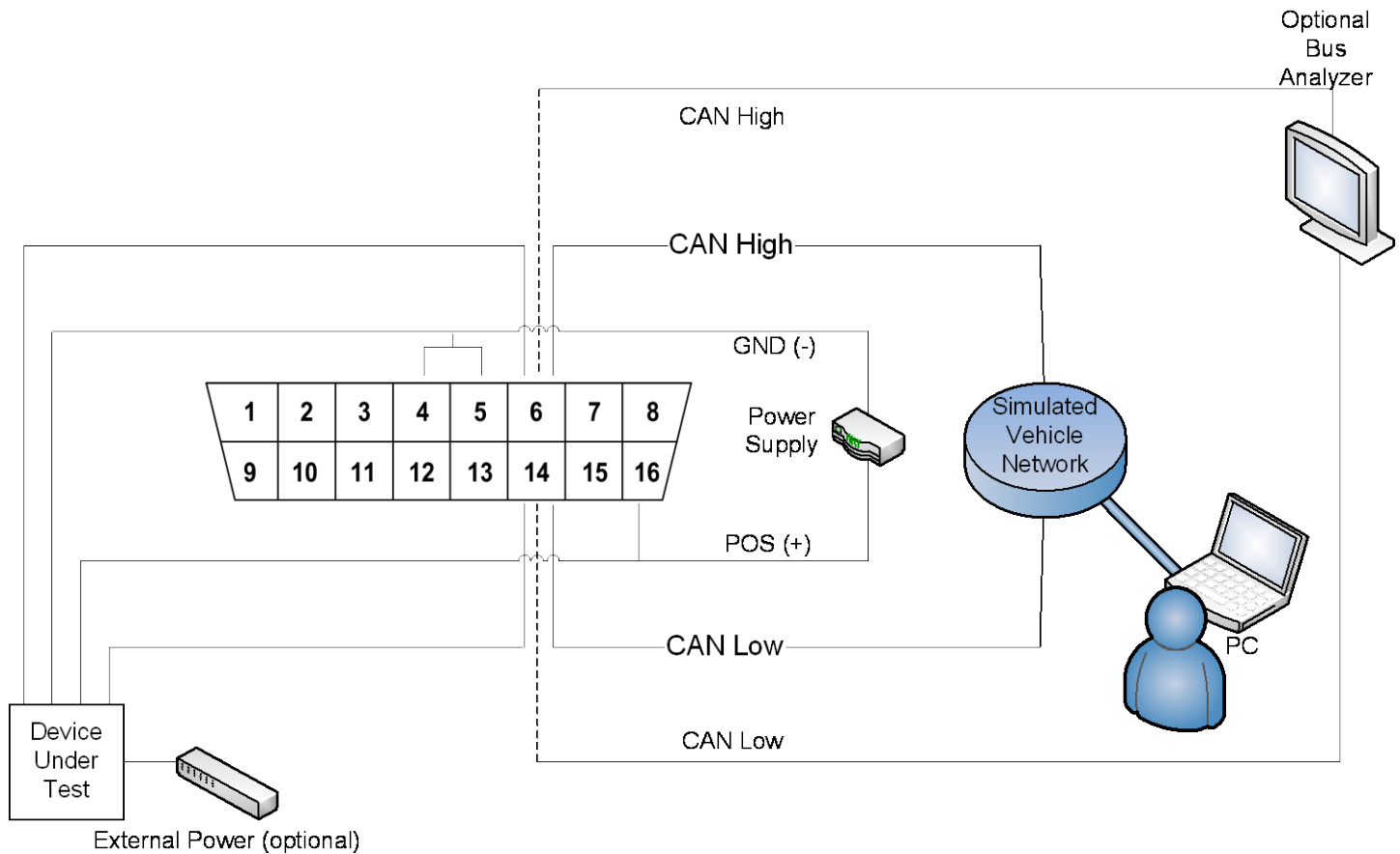


Figure 4 - Test set-up for ISO 15765-4 testing

5.4.3.2 ISO 15765-4 ECU Addresses

The following address bytes have been pre-defined for 11-bit ISO 15765-4. For convenience, the test cases in this document will use the text in the 'ECU Reference' column when referring to the specific set of address bytes, detailed in the 'Address Bytes' column of the table below.

ECU Reference	Address Bytes
ECU #1	\$00 \$00 \$07 \$E8
ECU #2	\$00 \$00 \$07 \$E9
ECU #3	\$00 \$00 \$07 \$EA
ECU #4	\$00 \$00 \$07 \$EB
ECU #5	\$00 \$00 \$07 \$EC
ECU #6	\$00 \$00 \$07 \$ED
ECU #7	\$00 \$00 \$07 \$EE
ECU #8	\$00 \$00 \$07 \$EF

The first four bytes are the CAN ID bits 28-24 first, followed by CAN ID bits 23-16, CAN ID bits 15-8, CAN ID bits 7-0.

Figure 5 - ECU reference and associated addresses for ISO 15765-4 (11-bit)

The following address bytes have been pre-defined for 29-bit ISO 15765-4. For convenience, the test cases in this document will use the text in the 'ECU Reference' column when referring to the specific set of address bytes, detailed in the 'Address Bytes' column of the table below.

ECU Reference	Address Bytes
ECU #1	\$18 \$DA \$F1 \$10
ECU #2	\$18 \$DA \$F1 \$11
ECU #3	\$18 \$DA \$F1 \$12
ECU #4	\$18 \$DA \$F1 \$13
ECU #5	\$18 \$DA \$F1 \$14
ECU #6	\$18 \$DA \$F1 \$15
ECU #7	\$18 \$DA \$F1 \$16
ECU #8	\$18 \$DA \$F1 \$17

The first four bytes are the CAN ID bits 28-24 first, followed by CAN ID bits 23-16, CAN ID bits 15-8, CAN ID bits 7-0.

Figure 6 - ECU reference and associated addresses for ISO 15765-4 (29-bit)

The following messages have been pre-defined for 11-bit ISO 15765-4. These messages represent the fully assembled message and do not include any transport layer mechanisms that appear in the individual CAN Frames (like the PCI byte, Flow Control messages, etc.). For convenience, the test cases in this document will use the text in the 'Message Reference' column when referring to the specific set of message bytes, detailed in the 'Message Bytes' column of the table below.

Message Reference	Message Bytes
15765_11_SID\$01_PID\$00	\$00 \$00 \$07 \$DF \$01 \$00
15765_11_SID\$01_PID\$00-\$E0	\$00 \$00 \$07 \$DF \$01 \$00 \$20 \$40 \$60 \$80 \$A0 \$C0 \$E0
15765_11_SID\$01_PID\$01	\$00 \$00 \$07 \$DF \$01 \$01
15765_11_SID\$01_PID\$0C	\$00 \$00 \$07 \$DF \$01 \$0C
15765_11_SID\$01_PID\$20	\$00 \$00 \$07 \$DF \$01 \$20
15765_11_SID\$01_PID\$40	\$00 \$00 \$07 \$DF \$01 \$40
15765_11_SID\$01_PID\$41	\$00 \$00 \$07 \$DF \$01 \$41
15765_11_SID\$01_PID\$01-\$0C-\$41	\$00 \$00 \$07 \$DF \$01 \$01 \$0C \$41
15765_11_ECU1_SID\$01_PID\$00	\$00 \$00 \$07 \$E8 \$41 \$00 \$80 \$10 \$00 \$00
15765_11_ECU1_SID\$01_PID\$00_20	\$00 \$00 \$07 \$E8 \$41 \$00 \$80 \$10 \$00 \$01
15765_11_ECU1_SID\$01_PID\$00-\$0E	\$00 \$00 \$07 \$E8 \$41 \$00 \$80 \$00 \$00 \$00 \$20 \$00 \$00 \$00 \$01 \$40 \$10 \$00 \$00 \$00
15765_11_ECU1_SID\$01_PID\$01	\$00 \$00 \$07 \$E8 \$41 \$01 \$00 \$07 \$EF \$EF
15765_11_ECU1_SID\$01_PID\$01_SPARK	\$00 \$00 \$07 \$E8 \$41 \$01 \$00 \$07 \$EF \$EF
15765_11_ECU1_SID\$01_PID\$01_COMP	\$00 \$00 \$07 \$E8 \$41 \$01 \$00 \$0F \$EB \$EB
15765_11_ECU1_SID\$01_PID\$0C_KOEO	\$00 \$00 \$07 \$E8 \$41 \$0C \$00 \$00
15765_11_ECU1_SID\$01_PID\$20	\$00 \$00 \$07 \$E8 \$41 \$20 \$00 \$00 \$00 \$01
15765_11_ECU1_SID\$01_PID\$40	\$00 \$00 \$07 \$E8 \$41 \$40 \$10 \$00 \$00 \$00
15765_11_ECU1_SID\$01_PID\$41_SPARK	\$00 \$00 \$07 \$E8 \$41 \$41 \$00 \$07 \$EF \$EF
15765_11_ECU1_SID\$01_PID\$01-\$0C-\$41	\$00 \$00 \$07 \$E8 \$41 \$01 \$00 \$07 \$EF \$EF \$0C \$00 \$00 \$41 \$00 \$07 \$EF \$EF
15765_11_ECU1_SID\$01_NRC\$21	\$00 \$00 \$07 \$E8 \$7F \$01 \$21
15765_11_ECU2_SID\$01_PID\$00	\$00 \$00 \$07 \$E9 \$41 \$00 \$80 \$10 \$00 \$00
15765_11_ECU2_SID\$01_PID\$01_SPARK	\$00 \$00 \$07 \$E9 \$41 \$01 \$81 \$44 \$00 \$00
15765_11_ECU2_SID\$01_PID\$01_COMP	\$00 \$00 \$07 \$E9 \$41 \$01 \$81 \$4C \$00 \$00
15765_11_ECU2_SID\$01_PID\$0C_KOEO	\$00 \$00 \$07 \$E9 \$41 \$0C \$00 \$00
15765_11_ECU3_SID\$01_PID\$00	\$00 \$00 \$07 \$EA \$41 \$00 \$00 \$00 \$00 \$00
15765_11_ECU4_SID\$01_PID\$00	\$00 \$00 \$07 \$EB \$41 \$00 \$00 \$00 \$00 \$00
15765_11_ECU5_SID\$01_PID\$00	\$00 \$00 \$07 \$EC \$41 \$00 \$00 \$00 \$00 \$00
15765_11_ECU6_SID\$01_PID\$00	\$00 \$00 \$07 \$ED \$41 \$00 \$00 \$00 \$00 \$00
15765_11_ECU7_SID\$01_PID\$00	\$00 \$00 \$07 \$EE \$41 \$00 \$00 \$00 \$00 \$00
15765_11_ECU8_SID\$01_PID\$00	\$00 \$00 \$07 \$EF \$41 \$00 \$00 \$00 \$00 \$00
15765_11_SID\$02_PID\$02	\$00 \$00 \$07 \$DF \$02 \$02 \$00
15765_11_ECU1_SID\$02_PID\$02_NoDTC	\$00 \$00 \$07 \$E8 \$42 \$02 \$00 \$00 \$00
15765_11_ECU2_SID\$02_PID\$02_NoDTC	\$00 \$00 \$07 \$E9 \$42 \$02 \$00 \$00 \$00
15765_11_ECU1_SID\$02_PID\$02_DTC	\$00 \$00 \$07 \$E8 \$42 \$02 \$00 \$01 \$07
15765_11_SID\$03	\$00 \$00 \$07 \$DF \$03
15765_11_ECU1_SID\$03_NoDTC	\$00 \$00 \$07 \$E8 \$43 \$00
15765_11_ECU1_SID\$03_DTC	\$00 \$00 \$07 \$E8 \$43 \$04 \$01 \$07 \$01 \$10 \$01 \$15 \$01 \$24
15765_11_ECU2_SID\$03_NoDTC	\$00 \$00 \$07 \$E9 \$43 \$00
15765_11_SID\$04	\$00 \$00 \$07 \$DF \$04
15765_11_ECU1_SID\$04_DONE	\$00 \$00 \$07 \$E8 \$44
15765_11_ECU1_SID\$04_NRC22	\$00 \$00 \$07 \$E8 \$7F \$44 \$22
15765_11_ECU1_SID\$04_NRC78	\$00 \$00 \$07 \$E8 \$7F \$44 \$78
15765_11_ECU2_SID\$04_DONE	\$00 \$00 \$07 \$E9 \$44
15765_11_ECU2_SID\$04_NRC22	\$00 \$00 \$07 \$E9 \$7F \$44 \$22
15765_11_SID\$06_MID\$00	\$00 \$00 \$07 \$DF \$06 \$00
15765_11_ECU1_SID\$06_MID\$00	\$00 \$00 \$07 \$E8 \$46 \$00 \$CC \$00 \$00
15765_11_SID\$07	\$00 \$00 \$07 \$DF \$07

15765_11_ECU1_SID\$09_INF\$0D	\$00 \$00 \$07 \$E8 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$31
15765_11_ECU1_SID\$09_INF\$0F	\$00 \$00 \$07 \$E8 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$31
15765_11_ECU1_SID\$09_NRC78	\$00 \$00 \$07 \$E8 \$7F \$49 \$78
15765_11_ECU2_SID\$09_INF\$00	\$00 \$00 \$07 \$E9 \$49 \$00 \$15 \$40 \$00 \$00
15765_11_ECU2_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$E9 \$49 \$00 \$14 \$6A \$00 \$00
15765_11_ECU2_SID\$09_INF\$04	\$00 \$00 \$07 \$E9 \$49 \$04 \$01 \$32 \$34 \$32 \$32 \$31 \$34 \$31 \$39 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU2_SID\$09_INF\$04_9	\$00 \$00 \$07 \$E9 \$49 \$04 \$09 \$31 \$32 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$32 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$32 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$32 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$32 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$32 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$32 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$32 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$32 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU2_SID\$09_INF\$06	\$00 \$00 \$07 \$E9 \$49 \$06 \$01 \$27 \$91 \$BC \$88
15765_11_ECU2_SID\$09_INF\$06_9	\$00 \$00 \$07 \$E9 \$49 \$06 \$09 \$27 \$91 \$BC \$88 \$28 \$91 \$BC \$87 \$29 \$91 \$BC \$86 \$2A \$91 \$BC \$85 \$2B \$91 \$BC \$84 \$2C \$91 \$BC \$83 \$2D \$91 \$BC \$82 \$2E \$55 \$AA \$81 \$2F \$FF \$00 \$80
15765_11_ECU2_SID\$09_INF\$08_32	\$00 \$00 \$07 \$E9 \$49 \$08 \$10 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU2_SID\$09_INF\$08_40	\$00 \$00 \$07 \$E9 \$49 \$08 \$14 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$5A \$00 \$5F
15765_11_ECU2_SID\$09_INF\$0A	\$00 \$00 \$07 \$E9 \$49 \$0A \$01 \$45 \$43 \$4D \$32 \$2D \$45 \$6E \$67 \$69 \$6E \$65 \$43 \$6F \$6E \$74 \$72 \$6F \$6C \$32 \$00
15765_11_ECU2_SID\$09_INF\$0B_32	\$00 \$00 \$07 \$E9 \$49 \$0B \$10 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU2_SID\$09_INF\$0B_36	\$00 \$00 \$07 \$E9 \$49 \$0B \$12 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU2_SID\$09_INF\$0D	\$00 \$00 \$07 \$E9 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$32
15765_11_ECU2_SID\$09_INF\$0F	\$00 \$00 \$07 \$E9 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$32
15765_11_ECU3_SID\$09_INF\$00	\$00 \$00 \$07 \$EA \$49 \$00 \$14 \$40 \$00 \$00
15765_11_ECU3_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$EA \$49 \$00 \$14 \$4A \$00 \$00
15765_11_ECU3_SID\$09_INF\$04_9	\$00 \$00 \$07 \$EA \$49 \$04 \$09 \$31 \$33 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$33 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00

	\$00 \$00 \$00 \$00 \$33 \$33 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$33 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$33 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$33 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$33 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$33 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$33 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU3_SID\$09_INF\$06_9	\$00 \$00 \$07 \$EA \$49 \$06 \$09 \$37 \$91 \$BC \$88 \$38 \$91 \$BC \$87 \$39 \$91 \$BC \$86 \$3A \$91 \$BC \$85 \$3B \$91 \$BC \$84 \$3C \$91 \$BC \$83 \$3D \$91 \$BC \$82 \$3E \$55 \$AA \$81 \$3F \$FF \$00 \$80
15765_11_ECU3_SID\$09_INF\$0A	\$00 \$00 \$07 \$EA \$49 \$0A \$01 \$54 \$43 \$4D \$31 \$2D \$54 \$72 \$61 \$6E \$73 \$6D \$69 \$73 \$43 \$74 \$72 \$6C \$31 \$00 \$00
15765_11_ECU3_SID\$09_INF\$0D	\$00 \$00 \$07 \$EA \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$33
15765_11_ECU3_SID\$09_INF\$0F	\$00 \$00 \$07 \$EA \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$33
15765_11_ECU4_SID\$09_INF\$00	\$00 \$00 \$07 \$EB \$49 \$00 \$14 \$40 \$00 \$00
15765_11_ECU4_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$EB \$49 \$00 \$14 \$4A \$00 \$00
15765_11_ECU4_SID\$09_INF\$04_9	\$00 \$00 \$07 \$EB \$49 \$04 \$09 \$31 \$34 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$34 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$34 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$34 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$34 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$34 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$34 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$34 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$34 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU4_SID\$09_INF\$06_9	\$00 \$00 \$07 \$EB \$49 \$06 \$09 \$47 \$91 \$BC \$88 \$48 \$91 \$BC \$87 \$49 \$91 \$BC \$86 \$4A \$91 \$BC \$85 \$4B \$91 \$BC \$84 \$4C \$91 \$BC \$83 \$4D \$91 \$BC \$82 \$4E \$55 \$AA \$81 \$4F \$FF \$00 \$80
15765_11_ECU4_SID\$09_INF\$0A	\$00 \$00 \$07 \$EB \$49 \$0A \$01 \$45 \$43 \$43 \$31 \$2D \$45 \$6D \$69 \$73 \$43 \$72 \$69 \$74 \$49 \$6E \$66 \$6F \$31 \$00 \$00
15765_11_ECU4_SID\$09_INF\$0D	\$00 \$00 \$07 \$EB \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$34
15765_11_ECU4_SID\$09_INF\$0F	\$00 \$00 \$07 \$EB \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$34
15765_11_ECU5_SID\$09_INF\$00	\$00 \$00 \$07 \$EC \$49 \$00 \$14 \$40 \$00 \$00
15765_11_ECU5_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$EC \$49 \$00 \$14 \$4A \$00 \$00
15765_11_ECU5_SID\$09_INF\$04_9	\$00 \$00 \$07 \$EC \$49 \$04 \$09 \$31 \$35 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$35 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$35 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$35 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$35 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00

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15765_11_ECU5_SID\$09_INF\$06_9	\$00 \$00 \$07 \$EC \$49 \$06 \$09 \$57 \$91 \$BC \$88 \$58 \$91 \$BC \$87 \$59 \$91 \$BC \$86 \$5A \$91 \$BC \$85 \$5B \$91 \$BC \$84 \$5C \$91 \$BC \$83 \$5D \$91 \$BC \$82 \$5E \$55 \$AA \$81 \$5F \$FF \$00 \$80
15765_11_ECU5_SID\$09_INF\$0A	\$00 \$00 \$07 \$EC \$49 \$0A \$01 \$45 \$43 \$43 \$32 \$2D \$45 \$6D \$69 \$73 \$43 \$72 \$69 \$74 \$49 \$6E \$66 \$6F \$32 \$00 \$00
15765_11_ECU5_SID\$09_INF\$0D	\$00 \$00 \$07 \$EC \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$35
15765_11_ECU5_SID\$09_INF\$0F	\$00 \$00 \$07 \$EC \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$35
15765_11_ECU6_SID\$09_INF\$00	\$00 \$00 \$07 \$ED \$49 \$00 \$14 \$40 \$00 \$00
15765_11_ECU6_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$ED \$49 \$00 \$14 \$4A \$00 \$00
15765_11_ECU6_SID\$09_INF\$04_9	\$00 \$00 \$07 \$ED \$49 \$04 \$09 \$31 \$36 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$36 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$36 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$36 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$36 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$36 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$36 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$36 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$36 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU6_SID\$09_INF\$06_9	\$00 \$00 \$07 \$ED \$49 \$06 \$09 \$67 \$91 \$BC \$88 \$68 \$91 \$BC \$87 \$69 \$91 \$BC \$86 \$6A \$91 \$BC \$85 \$6B \$91 \$BC \$84 \$6C \$91 \$BC \$83 \$6D \$91 \$BC \$82 \$6E \$55 \$AA \$81 \$6F \$FF \$00 \$80
15765_11_ECU6_SID\$09_INF\$0A	\$00 \$00 \$07 \$ED \$49 \$0A \$01 \$54 \$43 \$4D \$32 \$2D \$54 \$72 \$61 \$6E \$73 \$6D \$69 \$73 \$43 \$74 \$72 \$6C \$32 \$00 \$00
15765_11_ECU6_SID\$09_INF\$0D	\$00 \$00 \$07 \$ED \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$36
15765_11_ECU6_SID\$09_INF\$0F	\$00 \$00 \$07 \$ED \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$36
15765_11_ECU7_SID\$09_INF\$00	\$00 \$00 \$07 \$EE \$49 \$00 \$14 \$40 \$00 \$00
15765_11_ECU7_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$EE \$49 \$00 \$14 \$4A \$00 \$00
15765_11_ECU7_SID\$09_INF\$04_9	\$00 \$00 \$07 \$EE \$49 \$04 \$09 \$31 \$37 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$37 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$37 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$37 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$37 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$37 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$37 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$37 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00

	\$00 \$00 \$00 \$00 \$39 \$37 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU7_SID\$09_INF\$06_9	\$00 \$00 \$07 \$EE \$49 \$06 \$09 \$77 \$91 \$BC \$88 \$78 \$91 \$BC \$87 \$79 \$91 \$BC \$86 \$7A \$91 \$BC \$85 \$7B \$91 \$BC \$84 \$7C \$91 \$BC \$83 \$7D \$91 \$BC \$82 \$7E \$55 \$AA \$81 \$7F \$FF \$00 \$80
15765_11_ECU7_SID\$09_INF\$0A	\$00 \$00 \$07 \$EE \$49 \$0A \$01 \$54 \$43 \$43 \$31 \$2D \$54 \$72 \$61 \$6E \$73 \$66 \$43 \$61 \$73 \$65 \$43 \$74 \$72 \$6C \$31
15765_11_ECU7_SID\$09_INF\$0D	\$00 \$00 \$07 \$EE \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$37
15765_11_ECU7_SID\$09_INF\$0F	\$00 \$00 \$07 \$EE \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$37
15765_11_ECU8_SID\$09_INF\$00	\$00 \$00 \$07 \$EF \$49 \$00 \$14 \$40 \$00 \$00
15765_11_ECU8_SID\$09_INF\$00_DIESEL	\$00 \$00 \$07 \$EF \$49 \$00 \$14 \$4A \$00 \$00
15765_11_ECU8_SID\$09_INF\$04_9	\$00 \$00 \$07 \$EF \$49 \$04 \$09 \$31 \$38 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$38 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$38 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$38 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$38 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$38 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$38 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$38 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$38 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_11_ECU8_SID\$09_INF\$06_9	\$00 \$00 \$07 \$EF \$49 \$06 \$09 \$87 \$91 \$BC \$88 \$88 \$91 \$BC \$87 \$89 \$91 \$BC \$86 \$8A \$91 \$BC \$85 \$8B \$91 \$BC \$84 \$8C \$91 \$BC \$83 \$8D \$91 \$BC \$82 \$8E \$55 \$AA \$81 \$8F \$FF \$00 \$80
15765_11_ECU7_SID\$09_INF\$0A	\$00 \$00 \$07 \$EF \$49 \$0A \$01 \$54 \$43 \$43 \$32 \$2D \$54 \$72 \$61 \$6E \$73 \$66 \$43 \$61 \$73 \$65 \$43 \$74 \$72 \$6C \$32
15765_11_ECU8_SID\$09_INF\$0D	\$00 \$00 \$07 \$EF \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$38
15765_11_ECU8_SID\$09_INF\$0F	\$00 \$00 \$07 \$EF \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$38
15765_11_SID\$0A	\$00 \$00 \$07 \$DF \$0A
15765_11_ECU1_SID\$0A_NoDTC	\$00 \$00 \$07 \$E8 \$4A \$00
15765_11_ECU1_SID\$0A_DTC	\$00 \$00 \$07 \$E8 \$4A \$04 \$01 \$07 \$01 \$10 \$01 \$15 \$01 \$24
15765_11_ECU2_SID\$0A_NoDTC	\$00 \$00 \$07 \$E9 \$4A \$00

The first four bytes are the CAN ID bits 28-24 first, followed by CAN ID bits 23-16, CAN ID bits 15-8, CAN ID bits 7-0.

Figure 7 - Pre-defined messages for ISO 15765-4 (11-bit)

The following messages have been pre-defined for 29-bit ISO 15765-4:

Message Reference	Message Bytes
15765 29 SID\$01 PID\$00	\$18 \$DB \$33 \$F1 \$01 \$00
15765 29 SID\$01 PID\$00-\$E0	\$18 \$DB \$33 \$F1 \$01 \$00 \$20 \$40 \$60 \$80 \$A0 \$C0 \$E0
15765 29 SID\$01 PID\$00	\$18 \$DB \$33 \$F1 \$01 \$00
15765 29 SID\$01 PID\$01	\$18 \$DB \$33 \$F1 \$01 \$01
15765 29 SID\$01 PID\$0C	\$18 \$DB \$33 \$F1 \$01 \$0C
15765 29 SID\$01 PID\$20	\$18 \$DB \$33 \$F1 \$01 \$20
15765 29 SID\$01 PID\$40	\$18 \$DB \$33 \$F1 \$01 \$40
15765 29 SID\$01 PID\$41	\$18 \$DB \$33 \$F1 \$01 \$41
15765 29 SID\$01 PID\$01-\$0C-\$41	\$18 \$DB \$33 \$F1 \$01 \$01 \$0C \$41
15765 29 ECU1 SID\$01 PID\$00	\$18 \$DA \$F1 \$10 \$41 \$00 \$80 \$10 \$00 \$00
15765 29 ECU1 SID\$01 PID\$00 20	\$18 \$DA \$F1 \$10 \$41 \$00 \$80 \$10 \$00 \$01
15765 29 ECU1 SID\$01 PID\$00-\$0E	\$18 \$DA \$F1 \$10 \$41 \$00 \$80 \$00 \$00 \$00 \$20 \$00 \$00 \$00 \$01 \$40 \$10 \$00 \$00 \$00
15765 29 ECU1 SID\$01 PID\$01	\$18 \$DA \$F1 \$10 \$41 \$01 \$00 \$07 \$EF \$EF
15765 29 ECU1 SID\$01 PID\$01 SPARK	\$18 \$DA \$F1 \$10 \$41 \$01 \$00 \$07 \$EF \$EF
15765 29 ECU1 SID\$01 PID\$01 COMP	\$18 \$DA \$F1 \$10 \$41 \$01 \$00 \$0F \$EB \$EB
15765 29 ECU1 SID\$01 PID\$0C KOEO	\$18 \$DA \$F1 \$10 \$41 \$0C \$00 \$00
15765 29 ECU1 SID\$01 PID\$20	\$18 \$DA \$F1 \$10 \$41 \$20 \$00 \$00 \$00 \$01
15765 29 ECU1 SID\$01 PID\$40	\$18 \$DA \$F1 \$10 \$41 \$40 \$10 \$00 \$00 \$00
15765 29 ECU1 SID\$01 PID\$41 SPARK	\$18 \$DA \$F1 \$10 \$41 \$41 \$00 \$07 \$EF \$EF
15765 29 ECU1 SID\$01 PID\$01-\$0C-\$41	\$18 \$DA \$F1 \$10 \$41 \$01 \$00 \$07 \$EF \$EF \$0C \$00 \$00 \$41 \$00 \$07 \$EF \$EF
15765 29 ECU1 SID\$01 NRC\$21	\$18 \$DA \$F1 \$10 \$7F \$01 \$21
15765 29 ECU2 SID\$01 PID\$00	\$18 \$DA \$F1 \$11 \$41 \$00 \$80 \$00 \$00 \$00
15765 29 ECU2 SID\$01 PID\$01 SPARK	\$18 \$DA \$F1 \$11 \$41 \$01 \$81 \$44 \$00 \$00
15765 29 ECU2 SID\$01 PID\$01 COMP	\$18 \$DA \$F1 \$11 \$41 \$01 \$81 \$4C \$00 \$00
15765 29 ECU2 SID\$01 PID\$0C KOEO	\$18 \$DA \$F1 \$11 \$41 \$0C \$00 \$00
15765 29 ECU3 SID\$01 PID\$00	\$18 \$DA \$F1 \$12 \$41 \$00 \$00 \$00 \$00 \$00
15765 29 ECU4 SID\$01 PID\$00	\$18 \$DA \$F1 \$13 \$41 \$00 \$00 \$00 \$00 \$00
15765 29 ECU5 SID\$01 PID\$00	\$18 \$DA \$F1 \$14 \$41 \$00 \$00 \$00 \$00 \$00
15765 29 ECU6 SID\$01 PID\$00	\$18 \$DA \$F1 \$15 \$41 \$00 \$00 \$00 \$00 \$00
15765 29 ECU7 SID\$01 PID\$00	\$18 \$DA \$F1 \$16 \$41 \$00 \$00 \$00 \$00 \$00
15765 29 ECU8 SID\$01 PID\$00	\$18 \$DA \$F1 \$17 \$41 \$00 \$00 \$00 \$00 \$00
15765 29 SID\$02 PID\$02	\$18 \$DB \$33 \$F1 \$02 \$02 \$00
15765 29 ECU1 SID\$02 PID\$02 NoDTC	\$18 \$DA \$F1 \$10 \$42 \$02 \$00 \$00 \$00
15765 29 ECU2 SID\$02 PID\$02 NoDTC	\$18 \$DA \$F1 \$11 \$42 \$02 \$00 \$00 \$00
15765 29 ECU1 SID\$02 PID\$02 DTC	\$18 \$DA \$F1 \$10 \$42 \$02 \$00 \$01 \$07
15765 29 SID\$03	\$18 \$DB \$33 \$F1 \$03
15765 29 ECU1 SID\$03 NoDTC	\$18 \$DA \$F1 \$10 \$43 \$00
15765 29 ECU1 SID\$03 DTC	\$18 \$DA \$F1 \$10 \$43 \$04 \$01 \$07 \$01 \$10 \$01 \$15 \$01 \$24
15765 29 ECU2 SID\$03 NoDTC	\$18 \$DA \$F1 \$11 \$43 \$00
15765 29 SID\$04	\$18 \$DB \$33 \$F1 \$04
15765 29 ECU1 SID\$04 DONE	\$18 \$DA \$F1 \$10 \$44
15765 29 ECU1 SID\$04 NRC22	\$18 \$DA \$F1 \$10 \$7F \$44 \$22
15765 29 ECU1 SID\$04 NRC78	\$18 \$DA \$F1 \$10 \$7F \$44 \$78
15765 29 ECU2 SID\$04 DONE	\$18 \$DA \$F1 \$11 \$44
15765 29 ECU2 SID\$04 NRC22	\$18 \$DA \$F1 \$11 \$7F \$44 \$22
15765 29 SID\$06 MID\$00	\$18 \$DB \$33 \$F1 \$06 \$00
15765 29 ECU1 SID\$06 MID\$00	\$18 \$DA \$F1 \$10 \$46 \$00 \$CC \$00 \$00 \$00
15765 29 SID\$07	\$18 \$DB \$33 \$F1 \$07
15765 29 ECU1 SID\$07 NoDTC	\$18 \$DA \$F1 \$10 \$47 \$00
15765 29 ECU1 SID\$07 DTC	\$18 \$DA \$F1 \$10 \$47 \$04 \$01 \$07 \$01 \$10 \$01 \$15 \$01 \$24

15765 29 ECU2_SID\$07_NoDTC	\$18 \$DA \$F1 \$11 \$47 \$00
15765 29_SID\$08_TID\$00	\$18 \$DB \$33 \$F1 \$08
15765 29 ECU1_SID\$08_TID\$00	\$18 \$DA \$F1 \$10 \$48 \$00 \$80 \$00 \$00 \$00
15765 29_SID\$09_INF\$00	\$18 \$DB \$33 \$F1 \$09 \$00
15765 29_SID\$09_INF\$02	\$18 \$DB \$33 \$F1 \$09 \$02
15765 29_SID\$09_INF\$04	\$18 \$DB \$33 \$F1 \$09 \$04
15765 29_SID\$09_INF\$06	\$18 \$DB \$33 \$F1 \$09 \$06
15765 29_SID\$09_INF\$08	\$18 \$DB \$33 \$F1 \$09 \$08
15765 29_SID\$09_INF\$0A	\$18 \$DB \$33 \$F1 \$09 \$0A
15765 29_SID\$09_INF\$0B	\$18 \$DB \$33 \$F1 \$09 \$0B
15765 29_SID\$09_INF\$0D	\$18 \$DB \$33 \$F1 \$09 \$0D
15765 29_SID\$09_INF\$0F	\$18 \$DB \$33 \$F1 \$09 \$0F
15765 29 ECU1_SID\$09_INF\$00	\$18 \$DA \$F1 \$10 \$49 \$00 \$55 \$40 \$00 \$00
15765 29 ECU1_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$10 \$49 \$00 \$54 \$6A \$00 \$00
15765_29_ECU1_SID\$09_INF\$02	\$18 \$DA \$F1 \$10 \$49 \$02 \$01 \$31 \$47 \$59 \$44 \$45 \$36 \$33 \$41 \$37 \$41 \$30 \$30 \$30 \$30 \$30 \$30 \$30
15765_29_ECU1_SID\$09_INF\$04	\$18 \$DA \$F1 \$10 \$49 \$04 \$01 \$31 \$32 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU1_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$10 \$49 \$04 \$09 \$31 \$31 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$31 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$31 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$31 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$31 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$31 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$31 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$31 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$31 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765 29 ECU1_SID\$09_INF\$06	\$18 \$DA \$F1 \$10 \$49 \$06 \$01 \$17 \$91 \$BC \$88
15765_29_ECU1_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$10 \$49 \$06 \$09 \$17 \$91 \$BC \$88 \$18 \$91 \$BC \$87 \$19 \$91 \$BC \$86 \$1A \$91 \$BC \$85 \$1B \$91 \$BC \$84 \$1C \$91 \$BC \$83 \$1D \$91 \$BC \$82 \$1E \$55 \$AA \$81 \$1F \$FF \$00 \$80
15765_29_ECU1_SID\$09_INF\$08_32	\$18 \$DA \$F1 \$10 \$49 \$08 \$10 \$00 \$64 \$00 \$69 \$00 \$0A \$00 \$0F \$00 \$00 \$00 \$00 \$00 \$1E \$00 \$23 \$00 \$00 \$00 \$00 \$00 \$32 \$00 \$37 \$00 \$3C \$00 \$41 \$00 \$46 \$00 \$4B
15765_29_ECU1_SID\$09_INF\$08_40	\$18 \$DA \$F1 \$10 \$49 \$08 \$14 \$00 \$64 \$00 \$69 \$00 \$0A \$00 \$0F \$00 \$00 \$00 \$00 \$00 \$1E \$00 \$23 \$00 \$00 \$00 \$00 \$00 \$32 \$00 \$37 \$00 \$3C \$00 \$41 \$00 \$46 \$00 \$4B \$00 \$5A \$00 \$5F \$00 \$00 \$00 \$00
15765_29_ECU1_SID\$09_INF\$0A	\$18 \$DA \$F1 \$10 \$49 \$0A \$01 \$45 \$43 \$4D \$31 \$2D \$45 \$6E \$67 \$69 \$6E \$65 \$43 \$6F \$6E \$74 \$72 \$6F \$6C \$31 \$00
15765_29_ECU1_SID\$09_INF\$0B_32	\$18 \$DA \$F1 \$10 \$49 \$0B \$10 \$00 \$64 \$00 \$69 \$00 \$0A \$00 \$0F \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$00 \$37 \$00 \$3C \$00 \$41 \$00 \$46 \$00 \$4B
15765_29_ECU1_SID\$09_INF\$0B_36	\$18 \$DA \$F1 \$10 \$49 \$0B \$12 \$00 \$64 \$00 \$69 \$00 \$0A \$00 \$0F \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$00 \$37 \$00 \$3C \$00 \$41 \$00 \$46 \$00 \$4B \$00 \$50 \$00 \$55
15765_29_ECU1_SID\$09_INF\$0D	\$18 \$DA \$F1 \$10 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$38 \$38 \$35 \$31

15765_29_ECU1_SID\$09_INF\$0F	\$18 \$DA \$F1 \$10 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$31
15765_29_ECU1_SID\$09_NRC78	\$18 \$DA \$F1 \$10 \$7F \$49 \$78
15765_29_ECU2_SID\$09_INF\$00	\$18 \$DA \$F1 \$11 \$49 \$00 \$15 \$40 \$00 \$00
15765_29_ECU2_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$11 \$49 \$00 \$14 \$6A \$00 \$00
15765_29_ECU2_SID\$09_INF\$04	\$18 \$DA \$F1 \$11 \$49 \$04 \$01 \$32 \$34 \$32 \$32 \$31 \$34 \$31 \$39 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU2_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$11 \$49 \$04 \$09 \$31 \$32 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$32 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$32 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$32 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$32 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$32 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$32 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$32 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$32 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU2_SID\$09_INF\$06	\$18 \$DA \$F1 \$11 \$49 \$06 \$02 \$27 \$91 \$BC \$88
15765_29_ECU2_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$11 \$49 \$06 \$09 \$27 \$91 \$BC \$88 \$28 \$91 \$BC \$87 \$29 \$91 \$BC \$86 \$2A \$91 \$BC \$85 \$2B \$91 \$BC \$84 \$2C \$91 \$BC \$83 \$2D \$91 \$BC \$82 \$2E \$55 \$AA \$81 \$2F \$FF \$00 \$80
15765_29_ECU2_SID\$09_INF\$08_32	\$18 \$DA \$F1 \$11 \$49 \$08 \$10 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU2_SID\$09_INF\$08_40	\$18 \$DA \$F1 \$11 \$49 \$08 \$14 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$5A \$00 \$5F
15765_29_ECU2_SID\$09_INF\$0A	\$18 \$DA \$F1 \$11 \$49 \$0A \$01 \$45 \$43 \$4D \$32 \$2D \$45 \$6E \$67 \$69 \$6E \$65 \$43 \$6F \$6E \$74 \$72 \$6F \$6C \$32 \$00
15765_29_ECU2_SID\$09_INF\$0B_32	\$18 \$DA \$F1 \$11 \$49 \$0B \$10 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU2_SID\$09_INF\$0B_36	\$18 \$DA \$F1 \$11 \$49 \$0B \$12 \$00 \$64 \$00 \$69 \$00 \$00 \$00 \$00 \$00 \$14 \$00 \$19 \$00 \$00 \$00 \$00 \$00 \$28 \$00 \$2D \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU2_SID\$09_INF\$0D	\$18 \$DA \$F1 \$11 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$32
15765_29_ECU2_SID\$09_INF\$0F	\$18 \$DA \$F1 \$11 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$32
15765_29_ECU3_SID\$09_INF\$00	\$18 \$DA \$F1 \$12 \$49 \$00 \$14 \$40 \$00 \$00
15765_29_ECU3_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$12 \$49 \$00 \$14 \$4A \$00 \$00
15765_29_ECU3_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$12 \$49 \$04 \$09 \$31 \$33 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$33 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$33 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$33 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$33 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00

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15765_29_ECU3_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$12 \$49 \$06 \$09 \$37 \$91 \$BC \$88 \$38 \$91 \$BC \$87 \$39 \$91 \$BC \$86 \$3A \$91 \$BC \$85 \$3B \$91 \$BC \$84 \$3C \$91 \$BC \$83 \$3D \$91 \$BC \$82 \$3E \$55 \$AA \$81 \$3F \$FF \$00 \$80
15765_29_ECU3_SID\$09_INF\$0A	\$18 \$DA \$F1 \$12 \$49 \$0A \$01 \$54 \$43 \$4D \$31 \$2D \$54 \$72 \$61 \$6E \$73 \$6D \$69 \$73 \$43 \$74 \$72 \$6C \$31 \$00 \$00
15765_29_ECU3_SID\$09_INF\$0D	\$18 \$DA \$F1 \$12 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$33
15765_29_ECU3_SID\$09_INF\$0F	\$18 \$DA \$F1 \$12 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$33
15765_29_ECU4_SID\$09_INF\$00	\$18 \$DA \$F1 \$13 \$49 \$00 \$14 \$40 \$00 \$00
15765_29_ECU4_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$13 \$49 \$00 \$14 \$4A \$00 \$00
15765_29_ECU4_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$13 \$49 \$04 \$09 \$31 \$34 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$34 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$34 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$34 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$34 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$34 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$34 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$34 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$34 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU4_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$13 \$49 \$06 \$09 \$47 \$91 \$BC \$88 \$48 \$91 \$BC \$87 \$49 \$91 \$BC \$86 \$4A \$91 \$BC \$85 \$4B \$91 \$BC \$84 \$4C \$91 \$BC \$83 \$4D \$91 \$BC \$82 \$4E \$55 \$AA \$81 \$4F \$FF \$00 \$80
15765_29_ECU4_SID\$09_INF\$0A	\$18 \$DA \$F1 \$13 \$49 \$0A \$01 \$45 \$43 \$43 \$31 \$2D \$45 \$6D \$69 \$73 \$43 \$72 \$69 \$74 \$49 \$6E \$66 \$6F \$31 \$00 \$00
15765_29_ECU4_SID\$09_INF\$0D	\$18 \$DA \$F1 \$13 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$34
15765_29_ECU4_SID\$09_INF\$0F	\$18 \$DA \$F1 \$13 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$34
15765_29_ECU5_SID\$09_INF\$00	\$18 \$DA \$F1 \$14 \$49 \$00 \$14 \$40 \$00 \$00
15765_29_ECU5_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$14 \$49 \$00 \$14 \$4A \$00 \$00
15765_29_ECU5_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$14 \$49 \$04 \$09 \$31 \$35 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$35 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$35 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$35 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$35 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$35 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$35 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$35 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00

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15765_29_ECU5_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$14 \$49 \$06 \$09 \$57 \$91 \$BC \$88 \$58 \$91 \$BC \$87 \$59 \$91 \$BC \$86 \$5A \$91 \$BC \$85 \$5B \$91 \$BC \$84 \$5C \$91 \$BC \$83 \$5D \$91 \$BC \$82 \$5E \$55 \$AA \$81 \$5F \$FF \$00 \$80
15765_29_ECU5_SID\$09_INF\$0A	\$18 \$DA \$F1 \$14 \$49 \$0A \$01 \$45 \$43 \$43 \$32 \$2D \$45 \$6D \$69 \$73 \$43 \$72 \$69 \$74 \$49 \$6E \$66 \$6F \$32 \$00 \$00
15765_29_ECU5_SID\$09_INF\$0D	\$18 \$DA \$F1 \$14 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$35
15765_29_ECU5_SID\$09_INF\$0F	\$18 \$DA \$F1 \$14 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$35
15765_29_ECU6_SID\$09_INF\$00	\$18 \$DA \$F1 \$15 \$49 \$00 \$14 \$40 \$00 \$00
15765_29_ECU6_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$15 \$49 \$00 \$14 \$4A \$00 \$00
15765_29_ECU6_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$15 \$49 \$04 \$09 \$31 \$36 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$36 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$36 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$36 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$36 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$36 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$36 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$36 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$36 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU6_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$15 \$49 \$06 \$09 \$67 \$91 \$BC \$88 \$68 \$91 \$BC \$87 \$69 \$91 \$BC \$86 \$6A \$91 \$BC \$85 \$6B \$91 \$BC \$84 \$6C \$91 \$BC \$83 \$6D \$91 \$BC \$82 \$6E \$55 \$AA \$81 \$6F \$FF \$00 \$80
15765_29_ECU6_SID\$09_INF\$0A	\$18 \$DA \$F1 \$15 \$49 \$0A \$01 \$54 \$43 \$4D \$32 \$2D \$54 \$72 \$61 \$6E \$73 \$6D \$69 \$73 \$43 \$74 \$72 \$6C \$32 \$00 \$00
15765_29_ECU6_SID\$09_INF\$0D	\$18 \$DA \$F1 \$15 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$36
15765_29_ECU6_SID\$09_INF\$0F	\$18 \$DA \$F1 \$15 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$36
15765_29_ECU7_SID\$09_INF\$00	\$18 \$DA \$F1 \$16 \$49 \$00 \$14 \$40 \$00 \$00
15765_29_ECU7_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$16 \$49 \$00 \$14 \$4A \$00 \$00
15765_29_ECU7_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$16 \$49 \$04 \$09 \$31 \$37 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$37 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$37 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$37 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$37 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$37 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$37 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$37 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$37 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU7_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$16 \$49 \$06 \$09 \$77 \$91 \$BC \$88 \$78 \$91 \$BC \$87 \$79 \$91 \$BC \$86 \$7A \$91 \$BC

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15765_29_ECU7_SID\$09_INF\$0A	\$18 \$DA \$F1 \$16 \$49 \$0A \$01 \$54 \$43 \$43 \$31 \$2D \$54 \$72 \$61 \$6E \$73 \$66 \$43 \$61 \$73 \$65 \$43 \$74 \$72 \$6C \$31
15765_29_ECU7_SID\$09_INF\$0D	\$18 \$DA \$F1 \$16 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$37
15765_29_ECU7_SID\$09_INF\$0F	\$18 \$DA \$F1 \$16 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$37
15765_29_ECU8_SID\$09_INF\$00	\$18 \$DA \$F1 \$17 \$49 \$00 \$14 \$40 \$00 \$00
15765_29_ECU8_SID\$09_INF\$00_DIESEL	\$18 \$DA \$F1 \$17 \$49 \$00 \$14 \$4A \$00 \$00
15765_29_ECU8_SID\$09_INF\$04_9	\$18 \$DA \$F1 \$17 \$49 \$04 \$09 \$31 \$38 \$35 \$38 \$39 \$37 \$37 \$38 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$32 \$38 \$35 \$38 \$39 \$37 \$37 \$37 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$33 \$38 \$35 \$38 \$39 \$37 \$37 \$36 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$34 \$38 \$35 \$38 \$39 \$37 \$37 \$35 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$35 \$38 \$35 \$38 \$39 \$37 \$37 \$34 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$36 \$38 \$35 \$38 \$39 \$37 \$37 \$33 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$37 \$38 \$35 \$38 \$39 \$37 \$37 \$32 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$38 \$38 \$35 \$38 \$39 \$37 \$37 \$31 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$39 \$38 \$35 \$38 \$39 \$37 \$37 \$30 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00
15765_29_ECU8_SID\$09_INF\$06_9	\$18 \$DA \$F1 \$17 \$49 \$06 \$09 \$87 \$91 \$BC \$88 \$88 \$91 \$BC \$87 \$89 \$91 \$BC \$86 \$8A \$91 \$BC \$85 \$8B \$91 \$BC \$84 \$8C \$91 \$BC \$83 \$8D \$91 \$BC \$82 \$8E \$55 \$AA \$81 \$8F \$FF \$00 \$80
15765_29_ECU7_SID\$09_INF\$0A	\$18 \$DA \$F1 \$17 \$49 \$0A \$01 \$54 \$43 \$43 \$32 \$2D \$54 \$72 \$61 \$6E \$73 \$66 \$43 \$61 \$73 \$65 \$43 \$74 \$72 \$6C \$32
15765_29_ECU8_SID\$09_INF\$0D	\$18 \$DA \$F1 \$17 \$49 \$0D \$01 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$53 \$4E \$39 \$38 \$37 \$36 \$35 \$38
15765_29_ECU8_SID\$09_INF\$0F	\$18 \$DA \$F1 \$17 \$49 \$0F \$01 \$00 \$00 \$00 \$00 \$00 \$00 \$56 \$41 \$4C \$44 \$45 \$52 \$54 \$41 \$4E \$38
15765_29_SID\$0A	\$18 \$DB \$33 \$F1 \$0A
15765_29_ECU1_SID\$0A_NoDTC	\$18 \$DA \$F1 \$10 \$4A \$00
15765_29_ECU1_SID\$0A_DTC	\$18 \$DA \$F1 \$10 \$4A \$04 \$01 \$07 \$01 \$10 \$01 \$15 \$01 \$24
15765_29_ECU2_SID\$0A_NoDTC	\$18 \$DA \$F1 \$11 \$4A \$00

The first four bytes are the CAN ID bits 28-24 first, followed by CAN ID bits 23-16, CAN ID bits 15-8, CAN ID bits 7-0.

Figure 8 - Pre-defined messages for ISO 15765-4 (29-bit)

5.4.3.4 ISO 15765-4 Message Timing

For convenience, the test cases in this document will use the text in the 'Parameter Reference' column when referring to the specific value, detailed in the 'Value' column of the table below. Unless otherwise specified, the following timing values shall be used:

Parameter Reference	Value
P2_MIN	0 ms
P2	5 ms
P2_MAX	50 ms
P2_MIN_78	0 ms
P2_78	2500 ms
P2_MAX_78	5000 ms

Figure 9 - Pre-defined message timing for ISO 15765-4

5.4.3.5 ISO 15765-4 (11-bit, 500K) Monitor State

The device shall initially be in the 'Power On' state, connected to the CAN network with the appropriate termination (as depicted in 5.4.3.1), and configured for 11-bit CAN Identifiers at a baud rate of 500000. The device shall not generate any In-Frame Acknowledgements on the CAN network, but shall interpret messages according to the ISO 15765-2 format (that is, verify and remove the PCI byte).

5.4.3.6 ISO 15765-4 (11-bit, 250K) Connected State

The device shall initially be in the 'Power On' state, connected to the CAN network with the appropriate termination (as depicted in 5.4.3.1), and configured for 11-bit CAN Identifiers at a baud rate of 250000.

5.4.3.7 ISO 15765-4 (11-bit, 500K) Connected State

The device shall initially be in the 'Power On' state, connected to the CAN network with the appropriate termination (as depicted in 5.4.3.1), and configured for 11-bit CAN Identifiers at a baud rate of 500000.

5.4.3.8 ISO 15765-4 (29-bit, 500K) Connected State

The device shall initially be in the 'Power On' state, connected to the CAN network with the appropriate termination (as depicted in 5.4.3.1), and configured for 29-bit CAN Identifiers at a baud rate of 500000.

5.4.3.9 ISO 15765-4 (11-bit, 500K, 2 ECUs) Initialized State

The OBD network shall have determined to be ISO 15765-4 with 11-bit CAN Identifiers at a baud rate of 500000 with two OBD II ECUs having been identified. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 8.2.2 shall define this state.

5.4.3.10 ISO 15765-4 (29-bit, 500K, 2 ECUs) Initialized State

The OBD network shall have determined to be ISO 15765-4 with 29-bit CAN Identifiers at a baud rate of 500000 with two OBD II ECUs having been identified. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 8.2.3 shall define this state.

5.4.3.11 ISO 15765-4 (11-bit, 500K, 8 ECUs) Initialized State

The OBD network shall have determined to be ISO 15765-4 with 11-bit CAN Identifiers at a baud rate of 500000 with eight OBD II ECUs having been identified. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 8.2.4 shall define this state.

5.4.3.12 ISO 15765-4 (29-bit, 500K, 8 ECUs) Initialized State

The OBD network shall have determined to be ISO 15765-4 with 29-bit CAN Identifiers at a baud rate of 500000 with eight OBD II ECUs having been identified. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 8.2.5 shall define this state.

5.4.3.13 ISO 15765-4 (11-bit, 500K, 2 ECUs) SID9 Ready State

The SID \$09 INFOTYPES shall be known for each of the two OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 0 shall define this state.

5.4.3.14 ISO 15765-4 (11-bit, 500K, 2 ECUs) SID9 Diesel Ready State

The SID \$09 INFOTYPES shall be known for each of the two OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 9.2.38 shall define this state.

5.4.3.15 ISO 15765-4 (29-bit, 500K, 2 ECUs) SID9 Ready State

The SID \$09 INFOTYPES shall be known for each of the two OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 9.2.39 shall define this state.

5.4.3.16 ISO 15765-4 (29-bit, 500K, 2 ECUs) SID9 Diesel Ready State

The SID \$09 INFOTYPES shall be known for each of the two OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 9.2.40 shall define this state.

5.4.3.17 ISO 15765-4 (11-bit, 500K, 8 ECUs) SID9 Ready State

The SID \$09 INFOTYPES shall be known for each of the eight OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 9.2.41 shall define this state.

5.4.3.18 ISO 15765-4 (11-bit, 500K, 8 ECUs) SID9 Diesel Ready State

The SID \$09 INFOTYPES shall be known for each of the eight OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 0 shall define this state.

5.4.3.19 ISO 15765-4 (29-bit, 500K, 8 ECUs) SID9 Ready State

The SID \$09 INFOTYPES shall be known for each of the eight OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 0 shall define this state.

5.4.3.20 ISO 15765-4 (29-bit, 500K, 8 ECUs) SID9 Diesel Ready State

The SID \$09 INFOTYPES shall be known for each of the eight OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 0 shall define this state.

5.4.4 ISO 14230-4

5.4.4.1 ISO 14230-4 Electrical Connections

Figure 10 outlines the typical set-up for ISO 14230-4 testing.

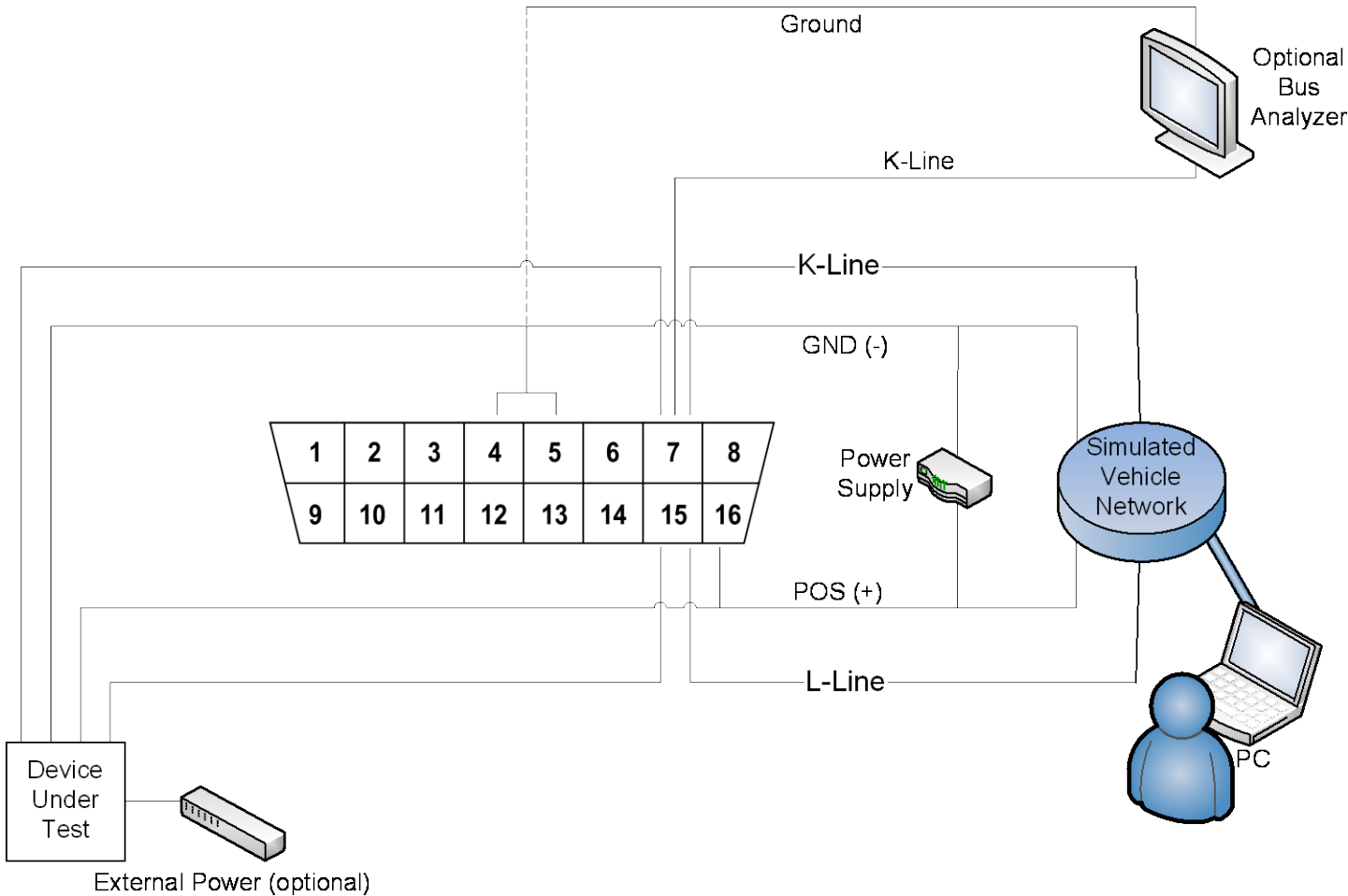


Figure 10 - Test set-up for ISO 14230-4 testing

5.4.4.2 ISO 14230-4 ECU Addresses

The following address bytes have been pre-defined for ISO 14230-4. For convenience, the test cases in this document will use the text in the 'ECU Reference' column when referring to the specific set of address bytes, detailed in the 'Address Bytes' column of the table below.

ECU Reference	Address Bytes
ECU #1	\$10
ECU #2	\$11
ECU #3	\$12
ECU #4	\$13
ECU #5	\$14
ECU #6	\$15
ECU #7	\$16
ECU #8	\$17

Figure 11 - ECU reference and associated addresses for ISO 14230-4

5.4.4.3 ISO 14230-4 Messages

The following messages have been pre-defined for ISO 14230-4. For convenience, the test cases in this document will use the text in the 'Message Reference' column when referring to the specific set of message bytes, detailed in the 'Message Bytes' column of the table below.

Message Reference	Message Bytes
14230 START_COMM	\$C1 \$33 \$F1 \$81 CS
14230 ECU1 START_COMM E98F	\$83 \$F1 \$10 \$C1 \$E9 \$8F CS
14230 ECU1 START_COMM 6B8F	\$83 \$F1 \$10 \$C1 \$6B \$8F CS
14230 ECU1 START_COMM 6D8F	\$83 \$F1 \$10 \$C1 \$6D \$8F CS
14230 ECU1 START_COMM EF8F	\$83 \$F1 \$10 \$C1 \$EF \$8F CS
14230 ECU1 START_COMM NO_KB	\$83 \$F1 \$18 \$C1 CS
14230 ECU1 START_COMM_0000	\$83 \$F1 \$18 \$C1 \$00 \$00 CS
14230 SID\$01 PID\$00	\$C2 \$33 \$F1 \$01 \$00 CS
14230 ECU1 SID\$01 PID\$00	\$86 \$F1 \$10 \$41 \$00 \$80 \$10 \$00 \$00 CS
14230 ECU2 SID\$01 PID\$00	\$86 \$F1 \$11 \$41 \$00 \$80 \$10 \$00 \$00 CS
14230 ECU3 SID\$01 PID\$00	\$86 \$F1 \$12 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 ECU4 SID\$01 PID\$00	\$86 \$F1 \$13 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 ECU5 SID\$01 PID\$00	\$86 \$F1 \$14 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$01 PID\$00	\$86 \$F1 \$15 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$01 PID\$00	\$86 \$F1 \$16 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 ECU8 SID\$01 PID\$00	\$86 \$F1 \$17 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 ECU18 SID\$01 PID\$00	\$86 \$F1 \$18 \$41 \$00 \$00 \$00 \$00 \$00 CS
14230 SID\$01 PID\$01	\$C2 \$33 \$F1 \$01 \$01 CS
14230 SID\$01 PID\$0C	\$C2 \$33 \$F1 \$01 \$0C CS
14230 SID\$01 PID\$20	\$C2 \$33 \$F1 \$01 \$20 CS
14230 SID\$01 PID\$40	\$C2 \$33 \$F1 \$01 \$40 CS
14230 SID\$01 PID\$41	\$C2 \$33 \$F1 \$01 \$41 CS
14230 ECU1 SID\$01 PID\$00_20	\$86 \$F1 \$10 \$41 \$00 \$80 \$10 \$00 \$01 CS
14230 ECU1 SID\$01 PID\$01 SPARK	\$86 \$F1 \$10 \$41 \$01 \$00 \$07 \$EF \$EF CS
14230 ECU1 SID\$01 PID\$01 COMP	\$86 \$F1 \$10 \$41 \$01 \$00 \$0F \$EB \$EB CS
14230 ECU1 SID\$01 PID\$0C KOEO	\$84 \$F1 \$10 \$41 \$0C \$00 \$00 CS
14230 ECU1 SID\$01 PID\$20	\$86 \$F1 \$10 \$41 \$20 \$00 \$00 \$00 \$01 CS
14230 ECU1 SID\$01 PID\$40	\$86 \$F1 \$10 \$41 \$40 \$10 \$00 \$00 \$00 CS
14230 ECU1 SID\$01 PID\$41 SPARK	\$86 \$F1 \$10 \$41 \$41 \$00 \$07 \$EF \$EF CS
14230 ECU2 SID\$01 PID\$01 SPARK	\$86 \$F1 \$11 \$41 \$01 \$81 \$44 \$00 \$00 CS
14230 ECU2 SID\$01 PID\$01 COMP	\$86 \$F1 \$11 \$41 \$01 \$81 \$4C \$00 \$00 CS
14230 ECU2 SID\$01 PID\$0C KOEO	\$84 \$F1 \$11 \$41 \$0C \$00 \$00 CS
14230 SID\$02 PID\$02	\$C3 \$33 \$F1 \$02 \$02 \$00 CS
14230 ECU1 SID\$02 PID\$02 NoDTC	\$85 \$F1 \$10 \$42 \$02 \$00 \$00 \$00 CS
14230 ECU2 SID\$02 PID\$02 NoDTC	\$85 \$F1 \$11 \$42 \$02 \$00 \$00 \$00 CS
14230 ECU1 SID\$02 PID\$02 DTC	\$85 \$F1 \$10 \$42 \$02 \$00 \$01 \$07 CS
14230 SID\$03	\$C2 \$33 \$F1 \$03 CS
14230 ECU1 SID\$03 NoDTC	\$82 \$F1 \$10 \$43 \$00 CS
14230 ECU1 SID\$03 DTC M1	\$8A \$F1 \$10 \$43 \$01 \$07 \$01 \$10 \$01 \$15 CS
14230 ECU1 SID\$03 DTC M2	\$8A \$F1 \$10 \$43 \$01 \$24 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$03 NoDTC	\$82 \$F1 \$11 \$43 \$00 CS
14230 SID\$04	\$C2 \$33 \$F1 \$04CS
14230 ECU1 SID\$04 DONE	\$81 \$F1 \$10 \$44 CS
14230 ECU1 SID\$04 NRC22	\$83 \$F1 \$10 \$7F \$44 \$22 CS
14230 ECU1 SID\$04 NRC78	\$83 \$F1 \$10 \$7F \$44 \$78 CS
14230 ECU2 SID\$04 DONE	\$81 \$F1 \$11 \$44 CS
14230 ECU2 SID\$04 NRC22	\$83 \$F1 \$11 \$7F \$44 \$22 CS
14230 SID\$05 TID\$01	\$C3 \$33 \$F1 \$05 \$01 \$02 CS
14230 ECU1 SID\$05 TID\$01	\$86 \$F1 \$10 \$45 \$01 \$02 \$5A CS
14230 SID\$06 MID\$00	\$C2 \$33 \$F1 \$06 \$00 CS
14230 ECU1 SID\$06 MID\$00	\$86 \$F1 \$10 \$46 \$00 \$CC \$00 \$00 \$00 CS

14230	SID\$07	\$C1 \$33 \$F1 \$07 CS
14230	ECU1 SID\$07 NoDTC	\$82 \$F1 \$10 \$47 \$00 CS
14230	ECU1 SID\$07 DTC M1	\$8A \$F1 \$10 \$47 \$01 \$07 \$01 \$10 \$01 \$15 CS
14230	ECU1 SID\$07 DTC M2	\$8A \$F1 \$10 \$47 \$01 \$24 \$00 \$00 \$00 \$00 CS
14230	ECU2 SID\$07 NoDTC	\$82 \$F1 \$11 \$47 \$00 CS
14230	SID\$08 TID\$00	\$C1 \$33 \$F1 \$08 CS
14230	ECU1 SID\$08 TID\$00	\$86 \$F1 \$10 \$48 \$00 \$80 \$00 \$00 \$00 CS
14230	SID\$09 INF\$00	\$C2 \$33 \$F1 \$09 \$00 CS
14230	SID\$09 INF\$01	\$C2 \$33 \$F1 \$09 \$01 CS
14230	SID\$09 INF\$02	\$C2 \$33 \$F1 \$09 \$02 CS
14230	SID\$09 INF\$03	\$C2 \$33 \$F1 \$09 \$03 CS
14230	SID\$09 INF\$04	\$C2 \$33 \$F1 \$09 \$04 CS
14230	SID\$09 INF\$05	\$C2 \$33 \$F1 \$09 \$05 CS
14230	SID\$09 INF\$06	\$C2 \$33 \$F1 \$09 \$06 CS
14230	SID\$09 INF\$07	\$C2 \$33 \$F1 \$09 \$07 CS
14230	SID\$09 INF\$08	\$C2 \$33 \$F1 \$09 \$08 CS
14230	SID\$09 INF\$0B	\$C2 \$33 \$F1 \$09 \$0B CS
14230	ECU1 SID\$09 INF\$00	\$86 \$F1 \$10 \$49 \$00 \$FF \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$00 DIESEL	\$86 \$F1 \$10 \$49 \$00 \$FE \$20 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$01	\$83 \$F1 \$10 \$49 \$01 \$05 CS
14230	ECU1 SID\$09 INF\$02 M1	\$87 \$F1 \$10 \$49 \$02 \$01 \$00 \$00 \$00 \$31 CS
14230	ECU1 SID\$09 INF\$02 M2	\$87 \$F1 \$10 \$49 \$02 \$02 \$47 \$59 \$44 \$45 CS
14230	ECU1 SID\$09 INF\$02 M3	\$87 \$F1 \$10 \$49 \$02 \$03 \$36 \$33 \$41 \$37 CS
14230	ECU1 SID\$09 INF\$02 M4	\$87 \$F1 \$10 \$49 \$02 \$04 \$41 \$30 \$30 \$30 CS
14230	ECU1 SID\$09 INF\$02 M5	\$87 \$F1 \$10 \$49 \$02 \$05 \$30 \$30 \$30 \$30 CS
14230	ECU1 SID\$09 INF\$03	\$83 \$F1 \$10 \$49 \$03 \$04 CS
14230	ECU1 SID\$09 INF\$03 9	\$83 \$F1 \$10 \$49 \$03 \$24 CS
14230	ECU1 SID\$09 INF\$04 M1	\$87 \$F1 \$10 \$49 \$04 \$01 \$31 \$32 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 M2	\$87 \$F1 \$10 \$49 \$04 \$02 \$39 \$37 \$37 \$32 CS
14230	ECU1 SID\$09 INF\$04 M3	\$87 \$F1 \$10 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 M4	\$87 \$F1 \$10 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M1	\$87 \$F1 \$10 \$49 \$04 \$01 \$31 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M2	\$87 \$F1 \$10 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M3	\$87 \$F1 \$10 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M4	\$87 \$F1 \$10 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M5	\$87 \$F1 \$10 \$49 \$04 \$05 \$32 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M6	\$87 \$F1 \$10 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
14230	ECU1 SID\$09 INF\$04 9 M7	\$87 \$F1 \$10 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M8	\$87 \$F1 \$10 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M9	\$87 \$F1 \$10 \$49 \$04 \$09 \$33 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M10	\$87 \$F1 \$10 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
14230	ECU1 SID\$09 INF\$04 9 M11	\$87 \$F1 \$10 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M12	\$87 \$F1 \$10 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M13	\$87 \$F1 \$10 \$49 \$04 \$0D \$34 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M14	\$87 \$F1 \$10 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
14230	ECU1 SID\$09 INF\$04 9 M15	\$87 \$F1 \$10 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M16	\$87 \$F1 \$10 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M17	\$87 \$F1 \$10 \$49 \$04 \$11 \$35 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M18	\$87 \$F1 \$10 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
14230	ECU1 SID\$09 INF\$04 9 M19	\$87 \$F1 \$10 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M20	\$87 \$F1 \$10 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M21	\$87 \$F1 \$10 \$49 \$04 \$15 \$36 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M22	\$87 \$F1 \$10 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
14230	ECU1 SID\$09 INF\$04 9 M23	\$87 \$F1 \$10 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M24	\$87 \$F1 \$10 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
14230	ECU1 SID\$09 INF\$04 9 M25	\$87 \$F1 \$10 \$49 \$04 \$19 \$37 \$31 \$35 \$38 CS
14230	ECU1 SID\$09 INF\$04 9 M26	\$87 \$F1 \$10 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
14230	ECU1 SID\$09 INF\$04 9 M27	\$87 \$F1 \$10 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS

14230 ECU1 SID\$09 INF\$04 9 M28	\$87 \$F1 \$10 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$04 9 M29	\$87 \$F1 \$10 \$49 \$04 \$1D \$38 \$31 \$35 \$38 CS
14230 ECU1 SID\$09 INF\$04 9 M30	\$87 \$F1 \$10 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
14230 ECU1 SID\$09 INF\$04 9 M31	\$87 \$F1 \$10 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$04 9 M32	\$87 \$F1 \$10 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$04 9 M33	\$87 \$F1 \$10 \$49 \$04 \$21 \$39 \$31 \$35 \$38 CS
14230 ECU1 SID\$09 INF\$04 9 M34	\$87 \$F1 \$10 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
14230 ECU1 SID\$09 INF\$04 9 M35	\$87 \$F1 \$10 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$04 9 M36	\$87 \$F1 \$10 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$05	\$83 \$F1 \$10 \$49 \$05 \$01 CS
14230 ECU1 SID\$09 INF\$05 9	\$83 \$F1 \$10 \$49 \$05 \$09 CS
14230 ECU1 SID\$09 INF\$06	\$87 \$F1 \$10 \$49 \$06 \$01 \$17 \$91 \$BC \$88 CS
14230 ECU1 SID\$09 INF\$06 9 M1	\$87 \$F1 \$10 \$49 \$06 \$01 \$17 \$91 \$BC \$88 CS
14230 ECU1 SID\$09 INF\$06 9 M2	\$87 \$F1 \$10 \$49 \$06 \$02 \$18 \$91 \$BC \$87 CS
14230 ECU1 SID\$09 INF\$06 9 M3	\$87 \$F1 \$10 \$49 \$06 \$03 \$19 \$91 \$BC \$86 CS
14230 ECU1 SID\$09 INF\$06 9 M4	\$87 \$F1 \$10 \$49 \$06 \$04 \$1A \$91 \$BC \$85 CS
14230 ECU1 SID\$09 INF\$06 9 M5	\$87 \$F1 \$10 \$49 \$06 \$05 \$1B \$91 \$BC \$84 CS
14230 ECU1 SID\$09 INF\$06 9 M6	\$87 \$F1 \$10 \$49 \$06 \$06 \$1C \$91 \$BC \$83 CS
14230 ECU1 SID\$09 INF\$06 9 M7	\$87 \$F1 \$10 \$49 \$06 \$07 \$1D \$91 \$BC \$82 CS
14230 ECU1 SID\$09 INF\$06 9 M8	\$87 \$F1 \$10 \$49 \$06 \$08 \$1E \$55 \$AA \$81 CS
14230 ECU1 SID\$09 INF\$06 9 M9	\$87 \$F1 \$10 \$49 \$06 \$09 \$1F \$FF \$00 \$80 CS
14230 ECU1 SID\$09 INF\$07 832	\$83 \$F1 \$10 \$49 \$07 \$08 CS
14230 ECU1 SID\$09 INF\$07 840	\$83 \$F1 \$10 \$49 \$07 \$0A CS
14230 ECU1 SID\$09 INF\$07 B32	\$83 \$F1 \$10 \$49 \$07 \$08 CS
14230 ECU1 SID\$09 INF\$07 B36	\$83 \$F1 \$10 \$49 \$07 \$09 CS
14230 ECU1 SID\$09 INF\$08 32 M1	\$87 \$F1 \$10 \$49 \$08 \$01 \$00 \$64 \$00 \$69 CS
14230 ECU1 SID\$09 INF\$08 32 M2	\$87 \$F1 \$10 \$49 \$08 \$02 \$00 \$0A \$00 \$0F CS
14230 ECU1 SID\$09 INF\$08 32 M3	\$87 \$F1 \$10 \$49 \$08 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$08 32 M4	\$87 \$F1 \$10 \$49 \$08 \$04 \$00 \$1E \$00 \$23 CS
14230 ECU1 SID\$09 INF\$08 32 M5	\$87 \$F1 \$10 \$49 \$08 \$05 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$08 32 M6	\$87 \$F1 \$10 \$49 \$08 \$06 \$00 \$32 \$00 \$37 CS
14230 ECU1 SID\$09 INF\$08 32 M7	\$87 \$F1 \$10 \$49 \$08 \$07 \$00 \$3C \$00 \$41 CS
14230 ECU1 SID\$09 INF\$08 32 M8	\$87 \$F1 \$10 \$49 \$08 \$08 \$00 \$46 \$00 \$4B CS
14230 ECU1 SID\$09 INF\$08 40 M1	\$87 \$F1 \$10 \$49 \$08 \$01 \$00 \$64 \$00 \$69 CS
14230 ECU1 SID\$09 INF\$08 40 M2	\$87 \$F1 \$10 \$49 \$08 \$02 \$00 \$0A \$00 \$0F CS
14230 ECU1 SID\$09 INF\$08 40 M3	\$87 \$F1 \$10 \$49 \$08 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$08 40 M4	\$87 \$F1 \$10 \$49 \$08 \$04 \$00 \$1E \$00 \$23 CS
14230 ECU1 SID\$09 INF\$08 40 M5	\$87 \$F1 \$10 \$49 \$08 \$05 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$08 40 M6	\$87 \$F1 \$10 \$49 \$08 \$06 \$00 \$32 \$00 \$37 CS
14230 ECU1 SID\$09 INF\$08 40 M7	\$87 \$F1 \$10 \$49 \$08 \$07 \$00 \$3C \$00 \$41 CS
14230 ECU1 SID\$09 INF\$08 40 M8	\$87 \$F1 \$10 \$49 \$08 \$08 \$00 \$46 \$00 \$4B CS
14230 ECU1 SID\$09 INF\$08 40 M9	\$87 \$F1 \$10 \$49 \$08 \$09 \$00 \$5A \$00 \$5F CS
14230 ECU1 SID\$09 INF\$08 40 M10	\$87 \$F1 \$10 \$49 \$08 \$0A \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 32 M1	\$87 \$F1 \$10 \$49 \$0B \$01 \$00 \$64 \$00 \$69 CS
14230 ECU1 SID\$09 INF\$0B 32 M2	\$87 \$F1 \$10 \$49 \$0B \$02 \$00 \$0A \$00 \$0F CS
14230 ECU1 SID\$09 INF\$0B 32 M3	\$87 \$F1 \$10 \$49 \$0B \$03 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 32 M4	\$87 \$F1 \$10 \$49 \$0B \$04 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 32 M5	\$87 \$F1 \$10 \$49 \$0B \$05 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 32 M6	\$87 \$F1 \$10 \$49 \$0B \$06 \$00 \$32 \$00 \$37 CS
14230 ECU1 SID\$09 INF\$0B 32 M7	\$87 \$F1 \$10 \$49 \$0B \$07 \$00 \$3C \$00 \$41 CS
14230 ECU1 SID\$09 INF\$0B 32 M8	\$87 \$F1 \$10 \$49 \$0B \$08 \$00 \$46 \$00 \$4B CS
14230 ECU1 SID\$09 INF\$0B 36 M1	\$87 \$F1 \$10 \$49 \$0B \$01 \$00 \$64 \$00 \$69 CS
14230 ECU1 SID\$09 INF\$0B 36 M2	\$87 \$F1 \$10 \$49 \$0B \$02 \$00 \$0A \$00 \$0F CS
14230 ECU1 SID\$09 INF\$0B 36 M3	\$87 \$F1 \$10 \$49 \$0B \$03 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 36 M4	\$87 \$F1 \$10 \$49 \$0B \$04 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 36 M5	\$87 \$F1 \$10 \$49 \$0B \$05 \$00 \$00 \$00 \$00 CS
14230 ECU1 SID\$09 INF\$0B 36 M6	\$87 \$F1 \$10 \$49 \$0B \$06 \$00 \$32 \$00 \$37 CS
14230 ECU1 SID\$09 INF\$0B 36 M7	\$87 \$F1 \$10 \$49 \$0B \$07 \$00 \$3C \$00 \$41 CS

14230 ECU1 SID\$09 INF\$0B 36 M8	\$87 \$F1 \$10 \$49 \$0B \$08 \$00 \$46 \$00 \$4B CS
14230 ECU1 SID\$09 INF\$0B 36 M9	\$87 \$F1 \$10 \$49 \$0B \$09 \$00 \$50 \$00 \$55 CS
14230 ECU1 SID\$09 NRC78	\$83 \$F1 \$10 \$7F \$49 \$78 CS
14230 ECU2 SID\$09 INF\$00	\$86 \$F1 \$11 \$49 \$00 \$3F \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$00 DIESEL	\$86 \$F1 \$11 \$49 \$00 \$3E \$20 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$03	\$83 \$F1 \$11 \$49 \$03 \$04 CS
14230 ECU2 SID\$09 INF\$03 9	\$83 \$F1 \$11 \$49 \$03 \$24 CS
14230 ECU2 SID\$09 INF\$04 M1	\$87 \$F1 \$11 \$49 \$04 \$01 \$32 \$34 \$32 \$32 CS
14230 ECU2 SID\$09 INF\$04 M2	\$87 \$F1 \$11 \$49 \$04 \$02 \$31 \$34 \$31 \$39 CS
14230 ECU2 SID\$09 INF\$04 M3	\$87 \$F1 \$11 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 M4	\$87 \$F1 \$11 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M1	\$87 \$F1 \$11 \$49 \$04 \$01 \$31 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M2	\$87 \$F1 \$11 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M3	\$87 \$F1 \$11 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M4	\$87 \$F1 \$11 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M5	\$87 \$F1 \$11 \$49 \$04 \$05 \$32 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M6	\$87 \$F1 \$11 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
14230 ECU2 SID\$09 INF\$04 9 M7	\$87 \$F1 \$11 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M8	\$87 \$F1 \$11 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M9	\$87 \$F1 \$11 \$49 \$04 \$09 \$33 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M10	\$87 \$F1 \$11 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
14230 ECU2 SID\$09 INF\$04 9 M11	\$87 \$F1 \$11 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M12	\$87 \$F1 \$11 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M13	\$87 \$F1 \$11 \$49 \$04 \$0D \$34 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M14	\$87 \$F1 \$11 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
14230 ECU2 SID\$09 INF\$04 9 M15	\$87 \$F1 \$11 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M16	\$87 \$F1 \$11 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M17	\$87 \$F1 \$11 \$49 \$04 \$11 \$35 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M18	\$87 \$F1 \$11 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
14230 ECU2 SID\$09 INF\$04 9 M19	\$87 \$F1 \$11 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M20	\$87 \$F1 \$11 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M21	\$87 \$F1 \$11 \$49 \$04 \$15 \$36 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M22	\$87 \$F1 \$11 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
14230 ECU2 SID\$09 INF\$04 9 M23	\$87 \$F1 \$11 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M24	\$87 \$F1 \$11 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M25	\$87 \$F1 \$11 \$49 \$04 \$19 \$37 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M26	\$87 \$F1 \$11 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
14230 ECU2 SID\$09 INF\$04 9 M27	\$87 \$F1 \$11 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M28	\$87 \$F1 \$11 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M29	\$87 \$F1 \$11 \$49 \$04 \$1D \$38 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M30	\$87 \$F1 \$11 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
14230 ECU2 SID\$09 INF\$04 9 M31	\$87 \$F1 \$11 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M32	\$87 \$F1 \$11 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M33	\$87 \$F1 \$11 \$49 \$04 \$21 \$39 \$32 \$35 \$38 CS
14230 ECU2 SID\$09 INF\$04 9 M34	\$87 \$F1 \$11 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
14230 ECU2 SID\$09 INF\$04 9 M35	\$87 \$F1 \$11 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$04 9 M36	\$87 \$F1 \$11 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
14230 ECU2 SID\$09 INF\$05	\$83 \$F1 \$11 \$49 \$05 \$01 CS
14230 ECU2 SID\$09 INF\$05 9	\$83 \$F1 \$11 \$49 \$05 \$09 CS
14230 ECU2 SID\$09 INF\$06	\$87 \$F1 \$11 \$49 \$06 \$01 \$27 \$91 \$BC \$88 CS
14230 ECU2 SID\$09 INF\$06 9 M1	\$87 \$F1 \$11 \$49 \$06 \$01 \$27 \$91 \$BC \$88 CS
14230 ECU2 SID\$09 INF\$06 9 M2	\$87 \$F1 \$11 \$49 \$06 \$02 \$28 \$91 \$BC \$87 CS
14230 ECU2 SID\$09 INF\$06 9 M3	\$87 \$F1 \$11 \$49 \$06 \$03 \$29 \$91 \$BC \$86 CS
14230 ECU2 SID\$09 INF\$06 9 M4	\$87 \$F1 \$11 \$49 \$06 \$04 \$2A \$91 \$BC \$85 CS
14230 ECU2 SID\$09 INF\$06 9 M5	\$87 \$F1 \$11 \$49 \$06 \$05 \$2B \$91 \$BC \$84 CS
14230 ECU2 SID\$09 INF\$06 9 M6	\$87 \$F1 \$11 \$49 \$06 \$06 \$2C \$91 \$BC \$83 CS
14230 ECU2 SID\$09 INF\$06 9 M7	\$87 \$F1 \$11 \$49 \$06 \$07 \$2D \$91 \$BC \$82 CS
14230 ECU2 SID\$09 INF\$06 9 M8	\$87 \$F1 \$11 \$49 \$06 \$08 \$2E \$91 \$BC \$81 CS

14230	ECU2	SID\$09	INF\$06	9	M9	\$87	\$F1	\$11	\$49	\$06	\$09	\$2F	\$FF	\$00	\$80	CS
14230	ECU2	SID\$09	INF\$07	832		\$83	\$F1	\$11	\$49	\$07	\$08					CS
14230	ECU2	SID\$09	INF\$07	840		\$83	\$F1	\$11	\$49	\$07	\$0A					CS
14230	ECU2	SID\$09	INF\$07	B32		\$83	\$F1	\$11	\$49	\$07	\$08					CS
14230	ECU2	SID\$09	INF\$07	B36		\$83	\$F1	\$11	\$49	\$07	\$09					CS
14230	ECU2	SID\$09	INF\$08	32	M1	\$87	\$F1	\$11	\$49	\$08	\$01	\$00	\$64	\$00	\$69	CS
14230	ECU2	SID\$09	INF\$08	32	M2	\$87	\$F1	\$11	\$49	\$08	\$02	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	32	M3	\$87	\$F1	\$11	\$49	\$08	\$03	\$00	\$14	\$00	\$19	CS
14230	ECU2	SID\$09	INF\$08	32	M4	\$87	\$F1	\$11	\$49	\$08	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	32	M5	\$87	\$F1	\$11	\$49	\$08	\$05	\$00	\$28	\$00	\$2D	CS
14230	ECU2	SID\$09	INF\$08	32	M6	\$87	\$F1	\$11	\$49	\$08	\$06	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	32	M7	\$87	\$F1	\$11	\$49	\$08	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	32	M8	\$87	\$F1	\$11	\$49	\$08	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M1	\$87	\$F1	\$11	\$49	\$08	\$01	\$00	\$64	\$00	\$69	CS
14230	ECU2	SID\$09	INF\$08	40	M2	\$87	\$F1	\$11	\$49	\$08	\$02	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M3	\$87	\$F1	\$11	\$49	\$08	\$03	\$00	\$14	\$00	\$19	CS
14230	ECU2	SID\$09	INF\$08	40	M4	\$87	\$F1	\$11	\$49	\$08	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M5	\$87	\$F1	\$11	\$49	\$08	\$05	\$00	\$28	\$00	\$2D	CS
14230	ECU2	SID\$09	INF\$08	40	M6	\$87	\$F1	\$11	\$49	\$08	\$06	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M7	\$87	\$F1	\$11	\$49	\$08	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M8	\$87	\$F1	\$11	\$49	\$08	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M9	\$87	\$F1	\$11	\$49	\$08	\$09	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$08	40	M10	\$87	\$F1	\$11	\$49	\$08	\$0A	\$00	\$5A	\$00	\$5F	CS
14230	ECU2	SID\$09	INF\$0B	32	M1	\$87	\$F1	\$11	\$49	\$0B	\$01	\$00	\$64	\$00	\$69	CS
14230	ECU2	SID\$09	INF\$0B	32	M2	\$87	\$F1	\$11	\$49	\$0B	\$02	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	32	M3	\$87	\$F1	\$11	\$49	\$0B	\$03	\$00	\$14	\$00	\$19	CS
14230	ECU2	SID\$09	INF\$0B	32	M4	\$87	\$F1	\$11	\$49	\$0B	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	32	M5	\$87	\$F1	\$11	\$49	\$0B	\$05	\$00	\$28	\$00	\$2D	CS
14230	ECU2	SID\$09	INF\$0B	32	M6	\$87	\$F1	\$11	\$49	\$0B	\$06	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	32	M7	\$87	\$F1	\$11	\$49	\$0B	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	32	M8	\$87	\$F1	\$11	\$49	\$0B	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	36	M1	\$87	\$F1	\$11	\$49	\$0B	\$01	\$00	\$64	\$00	\$69	CS
14230	ECU2	SID\$09	INF\$0B	36	M2	\$87	\$F1	\$11	\$49	\$0B	\$02	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	36	M3	\$87	\$F1	\$11	\$49	\$0B	\$03	\$00	\$14	\$00	\$19	CS
14230	ECU2	SID\$09	INF\$0B	36	M4	\$87	\$F1	\$11	\$49	\$0B	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	36	M5	\$87	\$F1	\$11	\$49	\$0B	\$05	\$00	\$28	\$00	\$2D	CS
14230	ECU2	SID\$09	INF\$0B	36	M6	\$87	\$F1	\$11	\$49	\$0B	\$06	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	36	M7	\$87	\$F1	\$11	\$49	\$0B	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	36	M8	\$87	\$F1	\$11	\$49	\$0B	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU2	SID\$09	INF\$0B	36	M9	\$87	\$F1	\$11	\$49	\$0B	\$09	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$00			\$86	\$F1	\$12	\$49	\$00	\$3C	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$03	9		\$83	\$F1	\$12	\$49	\$03	\$24					CS
14230	ECU3	SID\$09	INF\$04	9	M1	\$87	\$F1	\$12	\$49	\$04	\$01	\$31	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M2	\$87	\$F1	\$12	\$49	\$04	\$02	\$39	\$37	\$37	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M3	\$87	\$F1	\$12	\$49	\$04	\$03	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M4	\$87	\$F1	\$12	\$49	\$04	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M5	\$87	\$F1	\$12	\$49	\$04	\$05	\$32	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M6	\$87	\$F1	\$12	\$49	\$04	\$06	\$39	\$37	\$37	\$37	CS
14230	ECU3	SID\$09	INF\$04	9	M7	\$87	\$F1	\$12	\$49	\$04	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M8	\$87	\$F1	\$12	\$49	\$04	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M9	\$87	\$F1	\$12	\$49	\$04	\$09	\$33	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M10	\$87	\$F1	\$12	\$49	\$04	\$0A	\$39	\$37	\$37	\$36	CS
14230	ECU3	SID\$09	INF\$04	9	M11	\$87	\$F1	\$12	\$49	\$04	\$0B	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M12	\$87	\$F1	\$12	\$49	\$04	\$0C	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M13	\$87	\$F1	\$12	\$49	\$04	\$0D	\$34	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M14	\$87	\$F1	\$12	\$49	\$04	\$0E	\$39	\$37	\$37	\$35	CS
14230	ECU3	SID\$09	INF\$04	9	M15	\$87	\$F1	\$12	\$49	\$04	\$0F	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M16	\$87	\$F1	\$12	\$49	\$04	\$10	\$00	\$00	\$00	\$00	CS

14230	ECU3	SID\$09	INF\$04	9	M17	\$87	\$F1	\$12	\$49	\$04	\$11	\$35	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M18	\$87	\$F1	\$12	\$49	\$04	\$12	\$39	\$37	\$37	\$34	CS
14230	ECU3	SID\$09	INF\$04	9	M19	\$87	\$F1	\$12	\$49	\$04	\$13	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M20	\$87	\$F1	\$12	\$49	\$04	\$14	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M21	\$87	\$F1	\$12	\$49	\$04	\$15	\$36	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M22	\$87	\$F1	\$12	\$49	\$04	\$16	\$39	\$37	\$37	\$33	CS
14230	ECU3	SID\$09	INF\$04	9	M23	\$87	\$F1	\$12	\$49	\$04	\$17	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M24	\$87	\$F1	\$12	\$49	\$04	\$18	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M25	\$87	\$F1	\$12	\$49	\$04	\$19	\$37	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M26	\$87	\$F1	\$12	\$49	\$04	\$1A	\$39	\$37	\$37	\$32	CS
14230	ECU3	SID\$09	INF\$04	9	M27	\$87	\$F1	\$12	\$49	\$04	\$1B	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M28	\$87	\$F1	\$12	\$49	\$04	\$1C	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M29	\$87	\$F1	\$12	\$49	\$04	\$1D	\$38	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M30	\$87	\$F1	\$12	\$49	\$04	\$1E	\$39	\$37	\$37	\$31	CS
14230	ECU3	SID\$09	INF\$04	9	M31	\$87	\$F1	\$12	\$49	\$04	\$1F	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M32	\$87	\$F1	\$12	\$49	\$04	\$20	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M33	\$87	\$F1	\$12	\$49	\$04	\$21	\$39	\$33	\$35	\$38	CS
14230	ECU3	SID\$09	INF\$04	9	M34	\$87	\$F1	\$12	\$49	\$04	\$22	\$39	\$37	\$37	\$30	CS
14230	ECU3	SID\$09	INF\$04	9	M35	\$87	\$F1	\$12	\$49	\$04	\$23	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$04	9	M36	\$87	\$F1	\$12	\$49	\$04	\$24	\$00	\$00	\$00	\$00	CS
14230	ECU3	SID\$09	INF\$05	9		\$83	\$F1	\$12	\$49	\$05	\$09	CS				
14230	ECU3	SID\$09	INF\$06	9	M1	\$87	\$F1	\$12	\$49	\$06	\$01	\$37	\$91	\$BC	\$88	CS
14230	ECU3	SID\$09	INF\$06	9	M2	\$87	\$F1	\$12	\$49	\$06	\$02	\$38	\$91	\$BC	\$87	CS
14230	ECU3	SID\$09	INF\$06	9	M3	\$87	\$F1	\$12	\$49	\$06	\$03	\$39	\$91	\$BC	\$86	CS
14230	ECU3	SID\$09	INF\$06	9	M4	\$87	\$F1	\$12	\$49	\$06	\$04	\$3A	\$91	\$BC	\$85	CS
14230	ECU3	SID\$09	INF\$06	9	M5	\$87	\$F1	\$12	\$49	\$06	\$05	\$3B	\$91	\$BC	\$84	CS
14230	ECU3	SID\$09	INF\$06	9	M6	\$87	\$F1	\$12	\$49	\$06	\$06	\$3C	\$91	\$BC	\$83	CS
14230	ECU3	SID\$09	INF\$06	9	M7	\$87	\$F1	\$12	\$49	\$06	\$07	\$3D	\$91	\$BC	\$82	CS
14230	ECU3	SID\$09	INF\$06	9	M8	\$87	\$F1	\$12	\$49	\$06	\$08	\$3E	\$55	\$AA	\$81	CS
14230	ECU3	SID\$09	INF\$06	9	M9	\$87	\$F1	\$12	\$49	\$06	\$09	\$3F	\$FF	\$00	\$80	CS
14230	ECU4	SID\$09	INF\$00			\$86	\$F1	\$13	\$49	\$00	\$3C	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$03	9		\$83	\$F1	\$13	\$49	\$03	\$24	CS				
14230	ECU4	SID\$09	INF\$04	9	M1	\$87	\$F1	\$13	\$49	\$04	\$01	\$31	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M2	\$87	\$F1	\$13	\$49	\$04	\$02	\$39	\$37	\$37	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M3	\$87	\$F1	\$13	\$49	\$04	\$03	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M4	\$87	\$F1	\$13	\$49	\$04	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M5	\$87	\$F1	\$13	\$49	\$04	\$05	\$32	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M6	\$87	\$F1	\$13	\$49	\$04	\$06	\$39	\$37	\$37	\$37	CS
14230	ECU4	SID\$09	INF\$04	9	M7	\$87	\$F1	\$13	\$49	\$04	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M8	\$87	\$F1	\$13	\$49	\$04	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M9	\$87	\$F1	\$13	\$49	\$04	\$09	\$33	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M10	\$87	\$F1	\$13	\$49	\$04	\$0A	\$39	\$37	\$37	\$36	CS
14230	ECU4	SID\$09	INF\$04	9	M11	\$87	\$F1	\$13	\$49	\$04	\$0B	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M12	\$87	\$F1	\$13	\$49	\$04	\$0C	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M13	\$87	\$F1	\$13	\$49	\$04	\$0D	\$34	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M14	\$87	\$F1	\$13	\$49	\$04	\$0E	\$39	\$37	\$37	\$35	CS
14230	ECU4	SID\$09	INF\$04	9	M15	\$87	\$F1	\$13	\$49	\$04	\$0F	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M16	\$87	\$F1	\$13	\$49	\$04	\$10	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M17	\$87	\$F1	\$13	\$49	\$04	\$11	\$35	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M18	\$87	\$F1	\$13	\$49	\$04	\$12	\$39	\$37	\$37	\$34	CS
14230	ECU4	SID\$09	INF\$04	9	M19	\$87	\$F1	\$13	\$49	\$04	\$13	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M20	\$87	\$F1	\$13	\$49	\$04	\$14	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M21	\$87	\$F1	\$13	\$49	\$04	\$15	\$36	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M22	\$87	\$F1	\$13	\$49	\$04	\$16	\$39	\$37	\$37	\$33	CS
14230	ECU4	SID\$09	INF\$04	9	M23	\$87	\$F1	\$13	\$49	\$04	\$17	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M24	\$87	\$F1	\$13	\$49	\$04	\$18	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M25	\$87	\$F1	\$13	\$49	\$04	\$19	\$37	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M26	\$87	\$F1	\$13	\$49	\$04	\$1A	\$39	\$37	\$37	\$32	CS

14230	ECU4	SID\$09	INF\$04	9	M27	\$87	\$F1	\$13	\$49	\$04	\$1B	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M28	\$87	\$F1	\$13	\$49	\$04	\$1C	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M29	\$87	\$F1	\$13	\$49	\$04	\$1D	\$38	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M30	\$87	\$F1	\$13	\$49	\$04	\$1E	\$39	\$37	\$37	\$31	CS
14230	ECU4	SID\$09	INF\$04	9	M31	\$87	\$F1	\$13	\$49	\$04	\$1F	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M32	\$87	\$F1	\$13	\$49	\$04	\$20	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M33	\$87	\$F1	\$13	\$49	\$04	\$21	\$39	\$34	\$35	\$38	CS
14230	ECU4	SID\$09	INF\$04	9	M34	\$87	\$F1	\$13	\$49	\$04	\$22	\$39	\$37	\$37	\$30	CS
14230	ECU4	SID\$09	INF\$04	9	M35	\$87	\$F1	\$13	\$49	\$04	\$23	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$04	9	M36	\$87	\$F1	\$13	\$49	\$04	\$24	\$00	\$00	\$00	\$00	CS
14230	ECU4	SID\$09	INF\$05	9		\$83	\$F1	\$13	\$49	\$05	\$09					CS
14230	ECU4	SID\$09	INF\$06	9	M1	\$87	\$F1	\$13	\$49	\$06	\$01	\$47	\$91	\$BC	\$88	CS
14230	ECU4	SID\$09	INF\$06	9	M2	\$87	\$F1	\$13	\$49	\$06	\$02	\$48	\$91	\$BC	\$87	CS
14230	ECU4	SID\$09	INF\$06	9	M3	\$87	\$F1	\$13	\$49	\$06	\$03	\$49	\$91	\$BC	\$86	CS
14230	ECU4	SID\$09	INF\$06	9	M4	\$87	\$F1	\$13	\$49	\$06	\$04	\$4A	\$91	\$BC	\$85	CS
14230	ECU4	SID\$09	INF\$06	9	M5	\$87	\$F1	\$13	\$49	\$06	\$05	\$4B	\$91	\$BC	\$84	CS
14230	ECU4	SID\$09	INF\$06	9	M6	\$87	\$F1	\$13	\$49	\$06	\$06	\$4C	\$91	\$BC	\$83	CS
14230	ECU4	SID\$09	INF\$06	9	M7	\$87	\$F1	\$13	\$49	\$06	\$07	\$4D	\$91	\$BC	\$82	CS
14230	ECU4	SID\$09	INF\$06	9	M8	\$87	\$F1	\$13	\$49	\$06	\$08	\$4E	\$55	\$AA	\$81	CS
14230	ECU4	SID\$09	INF\$06	9	M9	\$87	\$F1	\$13	\$49	\$06	\$09	\$4F	\$FF	\$00	\$80	CS
14230	ECU5	SID\$09	INF\$00			\$86	\$F1	\$14	\$49	\$00	\$3C	\$00	\$00	\$00		CS
14230	ECU5	SID\$09	INF\$03	9		\$83	\$F1	\$14	\$49	\$03	\$24					CS
14230	ECU5	SID\$09	INF\$04	9	M1	\$87	\$F1	\$14	\$49	\$04	\$01	\$31	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M2	\$87	\$F1	\$14	\$49	\$04	\$02	\$39	\$37	\$37	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M3	\$87	\$F1	\$14	\$49	\$04	\$03	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M4	\$87	\$F1	\$14	\$49	\$04	\$04	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M5	\$87	\$F1	\$14	\$49	\$04	\$05	\$32	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M6	\$87	\$F1	\$14	\$49	\$04	\$06	\$39	\$37	\$37	\$37	CS
14230	ECU5	SID\$09	INF\$04	9	M7	\$87	\$F1	\$14	\$49	\$04	\$07	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M8	\$87	\$F1	\$14	\$49	\$04	\$08	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M9	\$87	\$F1	\$14	\$49	\$04	\$09	\$33	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M10	\$87	\$F1	\$14	\$49	\$04	\$0A	\$39	\$37	\$37	\$36	CS
14230	ECU5	SID\$09	INF\$04	9	M11	\$87	\$F1	\$14	\$49	\$04	\$0B	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M12	\$87	\$F1	\$14	\$49	\$04	\$0C	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M13	\$87	\$F1	\$14	\$49	\$04	\$0D	\$34	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M14	\$87	\$F1	\$14	\$49	\$04	\$0E	\$39	\$37	\$37	\$35	CS
14230	ECU5	SID\$09	INF\$04	9	M15	\$87	\$F1	\$14	\$49	\$04	\$0F	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M16	\$87	\$F1	\$14	\$49	\$04	\$10	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M17	\$87	\$F1	\$14	\$49	\$04	\$11	\$35	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M18	\$87	\$F1	\$14	\$49	\$04	\$12	\$39	\$37	\$37	\$34	CS
14230	ECU5	SID\$09	INF\$04	9	M19	\$87	\$F1	\$14	\$49	\$04	\$13	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M20	\$87	\$F1	\$14	\$49	\$04	\$14	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M21	\$87	\$F1	\$14	\$49	\$04	\$15	\$36	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M22	\$87	\$F1	\$14	\$49	\$04	\$16	\$39	\$37	\$37	\$33	CS
14230	ECU5	SID\$09	INF\$04	9	M23	\$87	\$F1	\$14	\$49	\$04	\$17	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M24	\$87	\$F1	\$14	\$49	\$04	\$18	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M25	\$87	\$F1	\$14	\$49	\$04	\$19	\$37	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M26	\$87	\$F1	\$14	\$49	\$04	\$1A	\$39	\$37	\$37	\$32	CS
14230	ECU5	SID\$09	INF\$04	9	M27	\$87	\$F1	\$14	\$49	\$04	\$1B	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M28	\$87	\$F1	\$14	\$49	\$04	\$1C	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M29	\$87	\$F1	\$14	\$49	\$04	\$1D	\$38	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M30	\$87	\$F1	\$14	\$49	\$04	\$1E	\$39	\$37	\$37	\$31	CS
14230	ECU5	SID\$09	INF\$04	9	M31	\$87	\$F1	\$14	\$49	\$04	\$1F	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M32	\$87	\$F1	\$14	\$49	\$04	\$20	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M33	\$87	\$F1	\$14	\$49	\$04	\$21	\$39	\$35	\$35	\$38	CS
14230	ECU5	SID\$09	INF\$04	9	M34	\$87	\$F1	\$14	\$49	\$04	\$22	\$39	\$37	\$37	\$30	CS
14230	ECU5	SID\$09	INF\$04	9	M35	\$87	\$F1	\$14	\$49	\$04	\$23	\$00	\$00	\$00	\$00	CS
14230	ECU5	SID\$09	INF\$04	9	M36	\$87	\$F1	\$14	\$49	\$04	\$24	\$00	\$00	\$00	\$00	CS

14230 ECU5 SID\$09 INF\$05 9	\$83 \$F1 \$14 \$49 \$05 \$09 CS
14230 ECU5 SID\$09 INF\$06 9 M1	\$87 \$F1 \$14 \$49 \$06 \$01 \$57 \$91 \$BC \$88 CS
14230 ECU5 SID\$09 INF\$06 9 M2	\$87 \$F1 \$14 \$49 \$06 \$02 \$58 \$91 \$BC \$87 CS
14230 ECU5 SID\$09 INF\$06 9 M3	\$87 \$F1 \$14 \$49 \$06 \$03 \$59 \$91 \$BC \$86 CS
14230 ECU5 SID\$09 INF\$06 9 M4	\$87 \$F1 \$14 \$49 \$06 \$04 \$5A \$91 \$BC \$85 CS
14230 ECU5 SID\$09 INF\$06 9 M5	\$87 \$F1 \$14 \$49 \$06 \$05 \$5B \$91 \$BC \$84 CS
14230 ECU5 SID\$09 INF\$06 9 M6	\$87 \$F1 \$14 \$49 \$06 \$06 \$5C \$91 \$BC \$83 CS
14230 ECU5 SID\$09 INF\$06 9 M7	\$87 \$F1 \$14 \$49 \$06 \$07 \$5D \$91 \$BC \$82 CS
14230 ECU5 SID\$09 INF\$06 9 M8	\$87 \$F1 \$14 \$49 \$06 \$08 \$5E \$55 \$AA \$81 CS
14230 ECU5 SID\$09 INF\$06 9 M9	\$87 \$F1 \$14 \$49 \$06 \$09 \$5F \$FF \$00 \$80 CS
14230 ECU6 SID\$09 INF\$00	\$86 \$F1 \$15 \$49 \$00 \$3C \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$03 9	\$83 \$F1 \$15 \$49 \$03 \$24 CS
14230 ECU6 SID\$09 INF\$04 9 M1	\$87 \$F1 \$15 \$49 \$04 \$01 \$31 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M2	\$87 \$F1 \$15 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M3	\$87 \$F1 \$15 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M4	\$87 \$F1 \$15 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M5	\$87 \$F1 \$15 \$49 \$04 \$05 \$32 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M6	\$87 \$F1 \$15 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
14230 ECU6 SID\$09 INF\$04 9 M7	\$87 \$F1 \$15 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M8	\$87 \$F1 \$15 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M9	\$87 \$F1 \$15 \$49 \$04 \$09 \$33 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M10	\$87 \$F1 \$15 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
14230 ECU6 SID\$09 INF\$04 9 M11	\$87 \$F1 \$15 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M12	\$87 \$F1 \$15 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M13	\$87 \$F1 \$15 \$49 \$04 \$0D \$34 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M14	\$87 \$F1 \$15 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
14230 ECU6 SID\$09 INF\$04 9 M15	\$87 \$F1 \$15 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M16	\$87 \$F1 \$15 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M17	\$87 \$F1 \$15 \$49 \$04 \$11 \$35 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M18	\$87 \$F1 \$15 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
14230 ECU6 SID\$09 INF\$04 9 M19	\$87 \$F1 \$15 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M20	\$87 \$F1 \$15 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M21	\$87 \$F1 \$15 \$49 \$04 \$15 \$36 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M22	\$87 \$F1 \$15 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
14230 ECU6 SID\$09 INF\$04 9 M23	\$87 \$F1 \$15 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M24	\$87 \$F1 \$15 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M25	\$87 \$F1 \$15 \$49 \$04 \$19 \$37 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M26	\$87 \$F1 \$15 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
14230 ECU6 SID\$09 INF\$04 9 M27	\$87 \$F1 \$15 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M28	\$87 \$F1 \$15 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M29	\$87 \$F1 \$15 \$49 \$04 \$1D \$38 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M30	\$87 \$F1 \$15 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
14230 ECU6 SID\$09 INF\$04 9 M31	\$87 \$F1 \$15 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M32	\$87 \$F1 \$15 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M33	\$87 \$F1 \$15 \$49 \$04 \$21 \$39 \$36 \$35 \$38 CS
14230 ECU6 SID\$09 INF\$04 9 M34	\$87 \$F1 \$15 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
14230 ECU6 SID\$09 INF\$04 9 M35	\$87 \$F1 \$15 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$04 9 M36	\$87 \$F1 \$15 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
14230 ECU6 SID\$09 INF\$05 9	\$83 \$F1 \$15 \$49 \$05 \$09 CS
14230 ECU6 SID\$09 INF\$06 9 M1	\$87 \$F1 \$15 \$49 \$06 \$01 \$67 \$91 \$BC \$88 CS
14230 ECU6 SID\$09 INF\$06 9 M2	\$87 \$F1 \$15 \$49 \$06 \$02 \$68 \$91 \$BC \$87 CS
14230 ECU6 SID\$09 INF\$06 9 M3	\$87 \$F1 \$15 \$49 \$06 \$03 \$69 \$91 \$BC \$86 CS
14230 ECU6 SID\$09 INF\$06 9 M4	\$87 \$F1 \$15 \$49 \$06 \$04 \$6A \$91 \$BC \$85 CS
14230 ECU6 SID\$09 INF\$06 9 M5	\$87 \$F1 \$15 \$49 \$06 \$05 \$6B \$91 \$BC \$84 CS
14230 ECU6 SID\$09 INF\$06 9 M6	\$87 \$F1 \$15 \$49 \$06 \$06 \$6C \$91 \$BC \$83 CS
14230 ECU6 SID\$09 INF\$06 9 M7	\$87 \$F1 \$15 \$49 \$06 \$07 \$6D \$91 \$BC \$82 CS
14230 ECU6 SID\$09 INF\$06 9 M8	\$87 \$F1 \$15 \$49 \$06 \$08 \$6E \$55 \$AA \$81 CS
14230 ECU6 SID\$09 INF\$06 9 M9	\$87 \$F1 \$15 \$49 \$06 \$09 \$6F \$FF \$00 \$80 CS

14230 ECU7 SID\$09 INF\$00	\$86 \$F1 \$16 \$49 \$00 \$3C \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$03 9	\$83 \$F1 \$16 \$49 \$03 \$24 CS
14230 ECU7 SID\$09 INF\$04 9 M1	\$87 \$F1 \$16 \$49 \$04 \$01 \$31 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M2	\$87 \$F1 \$16 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M3	\$87 \$F1 \$16 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M4	\$87 \$F1 \$16 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M5	\$87 \$F1 \$16 \$49 \$04 \$05 \$32 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M6	\$87 \$F1 \$16 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
14230 ECU7 SID\$09 INF\$04 9 M7	\$87 \$F1 \$16 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M8	\$87 \$F1 \$16 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M9	\$87 \$F1 \$16 \$49 \$04 \$09 \$33 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M10	\$87 \$F1 \$16 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
14230 ECU7 SID\$09 INF\$04 9 M11	\$87 \$F1 \$16 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M12	\$87 \$F1 \$16 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M13	\$87 \$F1 \$16 \$49 \$04 \$0D \$34 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M14	\$87 \$F1 \$16 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
14230 ECU7 SID\$09 INF\$04 9 M15	\$87 \$F1 \$16 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M16	\$87 \$F1 \$16 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M17	\$87 \$F1 \$16 \$49 \$04 \$11 \$35 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M18	\$87 \$F1 \$16 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
14230 ECU7 SID\$09 INF\$04 9 M19	\$87 \$F1 \$16 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M20	\$87 \$F1 \$16 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M21	\$87 \$F1 \$16 \$49 \$04 \$15 \$36 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M22	\$87 \$F1 \$16 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
14230 ECU7 SID\$09 INF\$04 9 M23	\$87 \$F1 \$16 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M24	\$87 \$F1 \$16 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M25	\$87 \$F1 \$16 \$49 \$04 \$19 \$37 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M26	\$87 \$F1 \$16 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
14230 ECU7 SID\$09 INF\$04 9 M26	\$87 \$F1 \$16 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M28	\$87 \$F1 \$16 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M29	\$87 \$F1 \$16 \$49 \$04 \$1D \$38 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M30	\$87 \$F1 \$16 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
14230 ECU7 SID\$09 INF\$04 9 M31	\$87 \$F1 \$16 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M32	\$87 \$F1 \$16 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M33	\$87 \$F1 \$16 \$49 \$04 \$21 \$39 \$37 \$35 \$38 CS
14230 ECU7 SID\$09 INF\$04 9 M34	\$87 \$F1 \$16 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
14230 ECU7 SID\$09 INF\$04 9 M35	\$87 \$F1 \$16 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$04 9 M36	\$87 \$F1 \$16 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
14230 ECU7 SID\$09 INF\$05 9	\$83 \$F1 \$16 \$49 \$05 \$09 CS
14230 ECU7 SID\$09 INF\$06 9 M1	\$87 \$F1 \$16 \$49 \$06 \$01 \$77 \$91 \$BC \$88 CS
14230 ECU7 SID\$09 INF\$06 9 M2	\$87 \$F1 \$16 \$49 \$06 \$02 \$78 \$91 \$BC \$87 CS
14230 ECU7 SID\$09 INF\$06 9 M3	\$87 \$F1 \$16 \$49 \$06 \$03 \$79 \$91 \$BC \$86 CS
14230 ECU7 SID\$09 INF\$06 9 M4	\$87 \$F1 \$16 \$49 \$06 \$04 \$7A \$91 \$BC \$85 CS
14230 ECU7 SID\$09 INF\$06 9 M5	\$87 \$F1 \$16 \$49 \$06 \$05 \$7B \$91 \$BC \$84 CS
14230 ECU7 SID\$09 INF\$06 9 M6	\$87 \$F1 \$16 \$49 \$06 \$06 \$7C \$91 \$BC \$83 CS
14230 ECU7 SID\$09 INF\$06 9 M7	\$87 \$F1 \$16 \$49 \$06 \$07 \$7D \$91 \$BC \$82 CS
14230 ECU7 SID\$09 INF\$06 9 M8	\$87 \$F1 \$16 \$49 \$06 \$08 \$7E \$55 \$AA \$81 CS
14230 ECU7 SID\$09 INF\$06 9 M9	\$87 \$F1 \$16 \$49 \$06 \$09 \$7F \$FF \$00 \$80 CS
14230 ECU8 SID\$09 INF\$00	\$86 \$F1 \$17 \$49 \$00 \$3C \$00 \$00 \$00 CS
14230 ECU8 SID\$09 INF\$03 9	\$83 \$F1 \$17 \$49 \$03 \$24 CS
14230 ECU8 SID\$09 INF\$04 9 M1	\$87 \$F1 \$17 \$49 \$04 \$01 \$31 \$38 \$35 \$38 CS
14230 ECU8 SID\$09 INF\$04 9 M2	\$87 \$F1 \$17 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
14230 ECU8 SID\$09 INF\$04 9 M3	\$87 \$F1 \$17 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
14230 ECU8 SID\$09 INF\$04 9 M4	\$87 \$F1 \$17 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
14230 ECU8 SID\$09 INF\$04 9 M5	\$87 \$F1 \$17 \$49 \$04 \$05 \$32 \$38 \$35 \$38 CS
14230 ECU8 SID\$09 INF\$04 9 M6	\$87 \$F1 \$17 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
14230 ECU8 SID\$09 INF\$04 9 M7	\$87 \$F1 \$17 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
14230 ECU8 SID\$09 INF\$04 9 M8	\$87 \$F1 \$17 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS

14230	ECU8	SID\$09	INF\$04	9	M9	\$87	\$F1	\$17	\$49	\$04	\$09	\$33	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M10	\$87	\$F1	\$17	\$49	\$04	\$0A	\$39	\$37	\$37	\$36	CS
14230	ECU8	SID\$09	INF\$04	9	M11	\$87	\$F1	\$17	\$49	\$04	\$0B	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M12	\$87	\$F1	\$17	\$49	\$04	\$0C	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M13	\$87	\$F1	\$17	\$49	\$04	\$0D	\$34	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M14	\$87	\$F1	\$17	\$49	\$04	\$0E	\$39	\$37	\$37	\$35	CS
14230	ECU8	SID\$09	INF\$04	9	M15	\$87	\$F1	\$17	\$49	\$04	\$0F	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M16	\$87	\$F1	\$17	\$49	\$04	\$10	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M17	\$87	\$F1	\$17	\$49	\$04	\$11	\$35	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M18	\$87	\$F1	\$17	\$49	\$04	\$12	\$39	\$37	\$37	\$34	CS
14230	ECU8	SID\$09	INF\$04	9	M19	\$87	\$F1	\$17	\$49	\$04	\$13	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M20	\$87	\$F1	\$17	\$49	\$04	\$14	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M21	\$87	\$F1	\$17	\$49	\$04	\$15	\$36	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M22	\$87	\$F1	\$17	\$49	\$04	\$16	\$39	\$37	\$37	\$33	CS
14230	ECU8	SID\$09	INF\$04	9	M23	\$87	\$F1	\$17	\$49	\$04	\$17	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M24	\$87	\$F1	\$17	\$49	\$04	\$17	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M25	\$87	\$F1	\$17	\$49	\$04	\$19	\$37	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M26	\$87	\$F1	\$17	\$49	\$04	\$1A	\$39	\$37	\$37	\$32	CS
14230	ECU8	SID\$09	INF\$04	9	M27	\$87	\$F1	\$17	\$49	\$04	\$1B	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M28	\$87	\$F1	\$17	\$49	\$04	\$1C	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M29	\$87	\$F1	\$17	\$49	\$04	\$1D	\$38	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M30	\$87	\$F1	\$17	\$49	\$04	\$1E	\$39	\$37	\$37	\$31	CS
14230	ECU8	SID\$09	INF\$04	9	M31	\$87	\$F1	\$17	\$49	\$04	\$1F	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M32	\$87	\$F1	\$17	\$49	\$04	\$20	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M33	\$87	\$F1	\$17	\$49	\$04	\$21	\$39	\$38	\$35	\$38	CS
14230	ECU8	SID\$09	INF\$04	9	M34	\$87	\$F1	\$17	\$49	\$04	\$22	\$39	\$37	\$37	\$30	CS
14230	ECU8	SID\$09	INF\$04	9	M35	\$87	\$F1	\$17	\$49	\$04	\$23	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$04	9	M36	\$87	\$F1	\$17	\$49	\$04	\$24	\$00	\$00	\$00	\$00	CS
14230	ECU8	SID\$09	INF\$05	9		\$83	\$F1	\$17	\$49	\$05	\$09					CS
14230	ECU8	SID\$09	INF\$06	9	M1	\$87	\$F1	\$17	\$49	\$06	\$01	\$87	\$91	\$BC	\$88	CS
14230	ECU8	SID\$09	INF\$06	9	M2	\$87	\$F1	\$17	\$49	\$06	\$02	\$88	\$91	\$BC	\$87	CS
14230	ECU8	SID\$09	INF\$06	9	M3	\$87	\$F1	\$17	\$49	\$06	\$03	\$89	\$91	\$BC	\$86	CS
14230	ECU8	SID\$09	INF\$06	9	M4	\$87	\$F1	\$17	\$49	\$06	\$04	\$8A	\$91	\$BC	\$85	CS
14230	ECU8	SID\$09	INF\$06	9	M5	\$87	\$F1	\$17	\$49	\$06	\$05	\$8B	\$91	\$BC	\$84	CS
14230	ECU8	SID\$09	INF\$06	9	M6	\$87	\$F1	\$17	\$49	\$06	\$06	\$8C	\$91	\$BC	\$83	CS
14230	ECU8	SID\$09	INF\$06	9	M7	\$87	\$F1	\$17	\$49	\$06	\$07	\$8D	\$91	\$BC	\$82	CS
14230	ECU8	SID\$09	INF\$06	9	M8	\$87	\$F1	\$17	\$49	\$06	\$08	\$8E	\$55	\$AA	\$81	CS
14230	ECU8	SID\$09	INF\$06	9	M9	\$87	\$F1	\$17	\$49	\$06	\$09	\$8F	\$FF	\$00	\$80	CS

Where CS indicates a correctly computed Checksum as defined by ISO 14230-4.

Figure 12 - Pre-defined messages for ISO 14230-4

5.4.4.4 ISO 14230-4 Message Timing

For convenience, the test cases in this document will use the text in the 'Parameter Reference' column when referring to the specific value, detailed in the 'Value' column of the table below. Unless otherwise specified, the following timing values shall be used:

Parameter Reference	Value
W1_MIN	60 ms
W1	100 ms
W1_MAX	300 ms
W2_MIN	5 ms
W2	15 ms
W2_MAX	20 ms
W3_MIN	0 ms
W3	15 ms
W3_MAX	20 ms
W4_MIN	25 ms
W4	40 ms
W4_MAX	50 ms
W5	At least 300 ms
W5	5 ms
TiniL	24 ms (± 1 ms)
Twup	50 ms (± 1 ms)
P1_MIN	0 ms
P1	5 ms
P1_MAX	20 ms
P2_MIN	0 ms
P2	30 ms
P2_MAX	50 ms
P3_MIN	0 ms
P3	25 ms
P3_MAX	5000 ms
P4_MIN	0 ms
P4	25 ms
P4_MAX	20 ms

Figure 13 - Pre-defined message timing for ISO 14230-4

5.4.4.5 ISO 14230-4 Connected State

The device shall initially be in the 'Power On' state with the K and L Lines connected and the appropriate pull-up applied (as depicted in 5.4.4.1).

5.4.4.6 ISO 14230-4 (2 ECUs) Initialized State

The OBD network shall have determined to be ISO 14230-4 at a baud rate of 10400 with two OBD II ECUs shall have been identified. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of any Section from 8.3.2 to 8.3.9 shall define this state.

5.4.4.7 ISO 14230-4 (8 ECUs) Initialized State

The OBD network shall have determined to be ISO 14230-4 at a baud rate of 10400 with eight OBD II ECUs having been identified. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 8.3.10 shall define this state.

5.4.4.8 ISO 14230-4 (2 ECUs) SID9 Ready State

The SID \$09 INFOTYPES shall be known for each of the two OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 9.3.17 shall define this state.

5.4.4.9 ISO 14230-4 (2 ECUs) SID9 Diesel Ready State

The SID \$09 INFOTYPES shall be known for each of the two OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 0 shall define this state.

5.4.4.10 ISO 14230-4 (8 ECUs) SID9 Ready State

The SID \$09 INFOTYPES shall be known for each of the eight OBD II ECUs on the network. The DUT may produce a periodic message transmission to keep the network alive. A successful completion of 9.3.19 shall define this state.

5.4.5 ISO 9141-2

5.4.5.1 ISO 9141-2 Electrical Connections

Figure 14 outlines the typical set-up for ISO 9141-2 testing.

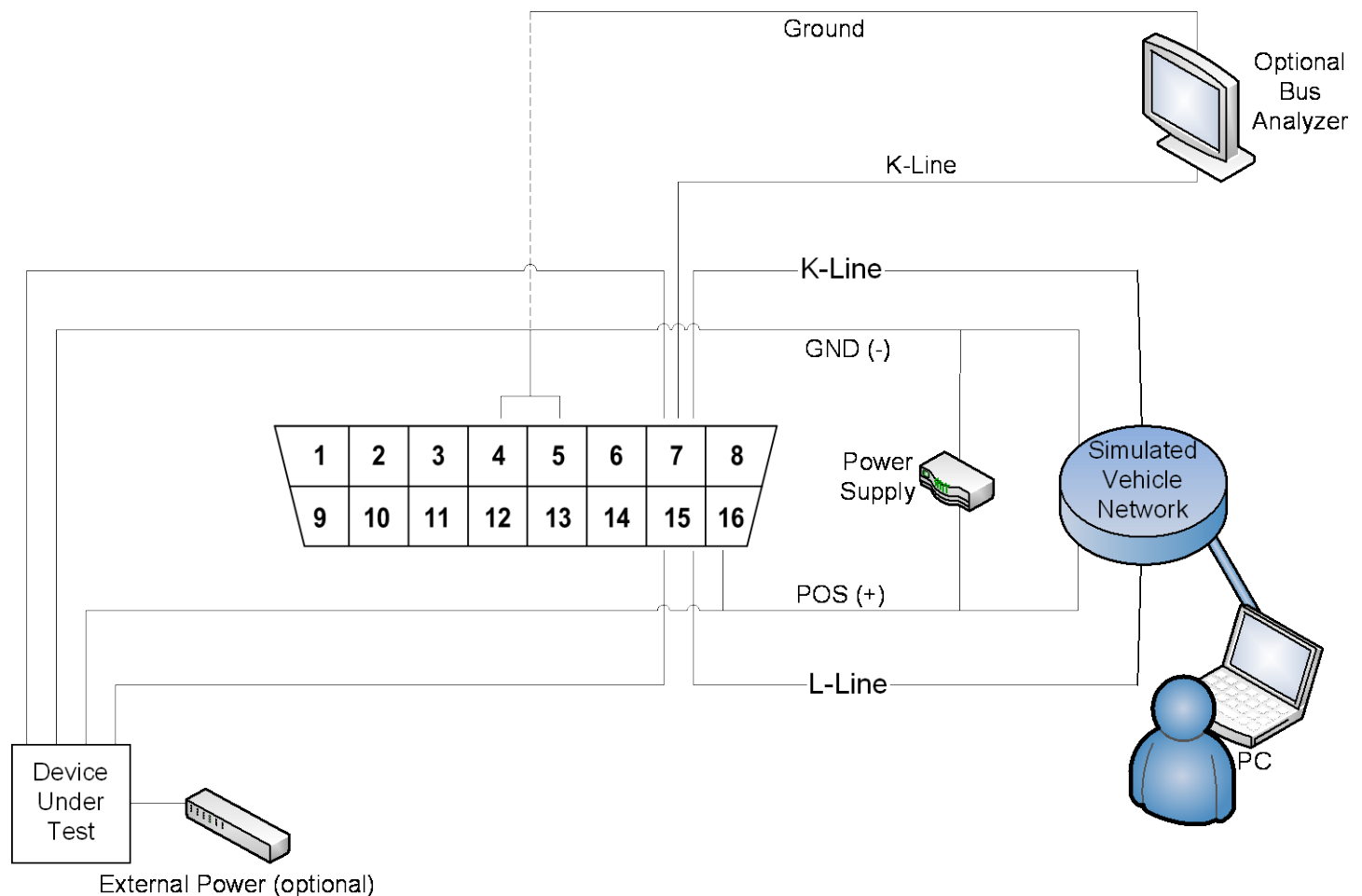


Figure 14 - Test set-up for ISO 9141-2 testing

5.4.5.2 ISO 9141-2 ECU Addresses

The following address bytes have been pre-defined for ISO 9141-2. For convenience, the test cases in this document will use the text in the 'ECU Reference' column when referring to the specific set of address bytes, detailed in the 'Address Bytes' column of the table below.

ECU Reference	Address Bytes
ECU #1	\$10
ECU #2	\$11
ECU #3	\$12
ECU #4	\$13
ECU #5	\$14
ECU #6	\$15
ECU #7	\$16
ECU #8	\$17

Figure 15 - ECU reference and associated addresses for ISO 9141-2

5.4.5.3 ISO 9141-2 Messages

The following messages have been pre-defined for ISO 9141-2. For convenience, the test cases in this document will use the text in the 'Message Reference' column when referring to the specific set of message bytes, detailed in the 'Message Bytes' column of the table below.

Message Reference	Message Bytes
9141_SID\$01_PID\$00	\$68 \$6A \$F1 \$01 \$00 CS
9141_ECU1_SID\$01_PID\$00_BAD	\$48 \$6B \$10 \$72 \$33
9141_ECU1_SID\$01_PID\$00	\$48 \$6B \$10 \$41 \$00 \$80 \$10 \$00 \$00 CS
9141_ECU1_SID\$01_PID\$00	\$48 \$6B \$10 \$41 \$00 \$80 \$10 \$00 \$00 CS
9141_ECU2_SID\$01_PID\$00	\$48 \$6B \$11 \$41 \$00 \$80 \$10 \$00 \$00 CS
9141_ECU3_SID\$01_PID\$00	\$48 \$6B \$12 \$41 \$00 \$00 \$00 \$00 \$00 CS
9141_ECU4_SID\$01_PID\$00	\$48 \$6B \$13 \$41 \$00 \$00 \$00 \$00 \$00 CS
9141_ECU5_SID\$01_PID\$00	\$48 \$6B \$14 \$41 \$00 \$00 \$00 \$00 \$00 CS
9141_ECU6_SID\$01_PID\$00	\$48 \$6B \$15 \$41 \$00 \$00 \$00 \$00 \$00 CS
9141_ECU7_SID\$01_PID\$00	\$48 \$6B \$16 \$41 \$00 \$00 \$00 \$00 \$00 CS
9141_ECU8_SID\$01_PID\$00	\$48 \$6B \$17 \$41 \$00 \$00 \$00 \$00 \$00 CS
9141_SID\$01_PID\$01	\$68 \$6A \$F1 \$01 \$01 CS
9141_SID\$01_PID\$0C	\$68 \$6A \$F1 \$01 \$0C CS
9141_SID\$01_PID\$20	\$68 \$6A \$F1 \$01 \$20 CS
9141_SID\$01_PID\$40	\$68 \$6A \$F1 \$01 \$40 CS
9141_SID\$01_PID\$41	\$68 \$6A \$F1 \$01 \$41 CS
9141_ECU1_SID\$01_PID\$00_20	\$48 \$6B \$10 \$41 \$00 \$80 \$10 \$00 \$01 CS
9141_ECU1_SID\$01_PID\$01_SPARK	\$48 \$6B \$10 \$41 \$01 \$00 \$07 \$EF \$EF CS
9141_ECU1_SID\$01_PID\$01_COMP	\$48 \$6B \$10 \$41 \$01 \$00 \$0F \$EB \$EB CS
9141_ECU1_SID\$01_PID\$0C_KOEO	\$48 \$6B \$10 \$41 \$0C \$00 \$00 CS
9141_ECU1_SID\$01_PID\$20	\$48 \$6B \$10 \$41 \$20 \$00 \$00 \$00 \$01 CS
9141_ECU1_SID\$01_PID\$40	\$48 \$6B \$10 \$41 \$40 \$10 \$00 \$00 \$00 CS
9141_ECU1_SID\$01_PID\$41_SPARK	\$48 \$6B \$10 \$41 \$41 \$00 \$07 \$EF \$EF CS
9141_ECU2_SID\$01_PID\$01_SPARK	\$48 \$6B \$11 \$41 \$01 \$81 \$44 \$00 \$00 CS
9141_ECU2_SID\$01_PID\$01_COMP	\$48 \$6B \$11 \$41 \$01 \$81 \$4C \$00 \$00 CS
9141_ECU2_SID\$01_PID\$0C_KOEO	\$48 \$6B \$11 \$41 \$0C \$00 \$00 CS
9141_SID\$02_PID\$02	\$68 \$6A \$F1 \$02 \$02 \$00 CS
9141_ECU1_SID\$02_PID\$02_NoDTC	\$48 \$6B \$10 \$42 \$02 \$00 \$00 \$00 CS
9141_ECU2_SID\$02_PID\$02_NoDTC	\$48 \$6B \$11 \$42 \$02 \$00 \$00 \$00 CS
9141_ECU1_SID\$02_PID\$02_DTC	\$48 \$6B \$10 \$42 \$02 \$00 \$01 \$07 CS
9141_SID\$03	\$68 \$6A \$F1 \$03 CS
9141_ECU1_SID\$03_NoDTC	\$48 \$6B \$10 \$43 \$00 CS
9141_ECU1_SID\$03_DTC_M1	\$48 \$6B \$10 \$43 \$01 \$07 \$01 \$10 \$01 CS
9141_ECU1_SID\$03_DTC_M2	\$48 \$6B \$10 \$43 \$01 \$24 \$00 \$00 \$00 CS

9141 ECU2_SID\$03_NoDTC	\$48 \$6B \$11 \$43 \$00 CS
9141_SID\$04	\$68 \$6A \$F1 \$04CS
9141 ECU1_SID\$04_DONE	\$48 \$6B \$10 \$44 CS
9141 ECU1_SID\$04_NRC22	\$48 \$6B \$10 \$7F \$44 \$22 CS
9141 ECU1_SID\$04_NRC78	\$48 \$6B \$10 \$7F \$44 \$78 CS
9141 ECU2_SID\$04_DONE	\$48 \$6B \$11 \$44 CS
9141 ECU2_SID\$04_NRC22	\$48 \$6B \$11 \$7F \$44 \$22 CS
9141_SID\$05_TID\$01	\$68 \$6A \$F1 \$05 \$01 \$02 CS
9141 ECU1_SID\$05_TID\$01	\$48 \$6B \$10 \$45 \$01 \$02 \$00 \$5A CS
9141_SID\$06_MID\$00	\$68 \$6A \$F1 \$06 \$00 CS
9141 ECU1_SID\$06_MID\$00	\$48 \$6B \$10 \$46 \$00 \$CC \$00 \$00 \$00 CS
9141_SID\$07	\$68 \$6A \$F1 \$07 CS
9141 ECU1_SID\$07_NoDTC	\$48 \$6B \$10 \$47 \$00 CS
9141 ECU1_SID\$07_DTC_M1	\$48 \$6B \$10 \$47 \$01 \$07 \$01 \$10 \$01 \$15 CS
9141 ECU1_SID\$07_DTC_M2	\$48 \$6B \$10 \$47 \$01 \$24 \$00 \$00 \$00 \$00 CS
9141 ECU2_SID\$07_NoDTC	\$48 \$6B \$11 \$47 \$00 CS
9141_SID\$08_TID\$00	\$68 \$6A \$F1 \$08 CS
9141 ECU1_SID\$08_TID\$00	\$48 \$6B \$10 \$48 \$00 \$80 \$00 \$00 \$00 CS
9141_SID\$09_INF\$00	\$68 \$6A \$F1 \$09 \$00 CS
9141_SID\$09_INF\$01	\$68 \$6A \$F1 \$09 \$01 CS
9141_SID\$09_INF\$02	\$68 \$6A \$F1 \$09 \$02 CS
9141_SID\$09_INF\$03	\$68 \$6A \$F1 \$09 \$03 CS
9141_SID\$09_INF\$04	\$68 \$6A \$F1 \$09 \$04 CS
9141_SID\$09_INF\$05	\$68 \$6A \$F1 \$09 \$05 CS
9141_SID\$09_INF\$06	\$68 \$6A \$F1 \$09 \$06 CS
9141_SID\$09_INF\$07	\$68 \$6A \$F1 \$09 \$07 CS
9141_SID\$09_INF\$08	\$68 \$6A \$F1 \$09 \$08 CS
9141_SID\$09_INF\$0B	\$68 \$6A \$F1 \$09 \$0B CS
9141 ECU1_SID\$09_INF\$00	\$48 \$6B \$10 \$49 \$00 \$FF \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$00_DIESEL	\$48 \$6B \$10 \$49 \$00 \$FE \$20 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$01	\$48 \$6B \$10 \$49 \$01 \$05 CS
9141 ECU1_SID\$09_INF\$02_M1	\$48 \$6B \$10 \$49 \$02 \$01 \$00 \$00 \$00 \$31 CS
9141 ECU1_SID\$09_INF\$02_M2	\$48 \$6B \$10 \$49 \$02 \$02 \$47 \$59 \$44 \$45 CS
9141 ECU1_SID\$09_INF\$02_M3	\$48 \$6B \$10 \$49 \$02 \$03 \$36 \$33 \$41 \$37 CS
9141 ECU1_SID\$09_INF\$02_M4	\$48 \$6B \$10 \$49 \$02 \$04 \$41 \$30 \$30 \$30 CS
9141 ECU1_SID\$09_INF\$02_M5	\$48 \$6B \$10 \$49 \$02 \$05 \$30 \$30 \$30 \$30 CS
9141 ECU1_SID\$09_INF\$03	\$48 \$6B \$10 \$49 \$03 \$04 CS
9141 ECU1_SID\$09_INF\$03_9	\$48 \$6B \$10 \$49 \$03 \$24 CS
9141 ECU1_SID\$09_INF\$04_M1	\$48 \$6B \$10 \$49 \$04 \$01 \$31 \$32 \$35 \$38 CS
9141 ECU1_SID\$09_INF\$04_M2	\$48 \$6B \$10 \$49 \$04 \$02 \$39 \$37 \$37 \$32 CS
9141 ECU1_SID\$09_INF\$04_M3	\$48 \$6B \$10 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_M4	\$48 \$6B \$10 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M1	\$48 \$6B \$10 \$49 \$04 \$01 \$31 \$31 \$35 \$38 CS
9141 ECU1_SID\$09_INF\$04_9_M2	\$48 \$6B \$10 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
9141 ECU1_SID\$09_INF\$04_9_M3	\$48 \$6B \$10 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M4	\$48 \$6B \$10 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M5	\$48 \$6B \$10 \$49 \$04 \$05 \$32 \$31 \$35 \$38 CS
9141 ECU1_SID\$09_INF\$04_9_M6	\$48 \$6B \$10 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
9141 ECU1_SID\$09_INF\$04_9_M7	\$48 \$6B \$10 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M8	\$48 \$6B \$10 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M9	\$48 \$6B \$10 \$49 \$04 \$09 \$33 \$31 \$35 \$38 CS
9141 ECU1_SID\$09_INF\$04_9_M10	\$48 \$6B \$10 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
9141 ECU1_SID\$09_INF\$04_9_M11	\$48 \$6B \$10 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M12	\$48 \$6B \$10 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M13	\$48 \$6B \$10 \$49 \$04 \$0D \$34 \$31 \$35 \$38 CS
9141 ECU1_SID\$09_INF\$04_9_M14	\$48 \$6B \$10 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
9141 ECU1_SID\$09_INF\$04_9_M15	\$48 \$6B \$10 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
9141 ECU1_SID\$09_INF\$04_9_M16	\$48 \$6B \$10 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS

9141 ECU1 SID\$09 INF\$04 9 M17	\$48 \$6B \$10 \$49 \$04 \$11 \$35 \$31 \$35 \$38 CS
9141 ECU1 SID\$09 INF\$04 9 M18	\$48 \$6B \$10 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
9141 ECU1 SID\$09 INF\$04 9 M19	\$48 \$6B \$10 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M20	\$48 \$6B \$10 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M21	\$48 \$6B \$10 \$49 \$04 \$15 \$36 \$31 \$35 \$38 CS
9141 ECU1 SID\$09 INF\$04 9 M22	\$48 \$6B \$10 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
9141 ECU1 SID\$09 INF\$04 9 M23	\$48 \$6B \$10 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M24	\$48 \$6B \$10 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M25	\$48 \$6B \$10 \$49 \$04 \$19 \$37 \$31 \$35 \$38 CS
9141 ECU1 SID\$09 INF\$04 9 M26	\$48 \$6B \$10 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
9141 ECU1 SID\$09 INF\$04 9 M27	\$48 \$6B \$10 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M28	\$48 \$6B \$10 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M29	\$48 \$6B \$10 \$49 \$04 \$1D \$38 \$31 \$35 \$38 CS
9141 ECU1 SID\$09 INF\$04 9 M30	\$48 \$6B \$10 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
9141 ECU1 SID\$09 INF\$04 9 M31	\$48 \$6B \$10 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M32	\$48 \$6B \$10 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M33	\$48 \$6B \$10 \$49 \$04 \$21 \$39 \$31 \$35 \$38 CS
9141 ECU1 SID\$09 INF\$04 9 M34	\$48 \$6B \$10 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
9141 ECU1 SID\$09 INF\$04 9 M35	\$48 \$6B \$10 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$04 9 M36	\$48 \$6B \$10 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$05	\$48 \$6B \$10 \$49 \$05 \$01 CS
9141 ECU1 SID\$09 INF\$05 9	\$48 \$6B \$10 \$49 \$05 \$09 CS
9141 ECU1 SID\$09 INF\$06	\$48 \$6B \$10 \$49 \$06 \$01 \$17 \$91 \$BC \$88 CS
9141 ECU1 SID\$09 INF\$06 9 M1	\$48 \$6B \$10 \$49 \$06 \$01 \$17 \$91 \$BC \$88 CS
9141 ECU1 SID\$09 INF\$06 9 M2	\$48 \$6B \$10 \$49 \$06 \$02 \$18 \$91 \$BC \$87 CS
9141 ECU1 SID\$09 INF\$06 9 M3	\$48 \$6B \$10 \$49 \$06 \$03 \$19 \$91 \$BC \$86 CS
9141 ECU1 SID\$09 INF\$06 9 M4	\$48 \$6B \$10 \$49 \$06 \$04 \$1A \$91 \$BC \$85 CS
9141 ECU1 SID\$09 INF\$06 9 M5	\$48 \$6B \$10 \$49 \$06 \$05 \$1B \$91 \$BC \$84 CS
9141 ECU1 SID\$09 INF\$06 9 M6	\$48 \$6B \$10 \$49 \$06 \$06 \$1C \$91 \$BC \$83 CS
9141 ECU1 SID\$09 INF\$06 9 M7	\$48 \$6B \$10 \$49 \$06 \$07 \$1D \$91 \$BC \$82 CS
9141 ECU1 SID\$09 INF\$06 9 M8	\$48 \$6B \$10 \$49 \$06 \$08 \$1E \$55 \$AA \$81 CS
9141 ECU1 SID\$09 INF\$06 9 M9	\$48 \$6B \$10 \$49 \$06 \$09 \$1F \$FF \$00 \$80 CS
9141 ECU1 SID\$09 INF\$07 832	\$48 \$6B \$10 \$49 \$07 \$08 CS
9141 ECU1 SID\$09 INF\$07 840	\$48 \$6B \$10 \$49 \$07 \$0A CS
9141 ECU1 SID\$09 INF\$07 B32	\$48 \$6B \$10 \$49 \$07 \$08 CS
9141 ECU1 SID\$09 INF\$07 B36	\$48 \$6B \$10 \$49 \$07 \$09 CS
9141 ECU1 SID\$09 INF\$08 32 M1	\$48 \$6B \$10 \$49 \$08 \$01 \$00 \$64 \$00 \$69 CS
9141 ECU1 SID\$09 INF\$08 32 M2	\$48 \$6B \$10 \$49 \$08 \$02 \$00 \$0A \$00 \$0F CS
9141 ECU1 SID\$09 INF\$08 32 M3	\$48 \$6B \$10 \$49 \$08 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$08 32 M4	\$48 \$6B \$10 \$49 \$08 \$04 \$00 \$1E \$00 \$23 CS
9141 ECU1 SID\$09 INF\$08 32 M5	\$48 \$6B \$10 \$49 \$08 \$05 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$08 32 M6	\$48 \$6B \$10 \$49 \$08 \$06 \$00 \$32 \$00 \$37 CS
9141 ECU1 SID\$09 INF\$08 32 M7	\$48 \$6B \$10 \$49 \$08 \$07 \$00 \$3C \$00 \$41 CS
9141 ECU1 SID\$09 INF\$08 32 M8	\$48 \$6B \$10 \$49 \$08 \$08 \$00 \$46 \$00 \$4B CS
9141 ECU1 SID\$09 INF\$08 40 M1	\$48 \$6B \$10 \$49 \$08 \$01 \$00 \$64 \$00 \$69 CS
9141 ECU1 SID\$09 INF\$08 40 M2	\$48 \$6B \$10 \$49 \$08 \$02 \$00 \$0A \$00 \$0F CS
9141 ECU1 SID\$09 INF\$08 40 M3	\$48 \$6B \$10 \$49 \$08 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$08 40 M4	\$48 \$6B \$10 \$49 \$08 \$04 \$00 \$1E \$00 \$23 CS
9141 ECU1 SID\$09 INF\$08 40 M5	\$48 \$6B \$10 \$49 \$08 \$05 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$08 40 M6	\$48 \$6B \$10 \$49 \$08 \$06 \$00 \$32 \$00 \$37 CS
9141 ECU1 SID\$09 INF\$08 40 M7	\$48 \$6B \$10 \$49 \$08 \$07 \$00 \$3C \$00 \$41 CS
9141 ECU1 SID\$09 INF\$08 40 M8	\$48 \$6B \$10 \$49 \$08 \$08 \$00 \$46 \$00 \$4B CS
9141 ECU1 SID\$09 INF\$08 40 M9	\$48 \$6B \$10 \$49 \$08 \$09 \$00 \$5A \$00 \$5F CS
9141 ECU1 SID\$09 INF\$08 40 M10	\$48 \$6B \$10 \$49 \$08 \$0A \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$0B 32 M1	\$48 \$6B \$10 \$49 \$0B \$01 \$00 \$64 \$00 \$69 CS
9141 ECU1 SID\$09 INF\$0B 32 M2	\$48 \$6B \$10 \$49 \$0B \$02 \$00 \$0A \$00 \$0F CS
9141 ECU1 SID\$09 INF\$0B 32 M3	\$48 \$6B \$10 \$49 \$0B \$03 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$0B 32 M4	\$48 \$6B \$10 \$49 \$0B \$04 \$00 \$00 \$00 \$00 CS

9141 ECU1 SID\$09 INF\$0B 32 M5	\$48 \$6B \$10 \$49 \$0B \$05 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$0B 32 M6	\$48 \$6B \$10 \$49 \$0B \$06 \$00 \$32 \$00 \$37 CS
9141 ECU1 SID\$09 INF\$0B 32 M7	\$48 \$6B \$10 \$49 \$0B \$07 \$00 \$3C \$00 \$41 CS
9141 ECU1 SID\$09 INF\$0B 32 M8	\$48 \$6B \$10 \$49 \$0B \$08 \$00 \$46 \$00 \$4B CS
9141 ECU1 SID\$09 INF\$0B 36 M1	\$48 \$6B \$10 \$49 \$0B \$01 \$00 \$64 \$00 \$69 CS
9141 ECU1 SID\$09 INF\$0B 36 M2	\$48 \$6B \$10 \$49 \$0B \$02 \$00 \$0A \$00 \$0F CS
9141 ECU1 SID\$09 INF\$0B 36 M3	\$48 \$6B \$10 \$49 \$0B \$03 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$0B 36 M4	\$48 \$6B \$10 \$49 \$0B \$04 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$0B 36 M5	\$48 \$6B \$10 \$49 \$0B \$05 \$00 \$00 \$00 \$00 CS
9141 ECU1 SID\$09 INF\$0B 36 M6	\$48 \$6B \$10 \$49 \$0B \$06 \$00 \$32 \$00 \$37 CS
9141 ECU1 SID\$09 INF\$0B 36 M7	\$48 \$6B \$10 \$49 \$0B \$07 \$00 \$3C \$00 \$41 CS
9141 ECU1 SID\$09 INF\$0B 36 M8	\$48 \$6B \$10 \$49 \$0B \$08 \$00 \$46 \$00 \$4B CS
9141 ECU1 SID\$09 INF\$0B 36 M9	\$48 \$6B \$10 \$49 \$0B \$09 \$00 \$50 \$00 \$55 CS
9141 ECU1 SID\$09 NRC78	\$48 \$6B \$10 \$7F \$49 \$78 CS
9141 ECU2 SID\$09 INF\$00	\$48 \$6B \$11 \$49 \$00 \$3F \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$00 DIESEL	\$48 \$6B \$11 \$49 \$00 \$3E \$20 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$03	\$48 \$6B \$11 \$49 \$03 \$04 CS
9141 ECU2 SID\$09 INF\$03 9	\$48 \$6B \$11 \$49 \$03 \$24 CS
9141 ECU2 SID\$09 INF\$04 M1	\$48 \$6B \$11 \$49 \$04 \$01 \$32 \$34 \$32 \$32 CS
9141 ECU2 SID\$09 INF\$04 M2	\$48 \$6B \$11 \$49 \$04 \$02 \$31 \$34 \$31 \$39 CS
9141 ECU2 SID\$09 INF\$04 M3	\$48 \$6B \$11 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 M4	\$48 \$6B \$11 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M1	\$48 \$6B \$11 \$49 \$04 \$01 \$31 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M2	\$48 \$6B \$11 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M3	\$48 \$6B \$11 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M4	\$48 \$6B \$11 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M5	\$48 \$6B \$11 \$49 \$04 \$05 \$32 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M6	\$48 \$6B \$11 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
9141 ECU2 SID\$09 INF\$04 9 M7	\$48 \$6B \$11 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M8	\$48 \$6B \$11 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M9	\$48 \$6B \$11 \$49 \$04 \$09 \$33 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M10	\$48 \$6B \$11 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
9141 ECU2 SID\$09 INF\$04 9 M11	\$48 \$6B \$11 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M12	\$48 \$6B \$11 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M13	\$48 \$6B \$11 \$49 \$04 \$0D \$34 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M14	\$48 \$6B \$11 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
9141 ECU2 SID\$09 INF\$04 9 M15	\$48 \$6B \$11 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M16	\$48 \$6B \$11 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M17	\$48 \$6B \$11 \$49 \$04 \$11 \$35 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M18	\$48 \$6B \$11 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
9141 ECU2 SID\$09 INF\$04 9 M19	\$48 \$6B \$11 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M20	\$48 \$6B \$11 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M21	\$48 \$6B \$11 \$49 \$04 \$15 \$36 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M22	\$48 \$6B \$11 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
9141 ECU2 SID\$09 INF\$04 9 M23	\$48 \$6B \$11 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M24	\$48 \$6B \$11 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M25	\$48 \$6B \$11 \$49 \$04 \$19 \$37 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M26	\$48 \$6B \$11 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
9141 ECU2 SID\$09 INF\$04 9 M27	\$48 \$6B \$11 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M28	\$48 \$6B \$11 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M29	\$48 \$6B \$11 \$49 \$04 \$1D \$38 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M30	\$48 \$6B \$11 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
9141 ECU2 SID\$09 INF\$04 9 M31	\$48 \$6B \$11 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M32	\$48 \$6B \$11 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M33	\$48 \$6B \$11 \$49 \$04 \$21 \$39 \$32 \$35 \$38 CS
9141 ECU2 SID\$09 INF\$04 9 M34	\$48 \$6B \$11 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
9141 ECU2 SID\$09 INF\$04 9 M35	\$48 \$6B \$11 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$04 9 M36	\$48 \$6B \$11 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS

9141 ECU2 SID\$09 INF\$05	\$48 \$6B \$11 \$49 \$05 \$01 CS
9141 ECU2 SID\$09 INF\$05 9	\$48 \$6B \$11 \$49 \$05 \$09 CS
9141 ECU1 SID\$09 INF\$06	\$48 \$6B \$11 \$49 \$06 \$01 \$27 \$91 \$BC \$88 CS
9141 ECU2 SID\$09 INF\$06 9 M1	\$48 \$6B \$11 \$49 \$06 \$01 \$27 \$91 \$BC \$88 CS
9141 ECU2 SID\$09 INF\$06 9 M2	\$48 \$6B \$11 \$49 \$06 \$02 \$28 \$91 \$BC \$87 CS
9141 ECU2 SID\$09 INF\$06 9 M3	\$48 \$6B \$11 \$49 \$06 \$03 \$29 \$91 \$BC \$86 CS
9141 ECU2 SID\$09 INF\$06 9 M4	\$48 \$6B \$11 \$49 \$06 \$04 \$2A \$91 \$BC \$85 CS
9141 ECU2 SID\$09 INF\$06 9 M5	\$48 \$6B \$11 \$49 \$06 \$05 \$2B \$91 \$BC \$84 CS
9141 ECU2 SID\$09 INF\$06 9 M6	\$48 \$6B \$11 \$49 \$06 \$06 \$2C \$91 \$BC \$83 CS
9141 ECU2 SID\$09 INF\$06 9 M7	\$48 \$6B \$11 \$49 \$06 \$07 \$2D \$91 \$BC \$82 CS
9141 ECU2 SID\$09 INF\$06 9 M8	\$48 \$6B \$11 \$49 \$06 \$08 \$2E \$55 \$AA \$81 CS
9141 ECU2 SID\$09 INF\$06 9 M9	\$48 \$6B \$11 \$49 \$06 \$09 \$2F \$FF \$00 \$80 CS
9141 ECU2 SID\$09 INF\$07 832	\$48 \$6B \$11 \$49 \$07 \$08 CS
9141 ECU2 SID\$09 INF\$07 840	\$48 \$6B \$11 \$49 \$07 \$0A CS
9141 ECU2 SID\$09 INF\$07 B32	\$48 \$6B \$11 \$49 \$07 \$08 CS
9141 ECU2 SID\$09 INF\$07 B36	\$48 \$6B \$11 \$49 \$07 \$09 CS
9141 ECU2 SID\$09 INF\$08 32 M1	\$48 \$6B \$11 \$49 \$08 \$01 \$00 \$64 \$00 \$69 CS
9141 ECU2 SID\$09 INF\$08 32 M2	\$48 \$6B \$11 \$49 \$08 \$02 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 32 M3	\$48 \$6B \$11 \$49 \$08 \$03 \$00 \$14 \$00 \$19 CS
9141 ECU2 SID\$09 INF\$08 32 M4	\$48 \$6B \$11 \$49 \$08 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 32 M5	\$48 \$6B \$11 \$49 \$08 \$05 \$00 \$28 \$00 \$2D CS
9141 ECU2 SID\$09 INF\$08 32 M6	\$48 \$6B \$11 \$49 \$08 \$06 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 32 M7	\$48 \$6B \$11 \$49 \$08 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 32 M8	\$48 \$6B \$11 \$49 \$08 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M1	\$48 \$6B \$11 \$49 \$08 \$01 \$00 \$64 \$00 \$69 CS
9141 ECU2 SID\$09 INF\$08 40 M2	\$48 \$6B \$11 \$49 \$08 \$02 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M3	\$48 \$6B \$11 \$49 \$08 \$03 \$00 \$14 \$00 \$19 CS
9141 ECU2 SID\$09 INF\$08 40 M4	\$48 \$6B \$11 \$49 \$08 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M5	\$48 \$6B \$11 \$49 \$08 \$05 \$00 \$28 \$00 \$2D CS
9141 ECU2 SID\$09 INF\$08 40 M6	\$48 \$6B \$11 \$49 \$08 \$06 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M7	\$48 \$6B \$11 \$49 \$08 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M8	\$48 \$6B \$11 \$49 \$08 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M9	\$48 \$6B \$11 \$49 \$08 \$09 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$08 40 M10	\$48 \$6B \$11 \$49 \$08 \$0A \$00 \$5A \$00 \$5F CS
9141 ECU2 SID\$09 INF\$0B 32 M1	\$48 \$6B \$11 \$49 \$0B \$01 \$00 \$64 \$00 \$69 CS
9141 ECU2 SID\$09 INF\$0B 32 M2	\$48 \$6B \$11 \$49 \$0B \$02 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 32 M3	\$48 \$6B \$11 \$49 \$0B \$03 \$00 \$14 \$00 \$19 CS
9141 ECU2 SID\$09 INF\$0B 32 M4	\$48 \$6B \$11 \$49 \$0B \$04 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 32 M5	\$48 \$6B \$11 \$49 \$0B \$05 \$00 \$28 \$00 \$2D CS
9141 ECU2 SID\$09 INF\$0B 32 M6	\$48 \$6B \$11 \$49 \$0B \$06 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 32 M7	\$48 \$6B \$11 \$49 \$0B \$07 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 32 M8	\$48 \$6B \$11 \$49 \$0B \$08 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 36 M1	\$48 \$6B \$11 \$49 \$0B \$01 \$00 \$64 \$00 \$69 CS
9141 ECU2 SID\$09 INF\$0B 36 M2	\$48 \$6B \$11 \$49 \$0B \$02 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 36 M3	\$48 \$6B \$11 \$49 \$0B \$03 \$00 \$14 \$00 \$19 CS
9141 ECU2 SID\$09 INF\$0B 36 M4	\$48 \$6B \$11 \$49 \$0B \$04 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 36 M5	\$48 \$6B \$11 \$49 \$0B \$05 \$00 \$28 \$00 \$2D CS
9141 ECU2 SID\$09 INF\$0B 36 M6	\$48 \$6B \$11 \$49 \$0B \$06 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 36 M7	\$48 \$6B \$11 \$49 \$0B \$07 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 36 M8	\$48 \$6B \$11 \$49 \$0B \$08 \$00 \$00 \$00 \$00 CS
9141 ECU2 SID\$09 INF\$0B 36 M9	\$48 \$6B \$11 \$49 \$0B \$09 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$00	\$48 \$6B \$12 \$49 \$00 \$3C \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$03 9	\$48 \$6B \$12 \$49 \$03 \$24 CS
9141 ECU3 SID\$09 INF\$04 9 M1	\$48 \$6B \$12 \$49 \$04 \$01 \$31 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M2	\$48 \$6B \$12 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M3	\$48 \$6B \$12 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M4	\$48 \$6B \$12 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M5	\$48 \$6B \$12 \$49 \$04 \$05 \$22 \$53 \$35 \$38 CS

9141 ECU3 SID\$09 INF\$04 9 M6	\$48 \$6B \$12 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
9141 ECU3 SID\$09 INF\$04 9 M7	\$48 \$6B \$12 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M8	\$48 \$6B \$12 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M9	\$48 \$6B \$12 \$49 \$04 \$09 \$33 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M10	\$48 \$6B \$12 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
9141 ECU3 SID\$09 INF\$04 9 M11	\$48 \$6B \$12 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M12	\$48 \$6B \$12 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M13	\$48 \$6B \$12 \$49 \$04 \$0D \$34 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M14	\$48 \$6B \$12 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
9141 ECU3 SID\$09 INF\$04 9 M15	\$48 \$6B \$12 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M16	\$48 \$6B \$12 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M17	\$48 \$6B \$12 \$49 \$04 \$11 \$35 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M18	\$48 \$6B \$12 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
9141 ECU3 SID\$09 INF\$04 9 M19	\$48 \$6B \$12 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M20	\$48 \$6B \$12 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M21	\$48 \$6B \$12 \$49 \$04 \$15 \$36 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M22	\$48 \$6B \$12 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
9141 ECU3 SID\$09 INF\$04 9 M23	\$48 \$6B \$12 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M24	\$48 \$6B \$12 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M25	\$48 \$6B \$12 \$49 \$04 \$19 \$37 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M26	\$48 \$6B \$12 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
9141 ECU3 SID\$09 INF\$04 9 M27	\$48 \$6B \$12 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M28	\$48 \$6B \$12 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M29	\$48 \$6B \$12 \$49 \$04 \$1D \$38 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M30	\$48 \$6B \$12 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
9141 ECU3 SID\$09 INF\$04 9 M31	\$48 \$6B \$12 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M32	\$48 \$6B \$12 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M33	\$48 \$6B \$12 \$49 \$04 \$21 \$39 \$33 \$35 \$38 CS
9141 ECU3 SID\$09 INF\$04 9 M34	\$48 \$6B \$12 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
9141 ECU3 SID\$09 INF\$04 9 M35	\$48 \$6B \$12 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$04 9 M36	\$48 \$6B \$12 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
9141 ECU3 SID\$09 INF\$05 9	\$48 \$6B \$12 \$49 \$05 \$09 CS
9141 ECU3 SID\$09 INF\$06 9 M1	\$48 \$6B \$12 \$49 \$06 \$01 \$37 \$91 \$BC \$88 CS
9141 ECU3 SID\$09 INF\$06 9 M2	\$48 \$6B \$12 \$49 \$06 \$02 \$38 \$91 \$BC \$87 CS
9141 ECU3 SID\$09 INF\$06 9 M3	\$48 \$6B \$12 \$49 \$06 \$03 \$39 \$91 \$BC \$86 CS
9141 ECU3 SID\$09 INF\$06 9 M4	\$48 \$6B \$12 \$49 \$06 \$04 \$3A \$91 \$BC \$85 CS
9141 ECU3 SID\$09 INF\$06 9 M5	\$48 \$6B \$12 \$49 \$06 \$05 \$3B \$91 \$BC \$84 CS
9141 ECU3 SID\$09 INF\$06 9 M6	\$48 \$6B \$12 \$49 \$06 \$06 \$3C \$91 \$BC \$83 CS
9141 ECU3 SID\$09 INF\$06 9 M7	\$48 \$6B \$12 \$49 \$06 \$07 \$3D \$91 \$BC \$82 CS
9141 ECU3 SID\$09 INF\$06 9 M8	\$48 \$6B \$12 \$49 \$06 \$08 \$3E \$55 \$AA \$81 CS
9141 ECU3 SID\$09 INF\$06 9 M9	\$48 \$6B \$12 \$49 \$06 \$09 \$3F \$FF \$00 \$80 CS
9141 ECU4 SID\$09 INF\$00	\$48 \$6B \$13 \$49 \$00 \$3C \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$03 9	\$48 \$6B \$13 \$49 \$03 \$24 CS
9141 ECU4 SID\$09 INF\$04 9 M1	\$48 \$6B \$13 \$49 \$04 \$01 \$31 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M2	\$48 \$6B \$13 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M3	\$48 \$6B \$13 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M4	\$48 \$6B \$13 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M5	\$48 \$6B \$13 \$49 \$04 \$05 \$32 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M6	\$48 \$6B \$13 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
9141 ECU4 SID\$09 INF\$04 9 M7	\$48 \$6B \$13 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M8	\$48 \$6B \$13 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M9	\$48 \$6B \$13 \$49 \$04 \$09 \$33 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M10	\$48 \$6B \$13 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
9141 ECU4 SID\$09 INF\$04 9 M11	\$48 \$6B \$13 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M12	\$48 \$6B \$13 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M13	\$48 \$6B \$13 \$49 \$04 \$0D \$34 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M14	\$48 \$6B \$13 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
9141 ECU4 SID\$09 INF\$04 9 M15	\$48 \$6B \$13 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS

9141 ECU4 SID\$09 INF\$04 9 M16	\$48 \$6B \$13 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M17	\$48 \$6B \$13 \$49 \$04 \$11 \$35 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M18	\$48 \$6B \$13 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
9141 ECU4 SID\$09 INF\$04 9 M19	\$48 \$6B \$13 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M20	\$48 \$6B \$13 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M21	\$48 \$6B \$13 \$49 \$04 \$15 \$36 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M22	\$48 \$6B \$13 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
9141 ECU4 SID\$09 INF\$04 9 M23	\$48 \$6B \$13 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M24	\$48 \$6B \$13 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M25	\$48 \$6B \$13 \$49 \$04 \$19 \$37 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M26	\$48 \$6B \$13 \$49 \$04 \$1A \$39 \$37 \$37 \$32 CS
9141 ECU4 SID\$09 INF\$04 9 M27	\$48 \$6B \$13 \$49 \$04 \$1B \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M28	\$48 \$6B \$13 \$49 \$04 \$1C \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M29	\$48 \$6B \$13 \$49 \$04 \$1D \$38 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M30	\$48 \$6B \$13 \$49 \$04 \$1E \$39 \$37 \$37 \$31 CS
9141 ECU4 SID\$09 INF\$04 9 M31	\$48 \$6B \$13 \$49 \$04 \$1F \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M32	\$48 \$6B \$13 \$49 \$04 \$20 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M33	\$48 \$6B \$13 \$49 \$04 \$21 \$39 \$34 \$35 \$38 CS
9141 ECU4 SID\$09 INF\$04 9 M34	\$48 \$6B \$13 \$49 \$04 \$22 \$39 \$37 \$37 \$30 CS
9141 ECU4 SID\$09 INF\$04 9 M35	\$48 \$6B \$13 \$49 \$04 \$23 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$04 9 M36	\$48 \$6B \$13 \$49 \$04 \$24 \$00 \$00 \$00 \$00 CS
9141 ECU4 SID\$09 INF\$05 9	\$48 \$6B \$13 \$49 \$05 \$09 CS
9141 ECU4 SID\$09 INF\$06 9 M1	\$48 \$6B \$13 \$49 \$06 \$01 \$47 \$91 \$BC \$88 CS
9141 ECU4 SID\$09 INF\$06 9 M2	\$48 \$6B \$13 \$49 \$06 \$02 \$48 \$91 \$BC \$87 CS
9141 ECU4 SID\$09 INF\$06 9 M3	\$48 \$6B \$13 \$49 \$06 \$03 \$49 \$91 \$BC \$86 CS
9141 ECU4 SID\$09 INF\$06 9 M4	\$48 \$6B \$13 \$49 \$06 \$04 \$4A \$91 \$BC \$85 CS
9141 ECU4 SID\$09 INF\$06 9 M5	\$48 \$6B \$13 \$49 \$06 \$05 \$4B \$91 \$BC \$84 CS
9141 ECU4 SID\$09 INF\$06 9 M6	\$48 \$6B \$13 \$49 \$06 \$06 \$4C \$91 \$BC \$83 CS
9141 ECU4 SID\$09 INF\$06 9 M7	\$48 \$6B \$13 \$49 \$06 \$07 \$4D \$91 \$BC \$82 CS
9141 ECU4 SID\$09 INF\$06 9 M8	\$48 \$6B \$13 \$49 \$06 \$08 \$4E \$55 \$AA \$81 CS
9141 ECU4 SID\$09 INF\$06 9 M9	\$48 \$6B \$13 \$49 \$06 \$09 \$4F \$FF \$00 \$80 CS
9141 ECU5 SID\$09 INF\$00	\$48 \$6B \$14 \$49 \$00 \$3C \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$03 9	\$48 \$6B \$14 \$49 \$03 \$24 CS
9141 ECU5 SID\$09 INF\$04 9 M1	\$48 \$6B \$14 \$49 \$04 \$01 \$31 \$35 \$35 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M2	\$48 \$6B \$14 \$49 \$04 \$02 \$39 \$37 \$37 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M3	\$48 \$6B \$14 \$49 \$04 \$03 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M4	\$48 \$6B \$14 \$49 \$04 \$04 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M5	\$48 \$6B \$14 \$49 \$04 \$05 \$32 \$35 \$35 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M6	\$48 \$6B \$14 \$49 \$04 \$06 \$39 \$37 \$37 \$37 CS
9141 ECU5 SID\$09 INF\$04 9 M7	\$48 \$6B \$14 \$49 \$04 \$07 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M8	\$48 \$6B \$14 \$49 \$04 \$08 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M9	\$48 \$6B \$14 \$49 \$04 \$09 \$33 \$35 \$35 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M10	\$48 \$6B \$14 \$49 \$04 \$0A \$39 \$37 \$37 \$36 CS
9141 ECU5 SID\$09 INF\$04 9 M11	\$48 \$6B \$14 \$49 \$04 \$0B \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M12	\$48 \$6B \$14 \$49 \$04 \$0C \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M13	\$48 \$6B \$14 \$49 \$04 \$0D \$34 \$35 \$35 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M14	\$48 \$6B \$14 \$49 \$04 \$0E \$39 \$37 \$37 \$35 CS
9141 ECU5 SID\$09 INF\$04 9 M15	\$48 \$6B \$14 \$49 \$04 \$0F \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M16	\$48 \$6B \$14 \$49 \$04 \$10 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M17	\$48 \$6B \$14 \$49 \$04 \$11 \$35 \$35 \$35 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M18	\$48 \$6B \$14 \$49 \$04 \$12 \$39 \$37 \$37 \$34 CS
9141 ECU5 SID\$09 INF\$04 9 M19	\$48 \$6B \$14 \$49 \$04 \$13 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M20	\$48 \$6B \$14 \$49 \$04 \$14 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M21	\$48 \$6B \$14 \$49 \$04 \$15 \$36 \$35 \$35 \$38 CS
9141 ECU5 SID\$09 INF\$04 9 M22	\$48 \$6B \$14 \$49 \$04 \$16 \$39 \$37 \$37 \$33 CS
9141 ECU5 SID\$09 INF\$04 9 M23	\$48 \$6B \$14 \$49 \$04 \$17 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M24	\$48 \$6B \$14 \$49 \$04 \$18 \$00 \$00 \$00 \$00 CS
9141 ECU5 SID\$09 INF\$04 9 M25	\$48 \$6B \$14 \$49 \$04 \$19 \$21 \$35 \$35 \$38 CS