Hub Managed Diagnostics (HMD)

Step by step diagnostics

Refresh and clear DTCs

Test operations

Suggested test sequences

Design & Function Repair instructions

Start page

Help and tips

Electrical schematics

Components images

Special tools

Diagnostic specifications

Data Link Fault tracing

3. Run Diagnostic - Data links, fault tracing

Product Status

Filter

Click the ECU with the Codes

Information

▾ Tech tip

Fault Tracing Area

Click on the schematic button and select the data link to be fault traced

Click on the battery button to select the control unit or component to fault trace

▾ Data link wires

▾ Control Unit

▾ Battery

Operations relevant for fault tracing

▾ Operations
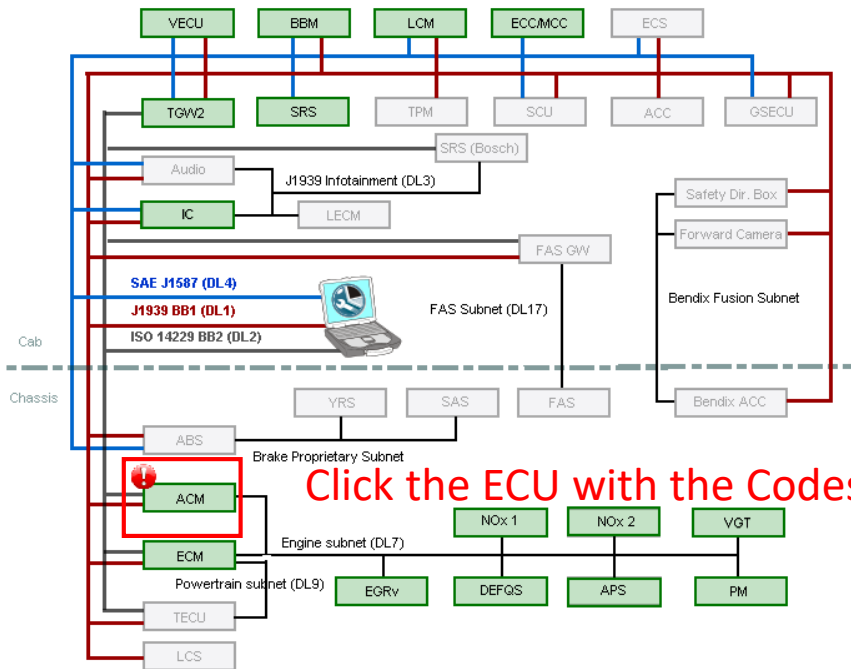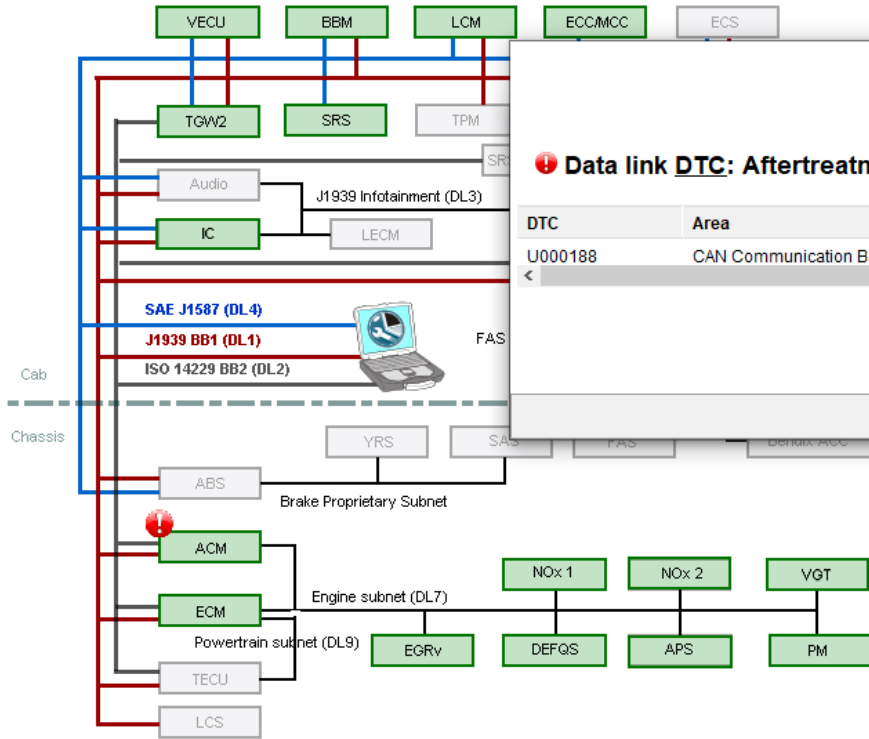
Function status

▾ Refresh status

3. Run Diagnostic   Exit >   Cancel

3. Run Diagnostic - Data links, fault tracing

Click on the battery button to select the control unit or component to fault trace

Data link wires

Select a data link and click **Update view**

Check for the following:

- Connectors not fully connected
- Pushed-back pins
- Corrosion in connectors
- Rubbed wires
- Polarization error

Product Status

Filter

VECU | BBM | LCM | ECC/MCC | ECS

TGW2 | SRS | TPM

Audio

J1939 Infotainment (DL3)

IC | LECM

SAE J1587 (DL4)

J1939 BB1 (DL1)

ISO 14229 BB2 (DL2)

FAS

Cab

Chassis

YRS | SAS | FAS | Bendix ACC

ABS

Brake Proprietary Subnet

ACM

NOx 1 | NOx 2 | VGT

ECM

Engine subnet (DL7)

Powertrain subnet (DL9)

EGRv | DEFQS | APS | PM

TECU

LCS

DTC details

⚠ **Data link DTC: Aftertreatment Control Module**

DTC	Area	Fault	Data link	Status	Count	First occurrence
U000188	CAN Communication Backbone 2 Net	Bus off	DL2	Active	0	Not available

Close

circuit and then wiggle the wires and c
fault occurred

data link schematics

imum and maximum values on the mu

Control Unit

Battery

Operations relevant for fault tracing

Operations

Function status

3. Run Diagnostic
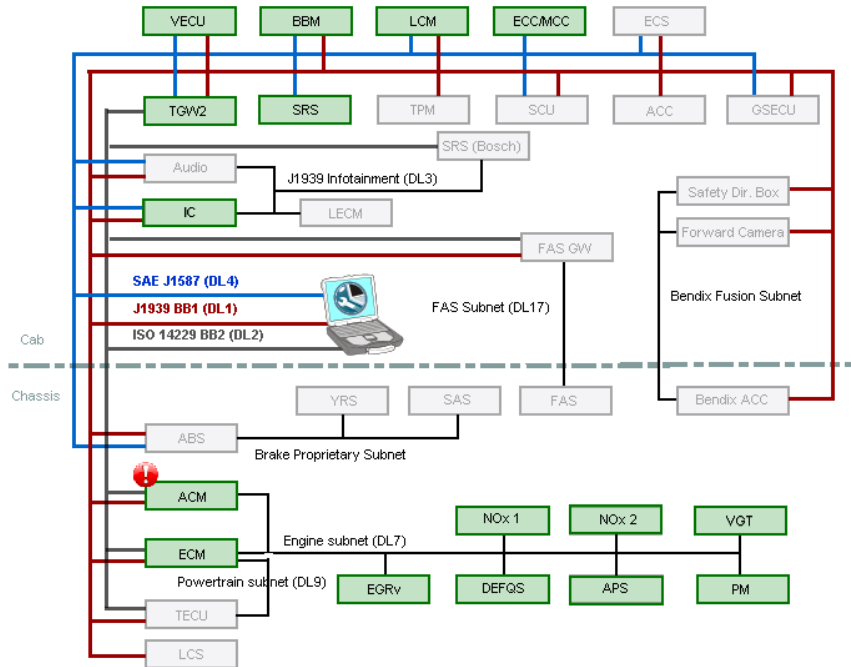
3. Run Diagnostic - Data links, fault tracing

Product Status

Filter

Information

▼ Tech tip

Fault Tracing Area

📋 Click on the schematic button and select the data link to be fault traced

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▼ Refresh status

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Product Status

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Click on the schematic button and select the data link to be fault traced

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Data link wires

Control Unit

Battery

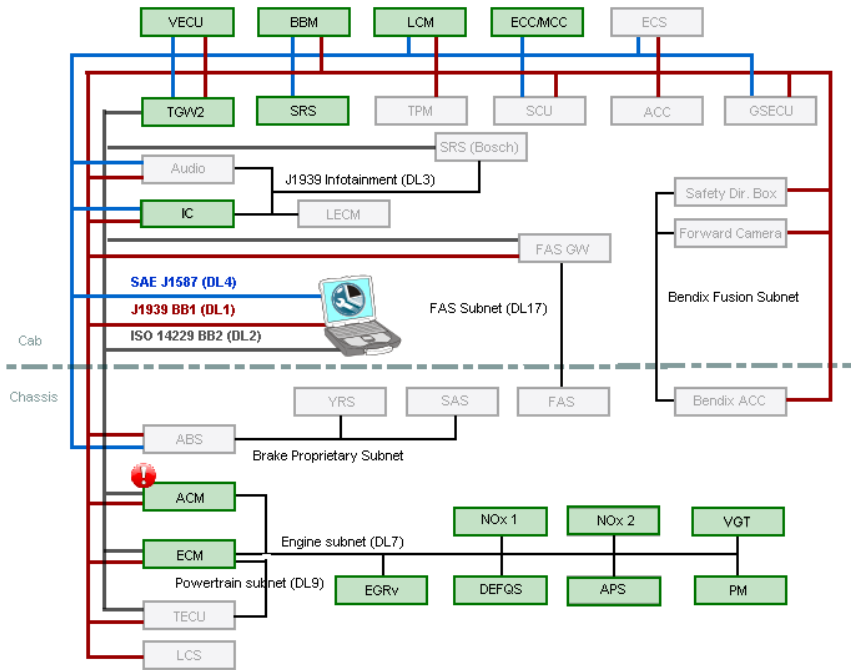### Operations relevant for fault tracing

Operations

Function status

Refresh status

3. Run Diagnostic   Exit >   Exit >   Cancel

Information

▲ Tech tip

Description, Design and Function

To fully understand the system and be able to fault trace, it is recommended to read the Description, Design and Function in IMPACT

Common data link faults

- Rubbed wires
- Pushed-back pins
- Connectors not fully connected
- Corrosion in connectors
- Control unit not powered up
- Missing or defective terminating resistor
- ECU software
- ECU hardware

Erroneous DTCs

Some DTCs are considered erroneous or erratic. Inactive DTCs that cannot be duplicated under normal vehicle operation, may be erroneous and diagnostics are not always necessary.
Erroneous data link DTCs can be caused by programming an ECU, low system voltage, poor ground connections, etc..

Non-responding Electronic Control Units

Perform a refresh using the **Function status** below to attempt to get a response from a missing <u>ECU</u>.
If an <u>ECU</u> does not respond after a function status refresh it might help to disconnect the batteries. Wait for 5 minutes and reconnect before performing a second function status refresh.

Third party Electronic Control Units (ECUs)

Some vehicles have customer added Electronic Control Units (ECUs) such as Qualcomm and PeopleNet PC
If not connected correctly to the data link network, these Electronic Control Units (ECUs) can cause communication faults. If suspected, the recommendation is to disconnect the ECUs from the data link network

Intermittent fault

To find intermittent faults, the recommendation is to use a multimeter to check for faulty connections.
For detailed information, see: Data link wires

How to start fault tracing

Analyze the system from the Product status view to determine in which area to start the fault tracing

- Non-responding Electronic Control Units
- Electronic Control Units (ECUs) with set DTCs, click on the ECUs for DTC details

Data link wires

Select a data link and click **Update view**

Check for the following:

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▼ **Connector check**

▼ **Voltage signal check**

▲ **Resistance check**

📄 **Note: Remove the voltage by disconnecting the negative wire from the battery**

Step	🖊 Positive probe	🖊 Negative probe	Expected value
1	Wire, High	Wire, High	0 Ohms (Wires, check)
2	Wire, Low	Wire, Low	0 Ohms (Wires, check)
3	Wire, High	Ground point	Open circuit
4	Wire, Low	Ground point	Open circuit
5	Wire, High	Wire, Low	50 - 70 Ohms (*Terminating resistor)

*Terminating resistor
The resistance when measuring the CAN circuit (two terminating resistors in parallel) should be approximately 50 - 70 Ohm
The resistance when measuring towards only one terminating resistor should be approximately 120 Ohm

📄 **Note:** See schematics for connector pins

🖊 Type in the measured value

1 [0] Ω

2 [0] Ω

3 [0] Ω

4 [0] Ω

5 [0] Ω

Fault Tracing Area

Click on the schematic button and select the data link to be fault traced

Click on the battery button to select the control unit or component to fault trace

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▲ **Data link wires**   ?

Select a data link and click **Update view**

Check for the following:

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▼ **Connector check**	?

▼ **Voltage signal check**	?

▼ **Resistance check**	?

▼ **Intermittent faults, test**	?

Data link wires

Select a data link and click **Update view**

Check for the following:

- Connectors not fully connected
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▼ Connector check	?

▼ Voltage signal check	?

▼ Resistance check	?

▲ Intermittent faults, test ✓

Intermittent faults might be found by connecting a multimeter into the circuit and then wiggle the wires and connectors.
A test drive may also be needed to recreate the conditions when the fault occurred

1. Set the multimeter to appropiate setting
2. Connect the tools according to the information in the choosen data link schematics
3. Once reading the values, press the MIN/MAX button
4. Wiggle the wires or perform a test drive while notifying the minimum and maximum values on the multimeter to find a bad contact