

Chassis ID	Path /Diagnostics/FM, CHID CKD882147-/Data links, fault tracing
Model	Identity 119792982
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Data links, fault tracing

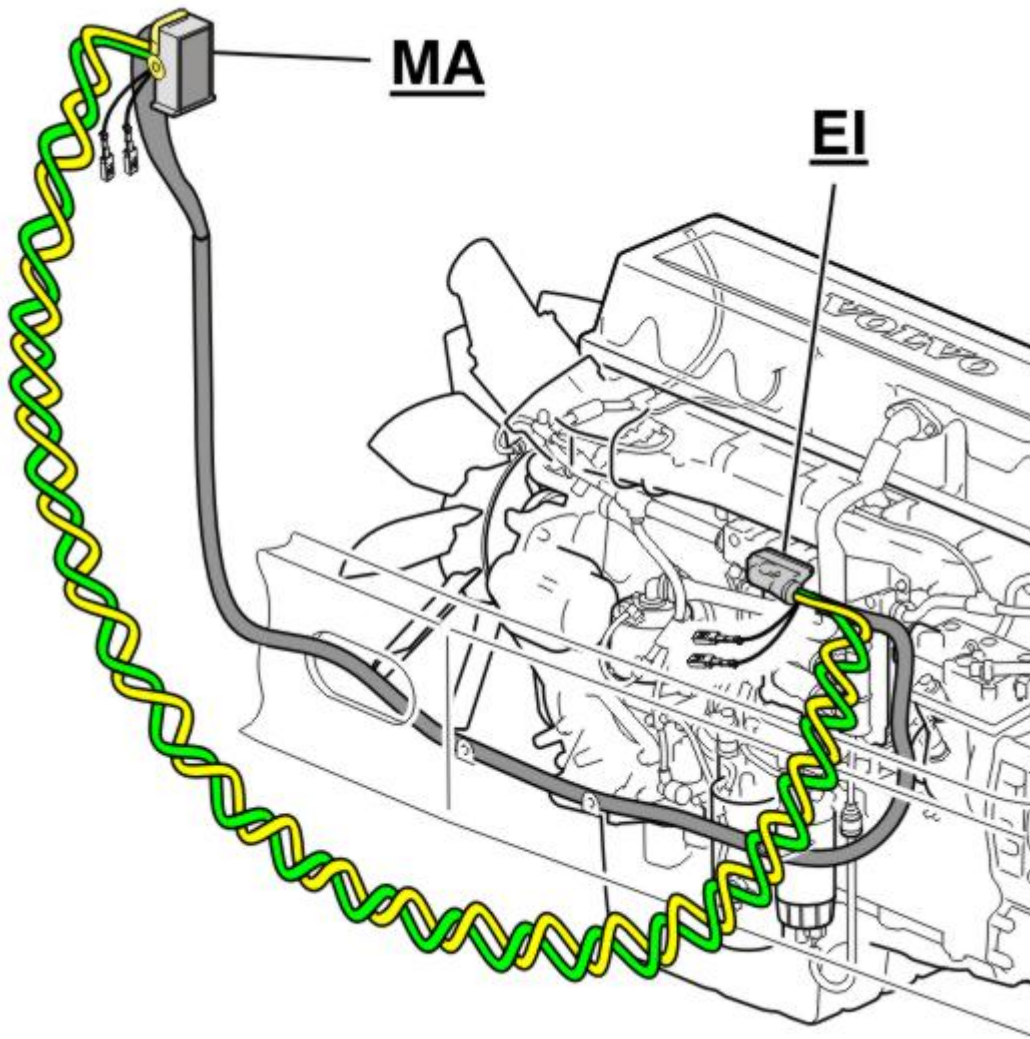
The control units share information via two different data links, the SAE J1587/J1708 information link and the SAE J1939 Control link.

Messages on the SAE J1587/J1708 information link include fault codes and warning messages. The SAE J1587/J1708 link also, in some cases, acts as a back-up for SAE J1939. VCADS Pro communicates only on SAE J1587/J1708.

SAE J1939 is a faster link and can therefore send more time critical data. SAE J1939 is used to send data which the system uses for control functions, for example engine rpm.

Fault tracing tips:

- Look at the entire system, check which other fault codes have been set, particularly at what time they were set.
- An active fault in the brake system remains active until the starter key is turned to the stop position. Always ensure that the brake control unit has reset its fault codes.
- If several control units set **active** fault code SID 231 SAE J1939 Control link, the connector for one of the control units which sets fault code SID 231 can be disconnected and the other systems can be checked to ensure they function correctly. This is to investigate whether the fault is in the control unit. The other control units will report that they are not receiving information from the control unit which is disconnected. If the fault remains, disconnect the next control unit which has fault code SID 231. Keep in mind that the engine may not start if some control units are disconnected.
- Measure the resistance of the data link cables [Resistance measurement](#).
- **If the fault is intermittent, it is most likely that the fault is in the cable harness or in the connectors.** Refer to service information function group 371, information type diagnostics Wiring and connectors, fault tracing.
- For intermittent faults, VCADS Pro test 17004–3 Fault codes, test mode can be started to carry out fault tracing in the system. (It is important that all fault codes are deleted before testing).
- Check data link cables for open circuits [Cable measurement](#).



If you think you know where the fault might be, but do not want to replace the cable harness immediately, you can make a test cable and connect it in parallel. The existing pins must be pinned out.

Checks:

- [SAE J1587/J1708 Information link, fault tracing](#)
- [SAE J1939 Control link, fault tracing](#)

Assembly MID-number

MID 128	Engine control unit (EMS/EECU)
MID 130	Gearbox control unit (TECU)
MID 136	Brake control unit (ABS/EBS)
MID 140	Instrumentation
MID 141	Dynafleet Gateway (TGW)
MID 142	Volvo Link
MID 144	Vehicle control unit (VECU)
MID 146	Climate unit

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MID 150	Air suspension (ECS)
MID 163	Electronic immobiliser
MID 166	Tyre pressure monitoring (TPM)
MID 179	Control unit FMS Gateway
MID 184	Electronically controlled bogie axle (RAS)
MID 203	Fleet management system
MID 204	Control unit Lane Change Support (LCS)
MID 206	Radio
MID 214	Control unit burglar alarm (ACM)
MID 216	Control unit external lighting (LCM)
MID 219	Adaptive cruise control, control unit (ACC)
MID 220	Tachograph
MID 222	Retarder control unit (RECU)
MID 223	Gear selector control unit (GECU)
MID 231	Mobile communication unit
MID 232	Supplemental restraint system, control unit (SRS)
MID 238	Driver Assistance Control Unit (DACU)
MID 248	Lane Keeping Support (LKS)
MID 249	Body builder module (BBM)
MID 250	Steering wheel functions (SWM)

Explanation J1939 sub-network

J1939-1	Main network SAE J1939
J1939-2	Part of SAE J1939 under the vehicle control unit
J1939-3	Part of SAE J1939 under instrumentation
J1939-4	Part of SAE J1939 under body builder module
J1939-5	Part of SAE J1939 under gearbox control unit (only I-shift)
J1939-6	Part of SAE J1939 under the control unit adaptive cruise control
J1939-7	Part of SAE J1939 under the engine control unit.
J1939-8	Part of SAE J1939 under DACU.

SAE J1587/J1708

For checking, see [SAE J1587/J1708 Information link, fault tracing](#).

SAE J1587/J1708 is used, among other things, to send fault code information. Disturbance on SAE J1587/J1708 can affect the fault code reading, which can cause problems when reading off the fault code. It can also be difficult to communicate with the source of the fault in order to carry out tests using VCADS Pro. A simple way to check whether VCADS Pro has contact with all control units on the SAE J1587/J1708 link is 17034-3 Vehicle information, test. A fault on SAE J1587/J1708 means that a fault code is probably not set by the control unit which is faulty.

Note: It is important to know which control units the vehicle is equipped with and which fault codes each control unit sets.

There are several types of faults which set a fault code for the SAE J1587/J1708 link (SID 250). If a control unit sets a fault code, there probably is not a fault in that control unit. The fault can be an open circuit or a short circuit in the cable harness at one or more places. To exclude an open circuit in the cable harness, check the voltage level at each control unit, see [SAE J1587/J1708 Information link, fault tracing](#).

Fault codes on the SAE J1587/J1708 link (SID 250) can also be due to another control unit not sending information. The reason for this may be faults in components connected to the other control unit. All other fault codes should therefore be rectified before fault tracing on the link is begun.

Note: To differentiate between J1587/J1708 faults and J1939 faults, different FMI's are used for communication faults on the J1587/J1708 link. FMI9 is used for J1939 and FMI12 for J1587/J1708.

In this case, FMI12 indicates primarily a communication fault rather than a component fault!

[Explanation PSID 200 - 215 FMI 12](#)

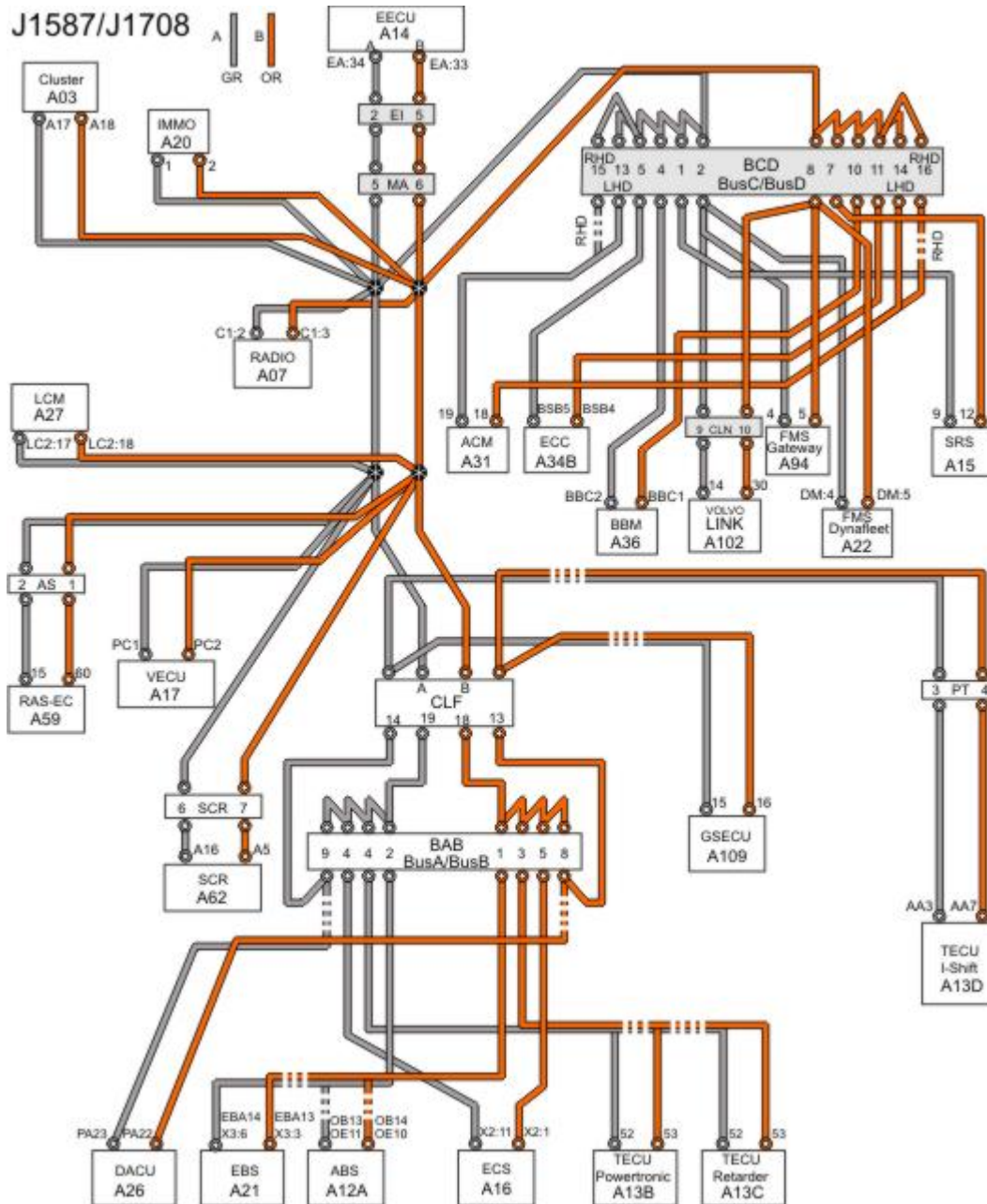
PSID 200	Communication interference, data link, engine control unit
PSID 201	Communication interference, data link, vehicle control unit
PSID 202	Communication interference, data link, instrumentation
PSID 203	Reserved for future use
PSID 204	Communication interference, data link, brake control unit
PSID 205	Communication interference, data link, gearbox control unit
PSID 206	Communication interference, data link, retarder control unit
PSID 207	Communication interference, data link, gear selector control unit
PSID 208	Communication interference, data link, air suspension
PSID 209	Reserved for future use
PSID 210	Communication interference, data link, external lighting control unit
PSID 211	Communication interference, data link, adaptive cruise control
PSID 212	Communication interference, data link, tachograph
PSID 214	Communication interference, data link, body-builder module
PSID 215	Communication interference, data link, electronically steered bogie axle
PSID 233	Communication interference, data link, electrical immobilizer
PSID 234	Communication interference, data link, burglar alarm control unit
PSID 235	Communication interference, data link, air bag control unit
PSID 236	Communication interference, data link, FMS Gateway control unit

PSID 238 Communication interference, data link, climate control unit

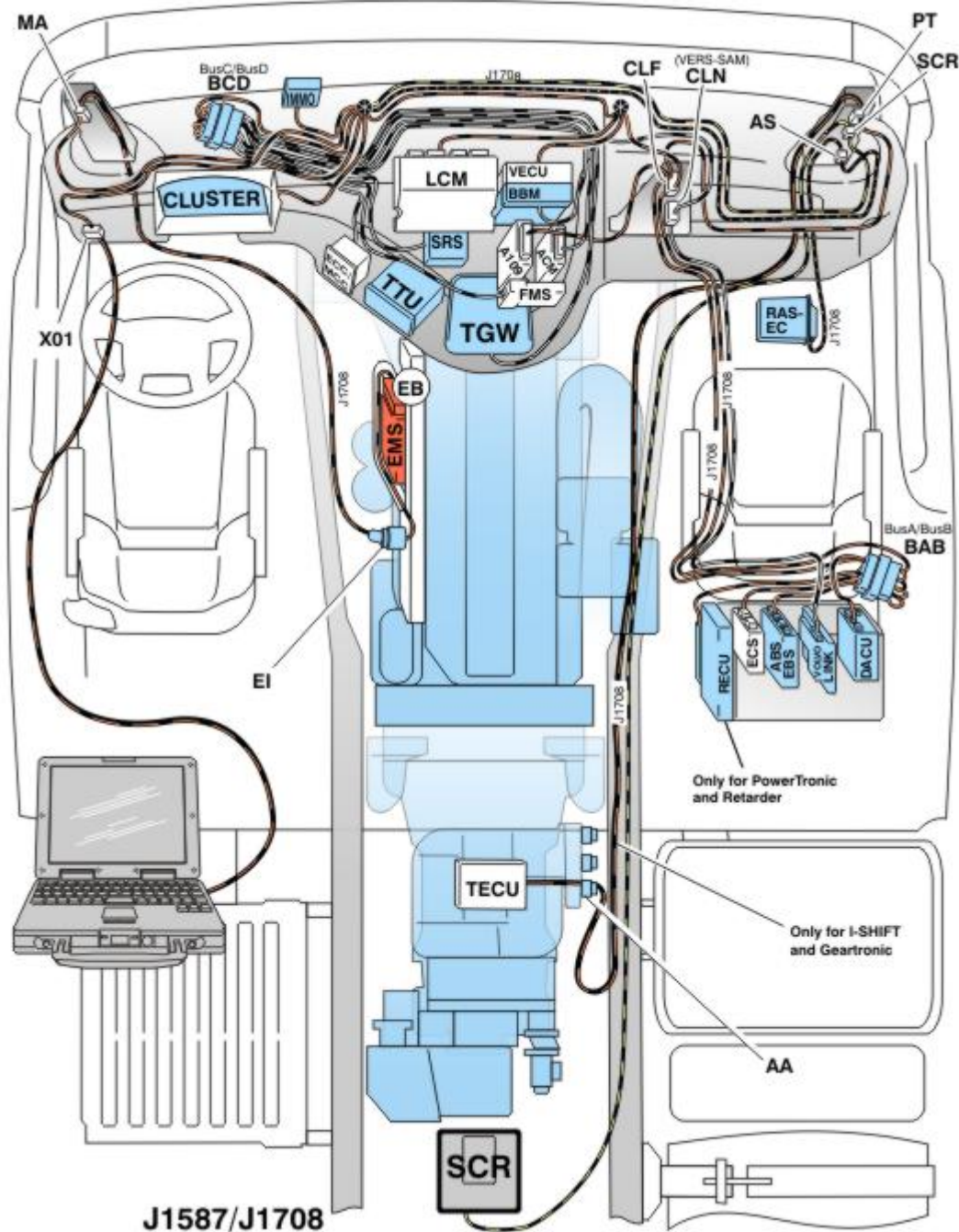
PSID 239 Communication interference, data link, Volvo link

Wiring diagram SAE J1587/J1708

Note: Always check against the relevant wiring diagram.



Wiring harness SAE J1587/J1708



SAE J1939

For checking, see [SAE J1939 Control link, fault tracing](#).

Information on the SAE J1939 data link is used by control functions. SAE J1939 diagnosis has therefore been expanded and supplemented with additional fault codes to give more precise fault information. The fault codes are sent on the SAE J1587/J1708 link.

If control unit A does not receive messages from another control unit, control unit B, fault codes PSID 200-215 are used to point out which control unit B messages are not received from. If control unit B loses contact with the link, several other control units will set a fault code which points to control unit B.

Example:

If there is an interruption on the SAE J1939 link at the vehicle control unit (MID 144), connector PC, messages from the vehicle control unit do not reach other control units on SAE J1939. Instrumentation and the brake control unit use messages from the vehicle control unit. When messages do not arrive,

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instrumentation and the brake control unit set a fault code. Instrumentation sets fault code MID 140 PSID 201 FMI 9 and the brake control unit sets MID 136 PSID 201 FMI 9.

PSID 201 is set by both instrumentation and the brake control unit and points to the vehicle control unit. This can be used to find a fault on the control link. If the fault is in the cable harness, the continued contact between specific control units can be used to exclude parts of the cable harness. A fault code is also set on the SAE J1939 link (SID 231) for some faults on the SAE J1939 link.

Note: Inactive fault codes (PSID 200–215 FMI 9) are not shown in the instrument. Can only be read in VCADS Pro.

Note: It is important to know which control units the vehicle is equipped with and which fault codes each control unit sets.

Explanation SID 231/PSID 232 FMI 2

SID 231 The identified control unit cannot communicate with other systems on J1939–1

PSID 232 The identified control unit cannot communicate on sub network J1939–2 to 5

Explanation PSID 200 - 215 FMI 9

PSID 200 Communication interference, data link, engine control unit

PSID 201 Communication interference, data link, vehicle control unit

PSID 202 Communication interference, data link, instrumentation

PSID 203 Reserved for future use

PSID 204 Communication interference, data link, brake control unit

PSID 205 Communication interference, data link, gearbox control unit

PSID 206 Communication interference, data link, retarder control unit

PSID 207 Communication interference, data link, gear selector control unit

PSID 208 Communication interference, data link, air suspension

PSID 209 Reserved for future use

PSID 210 Communication interference, data link, external lighting control unit

PSID 211 Communication interference, data link, adaptive cruise control

PSID 212 Communication interference, data link, tachograph

PSID 213 Communication interference, data link, mobile communication unit

PSID 214 Communication interference, data link, body-builder module

PSID 215 Communication interference, data link, electronically steered bogie axle

PSID 237 Communication disturbance data link, Dynafleet Gateway (TGW)

PSID 242 Communication disturbance data link, Lane Keeping Support (LKS)

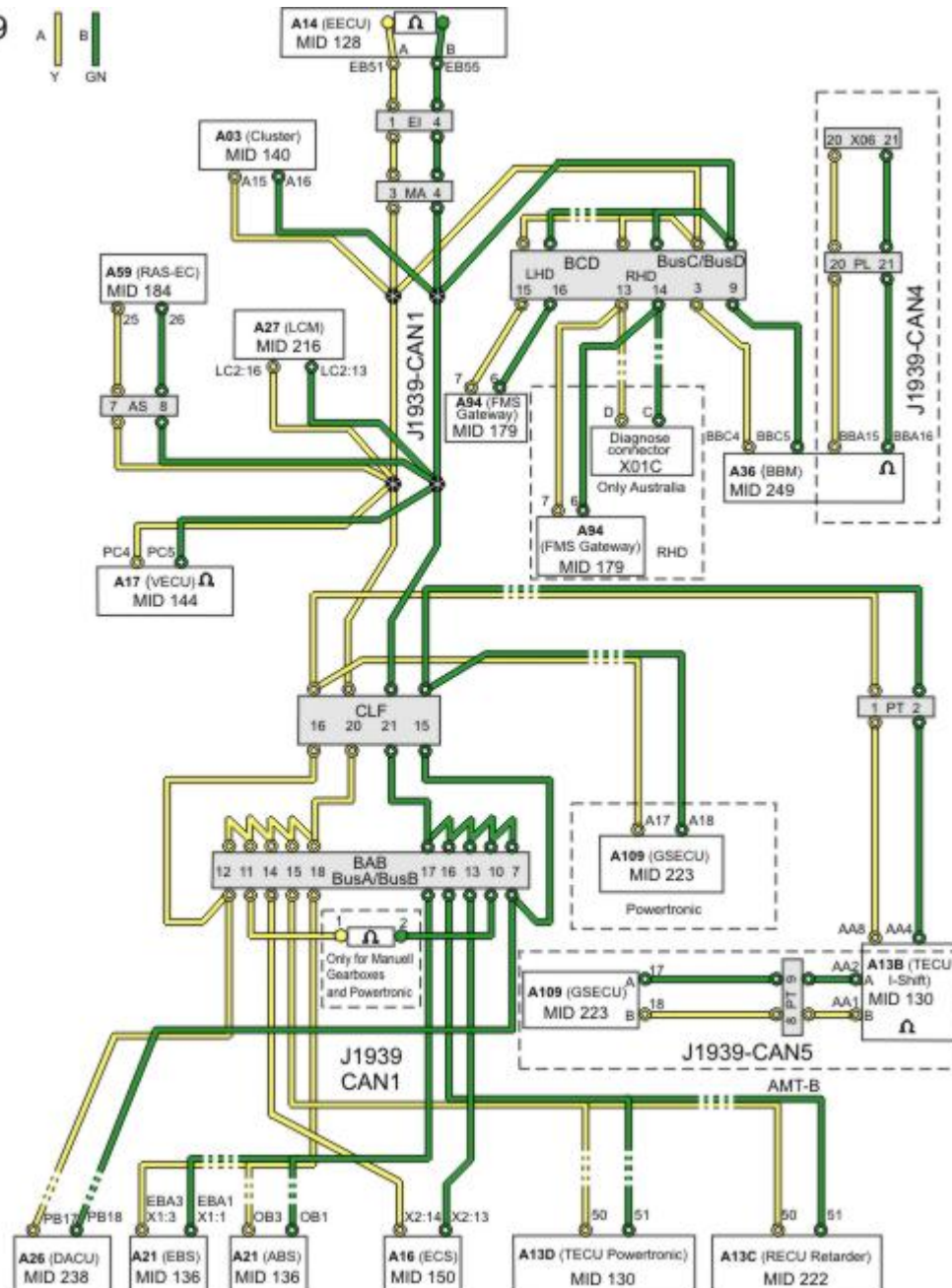
PSID 250 Communication disturbance data link, Driver Assistance Control Unit (DACU)

Wiring diagram J1939 CAN1, 4, 5

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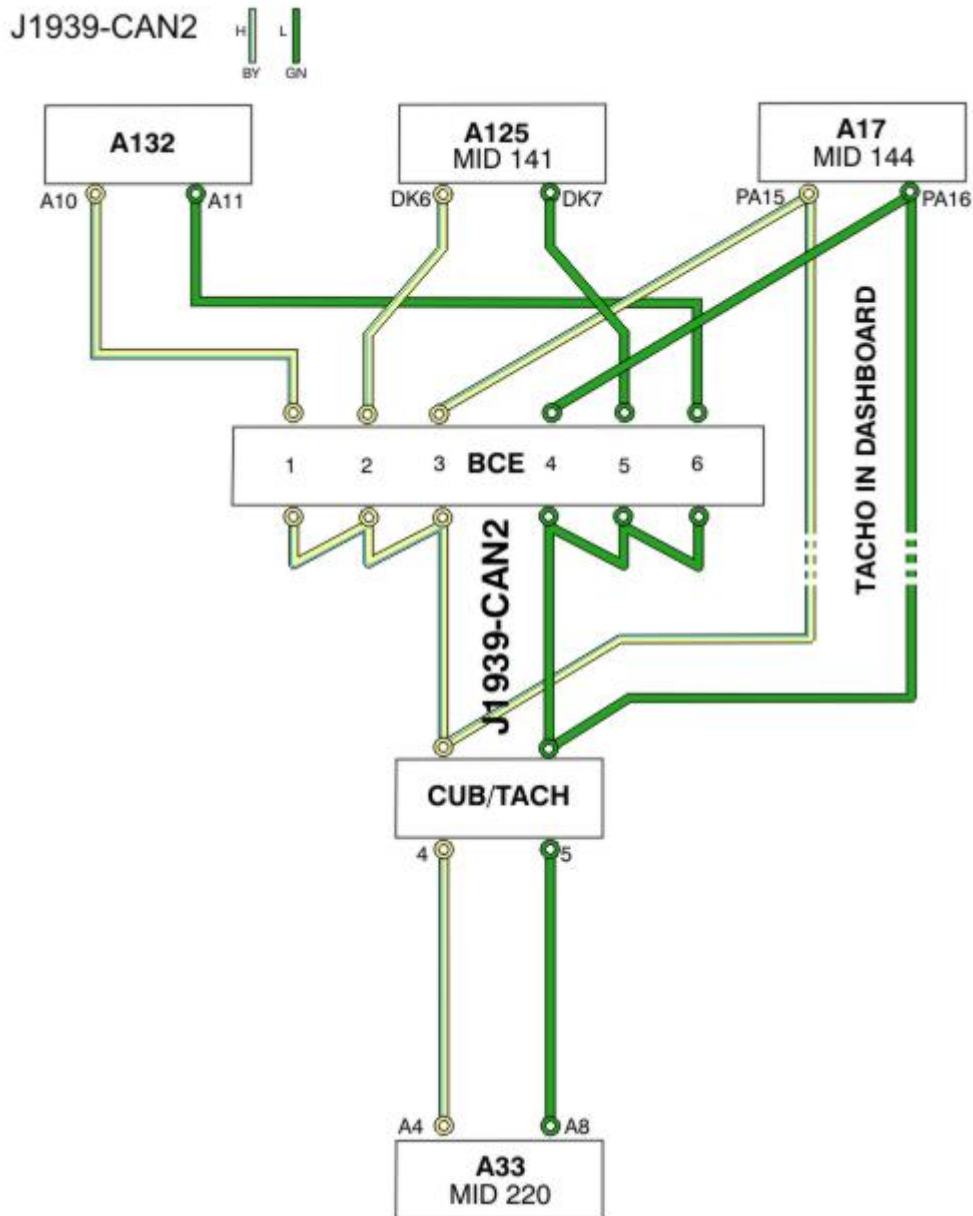
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J1939



Wiring diagram J1939 CAN2

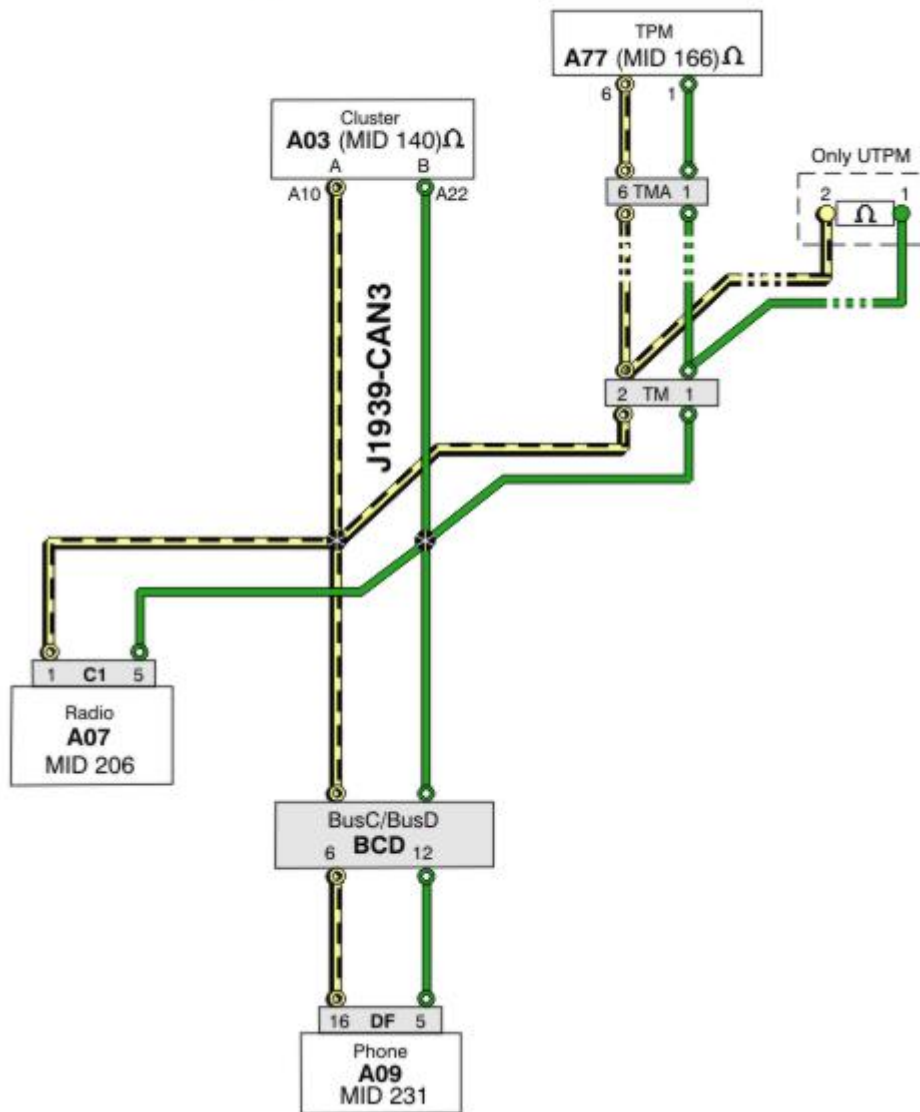
Note: Always check against the relevant wiring diagram.



Wiring diagram J1939 CAN3

Note: Always check against the relevant wiring diagram.

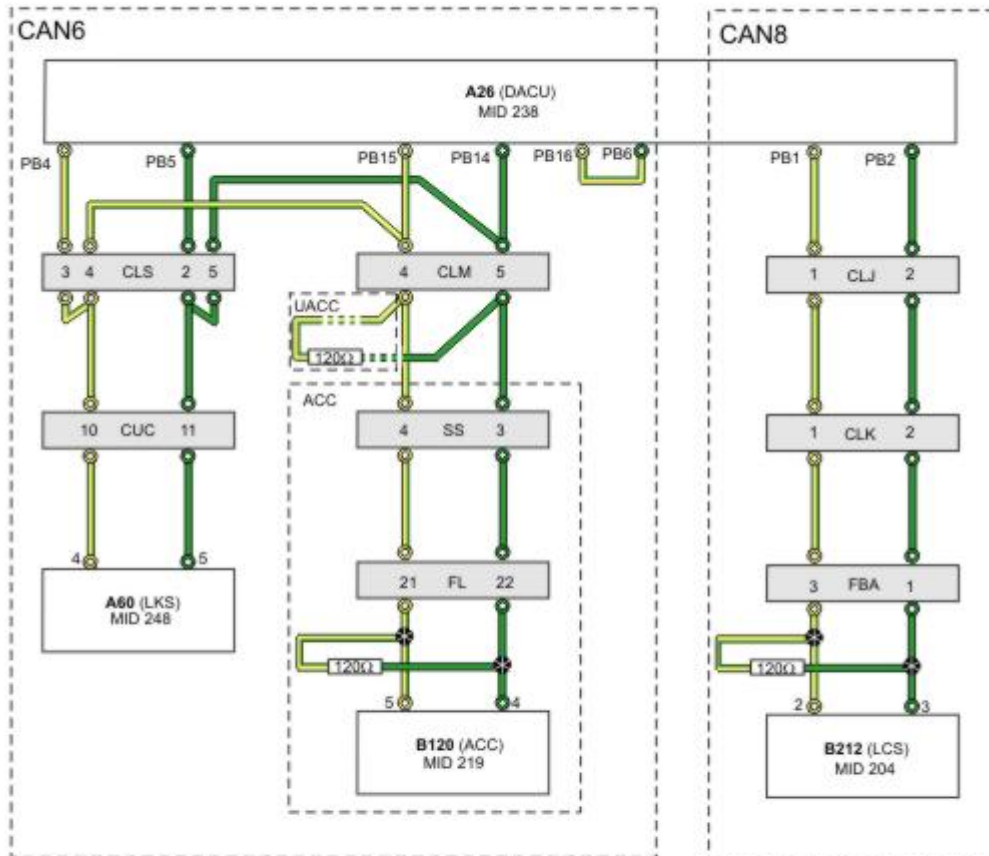
J1939-CAN3



Wiring diagram J1939 CAN6, CAN8

Note: Always check against the relevant wiring diagram.

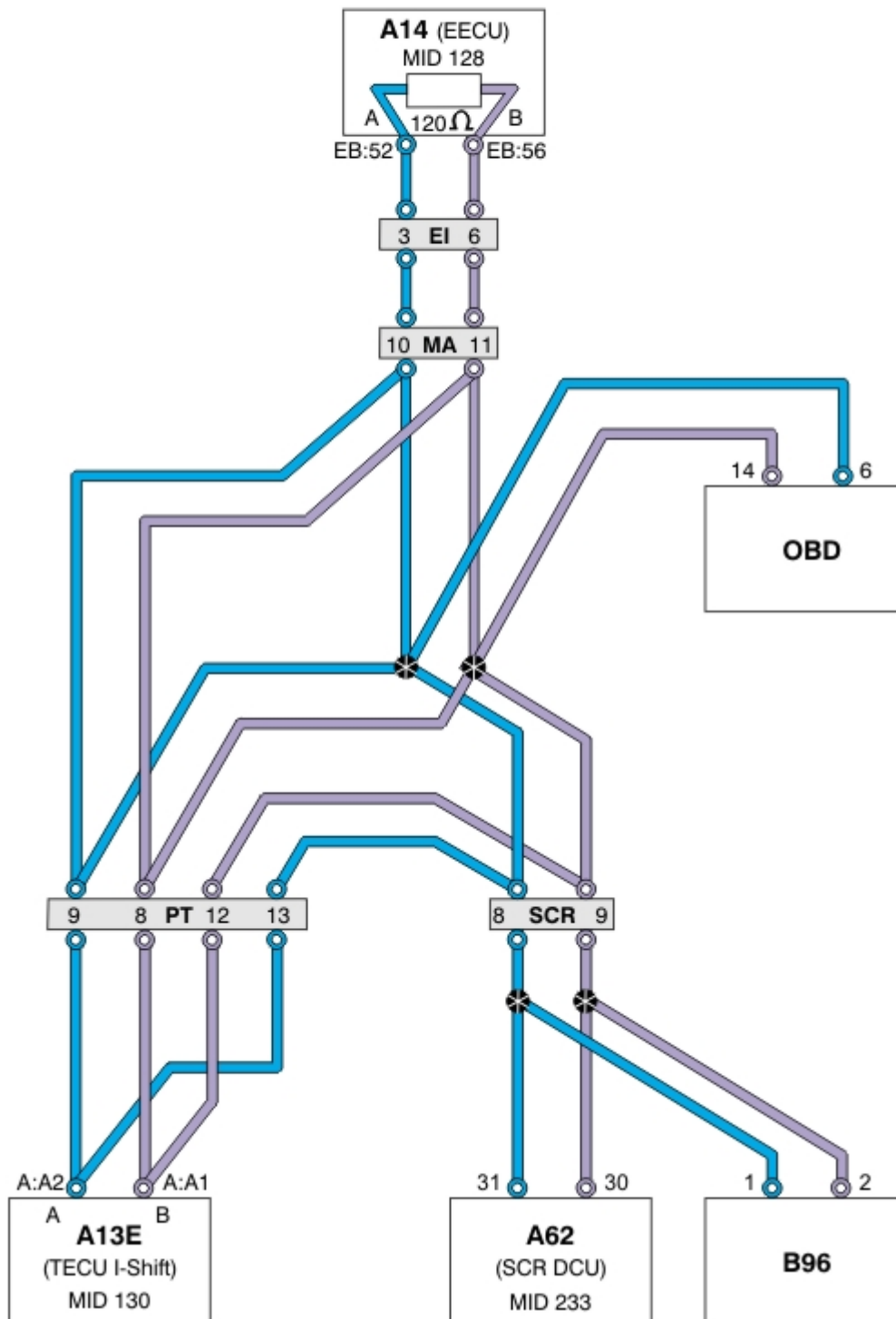
J1939-CAN6, CAN8



Wiring diagram J1939 CAN7

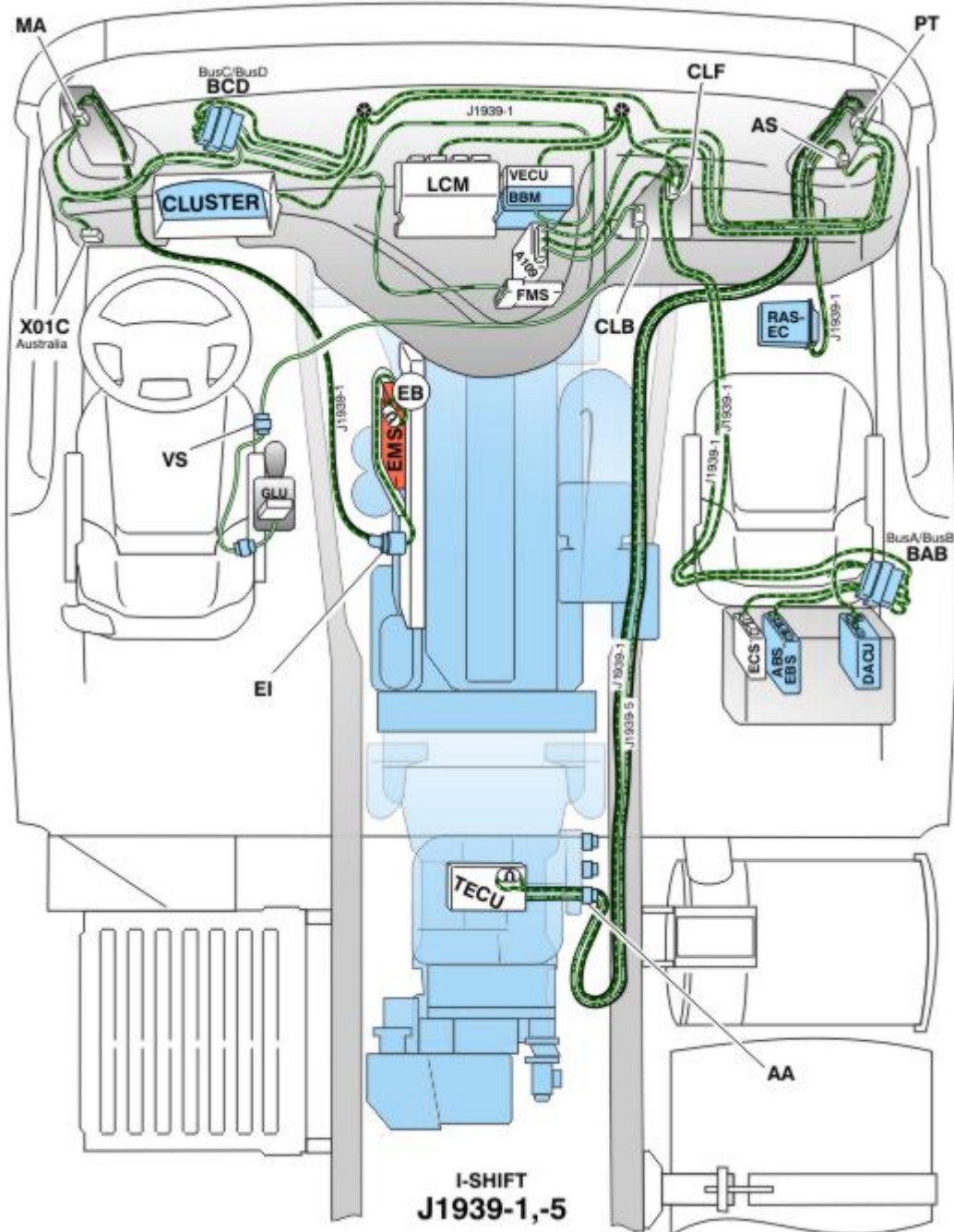
Note: Always check against the relevant wiring diagram.

J1939-CAN7

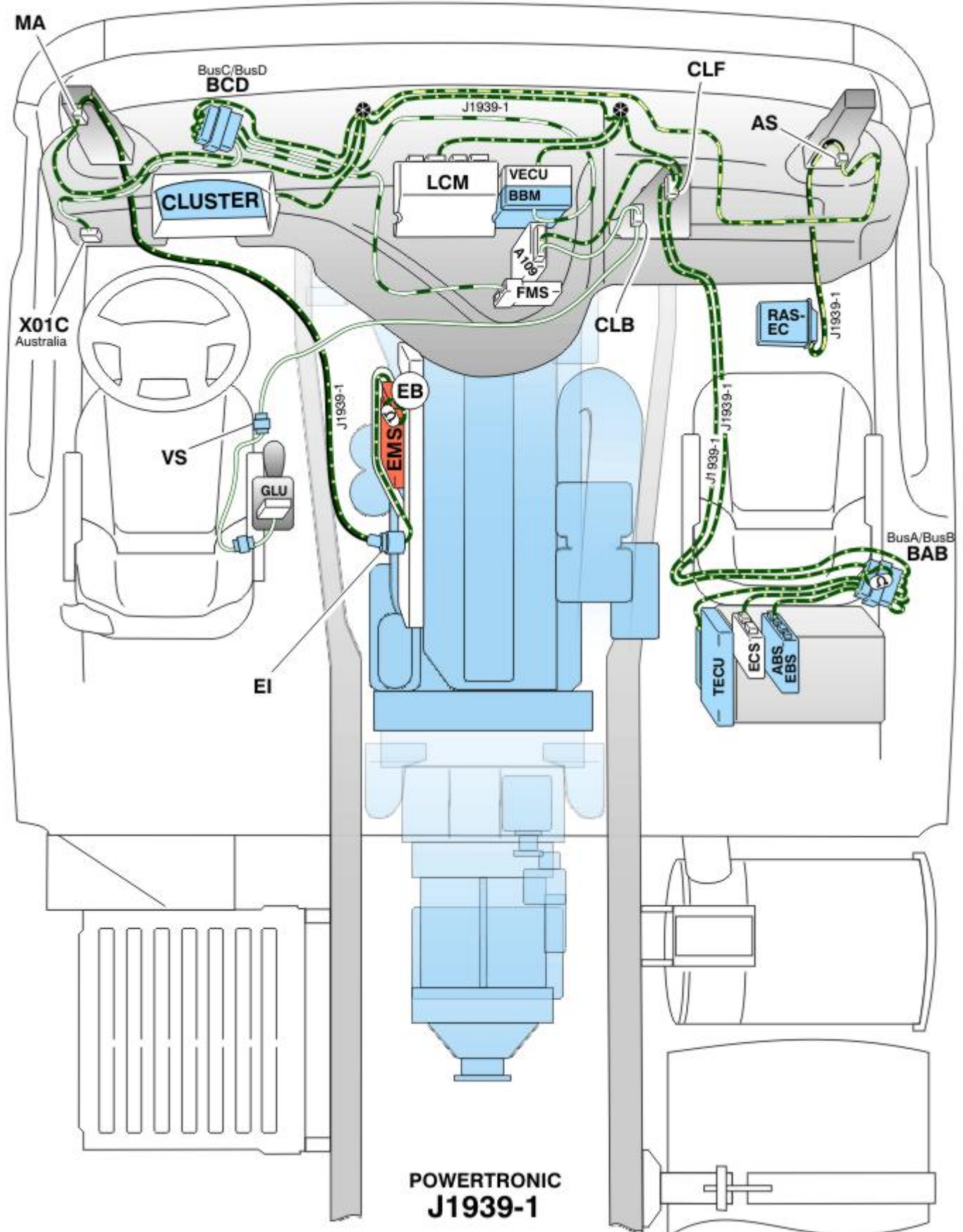


Cable harnesses J1939

I-SHIFT



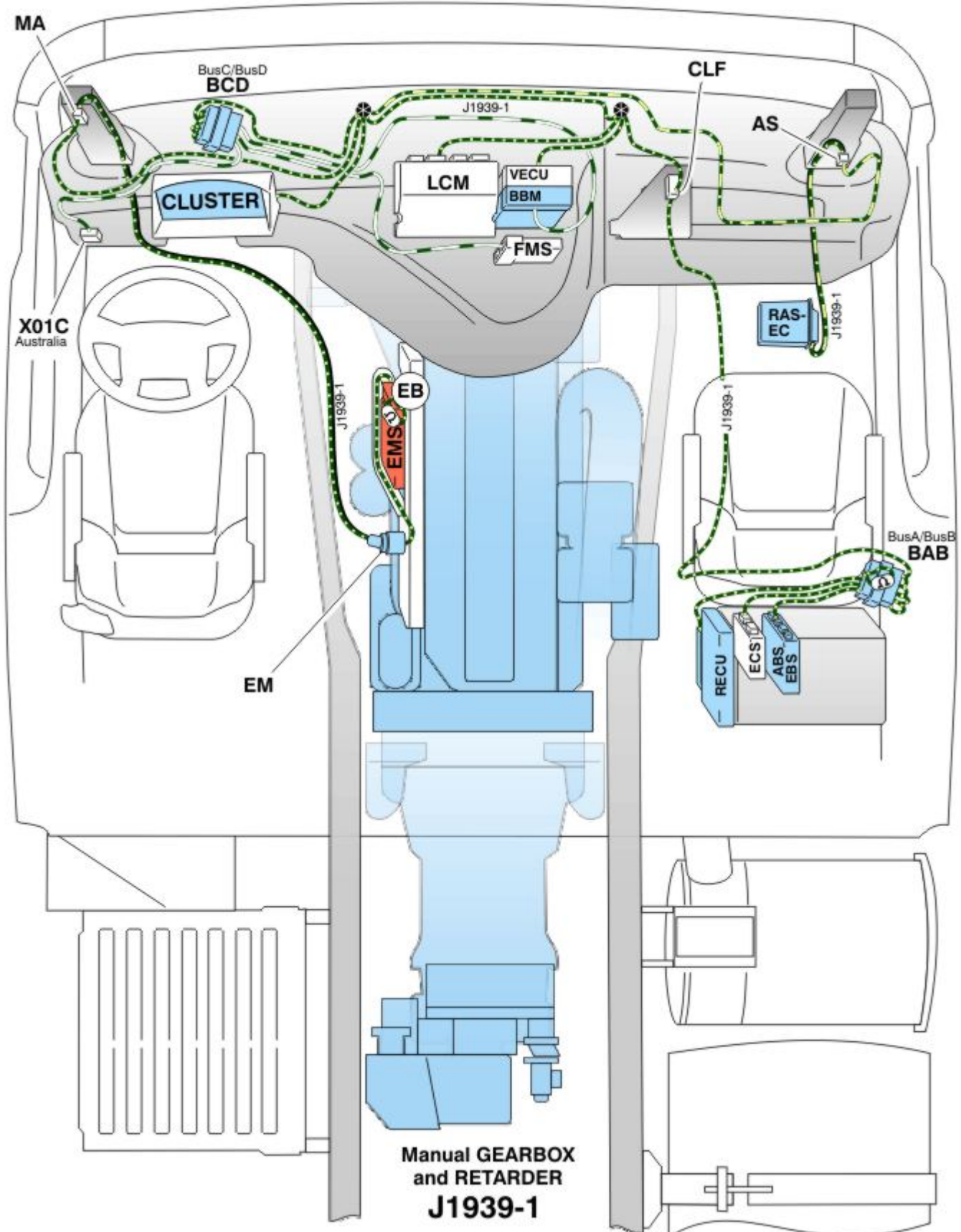
Cable harnesses J1939 POWERTRONIC



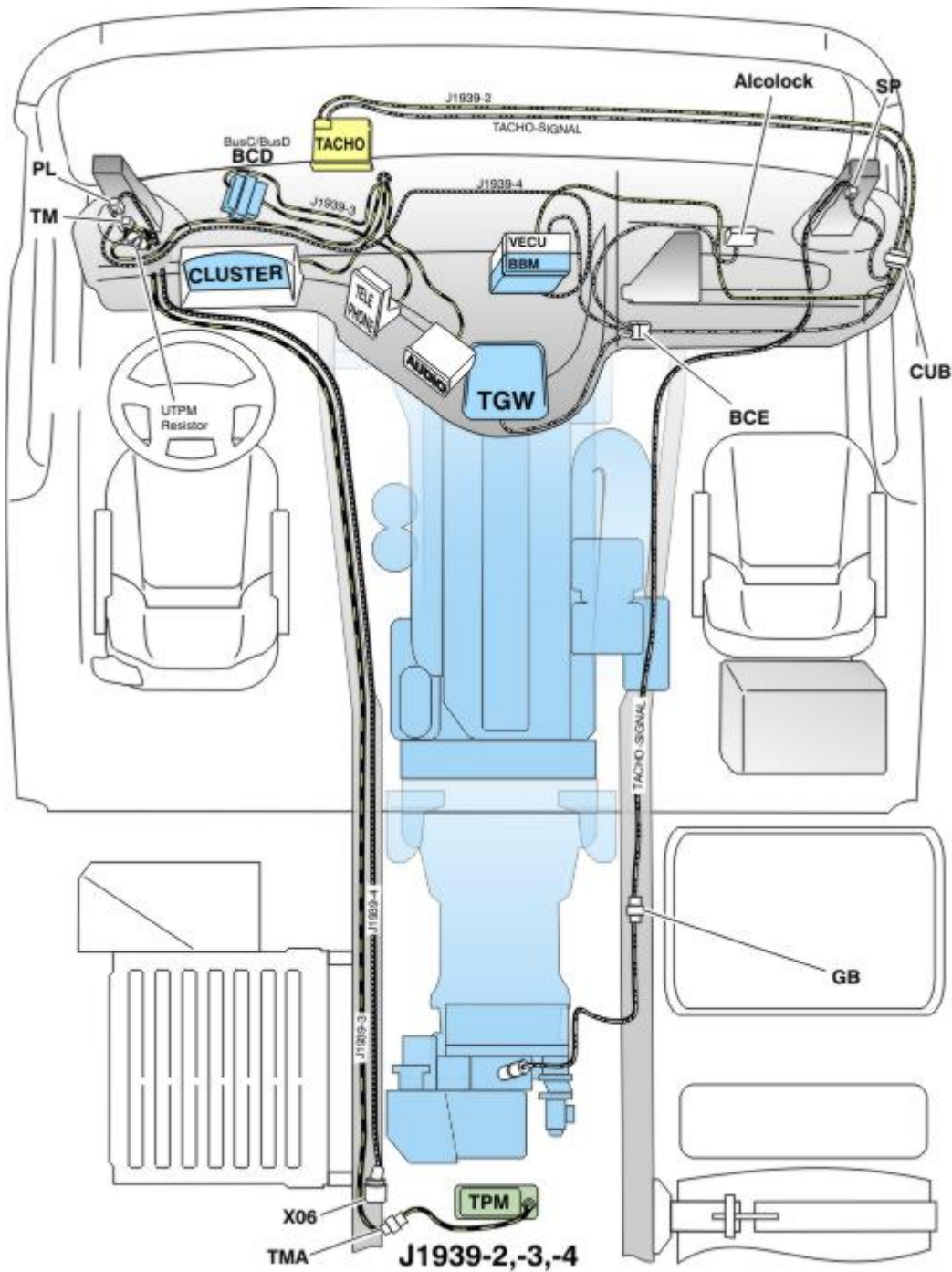
Cable harnesses J1939 MANUAL GEARBOX RETARDER

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Cable harnesses J1939 2,-3,-4



Cable harnesses J1939 6,-7,-8

