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# SERVICE BULLETIN

| Classification: | Reference: | Date: |
|---|---|---|
| EL13-007a | NTB13-027a | August 22, 2013 |

# 2005-2013 NISSAN; CAN COMMUNICATION – NETWORK DIAGNOSTIC FLOW CHART

**Bulletin amended to change End Diagnosis 5 to 4 and End Diagnosis 6 to 5.**
**No other changes have been made to the body of this bulletin. Discard previous versions.**

**APPLIED VEHICLES:** All 2005 – 2013MY Nissan Vehicles

## SERVICE INFORMATION

This TSB is for troubleshooting of CAN Modules with "Diag-On-CAN" Diagnostics. The flow charts below are meant to troubleshoot current CAN DTCs. The flow charts are intended to diagnose one module at a time; repeat the process as needed for additional control units.

Definition of CAN Codes:

U1000 – missing ECM CAN communications not related to OBD2 system

U1000 – missing CAN communications for all other ECUs

U1001 – missing ECM CAN communications related to OBD2 system

U1002 – similar to U1000, but has a tighter timing spec to set the DTC

U1010 – Module has internal Issues

## CLAIMS INFORMATION

### Submit a Primary Part (PFP) type line claim using the following claims coding:

| OP NAME | OP CODE | FRT |
|---|---|---|
| CAN DIAGONSIS End Diag 1 | RX3DAA | 0.5 |
| CAN DIAGONSIS End Diag 2 | RC3FAA | 1.0 |
| CAN DIAGONSIS End Diag 3 | RC3HAA | 2.0 |
| CAN DIAGONSIS End Diag 4 | RC3MAA | 4.0 |
| CAN DIAGONSIS End Diag 5 | RC3PAA | 5.0 |

* The PFP should be the part number of the component that was diagnosed with issues and replaced.
* These operation codes cannot be claimed alone. They must be claimed in combination with the replacement of the diagnosed component.
* Use the appropriate Symptom and Diagnosis code which applies to the replaced component.

Nissan Bulletins are intended for use by qualified technicians, not 'do-it-yourselfers'. Qualified technicians are properly trained individuals who have the equipment, tools, safety instruction, and know-how to do a job properly and safely. NOTE: If you believe that a described condition may apply to a particular vehicle, DO NOT assume that it does. See your Nissan dealer to determine if this applies to your vehicle.

**Helpful Tips:**

- Always diagnose CAN communication codes first, U1000, U1001, U1002, U1010, then network codes, UXXXX, and then all other codes.
- A quick method to test CAN communications is to operate the vehicle's functions such as Hazards, Brakes, Tachometer, PRNDL, Speedometer, 4WD, Difflock, Seat Memory, Power Back Door or High Beams.
- In a low voltage situation (less than 10V), modules will stop communicating at different voltages.
- Integrated Power Distribution Module (IPDM) is a smart relay and fuse box. It powers other modules in the same way fuses and relays do.
- CAN voltages can be checked via CONSULT.
- Missing "Ignition 2" fuse or other high level fuses can cause CAN Diag Support Monitor to not work.
- High level fuses such as "Ignition 1", "Ignition 2" and "Elec B" power many modules.
- Pins/terminals can be bent and still pass visual inspection.
- When troubleshooting a harness that has multiple inline connections, section off the harness and isolate it one portion at a time. Add a terminating resistor to the end of the harness in substitution of the terminating modules.
- If a module has multiple connectors, disconnect one at a time.

**NOTE:** 120 ohm resistors may be needed to perform diagnostics.

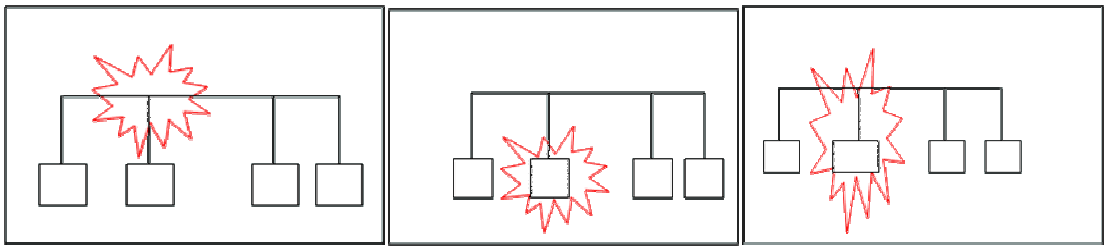
**Normal CAN Measurements**

| CAN | HI-LO | HI-GND | LO-GND |
|---|---|---|---|
| Normal Resistance measurement | 60Ω | kΩ-OC * | kΩ-OC * |

* kΩ = kilo Ohms, OC = open circuit

**Main Types of Issues:**

**Harness Issue** **Module Issue** **Harness & Module Issue**

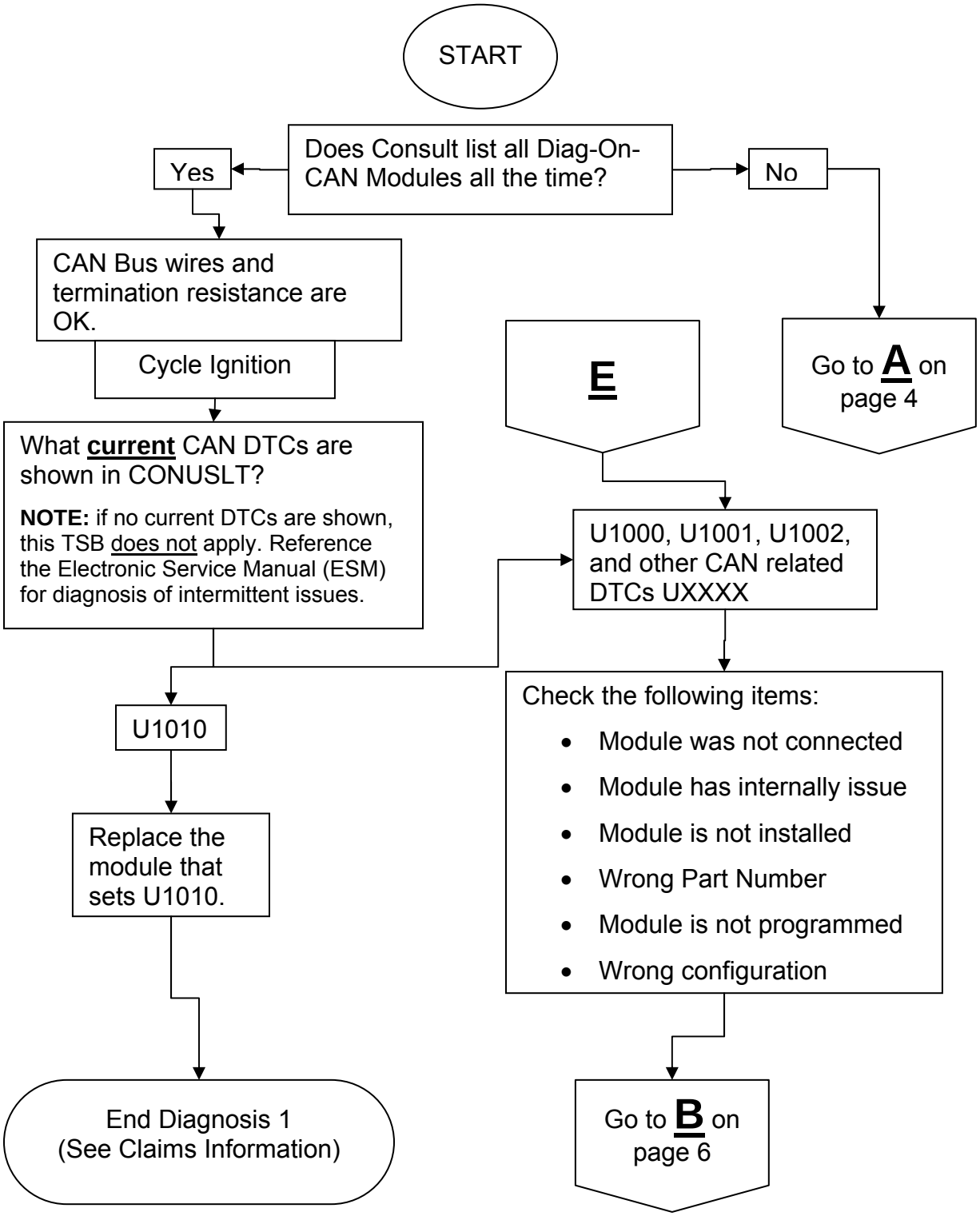


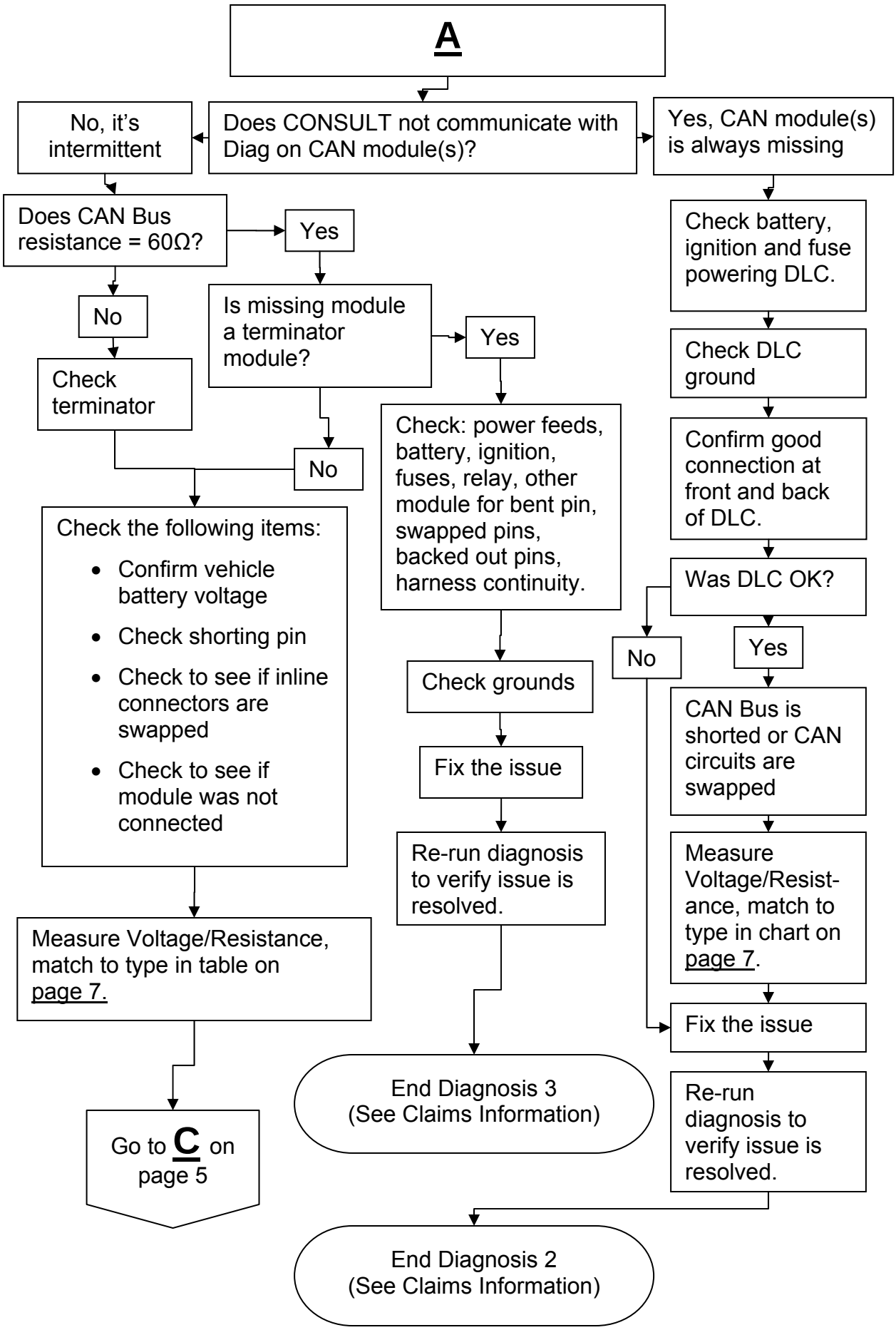
**NOTE: DO NOT REPLACE ANY COMPONENTS UNLESS IT IS SUPPORTED BY DIAGNOSIS**

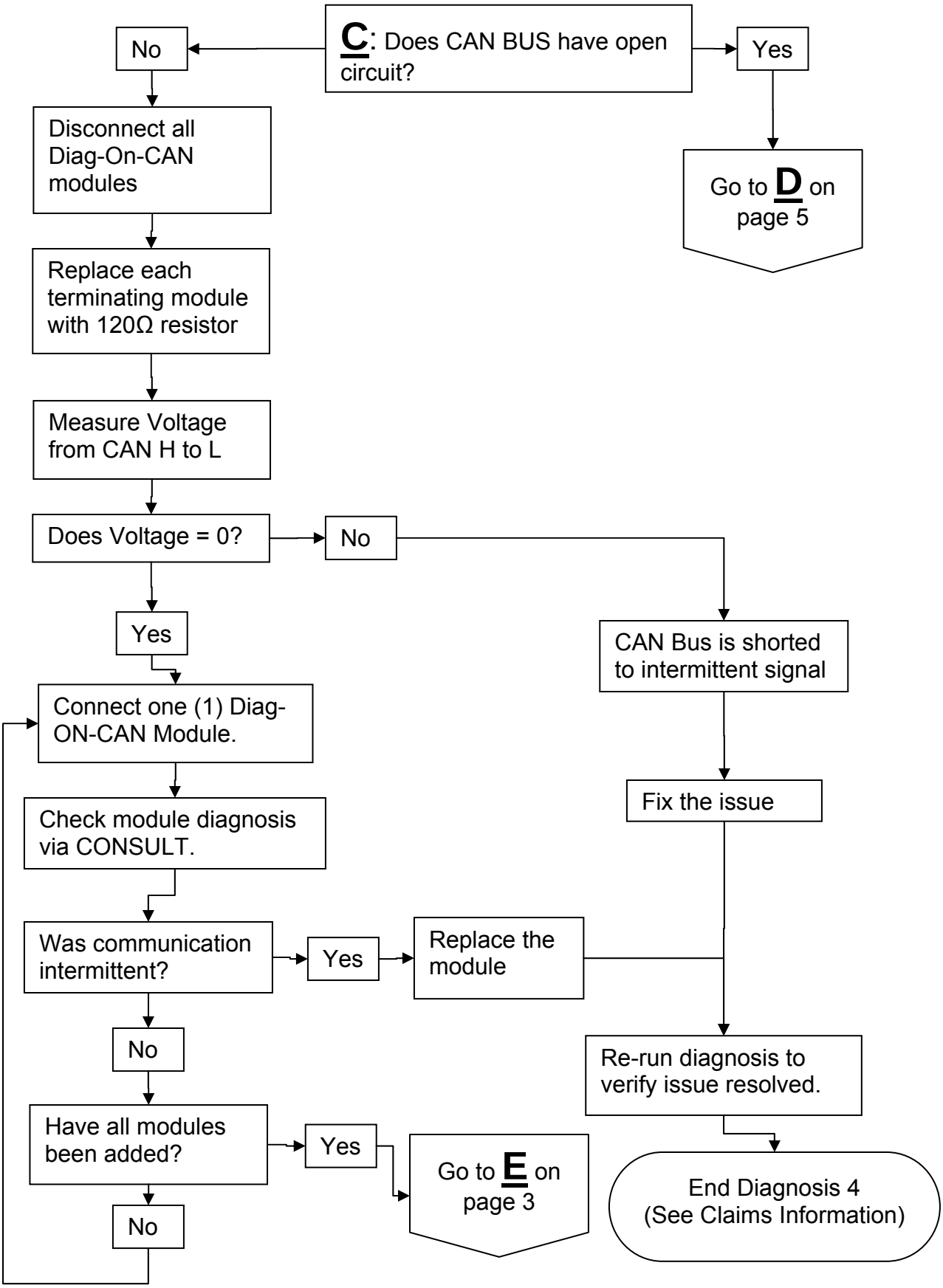
**NOTE:** Use legend below for flow charts on pages 3-6 and Table A on page 7.

**OC**=Open Circuit; **SC**=Short Circuit; **H**=High; **L**=Low; **Mid**=Middle; **Term**=Terminating; **V**=voltage; **DLC**=data link connector

**Troubleshooting Flowchart**




A
Does CONSULT not communicate with Diag on CAN module(s)?
No, it's intermittent
Yes, CAN module(s) is always missing
Does CAN Bus resistance = 60Ω?
Yes
No
Check terminator
Is missing module a terminator module?
Yes
No
Check the following items:
Confirm vehicle battery voltage
Check shorting pin
Check to see if inline connectors are swapped
Check to see if module was not connected
Measure Voltage/Resistance, match to type in table on page 7.
Go to C on page 5
Check: power feeds, battery, ignition, fuses, relay, other module for bent pin, swapped pins, backed out pins, harness continuity.
Check grounds
Fix the issue
Re-run diagnosis to verify issue is resolved.
End Diagnosis 3 (See Claims Information)
Check battery, ignition and fuse powering DLC.
Check DLC ground
Confirm good connection at front and back of DLC.
Was DLC OK?
No
Yes
CAN Bus is shorted or CAN circuits are swapped
Measure Voltage/Resist-ance, match to type in chart on page 7.
Fix the issue
Re-run diagnosis to verify issue is resolved.
End Diagnosis 2 (See Claims Information)


C: Does CAN BUS have open circuit?
No
Yes
Disconnect all Diag-On-CAN modules
Go to D on page 5
Replace each terminating module with 120Ω resistor
Measure Voltage from CAN H to L
Does Voltage = 0?
No
Yes
CAN Bus is shorted to intermittent signal
Connect one (1) Diag-ON-CAN Module.
Fix the issue
Check module diagnosis via CONSULT.
Was communication intermittent?
Yes
Replace the module
No
Re-run diagnosis to verify issue resolved.
Have all modules been added?
Yes
Go to E on page 3
End Diagnosis 4 (See Claims Information)
No



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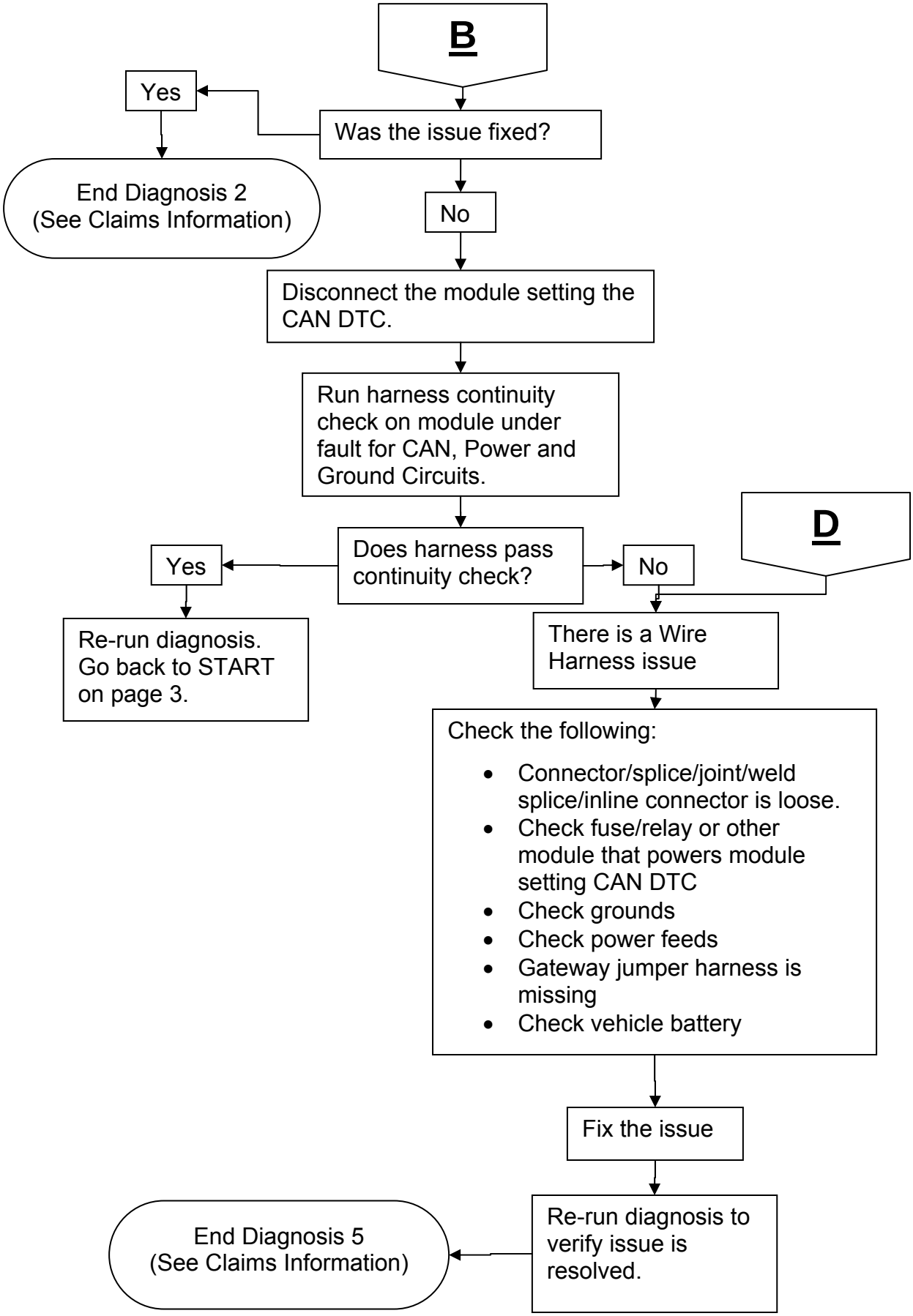
B
Was the issue fixed?
Yes
End Diagnosis 2
(See Claims Information)
No
Disconnect the module setting the CAN DTC.
Run harness continuity check on module under fault for CAN, Power and Ground Circuits.
Does harness pass continuity check?
Yes
Re-run diagnosis. Go back to START on page 3.
No
D
There is a Wire Harness issue
Check the following:
Connector/splice/joint/weld splice/inline connector is loose.
Check fuse/relay or other module that powers module setting CAN DTC
Check grounds
Check power feeds
Gateway jumper harness is missing
Check vehicle battery
Fix the issue
Re-run diagnosis to verify issue is resolved.
End Diagnosis 5
(See Claims Information)

**Harness Incident Type**:

Use the Chart below to determine the type of Harness Incident.

- Measure CAN H or L to Ground at the DLC for Voltage.
- Measure CAN H to L for resistance.

**NOTE:** Use the legend below for Table A.

**OC**=Open Circuit; **SC**=Short Circuit; **H**=High; **L**=Low; **Mid**=Middle; **Term**=Terminating; **V**=voltage; **DLC**=data link connector

**Table A**

| TYPE | RESISTANCE | CAN H V, KEY OFF, CAN BUS ASLEEP | CAN L V, KEY OFF, CAN BUS ASLEEP | CAN H V, KEY ON | CAN L V, KEY ON |
|---|---|---|---|---|---|
| Normal | 60Ω | 0v | 0v | 2.7v | 2.3v |
| Main bus OC | 120Ω | 0v | 0v | 2.6v | 2.3v |
| Main bus OC of Can H | 120Ω | 0v | 0v | 2.6v | 2.2v |
| Main bus OC of CAN L | 120Ω | 0v | 0v | 2.7v | 2.4v |
| Branch OC | 60Ω | 0v | 0v | 2.7v | 2.3v |
| Branch OC CAN H | 60Ω | 0v | 0v | 2.7v | 2.3v |
| Branch OC CAN L | 60Ω | 0v | 0v | 2.7v | 2.3v |
| Branch OC at DLC | OC/MΩ | 0v | 0v | 0v | 0v |
| Branch OC at DLC CAN H | OC/MΩ | 0v | 0v | 0v | 2.3v |
| Branch OC at DLC CAN L | OC/MΩ | 0v | 0v | 2.7v | 0v |
| OC at Term ECU | 120Ω | 0v | 0v | 2.7v | 2.3v |
| OC at Term ECU-CAN H | 120Ω | 0v | 0v | 2.7v | 2.3v |
| OC at Term ECU-CAN L | 120Ω | 0v | 0v | 2.7v | 2.3v |
| CAN H SC to Battery | N/A | B+ | Approximately B+ | B+ | Approximately B+ |
| CAN L SC to Battery | N/A | Approximately B+ | B+ | Approximately B+ | B+ |
| CAN H SC to Ignition | N/A | 0v | 0v | B+ | Approximately B+ |
| CAN L SC to Ignition | N/A | 0v | 0v | Approximately B+ | B+ |
| CAN H SC to Signal | Varies | Varies | Varies | Varies | Varies |
| CAN L SC to Signal | Varies | Varies | Varies | Varies | Varies |
| CAN H to L SC | 0Ω | 0v | 0v | 2.5v | 2.5v |
| CAN H SC to Ground | 161Ω | 0v | 0v | 0v | Approximately 0v |
| CAN L SC to Ground | 0Ω | 0v | 0v | Approximately 0.7v | 0v |