

Classification:

EL13-010C

Reference:

ITB13-006C

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Date:

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CAN COMMUNICATION – NETWORK DIAGNOSTIC FLOW CHART

This bulletin has been amended. See AMENDMENT HISTORY on the last page.
Please discard previous versions of this bulletin.

APPLIED VEHICLES: 2005 – 2022 Infiniti Vehicles
EXCEPT: 2022 QX60 (L51)

SERVICE INFORMATION

This TSB is for troubleshooting of CAN Modules with “Diag-On-CAN” Diagnostics. The flow charts included 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

Infiniti 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 Infiniti 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.

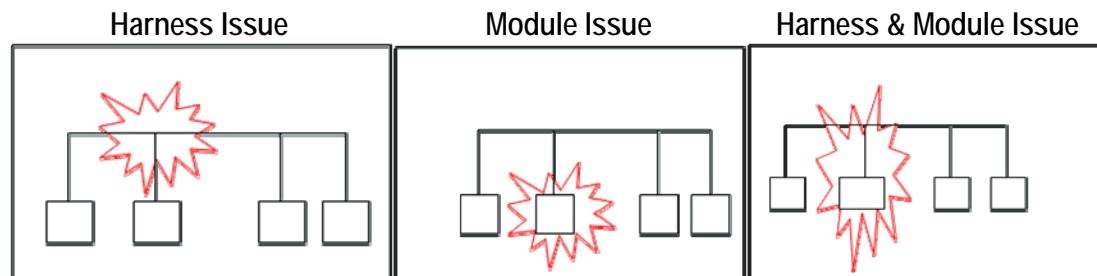
NOTE: 120 ohm resistors may be needed to perform diagnostics.

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:

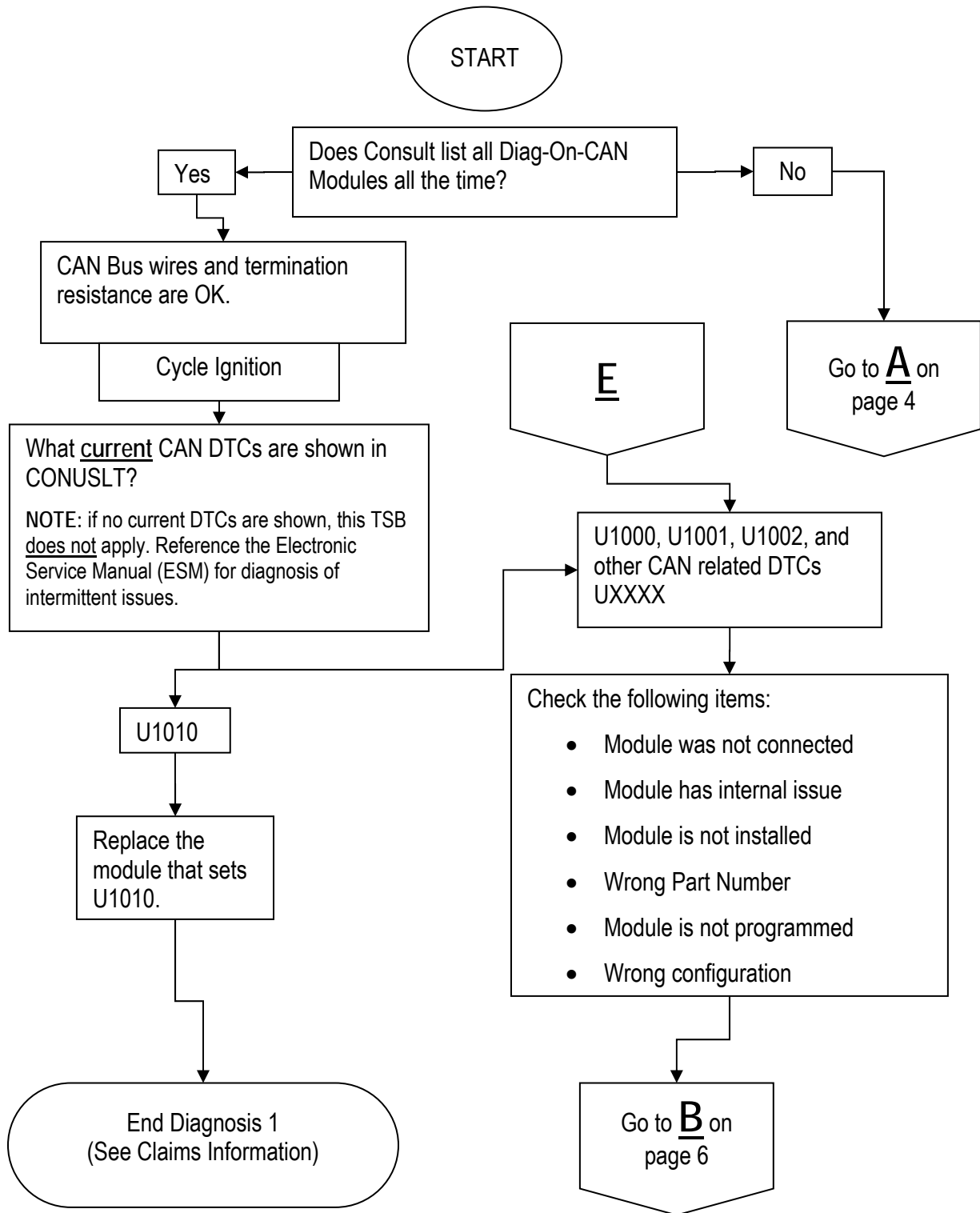


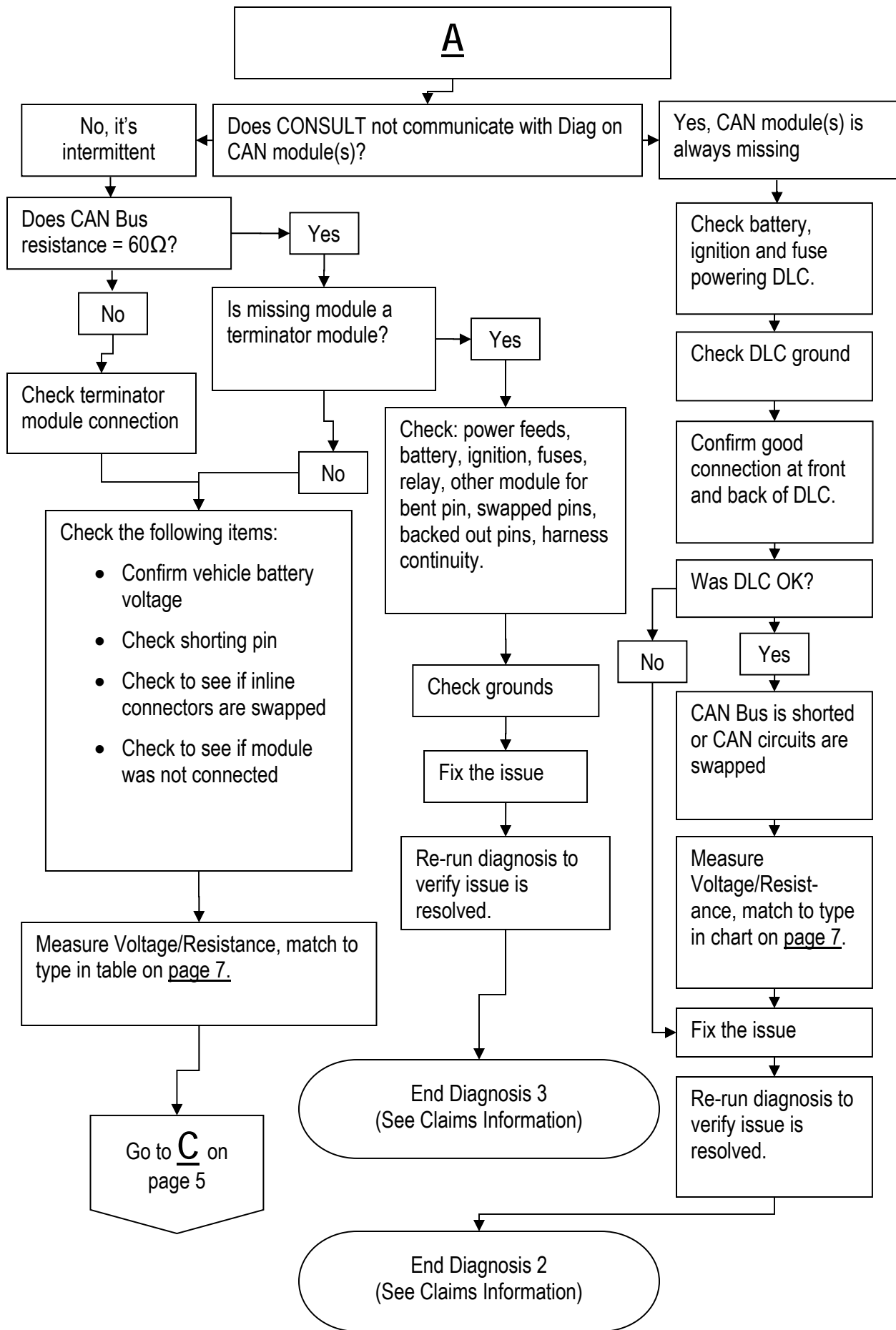
NOTE: DO NOT REPLACE ANY COMPONENTS UNLESS IT IS SUPPORTED BY DIAGNOSIS

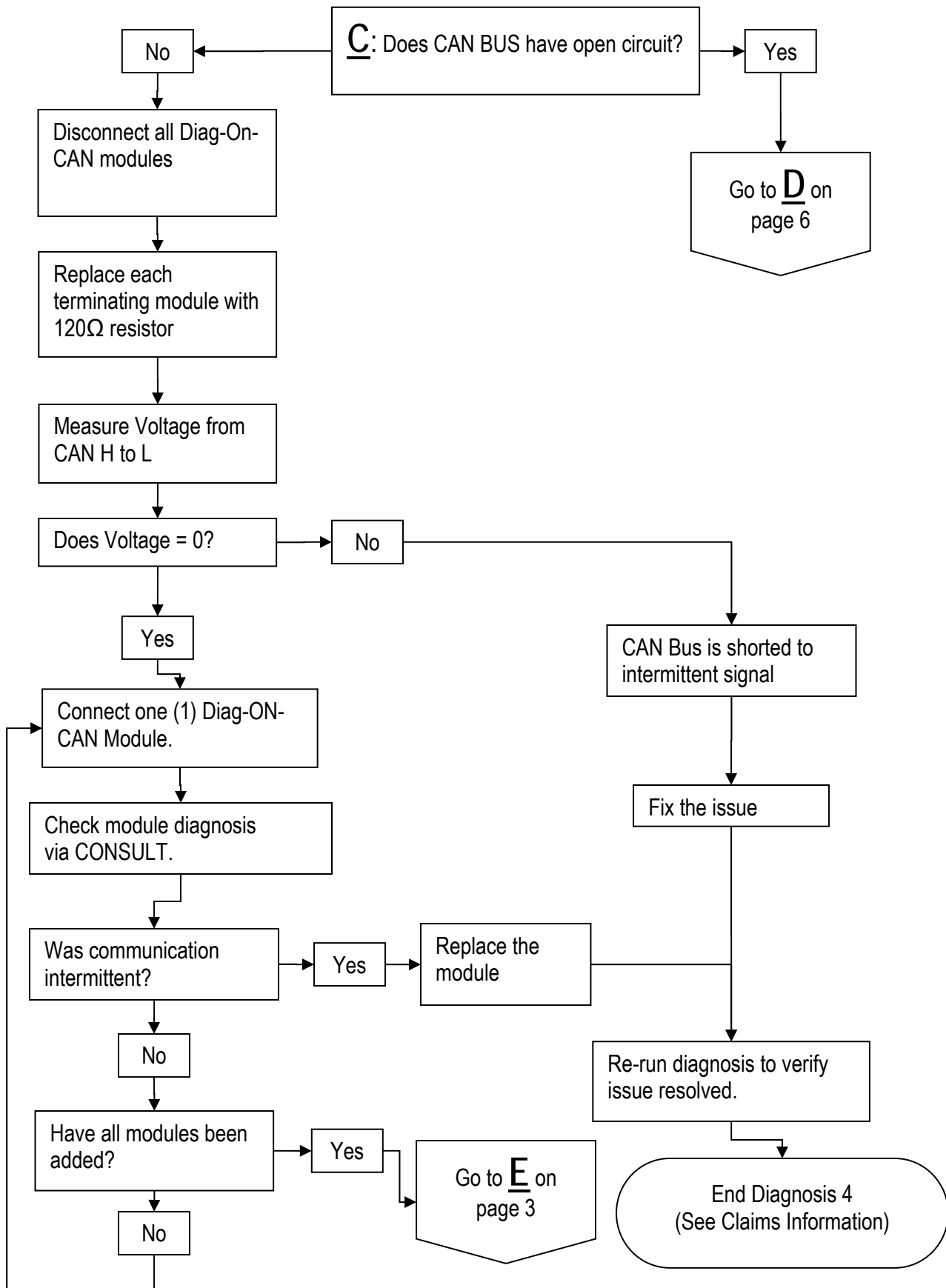
NOTE: Use legend below for flow charts on pages 3-6 and Table A on page 7.

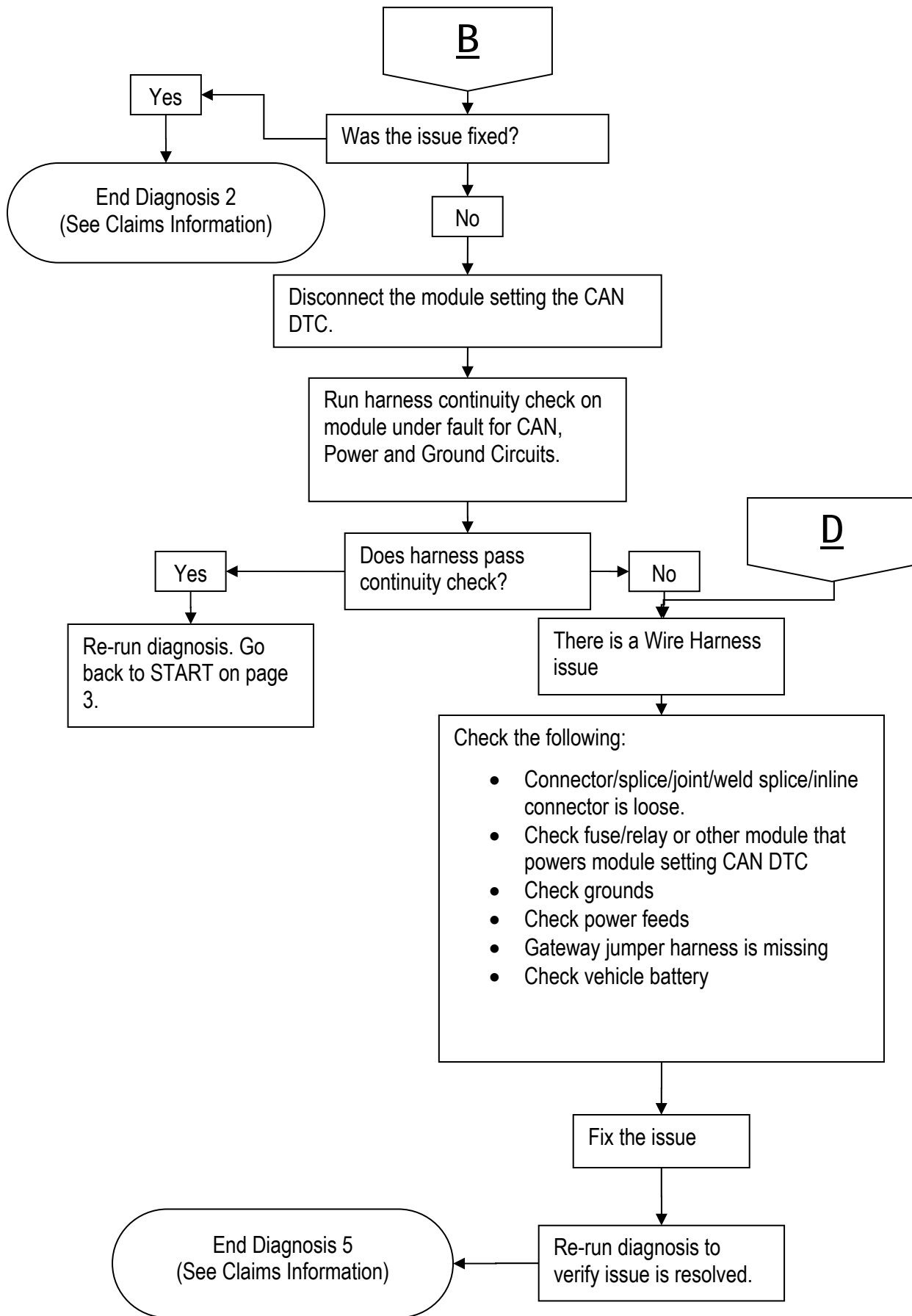
OC=Open Circuit; SC=Short Circuit; H=High; L=Low; Mid=Middle; Term=Terminating; V=voltage;
DLC=data link connector

Troubleshooting
Flowchart









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

CLAIMS INFORMATION

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

OP NAME	OP CODE	FRT
CAN DIAGNOSIS End Diag 1	RX3DAA	0.5
CAN DIAGNOSIS End Diag 2	RC3FAA	1.0
CAN DIAGNOSIS End Diag 3	RC3HAA	2.0
CAN DIAGNOSIS End Diag 4	RC3MAA	4.0
CAN DIAGNOSIS 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.

AMENDMENT HISTORY

PUBLISHED DATE	REFERENCE	DESCRIPTION
March 22, 2013	ITB13-006	Original bulletin published
August 22, 2013	ITB13-006A	Updated to change End Diagnosis 5 to 4 and End Diagnosis 6 to 5
-	ITB13-006B	Not published
February 22, 2022	ITB13-006C	APPLIED VEHICLES revised and typo in CLAIMS INFORMATION corrected