BREAKING it DOWN

OE-Specified Voltage Environment for Reprogramming

When it comes to vehicle reprogramming, there is one constant, and that is the need for a stable voltage environment to ensure a successful reprogramming event. No matter what your reprogramming tool of choice is, be it factory tool, after-market tool or pass-through device, each OE has a recommended target system voltage in which the event should take place. Not surprisingly, they vary from make to make and can even vary from model to model within one manufacturer.

Below, please find chart providing a quick reference to the specified voltage environment for module reprogramming by manufacturer. (Updated February 2026)

Manufacturer	Recommended Voltage	Comment
Acura	above 12V	Ideal target is 13.5V
Alfa Romeo	13.2V-13.5V	Not above 13.5V
Audi	12.8V-14.2V	Must remain >12.5V; ideal target is 13.5V
BMW	14.2V	13.8V for lithium batteries
Buick	13.4V	
Cadillac	13.4V	
Chevrolet	13.4V	
Chrysler	13.2V-13.5V	Not above 13.5V
Dodge	13.2V-13.5V	Not above 13.5V
Fiat	13.2V-13.5V	Not above 13.5V
Ford	12.6V-13.6V	** See note.
Genesis	13.5V	
GMC	13.4V	
Honda	above 12V	Ideal target is 13.5V
Hyundai	13.5V	
Infiniti	13.5V	
Jaguar	13.4V	
Jeep	13.2V-13.5V	Not above 13.5V
Kia	13.5V	
Land Rover	13.4V	
Lexus	13.5V	
Lincoln	12.6V-13.5V	**See Note.
Mazda	13.5V	
Mercedes	12.5V-14.5V	
Mini	14.2V	13.8V for lithium batteries
Mitsubishi	13.5V	
Nissan	13.5V	
Porsche	13.5-14.5V	Ideal target is 14.2V
Smart	above 12.5V	
Sprinter	12.5V-14.5V	
Subaru	13.5V	Do not exceed 14.0V – will cause programming to abort.
Toyota (except supra)	13.5V	Supra 14.2V
Volkswagen	12.8V-14.2V	Must remain >12.5V; ideal target is 13.5V
Volvo	13.4V	

***Note:** *Most OEM's also now have a recommendation that the vehicle module temperature must be no higher than 68F. It may be necessary to cool the vehicle down prior to programming.*

****Note:** *Ford designates negative cable to be connected to engine or chassis ground. If both negative and positive battery cables are connected to the battery post, the battery monitoring system must go through a recalibration (the system calibrates the battery state of charge after about 8 hours of sleep time).*

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Failed Module Reprogram Recovery Instructions by Manufacturer 2026

Acura	Leave Key On Attempt with J2534 Legacy App
Alfa Romeo	Leave Key On Attempt with Mopar Diagnostic Pod
Audi	Can do either – Turn Key Off or Leave Key On. Attempt again
BMW	Leave Key On for gateway failures. Turn Key Off, disconnect power 30 seconds all other modules.
Buick	Turn Key Off, disconnect power 30 seconds. If vehicle is pre-2007, use Cardaq M or similar early J2534 interface
Cadillac	Turn Key Off, disconnect power 30 seconds. If vehicle is pre-2007, use Cardaq M or similar early J2534 interface
Chevrolet	Turn Key Off, disconnect power 30 seconds. If vehicle is pre-2007, use Cardaq M or similar early J2534 interface
Chrysler	Leave Key On Attempt with Mopar Diagnostic Pod
Dodge	Leave Key On Attempt with Mopar Diagnostic Pod
Fiat	Leave Key On Attempt with Mopar Diagnostic Pod
Ford	Leave Key On, attempt again. If unsuccesful, try blank path programming.
Genesis	Leave Key On Attempt with Factory Android Tablet
GMC Truck	Turn Key Off, disconnect power 30 seconds. If vehicle is pre-2007, use Cardaq M or similar early J2534 interface
Honda	Leave Key On Attempt with J2534 Legacy App
Hyundai	Leave Key On Attempt with Factory Android Tablet
Infiniti	Leave Key On, attempt again.
Jaguar	Ford/Fomoco Module – Leave Key On, attempt again.
Jeep	Leave Key On Attempt with Mopar Diagnostic Pod
Kia	Leave Key On Attempt with Factory Android Tablet
Land Rover	Ford/Fomoco Module – Leave Key On, attempt again.
Lexus	Leave Key On, attempt again.
Lincoln	Leave Key On, attempt again. If unsuccesful, try blank path programming.
Mazda	Leave Key On, attempt again.
Mercedes	Can do either – Turn Key Off or Leave Key On. Attempt again
Mini	Leave Key On for gateway failures. Turn Key Off, disconnect power 30 seconds all other modules.
Mitsubishi	Leave Key On, attempt again.
Nissan	Leave Key On, attempt again.
Smart	Can do either – Turn Key Off or Leave Key On. Attempt again
Sprinter	Can do either – Turn Key Off or Leave Key On. Attempt again
Subaru	Leave key on and allow software to attempt again when prompted. Software will attempt 4-5 times before prompting to turn key off. If module loses power, key off until powered down completely. Attempt again, may take multiple attempts. Must use same laptop to recover as the log is stored in the software.
Toyota (except supra)	Leave Key On, attempt again.
Volkswagen	Can do either – Turn Key Off or Leave Key On. Attempt again
Volvo	1. Open Vida -> Software Installation -> Advanced Test 2. Verify that the control module is “Not responding” 3. Disconnect its power supply by removing its fuse(s) or connector **NOTE! – There might be more than one fuse that is used to power up a control module.** 4. Enable programming mode and immediately reconnect its power supply 5. Verify the control module is in “programming” mode 6. Close the Advanced Test menu by clicking the X in the top right corner – do NOT click “Stop Programming Mode” or “Reset” before exiting. 7. Purchase and install a reload for the control module and answer NO when asked if it was replaced 8. If available, purchase and install the Total Upgrade, Service 2.0, or PDS ** If the control module is “not responding” after step 5, perform steps 1-5 again (please try at least eight times) ** Reference: https://static.nhtsa.gov/odi/tsbs/2023/MC-10241680-9999.pdf

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