

NISSAN: HOW TO PERFORM IDLE AIR FLOW VOLUME LEARN

Purpose of idle air flow volume learn

It enables to adjust the idle air volume, so as to keep the engine RPM within specification.

When to perform idle air flow volume learn?

- After IACV-AAC valve, throttle body or ECM replaced
- When idle RPM or ignition timing out of specification

Prerequisites

Before performing the function, please confirm that every of the following conditions are met, otherwise, the adjustment process will not be completed.

- a) Battery voltage: > 12.9V(at idle)
- b) Engine coolant temperature:70-99 ° C
- c) PNP switch: ON
- d) Electric load switch: OFF(i.e. AC, headlight, rear windscreen defogger)
- e) For vehicle equipped with DRL(Day Running Light), the light switch should be at I stage, only the sidelight is ON.
- f) Coolant fan motor: stop
- g) Steering wheel: middle position(ahead straight)
- h) Vehicle speed: zero
- i) Gearbox: warm

(Tip: Connecting X431, enter "A/T", click "DATA MONITOR" mode to view "FLUID TEMP SE", the value should be less than 0.9V.)

How to adjust idle air flow volume with X431?

(1) Accelerator pedal released position learn

Note:

This operation enables to learn accelerator pedal released position by monitoring the accelerator pedal position sensor signal.

This operation must be done after the harness connector of accelerator pedal position sensor or ECM is disconnected.

STEP:

1. Accelerator pedal released completely.
2. Turn key switch to ON, wait for at least 2 seconds.
3. Turn key switch to OFF, wait for at least 10 seconds.
4. Turn key switch to ON, wait for at least 2 seconds.
5. Turn key switch to OFF, wait for at least 10 seconds.

(2) Throttle closed position learn

Note:

This operation enables to learn throttle closed position by monitoring the TPS signal.

This operation must be done after the harness connector of throttle actuator or ECM is disconnected.

STEP:

1. Accelerator pedal released completely.
2. Turn key switch to ON.
3. Turn key switch to OFF, wait for at least 10 seconds.

Tip: you can judge the throttle actuated for more than 10 seconds by listening the sound from the throttle.

(3) Start engine and warm up to normal operating temperature

(4) Check if all preconditions meet as list in Prerequisites section.

(5) Connecting X431, enter "WORK SUPPORT" mode, select "SELF-LEARNING CONT", which is used to clear self-learn value from ECU.

(6) Under "WORK SUPPORT", select "IDLE AIR VOL LEARN".

(7) Touch "START" button, and wait for 20s.

(8) If "CMPLT" appears on the X431 screen, it means the operation succeeds. On the contrary, if "INCMP" appears, it indicates "IDLE AIR VOLUME ADJUSTMENT" fails to complete. Please refer to the following diagnostic procedure in the article end to troubleshoot it.

(9) Let the engine running at high rpm for 2-3 times; make sure that both idle speed and ignition timing are met with the specifications as following:

Idle speed:

M/T: 625±50r/min

A/T: 700±50 r/min (at N or P)

Ignition timing:

M/T: 15°±2°BTDC

A/T: 15°±2°BTDC (at N or P)

How to adjust idle air flow volume without X431?

(1) Accelerator pedal released position learn

Note:

This operation enables to learn accelerator pedal released position by monitoring the accelerator pedal position sensor signal.

This operation must be done after the harness connector of accelerator pedal position sensor or ECM is disconnected.

STEP:

1. Accelerator pedal released completely.
2. Turn key switch to ON, wait for at least 2 seconds.
3. Turn key switch to OFF, wait for at least 10 seconds.
4. Turn key switch to ON, wait for at least 2 seconds.
5. Turn key switch to OFF, wait for at least 10 seconds.

(2) Throttle closed position learn CBS002U

Note:

This operation enables to learn throttle closed position by monitoring the TPS signal. This operation must be done after the harness connector of throttle actuator or ECM is disconnected.

STEP:

1. Accelerator pedal released completely.
2. Turn key switch to ON.
3. Turn key switch to OFF, wait for at least 10 seconds.

Tip: you can judge the throttle actuated for more than 10 seconds by listening the sound from the throttle.

(3) Start engine and warm up to normal operating temperature

(4) Check if all preconditions meet as list in Prerequisites section.

(5) Turn key switch to OFF, and wait for at least 10 seconds.

(6) Make sure that the accelerator pedal released completely, and turn key switch to ON, wait for 3 seconds.

(7) Please cycle the operation, depressing-releasing accelerator pedal completely, for 5 times within 5 seconds.

(8) Wait for 7 seconds, then depress the accelerator pedal completely and hold on for 20 seconds until MIL stop flashing, thereafter, the MIL always lights on.

(9) Release accelerator pedal completely for 3 seconds as long as MIL lights on.

(10) Start the engine and let it running at idle for a while.

(11) Wait for 20 seconds.

(12) Let the engine running at high speed for 2-3 times; make sure that both idle speed and ignition timing are met with the specifications as following:

Idle speed:

M/T: 625±50r/min

A/T: 700±50 r/min (at N or P)

Ignition timing:

M/T: 15°±2°BTDC

A/T: 15°±2°BTDC (at N or P)

Please do as following if failed to complete idle air volume adjustment

- 1) Check and confirm throttle is closed fully.
- 2) Check and confirm that there is no air leakage downstream throttle.
- 3) Adjust throttle closed switch, and reset the memory.
- 4) If all above are normal, the problem may be due to engine parts and/or its installation, please check and troubleshoot it.
- 5) If any following situation occurs after engine starting, please troubleshoot it and perform "idle air volume adjustment" again.
 - A, Engine stall
 - B, Idle error
 - C, The fuse related with IACV-AAC valve blows off