All throttle motor learning processes are affected by negative voltage spikes on the “12V” supply line when sampling of the throttle motor voltage, current, or resistance during the learning process is substituted for sampling of the voltage of the “12V” supply line. As a result of a negative voltage spike appearing on the “12V” supply line during the sampling of the learning process, the measured values of the throttle motor voltage, current, or resistance are temporarily changed in such a way that the throttle motor output is always increased by the compensation applied during the learning process. This higher throttle motor output leads to sudden acceleration.

The reasoning goes as follows. The current through the throttle motor and the voltage across the throttle motor are both proportional to the voltage of the “12V” supply line voltage powering the H-bridge. Therefore, if one measures the current through the throttle motor or the voltage across the throttle motor directly, such a direct measurement will be affected proportionally by changes in the “12V” supply line voltage. Therefore, if a negative voltage spike occurs on the “12V” supply line while a measurement is being made of the current through the throttle motor or the voltage across the throttle motor, then the current or voltage measured during a voltage spike will be lower than the normal current or voltage measured without a negative voltage spike. This means that if either the current through the throttle motor or the voltage across the throttle motor is used as an indicator of throttle aging, then when this indicator is sampled for comparison with a reference sample in a throttle aging algorithm, if a negative voltage spike occurs on the “12V” supply line during the sampling of this indicator, a lower indicator current or voltage learning value will be obtained that, when used to compensate a reference value, will cause the learning process to increase the throttle output. This means that even though the learning algorithm is believed to be independent of the “12V” supply line voltage because it “directly” measures the current through the throttle motor or the voltage across the throttle motor, it really is not. Such “direct” measurements will always be affected by negative voltage spikes on the “12V” supply line. And because these negative voltage spikes always produce a temporary lowering of the “12V’ supply line voltage, they will always produce a temporary lowering of the “direct” measurements used for the throttle learning function. This means that they will always produce a higher throttle output after they are used to compensate the reference current or voltage in the throttle learning process.

The same reasoning applies if one measures the throttle motor resistance directly and uses it in a throttle learning process to compensate for throttle aging. In this case, aging always causes the throttle motor resistance to increase with time. Heating also causes throttle motor resistance to increase with temperature. But an increase in throttle motor resistance causes a decrease in the throttle motor current ($I_{mot} = V_{supply}/R_{mot}$), which reduces the throttle motor torque. In order to measure the throttle motor resistance for learning purposes, one cannot just measure the voltage across the motor resistance directly because the voltage exceeds the 5 volts of a normal analog-to-digital converter in an ECU. Therefore, one must measure the throttle motor voltage indirectly by measuring the throttle motor current and then using this current to calculate the voltage drops across all the resistances in the H-bridge, followed by subtracting these voltage drops from the “12V” supply voltage to get the voltage across the motor. The motor resistance is then calculated from the measured motor current and motor voltage. The motor current is measured by either: 1) putting a known reference resistance in the ground line of the H-bridge and measuring the voltage across this known reference resistance, or 2), running a mirrored image of the H-bridge current through a known reference resistor outside the H-bridge, and then measuring the voltage across this known reference resistor. Method 2) is usually preferred because of its greater accuracy. In either case, measuring the motor resistance boils down to measuring the motor current, which has been discussed in the previous paragraph. Therefore, a negative voltage spike on the "12V" supply line, appearing during the learning process, will produce a temporary lowering of the measured motor current, causing a temporary increase in the measured motor resistance, making it appear as if the throttle has aged more than it really has without a negative voltage spike. Therefore, when this incorrect motor resistance is used to compensate the reference motor resistance during the learning process, the throttle motor output will be increased more than it should have been in the absence of a negative voltage spike. So, again, even though the learning algorithm is believed to be independent of the "12V" supply line voltage because it "directly" measures the resistance of the throttle motor, it really is not. Such "direct" measurements will always be affected by negative voltage spikes on the "12V" supply line.

In summary, all throttle motor learning processes are affected by negative voltage spikes on the "12V" supply line when sampling of the throttle motor voltage, current, or resistance during the learning process is substituted for sampling of the voltage of the "12V" supply line. As a result of a negative voltage spike appearing on the "12V" supply line during the sampling of the learning process, the measured values of the throttle motor voltage, current, or resistance are temporarily changed in such a way that the throttle motor output is always increased by the compensation applied during the learning process. This higher throttle motor output leads to sudden acceleration.

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