



AUTOMOTIVE ENGINEERING

FACT SHEET

TIRE INFLATOR KITS



BACKGROUND & METHODOLOGY

As automakers strive to comply with increasingly-stringent fuel economy standards, it is forecast that tire inflator kits will continue to replace heavier spare tires in new vehicles. As a service to its members, the automotive industry and the general public, AAA conducted primary and secondary research to evaluate the market penetration and effectiveness of these kits.

Despite the increased prevalence of run-flat tires and tire pressure monitoring systems, flat tires continue to be the second leading cause of AAA roadside assistance calls, accounting for more than four million calls annually.

AAA Engineering found that approximately 36 percent of 2015 model year vehicles sold in the United States came without a spare tire, up from just 5 percent of vehicles sold in 2006. In the last 10 model years (2006-2015) this represents more than 29 million vehicles sold without a spare tire*.

KEY FINDINGS

- **Approximately one-third (36 percent) of 2015 model year vehicles sold do not have a spare tire.** For comparison, only five percent of 2006 model year vehicles sold lacked a spare tire. More than 29 million vehicles sold in the last 10 model years are missing a spare tire*.
- Each year, **AAA receives more than 4 million calls related to flat tires.** Despite tire and technology improvements, including tire pressure monitoring systems, there has not been a decline in flat-tire related calls in the last five years.
- **The cost to repair a tire after using a tire inflator kit can be as much as 10 times greater than using a spare tire** due to the replacement cost of the kit and the tire pressure monitoring sensor.
- **AAA test results indicate that tire inflator kits work as described, however they are only an option in very specific circumstances.**
 - Tire inflator kits can only be used when a puncture occurs on the center tire tread and the object remains in the tire.
 - Tire inflator kits cannot be used if the object is no longer in the tire, or when sidewall, blowout, pothole or curb-related damage occurs.
- **Knowing how to change a tire is a skill that varies among ages and genders:**
 - 82 percent of drivers claim to know how to change a tire.
 - One-in-five (22 percent) millennial drivers, ages 18-34, say they do not know how to change a tire.
 - Nearly 90 percent of drivers ages 35-54 claim to know how to change a tire.
 - 97 percent of men say they know how to change a tire versus 68 percent of women.

To understand if tire inflator kits benefit consumers, AAA pursued four lines of inquiry:

1. **Which vehicles do not come equipped with a spare tire?**
2. **How effective are tire inflator kits at temporarily repairing a flat tire?**
3. **Are the stated capabilities of the tire inflator kits accurate?**
4. **What are the limitations and consequences of use?**



METHODOLOGY

In order to simulate typical tire puncture situations, tires used in this study included passenger car and light truck tires ranging from new to used condition with 5-7/32" tread depth. All rubber conditions were good, with no deformations, cracking or abnormal/excessive dry rot, and all tires were verified to be well sealed and not leaking before testing.

Test Procedure:

- Roofing nails, drywall screws and finishing nails were used to create a puncture-type flat and tires were checked to ensure a leak was present.
- After leak verification, a five mile road course was driven at speeds below 40 mph and tires were manually deflated to 5 psi.
- Each tire inflator kit was used according to OEM instructions.
- Repaired tires were driven the same five mile course and re-checked for pressure and leaks.



Measurements:

- Pressure and temperature before puncture.
- Temperature after driving with puncture.
- Temperature after driving with repair.
- Pressure at fill and after 24 hours.
- Presence of leaks at puncture, after repair and after 24 hours.

In collaboration with AAA Northeast, tire inflator kits were also tested on tires without a foreign object embedded. These tires were unable to be re-inflated under any circumstance.

AAA RECOMMENDATIONS

- If your vehicle is equipped with a tire inflator kit in lieu of a spare tire, read the owner's manual and understand system limitations before roadside trouble strikes.
- When purchasing a new vehicle, don't assume it comes equipped with a spare tire. Always ask sales staff for a detailed list of equipment and if a spare tire can be purchased as an option.
- If your vehicle is equipped with a tire inflator kit, AAA recommends that you check its expiration date and replace the kit when necessary, typically between 4-8 years.
- If your vehicle has a spare tire, be sure it is properly inflated and stowed. Check tire pressure monthly, as a flat spare tire is of no value in an emergency.
- When faced with a flat tire, AAA members can request assistance at (800) AAA-HELP, by visiting AAA.com/RoadsideAssistance or via the [AAA Mobile App](#).

THE DISAPPEARING SPARE TIRE

In 2010, the Department of Transportation and the Environmental Protection Agency established new Corporate Average Fuel Economy standards (CAFE) for vehicle model years 2012 to 2016. The CAFE standards are set at a combined 34.1 mpg by 2016.

To comply with CAFE standards, automakers have worked to reduce excess vehicle weight, including replacing the spare tire with a tire inflator kit.



In the 2015 model year alone, 136 car models came standard without a spare tire. The list includes select makes and models from the following automakers: Acura, Audi, BMW, Buick, Cadillac, Chevrolet, Chrysler, Dodge, Fiat, Ford, GMA, Honda, Hyundai, Jaguar, Jeep, Kia, Land Rover, Lexus, Lincoln, Lotus, Maserati, Mazda, Mercedes, Mini, Nissan, Porsche, Ram, Scion, Smart, Subaru, Tesla, Toyota, Volkswagen and Volvo.

The complete list can be found [here](#).