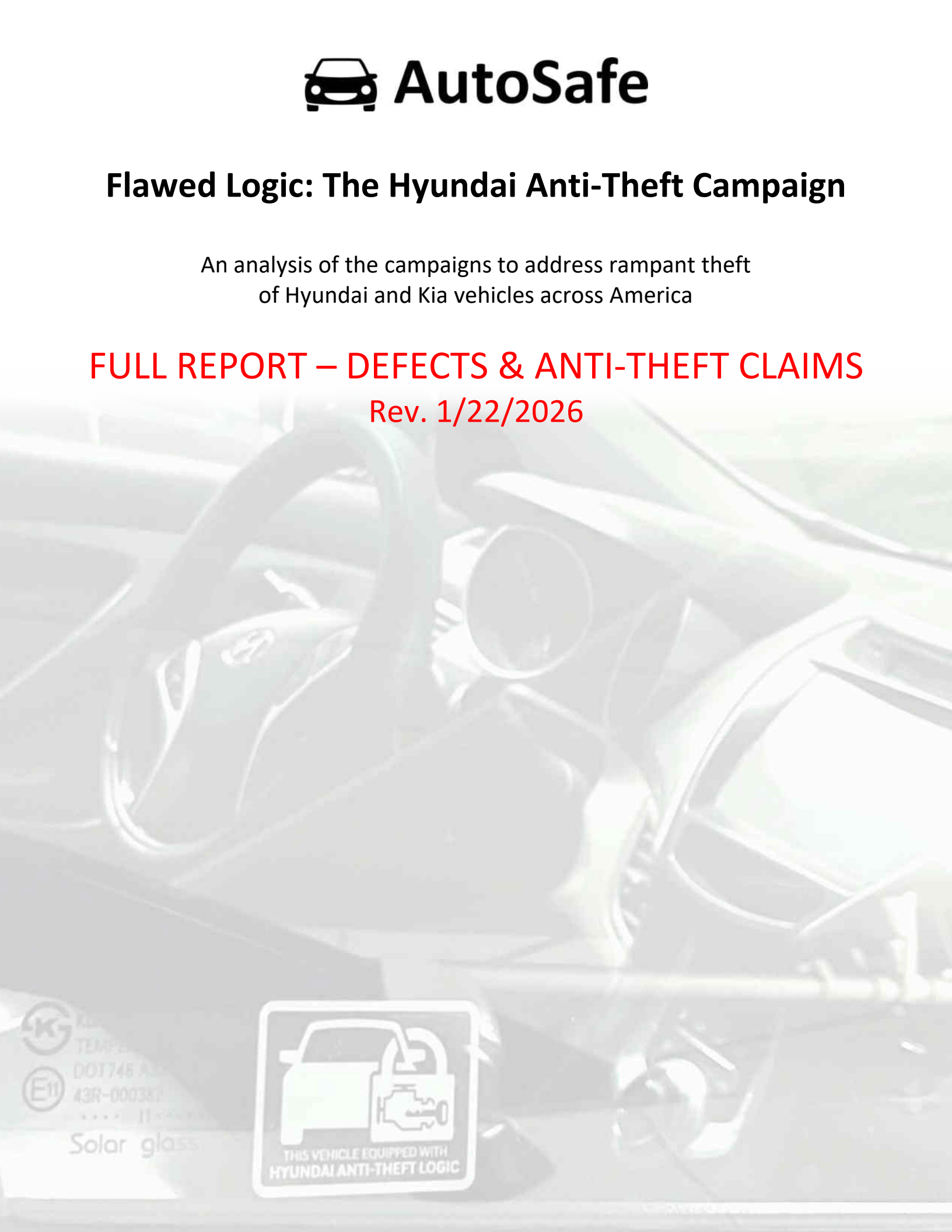
AutoSafe

Flawed Logic: The Hyundai Anti-Theft Campaign

An analysis of the campaigns to address rampant theft
of Hyundai and Kia vehicles across America

FULL REPORT – DEFECTS & ANTI-THEFT CLAIMS

Rev. 1/22/2026



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The staggering amount of theft involving Hyundai & Kia vehicles in the past 5 years has earned the automakers the top spots for "America's Most Stolen Vehicles". This report intends to investigate the results of the Hyundai/Kia anti-theft campaign and was initiated due to the continuing thefts of Hyundai and Kia vehicles after the "anti-theft logic" update was supposed to stem the nationwide surge.

Car theft has been a major issue worldwide that affects all makes of cars and has resulted in various countries mandating electronic anti-theft immobilizers as early as 1998. The immobilizer technology adds a layer of security by first validating the authenticity of a microchip embedded in the key to the car's computer (ECU) before it will start.

Although immobilizer technology was mandated across various European countries, Australia and Canada, it was not required by law in the US; however, as automakers complied with these global mandates, the technology also became largely industry-standardized in the US. As an example, Ford started to standardize the technology in the US by 1996 and had nearly their entire consumer-vehicle segment outfitted by 1999.

Before immobilizers were standard, the primary focus of a vehicle's security was on its mechanical ignition assembly. The assembly consists of an ignition lock cylinder, an ignition switch to start the car, and a steering-lock that prevents the steering-wheel from turning while engaged; these components are linked together by an internal tumbler-rod that is rotated by turning the ignition cylinder with its key.

The ignition assembly is subject to federal law in America through the rules and standards set forth under the Federal Motor Vehicle Safety Standards, specifically, "§ 571.114 Standard No. 114 (FMVSS 114); Theft protection and rollaway prevention."

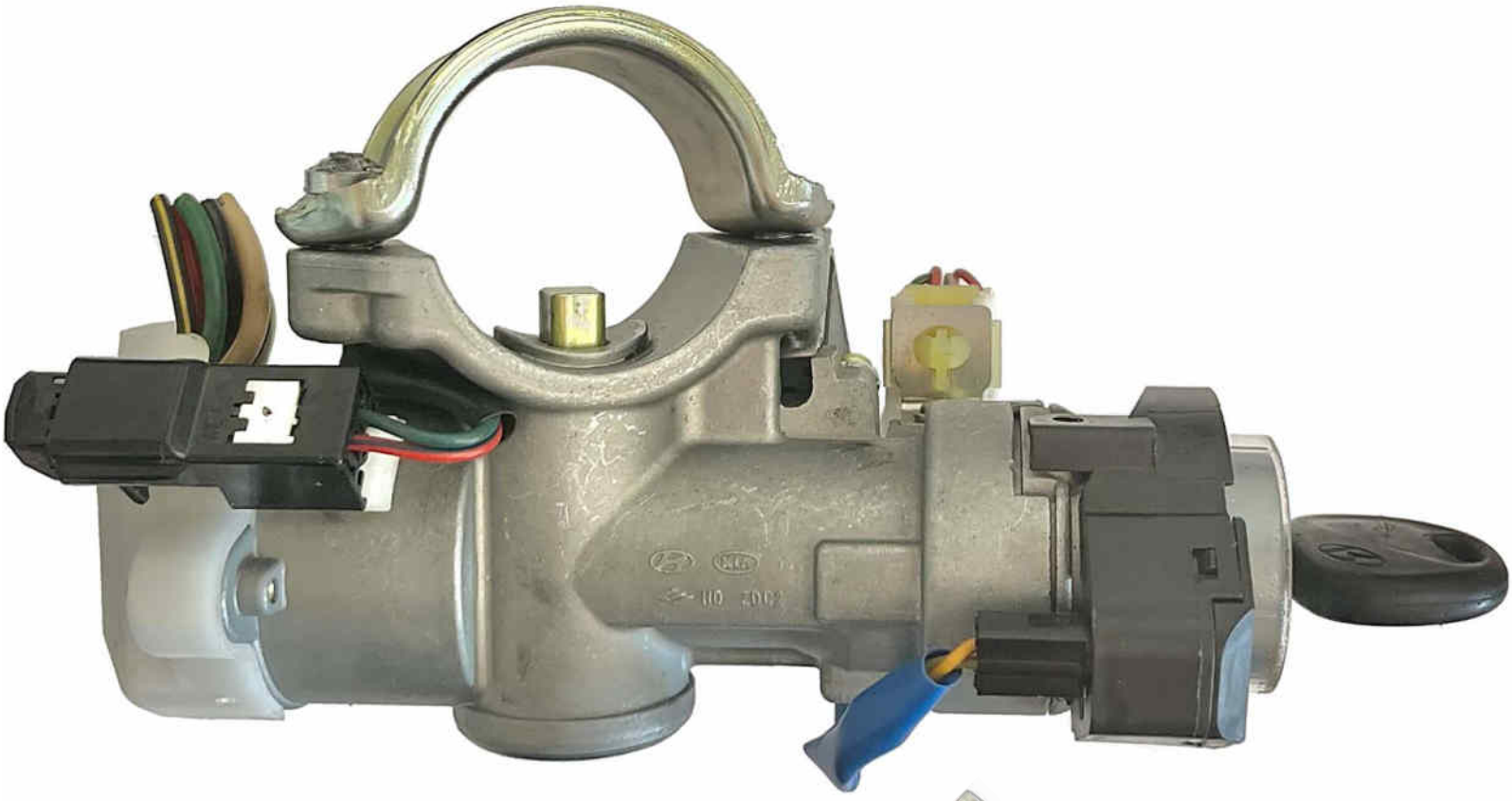
The NHTSA is the federal agency entrusted to enforce these laws and can issue a national recall if an automaker fails to meet the federal standards.
A recall can also be issued if a vehicle component is found to be either defective or substandard and, therefore, fails to uphold a federal standard or creates the potential to cause serious crashes.

§ 571.114 Standard No. 114; Theft protection and rollaway prevention.

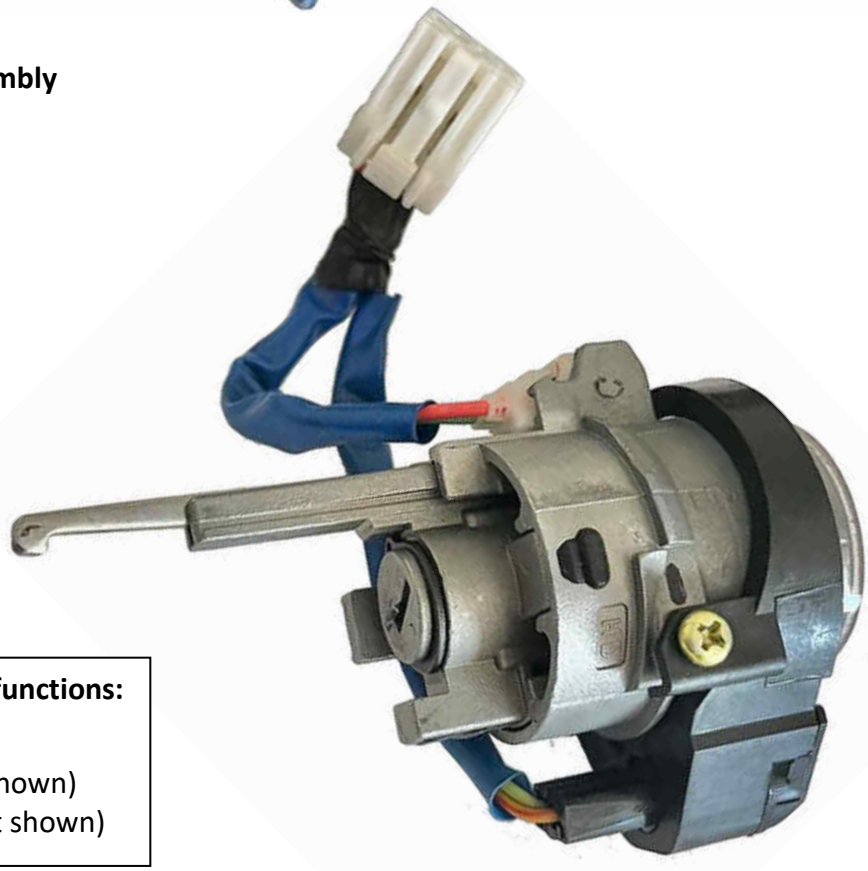
S1. Scope. This standard specifies vehicle performance requirements intended to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles.
S2. Purpose. The purpose of this standard is to decrease the likelihood that a vehicle is stolen, or accidentally set in motion.
S5.1 ***Theft protection.***
S5.1.1 Each vehicle must have a starting system which, whenever the key is removed from the starting system prevents:
(a) The normal activation of the vehicle's engine or motor; **and**
(b) Either steering, or forward self-mobility, of the vehicle, or both.

Metal Ignition Assembly

Until 2010, Hyundai's ignition assembly construction was of a solid metal shell (i.e., "housing") that was designed to resist tampering and brute force attacks.



2007-10 Hyundai Elantra ignition assembly



Cylinder connector (shown) has up to 3 functions:

1) Key detection switch (standard)
2) LED illumination ring (optional / shown)
3) Immobilizer RF coil (optional / not shown)

Plastic Ignition Assembly

Starting in models first introduced in 2011, Hyundai began replacing the metal ignition assemblies with hollow plastic that was designed to reduce their manufacturing costs.

2011-16 Hyundai Elantra Ignition Assembly

Cylinder connector (not shown) has up to 3 functions:

1) Key detection switch (standard)
2) LED illumination ring (optional)
3) Immobilizer RF coil (optional)

Plastic Ignition Assembly (Overview)

Design

Beginning with vehicle models introduced globally in 2011, Hyundai replaced the previously robust metal ignition assemblies with cheaper, fragile plastic assemblies. These plastic assemblies utilized thin-wall construction intended for portable electronics, and they failed to provide the security standards of the metal assemblies they replaced. From a logical and engineering standpoint, the new plastic assemblies had been designed for use in combination with immobilizer technology.

We contend that the metal housing and associated tamper-resistant security had become an expected quality standard. Any engineering shift to lower-security plastic construction would have required immobilizers to be included as standard equipment to maintain the expected level of vehicle security.

Hyundai failed to implement immobilizers as standard. As a result, it remained the only automaker in the United States selling vehicles with plastic ignition assemblies without immobilizers through the 2022 model year. This decision contributed to a national car theft epidemic and raises serious questions regarding whether Hyundai reasonably complied with the anti-theft requirements of the Federal Motor Vehicle Safety Standards (FMVSS 114).

Risks

The plastic ignition assembly has different physical properties than its metal predecessor, allowing the housing to flex, deform, and fracture more easily. Hyundai failed to make appropriate design changes to the plastic housing or its mechanisms to bolster their effectiveness and counteract the plastic's tendency to deform, which increases the likelihood of malfunctions.

By examining both new and used ignition assemblies, we were able to assess how the assemblies and their mechanisms function in the real world. We evaluated their mechanical design, construction, and operational effectiveness, and examined the adverse risks of converting the assemblies to plastic, including the resulting potential for malfunctions.

"Anti-Theft Logic" (Defective Alarm)

In addition to the decision to implement plastic ignition assemblies without the designed immobilizer system, Hyundai sold these vehicles with defective alarm systems through the 2022 model year.

Prior to the national attention on the Hyundai/Kia theft epidemic, many owners were unaware of the alarm defect. When owners tested the alarm while armed—by opening the door and attempting to start the vehicle—the alarm functioned as expected, preventing ignition. However, a programming defect caused the alarm to fail if the door had not been opened, allowing the ignition to start the vehicle.

This defect enabled thieves to gain entry by simply breaking a window and then prying the ignition cylinder from its plastic housing to start the car, often using only a USB cable. Local law enforcement agencies began to notice this method in **2020** as thefts of Hyundai and Kia vehicles increased, preceding a national surge in **2021**. The escalating theft crisis prompted numerous state attorneys general and municipalities to formally request assistance from Hyundai and Kia in **2021**.

Hyundai did not formally acknowledge the alarm defect until 2023, when it began rolling out the ECU software update known as the "Anti-Theft Logic" update, which applied to vehicles dating back to 2011.

In this report, we will examine the effectiveness of the updated alarm system, evaluate its ability to prevent theft, and explore flaws in the system's design and potential avenues for exploitation.

“Anti-Theft Protection” (Cylinder Sleeve)

As the software update campaign to address the defective alarm system was rolled out, certain vehicle models were found to be incompatible with the update. For these vehicles, Hyundai offered an alternative: a metal sleeve installation designed to reinforce the ignition cylinder and reduce the likelihood of it being pried from the plastic assembly housing.

In this report, we will examine the effectiveness of the ignition cylinder sleeve and assess whether it meaningfully improves the overall performance and robustness of the plastic ignition assembly.

Steering-Wheel Lock Campaign (“The Club”)

Because Hyundai and Kia delayed implementing a software update to correct the defective alarm, they offered a temporary, stopgap solution to vehicle owners by distributing imitation steering-wheel locks—off-branded clones of “The Club.” As of 2025, Hyundai continues to provide these steering-wheel locks for vehicles not eligible for the “Anti-Theft Logic” update (Campaign P32).

In this report, we will examine the effectiveness of the steering-wheel lock and evaluate the potential risks it poses, including damage to the plastic ignition assembly and its components from both attempted theft and routine use.

Objectives

A) Evaluate the plastic ignition assemblies and analyze their compliance with Federal Motor Vehicle Safety Standard No. 114, Theft Protection and Rollaway Prevention (49 CFR Part 571).

B) Assess the potential for malfunctions in the components of the plastic ignition assemblies.

C) Examine the effectiveness of the “Anti-Theft Logic” software update in mitigating vehicle theft.

D) Evaluate the effectiveness of the “Anti-Theft Protection” metal cylinder sleeve in reinforcing the ignition assembly.

E) Assess the results and potential consequences of distributing steering-wheel locks to customers with plastic ignition assemblies.

Hyundai Motor Group (“**HMG**”) of Korea owns **Hyundai Motor Co.** (“**HMC**”) of Korea and **Kia Corporation** of Korea.
Hyundai Motor Co. (“**HMC**”) owns/operates **Hyundai Motors America** (“**HMA**”) DBA **Hyundai Motor North America** (“**HMNA**”).
Kia Corporation owns **Kia America** (“**KA**”), formerly known as **Kia Motors America** (“**KMA**”) – **HMC** is also a parent company of **KA**.
HMA is headquartered in Fountain Valley, CA & **KA** is headquartered in Irvine, California.

Ignition Assembly (Explainer)

The ignition assembly consists of an ignition cylinder (with key), an ignition switch to start the car, and a steering-lock assembly that prevents the steering-wheel from turning while engaged.

These components are joined in a housing and linked by a tumbler-rod, which is rotated by the ignition cylinder.

IGNITION HOUSING

IGNITION SWITCH

STEERING-LOCK ASSEMBLY

TUMBLER ROD

IGNITION CYLINDER

Ignition cylinder / switch positions:

LOCK (OFF):
Ignition switch is OFF and no power is transferred to the car.
Tumbler-rod disengages steering-lock and allows the spring-loaded bolt to deploy (upon removal of key).

ACC (Accessory Mode):
Ignition switch enables power output to the vehicle's accessories and shuts-off the engine (if running).
Tumbler-rod engages steering-lock and retracts the spring-loaded bolt.

ON (Ignition ON):
Ignition switch enables power output to systems used while driving (power steering, ABS, airbags, etc.).
Tumbler-rod continues to engage steering-lock.

START (Start Engine):
Ignition switch enables power output to the engine starter motor. The ignition switch uses spring-tension to turn itself back to the ON position when the key is released.
Tumbler-rod continues to engage steering-lock.

Note: Some vehicles require the driver to "**PUSH**" the key in ACC position before turning to LOCK.

Steering Lock (Explainer)

When the key is turned to LOCK and removed from the ignition cylinder, a spring-loaded steering-lock bolt rises from the ignition assembly and engages a receiver port in the steering column, preventing the wheel from turning.

When the key is reinserted and turned, the tumbler-rod cam depresses the steering-lock assembly, retracting the bolt and restoring free movement of the steering column.

Steering Column

Steering Wheel Connection

Steering Lock Port

Steering Lock

Ignition Assembly

Ignition Switch (RP)

In 2017, a lawsuit was filed against Hyundai by drivers reporting that the steering wheel became unresponsive while the vehicle was in motion. The suit primarily involved the 2011–2016 Hyundai Elantra and 2012–2017 Accent, with drivers claiming that the steering wheel had seemingly locked during operation, sometimes resulting in crashes.

Within this report, we will demonstrate how some of these incidents may be explained by malfunctions within the ignition assembly that can inadvertently trigger the steering-lock to deploy.

Some reported cases involving the Elantra also included a perceived loss of braking capability. A possible explanation for this may be the soft ignition switch, which can cause the vehicle to shut off while in motion, disabling the car's power systems. A vehicle may shut off if the ignition key is inadvertently turned from ON to ACC, due to driver error or other contributing factors. When the car shuts-off, it disables Hyundai's EPS (Electronic Power Steering), Power Brakes, ABS (Anti-Lock Braking System) and Airbags.

Without the aid of the **power steering** system, turning the steering-wheel and correcting a car's direction becomes much more physically demanding. The surprised driver may not be prepared to exert the required force to properly turn the steering wheel and this may be perceived as a steering lock-up.

Without the aid of the **power brakes**, there will be some residual brake power available but it will require greater force to be applied to the brake pedal and the stopping distance will be longer. The residual brake power will be partially depleted each time the brake pedal is applied and once depleted, will require significantly greater force to continue braking the car. Furthermore, the vehicle's **ABS** (Anti-Lock Braking System) will also be disabled. Emergency braking without ABS can also cause wheel lock-up, leading the car to slide.

These conditions present serious safety risks, as the driver's diminished ability to steer or brake can result in a severe crash. The absence of **airbag** deployment further increases the likelihood of serious injury or death.

The ignition switch at the center of this issue was newly introduced in the 2011 Hyundai Elantra and several other Hyundai/Kia models. The switch followed the trend of plastic ignition assemblies, being smaller and cheaper to manufacture. Its detents and turning resistance secure the ignition cylinder's position.

Our investigation of the 2011–2016 Hyundai Elantra ignition switch revealed weak turning resistance. Comparative measurements of the force required to turn the switch were below our equipment's minimum threshold and registered as zero (undetectable). We plan to acquire specialized equipment capable of measuring lower forces and conduct further testing in the near future.

However, Hyundai was aware of the risk of inadvertent steering-lock deployment due to low turning resistance and implemented a "Push-to-Lock" safety mechanism within the tumbler rods paired with this switch. This mechanism prevents the ignition from inadvertently turning to the LOCK/OFF position while the vehicle is in motion. However, it does not mitigate the risk of the switch inadvertently turning to ACC, which can shut off the engine and power systems during operation.

"PB" ignition switch

Part #: 93110-3S000

We observed two conditions that increased the likelihood of an inadvertent ignition shut-off scenario:

1. **Keychain weight and movement**

Many drivers keep their car key attached to bulky keychains that can move or bounce while driving. Depending on how the keychain lands, it may exert a rotational force on the key, inadvertently turning it and shutting off the vehicle.

The automotive industry became aware of the risks associated with low-resistance ignition switches—often introduced for a "sporty" feel—approximately four years after Hyundai introduced the "PB" switch into the U.S. market. The 2011–2016 Elantra ignition switch, with its low turning resistance, is particularly vulnerable to this condition.

2. **Transfer of vibration and shock into the ignition switch**

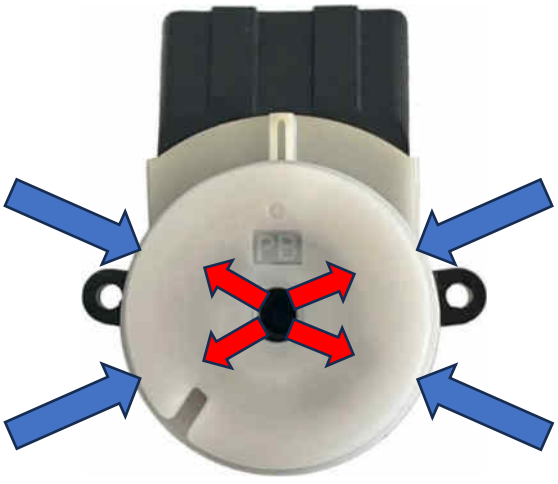
Vibration and shock from the steering column can propagate into the ignition switch, altering its mechanics and reducing the force required to turn it. These forces are transmitted through the switch casing and mated ignition housing, behaving similarly to energy transfer in billiard balls—a well-understood engineering concept (illustrated by blue arrows).

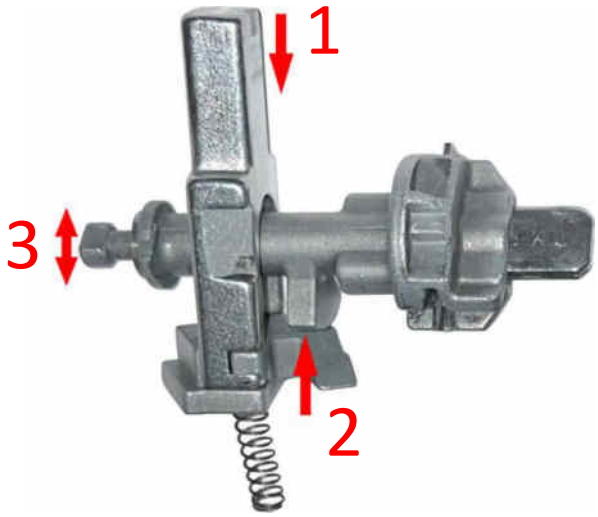
Additional vibration is introduced via the tumbler-rod, a mechanism less commonly understood without detailed knowledge of the assembly's operational mechanics and extensive real-world testing. Unlike the externally applied forces from the housing, these tumbler-rod forces act from the internal to the external direction (illustrated by red arrows), further affecting the switch's behavior.

Illustration of concept

Vibration from the steering column and the shocks of repetitive bumps can push down on the lock-bolt (**1**);
the lock assembly's spring will push the lock back up, and these opposing forces can cause the lock assembly to act like a reciprocating jackhammer against the tumbler rod's cam (**2**);
This vibration can then transfer through the tumbler rod and into the ignition switch (**3**).

The effect of vibrations transferred into the ignition switch acts on its mechanics from both an external-to-internal, and an internal-to-external direction simultaneously, which can momentarily reduce the switch's resistance and the required force to turn it.





Note: Our investigation into the "PB" ignition switch is ongoing and will be expanded in future revisions of this report.

Ignition Switch - Push-To-Lock (RP)

The ignition switch's detents and turning resistance secure the ignition cylinder's position. Due to the low turning resistance of the "PB" switch, the 2011–2020 Elantra incorporated a mechanical push-to-lock safety mechanism within the tumbler rod. This mechanism, also used in other models equipped with the "PB" switch, serves as a mechanical backup to prevent the key from inadvertently turning all the way to the LOCK position while the vehicle is in motion, which could otherwise result in a crash.

The push-to-lock mechanism introduces an additional layer of safety in preventing crashes because:

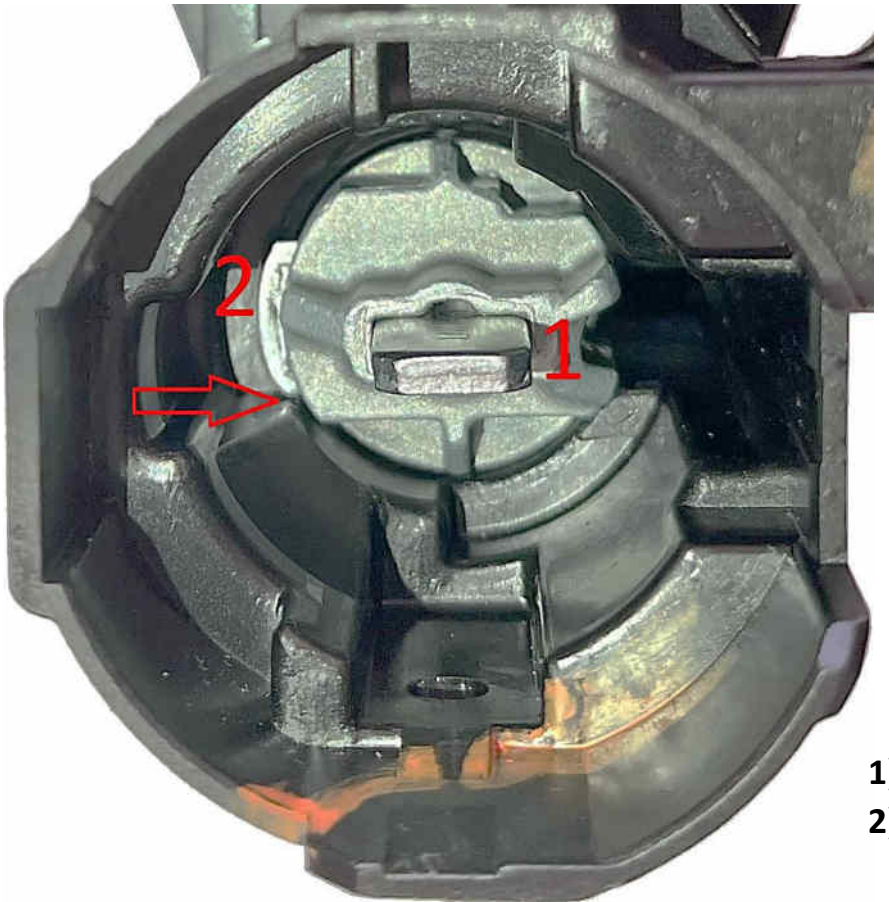
A) Manual transmission vehicles do not use a key-interlock, allowing the key to turn to LOCK while the vehicle is in motion.
B) In automatic transmission vehicles, the key-interlock solenoid may fail without warning (note: the interlock is not required outside the U.S.).
C) The vehicles employ an ignition switch with low turning resistance, making it susceptible to inadvertently turning to LOCK.
   - This can result in the steering lock deploying unexpectedly, potentially causing a temporary steering lock-up.

Working Principle: The tumbler-rod contains a retractable tab that is blocked by the housing, preventing counter-clockwise rotation from ACC to LOCK. To turn the tumbler-rod from ACC to LOCK, the key must be pushed into the cylinder, which retracts the tab.

When the driver pushes the key, the tumbler-rod's extension lever (**1**) is pressed into the tumbler-rod, causing the tab (**2**) to retract and allowing rotation from ACC to LOCK.

Defect: The tab's edge (ARROW) makes approximately 1 mm of contact with the plastic housing, which over time carves and deforms the plastic, creating a small channel or ramp. This design flaw has resulted in millions of defective ignition assemblies in which the tumbler-rod's tab can retract on its own, allowing the cylinder to turn to LOCK without the key being pushed into the cylinder.

As a result, this critical safety mechanism is circumvented. The plastic ignition assembly lacks adequate reinforcement, rendering the push-to-lock mechanism defective and unreliable.



2015 Hyundai Elantra

1) **Extension Lever**
2) **Retractable Tab**

Ignition Switch - Push-To-Lock (RP)

Comparison of Hyundai Elantra (2015) ignition housing to Ford Focus (2008)

AutoSafe contends that this defect within the affected ignition assemblies concerns an important safety feature that should be recalled. We suggest replacement with a metal reinforced housing.

The push-to-lock defect has been identified in the following models so far:

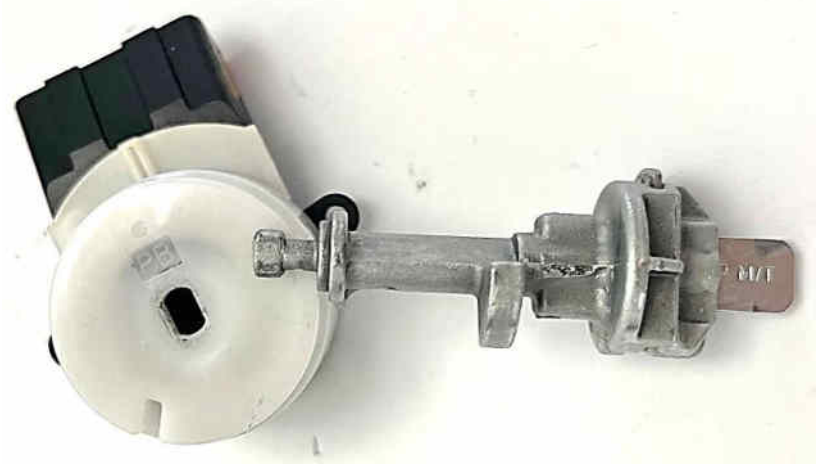
	US Model Year
HYUNDAI	
Elantra	2011-2016
Elantra	2017-2020
Elantra Coupe	2013-2014
Sonata	2011-2014
KIA	
Optima	2011-2015
Rio	2012-2017

Tumbler-Rod & Steering Lock Assy (RP)

After examining a 2011–2016 Elantra ignition assembly, we observed that the tumbler-rod remains secured within the ignition switch in all positions except when the ignition cylinder and tumbler-rod are turned to the ON position. In this state, the tumbler-rod can freely slide out of the ignition switch. This behavior is consistent across multiple Hyundai and Kia models that utilize the same ignition switch component.

The tumbler-rod's critical role is to disable the steering-lock assembly, and for safety, it must remain securely retained to prevent a steering lock-up while driving. However, when the ignition is in the ON position, no mechanism secures the tumbler-rod within the housing.

This design raises concerns: allowing the tumbler-rod to disengage while the vehicle is in operation introduces the potential for unintended steering lock activation. A more robust design would release the tumbler-rod only in the Accessory (ACC) position, thereby reducing the risk of steering malfunctions during driving.



To prevent steering-lock malfunctions, automakers typically design the tumbler-rod and assembly housing to restrict any lateral movement of the tumbler-rod while the vehicle is in motion.

This is commonly achieved through one or more of the following methods:

A) Integrating the ignition switch to secure the tumbler-rod, releasing it only in the Accessory (ACC) position.

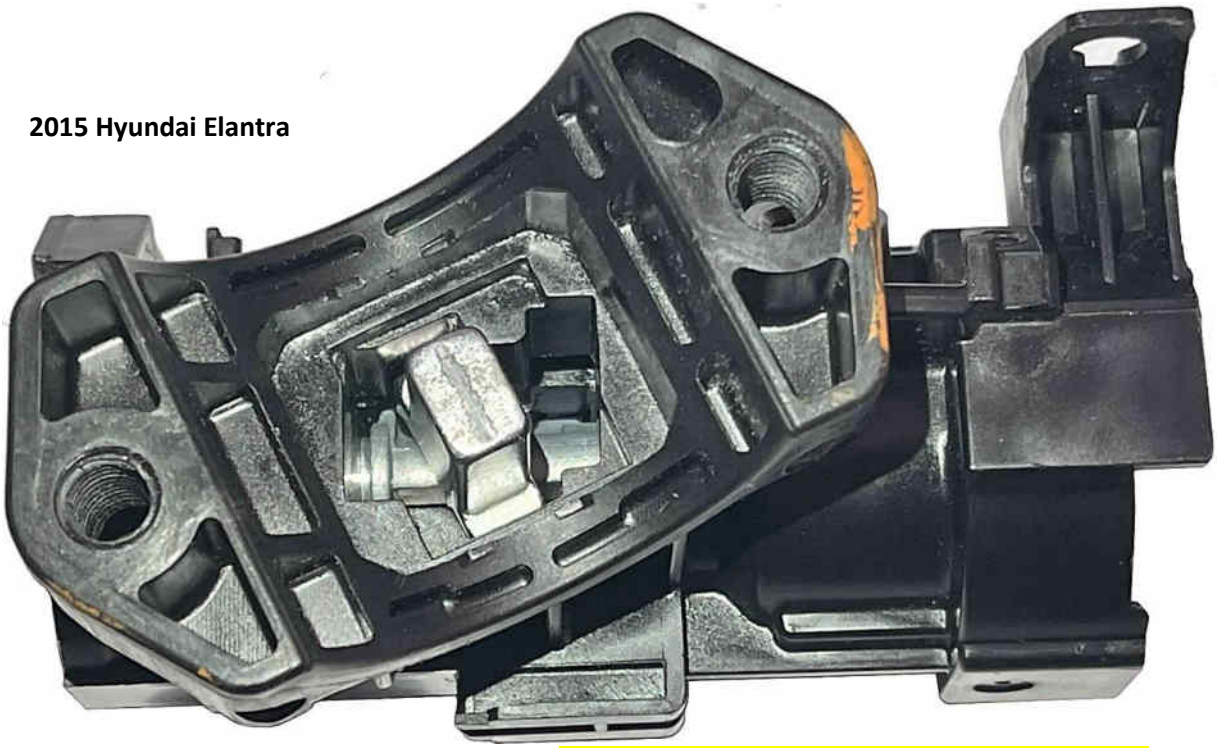
B) Incorporating raised stop-channels within the assembly housing. These channels serve as physical barriers for the tumbler-rod's cam, preventing unintended lateral movement in specific rotational positions, such as the ON position.

HYUNDAI Tumbler Rod (2011-16 Elantra)

Tumbler-Rod & Steering Lock Assy

To reduce the risk of lateral movement of the tumbler-rod in the ON position, Hyundai designed the 2011–2016 Elantra's tumbler-rod with a small 1 mm catch that makes contact with the edge of the lock-bolt assembly, intended to act as a stop against sideways movement.

However, the contact surface between the tumbler-rod catch and the lock-bolt assembly is minimal—limited to roughly 1 mm at an angled edge. Because both parts feature rounded edges and a sloped profile, the catch can slip past the lock-bolt's edge under certain conditions, creating the potential for a steering-lock malfunction.



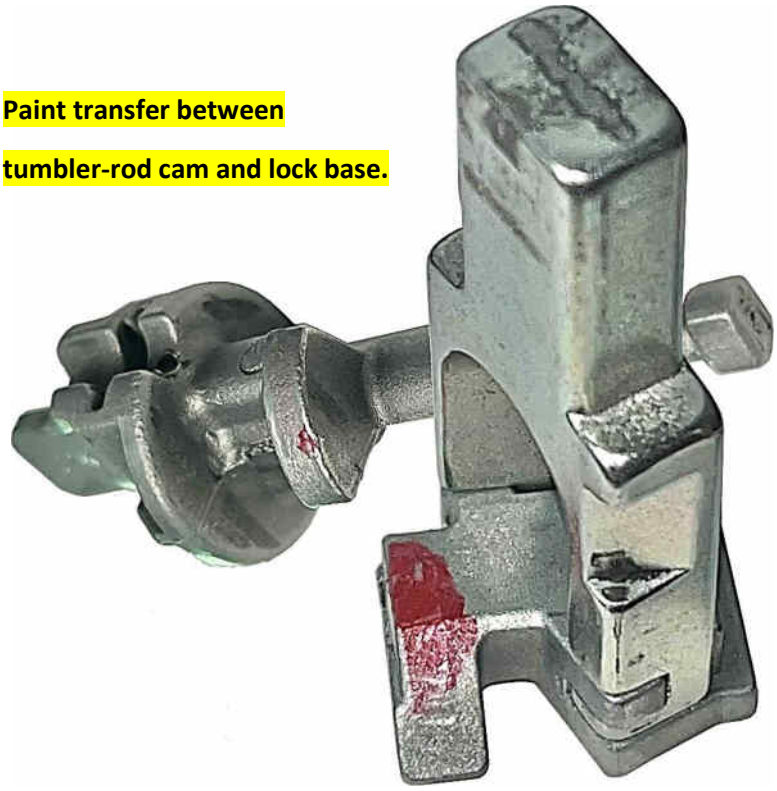
Paint transfer between tumbler-rod and lock-bolt.

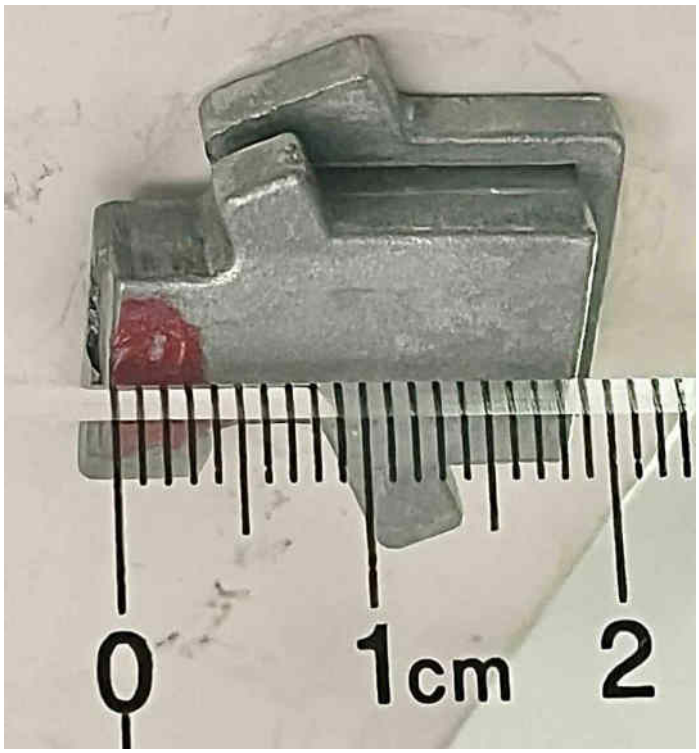
Tumbler-Rod & Steering Lock Assy

The tumbler-rod's cam makes as little as 2 mm of contact with the base of the steering-lock assembly. The tumbler-rod itself has approximately 1 mm of lateral tolerance, resulting in a contact range of 2–3 mm between the cam and the base.

Paint transfer between

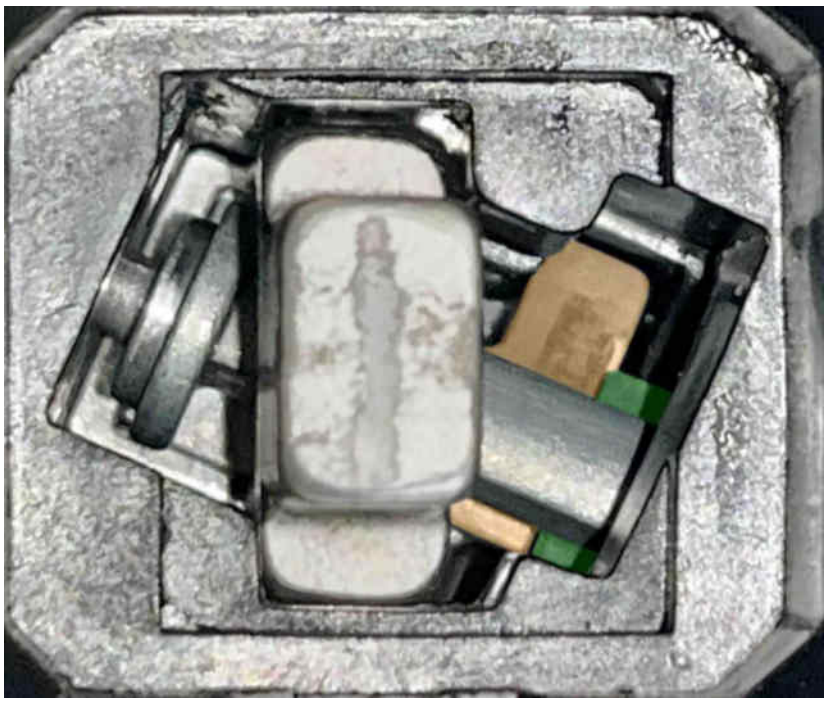
tumbler-rod cam and lock base.

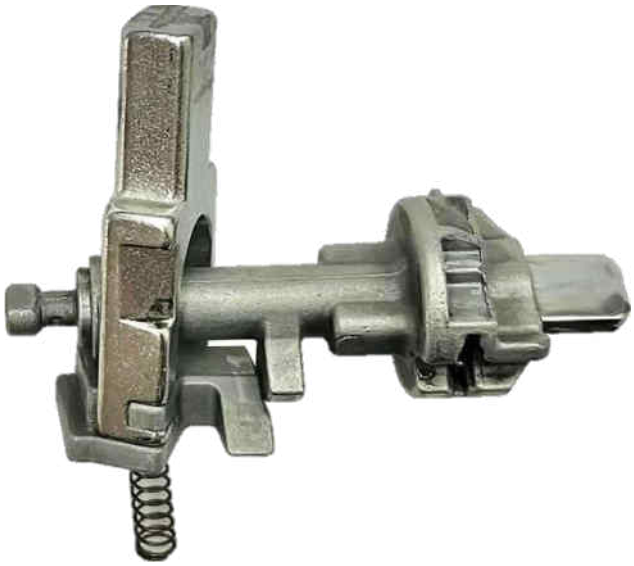




If the tumbler-rod moves laterally by as little as 2 mm while in the ON position, it can slip off the lock's base, causing the lock-bolt to spring up and resulting in a steering lock-up malfunction.

The following image illustrates an internal malfunction in which the tumbler-rod has shifted laterally by 2 mm, causing the tumbler-rod's cam (highlighted in green) to slip off the steering-lock's base (highlighted in orange).





Tumbler-Rod & Steering Lock Assy

We conducted extensive testing of the 2011–2016 Hyundai Elantra ignition assembly. While in the ON position, the ignition switch can be removed, allowing a slight lateral force to be applied to the tumbler-rod via its exposed switch end. Our testing revealed that, due to the lack of proper safeguards within the ignition assembly, the tumbler-rod could easily move 2 mm laterally and slip off the steering lock's base while the ignition cylinder was turned to ON.

Note: The majority of testing was conducted with the lever latch mechanism disabled, as this mechanism does not prevent lateral movement or dislodgment of the tumbler-rod. Independent testing of the lever latch mechanism (see "Lever Latch" section) was performed to evaluate the efficacy of individual safety mechanisms.

Our results demonstrated that depending on how the tumbler-rod dislodged within the assembly, the malfunction could result in either a partial or full deployment of the steering lock.

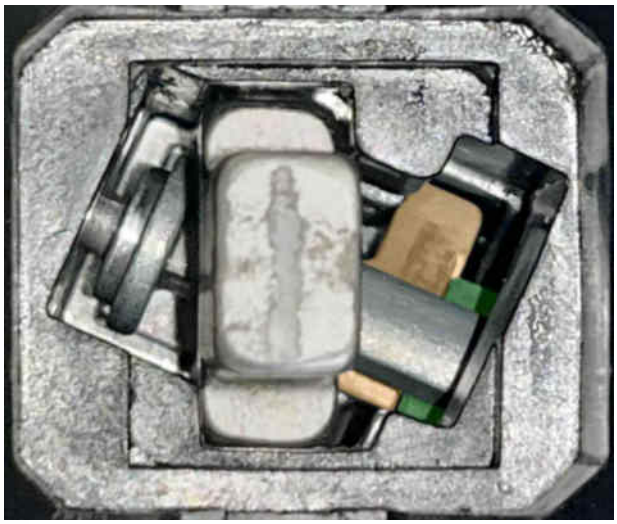
- Partial deployment: The steering-wheel may stick where the steering-column lock port meets the lock-bolt.
- Full deployment: The steering-wheel completely locks, preventing steering.

We also observed that turning the key back to LOCK re-seats the tumbler-rod into its proper position and resets the assembly. This makes it difficult to diagnose the malfunction after the vehicle has been shut off, as there are no sensors that record a steering-lock deployment or malfunction.

Our testing confirmed that lateral movement of the tumbler-rod, which can cause steering-lock deployment, is possible due to:

A) The ignition switch releases the tumbler-rod in the ON position, allowing it to move freely within the assembly.

B) The assembly housing lacks a raised stop-channel (red block) for the tumbler-rod cam, which would otherwise prevent lateral movement in the ON position.



The steering lock has fully deployed while the ignition cylinder is turned to the ON position.

Tumbler-Rod & Steering Lock Assy (RP)

We contend that Hyundai likely recognized that the 2011–2016 Elantra (and similarly designed) ignition assemblies were vulnerable to malfunction because they lacked a critical component to prevent the tumbler-rod from moving laterally and slipping off the lock's base.

Hyundai subsequently addressed this issue by incorporating a raised stop-channel into later ignition assembly housings. This feature ensures that the tumbler-rod cam remains laterally secured while in the ON position, preventing it from slipping off the lock's base and inadvertently deploying the steering lock.

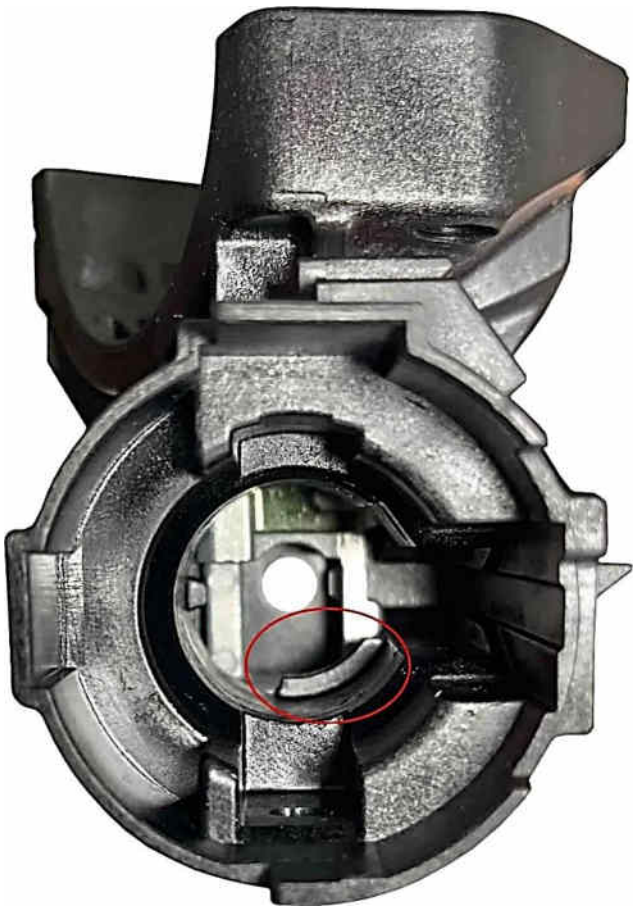
The image below illustrates this design improvement: the stop-channel (red block) physically restrains the tumbler-rod cam, blocking unwanted lateral movement and ensuring it cannot disengage from the lock's base (shown to the right).

Below, we compare the 2011–2016 Elantra ignition assembly (left) with a later-generation Hyundai housing.
In the updated design, a raised stop-channel (circled in red) has been added to the assembly housing—an important feature absent from the 2011–2016 design.

Note: To determine whether Hyundai had retroactively corrected this issue, we purchased a replacement ignition assembly for the 2011–2016 Elantra. Disappointingly, these assemblies continue to be sold without the stop-channel, leaving the vulnerability to lateral movement unresolved.

2011-16 Elantra Housing

Later Generation Housing



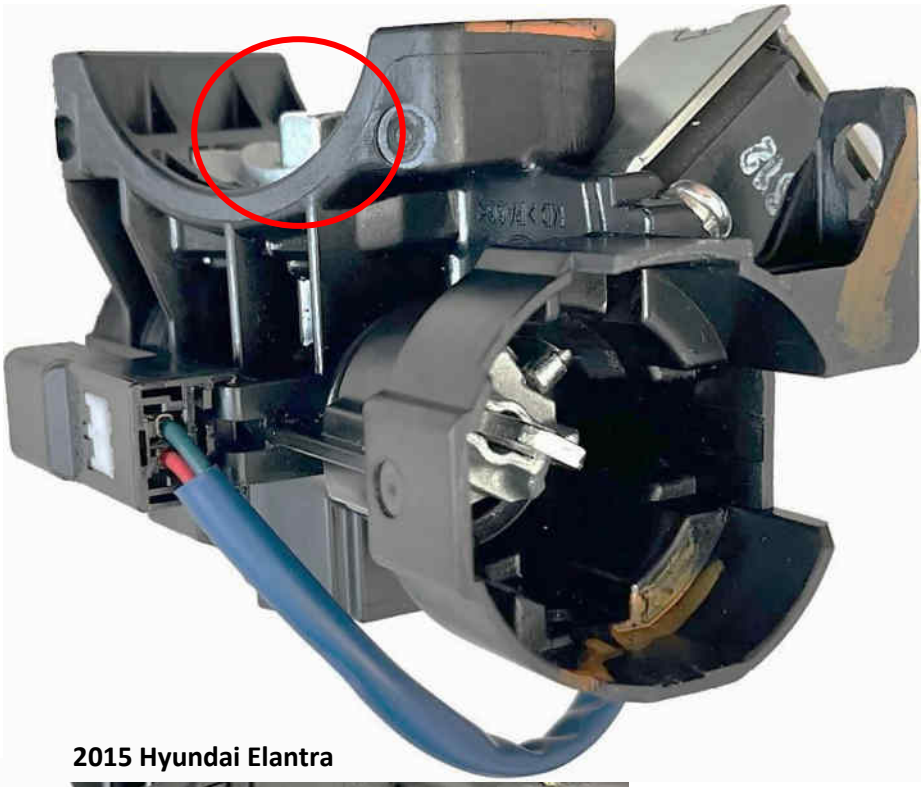
Key Interlock (Explainer)

The ignition assembly in automatic transmissions also includes a key-interlock that prevents the key from being removed unless the transmission is in PARK. The interlock solenoid pushes and retracts a pin that prevents the tumbler-rod from rotating to LOCK while the transmission is shifted out of PARK. This feature was designed to satisfy the rollaway prevention requirements of FMVSS 114 S5.2, and its purpose is to reduce the risk of vehicle rollaway or carbon monoxide exposure in enclosed areas.
The key-interlock pin was **not** designed to secure the tumbler-rod from lateral movement and is not used outside the USA.

Our testing below shows the tumbler rod in the ON position and having dislodged after moving laterally. The steering-lock can be seen deployed while the key-interlock pin is enabled.

Furthermore, our testing on a 2012 Elantra showed that if the interlock fails to deploy the pin due to obstruction or burnout, the car will still allow the transmission to shift. Permitting a shift into DRIVE without the interlock deployed constitutes an automatic noncompliance with 49 CFR 571.114 S5.2 & S6.2.

S5.2 **Rollaway prevention in vehicles equipped with transmissions with a "park" position.**
S5.2.1 Except as specified in S5.2.3, the starting system required by S5.1 must prevent key removal when tested according to the procedures in S6, unless the transmission or gear selection control is locked in "park" or becomes locked in "park" as a direct result of key removal.



2015 Hyundai Elantra

KEY POINTS:

Mandated by FMVSS 114 **S5.2 Rollaway prevention**.

Key-interlock for **automatic vehicles only**.

Key-interlock pin **not** designed to secure tumbler-rod.

Tumbler-rod face varies by model, some faces have sections cut-out (see example below).

Key-interlock pin can also be **behind** the tumbler-rod face on some models, which again does **not** secure the tumbler-rod.

If interlock solenoid is damaged or fails to properly deploy pin, the vehicle will still shift into DRIVE and **won't** alert the driver.

This may be interpreted as a violation of 49 CFR 571.114 S5.2 and/or S.6.2 (test procedures).

Steering lock malfunction in ON position.

Tumbler-rod has moved far enough laterally to slip off the lock's base while key-interlock pin is enabled.

Note: Tumbler-rod face can vary by model. The interlock-pin can also be **behind** the tumbler rod's face.

Kia Optima tumbler-rod face

Lever Latch (RP)

The NHTSA had the foresight to require that ignition assemblies include a safeguard preventing a malfunction or driver error from causing an inadvertent steering lock-up. The regulation mandates that the steering lock may only deploy once the key has been removed.

Hyundai's compliance approach relied on a lever attached to the ignition cylinder. This lever engages a notch in the spring-loaded lock assembly while the key remains inserted. Once the key is removed, the lever disengages, allowing the lock to spring upward and immobilize the steering column.

§ 571.114 Standard No. 114; Theft protection and rollaway prevention.
S1. Scope. This standard specifies vehicle performance requirements intended to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles.
S2. Purpose. The purpose of this standard is to decrease the likelihood that a vehicle is stolen, or accidentally set in motion.
S5.1 ***Theft protection.***
S5.1.1 Each vehicle must have a starting system which, **whenever the key is removed** from the starting system prevents:
(a) The normal activation of the vehicle's engine or motor; **and**
(b) Either steering, or forward self-mobility, of the vehicle, or both.

The lever latch is the mechanism that fulfills the Federal Motor Vehicle Safety Standard No. 114 S5.1.1 (b).

Upon express removal of the key, it allows the steering lock to deploy, thereby preventing steering.

Lever latch with key inserted

Lever latch with key removed

Lever latch and lock notch

It was concerning that the lock's notch and lever have a very small contact area of only a few millimeters, with both components featuring rounded edges. This mechanism relies on tight tolerances to function effectively, yet the lock assembly is poorly engineered and manufactured, composed of multiple pieces that easily separate and move within the assembly.

The notch has a maximum depth of 2 mm, tapering to nothing, and the combined effects of rounded lever edges and loose tolerances reduce the effective contact to roughly 1 mm.

We tested the lever's effectiveness by turning the ignition to LOCK while keeping the key inserted, in order to assess the reliability of the cylinder's latch lever.

Our testing revealed that the lever's spring tension can be easily overcome with taps and gentle impacts simulating potholes or road shocks. These impacts allowed the lock to slip past the safety mechanism, demonstrating the lever's ineffectiveness in preventing an inadvertent steering lock-up while the vehicle is in motion.

We therefore contend that any lateral movement of the tumbler rod caused by bumps or potholes could also overcome the lever latch's spring tension.

The root cause of this defective mechanism appears to be the approximately 1 mm of meaningful surface contact between the latch and lock notch, combined with the substandard construction of both the lever mechanism and the overall ignition assembly.

Lever Latch – Substandard Construction (Rounded / sloped edges)

In the 2011–2016 Elantra, we observed that the side of the lever contacting the lock is noticeably more rounded and sloped compared to the opposite side. Additionally, the entire lever exhibits more play than the lever used in older-generation Elantras. The combination of the sloped edge and increased play further reduces the effective surface contact between the lever and the lock's notch, thereby decreasing the overall effectiveness and reliability of the mechanism.

We compared the lever from a 2015 Hyundai Elantra (2011–2016 model) to a lever from a 2008 Elantra (2007–2010 model). The 2015 lever has a noticeably rounded edge and significantly more play, whereas the 2008 lever features a well-defined edge with minimal movement. This contrast highlights the reduction in effective contact and reliability of the later mechanism.

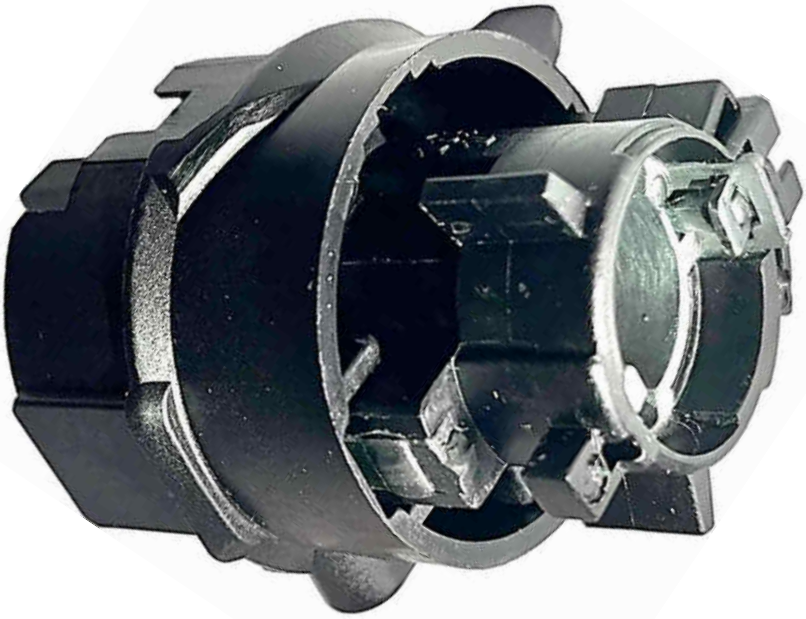
2011-2016 Elantra lever

2007-2010 Elantra lever

Lever Latch – Substandard Construction (Lever tab)

The lever latch is attached to a thin 1 mm metal tab that lifts when the key is inserted, actuating the mechanism. This tab only contacts the lever at its very edge and is loosely fitted. As a result, it makes less than 1 mm of effective contact. The loosely secured tab can move or “wiggle” like a loose tooth, and if it were to dislodge, the latch would fail to actuate, rendering the safety mechanism ineffective.

- 2011-2016 Elantra ignition cylinder with key cylinder removed and lever tab exposed



- 2007-2010 Elantra ignition cylinder with key cylinder removed and latch lever tab exposed

Lever Latch – Substandard Construction

	US Model Years	Likely Substandard?
HYUNDAI		
Accent	2012-2017	Yes (RB1)
Elantra	2011-2016	Yes
Elantra	2017-2020	Yes
Elantra	2021-2022	Yes
Elantra Coupe	2013-2014	Yes
Elantra GT (i30)	2018-2020	Yes
Sonata	2011-2014	Yes
Sonata	2015-2019	Yes
Sonata	2020-2022	Yes
Tucson	2016-2021	Yes
Tucson	2022	Yes
Veloster	2019-2021	Yes
KIA		
Forte	2019-2022	Yes
K5 (LX)	2021-2022	Yes
Optima	2011-2015	Yes
Optima	2016-2020	Yes
Rio	2012-2017	Yes
Rio	2018-2022	Yes
Sedona	2015-2021	Yes
Seltos	2021-2022	Yes
Sorento	2021-2022	Yes
Soul	2014-2019	Yes
Soul	2020-2022	Yes
Sportage	2017-2022	Yes

Demonstration Video:

https://www.youtube.com/watch?v=qV_Hi7Rt9SQ

Note: Video shows RB2 cylinder for Accent.

Lever Latch – Cracked or deformed plastic housing

The ignition cylinder is held in the plastic housing by a single locking pin. If the housing becomes slightly deformed or cracked in a way that compromises the pin's retention, the cylinder—and its attached latch mechanism—can shift a few millimeters away from the lock assembly notch. This movement would render the key latch lever ineffective at preventing a steering lock-up while driving.

***See "Theft Damage (p. 26)"**

Lever Latch – FMVSS 114 S5.1.1

We contend that the lever latch fails to satisfactorily meet the FMVSS 114 S5.1.1 standard, which requires that an anti-theft device (steering lock) deploy only upon removal of the key. The key-removal requirement is the standard's built-in safety measure to prevent inadvertent steering lock-ups while the vehicle is in motion.

We tested the 2011–2016 Elantra lever mechanism by turning the ignition to LOCK while keeping the key inserted. Our testing showed that the lever's spring tension can be easily overcome with taps or gentle impacts simulating bumps and potholes. These shocks allowed the lock to bypass the lever latch mechanism and deploy while the key remained inserted.

We determined that the lever mechanism intended to enforce the key-removal portion of S5.1.1 is neither effective nor reliable. This is likely due to the latch's limited 1 mm of effective contact with the lock assembly notch and the excessive play present in both the lever and the lock assembly.

The steering lock prevents steering of the vehicle, and to satisfy FMVSS 114 S5.1.1(b), it must not deploy until the key is removed from the ignition. While other (flawed) safety mechanisms may be cited, federal standards specifically apply to the lever latch mechanism, which must be evaluated on its own to determine compliance with S5.1.1(b).

The lever latch mechanism has failed to meet a reasonable standard of quality (substandard) and is therefore ineffective at upholding the anti-theft mandate's innate safety component. This defective component should be recalled so that ignition cylinders and lever latch mechanisms can be replaced with higher-quality parts that reliably prevent inadvertent steering lock-up while the key remains inserted.

§ 571.114 Standard No. 114; Theft protection and rollaway prevention.
S1. Scope. This standard specifies vehicle performance requirements intended to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles.
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S5.1 ***Theft protection.***
S5.1.1 Each vehicle must have a starting system which, **whenever the key is removed** from the starting system prevents:
(a) The normal activation of the vehicle's engine or motor; **and**
(b) Either steering, or forward self-mobility, of the vehicle, or both.

The lever latch is the mechanism that fulfills the Federal Motor Vehicle Safety Standard No. 114 S5.1.1 (b).

Upon express removal of the key, it deploys the steering lock and prevents steering.

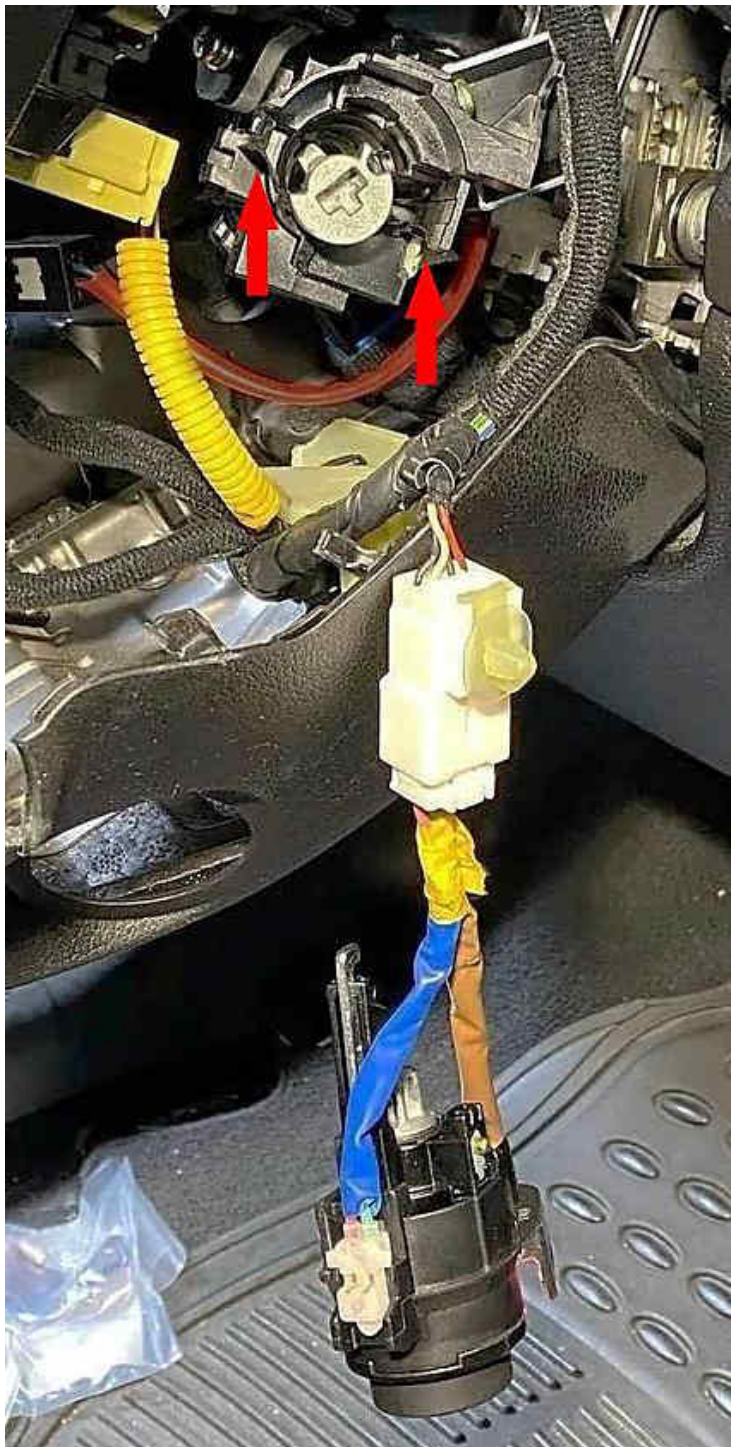
Demonstration Video: https://www.youtube.com/watch?v=qV_Hi7Rt9SQ

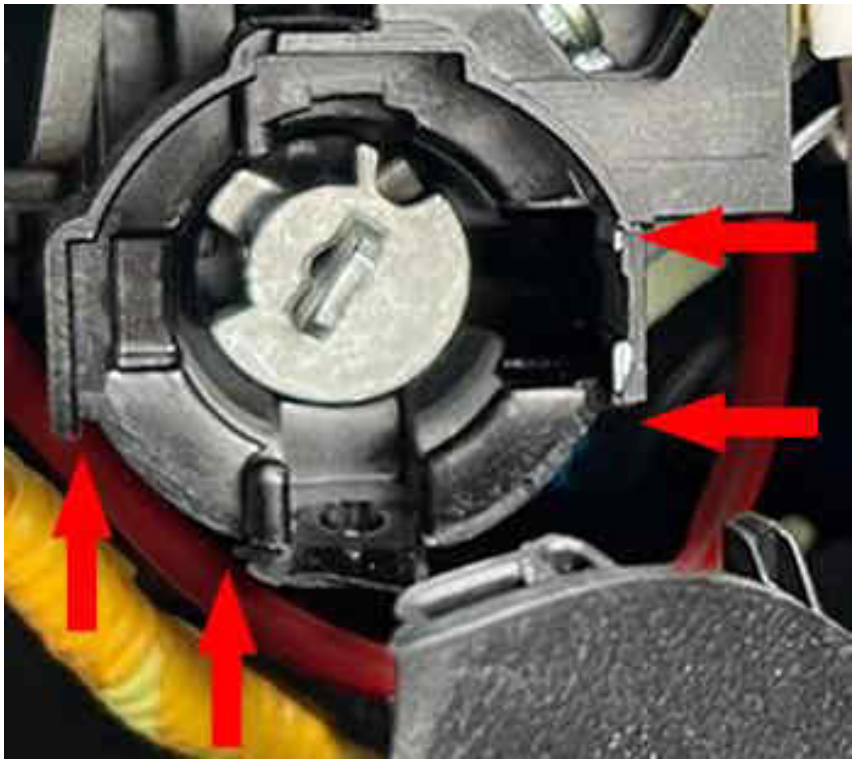
Theft Damage (RP)

Due to the widespread theft epidemic, millions of Hyundai and Kia vehicles may have compromised ignition assemblies that are at increased risk of malfunction. During an attempted theft, the ignition cylinder is often pried using a screwdriver, which introduces flexing and torsional stress throughout the ignition housing and its components. This stress causes the thin-walled (< 2mm) plastic housing to deform or fracture. Over time, even minor fractures can propagate and worsen due to the routine stresses of everyday use.

These deformations compromise the ignition assembly's safety mechanisms, which rely on substandard construction and tolerances as tight as 1 mm to function effectively. Once the assembly is compromised, there is a significantly higher risk of malfunctions that could result in a total loss of steering control. Because the tumbler-rod's cam is responsible for engaging and disengaging the steering-lock mechanism, preserving the integrity of the assembly requires the ignition housing to remain free from deformation or stress fractures.

Photo of ignition assembly housings documenting theft damage. Tumbler-rod in OFF/LOCK position.
Red arrows are noting areas of either cracked or missing plastic.





In 2023 alone, the NICB reported 174,421 Hyundai and Kia vehicles among the ten most stolen models. The actual number of stolen vehicles from these manufacturers is significantly higher when accounting for all models, and this figure does not include attempted thefts—which would further increase the number of vehicles with compromised ignition assemblies.

Assuming a conservative average of 350,000 affected vehicles per year (including attempted theft) over the past four years, there could be roughly 1.4 million Hyundai and Kia vehicles with compromised ignition assemblies on U.S. roads. These vehicles are more prone to catastrophic failure modes that could cause the steering wheel to lock suddenly while the vehicle is in motion.

Hyundai's business practices have maintained a high number of affected vehicles in operation, showing minimal concern for the risk to its customers and refusing to offer reasonable price concessions. The cost of an ignition assembly and cylinder set from a Hyundai dealership currently ranges from $700–$800, with total repair costs, including labor and taxes, likely exceeding $1,000. Many owners, guided by mechanics or online tutorials, have opted to simply reinsert the cylinder into the compromised housing or replace it with a low-cost aftermarket cylinder, leaving the compromised assembly in place. These drivers are likely unaware of the increased risk of a critical steering lock-up failure while driving.

We estimate that approximately 1,000,000 Hyundai and Kia vehicles with compromised ignition assemblies are currently on U.S. roads. Daily use continues to stress the existing fractures in the housing, which propagate over time, increasing the likelihood of a sudden catastrophic steering lock-up.

The potential consequences of such failures are severe and life-threatening. **We strongly encourage Hyundai to issue a recall for all vehicles that have experienced an attempted theft, replacing the ignition assembly entirely and publicly warning drivers about the increased risk.** We also advise that the public be informed about the dangers of stolen vehicles being driven with physically damaged ignition assemblies and removed cylinders, which significantly elevates the risk of a catastrophic failure. Such failures may partially explain the unusually high number of crashes associated with the Hyundai and Kia theft trend.

AutoSafe's proposes issuing a recall of all **plastic** ignition assemblies without immobilizer systems due to:

1) **Inadequate Material Strength of Plastic Housing**
   The ignition assembly's thin-walled plastic housing lacks sufficient material strength and structural integrity. Under foreseeable misuse scenarios, such as theft attempts involving prying, forced rotation, or impact, the housing can be easily compromised. Because FMVSS 114 requires ignition systems to provide a reasonable level of protection against unauthorized operation of a vehicle, a component design that is so fragile cannot reasonably be considered compliant.

2) **The ignition assembly housing's plastic is of insufficient thickness and creates the potential for malfunctions.**
   The thinnest section of the housing is structurally vulnerable, making it possible for an initial fracture to form at this weak point. Once initiated, such a fracture can propagate through the plastic housing under normal operating stresses, thereby creating the potential for a catastrophic malfunction, including a sudden steering lock-up while the vehicle is in motion.

3) **Reliance on Electronic Immobilizer Instead of Physical Security**
   The ignition assembly's 1.x mm thin-walled plastic housing appears to have been engineered with the assumption that an electronic immobilizer would provide the primary theft deterrent. In such a configuration, the housing itself is not designed to resist tampering or forced entry, but rather to function as a placeholder for the immobilizer system.
   By delegating the anti-theft function almost entirely to the immobilizer, the assembly's physical design fails to satisfy the standard's intent, as it cannot meaningfully deter or resist a theft attempt on its own.

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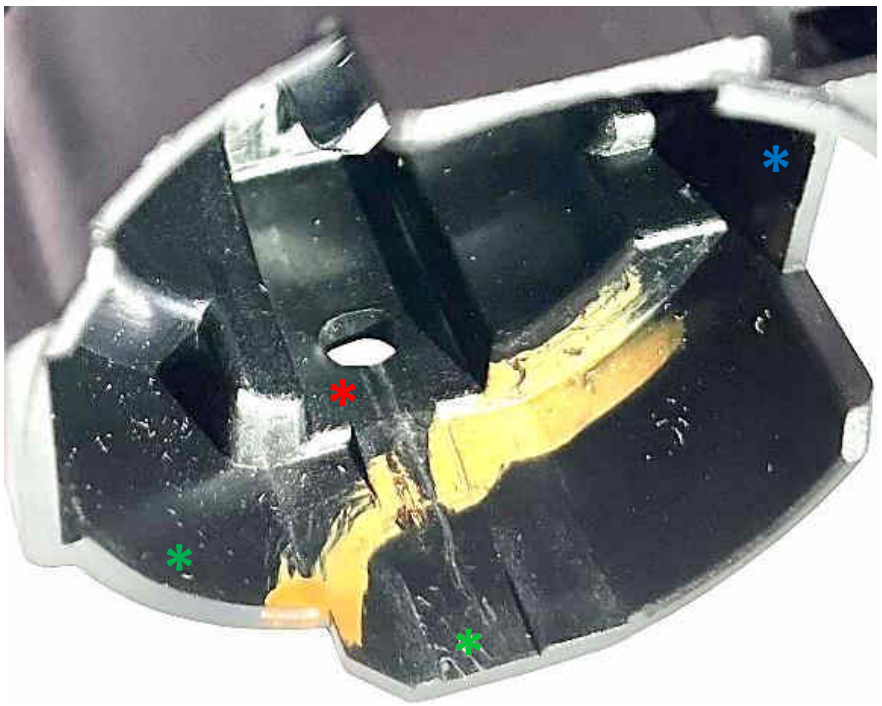

Comparison

Ford utilized plastic ignition assemblies that were reinforced with metal in a few select models starting in 2008. **These metal reinforced assemblies also included immobilizer technology as standard** (Ford standardized immobilizers by 1999) and should have served as an example to Hyundai as to the expected quality standards in the United States.

Hyundai Elantra (2015/2016) - $740.58

Ford Focus (2008) - $215.00

Instead of meeting U.S. quality expectations, the focus shifted to cutting costs and boosting profits with substandard parts. Competition should drive better products, but American companies shouldn't lose ground at home because newer players gain an advantage by cutting corners.

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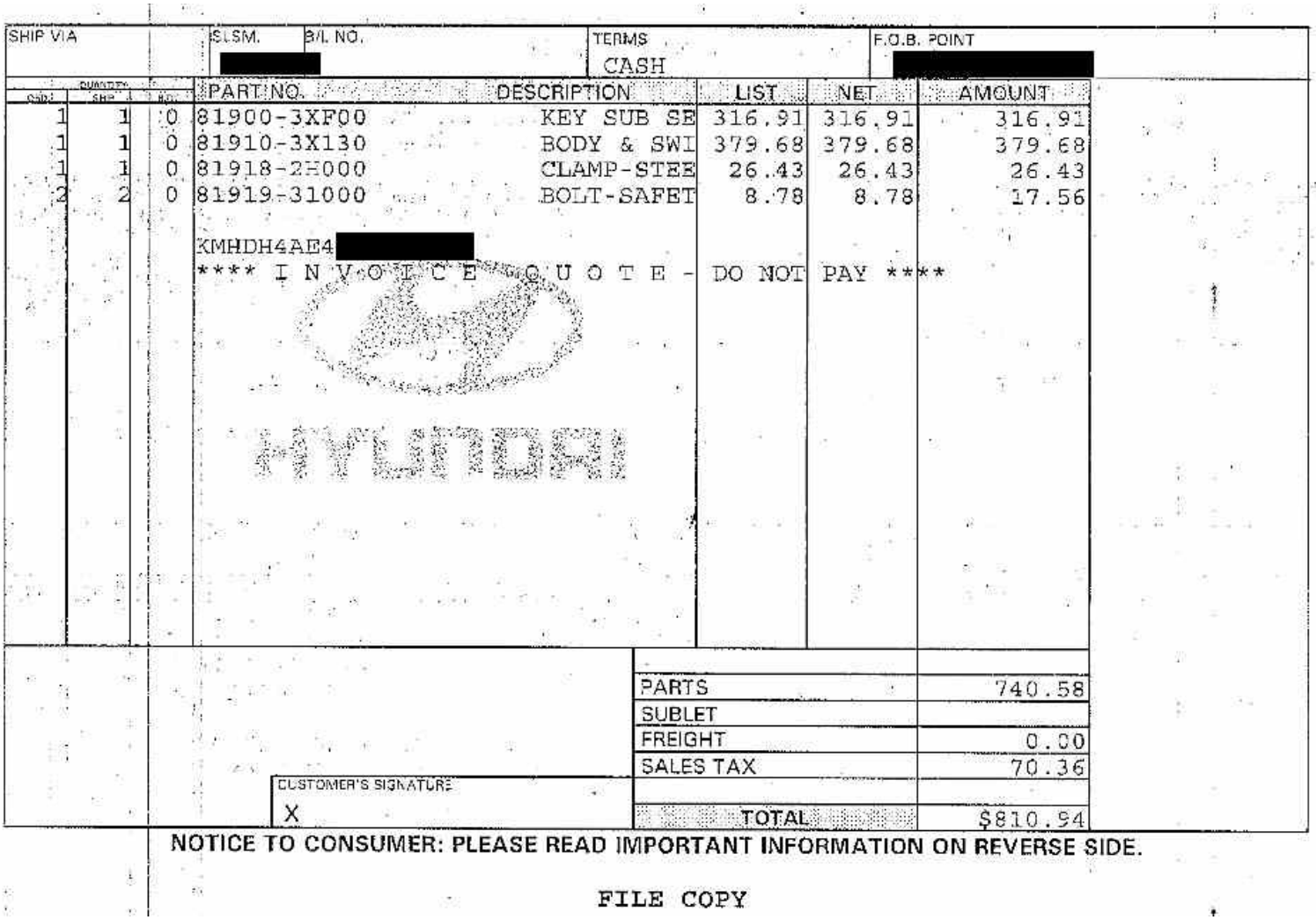
   By delegating the anti-theft function almost entirely to the immobilizer, the assembly's physical design fails to satisfy the standard's intent, as it cannot meaningfully deter or resist a theft attempt on its own.

Price Quote for 2015 Hyundai Elantra Ignition Assembly

Price quote from Hyundai dealership in Los Angeles, CA



SHIP VIA | SLSM. [redacted] | B/L NO. | TERMS CASH | F.O.B. POINT [redacted]

CNCL.	QUANTITY SHP.	B/O	PART NO.	DESCRIPTION	LIST	NET	AMOUNT
1	1	0	81900-3XF00	KEY SUB SE	316.91	316.91	316.91
1	1	0	81910-3X130	BODY & SWI	379.68	379.68	379.68
1	1	0	81918-2H000	CLAMP-STEE	26.43	26.43	26.43
2	2	0	81919-31000	BOLT-SAFET	8.78	8.78	17.56

KMHDH4AE4[redacted]

**** I N V O I C E Q U O T E - DO NOT PAY ****

HYUNDAI

PARTS	740.58
SUBLET	
FREIGHT	0.00
SALES TAX	70.36
TOTAL	$810.94

CUSTOMER'S SIGNATURE

X

NOTICE TO CONSUMER: PLEASE READ IMPORTANT INFORMATION ON REVERSE SIDE.

FILE COPY

Note: Quote does <u>not</u> include the price of labor to install parts.

We believe there may be 1,000,000 vehicles with compromised ignition assemblies driving on America's roads today.

If every vehicle owner were to pay Hyundai's quoted price, Hyundai would stand to benefit by taking in over **1 Billion dollars** in additional revenue.

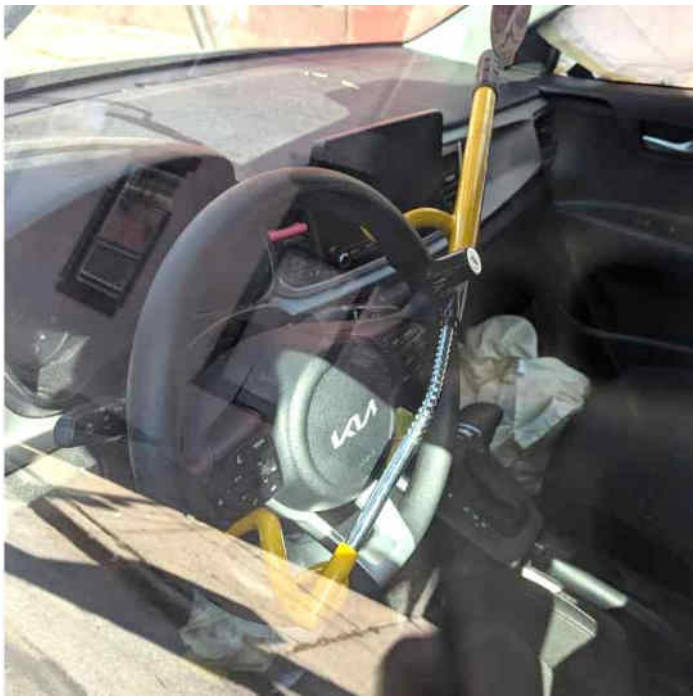
Steering-Wheel Lock Campaign (RP)

As Hyundai and Kia thefts surged across the United States, the automaker resorted to an unorthodox “band-aid” solution: distributing imitation steering-wheel locks (distinct from the ignition assembly’s steering-lock). As of 2025, Hyundai continues to provide these locks for affected vehicles not eligible for the “Anti-Theft Logic” update (Campaign P32).

The steering-wheel lock was designed to attach to the wheel and prevent maneuvering while in place. Unfortunately, the selected lock was already known to be easily defeated. Its design dates back to the 1980s and remained popular throughout the 1990s, but by the 2000s, its vulnerabilities were widely recognized, and it was no longer considered a viable security measure. Today, these locks are often seen as nostalgic relics of the 1990s, akin to cassettes or VHS tapes.

These locks could be bypassed by bending the bar with a stronger one or by quickly cutting through the steering wheel with a hacksaw. Once Hyundai and Kia began distributing these locks, a new generation of thieves rapidly rediscovered and exploited these well-known weaknesses.

VIDEO DEMONSTRATION



★☆☆☆☆ Verified Purchase

They were able to just pry it off relatively easily, can not recommend

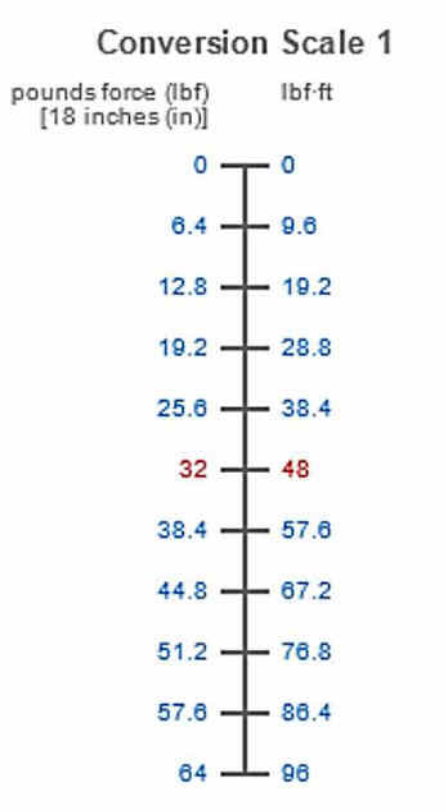
★☆☆☆☆ Verified Purchase

Car stolen easily

My car was stolen easily with this device installed... when it was recovered the device shown was in the back seat.

Although the campaign may have been well-intentioned, we contend that distributing these steering-wheel locks failed to account for potential repercussions on the vehicle's ignition components. The decision appears to have been made hastily and without a proper engineering review.

The steering-wheel lock's extended handle functions like a torque wrench, allowing extreme force to be inadvertently applied through the steering column onto the ignition assembly's steering lock. The leverage provided by the handle makes it possible for even a child to exert sufficient force to damage the plastic ignition assembly. We contend that this force generates stress within the ignition assembly's housing, potentially causing deformations and stress fractures in both the housing and its components.



The steering-wheel lock distributed by Hyundai (part #6009L) features a handle with a grip that is easily grasped by children. The handle extends outward from the steering wheel, reaching approximately 18 inches from the center of a standard 15-inch steering wheel's locking nut.

An 8-year-old child (weighing up to 80 lbs, per CDC data) playing in the vehicle could apply 30–70% of their body weight—approximately 50% on average—onto the steering-wheel lock's handle. This translates to 24–56 lbs of force (32 lbs average) and produces roughly 36–84 lb-ft of torque (48 lb-ft average) on the steering column, which in turn stresses the ignition assembly's steering-lock mechanism. This torque could easily cause deformation and stress fractures in the plastic housing and its components.

By comparison, an adult attempting to bypass the lock could apply ~200 lb-ft (and higher if braced) of torque, greatly increasing the risk of catastrophic damage to the ignition assembly.

The picture below shows a real-world example of the torque and strain sustained by a steering wheel (and by extension, the steering column and ignition assembly) when thieves attempted to forcefully remove a steering-wheel lock.

Note how the steering wheel's metal bracket was sheared by the force applied through the steering-wheel lock.

Photo source: Amazon
Not Hyundai or Kia vehicle. Photo is for illustrative purpose.

Steering Column

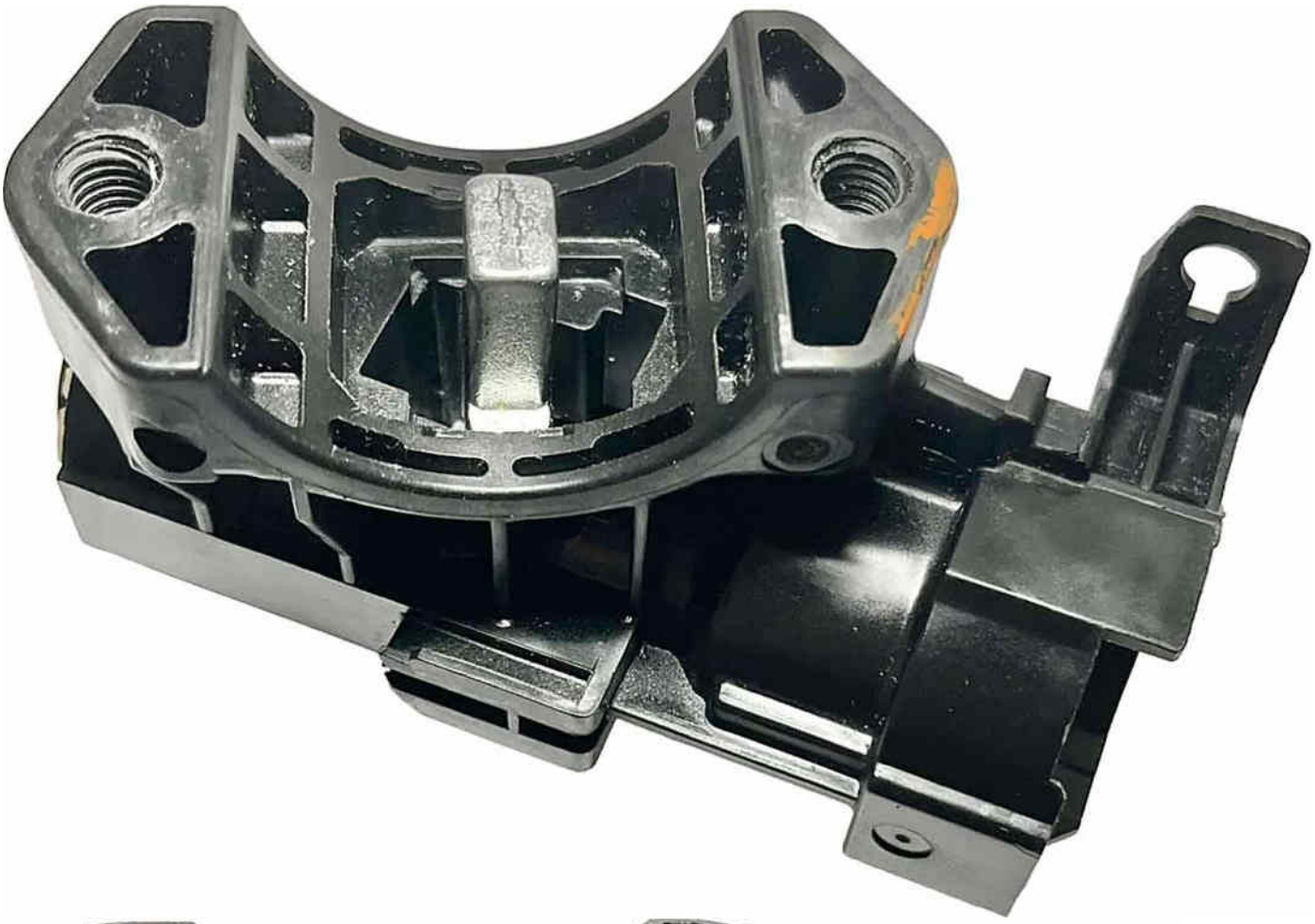
Steering Wheel Connection

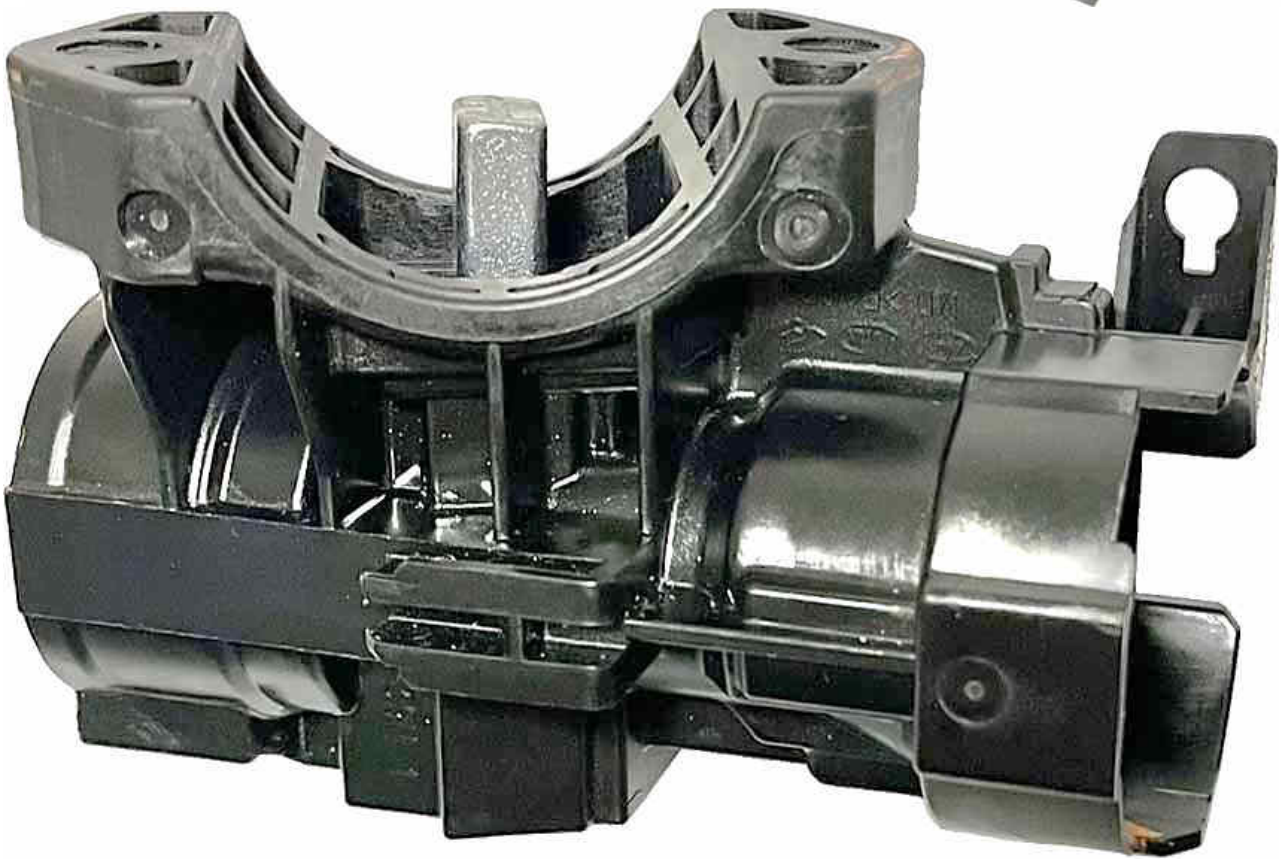
Steering Lock Port

Steering Lock

Ignition Assembly

The ignition assembly's plastic housing was not engineered to withstand the extreme stresses produced by Hyundai's steering-wheel lock mechanism. Instead, it was manufactured with hollow crevices to reduce plastic use and lower costs. The wall thickness around the steering lock varies but averages approximately 2 mm.





It is evident that the torque transmitted through the steering column and onto the ignition assembly's steering lock imposes extreme stress on the fragile plastic housing. This excessive stress can cause deformation and/or stress fractures within the housing's thin plastic walls.

These structural failures can directly affect:

1. The positioning of the tumbler rod within the housing.
2. The manner in which the tumbler rod's cam engages the steering lock assembly.
3. The tumbler rod's ability to reliably engage or disengage the steering lock.

Once deformation or fracturing occurs, the altered positioning or restricted movement of the tumbler rod compromises the integrity of the entire ignition assembly. In this compromised state, the steering lock's spring-loaded mechanism may inadvertently deploy while the vehicle is in motion—resulting in an unexpected lock of the steering wheel.

A full deployment of the steering lock during operation would cause a complete steering lock-up, making it impossible for the driver to control the vehicle. Most critically, this hazard is most likely to occur at higher speeds, when vibration is greatest, or when the vehicle strikes potholes or bumps—situations where shock loads transfer through the steering column and further destabilize the weakened ignition assembly.

Based on our examination of the steering lock's effect on the ignition assembly, we conclude that this accessory can inadvertently damage ignition components and poses a significant safety risk. Accordingly, it should be subject to an immediate recall.

Furthermore, because deformation or stress fractures within the ignition housing cannot be reliably detected by visual inspection, we recommend the following:

- Recall and replacement of ignition assemblies in all vehicles where Hyundai steering-wheel locks were installed following an attempted theft, regardless of whether visible damage is present.
- Recall and replacement of ignition assemblies in all vehicles where Hyundai steering-wheel locks were installed and children may have been left unattended, as the lock's bright color and handle design could have encouraged tampering and further compromised the ignition assembly.

Part #: 6009L (2 variants: single or twin hook)

Ignition Switch (PB & CD2)

In 2017, a lawsuit was filed against Hyundai by drivers reporting that the steering wheel became unresponsive while the vehicle was in motion. The suit primarily involved the 2011–2016 Hyundai Elantra and 2012–2017 Accent, with drivers claiming that the steering wheel had seemingly locked during operation, sometimes resulting in crashes.

Within this report, we will demonstrate how some of these incidents may be explained by malfunctions within the ignition assembly that can inadvertently trigger the steering-lock to deploy.

Some reported cases involving the Elantra also included a perceived loss of braking capability. A possible explanation for this may be the soft ignition switch, which can cause the vehicle to shut off while in motion, disabling the car's power systems. A vehicle may shut off if the ignition key is inadvertently turned from ON to ACC, due to driver error or other contributing factors. When the car shuts-off, it disables Hyundai's EPS (Electronic Power Steering), Power Brakes, ABS (Anti-Lock Braking System) and Airbags.

Without the aid of the **power steering** system, turning the steering-wheel and correcting a car's direction becomes much more physically demanding. The surprised driver may not be prepared to exert the required force to properly turn the steering wheel and this may be perceived as a steering lock-up.

Without the aid of the **power brakes**, there will be some residual brake power available but it will require greater force to be applied to the brake pedal and the stopping distance will be longer. The residual brake power will be partially depleted each time the brake pedal is applied and once depleted, will require significantly greater force to continue braking the car. Furthermore, the vehicle's **ABS** (Anti-Lock Braking System) will also be disabled. Emergency braking without ABS can also cause wheel lock-up, leading the car to slide.

These conditions present serious safety risks, as the driver's diminished ability to steer or brake can result in a severe crash. The absence of **airbag** deployment further increases the likelihood of serious injury or death.

The ignition switch at the center of this issue was newly introduced in the 2011 Hyundai Elantra and several other Hyundai/Kia models. The switch followed the trend of plastic ignition assemblies, being smaller and cheaper to manufacture. Its detents and turning resistance secure the ignition cylinder's position.

Our investigation of the 2011–2016 Hyundai Elantra ignition switch revealed weak turning resistance. Comparative measurements of the force required to turn the switch were below our equipment's minimum threshold and registered as zero (undetectable). We plan to acquire specialized equipment capable of measuring lower forces and conduct further testing in the near future.

However, Hyundai was aware of the risk of inadvertent steering-lock deployment due to low turning resistance and implemented a "Push-to-Lock" safety mechanism within the tumbler rods paired with this switch. This mechanism prevents the ignition from inadvertently turning to the LOCK/OFF position while the vehicle is in motion. However, it does not mitigate the risk of the switch inadvertently turning to ACC, which can shut off the engine and power systems during operation.

"PB" ignition switch

Part #: 93110-3S000

<u>We observed two conditions that increased the likelihood of an inadvertent ignition shut-off scenario:</u>

1. **Keychain weight and movement**

Many drivers keep their car key attached to bulky keychains that can move or bounce while driving. Depending on how the keychain lands, it may exert a rotational force on the key, inadvertently turning it and shutting off the vehicle.

The automotive industry became aware of the risks associated with low-resistance ignition switches—often introduced for a "sporty" feel—approximately four years after Hyundai introduced the "PB" switch into the U.S. market. The 2011–2016 Elantra ignition switch, with its low turning resistance, is particularly vulnerable to this condition.

2. **Transfer of vibration and shock into the ignition switch**

Vibration and shock from the steering column can propagate into the ignition switch, altering its mechanics and reducing the force required to turn it. These forces are transmitted through the switch casing and mated ignition housing, behaving similarly to energy transfer in billiard balls—a well-understood engineering concept (illustrated by blue arrows).

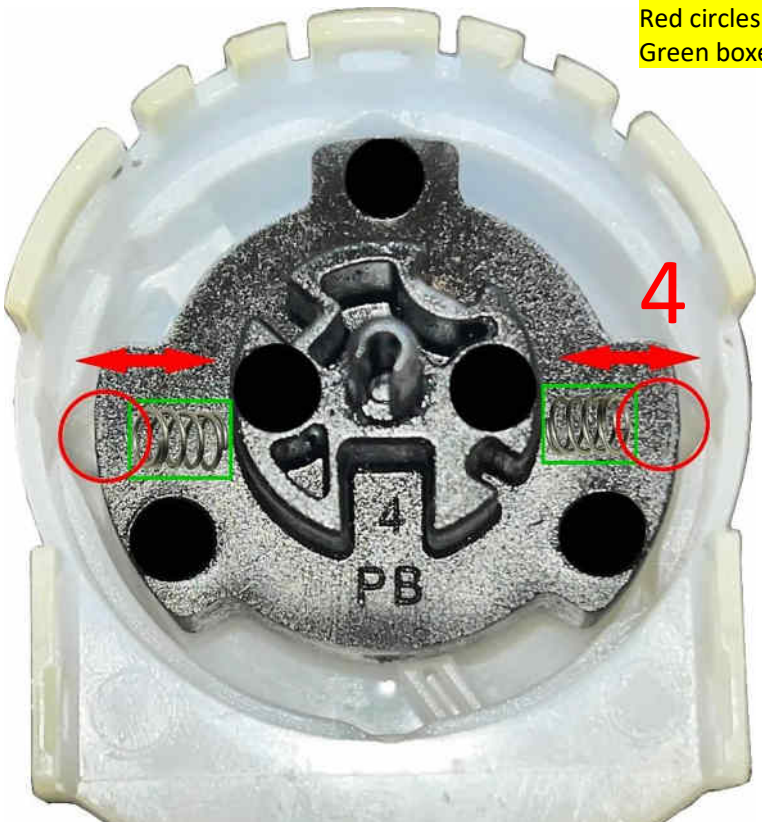
Additional vibration is introduced via the tumbler-rod, a mechanism less commonly understood without detailed knowledge of the assembly's operational mechanics and extensive real-world testing. Unlike the externally applied forces from the housing, these tumbler-rod forces act from the internal to the external direction (illustrated by red arrows), further affecting the switch's behavior.

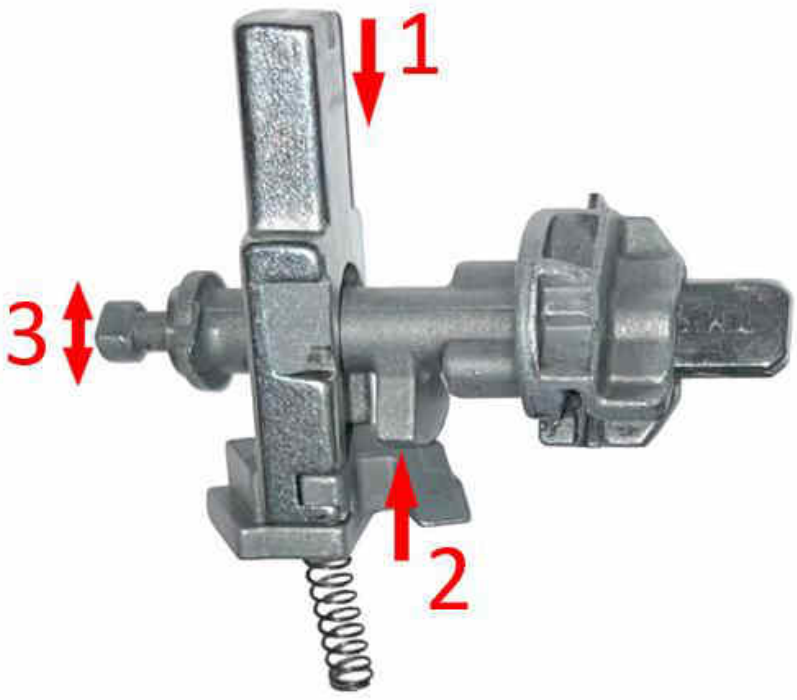
Illustration of concept

Vibration from the steering column and the shocks of repetitive bumps can push down on the lock-bolt (**1**);
the lock assembly's spring will push the lock back up, and these opposing forces can cause the lock assembly to act like a reciprocating jackhammer against the tumbler rod's cam (**2**);
This vibration can then transfer through the tumbler rod and into the ignition switch (**3**).

The effect of vibrations transferred into the ignition switch acts on its mechanics from both an external-to-internal, and an internal-to-external direction simultaneously, which can momentarily reduce the switch's resistance and the required force to turn it.

Red circles outline the ball-bearings,
Green boxes outline the internal springs (illustrated).





We believe Hyundai has also identified the 2011-20 ignition switch as a potential hazard and cause for such malfunctions due to its low turning resistance. We observed that the 2021+ Hyundai Elantra uses what appears to be a new ignition switch model, which can be visually distinguished by its black plastic shell cover instead of the previous 2011-2020 ignition switch's white shell. The new black shell also changes its fitment tab (9 o'clock position) from the white shell (7 o'clock position).

2011-2020 ignition switch ("**PB**")

Fitment tab at 7

2021-Present ignition switch ("**CD2**")

Fitment tab at 9

We procured new replacement ignition switches as part of entire replacement assemblies produced for the 2011-2016 & 2021+ Elantra. We noted that both switches share the same typo for Ignition-1 on the plastic casing as "G1" (circled green) instead of "IG1" (older examples of this casing and the most current casing's pin connector both list it correctly as "IG1"); we can also see that Ignition-2 is spelled correctly on both casings as "IG2" (circled red).

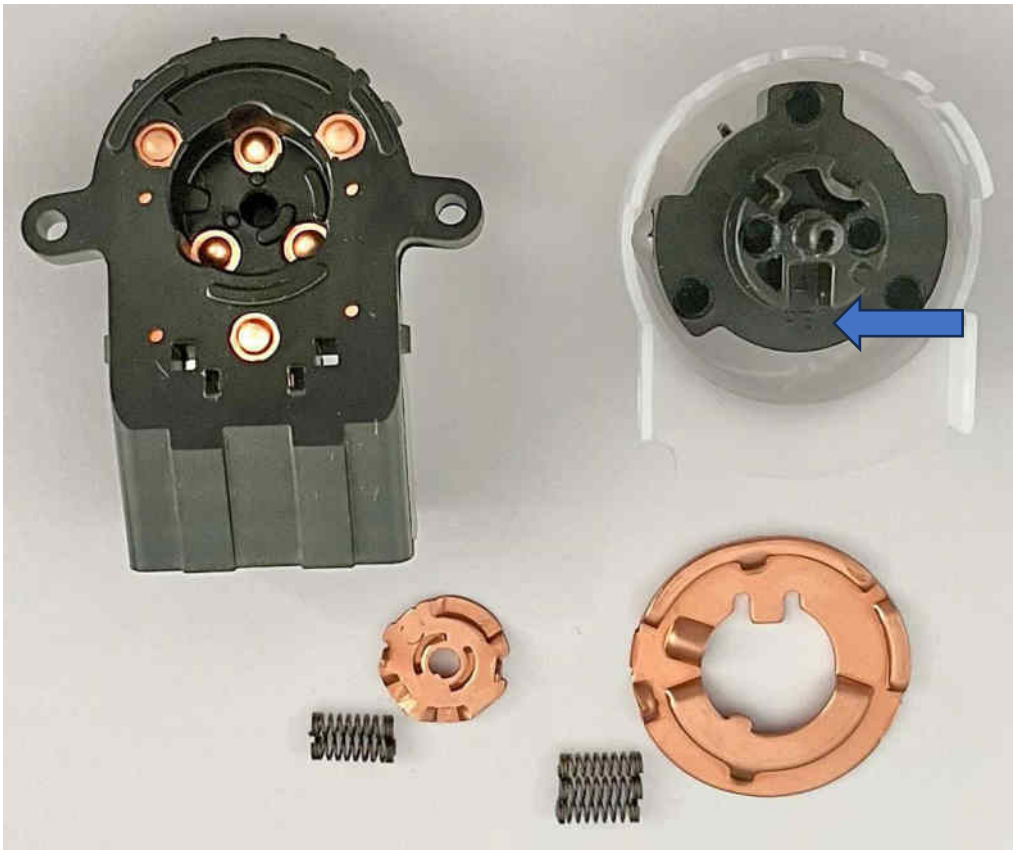
We contend the below pictures prove that the plastic backing and its primary internal components are absolutely identical.

2011-20 Elantra (PB White Shell)

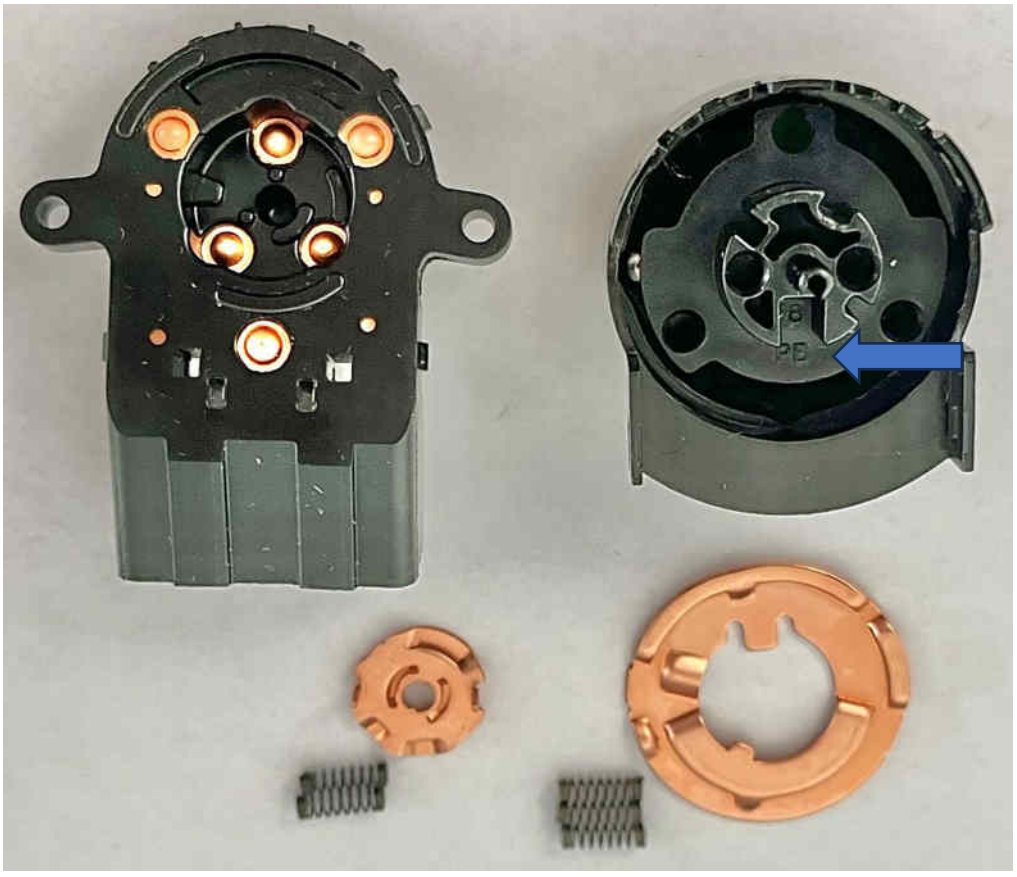
2021-Present Elantra (CD2 Black Shell)

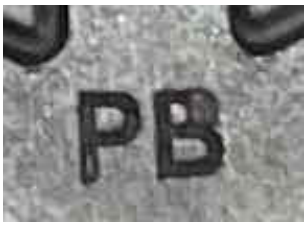
View inside the casing connector confirming the correct spelling as "IG1"

Upon deeper examination, it appeared that the two ignition switches used identical components throughout. The detent switching mechanism even had the same part markings (i.e., “PB”). The only obvious difference was the white and black shell.



Note: “PB” switch’s detent mechanism marked as “PB.”





Note: “CD2” switch’s detent mechanism also marked as “PB.”

We tried to understand why Hyundai would make such effort to alter an identical ignition switch only to prevent its interoperability with newer model ignition assemblies.

We discovered the answer upon further examination of the detent-switching mechanism. The new black cover switch uses 2 stiffer springs within its ball-bearing and detent switching mechanism. These stiffer springs resist compression more than the old springs and increase the pressure of the ball-bearings against the shell's detents, thereby, significantly increasing the force required to turn the key from ON to ACC.

New CD2 switch detent mechanism (marked "PB")

Original springs on left (silver) & new springs on right (black)

Comparison to GM Ignition Switch

In the case of GM's ignition switch fiasco, GM modified the dimensions of its spring in order to increase the spring's compression resistance (increasing its length by just 1.6mm).

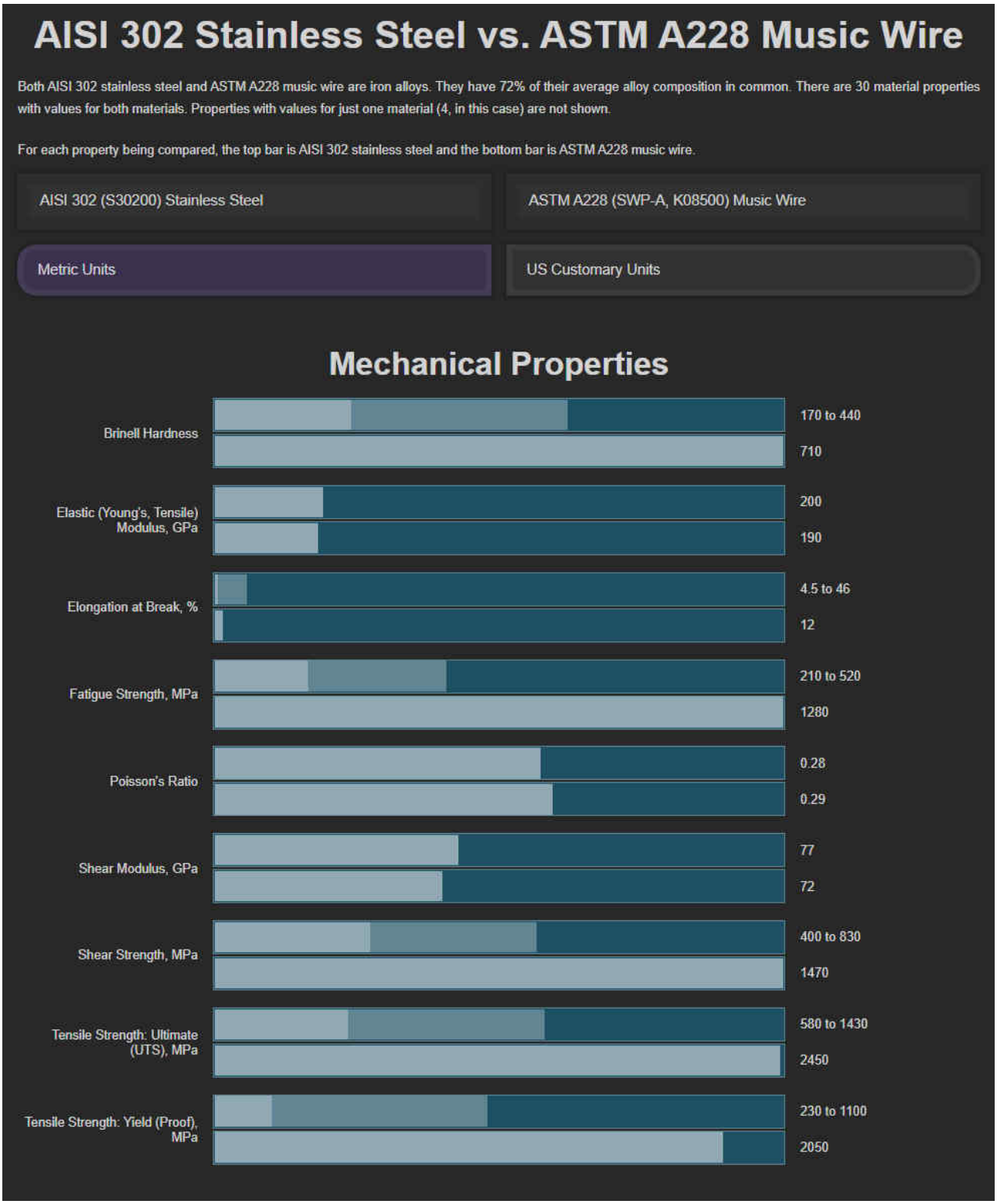
In contrast to GM, Hyundai may have determined it could achieve the same result by changing the material of the spring (rather than its dimensions). The CD2 switch replaced the PB switch's silver springs and introduce another metal material for the springs. This metal variant exhibited significantly more compression resistance and, subsequently, considerably increased the turning resistance of the switch.

As an example of how different metals influence spring characteristics, consider the comparison between carbon-steel and stainless-steel springs. Carbon steel generally provides higher tensile and fatigue strength than stainless steel, which translates into greater resistance to compression under load.

The chart below illustrates this relationship, showing how the superior tensile strength of carbon steel results in significantly higher compression resistance compared to stainless steel.

Note: We are not claiming that the PB switch used stainless steel. The example is provided only to show how different spring materials could produce different levels of turning resistance.

An example comparison of materially different springs and characteristics - Stainless Steel & Carbon Steel



Music Wire (ASTM A228): • Ultimate Tensile Strength (UTS): ~2450 MPa • Yield (Proof) Strength: ~2050 MPa	**Stainless Steel 302**: • UTS: 580–1430 MPa • Yield Strength: 230–1100 MPa

Translation to Compression Resistance

- Using the **lower end** of stainless yield (230 MPa), music wire can handle up to **~8.9× more stress**.
  Using the **upper end** (1100 MPa), music wire still handles **~1.9× more stress**.
- In typical design conditions, using average values (e.g., music wire ~2050 MPa vs stainless ~800 MPa), the difference is **~2.5×**, consistent with practical engineering expectations.

Note: The change to GM's ignition switch spring resulted in an increased compression resistance of about 2x, which would be comparable to a material change from stainless steel springs to carbon steel (source: Varukas Report).

Thus, a materially different spring would achieve the same result as GM's modification, albeit in a manner that is more difficult to detect.

We also attempted to measure the force required to rotate the ignition switch from the **ON** to **ACC** position, measured at the same distance from the switch as the car's key handle.

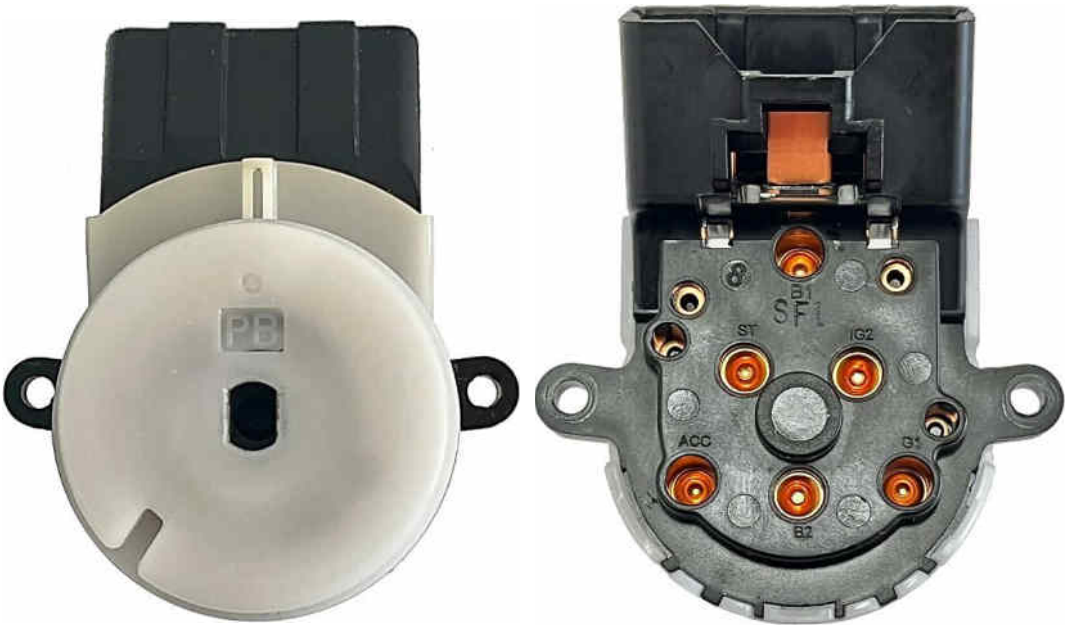
- The **black-shell ignition switch** required, on average, more than **3 in·lbf** of torque to turn.
- The **white-shell ignition switch** required less force than our equipment could detect (below the minimum threshold), and therefore registered as **0**. We are currently working with a specialized calibration lab to obtain more precise measurements

We believe this evidence demonstrates that Hyundai recognized the white-shell ignition switches as a safety hazard, as they were far too easy to turn while the vehicle was in motion. Hyundai identified the softer springs within the detent-switching mechanism as the cause and addressed the problem by installing stiffer springs. To further ensure that old stock could not be mistakenly used in production, Hyundai changed both the shell color and the fitment tab.

However, Hyundai did not inform consumers of the risks posed by the white-shell ignition switch in earlier vehicles, nor did it issue a recall to replace the two springs within the ignition switch.

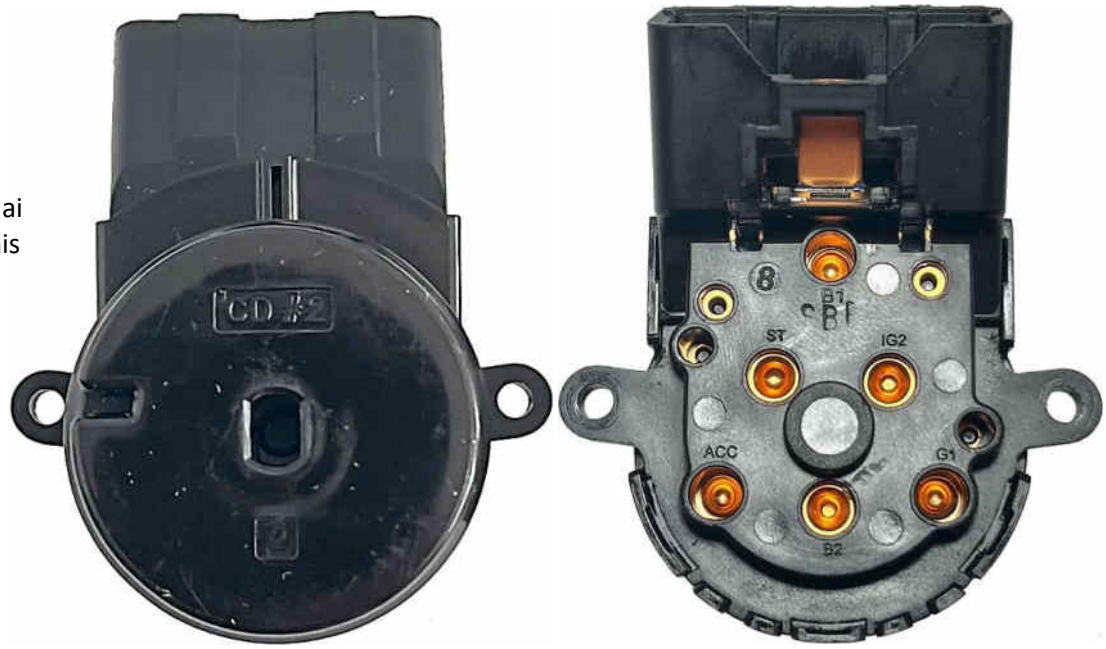
This concealed corrective effort underscores how serious Hyundai considered the hazard to be, and the lengths it went to in order to quietly implement a fix. At the same time, Hyundai avoided taking public responsibility—likely in order to prevent consequences similar to GM's 2014 ignition switch recall. That recall was triggered when investigators uncovered GM's undisclosed corrective change after a fatal crash, in which the ignition switch turned off while the vehicle was in motion.

Part #: 93110-3S000
Reference: PB



Part #: Unknown
Reference: CD2

Note: We are unable to identify a part number for this switch. Hyundai dealerships have confirmed that this switch is not sold individually.



AutoSafe's evaluation proposes issuing a recall for the ignition switch component within the above listed vehicles in order to replace the 2 internal soft springs with the stiffer springs that increase switching resistance.

We have identified the following vehicles with the "PB" switch:

HYUNDAI	Model Years
Elantra	2011-2016
Elantra	2017-2020
Elantra Coupe	2013-2014
Elantra GT (i30)	2018-2020
Genesis Coupe	2013-2014
Sonata	2011-2014
Sonata	2015-2019
Tucson	2011-2015
Tucson	2016-2021
Veloster	2019-2021

KIA	Model Years
Optima	2011-2015
Optima	2016-2020
Rio	2012-2017
Rio	2018-2022
Sedona	2015-2021
Sorento	2010-2015
Soul	2014-2019
Sportage	2011-2016
Sportage	2017-2022

GM's 2014 ignition switch recall addressed a very similar issue. Once GM's engineers identified a potential defect, they implemented a fix using a longer spring and detent plunger (analogous to Hyundai's detent ball bearings) to increase the switch's turning resistance.

Similarly, once Hyundai became aware of a potential issue, they implemented a comparable solution using stiffer springs to increase the switch's turning resistance. However, unlike GM, Hyundai delayed implementation—potentially for several years—applying the fix only to new-generation models introduced in 2020. These updated vehicles were sold alongside earlier models that still contained the nearly identical but comparatively defective switches.

Ignition Switch (RBK1 & RBK2)

The RBK ignition switch was first introduced in the U.S. with the 2012 Hyundai Accent and Veloster and was subsequently implemented in numerous other models as they were released in later years.

The RBK switch was designed with higher torque ratings than the PB switch and utilized a single, larger spring. Our investigation indicates that the RBK switch was initially produced in 2010 as the RBK1, followed by an updated RBK2 design in 2011.

Part #: 93110-1R000
Reference: RBK1 / RBK2

HYUNDAI	Model Years
Accent	2012-2017
Accent	2018-2022
Elantra GT (i30)	2013-2017
Kona	2018-2022
Palisade (Santa Fe XL)	2020-2022
Santa Fe - SE/GLS/LTD (LWB)	2013-2016
Santa Fe - Sport (SWB)	2013-2018
Santa Fe - XL (LWB)	2018-2019
Santa Fe (SWB)	2019-2022
Veloster	2012-2017
Venue	2020-2023

KIA	
Forte	2014-2016
Forte	2017-2018
Sorento	2016-2020

Hyundai/Kia utilized 2 methods of identifying the RBK 1/2 switch and its production details.

1) The switch displays its manufacturer model/reference number on its casing.

RBK 1

RBK 2

2) The switch displays its production date-code prominently printed onto the side of its casing (4 characters).

The date-code utilizes 4 characters.

The first character appears to represent the production year.
The earliest character in this series begins with “0” and likely represents “2010.”
The production series character typically nears the model year that the switch will be installed into (with the exception of the 0-series).

The second character appears to represent the month of production.
The characters “1” through “9” represent the months of January through September;
The characters then change to the letters “X,” “Y,” and “Z,” representing the months of October through December.

The third and fourth characters appear to represent the day of the production month.
The values range from “01” to “31.”

The RBK1 switch uses a single spring paired with a small ball bearing (see blue arrow), which helps secure the switch's position within the case detents.
The force required to compress the spring sufficiently to allow the ball bearing to move between detents provides the turning resistance, or "torque force," that helps prevent the ignition key from turning inadvertently (e.g., from ON to ACC).

The RBK1/2 switch was first introduced with the "1-series" (2011 production), which we identified in the ignition assemblies of numerous 2012–2013 Hyundai Accent and Veloster vehicles.

Once the supply of "1-series" switches was exhausted, we presume that Hyundai began using the older "0-series" (2010 production) switches. These "0-series" switches were found in later 2012–2013 Hyundai Accent and Veloster vehicles and may also have been used in models such as the Hyundai Elantra GT, Santa Fe, Kia Forte, and others.

We believe it is possible that during the RBK1's 2010 production, it was determined that the switch did not provide sufficient turning resistance. A running change may have been made to the spring component in the "0-series" or "1-series" switches, effectively introducing the RBK2 design into production.

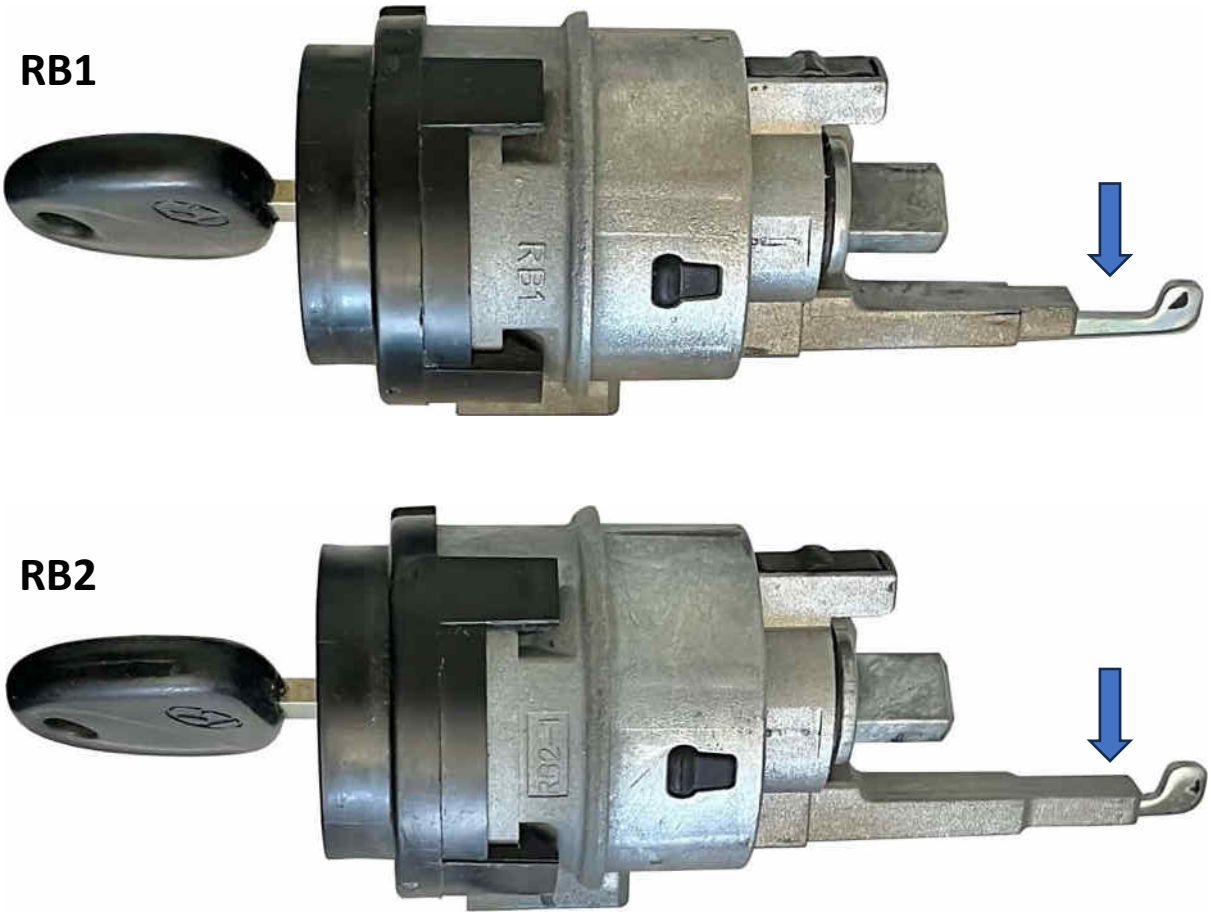
It is also possible that Hyundai repurposed "0-series" or "1-series" switches by replacing the shell and certain components to upgrade them to the RBK2 design.

We are currently investigating whether Hyundai employed a system of marking lines or white dots on the switch body and shell as a quality assurance measure to confirm that switches had been updated or repurposed with RBK2 internals. Notably, these markings were not present on the PB ignition switch.

RB1 VS RB2 (IGNITION LOCK CYLINDER)

To better understand Hyundai's subtle part labelling scheme, we bring attention to the 2012-17 Hyundai Accent's ignition cylinder.

The 2012 Accent was introduced with the RB1 ignition cylinder. Shortly thereafter, Hyundai introduced the RB2 ignition cylinder, which made modification to the lever latch's railing and extended it.



Once this change is noted, it is apparent that "RB" refers to the ignition cylinder's model, and the numbers (i.e., "1" or "2") refer to the model revision.

It is interesting to note, that the lever latch is a safety mechanism that is designed to prevent steering-wheel lock ups while the key is still inserted. It could be hypothesized that Hyundai may have become concerned that 2012 vehicles could lose steering control and sought to make changes to both the ignition cylinder's lever latch and the ignition switch (in order to rule out multiple sources for such a malfunction).

The 2012 model was the first Accent to use a plastic ignition assembly. The plastic ignition assemblies had more tolerance or flex within its components, which made it more likely for the lever latch safety mechanism to fail to prevent an inadvertent deployment of the steering lock. Extending the lever latch rail would have reduced the amount of play within the lever latch and helped improve the safety mechanism's effectiveness.

It is also interesting to note that once Hyundai implemented the new ignition cylinder with improved lever latch, they also continued to utilize the older RB1 ignition cylinder until stock of the old cylinder was depleted. Both the old cylinders and new cylinders with upgraded lever latches were intermixed into the production lines, as can be seen in the ignition switch spreadsheet.

Significance

We contend it is likely that in similar fashion to the ignition cylinder's part model labelling scheme (RB1, RB2), the ignition switch also combines letters and a numerical revision for its part model/number labelling scheme (RBK1, RBK2).

Our investigation is ongoing, but we request NHTSA's assistance in determining what material change occurred that resulted in the ignition switch's revision from RBK1 to RBK2, and why a new part # was not issued.

We are also seeking clarification on the significance of the different markings (i.e., dots, lines, symbols) used within the repurposing of switches and/or QA process.

Note: The cylinder's connector production code is used to determine the approximate production date of the vehicle.

Year	Switch	Connector	Cylinder	CASE	Markings
2012	0218				Black checkmark on back circle, unable to see bottom + white dot on front
2012	0307	2309	RB1	RBK-2	Black checkmark on back circle **w/out line** + White dot on front
2012	0307	2223	RB2		Black checkmark on back circle + white dot on front - cannot determine if line is on back
	0313	2313			White dot on front
2013	0315	2404	RB2	RBK-1	Black checkmark on back circle and line + white dot on front
	0317	2330			Black dot on back circle & line on bottom of back + White dot on front
2012	0322	2321	RB2		White dot on front
2013	0505	2510	RB2	RBK-1	Black line on bottom left, **w/out checkmark** + White dot on front
2013	0630		RB1		Black checkmark V on lower back and White dot on front
2013	0630		RB1		White dot on front
	0924	2927	RB2-2		Black V on lower right, No white dot on front
2012	1420				Red circle sticker on left side
	1421			RBK-1	Yellow circle sticker on left side
2012	1422	1430	RB1		Green sticker on left side
2012	1602	1617	RB1		Cannot determine if white dot present
2012	1615	1614	RB2	RBK-2	No sticker, white dot on front, blue ink on shell top
	1705				No dot
	1817	1804	RB1	RBK-1	No dot, case stamped C
	1825				White dot on front
2012	1916	1907	RB2		White dot on front
2012	1X20				White dot on front
	1Z05				White dot on front
	1Z07	1Z23	RB1		White dot on front
	1Z17	1Z23	RB1		White dot on front
	2215	2218	RB2-4		Large black checkmark on left side and lower back (right)
	2Y23	2Y29	RB2-1		Large black checkmark on right (and C on back?)
	3312	3402			
	3314	3311	RB2-1		Large black checkmark on right
2013	3603	3612	RB2-4		None
	3612	3627			
2013	3613	3614			None
2013	3711	3718	RB2-1		Black line over production date

	3X11	3X16	RB2-2		Black line over production date
2014	3Y05	3Y15		RBK-2	Black line over production date
2014	3Y05	3Y15	RB2-4		
2014	4110	4115	RB2-4		None
2014	4115				Black line over production date
2015	4X29	4X31	RB2-1		None
	4Z03	4Z08			Black line over production date, NO dot in front
	5106	5109	RB2-1		
	5113	5115	RB2-4		
	5114	5120	RB2-x		Black line over production date
2015	5224	5310	RB2-1	RBK-1	Black line over production date
	5224	5310			Black line over production date
2016	5518		RB2-2		None (back unchecked)
	5521	5525	RB2-4		None (front unchecked) - Case stamped A
	5619	5618	RB2-4		
2016	5922	5X26			
	5Y24	5Y26			
	5Z02	5Z04	RB2-3		No line or markings on either side (back/front unchecked)
2016	5Z07		RB2-2		
2016	6407	6408	RB2-x		U and 3 dots
2016	6407	6408			U and 3 dots
2017	6608	6609	RB2-1	RBK-2	U and 3 dots
2017	6613	6614	RB2-4		U and 3 dots
2017	6X27	6X23			U and 3 dots
2017	6X31				U and 3 dots
2017	6Y02	6Y10			U and 3 dots
2017	6Y04	6Y28	RB2-4		U and 3 dots
2017	7223	7Z19		RBK-1	

It may be of some interest to note that the 6-series switches coincided with Hyundai's removal of the push-to-lock safety feature in the ignition cylinders of various models using the RBK switch (e.g., Tucson). These switches included additional markings, and we believed they may have exclusively used RBK-2 labelled cases, suggesting that engineers intended to ensure the new cylinders were paired exclusively with the updated switch.

Interestingly, the 7-series switches removed these additional markings and reverted to the RBK-1 case designation, which may suggest an attempt to conceal the earlier corrective effort.

Anti-Theft Logic (RP)

Window Decals

Hyundai's defective "burglar alarm" system allowed for their cars to start even while the alarm was armed and active, as long as the alarm was not tripped by opening a door. The defective alarm system, combined with Hyundai's switch from robust metal to thin-walled plastic ignition assemblies starting in 2011, led to a theft epidemic across the United States.

Before the theft surge became a national concern, owners were often unaware of the defect. Testing the alarm by opening the door would function as expected, but if the door remained closed, a programming flaw allowed the ignition to start. Thieves exploited this by breaking windows and prying the ignition cylinder from its plastic housing to start the car, sometimes using just a USB cable.

This particular method began catching the attention of some local law enforcement agencies in **2020** after noticing an uptick in thefts of Hyundai and Kia vehicles, which preceded a national surge in 2021. The crisis of car theft led to numerous state attorney generals and municipalities formally requesting help from Hyundai and Kia in **2021**.

Hyundai did not acknowledge the defect or release a corrective ECU software update, known as the "Anti-Theft Logic" update, until 2023, covering vehicles back to 2011.

Despite Hyundai's opaque efforts to obscure details on the system, thieves quickly figured out how the system *actually* works and how to bypass it. Each day, more thieves learn the trivial methods that disable Hyundai's updated alarm and theft rates continue to rise, heading closer to the peak of the theft epidemic.

This report examines the alarm's working principles, the update's efficacy, and how criminals are currently circumventing the system.

How the "Anti-Theft Logic" (actually) works:

The alarm and its "Anti-Theft Logic" are enabled by either pressing the lock button on the wireless key fob or by mechanically locking the driver door lock with the key.

Once the alarm is active, the car will not start until the alarm is deactivated by pressing the unlock button on the wireless key fob or mechanically unlocking the driver door lock with the key.

Anti-Theft Logic Disabling Methods:

Method 1 – Brute Force

Method 2 – Remove Lock

Method 3 – Short Circuit

Vehicle List - HYUNDAI

HYUNDAI	US Model Years	Housing	Anti-Theft Logic Eligible	Alternative Offered?
Accent	2012-2017	Plastic	No	Sleeve
Accent	2018-2022	Plastic	Yes	/
Elantra	2011-2016	Plastic	Yes	/
Elantra	2017-2020	Plastic	Yes	/
Elantra	2021-2022	Plastic	Yes	/
Elantra Coupe	2013-2014	Plastic	No	Sleeve
Elantra GT (i30)	2013-2017	Plastic	Yes	/
Elantra GT (i30)	2018-2020	Plastic	Yes	/
Elantra Touring (i30cw)	2011-2012	Metal	No	Sleeve
Entourage	2011-2014	Metal	Yes	/
Genesis Coupe	2011-2012	Metal	No	Sleeve
Genesis Coupe	2013-2014	Metal	Yes	/
Kona	2018-2022	Plastic	Yes	/
Palisade (Santa Fe XL)	2020-2022	Plastic	Yes	/
Santa Fe	2011-2012	Metal	No	Sleeve
Santa Fe - SE/GLS/LTD (LWB)	2013-2016	Plastic	Yes	/
Santa Fe - Sport (SWB)	2013-2018	Plastic	Yes	/
Santa Fe - XL (LWB)	2018-2019	Plastic	Yes	/
Santa Fe (SWB)	2019-2022	Plastic	Yes	/
Sonata	2011-2014	Plastic	Yes	/
Sonata	2015-2019	Plastic	Yes	/
Sonata	2020-2022	Plastic	Yes	/
Tucson	2011-2015	Metal	Yes	/
Tucson	2016-2021	Plastic	Yes	/
Tucson	2022	Plastic	Yes	/
Veloster	2012-2017	Plastic	Yes	/
Veloster	2019-2021	Plastic	Yes	/
Venue	2020-2021	Plastic	Yes	/
Veracruz	2011-2012	Metal	No	Sleeve

Anti-Theft Logic Window Decal

Cylinder Sleeve Window Decal

Vehicle List - KIA

KIA	US Model Years	Housing	Anti-Theft Logic Eligible	Alternative Offered?
Forte	2010-2013	Metal	No	Sleeve
Forte	2014-2016	Plastic	No	Sleeve
Forte	2017-2018	Plastic	Yes	/
Forte	2019-2022	Plastic	Yes	/
K5 (LX)	2021-2022	Plastic	Yes	/
Optima	2011-2015	Plastic	Yes	/
Optima	2016-2020	Plastic	Yes	/
Rio	2010-2011	Metal	No	Sleeve
Rio	2012-2017	Plastic	Yes *	Sleeve
Rio	2018-2022	Plastic	Yes *	Sleeve
Sedona	2011-2014	Metal	Yes *	Sleeve
Sedona	2015-2021	Plastic	Yes	/
Seltos	2021-2022	Plastic	Yes	/
Sorento	2010-2015	Metal	Yes	/
Sorento	2016-2020	Plastic	Yes	/
Sorento	2021-2022	Plastic	Yes	/
Soul	2010-2013	Metal	No	Sleeve
Soul	2014-2019	Plastic	No	Sleeve
Soul	2020-2022	Plastic	Yes *	Sleeve
Sportage	2011-2016	Metal	Yes *	Sleeve
Sportage	2017-2022	Plastic	Yes	/

* Base model trims (e.g., “Rio LX”) may not be eligible for Anti-Theft Logic update and will be offered the cylinder sleeve alternative.

Anti-Theft Logic Window Decal

Cylinder Sleeve Window Decal

Anti-Theft Logic - Brute Force

The most common method for bypassing the “Anti-Theft Logic” alarm today involves using brute force on the door lock cylinder. This technique predates the anti-theft update and is preferred because it avoids breaking windows. Tutorial videos demonstrating this method can be found on social media under usernames or tags such as “KiaBoyz.”

Typically, thieves use a screwdriver and locking pliers (“vice grips”) to forcibly turn the lock cylinder. The cylinder’s pins either shear or carve into the soft pot-metal, allowing the lock to turn. In many cases, the weak material causes the cylinder to crumble or be pried out entirely.

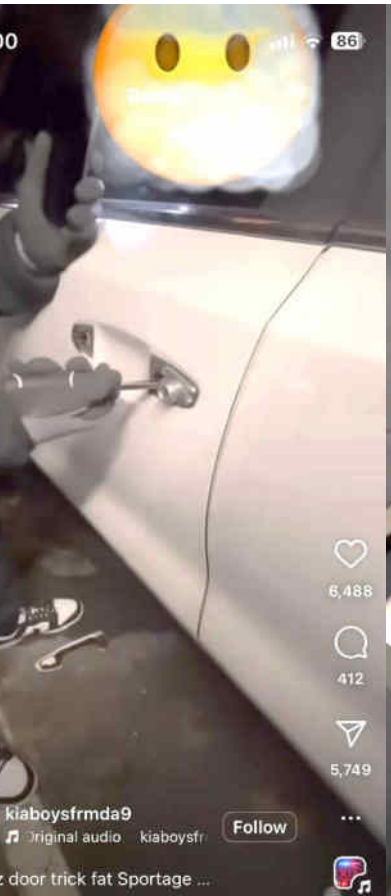
Once the cylinder turns, the door unlocks without triggering the alarm, allowing the thief to remove the ignition cylinder and start the car.

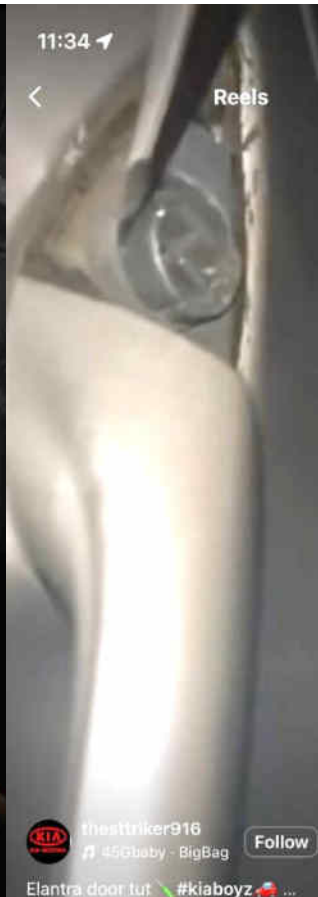
Theft attempt
Source: Reddit

3/16” Screwdriver

Locking Pliers

Social media (Instagram) videos demonstrating brute force break-ins:





Anti-Theft Logic – Remove Lock (RP)

Although brute-force attacks on the door lock have proven effective—and improvements in material and construction are clearly needed—the mechanical security has occasionally thwarted theft attempts. Unfortunately, oversight in the lock's design allows even arthritic seniors to disable the alarm in under a minute.

If a thief cannot turn the lock cylinder directly, they can break the window, unbolt the door lock, and then use a screwdriver to turn the door actuator. Hyundai and Kia door locks are secured with a standard 8 mm or 10 mm bolt across nearly the entire lineup. Turning the door actuator operates the lock in the same manner as the cylinder, unlocking the car and disengaging the "Anti-Theft Logic" protection.

AutoSafe's security evaluation proposes issuing a recall to change these standard bolts with security / shear bolts.

8mm/10mm Ratchet

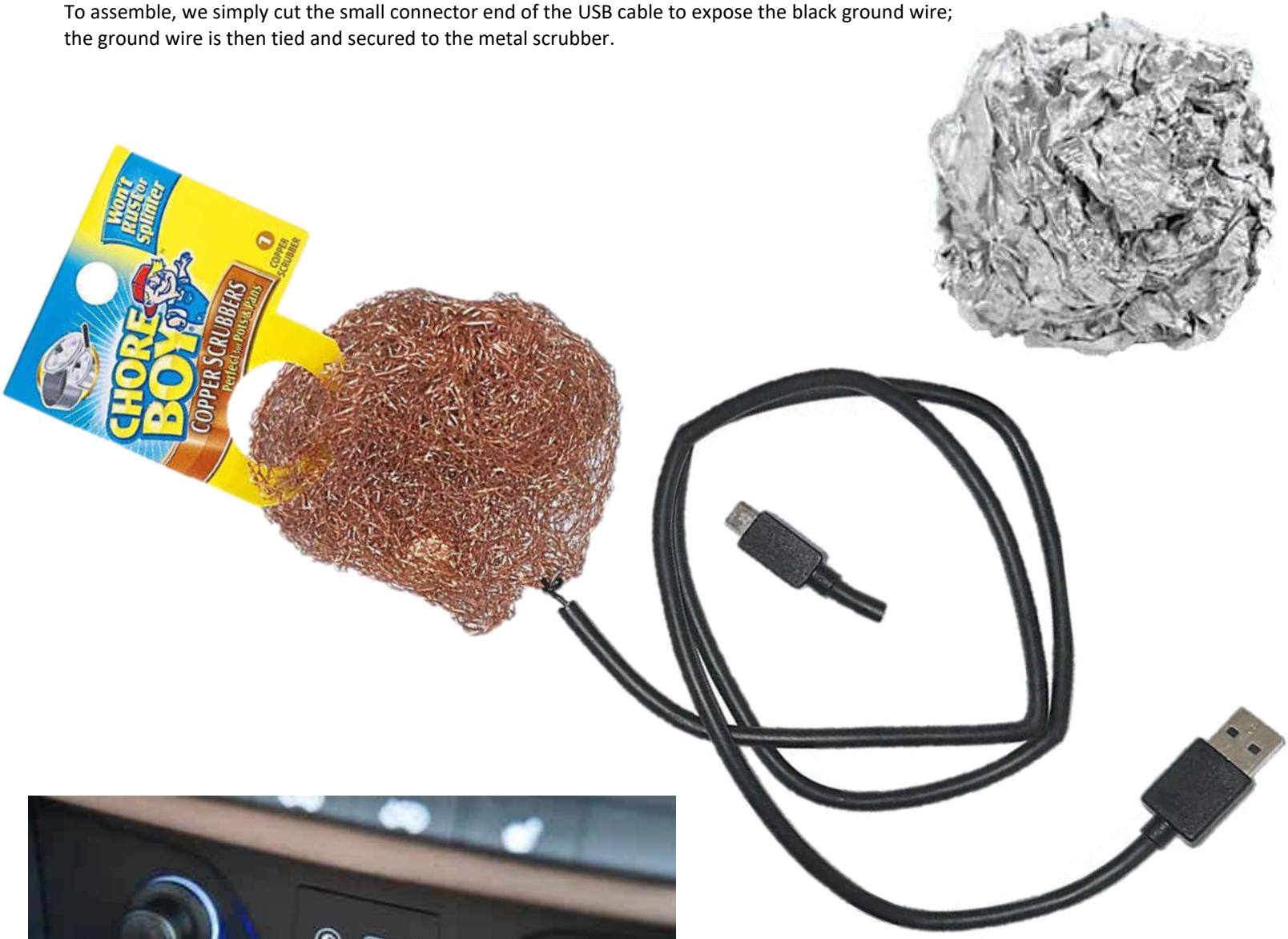
Door actuator

Anti-Theft Logic – Short Circuit (VIDEO DEMONSTRATION)

A third method for bypassing the Anti-Theft Logic highlights Hyundai's flawed wiring scheme. The door lock signal pins are held high by default and pulled low when the door is unlocked. This design allows someone to mass-short the connector pins and disable the alarm.

This can be demonstrated by pressing a ball of tinfoil into the door's wiring harness connector port, which shorts the pins and pulls them low, disabling the Anti-Theft Logic. Because this method can damage electrical components, we instead used a metal dishwashing scrubber (e.g., Scotch-Brite, Chore Boy) to short the pins to the car's USB port. Using this "USB-scrubber" method, we achieved near-instantaneous alarm deactivation on multiple Hyundai and Kia vehicles and presume it is universally effective on all models using the Anti-Theft Logic system.

To assemble, we simply cut the small connector end of the USB cable to expose the black ground wire; the ground wire is then tied and secured to the metal scrubber.



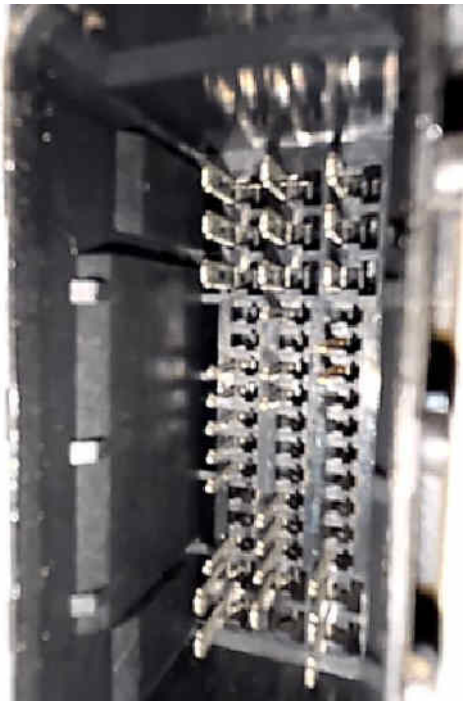
Note: USB adapter also works to ground scrubber.

Anti-Theft Logic – Short Circuit (VIDEO DEMONSTRATION)

The ball of tinfoil or metal scrubber is inserted into the driver door connector port to make contact with the pins within.
The active alarm should silence and the “Anti-Theft Logic” should now be disabled.

AutoSafe’s security evaluation proposes changes to the wiring scheme to prevent the mass shorting of pins disabling the alarm.

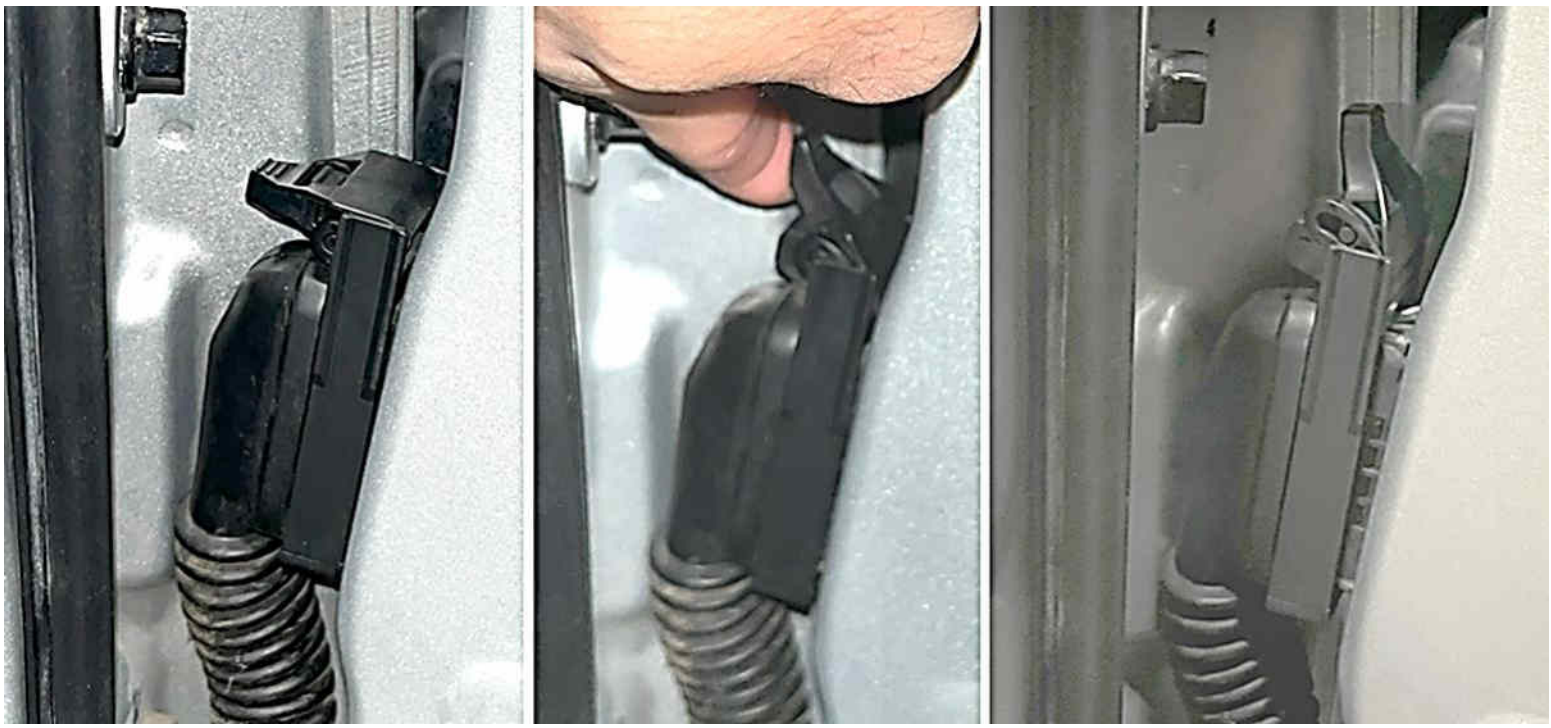
Inside door connector port



Anti-Theft Logic – Short Circuit

The door connector is disconnected from the port using a release tab.
The connectors we encountered came in 2 types of release tabs that are shown below.

Type 1 Connector (Soda Tab):
Using finger, lift tab up like a soda can tab. Continue to push tab towards door frame until connector partially pops out.



Type 2 Connector (Lift Tab):
Place a key under the tab and lift straight up. Continue lifting the tab until connector partially pops out.

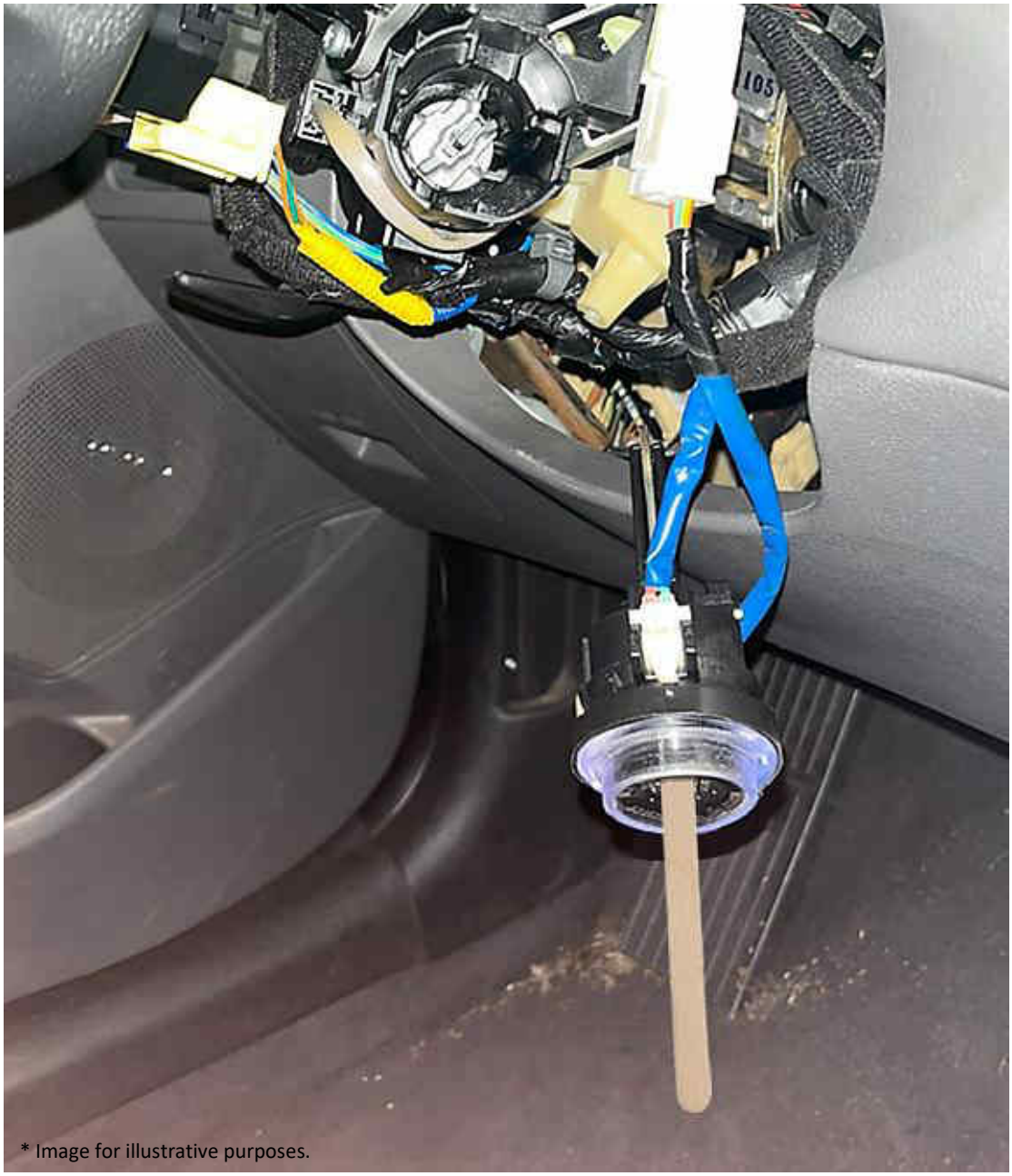
Anti-Theft Logic – Key-in-ignition requirement

We were informed by various Hyundai/Kia outlets and via a NHTSA PR statement that the Anti-Theft Logic system would require a key to be inserted into the ignition cylinder to allow the car to start.

Hyundai & Kia went so far as to advertise this function as an “immobilizer” through their public relations media campaigns and through misinformation provided to and by their dealership networks.

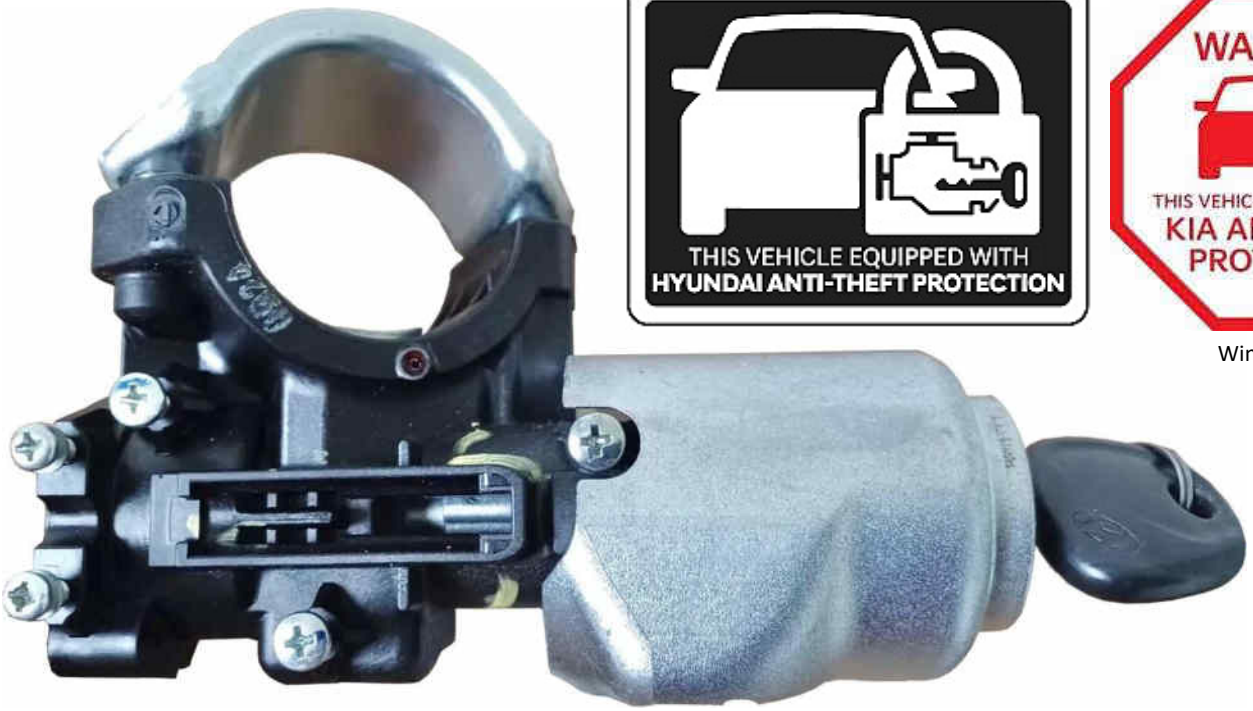
Our testing shows this supposed immobilizer upgrade is largely ineffective. The ignition cylinder only uses a simple switch to signal the insertion of an object—presumably a key. It cannot verify whether the object is a genuine Hyundai/Kia key or even a key at all.

Defeating this “requirement” was trivial and a popsicle stick proved ideal at simulating a Hyundai-Kia key, fitting all Hyundai-Kia cylinders tested. It was found that the popsicle stick only needed to be firmly inserted about 1/2” to actuate the switch before turning the tumbler rod to start the ignition.



* Image for illustrative purposes.

Anti-Theft Protection (Metal Sleeve “Protector”)



Window Decals

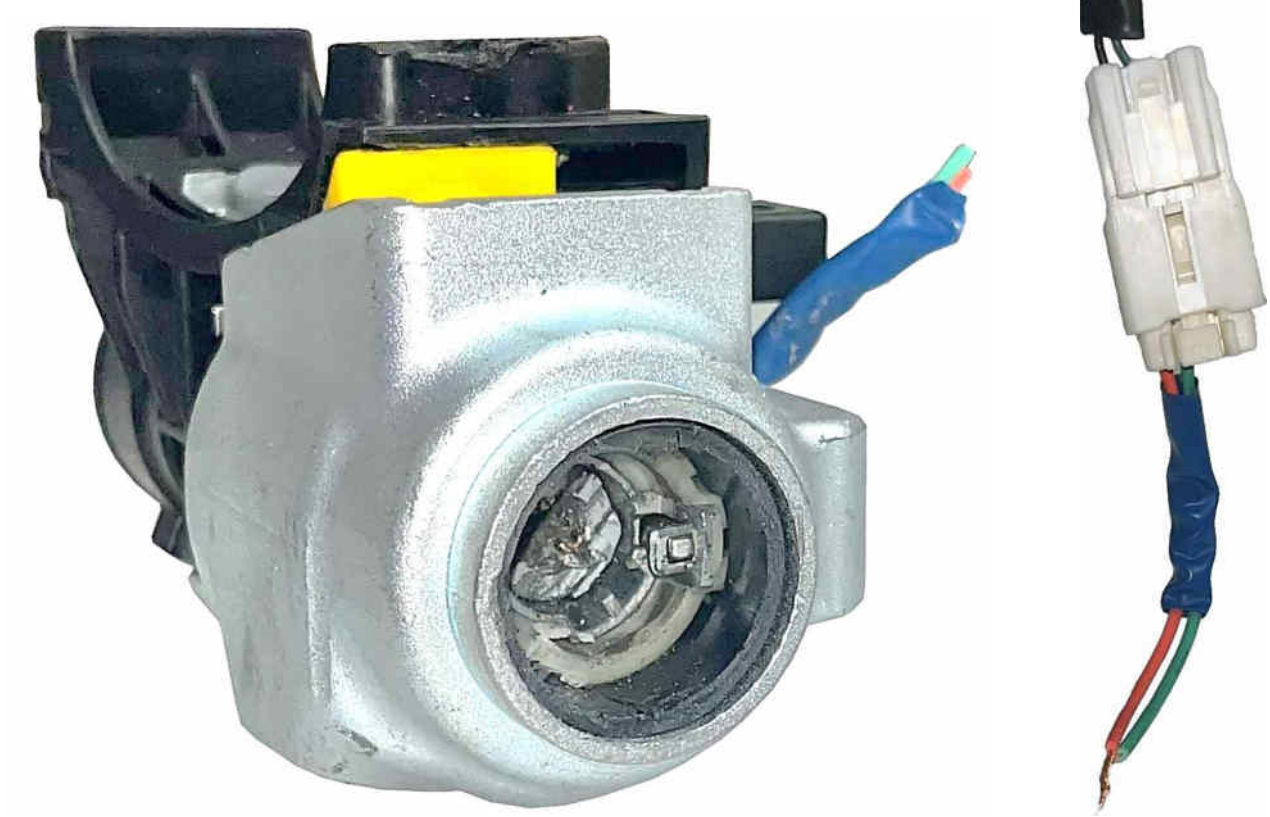
Some vehicles were incompatible with the “Anti-Theft Logic” software update, so Hyundai introduced a metal sleeve (“protector”) for the ignition cylinder.

Note: A December 2025 settlement will make all affected 2011-2022 Hyundai-Kia cars eligible to have this metal protector installed (even if they already had the software update installed).

Upon examination of the upgraded assembly, we noted the following:

The plastic face of the cylinder has been left exposed, without any metal shielding.
This leaves the cylinder’s internal components completely exposed, and able to be pried out.

The plastic cover of the cylinder has been left uncovered and unprotected.



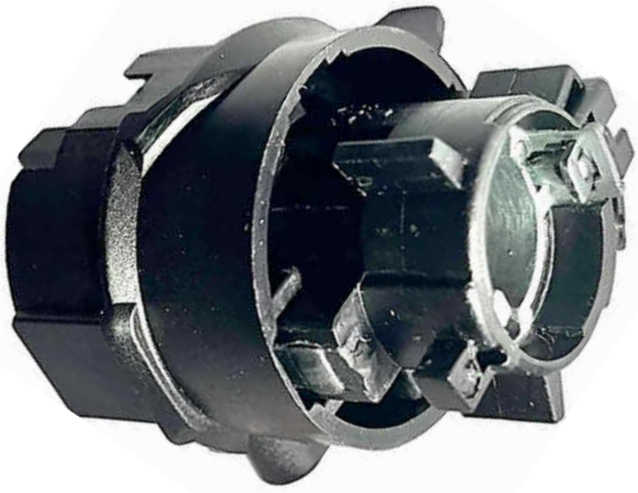
The uncovered plastic face of the cylinder can still be easily broken off and allow the internal components of the cylinder to be pried out and turned with a flathead screwdriver, which is made even easier with the use of vice grips or locking pliers.
The key detection switch can also be bypassed by cutting the red/green wires and twisting them together (only necessary for vehicles with the software update).

Hyundai-Kia promised that the ignition sleeve would prevent the type of theft that was demonstrated and spread through social media posts, however, we contend that the prying attack method is still possible.

Although it has become more challenging to pry the entire cylinder off, several social media posts (pictured to right) demonstrate prying attacks in which the cylinder's internal components are pried out, leaving the cylinder body attached to the assembly.

Unfortunately, the metal sleeve does not even attempt to prevent prying of the cylinder's internal plastic components.

Example 2011+ ignition cylinder (plastic construction)



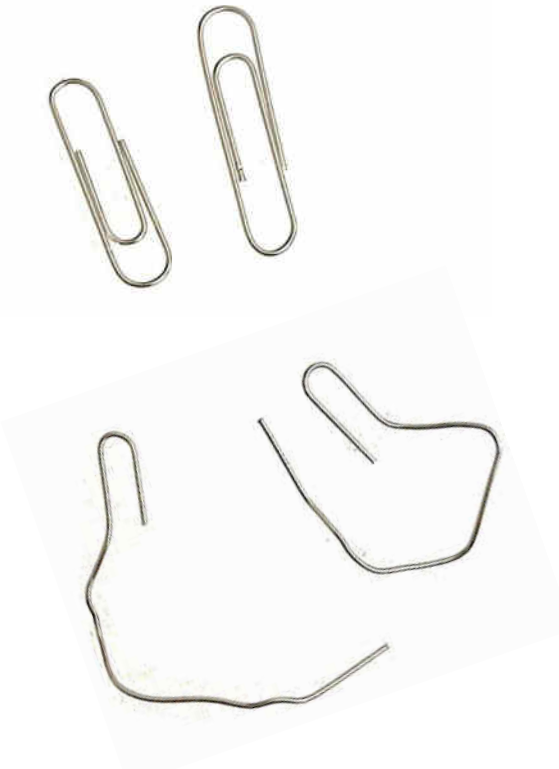
Another issue that the cylinder sleeve fails to address is that the assembly is secured to the steering column by metal bolts, which are held in by the assembly's plastic body and threads.

If the bolts are heated and then removed, the ignition assembly can be pushed down about 1-inch to free the steering lock and allow free movement of the steering wheel (after the car turns on).

Plastic body and threads

Demo Materials:

Lighter
Popsicle
Paperclips (small)



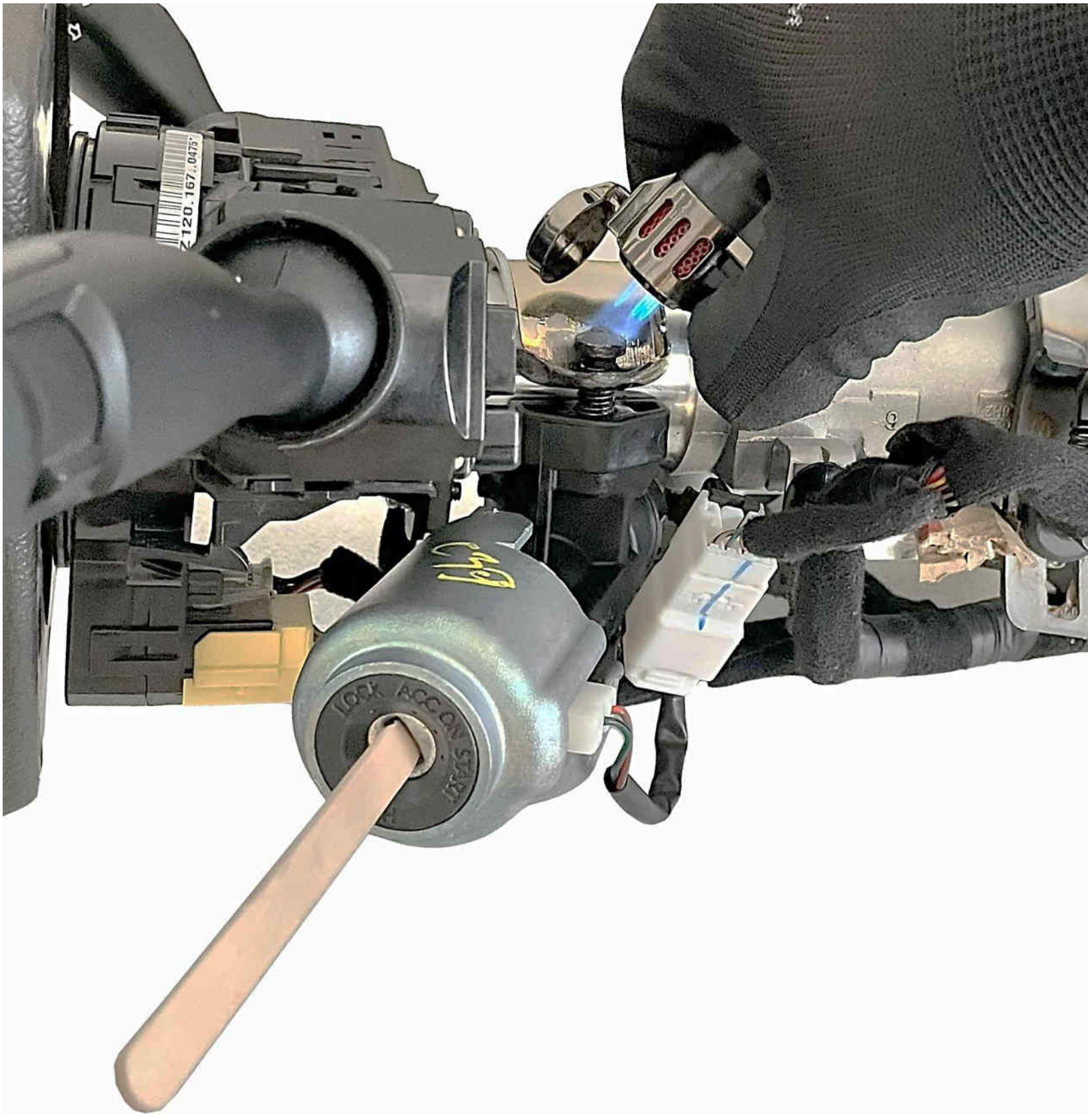
DEMONSTRATION VIDEO

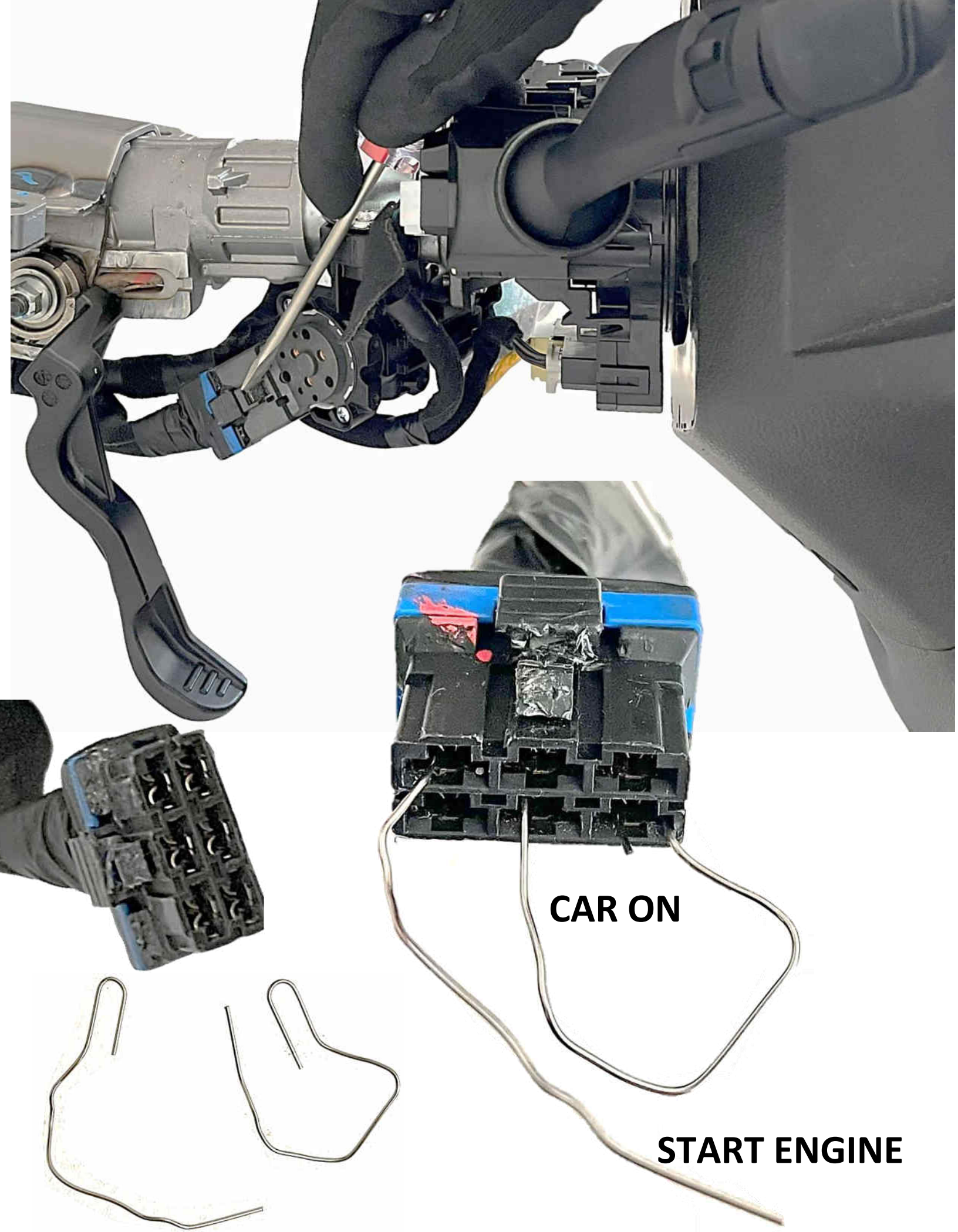
Step 1: Remove plastic shroud covers around steering column.

Step 2: Use a lighter to heat up each bolt for 45 seconds and then pry with a screwdriver, bolts will smoothly slide out and free the ignition assembly and steering wheel (but car must be turned on for power steering).

Step 3: Insert a popsicle stick into the ignition (only required for vehicles also upgraded with software update).

Step 4: Insert paperclips into the ignition switch's connector to start the car.




CAR ON
START ENGINE

Explanation: (SEE DEMONSTRATION VIDEO)

By heating the bolts and extracting them from the plastic housing, the ignition assembly's steering lock can be disabled by simply pushing down on the assembly. The steering wheel will then be able to turn freely once the car is turned on.

Conclusion:

The purpose of the metal protector is to reinforce the cylinder because it is made of plastic. Hyundai even spent a considerable sum to claim their ignition cylinder sleeve has been independently tested and verified by a leading engineering and scientific consulting firm; however, it was disappointing to see that the cylinder "protector" had such a glaring design flaw that left the front plastic cover completely unprotected. Hyundai should expect that thieves will utilize the same prying and brute force methods currently used to bypass the door lock on the ignition cylinder.

Although the metal protector partially patches the ignition assembly's cylinder, it still leaves the rest of the plastic assembly completely vulnerable; therefore, the lighter bypass demonstrated exploits the assembly's fundamental weakness (and the same defect)—the ignition housing's plastic construction.

NHTSA Complaint

The Hyundai "Anti-Theft Logic" software update was intended to address the wave of thefts that spread across the United States. These thefts stemmed from three primary causes:

First, Hyundai's lack of industry-standard immobilizers. By the time these thefts occurred, immobilizers were a basic and expected component in modern vehicles. They provide a critical layer of security that prevents vehicles from being stolen and misused in ways that endanger public safety.

Second, Hyundai's transition from durable metal ignition assemblies to thin-walled plastic housings. While thin-walled plastic is suitable for lightweight consumer electronics, it is inappropriate for critical vehicle security components. These flimsy plastic ignition assemblies failed to meet a reasonable expectation of quality (as demonstrated by the prior metal assemblies) and should be deemed "substandard."

These substandard ignition assemblies fall under the scope of NHTSA's oversight through the Federal Motor Vehicle Safety Standards, specifically FMVSS 114: Theft Protection and Rollaway Prevention (§ 571.114). Under this standard, NHTSA can issue a national recall if an automaker fails to comply with federal requirements, or if a component is found to be defective or substandard in a way that undermines theft prevention or creates the potential for serious crashes.

Third, Hyundai's defective alarm system. The alarm allowed vehicles to be started even while armed and active. This defect was widely exposed on social media, where videos showed thieves smashing windows, entering cars without opening the doors, and successfully starting the engines—while the alarms remained armed. In contrast, if an owner tested the alarm by unlocking the door and attempting to start the car, the system functioned as expected and prevented ignition. The Hyundai "Anti-Theft Logic" update was presented as a fix for this defect by reprogramming the alarm system through the ECU/BCM.

By the time Hyundai released this update, however, the damage had already escalated. Rising theft rates and the harm caused to life and property had drawn the attention of the public, law enforcement, state and local governments, and federal regulators. Calls mounted for a national recall of affected vehicles due to the absence of immobilizers and substandard ignition assemblies, and formal procedures were initiated in Congress to compel the NHTSA to act.

In response, Hyundai launched a national PR campaign to counter the growing pressure. We allege that Hyundai's campaign relied on misinformation, omissions, and obfuscation. The company framed the update as an "immobilizer," exaggerating its capabilities and effectiveness in order to silence recall efforts already in motion.

By withholding key details about how the update actually works and by providing misleading information about its efficacy, Hyundai curtailed efforts by government entities across the U.S. to compel a recall. A coalition of 23 state attorneys general, along with congressional members and committees, were prevented from advancing their efforts due to Hyundai's deceptive corporate messaging, which misled the media, the public, and policymakers alike.

Meanwhile, public safety remains at risk. These defective systems continue to be exploited. The NHTSA reported in February 2023 that the defect "has resulted in at least 14 reported crashes and eight fatalities." Many law enforcement leaders and state attorneys general would contest those figures. For example, in Minneapolis alone in 2022, thefts of Kia and Hyundai vehicles were tied to: 5 homicides, 13 shootings, 36 robberies, and 265 motor vehicle accidents.

This report has been prepared for the NHTSA to demonstrate that Hyundai misrepresented the methods, efficacy, and robustness of the "Anti-Theft Logic" update. Hyundai's deceptive actions thwarted government efforts to pursue a national recall, prevented public officials from addressing an ongoing public safety threat, and allowed the company to evade responsibility while the damage to communities continues.

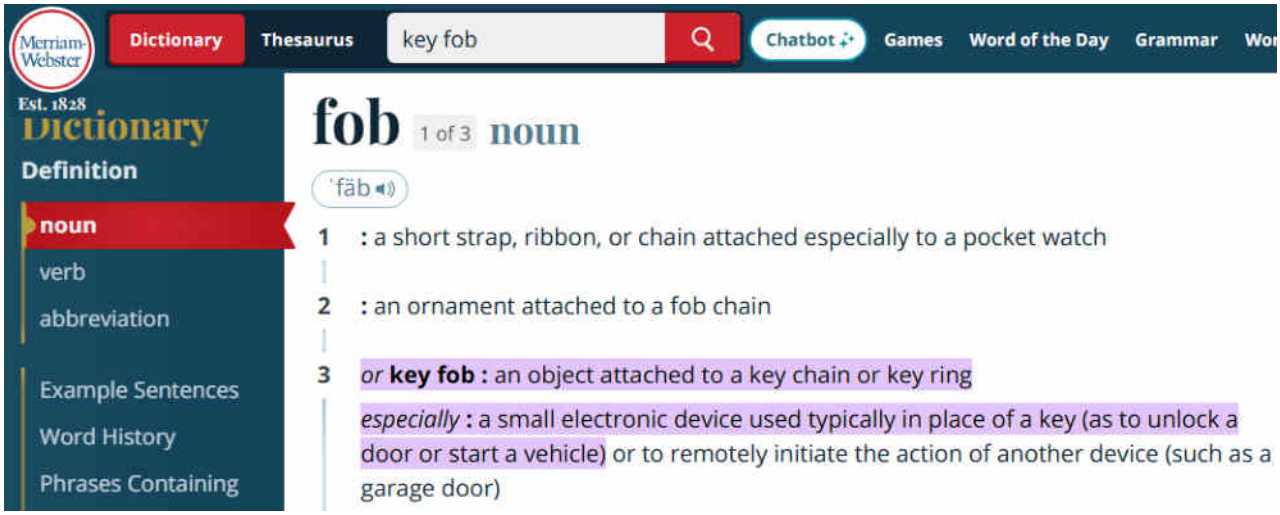
Claims (Playlist - Unlisted)

Claim 1

Hyundai made false or misleading claims about how the software update works regarding the requirement to arm/disarm the anti-theft logic using only the electronic key fob (remote).

In reality, the system also arms and disarms mechanically when a key is used in the door lock cylinder, a flaw that quickly allowed thieves to bypass the update using brute force methods.

Example Hyundai / Kia "Key Fob"



HYUNDAI Technical Service Bulletin	GROUP: BODY ELECTRICAL	NUMBER: 19-BE-006H
	DATE: MARCH, 2019	MODEL(S): ALL VEHICLES
SUBJECT: KEY FOB CODE SAVING/PROGRAMMING INFORMATION		

Description: This bulletin provides information for the following:

- General key FOB information including smart key and RKE (Remote Keyless Entry).

SUBJECT: KEY FOB CODE SAVING/PROGRAMMING INFORMATION

Parts Information:

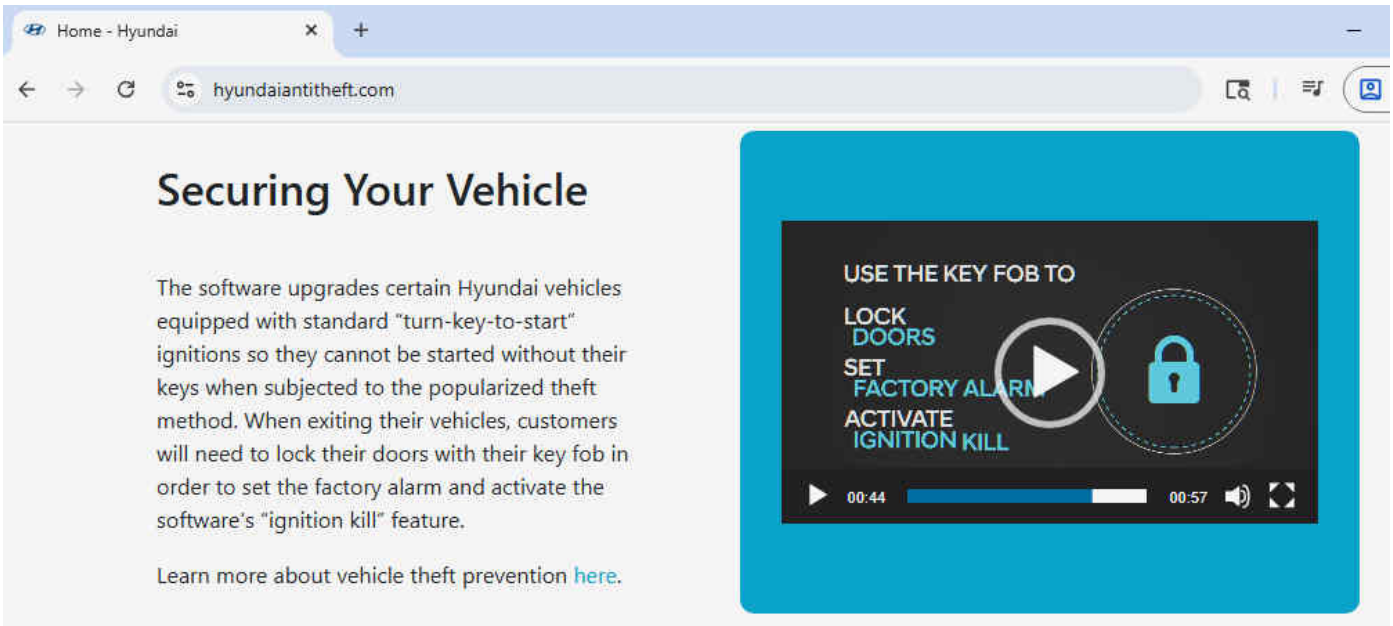
Various Types of Key FOBs

Part Name	Part Prefix	Image	Comment
TX ASSY-KEYLESS ENTRY (NOT SMART KEY - RKE)	95430		Apply to various models

Example 1

Hyundai USA:
“When exiting their vehicles, customers will need to lock their doors with their key fob in order to set the factory alarm and activate the software's ‘ignition kill’ feature.”

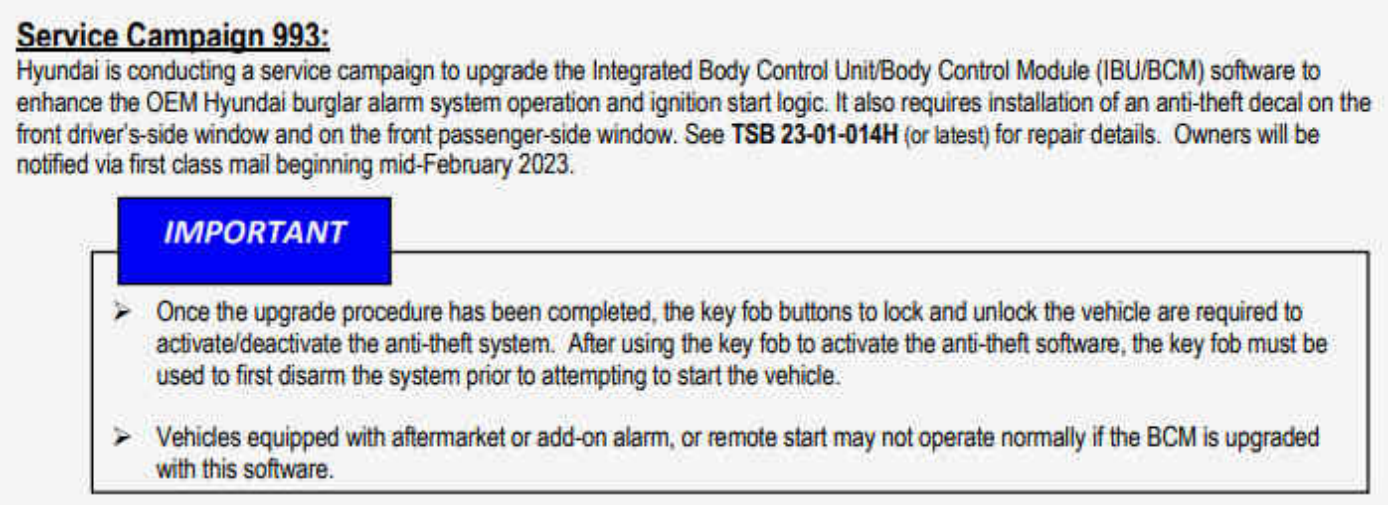
Video **[0:36]:** "Remember to always lock your doors with your key fob button when exiting your vehicle."



Example 2A

Hyundai Service Campaign 993 (via NHTSA):

"Once the upgrade procedure has been completed, the key fob buttons to lock and unlock the vehicle are required to activate/deactivate the anti-theft system. After using the key fob to activate the anti-theft system, the key fob must be used to first disarm the system prior to attempting to start the vehicle."



Service Campaign 993:

Hyundai is conducting a service campaign to upgrade the Integrated Body Control Unit/Body Control Module (IBU/BCM) software to enhance the OEM Hyundai burglar alarm system operation and ignition start logic. It also requires installation of an anti-theft decal on the front driver's-side window and on the front passenger-side window. See **TSB 23-01-014H** (or latest) for repair details. Owners will be notified via first class mail beginning mid-February 2023.

IMPORTANT

- Once the upgrade procedure has been completed, the key fob buttons to lock and unlock the vehicle are required to activate/deactivate the anti-theft system. After using the key fob to activate the anti-theft software, the key fob must be used to first disarm the system prior to attempting to start the vehicle.
- Vehicles equipped with aftermarket or add-on alarm, or remote start may not operate normally if the BCM is upgraded with this software.

Example 2B

Kia Technical Service Bulletin
Via NHTSA: 1 (Forte), 2 (K5), 3 (Optima), 4 (Rio), 5 (Sedona), 6 (Seltos), 7 (Sorento), 8 (Soul), 9 (Sportage)

"This logic upgrade will add anti-theft ignition start logic to the vehicle's system operation **which activates when the vehicle is locked with the use of the key fob.**"

"After the 'updated' software installation is completed, **the use of the key fob to lock and unlock the vehicle will be required** to activate/deactivate the Anti-Theft system"

	GROUP	MODEL
	Customer Satisfaction	**2011-2020MY Optima (TF, QF, JF, JFa)**
	NUMBER	DATE
	2303 (Rev 4, 6/05/2024)	**February 2023**

TECHNICAL SERVICE BULLETIN

SUBJECT: **CUSTOMER SATISFACTION: ANTI-THEFT S/W LOGIC UPGRADE & DECAL INSTALLATION (CS2303)**

NOTICE

This bulletin has been revised to include additional information. New/revised sections of this bulletin are indicated by a black bar in the margin area.

This bulletin provides the procedure to upgrade the software logic of the Integrated Body Control Unit (IBU) or Body Control Module (BCM) system on certain 2011-2015MY Optima (TF), 2012-2015MY Optima (QF) and 2016-2020MY Optima (JF, JFa) vehicles produced within the dates outlined on page 10, which may not be equipped with an immobilizer. This logic upgrade will add anti-theft ignition start logic to the vehicle's system operation **which activates when the vehicle is locked with the use of the key fob**. Follow the procedure outlined in this publication to apply the improved logic to the 'IBU-BCM' system using the KDS ECU Upgrade function as described in this bulletin. For confirmation that the latest reflash has been applied to a vehicle you are working on, verify the ROM ID using the table on page 3 of this bulletin.

Window decals should also be applied to both front windows in accordance with the instructions on page 8 to indicate this anti-theft S/W logic upgrade has been completed (unless a customer specifically requests, they not be installed). An initial supply of window decals will be shipping directly to dealers. Should there be a delay in receipt of this supply, please track any customers that may need window decals installation upon receipt of the stickers.

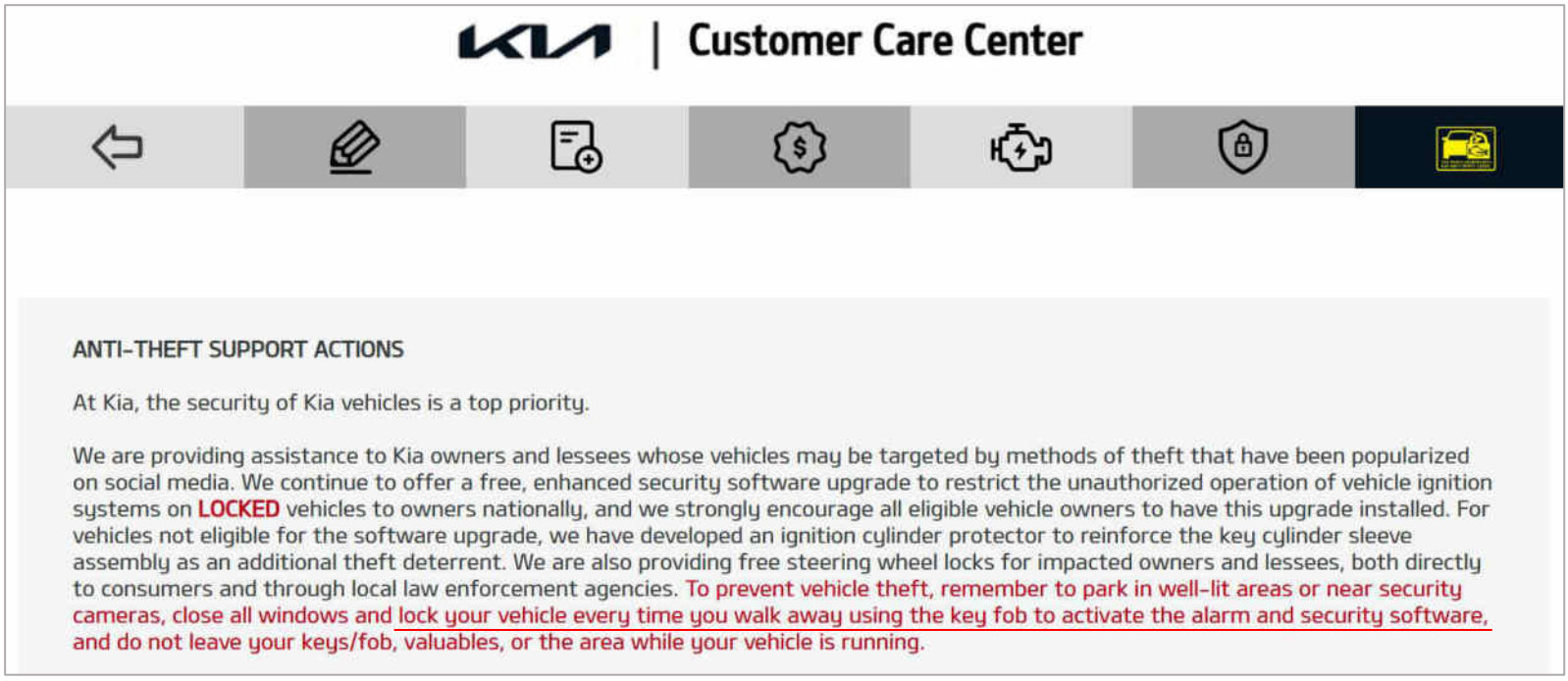
NOTICE

After the 'updated' software installation is completed, the use of the key fob to lock and unlock the vehicle will be required to activate/deactivate the Anti-Theft system

Example 2C

Kia USA Customer Care Center:

"To prevent vehicle theft, remember to … lock your vehicle every time you walk away using the key fob to activate the alarm and security software …"



Example 3

Hyundai Spokesperson:

"For the anti-theft software to work, the vehicle must be locked using a button on the key fob — not by turning the metal key in the door lock."

https://www.cnn.com/2024/08/07/business/thieves-hyundai-kia-new-security-software/index.html

Example 4

Kia reps making false statements to media and customers:

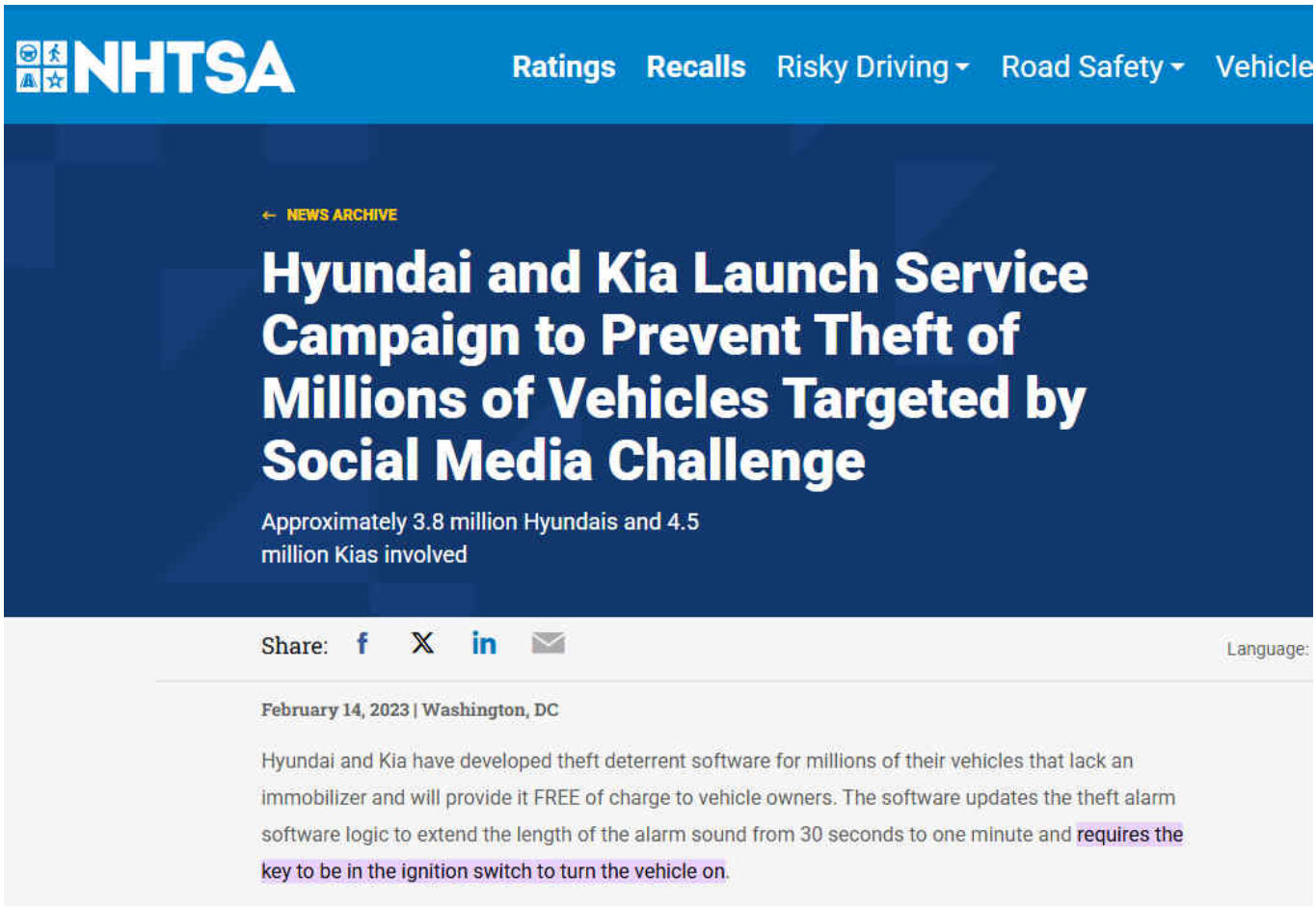
"When you go down to lock your doors, make sure you hit the lock button two times …"

Archive: https://www.youtube.com/watch?v=u4QQvRoEm3M&t=23 (Original)

Claim 2

Hyundai made false or misleading claims to both the NHTSA and the public about the operation of its software update, specifically regarding the requirement that a key be in the ignition to start the vehicle. As detailed in the analysis report under the heading "Anti-Theft Logic – Key-in-ignition requirement," this claim exaggerated the update's security improvement and misrepresented the system's operation and effectiveness.

NHTSA PR Statement (Direct Link)



Videos of the false or misleading claims regarding the key-in-ignition requirement:

A) Kia Service Manager explaining that the key will be required to start the car.
Archive: https://www.youtube.com/watch?v=CpJOSpiTM1c&t=110s (Original)

B) Kia representative claiming that the software update ensures that the car cannot be stolen without the key.
Archive: https://www.youtube.com/watch?v=-OWghGxkTZo&t=40s (Original)

C) "Technicians update cars so the key must be in the ignition switch to turn the vehicle on ..."
Archive: https://www.youtube.com/watch?v=t-IaWvnBnAw&t=25s (Original)

D) Kia Technician: "So whenever you go to start the car, it reads the key now and if it doesn't see a key in the vehicle, it won't start the vehicle."
Archive: https://www.youtube.com/watch?v=ihlMmrBi4dE&t=50s (Original)

E) Kia Service Manager: "The software is detecting if a key is actually installed in the lock cylinder. So, if the vehicle does not detect a key has been inserted into the lock cylinder, it will not start."
Archive: https://www.youtube.com/watch?v=1niotPJlqgc&t=70s (Original)

Claim 3

Hyundai made false and misleading claims about the nature of its software update. The company falsely characterized and promoted its “Anti-Theft Logic” update as an “immobilizer.”

In the automotive industry, an immobilizer is a defined electronic security component of the ignition starting system that requires electronic data verification before the ignition can be enabled. This is the standard Hyundai and Kia promised to deliver to the government, law enforcement, and the public.

Our findings clearly demonstrate that Hyundai’s software update does not meet this definition. The system can be disabled entirely through a simple mechanical action: turning the door lock cylinder. This disables the alarm and enables the ignition system, bypassing any electronic verification by the remote fob.

Hyundai and Kia’s misrepresentation of this software update as an “immobilizer” was intended to mislead regulators and customers, and to avoid a recall that should have been triggered under federal safety standards.

Example 1:

"Dave VandeLinde, Hyundai Motor America’s vice present for after-sales, said that the upgrades install a software-based immobilizer that is activated with the vehicles’ remote key fobs."

“If the customer locks their vehicle with the lock button on their key fob, the vehicle has the immobilizer system armed.”

https://www.mprnews.org/story/2023/11/09/police-urge-kia-hyundai-owners-to-get-antitheft-upgrades

Example 2:

2A:
[VIDEO 7:06] Dave VandeLinde: “To make sure we’re available . . . to make sure they [Hyundai/Kia owners] can get the immobilizer solution that fits their vehicle.”

Article: https://www.cbsnews.com/minnesota/news/hyundai-kia-holding-software-upgrade-clinics-in-minnesota-for-vehicles-targeted-by-thieves/

Video Archive: https://www.youtube.com/watch?v=exOZSD-TsHg

2B:
[1:53] VandeLinde: “First of all, the alarm will sound and the vehicle won’t start. That mimics an immobilizer factory solution in the vehicle, so that’s the key. They will not be able to drive away with the vehicle.”

Archive: https://www.youtube.com/watch?v=F1P1iCk-2YA (Original)

2C:
[3:03] Dave VandeLinde: "The software package, once it's on, won't allow the vehicle to start until it sees the immobilizer signal from the customer."

Archive: https://www.youtube.com/watch?v=-RWhEsdLtOc (Original)

Example 3:

3A:
[1:40] James Bell (Head of corporate communications for Kia America) claims the software solution mimics an immobilizer.

Archive: https://www.youtube.com/watch?v=YHnnaWM2Ruo&t=100s (Original)

[9:55-11:30] James Bell allows reporter to describe the software update as an immobilizer numerous times without correction.

Archive: https://www.youtube.com/watch?v=YHnnaWM2Ruo&t=595s (Original)

3B:
[1:24] Same journalist subsequently reporting that "immobilizers" are now available for Hyundai and Kia vehicles.

Archive: https://www.youtube.com/watch?v=dO4ltpWWPoc&t=84s (Original)

Example 4:

Emily Falecki, Project Manager with Kia's Anti-Theft Program:
"They can still break into your back window and attempt to steal your vehicle but **what the software update does, is that it doesn't disable that ignition immobilizer feature** and it will sound the factory alarm ..."

Archive: https://www.youtube.com/watch?v=fXwqb_7V1_0&t=90s (Original)

Example 5:

Dealerships making false statements:

https://www.worldkiajoliet.com/kia-models-eligible-for-software-update/
https://www.emichkia.com/understanding-the-kia-anti-theft-immobilizer-update-and-safety-recall/

A) Archive: https://www.youtube.com/watch?v=zGlwUXUKwdo&t=90s (Original)

B) Archive: https://www.youtube.com/watch?v=-kFxkY-BDqE&t=65s (Original)

C) Archive: https://www.youtube.com/watch?v=6SKtPNEvBX4 (Original)

   [0:20] Media incorrectly reports that the update is an immobilizer due to misinformation from dealership.
   [0:26] Shows the technician's computer screen showcasing the "ECU Upgrade" as "IMMOBILIZER (BCM) LOGIC IMPROVEMENT."

D) Archive: https://www.youtube.com/watch?v=E8dG5PHL_Y4 (Original)

   [0:48] GM, Russ Darrow Kia: This now will immobilize the vehicle, if the key and [wireless remote] FOB – at the same time – are not detected in your current vehicle.

Example 6:

Media article examples resulting from the misinformation campaign:
https://www.kansascity.com/news/local/article273649755.html

https://www.fox5vegas.com/2023/04/18/how-see-if-your-kia-hyundai-vehicle-is-eligible-anti-theft-software-upgrade/

Claim 4

Hyundai has falsely represented the capabilities of its anti-theft software update and intentionally withheld knowledge of significant security flaws from the public—omissions that directly undermined efforts by government officials and the NHTSA to initiate a national recall.

Example 1:

James Bell (Head of corporate communications for Kia America) claiming that the anti-theft update makes it so the car can't be stolen:

Archive: https://www.youtube.com/watch?v=lDGojrSdo-I&t=45s (Original)

Example 2:

[10:00] James Bell claiming the software update will make the vehicle inoperable.

[11:30] Claiming that the software update is a “solution that is very robust.”

Archive: https://www.youtube.com/watch?v=71U7UJEoW7I (Original)

Example 3:

Keith Ellison (Minnesota Attorney General):
"Kia and Hyundai's software update is not a real solution to this problem. We are still hearing from consumers who have had their vehicles stolen after the update ..."

"After over a year of rampant thefts of Hyundai and Kia vehicles, Hyundai's decision to offer a four-day clinic does not come close to remedying the problems caused by their failure to equip their vehicles with industry standard engine immobilizers."

"Attorney General Ellison's investigation into the threat to public safety posed by Kia and Hyundai vehicles remains ongoing."

https://www.cbsnews.com/minnesota/news/hyundai-kia-holding-software-upgrade-clinics-in-minnesota-for-vehicles-targeted-by-thieves/

Example 4:

Media reports of ongoing thefts of cars that received the software update:

A) MN attorney general:
Archive: https://www.youtube.com/watch?v=2TKBZe-Ipzw (Original)

B) Syracuse police chief:
Archive: https://www.youtube.com/watch?v=ZJF3i50iyFE (Original)

Claim 5

In addition to Hyundai’s apparent motive to circumvent pressure for a national recall, the company’s suppression of critical information regarding how the software update actually works and its lack of effectiveness served to protect corporate interests in a class action litigation. This deliberate withholding of information should not shield Hyundai from future liability for damages resulting from its efforts to obstruct recall actions through a calculated misinformation campaign.

Government Efforts

Bonta among 23 attorneys general blasting Kia, Hyundai over lack of anti-theft devices (Link)

In a letter Monday, Bonta was among 23 attorneys general urging the two automakers to take immediate action to address the thefts. The attorneys said Hyundai and Kia did not install engine immobilizers in many of its vehicles sold in the U.S. between 2011 and 2022.

"Hyundai and Kia made a decision to forgo a standard safety feature that would help protect owners' investments, and now their customers are paying the price," Bonta said in a statement Monday. "It's time for Hyundai and Kia to take responsibility for their poor decision which is hurting American families and putting public safety at risk. They must remedy this decision, now."

Attorney General Bonta Leads States Calling for Recall of Theft-Prone Hyundai and Kia Vehicles (Link)

California Attorney General Rob Bonta today led a coalition of 18 states calling for a federal recall of Hyundai and Kia vehicles following the companies' continued failure to take adequate steps to address the alarming rate of theft of their vehicles. The letter, sent to the National Highway Traffic Safety Administration (NHSTA), requests the NHTSA to institute a recall of unsafe Hyundai and Kia vehicles manufactured between 2011 and 2022 whose easily bypassed ignition switches and lack of engine immobilizers make them particularly vulnerable to theft.

National Recall of Kia/Hyundai models vulnerable to theft (RCA-2024-00161) (Link)

The automakers, Kia and Hyundai did not install industry-standard engine immobilizer technology on certain models between 2011 and 2022 resulting in millions of Kia and Hyundai vehicles being built without an anti-theft device to prevent the car from starting without the key or fob. Millions of Kia and Hyundai models with this defect are vulnerable to theft, and models without this defect are perceived to be vulnerable to theft.

This defect allows for theft of Kia and Hyundai vehicles and endangers public safety by enabling reckless driving and other crimes of opportunity. According to the Minneapolis Police Department, auto thefts were tied to five homicides, 13 shootings, 36 robberies, and 265 motor vehicle accidents in 2022.

CALLING FOR FEDERAL ACTION TO RECALL KIA AND HYUNDAI MODELS VULNERABLE TO THEFT (Link)

That the Mayor and City Council do hereby join a growing coalition of elected leaders representing municipalities across the country and at least 18 attorneys general in calling on the National Highway Traffic Safety Administration to initiate a national recall of Kia and Hyundai models that lack immobilizer technology and are vulnerable to theft due to their safety related defects and offer fair compensation or a fair trade for a safe and secure vehicle in exchange for financial loss for impacted individuals.
And be it further resolved, that a copy of this resolution be sent to the Administrator of the National Highway Traffic Safety Administration, the United States Secretary of Transportation, the President of the United States, the United States Congressional Delegation for Minnesota, the Minnesota Attorney General, the Minnesota Secretary of Transportation, the Administrator of the Minnesota Department of Transportation Motor Vehicle Administration, the Governor of Minnesota, Commissioner of the Minnesota Department of Public Safety.

Hyundai, Kia holding software-upgrade clinics in Minnesota for vehicles targeted by thieves (Link)

"On March 2, Attorney General Ellison called on Kia and Hyundai to recall all vehicles lacking industry-standard anti-theft engine immobilizers to correct this clear deficiency and stem the rising tide of auto thefts. That remains his position.

"Kia and Hyundai's software update is not a real solution to this problem. We are still hearing from consumers who have had their vehicles stolen after the update ..."

"After over a year of rampant thefts of Hyundai and Kia vehicles, Hyundai's decision to offer a four-day clinic does not come close to remedying the problems caused by their failure to equip their vehicles with industry standard engine immobilizers."

AutoSafe Solution

This report demonstrates that Hyundai made false and misleading representations regarding the functionality of their “Anti-Theft Logic” software update, and that the company’s public claims were not fulfilled. AutoSafe, however, has developed a solution to ensure that Hyundai and Kia can meet the commitments they originally made.

AutoSafe has designed and developed a plug-in product compatible with Hyundai and Kia models affected by the theft crisis. Our solution ensures that the vehicle’s fob remote is required to disable the vehicle’s burglar alarm system—precisely what Hyundai and Kia originally promised the government, law enforcement agencies, and the American public.

The plug-in provides a seamless customer experience, is permanently installed in under five minutes, and represents the most cost-effective option for delivering a robust electronic security system that cannot be mechanically bypassed. AutoSafe was prepared to supply this solution for just $10 per vehicle.

Despite this, Hyundai has declined to proceed with our proposal. Instead, the company has chosen to allow vehicle thefts to continue while preparing yet another campaign of obfuscation and misinformation—actions that undermine public safety and burden law enforcement.

We urge the NHTSA to address this critical issue and hold Hyundai and Kia accountable for the misrepresentations made to the public, law enforcement, and the NHTSA.