How an Automotive Manufacturer Could Have
Prevented a Massive Recall on Defective Ignition Switches

A problem with a tiny, 57-cent part inside the ignition switch has led to a recall of 2.6 million vehicles, numerous federal probes, and at least 13 deaths.

The faulty part was redesigned in 2006, **but the part number was never changed!** Typically, any time a car part is redesigned, the manufacturer changes the part number.

The fact that the part number wasn't changed prevented federal safety investigators and the auto manufacturer from trying to figure out which particular cars had the defective parts.

The part, called the "switch indent plunger," is roughly a half-inch long and costs 57-cents.

Plunger

Ignition Switch

The plunger is designed to provide enough torque, or pressure, to keep the ignition from accidentally turning off. If the ignition shuts off while the car is running, the airbags, power steering, and anti-lock brakes are all disabled.

The part manufacturer told Congressional investigators that the automaker knew the plunger didn't have enough torque to meet its specifications when it was first delivered to the company. But the automaker accepted them anyway.

Many of today's manufacturers in the auto industry typically rely on some identification methods to identify part numbers, but they miss the opportunity to finitely track parts and products in the manufacturing because they have no way to automate their data collection processes on the assembly line. Why? Part of the answer is because the parts themselves are not bar coded with either a part number or a serialized barcode. Automakers continue to leave the door open for massive recalls by not tracking individual parts with a serialized barcode.

Reducing Recall Liability - Serialize Parts with 2D Symbologies

2D symbologies (barcodes) can contain vast amounts of information that manufacturers and suppliers can use to further benefit the automatic data collection processes throughout the manufacturing process and in the event of a product recall call; identify more than just a part number. The Auto Industry recommends the 2D symbologies, datamatrix and QR Code, for individual parts marking because 2D codes can contain vast amounts of information in very little space and can be damaged and still be readable, these codes are ideal for the Auto Industry. Each individual part can be labeled with its own serialized 2D barcode. Today's printing technologies allow virtually any type of part surface to be marked with one of these 2D barcodes. The Auto Industry's direct part marking initiative opens up many opportunities for error proofing operations and labeling. The ability to serialize every part with a 2D code allows the opportunity to not only identify the part with a part number, but also track revisions, test results, processes, etc. and link that data directly to the individual part itself. Because the auto manufacturer was not using or even requiring individualized part identification using a serialized 2D code on these parts, they were not able to finite and narrow down the recalling of defective parts. Every part was identified by the same part number regardless of it's revision level or change levels. Thus newer corrected parts and the older defective parts had the same part number attached to them. Furthermore GM was not able to differentiate which individual cars had the old or new parts installed in them. This caused GM to recall all the cars that had the single particular part number installed into the vehicles regardless if the part was a newer fixed part or an older bad part.

Ignition switch with serialized 2D code could have prevented widespread recall

By using a 2D code or serialized individual part labels to mark individual parts, the individual part now becomes capable of retaining a database of information about each part and can be used for any automatic data collection, error proofing or verification process. Each part now can have its own identity and traceable history. Parts marking provides for functionality to serialize all production parts. This can be by using direct part marking methodologies such as labeling, dot peen, laser etching, ink jet and many others. Each individual part label is typically scanned to an assembly which is ultimately scanned when assembled in vehicle. This attaches all the part information directly to the vehicle that the part was installed to.

By using a direct part marking or serialized labeling to mark parts with a unique serial number, the user has the opportunity to automatically collect lot traceability information for each part or sub-assembly. This information can be easily collected by reading the symbol on the main component or casing at each assembly station and reading a raw material serialized label on components that are added to the assembly. This process links the main component serial number with each subcomponent added to the assembly. A record of what components go into making a particular assembly can then be maintained in a database and automatically linked to the car VIN number that it was assembled in. In fact, had the automaker used this type of traceability in the beginning when the fixed part was in production, the total cost of the recall could have been reduced significantly. This type of traceability can be very useful is performing to the spirit of the government mandated TREAD act. This process, identified by the auto industry as "quality conveyance," provides a link between the parts, the sub assemblies, and the vehicle it is assembled into.

About Freedom Technologies

Freedom Technologies provides expert identification, tracking and data management solutions for Automotive, Government, Aerospace, Industrial, Medical, Oil & Gas and Food & Beverage industries. Since 1991, Freedom has been a leader in the Manufacturing industries through innovative error proofing solutions that integrate to cameras, PLC's, vision systems, direct part marking, scales among many others. Through our integration, data is retained from these systems by Freedom Technologies application to provide traceability to the item level.

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• Preventing quality spills

• How to use Automated Data Collection (ADC) to improve inventory accuracy to near 100%

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