

# Hyundai and Kia Crash Data A Preliminary Overview

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**B**ackground  
The Bosch Crash Data Retrieval (CDR) Tool was first offered for sale, commercially, in 2000 largely as a function of a relationship between General Motors and, at the time, a scan tool company Vetronix. In the ensuing years, Ford (in 2003) then Chrysler (in 2008) and finally Toyota (in 2011) reached agreements to allow access to crash data from modules in their vehicles to be part of the CDR Tool functionality.

In 2012, the provisions of Title 49 of (US) Code of Federal Regulations, part 563 (49CFR563 or what has become known as “the rule” or “part 563”) took effect. “The rule” specifies that for “...vehicles manufactured on

or after September 1, 2012, if they are equipped with a ... device or function in a vehicle that records the vehicle's dynamic time-series data during the time period just prior to a crash event ... intended for retrieval after the crash event... (the) manufacturer ... shall ensure by licensing agreement or other means that a tool(s) is commercially available that is capable of accessing and retrieving the data stored in the EDR...”<sup>1</sup>

In the run-up to September 2012, the (US) National Highway Traffic Safety Administration (NHTSA) had published the provisions of “the rule” in the Federal Register and had responded to several petitions for reconsideration as well as comments published pursuant to notices of proposed rule making (NPRM). During



that process, some modifications and clarifications were ultimately made to provisions of “the rule;” however, one area in particular that was never really thoroughly addressed was the passage found in 563.12 specifying that manufacturers: “... of a motor vehicle equipped with an EDR shall ensure by licensing agreement or other means that a tool(s) is commercially available that is capable of accessing and retrieving the data stored in the EDR that are required by this part. The tool(s) shall be commercially available not later than 90 days after the first sale of the motor vehicle ...”

When “the Final Rule” was published, the only commercially available tool designed to access recorded crash data was the Bosch CDR Tool. On the one hand, many anticipated then that, given the limited market for this type of tool/system and experience (which included at least one other potential tool supplier expressing interest in developing an alternative tool and then deciding against it as a function of the product development cost versus the market potential), the Bosch CDR Tool would become the tool widely adopted by other OEs who would be looking to be “563” compliant. On the other hand, “the rule” was written specifically to leave it to the OEs to find a way to “be compliant” inasmuch as NHTSA, a government agency, couldn’t specify a particular vendor/supplier for the tool which would enable OE compliance.

At one point prior to the implementation of the “final rule,” Toyota had announced publicly (and even went so far as to post to their web site) that they were developing a tool for access to data recorded in their vehicles. In fact, Toyota was using what became known as their “Read Out Tool (ROT)” for some time. Ultimately, they worked with Bosch to include Toyota line vehicle access as part of the Bosch CDR Tool functionality. Similarly, other OEs who, at one time or another and in one way or another,

expressed objection to “the rule” or suggested the probability that they would develop separate or parallel tools have ended up working to make it such that data from their vehicles has become accessible using the Bosch CDR Tool. Notable exceptions; however, have emerged.

As of this writing, Land Rover and Jaguar (which were purchased from Ford by Tata Motors around the time of the 2009 auto industry “troubles”) have a process in place which requires someone looking to get data from their relevant system(s) to arrange the retrieval with them (the OE). In a rather unique interpretation of “the rule,” Rover and Jag then required that the retrieved “data” be sent to (at last report) the UK for translation to what one might hope to anticipate is a “compliant” report form/format. In “563,” we find a passage (at 563.12) specifying that manufacturers: “... of a motor vehicle equipped with an EDR shall ensure by licensing agreement or other means that a tool(s) is commercially available that is capable of accessing and retrieving the data stored in the EDR that are required by this part...(emphasis, authors).” Notably, in the strictest reading of this part of “563,” the commercial availability of access to a tool that “accesses” and “retrieves” data but does not generate a report would satisfy this requirement. By extension, or perhaps in application, one might point to the remainder of “the rule” which addresses (for example, at 563.8(a) Table III) that the “... data elements ... must be reported in accordance with the range, accuracy and resolution specified in Table III ... (emphasis, authors).” While there is, admittedly, still no requirement in “the rule” specifically calling for the retrieval tool to generate a report, or “when” a report might be generated relative to the access and retrieval, clearly that was anticipated by NHTSA as “the rule” was drafted although it wasn’t actually laid out in “the rule’s” final format.

## Editor’s note:

While the Bosch Crash Data Retrieval Tool remains the primary commercially available system used by collision reconstructionists to access and retrieve crash data stored in passenger cars, light trucks and SUVs, other options have emerged which allow access to crash data recorded in modules in those few vehicles not currently covered by the Bosch CDR Tool. This first-of-its-kind review is a brief comparison of what those other systems offer - and don’t offer - compared to that afforded by the Bosch CDR Tool.

In addition to this article, some limited information about these systems has already been incorporated into the Collision Safety Institute’s CDR Data Analyst course curriculum including a comparison of the data which may be retrieved by way of the other options to data from instru-

mented crash tests. However, since that course is designed to train and support users of the Bosch CDR Tool, not these other tools, the information there is, of course, relatively limited.

For a detailed and comprehensive look at data from tools such as those offered for non-Bosch CDR Tool supported vehicles - including comparisons to a wider range of fully instrumented crash tests - those interested in these systems should consider attending the CDR User’s Summit in Houston, TX in January, 2014 where the use of these tools and detailed reliability comparisons from crash tests such as those mentioned herein as well as other related issues will be more fully presented.

Another exception, and the larger focus of this narrative, is the emergence of a tool - or tools depending on one's perspective - capable of allowing access to and data retrieval from Hyundai and Kia vehicles. Announced about the time "the rule" took effect, these OEs have opted to use a tool(s) made by Global Information Technology ("GIT") to be "563 compliant."

Since 2001, "GIT" has been the "OE" supplier for diagnostic tools for both Hyundai and Kia. Editorially, one might recall that the origin of what is now the Bosch CDR Tool was based on collaboration between then Vetronix and General Motors where Vetronix was the supplier of the Tech I and Tech II scan tools as used by GM dealerships. When the "GIT"-based "EDR" application(s) for Hyundai and Kia were announced, the Hyundai kit became available through GIT America's Aftermarket Support division and the Kia-specific system from Snap-On Business Solutions.

The primary difference between the two tools is really a result of the nature by which the distribution takes place. The tools are composed generally as one finds the Bosch CDR Tool meaning there is software, and hardware including what, in the Bosch tool would be known as the "interface module" or what is called, by GIT, the "Vehicle Communication Interface (VCI)." Unlike the Bosch CDR Tool "interface module," which has been designed specifically for the CDR tool application, the VCI is a near-universal component for GIT scan tool or diagnostics connectivity

associated with Hyundai and Kia vehicles going back to, at least 2010.

Apart from that, the only remaining difference between the VCI sold for Hyundai applications and that sold for Kia applications is the color of the VCI enclosure. The "blue enclosure" VCI is sold for Hyundai applications and the "red enclosure" is sold for Kia applications (interestingly enough, Snap-On tools typically have red enclosures, a theme comparable to the use of "Bosch green").

In testing conducted to date, the authors have used both enclosures interchangeably accessing and retrieving data from Kia and Hyundai vehicles. For example, Hyundai data access and retrieval has been completed using the Hyundai version of the "EDR (system)" software and the Kia-designated VCI, and vice versa. The basic system cables (i.e.: for DLC access) are also interchangeable. These systems are not; however, sold together or currently sold such that a "piecemeal" assembly of a single tool capable of working with both systems is possible. It should not; however, come as a surprise that these systems are really so similar. Prior to GIT becoming the official OE supplier for diagnostic tools to Hyundai and Kia, the Hyundai Motor Company purchased more than 50% of what was then South Korea's second-largest auto manufacturer: Kia Motors. Over time; however, that relationship changed - at least outwardly - such that, by 2012, Hyundai retained only slightly more than 30% of Kia ownership. Nonetheless, as a function of other agreements, Hyundai remains the default representative of the two otherwise seemingly separate entities.



### The Hyundai Tool

The Hyundai-specific tool is available from GIT America's Aftermarket Support division located in Tustin, CA. Through March 2013, the tool was offered at what was apparently an "introductory" price of about \$2850 (including shipping). In April, 2013, that price increased to \$4000 including shipping and one more direct-to-module cable than was included in the earlier version/release of the system. The tool is sold to allow retrieval from model year 2013 Hyundai vehicles which would provide for Hyundai compliance with "the rule." There is a software subscription required which, in March 2013, was \$195 (per year) for each system (Hyundai and Kia).

### The Kia Tool

The Kia-specific version of the tool is available from Snap-on Business Solutions. Snap-on is based in Richfield, Ohio. Through March, 2013, the Kia version of the tool was available for \$3767 plus shipping. In April 2013, the price of the tool increased to \$4300 and 2 additional direct-to-module cables were added to the

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## Influence of Dynamic Structural Loading on Vehicle Occupants

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**V**ehicle occupants are subjected to dynamic structural loading during a crash event. This loading is the result of the interaction between the vehicle structure and the occupant. The magnitude and duration of this loading are dependent on the severity of the crash and the location of the occupant within the vehicle. This paper discusses the influence of dynamic structural loading on vehicle occupants and presents a method for evaluating the risk of injury to occupants during a crash event.



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## Current Issue

Volume 8, Issue 2, Fall 2010  
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This issue of Collision Magazine features the most detailed and in-depth analysis of Hyundai and Kia crash data published to date. The extensive review of the functionality of the Hyundai/Kia "ECR Tool" application in crash tests and real-world examples is the focus of the primary feature story in the Fall issue of Collision.

In addition, "Differentiating Forensic Cause-Preventive Component Damage from 'Crash Damage'" will get a look at methods for evaluating damaged components and an alternate method of investigating the potential of a pre-crash mechanical failure which may lead to or contribute to a crash. The analysis is carried out by the increasing use of vehicle examinations in "Evidence Collection Overhead" during vehicle inspections. A job of detailed study, these crash investigative techniques will aid an examination of crash data in order to help identify and prevent the effect of similar incidents on the contents of the indispensable issue of Collision Magazine.