Scan tool functionality and application in today's collision repairs.

With the increasing amount of technology introduced into vehicles over the past few years and continuing heavily into the future, the need for access to advanced level diagnostics and scan tools has reached a critical point for collision repairs. Progressive shops that plan to handle this proactively and efficiently will need to incorporate additional diagnostic functions for damage assessments and to complete computerized calibrations into their processes.

Shops do have some options; each option does have unique consequences.

- **Sublet scanning functions and diagnostics to dealers**. This is a time consuming process and is usually done after repairs have started and additional problems are present. Usually adds to towing and rental expense. It is not feasible for a pre-repair or estimate process during blueprinting stage of repair estimate.

- **Sublet scanning functions and diagnostic to a mobile service.** This can be more effective than towing to a dealer being as towing costs can be reduced or eliminated but can still be time consuming due to scheduling for mobile service visit. This can be applied to blue printing process but forces the shop to wait for mobile tech visit.

- **Remote diagnostics with remote scan tool connectivity**
  At CDS we are currently applying this functionality which was previously just a conceptual idea. Our communication Interface, currently known as "Astech" is not a scan tool at all by itself, but a means for our diagnostic experts to connect scan tools remotely to vehicles over long distances using an internet connection in your shop to perform functions needed to assess, diagnose, and complete procedures that are only possible using the highest levels of OEM specific scan tools and some aftermarket scan tools. See patent # US8688313 for more information on process and visit www.collisiondiagnosticservices.com for more detailed information on services available.

- **Perform scanning functions and diagnostics themselves.** This would probably be the most effective for a timing and operational standpoint. However this process does require the shop to obtain and maintain their own equipment and personnel to perform the diagnostic functions with the scan tool and interpret the results. Scan tools can very expensive depending on the level of coverage and functionality needed. Se descriptions of available scan tool options below.

Keep in mind what a scan tool does and doesn't do; levels of functionality are further detailed below. Scan tools do not technically fix anything or directly diagnose anything. However without these functions being available from a high level scan tool, diagnostics, calibrations, and re-learn function are mostly impossible. Scan tools provide vehicle data and trouble codes stored within the vehicle computer networks. Access to these codes and data direct the technician to the area of concern or where/what a malfunction could be. Vehicle computer networks also automatically disable many vehicle functions when a trouble code is stored even after the actual fault has been repaired (unplugged connector, replaced component not re-learned etc.) Clearing the code can restore the function giving the appearance that the scan tool "fixed" the problem. But if the fault is still present (poor connection, loose ground, etc.) the code will re-appear and a malfunction indicator or message may illuminate, or a certain function may become inoperative again. In addition to these functions there are the programming, set up and calibration functions needed to complete a job. For instance if a brake pedal sensor or active grill shutter assembly is replaced the physical repair is complete, but the component will not operate until the network on the vehicle is commanded to "relearn" the components limits. Much like plugging a new monitor into you PC that needs the drivers downloaded and installed to operate. If the component is broken the calibration will never make it work.

- **Generic OBD-II Scan-Tool**

OBD-II is a government mandated diagnostic protocol that is primarily aimed at diagnosing emissions-related problems. ***An OBD-II scan tool*** will work in many different brands of cars for engine emissions based systems only. Although you can use an OBD-II Scan Tool in an OBD-II compliant (1996 or newer) vehicle, an OBD-II Scan Tool can only query codes from the engine, not the numerous other "intelligent" systems in the car. Want to reprogram your central locks or your Radio? Diagnose a problem with ABS, Airbags, or Automatic Transmission? Initialize a body control or airbag module after replacement? Reset your Service Reminder Indicators? A **Generic OBD-II Scan-Tool** can't do any of these things.

- **Aftermarket Multi line scan tools**

Scan tools capabilities vary significantly to retrieve and clear trouble codes, acquire lines of data (Read sensor output and observe or activate actuators like the idle air control, body function motors, transmission controls etc.). Some have additional capabilities to perform special re-learn functions. These levels of capabilities are common to almost all scan tools beyond OBD-II generic scanners to different degrees. These tools provide a pretty good number of lines of information and do a decent job of giving basic information on a lot of vehicle applications for a wide range of makes and models. The higher end aftermarket scan tools may contain some "re-learn" procedures as well but this will vary by vehicle and the level of software in the tool. Keep in mind several scan tools require subscription purchases of separate software packages for different manufactures. Even the highest end aftermarket scan tools will be 1-2 or more years behind for procedures and coverage for the current model year release. This is detrimental in collision repairs because of the latest model vehicles that enter their shops. If you have a vehicle requiring a module replacement and needs programming or initialization be aware that 99% of aftermarket scan tools do not provide module re-flash capabilities. Additional equipment (j2534 pass through) with software purchases will be needed to complete this or sublet to another equipped shop, mobile programming service or dealership

- **OEM Scan tools**

These tools use their particular manufacturer proprietary diagnostic protocol and are only designed and supported for use in the specified **OEM** Line of vehicles. These tools can be very expensive to acquire and maintain but are designed to do **ALL** the functions required for a particular manufacture with additional and expended capabilities in all areas of the vehicle module networks. Each manufacture scan tool also requires the user to understand the operations and functions of the tool along with the requirement of subscriptions and IT maintenance keeping them operational at their intended levels.

Diagnostic Capabilities: Many scan tools that are generic, are not up-datable and operate on a generic OBD II or CAN platform. This means that they will work with just about any vehicle pretty good but only offer you limited ability like reading and resetting fault codes, accessing basic data stream information from the PCM. They seldom offer bi-directional communications and module re-flash capability. Many OEM PC based systems are great for looking at Data Streams as they allow functions like graphing and the ability to look at Snap shot, freeze frame or failure records.

Bi-Directional Communication: This is a scan tools ability to communicate in both directions with an automobile, such as commanding outputs and initiating (giving instructions) to a vehicles module to perform a task such as commanding headlamps on, wipers to operate or door lock actuators to function. If you can only read what is on the vehicle network, but cannot respond or talk back, your effectiveness for diagnostics is limited. This is what most aftermarket scan tools do, they retrieve information, but you can't send messages back to the vehicle network to initiates output functions or calibrations.

Updatability: OEM scan tool updates are normally released before a new vehicle platform or new model year is made available for sale. This insures you have the coverage and capabilities before you see these vehicles in for repair. Most aftermarket scan tools can be updated when made available and typically a couple of years behind the OE level of release. Some scan tool company's require a current subscription or for updates or a per update fee.

Ability to Flash Program Modules: This refers to a scan tools ability to be used as a programming tool for vehicles PCM, BCM, TCM, Radio or any other module or device on today's cars. Keep in mind that a second level of software access

with the OEM must be subscribed to in order to access the flash files to download with the OEM scan tool. Less than 5% of aftermarket scan tools will do this. A separate j2534 device compatible with OE flash program files is needed in addition to the scan tool or scan tool PC based software for this function to be performed.

Functionality: A good scan tool offers you the ability to look at "Pending Codes." these are fault codes that occur, but do not trigger a light. OEM scan tools offer the highest level of this data available from vehicle networks. In addition data retained as "failure records" are also available with OE and the highest level scan tools.

Using remote scanning functions and diagnostics. This process is new and still in development. Currently this is being delivered exclusively by CDS "Collision Diagnostic Services". This allows the shop to have the vehicle scanned with guided diagnostic processes delivered to the shop by a master certified diagnostic specialist on a per use basis. No scan tools to buy or maintain and allows intermediate level technicians at the shop to carry out on vehicle inspections, tests or procedures as needed for areas of concern from the scan results interpreted by a Master technician. No towing to dealer and reduced wait times. At CDS our technicians use OE scan tools to perform the functions needed while the car remains in the shop from initial diagnostic assessment to calibrating or programming modules and components affected by the damage or repair process. If this method seem to be a reasonable alternative to the ways it has been done in the past please contact us at CDS for more information on obtaining and using web based remote diagnostics for your current diagnostic needs.

Thank you,

Chuck Olsen

Director of Diagnostics and Technical support
Chuck.o@collisiondiagnosticservices.com
Office: 904-638-4792
www.collisiondiagnosticservices.com

Remote diagnostics to help you put cars back where they belong.