



Pass-Thru

Introduction to J2534 & Flash Programming

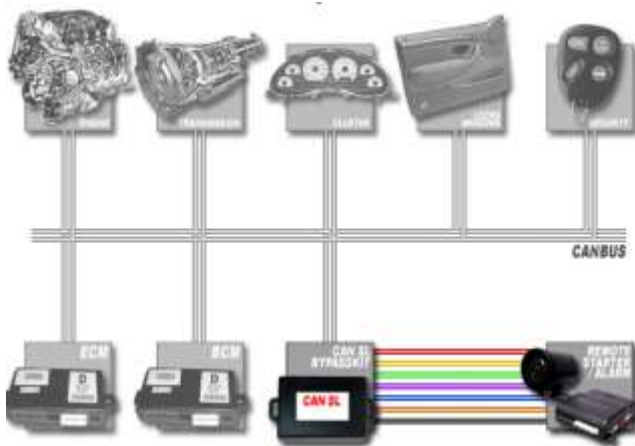
Pass-Thru

Testing & Communication

Background – For a better understanding

Over the last ten to fifteen years there have been massive leaps in vehicle electronic architecture, much of which most people have got to know in varying amounts. Due to knowing only part of the story leaves many people unsure of what to expect in the areas where their knowledge is weak.

As electronics progressed, from cars having just one ECU to cars that have many systems all with separate ECUs they all share a network around the vehicle; this is the CAN BUS system. As with all computers, they need updating from time to time.



Due to the complexity and vast array of electronics that are now included with all vehicles, there has become a bigger reliance on Car Dealerships for working on these specialist systems. The American Government were the first to act to stop this becoming a problem, they announced Block Exemption. Now you are all probably aware that this happened in 2001, in America it was law, but in Europe it was advisory.

At first many leading names in the Motor Industry looked further into this and how it would unfold to garages, their message was clear 'leave it to us and we will let you know when the case is won'. You may be surprised to learn that they won the case many years ago, but they seem to have forgotten to tell everyone else about it.

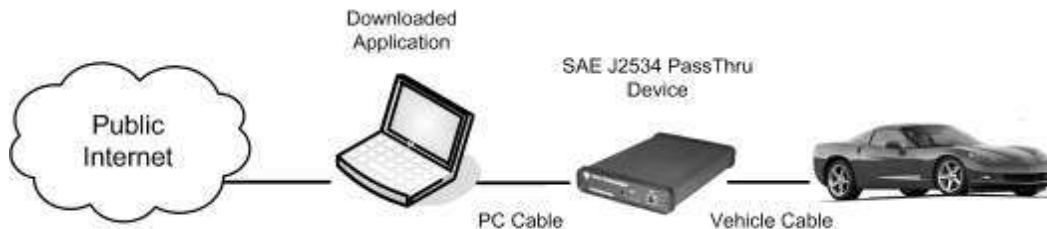
What happened – and why

It was made law that any vehicle manufacturer who wished to sell any cars in the USA had to produce a "Technical Website", this website had to make available all the documentation an aftermarket garage would need to be able to work to the same level as their franchised dealers. They are able to charge "a reasonable cost" for this information, on a subscription basis.

There would also need to be a Vehicle Communication Interface (VCI) of a universal nature made available to the aftermarket. What they did not do was tell anyone; here in the UK this has been available since 2001. This is where many diagnostic companies get their information from.

What has happened now is really very good as well as very useful, but there does need to be a great deal of learning before people just jump in and start reprogramming cars. A good place to start is to look how everyday people are using computers, either Desktop or Laptop. In most cases they run on a Windows Operating system. Most people are now used to connecting to the internet, logging on Microsoft Update to download programme updates. We are even used to having attachments connected to our computers, such as printers, scanners etc etc. They also are updated whilst being connected to the internet, often on a daily basis.

In its most basic way this is what happens with cars, if we take the car as being the computer, ABS being one of the attachments, Climate Control another and Air Bags another. In some vehicles there may be in excess of 100 attachments (ECUs). What you do is plug a computer connected to the internet to a vehicle, log on to a specific Manufacturers Technical Website. The vehicle is then looked at by the technical website as if it were a computer with lots of attachments; they are all connected on the same network so are able to be updated as one 'system'.



It is important that vehicle networks are updated intact, or should I say with all the ECUs connected. Today's vehicles share information around its network lines (BUS lines), this way the number of sensors and actuators are kept to a minimum. If one of the control units were to be removed and programmed on its own, some of the information needed elsewhere in the system may not pick up as it should. This could cause other problems as well as being dangerous.

You may have noticed that vehicle recalls do not happen or appear to happen as often as they used to, this is due to computer systems on cars being reprogrammed to fine tune their operation or even cover up faults to designs that are programmed out. It is often the case that when a customer takes their new car in for their first service, it is common that they are told the car has been serviced with no problems found. They are usually told that the car has been checked for faults but none found, however no one is told that the dealer has checked the manufacturers system for software updates.

Downloads are very important, so understanding them and what they do is also important but they are only one part of the system and what is available. You will find several other much needed features as part of the Technical backup from the manufacturer, such as Technical Service bulletins, wiring diagrams, operating manuals and much more.

The way that it works

Each manufacturer has its own website, the name of which you would not be able to just guess. Nothing in the law stipulated that it had to be easy to find, so in many cases getting the web address can be the difficult part. Whilst the manufacturers have to provide the information, they still do not really want everyone using them. From their point of view it would be better for them if people just used the dealerships.

Once you enter the technical website you always have the option to be able to register and subscribe. This means that you (the customer) agree a separate set of terms & conditions with each manufacturer. The contract is between you and them, each time you subscribe. In most cases there are varying levels of support you are able to subscribe to. Some of which are:

- **All** £31.20 (inc VAT) per day
- **Diagnostics** £21.60 (inc VAT) per day
- **Bulletins** £21.60 (inc VAT) per day
- **Service** £21.60 (inc VAT) per day



As you can see above, when you log on you log on to that specific vehicle. By logging onto the specific vehicle, the system knows all that is installed as well as the level of software it is currently working on. Should you wish to update, or reinstall the system you would be able to carry out this operation.

Once you have subscribed and are logged on, you are able to call their technical helpline. It is in the manufacturers interests to make sure that they give good product support to anyone who is registered and logged in.

When you select Diagnostics, you then use the manufacturer's diagnostic tool (online). Any links available from that tool are specific to the vehicle you are working on; this obviously makes diagnosis (your diagnosis) more accurate and reliable.

The Link (VCI)

As well as looking at the computer screen, you need to connect the computer to the vehicle. To do this you need to use a connection interface (VCI), at the end of the cable there is a 16 pin (J1962 or EOBD type) socket.

There are a number of these available now, many of which can be imported from America. The important point to note is that it is **J2534-1** compliant, this is a standard agreed within SAE. Here in the UK there is one VCI that is approved by all vehicle manufacturers, the information transfer rate may not be the fastest but it is certainly the most stable.

For the VCI to work and communicate correctly there needs to be 'Drivers' downloaded from each of the manufacturers, this is done when registering on their site. As you can tell once you start using the Pass-Thru device it does grow into rather a complex tool.

In Conclusion

Whilst on first reading, it may appear that everyone's questions and concerns have been answered by the introduction of Pass-Thru testing/programming. I would urge caution; there is no way that Pass-Thru should be seen as a replacement to your everyday Scan-tool or Oscilloscope. It should be seen as a way forward, to be used in specific cases. If you try to use it as an everyday tool, you will soon find it to be extremely expensive.

To learn more, please contact ICT Workshop Solutions – www.ictworkshopsolutions.com