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Security Marking and Registration Systems

Vehicle Identification – The Great Debate!

1. **Glass Marking - VIN versus Independent Unique Code and 24-hour telephone number.**
2. **Visible Marking versus Electronic Parts Identification.**

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Introduction:

This paper considers the merits and demerits of marking vehicle windows with the VIN – full 17 character or partial - as a method of identifying vehicles and countering vehicle crime at all levels and compares this with marking with a Third Party Code coupled with registration and 24/7 verification of data. It also considers whether or not covert electronic identification of parts is an effective alternative to overt window and component parts marking.

1. Glass Marking – VIN versus Independent Unique Code and 24-hour telephone number.

Vehicle Identification Numbers (VIN):

The VIN is allocated to a vehicle by the manufacturer prior to production and should remain with it for life. The VIN system is controlled by ISO through three standards, 3779:1983, 4030:1983 and TR8357:1996. VIN is used by both manufacturers and official bodies (police and licensing departments) to represent the true identity of a vehicle. However, herein lies a fundamental weakness of the system inasmuch as that overtly displaying a full or partial VIN to assist in vehicle identification actually assists criminality rather than deterring it.

When considering use of a VIN or partial VIN to etch into vehicle window glass as a deterrent to theft and as an aid to the identification and recovery of stolen vehicles the following should be borne in mind:

1. VINs are frequently taken at face value - in other words police, in particular, will check a VIN against an official record and if they match, will make an assumption that the vehicle is genuine rather than carrying out further checks. Criminals are well versed in the skills required to obtain VIN in order to change a vehicle's identity, mark a vehicle up with a false VIN and use the information to create forged documents.
2. In the UK and other parts of the world it is easy to obtain genuine replacement vehicle registration documents from official sources through deception, as long as the VIN is provided on the application form.

3. Many vehicle manufacturers are happy to issue duplicate VIN plates with little or no security checking before doing so, once supplied with the VIN required.
4. The VIN is the access route to buying components for vehicles including keys, door locks and engine management systems.
5. If the glass is marked with only a partial VIN, a criminal can build the full VIN from it, providing he has knowledge of the vehicle.

The following points are also relevant:

a) A VIN is 17 characters long. Ideally the beginning and end of the string should have a security mark (e.g. the vehicle manufacturer's logo) to prevent the illegal addition of characters. In either case the opportunity for error is significant. Errors can only be properly corrected by replacing the glass.

b) Only a 17 character VIN is unique to an individual car. If a truncated version is used to etch the glass, that number is no longer one-vehicle specific.

c) It is an accepted fact that the maximum string length for memory retention and 'reproducibility' is no longer than seven alpha-numeric characters. Anyone needing to check a full VIN will by default have to write it down, thus creating the possibility of errors being introduced into the checking procedures, particularly at night.

Third-Party Numbering Systems:

Most, if not all, of the above problems are avoided if Third Party marking systems are used. In this context the term 'Third Party' means a numbering system which, in itself, does not allow the criminal access to sensitive owner or vehicle data. To achieve this objective a number of criteria need to be met:

1. There should be no link between the allocation of a third party code, the VRM and the VIN that can be made by criminals or others, through dealerships, licensing authorities or any other method through which criminal abuse of information can take place.
2. The linking of the etch code, VRM and VIN must be via a secure, accredited, database – such as Retaingroup's International Security Register (ISR) which is certified by the Loss Prevention Council under Standard 1224.
3. Marking and registration of the vehicle should take place as early as possible in the vehicle's life – at manufacturing plants or at export/import centres.
4. Issue of the secure codes should be strictly controlled and the marks should be difficult and costly for thieves to replicate or alter- e.g. by including the manufacturer's logo as an integral part of the mark. **(The markings on Toyota, Lexus and Skoda windows are good examples).**
5. The string used should be no longer than seven characters.
6. The checking service must be available 24/7 and the telephone number must be marked into the glass below the unique code to allow easy/immediate contact for anyone wishing to verify vehicle data. Experience shows that nearly 50% of all such enquiries are made "out of hours".

7. **Verification** of registered data should be a service which is available to all free of charge, funded by the original price of the marking and registration system (preferably by the vehicle manufacturers and importers as Original Equipment) and by registration of subsequent owners.
8. Release of additional data to police and other authorised persons or organisations should also be free of charge and be controlled by the strictest of protocols.
9. An audit trail must be maintained of all enquiries. Staff must be security vetted prior to employment.

When considering the use of a Third-Party system to etch vehicle window glass as a deterrent to theft and as an aid to the identification and recovery of stolen vehicles the following should be borne in mind:

a) If a Third Party code were duplicated on a stolen vehicle the existence of two vehicles bearing the same number would be picked up in any subsequent enquiry.
b) If a random false code is used a check on that code would identify it as such straight away.
c) There is no possibility of marking the wrong code into vehicle glass, thus avoiding the expense of having to replace windows. Codes are assigned to vehicle VINs and VRMs on the database after registration.
d) There is a controlled separation between code, VRM and VIN, therefore visibility of the code does not allow a criminal access to other important vehicle data or services.
e) The ability for members of the public to make enquiries on a 24-hour basis enables owners or purchasers of used marked and registered vehicles to check the data quickly and easily, again according to strict security protocols.
f) Use of a Third Party code is the most simple and effective way of detecting if a vehicle has been cloned.
g) Statistics are available which prove the system is effective in deterring and detecting crime.

In the latest Thatcham NVSA document (NVSA4A) that has just been issued, up to a maximum of 24 points are awarded for marking vehicle windows (3 points per window) with either the full or partial VIN, or with an independent Third Party code and 24-hour telephone number – i.e. no incentive is given to vehicle manufacturers for protecting their vehicles with the latter system, despite all the evidence showing that it is an effective deterrent to theft and aid to recovery, whereas making the VIN visible in any position is considered by many to undermine vehicle security. Last year the lack of support for marking and registration under NVSA4 led to a reduction of 250,000 vehicles being marked with a code and 24-hour phone number. Renault was one of the companies in question and they withdrew the system despite being written to by senior police requesting them not to do so.

2. Visible Marking versus Electronic Parts Marking:

Thatcham NVSA4A provides vehicle manufacturers with one point for each component part identified electronically, whilst 2 are awarded for overt marking. Some manufacturers are trying to get acceptance for replacing window and overt parts marking with electronic identification. There are three methods of identifying parts electronically:

a) A hexadecimal memory address within a specific electronic module is assigned for VIN storage – the EOL (End of Line) programming sequence automatically causes the VIN to be broadcast over the CAN bus/LIN bus (depending on the technology used) and stored in the module.
b) Attaching a Radio Frequency Identification (RFID) tag, which will have been programmed with a unique number, to the part.
c) Marking the part with a bar-code so that it can be read electronically.

While these three methods may be advantageous to the vehicle manufacturers because the cost of a) is negligible and the costs of b) and c) would be borne by the component or module supplier, there is a fundamental reason why the advantage ends there:

Where method a) is concerned, only those parts that are in some way interconnected with the ECU and the data bus can be identified in this way and a special diagnostic tool is needed together with the memory address details to be able to read the VIN. Alternatively the part would have to be returned to the manufacturer for identification.

With b) an RFID reader would be needed to read the data from the tag. Because it would be a logistical nightmare to programme the chip with the VIN, a database would then need to be referred to in order to get the corresponding vehicle details.

With c) an appropriate bar-code reader would be needed to determine the data.

Whichever of the three methods is used, there is always the one common factor - at least one device is required to identify the data, whereas visible marks can be read immediately. From a law enforcement point of view visible marking is essential. There are many reasons why a need for devices to obtain information is not helpful, the most crucial being an inability to make an immediate check. This is why eye-readability is essential and, for reasons expressed above, a code and 24-hour telephone number (linking a vehicle to details held on a secure database) is the most secure system.

A brief summary:

1. Marking windows with a code and telephone number, registering vehicle details on a secure database, and providing a 24/7 verification service has proved to be effective at

deterring and detecting vehicle crime. (Statistics can be provided on request). No other system can quickly identify cloning.

2. Glass is the most difficult surface from which to remove a visible mark without leaving a trace, therefore vehicle windows should always be marked no matter what other markings are present.
3. Window marking, supported 24/7, saves police time – one telephone call can provide immediate answers.
4. Identification of component parts should be visible and as permanent as possible.
5. Electronic parts identification is no help to police or anyone else wanting or needing to make an immediate check on a vehicle.

Vehicle Identification - join the Great Debate.

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A003 3rd November 2006

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