



HOMOLOGATION DIRECTIVE

WM03

PLANT

OR HEAVY EQUIPMENT

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FOREWORD

Data from various sources, including the police and insurers, indicate that theft of and from company vehicles involves many millions of Euros every year. It is not unlikely that the estimations are still rather low, in view of the fact that the registration of these 'thefts' is influenced by various factors. The concept "company vehicles" must be viewed in a broader context than merely a lorry and articulated truck. Various types of plant or heavy equipment also fall under company vehicles as being material that is operated business-wise.

In order to have a balanced opinion about the requirements that the protection of these vehicles has to meet, it is necessary to gain an understanding of the possibilities to implement electronic and mechanical security devices as well as the modus operandi of criminals who are after the (contents of) company vehicles.

In addition to a whole range of organisational measures to reduce the chance of theft of and from company vehicles, it is also possible to make use of techno-preventive features on and at the vehicle. These technical features against theft can be divided into two categories:

- Electronic features
- Mechanical security devices

These security devices will only be effective if they are applied in combination with each other. For requirements with regard to mechanical security devices the reader is referred to the SCM-Homologation Directive of Mechanical Security Devices 2002 (MP03).

The SCM Directive WM 03 was drawn up with the intention to set minimum requirements with regard to the theft-preventive effect of security systems for work and plant or heavy equipment. For vehicles with a weight up to 7,500 kg and 12 V board voltage the current Directive AA03 is applicable. In many cases this latter specification is also suitable for plant or heavy equipment on 12 Volt.

In view of the substantial parallels between company vehicles and plant or heavy equipment, it was decided to not draw up any separate specification, but to make use of the already existing Directive BV03 as much as possible. The following Homologation Directive WM 03 therefore only contains information that is additional or different from the text in BV03. When designing security systems for plant or heavy equipment, it is therefore advisable to also apply the Directive BV03.

The Homologation Directive WM 03 is drawn up under the auspices of the SCM and SCM grants the approval certificates. The certificates can be carried out by accredited test houses with which the SCM has concluded a cooperation agreement. In this cooperation agreement it is laid down when and in what way the quality control is maintained during the approval period. For the conditions the reader is referred to Directive AA03.

The Homologation Directive "SECURITY SYSTEMS FOR PLANT OR HEAVY EQUIPMENT WM03", hereinafter to be referred as the "Directive", is issued by the Dutch Institute for Certification of Vehicle Security Systems (SCM).

The Directive was drawn up, under the auspices of the "College of Experts of the SCM", in consultation with experts from the BMWT. This group consisted of representatives from:

- Manufacturers / importers of plant or heavy equipment
- Insurers
- Representatives from the BMWT
- Dutch Institute for Certification of Vehicle Security Systems (SCM)

The Inspection Specification was divided into three parts:

- | | |
|---|-------------|
| - General provisions and conditions | Chapter 1+2 |
| - Inspection requirements regarding systems | Chapter 3 |
| - Description of the tests | Chapter 7 |

In the Inspection requirements the technical requirements that the systems have to meet according to this Inspection Specification are described.

In the Description of the tests the conditions, implementation and the different equipment of the various tests are explained.

The reader is referred to the current specification AA03 for the General provisions and inspection conditions for the inspection of the type and the production phase for SCM-approved systems and the requirements for the manufacturer / importer of SCM-approved systems.

1.1 Entrance date Inspection specification WM03

The date of entrance of the Directive WM03 is 1 January 2003.

In view of the fact that it is (still) also possible to make use of systems approved according to BV03 (BV02), the expiry dates for BV02 are stated below. The current specification BV02 expires as from 1 January 2003.

The current approvals under BV02 continue to be in force until 1 July 2004. In this period approvals under BV02 can be changed to BV03, possibly with additional tests. This will be assessed by the test house.

1.2 Disputes

In the event of lack of clarity or differences in the English version, the Dutch version will have priority.

Netherlands law shall apply to this agreement.

2. CONCEPT DESCRIPTIONS

2.1 Definitions

- Approval holder: client for an inspection of a SCM-approved system.
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- Attack time: time in which the system can resist an attack with the methods and means described for this purpose and within which is not unset.
- After-market systems: systems that have been built in after the vehicle has been delivered.
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- Blocking condition: condition whereby the automatic blockings are switched on.
- Blocking: feature which, possibly with additional mechanical components, is suitable for starting motor interruption, fuel supply interruption / interruption of the hydraulic system or interruption of the motor management system, which is activated automatically.
- Cable: wire for transport of electricity in a company vehicle, consisting of one core.
- CCS: central inspection and control unit of the blocking system.
- Code panel: keyboard, assembled in the vehicle, with which the blockings can be cancelled by entering a multi-figure code.
- Coded signal: a signal (for wire connections) that is characterised by a minimum number of changeovers per time unit in the level.
- Double blocking: a blocking consisting of a starting motor interruption and an extra blocking, not being the starting motor interruption.
- Driving condition: condition in which the entire system has been unset and the vehicle is started normally and can be driven.
- Energy supply: power supply of the system by means of the electricity supply of a vehicle (battery).
- Ex factory system: system that is built in in the vehicle in the factory or in the factory organisation (making use of the original components of the ex factory system).
- Homologation Directive: all requirements as described in this Directive.
- Key: instrument for operating a lock.
- Motor management system: the electronic control system of the vehicle which, if interrupted, can be equated with a multiple interruption in conformity with the requirements of the attack test.
- Multiple blocking: an interruption in the electronic control system of the vehicle, whereby at least two electric circuits are interrupted.
- Plant or heavy equipment: Vehicles and machines, used for moving goods, earth, equipment, machines, etc. such as earth-moving machines, excavating machines and mini excavators, piling frames, telescopes, tractors, aggregates, generators, etc.
- Random code: a system whereby a code for switching on and off, calculated by means of an algorithm, is not used again within a certain time.
- Relay: a feature which, controlled by a signal, makes or interrupts an electric connection.
- Rolling code: a system whereby a once used code for setting and unsetting is not used again within a certain time.
- Second switch-off method: separate switch-off method for the driver, independent of the radio controlled remote control and functioning without a battery.
- Security system: an electronic security system for vehicles with a battery voltage of max. 24 V DC, consisting at least of a CCS, setting and unsetting system, a cable harness as well as an optical indicator of the system condition. In addition: a users manual and (if not built in ex factory) installation instructions.
- Setting: bringing the system in blocking condition.
- Slot: key switch or electronic contactor to switch the system or system component on or off.

- Starting motor interruption: interruption in the electric circuit, or a part of this, so that the starting motor cannot be operated through the ignition lock.
- Strand: a cable harness produced in one casing.
- Supplier: the person who places the SCM-approved product on the market in the Netherlands.
- System: blocking system.
- System code: a code given to the system by the manufacturer.
- System component: a completely working component of the system that is connected with other system components through a cable harness.
- System condition: driving condition, blocking condition, monitoring condition or alarm condition.
- Type indication: individual indication of a system component.
- Unsetting: bringing the system into driving condition.

3. REQUIREMENTS WITH REGARD TO SECURITY SYSTEMS

The requirements that have to be met by the various systems differ, depending on the application. For this purpose the system requirements have been drawn up in two categories:

- 3.1. Ex factory systems
- 3.2 After-market systems

3.1. EX FACTORY SYSTEMS

3.1.1 Classification

Class W1

consisting of a system that sets automatically and prevents the movement of the vehicle on its own, no detection and no alarm:

- Blocking on the fuel supply (or hydraulic circuit) +
- Interruption of the starting motor circuit +
- Attack resistance at least 5 minutes

Class W2

consisting of a system that sets automatically and prevents the movement of the vehicle on its own, no detection and no alarm:

- Blocking in conformity with class W1, with attack resistance at least 15 minutes

Class W3

consisting of a system that sets automatically and prevents the movement of the vehicle on its own, no detection and no alarm, combined with a vehicle tracking system that meets the requirements of the SCM-specification TT03.

- Blocking in conformity with class W1 of W2 +
- vehicle tracking system

3.1.2 Attack resistance

For this the reader is referred to the current text of BV03.

3.1.3 Technical specifications

See BV03

3.2. AFTER-MARKET SYSTEMS

3.2.1 Classification

Class W1

consisting of a system that sets automatically and prevents the movement of the vehicle on its own, no detection and no alarm:

- For example: blocking on the fuel supply or hydraulic circuit +
- Interruption of the starting motor circuit +
- Attack resistance at least 5 minutes

Class W2

consisting of a system that sets automatically and prevents the movement of the vehicle on its own, no detection and no alarm:

- Blocking in conformity with class W1, with attack resistance at least 15 minutes

Class W3

consisting of a system that sets automatically and prevents the movement of the vehicle on its own, no detection and no alarm, combined with a vehicle tracking system that meets the requirements of the SCM-specification TT03.

- Blocking in conformity with class W1 of W2 +
- vehicle tracking system

3.2.2 Attack resistance

For this the reader is referred to the current text of BV03.

3.2.3 Technical specifications

See BV03

3.2.4 Cable work

The system must be provided with cable work with connections. Hereby the following applies with regard to the cabling of the security component:

- the minimum length is two (2) metres.
- in the event of vehicle-specific cable work it is possible to depart from this.
- the cabling of the blocking part is made in the same colour and thickness with colour or number codes, which can be removed after assembly.
- the core diameter of the cables must have a minimum section of one (1) mm² or as much more as necessary, all depending on the application.

7. DESCRIPTION OF THE TESTS

7.1 General

- 7.1.1 The sequence of the tests to be carried out is determined by the certification institute.
- 7.1.2 The system components are tested in the form as assembled and delivered.
- 7.1.3 The positioning of the system components during the tests to be carried out is determined by the certification institute and, if possible, according to building-in instructions. In the event of special wishes of a manufacturer it should be demonstrated that with the assembly the position in which the tests took place has been maintained.
- 7.1.4 System components are tested in conformity with the test matrix.
- 7.1.5 During the duration of each test the status of the system may not be changed, except in the usual way or the way intended for this purpose.
- 7.1.6 After the conclusion of each test, the system components must function according to the specifications of the manufacturer and not have undergone any deformations and/or changes that may negatively affect the functioning of the system components at that moment or in due course.
- 7.1.7 The attack test is carried out according to the instructions of appendix 4 (of the specification AA03 and BV03). An attack time of 15 minutes applies to the security requirement of class W2. Each system must at least meet the requirement of class W1, after which an additional test on the vehicle must demonstrate that the security system can also resist the attack test for 15 minutes.**

7.2 Test matrix

Component	Test module											
	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
Entire system	X	X	X	X		X	X	X	X			X
Hand transmitter		X							X		X	
Components on the motor	X	X	X	X	X	X	X	X	X	X		

T1	Vibration and impact test For components assembled on the motor:	In conformity with EU 95/56, par. 5.2.8.2.1 In conformity with EU 95/56, par. 5.2.8.2.2
T2	Cold test	In conformity with EU 95/56, par. 5.2.2.1
T3	Heat test	In conformity with EU 95/56, par. 5.2.2.2
T4	Heat test with condense test	In conformity with EU 95/56, par. 5.1.3
T5	High heat test (for components under the hood)	In conformity with EU 95/56, par. 5.2.2.3
T6	Stress reduction	In conformity with EU 95/56, par. 5.2.14
T7	Supply voltage test	In conformity with ISO 7637-1
T8	HF-radiation (EMC)	In conformity with EU 95/54 with adapted levels: see BV03
T9	Duration test:	see BV03
T10	Corrosion test:	see BV03
T11	Drop test:	see BV03
T12	Attack test	In conformity with Appendix 4 AA03 and BV03