



— L I O N —

lion DS[®]-25

Breath Alcohol Ignition Interlock Device

User Guide



Contains important information which will affect your compliance with any managed programme of which you may be a part.

PLEASE READ CAREFULLY BEFORE USE

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Terminology

The definition of any word or phrase printed in *italics* may also be found in the table below:

Arrow Keys	Keys on the <i>handset</i> fascia whose function changes dependant on the labels displayed on the screen directly above them.
BAIID	Breath Alcohol Ignition Interlock Device. Also known as an "interlock".
Blocked	The condition in which the vehicle will not be able to start due to the action of the <i>Control Unit</i> .
Calibration	A procedure whereby the <i>handset</i> is checked or adjusted to ensure that it is providing accurate results.
Control Unit	The part of the DS-25, mounted out of sight which <i>blocks</i> or <i>unblocks</i> the <i>ignition circuits</i> .
Cut-Off	The alcohol level at or above which the DS-25 will not unblock the <i>Ignition Circuits</i> . This level is set by the controlling authority.
Emergency override	A procedure which allows to driver to override the DS-25 and start the vehicle without providing a satisfactory breath sample.
Ethanol	The chemical name for the particular alcohol found in alcoholic drinks such a wine, beer, whiskey etc.
False Positive Result	An above <i>cut-off</i> breath sample caused by factors other than that of alcohol levels in the driver's breath which reflect the blood alcohol level. May be caused by mouthwash, perfume, screen washer fluid or anti-bacterial hand gels etc. All of these products contain alcohol.
Grace Period	Period of time following a particular deadline (e.g. a calibration /maintenance visit during which the required procedure may take place without penalty).
Handset	The part of the DS-25 mounted on the dashboard of the vehicle into which you blow your breath sample.
Ignition Circuit	This is a general term which covers the various electrical sub-systems which must be present for the vehicle move under its own power.
LCD	Liquid Crystal Display. The type of display screen used on the DS-25.
LED	Light Emitting Diode. The light source providing the red and green lights on the DS-25 fascia.
Local Settings	Numerical or logic values stored within the DS-25 which comply with the specific requirements of your local legislation (if any).
Negative breath sample	A breath sample provided by the driver which contains alcohol at a value below that of the <i>Cut-off</i> level.
PIN	A numerical code which, under certain circumstances, allows the DS-25 to be overridden.
Positive breath sample	A breath sample provided by the driver which contains alcohol at a value at or above that of the <i>Cut-off</i> level.
Restart Period	The period of time following the engine being turned off during which it may be restarted without providing a further breath sample.
Service	Periodic checks and adjustments required by the DS-25 to ensure programme compliance.
Standby Mode	The mode into which the DS-25 automatically returns after activity. It is not switched off and continues to monitor its environment whilst in this condition.
Start Period	The period of time following the handset displaying PASS after a breath sample. During this time the <i>ignition circuits</i> are in an <i>unblocked</i> state and the vehicle is able to be started.
Unblocked	The condition in which the vehicle will be able to start due to the action of the <i>Control Unit</i> .

Intended use

The lion DS[®]-25 is a Breath Alcohol Ignition Interlock Device (*BAIID*) designed for use primarily in *Offender Programmes*. It may be fitted to 12V or 24V vehicles with negative earth electrics. It may also be fitted to Hybrid and fully electric vehicles. It will prevent the vehicle from being driven by any driver whose breath alcohol value is above the pre-set *cut-off* value.

Whilst the DS-25 effectively incorporates a vehicle immobiliser, it is not designed as an anti-theft device and should not be used as a sole line of defence against theft.

Principle of Operation

The DS[®]-25 consists of a *handset* which is a sophisticated Breath Alcohol Meter plus a *Control Unit* which resembles a conventional vehicle immobiliser. Until the driver provides the *handset* with a *negative breath sample* the *Control Unit* maintains the *Ignition Circuits* in a *blocked* condition whereby the vehicle engine (or electric motor) cannot be started. The *Ignition Circuits* may only be *unblocked* by providing the handset with a breath sample containing an alcohol level lower than the pre-set *cut-off* value.

Hybrid and Fully Electric Vehicles

The lion DS[®]-25 may be installed on hybrid and fully electric vehicles. Principle of operation is the same as with a standard vehicle using a conventional petrol/diesel engine. There may however be a slight modification in the vehicle initialisation sequence once the interlock has been installed. Your installer will inform you of any changes.

Safety

Starting a vehicle equipped with a *BAIID* may take slightly longer than normal with such a device. For this reason do not leave a vehicle equipped with a lion DS[®]-25 parked in any position where it may have to be moved quickly.

Liability

See Lion Laboratories Ltd. Terms and Conditions of Sale which can be found on our website www.lionlaboratories.com.

Installation

The lion DS[®]-25 may only be installed by a Lion approved installer and in accordance with local regulations. In some localities the installer may also be required to be government approved. Unqualified installation may damage the vehicle and will also invalidate the product warranties. If you have a vehicle that is still under the manufacturer's warranty, it is best to check if the installation of the DS[®]-25 will affect the vehicle manufacturer liabilities/warranties.

Data Download

Interlocks are required to store data electronically concerning events such as breath sample results, vehicle starts, attempts to disconnect the system, circumvention or drive the vehicle without having provided an acceptable breath sample. This information can be downloaded from the unit on a regular basis. Data Downloads usually occur at the same time as a routine *calibration/service* visit. Data Download allows the Programme Administrators to check that the conditions of the drivers' licence are being adhered to.

Downloaded data may only be accessed by the authorised Programme Administrators and not by Lion or its distributors.

Data download requires hardware and software specific to the lion DS[®]-25.

Calibration and Service

The DS[®]-25 requires periodic *calibration* and *servicing*. The required dates for these procedures are controlled in software. When the *calibration/service* procedures are required, a *calibration/service* warning will be displayed on the *handset* screen at start-up indicating when the *calibration/service* period is going to expire (locally regulated). In some localities an extra period of time (*Grace Period*) after the due date may be available to you during which the unit may be *calibrated/serviced*. In this case, a *Permanent Lockout* countdown will start once the *calibration/service* date has been passed. This will be shown during the start-up sequence of the handset and will require that you acknowledge the message by pressing the indicated *arrow key* before continuing.

If *calibration or servicing* has not been carried out before the end of the *Grace Period* then the DS[®]-25 will permanently prevent the vehicle from being started until it has been *calibrated or serviced*.

See the *Local Settings* sheet provided with this unit for details.

Calibration and Service may only be carried out by Lion approved personnel. In the unlikely event of product failure, any repair has to be made by an approved Lion Service Centre using Lion approved parts. Failure to observe this condition will invalidate the product warranties. *Calibration and Service* is very important to the prolonged use of the DS[®]-25 and must be carried out in accordance with the Lion Service & Calibration Manual in order to ensure correct operation of the unit.

Vehicle Battery

The DS[®]-25 is designed to work with an input voltage of 9V to 32V. It is important to recognise that under extremely cold conditions your vehicle's battery may not be able to provide the required current to crank the engine and therefore would create a voltage drop of <9V. Please ensure that you follow your vehicle manufacturer's instructions for battery care.

You should also be aware that the DS[®]-25 itself constantly draws a very small amount of power from the vehicle battery (<1.0 mA). The battery in a small family car would power the DS[®]-25 for many months without recharging. However if your vehicle is to be taken off the road for any extended period of time please consult your local Programme Administrator or Lion Distributor for advice.

Many Interlock programmes require that vehicle battery disconnection is logged as an event in the memory of the interlock. Please review your programme documentation for information regarding battery disconnection and vehicle servicing.

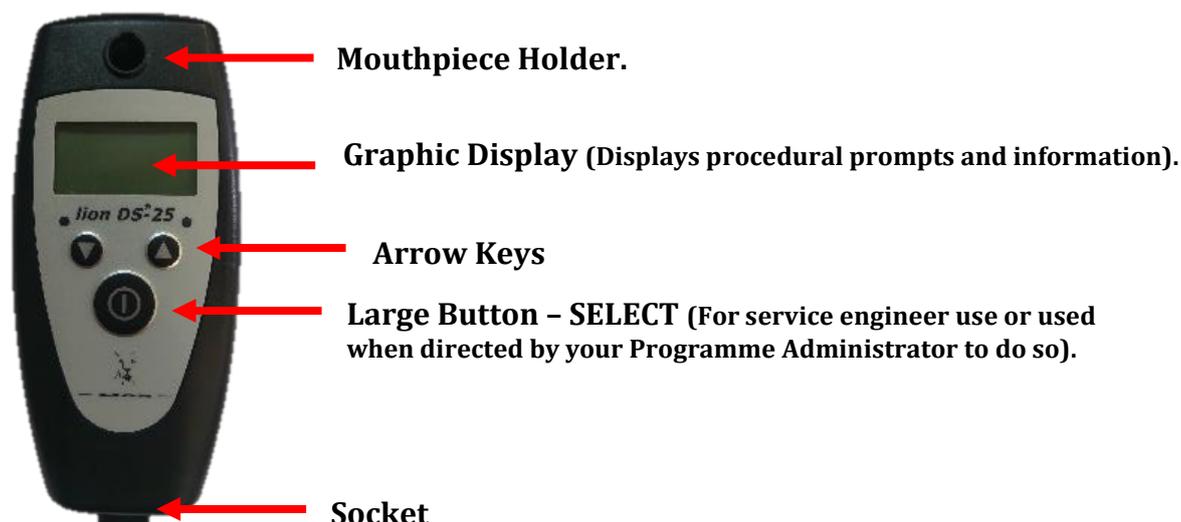
Vehicle servicing

When the vehicle (into which the DS[®]-25 is installed) is taken to a garage for repair or servicing then the technicians working on the vehicle will need to be aware of the presence of the BAIID. Your Programme Administrator or Lion approved installer will be able to provide you with information to give to the garage which is relevant to the specific configuration of the unit and local programme regulations.

Modifications

Do not attempt, under any circumstances, to modify either the DS[®]-25 system or its associated wiring. Failure to observe this advice may result in damage to the DS[®]-25 or to the vehicle on which it is installed. Such action may also contravene the conditions under which you are legally or contractually allowed to drive the vehicle. System design and installation is such that attempts to tamper with the components will be visibly evident or electronically recorded or both.

Handset features



Operating Temperature

- The DS[®]-25 is designed for use at temperatures between -45°C and +85°C.
- If you switch on whilst the *handset* is at temperatures above 85°C then the message "E9 PLEASE COOL HANDSET" will be displayed and the unit will automatically return to *standby mode*. If the handset is at a temperature above 85°C then remove it from the vicinity of the heat source (usually the sun on the dashboard) to allow it to cool down.
- If you switch on whilst the *handset* is at temperatures below -45°C then the message "E6 TEMPERATURE TOO COLD" will be displayed and the unit will automatically return to *standby mode*. If it is below -45°C then apply gentle heat to warm it up. Placing it close to your body under your coat is usually an effective way of warming it.
- At temperatures below -20°C, LCD displays become slow to react and could therefore cause confusion to the user. User communication will be made through the green and red Light Emitting Diodes (*LED*) on the handset fascia.
- Please note that the *LED*'s are operational at all working temperatures and may be used instead of the display screen if desired.

Handset disconnection

The handset is connected to the vehicle via a cable. It is possible to disconnect the cable from the handset by firmly grasping the moulded connector plug and pulling it out of the socket. If you know that the vehicle is likely to be exposed to extreme temperatures then you may wish to remove the handset from the vehicle between uses. To re-connect, reverse the operation observing the fact that the plug and socket must be correctly orientated in order to be able to insert the plug into the socket. However, some *Offender Programmes* impose restrictions on this practice.

Operation at temperatures between -20°C and -45°C

The following table shows the display message on the screen and the equivalent *LED* sequence of green and red lights which you will see on the handset.

Key

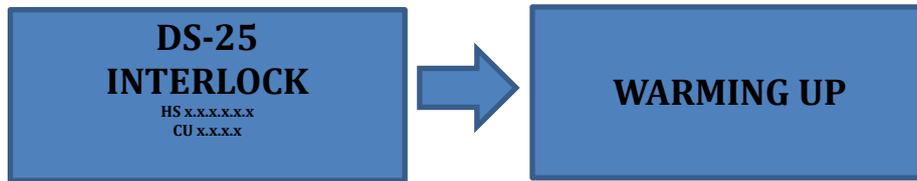
	OFF
	ON
	SLOW FLASH
	RAPID FLASH

GREEN LED	RED LED	MEANING
		Warming up
		Fit Mouthpiece Provide Sample / Blow for minimum 3 Seconds
		Invalid sample provided
		Not blowing long enough to provide valid sample
		Analysing
		Pass / Start Period Active / Standby Mode
		Fail

System Start-up

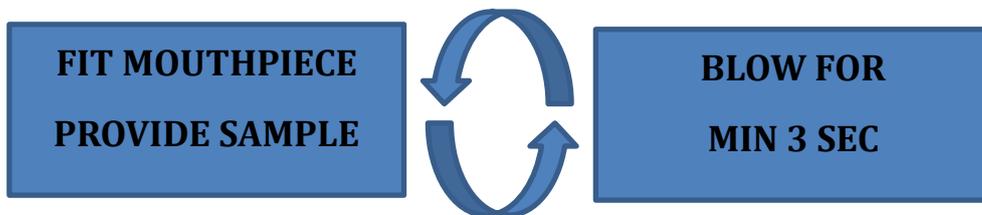
The DS®-25 will exit its *standby mode* and power up automatically once your vehicle's ignition is switched on or when the vehicle door is opened/the interior light is ON.

A confirmatory beep will sound, followed by a series of screens showing the following messages:



During this time, the red *LED* will flash slowly. This is intentional and is not an indication of a problem. It is recommended that you observe the display screen during start-up as it may show information regarding *calibration/maintenance* requirements. Meanwhile, the system automatically checks its operating parameters.

When the *handset* is ready to take a sample, a further single beep will sound, followed by two alternating messages:



Breath Test Procedure

Before providing a sample

1. The DS®-25 reacts very specifically to the presence of alcohol in the breath. However, it can be affected by the use of products containing alcohol such as mouthwash or the application of perfume or aftershave immediately before taking your sample. Vehicle screen wash can also contain high concentrations of alcohol and washing your windscreen before providing a sample may cause a *false positive result*. You should also avoid the presence paints, polish, solvents etc. in the vicinity of the handset as many of these products contain alcohols.
2. Taking any form of alcohol by mouth within 15 minutes of providing a sample is not recommended and may cause *false positive results* to occur. Many foods and drinks contain small but detectable quantities of alcohol. For this reason we recommend that you take nothing by mouth for 15 minutes before driving a DS®-25 equipped vehicle.
3. If you have recently been drinking, then bringing up wind or vomiting immediately before providing a sample can also cause *false positive results* and should be avoided.
4. Elevated results can occur if you have consumed alcohol up to 15 minutes before providing a sample. This is because your mouth may still contain residual alcohol from the drink.
5. Smoking within two minutes before providing a sample is not recommended.

Providing a Sample

1. Remove the handset from its docking station by lifting upwards parallel to the mounting surface.
2. Insert a clean dry mouthpiece into the mouthpiece holder being careful to align the Location Key. For full details see section below titled "Disposable Mouthpiece". Take a deep breath, seal your lips around the wide end of the mouthpiece and blow into it for a minimum of 3 seconds. The *handset* will detect your breath flow and will emit a continuous tone as long as you are blowing sufficiently hard. Once sufficient breath has been blown the continuous tone will stop and will be followed closely by a click. Once you have heard the click, stop blowing.
3. You will now see the *handset* display show the message "Analysing"
4. After a few seconds, your breath sample will have been analysed and, if the breath alcohol level is below the pre-set *cut-off*, then "PASS" will appear on the *handset* display. A coded signal will be sent immediately to the *Control Unit* in order to *unblock* the *ignition circuit*. Return the handset to its mounting position. You now have a *start period* of a number of minutes (your installer will tell you how many) which will be displayed on the DS®-25 *handset* during which you may start your vehicle, even if you turn the ignition off and then back on.
5. When the vehicle is started, the *start period* is cancelled and "SAFE JOURNEY" is displayed, after 20 seconds the handset display will turn off.
6. The DS®-25 will return to its *standby mode* automatically in the event that the vehicle is not started and the *start period* expires.

Breath test FAIL (vehicle start BLOCKED)

If the *handset* displays "FAIL" then it has detected alcohol in the breath at a level in excess of the pre-set *cut-off*. If you have observed the points shown in the "Before Providing a Sample" section of these instructions, then you have a breath alcohol level above the pre-set *cut-off*. Wait for a period of 15 minutes and try again. By this time your breath alcohol level may have reduced to a point whereby you will pass the test. The alcohol level in every breath test is recorded by the DS®-25.

Restart Period

After the vehicle engine is switched off, the DS®-25 system enters what is called a *Restart Period*. This period is displayed on the DS®-25 *handset* during this period, the engine may be restarted without the need for a breath sample to be provided. This feature allows the driver to restart quickly should the engine be stalled or be turned off for a short period. See your programme administrator for details of the length of the *Restart Period*.

Disposable Mouthpiece

The mouthpiece must be fitted into the mouthpiece holder in order to provide a sample. Please note that the mouthpiece will only fit into the *handset* if orientated correctly. Unwrap the mouthpiece from its protective packaging, with the location key facing upwards, slide the mouthpiece into the hole in the centre of the *handset* above the display. The location key must fit into the corresponding guide slot in the holder and the mouthpiece pushed in until it will move no further. See images contained in Fig 2.

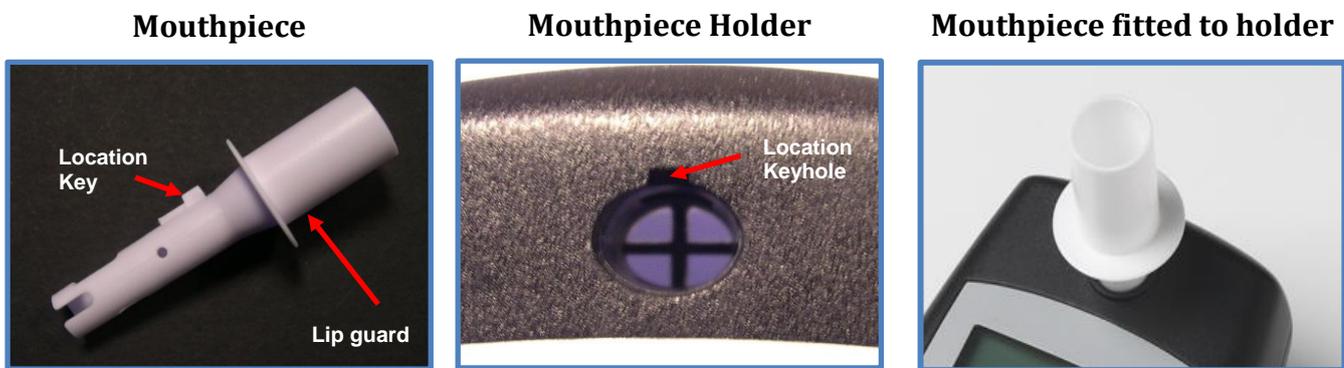
Failure to correctly locate the mouthpiece may result in the *handset* refusing to take a breath sample and therefore preventing you from starting your vehicle.

The mouthpieces are disposable, manufactured under hygienic conditions and supplied in individual wrappers.

Important notes

1. Mouthpieces may be re-used and typically a single vehicle user will leave a mouthpiece in place in the handset for immediate use.
2. For hygiene reasons and to ensure that the DS®-25 operates correctly, we recommend that a single vehicle user's mouthpiece is exchanged once a day for a new one.
3. Additional mouthpieces may be purchased from your local Lion distributor or *Service Centre*.

Fig2 Handset mouthpiece



Emergency Override

The DS®-25 is equipped with an *emergency override* facility which may or may not be enabled in your location. See your programme administrator for details about the *emergency override*.

User Maintenance

If and when required, simply wipe over the handset over with a lightly dampened cloth.

Please do not use chemical solvents, abrasives or excess water as these could damage both the case material and the internal sensors.

FAQ's

- My DS®-25 keeps telling me to "PLEASE BLOW FOR LONGER TIME" but I keep running out of breath before the double beep.
 - *You must blow for at least 3 seconds. Try blowing more softly. As long as you can hear a continuous tone then you are blowing hard enough.*
- I can see droplets of condensation coming out of the end of the mouthpiece. Will this affect the results?
 - *We recommend that if you see this happening then you change the mouthpiece for a dry one immediately. Condensation may prevent you from starting your vehicle. Dispose of your wet mouthpiece.*
- Can I leave my mouthpiece in the handset?
 - *Yes.*
- I have forgotten my mouthpieces. Can I blow directly into the DS®-25?
 - *No. The unit is designed to accept a mouthpiece and is unable to take a sample without one. Attempts to use the DS-25 without a mouthpiece may damage the handset and your vehicle will be unable to start. Subsequent repair will not be covered by warranty.*
- Can I re-use my mouthpiece?
 - *Yes you can up to a point. For hygiene reasons and to ensure that the DS®-25 operates correctly, we recommend that a single vehicle user's mouthpiece is exchanged once a day for a new one.*
- How many drinks can I have before the DS®-25 will prevent me from starting my vehicle?
 - *The answer to this question is entirely dependent on where the DS®-25's cut-off level has been set and how quickly you absorb and burn off alcohol. For this reason it is recommended not to drink any alcohol at all before driving. Remember that alcohol stays in the body for many hours after you stop drinking. Your alcohol level in the morning, after drinking the night before, may well be high enough to prevent you from starting your vehicle.*
- Can I disconnect the DS-25 system and drive my vehicle without it?
 - *No. Any attempt to tamper with the system in any way, either by trying to disconnect the unit or by providing a sample other than one provided by you are recorded electronically. Such actions may also leave you subject to penalties under your local jurisdiction.*
- Will the DS®-25 switch off my engine?
 - *No. For safety reasons the DS®-25 cannot switch off a running engine. It can only prevent an engine from starting.*
- The cable connecting the handset to my vehicle has a USB looking plug on it. Does this mean I can connect the DS®-25 handset to my computer?
 - *No. Although a connector looking like USB "B" is used, it is proprietary to Lion Laboratories. Attempts to connect the handset or the cable to any other device (laptop, printer smart phone etc.) may result in damage to both devices.*

Interfering Substances

The DS®-25 has been tested against the following possible interfering substances and has been found not to generate false positive results:

Acetaldehyde 0.08 mg/l

Carbon monoxide 0.10 mg/l

Ethyl acetate 0.08 mg/l

n-Hexane 0.10 mg/l

Methanol 0.05 mg/l

n-Pentane 0.10 mg/l

Toluene 0.10 mg/l

Acetone 0.25 mg/l

Diethyl Ether 0.15 mg/l

n-Heptane 0.10 mg/l

Methane 0.15 mg/l

n-Octane 0.10 mg/l

2-Propanol 0.05 mg/l

Disposal

In order to comply with European Directives regarding Restriction of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE), at the end of the product's life, please return to Lion Laboratories or your local Lion distributor. For further advice please contact your Lion Laboratories distributor, installer or Lion Laboratories itself.

User Replaceable Parts

The DS®-25 Mouthpiece is considered a user replaceable part. When ordering replacement mouthpieces please use P/N **SA00081** (1 bag of 25 mouthpieces).

Lion DS®-25 Technical specification

Handset Size:	<i>156mm x 71mm x 35mm</i>
Handset Weight:	<i>150g</i>
Sensor Type:	<i>Electrochemical Fuel Cell</i>
Sensor specificity:	<i>To EN-50436-1 (2014)</i>
Operational ambient temperature:	<i>-45°C to +85°C</i>
Storage ambient temperature:	<i>-45°C to +85°C</i>
Operational ambient humidity:	<i>10% to 95% RH non-condensing</i>
Operating input voltage:	<i>9V to 32V (chassis negative)</i>
Display:	<i>Graphics backlit LCD</i>
Warm-up time:	<i><20 seconds at 20°C <2mins at -20°C</i>
Breath Sample Volume:	<i>0.8 L to 1.2 L (configurable)</i>
Recovery time after insufficient sample:	<i><15 seconds</i>
Analytical response time for zero alcohol:	<i><10 seconds</i>
Recovery time at 0.35mg/L BrAC:	<i><75 seconds</i>
Vibration:	<i>To EN50436-1(2014)</i>
Shock:	<i>To EN50436-1(2014)</i>
Case material:	<i>Polycarbonate ABS</i>
Memory output:	<i>Via cable to product specific download software</i>
Mouthpiece material:	<i>HDPE (product specific)</i>
Maximum Calibration Interval:	<i>12 months (may be shorter locally)</i>
Warranty:	<i>1 year (may vary locally)</i>
Approvals:	<i>EN-50436-1 (2014) EN-50436-2 (2014) E8 (approval number 10R-058884)</i>

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