

**Driver & Company Manual**

# **SE5000-8 Smart Tachograph**

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# Welcome

Thank you for choosing the SE5000-8 Stoneridge Smart Tachograph.

At Stoneridge we believe in making your life easier working as a driver or as a fleet owner. Your SE5000-8 Tachograph has been designed with this in mind, with functions such as simple menu options, high speed downloads, and remote download capability.

## This Manual

Use this manual to familiarize yourself with how to operate the tachograph (Vehicle Unit, VU), in order to obtain the maximum use from it. The manual addresses both drivers and fleet owner companies with vehicles where the tachograph is installed.

The manual consists of three parts:

- **Driver Part** with information for the driver.
- **Company Part** with information for the company owning the vehicle.
- **Reference Part** with additional information used as a reference.

We recommend that all users read the **Driver Part** as a start. This will give you enough information to start using the tachograph. As company owners you also have to read the **Company Part** in order to understand your obligations. You can then use the **Reference Part** to look up specific details while using the tachograph.

## Changes

Stoneridge Electronics reserves the right to introduce changes in design, equipment, and technical features at any time. You cannot, therefore, base any claims on the data, illustrations or descriptions in this Manual.

## Copyright

This manual must not be reprinted, translated, or otherwise reproduced in whole or in part, without written permission from Stoneridge Electronics AB.

## Operating Safety

### Risk of accident!

Only operate the tachograph while the vehicle is stationary. Operating the tachograph while driving will distract your attention from the traffic and you may cause an accident.

## Internet Information

Further information about Stoneridge SE5000-8 Smart Tachograph and about Stoneridge Electronics Ltd can be found at:

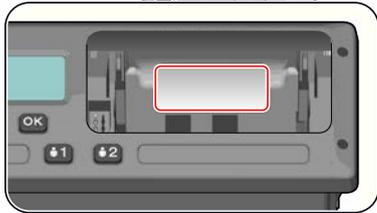
[www.stoneridgeelectronics.com](http://www.stoneridgeelectronics.com)

## Don't open the Case

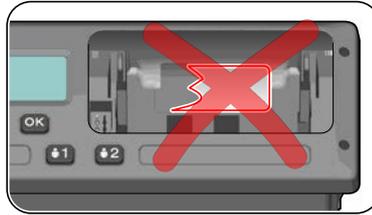
The tachograph has been installed by authorised personnel.

A tachograph case must never be opened. No tampering with or modifications to the tachograph system are permitted. A tamper label is placed inside the printer housing. The tamper label must not be torn apart.

Here you can see where the tampering label is placed and how it looks when it is untouched.



A tampered label might look like this.



### Note!

Unauthorized persons that modify this equipment are committing a punishable offence, depending on the legislation in the country concerned.

### Other Documents

Besides this Driver & Company Manual there are a number of other documents that contain information about the tachograph.

- **Workshop Manual** - Contains information for certified smart tachograph workshops. This information is only handed out to workshops qualified by Stoneridge training program.
- **Control Manual** - Contains information for control officers on how to carry out controls on the tachograph and the driver situation.
- **Driver Quickguide** - Gives quick information about how to handle the tachograph as driver.
- **Company Quickguide** - Gives you as fleet owner a quick lesson in how to use the tachograph.

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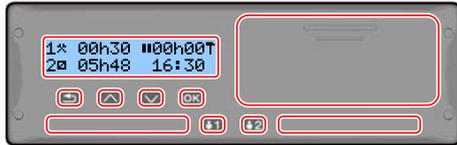
## Driver Part

The Driver Part contains the following:

- **SE5000-8 Smart Tachograph**- a presentation on what you can see on the SE5000-8 Smart Tachograph, the card tray, printer panel, buttons and the different displays. Finally, information on how activities are registered is given.
- **Before you Start Driving** - information about the most frequent handling of the tachograph.
- **At Card Insertion** - Describes how to carry out manual entries.
- **Driver Settings** - this section contains all settings available to the driver.
- **Driver Card** - how to insert and withdraw a card.
- **Printouts** - how to handle the built-in printer.

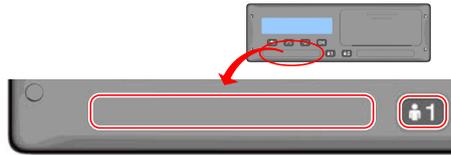
## The SE5000-8 Smart Tachograph

This is a brief presentation of what you can see of the tachograph. The illustration below shows what can be seen when you e.g. enter the vehicle and touch any key on the tachograph. Normally the tachograph is resting and not showing any information in the display window, but a touch of any button will wake it up.



The tachograph is also referred to as the Vehicle Unit (VU). In addition to the tachograph there is a Motion Sensor attached to the vehicle and the Tachograph. Read more about the sensor and integration with the vehicle under **Motion Sensor on the facing page** and **Dashboard Integration on the facing page**.

## Card Trays



There are two card trays where you insert your driver card.

- **Tray 1** is operated by the button marked **1** and is used for the current driver card.
- **Tray 2** is operated by the button marked **2** and is used for a co-driver card.
- **Open and Close** the trays:
  - **To open** - Press the button and hold it until it opens.
  - **Close** the tray by pushing it in gently.

## Printer Panel



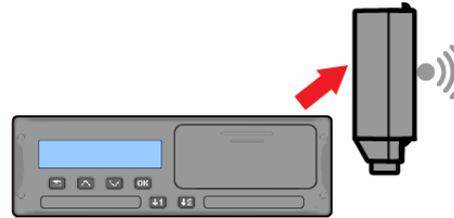
Behind the printer panel there is a printer containing a paper cassette with a paper roll. The printer is used e.g. to make printed records of information stored in the tachograph. The printed paper will come out from a small opening at the bottom of the printer panel.

## Buttons

-  **Back**
  - Moves back in a menu
  - Returns to the standard display (press repeatedly)
  
-  **Arrow up**
  - Moves up in the menu or a set of views
  - Increases a value
  - Toggles options
  
-  **Arrow down**
  - Moves down in a menu or a set of views
  - Decreases a value
  - Toggles options
  
-  **OK**
  - Opens the menu
  - Confirms a selection
  - Moves horizontally in a menu
  - Clears a message or warning

## DSRC

The DSRC, is a unit that is separate from the vehicle unit, and it is used to perform targeted roadside checks via microwave communication link.



## Display



The display is, like any other display unit, used in many different ways:

- Basically the display is used to show information.
- Together with the four buttons (not the numbered buttons) the display

is used to navigate in a menu system.

- The display is also used as a feedback when entering information or into the tachograph or changing settings.

## Motion Sensor

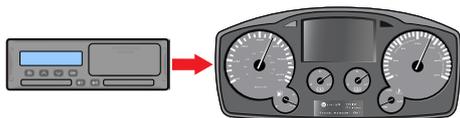
The Motion Sensor, or just sensor, is transferring the motion signals from the vehicle to the Tachograph. This is a part of the Tachograph installation and must not be tampered with. Any attempt to tamper with the sensor or the sensor cable is recorded in the Tachograph.



## Dashboard Integration

Some vehicles can display some of the Tachograph information on an integrated display. Here are examples on the type of information that can be displayed:

- Speed
- Travelled distance
- Accumulated Daily Driving Time
- Accumulated Driving Time
- Messages, Warnings and Faults.



### Different Display Views

The tachograph has two different standard set of Display Views that you easily can browse by using the arrow buttons. Depending on the two settings below the set of views are different.

- **DDS ON (Driver Decision Support ON).**
- **DDS OFF (Driver Decision Support OFF).**

### Display Views in DDS ON

In the standard set of Views, DDS is shown and the set of Views are:

- Default Display.
- Working Time \*.
- Current Speed.
- Time Left Driving.
- Time Left Resting.
- Ferry/Train \*\*.

\* If enabled, see DDS sections for details.

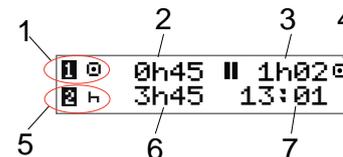
\*\* If active, see DDS sections for details.

### Display View in DDS OFF

DDS can be disabled and then the set of Views contains the following:

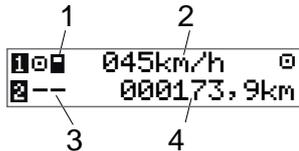
- Default Display.
- Driver 1.
- Driver 2.
- UTC Date and Time.
- Local Date and Time.
- Current Speed.

### Default Display



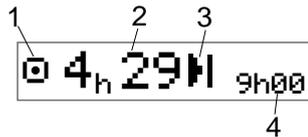
1. Driver's current activity.
2. Driving time since last break/rest if driving, otherwise duration of current activity.
3. Driver's cumulated break time.
4. Operating mode of tachograph (Operational mode is automatically entered when no card is inserted or when a driver card is inserted in the tachograph).
5. Co-driver's current activity.
6. Duration of the co-driver's activity.
7. Local time.

### Current Speed



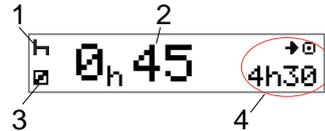
1. Type of card inserted in tray 1.
2. Current speed.
3. Type of card inserted in tray 2.
4. Odometer.

### Time Left Driving



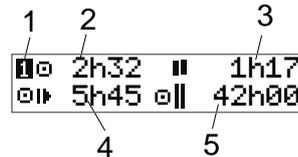
1. Time left driving view is shown.
2. Time left driving until next activity.
3. Next activity (start of daily rest).
4. How long the resting time must be to get more driving time.

### Time Left Resting



1. Driver's current activity (resting).
2. Time Left Resting until more driving time is available.
3. Co-driver's current activity (available).
4. Drive time available after this break/rest.

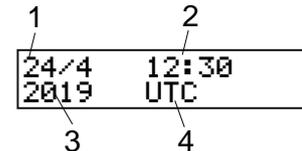
### Driver 1 and Driver 2



1. Indicates if driver or co-driver information is shown.
2. Drive time since last break.
3. Cumulated break time.
4. Daily driving time.

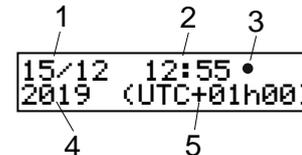
5. Cumulated driving time during the current and previous week.

### UTC Date and Time



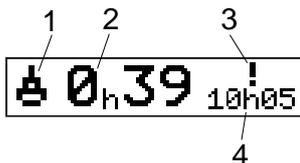
1. Date.
2. UTC time.
3. Year.
4. Indicates that it is UTC time that is used.

### Local Date and Time



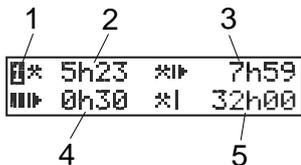
1. Date.
2. Local time.
3. Local time icon.
4. Year.
5. Local time zone offset.

### Ferry/Train



1. Ferry/Train presentation.
2. Remaining interruption time (max 1h).
3. Indication that "Interruption Time" needs to be reduced to fit the Daily rest period in a 24h period.
4. Remaining Daily Rest time.

### Working Time



1. Indicate that driver information is shown.
2. Working time since last break.

3. Daily working time.
4. Daily break time.
5. Weekly working time.

### Menus

There are four main menus in the display, used for making selections and settings. You navigate in the menus by using the buttons on the tachograph.

- PRINT Printout selections
- SETTINGS Available settings
- PLACES Selection of begin/end places, Out of Scope or Ferry/Train
- INFO In the **INFO** menu you can toggle between five different display views, see **INFO Menu** on page 24.

- Driving While driving the vehicle.
- Work While working when the vehicle is standing still, for example when loading the vehicle.
- Available While not working, for example when you are a co-driver.
- Rest While taking a break.
- unknown activity No activity type recorded.

### Manually Registered Activities

The following are the two main situations when you register activities manually:

- When you need to record activities when no driver card was inserted, see above

### How are Activities Registered?

Activities performed by the driver and the co-driver during the day are registered on the driver card.

Available activities:

- If the vehicle is standing still and you would like to change the current activity set by the tachograph. For example, you may change the driver's activity from **Work** to **Rest**. Press shortly on button **1** (to make selections for the driver) or on button **2** (to make selections for the co-driver) repeatedly until the desired activity is displayed. **Driving** is always selected automatically and cannot be changed.

**Note!**

For traffic safety reasons you may only operate the tachograph when the vehicle is standing still.

## Before you Start Driving

The following scenario describes a normal working day with a single driver where:

- **Driver Card was ejected** at the end of the last working day.
- **Driver was resting** until card was inserted.
- **Driver Card is inserted** again when the new working day starts.

### Note!

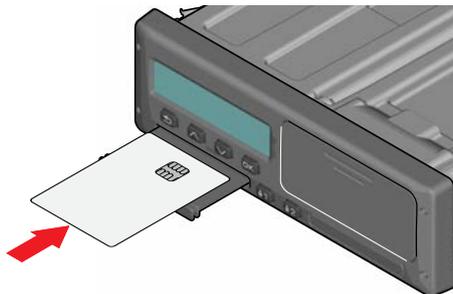
A driver card must be inserted in the tachograph in order to identify the driver. The driver card is personal and may not be used by anyone else but the rightful card holder.

### Insert a Card

Since this is a single driver scenario card tray 1 is used. If a co-driver is present he/she must insert their card in tray 2.

1. Press and hold button **1** on the tachograph until the tray is opened.
2. Insert the card with the chip facing forward and upwards.

3. Close the tray by pushing it carefully forward.



If the inserted card is unknown to the tachograph, drivers consent is requested to export personal data. The display will show:

```
OK to exp  
pers. data?
```

Select **YES** or **NO** and then press **OK**.

The display will, for a moment, show your name, the time for your last withdraw and then it will show:

```
Rest until  
now?
```

4. Press **OK**. The display will show (please see note at end of chapter):  

```
Begin country
```

5. Select the destination country of your journey and press **OK**. The display will show:

```
Entries  
printouts?
```

6. Select the start country of your journey and press **OK**. The display will show:

```
Entries  
printouts?
```

7. Select whether or not to make a printout of the entered data by selecting **YES** or **NO** and then press **OK**.

8. Press **OK** to confirm.

The display will show:

```
Ready to  
drive
```

You are ready to drive.

The card tray will be locked:

- When the vehicle is in motion.
- While the tachograph is busy processing a driver card.
- If the power supply to the tachograph is interrupted.

**Note!**

If end country (destination country) was selected when you ejected the card you do not need to register it again. The tachograph does not automatically prompt for begin/end place if card was withdrawn for less than 9 hours.

**Note!**

If the tachograph fails to read the card (driver card authentication), see **Display Messages on page 50**.

**At the End of the Day**

When the driving is done for the day or when driver and co-driver change places, the card often will be ejected from the tachograph.

**Eject (Withdraw) Driver Card**

1. Press button **1** or **2** on the tachograph. The display will show:

```
End country
Portugal
```

2. Select your end country and press **OK** to confirm. The data is stored on the card and the tray is opened.

3. Press the card up slightly from underneath through the opening on the tray, or push the edge of the tray down until the driver card comes out.
4. Close the tray by pushing it carefully forward.

**Note!**

You cannot eject the card while:

- Driving
- Data on the card is being processed
- (in ADR vehicles) when ignition is OFF

**Data Stored on the Card**

All activities such as working, driving, and resting are registered on the driver card as well as in the tachograph. When driving the card must be inserted in the tachograph and if you change vehicle you must bring your card with you to the other vehicle. The card fits into all smart tachograph regardless of the brand. Consequently you will always have updated driver data on your card.

The driver card stores data up to the limit of its internal memory, normally at least 28 days. After this limit, new data will overwrite the oldest data.

**Two Driver Scenario**

The present driver's card shall always be inserted in tray **1** and the co-driver's card in tray **2**. When the drivers swap seats they have to swap the cards as well so that the driving time will be registered on the current driver's card.

**Note!**

It is strongly recommended that the cards are handled in following sequence:

At withdraw: First withdraw driver's card in slot **1**, then withdraw co-driver's card in slot **2**.

At insertion: First insert co-driver's card in slot **2**, then insert driver's card in slot **1**.

It is strongly recommended to NOT swap card at midnight, 23:59 - 00:01, due to card data processing performed by the VU (regulation requirements). It is strongly recommended to NOT swap card during Ferry or Train Scenario.

## Begin and End Places

When the working day starts and ends the tachograph needs to know both begin place and end place of the journey.

You can register the places at any time during the day (also during a manual entries procedure). When ejecting the driver card you will get a question about entering the end place.

To register the places during the working day, do as follows:

1. Press **OK** to show the menu.
2. Select:  
**PLACES**
3. Press **OK** and navigate to:  
**Begin place**
4. Press **OK** and select the place.
5. Press **OK** to confirm.
6. To register destination place, perform the same procedure again but navigate to:  
**End place**
7. Press **OK** to confirm the destination place. Your places are registered.

## At Card Insertion

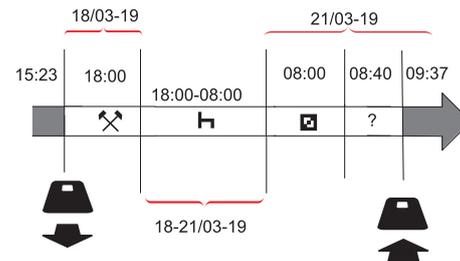
When you have performed activities without the driver card inserted you need to register these activities manually. We assume that you register the activities next time you insert the driver card. Please note that all activities are entered in local time.

## Manual Entries

The following scenario describes a situation when you need to register manual entries (with your card inserted). Please note that you will most likely not be able to get the same presentation on your display.

- **Friday at 15:23 18/3 2019:** You arrived and ejected the driver card.
- **From 15:23 until 18:00:** You performed other work.
- **From 18:00 over the weekend until 08:00 Monday 21/3:** You rested.
- **From 08:00 to 08:40:** You were available.

- **From 08:40 to 09:37:** You performed other work with unaccounted time. Unaccounted time is time that should not be registered on the driver card, for example driving with an analogue tachograph.
- **Monday at 09:37 21/3 2019:** You insert the driver card.



To register manual entries according to the scenario above, do as follows:

1. Insert the driver card. The display will show:  
**Rest until now?**
2. Select **NO** and press **OK**. The display will show:

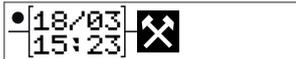
Add manual entries?

3. Press **OK**. The display will show the date and time for the last card ejection together with the following:

```
end
shift
```

You will now register the other work you performed 18/3.

4. Highlight the **X** symbol.



5. Press **OK**.



6. The date 18/03 is correct but 21/3 to the right needs to be changed to 18/03. Change it by scrolling back to 18/03, using the arrow buttons.



7. Press **OK** to confirm.
8. Change the time (hour) to 18 by scrolling forwards to 18.37 and press **OK**.



9. Change the minutes to 00 by scrolling forwards to 18:00 and press **OK**.



10. Press **OK** again to confirm. The display will show the date and time when the other work was finished together with:

```
end
shift
```

You will now register the time when you rested.

11. Highlight the rest symbol **H** and press **OK**.



12. Press **OK** to confirm the date (21/03, which already is correct.
13. Change the hour by scrolling to 08 and press **OK**.
14. Change the minutes by scrolling to 08:00 and press **OK**.
15. Since the rest was longer than nine hours, the following is displayed.

```
Begin country
```

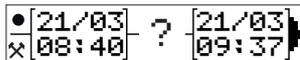
16. Select start country and press **OK**.
17. Press **OK** again to confirm. The date and time when the rest was finished is displayed together with the following:  
**begin shift**

You will now register the time when you were available.

18. Highlight the available symbol **□** and press **OK**.



19. Press **OK** to confirm the date (21/03), which already is correct.
  20. Change the hour by scrolling to 08 and press **OK**
  21. Change the minutes by scrolling to 08:40 and press **OK**.
  22. Press **OK** again to confirm. The date and time when the available period was finished is now displayed together with the following:  
**begin shift**
- You will now register your work with unaccounted time. This will *not* be registered on the driver card.
23. Highlight the **?** symbol and press **OK**.



24. The time between the last activity (unaccounted time) and the time when the card was inserted is displayed, which is correct). Press **OK** to confirm
25. Press **OK** again to confirm.

You have now registered all work, rest, available time, and unaccounted time for the period when no card was inserted.

The following will be displayed:

Entries  
printout?

26. Select whether or not to make a printout of the entered data by selecting **YES** or **NO**. We assume that you will not make a printout (for information about printouts, see section **Printouts on page 29**).
27. Press **OK**. The following is displayed:

Confirm  
entries?

28. Press **OK** to confirm and save the entries. Now the display will show the following:

Ready to  
drive

### Change a Manual Entry

You can go back and change your manual entries by using the **Back** button at any time.

You can make changes at the latest before you answer **YES** on the question:

Confirm  
entries?

1. Select **NO** and press **OK**.
2. Select the following:

Change  
entry?

3. Press **OK** and the first manual entry is displayed again.
4. Navigate to the entry that you will change. Carry out the changes according to the procedure above.

### Clear all Entries

To start over again, do as follows when the following is displayed:

Confirm  
entries?

5. Select **NO** and select:  
Clear all  
entries
6. Press **OK** and register new entries according to the procedure above.

#### Note!

The manual mode will be closed when driving begins or when no interaction has been made with the tachograph for 1 or 20 minutes, depending on the settings.

### Selection of Activity

When the vehicle is stopped, the following activity types can be manually selected for the driver and co-driver.

**Work**

**Rest**

**Available**



1. With the Card still in the tachograph press the (1/2) button shortly. If you are the driver you must use the (1) button and if you are a co-driver you must use the (2) button.
2. Press again shortly until you have the right symbol displayed.
3. Wait for the tachograph to switch back to the selected view (that you previously have selected).

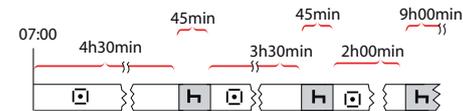
## Working Time Directive (WTD)

This version of the Stoneridge Smart Tachograph supports the EU Working Time Directive (2002/15/EC).

## DDS in Driver Scenarios

DDS includes both the Working Time Directive and the Ferry/Train Mode in the calculations.

DDS is described in a driving scenario that has the following components:



The main part of this scenario will be described below together with the Time Left Driving View.

## Start Driving with DDS

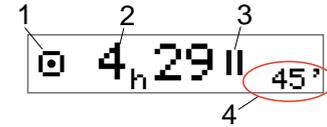
Assume that you start driving in the morning at e.g. at 7 in the morning. In the illustration below you insert the card and start driving at the same time (A).

According to the current regulations you are allowed to drive for 4 hours and 30 minutes before you have to make a 45 minutes break (or 15 + 30 minutes). The end of the accumulated driving time is marked with the symbol at position (B).



## Time Left Driving

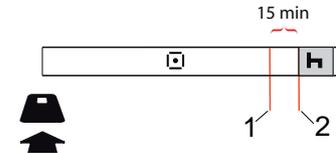
DDS keeps track of your driving time and shows the Time Left Driving.



1. Icon is indicating that this is the Time Left Driving View.
2. You can drive for 4 hours and 29 minutes before you must take a break.
3. Next required activity will be a break.
4. Next required break must be at least 45 minutes.

## Warning and Pre-warning

When there is 15 minutes remaining to drive the tachograph will give a Pre-warning. A Warning will be shown when you must stop driving.



1. Pre-warning - will be shown 15 minutes before Time Left Driving has elapsed.
2. Warning - will be shown when Time Left Driving has elapsed.

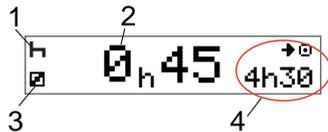
### Taking a Break

Similar to the Time Left Driving View the DDS will present a Time Left Resting View when you are resting.

45min



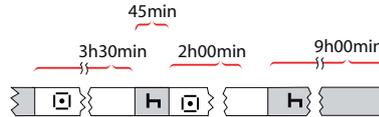
This is the first break after 4.5 hours driving.



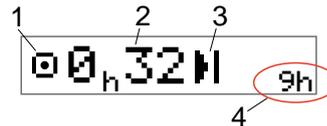
1. Driver is resting.
2. Remaining resting time is 45 minutes.
3. Availability is the activity selected for the co-driver.
4. You can drive 4 hours and 30 minutes when you have finished your rest.

### Towards the End of the Day

At the end of the day, the next activity has changed to Daily Rest instead.



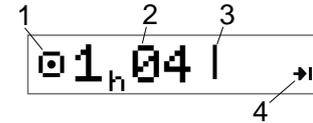
After a day with: 4.5 hour driving, 45 minutes break, 3.5 hours driving, 45 minutes break and finally driving for 1 hour and 28 minutes, the following is shown.



1. Icon is indicating that this is the Time Left Driving View.
2. You can drive for 32 minutes before you must take a rest.
3. Icon showing the next required activity will be the Daily Rest.
4. Showing that you will have to take a 9 hour rest.

### Weekly Driving Time Limit

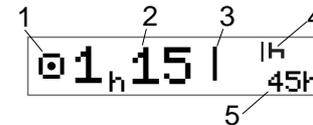
When the weekly drive time limit is near, the view will look like this:



1. Icon is indicating that this is the Time Left Driving View.
2. Time left to drive this week.
3. Icon showing that you must fulfil your Weekly Rest.
4. Icon indicating that you must wait for the next week to get more driving time. You must wait for the next UTC week.

### Calendar Time Limit

The drive time left view will show this when the next activity required will be a weekly rest:

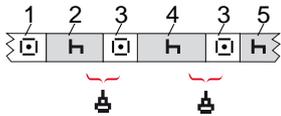


1. Icon is indicating that this is the Time Left Driving View.
2. Time left to drive this week.

3. Icon showing that you must fulfil your Weekly Rest in order to get more driving time.
4. Icon showing the Weekly Rest has to be started immediately after the Driving Time has elapsed.
5. Showing the duration of the rest (45 hours).

### Ferry or Train Scenario

When taking your regular daily rest in conjunction with travelling by ferry or train there is a possibility to interrupt the rest twice to embark and disembark the ferry or train. For DDS to calculate the daily rest correctly enter Ferry/Train special condition just before starting to embark/disembark the ferry/train according to picture below.



1. Driving to ferry/train
2. Rest during waiting time at the ferry/train terminal.

3. Driving during embarkation/disembarkation of the ferry/train.
4. Rest during ferry/train journey.
5. Continued rest after ferry/train journey.

The total driving time interruption (3 and 3) must not exceed 60 minutes.

### Activate Ferry/Train condition

To activate the ferry/train condition (when standing in the queue or on-board the ferry/train):

1. Press **OK** to show the menu.
2. Select:  
**PLACES**
3. Press **OK** and select:  
**Ferry/train**
4. Press **OK** to confirm. The Ferry/train activity is activated.

### End Ferry/Train condition

For latest issued driver card, in a Smart Tachograph, it is possible to end an

ongoing Ferry/Train condition. E.g. if your daily rest is fulfilled during the journey (4) and you do not want to continue with more rest (5), it is possible to end the ferry/train condition before disembark.

1. Press **OK** to show the menu.
2. Select:  
**PLACES**
3. Press **OK** and select:  
**End Ferry/train?**
4. Press **OK** to confirm. The Ferry/train activity is deactivated.

### Note!

An active Ferry/train condition will end, when latest issued driver card is withdrawn. E.g. if you eject the card during ferry/train journey (4), the display will, at next card insertion, show a ferry symbol with a question mark. Indicating that an ongoing ferry/train is possible to continue. Activate the Ferry/Train condition again if desired.

The Ferry train view (see **Ferry/Train on page 12**) will automatically appear if

conditions are correct for a "daily rest interrupted by ferry/train".

It is only possible to get DDS support for Ferry/Train once during a day/daily rest. It is recommended that ignition shall be turned off at short Ferry/Train journey to avoid motion errors.

**Note!**

Please remember that the activity still needs to be changed to rest after embarking the ferry.

For more information also see **Data and Specifications on page 81.**

**Driving Out of Scope**

Some driving conditions do not require recording of time on the tachograph, for example driving in countries where no such legislation exists. This driving mode is called out of scope.

For detailed information, see national regulations and EU tachograph regulations 561/2006.

**To activate or deactivate the out of scope mode:**

1. Press **OK** to show the menu.
2. Select:  
**PLACES**
3. Press **OK** and select:  
**Out of scope**
4. Press **OK**.

- If you turned the out of scope mode on, the Default Display View will show:

**OUT**

The out of scope mode is activated.

- If you are turning off the out of scope mode, the display will show:

**End out of scope?**

5. Press **OK** to confirm. The out of scope mode is deactivated.



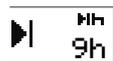
The following pictogram can be shown in position (1) and have the following meaning:

|    |  |  |
|----|--|--|
| ■  | Time for break   | 45 or 15 + 30 min                      |
| ▶  | Time for daily rest                                      | 11 or 9 hours                          |
| I  | Time for weekly rest or weekly drive time limit reached. | 45 or 24 hours or wait until next week |
| II | 2-weeks drive time limit reached                         | Wait until next week                   |

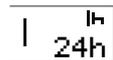
**More on Time Left Driving**

The Time Left Driving View can hold different information during a driving scenario.

If a pictogram (2) is shown, it has the following meaning:



A daily rest must start immediately when the remaining time is zero.



A weekly rest must start immediately when the remaining time is zero.



Working time is the cause of next break or rest.

## DDS Calculations and Limitations

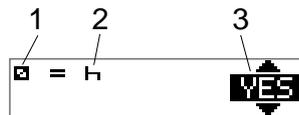
The Reference Part contains a more detailed description of the DDS calculations and limitations. See **Data and Specifications** on page 81.

## Period of Availability (POA)

### In DDS calculations

In the Driver Decision Support mode the POA can be calculated as break (YES) or

not calculated as break (NO).

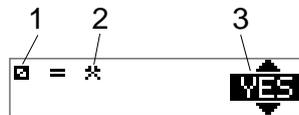


1. Pictogram for availability.
2. Pictogram for break.
3. The command can be toggled between YES (POA calculated as break) and NO (POA *not* calculated as break).

### In WTD calculations

Due to different regulations in European Union the period of availability can be calculated either as a *break* or as *work*.

In the Working Time Directive mode the POA can be calculated as work (YES) or not calculated as work (NO).



1. Pictogram for availability.
2. Pictogram for work.

3. The command can be toggled between YES (POA calculated as work) and NO (POA *not* calculated as work).

## INFO Menu

When you select the Info menu the following Views are presented:

- Accumulated Driving Time Driver 1.
- Accumulated Driving Time Driver 2.
- Local Date and Time.
- UTC Date and Time.
- SE 5000 revision and Software Identification Number.
- Company Locked in.
- Time to Download and Calibration.
- Calendar Time Left to Rest.

### Note!

The Info menu is only available when the vehicle is stationary.

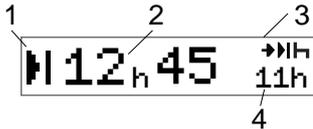
## How to reach INFO MENU

You can reach the INFO Menu in the following way:

1. Press **OK** to show the menus.
2. Select:  
**INFO**
3. Press **OK**.

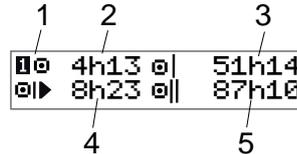
Now, you can use the arrow buttons to move between the different views.

## Calendar Time Left until Rest



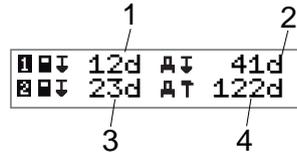
1. Calendar Time until Rest icon.
2. Calendar time left until a rest must start.
3. Icon indicating that next rest must be a daily rest.
4. Indicates how long the resting time must be (11 hours in this case).

## Cumulated Driving Time Driver 1/2



1. Driver 1 (there is a similar display for driver 2).
2. Continuous Driving Time.
3. Cumulated Weekly Driving Time.
4. Cumulated Daily Driving Time.
5. Cumulated 2-Week Driving Time.

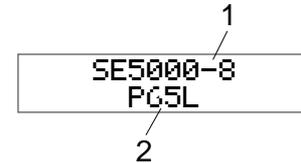
## Time to Download and Calibrate



1. Days left until the Driver 1 Card has to be downloaded.
2. Days left until tachograph data has to be downloaded.
3. Days left until the Driver 2 Card has to be downloaded.

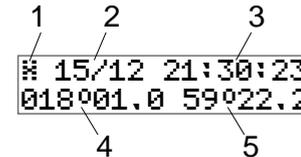
4. Days left until the tachograph has to be calibrated.

## Revision



1. SE5000-8 Revision.
2. Software Identification number.

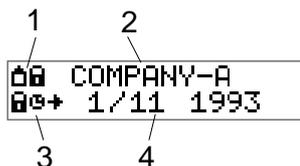
## GNSS Positioning



1. Pictogram for GNSS
2. Date (dd/MM) of latest position from GNSS (UTC time)
3. Time (hh:mm:ss) of latest position from GNSS (UTC time)

4. Latest GNSS longitude (degree and minutes). Positive value means east and negative value means west
5. Latest GNSS latitude (degree and minutes). Positive value means north

### Company Locked in



1. Company Locks pictogram combination.
2. Name of company with an active lock.
3. Pictogram indication lock in starting time.
4. Date when company data was locked in.

## Driver Settings

The driver can make the following settings:

- Change Language
- Enable/Disable DDS Presentation
- Enable/Disable DDS Warnings
- Change Local Time
- Daylight Saving Time
- Invert Colours on the Display
- Drivers consent to export personal data
- View Vehicle Registration Number (VRN)
- Enable/Disable WTD Presentation

### Change Language

By default, it is the driver card language that is used in the tachograph and on printouts, but you can change which language is to be used.

If you change language, the new language will be saved only in the tachograph, not on the driver card.

1. Press **OK** to show the menu.
2. Select:  
**SETTINGS**
3. Press **OK** and select:  
**Language**

4. Press **OK** and select the desired language.
5. Press **OK** to confirm. The language is changed.

### DDS Presentation ON/OFF

By default the DDS (Driver Decision Support) is enabled (ON), but it can be switched OFF which means that not only the presentation is switched off but also all warnings associated with the DDS.

1. Press **OK** to show the menu.
2. Select:  
**SETTINGS**
3. Press **OK** and select:  
**DDS Settings**
4. Press **OK** and select:  
**DDS enable**
5. Select **OFF** to disable the DDS presentation.
6. Press **OK** to confirm. The DDS presentation is now disabled.

## DDS Warnings ON/OFF

By default the DDS warnings (Driver Decision Support) are enabled (ON), but they can be switched OFF.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK** and select:  
`DDS Settings`
4. Press **OK** and select:  
`DDS warnings`
5. Select **OFF** to disable the DDS warnings.
6. Press **OK** to confirm. The DDS warnings are now disabled.

## Change Local Time

Local time is the current time in a specific country. Local time is only shown as information on the display and on some printouts. The local time is set manually and can be adjusted in steps of 30 minutes.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK** and select:  
`Local time`
4. Press **OK**.
5. Change the time, using the arrow buttons.
6. Press **OK** to confirm. The local time is changed.

## Daylight Saving Time

In EU countries, the last Sunday in March and October the tachograph will remind you to change the local time according to Daylight Saving Time (local summer/winter time).

1. When adjustment is needed, the display will show:  
`New time?`
2. Press **OK** to confirm. The local time is changed.

## Drivers Consent to Export Personal Data

The driver can choose to accept export of personal data from the tachograph.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK** and select:  
`Drivers Consent`
4. At:  
`OK to exp  
pers. data?`  
Select **YES** or **NO**.
5. Press **OK** to confirm. The setting is now saved.

## Invert Colours on the Display

There are two modes for the display: dark background with light text or light background with dark text.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`

3. Press **OK** and select:  
**Invert display**
4. Press **OK** to confirm. The display is inverted.

To reset the display, follow the same procedure but select **NO** in step 3.

### View Vehicle Registration Number

The Vehicle Registration Number (VRN) can be viewed by the driver but it needs a company card to set it, see **Set Vehicle Registration Number (VRN) on page 38**.

1. Press **OK** to show the menu.
2. Select:  
**SETTINGS**
3. Press **OK** and select:  
**Reg. Number**
4. Press **OK** to confirm. The vehicle registration number is displayed.

### Power Saving Mode

When the ignition key is switched off the tachograph will turn to power saving

mode ten minutes after the last interaction. In power saving mode the display is off.

The display will be switched on again when:

- Pressing any button once
- Switching the ignition key on
- Taking the vehicle in tow

### Care of Tachograph

To obtain a long and trouble-free lifetime for the tachograph please keep the following in mind:

- Keep the trays closed at all times and only open them to insert and withdraw a card.
- Do not place objects on the trays when they are open, otherwise they could be damaged.
- Keep the tachograph clean.
- Clean a dirty tachograph with a damp, soft cloth.

### Care of Cards

Treat your card with care and please note the following:

- Do not flex or bend the card.
- Ensure that the card contacts are kept free from dirt and dust.
- Clean it with a soft damp cloth if necessary.
- Protect it from damage.

### Card damaged, lost or stolen

If the card is damaged, lost or stolen the owner has to request a replacement card from the responsible authority in the country where the card was issued.

If a card is stolen or if the owner suspects that an unauthorized person has access to the card, the owner has to report the incident to the local police and obtain a police report number.

A driver without a valid driver card is not permitted to drive a vehicle equipped with a smart tachograph.

## Printouts

You can view the information stored in the tachograph and on the driver cards by printing it on paper or by showing it on the display. There are a number of different presentations available, which you can read more about in **Printout Examples on page 63**

### Printout Data

1. Press **OK** to show the menu and select:

`PRINT`

2. Press **OK** and select the type of printout to make. Then press **OK**.

Some types of printouts require specification of the driver card and a date. If so the following is displayed:

`Select card 1 or 2`

3. Select **1** to make a printout for the current driver's card or **2** to make a printout for a co-driver's card.

Some printouts require selection of the file system generation (generation 2 cards

has two file systems (gen 1 and gen 2). If so the following is displayed:

`Card gen 1 or 2`

4. If applicable, select card file system generation 1 or 2
5. Select the desired date by using the arrow buttons and press **OK**.
6. Now you select whether to view the data on the display only or to make a printout on paper.

- To view the data on the display only, select:

`display`

- Press **OK** and scroll through the data using the arrow buttons and then press **OK** to return.

- To make a printout on paper, select `printer`

- Press **OK**. The display will show:

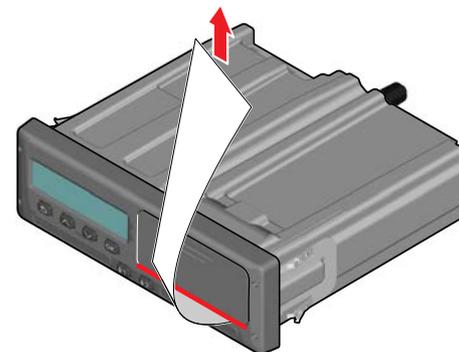
`Printer busy`

- If you would like to cancel the process, press and hold the **Back**

button. Wait until the message is cleared and then pull the printout upwards to tear it off.

### Note!

To avoid paper jam make sure the slot on the paper cassette is not blocked.

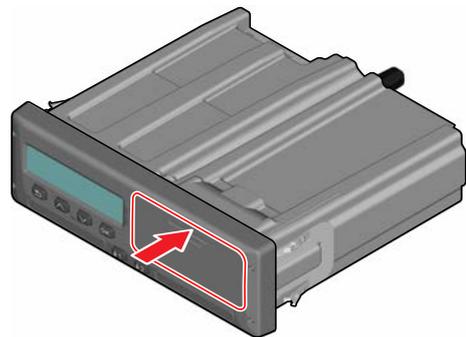


## Change the Paper Roll

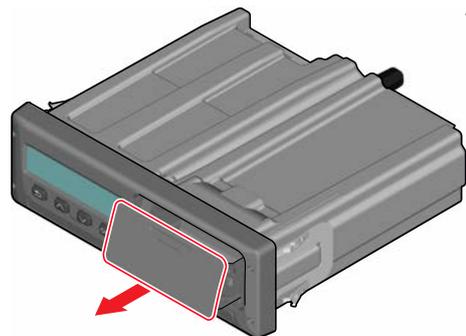
### Note!

To avoid malfunctioning only use printer paper approved by Stoneridge.

1. Press the upper edge of the front panel. The panel opens.

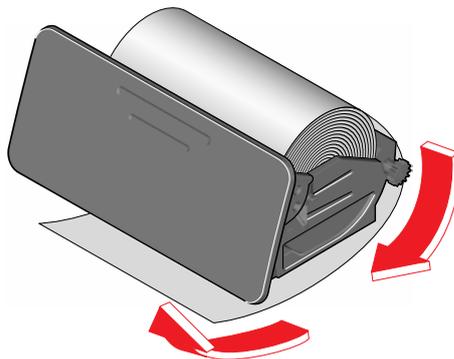


2. Hold the lower edge of the panel and carefully pull out the cassette.

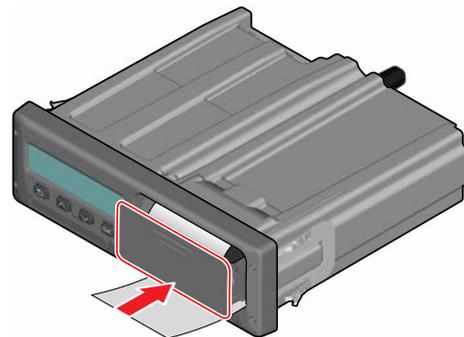


3. Feed the paper around the back of the paper cassette and forwards, passing

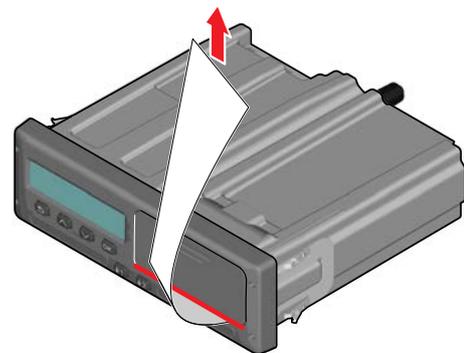
the lower edge of the panel.



4. Insert the paper into the printer.  
5. Slide the paper cassette into the tachograph and press the lower part of the panel to close.



6. Pull the paper upwards and tear it off.



## Company Part

The Company Part contains information especially for the vehicle owners and hauliers who have certain responsibilities that are described in the following main sections:

- **Company Inspection** - the company is obligated to carry out inspections of the Tachograph and keep records.
- **Workshop Inspection** - the company has to administrate a workshop inspection of the Tachograph and store records from the inspection.
- **Lock-in and Lock-out Data** - the company can lock in data in order to make the data out of reach for unauthorised persons. This together with a reset function (lock-out data) is described here.
- **Download Data** - the company is obligated to carry out download of tachograph data.
- **Company Card** - contains information about the company card.

- **Company Settings** - a few settings are only available for the company staff and these settings are found here.

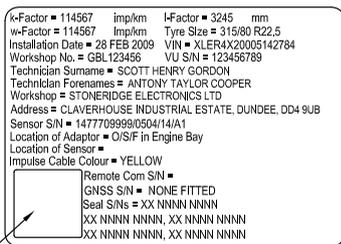
### Note!

The company must make sure that all their vehicles over 3.5 tons are equipped with smart tachograph systems according to EU regulations and national laws. The company card is personal and may not be used by anyone else but the rightful card holder.

## Company Inspection

The company inspection shall ensure that:

- The Type Approval Number is correct.
- The UTC time is accurate by less than 20 minutes.
- The tachograph is within the correct calibration interval.
- The installation plaque is time valid and not broken.



HOLO GUARD LABEL

- The tamper label is not torn apart.

The company inspection should also ensure that:

- The stored calibration factors agree with what is recorded on the installation plaque.
- The tachograph's internally stored vehicle parameters (Vehicle Identification Number [VIN] and Vehicle Registration Number [VRN]) agree with the actual vehicle data.
- The tachograph does not have any visible damage.

## Keep a Record

Keep a record of the Company Inspection.

## Inspection Fails

If there are faults in any of the items included in a company inspection, or if there is any doubt regarding the company inspection, the vehicle must be taken to a smart tachograph workshop for inspection.

If not it will result in a decision that the company is breaking EU, EEA and AETR tachograph regulations and the vehicle, in which the tachograph is fitted, will be invalid for use.

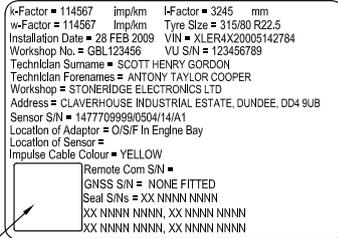
### Note!

Consult relevant authority for national regulations.

## Workshop Inspection

The tachograph installation has to undergo a workshop inspection every second year. It is the company's responsibility to administrate this inspection and to take care of records from the inspection (carried out at a Smart Tachograph Workshop).

The installation plaque, fixed near the tachograph, states the date for passed inspection.



HOLO GUARD LABEL

**Note!**

At the inspection the installation plaque must be valid and not broken.

Ensure that the information in the tachograph test certificate received after a workshop periodic inspection is accurate.

The following records must be taken care of by the company:

- Test Certificates from the Workshop.
- Undownloadability certificates, see **Downloading - why? on the next page.**

Data must be available in the event of an enforcement authority investigation or audit.

## Lock-in/Lock-out Data

The company owner can lock-in tachograph data in order to make them unreachable for unauthorized persons.

We recommend that the Lock-in Data is carried out before the tachograph is being used. If Lock-in is carried out at a later time all data up to this time will be unlocked and available.

## Selling the Vehicle

In case the vehicle will be sold, a lock-out data procedure has to be performed before the vehicle is handed over to the new owner. If not there will be a risk for a mix up in the storing of data.

## When inserting a Company Card.

When a company card is inserted and the company data is not locked in, the Lock-in/out status will be shown automatically.

1. Insert a company card in tray 1 or 2.  
The tachograph automatically enters the company mode of operation.

If two company cards are inserted the last inserted will be ejected.

If your company does not have an active lock-in of data, a reminder to lock-in data will be shown:

**Company  
lock-in**

At this point it is possible to lock-in data (or leave data unlocked):

2. Select **YES** and press **OK**.

The following display appears for a short time:

**Lock-in  
complete**

You can later at any time show the lock-in/out status by selecting the INFO menu, see **How to reach INFO MENU on page 25.**

## Another Company still Locked-in

If a lock-in is performed and there is another company still locked-in, the tachograph will automatically perform a lock-out of the previous company. No data will be lost for any company.

### Lock-in Data

If company data is not locked-in, the Lock-in menu is shown after insertion of a company card. In addition lock-in can be carried out at any time.

1. Press the **OK** button to show the tachograph menu.

2. Select:

```
COMP LOCKS
```

3. Press **OK**.

The display will show:

```
Company  
lock-in
```

5. Select **YES** and press **OK**.

The following display appears for a short time:

```
Lock-in  
complete
```

If the last lock-out was made by the present company, that lock-out will be cancelled and the present company lock-in will be extended to the date and time for the previous lock-in.

### Note!

The tachograph is able to handle a maximum of 255 company locks. After that the oldest company lock will be removed.

### Lock-out Data

A lock-out must be performed before the tachograph is transferred to another company or if there is a risk of getting the next company's data recorded. If the lock-out is forgotten, the data will not be locked-out until the next company performs a lock-in.

1. Insert a company card in tray 1 or 2.

The tachograph automatically enters the company mode of operation.

If two company cards are inserted the last inserted will be ejected.

2. Press the **OK** button to show the tachograph menu.

3. Select:

```
COMP LOCKS
```

4. Press **OK**.

5. Select **YES** and press **OK**.

The display will show:

```
Company  
lock-out
```

6. Select **YES** and press the **OK** to perform the lock-in.

The following display appears for a short time:

```
Lock-out  
complete
```

### Downloading - why?

The available space on the cards and in the tachograph is limited and when the memory is full the information will be overwritten by new information and thereby it will be lost for ever.

To avoid this and to secure card and tachograph data a frequent download of information is needed. It means that data will be transferred from the card/tachograph to a data storage outside the vehicle.

Data has to be downloaded regularly. Please note that downloading will not destroy any data. Data is only erased (destroyed) when it is overwritten by new data or by an accident.

**Note!**

Consult the relevant authority for more information.

**Equipment**

Downloading of stored data from the tachograph memory or an inserted driver card is done by attaching a download equipment. For the best result, Stoneridge Electronics recommends OPTAC. Other download equipment compliant with the protocol as laid out in the legislative document 2016/799 (Annex 1C) Appendix 7 can also be used.

Also remote download is possible but it is not described here.

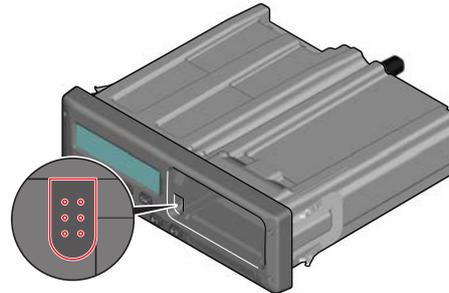
Many types of equipment can download cards directly by inserting them in a card holder on the equipment in question.

The equipment used for downloading will generate a digital signature that will be stored together with the downloaded data.

**Downloading Procedure****Note!**

If a driver card is inserted in tray 1, insert the company card in tray 2 to perform the download.

1. Remove the printer cassette.
2. Attach the download equipment to the tachograph through the 6-way front download connector.



3. Start downloading data according to the instructions on the download equipment.

The tachograph will show:

`Downloading busy`

When downloading is completed, the following message will be displayed:

`Downloading complete`

If the downloading process failed the display will show the following warning:

`Download failure`

See **Display Messages** on page 50

**Keep a Record**

Store all downloaded data in a secure suitable way. This will prevent unauthorised access of data.

Data must be available in the event of an enforcement authority investigation or audit.

**Certificate - when not Downloadable**

If it is not possible to download data from a faulty tachograph at the workshop, they will issue a certificate of not downloadable information.

Such certificate received from a workshop must be securely stored. The certificate must be available to the enforcement

authorities during any investigation or audit.

It is good practice to keep a register of undownloadability certificates issued from a smart tachograph workshop.

### Note!

If a workshop receives a written request from an enforcement authority, a copy of stored downloaded data might be given to the authority for the purpose of investigation without the permission of the data owner.

### Download with Control Card

With a valid control card enforcement authorities can download data for investigation purposes.

### Company Card

Company Cards are issued by the responsible authorities in respective EU, EEA and AETR country (EU - European Union, EEA - European Economical Area, AETR - United Nation's agreement on International Road Transport). A

company may have several Company Cards.

The Company Card must be inserted in the tachograph in order to identify the company.

### Note!

If the tachograph fails to read the card (company card authentication), see **Display Messages on page 50** and look for:

```
Card 1auth.  
failure
```

The Company Card can be authenticated remotely. If remote authentication fails, the user will be notified by the user interface. This will not be visible on the VU-display.

The card tray is locked when the vehicle is in motion, while the tachograph is busy processing the company card and if the power supply to the tachograph is interrupted.

The Company Card can store a minimum of 230 records. The maximum number of records is dependent on the card type. When the upper limit is reached the oldest data will be overwritten.

### Data Stored at Lock-in/out or Download

Each time a company card is inserted into a tachograph a record of card activity is stored on the company card and in the tachograph.

- Date and time of the company activity.
- Type of activity performed.
- Period downloaded, if applicable.
- Vehicle Registration Number (VRN) and country registration authority of the vehicle used for the activity.
- Driver card number and card issuing country, in case of a card download.

### Company Card Stored Data

A single record of the company card activity, containing the following card and card holder information, will be stored on the company card:

- Card number.
- Issuing country, issuing authority name and the issue date.
- Card validity - start date and expiry date.
- Company name and address.

### Tachograph Stored Company Activity Data

Each time a company card is used to carry out a tachograph activity a record is stored in the tachograph.

The data stored when performing a lock-in/lock-out is:

- Lock-in date and time.
- Lock-out date and time.
- Company card number and card issuing member state.
- Company name and address.

The data stored when performing a download is:

- Date and time of the download.
- Company card number.

- Card issuing member state of the card used to perform the download.

## Company Settings

You must have a company card to carry out the following settings.

### Show Download Process

You can select to show the Download process or blank it out.

1. Press **OK** to show the menu.
2. Select:  
`Setting`
3. Press **OK**.
4. Select:  
`Parameters`
5. Press **OK**.
6. Select:  
`Show downl. process`
7. If the process must be shown - select:  
`YES`
8. If the process not must be shown - select:  
`NO`

9. Then press **OK** to confirm.

### WTD Presentation ON/OFF

By default the WTD (Working Time Directive monitoring) is enabled (ON), but it can be switched OFF which means that not only the presentation is switched off but also all warnings associated with the WTD monitoring.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK** and select:  
`WTD Settings`
4. Press **OK** and select:  
`WTD enable`
5. Select **OFF** to disable the WTD presentation.
6. Press **OK** to confirm. The WTD presentation is now disabled.

### D8 Data Format

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`

3. Press **OK**.
4. Select:  
`Parameters`
5. Press **OK**.
6. Select:  
`D8 data format`
7. For SRE proprietary format - select:  
`SRE`
8. For legacy format - select:  
`2400`
9. Then press **OK** to confirm.

### Set Activity when Switching Ignition Key on/off

You can select an activity to automatically be selected when switching the ignition key on or off. The activity change will apply to both the driver and the co-driver.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK**.
4. Select:  
`Parameters`

5. Press **OK**.
6. Select one of the following (depending on which setting you wish to make):  
`Default activ. key on`  
`Default activ. key off`
7. Press **OK** to confirm.

### Set Timeout for Manual Entries

The manual entries will be closed when no interaction has been made for 1 or 20 minutes, depending on the settings. As default the timeout is 1 minute.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK**.
4. Select:  
`Parameters`
5. Press **OK**.
6. Select:  
`Man. entries timeout`
7. Press **OK**.
8. Select one of the following:  
`1 min`  
`20 min`

9. Press **OK**.

### Set Vehicle Registration Number (VRN)

Normally a Vehicle Registration Number (VRN) is set during installation. But if the VRN is missing you can enter it yourself. The number can only be registered once by the company.

1. Press **OK** to show the menu.
2. Select:  
`SETTINGS`
3. Press **OK**.
4. Select:  
`Reg. Number`
5. Press **OK**.
6. **Enter Reg. Number** is displayed. Press **OK**.
7. Select Country and press **OK**.
8. Select preferred character set (default set is Latin 1) and press **OK**.

9. Select the character for the first character in the vehicle registration number and press **OK**. Repeat until the complete number is entered. 13 characters can be entered.
10. Select the  symbol and press **OK**.
11. Press **OK** to confirm. The vehicle registration number is set.

## DDS Settings

For the company a number of DDS settings are available, see the Table with all DDS Settings.

### Table with all DDS Settings

This table contains all DDS settings.

- on/off - the presentation can be switched on (enabled) or switched off (disabled).
- days - is a setting for how many days in advance a warning or pre-warning shall be presented.

## DDS Displays

| Display text               | Setting            | Description  |
|----------------------------|--------------------|--|
| DDS enable                 | on/off             | Set if the DDS shall be shown or not shown. This is available for both driver and company.   |
| DDS warnings               | on/off             | Set if the warnings and the pre-warnings shall be shown or not. This is available for both driver and company.   |
| ☐ = h                      | break/<br>no break | Set if the POA (periods of availability) shall be registered as a break. This is available for company.  |
| 9h                         | on/off             | This is a pre-warning and a warning that will be shown when the 9 hours daily driving time is near to be reached.  |
| daily<br>drive time        | on/off             | This is a pre-warning and a warning that will be shown when the maximum daily driving time is near to be reached.  |
| weekly<br>drive time       | on/off             | This is a pre-warning and a warning that will be shown when the maximum weekly driving time is near to be reached.   |
| 2-week<br>drive time       | on/off             | This is a pre-warning and a warning that will be shown when the maximum 2-weekly driving time is near to be reached.   |
| daily/weekly<br>rest       | on/off             | Pre-warning and a warning for daily/weekly rest period.  |
| card downl.<br>interval    | days               | Here the company can set the number of days between card downloads.  |
| veh. downl.<br>interval    | days               | Here the company can set the number of days between tachograph download.   |
| drive time<br>pre-warning  | hhmm               | Set how many minutes (hours) in advance the tachograph will give a pre-warning. This setting affects all pre-warnings except the continuous driving time pre-warning |
| card expiry<br>pre-warning | days               | Set how many days in advance the tachograph will give a warning.   |

---

|                            |        |   |
|----------------------------|--------|---|
| card downl.<br>pre-warning | days   | Set how many days in advance the tachograph will give a warning.                                |
| veh. downl.<br>pre-warning | days   | Set how many days in advance the tachograph will give a warning.                                |
| calibration<br>pre-warning | days   | Set how many days in advance the tachograph will give a warning.                                |
| Auto DDS<br>display        | on/off | In this setting the tachograph can be set to automatically show the standard display selection. |

**WTD Settings**

| Display text  | Setting  | Description   |
|---|----------|---|
| WTD enable  | YES/NO   | Set if the WTD shall be used (enable) or not used (disable). This is available for both driver and company. |
| 6h  | YES/NO   | Set if the 6 hour pre-warning and a 6h warning shall be shown or not. This is available for company.        |
| 60h   | YES/NO   | Set if the 60 hour pre-warning and a 60h warning shall be shown or not. This is available for company.      |
|  =  | YES/NO   | Period of Availability is calculated as work (YES) or not calculated as work (NO).                          |
| 1st break   | 15,30,45 | Set the length of the break to 15, 30 or 45 minutes   |

## Reference Part

The reference part contains additional information that sometimes may be needed but not frequently used. This part contains:

- **Display and Printout Symbols** - contains list of symbols used in the display and on the printouts.
- **Available Languages** - a list of languages for the display.
- **Available Countries** - a list of countries that can be selected as locations.
- **Display Messages** - an alphabetically ordered list of messages, warnings and faults that can appear on the display.
- **Printout Examples** - contains the most of the possible printouts.
- **ATEX Tachograph** - a Tachograph version that is aimed for use in vehicles used for hazardous goods transports.
- **Contact Stoneridge** - how to contact Stoneridge.
- **Index**

Keep this Driver & Company Manual in the vehicle. If the vehicle is sold, pass this manual on to the new owner as the Tachograph is considered as a part of the vehicle.

The local Stoneridge representative will be pleased to assist you if you should have any questions. You will find a list of local representatives in chapter **Contact Stoneridge on page 87**

## Symbols

This is a list of the most frequently shown symbols on the display and on the printouts.

| Symbol  | Description   |
|---|---|
| ⊖   | Function not available  |
| 1  | Driver or slot  |
| 2  | Co-driver or slot   |
|    | Card  |
|    | Eject   |
|    | Work  |
|    | Driving/driver (mode of Operation)                              |
|    | Rest/break  |
|    | Available   |
|    | Ferry / train crossing  |
| <b>OUT</b>  | Out of scope, -i.e. no activities time durations are calculated |
| •   | Local time/location   |
|    | Start of daily work period                                      |
|    | End of daily work period  |
|    | Break   |
|    | From or to  |
|    | Printer, printout   |
|    | Paper   |

| Symbol  | Description                           |
|---|---------------------------------------|
|  | Display                               |
|  | Processing, please wait               |
|  | Time, clock                           |
| <b>UTC</b>  | UTC time                              |
| <b>24h</b>  | Daily                                 |
|   | Weekly                                |
|   | Two weeks                             |
| Σ   | Total/summary                         |
| >   | Speed                                 |
| >>  | Over speeding                         |
| ×   | Faults                                |
| !   | Events                                |
| ?   | Pre-warning/question/unknown activity |
| T   | Workshop                              |
|  | Company                               |
|  | Controller                            |
|  | Manufacturer                          |
|  | Security                              |
|  | External storage/download             |
|  | Buttons                               |
| ✓   | Finished                              |
|  | Tachograph (VU), vehicle              |
| •   | Tyre size                             |
| ⌚   | Sensor                                |

| Symbol  | Description                          |
|---|--------------------------------------|
|  | Power supply                         |
|  | Print                                |
|  | Print, submenu                       |
|  | Company lock                         |
|  | Places                               |
|  | Places, sub menu                     |
|  | Settings                             |
|  | GNSS positioning facility            |
|  | ITS interface                        |
|  | Remote communication facility (DSRC) |

## Symbol Combinations

The following combination of symbols are the most common.

| Symbols   | Description                         |
|---|-------------------------------------|
| •▶  | Location start of daily work period |
| ▶•  | Location end of daily work period   |
|  → | From time (UTC)                     |
| →  | To time (UTC)                       |
| •  | Local time                          |
| ⊙ ⊙   | Crew driving                        |
| ⊙   | Driving time for two weeks          |

| Symbols | Description                                     |
|---------|---|
| OUT →   | Out of scope - begin                            |
| → OUT   | Out of scope - end                              |
| ↔       | Ferry/train mode - begin                        |
| ↔       | Ferry/train mode - end                          |
| ⊙ ▶     | Cumulative driving time of current day          |
| ↓ ⊙     | Printer low temperature                         |
| ↑ ⊙     | Printer high temperature                        |
| ■ --    | No card   |
| ⊙ ■     | Driver card                                     |
| ⊣ ■     | Workshop card                                   |
| ⊣ ■     | Company card                                    |
| ⊣ ■     | Control card                                    |
| ⊣ ●     | Control place                                   |
| ⊣ →     | From vehicle                                    |
| ⊙ ☹     | Position after 3 hours accumulated driving time |

## Available Languages

When you insert your driver card the Tachograph automatically changes to the language on the card. But you can select any of the following languages.

| Language    | Language in English |
|-------------|---------------------|
| Български   | Bulgarian           |
| Čeština     | Czech               |
| dansk       | Danish              |
| Deutsch     | German              |
| eesti       | Estonian            |
| Ελληνικά    | Greek               |
| English     | English             |
| español     | Spanish             |
| français    | French              |
| islenska    | Icelandic           |
| italiano    | Italian             |
| latviesu    | Latvian             |
| lietuviu    | Lithuanian          |
| magyar      | Hungarian           |
| Nederlands  | Dutch               |
| norsk       | Norwegian           |
| polski      | Polish              |
| português   | Portuguese          |
| română      | Romanian            |
| русский     | Russian             |
| slovenčina  | Slovakian           |
| slovenscina | Slovenian           |
| suomi       | Finnish             |
| svenska     | Swedish             |
| shqip       | Albanian            |
| bosanski    | Bosnian             |

| Language       | Language in English |
|----------------|---------------------|
| hrvatski       | Croatian            |
| Македонски јаз | Macedonian          |
| srpski         | Serbian             |
| Türkçe         | Turkish             |
| Україна        | Ukraine             |

## Available Countries

You can select the following countries as location on your Tachograph.

| Country            |
|--------------------|
| Albania            |
| Andorra            |
| Armenia            |
| Austria            |
| Azerbaijan         |
| Belarus            |
| Belgium            |
| Bosnia/Herzegovina |
| Bulgaria           |
| Croatia            |
| Cyprus             |
| Czech Republic     |
| Denmark            |
| Estonia            |

## Reference Part

---

| <b>Country</b>      |
|---------------------|
| Faeroe Islands      |
| Finland             |
| France              |
| Georgia             |
| Germany             |
| Greece              |
| Hungary             |
| Iceland             |
| Ireland             |
| Italy               |
| Kazakhstan          |
| Latvia              |
| Liechtenstein       |
| Lithuania           |
| Luxembourg          |
| Macedonia           |
| Malta               |
| Monaco              |
| Montenegro          |
| Netherlands         |
| Norway              |
| Poland              |
| Portugal            |
| Republic of Moldova |
| Romania             |

| <b>Country</b>       |
|----------------------|
| Russian Federation   |
| San Marino           |
| Serbia               |
| Slovakia             |
| Slovenia             |
| Spain - regions      |
| - Andalucía          |
| - Aragón             |
| - Asturias           |
| - Baleares           |
| - Canarias           |
| - Cantabria          |
| - Castilla-La-Mancha |
| - Castilla-León      |
| - Cataluña           |
| - Extremadura        |
| - Galicia            |
| - La Rioja           |
| - Madrid             |
| - Murcia             |
| - Navarra            |
| - País Vasco         |
| - Valencia           |
| Sweden               |
| Switzerland          |

| <b>Country</b>              |
|-----------------------------|
| Turkey                      |
| Turkmenistan                |
| Ukraine                     |
| United kingdom , including: |
| - Alderney                  |
| - Guernsey                  |
| - Isle of Man               |
| - Jersey                    |
| - Gibraltar                 |
| Uzbekistan                  |
| Vatican City                |
| Yugoslavia                  |
| European community          |
| Rest of Europe              |
| Rest of the World           |

## Built-in Test

The built-in test can be used to check the following tachograph components for correct operation:

- Display □
- Driver card ■
- Buttons ₤
- Printer ▼
- Invert display ⚡

Perform a built-in test in the following way, but please note that the built-in test is only available when the vehicle is stationary.

1. Press the **OK** button and select:  
`SETTINGS`
2. Press **OK** again.
3. Select:  
`Built-in Test`
4. Press **OK**.
5. Select one of the five test categories and press **OK**.

| Type of Test       | Description  | Action if Test Failed  |
|--------------------|--|--|
| □ Display          | <p><b>Display test</b><br/>The display shows positive view, negative view and a pattern of rectangles for 1 second each.</p>   | <p>Visit a smart tachograph workshop to have the tachograph checked if the display is unreadable.</p> <p>If the display is unreadable the tachograph has to be decommissioned and replaced.</p>  |
| ■ Driver card      | <p><b>Test of the inserted driver cards</b><br/>There must be a driver card in the relevant slot. The name of the card holder is read and displayed for 2 seconds.</p> | <p>If a card is reported as defective, check a different card to ensure that the tachograph is functioning.</p> <p>If the tachograph seems to be defective, visit a smarttachograph workshop to have the equipment checked.</p> <p>If it is the driver card that is definitely defective, contact the responsible authority in the country where the driver card was issued.</p> |
| ⌘ Button           | <p><b>Button test</b><br/>You are prompted to press the buttons one by one from left to right within 2 seconds of each other, otherwise the test fails.</p>            | <p>Carefully clean dirty buttons with a damp cloth and a mild detergent.</p> <p>Visit a smart tachograph workshop to have the tachograph checked if a button repeatedly fails to work.</p>   |
| ▼ Printer          | <p><b>Printer test</b><br/>Prints a test page to check printer functionality.</p>  | <p>Check the paper cassette, if necessary insert a new paper roll or replace the cassette.</p> <p>Visit a smart tachograph workshop to have the tachograph checked if the printer still does not work.</p>   |
| ↯ Inverted display | <p><b>Inverted display function test</b><br/>The display view is inverted for 2 seconds.</p>   | <p>Visit a smart tachograph workshop to have the tachograph checked if the display is unreadable.</p>  |

**Other tests**

| <b>Type of Test</b> | <b>Description</b>  | <b>Action if Test Failed</b>  |
|---------------------|---|---|
| GNSS test           | Check GNSS facility. Run " <b>Info</b> " ► " <b>GNSS live view</b> " to test the GNSS facility.                                 | Check if any external transmitter disturbs the GNSS satellite signal.         |
| Other active faults | Show all currently active events and faults. Switch ignition key from off to on. Now all currently active faults will be shown. | See <b>Display Messages</b> on page <b>50</b> for actions on each fault type. |

## Display Messages

There are four type of messages that can be seen on the display.

- **Messages** - contains information on processes or reminders to the driver. Messages are not stored and can not be printed. Press the **Back** button to clear the message.
- **Pre-warnings** - appear as early reminders to the warnings. Pre-warnings, except DDS and WTD related, are stored and can be printed. Press the **OK** button twice to clear the Pre-warning.
- **Warnings**- appear in the event of e.g. speeding or violations of the law or if tachograph not can be recording. Warnings are stored and can be printed. Press the **OK** button twice to clear the Warning.
- **Faults** - are more critical than warnings and are displayed if there is

a fault detected in the tachograph, in the sensor or driver card. In addition faults are presented if tampering with the equipment is detected. Faults are stored and can be printed. Press the **OK** button to acknowledge the Fault.

| Display   | Description  | Action   |
|---|--|--|
|    | Message<br>Entry not possible while driving. Related to the operator.  | Stop the vehicle and try the entry again.  |
|  Absence of GNSS pos info   | The VU is unable to detect any valid GNSS satellite signal for a long time   | Make sure the GNSS antenna is not covered with or close to large metallic parts  |
|  Already in company mode  | Message<br>Two company cards inserted. The second card will be ejected without being processed (authenticated). Related to the operator. | Insert only one Company card.  |
|    Card auth. failure | Fault<br>The tachograph security check for the card in slot 1 failed. Similar message for slot 2. Related to the tachograph.             | Eject the card and check it visually.<br>Clean the card with a soft damp cloth and try again.<br>Still faulty - Perform a self test, see <b>Other tests on page 49</b><br>Still faulty - Visit a workshop to have the equipment checked. |
|   Card fault   | Fault<br>The card in slot 1 is defective. Similar message for slot 2. Related to the card.   | Eject the card and check it visually.<br>Clean the card with a soft damp cloth and try again.<br>Still faulty - Perform a self test, see <b>Other tests on page 49</b><br>Still faulty - Visit a workshop to have the equipment checked. |

| Display                         | Description  | Action   |
|---------------------------------|--|--|
| !@#@ Card time overlap          | Warning<br>The last withdrawal time of the inserted driver card is later than the date/time of the tachograph. Related to the tachograph | Check the date/time of the tachograph and change if necessary.<br><br>Wait for the overlap period to elapse.   |
| !## Card conflict               | Warning<br>An invalid card combination has been detected. Related to the card.   | Withdraw the offending card.   |
| !@→x@ Card eject without saving | Message<br>Data could not be stored on the card withdrawn from slot 2 due to an error. Similar message for slot 1. Related to the card.  | Eject the card and check it visually.<br><br>Clean the card with a soft damp cloth and try again.<br><br>Still faulty - Perform a self test, see <b>Other tests on page 49</b><br><br>Still faulty - Visit a workshop to have the equipment checked. |
| @## Card expired                | Message<br>The card in slot 1 has expired. Similar message for slot 2. Related to the operator.  | Remove the card and replaced it with a valid one.  |
| !@#@ Card expiry                | Message<br>The card in slot 1 will expire (Day/Month) . Similar message for slot 2. Related to the operator.                             | Contact the responsible authority to get a new card.   |
| !#@ Card ins. while driving     | Warning<br>A driver card was inserted while the vehicle was in motion. Related to the operator.  | Continue the journey if the driver card is valid.  |

| Display                    | Description   | Action   |
|----------------------------|---|--|
| !@←☐☐ Card integrity error | Fault<br>Corrupt data detected when reading data from the card in slot 2 to the tachograph. Similar message for slot 1. Related to the card.  | Eject the card and check it visually.<br><br>Clean the card with a soft damp cloth and try again.<br><br>Still faulty - Perform a self test, see <b>Other tests on page 49</b><br><br>Still faulty - Visit a workshop to have the equipment checked. |
| →✓ Changes saved           | Message<br>A pop-up message to confirm that a change is saved.  | No further action required.  |
| ?@▶ daily drive time       | Pre-warning - 9h daily drive time<br><br>Warning - 9h daily drive time<br><br>Pre-warning - daily drive time<br><br>Three different warnings for reaching the allowed driving time. |  |
| !@A/A Data integrity error | Fault<br>The user data stored in the tachograph has errors. Related to the tachograph   | Visit a smart tachograph workshop to have the equipment checked.   |
| ↓×↓ Download failed        | Warning<br>A failure when trying to download data from the tachograph. Related to the tachograph/card.  | Check the connector and the download equipment. Retry the download.<br><br>If still faulty<br><br>Tachograph fault -<br><br>Visit a smart tachograph workshop to have the equipment checked.   |

| Display                         | Description   | Action   |
|---------------------------------|---|--|
| !⏴ d/m<br>download card         | Message<br>Indicates the time to next download of the card (Day/Month) in slot 1. Similar message for slot 2        | Prepare for download.  |
| !⏴ d/m<br>download vehicle      | Message<br>Indicates the time to next download from the tachograph (Day/Month).                                     | Prepare for download.  |
| ⏴⏴ Download<br>complete         | Message<br>The tachograph download process has been completed successfully.   | No further action required.  |
| ⊞/⊞× Driving<br>can't open slot | Message<br>An attempt was made to open the slot while the vehicle was in motion. Related to the operator.           | Stop the vehicle. The card tray can be opened only when the vehicle is stationary. |
| !⊞ Driving w/o<br>valid card    | Warning<br>Driving without an appropriate card, or with an inappropriate card combination. Related to the operator. | Stop and remove inappropriate card.  |
| !⊞▶ end of<br>daily drive       | Warning<br>Maximum daily driving time   |  |
| !⊞  end of<br>weekly drive      | Warning<br>Maximum weekly driving time  |  |
| !*  end of<br>weekly work       | Warning<br>The weekly working time is reached according to the 60 h WTD rule.                                       |  |
| !⊞   end of<br>2-week drive     | Warning<br>Maximum 2-week driving time  |  |

| Display                          | Description   | Action   |
|----------------------------------|---|--|
| fn× Function not possible        | Message<br>The desired function cannot be carried out.<br>Related to the tachograph.  | Check if the tachograph is set in the correct mode of operation.<br><br>If the display still shows - Visit a smart tachograph workshop to have the equipment checked.              |
| !Ⓜ Hardware sabotage             | Fault<br>Card has been removed by force. Related to the operator.   | Visit a smart tachograph workshop to have the equipment checked.   |
| !Ⓜ Insertion of a non valid card | Warning<br>A non-valid card has been inserted to a slot.<br>Related to the operator.  | Eject the non-valid card.  |
| !ⓂⓂ Last sess. not closed ok     | Warning<br>The driver card in tray 1 was ejected incorrectly during the last session.<br><br>The previous card withdrawal in tray 1 was not completed correctly by the tachograph. Similar message for slot 2. Related to the card. | Eject the card and check it visually.<br><br>Clean the card with a soft damp cloth and try again.<br><br>Still faulty - perform a self test, see <b>Built-in Test on page 47</b> . |
| Ⓜ→✓ Lock-in complete             | Message<br>The lock-in is completed.  | No further action required.  |
| ←Ⓜ✓ Lock-out complete            | Message<br>The lock-out is completed.   | No further action required.  |
| !ⓂⓂ 30' max interruption         | Indication of the remaining interruption time   |  |
| M.....! Memory full!             | Message<br>Manual entries memory full. Related to the operator.   | Modify the manual entries so that the total number of entries is less.   |

| Display                          | Description  | Action   |
|----------------------------------|--|--|
| New time?<br>● 03:01             | Message<br>Daylight saving time changes.   | Answer <b>YES</b> to start or end daylight saving time.<br>Answer <b>NO</b> or press the <b>Back</b> button to cancel. |
| !ATd/m<br>next calibration       | Warning<br>Next mandatory calibration has to be carried out<br>(d/m = Day/Month)   | Plan for the calibration.  |
| !@/T No driver/<br>workshop card | Message<br>A function has been selected that requires an<br>inserted driver or workshop card. Related to the<br>operator.  | Visit a smart tachograph workshop to have the<br>equipment checked.  |
| !@L? No<br>further details       | Fault<br>An unknown type of sensor error occurred.<br>Related to the motion sensor.  | Visit a smart tachograph workshop to have the<br>equipment checked.  |
| >><br>Overspeeding               | Warning<br>The vehicle speed has exceeded the speed limit<br>set for 1 minute and will be stored. Related to the<br>operator.  | Observe the specified speed limit.<br>Find out the maximum speed allowed for the<br>vehicle.                           |
| >>? Overspeeding<br>pre-warning  | Warning<br>The vehicle is exceeding the over speed limit.<br><br>After 1 (one) minute of continuous over speeding<br>the warning will be stored. Related to the<br>operator. | Observe the specified speed limit.   |

| Display                      | Description   | Action   |
|------------------------------|---|--|
| !⚡ Power supply interruption | <p>Warning</p> <p>The tachograph supply voltage is below or above the limit for correct operation or has been disconnected. Related to the vehicle.</p> <p>Warning</p> <p>The power supply to the tachograph has been interrupted for more than 200 milliseconds. Cranking voltage should not cause this event. The event is not generated in calibration mode. Related to the vehicle.</p> | <p>Visit a smart tachograph workshop to have the equipment checked.</p>  |
| ⚠️ Printer high temperature  | <p>Message</p> <p>The printing could not start, or the ongoing printing has been interrupted, because the temperature of the printer is too high. Related to the printer.</p>   | <p>Wait until the printer temperature is in allowable range and try to print again.</p> <p>Visit a smart tachograph workshop to have the equipment checked.</p>  |
| ⚠️ Printer low power         | <p>Message</p> <p>The ongoing printing has been interrupted because the tachograph input voltage is too low. Related to the vehicle.</p>  | <p>Check that the ignition is on.</p> <p>Check the vehicle battery voltage, connections, etc.</p> <p>If the printer still is faulty - Visit a smart tachograph workshop to have the equipment checked.</p> |
| ⚠️ Printer low temperature   | <p>Message</p> <p>The printing could not start because the temperature of the printer is too low. Related to the printer.</p>   | <p>Wait until the printer temperature is in allowable range and try to print again.</p> <p>If the printer still is faulty - Visit a smart tachograph workshop to have the equipment checked.</p>           |

| Display   | Description   | Action  |
|---|---|---|
| ▼E× Printer out of paper  | Message<br>The ongoing printing has been interrupted because the printer is out of paper.                               | Replace paper.  |
| Printing busy  | Message<br>The printing is ongoing.   | Wait until the printout is finished.<br><br>Press and hold the Back button to cancel the printout |
| ▼×▼ Printing cancelled  | Message<br>The ongoing printing has been cancelled.   | No further action required.   |
| ▼✓▼ Printing complete   | Message<br>The ongoing printing has been completed.   | No further action required.   |
| >4 1/2h? Quarter left reminder  | Message<br>The driver has 15 minutes left until the legal maximum continuous driving time of 4½ hours will be exceeded. | Find a suitable place to take a break in the next 15 minutes.                                     |
| ?*6h reminder break   | Pre-warning<br>A reminder for a break according to the 6 h WTD rule.  |   |
| ?▶1h reminder daily rest  | Pre-warning<br>A reminder for the daily rest.   |   |
| !▶1h reminder weekly rest   | Pre-warning<br>A reminder for the weekly rest.  |   |
| ×Y Remote Detection fault   | Fault<br>Cannot communicate with the Remote Detection facility (DSRC)   | Visit a smart tachograph workshop to have the equipment checked.                                  |

| Display                   | Description  | Action   |
|---------------------------|--|--|
| !@AX Security violation   | Tampering with hardware has been detected  | Visit a smart tachograph workshop to have the equipment checked. |
| !@I Sensor auth. failure  | Fault<br>The tachograph does not detect the sensor. Related to the motion sensor.  | Visit a smart tachograph workshop to have the equipment checked. |
| !@IA Sensor auth. failure | Fault<br>The tachograph does not recognise the connected sensor as the one installed. Related to the motion sensor.<br><br>Fault<br>An unsuccessful authentication attempt of the motion sensor has been detected. Related to the motion sensor. | Visit a smart tachograph workshop to have the equipment checked. |
| !I=0 Sensor cable fault   | Warning<br>No pulses received from motion sensor, but encrypted data is received. Related to the motion sensor.  | Visit a smart tachograph workshop to have the equipment checked. |
| !I>0 Sensor cable fault   | Warning<br>Pulses received from motion sensor, but encrypted data missing or mismatch. Related to the motion sensor.   | Visit a smart tachograph workshop to have the equipment checked. |
| XIA Sensor comms error    | Fault<br>Motion sensor communication error. Related to the motion sensor.  | Visit a smart tachograph workshop to have the equipment checked. |

| Display                           | Description  | Action  |
|-----------------------------------|--|---|
| !⌚ Sensor data error              | Warning<br>Signal failure between motion sensor and tachograph. Related to the motion sensor.      | Visit a smart tachograph workshop to have the equipment checked.                |
| !⌚⌚/⌚ Sensor data integrity error | Fault<br>Internal motion sensor error, stored data integrity failure. Related to the motion sensor | Visit a smart tachograph workshop to have the equipment checked.                |
| ×⌚⌚ Sensor no acknowledge         | Fault<br>Motion sensor communication error. Related to the motion sensor.                          | Visit a smart tachograph workshop to have the equipment checked.                |
| ×⌚←⌚ Sensor no answer             | Fault<br>The motion sensor and tachograph do not communicate. Related to the motion sensor.        | Visit a smart tachograph workshop to have the equipment checked.                |
| !⌚⚡ Sensor no power signal        | Fault<br>Motion sensor has no power. Related to the motion sensor.                                 | Visit a smart tachograph workshop to have the equipment checked.                |
| ×⌚⌚⚡↑ Sensor power high           | Fault<br>Motion sensor power too high. Related to the motion sensor.                               | Visit a smart tachograph workshop to have the equipment checked.                |
| ×⌚⌚⚡↓ Sensor power low            | Fault<br>Motion sensor power too low. Related to the motion sensor.                                | Visit a smart tachograph workshop to have the equipment checked.                |
| ⌚→T? Service pre-warning          | Message<br>Next calibration, pre-warning.  | Visit a smart tachograph workshop to have the equipment checked.                |
| !⌚⌚ Time conflict GNSS versus UU  | Message<br>The internal clock and the GNSS clock differs more than 1 minute                        | Make sure the GNSS antenna is not covered or that the GNSS signal is distorted. |

| Display                          | Description   | Action   |
|----------------------------------|---|--|
| >4 1/2h Time for break           | Message<br>The legal maximum continuous driving time of 4½ hours has elapsed.             |  |
| !*6h time for break              | Warning<br>Take a break according to the 6 h WTD rule                                     | Minimum break 15 min   |
| !▶1h time for daily rest         | Warning<br>A warning for start of daily rest.   |  |
| !A→T<br>Time for service         | Message<br>The tachograph is out of calibration.  | Visit a smart tachograph workshop to have the equipment checked.   |
| !▶1hh time for weekly rest       | Warning<br>A warning for start of weekly rest.  |  |
| ■→ⓐ Timeout<br>no key pressed    | Message<br>The tachograph is waiting for input. Timeout 1 min or 20 min.                  | Press the appropriate buttons and complete the process. Timeout can be changed in Settings menu.                                     |
| xⓐ/ⓐZx Unable to open slot       | Message<br>The card tray concerned cannot be opened.<br>Related to the tachograph.        | Check that the ignition is on.<br><br>If the tray is still faulty - Visit a smart tachograph workshop to have the equipment checked. |
| !ⓐⓐⓐ Unauth.<br>change of sensor | Fault<br>The sensor has been changed since last pairing.<br>Related to the motion sensor. | Visit a smart tachograph workshop to have the equipment checked.   |
| !AZx Unauth. UO<br>opening       | Fault<br>The Tachograph unit case has been opened.<br>Related to the tachograph.          | Visit a smart tachograph workshop to have the equipment checked.   |

| Display                    | Description  | Action  |
|----------------------------|--|---|
| !A Vehicle Motion Conflict | Message<br>GNSS motion sensor and primary motions sensor data contradicts. Related to the motion sensor. | Visit a smart tachograph workshop to have the equipment checked.<br><br>Check second source sensor operation and primary sensor and its wiring. |
| !B 12/10 VU expiry         | Warning<br>The tachograph (VU) will expire at the displayed date.  | Visit a smart tachograph workshop to replace the tachograph   |
| xA VU internal fault       | Fault<br>The tachograph has detected an internal fault. Related to the tachograph.                       | Visit a smart tachograph workshop to have the equipment checked.  |
| ?@ weekly drive time       | Pre-warning<br>Maximum weekly driving time   |   |
| ?* weekly work time        | Pre-warning<br>Reaching the weekly working time according to the 60 h WTD rule.                          |   |
| ?@ 2-week drive time       | Pre-warning<br>Maximum 2-week driving time   |   |

## Printout Examples

On the following pages there are a number of printout examples that can be selected from the **PRINT** menu:

- Daily printout (card) **24h card** (including local time).
- Daily printout (VU) **24h vehicle** (including local time).
- Event and faults (card) **event card**.
- Event and faults (VU) **event vu**.
- Drive Time Info **drive time info**
- Technical data **technical data**.
- Overspeeding **overspeeding**.
- Vehicle speed **vehicle speed**.
- Engine speed (rpm) **engine speed**.
- Status D1/D2 **status D1/D2**.
- Manual Entry Sheet **man entry sheet**.

### Daily Printout (card)

This printout lists all activities stored on the driver card (or co-driver card) for the selected date (legal requirement). UTC time is used.

The display shows the following (on the second line):

#### 24h card

**Stoneridge**

1 25/04/2017 08:04 (UTC)

2 24h

3 Smith

4 Bob

5 S / 10007001130590 0 0

6 31/12/2018 - GEN 2

7 YV1AA8843M10123456

8 S / CAR321

9 Stoneridge Electronics

10 900588RA/37R01

11 GEN 2

12 Bil&lastvagnsservice

13 S / 0 0 0 1 2 1 2 0

14 23/12/2016

15 S / 0 0 9 2 4 5 3 9  
12/04/2017 08:23

16 18/04/2017 67

17 S / CAR321

18 26 007 km

19

|   |       |       |   |
|---|-------|-------|---|
| h | 00:00 | 07h32 |   |
| o | 06:30 | ----  | → |
| o | 06:31 | 00h06 |   |
| h | 06:37 | 00h55 |   |
| o | 07:32 | ----  | → |
| o | 07:32 | 04h01 |   |
| h | 11:33 | 00h45 |   |
| o | 12:28 | 00h32 |   |

21 26 305 km 38 km

1. Printout date and time
2. Type of printout (24h, card)
3. Card holder's surname
4. Card holder's first name
5. Type of card, Country, and Card Identification.
6. Card expiration date and generation
7. Vehicle identification, VIN
8. Registering member state and Vehicle Registration Number, VRN
9. Tachograph manufacturer
10. Tachograph part number
11. Tachograph generation number
12. Responsible workshop for last calibration
13. Workshop card number
14. Date of last calibration
15. Last control the inspected driver has been subjected to
16. Enquiry date and daily card presence counter
17. Tray where card was inserted
18. VRN, Vehicle Registration Number, for the vehicle where the driver card was inserted
19. Vehicle odometer at card insertion
20. Activities with driver card inserted, start and duration time
21. Card withdrawal: Vehicle odometer and distance travelled since last insertion for which odometer is known

### Daily Printout (card) continued

To make it easier to check the activities on the printout you can select local time instead of UTC. The printout contains in all other respect the same information.

**Note!**

The text **OUT OF REGULATION** indicates that this printout doesn't comply with any regulation.



|               |                          |
|---------------|--------------------------|
| 22            | ●▶10:29 S                |
| 23            | lon +018°01.0'           |
| 24            | lat +58°22.2'            |
| 25            | 07:29                    |
| 26            | 26 007 km                |
| 27            | ▶●12:41 S                |
| 28            | lon +018°01.0'           |
| 29            | lat +59°22.2'            |
| 30            | 17:43                    |
| 31            | 26 305 km                |
| 32            | ⊙10:32                   |
| 33            | lon +018°01.0'           |
| 34            | lat +59°22.2'            |
| 35            | 10:31                    |
| 36            | 26 223 km                |
| 37            | ⊙ 04h33 298 km           |
| 38            | * 00h00 ⊘ 00h00          |
| 39            | h 08h17 ? 00h00          |
| 40            | ⊙⊙ 00h00                 |
| -----!x□----- |                          |
| 41            | !⊠(02) 23/01/2017 12:34  |
|               | !11 00h02                |
| -----         |                          |
|               | >> (02) 27/02/2017 13:53 |
|               | !05 00h15                |
| -----         |                          |
|               | x⊠ (02) 01/03/2017 08:01 |
|               | !08 00h01                |
| -----!x□----- |                          |
| 42            | !⊠(02) 23/01/2017 12:34  |
|               | !11 ( 1 ) 00h02          |
| -----         |                          |
|               | ⊙⊠S /10007001130590 0 0  |
|               | Timeout 13243            |
| -----         |                          |
| 43            | ■● .....                 |
| 44            | □ .....                  |
| 45            | ○ .....                  |

- 22. Time and location at the start of daily period
- 23. Longitude at the start of daily period
- 24. Latitude at the start of daily period
- 25. Time of latest position from GNSS
- 26. Odometer at the start of daily period
- 27. Time and location at the end of daily period
- 28. Longitude at the end of daily period
- 29. Latitude at the end of daily period
- 30. Time of latest position from GNSS
- 31. Odometer at the end of daily period
- 32. Time after 3 hours of accumulated driving
- 33. Longitude after 3 hours of accumulated driving
- 34. Latitude after 3 hours of accumulated driving
- 35. Time of latest position from GNSS
- 36. Odometer after 3 hours of accumulated driving
- 37. Total driving duration and distance
- 38. Total duration of **work** and **available**
- 39. Total duration of **rest** and **unknown**
- 40. Total duration of crew activities
- 41. Events and faults from the driver card
- 42. Events and faults from the VU, vehicle unit
- 43. Control place
- 44. Controller's signature
- 45. Driver's signature

### Daily Printout (VU) (1/3)

M=Manual entries of driver activities.

This printout lists all activities stored in the tachograph (VU) for the selected date (legal requirement). UTC time is used. The printout is dependent of the following:

- If no card is inserted, select either the current day or any of the eight previous calendar days.
- When a card is inserted, select any day stored in the tachograph, out of a maximum of typically the recent 28 days. If no data is available for the selected date, the printout will not be initiated.

The display shows the following (on the second line):

#### 24h vehicle

The diagram shows a tachograph printout with the Stoneridge logo at the top. The printout is divided into sections by dashed lines. Numbered callouts (1-14) point to the following fields:

- 1: 18/04/2017 08:08 (UTC)
- 2: 24h
- 3: Smith
- 4: Bob
- 5: S /10007001130590 0 0
- 6: 31/12/2018 - GEN 2
- 7: 05/02/2018
- 8: 102 075 - 102 809 km
- 9: 102 075 km
- 10: Smith
- 11: Bob
- 12: S /10007001130590 0 0
- 13: 31/12/2018 - GEN 2
- 14: S / CAR321

The printout also includes a section for driver activities with the following data:

|   |       |       |
|---|-------|-------|
| h | 00:00 | 07h32 |
| o | 07:30 | 03h10 |
| h | 10:40 | 00h46 |
| x | 11:26 | 00h10 |
| o | 11:36 | 03h12 |
| h | 14:48 | 00h55 |
| o | 15:43 | 02h00 |

At the bottom, the total distances are shown: 102 809 km and 734 km.

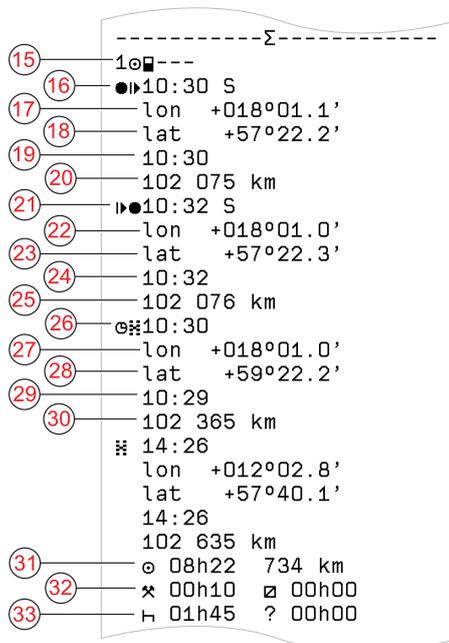
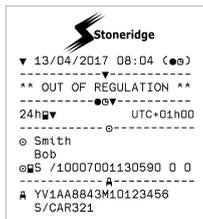
1. Printout date and time
2. Type of printout (24h, VU)
3. Card holder's surname
4. Card holder's first name
5. Card and country identification number
6. Card expiration date and generation
7. Activities stored in the VU per slot in chronological order
8. Enquiry date
9. Vehicle odometer at 00:00 and 24:00
10. Driver (slot 1)
11. Registration member state and vehicle registration number of previous vehicle used
12. Date and time of card withdrawal from previous vehicle
13. Vehicle odometer at card insertion
14. Activities with start and duration time

## Daily Printout (VU) (2/3)

To make it easier to check the activities on the printout you can select local time instead of UTC. The printout contains in all other respect the same information.

### Note!

The text OUT OF REGULATION indicates that this printout doesn't comply with any regulation.



15. Periods without card in driver slot
16. Time and location at the start of daily period
17. Longitude at the start of daily period
18. Latitude at the start of daily period
19. Time of latest position from GNSS
20. Odometer on start of daily period
21. Time and location at the end of daily period
22. Longitude at the end of daily period
23. Latitude at the end of daily period
24. Time of latest position from GNSS
25. Odometer on end of daily period
26. Time after 3 hours of accumulated driving
27. Longitude after 3 hours of accumulated driving
28. Latitude after 3 hours of accumulated driving
29. Time of latest position from GNSS
30. Odometer after 3 hours of accumulated driving
31. Total driving duration and distance
32. Total duration of **work** and **available**
33. Total duration of **rest** and **unknown**

### Daily Printout (VU) (3/3)

34. Record identifier (VU daily summary per driver)

35. Driver surname

36. Driver's first name(s)

37. Driver's card identification

38. Time and location at the start of daily period

39. Longitude at the start of daily period

40. Latitude at the start of daily period

41. Time of latest position from GNSS

42. Odometer on start of daily period

43. Time and location at the end of daily period

44. Longitude at the end of daily period

45. Latitude at the end of daily period

46. Time of latest position from GNSS

47. Odometer on end of daily period

48. Time after 3 hours of accumulated driving

49. Longitude after 3 hours of accumulated driving

50. Latitude after 3 hours of accumulated driving

51. Time of latest position from GNSS

52. Odometer after 3 hours of accumulated driving

53. Total driving duration and distance

54. Total duration of **work** and **available**

55. Total duration of **rest** and **unknown**

56. Total duration of crew activities

57. Events and faults

58. Type, purpose, and start time of event

59. Additional code, repetitions that day, duration

60. Card identification

- 61. Control place
- 62. Controller signature
- 63. From time
- 64. To time
- 65. Driver signature

## Events and Faults (card)

This printout lists all warnings and faults stored on the card (legal requirement). UTC time is used.

The display shows the following (on the second line):

**event card**

```

Stoneridge
1 18/04/2017 08:11 (UTC)
2 !x
3 Card file generation 2
4 Smith
5 Bob
6 S /10007001130590 0 0
7 31/12/2018 - GEN 2
8 YV1AA8843M10123456
9 S/CAR321
10 ! (00) 28/01/2018 08:53
!00 00h00
S /CAR321
!+ (00) 29/01/2018 10:03
!00 00h32
S /CAR321
11 x1 (00) 01/02/2018 09:00
X00 00h00
S /CAR321
12 .
13 .
14 .
    
```

1. Date and time
2. Type of printout (event and faults, card)
3. Card file system (generation 1 or 2)
4. Card holder's surname
5. Card holder's first name
6. Card and country identification number
7. Card expiration date and generation
8. Vehicle identification number VIN
9. Registering member state and Vehicle Registration Number, VRN
10. List of all events stored on the card
11. List of all faults stored on the card
12. Control place
13. Controller's signature
14. Driver's signature

## Events and Faults (VU)

This printout lists all warnings and faults stored in the tachograph or vehicle unit (legal requirement). UTC time is used.

The display shows the following (on the second line):

`event vehicle`

Stoneridge

1. 06/02/2018 17:49 (UTC)

2. !xA

3. Smith  
Bob

4. S /10007001130590 0 0

5. 31/12/2018 - GEN 2

6. YV1AA8843M10123456

7. S/CAR321

8. !0(00) 28/01/2018 08:30

9. !04 ( 1) 00h23

10. !0(00) 28/01/2018 08:53  
!05 ( 1) 00h00  
S /10007001130590 0 0

!+(00) 29/01/2018 10:03  
!09 ( 2) 00h32

>>(00) 30/01/2018 10:23  
!07 ( 1) 00h13  
S /10007001130590 0 0

>>(00) 05/02/2018 11:08  
!07 ( 1) 00h20  
S /10007001130590 0 0

11. x1(00) 01/02/2018 09:00

12. x40 ( 1) 00h00

13. S /10007001130590 0 0

14. ■

15. □

16. ○

1. Date and time of the printout
2. Type of printout (events and faults, VU)
3. Card holder
4. Card identification
5. Card expiration date and generation
6. Vehicle Identification Number (VIN)
7. Registering member state and Vehicle Registration Number, VRN
8. Type, purpose, and start time of event
9. Additional code, number of similar events, and duration of event
10. Card identification
11. Type, purpose, and start time of fault
12. Additional code, number of similar faults, and duration of fault
13. Card identification
14. Control place
15. Controller signature
16. Driver signature

## Drive Time Info

This printout lists drive time information.

The display shows the following (on the second line):

`drive time info`

### Note!

Nos. 16 through 20: These summary lines are only printed if there are any warnings present.

### Note!

No. 8: The question mark after the value indicates that UNKNOWN periods have been assimilated to BREAK/REST.

The screenshot shows a driver's tachograph printout with the following data fields and callouts:

- 1: Date and time: 13/12/2018 11:20
- 2: Time zone: (UTC+01:00)
- 3: Card holder surname and first name: Andersson Richard
- 4: Card holder ID: S /10007001130590 0 0
- 5: Card expiry date and card generation: 05/06/2023 - GEN 2
- 6: Driver's time summary: 12/2/2011 19:24 [?]
- 7: End of the last daily/weekly rest period: 02h51
- 8: Driver's continuous driving time: 00h13
- 9: Driver's accumulated break time: 10h29 (>9h: 2)
- 10: Daily driving time, in parenthesis - the number of times when the driving time has exceeded 9 hours during the current week: 12h24
- 11: Time left before the driver must start the daily/weekly rest period: 0h
- 12: Driver's time summary: 31/12/2012
- 13: Driver's accumulated break time: 12/04/2011
- 14: Daily driving time, in parenthesis - the number of times when the driving time has exceeded 9 hours during the current week: 12/04/2011
- 15: Time left before the driver must start the daily/weekly rest period: 12/12/2011
- 16: Weekly driving time: 12/12/2011
- 17: Two weeks driving time: 12/12/2011
- 18: Driver card summary: 12/12/2011
- 19: Driver card expiry date: 12/12/2011
- 20: Date of the next mandatory driver card download: 12/12/2011

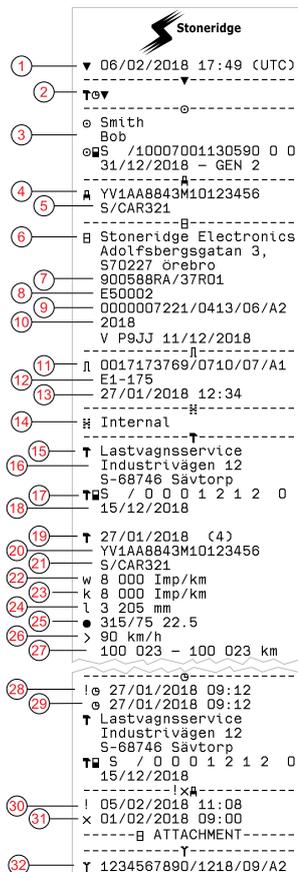
1. Date and time.
2. Shows the time difference between UTC and local time.
3. Type of printout (driver's time summary).
4. Card holder surname and first name
5. Card holder ID.
6. Card expiry date and card generation.
7. Driver's time summary
8. End of the last daily/weekly rest period.
9. Driver's continuous driving time.
10. Driver's accumulated break time.
11. Daily driving time, in parenthesis - the number of times when the driving time has exceeded 9 hours during the current week.
12. Time left before the driver must start the daily/weekly rest period.
13. Weekly driving time.
14. Two weeks driving time.
15. Driver card summary.
16. Driver card expiry date.
17. Date of the next mandatory driver card download.
18. Vehicle unit (tachograph) related times summary.
19. Date of the next mandatory VU download.
20. Date of the next mandatory VU calibration.

## Technical Data

This printout list data as speed settings, tyre size, calibration data and time of adjustments.

The display shows the following (on the second line):

### technical data



1. Date and time
2. Type of printout (technical data)
3. Cardholder ID
4. Vehicle Identification Number (VIN)
5. Registering member state and Vehicle Registration Number, VRN
6. Tachograph manufacturer
7. Tachograph part number
8. Tachograph approval number
9. Tachograph serial number, type of equipment and code of manufacturer
10. Year of manufacture and software version and installation date
11. Motion sensor serial number
12. Motion sensor approval number
13. Date and time of motion sensor pairing (The last 20 pairings will be stored)
14. GNSS coupling data
15. Workshop performing the last calibration
16. Workshop address
17. Workshop card identification
18. Workshop card expiry date
19. Calibration date and purpose
20. VIN
21. VRN and country of registration
22. Characteristic coefficient of vehicle
23. Constant of the recording equipment

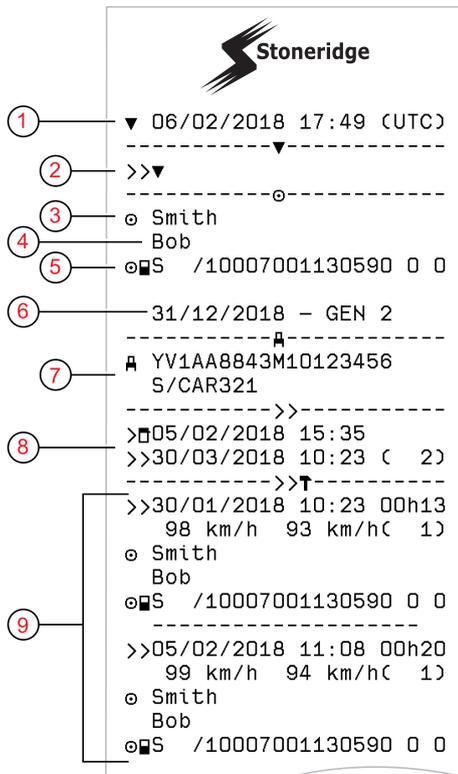
24. Effective circumference of wheel tyres
25. Vehicle tyre size
26. Speed limiting device setting
27. Old and new odometer values
28. Old date and time (Before time adjustment)
29. New date and time (After time adjustment)
30. Most recent event date and time
31. Most recent fault date and time
32. DSRC serial number

## Overspeeding

This printout lists overspeeding events together with duration and the name of the driver.

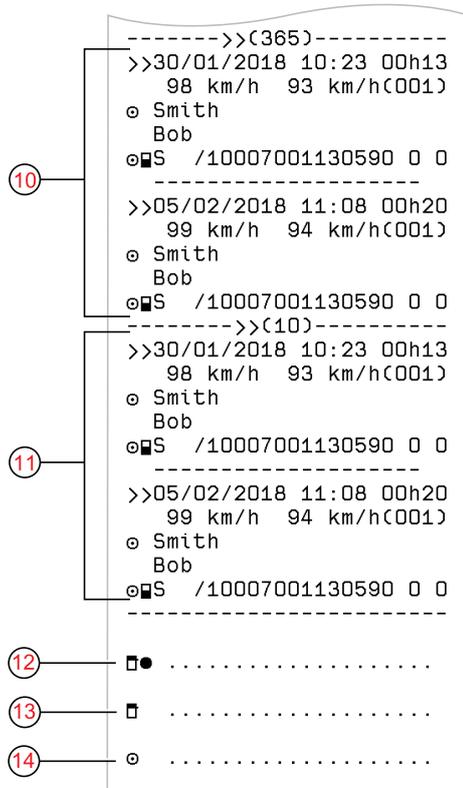
The display shows the following (on the second line):

### overspeeding



1. Date and time.
2. Type of printout. (overspeeding). Speed limiting device setting.
3. Card holder's surname.
4. Card holder's first name.
5. Card and country identification number.
6. Expiry date of the driver card.
7. Vehicle identification. VIN, registering member state and VRN.
8. Date and time of the last overspeeding control.
9. Date and time of first overspeeding and number of over speeding events since the last over speeding control.  
First overspeeding after the last calibration.  
Date time and duration. Max and average speed.  
Driver and drivers card identification.

Overspeeding continued



- 10. Five most serious overspeeding over the last 365 days. Date time and duration. Max and average speed. Driver and drivers card identification.
- 11. Most serious overspeeding events over the last ten days. Date time and duration. Max and average speed. Driver and drivers card identification.
- 12. Control place.
- 13. Controller's signature.
- 14. Driver's signature.

## Vehicle Speed

This printout lists the vehicle speed organized chronologically in speed bands (km/h) for each driver.

The display shows the following (on the second line):

**vehicle speed**

**Stoneridge**

```

1  ▼ 06/02/2018 07:26 UTC)
2  -----
3  KM/H▼
4  -----
5  ◉ Smith
6  ◉ Bob
7  ◉ S /10007001130590 0 0
8  ◉ 31/12/2018 - GEN 2
9  -----
10 ◉ YV1AA8843M10123456
11 ◉ S/CAR321
12 -----
13 ◉ 06/02/2018
14 -----
15 ◉ Smith
16 ◉ Bob
17 ◉ S /10007001130590 0 0
18 ◉ → 06/02/2018 07:25
19 ◉ → 06/02/2018 17:49
20 -----
21 KM/H
22 -----
23 0 <= v < 10 02h30
24 10 <= v < 20 00h02
25 20 <= v < 30 00h03
26 30 <= v < 40 00h25
27 40 <= v < 50 00h32
28 50 <= v < 60 00h35
29 60 <= v < 70 00h33
30 70 <= v < 75 00h30
31 75 <= v < 80 01h53
32 80 <= v < 85 01h15
33 85 <= v < 90 00h04
34 -----
35 ◉ .....

```

1. Date and time
2. Type of printout. (vehicle speed)
3. Card holder's surname
4. Card holder's first name
5. Card and country identification number
6. Expiration date and generation of the driver card
7. Vehicle identification. VIN, registering member state and VRN
8. Date of printout
9. Information about previous driver (In chronological order)
10. Previous drivers start date and time
11. Previous drivers end date and time
12. Speed band and duration time
13. Driver's signature

### Engine Speed (rpm)

This printout lists the vehicles engine speed in bands of rpm in chronological order for each driver.

The display shows the following (on the second line):

**engine speed**

```

Stoneridge
-----
1 06/02/2018 07:26 UTC
-----
2 RPM
-----
3 Smith
4 Bob
5 S /10007001130590 0 0
6 31/12/2018 - GEN 2
-----
7 YV1AA8843M10123456
  S/CAR321
-----
8 06/02/2018
-----
9 Smith
  Bob
10 S /10007001130590 0 0
11 06/02/2018 07:25
    06/02/2018 17:49
-----
12 RPM
    0 <= v < 250 02h30
    250 <= v < 500 00h02
    500 <= v < 750 00h03
    750 <= v < 1000 00h25
    1 000 <= v < 1250 00h32
    1 250 <= v < 1500 00h35
    1 500 <= v < 1750 01h03
    1 750 <= v < 2000 01h53
    2 000 <= v < 2250 01h19
-----
13

```

1. Date and time
2. Type of printout. (engine speed)
3. Card holder's surname
4. Card holder's first name
5. Card and country identification number
6. Expiration date and generation of the driver card
7. Vehicle identification. VIN, registering membership state and VRN
8. Date of printout
9. Information about previous driver (In chronological order)
10. Previous drivers start date and time
11. Previous drivers end date and time
12. Speed band of engine and duration time
13. Driver's signature

## Status D1/D2

This printout lists the changes of status of the rear connectors (D1 and D2). The output of the rear connectors are company specific.

The display shows the following (on the second line):

**status D1/D2**

```

Stoneridge
1  ▼ 06/02/2018 07:25 UTC)
2  -----STATUS 1/2▼-----
3  ○ Smith
4  Bob
5  ○ S /10007001130590 0 0
6  31/12/2018 - GEN 2
7  A YV1AA8843M10123456
   S/CAR321
8  -----
   06/02/2018
   -----STATUS 1/2-----
9  STATUS D1 D2 TIME
   0 0 07:31:20
   1 0 08:25:12
   1 1 08:25:18
   0 1 10:25:23
   0 0 10:40:00
10 ○ .....

```

1. Date and time
2. Type of printout. (Status D1/D2)
3. Card holder's surname
4. Card holder's first name
5. Card and country identification number
6. Expiry date of the driver card
7. Vehicle identification. VIN, registering member state and VRN
8. Selected date of printout
9. Changes of status for the connectors and timestamp
10. Driver's signature

## Manual Entry Sheet

This is a printout sheet for hand writing of data.

The display shows the following (on the second line):

**man entry sheet**

**Stoneridge**

① ▼ 06/02/2018 07:25 (●●)

② Me▼ UTC+01h00

③ ⓪ Smith  
Bob

④ Ⓜ YV1AA8843M10123456  
S/CAR321

⑤ Ⓜ→ 05/02/2018 17:02

⑥

|   |   |   |   |       |
|---|---|---|---|-------|
| ⓪ | H | X | □ | ..... |
| ⓪ | H | X | □ | ..... |
| ⓪ | H | X | □ | ..... |
| ⓪ | H | X | □ | ..... |
| ⓪ | H | X | □ | ..... |
| ⓪ | H | X | □ | ..... |

⑦ →ⓂⓂ 06/02/2017 07:30

⑧ ⓪ .....

1. Date and time (local time)
2. Type of printout (Manual Entries)
3. Card holder's name and identification number
4. Vehicle identification. VIN, registering member state and VRN
5. Card withdrawal time
6. Manual entries with duration time
7. Card insertion time
8. Driver's signature

## Data and Specifications

### DDS Calculations and Limits

DDS does a *best effort* calculation to support drivers and fleets in their compliance with Regulation (EC) 561/2006. Stoneridge shall not be held responsible for any defects or shortcomings in this function.

DDS generally takes the following into account in its internal calculations:

- Activity data on driver card.
- General requirements in Regulation (EC) 561/2006 on drive time, breaks, rests and calendar weeks.
- Requirements in the Working Time Directive 2002/15/EC.
- Includes calculation of Ferry/Train travelling time.
- Time of the VU internal clock, in the UTC time zone.

The data presented by DDS may in some cases differ from what regulation states or how it may be interpreted by some

control officers, especially in (but not limited to) some special cases:

- Periods of driving mixed between analogue and smart tachographs, with new driver cards or without driver cards, in which case relevant data may be missing on the driver card.
- Extremely frequent activity changes.
- Malfunctioning driver card.
- Some uses of Out of Scope special conditions.
- Driving in non-EU AETR countries.
- International coach bus transports where the 12 day derogation applies.
- Other exceptions where Regulation (EC) 561/2006 does not apply.
- Use of compensatory weekly rest.
- Certain combinations of reduced and regular weekly rests starting and ending in separate calendar weeks.
- Optional use of AVAILABILITY activity for breaks.

- Large deviations in time adjustment between vehicle units where the driver card has been inserted.
- Multi-manning when drivers have started their daily working periods at separate times.

### DDS in Details

This table reflects what the DDS covers and not covers.

| Type   | Support<br>YES/NO |
|--|-------------------|
| Daily driving time 4.5 + 4.5h                                | YES               |
| Extended driving time 10h                                    | YES               |
| Number of extended driving times during a 2-week period      | YES               |
| Daily break 45 min   | YES               |
| Divided break 15-30 min                                      | YES               |
| Daily rest 11h   | YES               |
| Reduced daily rest 9h  | YES               |
| Split daily rest 3+9h  | YES               |
| Number of reduced daily rests since last weekly rest (max 3) | YES               |
| Max interval between daily rests (24h if single driver)      | YES               |

|  |     |
|--|-----|
| Weekly driving time 56h  | YES |
| 2-week driving time 90h  | YES |
| Weekly rest 45h  | YES |
| Reduced weekly rest 24h  | YES |
| Max interval (144h since end)  | YES |
| Assigning to one week  | YES |
| Multi-manning  | YES |
| Regular/reduced rests in two week period (1+1)                                       | YES |
| 12 days derogation rule for international bus transports.                            | NO  |
| Compensatory weekly rest.  | NO  |
| Working time directive.  | YES |
| Interruptions of daily rest for ferry/train, e.g. driving on or off a ferry or train | YES |
| AETR specific rules  | NO  |

**Note!**

All calculations are based on fixed weeks in UTC time and not on local time weeks.

**Certification and Approval**

The tachograph is approved for use in the European Union and certified to Common Criteria level EAL4+ in accordance with EU legislation.

**Avoid High Voltage**

Interrupt the power supply to the tachograph if you expect that the vehicle will require several jump-starting attempts.

For more information on how to interrupt the tachograph power, see the vehicle’s operating manual.

It might be necessary to re-calibrate the tachograph if the power is interrupted.

**Note!**

High voltage may lead to permanent tachograph damage and to failure of the tachograph’s electronic components. Damage to the tachograph caused in this way invalidates the warranty.

**Data stored in the Tachograph**

The tachograph records and stores various data:

- Driver card data, except from driving license data.
- Warnings and malfunctions related to the tachograph and the driver, company and workshop cards.
- Vehicle information, odometer data and detailed speed for 24 hours.
- Tampering with the tachograph.
- Vehicle speed is stored continuously.
- Tachograph generation.

**Note!**

Over speeding for more than one minute will be stored in the tachograph.

*Insertion and Withdrawal Data*

Data stored for each driver card:

- Card holder’s surname and first name.

- Driver card number, card issuing member state and the card expiry date.
- Date and time at driver card insertion and withdrawal.
- Vehicle odometer value at driver card insertion and withdrawal time.
- The vehicle registration number and registering member state of the vehicle.
- Vehicle position
- Card withdrawal time for the last vehicle in which the driver card was inserted.
- In which tray the driver card is inserted.
- Indication if manual entries of activities have been made.
- Driver's tachograph language choice.

### *Driver Activity Data*

Data stored for each day and change of driving activity:

- Driving status: single or part of a crew.

- Card tray used in the tachograph.
- Card inserted or not inserted at the time of change of activity.
- Driver activity.
- Date and time of activity change.

### *Other Data*

Other data stored in the tachograph:

- Detailed vehicle speed.
- Vehicle overspeeding for at least 1 minute.
- Company and workshop events
- Vehicle position at every three hours of accumulated driving

### *Data stored on the Card*

The driver card is unique for each driver and therefore it identifies the card holder. In addition the card stores various data:

- Driving time, activities and distance.
- Drivers license information.
- Some warnings and malfunctions.

- Vehicle Registration Number (VRN) for vehicles used by the card holder.
- Controls performed by authorities.

Data is stored automatically on the card, when so is needed. In a co-driver operation, data for both driver and co-driver are stored on the cards respectively. The tachograph supports both generation 1 and generation 2 cards.

### **Note!**

Normally the driver card can store data for at least 28 days. After this time, the oldest data is over written when new data is stored.

### *Insertion and Withdrawal Data*

Data stored for each day and vehicle:

- Date and time for the first driver card insertion and last withdrawal.
- Vehicle odometer value at first driver card insertion and last withdrawal.

- The vehicle registration number and registering member state of the vehicle.
- Vehicle position

### *Driver Activity Data*

Data stored for each day and change of driving activity:

- Date and daily presence counter.
- The total distance travelled by the driver card holder.
- The driving status at every midnight or at card insertion, single driver or part of a crew.
- A record of each driving activity change.
- Driving status: driver or co-driver.
- Card tray used in the tachograph.
- Card inserted or not inserted at the time of change of activity.
- Driver activity.
- Date and time of activity change.
- Vehicle position at every three hour of accumulated driving

### **Electromagnetical Compability**

The tachograph fulfils the requirements of UNECE regulation number 10, revision 05, in respect of electromagnetic compatibility.

### **Tachograph Version**

Smart Tachograph SE5000-8.

Type approval number: e5 0002

### **Operating Temperature**

–25°C to +70°C

Hazardous goods version in accordance with ADR: –25°C to +65°C.

## ATEX Tachograph

### Hazardous Goods Vehicles

The ATEX version of the tachograph is approved for use in hazardous goods vehicles. It differs from the standard tachograph as it has explosion protection and is certified in accordance with EU Directive 2014/34/EU.

#### Note!

The ATEX tachograph explosion protection is only guaranteed when the ignition is off and the battery isolating switch is open.

### The ATEX Tachograph

For the ATEX Tachograph some functions are disabled immediately when the ignition is switched off:

- Card trays cannot be ejected.
- Printouts are not possible.
- Background illumination for buttons and display is switched off.

#### Note!

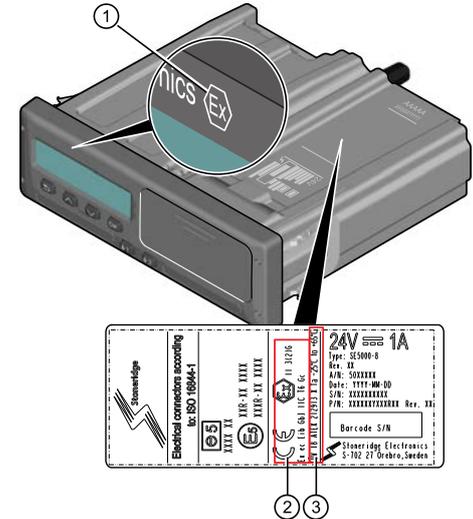
The ATEX Tachograph will enter the power saving mode immediately after the ignition is switched off.

To have the ATEX Tachograph fully operational, the ignition key must be in position key-on or ignition on, depending on your vehicle manufacturer.

#### Visible Differences

The following visible differences between a standard Tachograph and an ATEX Tachograph:

1. **Ex** symbol on the Tachograph front
2. ADR classification
3. TÜV test certificate number





---

## **Contact Stoneridge**

Further information about Stoneridge  
SE5000-8 Smart Tachograph and  
Stoneridge Electronics Ltd. can be found  
at: [www.stoneridgeelectronics.com](http://www.stoneridgeelectronics.com)

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