



Knowledge Article

Incorrectly issued card numbers creating
authentication problems with the Smart tachograph

August 2019

Version 1



Titel/Title: KNOWLEDGE ARTICLE ON CARD HANDLING ON SMART TACHOGRAPH				Sida/Page: 1(5)
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1. INTRODUCTION

With the introduction of the Smart tachograph the card number structure used in some Member States and new requirements in the Smart tachograph has caused some implications for the fleets and workshops in the EU.

Stoneridge has compiled a Knowledge Article (KA) to describe the problems in the market and propose solutions how the fleets and workshops should act to overcome the problems that they face. It also highlights areas of considerations to the Member States when changing the card number on the cards in the digital tachograph system.

This Knowledge article addresses the issues that arise when;

- A fleet is performing a company lock
- A fleet is downloading data
- A fleet is using several company cards
- Service providers and fleets use Remote download and company cards for authentication
- Workshops perform calibration and services using multiple workshop cards

Note that this Knowledge Article is based on cards being issued with incorrect incrementation of the 15th character “card replacement index”, and not the 14th character “card consecutive index” which should be used when issuing more than one card to a company.

These issues will affect all type approved Smart tachographs independent of brand.

Cards issued with the correct incrementation of the 14th character is not in scope of this KA.

2. DEFINITIONS

1B Card	Generation 1 Digital Tachograph Card
1C Card	Generation 2 Digital Tachograph Card
1C Tachograph	Generation 2 Digital Tachograph
Smart Tachograph	Generation 2 Digital Tachograph



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3. THE NEW CARD FUNCTION OF THE SMART TACHOGRAPH

Text below taken from in COMMISSION IMPLEMENTING REGULATION (EU) 2016/799 outlining the requirements on the Smart tachograph.

3.1 Monitoring cards insertion and withdrawal

(16) Upon card insertion the recording equipment shall detect whether the card inserted is a valid tachograph card and in such a case identify the card type and the card generation.

If a card with the same card number and a higher renewal index has already been inserted in the recording equipment, the card shall be declared as non-valid.

If a card with the same card number and renewal index but with a higher replacement index has already been inserted in the recording equipment, the card shall be declared as non-valid.

The last point is extremely important in our scenarios.

With regards to the card numbers, please see the extract for the **Definitions section in Annex 1C**:

(g) 'card number' means: a 16-alphanumeric character number that uniquely identifies a tachograph card within a Member State. The card number includes a card consecutive index (if applicable), a card replacement index and a card renewal index; a card is therefore uniquely identified by the code of the issuing Member State and the card number;

(h) 'card consecutive index' means: the 14th alphanumeric character of a card number that is used to differentiate the different cards issued to a company, a workshop or a control authority entitled to be issued several tachograph cards. The company, the workshop or the control authority is uniquely identified by the 13 first characters of the card number;

(i) 'card renewal index' means: the 16th alphanumeric character of a card number which is incremented each time a tachograph card is renewed;

(j) 'card replacement index' means: the 15th alpha-numerical character of a card number which is incremented each time a tachograph card is replaced

In the scenario whereby a company card is used with B000001100000050 then if the 16th digit is the same then the 15th digit needs to be the same or higher, anything lower would be rejected, e.g. B000001100000010 however B000001100000011 would be accepted due to the 16th digit being higher.

Please note that once the 16th digit is higher any cards (with the same first 14 digits) with a lower 16th digit would then be rejected by the Smart tachograph.

The Smart tachograph will always verify the card number upon insertion and remote download, and this is valid for all the cases in this document.

4. APPLICABLE SCENARIOS AND CONSEQUENCES

4.1. Summary table

The table shows the Smart tachograph acceptance of cards when Consecutive, Replacement, Renewal and Card number are changed. The scenarios and consequences are separated into cases and are described later in this document.

Case	Same Tachograph								Reason	Index to Note
	First Card Used				Second Card Used					
	13 first characters	14th character	15th character	16th character	13 first characters	14th character	15th character	16th character	Second card Accepted / Rejected	
1	B000001100000	0	2	0	B000001100000	0	1	0	Rejected	15th character is lower
2	B000001100000	0	1	0	B000001100000	0	1	1	Accepted	16th character is higher
3	B000001100000	0	2	0	B000000100000	0	1	0	Accepted	Different 13 characters (different company/workshop card number)
4	B000001100000	0	5	0	B000001100000	0	5	0	Accepted	No difference in full card number
5	B000001100000	0	5	0	B000001100000	0	6	0	Accepted	15th character is higher
6	B000001100000	0	2	0	B000001100000	1	1	0	Accepted	14th character differs
7	B000001100000	0	1	1	B000001100000	0	1	0	Rejected	16th character is lower

4.2. Case 1

The second card will be correctly declared Non-Valid as the replacement index is lower than the previous card.

Consequence; Any card* with lower replacement index than the first card* used, and the renewal index is the same/lower, will be declared as Non-Valid.

4.3. Case 2

The second card will be correctly accepted as the renewal index is higher than the previous card.

Consequence; First card used will no longer be accepted by the tachograph and declared Non-Valid card upon insertion.

4.4. Case 3

The second card will be correctly accepted as the 13 first characters in card number is different to previous card. The 14th to 16th characters are not relevant in this case.

Company

Consequence; will at card insertion;

1. Any Lock in to the new company will lock out the previous company card and subsequently any new activity data will be locked to the new company and the old data will not be possible to download with this new card or,
2. If a download is initiated, manually or remotely, the company will not retrieve any activity data locked to the previous company card as only unlocked data will be downloaded

Workshop

Consequence; Card is classified as a new workshop card therefore the card will be accepted.



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4.5. Case 4

No consequence as all 16 characters are the same.

4.6. Case 5

The second card will be correctly accepted as the replacement index is higher than the previous card.

Consequence; First card used will no longer be accepted by the tachograph and declared Non-Valid card upon insertion.

4.7. Case 6

The second card will be correctly accepted as the card consecutive index is different than the previous card.

Consequence; Both cards will continue to be accepted by the tachograph as the 14th character is different.

4.8. Case 7

The second card will be correctly declared Non-Valid as the renewal index is lower than the previous card.

Consequence; Any card* with lower renewal index than the first card* used will be declared as Non-Valid.

****providing the first 14 characters match***



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6. REFERENCE DOCUMENTS

[1]

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7. APPENDIX

No Appendix

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