

Chapter 14 List of the events/malfunctions and measures for trouble-shooting

Abbreviations and explanations:

SrvID	Service ID (EFAS service code)
EFT	Event fault type, error code in accordance with EU Regulation (EC) No. 1360/2002
DTC	Diagnostic trouble code (standardized automotive error code)
dec	Decimal (base 10 numeral system)
hex	Hexadecimal numeral system with a base of 16 (using characters 0 to 9 and A to F)

14.1 EFT summary table

The following table provides an overview of the types of error code specified for digital tachographs in accordance with EU Regulation (EC) No. Set 1360/2002.

The error code types appear on the printouts and in the downloaded data in hexadecimal (hex) format.

Table 22 — EFTs and corresponding SrvIDs

EFT (hex)	Meaning	SrvIDs
0x0x	General events	
0x00	No further details	¹³
0x01	Invalid card inserted	S7, S8, S117, S118
0x02	Smart-card conflict	S69
0x03	Time overlap	S9, S10
0x04	Driving without suitable smart-card	S67
0x05	Card inserted while driving	S11, S12
0x06	Last use of smart-card not fully completed	S13, S14
0x07	Speed infringement	S70
0x08	Power supply outage	S3, S6
0x09	Sensor data errors	S22, S23, S24, S25, S101
0x0A	Vehicle motion data conflict (IMS)	S83
0x1x	Security breach of the vehicle unit	
0x10	No further details	¹³
0x11	Authentication failure of the speed sensor	S28, S84
0x12	Failure to authenticate the tachograph card	S19, S20
0x13	Unauthorized replacement of the speed sensor	S29
0x14	Integrity error in the card data	S15, S16, S90, S91
0x15	Integrity error in the stored user data	S36, S71, S82, S106
0x16	Internal error during data transfer	S72
0x17	Unauthorized opening of the tachograph housing	S73
0x18	Hardware sabotage	S17, S18, S30, S68
0x2x	Security breach of the sensor	
0x20	No further details	S85
0x21	Authentication error	S27
0x22	Integrity error in the stored data	S26
0x23	Internal data transfer error	S75
0x24	Unauthorized opening of the housing	S76
0x25	Hardware sabotage	S77
0x3x	Vehicle unit error	
0x30	No further details	
0x31	Vehicle unit internal error	S35, S41, S42, S43, , S48, S81, S87, S92, S94, S95, S96, S97, S98, S99, S103, S105, S108, S110, S111, S112, S113, S114, S119
0x32	Printer error	S38
0x33	Display error	S44
0x34	Download error	S74
0x35	Sensor error	S45, S31

¹³ EFTs without proper SrvID are not supported by EFAS

EFT (hex)	Meaning	SrvIDs
0x4x	Card error	
0x40	No further details	S39, S40
0x8x	Vendor-specific events	
0x80	Software update	S107
0x81	Authorized opening of the tachograph housing	S66
0x82	Temperature exceeded	S80
0x9x	Vendor-specific faults	
0x90	Independent motion sensor fault	S116

14.2 Overview of Service IDs

The following table lists all events and faults with their meaning in a running order of the service ID code. In the column “Description and trouble-shooting” you will find tips on the causes of events and malfunctions, as well as information regarding how EFAS detects these events and malfunctions.

The measures provide you with clues on how to isolate the cause of the fault, and they indicate the options available for trouble-shooting in the workshop. However, completeness of the causes and measures listed cannot be assured owing to the variety of vehicle models and components of the tachograph system.

Table 23 — Overview of the events/malfunctions and measures for trouble-shooting

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S1 ¹⁴	--	80 00 002007	---	Meaning / Cause: The supply voltage of the motion sensor exceeds the maximum permissible value of 9V The tachograph checks this voltage cyclically several times per second. Measures: Measure the supply voltage of the motion sensor at the pins B1 and B2.
S2 ¹⁴	--	80 00 002003	---	Meaning / Cause: The supply voltage of the motion sensor is below the minimum permissible value of 6.5V The tachograph checks this voltage cyclically several times per second. Measures: Measure the supply voltage of the motion sensor at the pins B1 and B2.
S3 ¹⁴	08	80 00 002004	!≠ Interruption of power supply	Meaning / Cause: An interruption of the supply voltage of the motion sensor longer than 200 ms has been detected and reported by the motion sensor. Measures: <ul style="list-style-type: none"> • Measure the supply voltage of the motion sensor at the pins B1 and B2. The value must be between 6.5V and 9V. • Check the corresponding plug connector (B-connector of the digital tachograph and connector on the motion sensor). • Check the contacts and wires for damaged spots and contact problems.
S4 ¹⁴	--	80 00 000007	---	Meaning / Cause: The supply voltage of the tachograph is below the minimum permissible voltage value. The tachograph checks this voltage cyclically several times per second. Measures: Measure the supply voltage of the tachograph at the pins A1, A3, A5, A6 or terminals 30, 15, 31a, and 31 and compare these with the specifications in the technical data or the type label of the tachograph.

¹⁴ The EFT for this event or the malfunction is not stored to the mass memory in the CALIBRATION operating mode. Information appears in the display with the specification of the SrvID that this event or malfunction has been detected for a short duration.

¹⁵ xx minutes: Pre-warning time in minutes; can be configured via RDI parameters.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S5 ¹⁴	--	80 00 000003	---	<p>Meaning / Cause: The supply voltage of the tachograph is below the minimum permissible voltage value. The tachograph checks this voltage cyclically several times per second.</p> <p>Measures: Measure the supply voltage of the tachograph at the pins A1, A3, A5, A6 or terminals 30, 15, 31a, and 31 and compare these with the specifications in the technical data or the type label of the tachograph.</p>
S6 ¹⁴	08	80 00 000004	!≠ Interruption of power supply	<p>Meaning / Cause: An interruption in the supply voltage of the tachograph greater than 200 ms has been detected. An interruption can be caused by an under-voltage or over-voltage or voltage drop.</p> <p>Note: After the occurrence of voltage interruption, the DTC can be reset only when proper supply voltage is available at the recording equipment for a period of at least one minute.</p> <p>Measures: Measure the supply voltage of the tachograph at the pins A1, A3, A5, A6 and terminals 30, 15, 31a and 31. Check the contacts of the A connector as well as the supply lines to the tachograph.</p>
S7	01	40 00 000200	!❏ Card invalid ❏ (Symbol in the display for invalid cards)	<p>Meaning / Cause: An invalid card has been inserted in the card slot 1. The following causes are possible:</p> <ul style="list-style-type: none"> • The card has been inserted the wrong way round. • The card is not a tachograph card. • The tachograph card is defective. • The validity period of the tachograph card has not yet begun or has expired. • The PIN of a workshop smart-card has been entered incorrectly 5 times. • The card reader is defective. <p>Checks take place when inserting the card and periodically during operation.</p> <p>Note: Invalid tachograph smart-cards are ignored by the tachograph, however the display, printout, or downloading of data stored on expired smart-cards is possible. An invalid or expired tachograph card is reported by the tachograph with the help of a symbol. Invalid cards are not ejected automatically.</p> <p>Measures: Press key 1 to eject the card and check the card in accordance with the measures listed above. In order to check whether the card reader of the EFAS or the card is defective, please check the card in another tachograph or using a reader, or insert other tachograph cards (which are known to be working properly) for comparison in the EFAS (see also service ID S39/S40)</p>
S8	01	40 00 000300	!❏ Card invalid	<p>This error matches the previous one, however, for card slot 2.</p>

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S9	03	40 00 000200	!ⓂⓂ Time overlap	Meaning / Cause: The tachograph card in card slot 1 contains an ejection time that is later than the current time in EFAS. The event is usually only possible if the card has been inserted into another tachograph previously. Measures: <ul style="list-style-type: none"> • Check if the time setting deviates from the UTC time. If possible, also check the time of the previous tachograph, whether the time on this device deviates from the UTC time. • Correct the UTC time using a workshop smart-card and an appropriate diagnostics device.
S10	03	40 00 000300	!ⓂⓂ Time overlap	This error matches the previous one, however, for card slot 2.
S11	05	40 00 000200	!ⓂⓂ Card inserted whilst driving	Meaning / Cause: A tachograph card has been inserted in card slot 1 whilst the vehicle was in motion, i.e. motion sensor pulses were detected and the tachograph is in the "driving" mode. Measures: Insert the cards into the slots only when the vehicle is stationary.
S12	05	40 00 000300	!ⓂⓂ Card inserted whilst driving	This error matches the previous one, however, for card slot 2.
S13	06	40 00 000200	!ⓂⓂ Last use of card not finished	Meaning / Cause: A tachograph smart-card has been inserted into card slot 1 after the card was previously inserted in another tachograph and was not closed down properly. The following causes are possible: <ul style="list-style-type: none"> • Improper or forced removal of the card (tampering attempt). • A write error has occurred when it was used in the previous device. Measures: <ul style="list-style-type: none"> • The card is closed automatically by EFAS after inserting it in one of the two card slots. The error should not recur thereafter. • If possible, check the card reader of the previous device. • Watch for other card errors (also see service IDs S7/S8 and service IDs S39/S40).
S14	06	40 00 000300	!ⓂⓂ Last use of card not finished	This error matches the previous one, however, for card slot 2.
S15 ¹⁴	14	40 00 000200	!Ⓜ Security violation	Meaning / Cause: The integrity (authenticity) of the data on the tachograph smart-card in the card slot 1 is not assured. Errors have been detected in the data structure by the security module of the tachograph. The following causes are possible: <ul style="list-style-type: none"> • A defective card locking mechanism of the tachograph (a defect in the card reader is unlikely with such a fault, since in this case, other error codes are reported). • A defective tachograph card. • An attempt at tampering. Measures: <ul style="list-style-type: none"> • Check the tachograph smart-card in the other card slot or in another device. • Check the card locking mechanism of the recording equipment (please take note of the remarks given under service ID 17 and ID 18!). • Replace the tachograph smart-card.
S16 ¹⁴	14	40 00 000300	!Ⓜ Security violation	This error matches the previous one, however, for card slot 2.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S17	18	40 00 000400	!Ⓜ Security violation	<p>Meaning / Cause: A tachograph card was manually removed from card slot 1 without pressing the eject key or the recording equipment has determined, after supply voltage interruption, that the card is no longer in the slot.</p> <p>Measures: Insert a card in the slot the wrong way round *) for testing purpose and check whether the card locking mechanism of the tachograph is defective. It should not be possible to remove the card manually.</p> <ul style="list-style-type: none"> • A tachograph having a defective locking mechanism must be replaced. • Caution: The card should be inserted the wrong way round (contact surfaces facing downwards) since, in the event of a defective locking mechanism, the card may be provided with defective information on account of incomplete write operations!
S18	18	40 00 000500	!Ⓜ Security violation	This error matches the previous one, however, for card slot 2.
S19	12	40 00 000200	!Ⓜ Security violation	<p>Meaning / Cause: An error was detected while authenticating a tachograph card in card slot 1. In the case of this error it is unlikely that there is a defect in the card locking mechanism or the card reader of the tachograph, since, in such cases other error codes are reported. The following causes are possible:</p> <ul style="list-style-type: none"> • A defective tachograph card. • An attempt at tampering. <p>Measures: Check the tachograph smart-card in the other card slot or in another device.</p>
S20	12	40 00 000300	!Ⓜ Security violation	This error matches the previous one, however, for card slot 2.
S21	--	80 00 000660	> Printer < Insert module or > Printer < No paper	<p>Meaning / Cause: The event is set when no printer module has been plugged in, or when there is no paper in the printer.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Feed paper in the printer module and plug in the module. • Replace the printer module if the previous step does not eliminate the fault.
S22	09	80 00 002180	!Ⓜ Sensor data error	<p>Meaning / Cause: The real-time signal of the motion sensor (pin B3) is interrupted. The speed display remains at 0km/h, although the vehicle is in motion. The motion sensor reports a checksum via the data channel, which corresponds to a speed > 0 km/h.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the plug connector contacts and lines to the motion sensor. • Check the supply voltage of the motion sensor. • Check the pulses at pin B3. • Check the pulse detection of the recording equipment via the front interface. • Replace the motion sensor.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
23	09	80 00 002280	!Π Sensor data error	<p>Meaning / Cause: The real-time signal of the motion sensor (pin B3) is faulty. The speed indicator displays the wrong speed. The number of pulses counted does not match with the checksum of the motion sensor transmitted via the data channel.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the plug connector contacts and lines to the motion sensor. • Check the supply voltage of the motion sensor. • Check the pulses at pin B3. • Check the pulse detection of the recording equipment via the front interface. • Replace the motion sensor.
S24	09	80 00 002380	!Π Sensor data error	<p>Meaning / Cause: The communication via the data channel (pin B4) between the tachograph and the motion sensor has malfunctioned.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the plug connector contacts and lines to the motion sensor. • Check the supply voltage of the motion sensor. • Check the data signal at the pin B4. • Check the pulse detection of the recording equipment via the front interface. • Replace the motion sensor.
S25	09	80 00 002380	!Π Sensor data error	<p>Meaning / Cause: The communication via the data channel (pin B4) between the tachograph and the motion sensor is interrupted. The motion sensor is not responding or no motion sensor is connected.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Connect and pair the motion sensor, if not yet done. • Check the plug connector contacts and lines to the motion sensor. • Check the supply voltage of the motion sensor. • Check the data signal at the pin B4. • Check the pulse detection of the digital tachograph via the front interface. • Replace the motion sensor.
S26 ¹⁴	22	80 00 002452	!⊞ Security violation	<p>Meaning / Cause: Error with respect to the integrity (authenticity) of the data of the motion sensor</p> <p>Measures: The motion sensor must be replaced.</p>
S27 ¹⁴	21	80 00 002452	!⊞ Security violation	<p>Meaning / Cause: The motion sensor itself has detected and reported an error while authenticating and the event is saved in the motion sensor. In general, this event can occur only if the motion sensor had been connected to another recording equipment in the meantime.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the seal on the motion sensor and check the feed cables. • The motion sensor must be replaced if the fault reoccurs.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S28 ¹⁴	11	80 00 002452	!🔒 Security violation	<p>Meaning / Cause: An error has been detected by the tachograph while authenticating the motion sensor. The connected motion sensor is defective or it has not been paired with the tachograph or, in the meantime, another motion sensor was connected to the tachograph. Since the tachograph repeats the authentication multiple times when an error occurs, it may take several minutes for the error to be displayed.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Insert the workshop smart-card and carry out the pairing. • Check the seal on the motion sensor and check the feed cables. • The motion sensor must be replaced.
S29 ¹⁴	13	80 00 002452	!🔒 Security violation	<p>Meaning / Cause: The tachograph has detected an unauthorized modification of the motion sensor.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the seal on the motion sensor and check the feed cables. • Repeat the pairing procedure. • The motion sensor must be replaced.
S30 ¹⁴	18	80 00 000800	!🔒 Security violation and finally ×🔧 Service! SrvID: S30	<p>Meaning / Cause: The tachograph has an error in the current time or has detected a malfunction in the integrated clock. Further data recording is no longer possible. Data recording is not continued in order to avoid inconsistent data. Tachograph smart-cards, with the exception of workshop smart-cards, are no longer accepted.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Insert the workshop smart-card and check the clock signal at the front interface. • Set and check the current time in UTC, disconnect the device from the supply voltage for a few minutes and check whether the fault reoccurs. • In case of a defect in the integrated clock the tachograph must be replaced.
S31	--	80 00 000900	---	<p>Meaning / Cause: The tachograph detects motion sensor pulses when the ignition is switched off.</p> <p>The following causes are possible:</p> <ul style="list-style-type: none"> • The vehicle is being moved manually or being towed. • The ignition signal is not detected by the recording equipment. • There is a malfunction in the motion sensor signal or the supply voltage. <p>Measures:</p> <ul style="list-style-type: none"> • Check the voltage level of the ignition signal at the tachograph pins A3 / terminal 15. • For the ignition signal and for the motion sensor check the corresponding contacts and feed cables at the A and B connectors of the tachograph and check the motion sensor for any damaged location and contact problems.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S32	--	40 00 000A70	---	<p>Meaning / Cause: Communication on the CAN main vehicle bus (depending on the parameter setting at the A or C connector) of the tachograph has malfunctioned or is not possible. The following causes are possible:</p> <ul style="list-style-type: none"> No bus subscriber is connected or a bus subscriber is not supplied with voltage. The CAN fault management system has not been configured correctly. This means that the time period, which the bus subscribers connected require for initialization after switching on the ignition, has not been considered. <p>Measures:</p> <ul style="list-style-type: none"> Check the feed cables to the Bus subscribers and the power supply to the Bus subscribers. Test the malfunctions on the CAN bus using a suitable CAN diagnostics device. Read out the CAN error counters using the <i>EFAS Service Tool</i> (the error counters should read zero or should reset to zero). Check the sample point, i.e. the parameter value RDI=0xF97A for data bits on the CAN bus. The parameter is normally set for EOL programming to a value between 60% and 100%. Check if the malfunction can be eliminated by changing the parameter. Check the CAN error management (parameter value RDI=0xF97C) and, if required, increase the value. The value is usually specified by the vehicle manufacturer. See also the measures for the following error. <p>Remarks: Depending on the configuration of the CAN fault management system, the detection of these malfunctions is suppressed for a maximum of 25 seconds (smaller values are common) after switching on the ignition. This means that only malfunctions that still persist after this time has elapsed or those that occur thereafter are then reported immediately. Please wait for the corresponding period of time in order to be sure that there is no malfunction.</p>
S33	--	40 00 000B78	---	<p>Meaning / Cause: The CAN main vehicle bus (depending on the parameter setting at the A or C connector) is in the "Bus Off" state, i.e. the tachograph is no longer participates in the CAN communication. The following causes are possible:</p> <ul style="list-style-type: none"> Missing terminal resistances at the bus end points or incorrect bus termination at the intermediate points. Incorrect baud rates of other subscribers or incorrectly selected baud rate or protocol in the EFAS Cable short-circuits. <p>Measures:</p> <ul style="list-style-type: none"> Check the feed cables to the Bus subscribers. Check whether the EFAS has a terminating resistor (device option) and whether a terminal resistance is required at the EFAS for the given type of vehicle. Check whether the bus is correctly terminated at the end points of the bus with terminating resistors. Select the correct bit rate and protocol in EFAS with the <i>EFAS Service Tool</i>.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S34	--	40 00 001177	---	<p>Meaning / Cause: The communication with the instrument panel / E-tachometer has malfunctioned or is interrupted. The connection between the instrument panel / E-tachometer and the tachograph is monitored by the tachograph cyclically by means of a life sign message transmitted by the instrument panel / E-tachometer every second.</p> <p>Measures:</p> <ul style="list-style-type: none"> • First check whether any of the faults listed above (service ID 32 and 33) are reported and initiate the corresponding measures listed against them. • Check the CAN connection to the instrument panel / E-tachometer. • Check that the instrument panel / E-tachometer is working properly. • Check the specifications of the instrument panel or E-tachometer of the given vehicle type. • Deactivate the monitoring of the life-sign messages with the help of parameter configuration (see parameter RDI=0xF90C). (If other data are displayed correctly on the instrument panel or on the E-tachometer, then apparently the handshake message is not supported by this device. <p>Remarks: Depending on the configuration of the CAN fault management system, the detection of these malfunctions is suppressed for a maximum of 25 seconds (smaller values are common) after switching on the ignition. This means that only malfunctions that continue to persist after this time has elapsed or those that occur thereafter are reported within a few seconds. Please wait for the corresponding period of time in order to be sure that there is no malfunction.</p>
S35 ¹³	31	80 00 000C31	✕ Internal Device malfunction	<p>Meaning / Cause: An error has been detected in the checksum of the program memory. Apparently, this is a hardware defect in certain memory locations in the program memory. Proper functioning of the device is probably no longer ensured. This fault is displayed, in general, a few minutes after leaving the standby mode, e.g. after turning on the ignition, when a memory error is detected during the POST (Power-On Self Tests).</p> <p>Measures:</p> <ul style="list-style-type: none"> • If this fault continues to occur, the tachograph must be replaced.
S36 ¹⁴	15	80 00 000D33	! Security violation	<p>Meaning / Cause: The tachograph has detected a checksum error in the calibration data after being turned on. Proper functioning of the device is probably no longer ensured.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Acknowledge the message and turn off the ignition. Wait until the device turns off and then turn on the ignition again (alternatively: Send an ECU Reset command with the sub-function 0x03 ("Soft Reset") via the diagnostics interface). The tachograph must be replaced if this error message appears again after restarting. • Check the calibration data for validity and re-calibrate the device.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S37	--	80 00 000D40	---	<p>Meaning / Cause: The calibration data are incorrect or incomplete at the end of a calibration procedure (e.g., after pulling out the workshop smart-card). At least one of the 11 EC calibration parameters does not have a valid value or during the calibration procedure, setting a given value was rejected and finally not corrected.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the calibration parameters saved in the device. • Recalibrate the device. • Use the test equipment and corresponding instruction manuals.
S38 ¹³	32	40 00 000700	✕Printer malfunction	<p>Meaning / Cause: A printer malfunction was detected, i.e. a printout could not be started or was canceled after the issue of a temperature warning, because the printing mechanism could not cool itself off within one minute.</p> <p>The following causes are possible:</p> <ul style="list-style-type: none"> • The communication to the printer is faulty. • There are contact problems between the tachograph and the printer module. • The temperature sensor of the printer module is defective. • The ambient temperature is too high. • Hardware defect in the printer controller or power supply in the tachograph. <p>Measures:</p> <ul style="list-style-type: none"> • Observe the operating temperature of the printing mechanism in the technical data. • Check the contacts of the printer module and in the tachograph. • Replace the defective printer module. If contacts in the printer plug-in slot of the tachograph are damaged or if there is a hardware defect then the tachograph must be replaced.
S39	40	40 00 000200	✕1 Card malfunction	<p>Meaning / Cause: Reading or writing of the tachograph card in card slot 1 malfunctioned.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check whether the card or the contact surfaces of the card are damaged. • In order to check whether the card reader of EFAS or the card is defective, please check the card in another tachograph or using a reading device, or insert other tachograph cards (which are known to be working properly) for comparison in the EFAS.
S40	40	40 00 000300	✕2 Card malfunction	<p>This malfunction matches the previous one, however, for card slot 2.</p>
S41 ¹⁴	31	40 00 000400	✕Internal Device malfunction	<p>Meaning / Cause: There is a mechanical or electrical defect in a card reader (card slot 1). For example, the card could not be ejected by the ejecting mechanism.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Press the driver's key / eject key  for a longer time to repeat the ejection of the card. • If the ejecting mechanism can be heard but the card does not eject, then it is either a mechanical defect or the card is damaged, which then blocks the slot. • If no ejecting sound can be heard then there is an electronic defect. If it is not possible to remove the card then the tachograph must be opened using a workshop smart-card in the other card slot in order to eject the card manually.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S42 ¹³	31	40 00 000500	×A Internal Device malfunction	This malfunction matches the previous one, however, for card slot 2.
S43 ¹³	31	40 00 000F00	×A Internal Device malfunction	Meaning / Cause: Malfunction of the keyboard has been detected, i.e. at least one key remains continuously pressed. The tachograph assumes that a key has been pressed continuously if it remains pressed for more than two minutes. Measures: Check if the keys are being blocked. Devices, in which the keys are blocked permanently must be replaced.
S44 ¹³	33	40 00 001030	×A Display malfunction <i>(the text output: "×A service display fault", appears additionally on the printer)</i>	Meaning / Cause: A malfunction of the LCD display has been detected, i.e. the communication for display has malfunctioned or is permanently interrupted. There is either no picture on the display (no characters visible) or it is faulty (flickering, pixel errors, etc.). Measures: Devices, in which this fault occurs permanently or in which visible defects can be seen in the picture displayed, must be replaced. Remarks: If the display is too faint then the contrast and brightness must be adjusted in the corresponding setup menu. In this case, however, there is no malfunction reported.
S45 ¹³	35	40 00 002508	×I Sensor malfunction	Meaning / Cause: The motion sensor has reported an internal fault to the tachograph. Measures: If this fault occurs repeatedly then the tachograph must be replaced.
S46	--	40 00 003100	---	Meaning / Cause: Tachograph malfunction, pin B5. Remarks: Reserved code (not supported by EFAS).
S47 ¹³	--	40 00 003200	---	Meaning / Cause: Tachograph malfunction, pin B6. Remarks: Reserved code (not supported by EFAS). The pin is electrically connected to the pins B7 and D6. Please see the description of service ID 48.
S48	31	40 00 003000	×A Internal Device malfunction	Meaning / Cause: Tachograph malfunction, pin B7 (speed signal). The monitoring circuit of the signal at this output of the recording equipment has detected a malfunction. Measures (continued): Check B7 for short-circuit and measure the signal level. Measure the pulses at the output B7 and compare them with the input pulses from the motion sensor at the input B3. The pulse frequency must be identical, the pulses at the output B7 are normalized by the taking the value of the k-factor that has been configured into consideration. Check the connection between output B7 and the controller connected.
S49	--	40 00 003300	---	Meaning / Cause: Tachograph malfunction, pin B8. Remarks: Reserved code (not supported by EFAS).
S50	--	40 00 004000	---	Meaning / Cause: Tachograph malfunction, pin C1. Remarks: Reserved code (not supported by EFAS).

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S51	--	40 00 004100	---	Meaning / Cause: Tachograph malfunction, pin C2. Remarks: Reserved code (not supported by EFAS).
S52	--	40 00 004200	---	Meaning / Cause: Tachograph malfunction, pin C3. Remarks: Reserved code (not supported by EFAS).
S53	--	40 00 004300	---	Meaning / Cause: Tachograph malfunction, pin C4. Remarks: Reserved code (not supported by EFAS).
S54	--	40 00 004400	---	Meaning / Cause: Tachograph malfunction, pin C5. Remarks: Reserved code (not supported by EFAS).
S55	--	40 00 004500	---	Meaning / Cause: Tachograph malfunction, pin C6. Remarks: Reserved code (not supported by EFAS).
S56	--	40 00 004600	---	Meaning / Cause: Tachograph malfunction, pin C7. Remarks: Reserved code (not supported by EFAS).
S57	--	40 00 004700	---	Meaning / Cause: Tachograph malfunction, pin C8. Remarks: Reserved code (not supported by EFAS).
S58	--	40 00 004800	---	Meaning / Cause: Tachograph malfunction, pin D1. Remarks: Reserved code (not supported by EFAS).
S59	--	40 00 004900	---	Meaning / Cause: Tachograph malfunction, pin D2. Remarks: Reserved code (not supported by EFAS).
S60	--	40 00 004A00	---	Meaning / Cause: Tachograph malfunction, pin D3. Remarks: Reserved code (not supported by EFAS).
S61	--	40 00 004B00	---	Meaning / Cause: Tachograph malfunction, pin D4. Remarks: Reserved code (not supported by EFAS).
S62	--	40 00 004C00	---	Meaning / Cause: Tachograph malfunction, pin D5. Remarks: Reserved code (not supported by EFAS).
S63	--	40 00 004D00	---	Meaning / Cause: Tachograph malfunction, pin D6. Remarks: Reserved code (not supported by EFAS).
S64	--	40 00 004E00	---	Meaning / Cause: Tachograph malfunction, pin D7. Remarks: Reserved code (not supported by EFAS).
S65	--	40 00 004F00	---	Meaning / Cause: Tachograph malfunction, pin D8. Remarks: Reserved code (not supported by EFAS).

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S66	81	---	!Ⓜ Manufacturer specific Event	Meaning / Cause: The tachograph was opened with authorization using a workshop smart-card. Measures: The opening must be marked in the repair protocol and protocol must be archived.
S67	04	80 00 001260	!Ⓜ Driving without a suitable card	Meaning / Cause: The vehicle was moved although there was no valid tachograph smart-card (driver's card or workshop smart-card) inserted into card slot 1. Measures: Check whether a valid driver's card or workshop smart-card has been inserted in card slot 1. In the case of workshop smart-cards, the PIN must be entered before the journey can be started.
S68 ¹³	18	--	!Ⓜ Security violation	Meaning / Cause: The internal security module has indicated a potential inconsistency during the hardware test. Measures: <ul style="list-style-type: none"> • Check the printout "tachograph events and malfunctions" or inspect the corresponding downloaded data; look for the simultaneous occurrence of EFT 49 dec (0x31). If both occur simultaneously, they can be ignored. • If the event occurs without a simultaneous EFT 49 dec (0x31) more than once per month, the tachograph should be replaced.
S69	2	--	!Ⓜ Smartcard conflict	Meaning / Cause: The combination of tachograph cards inserted into card slots 1 and 2 makes no sense. The card in the second slot is ignored. Measures: Check the card combination and remove one of the two cards.
S70	07	--	>> Over speeding	Meaning / Cause: Exceeding of the programmed maximum permissible speed for longer than 1 minute. The following causes are possible: <ul style="list-style-type: none"> • The value for the highest permissible speed was not programmed correctly (please note the ex-works default value). • The driving speed is too high. Measures: <ul style="list-style-type: none"> • Program the correct value of the highest speed permissible for the vehicle. • Reduce the speed.
S71 ¹⁴	15	--	!Ⓜ Security violation	Meaning / Cause: The tachograph has detected an error in its mass memory data. Data integrity is no longer guaranteed. Measures: The tachograph must be replaced if the fault reoccurs.
S72 ¹⁴	16	--	!Ⓜ Security violation	Meaning / Cause: There is a communication problem internal to EFAS. The internal communication between the main processor and the security module is faulty. Measures: If this fault continues to occur, the tachograph must be replaced.
S73 ¹⁴	17	--	!Ⓜ Security violation	Meaning / Cause: The recording equipment has been opened "without authorization". Measures: The tachograph must be replaced if the device is damaged or has been tampered with or if the seals have been removed by unauthorized persons.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S74 ¹⁴	34	--	✕⌵ Download malfunction	Meaning / Cause: There is a malfunction while downloading data. Measures: <ul style="list-style-type: none"> • Check the connection (cable and connector) to the front interface of the recording equipment. • Check if the transmission equipment used is compatible with the recording equipment (check the manufacturer and software version used on the transmission equipment).
S75 ¹⁴	23	80 00 002452	!⌵ Security violation	Meaning / Cause: The motion sensor reports a general communication malfunction. Measures: Check the motion sensor. If the error is displayed several times then the motion sensor must be replaced.
S76 ¹⁴	24	80 00 002452	!⌵ Security violation	Meaning / Cause: Motion sensor malfunction. Remarks: Reserved code for future functional extensions of the motion sensor.
S77 ¹⁴	25	80 00 002452	!⌵ Security violation	Meaning / Cause: The motion sensor reports a temperature-related fault (over-temperature). Measures: Check the motion sensor. If the error is displayed several times then the motion sensor must be replaced.
S78	--	--	---	Meaning / Cause: This service ID is only processed internally in the tachograph. Measures None
S79	--	--	---	Meaning / Cause: This service ID is only processed internally in the tachograph. Measures: None
S80	82	--	!⌵ Temperature out of range	Meaning / Cause: The tachograph has been operated beyond the permissible temperature range. Measures: None, warranty void.
S81 ¹⁴	31	40 00 000139	✕⌵ Internal Device malfunction and finally ✕⌵ Service! SrvID: S81	Meaning / Cause: A general internal device malfunction is at hand. There is a hardware defect in the internal security module. Measures: The tachograph must be replaced, if the error occurs several times.
S82 ¹⁴	15	40 00 000139	!⌵ Security violation and finally ✕⌵ Service! SrvID: S82	Meaning / Cause: While testing the mass memory or when reading from the mass memory of the tachograph an integrity error of the data or data structures has been detected. Measures: The recording equipment must be replaced, if the error occurs several times.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S83	0A	40 00 002280	!⚠ Vehicle motion conflict SrvID: S83	<p>Meaning/Cause: EFAS detected a relevant difference between the speed read from paired motion sensor and the speed read from Independent Motion Source (IMS). According to CR (EU) 1266/2009 speed difference is treated relevant, if speed read from independent motion source is higher than 6 km/h while speed read from motion sensor is 0 km/h for a duration longer than 60 seconds.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check motion sensor and CAN bus. • Check IMS setting. • Run IMS test function to verify IMS settings.
S84 ¹⁴	11	80 00 002452	!⚠ Security violation	<p>Meaning / Cause: There are two causes for this error:</p> <ul style="list-style-type: none"> • Pairing with the motion sensor had failed during the initial commissioning. The device remains deactivated (the error is displayed after the workshop smart-card is removed). • The device was activated successfully and new pairing with another motion sensor by means of a command has failed. (The error is displayed after the workshop smart-card is removed as well as after every restart of the device, to warn that despite the activation there is no valid pairing present.) <p>Measures:</p> <ul style="list-style-type: none"> • Pair the tachograph with the motion sensor. • Check the cause as to why pairing could not be carried out (check the connector contacts and feed cables to the motion sensor). • Replace the motion sensor.
S85 ¹⁴	20	80 00 002452	!⚠ Security violation	<p>Meaning / Cause: The motion sensor reports an unknown error for the recording equipment. The motion sensor used is not compatible with the recording equipment EFAS or the motion sensor is defective.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check whether the motion sensor used may be operated with the tachograph EFAS. • Check the function of the motion sensor. • Replace the motion sensor.
S86	--	--	---	Reserved code for future functional extensions of the tachograph.
S87 ¹⁴	31	40 00 000139	✖⚠ Internal device malfunction	<p>Meaning / Cause: The security module of the tachograph has detected a possible internal fault.</p> <p>Measures:</p> <ul style="list-style-type: none"> • Check the printout "tachograph events and malfunctions" or the inspect the corresponding downloaded data; look for the simultaneous occurrence of EFT 24 dec. If both occur simultaneously, they can be safely ignored. • If the event occurs without a simultaneous EFT 24 dec more than once in a month, the tachograph should be replaced.
S88	--	--	---	This malfunction matches SrvID S32, however, it relates to the CAN expansion bus.
S89	--	--	---	This malfunction matches SrvID S33, however, it relates to the CAN expansion bus.

SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S90 ¹⁴	14	40 00 000200	!Ⓜ Security violation	<p>Meaning / Cause: The integrity (authenticity) of the data on the tachograph card in card slot 1 is not assured. Errors were found in the data structure. The following causes are possible:</p> <ul style="list-style-type: none"> • A defective card locking mechanism of the tachograph (a defect in the card reader is unlikely with such a fault, since in this case, other error codes are reported). • A defective tachograph smart-card. • An attempt at tampering. <p>Measures:</p> <ul style="list-style-type: none"> • Check the tachograph card in another card slot or in another device. • Check the card locking mechanism of the tachograph (please take note of the remarks given under service ID 17 and 18). • Replace the tachograph smart-card.
S91 ¹⁴	14	40 00 000300	!Ⓜ Security violation	This error matches the previous one, however, for the card slot 2.
S92	31	40 00 000139	×Ⓜ Internal device malfunction and finally ×Ⓜ Service! SrvID: S92	<p>Meaning / Cause: A general internal device malfunction is at hand. The tachograph has detected an invalid combination of the software components installed.</p> <p>Measures: The tachograph must be replaced.</p>
S93	--	--	---	Reserved code for future functional extensions of the tachograph
S94 ¹⁴	31	40 00 000139	×Ⓜ Internal device malfunction	<p>Meaning / Cause: A general internal device malfunction is at hand. The device has performed a restarted, the cause for which is unknown.</p> <p>Measures: If this fault continues to occur, the tachograph must be replaced.</p>
S95 ¹⁴	31	40 00 000139	×Ⓜ Internal device malfunction	<p>Meaning / Cause: A general internal device malfunction is at hand. The device has performed a restarted as a result of the in-built "Watchdog".</p> <p>Measures: If this fault continues to occur, the tachograph must be replaced.</p>
S96 ¹⁴	31	40 00 000139	×Ⓜ Internal device malfunction	<p>Meaning / Cause: A general internal device malfunction is at hand. The device has performed a restart as a consequence of an extraordinary event during program execution. The cause here can be, e.g. a defective memory module.</p> <p>Measures: If this fault continues to occur, the tachograph must be replaced.</p>
S97 ¹⁴	31	40 00 000139	×Ⓜ Internal device malfunction	<p>Meaning / Cause: A general internal device malfunction is at hand. The device has performed a restart as a consequence of an extraordinary event during program execution.</p> <p>Measures: If this fault continues to occur, the tachograph must be replaced.</p>
S98 ¹⁴	31	40 00 000139	×Ⓜ Internal device malfunction and finally ×Ⓜ Service! SrvID: S98	<p>Meaning / Cause: The internal real-time clock (RTC) is defective. The following causes are possible:</p> <ul style="list-style-type: none"> • The communication to the clock module is interrupted • The time is incorrect and cannot be corrected. <p>Measures: Correct the time setting in the CALIBRATION operating mode. If the time cannot be set correctly then the tachograph must be replaced.</p>