

eSID2

extended Saab Information Display Generation 2



Revision 9
2018-04-26
<http://www.esid.se>

What is eSID ?

- eSID enhances the Saab driving experience by collecting internal hidden car data and presenting it to the driver on the built-in SID (Saab Information Display) located in the instrument cluster on Saab 9-3 MY07 and newer cars
- eSID focuses on integration in existing vehicle functions and providing a range of new functions other than what OBD-tools provide, for instance "Three-Blink" and customizable startup message.
- The unit fits into a OBD-connector housing and can easily be mounted/removed from the vehicle within seconds.

What's new with eSID2 ?

- eSID2 has a completely new hardware with a new microprocessor that has twice the capacity compared to eSID1 together with dual CAN-buses.
- eSID2 now has five selectable favorite functions for easy access and all the functions are now sorted in function groups: Engine, Transmission, Vehicle and Diagnostics.
- A couple of new display functions has been added along with the ability to select display units to make it usable on all SAAB markets
- Furthermore, a new windscreen wiper function has been developed where the driver can change the wiper interval times.

Can i update my eSID1 ?

- Unfortunately not, the eSID2 software is not compatible on the eSID1 hardware.

Can i use this in my vehicle?

- The eSID works only on Saab 9-3 MY07-12 and it's plug and play. Just connect it to the OBD-connector located near the accelerator pedal and start using it directly.
- Installation time: Expert: 5 seconds
 Beginner: 1 minute
- **Dont connect eSID while driving, focus on the road!**

User interface

- Start eSID with a long press on **CLR**-switch¹
- Stop eSID with a short press on **CLR**-switch²
- Change display functions with **INFO UP/DN** and use **SET** switch to reset data or to activate subfunctions
- Leave subfunctions with a short press on **CLR**-switch

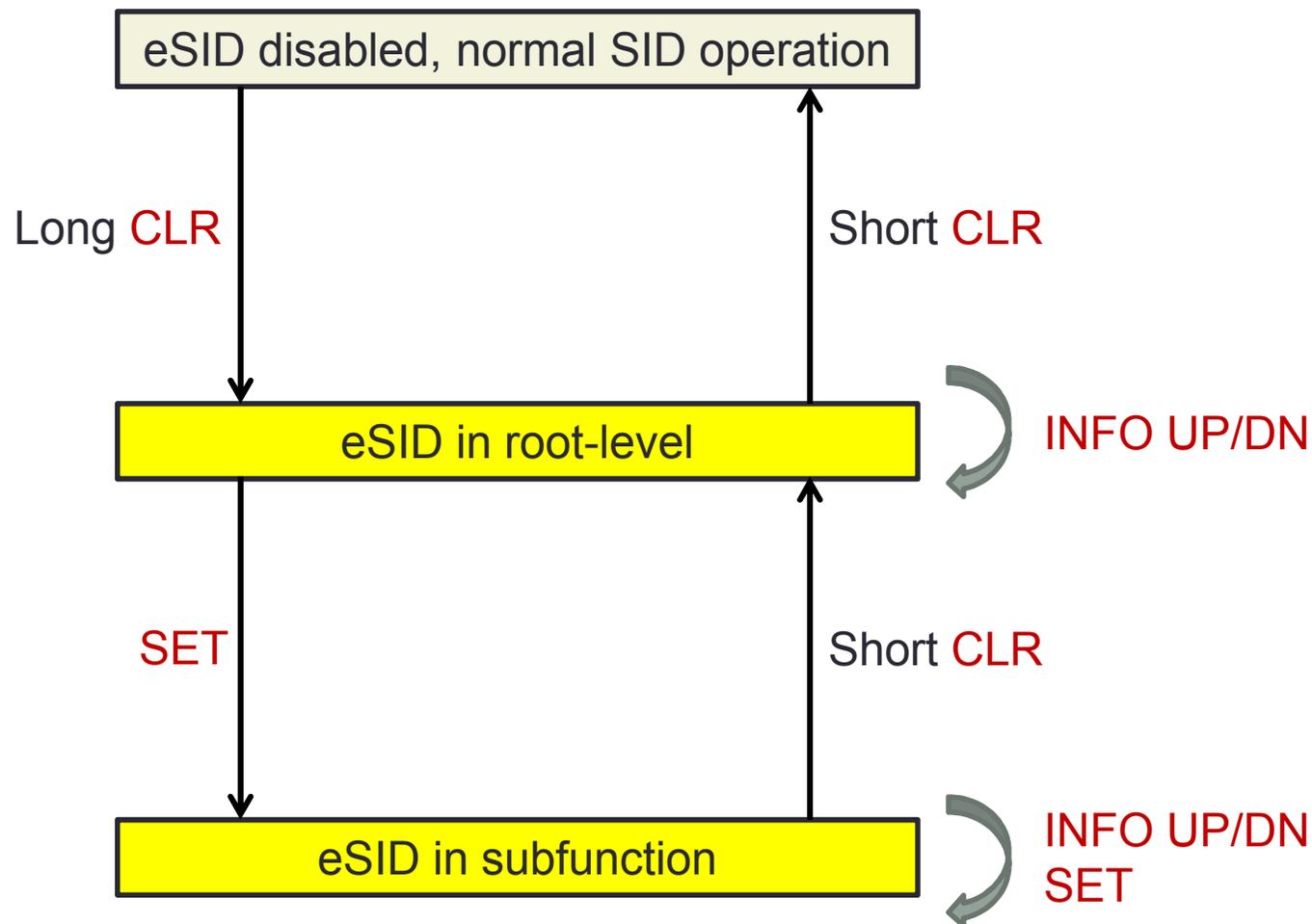


- 1) More than 500ms
- 2) Less than 500ms

User interface

- Does the eSID prevent warning(s) to be showed to the driver?
 - No it does not! Any warning will be showed due to higher priority on the display
- Can i return to the normal SID?
 - Yes, as seen on the next slide you can enter and exit the eSID with the **CLR**-button on the steering wheel.

User interface



Limitations

- eSID is well integrated but is still an external add-on system and there are limitations:
- **Long press on CLR normally resets Trip Computer**

Long press on **CLR** is normally used to reset trip computer. To inhibit start of eSID and reset the trip computer, either:

 1. Remove the eSID (and reset its fuel/distance values aswell)
 2. Have ignition on, engine turned off and accelerator pedal pressed more than 80% when then long-press CLR.
 3. Enter nightpanel-mode. After eSID shows "Stealth Mode activated", wait 5 seconds, then wake up the display with a short press on CLR and finally a long press on CLR to reset trip computer. When nightpanel-mode is deactivated, eSID will return to the last active display function.

Limitations

- **eSID lost control of the display suddenly**
 - There are situations where the cluster decides to take back the display from eSID, for instance when the ambient temperature drops from 4 °C to 3 °C. In that case it switches to "Temp" view to inform the driver that the road could be slippery. There might be other cases as well.
 - When this happens, the best is just to wait. eSID is still running in the background and will resume control of the display after < 10 seconds.
- **Stand-by power consumption**
 - When the key is removed from the car the eSID will turn off and then go to sleep together with the rest of the electrical system. However, eSID consumes approx. **9mA** while in standby-mode, so if the car is parked for a prolonged period, it is recommended that eSID is first removed to avoid depleting the battery.

Limitations

- **OnStar**

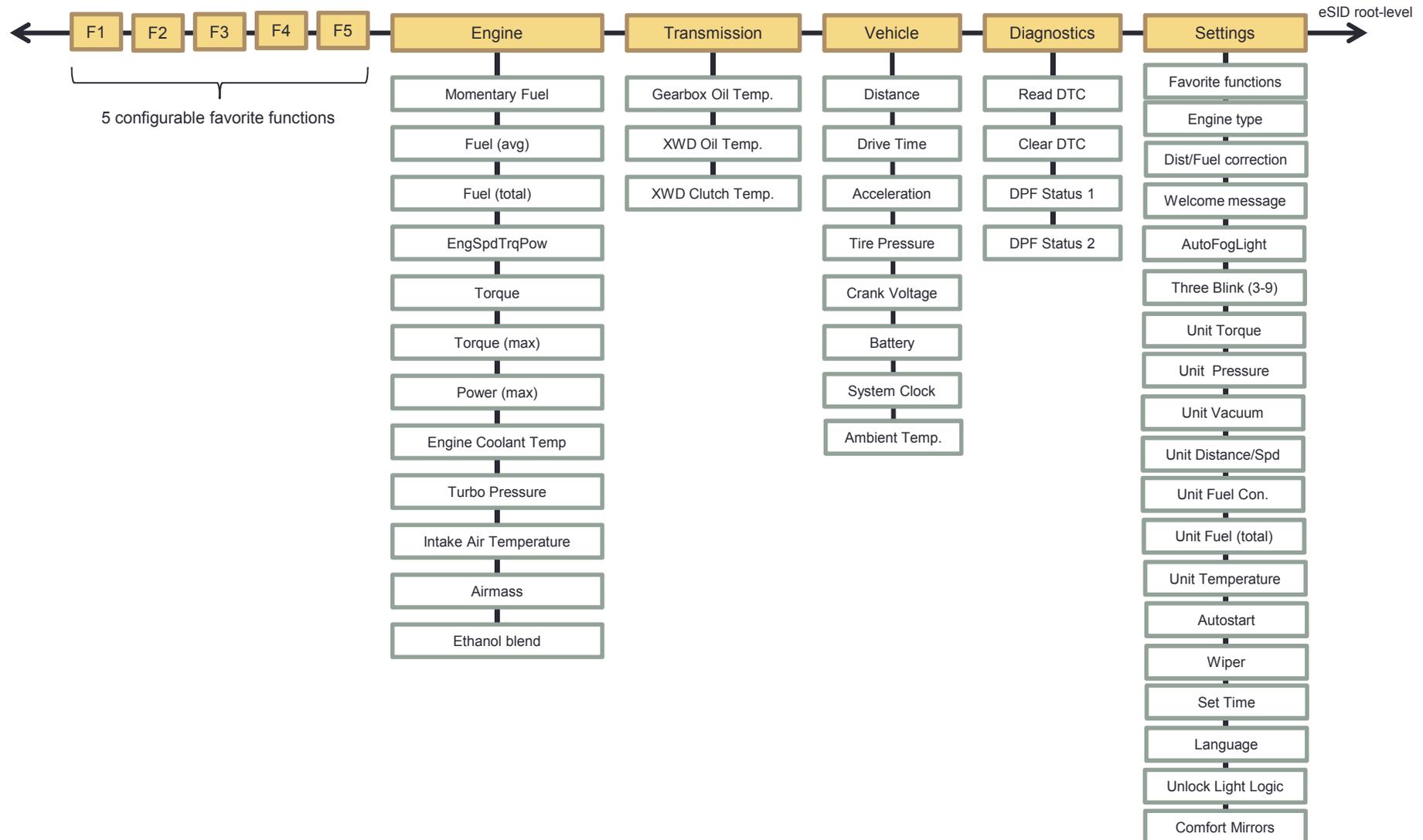
- On vehicles built with OnStar (USA/Canada/Mexico), the instrument cluster has special functionality regarding phone steering wheel switches (**CALL** and **CLR**).
- The eSID will detect this automatically and disable the function in the vehicle and instead eSID will emulate the same functionality so that the switches work as intended, i.e. the driver does not feel any difference!
- This automatic check is performed on every startup so if the vehicle functionality is re-enabled again, dont connect the eSID. If you do, the procedure on the next page needs to be performed again.

Limitations

- **OnStar**

- If eSID is to be removed permanently from an OnStar vehicle, the vehicle function needs to be re-enabled first to enable **CALL/CLR** switches to work with OnStar. Perform this to re-enable the function:
 - Ignition On
 - Engine Off
 - eSID connected but not active (normal SID active)
 - Accelerator Pedal > 80%
 - Night Panel activated
- If all the above conditions are fulfilled, perform a short press on **CALL** and the display will light up (Note! The display will light up even if the conditions are not fulfilled). Then remove the eSID from the OBD-connector. Now the OnStar functionality works again without the eSID.

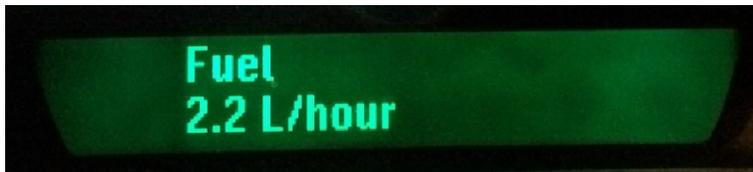
eSID2 Functional Overview



Engine functions

Momentary Fuel Consumption

- During standstill the estimated fuel amount per hour is calculated on a two second period and then extrapolated
- During driving the unit (l/10km,mpg etc) is shown for 12 seconds, and after that removed to avoid unnecessary information



Momentary Fuel Add-on functions

Gear indication on automatic transmission

- On automatic transmission vehicles, the current gear (for ex. "6") is shown in the upper right corner if the gear selector is in Drive-position

Slippery road warning

- When outside temperature is below zero degrees Celsius a '*' will be shown in the upper right corner.

Windscreen Wiper Indication

- If the eSID windscreen wiper is active, a "W" will be shown in the upper right corner. See functional description in this document under "Additional functions".

Regeneration Active (from SW 2.09.x)

- If a DPF Regeneration is currently active a 'R' will be shown in the upper right corner.

Average Fuel Consumption

- Two counters are used to collect the total accumulated average fuel consumption from the car
- Reset the value with a press on **SET**.
- Fuel, Distance and Fuel (avg) can all be reset individually.
- Change unit in Settings
(l/10km, l/100km,
mpg Imperial, mpg US)



Accumulated Fuel

- One counter is used to collect the total accumulated fuel from the car
- Reset the value with a press on **SET**.
- Fuel, Distance and Fuel (avg) can all be reset individually.
- Change unit in Settings
(Liter, Imperial Gallon, US Gallon)



Momentary Vehicle Data

- This is a function that shows engine speed, vehicle speed, engine torque and engine power information together in one view.
- Vehicle Speed unit (km/miles) and Torque (Nm,lbft) units are selected in the Settings-menu.



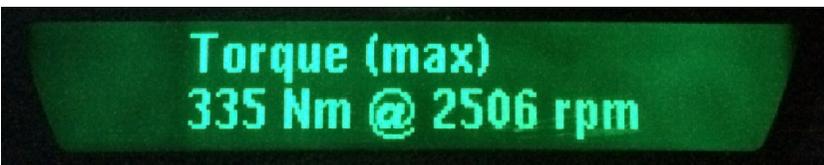
Rpm	Spd	Trq	Pow
4532	85	272	173



Rpm	Spd	Trq	Pow
1159	19	-17	0

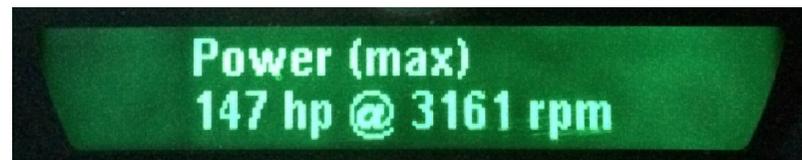
Torque / Torque (max)

- This function shows the momentary torque value, as read from the engine controller.
- Torque (max) is processed and saved all the time when the eSID is connected, even when the display is not active.
- It shows negative values when engine is braking when releasing the accelerator pedal (this is correct behaviour)
- It is possible to manually reset the max value with the **SET**-switch



Power (max)

- This function shows the maximum power output calculated from the torque and engine speed information, as read from the engine controller.
- The value is calculated all the time when the eSID is connected, even when the display is not active.
- It is possible to manually reset the max value with the **SET**-switch



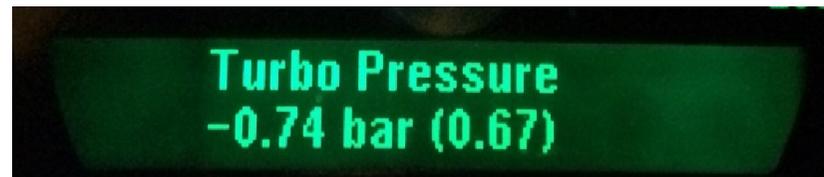
Engine Coolant Temperature

- Engine coolant temperature, as read from the engine controller
- Temperature unit (Celsius, Fahrenheit) is selected in the Settings-menu.



Turbo Pressure

- The turbo pressure is read from the engine controller and the accuracy and range is different depending on manufacturer implementation (B284 only shows positive pressure)
- Max pressure is **ONLY** calculated while this function is active.
- It is possible to manually reset the max value with the **SET**-switch



Turbo Pressure

- When kPa is selected as pressure unit, Turbo Pressure will be shown in absolute pressure.
- When bar or psi is selected as pressure unit, Turbo Pressure will be shown relative to the atmospheric pressure (~100kPa). Vacuum unit is only used when displaying relative pressure.
- Pressure (bar,kPa,psi) and Vacuum (bar,Hg) units are selected in the Settings-menu
- The atmospheric pressure is read when the ignition key is turned from LOCK to OFF and stops when engine is cranking. If the key is turned quickly from LOCK to engine crank, the atmospheric pressure will not be updated and last read value will be used. Default on startup is 100kPa.

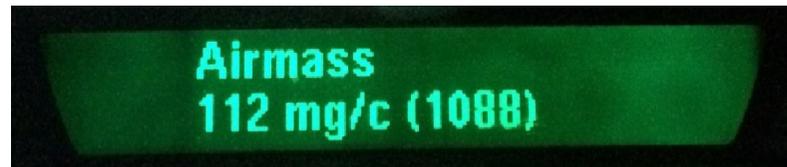
Intake Air Temperature

- Intake air temperature into the engine, as read from the engine controller
- Temperature unit (Celsius, Fahrenheit) is selected in the Settings-menu.



Airmass

- The airmass is read from the engine controller and the unit is different depending on manufacturer implementation (kg/h, mg/c, etc)
- This function is only supported on turbocharged engines: B207 (4-cyl), B284 (6-cyl), Z19DTx (1.9L Diesel), A20NFT (2.0L MY12) and NEVS MY14 engines (not supported on 1.8i)
- Max airmass is **ONLY** calculated while this function is active.
- It is possible to manually reset the max value with the **SET**-switch



Ethanol blend

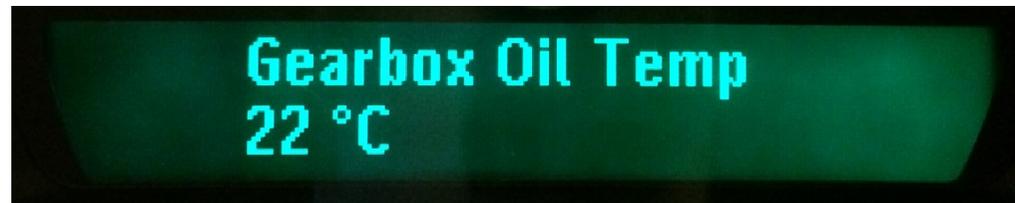
- Available on B207 BioPower and A20NFT (9-3 Griffin MY12)
- MY07-10: Ethanol adaptation runs when an increase in fuel level is detected (i.e. the driver is affecting the gasoline/ethanol mixture). After refueling, the value will jump up and down a few times until the adaptation is complete.
- MY11-12: The value is read from the ethanol sensor and is more accurate than the ethanol adaptation. Please note the BioPower bar in the cluster shows maximum value on 75% Ethanol.
- Value is from 0-85% ethanol and affects power output from the engine



Transmission functions

Gearbox Oil Temperature

- Gearbox oil temperature is available on cars with automatic gearbox and is read from transmission controller.
- Temperature unit (Celcius, Fahrenheit) is selected in the Settings-menu.



XWD Clutch/Oil Temperature

- XWD temperatures are available on cars with the XWD-system and is read from the XWD-controller, they are estimated values based on an internal temperature sensor inside the controller on the rear axle.
- Temperature unit (Celsius, Fahrenheit) is selected in the Settings-menu.



Vehicle functions

Accumulated Distance

- One counter is used to collect the total accumulated distance from the car
- Reset the value with a press on **SET**.
- Fuel, Distance and Fuel (avg) can all be reset individually.
- Change unit in Settings
(Km, Miles)



Drive Time

- Function is intended to show the total driving time for the trip including short stops with engine off
- Resets when the key is removed from the ignition lock.
- Timer starts to count when vehicle starts to move, and keeps counting when the vehicle is later standstill or engine is off with key still in ignition
- It is possible to manually reset the counter at any time with the **SET**-switch

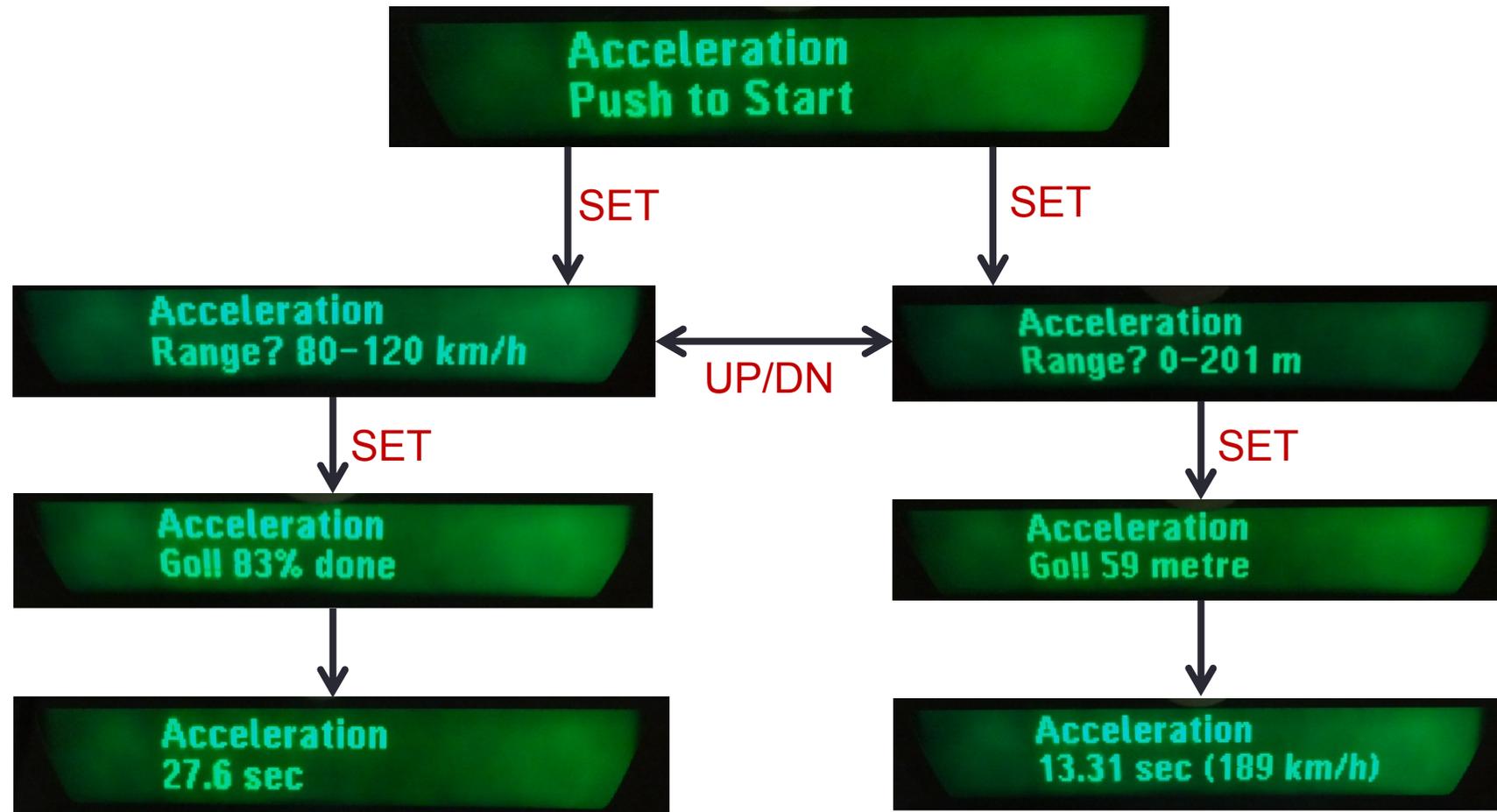


Acceleration Time

- Measures the time it takes to accelerate thruh the selected range or distance. On distance also the end speed is shown.
- Change unit in Settings:
(km, miles)

Km	Miles
0-100 km/h	0-60 mph
70-130 km/h	5-60 mph
80-120 km/h	0-100 mph
0-180 km/h	5-100 mph
100-150 km/h	60-90 mph
100-200 km/h	0-120mph
0-201 metre	1/8 mile
0-402 metre	1/4 mile

Acceleration Time



Tire pressure

- This information is shown if the vehicle is equipped with the Tire Pressure Monitor System (TPMS). Shows the relative pressure in the tires in the following order:

- Front Left
- Front Right
- Rear Left
- Rear Right



- Pressure (bar,kPa,psi) units are selected in the Settings-menu

Crank Voltage

- This function shows how low the battery voltage drops when the engine starter is activated during engine crank.
- Gives an indication of the battery status (health, charging level etc).
- Not available on any Saab since the 9000-model (1985-1998)



Battery Status (MY2007-2010)

- Shows the current battery voltage.



Battery Status (MY2011-)

- Shows the battery voltage, temperature, state-of-charge (%) and momentary current flow in/out of the battery.
- Only available on MY2011 and newer (not USA/Canada), they are equipped with a battery sensor located on the negative pole on the battery.



Battery: 14.0V 25 °C
49% SOC -3.0 A

System Clock

- Shows the system clock of the car.
- The OEM-radio is the master of the clock in the Saab 9-3, and every time the key is turned on the radio synchronizes its time with the vehicle. If the OEM-radio is removed the last time synchronized will be used by the vehicle and kept on counting but in state "Invalid" (this is not an eSID feature).
- This function is intended to be used if the vehicle doesn't have the OEM-radio installed anymore, instead the system clock has been set by eSID (see Settings). Then to verify that the operation was successful, use this function.
- System clock is mainly important for service counters and auxiliary heater.

System Clock

- If the OEM-radio is removed, the system clock will still be operating but set to "Invalid" and eSID shows this by adding "(I)" after the clock.



Ambient Temperature

- Shows current outside temperature exactly like the original SID functionality.
- No need to exit eSID to see the outside temperature.

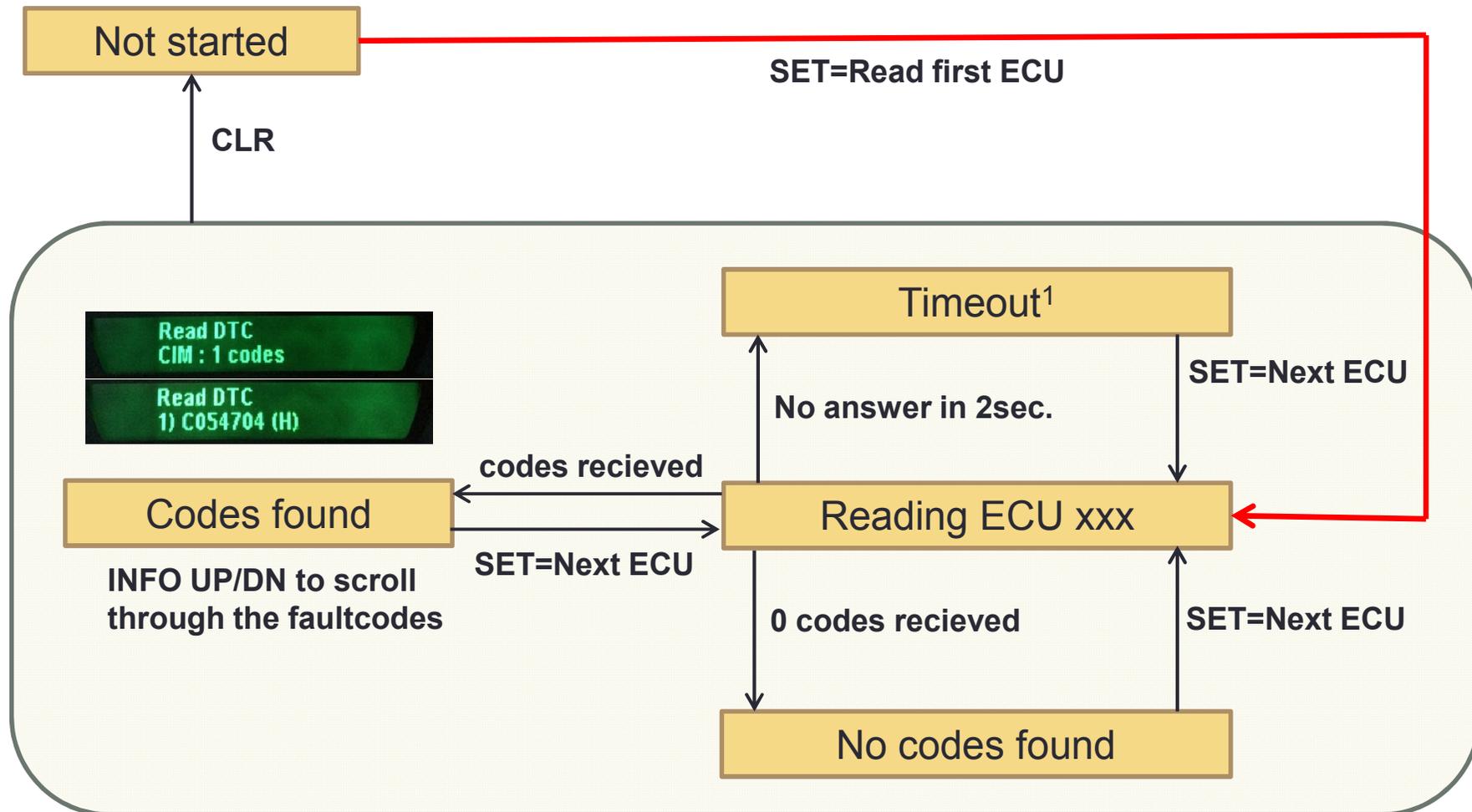


Diagnostic functions

Diagnostic Read DTC

- DTC stands for Diagnostic Trouble Code, and these codes can be set inside a ECU (electronic control unit) in the vehicle if it has detected a fault (short circuit etc)
- This function is disabled if the engine is running
- Compared to a less advanced OBD-reader, this function reads all trouble codes in the entire vehicle, one ECU at a time.
- The trouble codes are either (A)ctive or (H)istory for all non-OBD-nodes and (P)reliminary or (C)onfirmed for OBD-nodes (Engine/Transmission)
- The code(s) description can be looked up in SAAB WIS for further fault tracing (Workshop Instruction Documents)

Diagnostic Read DTC



1) Timeout will occur if the vehicle is not equipped with the ECU or if the ECU is broken or missing power supply/CAN-bus

Diagnostic Read DTC

ECU	Description
ECM	Engine
TCM	Automatic Transmission
TCS	Brake, Traction, Stability
EHPS	Electric Hydraulic Power Steering
AHL (AFL)	Automatic Headlight levelling
RDCM	XWD Rear-drive axle
MIU	Main Instrument Cluster
BCM	Body Control module
DDM	Driver Door module
DSM	Driver Seat memory
ACC	Automatic climate control
CIM	Column Integration Module
PDM	Passenger Door module
REC	Rear electrical center

ECU	Description
RLDM	Rear left door module
RRDM	Rear right door module
SRM	Sun roof module
STC	Convertible Soft top controller
UEC	Front electrical center
ACM	Airbag controller
EHU	Radio/Navigation
SPA	Parking assistance
SLM	Automatic gear shift lever module
AHM	Auxiliary heater
TPMM	Tire pressure monitor
UHP	Bluetooth Phone (Not US/CA/MX)
ONS	OnStar (US/CA/MX)
SDAR	Satellite Radio (US/CA/MX)

Diagnostic Erase/Clear DTC

- This function is disabled if the engine is running
- Compared to a cheaper OBD-reader, this function clears all faultcodes in the entire vehicle, in all ECU's.
- When using this operation, it is common to receive an Airbag-popup, this is due to that the normal communication is interrupted when the fault codes are cleared.

DPF Status

- Shows Diesel Particle Filter status to know more about regeneration when the engine controller determines when to perform a regeneration
- Soot = Soot mass ratio in DPF, mass per filter volume (%)
- Regen = Regeneration Active (0-100 %) (from SW 2.09.x)
- MR = Mileage since last regeneration (km)
- DiffP = Differential pressure over the DPF (0-99kPa)



Additional functions

Three Blink

- When touching the direction indication stalk for a short amount of time (100-500ms), the eSID will give a selectable number of extra blinks in the same direction.
- If the driver interrupts the Three Blink function by using the stalk in left or right direction, then the function is disabled for three seconds
- Number of "Blinks" can be selected in the Settings-menu (Off,3-9 Blinks).

Automatic Fog Light activation

- This function activates the front fog-lights automatically when turning the MainLightSwitch to Park position or when activating the main beam (Configurable in Settings-menu)
- Auto Fog Light in Park is not possible on USA/Canada-vehicles
- Normally the driver needs to manually switch the light switch to "Park" and press the fog light switch. eSID helps with the activation so the driver only needs to turn the light switch to "Park"
- When turning to "Park" from "Off" or "Lowbeam" (and Fog Lights are off), then they will automatically be activated.



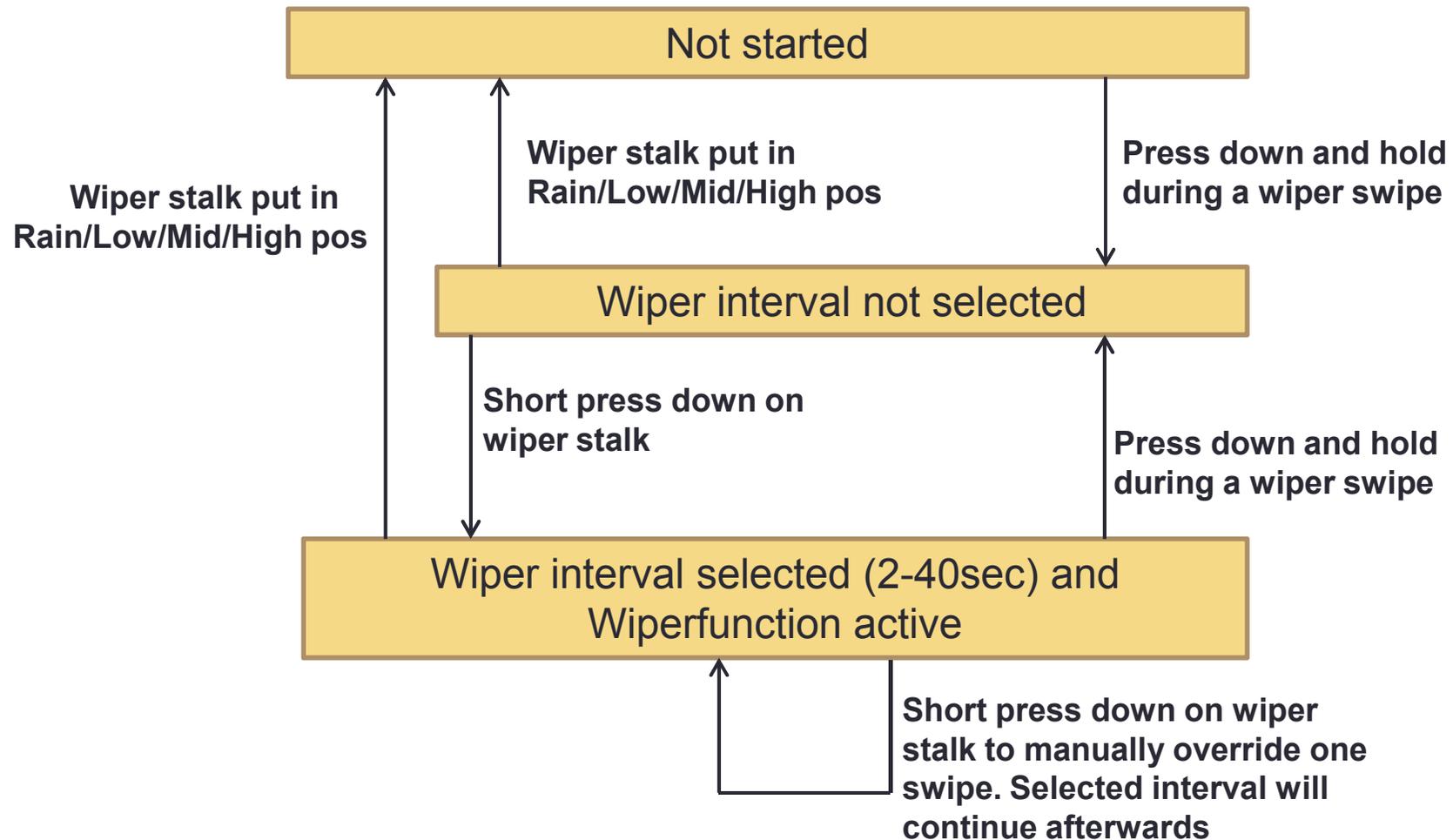
Automatic Fog Light activation

- When activating main beam and releasing the stalk the fog light will be activated automatically (if configured)

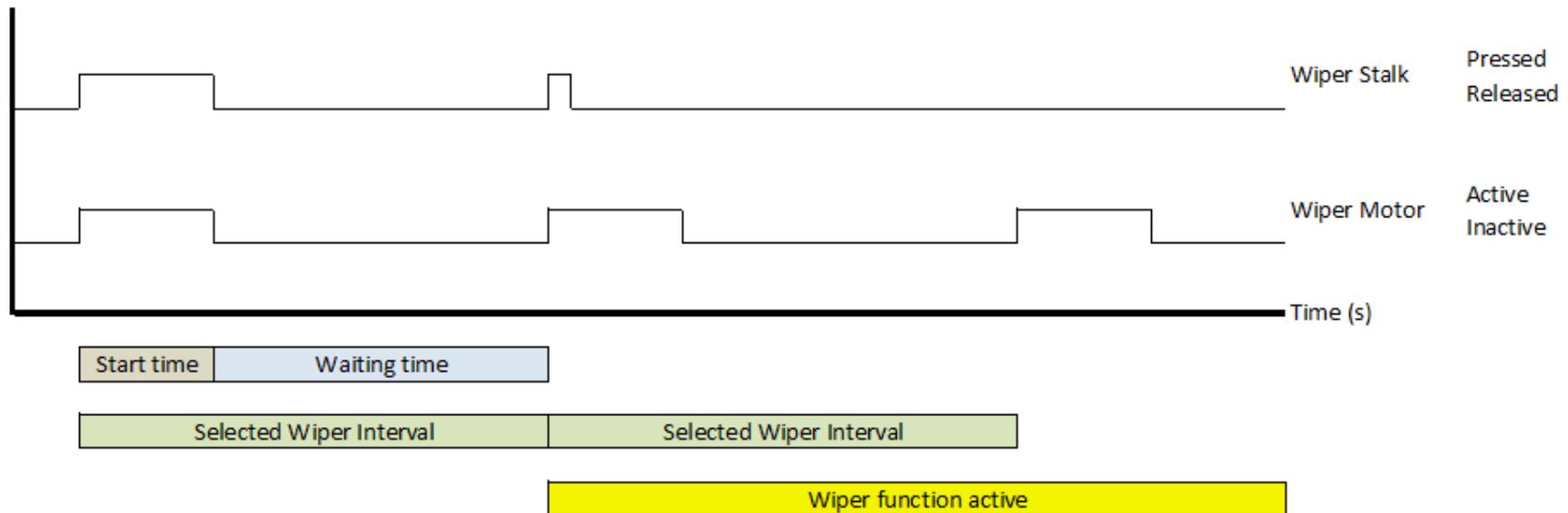
Windscreen Wiper

- This is a function to manually select the interval between the windscreen wipes.
- The whole point is to press down the wiper stalk and hold the windscreen wiper during a complete "swipe" of the windscreen and when the wiper stalk is released back into "idle" position the eSID counts the time from the stalk was released until a second short press down on the stalk is performed. Valid delay range is from 2 to 40 seconds.
- When the time has been set, the windscreen wiper will continue to run until the driver moves the wiper stalk into any other position than "idle" or if the ignition is turned off.
- Possible to manually enter an extra swipe while the function is running. It will continue with the selected interval afterwards.

Windscreen Wiper



Windscreen Wiper



Auxiliary Heater Control (from SW 2.09.x)

- The eSID can remotely start the auxiliary heater using the remote control
- Long press (6 seconds) on any of the two buttons below will be trigger the sequence.



- Its recommended to disable Panic Alarm in a workshop and use Follow-me-home/Panic alarm button when using this function.

Auxiliary Heater Control (from SW 2.09.x)

- When the sequence is triggered:
 - Quick double blink on the turn indicators to show that the sequence has been received (let go of the remote button)
 - Some seconds later, a long blink to indicate that the auxiliary heater has started
 - One quick blink every minute while running
- When the heater control sequence has started its possible to lock the car and to turn off the find-me-to-car light (activated depending on which button was pressed)
- The heater will continue running until the timer has elapsed (30 min) or if the user presses the "Unlock" button, then it will terminate immediately.

Comfort Mirrors

(from SW 2.10.x)

- The function can be enabled/disabled in eSID Settings
- The mirrors will fold if the following conditions are fulfilled:
 - Vehicle is locked with Remote (single press)
 - Driver door is closed
 - eSID has learned the mirror position (driver must use the fold/unfold once manually after eSID has been inserted)
- The mirrors will unfold if the following conditions are fulfilled:
 - Vehicle is unlocked with Remote (single press)
 - Mirrors was folded by eSID

Unlock Light Logic

(from SW 2.10.x)

- The function can be enabled/disabled in eSID Settings
- If the value is non-zero the eSID will suppress the two indicator blinks when performing an unlock lock command with the remote and instead activate exterior light.
- Function will activate exterior light if all the following conditions are fulfilled:
 - Unlock Light Logic value in eSID Settings $\neq 0$
 - Driver Door is closed
 - Vehicle is unlocked with Remote (single press)
- Function will re-activate normal exterior light if any of the following conditions are fulfilled:
 - Driver Door is opened
 - Vehicle is locked with Remote (single press)
 - 60 seconds activation timer has expired.

Unlock Light Logic

(from SW 2.10.x)

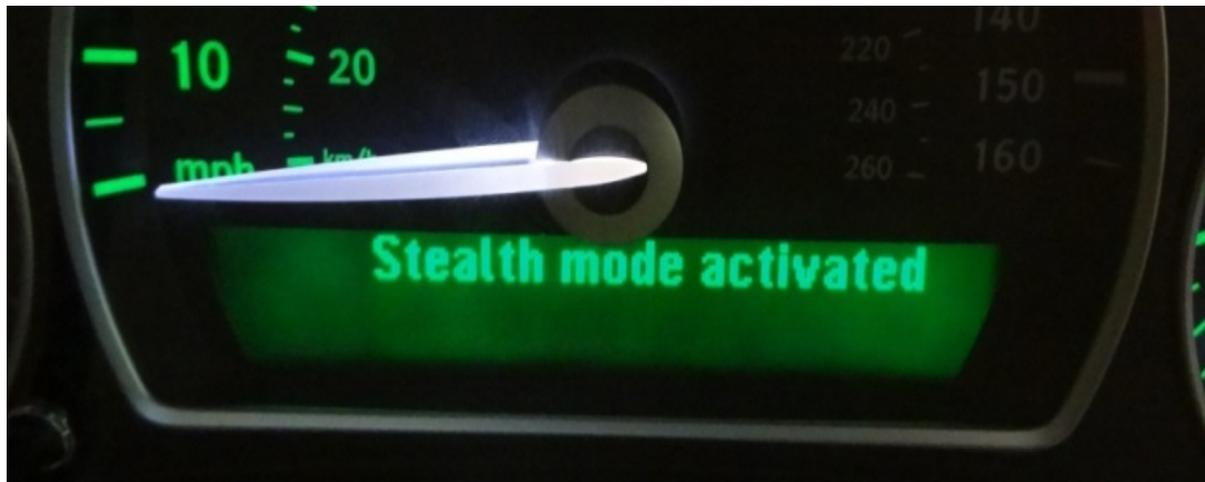
- The light configuration is bit-coded into a value between 0 and 127.

	Bit						
	6	5	4	3	2	1	0
Front: PosLight+Sidemarkers							X
Front: FogLights						X	
Front: Lowbeam					X		
Rear: PosLight				X			
Rear: Brake light			X				
Rear: License Plate		X					
Front/Rear: Turn Indicators	X						

- Example: If the position light (LED), front foglights and rear position light should be activated:
 - Bit0 = 1 (position light)
 - Bit1 = 1 (fog light)
 - Bit3 = 1 (rear pos light)
 - Writing this in 8-bit binary result in: 0000 1011, which corresponds to "11" in decimal value and this is the value that shall be put in the eSID Settings.

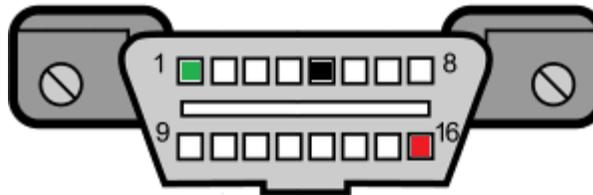
Stealth mode

- "Stealth mode activated" is shown when the driver activates Night Panel.
- eSID will resume its previous display view when night panel is turned off



Change System Clock : Preparations

- If the car is not equipped with OEM-radio and the clock needs to be adjusted with eSID the following hardware is required:
 - An additional OBD-connector must be installed in the vehicle with three cables attached to it:



OBD pin1 shall be connected to Infotainment CAN-bus found in Radio connector X1-13

OBD pin5 shall be connected to Ground found in Radio connector X1-8 (Or for instance the cig.lighter

OBD pin16 shall be connected to Power/12V found in Radio connector X1-1 (Or for instance the cig.lighter)

- Use eSID as normal and set the new date and time in Settings. Then turn off the ignition and move eSID to the new OBD-connector and turn on the ignition. Wait 10 seconds and then move the eSID back to the normal OBD-connector. Read the System Clock under "Vehicle" display group.

Change System Clock : Step-by-step

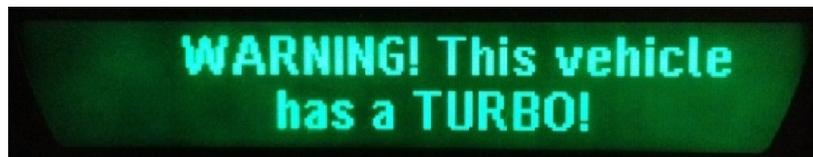
- Set a new desired date and time in under Settings menu and when all has been entered it should look like this:



- Press **SET** to save this time in eSID memory, if you press **CLR** it will NOT be saved and you have to repeat the first step.
- Turn off the Ignition and move over the eSID to the new OBD-connector from the previous slide
- Turn on the Ignition with eSID connected to the new OBD-connector
- Wait ~5 seconds
- Move eSID over to the normal OBD-connector without cycling the Ignition.
- Verify the new date and time under "System Clock" in the "Vehicle"-group.

Welcome Text

- eSID has a customizable startup welcome text, shown after "Control OK" when turning on the ignition
- This function is active after the startup is complete (startup text that is shown the first time, with SW version)
- When turning off the ignition, it has to remain off for a couple of seconds before turning it on again to trigger the welcome text (same time that will trigger the "Control OK")



eSID Settings

eSID Settings

- Some parameters are saved in the eSID's memory and will be maintained when removed from the car
- 1) **Favorite function(s)**
- 2) **Engine**. See next slide
- 3) **Fuel correction factor**: Used to trim the counters to be more accurate, see next slide.

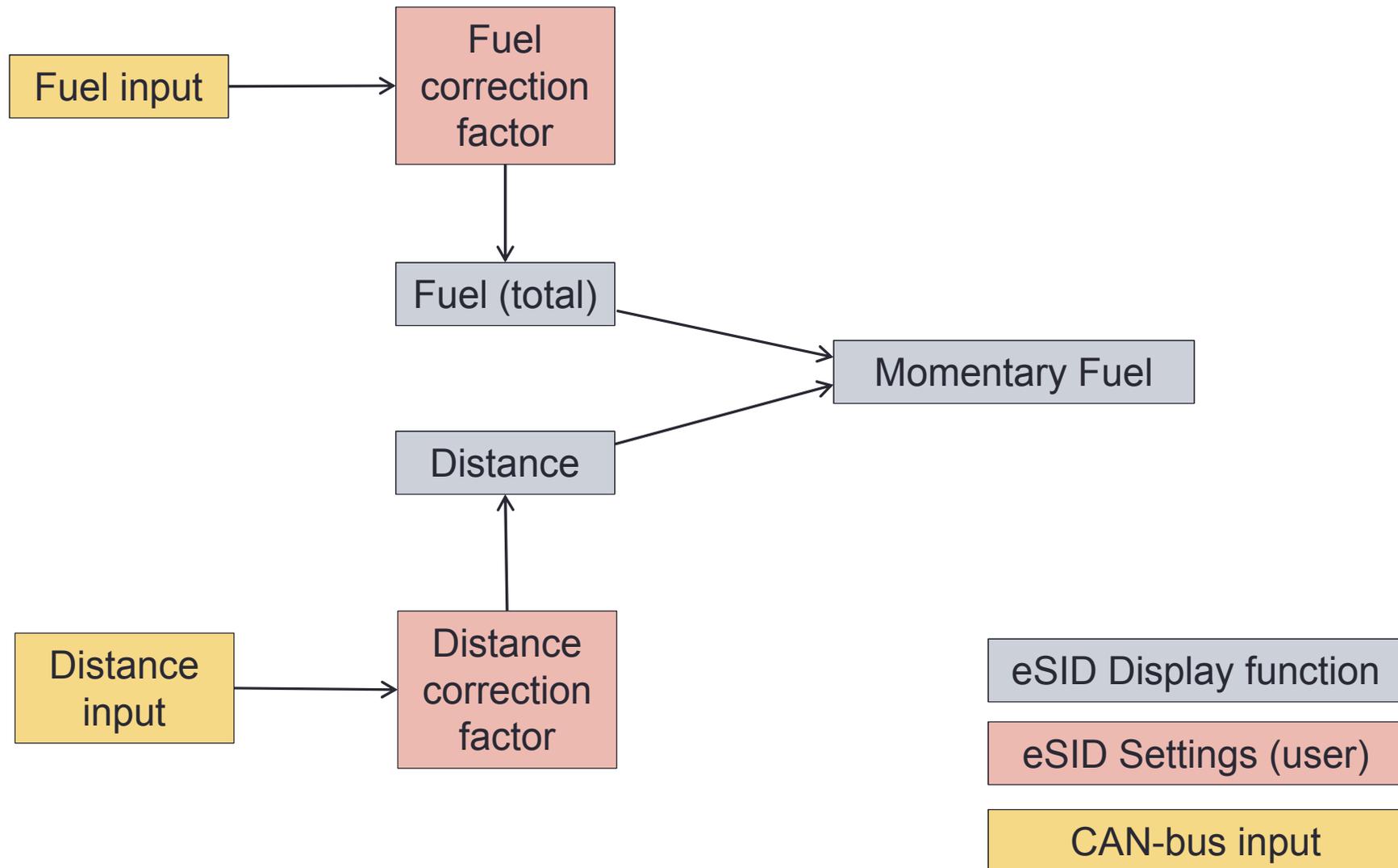
Ex: 1,052 = 5.2% more fuel
 0,981 = 1,9% less fuel

- 4) **Dist correction factor**: Same as above for distance
- 5) **Welcome Text**: Choose the startup text and if its enabled
- 6) **AutoFogLight**: Disable/Enable the AutoFogLight function
- 7) **ThreeBlink**: Disable/Enable the ThreeBlink function
- 8) **Units**: Select unit for Torque, Pressure, Vacuum, Distance, FuelCon, Volume and Temp.
- 9) **Autostart**: Disable/Enable the eSID autostart after ignition on function
- 10) **Wiper**: Disabled/Enable the eSID Windscreen Wiper function
- 11) **Set Time**: Program a new date and time in eSID memory (See System Clock slide)
- 12) **Language**: Select Language (Auto, English or Custom language) (Only SW 2.08.x and newer)
- 13) **Unlock Light Logic**: Select exterior light configuration (0 = Disabled) (Only SW 2.10.x and newer)
- 14) **Comfort Mirrors**: Disable/Enable the function (Only SW 2.10.x and newer)

eSID Settings: Engine

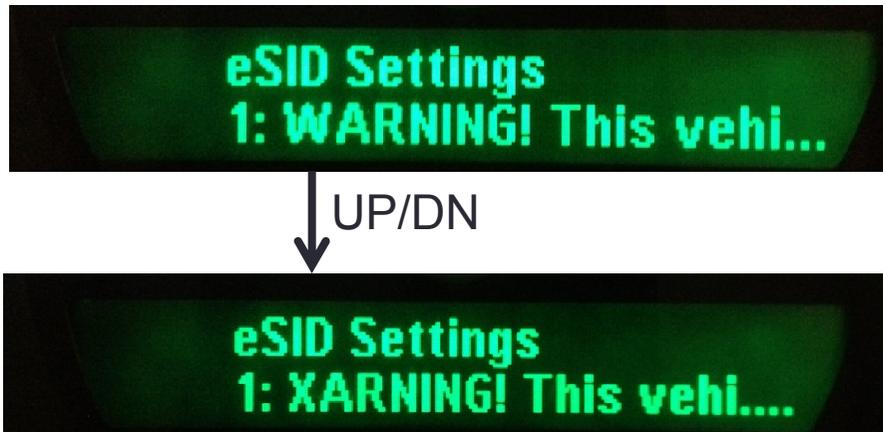
- Auto (eSID automatically selects based on VIN) (from. SW 2.09.x)
- **B207** (4-cyl Turbo 1.8t, 2.0t, 2.0T MY03-11. All Gasoline versions and BioPower cars w/o ethanol sensor i.e. MY07-10 FWD)
- **B207 ES** (4-cyl Turbo 1.8t/2.0t BioPower MY10 XWD and all MY11) (Note: from. SW 2.05.6)
- **B284** (V6 Turbo)
- **Z19DTx** (1.9L Diesel TiD/TTiD)
- **A20NFT** (MY12 Griffin Gasoline/BioPower)
- **NEVS_M14** (MY14 Saab 9-3 Aero by NEVS)
- **Other** (Non-turbo versions)

eSID Settings: Dist/Fuel correction



eSID Settings: Welcome Text

- Press **UP/DN** to change the character, press **SET** to go the next one. Once the first row is done it continues on the second



eSID Settings: Language

- eSID2 from software v2.08.0 and newer supports two languages, English and one custom language
- If "Auto" is selected, then eSID2 will read the language from the cluster every time the key is turned from LOCK to RUN (or when manually changed in the cluster settings).
- If the language in the instrument cluster matches the custom language stored in eSID2, then that language will be selected, otherwise English.

Contact Information

- This product is sold by Service 4 Hjo AB, Sweden (Registered for F-tax)
- Contact us at:
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