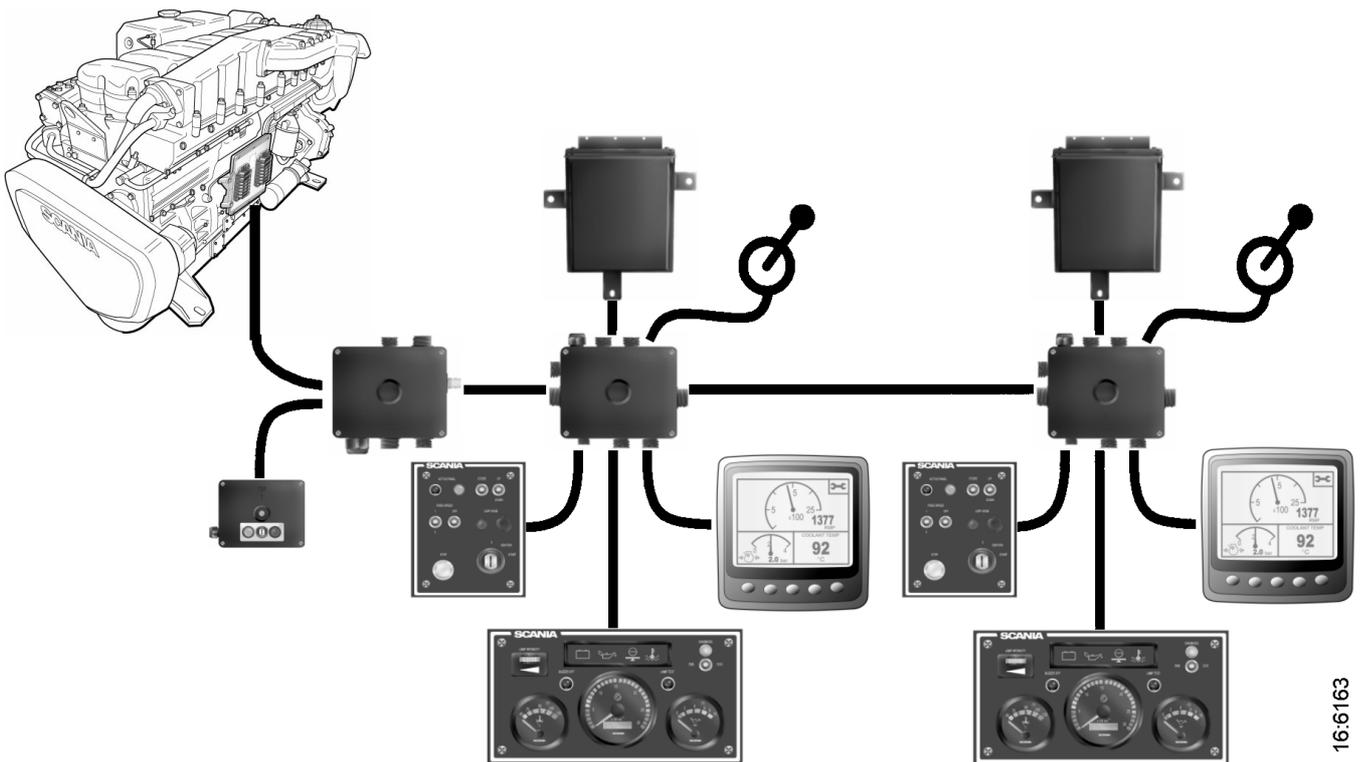


**Scania EMS
Instrumentation
1 920 778**



16.6163

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Scania EMS Instrumentation

General

The base system consists of the main supply box (MSB), the junction box for the coordinator (CBC) and the coordinator (COO). The main supply box is connected directly to the S6 control unit.

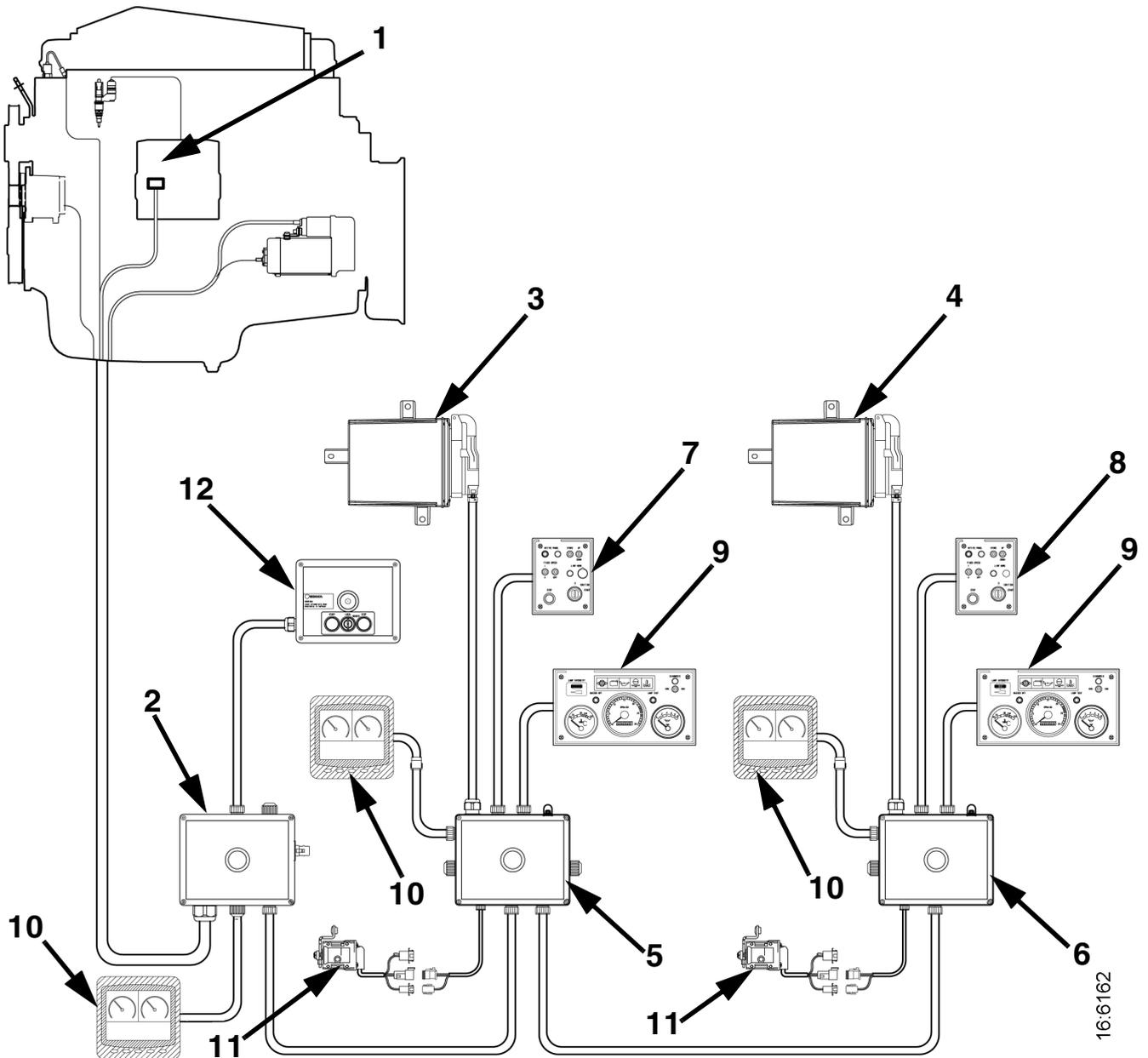
This base system has several different options for connection to the system:

- Scania EMS digital display combined with a control panel with a starter key.
- A remote control box which allows the engine to be controlled from the engine room.
- An analogue instrument panel instead of the digital display or combined with it.
- A Scania APS sensor (accelerator pedal sensor).
- In addition, the system can be doubled if there are two control desks.

The whole instrumentation system is *Plug and Play* which makes it very simple to install.

See illustration of dual system on the next page.

In this Operator's Manual, only the analogue instrument panel 9, *Scania EMS display 10* and *Control Panel 8* and 9, are described.



16:6162

1. Control Unit S6
 2. Main Supply Box
 3. Coordinator
 4. Coordinator
 5. Connection Box Coordinator (master)
 6. Connection Box Coordinator (slave)
 7. Control Panel (master)
 8. Control Panel (slave)
 9. Instrument Panel
 10. Scania EMS Display
 11. Accelerator Position Sensor
 12. Remote Control Box
- Scania instrumentation, dual system*

Instrument Panel (analogue)

General

The analogue instrument panel has instruments for reading the rotation speed with hour counter, coolant temperature and oil pressure, as well as switches and lamps for diagnosis and alarms.

The analogue instrument panel incorporates the following functions:

Also see illustration on next page.

Lamp intensity (S54)

The intensity of the gauges can be regulated with this roller control.

Buzzer off (S51)

This button deactivates the buzzer sound on any existing alarm. The warning lamp for the current alarm trigger will remain illuminated until the fault is rectified.

Lamp test (S52)

This button is used to check that the system lamps are intact and functioning. When the button is activated, the coordinator will activate all lamps on the panel and the buzzer will sound. The lamps illuminate and the buzzer sounds as long as the button is depressed.

When the key in the control panel (Control Panel) is turned to the *Ignition* position, an automatic lamp test takes place for 2 seconds and the buzzer sounds for 1 second.

Diagnosis EMS/COO (W21 and S53)

This is a 3 position switch which is linked to diagnostics lamp W21. The diagnostic lamp remains lit for as long as the system has an active fault code.

When the switch is activated in the COO direction for at least 1 second, the coordinator will transmit any fault codes as flash codes on the diagnostic lamp (W21).

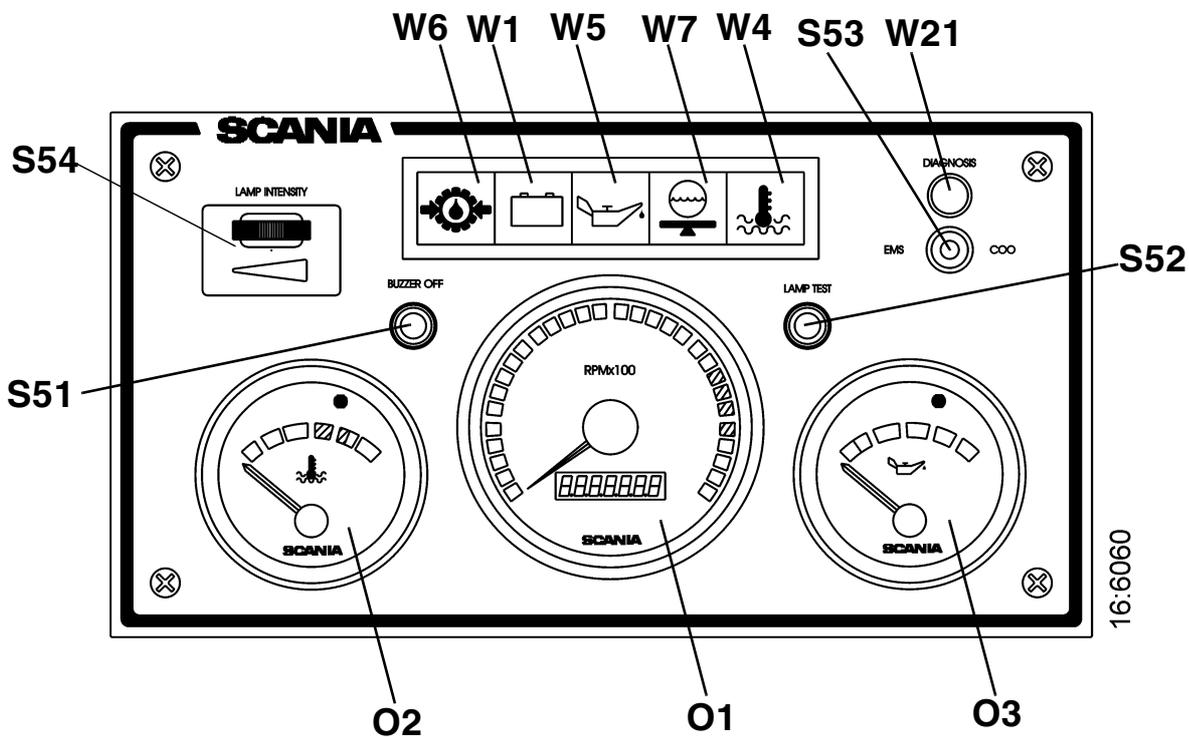
When the switch is activated in the EMS direction for at least 1 second, the coordinator will transmit any fault codes for the EMS the control unit as flash codes on the diagnostic lamp (W21).

In order to read flash codes with dual instrumentation it is necessary to request diagnosis from the instrument panel to which the coordinator concerned is connected.

For further information on reading and deleting flash codes, see *Troubleshooting using flash codes*.

Warning lamps (W1, W4, W5, W6, W7)

On the warning lamp panel there are warning lamps for alternator charging, oil pressure, coolant temperature and coolant level. The warning lamp for hydraulic pressure is not used.



- O1 Tachometer with hour counter
- O2 Coolant temperature gauge
- O3 Oil pressure gauge
- S51 Buzzer deactivation
- S52 Lamp test switch
- S53 Diagnostic switch
- S54 Instrument lighting rheostat
- W1 Charge indicator lamp
- W4 Warning lamp, coolant temperature
- W5 Warning lamp, oil pressure
- W6 Warning lamp, hydraulic pressure
- W7 Warning lamp, coolant level
- W21 Diagnostic lamp

Scania analogue instrument panel

Troubleshooting using flash codes for the EMS control unit

1. Switch on the ignition. If the diagnostics lamp remains on after 2 seconds there is an active fault.
2. Activate the diagnostic switch (*S53*) to the left to see the flash codes for the control unit (*EMS*).
3. A fault code will then flash on the diagnostics lamp (*W21*). This flash code consists of long flashes (approximately 1 second long) and short flashes (0.3 seconds long). Long flashes are equivalent to tens and short flashes to ones.
Example: *long - short - short = fault code 12*.
4. Repeat this procedure until the first flash code is repeated. This means that the entire fault code memory has been flashed out. If the fault code memory is empty, only one long flash approximately 4 seconds long will be given.
5. See the flash code table on the next page for a description and to locate the fault.
6. For further information about the fault code the PC based diagnostic tool or *Scania EMS Display* must be used. Contact an authorised Scania workshop.
7. The diagnostics lamp will stay on for as long as a fault is active. Even if the lamp has gone off and the fault is no longer active, the code can generally be read off in accordance with the instructions above.
8. When a fault has been rectified the fault code can be erased as described below.

Deleting fault codes (flash codes)

1. Turn the ignition off. If the vessel has dual instrumentation, the ignition must be switched off on both panels.
2. Activate the diagnostics switch in the direction of the flash codes, i.e. to the left for *EMS*.
3. Turn the ignition on at the same time as holding the diagnostics switch activated to the left (*EMS*) for 3 seconds.
4. This will erase passive fault codes which can be read off via flash codes for the relevant system. The rest of the fault codes will remain in the *EEPROM* and can only be deleted using the PC tool.

Overview of flash codes for EMS control unit

Code	Description	Code	Description
0	No fault detected.	53	PDE in cylinder 3: The solenoid valve does not work correctly.
11	Over-revving. One or both engine speed sensors shows a speed in excess of 3,000 rpm.	54	PDE in cylinder 4: The solenoid valve does not work correctly.
12	Engine speed sensor 1 faulty, or incorrect signal.	55	PDE in cylinder 5: The solenoid valve does not work correctly.
13	Engine speed sensor 2 faulty, or incorrect signal.	56	PDE in cylinder 6: The solenoid valve does not work correctly.
14	Coolant temperature sensor faulty, or incorrect signal.	57	PDE in cylinder 7: The solenoid valve does not work correctly.
15	Charge air temperature sensor faulty, or incorrect signal.	58	PDE in cylinder 8: The solenoid valve does not work correctly.
16	Charge air pressure sensor faulty, or incorrect signal.	59	Incorrect signal in extra analogue input.
17	Oil temperature sensor faulty, or incorrect signal.	61	Incorrect control unit shutdown.
18	Oil pressure sensor faulty, or incorrect signal.	66	Shutdown due to coolant level.
21	Coolant level sensor faulty.	68	Alternator charging incorrectly.
23	Internal fault code in the coordinator.	69	Starter motor function interrupted or not activated.
24	Accelerator/brake. If the accelerator and brake pedals have been operated simultaneously.	82	Engine speed above ref. engine speed at start.
25	Accelerator sensor/idle switch. Accelerator sensor/kickdown switch.	83	Fault in memory circuit (EEPROM) in control unit.
27	Engine shutdown bypassed.	84	Data transfer to the control unit memory (EEPROM) has been interrupted.
28	Shutdown due to oil pressure.	85	Incorrect internal temperature in the control unit.
31	Torque limitation due to oil pressure.	86	Internal fault in the control unit: Fault in hardware control.
32	Incorrect parameters for <i>limp home</i> function.	87	Fault in control unit RAM.
33	Battery voltage incorrect or no signal.	88	Internal control unit fault: Memory fault.
37	Emergency shutdown switch activated in accordance with CAN message from coordinator.	89	Incorrect seal: Prohibited changes in software.
43	CAN circuit faulty in the control unit.	93	Engine speed sensors faulty or not connected.
47	Immobiliser function. Starter key code incorrect.	94	Shutdown due to high coolant temperature.
48	CAN message from the coordinator incorrect or missing.	96	Torque limitation due to high coolant temperature.
49	Incorrect CAN version in control unit or coordinator.	98	Incorrect voltage supply to one of the sensors.
51	PDE in cylinder 1: The solenoid valve does not work correctly.	99	Internal hardware fault in the processor (TPU).
52	PDE in cylinder 2: The solenoid valve does not work correctly.		

Troubleshooting using flash codes for the EMS coordinator

1. Switch on the ignition. If the diagnostics lamp remains on after 2 seconds there is an active fault.

Important! *The diagnostics lamp only indicates faults for the coordinator connected to the instrument panel from which the flash codes are read.*

2. Activate the diagnostics switch (*S53*) to the right to see the flash codes for the coordinator (*COO*).
3. A fault code will then flash on the diagnostics lamp (*W21*). This flash code consists of long flashes (approximately 1 second long) and short flashes (0.3 seconds long). Long flashes are equivalent to tens and short flashes to ones.
Example: *long - short - short = fault code 12.*
4. Repeat this procedure until the first flash code is repeated. This means that the entire fault code memory has been flashed out. If the fault code memory is empty, only one long flash approximately 4 seconds long will be given.
5. See the flash code table on the next page for a description and to locate the fault.
6. For further information about the fault code the PC based diagnostic tool or *Scania EMS Display* must be used. Contact an authorised Scania workshop.
7. The diagnostics lamp will stay on for as long as a fault is active. Even if the lamp has gone off and the fault is no longer active, the code can generally be read off in accordance with the instructions above.

Deleting fault codes (flash codes)

1. Turn the ignition off. If the vessel has dual instrumentation, the ignition must be switched off on both panels.
2. Activate the diagnostic switch in the direction of the flash codes, i.e. to the right for the coordinator (*COO*).
3. Turn the ignition on at the same time as holding the diagnostic switch activated to the right (*COO*), for 3 seconds.
4. Any fault code that can be read by a flash code for the system in question will be deleted. The rest of the fault codes will remain in the *EEPROM* and can only be deleted using the PC tool.

Important! *It is only possible to delete fault codes for the coordinator that is connected to the instrument panel from which deletion is carried out.*

Overview of flash codes for EMS coordinator

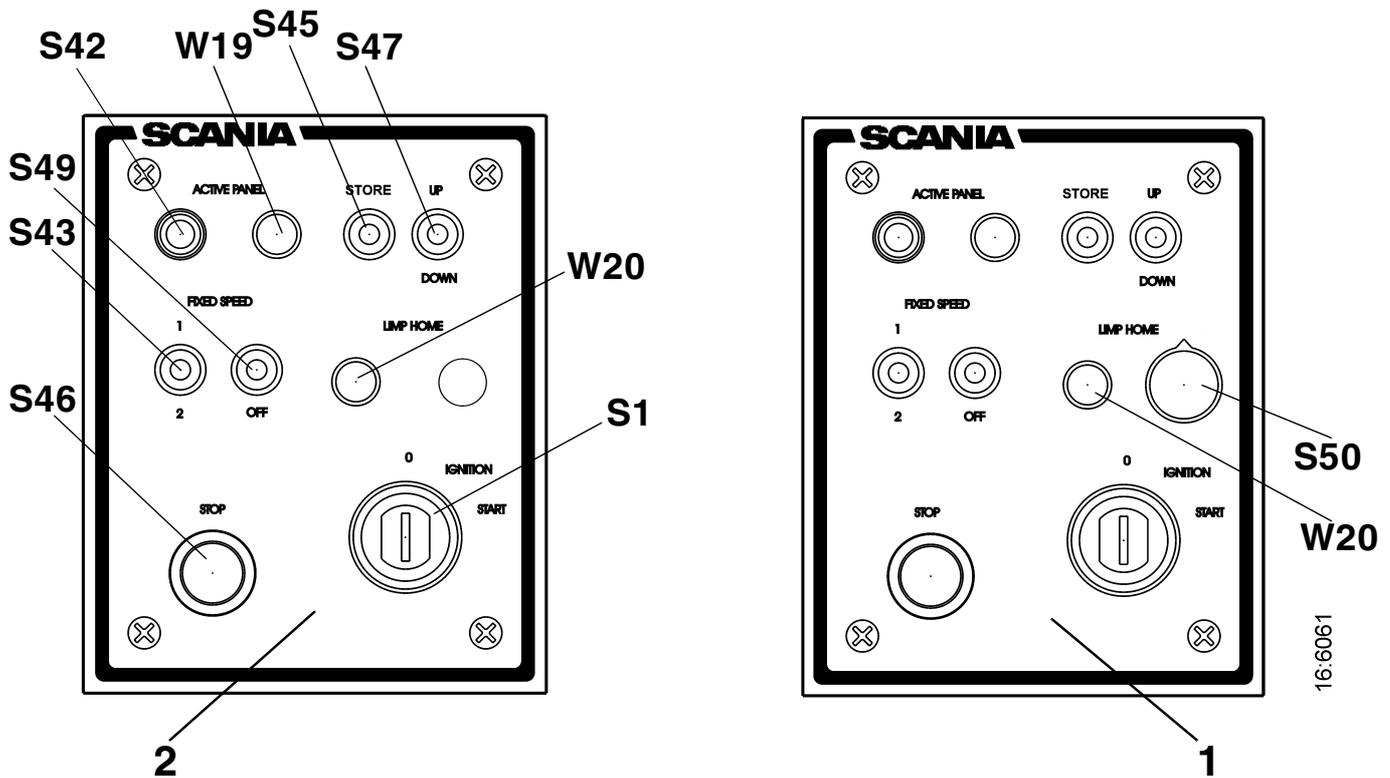
Flash code	Fault description
11 ¹⁾	Incorrect signal from the fine adjustment for the nominal engine speed signal.
11 ²⁾	Incorrect analogue signals from the accelerator pedal sensor.
12 ¹⁾	Incorrect analogue signal from the resistor module for governor setting.
12 ²⁾	Incorrect analogue signal from the resistor module for idling and fixed speed setting.
13	No communication (EMS) with the engine.
14	Short-circuit in the tachometer signal circuit.
15	Faulty atmospheric pressure sensor.
17	Short-circuit in the coolant temperature gauge signal cable.
18	Short-circuit in the oil pressure gauge signal circuit.
19	Short-circuit in the oil pressure lamp signal circuit.
21	Different versions of the communications protocol between the coordinator and EMS.
22	Faulty start switch or short circuit.
23	Supply voltage too high.
24	Supply voltage too low.
25	Check value from <i>end of line</i> (EOL) is incorrect.
26	Speed sensor signal missing or incorrect.
27	The signals from the RCB (Remote Control Box) switches are implausible.
28	Incorrect signals from the droop setting switches.
29	Faulty remote start switch or short circuit.
31	No communication from the slave coordinator or the master coordinator.
32	Short circuit in the signal cable to the coolant temperature warning lamp.
33	Short circuit in the signal cable to the charge warning lamp.
34	Incorrect signal from the <i>Fixed speed</i> switches.
35	Fault in CAN communication.

1) Single speed engine

2) All-speed engine

Scania Control Panel (SCP)

Start and stop the engine from the *Scania Control Panel* which has a starter key and a stop button together with functions for *Fixed Speed* and *Limp Home*.



- 1 Master panel
- 2 Slave panel
- W19 Lamp for Active Panel
- W20 Lamp for Limp Home Throttle
- S1 Starter key
- S42 Switch to activate Active Panel function
- S43 Switch for activating and switching between Fixed Speed 1 and 2
- S45 Switch for storage
- S46 Stop button
- S47 Switch for adjusting Fixed Speed/Idle Speed up or down
- S49 Switch for deactivating Fixed Speed function
- S50 Potentiometer for Limp Home Throttle

Scania Control Panel with starter key

The following functions are available in *Scania Control Panel*:

Active Panel

Activate the panel by depressing pushbutton *S42*. The coordinator registers that this control position is active and switches on lamp *W19*.

The panel from which the engine is started is automatically active and it is then possible to make adjustments and request throttle actuation.

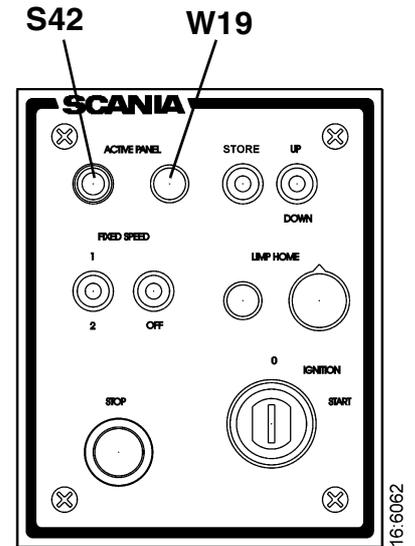
In order to change active panel (changing throttle position), both throttle controls must be at 0% throttle. Switch off the active panel so that neither panel is active. Then it is possible to change control position.

With single instrumentation, the panel is activated when the key is turned to the ignition position.

If the throttle control fails, the *Active Panel* lamp is still illuminated and the *Limp Home* lamp comes on which means that the limp home throttle (emergency throttle) is engaged.

If *CAN* communication fails, the *Limp Home* lamp comes on and the *Limp Home* throttle is engaged.

See also under *Limp Home Throttle*.



Fixed Speed 1 and 2

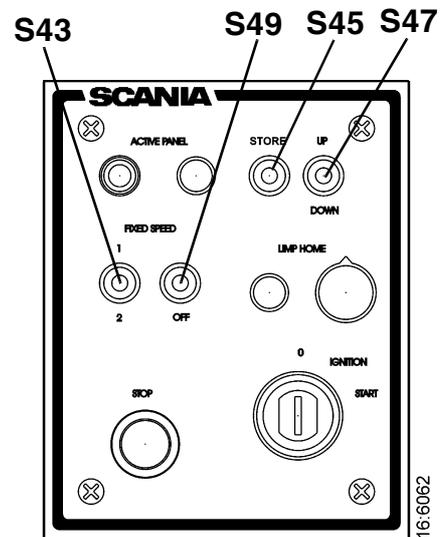
These two functions are activated via a 3-position switch, *S43*. With *Fixed Speed 1*, it is possible to set an isochronous speed between high and low idle speed. With *Fixed Speed 2* it is possible to set an isochronous speed between 450 and 2,000 rpm. In both modes, it is possible to set torque limitation via the diagnostic tool or the digital display.

During activation, the engine goes up or down to the last saved value for the mode.

The conditions for activating these modes are that the engine is running, the panel is active and the throttle is at 0%.

Change the speed for either modes in the following way:

- Activate the mode to be changed by moving switch *S43* to 1 or 2.
- Adjust the speed up or down using switch *S47*.
- Press *Store* switch *S45* for 3 seconds to save the new values. If you exit the mode without saving, the engine will resume the last speed value that was stored for that mode.
- When using dual instrumentation it is only possible to make adjustments from the panel that is active.
- In order to deactivate the function, press switch *S49* to *Off*, touch the accelerator pedal, change the panel when using dual instrumentation, or switch off the engine.



Idling speed adjustment

Reset the engine idle speed as follows:

1. Activate *Store* switch *S45* for 3 seconds in order to go to adjustment mode.
2. Adjust the idle speed up or down (+ or -) using switch *S47*.
3. Save the set value by activating the *Store* switch for 3 seconds.

- It is also possible to set the engine idle speed using the diagnostic tool or Scania digital display.
- In order to reset the idle speed the coolant temperature must not be higher than 50°C with the engine running at idle.
- The idle speed can be set to between 500 and 1,050 rpm.

Stop

The engine stop function is available in several places in the system.

With single instrumentation the stop button is in 2 places:

- In the *Remote Control Box (RCB)*.
- In the *Control Panel (S46)*.

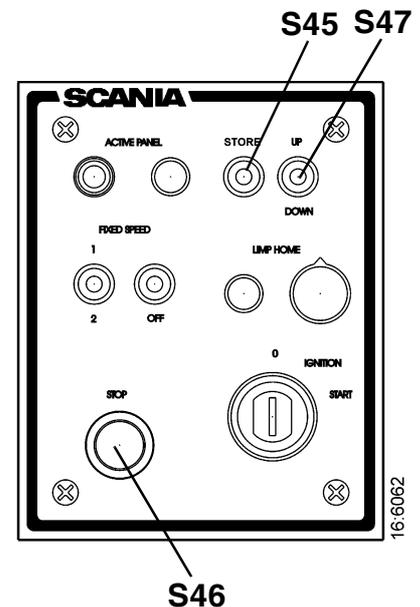
With dual instrumentation, the stop button can be located in 3 places:

- In the *Remote Control Box (RCB)*.
- In both *Control Panels (S46)*.

When one of these buttons is activated *COO* sends a message to *S6* to stop the engine.

It is also possible to stop the engine by turning the key to *O*. With dual instrumentation it is possible that both *Control Panels* are in ignition position and both keys must then be turned to *O*.

We therefore recommend that the engine is stopped with a stop button.



Limp Home Throttle

Limp Home Throttle is an emergency throttle function which is activated if the master coordinator fails or if the master throttle control fails when the master control position is active, or if the slave throttle control fails when the slave control position is active or if CAN traffic fails.

If any of the above should occur, the Limp Home lamp W20 will come on and the Limp Home Throttle will be engaged.

Limp Home Throttle, S50, consists of a potentiometer on the master Control Panel which can be operated in limp home mode. The potentiometer value goes directly to switch A2 on the S6 control unit.

In order to use Limp Home Throttle, the potentiometer must first be turned to the 0 position before it is activated. The potentiometer is only on the Master Control Panel. There is a Limp Home lamp on both panels. If CAN fails, both the lamps will come on and the Limp Home Throttle will become active.

The potentiometer is only on the master panel but *Limp Home* lamp W20 is on both panels.

If the master control fails when the master panel is active, the lamps on both panels will come on. If you then change to the slave panel, both lamps will go off and it is possible to control the engine throttle via the slave panel.

The same will also apply the other way round.

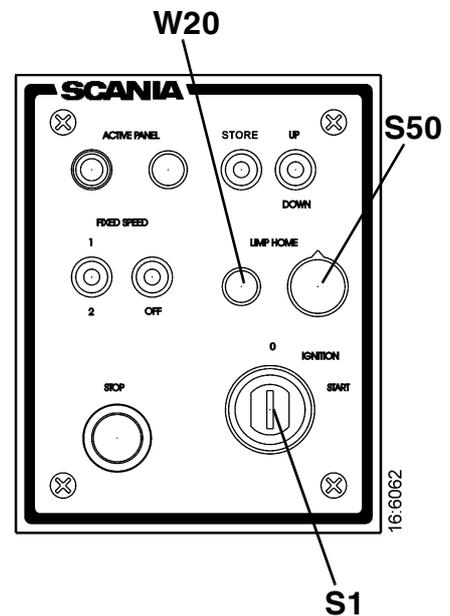
Start Key

Start the engine by using key S1 on Scania Control Panel. The key generates a U15 signal in the *Ignition* position and a U50 signal in the *Start* position.

When the coordinator receives a signal from the key to start, the coordinator sends a *CAN* message to the S6 control unit, which in turn sends a signal to the starter relay that supplies the starter motor with power and the engine starts.

- If a panel is active, it is only possible to start the engine from that panel.
- If no panel is active, the panel that you use to start the engine will automatically become active.

The engine stops when the key is turned to the 0 position. This only applies if the other key in a dual system is *not* turned on.



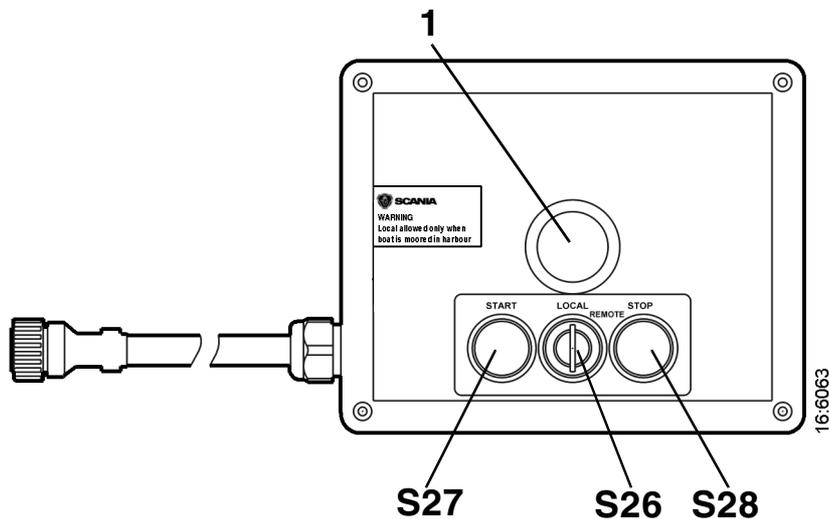
Remote Control Box (RCB)

The Remote Control Box is connected to switch C57 on the Main Supply Box (MSB). RCB can be used to lock the engine so that it cannot be operated from any position except where the RCB is located.

Note: This can only be done when the boat is moored, i.e. when there is no risk that the boat will drift out of control. There is a sign on the RCB with this warning text.

- There are two positions for key switch S26: *Local* and *Remote*.
 - **Local:** The engine cannot be operated from any location other than from the RCB box.
 - **Remote:** Normal position, the engine can be operated from the other throttle control positions.
- When the *Local* position is activated, the green lamp 2 is illuminated. At the same time the *Active Panel* lamps on the *Scania Control Panel (Slave and Master)* start to flash, which indicates that neither of these panels can be activated.
- When the engine is started from the *RCB* using S27 it only runs on idle as long as the *Local* position is activated and no other throttle control can be used.
- If the key switch is reset from *Local* to *Remote* when the engine is running, the green lamp 2 will go out and the engine will continue to run on idle, but it will then be possible to operate the throttle control from other control positions if the *Slave* or *Master* panel is active.
- If key switch S26 is reset from *Remote* to *Local* while the engine is running, nothing will happen, except that this will be regarded as an unintentional action.
- If *CAN* communication fails when the engine has been started from the *RCB*, the engine will stop but the *Limp Home* function will not be engaged.

- In order to start the engine again, "jumpering" is required as follows:
 - Connect pin 50 on the starter relay to the *positive* pin on the starter motor. The engine starts but it is only possible to control the throttle using the *Limp Home* potentiometer
 - In order to stop the engine you must switch off the power to *EMS S6* by turning the starter key to 0 or via switch *C122* in the *MSB*.



- 1 Green indicator lamp
- S26 Rotary switch for activating the Local function
- S27 Start button
- S28 Stop button

Scania Remote Control Box (RCB)

Scania EMS Display (SED)

General

Scania EMS Display is a graphic display which represents engine data, diagnostics, and allows certain parameters in the engine management system EMS to be set. Scania EMS Display can only be used together with EMS and the new electrical system adapted for marine use.

Communication to and from the display is carried out via CAN bus, protocol J1939.

Function

The information content can be found in different screens according to a tree structure. At the top level there are six different screens, three *Favourites*, *Information*, *Diagnostics* and *Settings*.

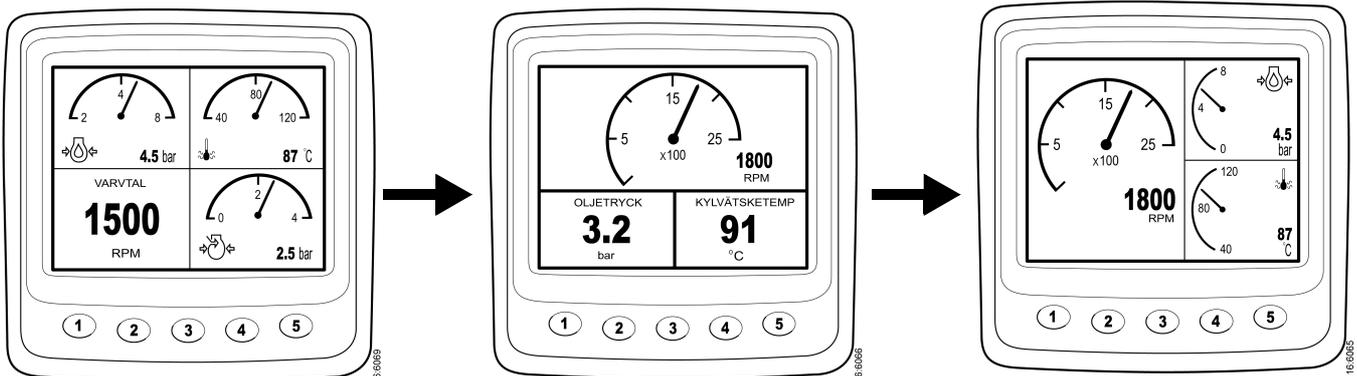
The buttons are configured to function differently depending on which screen is currently active. To scroll between different screens at the top level, use buttons 1 and 5 depending on whether you want to move forwards or backwards in the structure.

When one of the Favourite screens is active, the information about each button's function is hidden. The reason for this is to make as large an area as possible available for presentation. As soon as a button is depressed, the description for the button is displayed for approx 5 s.

Each window (except for Favourites) has a number in the upper left corner. The numbers indicate the current screen and level.

Favourites screen

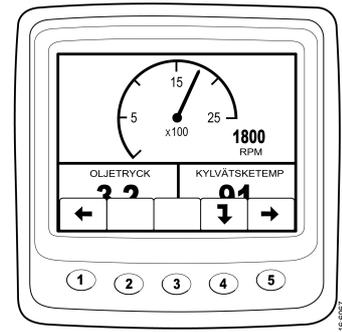
The *Favourites* screen is used to display engine data during operation, more or less equivalent to a Scania analogue instrument panel. The Favourites screen can have three different appearances, all on the highest level.



If you want to change from one *Favourite* to another *Favourite*, press button 1 or 5 depending on which is currently displayed.

In this diagram, the buttons have the following functions:

1		Scroll to the left at the top level
2		
3		
4		Go down one level in the structure
5		Scroll to the right at the top level

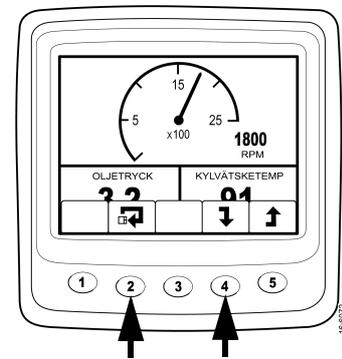


Change the appearance of a *Favourite* by pressing button 4.

The button diagram shown on the right, will then be displayed.

By pressing button 2 the appearance of the screen changes according to the sequence on page 19.

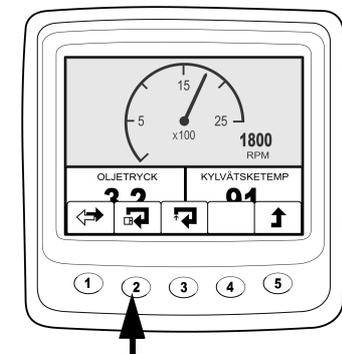
When an appearance has been selected, it is possible to change the contents of the selected window.



Press button 4 to display the button bar as shown in the table below.

- In order to select the contents of a window area, it must be active.
- Activate the window area by pressing button 2. The window will then be greyed out.

1		Changing between digital and analogue signals
2		Changing between greyed active partial screen
3		Changing of signal in greyed active partial screen
4		
5		Go up one level in the structure

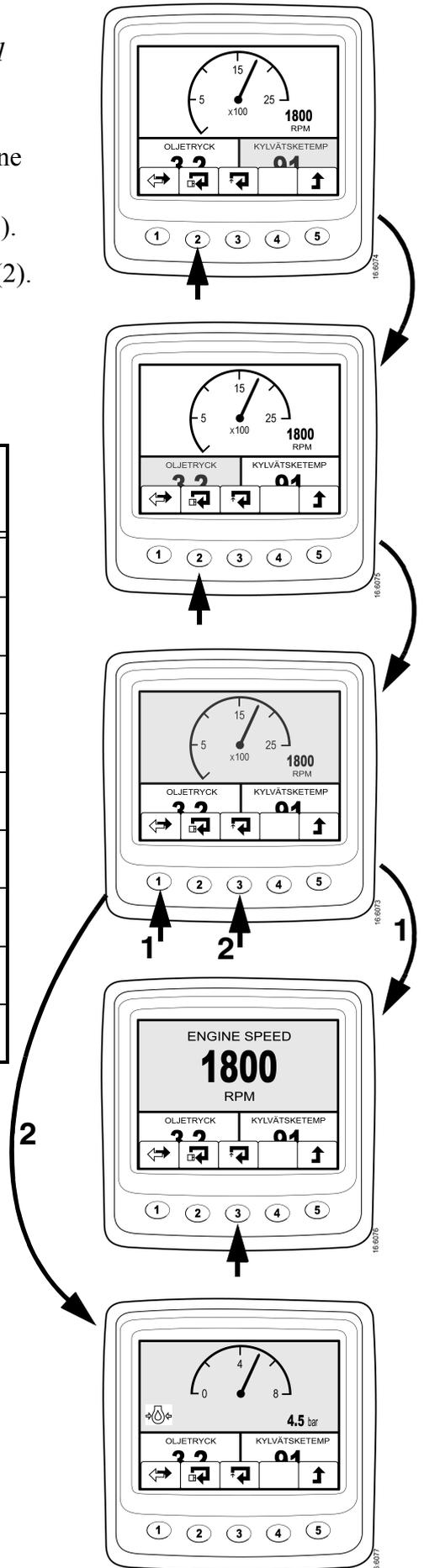


- Change the active window area by pressing button 2.
- The contents of the window area are changed with button 3 and 1 according to the following table:

The information in the different window areas can be displayed in digital or analogue format. Some signals can only be displayed in one format, see the table.

- Press button 1 to change between analogue and digital display (1).
- Press button 3 to change the contents of the active window area (2).

Signal	Digital display	Analogue display	Symbol
Engine speed	Yes	Yes	RPM
Oil pressure	Yes	Yes	
Coolant temperature	Yes	Yes	
Charge air pressure	Yes	Yes	
System voltage	Yes	Yes	
Fuel consumption	Yes	No	
Load at current speed	Yes	No	
Operating time	Yes	No	
Throttle	Yes	No	



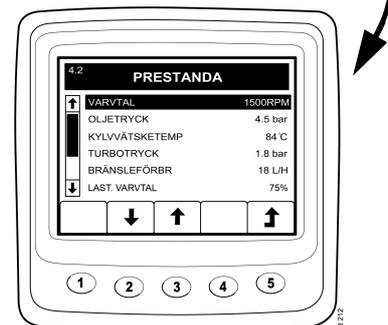
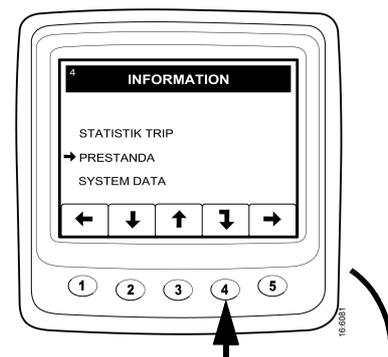
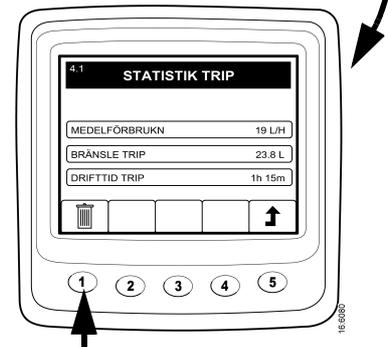
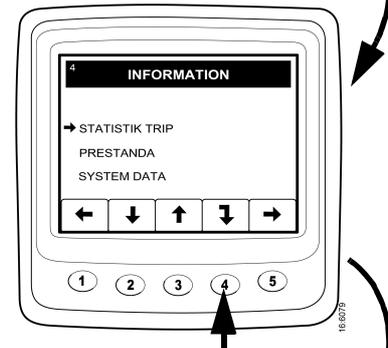
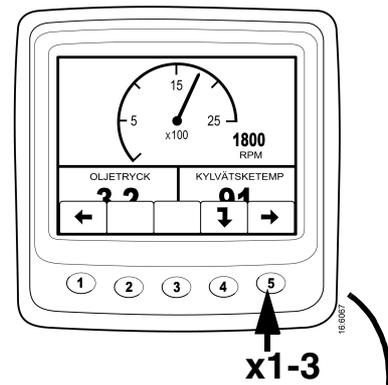
Information (4)

Carry out the following in order to go to this screen from the basic screen (Favourite):

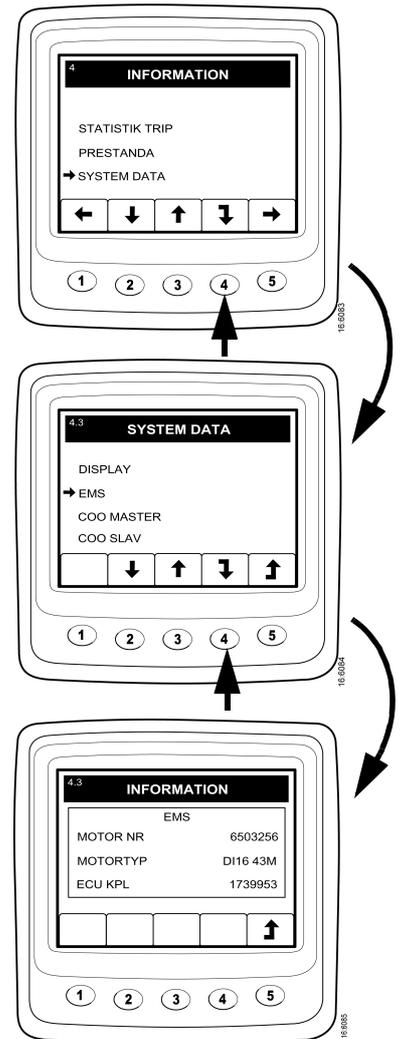
- Press any button to display the button bar.
- Press button 5 one to three times (depending on which Favourite is active) to go to screen 4 *INFORMATION*.
- The button bar will now stay on the screen.

- Buttons 2 and 3 are used to move up or down in this screen view.
- Press button 4 to go down one step in the structure to *TRIP STATISTICS (4.1)*.
- Here is some information according to the diagram.
- Press button 1 (*Reset*) in order to zero the reading.
- In order to go back to screen 4, press button 5.
- The maximum time a reading is registered is 999 h, then it will automatically be *Reset*.

- Go down one step with button 2 to *PERFORMANCE*.
- Press button 4 to go down one step in the structure to *4.2 PERFORMANCE*.
- The information displayed here is the current performance at that time, i.e. the displayed values are real-time values. Corresponding values can also be read in the *Favourite* window, but this is a quicker way to get a summary of the performance-related parameters.



- In order to go back to screen 4, press button 5
- Go down one step with button 2 to *SYSTEM DATA*.
- Press button 4 to go down one step in the structure to *4.3 SYSTEM DATA*.
- Here it is possible to select information about the four different system control units.
- If you select *EMS* and press 4, information about the engine, engine number and engine type and the EMS control unit part number will be displayed.
- If you select *DISPLAY*, the following information about *Scania EMS Display* is displayed:
 - Part number (complete)
 - Hardware number
 - Software number
 - Version number
- The corresponding information is retrieved for the coordinators if the *COO MASTER* or *COO SLAVE* is selected.



Fault codes (5)

- Return to screen 4 *INFORMATION* by pressing twice on 5. If you press button 5 again, screen 5 *FAULT CODES* is displayed.
- The upper symbol to the right indicates that **at least one** fault code is active.
- The button bar has a different appearance and it will be displayed the whole time. Refer to the table below.

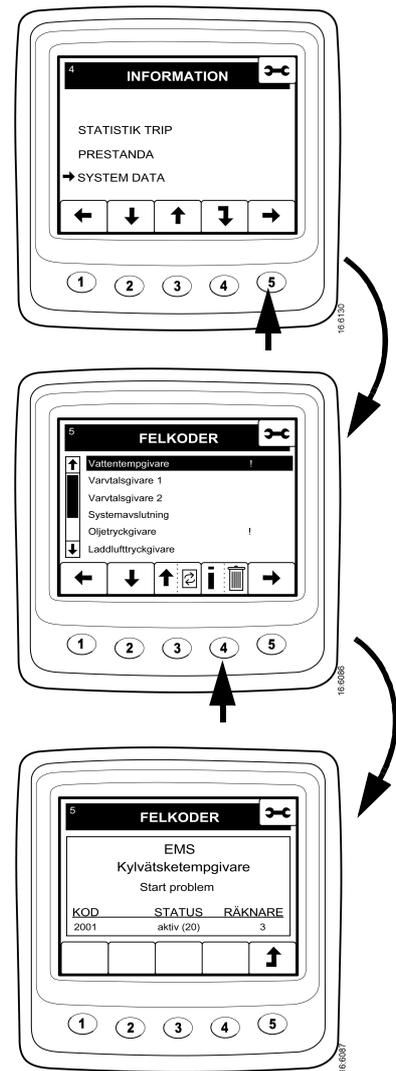
1		Scroll to the left at the top level
2		Go down to the next line in the list
3		Short press: Up to the next line in the list Long press (3 s): Update the list
4		Short press: Information about the highlighted fault code Long press (3 s): Clear fault codes
5		Scroll to the right at the top level

- In the example, the *Coolant temperature sensor* and *Oil pressure sensor* are marked by a !, which means that these are active fault codes.

Information about the highlighted fault code

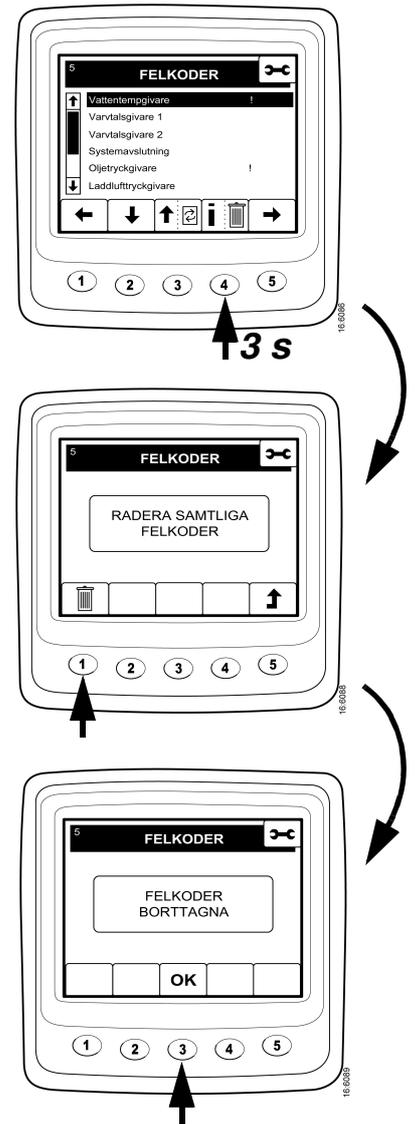
In the example, the *Coolant temperature sensor* is shown in black. By giving a short press on button 4, the information screen about the fault code is displayed.

Information type	Description
Control unit affected	The control unit where the fault originated, e.g. EMS
Name of fault	Fault code name, e.g. <i>Coolant temperature sensor</i>
System behaviour	How the system is behaving when the fault is <u>active</u> , for example <i>Problems starting</i>
Code	The number of the selected fault code, e.g. 2001
Status	If the fault is <u>active</u> or <u>passive</u>
Hex code	Gives more information than just status, e.g. 20
Qty	How many times the fault has occurred, e.g. 3



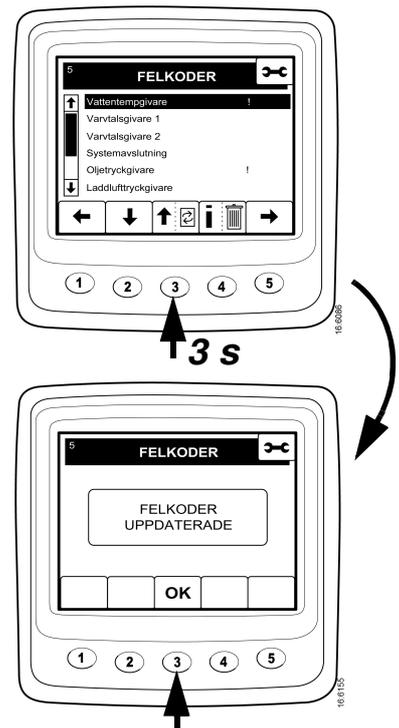
To erase fault codes

- Press button 4 for three seconds.
- A screen asking if you want to erase all fault codes is displayed.
- Press button 1 to erase all fault codes.
- Then press button 3, *OK*, to confirm.



Update the fault code list

- Update the fault code list by pressing button 3 for three seconds.
- Confirm by pressing button 3, *OK*.

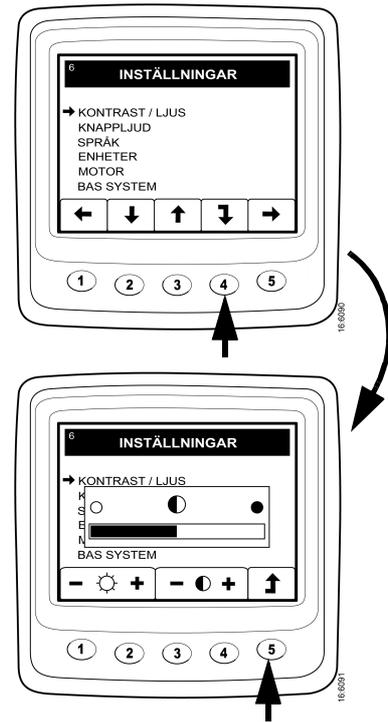


Settings (6)

- Press button *1* or *5* from the *Favourites* screen to go to screen *6 SETTINGS*.
- In order to quickly go to the setting mode, regardless of where you are: Press buttons *2* and *4* simultaneously.

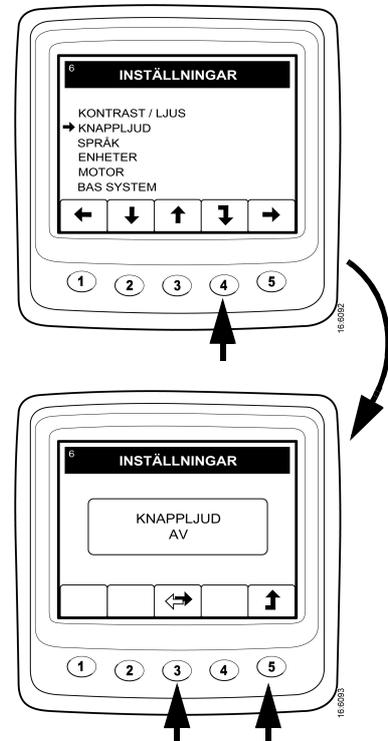
CONTRAST/LIGHT (6.1)

- Using buttons *2* and *3* to go up or down in the list.
- Press button *4* to go to the adjustment screen for *CONTRAST/LIGHT*.
- Here it is possible to adjust the light and the brightness to the current operating conditions.
- In order to reset to the original setting, press buttons *2*, *3* and *4* at the same time for three seconds.



BUTTON BLEEP (6.2)

- Press button *2* to go to *BUTTON BLEEP*.
- Press button *4* to go to the adjustment screen.
- Press button *3* to change between *BUTTON BLEEP OFF* or *BUTTON BLEEP ON*
- Press button *5* to return to the selection screen.
- The setting *BUTTON BLEEP OFF* does not affect the alarm signal.



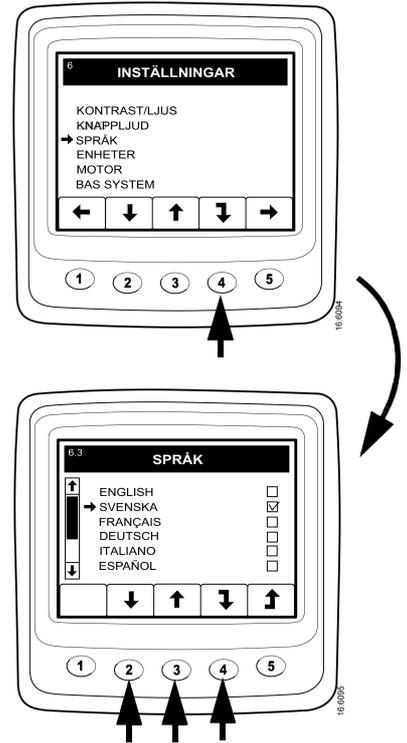
LANGUAGE (6.3)

Information on *Scania EMS Display* can be displayed in seven different languages:

- Swedish English German French Spanish
- Italian Portuguese

The default language is English

- Press button 2 or 3 to go to *LANGUAGE*.
- Press button 4 to go to the selection screen.
- Press button 2 or 3 to select language.
- Press 4 to confirm the change. The box to the right about selecting language will then be marked, which means that the change has taken place.
- Press button 5 to return.



UNITS (6.4)

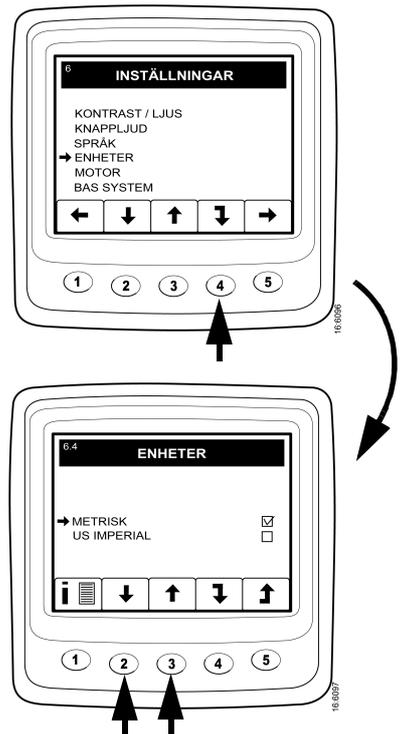
It is possible to select between two different sets of units for different parameters according to the table:

- METRIC
- US IMPERIAL

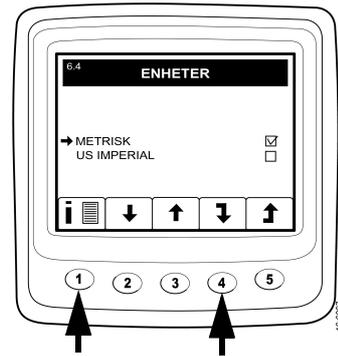
Parameter	Metric	US Imperial
Pressure	Bar	Psi
Voltage	V	V
Engine speed	Rpm	Rpm
Temperature	°C	°F
Fuel consumption	L/h, L	Gal/h, Gal*

*) US Gallon = 3.79 l

- Press button 2 or 3 to go to *UNITS*.
- Press button 4 to go to the selection screen.
- Press button 2 or 3 to select the unit system.



- Press button 4 to confirm the change. The box to the right will then be marked, which means that the change has taken place.
- If you press button 1, information is displayed in accordance with the table above.
- Press button 5 to return.



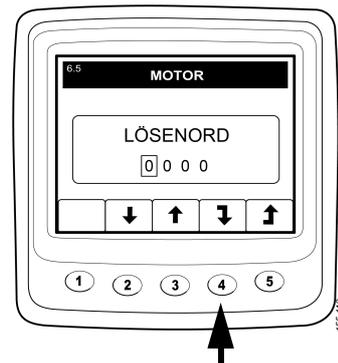
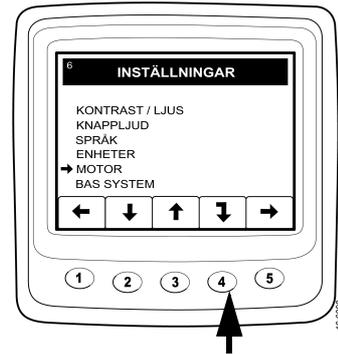
ENGINE (6.5)

From this screen it is possible to change the basic settings with which the engine was supplied.

Note: Changing basic settings may affect safety-critical functions.

- Press button 2 or 3 to go to *ENGINE*.
- Press button 4 to continue.
- To prevent unintentional changes, this function is password-protected. The password is factory-set to "2 2 2 2" but this can be changed by the end-customer; see 6.5.9. Enter the password and press button 4 to continue.
- A screen with a warning is displayed. Press button 3, *OK*, to proceed to the parameters that can be set.

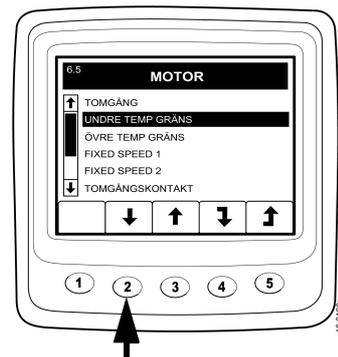
On the first screen, 6 parameters are displayed and by pressing button 2, you can access the last two parameters.



There is a short description below about the engine settings that can be adjusted from this screen:

IDLE SPEED (6.5.1)

The low idle speed for a warm engine can be set between 500-1,050 rpm. It is not possible to reset the idle speed value if the coolant temperature is below 50°C. Nor can the idle speed be reset if the engine is running at raised low idling for any reason.



LOW TEMP LIMIT (6.5.2)

The lower temperature limit, which has a basic setting of 95°C (203°F), is the level for the alarm and torque reduction if this has been selected. See page 33 for an example.

It is possible to set this level to between 85°C (185°F) and 105°C (221°F). The lower limit cannot be set above the upper temperature limit.

HIGH TEMP LIMIT (6.5.3)

The upper temperature limit, which has a basic setting of 105°C (221°F), also provides the option to stop the engine automatically in addition to the alarm function.

It is possible to set this level to between 95°C (203°F) and 105°C (221°F). The upper limit cannot be set below the lower temperature limit.

FIXED SPEED 1 (6.5.4)

Setting of upper torque limit:

This is an isochronous idle speed which can be set and activated from *Scania Control Panel*. See page 14.

On *Scania EMS Display* it is then possible to set an upper torque limit for *FIXED SPEED 1*. This setting only applies when *FIXED SPEED 1* is activated.

FIXED SPEED 2 (6.5.5)

Setting of upper torque limit:

This is an isochronous idle speed which can be set and activated from *Scania Control Panel*. See page 14.

On *Scania EMS Display* it is then possible to set an upper torque limit for *FIXED SPEED 2*. This setting only applies when *FIXED SPEED 2* is activated.

IDLING SWITCH (6.5.6)

The idling switch (safety switch) is a safety function in Scania's electrical system which checks that the accelerator pedal is functioning correctly.

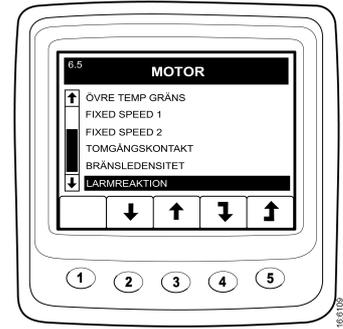
The component is a closing switch that is activated when the throttle position is above zero.

The function can be disengaged.

Note: A safety function is then disconnected.

FUEL DENSITY (6.5.7)

Fuel density affects the calculation of the engine power and it can be noted here. The default is 840 kg/m³ and the setting range is 700-1,000 kg/m³.

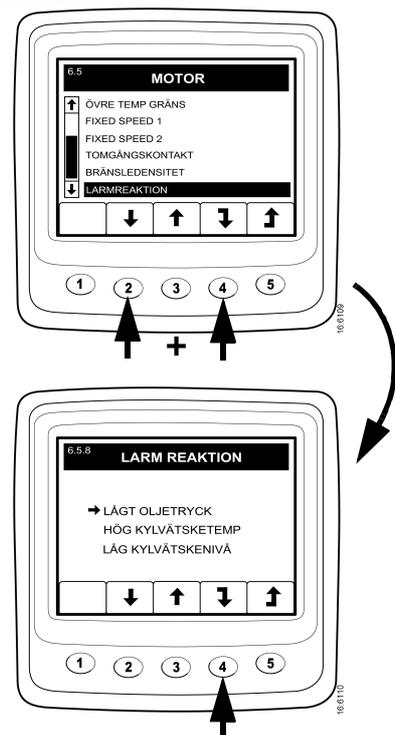


ALARM REACTION (CMOL) (6.5.8)

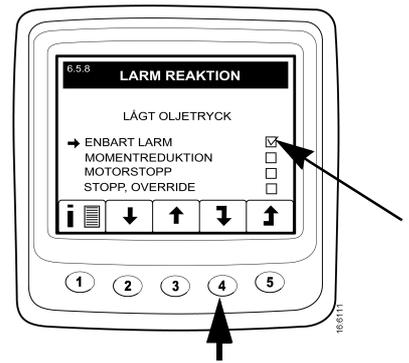
The engine behaviour may vary depending on how *EMS* is programmed.

Signal	Line	EMS behaviour
Low oil pressure	1	Alarm only if there is a fault
	2	Alarm and torque reduction
	3	Alarm and engine shutdown
	4	Engine shutdown and override
High coolant temperature	1	Alarm only if there is a fault
	2	Torque reduction
	3	Engine shutdown
	4	Torque reduction at the lower temperature limit, Engine shutdown at the upper temperature limit
	5	Engine shutdown and override
	6	Torque reduction at the lower temperature limit, Engine shutdown at the upper temperature limit and override
Low coolant level	1	Alarm only if there is a fault
	2	Alarm and torque reduction
	3	Alarm and engine shutdown
	4	Engine shutdown and override

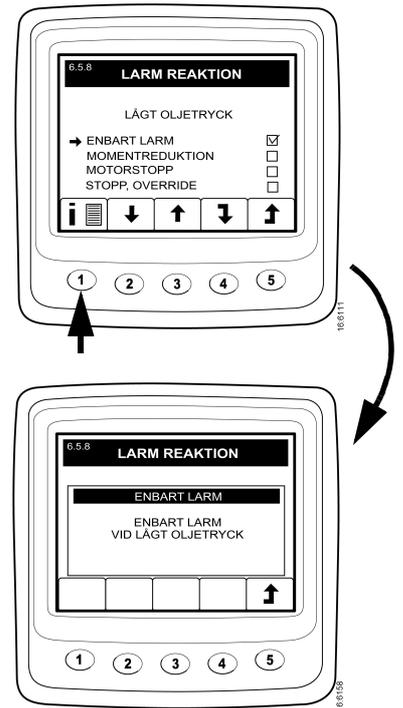
- Press button 2 to go to *ALARM REACTION*.
- Press button 4 to go down one level.
- Select signal type using button 2 or 3 and go down to the *EMS* function using button 4.



- Select the *EMS* function using button 2 or 3. On the screen displayed: *ALARM ONLY*.
- Press 4 to confirm the selection. The box to the right will then be marked, which means that the change has taken place.



- Press button 1 to get a more detailed description of the selected *EMS* function.
- Press button 5 to return.

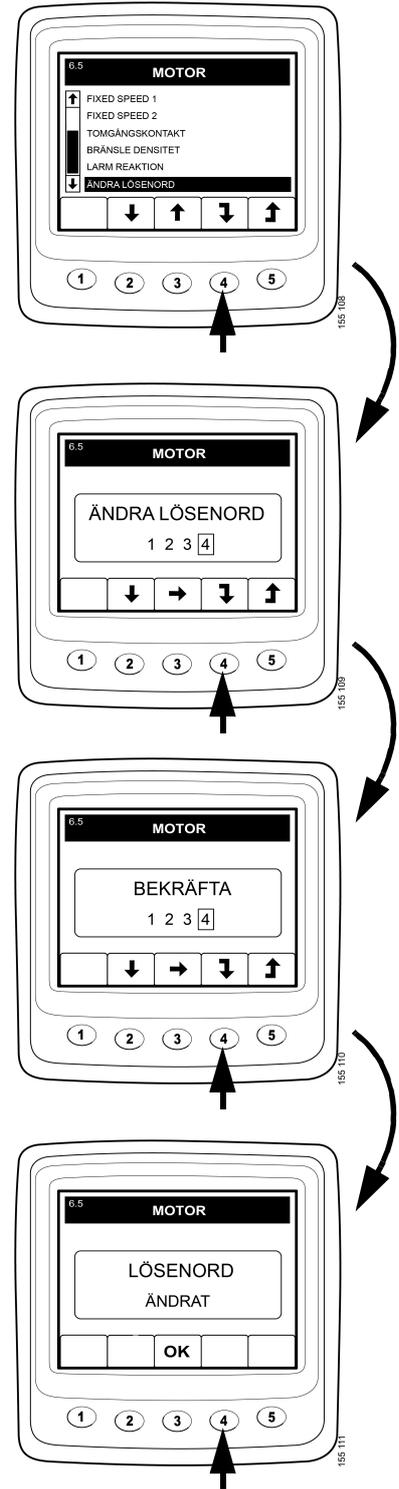


CHANGE PASSWORD (6.5.9)

A new password can be set, the valid values are 0001 - 9999.

- Press button 4 to change the password.
- Enter the desired password and press button 4.
- Press button 4 to confirm the password.
- Press button 4 to return.

Note: If you have forgotten the password, contact your nearest Scania representative.

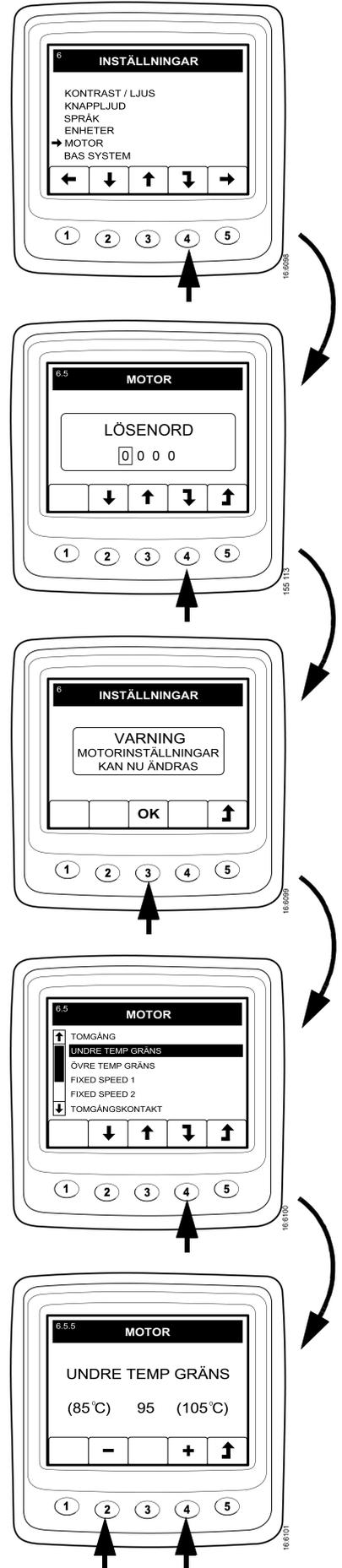


Example

Setting the LOW TEMP LIMIT (6.5.2)

- Press button 4 to continue.
- Enter the password and press button 3.
A warning screen is displayed.
- Press button 3, *OK*, to acknowledge the warning and proceed to the parameters that can be set.
- Press button 2 or 3 to move up or down in the selection screen
- Press button 4 when for example *LOW TEMP LIMIT* has been selected.
- Press button 4 again to display the setting screen.
- Press button 2 or 4 to increase or decrease the setting value.
- Press + or - to automatically delete the old value and enter the new one.
- Press button 5 to return.

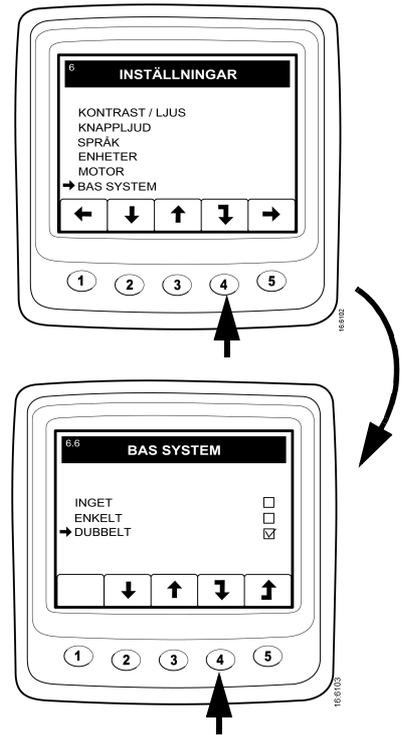
The same settings can be adjusted for the other parameters.



BASE SYSTEM (6.6)

Here it is possible to configure Scania EMS Display for the electrical system to be used. The alternatives are *NONE*, *SINGLE* or *DOUBLE*.

- Press button 2 or 3 to go to *BASE SYSTEM*.
- Press button 4 to go to the selection screen.
- Press button 2 or 3 to select base system.
- Press button 4 to confirm the change. The box to the right will then be marked, which means that the change has taken place.
- Press button 5 to return.



Alarm and fault code generation

Both new alarm and fault codes create dialogue boxes (pop-up boxes). The alarm dialogue box has the highest priority for all functions in *Scania EMS Display*.

Alarm

There are four different alarms available in the system:

Alarm	Icon	Remarks
Low oil pressure		
High coolant temperature		
Low coolant level		
Alternator not charging		System voltage displayed

Function

When an alarm is created it is displayed as a warning on the basic screen together with the alarm icon. The alarm signal sounds at the same time both on the instrument panel and on *Scania EMS Display*.

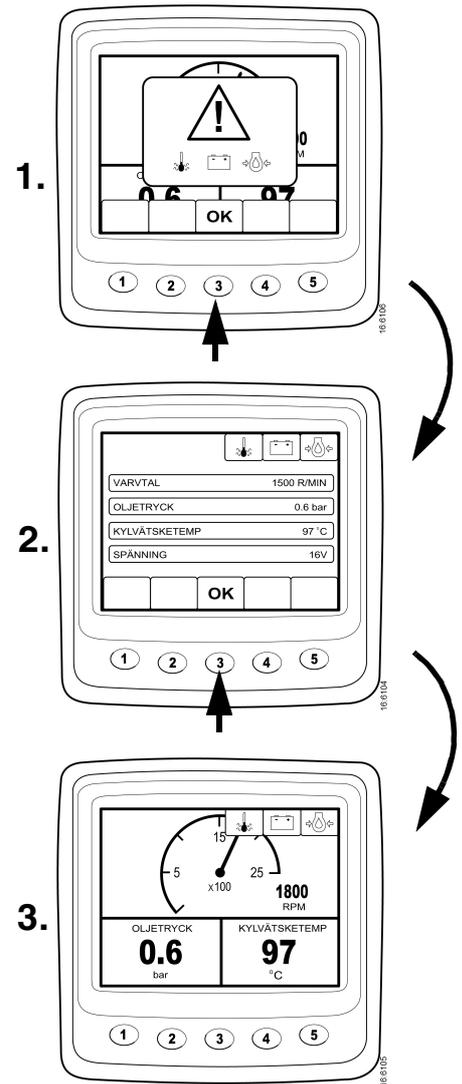
The alarm signal on *Scania EMS Display* is confirmed by pressing button 3, *OK*. If there are more alarms (icons), one alarm has to be confirmed at a time. Screen 1.

Each confirmed alarm is then displayed as an icon in the upper right corner of the screen as long as a fault is active, regardless of which screen is active.

Note: All alarms must be confirmed before the next screen will be displayed.

The screen in illustration 2 always has the same content.

If you press button 3, *OK*, when in screen 2, you will return to the screen displayed before the first alarm was generated, Screen 3.

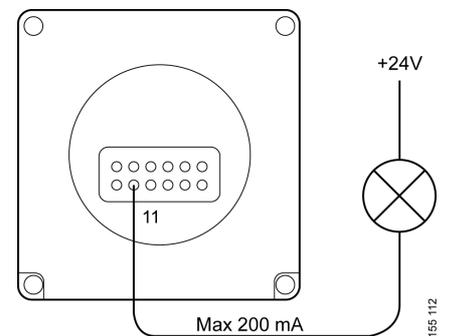


External alarm signal

External alarm output

As soon as an alarm is present, pin 11 on the 12-pin display connector is activated. The output can be used to activate a warning lamp or similar. Pin 11 must be connected in order to earth a lamp or a relay connected to +24V.

Maximum current 200 mA.



Fault code generation

There are several fault codes in the electrical system to help when a system fault or engine fault occurs.

When a new active fault code is registered in the system, it will be displayed on the screen as in illustration 1.

Acknowledge all active fault codes by pressing button 3, *OK*. In the next screen, a spanner icon is displayed in the upper right corner. Screen 2.

This is displayed when at least one fault code is active.

It is not possible to see how many fault codes are active from these screens. To see the fault codes that are present, go to the description of **Fault codes** on page 20.

When starting the system a dialogue box as in illustration 1 is displayed if there is at least one active fault code.

