# **Driver's Handbook**

# B11R EURO 6





### **Foreword**

The following levels of observations, cautions and warnings are used in this Service Documentation:

**Danger:** Indicates an unsafe practice where serious personal injury or death could occur.

**Warning:** Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Caution: Indicates an unsafe practice where damage to the product could occur.

**Note:** Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

This manual describes the B11R chassis with the multiplex electrical system.

The manual contains comprehensive information about the instruments and controls, as well as about driving. A large part of the equipment on the vehicle is built in by the bodybuilder, so it is the chassis that is covered primarily here.

Service hatches and locations of fluid reservoirs may vary depending on body type.

Refer to our information in Impact for more service information. Help and directions can be found in "If something happens" if anything unexpected should happen.

Technical data, design information, descriptions and illustrations in this book, that were current when the book was published, may have been changed. We reserve the right to make changes without prior notice.

### **Volvo Bus Corporation**

Göteborg, Sweden

Order number: 89247532

©2016 Volvo Bus Corporation, Göteborg, Sweden

All rights reserved. No part of this publication may be reproduced, stored in retrieval system, or transmitted in any forms by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Volvo Bus Corporation.

# Contents

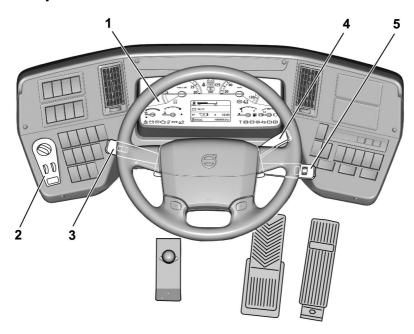
Introduction	1	Start and stop	6'
Driver's responsibility	1	Daily level check	6'
•		Checking before driving	7
Instruments and controls	2	Start and stop of engine	72
Driver's position		1 2	
Instrument panel	3	Some advice for driving	70
Control panel lighting	15	Safe driving	70
Controls	17	Economy driving	7′
Switches	34	Driving in cold weather	
Steering wheel	52	Power steering	
Gearbox		Disconnected accelerator pedal	
Emergency and safety equipment	55	If something happens	8.
Overview	55	Safety	
Fire extinguisher	56	Releasing the parking brake	8
Warning triangle	57	Punctures	8′
First-aid cushion		Punctured air bellows	8′
Emergency hammer		Towing	8′
Toolbox		Changing the batteries	8
		Rapid charging	90
Exhaust emission control		Starting assistance	
OBD system	59	Fuses and relays	
SCR system monitoring	62	·	
Diesel Particulate Filter	63	Technical data	
Automatic regeneration	64	Type plates	102
-		Service intervals	
Filling up instructions		Washing the vehicle	104
Filling fuel		-	
Filling AdBlue	66	Index	10:

## **Driver's responsibility**

- The driver is responsible for the passengers' safety and security during the journey. Read the driver's manual before starting the journey.
- The driver must be aware of what all the lamps and meters in the instrument panel mean together with the symbols and messages on the display and what is to be done with this information.
- The driver should be aware of the vehicle weight and load capacity. Refer to the directions on warning decals, the vehicle's registration documents and the identification plate.
- The driver should always anticipate the risks for the passengers.
- It is the driver's responsibility to make sure all safety equipment is in its specified locations. Therefore check seat belts, emergency door openings, clamping strip function, fire extinguishers and first aid equipment regularly.
- Never leave the driver's position without applying the parking brake hand control and ensuring that it is in the locked position.
- The vehicle's brakes work with compressed air. Never drive the vehicle when the pressure is too low or when there are other faults with the brakes.
- Be aware of faults in the steering. The vehicle can be steered even when the steering servo does not work but is then very heavy to steer.

- Never crawl under the vehicle when it is raised with a jack. Use approved jack stands or pallet wood when repairing punctures or changing wheels.
- Lifting or pallet devices must rest on a level surface. Wheels that are not raised must be chocked to prevent the vehicle moving.
- Re-tighten the wheel nuts after approximately 200 km driving if the wheels have been removed.
- Tighten the wheel nuts every 6 months regardless of whether the wheels have been removed or not.
- Follow recommended service and maintenance programmes to maintain vehicle condition and safety.
- Pay attention to exhaust and fuel smells.
   Any leaks should be taken care of immediately at the garage.
- The vehicle's tyres and wheel rims must be approved for the intended load and speed in accordance with valid legislation.

## **Driver's position**



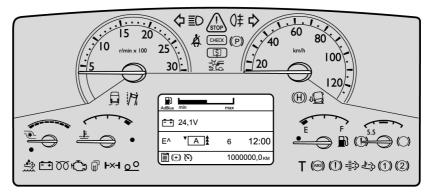
T0082686

In the driver's position you will find the control panel which, among other things, contains the following:

- 1 Instrument panel
- 2 Control panel lighting
- 3 Control for direction indicators, cruise control and headlight flasher
- 4 Retarder control (applies to certain variants)
- 5 Controls for the windscreen wiper/washer and display

The driver's position also contains a number of different switches.

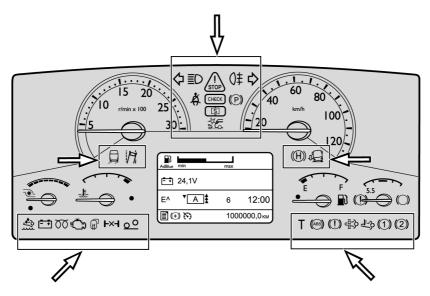
## Instrument panel



T0102635

The instrument panel contains lamps, gauges and a display.

## Lamps in the instrument panel.



T0102636

In the instrument panel above the display are a stop lamp and a warning lamp that light up when there is something wrong with the vehicle or when something occurs that the driver must be made aware of. Sometimes an associated symbol and/or text message is displayed to give the driver pertinent information concerning the vehicle. The other lamps on the instrument panel are called control lamps.

For more information, see separate driver's instructions "Display IC08".

### Stop lamp



#### WARNING

When the stop lamp lights the vehicle must be stopped immediately and the engine switched off. If the vehicle is not halted and the engine not switched off, there will be serious consequences for the vehicle, driver, and/or passengers. If the stop lamp comes on and the engine is running a sound signal is also given.

For more information, see separate driver's instructions "Display IC08".

### Warning lamp

When the warning lamp is lit, a symbol and a possible text message are shown on the display. Also, a sound signal can be activated if the engine is running.

**Note:** When the warning lamp lights the vehicle must, in certain cases, be driven to the workshop for repair as soon as possible.

The vehicle is not in danger of imminent damage and can normally complete the present assignment.

In some cases the warning lamp is also used to attract the driver's attention, e.g. a warning that the boot lid is open or automatic reset of the main switch. In which case, the corresponding warning symbol is shown on the display.

For more information, see separate driver's instructions "Display IC08".



T008292



.....

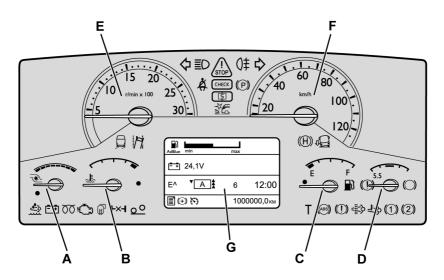
The table shows the lamps in the instrument panel.

Symbol	Meaning	Symbol	Meaning
<b></b>	Left direction indicators activated	$\square \Diamond$	Electronic Stability Program (ESP)
$\Rightarrow$	Right direction indicators activated		Lane Keeping Support (LKS)
<b>≣</b> O	Main beam activated	• <u>î</u> ]}	Indicates low fluid level in the tank for Diesel Exhaust Fluid (DEF), only USA
<b>()</b> ‡	Rear fog light activated.		Battery charging fault
STOP	Stop message in the display	00	Pre-heating activated
СНЕСК	Warning message in the display	Ç	Emission values too high
(\$)	Stop at the next lay-by		Window/mirror heater activated
¥6	Collision warning system with emergency braking function (CW EB)	<b>I-</b> × <b>-I</b>	Differential lock is engaged
<b>A</b>	Seat belt reminder	00	Bogie lifted
(P)	Parking brake applied		Door brake activated

The table shows the lamps in the instrument panel (cont.).

Symbol	Meaning	Symbol	Meaning
	Curtsy activated (for easier access)		Clogged particulate filter
T	Check the tachograph		High exhaust temperature
(ABS)	Fault in ABS system		No data from 1st brake circuit
	Fault in braking system	(2)	No data from 2nd brake circuit

## Gauges and display



T0102641

The instrument panel contains

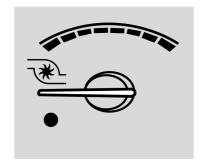
- Turbo pressure gauge A
- Coolant temperature gauge В
- Fuel gauge  $\mathbf{C}$
- D Brake pressure gauge
- Е Tachometer
- Speedometer F
- Display G

### Turbo pressure gauge (A)

The turbo pressure gauge measures the overpressure in the inlet pipe. A high turbo pressure means higher fuel consumption.

Use the turbo pressure gauge to drive as economically as possible. During normal driving on flat roads, the turbo pressure gauge needle should stay within the green zone.

For information about the symbols and messages that are shown in the event of a fault in the turbo pressure gauge, see separate driver's instructions "Display IC08".



T0082692

### Engine coolant temperature gauge (B)

The temperature gauge shows the temperature in the engine cooling system.

The engine has overheating protection that regulates the engine output down to 50 % when the indicator reaches the red zone. You can continue to drive the vehicle even when the overheating protection is out of order.



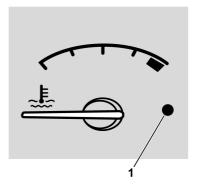
#### CAUTION

The vehicle must not be driven if the temperature should rise any further as this may cause further damage to the engine.

If the engine cooling system reaches too high a temperature this is indicated by:

- a LED by the oil pressure gauge (1) lighting
- warming or stop lamp above the display lighting
- a symbol with a message being shown in the display
- a sound signal being activated (if the engine is running).

For more information about the symbols and messages that are shown, see separate driver's instructions "Display IC08".



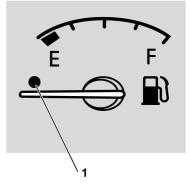
#### Fuel gauge (C)

The fuel gauge shows the amount of fuel in the tank.

If the amount of fuel in the tank is low (when the needle has reached the red zone), this is indicated by

- a LED by the fuel gauge (1) lighting
- a symbol with a message being shown in the display

For information about the symbols and messages that are shown in the event of low fuel level, as well as information about additional fuel data (for example, fuel consumption, stage data and remaining fuel), see separate driver's instructions "Display ICO8".



### Brake pressure gauge (D)

The brake pressure gauge shows the air pressures in the 1st and 2nd brake circuits. Air pressures in the 3rd and 4th brake circuits on articulated buses are shown on the display. For more information, see separate driver's instructions "Display IC08".

During normal driving the brake pressure gauge needle should remain within the green zone, but during braking it may move below the green zone for a short time.

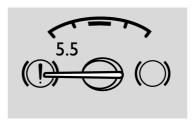
If the air pressure in any of the brake circuits is too low, this is indicated by

- the red stop lamp above the display lighting
- a symbol with a message being shown in the display
- an acoustic signal is activated (if the engine is running).



#### **WARNING**

Stop immediately if the air pressure in the brake circuit is too low and investigate the cause of the pressure drop.



T0082697



T0083264

The symbols for 1st and 2nd brake circuits are shown on the instrument panel.

#### Tachometer (E)

The tachometer is divided into three zones. When driving on level roads, the needle should be steady and remain within the green zone.

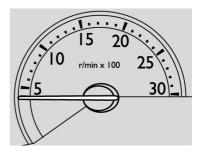
The dark zone between green and red is used when engine braking as the engine brake is the most effective within this engine speed range.

Use the turbo pressure gauge to drive as economically as possible.



### **CAUTION**

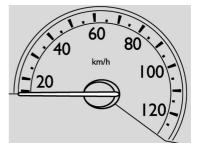
Avoid allowing the tachometer needle to enter the red zone as this can cause damage to the engine and gearbox.



T0082694

#### Speedometer (F)

The speedometer shows the vehicle speed in km/h. The speedometer shows the speed in km/h combined with mph on some markets.



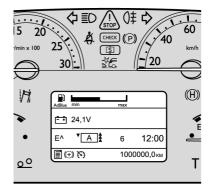
T0082695

#### Display (G)

The display in the instrument panel is used to show messages, provide information and control certain vehicle functions. The display contains several main menus and sub-menus with associated functions.

For more information about the display's functions, see separate driver's instructions "Display IC08".

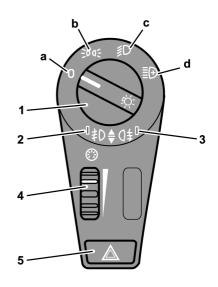
For operating the display, see Chapter "Display controls", page 27.



## **Control panel lighting**

The control on the control panel is used to switch between the vehicle's different light settings.

- a Lighting switched off or automatic dipped lights
- b Parking lights
- c Main and dipped beam
- d Extra headlamps (option)
- 1 Light switch (spring-loaded).
  Pull out: Rear fog lights on
  Pull out again: Rear fog lights off
  Press in: Front fog lights on
  Press in again: Front fog lights off
- 2 Indicator lamp, front fog lights
- 3 Indicator light, rear fog lights
- 4 Rheostat for regulating the instrument lighting
- Warning lights (see chapter "Hazard warning lights", page 16)



## Hazard warning lights

When the warning light button is pressed in, all the vehicle's warning lights (indicators) will come on.

The vehicle's warning lights can be used even when the main switch and the ignition have been turned off.



Always use the vehicle's warning lights if it is has been stopped in such a way that it can constitute a hazard for other road users.

**Note:** Regulations for the use of hazard warning lights may vary from country to country.



### **Controls**

The following controls and functions are covered in this section:

- · Key ignition switch
- Direction indicators, dipped/full beam switch.
- Idling speed
- Cruise control (optional)
- Retarder control (optional)
- Windscreen wiper, windscreen and headlamp washer
- Display controls
- Parking brake (emergency brake)
- Blocking valve
- Engine control panel
- Battery disconnector

## Key ignition switch

The ignition switch has four positions:

#### 0 Stop position

The ignition is switched off.

#### Intermediate position

Some electrical components can now be used as required by the customer. The steering lock is inactivated.

#### II Ignition position

Ignition on. Preheating active.

#### III Start position

The engine is started. Spring-return position

**Note:** The key can only be removed from the ignition switch in the stop position (position 0).

The steering column lock is activated when the key is removed from the ignition switch and inactivated when the key is turned to the intermediate position (position I).

For more information, see chapter "Start the engine.", page 73.



## Direction indicators, dipped/full beam switch.

#### 1 Pressure point position

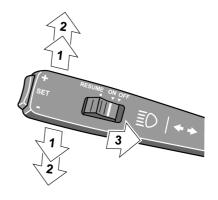
Move the control slightly upwards or downwards when turning with small steering wheel movements, for example when changing lanes or overtaking. The direction indicator is active as long as it is held in position by the finger. The lever will return to neutral position immediately it is released.

#### 2 Past the pressure point

Move the lever past the pressure point. The direction indicators will stay on until the lever is returned manually or the steering wheel returns after turning.

3 Main beam flasher (headlight flasher)
Pull the lever towards the steering wheel
(until slight resistance is felt). The main
beam lights until the control is released.

Main beam and dipped beam switching
Pull the lever towards the steering wheel,
past the headlight flasher position and
release it. The headlamps switch between
main and dipped beam.



## **Idling speed**

The idling speed should normally be approx. 575-625 rpm. When the vehicle is stationary, the engine speed can be temporarily increased up to a maximum of 1200 rpm.

The electronic control system ensures that the normal engine idling speed is maintained so that manual adjustment is normally not required.

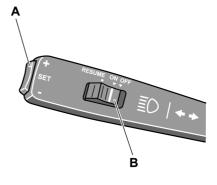
### Adjusting the idling speed

Before manual adjustment of the idling speed, make sure that the vehicle is stationary and the engine is running at idling speed. The accelerator pedal must be released.

- Set control button (B) to the "ON" position.
- Increase the speed by pressing SET button (A) towards "+". Each press gives an increase of 10 rpm.
- Decrease the speed by pressing SET button (A) towards "-". Each press gives a reduction of 10 rpm.

**Note:** The change in idling speed is only temporary. After using a pedal, engaging a gear or releasing the parking brake, the idling speed will return to the factory setting.

**Note:** If the engine does not "run smoothly" at the speed programmed by the factory, the bus must be taken to a Volvo workshop.



## **Cruise control (optional)**

Cruise control is used to operate the vehicle at a constant lowest speed within the interval 30-130 km/h.

Once the vehicle has reached the desired speed, activate cruise control by sliding the switch (**B**) to "ON" and then pressing "+" or "-" on the SET button (A).

To increase or decrease the speed, press "+" or "-" again.

**Note:** The brake and clutch pedals must be completely released.

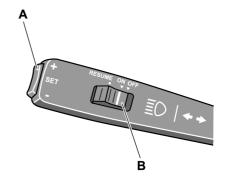
If the speed is increased temporarily with the accelerator pedal, the vehicle will return to the set speed after releasing the accelerator pedal.

Disconnect the cruise control by pushing sliding button (**B**) to the "OFF" position or by pressing the brake or clutch pedal.

To return to the previously set speed after disconnecting the cruise control, move sliding button (B) to the spring-return position " RESUME".

**Note:** This does not apply if the cruise control is deactivated by moving the sliding button (**B**) to the "OFF" position.

To use the cruise control together with the retarder, see chapter "Retarder control (optional)", page 22.



## Retarder control (optional)

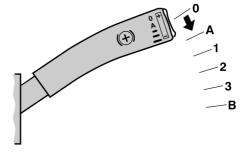
The retarder is an additional brake which functions as a complement to the standard brake system, EBS (Electronic Brake System). The retarder only acts on the driving wheels.

For information about the braking system, see separate driver instruction "EBS".

#### Activation of retarder

The retarder function can be activated in the following way:

- Automatic: move the retarder control to A, release the accelerator pedal and press the brake pedal to activate one of the retarder's automatic sub-functions, "Retarder integration", "Speed restriction" and "Cruise control", see the next section.
- Manual: move the retarder control to 1, 2 or 3 and release the accelerator pedal.
   The auxiliary brake is applied more for each step.
- Position B: On vehicles with I-shift, there is also a B position. With the brake programme engaged, the gearbox will change to the gear that gives the best output for the auxiliary brake.



**Note:** If the temperature in the retarder becomes too high then the retarder is disengaged automatically. A symbol and a message are shown in the display. For more information, see separate driver's instructions "Display IC08".

#### Retarder integration

Activate "Retarder integration" by

- 1 moving the retarder control to position A and
- 2 depressing the brake pedal.

Use the brake pedal as usual. The brake system (EBS) controls the different brakes so that they are used in the best way by using the retarder as much as possible and, when necessary, applying the normal brakes.

#### Speed limiter

Use speed restriction to limit the top speed of the vehicle by

- 1 moving the retarder control to position A and
- 2 releasing the accelerator pedal completely.

**Note:** The cruise control must be inactivated.

Activate the speed limitation by pressing "+" or "-" on the SET button on the retarder control. To increase or decrease the reference speed, press repeatedly on the "+" or "-" buttons.

#### Combined cruise control and speed limiter

Use a combination of cruise control and speed restriction to limit the vehicle's upper and lower speeds.

Create a speed interval (for example 80-85 km/h) that vehicle holds irrespective of road inclination by

- 1 moving the retarder control to position A
- 2 releasing the accelerator pedal completely
- 3 use the cruise control to limit the speed downwards using the SET button (±) on the cruise control's control (see chapter "Cruise control (optional)", page 21)
- 4 using the retarder to limit the speed upwards using the SET button (±) on the cruise control lever

The default setting for retarder overspeed is 7 km/h and it can then be adjusted between 3-15 km/h. The set overspeed is shown on the display, see separate driver's instructions "Display IC08".

#### Inactivation of retarder

The retarder function can be inactivated in different ways by:

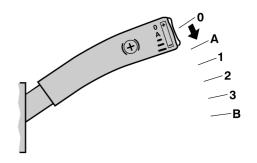
- moving the retarder control to position **0**
- moving the retarder control to position A and release the brake pedal
- moving the retarder control to position 1, 2 or 3 and press down the accelerator pedal.
- Switch, see "Inactivation of retarder", page 37

**Note:** The retarder is automatically disengaged whenever the wheels have a tendency to lock, if the vehicle detects a slippery road surface or in case of a skid.



### **CAUTION**

Do not inactivate the retarder function unnecessarily as this wears the brake linings.



## Windscreen wiper, windscreen and headlamp washer

#### 1 Intermittent wiping

Move the control to the intermittent position to make the wipers make one wipe every tenth second. For shorter intervals, move the control to its normal position and then to the intermittent position again when the next wipe is to start. In this way, the intermittent wiping time can be set between 1 to 10 seconds.

#### 2 Pressure point wipe position

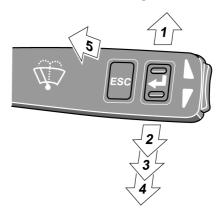
Move the control to the pressure point position. The windscreen wipers wipe as long as the control is held in this position and stops in the start position when the control is released

- 3 Windscreen wiper, normal speed
- 4 Windscreen wiper, high speed

#### 5 Windscreen and headlamp washers

Move the control towards the steering wheel and release it again. The headlamp washers spray washer fluid and the wipers make 2-3 wipes after the control is released.

The headlamp washers and windscreen washers have the same fluid reservoir.



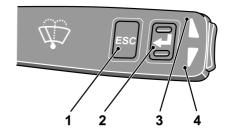
## **Display controls**

The windscreen wiper control is also used to control the display in the instrument panel.

To Navigate through the display menus display control has the following four buttons:

- 1 ESC Acknowledge. Cancel. Return.
- 2 **←** (ENTER) Select. Confirm. Reset.
- $\Delta$ Step up. Navigate. Change.
- 4  $\nabla$ Step down. Navigate. Change.

For more information about the display and display control, see separate driver's instructions "Display IC08".



## Parking brake

The parking brake acts on the driving wheels.

Apply the parking brake gradually by moving the hand control backwards. The parking brake is fully applied when the hand control is in its rear, locked position and the control lamp "Parking brake applied" lights.

To release the parking brake from the locked position, lift up the ring and move the hand control to the forward position.

**Note:** The pneumatic system must be charged up and the blocking valve must be in the depressed position.

For more information, see chapter "Blocking valve", page 30.



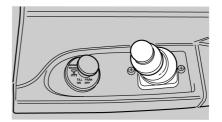
#### /!\ DANGER

Never leave the driver's position without applying the parking brake hand control and ensuring that it is in the locked position.



### ↑ CAUTION

Never drive if the "Parking brake applied" lamp in the instrument panel is lit. Stop immediately if it lights while driving as there is a risk that the parking brake has been applied unintentionally.



#### **Emergency brake**

When using the parking brake as an emergency brake, move the hand control gradually backwards to the parking position.

**Note:** Keep the catch pulled in all the time or the control might stick in the locked position.



#### ∕I\ CAUTION

The parking brake can and should only be used as an emergency brake if brake pressure is lost.



#### WARNING

Since the parking brake only works on the drive wheels, the stopping distance will be longer than when braking with the ordinary braking system.

Braking with only the parking brake also increases the risk of skidding.

### Automatic parking brake application

If the vehicle has the automatic parking brake application function, the parking brake will be activated when:

- the vehicle is stationary and ignition is switched off at the same time as a door is open
- the vehicle is stationary and the main switch is switched off

## **Blocking valve**

The blocking valve is activated when the air pressure in the brake circuit is too low and an attempt is made to apply the parking brake, for example if the vehicle is parked for a long period.

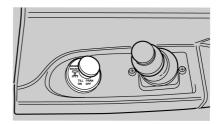
To release the parking brake when the blocking valve has released:

- 1 Start the engine.
- 2 Wait until sufficient brake pressure has been built up (5.6 bar) and the stop lamp in the instrument panel has gone out.
- 3 Press in the blocking valve.
- 4 Move the parking brake to its forward position.

**Note:** Even if the hand lever for the parking brake has been moved to the forward position, the brake will not be released until the blocking valve has been pressed in.



Never drive if the "Parking brake applied" lamp in the instrument panel is lit. Stop immediately if it lights while driving as there is a risk that the parking brake has been applied unintentionally.



## **Engine control panel**

The engine control panel is located inside the engine service hatch and should only be used by service personnel to switch the engine on and off when checking and for repairs.

#### 1 Switch

When switch (1) is turned off (position 0) the engine cannot be started, neither from the driver's position nor from the engine compartment.



### WARNING

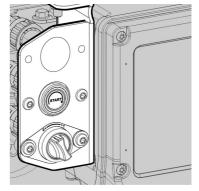
When working in the engine compartment, switch (1) must be switched off (position 0).

#### 2 Start button

The engine can be started with the start button (2) when the breaker (1) is on (position 1) and the ignition is switched on at the driver area.

The Breaker must be set in position (position 0) in order to start the engine. To start the engine again the ignition must be switched on and off at the driver area, otherwise only the starter motor is activated.

The location of the buttons can vary between different variants.



## **Battery disconnector**



#### **CAUTION**

The ignition must be in stop position and the main switch on the control panel (see Chapter "Main switch", page 35) must always be turned off before the battery main switch is used.

The battery main switch is used to turn off the supply voltage in the vehicle.

Turn the battery main switch to off (0) to disconnect the voltage supply.



#### WARNING

Certain consumers will be live even when the battery main switch is turned off. If the vehicle is equipped with starter batteries and consumer batteries, the voltage supply will be disconnected **only from the consumer batteries**. To ensure the consumer and starter batteries are fully disconnected, the battery cables must be removed from each battery.

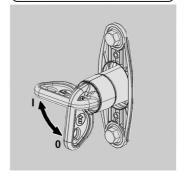
**Note:** Vehicle equipment can drop memory function or set error codes if the unit has been without power.

### BATTERY SWITCH

BEFORE TURNING OFF: SWITCH OFF THE MAIN SWITCH ON DASHBOARD

VOLVO

20885794



T0082702

Position 0: disconnected Position 1: connected

#### For buses with SCR:

When the engine is switched off, a process starts pumping the nozzles and pipes to the SCR system clean (exhaust aftertreatment).



#### ∕I\ CAUTION

Wait before turning off the battery main switch for at least 5 minutes after the engine has been switched off so the the cleaning process can be completed, otherwise the AdBlue solution in the SCR system can freeze at low temperatures.

# Applies to buses equipped with a digital tachograph:

Directly the power supply has been restored the tachograph shows the program version for approx. 5 seconds. Thereafter the symbol "No voltage supply" together with the corresponding message are shown in the tachometer display. The symbol goes out automatically after one hour or if the tachograph is activated within one hour.

### **Switches**

The following switches are covered in this section:

- Main switch
- Emergency switch
- Inactivation of retarder
- Door brake (optional)
- Kneeling (optional)
- Levelling (optional)
- Bogie lift (option)
- Differential lock (optional)
- Traction control (optional)
- Hill start assistance (optional)
- Driver support system
- Stop signal
- Pram signal

### Main switch

The main switch is used to cut the main current in the vehicle.

Always cutting the main current when leaving the vehicle means all the major current consumers will be turned off so that battery capacity if available when the vehicle is started.

Current will still be supplied to the clocks, tachograph, auxiliary heater and certain other functions even when the main switch is turned off.

Note: Never turn off the main switch with the engine running.



T0082703

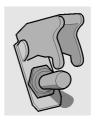
### **Emergency switch**

**Note:** The emergency switch must only be used to stop the engine in emergency situations.

When the emergency switch is activated the following occurs (can vary from country to country):

- Engine is switched off.
- The main part of the electrical power is cut.
- The fuel supply to the engine and the outlet from fuel tanks are restricted.
- The door mechanisms are released.
- The hazard lights (flashers) are activated (applies to certain markets).

Activate the emergency cut out by lifting the cover upwards and pressing up the switch. When the cover is closed the power switch automatically is pressed down to the disconnected position.



T0009170

### Inactivation of retarder

Press the retarder switch or release the brake pedal to inactivate the retarder function.

**Note:** The retarder is automatically disengaged whenever the wheels have a tendency to lock, if the vehicle detects a slippery road surface or in case of a skid.



T0082936



### **CAUTION**

Do not inactivate the retarder function unnecessarily as this wears the brake linings.

### **Door brake (optional)**

The switch is used to disengage the door brake.

The switch is located in the electrical distribution unit close to the driver, for example in the headlining at the front of the vehicle.

**Note:** The switch for disengaging the door brake may only be used in emergencies if the vehicle cannot be moved in a normal manner.



T0082940

#### The door brake function

The door brake is an auxiliary brake that applies the vehicle brakes automatically if a door is opened.

Normally, the door brake should always be applied to the the vehicle cannot move off from stationary before the doors are closed.

**Note:** The door brake may only be used when the road incline is less than 5%.



The door brake must never be used to replace the parking brake.

The door brake is deactivated when the ignition is turned off, which means the vehicle can start to move.

On certain variants the door brake is activated during kneeling in order to prevent the vehicle being driven away in the lowered position. For more information, see chapter "Kneeling (optional)", page 41.

#### Activation of door brake

The following must apply before the door brake can be activated

- the engine is running.
- brake pressure is normal
- the vehicle is stationary
- the door is opened.

The door brake can then be activated in different ways depending on the customer's requests.

When the door brake is activated, control lamp "Door brake activated" lights in the instrument panel.

#### Inactivation of door brake



#### DANGER

The door brake must only be inactivated in emergencies.

The door brake can be inactivated by the switch or by:

- 1 Closing the door.
- 2 Releasing the accelerator pedal completely.
- 3 Depressing the accelerator pedal again.

## **Kneeling (optional)**

The kneeling switch is used to lower the vehicle's boarding height.



#### / DANGER

Ensure that the bus can kneel without risking trapping passengers' feet between the doorsill and the kerb.

To permit kneeling, the following must be fulfilled

- the engine is running.
- vehicle speed is below 5 km/h
- the air suspension system has sufficient pressure
- the ramp is not lowered
- the level control switch is in the normal position
- the "Lowering protection" function has not been activated.



T0082934

#### Activation of kneeling

Activate kneeling by pressing the bottom of the switch and holding it until the kneeling action has been carried out.

Control lamp "Kneeling activated" lights up on the instrument panel and an acoustic signal sounds.

On certain variants the door brake is activated during kneeling in order to prevent the vehicle being driven away in the lowered position. For more information, see chapter "Door brake (optional)", page 38.

Certain variants have pinch protection (kneeling protection) that stops the kneeling if objects are trapped, such as between sill and kerb, for example.

For closing in the event of a fault in the pinch protection, see separate driver's instructions "Display IC08".

### Resetting

There are different ways in which the vehicle can return to normal height:

- Release the switch before kneeling is completed.
- Push in the upper part of the switch.
- Switch off and start the engine again.
- Close the door (applies to certain variants).
- Drive away the vehicle (applies to variants where the door brake is not activated for kneeling).

## **Speed-related level control (option)**

The switch for speed-related level control is used to activate / deactivate the function.

#### The function means that:

- the vehicle's height is reduced at speeds above 80 km/h in order to give better fuel consumption with a return to normal height when the speed has decreased to 70 km/h.
- at a speed of 0 80 km/h the vehicle is at normal height



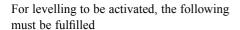
## Levelling (optional)

The kneeling control switch is used to adjust the vehicle's air suspension and thereby control the ground clearance.

The air suspension system strives to maintain the desired height of the vehicle regardless of the load.



Level regulation must only be used temporarily. The switch must be in its centre position while driving.



- the engine is running.
- vehicle speed is below 5 km/h
- the air suspension system has sufficient pressure
- the ramp is not lowered
- the level control switch is in the normal position
- the "Lowering protection" function has not been activated.



T0082937

#### Raising

Press the top part of the switch to raise the

Once the vehicle has adjusted to the chosen height, a symbol and a message will be shown on the display together with the information lamp on the instrument panel.

**Note:** If the vehicle speed exceeds 30 km/h, it will be regulated down automatically. A symbol and a message will also be displayed and an alarm will sound.

For more information about the symbols and messages that are shown, see separate driver's instructions "Display IC08".

#### Lowering

Press the bottom of the switch to lower the vehicle.

Once the vehicle has adjusted to the chosen height, a symbol and a message will be shown on the display together with the information lamp on the instrument panel.

**Note:** If the vehicle speed exceeds 5 km/h when lowered, a symbol and a message will be displayed and an alarm sound.

For more information about the symbols and messages that are shown, see separate driver's instructions "Display IC08".

### **Bogie lift (option)**

The switch for bogie de-loading is used to transfer some of the vehicle weight from the bogie axle to the drive axle. This can assist the driver when pulling away on a slippery surface.

To engage the bogie lift the following must be the case:

- ignition on
- the air suspension system has sufficient pressure
- vehicle speed is below 30 km/h.

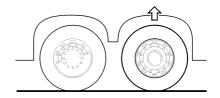
Press the lower part of the switch to shift the bogie load to the driving axle. The switch is spring-loaded.

When the bogie lift is engaged the control lamp "Bogie lifted" is displayed on the instrument panel.

The pressure in the bogie axle will be reset when the bottom of the switch is pressed in or when the vehicle speed exceeds 30 km/h.



T0082930



T0009361

### **Differential lock (optional)**

The switch for the differential lock/DLC (Diff Lock Control) is used to disconnect the drive axles so that the wheels rotate at the same speed. This increases driveability when the surface is icy and slippery.

For more information, see separate driver instructions "EBS"



T0082928

### **Traction control**

The TCS (Traction Control System) switch is used to allow the vehicle wheels to spin more or to increase accessibility when driving in loose snow, sand or mud.

**Note:** Do not use the switch for traction control/TCS during normal driving.

For more information, see separate driver instructions "EBS".



### Hill start assistance (optional)

The switch for hill start assistance is used when starting on steep inclines.

The hill start aid works differently depending on whether the vehicle is equipped with manual gearbox or automatic transmission. For more information, see separate driver's instructions "EBS".

**Note:** When the main switch is switched off, hill start assistance is inactivated.



T0082933

### **Driver support system**

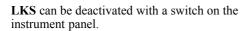
The driver support system includes:

- Collision Warning with Emergency Braking Function (CW EB).
- Lane Keeping Support (LKS).
- Adaptive Cruise Control (ACC)

For more information, see separate driver's instructions "Driver support system".

CW EB can be deactivated with a switch on the instrument panel.

Note: The CW EB function is switched off automatically when the vehicle is started and is available at speeds above 15 km/h.



Note: The LKS function is switched on automatically when the vehicle is started and the function is activated at a speed of 60 km/h.



T0102643



## **Next stop signal (optional extra)**

The stop signal comprises

- stop button in bus
- stop signs in the bus's headlining
- a control lamp in the instrument panel
- a sound signal

The stop signal is activated by pressing any of the stop buttons in the bus. The stop signs on the roof and the control lamp "Next stop" on the instrument panel light up while an acoustic signal is activated.

The system is reset automatically when a door is opened, or manually by using a switch in the instrument panel.



T0082925

### Perambulator signal (optional extra)

The pram signal comprises

- pram buttons inside and outside the bus
- a control lamp in the instrument panel
- a sound signal

The pram signal is activated by pressing one of the pram buttons, the control lamp "Entering or exiting with pram" lights and a sound signal is activated.

The system is reset automatically when a one of the exit doors is closed, or manually by using a switch in the instrument panel.



T0083115

### Steering wheel

### Steering wheel adjustment

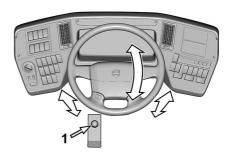
The horizontal position and inclination of the steering wheel and dashboard are variably adjustable.

## /!\ DANGER

The steering wheel may only be adjusted while the vehicle is stationary and the parking brake applied.

Adjust in accordance with the following:

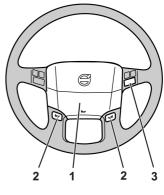
- 1 Activate the parking brake.
- 2 Depress and hold button (1).
- 3 Adjust the steering wheel and dashboard to the desired position.
- 4 Release button (1). The steering wheel and dashboard are locked in their new positions.



### Horn

The vehicle has an electric horn (diaphragm) (1). A compressed air horn (2) is available as an option. The electric horn is activated by pressing the centre of the steering wheel and the compressed air horn is activated after pressing one of the two small buttons further down on the steering wheel.

Note: Use the horn in accordance with applicable legislation.



T0083391

#### Steering wheel controls (optional extra)

There are controls (3) for the radio in steering wheel.

#### **Gearbox**

### **Automatic gearbox**

The vehicle may be equipped with automatic transmission with integrated retarder, combined with a 3 or 6-button panel.

**3 button**: gear positions D, N and R.

**6 button**: gear positions 1, 2, 3, D, N and R.

The engine can only be started with the gear selector in the N position.

For more information, see separate driver's instructions "Gear selector panel for ZF-EcoLife"

### Gearbox, I-Shift

The vehicle can be equipped with automatic transmission combined with a 4-button panel.

Declutching and gear changing are operated completely automatically. If necessary, gear changing can be performed manually.

The gear lever, mounted on the driver's seat, can be tilted horizontal to the seat cushion. There is more room for the driver when the lever is folded down.

Refer to separate driver instructions "I-shift" and "I-shift with gear selector panel" for more information



T4023378

Example of 6-button panel.





### **Overview**

The vehicle has the following emergency and safety equipment:

- Fire extinguisher
- Warning triangle
- First-aid cushion
- Emergency hammer
- Toolbox

**Note:** It is essential that all emergency and safety equipment is checked regularly so that it is in working order and in place.

**Note:** As a driver you must always keep informed about emergency and safety equipment located in the vehicle, how it is used and that nothing is missing.

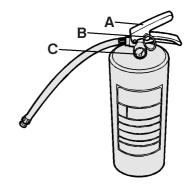
## 56 Emergency and safety equipment

### Fire extinguisher

The fire extinguisher is used to put out fires in volatile fluids, wood, fabric, paper and electrical equipment. Regularly check that the pressure gauge (C) needle is within the green zone.

Use the fire extinguisher as follows:

- 1 Take the fire extinguisher off its bracket.
- 2 Hold the extinguisher with one hand, and pull the safety pin (**B**) out with the other hand.
- 3 Aim the rubber hose at the centre of the fire and pull the trigger (A).



.......

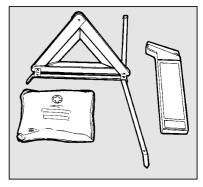
### Warning triangle

The warning triangle is used when the vehicle has stopped at a location where it is a risk to other traffic.

Switch on the vehicle's hazard warning lights, see chapter "Hazard warning lights", page 16, and set up the warning triangle at least 100 metres behind the vehicle.

### First-aid cushion

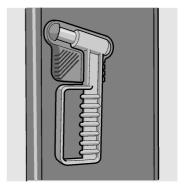
The cushion contains basic materials for giving first aid.



T0009181

## **Emergency hammer**

The emergency hammer is used to break the vehicle windows in an emergency situation.



T0008902

# 58 Emergency and safety equipment

### **Toolbox**

Toolbox with contents. Contact your distributor to order.

Example of a complete toolbox:

Tools	Part no.
Pump nipple	342 781
Nipple	342 782
Hose clip (2x)	942 458
Hose (6.3 x 4)	942 868
Hammer	962 207
Combination screwdriver	991 175
Adjustable spanner	995 156
Polygrip pliers	995 184
Tool bag	1 577 384
Handle (2 pcs)	1 577 686
Jack extension	1 586 079
Crank (coach)	1 590 997
10 ton jack (coach)	3 124 497
10 ton jack (city)	3 178 732
Socket (M22)	1 045 767

### **OBD** system

The OBD (On-Board Diagnostic) system monitors that the exhaust meets EU's legal requirements.

The OBD system monitors:

- NOx (nitrogen oxide) levels in the exhaust.
- PM (particle) levels in the exhaust.
- Quality and access to AdBlue.
- Other functions in the engine and exhaust emission control system.

A fault in the system is classed according to how great an impact it has on exhaust emission control.

- A. large impact
- B. medium impact
- C. minor impact

A fault code will be set if a fault occurs. A "MIL" (Multifunction Indicator Lamp) symbol will come on or flash on the dashboard, see "Flash codes", page 60.



T008291

### 60 Exhaust emission control

#### Flash codes

The MIL symbol flashes or lights up depending on how the fault is classified and whether or not the engine is running.

If the symbol lights up during the first 15 seconds or if it comes on steadily while driving, a fault has occurred.
Contact your Volvo workshop.

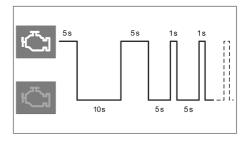
With the starter key in "II" position and the engine stationary, the MIL symbol will flash in different patterns to inform of the system status, see "Flash pattern", page 61.



T0082911

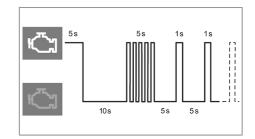
#### Flash pattern

Normal state, no fault.



Normal state, no fault.

However, it has not been possible to carry out certain tests due to the conditions not being met.



Other flash patterns mean that the exhaust does not meet with legal requirements or that the OBD system is not functioning as it should.

Contact your Volvo workshop.

## **SCR** system monitoring

The driver must be notified when the exhaust emission control system is not working. Vehicle performance will be impaired if a fault should occur in the system or the tank of AdBlue is empty.

The system monitors:

- Low AdBlue level.
- Incorrect AdBlue consumption.
- Incorrect AdBlue quality.
- Components that affect the level of nitrogen oxide in the exhaust.

For more information about symbols and messages that are shown in the driver's display, see separate driver's instructions "Display IC08".

#### **Diesel Particulate Filter**

The filter reduces emissions of carbon (PM), hydrocarbons (HC) and carbon monoxide (CO). Sulphur-free fuel must be used if it is to work

#### Soot

The filter collects particles of soot. Many particles in the filter means a higher exhaust counter pressure, which can cause somewhat higher fuel consumption and a risk of unnecessary engine wear. To prevent this, there is a system that removes the soot by automatically burning away the particles. This process of burning is active regeneration and involves heating the filter so that the particles are incinerated. Regeneration is carried out automatically, see "Automatic regeneration", page 64.

The soot level is shown in the driver's display, see separate driver's instructions "Display IC08".

### **Ash**

The filter also removes inorganic compounds (ash) from the exhaust, which originate from additives in the engine oil. Ash cannot be burned away so regular service of the particulate filter is necessary. For service intervals, see separate service information.

Ash level is shown in the driver's display, see separate driver's instructions "Display IC08".

#### 64 Exhaust emission control

## **Automatic regeneration**

Automatic regeneration is activated when necessary. Regeneration only takes place while driving and when the load is sufficiently high to attain a sufficiently high temperature. Regeneration is interrupted at low exhaust temperatures but will resume automatically once the exhaust temperature is sufficiently high again.

For more information about symbols and messages that are shown in the driver's display, see separate driver's instructions "Display IC08".

## Filling fuel

Note: Only fill up at appropriate places.

Refuelling is done behind a hatch on the side of the vehicle

#### Filling instructions:

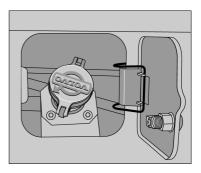
- 1 Open the flap and undo the fuel filler cap.
- 2 Place the fuel pump nozzle in the filler pipe opening.
- 3 Fill the tank.
- 4 Put the pump nozzle back when the tank is full.
- 5 Close the fuel filler cap and the flap.

If the vehicle is equipped with an auxiliary heater, it may have a separate fuel tank.



### **CAUTION**

Only use fuel that fulfills the manufacturer's requirements. Avoid spilling fuel on the paintwork.



T2022265

### 66 Filling up instructions

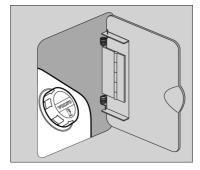
## Filling AdBlue

The AdBlue tank is located on the side of the vehicle.

The AdBlue tank's filler has a magnet that opens the filler nozzle. This is to prevent filling of AdBlue in the wrong tank.

AdBlue consumption must be equivalent to approximately 4-5% of fuel consumption. When the quantity of AdBlue falls below a certain level in the tank, a symbol is shown as well as a message in the display, see separate driver's instructions "Display IC08".

**Note:** Do not fill up in the pipe. Always leave space for AdBlue to expand.



T2061627

### Daily level check

Engine oil, servo oil, coolant and hydraulic fluid levels must be checked daily.

If the fluid level is too low in a reservoir then a symbol is shown as well as a message in the display, see separate driver's instructions "Display IC08".

## **Engine oil**

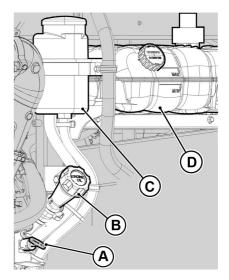
It is very important to maintain the engine oil at the correct level for optimum lubrication of the engine.

An oil level that is too high may lead to increased consumption of oil, which can cause clogging of the silencer and crankcase ventilation.

An oil level that is too low can cause overheating of the engine, which may lead to abnormal engine wear and piston scoring.

Check engine oil level using the display, see separate driver's instructions "Display IC08".

Check the level of the engine oil using the oil dipstick (A), see "Checking the oil level", page 68.



T0082690

#### Checking the oil level

#### Warm engine:

- 1 Position the bus on a level surface.
- 2 The engine is switched off. Wait at least 3 minutes before checking the level.

Point 3-6, see text below.

#### Cold engine:

- 1 Position the bus on a level surface.
- 2 The engine is switched off. To obtain a more precise measurement, wait at least 4 hours before checking the level. This is in order that the oil can run back down into the oil sump.
- 3 Open the engine hatch.
- 4 Remove the oil dipstick (**A**) and wipe with a clean rag.
- 5 Check the oil level with the oil dipstick. Always read at the lower edge of the dry area.
- 6 Top up with engine oil (**B**) if necessary. Top up until the oil level is at 50 percent between the max and min markings. Do not overfill.



Level at min marking, top up to 50 percent between min and max.



Optimum level 50 percent between min and max marking, do not top up.



Oil level at max marking, do not top up.

### Servo oil

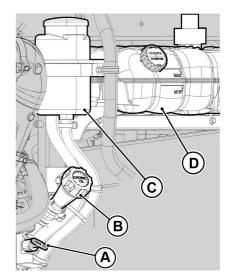
Make sure the oil level is between max and min in the reservoir (C). Top up with servo oil as necessary.

### Coolant

The coolant level is checked from the display, see separate driver's instructions "Display IC08". Top up coolant if necessary.



Take care when opening the cap on the coolant reservoir (**D**). The coolant system will be pressurised if the engine is warm.



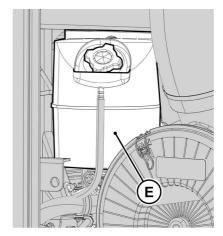
T0082690

**Note:** It is important that the cap on the fluid reservoir is refitted with the logo horizontal in order to avoid leakage.

# 70 Start and stop

# Hydraulic oil

Make sure the oil level is between max and min in the coolant fan hydraulic fluid reservoir (E). Top up with hydraulic fluid as necessary.



T0082700

# Checking before driving

Before starting to drive, close all hatches and make sure that

- all safety equipment is in its specified place
- the opening and closing of doors work
- the sensitive edges of the doors work
- the emergency opening system for the doors is in working order
- the windscreen wipers/washers work
- direction indicators and horn are in working order
- all lighting is in working order
- the destination signs are set correctly
- the tyres have the correct air pressure
- nothing has got stuck between the rear wheels (dual-mounted wheels).

## 72 Start and stop

### Start and stop of engine

### **Test of lamps**

Once the ignition has been turned on, the vehicle's control system will carry out a function test of all the instrument panel lamps (applicable for the bus variant).

All the lamps and meter LEDs light up for about 5 seconds or more.

**Note:** During the lamp test, no confirmation is given that the engine is ready for start, but wait with the engine start until the lamp test is completed or the control lamp "Preheater activate" has gone out.

### Start the engine.

### Starting a hot engine

To start the engine:

- 1 Turn the ignition key or ignition knob to the ignition position:
- 2 Wait for at least 5 seconds (or until the control lamp "Preheater active" goes out).
- 3 Start the engine by turning the ignition key or ignition knob to the start position.

The display informs whether the starter motor has overheated. Wait a few minutes before making the next start attempt. On certain variants the waiting time is shown in the display, see separate driver's instructions "Display IC08".

### 74 Start and stop

### Starting a cold engine (preheater function)

To prevent exhaust smoke when starting a cold engine, the intake air should be heated if the outside temperature is around  $-10^{\circ}$  C or lower.

1 Turn the ignition to II.

If air intake heating is required, it will start automatically and continue as long as the "Preheating activated" control lamp on the instrument panel is lit. It can take up to 50 seconds depending on the temperature of the coolant

- 2 Wait until the control lamp has gone out.
- 3 Then turn to start **III** to start the engine.

For more information on the ignition key and ignition knob, see chapter "Key ignition switch", page 18.



Do not race the engine while it is cold. In extremely cold weather (-20 °C or lower), a cold engine must not be run faster than 1000 rpm.



T0008969



T0082920

# Symbols in the display after start

After starting, the stop lamp in the instrument panel will light and the symbol "Poor brake performance or fault in brake system" is shown in the display until the brake pressure has risen to its normal level (5.6 bar).

If other symbols are shown in the display after start, the same procedure applies as for normal driving.



T3014364



T0014583

## Stop the engine

To switch off the engine:

- 1 Apply the parking brake and move the gear shift to the **N** position.
- 2 Turn the ignition key or ignition knob to the stop position:
- 3 Switch off the main switch.

**Note:** In an emergency situation, the engine can be stopped using the emergency switch, see chapter "Emergency switch", page 36.

# 76 Some advice for driving

# Safe driving

- Check that instruments are indicating normal values after starting and check regularly while driving.
- Check the brake system lamps and symbols at start and regularly while driving!
- Never cover the radiator!
   The thermostat will maintain the correct temperature in all conditions.

   Regularly check the coolant level and always use the correct coolant.
   Do not drive with a leaky cooling or heating system.
- The steering servo force is not felt in the steering wheel!
   Never use the sideway force of the power steering when the front wheels are locked against a kerb, etc.
- Use the retarder function!
   The wheel brakes can become overheated with prolonged braking, for example on downhill slopes, which leads to poor brake perfomance.

# **Economy driving**

- Calm driving gives safer traffic, satisfied passengers, lower fuel consumption and less wear on the vehicle.
- Use the turbo pressure gauge and tachometer to drive as fuel economically as possible.
- Too low air pressure in the tyres increases the rolling resistance and thereby increases the fuel consumption!
- Idling, cold motor, electrical equipment, etc., consumes large amounts of fuel!
   Turn off the engine when the vehicle is stationary (avoid unnecessary idling).
   Run the engine warm as quickly as possible.
   Turn off all unnecessary electronic
  - Turn off all unnecessary electronic equipment.
- Irratic driving and high speeds increase the fuel consumption considerably!
   Keep your distance to vehicles in front for smoother driving.
   Do not drive too fast.
- Fully depressing the accelerator pedal and making the gearbox change down, so-called kick-down, also uses extra fuel! Choose the right moment to change gear depending on the acceleration.
   Make smooth, soft gear changes.

# 78 Some advice for driving

- Violent acceleration and late braking give both poor driving economy and comfort! Accelerate smoothly and calmly when starting from standstill.
   Pay attention to the traffic situation.
   Release the accelerator early and let the speed reduce gradually.
- Always use the retarder function!
   The wheel brakes can become overheated following prolonged braking, on downhill slopes for example, which leads to increased wear on brake linings.
- The air system takes power from the engine to be refilled again!
   Use the door brake at bus stops, if permitted.
   Only use kneeling while passengers board or leave the bus.
   Only open and close the doors when passengers board or leave the bus.

Do not pump the brake pedal.

### **Driving in cold weather**

Pay attention to the following before driving in cold weather (air temperature +5 °C or lower):

- The coolant in the cooling system must have the correct admixture of concentrated antifreeze.
- Check that the radiator and the grill on the hatch to the radiator are free from snow and ice
- The washer fluid tank must be filled with winter washer fluid.
- The batteries must be in good condition. Low temperatures reduce the batteries' ability to supply power. Make sure the battery terminals are clean, the clamps properly tightened and all cells have the correct electrolyte level.
- The engine oil, gearbox oil and rear axle oil must have the correct viscosity.
- Fill the tanks with winter fuel, which reduces the risk for formation of paraffin in the fuel system. If this has already occurred, replace the fuel filters and fill the tank(s) with winter fuel.
- The compressed air system is sensitive to low temperatures If there is a lot of condensation water in the primary tank, drain the tank and replace the air drier desiccant cartridge.

### 80 Some advice for driving

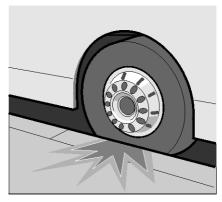
### **Power steering**

If the wheels are blocked laterally, against a kerb for example, drive forward and turn the steering wheel carefully so the vehicle moves away from the kerb. Never force the wheels to turn.



Avoid making the vehicle turn by forcing the steering wheel. Force exerted on the steering wheel increases the pressure in the steering servo with risk of overheating that can damage the oil pump.

If the power steering is out of order for some reason and it feels like the steering gear has locked up, the vehicle can still be steered if the steering wheel is turned with some pressure.



T0008960

## Dynamic steering

**Dynamic steering** improves the following characteristics:

- Steering at low speed is lighter.
- Steering in a side wind or on a slanting road surface is lighter and more stable.
   The system compensates as required for the constant force in the steering wheel.
- Driving on a rough road surface becomes more stable. The system compensates for roughness in the road, which results in less shaking in the steering wheel.
- Steering when reversing is easier since the steering wheel also returns to its original position while reversing.
- During heavy braking, when the braking wheels are on different surfaces, the system endeavours to steer the bus straight ahead.

In the event of a fault in the system, the electric motor is switched off and the steering works with hydraulic assistance.

A fault in the system is indicated by a message in the display, see separate driver's instructions "Display IC08".

If the system detects that the bus is pulling to the side and that it may be due to incorrect wheel alignment, the message "Misaligned wheels" is shown in the driver information display.

Contact an authorised Volvo workshop to rectify the fault.

### 82 Some advice for driving

### Disconnected accelerator pedal

If the driver depresses the brake pedal (or applies the parking brake) and the accelerator pedal at the same time, the accelerator pedal will not function.

On condition the speed is higher than 5 km/h, the accelerator is disconnected and remains so until both the brake and accelerator pedals are released completely.

A symbol is shown in the display for as long as the accelerator pedal is disengaged. For more information, see separate driver's instructions "Display IC08".



### **Safety**



## WARNING

Always make passenger safety your first priority!

If anything unforeseen happens it is important to do the following:

- 1 Stop the vehicle.
- 2 Activate the hazard lights.
- 3 Open the doors. If necessary, use the emergency opener that is located close to the door.
- 4 Let the passengers out.
- 5 Switch off the ignition.
- 6 Switch off the main switch.
- 7 Place a warning triangle behind the vehicle.
- 8 If necessary, activate the emergency switch.



### **WARNING**

If the fire alarm sounds, the engine must be switched off as soon as possible.



T8009312

Example of an emergency door opening switch. Placed next to the door.

## Releasing the parking brake

If the engine stalls, for example, the vehicle cannot provide its own air and the brake circuit will not receive sufficient air pressure.



### / DANGER

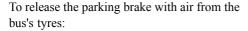
The foot brake will not work when there is no pressure in the brake circuit.

To release the parking brake at this point will require pressurising the brake circuit from an external source. The parking brake can be released either with the assistance of air from one of the vehicle's own tyres or mechanically.

### Releasing the parking brake using air

When towing for short distances, the parking brake can be released using the tyre inflation valve, which uses air from one of the bus's own tyres.

**Note:** The tyre inflation valve can also be used to inflate a tyre using the bus's compressed air system.



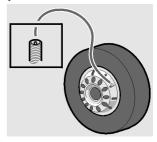
- Chock the wheels or connect a draw bar to a towing vehicle to prevent the bus from moving.
- 2 Connect the tyre inflation hose between the tyre inflation valve and a tyre valve. The hose is available in the bus's tool box, see chapter "Toolbox", page 58.
- 3 Move the parking brake forwards to the driving position.
- 4 Press the other end of the hose against the tyre inflation valve at the same time as pressing in the blocking valve.

  The brake system is now filled with air from the tyre. Filling can be stopped as soon as the transfer flow has ceased.
- 5 The bus can now be towed.
  For more information, see separate driver's instructions "Changing wheels and bellows".



T0008908

#### Tyre inflation valve



0009182

The tyre inflation hose is connected between the tyre inflation valve and a tyre valve.

## Mechanical release of the parking brake

When towing longer distances, or if the parking brake cannot be released with air from the bus's tyres, it can be released mechanically.

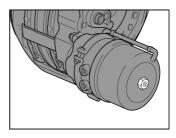
To release the parking brake mechanically:

- Chock the wheels or connect a draw bar to a towing vehicle to prevent the bus from moving.
- 2 If possible, first fill the brake cylinders with air, which eases the turning of the release nuts.
- 3 Turn to release the release nuts, which are located on both brake cylinders on the drive axle. After three turns, a red dowel will appear from the nut. Continue to turn the nut up to the stop.

  To release the parking brake, a complete compression of the parking brake springs (approx. 45 turns) is required.
- 4 The bus can now be towed. For more information, see separate driver's instructions "Changing wheels and bellows".
- 5 Replace the bolts in storage and replace any plastic covers after completed towing.

### / DANGER

The bus will lose all braking capacity when the parking brake is released mechanically.



T501463

Release nut

### **Punctures**

In case of a puncture, the tyre must be repaired or the wheel changed before towing or rescue can be started.

For information about changing wheels, see separate driver instruction "Changing wheels and bellows"

### **Punctured air bellows**

If any of the vehicle's air bellows are punctured, further driving should be avoided. The preferred alternative is to replace the bellow at the current location or the vehicle should be towed to the nearest Volvo work shop. Only if other options are judged not feasible, the vehicle shall be driven. In such case, the speed must be reduced to max 20 km/h and during approx. 0,5 hour in order to avoid consequential faults.

For information about changing bellows, see separate driver instruction "Replacing wheels and bellows"

### **Towing**



### WARNING

The propeller shaft **must always** be dismantled if the drive wheels are in contact with the road when towing. If not dismantled, the gearbox may be damaged.

# Changing the batteries

#### Consumer batteries and start batteries

The system comprises two consumer batteries and two start batteries.

**Note:** Batteries contain acid which is corrosive and poisonous. It is therefore important that batteries are handled in an environmentally safe manner. Let your Volvo dealer help you.

When replacing batteries, both batteries must have the same capacity and age. The batteries must be connected with the correct polarity.

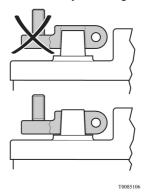
#### Replacement of consumer batteries:

- 1 Switch off the main switch.
- 2 Undo the negative battery terminal cable.
- 3 Undo the positive battery terminal cable.
- 4 Remove the cable between the batteries.
- 5 Change the battery.
- 6 Clean the cable clamps and the battery poles.
- 7 Fit the cable between the batteries.
- 8 Install the positive battery terminal cable.
- 9 Install the negative battery terminal cable.
- 10 Protect the battery terminals from corrosion.
- 11 Turn on the main switch.



Incorrect connection will seriously damage the electrical system.

If necessary, clean the contact surfaces to permit correct installation. Incorrect installation entails a high risk of oxidisation in the space between the top of the battery terminal and the battery cable lug.



Top: Incorrect Assembly. The terminal has not been pressed down on the pole. Bottom: Correct Assembly. The terminal has been pressed down on the pole.

The system comprises two consumer batteries and two start batteries

**Note:** Batteries contain acid which is corrosive and poisonous. It is therefore important that batteries are handled in an environmentally safe manner. Let your Volvo dealer help you.

When replacing batteries, both batteries must have the same capacity and age. The batteries must be connected with the correct polarity.

#### Replacement of start batteries:

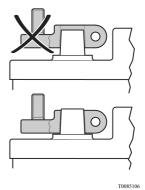
- 1 Switch off the main switch.
- 2 Disconnect the battery cables from the negative poles on the consumer batteries.
- 3 Disconnect the battery cables from the negative poles on the start batteries.
- 4 Disconnect the battery cables from the positive poles on the start batteries.
- 5 Disconnect the cable between the start batteries
- 6 Change the battery.
- 7 Clean the cable clamps and the battery poles.
- 8 Fit the cable between the start batteries
- 9 Connect the battery cables to the positive poles on the start batteries.
- 10 Connect the battery cables to the negative poles on the start batteries.
- 11 Protect the battery terminals from corrosion.
- 12 Connect the battery cables to the negative poles on the consumer batteries.
- 13 Turn on the main switch.



### WARNING

Incorrect connection will seriously damage the electrical system.

If necessary, clean the contact surfaces to permit correct installation. Incorrect installation entails a high risk of oxidisation in the space between the top of the battery terminal and the battery cable lug.



Top: Incorrect Assembly. The terminal has not been pressed down on the pole. Bottom: Correct Assembly. The terminal has been pressed down on the pole.

## Rapid charging

The vehicle has a connection for an external power source next to the battery box.



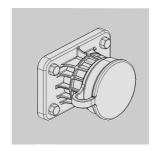
### **CAUTION**

When quick charging, first the main switch and then the battery main switch must be turned off to avoid overvoltage in the vehicle's power consumers.

The system comprises two consumer batteries and two start batteries.

If the consumer battery capacity is too low, connect an external 24V supply. Start the engine.

It is not possible to start the engine if the capacity of the consumer and start batteries are too low until they have been sufficiently recharged.



T0076656

## Starting assistance



### **CAUTION**

The starting assistance unit must not be connected. These can produce very high voltage levels. Levels that can damage the control units

If the battery capacity is too low to start the engine, use extra batteries or another vehicle for start help.



### **WARNING**

Batteries contain oxyhydrogen gas which is very explosive. A spark, which can be generated if you connect the starting cables incorrectly or if they are moved around during the starting procedure, is sufficient for the battery to explode and cause serious damage and injury. Batteries contain sulphuric acid which can give serious burns. If the acid gets in your eyes, skin or clothes, rinse with large amounts of water. If the acid gets in your eyes, get medical attention at once. Do not lean over the batteries

The system comprises two consumer batteries, two start batteries and a battery charger. The battery charger is connected between the starter and consumer batteries and ensures the starter batteries are always fully charged.

#### Low consumer battery capacity:

 Connect extra batteries or another power source to the consumer batteries.

#### Low consumer and start battery capacity:

- Connect extra batteries or another power source to the consumer batteries. The start batteries must be charged sufficiently in order to start the engine.
- To start the engine immediately. Connect extra batteries or another power source to the consumer batteries and the start batteries

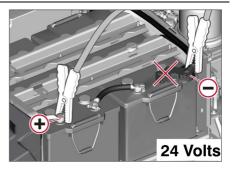
#### Low start battery capacity:

If the consumer batteries are charged but the start batteries are discharged, there may be a faulty component.

- To start the engine immediately, connect extra batteries or another power source to the start batteries.
- To ensure the engine can be started next time, any loss of function must first be rectified.

Starting with jump leads

- 1 Turn the ignition key to the 0 position
- 2 Make sure that the help start battery has 24 V total voltage or 24 V system voltage.
- 3 Switch the engine of the "assisting vehicle" off, and make sure that the vehicles do not touch one another
- 4 Connect one of the black cable's clamps to the negative terminal of the help battery marked in blue. N or –.
- 5 Connect the other black cable clamp to a place a grounded point some distance away from the battery of the vehicle which needs starting assistance.
- 6 Connect one of the clamps on the red cable to the positive terminal on the help battery. The positive pole is marked in red, P or +.
- 7 Connect the other clamp on the red cable to the positive terminal on the battery of the vehicle that needs help. The positive pole is marked in red, P or +.
- 8 Start the engine of the "assisting vehicle". Let the engine run for a few minutes at a higher idling speed than normal.
- 9 Start the engine on the vehicle that needs jump starting.
- 10 Remove the black cable clamp from the ground point.
- 11 Remove the black cable clamp from the negative terminal of the help battery.
- 12 Remove the red cable.



T3107211

Always connect the black cable to the negative terminal first, in order to activate the battery sensor.

**Note:** After the vehicle has been started using start cables, the batteries should be charged using a battery charger. An alternator can never charge the battery to 100 %; in favourable circumstances a maximum level of 90 % can be achieved

# Fuses and relays

Fuses and relays are fitted in the electrical distribut. unit and in the front and rear electrical boxes. The electrical distribution unit is located close to the driver, for example in the headlining at the front of the vehicle.





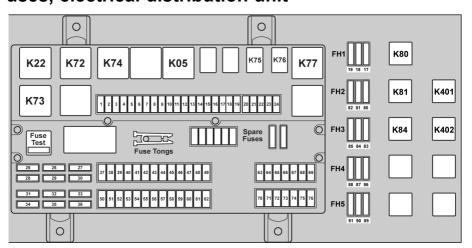
Always use fuses with the correct rating when replacing. Never fuse too high.



ALWATS REPLACE FUSES AND CIRCUIT BREAKERS WITH SAME CURRENT / AMPERAGE RATING. INCREASING FUSE OR CIRCUIT BREAKER RATING MAY RESULT IN ELECTRICAL CIRCUIT OVERHEATING AND POSSIBLY FIRE.

T0083390

# Fuses, electrical distribution unit



T0104573

	Fuses, electrical distribution unit						
F01	5 A	APBE (automatic evacuation parking brake)	F21	15 A	_		
F02	10 A	_	F22	10 A	_		
F03	10 A	Luggage light	F23	5 A	ECS (electronic controlled spring)		
F04	5 A		F24	10 A	_		
F05	5 A	BIC (dashboard), OBD (onboard diagnostics), controls, switches	F25	20 A	_		
F06	5 A	ECU (alternator control unit), engine components	F26	30 A	_		
F07	5 A	VECU (vehicle control unit)	F27	20 A	_		
F08	5 A	BIC (dashboard), OBD (onboard diagnostics), tachograph	F28	20 A	EBS (electronically controlled brake system)		
F09	5 A	Oil master	F29	30 A	Windscreen wipers		
F10	5 A	Electric power steering	F30	20 A	Ignition +15		
F11	5 A	GECU (gear selector electronic control unit)	F31	20 A	_		
F12	10 A	TECU (transmission control unit)	F32	20 A	_		
F13	15 A	Windscreen wipers, washers	F33	20 A	_		
F14	10 A	Body +15	F34	20 A	_		
F15	10 A	_	F35	20 A	Front external lights		
F16	5 A	_	F36	15 A	Day running lights		
F17	5 A	Automatic lubrication, turntable (articulated bus)	F37	5 A	HYB lamp (only for hybrid vehicles)		
F18	10 A	_	F38	5 A	LCM (light control module)		
F19	5 A	_	F39	5 A	FMS Gateway (Fleet Management System)		
F20	10 A	Alcolock, AIC (advanced information)	F40	15 A	_		

	Fuses, electrical distribution unit (cont.)						
F41	10 A	_	F60	5 A	+DR body		
F42	5 A	DACU (Driver Assistance Control Unit)	F61	5 A	Infotainment system (sound system, telephone)		
F43	5 A	Fuel shut-off valve	F62	10 A	Exhaust emission control, AIC (advanced information)		
F44	15 A		F63	10 A	Control unit BUS I/O		
F45	15 A	_	F64	10 A	LDWS (Lane Departure Warning System), vibration, driver's seat		
F46	10 A	Horn	F65	10 A	_		
F47	15 A	_	F66	10 A			
F48	5 A	EBS (electronically controlled brake system)	F67	5 A	_		
F49	5 A	ECS (electronic controlled spring)	F68	5 A	Ignition key		
F50	5 A	VDS (Volvo Dynamic Steering) Gateway	F69	_	_		
F51	5 A	BBM ECU (bodybuilder control unit)	F70	5 A			
F52	10 A	Body +30	F71	10 A			
F53	10 A	TECU (transmission control unit)	F72	5 A	_		
F54	10 A	Dynafleet, FMS (Fleet Management System)	F73	5 A	_		
F55	5 A	Control unit BUS I/O	F74	15 A	Windscreen and headlamp washers		
F56	5 A	_	F75	15 A	_		
F57	5 A	GECU (gear selector electronic control unit)	F76	5 A	_		
F58	5 A		F77	25 A	LCM (light control module)		
F59	5 A	Voltage supply switch dashboard	F78	25 A	LCM (light control module)		

	Fuses, electrical distribution unit (cont.)						
F79	25 A	LCM (light control module)	F86	5 A	BIC (dashboard)		
F80	25 A	LCM (light control module)	F87	5 A	Main switch		
F81	25 A	LCM (light control module)	F88	30 A	VDS (Volvo Dynamic Steering)		
F82	25 A	LCM (light control module)	F89	5 A	Side position light, left		
F83	15 A	_	F90	5 A	Side position light, right		
F84	5 A	Infotainment system (sound system, telephone)	F91	_			
F85	20 A						

# Relays, electrical distribution unit

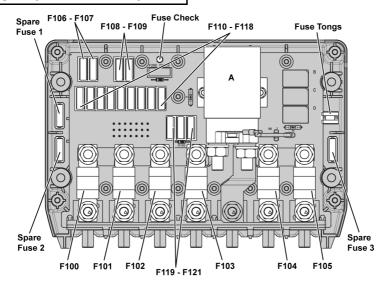
	Relays, electrical distribution unit						
K73	24 V	Ignition +DR	K77	24 V	Day running lights		
K22	24 V	Ignition +15	K80	24 V	Emergency switch		
K72	24 V	VECU (vehicle control unit), ECU (alternator control unit), engine components	K81	24 V	Main switch		
K74	24 V	Gearbox	K84	24 V	APBE (automatic evacuation parking brake)		
K05	24 V	Windscreen wipers	K401	12 V	LDWS (Lane Departure Warning System), vibration, left-hand seat cushion of driver's seat		
K75	24 V	Luggage light	K402	24 V	LDWS (Lane Departure Warning System), vibration, right-hand seat cushion of driver's seat		
K76	24 V	ECS (electronic controlled spring)	_	_			

# Fuses and relays, front electrical box



Always use fuses with the correct rating when replacing. Never fuse too high.

Replacement of relay A and fuses F100 to F105 should only be carried out at an authorised workshop. This is to ensure correct tightening torque on reassembly



T0082701

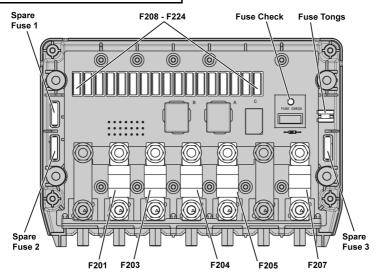
Fuses and relays, front electric box						
A	_	Main relay	F112	15 A	Spare	
F100	400 A	Electric box, rear	F113	20 A	Fan ESS (energy storage system) (only hybrid)	
F101	100 A	Chassis +30	F114	20 A	Fan ESS (energy storage system) (only hybrid)	
F102	150 A	Electric servo steering / Body (tourist bus)	F115	10 A	Tachograph	
F103	200 A	Body +30	F116	15 A	Pump ESS (energy storage system) (only hybrid)	
F104	150 A	B+	F117	15 A	Pump ESS (energy storage system) (only hybrid articulated bus)	
F105	100 A	Battery charger (tourist bus)	F118	20 A	Spare, body	
F106	5 A	HPCU (hybrid power train control unit) (only hybrid)	F119	5 A	ESS (energy storage system) (only hybrid)	
F107	5 A	Signal cooling ESS (energy storage system) (only hybrid)	F120	5 A	Sensor battery	
F108	15 A	Bodywork	F121	5 A	Main switch, signal ARMS (automatic resetting of main switch)	
F109	20 A	I-start	1	5 A	Spare	
F110	20 A	Bodywork	2	10 A	Spare	
F111	15 A	Heater/charger ESS (energy storage system) (only hybrid)	3	20 A	Spare	

### Fuses and relays, rear electrical box



Always use fuses with the correct rating when replacing. Never fuse too high.

Replacement of fuses F201 to F207 should only be carried out at an authorised workshop. This is to ensure correct tightening torque on reassembly



T0083116

Fuses and relays, rear electric box						
F201	200 A	Alternator	F216	5 A	Spare	
F203	150 A	Bodywork	F217	5 A	Engine hatch	
F204	150 A	Bodywork	F218	10 A	Engine compartment light	
F205	125 A	Bodywork	F219	10 A	AMECU (turntable control unit) (only articulated buses)	
F207	400 A	Electric box, front	F220	20 A	Spare	
F208	10 A	CCIOM (central chassis I/O module)	F221	10 A	Remote filling coolant	
F209	20 A	Fuel heater	F222	15 A	Spare (Oilmaster double decker)	
F210	15 A	EMS (engine management system)	F223	10 A	Hydraulic steering	
F211	15 A	EMS (engine management system)	F224	30 A	ACM (exhaust emission control unit)	
F212	10 A	EMS (engine management system)	1	5 A	Spare	
F213	10 A	EMS (engine management system)	2	10 A	Spare	
F214	10 A	Air compressor/air drier	3	20 A	Spare	
F215	10 A	UQS (sensor urea grade)	_	_		

### Type plates

### Identification plate

The identification plate is divided into a legal requirement section, punched inside the inner frame on the plate, and three fields for chassis type, drive and wheelbase. The latter is not used for buses, only for trucks.

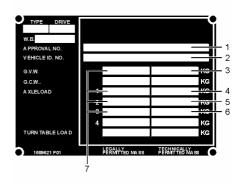
The identification plate is located beside the driver's position and contains the following information:

- 1 If special national approval is required an approval number is punched in here by the main dealer/importer.
- 2 VIN number, the same number that is stamped onto the frame member, see chapter "Vehicle Identification Number (VIN)", page 103.
- 3 Max technical gross weight (kg). (Technical weight is the weight for which the vehicle is constructed.)
- 4 Max technical front axle weight (kg).
- 5 Max technical rear axle weight (kg).
- 6 (For articulated buses) max technical axle weight (kg) for third axle.
- 7 National total weight or axle weight regulations.

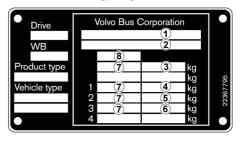
If these regulations prescribe lower values than the technical max values, then the general agent/importer should complement these with the applicable values.

From 1 November 2014 a new identification plate will be used that is company specific. The same information as before will be stamped on.

New field 8 where the country code where the vehicle is to be registered is to be stamped.



Identification plate up until October 2014.



Identification plate as from November 2014.

# **Vehicle Identification Number (VIN)**

Vehicle identification number (VIN number) is stamped on the body in the wheelhousing in front or behind the front axle, on the front right part of the vehicle. Examples of VIN numbers:

YV3 Manufacturer

1M Chassis version

A4 Engine version

1 Brake system

8 Check figure

X Model year

A Assembly factory

### **Engine**

Type designation, component number and serial number are punched on the top of engine block near the injector pump.

### **Gearbox**

The type designation and serial number are punched on the top of the gearbox.

### Rear axle

The plate is on the right-hand side of pinion bearing housing.

### Retarder

Serial number and version are stamped on the rear left side of retarder housing.

### 104 Technical data

### Service intervals

In order to maintain the original properties of the vehicle throughout its service life, it must undergo regular maintenance according to a special service programme.

Carry out the service and maintenance for the vehicle at a Volvo workshop. Here there is the staff, the special tools and service information required for high service quality. The use of Volvo genuine parts, which have the same quality as the components that the Volvo factory assembles, also contributes to this. For service intervals, see separate service information.

### Washing the vehicle

**Note:** When washing the vehicle, chemical agents with an alkaline value that is too high (pH>12) must not be used.

**Note:** Use high-pressure jets with care. Avoid using high-pressure jets underneath the vehicle.

Refer to separate driver instructions "Cleaning and maintenance of painted surfaces" for more information on washing vehicles.

A	Cruise Control, Adaptive	^
Adaptive Cruise Control (ACC)49	(ACC) 4	9
AdBlue	D	
Automatic gearbox 54 Automatic parking brake	Diesel Particulate Filter 6 Differential lock 4	_
application	Direction indicators	
, tatomatio regeneration or	pedal 8	
В	Display	7
Battery main switch	Display, symbols	7
Blocking valve30	Door brake	1
Brake pressure gauges 12	Driver support system 4 Driver's position	
C	Driving in cold weather	9
Changing wheels		
Consumer battery,	E	
replacement	Economical driving	7
Control: Battery main	location 9 Emergency and safety	3
switch	equipment 5 Emergency brake 2	
Control: Cruise control 21 Control: Direction	Emergency hammer 5 Emergency switch 3	7
indicators	Emission values	0
Control: Engine control panel	Engine control paner	
Control: Idling speed	flushing clean3	
beam	Exhaust emission control 5 Exhaust emission control	
Control: Retarder 22	SCR 5	9
Controls: Key ignition	F	
switch	Filling up instructions 6	
wipers/washers	Filling, AdBlue	5
Cruise control21, 24	Fire extinguisher 5	

# 106 Index

First-aid cushion	Lamps in the instrument cluster
Gauge: Brake pressure	Level check, power steering fluid
coolant	Main and dipped beam
Н	OBD system 59 On-Board Diagnostics 60
Hazard warning lights16	
Headlamp washer       26         Hill start aid       48         Horn       53         Hydraulic fluid       70	Parking brake
Hill start aid	Parking brake
Hill start aid	Parking brake
Hill start aid	Parking brake       28–30         Parking brake,       84–86         release       84–86         Power steering       80         Power steering fluid       69         Pram signal       51         Preheat       18         Preheating       74         Punctured air bellows       87
Hill start aid	Parking brake 28–30 Parking brake, release 84–86 Power steering 80 Power steering fluid 69 Pram signal 51 Preheat 18 Preheating 74 Punctured air bellows 87 Punctures 87

Replacing battery, consumer battery88	Switch: Traction control4 Switch: Unloading the	17
Replacing battery, start	bogie	46
battery 89	Switches: Collision Warning	. •
Retarder22, 25, 37	with Emergency Braking	
Retarder integration		49
retarder integration20	Switches: Deactivating the	τυ
	retarder	37
S	Switches: Lane Keeping	,,
3	Support (LKS)	4Ω
Safe driving76	Switches: Speed-related	+9
Safety83	level control	12
SCR33, 60	level control	+3
SCR system monitoring 59		
Service intervals	<b>-</b>	
Some advice for driving76	Т	
Soot level	Tachometer	13
Speed limiter23–24	TCS, Traction Control	10
Speed-related level	System	17
control43	Technical data10	ጉ ገጋ
Speedometer13	Temperature gauge,	<i>)</i> _
Start and stop67	coolant	1∩
	Toolbox	
Start battery, replace-		
ment	Towing	) / 17
Starting a cold engine	Traction control	
Starting a hot engine	Turbo pressure gauge	. 9
Starting assistance	Tyre inflation valve	30
Steering wheel		
Steering wheel		
adjustment	U	
Steering wheel controls 53	Unloading the bogie4	16
Stop lamp5	Officacing the bogie	+0
Stop signal50		
Switch	<b>\A</b> /	
Switch: Differential lock 47	W	
Switch: Door brake	Warning lamp	5
Switch: Emergency	Warning triangle	
switch 36	Washing the vehicle	
Switch: Hill start aid48		J+
Switch: Kneeling41	Windscreen wipers/wash-	26
Switch: Level control 44	ers2	ںء
Switch: Main switch		



Göteborg, Sweden