

EUROCARGO 12-18t EURO III-V

OPERATOR'S MANUAL

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Safety

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Table of acronyms

The table shows the meaning of the acronyms which are given in the handbook

ACRONYM	DESCRIPTION
ABS	"Anti-lock Braking System". Anti-lock braking system
ADR	"Accord européen relatif au transport international des marchandises Dangereuses par Route". Provisions for the transport of hazardous goods
ASR	Anti-skid regulator
BC	"Body Computer". Electronic control unit of the vehicle
BM	"Bed Module". Bunk module control unit
CAN	"Controller Area Network". communications protocol
CC	"Cruise Control". Speed programmer
CDM	Passenger door control unit
CTRN	"Contractual Technical Reference Number". Number of the technical reference contract
CUC	"Clean Up Catalyst". Catalyst for the excess oxidation AdBlue®
DOC	"Diesel Oxidation Catalyst". Oxidation catalyst for unburned hydrocarbons and carbon dioxide
DDM	Driver's door control unit
DRL	"Daytime Running Light". Lights for daytime driving
EASY	"Electronic Advanced System". Diagnostic tool used by Service Network
EBL	"Electronic Brake- Force Limitation". Electronic braking corrector
EBS	"Electronic Braking System". Electronic control of braking system

ACRONYM	DESCRIPTION
ECAS	"Electronic Control Air Suspension". Air suspensions
ECM	Electronic card code for vehicle keys
EDC	Electronic Diesel Control. Engine supply control unit.
EM	"Expansion Module". Expansion module (to access "body builders")
ESP	"Electronic Stability Program". Electronic system for stability control
LED	"Light Emitting Diode". Light emitting diode
MET	"Input / Output Unit". Input and output unit
OBDII	"On Board Diagnostic". diagnosis socket
PIC	"Product Identification Code". Product Identification Code
PTO	"Power Take Off". Power take-off .
SCR	"Selective Catalyst Reduction". Selective catalyst reduction
SWI	"Steering wheel Interface". Steering column switches/steering wheel interface control unit
TCO	Chrono-tachograph control unit
TGC	Main current contactor
UDS	"Urea Dosing System". Dosing system management AdBlue®
USB	"Universal Serial Bus". Serial communication interface
VCM	"Vehicle Control Module". Vehicle control module
VIN	"Vehicle identification number". Vehicle identification number

**Safety warnings symbols**

You will often find these symbols on the following pages; follow the instructions to which they refer, for your own safety and the safety of your vehicle.

Risk of injury

Failure to observe these indications, partially or fully, may lead to serious risk of injury.

Risk of serious damage to the vehicle

Failure to observe these indications, partially or fully, will cause serious damage to the vehicle and may invalidate the warranty

General risk

Combines the risks of both the signs described above.

Safeguarding the environment

This refers to the correct behaviour to adopt in order for vehicle use to be as environmentally friendly as possible.

Installation of electric/electronic devices

Installation of accessories, additions and any modifications to the vehicle are to be executed in compliance with the "Directives for converting and fitting out vehicles", available from the Service Network workshops.

Remember that, particularly for the electrical system, various electrical sockets are provided as standard (or available as an option) in order to simplify and standardise the bodybuilders' work on the electrical system.

IVECO authorisation is required for any exception to the "Directives for converting and fitting out vehicles". Failure to comply with the above requirements will invalidate the warranty, and in certain cases, the possible loss of vehicle type approval.

INSTALLATION OF ELECTRIC/ELECTRONIC DEVICES

Any electric/electronic devices installed after purchasing the vehicle in the after-sales market must carry the following mark:



IVECO authorises the installation of transceiver equipment provided it is installed by the IVECO Service Network in compliance with the manufacturer's instructions.

No modifications or connections to the wiring of the electric control units are allowed. In particular changes to the data connection line between control units (CAN line) are strictly prohibited.



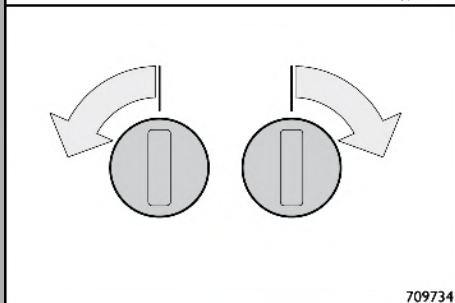
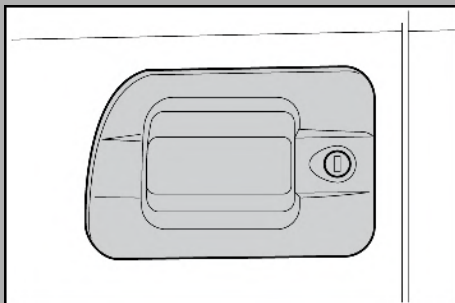
Risk of damage

The installation of devices that modify the vehicle's characteristics may lead to the vehicle being considered unroadworthy by the relevant authorities and may also lead to invalidation of the warranty, within the limits of defects caused by the aforementioned modifications.

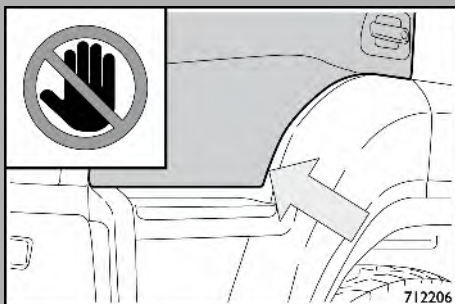
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

The driver's position

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Opening and closing the doors

Opening from the outside

The vehicle is equipped with two symmetrical access doors on the two sides. The external handle to open the door has a lock and key for locking it from outside the vehicle.

- to unlock the door, turn the key in an anticlockwise direction;
- to lock the door, turn the key in a clockwise direction;
- to open the door, pull the handle downwards.

When the door is opened, the cab interior lights and the step lights activate immediately. The lights and the ceiling light switch off when the doors are closed (they are timer-controlled).

Alternatively, the remote control can be used instead of the key on vehicles equipped with central locking.

NOTE See the paragraph "Each year before winter" in the Ordinary maintenance chapter.



Risk of damage

To close the door, DO NOT act on the lower edge of the plastic guard.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Access to the cab

After having unlocked the vehicle doors, use the external opening handle **(I)** to open the door.

NOTE See the paragraph "Each year before winter" in the Ordinary maintenance chapter.

Enter the vehicle using the handholds and the steps.
If necessary, fully lower the air-sprung seat (if fitted).

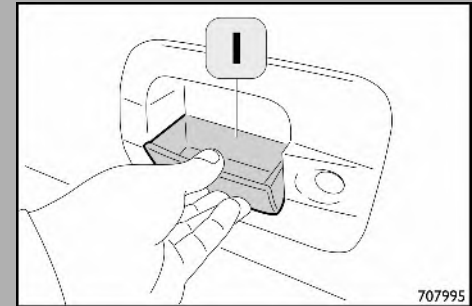


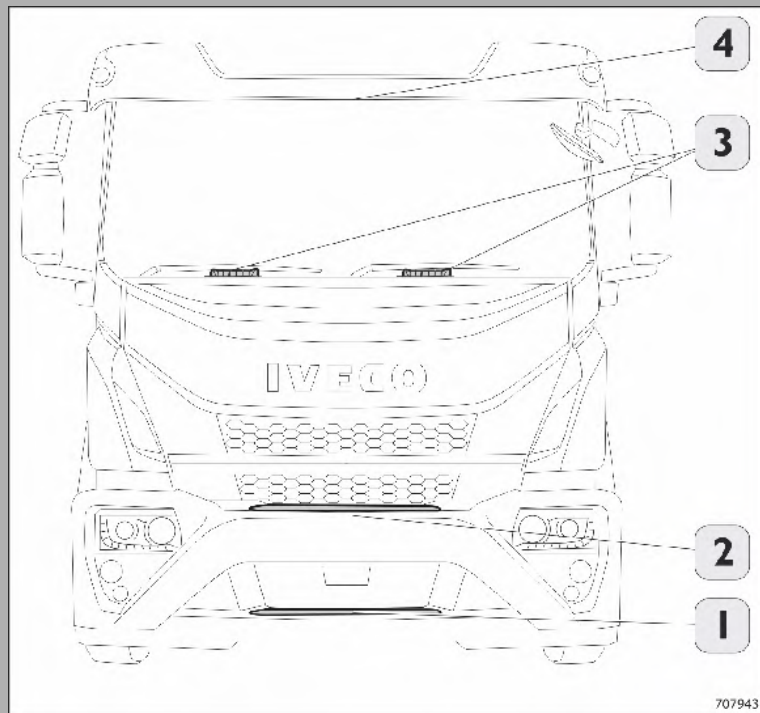
Risk of injury:

Pay attention to the following safety standards:

- Keep the access steps and grab handle clean to prevent slipping.
- Climb up and down always facing towards the loading platform and never with your back facing it.
- Never jump out of the cab.

Failure to comply with these prescriptions can result in the risk of serious injury





Access to the windscreen

To access the windscreen (e.g. for cleaning), you will need:

- the step **(1)**.
- the step **(2)** (in cabs where it is fitted).
- the handles **(3)** located at the base of the windscreen at the front grille.
- the handle **(4)** located inside the sun visor (in cabs where it is fitted).



Risk of injury:

Requirements for entering the cab:

- Never jump out of the cab.
- Keep the access steps clean.

Failure to comply with these prescriptions can result in the risk of serious injury



Risk of injury:

Do not grasp the arms of the windscreen wipers or the mirror while cleaning the windscreen: risk of falling and damaging components of the windscreen wipers and the mirror.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Doors

When the doors are open the two external light fixtures on the upper cross member and the white internal ceiling light switch ON.

The external light fixtures switch OFF when the doors are closed (they are timer-controlled).

1. Door opening lever.
2. Document pocket.
3. Knob for locking the door from the inside.
4. Handle for closing the door.

NOTE There is a speaker in the document pocket, if fitted.

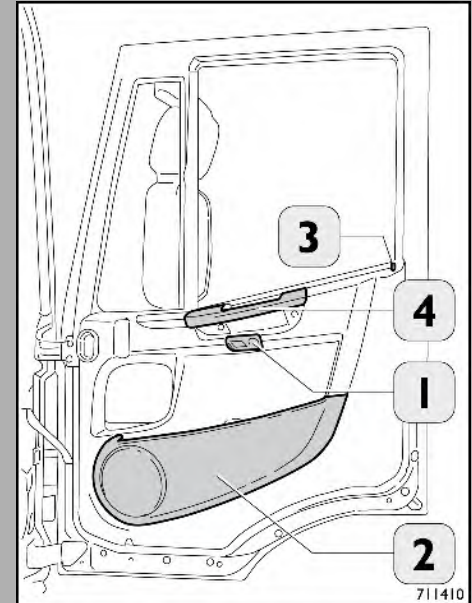


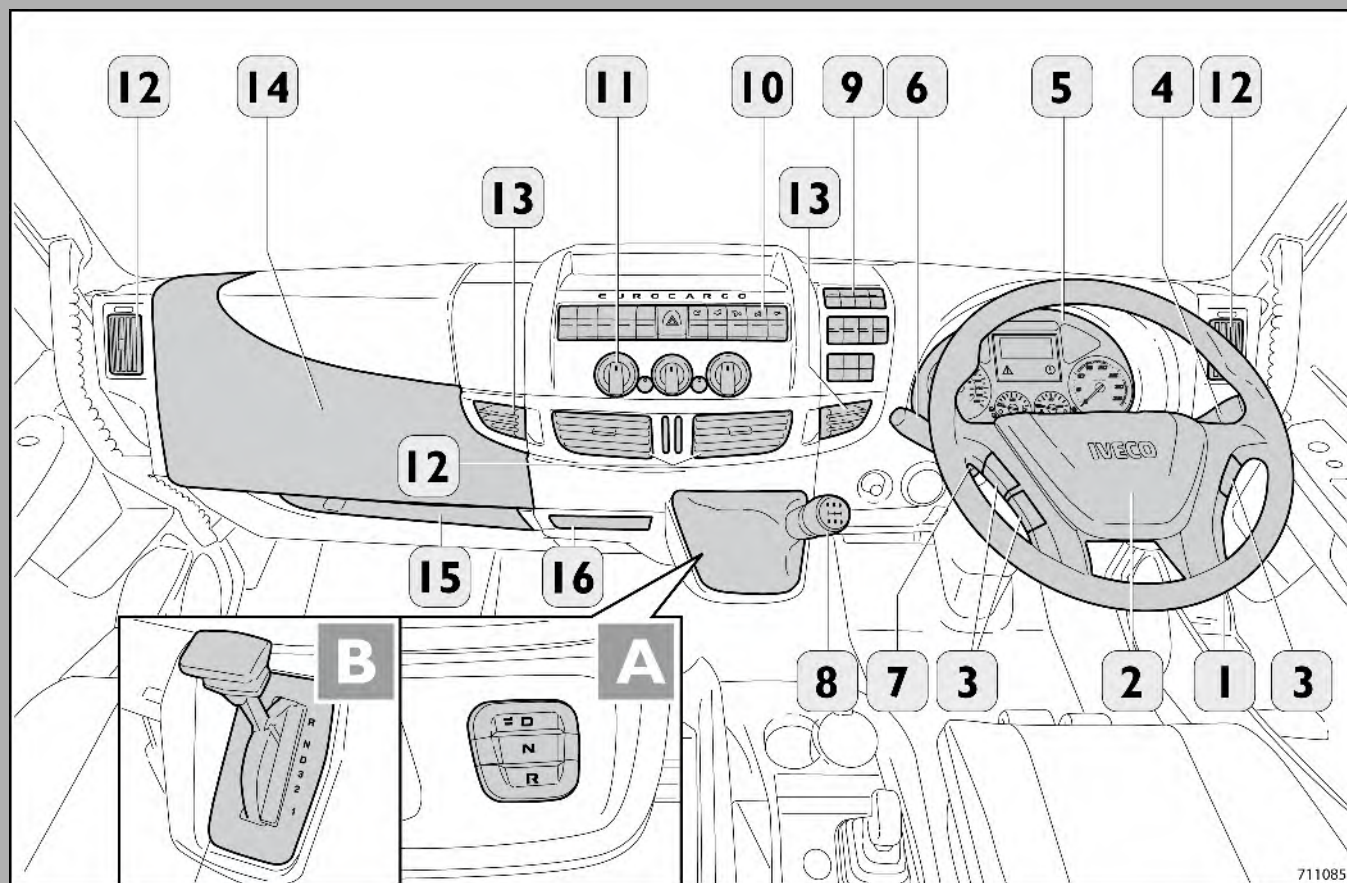
Risk of injury:

Close the doors properly to avoid risks to the driver and passengers:

- Travel only with the doors properly closed.

Failure to comply with these prescriptions can result in the risk of serious injury





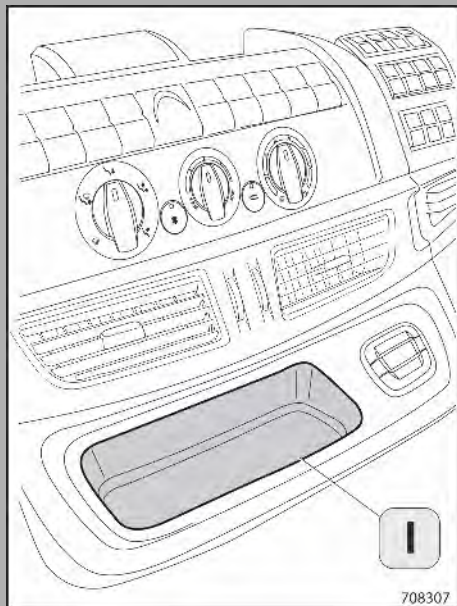
1. Steering wheel.
2. Horn control / airbag cover (if fitted).
3. Steering wheel controls (if fitted)
4. Lever on LH steering wheel.
5. Dashboard.
6. Lever on RH steering wheel.
7. Engine ignition switch.
8. Gear lever:

The figure shows a manual gear lever;

Detail **(A)** automatic transmission control S3000 or AS Tronic.

part **(B)** automatic gearbox control S2500.

9. Left side dashboard controls;
10. Central dashboard controls;
11. Air conditioning system / heater assembly controls;
12. Side and central air vents;
13. Document compartment;
14. Cover for access to fuse and contactor compartment;
15. Storage compartment;
16. Storage compartment.

**Storage compartment**

Versions equipped with automatic gearbox and two seats may also be equipped with the storage compartment **(I)**.

Instrument panel

The systems fitted to your vehicle enable you to check and easily use the main function controls, if necessary.

To avoid creating potentially dangerous situations, also for other road users, please carefully comply with the following precautions: The system must be used while always maintaining full control of the vehicle; If there is any doubt, stop and carry out the various operations.



General risk, general prescriptions

Always keep full control of the vehicle.

If there is any doubt, stop and carry out the various operations.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of injury:

Lack of attention and/or loss of view of the road by the driver can be a source of serious accidents. Before starting out, become familiar with the vehicle's systems and other controls.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

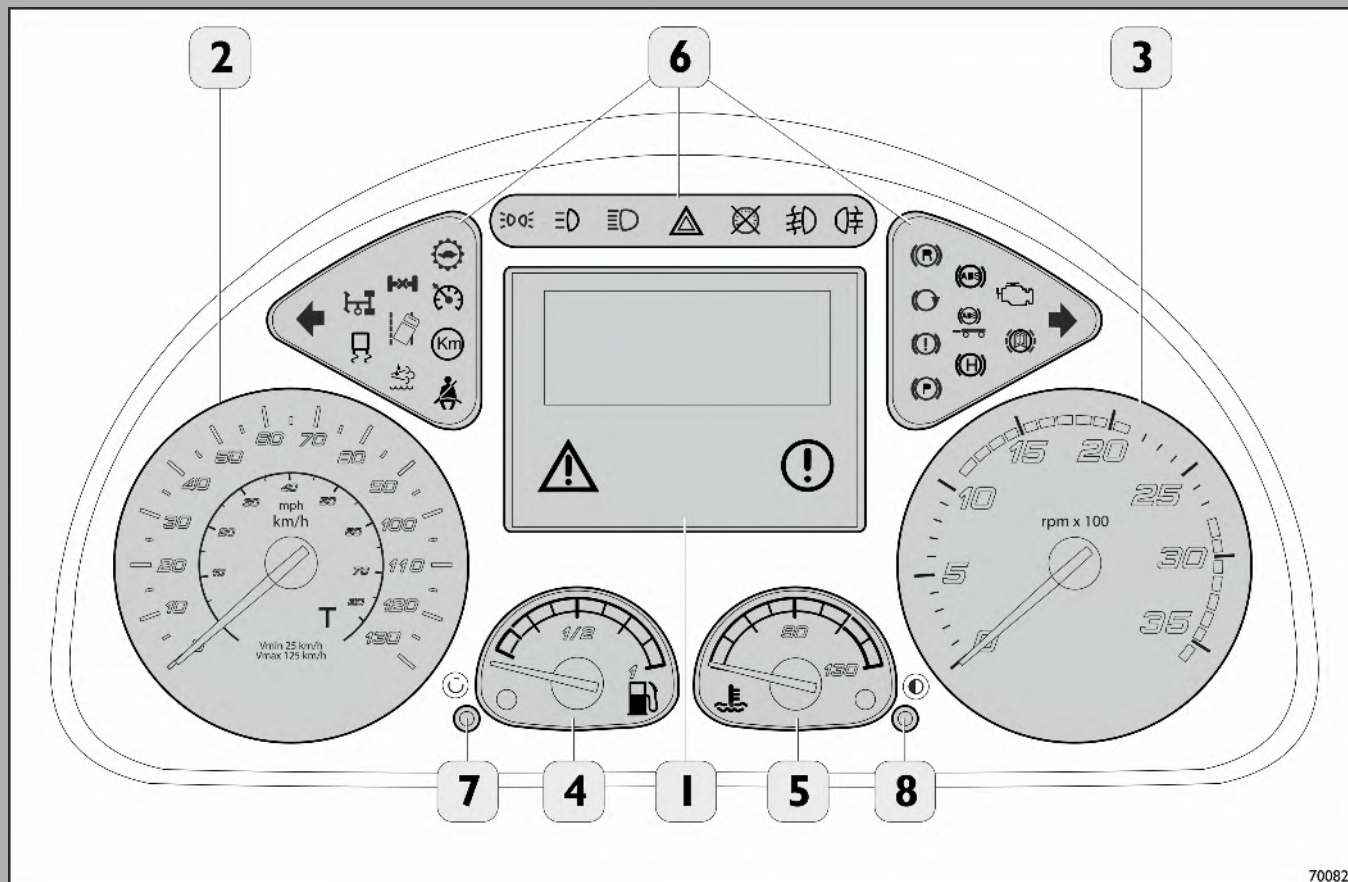


General prescriptions

Drivers are responsible for ensuring that they are in the best possible position to ensure both their own safety and the safety of others using the road.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

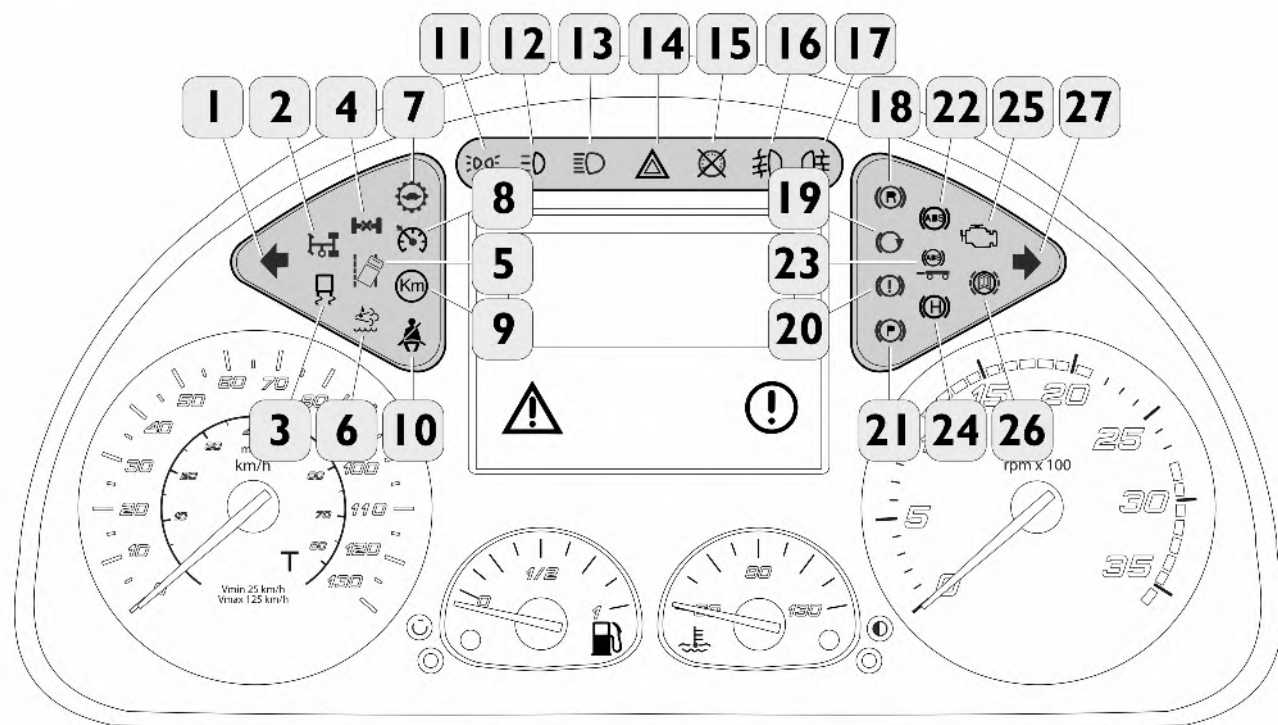
- The seat and steering wheel adjustment controls can be used to obtain the most comfortable driving position.
- While driving, the driver's comfort is influenced by a number of external factors such as the road surface, speed, vehicle load, etc. It is important that the driver reacts to these external factors to maintain comfort and in many cases, particularly when the road surface is in a poor condition or the road is unpaved, the only factor he can control is vehicle speed. In these conditions drivers must maintain a speed which ensures their own comfort while respecting the Highway Code.






















Instruments




The dashboard consists of the following instruments:

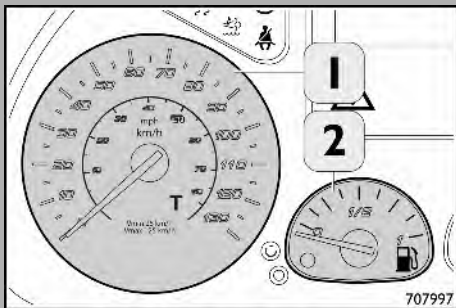
1. Digital display.
2. Tachograph with km/h and mph scale.
3. Rev counter.
4. Fuel level gauge with incorporated yellow reserve warning light.
5. Engine coolant thermometer with red high-temperature warning light.
6. Warning lights.
7. Button for trip odometer reset and navigation in display page.
8. Instrument lighting adjustment.



MEANING	IDEOGRAM	REFERENCE	COLOUR
Left turn indicator		1	Green
Power take-off engaged		2	Yellow
ASR or ESP active The warning light flashes if the functions are activated, it stays fixed on if there is a fault or if the driver requests deactivation		3	Yellow
Differential lock engaged		4	Yellow
Not used		5	Yellow
Not used		6	Yellow
Slow gears engaged		7	Yellow
Cruise Control on		8	Green
Programmable speed limiter engaged		9	Yellow
Safety belts not fastened		10	Red
External lights on		11	Green
Additional lights		12	Yellow

MEANING	IDEOGRAM	REFERENCE	COLOUR
High beam headlights		13	Blue
Hazard lights		14	Red
Instrument panel fault		15	Red
Front fog lights		16	Green
Rear fog light		17	Yellow
Retarder		18	Yellow
Engine brake		19	Yellow
Brake system fault		20	Red
Parking brake engaged		21	Red
Tractor ABS failure		22	Yellow
Trailer ABS failure		23	Yellow
Front handbrake engaged (where provided)		24	Red

MEANING	IDEOGRAM	REFERENCE	COLOUR
Emission warning light OBD II		25	Yellow
Vehicle braked due to doors open (not used)		26	Yellow
Right turn indicator		27	Green



Fuel level indicator and tachometer

Speedometer

The speedometer **(1)** indicates the driving speed. The instrument begins to supply data on exceeding **4 km/h**.

Fuel level indicator

Instrument **(2)** indicates the quantity of fuel in the tank.

When the pointer indicates:

- 0. The tank is empty.
- 1/2. The tank is half full.
- 1. The tank is full.

The activation of the warning light and the pointer in the red zone shown on the instrument indicate that the tank contains the reserve amount of litres of fuel.

Therefore, it is recommended to refuel the vehicle at a service station.

Diesel always contains impurities. Using the reserve fuel in the vehicle could be harmful to the vehicle's engine, as these impurities are introduced to the fuel system, fouling the various injection components.

Rev. counter and coolant temperature warning light**Revolutions counter**

The rev. counter **(3)** indicates the engine rotation speed. Driving correctly makes it possible to fully use the engine, without unnecessary overrevving.

Engine operation in the red zone must be avoided.

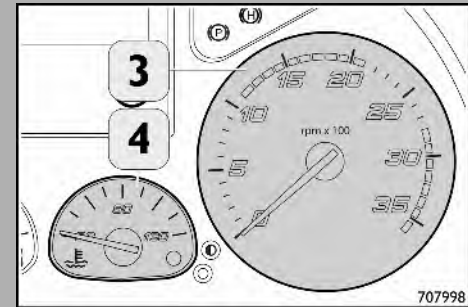
Coolant temperature warning light

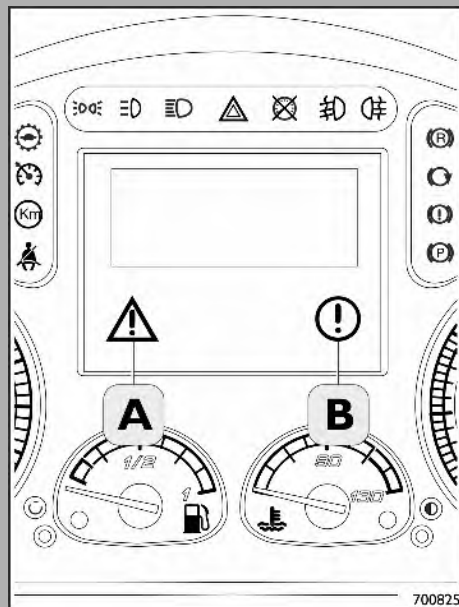
The instrument **(4)** indicates the coolant temperature. If the needle shows a high temperature (red zone) and the warning light activates at the same time, stop the vehicle immediately and have the coolant system controlled by the Service Network.



General risk, general prescriptions

If the engine coolant temperature rises excessively, the driver must pull over immediately, switch off the engine and contact the Service Network. Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle





Operation/fault warning lights on display

When the following functions are on, or the failures described on the following pages occur, the relevant symbol will appear on the display.

A. YELLOW (MINOR FAULT/FAILURE):









- A. drive carefully and go to the nearest Service Network workshop as soon as possible;
- B. if required by the type of anomaly, restore the correct level of fluid indicated following the indications provided in relation to the level which is to be topped-up.













B. RED (CRITICAL FAULT/FAILURE – STOP WARNING LIGHT):











Park the vehicle to the side of the road in a safe location, turn off the engine, then call the Dealer for assistance or the toll free customer assistance number if the failure occurred outside normal hours or in a remote location (24-hour service).












The tables on the following pages show the ideograms that can appear on the display in the following cases:




- Minor fault:
- Severe failure:
- Operating status.










MEANING	IDEOGRAM	COLOUR
Axle brake pad wear		Yellow
Rear axle brake pads wear		Yellow
Low brake fluid level		Red
Low rear axle brake circuit pressure		Red
Low front axle brake circuit pressure		Red
parking brake failure		Red
Low parking brake pressure		Red
Rear AoH converter at end of travel		Red
Low engine oil pressure		Red
Low engine oil level		Yellow
Very low engine oil level		Red
Low engine coolant level		Yellow

MEANING	IDEOGRAM	COLOUR
High engine oil temperature		Yellow
Low AdBlue® level *		Yellow
Gearbox fault/failure		Yellow / Red
High gearbox oil temperature (for Allison gearboxes only)		Yellow
Low PowerPack oil level (for EMOS gearboxes only)		Yellow
Automatic transmission gear engagement limitation		Yellow
Transfer box slow gears engaged		—
EDC in power take-off mode		—
High retarder temperature		Yellow
Retarder fault/failure		Yellow / Red
Air suspension fault/failure		Yellow / Red
Air suspensions not in running condition		Yellow

MEANING	IDEOGRAM	COLOUR
Low air suspension pressure		Red
Insufficient generator charge		Red
Insufficient second generator charge (if provided)		Red
Low power steering fluid level		Yellow
Doors open		Red
Immobilizer Code		Yellow
Immobilizer failure/engagement		Yellow
Start-up disabled		Yellow
Cab tilt enablement		Yellow
Tail lift		Red
Fault in lighting system		Yellow
Flatbed tilted		Yellow

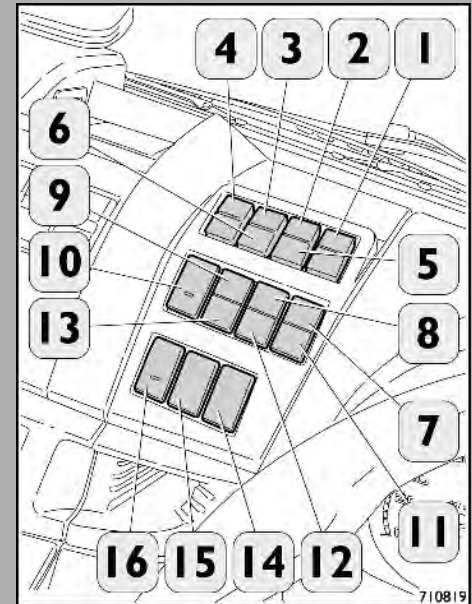
MEANING	IDEOGRAM	COLOUR
Air filter clogged		Yellow
Water in diesel oil pre-filter		Yellow
Heated mirrors		—
Low windscreen washer fluid level		Yellow
Drive time		Yellow
Scheduled maintenance due date		—
Second speed limitation request		—
Trailer connected electrically		—
Dashboard fault		Yellow
Low external temperature (with buzzer)		—
Alarm		—



MEANING	IDEOGRAM	COLOUR
CAN network fault/failure	CAN	Yellow / Red
Disabling ABS		—
Load information alarm (present only with bodybuilder)		Yellow
EDC control unit fault/failure		Yellow / Red
SWI control unit fault (if present)	SWI	Yellow
Body Computer fault/failure	BC	Yellow / Red
MET control unit fault/failure	MET	Yellow / Red
UDS control unit fault / failure	UDS	Yellow / Red
Tachograph fault/failure	TCO	Yellow / Red
Expansion Module control unit fault	EM	Yellow
VCM control unit fault/failure	VCM	Yellow / Red
Driver door control unit fault	DDM	Yellow / Red
Passenger door control unit fault	CDM	Yellow
Bunk control unit fault	BM	Yellow

MEANING	IDEOGRAM	COLOUR
Additional air heater fault		Yellow
Programming additional air heater		—
Central locking control unit fault		Yellow
High coolant temperature		Yellow
Excessively high coolant temperature		Red
Battery voltage level too low		Red
Engine PTO active		—
Engine preheating		Yellow
Disabling of ASR or ASR/ESP		Yellow
* Only for vehicles with Euro 5 engines		

Left side dashboard controls











- (1) — Spare
- (2) SL Speed limiter (with automatic gearboxes, if fitted).
- (3) ☒ Middle roof ceiling lighting (only long cab + middle roof).
- (4) — Spare
- (5) ASR ASR off.
☒ Disabling ESP
- (6) ☒ Fog lights.
- (7) OK Trip computer 'OK'
- (8) ⬆ Trip computer 'UP'.
- (9) ☒ Rear fog lights.

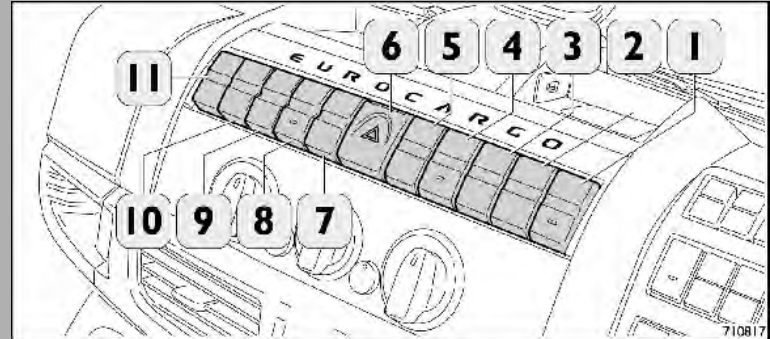


- (10) — Spare
- (11) C Trip Computer: 'CANCEL'.
- (12) ↓ Trip Computer: 'DOWN'.
- (13)  Cab internal lights.
- (14) ECO Economy button.
- (15) — Spare
- (16)  Cab tilting consent.

NOTE The position of the buttons may vary depending on the version.

Central dashboard controls

- (1)  Heated mirrors.
- (2)  Electrical hatch
-  Power take-off I (PTO I)
-  Loading platform lighting (if fitted)
- (3) Main current contactor, alternatively:
 -  With ADR
 -  Without ADR
- (4)  Heated windscreen.
- (5)  Retarder disabling from brake pedal (if fitted).
- (6)  Hazard lights.
- (7)  Rotating beacons.



- | | | |
|------|--|-----------------------------------|
| (8) | | Additional heater. |
| (9) | | Reverse buzzer(Reverse Buzzer) |
| (10) | | Power take-off 1 (PTO 1) |
| | | Loading platform lighting |
| (11) | | Power take-off 2 (PTO 2) |
| | | Tail lift |
| | | Ramp safety device |
| | | EN 1501 warning light (if fitted) |

NOTE The position of the buttons may vary depending on the version.

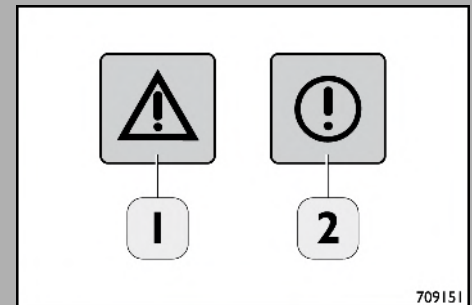
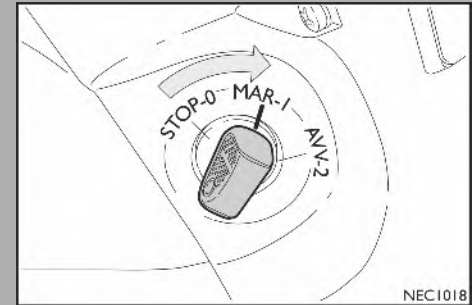
Display operation

The display screen changes under following conditions:

- Key to MAR-I with engine off.
- Key to MAR-I with engine running.

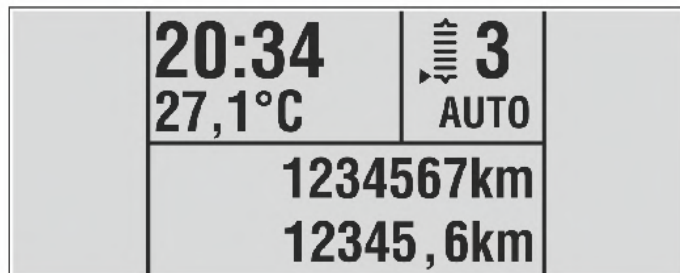
By setting the key to "MAR-I", the display will show the control of the main systems on the vehicle. It shows their presence and status with the warning light **(1)** and the symbol of the associated function appears on the left of the display when non-critical faults occur. The warning light **(2)** and the associated function symbol that appears on the right of the display indicate serious faults.

If several anomaly and/or fault symbols are present simultaneously on the same display strip, they will flash in sequence.







NEC645



NEC656

The following is available:

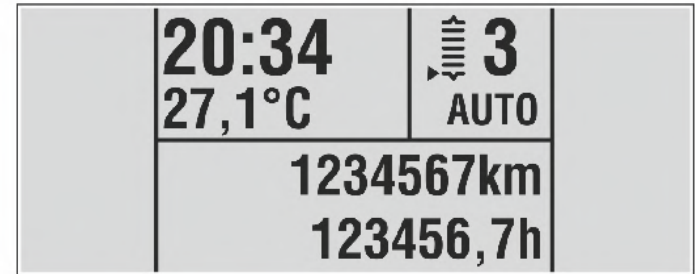
- Up to 21 screen pages accessible by activating the buttons "OK", "C",  and  on the dashboard or steering wheel (depending on vehicle configuration).

These screens can be always visible or only with the vehicle stationary.

System initialisation screen.

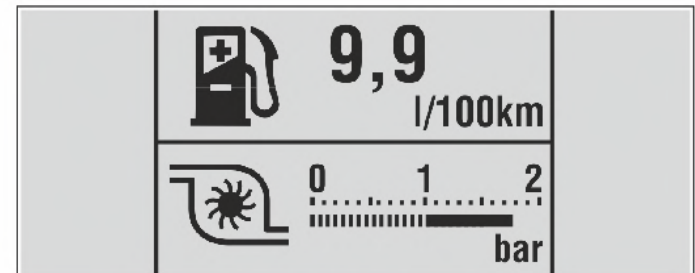
1. Hour/Outside temperature in °C/Km/Km partial/Gear engaged (mechanical and automatic gearbox). Screen always visible.

2. Hour/Outside temperature in °C/Km/ Partial operating hours/Gear engaged (mechanical and automatic gearbox). Screen always visible.



NEC657

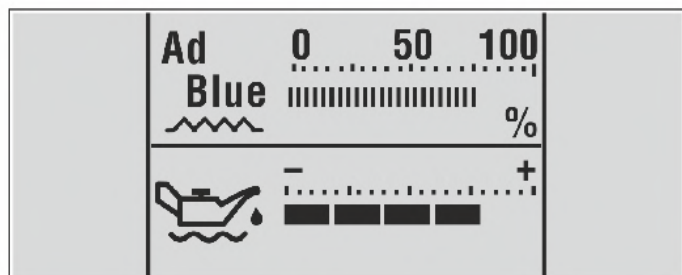
3. Turbo pressure and consumption. Screen always visible.



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NEC661

4. Information Radio-CD/Km/Km partial/Gear engaged (mechanical and automatic gearbox). Screen present only for vehicles equipped with Bluetooth radio, always visible.

5. **AdBlue®** level/Engine oil level. Screen always visible (Only vehicles with E5 engines).

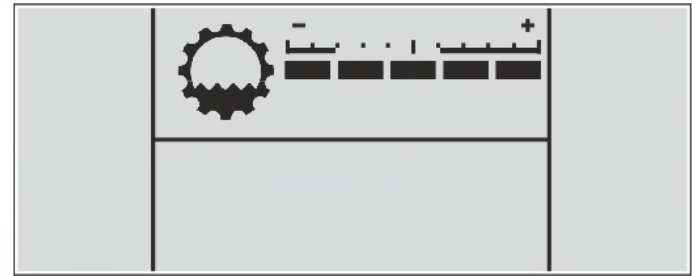
The level of the engine oil is not measured in the following cases:

- The new reading is not taken unless, after engine start-up and engine switch-off, have passed 15 minutes before setting the key to MAR-I. The dashboard does not display any ideograms and no oil level value on the display.
- When setting the key to the MAR-I position, if the engine is started immediately without waiting for the "Check in progress" message to disappear from the dashboard. The dashboard does not display any ideograms and no oil level value on the display.
- If there is a sensor fault (short circuit to ground or battery, sensor disconnected) signalled by the dashboard with the ideogram "MET" and the yellow triangle, the new measurement will not be performed. The dashboard does not display any level value. Contact the Service Network.
- In the case of a measurement system fault (for example, with a tachograph fault) the new measurement is not performed. The dashboard does not display the message BC, no yellow triangle and no oil level value appears on the display.

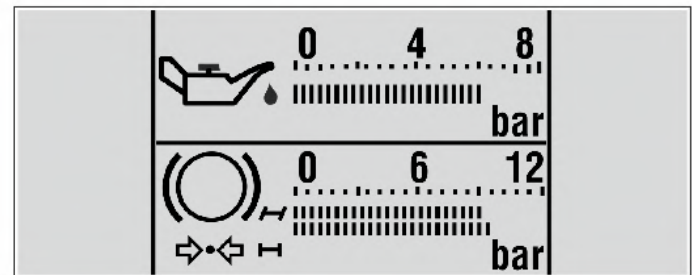
NOTE The reading of the oil level is not correct if the vehicle is not on a level surface. In this case, there may be a difference between the reading performed using the dipstick and the reading performed by the sensor. In the case of a low engine oil level, the red SERIOUS FAULT/ FAILURE - STOP warning light switches on.

6. Gearbox oil level Present with Allison gearbox.

7. Engine oil pressure/brake circuit air pressure. Screen always visible.



701018



701015

/ 1 Trip 1	
Fuel Used	1234567l
Fuel Econ.	5,6l/km
Driving Time	1234:56

NTK280g

/ 2 Trip 2	
Fuel Used	1234567l
Fuel Econ.	5,6l/km
Driving Time	1234:56

NTK281g

8. Trip information **(1)**. Fuel consumed/average consumption/trip hours.



The display can show three items of information. Pressing the MENU/OK button on the steering wheel or OK on the dashboard and then the **▲ ▼** buttons on the dashboard or on the steering wheel, allows the user to navigate through the entire list of information available. It is possible to select the information to show on the display by pressing the "OK" button while scrolling through the list.

The data shown in the figure can be reset by pressing the reset button located on the display near the fuel level indicator. Screen always visible.



9. Trip information **(2)***. Fuel consumed/average consumption/trip hours. The data is reset every time the engine ignition key is turned to the "STOP" position.


Screen always visible.

10. Total trip data*. Fuel consumed/average consumption/trip hours. Screen active only with the vehicle stationary.



* The display can show three items of information. Pressing the MENU/OK button on the steering wheel or OK and then the   buttons on the dashboard or on the steering wheel, allows the user to navigate through the entire list of information available. It is possible to select the information to show on the display by pressing MENU/OK on the steering wheel or OK on the dashboard while scrolling through the list.

11. "Tachograph" screen: total driving/rest hours.

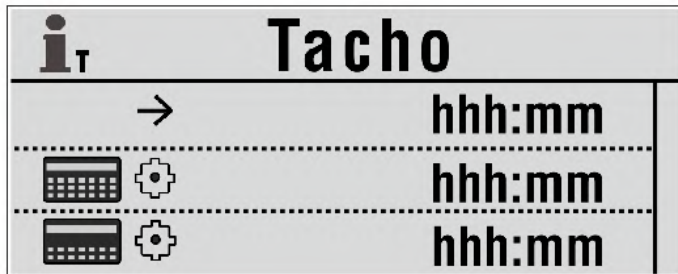
* Three different types of information can be shown on the display at a time. Pressing the MENU/OK button on the steering wheel or OK and then the   buttons on the dashboard or on the steering wheel, allows the user to navigate through the entire list of information available. Screen always visible.

 Totals	
Fuel Used	1234567l
Fuel Econ.	5,6l/km
Driving Time	123456,7h

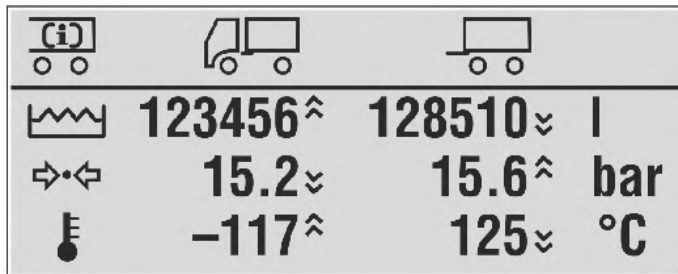
NTK282g

 Tacho	
→ 	hhh:mm
→ h	hhh:mm
24h 	hhh:mm*

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Second "Tachograph" screen.

12. "Bodybuilders" screen (if fitted)

This page provides information about the specific vehicle version:

- Tank level.
- Pressure.
- Temperature.

Screen always visible

I3. Vehicle version operating value modification screen (if provided).

To modify these values use the buttons on the dashboard or steering wheel:

BUTTON 

BUTTON 

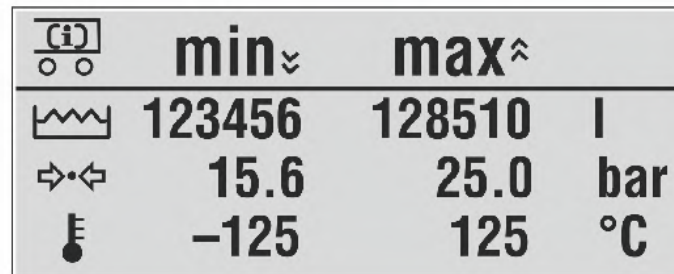
To confirm them press MENU/OK on the steering wheel or OK on the dashboard. Screen active only with the vehicle stationary.

I4. "Alarm clock" screen.

It is used to program the alarm clock.

NOTE By deactivating the TGC using the external manual control or by pressing the ADR button on the dashboard, the alarm clock setting is cancelled.

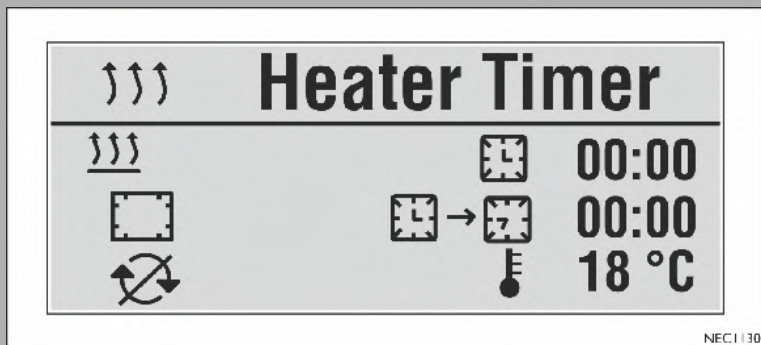
Screen active only with the vehicle stationary.



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15. "Heater timer" screen.

It is used to program the heater using the timer, when the additional heater is fitted. Screen active only with the vehicle stationary.

NOTE By deactivating the TGC using the external manual control or by pressing the ADR button on the dashboard, the heater setting is cancelled. The temperature indication is present with the water-based additional heater.



General prescriptions

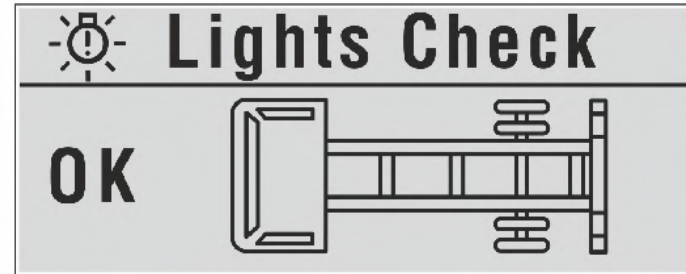
After the engine is stopped, wait 90 seconds before removing all voltage to the engine or before disconnecting the batteries. Failure to respect this indication may damage the AdBlue system. In the event of an emergency act promptly without waiting 90 seconds.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

NOTE For ADR vehicles only (transport of dangerous goods): only the alarm clock can be set, while the heater can only be switched ON using the button on the dashboard.

I 6. "Light control" screen.

Displays the status of the vehicle lights. Screen active only with the vehicle stationary.



NEC461

I 7. "Diagnostics" screen.

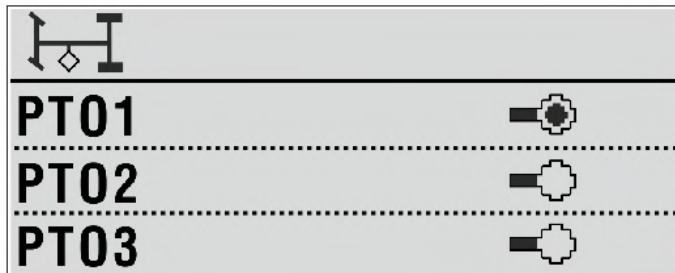
Page configuration is as follows:

- First column = system (control unit) with the fault.
- Second column = control unit code plus fault code (DTC).
- Third column = type of fault.
- Fourth column = frequency of fault (since last system reset).


Screen active only with the vehicle stationary.

EDC	40011	30	127
BC	42133	01	3
ETC	40308	00	1

NTK288g



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Maintenance			
EP1	122	17/11/02	✓
EP2	144	19/12/02	
M2	160	---	

NEC463

18. "PTO" screen (if present)

If there is a PTO, the screen is shown automatically:

- Upon request;
- On engagement;
- On disengagement;

If there is more than one PTO, the screen is shown automatically:

- When the first PTO is engaged;
- When the first PTO is requested but not engaged;
- When the last PTO engaged or requested is disengaged;

The user exits the screen in the following ways:

- By pressing the "C" button on the dashboard (see "Controls on right rim" in the chapter "The driver's seat").

■ PTO not available

⊗ PTO requested but not engaged

● PTO engaged

○ PTO present but not engaged

19. "Maintenance" screen.

- First column = service
- Second column = Relative kilometres
- Third column = Date serviced
- Fourth column = Approved

Screen active only with the vehicle stationary.

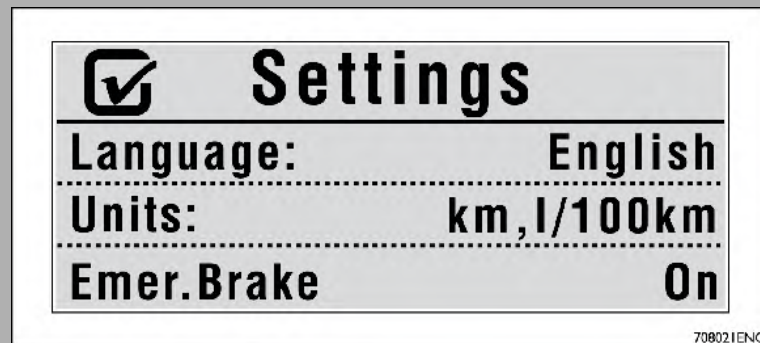
20. "Settings" screen.

Display settings.

Screen active only with the vehicle stationary.

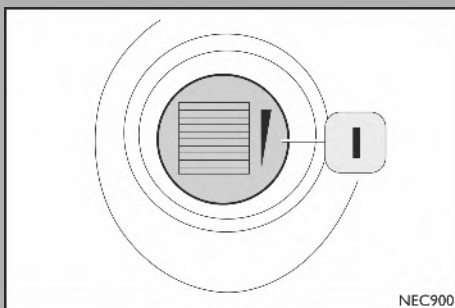
Menu structure

When a screen is displayed, it is possible to navigate between the previously described screens in the display menu. To do this, press the buttons on the steering wheel or dashboard as shown in the following diagram.



	MENU		SUBMENU	
↑↓	System initialisation (Ignition key set to 'MAR-I')	MENU OK ➔		↑ + ↓ -
	Screen 1 (trip km)			
	Screen 2 (trip time)			
	Screen 3 (trip miles)			
	Consumption and turbo pressure			
	CD-Radio Bluetooth			
	Fluid level (engine oil - AdBlue® E5 engines)			
	Pressures (engine oil - brake circuit)	OUTPUT ➔		
	Trip 1		Scroll menu options	
	Trip 2		Scroll menu options	
	Total trip		Scroll menu options	
	Tachograph		Scroll menu options	
	Bodybuilder screen		Scroll menu options	
	Bodybuilder screen changes		Select/modify	

	MENU		SUBMENU	
↑↓	Alarm clock	MENU OK → OUTPUT ←	Select/modify	↑ + ↓ —
	Heating timer		Select/modify	
	Light check			
	DIAGNOSTICS		Scroll menu options	
	PTO			
	Maintenance		Scroll menu options	
	Settings		Select/modify	



Automatic screens (pop-up)

The automatic screens are shown below as they appear on the display when the relative command is activated.

The function is activated for a pre-established time and according to the basic page structure; ten seconds after the last operation the display returns to the screen that was active at the time of the event.

The screens are as follows:

1. headlamp position adjustment;
2. external rear-view mirrors adjustment;
3. programmable speed limiter;
4. Speed programmer (Cruise Control);
5. power take-off (rpm);
6. Alarm;
7. CD - Radio control (if Bluetooth radio is present);
8. Brake circuit air pressure;
9. telephone call (if Bluetooth radio is present);
10. ASR or ASR/ESP deactivated (depending on configuration)
11. screen at the disposal of the bodybuilder.

1. Headlight position adjustment

This adjustment should only be made when the vehicle is stationary and with the ignition key set to "MAR-I".

Use the control **(1)** to adjust the headlight position depending on vehicle load; note that heavier vehicle loads require lower beam adjustment to prevent blinding other road users.

For more precise adjustment, it is advisable to contact the Service Network.

The headlamp position is shown on the display.

2. External rear-view mirrors electrical adjustment (if fitted)

NOTE This adjustment should only be made when the vehicle is stationary and with the ignition key set to "MAR 1".

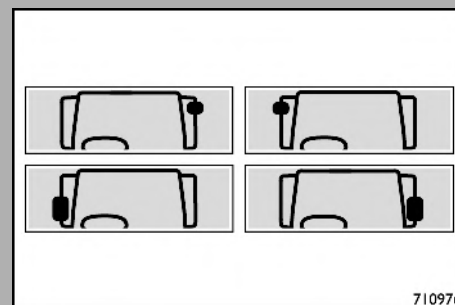
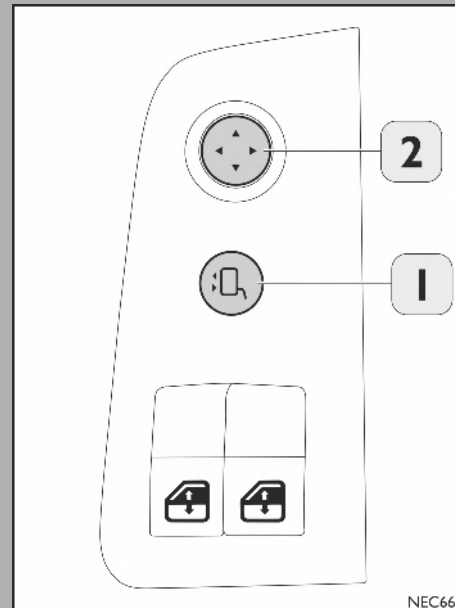
The vehicle external mirrors can be selected by operating the control **(1)**. The orientation of the four basic positions (up, down, left, right) can be selected using the control **(2)**. The selected mirror sequence is shown on the display in a pop-up window.

The figure shows the screens displayed when adjusting the rear-view mirrors.

As it follows:

- Passenger side wide-angle mirror.
- Driver's wide-angle mirror.
- Main driver side mirror.
- Main passenger side mirror.

NOTE If electrical adjustment is not available, the driver must move the mirrors manually.





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3. Programmable speed limiter SPEED LIMITER-SL

The speed limiter is fixed at the speed required by the highway code.

The adjustments are active below the speed set by law.

Once the desired speed is reached, press the steering column switch on the right or the button in the dashboard (depending on the model): the pop-up shown in the figure will appear on the display.

The vehicle cannot exceed the preset speed limit until the command is operated again. Additional information about the SPEED LIMITER-SL device can be found in the chapter "Start-up and driving".

4. Speed programmer (cruise control)

Operating instructions in the section "Speed programmer (Cruise Control-CC)" in the chapter "Start-up and driving".

5. Power take-off

RPM. Operating instructions in the section "PTO" in chapter "Controls and devices".

6. Alarm clock

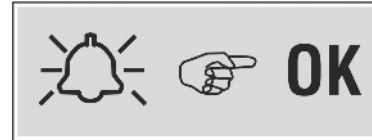
Operating instructions: refer to the relative paragraph in this chapter.

7. CD - Radio control

If Bluetooth radio present.

8. Brake circuit air pressure

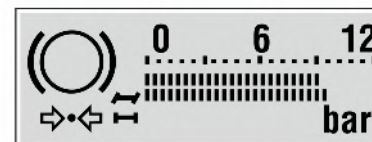
The pop-up window shown in the figure appears on the display at engine start-up if air pressure in the braking circuit is low. It remains visible until the circuit pressure level is corrected.



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9. Telephone call



If Bluetooth radio present.

10. ASR or ASR/ESP deactivated (depending on configuration)**11. Screen available to the bodybuilder**

Programming the alarm clock

Display the "Alarm clock" screen by browsing the display menu using the buttons on the right frame of the dashboard (see "Controls on the right frame"). With the "Alarm clock" screen displayed and using the  and  buttons on the dashboard or steering wheel, select the following fields:

- alarm clock activation;
- day of the week (see figure);
- daily alarm (alarm repeated every day)
- set hour;
- set minutes.

After selecting the desired field, again using the  and  buttons on the dashboard or steering wheel, the field settings can be changed. To confirm the new settings press the MENU/OK button on the steering wheel or OK on the dashboard.

NOTE By deactivating the TGC using the external manual control or by pressing the ADR button on the dashboard, the alarm clock setting is cancelled.



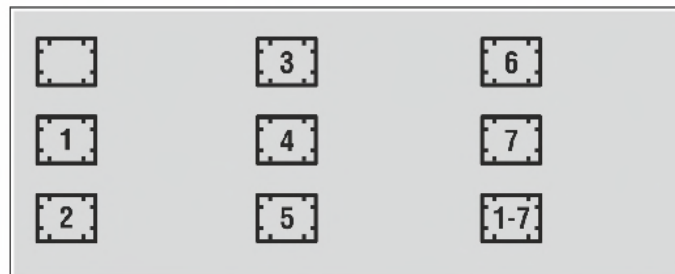
General prescriptions

After the engine is stopped, wait 90 seconds before removing all voltage to the engine or before disconnecting the batteries. Failure to respect this indication may damage the AdBlue system. In the event of an emergency act promptly without waiting 90 seconds.

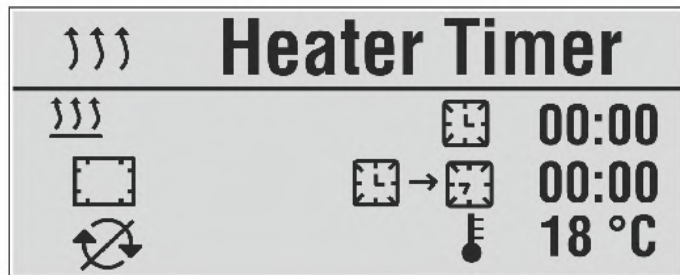
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



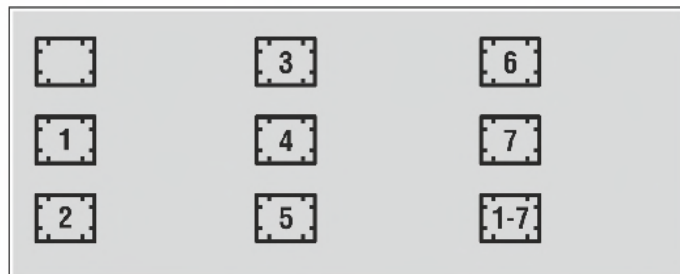
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Heater timer

Display the "Heater timer" screen by browsing in the display menu using the buttons on the dashboard as explained in "Controls on the right frame". Once the "Heater timer" screen is displayed, press the MENU/OK button on the steering wheel or the OK button on the dashboard to select the heater symbol. By using the  and  buttons on the dashboard or steering wheel, the following fields are selected:

- heater selection: cab area;
- day of the week (see figure);
- repetition;
- set hour;
- set minutes;
- set duration (maximum duration 1.59 hours);

After selecting the desired field, again using the  and  buttons on the dashboard or steering wheel, the field settings can be changed. To confirm the new settings press the MENU/OK button on the steering wheel or OK on the dashboard.

Mirror heating

(if provided)

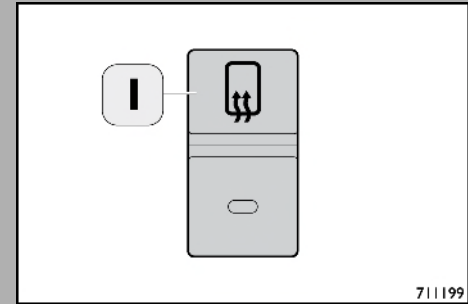
Mirrors are only heated when the ignition key is set to 'MAR-I'.

Press the relevant button **(I)** to switch ON rear-view mirror heating; the relevant icon is displayed on screen.

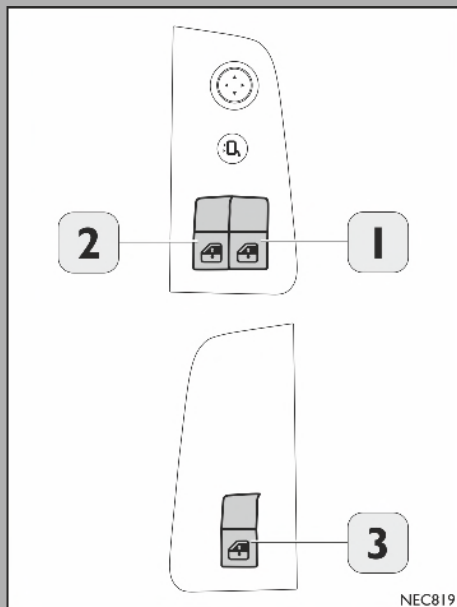
To turn this function off, press the **(I)** push-button again.

The icon will no longer be displayed. This function can be selected also while driving.

The mirror heating cycle lasts a maximum of 30 minutes.



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Power windows

The power window buttons for both the driver seat **(1)** and the passenger seat **(2)** are located on driver's side. The passenger can only operate the windows on the passenger side **(3)**.



Risk of injury:

Incorrect use of the power windows may be dangerous:

- Before and during operation, check that people, animals and objects are not exposed to the risk of injury caused by moving windows, or by personal items being trapped or thrown from windows.

Failure to comply with these prescriptions can result in the risk of serious injury



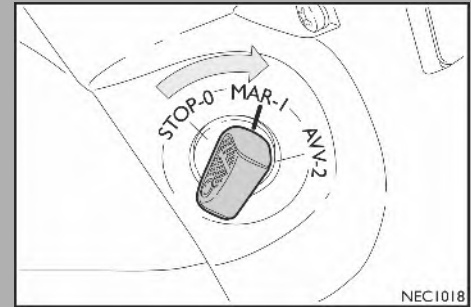
Risk of injury:

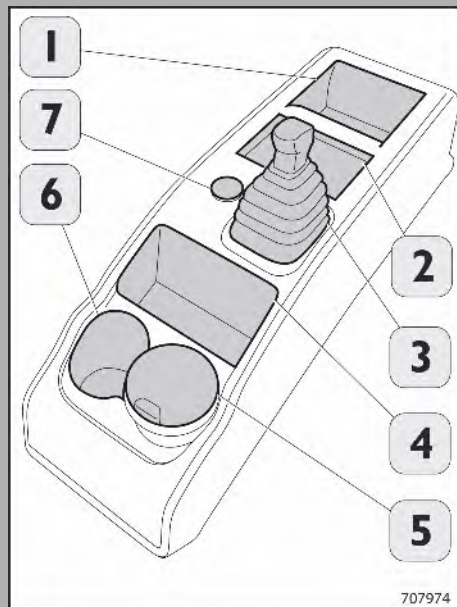
Incorrect use of the power windows may be dangerous:

- When getting out of the vehicle, always remove the ignition key to prevent accidental operation of the power windows with a risk of injury for passengers still in the vehicle.

Failure to comply with these prescriptions can result in the risk of serious injury

The operation of the power windows is always active when the ignition switch is in position MAR-I.



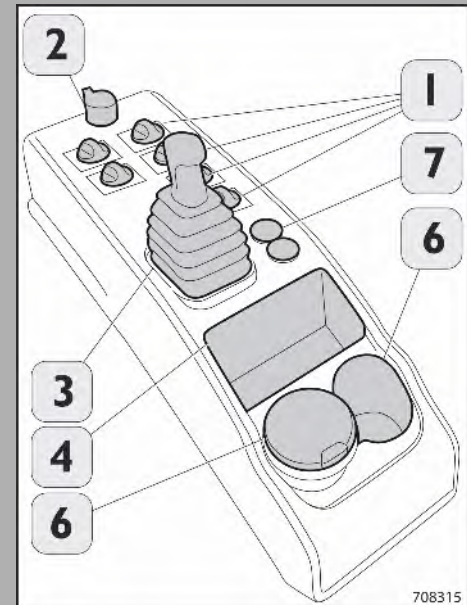
**Central tunnel**

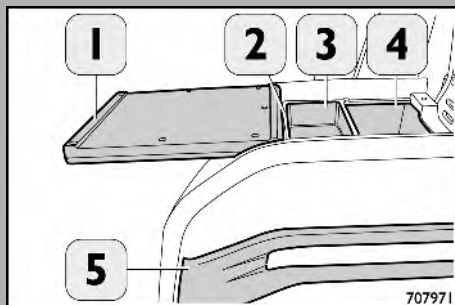
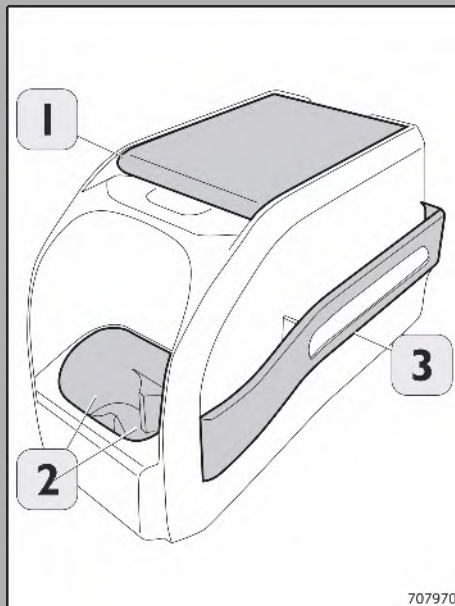
- 1. Storage pocket.
- 2. Storage pocket.
- 3. Parking brake lever.
- 4. Storage pocket.
- 5. Container (if fitted) / Bottle holder.
- 6. Bottle holder
- 7. Socket **12 V**

Central tunnel (type 2)

1. Pre-installation of pneumatic valves. Differential locking (if present).
2. Compressed air intake/valve Svezia pre-installation.
3. Parking brake lever.
4. Storage compartment
5. Bottle holder
6. Container (if fitted) / Bottle holder
7. Socket **I2 V** closing cover

The position of the pneumatic valves may vary based on the vehicle configuration.





Central console

The vehicle with two seats in the cab can also be equipped (if provided for) with a small compartment which can be used for certain office-like functions.

External view, driver's side:

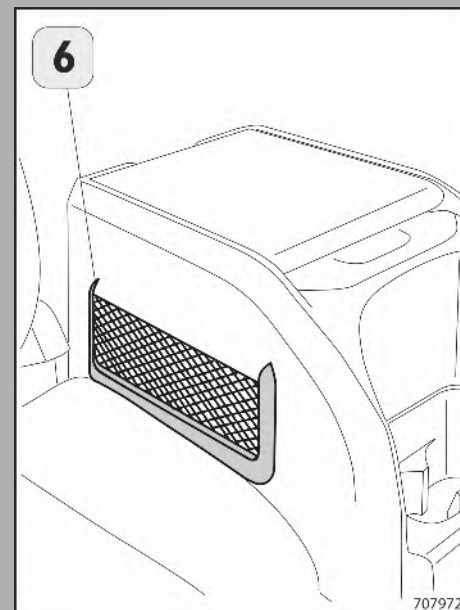
1. Flap.
2. Bottle holder.
3. Side pocket.

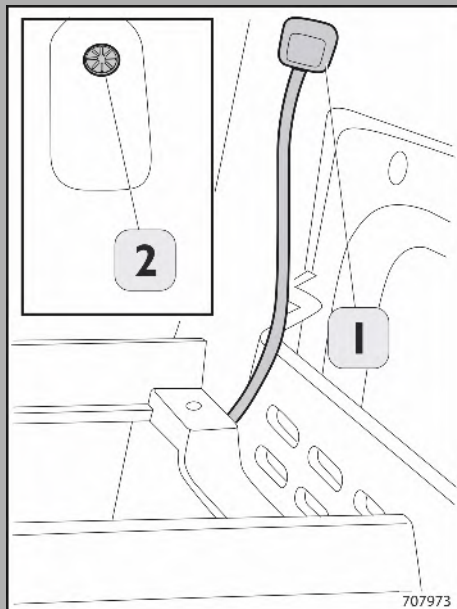
Lifting the flap (**1**), which can be used like a small writing desk, provides access to:

- to the USB port (**2**);
- the removable pockets (**3**);
- the storage compartment (**4**).

On the side of the driver's seat the pocket (**5**).

On the sides of the console there are storage compartment/magazine pockets **(6)**.





In versions with the central console, there is a led light **(1)** which can be switched on by pressing the switch **(2)** located above the light itself.

Upper panel and cab equipment

Low roof area

There is a console in the top part of the cab above the dashboard for stowing items in general.

1. Panel with compartments for radio and tachograph.
2. Open shelf with interior compartment lighting.
3. Glove compartment with door.

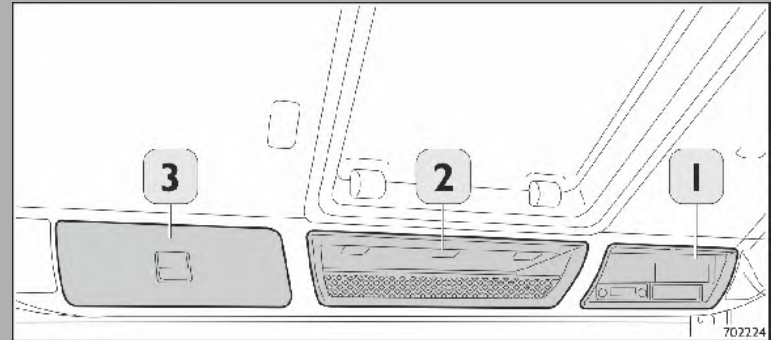


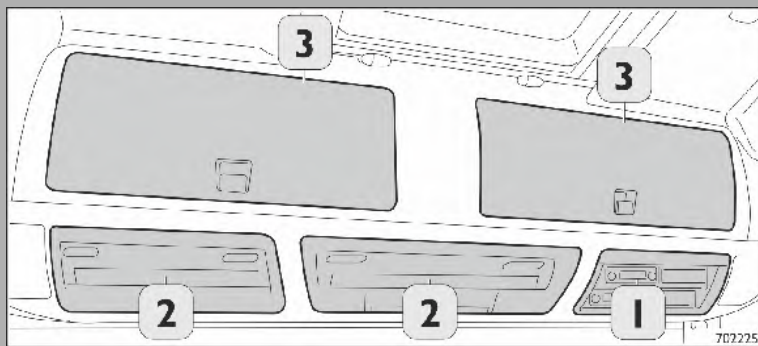
General risk, general prescriptions

Do not leave objects in the vehicle while it is moving that could strike the occupants and/or damage the vehicle .

- Use the storage/glove compartments that have been expressly provided for stowing objects safely away when driving.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle





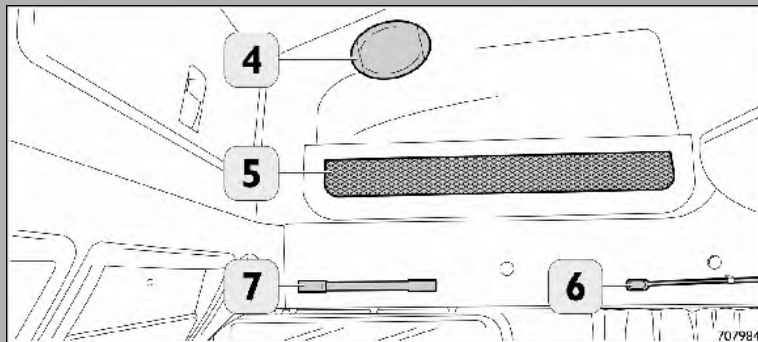
High roof area

This area includes:

1. Panel with compartments for radio and tachograph.
2. Open shelves with the central one housing interior compartment lighting.
3. Glove compartments with door.

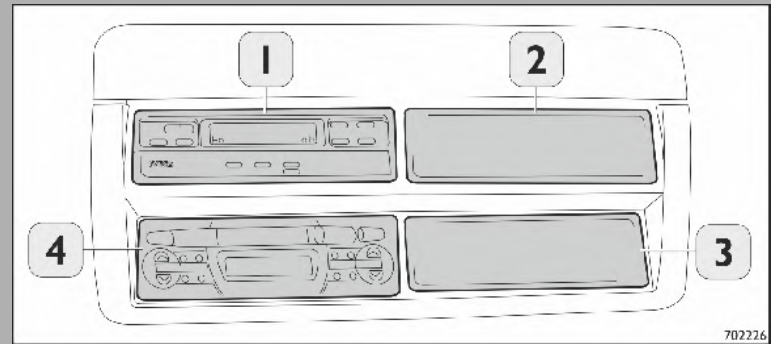
The high-roofed cab also has:

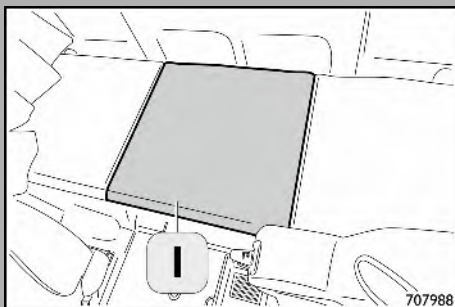
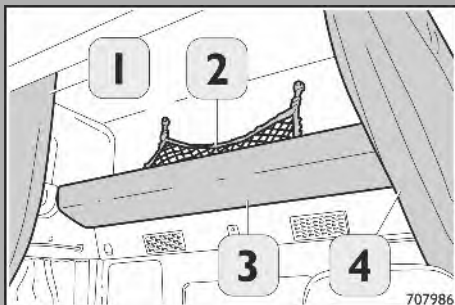
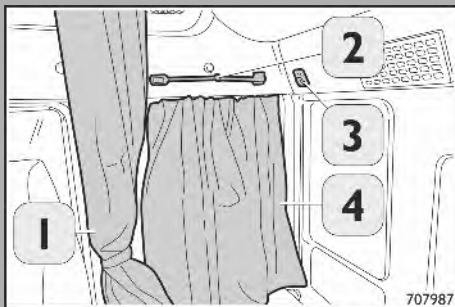
4. Ceiling light for cab lighting.
5. Storage compartment
6. Reading light.
7. Handle.



Console on driver's side

1. Electronic tachograph.
2. Compartment for radio.
3. Spare compartment (if a radio is installed this can house the amplifier or transmitter/receiver unit for a mobile phone or Toll Collect, if any).
4. Compartment for CB.





Rest area

Side top section of the cab

This part of the cab includes the following elements:

1. Curtain.
2. Handle.
3. Coat hook.
4. Curtain.

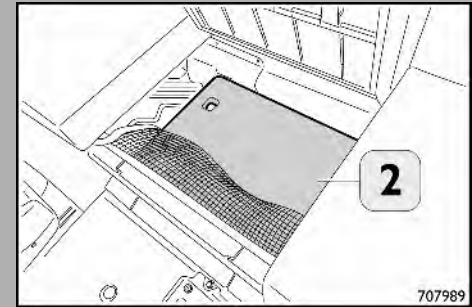
Rear top section of the cab

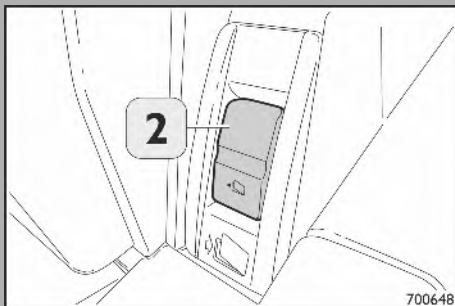
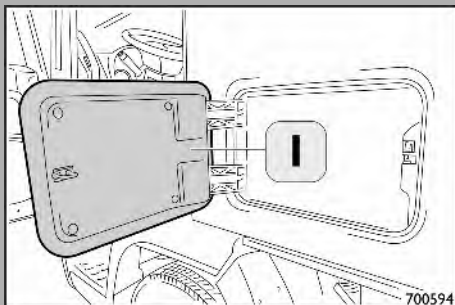
1. Curtain.
2. Protective net.
3. Available compartment.
4. Curtain.

NOTE For more privacy while sleeping, the curtain can be pulled across. To release it, open the felt ties.

Where fitted, long cabs may have a bunk consisting of three cushions (1) behind the seats. Lifting the cushions (1) provides access to a storage compartment which can also be accessed from outside the vehicle as described below.

Lifting the cushions provides access to the storage compartment **(2)**. This compartment can also be accessed from outside the vehicle by means of the external side door.



**Side external door**

Lifting the cushions of the chest accesses a storage compartment.

This compartment can also be accessed from outside the vehicle by opening the door **(1)**.

It is opened by pressing the button **(2)** located on the floor near the seat.

NOTE The compartment could contain the heater. In this case, carefully store any objects, preventing contacts that could damage both the heater as well as the stored items.

Hatch which can be opened equipped with black-out blind

An air vent hatch which can be opened manually or electrically may be located on the cab roof.

To access the hatch, open the black-out blind **(1)**.

The hatch can open in three positions.

Manually opening hatch

To open the hatch, push the handle while pressing the red button shown in the figure, until the desired level of opening is reached.

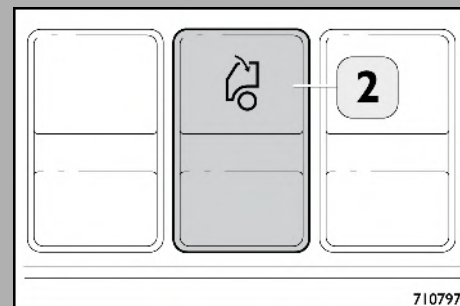
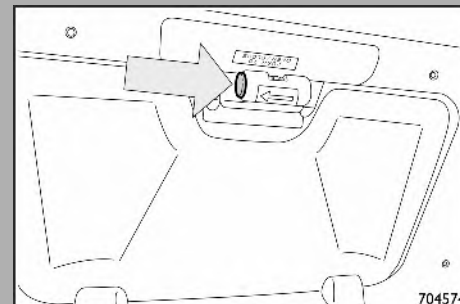
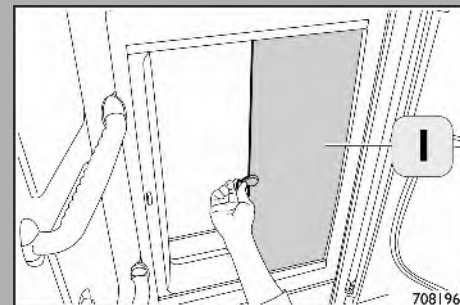
Lock the hatch by releasing the red button.

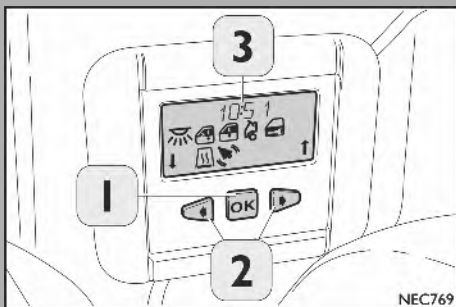
To close the hatch, press the red button shown in the figure and pull the handle towards you.

Electrically opening hatch

Press the button **(2)** on the dashboard to open or close the hatch.

NOTE The rest area furnishing may alter according to the options ordered.





Bunk Module

The rest area contains a bed module that can perform the following functions (variable configuration on the vehicle):

- Hour and minute indication.
- Cab interior lights ON/OFF (white).
- Cab interior lights ON/OFF (red).
- Sun blind opening / closing.
- Door opening / closing.
- Power windows opening / closing.
- Electrical hatch opening / closing.
- Radio and/or compact disc ON/OFF.
- Volume setting of radio and/or compact disc.
- Radio tuning and/or selection of compact disc track.
- Alarm clock function.
- Additional heater on/off.
- Temperature setting (with additional heater on, only).

The different functions can be called up or programmed using the following keys:

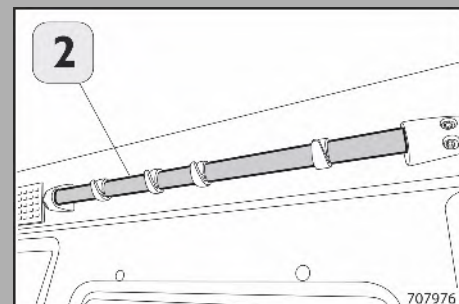
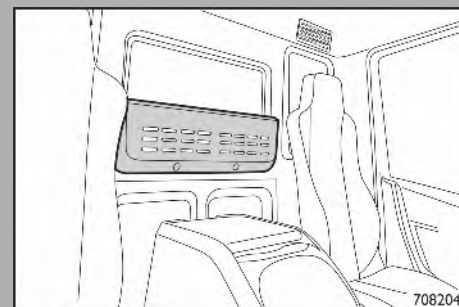
1. Button to confirm.
2. Button to select required function.
3. Clock.

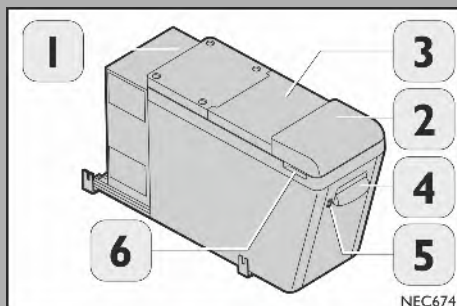
Short cab rear wall

Vehicles with a short cab have a storage compartment in the rear wall.

At the top, a rod for hanging clothes **(2)**, if fitted.

NOTE Each individual clothes hook can support a maximum weight of **10 kg**. The clothes hanging rod must not be used as a hand grip for moving around the cab.





Refrigerator

1. Adjustable thermostat (OFF-MIN-MED-MAX) on the rear wall. It can be adjusted by inserting a coin or a screwdriver in the slot of the small adjustment wheel.
2. "REFRIGERATOR" compartment cover (to be opened before the compartment cover 3).
3. "FREEZER" compartment cover.
4. Movement handle
5. ON/OFF switch with built-in orange warning light in the button.
6. Side niche for facilitating the opening.

When you press the on switch **(5)**, the orange warning light turns ON to confirm the activation.

Access to the **(2)** "REFRIGERATOR" compartment, e.g. to remove/store bottles, is always possible (even when the vehicle is stopped); however to access the **(3)** "FREEZER" compartment, it must be removed as follows:

- A. Release the hold position by pulling slightly on the movement handle at the front **(4)** (upwards towards contact point) and extract the fridge bringing it forwards.
- B. Once completely removed, release the maintain handle from the position it has reached; In this position, after opening the compartment **(3)** and tilting the upper divider downwards (max **15 °C**), the "FREEZER" can be accessed.

Temperatures reached inside compartments **(2)** and **(3)** depend on thermostat setting previously carried out with the control **(1)**.

REFRIGERATOR compartment **(2)**: from **0 – 4 °C**.

FREEZER compartment **(3)**: from **-10 – -18 °C**.

NOTE Opening the FREEZER compartment **(3)** cover is possible only after opening the REFRIGERATOR compartment **(2)**.

In case of a power failure, the cold temperature accumulated inside the refrigerator makes it possible to preserve the food for a few hours; therefore it is possible to switch OFF the fridge also for power saving purposes.

Avoid introducing warm food and make sure that the cover is always closed properly.

Defrosting is required when the frost layer thickness exceeds **4 mm**.

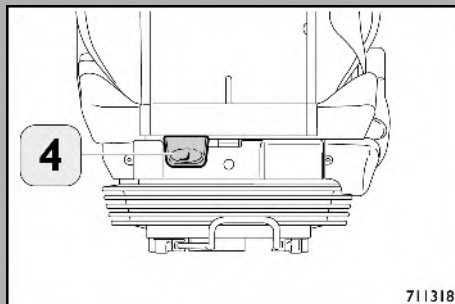
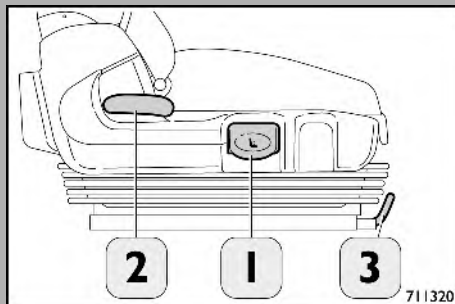
Do not use cutting blades or sharp objects for defrosting.

For correct maintenance it is recommended to periodically clean the inside of the refrigerator with sodium bicarbonate dissolved in lukewarm water; in any case avoid using abrasive products, detergents and soaps.

Use the sponge located under the cover to wipe out water produced as a result of defrosting. The refrigerator is switched OFF automatically when the cab is tilted.

Controls and devices

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Seat with two/three degrees of freedom

(if provided)



General prescriptions

Adjust the seat only when the vehicle is stationary and check that the seat is fixed into the position selected.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

This seat permits the following adjustments:

Height adjustment

- By operating the lever **(1)**, the seat is free to move upwards.

Backrest adjustment

- By operating lever **(2)** the backrest is free to take the desired position; when releasing the lever, the backrest locks in the desired position.

Longitudinal adjustment

- By operating the lever **(3)**, the seat is free to move forwards or backwards; when releasing the lever, the seat locks in the desired position.

Angle adjustment

- By using the handle **(4)**, it is possible to vary the angle of the cushion.

Air-suspension seat

(if provided)

**General prescriptions**

Adjust the seat only when the vehicle is stationary and check that the seat is fixed into the position selected. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle.

This seat permits the following adjustments:

Longitudinal adjustment

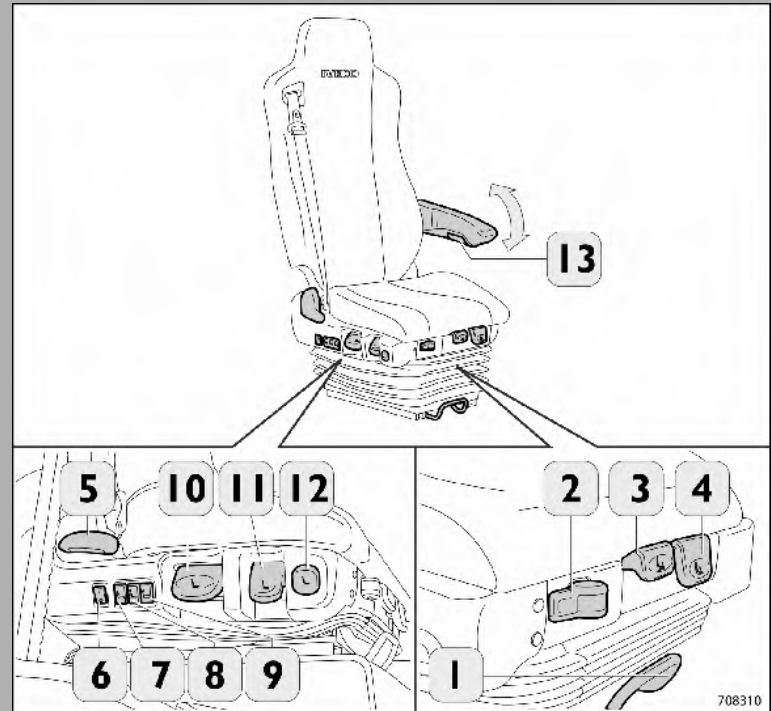
- Pull the lever **(1)** up to free the seat in order to move it forwards or backwards; when releasing the lever, the seat locks in the desired position.

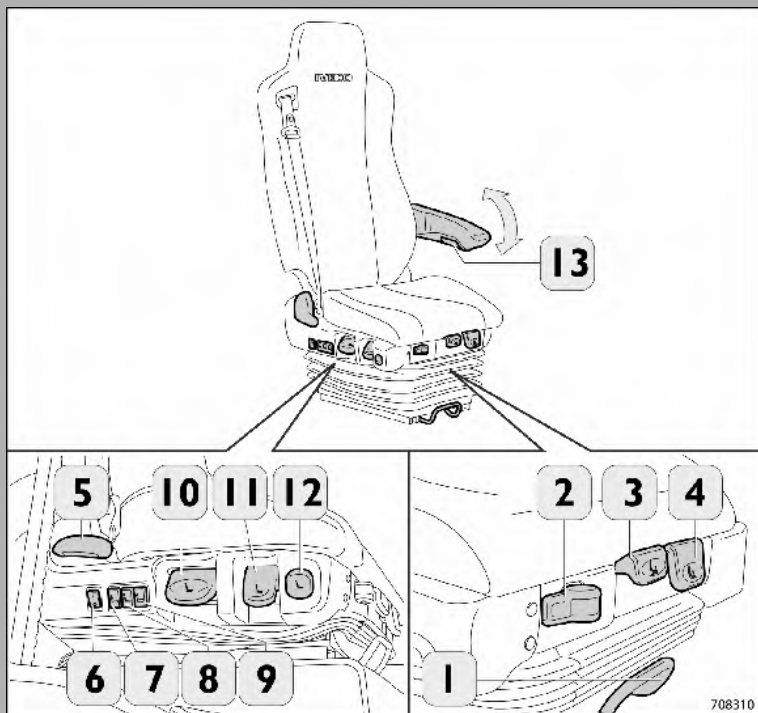
Longitudinal adjustment

- This is achieved through handle **(2)**.

Cushion extension

- This is achieved through handle **(3)**.





Seat tilting

- This is achieved through handle **(4)**.

Backrest adjustment

- This is achieved through handle **(5)**.

Cushion heating

- This is achieved using the switch **(6)**.

Inflation of seat side cushions

- This is achieved by pressing the top section of button **(7)**.

Inflation of seat lumbar cushions

- This is achieved by pressing the top section of the buttons **(8) - (9)**.

Vertical adjustment

- To raise the seat pull the handle **(10)** upwards, to lower the seat push the handle downwards (stepwise adjustment).

Vertical shock absorber adjustment

- This is achieved with the control **(11)**.

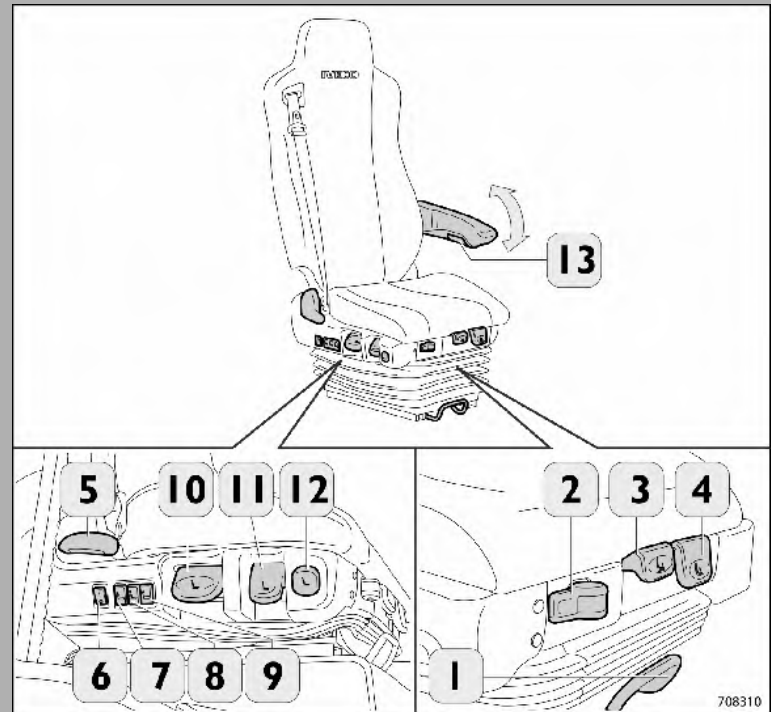
Seat activation and quick air bleed (ON/OFF)

- This is achieved with the control **(12)**.

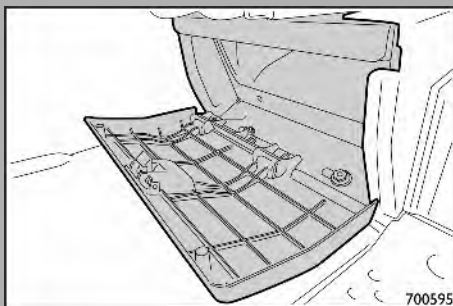
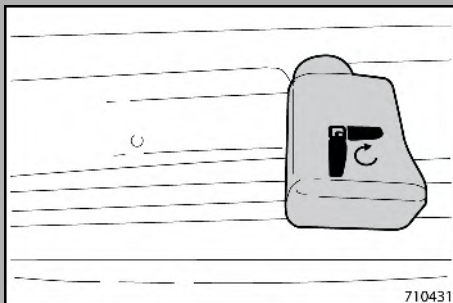
NOTE Optimal seat adjustment ensures the best visibility while driving.

Arm rest

- The arm rest **(13)** can be lifted. To adjust the height, act on the small wheel located at the bottom.



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Rotary device adjustment (for passenger seat, only)



Risk of damage

Be sure to use the seat only in the driving direction while driving.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Pull the side lever backwards (below adjustment controls) and turn the seat. The seat can be locked in three different positions: driving direction, **90°** and **180°**.

Storage compartments, as shown in the figure, are located under the seats, closed by a door.

Seat belts

To fasten the seat belt, grip the tongue and insert it into the buckle until hearing the catch engage. To release the belt, press the button located on the top end of buckle.

The belt does not require manual adjustment: the belt adjusts automatically to the most suitable length for the person travelling, allowing full freedom of movement, as long as no sudden movements are made.

The mechanism is sensitive to changes in the vehicle position and so the belt may lock in the following circumstances: braking or sudden acceleration, vehicle on a slope or in a curve.

Warnings:

- Move the backrest in nearly vertical position; positions of the seat that interfere with the correct position of the belt represent a risk for occupants and therefore they must be avoided.
- The belt must pass between the neck and the shoulder.
- The belt must not be twisted and must fit comfortably on the lap but not over the abdomen, to avoid the risk of slipping forward.
- From time to time, check that the anchoring screws are fully tightened and that the belt is not cut or frayed.
- If the vehicle is involved in any serious accident, replace the belt worn at the time, even though it may appear undamaged: replace when torn or worn (contact Service Network).
- Do not undertake modifications that could reduce seat belt functionality.
- To clean the seat belts, hand wash with water and neutral soap, rinse and leave to dry in the shade. Do not use strong detergents, bleaches, dyes, or any other chemical substance that could weaken the fibres. Avoid wetting the reels: their correct operation is guaranteed only if water does not enter them.

NOTE The seats fitted on your vehicle are not suitable for transporting children: the belt was designed for use by adult occupants.

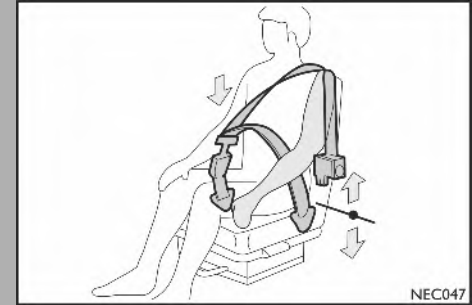


General risk, general prescriptions

- Always fasten the seat belts: travelling without a seat belt fastened increases the risk of injury in the event of a collision.
- Do not press the release push button while driving.

Failure to comply with these prescriptions can result in the risk of serious injury

With the switch in position MAR-I, when the seat belt is not fastened, the "safety belts not fastened" warning light switches ON on the instrument panel.



When the vehicle exceeds a speed of **10 km/h**, an audio warning activates for approximately 30 seconds.

During this phase the warning light blinks.

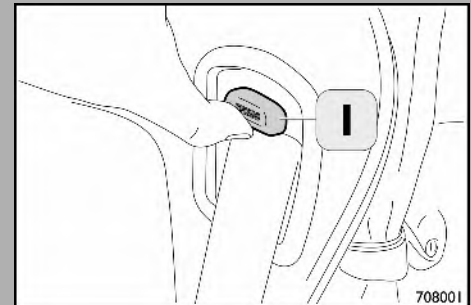
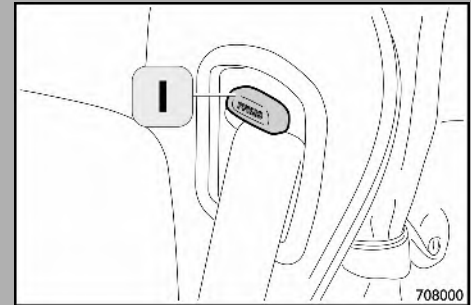
After this time the audio warning switches OFF for 10 seconds to then switch ON again with the frequency described above.

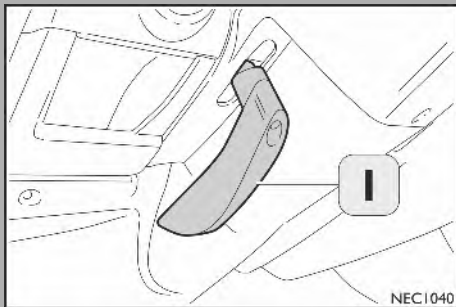
The audio warning activates each time the vehicle exceeds **10 km/h**.

Seat belt for air-suspension seat

With this type of seat the length of the belt can be adjusted using the cursor **(I)**.

lift the cursor **(I)** as indicated in the figure. Let the belt run through until it is the required length.





Steering wheel adjustment



General prescriptions

The steering wheel may move while the vehicle is running:

- This operation must be carried out only when the vehicle has come to a complete stop, with the parking brake engaged, ensuring proper locking of the steering wheel. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Under special circumstances, should the power steering assist mechanism fail, remember that the effort required for steering is considerably higher, even if mechanical connection between steering wheels and wheels is still present.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

The position of the steering wheel can be changed by adjusting its height and tilt to adapt it to the driver's size.

These adjustments are carried out as follows:

- loosen the fastening screw on the steering column, turning the lever **(I)** clockwise to the end of stroke;
- grasping the steering wheel with your hands, adjust it by pulling it upwards or pushing it downwards to adjust the height and pushing it forward or pulling it towards you to adjust the depth;
- maintaining the steering wheel in the desired position, retighten the locking screw, turning the lever **(I)** anti-clockwise to the end of stroke.

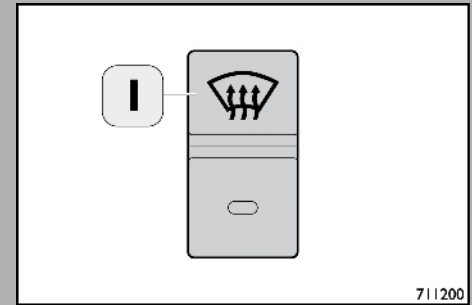
Windscreen heating

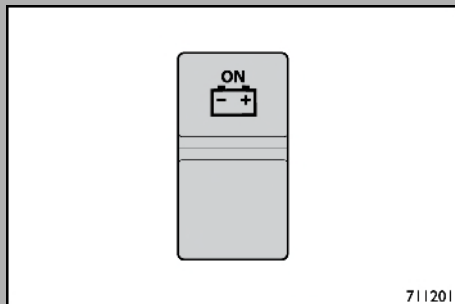
(if provided)

To switch on this function, press the push button **(I)**.

Heating of the windscreen takes 12 minutes.

Due to high energy consumption, switch on heating only with engine running.





Battery isolator



General prescriptions

After the engine is stopped, wait 90 seconds before removing all voltage to the engine or before disconnecting the batteries. Failure to respect this indication may damage the AdBlue system. In the event of an emergency act promptly without waiting 90 seconds.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Automatic battery cut-off switch

(if provided)

With the key set to STOP-0, after a variable user-defined time and based on the devices engaged, the battery cut-off switch is automatically triggered to disconnect batteries from the vehicle circuits.

Connection is automatically restored under following conditions:

- Main current contactor tripping by push button.
- Activation pulse for immediate additional heater activation.
- Switching ON of one light inside the cab.
- Hazard light switching on.
- Insertion of ignition key into the ignition cylinder.
- Horn activation.
- Driver or passenger door opening.
- External light activation.
- Central locking on.
- Brake pedal activation.
- Electrical hatch activation.

Operation of the button shown in the figure is inhibited for the first ten seconds after the engine has been switched off (key set to STOP-0) provided that:

- the additional heater is not on;
- the hazard lights are not on;
- the brake pedal is not depressed (vehicles equipped with EBS);
- no control unit (dashboard, heater, bed module) has the alarm clock programmed (signal sent via CAN line to vehicle body computer).

If the additional heater is on, turn it off and wait for the end of the washing cycle (approx. three minutes). Also:

- turn off the hazard lights (if they are on);
- do not depress the brake pedal (vehicles equipped with EBS);
- no control unit (dashboard, heater, bed module) has the alarm clock set (signal sending via CAN line to the body computer of the vehicle).

Once these conditions have been checked, press the button shown in the figure on the previous page.

Manual battery cut-off switch

(if provided)

Disconnect the manual battery cut-off switch as follows:

- Turn the knob in an anticlockwise direction to disconnect the electrical system from the batteries.
- Turn the knob in a clockwise direction to reconnect the electrical system to the batteries.

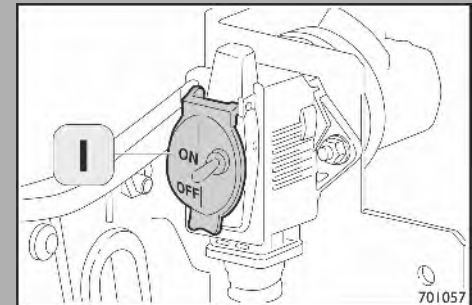
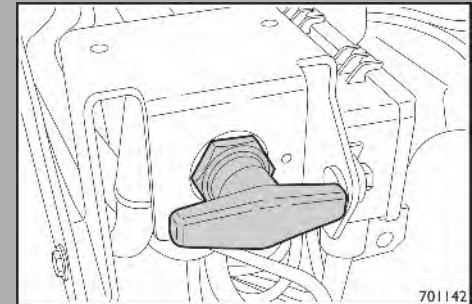
Switch operation is as described in the previous pages.

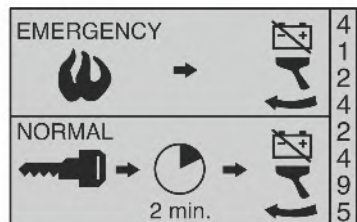
ADR - transport of dangerous goods

(if provided)

On some versions (ADR-transport of hazardous goods), the battery cut-off switch can be integrated by the switch **(I)** which must be activated as follows:

- Lift the cover;
- Upper switch: ON;
- Lower switch: OFF.





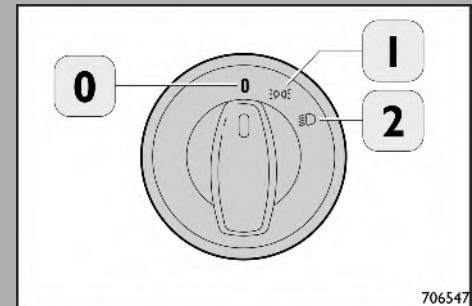
NEC423

NOTE The ADR switch blocks the electrical system

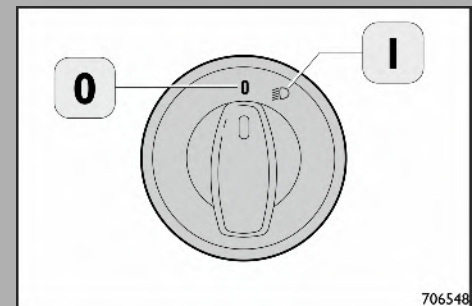
When the ADR main switch is pressed, central locking no longer works, with or without the remote control. Both doors must be closed manually.

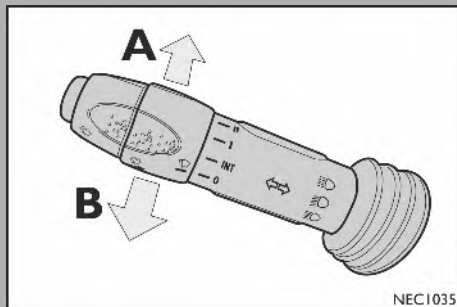
External light switch**Rotating switch without daylight**

- 0. No function: Headlamps off.
- 1. With the engine off: parking lights on. With the engine running: side lights on.
- 2. Pre-installation for low beam or high beam lights. To select them, act on the lever on the left of the steering wheel.

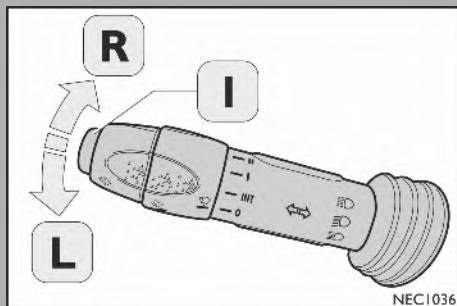
**Rotating switch with daylight**

- 0. With the engine off: lights off. With the engine running: Daytime running lights on.
- 1. With the engine off: parking lights on. With the engine running: Side lights / low beam lights on.

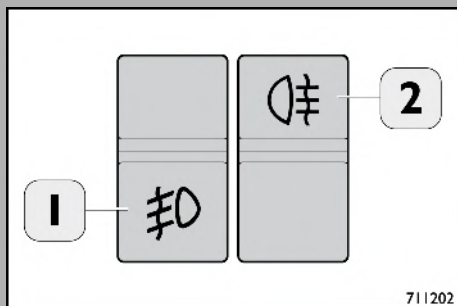




NEC1035



NEC1036




711202

Steering column switch - left lever


High beam lights

To engage the low beam lights, move the steering wheel lever in the direction of the arrow



(A). The warning light  will activate.

Flashing the headlights

Pull the lever in the unstable position towards the steering wheel in the direction of the arrow

(B). The warning light  will activate.

Move the lever to the stable position:

- Up ('R' position): activation of right turn indicator, the warning light  flashes on the dashboard.
- Down ('L' position): activation of left turn indicator, the warning light  flashes on the dashboard.

The turn indicators automatically turn off when the vehicle is once again driving straight.

Horn = push button on end **(I)**.

Fog lights, rear fog lights

Fog lights

With the side lights or the low beam lights on (see description above), press the control **(1)** to switch on the front fog lights. To switch them off, press the control **(1)** again.

Rear fog lights

With the engine running and the low beam lights engaged, press the control **(2)** to switch on the rear fog lights. To switch them off, press the control **(2)** again. When the engine is switched off, the rear fog lights switch off automatically. To switch them back on again, repeat the described procedure.

Hazard lights

To switch the hazard lights on or off, press the control **(1)**. To switch them off, press the control **(1)** again. The hazard lights can operate when the engine is running or when it is switched off.

Windscreen wiper control

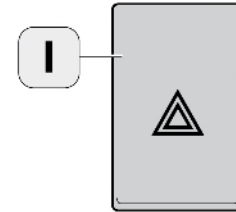
Single windscreen wiper stroke = sliding movement.

OFF / intermittent = rotating movement of the ring nut **(1)**.

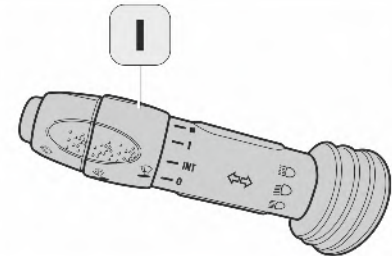
Fast/slow speed = rotary movement of ring nut **(1)**.

Windscreen and headlight washers = axial movement of ring nut **(1)**.

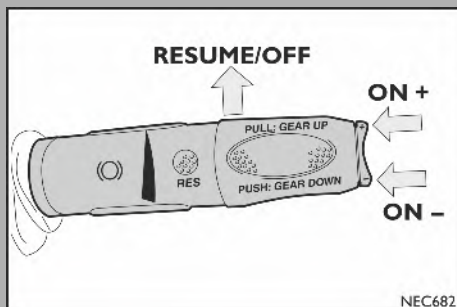
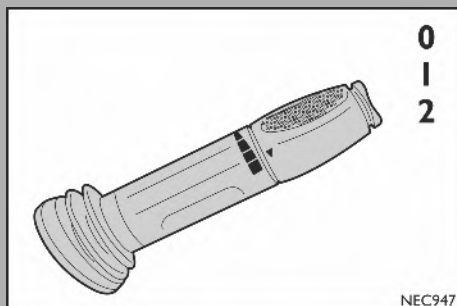
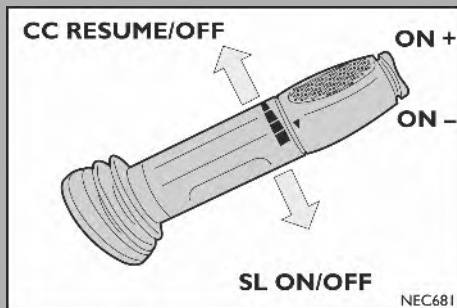
NOTE The headlight washing function is active only with outer lights ON.



711203



NEC1161



Steering column switch - right lever

A - vehicles with mechanical gearbox

Control for Cruise Control:

(for operating details see the relevant paragraph)

ON+ / ON - function = tilting head button.

OFF / Resume function = vertical movement towards the steering wheel.

Exhaust brake control:

Position 0 = disable.

Positions 1-2 = engine brake.

Speed limiter control = vertical movement downwards.

NOTE In vehicles without engine brake and without Cruise Control there is no right lever and the Speed Limiter function will be integrated into the small dash on the right rim.

B - vehicles with ZF-AS Tronic and Allison gearbox

Control for Cruise Control:

(for operating details see the relevant paragraph)

ON+/ON- function = tilting head button.

OFF/Resume function = RES button.

Exhaust brake + retarder control (if provided):

Position 0 = disabled.

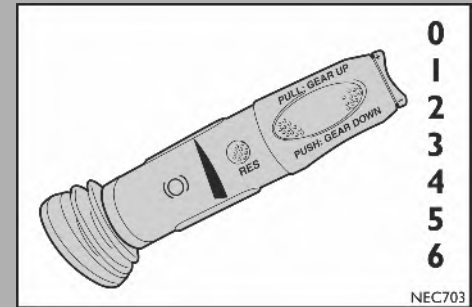
Positions 1-2 = engine brake.

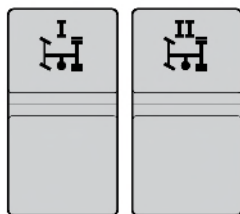
Positions 3-4-5-6 = engine brake + Retarder levels (if expected).

Gearbox control: (for operating details see the relevant paragraph)

Up gear shift = vertical movement towards the steering wheel.

Downward gear shift = vertical movement downwards.





711204

Power take-offs

The vehicle can have the following power-take-offs:

1. PTO on mechanical gearbox.
2. PTO on ZF-AS Tronic gearbox.
3. PTO on automatic Allison gearbox.
4. PTO on Multipower.



General prescriptions

Allowing the engine to idle for more than 3 hours is not permitted unless specifically approved by the manufacturer. If vehicle use envisages keeping the engine at idle for more than 3 hours, contact the Service Network.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Up to three PTOs can be simultaneously controlled by the vehicle's multiplex electronic system (ECUs).

1. PTO on manual gearbox.

Operation:

- Gearbox in neutral, vehicle stationary.
- Engage the handbrake.
- Press the clutch pedal to the floor.
- Press the button for the relevant PTO.
- Wait for the pop-up message on the display to disappear and the warning light to come on.
- When the clutch pedal is released, the PTO activates.
- To disengage the PTO, press the relevant button .



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

2. PTO on ZF-AS Tronic gearbox

The engine and gearbox behaviour depends on ECU programming (refer to the bodybuilder manual).

To engage the PTO, follow the procedure below:

- Gear in neutral, vehicle at a stop, accelerator pedal not pressed.
- Press the relevant button of the PTO to be activated: the corresponding PTO warning light flashes.
- The PTO is activated after a few seconds, the PTO warning light remains on and the engine speed varies, reaching the programmed value.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

The gearbox behaviour depends on the programming of the "Expansion Module" control unit. Configuring the PTO as "stationary" or "non stationary", the gearbox will operate as described below.

"Stationary PTO" configuration

The gearbox does not engage any gear and remains in neutral as long as the PTO is engaged.

"Non stationary PTO" configuration

The gearbox allows first gear and reverse gear to be engaged, both in "Manoeuvre mode" (SLOW). To see how to request these gears and modes, refer to the chapter on the use of ZF AS-Tronic gearbox.

When the power take-off is engaged, the gearbox does not allow passing to automatic mode, therefore it is always in semi-automatic mode (SEMI).

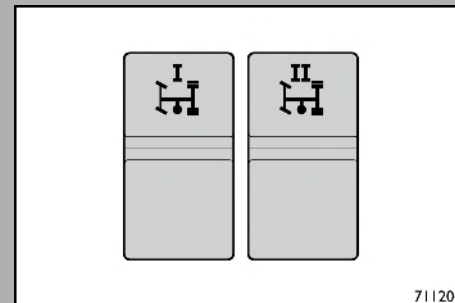
In particular, when the PTO and first gear are engaged, the gearbox does not allow any further gear shifting (therefore the vehicle can be moved only in first gear).

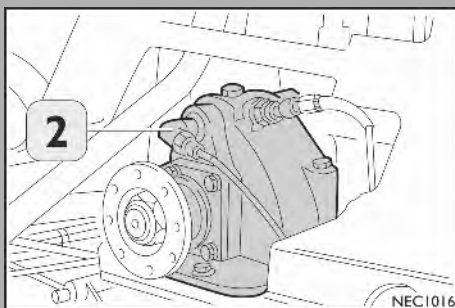
NOTE Also refer to the chapter on using the ZF AS-Tronic gearbox.

3. PTO on Allison automatic gearbox

Operation:

- Gearbox set to D, vehicle stationary.





- Press the PTO key (engine speed varies).
- The warning light **(7)** or the warning light **(8)** will appear on the dashboard display (Page **16**) (depending on outfitting) and the engine speed will go back to what it was on engagement.
- Gearbox set to N, activate the power take-offs.

NOTE For further information, refer to the chapter on the use of the automatic Allison gearbox.

4. PTO Multipower

Operation:

- Engine off, ignition key set to MAR-I, vehicle stationary.
- Press the button for the relevant PTO.
- After the yellow warning light activates, the engine can be started.

In case of failure of the electrical or air control, manual engagement is possible as follows:

- Remove the coupling ring **(2)**.
- Screw in fully an M12x1,5 screw (not supplied).

Differential locks

(if provided)

The differential lock must only be used when driving on muddy and slippery surfaces. The rear axle differential lock is engaged by the air valve **(3)**.

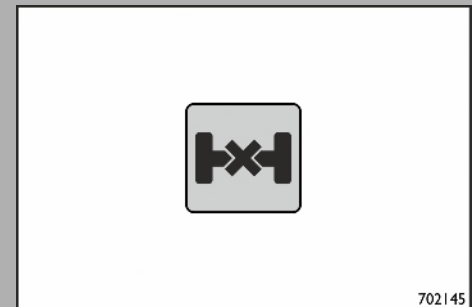
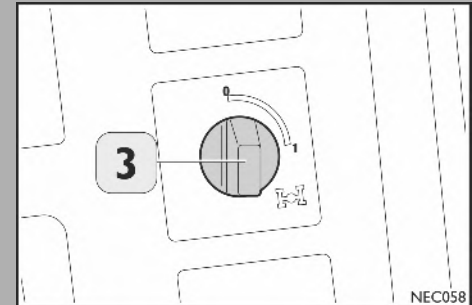
When the lock is engaged, the warning light on the dashboard lights up.

Carry out the following operations to ensure efficient operation:

- Pass to the locking position when the vehicle is stationary.
- Exercise maximum care.

Once the negative road conditions have been overcome, proceed as follows:

- Pass to the unlocking position maintaining the speed of the vehicle.
- Raise the accelerator momentarily.
- Resume the safe speed.
- If the lock fails to disengage immediately, changes in the direction of travel must be made to eliminate any stress.





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General risk, general prescriptions

- In conditions with a muddy and slippery terrain do not let the wheels slip when the differential lock is not engaged, since it would cause damage (a few seconds are sufficient).

- Vehicle driveability is decreased with the differential lock engaged.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

- Do not activate the differential lock while a wheel is slipping, do not drive on pavement or on cobbled roads with the differential lock engaged; it could lead to serious damage to the gears.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Cab tilting

ATTENTION Before tilting the cab, the front grille must be opened.

ATTENTION Before tilting the cab, deactivate the air conditioning system so the engine on and off controls can be used without any difficulties.

Before tilting the cab:

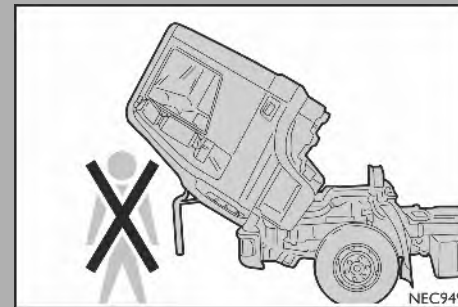
- Engage the handbrake and stop the engine.
- It is recommended to use the wheel chocks to block the vehicle.
- Remove all non-constrained or heavy objects from the cab.
- Leave an area in front of the cab and a manoeuvring area free.
- When operations are to be performed with cab tilted, never leave cab in an intermediate position.
- The cab is completely tilted when it makes the last movement due exclusively to the action of its weight.

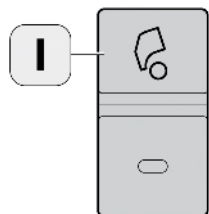


General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle





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Risk of injury:


- Before tilting the cab, make sure that the area in front of the cab is clear.
- Do not open the doors when the cab is tilted, cab weight is difficult to support. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of injury:

- When the cab is tilted, burning may occur due to very hot engine components.
 - When the engine is running, injuries may occur due to revolving components of the engine.
 - Be careful with scarves or loose clothing: they may get caught in moving parts.
- Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

To tilt the cab, proceed as follows:

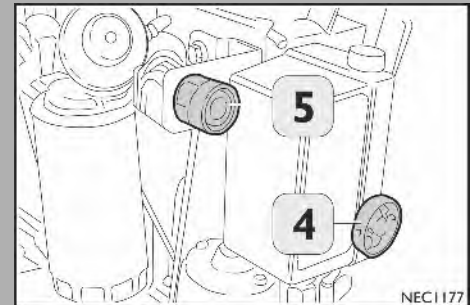
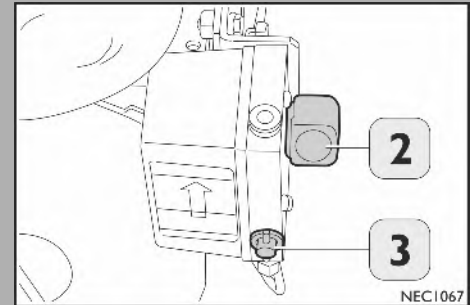
- Press the button **(I)** on the dashboard. The display shows the icon "Cab tilting enabling" () and the yellow fault indicator turns ON on the instrument panel.
- After making sure that the parking brake lever is mechanically locked in place, exit the vehicle and go to the cab tilting control (hydraulic or electrical, depending on the vehicle model or option), located on the side of the vehicle.

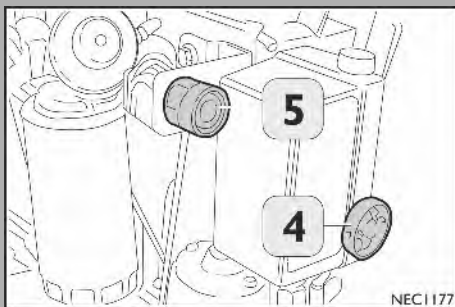
- Insert the lever in the seat **(3)** and move the reference to the pressurised circuit position as shown on the plate.
- Insert the lever in the hand-operated pump **(2)** drive.
- Raise the cab by operating the lever.

If the hydraulic system is faulty, the cab may be tilted mechanically (e.g. using a crane) after removing the gearbox connection bar and releasing the cab.

Versions with electric cab tilting

- Move the lever **(4)** to the circuit pressurised position.
- Operate the button **(5)** to lower the cab fully.





Cab lowering

- Move the lever to the circuit decompression position as indicated on the plate.
- Alternatively operate the lever as for the tilting operation, until completely lowering the cab.
- Make sure that the tipped cab symbol on the display and the red warning light indicating a serious fault are both off.

Versions with electric cab tilting

- Move the lever **(4)** to the circuit decompression position as indicated on the plate.
- Operate the button **(5)** to lower the cab fully.
- When the operation is completed, leave the lever **(4)** in the circuit decompression position until the next tilting operation.

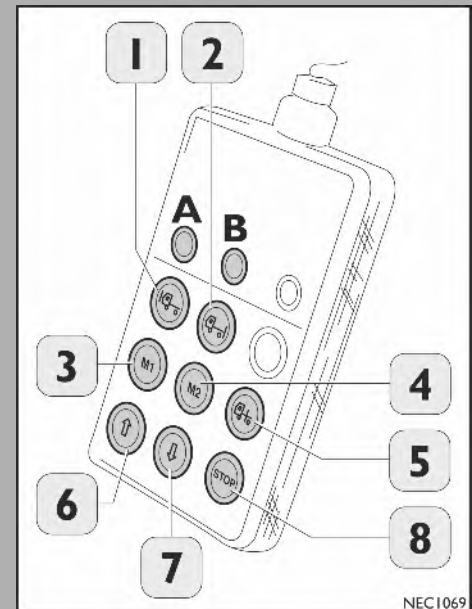
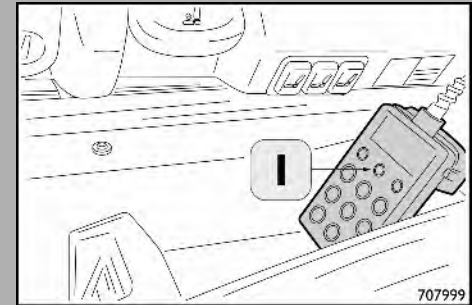
ECAS - Electronic control air suspensions

(if provided)

Any operation for lifting, lowering and levelling the vehicle to a stable position carried out before loading and unloading the vehicle, is carried out by means of the remote control to the side of the driver's seat as indicated in the figure.

The remote control can be removed from its support to perform the above operation also from outside the vehicle.

NOTE The vehicle is to be fully lowered before unloading heavy loads or containers (using a crane).



10**11**

NEC066

Vehicles with front and rear air suspension

Lift the chassis first at the front, then at the rear.

Use

- Turn the ignition key to position MAR-I. The symbol **(10)** with the red warning light indicating a serious fault turns on for approximately three seconds.

NOTE Do not stop the engine if the symbol **(11)** activates. If the symbol **(10)** activates while driving, stop the vehicle and set the ignition key to STOP-0; wait about 7 secs before turning the key back to MAR-I. If the symbol **(10)** does not deactivate after approx. two seconds, contact the Service Network.

- Lift the axles in order to obtain the expected chassis height.

Press the button **(1)**: the front axle is selected.

Press push button **(2)**: the rear axle is selected.

Press the buttons **(1)** + **(2)**: this selects both axles.

If the warning lights **(A)** and/or **(B)** activate, this indicates that selection has been made.

- To cancel the selection made on one axle (or on both) press the relevant push-button again.
- Press buttons **(6)** or **(7)** and hold to lift or lower the chassis.
- Slightly press push button **(5)** to restore chassis to normal self-levelling position.



Risk of damage

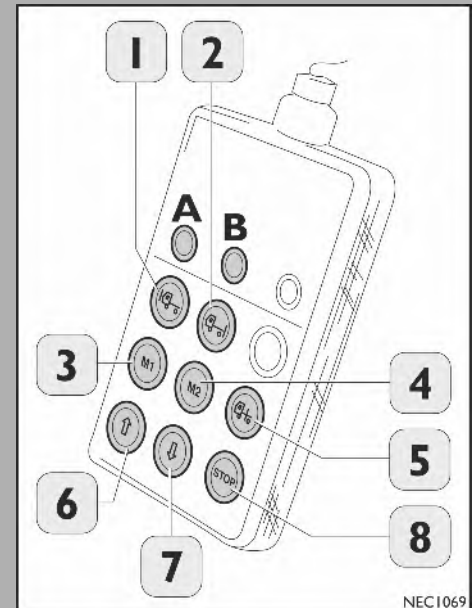
After having carried out the loading/unloading operations, the driver must set the vehicle back to the normal self-levelling position before setting off again. Refer to the self-levelling procedure indicated below before moving the vehicle.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

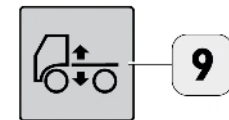
Warning light **(9)** turns OFF as soon as the normal level is reached.

Push button **(5)** controls all axles even if the preliminary selection involved one axle only.

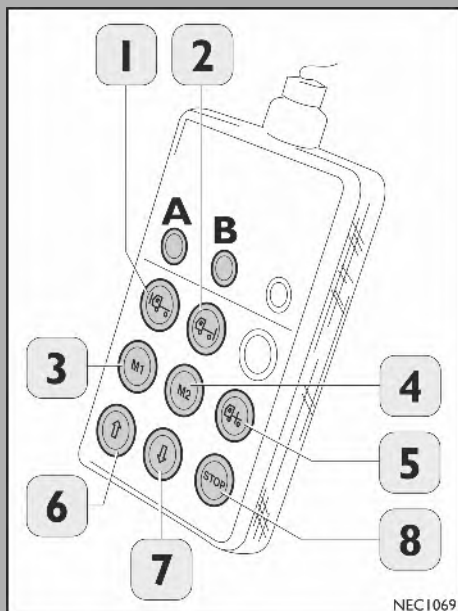
- The button **(8)** "STOP" interrupts any action being carried out by the system.



NEC1069



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Saving the levels

With the two memory buttons **(3)** and **(4)** it is possible to save the desired level (both front and rear).

These buttons control both axles, even if only one axle was previously selected.

- Move the chassis to the required height following above instructions.
- Press and hold button **(8)** "STOP" while pressing either button **(3)** or **(4)** at same time;
- Release push-button **(3)** or **(4)**.
- Release the button **(8)**.



Risk of injury:

For vehicle with tilting body, the air suspension is to be fully lowered before tilting the body.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE Chassis/vehicle lifting with stabilizers. The lifting operation with mechanical-hydraulic or electrical stabilizers must only be carried out with inflated bellows. It is prohibited to carry out lifting operations with the bellows in the completely lowered or deflated position.



Risk of injury:

For the safety of the operator on the running board, the driver must moderate braking if using the service brake or retarder.

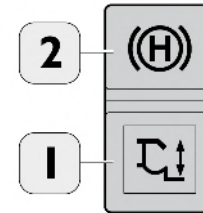
Failure to comply with these prescriptions can result in the risk of serious injury

NOTE Contact the bodybuilder to receive more information about the device reset and emergency exclusion command in the case of malfunction or emergency conditions while driving.

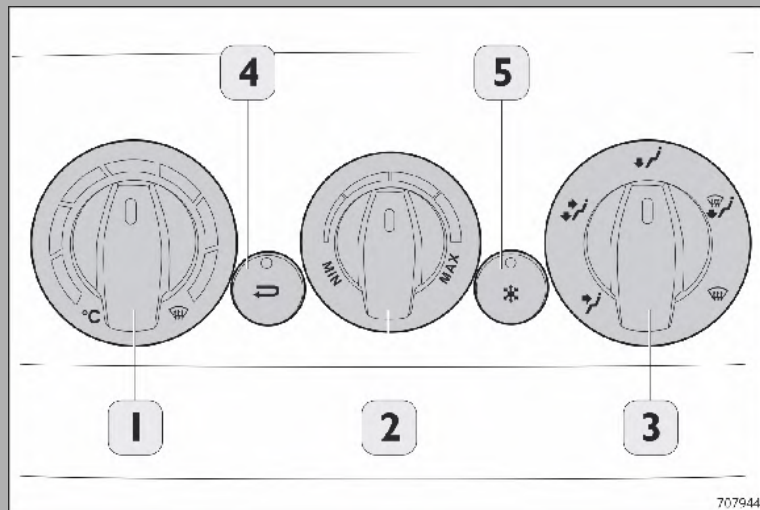
Limitation of vehicle operation if an operator is on the rear running board
(if fitted)

In compliance with standard EN1501, if there is an operator present on the rear running board, the device imposes the following limitations to vehicle operation:

- If the device detects the presence of an operator on the platform, the warning light **(1)** turns on.
- Maximum speed is limited to **30 km/h**. The speed value is shown on the display.
- If in particular driving conditions such as driving downhill, vehicle speed exceeds **30 km/h**, the Speed Limiter cuts off the fuel supply to the engine.
- When the device activates at a speed exceeding **40 km/h**, the Speed Limiter does not activate. An acoustic alarm will go off instead.
- If the device activates below **40 km/h**, the Speed Limiter is activated and cuts off the fuel supply to the engine.
- When the reverse gear is engaged, reverse gear protection is activated: the brakes are activated, the delivery of fuel to the engine is interrupted and the warning light **(2)** activates. In order to continue driving, this protection must be disengaged by turning the key to the STOP-0 position or by engaging a forward gear.



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Heating and ventilation

1. Knob for adjusting the air temperature (max and min air temperature/rotation to left cool air - rotation to right hot air - windscreen defrosting).
2. Electro-fan knob with relative operating speeds and operating selection (max and min operating speed/ rotation to left towards minimum speed - rotation to right towards maximum speed).
3. Control knob for air intake:
 - air towards occupant's head
 - air towards occupant's head and feet
 - air towards occupant's feet
 - air towards occupant's feet and windscreen
 - air towards windscreen
4. Switch to turn on air recirculation: prevents the entry of external air.

The prolonged use of recirculated air may make the cab environment unpleasant and cause the windows to fog. If this occurs, turn off the recirculation. This function is particularly useful in case of heavy pollution conditions (in a queue, inside a tunnel, etc.), and when faster heating is required for the cab. It is not recommended to use it for long periods, especially when not alone in the vehicle. Do not use the recirculation function during a rainy/cold day as this could cause the windows to fog up inside.

5. Air conditioner on/off switch.

An important feature of the climate control unit is air dehumidification. It is advisable to use it to avoid possible misting. The system uses **R134a®** coolant that, in the case of accidental leaks, does not harm the environment.

Do not use R12 liquid (or others) as it is incompatible with the system components and contains CFC (chlorofluorocarbons). During winter, the system must be operated at least once a month for 10 minutes.



Risk of injury:

The cryogenic fluid is pressurised and may cause damage due to freezing if it comes into contact with the skin:

- Do not tamper with the air-conditioning circuit.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Additional heater

(if fitted)

NOTE The driver is responsible for programming and turning on the heater and its timer. The driver must make sure that the start time, the conditions and the parking situation at that moment are suitable.



Contamination, fire

It is prohibited to use the heating device in closed areas or in areas where there is an accumulation of flammable or explosive dust. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle.

The vehicle can be equipped with an additional air heater.

- The additional air heater recirculates air inside the cab exploiting the heat generated by an internal heating unit. In winter, it allows the cab to be preheated before the engine is started or during a night stop, by means of a ducting and vent system.

The heater can be started even if the engine is switched off. To start the heater, the batteries must be connected to the electrical system.

The heater operates by burning diesel fuel taken from the vehicle tank.

Before stating the additional heater, make sure that the fuel level in the tank is sufficient.

The additional heater exhaust pipe must be free of all impurities.

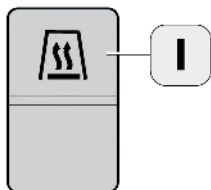
Heater start-up and control

Observe the indications provided above. To start the heater, press the button **(I)**. The light on the button indicates that the heater is on.

The heater remains in operation until reaching the set temperature or for a maximum of **2 h**

With manual climate control the temperature knob must be set to "MAX". The temperature setting depends on the outside temperature. The cab temperature can be adjusted using the Bed module and the instrument panel in the Main Menu.

If the temperature set is lower than the temperature in the cab, the thermostat automatically reduces combustion and the aeration fan speed until the interior compartment is at the required temperature.



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It is possible to switch the additional heater on and off, adjust the temperature of the air introduced and modify the timer settings also using the "Bunk module" (Page **76**). The maximum heating period is **9 h**.

Heating can also be initiated by means of a programmable timer on the instrument panel. The maximum period of continuous operation of the heater is **2 h**

Warnings

In the event of a failed start-up:

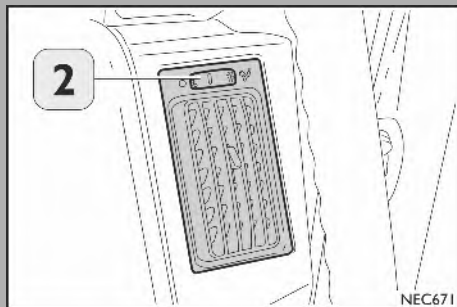
- If the first start-up was unsuccessful, a second attempt is made automatically after approximately 90 seconds. If the second attempt is unsuccessful, the heater will keep the fan on for 4 minutes and it will have to be started up manually. If further start-up attempts are unsuccessful, contact the Service Network.

ATTENTION In the case of ADR vehicles, it is compulsory to switch off the heater before entering an area of high fire risk (for example: refineries, refuelling stations, etc.).

For ADR vehicles, if the heater does not switch off before entering a fire risk area, it will switch off in the following cases:

- within 40 seconds of the engine being switched off;
- the start-up of an additional unit, for example a pump for discharging flammable material;
- a door being opened (only for some Markets).

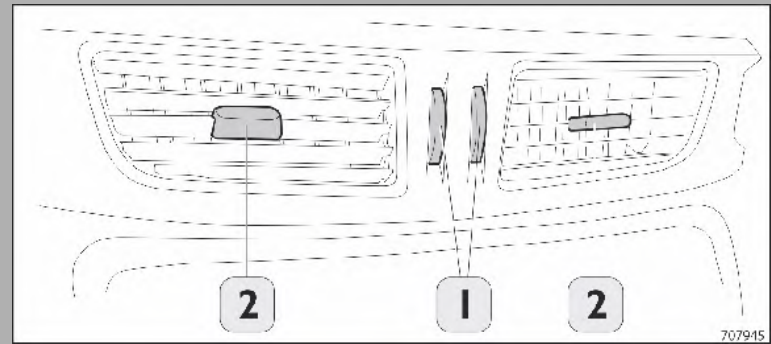
NOTE To check the additional heater in winter, please refer to the paragraph "Each year before winter" in the Ordinary maintenance chapter.

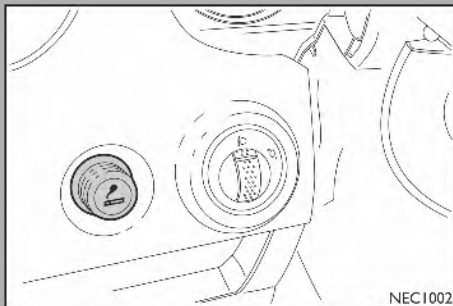
**Air vents for side and passenger windows**

(turn the knurled **(2)** wheel to the right to open - to the left to close).

Air vents on the dashboard

(turn the knurled **(1)** wheel up to open - down to close).





Cigarette lighter

It is located on the central dashboard. To activate it, press the button. The button automatically returns to its original position after a few seconds, and the cigarette lighter is ready for use.



Risk of burns

Always check that the cigarette lighter switches itself off:

- The cigarette lighter reaches high temperatures.
- Handle with care and do not let children use it.

Failure to comply with these prescriptions can result in the risk of serious injury



Contamination, fire

- Do not use the ashtray both for cigarette butts and paper: this could cause a fire.
- Never use the cigarette lighter as a power socket to connect auxiliary electrical devices. Use the specific electrical socket.

Correct behavior will ensure that vehicle is used as environmentally friendly as possible

Voltage reducer

The electrical system of the vehicle is prearranged to supply power to **12 V** appliances.
The connection with the voltage reducer (**24 – 12 V**) is on the cable in the cab.
Never supply power to any device by withdrawing a voltage of **12 V** from just one battery.



Risk of damage

The voltage reducer (supplied by IVECO) is prearranged for a maximum current absorption of 20 A, at a temperature of 30°C measured at the equipment compartment located on the upper cross member.
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

Do not use devices with absorption greater then 10 A - 60 °C:
- risk of damaging electrical system.
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE A power socket is provided for connecting additional electrical devices.



General risk, general prescriptions

The power socket may be destroyed!
Connect only appliances with maximum rating equal or lower to the socket rating.
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General prescriptions

Connect only devices with pins with a positive pole in the centre of the socket.
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

Extended use of the power socket when the engine is not running might discharge the battery.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

The connected supplementary electrical devices must have electromagnetic compatibility compliant with current regulations, in order to avoid disturbance of vehicle operation.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Tow hook

Regulations for trailer towing

Before coupling/uncoupling:

- Carry out an inspection around the vehicle making sure that it is parked in a safe place, not on a slope or soft terrain.
- Secure the trailer with chocks under the rear wheels.
- The front axle of the trailer must remain movable.
- Before moving the tractor make sure there is no one between it and the trailer.

After coupling:

- Engage the handbrake.
- Check that the connection has been carried out correctly.
- Connect the cables to the socket on the cross member. Depending on vehicle configuration, there may be two 7 pole sockets or one 15 pole socket. Furthermore, there may be an additional 13-pole socket and/or a ABS 5-pole socket.
- Connect the controllable brake coupling joints (yellow) and the automatic brake (red) to that of the trailer.

NOTE Follow any additional instructions provided by the hook manufacturer.

- Check the efficiency of the braking system and lights.
- Check that the hook and the relevant cross member are secured before starting the vehicle.



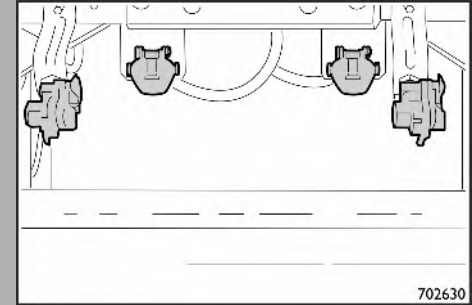
General risk, general prescriptions

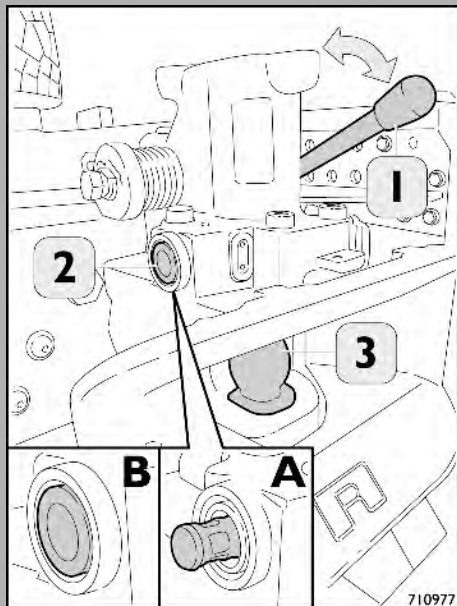
Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

While driving:

- Drive with particular care when towing a trailer.
- If stopping uphill or downhill, make sure the handbrake works perfectly; the vehicle must be prevented from moving.





Rockinger tow hook

NOTE For coupling and uncoupling the trailer, follow the instructions given in the paragraph "Rules for towing the trailer".

Ensure that the lever **(1)** is in the vertical position (pin raised) and that the safety indicator **(2)** is in position **(A)** (out of its housing).

NOTE Before coupling, adjust the height of the trailer drawbar to that of the towing hook.

Coupling is automatic when the trailer drawbar presses against the protruding part of the pin **(3)**.

When the trailer is correctly coupled, lever **(1)** will click from the vertical to the horizontal position and the safety indicator **(2)** will return into its seat (position **(B)**).

When coupling the trailer, always check that the indicator **(2)** is flush with its seat.

NOTE Before uncoupling, disconnect the brake hoses, and the lighting and ABS cables.

To uncouple the trailer, move the lever **(1)** to the vertical position until the safety indicator **(2)** fully protrudes from its seat.

When the hook is not being used, it is always advisable to keep it in a closed position.

To close the hook manually, use a tool to lever the protruding part of the pin **(3)** to release the automatic lock.

ATTENTION The pin will close suddenly. Never use your hands or any other part of your body to release the pin; always use a suitable tool.



Risk of injury:

Keep at a safe distance and keep all parts of the body away from the device during operation.

Failure to comply with these prescriptions can result in the risk of serious injury

Ringfeder tow hook

(if provided)

NOTE For coupling and uncoupling the trailer, follow the instructions given in the paragraph "Rules for towing the trailer".

To open the tow hook raise the lever **(1)** to the vertical position. The control pin **(2)** will move from position **(A)** to position **(B)**.

NOTE Before coupling, adjust the height of the trailer drawbar to that of the towing hook.

To couple the trailer, open the tow hook and reverse the tractor unit paying attention to the position of the trailer drawbar.

Coupling takes place automatically when the trailer drawbar presses against the tow hook.

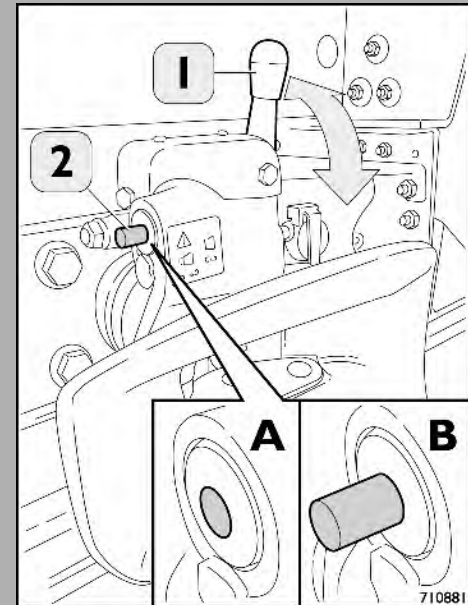
Always check correct locking of the drawbar on the tow hook by means of the red pin **(2)**:

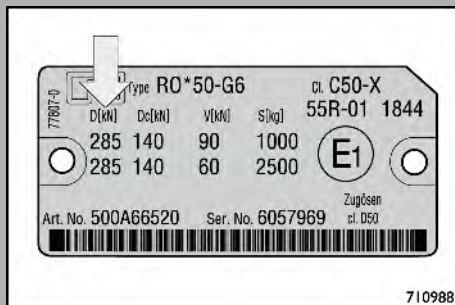
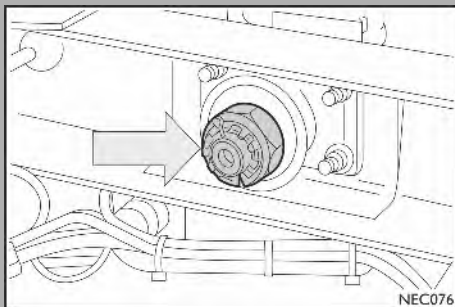
- Red pin out of its housing, coupling not performed correctly.
- Red pin fully retracted into its housing, coupling performed correctly.

ATTENTION If the control pin is not fully retracted into its housing, the coupling is not protected and the coupling operation must be repeated.

NOTE Before uncoupling, disconnect the brake hoses, and the lighting and ABS cables.

To uncouple the trailer open the tow hook and move the vehicle away from the trailer.





NOTE If necessary, retighten the tow hook nut to the correct tightening torque.

To perform the operation, first remove the cotter pin that holds the nut.

REAR TOW HOOK TIGHTENING TORQUES			
D	BALL DIAMETER	ROCKINGER	RINGFEDER
		TORQUE	
70 kN	40 mm	350+50 N·m	min. 350 N·m
	50 mm	min. 350 N·m	350 – 450 N·m
100 kN	40 mm	630 +/- 130 N·m	min. 500 N·m
	50 mm	min. 500 N·m	500 – 650 N·m
120 kN	40 mm	630 +/- 130 N·m	min. 500 N·m

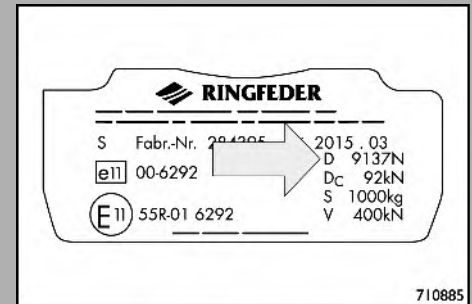
The value "D" is indicated on the plate secured to the tow hook:

- Rockinger hook

- Ringfeder hook

Reinsert the cotter pin after completing the operation.

If, after tightening the nut to the required torque, the hole for inserting the cotter pin does not coincide with one of the spaces between two contiguous teeth of the nut, do not reduce the tightening torque, but increase it enough to be able to insert the cotter pin. This ensures correct nut tightening.



Accessories fitted by the user

Regarding the line of high quality products offered by the Iveco shop, please comply with the following advice:

- In case of additional drilling (e.g. hole for radio aerial) on the cab panelling, suitably protect the part concerned, to prevent early oxidation on the internal or external surfaces.
- Take care when fitting (knocks by screwdriver, interference, etc.), to avoid permanent damage to the paint.

**Risk of electrocution**

Disconnect the battery negative pole and then the positive pole before carrying out any work on the vehicle. If the vehicle is equipped with a battery sensor, read the relative chapter in order to find out how to handle the negative terminal correctly. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Self-adhesive decals

The removal or application of self-adhesive decals must not be done with sharp tools (e.g. blades, knives, etc.) as they could cause deep scratches on the paintwork, resulting in premature corrosion of the underlying material.

Radio transmitters and mobile phones

Mobile phones and other radio-transmitter devices (e.g. CBs) cannot be used inside the vehicle unless a separate aerial is fitted on the outside of the vehicle. .

The use of mobile phones, CB transmitters or similar devices inside the driver's cab (without an external aerial) produces radiofrequency electromagnetic fields which, when amplified by the resonance effects inside the driving area, may cause potential health hazards as well as malfunctions. These may affect the electronic systems fitted in the vehicle, such as the various engine control units, ABS, etc., which may compromise vehicle safety and your own safety. Also, the transmission and reception efficiency of these devices may be degraded by the shielding effect of the body.

Installation of additional electrical equipment

Do not install electrical/electronic which are not permitted by IVECO or are illegal (for example, C.B. devices with power exceeding the legal limit of **5 W** which could cause disturbances or electromagnetic interference).

Legislation for the Australian market

NOTE Legislative information only valid for the Australia market.

Clause 5.9.1

WARNING: Seat belts are designed to be worn on the body and should be worn across the lower front part of the pelvis, chest and shoulders depending on the situation. Seat belts should not be worn across the abdomen.

Seat belts should be adjusted so they adhere as tightly as possible while still being comfortable, to provide the protection for which they have been designed. A loose belt will significantly reduce protection to the person wearing it.

Make sure that the belt does not come into contact with polish, oils, chemical products and in particular, battery acid. They can be cleaned using water and a soft detergent. The belt must be replaced if the webbing is worn or damaged.

The whole assembly must be replaced following a collision even if no damage to the belt assembly is visible. The belt must not be twisted.

Each belt is only to be used with one person: it is forbidden to put a seat belt around a child sitting on the lap of another person.

Clause 5.9.2.1

WARNING: No modification or additions to the seat belts or the adjustment devices are to be made by the user to change the operation or tension of the seat belts.

Start-up and driving

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Safe driving

Before starting to drive

- Adjust the seat, steering wheel and rear-view mirrors to ensure that the driving position is correct.
- Check that nothing hinders pedal motion.
- Check horn operation.
- Check external light operation, and if necessary, clean the light assemblies.
- Check that light beam alignment is set correctly, particularly for night driving.
- Check that there are no leaks of oil or other fluids under the vehicle.
- Check that any load is correctly stowed.
- Finally, check that the parking brake is released and that the indicators and warning lights on the dashboard are not indicating any faults. In order to avoid accidental movements of the vehicle, disengage the parking brake while pressing the pedal brake.
- Fasten the seat belts correctly.



General risk, general prescriptions

Never leave objects which could move and obstruct the controls, or in the event of a collision, could hit the occupants.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Driving

- Long journeys should be undertaken only when the driver is in perfect shape.
- A light meal, with easily digestible food, will help keep reflexes ready and ensure the concentration necessary for safe driving.
- Abuse of alcohol, drugs and/or certain medicines is very dangerous. Never drive under the influence of alcohol or the effect of drugs or narcotics.
- Driving carefully means being able to predict the incorrect or imprudent behaviour of others, respecting the speed limits and using the furthest right hand lane on the motorway.
- Always comply with the stopping and driving times indicated by the chrono-tachograph (if fitted).
- Use the indicators when changing direction.
- Keep a safe distance from the vehicle in front; this distance varies depending on speed, weather conditions and traffic and road conditions.
- Do not drive with one hand resting on the gear shift lever (if present); the unintentional force (if even light) applied will cause unnecessary wear on the elements inside the gearbox.

- Do not drive with the gearbox in neutral.
- To avoid early wear on the clutch, never start driving using the long gears.
- Do not drive with a foot on the clutch pedal; this habit can cause early wear of the clutch components.
- Do not drive for too long without a break; stop at regular intervals to stretch legs and freshen up.
- Use the numerous settings of the heating and ventilation system or the climate control system to ensure a constant exchange of air.
- Do not drive downhill with the engine OFF: under these conditions, there is no braking effect from the engine and thus a larger force is required on the brake pedal: use the engine brake with low gears to avoid overheating the brakes.
- If the vehicle breaks down, park the vehicle off the road, switch on the hazard lights and position the warning triangle to signal the presence of the vehicle. Always comply with the current Highway Code.
- Do not apply decals or other stickers on the windows: they may distract or obstruct vision.



Contamination, fire

- Throwing burning objects such as cigarette butts out of the windows when the vehicle is moving could be dangerous for persons, for other vehicles, for the surrounding environment and for the goods being carried. It could also be hazardous for the vehicle itself.

Correct behavior will ensure that vehicle is used as environmentally friendly as possible

Parking

If it is necessary to leave the vehicle stationary, proceed as follows:

- Switch off the engine.
- Engage the parking brake.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

- Engage 1st gear if the vehicle is on an upwards incline or reverse if the vehicle is facing downward (only for vehicles with manual gearbox).

- With the engine OFF, do not leave the ignition key at MAR-I, to avoid wasting power and discharging the batteries.

Driving at night

- Keep a safe driving distance, greater than when driving in daytime: in fact it is more difficult to estimate the speed of a vehicle when you can only see the lights.
- Stop and take a break at the first signs of drowsiness: continuing would be dangerous for you and for others.
- Use the high beam lights only away from built-up areas and only when doing so will not create any difficulty for other motorists.
- Switch from the high beams to the low beams when encountering other vehicles.
- Drive with particular care, where necessary reducing vehicle speed, particularly on unlit roads.

Driving in rain, fog and snow

- If the road is wet, the friction between the wheels and the road surface is greatly diminished and this increases the braking distances and reduces adhesion in curves: reduce vehicle speed and keep a greater distance from the vehicles in front.
- Heavy rain and fog reduce visibility; to make the vehicle more visible, switch on the low beams during the day as well, in accordance with current local regulations.
- Do not drive through large puddles or sections of flooded road at a high speed; so-called aquaplaning may occur causing vehicle control to be lost: primarily use the engine brake and avoid sudden braking.
- If outside visibility is poor, position the ventilation controls as shown in the appropriate paragraph, to demist the windows more efficiently.
- Before starting to drive, check the condition of the windscreen wipers; if the temperature drops below **0 °C**, or if it has snowed, check that the wipers are not stuck to the windscreen. Lift the windscreen wipers when the vehicle is parked to avoid sticking.
- In case of fog, drive very carefully, limiting vehicle speed and not overtaking unless it is strictly necessary.
- Make sure that the cleaning fluid contained in the windscreen/headlight washer reservoir has anti-freeze and scale-inhibiting properties.
- During winter periods, even apparently dry roads may have icy sections: particularly sections shaded from the sun or lined with trees or rocks.

Tyres

The tyres fitted to the vehicle are the "tubeless" type.

You are advised to comply with the following requirements in order to achieve maximum driving comfort, safety and long tyre life:

- Before driving in tight curves, reduce vehicle speed even if vehicle performance allows otherwise.
- Avoid sudden acceleration or over-enthusiastic braking.
- Do not drive for long periods at sustained and constant speed, particularly on uneven terrain.
- Check that the wheels are correctly balanced and aligned.
- Avoid knocking the sides of the tyres (for example, when parking).
- Never tamper with the inflation valve, under any circumstances.
- Do not insert any type of tool between the rim and the tyre.
- Replace the rim if it is distorted in any way.
- If pressure drops unduly, replace the wheel and have its seal checked.
- Prolonged vehicle stoppage causes deformity in the tyres.
- Tyre pressure, including the spare wheel, must match the values specified in the specific paragraph of this booklet.
- Never use tyres that are second-hand, of unknown origin or more than 6 years old.
- Inner tubes must never be used with tubeless tyres.
- Avoid leaving the vehicle parked for long periods on the edge of a step or other irregular road surfaces.
- Check tyre tread depth regularly, ensuring that it meets the minimum requirements required by law. Some types of tyres have wear indicators and must be replaced as soon as they become visible on the tread. Tread wear increases the risk of aquaplaning.
- Check regularly that the tyres do not display irregular tread wear; if this is the case, contact the Service Network for assistance.

Snow chains

NOTE See the paragraph "Each year before winter" in the Ordinary maintenance chapter.

Economical and ecological driving



General risk, general prescriptions

The conditions of use and driving behaviour have a direct effect on fuel consumption and environmental impact. By following a few simple rules, without forgoing "lively" driving, the driver can avoid damage to the environment, and at the same time reduce fuel consumption.

Correct behavior will ensure that vehicle is used as environmentally friendly as possible

- Do not attempt to obtain peak performance from the vehicle when the engine is cold.
- Do not accelerate needlessly while stationary.
- Wherever possible, do not drive with the side windows down; it is better to use the ventilation and climate control system sensibly to achieve the best environmental conditions inside the vehicle.
- When traffic and road conditions allow, use a fast gear.
- In slow-moving urban traffic or when travelling in a queue at low speed, it is advisable to reduce the use of devices with high energy consumption (interior ventilation at high speed) to a minimum.
- Racing the accelerator while shifting or before shutting down the engine is pointless and can damage the turbocharger.
- The best fuel consumption to performance ratio will be achieved by keeping the engine revs within the green sector stamped on the rev counter. The red (over revving) sector must never be used.
- Follow the Plan of Scheduled Maintenance scrupulously: regular maintenance is the best guarantee for safe operation and for keeping operating costs as low as possible. These operations are obligatory during the warranty period and failure to carry them out will invalidate the warranty.

Opening and closing the vehicle doors

Remote control for central locking

The vehicle can be equipped with keys which include an Immobilizer and remote control system (if requested). To unlock the doors with the remote control function, press button **(1)** briefly always pointing the remote control in the direction of the vehicle; the turn indicators will flash to signal that all the doors have unlocked.

To unlock the doors, briefly press button **(2)** on the remote control always pointing it in the direction of the vehicle: the turn indicators will flash simultaneously to signal that all the doors have locked.

Replacing the remote control battery

- Insert a coin or a screwdriver into the slot on the side of the key and carefully open the two halves.
- Change the battery, respecting the polarity.
- Close the two halves of the key, making sure they couple properly.

NOTE A reduction in the range of action of the remote control is a sign that its battery is running down.

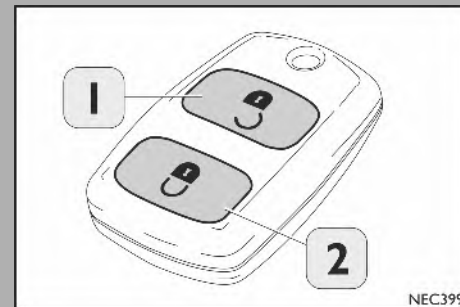


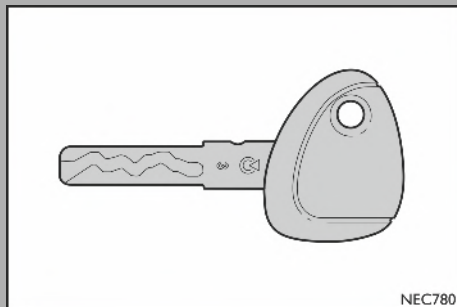
General risk, general prescriptions

A flat key remote control battery is harmful for the environment. It must be disposed of in specific containers, as required by law. Or it can be delivered to the Service Network, which will dispose of it properly.

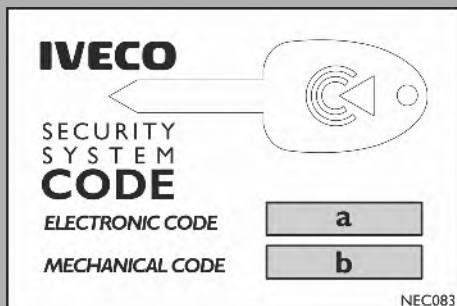
Correct behavior will ensure that vehicle is used as environmentally friendly as possible

NOTE The remote control contains a CR 2032 **3 V** lithium battery.





NEC780



NEC083

Door opening key and Immobilizer system

(if provided)

To improve protection against attempted theft, the vehicle is equipped with an electronic engine Immobilizer.

In fact the ignition keys are equipped with an electronic device that transmits a coded signal to the Immobilizer control unit.

Vehicle keys

Two keys are supplied and make up a "Set" (keys + Immobilizer + ECM).

Code Card

A code card is delivered together with the keys, stating:

- A. the electronic code to be used in the event of an emergency. Contact the Service Network to have this code activated.
- B. the mechanical code of the keys.

Users are advised to carry the electronic code recorded on the code card with them at all times in case the need for an emergency start-up should arise.

Engaging the Immobilizer system

The Immobilizer is enabled when the ignition key is turned to the STOP-0 position: engine stopped, key can be removed.

Disabling the Immobilizer

Turn the ignition key to MAR-I, the engine lock is disabled only if the protection system recognises the key code. If the code is valid, the control unit of the protection system sends an appropriate coded signal to the electronic control unit of the engine enabling the start-up of the engine.

The fact that the code has been recognised by the system is indicated by the yellow fault warning light **(3)** indicating a minor fault flashing for approximately 4 seconds. Anything else indicates that the code has not been recognised. In this case, it is recommended that the key be turned to the STOP-0 position and then back to MAR-I; if immobilisation continues retry with the other key supplied. If the engine still does not start, contact the Service Network.

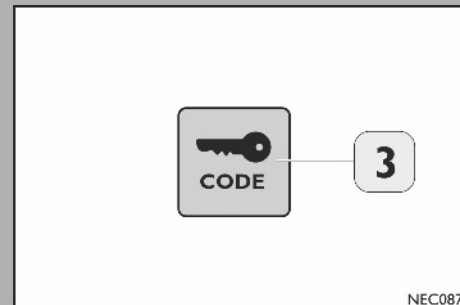
Warning

If the minor fault **(3)** yellow warning light comes on temporarily or permanently while driving or when starting the vehicle, this does not necessarily indicate a system fault but may in certain cases be interpreted as a tampering attempt by a thief or a particularly low battery charge.

By switching the engine off (STOP-0 position) when the symbol **(3)** with the minor fault yellow warning light is activated, it is possible that the next engine start-up may only be possible via the emergency procedure.



NEC1018



NEC087



Emergency start-up

This allows the engine to be started if the key is not recognised or the immobilizer control unit is faulty. Start-up is possible by entering the ELECTRONIC CODE (a) through accelerator pedal operation;

proceed as follows:

1. Turn the key to MAR-1. EDC warning light begins to flash after 2 seconds.
2. Keep the accelerator pedal pressed down for 3 to 6 seconds and then release it.
3. EDC warning light begins to flash at lower frequency.
4. When the number of flashes corresponds to the first digit of the ELECTRONIC CODE, fully depress the accelerator pedal and then release it (the EDC warning light remains off while the pedal is being pressed).
5. Continue in this way for the remaining digits in the ELECTRONIC CODE.
6. If the code entered is correct, the EDC warning light will stop flashing.
7. Start the vehicle.

In any case, contact the Service Network as soon as possible for verification of the system.

Warning

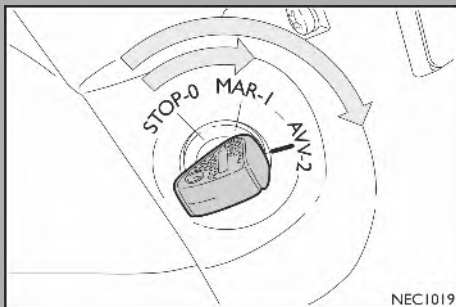
Each key supplied has a common mechanical code and a unique electronic code, different from the others, which must be stored in the system control unit.

When additional keys are requested, remember that the code is recorded on all the keys, including those already in your possession.

Contact the Service Network directly, bringing all the keys in your possession and the code card with you.

The codes of any keys not presented during the new memorisation process are erased from the memory; this ensures that lost keys will no longer be able to start the engine.

- The code card is an essential and unique element associated with each vehicle; therefore it is recommended to keep it in a safe place. It is therefore recommended to write down the codes without leaving it in the vehicle and to carry it at all times to avoid the risk of losing it.
- If vehicle ownership changes, it is essential that all the keys and the code card are handed over to the new owner.



Engine starting

Starting the engine when the outside temperature is higher than 10°C

- Engage the main power switch (if fitted).
- Make sure that the parking brake is engaged.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

- Set the gearbox to neutral. For mechanical gearboxes: neutral position of the gearbox control lever. For AS Tronic and Allison gearboxes: press the "N" button.
- Insert the key in the ignition switch and turn it clockwise to the MAR-1 position.
- Then turn the key to the AVV-2 position and release it as soon as the engine starts. During start-up, it is advisable not to press the accelerator pedal. The control unit makes a general check approximately every 1-2 seconds before injecting fuel.

Before starting up:

- Press the brake pedal.
- Release the parking brake.
- Release the brake pedal and press the accelerator pedal to start driving.

If the engine does not start easily, do not run the starter for more than 30 seconds.

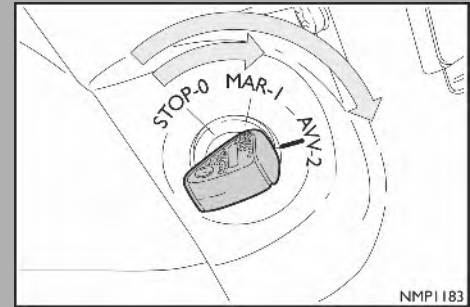
After starting the engine, drive slowly with the engine at medium rpm to allow it to reach the optimum running temperature.

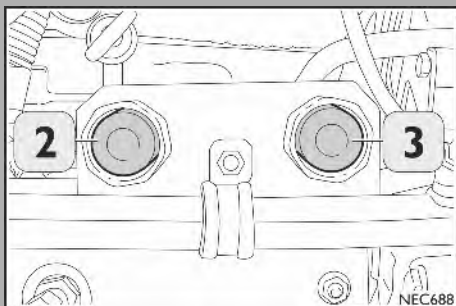
This achieves the following:

- a continual, regular flow of oil in the entire lubrication circuit;
- exhaust emissions maintained with the specified limits;
- fuel consumption kept low.

Starting the engine when the outside temperature is lower than 10°C

NOTE See the paragraph "Each year before winter" in the Ordinary maintenance chapter.





Starting the engine from the engine compartment

It is possible to start the engine with the cab tilted by means of push button **(2)** (located on the engine itself); for this purpose, the ignition switch must have been turned to the MAR-1 position.

For your safety, it is not possible to start the engine if the gear lever is not in the neutral position and if the parking brake is not engaged.

To stop the engine press the push button **(3)**.



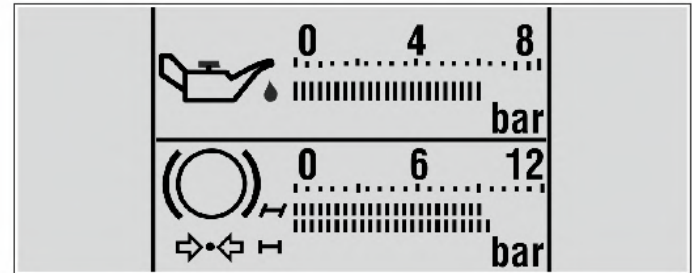
General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

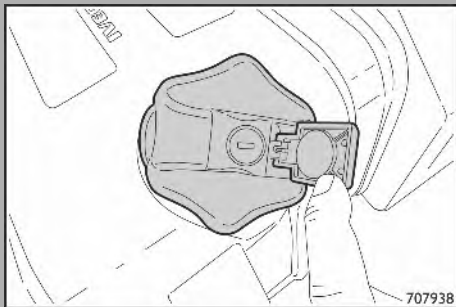
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Before starting the vehicle

- Look at the display to check that the pressure gauges show a minimum bar of **6,5 bar** for both sections (front and rear axles).
- If one or both of these conditions are not met, there is a failure in the braking system.
- Contact the Service Network immediately.
- If it be absolutely necessary to move the vehicle, use the utmost care since its braking capacity is impaired.



701015



Fuel inlet

The refuelling cap with lock is located on the fuel tank.



General risk, general prescriptions

Switch off the additional heater, where present, before refuelling.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

- If the fuel cap has to be replaced, ask the Service Network for the specific one for the vehicle model.

- Avoid spilling fuel when refuelling. Fuel contains alcohol which could damage the paint.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

Fuel vapours are extremely flammable and can even be explosive in enclosed spaces.

While refuelling:

- Switch off the engine
- Do not smoke or use a naked flame
- Do not spill the fuel
- Switch off all appliances which produce radio frequencies

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Engine idle speed adjustment

To be carried out with the vehicle stationary and the engine warm since the adjustment cannot be made if engine temperature is below **30 °C**.

- Start the engine and keep it running at idling speed without accelerating.
- Press and hold the brake pedal during the entire procedure.

For vehicles with a mechanical gearbox

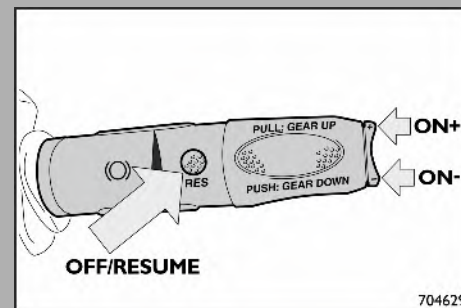
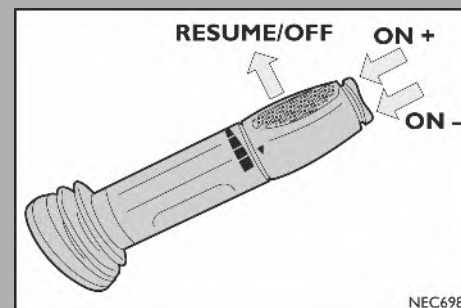
- Move the Cruise Control lever towards the steering wheel (RESUME), checking that the speed drops to the required idling speed.
- Adjust the rpm as desired using ON+ o ON- (tilting head key). Each pulse will make engine speed change by approximately **20 RPM**.
- Once the desired engine speed is reached, move the Cruise Control lever towards the steering wheel (RESUME) again and hold it in position for approximately **5 s** with the ON+ button pressed.

For vehicles with AS Tronic and Allison gearbox

- Press the button (RESUME) on the Cruise Control checking that the speed drops to the required idling speed.
- Adjust the rpm as desired using ON+ o ON- (tilting head key). Each pulse will make engine speed change by approximately **20 RPM**.
- Once the desired engine speed is reached, press the button again (RESUME) on the Cruise Control lever and hold it in position for approximately **5 s** with the ON+ button pressed.
- Release the brake pedal.

The new engine idling speed will then be stored even if the engine is stopped and will remain valid after further start-ups.

If the procedure is not carried out correctly and/or in the event of a fault during its execution, the old idling speed is maintained.



Speed programmer (cruise control)

(If fitted)

(Function active starting from **20 km/h** up to maximum vehicle speed)

The system automatically maintains the vehicle speed without using the accelerator pedal.

If vehicle speed should increase by more than **2 km/h** from the set value (e.g. driving downhill), the engine brake is automatically activated to slow down the vehicle and maintain its speed.



Risk of injury:

The system does not control nor adjust the vehicle direction.

- The driver is the only one responsible for driving the vehicle and must always maintain control over all vehicle functions, in particular the steering, accelerator and brakes.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Cruise Control must not be used in heavy traffic or when it is important to control the speed continuously (e.g. on hills).

It can be enabled when the following conditions are met:

- Engine brake by means of lever on steering wheel not engaged.
- Vehicle running with a gear engaged.
- Vehicle speed above **20 km/h**.
- Brake pedal not pressed.
- Clutch pedal not depressed (for vehicles with mechanical gearbox).

CONTROL	VEHICLE SPEED ADJUSTMENT
ON +	Speed increase
ON –	Speed decrease
RESUME	Selecting the last speed stored
OFF	Deleting speed stored

The control is deactivated when the brake pedal or the engine/clutch brake are operated. The same occurs if the minimum speed required is not reached.

The maximum speed limit is stored in the program within the electronic control module and cannot be changed.

1. Rocker switch ON+:

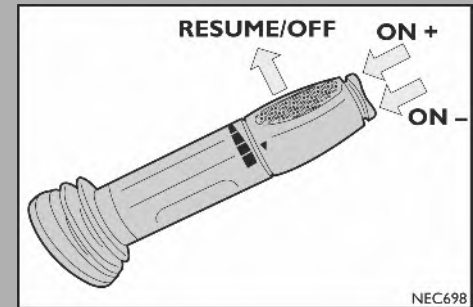
- pressed once, it activates the function and keeps the speed set by the current accelerator pedal position. It is then possible to release the accelerator pedal; the vehicle will keep the cruise speed as set.
- with the function already activated, it increases vehicle speed without having to act on the accelerator pedal.

2. The rocker switch ON with Cruise Control activated, reduces vehicle speed.

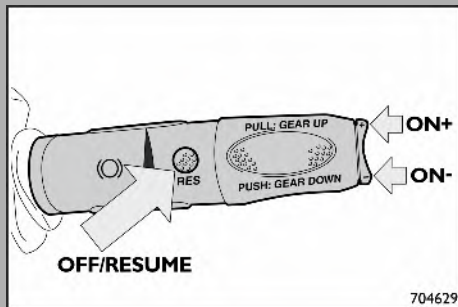
For vehicles with a mechanical gearbox

3. Moving the lever towards the steering wheel (OFF) deactivates Cruise Control (CC display is shaded)

4. If the lever (RESUME) is moved a second time towards the steering wheel, the stored value is once again activated (CC display clear).



NEC698



For vehicles with AS Tronic and Allison gearbox

3. Moving the lever downwards (RESUME) deactivates Cruise Control (CC display is shaded)
4. Moving the lever downwards again (RESUME) restores the stored value (CC display is clear).

Tip function

By briefly pressing the ON+ or ON- rocker switch, the vehicle speed varies by **1 km/h** (e.g. with a speed of **60 km/h** and pressing ON+ three times, **63 km/h** is obtained; pressing ON- three times gives **57 km/h**).

Ramp Function

Keeping it pressed, the speed varies continuously.

Disengagement

The system is disengaged:

- Manually and permanently (using the RES push button).
- Automatically and permanently by pressing the brake pedal and using the engine brake.
- Automatically and permanently by pressing the accelerator pedal (thus asking for a higher speed than what is set) for more than 30 seconds.

With mechanical gearbox: If the clutch pedal is pressed, the system goes momentarily into stand-by.

After switching OFF, it is possible to bring the vehicle back to the cruise speed set previously by simply using the RESUME control.

The system is temporarily disabled when requesting a speed greater than the set limit with the accelerator pedal (for no longer than 30 seconds).

As soon as the accelerator pedal is released, the function automatically resumes the last saved speed.

Warning

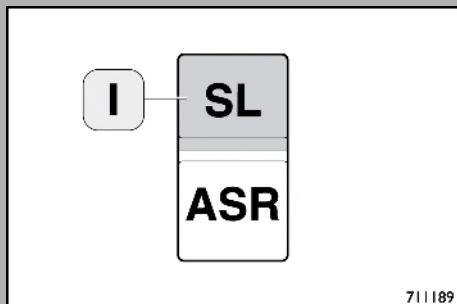
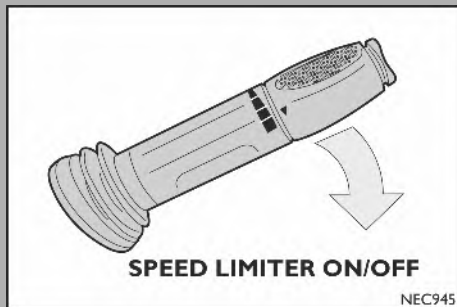
The speed value is shown on the CC display **(1)**; when using the Ramp Function, the display shows the actual vehicle speed and the setting is the current value at the time the push button is released.

The value displayed disappears after 10 seconds.

In order not to deactivate the engine brake on downhill sections, the Cruise Control remains active if the brake pedal is used at speeds greater than **4 km** /hour.



NEC1062



Speed limiter (SPEED LIMITER-SL)

The engine control unit has a function that automatically limits the cruise speed to **90 km/h**.

Without button on the dashboard

You can choose a lower value using the Cruise Control command lever, turning it downwards until you reach the desired speed.

With button on the dashboard

It is possible to select a lower speed using the button **(I)** on the dashboard when the desired speed is reached.

Warnings:

- Cruise Control works only if its preset speed is less or equal to the speed set on the speed limiter
- The value shown on the SL display is the maximum speed allowed including all tolerances according to 94/24 EEC and 92/6 EEC standards.
- Within **10 s** you can make a fine adjustment of the SL value using the ON+ /ON- rocker switch on the end of the right steering column switch.

Engine brake control

(if provided)

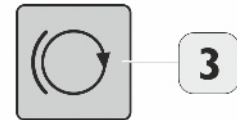
Two control systems are provided for the exhaust brake, which can be selected using the right steering column switch, to be used in different types of situations/paths:

- Works together with the accelerator, engaging while the pedal is released; to be used in long downhill sections with a constant gradient;
- Works with the service brake, engaging during the initial pedal travel and while the position is maintained; to be used essentially to reduce wear to the service brakes on paths where they are used often (e.g.: city driving).

The warning light **(3)** on the dashboard lights up each time the exhaust brake is engaged.

The engine brake can be temporarily disengaged if the antilock brake system ABS or the ESP system activates.

If Cruise Control is engaged, the engine brake can be activated automatically by the system to maintain vehicle speed.



NEC097

Retarder

(if fitted)

The use of the Retarder is particularly advisable when braking at a high speed or when driving down a fairly long downhill gradient.

Best performance is obtained with the vehicle at medium/high speeds.

When used, you can economise the application of the service brakes, as a result of which the entire braking effect is available in case of an emergency.

A retarder decoupling button is located on the mid panel, which can be used to inhibit the automatic activation of the retarder after pressing down on the brake pedal.

When turning on the panel, the button position defines the on/off status of the retarder when activating the service brakes (note: the position of the button does not inhibit the retarder when it has been activated using the lever).

The Retarder is momentarily disengaged whenever the ABS or ESP system activates.

If cruise control is engaged, the retarder can be activated automatically by the system to guarantee that the set speed will be maintained.

The retarder is not able to guarantee maximum braking torque under all operating conditions, especially in cases of prolonged activation (for example, to slow down the vehicle on long downhill stretches). In particular, in the event of a long braking action, the power of the Retarder (if hydraulic) automatically adapts to the cooling capacity of the vehicle cooling system, reducing its braking performance if necessary.



General risk, general prescriptions

In the following cases, the Retarder automatically goes down to the maximum admissible braking force for safety reasons, so that cooling water does not exceed its maximum allowable temperature:

- On reaching the preset maximum temperature of the cooling water.
- In the event of a breakdown or fault in an electrical component.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

It is necessary to take into account the lower braking power by adapting driving style accordingly (choice of gear, engine brake, service brake).

If the vehicle is equipped with an electro-magnetic retarder, the magnet temperature can reach high values when activated and immediately afterwards.

Also when the vehicle is stationary, do not come into contact with the retarder components for a few minutes after switching off the engine due to the high temperatures reached during operation.

Retarder warning light

The retarder warning light indicates its current state of operation to the driver.

NOTE If the retarder functions do not match the optical indications described below, there is a fault in the electrical system. Go to the nearest Service Network workshop. The lighting up of the warning lights when the ignition key is in running position a few seconds after the engine is started does not indicate a malfunction, but is a normal occurrence.

Warning light indication in normal operation

The warning light is not turned ON:

- The retarder is not engaged.

The warning light remains ON permanently:

- The retarder is engaged and is supplying a braking torque defined in function of the lever position or the pressed brake pedal position or due to a request from the Cruise Control.

The warning light flashes continuously:

- The retarder is preselected but not active because an inhibition condition is present (e.g: accelerator pedal pressed, over-temperature, etc.). The inhibition condition may be due to a system malfunction only in the case of the simultaneous signalling of a retarder fault; in this case, go to the nearest Service Network workshop. In all other cases, it is a condition of temporary unavailability; therefore, completely release the accelerator pedal and use the service brake while you wait for the Retarder to become available again (this is signalled by the warning light activating and staying on).

General instructions for using the retarder

The use of the retarder has no effect on the method used to control the gearbox.

The gearbox continues to be used as usual.

In addition to the instructions given in the previous pages, it is also necessary to follow the following instructions.

Warnings

- In addition to the instructions given in the previous pages, it is also necessary to follow the following instructions.
- When the clutch is disengaged (when shifting gears) the braking force provided by retarder remains unchanged. However, there will be no engine braking torque.



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NEC701

**Risk of injury:**

Retarder use must be adjusted to the conditions of the road surface, especially in the case of low road grip, which is typical of the winter season.

- In these conditions, it is recommended to decouple the automatic activation from pressing down on the pedal to avoid manoeuvring errors, via the specific button.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

**General risk, general prescriptions**

On an icy or wet road the Intarder must be used only with the utmost caution. It acts only on the rear engine axle; as a result, the vehicle may skid.

- In this case, disengage the control lever if necessary in order to avoid manoeuvring errors.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

**Risk of damage**

Before and during driving for long periods or on very steep descents, it is advisable to maintain high engine rpm. Otherwise, sufficient cooling of the engine coolant can not be guaranteed.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**General risk, general prescriptions**

If necessary, slow the vehicle down and possibly engage a lower gear to increase engine rpm and thereby the cooling capacity of the cooling system.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Vehicles with manual or automated gearbox without retarder

Position 0 = disabled.

Position 1 = exhaust brake combined with service brake.

Position 2 = exhaust brake combined with accelerator ("last wins" logic).

Vehicles with Allison gearbox without retarder

Position 0 = disabled.

Position 1 = exhaust brake combined with service brake.

Position 2 = exhaust brake combined with the accelerator (it shifts gears to increase the engine rpm, to obtain more effective braking).

Vehicles with automatic gearbox and hydraulic retarder

Position 0 = disabled.

Position 1 = exhaust brake combined with service brake.

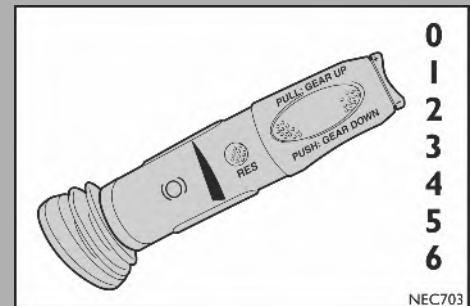
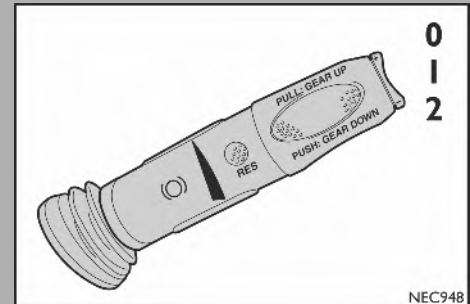
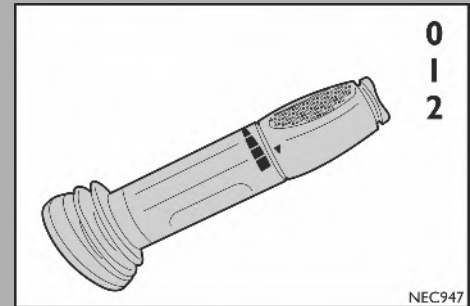
Position 2 = exhaust brake combined with accelerator.

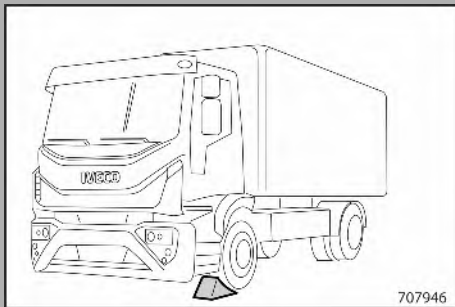
Position 3 = engine brake **100%** + Retarder **33%**

Position 4 = engine brake **100%** + Retarder **66%**

Position 5 = engine brake **100%** + Retarder **100%**

Position 6 = engine brake **100%** + Retarder **100%** (gear shift to increase engine speed, increasing braking efficiency of the engine).





Using the parking brake



General risk, general prescriptions

It is not permitted to use the parking brake as the service brake in order to slow the vehicle down.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE Use the handbrake only when the vehicle is stationary.



Risk of injury:

In order to avoid damage to persons and objects that can be rather severe, the parking brake must always be engaged when stopping the vehicle for long and short periods. Furthermore, it must also be engaged when coupling/ dividing the trailer / semi-trailer from the tractor.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Make sure that the parking brake is engaged before leaving the vehicle.

If parking on sloping roads:

- Use the appropriate wheel chocks to block the vehicle (in front of or behind the rear wheels when vehicle is loaded, or the front wheels when empty).
- We recommend turning the front wheels of the vehicle so that it cannot gain speed in case it is accidentally put into motion.

Vehicle parking procedures

Follow these procedures to park the vehicle correctly:

- Stop the vehicle using the service brake.
- Set the gearbox to neutral.
- Engage the parking brake.
- Switch off the engine.

Parking brake control lever positions

The parking brake lever **(I)** can be moved into the following positions:

- a. Brake disengaged (lever released).
- b. Brake engaged.
- c. Trailer brake disconnected from the tractor (unstable position - only for trailer vehicles).

In this position, the driver can check whether the tractor parking brake (tractor or truck) is able to keep the tractor trailer parked on sloping roads.

Engaging the parking brake (position b)

Grip the lever and shift from position **(a)** to position **(b)**. To ensure that the lever is effectively secured in the locking point, check that:

- it is lowered in relation to the target position "b" and that it is stable in position;
- the buzzer warning users of the failure to engage the parking brake is off (if previously on);
- the warning light **(P)** on the instrument panel activates.

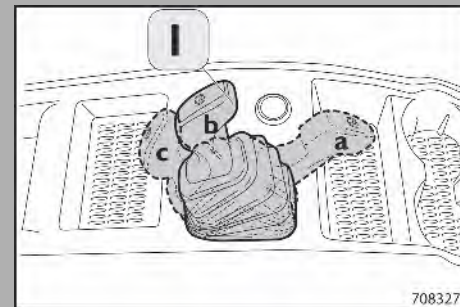


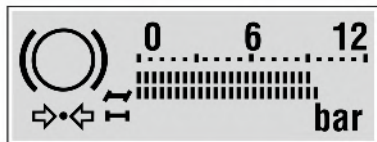
General risk, general prescriptions

Make very sure that the hand lever is locked in the "b" position and that the parking brake is engaged.

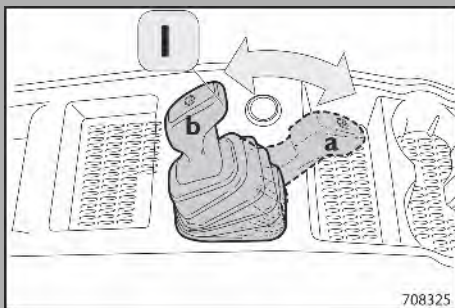
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE The lock is secured in position **(a)** when the lever is lowered slightly and is stable in position **(b)**, the buzzer is deactivated (if previously enabled) and the warning light **(P)** activates and stays activated on the instrument panel. In case of incorrect locking repeat, the engagement manoeuvre.





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Disengaging the parking brake (position a)

Before releasing the parking brake, wait for the air pressure in the supply circuits, which is indicated by the pressure gauges on the dashboard, to reach the working value. When this pressure has been reached (equal to or greater than **8 bar**), the brake can be released.



General risk, general prescriptions

The brake cylinders lock in place if the air pressure does not properly supply the parking brake circuit.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

To allow the vehicle to move, the brake cylinders must be mechanically released.

When

brake cylinders have been released, the vehicle may not be driven and must be towed to a Service Network workshop.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

- Lift the lever **(I)** until it releases the end of the vertical stroke (release of the lever restraint system);
- accompany the lever in its movement from position **(b)** to position **(a)**. The warning light **(P)** switches OFF to indicate the device disengagement.

Checking parking brake efficiency on trailer vehicles (position c)

From position **(b)** - parking brake engaged - move the lever **(I)** to the unstable position **(c)** and hold the position. In this way the trailer / semi-trailer braking system is disengaged and the braking action is provided only by the tractor spring accumulator cylinders.

Brake disengagement is performed by shutting the 3-way valve that supplies air to the pneumatic union between the tractor and trailer. In this condition the tractor parking brake must be able to keep the tractor trailer locked in place.

Move the lever **(I)** to position **(b)** making sure that it lowers slightly to engage the safety locking system and that it is in a stable position.



General risk, general prescriptions

Make very sure that the hand lever is locked in the "b" position and that the parking brake is engaged.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE The lock is secured in position when the lever is lowered slightly and is stable in position, the buzzer is deactivated (if previously enabled) and the warning light **(P)** activates and stays activated on the instrument panel. In case of incorrect locking repeat, the engagement manoeuvre.

If the brake is not engaged properly, the lever **(I)** could slip out of position **(b)** and return to position **(a)** (see previous pages). The vehicle may be set in motion in this situation.

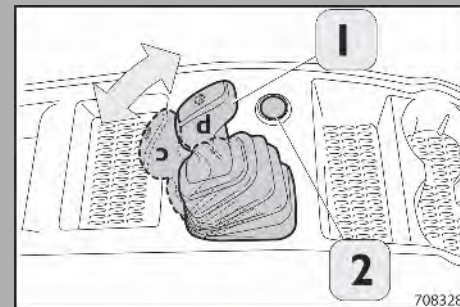


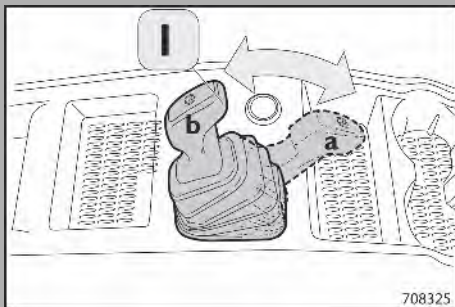
General risk, general prescriptions

If the braking strength of the tractor's spring accumulator cylinders is not sufficient to keep the tractor trailer stationary when parked, appropriate chocks must be used.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE See the manufacturer's documentation for information on the trailer / semi-trailer braking system.





Buzzer activation

The vehicles are equipped with a warning buzzer that sounds if you forget to turn off the lights and engage the parking brake.

The buzzer is activated in the situations indicated in the tables:

PARKING BRAKE ENGAGED		
Door open	Side lights ON	Side lights OFF
With the ignition key set to STOP-0	Buzzer ON	Buzzer OFF
With the ignition key set to MAR-I	Buzzer OFF	
PARKING BRAKE NOT ENGAGED		
Door open	Gearbox in neutral	Gearbox not in neutral
With the ignition key set to STOP-0	Buzzer ON *	
With the ignition key set to MAR-I	Buzzer ON	Buzzer OFF
Belt unfastened	Buzzer ON	
Brake pedal not pressed	Buzzer ON	

Vehicles fitted with the AsTronic / EMOS / gearbox have a buzzer that is activated under the following conditions:

- Gear engaged and door open (driver's door and/or passenger door). In this case the buzzer is intermittent.
- Engaging reverse gear (only present with EMOS gearbox). In this case the buzzer only emits one single sound.



General risk, general prescriptions

Make very sure that the hand lever is locked in the "b" position and that the parking brake is engaged.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE The lock is secured in position when the lever is lowered slightly and is stable in position, the buzzer is deactivated (if previously enabled) and the warning light (P) activates and stays activated on the instrument panel. In case of incorrect locking repeat, the engagement manoeuvre.



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ABS

(if provided)

ABS - Anti-Lock Braking System

The ABS system permits optimal braking action together with complete control of the vehicle.

- It prevents locking on each individual wheel when braking regardless of the grip conditions of the wheels on the road.
- It gives the driver a high degree of safety keeping the vehicle stable and on track.

The electronic brake corrector function EBL (Electronic Brake- Force Limitation) automatically reduces the braking forces on the rear axle if the vehicle is not fully loaded.

Comply with the following:

- When braking, the brake pedal may be subjected to light pulsations due to the ABS system.
- When the ABS intervenes and pulsations are felt on the brake pedal, pressure must not be released but the pedal is to be kept pressed down; this way you will stop in the shortest possible distance, compatibly with the road conditions.
- The performance of the system, in terms of active safety, must not lead the driver to take pointless or unnecessary risks.
- Driving must in any case take into account the weather conditions, visibility and traffic.
- Maximum possible deceleration in any case always depends on the grip between the tyres and road surface. Bear in mind that in the event of snow or ice, the grip is greatly reduced and therefore, in these conditions, stopping distances remain high even with the ABS system.

Functional diagnostics, any faults or limitations are indicated by the warning lights on the display. If the ABS warning light comes on when driving (yellow) this indicates a fault in the system compromising the wheel anti-lock braking system operation.



Risk of injury:

Damage to the ABS system change the behaviour of the vehicle while braking.

- Contact an IVECO workshop as soon as possible and drive with the utmost care.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

ASR – Anti-skid regulator

(if provided)

The ASR system prevents any undesired wheel slipping, both during acceleration and on bends, especially on an icy or slippery road or off-road.


In addition:

- It prevents skidding of the drive wheels both on pick-up and when driving.
- It ensures an optimal grip on a slippery surface.
- It improves stability especially in a curve with a poor grip.
- It reduces tyre wear.

During the anti-slip function, the warning light  will start to flash on the cluster.

Turning off the ASR system

ASR system activation is disabled by pressing the button **(I)**. This can be useful in certain off-road driving conditions.


The driver is informed by the symbol  on the cluster.

If there is reduced pressure in the pneumatic system, the ASR function may deactivate automatically to preserve the braking function.

The warning lights switch ON when the ignition key is in the MAR-I position a few seconds after engine starting; this is not a failure indication but a normal check function.

ASR system fault

Functional diagnostics, any faults or limitations are indicated by the warning lights on the display.

If the (yellow) warning light  comes on when driving, this indicates a fault in the system that is compromising operation of the ASR system.

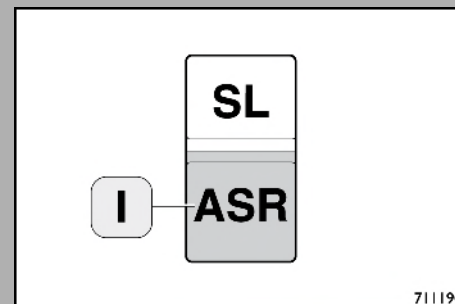


General risk, general prescriptions

Any faults in the ASR system disable system operation. Faults regarding only the ASR system do not compromise operation of the ABS and EBL system (ABS warning light off).

Contact a Service Network workshop as soon as possible and drive with the utmost care.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



ESP – Enhanced Vehicle Stability Control

(if fitted)


The ESP function controls the vehicle's dynamics.

The main objectives of this function are:

- Improve directional stability assisting the driver in conditions of understeering and oversteering. The actions undertaken by the system are an attempt to maintain the direction requested by the driver.
- Shorten braking distances in conditions of line changes on slippery roads.
- Anti-roll control during dynamic manoeuvres. The system reacts to stabilize the vehicle when it detects approaching conditions which could lead the vehicle to roll over.

To prevent a loss of control, the ESP will automatically activate the brakes of a single wheel per axle in an attempt to restore the vehicle to the correct trajectory.

In order to support the deceleration of the vehicle, engine torque will be reduced and the engine brake may be activated. If the vehicle is a tractor-trailer vehicle, the system will react by checking the stability and direction of the vehicle assembly also acting on the trailer braking.



When the ESP is operating, the warning light  comes on and flashes on the instrument panel.

VEHICLES WITH REAR DIFFERENTIAL LOCK


- In some road surface conditions, the simultaneous application of the brakes and the differential lock could make the vehicle less stable compared to when the brakes are applied without the differential lock, also with the ABS system.
- The rear differential lock should only be used in cases of real need on straight stretches of road and at speeds of less than **15 km/h**. Using this device improperly can compromise the handling of the vehicle and cause mechanical damage to it.
- In some road surface conditions, applying the brakes and differential lock at the same time could decrease the vehicle's stability even with ABS or ESP system.
- In some road surface conditions, engaging the differential lock could compromise the operation of the ESP system and therefore vehicle handling.
- The differential lock device does not cut out automatically: follow the instructions to disengage it.

ASR/ESP system deactivation

ASR and ESP system activation is disabled by pressing the button . This can be useful in certain off-road driving conditions.

The driver is informed by the symbol  and the yellow warning light  activating and staying activated on the instrument panel. The function reactivates and the warning light goes out when the button is pressed again.

Functional diagnostics, any faults or limitations are indicated by the warning lights on the display.

If the yellow warning light  comes on when driving, this indicates a fault in the system that is compromising operation of the ASR and ESP systems.

**General risk, general prescriptions**

Any faults in the ASR/ESVC system disable system operation. Contact a Service Network workshop as soon as possible and drive with the utmost care.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

**General prescriptions**

Correct action by the ESP system is ensured by continual checks on the vehicle operating data. Faults regarding only the ASR/ESP system do not compromise operation of the ABS and EBL system (ABS warning light off), however, the driver should go to the closest service centre as soon as possible.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE The ESP system provides the driver with an aid, in the event of losing vehicle stability, but it does not ensure full control in all conditions. The effectiveness of the aid provided by the ESP system depends on the conditions in which it has to operate, for example, the conditions of the road surface, tyres, braking system, suspension, etc.

**General risk, general prescriptions**

The presence of safety systems (ABS, ESP, ecc.) on board the vehicle does not relieve the driver of the responsibility of driving carefully. The driver is the only one responsible for the way the vehicle is driven.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE For all vehicles and particularly for those equipped with ESP it is not permitted to make any changes to the vehicle equipment, suspensions, wheelbase, gearbox, engine, steering system, electronic control unit parameters, sensors and their positioning, or the ESP modulator connection pipes.



General risk, general prescriptions

The use of tyres not foreseen in the vehicle's registration document is not only prohibited by law, but could also have a negative impact on the proper operation of the ESP and the ABS systems.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General prescriptions

For vehicles equipped with ESP it is recommended to use the same type of tyres on the front and rear axle: it is therefore recommended not to combine winter tyres on the rear axle and summer tyres on the front axle.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

To fit out vehicles equipped with ESP, make sure you have the specific "Directives for converting and fitting out vehicles" for vehicles with this device.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

In this manual, the manufacturer provides all the information for making the most common versions. For whatever is not clearly stated, contact the service network.

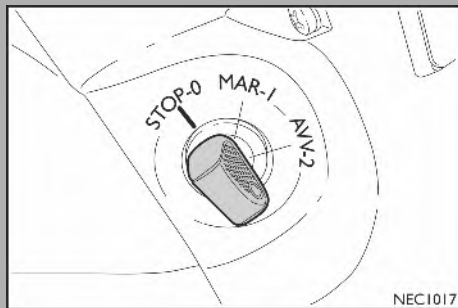
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Supplementary valve to release vehicle parking

(if provided)

On the vehicles equipped with this device, before leaving you should:

- Start the engine and keep it running until the normal air pressure in the tank is reached (min **6,5 bar** -signalled on the display).
- Disengage the parking brake.
- If the vehicle does not move, turn the selector to unlock the parking of the vehicle.
- Start the vehicle.



Stopping the engine

To stop the engine turn the key back to STOP-0.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake". Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Extract the key from the ignition block only when the vehicle is stationary. Never leave the vehicle without engaging the parking brake. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Shut-down from the engine compartment

After stopping the engine from the ground with the cab tilted, press and hold the red button indicated in the figure for another 3 seconds to make sure the engine has actually been turned off.

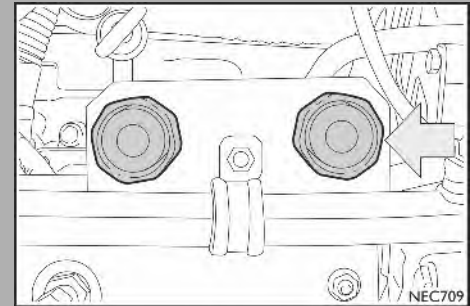


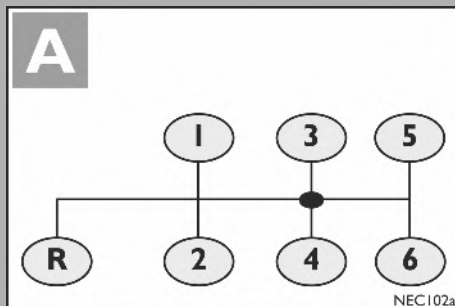
General risk, general prescriptions

In the following cases serious electronic faults may result:

- Use the battery cut-off switch to try and stop the engine (to be used in the case of an emergency).
- Connect / disconnect the ECM control unit connectors with engine running or the control unit powered.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle





Manual gearbox use

- Fully press down the clutch pedal; set the gear shift lever to 1st speed.
- Disengage the parking brake.
- Slowly release the clutch pedal and gradually accelerate.
- Engage the next gears. The engine must never exceed the rpm corresponding to maximum speeds, even downhill.



General risk, general prescriptions

Do not drive downhill in neutral or with the clutch disengaged. Danger of the propeller shaft breaking.
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

Early clutch wear:

- When starting, it is mandatory to engage the gears starting from the lowest ones (1st or 2nd).

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

A) Six-speed gearboxes

NOTE The engine will not start when a gear is engaged.

B) Nine-speed gearbox

Transfer from the slow range gears to the fast range

To carry out this manoeuvre:

- Set the gear range selector **(1)** to 'H' (fast).
- Press the clutch and shift the gear by changing from the 4th to the 5th speed.

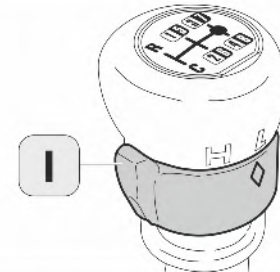
- The yellow warning light **(2)** on the dashboard turns OFF.

Transfer from the fast range gears to the slow range

To carry out this manoeuvre:

- Shift down the gears to the 5th gear.
- Set the gear range selector **(1)** 'L' (slow).
- Press the clutch down and change the gear by shifting down from the 5th to the 4th gear.

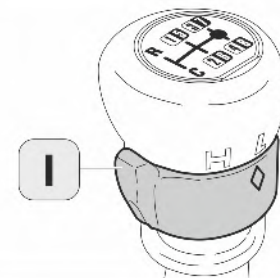
When travelling at speeds below **32 km/h**, it is still possible to change from the fast gear range to the slow range from any gear in the high range.



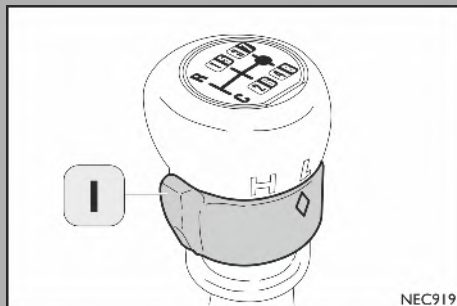
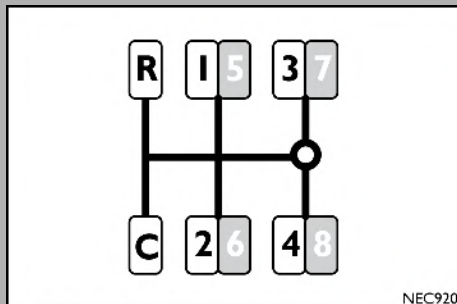
NEC919



NEC417



NEC919



If the selector is accidentally set to "L" (slow) and the speed is greater than **32 km/h**, it is only possible to move from 5th gear to 6th gear.

ATTENTION It is only possible to shift to the slow gear range from the 5th gear to avoid incorrect operations and damage to the transmission.

Engaging the "Crawler" gear and engaging reverse gear

On the nine-speed gearbox, it is only possible to engage the "Crawler" and reverse gears if the selector **(I)** is set to "L" slow range.

The reverse gear must be engaged only when the vehicle is stopped; otherwise you may damage the meshing teeth.

In order to protect the clutch, the engine and also the gearbox against overspeed, no manoeuvring mistakes must be made when changing to the next gear down.

Stopping the vehicle

- Release the accelerator pedal and gradually press the brake pedal.
- When the vehicle is about to stop, disengage the clutch and shift the gear lever to neutral.
- With the vehicle stopped, engage the parking brake. Braking is guaranteed even if one of the brake pipes is broken because the front and rear brake circuits are independent.



Risk of injury:

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Using the gearbox AS Tronic

1. General information
2. Engine start-up
3. Driving in semi-automatic mode (AUTO)
4. Driving in manual mode (SEMI)
5. Gearbox in neutral
6. Reverse gear
7. Uphill start
8. Downhill start
9. Manoeuvring in "Manoeuvre mode" (SLOW)
10. Braking
11. Stopping the vehicle
12. Driving with Cruise Control
13. Driving with PTO controlled by clutch
14. Stopping the engine
15. Protective functions
16. Signals on the display
17. Emergency gearbox function (LIMP HOME)



General risk, general prescriptions

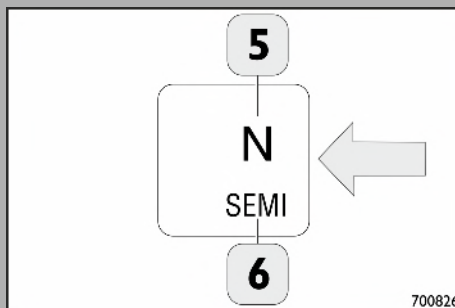
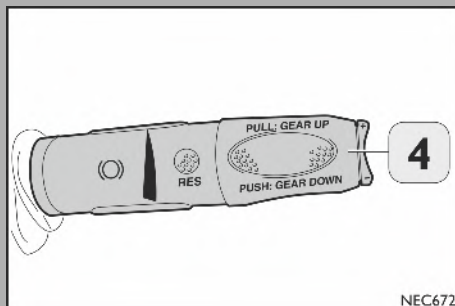
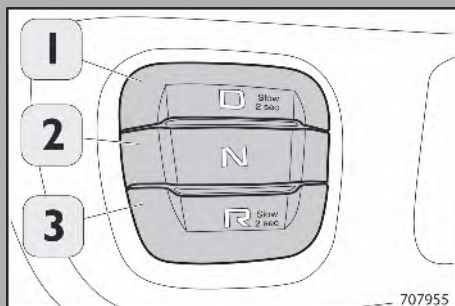
For off-road use on uneven terrain with extremely variable forward resistance, move to manual mode and do not make any gear changes.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

1. General information

The AS Tronic gearbox control system is the combination of an electro-hydraulic/electro-pneumatic gearbox with an automated clutch (no clutch pedal is fitted). The automatic clutch means that the driver does not have to operate the clutch at all.

This system allows the driver to concentrate on gear selection and prevents engagement of the incorrect gear. The display shows all system information required by the driver. The AS Tronic transmission can be controlled in automatic or semi-automatic mode.



Controls

1. Button "D".
2. Button "N".
3. Button "R".
4. Lever on steering wheel.

Accelerator pedal

When a gear is engaged, simply operate the accelerator pedal to accelerate the vehicle. The clutch is engaged by the system actuator. The clutch is controlled by the basic electronic control unit when the accelerator pedal is pressed and on other occasions.

NOTE While shifting, the engine rpm is controlled by the gearbox's electrical system and the accelerator pedal position does not have to be altered.

2. Engine start-up

- Parking brake engaged.
- Ignition key inserted.
- System self-diagnostics .
- Start the engine.
- Check complete.

The screen will display N (gear in neutral) **(5)**.

- Semi-automatic (SEMI) operating mode is activated **(6)**.

3. Driving in automatic mode (AUTO)

- Parking brake engaged.
- Start the engine.
- Gearbox in neutral.
- Briefly press the "D" button **(1)**.

The automatic transmission is activated and the calculated set-off gear is engaged. The ECU calculates the most suitable gear to start driving according to the vehicle weight and slope of the road.

The display shows the pick-up gear together with "AUTO" **(6)**.



General risk, general prescriptions

If the accelerator pedal is not pressed, the system is not powered. On a slope, the vehicle can move accidentally.

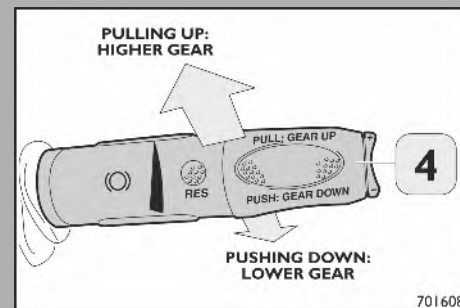
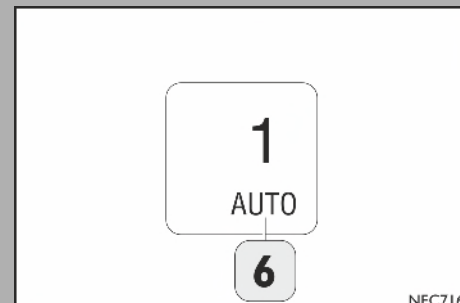
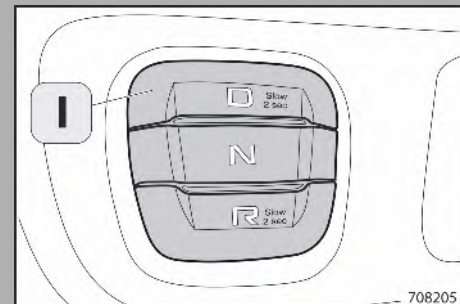
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

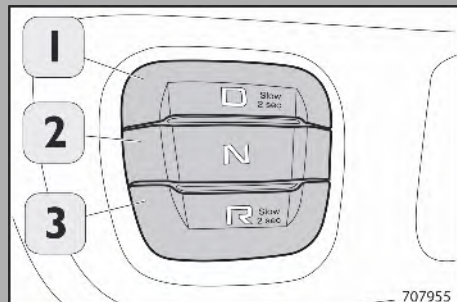
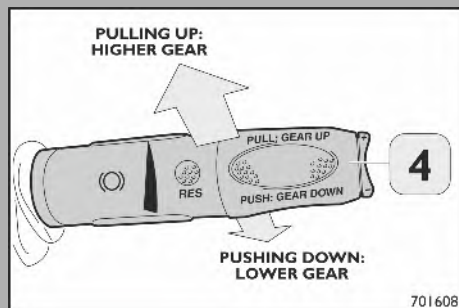
For off-road use on uneven ground, the AS Tronic gearbox must be used in manual mode.

NOTE For six-speed gearboxes, the starting gears are the 1st, 2nd (which can be set by the ECU only under particular conditions). For the 12-speed gearbox, the start-up gears that can be selected are from the 1st to the 5th.

The pick-up gear can be changed, within the range indicated above, with the following operations on the steering column switch **(4)**.

- Moving the steering column switch slightly upwards (pulling it) shifts one gear up.
- Moving the steering column switch slightly downwards (pressing it) shifts down a gear.
- Keeping the steering column switch in the desired position (pulling/pressing it) shifts two gears up or down respectively.





- Depress the accelerator pedal disengaging the parking brake. The vehicle drives off (the clutch is engaged automatically).



General risk, general prescriptions

If the accelerator pedal is not pressed down, no power is transmitted to the system.

When on a slope the vehicle may move.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Shifting with the vehicle moving

When driving the vehicle, the gear is shown on the display. All the shift processes are carried out automatically and depend on the following factors:

- Driving situation.
- Load.
- Accelerator position.
- Speed.
- Engine speed.

Manual gear shift is possible at any time using the lever on the steering wheel **(4)** without, however, having to leave automatic mode.

Kick-down control on the accelerator

The system moves to power mode by pressing the accelerator fully. Based on the available engine torque, the gearbox evaluates if it is necessary to downshift in order to accelerate the vehicle.

During operation of the kick-down control, the gearbox remains in automatic mode.

Maintaining a speed

To maintain the gear engaged during automatic operating mode, briefly press the "D" button **(1)**. The gearbox switches to manual mode (SEMI). **(1)**.

The other shift processes can be operated only using the steering wheel lever **(4)** (consult chapter "Driving in manual mode"). To return to automatic mode, briefly press the "D" button again.

Shift dynamic

On uphill gradients, the "Shift dynamic" function inside the system is activated. The shifting process is speed up to minimise the speed difference while shifting (slightly worse shifting comfort).

4. Driving in semi-automatic mode (SEMI)

- Parking brake engaged.
- Start the engine.
- Gearbox in neutral.
- Briefly press the "D" button **(1)**.

The automatic transmission is activated and the calculated set-off gear is engaged. The ECU calculates the most suitable gear to start driving according to the vehicle weight and slope of the road.

The display shows the pick-up gear together with the message "AUTO".

- Briefly pressing the "D" button again activates semi-automatic transmission.

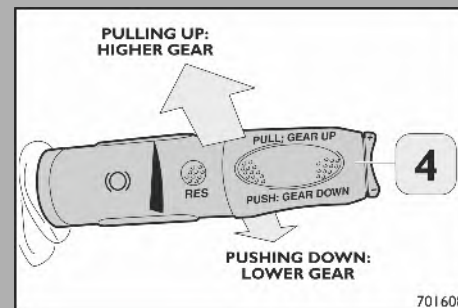
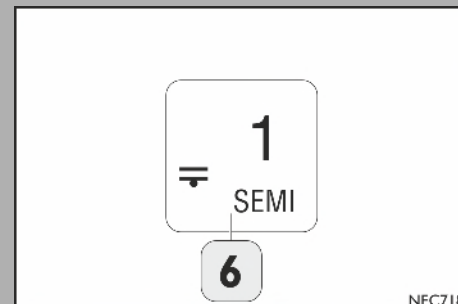
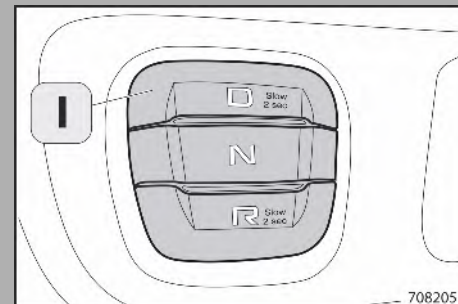
On the display, "AUTO" changes to "SEMI" **(6)**.

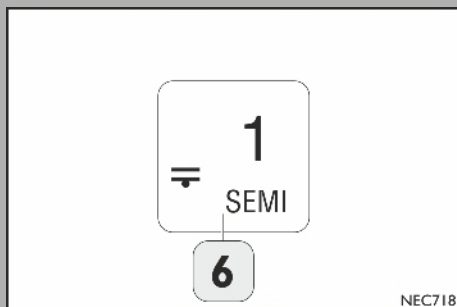
- If "D" is pressed again, the gearbox reverts to automatic mode (AUTO).

NOTE For six-speed gearboxes, the starting gears are the 1st, 2nd (which can be set by the ECU only under particular conditions). For the 12-speed gearbox, the start-up gears that can be selected are from the 1st to the 5th.

The pick-up gear can be corrected, within the range indicated above, with the following operations on the steering column switch **(4)**.

- Moving the steering column switch slightly upwards (pulling it) shifts one gear up.
- Moving the steering column switch slightly downwards (pressing it) shifts down a gear.
- Keeping the steering column switch in the desired position (pulling/pressing it) shifts two gears up or down respectively.
- Depress the accelerator pedal disengaging the parking brake. The vehicle starts (the clutch engages automatically)





General risk, general prescriptions

If the accelerator pedal is not pressed, the system is not powered. On a slope, the vehicle can move accidentally.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE The required gear is not engaged if this involves the engine overrevving (overrevving protection). One to three bars appear on the display while driving when the gear is engaged. The bars refer to the max. number of gears that may be downshifted at the time of display **(6)**.

Shift dynamic

On uphill gradients, the "Shift dynamic" function inside the system is activated. Gear engagement is faster, minimising the difference in speed while shifting (slightly worse shifting comfort).

- During the shift process, the gearbox ignores any other gear selection. This means that in order to change again, the current gear engagement must be completed. Shifting to neutral has priority over all other gearbox processes, meaning that it is possible to shift to neutral from any other gear at any moment consult chapter 5 'Gearbox in neutral'.
- The accelerator pedal position must not be altered during this process because the engine is regulated automatically.
- The function of the speed control system (Cruise Control) is not turned off when shifting gears.
- When the "D" button **(I)** is pressed briefly with the vehicle stationary and a forward gear engaged, or while driving, it is possible to switch between manual mode (SEMI) and automatic mode (AUTO).

- When the "D" button **(1)** is pressed briefly with the vehicle stationary and a forward gear engaged, or while driving, it is possible to switch between manual mode (SEMI) and automatic mode (AUTO).

5. Gearbox in neutral

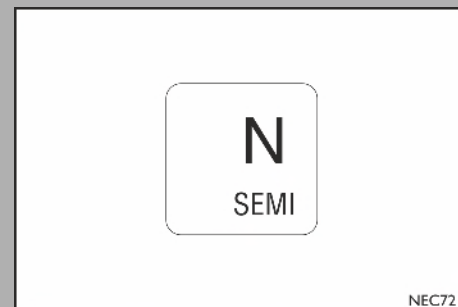
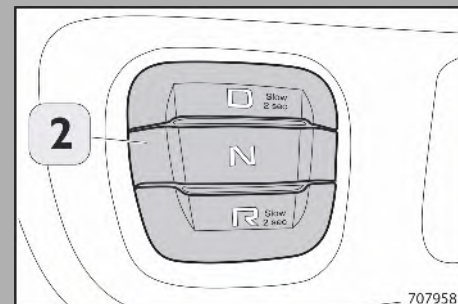
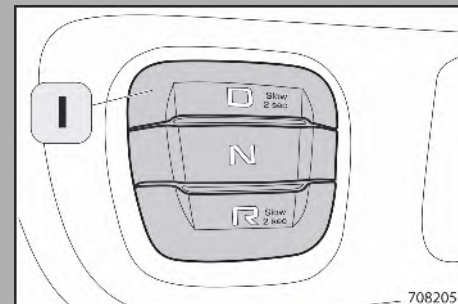
- Press the "N" button **(2)**. N appears on the display.

Gearbox in neutral "N" takes precedence over all other gearbox processes. It is possible to shift to neutral from any gear at any time.

When driving forward, it is possible to engage a gear at any time from the neutral position. For this purpose, press the "D" button **(1)** lightly.

NOTE To protect the mechanical components of clutch control, when the stop time exceeds 1-2 min. (e.g. when in a queue, at level crossing, etc...) shift to neutral "N". This disengages the clutch to reduce stress on the relevant control.

NOTE With the engine off, no gear engagement is possible.





General risk, general prescriptions

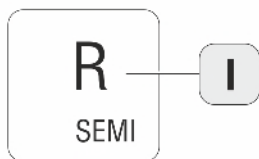
Do not shift to neutral while the vehicle is running as there would not be any engine brake effect and it would be possible to lose control of the vehicle.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

6. Reverse gear

NOTE Reverse gear can be engaged only in semi-automatic mode.

The 6-speed gearbox has only one reverse gear. The display will show "R" **(1)**.



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The 12-speed gearbox provides two reversing speeds. The following is shown on the display:

- R - slow reverse **(1)**.
- RH - fast reverse **(2)**.

Reverse gear engagement

Reverse gear can be engaged only with the vehicle stationary.

It is irrelevant if the gearbox is in neutral position or if a forward gear is engaged.

- With the vehicle stationary, briefly press button "R" **(3)**. The reverse gear is engaged (R).
- Operating the accelerator. The vehicle will start off (the clutch is engaged automatically).

NOTE For vehicles with 12-speed gearboxes: Both with the vehicle stationary and while reversing, it is possible to move between the two reverse gears R (slow) and RH (fast) by operating the steering column switch **(4)**. - Pressing the steering column switch lever upwards (pull), RH. - Pressing the steering column lever switch downwards (press), R.

NOTE Do not try to engage reverse gear with the vehicle in motion! Stop the vehicle immediately.

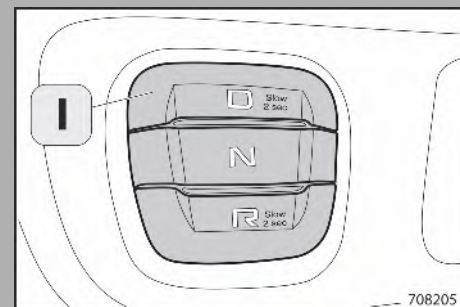
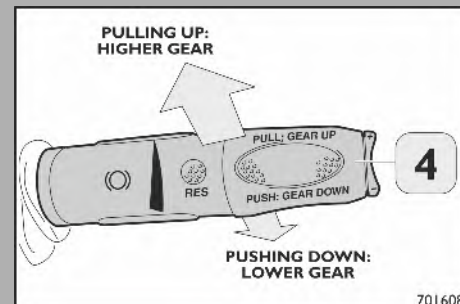
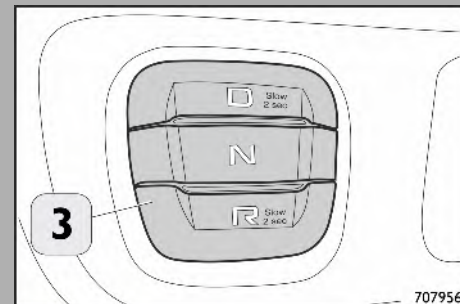
Starting in 1st

- The vehicle must be stopped.
- Briefly press the button "D" **(1)**.

The automatic transmission is activated and the calculated set-off gear is engaged.

The ECU calculates the most suitable gear to start driving according to the vehicle weight and slope of the road.

The display shows the set-off gear and "AUTO".



NOTE For six-speed gearboxes, the starting gears are the 1st or 2nd (which can be set by the control unit only under particular conditions). For the 12-speed gearbox, the start-up gears that can be selected are from the 1st to the 5th.

The pick-up gear can be corrected, within the range indicated above, with the following operations on the steering column switch **(4)**. Moving the steering column switch slightly upwards (pulling it) shifts one gear up. Moving the steering column switch **(4)** slightly downwards (pressing it) shifts down a gear.

Keeping the steering column switch in the desired position (pulling/pressing it) shifts two gears up or down respectively. Depress the accelerator pedal disengaging the parking brake. The vehicle drives off (the clutch is engaged automatically).



General risk, general prescriptions

If the accelerator pedal is not pressed down, no power is transmitted to the system. When on a slope the vehicle may move.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

7. Uphill start

- Parking brake engaged.
- Select the required start-up gear.
- Press the accelerator pedal down fully and release the parking brake.



General risk, general prescriptions

By applying too little pressure on the accelerator pedal there is the risk of the vehicle moving backwards after releasing the parking brake.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE The start-up gear must suit the load conditions of the vehicle and the amount of slope to prevent overloading the clutch.



General risk, general prescriptions

- If the accelerator pedal is not pressed for such an operation, the vehicle will start moving back. In this case the clutch will disengage and engage at short intervals (jerking). The same also applies for forward movement with the reverse gear engaged on a downhill slope.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

8. Downhill start

NOTE It is possible to start the vehicle downhill as if on flat ground.

- Parking brake engaged.
- Select the required start-up gear.
- Release the parking brake.

The vehicle moves and if the gear is engaged, the clutch is automatically engaged without pressing down on the accelerator pedal. The system is powered.

NOTE If the vehicle in neutral moves downhill after releasing the brake, simply press the "D" (I) button to engage an appropriate gear for the speed and engage the clutch.



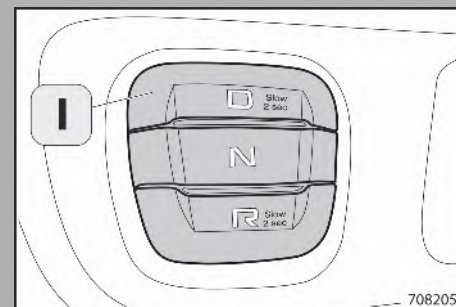
General risk, general prescriptions

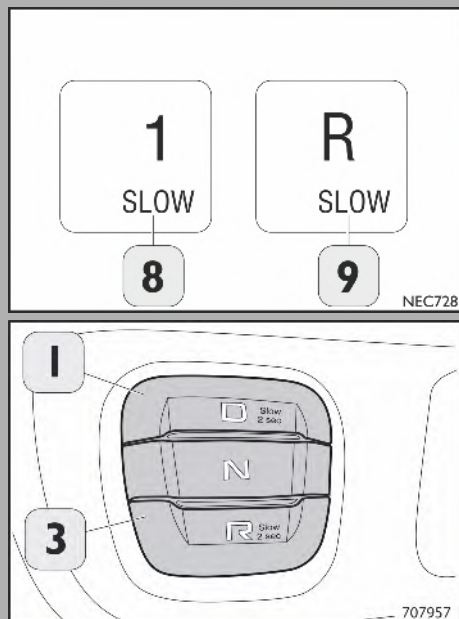
- When the vehicle moves without a gear engaged, the engine does not apply any braking force.
- Prevent the vehicle from moving in the opposite driving direction (e.g. forward with reverse gear engaged).

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

9. Manoeuvring in "Manoeuvre mode" (SLOW)

When manoeuvring under difficult driving conditions (e.g. gradients), the driver has another manoeuvre mode available. The driver can use this mode to accurately regulate the clutch depending on the accelerator travel (up to **100%**).





In this situation, engine speed will be limited and quick vehicle acceleration will be prevented. The switch positions are as follows:

Activation:

- The vehicle must be stationary

Forward manoeuvre

- Press and hold (>2 sec.) the "D" button **(1)**. The forward manoeuvre mode is activated. The display will show "I SLOW" **(8)**.

Reverse manoeuvre

- Press and hold (>2 sec.) the "R" button **(3)**. The reverse manoeuvre mode is activated. The display will show "R SLOW" **(9)**.
- By operating the accelerator it is possible to engage the clutch, in this way allowing the vehicle to continue driving.

Deactivation:

With the stationary vehicle:

- Briefly press the button "D" **(1)**. Automatic transmission is activated and the calculated set-off gear is engaged

or

- briefly press the "R" button **(3)**. The reverse gear is engaged. Or: briefly pulling on the steering column lever upwards or pushing it downwards (as for a gear change).

During the forward manoeuvre

- Briefly press the "D" button **(1)** to engage automatic transmission

or

- operate the kick-down.

During the reverse manoeuvre:

- briefly press the "R" button **(3)**.

or

- operate the kick-down, or pulling on the steering column lever upwards or pushing it downwards (as for a gear change).

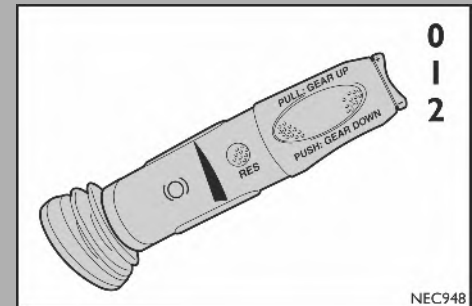
NOTE Deactivating the manoeuvre mode while moving, while the accelerator pedal is pressed, the vehicle can accelerate suddenly, as engine speed is no longer limited.

10. Braking

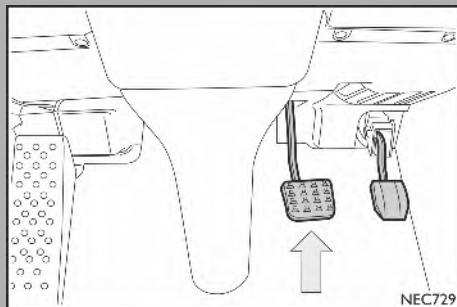
When in automatic mode the driver can shift down through the gears using the right steering wheel level and by pressing brake pedal (service brake). By increasing engine rpm, engine braking force is also increased.

Lever positions

0. Rest. the engine braking has not been activated.
 1. Activation of the engine brake in combination with the service brake.
 2. Activation of the engine brake upon releasing the accelerator.
- Moving the right steering lever to position 1, the engine brake is combined with the service brake pedal. Activating the brake pedal activates the engine brake and the gearbox anticipates the downshifting, maximising the braking effect.
 - Moving the right steering lever to position 2, the engine brake is combined with the accelerator ("last wins" logic). The engine brake activates when releasing the accelerator and the gearbox automatically downshifts to maintain braking effect.
 - Moving the right steering lever to position 2 while also activating the service brake, the gearbox anticipates the downshifting to maximise the braking effect.



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NOTE If engine rpm decreases while braking, continue downshifting to reach the suitable rpm. After braking with use of the engine brake, simply press down on the accelerator to change the gear and accelerate the vehicle (also with engine brake lever in position 1 or 2).

11. Stopping the vehicle

Slow down and bring the vehicle to a stop using the brake. The clutch is automatically disengaged before the vehicle stops, to prevent engine stalling.

When leaving the vehicle unattended with engine on, it is mandatory to engage both neutral and handbrake.

NOTE If you leave the vehicle (opening the doors) with a gear engaged, it will beep.

Exhaust brake operation while driving on a slippery surface may cause the engine stop. In these conditions, power steering is not available.

NOTE If the vehicle is stopped with the engine running and a gear engaged, simply depress the accelerator pedal to start up again.

NOTE After stopping the system, engage the calculated start-up gear. If the gear is not suitable for start-up, the correct gear has to be engaged manually. For long vehicle stops, it is recommended to shift to neutral and engage the parking brake.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

12. Driving with Cruise Control

- To maintain the set speed (Vset) downhill, the engine control unit automatically engages the engine brake and the retarder.
- If there is an increase in speed nonetheless, the gearbox can engage a lower gear (only in automatic model!).

NOTE If the braking action is not enough on steep descents, brake using the service brake.

13. Driving with PTO controlled by clutch

NOTE PTO engagement is only possible in neutral, as described on the page **100**). Once the PTO is engaged, gearbox use (possibility of engaging gears) depends on how the Expansion Module ECU is configured (see bodybuilder's manual). The possible configurations are: "stationary PTO " or "non-stationary PTO".

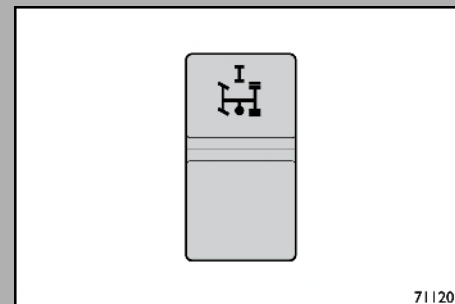
When the "stationary PTO" is configured

The gearbox does not engage any gear and remains in neutral as long as the PTO is engaged.

When the "non-stationary PTO" is configured

The gear allows engaging the first gear and reverse, both also in "Manoeuvring mode" (SLOW). To request these gears and modes, see the previous sections. When the PTO is engaged, the gearbox does not allow switching to automatic mode, therefore it is always in semi-automatic mode (SEMI).

In particular, when the PTO and first gear are engaged, the gearbox does not allow any further gear shifting (therefore the vehicle can be moved only in first gear).



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14. Stopping the engine



General risk, general prescriptions

The engine can not be stopped with a gear engaged as the system automatically switches to neutral. If parking brake is not engaged, the vehicle could move! Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

- Stop the vehicle.
- Engage the parking brake.
- Set the gearbox to neutral (N).
- Switch off the engine using the ignition key (STOP-0 position).



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake". Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

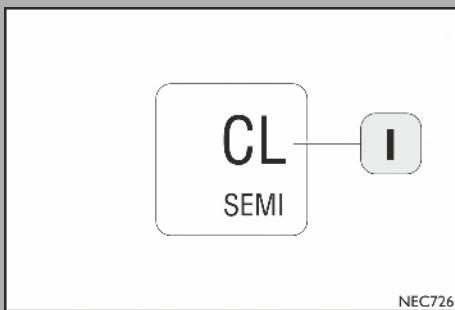
NOTE If the neutral position is not engaged before turning off the engine, this is automatically carried out as soon as the ignition is deactivated.

15. Protective functions

Clutch protection

If the stress applied to the clutch is excessive (frequent starts in succession or slow speed in a gear which is too high), the display will show "CL" (I).

NOTE In this case the driver must select service conditions that do not place excessive stress on the clutch (e.g. vehicle acceleration until the clutch is fully engaged; stopping or quick start-up in a lower gear).



NOTE If the driver ignores the signal and the clutch is required again, it engages automatically when the accelerator pedal is pressed. Under some circumstances this may cause the engine to stall and it is therefore possible for the vehicle to start moving backwards if on an uphill gradient.

Engine overspeed protection

To protect the engine and gearbox, the electronic system will only permit shifting within the ranges pre-set by the vehicle manufacturer.



General risk, general prescriptions

The engine may overspeed causing damage if the vehicle continues to accelerate while travelling downhill. The driver must be careful never to exceed engine max. rated speed.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

16. Signals on the display

The engaged gear **(1)** is shown on the display.

The display also gives information on the mode selected.

- Semi-automatic "SEMI" **(2)**.
- Automatic "AUTO" **(3)**.



Risk of damage

Do not try to start the engine by towing the vehicle.

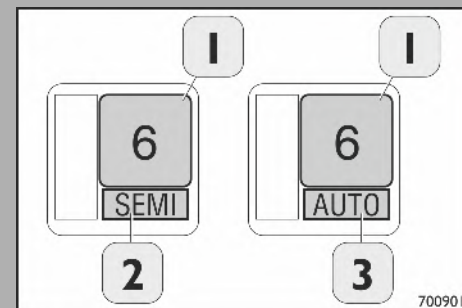
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

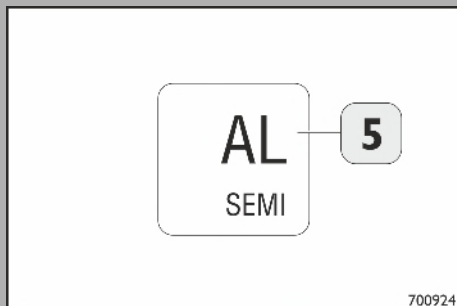
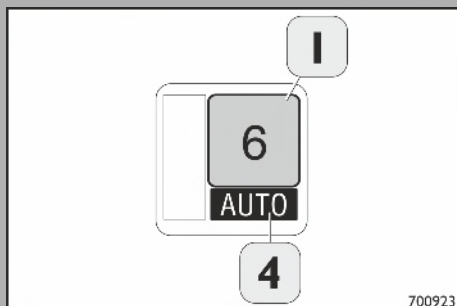


General risk, general prescriptions

Severe damage may be caused to the gearbox if the drive wheels are not raised from the road and the transmission is not disconnected (removing the propeller shaft) before towing.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle and can sometimes result in the guarantee being voided





- Automatic preselected but "AUTO" not activated, reverse image **(4)**.

Other remarks:

- "AL" = air leak **(5)**. Low pressure in gearbox air system. Flashing signal.

NOTE If "AL" flashes while driving, stop the vehicle immediately and have the system checked.

Attention:

- If a gear is engaged when driving that has an insufficient supply pressure, the gearbox can remain in neutral until there are some force flows and until the exhaust brake is available. In addition it is possible that the engine stalls when the vehicle is stationary.
- If the engine cannot be started because a gear is engaged and neutral cannot be engaged because the air pressure is too low (the display shows AL), the system must be refilled from the outside regardless of other users (brakes, secondary users, etc.). The compressed air is supplied from an external source by means of the filling valve.

- "AP" = accelerator pedal **(6)**.

If this signal is displayed, release the accelerator pedal. If the message does not disappear, contact a Service Network workshop.
It is impossible to drive any further!

- "CL" = excessive stress on clutch **(7)**.

This is displayed alternately with the gear engaged signal. Select a lower gear.

- "CW" = clutch wear **(8)**.

If on at engine start, this means that clutch is worn out. Contact a Service Network workshop to have the clutch replaced.

- "CH" = system auto-diagnostics **(5)** (displayed when ignition is switched on).

17. Emergency gearbox function (LIMP HOME)

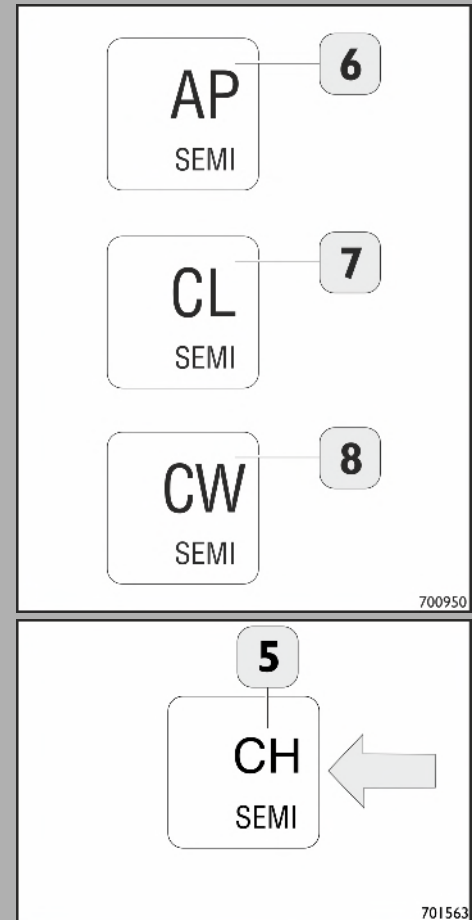
The Limp Home is only available for the 12-speed gearbox and can only be activated if the following faults occur: 76, BE, BF.

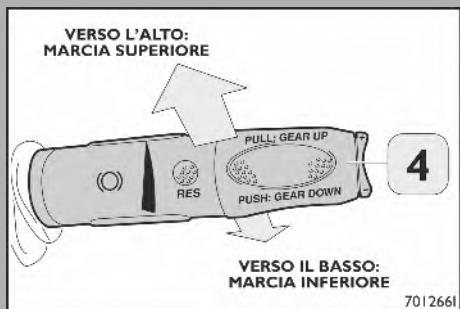
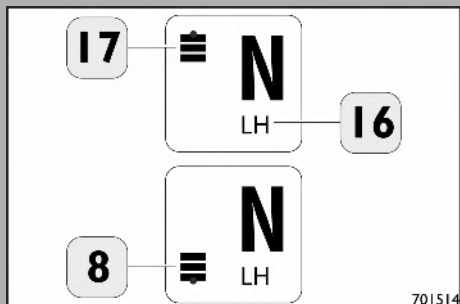
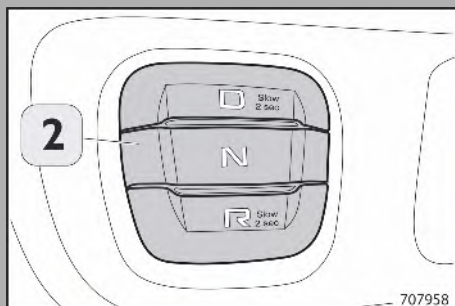
1. Safety warnings

- It is an emergency function to use when the system's normal automatic monitoring service is out of order. Therefore proceed with caution!
- Pay particular attention to the total pressure.
- observe the reactions of the vehicle, in extreme cases the indication is not the gear actually engaged, i.e. a forward gear may be displayed whereas the transmission is in reverse gear!

2. Usage

- The indication (display) flashes: "LH" = activate emergency gearbox mode!





3. Activation by the driver

- Key off (until message displayed disappears)
- Turn the ignition on and within **5 s** press the 'N' button **(2)** for at least **5 s**.

4. "LH" **(16)** comes on permanently

- Emergency gearbox mode activated - Gearbox at minimum - Clutch disengaged

5. Indication function (clutch status)

- Bars with arrow at the top **(17)** (flashing) = clutch disengaged.
- Bars with arrow at the bottom **(8)** (permanently lit) = clutch engaged or disengaged.

6. Use

- After activating the emergency gearbox mode (see point 3) start the engine.
- After having started the engine press and release the brake pedal. Engage the required pick-up gear: Forwards:
 - pressing the steering column switch **(4)** at the top (pull) the gearbox engages the next highest gear. pressing the steering column switch **(4)** downwards (press), the gearbox engages the next lowest gear.

Reverse gear:

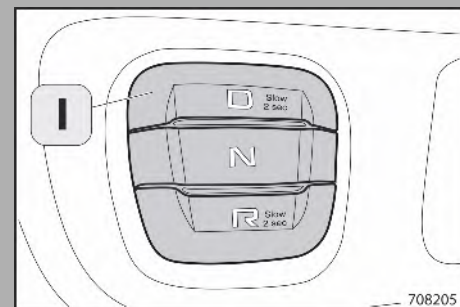
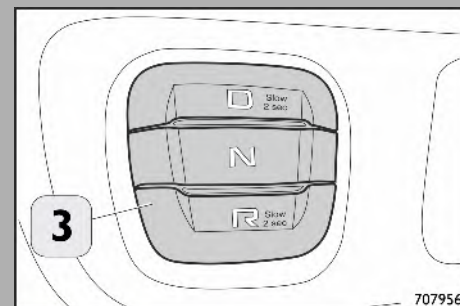
- press the 'R' button **(3)** (the slow reverse gear 'RL' is engaged).

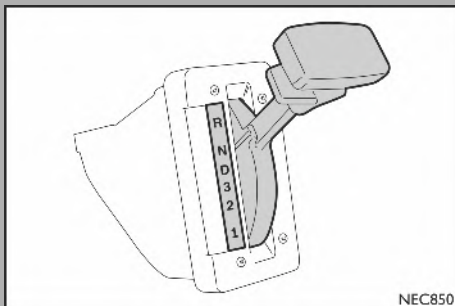
- briefly pressing the steering column lever **(4)** up (pull) the gearbox switches to fast reverse gear 'RH'.

- Engage the clutch. Press the button 'D' Engage the clutch. Press the button **(1)** until the bars with the arrow at the bottom are displayed.

Attention:

- Clutch engagement may be delayed or even sudden! If the vehicle is going downhill with a gear engaged, the clutch engages automatically.
- Release the clutch: Briefly press the button "D" **(1)** or, alternatively, press the brake pedal.
- if, with the brake pedal pressed, the clutch is engaged using the "D" button **(1)** (e.g. pick-up in the mountains), to be able to disengage the clutch again using the brake pedal, take your foot off the brake pedal just before!
- The gear can be changed only with the vehicle stationary.
- Disabling the emergency gearbox: switch off the ignition and wait until the indication disappears. On restarting, the system will be in normal mode.





Use of the Allison S2500 automatic gearbox

1. General information
2. Starting the engine
3. Selecting a ratio
4. Starting off and driving
5. Accelerator check
6. Reverse gear
7. Uphill start
8. Downhill start
9. Driving with the exhaust brake
10. Driving with Cruise Control
11. Stopping the engine

1. General information

On vehicles with an automatic transmission, it is not necessary to select the exact moment to shift up or down according to changes in traffic or road conditions: the automatic transmission takes care of this.

It is nevertheless essential to be aware of the gear selector position and of the available ratios and when to select them.

NOTE During engagement, engine rpm is controlled by the gearbox electrical system, and the position of the accelerator pedal does not have to be modified.

Gear selector

The selector is electromechanical and the positions are as follows:

1. R (reverse).
2. N (neutral).
3. D (drive).
4. 3, 2 and 1 (low forward gears).

Positions (R, N, D, 3, 2, 1) are chosen by pulling the up the ring located under the lever grip and selecting the required gear.

During normal operation, if D is selected (drive), the digital display indicates the highest reachable speed for the speed range adopted. Conditions that cause the warning lights to come on can disable the gear selector.

2. Engine start-up

- Parking brake engaged.
- Neutral gear selector (N).
- Ignition key in the MAR-I position.
- Start the engine.

The screen will display N (gear in neutral) **(5)**.

3. Selecting a ratio

R The display on the cluster shows "R" when R (reverse) is selected.

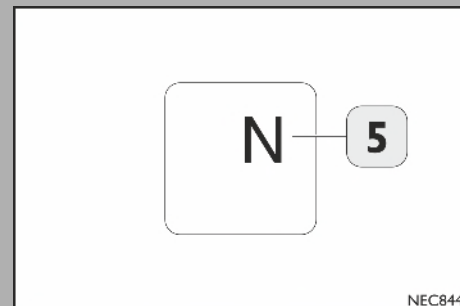
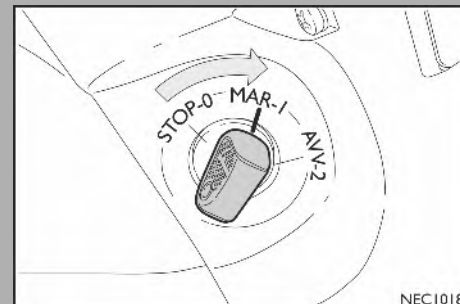
N When starting the engine use N (neutral) to:

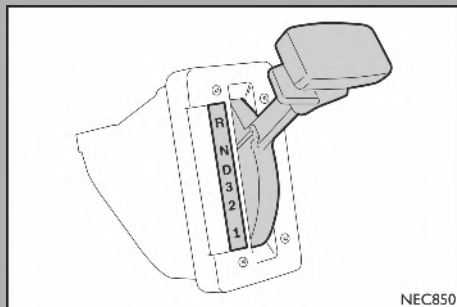
- Switch the engine on and off.
- Check vehicle functions.
- Prolonged periods of engine idling (over 5 minutes).
- Operation of the possible power take-off from a standstill.

The vehicle will move only after selecting N (neutral). If the vehicle engages a speed other than N (neutral), contact the service network immediately. The display will show "N" (neutral) when the gear is selected.

D When D (drive) is selected, the gearbox engages the first gear only if the service brake is pressed at the same time (unless the control unit is programmed otherwise).

As the vehicle's speed increases, the gearbox will automatically pass to a higher gear through each ratio. As the vehicle speed decreases, the gearbox will shift automatically to a lower gear. The digital display will show the highest available ratio in D (drive).





Risk of injury:

During normal driving the gearbox prevents automatic shifting to gears higher than the selected gear.

When driving downhill, if the engine speed exceeds that permitted for the gear in use, the gearbox will shift to the next highest gear to prevent damaging the engine. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Only engage the gear when the engine is running at the normal idle speed and the driver's foot is firmly in contact with the brake pedal. Moving the gearbox lever from P (Parking) or N (Neutral) with the engine speed above idle can cause the vehicle to accelerate dangerously and cause the driver to lose control of the vehicle.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

3, 2, 1 Lower ratios provide better engine braking downhill (the lower the ratio, the greater the braking effect).

Sometimes it may be advisable to limit the automatic transmission to lower ratios as a result of:

- Road conditions.
- Load.
- Traffic conditions.
- etc.

The first ratio supplies the engine with maximum torque and maximum engine braking effect. Use the first ratio in the following cases:

- In mud or deep snow.
- Manoeuvring in tight spaces.
- Driving on steep hills or descents.

Ratio pre-selection

Pre-selection during normal operation may lead to reduced fuel saving.

Ratio pre-selection means selecting a lower ratio corresponding to the driving conditions encountered or likely to arise. Using the gear pre-selection can provide better control on slippery or icy roads or descents.

Shifting to a lower ratio increases the engine's braking capacity. Selecting a lower ratio often avoids shifting from that ratio up to the next one when there is a mixed stretch uphill and downhill.

4. Starting off and driving

- Start the engine.
- Lever in position N (neutral).
- Brake pedal pressed.
- Shift the lever to position D (drive).

The calculated starting gear is engaged and the highest ratio available in "D" appears on the display.

- Release the brake pedal.
- Start by pressing the accelerator pedal.

NOTE If the brake pedal is not pressed while shifting the lever to position D (drive), no gear is engaged. The 'Gear engagement limitation' warning light will light up on the display.

If you leave the vehicle with the engine running, it may move unexpectedly and cause damage to people and property. If you need to leave the engine running, do not leave the vehicle before completing the following procedure entirely:

- Put the gearbox into N (neutral).
- Check that the engine is at idle speed.
- Engage the parking brake and the emergency brake (if present) and check that they are indeed engaged.
- Block the wheels with chocks and take any other necessary steps to prevent the vehicle from moving.

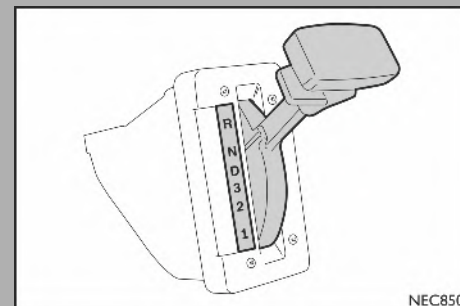
NOTE R (reverse) cannot be engaged due to an active inhibitor. Always apply the service brakes if R (reverse) is selected to prevent unexpected vehicle movements, since the service brakes may be inhibited.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Driving tips:

- Do not leave the engine idling in R (reverse) for longer than 5 minutes. Prolonged idling in R (reverse) may cause the gearbox to overheat and cause damage.
- Always select N (neutral) when the engine runs at idle speed for longer than five minutes.
- Visually check the display when moving the lever, to see that the selected ratio is displayed (for instance if position N is selected (neutral), "N" must appear on the display).
- When starting the engine, check that the brake pedal works correctly. Failure to apply the brakes could cause the vehicle to move unexpectedly. To avoid unforeseen vehicle movements, operate the brake pedal or engage the parking brake whenever N (neutral) is selected.
- If you allow the vehicle to decelerate by inertia when in N (neutral), no exhaust brake effect is present and it is possible to lose control of the vehicle.. Driving by inertia may cause severe damage to the gearbox. To avoid damage, do not therefore leave the vehicle to run by inertia in N (neutral).
- D (drive) might not be engaged because of active inhibition. Always operate the brake pedal beforehand when D is selected (drive) to avoid an unexpected movement of the vehicle, and because there may be assistance inhibition.
- Do not leave to idle in D (drive) for longer than 5 minutes. Prolonged idling in D (drive) may cause the gearbox to overheat and cause damage. Always select N (neutral) when the engine runs at idle speed for longer than five minutes.
- Shifting from N (neutral) to D (drive) or R (reverse) may be carried out only with the engine idling and the brake pedal pressed.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake". Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

5. Accelerator check

The position of the accelerator pedal affects the operation of the automatic transmission. The accelerator electronic butterfly valve position signal will tell the control unit when the driver has depressed the pedal.

When the pedal is fully depressed, the gearbox shifts to higher gears automatically at higher engine speeds. When the pedal is only partly depressed, the gearbox shifts to high gears at lower engine speeds.



Risk of injury:

To prevent injury or damage due to sudden vehicle movement, avoid shifting from N (neutral) to the D (drive) or R (reverse) position while pressing down on the accelerator pedal.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of injury:

If shifting takes place with the accelerator pedal pressed, the gear will be engaged only if

the engine speed is near idling speed. This may cause the vehicle to move unexpectedly.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



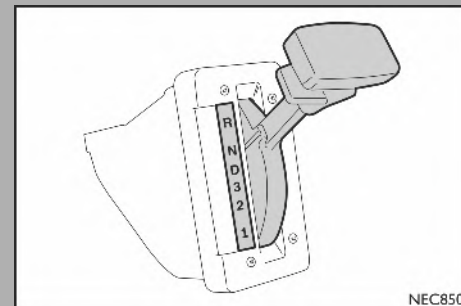
Risk of injury:

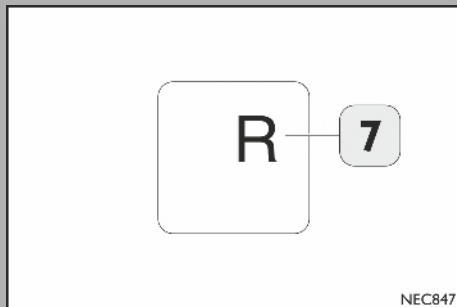
When the engine speed is higher than idling speed, the gearbox will remain in N (neutral). To prevent this from occurring, shift from N (neutral) to D (drive) or R (reverse) only when the accelerator pedal is not pressed and the engine is idling.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

6. Reverse gear

- Brake pedal pressed.
- Lever in position R (reverse).





Reverse gear is engaged and "R" **(7)** appears on the display.

- Release the brake pedal.
- Start by pressing the accelerator pedal.

NOTE If the brake pedal is not pressed while shifting the lever to position R (reverse), no gear is engaged. The 'Gear engagement limitation' warning light will light up on the display.

7. Uphill start

- Parking brake engaged.
- Brake pedal pressed.
- Shift the gearbox lever to position D (drive).
- Release the brake pedal.
- Press the accelerator pedal down fully and release the parking brake.



General risk, general prescriptions

By applying too little pressure on the accelerator pedal there is the risk of the vehicle moving backwards after releasing the parking brake.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE If the brake pedal is not pressed while shifting the lever to position D (drive), no gear is engaged. The 'Gear engagement limitation' warning light will light up on the display.

8. Downhill start

NOTE It is possible to start the vehicle downhill as if on flat ground.

- Start the engine.
- Lever in position N (neutral).
- Brake pedal pressed.
- Shift the lever to position D (drive).

The calculated starting gear is engaged and the highest ratio available in D appears on the display.

- Release the brake pedal.
- Start by pressing the accelerator pedal.

NOTE If the brake pedal is not pressed while shifting the lever to position D (drive), no gear is engaged. The 'Gear engagement limitation' warning light will light up on the display.



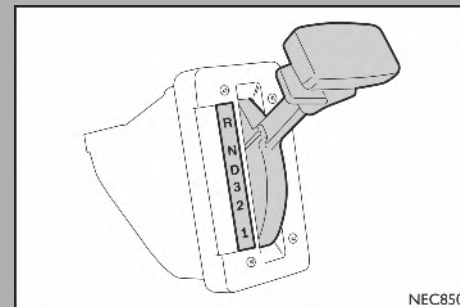
General risk, general prescriptions

- When the vehicle moves without a gear engaged, the engine does not apply any braking force.
- Prevent the vehicle from moving in the opposite driving direction (e.g. forward with reverse gear engaged).

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

9. Driving with the exhaust brake

The exhaust brake offers outstanding speed control on descents. If the vehicle is heavily laden or the gradient is steep, a lower ratio may be preselected before reaching the steep section. To use the engine as a braking force, always select the lower ratio. As vehicle speed increases, use the brakes to brake the vehicle. On reaching a lower speed, the control unit automatically downshifts (down to the second gear). With the exhaust brake engaged, "2" will appear on the display.



NOTE To avoid losing control of the vehicle, use the brakes together with the suitable ratio for the slope. Downshifting makes it possible to use the braking capacity of the engine and facilitates vehicle control.



Risk of injury:

During normal driving the gearbox prevents automatic shifting to gears higher than the selected gear.

When driving downhill, if the engine speed exceeds that permitted for the gear in use,

the gearbox will shift to the next highest gear to prevent damaging the engine.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE This function which prevents the automatic shifting to higher gears with the selected ratio, also reduces the braking power of the engine and therefore can cause the driver to lose control of the vehicle. It is therefore essential to use the brakes to prevent this condition from occurring.

10. Driving with Cruise Control

Note that when the cruise control is activated, the gear may change continuously if the set cruising speed is too close to a programmed gear shift point.

This eventuality can be eliminated by means of the following solution:

- Set a lower gear by shifting the gear selection lever.

To maintain the set speed downhill, the engine control unit automatically engages the exhaust brake. If in spite of this the speed should increase further, the gearbox can shift down to a lower ratio.

11. Stopping the engine

- Slow down the vehicle until it stops.
- Engage the parking brake.
- Press the brake pedal.
- Shift the lever to position N (neutral).
- Switch OFF the engine by turning the ignition key to the STOP-0 position.

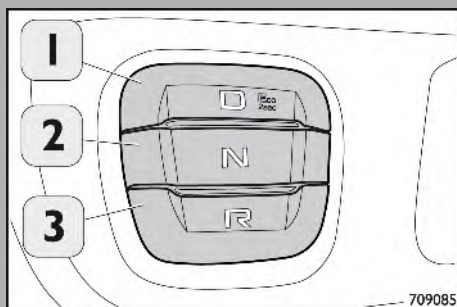
NOTE If the engine is switched off without having shifted the lever to position N (neutral), the transmission automatically engages neutral when the key is turned to the STOP-0 position.

NOTE If the vehicle is stopped with the engine running and a gear engaged, simply depress the accelerator pedal to start up again.

NOTE When leaving the vehicle unattended with engine on, it is mandatory to engage both neutral and handbrake.

NOTE If you leave the vehicle (opening the doors) with a gear engaged, it will beep.





Use of the Allison S3000 automatic gearbox

1. General information
2. Engine start-up
3. Selecting a gear
4. Starting off and driving
5. Uphill start
6. Downhill start
7. Shifting to neutral
8. Braking
9. Stopping the vehicle
10. Driving modes
11. Driving with Cruise Control
12. Stopping the engine.

1. General information

On vehicles with an automatic transmission, it is not necessary to shift up or down according to changes in traffic or road conditions.

The automatic transmission takes care of this and shifts automatically. This system prevents engagement of the incorrect gear. It is nevertheless essential to be aware of the available gear range.

No clutch pedal is present. The display shows all system information required by the driver.

NOTE During shifting, the engine speed is controlled by the electrical system of the gearbox. Therefore, the accelerator pedal position does not have to be altered.

Controls

- 'D' button (drive) **(1)**.
- Button 'N' (neutral) **(2)**.
- Button 'R' (reverse gear) **(3)**.
- Lever on steering wheel **(4)**.

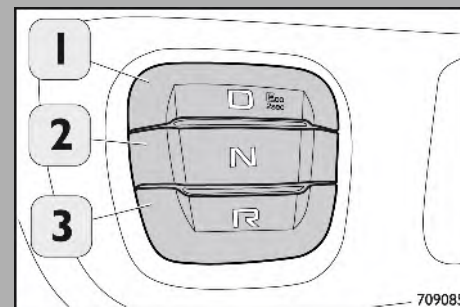
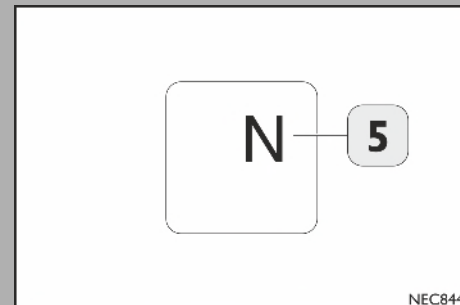
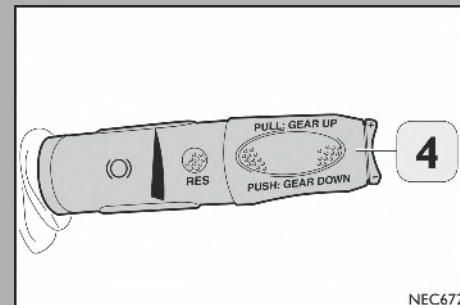
2. Engine start-up

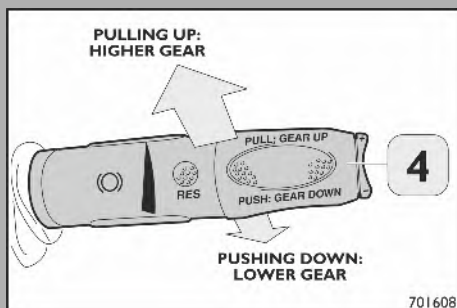
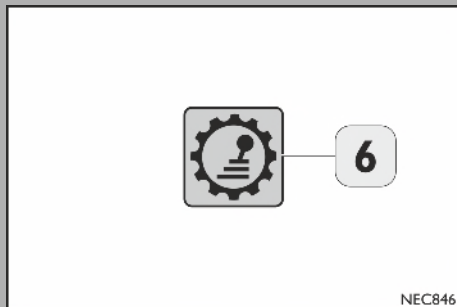
- Parking brake engaged.
- Ignition on.
- Start the engine. The display shows 'N' (neutral) **(5)**.

3. Selecting a gear

Select a forward gear.

- Depress the service brake pedal and at the same time briefly press button 'D' **(1)**. The first forward gear is engaged. The display shows the highest available forward gear (not the currently engaged gear).
- If the service brake pedal is not depressed while button 'D' **(1)** is being pressed, the requested gear will not be engaged. The displays shows the 'shift inhibit symbol' **(6)**.





In this case: press button 'N' **(2)** and briefly press button 'D' **(1)** again, while depressing the service brake pedal.



General risk, general prescriptions

After start up, check that the service brake pedal works properly. Failure to apply the brakes could lead to the vehicle moving unexpectedly.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of damage

With a gear engaged a certain torque is transmitted to the drive wheels.

Therefore, without engaging the service brake or the parking brake, the vehicle could move.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

The highest available forward gear can be corrected by pushing / pulling the steering wheel lever **(4)**:

When the lever is moved slightly downward:

- The highest available gear is downshifted by 1.

When the lever is moved downward for more than 1 second:

- The highest available gear is reduced by 2 ratios.

Pull the lever slightly up:

- The highest available gear is increased by 1.

When the lever is moved upward for more than 1 second:

- The highest available gear is increased by 2 ratios.

NOTE The highest available gear can be corrected when stationary or while driving. The first gear supplies the maximum engine braking effect. Decrease the highest available ratio to the first gear in case of: - Driving in mud or deep snow. - Manoeuvring in tight spaces. - Driving on steep hills or descents.

Select low gear ranges on long descents to reduce brake wear.

Selecting a reverse gear

- Press the service brake pedal and, at the same time, press the "R" **(3)** button.
- the reverse gear is engaged. The display shows 'R' **(7)**.
- If the service brake pedal is not depressed while button 'R' **(3)** is being pressed, the requested gear will not be engaged. The displays shows the 'shift inhibit symbol' **(6)**.

Press button 'N' **(2)** and briefly press button 'R' **(3)** again, while depressing the service brake pedal.

Shifting from forward to reverse or from reverse to forward gear

It is recommended, especially in conditions with cold gearbox oil, to first pass from the neutral position (pressing 'N') every time you want to change from a forward gear ratio to a reverse gear, or vice versa.



Risk of damage

With a gear engaged a certain torque is transmitted to the drive wheels. Therefore, without engaging the service brake or the parking brake, the vehicle could move.

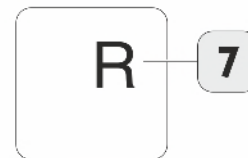
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



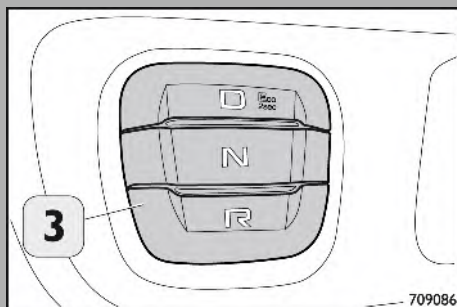
Risk of injury:

To prevent injury or damage due to sudden vehicle movement, avoid shifting from N (neutral) to the D (drive) or R (reverse) position while pressing down on the accelerator pedal.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



NEC847



Risk of injury:

If shifting takes place with the accelerator pedal pressed, the gear will be engaged only if

the engine speed is near idling speed. This may cause the vehicle to move unexpectedly.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of injury:

When the engine speed is higher than idling speed, the gearbox will remain in N (neutral). To prevent this from occurring,

shift from N (neutral) to D (drive) or R (reverse) only when the accelerator pedal is not pressed and the engine is idling.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of injury:

During normal driving the gearbox prevents automatic shifting to gears higher than the selected gear.

When driving downhill, if the engine speed exceeds that permitted for the gear in use,

the gearbox will shift to the next highest gear to prevent damaging the engine.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of injury:

However, this reduces the braking power of the engine and may cause a loss of vehicle control.

Therefore, in order to prevent this situation from occurring, it is essential that the driver uses the exhaust brake and the retarder or the retarder (if present) or the service brake.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

4. Starting off and driving

After the engine is started and the gear is selected and engaged:

- Disengage the parking brake.
- Release the brake pedal.

- Press the accelerator pedal to start moving the vehicle.

When a certain engine speed has been reached, the gearbox shifts automatically to the next highest gear (up to the highest available gear). If the engine speed decreases, the gearbox will shift automatically to a lower gear. The display shows the highest available gear and not the currently engaged gear.



General risk, general prescriptions

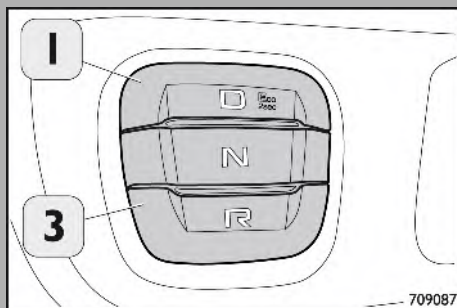
If the accelerator pedal is not pressed, the system is not powered. On a slope, the vehicle can move accidentally.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

All shifting operations are carried out automatically and depend on the following factors:

- Driving situation.
- Load.
- Accelerator pedal position including kick down activation.
- Engine speed.
- Vehicle speed.

NOTE During shifting, the engine speed is controlled by the electrical system of the gearbox. Therefore, the accelerator pedal position does not have to be altered. Kick down If the accelerator pedal is fully depressed (Kick down activated): - at low engine speed the gearbox automatically shifts to a lower gear in order to obtain more engine power; - the shifting points for up and down shiftings are set higher.



Risk of damage

If the wheels are stuck and do not turn when attempting start-up: do not use maximum power for more than 10 seconds in D (drive) or R (reverse). Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



Risk of damage

Exceeding 10 seconds under these conditions can cause the gearbox to overheat. If the gearbox overheats, shift to N (neutral) and adjust the engine speed to 1200 – 1500 RPM until it cools down (approx. 2-3 minutes). Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

5. Uphill start

After the engine is started and the gear is selected and engaged (Attention: apply the parking brake!):

- Release the brake pedal.
- Press the accelerator pedal fully and release the parking brake to start moving the vehicle.



General risk, general prescriptions

Insufficient pressure on the accelerator pedal may result in the vehicle moving backwards when the parking brake is disengaged.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of damage

If the wheels are stuck and do not turn when attempting start-up:

do not use maximum power for more than 10 seconds in D (drive) or R (reverse).

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



Risk of damage

Exceeding 10 seconds under these conditions can cause the gearbox to overheat. If the gearbox overheats, shift to N (neutral) and adjust the engine speed to 1200 – 1500 RPM

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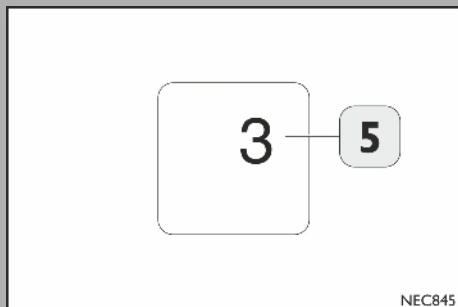
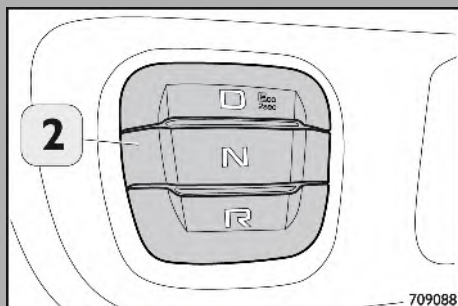
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

6. Downhill start

It is possible to start the vehicle downhill as if on flat ground.

After the engine is started and the gear is selected and engaged:

- Disengage the parking brake.
- Release the brake pedal.
- Press the accelerator pedal to start moving the vehicle.



7. Shifting to neutral

- Press button "N" (2).

Neutral is engaged. The display shows 'N' (neutral) (5).



General risk, general prescriptions

Do not shift to neutral while the vehicle is running as there would not be any engine brake effect and it would be possible to lose control of the vehicle.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Do not leave the engine idling with a gear engaged for longer than 5 minutes.

Prolonged idling with an engaged gear may cause the gearbox to overheat and cause damage. Always

select N (neutral) when the engine runs at idle speed for longer than five minutes.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

8. Braking

The vehicle can be decelerated by depressing the service brake pedal and by activating the engine brake and the retarder (if provided). In order to reduce the wear of the service brake it is recommended to use the wear-free braking systems (service brake and retarder) whenever the external circumstances allow this.

Without retarder

- The gear shift lever has the positions 0, 1, 2.
- By moving the gear shift lever from position 0 to position 1 the engine brake is requested.

- By moving the gear shift lever to position 2, in addition to the engine brake request, the 2nd gear is automatically preselected for maximum engine brake performance.

With retarder

- The gear shift lever has the positions 0, 1, 2, 3, 4, 5, 6.
- Shifting the gearbox lever from position 0 to position 1...5, the engine brake and the retarder are gradually requested.
- Shifting the gearbox lever to position 6, the engine brake and the retarder are requested and the 2nd gear is automatically preselected in order to achieve maximum engine braking.
- It is not necessary to deactivate the engine brake and retarder while shifting.
- To avoid losing control of the vehicle, use the engine brake or the retarder (if present) in conjunction with the service brake and select the ratio best suited to the gradient. The higher the engine speed and the lower the gear, the higher the engine braking effect.
- If the vehicle is heavily laden or the gradient is steep, a lower gear may be selected before reaching the steep section.

Attention!

- During normal driving the gearbox prevents automatic shifting to gears higher than the selected gear. When driving downhill, if the engine speed exceeds that permitted for the gear in use, the gearbox will shift to the next highest gear to prevent damaging the engine. However, this reduces the braking power of the engine and may cause a loss of vehicle control. Therefore, in order to avoid this situation, it is fundamental to use the engine brake and the retarder (if fitted) or the service brake.
- Do not use the retarder in adverse weather conditions or on slippery road surfaces. To prevent injury or damage due to losing control of the vehicle, use the service brake and maintain a moderate vehicle speed.
- The retarder takes approximately one second to reach maximum braking capacity. Take this into consideration when using it.
- Periodically check that the retarder operates correctly.
- The retarder is disengaged automatically whenever the vehicle ABS antilock braking system is activated. If the ABS system does not work properly, it is advisable not to use the retarder.
- If the retarder is inefficient, check that the gearbox fluid level is correct. Low gearbox fluid level is one of the most common causes for retarder problems. A quantity equal to two litres less or more than the normal fluid quantity may reduce the efficiency of the retarder and increase the gearbox temperature.

- If the transmission fluid temperature exceeds the programmed operating limits, retarder capacity is gradually and automatically reduced to minimise or eliminate any system overheating problems. Always monitor the gearbox and engine temperature. Select a lower ratio to increase the cooling system capacity; if the system overheats, use the service brakes to slow down the vehicle and select a lower gear.

9. Stopping the vehicle

Slow down and bring the vehicle to a standstill by using the brakes.

NOTE If the current gear, when bringing the vehicle to a standstill, is higher than the starting gear the system automatically shifts to the starting gear.



General risk, general prescriptions

With a gear engaged a certain torque is transmitted to the drive wheels. Therefore, if you release the brakes the vehicle could move.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Do not leave the engine idling with a gear engaged for longer than 5 minutes.

Prolonged idling with an engaged gear may cause the gearbox to overheat and cause damage. Always

select N (neutral) when the engine runs at idle speed for longer than five minutes.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

Before leaving the vehicle with engine running: shift to neutral and engage the parking brake.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

10. Driving modes

The gearbox offers 2 gear changing methods:

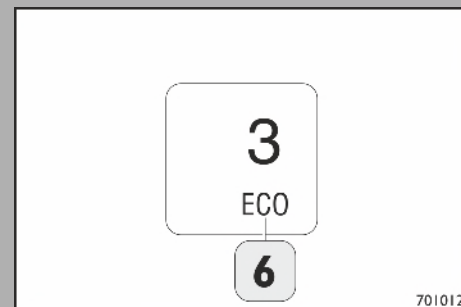
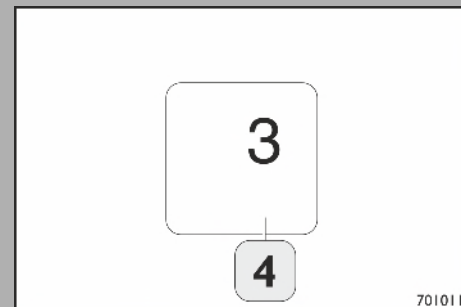
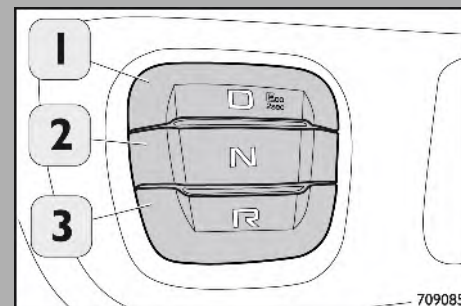
- AUTOMATIC, which based on vehicle use conditions (accelerator pedal, load, road gradient) decides independently, and continuously, on the shifting points selected between 2 maps:
 - Performance (PRE) privileges performance, the shifting points are performed at a higher engine speed.
 - Economic (ECO) privileges a reduction in consumption, the shifting points are performed at a reduced engine speed.
- ECONomy: shifting strategy that strongly privileges a reduction in consumption.

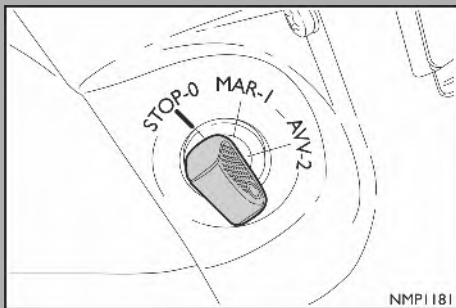
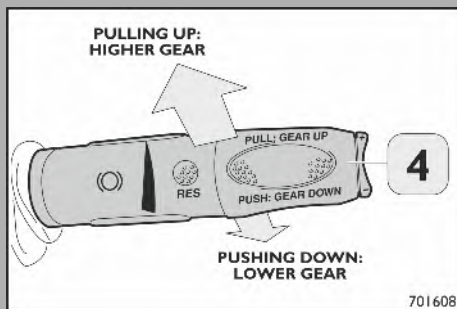
Activation / deactivation

These modes can be activated and deactivated while stationary or while driving.

- The AUTOMATIC mode is available standard. The display does not show anything **(4)**.

- ECONomy mode requires pressing the 'D' button for at least 2 seconds. The display shows ECO **(6)**.
- To return to AUTOMATIC briefly press 'D'.





11. Driving with Cruise Control

Gear shifting may be continuous when Cruise Control is activated, if cruising speed is too near a programmed shifting point.

In order to overcome this situation, the following operations are recommended:

- A. In order to prevent any upshifting, select a lower gear by using the gear shift lever **(4)**.
- B. Change the set cruise control speed in relation to the gear shifting point.

NOTE To keep the cruise speed set on a descent, the engine brake and the retarder (if present) are automatically activated. In addition, a downshift can be executed by the gearbox.



General risk, general prescriptions

If the braking effect requested by the cruise control is not sufficient to keep the vehicle speed at the set cruise control speed, it is necessary for the driver to brake with the service brake.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

12. Stopping the engine



General risk, general prescriptions

The engine can not be stopped with a gear engaged as the system automatically switches to neutral. If parking brake is not engaged, the vehicle could move!

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

In order to stop the engine:

- Bring the vehicle to a complete standstill.
- Engage the parking brake.
- Shift the gearbox to neutral (recommended).
- Stop the engine with the ignition key.

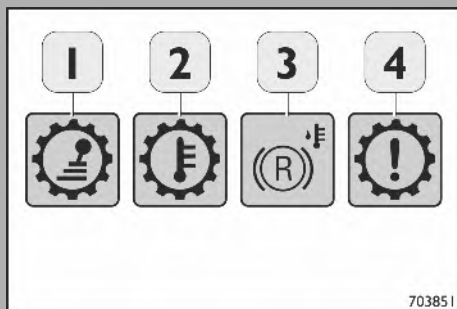


General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

- Switch OFF the engine by turning the ignition switch to the 'STOP-0' position.



General instructions on the use of the automatic gearbox

1. Parking brake
2. Signals on the display
3. Start-up at low temperatures
4. High fluid temperature
5. Towing the vehicle
6. Power take-off operation
7. Automatic transmission maintenance

1. Parking brake

The sole purpose of the parking brake is to block an unmanned vehicle with the engine off. The parking brake may not be strong enough to hold a vehicle with the engine running and gear engaged in drive or reverse.

If the vehicle is left unmanned with the engine running, the gearbox must be in N (neutral) with the brakes engaged and the wheels blocked with chocks.

2. Indicators on the display

The display shows "N", "R" or the highest gear that can be reached according to the gear sequence selected.

The electronic control system is programmed to inform the driver about problems in the gearbox and to take the required action automatically.

Depending on the detected problem, the control unit may take the following actions:

- Switch on the minor fault symbol **(1)** with yellow warning light.
- Switch on the minor fault symbol **(2)** with yellow warning light.
- Switch on the minor fault symbol **(3)** with yellow warning light.
- Switch on the serious fault symbol **(4)** with red warning light.
- Limit gear shifting.
- Log a diagnostic code.
- Reduce braking torque of the retarder.

(1) 'Gearbox inhibition '

The requested action (e.g. engaging a gear) could not be executed.

(2) 'High gearbox oil temperature'

The gearbox oil temperature is too high.

If the gearbox overheats during normal operation, proceed as follows:

- Check the gearbox fluid level. Consult the paragraph on maintenance.
- Park the vehicle in a safe place and check the cooling system.

If this is working correctly, adjust the engine speed to **1200 – 1500 RPM** with the gearbox in N (neutral).

This should restore the gearbox and engine temperature levels to normal service levels in 2 or 3 minutes. Reduce the engine speed if the temperatures do not drop.

If the high engine temperature persists in the engine or gearbox, stop the engine and contact the Service Network.

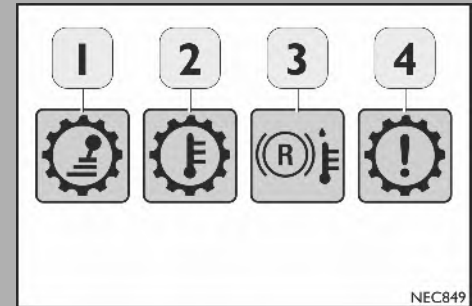
(3) 'High retarder oil temperature'

The retarder oil temperature is excessively high. The braking torque of the retarder will be gradually reduced. The vehicle may accelerate.

(4) 'Check gearbox'

The gearbox is not operating properly. Operations are limited. Before stopping the vehicle, the gearbox may be operated for a short period in the selected gear to allow the vehicle to reach the nearest Service Network point.

The repair must be carried out as quickly as possible to minimise any damage to the gearbox.



3. Start-up at low temperatures

The gearbox is programmed not to operate at full efficiency until the optimum working temperature is reached, as shown in the following diagram:

SUMP FLUID TEMPERATURE	OPERATING
-32 – -7 °C (-26 – 19 °F)	N (neutral), R (reverse), second gear
-7 °C (19 °F)	Full operation in all ratios

When the temperature in the sump is below **10 °C (50 °F)** proceed as indicated below if changing driving direction:

- To shift from the forward to the reverse gear, select N (neutral) and R (reverse).
- To shift from reverse to the forward gear, select N (neutral) and D (forward gear).

Failure to observe these procedures can cause the gearbox warning lights to switch on and the operation of the gearbox will be limited to N (neutral).

The operation of the gearbox at extremely cold ambient temperatures can require preheating or using a gearbox fluid with lower viscosity.

4. High fluid temperature

The gearbox overheats when the following temperatures are exceeded:

Sump oil **121 °C (250 °F)**

Radiator inlet coolant **149 °C (300 °F)**

If the gearbox overheats during normal operation, proceed as follows:

- Check the level of fluid in the gearbox.
- Stop the vehicle in a safe place and check the cooling system.
- If this is working correctly, adjust the engine speed to **1200 – 1500 RPM** with the gearbox in N (neutral). This should restore the gearbox and engine temperature levels to normal service levels in 2 or 3 minutes. Reduce the engine speed if the temperatures do not drop.
- If the high engine temperature persists in the engine or gearbox, stop the engine and contact the Service Network.

ATTENTION:

- On steep descents, using the brakes intensively can lock the front brakes and lock the steering gear. This could create a situation where accidents and/or damage to people and property are more likely to occur. Modulate the use of the braking system, controlling and keeping a constant and safe speed.

- Avoid abrupt stops and starts.
- Never run the engine at full power for longer than 10 seconds with the wheels locked and the gear engaged. An extension of this condition can cause overheating of the temperature of the gearbox fluid with consequent serious damage to the gearbox itself.

5. Towing the vehicle



Risk of damage

For towing purposes, the propeller shaft must generally be disconnected from the rear axle.

Do not try to start the engine by towing the vehicle.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General risk, general prescriptions

Severe damage may be caused to the gearbox if the drive wheels are not raised from the road and the transmission is not disconnected (removing the propeller shaft) before towing.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

6. Power take-off operation

The (ECU) determines whether the PTO can be engaged without being damaged.

If the vehicle is found to be in a critical condition (e.g. high engine temperature) the PTO will be disengaged by the ECU.

Normally the PTO may be operated when the vehicle is stationary or moving.

Power take-off activation:

The driver can engage the PTO by operating the PTO switch.

If the PTO is requested an icon will flash until the PTO is engaged. As soon as the PTO is engaged the icon will indicate this by remaining permanently on.

If it is not possible to engage the PTO (e.g.: excessively high engine speed) the icon flashes until the PTO is switched off. If the switch is not switched off after a certain time, a warning will be generated.

If the PTO request was not accepted because the engagement conditions were not met (e.g. excessive engine speed), the driver must bring the vehicle back to a non-critical condition (e.g. reduce engine speed) and request the PTO again by switching it off then on.



General risk, general prescriptions

Although the power take-off is monitored by a vehicle electronic control unit the driver has to pay attention to not exceed the PTO engagement and operating speed. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Error management:

If the PTO cannot be engaged / disengaged correctly an error is generated.

The error will be deleted the next time it is correctly engaged / disengaged.

If the ECU has an internal problem, the operation of the PTO can be started or continued in "degraded mode". In this mode the driver will be asked, via a dashboard menu, to confirm or reject start-up / termination of the PTO operation.

NOTE The IVECO workshops can change the default PTO engagement / disengagement conditions for special applications requested by the bodybuilders.

7. Automatic transmission maintenance

Monitor the fluid level and the electronic and hydraulic connections.

The gearbox must be kept clean for more effective checking.

Carry out inspections at regular intervals and check for the following:

- Loose bolts.
- Fluid leaks near the gearbox fittings, pipes and openings.
- Electrical wiring condition.
- Presence of gearbox fluid in the engine cooling system and presence of coolant in the gearbox fluid. This could indicate a defective oil cooler.
- Check the oil vapour vents to ensure they are clean and free of dirt or debris.

Contact the Service Network if needed and also if the following problems occur:

- Vehicle moves irregularly.
- Fluid leaks in the gearbox.
- Unusual noises from the gearbox.
- Gearbox warning lights switch on frequently.

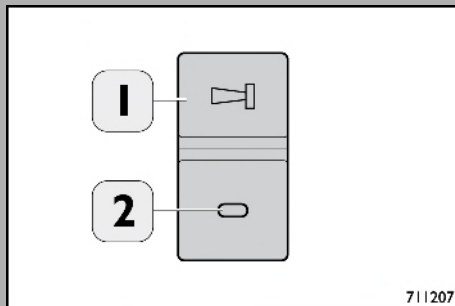
On-board equipment

Reverse buzzer switch

226

On-board equipment

227



Reverse buzzer switch

(If fitted)

In some markets and depending on vehicle outfitting, there may be a switch to adjust the volume of the reversing buzzer (two volume levels: high or low) or to activate/deactivate it. By pressing the top part of the switch **(1)** the buzzer is activated or set to the high volume level during reversing manoeuvres.

By pressing the bottom part of the switch **(2)** the buzzer is deactivated or set to the low volume level during reversing manoeuvres.

The in-built led activates **(2)** when the buzzer is active or the high volume level is set.

On-board equipment

Each vehicle is delivered with a set of wrenches and tools to enable the customer to carry out normal use and maintenance jobs.

Chocks

(if provided)

Jack

The figure alongside shows the location of the jack for lowering the spare wheel on models with a spare wheel holder at the side.

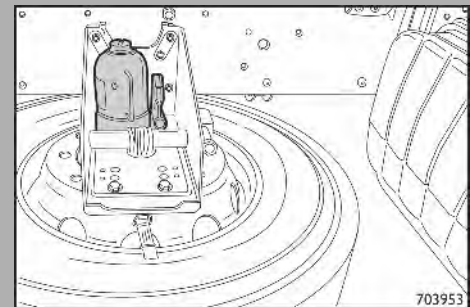
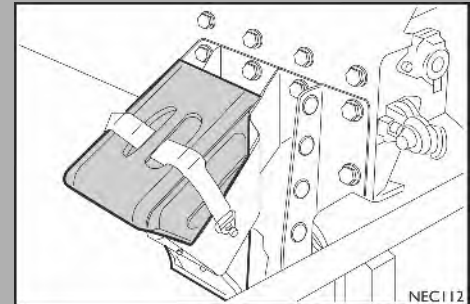


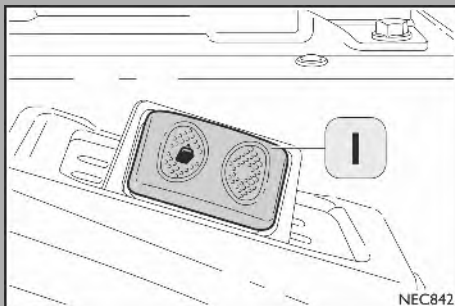
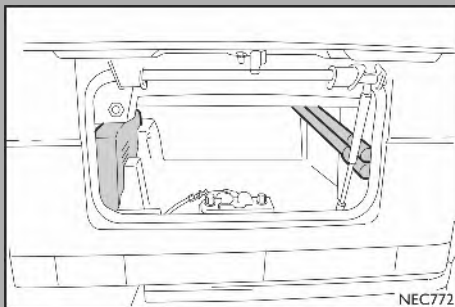
Risk of injury:

All objects in the cab may interfere with controls or strike occupants in case of impacts:

- Store all objects.

Failure to comply with these prescriptions can result in the risk of serious injury



**Jack rod, extension and manoeuvring hook**

In short cabs the accessories are located behind the driver's seat.

In long cabs they are located externally and can be opened using the control (I) on the side of the passenger seat.

Tool kit bag:

Contents:

Double hex wrench for wheels **30x32 mm**.

Double flat bladed and cross head screwdriver

Double elbowed wrench 10x13 for dismantling front headlights and rear twinned wheels stand (valves on rim).

Wrench for dismantling box jack and for unlocking rear spare wheel holder.

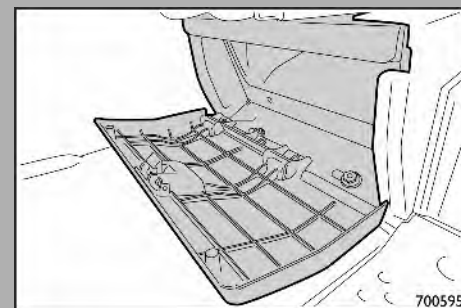
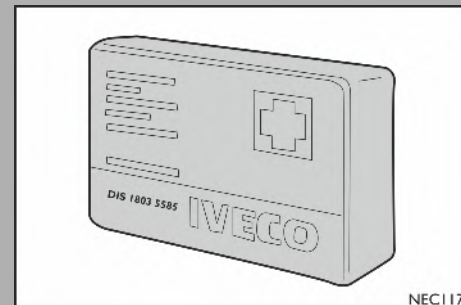
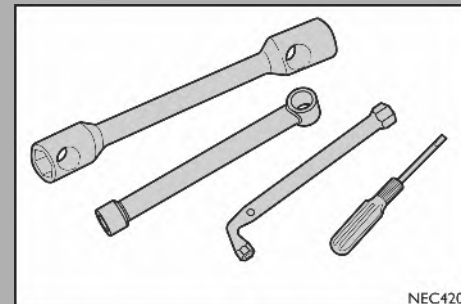
The tool kit is located in the compartment under the passenger's seat.

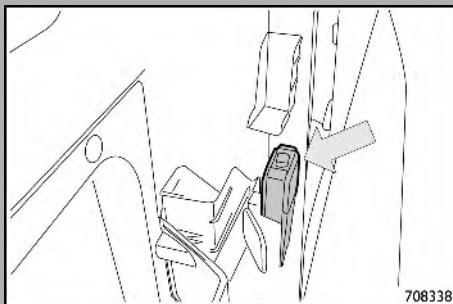
First-aid box

(if provided)

Hazard warning triangle and emergency lamp

The hazard warning triangle is located inside the compartment below the passengers seat shown in the figure.

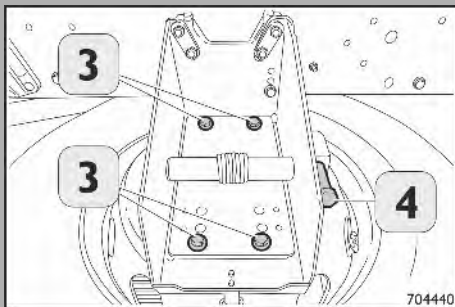
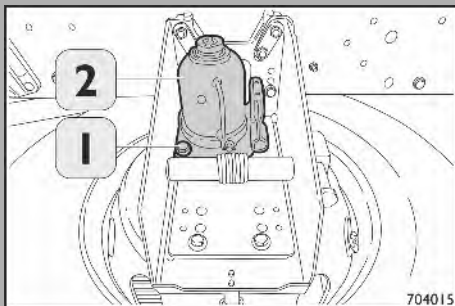
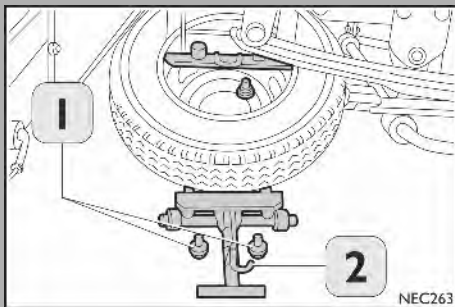




The emergency lamp is located in the specific storage compartment in the rear section of the cab.

Operator roadside repairs

Spare wheel	232
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Spare wheel

Models with rear wheel holder

To remove the wheel, proceed as follows:

- Unscrew both bolts **(1)** and pull the locking device **(2)**.
- Lower the wheel holder slide and remove the attachment device on the opposite side.
- Remove the wheel nuts.

When refitting the new wheel, fully tighten the locking device on the spare wheel holder.

Models with side wheel holder

To remove the wheel, proceed as follows:

- Undo the screw **(1)**.
- Remove the jack **(2)**.

- Unscrew the four nuts securing **(3)** the wheel to the wheel holder.
- Lower the wheel by turning the four screws **(4)**.



General risk, general prescriptions

Periodically check that the spare wheel is properly secured. Vibrations could cause bolt loosening.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Jack

(if provided)

For the rules of inspection and maintenance, follow the instructions provided in the specific documentation provided by the jack manufacturer.

After using it, close it properly.

The jack can not be repaired; if broken, it must be replaced with a new, original one.

No tools other than the supplied lever can be used with the jack.



General prescriptions

To use the jack you must scrupulously follow the instructions indicated on the plate attached to it.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General prescriptions

The jack must only be used for short periods, e.g. for changing the wheel.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



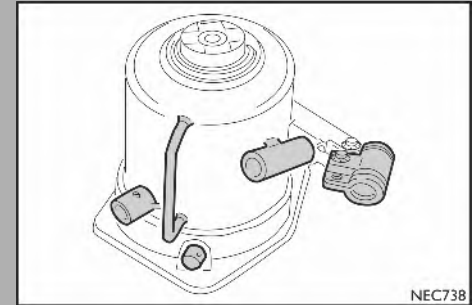
General risk, general prescriptions

- Do not use the jack if the roadbed is not solid and compact.
 - Do not lift the vehicle without having clearly identified the lifting points.
 - Do not use the jack for loads greater than those indicated on the label attached to it.
- Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

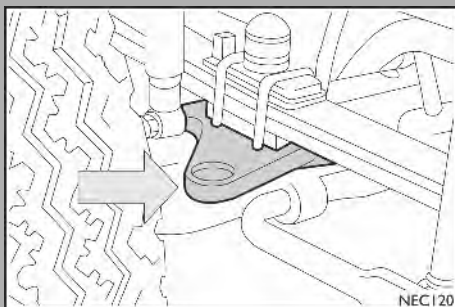


General risk, general prescriptions

- If the jack is not positioned correctly it may cause the raised vehicle to fall.
 - Do not position yourself (even partially) under the raised vehicle. If necessary contact the Service Network, which is equipped for this purpose.
- Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



NEC738



Changing wheels

When changing the wheels you must take some simple precautions, as described below:

- Stop the vehicle in a position that does not constitute a traffic hazard and makes it possible to change the wheel safely. If possible the ground should be flat and compact.
- Switch the engine off and engage the parking brake.
- Put the vehicle into first or reverse gear.
- Block the wheels on the ground with chocks (if provided). The chocks must be used paired on the same axle.
- Where required by law, put on the reflector vest before leaving the vehicle.
- Indicate the presence of the parked vehicle in accordance with current regulations in force in the country where driving:
 - hazard lights;
 - reflective warning triangle;
 - other.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

To change a wheel, proceed as follows:

- Stop the vehicle on firm and level ground.
- With the tyre to be changed still in contact with the ground, partially loosen the nuts of the wheel studs.
- Lift the wheel by means of the jack according to the points indicated in the two figures respectively for the front and rear axles.



General risk, general prescriptions

Before raising the vehicle, remember not only to engage the parking brake but to also use chocks to block the wheels which remain on the ground.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

NOTE The chocks must be used paired on the same axle.

- Carefully clean the wheel studs, nuts and support surfaces before fitting the wheel. Do not oil the threads.

NOTE The above suggestion may also help if loosening the nuts in the future.



General prescriptions

For correct tightening only use the tools supplied with the vehicle.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

When the vehicle is new, and every time after the wheel has been removed, the nuts must be retightened after the first 50 km and the next 100 km.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

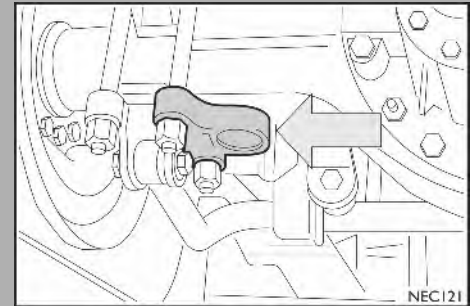


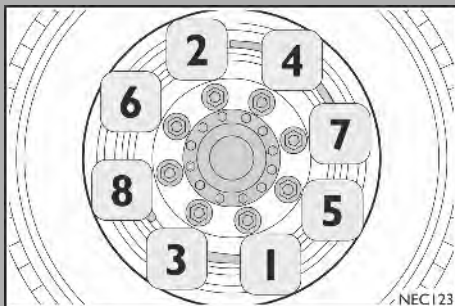
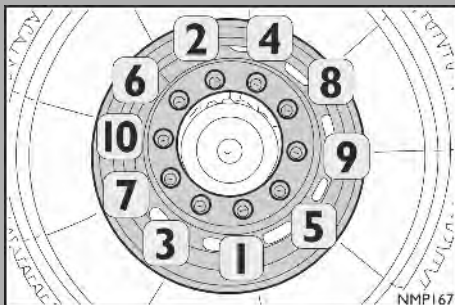
General prescriptions

To prevent injuries, do not use wheels or fixing components other than the original ones.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

NOTE Check the mileage if the decal on the windscreen is present. To prevent injuries, do not use wheels or fixing components other than the original ones.



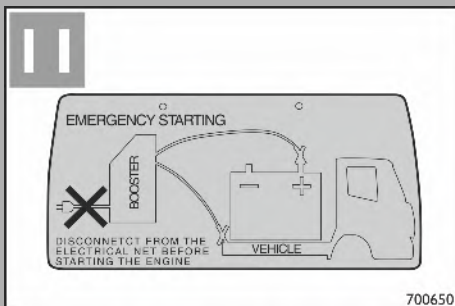
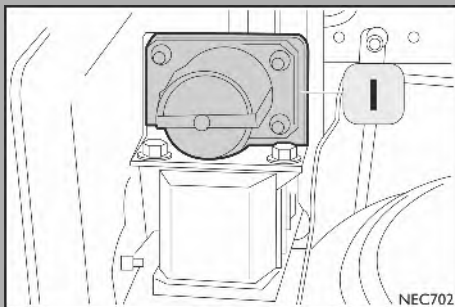


- Tighten the fastening nuts following the sequence indicated in the figures, observe the specified subsequent stages and only using the tool supplied.
- Tighten the nuts slightly until the wheel is correctly fastened on its mount.
- Lower the wheel to the ground and completely tighten the nuts by applying your body weight to the end of the lever.
- Check the pressure in the tyre.

Fastening sequence of nuts for vehicles with ten-stud wheels.

Fastening sequence of nuts for vehicles with eight-stud wheels.

MODEL	TIGHTENING TORQUE
I20EL	440 – 540 N·m
I20E, I30E, I40E, I50E, I60E	440 – 540 N·m *
	580 – 650 N·m **
I80E	580 – 650 N·m
I90E	
I90EL	
* M20 nut ** M22 nut	



Emergency start-up

If the batteries are discharged the engine can be started in the following ways:

- If the vehicle is equipped with bipolar power sockets **(I)** it is necessary to connect it to an external **24 V** DC power source or the bipolar socket of another vehicle using a special cable.
- If the vehicle is not equipped with socket **(I)**, use the emergency start cables and batteries of another vehicle for start-up.
- Use the cable to connect the positive terminals of the two batteries (marked with +).
- Connect a second cable from the negative (- sign) terminal of the charged battery to the ground of the vehicle with the discharged battery.
- Start the engine. When the engine is started, remove the cables by reversing the sequence described for connection.

The correct procedure is on the designated plate in the battery compartment.



Risk of electrocution

Before connecting the start cable, make sure that the operating tension is equal. Start engine using only cables provided; never use quick charge equipment. Observe the safety regulations!

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of electrocution

Use only emergency start cables (cable section to be approx. 70) with insulated terminals.

If recharging with battery chargers connected to a network, before starting up the vehicle, disconnect the battery chargers from the network.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of electrocution

The overvoltage can damage electronic components. A flat battery can freeze at -10°C ,

so before starting it must be thawed out.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Risk of skin irritation or allergic reactions

Distance yourself from the batteries when emergency starting.

Failure to comply with these prescriptions can result in the risk of serious injury

Precautions to be used with electronic control units installed

To prevent incorrect operations which may permanently impair or decrease control unit operations, follow the instructions described below:

- If arc welding is required on the chassis, disconnect the connectors from the control units; for welding close to the control unit location, remove the control unit from the chassis.
- Do not disconnect and/or connect connectors from/to the control units with engine running or control units powered.
- After any maintenance operation requiring battery disconnection, make sure that the terminals are properly connected to the poles when reconnecting the battery.
- Do not disconnect batteries with the engine on.
- Do not use a battery charger to start the engine.
- Disconnect batteries from on-board wiring for charging.
- Remove the electronic control units if particular operations require temperatures exceeding **80 °C**.

It is strictly prohibited to apply paint to the engine or engine / chassis with control units / electronic components installed.

Should this be required, use special compatible paints (to be checked each time) and protect some parts of the engine as specified by the manufacturer of the components involved. Contact the Service Network for further explanations.

Operational precautions that must be observed

Before performing any repair operation on electrical system control units, and specifically before replacing engine start-up contactor, if required, strictly comply with the following instructions to prevent short circuiting:

- Before extracting the contactor from the control unit, the main power switch must be switched off or battery terminals must be disconnected from batteries.
- Fit a new contactor if the plastic protection has come off or the contactor was opened accidentally when being removed from the control unit.



General prescriptions

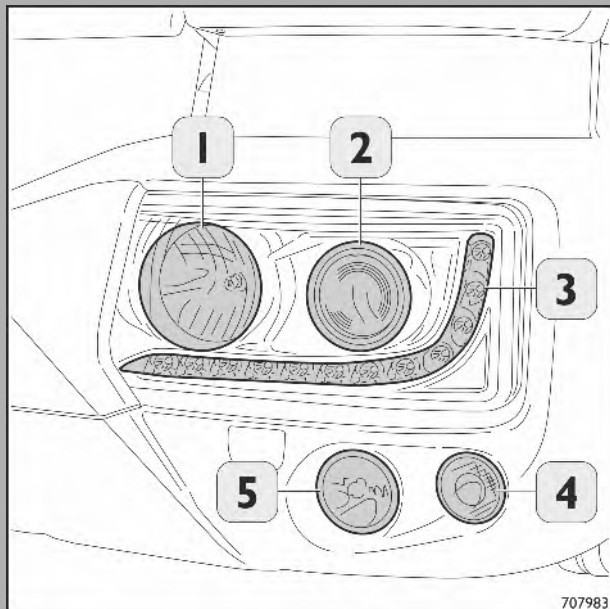
After the engine is stopped, wait 90 seconds before removing all voltage to the engine or before disconnecting the batteries. Failure to respect this indication may damage the AdBlue system. In the event of an emergency act promptly without waiting 90 seconds.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

VDI (Vehicle Data Interface)

The vehicle can be equipped with an electronic component for the reading of specific data. This component is known as VDI (Vehicle Data Interface).

Data obtained from VDI are subjected to tolerances. To obtain this data, you need to use a computer with the necessary software.



Changing bulbs

Front light assembly with LED daytime running lights and halogen low beam lights and halogen high beam lights (with plastic bumpers)

The light assembly has the following lights.

1. High beam lights.
2. Low beams.
3. Daytime running lights.
4. Front turn indicators.
5. Fog lights (if applicable).

Front light assembly with LED daytime running lights, Xenon low beam lights and halogen high beam lights (with plastic bumpers)

The light assembly has the following lights.

1. High beam lights.
2. Low beam lights + high beam lights.
3. Daytime running lights.
4. Front turn indicators.
5. Fog lights (if applicable).



Risk of burns

The bulbs and bulb holder can be very hot.

Failure to comply with these prescriptions can result in the risk of serious injury

The gas discharge headlamps (Xenon) function with an electric arc in an environment saturated with pressurised Xenon gas, instead of an incandescent filament.

The produced light is considerably superior to light from traditional bulbs, both with regard to light quality (brighter light) as well as to the width and position of the illuminated area.

The advantages offered by improved lighting can be noticed (due to less eye fatigue and drivers able to better orient themselves while driving thus improving driving safety) especially in bad weather, fog and/or with poor road signs, for better lighting of the road edges, which are normally dark.

The great improvement in the lighting of the road edges considerably increases driving safety, as it helps the driver to better identify other users on the edges of the road (pedestrians, bicyclists and motorcyclists).

Very high voltage is required for sparking the electric arc, whereas the subsequent power supply is at a lower voltage.

The headlamps reach maximum brightness after a few seconds.

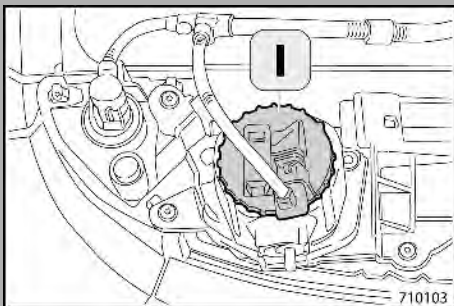
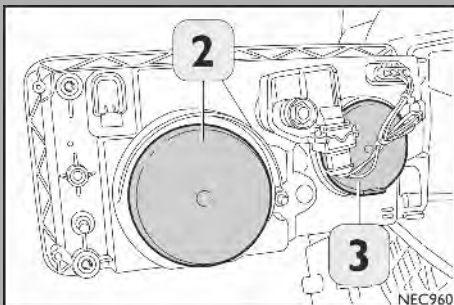
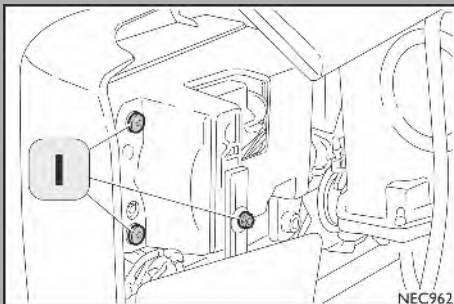
The high level of brightness produced by this type of headlamp requires the use of an automatic system for maintaining the position of the headlamps constant and prevent dazzling oncoming vehicles when braking, accelerating or transporting loads.



General risk, general prescriptions

Handle Xenon lamps may lead to a risk of electrical discharge. Contact the Service Network for replacement.

Failure to comply with these prescriptions can result in the risk of serious injury



NOTE To replace the LED lights, contact the Service Network.

To replace the bulbs in the front light assembly, tilt the cab and carry out the operations indicated below:

- the screws can be accessed with the cab tilted.
- Unscrew the screws **(1)** and turn the light assembly so that the bulbs can be accessed.
- Remove the cover **(2)** to access the halogen lamp of the low beam lights (and/or side light bulbs).
- Remove the connection.
- Replace the halogen bulb.
- When fitting the new lamp, do not touch lamp directly with fingers, as this may adversely affect operation.
- Reconnect the connection.
- Refit the cover **(2)**.
- Following the same procedure, unscrew the cover **(3)** to access the halogen lamp of the high beam lights.

Fog lights
(if provided) (with plastic bumpers)

To replace the halogen bulb, it is necessary to:

- Rotate the protective cover **(1)** of the fog lights.
- Replace the defective halogen bulb.
- When fitting the new bulb, do not touch the bulb directly with fingers, as this may adversely affect its operation.
- Refit the protective cover **(1)**.

Front turn indicator
(with plastic bumpers)

To replace the bulb, proceed as follows:

- Disconnect the electrical connection.
- Turn and remove the bulb holder **(1)**.
- Replace the faulty light bulb.
- Insert the bulb holder **(1)** into its seat.
- Connect the electrical connection.

Front light assemblies (with metal bumpers)

1. High beam lights.
2. Low beam lights and side lights.
3. Front turn indicators.
4. Fog lights (if applicable).

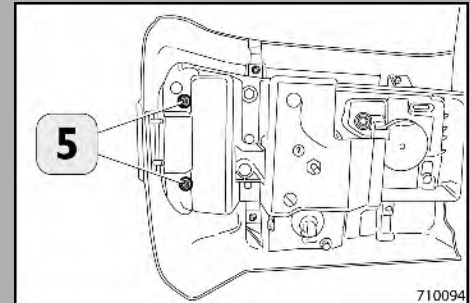
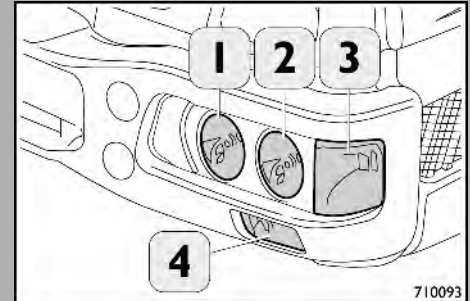
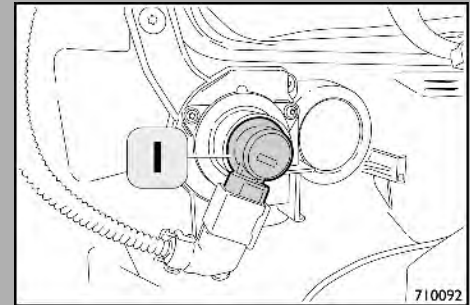


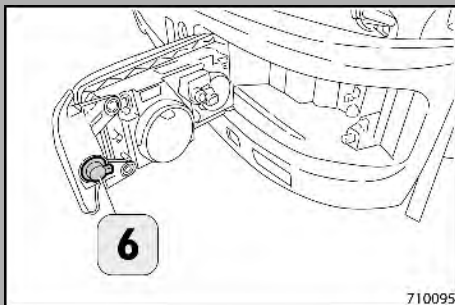
Risk of burns
The bulbs and bulb holder can be very hot.
Failure to comply with these prescriptions can result in the risk of serious injury

Front direction indicators (with metal bumpers)

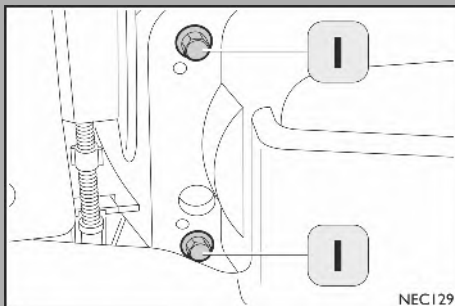
To replace the front turn indicator bulbs, tilt the cab and proceed as follows :

- Remove the screws **(5)**.





- Turn the light assembly as indicated in the figure.
- Disconnect the electrical connection.
- Turn and remove the bulb holder **(6)**.
- Replace the faulty light bulb.
- Reinsert the bulb holder **(6)** into its seat.
- Connect the electrical connection.
- Close the light assembly.
- Tighten the fastening screws of the light assembly.



Side lights, low and high beam lights

To replace a lamp in the front light assembly, proceed as follows:

- Dismantle the light assembly by removing the screws **(I)** using the appropriate wrench.
- Then unscrew the cover to gain access to the halogen bulb of the low beams (and/or the side light bulb).
- Remove the electrical connection.
- Replace the halogen bulb.
- When fitting the new lamp, do not touch lamp directly with fingers, as this may adversely affect operation.
- Reconnect the electrical connection.
- Remount the cover screwing it back on.
- Following the same procedure, unscrew the adjacent cover to gain access to the high beam light halogen lamp.



Risk of burns

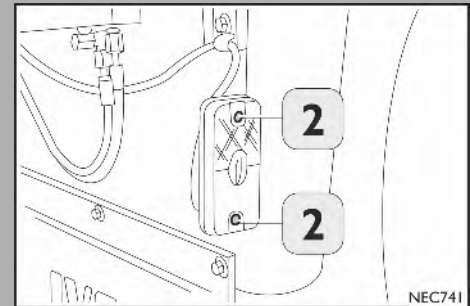
The bulbs and bulb holder can be very hot.

Failure to comply with these prescriptions can result in the risk of serious injury

Side markers

To replace the bulb, proceed as follows:

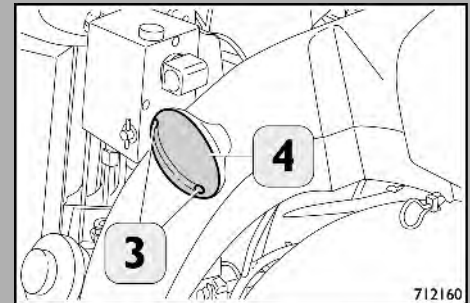
- Unscrew the fastening screws **(2)**.
- Replace the faulty light bulb.
- Retighten the screws **(2)**.



Side turn indicator

To replace the side indicator light bulbs, proceed as follows:

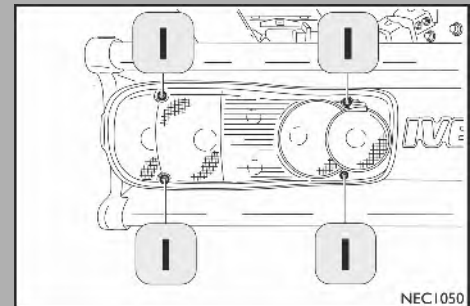
- Loosen the fixing screws **(3)**.
- Remove the transparent cover **(4)**.
- Replace the lamp.
- Refit the transparent cover **(4)** and retighten the screws **(3)**.

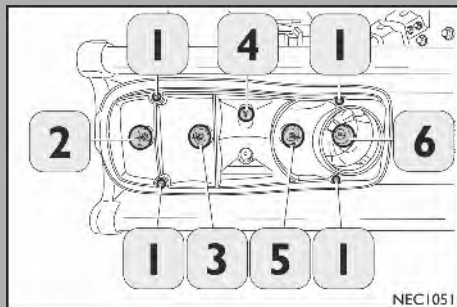


Rear light assembly

To replace a bulb in the rear light assembly, proceed as follows:

- Unscrew the screws **(1)** of the clear cover.
- Remove the transparent cover.





The bulbs are arranged as specified:

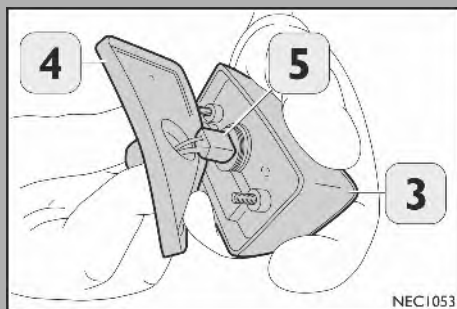
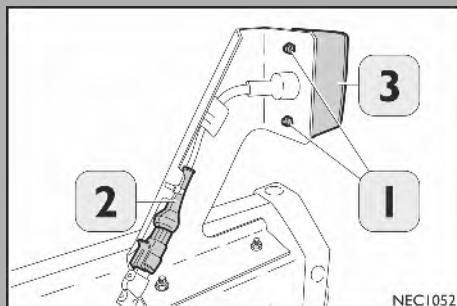
- 2. Spherical bulb for turn indicator light.
- 3. Spherical bulb for brake light.
- 4. Spherical bulb for side lights.
- 5. Spherical bulb for reverse light.
- 6. Spherical bulb for rear fog light.

- Refit the transparent cover.
- Retighten the screws **(1)** of the clear cover.

Rear markers

To replace the light bulbs, proceed as follows:

- Unscrew the locking nuts **(1)** of the light cluster **(3)**.
- Release the connector **(2)**.
- Remove the light cluster **(3)**.



- Remove the gasket **(4)**.

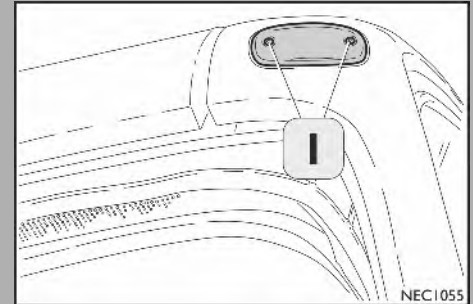
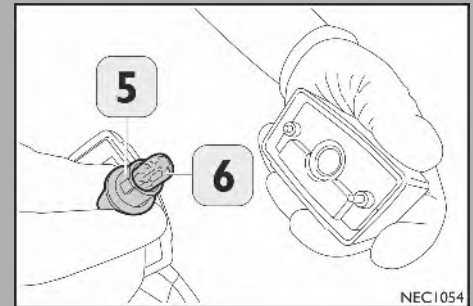
- Remove the bulb holder **(5)** and replace the bulb **(6)**.

Proceed inversely to mounting sequence.

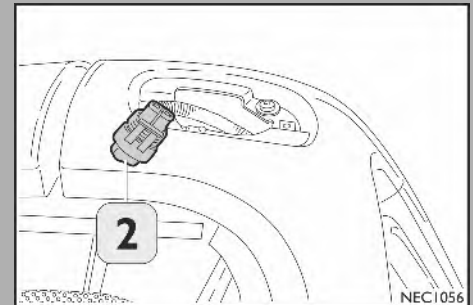
Top side clearance lights

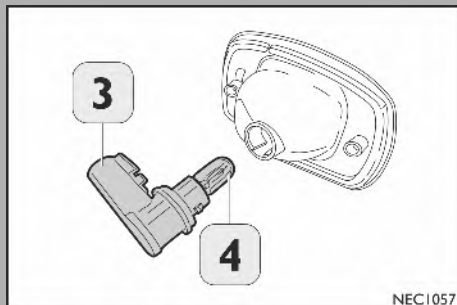
To replace the light bulbs, proceed as follows:

- Loosen the screws **(1)** securing the clear cover.



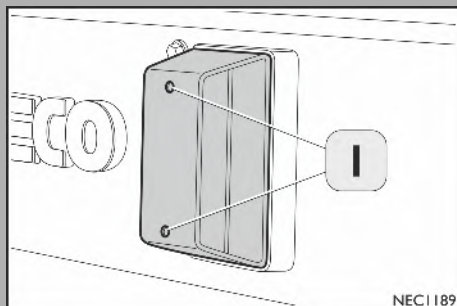
- Remove the light cluster and release the connector **(2)**.





- Remove the bulb holder (3) and replace the bulb (4).

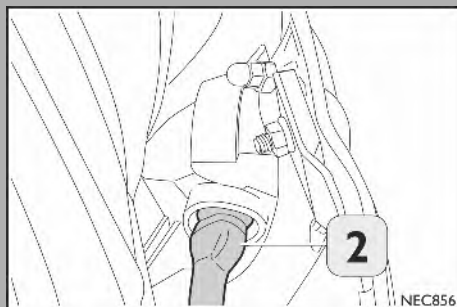
Proceed inversely to mounting sequence.



Spherical bulb for licence plate light.

- Remove the screws (1).
- Remove the plastic cover.
- Replace the bulb.

Proceed inversely to mounting sequence.



Front markers

To replace the bulb, proceed as follows:

- Remove the connection pin (2).
- Replace the faulty light bulb.
- Refit the connection pin (2).

Inner lights

- Pry up on the side notches of the external fastening ring and remove it.

NOTE During the removal phase, be careful not to damage the panel.

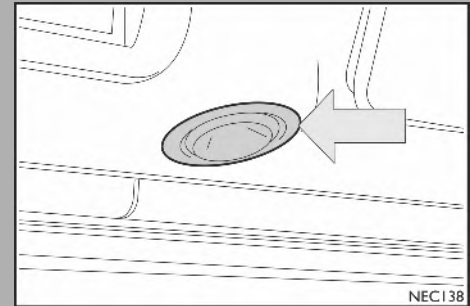
- Disconnect the bulb holder socket from the connector **(1)**.
- Open the bulb holder socket using the side tabs **(2)**.
- Remove the bulb and replace it.
- To refit the bulb, repeat the operations indicated above but in the reverse order.

Internal lights (central ceiling light)

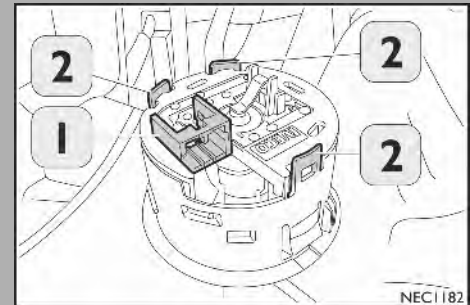
To replace the light bulbs, proceed as follows:

- Using a screwdriver or other suitable tool, pry up in the positions shown in the figure and remove the lens from the panel.
- Replace the bulb.
- Reposition the ceiling light, press fitting it.
- Refit the transparent cover.

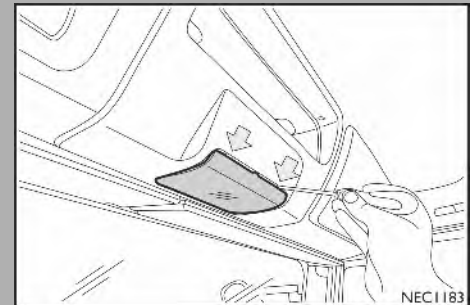
NOTE During the removal phase, be careful not to damage the panel.



NEC I 38



NEC I 82



NEC I 83

Towing the vehicle

(To be carried out a type-approved tow bar: comply with the applicable towing regulations). Use the screw-in pull hook included in the on-board equipment and insert it into the prearranged point below the covers indicated.

If the vehicle is being towed, proceed as follows:

- turn the ignition key to MAR-I to release the steering lock;
- open the cover **(1)** (on the left for left hand drive vehicles and on the right for right hand drive vehicle);
- screw the pull hook into the threaded seat **(2)** ensuring that it is secured correctly.

If the propeller shaft detaches from the rear axle flange, secure it firmly to the chassis using a rope.

The engine cannot be used for a tow start under any circumstances.

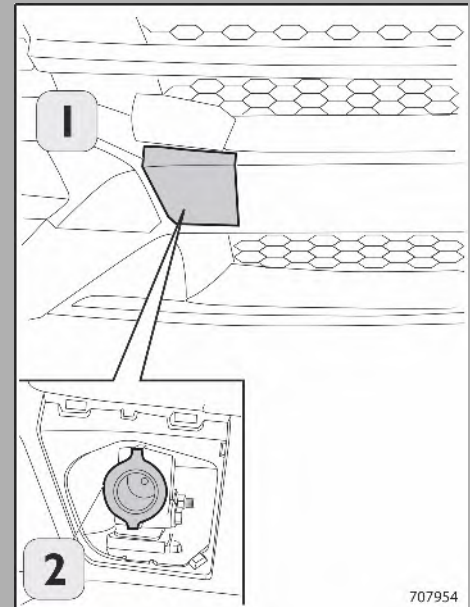
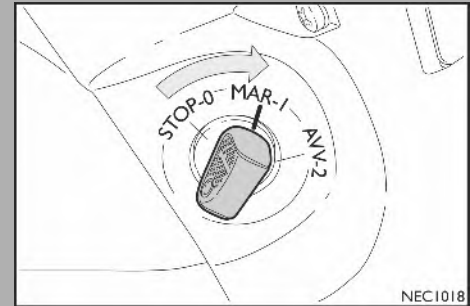
On vehicles equipped with the AEBS device, this system must be disabled manually.

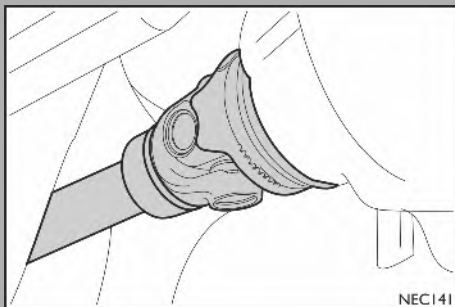
For towing with the front axle raised, make sure the vehicle ignition system is turned off or the ABS fuses have been removed.



General risk, general prescriptions

Under special circumstances, should the power steering assist mechanism fail, remember that the effort required for steering is considerably higher, even if mechanical connection between steering wheels and wheels is still present. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



**Risk of damage**

Do not dismantle the axle shafts from rear axle to prevent major lubricant leaks. When towing a loaded vehicle, always use a rigid tow bar and do not lift the vehicle. Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**Risk of damage**

If the type of fault requires the front axle to be lifted while towing, unload the vehicle or install a lifting carriage below the axle. Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

NOTE When towing a loaded vehicle, always use a rigid tow bar and do not lift the vehicle.

If you need to tow vehicles with damaged mechanical components, proceed as follows:

- Move the gear control lever to neutral position in the fast range. (Disconnect the propeller shaft from the rear axle when the clutch is locked or the fast range can not be engaged).
- Max. permitted towing speed **40 km/h**. Max. permitted towing distance. **100 km**.

NOTE If resorting to towing with lifting, it is recommended that this is carried out on roads which are in a good condition and at a maximum speed of **30 km/h** and for a distance not exceeding **30 km**. Carry out lifting and towing with means which comply with the legal provisions.

NOTE Do not tow the vehicle with reverse gear engaged: this will avoid damaging the gearbox.

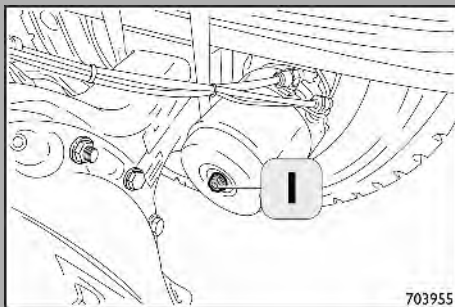
**General prescriptions**

Carry out lifting and towing in a manner that complies with the legal provisions. Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle and can sometimes result in the guarantee being voided



General risk, general prescriptions

Under special circumstances, should the power steering assist mechanism fail, remember that the effort required for steering is considerably higher, even if mechanical connection between steering wheels and wheels is still present. Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



Spring accumulator cylinder

If compressed air fails to reach the parking brake circuit, the vehicle is automatically braked by the spring accumulator cylinder. For towing purposes, release the brake through the brake release device. To achieve this, position chocks at the drive wheels and engage the parking brake lever.

Then proceed as follows:

- Turn the middle screw at the rear of the cylinder anti-clockwise all the way down. do not exceed **35 N·m**.
- Carry out the same operation on the cylinder of the opposite wheel.



General risk, general prescriptions

After operating on the emergency engagement device, vehicle must be towed and must under no circumstances be driven autonomously:

- To restore both the functions and efficiency of the braking system, contact any Service Network workshop.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Bleeding air from the fuel circuit

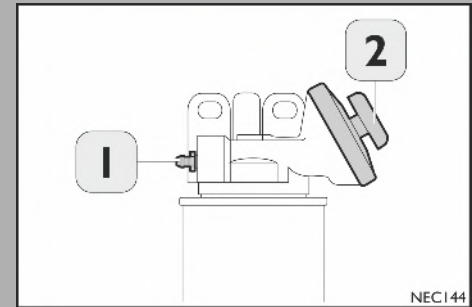
Air bleeding from the fuel system shall be performed as follows:

- Loosen the screw **(1)**, connecting it to an appropriate pipe to direct the bleeding residues to suitable containers.
- Operate the manual control of the priming pump **(2)** until the fuel that exits the bleed screw does not contain air **(1)**.
- Retighten the screw **(1)**.
- Continue to activate the manual control until the priming pump **(2)** begins to run empty.
- Start the engine and let it run idle for a few minutes to remove any residual air.



General risk, general prescriptions

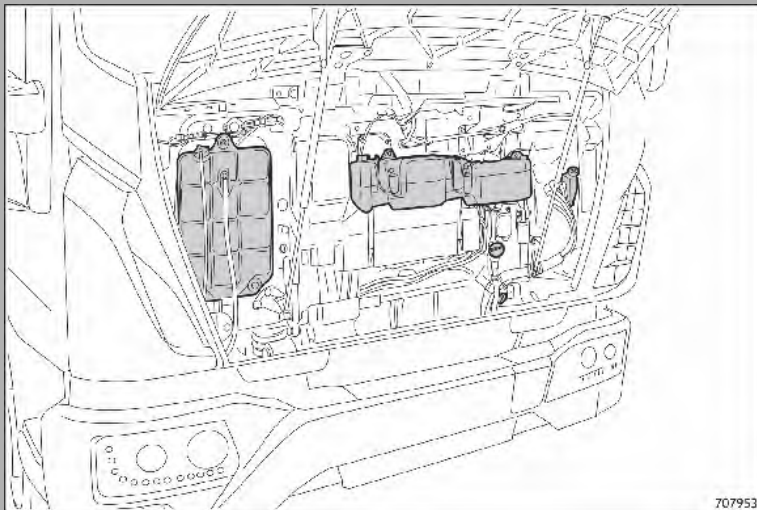
Be careful to tighten the bleeder screws to prevent dangerous fuel leaks.
Correct behavior will ensure that vehicle is used as environmentally friendly as possible



NEC144

Operator checks

Grille opening	260
Checks to be carried out	261
Before each trip	262
Every week	265
Every six months	274
Every year	275
Each year before winter	276
Caring for the vehicle	298

**Grille opening**

- To open the front grille, simply pull and lift it.
- Do not operate the wipers when the front grille is lifted to avoid removing part of the grille paint.

Checks to be carried out**Before each trip**

1. Engine oil.
2. Engine coolant.
3. Wiper fluid.
4. Power steering.

Every week

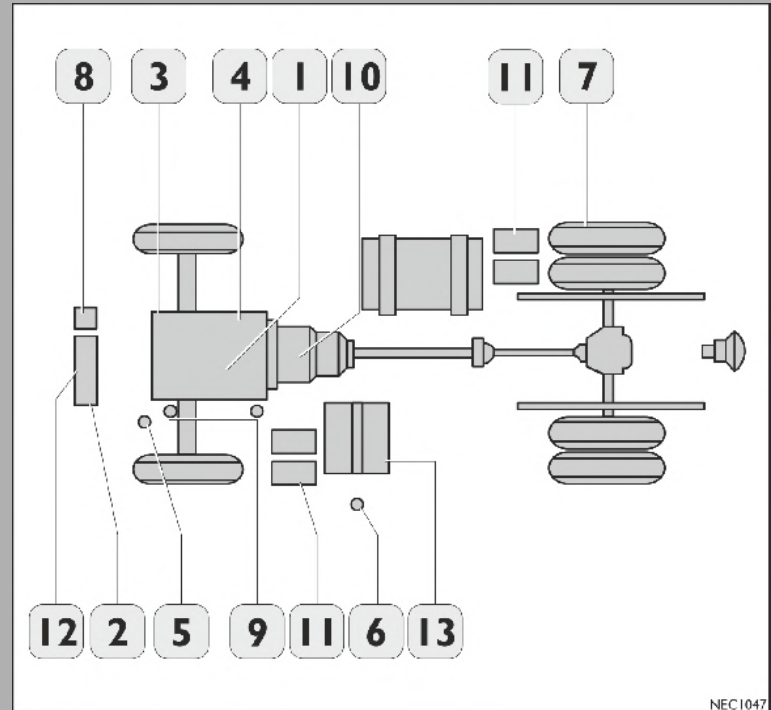
5. Fuel pre-filter.
6. Air dryer.
7. Tyres.
8. Clutch fluid.
9. Cab tilting indicator light.
10. Automatic transmission.

Every six months

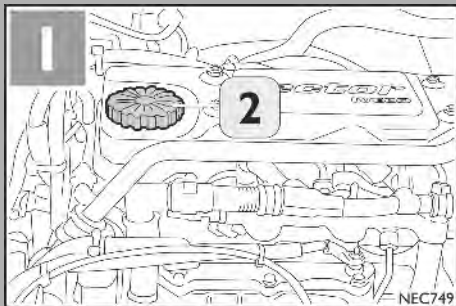
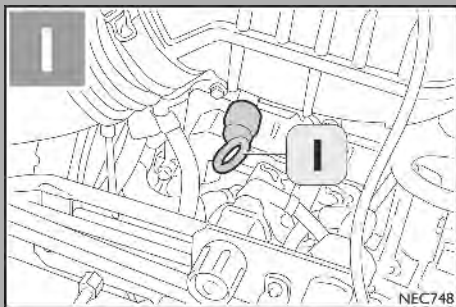
11. Air tanks.
12. Pollen filter.

Every year

13. Batteries.



NEC1047



Before each trip

Check the following on the instrument cluster:

- Engine oil level (at least **30 min** after stopping the engine).
- Engine oil temperature.
- Engine oil pressure.
- Air pressure.
- No symbol displayed showing failures.

1. Check the engine oil level using the dipstick **(1)** (by tilting the cab). This level must be between the reference marks on the dipstick.

If necessary, top up through the filler **(2)**.



Risk of injury:

After topping up, close the filler properly to prevent dangerous oil leaks while driving.

Failure to comply with these prescriptions can result in the risk of serious injury

Use the specific recommended product for topping up:

URANIA LD7 (C.T.R. N° 1517.F06)

URANIA FE (C.T.R. N° 1023.M01)

In any case, refer to the fluids and lubricants tables in the paragraph **345**.

2. Check the coolant level. It must be between the MAX and MIN reference marks.

Top-up from the filler **(1)** only.



Risk of injury:

Carry out the check only with the engine off and sufficiently cooled; otherwise opening the plug could cause hot fluid to spray out.
Failure to comply with these prescriptions can result in the risk of serious injury

Use the specific recommended product for topping up:

PARAFLU UP® (C.T.R.N° 1101.M16)

NOTE See the paragraph "Each year before winter".

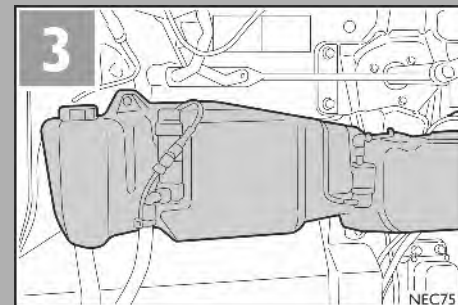
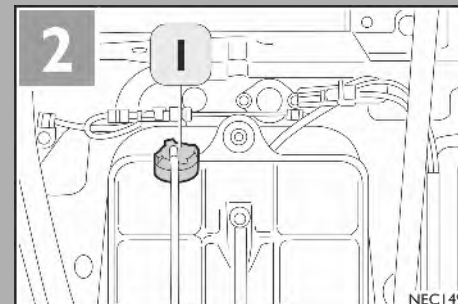
3. Check the fluid level in the windscreen washer tank: should a top-up be necessary, we recommend a mixture of water and **TUTELA PROFESSIONAL SC 35 (C.T.R. N° 1005.B00)** fluid.

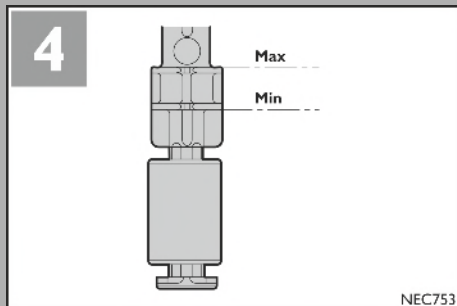
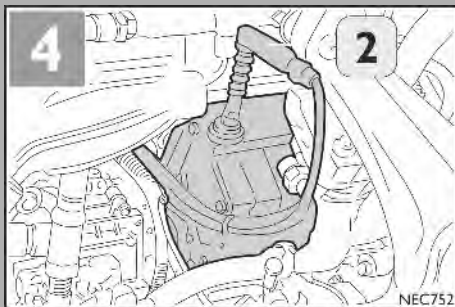
Also check that the lines are not clogged; If necessary, clean the nozzles with a needle.



Contamination, fire

Some commercial windscreen washer additives are inflammable: pay attention to contact with hot parts of the engine.
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle





4. Check the level of the power steering circuit fluid. Remove the power steering tank cap **(2)** (after detaching the sender) and check that the fluid level reaches the upper mark on the dipstick with the engine running and wheels straight. With the engine stopped and the wheels straight, the oil level should exceed the MIN mark on the dipstick by **1 mm** or **2 mm** Top-up if necessary.

Use the specific recommended product for topping up:

TUTELA TRANSMISSION GI/A (C.T.R. N° 1002.B92)

In any case, refer to the fluids and lubricants tables in the paragraph **345**.

Moreover, check:

- The condition of tow hook (if fitted).
- The conditions of the tyres.
- The operation of the service brake, the parking brake and the engine brake.
- The operation of the lights, of the warning lights and the windscreen wiper.



General risk, general prescriptions

The brake fluid is poisonous and corrosive: in the event of accidental contact immediately wash with water and neutral soap.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

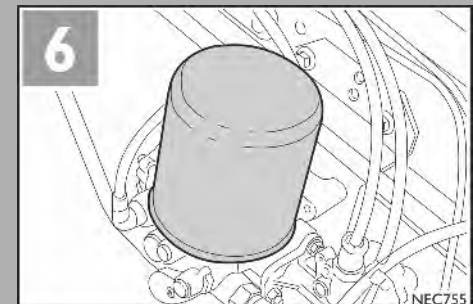
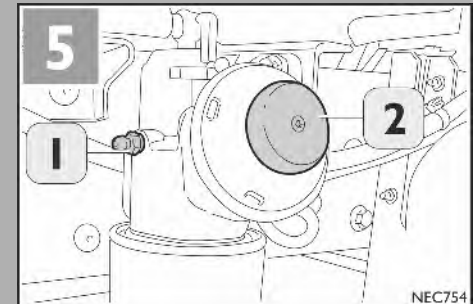
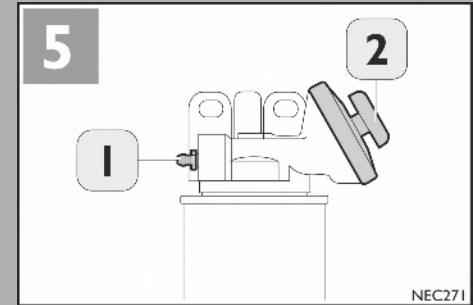
Every week

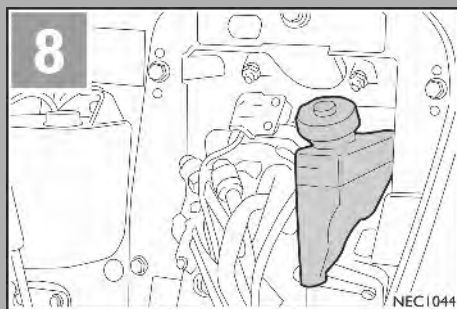
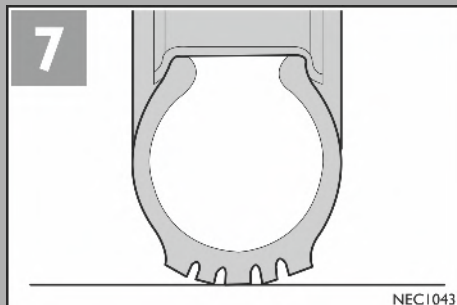
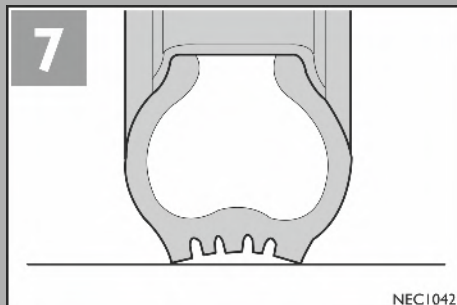
5. Drain off any air that may have accumulated in the diesel oil pre-filter as follows:

- Loosen the screw **(1)**, connecting it to an appropriate pipe to direct the bleeding residues to suitable containers.
- Operate the manual control of the priming pump **(2)** until the fuel that exits the bleed screw does not contain air **(1)**.

- Retighten the screw **(1)**.
- Continue to activate the manual control until the priming pump **(2)** begins to run empty.
- Start the engine and let it run idle for a few minutes to eliminate any residual air.

6. Check whether the air dryer works properly by operating one of the air tank bleed valves. In this case the air must exit the tank with little or no trace of condensation. If you start detecting substantial condensation, perform the check at shorter intervals to determine if the dryer is only temporarily overloaded or if its operation is permanently impaired. In the first case the exit of condensation must disappear again quickly as soon as the functionality of the granules has regenerated. Otherwise, it is necessary to replace the cartridge since the capacity of the granules to absorb moisture has been drastically reduced by the action of oil, dirt, carbonaceous deposits, etc.





7. Check the state of wear and pressure of the tyres (including the spare tyre). If pressure is low, tyres tend to wear on the outside part of the tread when driving.

If the pressure is too high, the tyres tend to wear in the centre of the tread when driving. If abnormal wear is found on the front tyres (on the inner or outer section of the tread) have the front wheel toe-in checked.

Do not exceed the maximum weight per axle (when the vehicle is fully loaded).

Then replace the pair of tyres mounted on an axle when, as a result of the tread pattern wearing out, continuous bands extending over the entire width of the tyre appear clearly on the tread.

In addition, the tyres show other indications of wear: the tyres must be replaced when the tread reaches these wear indicators.

8. Check the fluid level in the clutch release control tank.

Top up only using **TUTELA BRAKE FLUID TRUCK DOT SPECIAL (C.T.R. N° 1002.F99)**. (the MIN clutch fluid tank level corresponds to a new clutch; the MAX clutch fluid tank level corresponds to a worn clutch).



Risk of skin irritation or allergic reactions

The clutch fluid is toxic and corrosive: in the event of accidental contact immediately wash with water and neutral soap.

Failure to comply with these prescriptions can result in the risk of serious injury

9. Check the operation of the unhooked cab signalling icon.

Carry out the following operations:

- Visual check of the integrity of the exhaust gas system.
- Visual check of radiator protective grille cleanliness. If necessary, remove it and clean it.

10. Automatic gearbox (oil level check).

If you leave the vehicle with the engine running, it can move suddenly and cause harm to people. If you need to leave the engine running, do not leave the vehicle before completing the following procedure entirely:

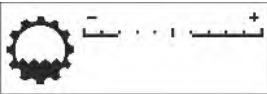
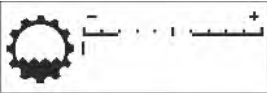
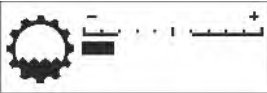




- Shift the gearbox to N (neutral).
- Check that the engine is at idle speed.
- Operate the parking brake and make sure that it is actually engaged.
- Block the wheels with chocks and take any other necessary steps to prevent the vehicle from moving.

9



NEC1045

Check using the Allison S3000 gearbox oil level display

GEARBOX OIL LEVEL	LITRES	MEANING
	-	System not ready to measure the oil level (see note)
	up to 4 litres too low	Danger (oil level too low)
	from 2 to 3.5 litres too low	Alarm (low oil level)
	from 0 to 1.5 litres too low	Level OK
	from 0.5 to 2 litres too high	Level OK
	from 2.5 to 4 litres too high	Alarm (too much oil)
	more than 4.5 litres too high	Danger (excessive oil)

NOTE The measurement of the transmission oil level is not always available.

Some conditions are necessary for it to be available:

- engine idling,
- gear in neutral (N),
- vehicle stationary,
- gearbox oil temperature between **40 – 104 °C**,
- wait time for valid measurement approx. 2 min.

Manually checking the oil level in the gearbox

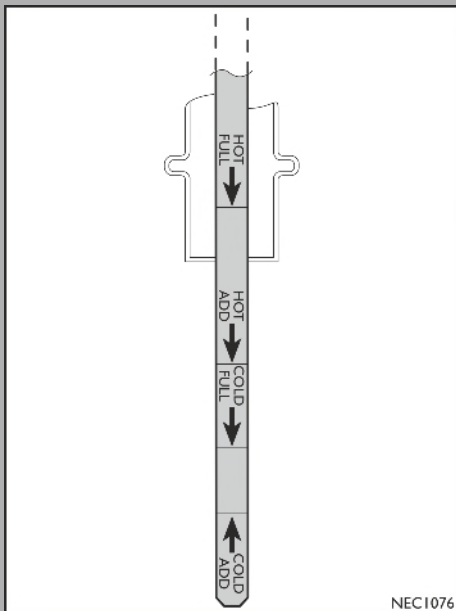
Clean around the end of the filling pipe before removing the dipstick: this prevents dirt and other foreign bodies from getting into the hydraulic system, avoiding the following consequences:

- Valves jamming.
- Excessive wear on the parts of the gearbox.
- Obstruction of the passages.

Check the fluid level by following the procedures described in the following paragraphs. Report any trouble concerning the level of the liquid to the Service Network.

Warnings

- the correct level of fluid can be determined only if the gearbox is in a level position.
- The level of fluid increases as the temperature of the fluid increases. **DO NOT** fill the gearbox above the level specified for the cold check if the gearbox fluid is below the normal operating temperature. During operation, overfilling the gearbox could cause overheating and damage.
- **DO NOT** leave the gearbox running for extended periods of time before having checked that the fluid level is correct when hot. Long-term operation with an incorrect fluid level could damage the gearbox.
- The exact level of fluid is obtained by respecting the following conditions: engine at idle speed (**500 – 800 RPM**), transmission in N (neutral), gearbox fluid at normal operating temperature, vehicle on a flat surface.
- Containers used previously for antifreeze or engine coolant solutions must **NEVER** be used for the gearbox fluid. Antifreeze and coolant solutions contain ethylene glycol that may damage the clutch plates and some linings if it comes into contact with the gearbox.



NEC1076

- The frequency of changing the gearbox fluid and the filter depends on the degree of use of the gearbox. To prevent damage to the gearbox, it may be necessary to change the fluid more frequently than advised in the general guidelines if the working conditions lead to high levels of contamination or overheating.
- Change the fluid and filters according to the mileage, months or hours recommended in the scheduled maintenance plan. In some cases, the hours of operation can be a more reliable measure of oil duration; therefore, the fluid change frequency must not be based solely on the mileage.
- The gearbox fluid and the filters must be replaced whenever any dirt or conditions of high temperature are found. A condition of high temperature occurs when the gearbox fluid appears clear, it has a strong smell or has exceeded the oil analysis limits.

Cold check – Allison 3000 gearbox

Checking the level of the liquid when cold determines whether the gearbox has enough liquid to work safely until a hot check is performed.

A cold check may be carried out after the initial start-up and after confirmation of the presence of transmission fluid (the temperature of the liquid in the sump is generally **16 – 49 °C (60 – 120 °F)**). To carry out a cold check proceed as follows:

1. Move the vehicle to a flat surface, shift the gearbox to N (neutral) and engage the parking brake.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

2. Start the engine for at least **1 min**.
3. With the engine at idle speed (**500 – 800 RPM**), engage D (drive), then R (reverse) to remove air from the hydraulic circuits.
4. Engage N (neutral) and let the engine run idle (**500 – 800 RPM**).
5. Remove the dipstick and clean it. Insert the dipstick in the filling pipe, pushing it down as far as it will go.

8. Extract the dipstick and observe the level of the fluid. If the level of fluid on the dipstick is between the COLD ADD - COLD FULL marks (cold check), the level is sufficient for running the gearbox until the temperature for carrying out the hot check is reached. If the fluid level is not within this range, add or remove fluid as required until the level is between the COLD ADD - COLD FULL marks (cold check).
9. Carry out a hot check as soon as possible once the operating temperature has been reached (**71 – 93 °C; 160 – 200 °F**).

Hot check – Allison 3000 gearbox

The gearbox fluid must be sufficiently hot to allow an accurate check, since the level of the fluid increases as the temperature increases.

To carry out a hot check proceed as follows:

1. Check that the fluid has reached the normal operating temperature (**71 – 93 °C; 160 – 200 °F**). If the gearbox temperature indicator is missing, check the level of the fluid when the engine coolant temperature indicator is stabilized and the gearbox has been operating under load for at least an hour.
2. Park the vehicle on a level surface and engage N (neutral). Apply the hand brake and let the engine run idle (**500 – 800 RPM**).

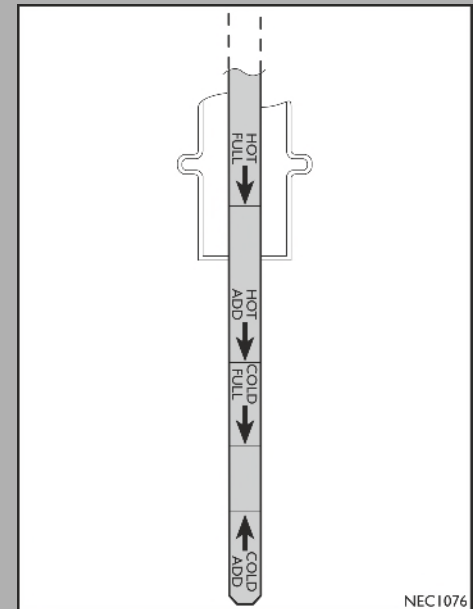


General risk, general prescriptions

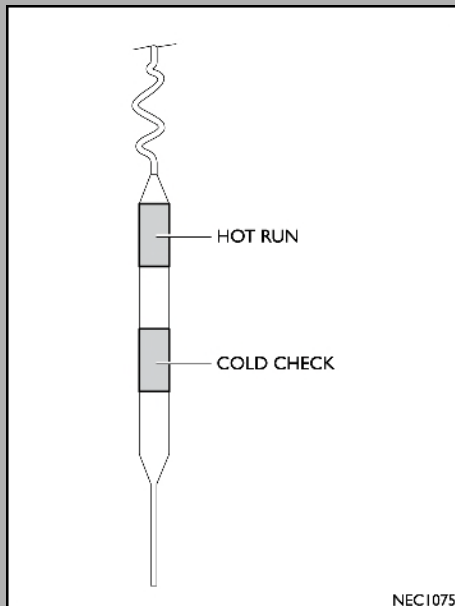
Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

3. Remove the dipstick and clean it. Insert the dipstick in the filling pipe, pushing it down as far as it will go.
4. Extract the dipstick and observe the level of the fluid. The safe level of operation is between the HOT ADD - HOT FULL marks (hot gear).
5. If the level is not within this range, add or remove fluid as required until the level is between the HOT ADD - HOT FULL marks (hot gear).
6. Check that the fluid checks are consistent. Check the level several times and check to ensure the gearbox vent is clean and not obstructed if the values do not correspond. If the values still do not correspond, contact the Service Network.



NEC1076



NEC1075

Cold check – Allison 2500 gearbox

Checking the level of the liquid when cold determines whether the gearbox has enough liquid to work safely until a hot check is performed.

A cold check may be carried out after the initial start-up and after confirmation of the presence of transmission fluid (the temperature of the liquid in the sump is generally **16 – 49 °C (60 – 120 °F)**). To carry out a cold check proceed as follows:

1. Move the vehicle to a flat surface, shift the gearbox to N (neutral) and engage the parking brake.



General risk, general prescriptions

Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

2. Start the engine for at least **1 min.**
3. With the engine at idle speed (**500 – 800 RPM**), engage D (drive), then R (reverse) to remove air from the hydraulic circuits.
4. Engage N (neutral) and let the engine run idle (**500 – 800 RPM**).
5. Remove the dipstick and clean it. Insert the dipstick in the filling pipe, pushing it down as far as it will go.
8. Extract the dipstick and observe the level of the fluid. If the level of fluid on the dipstick is within the COLD CHECK range (cold check), the level is sufficient for running the gearbox until the temperature for carrying out the hot check is reached. If the fluid level is not within this range, add or remove fluid as required until the level is within the COLD CHECK range (cold check).
9. Carry out a hot check as soon as possible once the operating temperature has been reached (**71 – 93 °C; 160 – 200 °F**).

Hot check – Allison 2500 gearbox

The gearbox fluid must be sufficiently hot to allow an accurate check, since the level of the fluid increases as the temperature increases.

To carry out a hot check proceed as follows:

1. Check that the fluid has reached the normal operating temperature (**71 – 93 °C; 160 – 200 °F**). If the gearbox temperature indicator is missing, check the level of the fluid when the engine coolant temperature indicator is stabilized and the gearbox has been operating under load for at least an hour.
2. Park the vehicle on a level surface and engage N (neutral). Apply the hand brake and let the engine run idle (**500 – 800 RPM**).

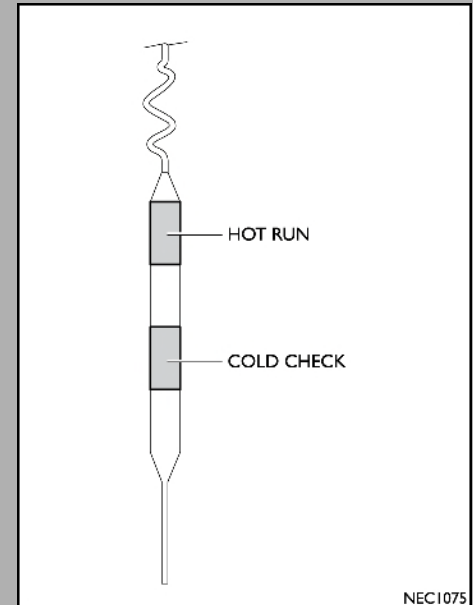


General risk, general prescriptions

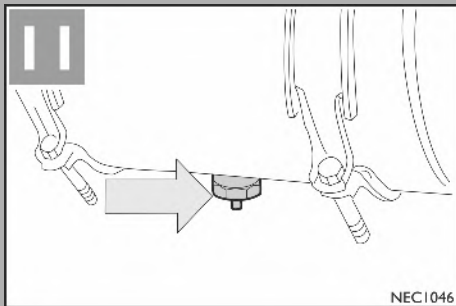
Make sure that the parking brake lever is mechanically locked into the mechanical position as described in section "Using the parking brake".

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

3. Remove the dipstick and clean it. Insert the dipstick in the filling pipe, pushing it down as far as it will go.
4. Extract the dipstick and observe the level of the fluid. The safe level of operation is within the HOT RUN range (hot gear).
5. If the level is not within this range, add or remove fluid as required until the level is within the HOT RUN range (hot gear).
6. Check that the fluid checks are consistent. Check the level several times and check to ensure the gearbox vent is clean and not obstructed if the values do not correspond. If the values still do not correspond, contact the Service Network.



NEC1075



Every six months

11. Bleed condensation from the air tanks by operating the device shown in the figure.



Risk of injury:

During bleeding there is the danger of grains of powder shooting out.

Failure to comply with these prescriptions can result in the risk of serious injury

Operating conditions

The operating conditions of the tanks (operating pressure and temperature) are to be found on the plates on the tanks. The area of use must be in compliance with the said conditions. When operating, the tank must not be submitted to stress other than that due to normal operating pressure and its weight. The tank is intended to be used only in compressed air systems.

Maintenance

Air tanks are maintenance-free provided the following instructions are complied with:

- Any painting must be preceded by a preparatory coat.
- Surface treatment of the fasteners by means of passivation of the components.
- Be extremely careful not to damage threads and/or bleeding devices applied, if any.
- Clean with alcohol-free products.
- Internal inspection through connection.
- Periodic discharge.
- Carry out an external and internal inspection at least once a year, to check whether the thickness of the tank is in compliance with the expected value.

Do not heat-treat or weld tank walls. If dented, replace the tank.

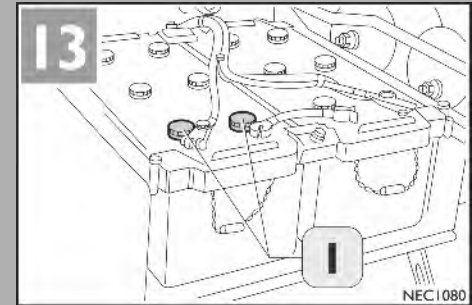
12. Check the level of clogging of the pollen filter. It is accessible by lifting the front grille.

Every year

I3. Check the electrolyte level in the batteries through the plugs **(I)**.

NOTE Refer to the paragraph entitled "Every year before winter" in the "Ordinary Maintenance" chapter for more information about the detailed control operations.

NOTE If the vehicle will not be used for more than one week, disconnect the battery's negative pole.



Each year before winter**Refuelling****Diesel oil for low temperatures**

At low temperatures the degree of fluidity of the diesel can become insufficient due to the separation of the paraffin, which tends to solidify causing the possible clogging of the fuel filters as well as the fuel supply and diesel injection pipes.

Diesel characteristics are established by standard **EN 590**, which defines different classes of diesel for use at low ambient temperatures.

Although IVECO vehicles are fitted with a fuel heating system, it is a good idea to use specific diesel according to the "mission" to be undertaken.

In certain countries, by law, only "winter" diesel (October-March) is distributed on the national sales network during the winter period.

Its use is guaranteed, in compliance with international regulations, in temperatures as low as -10 °C or -20 °C for diesels distributed in mountainous areas at high altitude or in countries with particularly cold climates ("Arctic" diesel).

NOTE Use "Arctic" diesel when driving in mountainous regions or in countries with particularly cold climates. When arriving in an area with cold temperatures, it is recommended that you top-up the vehicle with "Arctic" diesel particularly before leaving the vehicle parked for several hours at night and in the open. Furthermore, to enable the newly introduced diesel to mix with that already in the tank, after topping up it is advisable to drive for a further ten minutes.

ATTENTION Before starting a journey, it is the driver's responsibility to refuel the vehicle only with the type of diesel that best suits the climatic conditions of the roads that are being travelled on and those required by the mission. The characteristics of the diesel are indicated in the table.

COLD FILTER PLUGGING POINT (CFPP)	(TYPE EN 590)
0 °C	"Summer diesel"
- 10 °C	"Winter diesel for Spain/Portugal/Italy"

COLD FILTER PLUGGING POINT (CFPP)	(TYPE EN 590)
- 15 °C	"Winter diesel for France/United Kingdom"
- 20 °C	"Winter diesel for countries in Central Europe"
- 26 °C	"Arctic diesel – Class I"

NOTE IVECO does not permit the use of additives, paraffins, diesel for turbines, benzene in diesel fuel. These products result in a loss of lubrication capacity of propulsion diesel and therefore may seriously damage the injection system. The use of Petronas Durance Diesel Art is permitted. This is an additive designed to improve the fluidity of diesel fuel at low temperatures. It protects paraffin from crystallizing at temperatures down to -20 °C depending on the type of diesel. Refer to the bottle for the instructions for use.

Checks for the winter season

Periodically check for water in the fuel pre-filter.

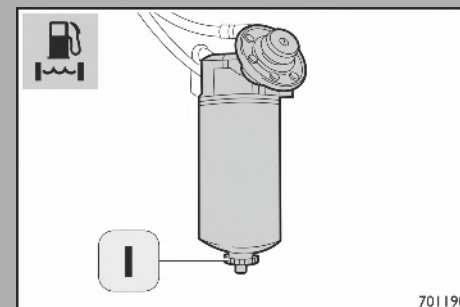
This check, particularly during the winter season, must be carried out after every journey without waiting for a warning light to appear on the dashboard.

If the display shows the yellow warning light for a minor fault indicating water in the fuel pre-filter, drain the water by unscrewing the cock **(I)**.

ATTENTION Do not spill the contaminated water in the pre-filter into the environment. Collect the drained water in a suitable container and dispose of it in the correct manner, in full compliance with environmental regulations.

Furthermore, to prevent problems with the fuel system, as summer approaches:

- Evaluate the conditions of use for diesel filters and if needed replace them before the replacement date stated in the programmed maintenance schedule.
- Only use good quality diesel that complies with international standards (standard EN590 B7). Filling from drums or tanks can cause contamination of the diesel, with consequent malfunction in the supply system.



- Do not travel with the diesel tank nearly empty, at most travel with the tank filled to half of its capacity. This is to avoid a build up of condensation, reproduction of bacteria (due to the presence of a vegetal component in the diesel) and above all to prevent the fuel from freezing.
- Once the engine has been started, do not attempt to obtain peak performance from the vehicle when the engine is cold. Allow the fuel to heat up gradually.

Windscreen wipers, windscreen washers and headlight washers

Shown below are several simple use and maintenance regulations to make sure windscreen wipers and windscreen washers/headlight washers remain efficient.

Windscreen wipers

It is recommended to clean windows regularly by removing grease, dirt and tar, not only to obtain maximum visibility when driving but to therefore considerably prolong the service life of the windscreen wipers.

Before starting to drive, check the condition of the windscreen wipers.

Periodically inspect the wipers; if they are worn and soiled, they can significantly reduce visibility. Do not operate the windscreen wipers on dry glass; if the rubber wipers are deformed or have worn tracks, replace the wipers.

When the temperature drops below 0°C, or if it has snowed, check that the wipers are not stuck to the windscreen. Lift the windscreen wipers when the vehicle is parked to avoid sticking.

Before lowering and/or operating the windscreen wipers, remove any snow or ice from the windscreen. If necessary, use a de-icing product to release the blades.

Windscreen washers and headlight washers

Check the fluid level in the windscreen washer/headlight washer tank before every journey: should a top-up be necessary, we recommend a mixture of water and **TUTELA**

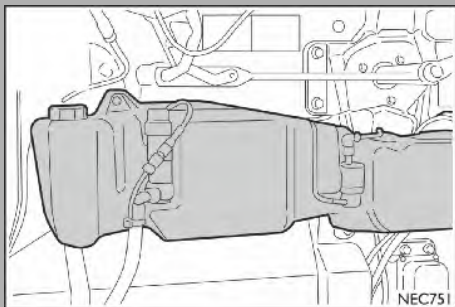
PROFESSIONAL SC 35 (C.T.R. N° I005.B00) fluid.

Make sure that the cleaning fluid in the windscreen washer/headlight washer tank has anti-limescale properties. During the winter season, the fluid must also have anti-freeze properties. The table below shows the correct concentration according to the season.

Make sure that both the spray nozzles of the windscreen and those of the headlight washers (if provided) eject an adequate jet of fluid and are correctly aligned.

If the nozzles malfunction, check that the supply circuits are not blocked; remove any blockages using a pin, if required.

During the winter, remove snow and ice using a de-icer.



EXTERNAL TEMPERATURE	- 35 °C	- 20 °C	- 10 °C	0 °C	SUMMER
TUTELA PROFESSIONAL SC 35 (C.T.R. N° 1005.B00) (in parts)	1	1	1	1	1
Water (in parts)	-	1	2	6	10

Coolant level check

The liquid must be between the MAX and MIN reference marks.

Top-up from the filler **(1)** only.

If necessary, restore the coolant level and concentration, topping up with the specifically recommended product: **PARAFLU UP® (C.T.R.N° 1101.M16)**.

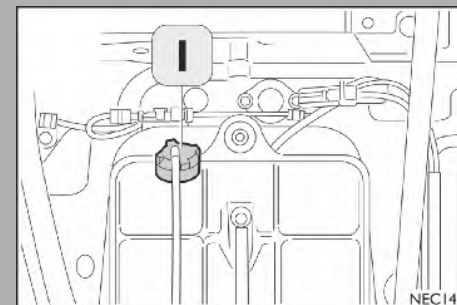
NOTE These fluids must not be used unless specifically indicated below the grille. The vehicles with the **PARAFLU UP® (C.T.R.N° 1101.M16)** tag are equipped with this fluid from the first equipment. In any case, refer to the fluids and lubricants tables provided in the "Technical Specifications" chapter.

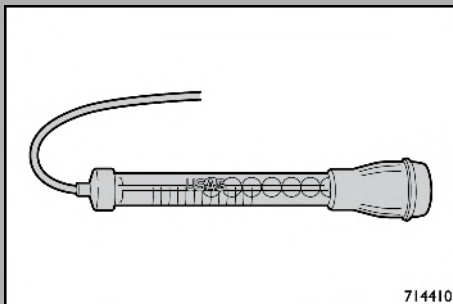


Risk of injury:

Carry out the check only with the engine off and sufficiently cooled; otherwise opening the plug could cause hot fluid to spray out.

Failure to comply with these prescriptions can result in the risk of serious injury



**Anti-freeze fluid concentration check****Winter season**

This check is essential during the winter season to avoid serious damage to the engine cylinder head.

Without anti-freeze fluid or with it present but at a low concentration, the water in the cooling system and engine cavities may freeze and increase in size. This causes cracks in the engine cylinder head and coolant leaks.

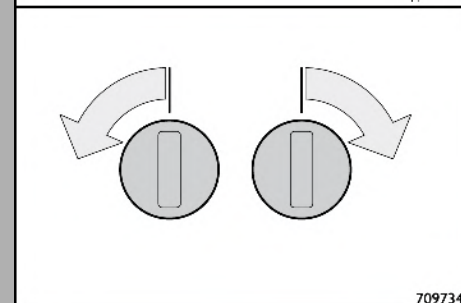
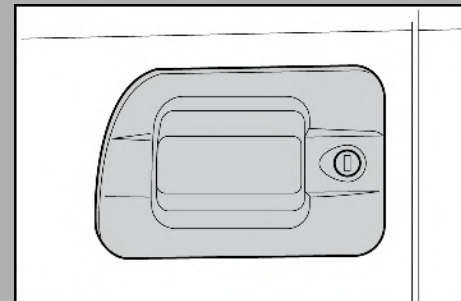
To prevent this damage, before the winter season, check the percentage and state of the coolant using a hydrometer, like that shown in the figure.

If necessary, restore the correct coolant content and concentration, topping up with the specifically recommended product: **PARAFLU UP® (C.T.R.N° 1101.M16)**

NOTE These fluids must not be used unless specifically indicated below the grille. The vehicles with the **PARAFLU UP® (C.T.R.N° 1101.M16)** tag are equipped with this fluid from the first equipment. In any case, refer to the fluids and lubricants tables provided in the "Technical Specifications" chapter.

Door lock lubrication**Winter season**

Before the winter season, lubricate the lock pawl points shown in the figure. If it has frozen, only use a anti-freeze product.

**Tyre check**

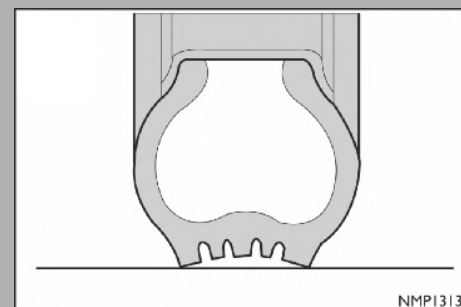
Check the state of wear and pressure of the tyres weekly (including the spare tyre).

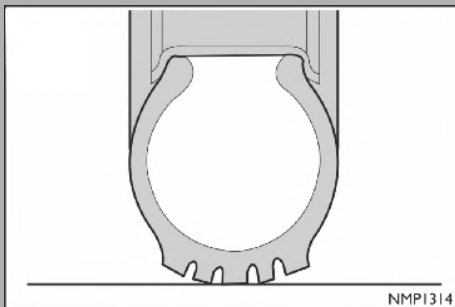
If pressure is low, tyres tend to wear on the outside part of the tread when driving.

If the pressure is too high, the tyres tend to wear in the centre of the tread when driving.

If abnormal wear is found on the front tyres (on the inner or outer section of the tread) have the front wheel toe-in checked.

Do not exceed the maximum weight per axle (when the vehicle is fully loaded).





It is advisable to replace the pair of tyres mounted on an axle when, as a result of the tread pattern wearing out, continuous bands extending over the entire width of the tyre appear clearly on the tread.

In addition, the tyres show other indications of wear: replacement of the tyres is mandatory when the tread wear indicators appear.

Never tamper with the inflation valve, under any circumstances.

Winter tyres

If necessary, to tackle snowy or muddy roads, use winter-type tyres that can be identified by the code M+S ("Mud and Snow") reported on the shoulder of the tyre.

Moreover, on the shoulder, the winter tyres may show a drawing of a mountain and/or a star profile.

For the correct choice of the winter-type tyres, please contact the Service Network, which will be at your disposal to suggest the most suitable types of tyre according to your needs and to the type of vehicle.

NOTE The use of winter tyres is regulated by the highway code.

ATTENTION Please remember that the winter tyres should be fitted to all the wheels of the vehicle. Furthermore, they should be all of the same type and dimension on every wheel. When using the winter tyres, please follow the requirements of the Manufacturer, with particular attention to the indication concerning the maximum allowed speed that should always be observed.

Chain suitability of the vehicle tyres

For the correct choice of the chains, please contact the Service Network, which will be at your disposal to suggest the most suitable types according to your needs and to the type of vehicle.

Snow chains

- The use of snow chains is subject to the current legislation applicable in each country.
- Chains should only be applied to drive wheel tyres.
- Make sure that the snow chains do not damage the suspensions.

- To prevent tyre damage, do not drive with the chains fitted unless there is snow on the road. In extreme circumstances (for example, in tunnels), proceed very slowly and remove the chains as soon as possible.
- With the chains fitted, keep to a moderate speed, avoid potholes and do not drive over steps or pavements.
- For some types of chains, the tension has to be re-checked after travelling a few dozen metres.
- Before buying or using snow chains, consult the Service Network, which may be able to provide more information about how to choose and use the products available on the market for driving on snowy roads.
- If necessary, when driving on snowy roads, turn off the ASR.

NOTE The use of the chains is regulated by the rules of the Highway Code.



General risk, general prescriptions

With the chains fitted:

- Drive carefully at a moderate speed (below 50Km/h)
- Do not accelerate brusquely to prevent the wheels from slipping which could cause the chains to break
- After some meters, check that the chains are fitted and tensioned correctly.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

- If necessary, when driving on snowy roads, turn OFF the ASR.
- To prevent tyre damage, do not drive on roads that are not covered with snow with the chains fitted. In extreme circumstances (for example, in tunnels), proceed very slowly and remove the chains as soon as possible.
- With the chains fitted, keep to a moderate speed, avoid potholes and do not drive over steps or pavements.
- For some types of chains, the tension has to be re-checked after travelling a few dozen metres.
- Before buying or using snow chains, consult the Service Network, who may be able to provide you with more information on how to choose and use the products available on the market for driving in snow.

Advice for improving the battery life

Batteries found on vehicles have a maximum capacity from **180 A·h** or **225 A·h**; this energy reserve starts up the vehicle and guarantees comfort functionalities during stops.

To guarantee that the vehicle restarts, avoid excessive unnecessary consumption, also because the amount of energy required to start the vehicle varies according the temperature and therefore the capacity that is effectively available.

Please remember that in low temperatures (**-20 °C**) the efficient charge capacity of the battery may fall to **50%**. There is also the risk that the electrolyte could freeze.

Freezing depends on the state of charge of the battery, namely on the density of the electrolyte.

Particularly this means there is an energy reserve that enables it to be used for 10 consecutive minutes respectively **18 A** or **22,5 A**, compromising the possibility to start the vehicle.

For example: with an electric parking air conditioner (parking cooler), in conditions of maximum load, continuous consumption of **20 A** can be reached.

During long stops with the engine off and during the winter period the simultaneous use of different utilities that absorb energy exhaust the batteries, which, if used to their maximum capacity, may not have enough power to then start the engine.

To reduce this risk, we have provided a suggested list of step to take.

Recharge the battery

Take advantage of long vehicle stops (end of a "mission", night time stop, holiday) to make sure the battery remains efficient with a recharge.

A fully charged battery reduces fuel consumption and the risk of the battery freezing. In fact, in cold climates, it is good practice to have a charged battery to prevent the electrolytes from freezing when the vehicle is parked up for extended periods of time. Remember that the battery terminals must be fully tightened.

You are advised to recharge the battery every two/three weeks particularly during the winter period. A charged battery reduces fuel consumption.

Use the battery disconnecting switch should the vehicle be out of service. Please remember that depending on the vehicle version there are three types of battery disconnecting switch:

- Automatic electric with timer (no action required by the driver).
- Manual that must be activated by the driver.
- ADR manual electric, that must be activated with the switch on the dashboard or by that on the driver's chassis.

During extremely prolonged stops (long vehicle inactivity) disconnect a battery pole (positive for vehicles with battery sensor, making sure to isolate it, or the negative one in other cases).

After these long periods of activity, and before using the vehicle, it is recommended to recharge the batteries.

Carefully monitor the battery during the recharging phase to prevent prolonged charging, particularly for old battery chargers. New electronically controlled battery chargers guarantee to prevent the occurrence of such happening.

Use of electronic equipment on board the vehicle, when stopped with the engine off

We would like to reiterate that the simultaneous use of different utilities exhaust the batteries, which, if used to their maximum capacity, may, particularly in winter, not have enough power to then start the engine.

Indications on the use of certain devices are provided below. The use of these devices may fully drain the batteries resulting in the engine being unable to start.

Refrigerator

- This accessory consumes **1 A** to **3 A**. If left to run for several consecutive hours, it may absorb up to **50%** of the battery charge. If this is not done with the battery charged to the maximum it may drain completely.

NOTE The fridge has a control system which stops operation when battery voltage reaches the minimum levels. In this case, there is the risk that the vehicle will not start.

Interior lights

- Inner lights absorb **5 A**. You are advised to use them wisely, turning them off when they are not required.

Air-conditioning system and additional heater

- When expecting a long stop, before stopping, you are advised to use the vehicle's climate control system to achieve the desired temperature inside the cab. This reduces the energy required by the night time climate control unit or additional heater. Use the "Economy" use functions provided for these devices.

DC-AC inverter

- Do not use a DC-AC inverter greater than **350 W**.

Use of electronic equipment.

- Electronic entertainment devices such as tablets, PCs, DVD players or others, consume a large quantity of energy. You are advised to use these devices in moderation. For example, remember that the simultaneous use of the refrigerator, additional night time air conditioning, inner lights for 10 hours consecutively results in consumption of **170 A**.

Recharging the batteries of electronic devices

- The batteries of electronic devices such as mobile phones, music players, satellite navigation, tablets or other must only be recharged when the engine is on or only in cases of emergency when the vehicle is stopped. We would like to remind you that the use of such devices when driving is subject the limitations of the highway code.

Precautions for using the battery correctly

The batteries are housed in the specific box. To access them, remove the cover by acting on the hooks **(1)**.

NOTE To correctly refit the cover, the retaining tabs **(2)** must remain outside and not be covered by the cover.

IVECO has introduced a new type of battery with significant technical optimisations, in order to guarantee an improvement of the electrical/mechanical characteristics:

- Better locking of plate assembly inside the container;
- Plates with enhanced mesh and shape;
- Variation of alloy used.

Improvement activity has greatly decreased water consumption, allowing for the development of batteries requiring reduced maintenance and a new type of labyrinth lid without any plugs. This new type of lid integrates an exhaust system of the products generated by the gasification process via two small holes on the short side.

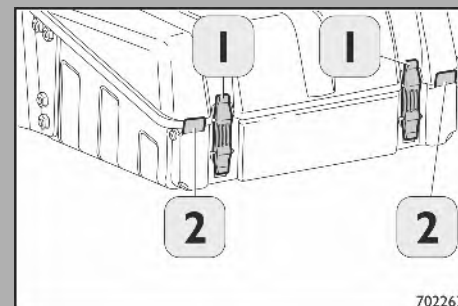
Routine inspection is however recommended, checking that the level of the electrolyte in the batteries through the plugs **(1)** is still between the reference points (MIN) and (MAX) on the batteries.

Check that the terminals are tightened correctly, that they are clean and protected using a suitable product.

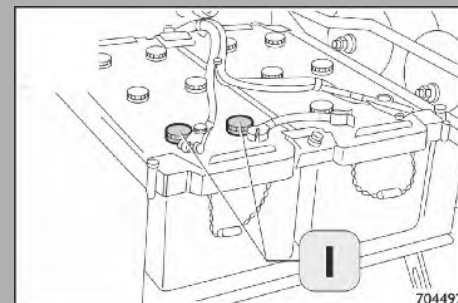
If the vehicle is used for short distances or if it is parked for long periods of time, particularly during winter, check the charge status of the battery often and avoid excessive use of electronic devices during long stops.

If the vehicle is parked for a long period of time, charge the batteries with an external charger to ensure that the engine will start.

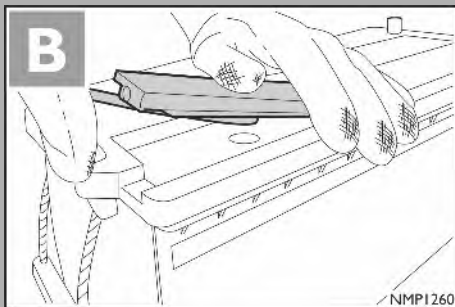
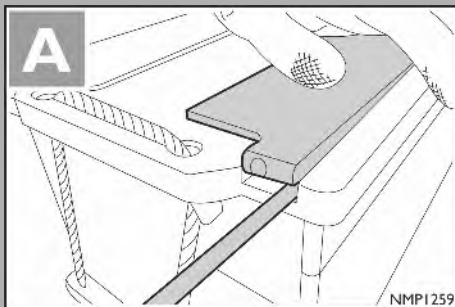
When attempting to start the engine, do not start the starter motor for more than 30 seconds.



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Should this happen, turn the key to the stop position, allow the battery to recuperate for a few minutes, make sure that the fuel system is primed (when actuating the priming pump there is significant resistance in the pre-filter due to the accumulated pressure in the system), make sure that the preheating system works and try to restart the engine again.

These must never be plugged by any sort of mounting or mud deposits.

Check (at least once a year) the fluid level inside the battery and top-off only using distilled water by following the procedure below.

NOTE Make sure you have the following materials before proceeding: Distilled water; Gloves; Protective glasses; Flat head screwdriver; Rubber mallet.



Risk of skin irritation or allergic reactions

Before handling batteries, protective glasses and gloves must be worn, as well as an apron to protect clothing.

Failure to comply with these prescriptions can result in the risk of serious injury



Risk of damage

Successively: Lift the plug ramps by acting on the bleed holes on the ramps. (Figure A).

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



Risk of damage

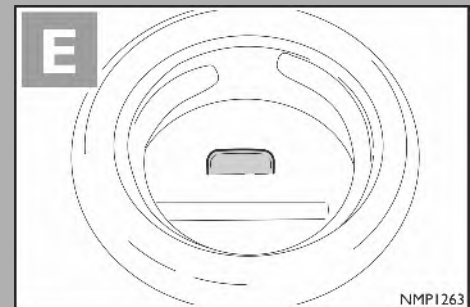
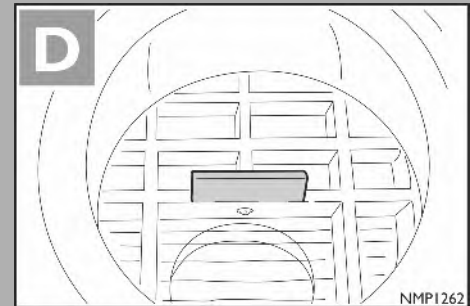
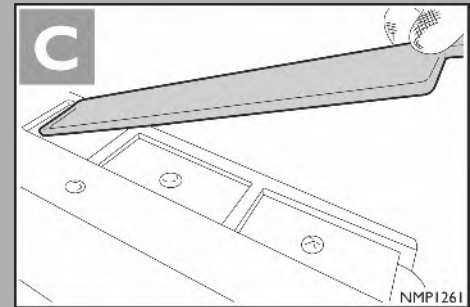
Remove the plug with the help of a screwdriver; do not try to pull the cap off after having only lifted it from the edge as this may cause permanent damage. (Figure B).

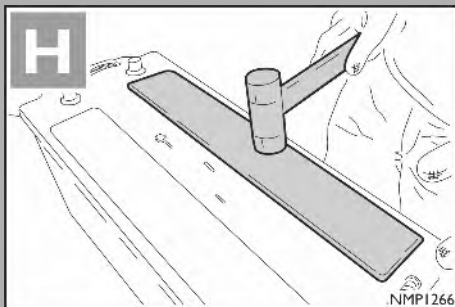
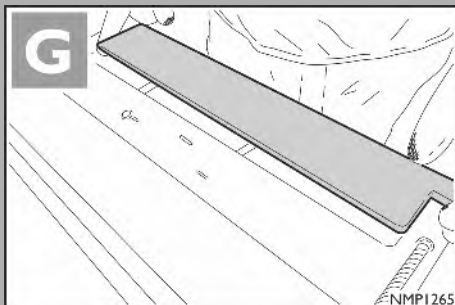
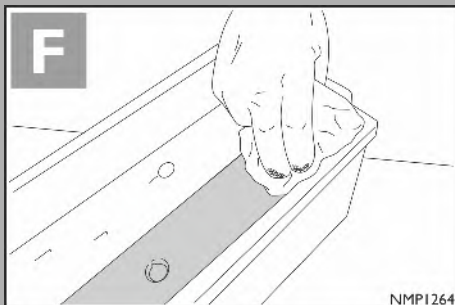
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

- After all holes have been freed, remove the plugs (figure C).
- Check the level of the electrolyte, using the dipsticks inside the battery.

- The plastic dipsticks indicate the maximum electrolyte level (top part) and minimum level (bottom part). They can be of two different types: figure (D); figure (E).

- Restore the level using distilled water making sure that the battery maximum level is not exceeded.





- Dry the plug container (figure F).

- Replace the plugs using, if necessary, a rubber mallet (figure G, H, I).

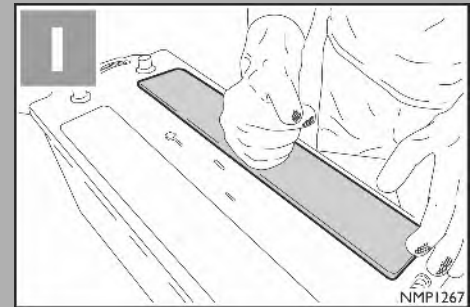


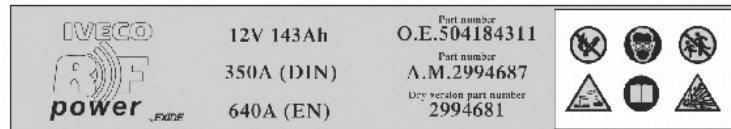
Risk of damage
Do not use tools that may damage the caps.
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

- Figure H

ATTENTION Do not hit the chip RFID located under the IVECO RF POWER writing with the rubber hammer.

- Figure I





NEC.1029

The battery in use on the vehicle uses an electronic device below the label that is able to log all relevant battery information.



General risk, general prescriptions
Do not tamper with battery label.
Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

The device is below the words "IVECO RF Power" in order to prevent damaging the device and losing the information required for battery replacement under warranty:

- Wash the battery installation area at high pressure;
- Wash using fluids other than water;
- Remove the label for whatsoever reason;
- Cut the label and/or damage it;
- Place any object above or near the area where the device is installed.

Charging procedure

NOTE The battery charger must be suitable for charging **12 V** batteries. Both batteries must always be charged. If charging at **24 V**, use a specific battery charger able to balance them. If you do not have such a device, use a **12 V** battery charger suitable for charging. The charge current must be 1/10 or less of the nominal battery capacity.

NOTE Before any intervention on the batteries, read the indications provided in the paragraph "Precautions for accident prevention while handling batteries" indicated in this chapter.



Risk of injury:

The batteries contain sulphuric acid which is highly caustic and corrosive; during the top up operations protective glasses and gloves must be worn, as well as an apron to protect clothing. If possible, have this check performed by qualified personnel. Failure to comply with these prescriptions can result in the risk of serious injury

Proceed as follows for recharging:

- First disconnect the negative terminal from the batteries, followed by the positive terminal.
 - If the vehicle is equipped with a battery sensor, read the paragraph "Battery sensor" in order to find out how to handle the negative terminal correctly.
 - Do not disconnect the connection cables between the batteries.
1. Set the SLOW charge voltage as described in the battery charge instruction manual.
 2. Connect the negative terminal of the battery charger to the negative terminal of the batteries **(-)** and the positive terminal to the positive terminal **(+)** of the batteries.
 3. Turn the battery charger on.
 4. Once the charging operations have completed, switch off the battery charger and disconnect first the positive terminal from the batteries and then disconnect the negative terminal.



Warning for injury prevention while handling batteries

1. Smoking and handling of fires and naked flames is strictly prohibited. Do not generate sparks. Do not generate sparks while connecting devices or measuring instruments directly to batteries.

Before disconnecting batteries, disconnect live devices (tachograph, internal lights, etc.) by removing the corresponding fuse in the control unit.

Disconnect the ground first. Avoid short circuits caused by wrong connections or handling with fixed wrenches.

If the vehicle is equipped with a battery sensor, refer to the relative paragraph for indications on moving the negative terminal.

Do not remove the caps from the terminals if not necessary. During connection, install the ground cable last.

2. Wear safety goggles or masks!

3. Keep acids and batteries out of the reach of children!

4. The battery contains acid. Wear protection gloves and garments. Do not tilt or overturn the battery: Acid leaks from exhaust holes may occur.

5. Pay attention to the warnings in the operating instructions and the documentation of the battery manufacturer.

6. Risk of explosion! Special care is required after recharging the battery or after long trips. While recharging, explosive gas is produced (mixture of hydrogen and oxygen). Provide proper ventilation.

- Batteries include heavy pollutants. To replace the batteries we recommend contacting the Service Network, which is equipped for disposal compatible with the environment and the provisions of the law.
- Incorrect installation of electrical devices may result in serious damage to the vehicle. If, after purchasing the vehicle, accessories are to be installed, please contact the IVECO Iveco Service Network, which will recommend the most appropriate devices and will be able to advise on whether a battery with greater capacity needs to be used.
- The battery fluid is toxic and corrosive. Avoid contact with the skin and the eyes. Operations should be performed in a ventilated room and away from unprotected flame or possible spark sources (cigarettes, etc.): fire and explosion hazard.
- A battery which is kept at a charge of less than **50%** can become damaged due to sulfation, capacity is reduced and start-up is compromised. Furthermore it will have a greater tendency to freezing (in this case, it can happen at **-10 °C**).

- The starting procedure described above must be carried out by skilled personnel, since incorrect actions can cause electrical discharges of substantial intensity.
- In order to prevent damage to the electrical equipment of the vehicle, rigorously follow the instructions of the manufacturer of the wiring, which must have sufficient cross-section and adequate length, so that the two vehicles do not touch.
- It is strictly forbidden to use a quick battery charger for emergency start-up: It could damage the electrical systems and in particular the systems that manage ignition and supply.
- Connection and disconnection from battery terminals may generate voltages that adversely affect vehicle electronic systems and control units. Such operations must be carried out by skilled personnel only.

Useful advice

In order to prevent rapid discharge of the battery and to conserve it during operating times, observe the following recommendations:

- Terminals should always be properly fastened.
- Do not keep devices on for long with engine off (car radio, lights, etc.).
- When the engine is shut off and the vehicle is left after being correctly parked, make sure that no internal or external lights are left on.
- Before any work is performed on the electrical systems, disconnect the negative pole of the battery.
- If the vehicle is equipped with a battery sensor, refer to the relative paragraph for indications on moving the negative terminal.

Headlight check (winter check)

As regards visibility conditions, not only due to the number daylight hours but also often adverse weather conditions, you are advised to:

- Keep the front light assemblies, rear lights and those on both sides clean.
- Immediately replace bulbs that are not working.
- Contact the Service Network immediately to replace any damaged components and modify front light assemblies to obtain the correct orientation of the light beam (vehicles with mechanical suspension).

NOTE the remote control for locking the door (if present) has a specific button that activates all the external lights at the same time to allow the bulbs to be checked.

Check operation of additional heater (winter check)

At the start of the winter season, make sure the additional heater is operating correctly by actuating the controls on the dashboard.

With automatic climate control use the temperature knob to adjust the temperature setting. The heating starts automatically when the cab temperature is not reached and the outside temperature is below **5 °C**.

Contact the Service Network in case of malfunction.

Starting the engine when the outside temperature is less than 10 °C

The vehicle is equipped with an electrical preheating device to warm up the air intake to facilitate engine starting at low temperatures.

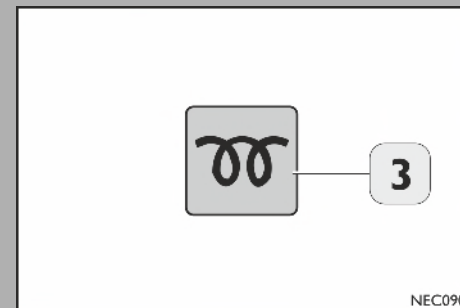
- Set the gearbox to neutral. For mechanical gearboxes: neutral position of the gearbox control lever. For AS Tronic and Allison gearboxes: press the "N" button.
- Insert the key in the ignition switch and turn it clockwise to the MAR-I position.
- The symbol **(3)** on the display stays on if preheating is needed (and for its entire duration), otherwise it goes out.
- Wait until the preheating symbol **(3)** starts flashing.
- Then turn the key to the AVV-2 position and release it as soon as the engine starts.

NOTE If the engine is not started within a few seconds from the time the warning light switches off, the light switches off and the preheating system is deactivated to avoid discharging the batteries. It is recommended that the preheating process is then repeated.

**General prescriptions**

Allowing the engine to idle for more than 3 hours is not permitted unless specifically approved by the manufacturer. If vehicle use envisages keeping the engine at idle for more than 3 hours, contact the Service Network.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



NEC090

Caring for the vehicle

Maintenance of the body



General risk, general prescriptions

Detergents pollute water:

- Therefore, wash the vehicle in an area equipped for collection and purification of the fluids used for washing.

Correct behavior will ensure that vehicle is used as environmentally friendly as possible

Regularly wash the vehicle with neutral products and water.

The frequency of washing depends on the following factors:

- Areas with high atmospheric pollution.
- Travelling on streets treated with de-icing salt.
- Parking under trees producing resinous substances.
- Do not use brushes with hard bristles or dirty cloths so as to avoid deep scoring of the varnish layer and clouding of external plastic parts.
- Carefully dry to remove any water spots.
- Do not wash the vehicle after prolonged exposure to the sun, otherwise the paint's shine may be altered.
- Do not immediately place the vehicle in a closed area, but leave it in the open air to facilitate evaporation of the water.

Cleaning plastic parts

The external plastic parts are cleaned using the same washing procedure as the vehicle.

If there are still traces of dirt, the use of specific products is recommended, following the manufacturer's instructions carefully.

The use of such products is also recommended for cleaning the plastic protective coverings inside the driver's cabin (dashboard, doors, etc.).

Do not use products for cleaning paints or products containing aromatic solvents, methanol or hydrocarbons.

Window cleaning

Use specific products for cleaning; use very clean cloths in order not to scratch the glass or alter its transparency.

Cleaning the plastic sun visor

Use neutral soap and water only.

If residue remains and proves difficult to remove (e.g. resinous matter), dab cooking oil on the stains, then wash again with neutral soap and water only.

Do not clean the sun visor when dry to prevent scratching or damage to its surface.



Risk of damage

To clean the sun visor, do not use products containing aromatic solvents, ketone ester, methanol, hydrocarbons, denatured alcohol, as these may damage the plastic and result in microcracks, which may later cause the sun visor to break.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Cleaning the interior and fabric parts

Dust may be removed from the seats and the fabric parts with the help of a soft brush.

More intensive cleaning can be carried out with dry foam and solvents in general.

Use these substances with care, because they are inflammable and emit vapours.

Therefore, ensure good ventilation of the cab until it is dry

Chlorate solvents (trichloroethylene, hyperchlorite, etc.) must not be used.

Do not use water jets for interior cleaning because they may damage the electrical components installed under the dashboard and/or the underside of the seats; take the necessary precautions to safeguard their correct function.

Plastic decorations on the sun visor

Decorating the sun visor by painting or applying decals, stickers, or self-adhesive film is possible if they conform to the following conditions:

- Painting with two-component paints (of the polyurethane type) suitable for the type of plastic of the sun visor only is allowed; do not use paints containing aromatic solvents, ketone or esters;
- do not apply decals, labels, films or any PVC-based stickers; the use of specific polyester or polyethylene-based products for polymethylmethacrylates is recommended.

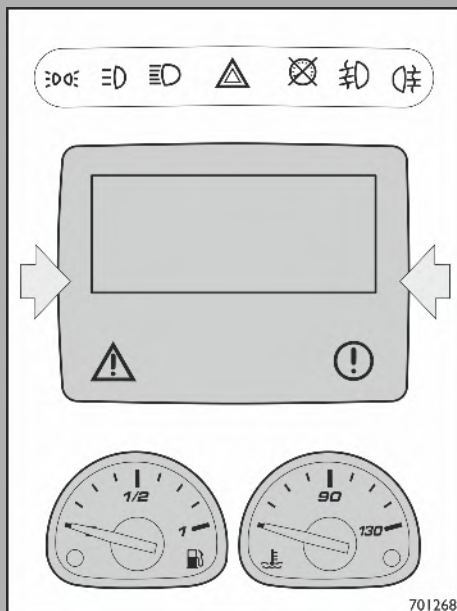


Risk of damage

Failure to comply with the conditions listed above can alter the plastic material of the sun visor

,which may cause the sun visor to break.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



Windscreen wiper, windscreen washer and headlight washer

Periodically inspect the wipers; if they are worn and soiled, they can significantly reduce visibility. Regularly clean the glass removing grease and grime, dirt and tar; the service life of the wipers will thereby be prolonged considerably.

Before operating the windscreen wipers, remove any snow or ice present: In temperatures below zero make sure that ice has not stuck the rubber part to the glass before operating the windscreen wipers: if necessary, use a de-icing product to release the wipers.

Do not operate the windscreen wipers on dry glass; if the rubber wipers are deformed or have worn tracks, replace the wipers.

Make sure that both the nozzles of the windscreen and those of the headlight washers (if provided) eject an adequate jet of fluid and are correctly aligned.

In case of malfunction of the nozzles, check that the supply circuits are not obstructed; eliminate any clogging of the outlet holes using a pin.

Display cleaning

Extreme care is to be taken with the display. Do not use sharp objects as these may scratch or damage the display.

Use a soft, clean and dry cloth to clean the display.

NOTE Do not use alcohol or benzene to clean the instrument panel glass.

Washing the engine

For these operations it is recommended to contact specialised workshops; washing must be performed when the engine is cold and with great care. This is to prevent damage to the electrical components of the system.



General risk, general prescriptions

This operation must be done by the Service Network, which is equipped for collection and purification of the fluids used for washing. Washing must be performed when the engine is cold and with great care, to avoid damage to the electronic components fitted on the vehicle.

Correct behavior will ensure that the vehicle is used as environmentally friendly as possible.

Scheduled maintenance

The philosophy of scheduled maintenance

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Non-scheduled operations

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Timed operations

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The philosophy of scheduled maintenance

Long life and efficient operation with regular maintenance.

To be sure that the vehicle is always in perfect operating condition, the inspections, controls and adjustments of the various parts described in the following pages must be carried out at the indicated intervals.

Regular maintenance is the best guarantee of safety and for keeping management costs as low as possible.

Contact the Service Network for carrying out specified operations.

Maintenance work must be carried out at the established number of kilometres.

These operations are obligatory during the warranty period and failure to carry them out will invalidate the warranty.

This work must only be carried out by the Service Network, who will confirm it with a date, stamp and signature in the special boxes provided in the overall maintenance plan.

Maintenance services schedule

Scheduled Maintenance includes "Standard" services, plus a set of operations known as "Extra-Plan" and others known as "Timed".

Normally there are no different programs in relation to vehicle use. If there is a difference in terms of "mission", the number of programs will be the same as the number of missions.

Systematic use of the recommended lubricants ensures long replacement intervals at relatively reduced costs. For more information, consult the recommended lubricants summary card.

M = STANDARD SERVICE

Standard services are marked with M = "Maintenance".

These must be carried out at regular km intervals, normally in multiples.

EP/T EXTRA PLAN OPERATIONS - TIMED OPERATIONS

Extra plan maintenance operations are marked as EP = "Extra Plan".

These operations are complementary to "standard" services and must be carried out at intervals that are not compatible with standard services.

Timed operations are marked with T = "Timed".

They are exclusively carried out in specific time-based intervals and are normally executed during particular seasonal conditions.

To minimise vehicle maintenance stops it is advisable to schedule the extra-plan stops according to the vehicle's average annual mileage, where possible making them coincide with the specified distance intervals.



General prescriptions

The correlation, if necessary, between the mileage interval and the hours of use interval (if indicated in the routine maintenance summary card) is valid if the ratio with the average working speed of the vehicle (regularly presented) is respected.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



General prescriptions

The correlation is specified merely as a guide to assist in the plan of hypothetical maintenance stops. Therefore the time intervals indicated for the non-programmed operations are limited, independently of the Km effectively clocked up.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

Programmed maintenance plan specs

TYPE OF USE	ENGINE OIL	STANDARD SERVICES			
		M1	M2	M3	M4
long range transport: national or international, mainly on motorways.	ACEA E7 URANIA LD7 (C.T.R. N° 1517.F06) (I)	Every 80.000 km	Every 160.000 km	Every 240.000 km	Every 480.000 km
short/medium range transport: regional or interregional.		Every 60.000 km	Every 120.000 km	-	Every 240.000 km
Heavy-duty use mainly in urban areas: dumpers, compactors, street sweeps, distribution.		1 year or 40.000 km or 800 h	2 years or 80.000 km or 1.600 h	-	4 years or 160.000 km or 3.200 h
Use in countries with particularly heavy-duty conditions: dust, humidity, unsurfaced roads and/or roads in poor condition, very hot or very cold climates, etc.		1 year or 20.000 km or 400 h	2 years or 40.000 km or 800 h	-	4 years or 80.000 km or 1.600 h

TYPE OF USE	ENGINE OIL	EXTRA-PLAN		
		EPI AUTOMATIC TRANSMISSION MAINTENANCE	EP2	EP3 MECHANICAL GEARBOX MAINTENANCE
long range transport: national or international, mainly on motorways.	ACEA E7 URANIA LD7 (C.T.R. N° I517.F06) (1)	Every 40.000 km or 2 years or 2000 h (2)	Every 150.000 km or 2 years	Every 540.000 km or 3 years
short/medium range transport: regional or interregional.				
Heavy-duty use mainly in urban areas: dumpers, compactors, street sweeps, distribution.		Every 20.000 km or 6 months or 500 h		Every 360.000 km or 3 years
Use in countries with particularly heavy-duty conditions: dust, humidity, unsurfaced roads and/or roads in poor condition, very hot or very cold climates, etc.				Every 80.000 km or 2 years

TYPE OF USE	ENGINE OIL	TIMED OPERATIONS		
		T1	T2	T3
long range transport: national or international, mainly on motorways.	ACEA E7 URANIA LD7 (C.T.R. N° I517.F06) (I)	Every 6 months	Every year	Every 3 years
short/medium range transport: regional or interregional.				
Heavy-duty use mainly in urban areas: dumpers, compactors, street sweeps, distribution.				
Use in countries with particularly heavy-duty conditions: dust, humidity, unsurfaced roads and/or roads in poor condition, very hot or very cold climates, etc.				

NOTES

(1) At the first engine oil change interval it is possible to use ACEA E4 SAE 5W30 URANIA FE synthetic oil to gain "fuel economy" benefits; this does not affect the oil change interval.

(2) Only for Allison gearbox, family 1000/2000: Every **80.000 km** or 2 years or **2000 h**.

- When using a lower class lubricant, e.g. ACEA E2 (Urania Turbo), halve the mileage before the engine oil and filter are replaced.
- If fuel with a percentage of sulphur content above **0,05%**, the mileage before replacing the engine oil and oil filter must be halved.
- In the case of very low annual distances, the engine oil and filter must be replaced at least every year.
- In the case of very low annual distances, general greasing must be performed at least once a year.

Schedule of maintenance stops

SCHEDULE OF MAINTENANCE STOPS EXPRESSED IN KILOMETRES LONG RANGE TRANSPORT: NATIONAL OR INTERNATIONAL, MAINLY ON MOTORWAYS	
KM X 1000	M SERVICES
80	M1
160	M2
240	M3
320	M2
400	M1
480	M4
560	M1
640	M2
720	M3
800	M2
880	M1
960	M4
1040	M1
1120	M2
1200	M3
1280	M2

SCHEDULE OF MAINTENANCE STOPS EXPRESSED IN KILOMETRES SHORT/MEDIUM RANGE TRANSPORT: REGIONAL OR INTERREGIONAL	
KM X 1000	M SERVICES
60	M1
120	M2
180	M1
240	M4
300	M1
360	M2
420	M1
480	M4
540	M1
600	M2
660	M1
720	M4
780	M1
840	M2
900	M1
960	M4
1020	M1
1080	M2

SCHEDULE OF MAINTENANCE STOPS HEAVY-DUTY USE - MAINLY URBAN: DUMPERS, COMPACTORS, ROAD SWEEPERS, DISTRIBUTION			
KM X 1000	HOURS	YEARS	M SERVICES
40	800	1	M1
80	1600	2	M2
120	2400	3	M1
160	3200	4	M4
200	4000	5	M1
240	4800	6	M2
280	5600	7	M1
320	640	8	M4
360	7200	9	M1
400	8000	10	M2
440	8800	11	M1
480	9600	12	M4
520	10400	13	M1
560	11200	14	M2
600	12000	15	M1
640	12800	16	M4
680	13600	17	M1

SCHEDULE OF MAINTENANCE STOPS USE IN COUNTRIES WITH PARTICULARLY HEAVY-DUTY CONDITIONS: DUST, HUMIDITY, UNSURFACED ROADS AND/OR ROADS IN POOR CONDITION, VERY HOT OR VERY COLD CLIMATES, ETC.		
KM X 1000	HOURS	M SERVICES
20	400	M1
40	800	M2
60	1200	M1
80	1600	M4
100	2000	M1
120	2400	M2
140	2800	M1
160	3200	M4
180	3600	M1
200	4000	M2
220	4400	M1
240	4800	M4
260	5200	M1
280	5600	M2
300	6000	M1
320	6400	M4
340	6800	M1
360	7200	M2

SCHEDULE OF MAINTENANCE STOPS USE IN COUNTRIES WITH PARTICULARLY HEAVY-DUTY CONDITIONS: DUST, HUMIDITY, UNSURFACED ROADS AND/OR ROADS IN POOR CONDITION, VERY HOT OR VERY COLD CLIMATES, ETC.		
KM X 1000	HOURS	M SERVICES
380	7600	M1
400	8000	M4

Scheduled maintenance operations

OPERATIONS	M1	M2	M3	M4
Lubrication, oil and filter change, fluid check				
Change engine oil (2)	•	•	•	•
Change engine oil filter/s (2)	•	•	•	•
Check hydraulic clutch fluid level	•	•	•	•
General greasing of the chassis (2)	•	•	•	•
Change pollen filter (2)	•	•	•	•
Replace the fuel filter cartridge	•	•		•
Replace fuel pre-filter cartridge	•	•		•
Replace engine air filter (dry cartridge) (4)		•		•
Change axle wheel hub(s) oil (3)		•		•
Change rear axle oil (5)		•		•
Engine compartment checks				
Check condition of the various drive belts	•	•		
Replace belt and various controls			•	•
Check tappet clearances and adjust if necessary			•	•
External checks				
Check headlamp levelling		•		•
External washing of the radiator	•	•	•	•

OPERATIONS	M1	M2	M3	M4
Vehicle underbody checks				
Engine coolant system seal check	•	•	•	•
Check brake disc and pad wear	•	•	•	•
Check mechanical gearbox breather efficiency		•		•
Check rear axle breather efficiency		•		•
Check fixing of steering box and support		•		•
Check steering column and steering linkage		•		•
Diagnostics				
Check AdBlue® system using E.A.SY. (3)	•	•	•	•
Engine EDC system check-up with E.A.SY.			•	•
Miscellaneous				
Cab tilting, opening and closure of bonnets and removing–refitting of engine guards	•	•	•	•
Handling operations (1)	•	•	•	•
On-road functional test	•	•	•	•
<p>(1) Handling operations for vehicle and tools in the workshop.</p> <p>(2) This intervention must be carried out every 12 months.</p> <p>(3) If present.</p> <p>(4) In any case, to be carried out every two years. Early filter clog is generally due to environmental conditions. Therefore it must be replaced when signalled by the special sensor regardless of the indications, which must in any case be observed when no specific instructions are provided.</p> <p>(5) Replace in any case every 2 years.</p>				

Non-scheduled operations**NON-SCHEDULED OPERATIONS
(AT THE SAME TIME AS A MAINTENANCE SERVICE, IF POSSIBLE)****EPI (1)**

Change automatic gearbox oil filter

Remove, refit and clean automatic transmission breather

Change automatic gearbox oil

EP2 every **150.000 km** and in any case every 2 years

Replace the **AdBlue®** system filter and pre-filter(s)

AdBlue® system verification test

EP3 **(2)** Every **80.000 km** and in any case every 2 years for use in countries with particularly heavy-duty conditions

Every **360.000 km** and in any case every 3 years for heavy-duty use

Every **540.000 km** and in any case every 3 years for long and medium-range distances

Change gearbox oil

NOTES

(1) See tables on the following pages.

(2) The frequencies described apply when using newly filled 02E ZF TE-ML 02 class oil. When using oil **TUTELA TRANSMISSION FE-GEAR (C.T.R. N° II 12.FI I)** the change must be performed at **240.000 km** and every 2 years in case of heavy use of the vehicle and every **300.000 km** or 2 years for long and medium-range distance.

Allison gearbox, family 1000/2000		
	Gearbox oil type with TES-295 specification	
	Long and medium range use	Heavy-duty use in countries with particularly heavy-duty conditions
Gearbox oil filter replacement	Every 80.000 km or 24 months or 2.000 h	
Change gearbox oil	Every 240.000 km or 48 months or 4.000 h	Every 120.000 km or 36 months or 3.000 h
Allison gearbox, family 3000/4000		
	Gearbox oil type with TES-295 specification	
	Long and medium range use	Heavy-duty use in countries with particularly heavy-duty conditions
Gearbox oil filter replacement	Every 120.000 km or 36 months or 3.000 h	
Change gearbox oil	every 480.000 km or 48 months or 6.000 h	every 240.000 km or 48 months or 6.000 h
Always use oil with Allison - TES 295 technical specification		

Timed operations**TIMED OPERATIONS
(AT THE SAME TIME AS A MAINTENANCE SERVICE, IF POSSIBLE)**

T1 Every 6 months

Change and check pollen filter

Radiator guard grille cleaning

Check clearance between rear axle brake drum/shoes

Check clearance between front axle brake drum/shoes

T2 Every year – Before the winter

Check coolant density

Change total PTO oil (Multipower)

Replace the additional heater fuel filter

Replace drying filter

T3 Every 3 years

Change oil and bleed clutch hydraulic control

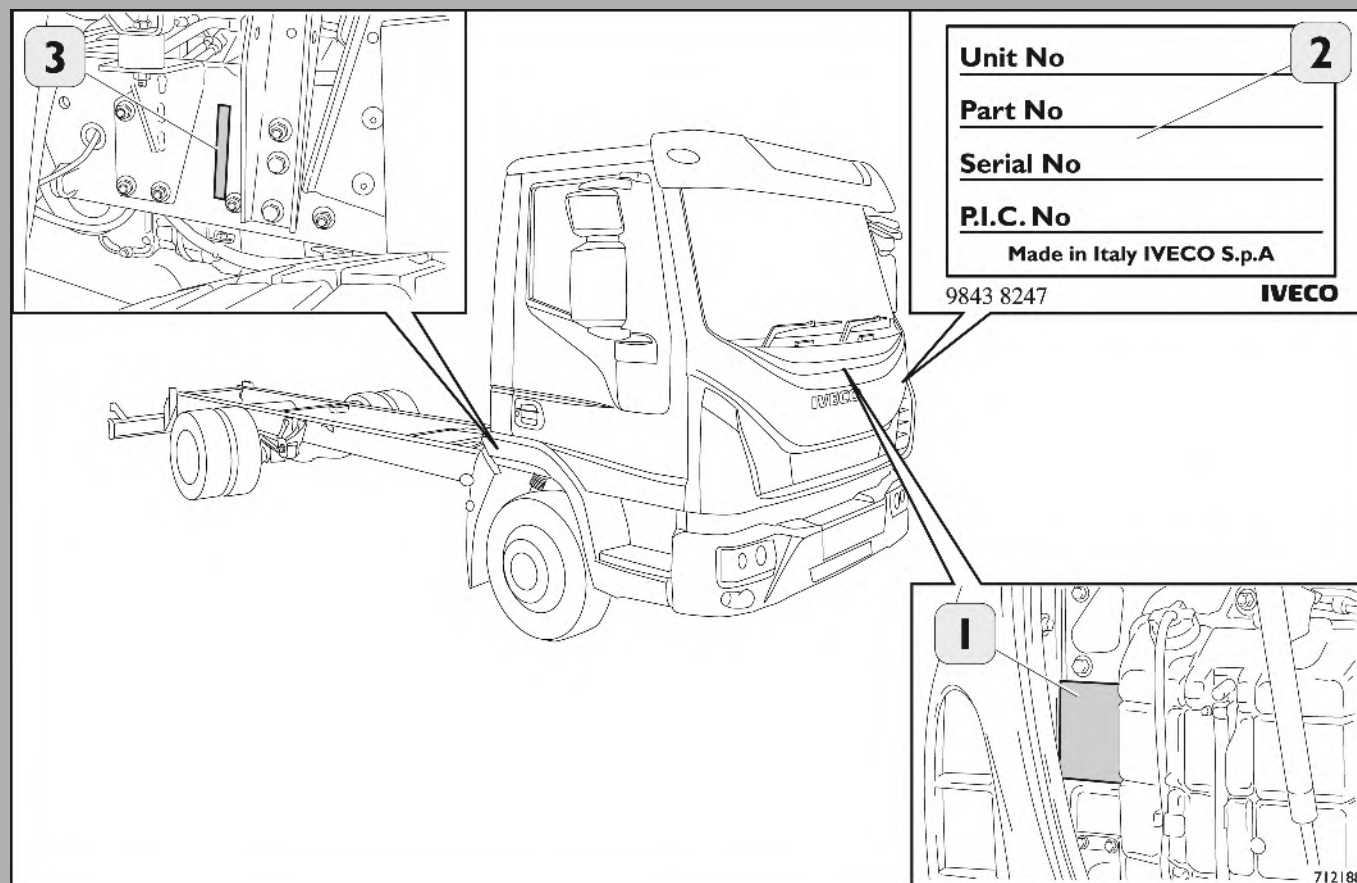
Replace engine coolant

Technical specifications

Vehicle identification data	320
Vehicle identification plate	325
Product identification plate	326
Engine	327
Commercial coding	329
Misc. technical data	329
Electrical system	331
Declaration of conformity for radio appliances	340
Refuelling	345
International lubricant designation	352
Selective catalytic reduction system – SCR (Selective Catalytic Reduction)	355

Vehicle identification data

The identification data of your vehicle are: type and number of the engine, type and number of the chassis, the manufacturer's plate and the identification plate.



1. Vehicle identification plate

For vehicle identification in compliance with C.E.E directives.

2. Product identification plate

This plate shows the P.I.C. For more details, please refer to the following pages.

3. Chassis

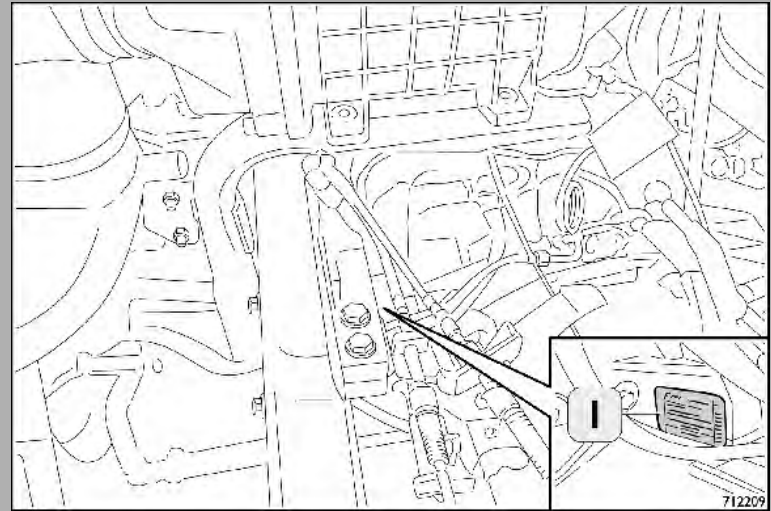
The marking (located at the front on the chassis right-hand side-member, with the vehicle in the direction of driving) consists of 17 alphanumeric characters assigned by the manufacturer to the individual vehicle. This punching identifies each vehicle unequivocally for a period of 30 years.

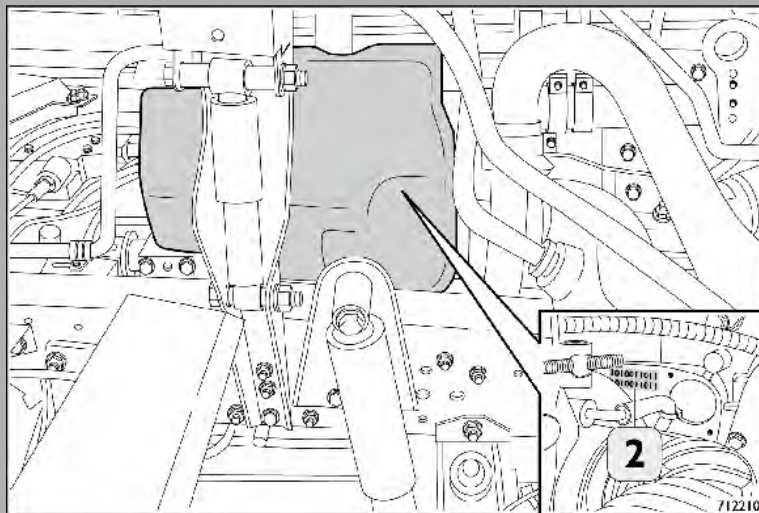
Engine identification

The engine identification label **(I)** is affixed to the flywheel housing (rear left side of the engine).

The identification label **(I)** has an alphanumeric code stamped on it which identifies the engine type and the production sequence number.

Tilt the cab to access the identification label **(I)**.





The engine code is repeated on a marking **(2)** located on the right side of the crankcase.
The cab always needs to be tilted.

NOTE the marking on the crankcase might not be visible as it is covered by some components (the heat guard and the air intake pipe). In this case, contact a Service Network workshop to access the marking on the crankcase.

Vehicle identification plate

- A. Type-approval number marking (where applicable).
- B. Vehicle identification number (V.I.N.).
- C. Total tractor weight.
- D. Total tractor + trailer weight (where applicable).
- E. Permitted weight limit on the 1st axle.
- F. Permitted weight limit on the 2nd axle (where applicable).
- G. Permitted weight limit on the 3rd axle.
- H. Permitted weight limit on the 4th axle (where applicable).
- I. Specific type information.
- L. Wheelbase in mm.
- M. Engine type.
- N. Engine power.
- O. Number of axles.
- P. Place of production.
- R. Permissible smoke grade value.

○ IVECO S.p.A. ○	
a)	
b)	
c)	Kg
d)	Kg
e)	1- Kg
f)	2- Kg
g)	3- Kg
h)	4- Kg
i)	Type
j)	Wheelbase
m)	Engine type
n)	Engine power (kW)
o)	N° of axles
r)	Current and absorbed rates
p)	Made in
IVECO	
○	

NEC392

Unit No
Part No
Serial No
P.I.C. No
Made in Italy IVECO S.p.A

9843 8247 **IVECO**

NEC393

Product identification plate

This data plate has the P.I.C. (product identification code) which is essential when referring to the spare parts catalogue (electronic and/or microfiche catalogue).

The P.I.C can also be found on the vehicle's warranty card.

NOTE When referring to the catalogue, use only the first 8 characters of the Production Identification Code. The data plate can be accessed by opening the front grille in the compartment used for the fluid top-ups and checks.

Engine

Standard E5 engines				
ENGINE TYPE	TECTOR (F4AE3481A)	TECTOR (F4AE 3681B)	TECTOR (F4AE3681D)	TECTOR (F4AE 3681E)
number of cylinders	4	6	6	6
bore	102 mm	102 mm	102 mm	102 mm
stroke	120 mm	120 mm	120 mm	120 mm
Displacement	3920 cm³	5883 cm³	5883 cm³	5883 cm³
Max. rated output	134 kW (182 CV)	160 kW (218 CV)	185 kW (251 CV)	205 kW (279 CV)
Operating at approximately	2700 RPM	2700 RPM	2700 RPM	2500 RPM
Max. torque	610 N·m (62 kgm)	680 N·m (69 kgm)	850 N·m (87 kgm)	950 N·m (97 kgm)
Operating at approximately	1300 – 2100 RPM	1200 – 2100 RPM	1250 – 2100 RPM	1250 – 2100 RPM
Standard E3 engines				
ENGINE TYPE	TECTOR (F4AEE681E)	TECTOR (F4AEE681G)	TECTOR (F4AEE681B)	TECTOR (F4AEE681A)
number of cylinders	6	6	6	6
bore	102 mm	102 mm	102 mm	102 mm
stroke	120 mm	120 mm	120 mm	120 mm
Displacement	5883 cm³	5883 cm³	5883 cm³	5883 cm³
Max. rated output	134 kW (182 CV)	160 kW (218 CV)	176 kW (239 CV)	202 kW (275 CV)
Operating at approximately	2700 RPM	2700 RPM	2700 RPM	2500 RPM

Max. torque	570 N·m (58 kgm)	680 N·m (69 kgm)	810 N·m (82 kgm)	930 N·m (95 kgm)
Operating at approximately	1200 – 2100 RPM	1200 – 2100 RPM	1250 – 2100 RPM	1250 – 1900 RPM

Commercial coding

190-280

The following coding is a description of the acronyms on the side applied to the vehicle.
Here is an example:

- 190 - 280 - Gross weight - GVW (no/10 = weight in t)

190	19 t
-----	------

- 280 - Engine Power (power in HP rounded up)

Misc. technical data**Clutch**

Dry single disc, with friction lining without asbestos.

Gearbox**ZF mechanical gearboxes**

6S700TO: 6 forward gears and 1 reverse gear

6S800TO: 6 forward gears and 1 reverse gear

6S1000TO: 6 forward gears and 1 reverse gear

9S-1110TO: 9 forward gears and 1 reverse gear

ZF automated gearboxes

6AS700TO: 6 forward gears and 1 reverse gear

6AS800TO: 6 forward gears and 1 reverse gear

6AS1000TO: 6 forward gears and 1 reverse gear

Allison automatic gearboxes

S2500: 5 forward gears and 1 reverse gear

S3000 : 5 forward gears and 1 reverse gear

Rear axle

Single reduction.

Steering

Hydraulic servo-assistance on all versions.

Suspensions

Front suspension

Mechanically

Suspension with parabolic springs (standard).

Suspension with semi-elliptical spring (optional).

Double acting hydraulic shock absorbers.

Stabilizer bars.

Stabilizer bars.

Rear suspension

Mechanically

Suspension with parabolic springs (standard).

Suspension with semi-elliptical spring (optional).

Double acting hydraulic shock absorbers

Stabilizer bars.

Air

2 air springs on models I 20EL.. - I 50E...

4 air springs on models I 60E.. - I 80E..

Stabilizer bars.

Brakes - Braking system

Front and rear disc brakes.

Hydro-pneumatic system with two independent circuits.

Manual parking brake with air control and actuator controlling rear wheels.

Electrical systemVoltage **24 V**.

LAMPS	TYPE	POWER IN WATT
Low beams	halogen	70
High beams	halogen	70
Fog lights	halogen	70
Front side lights	spherical	5
Front turn indicators	spherical	21
Side turn indicators	spherical	21
Rear side lights (two)	spherical	5
Rear turn indicators	spherical	21
Brake lights	spherical	21
Licence plate lights	spherical	5
Reverse gear light	spherical	21
Rear fog light	spherical	21
Front markers	cylindrical type	4

Alternator**70 A** (standard).**90 A** (optional).

Sensors and connections for ground diagnostics

Batteries**2x12 V****110 A·h.****120/143/170 A·h.**

Tyres

With the vehicle in running order, these tables on the following pages are used to determine the correct operating pressure of the tyres based on the type of tyre fitted and the weights acting on the front and rear axle.

The indicated pressures refer to cold tyres with an external temperature of **20 °C**.

The maximum capacity of a tyre with a smaller load index is lower.

The loads are given as examples. Consult the relevant publications of the tyre manufacturer.

[illegible]

[illegible]

[illegible]

P (BAR)	305/70 R-19.5 148/145		305/70 R-22.5 152/148		10 R-22.5 144/142		315/60 R-22.5 TL 152/148	295/80 R-22.5 TL 152/148
	SINGLE	TWIN	SINGLE	TWIN	SINGLE	TWIN	SINGLE	TWIN
4.5	—	—	—	—	—	—	—	—
4.75	—	—	—	—	—	—	—	—
5.0	4140	7620	—	—	—	—	—	—
5.25	4320	7950	—	—	—	—	—	—
5.5	4500	8290	—	—	—	—	—	—
5.75	4680	8620	—	—	—	—	—	—
6.0	4860	8950	—	—	—	—	—	—
6.25	5040	9280	—	—	—	—	—	—
6.5	5220	9610	—	—	—	—	—	5560
6.75	5400	9940	—	—	—	—	—	—
7.0	5580	10270	—	—	—	—	5660	5950
7.25	5760	10610	—	—	—	—	—	—
7.5	5940	10940	—	—	—	—	6030	6330
7.75	6120	11270	—	—	—	—	—	—
8.0	6300	11600	—	—	—	—	6390	6720
8.25	—	—	—	—	—	—	—	—
8.50	—	—	—	—	—	—	6760	7100
8.75	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	7100	—

P (BAR)	10 R-22.5 144/142		11 R-22.5 148/145		11 R-22.5 142/142]		12 R-22.5 152/148		295/80 R22.5 152/ 149	
	SINGLE	TWIN	SINGLE	TWIN	SINGLE	TWIN	SINGLE	TWIN	SINGLE	TWIN
4.5	–	–	–	–	6590	6590	–	–	–	–
4.75	–	–	–	–	6880	6880	–	–	–	–
5.0	3680	6970	4140	7620	3480	7160	–	–	–	–
5.25	3840	7270	4320	7950	3630	7740	–	–	–	–
5.5	4000	7570	4500	8290	3940	8020	4800	8510	4800	8780
5.75	4160	7870	4680	8620	4090	8310	4990	8850	4990	9140
6.0	4320	8180	4860	8950	4240	8590	5180	9190	5180	9490
6.25	4480	8480	5040	9280	4390	8880	5370	9540	5370	9840
6.5	4640	8780	5220	9610	4540	9170	5560	9880	5560	1019
6.75	4800	9090	5400	9940	4690	9450	5760	10220	5760	1054
7.0	4960	9390	5580	1027	4850	9740	5950	10560	5950	1089
7.25	5120	9690	5760	1061	4850	9740	6140	10900	6140	1124
7.5	5280	9990	5940	1094	5000	1003	6330	11240	6330	1159
7.75	5440	1030	6120	1127	5150	1030	6520	11580	6520	1195
8.0	5600	1060	6300	1160	5300	1060	6720	11920	6720	1230
8.25	–	–	–	–	–	–	–	–	6910	1230
8.50	–	–	–	–	–	–	6910	12260	6910	1265
8.75	–	–	–	–	–	–	–	–	7100	1300
9	–	–	–	–	–	–	7100	12600	–	–

P (BAR)	305/70 R- 22.5 152/ 148L		305/70 R- 22.5 150/ 147		315/60 R- 22,5 TL 152/ 148		315/60 R- 22,5 TL 154/148	315/60 R- 22,5 TL 152/ 148J	
	SINGLE	TWIN	SINGLE	TWIN	SINGLE	TWIN	SINGLE	SINGLE	TWIN
4.5	—	—	—	—	—	—	—	—	—
4.75	—	—	—	—	—	—	—	—	—
5.0	—	—	—	—	—	—	—	—	—
5.25	—	—	—	—	—	—	—	—	—
5.5	—	—	4530	8790	—	—	—	—	—
5.75	—	—	4710	9140	—	—	—	—	—
6.0	4920	8720	4890	9490	4920	9190	5190	4920	8720
6.25	5100	9050	5070	9840	5100	9540	5380	5100	9050
6.5	5280	9370	5250	10190	5280	9880	5580	5280	9370
6.75	5460	9690	5430	10540	5460	1022	5770	5460	9690
7.0	5640	1002	5610	10890	5640	1056	5960	5640	10020
7.25	5830	1034	5610	10890	5830	1090	6150	5830	10340
7.5	6010	1066	5790	11250	6010	1124	6350	6010	10660
7.75	6190	1098	5980	11600	6190	1158	6540	6190	10980
8.0	6370	1131	6160	11950	6370	1192	6730	6370	11310
8.25	6550	1163	6340	12300	6550	1226	6920	6550	11630
8.50	6740	1195	6520	—	6740	1260	7120	6740	11950
8.75	6920	1228	6700	—	6920	—	7310	6920	12280
9	7100	12600	—	—	7100	—	7500	7100	12600

P (BAR)	315/70 R 22.5 TL 154/150L		295/80 R- 22,5 TL 152/148		315/70 R- 22,5 TL 154/150	315/80 R- 22,5 TL 156/150	
	SINGLE	TWIN	SINGLE	TWIN	TWIN	SINGLE	TWIN
4.5	–	–	–	–	–	–	–
4.75	–	–	–	–	–	–	–
5.0	–	–	–	–	–	–	–
5.25	–	–	–	–	–	–	–
5.5	–	–	4800	8510	–	5410	9570
5.75	–	–	4990	8850	–	5620	9950
6.0	5190	9280	5180	9190	–	5840	1034
6.25	5380	9620	5370	9540	–	6050	1072
6.5	5580	9960	5560	9880	–	6270	1110
6.75	5770	1065	5760	1022	–	6490	1149
7.0	5960	1065	5950	1056	1122	6700	1187
7.25	6150	1099	6140	1090	–	6920	1225
7.5	6350	1134	6330	1124	1195	7140	1263
7.75	6540	1168	6520	1158	–	7350	1302
8.0	6370	1203	6720	1192	1267	7570	1340
8.25	6320	1237	6910	1226	–	7780	–
8.50	7120	1271	7100	1260	1340	8000	–
8.75	7310	1306	–	–	–	–	–
9	7500	13400	–	–	–	–	–

Declaration of conformity for radio appliances

Information relating to conformity of the radio according to Directive 2014/53/UE is indicated below

Bosch radio – Radio FUN – Eurocargo

The manufacturer, Robert Bosch Car Multimedia GmbH, states that the Eurocargo radio complies with Directive 2014/53/UE.

The complete text of the EU declaration of conformity is available from the website:
<http://cert.bosch-carmultimedia.net>

Bosch - RadioBT LDWS&AEBS 250kbits – Eurocargo

The manufacturer, Robert Bosch Car Multimedia GmbH, states that the Eurocargo MY2015 radio appliance is compliant with Directive 2014/53/UE.

The complete text of the EU declaration of conformity is available from the website:
<http://cert.bosch-carmultimedia.net>

Frequency band	Radiated Power [EIRP]	Hints / Restriction
2400 MHz — 2480 MHz	Bluetooth < 10 mW	Internal Antenna

Marelli UTP appliance – Eurocargo

The manufacturer, Magneti Marelli, states that the UTP radio complies with Directive 2014/53/UE.

The complete text of the EU declaration of conformity is available from the website:
<http://www.magnetimarelli.com/homologation/RED/IVECO-UTP-REVI>

Frequency band	Radiated Power [EIRP]	Hints / Restriction
GSM 900: 880 MHz — 960 MHz GSM 1800: 1710 MHz — 1880 MHz	GSM 900 33 dBm GSM 1800 30 dBm	Antenna Internal

Advanced Radar Sensor appliance

The manufacturer, ADC Automotive Distance Control Systems GmbH, states that the ARS 3-B radio complies with Directive 2014/53/UE.

The complete text of the EU declaration of conformity is available from the website:
<http://continental.automotive-approvals.com/>

Frequency band	Radiated Power [RMS EIRP]
76 GHz — 77 GHz	1 W — 30 dBm

TPMS appliance (IVTM/ OptiTire) Eurocargo

The manufacturer, Wabco-auto, states that the TPMS (IVTM/ OptiTire) radio complies with Directive 2014/53/UE.

The complete text of the EU declaration of conformity is available from the website:
<http://inform.wabco-auto.com>

Frequency band	Radiated Power [EIRP] 1mW
433.92 MHz	(0 dBm)

Appliance for central closing/opening of doors with remote control (CDL-RF) – Eurocargo

The manufacturer, TRW AUTOMOTIVE ITALIA s.r.l, states that the 612313-612315 radio complies with Directive 2014/53/UE.

Receiver	Short-Range Devices (SRD) EN301489-3	Short-Range Devices (SRD) EN300220-1	Short-Range Devices (SRD) EN300220-2
433.92 MHz	9 kHz – 246 GHz	25 MHz – 1000 MHz	25 MHz – 1000 MHz

VCM (Vehicle Control Module) control unit appliance - Eurocargo

The manufacturer, WABCO Europe BVBA, states that the Vehicle Control Module (VCM) radio appliance complies with Directive 2014/53/UE.

Harmonised standard applied :

EN 60950-1 (2006) + A11:2009 + A1: 2010 + A12: 2011 + AC: 2011 + A2: 2013 EN 50364 (2010)	Health and safety requirements according to 3.1.a
ETSI EN 301 489-1, V2.2.0 ETSI EN 301 489-3, V2.1.1	Protection requirement concerning electromagnetic compatibility according to article 3.1.b
ETSI EN 300 330 V2.1.1	Measures for the efficient use of the radio frequency spectrum (article 3.2)

EU-Declaration of Conformity

CE marking

We, Manufacturer/Representative
(full address)
TRW AUTOMOTIVE ITALIA s.r.l.
Via Marfornese, 20
10042 NICELUNO (TO) ITALY

declare that the product
(description of the apparatus, system, installation to which it refers)
Receiver 431.520Hz
652315
Brand: TRW

The object of the declaration described above
is in conformity with the relevant Union harmonisation legislation:
Directive 2014/53/EU
(sub-headers to which it refers)

EN181488-20 v.1.1
EMC standard/EMC/2014/53/EU equipment and EMC/2014/53/EU
Part 2: Specific conditions for Short Range Devices (SRD)
operating on frequencies between 6 kHz and 248 GHz

EN300220-1 v.1.1
Short Range Devices (SRD) operating in the frequency range
24.850 to 1.000 MHz
Part 1: Technical characteristics and methods of measurement

EN300220-2 v.1.1
Short Range Devices (SRD) operating in the frequency range
24.850 to 1.000 MHz; Part 2: Harmonized Standard covering the
essential requirements of article 3.3 of Directive 2014/53/EU for non
specific radio equipment

EN16950-1 v.2008-01-2008-01-2008-01-20
2014-02-20
Information technology equipment - Safety
Part 1: General requirements

Signed for and on behalf of:

Hardware: HW-CF Name: Marco Pizzi
Software: 1.0 Date: June 9, 2017 Function: Product Manager

The declaration of conformity is issued under the sole responsibility of the manufacturer.
The declaration of conformity must be translated in the EU-languages where the product will be sold.

Date: 31.05.2017
TESTED IN GERMANY
Based on Test report Ref. No.: 1705-0036
ACQUEDOTTI INFORMATION SYSTEMS
Via S. Maria, 10 - 00187 Roma (RM) - Italy

POM electronics GmbH
Karl P. ...
Authorized Signatory

EU-Declaration of Conformity

CE marking

We, Manufacturer/Representative
(full address)
TRW AUTOMOTIVE ITALIA s.r.l.
Via Marfornese, 20
10042 NICELUNO (TO) ITALY

declare that the product
(description of the apparatus, system, installation to which it refers)
Receiver 431.520Hz
652315
Brand: TRW

The object of the declaration described above
is in conformity with the relevant Union harmonisation legislation:
Directive 2014/53/EU
(sub-headers to which it refers)

EN181488-20 v.1.1
EMC standard/EMC/2014/53/EU equipment and EMC/2014/53/EU
Part 2: Specific conditions for Short Range Devices (SRD)
operating on frequencies between 6 kHz and 248 GHz

EN300220-1 v.1.1
Short Range Devices (SRD) operating in the frequency range
24.850 to 1.000 MHz
Part 1: Technical characteristics and methods of measurement

EN300220-2 v.1.1
Short Range Devices (SRD) operating in the frequency range
24.850 to 1.000 MHz; Part 2: Harmonized Standard covering the
essential requirements of article 3.3 of Directive 2014/53/EU for non
specific radio equipment

EN16950-1 v.2008-01-2008-01-2008-01-20
2014-02-20
Information technology equipment - Safety
Part 1: General requirements

Signed for and on behalf of:

Hardware: HW-CF Name: Marco Pizzi
Software: 1.0 Date: June 9, 2017 Function: Product Manager

The declaration of conformity is issued under the sole responsibility of the manufacturer.
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Date: 31.05.2017
TESTED IN GERMANY
Based on Test report Ref. No.: 1705-0036
ACQUEDOTTI INFORMATION SYSTEMS
Via S. Maria, 10 - 00187 Roma (RM) - Italy

POM electronics GmbH
Karl P. ...
Authorized Signatory

WABCO

Declaration of Conformity
in accordance with the Radio Equipment Act and Directive 2014/53/EU (RED)

Konformitätserklärung
gemäß dem Gesetz über Funkanlagen und der Richtlinie 2014/53/EU (RED)

WABCO Europe BVBA
Chaussée de la Hupe 166
1170 Brussels
Belgium

declares that the product: **Vehicle Control Module (VCM)**
erklärt, dass das Produkt:

complies with the requirements of directive 2014/53/EU, when used for its intended purpose.

bei bestimmungsgemäßer Verwendung den Anforderungen der Richtlinie 2014/53/EU entspricht.

Harmonised standards applied:
Angewendete harmonisierte Normen:

- EN 60950-1 (2006) + A11:2009 + A1:2010 + A12: 2011 + AC: 2011 + A2: 2013 - EN 60364 (2010)	Health and safety requirements according to 3.1.a Gesundheit und Sicherheit gemäß Artikel 3.1.a
- ETSI EN 301 489-1, V2.2.0 - ETSI EN 301 489-3, V2.1.1	Protection requirement concerning electromagnetic compatibility according to article 3.1.b Schutzanforderungen in Bezug auf die elektromagnetische Verträglichkeit gemäß Artikel 3.1.b
- ETSI EN 300 330 V2.1.1	Measures for the efficient use of the radio frequency spectrum (article 3.2) Maßnahmen zur effizienten Nutzung des Frequenzspektrums (Artikel 3.2)

Hammova, 19.09.2017
(Place, Date of issue)

WABCO Europe BVBA,

Dr. Christian Brenneke
Head of engineering

713377

VCM (Vehicle Control Module) certificate of conformity

Refuelling

Diesel refuelling

There is a label near the filler neck (shown in the figure) indicating the correct fuel to be used. Use commercially available diesel that complies with the applicable standards **EN 590** only. Fuel additives are not recommended.

The use of additives can limit the warranty services offered for the vehicle.

Refuelling from drums or tanks can contaminate the diesel oil, with consequent malfunction in the supply system; in these cases it is necessary to carry out adequate filtration or sedimentation of any impurities present.

Diesel oil for low temperatures

The degree of fluidity of the diesel oil may be reduced at low temperatures due to the separation of the paraffin. This results in the filters becoming clogged.

The **EN 590** standard provides for various categories of diesel for use at low environmental temperatures.

NOTE See the paragraph "Each year before winter" in the Ordinary maintenance chapter.

In certain countries, by law, only "winter" diesel is distributed on the national sales network during the winter period.

Its use is guaranteed, according to international standards, to temperatures of **-10 °C** or **-20 °C** for diesel distributed at high altitude in mountain regions or in countries with particularly harsh climates ("Arctic" diesel oil).

NOTE When used in mountain regions, it is recommended that the vehicle is refuelled with "Arctic" diesel before leaving it parked for many hours (above all in the open and at night). It is also recommended that the engine is left running for approx. 10 minutes to facilitate remixing of the Arctic diesel with the diesel already in the tank.



Risk of damage

It is the driver's responsibility to refuel the vehicle only with the type of diesel that best

suits the climatic conditions of the roads that are being travelled on and those required by the mission.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

It is the exclusive responsibility of the oil companies to distribute oil, in the country where the vehicle is being driven, which complies with the regulations relating to climatic conditions (seasons and geographical position of countries) and with local laws and regulations.



General risk, general prescriptions

- The use of special additives could limit claims under the warranty.
- Lubricant additives are not necessary.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle and can sometimes result in the guarantee being voided



Risk of injury:

- The consumables are harmful to health.
- If a product is ingested, see a doctor immediately.
- Keep consumable materials out of the reach of children.

Failure to comply with these prescriptions can result in the risk of serious injury



General risk, general prescriptions

Fuel vapours are extremely flammable and can even be explosive in enclosed spaces.

While refuelling:

- Switch off the engine
- Do not smoke or use a naked flame
- Do not spill the fuel
- Switch off all appliances which produce radio frequencies

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



General risk, general prescriptions

- If the fuel cap has to be replaced, ask the Service Network for the specific one for the vehicle model.

- Avoid spilling fuel when refuelling. Fuel contains alcohol which could damage the paint.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle



Risk of injury:

Dispose of consumable materials and the parts in contact with them (for example filters) in accordance with the law. The workshops of the Service Network are equipped for this purpose.

Correct behavior will ensure that vehicle is used as environmentally friendly as possible



Risk of injury:

Verification of the efficiency of the air conditioning system with the recharge, repair and replacement are not the responsibility of the owner. These must only be carried out by the Service Network.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

Fluids

COMPONENT		ORIGINAL LUBRICANTS	LITRES
Engine sump E5 4 cylinders	(MAX level)	URANIA LD7 (C.T.R. N° I517.F06) SAE I5W40 URANIA FE (C.T.R. N° I023.M0I) SAE 5W30	8,3
	(MIN level)		5,3
Engine sump E3/E5 6 cylinders	(MAX level)		11,6
	(MIN level)		8
Oil filter			—
6S700 - 6AS700 gearbox		TUTELA TRANSMISSION FE-GEAR (C.T.R. N° II I2.FII) SAE 75W80	5,8
6S800 - 6AS800 gearbox			9,6
6S1000 - 6AS1000 gearbox			9
ZF I2AS I2I0 TO gearbox			7,5
9S - I I I 0 gearbox			8
Gearbox S1000 - S2500 (*)	Standard sump	Complies with specification: Allison - TES 295	20,2
Gearbox S3000 (*)	Without retarder		28
	With retarder	30,2	
Clutch circuit		TUTELA BRAKE FLUID TRUCK DOT SPECIAL (C.T.R. N° I002.F99)	0,4
Power steering		TUTELA TRANSMISSION GI/A (C.T.R. N° I002.B92)	2,3

COMPONENT		ORIGINAL LUBRICANTS	LITRES
Front wheel hubs		TUTELA TRANSMISSION W90/M-DA (C.T.R. N° 1009.G87) SAE 80W90 (1) TUTELA TRANSMISSION W140/M-DA (C.T.R. N° 1014.N87) SAE 85W140 (2)	0,1
MS 08-125 rear axle			6,5
MS 10-144 rear axle			12,7
MS 10-164 rear axle			17,6
MS 13-165 rear axle			18,5
Cab tilting system		TUTELA BRAKE FLUID LHM (C.T.R. N° 1207.B02)	0,7
Fuel tank (depending on models)		Diesel oil	115-200-280-550
Tank AdBlue® (Engines E5)		AdBlue®	25
Cooling system	4-cylinder engines	PARAFU UP® (C.T.R.N° 1101.M16) (3)	8
	6-cylinder engines (220CV)		11
	6-cylinder engines (250 ÷ 300 CV)		12
	6-cylinder engines (with Allison 3000 gearbox without Retarder)		17
	6-cylinder engines (with Allison 3000 gearbox with Retarder)		18

COMPONENT	ORIGINAL LUBRICANTS	LITRES
<p>(C.T.R.= Contractual Technical Reference)</p> <p>(*)* First fill value</p> <p>(1) Specific for cold climates.</p> <p>(2) For hot or temperate climates.</p> <p>(3) To be used diluted to 50% with distilled water for protection down to -35 °C.</p>		

Fluids

COMPONENT	ORIGINAL LUBRICANTS	KG
Quantity of refrigerant in the air-conditioning system (*)	R134a® (**) – (***)	0,440 ± 0,015
(*) The system contains fluorinated greenhouse gases. (**) Global warming potential: Global Warming Potential (GWP) equal to 1430. (***) CO2 equivalent: 0,629 t .		

International lubricant designation

LUBRICANTS		ORIGINAL PRODUCTS
Engine oil Meets specifications: <ul style="list-style-type: none"> • ACEA E7 with a mineral base IVECO Standard I8-I804 T2 E7 <ul style="list-style-type: none"> • Synthetic base ACEA E4 Qualification IVECO Standard I8-I804	SAE 15W40 SAE 5W30	URANIA LD7 (C.T.R. N° I517.F06) URANIA FE (C.T.R. N° I023.M01)
Oil for differential and wheel hubs Meets specifications: <ul style="list-style-type: none"> • MIL-L-2105D • API GL5 Qualification IVECO STANDARD I8-I805	SAE 80W90 SAE 85W140	TUTELA TRANSMISSION W90/M-DA (C.T.R. N° I009.G87) (1) TUTELA TRANSMISSION W140/M-DA (C.T.R. N° I014.N87) (2)
Oil for total power take-off (Multi-power) Containing non-EP anti-wear additives Meets specifications: <ul style="list-style-type: none"> • API GL3 mineral based Qualification IVECO Standard I8-I807	SAE 80W/90	TUTELA TRANSMISSION ZC 90 (C.T.R. N° I001.A87)
Oil for mechanical gearboxes Containing non-EP anti-wear additives Complies with specification: <ul style="list-style-type: none"> • Class 02D API GL4 Qualification IVECO Standard I8-I807 <ul style="list-style-type: none"> • Class 02E ZF TE-ML 02 	SAE 75W80	TUTELA TRANSMISSION FE-GEAR (C.T.R. N° I112.F11)
Oil for automatic gearboxes Complies with specification: TES-295		—

LUBRICANTS		ORIGINAL PRODUCTS
<p>Oil for gearbox actuator control (Powerpack only E5 engines) Complies with specification:</p> <p>FIAT 9.55550 contractual technical ref.N°F428.H04</p> <p>Qualification IVECO Standard I8-I807</p>	ISO VG 22	TUTELA TRANSMISSION GI/R (C.T.R. N° I428.I07)
<p>Oil for power steering and hydrostatic transmissions Meets specifications:</p> <ul style="list-style-type: none"> • ATF Dexron II D <p>Qualification IVECO Standard I8-I807</p>		TUTELA TRANSMISSION GI/A (C.T.R. N° I002.B92)
<p>Grease for general greasing Lithium soap based, consistency NLGI 2 Qualification IVECO Standard I8-I810</p>		TUTELA GREASE MR 2 (C.T.R. N° I007.C89).
<p>Hydraulic brake and clutch control fluid Complies with standards:</p> <ul style="list-style-type: none"> • NHTSA I I6 DOT 4 • ISO 4925 • SAEJ I704 • CUNA NC 956-01 <p>Qualification IVECO Standard I8-I820</p>		TUTELA BRAKE FLUID TRUCK DOT SPECIAL (C.T.R. N° I002.F99)
<p>Mineral oil for hydraulic systems With anti-wear characteristics and extremely low pour point Qualification IVECO Standard I8-I823</p>		TUTELA BRAKE FLUID LHM (C.T.R. N° I207.B02)
<p>Coolant for climate control system Qualification IVECO Standard I8-I835</p>		R134a®

LUBRICANTS		ORIGINAL PRODUCTS
Windscreen washer fluid Mixture of alcohol, water and surfactants • CUNA NC 956-11 Qualification IVECO Standard 18-1802		TUTELA PROFESSIONAL SC 35 (C.T.R. N° 1005.B00)
Specific grease for bearings and wheel hubs Lithium soap based, consistency NLGI 3 Qualification IVECO Standard 18-1810		TUTELA GREASE MR 3 (C.T.R. N° 1002.190)
Grease for centralised lubrication systems With a synthetic base containing lithium soaps of NLGI grade 2 Qualification IVECO Standard 18-1810		TUTELA GREASE COMAR 2 (C.T.R. N° 1001.G95) (3)
Concentrated protective fluid for radiators Ethylene glycol-based, containing corrosion inhibitors, conforming to standard: • CUNA NC 956-16 Qualification IVECO Standard 18-1830		PARAFLU UP® (C.T.R.N° 1101.M16) (4)
(C.T.R.= Contractual Technical Reference) (1) Specific for cold climates. (2) For hot or temperate climates. (3) Operating temperature of -30 – +140 °C . (4) To be used diluted to 50% with distilled water for protection down to -35 °C . IVECO guarantees optimum engine performance with the use of original lubricants. If non-original products are used, lubricants with minimum ACEA performance are acceptable for the Diesel engines specified in the table. Using products with inferior characteristics to these ACEA specifications could cause engine damage not covered by warranty.		

Selective catalytic reduction system – SCR (Selective Catalytic Reduction)

(only fitted on vehicles with Euro 5 engines)

SCR system is based on the use of the reducing agent called **AdBlue®**

This technology converts pollutant nitrogen oxides (NO_x) in the exhaust into nitrogen (main component of the atmosphere) and water.

This conversion requires the action of **AdBlue®** (mixture of water and urea), which is injected downstream of the SCR module.

The pressurised gases enter the SCR module. Through an injection of **AdBlue®**, the temperatures are lowered and the chemical conversion takes place, resulting in free nitrogen (N₂) and water vapour (H₂O).

The CUC (Clean Up Catalyst) is located at the end and has the task of oxidising the excess **AdBlue®**.

The system is highly reliable and virtually entirely maintenance free for its entire service life. With this treatment we have:

- Reduction in nitrogen oxide emissions.
- Reduction in particulate emissions.
- Reduction in fuel consumption.

AdBlue®

AdBlue® is the trade name of a water-urea solution that provides the following advantages:

- Odourless composition.
- No toxicity.
- Non flammable.
- No colouring.
- Availability.

**Risk of damage**

Only use AdBlue® compliant with ISO 22241-1 and DIN 70 070 standards. Other fluids may damage the system and furthermore, the exhaust emissions would no longer comply with legal regulations.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**General risk, general prescriptions**

Distributors are responsible for the conformity of their product. Observe the storage and maintenance precautions in order to conserve the initial quality. The use of non-standard compliant urea may damage the vehicle.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**General risk, general prescriptions**

The introduction of any diesel, additive or other liquid into the AdBlue tank will cause irreversible damage to the AdBlue circuit pump module and may also damage the exhaust gas treatment system.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle and can sometimes result in the guarantee being voided

**General risk, general prescriptions**

If AdBlue comes into contact with painted or aluminium parts during refuelling, immediately rinse the affected parts with plenty of water.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

CAUTION!

- If damage is caused to the exhaust gas emission control system due to the use of additives/ tap water, addition of diesel or failure to observe the Iveco instructions, the warranty will be null and void.

**General risk, general prescriptions**

If AdBlue comes into contact with painted or aluminium parts during refuelling, immediately rinse the affected parts with plenty of water.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**Risk of injury:**

If AdBlue is overheated inside the tank to more than 50°C (e.g. due to direct sunlight), the AdBlue could break down, forming ammonia vapours. Ammonia vapours have a pungent smell: Be careful when you loosen the tank cap.

Failure to comply with these prescriptions can result in the risk of serious injury

**Risk of damage**

AdBlue® freezes at a temperature of -11 °C. Vehicles equipped with an AdBlue® preheating system also ensure vehicle use in winter with temperatures below -11 °C.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**Risk of damage**

At low temperatures it is possible that AdBlue® crystals form on the hose between the engine and the muffler.

This crystallisation does not affect the operation of the exhaust gas purification system in any way. If necessary, AdBlue® crystals may be removed with clean water.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**General prescriptions**

Do not fill the AdBlue® tank up to the plug, always leave a space of at least 5– 10 cm.

Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle

**General risk, general prescriptions**

The vehicle should not run without AdBlue to prevent environmental pollution.

Correct behavior will ensure that vehicle is used as environmentally friendly as possible

Filling with **AdBlue®** is as easy as ordinary refuelling, if done at an appropriate filling station.

Keep to the indications for low fluid level provided on your vehicle's instrumentation in order to be able to fill up within the foreseen time periods.


The Euro V anti-pollution standards oblige the manufacturers of industrial vehicles to provide for engine performance degradation if, during vehicle use, NOx emissions do not meet homologation requirements.

If you travel with an empty **AdBlue®** tank (**AdBlue®** level below the minimum threshold for metering device operation), or if other reasons do not allow the vehicle to meet the NOx emissions required by the standards, the performance of your engine will be limited (derating). The OBD yellow warning light on the dashboard turns on.

Derating activates the first time the vehicle is at null speed and continues until normal operating conditions of the anti-pollution devices enable the vehicle to meet the NOx emission standards again (if the **AdBlue®** tank is empty, it is necessary to refill it). It has no effect on vehicle reliability.

It should be remembered by law that the on-board control unit records these events so that they are available for checks.

NOTE Between the low **AdBlue®** level warning light activating and OBD with derating warning light activating, it is possible to drive at least **200 km**.

CONDITION	RESULT	IDEOGRAM
<ul style="list-style-type: none">• The remaining AdBlue® liquid at less than approximately 10% of the tank capacity.• NOx emissions > 3,5 g/kWh	Warning for the driver (flashing warning light).	
<ul style="list-style-type: none">• AdBlue® tank empty.• NOx emissions > 7 g/kWh	Steady light ON and engine performance limitation.	
<ul style="list-style-type: none">• AdBlue® fluid does not comply with IVECO minimum requirements.• Every deviation over 50% of the average consumption.• Dosing activity stop.	AdBlue® warning light switching on, engine performance degradation and saving failure code (not erasable for at least 400 days or 9600 h of engine operation).	
Only for vehicles with Euro 5 engines		

Plates

Plates

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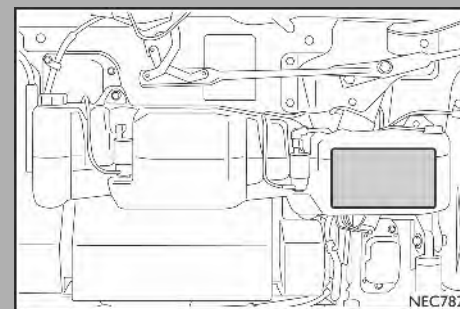
Plates

This chapter offers a simple explanation of the important plates that are located in various points on your vehicle.















Strictly follow the warnings and indications provided on these plates.

Data plate

The data plate is located on the additional water tank under the grille.



Description

IVECO		LUBRIFICANTI E LIQUIDI ORIGINALI ORIGINAL LUBRICANTS AND FLUIDS LUBRIFIANTS ET LIQUIDES ORIGINAUX LUBRIFICANTES Y LIQUIDOS ORIGINALES ORIGINAL SCHMIERSTOFFE		PETRONAS LUBRICANTS	
	Olio Motore Engine Oil Huile Moteur Aceite del Motor Motorenöl		Differenziale Differential Différentiel Diferencial Differenzial		Cambio Automatico Gearbox Automatic Transmission Automatique Transmission Automática Automatisches Getriebe
	Radiatore Radiator Radiateur Radiador Kühler	Trasmissioni Manuale e Semiautomatica Manual and Semi-automatic Transmissions Manuel et semi-automatique Transmissions Manuelle und halbautomatische Getriebe Manual y semiautomática Transmisiones	Servosterzo Power Steering Direction Assistée Dirección Asistida Hydrolenkung		
	Circuito Freni e Frizione Brakes and Clutch Circuit Circuit de freins et d'embrayage Bremsen und Kupplung Circuit Circuito de frenos y embrague		Lavacrystalli Windscreen Washer Lave-glace Lavacristales Scheibenwaschanlage		Ribaltamento cabina Cab Lifting System Levage de cabine Elevación de la cabina Fahrerhaus -Kippanlage
<div><div>- Utilizzare i prodotti prescritti sul libretto uso e manutenzione - Please refer to the product specified in the owner's manual - Utiliser les produits indiqués sur la notice d'entretien</div><div>- Use ed producto aconsejado en el manual de uso y mantenimiento - Benutzen Sie die Produkte die in der Betriebsanleitung vorgesehen sind</div></div>					
<div><div></div><div></div><div></div><div></div><div></div></div> <div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div></div>					

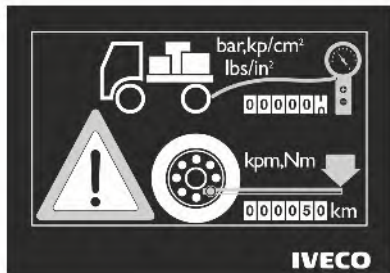
1. Disconnect the negative terminal of the battery before carrying out any operation on the vehicle (repairs, welding, replacement of assemblies/components, etc.).
2. After returning the cab to its normal position, ensure the cab tilt drive pump lever is not in the oil delivery position.
3. Never do any welding, drilling, grinding, etc. on the vehicle near electrical cables and pipes.
4. The protective anti-freeze fluid in the cooling circuit has a freezing point of **35 °C**.
5. The identification plate indicates the angle of the light beam to be respected when adjusting the headlamps (it can be **1.25%**, **1.50%** and **1.75%**).
6. Original lubricants and fluids.

7

SPEED-LIMITER
 LIMITATORE DI VELOCITA'
 LIMITEUR DE VITESSE
 GESCHWINDIGKEITSBEGRENZER
 LIMITADOR DE VELOCIDAD
V-SET = 85 KM/H

NEC784

8



NEC785

9



NEC829

Speed limiter plate

7. A speed limiter is installed on the vehicle. Location: on the windscreen.

Axle load plate

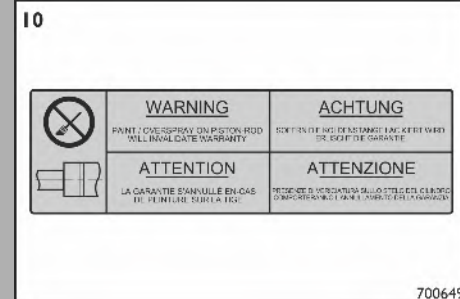
8. Before putting the vehicle into service, restore the tyre pressure to the operating values indicated in the Use and Maintenance booklet. The tyre pressure is reduced for vehicle transportation. For a new vehicle and after every tyre change, the nuts of the wheels must be retightened at the intervals specified on the plate. Location: on the windscreen.

Cab colour code

9. The cab colour code is shown on the plate. Location: under the front grille.

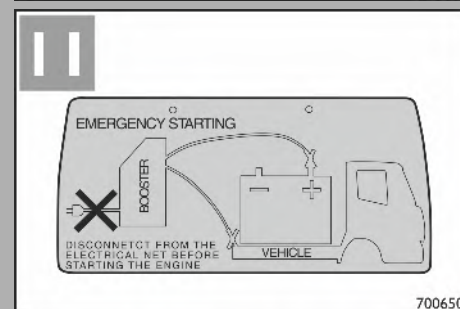
Cab tilting cylinder plate

10. The plate warns that the presence of paint on the cylinder stem annuls the warranty.
Location: on the cab raising / lowering cylinder.



Battery compartment plate

11. The plate indicates the correct emergency start-up procedure. Location: in the battery compartment.



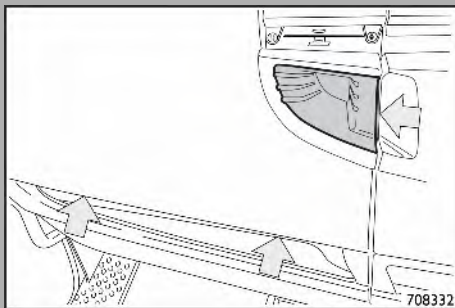
Fuses and contactors

Location of fuses and contactors - Euro III

370

Location of fuses and contactors - Euro V

395



Location of fuses and contactors - Euro III

NOTE The displays of the contactors/fuses relating to all the systems provided by the Manufacturer for the vehicle are described in the following pages. Not all the systems described are present on your vehicle, as they are dependent on the version chosen and the market for which the vehicle is intended.



Risk of injury:

Modifications or repairs to the electrical equipment carried out incorrectly and without taking into account the technical characteristics of the system can cause abnormal function and create a fire hazard. Before working on the electrical system, disconnect the battery cables.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



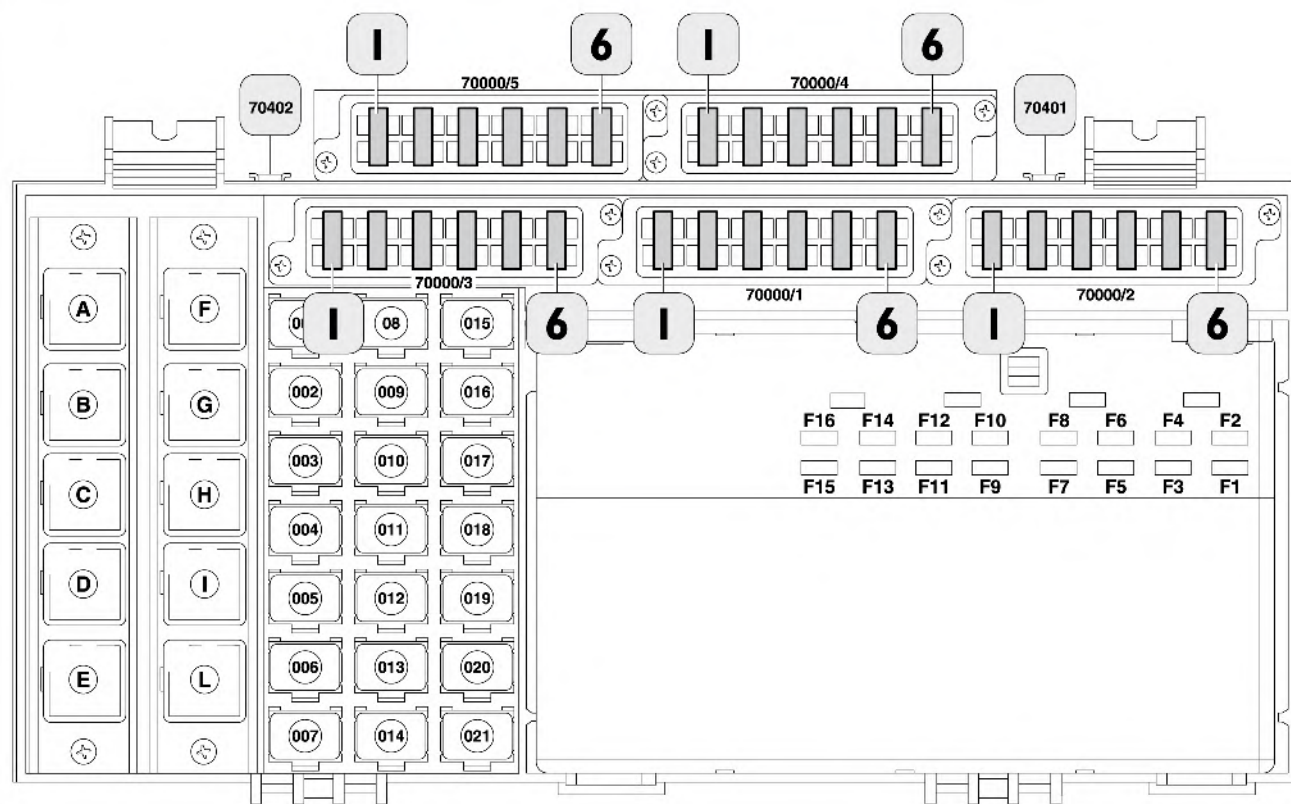
General risk, general prescriptions

Avoid any tampering with the electrical system. If this is nonetheless necessary, contact the Service Network. Use fuses only with the specified amperage. Replace the fuses only after having eliminated the cause of the problem.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

The fuses and contactors in the cab are located behind the cover of the dashboard located in front of the passenger.
To overturn the cover, open the passenger side ashtray and unscrew the screws shown in the figure.

Fuses and contactors in the cab



Fuse holder 70000/I (Red)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	Lighting of accessories compartment / Rotating beacons	10 A
2	F2	Medium roof cab lighting / Electrical hatch	10 A
3	F3	Rear door lights (crew cab) / loading platform lighting	10 A
4	F4	Astronic Lite gearbox	25 A
5	F5	Hazard light / EM	10 A
6	F6	Heated seats	10 A

Fuse holder 70000/2 (Brown)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	–	30 A
2	F2	–	30 A
3	F3	Headlight washer / Eberspacher additional heater	20 A
4	F4	Heated windscreen control / Central locking / Tail lift / Reverse gear acoustic warning	10 A
5	F5	Refrigerator	10 A
6	F6	Central locking / Tail lift	20 A

Fuse holder 70000/3 (Black)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	EM control unit	15 A
2	F2	EM control unit	15 A
3	F3	EM control unit (interface connector)	10 A
4	F4	EM control unit (interface connector)	10 A
5	F5	Allison gearbox / Astronic gearbox / 9S-1110 gearbox	10 A
6	F6	Allison gearbox / Astronic gearbox / SWI control unit	10 A

Fuse holder 70000/4 (natural)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	Cab tilting	30 A
2	F2	Cab tilting	5 A
3	F3	Heated windscreen	30 A
4	F4	Heated windscreen	30 A
5	F5	Air conditioner	20 A
6	F6	Heated mirrors	15 A

Fuse holder 70000/5 (green)

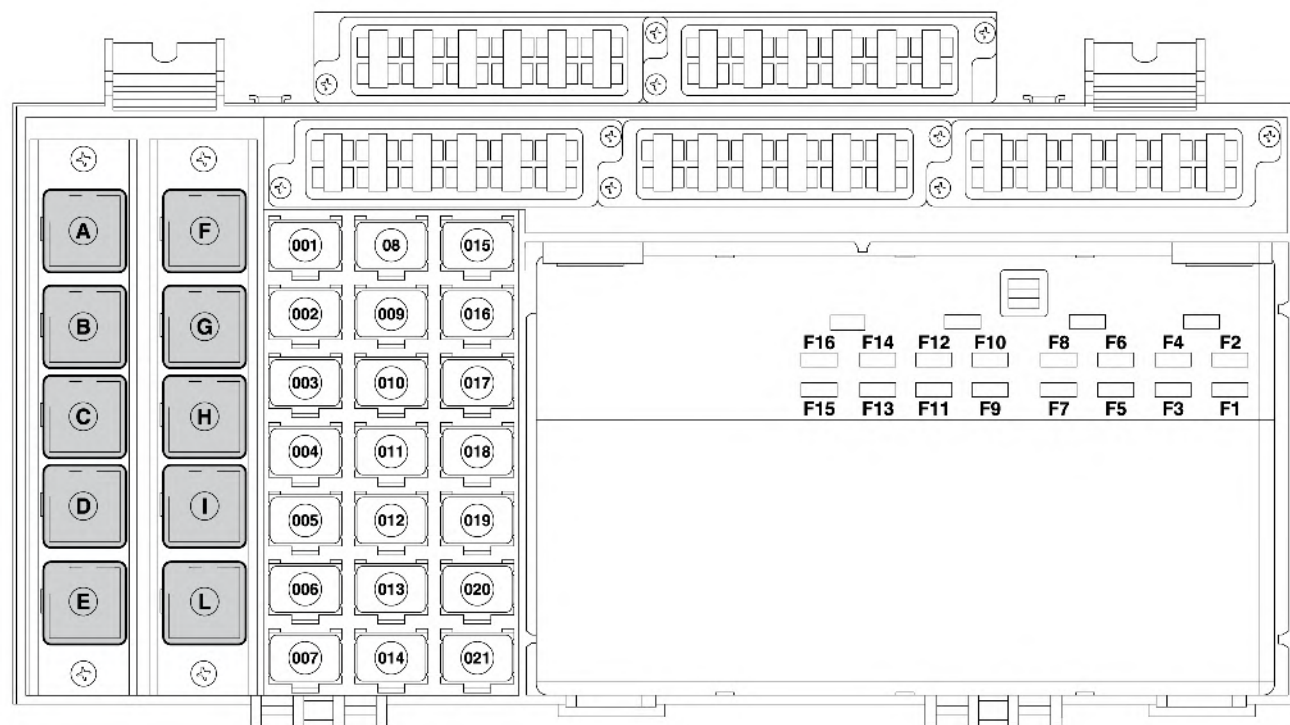
REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	Headlights (Xenon + led day lights)/Headlights (led day lights)	10 A
2	F2	Headlamps (Xenon + LED daytime running lights)	10 A
3	F3	–	5 A
4	F4	OBD socket	10 A
5	F5	–	10 A
6	F6	–	20 A

Fuse holder 70401

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1-2	F1	—	—
3-4	F2	—	—
5-6	F3	—	—
7-8	F4	—	—

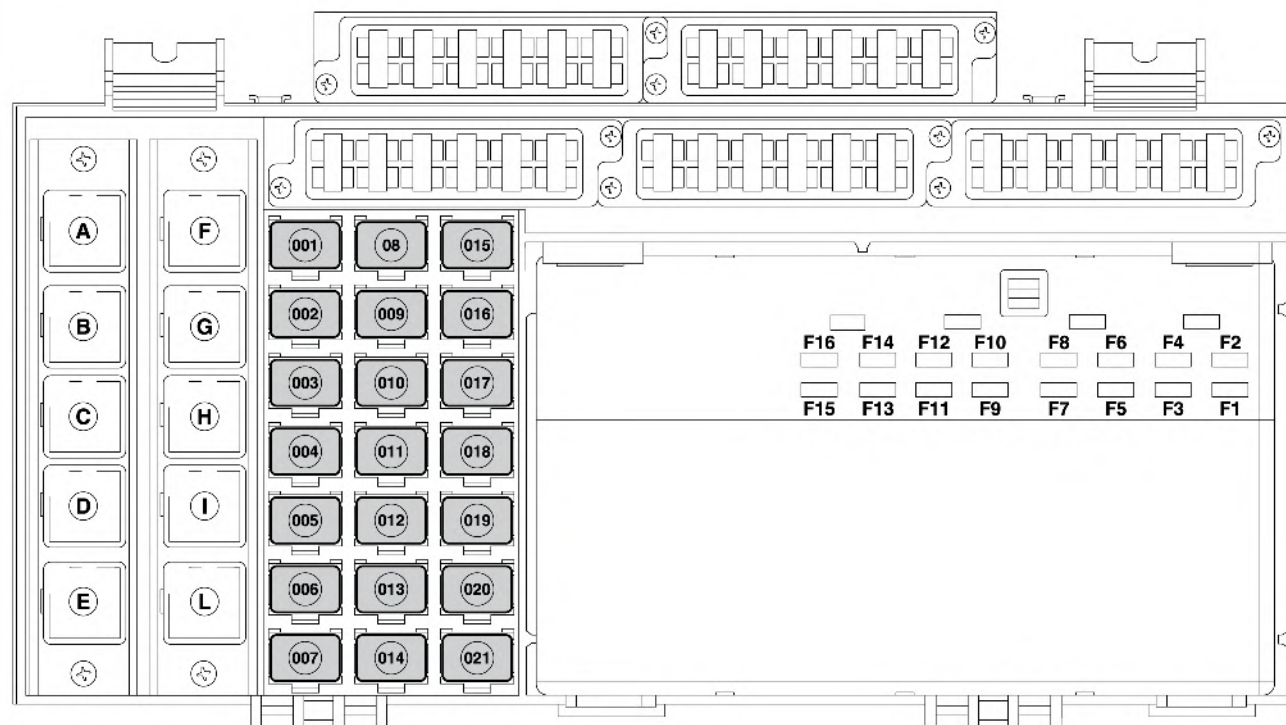
Fuse holder 70402

REF.	FIRST NAME	FUNCTION	CAPACITY
1–2	F1	USB	5 A
3–4	F2	USB	5 A
5–6	F3	–	–
7–8	F4	–	–



Mini contactors

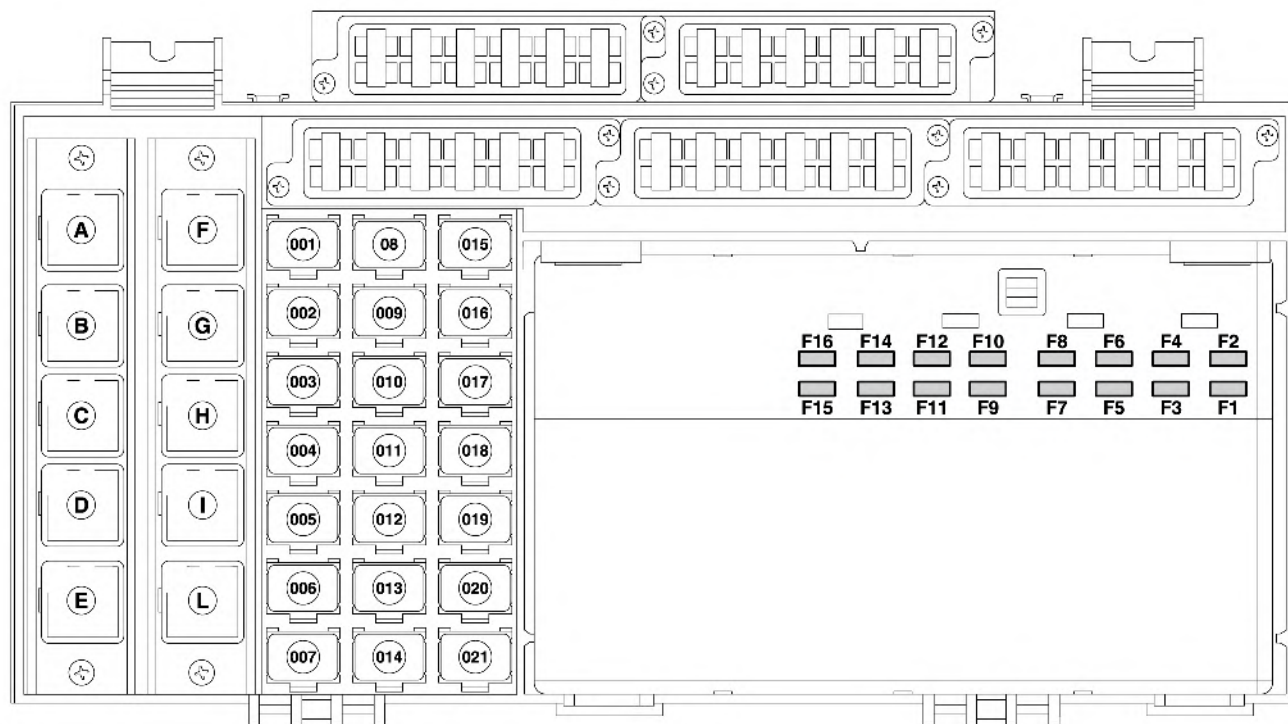
REF.	DESCRIPTION
A	Engine start-up contactor
B	Contactor for +15 power supply activation
C	Contactor for vehicle diagnostics (+15 consent from diagnostic tool)
D	Horn contactors
E	–
F	Contactor for ECAS command with VEHH tail lift engaged (opt)
F	EN-1501 ramp buzzer (opt)
G	Contactor for start-up prevention with tail lift engaged (opt)
G	EN-1501 ramp contactor (opt)
H	Contactor for activating heated rear-view mirrors (opt)
I	AS Tronic gearbox buzzer (opt)
L	Contactor for heated windscreen (timer) (opt)



Micro contactors (yellow)

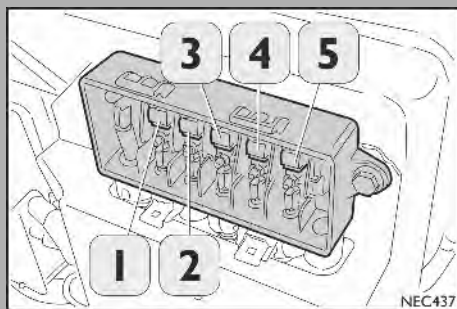
REF.	DESCRIPTION
1	Contactor for switching on courtesy light (medium roof)
2	Contactor for headlight washer consent (opt)
3	—
4	Contactor for TGC activation (TGC ON) (opt)
5	Contactor for TGC deactivation (TGC OFF) (opt)
6	Contactor for 9S-1110 gearbox (opt)
7	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
8	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
9	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
10	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
11	Contactor for disabling Allison 3000 gearbox retarder (opt)
12	Contactor for activating reversing lights (automatic / automated transmission) (opt)
13	Contactor for opening electrical hatch (opt)
14	Contactor for closing electrical hatch (opt)
15	—
16	Contactor for VEH tail lift command (opt)
17	Contactor for tail lift engagement (opt)
18	—

REF.	DESCRIPTION
19	—
20	—
21	—



IBC3 fuses and contactors

FIRST NAME	DESCRIPTION	CAPACITY
F1	Reverse gear lights / Headlight alignment device	10 A
F2	–	20 A
F3	VCM control unit	10 A
F4	Tachograph/cluster (IC)/bed module	5 A
F5	ABS control unit	20 A
F6	Trailer ABS connector	20 A
F7	DDM control unit/PDM control unit	20 A
F8	Starter contactor	20 A
F9	Bodybuilder connector/FMS connector	10 A
F10	Horn	20 A
F11	Voltage reducer / Radio receiver	20 A
F12	Braking system dryer resistor/contactor for heated rear-view mirrors	10 A
F13	ECAS control unit	10 A
F14	Cigarette lighter / Bunk ceiling light	10 A
F15	Bodybuilder connector / trailer ABS connector / FMS connector /Two-way radio / Ramp EN-1501	5 A
F16	Power windows (without PDM/DDM)	20 A



Description of power fuses

REF.	FUNCTION	CAPACITY
1	+30 power supply (battery direct supply) MET control unit	80 A
2	+30 power supply (battery direct supply) cab positive pin (PPC)	80 A
3	+30 power supply (battery direct supply) EDC7 control unit	30 A
4	+30 power supply (battery direct supply) IBC3 control unit	30 A
5	—	—

Description of power fuses with TGC

REF.	FUNCTION	CAPACITY
1	+30 power supply (no battery direct supply) MET control unit	80 A
2	+30 power supply (no battery direct supply) cab positive pin (PPC)	80 A
3	+30 power supply (no battery direct supply) EDC7 control unit	80 A
4	+30 power supply (battery direct supply) IBC3 control unit	30 A
5	—	—

Description of power fuses with TGC ADR and IGC

REF.	FUNCTION	CAPACITY
1	+30 power supply (no battery direct supply) MET control unit	80 A
2	+30 power supply (no battery direct supply) cab positive pin (PPC)	80 A
3	+30 power supply (no battery direct supply) EDC7 control unit	30 A
4	+30 power supply (no battery direct supply) IBC3 control unit	30 A
5	—	—

Contactors behind the cluster

The description of the fuses and contactors located behind the cluster is by way of indication only: for any replacement intervention required, the user is to contact the Service Network.

Micro contactors

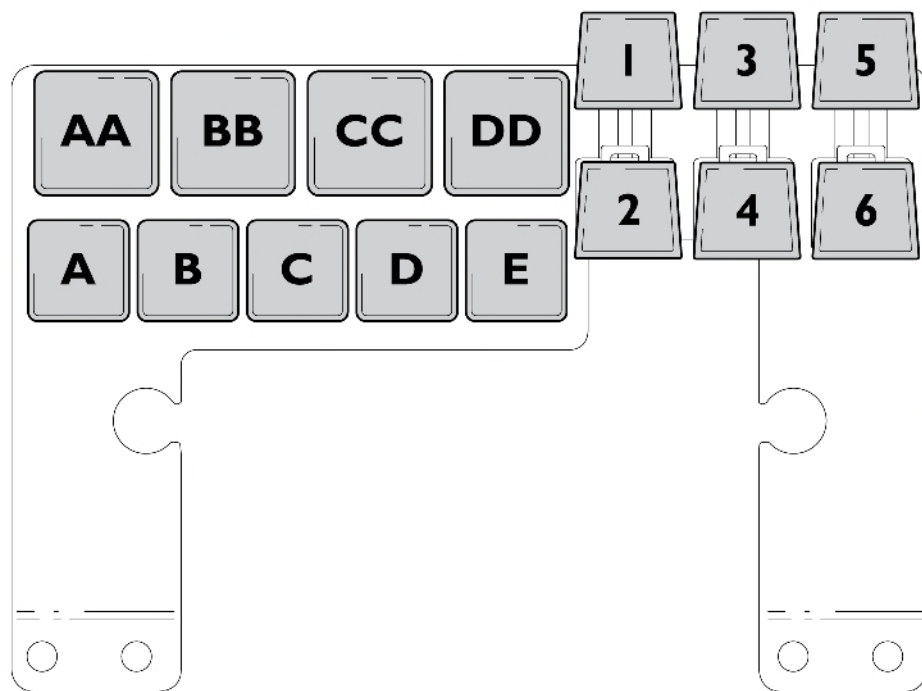
REF.	DESCRIPTION
1	Contactor for activating Xenon headlight lamps (left)
2	Contactor for activating Xenon Shutter headlights
3	Contactor for activating Xenon headlight lamps (right)
4	Contactors for activating DRL/Xenon headlight voltage reducer
5	Contactor for activating Xenon headlights
6	Diode for DRL/Xenon headlights

Mini contactors

REF.	DESCRIPTION
AA	Contactor for cab tilting
AB	Contactor for cab tilting
CC	–
DD	–

Mini contactors

REF.	DESCRIPTION
A	—
B	—
C	—
D	—
E	—



Location of fuses and contactors - Euro V

NOTE The displays of the contactors/fuses relating to all the systems provided by the Manufacturer for the vehicle are described in the following pages. Not all the systems described are present on your vehicle, as they are dependent on the version chosen and the market for which the vehicle is intended.



Risk of injury:

Modifications or repairs to the electrical equipment carried out incorrectly and without taking into account the technical characteristics of the system can cause abnormal function and create a fire hazard. Before working on the electrical system, disconnect the battery cables.

Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle



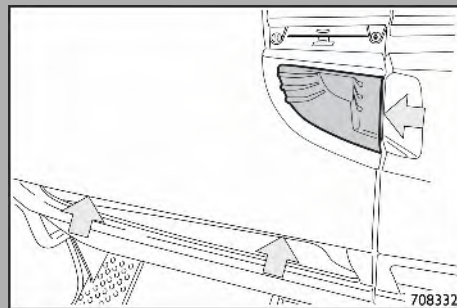
General risk, general prescriptions

Avoid any tampering with the electrical system. If this is nonetheless necessary, contact the Service Network. Use fuses only with the specified amperage. Replace the fuses only after having eliminated the cause of the problem.

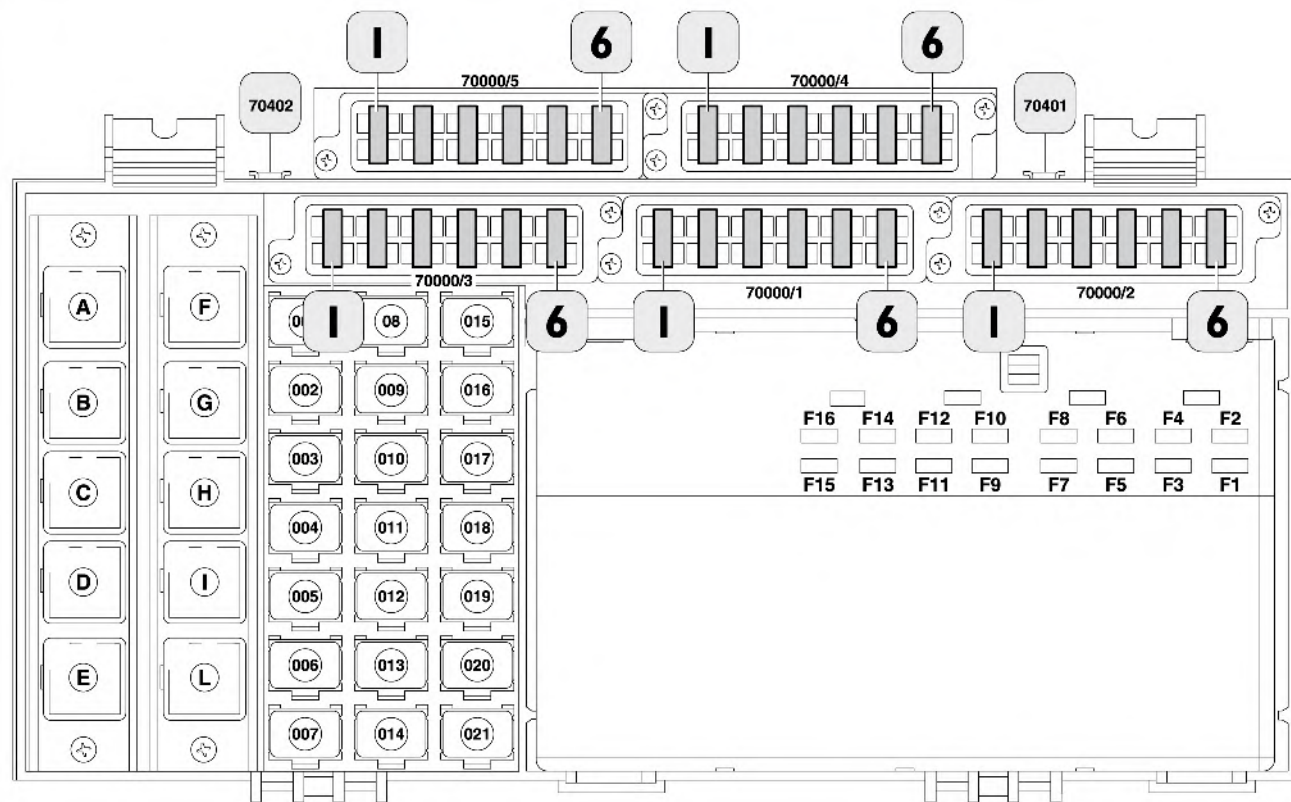
Failure to comply with these prescriptions can result in the risk of serious injury and serious damages to the vehicle

The fuses and contactors in the cab are located behind the cover of the dashboard located in front of the passenger.

To overturn the cover, open the passenger side ashtray and unscrew the screws shown in the figure.



Fuses and contactors in the cab



Fuse holder 70000/I (Red)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	Lighting of accessories compartment / Rotating beacons	10 A
2	F2	Medium roof cab lighting / Electrical hatch	10 A
3	F3	Rear door lights (crew cab) / loading platform lighting	10 A
4	F4	Astronic Lite gearbox	25 A
5	F5	Hazard light / EM	10 A
6	F6	Heated seats	10 A

Fuse holder 70000/2 (Brown)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	–	30 A
2	F2	–	30 A
3	F3	Headlight washer / Eberspacher additional heater	20 A
4	F4	Heated windscreen control / Central locking / Tail lift / Reverse gear acoustic warning	10 A
5	F5	Refrigerator	10 A
6	F6	Central locking / Tail lift	20 A

Fuse holder 70000/3 (Black)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	EM control unit	15 A
2	F2	EM control unit	15 A
3	F3	EM control unit (interface connector)	10 A
4	F4	EM control unit (interface connector)	10 A
5	F5	Allison gearbox / Astronic gearbox / 9S-1110 gearbox	10 A
6	F6	Allison gearbox / Astronic gearbox / SWI control unit	10 A

Fuse holder 70000/4 (natural)

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	Cab tilting	30 A
2	F2	Cab tilting	5 A
3	F3	Heated windscreen	30 A
4	F4	Heated windscreen	30 A
5	F5	Air conditioner	20 A
6	F6	Heated mirrors	15 A

Fuse holder 70000/5 (green)

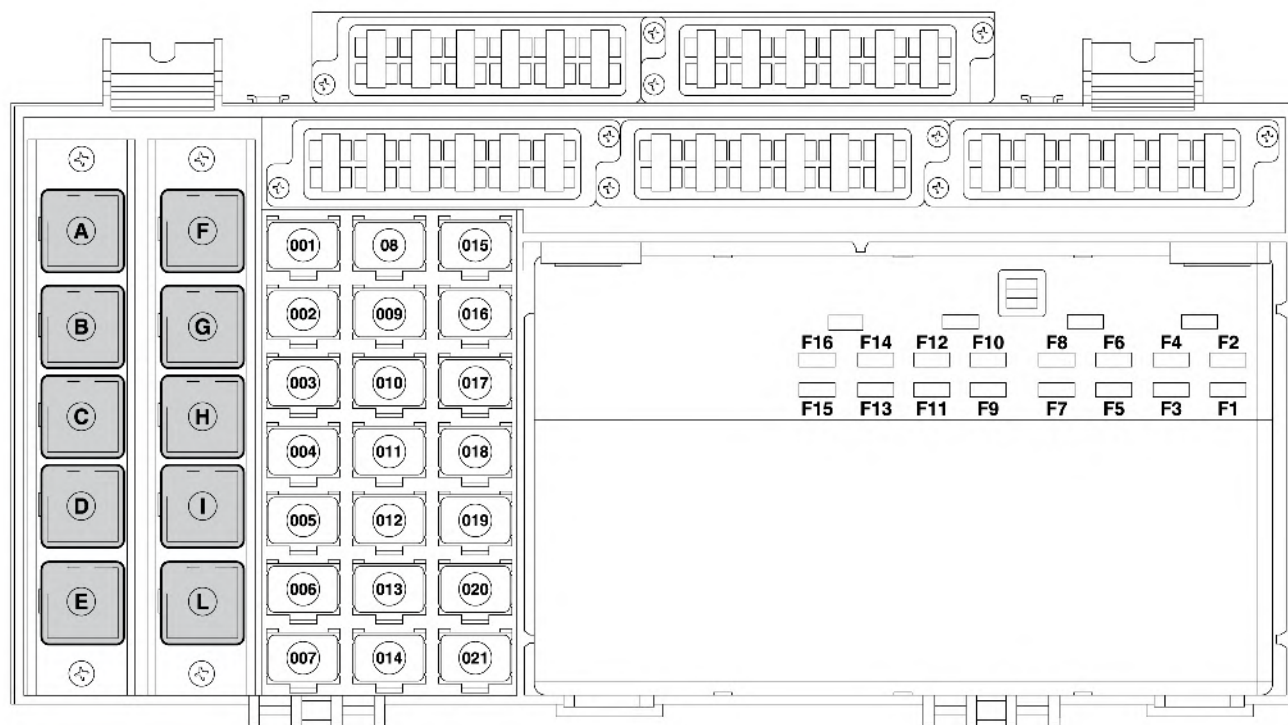
REF.	FIRST NAME	DESCRIPTION	CAPACITY
1	F1	Headlights (Xenon + led day lights)/Headlights (led day lights)	10 A
2	F2	Headlamps (Xenon + LED daytime running lights)	10 A
3	F3	–	5 A
4	F4	OBD socket	10 A
5	F5	–	10 A
6	F6	–	20 A

Fuse holder 70401

REF.	FIRST NAME	DESCRIPTION	CAPACITY
1-2	F1	—	—
3-4	F2	—	—
5-6	F3	—	—
7-8	F4	—	—

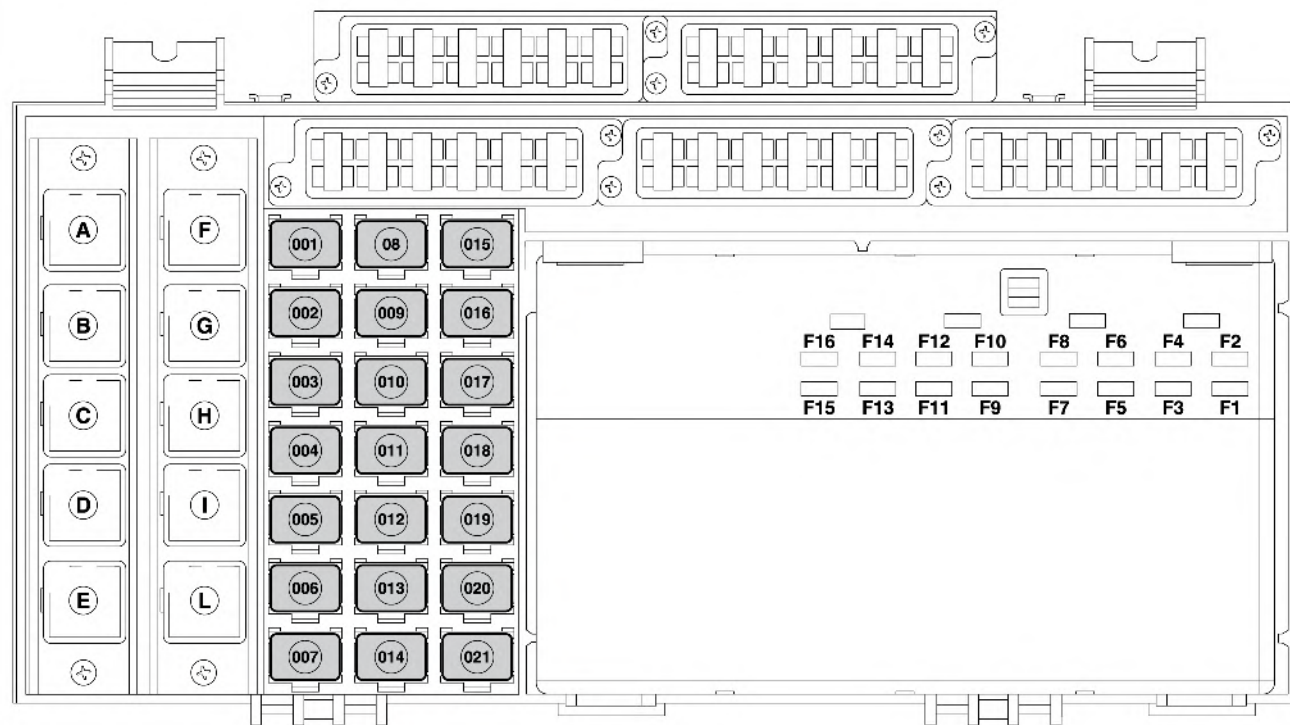
Fuse holder 70402

REF.	FIRST NAME	FUNCTION	CAPACITY
1–2	F1	USB	5 A
3–4	F2	USB	5 A
5–6	F3	–	–
7–8	F4	–	–



Mini contactors

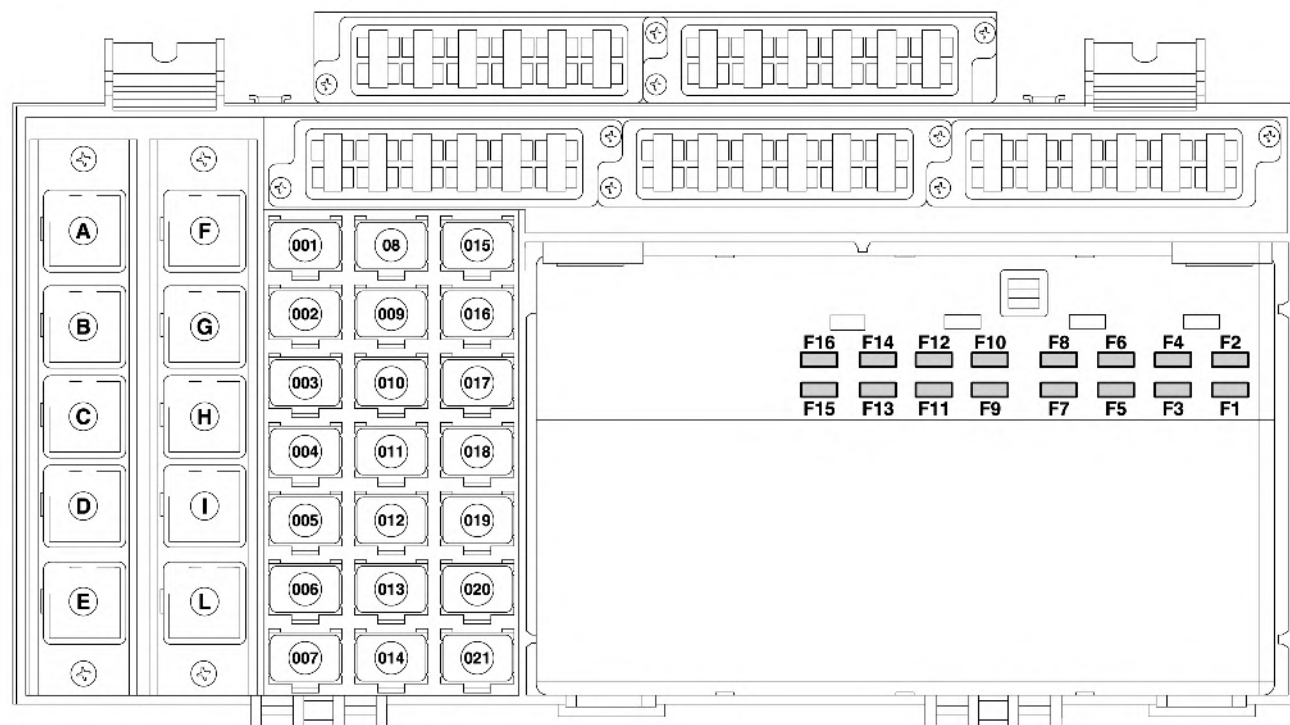
REF.	DESCRIPTION
A	Engine start-up contactor
B	Contactor for +15 power supply activation
C	Contactor for vehicle diagnostics (+15 consent from diagnostic tool)
D	Horn contactors
E	–
F	Contactor for ECAS command with VEHH tail lift engaged (opt)
F	EN-1501 ramp buzzer (opt)
G	Contactor for start-up prevention with tail lift engaged (opt)
G	EN-1501 ramp contactor (opt)
H	Contactor for activating heated rear-view mirrors (opt)
I	AS Tronic gearbox buzzer (opt)
L	Contactor for heated windscreen (timer) (opt)



Micro contactors (yellow)

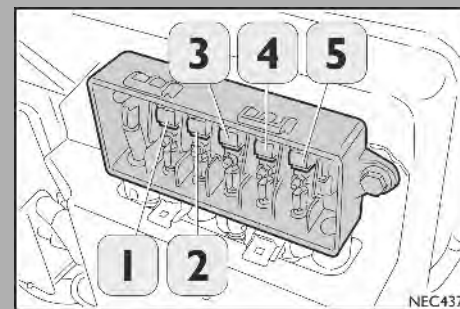
REF.	DESCRIPTION
1	Contactor for switching on courtesy light (medium roof)
2	Contactor for headlight washer consent (opt)
3	—
4	Contactor for TGC activation (TGC ON) (opt)
5	Contactor for TGC deactivation (TGC OFF) (opt)
6	Contactor for 9S-1110 gearbox (opt)
7	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
8	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
9	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
10	Contactor for ECAS command from box (opt) / Lufthansa catering (optional)
11	Contactor for disabling Allison 3000 gearbox retarder (opt)
12	Contactor for activating reversing lights (automatic / automated transmission) (opt)
13	Contactor for opening electrical hatch (opt)
14	Contactor for closing electrical hatch (opt)
15	—
16	Contactor for VEH tail lift command (opt)
17	Contactor for tail lift engagement (opt)
18	—

REF.	DESCRIPTION
19	–
20	–
21	–



IBC3 fuses and contactors

FIRST NAME	DESCRIPTION	CAPACITY
F1	Reverse gear lights / Headlight alignment device / NOX sensor	10 A
F2	–	20 A
F3	VCM control unit	10 A
F4	Tachograph/cluster (IC)/bed module	5 A
F5	ABS control unit	20 A
F6	Trailer ABS connector	20 A
F7	DDM control unit/PDM control unit	20 A
F8	Starter contactor	20 A
F9	Bodybuilder connector/FMS connector	10 A
F10	Horn	20 A
F11	Voltage reducer / Radio receiver	20 A
F12	Braking system dryer resistor/contactor for heated rear-view mirrors	10 A
F13	ECAS control unit	10 A
F14	Cigarette lighter / Bunk ceiling light	10 A
F15	Bodybuilder connector / trailer ABS connector / FMS connector /Two-way radio / Ramp EN-1501	5 A
F16	Power windows (without PDM/DDM)	20 A



Description of power fuses

REF.	FUNCTION	CAPACITY
1	+30 power supply (battery direct supply) MET control unit	80 A
2	+30 power supply (battery direct supply) cab positive pin (PPC)	80 A
3	+30 power supply (battery direct supply) EDC7 control unit	30 A
4	+30 power supply (battery direct supply) IBC3 control unit	30 A
5	Power supply + 30 (battery direct supply) UDS control unit	30 A

Description of power fuses with TGC

REF.	FUNCTION	CAPACITY
1	+30 power supply (no battery direct supply) MET control unit	80 A
2	+30 power supply (no battery direct supply) cab positive pin (PPC)	80 A
3	+30 power supply (no battery direct supply) EDC7 control unit	80 A
4	+30 power supply (battery direct supply) IBC3 control unit	30 A
5	Power supply + 30 (battery direct supply) UDS control unit	30 A

Description of power fuses with TGC ADR and IGC

REF.	FUNCTION	CAPACITY
1	+30 power supply (no battery direct supply) MET control unit	80 A
2	+30 power supply (no battery direct supply) cab positive pin (PPC)	80 A
3	+30 power supply (no battery direct supply) EDC7 control unit	30 A
4	+30 power supply (no battery direct supply) IBC3 control unit	30 A
5	Power supply + 30 (not battery direct supply) UDS control unit	30 A

Contactors behind the cluster

The description of the fuses and contactors located behind the cluster is by way of indication only: for any replacement intervention required, the user is to contact the Service Network.

Micro contactors

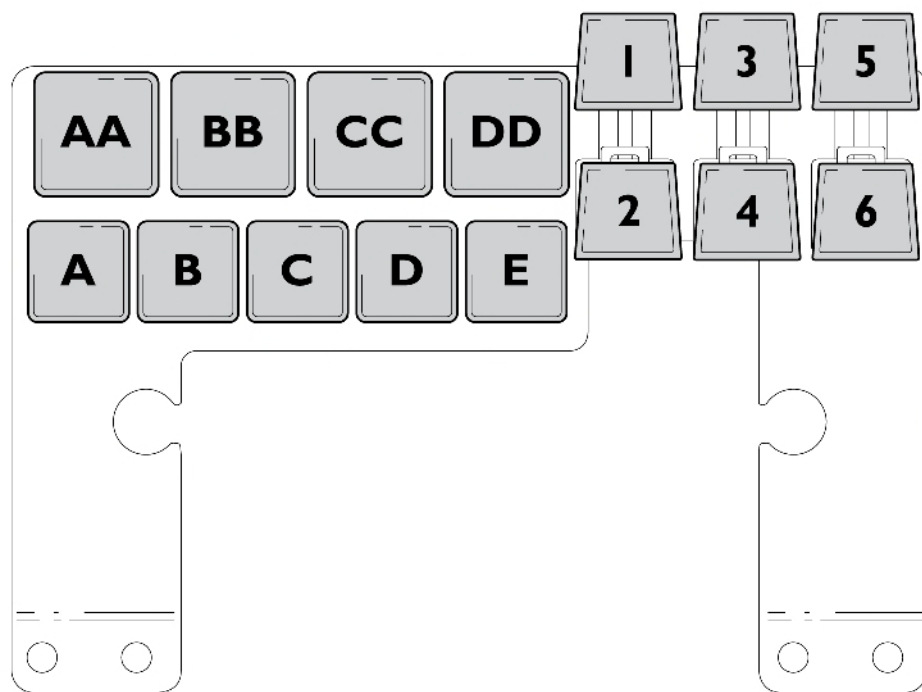
REF.	DESCRIPTION
1	Contactor for activating Xenon headlight lamps (left)
2	Contactor for activating Xenon Shutter headlights
3	Contactor for activating Xenon headlight lamps (right)
4	Contactors for activating DRL/Xenon headlight voltage reducer
5	Contactor for activating Xenon headlights
6	Diode for DRL/Xenon headlights

Mini contactors

REF.	DESCRIPTION
AA	Contactor for cab tilting
AB	Contactor for cab tilting
CC	–
DD	–

Mini contactors

REF.	DESCRIPTION
A	–
B	–
C	–
D	–
E	–





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Product overview



ORIGINAL PRODUCTS FOR IVECO.

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