HEAVY RANGE

TRAKKER

ACTIVE TIME
ACTIVE DAY
Use and maintenance

IVECO

On the following pages, you will often find these symbols; for your own safety and that of your vehicle, carefully follow the related instructions.

Symbols used in the handbook

Risk of personal injury: failure to comply with these requirements completely may result in the risk of serious personal injury.

Risk of serious damage to the vehicle: failure to comply with these requirements completely, may result in risk of serious damage to the vehicle and may even, on occasion, invalidate the warranty.

General risk: combines the risks of both the signs described above.

Protecting the environment: indicates the correct behaviour to be as environmentally friendly as possible.

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Installation of accessories, additions and modifications to the vehicle are to be executed in compliance with the IVECO assembly directives (the special publication "Bodybuilders' Instructions" is available from the *service network* workshops).
You are reminded that, particularly for the electrical system, different electrical outlets are provided as standard (or optionally) in order to simplify and standardise the outfitters' work on the electrical system.
IVECO authorisation is required for any exemption from the assembly directives.
Failure to comply with the above requirements will invalidate the warranty.

Important!

No modifications or connections to the CPUs wiring is allowed, specifically to the CPUs data connection line (CAN line), where any change is strictly prohibited.
Troubleshooting and maintenance operations, if any, are strictly at the authorised personnel's care and shall be carried out with IVECO approved equipment.

The driver's position

The cab of your vehicle has been designed in accordance with current standards of ergonomics to offer you a roomy, welcoming and safe environment.
This section describes the following elements:

- ❑ Access to the cab 6
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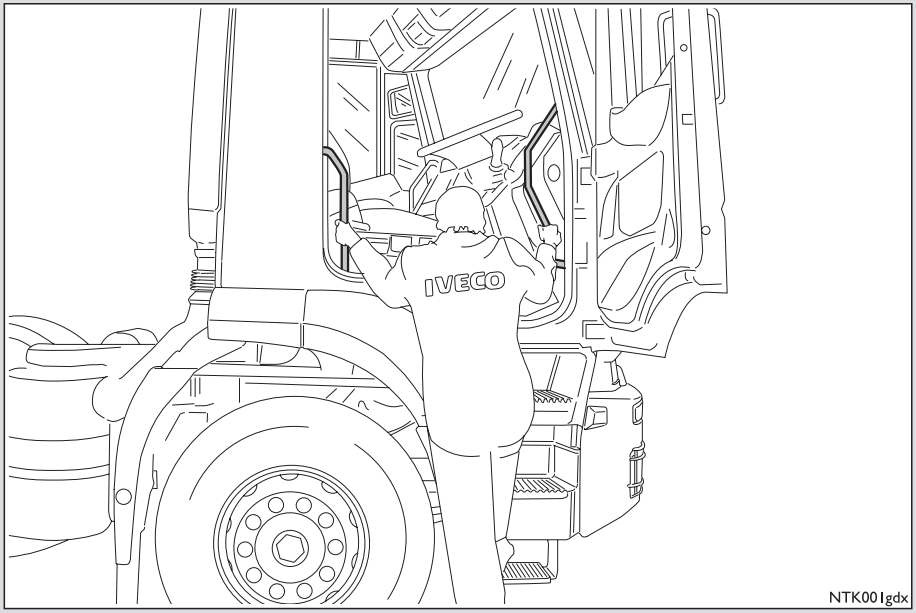


Risk of injury and accident!

- Use the handhold and the steps.
- Lower the seat on pneumatic suspension completely.
- Never jump out of the cab.
- Keep the access steps clean.

Access to the cab

Attention!

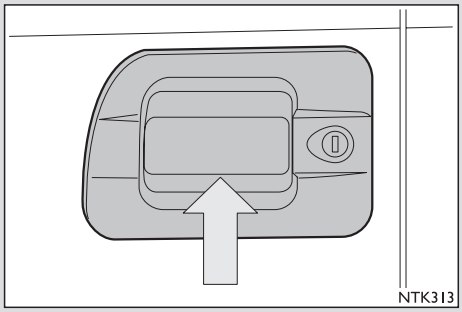
Risk of injury and accident: travel only with the doors properly closed.

Door opening and closing

Opening from the outside

The handle for opening of the door is strengthened with a lock with key for locking it from outside the vehicle.

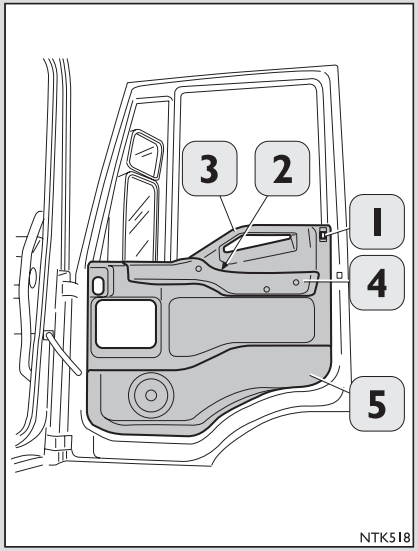
To open, pull the handle as indicated in the figure.



Doors

When the doors open the two external lights placed on the upper crosspiece and the inner roof white light are turned on.
The external lights switch off at doors closing (and are however controlled by a timer).
Roof lights are controlled by a timer.

1. Knob for locking the door from inside.
2. Lever for opening the door.
3. Arm rest.
4. Handle for closing the door.
5. Pocket for briefcase.



Access to the windscreen

To access the windscreen (e.g. for cleaning) use steps and handles provided on radiator grille. Keep the access steps clean.
On the versions with external parasol sun visors an additional handle is provided under the sun visor.

Front footboard

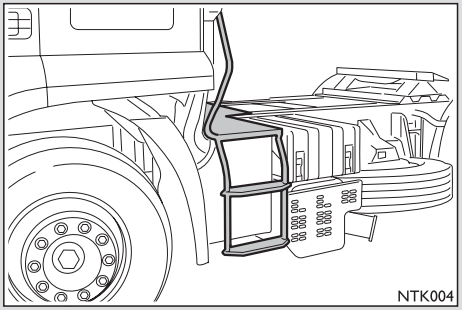
The figure shows the footboard (1) in its operation position. To get this position, release it from clips (2), then pull it outwards and check proper locking in its operating position. To get it back to its rest position, raise it slightly to release it, then push it backwards. Finally lock it with the clips (2).

Access to the loading platform (tractors only)

For boarding and exiting:

- use the handhold and the steps;
- keep the access steps clean.

If aerodynamic kit is present, the side spoiler can be rotated through 90°.



Buzzer activation

The vehicles are equipped with a warning buzzer that comes on when you forget to turn off the lights and engage the parking brake.
The buzzer is also activated in the situations indicated in the table:

Door open	**Parking brake engaged**		**Parking brake not engaged**	
	Sidelights on	Sidelights off	Gearbox in neutral	Gearbox not in neutral*
Start key in position (0)	BUZZER ON	BUZZER OFF	BUZZER ON*	
Ignition key in position (I)	BUZZER OFF		BUZZER ON	BUZZER OFF

The buzzer is also activated if an error is present in one of the systems, when the associated icon and description also appear.

* On vehicles equipped with a Eurotronic transmission under the following conditions:
– parking brake not engaged
– gearbox not in neutral
the buzzer is not activated.
Vehicles equipped with a Eurotronic transmission are equipped with a buzzer that comes on under the following condition:
– engine on;
– door open.

Attention!

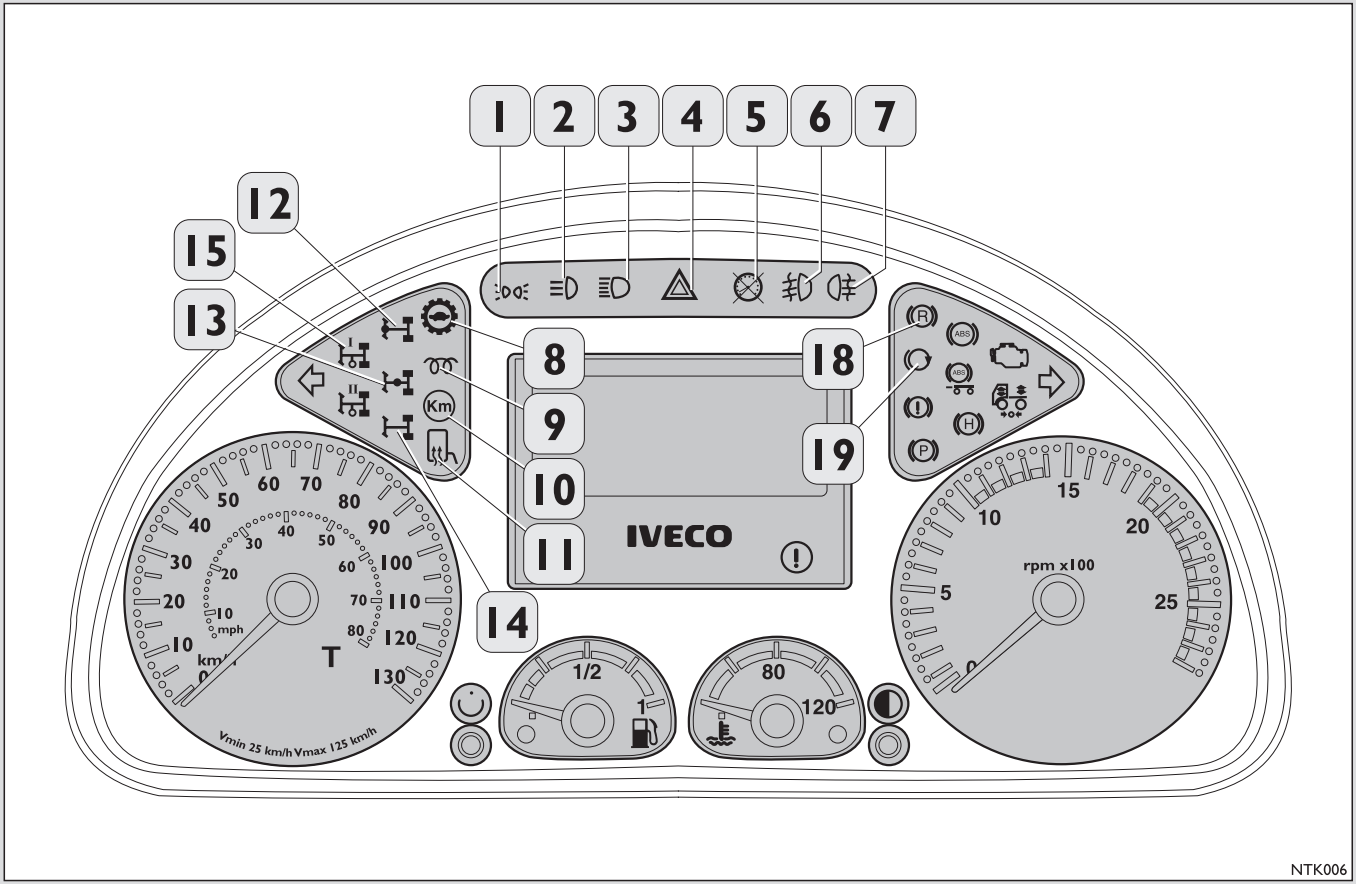
Important use and safety warning

The vehicle instrument panel is equipped with a display providing information on its operation.

Also, it allows control of some vehicle functions. Finally, to avoid potentially dangerous situations, it is necessary to observe the following precautionary norms scrupulously:

- Before starting the vehicle, get familiar with the systems and controls provided.
- Possible carelessness and/or impaired view of road conditions by the driver might result in serious crash.
- The system must be used always with vehicle under full control; if in doubt, stop to perform the operations required.

Instrument panel and display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13
14
15
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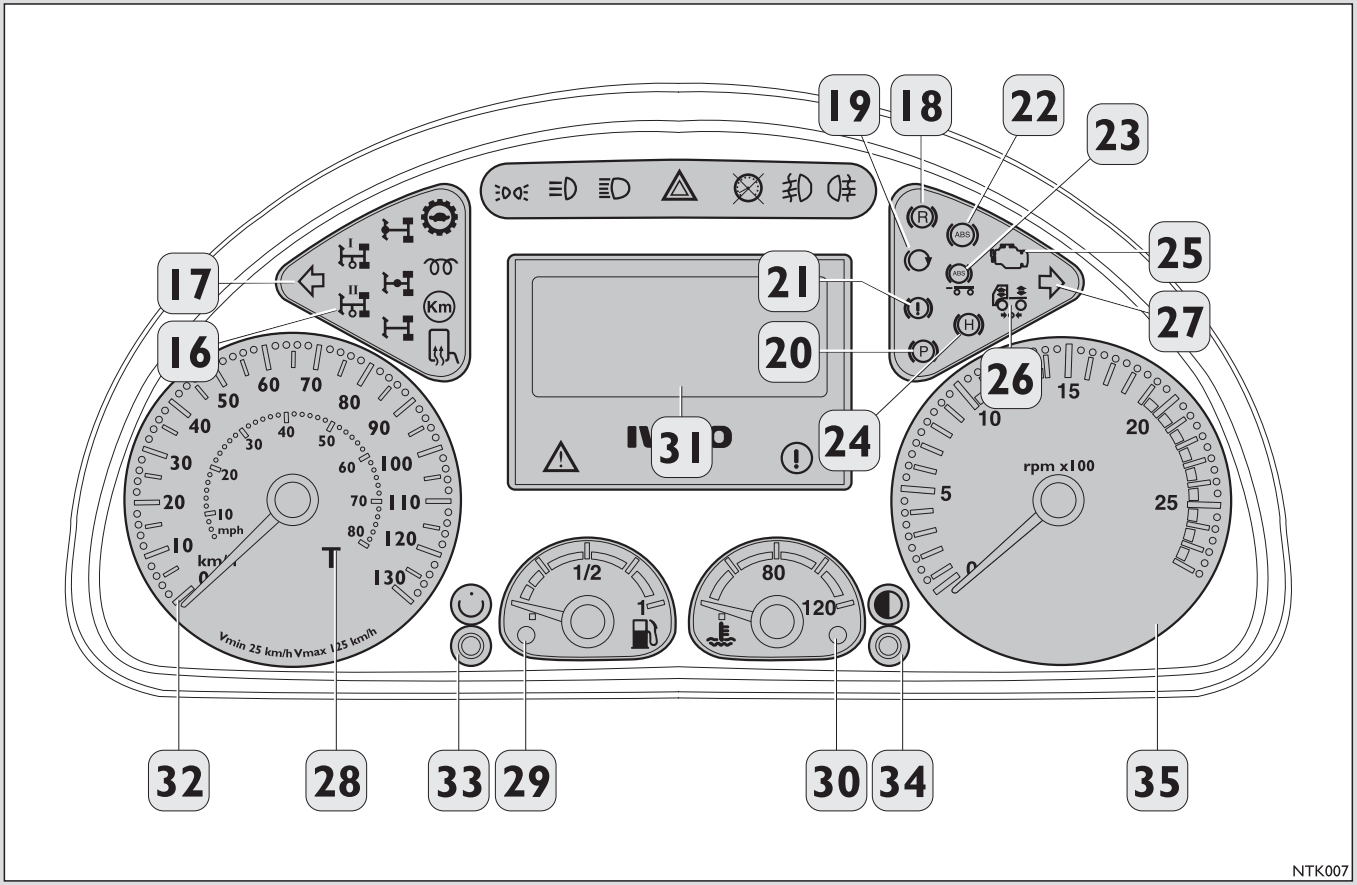
19
IVECO
rpm x100
mph
km/h
Vmin 25 km/h Vmax 125 km/h
1/2
1
80
120
NTK006

Instrument panel and display

Reference	Meaning	Symbol
1	External lights	
2	Optional headlights	
3	Driving beams	
4	Emergency lights	
5	Instrument panel fault	
6	Fog lights	
7	Rear fog lights	
8	Slow gears engaged	
9	Pre-heating	
10	Cruise control	
11	Mirror heating	
12	Front differential lock	
13	Side differential lock	
14	Rear differential lock	
15	First power take-off	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29
30
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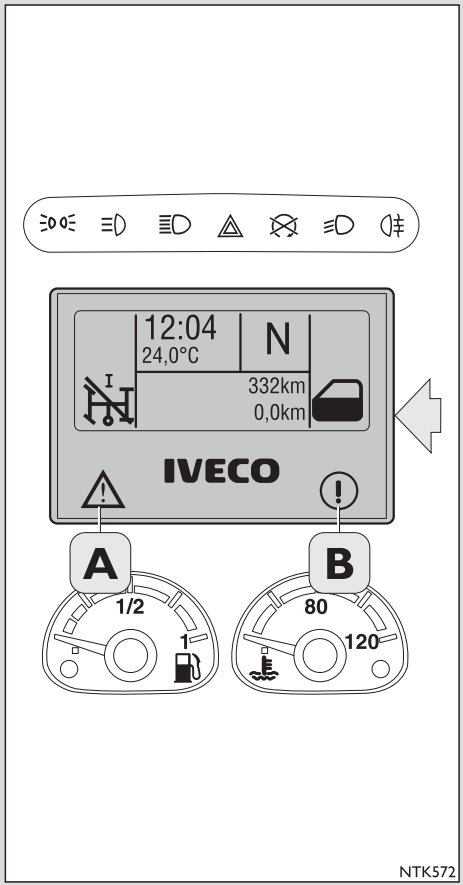
35
Km
mph
km/h
rpm x100
Vmin 25 km/h Vmax 125 km/h
1/2
1
80
120
NTK007

Instrument panel and display

Instruments and warning light legend

29. Low fuel level.
30. High coolant temperature.
31. Display.
32. Analogue speedometer.
33. Single function button to reset partial mileage by keeping it depressed for 4 secs.
34. Display brightness button. Working when external lights are on.
35. Analogue revolution counter.

Reference	Meaning	Symbol
16	Second power take-off	
17	Left turn indicator	
18	Decelerator	
19	Engine brake	
20	Parking brake engaged	
21	Brake system failure	
22	Tractor ABS failure	
23	Trailer ABS fault	
24	Front parking brake engaged	
25	OBD II warning light	
26	Low air pressure in pneumatic suspension (if equipped)	
27	Right turn indicator	
28	Tachograph fault	



Instrument panel and display

Operation/fault pilot lamps on display

When the following functions are on, or following faults occur the relevant symbol will be called up on the display.
This symbol may also appear on the yellow warning light **A** or on the red warning light **B**.

A. YELLOW COLOUR (MINOR FAULT/FAILURE):
drive carefully to the nearest workshop of the *service network*.

B. RED COLOUR (SEVERE FAILURE/FAULT – STOP WARNING LIGHT):
park the vehicle at the road side in a safe location, then call the dealer for assistance or free toll number of customer assistance if failure occurred outside normal hours or in a remote location (Round-the-Clock service).

Instrument panel and display

This table and the tables overleaf indicate the symbols that appear on the display in the event of a minor or severe anomaly/fault.

Meaning	Symbol	Colour
Cab detached		red
Cab tilt enablement		yellow
Reduced ASR operation		–
Reduced ASR (with ESP) operation		–
Door open		red
Front axle air brake low pressure		red
Rear axle air brake low pressure		red
Trailer air brake low pressure		red
Windscreen defrosting		–
Engine coolant min. level		yellow
Windscreen fluid low level in tank		yellow
ABS operation impaired		–

Meaning	Symbol	Colour
Immobiliser fault		yellow
Fault in supplementary air heater system		yellow
Tilting body		yellow
Instrument cluster fault/failure		yellow
Low hydraulic pressure in third steering axle		red
Engine coolant level too low		red
Front axle brake wear		red
Additional front axle brake wear		red
Low power steering fluid level		yellow
Oil filter clogged		yellow
Fuel filter clogged		yellow
Low engine oil level		yellow

Instrument panel and display

This table and the tables overleaf indicate the symbols that appear on the display in the event of a minor or severe anomaly/fault.

Instrument panel and display

This table and the tables overleaf indicate the symbols that appear on the display in the event of a minor or severe anomaly/fault.

Meaning	Symbol	Colour
Engine oil low pressure		red
Parking brake air low pressure		red
Rear second axle brake wear		red
Rear axle brake wear		red
Warning light for suspension not in driving condition		yellow
EM control unit anomaly		yellow
Air filter clogged		yellow
Water in fuel filter		yellow
Engine oil level too low		red
Engine oil high temperature		red
Air suspension fault/failure		yellow/red
Trailer brake wear		red
High engine oil level		yellow

Meaning	Symbol	Colour
Low generator charge		red
TCO ECU fault/failure	TCO	yellow/red
Parking brake failure		red
Fault in an exterior light		yellow
BC ECU fault/failure	BC	yellow/red
EDC fault/failure		yellow/red
Anomaly/gearbox fault		yellow/red
EBS fault/failure		yellow/red
Intarder fault/failure		yellow/red
MET ECU fault/failure	MET	yellow/red
DDM control unit anomaly	DDM	yellow
CDM control unit anomaly	CDM	yellow
BM control unit anomaly	BM	yellow

Instrument panel and display

This table and the tables overleaf indicate the symbols that appear on the display in the event of a minor or severe anomaly/fault.

Instrument panel and display

This table and the tables overleaf indicate the symbols that appear on the display in the event of a minor or severe anomaly/fault.

Meaning	Symbol	Colour
ESP anomaly	ESP	yellow
Air conditioning system anomaly		yellow
Anomaly in supplementary water heater		yellow
SWI control unit anomaly	SWI	yellow
IVTM control unit anomaly	IVTM	yellow
Urea Metering System fault/failure	UDS	yellow/red
Fault/anomaly in air heater system		–
Central lock fault		yellow
VCM control unit anomaly/fault	VCM	yellow/red

Meaning	Symbol	Colour
Third axle raise		–
Assisted take-off		–
ESP on		yellow
3rd power take-off engaged		–
EDC in economy mode		–
Loading platform light (tractor only)		–
Low AdBlue level		yellow
Heater timer on		–
Crawler gears on distributor		–
Semitrailer third axle lift		–
Belts not fastened		–
Low environmental temperature		–
EDC in power take-off mode		–
ASR on	ASR	yellow
Assisted take-off		–

Instrument panel and display

This table indicates the service symbols (user status) activated.

Instrument panel and display

This table and the tables overleaf indicate the symbols that appear on the display in the event of a minor or severe anomaly/fault.

Meaning	Symbol	Colour
Low power steering fluid pressure		red
Power steering sensor fault		red
3rd PTO requested but not engaged		–
Low front axle tyre pressure		yellow
Low rear axle tyre pressure		yellow
Low gearbox fluid level		red
Reduction in engine power for emissions		yellow
Fault in bodybuilders screened values		yellow

Meaning	Symbol	Colour
Trailer EBS failure		Yellow/red
Secondary generator insufficient charge		red
Airbag failure		red
Vehicle with EBS brake system		red
Immobilizer ON lamp		yellow
Start-up inhibited		yellow
Gear shift limitation		yellow
Driving time failure		yellow

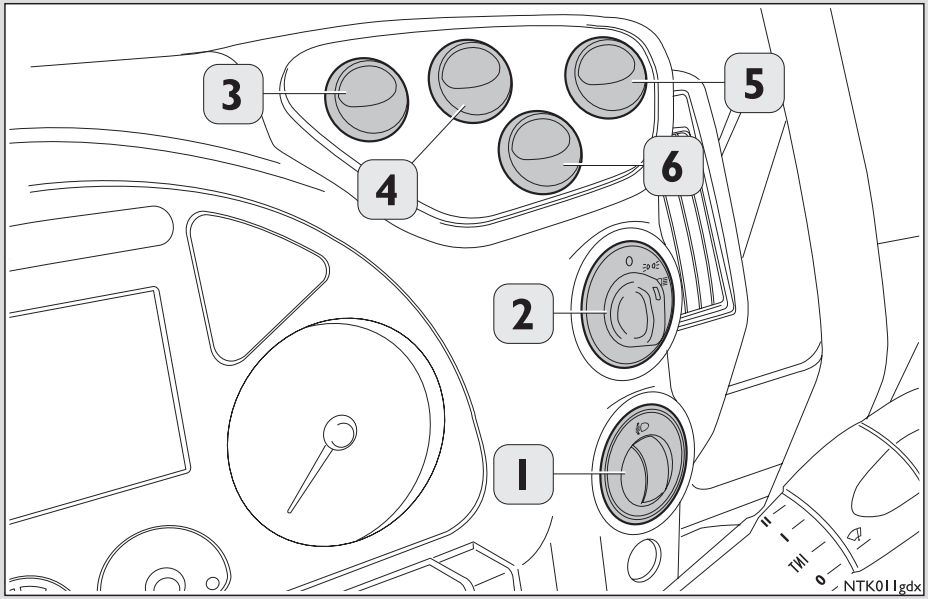
Instrument panel and display

This table shows the ideograms displayed in case of light or severe failure.

Instrument panel and display

This table shows the ideograms displayed in case of light or severe failure.

Meaning	Symbol	Colour
Electronically connected trailer		–
Generic alarm		–
CAN network failure	CAN	yellow/red
ACC remote control activated		–
ACC remote alarm		red
ACC sensor failure		yellow
ACC sensor dirty		yellow
Gearbox oil high temperature		–
Intarder oil high temperature		–



Dashboards

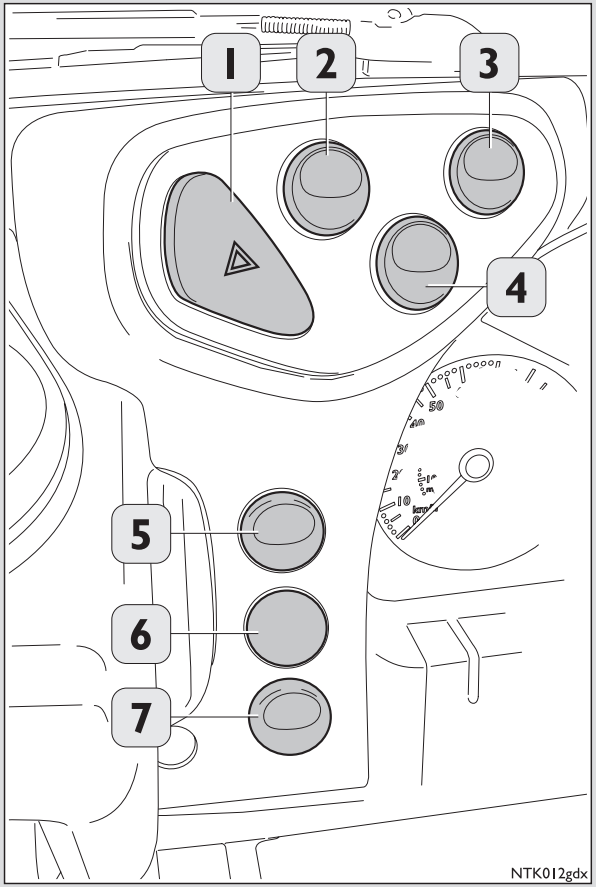
Controls on right dashboard frame

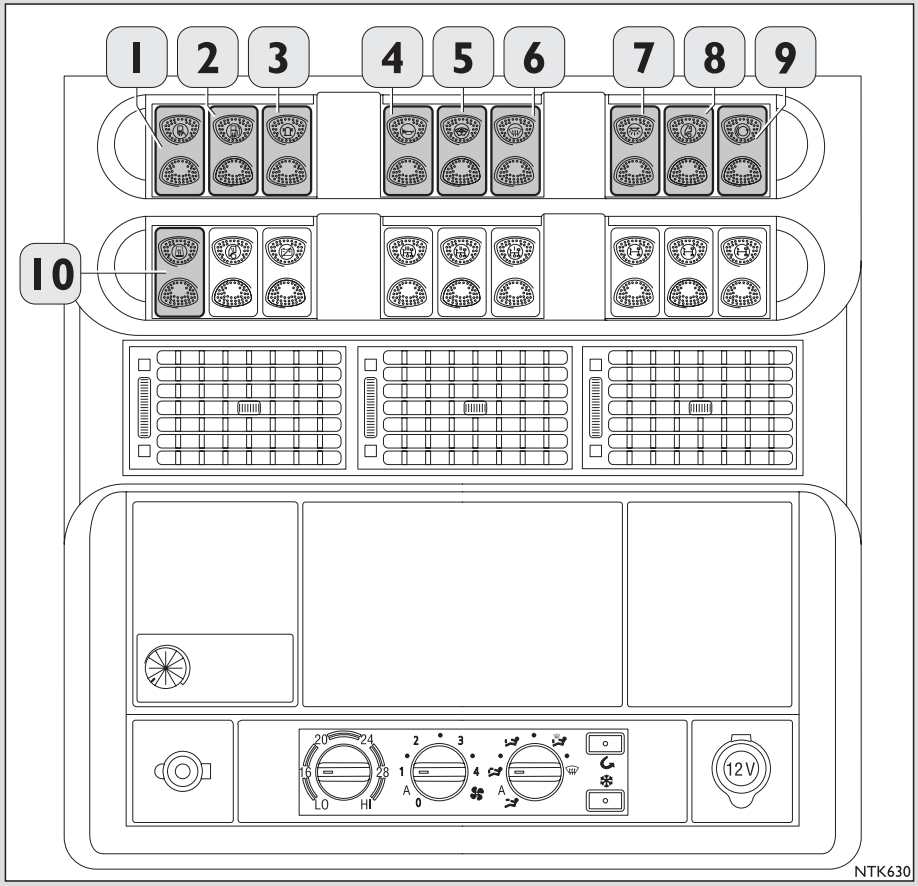
1. Headlamp alignment adjustment (rotary - vehicles with mechanical suspension).
2. Exterior light switch (rotary).
3. Available
4. Rear fog lights.
5. Fog lights.
6. Additional driving headlamps (if fitted).

Dashboards

Controls on left dashboard frame.

1. Hazard warning lights switch.
2. ASR key.
3. ABS key.
4. Available.
5. SL - Speed limit set
6. Available.
7. Available.





Dashboards

Controls on central panel

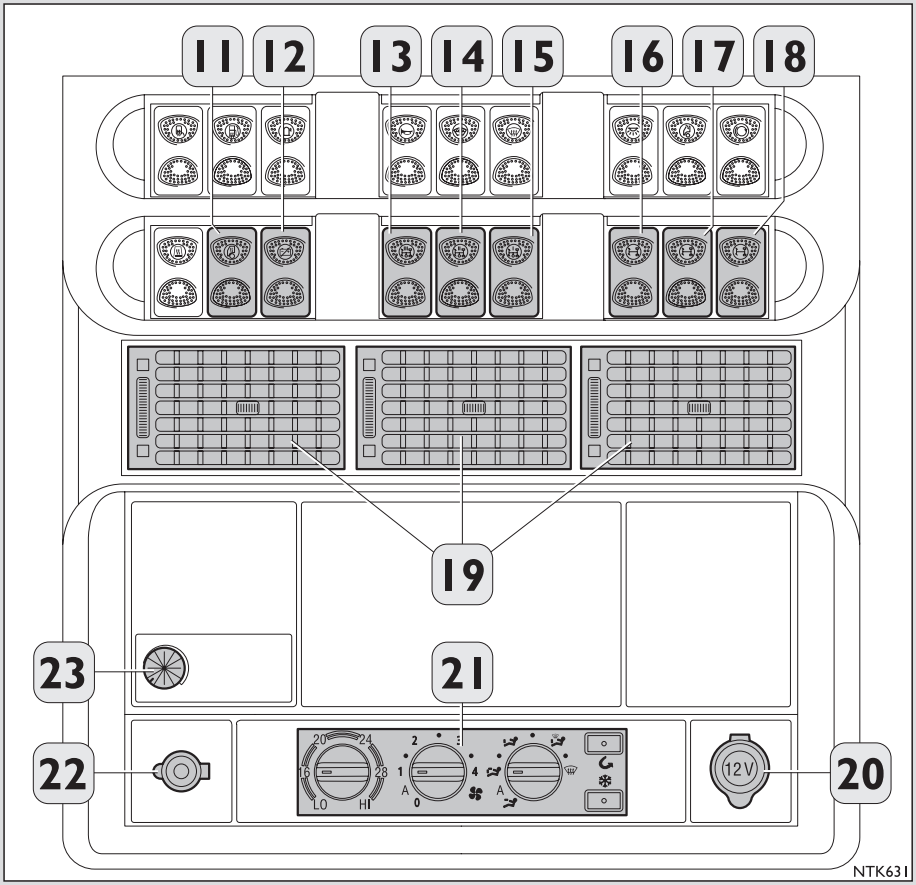
1. Mirror heating.
2. Fuel heater.
3. Rotary lights.
4. Electropneumatic horn.
5. Sun blind (if provided).
6. Cantilever lifting axle warning light / Heated wind screen switch
7. Cab interior light (central courtesy light).
8. Electric hatch (if fitted).
9. Engine brake provision.
10. Automatic heating.

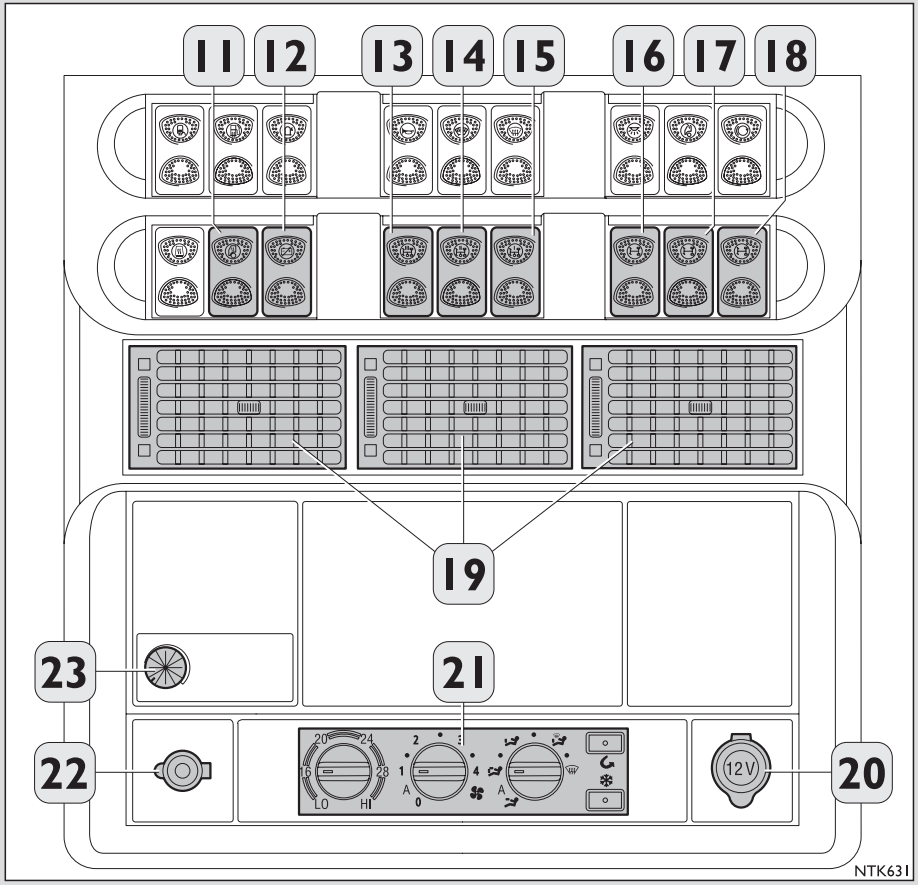
Dashboards

Controls on central panel

11. Engine and cab heating.
12. ADR (if fitted)/master current relay (if fitted).
13. Power take-off 3 (if fitted)/multipower power take-off (if fitted) / Loading platform headlight
14. Power take-off 2.
15. Power take-off 1.
16. Front axle differential lock (if fitted)/roof side inner cab light switch (if fitted).
17. Rear axle differential lock.

Note: when ADR button is depressed the central lock function is off (if equipped). Therefore, doors shall be manually locked.





Dashboards

Controls on central panel

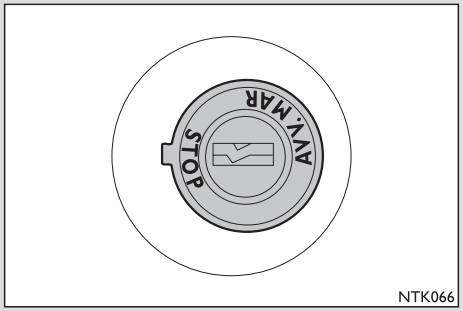
18. Longitudinal differential lock.
19 Ventilation outlets.
20. 12V power socket.
21. Heating and ventilation.
22. Ecopower key switch (if fitted).
23. Supplementary water heater thermostat (if fitted).

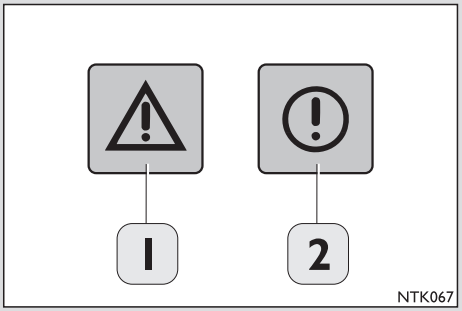
Display operation

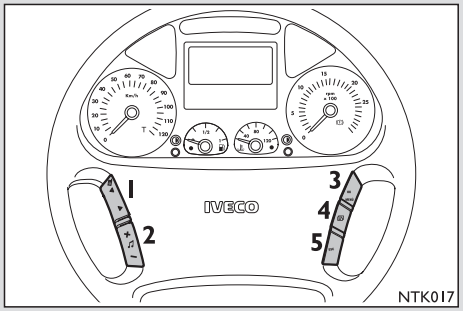
The display screen changes under following conditions:

- Key on "MAR" with engine off.
- Key on "MAR" with engine started.

Warning:
When key is turned onto "MAR", the display shows the control of the main systems present on vehicle. Presence and status are shown by warning light (1) and the symbol of the associated function is displayed on the left of the screen when a non-critical fault occurs.
Warning light (2), and the associated operating symbol on the right side of the screen indicate severe faults.







Display operation

Control description

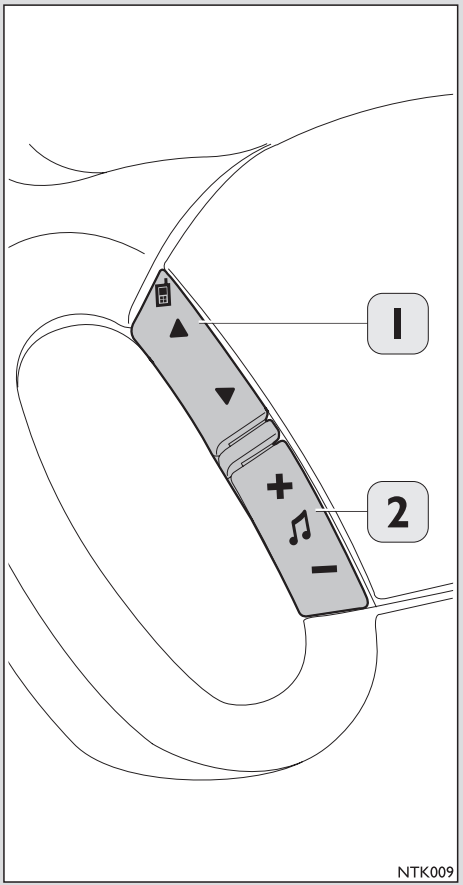
Twenty-one screens are available by depressing the keys located on steering wheel.

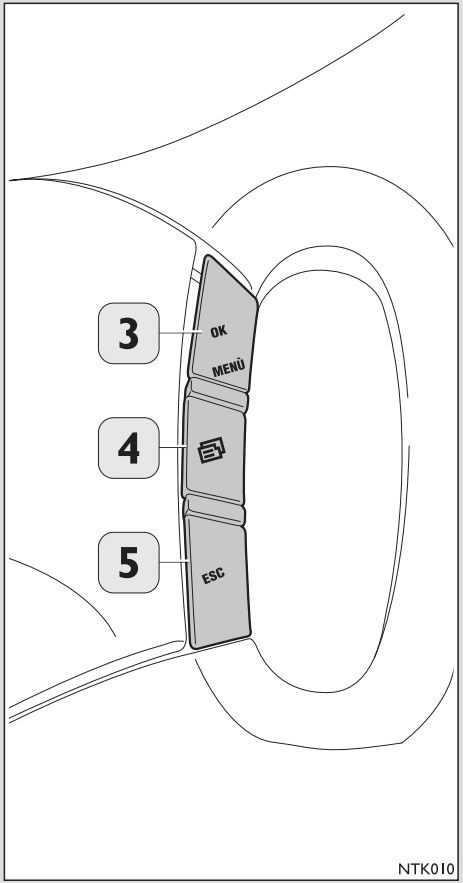
Display operation

Keys are provided on steering wheel to select and control some of the functions.

- Central area: horn.
- Left side:

1. KEY▲ KEY ▼
2. KEY + KEY -





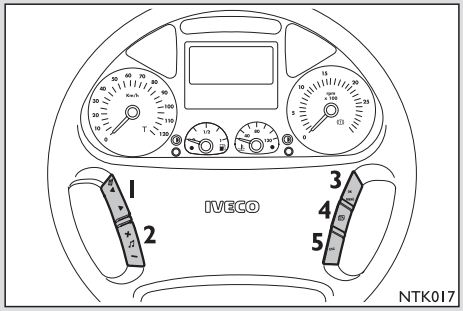
Display operation

■ Right side:
3. MENU /OK button
4. PAGE key
5. ESCAPE key.

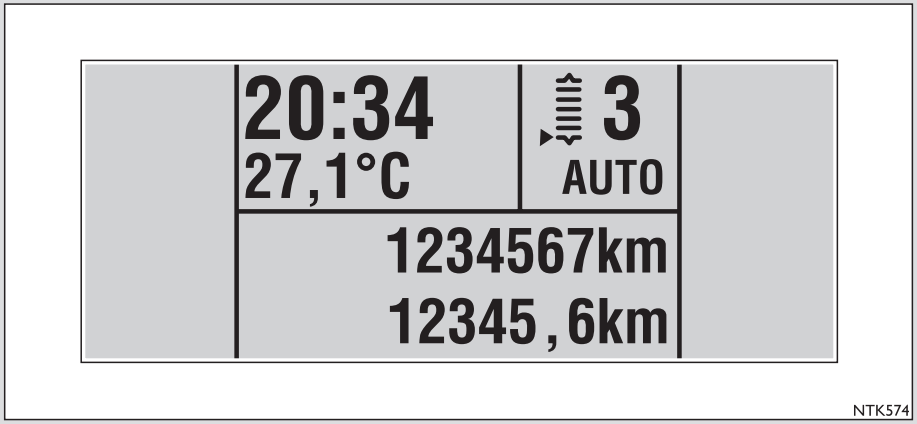
Display operation

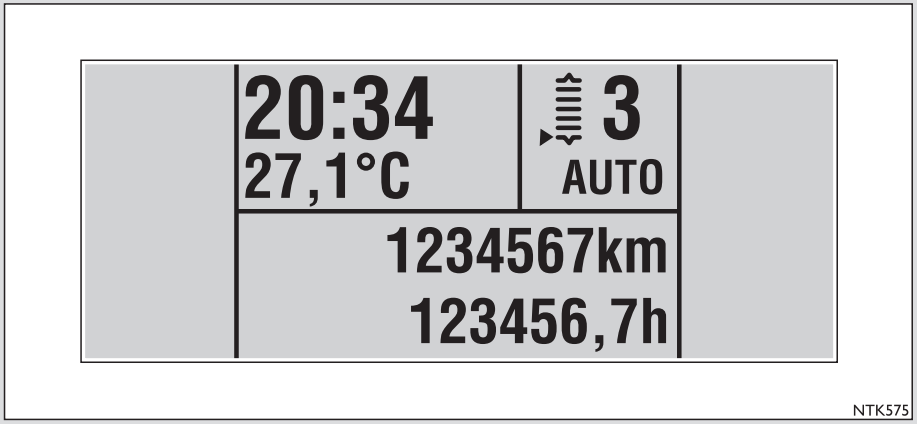
Key on "MAR" with engine off

Up to 20 screens are available, accessible by push-buttons on steering wheel.
These screens can be visible always or with vehicle stopped only.
Their description is found at following pages.



System initialization screen





Display operation

1. 1. Hour/External temperature in °C/Km/trip Km /Gear shifted (9-speed, automatic gearboxes)

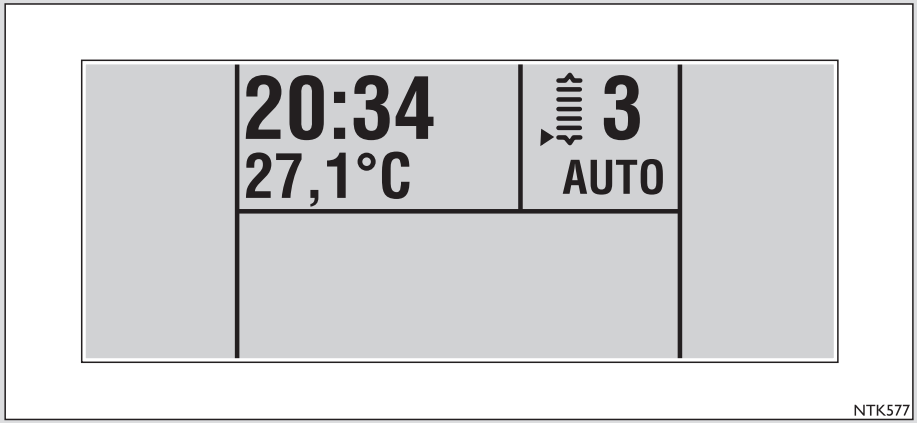
Screen always visible

2. Hour/External temperature in °C/Km/trip Km /Gear shifted (9-speed, automatic gearboxes)

Screen always visible

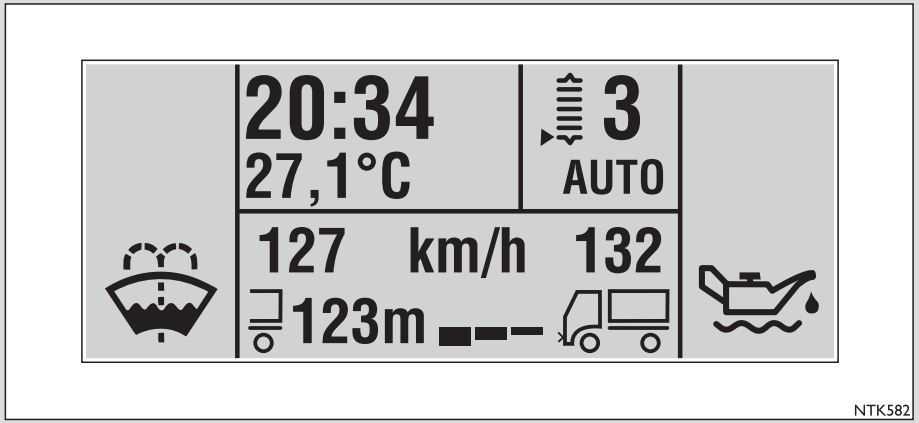
Display operation

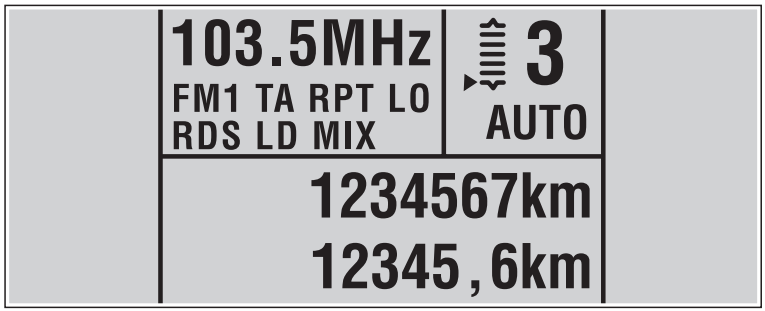
3. Hour/External temperature in °C/gear shifted (9-speed automatic gearboxes).



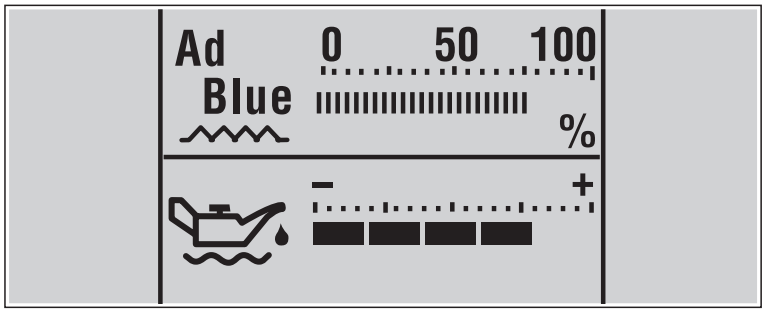
4. Adaptive Cruise Control, speed of preceding vehicle, speed of following vehicle/distance between vehicles.

Screen present only if ACC is applied.
Always visible





NTK578



NTK591

Display operation

5. Radio-CD information/Km/trip Km/gear shifted(9-speed and automatic gearboxes).

Screen present only for vehicles with radio, always visible

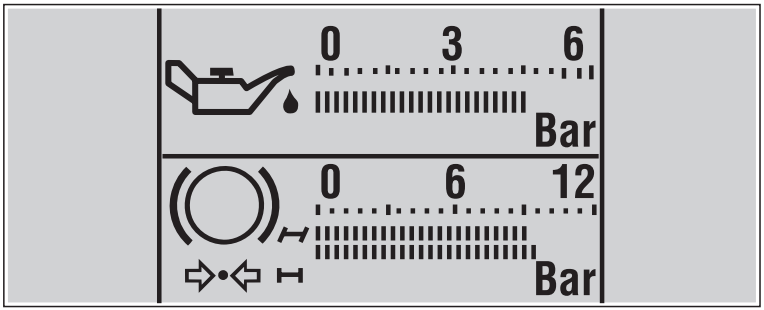
6. AdBlue liquid level/engine oil level.

Screen always visible

Display operation

7. Engine oil pressure/Air pressure in brake circuit.

Screen always visible

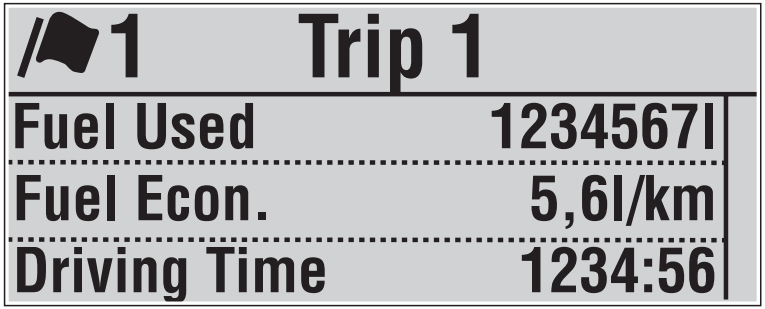


NTK592

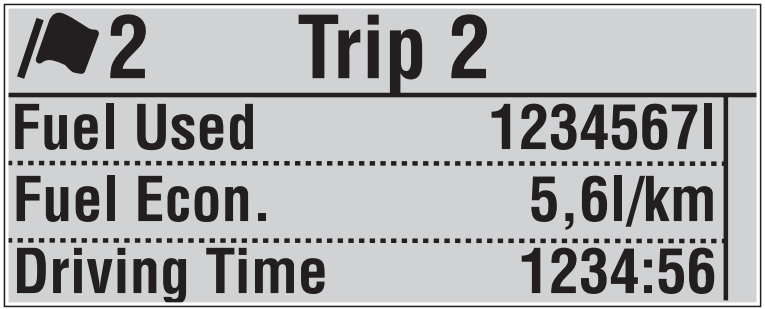
8. Trip information (1).
   Consumed fuel/Average consumption/Trip hours .

The display can show three types of information. Pressing the "Menu OK" key and then the complete list of all information available is scrolled. Information to be displayed can be selected by pressing the "OK" key when scrolling the list. Data shown in the Fig. can be reset by pressing the reset key located on display next to fuel level indicator.

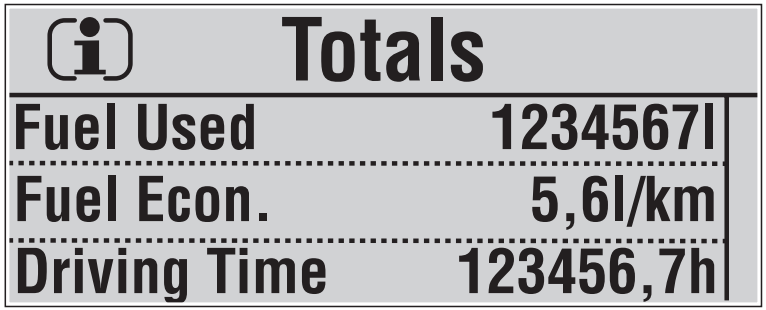
Screen always visible



NTK280g



NTK281g



NTK282g

Display operation

9. Trip information [2]*.
   Consumed fuel/Average consumption/Trip hours
   Data is reset whenever motor start-up key is rotated to Stop position. (0).

10. Total trip data *.
    Consumed fuel/Average consumption/Total trip hours.

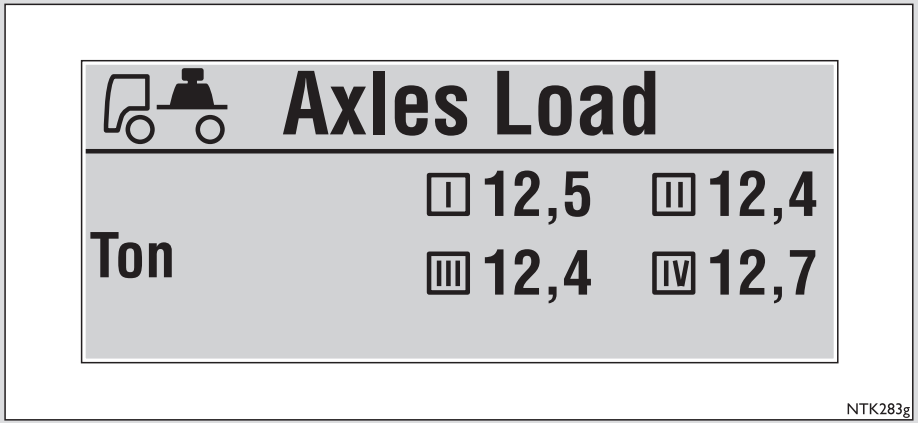
Screen visible with vehicle stopped only

* The display can show three types of information. Pressing the "Menu OK" key and then __ the complete list of all information available is scrolled. Information to be displayed can be selected by pressing the "OK" key when scrolling the list.

Display operation

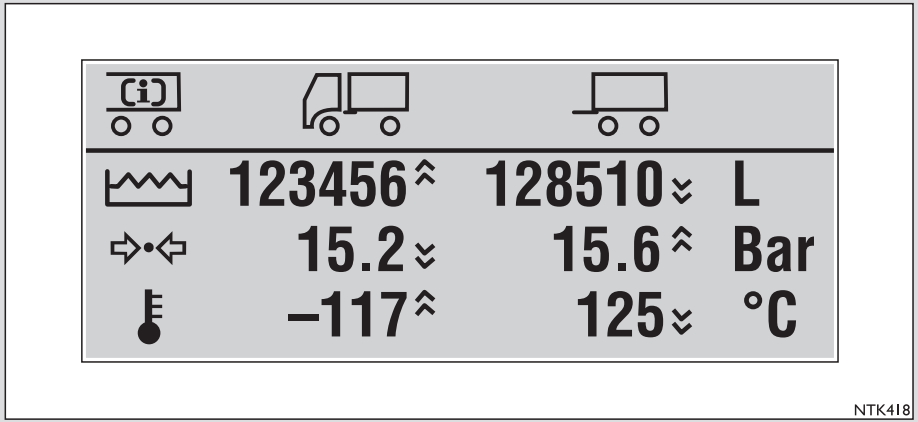
11."Axle Load" screen .
Load on axles is displayed (On vehicles equipped with ECAS only, with axle load function).

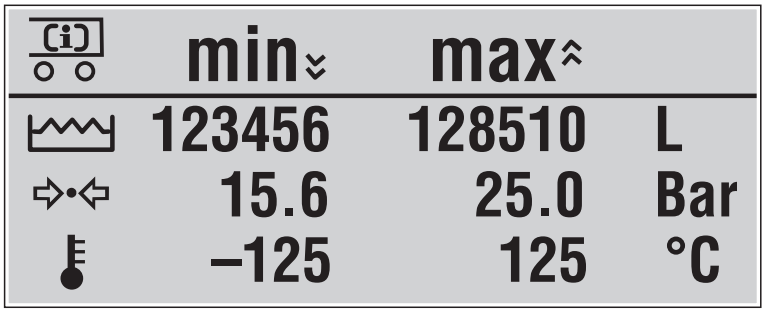
Screen visible with vehicle stopped only.



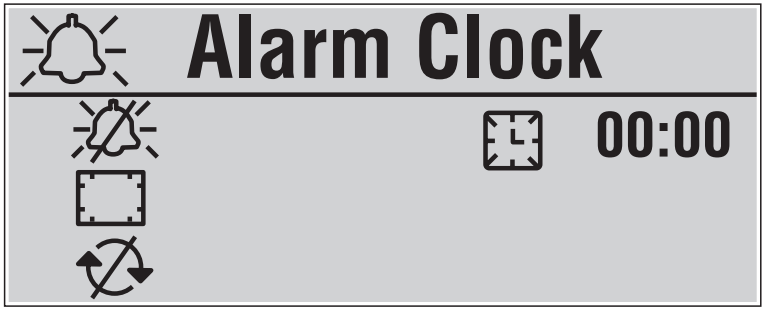
12. 'Body makers' screen (if applicable)
This page contains information related to the specific vehicle outfit:
- Tank level
- Pressure
- Temperature

Screen always visible





NTK419



NTK285g

Display operation

13. Vehicle outfit operation value change screen (if applicable).
    Use keys on steering wheel to change these values
    KEY ▲ KEY ▼
    KEY + KEY -

Press OK to confirm.

Screen visible with stopped vehicle only.

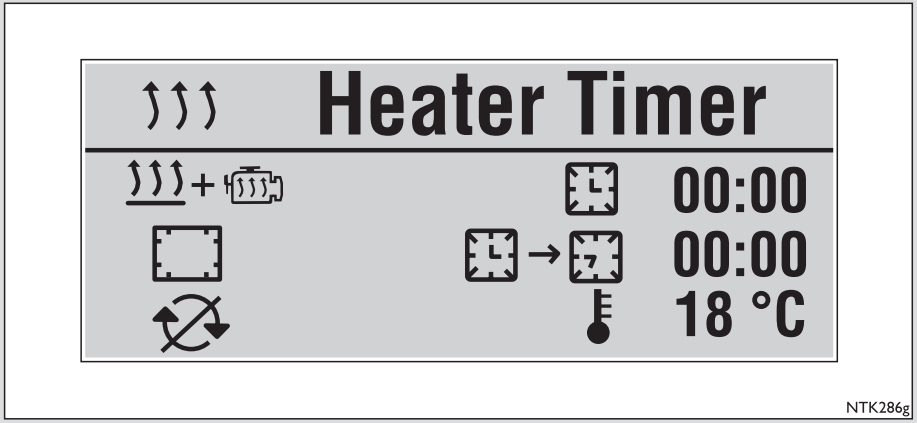
14. V "Wake-up" screen
    For wake-up cal setting

Note: Wage-up call setting is lost when disconnecting the T.G.C. by means of the external manual control or pressing the ADR key on the instrument panel.

Screen visible with stopped vehicle only.

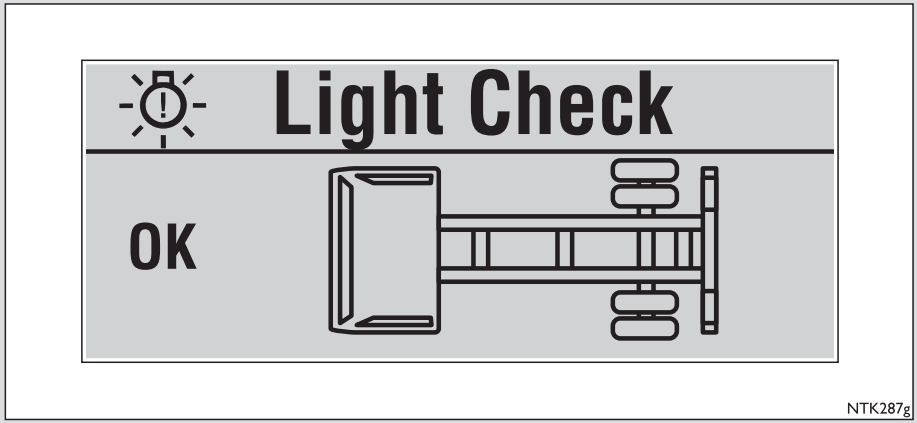
Display operation

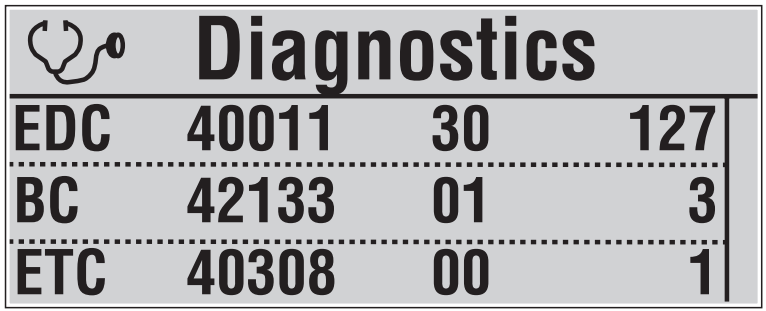
15. "Heater Timer " screen. For programming the heater using the timer, when the additional heater is present.
Note: engine is warmed up by water heater only. Disconnecting the T.G.C. using the manual external command or pressing the ADR key on the instrument panel, heater setting is lost. Temperature is displayed only with automatic heater or with additional air heater.
Note for ADR vehicles, only (dangerous merchandise transport): only the alarm clock can be set, while heater switch on shall be possible only from key placed on instrument panel.



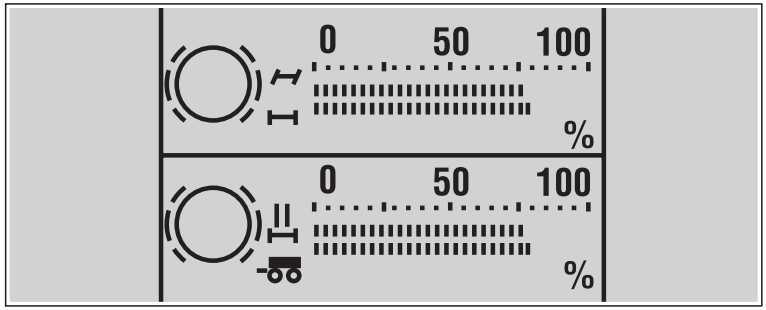
16. "Light control" screen
To display vehicle operation

Screen visible with stopped vehicle only





NTK288g



NTK593

Display operation

17. "Diagnostics" screen
    Page reading is as follows:
    First column = ECU.
    Second column = ECU address plus failure number.
    Third column = type of failure
    Fourth column = failure frequency

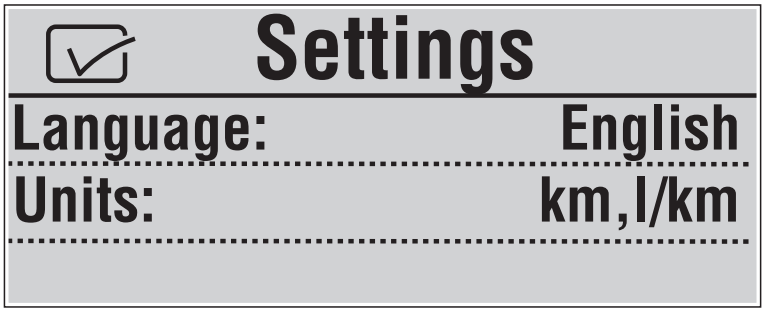
Screen visible with stopped vehicle only

18. "Brake pad consumption" screen
    Brake wear on axles and trailer is displayed (on vehicles with EBS only).

Screen visible with stopped vehicle only

19. "Tire pressure" screen (only on vehicles equipped with IVTM ECU for pressure monitoring).
Showing pressure of tires installed on vehicle front and rear axles.

Screen visible with stopped vehicle only



Display operation

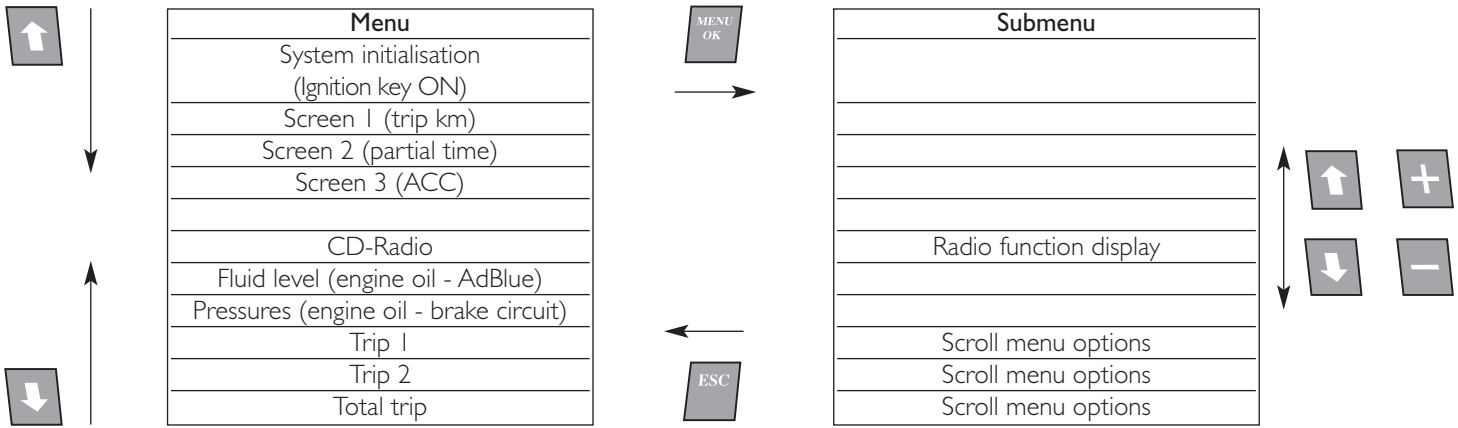
20. "Setting" screen
    Display setting

Screen visible with stopped vehicle only

Display operation

Menu Options

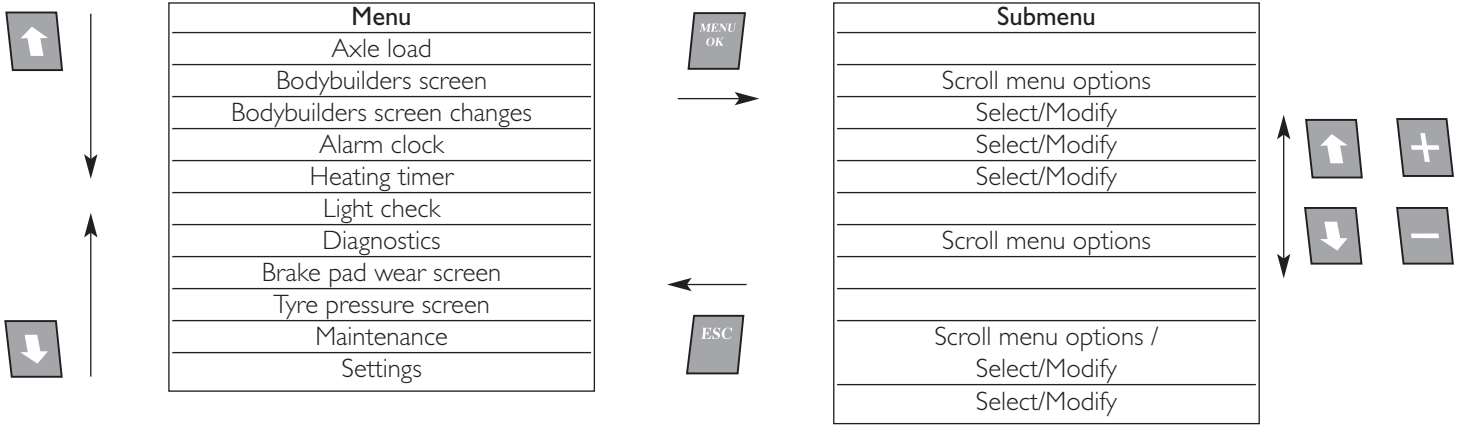
When the display shows one of the screens described previously (from page 36 to page 46) it is possible to browse the display menu. To do this, press the keys on the steering wheel as shown in the following diagram.



Display operation

Menu Options

When the display shows one of the screens described previously (from page 36 to page 46) it is possible to browse the display menu. To do this, press the keys on the steering wheel as shown in the following diagram.



Menu
Axle load
Bodybuilders screen
Bodybuilders screen changes
Alarm clock
Heating timer
Light check
Diagnostics
Brake pad wear screen
Tyre pressure screen
Maintenance
Settings

Submenu
Scroll menu options
Select/Modify
Select/Modify
Select/Modify
Scroll menu options
Scroll menu options / Select/Modify
Select/Modify

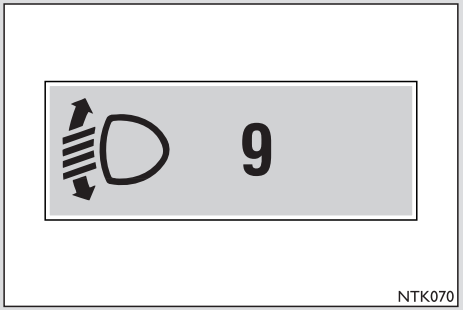
Display operation

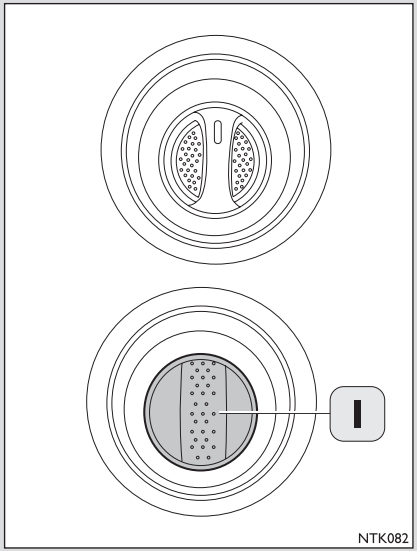
Automatic screens (pop-ups)

The automatic screens are shown below as they appear on the display at control selection.
The function is activated for a preset time and from the base menu; after ten second from the last selection the screen returns to the menu displayed at event occurrence.

The screens are the following:

1. headlamp alignment adjustment
2. door mirror adjustment
3. programmable speed limiter
4. speed programmer (cruise control)
5. power take-off (revolution number)
6. brake circuit air pressure
7. alarm clock
8. radio and CD player
9. engine idle rpm
10. power take-off





Display operation

Automatic displays (pop-ups)

1. Headlamp alignment adjustment of vehicles with mechancial suspension This adjustment should be carried out only with the vehicle at a standstill and the ignition key on "MAR".

Using the control (1) it is possible to change the inclination of the beam according to the vehicle load, remembering that the more the vehicle is loaded, the lower the inclination of the light-beam should be, so as not to irritate others on the road.
For a more precise adjustment, it is advisable to contact the service network.
Headlight alignment position is shown on the instrument cluster.

Display operation

Automatic screens (pop-ups)

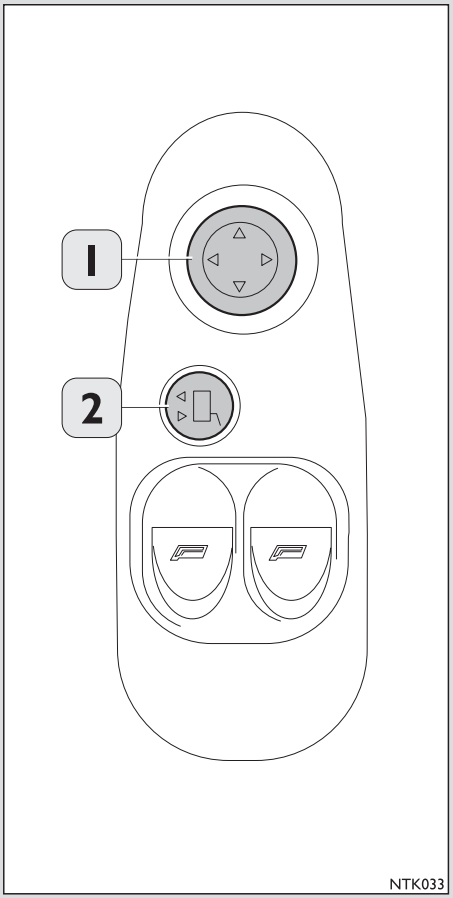
2. Door mirror adjustment (if equipped)

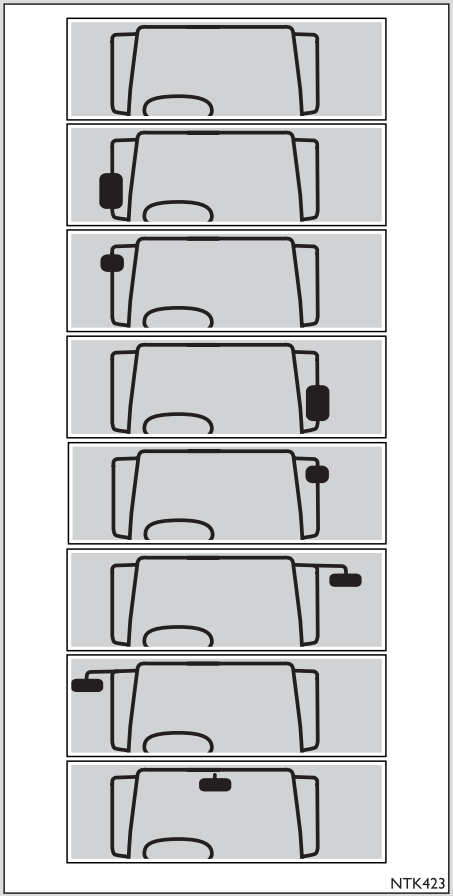
Note: adjustment to be carried out with vehicle at a standstill.

Use control (1), to adjust mirror in all four base positions (up, down, left, right).

Operate control (2) to select the vehicle door mirrors.

The selected mirror sequence is shown on the display by means of pop-ups. The latter is shown in the figure overleaf.





Display operation

Automatic screens (pop-ups)

2. Door mirror adjustment (if equipped)

The figure shows the screens displayed during rearview mirror adjustment

0 - No mirror selected.
1 - Main driver's mirror.
2 - Driver's wide-angle mirror.
3 - Main passenger side mirror.
4 - Passenger's wide-angle mirror.
5 - Passenger's close proximity mirror.
6 - Driver's close proximity mirror.
7 - Front mirror (if fitted).

Note: if power mirror are not equipped, adjustment can be performed manually.

Display operation

Automatic screens (pop-ups)

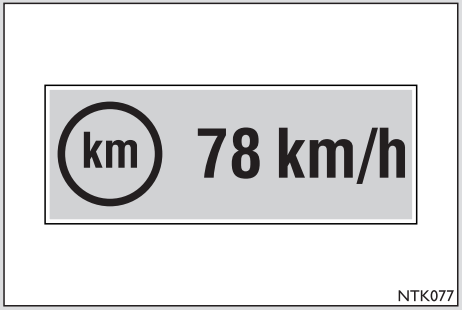
3. Programmable speed limiter SPEED LIMITER-SL

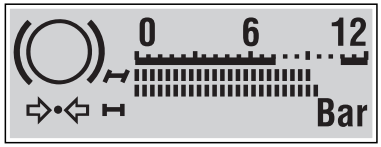
Programmable speed limiter is a device allowing to set a speed limit lower than speed set from vehicle.

When the required speed is reached, operate the right steering wheel lever: the pop-up shown in the figure will appear on the display.

The vehicle cannot exceed the preset speed limit until the lever is operated again.

Further information on the SPEED - LIMITER – SL is given on page 153.





NTK078

Display operation

Automatic screens (pop-ups)

4. Speed programmer (cruise control)
Operating instructions on page 150.

5. Power take-off
RPM
Operating instructions on pages 56 and 93.

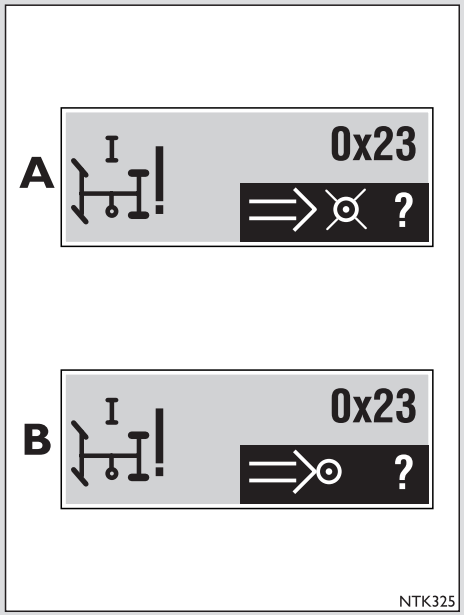
6. Air brake circuit pressure
The pop-up shown in the figure appears on the display at engine start-up if air brake circuit pressure is low. It remains visible until the circuit pressure level is correct.

Display operation

Automatic screens (pop-ups)
7. Alarm clock
Operating instructions on page 59.

8. Radio and CD player
Operating instructions on page 61.

9. Engine idle rpm
Display of engine idle rpm.



Display operation

10. Power take-off

When the driver decides to engage a power take-off (see page 93 for power take-off operation), the vehicle electronic management control unit checks whether it is possible to continue engaging the power take-off or whether this operation must be suspended.

If certain error conditions are present (lack of signal), the power take-off is temporarily disengaged. The pop-up indicated in the figure by letter A appears on the display, accompanied by a code. Once the driver has established the meaning of the code, he can decide, UNDER HIS OWN REPSONSIBILITY, whether or not to continue engaging the power take-off or to turn it off permanently.

Procedure for engaging power take-off in the presence of an error (lack of signal detected by control unit)

When the pop-up indicated by the letter A appears, the driver is fully reponsible for the decision to continue with the power take-off engagement operation. After establishing the code indicated on the display (see table overleaf), the driver must proceed as follows to engage the power take-off:

– press the '+' key on the steering wheel (the pop-up will be as indicated by letter B).

– press the 'OK' key on the steering wheel.

The driver must press the ESC key on the steering wheel in order not to engage the power take-off.

Note: If no key is pressed for sixty seconds following appearance of the pop-up indicated by letter A, the pop-up is no longer displayed and the engagement procedure is interrupted.

Display operation - Error code table

Fault index	PTO number	Fault	Text of pop up displayed
0 x 1	PTO1	Brake	Brake pedal signal error. Continue with PTO1 mission?
0 x 2	PTO1	Handbrake	Handbrake signal error. Continue with PTO1 mission?
0 x 3	PTO1	Input BC	Pressure switch signal error. Continue with PTO1 mission?
0 x 4	PTO1	Clutch	Clutch signal error. Continue with PTO1 mission?
0 x 5	PTO1	Gear	Gear signal error. Continue with PTO1 mission?
0 x 6	PTO1	RPM	Engine rpm signal error. Continue with PTO1 mission?
0 x 7	PTO1	Vehicle speed	Vehicle speed signal error. Continue with PTO1 mission?
0 x 8	PTO1	Temperature. Water	Water temperature signal error. Continue with PTO1 mission?
0 x 9	PTO1	Eurotronic	Eurotronic signal error. Continue with PTO1 mission?
0 x A	PTO1	-	Fault A. Continue with PTO1 mission?
0 x B	PTO1	-	Fault B. Continue with PTO1 mission?
0 x C	PTO1	-	Fault C. Continue with PTO1 mission?
0 x D	PTO1	-	Fault D. Continue with PTO1 mission?
0 x E	PTO1	-	Fault E. Continue with PTO1 mission?
0 x F	PTO2	Brake	Brake pedal signal error. Continue with PTO2 mission?
0 x 10	PTO2	Handbrake	Handbrake signal error. Continue with PTO2 mission?
0 x 11	PTO1	Input BC	Pressure switch signal error. Continue with PTO2 mission?
0 x 12	PTO2	Clutch	Clutch signal error. Continue with PTO2 mission?
0 x 13	PTO2	Gear	Gear signal error. Continue with PTO2 mission?
0 x 14	PTO2	RPM	Engine rpm signal error. Continue with PTO2 mission?

Display operation - Error code table

Fault index	PTO number	Fault	Text of pop up displayed
0 x 15	PTO2	Vehicle speed	Vehicle speed signal error. Continue with PTO2 mission?
0 x 16	PTO2	Water tempertature	Water temperature signal error. Continue with PTO2 mission?
0 x 17	PTO2	Eurotronic	Eurotronic signal error. Continue with PTO2 mission?
0 x18	PTO2	-	Fault A. Continue with PTO2 mission?
0 x 19	PTO2	-	Fault B. Continue with PTO2 mission?
0 x 1A	PTO2	-	Fault C. Continue with PTO2 mission?
0 x 1B	PTO2	-	Fault D. Continue with PTO2 mission?
0 x 1C	PTO2		Fault E. Continue with PTO2 mission?
0 x 1D	PTO3	Brake	Brake pedal signal error. Continue with PTO3 mission?
0 x 1E	PTO3	Handbrake	Handbrake signal error. Continue with PTO3 mission?
0 x 1F	PTO3	Input BC	Pressure switch signal error. Continue with PTO3 mission?
0 x 20	PTO3	Clutch	Clutch signal error. Continue with PTO3 mission?
0 x 21	PTO3	Gear	Gear signal error. Continue with PTO3 mission?
0 x 22	PTO3	RPM	Engine rpm signal error. Continue with PTO3 mission?
0 x 23	PTO3	Vehicle speed	Vehicle speed signal error. Continue with PTO3 mission?
0 x 24	PTO3	Water tempertature	Water temperature signal error. Continue with PTO3 mission?
0 x 25	PTO3	Eurotronic	Eurotronic signal error. Continue with PTO3 mission?
0 x 26	PTO3	-	Fault A. Continue with PTO3 mission?
0 x 27	PTO3	-	Fault B. Continue with PTO3 mission?
0 x 28	PTO3	-	Fault C.
0 x 29	PTO3	-	Fault D. Continue with PTO3 mission?
0 x 2A	PTO3	-	Fault E. Continue with PTO3 mission?

Display operation

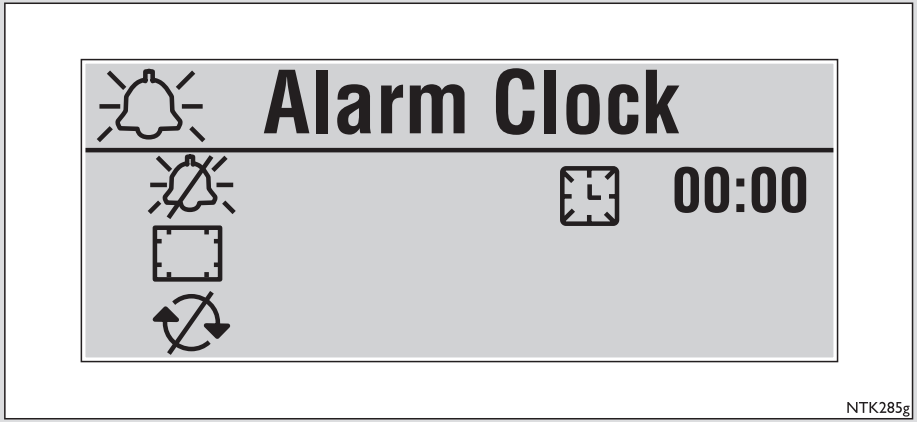
Programming of the alarm clock

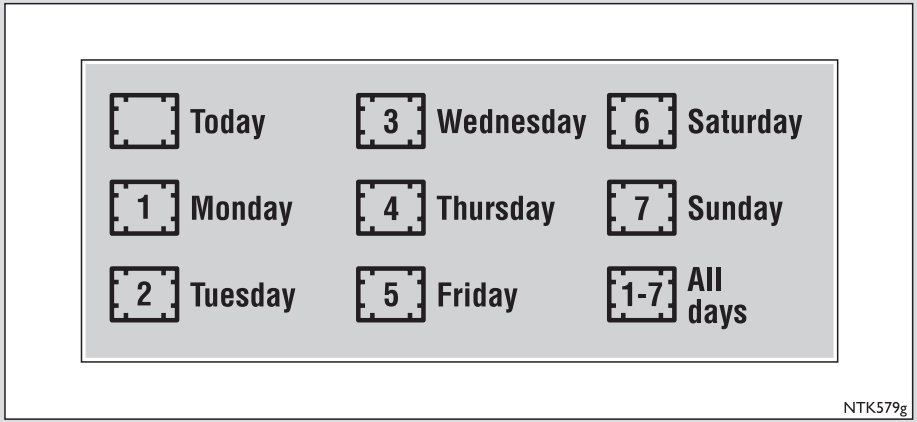
Display the alarm clock screen by browsing in the display menu using the steering wheel keys as explained on page 33 and following pages.

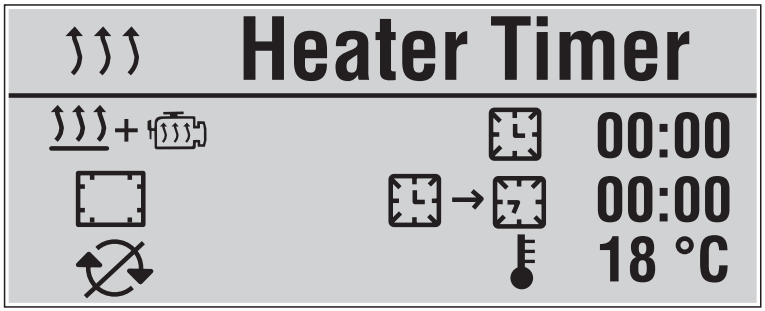
After displaying the alarm clock screen using the keys ↑ e ↓ select the following fields:

– alarm on
– weekday
– daily alarm (alarm repeated every day)
– set hour
– set minutes

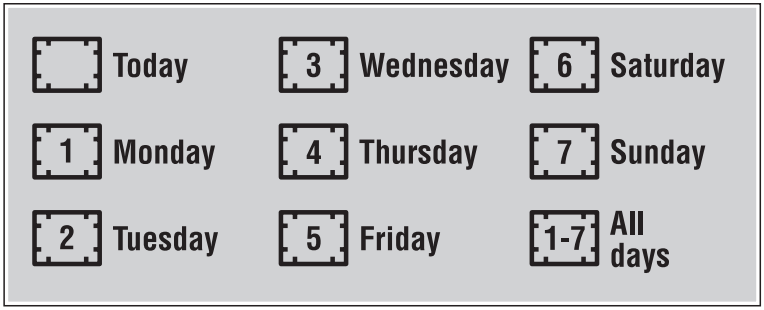
Once the required field is selected, again use keys ↑ ↓ to change the field settings. To confirm the new settings, press the OK key on the steering wheel.







NTK286g



NTK579g

Display operation

Heating timer

Display the heater timer screen by browsing in the display menu using the steering wheel keys as explained on page 33 and following pages.

Once the heater timer screen is displayed, press the OK key to select the heater symbol.

Use keys ↑ and ↓ to select the following fields:

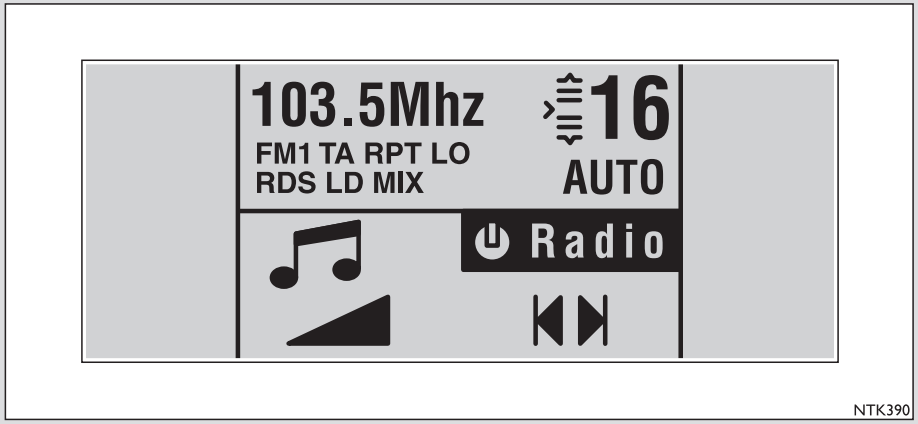
– heater selection: cab area; engine area; cab plus engine area
– weekday
– repetition
– set hour
– set minutes
– set duration (maximum duration 1.59 hours)
– set interior temperature (between 18°C and 30°C).

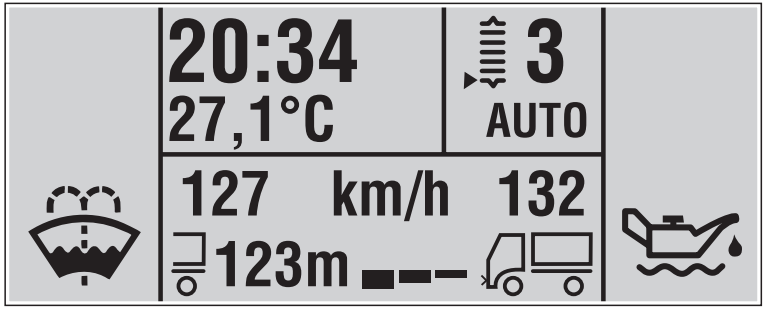
Once the required field is selected, again use keys ↑ and ↓ to change the field settings. To confirm the new settings, press the OK key on the steering wheel.

Display operation

Radio and CD player (if fitted)
Display the 'CD-Radio' screen by browsing in the display menu using the steering wheel keys as explained on page 33 and following pages.
After displaying the CD-Radio screen using the keys ↑ and ↓ select the following fields:
– turn on radio
– turn off radio
– audio volume
– CD player
– select radio frequency (if the device is in this operating mode) or select CD track (if the device is in this operating mode).

Once the required field is selected, again use keys ↑ and ↓ to change the field settings. To confirm the new settings, press the OK key on the steering wheel.





Cruise Control - ACC

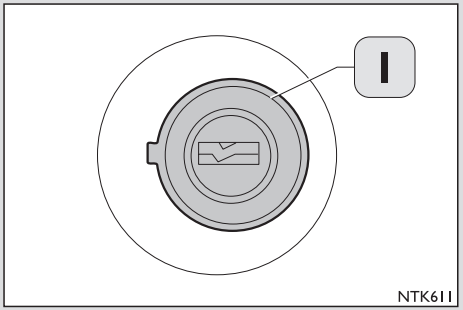
Display the "Cruise Control screen
– ACC" navigating in the display menu with push-buttons on steering wheel as explained at page 33.

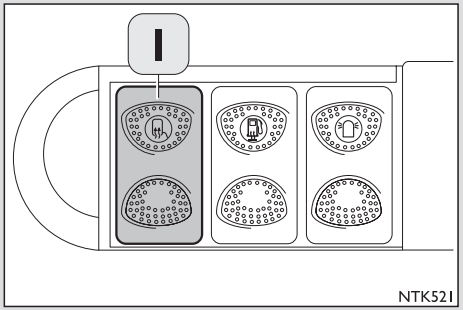
"Cruise Control" screen displayed
– ACC" using keys ↑ and ↓, "+" e "-" on steering wheel, vehicle as to preceding vehicle can be set.
To confirm new settings, press the "OK" push-button on steering wheel.

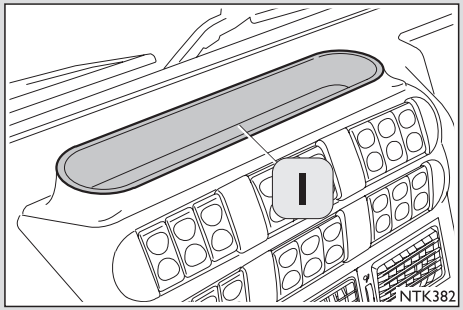
Screen visible only if ACC is applied
Always visible

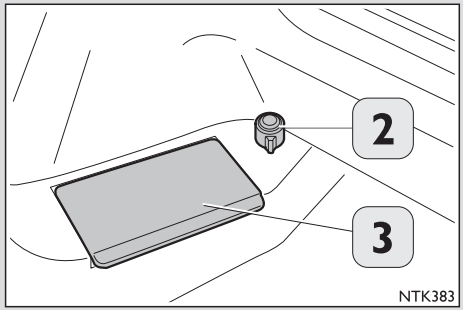
Door mirror heating (if equipped)

Mirror heating is active only with the ignition key on (1).
Press button (1) to switch on heating of rearview mirrors and relevant symbol is displayed on screen. To switch off this function press button (1) again. The symbol will disappear. This function can be selected also while driving. Heating time is 30 minutes max.







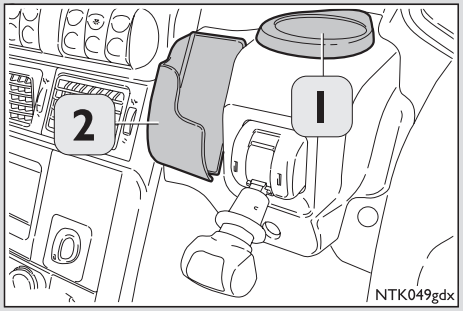


Central panel

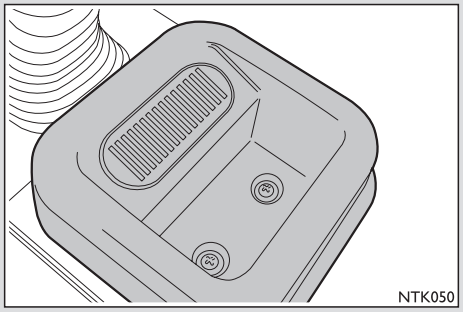
1. Upper open storage compartment.
2. Compressed air supply point, (e.g. for cleaning of cab interior).
3. Ashtray passenger side + driver side.

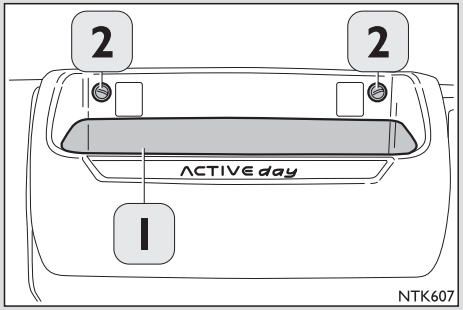
Central panel

1. Glass/can holder
2. Mobile phone holder



A storage compartment is located next to the gear lever, provided with a coin holder (if equipped).





Central panel

Document compartment

A document compartment (1) is provided on the passenger side together with a tilting door (for access to fuse box).
To open this door loosen screws provided (2).

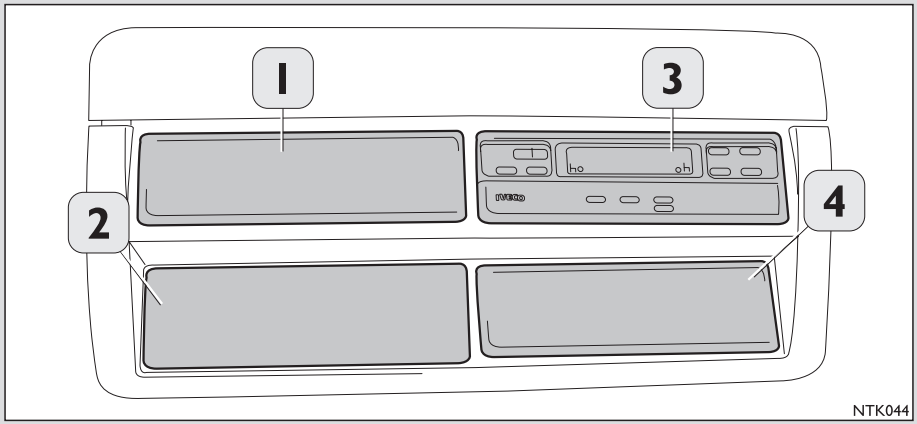
Top panel

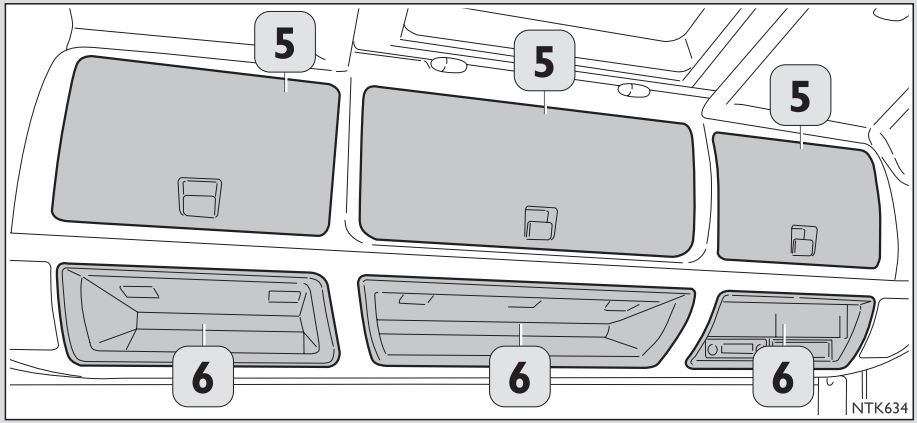
1. Compartment for radio
2. Compartment for CB
3. Tachograph
4. Spare compartment (if a radio is fitted it can house the amplifier or the transmitter/receiver unit of a phone)

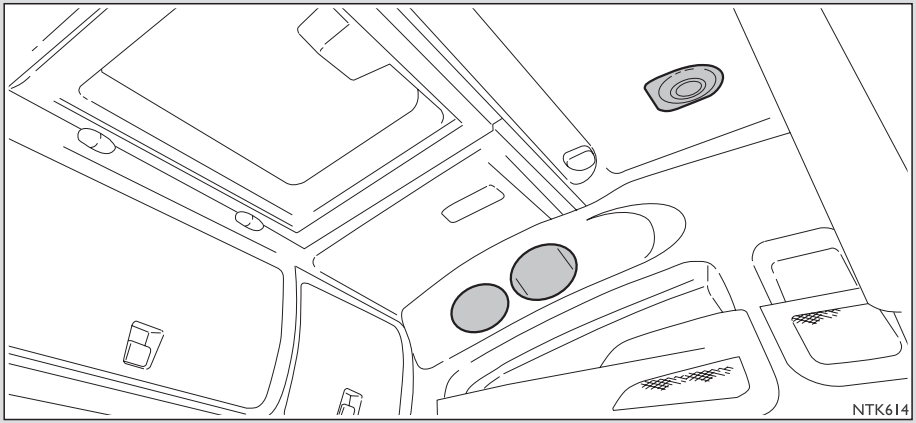
High top area (Active Time cab)

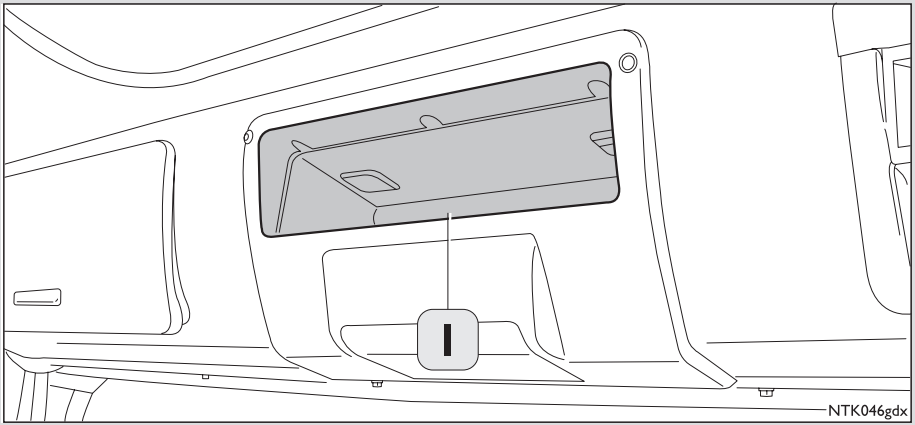
This area includes:

5. three compartments with door
6. two open compartments + compartment for tachograph/radio/CB housing.









Top panel

High roof area (Active Time cab)
This area includes:

- A side storage area with containment net (one on each side).
- Two roof lights for the cab.
- Provision for additional loudspeakers.
- Darkening curtain.
- Sun blind on side door (if fitted).

Vehicles with low roof

- Central roof light with storage compartment.

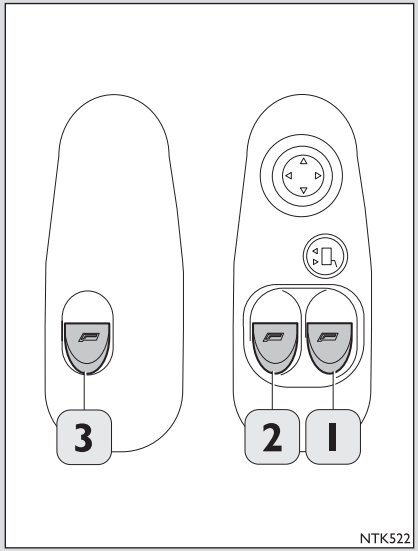
A vertical handle is also provided above compartment (1).

Attention!

Risk of injuries: Incorrect operation of electric windows may be dangerous. Before and during operation, check that people, animals and objects are not exposed to the risk of injuries caused by windows movement, or by personal items being trapped or thrown from windows. When getting out of the vehicle, always remove the ignition key to prevent accidental operation of electric windows with a risk of injuries for passengers still on board.

Electric windows (if provided)

Electric window button for both driver seat (1) and passenger seat (2) are located on door driver side. The passenger can only operate windows on passenger side (3).

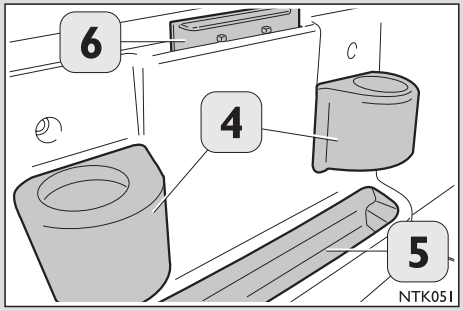


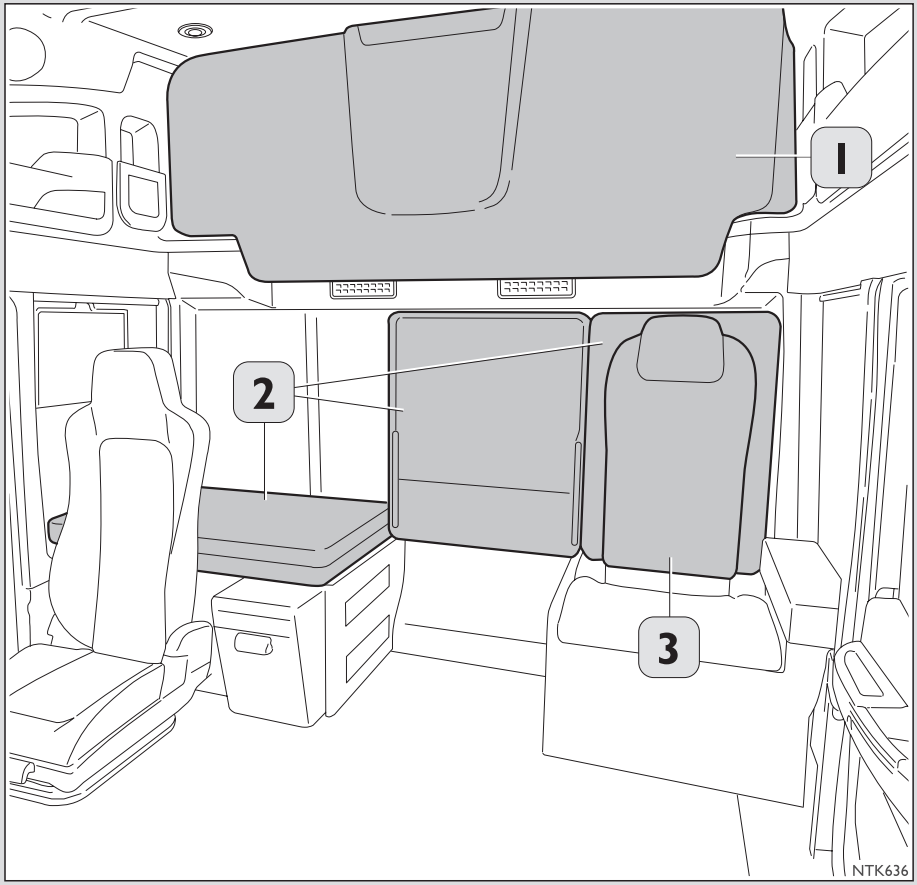
Short cab rear partition

The following are present on the rear wall of vehicles with short cab:

4. Two bottle holders.
5. Storage compartment.

A table-desk (6) is also present.





Rest area (Active Time vehicles)

Top bunk + safety net + built-in steps (if fitted)

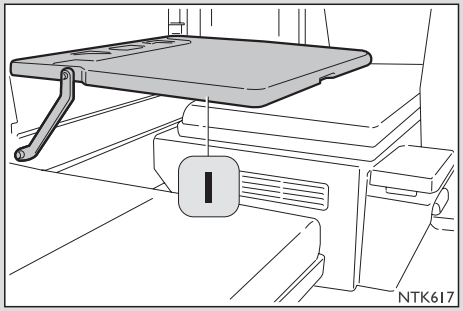
To open the bunk, undo buckles 1 and lower the bunk until it is in its final position. Fasten the protective mesh. A compartment for the built-in ladder is located in the lower part of the bunk.

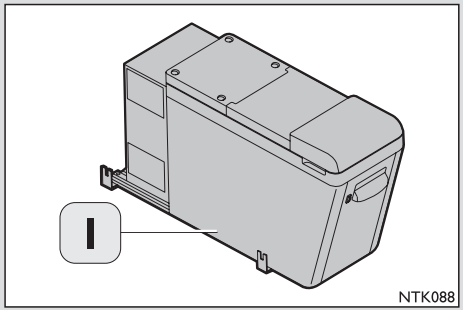
2. Three-piece bottom bunk
3. Comfort seat

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

Bottom bunk (Active Time vehicles)

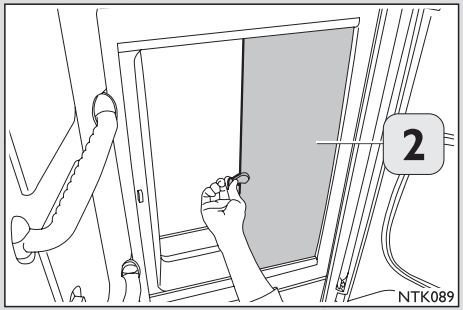
The bunk is obtained from the chest equipped with three cushions that is part of the storage compartment top. Removable table (1) is available as an option.
Notice: it is forbidden to use the lower bunk when driving





Long cab rest area

1. Refrigerator (if equipped – in chest mid section)
   On the rear side of the refrigerator a safe deposit box (optional) is provided with key

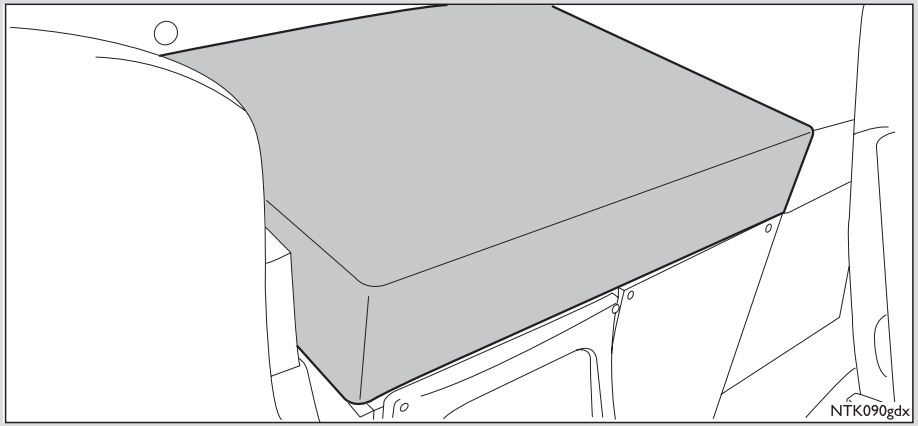


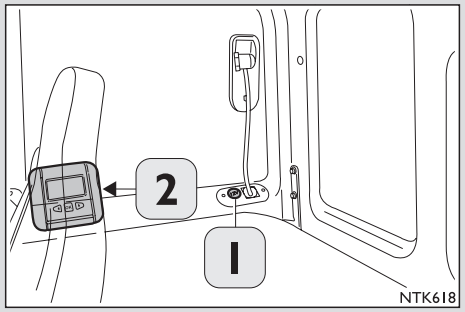
2. Trap door with darkening curtain
   (if equipped – Active Time medium high top).

Long cab rest area

Spare compartments

Under the chest cushions, wide compartments are available. One of these can house the heater. In this case it is re-commended not to store any material directly in contact with its surface.





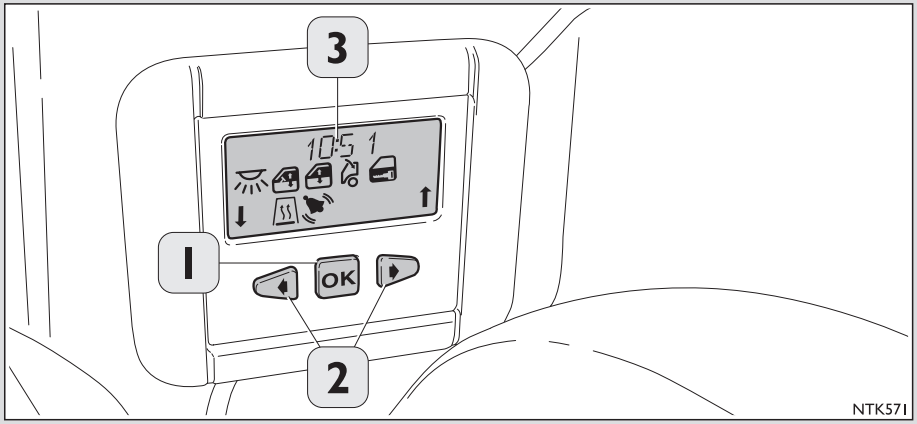
Long cab rest area

1. 12V power socket.
2. Bed module.

Bed module

It performs the following functions
(variable configuration according to the accessories on the vehicle):

- Hour and minute reading
- Cab interior lights on/off (white)
- Cab interior lights on/ off (red)
- Sun blind open/close
- Door opening / closing
- Power windows opening / closing
- Trap door opening / closing
- Radio and/or compact disc switching on/off
- Volume setting of radio and/or compact disc
- Radio tuning and/or selection of compact disc track
- Alarm clock function
- Optional heater switching on/off
- Temperature setting (with additional heater on, only)



Bed Module

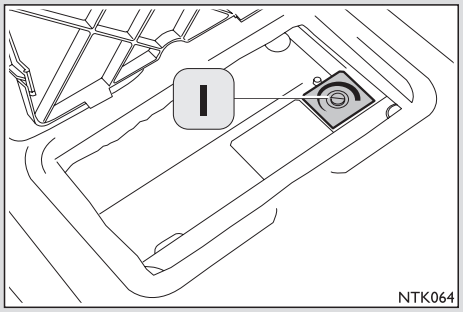
1. Key to confirm
2. Key to select required function
3. Clock

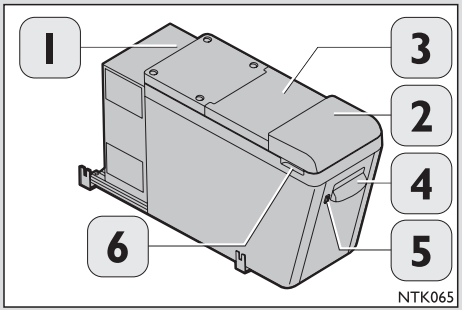
Refrigerator (if provided)

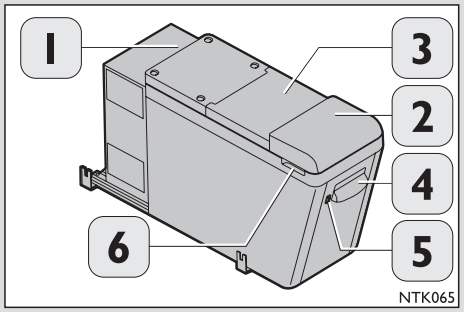
1. Adjustable thermostat (OFF-MIN-MED-MAX) on the rear wall.
   It can be turned by inserting a coin or a screwdriver in the slot of the small regulator wheel.
2. "REFRIGERATOR" space cover (to be opened before the space cover 3).
3. "FREEZER" space cover.
4. Pulling handle.
5. ON/OFF switch with built-in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

- On pressing the switch (5), the orange warning light lights up indicating the activation.
- Access to the "REFRIGERATOR" space (2), for example to remove/place bottles, is always possible (even in the rest position); whereas to access the "FREEZER" space (3), it is necessary to proceed in the following way:

A) Unlock the retention position by gently pulling the handle to the front movement (4) (all the way up) and pull the refrigerator forward.







Refrigerator (if provided)

B) Once the refrigerator is out of compartment, release handle to hold position achieved. The "FREEZER" can be accessed in this position, after opening the space (3) and when the inclination is lower than the upper divider (max 15°).

- The temperatures attainable in the spaces (2) and (3) are in accordance with the thermostatic regulation carried out beforehand using the control (1).
  REFRIGERATOR space (2): 0°C to 4°C
  FREEZER space (3): -10°C to -18°C

Note: opening of the cover of the FREEZER space (3) is always dependent on the opening of REFRIGERATOR space (2).
In the absence of electric power, the built-up cold allows the preservation of the commodities for a certain number of hours, for which the cold can be built-up by simply switching off the fridge.
Avoid introducing warm food and make sure that the lid is always closed well.
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 advisable to clean up the inside of the fridge periodically using sodium bicarbonate dissolved in lukewarm water, avoid the use of abrasive products, detergents and soaps in any case.
Use the sponge located under the cover to wipe out water produced as a result of defrosting.
The fridge is switched off automatically when the cab is tilted.

Controls and devices

This section provides instructions for using:

- ❑ Air-sprung seat 80
- ❑ Seat with two/three degrees of freedom 82
- ❑ Seat belts 83
- ❑ Steering wheel adjustment 85
- ❑ Heated windscreen 86
- ❑ Battery isolator 87
- ❑ ADR - Hazardous goods transport 88
- ❑ Outer lights 89
- ❑ Steering column lever 90
- ❑ Windscreen washer and headlamp washer tank 92
- ❑ Power take-offs 93
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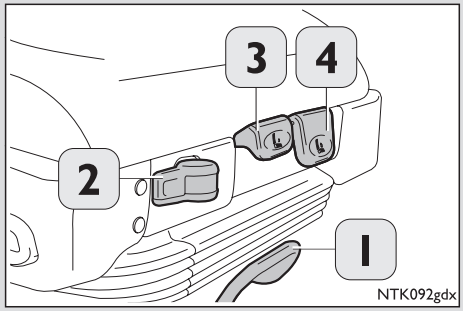
- ❑ Semitrailer hooking 119
- ❑ Semitrailer hooking 121
- ❑ ABS connection - 15-pin electrical connection 122
- ❑ Accessories fitted by the user 123



Air-sprung seat (if provided)

This seat allows the following adjustments:

Reach adjustment

- Pull lever (1) upwards to move seat forward or backward; release lever to lock seat in position required.

Longitudinal springing

- This is achieved by operating handle (2).

Seat extension

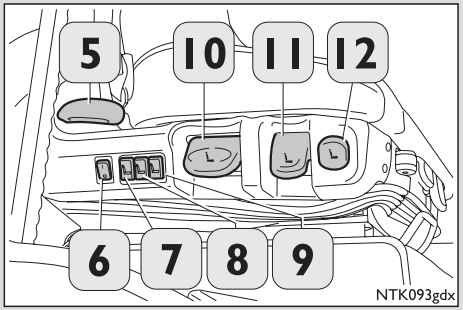
- This is achieved by operating handle (3).

Seat tilting

- This is achieved by operating handle (4).

Attention!

Risk of injuries: Adjust the seat only when the vehicle is stationary and check that the seat has clicked into the position selected.



Air-sprung seat (if provided)

Seat back adjustment

- This is achieved by operating handle (5).

Cushion heating

- This is achieved through switch (6)

Inflation of seat side cushions

- This is achieved by depressing top section of button (7)

Inflation of seat lumbar cushions

- This is achieved by depressing top section of buttons (8)-(9).

Seat ride adjustment

- To raise seat pull handle (10) upwards, to lower seat push handle downwards (spring trip adjustment).

Damper height adjustment

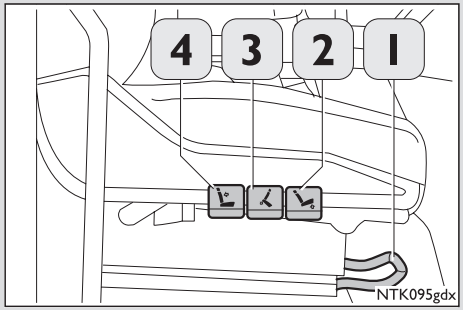
- This is achieved by operating control (11).

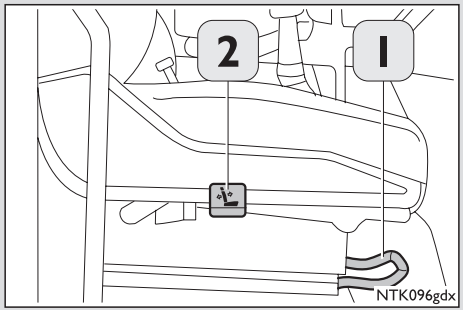
Seat activation and quick air bleed (ON/OFF)

- This is achieved by operating control (12).

Rotary device adjustment (for passenger seat, only)

To rotate seat, pull side lever backwards (below adjustment controls).
The seat can be locked in three different positions: driving direction (straight ahead), 90° and 180°.
Attention! While driving, use the seat only in the straight ahead position.





Seat with two/three degrees of freedom (if fitted)

This seat allows the following adjustments:

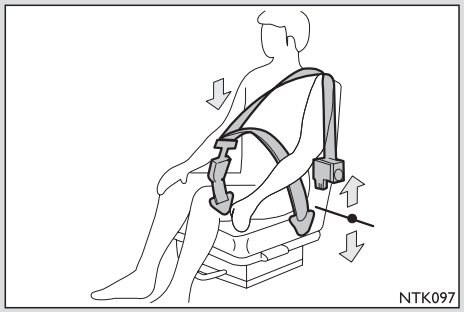
Reach adjustment
By operating lever (1), the seat is free to move forwards or backwards; on releasing the lever the seat is locked in the position required.

Seat back adjustment
Pull handle (4) to move seat as required; release lever to lock seat in position required.

Cushion height and position adjustment (for three degrees of freedom seat only)
Use handles (2) and (3) to raise seat (without driver's load on it) or to lower seat (with full or partial driver's load on it); release handle to lock seat at height required; to change cushion tilt use one handle only.

Seat belts

To fasten seat belt, grasp the tongue and insert it into the buckle until it clicks home. To release belt, press button provided located on the top end of buckle.
The belt does not require manual adjustment. The belt adjusts automatically to the length most suitable for the driver, allowing full freedom of movement, provided that none of these movements are sudden. 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 bend.



Warning:

- Move the back in nearly vertical position; positions of the seat that interfere with the correct position of the belt constitute a risk of personal injury and therefore they must be avoided.
  Note: The seats fitted on your vehicle are not suitable for child transportation: the belt was designed for use by occupants of adult size.
- The belt must pass between the neck and the upper arm.
- The belt should not be twisted and should sit comfortably over the pelvis, not 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 non-minor accident, replace the belt worn at the time, even though it may appear undamaged: also replace it when it exhibits cuts or signs of major wear (have the belts fitted by the *service network*).

Attention!

Always fasten your seat belt: travelling without a seat belt fastened increases the risk of injury in the event of a collision.

Seat belts

- 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 or dyes, or any other chemicals that could weaken belt fibres. Avoid the reels getting wet: they are guaranteed to work properly only if they are not penetrated by water.

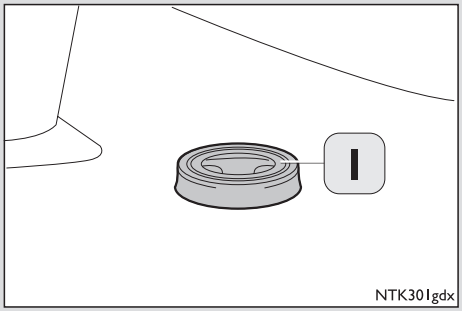
Attention!

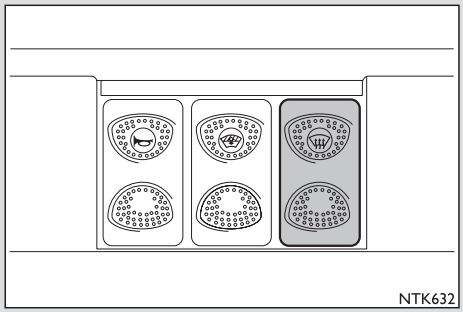
Risk of collision! This operation shall be carried out only with the vehicle at a stop and checking proper device operation.

Steering wheel adjustment

Steering wheel adjustment is pneumatic and can be controlled by the button located on the floor pan, driver side at the base of the steering column.

- While keeping button depressed, grasp steering wheel and adjust position as required.
- When adjustment is completed, release button.





Heated windscreen

To switch on this function press key (1).
Heating of the windscreen takes 12 minutes.
Due to high energy consumption, switch on heating only with engine running.

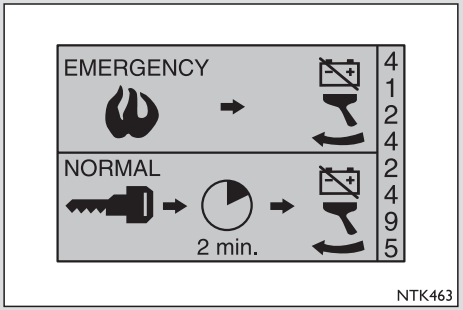
Battery isolator

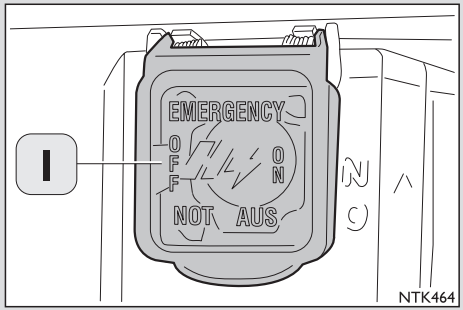
Automated battery isolator (if fitted)
With key to OFF, after a variable user-defined time, battery isolator is automatically triggered to disconnect batteries from vehicle circuits. Connection is automatically restored under following conditions:

- General contactor tripping by means of button (1).
- Triggering pulse for optional heater sudden activation.
- Switching on of one light inside cab.
- Hazard warning light switching on.
- Insertion of ignition key into key lock cylinder.
- Horn activation.
- Driver or passenger door opening.
- Exterior light activation.
- Central lock on.
- Brake pedal activation.
- Rotary headlamp activation.

Manual battery isolator (if provided)
When the vehicle is parked for longer than one day, disconnect manual battery isolator according to the instructions provided on it.

10 seconds after powering engine off (key to OFF) button operation is blocked, unless additional heater is on. Under these circumstances, switch additional heater off, then depress button (1); wait until heater washing cycle is completed (approx. 3 min.).





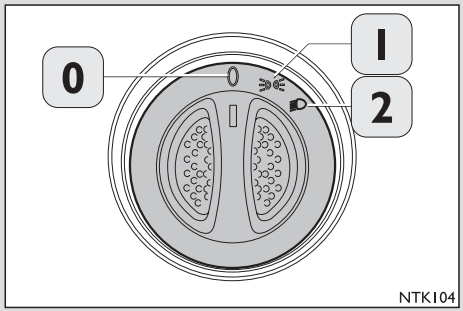
Battery isolator

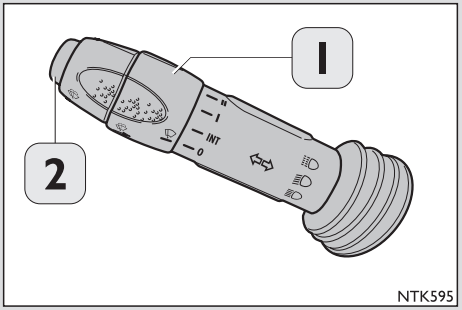
On some versions (ADR-transport of dangerous goods), the battery isolator can be supplemented with switch (1), which must be operated solely by following the information on the illustrated plate next to it.

Outer lights

0. All off.
1. Parking lights and markers.
2. Parking lights, markers, headlamps and high beams.

Note: Position (1) is active also with key off.





Steering column lever

Left lever
Direction indicator = side movement to left/right.
high beams = press in vertical direction.
flashing = single pulses in vertical direction

Windscreen wiper control
Single windscreen wiper stroke = sliding movement
OFF / intermittent = rotary movement.
fast/slow speed = rotary movement (1).
headlamp/windscreen washer = indicator switch top button (2).
Note: windscreen washing function is active only with outer lights on.

Steering column lever

Right cruise control lever (vehicles with manual gearbox)
(for operating details see relevant paragraph)
ON+ / ON - function = tilting head button.
OFF / Resume function = vertical movement toward steering wheel.

Engine brake control + retarder (if equipped)
OFF function = side movement.
Position 1-2 = engine brake.
Position 3-4-5-6 = retarder levels.

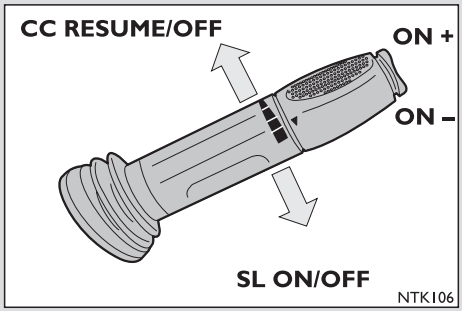
Speed limiter control = vertical movement downward.

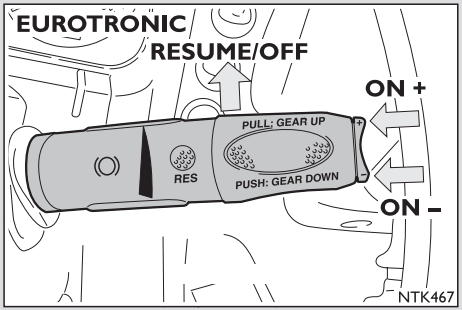
Right cruise control lever (vehicles with Eurotronic gearbox)

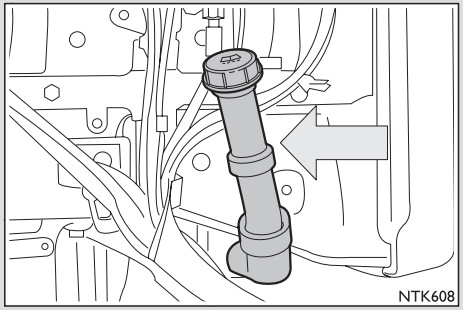
Cruise control switch
(for operating details see relevant paragraph)
ON+ / ON- function = tilting head button.
OFF / Resume function = RES button.

Engine brake control + retarder (if equipped)
Position 0 = disabled.
Positions 1-2-3-4-5-6 = engine brake + retarder levels (if equipped).

Gearbox control
(for operating details see relevant paragraph)
Up gear shift = vertical movement to steering wheel.
Downward gear shift = vertical movement downwards.







Windscreen and headlamp washer tank

Refill nozzle is located behind the front radiator grill. It is advisable to use the specific product **Tutela Professional SC 35** mixed with water as anti-freeze detergent according to the instructions below.

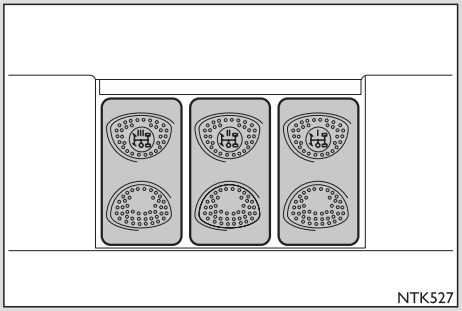
Mixing table

Outside temperature	-35°C	-20°C	-10°C	0°C	summer
Tutela Professional SC 35 (per parts)	1	1	1	1	1
Water (per parts)	-	1	2	6	10

Power take-offs

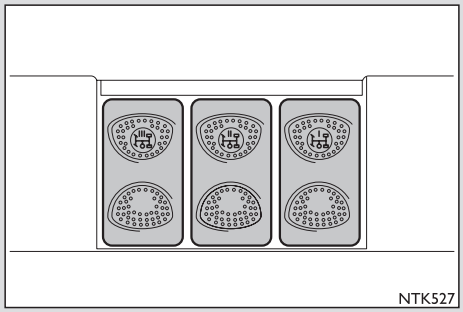
The vehicle can have the following power-take-offs:
1. P.T.O. on manual gearbox.
2. P.T.O. on Eurotronic gearbox.
3. P.T.O. on Multipower.
4. P.T.O. on engine.

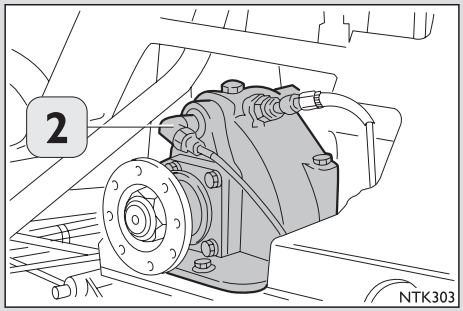
Up to three P.T.O.'s can be simultaneously controlled by the vehicle multiplex electronic system (ECUs).



1. **P.T.O. on manual gearbox.**
   Operation:

- Gearbox in neutral, vehicle at standstill.
- Depress clutch pedal to the floor.
- Depress associated P.T.O. key.
- Wait until the display pop-up menu disappears and yellow warning light (15) on page 13 switches on.
- The P.T.O. is activated as soon as the clutch pedal is released.
- To turn off the P.T.O., depress the key.





Power take-offs

2. P.T.O. on Eurotronic gearbox
   Operation:

- Gearbox in neutral, vehicle at standstill.
- Engine rpm: up to 1000 rpm.
- Depress associated P.T.O. key (engine rpm varies).
- Either yellow warning light (15) on page 13 or warning light (16) on page 15 is displayed (according to vehicle specification) and the original engine rpm is restored.

Note: for further information see section concerning Eurotronic transmission.

3. Multipower P.T.O.
   Operation:

- Engine off, ignition key on "MAR", vehicle at standstill.
- Depress associated P.T.O. button.
- When yellow warning light is on, engine can be started.

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

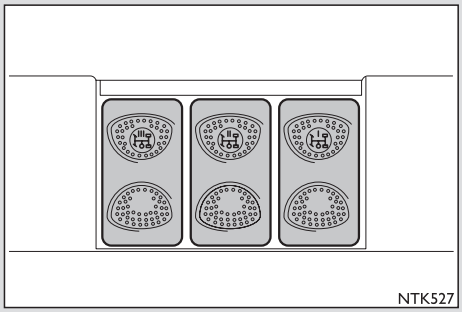
- remove the connection ring (2).
- Torque tighten one screw M12 x 1.5.

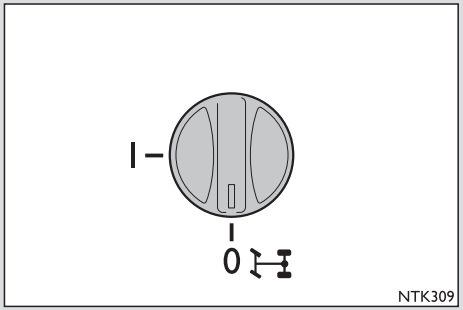
Power take-offs

4. Engine P.T.O.
   Operation:

- Engine rpm: up to a maximum 1000 rpm.
- Depress associated P.T.O. button. The P.T.O. is engaged.
- Either yellow warning light (15) on page 13 or warning light (16) on page 15 is switched on (depending on vehicle specification).

Note: if P.T.O. fails to engage after 10 secs, set relevant button to OFF and repeat procedure described. For special conversions, P.T.O. parameters can be modified at any IVECO *service network* using Modus.





Attention!

Once the poor road conditions are over, proceed as follows:
- Pass to the unlocking position maintaining the speed of the vehicle.
- Raise the accelerator momentarily.
- Resume the safe speed.

If unlocking mechanism fails to disengage immediately, changes are to be introduced in the driving direction to clear possible stress.

Differential locks

4 x 2 vehicles ("H" vehicles)

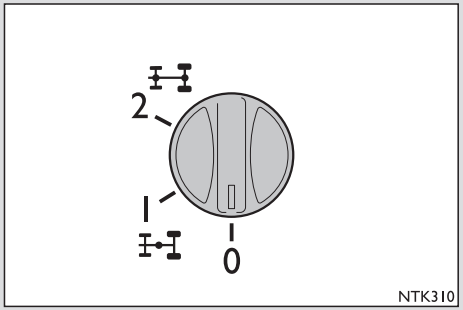
The rear axle differential lock is engaged by the air valve shown in the figure.
When the lock is engaged, the warning light on the dashboard lights up.
The lock must only be used on muddy and slippery terrains.
Carry out the following functions for a proper operation:
- Pass to the locking position when the vehicle is stationary.
- Exercise maximum care.

0 = disengaging the lock
I = engaging the lock

Attention!

When the lock is engaged, steering becomes difficult and the vehicle tends to go straight. Exercise maximum care!

- In muddy and slippery land conditions do not let the wheels slip when differential lock is not engaged, since it would cause damage (a few seconds are sufficient).
- Do not enable the differential lock while a wheel is slipping, do not travel on pavement or on cobbled beds with the differential lock engaged; it could lead to serious damage to the gears.
  Risk of accident: vehicle driveability is decreased with differential lock engaged.



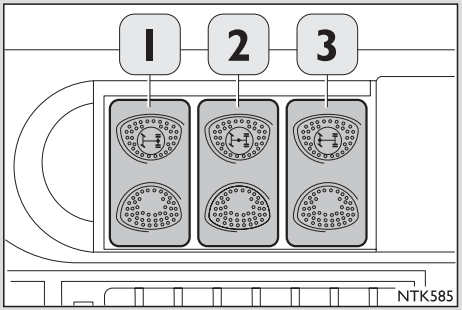
Differential locks

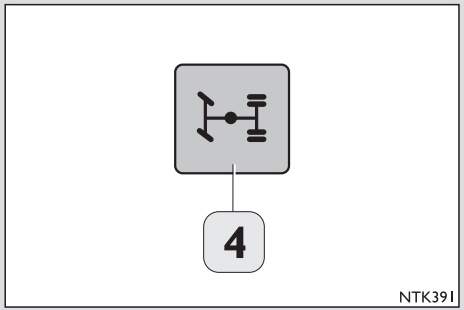
Rear and longitudinal differential locks
6 x 4 vehicles - 8 x 4 vehicles (“H” vehicles)

0 = disengaging the lock
1 = engaging the side lock
2 = engaging the cross lock

When locks are engaged, check warning lights on the instrument panel are turned on.
The lock must only be used on muddy and slippery terrains.
Proceed as follows for efficient operation:

- lock the differential with the vehicle at a standstill;
- exercise maximum care.





Differential locks

4 x 4 vehicles - 6 x 6 vehicles - 8 x 8 x 4 vehicles ("W" vehicles)

Engaging the rear axle differential lock

The rear axle differential lock is enabled by pressing the switch (1).
When the lock is engaged, the warning light on the dashboard lights up.
The lock must only be used on muddy and slippery terrains.
Proceed as follows for efficient operation:

- pass to the locking position when the vehicle is stationary;
- exercise maximum care.

Engaging the longitudinal differential lock

Longitudinal differential lock is enabled by pressing the switch (2).

Engaging the front axle differential locking switch (if equipped)

The front axle differential lock is enabled by pressing the switch (3).
The front axle differential lock engages only when the longitudinal lock is already engaged. For safety purposes it automatically disengages beyond the speed of 25 km/h.

Meaning of warning light (4) with two longitudinal differential locks present

When warning light (4) comes on with a fixed light, both differentials are locked.
When warning light (4) flashes, only one longitudinal differential is locked.

Meaning of warning light (4) with one longitudinal differential lock present

When warning light (4) comes on with a fixed light, the differential is locked.
When warning light (4) is off, the differential is not engaged.

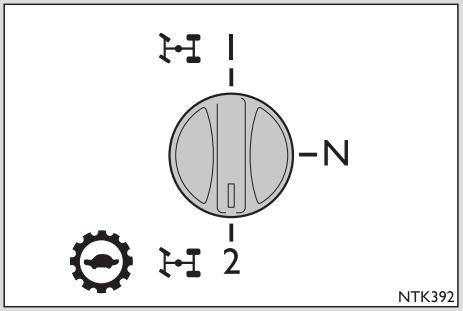
Attention!

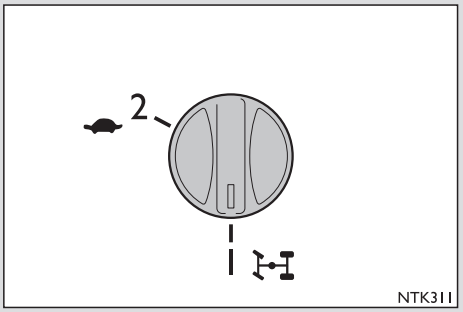
Engage distributor-reduction gear with vehicle stationary.

Reduction unit

Use of reduction unit 4x4-6x4 vehicles

1 = Position for road driving (normal gears)
2 = Position for driving off-road (crawler gears)
N = Neutral





Reduction unit

Shifting from on-road gear ratio to off-road ratio

- Release the accelerator and press the clutch pedal.
- Move the knob shown on the figure to position (2).
- Release the clutch pedal slowly in order to allow correct engagement of the couplings.

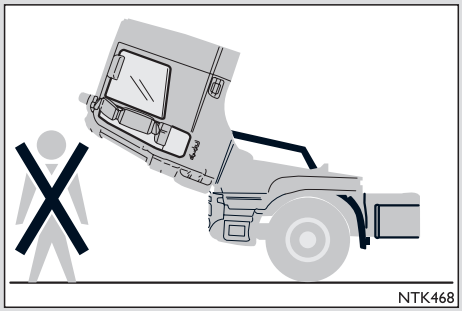
Shifting from off-road gear ratio to on-road ratio

- Release the accelerator and press the clutch pedal.
- Move the knob shown on the figure to position (1).
- Release the clutch pedal slowly to allow a correct engagement of the couplings.

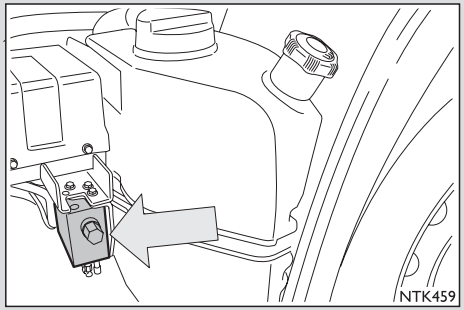
Attention! Risk of accident!

Before tilting the cab:

- Apply the parking brake and stop the engine.
- Remove all non-constrained or heavy objects from the cab.
- Leave an area in front of the cab and a manoeuvring area free.
- For operations to be carried out with the cab tilted, it is essential never to leave it in an intermediate position.



Cab tilting



Attention!

Risk of personal injury:
When tilting the cab, make sure that no one is standing in front of the cab.
Do not open the doors when the cab is tilted.
Cab weight is difficult to support.

Cab tilting

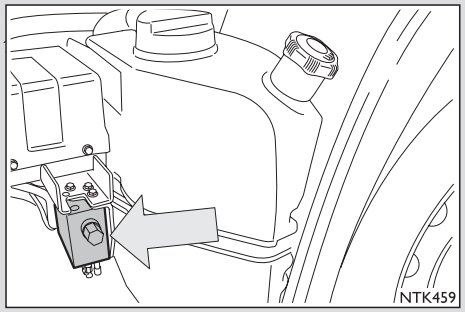
- Insert the wrench in combination with the extension lever in the hand pump, as arrowed in the figure.
- Move the lever to the circuit under pressure position.
- Raise the cab by turning the hexagonal wrench through the lever.

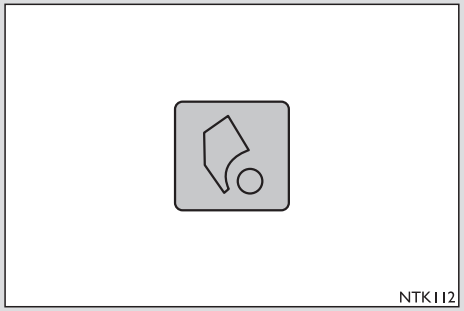
Note: On some specific versions, in place of the hexagonal wrench, it is enough to insert the lever on its own into the seat on the manual tilting pump.

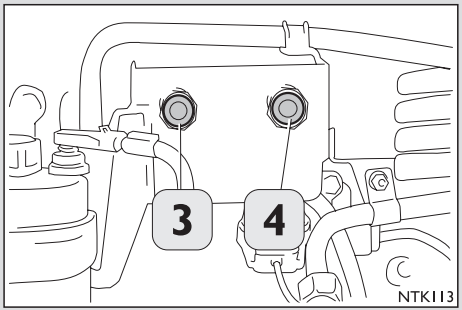
Cab lowering

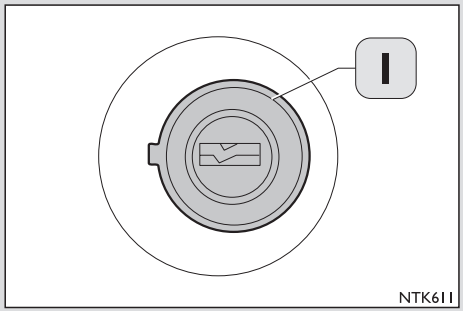
- Move the lever to the circuit under decompression position.
- Insert the hexagonal wrench in combination with the extension lever in the hand pump, as arrowed in the figure.
- Lower the cab by turning the hexagonal wrench through the lever.
- Make sure that the "the cab tilted" indicator lamp on the display is off.

Note: On some specific versions, in place of the hexagonal wrench, it is enough to insert the lever into the seat on the manual tilting pump.









Attention!

For your safety, it is not possible to start the engine using push-button (3) if the gear shift lever is not in the neutral position and if the parking brake is not active.

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.
Never approach the vehicle with loose clothing, as these may be caught in the moving components.

Cab lowering

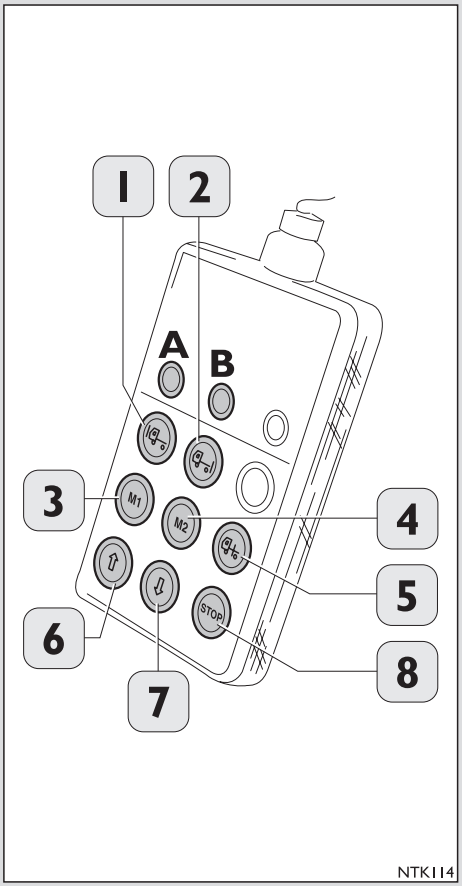
Remember that to start the engine with the cab tilted, it is necessary that the ignition commutator has been previously brought to position (1); to start the engine press the push-button (3) located on the engine.

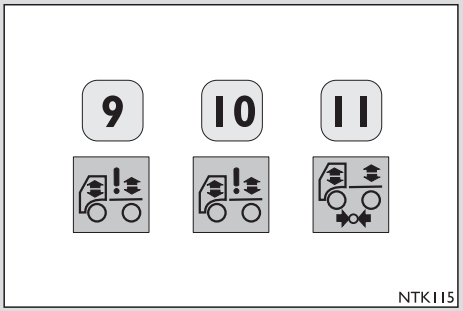
- To stop the engine, press button (4).

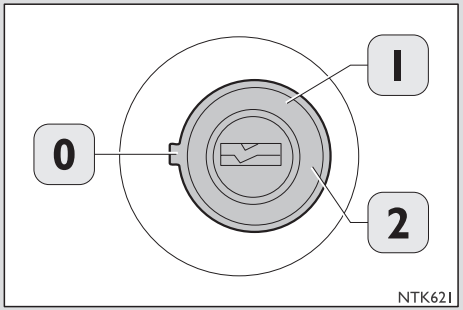
ECAS - Electronic Control Air Suspensions

Any operation for lifting, lowering and setting the vehicle to a stable position shall be carried out before loading and unloading the vehicle using the remote control provided at the driver's seat side.
Remote control can be taken off from support to perform the above operation even off the vehicle.

Attention! The vehicle must be fully lowered before unloading heavy loads or containers (by crane).







ECAS - Electronic Control Air Suspensions

Warning:
Do not stop the engine if warning light (11) is on.
Should warning light (10) come on while driving, stop vehicle and turn ignition key to (0); wait about 7 secs to turn key back to (1). If the warning light (10) does not go off after approx. two seconds, contact the *service network*.

Vehicles with front and rear pneumatic suspensions
Lift the frame first at the front, then at the rear.

Use

- Turn the ignition key to position (1).
  Warning lights (9) and (10) come on for about 3 secs.

ECAS - Electronic Control Air Suspensions

- Lift the axles in order to obtain the expected frame height.
  Press button (1): this selects the front axle.
  Press button (2): this selects the rear axle.
  Press buttons (1+2): this selects both axles.
  Warning lights A and/or B light up to show the selection made.

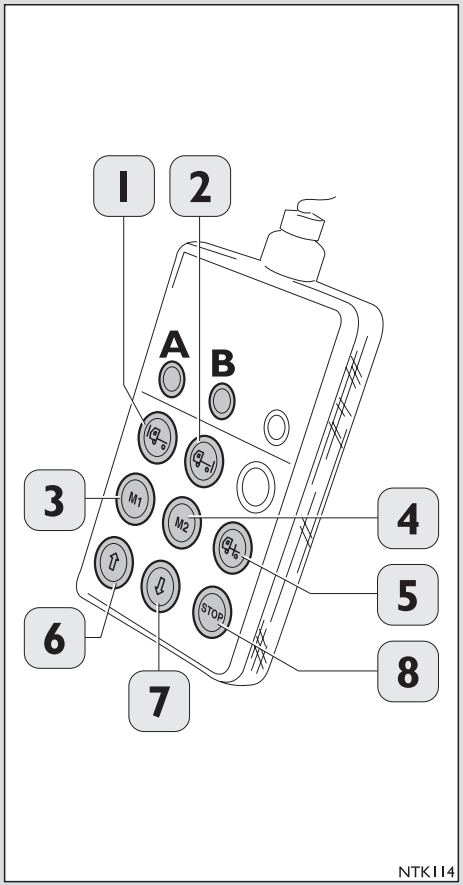
- To cancel the selection made on one axle (or on both) press the relevant button again.

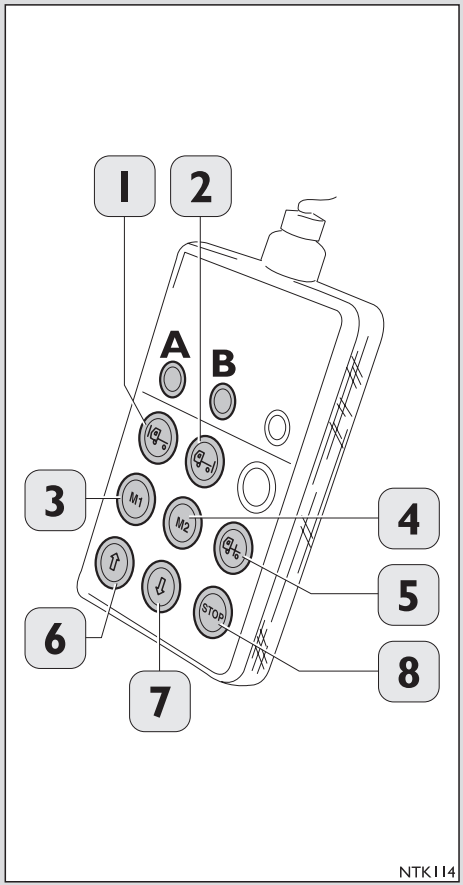
- Press buttons (6) or (7) and hold to lift/lower chassis.

- Slightly press button 5 to restore frame to normal.
  Self-levelling condition
  Warning light (9) goes off as soon as the normal level is reached.
  Button (5) controls all axles even if one axle only is selected.

- Button (8) STOP interrupts any action being carried out by the system.

Attention! After loading/unloading the vehicle and before leaving the site, it is compulsory to restore self-levelling condition by pressing button (5).





Attention!

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

ECAS - Electronic Control Air Suspensions

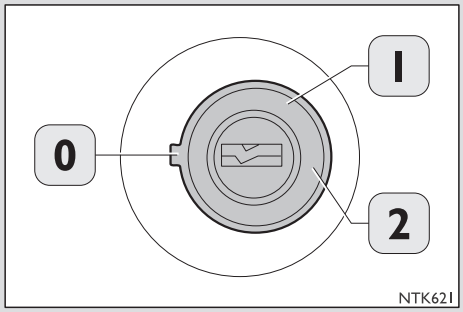
Storing the levels

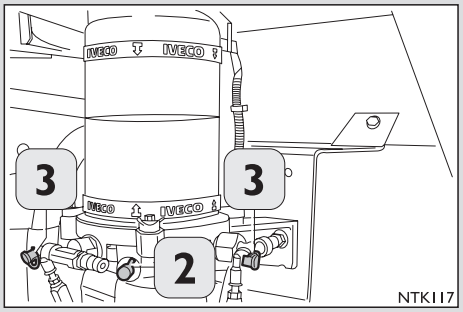
Use store buttons (3) and (4) to store level required (both front and rear).
These buttons control both axles, even if only one axle was previously selected.

- Set chassis to required height following above instructions.
- Press button (8) STOP and hold while depressing and holding either button (3) or (4) at the same time.
- Release button (3) or (4).
- Release button (8).

Centralised lubrication (if provided)

Lubrication takes place automatically and includes two different phases: **stand-by period and operation period**.
The system is activated when the ignition key is turned to (1).
A stand-by time elapses without any lubrication occuring, then the actual running time is started.
Should the stand-by period be interrupted due to removal of key (0), the value achieved up to that time is stored by the system. When the key is turned to (1) again, the stand-by period is resumed from the point at which it had been previously interrupted.
The partially completed stand-by period can be stored in the programme for three days.
If the vehicle remains unused for a longer period, the system will automatically begin with the period of operation.





Centralised lubrication (if provided)

- Periodically introduce Tutela COMAR 2 grease through the grease nipple (2), until the tank is filled to the MAX level marked it.
- In the event of system failure, it is possible to lubricate the vehicle manually through the grease nipples (3) using the appropriate pump.

Note:
IVECO pump is provided with a filter to prevent foreign matter from being introduced into system during filling operations.
If the system is clogged, remove lubrication device (2) and take off the filter to clean and/or replace it.

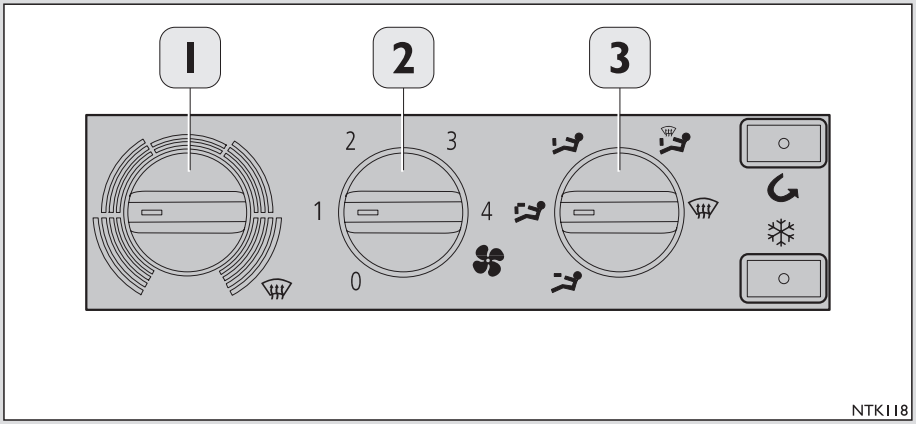
Heating and ventilation

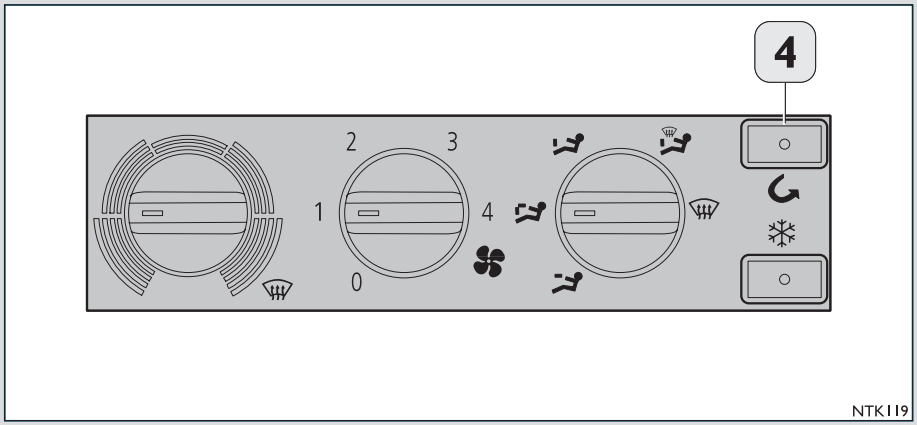
1. Air temperature setting knob (air max and min temperature / turn to left for fresh air - turn to right for warm air).

2. Electric fan knob with operating speed and mode selection:
- off (0)
- manual operation (1-2-3-4).

3. Control knob for air nozzle:

air towards occupant's head
air towards occupant's head and feet
air towards occupant's feet
air towards occupant's feet and windshield
air towards windshield





Heating and ventilation

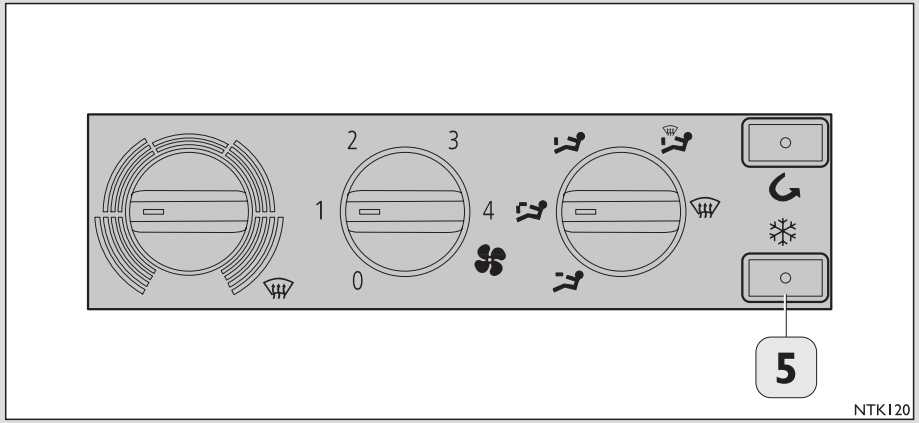
4. Air recirculation switch: to prevent outside air from entering. Extended use of recirculation air may result in uncomfortable conditions inside cab and misty windows. When any uncomfortable condition is perceived, switch recirculation off. This function is particularly useful in case of heavy pollution conditions (in a queue, inside a tunnel, etc.), and when quicker heating is required for the cab. Extended use is therefore not recommended, in particular with a passenger on board. Do not use recirculation with rainy/cold weather to prevent the windows from becoming misted inside.

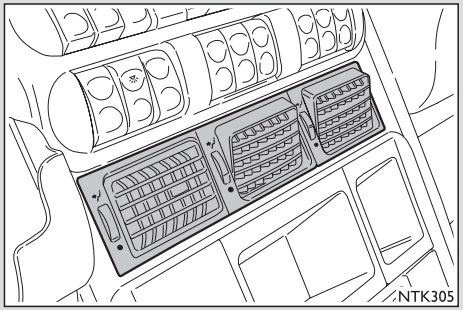
Attention!

Do not tamper with the air conditioning circuit, risk of injury: the cryogenic liquid is pressurised and may cause freezer-burn if it comes into contact with the skin.

Heating and ventilation

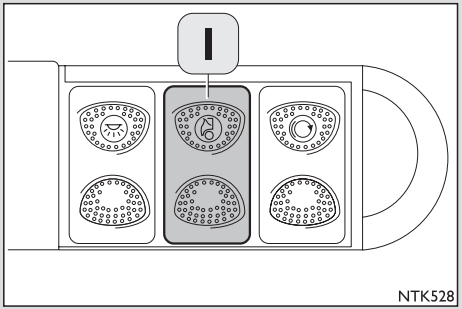
5. Air conditioning activation switch. The main technical feature of the air conditioner is air dehumidification. It is advisable to use it to avoid possible misting. The system uses R134a coolant which is environmentally friendly in case of leaks. Never, under any circumstances, use R12 fluid (or other fluids) incompatible with the system components, and containing CFCs (chlorofluorocarbons). During the winter the air conditioning system must be operated at least once a month for 10 minutes.





Heating and ventilation

Air delivery vents on dashboard (upper knurled knob open - lower knurled knob closed).
Air delivery vents to side windows and passenger (knurled knob left open - knurled knob right closed).



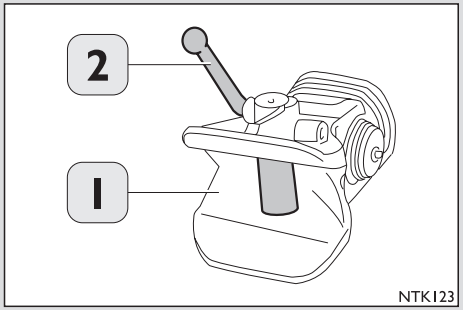
Electric hatch

1. Switch for electric hatch.

Voltage reducer

Vehicle system power supply is 12 V.
A voltage reducer (from 24 V to 12 V) is connected to the cable in the cabin.
Never connect any device directly to the 12 V output of a single battery.

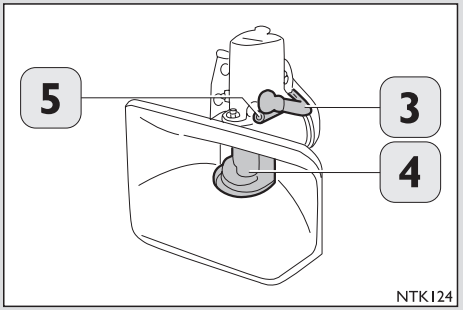
Attention! Voltage reducer (by IVECO) is preset for 20 A max. current absorption, at 30°C temperature as measured at device compartment height located on top crossmember (at 60°C max. absorption is 10 A).
It should not therefore be used for other devices with higher current absorption.



Trailer hooking (if provided)

Orlandi trailer tow

Couple the trailer to the hook (1) prior to lifting the lever (2).



Rockinger trailer tow

Make sure that the lever (3) is in vertical position (pin lifted).
Trailer is automatically hooked when drawbar is against
safety device (4). Lever (3) snaps from vertical to horizontal position means the trailer is hooked. To make sure, check if finger (5) is level to its seat. To release trailer, place lever (3) to vertical position until pawl (5) protrudes from its seat.
When the hook is not being used, it is always advisable to keep it in closed position.

Ringfeder trailer tow

- Carry out the coupling by pulling out the safety knob to release it, after having turned it by 1/4 turn in a counter-clockwise direction.
- Lift the coupling lever at the same time.
- Carry out the (automatic) coupling and subsequently check that the safety knob is in the correct position.

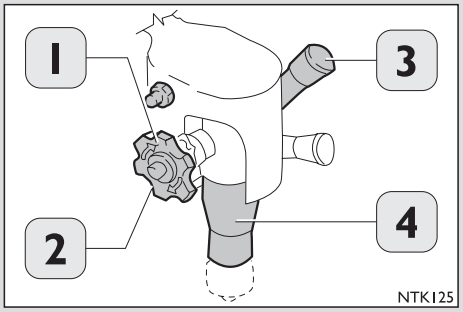
Trailer hooking

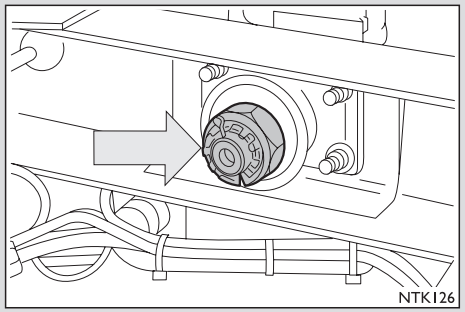
Orlandi automatic trailer tow

- Pull the knob (1) outward and turn it in a clockwise direction. The safety pin (2) protrudes out visibly in this position alone.
- Lift the handle (3) all the way up. The pin (4) is lifted completely and is ready to use.
- The entry or exit of the eyebolt of the trailer causes automatic closing of the pin (4) and becomes the safety pin (2) that automatically locks the coupling pin (4). For your safety, always check the position of the safety pin (2).

Match electrical cable connections to the joints. Connect the controllable brake and the automatic brake to that of the trailer.

Follow the additional instructions, if any, of the hook manufacturer.





Trailer hooking

Trailer towing standards

- 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.
- Adapt the height of the drawbar of the trailer to that of the towing hook.
- Before reversing with the tractor, make sure that the area between tractor and trailer is clear.

After the coupling:

- Apply the parking brake.
- Check that the connection has been effected correctly.
- Connect the joints of the pneumatic pipes and electrical cables.
- Check the braking system and the lights.
- Check that hook and the relevant crossbeam are secured before starting the vehicle.

While driving:

- Drive with particular care when you tow a trailer.
- Should you stop uphill or downhill, make sure the parking brake works perfectly; the vehicle must be prevented from moving (see point c. on page 161).

Important Carry out the recheck of the tightening torque of the nuts of the towing hook (Orlandi tow).
Tightening torque = 500 ÷ 611 Nm (50 ÷ 61.1 kgm).

Semitrailer hooking (if provided)

- Make sure that the fifth wheel is unlocked.
- The plate of the semitrailer with central pin (1) must be at least 50 mm lower than the upper edge of the fifth wheel; if necessary adjust the height.
- Manoeuvre slowly with the tractor under the semitrailer until it locks in place (automatic lock).
- Make sure that the lever (2) is engaged and visually check that the safety lock (3) is released.
- Apply the parking brake.
- Connect the couplings of electrical cables to the flexible cables supplied and thus to the electrical couplings of the semitrailer.
- Connect the brakes couplings of the tractor with that of the semitrailer.

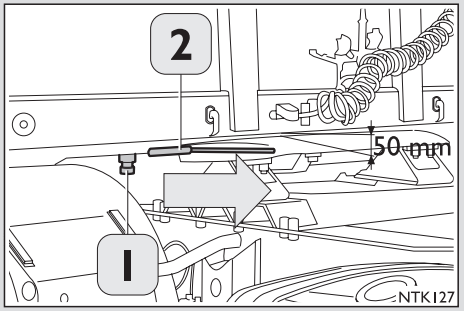
Note: for checking the correct operation of the vehicle brakes, refer to the parking brake operation at page 161.

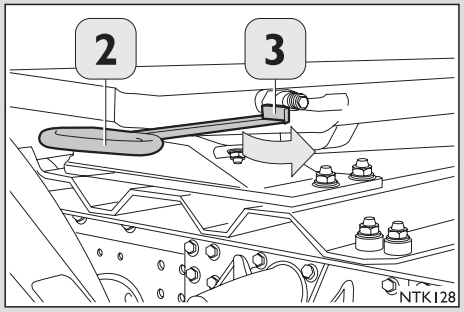
- Check the braking system and the lights.
- Lift the supports of the semitrailer and move them to travel position.

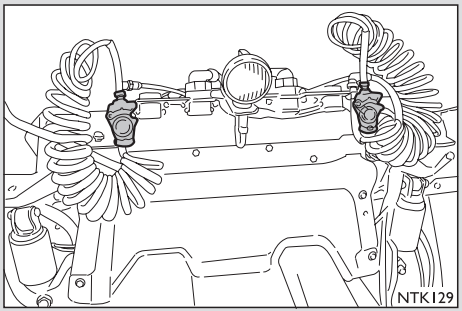
Attention! After coupling, meticulously check it for its condition, its level of security and that the coupling protection is closed properly.

While driving:

- Drive with particular care when you tow a semitrailer.
- Should you stop uphill or downhill, make sure the parking brake works perfectly; the vehicle must be prevented from moving.







Semitrailer attachment

Connection of brake couplings and electrical cables

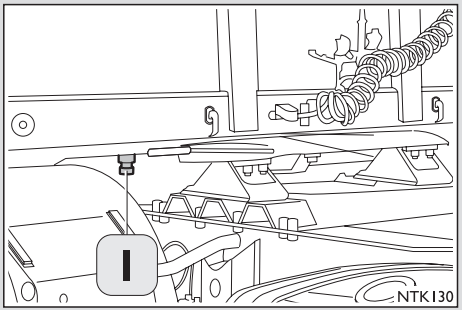
- Connect the couplings so that they can follow all the movements of the vehicle without stretching, rubbing or folding.
- First of all connect the adjustable half coupling (yellow) thereafter the automatic coupling (red).
- Check the operation.

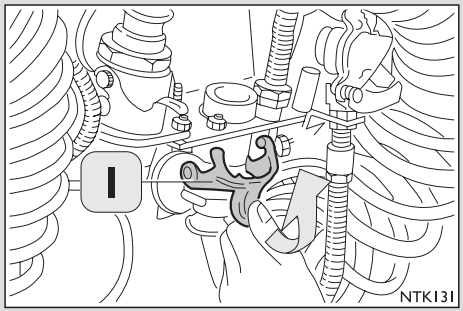
Semitrailer release

- Secure the semitrailer so that it cannot move accidentally (e.g. with chocks).
- Check the terrain conditions.
- Extract semitrailer supports (to meet capacity) until tractor suspensions are released but do not disengage semitrailer from fifth wheel. Danger of locking!
- Disconnect the brake couplings and electrical cables.
- Unlock the fifth wheel.

Disconnection of brake couplings and electrical cables

- Disconnect first the automatic half coupling (red).
  The brake of the semitrailer starts working.
- Only then disconnect the adjustable half coupling (yellow).
- Detach the electrical cable.
- Lower the pneumatic suspension in such a way that the fifth wheel is completely disengaged from the plate of the semitrailer.
  This is aimed at avoiding annoying repercussions on the central pin (1).
- Exit slowly from the semitrailer with the tractor.





ABS connection - 15-pin electrical connection

If the tractor is used without the semitrailer, it is necessary to pay particular attention to the reconnection of the ABS coupling into its seat.
After having inserted it, press forcefully onto the closing stirrup (1) until it locks.
Not doing this operation can cause water to enter, thereby causing corrosion and poor functioning of the device.

Attention!

Installation of accessories, additions and modifications to the vehicle are to be executed in compliance with the IVECO assembly directives (the special publication "Bodybuilders' Instructions" is available from *service network* workshops). IVECO authorisation is required for any exemption from the assembly directives. Failure to comply with the above requirements will invalidate the warranty.

Accessories fitted by the user

For remembering the line of products offered by the IVECO shop, we invite you to follow the following suggestions:

- In case of additional perforations (e.g. hole for fixing antenna) on the panels of the cab, protect the affected part in a suitable manner so as to avoid premature rusting of the internal or external surfaces.
- Take care during assembly (knocks by screwdriver, interferences, etc…) so as to avoid permanent damage to the layer of paint.

Attention: disconnect the negative terminal and then the positive terminal of the batteries before carrying out any operation on the vehicle.

Accessories fitted by the user

Self-adhesive decals

The removal or application of self-adhesive decals must never be carried out with cutting tools (e.g. blades, knives, etc) because these could cause deep incisions in the layer of paint and result in premature under-skin corrosion.

Radio transmitters and mobile phones

Mobile phones and other radio-transmitter devices (e.g. CB) 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 the like 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, in addition to potential health hazards, malfunctions. These may affect the electronic systems fitted to the vehicle, such as the various electronic modules, ABS, etc..., that may compromise vehicle safety and thus, also yours.
In addition, the transmission and reception efficiency of these devices may be degraded by the shielding effect of the bodywork.

Installation of additional electrical equipment

It is recommended not to install additional electrical/electronic equipment not provided by IVECO or those that are illegal (e.g. a C.B apparatus with power more than the legal limit of 5 W, that could induce disturbances or electromagnetic interferences).

Starting and driving

To ensure that you get the best results out of your vehicle and that it runs efficiently for many years, we recommend that you do not run the engine at maximum power for the first 3,000 km.
This section provides instructions for correctly executing the following operations as well as information regarding the devices related to them:

- ❑ Driving safely 126
- ❑ Economical and ecological driving 132
- ❑ Central locking remote control 133
- ❑ Immobiliser 134
- ❑ Starting the engine when the outside temperature is higher than 10°C 139
- ❑ Starting the engine when the outside temperature is lower than 10°C 141
- ❑ Starting the engine from engine compartment 142
- ❑ Before starting the vehicle 143
- ❑ Engine idle speed adjustment 144
- ❑ Cruise control 146
- ❑ Brake system EBL-ABS/ASR 154
- ❑ Engine Brake controls and intarder 157
- ❑ Use of parking brake 161
- ❑ Supplementary valve to release vehicle parking 162
- ❑ Stopping the engine 163
- ❑ Stopping the engine from the engine compartment 164
- ❑ Use of manual transmission 165
- ❑ Using the Eurotronic Automated gearbox 171

Driving safely

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 the pedal motion.
- Check horn operation.
- Check exterior light operation, and if necessary, clean the lighting units.
- Check that 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 handbrake 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, disable the parking brake while pressing the pedal brake.
- Fasten your seat belts correctly.

Driving safely

When you travel

- Long journeys should be undertaken only when you are feeling on top form.
- A light meal, based on easily digestible food, will help you keep your reflexes keen and maintain the concentration required for safe driving.
- Abuse of alcohol, illegal drugs and/or certain prescription drugs is highly dangerous.
  Avoid travelling in a state of drunkenness or under the effect of drugs or narcotics.
- Careful driving also means being in a position to predict other people's careless or incorrect conduct, keeping to the speed limits and using the correct lane when on the motorway.
- Use your indicators when changing direction.
- Maintain a safe distance from the vehicle in front; this distance varies depending on the speed, weather conditions, traffic and road conditions.
- Do not drive with the gears in neutral.
- Do not drive with your foot on the clutch pedal as this could cause premature wear of the clutch components.
- Never drive without a break for too long a period. Stop regularly and use these breaks to stretch your legs and refresh yourself.

Driving safely

- Use the numerous settings of the heating and ventilation system or the air conditioning system to ensure a constant exchange of air.
- Do not travel 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 engine brake with low gears to avoid overheating of the brakes.
- If you break down, park the vehicle off the road, switch on the hazard warning lights and position the warning triangle to signal your vehicle's presence. Always comply with the current Highway Code.
- Do not apply decals or other stickers to the windows: they may distract or obstruct vision.
- Throwing burning objects such as cigarette ends 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.

Parking

If you have to leave the vehicle stationary, proceed as follows:

- Switch off the engine.
- Apply the handbrake.
- Engage 1st gear if the vehicle is on an upward slope 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, to avoid wasting power and discharging the batteries.

Driving safely

Night driving

- Drive with particular care, where necessary reducing your speed, particularly on unlit roads.
- 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 see only the lights.
- Stop and take a break at the first signs of sleepiness: to continue would be dangerous for you and for others.
- Use high beams only away from built-up areas and only when you are sure that to do so will not irritate other motorists.
- Switch from the high beam to the low beam when you encounter other vehicles.

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 bends: reduce your speed and keep a greater distance from the vehicles in front.
- Heavy rain and fog reduce visibility; to make yourself more visible, switch on your low beam lights during the day as well, in accordance with current local regulations.
- Do not drive through large puddles or sections of flooded road at high speed; so-called aquaplaning may occur causing you to lose control of the vehicle: 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.

Driving safely

- 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.
- In case of fog, drive very carefully, limiting your 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:

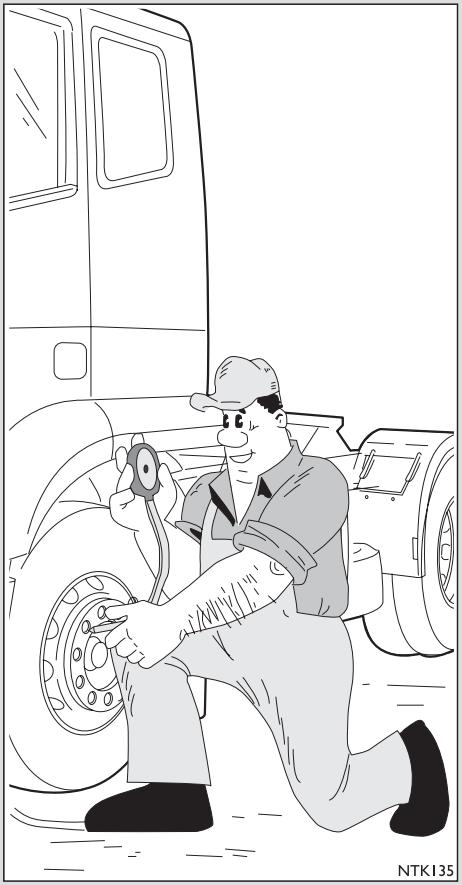
- Before negotiating tight bends, reduce your speed even if the vehicle performance allows otherwise.
- Avoid sudden acceleration or over-enthusiastic braking.
- Do not drive for long periods at sustained and constant speed, particularly on uneven terrain.
- Check that the wheels are correctly balanced 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 kind 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.

Driving safely

- 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 laid down by the law. Some types of tyres are provided with wear indicators and must be replaced as soon as these indicators become visible on the tread. Tread wear increases the risk of aquaplaning.
- Check regularly that the tyres do not exhibit irregular tread wear; if this is the case, contact the *service network* for assistance.

Snow chains

- The use of snow chains is subject to the current legislation applying in each country.
- The chains must be fitted to the drive wheels only.
- 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 mount 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 coping with snow.



Attention!

The way in which the vehicle is used and driven has a direct impact on fuel consumption and the environment. By following a few basic rules, the driver can avoid damaging the environment, and often reduce fuel consumption at the same time, and this can be done without taking the fun out of driving.

Economical and ecological driving

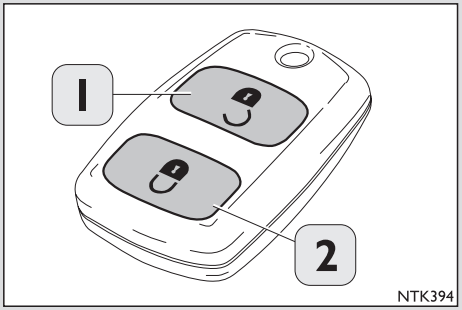
- Never demand maximum vehicle performance when the engine is cold.
- Do not accelerate needlessly whilst stationary.
- Wherever possible, do not drive with the side windows down; it is better to use the ventilation and air conditioning system sensibly to achieve the best environmental conditions inside the vehicle.
- When traffic and road conditions allow, use a high gear.
- In slow-moving urban traffic or when travelling in a queue at low speed, it is advisable to reduce to a minimum the use of devices with a high energy consumption (interior ventilation at high speed).
- Racing the accelerator while changing gears or before shutting down the engine is futile 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 area (excess speed) should 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.

Attention!

When flat, the key remote control battery is harmful to the environment. It must be disposed of in specific containers, as prescribed by the law. Or it can be sent to the service network, which will dispose of it properly. The remote control contains a lithium battery type CR 2032 of 3 V.

Central locking remote control (if fitted)

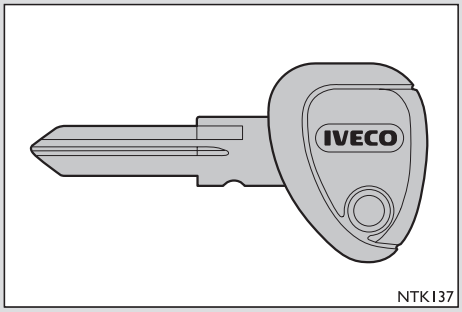
Briefly press button (2) on the remote control, pointing it in the direction of the vehicle: the indicators will flash simultaneously to signal that all the doors have locked.
To unlock the doors, press button (1), pointing the remote control in the direction of the vehicle; the indicators will flash to signal all the doors have unlocked.

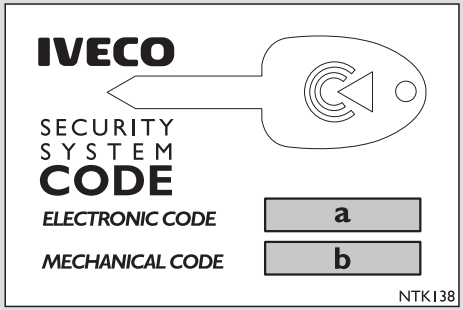


Changing the remote control battery

- 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.





Immobiliser (if provided)

To improve protection against thieves, the vehicle is equipped with an electronic engine immobiliser.
In fact the ignition keys are equipped with an electronic device that transmits a coded signal to the immobiliser control centre.

Vehicle keys

Two keys are supplied and make up a "Set" (keys + immobiliser + EDC).

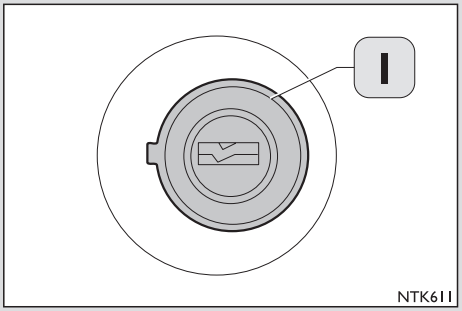
Code card

A code card containing the following information is supplied with all the keys:

a. the electronic code to be used in case of emergency start-up, the*service network*must be contacted for its activation.
b. the mechanical code for the keys.

It is advisable that users always carry the electronic code recorded on the code card with them in case the need for an emergency start-up should arise.

Immobiliser (if provided)



Emergency start-up

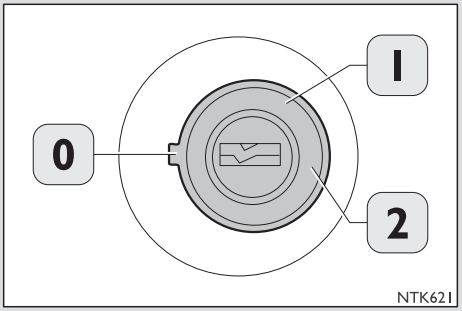
Allows the vehicle to be started if the key is not recognisable or the immobiliser control unit is not working. It is possible to start the vehicle by entering the ELECTRONIC CODE (a) by pressing the accelerator pedal in the following manner:

- Key on position (1). EDC warning light begins to flash after 2 seconds.
- Keep the accelerator pedal pressed down for 3-6 seconds and release.
- EDC warning light begins to flash at lower frequency.
- When the number of flashes corresponds to the first digit of the ELECTRONIC CODE, press the accelerator pedal down and then release (EDC warning light remains off while the pedal is pressed).
- Continue with the same procedure for the remaining figures of the ELECTRONIC CODE.
- If the code entered is correct, the EDC warning light stops blinking.
- Start the vehicle.

In any case, contact the *service network* as soon as possible for verification of the system.

Note:

Each key supplied has a common mechanical code and a unique electronic code, which must be stored on the control centre of the system. 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.



Attention!

Risk of accident
In the event of tampering with the ignition switch (e.g. attempt to steal the car), it is advisable to have the correct operation of the device checked by the *service network*: risk of jamming the steering wheel while driving.

Immobiliser (if provided)

Note:
- The Code Card is an essential and unique element associated with each vehicle; it is thus recommended to keep it in a safe place. It is therefore advisable to note down the codes and to avoid leaving it in the vehicle and to move it frequently in order to avoid risk of loss.
- If vehicle ownership changes, it is essential that all the keys and the code card are handed over to the new owner.

Key switch positions
0. = Insertion and extraction of key-engine off -steering lock, immobiliser enabled.
1. = Predisposition engine starter-various indicators, immobiliser disabled.
2. = Engine starting.

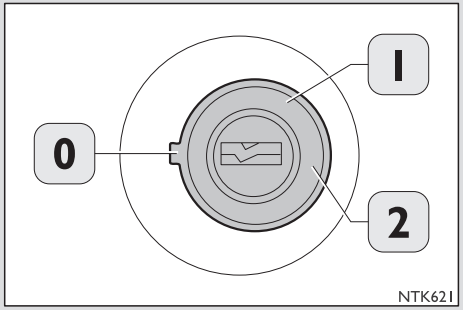
Immobiliser (if provided)

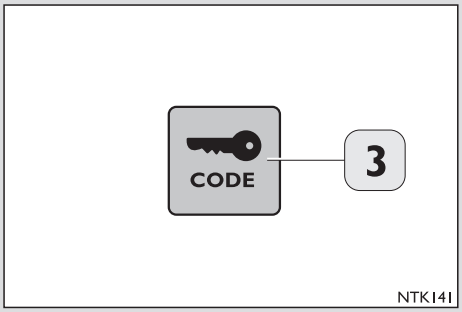
Enabling immobiliser system

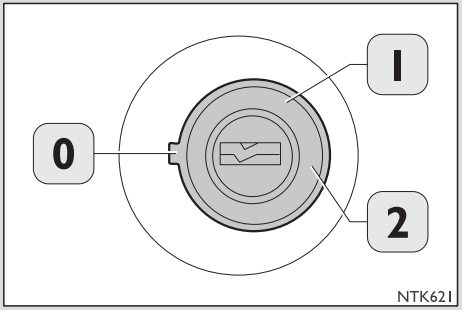
The immobiliser is enabled when the ignition key is turned to position (0): engine stopped, key can be removed.

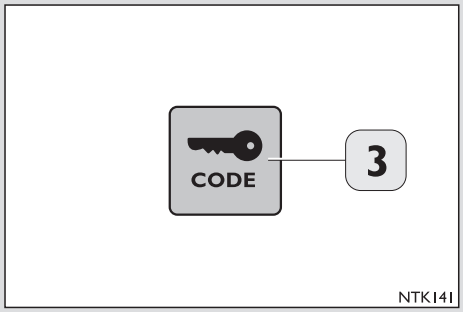
Disabling immobiliser

Turn the ignition key to position (1), the engine is immobilised unless the protection system recognises the code transmitted by the key.
If the code is valid, the control centre of the protection system sends an appropriate codified signal to the electronic control unit of the engine enabling the starting of the engine.
That the code has been recognised by the system is indicated by the warning light (3) 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 position (0) and then back to position (1); if immobilisation continues retry with the other key supplied.
If the engine still does not start, contact the *service network*.









Immobiliser (if provided)

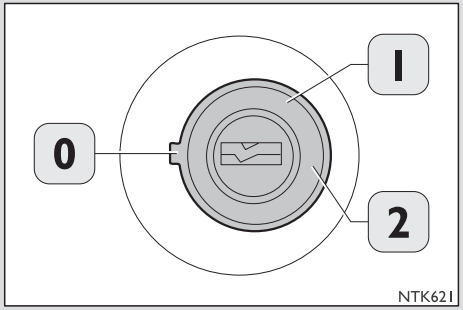
Note:
If the warning light (3) lights up temporarily or permanently during travel or starting the vehicle, this does not necessarily indicate a breakdown of the system but may in certain cases be interpreted as an attempted manipulation by a thief or a particularly low battery charge.
If you turn off the engine when the warning light (3) is on, the next engine start-up may be possible only via the emergency procedure.

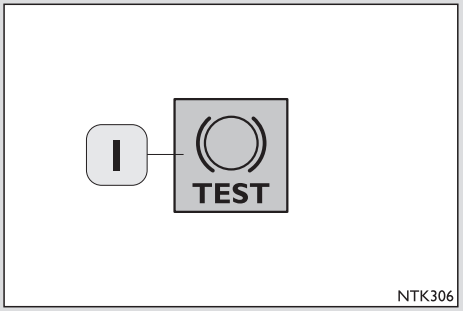
Starting the engine when the outside temperature is higher than 10°C

Key switch positions

0. = Insertion and extraction of key - engine off - steering lock.
1. = Predisposition engine starter - various indicators - preheater.
2. = Engine starting.

- Insert the key in the ignition switch and turn it clockwise to position (1).
- Then turn the key to position (2), 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.





Attention!

In order to reduce harmful emissions, it is advisable not to keep the engine at the minimum rpm for an extended period, whether cold or hot.

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

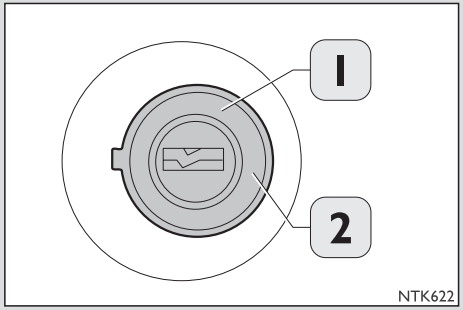
- **In "MAR" position, warning light (1) remains on until the brake pedal is pressed.**
  If the warning light does not switch on or if it does while an error code is displayed, contact a *service network* , workshop, or call the customer centre.
  In order to start the engine, it is not necessary to wait for the warning light to go off.
- Wait until normal pressure is attained in the air tanks.
- If it is not easy to start the engine, do not run the starter for more than 30 seconds. In order to allow the attainment of better thermal operating conditions, drive the vehicle slowly after starting the engine, thus keeping the engine rpm in the medium range.
  In this way you achieve:

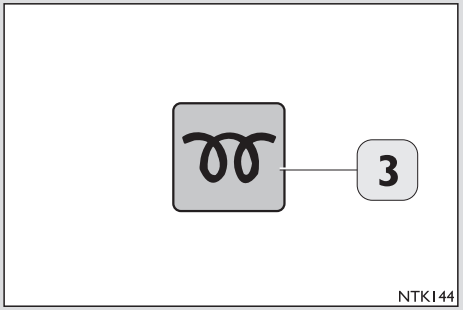
– a continuous and regular flow of oil in the entire lubrication circuit;
– maintaining the exhaust emissions within the prescribed limits;
– limiting fuel consumption.

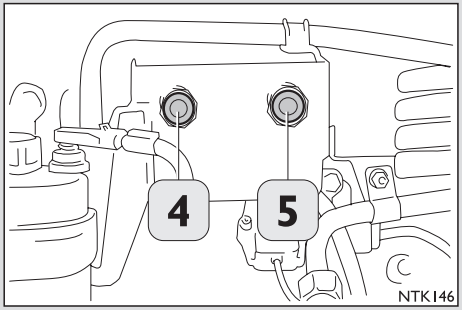
Starting the engine when the outside temperature is lower than 10°C

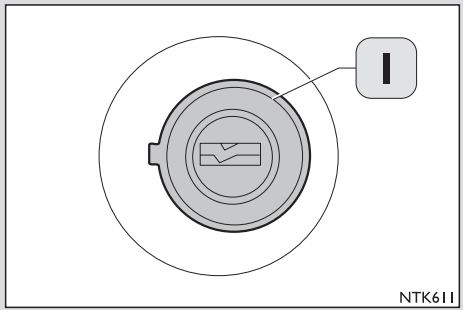
- The vehicle is equipped with an electrical preheating device to warm up the air intake to facilitate engine starting at low temperatures.
- Insert the key in the ignition switch and turn it clockwise to position (1).
- This starts a self-test of warning light (3) which lasts about 2 seconds. It remains lit if preheating is needed (and for its whole duration), otherwise, it goes off.
- Wait until preheating warning light (3) starts blinking.
- Then turn the key to position (2), and release it as soon as the engine starts.

Note: If the engine does not start within a few seconds, from the time the warning light starts blinking, the light goes off and the preheating system is switched off to avoid discharging the batteries.
You must then repeat the preheating process.







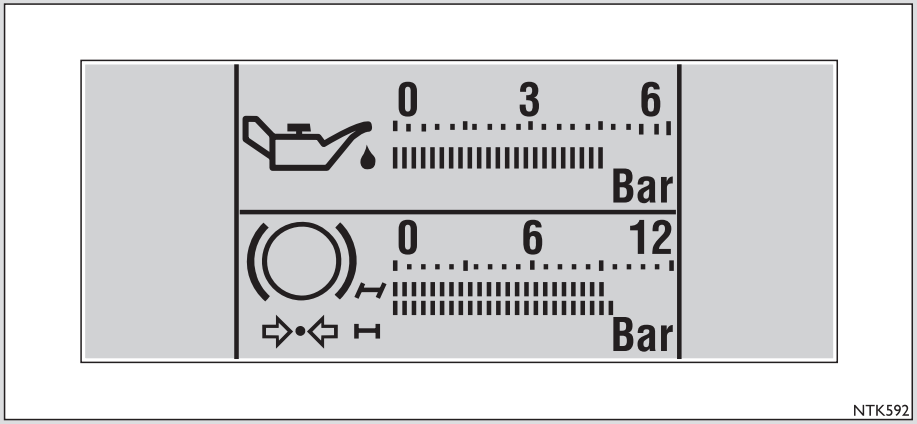


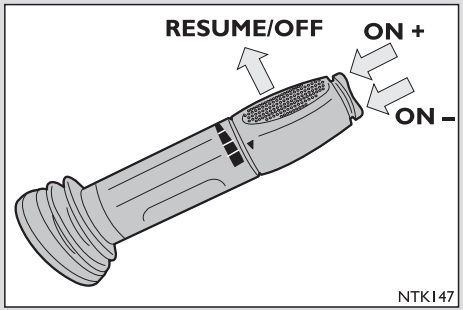
Starting the engine from the hood

It is possible to start the engine with the cabin tilted by means of push-button (4), (situated on the engine itself); for this purpose, the ignition commutator must have been turned to position (1).
For your safety, it is not possible to start the engine if the gear shift lever is not in the neutral position and if the parking brake is not engaged.
To stop the engine, press button (5).

Before starting the vehicle

Make sure from the display that the pressure gauges show a minimum pressure of 6.5 bar, for both sections (front and rear axle).
If this condition is not met, the brake system must be faulty.
You must then contact the *service network* immediately.
Should it be absolutely necessary to move the vehicle, use the utmost care since its braking capacity is impaired.





Engine idle speed adjustment

To be carried out when the vehicle is stationary and the engine is hot, since at engine temperature less than 30°C it is not possible to carry out the adjustment.

- Start the engine and keep it running without accelerating.

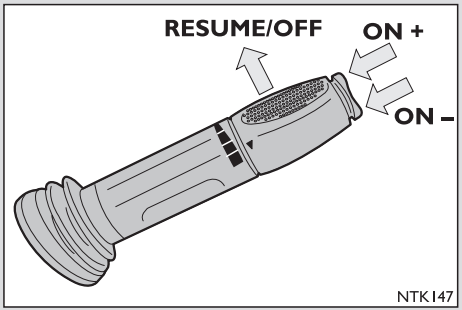
Press and hold the brake pedal during the entire procedure.

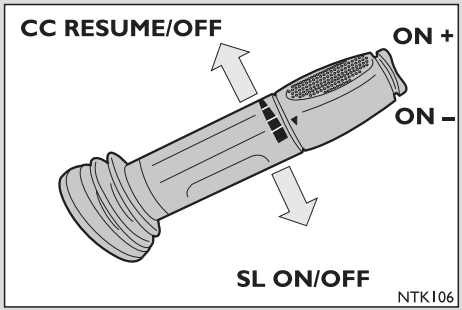
- Turn the cruise control command lever towards the steering wheel (RESUME), checking that the rpm drops to the minimum specified value.
- Adjust the rpm as desired via the toggle key ON + or ON - (toggling head key). Every pulse will change the engine speed by approximately 20 rpm.

Engine idle speed adjustment

- Once the desired rpm is reached, turn again the cruise control command lever towards the steering wheel (RESUME), keeping the lever towards the wheel for about 5 seconds while keeping the ON+ key pressed.
- Release the brake pedal.

The new engine idle speed will then be stored even if you stop the engine and will remain valid after further start-ups.
If the procedure is not executed correctly and/or in the event of an anomaly during its execution, the old idle speed is maintained.





Speed programmer (Cruise Control-CC)

(Function enabled from 20 km/h up to the vehicle maximum speed - the function is enabled only after you press the brake pedal once).
The system automatically maintains the vehicle speed without having to use the accelerator pedal.
Should the vehicle speed increase by more than 3 km/h from the set value (e.g. driving downhill), **the engine brake is automatically enabled** to slow down the vehicle and maintain its speed.
If it increases by more than 4 km/h, the intarder (if present) is also enabled.
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:

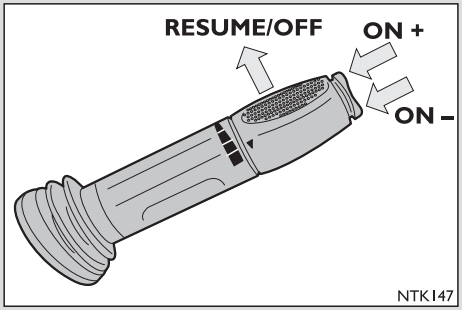
- engine brake lever/intarder not engaged;
- vehicle running with a gear engaged;
- vehicle speed higher than 20 km/h;
- brake pedal not pressed;
- clutch pedal not pressed.

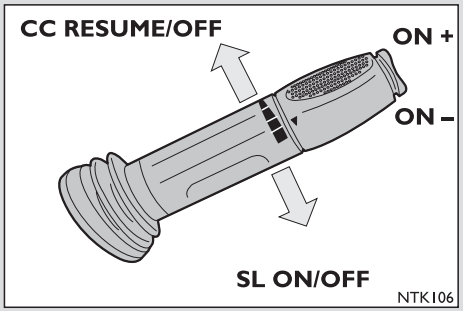
Command	Vehicle speed control
ON +	Speed increase
ON -	Speed decrease
RESUME	Selecting the last speed stored
OFF	Suppressing vehicle speed control

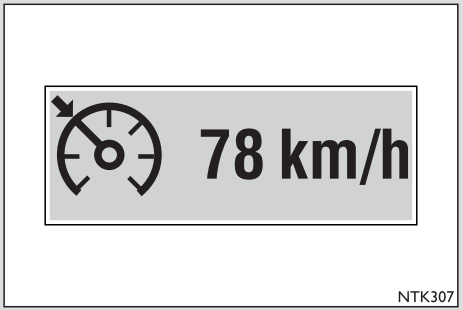
Speed programmer (Cruise Control-CC)

When the engine brake is operated or the brake or clutch pedal pressed, the control is suppressed. The same occurs if the minimum speed required is not reached. The cruise control is not disabled during gear change.
The maximum speed limit is stored in the program within the electronic control module and cannot be changed.

1. The toggle key ON + performs the following functions:
   a) 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.
   b) When the function is already active, it is used to increase the vehicle speed without using the accelerator pedal.
2. The toggle key ON - performs the following function:
   when the function is active, it is used to decrease the vehicle speed.
3. When the cruise control command lever is turned towards the steering wheel (OFF), the function is disabled.
4. Turning the lever again towards the steering wheel (RESUME), the stored value is set again.
5. **Tip function**
   If you toggle briefly on ON+ or ON- the vehicle speed varies by steps of 1 km/h (e.g. at a speed of 60 km/h, if you press three times on ON+ you reach 63 km/h; doing the same on ON-, you reach 57 km/h).
6. **Ramp function**
   If you keep it pressed, the speed varies continuously.







Speed programmer (Cruise Control-CC)

Disengagement

The system is disengaged:

- **Manually** and permanently (via the OFF command).
- **Automatically** and permanently by pressing the brake pedal or using the engine brake.
- **Automatically** and permanently by pressing the accelerator pedal (thus asking for a higher speed) for more than 30 seconds.

If you press the clutch pedal, the system goes momentarily into stand-by.
After disengagement, the vehicle resumes the cruise speed previously set.
The system is momentarily disabled if you press the accelerator pedal (for no more than 30 seconds) to ask for a higher speed.
As soon as you release the accelerator pedal, the function automatically resumes the last stored value.

Note: The speed value is shown on the display; when you use the ramp function, the display shows the actual vehicle speed and the setting is the current value at the time you released the pushbutton.
The value displayed disappears after 10 seconds.
In order not to deactivate the engine brake or intarder on downhill gradients, the cruise control remains active if the brake is used at speeds greater than 4 km/hour.

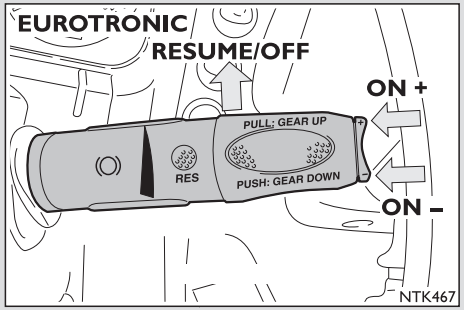
Adjusting engine idling speed (vehicles with Eurotronic gearbox)

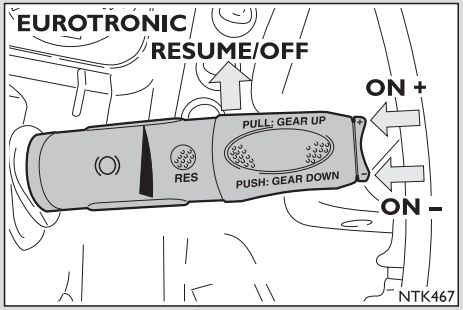
To be carried out when the vehicle is stationary and the engine is hot, since at engine temperatures less than 30°C it is not possible to carry out the adjustment.

- Start the engine and keep it running without accelerating.

  Press and hold the brake pedal during the entire procedure.
- Press the RESUME button on the cruise control lever, checking that the speed drops to the required idling speed.
- Adjust the rpm as desired via the toggle key ON + or ON - (toggling head key). Every pulse will change the engine speed by approximately 20 rpm.
- Once the desired rpm is reached, press the RESUME button again on the Cruise Control, keeping it pressed for about 5 seconds while keeping the ON+ key pressed.
- Release the brake pedal.

The new engine idle speed will then be stored even if you stop the engine and will remain valid after further start-ups.
If the procedure is not executed correctly and/or in the event of an anomaly during its execution, the old idle speed is maintained.





Speed programmer (Cruise Control-CC) vehicles with Eurotronic gearbox

(Function enabled from 20 km/h up to the vehicle maximum speed - on vehicles without EBS the function is enabled only after you press the brake pedal once)
The system automatically keeps the vehicle speed without using the accelerator pedal.
Should the vehicle speed increase by more than 2 km/h from the set value (e.g. driving downhill), the **engine brake is automatically enabled to slow down the vehicle and maintain its speed.**
If it increases by more than 4 km/h, the intarder (if present) is also enabled.
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:

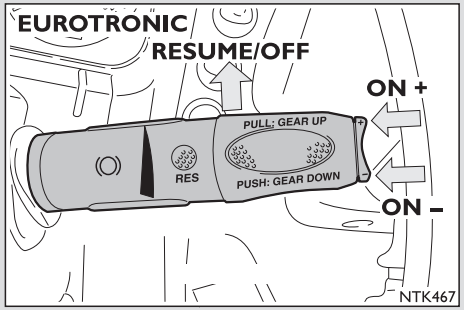
- engine brake lever/Intarder **not** engaged;
- vehicle running with a gear engaged;
- vehicle speed higher than 20 km/h;
- brake pedal not pressed;
- clutch pedal not pressed;

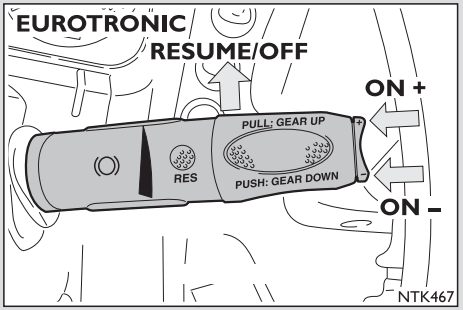
Command	Vehicle speed control
ON +	Speed increase
ON -	Speed decrease
RESUME	Selecting the last speed stored
OFF	Suppressing vehicle speed control

Speed programmer (Cruise Control-CC) vehicles with Eurotronic gearbox

When the engine brake is operated or the brake or clutch pedal pressed, the control is suppressed. 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. The toggle key ON + performs the following functions:
   a) 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.
   b) when the function is already active, it is used to increase the vehicle speed without using the accelerator pedal.
2. The toggle key ON - performs the following function:
   when the function is active, it is used to decrease the vehicle speed.
3. Pressing the RESUME button once turns off the function.
4. Pressing the RESUME button a second time activates the stored value again.
5. Tip Function
   If you toggle briefly on ON+ or ON- the vehicle speed varies by steps of 1 km/h (e.g. at a speed of 60 km/h, if you press three times on ON+ you reach 63 km/h; doing the same on ON-, you reach 57 km/h).
6. Ramp Function
   If you keep it pressed, the speed varies continuously.





Disengagement

The system is disengaged:

- **Manually** and permanently (via the RESUME 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) for more than 30 seconds.

If you press the clutch pedal, 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 with the accelerator pedal (for no longer than 30 seconds), when a speed greater than the set limit is required.
As soon as you release the accelerator pedal, the function automatically resumes the last saved speed.

Note: The speed value is shown on the display; when you use the Ramp Function, the display shows the actual vehicle speed and the setting is the current value at the time you released the pushbutton.

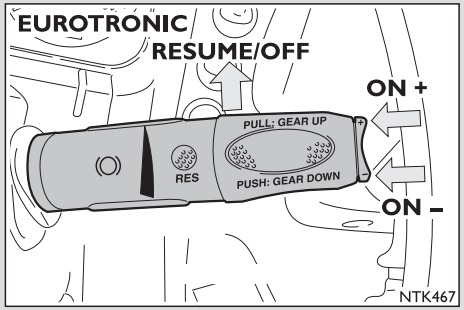
Speed limiter (SPEED LIMITER-SL) - vehicles with Eurotronic gearbox

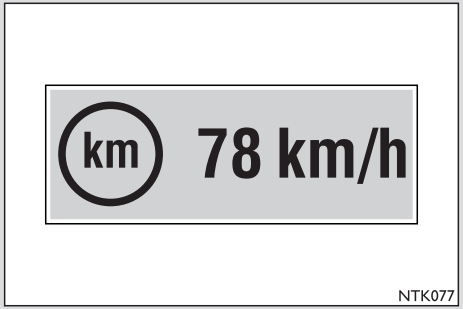
The engine control unit has a function which limits automatically the cruise speed to 90 km/h.
It is possible to select a lower speed using the button on the dashboard, till reaching the desired speed.

1. Cruise control speed saved.
2. Speed limiter speed saved.

Warning:

- Cruise control works only if its preset speed is less or equal 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 seconds you can make a fine adjustment of the SL value via the toggle switch ON+ /ON- on the end of the right turn signal lever. In the above-mentioned period the SL value is displayed with reverse colours (REVERSE).





EBL system-ABS/ASR system

EBL (Electronic Brake Limiter)

The EBL function controls the rear axle wheel skid by comparing it with the speed of the front axle wheels. The input data for the control centre is the rpm of the wheels and the brake pressure sensed by the sensor installed up-stream of the valve of the rear axle brake.
Based on these values, the control unit checks the speed of the vehicle, its deceleration, the rear axle wheel skid and the minimum expected deceleration. The electronic control unit has the purpose of slowing down the vehicle as quickly as possible, guaranteeing its stability and avoiding locking the wheels. The EBL function is enabled (ABS rear modulators maintaining the pressure as set) when the driver applies an excess of braking force depending on the vehicle load, i.e. when the rear axle and vehicle deceleration slip thresholds are exceeded.

ABS (Wheel Anti-Blocking System)

The ABS system allows an optimal braking action together with a complete control of the vehicle. Also:

- 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.

ASR (Anti-Slip Regulation)

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

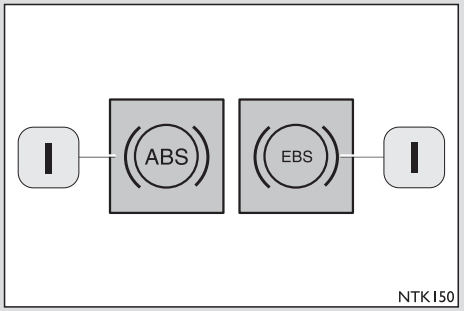
- It prevents the driving wheels from slipping both during pick-up and when driving.
- It guarantees an optimal behaviour on a slippery road.

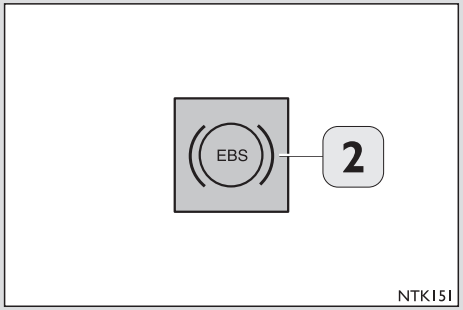
EBL system-ABS/ASR system

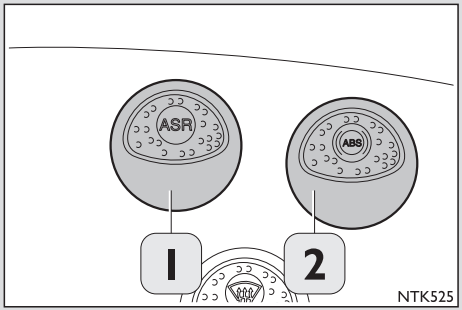
- It improves stability especially in a curve with poor grip.
- It reduces tyre wear.

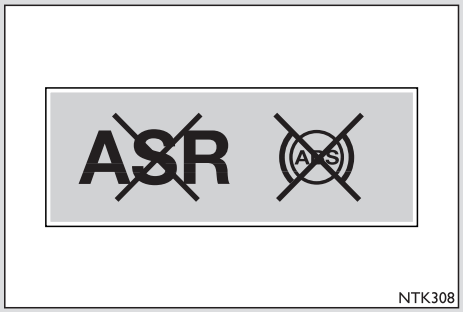
Operational diagnostics, possible anomalies or limitations of the above systems are indicated by specific warning lights on the display.
If the following lights come on while driving:

1. ABS/EBS (yellow): there is a slight fault in the system but the trip can continue without interruption.
2. EBS (red): there is a serious flaw in the system which greatly reduces the braking function. Please go to a *service network* workshop immediately.









Attention!

Risk of accident: any damage to the ABS system alters the behaviour of the vehicle when braking. You must get to an IVECO workshop as soon as possible and drive with the utmost care.

EBL system-ABS/ASR system

The driver can modify the parameters for the ABS system (key 1) and the ASR system (key 2) functions, which is particularly important for vehicles being used off-road.

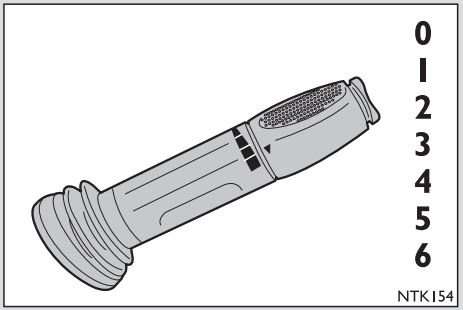
1. Disabling the ABS system (if equipped)

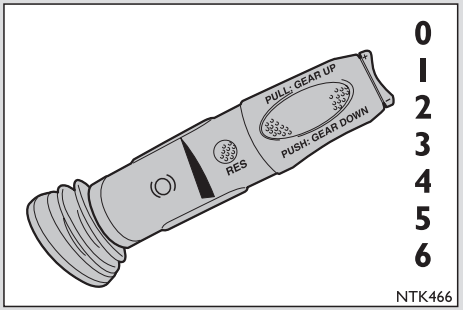
This key is used to modify internal parameters for the electronic control unit functions. The driver is informed by the ABS warning light which blinks when the function is on.
When you press this key, the ABS braking system is disabled, so the wheels may lock when braking.

2. Disabling the ASR system (if equipped)

Press this key to modify the ASR action and obtain more pick-up force when driving off-road. The ASR system operates with a slight delay if compared to the normal operation. The driver is informed by the corresponding warning light which blinks.
The warning lights are turned on when the ignition key is in the MAR position after a few seconds from engine start; this is no fault indication but a normal check function.

Engine brake and intarder controls (if provided)

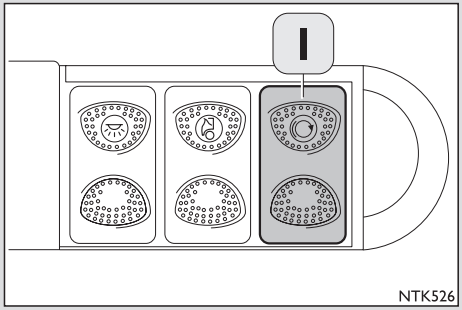


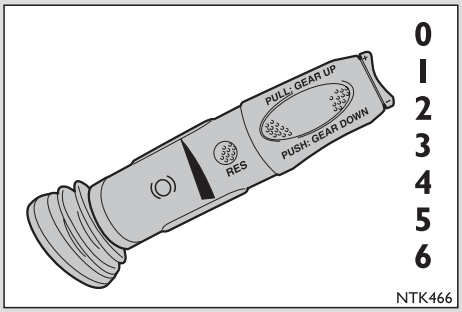


Vehicles with Eurotronic gearbox
Position 0 = disabled
position 1 = engine brake at 100%
position 2 = engine brake at 100% + Intarder at 25%
position 3 = engine brake at 100% + Intarder at 50%
position 4 = engine brake at 100% + Intarder at 75%
position 5 = engine brake at 100% + Intarder at 100%
position 6 = engine brake at 100% + Intarder at 100% (in automatic operation shifts gears to increase the engine rpm, to obtain a more effective braking).

Vehicles with manual gearbox
Position 0 = disabled
position 1 = engine brake at 100%
position 2 = engine brake at 100% + Intarder at 20%
position 3 = engine brake at 100% + Intarder at 40%
position 4 = engine brake at 100% + Intarder at 60%
position 5 = engine brake at 100% + Intarder at 80%
position 6 = engine brake at 100% + Intarder at 100%

Vehicles without intarder
Position 0 = disabled
position 1 = engine brake at 100% (50% only for vehicles with manual gearbox).
position 2 = engine brake at 100% (in automatic operation shifts gears to increase the engine rpm, to obtain a more effective braking).





Attention!

Hydraulic ZF brake-intarder (if provided)
In the following cases the intarder comes down automatically for safety purposes, when the degree of braking is much higher than permissible:
- on reaching the preset maximum coolant temperature;
- in the event of a breakdown or fault in an electrical component.

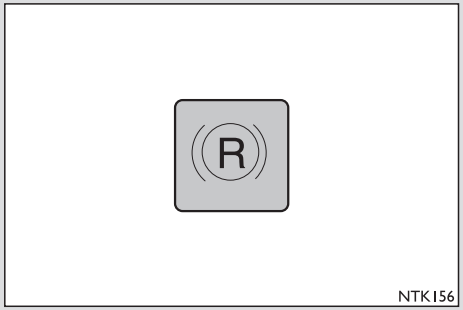
It is necessary to take into account the smaller braking power, appropriately adapting the manner of driving (choice of gear, engine brake, application of brake).

Vehicles without EBS
Via the preset switch (1), engine brake is enabled each time you press the brake pedal.
Attention! The application of the engine brake in combination with the accelerator pedal (system 1) disables all the regulatory operations linked to the cruise control.

Engine brake and intarder controls (if provided)

The use of the intarder is particularly advisable when you want to apply the brakes with the vehicle at high speed or when you are driving along a fairly long downhill road.
With its use you can economise the application of brake, as a result of which the entire braking effect is available in case of an emergency.
Attention! In the event of a long braking action, the intarder power adapts to the cooling capacity of the vehicle cooling system.
The braking effect is gradually reduced so as not to exceed the permissible maximum cooling water temperature.

Engine brake and intarder controls (if provided)



Hydraulic ZF-intarder brake (if fitted)
Intarder warning light
The intarder warning light indicates its current state of operation to the driver.
Note: If the intarder functions do not match the optical indications described in the following, there is a fault in the electrical system.
Go to the nearest workshop of the *service network*.
The lighting up of the warning lights when the ignition key is in MAR position a few seconds after the engine is started does not indicate any malfunctioning but is a normal occurrence.

Warning light indication in normal operation
The warning light is not turned on.
The intarder is not enabled.
The warning light remains steadily on
The intarder is enabled and is in operation in the selected degree of braking.
The warning light keeps blinking
Failure in the electrical circuit. Go to the nearest workshop of the *service network*.

Note: the intarder can be disengaged via the accelerator pedal only when the temperature of the cooling fluid is higher than 50°C.

Attention!

Risk of collision!
The intarder must be used with great care on icy or wet roads.
It acts only on the rear axle of the engine; as a result, the vehicle may skid.
In this case, disengage the control lever if necessary in order to avoid manoeuvring errors.
Before and while driving downhill, you should make sure that the engine speed does not decrease below 1600 rpm./min. Sufficient cooling of the radiator water cannot be guaranteed otherwise. If required, change to one gear lower in order to increase the speed of the engine and thus the capacity of the water pump.

Engine brake and intarder controls (if provided)

General instructions for using the intarder
The use of the intarder does not affect the method of gear changing.
The gear change 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.

Warning:
- Braking with the intarder is interrupted if the ABS is operating. The operation of the previously programmed intarder starts as soon as the effect of ABS ceases.
- When the clutch is disengaged (i.e. when shifting gears) the braking force provided by the intarder remains unchanged.

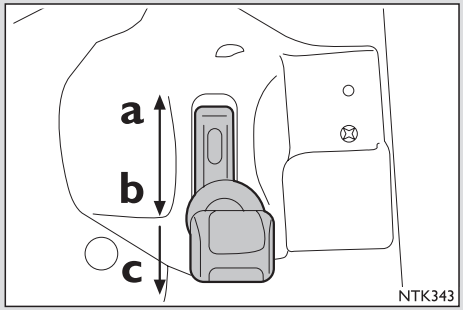
Attention!

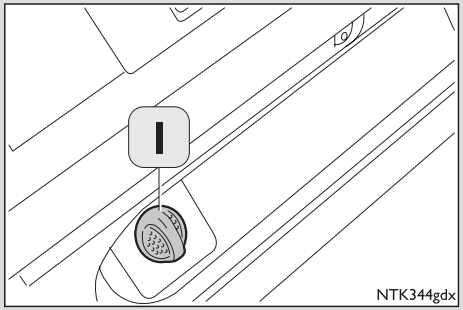
In order to avoid serious consequences for people's safety, the parking brake must be mandatorily used in the following cases:
- Any temporary or extended halt of the vehicle.
- When connecting semi trailer/trailer to the vehicle.
- Place wedges in case of a long stop on a slope.

Use of parking brake

The parking brake has the following positions:
a. Disengaged (pull the ring and move the lever upward).
b. Engaged (lever in downward position).
c. Trailer brake released.

In order to check if the tractor or the carriage holds the trailer or the semitrailer on a slope, run the following test: in position "c" push the knurl of the hand lever to the front (trailer brake disengaged).





Additional valve for releasing vehicle parking brake (if fitted)

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

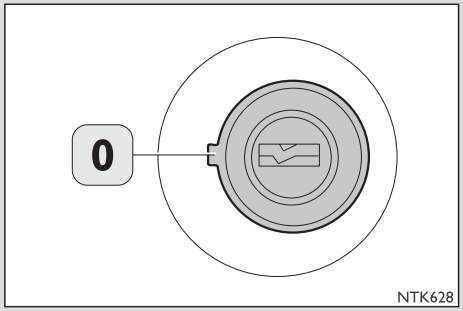
- Start the engine and keep it running until normal air pressure is reached inside tanks (min 6.5 bar from display).
- Disengage the parking brake.
- If the vehicle does not move, turn selector (1) shown in the figure to unlock the parking of the vehicle.
- Start the vehicle.

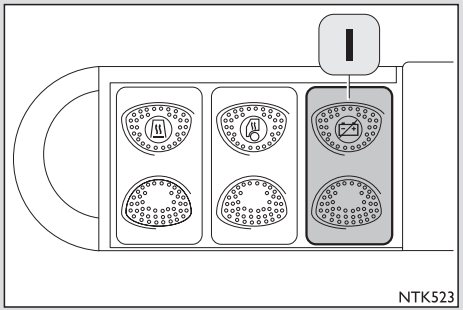
Attention!

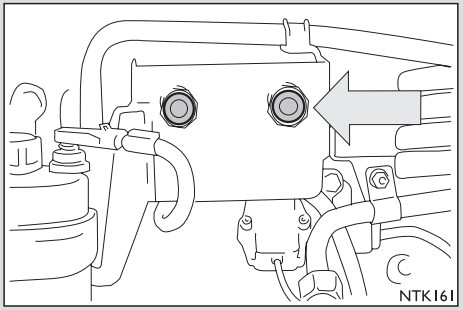
Risk of accidents: Extract the key from the ignition block only when the vehicle is stopped.
Never leave the vehicle without engaging the parking brake.

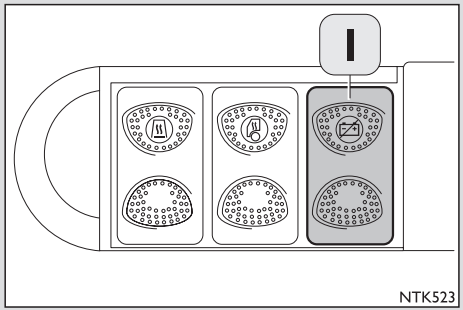
Stopping the engine

In order to shut down the engine, turn the ignition key back to the position (0).
Since immediately after the engine stops, the EDC control unit remains connected to the batteries to carry out checks on the electronic sensors, you must not disconnect the batteries during this period of time (= 10 sec.).









Attention!

The following cases can lead to serious malfunctioning of the electronic parts:

- Use of battery circuit breaker (1) to try and stop the engine (use in any event in case of emergency).
- Connect/disconnect EDC control unit connectors with engine running or the control unit live.

Stopping the engine from the engine compartment

When stopping the engine from the ground, after engine stop, hold the red push-button shown in the figure for further 3 seconds, for the same reason as described in the previous paragraph.

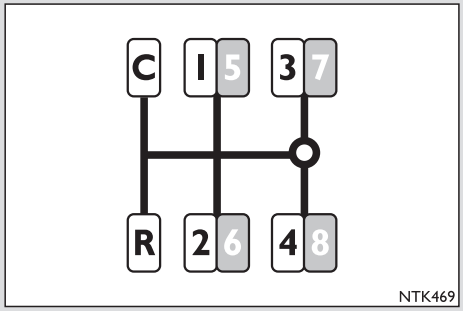
Attention!

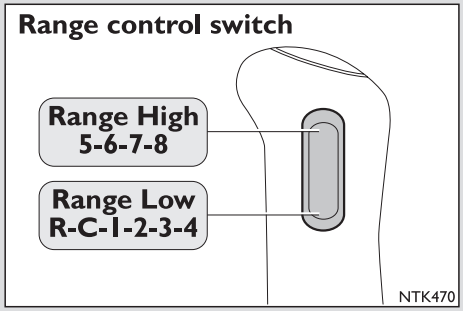
When setting off, it is mandatory to engage gear starting from the lowest ones (1st or 2nd). The purpose is to avoid early clutch wear.

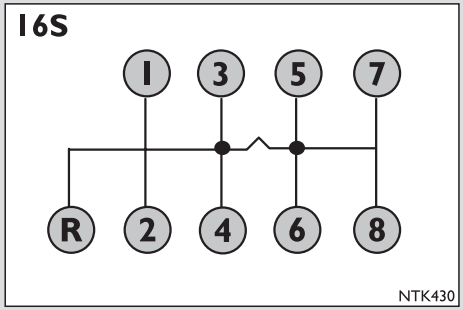
Use of manual transmission

Gearbox: 9 S 1310/1 TO - (simple H engagement diagram)

Servo-assisted synchronized gearbox with 9 forward gears and one reverse gear. All the gears, except for reverse R and the slow speed C (Crawler), are synchronized.
The gearbox is equipped with a simple H engagement scheme; this means that the range is pre-selected with a lever switch on the knob of the gear lever and inserted with the control lever passing through neutral.
That is: starting with the lower range unit (switch downward = display "**low**"), engagement of gears 1-2-3-4, then pre-selection of the top range (display "**high**"), return to position 1 (= 5th) and engagement of gears 6-7-8.
To avoid damage to the synchronizer and the clutch because of incorrect gear changing, the number of turns of the gearbox is controlled by the control unit of the VCM vehicle and, if necessary, passing to the lower range or from gears 7/8 to gears 5/6 and from gears 3/4 to gears 1/2 is stopped.
If the lower range has been pre-selected and the engagement is blocked, "**low**" flashes and an audible warning is emitted (beep).







Use of manual transmission

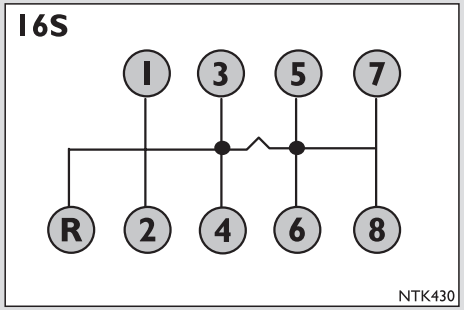
Control operations for these transmissions are the same as for synchronised conventional transmissions, i.e. without pressing the clutch twice upshifting and without accelerating in between when downshifting.
The gears can be engaged only when mating gears have reached the same speed. Therefore it is important to push the control lever evenly until the gear is engaged.

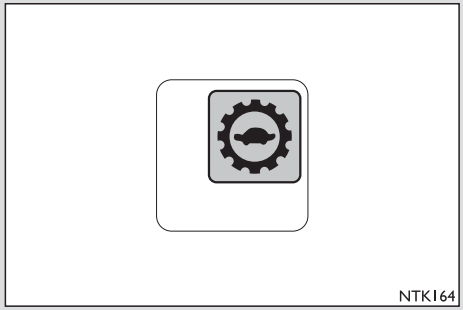
Gearbox control

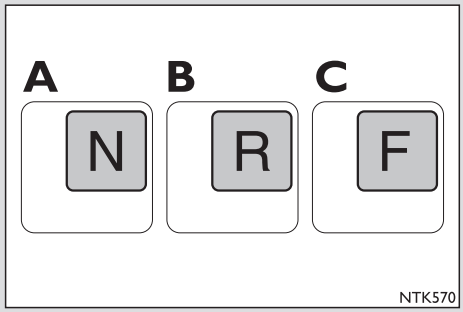
from 1st to the 4th = low gears
from the 5th to the 8th = high gears

Use of manual transmission

With gear reducer engaged and gear in neutral position, the control lever is placed in the 3/4 direction whereas with normal gears selected and gear on neutral, the lever is placed in the 5/6 direction.
In order to engage gears 1/2 and 7/8, it is necessary to move the gear change lever manually to the left or right respectively, overcoming the slight resistance of the positioning springs.
Selections 3/4 and 5/6 are separated by a click with a stronger spring.
Selections from low gears to high gears are separated by a click with a stronger spring.
To change gear range, do not grasp the lever as for a normal gear shift selection, but give a quick blow with the palm of your hand to overcome the elastic reaction. The lever will be automatically positioned in accordance with the desired selection.
Selections from low gears 3/4 to high gears 5/6 are separated by a click with a stronger spring.







Use of manual transmission

The reverse gear must only be engaged when the vehicle is stationary, otherwise it can damage the engaged teeth.
In order to protect the clutch, the engine and also the gear box against speed, excess, no manoeuvring mistakes must be made when changing to a lower gear.
A change to lower gear must be effected only when the speed of the vehicle corresponds to the maximum speed of the immediately lower gear.
Do not switch range with gear in neutral if the vehicle speed does not correspond to the maximum speed of the 4th gear.
Never downshift from high to low gears other than for downshifting from 5th to 4th gear during standard driving.
Even when the vehicle is temporarily in neutral, it is reccommended not to use the gearshift lever to engage the crawler gears.

Information displayed
Crawler gears (the turtle symbol lights up).
High gears (the F letter lights up).

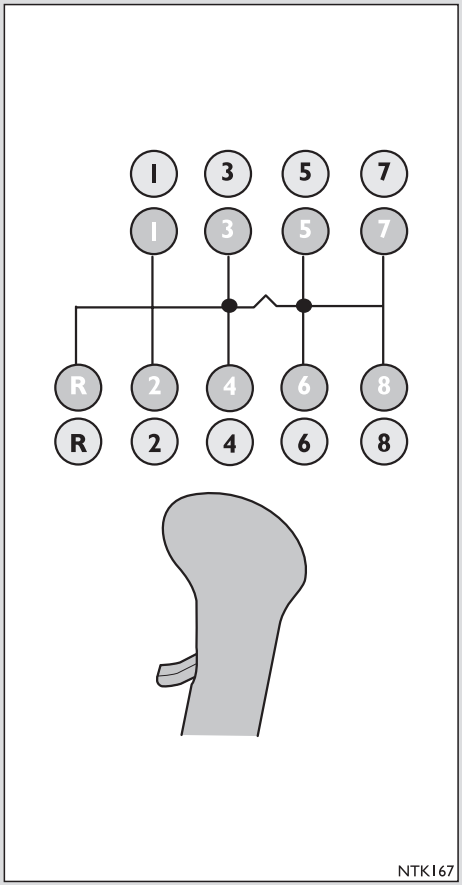
Information displayed
A Neutral position
B Reverse gear
C Forward gear

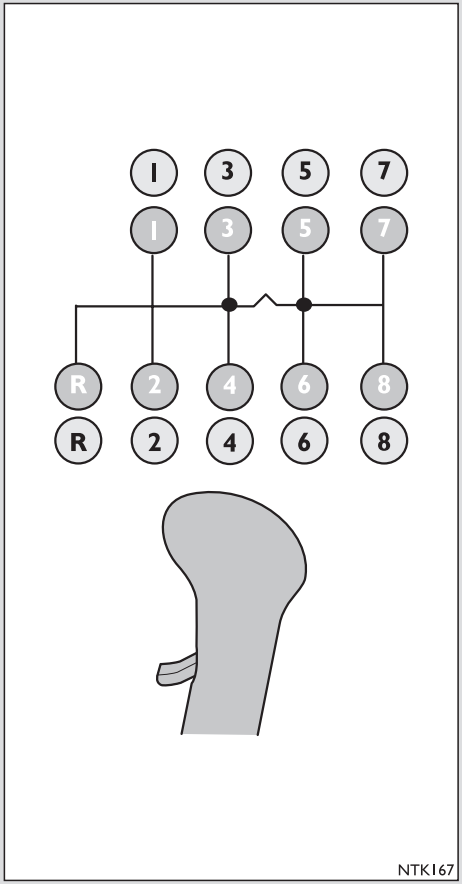
Use of manual transmission

Splitter control

The multiplier, which allows splitting each of the 8 gears and the reverse gear into two, is commanded by means of the pre-selection valve located in the control lever:
Lever up = high range
Lever down = low range
To command the multiplier just operate the gear shift lever and then depress the clutch pedal fully down. A valve actuated by the clutch pedal causes the air in the cylinder of the multiplier control to escape and thus effects the switching. In order to allow the correct operation of the multiplier, the engaging and disengaging manoeuvres must not take place rapidly.
In order to avoid involuntary intervention of the multiplier it is advisable to actuate the pre-selection lever just before moving the control.
It is not necessary to use the multiplier in all the gears but it helps to activate it in some cases, for example:

- When you want to take maximum advantage of the power of the engine in case of a difficult start, in overtaking or for uphill acceleration.
- On intercity stretches or while driving in convoy etc., when it is desirable to keep the engine in an economic speed range (fuel saving).
- To save fuel it is advisable to use the transmission with the lever of the multiplier set to high range (up).





Attention!

Do not drive downhill with gear in neutral or clutch disengaged. This may result in drive shaft failure and personal injuries or collision.

Use of manual transmission (all gearboxes)

Clutch engagement

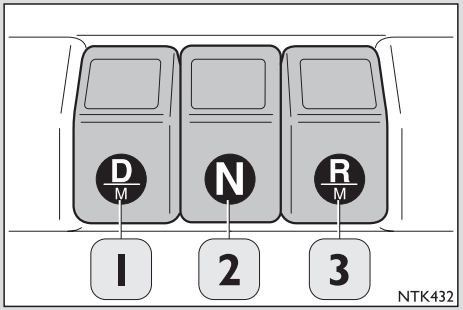
The clutch pedal must be pressed all the way for every change of gear.
If clutch is not fully disengaged or in case of faulty operation (partial engagement or disengagement), this may result in difficult operation. Besides, it may cause wear and tear of the synchronisers and the engaging teeth of the gearbox.

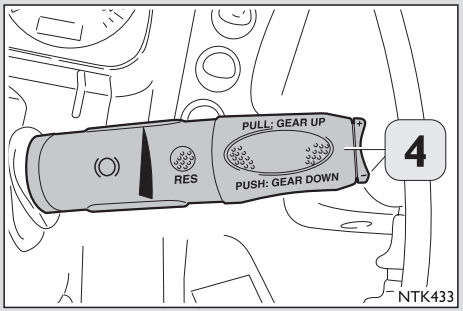
Attention!

For off-road use on uneven ground, Eurotronic transmission shall be used in manual mode.

Eurotronic Automated

1. General information
2. Engine start
3. Driving in automatic mode (AUTO)
4. Driving in manual mode (SEMI)
5. Gearbox in neutral
6. Reverse gear
7. Starting the vehicle uphill
8. Starting the vehicle downhill
9. Manoeuvring
10. Manoeuvre in manoevre mode (SLOW)
11. Braking
12. Stopping
13. Driving with cruise control
14. Driving with P.T.O. controlled by clutch
15. Engine stop
16. Protection functions
17. Signals on the display
18. Emergency function (Limp Home)
19. DTCs





Eurotronic Automated

1. General information

The Eurotronic transmission control system is the combination of an electropneumatic transmission 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 Eurotronic transmission can be controlled **manually or automatically**.

Accelerator pedal

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

Note: during the shift, the engine rpm is controlled by the gearbox electrical system and the accelerator pedal position does not have to be altered.

Controls

1. Key 'D'.
2. Key 'N'.
3. Key 'R'.
4. Lever on steering wheel.

Eurotronic Automated

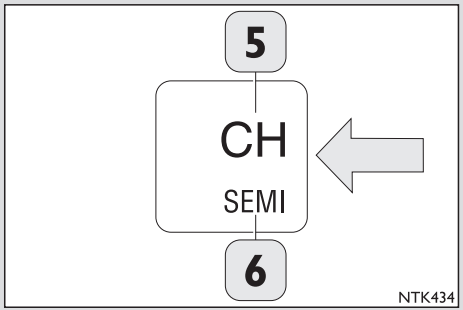
2. Engine start

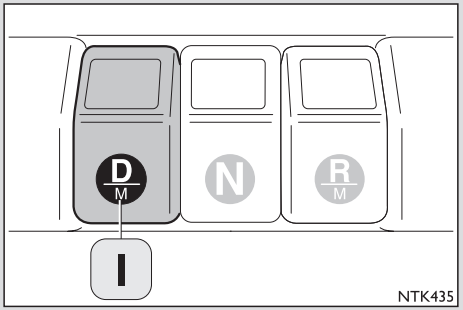
- Handbrake engaged.
- Ignition on.
- System check (5)
- Start the engine.
- Check complete.

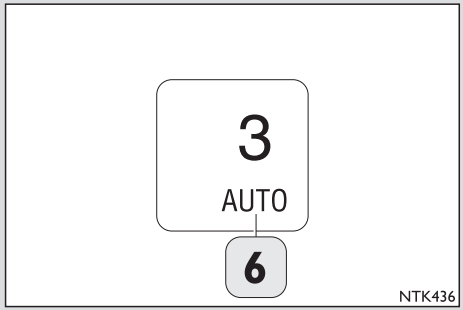
The screen will display **N** (gear in neutral).

- The manual mode (SEMI) is on (6).

Note: if the symbols "AP" and "CH", flash on the display, take your foot off the brake pedal.







Attention!

If accelerator pedal is not depressed, no power is transmitted to the system. When on a slope the vehicle may move.
On winding roads, use the Eurotronic transmission in normal mode (see section 3).

Eurotronic Automated

3. Driving in automatic mode (AUTO)

- Handbrake engaged.
- Start the engine.
- Gearbox in neutral.

- Briefly press button "D" (1).
  The automatic gearbox will come on and the calculated set-off gear will be engaged.
  The set-off gear and the message "AUTO" will appear on the display (6).

Attention!

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

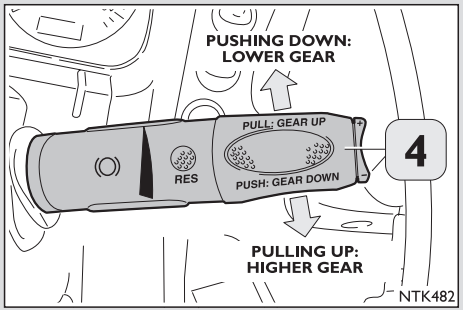
Eurotronic Automated

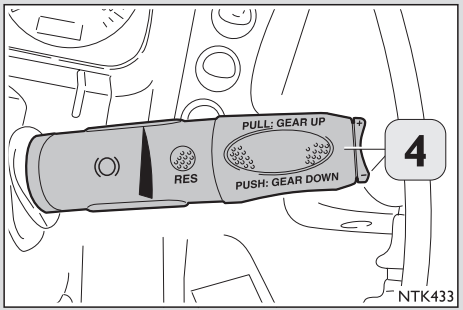
The set-off gear may be corrected by the following actions on the steering wheel lever (4):

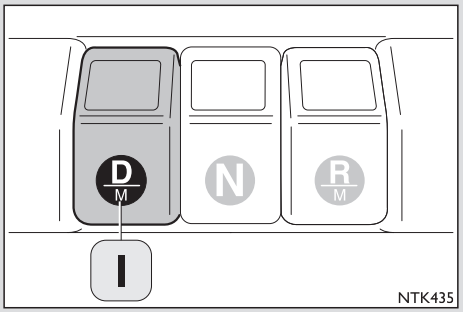
- Pulling the lever slightly up:
  the gearbox engages **a higher gear.**
- Pushing the lever slightly down:
  the gearbox engages **a lower gear.**
- If the lever is maintained in the required position:
  the gearbox engages **two gears higher** or **two gears lower**.

Note: the available set-off gears are 1st, 2nd, 3rd, 4th and 5th gear.

- Operate the accelerator pedal and then release the parking brake.
  The vehicle will set off (the clutch will engage automatically).







Eurotronic Automated

Shifting with vehicle in motion
While driving, the gear will be 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 rpm.

The gear can be changed manually at any time by means of the lever on the steering wheel (4) without, however, having to leave automatic mode.

Kick-down control on accelerator
When the accelerator is pressed to the end of its travel, the system switches to power mode. The change to a higher gear occurs at high engine speeds. When the vehicle is accelerated, the gearbox changes to a lower speed (as in automatics). During operation of the kick-down control, the gearbox remains in **automatic mode**.

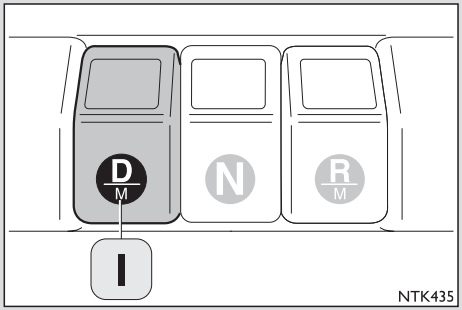
Mantaining a speed
To maintain the gear engaged during automatic operating mode, give a short press on the key **"D"** (1). The transmission switches to manual mode (SEMI). The other shift processes can be operated only using the steering wheel lever (4) (consult chapter 4 Driving in manual mode). To transfer to automatic mode again, press key "D" (1) again.

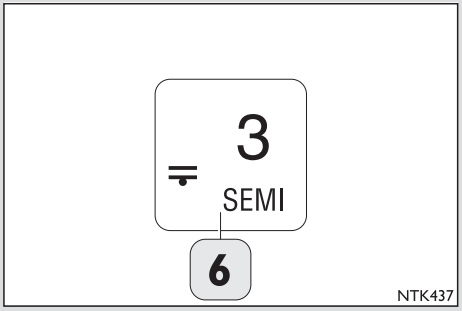
Shift dynamic
On uphill gradients, the shift dynamic function inside the system is activated.
The shifting process is speeded up to minimise the speed difference during the shift (slightly worse gearshift efficiency).

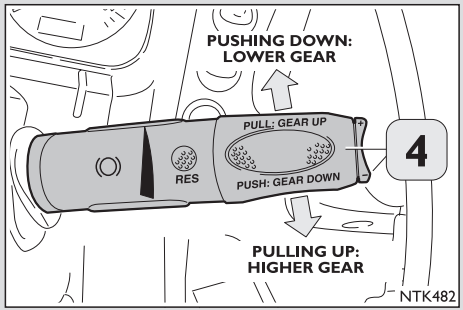
Eurotronic Automated

4. Driving in manual mode (SEMI)

- Handbrake engaged.
- Start the engine.
- Gearbox in neutral.
- Press the key briefly **"D"** (1).
  The automatic transmission will be activated and the set-off gear calculated will be engaged.
  The set-off gear and the message "AUTO" will be shown on the display.
- Press key **"D"** briefly to activate the automatic transmission.
  The message "AUTO" on the display will change to "SEMI" (6).







Attention!

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

Eurotronic Automated

The set-off gear may be corrected by the following actions on the steering wheel lever (4):

- Pulling the lever slightly up:
  the gearbox engages **a higher gear.**
- Pushing the lever slightly down:
  the gearbox engages **a lower gear.**
- If the lever is maintained in the required position:
  the gearbox engages **two gears higher** or **two gears lower**.

Note: the available set-off gears are 1st, 2nd, 3rd, 4th and 5th gear.

- Operate the accelerator pedal and then release the parking brake.
  The vehicle will set off (the clutch will engage automatically).

Shifting with vehicle in motion
Engaging a higher gear

- When lever (4) is moved slighly upward
  the gearbox engages **a higher gear**
- When lever (4) is held in this position
  the gearbox engages **two gears higher**.

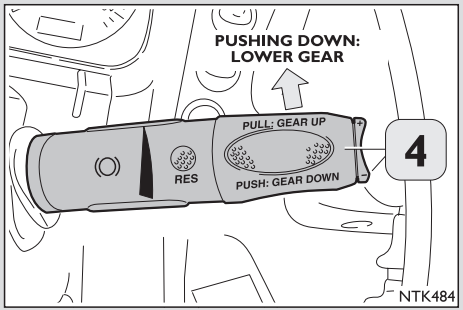
Eurotronic Automated

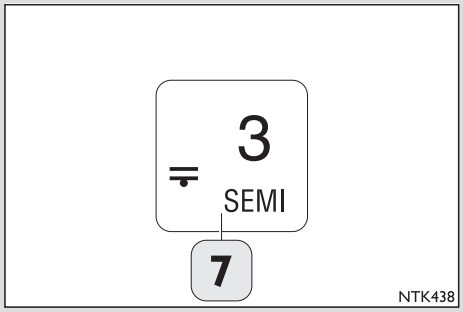
Engagement of a lower gear

- When lever (4) is moved slightly downward: the gearbox engages **a lower gear**.
- When lever (4) is maintained in this position: the gearbox engages **two lower gears**.

Note:

- The required gear is not engaged if this involves the engine over-revving (over-rev 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 changed down at the time of display. (7)
- Shift dynamic
  When driving uphill, the shift dynamic function in the system operates. Gear shifts are faster to minimise the speed difference during shifts (slightly worse shift efficiency).





Eurotronic Automated

- Throughout the shift process, any other gear selection is ignored i.e. the current gear shift must be completed before you can change gear again. Gearbox in neutral takes precedence over all other gearbox processes, i.e. it is possible to shift to neutral from any gear at any time (consult chapter 5 "Gearbox in neutral").
- The accelerator pedal position must not be altered during this process because the engine is modulated automatically.
- The function of the speed control system (cruise control) is not turned off when changing gear.
- When key **"D"** is pressed briefly with the vehicle at a standstill and a forward gear engaged or while driving, it is possible to switch from manual operation mode (SEMI) to automatic mode (AUTO).

Attention!

It is possible to shift to neutral even when driving. The force flow will be interrupted in this case. The engine brake effect will no longer act.

Eurotronic Automated

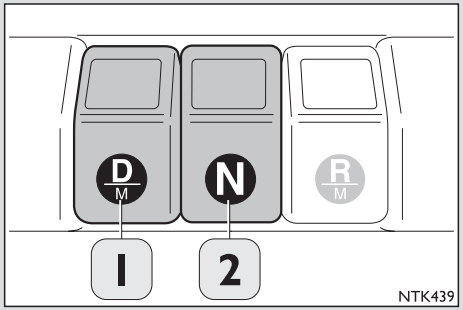
5. Gearbox in neutral

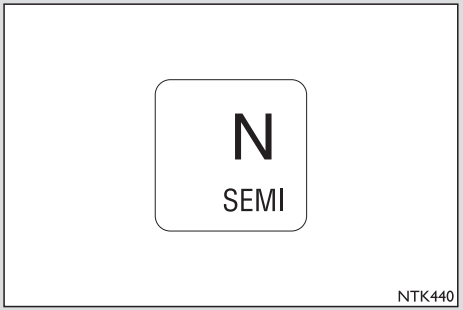
- Operate key **"N" (2)**.
  The display shows "N".

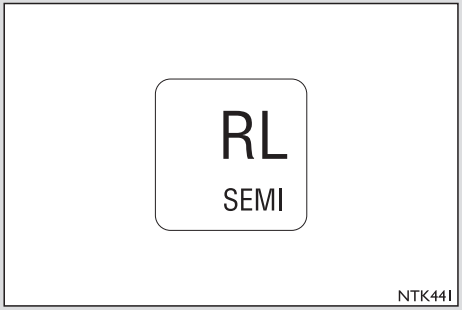
Gearbox in neutral "N" takes precedence over all other gearbox processes. It is possible to shift to neutral from any gear at any time. When driving forward, it is possible to engage a gear at any time from the neutral position. For this purpose, give key **"D"** (1) a light press.

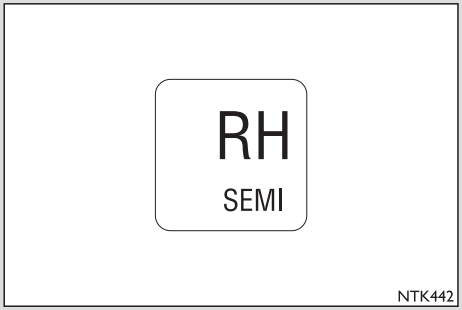
Note: To protect mechanical components of clutch control, when stop time exceeds 1-2 min. (e.g. when in a queue, at level crossing, etc...) shift to neutral "N". This disengages the clutch to reduce stress on the relevant control.

Note: with the engine off, no gear engagement is possible.









Eurotronic Automated

6. Reverse gear

Note:

Reverse gear can be engaged only in **manual mode**.

Reverse gear engagement

- RL - 1ª. reverse gear (low),
- RH - 2ª. reverse (fast).

Reverse gear can be engaged only **with vehicle at a standstill**.

Attention!

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

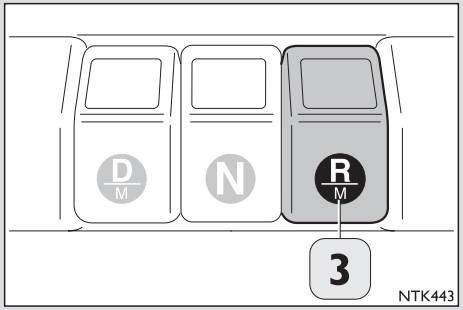
Eurotronic Automated

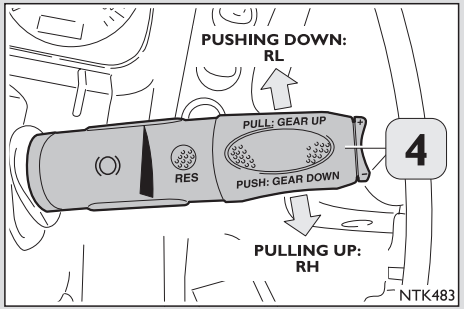
It is irrelevant whether the gearbox is in neutral or a forward gear is engaged.

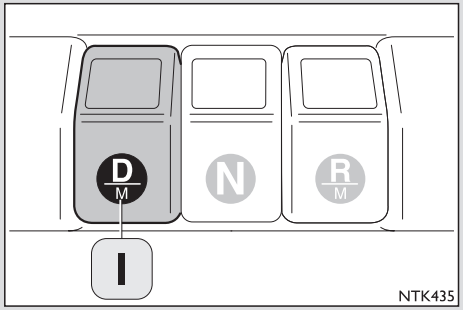
- When the vehicle is at a standstill, briefly press key **"R"** (3) to engage reverse slow (RL).

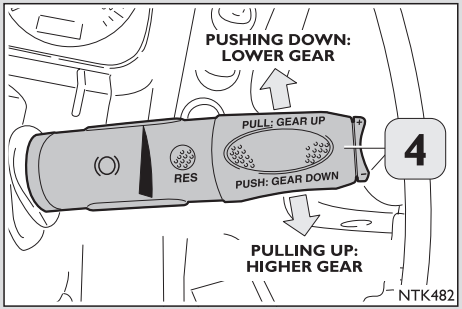
- Operating the accelerator
  The vehicle will set off (clutch will engage automatically)

Note:
When the vehicle is at a standstill or reversing, it is possible to change between two types of reverse RL (slow) and RH (fast) by operating the steering wheel lever (4).
Pull the lever slightly up ⟶ RH
Push the lever slightly down ⟶ RL









Attention!

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

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Shifting from reverse to forward gear (manual mode)

Engine start in 1st

- Reverse gear engaged.
- The vehicle must be at a standstill.
- Briefly press key **"D"** (1).
  The automatic gearbox will come on and the calculated set-off gear will be engaged.
  The set-off gear and the message "AUTO" will appear on the display (6).
- The set-off gear may be corrected by the following actions on the steering wheel lever (4):
  - Pull the lever slightly up:
  the gearbox engages **a higher gear.**
  - When the lever is moved slightly downward:
  the gearbox engages **a lower gear.**
  - When the lever is maintained in the required position:
  the gearbox will engage to **two gears higher or two gears lower.**

Note:

At set-off, the following gears are available: 1st, 2nd, 3rd, 4th and 5th gear.

- Operate the accelerator pedal
  The vehicle will set off (clutch will engage automatically).

Attention!

Over-weak action on accelerator pedal may result in vehicle moving backwards when parking brake is disengaged.
The drive-off gear must suit loading conditions of vehicle and slope inclination to prevent heavy clutch stress.

Under these conditions, if accelerator pedal is not depressed, the vehicle may move backwards. If this happens, the clutch engages and disengages at short intervals (jerking). This happens even for forward gears with reverse gear engaged and downhill.

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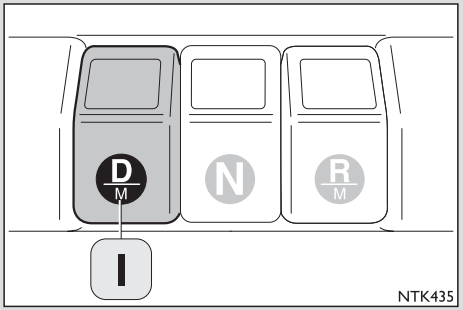
7. Uphill start

- Handbrake engaged.
- Select drive-off gear required.
- Depress accelerator pedal fully and release the parking brake.



Attention!

When vehicle moves without any gear engaged, engine brake is not operating. Do not leave the vehicle to move to opposite driving direction (e.g. forward with reverse gear engaged).

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8. Starting the vehicle downhill

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

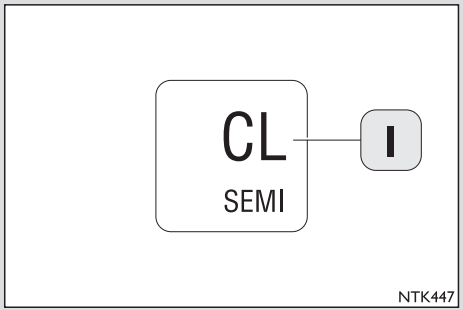
- Handbrake engaged.
- Select drive-off gear required.
- Release the parking brake.

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

Note! If the vehicle with neutral engaged starts moving on a slope after releasing the handbrake, press "D" (I) briefly to engage any gear suitable to the speed and to engage clutch.

Attention!

The vehicle can accelerate.
Risk of accident!



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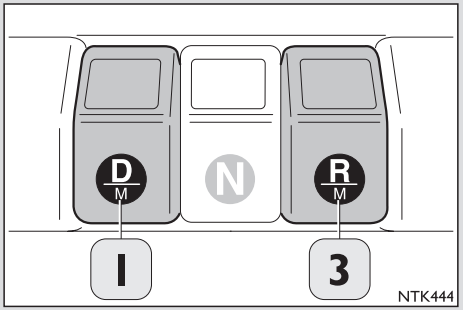
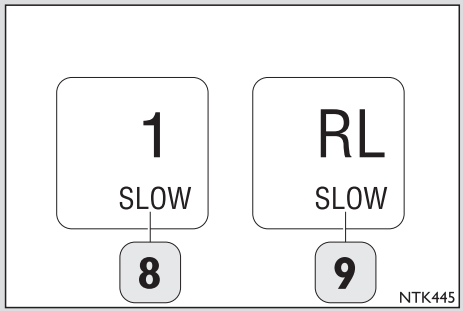
9. Driving in normal mode

To perform such operations as semitrailer or trailer attachment or detatchment a manoeuvre mode is provided. This mode is integral to the transmission system and must not be controlled by the driver.
To do this, the following gears are available:

- 1st gear and 2nd gear,
- both reverse gears.

The system detects this type of manoeuvre from the above gears, from the slow speed and from the accelerator pedal position (up to 70% of its travel).
In this operating mode, it is possible to control the clutch accurately according to the accelerator pedal position. When the accelerator is pressed down further (more than 70%), the system reacts as follows:
set off ⟶ engine rpm increases ⟶ the vehicle accelerates fast.
In general, a heavy stress is applied to clutch with this operation.
To keep load on clutch as low as possible, it is recommended to move vehicle using low gears (1st gear or 'RL').
Note: clutch overload is displayed on screen with the symbol 'CL' (1). If warning is ignored by the driver, the system automatically switches from manoeuvre to normal starting mode (the vehicle accelerates).





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10. Manoeuvre in manoevre mode (SLOW)

When manoeuvring under difficult driving conditions (e.g. gradients), the driver can call on another manoeuvre mode. The driver can use this mode to modulate the clutch accurately depending on the accelerator travel (up to 100%).
Under these circumstances, the engine speed will be limited and fast vehicle acceleration will be avoided (consult chapter 9 "Manoeuvring").
The switch positions are as follows:

Activation:

- The vehicle shall be at a standstill.

Forward manoeuvre

- Long press (>2 sec.) on key **"D"** (1)
  Forward manoevre mode will be activated.
  The display will show "1 SLOW" (8).

Reverse manoeuvre

- Long press (>2 sec.) on key **"R"** (3)
  Forward manoeuvre mode will be activated.
  The display will show "RL SLOW" (9).
- When the accelerator is operated, the clutch may be enaged to allow the vehicle to continue driving in this mode.

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Turning off

With vehicle at a standstill:

- Short press on key **"D"** (1).
  The calculated set-off gear will be engaged and the automatic gearbox will be activated.

or

- Short press on key **"R"** (3)
  Slow reverse will be engaged (RL).

During forward manoeuvres:

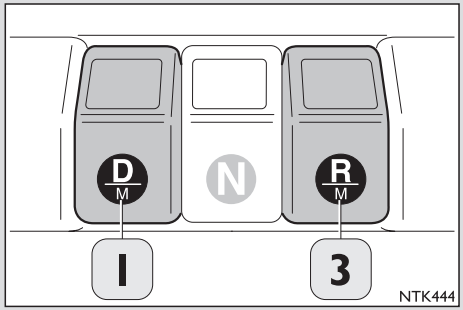
- short press on key **"D"** (1), the automatic gearbox will activate, or,
- operate kickdown.

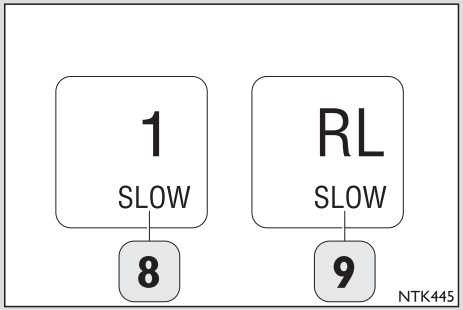
During reverse manoeuvres:

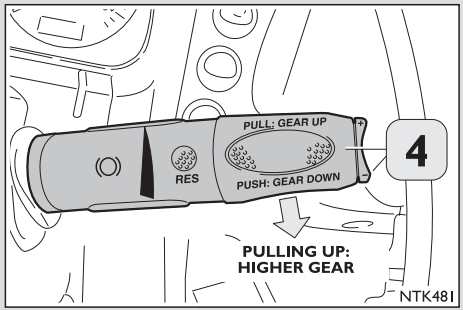
- Briefly press key **"R"** (3).

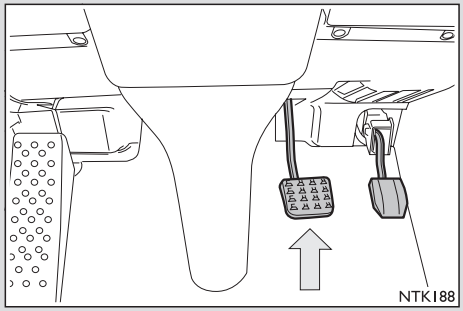
or

- operate kickdown.









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11. Braking

When in automatic mode the driver can shift down through the gears using the right steering level and by depressing brake pedal (service brake). By increasing engine rpm, engine braking force is increased too.
Three different rpm ranges can be obtained.

Without intarder

- Moving right steering lever to position 1 and operating brake pedal (service brake), the transmission shifts to a slightly higher rpm range (rpm range 1).
- When the steering wheel lever is moved to position 2, the gearbox shifts to a higher speed (speed range 2).
- Moving right steering lever to position 2 and operating pedal (service brake), the gearbox shifts to high rpm range (rpm range 3).

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With intarder

- By moving right steering lever to position 1... ...5, then depressing brake pedal (service brake), the gearbox shifts to a slightly higher range (rpm range 1).
- Moving right steering lever to 6, the gearbox shifts to a higher range (rpm range 2).
- Moving right steering lever to 6 and operating brake pedal (service brake), the transmission shifts to high rpm range (rpm range 3).

Note:

- If engine rpm decreases following a brake, speed is progressively decreased until achieving suitable rpm.
- In the event of braking with the intarder, and if required (cooling water flow increase - overheating/decreasing of braking effort), the gearbox shifts down automatically.
- Engine brake, if operating, must not be disengaged for gear shifting. Engine brake action is, however, interrupted during gear shifts to allow fast acceleration.

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12. Stopping

Slow down the vehicle to a stop using the brake.
Clutch is automatically disengaged before vehicle stop, to prevent engine stalling.

Attention!

If the vehicle is stopped with the engine running and a gear engaged, simply depress the accelerator pedal to start up again.

When leaving the vehicle unattended with engine on, it is mandatory to engage both neutral and parking brake.

Note: If the vehicle is left unattended (doors opening) with gear engaged, a buzzer is activated.

Engine brake operation during driving on slippery ground may result in the engine stalling. Under these circumstances power steering is not available.

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Note:

- If the gear engaged when stopping the vehicle is higher than drive-off gear selected, the system automatically shifts to the calculated starting gear.
- When stopping the vehicle with a lower gear engaged than the drive-off gear selected, the system keeps to the gear engaged.
- If the gear is not suitable for driving off, correct gear shall be engaged manually.
- For long stops of vehicle, it is recommended to shift into neutral.

Attention!

If the braking action is not sufficient on steep gradients, brake using the parking brake!

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13. Driving with cruise control

With ZF intarder

- To maintain the set speed (Vset) downhill, the engine control unit automatically cuts in the engine brake and intarder.
- If a speed change occurs in any event, the gearbox may engage a lower gear (only in automatic mode!).
- If necessary (increased coolant flow or in the event of overheating/feedback adjustment), the gearbox may engage a lower gear (only in automatic mode!).

Without ZF intarder

- To maintain the set speed (Vset) downhill, the engine control unit automatically engages the engine brake and intarder.
- If a speed change occurs in any event, the gearbox may engage a lower gear (only in automatic mode!).

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14. Driving with P.T.O. controlled by clutch

Note: The power take off is possible only in manual mode and can be activated only in neutral.

P.T.O. with vehicle moving

Only the following gears can be used with the P.T.O.:

1 - 3 - 5 and RL (in case of 12 gear transmission DD)

2 - 4 and RH (in case of 12 gear transmission OD)

Attention!

Gearshifts are made only with the vehicle stationary, only starting is possible.

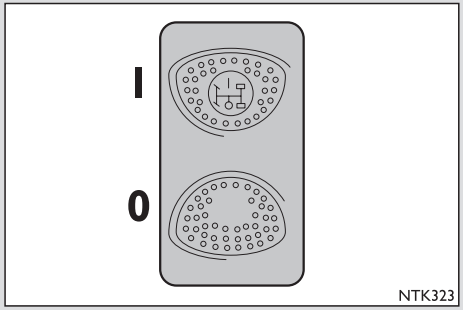
No gearshift is possible with vehicle in motion.

P.T.O. with vehicle at a standstill

When the P.T.O. is engaged with vehicle at a stop, no gear can be engaged. The gearbox remains in neutral.

Note:

- To prevent gears sticking with P.T.O. engaged, before shifting gear, release the power take-off. If not, the gearbox could inhibit shifting (error message!) and the problem could be solved only by restarting the system.



Attention!

The engine cannot be stopped with a gear engaged as the system automatically switches to neutral.
If parking brake is not engaged, the vehicle could move.

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15. Stopping the engine

- How to stop the vehicle.
- Apply the handbrake.
- Set gearbox to neutral (N).
- Stop the engine with the ignition key.

Note

If neutral is not engaged before stopping the engine, this is automatically carried out as soon as ignition key is turned off.

Attention!

If the message is ignored and clutch is depressed again, clutch is automatically engaged with accelerator pedal depressed (not in 1st or RL).
Under some circumstances this may involve engine stall, therefore if vehicle is uphill, it may slip backwards.

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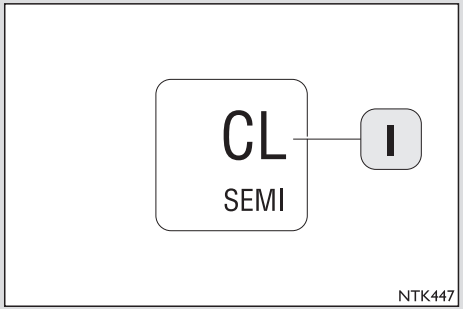
16. Protection functions

Clutch protection

If stress applied to clutch is excessive (frequent repeated start up in sequence or slow speed with a drive off gear too high), the display will show "CL" (1).



Note

In this case the driver must select service conditions where the clutch is not subjected to excessive stress (e.g. acceleration of the vehicle until full engagement of clutch; sudden stop or start with a lower gear).

Attention!

If vehicle keeps accelerating on a slope and engine rpm max speed is exceeded, the engine may be damaged. The driver must be careful never to exceed max. rated speed.

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Engine over-rev protection

For engine and transmission protection, shifting is allowed by electronic systems only within the ranges preset by the manufacturer.

In general, for towing purposes, the propeller shaft must be disconnected from rear axle.
Do not try to start the engine by towing the vehicle.

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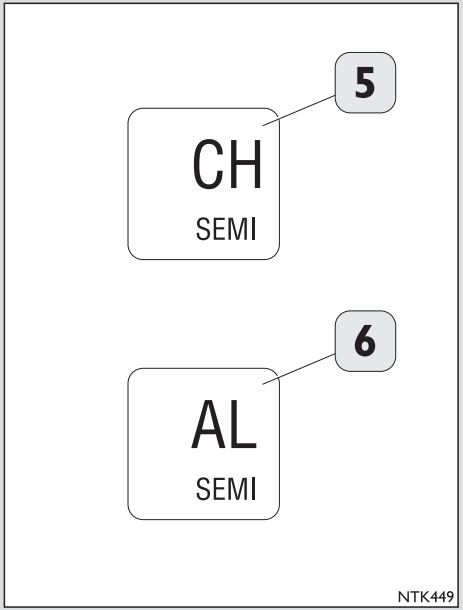
17. Signals on the display

The gear engaged is displayed on screen (1) ("1-12" or "N", "RL" and "RH"). The display also gives information on the mode selected.
- Manual "SEMI" (2).
- Automatic "AUTO" (3).
- Automatic mode preset but not triggered ("AUTO" reversed).

Bars (1 to 3 with arrow tip down (4)) refer to max number of gears which can be downshifted at time of display.
In emergency mode (see section "Emergency function") bars with arrow tip up and down refer to clutch status.



Attention!

While running, if fuel pressure is too low when engaging a gear, transmission can be in neutral to prevent force transmission thus inhibiting engine brake operation. Also, when vehicle stops, engine may stall. If the engine cannot be started up because a gear is engaged and it is not possible to shift to neutral because the supply pressure is not sufficient (display shows AL), the system must be supplied irrespective of other services (brake, auxiliary circuits, etc.).
The compressed air is supplied from the outside through the filling valve.

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Other indications:

- System troubleshooting (5)
  (displayed with key on).
- "**AL**" = Air leak (6). Low pressure in gearbox air system.
  Flashing signal.
  NOTE: if "**AL**" is displayed while driving, **stop vehicle immediately** and have the system checked.

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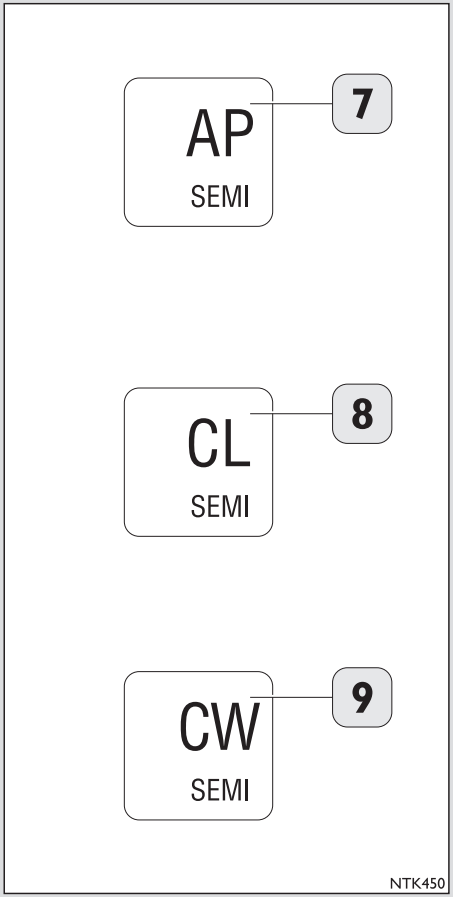
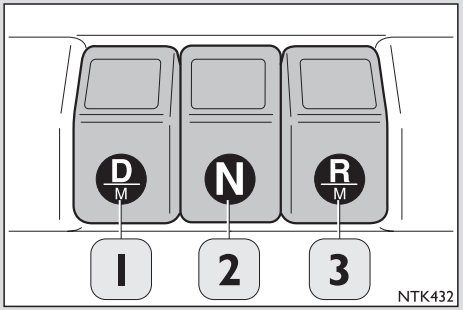
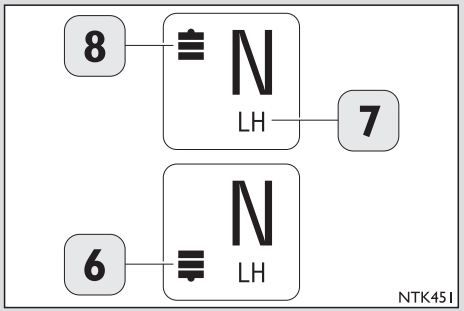
- "**AP**" = Accelerator pedal (7).
  If this signal is displayed, release the accelerator pedal. If the message does not disappear, the accelerator pedal switch is faulty.
  It is impossible to drive any further!
- "**CL**"= excessive stress on clutch (8).
  This is displayed alternately with the gear engaged.
  Select a lower gear.
- "**CW**" = Clutch wear message (9).
  If on at engine start, this means that clutch is worn out. Contact a Service Network workshop to replace the clutch.







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18. Emergency function (LIMP HOME)

1. Safety warning:

- This is an emergency function where the standard automatic check function is switched off. Exercise maximum care!
- Take the greatest care to ensure maximum air pressure.
- Attention: observe vehicle behaviour carefully; in critical conditions, the gear displayed does not match the gear engaged, i.e. a forward gear could be displayed while gearbox is stuck in reverse gear!

2. Use:

- Display: "**LH**" flashing = go to emergency mode!

3. Activation by the driver.

- Key off (until message displayed is cleared)
- Turn the ignition on:
- Within 5 seconds, press the neutral key (N) and hold down for at least 5 seconds.

4. "LH" warning light (7)

- Emergency mode on.
- Gearbox in neutral.
- Clutch engaged.

5. Clutch status warning light

- Bar with arrow tip up (8) = clutch disengaged
- Bar with arrow tip down (6) = the clutch is being engaged or is engaged

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6. Operation

- After activating emergency mode (see point 3), start up the engine.
- After starting the engine, operate the brake pedal and release again.
- Engage the required gear.
  Forward:
  - Pull lever (4) slightly up:
  the gearbox engages **a higher gear**
  - Push lever (4) slightly down:
  the gearbox engages **a lower gear**
  Back:
  - Short press on "**R**" (slow reverse "RL" is engaged)
  - When lever (4) is pulled slightly upward, the gearbox shifts to fast reverse "RH"
- Engage the clutch:
  Press key "**D**" until the bar is no longer displayed with the arrow down.

Attention: clutch engagement could occur late or suddenly

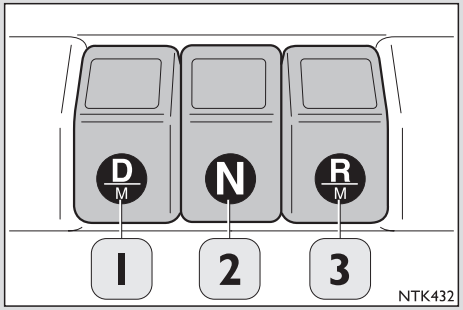
Note: while driving downhill with gear engaged, clutch is automatically engaged.

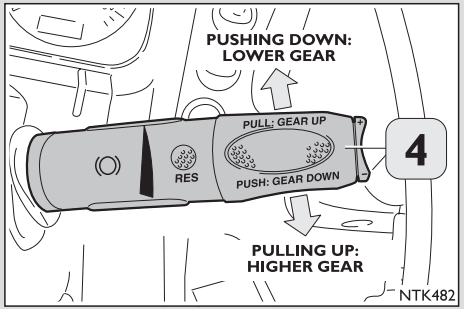
- Release the clutch:
  Short press on key "**D**" or alternatively operate the accelerator.

Attention: If the clutch is engaged during brake operation using key "D" (e.g. hill start), the brake pedal must be released briefly in order to release the clutch again with the accelerator!

Note:gears can be shifted only with the vehicle at a standstill.

- Exit emergency mode
  Turn off the ignition and wait for the warning light to go off. Once it comes back on, the system will be in normal operating mode.





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19. Fault codes

1. **Error codes for system faults for which it is advisable to stop the vehicle**
   (see par. TROUBLESHOOTING - hexadecimal digit column DTC)

Attention: it is not possible to carry on driving! Park the vehicle in a safe place.

Code	Result
6E	No connection between ECU and gear lever
BE, BF	Electronic control unit defective.
F1	No connection between the controller and keys "D"/"N"/"R"

2. **System fault codes that mean the vehicle must be parked** (in a safe place if possible)
   (see par. TROUBLESHOOTING - hexadecimal digit column DTC)

Attention: it is possible to carry on driving only in emergency mode (see "Emergency function")

- **With vehicle in motion**: no gear shift is possible.
- **With vehicle at a standstill** the vehicle does not start because the automatic gear does not disengage from neutral (N).

Fault codes are as follows:

02	03	04	05	06	07	08	09	0A	0D	0E	16	22	23	24	25	26	27	28
29	2A	36	3D	3E	42	43	44	45	46	47	48	49	52	53	54	55	5A	65
69	75	76	77	84	88	8C	90	96	99	9A	9B	9C	A9	AA	B1	B3	B4	B5
BC	BD	C1	E2	E3														

3. **Error codes resulting in vehicle stop: then, drive-off gears can be engaged**
   (see par. TROUBLESHOOTING - hexadecimal digit column DTC)

If two or three faults are displayed, as described in par. 3, the system behaviour is as described in par. 1.

Code	Result	Code	Result
51	**With vehicle in motion:** gears locked. **With vehicle at a stop:** drive-off gears can be engaged. It is possible to set off.	66, A3, 81, 82, 83, AF	**With vehicle in motion:** gears stuck, neutral included **With vehicle at a stop:** drive-off gears can be engaged.

4. **Codes referred to faults that permit carrying on driving with impaired operation**
   (see par. TROUBLESHOOTING - hexadecimal digit column DTC)

(*) With these faults the AUTOMATIC mode cannot be engaged

Code	Result	Code	Result
0B	Continuous audible alarm	0C, 2C	Reversing light (not operating)
0D, 0E, 2D, 2E, 3B, 3C, 3F, 40	Secondary transmission 1 or 2 not available. No other system limitation	(*)11, 31, 62	Increased shift times
(*)12, 13, 14, 15, 32, 33, 34, 35, 61, 6B	Clutch difficult to modulate	19, 59	Display warning light EE No system reaction

Code	Result	Code	Result
1A, 1B, 60,	There may be the following effects: **With vehicle in motion:** less comfort at start-up, operation and gear shifting when gear/P.T.O. engagement takes longer. **With vehicle at a standstill:** With intermediate start-up gear no manoeuvres can be performed.	2B, 4B	The audible warning does not work.
(*)1C, 1E, 1F, 20, 21, 5B, 5C, 5D, 5E, 71, AB, AD, B6, B7, B8, C0, C5, C7		(*)4A, 67	Driving possible in manual mode only. No other system limitation.
4C	The reversing light stays on.	(*)56	The display cannot be switched off. Gear selector does not disengage. No limitation in system functions.
(*)5F, 7D, 7F, A7, C6	No result as a fault in its own right. Some calculations cannot be performed (e.g. clutch wear cannot be calculated).	(*)63	Changing gear is less comfortable.
64, 68, 6F, 70, 80, AE			
6C	Single fault in gear selection lever. No function impaired.	(*)78, 79, 7A, 7B, 7C	Long time required for gear engagement, poor comfort at gear shifting, poor clutch control.

Code	Result	Code	Result
7E	The operation of the system is not impaired. Possible compressed air leak not indicated. Longer troubleshooting stage after starting up the engine.	85, 86, 87	**With vehicle in motion:** reduced gear selection. **With vehicle at a stop**: gears for driving off limited, no reverse gear.
89, 8A, 8B, 91, 92,	**With vehicle in motion:** GP control locked. It is possible to engage only gears in the GP range already engaged. Impaired comfort at engagement. Longer engagement time.	8D, 8E, 8F, 94, 95, 98	**With vehicle in motion:** automatic gear correction (last position GV) or neutral. **With vehicle at a standstill:** starting up the vehicle in the last GV position or with the selector.
97	**With vehicle in motion:** automatic gear correction or shifting to neutral. **With vehicle at a standstill:** drive-off gear to be selected only with gear selection lever	1D	System operation is not impaired. (Fault with Intarder; its operation may be limited).

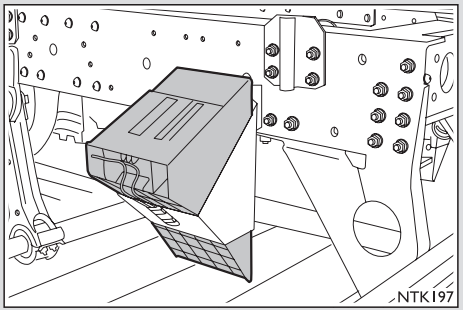
Code	Result	Code	Result
9E, 9F, A0	Automatic gear correction.	(*)A6	**With vehicle in motion:** shifting allowed. **Attention!** Once vehicle is stopped, it is not possible to continue driving.
(*)A4, A5	Vehicle operations impossible (e.g. trailer connection).	(*)A8	**With vehicle in motion:** no system limitations. **With vehicle at a standstill:** after reset, it is no longer possible to restart the vehicle if the error indication remains active.
(*)B2	CAN communication interference No further fault signal can be sent		

Attention!

Risk of accident: do not leave loose objects in the cabin which could interfere with the controls and injure passengers in the event of a collision.

Each vehicle is delivered with a set of spanners and tools to enable the customer to carry out normal operation and maintenance jobs.

Tool kit

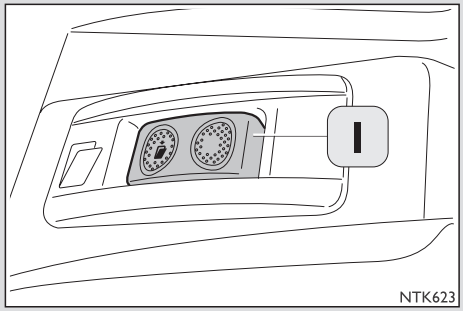


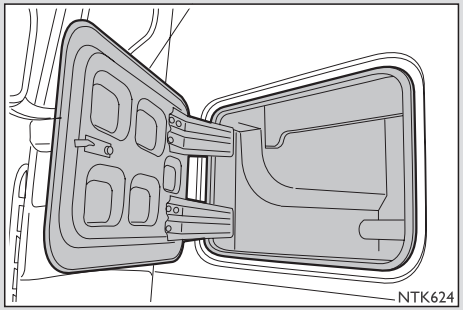
Tool kit

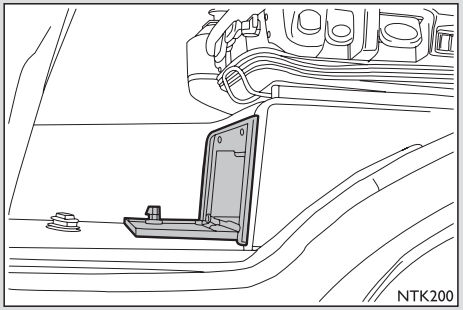
Chocks (if provided)

Tool kit

Jack (if provided) with control lever:
located in the compartment underneath the cot and accessible from the outside.
To open the flap, operate button 1.
Inside you will find the red warning triangle (if provided) and the screw-in handling hook.
For vehicles with Active Day cab, these accessories are located inside the cab.







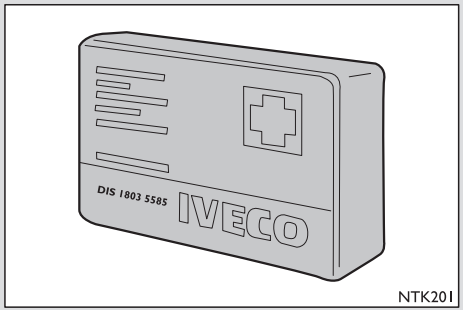
Tool kit

Tool kit bag contains:
Double head spanner 8 x 10 mm
Double head spanner 13 x 15 mm
Double head spanner 18 x 21 mm
Double head spanner 24 x 27 mm
Double head spanner 30 x 32 mm
Allen key 12 mm
Hexagonal head spanner for wheels 30 x 32 mm
Flat tip screwdriver
Philips screwdriver
Double tip screwdriver
Pliers
Hammer
Adjustable spanner (polygrip)

Outside the bag:
wheel block spanner (if equipped)
long lever for wheel mounting

Tool kit

First aid kit (if provided)



Quick repairs

This chapter provides some instructions for solving small problems that you may face while using your vehicle:

- ❑ Jack 216
- ❑ Changing wheels 217
- ❑ Engine start-up using an external power source (emergency) 220
- ❑ Fast coupling sockets 222
- ❑ Batteries 222
- ❑ Precautions to be taken with ECUs installed 226
- ❑ Mandatory operational precautions 227
- ❑ Changing lamps 228
- ❑ Towing the vehicle 236
- ❑ Emergency brake release device of spring accumulator cylinder 239
- ❑ Fan 241
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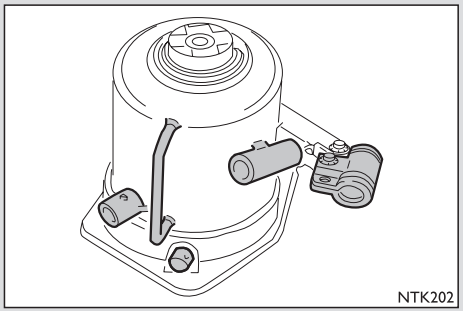


Jack (if provided)

For testing and maintenance standards, follow the instructions in the special documentation supplied by the jack manufacturer.
After using the jack, close it properly.

Attention!

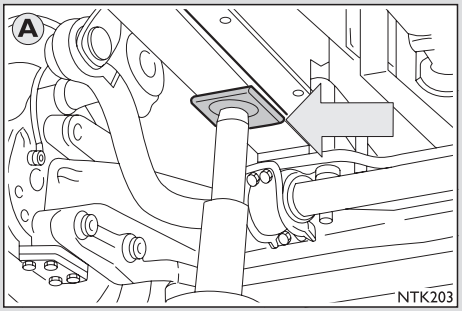
For correct use of the jack it is obligatory to scrupulously follow the instructions given on the placard attached to it.
Also: remember that before lifting the vehicle, the parking brake must be applied and the wheels on the ground should be blocked with wedges.
The jack should be used only for short-term lifting while changing the tyre.
Do not position yourself even partly under the vehicle when it is supported by the jack. If required, contact the *service network*, which is equipped for this purpose.

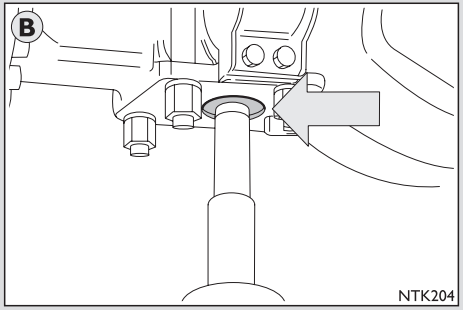
Changing wheels

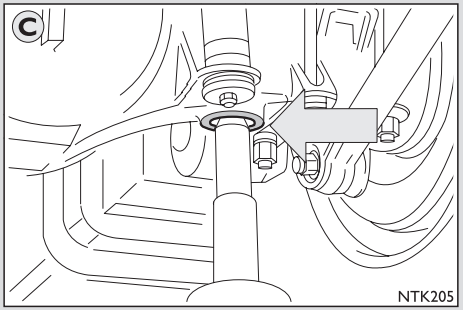
To replace a wheel, proceed as follows:

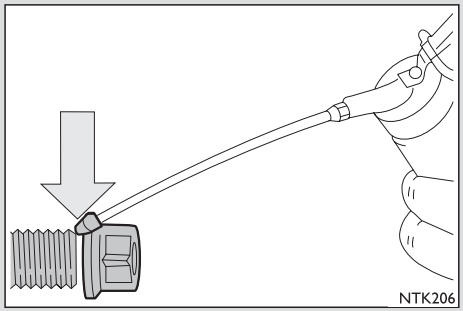
- Stop the vehicle on flat and solid ground.
- With the tyre to be replaced still resting on ground, partially loosen the wheel stud nuts.
- Lift the vehicle by means of the jack at the points indicated in the respective figures for

A. front axle (4 x 2, 6 x 4 and 8 x 4 x 4 vehicles);
B. front axle/s (4 x 4, 6 x 6 and 8 x 8 vehicles).









Changing wheels

C. rear axle/s

- Carefully clean wheel studs, nuts and supporting surfaces before assembly.
- To achieve full tightening, slightly lubricate contact surface between nut, integral washer and threads of stud.

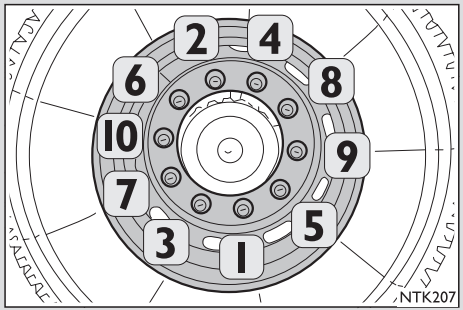
Note: following the above suggestion may also help when loosening the nuts in the future.

Attention!

Do not use tools other than those supplied with the vehicle since they are not suitable for correct tightening.

With a new vehicle and after every wheel change, the nuts must be retightened after the first 50 km and after every successive 1000 km as stated on the decal.

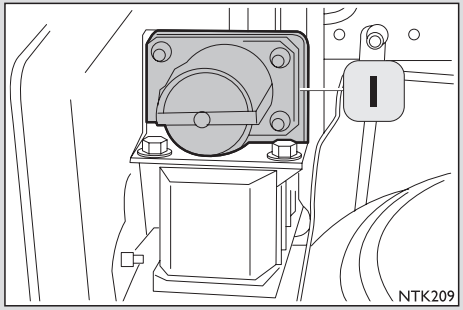
To prevent injuries to yourself and others, do not use fixing components other than the original ones.



Changing wheels

- Lock the fixing nuts according to the sequence specified in the figure as described in the steps below using the tools provided.
- Tighten nuts slightly until tyre is correctly fastened on its mount.
- Lock the nuts according to the sequence specified.
- Lower the vehicle to the ground and finish tightening the nuts by applying manual force to the top end of the lever (approx. 70 kg) (tightening torque applied manually is approximately the same as prescribed).
- Check the pressure in the tyre.

Tightening torque = 600 Nm (60 kgm)



Attention!

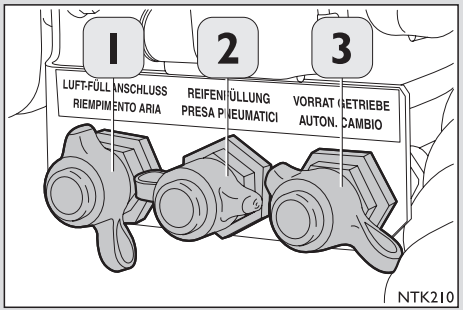
- Before connecting the starter cable, make sure that the operating tension is equal.
- Start engine using only cables provided; never use quick charge equipment. Observe the safety norms!
- Use only emergency start cables (cable section to be approx. 70 mm^2) with insulated terminals.
- When recharging with battery charger connected to mains, disconnect battery charger from mains before starting the vehicle.
- Overvoltage can damage the electronic components.
- A discharged battery can freeze at -10°C, therefore it must be thawed before starting.
- Do not lean on batteries at start-up: acid fumes may result in serious burnings.

Engine start-up using an external power source (emergency)

If the batteries are discharged the engine can be started in the following ways:
if the vehicle is equipped with bipolar power sockets (1) 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 vehicle is not equipped with socket (1), use emergency start cable and batteries of another vehicle for start-up.

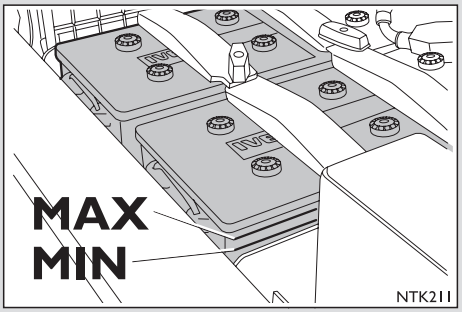
Engine start-up using an external power source (emergency)

- Use cable to connect 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 engine is started, remove cables by reversing the sequence described for connection.



Fast coupling sockets

1. Filling air into the pneumatic system.
2. Tyre inflation inlet.
3. Eurotronic transmission air circuit plug



Batteries

Batteries used are of the reduced maintenance type, therefore, under normal usage conditions, no electrolyte top-up is required. A routine inspection is however recommended to check if electrolyte level is still between MIN and MAX level on batteries.

Batteries

Warning for injury prevention while handling batteries

1. Smoking and handling of tools with unprotected flame 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 ECU. Disconnect ground first. Avoid short circuits caused by wrong connections or handling with fixed wrenches. Do not remove 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 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. During recharge, explosive gas is produced (mixture of hydrogen and oxygen). Ensure proper ventilation.

Warning:

- Batteries include heavy pollutants. To replace 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 acquiring the vehicle, accessories are to be installed, please contact the *IVECO service network*, which will recommend the most appropriate equipment and will be able to advise on the necessity of using a battery with a greater capacity.
- 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:
- If battery is left at 50% of total capacity, damage may result due to sulphating, impaired start performance and greater exposure to freezing (which may already occur at -10°C).
- Start procedure described above shall be performed by trained personnel, as any incorrect operation may generate considerable electrical discharge.
- 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 and adversely affect vehicle electronic systems and ECUs. These operations must be carried out by expert personnel.

Batteries

Batteries

Useful advice

In order to prevent rapid discharge of the battery and to conserve it during operating times, observe the following hints:

- 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 inside or outside lights are left on.
- Before any work is done on the electrical systems, disconnect the negative pole of the battery.

Precautions to be taken with ECUs installed

To prevent wrong operations, which may permanently impair or decrease ECU operations, follow precautions described below:

- If arc welding is required, disconnect connectors from ECUs; for welding close to ECU location, remove ECU from chassis.
- Do not disconnect and/or connect connectors from/to ECUs with engine running or ECU live.
- After any maintenance operation requiring battery disconnection, make sure that terminals are properly connected to the poles when connecting battery again.
- 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 ECUs whenever special operations are to be performed at temperatures exceeding 80°C.

It is strictly prohibited to apply paint on engine or engine/chassis with ECUs/electronic components installed. Should this be required, use special compatible paints (to be checked each time) and protect some parts of engine as specified by the manufacturer of the components involved. Contact the *service network* for more information.

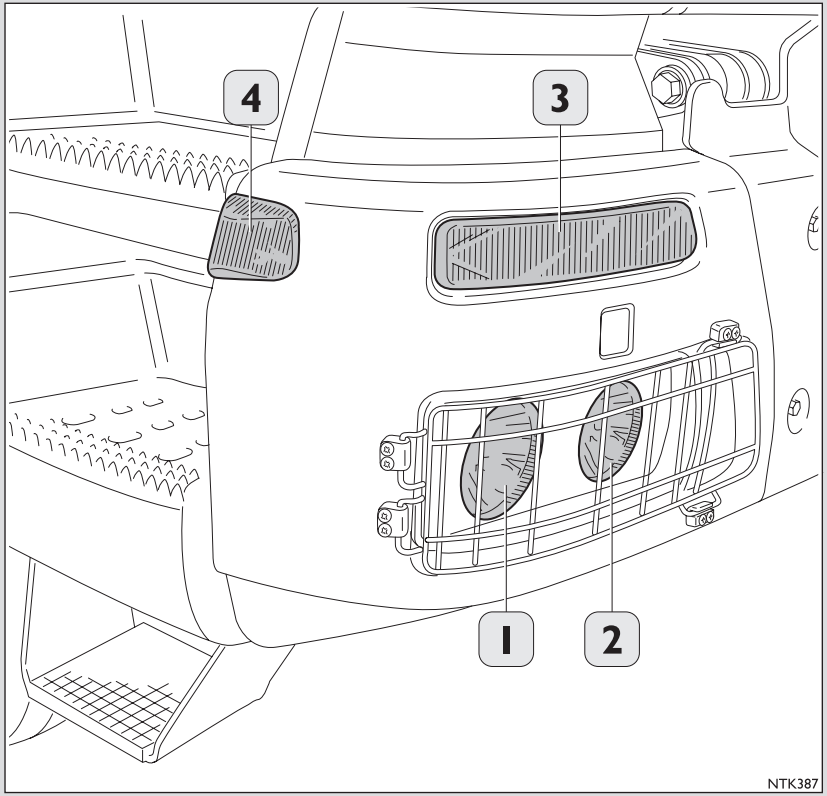
Mandatory operational precautions

Before performing any repair operation on electrical terminal boxes, and specifically before replacing engine start-up contactor if required, strictly comply with the following prescriptions to prevent short circuit:

- Before taking off contactor from ECU, main breaker must be switched off or battery terminals must be disconnected from batteries.
- Fit a new contactor if the plastic protection came off or the contactor was opened accidentally at removal from ECU.

VDI (Vehicle Data Interface)

The vehicle can be equipped with an electronic component for reading the collected data called VDI (vehicle data interface).
Data obtained from VDI are subjected to tolerances. To get this data, a computer running the necessary software is necessary.



Changing lamps

Front headlamp set

The headlamp set has the following composition:

1. Parking lights and low-beam headlights.
2. Low beam lights.
3. Front direction indicators.
4. Side direction indicators.

Changing lamps

Headlamps

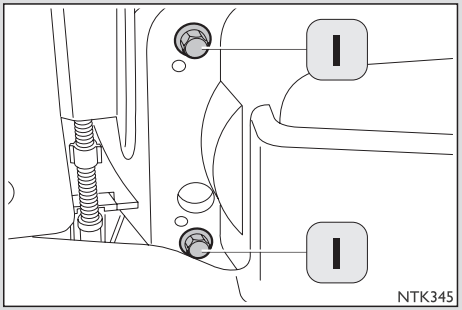
To change a lamp in the front lights, proceed as follows:

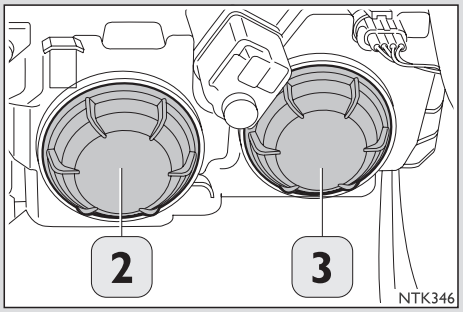
- Working from the front of the vehicle: Remove the protective grill of the headlights.

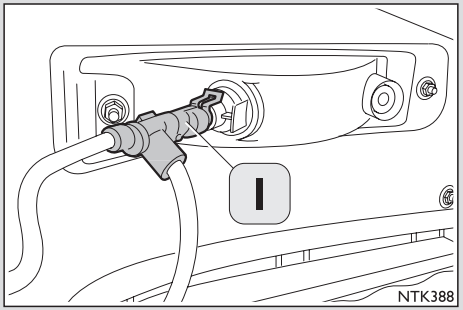
Working from the side of the vehicle:

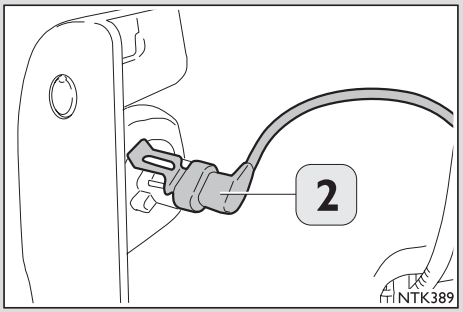
- Loosen the screws (1) locking the light assembly (the group opens out).
- Unscrew the cover (2) or (3).
- Remove the clips retaining the lamp holder.
- Remove the connection wrist pin.
- Replace the halogen lamp (or the lamp of the parking lights).
- When fitting the new lamp, do not touch lamp directly with fingers, as this may adversely affect operation.
- Fit the connection wrist pin back.
- Fit the clips retaining the lamp holder back.
- Refit the cover with the screws.
- Working from the front of the vehicle: Remount the protective grill of the headlights.

Note: If it is difficult to access the headlights, the cab can be tilted to facilitate the replacement of the light bulbs.









Changing lamps

Front indicators

To change the light bulbs of the front indicators, proceed as follows:

- Remove the connection roll pin (1).
- Remove the light bulb to be replaced.
- Replace the defective lamp.
- Fit the connection wrist pin back(1).

Side direction lights

To change the light bulbs of the front indicators, proceed as follows:

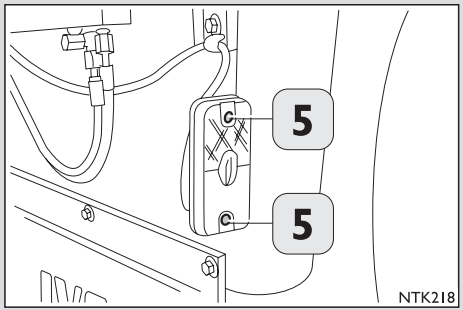
- Remove the connection roll pin (2).
- Remove the light bulb to be replaced.
- Replace the defective lamp.
- Fit the connection wrist pin back (2).

Changing lamps

Side markers

To replace a light bulb, proceed as follows:

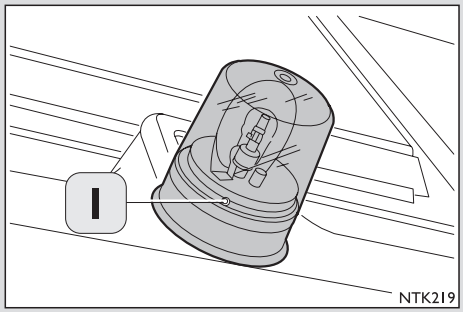
- Loosen the fixing screws (5).
- Replace the defective light bulb.
- Fit the screws (5) back.

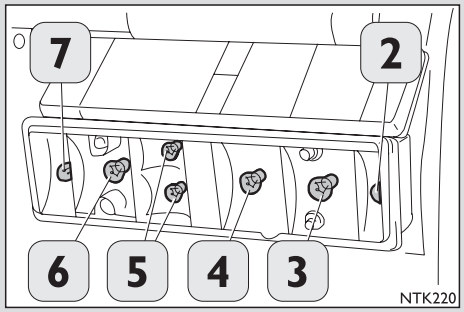


Rotary lamp (if provided)

To replace a light bulb, proceed as follows:

- Dismantle the transparent cover by removing the screws (1).
- Replace the defective light bulb.
- Fit the transparent cover back with the screws (1).





Changing lamps

Rear lights

To change a lamp in the rear lights, proceed as follows:

- Loosen fixing screws of transparent cover.
- Remove the transparent cover.

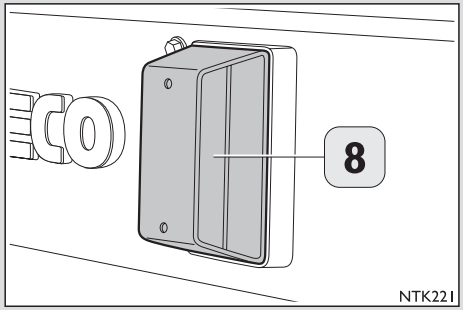
The bulbs are arranged as specified:

2. Spherical bulb for marker.
3. Spherical bulb for indicator.
4. Spherical bulb for brake light.
5. Spherical bulb for parking lights.
6. Spherical bulb for rear fog light.
7. Round bulb for reversing light.

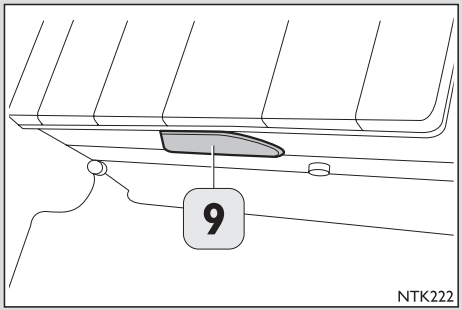
- Replace the transparent cover.
- Tighten fixing screws of transparent cover.

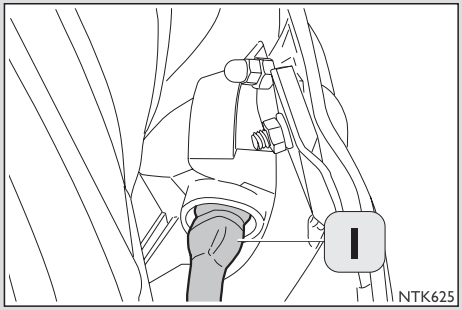
Changing lamps

8. Spherical bulb for license plate light (trailer).



9. Spherical bulb for license plate light (tractor).





Changing lamps

Front markers

To replace a light bulb, proceed as follows:

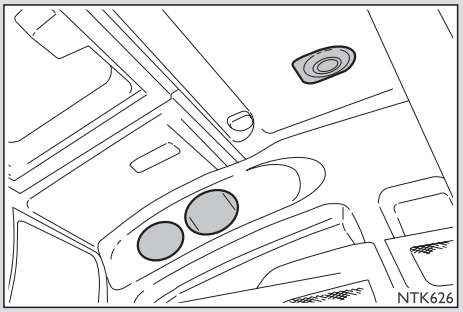
- Remove the connection wrist pin back (1).
- Replace the defective light bulb.
- Fit the connection wrist pin back (1).

Changing lamps

Inner lights

To replace a light bulb, proceed as follows:

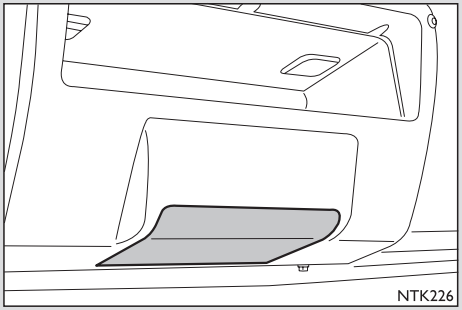
- Take off the side covers (where fitted) and unscrew the screws beneath.
- Adjust press-fitted spotlights.
- Replace the defective light bulb.
- Reposition courtesy light and/or spotlight.



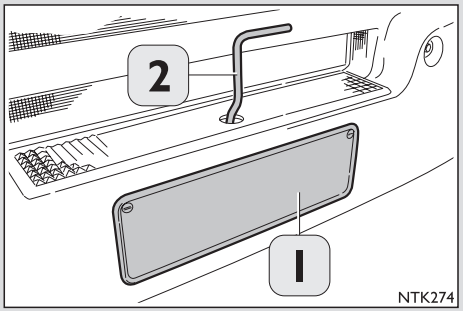
Inner lights (Active Day)

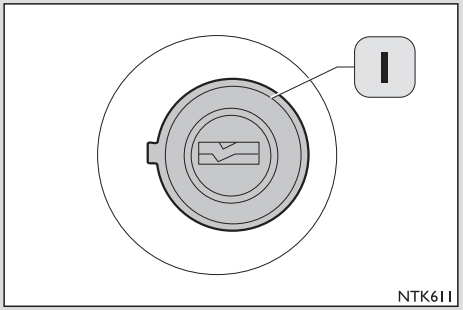
To change the light bulbs, proceed as follows:

- Operate on the press-on roof light.
- Fit back roof ceiling cover.



All bulbs can be removed by means of a standard bayonet fitting.





Attention!

If towing is required, proceed as follows:
- Turn the ignition key to position (1), to release steering lock.
- Loosen fixing screws (1) of license plate holder.
- Turn knob (2) clockwise.
- Lift lever (2).
- Insert towing hook.
- Lower lever (2) and check it is locked.
- If use of the engine is not required, just remove drive shaft from axle flange and support it.
- If the engine is to be used to provide air pressure and operate power steering, remove drive shaft completely.

Towing the vehicle

(only by means of an approved towing bar: strictly comply with towing standards in force - vehicles equipped with Eurotronic transmissions are subject to special specifications).

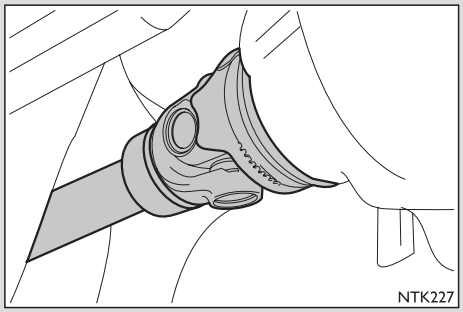
Attention!

Do not dismantle axle shafts from rear axle to prevent major lubricant leaks.

- When towing a loaded vehicle, always use a rigid towing bar and do not lift the vehicle.
- Should the type of breakdown require the rear axle to be lifted while towing, unload vehicle or install a lifting carriage below axle.

Towing the vehicle

To tow vehicle with front axle lifted, make sure that starting system of vehicle is off or ABS fuses were removed.



Attention!

Should towing be required with the vehicle lifted, it is recommended to drive carefully on even road surfaces at max speed of 30 km/h and not to exceed 30 km/h. Carry out lifting and towing in a manner that complies with the legal provisions. Note: Do not tow the vehicle with reverse gear engaged: this may damage the gearbox.

Towing the vehicle

If you need to tow vehicles with damaged mechanical components, proceed as follows: up to a max. towing distance of 100 km:

- Move the gear shift lever from neutral position to high gear position. (With clutch locked or if high gear cannot be engaged, detach the propeller shaft from the rear axle).
- Max towing speed permitted 40 km/h.

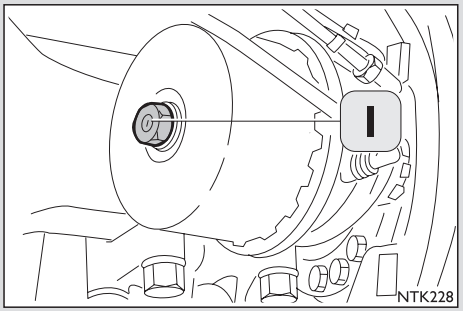
Warning!

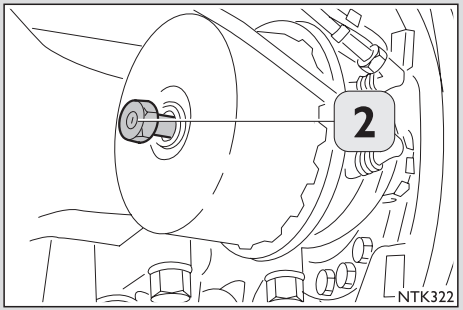
After operating on emergency disengagement device, vehicle must be towed and shall under no circumstance be driven autonomously.
To restore both functions and efficiency of braking system, ask any workshop of the *service network*.

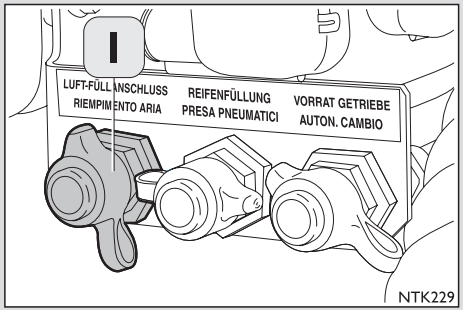
Emergency brake release device of spring accumulator cylinder

Should compressed air not be sent to parking brake circuit, brakes are automatically applied through the spring accumulator cylinder. For towing purposes, release brake through brake release device. To get this, put chocks under drive wheels and apply hand brake. Then proceed as follows:

- Turn centre screw on cylinder rear anticlockwise (from position 1 to position 2) do full stroke; do not exceed 35 Nm.
- Carry out the same operation on the cylinder of the opposite wheel.







Emergency brake release device of spring accumulator cylinder

Attention! Under special circumstances, should 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.

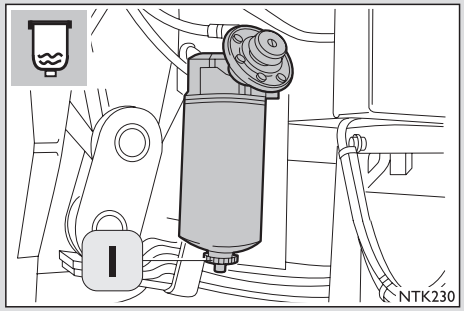
An optional integral release mechanism can be fitted on request, where screw does not protrude if turned counter clockwise and a red pin protrudes instead to signal releasing. Moreover it is advisable to fill up the tanks of the pneumatic system through the towing vehicle, using the fast coupling sockets (1) for assistance.

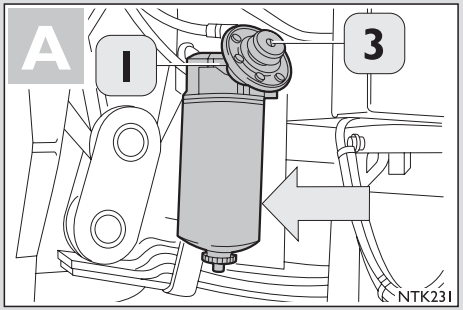
Electric fan

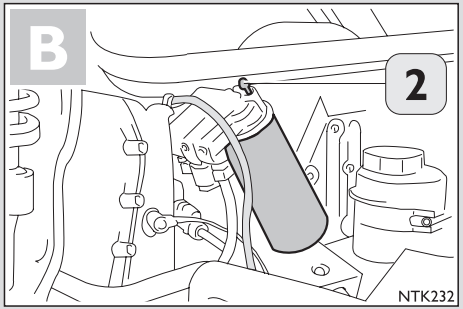
In case the indicator for excessive coolant temperature lights up, stop the engine immediately and contact a workshop of the *service network* at once.

Prefilter

Water inside prefilter
If the relevant warning light comes on, drain water by opening cock (1).







Bleeding air from the fuel circuit

- Loosen bleed screws and connect them to suitable lines to collect residue from bleeding into suitable containers to prevent fouling:
  1 = located on prefilter support (on frame);
  2 = located on filter support (on engine);
  5 = located on front portion of cylinder head (page 253).

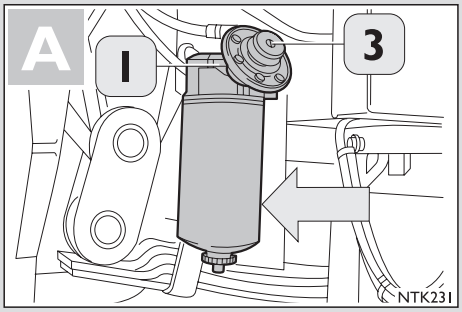
A = CURSOR 8-CURSOR 13.
B = CURSOR 8.

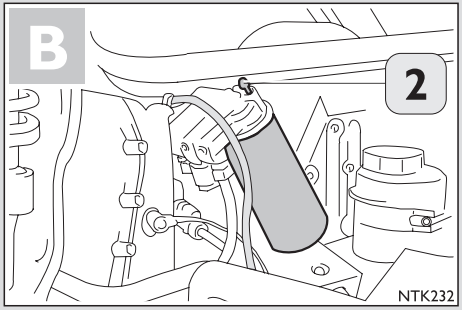
Attention!

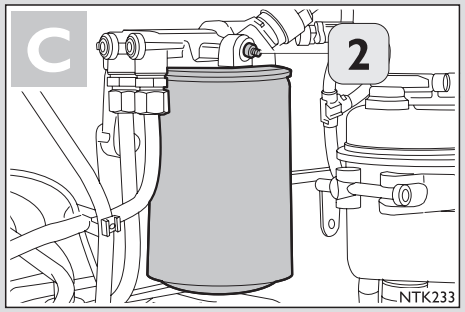
Fire hazard: Take care in tightening discharge plug to prevent dangerous fuel leaks.

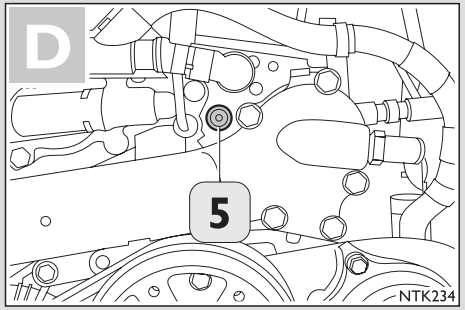
Bleeding air from the fuel circuit

- Manually pump the pump (3) located on the prefilter until no more fuel containing air exits from the discharge plug (1), close the plug again when the operation is over.
- Keep on operating pump until fuel free of air emerges from bleed screw (2) on the filter (than retighten the screw) and from screw (5) (overleaf) on the front side of the cylinder head (retighten screw when the operation is complete).









Bleeding air from the fuel circuit

Circuit bleeding is now complete. Start engine and let it run idle for a few minutes to remove any residual air.

C = CURSOR 13
D = CURSOR 8-CURSOR 13

Technical specifications

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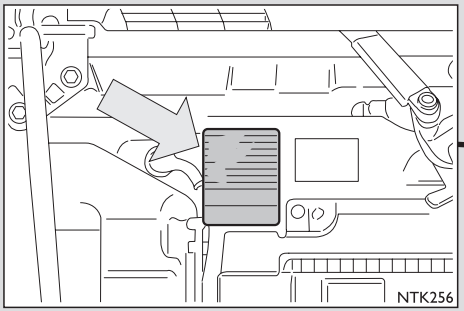
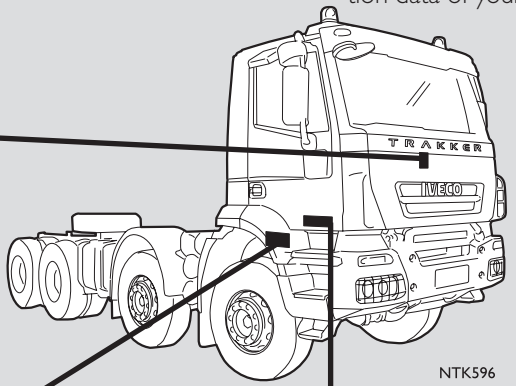
Vehicle identification data

Type and number of the engine, type and number of the vehicle chassis and manufacturer's plate are the identification data of your vehicle.

Manufacturer's plate

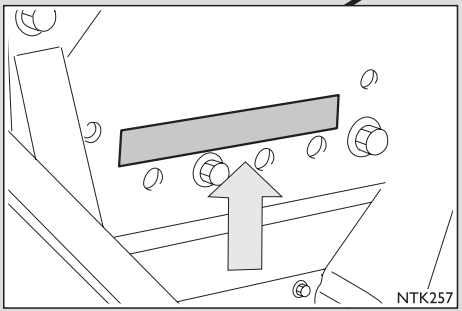
Allows identification of the vehicle as per EC Directive. (below the front radiator grille).

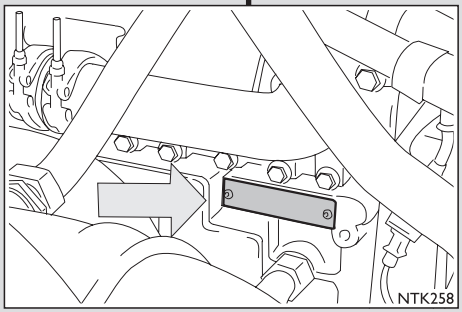




Frame

Stamp (front of right frame rail).





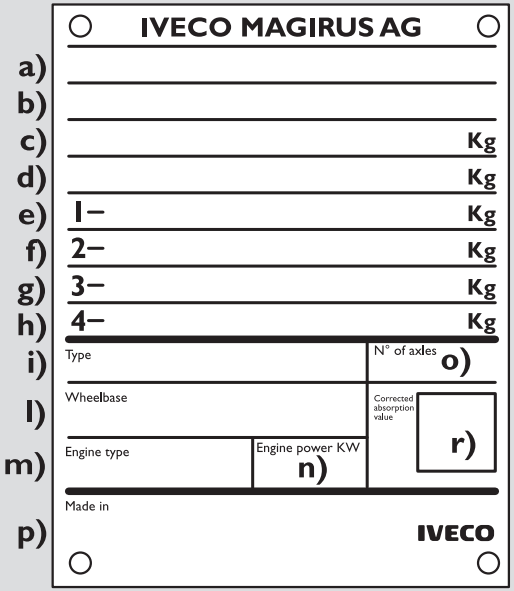
Engine

Plate on left rear side of engine block.

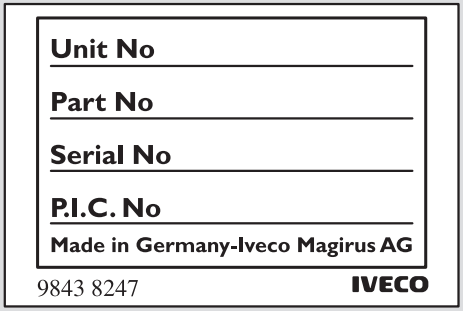
Vehicle identification plate

Plate key

a) Type approval number mark.
b) Vehicle identification number (V.I.N.).
c) Tractor overall weight.
d) Tractor + trailer overall weight
e) Max. weight permitted on 1st axle.
f) Max. weight permitted on 2nd axle.
g) Max. weight permitted on 3rd axle.
h) Max. weight permitted on 4th axle.
i) Vehicle type special identification.
l) Wheel base in mm.
m) Engine type.
n) Engine power.
o) Number of axles.
p) Production plant.
r) Smoke emission value permitted



NTK326



NTK348

Product identification label

This nameplate gives the P.I.C. (product identification number), indispensable data for refering to the **spare-parts catalog** (electronic catalog and/or microfiche).
The P.I.C is given also on the guarantee card of the vehicle.
Note: For referring to the catalogues use only the first 8 characters of the produced identification code.

MODEL	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 190 T 31	310 BHP	9S 1310 TO	5886/D	451391/2D	Chassis cab
AT/AD 190 T 33	330 BHP	9S 1310 TO 16S1620 TD	5886/D	451391/2D	Chassis cab
AT/AD 190 T 36	360 BHP	16S 1620 TD	5886/D	451391/2D	Chassis cab
AT/AD 190 T 41	410 BHP	16S 2220 TO	5886/D	451391/2D	Chassis cab
AT/AD 190 T 45	450 BHP	16S 2220 TO	5886/D	451391/2D	Chassis cab
AT/AD 400 T 36 T	360 BHP	16S 1620 TD 12AS 1930 TD	5886/D	451391/2D	Tractor
AT/AD 400 T 41 T	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	451391/2D	Tractor
AT/AD 400 T 41 T/P	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	451391/2D	Tractor
AT/AD 400 T 45 T	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	451391/2D	Tractor
AT/AD 400 T 45 T/P	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	451391/2D	Tractor
AT/AD 400 T 52 T	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	451391/2D	Tractor
AT/AD 400 T 50 T/P	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	451391/2D	Tractor

MODEL	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 190T 31W*	310 BHP	9S 1310TO	5985/2D	451391/2D	Chassis cab
AT/AD 190T 31W/P*	310 BHP	9S 1310TO	5985/2D	451391/2D	Chassis cab
AT/AD 190T 33W*	330 BHP	9S 1310TO 16 S1620TD	5985/2D	451391/2D	Chassis cab
AT/AD 190T 33W/P*	330 BHP	9S 1310TO 16 S1620TD	5985/2D	451391/2D	Chassis cab
AT/AD 190T 36W*	360 BHP	16S 1620TD 12 AS1930TD	5985/2D	451391/2D	Chassis cab
AT/AD 190T 36W/P*	360 BHP	16S 1620TD 12 AS1930TD	5985/2D	451391/2D	Chassis cab
AT/AD 190T 41W	410 BHP	16S 2220TO 12 AS2330TO	5985/2D	451391/2D	Chassis cab
AT/AD 190T 45W	450 BHP	16S 2220TO 12 AS2330TO	5985/2D	451391/2D	Chassis cab
AT/AD 190T 41WT	410 BHP	16S 2220TO 12 AS2330TO	5985/2D	451391/2D	Tractor
AT/AD 190T 45WT	450 BHP	16S 2220TO 12AS2330TO	5985/2D	451391/2D	Tractor

*Vehicles also with right-hand drive

MODEL	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 260 T 33*	330 BHP	9S 1310 TO 16S 1620 TD 12AS 1420 TD	5886/D	452146/2D**	Chassis cab
AD 260 T 33 B*	330 BHP	9S 1310 TO 12 AS 1420 TD	5886/D	452146/2D MT23-155/2D	Cement mixer
AT/AD 260 T 33 B/P*	330 BHP	9S 1310 TO 12 AS 1420 TD	5886/D	MT23-155/D	Cement mixer
AT/AD 260 T 36*	360 BHP	16S 1620 TD 12 AS 1930 TD	5886/D	452146/2D*	Chassis cab
AD 260 T 36 B*	360 BHP	16S 1620 TD 12 AS 1930 TD	5886/D	452146/2D MT23-155/D	Cement mixer
AD 260 T 36 B/P*	360 BHP	16S 1620 TD 12 AS 1930 TD	5886/D	MT23-155/D	Cement mixer
AT/AD 260 T 41*	410 BHP	16S 1620 TO 12 AS 2330 TO	5886/D	452191/2D	Chassis cab
AT/AD 260 T 41/P	410 BHP	16S 1620 TO 12 AS 2330 TO	5886/D	453291/2D	Chassis cab
AT/AD 260 T 45*	450 BHP	16S 2220 TO 12 AS 2330 TO	5886/D	452191/2D	Chassis cab
AT/AD 260 T 45/P	450 BHP	16S 2220 TO 12 AS 2330 TO	5886/D	453291/2D	Chassis cab

* Vehicles also with right-hand drive
** Right hand drive vehicles are fitted qith tandem rear axle MT23-155/D

MODEL 6x4	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 260 T 50*	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	452191/2D	Chassis cab
AT/AD 260 T 50/P	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	453291/2D	Chassis cab
AT/AD 380 T 36	360 BHP	16S 1620 TO 12AS 1930 TO	5886/D	453291/2D	Chassis cab
AD 380 T 36 B	360 BHP	16S 1620 TO 12AS 1930 TO	5886/D	453291/2D	Cement mixer
AT/AD 380 T 41	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D	Chassis cab
AD 380 T 41 B	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D	Cement mixer
AT/AD 380 T 41/P	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D	Chassis cab
AT/AD 380 T 45	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D	Chassis cab
AT/AD 380 T 45 B	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D	Cement mixer
AT/AD 380 T 45/P	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D	Chassis cab

* Vehicles also with right-hand drive

MODEL 6x4	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 380 T 50	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	45329 1/2D	Chassis cab
AT/AD 380 T 50/P	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	45329 1/2D	Chassis cab
AT/AD 440 T 41 T*	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45219 1/2D	Tractor
AT/AD 440 T 41 T/P	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 440 T 45 T*	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45219 1/2D	Tractor
AT/AD 440 T 45 T/P	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 440 T 50 T	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	45219 1/2D	Tractor
AT/AD 440 T 50 T/P	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 720 T 41 T	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 720 T 41 T/P	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor

* Vehicles also with right-hand drive

MODEL 6x4	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 720 T 45 T*	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 720 T 45 T/P	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 720 T 50 T	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor
AT/AD 720 T 50 T/P	500 BHP	16S 2520 TO 12AS 2330 TO	5886/D	45329 1/2D	Tractor

* Vehicles also with right-hand drive

MODEL 6x6	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 260T 36W	360 BHP	16S 1620TO 12AS 1930TO	5985/2D	452191/2D	Chassis cab
AT/AD 260T 41W	410 BHP	16S 2220TO 12AS 2330TO	5985/2D	452191/2D	Chassis cab
AT/AD 260T 45W	450 BHP	16S 2220TO 12AS 2330TO	5985/2D	452191/2D	Chassis cab
AT/AD 380T 36W	360 BHP	16S 1620TO 12AS 1930TO	5985/2D	453291/2D	Chassis cab
AT/AD 380T 41W*	410 BHP	16S 2220TO 12AS 2330TO	5985/2D	453291/2D	Chassis cab
AT/AD 380T 45W*	450 BHP	16S 2220TO 12AS 2330TO	5985/2D	453291/2D	Chassis cab
AT/AD 720T 41WT	410 BHP	16S 2220TO 12AS 2330TO	5985/2D	453291/2D	Tractor
AT/AD 720T 45WT	450 BHP	16S 2220TO 12AS 2330TO	5985/2D	453291/2D	Tractor

*Vehicles also with right-hand drive

MODEL 8x4	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 340 T 36*	360 BHP	16S 1620 TO 12AS 1930 TO	5886/D	452146/2D**	Chassis cab
AT/AD 340 T 36/P	360 BHP	16S 1620 TO 12AS 1930 TO	5886/D	MT 23-155/D	Chassis cab
AT 340 T 36 B	360 BHP	16S 1620 TO 12AS 1930 TO	5886/D	452146/2D	Cement mixer
AT 340 T 36 B/P	360 BHP	16S 1620 TO 12AS 1930 TO	5886/D	MT 23-155/D	Cement mixer
AT/AD 340 T 41*	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	452191/2D**	Chassis cab
AT/AD 340 T 41/P*	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	453291/2D**	Chassis cab
AD 340 T 41 B	410 BHP	16S 2220 TO 12AS 2330 TO	5886/2D	452191/2D	Cement mixer
AD 340 T 41 B/P	410 BHP	16S 2220 TO 12AS 2330 TO	5886/D	MT 23-155/D	Cement mixer
AT/AD 340 T 45*	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	452191/2D**	Chassis cab
AD 340 T 45 B	450 BHP	16S 2220 TO 12AS 2330 TO	5886/D	452191/2D	Cement mixer

* Vehicles also with right-hand drive
** Right hand drive vehicles are fitted qith tandem rear axle MT23-155/D

MODEL 8x4	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AT/AD 340T 45/P*	450 BHP	16S 2220TO 12AS 2330TO	5886/D	45329 1/2D	Chassis cab
AT/AD 410T 36*	360 BHP	16S 1620TO 12AS 1930TO	5886/D	45329 1/2D	Chassis cab
AD/AT 410T 41*	410 BHP	16S 2220TO 12AS 2330TO	5886/D	45329 1/2D	Chassis cab
AD 410T 41 B	410 BHP	16S 2220TO 12AS 2330TO	5886/D	45329 1/2D	Cement mixer
AT/AD 410T 41/P	410 BHP	16S 2220TO 12AS 2330TO	5886/D	45329 1/2D	Chassis cab
AT/AD 410T 45*	450 BHP	16S 2220TO 12AS 2330TO	5886/D	45329 1/2D	Chassis cab
AD 410T 45 B	450 BHP	16S 2220TO 12AS 2330TO	5886/2D	45329 1/2D	Cement mixer
AT/AD 410T 45/P	450 BHP	16S 2220TO 12AS 2330TO	5886/D	45329 1/2D	Chassis cab
AT/AD 410T 50	500 BHP	16S 2520TO 12AS 2330TO	5886/D	45219 1/2D	Chassis cab
AD 410T 50/P	500 BHP	16S 2520TO 12AS 2330TO	5886/D	45329 1/2D	Chassis cab

* Vehicles also with right-hand drive

MODEL 8x8	ENGINE	GEARBOXES	FRONT AXLE	REAR AXLE	TYPE
AD 410T 45W	450 BHP	16S 2220TO 12AS 2330TO	5985/2D	45329 1/2D	Chassis cab

.

Engine

		.31	.33
Engine type		CURSOR 8	CURSOR 8
Number of cylinders		6	6
Bore	mm	115	115
Stroke	mm	125	125
Displacement	cm^3	7790	7790
Maximum effective power	kW(BHP)	230 (310)	245 (330)
Maximum torque	Nm	1300	1400

		.36
Engine type		CURSOR 8
Number of cylinders		6
Bpre	mm	115
Stroke	mm	125
Displacement	cm^3	7790
Maximum effective power	kW(BHP)	265 (360)
Maximum torque	Nm	1500

Engine

		.41	.45
Engine type		CURSOR 13	CURSOR 13
Number of cylinders		6	6
Bore	mm	135	135
Stroke	mm	150	150
Displacement	cm^3	12880	12880
Maximum effective power	kW(BHP)	300 (410)	330 (450)
Maximum torque	Nm	1900	2200

		.50
Engine type		CURSOR 13
Number of cylinders		6
Bore	mm	135
Stroke	mm	150
Displacement	cm^3	12880
Maximum effective power	kW(BHP)	370 (500)
Maximum torque	Nm	2300

Clutch - Gearbox - Distributor/reduction unit - Steering - Suspension

Clutch
Dry single plate with asbestos-free linings.

Gearbox
According to the version:
manual gearboxes ZF 9S 1310TO / 16S 1620TD / 16S 2220TD / 16S 2520TO / 16S 1621 TD / 16S 2221TD / 16S 2521TO.
EuroTronic automated gearbox: 12 AS 1420TD / 12AS 1930TD / 12AS 2330TO / 12AS 1931TD / 12AS 2332TO.

Distributor-reduction unit
Gear ratio on the road 1.0
Gear ratio off-road 1.6

Steering
Ball recirculation power steering
As per 1 circuit version ZF 8098, or 2-circuit version ZF 8099 with emergency pump on gearbox.

Front suspension
Parabolic or semi-elliptical leaf springs. Double effect hydraulic shock absorbers. Anti-roll bars.

Rear suspension
Parabolic or semi-elliptical leaf springs. Versions with air suspension. Double effect hydraulic shock absorbers. Anti-roll bars.

Brakes - braking system

Brakes
Vehicles with partial drive (4x2-6x4-8x4)
Front
Disc, type SN7
Rear
Drum, Duo Duplex type.

All wheel drive (4x4-6x6-8x8)
Front
Drum, Duo Duplex type.
Rear
Drum, Duo Duplex type.

Braking system
Air system with three independent circuits. Manual parking brake with air control and actuator controlling rear wheels. Emergency brake built-in parking brake. Quick couplings. Triple control servodistributor for trailer braking control. Brake system air drier.

Brakes - braking system

Data for braking systems in compliance with ECE-R13 Standards

Type of braking system:
Wabco Electronic Braking Limitor (EBL) (EBL)

<table>
<tr><td rowspan="2">Compressor</td><td>Max braking pressure</td><td>Min intake pressure</td></tr>
<tr><td>10.7 bar
12.7 bar (Option)</td><td>9.2 bar
10.9 bar (Option)</td></tr>
<tr><td>4-way protection valve</td><td colspan="2">Closing static pressure 6.5 ± 0.25 bar</td></tr>
<tr><td rowspan="2">Trailer control valve</td><td colspan="2">Delivery pressure corresponding to a
control pressure equivalent to 1.5 bar (gap 41)</td></tr>
<tr><td colspan="2">min 1.5 bar / max 2.0 bar
(for EBL, only)</td></tr>
<tr><td>Min. service brake
design pressure
for calculation</td><td colspan="2">8 bar</td></tr>
</table>

Tyre pressure

With vehicle in drive gear, these tables allow to define the correct operating pressure of tyres according to both the type of tyres fitted and of weights acting on front and rear axles. Pressures listed refer to cold tyres with 20 °C outer temperature. Max. capacity of a tyre with smaller load index is lower.

Tyre pressure for road use

Type	Front axle		Rear axle	
	Max adm. kg	bar	Max adm. kg	bar
13R22.5 156/150K	8,000	8.5	13,400	8.5
13R22.5 156/150K	8,000	8.5	26,800	8.5
12R22.5 152/148K	7,100	8.5	12,600	8.5
13R22.5 156/149K	8,000	8.5	13,400	8.5
13R22.5 156/149K	8,000	8.5	26,000	8.5
385/65R22.5 160J	9,000	9.0	–	–
385/65R22.5 158L	8,500	8.5	–	–

Tyre pressure

Tyre pressure for off-road use

Tubeless tyres with appropriate rigging system are preferable for use on sand in order to avoid pressure losses due to sand penetration between the heel of the tyre and the rim.

ROAD: the pressures are to be adopted when the vehicle is travelling on hard ground (asphalt).
TRACK: the pressures are recommended for travel on roads in bad condition.
SAND: the adoption of these pressures allows the vehicle to get over very demanding sections involving problems of sticking or risks of sinking without much difficulty.

In order to avoid a faster decrease in the kilometric performance, it is advisable not to exceed the speed of 20 km/h.

Type	Front axle			Rear axle		
	Max kg	Use	bar	Max kg	Use	bar
12R22.5 152/148K	7100	USE ON ROADS	8.5	12,600	USE ON ROADS	8.5
	4,600	USE ON TRACKS	4.0	9,200	USE ON TRACKS	4.0
	4600	USE ON SAND	2.0	9200	USE ON SAND	2.0
13R22.5 156/150K	8,000	USE ON ROADS	8.5	13,400	USE ON ROADS	8.5
	7,000	USE ON TRACKS	6.0	12,000	USE ON TRACKS	6.0
	7000	USE ON SAND	3.5	12000	USE ON SAND	3.5
12.00R20 154/150K	7500	USE ON ROADS	8.5	13,400	USE ON ROADS	8.5
	7,000	USE ON TRACKS	5.75	12,000	USE ON TRACKS	5.75
	7000	USE ON SAND	3.0	12,000	USE ON SAND	3.0
12.00R24 156/153K	8,000	USE ON ROADS	7.5	14,600	USE ON ROADS	7.5
	7,000	USE ON TRACKS	5.0	12,000	USE ON TRACKS	5.0
	7000	USE ON SAND	3.0	12,000	USE ON SAND	3.0
315/80R22.5 156/150K	8,000	USE ON ROADS	8.5	13,400	USE ON ROADS	8.5
	6,500	USE ON TRACKS	5.5	11,000	USE ON TRACKS	5.5
	6,500	USE ON SAND	3.25	11,000	USE ON SAND	3.25

Electrical system

Voltage 24 V.

Batteries
2 x 12V 170 Ah
On request: 2x12V 220 Ah

Alternator:
90A

Starter motor:
4.5kW motor CURSOR 8
5.5kW motor CURSOR 13

Lights	Type	Power (W)
Dip headlamps	halogen type	70
High beams	halogen type	70
Fog lights (if equipped)	halogen type	70
Additional depth headlamps (if equipped)	halogen type	70
Front parking lights	round type	5
Front turn signals	round type	21
Side markers	round type	21
Rear parking lights (two)	round type	5
Side turn signals	round type	21
Brake lights	round type	21
License plate lights (two)	round type	5
Reverse gear light	round type	21
Rear fog light	round type	21
Front markers	cylindrical type	4
Side inner lights	round type	21
Internal spotlights	halogen type	5
Light on loading platform (tractor only)	round type	21

Refuelling

Refuelling

Use only diesel oil in accordance with EN 590 standard normally commercially available.
Fuel additives are not recommended. The use of additives can limit the warranty services offered for the vehicle.
Filling from drums or tanks can cause contamination of gasoline, 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

At low temperatures the degree of fluidity of the diesel oil can become low due to the separation of paraffin resulting in clogging of the filters.
The EN 590 standard provides for various categories of diesel for use at low environmental temperatures.
It lies entirely with the oil company to comply with the standards relating to the climatic conditions (seasons and geographical location of the countries).

Attention!

- Lubricant additives are not necessary.
  The use of special additives could limit claims under the warranty.
- The consumables are hazardous to health.
  If a product is ingested, see a doctor immediately.
- Keep consumable materials out of the reach of children.
- 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 to this purpose.

Refuelling

Note:

– Vehicles equipped with CURSOR 8 engines use mineral base oil from IVECO manufacturing plant.

– Vehicles equipped with EUROTRONIC AUTOMATED use sinthetic base oil from IVECO manufacturing plant.

		Genuine lubricants	lt	kg	Pints
CURSOR 8 Oil sump	(MAX level)	Urania FE 5W30 Urania LD7	23	21	40,5
	(MIN level)		12,5	11,2	22
	oil filter		2,5	2,7	4,4
CURSOR 13 Oil sump	(MAX level)		28	25,2	49,3
	(MIN level)		20	18	35,2
	oil filter		3	2,7	5,3
Gearbox ZF 9S 1310 TO		Tutela Truck FE – gear Tutela ZC 90	8.5	7.6	15
Gearbox ZF 9S 1311 TO			21	18.9	37
Gearbox ZF 16S 1620 TD			11	9.9	19,4
Gearbox ZF 16S 1621 TD			18.5	16.6	32,6
Gearbox ZF 16S 1620 TD/2520 TO			13	11.7	22,9
Gearbox ZF 16S 1621 TD/2521 TO			21.5	19.3	37,8
Gearbox 12 AS 1420 TD			11	9.9	19,4
Gearbox 12 AS 1930 TD/2330 TO			12	1.8	12,1
Gearbox 12 AS 1931 TD/2331 TO			21	18.9	35,7
Divider-reduction gear TC 1800-2200		Tutela ZC 90 Tutela GI/A (for cold climates)	6.5	5.5	11,4

	Genuine lubricants		lt	kg	Pints
Axle 5886/D (for each hub)			0.35	0.32	0,62
Front axle 5985/2D			5	4.5	8,8
Rear axle wheel reduction gear 5985/2D			0.75	0.68	1,3
Rear axle 451391/2D			16	14.5	28,2
Tandem axle 453291/2D		Intermediate + relay	27	24.3	47,5
	Tutela W140/M-DA	rear	16	14.5	28,2
Tandem axle 452191/2D	Tutela W90/M-DA(1)	Intermediate + relay	27	24.3	47,5
		rear	16	14.5	28,2
Tandem axle 452146/2D		Intermediate + relay	13	11.7	22,9
		rear	11.5	10.5	20,2
Tandem axle MT 23-155/D		Intermediate + relay	20	18	35,2
		rear	18.5	16.5	32,3
Power steering	Tutela GI/A		2.7* 13.5**	2.4 12	4,75 23,8
Clutch circuit	Tutela TRUCK DOT SPECIAL		0.5	0.45	0,9
Cabin tilting system	Tutela LHM		0.6	0.54	1,06
Fuel tank (according to models)	Gasolio		-	-	-
Urea tank (according to models)	Ad Blue		-	-	-

* Excluding vehicles with rear steering axle
** For vehicles with rear steering axle only
(1) Specific for cold climates

	Genuine lubricants	litres
CURSOR 8 Cooling system Protective anti-freezing-concentration 50% Freezing point - 35°C	Water+Paraflu[11]*	~34
CURSOR 8 Cooling system with ZF-Intarder Protective anti-freezing-concentration 50% Freezing point - 35°C		~50
CURSOR 13 Cooling system Protective anti-freezing-concentration 50% Freezing point - 35°C		~44
CURSOR 13 Cooling system ZF-Intarder Protective anti-freezing-concentration 50% Freezing point - 35°C		~64

* For corrosion-proofing purposes, it is always necessary to use a concentration of 50%

International lubricant designation		Genuine Products
Engine oil		
As per following standards:		
ACEA E4 fully synthetic base	SAE 5W 30	**Urania FE 5W30**
ACEA E7 mineral base	SAE 15W 40	**Urania LD7**
Oil for differential and wheel hubs		
As per following standards:		
API GL5 mineral base	SAE 85W 140	**Tutela W140/M-DA DA DA (for hot or temperate climates)**
API GL5 mineral base	SAE 80W 90	**Tutela W90/M-DA (for cold climates)**
Oil for mechanical gearbox		
Containing anti-wear additives with EP		
As per following standards:		
API GL4 fully synthetic base	SAE 75W 80	**Tutela Tuck FE-Gear**
API GL3 mineral base	SAE 80W 90	**Tutela ZC 90**
Oil for hydrostatic power steering and transmission		
A.T.F. DEXRON II D		**Tutela GI/A**
A.T.F. DEXRON III		**Tutela A.T.F 90**
Oil for total power take-up (multipower)		
Containing anti-wear additives with EP		
As per following standards:		
API GL3 mineral base	SAE 80W 90	**Tutela ZC 90**
Qualification IVECO standard 18-1807		

Note: If non genuine lubricants are used, lubricants with minimum performance ACEA are allowed for Diesel engines. **IVECO guarantees optimum engine performance when genuine lubricants are used**; using products with specifications lower than ACEA may damage the engine and invalidate the warranty.

International lubricant designation	**Original products**
General gear grease Lithium soap base, consistence N.L.G.I. n. 2	Tutela MR 2
Specific grease for bearings and wheel hubs Lithium soap base, consistence N.L.G.I. n. 3	Tutela MR 3
Clutch control fluid as per standards N.H.T.S.A. 116, ISO 4925, std. SAE J 1703, Qualification IVECO STANDARD 18-1823	Tutela TRUCK DOT SPECIAL
Windscreen washing liquid alcohol, water and surfactant mixture CUNA NC 956-11	Tutela PROFESSIONAL SC 35
Grease for centralized lube systems lithium soap base, synthetic base N.L.G.I. n. 2. Use temperature -30 thru +140	Tutela COMAR 2
Hydraulic system mineral oil as per standards Qualification IVECO STANDARD 18-1823	Tutela LHM
Concentrated protection fluids for radiators Ethylene glycol base containing corrosion inhibitors, as per Qualification IVECO STANDARD 18-1830	PARAFLU[11]

Selective catalytic reduction system –SCR (Selective Catalytic Reduction)

The SCR system is based on a reduction agent, called AdBlue, that when injected into the exhaust gas stream is converted into ammonia and carbon dioxide. At a later stage, the nitrogen oxides contained in the exhaust gases react with the ammonia, forming water and nitrogen.
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 is the trade name of a water-urea solution that provides the following advantages:

- odourless composition
- no toxicity
- not inflammable
- no colouring
- availability

Filling with AdBlue is as easy as ordinary refuelling, if done at an appropriate filling station. Keep to the indications for low fluid level on your vehicle's instrumentation in order to be able to fill up in good time.

Attention!

- Use only AdBlue to DIN 70 070 standard. Other fluids may damage the system: in addition, the exhaust emissions would no longer conform to the regulations of the law. In particular, if diesel were added to the AdBlue tank, irreversible damage could be caused to the AdBlue circuit pump module. Never add additives to AdBlue. Do not dilute AdBlue with tapwater: this could damage the exhaust gas emission control system. If damage is caused to the exhaust gas emission control system due to the due of additives/tapwater, to the addition of diesel or failure to observe the Iveco instructions, the warranty will be null and void.
- The vehicle should not run without AdBlue to prevent environmental pollution.
- If AdBlue comes into contact with painted or aluminium parts during refuelling, immediately rinse the affected parts with plenty of water.
- Do not fill the AdBlue reservoir to the filler cap but always leave a gap of 5 to -10 cm.
- If AdBlue is overheated for a long period inside the tank to more than 50°C (e.g. due to direct sunlight), the AdBlue could break down to form ammonia vapours. Ammonia vapours have a pungent smell: when the AdBlue tank cap is unscrewed, take care not to inhale any ammonia vapours emerging from the tank. Ammonia vapours are not, however, harmful to the health at this concentration.
- AdBlue freezes at a temperature of approximately -11°C. Vehicles equipped with an AdBlue preheating system also ensure that the vehicle can be used during the winter at temperatures below 11°C. At low temperatures, AdBlue crystals may form on the hose between engine and silencer. This crystallisation does not affect the operation of the exhaust emission control system in any way. If necessary, AdBlue crystals may be removed with clean water.

Attention!

The anti-pollution regulations EURO 4 and EURO 5 obligate the industrial vehicle producers to foresee a performance reduction of the engine if, during the use of the vehicle, the emissions of NO_x do not satisfy the homologating requirements. Therefore, in case of driving with an empty AdBlue tank (level of AdBlue under the minimum functioning quantity of the measurer), or other causes that do not consent the vehicle to respect the emissions of NO_x prescribed by the regulation, your engine will have a performance reduction (de-rating), signalled before start-up by the OBD yellow warning light on the instrument panel. Such performance reduction activates the first time the vehicle is brought to null speed and lasts until the restoring of the normal functioning conditions of the anti-pollution devices that allow the vehicle to again respect the emissions of NO_x (in case the empty AdBlue tank is sufficient, execute a fill up) and does not have effect on the dependability of the vehicle Remember also that by the law the power unit on board registers such types of events also rendering them available to eventual controls by the Public Order Officials.

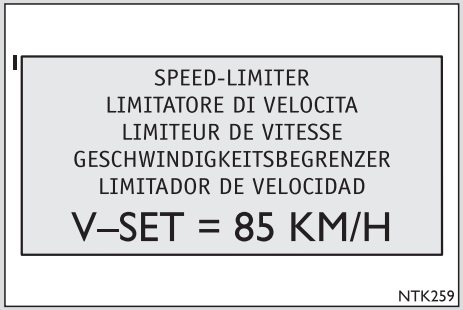
Synoptic table

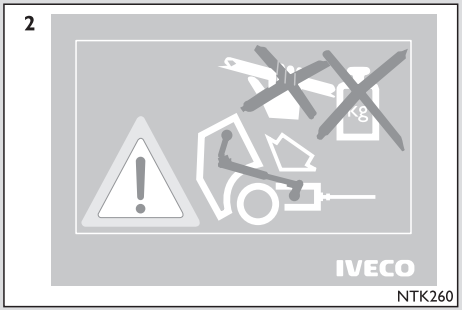
CONDITION	OUTCOME	IDEOGRAM
– Remaining AdBlue fluid less than approx. 10% of tank capacity. – NO_X emissions > 5 g/kWh vehicles Euro4. – NO_X emissions > 3.5 g/kWh vehicles Euro5.	Warning for the driver (flashing light).	
– AdBlue tank empty. – NO_X Emissions > 7 . g/kWh.	Steady light ON and engine performance limitation.	
– AdBlue fluid not meeting the minimum requirements of IVECO. – Any deviation above 50% of the average consumption. – Dosing activity stop.	AdBlue light on, decrease of engine performance and memorization of fault code (not erasable for at least 400 days or 9600 hours of engine operation).	

Note:
between the switch on of the low AdBlue level light and the switch on of the OBD light with derating, it is possible to travel at least for 200 km.

This chapter offers a simple explanation of the important plates that are located at various points in your vehicle.
Scrupulously follow the warnings and recommendations given on them.

Plates





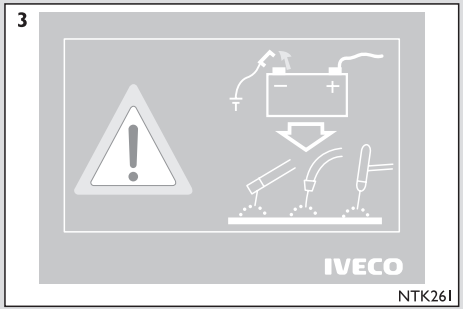
Plates

1. A speed limiter is installed on the vehicle.
   Location: on the windscreen.

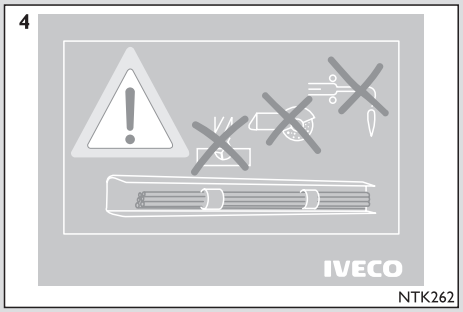
2. Do not load the tilted cab with any weight and avoid resting it against the gearbox connecting rod.
   Location: on the gearbox link bar.

Plates

3. Disconnect the battery negative terminal before carrying out any operation on the vehicle (repairs, welding, replacement of assemblies/components, etc.).
   Location: below or inside the vehicle front radiator grille.



4. Never carry out welding, drilling or grinding operations on the vehicle in the vicinity of electrical cables and pipes.
   Location: below or inside the vehicle radiator grille.



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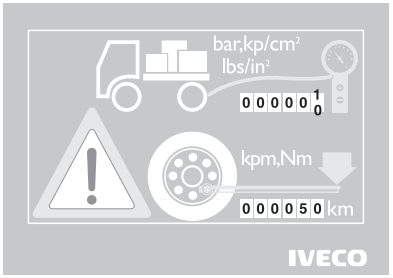


NTK263

6

NTK264

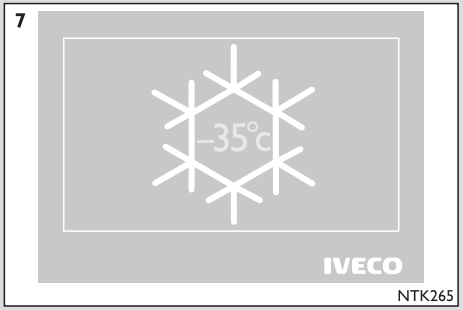
Plates

5. Before putting the vehicle into service, restore the tyre pressure to the operating values given in the Operation and Maintenance booklet. The tyre pressure is reduced for transportation of the vehicles.
   For a new vehicle and after every tyre change, the nuts of the wheels must be retightened at intervals specified on the plate.
   Location: on the windscreen.

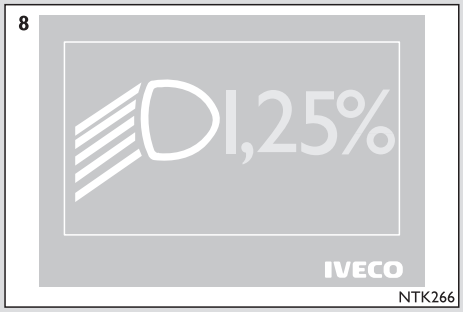
6 To replace the fluid in the power clutch system, only use the type of fluid shown on the plate.
Location: below or inside the vehicle front grille.

Plates

7. The antifreeze fluid in the cooling system has a freezing point of -35°C.



8. The plate indicates the light beam incidence setting to be respected when adjusting the headlamps.
   Location: below or inside the vehicle front radiator grille.



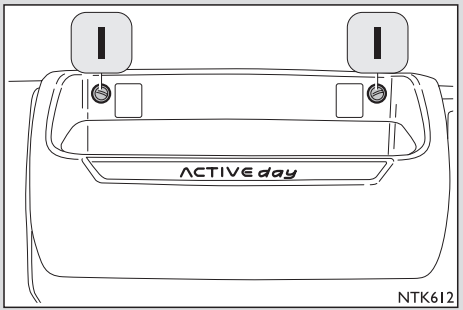
Attention!

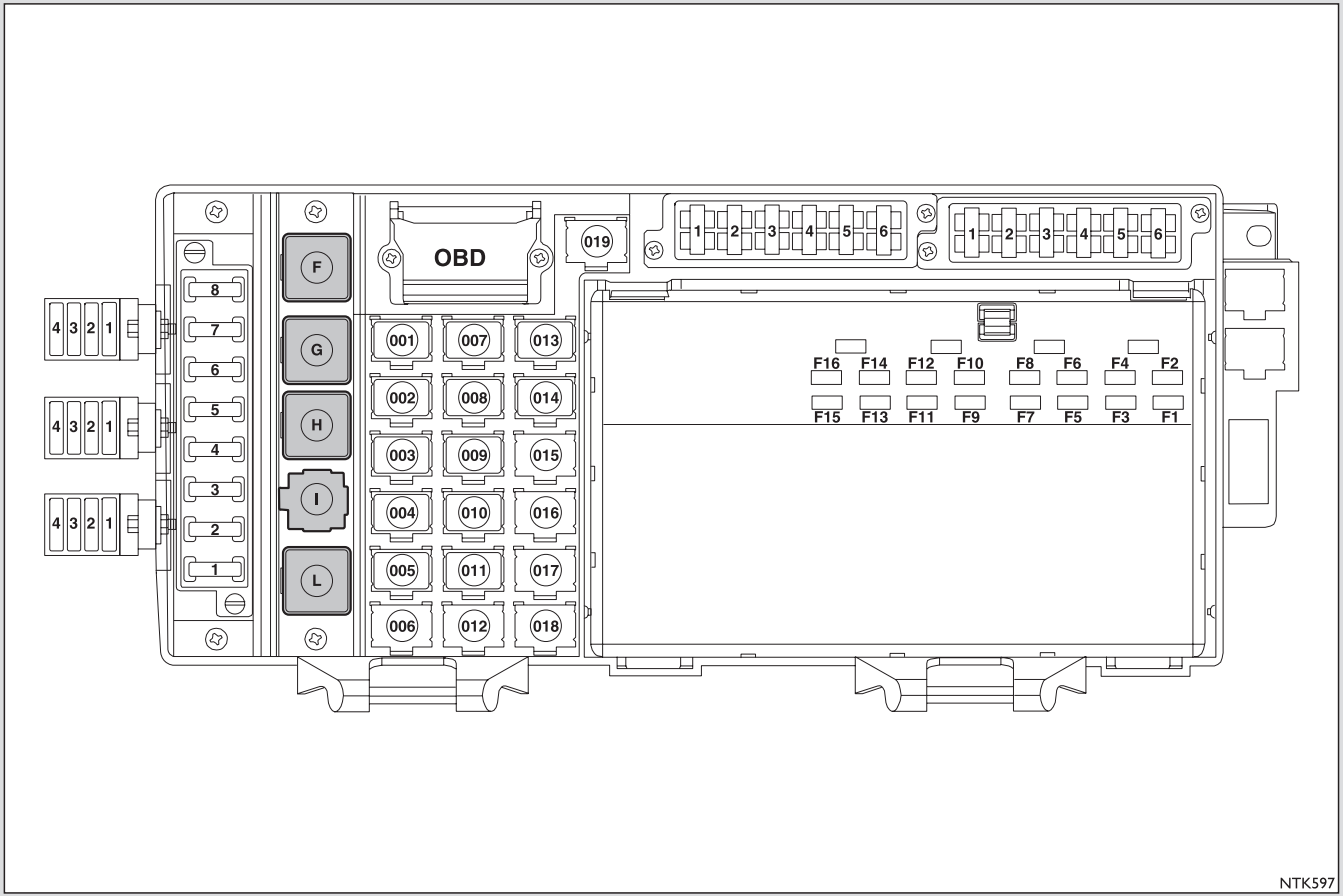
Before any work is carried out on the electrical systems, disconnect the battery leads. Avoid any tampering with the electrical system. However, if this should be necessary contact the *service network*. Use fuses only of the specified value: **fire hazard**.
Replace the fuses only after having eliminated the cause of the problem. Changes or repairs to the electrical equipment carried out improperly and without taking into account the technical specifications of the equipment can result in abnormal operation and create a fire hazard.

Fuses and relays

Fuses and relays

The amperage and the load connected to each fuse are shown on the sticker placed near the fuse compartment.
Location of fuses:
– Behind the flap in front of the passenger. To tilt the door unscrew the screws 1 by $^1/_4$ of a turn (Active Time).
– Behind the flap in front of the passenger. To open this flap loosen screws (1) (Active Day).
– On the chassis next to the batteries, behind the battery isolator.
Accessible by opening the two metal clips

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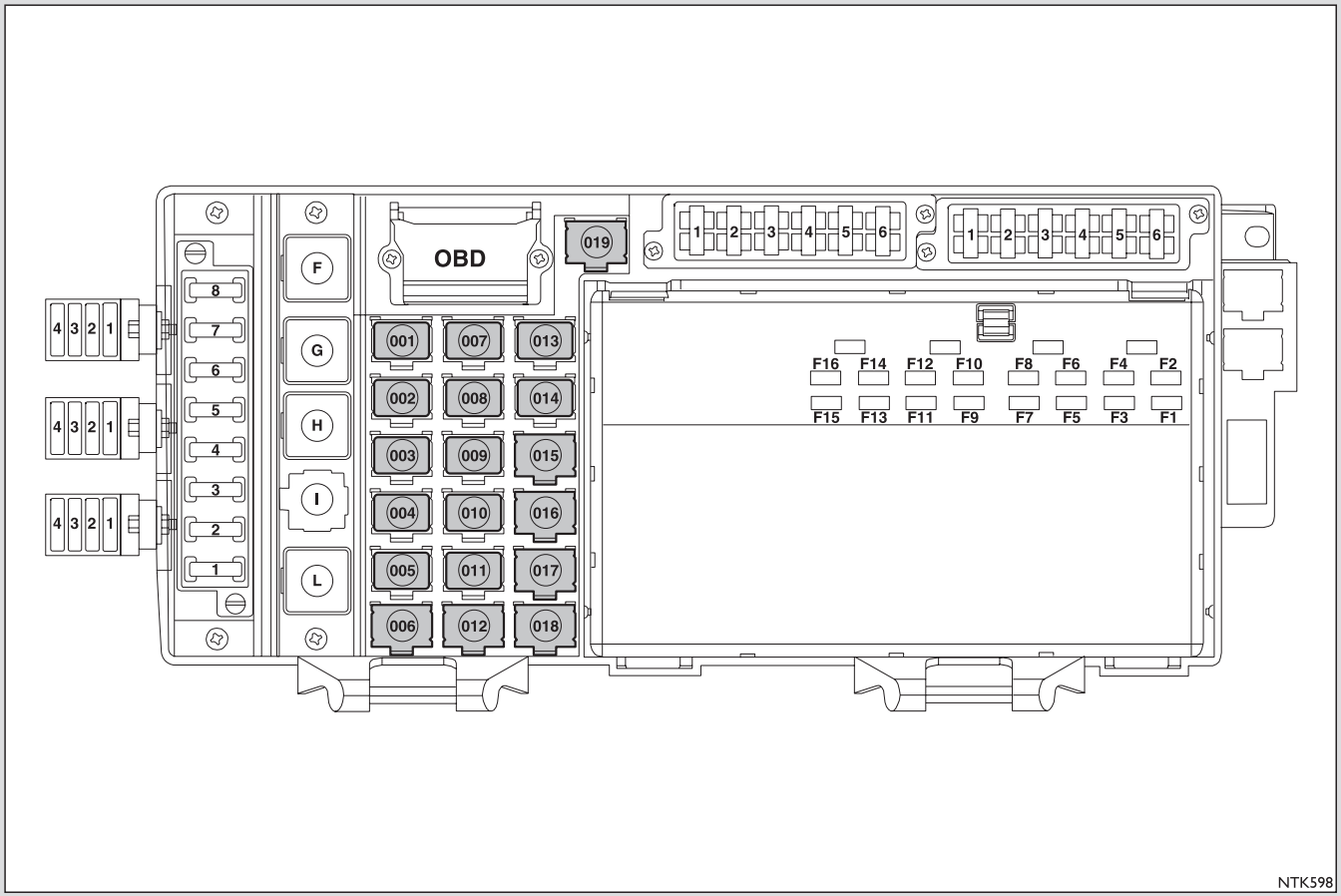
F15 F13 F11 F9 F7 F5 F3 F1
NTK597

Fuses and contactors

Minicontactors (black)

F – Engine cranking contactor
G – Engine cranking contactor
H – Spare
I – Spare
L – Spare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1 2 3 4 5 6
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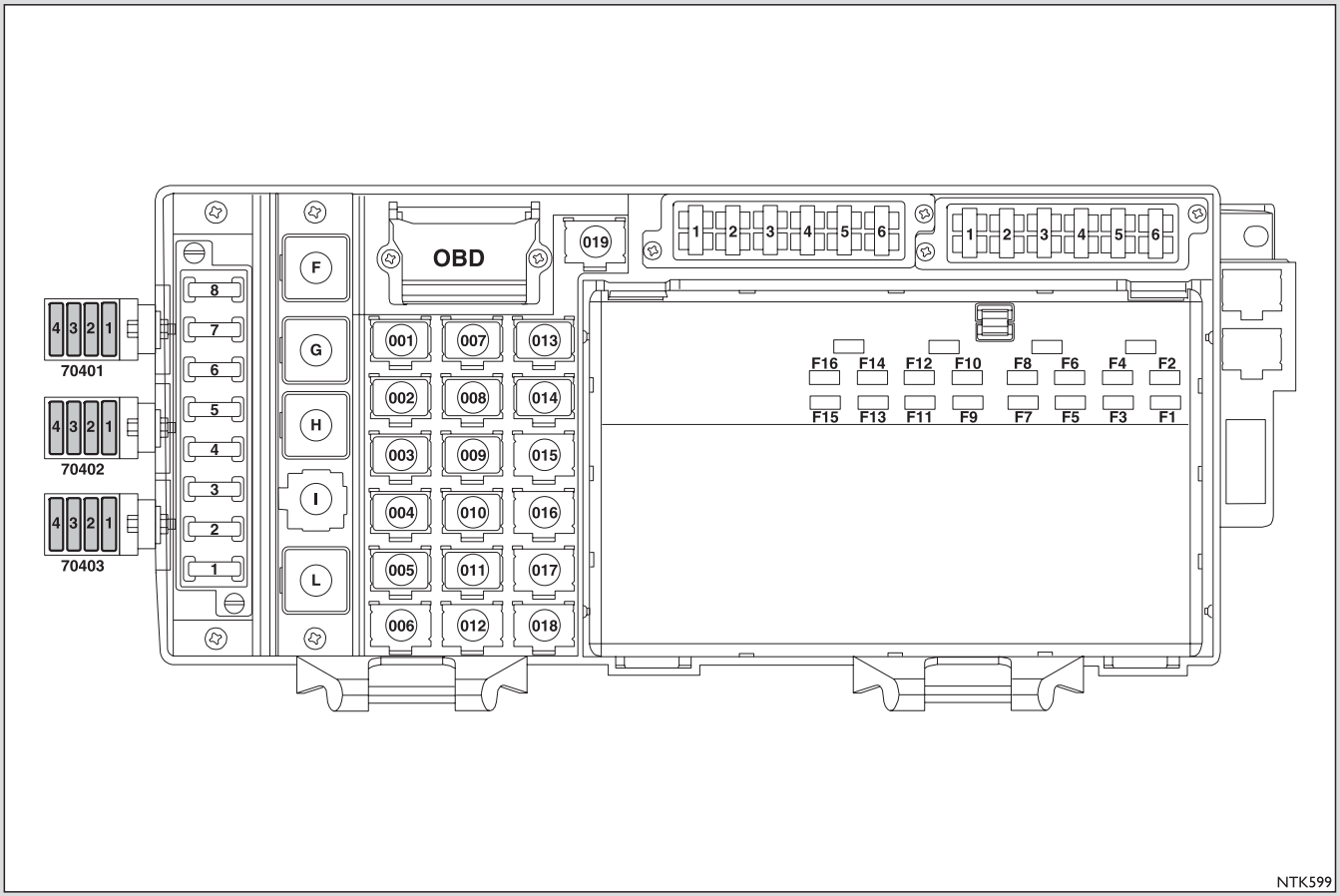
F15 F13 F11 F9 F7 F5 F3 F1
NTK598

Fuses and contactors

Microcontactors (yellow)

001 – Buzzer contactor
002 – Water heater contactor
003 – Spare
004 – Electric trap opening contactor
005 – Water heater contactor
006 – Spare
007 – Electric trap closing contactor
008 – Manual air conditioner contactor
009 – Manual air conditioner contactor
010 – Contactor for Baruffaldi fan electromagnetic coupling engagement
011 – Manual air conditioner contactor
012 – Manual air conditioner contactor
013 – Vehicle diagnostics contactor
014 – Manual air conditioner contactor
015 – Manual air conditioner contactor
016 – Headlamp washer enable contactor
017 – Contactor for electricity/mechanical general switch
018 – Contactor for general electricity contactor
019 – Spare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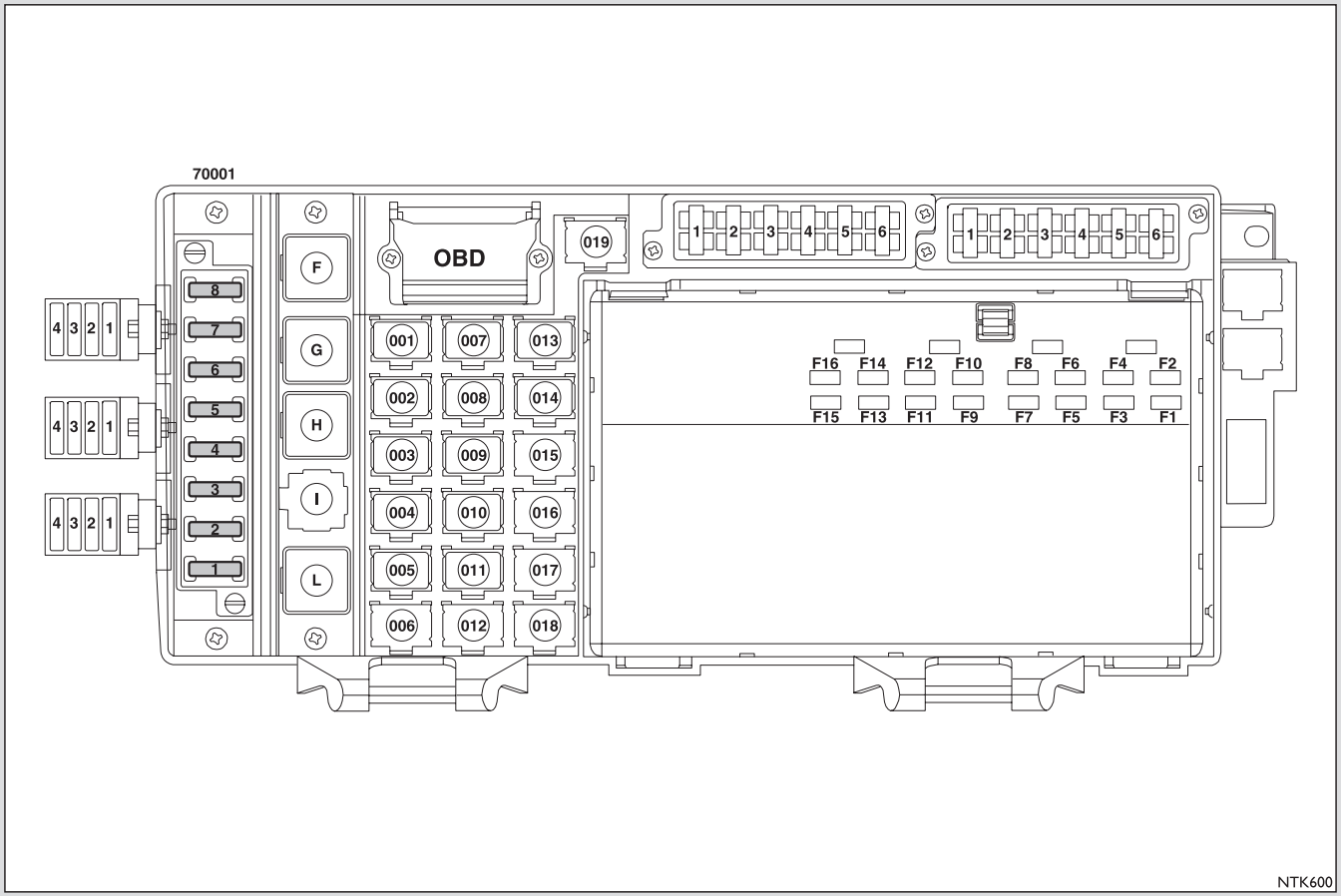
1 2 3 4 5 6
F16 F14 F12 F10 F8 F6 F4 F2
F15 F13 F11 F9 F7 F5 F3 F1
NTK599

Fuses and contactors

Fuse-holder 70401
1 – 7.5A Sun shade curtains
2 – 10A Spare
3 – 10A Spare
4 – 5A 12V internal lighting

Fuse-holder 70402
1 – 25A Heated windscreen
2 – 10A VGT solenoid valve/servoshift
3 – 15A Heated mirrors
4 – 25A Heated windscreen

Fuse-holder 70402
1 – 15A EM
2 – 15A EM
3 – 5A ACC
4 – 20A SCR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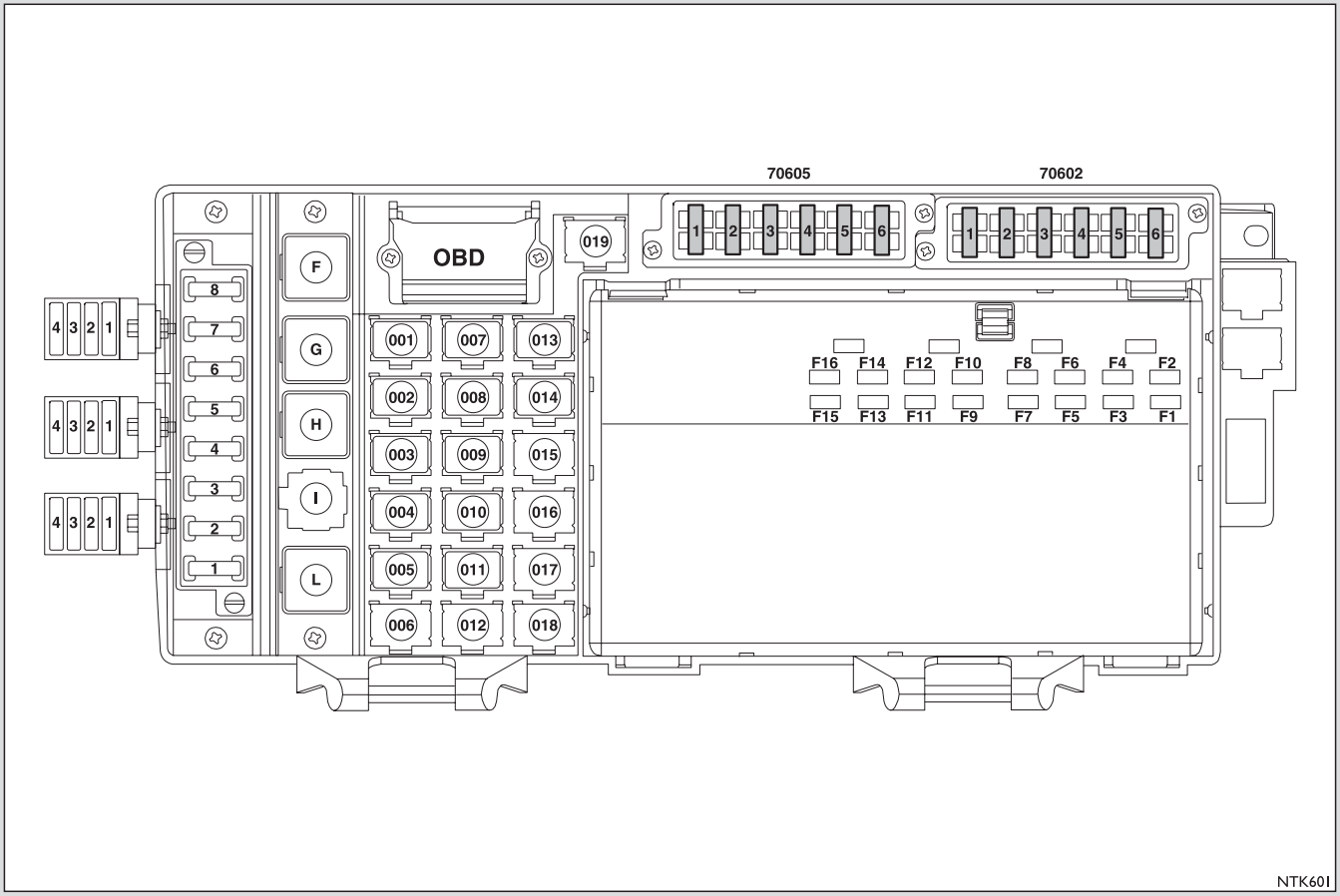
NTK600

Fuses and contactors

Fuse-holders 70001

1 – 10A Eurotronic2
2 – 15A Air conditioner
3 – 5A Air conditioner
4 – 15A Additional heater
5 – 5A Additional heater
6 – 5A Courtesy lights
7 – 10A ACC / heated windscreen / toll collect / telematics+ navigator
8 – 5A MC-NET / rotary headlamps / windscreen washer pump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70602
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1 2 3 4 5 6
F16 F14 F12 F10 F8 F6 F4 F2
F15 F13 F11 F9 F7 F5 F3 F1
NTK601

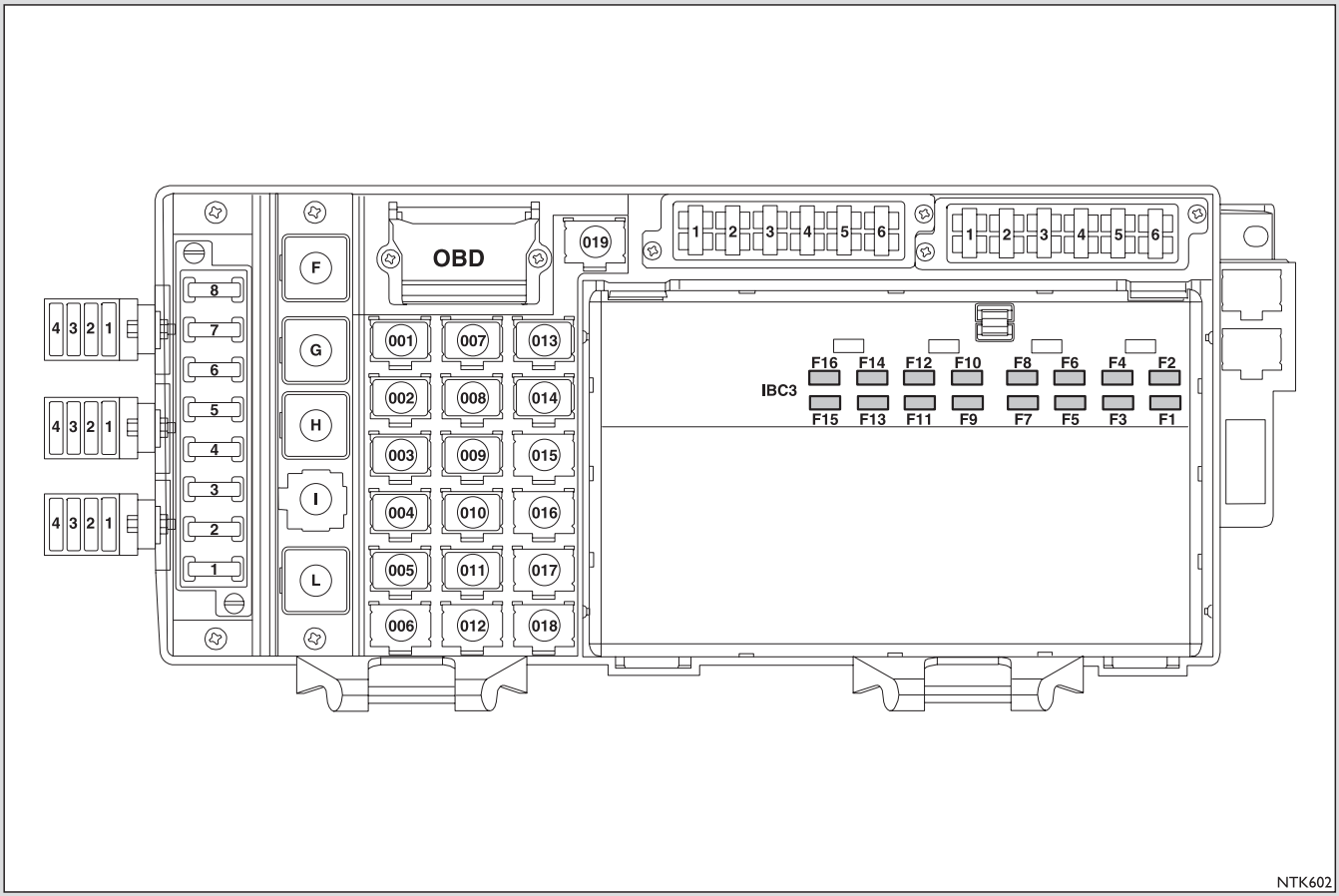
Fuses and contactors

Fuse-holder 70602

1 – 20/15A DDM / driver window regulator
2 – 20/15A PDM / passenger window regulator
3 – 30A Engine ECU
4 – 5A ABS
5 – 15A Spare
6 – 15A ABS

Fuse-holder 70605

1 – 10A Refrigerator/tool colect/OBD/telematic system+navigation
2 – 5A ECAS/Expansion Module
3 – 7.5A ECAS
4 – 10A Intarder/ABS
5 – 10A Intarder
6 – 7.5A Heated seat/Centralized lubrication/Door lock with RIF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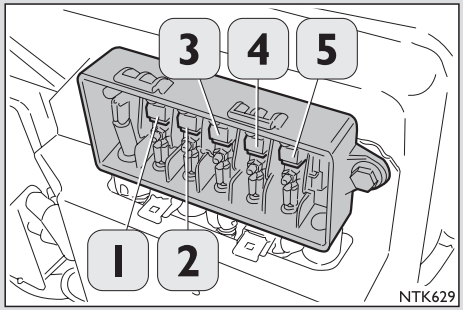
IBC3
F16 F14 F12 F10 F8 F6 F4 F2
F15 F13 F11 F9 F7 F5 F3 F1
NTK602

Fuses and contactors

Fuses IBC3

F1 – 10A Spare
F2 – 20A Spare
F3 – 10A VCM supply
F4 – 5A Tachograph / bed module
F5 – 20A Spare
F6 – 20A Spare
F7 – 20A Spare
F8 – 20A Spare
F9 – 10A EM ECU for cabin outfits
F10 – 10A Buzzer
F11 – 20A Bed light voltage reducer
F12 – 10A Air dryer resistor
F13 – 10A EM ECU for outfits on chassis
F14 – 10A Giunto 30-pin cigarette lighter
F15 – 5A Radio / cclimate control
F16 – 20A Spare



Fuses and contactors

Fuses in battery housing box

1 –	30A	MET
2 –	30A	MET
3 –		Spare
4 –		Spare
5 –		ABS/EBS
6 –		Spare

Driver check items

Becoming familiar with some simple control and verification procedures is very important. Carry out a preventive check-up of all the services required for correct replacement of tyres (positioning the jack for lifting, use of spanners, etc…).
Do not consider these procedures as troublesome routines; to a large extent, the perfect operation of your vehicle depends on these procedures.
A good preventive maintenance on your part backs up the scheduled maintenance prescribed by the *service network*, saving you time and inconvenience.

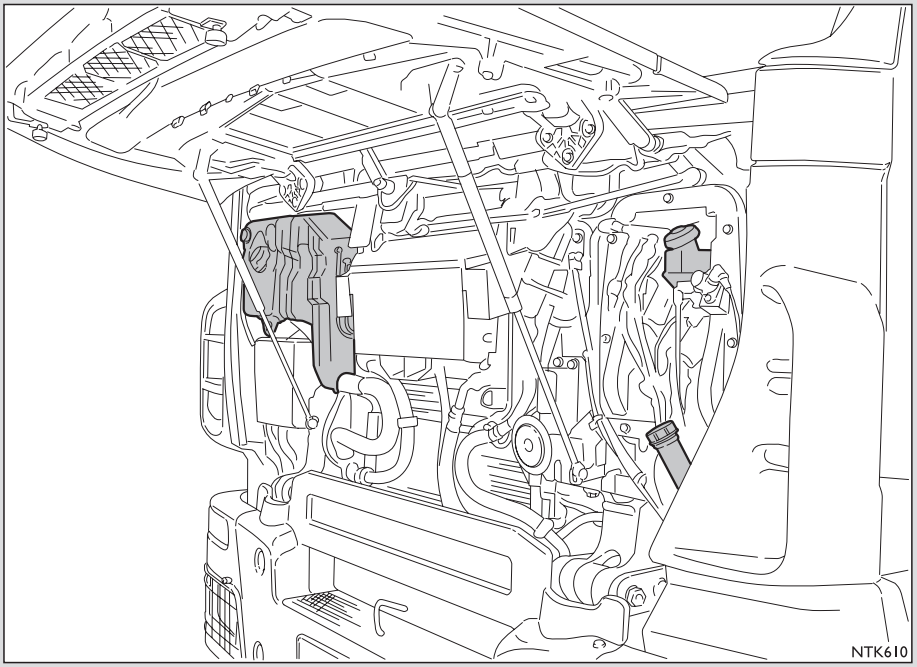
Attention!
In the event of abnormal smoke emission at the exhaust or unusual engine noises, go to an IVECO service location.

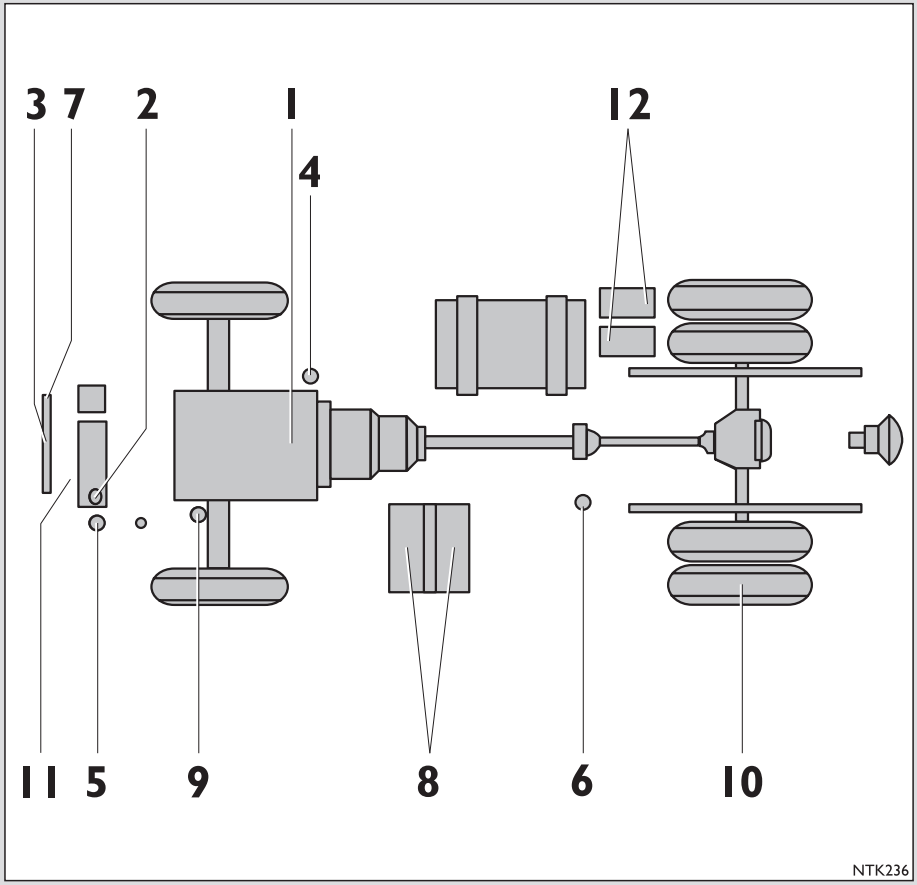
- ❑ Front radiator grille 302
- ❑ Inspections to be carried out by the user 304
- ❑ Before each trip 305
- ❑ Every week 312
- ❑ Every three months/Every six months 317
- ❑ Care of your vehicle 319

Front radiator grille opening

- To open the radiator grille, it is sufficient to pull and lift it.
- Do not operate the windscreen wipers with the radiator grille raised to avoid them damaging the varnish of the radiator grille.

Opening the front grille





Inspections to be carried out by the user

■ Before each trip

1. Engine oil.
2. Engine radiator water.
3. Windscreen wiper liquid.
4. Power steering.

■ Every week

5. Clutch fluid.
6. Air dryer.
7. Radiator anti-clogging net.
8. Batteries.
9. Jack.
10. Tyres.

■ Every three months

(maintenance with intervals in hours).

■ Every six months

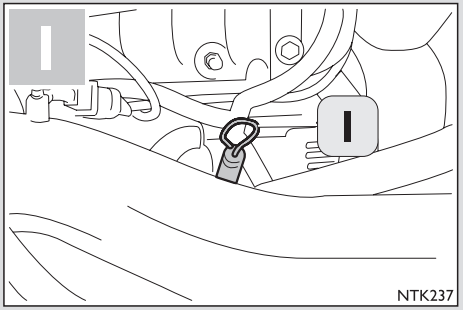
(maintenance with intervals in km).

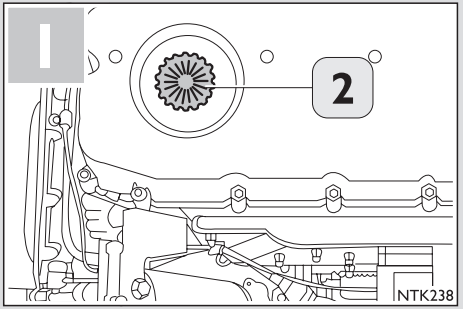
11. Pollen filter.
12. Air tanks.

Before each trip

Check the following indications on the instrument cluster (display):

- Engine oil level (at least 30 minutes after stopping the engine).
- Engine oil temperature.
- Engine oil pressure.
- Air pressure.
- No symbol displayed showing faults.





Attention!

Fire hazard: after topping up, close filler properly (2) to prevent dangerous oil leaks while driving.

Before each trip

Cursor 8 engines

1. If a system failure occurs, check engine oil level with dipstick (1) after tilting the cab.
   If required, top-up through the filler (2).

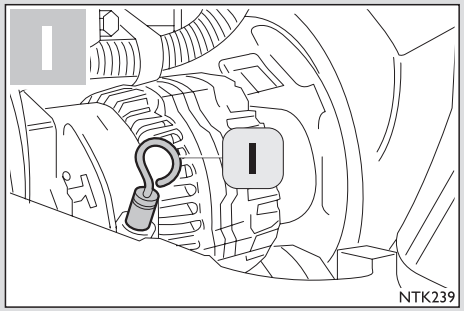
Attention!

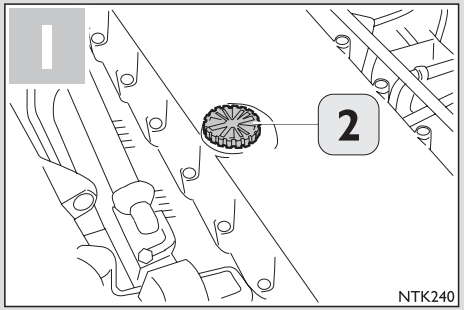
Fire hazard: after topping up, close filler properly (2) to prevent dangerous oil leaks while driving.

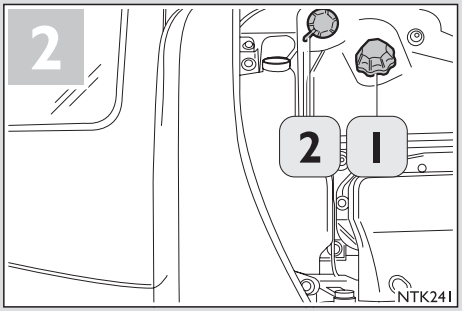
Before each trip

Cursor 13 engines

1. If a system failure occurs, check engine oil level with dipstick (1) after tilting the cab.
   If required, top-up through the filler (2).







Attention!

Carry out the check only with the engine off and sufficiently cold, otherwise the vapours could emerge from the cooling system expansion tank when the cap is opened.

Before each trip

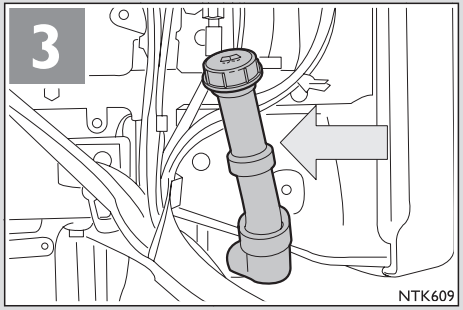
2. Check coolant level.
   It must be between the MAX and MIN levels on the reservoir.
   Top-up from the filler (1) only.
   Note: The plug (2) is sealed and must not be tampered with by the customer.

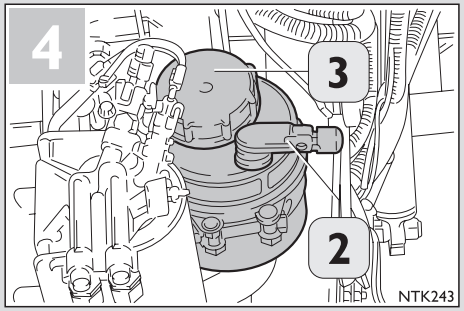
Attention!

Some commercial additives for windscreen washing are inflammable: take care when touching warm engine parts.

Before each trip

3. Check the liquid level in the windscreen washer tank: should a top-up be necessary, we recommend a mixture of water and **Tutela Professional SC 35** fluid. Check the sprays are operating correctly. Clean if necessary and check that the pipes are not blocked.





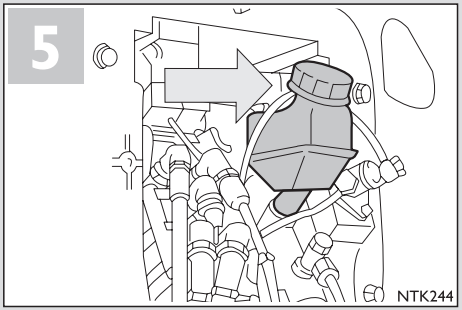
Before each trip

4. Check the fluid level in the power steering system after tilting the cab; remove cap (2) from the tank, after disconnecting the sending unit and top-up if necessary after removing the cover (3), taking into account that:
   - After the engine is started and with the wheels aligned, the oil level should reach the upper level on the dipstick.
   - After the engine is stopped and with the wheels aligned, the oil level should exceed the upper level on the dipstick by 1 to 2 cm.

Before each trip

Moreover, check:

- The conditions of the towing hook or the semi trailer rack.
- The conditions of the tyres.
- The operation of the braking system, the parking brake and the engine brake.
- The operation of the lights, of the warning lights and the windscreen wipers.



Attention!

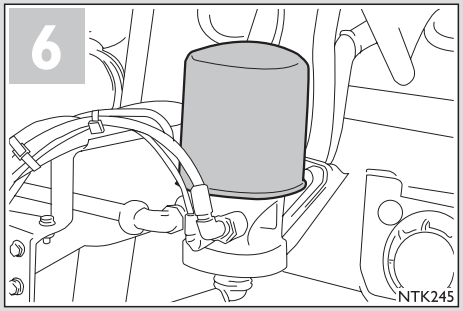
The clutch fluid is toxic and corrosive: in the event of accidental contact immediately wash with water and neutral soap.

Every week

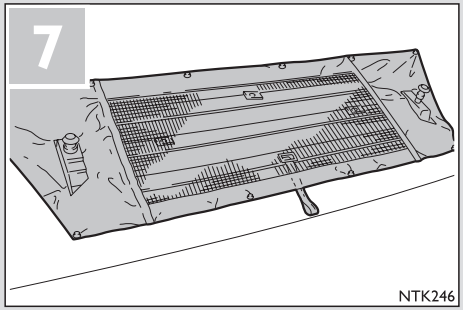
5. Check the liquid level in the clutch release control tank. For topping up use exclusively Tutela TRUCK DOT SPECIAL (only for vehicles with manual gearbox).

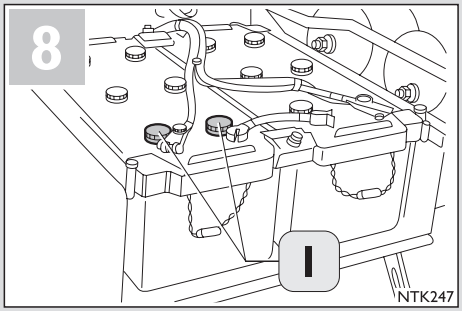
Every week

6. Via a purging valve on the air tanks, check if the air dryer works properly. In this case the air must exit from 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 escape of condensation must disappear again quickly as soon as the functionality of the granules has regenerated.
   Otherwise, if that cannot be confirmed, the cartridge must be changed, as the humidity absorption capacity of the granules has now decreased excessively through the effects of oil, dirt, carbonium deposits etc.



7. Check the condition of the radiator anti-clogging net located inside the radiator grille.
   If required, remove it and clean or wash.



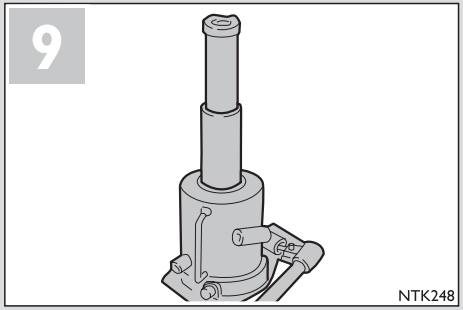


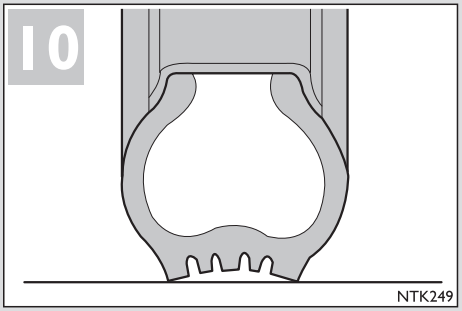
Every week

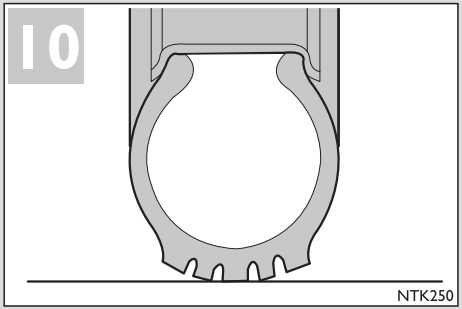
8. Check the electrolyte level in the batteries; if necessary top up with distilled water, when the batteries are idle and cold, through openings provided (1). Except maintenance-free batteries.
   Note: if the vehicle is not to be used for more than a week, disconnect the battery negative terminal.

Every week

9. For testing and maintenance rules, follow the instructions on the documentation provided by the jack manufacturer.







Every week

10. Check tyre wear and pressure (including the spare tyre). If pressure is low, tyres tend to wear in 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 alignment 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 said indicators of wear of tread appear.

Note:
Tyre pressures are given in the chapter Technical Characteristics.

Moreover, check:

- Visual check of the integrity of the exhaust gas system.

Take care of your eyes! Powder granules may emerge during bleeding.

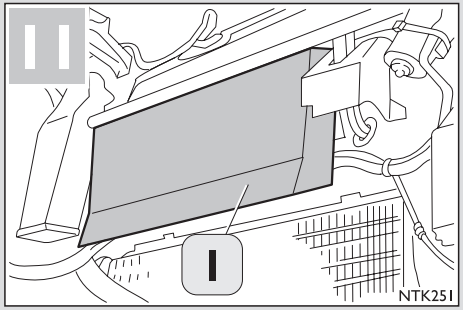
Every three months (maintenance at hour intervals).

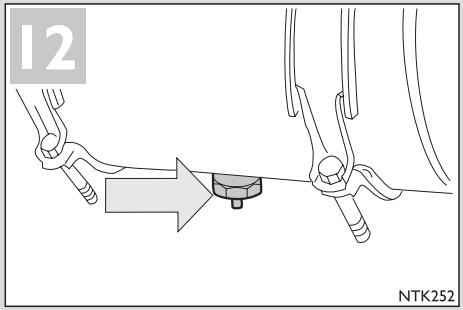
Every six months (maintenance at km intervals).

11. Check whether the pollen filter is clogged (1).
Raise radiator grille for access.

Attention! Excessive clogging of pollen filters may result in reduced air flow into cab, and therefore in impaired ventilation. This will result in a significant reduction in the efficiency of defrosting the windscreen.

12. Purge condensation from air tanks by operating the device shown.





Every six months (maintenance at km intervals)

Operating conditions

The operating conditions of the tanks (operating pressure and temperature) are given in the name 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 strains other than those due to normal operation pressure and weight. The tank is intended to be used only in the compressed air systems.

Maintenance

Maintenance-free if the following regulations are complied with:

- Any painting must be preceded by a preparatory coat.
- Surface treatment of the fasteners by means of passivation of the components.
- Take particular care not to damage threads and/or discharge mechanisms provided.
- 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. In case of dents, replace the tank.

Attention!

Detergents may pollute water. Therefore, wash the vehicle in an area equipped for collection and purification of the liquids used for washing.

Care of your vehicle

Maintenance of the bodywork

Regularly wash the vehicle with neutral products and water.
The frequency of washing depends on the following factors:

- Zones 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 sackcloth so as to avoid deep scoring of the varnish layer and clouding of external plastic parts.
- Carefully dry body to remove any water spots.
- Do not wash the vehicle after prolonged exposure to the sun, otherwise the paint shine may be altered.
- Do not immediately place the vehicle in a closed area, but leave it in the open to facilitate evaporation of the water.

Care of your vehicle

Cleaning plastic parts

The external plastic parts are cleaned using the same washing procedure as the vehicle.
If there are still traces of soiling, the use of specific products is recommended, following the manufacturer's instructions carefully.
The use of such products is indicated also for cleaning the plastic fittings of the interior (dashboard, doors, etc.). Do not use products for cleaning paint or products containing aromatic solvents, methanol or hydrocarbons.

Window cleaning

Use specific products for cleaning; use well cleaned 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 dry-clean sun visor to prevent scratching or damage to its surface.
ATTENTION: to clean sun visor, do not use products containing AROMATIC SOLVENTS, KETONE ESTER, METHANOL, HYDROCARBON, DENATURED ALCOHOL, as these may damage the plastic and result in MICROFLAWS, which may later cause the sun visor to break.

Care of your vehicle

Interior cleaning and fabric parts

Dust on the seats and the fabric parts can be removed 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, assure 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 electrical components installed under the dashboard and/or the underside of the seats; take the necessary precautions to safeguard their correct operation.

Washing the engine

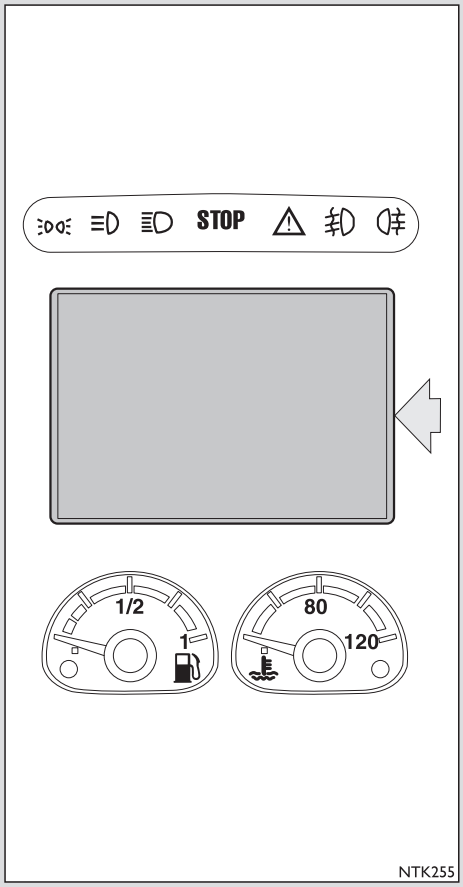
For this operation, it is advisable to consult an authorised workshop; in any case washing must performed when the engine is cold and with great care.
This is to prevent damage to the electrical components of the system.

Decoration of plastic sun visor

Decorating the sun visor by painting or application of 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 ester stuffs.
– Do not apply decals, labels, films or any PVC-based stickers; the use of specific polyester- or polyethylene-based products for polymethylmethacrylates is recommended.

ATTENTION: non-compliance with the conditions listed above can alter the plastic of the sun visor, which may cause the sun visor to break.



Care of your vehicle

Windscreen wipers, windscreen washers and headlamp washers

Periodically inspect the blades; 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 blades will thereby be prolonged considerably.

Before operating the windscreen wipers, remove any snow or ice present. At 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 blades. Do not operate the windscreen wipers on dry glass; if the rubber wipers are deformed or have worn tracts, replace the blades.

Make certain that both the spray nozzles of the windscreen and those of the headlamp washers (if provided) eject an adequate jet of liquid and are correctly aligned. In case of malfunction of the spray nozzles, check that the supply circuits are not obstructed; remove obstructions from the exit openings with a pin, if required.

Display cleaning

Extreme care shall be used with the display.

Do not use sharp objects as these may scratch or damage display.

Use a soft, clean and dry cloth to clean display.

Do not use solvents as these may corrode or damage the display.

Scheduled maintenance

Long life and efficient operation with one periodic maintenance:

- ❑ The philosophy of scheduled maintenance 324
- ❑ Maintenance service schedule 325
- ❑ Scheduled maintenance with intervals in hours for quarry and yard vehicles 326
- ❑ Stop schedule for quarry and yard vehicles (in hours) 328
- ❑ Scheduled maintenance for quarry and yard vehicles 329
- ❑ Temporary operations for quarry and yard vehicles 333
- ❑ Scheduled maintenance at mileage intervals for road vehicles 336
- ❑ Stop schedule for road vehicles (in kilometres) 338
- ❑ Scheduled maintenance for road vehicles 339
- ❑ Extra Plan/Temporary operations for road vehicles 343
- ❑ Global maintenance and lubrication plan 346

The philosophy of scheduled maintenance

In order to ensure the best performance of your vehicle throughout its life, inspection, checks and adjustment procedures required for the various vehicle systems at scheduled times are described on the following pages. Regular maintenance services are the best guarantee for safe operation and for keeping operating costs as low as possible.
Contact the *service network* for carrying out specified operations.
These procedures must be performed at the established kilometre intervals.
These operations are obligatory during the warranty period and failure to carry them out will invalidate the warranty.
The operations will have to be carried out exclusively by the *service network* which will have to confirm it with date, stamp and signature in special cases predisposed in the global maintenance plan.

Recommendations to the user

The intervals pertaining to engine lubrication are based on a percentage of sulphur present in the gasoline of less than 0.5%.
Note: If diesel oil with percentage of sulphur higher than 0.5% is used, the interval for the replacement of the engine oil must be halved.

Maintenance services schedule

The scheduled maintenance comprises "Standard" services plus a series of "Temporary" operations called "Off-plan" or else also called "Time based".

The standard services are marked with **M = Maintenance**.
They must be carried out at regular intervals expressed in kilometres normally multiples of each other.

The off-plan operations marked with **EP = Extra Plan** are operations complementary to the "standard" to be carried out at intervals not matching those of the standard services.

The time-based operations are instead marked with **T = Time**.
They are exclusively carried out in specific time-based intervals and are normally executed in particular seasonal conditions.

In order to reduce the number of stoppages for maintenance to a minimum, it is advisable to schedule off-plan stoppages, based on the travel in half a year, making them coincide, as far as possible, with the pre-defined intervals in terms of kilometres.

Scheduled maintenance at intervals in hours
For quarry and yard vehicles

- If the annual time travelled is very little, or less than 800 hours/year, the engine oil and the filter must be replaced once a year.
- If the operation is less than 1,600 hours/year, the transmission oil, axle oil, transfer gear oil , transfer group oil etc…, must be changed at least once every two years.
- The dryer filter of the pneumatic system must however be replaced every year.
- Early air filter clogging is mainly due to serious environmental conditions. For this reason, it must be replaced when indicated by the appropriate sensor independent of the prescribed interval; this time interval must, however, be respected in absence of any specific indications.
- If the operation per annum is too low, the general greasing must be carried out at least once a year.

Scheduled maintenance at intervals in hours
For quarry and yard vehicles

Type of use	Engine oil	Standard services			Time-based operations							
		M1	M2	M3	T1	T2	T3	T4	T5	T6	T7	T8
Quarry yard vehicles: (truck mixers, tilting trucks, etc.) **Off-road vehicles:** (snowploughs, etc.)	ACEA E4(1) Urania FE5W30	Every 1000 hours	Every 1500 hours	Every 3000 hours	Every 800 hours	Every 1200/ 2400/ 3600 hours	Every 3 months	Every year before winter	Every year before summer	Every year	Every 2 years	Every 3 years

(1) IVECO recommends using these oils for better fuel economy IVECO has already equipped new vehicles with these types of lubricant, suited to cold climates as well (minimum temperature down to -30°C). The lubricant change frequency refers to using these types of oil.

- ACEA E4 lubricants, also classed as ACEA E6, must not be used with the change frequencies contemplated for class ACEA E4. Their use requires changing the oil at the recommended intervals for ACEA E2 lubricants, i.e. every 400 hours.
- If using ACEA E7 (Urania LD7) lubricant, the engine oil and filters must be replaced every 800 hours.
- If using lower category ACEA E2 (Urania Turbo) lubricant, the engine oil and filters must be replaced every 400 hours.

Stop schedule for quarry and yard vehicles			
Hours	M services	Hours	M services
1000	M1	12000	M3
1500	M2	13000	M1
2000	M1	13500	M2
3000	M3	14000	M1
4000	M1	15000	M3
4500	M2	16000	M1
5000	M1	16500	M2
6000	M3	17000	M1
7000	M1	18000	M3
8500	M2	19000	M1
8000	M1	19500	M2
9000	M3	20000	M1
10000	M1	21000	M3
10500	M2	22000	M1
11000	M1	22500	M2

Scheduled maintenance for quarry and yard vehicles			
	M1	M2	M3
Engine oil changing	●		●
Engine oil filter/s changing	●		●
Fuel filter cartridge changing	●		●
Fuel prefilter cartridge changing	●		●
Air system dryer filter changing	●		●
Steering hydraulic system filter changing/cleaning	●		●
Level check in the clutch hydraulic system	●		●
Vehicle chassis lubrication	●		●
Status check of various control belts	●		
Clutch wear check on electric fan electromagnetic connection	●		●

Scheduled maintenance for quarry and yard vehicles			
	M1	M2	M3
Check AdBlue system using E.A.S.Y. MODUS or IT2000	●	●	●
Oil vent efficiency check on manual gearbox	●		●
Oil vent efficiency check on rear axle/s	●		●
Oil vent efficiency check on front axle	●		●
Oil vent cleaning on distributor between axles	●		●
Cab tilting, bonnet opening and closing and hooking/unhooking of engine parts	●	●	●
Moving operations [2]	●	●	●
Functional test on-road	●	●	●
Manual gearbox oil change		●	●
Transfer group oil change		●	●
Axle hub oil change		●	●
Change AdBlue system prefilter/s and filter		●	●

Scheduled maintenance for quarry and yard vehicles			
	M1	M2	M3
Front axle oil changing		●	●
Oil change for front axle wheel reduction gears		●	●
Rear axle oil changing		●	●
Oil changing on transfer gear between axles		●	●
Replacing turbocharger "VGT" air filter		●	●
Checking and adjusting valve clearance(1)		●	●
Checking headlamp alignment		●	●
Checking driving box fixing and support		●	●
EDC engine system check-up thorough MODUS, IT2000 or E.A.S.Y.		●	●

Scheduled maintenance for quarry and yard vehicles			
	M1	M2	M3
Fan drive belt change, Water pump and alternator			●
Air conditioning compressor drive belt change			●

Notes

(1) Only vehicles with Cursor 13 engine and short cab: overall removal/assembly of cab supporting crosspiece.

(2) Movement activity of the vehicle and the equipments in workshop.

Off-schedule/Temporary operations for quarry and yard vehicles

These operations can be carried out in combination with the maintenance service.

T1 Every 800 hours

- Change of oil for power-take-off total (Multipower) [1].

T2 Every 1200 hours supply gearboxes with mineral oil[1]
Every 2400 hours ZF 9 S 1310 gearboxes with synthetic oil[2]
Every 3600 hours ZF ASTRONIC gearboxes with synthetic oil[3]

- Replace ZF+INTARDER gearbox fluid and filter
- Change gearbox fluid

T3 Every three months

[1] ZF 16 S gearboxes filled with mineral oil, still change the fluid every year even if the vehicle is operated very little each year.
[2] ZF 9 S 1310 gearboxes filled with synthetic oil, still change the fluid every 2 years even if the vehicle is operated very little each year.
[3] Automatic ZF gearboxes filled with synthetic oil, still change the fluid every 3 years even if the vehicle is operated very little each year.

Temporary operations for quarry and yard vehicles

These operations can be carried out in combination with the maintenance service.

T4 Every year - Before winter

- Checking coolant density.
- Replacement of additional fuel heat filter.

T5 Every year - Before summer

- Check for possible clogging of the radiator.

T6 Every year

- Change cartridge and clean air filter container.
- Change engine vent filter.

T7 Every two years

- Change engine radiator fluid.

Temporary operations for quarry and yard vehicles

These operations can be carried out in combination with the maintenance service.

T8 Every three years

- Change oil and bleed hydraulic clutch drive.

Scheduled maintenance at kilometre intervals
For road vehicles on medium and long distances

- If fuel with percentage of sulphur higher than 0.5% is used, the engine oil change interval must be halved.
- If the annual mileage is very little or less than 100,000 km/year, the engine oil and the filter must be replaced once a year.
- If the annual mileage is very low, the fluids in the transmission, rear axle, distributor, idler assembly etc…, must be changed at least once every two years.
- The dryer filter of the pneumatic system must however be replaced every year.
- Early air filter clogging is mainly due to serious environmental conditions. For this reason, it must be replaced when indicated by the appropriate sensor independent of the prescribed interval; this time interval must, however, be respected in absence of any specific indications.

If the operation per annum is too low, the general greasing must be carried out at least once a year.

Scheduled maintenance at kilometre intervals
For road vehicles on medium and long distances

Type of use	Engine oil	Standard services			Extra Plan		Time-based operations					
		M1	M2	M3	EP1	EP2	T1	T2	T3	T4	T5	T6
Road on medium and long distances	ACEA E4 (1) Urania FE 5W30	Every 100,000 km	Every 150,000 km	Every 300,000 km	Every 120,000 240,000 360,000 km	Every 240,000 km	Every 6 months	Every year Before winter	Every year Before summer	Every year	Every 2 years	Every 3 years

(1) IVECO recommends using these oils for better fuel economy. IVECO has already equipped the new Euro 4 vehicle with these types of lubricant, suited to cold climates as well (minimum temperature down to -30°C). The lubricant change frequency declared in this handbook refers to using these types of oil.

- ACEA E4 lubricants also classified as ACEA E6 cannot be used for the oil change intervals specified for ACEA E4 category. Their use requires oil changes at the mileages specified for ACEA E2 lubricants, i.e. every 40,000 km.
- If using ACEA E7 (Urania LD7) lubricant, the engine oil and filters must be replaced every 80,000 km.

Stop schedule, in km, for road vehicles on medium and long distances			
Km x 1,000	Services M	Km x 1,000	Services M
100	M1	1200	M3
150	M2	1300	M1
200	M1	1350	M2
300	M3	1400	M1
400	M1	1500	M3
450	M2	1600	M1
500	M1	1700	M2
600	M3	1750	M1
700	M1	1800	M3
750	M2	1900	M1
800	M1	1950	M2
900	M3	2000	M1
1000	M1	2100	M3
1050	M2	2200	M3
1100	M1	2250	M2

Scheduled maintenance operations for road vehicles on medium and long distances			
	M1	M2	M3
Change engine oil	●	●	●
Change engine oil filter/s	●	●	●
Change fuel filter cartridge	●	●	●
Change fuel pre-filter cartridge	●	●	●
Change air system dryer filter	●	●	●
Change or clean steering hydraulic system filter	●	●	●
Check clutch hydraulic fluid level	●	●	●
General greasing of frame	●	●	●
Inspection of the condition of the various belt drives	●	●	
Clutch wear check on electric fan electromagnetic connection	●	●	●

Scheduled maintenance operations for road vehicles on medium and long distances			
	M1	M2	M3
Check AdBlue system using E.A.S.Y. MODUS or IT2000	●	●	●
Oil vent efficiency check on manual gearbox	●		●
Check efficiency of oil vent on rear axle/s	●		●
Check efficiency of oil vent on front axle	●		●
Oil vent cleaning on distributor between axles	●		●
Cab tilting, bonnet opening and closing and removal/installation and refit engine covers	●	●	●
Handling operations (1)	●	●	●
Functional test on-road	●	●	●
Manual gearbox oil change	●	●	
Transfer group oil change	●	●	
Axle hub oil change	●	●	
Change AdBlue system prefilter/s and filter		●	●

Scheduled maintenance operations for road vehicles on medium and long distances			
	M1	M2	M3
Power axle oil change		●	●
Power axle wheel reduction gear oil change		●	●
Rear axle/s oil change		●	●
Oil change on transfer gear between axles		●	●
Replacing turbocharger "VGT" air filter		●	●
Checking and adjusting valve clearance(2)		●	●
Checking headlamp alignment		●	●
Checking driving box fixing and support		●	●
EDC engine system check-up through MODUS, IT2000 or E.A.S.Y		●	●

Note:

M4 service includes operations of services M1-M2-M3

(1) Handling operations of vehicles and workshop equipment.

(2) Only vehicles with Cursor 13 engine and short cab: remove and refit cab support assembly.

Extra Plan/Time-based operations for road vehicles on short and long distances

These operations can be carried out in combination with the maintenance service.

EP1 Every120,000 km gearboxes containing mineral oil [1]
Every 240,000 km ZF 9 S 1310 gearboxes with synthetic oil [2]
Every 360,000 km ZF ASTRONIC with synthetic oil [3]

- Change gearbox fluid and oil filter.

EP2 Every 240,000 km

- Change generator and coolant pump belt
- Change air conditioner compressor drive belt

T1 Every six months – Particularly at the beginning of each spring

- Wash radiator grille.
- Check the condition of pollen filter[4].

T2 Every year - Before winter

- Checking coolant density.
- Replacement of additional fuel heat filter.

[1] ZF Ecosplit gearboxes containing mineral oil. Change the fluid in any case once yearly even if the mileages are low.
[2] ZF New Ecomid gearboxes containing synthetic oil. Change the fluid in any case every 2 years even if the mileages are low.
[3] ZF Automatic gearboxes containing synthetic oil. Change the fluid in any case every 3 years even if the mileages are low.
[4] If distance travelled is limited, replace the filters once a year at the beginning of spring.

Extra Plan/Time-based operations for road vehicles on short and long distances

These operations can be carried out in combination with the maintenance service.

T3 Every year - Before summer

- Check for possible clogging of the radiator.

T4 Every year

- Change of oil for power-take-off total (Multipower).

T5 Every two years

- Change engine coolant.

Extra Plan/Time-based operations for road vehicles on short and long distances

These operations can be carried out in combination with the maintenance service.

T6 Every three years

- Change oil and bleed hydraulic clutch drive.

Global maintenance and lubrication plan	
Mod.	Chassis
Licence plate	Date of registration
Last name	
Name	
Address	
City	Telephone

The following pages give the summary of the services to be carried out at the intervals established from the maintenance and with respect to the same, the spaces in which to affix the stamp of validation of the executed service.

Hours	km x 1000	Service	Mileage effectively carried out	Date day month year service voucher	Validation Carried out Services
1000	**100**	M1		....	
1500	**150**	M2		....	
2000	**200**	M1		....	
3000	**300**	M3		....	
4000	**400**	M1		....	
4500	**450**	M2		....	
5000	**500**	M1		....	
6000	**600**	M3		....	

Hours	km x 1000	Service	Mileage effectively carried out	Date day month year service voucher	Validation Carried out Services
7000	**700**	M1		....	
7500	**750**	M2		....	
8000	**800**	M1		....	
9000	**900**	M3		....	
10000	**1000**	M1		....	
10500	**1050**	M2		....	
11000	**1100**	M1		....	
12000	**1200**	M3		....	

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