Mercedes-Benz Buses and Coaches up to year of manufacture 2011

Guide for Rescue Services

Mercedes-Benz

Contents

1 Publisher's information

1.1 Questions and suggestions

If you have any questions, suggestions or proposals on this rescue guide, please feel free to contact us at:

EvoBus GmbH / Mercedes-Benz Buses and Coaches

Vertrieb/Marketing HPC: L22

Hanns-Martin-Schleyer-Str. 21-57,

D -68301 Mannheim, Germany

E-mail: info@mercedes-benz-omnibusse.com

1.2 Legal notices

1.2.1 Copyright

1.2.2 Products

The information is subject to change following the editorial deadline. The information in this description is to be regarded as an indication. Errors excepted. Colours may vary for technical reasons. This description may also contain models and consulting services that are not available in some countries.

1.2.3 Trademarks

Unless otherwise indicated, all marks displayed in this product description are subject to the trademark rights of EvoBus GmbH and/or Daimler AG, its model nameplates, and its corporate logos and emblems.

1.2.4 Liability and Warranty

EvoBus GmbH provides this information without guarantee or warranty of any kind, express or implicit. This shall also exclude any implied warranties of merchantability, fitness for any particular purpose or non-infringement of laws and patents. While the information provided is believed to be accurate, it may include errors or inaccuracies, for which we shall not assume any liability.

2 Foreword

Dear readers,

One of the main goals of EvoBus GmbH and the Mercedes-Benz Buses and Coaches brand has always been to guarantee the best possible safety.

This also includes making available information about our vehicles and their safety technology for rescue teams

Despite intensive efforts to make our buses as safe as possible, the possibility of injury cannot be completely ruled out in the event of an emergency.

A short, fast and effective rescue chain will therefore continue to be essential in the future. The rescue teams must get access as quickly as possible to the injured without increasing the danger for the casualties or themselves.

The prerequisite for this is the sound training of all rescue personnel. In view of the special circumstances for buses, e.g. construction, special access arrangements and safety systems, this guide will assist you in your work both during operations and in the training of rescue teams.

This guide has been written in the light of the latest knowledge and with the help of personnel from the rescue services, but makes no claim to completeness and is in no way a substitute for sound training and the relevant specialist literature on the topic of "Technical Rescue".

The guide is intended to provide support for rescue teams during operations and training. Since every accident, especially with buses, is an exceptional situation, the information in this guide must be adapted to each individual case.

EvoBus GmbH

BUS/MPM-I

68301 Mannheim, Germany

3 Tips for rescue teams

The rescue of persons from cars involved in accidents has in recent times become standard practice for rescue teams. This operation can be practised without any problem using discarded cars.

However, for buses and coaches the situation looks different. Owing to the long service life and the high residual value, it is almost impossible for rescue teams to exercise the rescue of injured persons from current vehicle models.

In comparison to motor car accidents, the patient-orientated rescue of persons from buses and coaches is much more costly, and not only because of the high number of injured. The more stable construction together with the significantly greater dimensions and weights of the vehicles make the rescue of trapped persons more difficult and complicated.

3.1 Medical aspects

Whereas up to a few years ago the fastest release of accident victims stood in the foreground, today it is medical initial emergency care and patient-orientated rescue from the vehicle that is of primary concern.

Exception

- Immediate danger due to fire or crash
- Crash rescue necessary on medical grounds

In every case the (hectic) pulling out of persons must be avoided at all costs. The accident victim should initially be left in the vehicle as long as there is no immediate danger for the person and rescuers.

The top priorities are the medical and psychological care of the accident victim, together with a careful, patient-orientated rescue from the vehicle.

The medical action taken in the vehicle should be limited to what is absolutely essential. At the same time access to the accident victim for the emergency doctor or rescue service must be facilitated to allow the life-saving measures to be carried out.

The vital immediate measures must be carried out without delay in accordance with the relevant current medical standard.

The most important immediate measures are:

- Assure the vital functions (breathing, circulation)
- Keep the airways free, and clear any breathing obstructions (possibly by intubation)
- Prevent shock or assess the state of shock and take stabilisation measures
- Take care of life-threatening injuries
- Stop serious bleeding
- Immobilise certain parts of the body
- Psychological care of the accident victim

In an accident very high accelerations act on the body, so there is a high risk of spinal injury. The accident victims must always be immobilised before taking any rescue measures; i.e. taken care of using the appropriate bracing procedures (e.g. "Stifneck", Kendrick Extraction Device (KED) etc.).

During the rescue operations the accident victim must be given constant medical care. It is essential to ensure a careful course of action.

3.2 Technical aspects

- Identification of the vehicle model
- Visual check on the installed restraint and safety systems
- Body features in relation to the use of hydraulic rescue equipment

3.3 Tactical operational aspects

During the rescue action there are numerous risks of injury for the patients and rescuers, e.g. due to

- running engines
- explosion of high pressure gas tanks and lines
- electronic equipment and defective electrical wiring
- hot water equipment
- coolant leaks
- air conditioners
- acid leaks
- sharp edges, metal parts, shards of glass etc.

Always pay attention to the personal safety of the rescuers.

3.3.1 Operational procedure

The aim of the patient-orientated rescue is to ensure wherever possible the gapless care of patients from the accident scene until the time of definitive care in hospital.

The rescue of accident victims from buses may be divided into different phases, in the same way as for passenger cars:

1. Initial opening
2. Care opening
3. Release opening

Through the parallel execution of medical and technical measures it is possible to optimise the time for a patient-orientated rescue.

During this time it is essential to have constant communication between the fire service and the rescue team.

An initial assessment, and the external securing of the vehicles involved in the accident or of the accident site always come at the start of the operation.

Initial assessment

- Number of vehicles involved
- Number of injured and trapped persons
- Special technical features of the vehicles
- Possibilities for access and release
- Special hazards

Making the outside safe

- Make the accident site safe against flowing traffic
- Ensure fire protection by making ready suitable extinguishing agents
- Secure luggage, ski boxes, trailers etc.
- Illumination of the accident site

Give immediate feedback to your command post.

Ask for additional support in good time; do not forget the support required for medical care, such as the senior emergency doctor, organisational leader, quick response groups etc.).

For tactical operational reasons (vehicle height) it is advisable to call up elevating rescue vehicles at an early stage: e.g. turntable ladder with basket and stretcher support.

Note section 3.3.3 Multiple casualty incident

3.3.2 Fire protection

The time between fire outbreak and conflagration is only a few minutes. Therefore it is essential to provide fourfold fire protection for classes A, B C, and D.

A fire risk exists during rescue work primarily due to

- escaping service fluids
- short circuit
- defective heaters

3.3.3 Multiple casualty incident

Owing to the possibility of a high number of casualties in bus accidents, in addition to the "Technical Rescue" team, there will usually be a need to set up a "Multiple casualty incident" team.

This requires additional rules regarding the operations logistics chain, the organisation of space, and the operations command system.

The following points must be given special treatment, particularly when the site of operations is confused and constricted:

- coning off the accident scene over a wide area, setting up road blocks
- alternative approach and exit routes for reinforcements
- requesting additional support
- staging areas for fire service, rescue service, disaster containment, police etc.
- preparation areas for fire and rescue service, ambulance service, disaster prevention, police etc.
- casualty holding and treatment areas

4 Technical information

In the bus industry too, development has not stood still. So, beside the conventional petrol or diesel engine there are more and more buses with alternative drives coming into use. Gas and fuel cell drives are no longer a rarity.

In addition, with regard to the body and the materials used, there are some special features compared with the construction of a passenger car. For example, we must assume that the dimensions will be significantly greater and the weight higher. Similarly, the articulated vehicle is also something special which rescuers should give thought to early on.

4.1 Diesel drive

Propulsion using petrol or diesel is the oldest and the most widespread. This is probably where the fewest questions are raised about ensuring fire protection. Yet even here there are some things to note that are not so relevant for operations involving crashed passenger cars.

4.1.1 Tank location

The tanks may be integrated into the front passenger seats, and so place special demands on the rescuers. However, the tanks on coaches also demand a cautious approach when using rescue equipment because of their location in the area of luggage compartments (beneath the passenger seats).

The precise location of the tanks can be found in the annexes.

During rescue operations make absolutely certain you also know the location of the lines from the tank to the engine.

Figure 1: City bus - tank in the body shell

Figure 2: City bus - tank with seat

Figure 3: Interurban bus - tank in the body shell

Figure 4: Coach - tank in the frame

4.1.2 Tank material and capacity

Material	- Plastic - Steel sheet - Aluminium
Capacity	180 litres (city bus) up to 1,000 litres (coach)

Diesel is assigned to **Fire class B** according to the European Standard EN2 for "Inflammable materials of diverse nature".

4.2 Natural gas drive

The Citaro CNG and Citaro G CNG models are low-floor city buses of the Mercedes-Benz Citaro type with natural gas drive.

Well-known on the diesel buses, the engine has been further developed for natural gas combustion and converted to work as a spark ignition engine.

Buses with natural gas drive may exhibit the following distinguishing features:

- "CNG" (Compressed Natural Gas) marking on the engine flap
- filler neck in the engine flap
- large roof bonnet

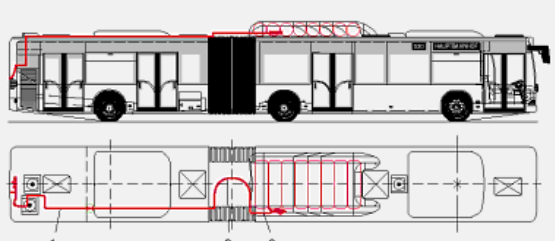
4.2.1 Technology

The installation of the natural gas components of the Citaro CNG is aimed at the highest level of safety.

The tanks are designed for pressures of over 500 bar and so provide a bursting safety factor of 2.5. On every pressure tank special safety devices, such as shut-off valves or fusible links ensure maximum safety standards.

For additional safety the gas tanks are located on the vehicle roof.

The gas line of the natural gas Citaro runs from the tank filler neck in the engine compartment directly to the pressure gas tanks on the roof without touching the passenger compartment. This prevents natural gas from entering the interior of the vehicle.



4.2.2 Materials

Roof gas bonnet: fibre-glass reinforced plastic.

Air slits are located on the top of the gas cover; these allow any leaking gas to escape.

The 20 mm wide gap between the gas cover and the roof of the bus in conjunction with the air slits satisfies the statutory requirement to permit an exchange of air.

Gas tanks: solid plastic polyethylene with carbon fibres.

The tanks are fixed in a heavy-duty steel frame on the roof framework.

Natural gas is assigned to **Fire class C** according to the European Standard EN2 for "Inflammable materials of diverse nature".

Natural gas is lighter than air and disperses upwards on escaping.

Extensive tests have shown that the solid tanks, pipes, unions and the complete natural gas peripherals offer the greatest possible safety in an accident.

The risk of a fire on a Mercedes-Benz bus driven by natural gas is no higher than for diesel vehicles.

4.2.3 Gas supply isolation

The refuelling unit is accessible via the

- rear engine flap
- tank flap above the front axle.

Located here on some models is a main shut-off valve, by means of which the gas supply to the tanks can be isolated.

On vehicles of later design the gas supply is automatically isolated by means of an electric shutoff valve on "Ignition OFF".

Risk of injury!

Even when the engine is off, turning on the gas preheater can open the solenoid valves to the gas bottles.

In addition to switching off the engine, also switch off the vehicle electrical system at the battery isolating switch (in the battery compartment).

The gas tanks are provided with safety devices on both sides.

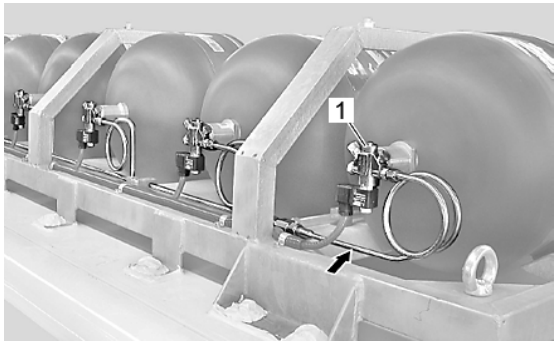
On left side:

At each gas bottle on the left side there is:

- A combined valve (1), comprising

  electrically operated solenoid valve, non-return valve, pipe fracture safeguard (cross-section reduction to 10%), fusible link (110°C) and mechanical shutoff valve.

All combined valves are connected together by a high pressure line (arrow).



On right side:

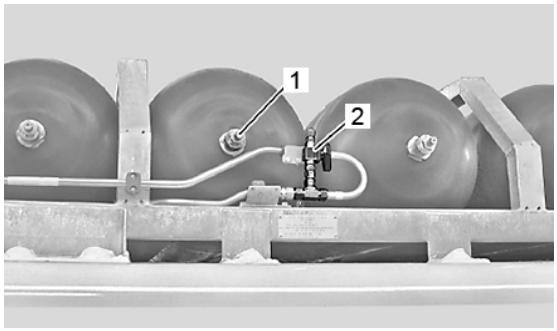
The following components are located on the right side of the gas supply system:

- Pressure limiting devices

  At each gas bottle there is a fusible link (1) to limit the pressure.

- T-piece with evacuation device

  In the high pressure line is an evacuation device (2). This enables the gas to be removed.



All safety devices are mechanical systems. Their operation requires no vehicle electrical supply.

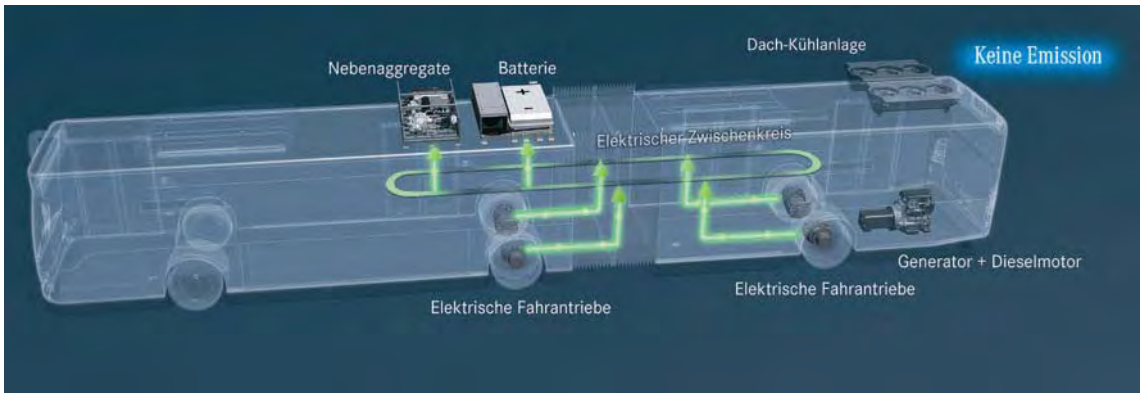
4.3 Diesel-electric drive (Citaro G BlueTec Hybrid)

Highly polluted inner cities or designated environment zones demand new drive technologies. With the hybrid drive, it is possible to move off and travel short distances fully emission free.

4.3.1 Technology

A hybrid is the combination of two energy stores (fuel tank and battery) and two energy converters (electric motor and diesel engine).

The main components of the diesel-electric hybrid are the hub electric motors, batteries, diesel engine, the electrically driven auxiliary units and the generator.



The diesel engine is no longer in continuous operation as a propulsion unit, but serves to drive a generator for producing electric power as and when required.

The electric motor is used as an additional generator when braking or decelerating to regenerate energy. This energy is stored in the lithium-ion batteries and retrieved when needed.

The high voltage batteries and electrically driven auxiliary units are housed on the roof.

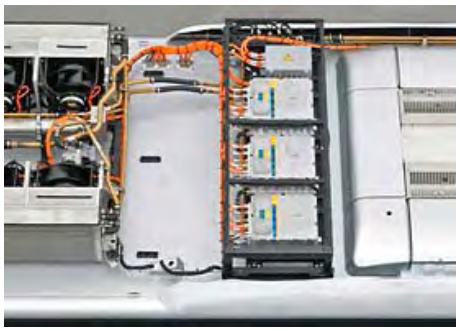
The roof-mounted cooling system at the rear end supports the trouble-free operation of engine, ancillaries and batteries.

Danger to life!

The voltage of the vehicle electrical system in diesel-electrical drive reaches 750 V/400 A. Unless the hybrid system is in the de-energised state, there exists a danger to life for rescue teams!

4.3.2 Materials

All electrical cables carrying voltages greater than 60 volts are orange or are run in an orange coloured conduit.

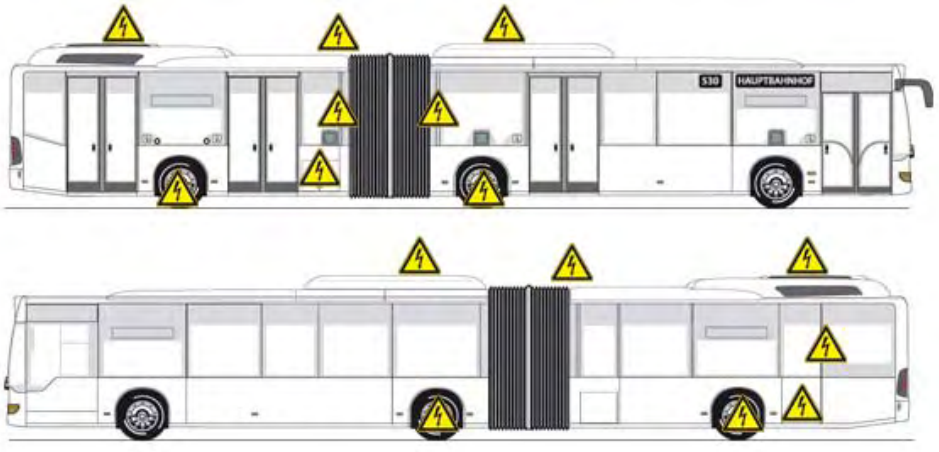


Components and wiring of the high-voltage system (750 V) are located

- on the vehicle roof (front end, articulation joint crossover, rear end),
- in the engine compartment,
- at the centre and rear axles, and
- at some window pillars.

- Vehicle battery (24 V) to rear of articulation joint on the right side.

Components and batteries are marked with the voltage warning sign: 



4.3.3 Removing electrical power from the bus

High voltage system (750 V)

There are several ways of de-energising the high voltage system of the bus:

1. Turn ignition key to position 0.

2. Operate emergency OFF switch to the left of the driver's workstation.

3. Operate emergency OFF switch in battery compartment.

4. Operate emergency OFF switch behind the flap at the front right.

Attention:

The emergency OFF switch in the front flap is optional equipment and therefore not available in every vehicle.

Danger to life!

On all 4 variants, fast de-energisation of the high voltage network takes place actively within 5 seconds.	
If fast de-energisation fails, the high voltage system is de-energised passively. This operation takes up to 6 minutes. The vehicle is then safely de-energised.	During this time proceed with due care. ATTENTION: There is still voltage within the batteries!
	When using extinguishing agents (DIN VDE 0132), always maintain the appropriate safety distance.

Position of emergency OFF switches

1	Emergency OFF switch in battery compartment
2	Emergency OFF switch at driver's workstation left side
3	Emergency OFF switch behind front flap (OPTIONAL EQUIPMENT)

Vehicle electrical system (24 V)

To isolate the vehicle battery, use of the battery isolator switch in the battery compartment is recommended.

When the high voltage system is activated, operating the battery isolator switch has no effect.

4.4 Fuel cell electric drive (Citaro FuelCELL Hybrid)

Mercedes-Benz vehicles with fuel cell electric drive are currently available in Europe as a short production run of 30 vehicles. In a number of different studies the operation of the vehicles and the necessary infrastructure are being tested.

As emission standards get ever stricter and fossil energy sources become increasingly scarce, the demand for this alternative drive concept can be expected to rise.

4.4.1 Technology

Fuel cells produce energy from the reaction of hydrogen and oxygen. They work with a high efficiency and emit only pure water vapour.

The drive train of the Citaro FuelCELL Hybrid is designed as a serial hybrid drive. This means that the fuel cell supplies the current to drive the electric wheel hub motors and auxiliary units. Energy management controls the distribution of energy from the fuel cell systems (stacks) in and outside the battery, and the distribution to the consuming loads. Energy not currently required is stored in the battery on the roof.

Energy generated from braking (recuperation) and idling drives the auxiliary units; surplus energy is also stored in the battery.

The fuel cell system and the pressure tanks, containing hydrogen compressed to 350 bar, are accommodated on the roof of the buses.

Electricity is produced from the hydrogen and delivered to the wheel hub motors and auxiliary units.

The wheel hub motors are located on the drive axle. The auxiliary units are in the motor tower at the rear of the bus on the left.

The high voltage batteries are housed on the roof.

Vehicles with a fuel cell drive are equipped with hydrogen tanks. For these vehicles it is particularly important to observe the .

Hydrogen (H_2) is assigned to **Fire class C** according to the European Standard EN2 for "Inflammable materials of diverse nature".

Danger to life!

The voltage of the vehicle electrical system reaches 800 V/200 A. Unless the hybrid system is in the de-energised state, there exists a danger to life for rescue teams!

Location of components

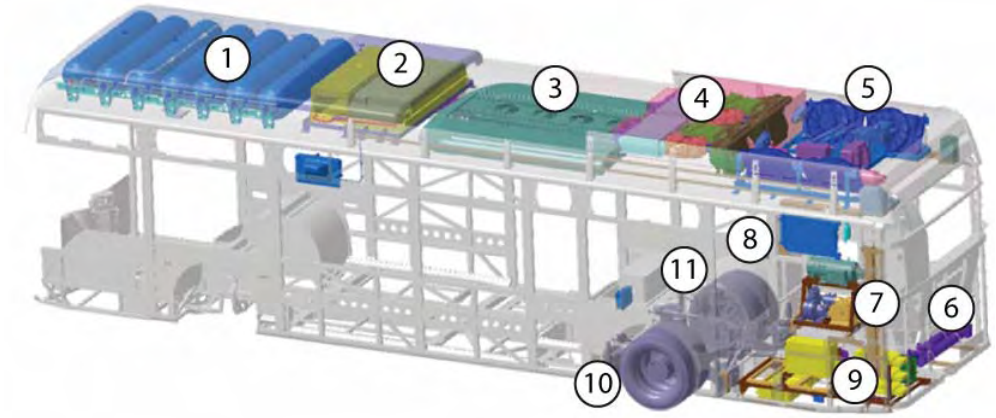


Figure 5: Location of fuel cell components

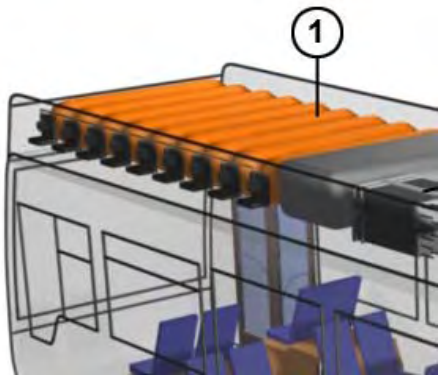
1	Hydrogen tanks (max. pressure 350 bar)
2	High voltage battery
3	Roof air conditioner
4	Fuel cell system
5	Roof-mounted cooling system (high temperature cooling)
6	Heating
7	Auxiliary units
8	Cooler (low temperature cooling for power electronics)
9	Power electronic carrier
10	Wheel hub motor
11	Vehicle battery 24 V (in front of drive axle right side)

4.4.2 Safety devices

Pressure tanks are provided with glass bulb pressure release devices (PRD).

If the temperature in the hydrogen tank system is excessive (e.g. fire) the hydrogen will be vented via the PRDs at a central position on the bus roof.

(1) Main vent point on right side of vehicle



The safety devices are mechanical systems. Their operation requires no vehicle electrical supply.

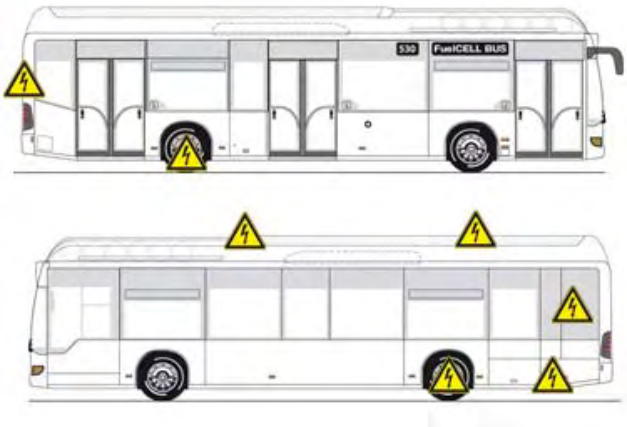
4.4.3 Materials

All electrical cables carrying voltages greater than 60 volts are orange or are run in an orange coloured conduit.

Components and wiring of the high-voltage system (800 V) are located

- on the vehicle roof (high voltage lines on the left side of the vehicle),
- in the engine compartment (motor tower and rear), and
- at the rear axle.

Components are marked with the voltage warning sign: 



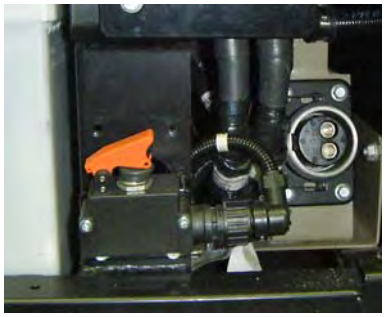
4.4.4 Removing electrical power from the bus

The bus is equipped with fuel cell stacks, in which electrical energy is generated by the reaction of hydrogen and oxygen. The danger zones for high voltages and currents are mainly on the vehicle roof and at the rear left of the engine compartment.

1. Turn ignition key to position 0.

2. Operate emergency OFF switch to the left of the driver's workstation.

3. Operate emergency OFF switch in battery compartment.



4. Operate emergency OFF switch behind the flap at the front right.

Attention:

The emergency OFF switch in the front flap is optional equipment and therefore not available in every vehicle.

Danger to life!

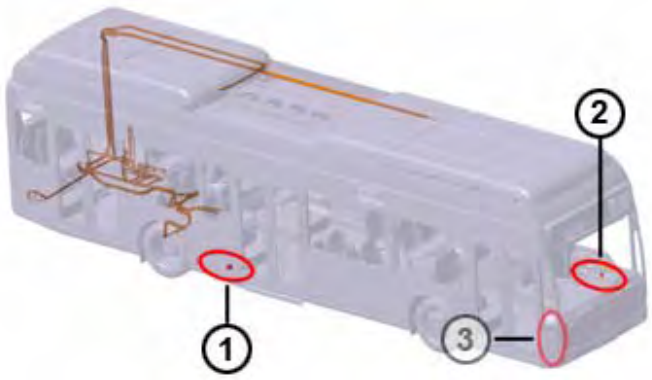
On all 4 variants fast de-energisation of the high voltage network takes place actively within 5 seconds.	
If fast de-energisation fails, the high voltage system is de-energised passively. This operation takes up to 6 minutes. The vehicle is then safely de-energised.	During this time proceed with due care. ATTENTION: There is still voltage within the batteries!
	When using extinguishers (DIN VDE 0132) always maintain the appropriate safety distance.

When power is removed from the bus, all electrical circuits are interrupted.

In the fuel cell stacks on the vehicle roof, the voltage is only slowly reduced (capacitor effect).

At the same time all hydrogen valves are closed and a further outflow of hydrogen into the lines is prevented. The deliberate discharge from the main vent point above the tanks is therefore not affected.

Position of emergency OFF switches



1	Emergency OFF switch in battery compartment
2	Emergency OFF switch at driver's workstation left side
3	Emergency OFF switch behind front flap (OPTIONAL EQUIPMENT)

Vehicle electrical system (24 V)

To isolate the vehicle battery, use of the battery isolator switch in the battery compartment is recommended.

When the high voltage system is activated, operating the battery isolator switch has no effect.

4.5 Vehicle body

Knowledge of the construction of the vehicle involved in an accident will facilitate the rescue action enormously. On this will depend how effectively the technical options and the available tools are used. This in turn is the basis for a rapid, careful, and successful rescue of trapped persons.

4.5.1 Body frame

The frame construction may place high demands on the performance of the hydraulic rescue equipment!

The body frame is of tubular construction.

- Semi-integral structure with all-round ribs joined together by continuous angle sections at the roof edges and seams.
- Pillars, bows and side members are made of large square steel tube.
- The sidewalls of city buses have a reinforced longitudinal member to provide protection against side impacts and act as a mounting for the seats.

Figure 6: Body frame (low-floor bus shown here)

4.5.2 Materials

Body frame material

- Square steel tube

Floor frame material

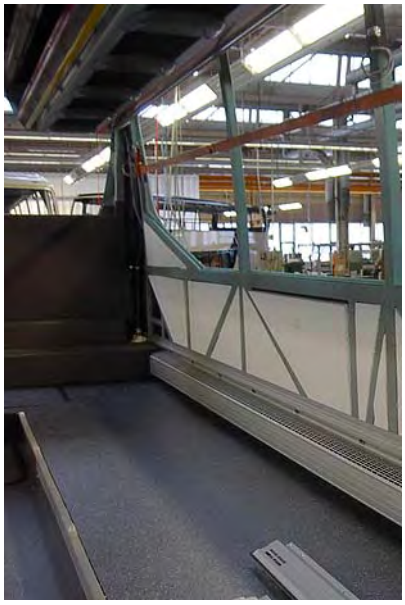
Longitudinal and cross members	Large-volume square tubes or folded and pressed parts
Junctions at the cross members (in front of and behind the rear axle)	Cast-steel nodes
Wheel housing area	Galvanised sheet steel or aluminium - 3 mm at FA - 2 mm at RA

Panelling material

- Strip-galvanised sheet steel or aluminium, thickness approx. 1.0 mm
- FRP mouldings
- Aluminium sheet

The panelling is bonded, spot welded or riveted to the body frame.

The sidewalls and the roof are lined throughout with insulating mats or Polystyrol.



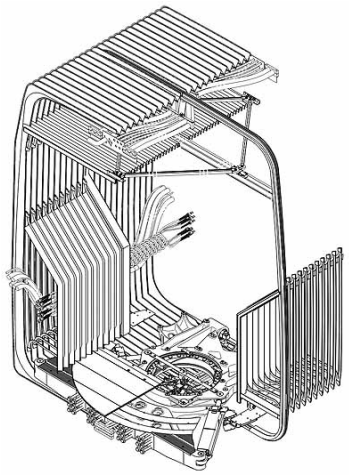
4.5.3 Articulation joint

The front and rear sections of the vehicle are connected by means of an articulation system.

It consists of support units, self-supporting ring gear and a hydraulic unit.

This articulation joint is especially robust due to the design of the cast parts (grey cast iron with spheroidal graphite, GGG).

The folding bellows and power supply routing are located in the articulation area.



To allow buckling movements of the bus, the front and rear sections of the joint are connected with a roller bearing. The pitch axis is at the junction between the front section of the vehicle and the joint.

Risk of injury!

When lifting articulated buses there is a considerable risk of injury. In particular, with a distorted articulation joint unforeseen movements can occur.	Proceed with extreme care. Pay attention to the personal safety of the rescuers.

4.5.4 Dimensions / weight

Mercedes-Benz buses and coaches are built in lengths between 8 m (midibus) and 18 m (articulated vehicle).

Depending on the length and axle equipment, a permissible gross vehicle weight from 12,600 kg to 28,000 kg is achieved.

4.6 Materials used

Only fire retardant materials are used in the interior of the bus in compliance with the legal requirements (EU and ECE) and the current state-of-the-art.

The requirements of EU Directive 95/28 and 2001/85 EC for the entire vehicle are deemed to have been met.

4.6.1 Magnesium and Aluminium

In the motor industry, light metals such as magnesium and aluminium are being used more and more. These metal parts find use in the vehicle as engine blocks, cylinder head covers, intake manifolds, transmission or clutch housings, dashboard brackets, seat backrest frames, and door and flap structures in conjunction with other materials and components of vehicle bodies.

Magnesium and aluminium are assigned to **Fire class D** according to the European Standard EN2 for "Inflammable materials of diverse nature".

Risk of injury!

Magnesium and aluminium components burn with a bright flame.	Avoid directly looking into the flames.
Magnesium and aluminium reach temperatures of 2000-3000°C in a fire.	Use appropriate extinguishing agents for metal fires.
During combustion at very high temperatures a part of the water molecules are split. When this happens hydrogen and oxygen are released. The mixture of these two gases is the explosive oxyhydrogen gas.	Use appropriate extinguishing agents for fighting fires of Fire Class D. Have a further hose ready for any fires in the vicinity.

There is no increased danger for bus passengers through the use of magnesium and aluminium.

5 Technical Rescue

Every instance of technical assistance, in particular the release of trapped or injured persons requires knowledge of the construction of the vehicle involved in the accident.

In this section you will find information about the equipment of Mercedes-Benz buses in "The new Citaro" model series. However, since there are numerous items of special equipment/optional extras for every model, the configuration of individual vehicles may vary widely.

Whenever possible, ask the **driver** about the precise equipment and operation of the vehicle.

5.1 Fire detection / fire extinguisher system

For Mercedes-Benz buses and coaches a fire detection / fire extinguisher system in the engine compartment is available as an extra.

Detection lines monitor the temperature in the engine room. If the set value (160 °C) is exceeded an alarm appears on the driver display with the text: "Fire in engine compartment".

The extinguishing operation is triggered in the same way. Atomised to a fine spray, the extinguishing agent discharges into the engine compartment from the extinguishing nozzles.

Risk of injury!

Under certain circumstances the fire extinguisher system may not be able to completely and permanently extinguish the fire.	Even if the fire appears to be out ensure fire protection is in place.
The fire detection lines installed in the engine compartment are at a pressure of about 15 bar. The extinguishing agent lines are at a pressure of 200 bar.	Wear the appropriate protective equipment.

1 – Detection line

2 - Nozzle 1

2 - Nozzle 2

4 - Nozzle 3

5 - Nozzle 4

5.2 Battery

In most buses there are two or more batteries. The batteries may be located in front of, above or behind the axles.

The exact position of the batteries in the individual models may be obtained from the annexes.

The battery position is not indicated on the outside of the vehicle.

The batteries are mounted on removable trays.

1. Open the locking screws / split pins of the battery supporting frame.
2. Pull out the tray by the carrying handles.
3. If the batteries are arranged one above the other, loosen the locking screws/split pins of the upper frame.
4. Swing the upper battery to the right.

Figure 7: Public service bus

Figure 8: Public service / interurban bus

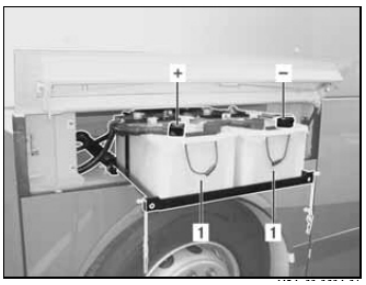


Figure 9: Coach

5.2.1 Disconnecting the battery

Do not disconnect the batteries until you have made use of all electrical loads for your own benefit e.g. driver window lifter, door openers, roof hatches, driver seat adjustment, interior lighting etc. This can considerably simplify the further course of the operation and the rescue of casualties.

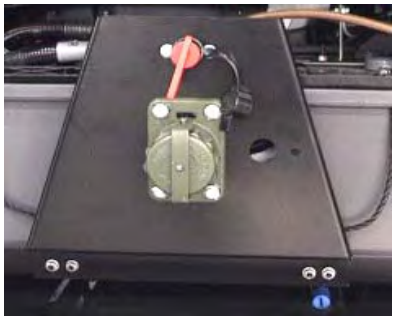
After disconnection of the batteries the interior lighting will no longer function.

Avoid panicking passengers by, for example, floodlighting the vehicle.

Risk of injury!

When working on batteries there may be a risk of injury and explosion.	Observe the safety warnings on the battery in the user instructions and in the vehicle operating manual.
Inside enclosed battery compartments an oxyhydrogen mixture may build up. On disconnecting the battery there may a risk of explosion.	Always pull the battery tray right out. Wear the appropriate protective equipment.
On some vehicles, disconnecting the battery can cause the driver seat to lower. Any uncontrolled movement may lead to the risk of further injury or to a worsening in the condition of the casualty.	Carry out this operation only in consultation with the emergency doctor.

Instead of disconnecting the battery it is recommended that you use the battery circuit breaker.



Disconnecting the battery

1. Switch off the ignition.
2. Disconnect the negative terminal.
3. Disconnect the positive terminal.
4. Hold the positive and negative cables together to discharge voltages stored across capacitors.
5. Check that circuits are dead by, for example, by switching on the hazard warning flasher.
6. Protect the cables against being re-energised or making contact by, for example, using cable ties.

After disconnecting the batteries also make sure that fire protection is in place.

5.3 Switching off the engine

In the case of diesel engines the engine may continue running after an accident. After securing the vehicle it must be switched off.

The engine may be switched off in various ways.

5.3.1 Removing the key

The ignition lock is located on the right of the steering column. Before you remove the key, the following criteria must be met:

- accelerator not depressed
- parking brake on
- pushbutton switch "N" of transmission operated

5.3.2 Start/Stop switch at driver station

Some buses are equipped with a Start/Stop switch.

This is found either

- on the console to the left of the driver's workstation or
- on the instrument panel.

5.3.3 Start/Stop switch in the engine compartment

Besides the ignition lock and the Start/Stop switch near the driver, there may also be an additional Start/Stop switch (1) in the engine compartment.

To stop the engine with switch (2), the following conditions must be met:

- ignition lock in drive position
- operation of the Stop switch

5.3.4 Battery circuit breaker

Operating the battery circuit breaker will interrupt the current supply to the injection system. After 2-3 injection operations the engine will stop.

Note that, after disconnecting the batteries, all electrical loads, such as window lifters, door openers, roof hatches, seat adjustment, interior lighting etc. will cease to work.

5.3.5 Master switch

Some models have a master switch fitted. It is located on the console to the left of the driver and is coloured red.

Operating the main isolating switch will switch off the engine. Speedometer, instrument cluster, central locking, interior lighting and roof hatches will still function.

1. Unlock the switch by turning the red knob to the left
2. Operate the switch by pressing the red knob.

5.3.6 Covering the air intake

A further way, which has proved itself in practice is to cover the air intake with a plastic foil. Due to the reduced oxygen supply, a vacuum builds up and the engine stops.

The engine air intake (1) is located at the rear on the right or left side of the vehicle.

Figure 10: City bus

Figure 11: City bus

5.3.7 Injecting CO_2

The engine can also be stopped by injecting carbon dioxide (CO_2) into the air filter.

5.3.8 Interrupting the fuel supply

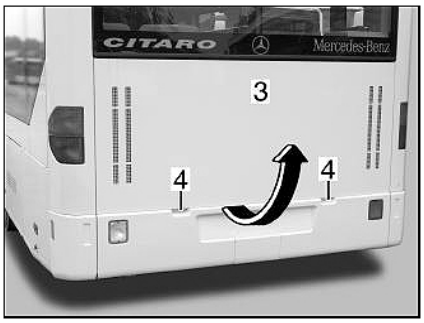
In order to switch off the engine, you may, if necessary, interrupt the fuel supply at the fuel filter in the engine compartment.

- Close the hand wheel (1) at the fuel filter or
- Unscrew the fuel filter.

5.3.9 Opening the engine compartment flap

Open the engine compartment flap (3) by the two handle recesses (4).

The engine compartment flap is normally not secured with a lock.



5.4 Securing and support

Risk of injury!	
Rescue action can bring about unintentional movement of the vehicle. This can lead to further injury to the accident victims and put the rescuers at risk.	Before beginning rescue work secure the vehicle against uncontrolled movements.

A patient-orientated rescue of injured persons from the vehicle can only be done after adequate stabilisation of the vehicle.

The bus must be prevented from rolling away by applying the parking brake (hand brake valve) if this has not already been done by the driver.

Located on the console panel, left of the driver.

Persons who are trapped are in direct contact with the vehicle. For this reason it is necessary to make sure that the action of securing the vehicle does not cause uncontrolled movements of the vehicle or parts thereof.

The secureness of the vehicle must be maintained during the entire rescue operation, and must not hinder the use of rescue equipment by the fire service.

The stabilisation of buses that are standing or lying on their side is relative easy. Here the vehicle can be secured against tipping and sliding with chocks, supporting struts, ropes and belts.

A bus that is unstable or lying on its roof requires extensive supporting materials and even perhaps the use of a mobile crane.

5.4.1 Support

The vehicle can be stabilised using wooden pads, blocks or planks.

5.4.2 Wheel chocks

Wheel chocks can be used to stop the bus rolling away.

5.4.3 Supporting struts

Buses on their side can be secured against tipping and sliding by using supporting struts or special support systems.

5.4.4 Endless slings

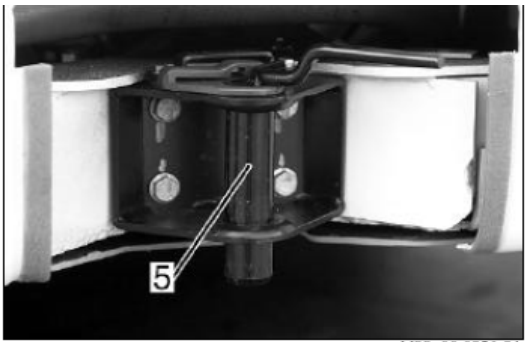
If the vehicle is on sloping or uneven terrain, such as a road embankment, it can be secured by using an endless sling in conjunction with a mobile crane, depending on the situation.

Because of the heavy weight of a bus it is essential to observe the safe working load of straps.

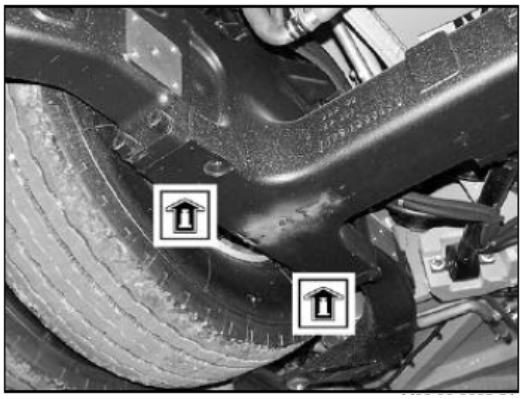
Suitable slinging points are:

- Coupling jaw at the front
  located behind the flap in the centre section of the bumper.

- Coupling jaw at the rear (optional extra)
  located behind a flap in the centre section of the bumper below the number plate.



- Drive axle
- Air suspension bellows



5.4.5 Lifting the vehicle

Risk of injury!

Lifting the vehicle, if not done properly, represents a high risk of injury for patients and rescuers.	Lifting of the entire vehicle must always be done at all the axles. The vehicle is not stable enough between the axles underneath the side wall (U-section) for it to be lifted or supported there.
Lifting the vehicle can lead to unforeseen movements or even failure of lifting appliances.	Place supports under vehicles being lifted in the course of the operation with materials suitable for the purpose. Work only on vehicles that are supported or secured.

The lift contact points for the jack on the body frame are marked on the outside of the bus by symbols. These points are also suitable as contact points for the lifting appliances of the fire service.

Caution with tandem axles:

Drive axle and trailing axle are interconnected through the suspension design. Lifting a single axle is only allowed so long as the wheels of the second axle do not lift off the ground.

If the vehicle is lying on the roof or on the side, then the reinforced vertical struts by the doors and on the opposite side of the vehicle act as slinging points for straps and endless slings, or as lifting points for lifting supports and lifting cushions.

Risk of injury!

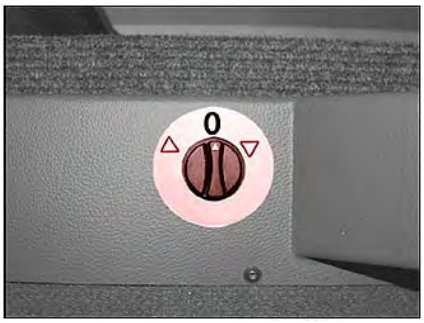
When lifting a bus with a mobile crane there is considerable risk of injury.	Always use the lifting points indicated as the slinging points for lifting the bus. Keep sufficient support material ready. Do not pull the sling through two opposite windows and lift the bus by the roof. The roofs are not designed for holding a bus.
If a bus is not lifted properly it can flip over onto the other side.	Make sure there is an adequate stabilising / counterbalancing force to prevent the bus flipping over.
If the bus is turned on its roof or the sling runs over the roof, then there will be considerable deformation of the roof, which will reduce the room above the seats.	Carry out this action only with the greatest consideration for the persons inside the vehicle.

5.4.6 Lifting and lowering system

Some Mercedes-Benz buses are equipped with air-sprung lifting and lowering system. Its purpose is to overcome obstacles on the ground or above the vehicle. The lifting and lowering system is operated via a rotary or pushbutton switch, depending on the model:

Rotary switch

The rotary switch for the lifting and lowering system is located to the left of the driver seat on the floor of the vehicle.



- Turn the switch to the right from the central position to lift the vehicle.
- Turn the switch to the left to lower the vehicle.
- The vehicle will be lifted or lowered by 70 mm respectively.

Pushbutton

The pushbutton switch for the lifting and lowering system is located on the instrument panel (shown here for the Citaro).

- Press the switch up to raise the vehicle.
- Press the switch down to lower the vehicle.
- The vehicle will be lifted or lowered by 70 mm respectively.

Using this function it may be possible to free persons trapped under the vehicle.

The lifting function works only when the engine is running and the electrical system is in working order.

5.4.7 Kneeling

Especially on city buses, the kneeling function allows the entrance side of the bus to be lowered to make boarding easier for passengers. This is done by exhausting the air bellows on the entrance side until the vehicle reaches the limit of the suspension.

This function is controlled via a pushbutton located on the instrument panel.

- Press the switch up to raise the vehicle on the entrance side.
- Press the switch down to lower the vehicle on the entrance side.

Using this function, it may be possible to free persons trapped under the vehicle.

The kneeling function works only when the engine is running and the electrical system is in working order.

5.5 Entering the vehicle

There are a number of ways to gain entry into the vehicle.

First check if entry is possible via the doors. Whenever possible, the use of rescue equipment should be kept to a minimum.

Other obvious entry options are the removal of the windows, and entry via either the roof hatches or the folding bellows of the articulated joint (initial opening).

A final option is to use rescue equipment to enlarge an existing opening for the rescue opening. However, this option should only be used as a last resort as there is an incalculable risk due to hidden cables etc.

Because a bus offers the optimum use of space, there is a large variety of equipment variants and uses: e.g. library bus, conference bus, blood donor bus and so on.

This guide deals solely with the equipment found in buses for the conveyance of passengers.

5.5.1 Vehicle doors

The doors fitted to Mercedes-Benz buses can be classified into three systems:

Inward folding doors

Outward swinging doors

Plug-in sliding door

On export vehicles an emergency door may also be fitted at the rear on the right:

5.5.2 Opening vehicle doors from outside

First try to open the doors normally with the pneumatic or electrical system. If that does not work, use the emergency valves as instructed on the notice next to the door.

Only then should you attempt to open or remove the doors using mechanical aids.

Often the doors can be opened without using technical aids.

Buttons

On city and interurban buses you may be able to open the doors with the "Open door" button on the outside of the door.

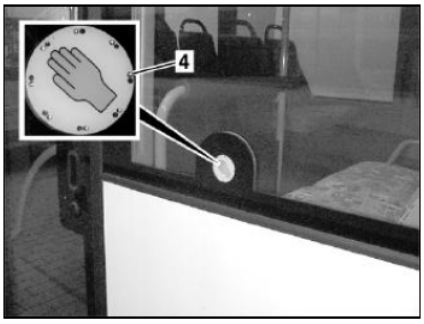


Figure 12: Door button outside – city bus

Door opening button in front end

On the city buses there is a pushbutton located behind a flap for opening Door 1.

Note: On many vehicles this button is in the fuel tank flap.

On coaches this button is located either

- on the door wing (Door 1) or

- in the front end under the right wiper arm

Outside emergency valve

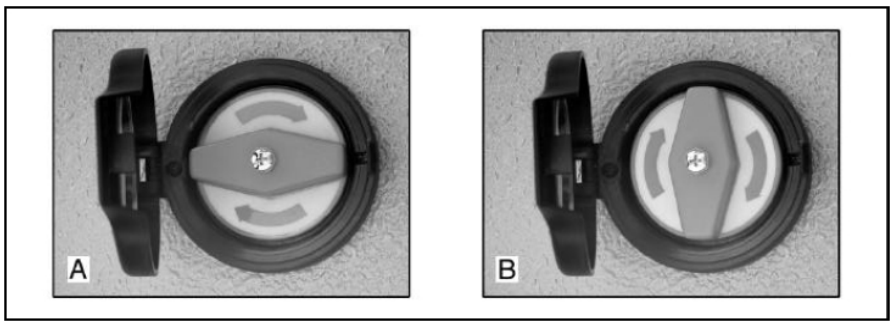
On buses built since 2005 an emergency valve is fitted on the outside of each door.

Figure 13: Outside emergency valve – example on city bus

The emergency valves on the outside of the vehicle also function after isolation of the vehicle electrical system.

A – Drive position

B – Emergency position



1. If necessary, remove the seal from the emergency valve.
2. Open the emergency valve cover.
3. Turn the emergency valve from the drive position (A) to the emergency position (B).
4. The door system is exhausted and is now depressurised. The door wings can now be opened by hand.

Pushing open manually

On some buses it is possible to push open the doors by hand against the resistance of the pneumatic system. Because of the closing pressure that is still present, the doors must be wedged open to stop them reclosing.

Opening with a spreader

If the doors do not open in the normal way, opening them with a hydraulic appliance is a suitable method.

1. Insert the spreader between the door rubbers.
2. Open the door.
3. Secure the door to prevent it from reclosing.

5.5.3 Opening doors from inside

Door buttons

Open the doors by means of the buttons on the instrument panel at the driver station if you already have entry into the vehicle and electrical power has not yet been isolated.

Figure 14: Buttons at driver station - city bus

Figure 15: Buttons at driver station - coach

Interior emergency valve

An emergency valve is fitted on the inside of every door.

Open the doors using a similar procedure as in the section “Opening vehicle doors from outside” – “Opening doors in an emergency”.

1 – Emergency valve

2 – Emergency valve cover

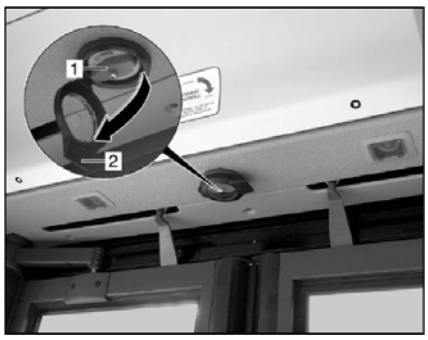


Figure 16: Inside emergency valve – example on city bus

Emergency valves on the inside of the vehicle also work after an electrical power failure.

Square wrench or hand wheel

EU Directive 2001/85/EC requires that it be possible to open doors from the inside (means of escape), even if the door has been closed manually from the outside.

The doors can always be opened from inside using the hand wheel (3).

To open the doors turn the lock (1) with a square wrench (2) or the hand wheel (3) in the direction of the arrow.

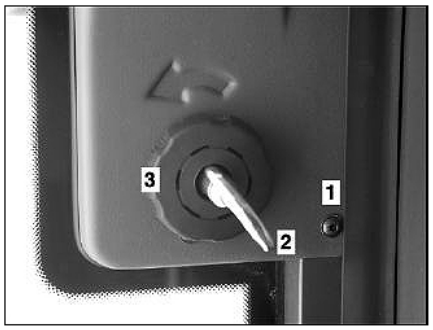


Figure 17: Hand wheel ### example on city bus

In some cases it may be necessary to remove the doors completely in order to rescue persons. If necessary, also remove the grab rails in the entry area.

Whenever possible do not use a parting grinder or cutting equipment, but hydraulic rescue equipment. Otherwise there is a risk of fire because of the fire retardant materials fitted in the interior.

5.5.4 Driver's door

Some vehicles are fitted with a driver door. This allows direct access to the driver's workstation.

The door is fitted with a basic lockable handle.

5.5.5 (Roof hatches)

The roof hatches can be pushed out and are designed as an emergency exit.

They can be opened manually from inside and outside.

The clear escape exit size is 505 x 807 mm (the law requires 500 x 700 mm).

Opening from outside

1. Pull on the red handle.

   The roof hatch will then open.

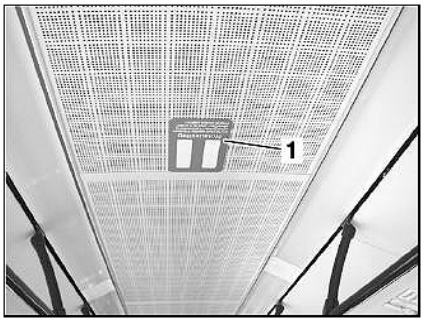
Opening from inside

Many buses are provided with a suspended ceiling. For this reason, you must first remove the interior roof hatch cover to be able to open the hatch.

City bus

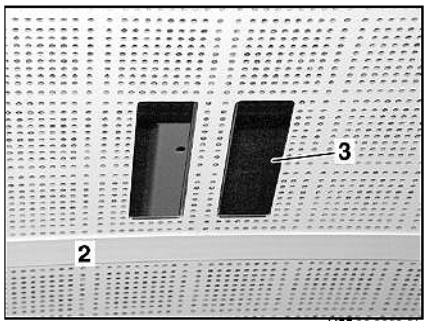
1. Press in the safety foil (1).

   Under the safety foil is a handle.



2. Remove the ceiling plate (2) by means of the handle (3).

   The safety lock (4) and the roof hatch (5) are now accessible and can be operated.



3. Pull the safety lock (4) downward.

   This unlocks the roof hatch (5) which can then be opened

4. Press the roof hatch (5) upward.

   The emergency exit will then open.

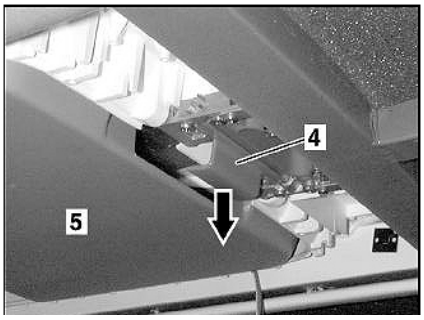
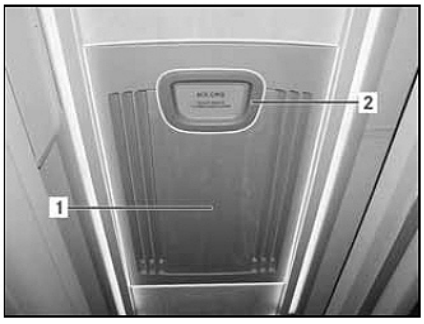


Figure 18: Citaro example

Coach

1. Remove the cover (1) by pulling on the handle (2) (Velcro strip).



2. Turn the inside handle (1) in the direction of the arrow (anti-clockwise).

   The cover (2) of the emergency exit can be pushed outwards.
   The cover is secured by a check strap.

5.5.6 Removing windows

In general, the windscreen is made of laminated safety glass, and the door, side and rear windows of single-pane safety glass. The window glass is bonded onto the frames.

Laminated safety glass

Remove the windscreen or parts thereof using the glass saw.

Risk of injury!

The weight of the windscreen of laminated safety glass can be as much as 120 kg! This means an increased risk of injury when removing a window glass.	During removal, ensure the windscreen cannot drop down, for example by splitting it into "manageable" pieces.
Sawing windows produces a fine glass dust which must not get into wounds or the air passageways.	Before starting work, cover the patients with a protective cover. Wear a face mask. Keep the number of cuts to a minimum.

Single-pane safety glass

1. Mask the windows of single-pane safety glass with foil.
2. Destroy the window glass with the spring punch.
3. Remove the window glass from the frame.

Risk of injury!

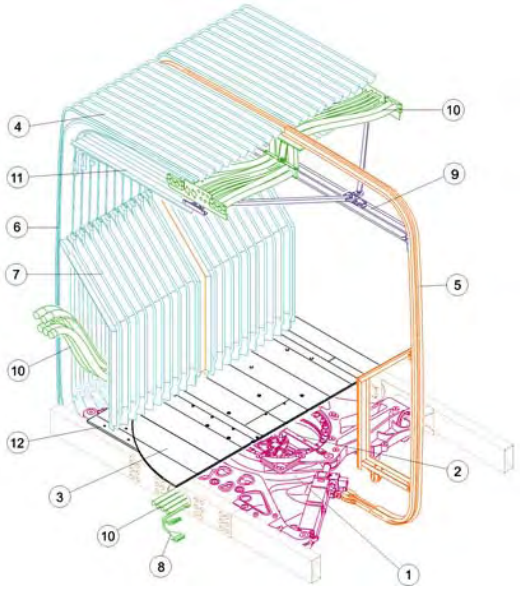
The waist rail height, especially on coaches, may be as much as 2 m above the ground.	Ensure there is sufficient staging for the rescue of casualties.

There may be two panes of safety glass as double glazing (insulating glazing) with a space and foil in between.

5.5.7 Cutting open the folding bellows

In the case of articulated buses access to the vehicle may be gained by cutting into the folding bellows.

1 - Low-floor articulation joint
2 - Potentiometer control
3 - Platform
4 – Folding bellows
5 – Centre frame
6 – Suspension sections
7 – Floor covering
8 – Cable harness
9 – Centre frame stabilisation
10 – Power supply routing system
11 – Roof lining
12 - Accessories



Risk of injury!

In both the lower and the upper half of the folding bellows are located the service ducts. In these areas service lines are routed from the from the front to the rear sections of the bus.	Do not cut up the folding bellows in the area of the service ducts.

5.6 Passenger compartment

After an accident it is likely there will be many different problems in the passenger area to deal with. For instance there are different methods of attachment and construction of passenger seats, numerous adjustment options, and restraint systems in some places.

Due to the fitting of handrails, partition walls and luggage racks, after an accident there will be some obstructions, which will make the rescue work more difficult.

5.6.1 Passenger restraint systems

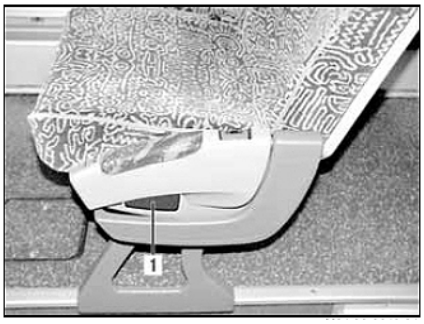
City bus	Interurban bus	Coach
No restraint systems for passenger seats	Restraint system possible, but not mandatory	2-point belts on all seats required by law

5.6.2 Adjustment of passenger seats

City bus	Interurban bus	Coach
No adjustment of passenger seats possible	Seat and backrest adjustment possible	Seat and backrest adjustment possible
No armrests	Armrests adjustable	Armrests adjustable

Side adjustment of aisle seat

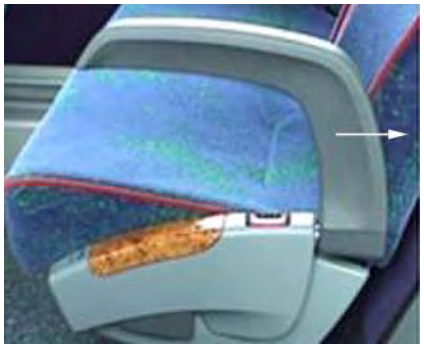
Pull the lever (1) upwards whilst at the same time sliding the seat in the direction of the aisle or into the initial position.



Armrest

Centre armrests and aisle-side armrests fold upwards.

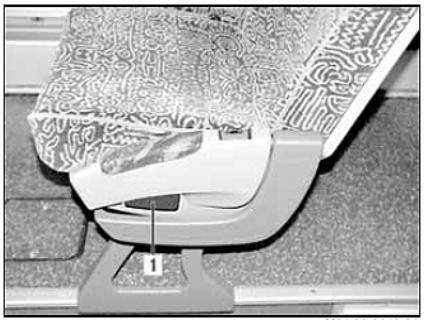
Armrest on aisle side: To fold down the armrest pull it to the rear (against the direction of travel).



Backrest adjustment (aisle-side)

Pull the lever (1) upwards whilst at the same time pressing the backrest to the rear.

Let go of the lever (1) in the desired position.



Backrest adjustment (wall-side)

Pull the lever between the seat surface and the vehicle wall to the rear. At the same time press the backrest to the rear.

Let go of the lever (1) in the desired position.

5.6.3 Attachment of passenger seats / removal of passenger seats

As buses generally have a relative small aisle, which restricts the rescue action enormously, it may be necessary to remove passenger seats.

In Mercedes-Benz buses and coaches three different seat attachment systems are used.

Here one can roughly differentiate these by the type of service:

- City bus
- Interurban bus
- Coach

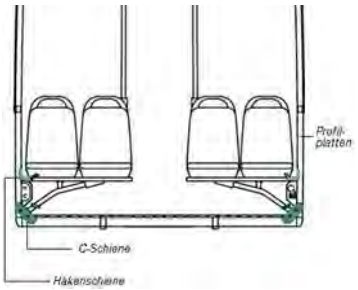
There may, however, also be mixed forms, e.g. a city bus may have an attachment system from the interurban bus.

City bus

Seat material: fibreglass-reinforced thermoplast, plywood

Attachment material: steel tube

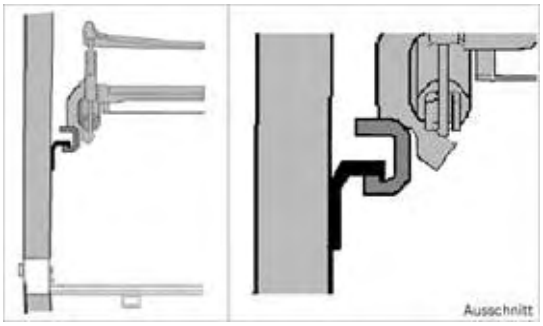
Cantilever seating with attachment by means of sliding pieces in the C-rail and clamp rail.



Interurban bus, coach

Seat and backrest frame material: steel tube

Attachment to C-rails, wall-side and platform-side



5.6.4 Handrails and partition walls

Handrails

Material: coated steel tube.

Attachment in a C-rail at the ceiling and at the seat backrests or floor.

Partitions

City bus:

The partitions consist of single-layer safety glass. The panes are clamped in a steel tube frame with rubber pieces.

Coach:

The partitions are made of plastic. Attachment by means of screws in the wall and floor.

5.6.5 Luggage racks

The luggage racks are made of aluminium extrusions, and the floor of the rack is of plastic or perforated aluminium sheet.

Figure 19: Example for an interurban bus

Risk of injury!

Luggage items in the luggage racks present an injury risk after an accident.	Secure the luggage so it cannot fall down, or clear the luggage before beginning with the rescue work.

5.7 Special areas

In particular on coaches there are special areas in which more casualties may be confined, or which can make the rescue work dangerous.

5.7.1 Toilet cabin

On most vehicles the toilet cabin is located in front of the entry to Door 2.

It is rare to find the toilet cabin in the rear of the vehicle.

Risk of injury!

Some toilet systems work with chemical agents.	Keep an adsorbent available to soak up any leaking chemicals. Observe the usual safety precautions when dealing with chemicals.

5.7.2 Galley

Like the toilet, the galley is located in the area of Door 2 or in the rear.

Figure 20: Galley with coffee machine, hot-dog cooker and water heater

Risk of injury!

In the galley there are electric heaters and coolers.	Beware of short circuits or overheating of equipment. Beware of boiling water.

5.7.3 Luggage compartment

The luggage compartment flaps at the sides may be secured with different systems

- square locks
- cylinder locks
- central locking

The central locking control is located on the instrument panel at the driver workstation. It can only be operated when the ignition is switched on.

Operation via the remote control is possible without the ignition being switched on.

Should none of the above unlocking devices operate, open the luggage flaps with a hydraulic spreader.

Check the luggage compartments for possible sources of fire. In the event of fire in the luggage compartment, remove all items of luggage to prevent the fire from spreading to the passenger compartment.

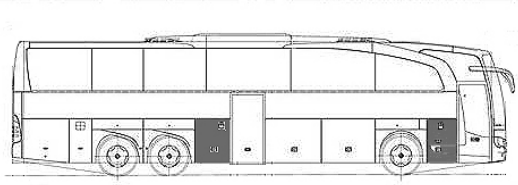
Remove the luggage and place it in safe custody at a collection point (task of the police).

Risk of injury!

Jammed luggage compartment flaps may open during the rescue action.	Maintain an adequate safe distance.

5.7.4 Driver's rest area

The driver rest area may be located behind the entry of Door 1 or Door 2.



Access:

- from the outside via flaps on the right and left
- from the inside via roller shutters in the door entries

The driver area is marked on the outside and at the access inside the vehicle with a pictogram.

Carry out a thorough check of all special areas and open all flaps. On some individual special models the special areas may be in positions different from the standard equipment.

5.7.5 Ski boxes

At the rear of coaches there may be ski boxes attached. These boxes partly cover the rear window and will make access to the vehicle more difficult.

Risk of injury!

The high weight of a loaded box (up to 650 kg) can hamper the rescue action.	Unload the ski box before you lift the bus, and place the contents in safe custody.

6 Characteristics

Every bus model possesses special characteristics that place different demands on the rescue teams.

6.1 Definition of bus

A vehicle intended for the transport of persons having more than 8 passenger seats (without the driver) is designated in German law as a motor bus.

6.2 Classification

Buses may be roughly classified according to their type of service into

- City buses
- Interurban buses
- Coaches (incl. midibuses)

City bus	Interurban bus	Coach
Urban fixed route services	Inter-city / fixed route services outside the cities	Touring
Vehicles with standing spaces that transport passengers on routes with numerous stops.	Vehicles for transporting seated passengers. Standing passengers in the aisle.	Vehicles for transporting seated passengers.

6.3 Distinguishing characteristics

	City bus	Interurban bus	Coach
Entrances (doors)	2 - 4 off	2 - 4 off	2 off
	double wing	single or double wing	single-wing
	width approx. 1.25 m	width approx. 0.70 m - 1.25 m	width approx. 0.70 - 0.90 m
Step height	low, no steps	with steps	high, with several steps
Waistline height	low	low to medium high	high
(height above road)	approx. 1.30 m	approx. 1.30 - approx. 1.90 m	approx. 2.20 m
Luggage compartments	none	partial, in floor assembly	in floor assembly
Seats	not adjustable	partially adjustable	adjustable
Backrest	low	high	high
Length	8.00 - 18.00 m	12.00 - 18.00 m	9.50 - 14.00 m
Width	2.35 - 2.55 m	2.50 - 2.55 m	2.40 - 2.55 m
Height	approx. 3.20 m	approx. 3.40 m	approx. 3.60 - approx. 4.00 m
Tank capacity	approx. 210 - 400 l	approx. 300 - 400 l	up to 1,000 l
Tank capacity	approx. 210 - 400 l	approx. 300 - 400 l	up to 1,000 l
Transport capacity	< 170 persons	< 130 persons	< 60 persons
Axles	2 - 3	2 - 3	2 - 3
Type	solo and articulated buses	solo and articulated buses	solo buses
Weight	up to 28 t	up to 28 t	up to 24 t
Models	Citaro	Citaro	Tourino
	Conecto	Conecto	Travego
		Integro	Tourismo

6.4 Euro standards

Beginning with the Euro standard I1 in 1992, since then the law has laid down ever more stringent emission standards.

Currently the Euro V standard applies, which sets the emission limits for certain pollutants.

EEV is a voluntary standard that goes beyond the legal requirements.

This rescue guide is concerned with vehicles that are subject to the standards Euro III, IV or V. At present these are the vehicles in most widespread use.

6.5 Model plate

The model plate gives the data for the exact identification of a bus.

The model plate (1) is located in the front entrance on the right.

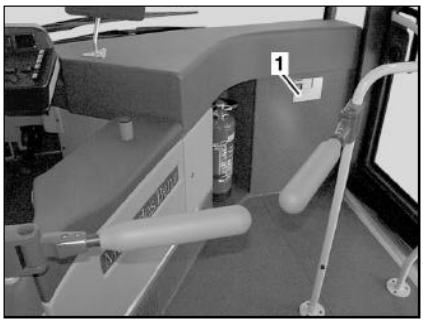
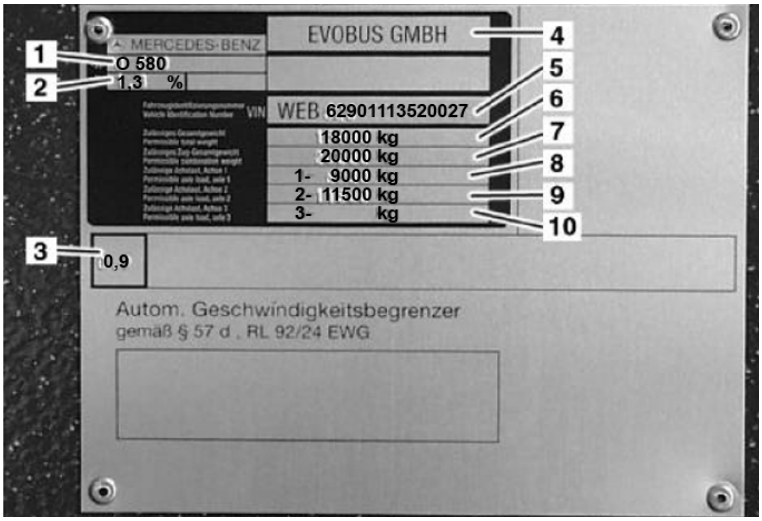


Figure 21: Model plate - example of Citaro



1	Vehicle model	6	Max permissible gross vehicle weight
2	Headlamp home setting	7	Max permissible combination weight
3	Flue gas coefficient	8	Permissible axle load, front axle
4	Vehicle manufacturer	9	Permissible axle load, second axle
5	Vehicle Identification Number (VIN)	10	Permissible axle load, third axle

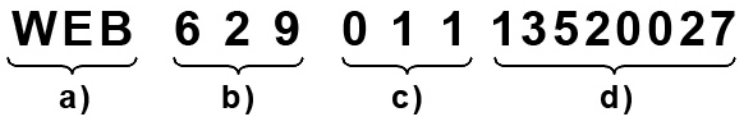
Important for identification are items 1 (vehicle model) and 5 (Vehicle Identification Number).

The Vehicle Identification Number (VIN) is also affixed behind the front flap.

6.5.1 Vehicle model

O 345	Conecto
O 350	Tourismo
O 510	Tourino
O 530	Citaro
O 550	Integro
O 580	Travego

6.5.2 Vehicle Identification Number (VIN)



a)	Manufacturer
b)	Model designation
c)	Model
d)	Vehicle Identification End Number

a) Manufacturer

WDB	Daimler-Benz
WEB	EvoBus
NMB	Mercedes-Benz Turkey

b) Model designation

444	Tourino
627	Integro
628	Citaro / Conecto
632	Tourismo / Travego
633	Integro / Intouro

c) Variant

The three digit variant number defines the model more precisely.

e.g. vehicle length, right/left-hand drive, number of doors

d) Vehicle Identification End Number

The end number enables the precise identification of the vehicle.

Overview of Euro V/EEV models

Model designation	Vehicle model	Name	Type	Length	No. doors	Comments
444.303-13	O 510	Tourino	Coach	9.35 m	2	Midibus
444.303-23	O 510	Tourino RL	Coach	9.35 m	2	Midibus, right-hand drive
628.020	O 530 CNG	Citaro CNG	City bus	12 m	3	Natural gas drive
628.080	O 530 RL	Citaro RL	City bus	12 m	1	Right-hand drive
628.083-13	O 530 RL	Citaro	City bus	12 m	2	Horizontal engine
628.083-23	O 530	Citaro RL	City bus	12 m	2	Right-hand drive
628.085	O 530	Citaro	City bus	12 m	3	Horizontal engine
628.090	O 530	Citaro	City bus	12 m	3	Vertical engine
628.087	O 530 Ü	Citaro Ü	City bus	12 m	2	Horizontal engine
628.185	O 530 L	Citaro L	City bus	15 m	3	Horizontal engine
628.187	O 530 LÜ	Citaro LÜ	Interurban bus	15 m	2	Horizontal engine
628.220	O 530 G CNG	Citaro G CNG	City bus	18 m	4	Articulated bus with natural gas drive
628.280	O 530 G RL	Citaro G	City bus	18 m	2	Articulated bus

Model designation	Vehicle model	Name	Type	Length	No. doors	Comments
628.283-13	O 530 G	Citaro G	City bus	18 m	3	Articulated bus
628.283-23	O 530 G RL	Citaro G RL	City bus	18 m	3	Right-hand drive articulated bus
628.285	O 530 G	Citaro G	City bus	18 m	4	Articulated bus
628.287	O 530 GÜ	Citaro GÜ	Interurban bus	18 m	3	Articulated bus
628.290	O 530 G	Citaro G	City bus	18 m	4	Articulated bus
628.293	O 530 G	Citaro G DEH	City bus	18 m	3	Articulated bus with diesel hybrid drive
628.294	O 530 G	Citaro G DEH	City bus	18 m	4	Articulated bus with diesel hybrid drive
628.310	-	Conecto	City bus	12 m	3	Vertical engine
628.320	-	Conecto G	City bus	18 m	4	Vertical engine
628.483	O 530 K	Citaro K	City bus	10,4 m	2	Horizontal engine
628.487	O 530 MÜ	Citaro MÜ	City bus	13 m	2	Horizontal engine
628.486	O 530	CapaCity	City bus	19,54 m	4	Horizontal engine
628.583	O 530 LE	Citaro LE	City bus	12 m	2	Horizontal engine
628.584	O 530 LE	Citaro LE	City bus	12 m	3	Horizontal engine
628.587	O 530 LE Ü	Citaro LE Ü	City bus	12 m	2	Horizontal engine
628.687	O 530 LE MÜ	Citaro LE MÜ	Interurban bus	13 m	2	Horizontal engine
632.036-13	MB R2 15 RHD	Tourismo	Coach	12.14 m	2	High decker coach
632.036-23	MB R2 15 RHD RL	Tourismo RL	Coach	12,14 m	2	High decker, right-hand drive
632.038	MB R2 16 RHD-2	Tourismo M/2	Coach	12,96 m	2	High decker coach
632.035	MB R2 16 RHD	Tourismo M	Coach	12,96 m	2	High decker coach
632.037	MB R2 17 RHD	Tourismo L	Coach	13,99 m	2	High decker coach
632.006	MB R1 15 RHD	Travego	Coach	12.14 m	2	High decker coach
632.005	MB R1 16 RHD	Travego M	Coach	12.96 m	2	High decker coach
632.007	MB R1 17 RHD	Travego L	Coach	13.99 m	2	High decker coach

Model designation	Vehicle model	Name	Type	Length	No. doors	Comments
632.245	MB 15 RHD	Travego	Coach	12.18 m	2	High decker coach
632.246	MB 16 RHD	Travego M	Coach	13 m	2	High decker coach
632.247	MB 17 RHD	Travego L	Coach	14.03 m	2	High decker coach
633.051	MBÜ-Ü 15	Intouro	Interurban bus	12.14 m	2	
633.052	MBÜ-Ü 16	Intouro M	Interurban bus	12.98 m	2	
633.251	MBÜ-S 15	Intouro E	Interurban bus	12.14 m	2	School bus
633.252	MBÜ-S 16	Intouro ME	Interurban bus	12.98 m	2	School bus
633.001	MBÜ 15	Integro	Interurban bus	12.14 m	2	Raised floor
633.002	MBÜ 16	Integro M	Interurban bus	12.98 m	2	Raised floor
633.004	MBÜ 19	Integro L	Interurban bus	14.92 m	2	Raised floor

7 Annex Euro IV/Euro V vehicles

This section gives an overview of the various models.

This annex is concerned solely with vehicles subject to the Euro IV or V standards.

The model number can be read from the model plate (see the section “Characteristics”).

The annex is primarily intended to assist you in training and preparation for rescue operations that may occur. This overview will help you to gain a better appreciation of the bus types in service in your operations area. At least you will then be well prepared for any rescue operations with these buses.

7.1 Characteristics of City buses

General / Technology

Drives of various types: diesel, gas, fuel cell
Number of passengers: up to 170 persons
mostly standees

Exterior view

several wide entries
low entry height
low waist rail height

Doors

inward and outward swinging doors
double wing
pneumatically powered
width: 1.25 m

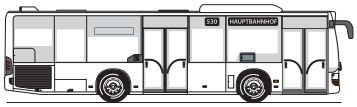
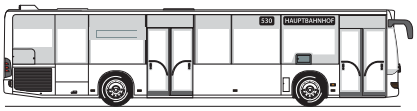
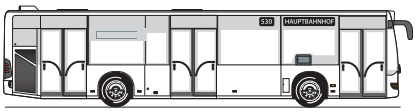
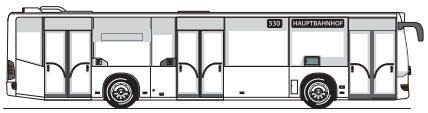
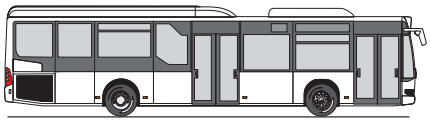
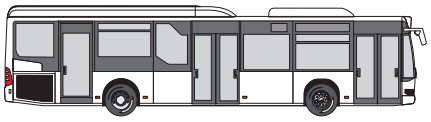
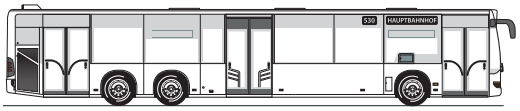
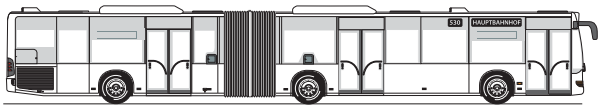
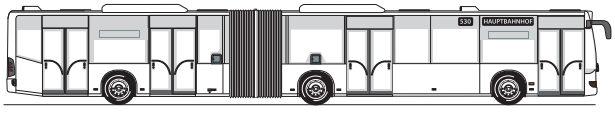
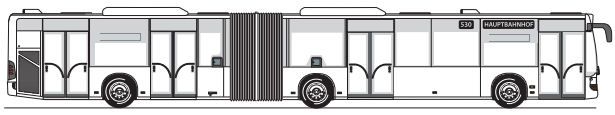
Interior equipment and seats

low backrests
no seat adjustment
no passenger restraint systems
numerous handrails
"standing area" for wheelchair passengers, pushchairs

Models

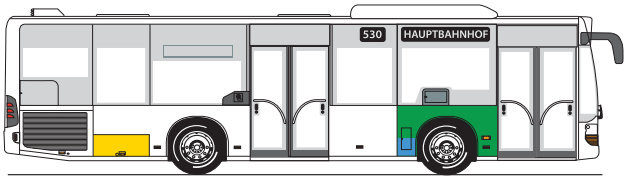
Citaro
The new Citaro
CapaCity
Conecto

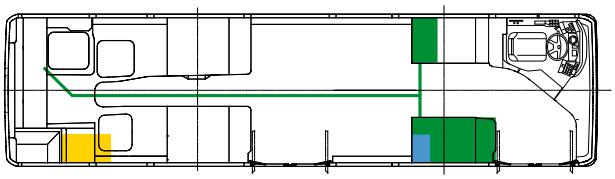
7.2 Overview Citaro city buses

Model designation	Vignette
Citaro K	
Citaro, 2-door	
Citaro, 3-door	
Citaro, vertical engine	
Citaro LE, 2-door	
Citaro LE, 3-door	
Citaro L	
Citaro G, 3-door	
Citaro G, 4-door	
Citaro G, vertical engine	

7.2.1 Citaro K

	Model designation	Length	Doors	Axles	Drive
Citaro K	628.483	10 m	2	2	Diesel





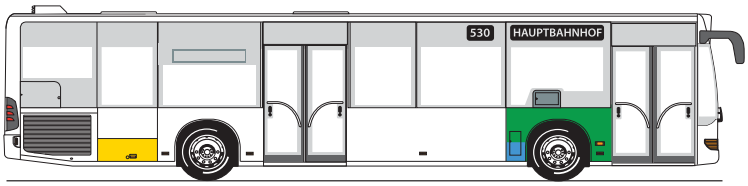
Tank (with pipework)

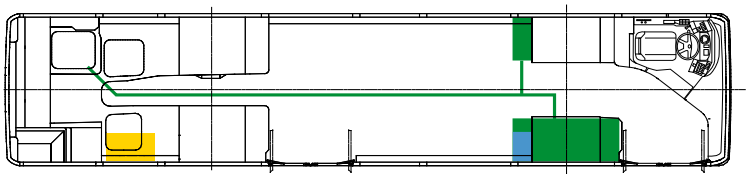
AdBlue tank

Battery

7.2.2 Citaro, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro	628.083	12 m	2	2	Diesel





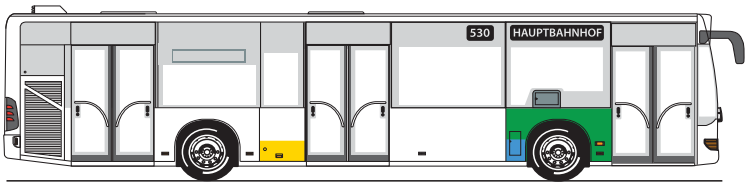
Tank (with pipework)

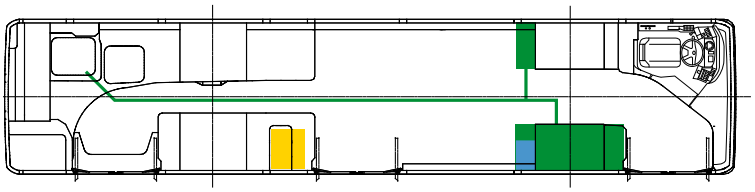
AdBlue tank

Battery

7.2.3 Citaro, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro	628.085	12 m	3	2	Diesel





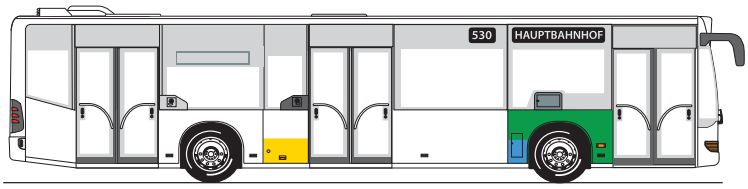
Tank (with pipework)

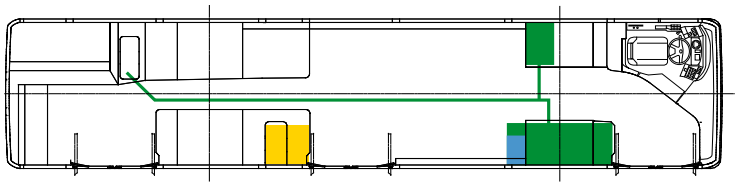
AdBlue tank

Battery

7.2.4 Citaro vertical engine

	Model designation	Length	Doors	Axles	Drive
Citaro vertical engine	628.090	12 m	2	2	Diesel





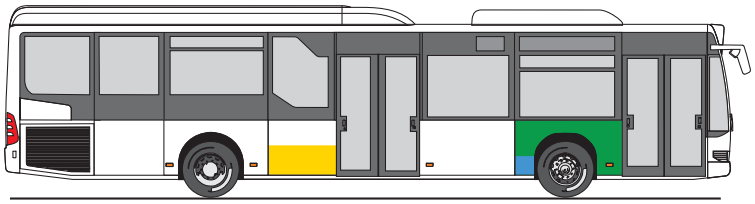
Tank (with pipework)

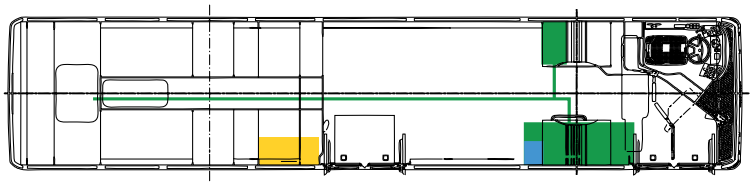
AdBlue tank

Battery

7.2.5 Citaro LE, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro LE	628.583	12 m	2	2	Diesel





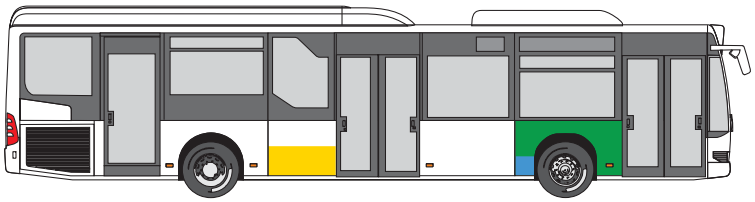
Tank (with pipework)

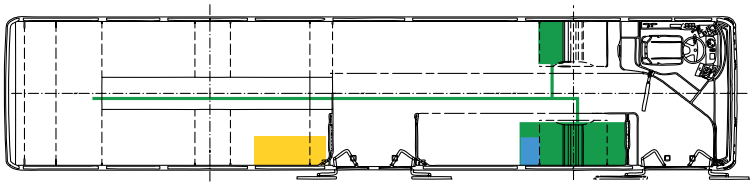
AdBlue tank

Battery

7.2.6 Citaro LE, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro LE	628.584	12 m	3	2	Diesel





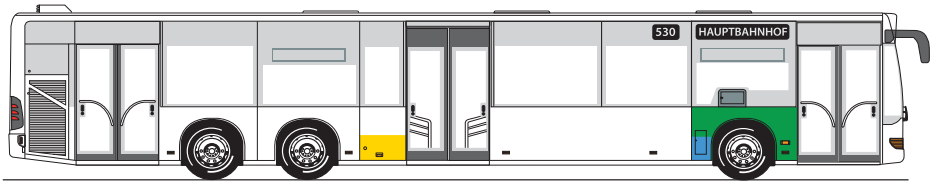
Tank (with pipework)

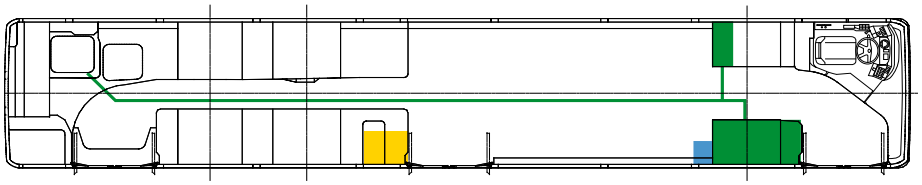
AdBlue tank

Battery

7.2.7 Citaro L

	Model designation	Length	Doors	Axles	Drive
Citaro L	628.185	15 m	3	3	Diesel





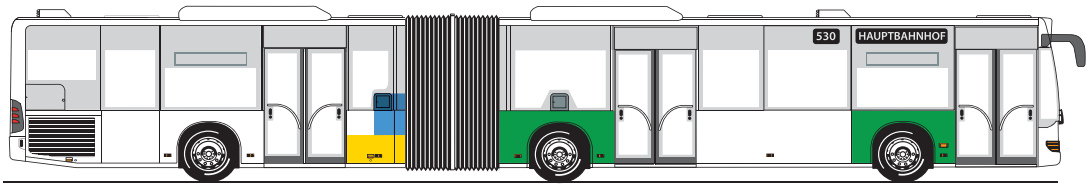
Tank (with pipework)

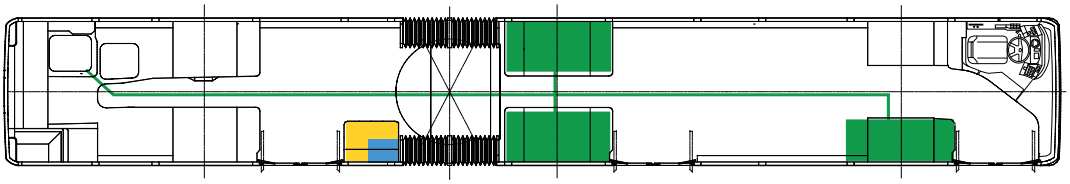
AdBlue tank

Battery

7.2.8 Citaro G, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro G	628.283	18 m	3	3	Diesel





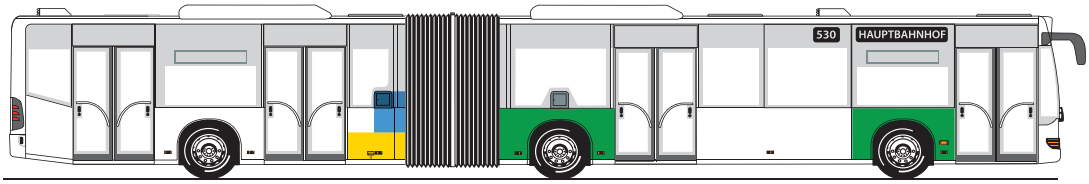
Tank (with pipework)

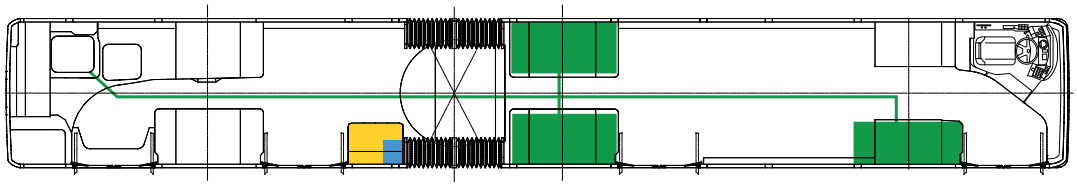
AdBlue tank

Battery

7.2.9 Citaro G, 4-door

	Model designation	Length	Doors	Axles	Drive
Citaro G	628.285	18 m	4	3	Diesel





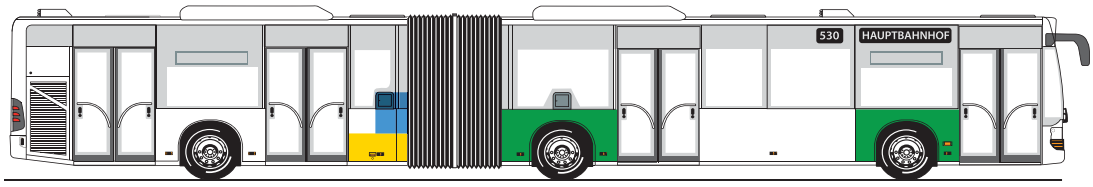
Tank (with pipework)

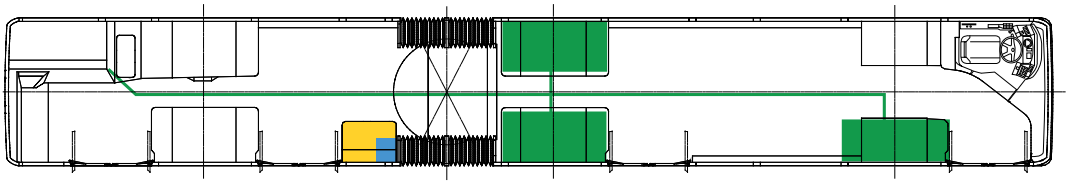
AdBlue tank

Battery

7.2.10 Citaro G, vertical engine

	Model designation	Length	Doors	Axles	Drive
Citaro G vertical engine	628.290	18 m	4	3	Diesel



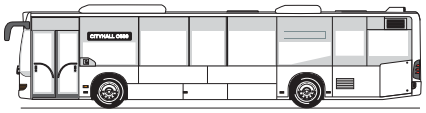
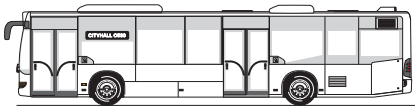
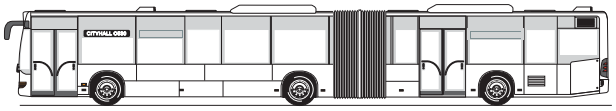
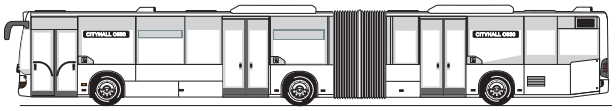


Tank (with pipework)

AdBlue tank

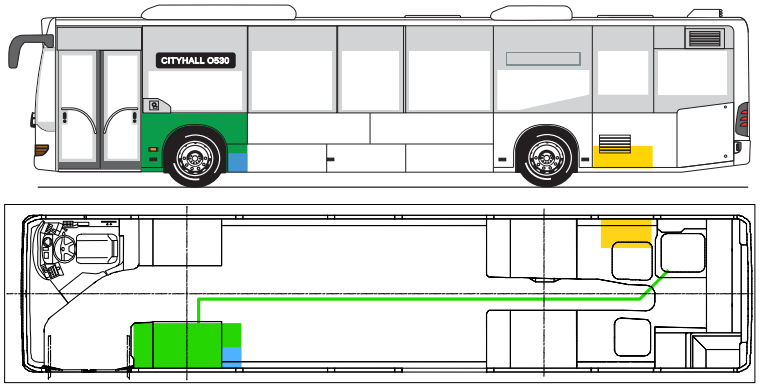
Battery

7.3 Overview of Citaro right-hand drive

Model designation	Vignette
Citaro right-hand drive, 1-door	
Citaro right-hand drive, 2-door	
Citaro G right-hand drive, 2-door	
Citaro G right-hand drive, 3-door	

7.3.1 Citaro right-hand drive, 1-door

	Model designation	Length	Doors	Axles	Drive
Citaro RL	628.080-23	12 m	1	2	Diesel



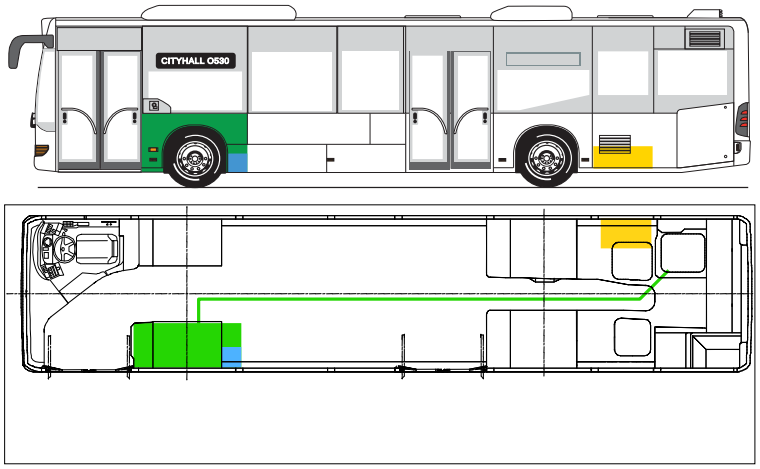
Tank (with pipework)

AdBlue tank

Battery

7.3.2 Citaro right-hand drive, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro RL	628.083-23	12 m	2	2	Diesel



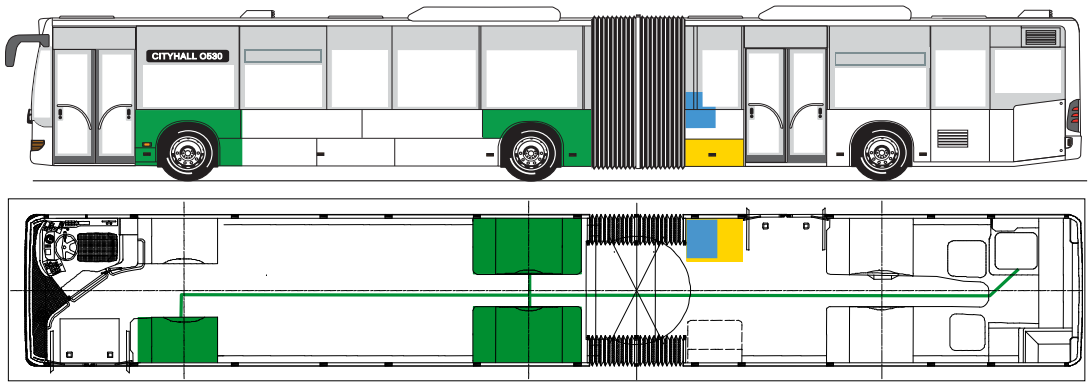
Tank (with pipework)

AdBlue tank

Battery

7.3.3 Citaro G right-hand drive, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro G RL	628.280-23	18 m	2	3	Diesel



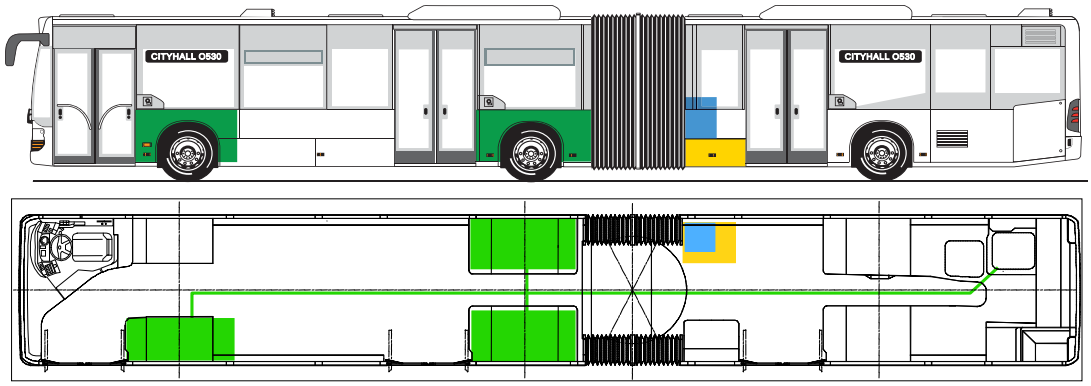
Tank (with pipework)

AdBlue tank

Battery

7.3.4 Citaro G right-hand drive, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro G RL	628.283-23	18 m	3	3	Diesel

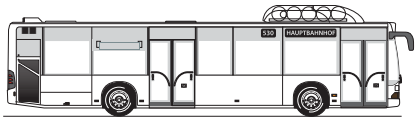
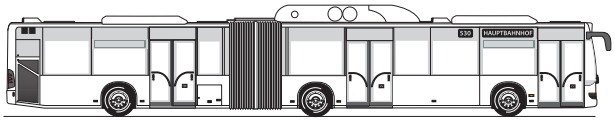


Tank (with pipework)

AdBlue tank

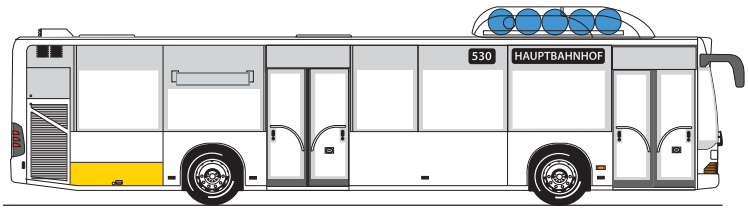
Battery

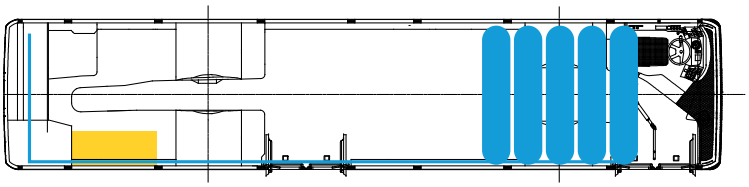
7.4 Overview of Citaro natural gas buses

Model designation	Vignette
Citaro CNG	
Citaro G CNG	

7.4.1 Citaro CNG

	Model designation	Length	Doors	Axles	Drive
Citaro CNG	628.020	12 m	2	2	Gas



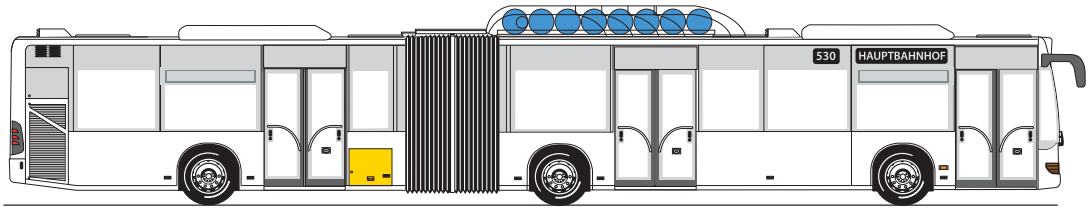


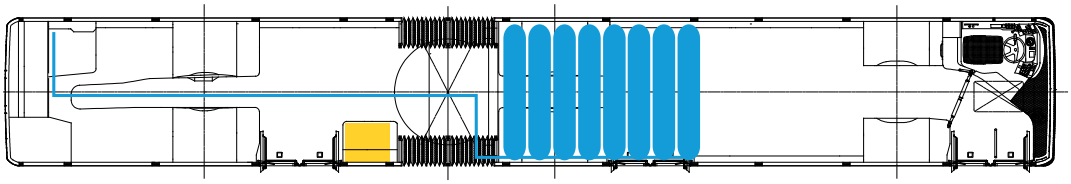
Tank (with pipework)

Battery

7.4.2 Citaro G CNG

	Model designation	Length	Doors	Axles	Drive
Citaro G CNG	628.220	18 m	3	3	Gas

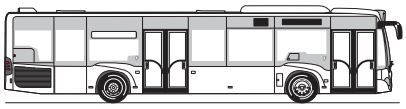
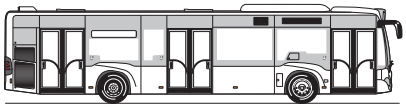
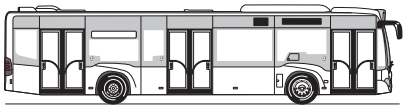
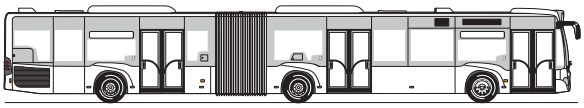
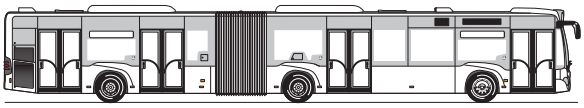




Tank (with pipework)

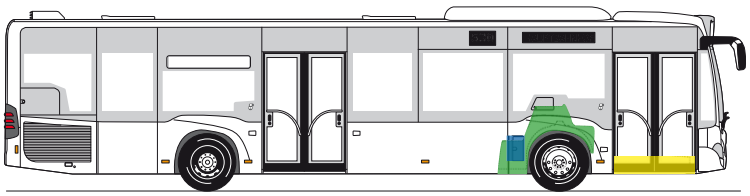
Battery

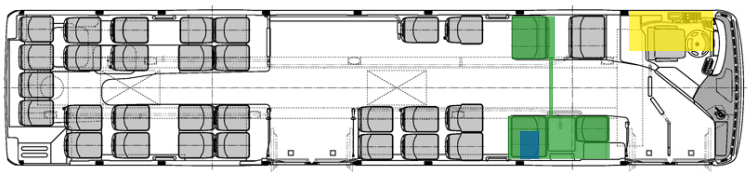
7.5 Overview of the new Citaro

Model designation	Vignette
The new Citaro, 2-door	
The new Citaro, 3-door	
The new Citaro, vertical engine, 3-door	
The new Citaro G, 3-door	
The new Citaro G, 4-door	

7.5.1 Citaro, 2-door

	Model designation	Length	doors	Axles	Drive
Citaro	628.031	12 m	2	2	diesel





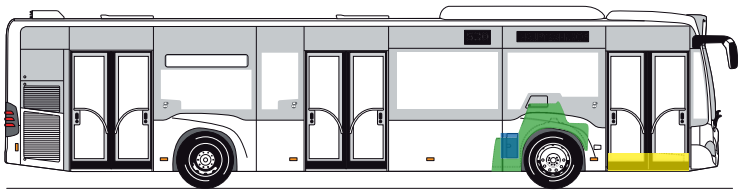
Tank (with pipework)

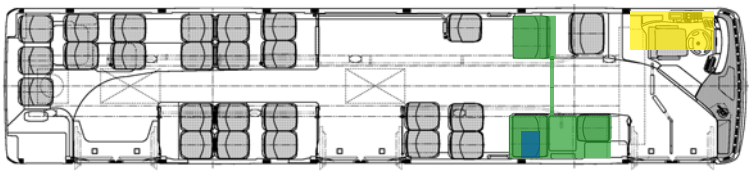
AdBlue tank

Battery

7.5.2 Citaro, 3-door

	Model designation	Length	doors	Axles	Drive
Citaro	628.032	12 m	3	2	Diesel





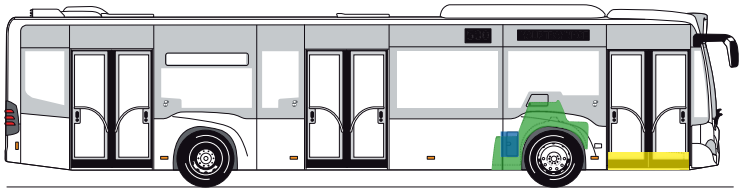
Tank (with pipework)

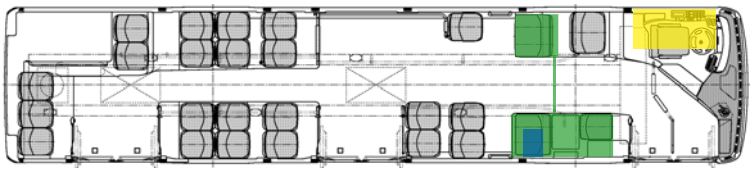
AdBlue tank

Battery

7.5.3 Citaro, vertical engine, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro	628.052	12 m	3	2	Diesel





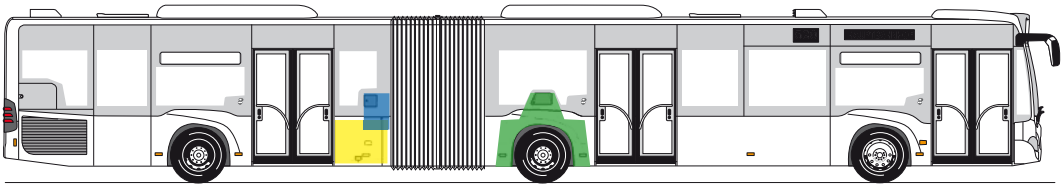
Tank (with pipework)

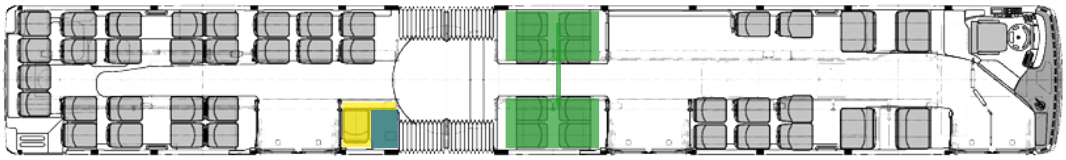
AdBlue tank

Battery

7.5.4 Citaro G, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro G	628.231	18 m	3	3	Diesel





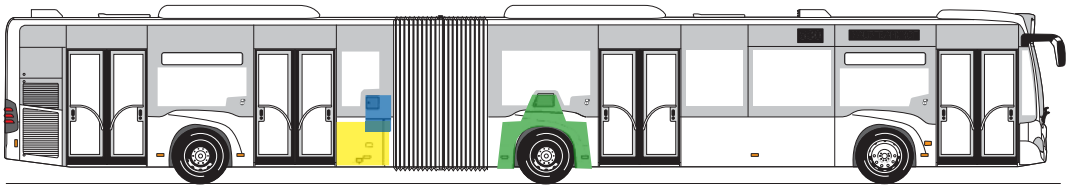
Tank (with pipework)

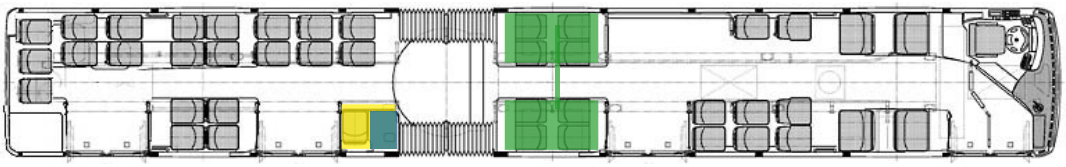
AdBlue tank

Battery

7.5.5 Citaro G, 4-door

	Model designation	Length	Doors	Axles	Drive
Citaro G	628.232	18 m	4	3	Diesel





Tank (with pipework)

AdBlue tank

Battery

7.6 Characteristics of city bus hybrid vehicles

General / Technology

- Drive: diesel hybrid, fuel cell hybrid
- Number of passengers: up to 150 persons
- mostly standees

Exterior view

- several wide entrances
- low entrance height
- low waist rail height

Doors

- inward and outward swinging doors
- double wing
- pneumatically powered
- width: 1.25 m

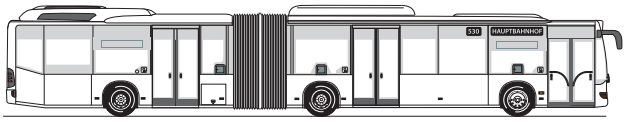
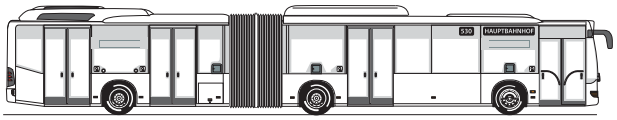
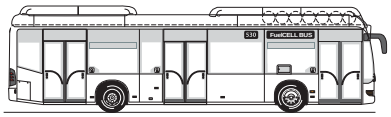
Interior equipment and seats

- low backrests
- no seat adjustment
- no passenger restraint systems
- numerous handrails
- "standing area" for wheelchair passengers, pushchairs

Models

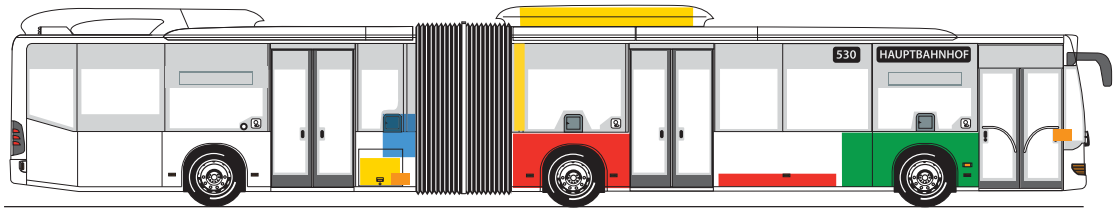
- Citaro

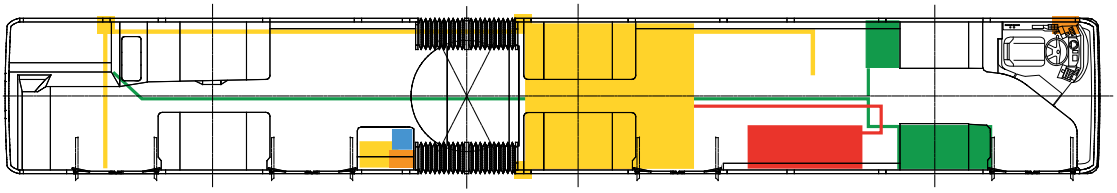
7.7 Overview city bus hybrid vehicles

Model designation	Vignette
Citaro G BlueTec Hybrid, 3-door	
Citaro G BlueTec Hybrid, 4-door	
Citaro FuelCell Hybrid, 3-door	

7.7.1 Citaro G BlueTec Hybrid, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro G BlueTec Hybrid	628.293	18 m	3	3	Diesel hybrid





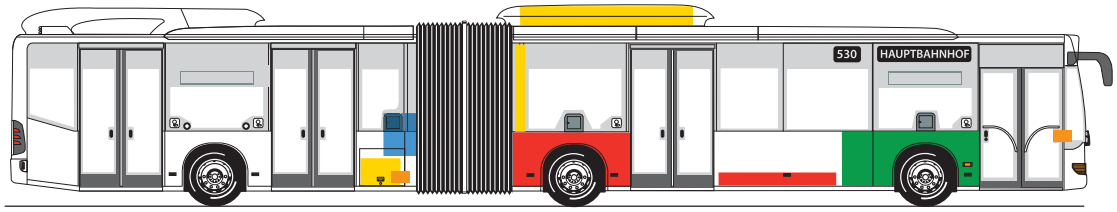
- Tank
- AdBlue tank
- Battery / high voltage line
- Fuel oil tank
- Emergency OFF switch

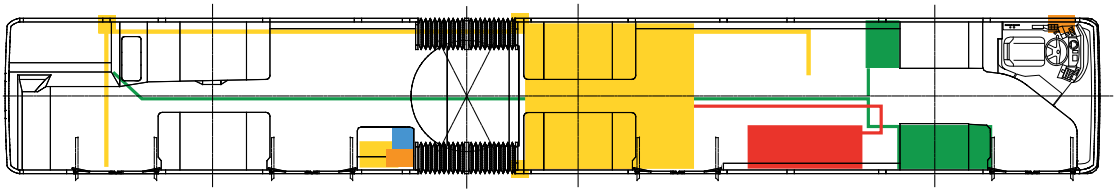
Danger to life!

The voltage of the vehicle electrical system reaches 750 V/400 A. Unless the hybrid system is in the de-energised state, there exists a danger to life for rescue teams!

7.7.2 Citaro G BlueTec Hybrid, 4-doors

	Model designation	Length	Doors	Axles	Drive
Citaro G BlueTec Hybrid	628.294	18 m	4	3	Diesel hybrid





Tank

AdBlue tank

Battery / high voltage line

Fuel oil tank

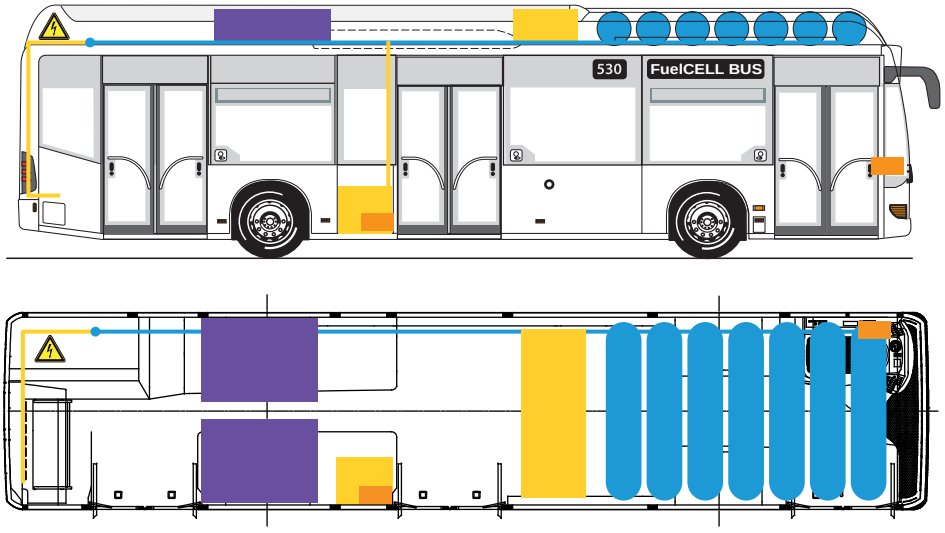
Emergency OFF switch

Danger to life!

The voltage of the vehicle electrical system reaches 750 V/400 A. Unless the hybrid system is in the de-energised state, there exists a danger to life for rescue teams!

7.7.3 Citaro FuelCell Hybrid

	Model designation	Length	Doors	Axles	Drive
Citaro FuelCell Hybrid	628.073	12 m	3	2	Fuel cell hybrid



Tank

Battery / high voltage line

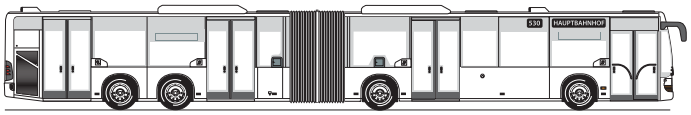
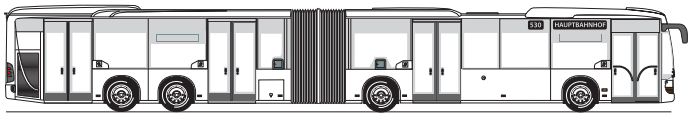
Fuel cell stacks

Emergency OFF switch

Danger to life!

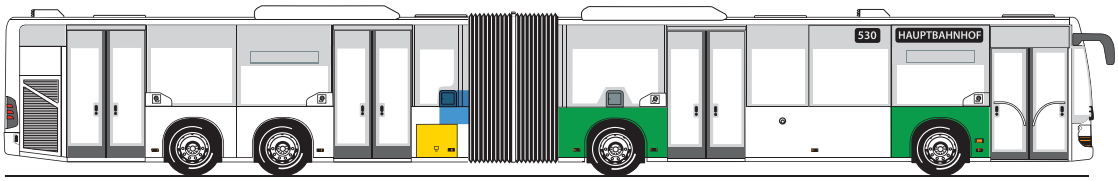
The voltage of the vehicle electrical system reaches 800 V/200 A. Unless the hybrid system is in the de-energised state, there exists a danger to life for rescue teams!

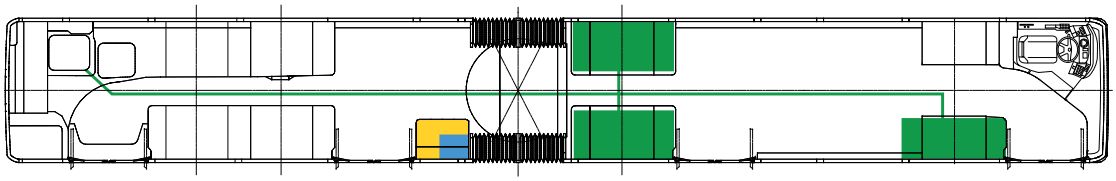
7.8 Overview of CapaCity

Model designation	Vignette
CapaCity	
CapaCity Metro Design	

7.8.1 CapaCity

	Model designation	Length	Doors	Axles	Drive
CapaCity	628.486	20 m	4	4	Diesel



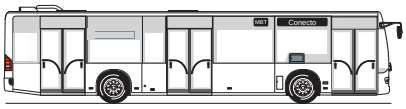
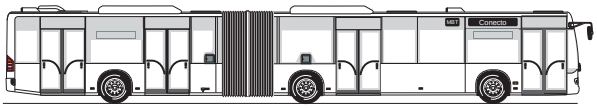


Tank (with pipework)

AdBlue tank

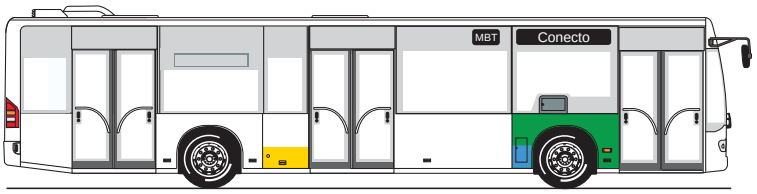
Battery

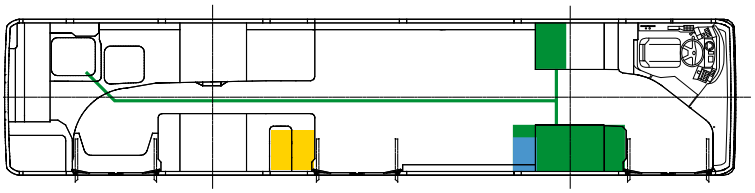
7.9 Overview of Conecto

Model designation	Vignette
Conecto	
Conecto G	

7.9.1 Conecto

	Model designation	Length	Doors	Axles	Drive
Conecto	628.310	12 m	2	2	Diesel





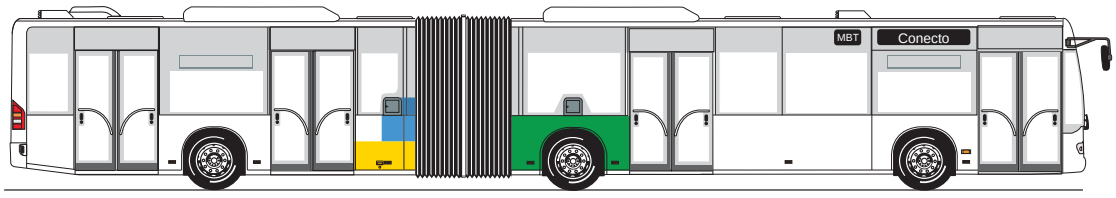
Tank (with pipework)

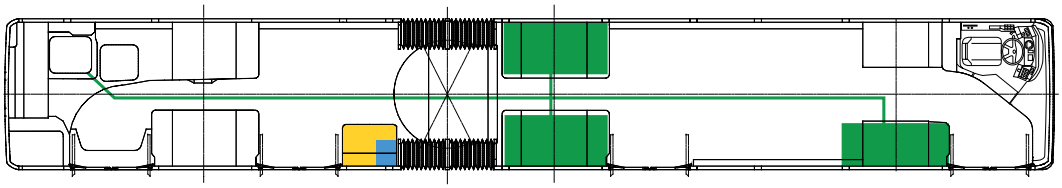
AdBlue tank

Battery

7.9.2 Conecto G

	Model designation	Length	Doors	Axles	Drive
Conecto G	628.320	18 m	4	3	Diesel





Tank (with pipework)

AdBlue tank

Battery

7.10 Characteristics of Interurban buses

General / Technology

	Drive: Diesel
	Number of passengers: up to 130 persons
	mostly seated

Exterior view

	several entrances
	entrances with steps
	low to medium height waist rail

Doors

	outward swinging doors
	double-wing and single-wing possible
	pneumatically powered
	width: approx. 0.70 m - 1.25 m

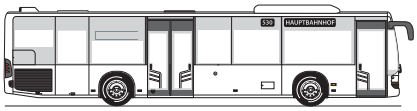
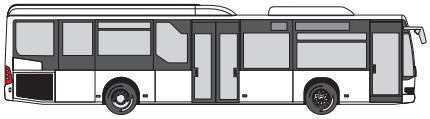
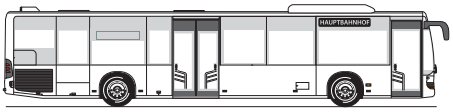
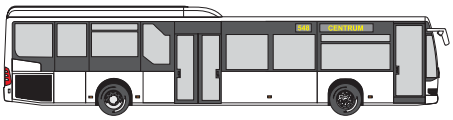
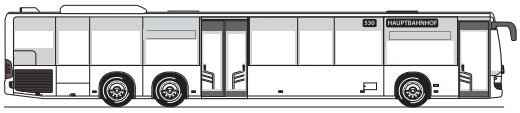
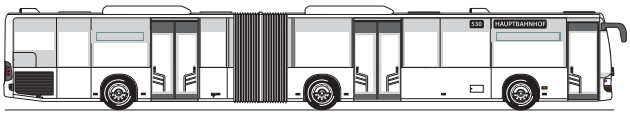
Interior equipment and seats

	low and high backrests
	seat adjustment possible
	passenger restraint systems possible
	handrails possible
	luggage compartments possible
	"standing area" for wheelchair passengers, pushchairs

Models

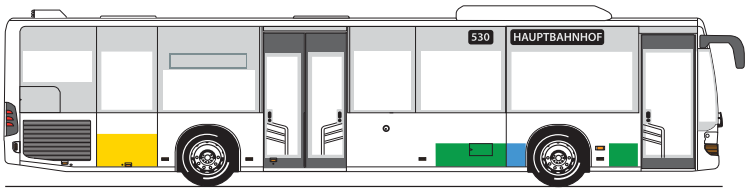
	Citaro
	Conecto
	Integro

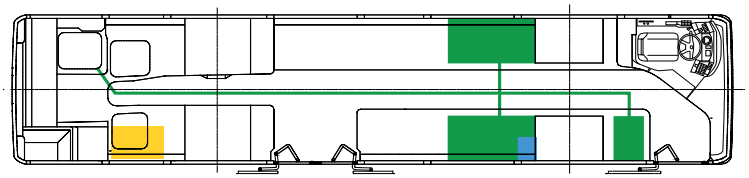
7.11 Overview of Citaro interurban buses

Model designation	Vignette
Citaro Ü	
Citaro LE Ü	
Citaro MÜ	
Citaro LE MÜ	
Citaro LÜ	
Citaro GÜ	

7.11.1 Citaro Ü

	Model designation	Length	Doors	Axles	Drive
Citaro Ü	628.087	12 m	2	2	Diesel





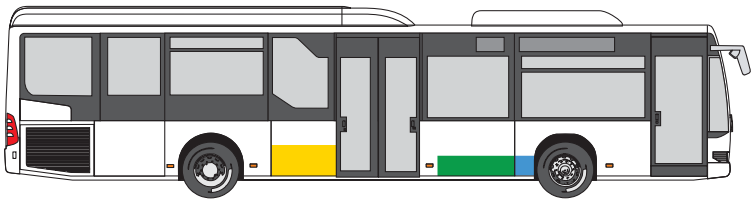
Tank (with pipework)

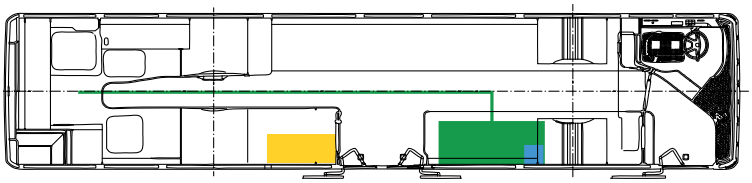
AdBlue tank

Battery

7.11.2 Citaro LE Ü

	Model designation	Length	Doors	Axles	Drive
Citaro LE Ü	628.587	12 m	2	2	Diesel





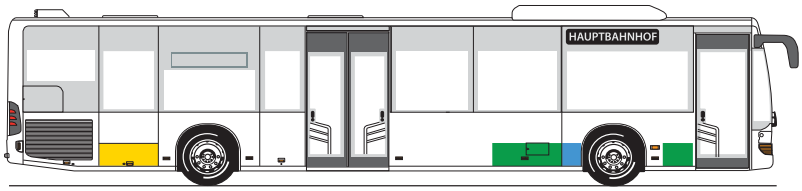
Tank (with pipework)

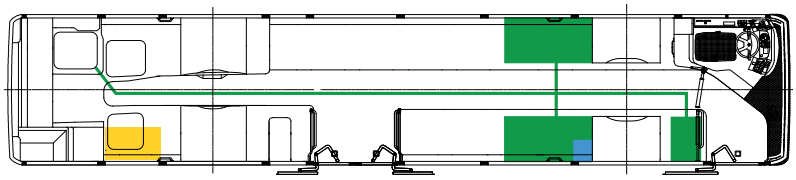
AdBlue tank

Battery

7.11.3 Citaro MÜ

	Baumuster	Length	Doors	Axles	Drive
Citaro MÜ	628.487	13 m	2	2	Diesel





Tank (with pipework)

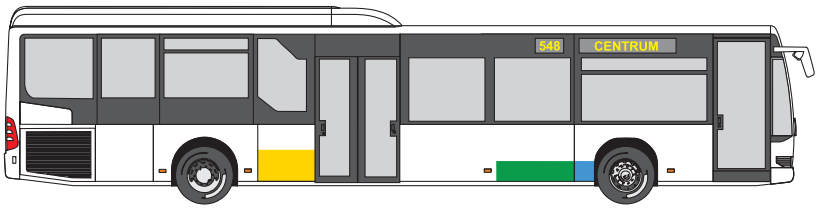
AdBlue tank

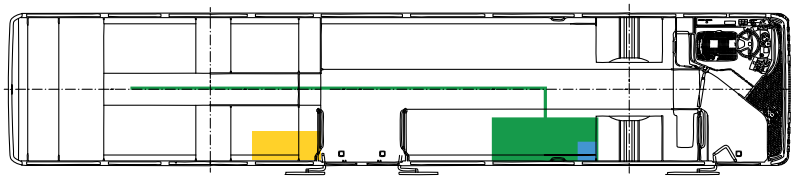
Battery

7.11.4 Citaro LE MÜ

	Model designation	Length	Doors	Axles	Drive
Citaro LE MÜ	628.687	13 m	2	2	Diesel

front left / rear right





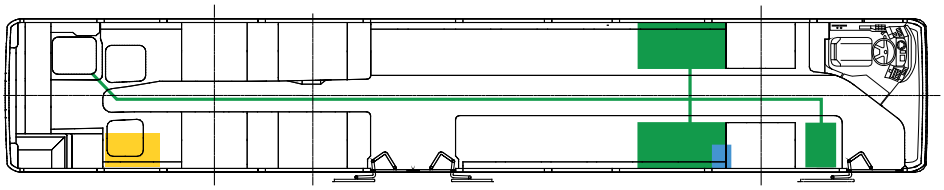
Tank (with pipework)

AdBlue tank

Battery

7.11.5 Citaro LÜ

	Model designation	Length	Doors	Axles	Drive
Citaro LÜ	628.187	15 m	2	3	Diesel



Tank (with pipework)

AdBlue tank

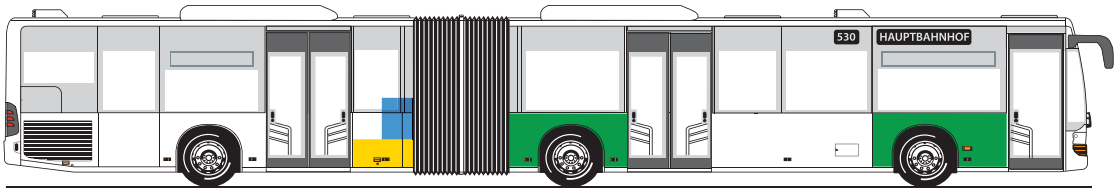
Battery

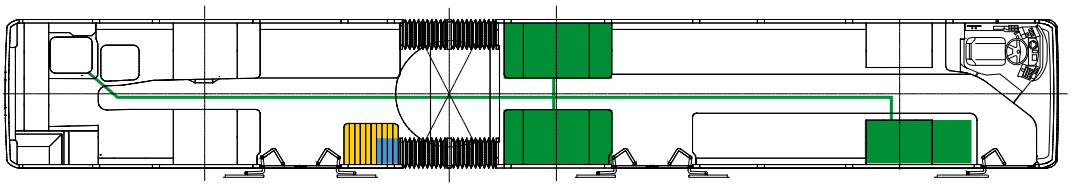
7.11.6 Citaro GÜ

	Model designation	Length	Doors	Axles	Drive
Citaro GÜ	628.287	18 m	3	3	Diesel

front right

front left / rear right



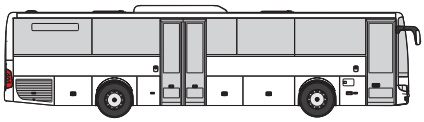
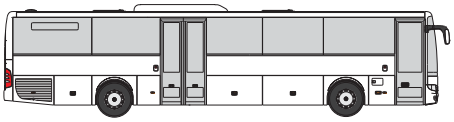


Tank (with pipework)

AdBlue tank

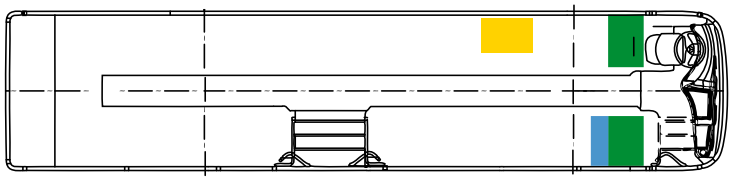
Battery

7.12 Overview of Integro

Model designation	Vignette
Integro	
Integro M	
Integro L	

7.12.1 Integro

	Model designation	Length	Doors	Axles	Drive
Integro	633.001	12 m	2	2	Diesel



Tank (with pipework)

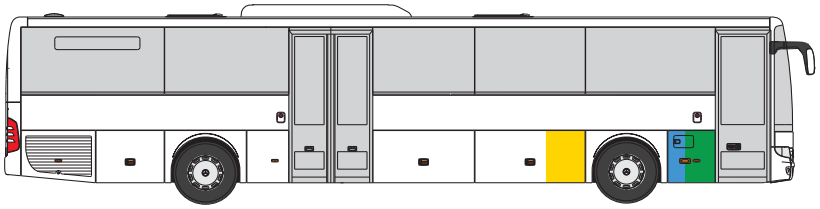
AdBlue tank

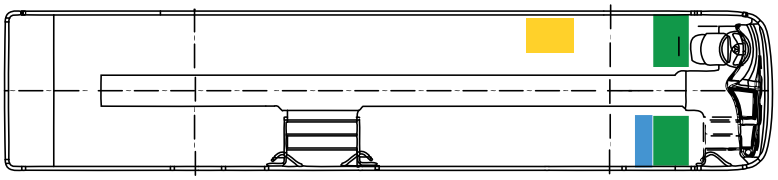
Battery

7.12.2 Integro M

	Model designation	Length	Doors	Axles	Drive
Integro M	633.002	13 m	2	2	Diesel

front left / rear right





Tank (with pipework)

AdBlue tank

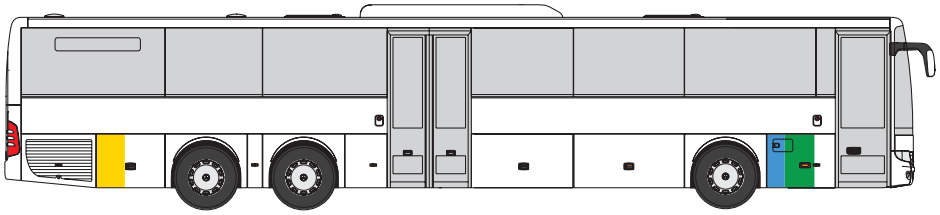
Battery

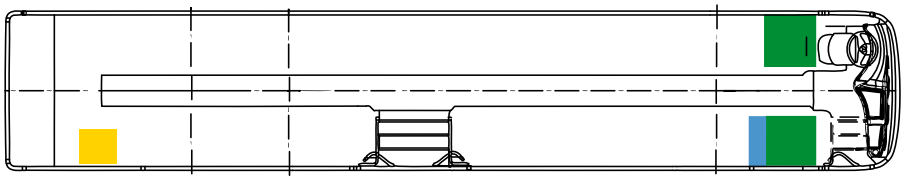
7.12.3 Integro L

	Model designation	Length	Doors	Axles	Drive
Integro L	633.004	15 m	2	3	Diesel

front right

front left / rear right



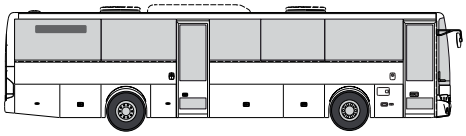
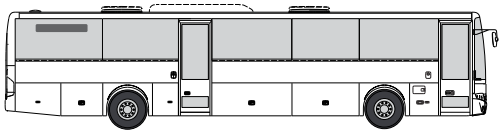
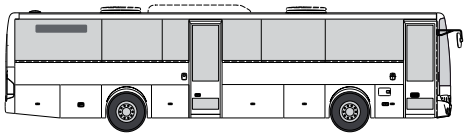
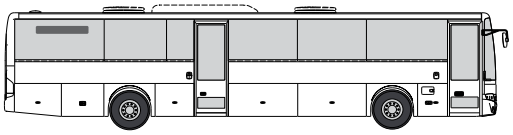


Tank (with pipework)

AdBlue tank

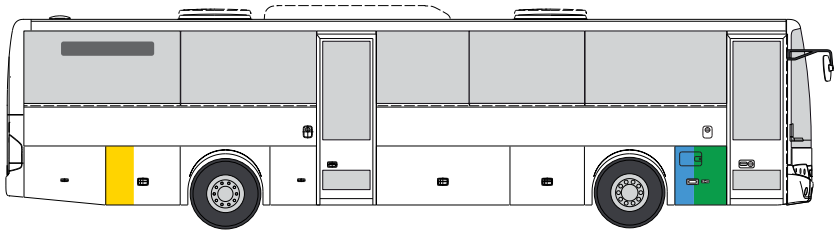
Battery

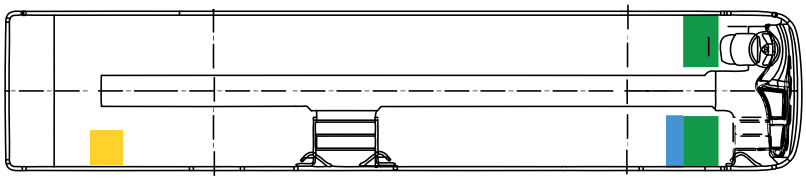
7.13 Overview of Intouro

Model designation	Vignette
Intouro	
Intouro M	
Intouro E	
Intouro ME	

7.13.1 Intouro

	Model designation	Length	Doors	Axles	Drive
Intouro	633.051	12 m	2	2	Diesel





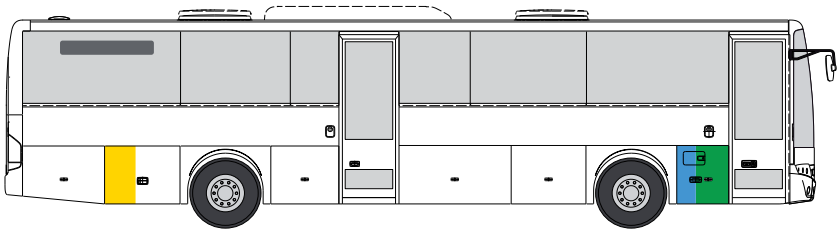
Tank (with pipework)

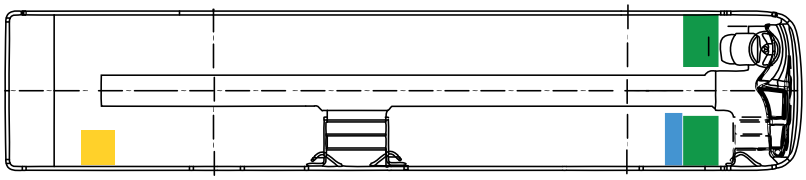
AdBlue tank

Battery

7.13.2 Intouro E

	Model designation	Length	Doors	Axles	Drive
Intouro E	633.251	12 m	2	2	Diesel





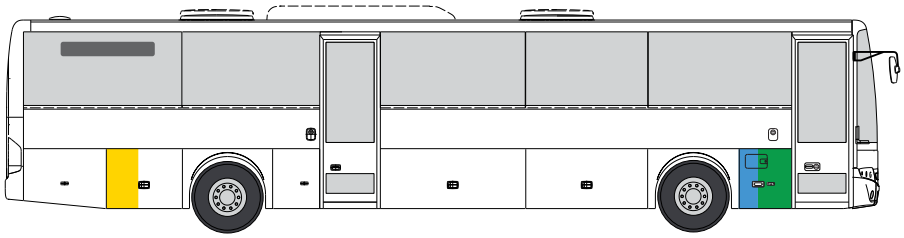
Tank (with pipework)

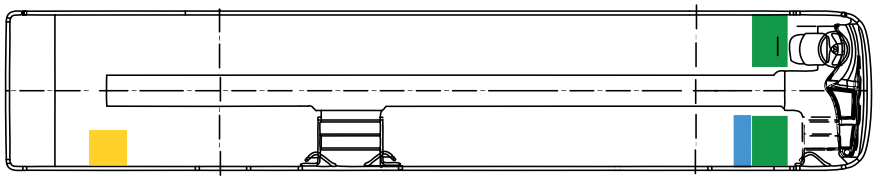
AdBlue tank

Battery

7.13.3 Intouro M

	Model designation	Length	Doors	Axles	Drive
Intouro M	633.052	13 m	2	2	Diesel





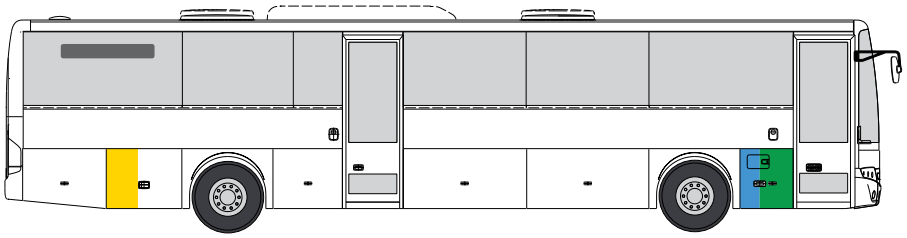
Tank (with pipework)

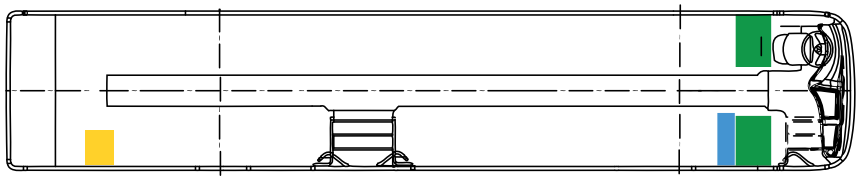
AdBlue tank

Battery

7.13.4 Intouro ME

	Model designation	Length	Doors	Axles	Drive
Intouro ME	633.252	13 m	2	2	Diesel





Tank (with pipework)

AdBlue tank

Battery

7.14 Characteristics of coaches

	Drive: Diesel
	Number of passengers: up to 60 persons
	seats only

Exterior view

	2 entrances
	entrances with several steps, height of floor approx. 1.35 m (above road)
	high waist rail height approx. 2.20 m (above road)

Doors

	outward swinging doors
	single-wing
	pneumatically powered
	width: 0.70 m (clear width)

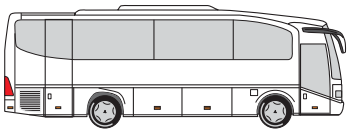
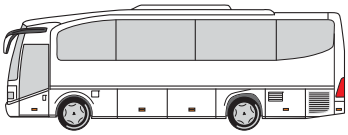
Interior equipment and seats

	high backrests
	seat adjustment at the side
	backrest adjustment
	passenger restraint system mandatory
	luggage compartments with grab rail
	may be toilet, galley, driver rest area, etc.

Models

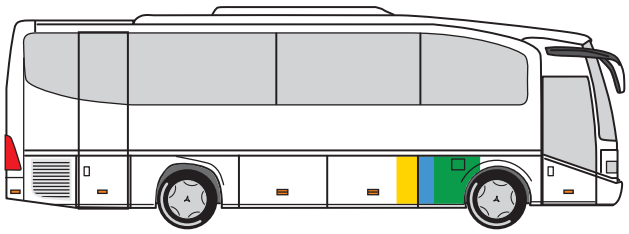
	Tourismo
	Travego
	Tourino

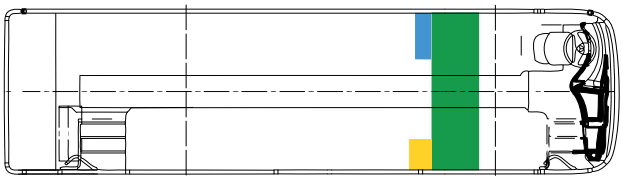
7.15 Overview of Tourino

Model designation	Vignette
Tourino	
Tourino right-hand drive	

7.15.1 Tourino

	Model designation	Length	Doors	Axles	Drive
Tourino	444.303	9.35 m	2	2	Diesel





Tank (with pipework)

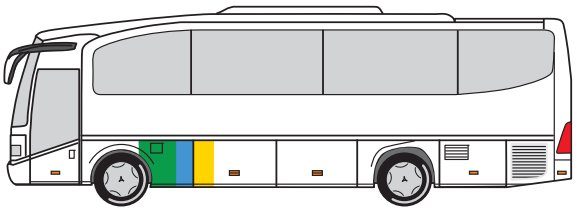
AdBlue tank

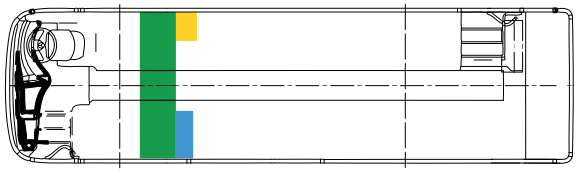
Battery

7.15.2 Tourino right-hand drive

	Model designation	Length	Doors	Axles	Drive
Tourino RL	444.303-23	9.35 m	2	2	Diesel

front left / rear right



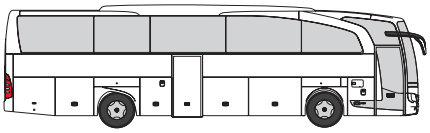
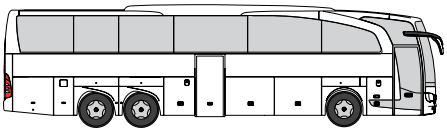
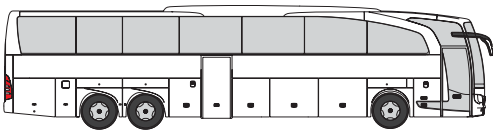


Tank (with pipework)

AdBlue tank

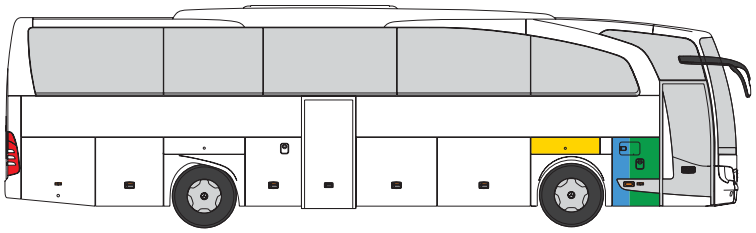
Battery

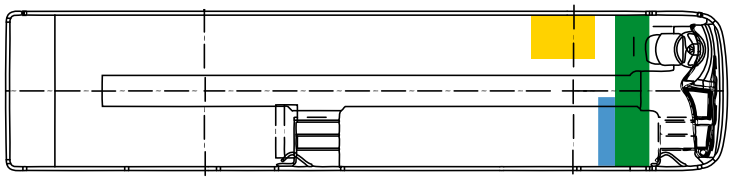
7.16 Overview of Travego

Model designation	Vignette
Travego	
Travego M	
Travego L	

7.16.1 Travego

	Model designation	Length	Doors	Axles	Drive
Travego	632.006	12 m	2	2	Diesel





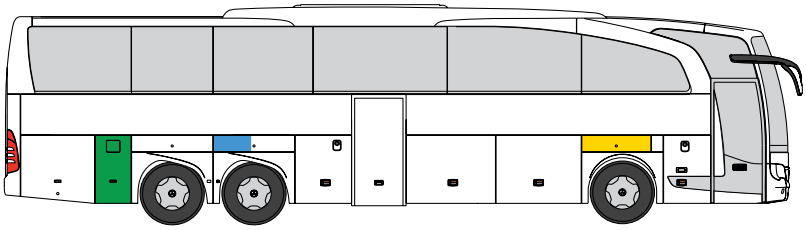
Tank (with pipework)

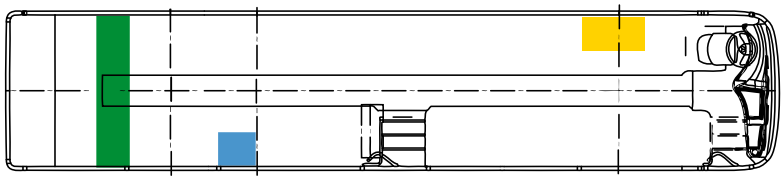
AdBlue tank

Battery

7.16.2 Travego M

	Model designation	Length	Doors	Axles	Drive
Travego M	632.005	13 m	2	2	Diesel





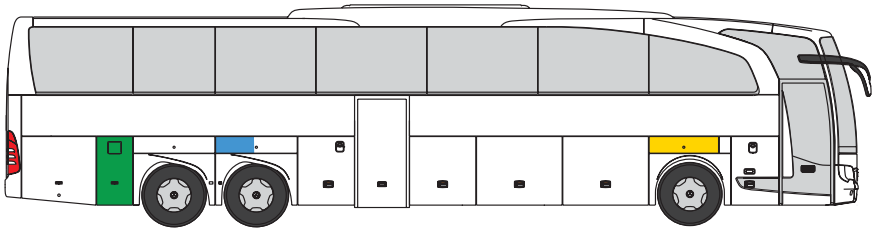
Tank (with pipework)

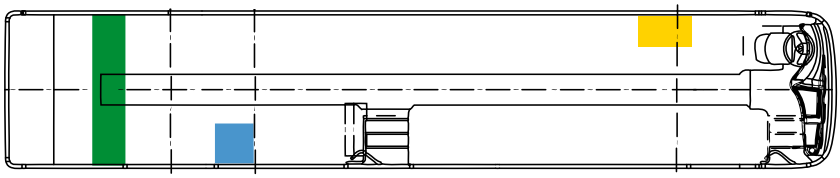
AdBlue tank

Battery

7.16.3 Travego L

	Model designation	Length	Doors	Axles	Drive
Travego L	632.007	14 m	2	2	Diesel



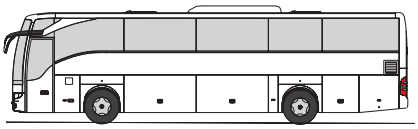
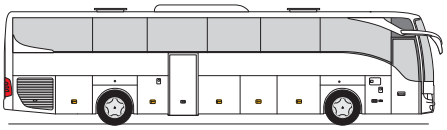
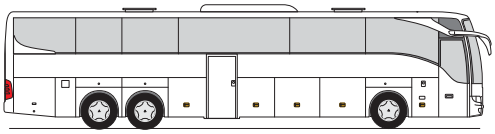
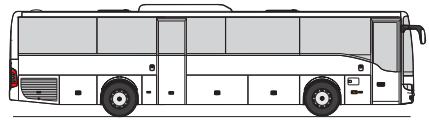
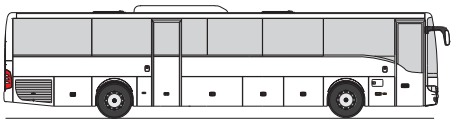


Tank (with pipework)

AdBlue tank

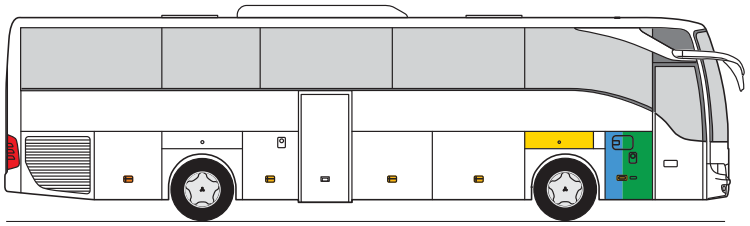
Battery

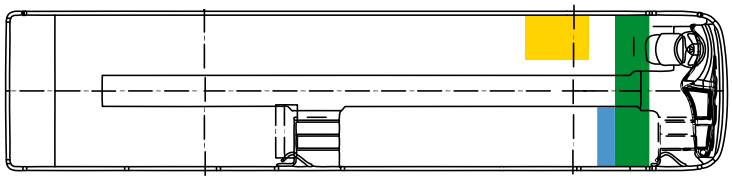
7.17 Overview of Tourismo

Model designation	Vignette
Tourismo	
Tourismo right-hand drive	
Tourismo M	
Tourismo M/2	
Tourismo L	
Tourismo RH	
Tourismo RH M	

7.17.1 Tourismo

	Model designation	Length	Doors	Axles	Drive
Tourismo	632.036	12 m	2	2	Diesel





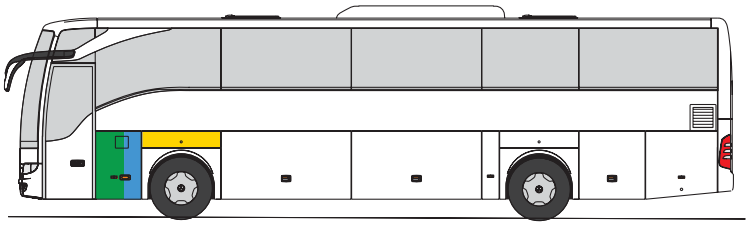
Tank (with pipework)

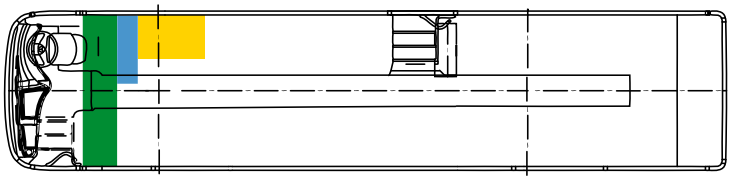
AdBlue tank

Battery

7.17.2 Tourismo right-hand drive

	Model designation	Length	Doors	Axles	Drive
Tourismo RL	632.036-23	12 m	2	2	Diesel





Tank (with pipework)

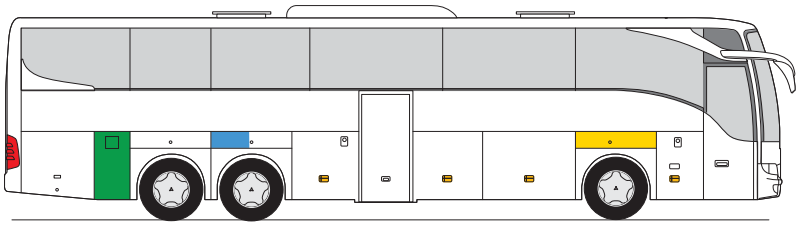
AdBlue tank

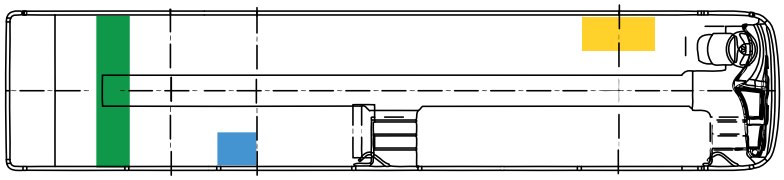
Battery

7.17.3 Tourismo M

	Model designation	Length	Doors	Axles	Drive
Tourismo M	632.035	13 m	2	2	Diesel

front right





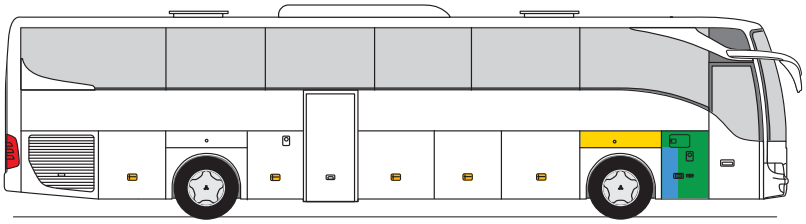
Tank (with pipework)

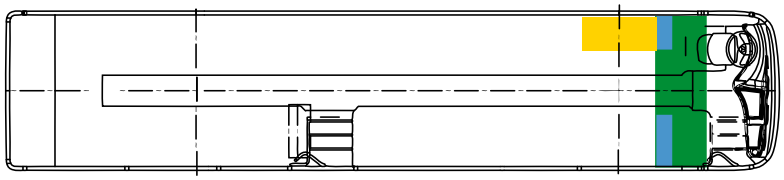
AdBlue tank

Battery

7.17.4 Tourismo M/2

	Model designation	Length	Doors	Axles	Drive
Tourismo M/2	632.038	13 m	2	2	Diesel





Tank (with pipework)

AdBlue tank

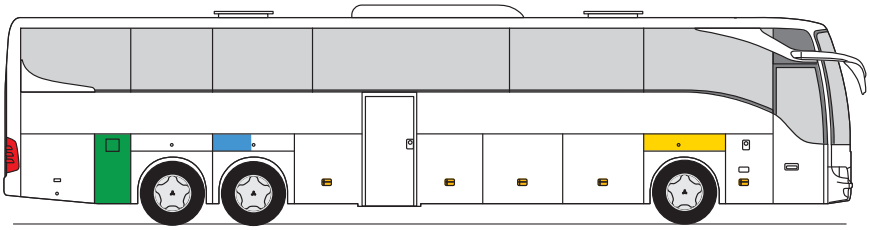
Battery

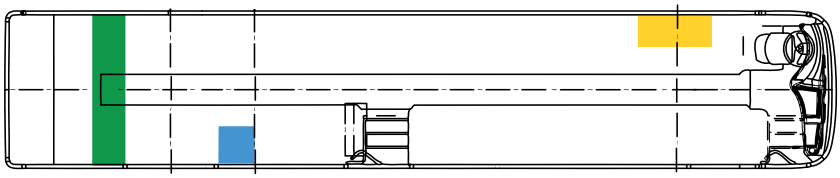
7.17.5 Tourismo L

	Model designation	Length	Doors	Axles	Drive
Tourismo L	632.037	14 m	2	2	Diesel

front right

front left / rear right





Tank (with pipework)

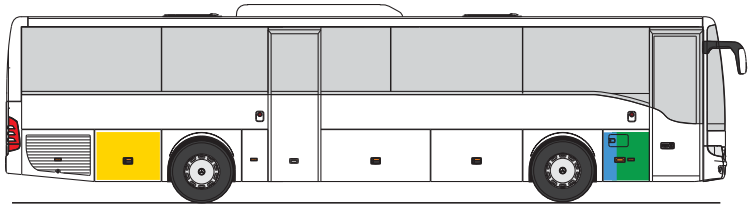
AdBlue tank

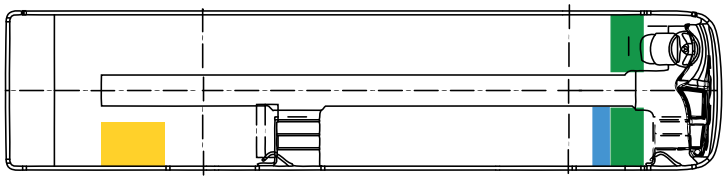
Battery

7.17.6 Tourismo RH

	Model designation	Length	Doors	Axles	Drive
Tourismo RH	632.025	12 m	2	2	Diesel

rear left





Tank (with pipework)

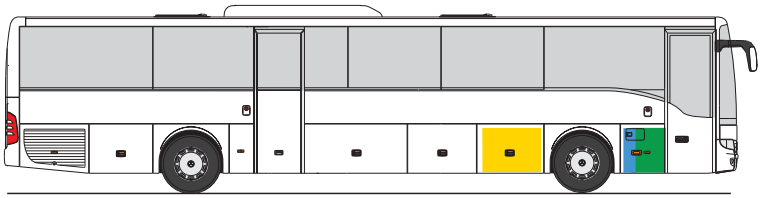
AdBlue tank

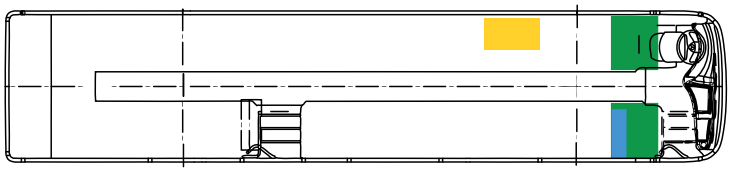
Battery

7.17.7 Tourismo RH M

	Model designation	Length	Doors	Axles	Drive
Tourismo RH M	632.026	13 m	2	2	Diesel

Picture of rear left





Tank (with pipework)

AdBlue tank

Battery

8 Annex Euro 3 vehicles

This section gives an overview of the various models.

This annex is concerned solely with vehicles subject to the Euro 3 standard.

The model number can be read from the type plate (see the section *Characteristics*).

The annex is primarily intended to assist you in training and preparation for rescue operations that may occur. This overview will help you to gain a better appreciation of the bus types in service in your operations area. At least you will then be well prepared for any rescue operations with these buses.

8.1 Characteristics of City buses

General / Technology

Drives of various types: diesel, gas, fuel cell

Number of passengers: up to 170 persons

mostly standees

Exterior view

several wide entrances

low entrance height

low waist rail height

Doors

inward and outward swinging doors

double wing

pneumatically powered

width: 1.25 m

Interior equipment and seats

low backrests

no seat adjustment

no passenger restraint systems

numerous handrails

"standing area" for wheelchair passengers, pushchairs

Models

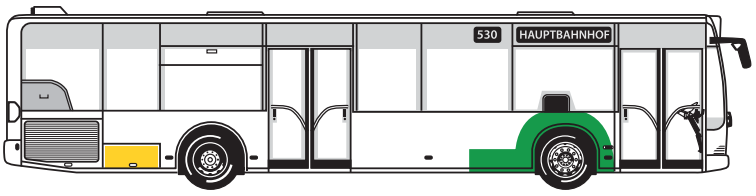
Citaro

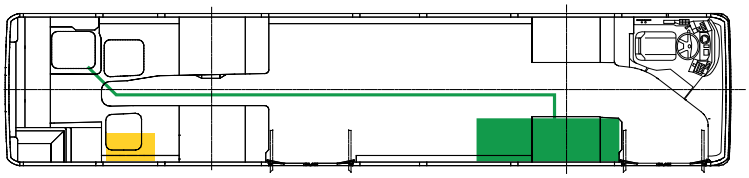
Conecto

Cito

8.1.1 Citaro Solo, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro Solo	628.043	12 m	2	2	Diesel engine



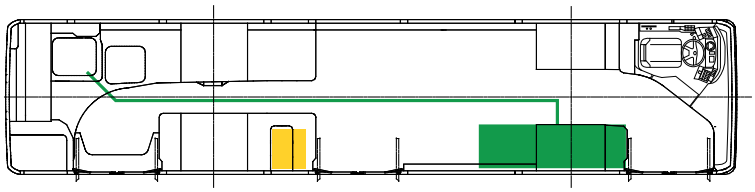


Tank (with pipework)

Battery

8.1.2 Citaro Solo, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro Solo	628.045	12 m	3	2	Diesel engine

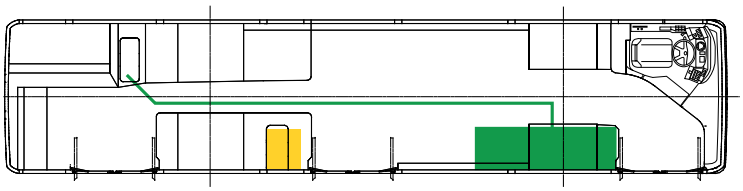


Tank (with pipework)

Battery

8.1.3 Citaro Solo, vertical engine

	Model designation	Length	Doors	Axles	Drive
Citaro Solo vert. engine	628.050	12 m	3	2	Diesel engine

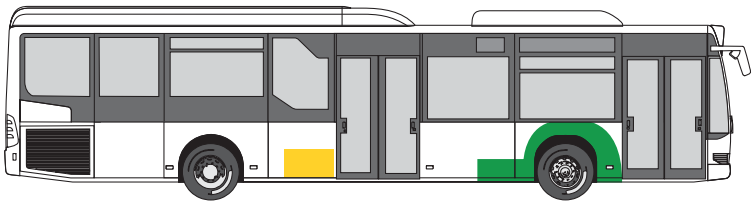


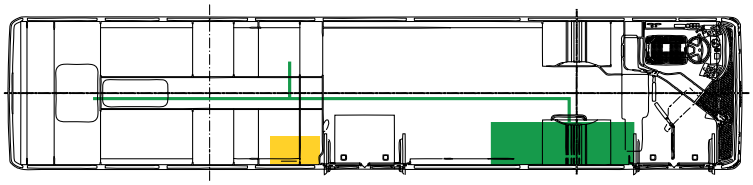
Tank (with pipework)

Battery

8.1.4 Citaro LE, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro LE	628.583	12 m	2	2	Diesel engine



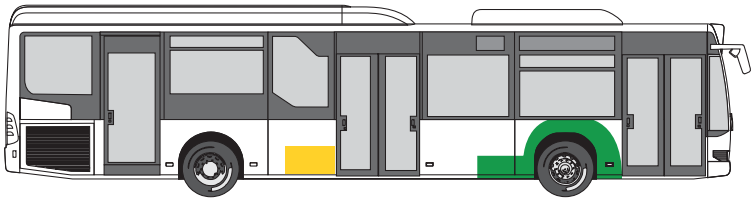


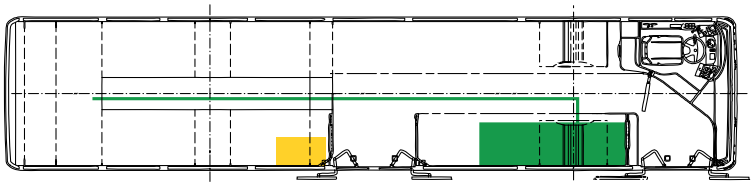
Tank (with pipework)

Battery

8.1.5 Citaro LE, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro LE	628.584	12 m	3	2	Diesel engine



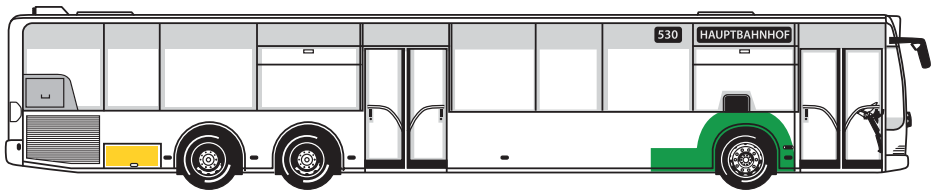


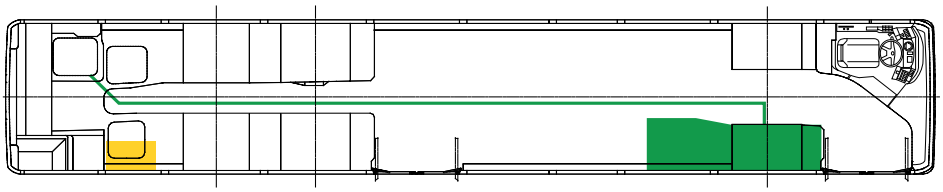
Tank (with pipework)

Battery

8.1.6 Citaro L, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro L	628.143	15 m	2	3	Diesel engine



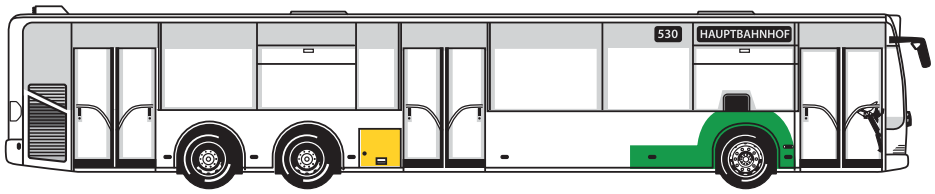


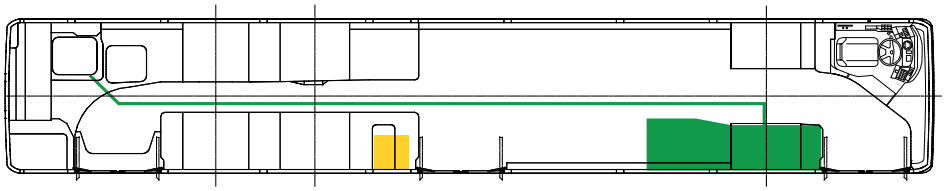
Tank (with pipework)

Battery

8.1.7 Citaro L, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro L	628.145	15 m	3	3	Diesel engine



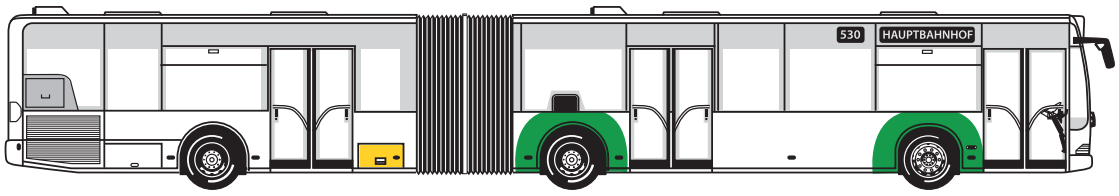


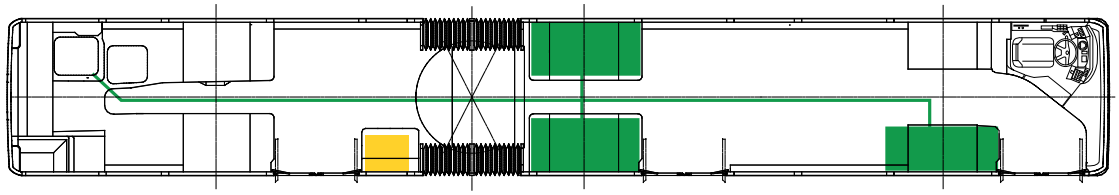
Tank (with pipework)

Battery

8.1.8 Citaro G, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro G	628.243	18 m	3	3	Diesel engine



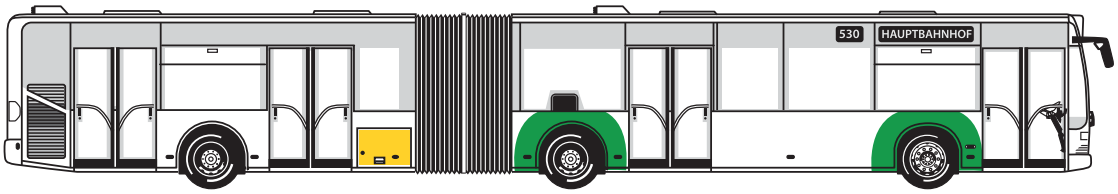


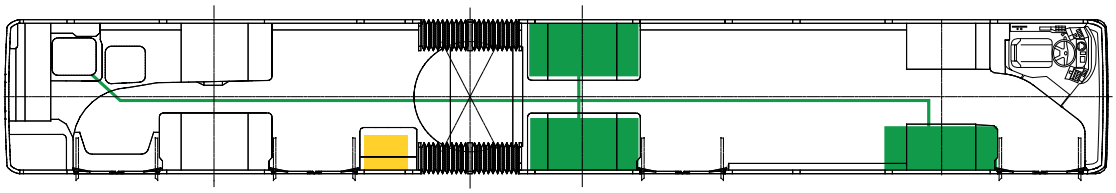
Tank (with pipework)

Battery

8.1.9 Citaro G, 4-door

	Model designation	Length	Doors	Axles	Drive
Citaro G	628.245	18 m	4	3	Diesel engine



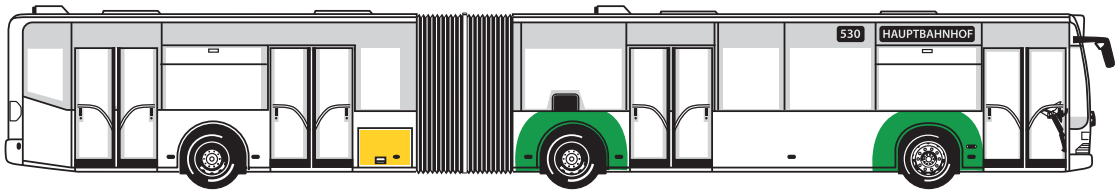


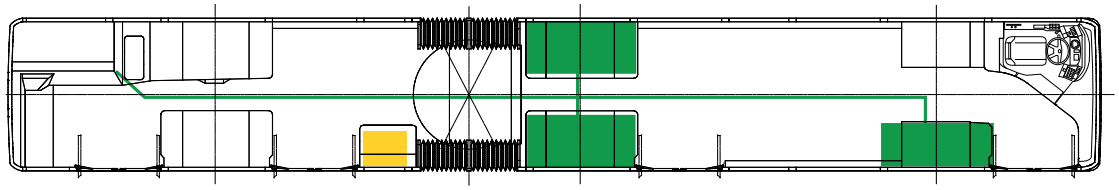
Tank (with pipework)

Battery

8.1.10 Citaro G, vertical engine

	Model designation	Length	Doors	Axles	Drive
Citaro G vertical engine	628.250	18 m	4	3	Diesel engine



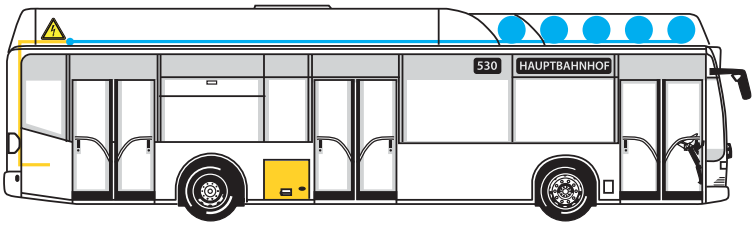


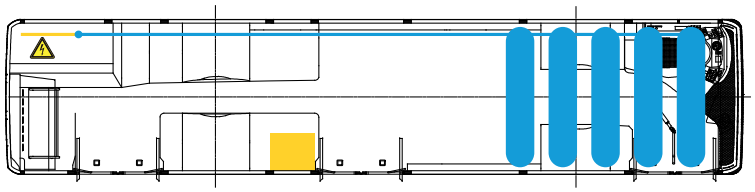
Tank (with pipework)

Battery

8.1.11 Citaro fuel cell

	Model designation	Length	Doors	Axles	Drive
Citaro fuel cell	628.075	12 m	3	2	Fuel cell





Tank

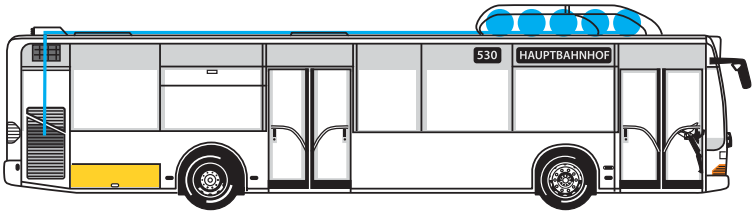
Battery / heavy current cable

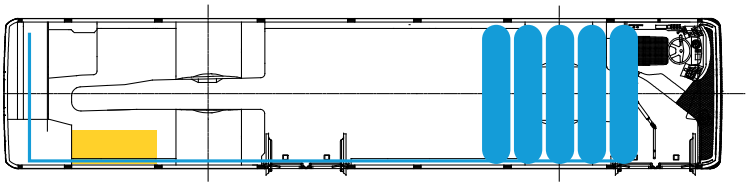
Danger to life!

The voltage of the vehicle electrical system is 650 V. When the system is ready for use there exists a danger to life!

8.1.12 Citaro CNG

	Model designation	Length	Doors	Axles	Drive
Citaro:CNG	628.010	12 m	2/3	2	Gas



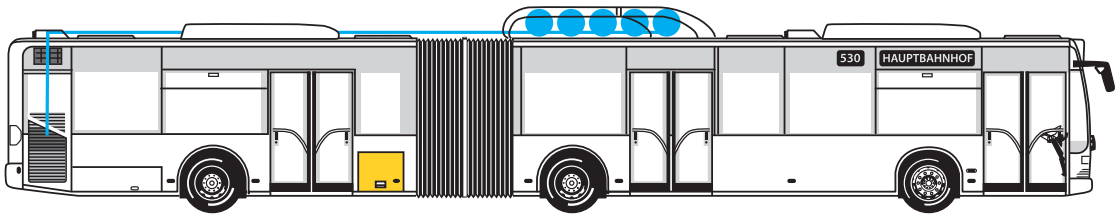


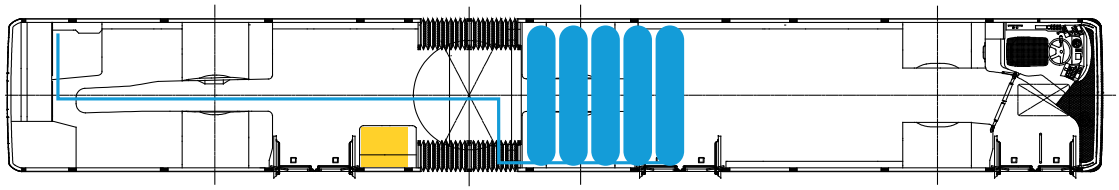
Gas tank (with pipework)

Battery

8.1.13 Citaro G CNG

	Model designation	Length	Doors	Axles	Drive
Citaro:G CNG	628.210	18 m	3/4	3	Gas



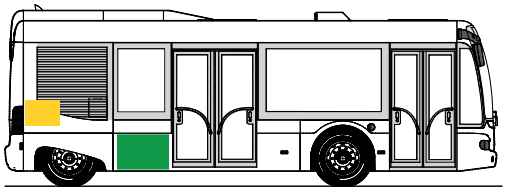


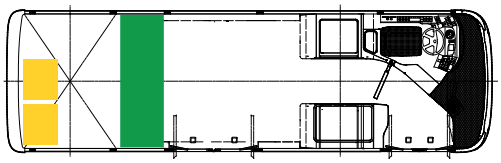
Gas tank (with pipework)

Battery

8.1.14 Cito 8.1 m

	Model designation	Length	Doors	Axles	Drive
Cito	666.030	8.10 m	2	2	Diesel engine





Tank (with pipework)

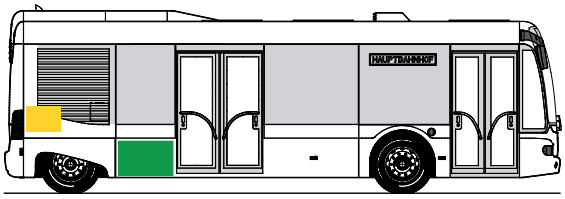
Battery

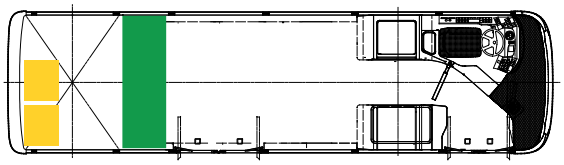
Danger to life!

The voltage of the vehicle electrical system is 650 V. When the system is ready for use there exists a danger to life!

8.1.15 Cito 8.9 m

	Model designation	Length	Doors	Axles	Drive
Cito	666.130	8.90 m	2	2	Diesel engine





Tank (with pipework)

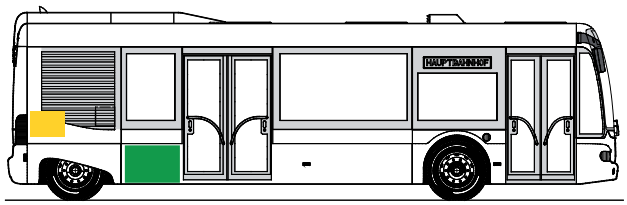
Battery

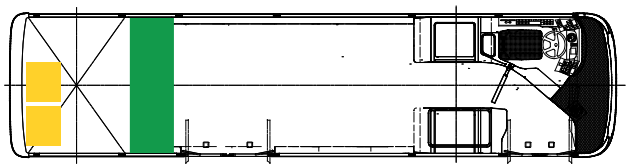
Danger to life!

The voltage of the vehicle electrical system is 650 V. When the system is ready for use there exists a danger to life!

8.1.16 Cito 9.6 m

	Model designation	Length	Doors	Axles	Drive
Cito	666.230	9.60 m	2	2	Diesel engine





Tank (with pipework)

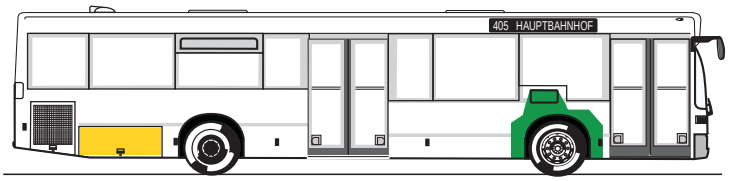
Battery

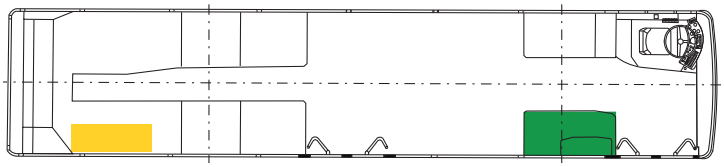
Danger to life!

The voltage of the vehicle electrical system is 650 V. When the system is ready for use there exists a danger to life!

8.1.17 O 405 N2

	Model designation	Length	Doors	Axles	Drive
O 405 N2	C 612.400	12.00 m	2	2	Diesel engine





Tank

Battery

8.2 Charcteristics of interurban buses

General / Technology

Drive: diesel

Number of passengers: up to 130 persons

mostly seated

Exterior view

several entrances

entrances with steps

low to medium height waist rail

Doors

outward swinging doors

double-wing and single-wing possible

pneumatically powered

width: approx. 0.70 m - 1.25 m

Interior equipment and seats

low and high backrests

seat adjustment possible

passenger restraint systems possible

handrails possible

luggage compartments possible

"standing area" for wheelchair passengers, pushchairs

Models

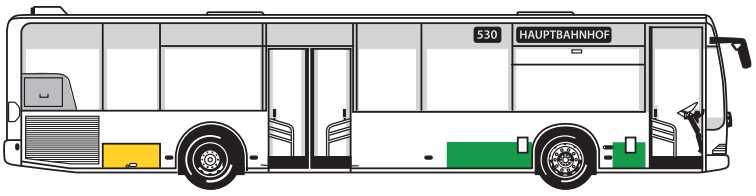
Citaro

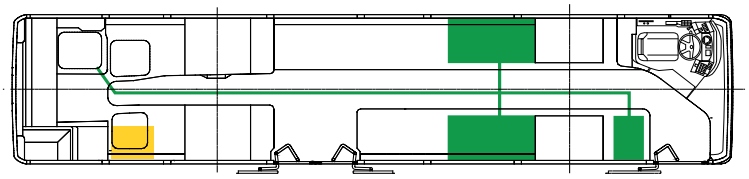
Conecto

Integro

8.2.1 Citaro Ü, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro Ü	628.047	12 m	2	2	Diesel engine



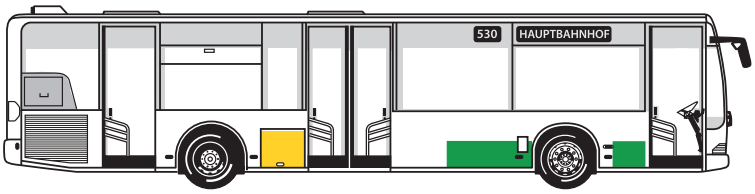


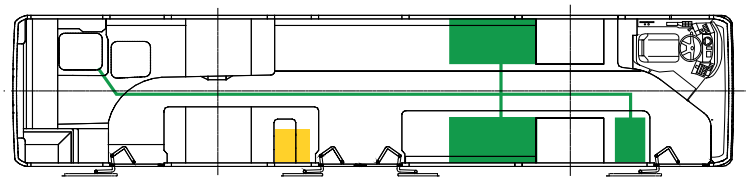
Tank (with pipework)

Battery

8.2.2 Citaro Ü, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro Ü	628.048	12 m	3	2	Diesel engine



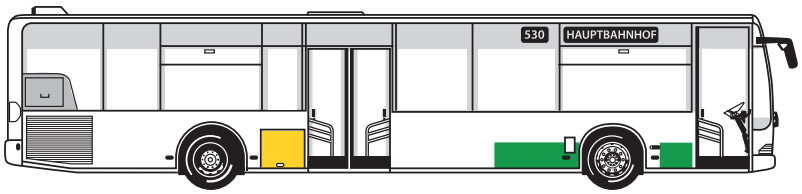


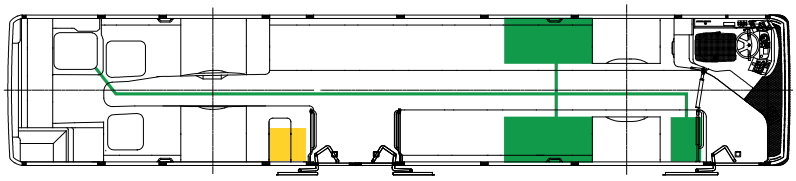
Tank (with pipework)

Battery

8.2.3 Citaro MÜ

	Model designation	Length	Doors	Axles	Drive
Citaro:MÜ	628.447	13 m	2	2	Diesel engine



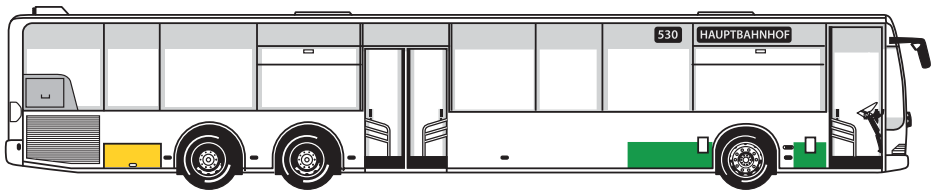


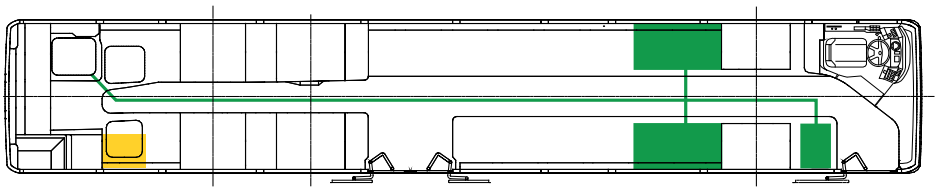
Tank (with pipework)

Battery

8.2.4 Citaro LÜ, 2-door

	Model designation	Length	Doors	Axles	Drive
Citaro LÜ	628.147	15 m	2	2	Diesel engine



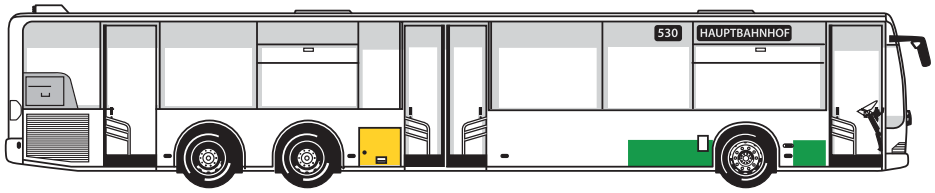


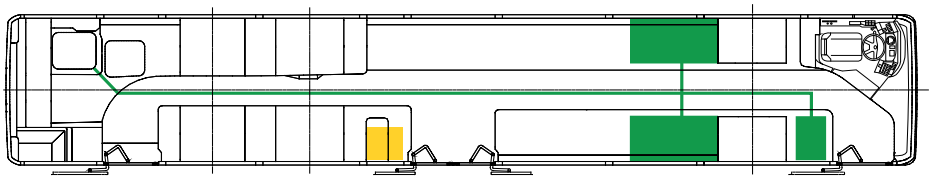
Tank (with pipework)

Battery

8.2.5 Citaro LÜ, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro LÜ	628.148	15 m	3	2	Diesel engine



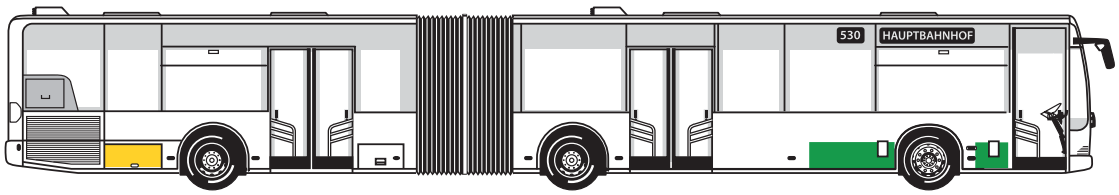


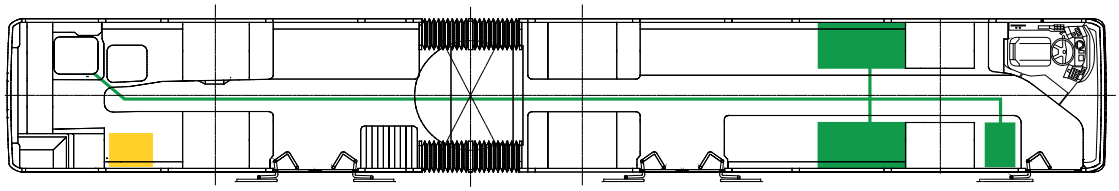
Tank (with pipework)

Battery

8.2.6 Citaro GÜ, 3-door

	Model designation	Length	Doors	Axles	Drive
Citaro GÜ	628.247	18 m	3	3	Diesel engine



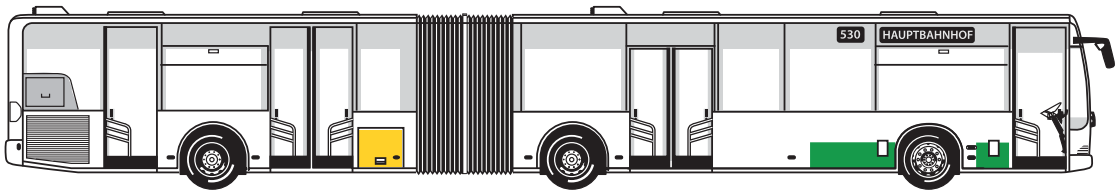


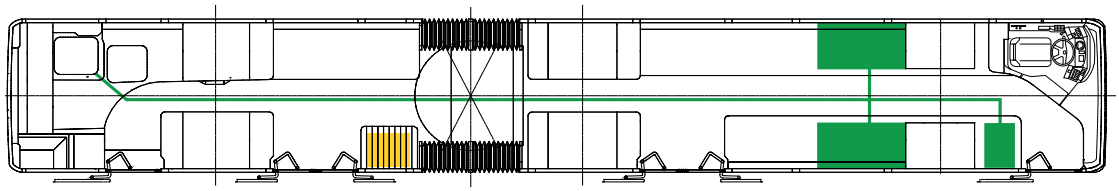
Tank (with pipework)

Battery

8.2.7 Citaro GÜ, 4-door

	Model designation	Length	Doors	Axles	Drive
Citaro GÜ	628.248	18 m	4	3	Diesel engine



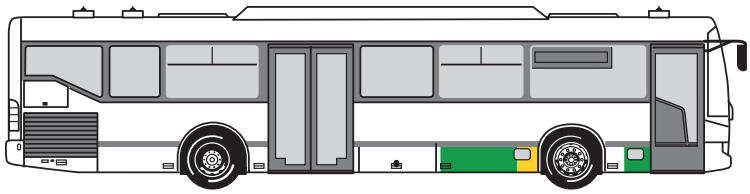


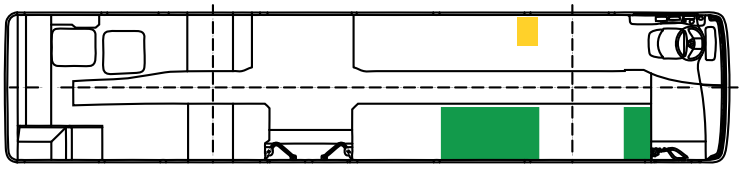
Tank (with pipework)

Battery

8.2.8 Conecto Ü

	Model designation	Length	Doors	Axles	Drive
Conecto:Ü	671.020	12 m	2	2	Diesel engine



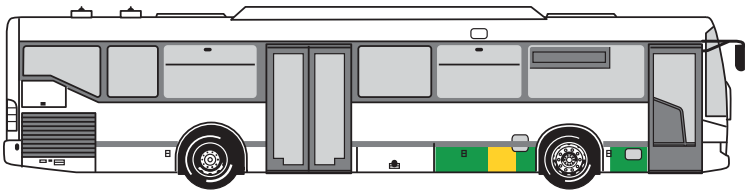


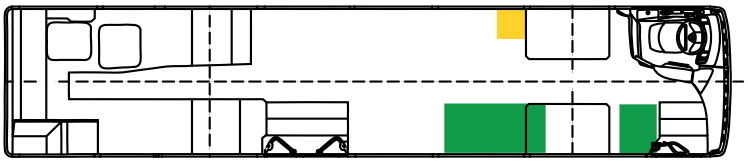
Tank (with pipework)

Battery

8.2.9 Conecto H

	Model designation	Length	Doors	Axles	Drive
Conecto:H	671.042	12 m	2	2	Diesel engine



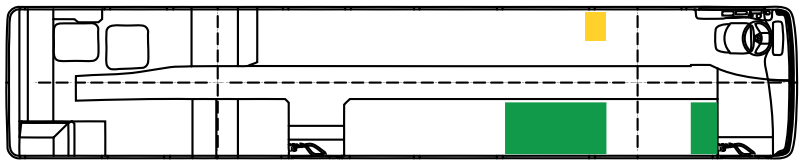


Tank (with pipework)

Battery

8.2.10 Conecto M

	Model designation	Length	Doors	Axles	Drive
Conecto M	671.021	13 m	2	2	Diesel engine

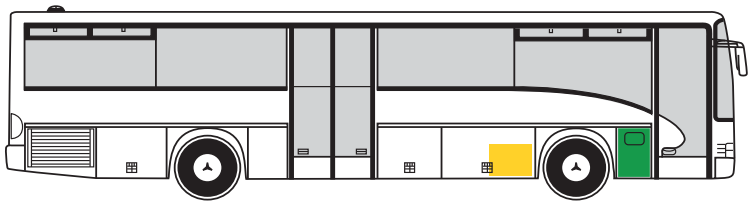


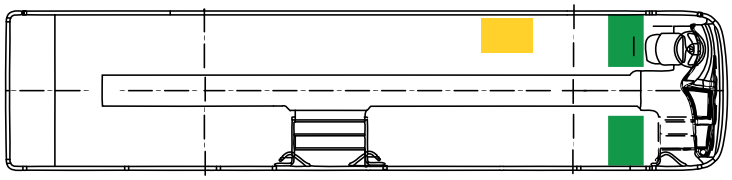
Tank (with pipework)

Battery

8.2.11 Integro

	Model designation	Length	Doors	Axles	Drive
Integro	627.001	12 m	2	2	Diesel engine



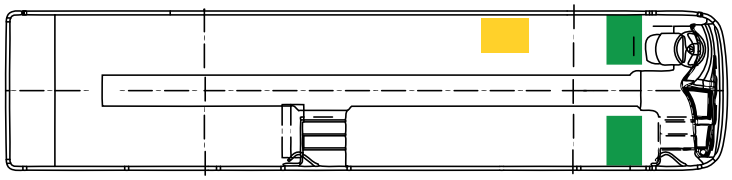


Tank (with pipework)

Battery

8.2.12 Integro H

	Model designation	Length	Doors	Axles	Drive
Integro H	627.021	12 m	2	2	Diesel engine

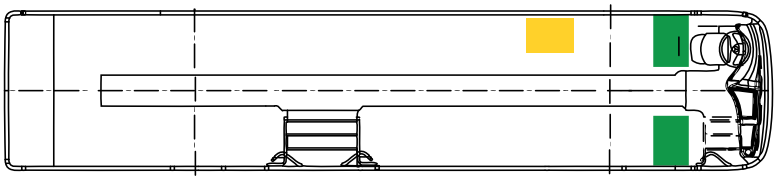


Tank (with pipework)

Battery

8.2.13 Integro M

	Model designation	Length	Doors	Axles	Drive
Integro M	627.031	13 m	2	2	Diesel engine

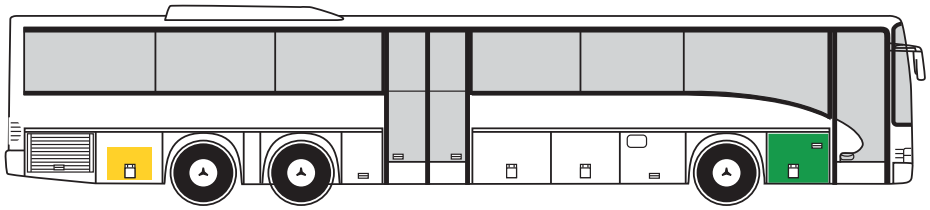


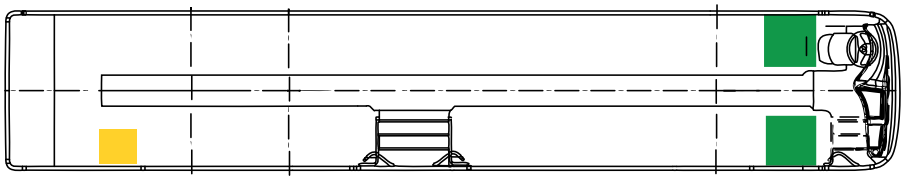
Tank (with pipework)

Battery

8.2.14 Integro L

	Model designation	Length	Doors	Axles	Drive
Integro L	627.011	15 m	2	3	Diesel engine





Tank (with pipework)

Battery

8.3 Characteristics of coaches

General / Technology

Drive: diesel

Number of passengers: up to 60 persons

seats only

Exterior view

2 entrances

entrances with several steps, height of floor approx. 1.35 m (above road)

high waist rail height approx. 2.20 m (above road)

Doors

outward swinging doors

single-wing

pneumatically powered

width: 0.70 m (clear width)

Interior equipment and seats

high backrests

seat adjustment at the side

backrest adjustment

passenger restraint system mandatory

luggage compartments with grab rail

may be toilet, galley, driver rest area, etc.

Models

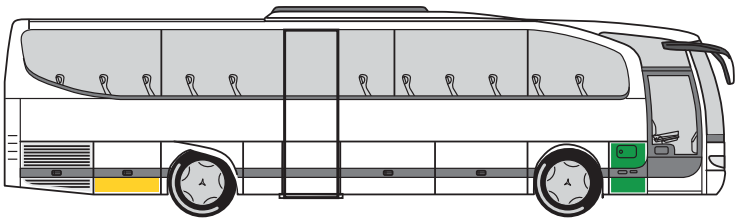
Tourismo

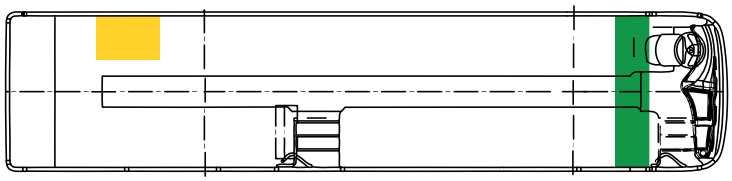
Travego

Tourino

8.3.1 Travego RH

	Model designation	Length	Doors	Axles	Drive
Travego RH	629.001	12 m	2	2	Diesel engine



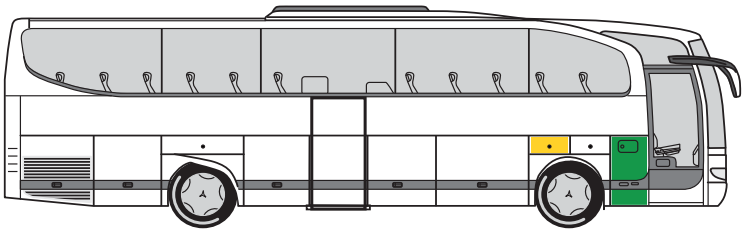


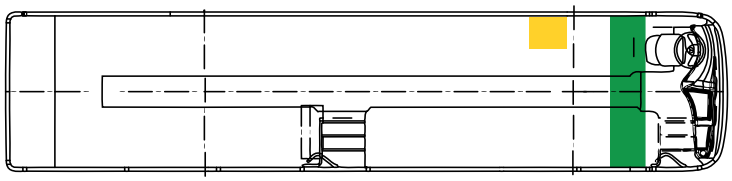
Tank

Battery

8.3.2 Travego

	Model designation	Length	Doors	Axles	Drive
Travego	629.011	12 m	2	2	Diesel engine



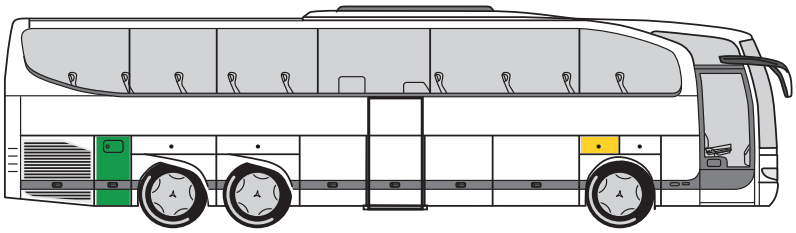


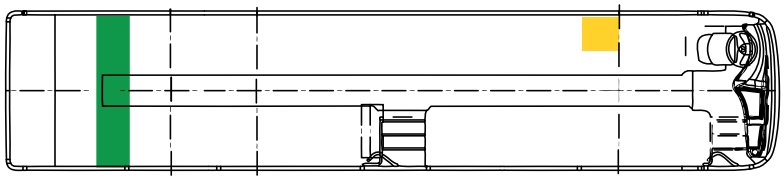
Tank

Battery

8.3.3 Travego M

	Model designation	Length	Doors	Axles	Drive
Travego M	629.015	13 m	2	3	Diesel engine



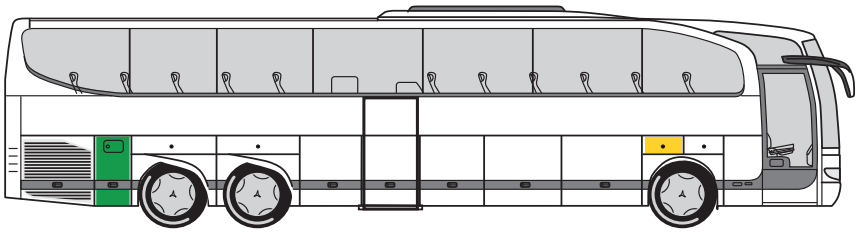


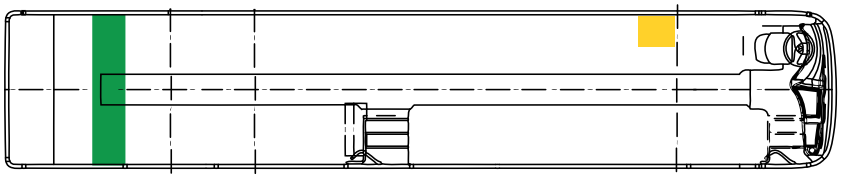
Tank

Battery

8.3.4 Travego L

	Model designation	Length	Doors	Axles	Drive
Travego L	629.012	15 m	2	3	Diesel engine



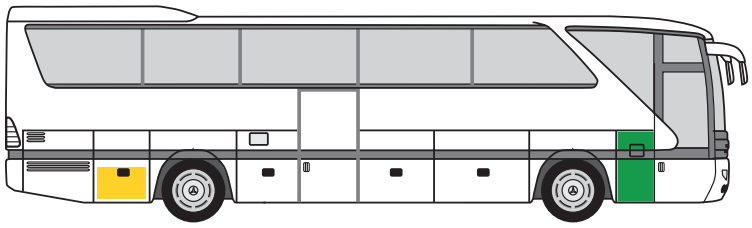


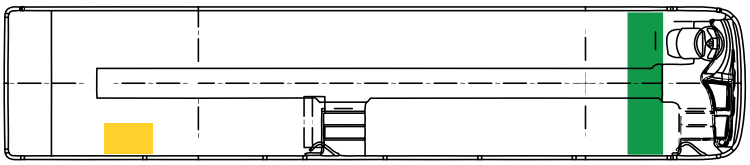
Tank

Battery

8.3.5 Tourismo RHD

	Model designation	Length	Doors	Axles	Drive
Tourismo RHD	613.358	12 m	2	2	Diesel engine



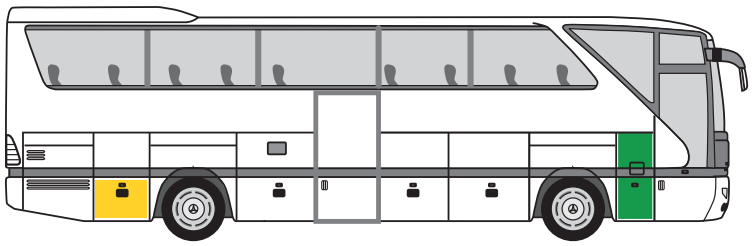


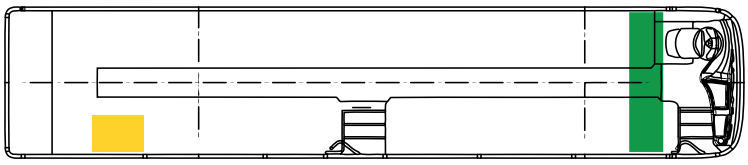
Tank

Battery

8.3.6 Tourismo SHD

	Model designation	Length	Doors	Axles	Drive
Tourismo:SHD	613.388	12 m	2	2	Diesel engine



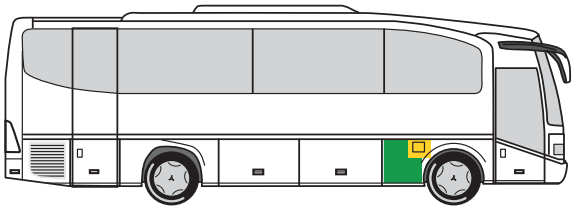


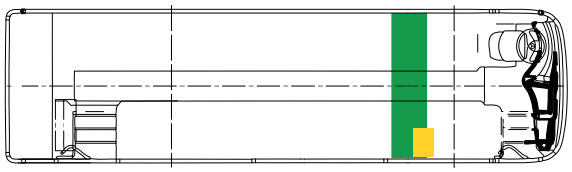
Tank

Battery

8.3.7 Tourino

	Model designation	Length	Doors	Axles	Drive
Tourino	444.203	9.35 m	2	2	Diesel engine



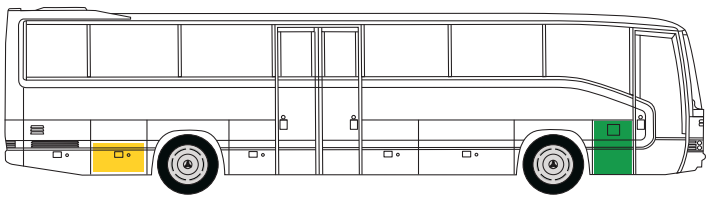


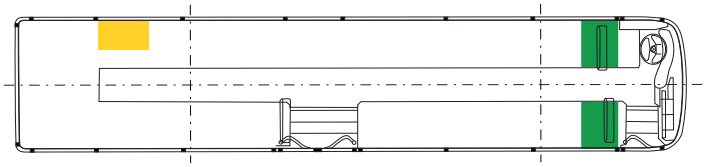
Tank

Battery

8.3.8 O 404

	Model designation	Length	Doors	Axles	Drive
O 404	C 618.215	12.00 m	2	2	Diesel engine





Tank

Battery

Index

C

V

W