



Body builder guidelines The Transporter



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* Electronic Stabilisation Program

1 General information

1.1 Introduction

These body builder guidelines provide body builders with important technical information which must be complied with when planning and manufacturing a body for road safety and operational reliability. The add-on, body, installation or conversion work required for this is referred to below as "body activities".

Due to the vast number of body builders and body types, it is not possible for Volkswagen AG to predict all possible changes, e.g. in driving properties, stability, weight distribution, centre of gravity of the vehicle and its handling characteristics which can occur due to the body activities. Therefore, Volkswagen AG does not accept any liability for accidents or injuries arising from changes of this kind made to its vehicles, especially if the changes have a negative effect on the vehicle as a whole. As a result, Volkswagen AG only accepts liability for its own design, production and instruction services. The body builder itself is obliged to ensure that its body activities are not faulty in themselves, and also that they cannot result in defects or dangers on the vehicle as a whole. The body builder itself bears the product liability in the event that this obligation is violated.

These body builder guidelines are intended for professional body builders. As a result, these body builder guidelines assume corresponding background knowledge. Note that some work (e.g. welding on load-bearing parts) is only allowed to be performed by appropriately qualified personnel. This requirement exists in order to avoid risks of injury and to achieve the quality needed in the body activities.

1.1.1 Concept of these guidelines

The following body builder guidelines are divided into 8 chapters so that you can find information rapidly:

1. Introduction
2. Technical data for planning
3. Modifications to closed bodies
4. Modifications to open bodies
5. Implementations of special bodies
6. Technical data
7. Calculations
8. Listings

Information

For more information, see 1.2.1.1 "Contact", 1.2.2 "Body builder guidelines, consulting", 1.3 "Delivery range"

The limit values selected in chapter 2 "Technical data for planning" must be complied with without fail, and must be used as the basis for planning.

1.1.2 Means of representation

The following means of representation are used in these body builder guidelines:

Warning note

A danger note draws your attention to possible accident or injury risks to which you or other persons might be exposed.

Environmental note

An environmental note provides you with information about environmental protection.

Practical note

This note draws your attention to a possible risk of damage to the vehicle.

Information

This note indicates additional information.

1.1.3 Vehicle safety

Warning note

Before installing external add-ons or mechanical units, it is essential that you read the chapters in these body builder guidelines that are related to installation, as well as corresponding chapters in the instructions and information for the suppliers' mechanical units and in the detailed owner's manual for the base vehicle. Otherwise you will not be able to recognise dangers, and might expose yourself or others to danger.

We recommend that you use parts, mechanical units, conversion parts or accessories that have been tested by Volkswagen AG for the corresponding vehicle type.

Have the vehicle's safety checked immediately if non-recommended parts, mechanical units, conversion parts or accessories are used.

Practical note

It is essential to comply with national registration regulations because body activities on the vehicle can alter the vehicle type under registration regulations and the operating permit may be invalidated. This applies in particular to:

- modifications which change the vehicle type approved in the operating permit,
- modifications which might be expected to endanger road users or
- modifications which impair the exhaust or noise emissions characteristics.

1.1.4 Operational safety

Warning note

Incorrect interventions in electronic components and their software may result in these no longer functioning. Due to the networking of electronics, systems that were not modified can be affected.

Malfunctions to the electronics can significantly impair the operational safety of the vehicle.

Have work on or modifications to electronic components performed by a qualified specialist workshop which has the necessary specialist knowledge and tools for performing the necessary work.

Volkswagen AG recommends a Volkswagen AG customer service workshop for this purpose.

Service by a qualified specialist workshop is essential, in particular for safety-relevant work and work on safety-relevant systems.

Some safety systems only operate when the engine is running. Therefore, do not switch the engine off when driving.

1.2 General notes

The following pages contain technical guidelines for custom body builders and equipment fitters designing and mounting bodies. The body builder guidelines must be strictly adhered to when performing any modifications to the vehicle. The German version of the body builder guidelines is the exclusive authority for the most up-to-date information. This also applies to legal claims.

1.2.1 Product and vehicle information for body builders

1.2.1.1 Contact in Germany

If you have questions about vehicle models made by Volkswagen Commercial Vehicles, you can contact us on the Internet using the Volkswagen AG Conversion Portal (www.umbauportal.de) in one of the following ways:

Free hotline (from a German landline)	0800-86228836
Contact:	info@umbauportal.de
Personal points of contact:	https://umbauportal.de/ansprechpartner

Alternatively, as a registered user, you can contact us directly using the contact form. There, you can store vehicle-specific information in advance, which will help us to deal with your request faster.

1.2.1.2 International contact

Please contact the body builder support personnel at the responsible importer for technical advice relating to Volkswagen Commercial Vehicles models and as a point of contact for conversions or the BB database. To find the point of contact who is responsible for you, please register at the BB database. Help is available for the registration option using the "Help" menu.

Personal points of contact:	https://www.bb-database.com/de/hilfe#faq_7
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1.2.1.3 Electronic Repair and Workshop Information from Volkswagen AG (erWin*)

Body builders can access repair and workshop information, e.g.

- Current flow diagrams
- Workshop manuals
- Maintenance
- Self-Study programmes

via the Electronic Repair and Workshop Information from Volkswagen AG (erWin*).

Information

Volkswagen AG workshop manuals and workshop information can be downloaded from the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

1.2.1.4 Genuine parts online ordering portal*

For the purchase of spare parts and for the research of Volkswagen Genuine Parts, our latest parts catalogues are available on the Internet on the "Genuine Parts Online Ordering Portal":

<http://www.partslink24.com>

*Information system of Volkswagen AG, subject to charges

1.2.1.5 Online owner's manuals

The Volkswagen AG website contains a "Service & Accessories" menu which gives access to the digital owner's manual for your vehicle:

<http://www.vwn-bordbuch.de>

Once you have entered the vehicle identification number of your Volkswagen, you can see all the manuals associated with your vehicle.

1.2.1.6 European Type Approval (ETA) and EC Certificate of Conformity (CoC)

Directive 2007/46/EC of the European Parliament establishes the framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles. Each manufacturer involved in the construction of a vehicle must complete the corresponding part of the certificate for its own production level.

COC = Certificate of Conformity. A document that verifies the conformity of certain goods – thus also including vehicles and bodies – with the recognised (international) standards. The purpose of this EC Certificate of Conformity is to facilitate the approval of goods on international markets. As a result, the document is needed above all in import and export as part of the customs clearance procedure.

The new directive also introduces a new method of EC type approval, namely the multi-stage approval process. As the name indicates, this involves several stages: first of all, the manufacturer of the first production stage undertakes the type approval for the chassis, including the powertrain, wheels, suspension, brake systems, etc. The first EC type approval is issued for these items. Following that, the manufacturer of the second production stage places the body on the chassis and presents the completed vehicle for the type approval.

Approval in 2 stages

- Manufacturer, 1st production stage:
EC type approval for chassis
- Manufacturer, 2nd production stage (body on chassis):
EC type approval for completed vehicle

1.2.2 Body builder guidelines, consulting

The body builder guidelines define the technical requirements for custom body builders and equipment fitters designing and mounting bodies for base vehicles of the Volkswagen Commercial Vehicles brand.

The body builder guidelines must be strictly adhered to when performing any modifications to the vehicle.

Ensure that no modification adversely affects the functional reliability and safety of the running gear, the body or the electric system. Modifications must only be performed by qualified specialists and in accordance with the generally acknowledged rules of the automotive industry.

Prerequisites for modifications to used vehicles:

The vehicle shall be in a good overall condition, i.e. structural parts such as longitudinal and cross members, pillars etc. shall not be corroded to such an extent that structural stability might be adversely affected.

Vehicles whose modifications might affect the validity of general certificate of roadworthiness must be presented to an authorised testing centre for approval. It is recommended to clarify in advance with the relevant authority whether approval is required. Please contact us in case of inquiries for proposed modifications.

We require precise information from you in order to respond to your inquiry quickly and comprehensively.

When inquiring, please enclose two sets of design drawings of the complete scope of the modifications, including all weights, centre of gravity and dimensions, which also clearly show how the body is attached to the chassis. Please also provide information about the intended operating conditions of the vehicle with your inquiry.

If bodies comply with the present body builder guidelines, no additional approval by Volkswagen AG is required for the presentation of the vehicle at the relevant authority examining roadworthiness.

The work safety regulations of the trade association and the EU machine directive apply.

When making modifications to vehicles, all corresponding and applicable legal regulations, rules, laws and directives must be observed.

1.2.2.1 Safety certificate

Volkswagen AG does not issue body approvals for non-Volkswagen bodies. It merely provides body builders with important information and technical specifications for dealing with the product in these guidelines. As a result, Volkswagen AG recommends that all work should be carried out on the base vehicle and the body in accordance with the current Volkswagen body builder guidelines applicable to the vehicle in question.

Volkswagen AG does not recommend body activities which

- are not conducted according to these Volkswagen body builder guidelines,
- exceed the gross vehicle weight rating,
- exceed the gross axle weight rating.

Volkswagen AG issues safety certificates on a voluntary basis, as follows:

The assessment conducted by Volkswagen AG is exclusively based on the documents submitted by the body builder which is carrying out the modifications. The inspection and safety assessment only relate to the expressly designated scope of work, its basic compatibility with the designated chassis and its interfaces or, in the event of chassis modifications, the fundamental admissibility of the design for the designated chassis.

The safety certificate relates to the presented overall vehicle, and not

- to the design of the overall body,
- its functions or
- the planned use.

Safety is only provided if the design, production and installation are carried out by the body builder performing the modifications in accordance with the state of the art and in accordance with the applicable body builder guidelines of Volkswagen AG - and assuming any deviations from these guidelines have been declared to be technically safe. The safety certificate does not release the body builder who is performing the modifications from its responsibility or the product, or from its obligation to carry out its own calculations, tests and a trial of the entire vehicle in order to ensure that the operational safety, road safety and driving properties of the overall vehicle it has manufactured are acceptable.

Accordingly, it is necessary to ensure that the body builder exclusively accepts its responsibility for ensuring that its body activities are compatible with the base vehicle as well as the operational and road safety of the vehicle. It is expressly stated that the safety certificate from Volkswagen AG does not represent a technical approval for the investigated changes.

In the course of assessment of a presented vehicle, an assessment report is written as a means of obtaining a safety certificate (safety certificate report).

The following assessment results are possible:

- Classified as "safe"
If the overall vehicle is classified as "safe", the Sales department can subsequently issue the safety certificate.
- Classified as "not safe"
Classification as "not safe" in the individual categories:
 - + base vehicle configuration
 - + impairment of the base vehicle and possibly
 - + sole body item

leads to a corresponding classification of the overall vehicle. This means no safety certificate can be issued initially.

In order for a not-safe classification to be resolved, the safety certificate report states the necessary change for each item in question. In order for the safety certificate to be obtained, these points will have to be addressed by the body builder and documented in a clearly comprehensible manner in a report along the same lines as the safety certificate report. On the basis of this detailed report, it is possible for the desk-review assessment to be completed with a positive result.

Depending on the defective points, it may be necessary not only to provide documentation of the defect resolution but

also for the vehicle from the first inspection to be presented again. The first report indicates if it will be necessary for a new assessment to be carried out on the vehicle.

The assessment report may also contain "notes/recommendations".

Notes/recommendations are technical remarks which do not have any effect on the final result of a safety certificate. They should be construed as advice and suggestions for further consideration, as a means of continuously improving the final product for the customer.

In addition, "notes/recommendation solely relating to the conversion" can also be formulated. The notes and recommendations stated as "solely relating to the body/conversion" must be dealt with and documented before the vehicle can be included in the body builder portal.

Practical note

Country-specific laws, directives and approval regulations shall be observed!

1.2.2.2 Application for the safety certificate

In order for the evaluation to be carried out for the safety certificate, the following documents and drawings shall be submitted to the responsible department before work begins on the vehicle (see section 1.2. "General Information").

- All deviations from these Volkswagen body builder guidelines.
- All data about dimensions, weight and centre of gravity (weighing certificates).
- Attachment of the body on the vehicle.
- Application conditions of the vehicle, e.g.:
 - + on rough roads
 - + in very dusty conditions
 - + at high altitudes
 - + at extreme outdoor temperatures
- Certificates (e-registration, seat tensile test).

Complete documentation avoids the need for clarification queries, and makes the processing faster.

1.2.2.3 Legal entitlements

- There is no legal entitlement for a safety certificate to be issued.
- Due to ongoing technical development and the information derived from this, Volkswagen AG is entitled to refuse a safety certificate even if a comparable certificate had been issued formerly.
- The safety certificate can be restricted to individual vehicles.
- The subsequent issue of a safety certificate may be refused for vehicles that have already been completed or delivered.
- The body builder is solely responsible for:
 - + the function and compatibility of its body activities with the base vehicle.
 - + road safety and operational reliability.
 - + all body activities and installed parts.

1.2.3 Warranty and product liability of the body builder

The body builder's or fitter's warranty conditions apply to the body builder's or fitter's scope of supply. Therefore, warranty claims associated with complaints to this scope of supply cannot be made under the warranty conditions applicable to Volkswagen Commercial Vehicles.

Defects of bodies, installations and conversions provided by third parties as well as defects of the vehicle caused by the said bodies, installations or conversions are excluded from the Volkswagen warranty and also from the Volkswagen paint and body warranty. This also applies to accessories which were not installed and/or supplied by the vehicle manufacturer.

The body builder or fitter is solely responsible for the design and assembly of bodies and the execution of conversions.

All conversions must be documented by the body builder or fitter in the service schedule. This service schedule is provided with every Volkswagen vehicle.

Due to the multitude of conversions and diversity of operating conditions, the information provided by Volkswagen AG is subject to the reservation that modified vehicles are not tested by Volkswagen AG. Modifications may affect the properties of the vehicle.

For reasons of liability, the body builders or fitters shall provide the following information in writing to their customers:

"Due to the modifications* to your Volkswagen Commercial Vehicles base vehicle, the properties of your base vehicle may have changed. Please understand that Volkswagen AG does not assume any liability for any negative effects resulting from the modifications* to the vehicle."

In individual cases, Volkswagen AG reserves the right to demand proof of the information being passed on to the customer. No general legal entitlement for the approval of a body modification exists, even if such approval was previously granted.

If bodies comply with the present guidelines, no additional approval by Volkswagen AG is required for the presentation of the vehicle at the relevant authority examining roadworthiness.

* At this point, the term "modification" may be substituted by a more precise description of the work performed, e.g. by "camping equipment installation", "wheelbase extension", "box body".

1.2.4 Ensuring traceability

Body dangers only detected after delivery can mean that subsequent measures in the market will be necessary (customer information, warning, call-back). To make these measures as efficient as possible, it is necessary to be able to trace the product after delivery. For this purpose, and in order to be able to use the central vehicle register (CVR) operated by the Federal Motor Transport Authority or comparable registers abroad in order to trace the affected vehicle owners, we strongly recommend that body builders should store the serial number/identification number of their body linked to the vehicle identification number of the base vehicle in their databases. Also, it is recommended for the customers' addresses to be stored and to provide a means for subsequent owners to be registered.

1.2.5 Trademarks

VW badges and VW emblems are trademarks of Volkswagen AG. VW badges and VW emblems are not allowed to be removed without authorisation, or to be attached in a different location.

1.2.5.1 Positions on rear of the vehicle

VW badges and VW emblems which are also supplied must be fitted in the location intended by Volkswagen.

1.2.5.2 Appearance of overall vehicle

If the vehicle does not correspond to the appearance and the quality requirements set by Volkswagen AG, then Volkswagen AG reserves the right to request removal of the Volkswagen AG trademarks.

1.2.5.3 Non-Volkswagen trademarks

Non-Volkswagen trademarks are not allowed to be attached next to Volkswagen badges.

1.2.6 Recommendations for vehicle storage

Extended storage times cannot always be avoided. The following measures are recommended to ensure that vehicle quality is not affected by long-term storage:

At vehicle delivery:

- Fill tank.
- Do not park the vehicle under trees, poles, etc.
- Open all ventilation flaps, set blower to maximum speed.
- Disconnect battery(ies). (See also chapter 2.5.4, "Vehicle battery")
- Remove dirt, snow and moisture from vehicle (footwell).
- Close windows, doors, front lid, rear lid and sunroof.
- On manual gearboxes select 1st gear and on automatic select P. Do not engage reverse gear. Do not apply the parking brake.
- Pull off windscreen wiper bags and clamp polystyrene block under the wiper arm. Please remove any other loose film. ("Aero wipers"*: remove and store in suitable location inside vehicle.)
- Check the tyre pressure.
- If incomplete vehicles are stored outdoors (e.g. chassis, back-to-back cab), the fuel tank and its pipes, all components between the longitudinal members up to the rear bumper and the spare wheel must be protected (covered) against direct exposure to sunshine, snow and liquids.

Check vehicles weekly for contamination by aggressive media (e.g. bird droppings, industrial dusts) and clean, if required. Check the battery open-circuit voltage every 50 days, even if the battery is disconnected. Open-circuit voltage means the voltage of the disconnected battery after a minimum storage period of 12 hours. Recharge battery in due time before it reaches an open-circuit voltage of 12.4 V. Batteries with an open-circuit voltage of less than 11.6 V are in state of exhaustive discharge and should be disposed of without delay.

When recharging the battery only current-controlled and voltage-limited chargers must be used. A maximum charging voltage of 14.4 V shall not be exceeded.

It is recommended to check the tyre inflation pressure every three months.

Reconnect battery negative lead(s) before recommissioning the vehicle.

1.2.7 Compliance with environmental rules and regulations

Environmental note

The following principles of environmentally friendly design and material selection should be followed right from the planning stage of fitted components or bodies, including with regard to the statutory requirements in the EU Directive on End-of-Life Vehicles 2000/53/EC.

Fitters of accessories and body builders shall ensure that they comply with all applicable environmental rules and regulations, especially EU directive 2000/53/EC concerning end-of-life vehicles and EU directive 2003/11/EC relating to restrictions on the marketing and use of certain dangerous substances and preparations ("low flammability" and certain flame-retardant agents) for closer definition of directive 76/769/EEC.

The vehicle owner must keep all assembly documentation concerning the modification and hand them over together with the vehicle to the dismantler. This ensures that modified vehicles are processed in compliance with environmental rules and regulations at the end of their lifecycle.

Materials which represent a potential risk such as halogen additives, heavy metals, asbestos, CFCs and chlorinated hydrocarbons shall be avoided.

- EU directive 2000/53/EC must be adhered to.
- Preferably, materials which allow valuable substance recycling and closed material cycles shall be used.
- The material and production process shall be selected so that only low amounts of easily recyclable waste are generated.
- Plastics shall only be used where these offer advantages in terms of cost, function or weight.
- In the case of plastics, especially composite materials, only mutually compatible substances from one material family are allowed to be used.
- With regard to components that are relevant for recycling, the number of plastic types used shall be kept as low as possible.
- It is necessary to check whether a component can be manufactured from recycled material or with recycled additives.
- Care shall be taken to ensure that recyclable components can be removed easily, e.g. by means of snap-lock connections, predetermined breaking points, good accessibility, use of standard tools.
- Simple, environmentally friendly removal of the fluids shall be ensured by means of drain plugs, etc.
- Wherever possible, the components shall not be painted or coated; instead, dyed plastic parts shall be used.
- Components in areas at risk of accident shall be designed to be tolerant of damage, repairable and easy to exchange.
- All plastic parts shall be identified according to the VDA material sheet 260 ("Components of motor vehicles; Identification of materials"), e.g. "PP-GF30R".

1.2.8 Recommendations for inspection, maintenance and repair

Maintenance instructions or service schedules outlining inspection and servicing work should be provided for the modifications performed by the body builder or accessories fitter. These instructions or schedules must include the maintenance and inspection intervals as well as the required operating fluids and materials and the spare parts. Parts and components with a limited service life which must be checked in regular intervals to ensure service reliability and timely replacement must be explicitly stated.

This should be supported by a repair manual including tightening torques, settings and tolerances as well as other relevant specifications. Special tools, including their source of supply, must also be stated.

The manual shall also state which type of work has to be performed only by the body builders and accessories fitters or their authorised workshops.

If the body builder's or accessory fitter's scope of supply includes electric, electronic or mechatronic, hydraulic or pneumatic systems, current flow diagrams and diagnosis routines or similar documentation facilitating a systematic search for faults shall be provided.

1.2.9 Accident prevention

Body builders shall ensure that the bodies comply with applicable legal rules and regulations as well as all regulations regarding work safety and accident prevention. All safety rules and the information material provided by accident insurance providers shall be observed.

All technically feasible measures must be taken to prevent unsafe operation.

Country-specific laws, directives and approval regulations must be observed.

The body builder is responsible for the compliance with these laws, rules and regulations.

For further information about commercial freight traffic in the Federal Republic of Germany please contact:

Postal address:	Berufsgenossenschaft für Fahrzeughaltungen Fachausschuss "Verkehr" Sachgebiet "Fahrzeuge" Ottenser Hauptstrasse 54 D-22765 Hamburg, Germany
Telephone	+49 (0) 40 39 80 - 0
Fax	+49 (0) 40 39 80-19 99
E-mail:	info@bgf.de
Homepage	www.bgf.de

1.2.10 Quality system

Worldwide competition, increased quality requirements by customers on the overall product of the Transporter, national and international product liability legislation, new forms of organisation and increasing pressure on costs are demanding effective quality assurance systems in all areas of the automotive industry.

The requirements on a quality management system of this kind are described in DIN EN ISO 9001.


















A VDA working group has prepared the guideline entitled "Quality management in the automotive industry - Minimum requirements on a management system for trailer and body manufacturers - System description and evaluation" for German body builders, on the basis of DIN EN ISO 9000 ff. Appeared as VDA Vol. 8 [VDA 8] (incl. CD-ROM), order no. A 13DA00080.

For the reasons stated above, Volkswagen AG strongly recommends that all body builders should set up and maintain a quality management system with the following minimum requirements:

Definition of responsibilities and authorisations including organisation plan.

- Description of the processes and procedures.
- Appointment of quality management representative.
- Performing contract and build feasibility checks.
- Performing product checks based on specified instructions.
- Regulating the handling of faulty products.
- Documentation and archiving of test results.
- Ensuring the quality records of employees are up to date.
- Systematic monitoring of test equipment.
- Systematic material and parts identification.
- Performing quality assurance measures at the suppliers.
- Ensuring the availability of process, working and test instructions, and that they are up to date, in the departments and in the workplace.

1.3 Delivery range

	Panel van (GVWR 2.6 ¹ /2.8 ² /2.85 ² / 3.0 ³ /3.2 ³ t)	Window van/ Rockton/ Rockton Expedition (GVWR 2.6 ¹ /2.8 ² /2.85 ² / 3.0 ³ /3.08 ³ /3.2 ³ t)	Running gear (GVWR 2.8 ² /2.85 ² / 3.0 ³ /3.2 ³ t)	Drop side (GVWR 2.8 ² /2.85 ² / 3.0 ³ t)
Short wheelbase (3,000 mm)				
Payload (kg)	422-1,438 ⁴⁾	454-1,244 ⁴⁾	783-1,629	783-1,629
Load compartment volume (m ³)	5.8	5.8	--	--
Load area (m ²)	--	--	--	--
Exterior dimensions (mm) ⁵⁾	4,892x2,283x1,990	4,892x2,283x1,990	4,892x2,283x1,952	5,076x2,300x1,952
Normal roof				
Payload (kg)	422-1,438 ⁴⁾	454-1,244 ⁴⁾		
Load compartment volume (m ³)	6.7	6.7		
Load area (m ²)	--	--		
Exterior dimensions (mm) ⁵⁾	4,892x2,283x2,176	4,892x2,283x2,176		
Medium-high roof				
Long wheelbase (3,400mm)				
Payload (kg)	354-1,387 ⁴⁾	451-1,244 ⁴⁾	746-1,644	561-1,259
Load compartment volume (m ³)	6.7	6.7	--	--
Load area (m ²)	--	--	--	5.7
Exterior dimensions (mm) ⁵⁾	5,292x2,283x1,990	5,292x2,283x1,990	5,292x2,283x1,949	5,476x2,300x1,949
Normal roof				
Payload (kg)	354-1,387 ⁴⁾	451-1,244 ⁴⁾	634-1,561	561-1,259
Load compartment volume (m ³)	7.8	7.8	--	--
Load area (m ²)	--	--	--	5.7
Exterior dimensions (mm) ⁵⁾	5,292x2,283x2,176	5,292x2,283x2,179	5,292x2,283x1,963	5,476x2,300x1,949
Medium-high roof ⁶⁾				
Payload (kg)	354-1,387 ⁴⁾	451-1,244 ⁴⁾		484-1,211
Load compartment volume (m ³)	9.3	9.3		--
Load area (m ²)	--	--		4.2
Exterior dimensions (mm) ⁵⁾	5,292x2,283x2,476	5,292x2,283x2,476		5,476x2,300x1,963
High roof ⁶⁾				

1) Load reduction possible as optional equipment for vehicles with short wheelbase and normal roof (not with Transporter Rockton/Rockton Expedition).

2) Standard gross vehicle weight rating (not with Transporter Rockton/Rockton Expedition).

3) Load increase possible as optional equipment (3.2 t GVWR as standard with Transporter Rockton/Rockton Expedition).

4) The weights specified here already include the weight differences for medium and high roofs.

5) Length x width x height. Vehicle width including exterior mirrors. The vehicle drawings are not to scale. Load ratings depend on the engine.

Equipment features can influence the payload or load weight by increasing/reducing the unladen weight. Please ask your Volkswagen Commercial Vehicles dealership about this.

The payload ranges shown here have been calculated with regard to equipment which can be selected or deselected, or

other articles which do not form part of the standard. The actual payload of a vehicle that is calculated from the difference between the gross vehicle weight rating and unladen weight can only be determined by weighing an individual vehicle.

6) Only applies to closed bodies

Information

Further information on the availability of individual combinations of gross vehicle weight rating, engine, gearbox and body variants and figures for consumption, CO₂ emissions and energy efficiency classes can be found in the sales documents and the configurator on the Volkswagen website:

<http://www.volkswagen-nutzfahrzeuge.de/de/cc5.html>

1.4 Advantages of the concept

- Two wheelbases.
- Six weight classes from 2600 kg, 2800 kg, 2850 kg, 3000 kg, 3080 kg and 3200 kg.
- High proportion of usable area.
- Through-load width between the wheelhouses 124 cm, pallet dimension.
- Low, flat loadbed with height 56 cm.
- Sturdy frame and smooth top flange for easy body assembly.
- Independent suspension front and rear.
- Powerful and economical engine range.
- Top cw value of 0.33 with closed bodies.
- High level of vehicle safety.
- Trailer load up to 2,500 kg.
- 4MOTION available for all models (not all weight classes).
- Low maintenance requirements.
- BlueMotion Technology with low-consumption engines.
- Bi-xenon headlights.
- 150 kW TSI engine (also with DSG and 4MOTION)
- Upgraded dash panel "Plus" e.g. for high-quality mobile homes.
- Additional assistance systems (e.g. lane change assist "Side Assist",
- ParkPilot front and rear, rear with "Rear Assist" camera, etc.)

Information

Additional vehicle data as well as information about the availability of individual combinations of gross vehicle weight, engine, gearbox and body variant can be found on the Internet at:

<http://www.volkswagen-nutzfahrzeuge.de/de/cc5.html>

1.5 Planning bodies

Practical note

During the planning of bodies, the right choice of materials and thus the observance of corrosion protection measures are important in addition to a user and maintenance friendly design

(see chap. 2.3.2.10 "Corrosion protection measures").

1.5.1 Selecting the base vehicle

The base vehicle needs to be selected carefully to ensure safe usage in the respective field.

During planning for the respective usage, please allow for the following:

- Wheelbase
- Engine/gearbox
- Final drive ratio
- Maximum weight
- Centre of gravity
- Seating version (number and arrangement)
- Electrics – scope (e.g. interior lighting, battery, e-interface for special vehicles)
- Ancillary drives (e.g. uprated alternator, larger compressor, possibly noise insulation for protecting the ancillary drive)
- Effects of recuperation on the current distribution in vehicles with Blue Motion technology

Practical note

Before carrying out body building or conversion work, the supplied base vehicle should be checked with regard to the fulfilment of applicable requirements.

You will find more information on the available chassis and body versions in chapters:

1.3 "Delivery range" or from the responsible department, see chapter 1.2.1 "Contact Options".

Information

On the Volkswagen AG homepage, you can put your vehicle together with the configurator and view the available optional equipment:

<http://www.volkswagen-nutzfahrzeuge.de/de/cc5.html>

1.5.2 Vehicle modifications

Before starting work on the body, the body builder should check whether

- the vehicle is suitable for the planned body
- the chassis type and the equipment also correspond with the operating conditions after the conversion

Build dimension drawings, product information and technical data can be obtained from the responsible department or via the communication system for the planning of bodies (see 1.2.1.1 "Contact in Germany", 1.2.1.2 "International contact" and 1.2.2 "Body builder guidelines, consulting").

Furthermore the optional equipment available from the factory should be noted (see chap. 1.6 "Optional equipment").

Vehicles delivered from the factory comply with EC guidelines and the national laws (except for some vehicles for countries outside Europe).

The vehicles also need to meet the EC guidelines and the national laws after the modifications have been made.

Practical note

Sufficient space must be provided in order to guarantee the function and operating safety of the components.

Warning note

Do not modify the steering or brake system! Modifications to the steering and brake system can result in these systems no longer working correctly and failing. This may result in the driver losing control of the vehicle and causing an accident.

Practical note

Modifications to the noise encapsulation can have effects which are relevant to registration.

1.5.3 Vehicle acceptance

The officially recognised appraiser or tester from the body builder must be informed about modifications to the chassis.

Practical note

Country-specific laws, directives and approval regulations shall be observed!

1.6 Optional equipment

We recommend using the optional equipment from Volkswagen AG that can be obtained with a PR no. for optimum adaptation of the body to the vehicle.

You can obtain information on the optional equipment available from Volkswagen as PR numbers from your Volkswagen customer service or from the body builder consultants (see 1.2.1 "Contact Options"). Please also note chapter 5 "Implementation of special bodies".

Information

Furthermore, on the Volkswagen AG homepage, you can put your vehicle together with the configurator and view the available optional equipment:

<http://www.volkswagen-nutzfahrzeuge.de/de/cc5.html>

Optional equipment (e.g. reinforced springs, frame reinforcements, anti-roll bars etc.) or equipment fitted later increase the kerb weight of the vehicle.

The actual vehicle weight and the axle loads should be determined before the body is built.

Not all additional equipment can be built into any vehicle without problems. This applies in particular if it is fitted later on.

We recommend using the reinforced springs that are available from the factory for bodies and conversions.

2 Technical data for planning

2.1 Base vehicle

2.1.1 Vehicle dimensions

2.1.1.1 Basic data of T5 GP panel van/window van (short + long wheelbase)

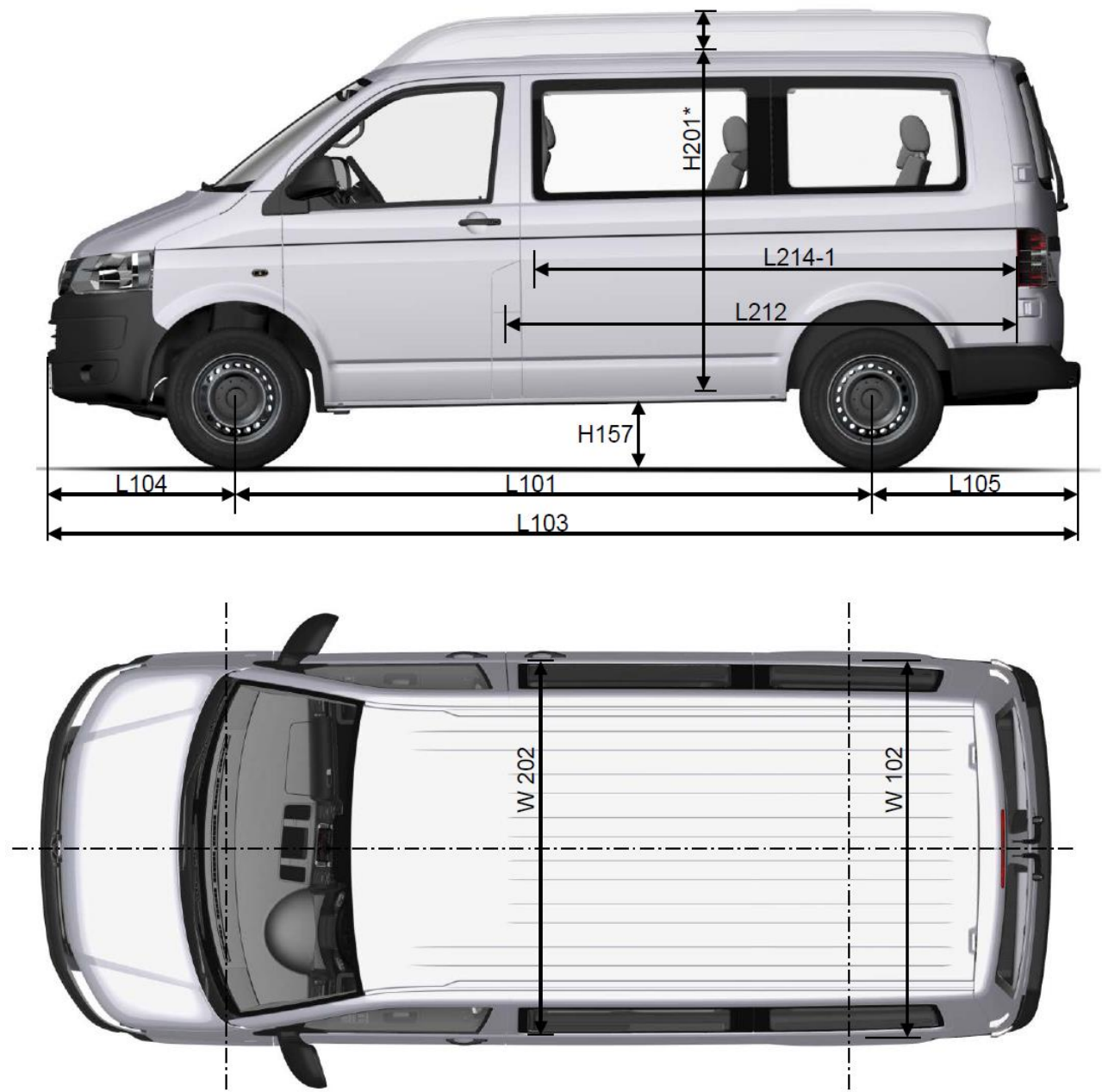


Fig. 1: Vehicle dimensions panel van/window van short wheelbase (acc. to DIN 70020, P1)

* Both roof heights can be found in the basic data table under the term H201

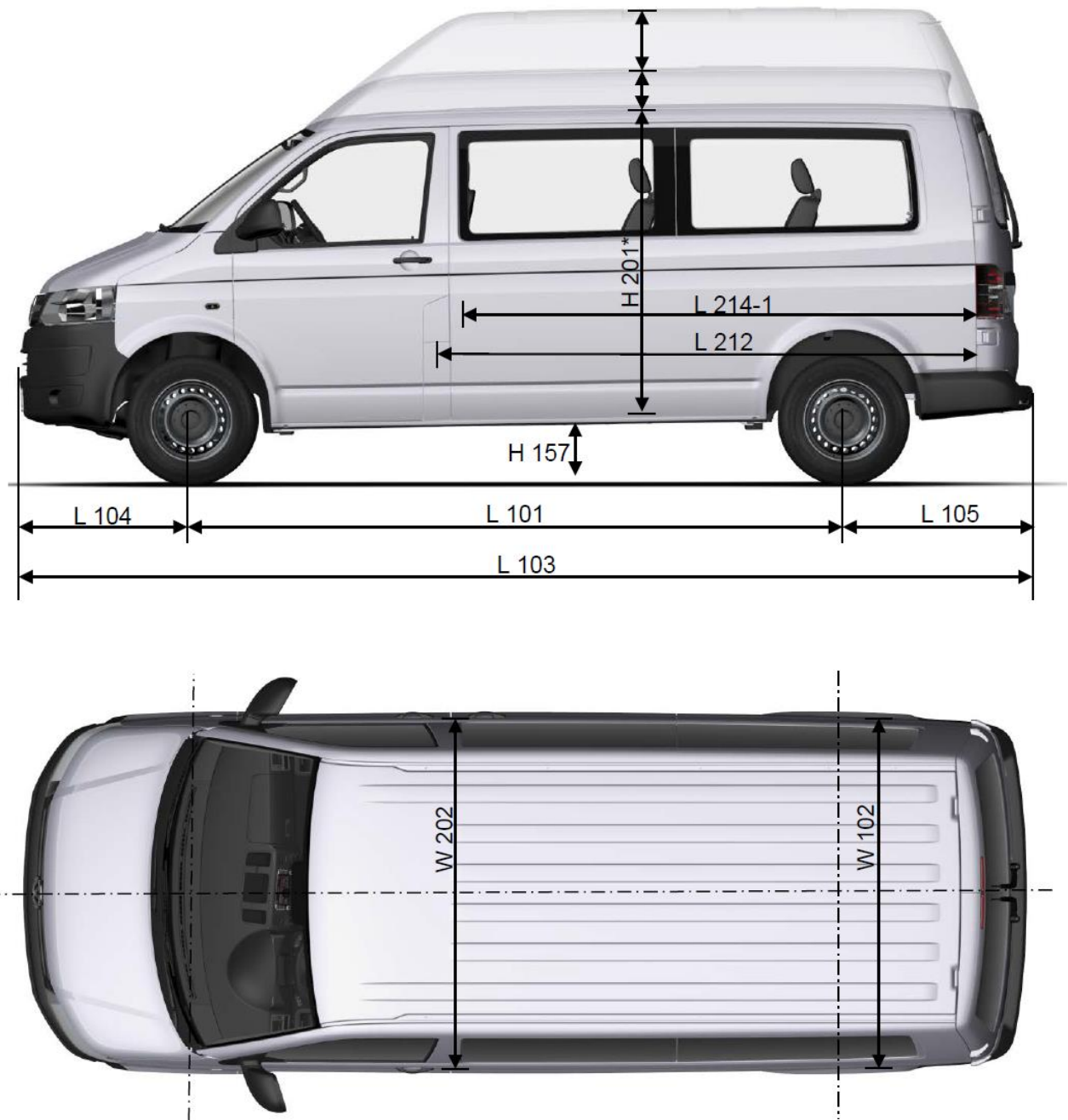


Fig. 2: Vehicle dimensions panel van/window van long wheelbase (acc. to DIN 70020, P1)

* All three roof heights can be found in the basic data table under the term H201

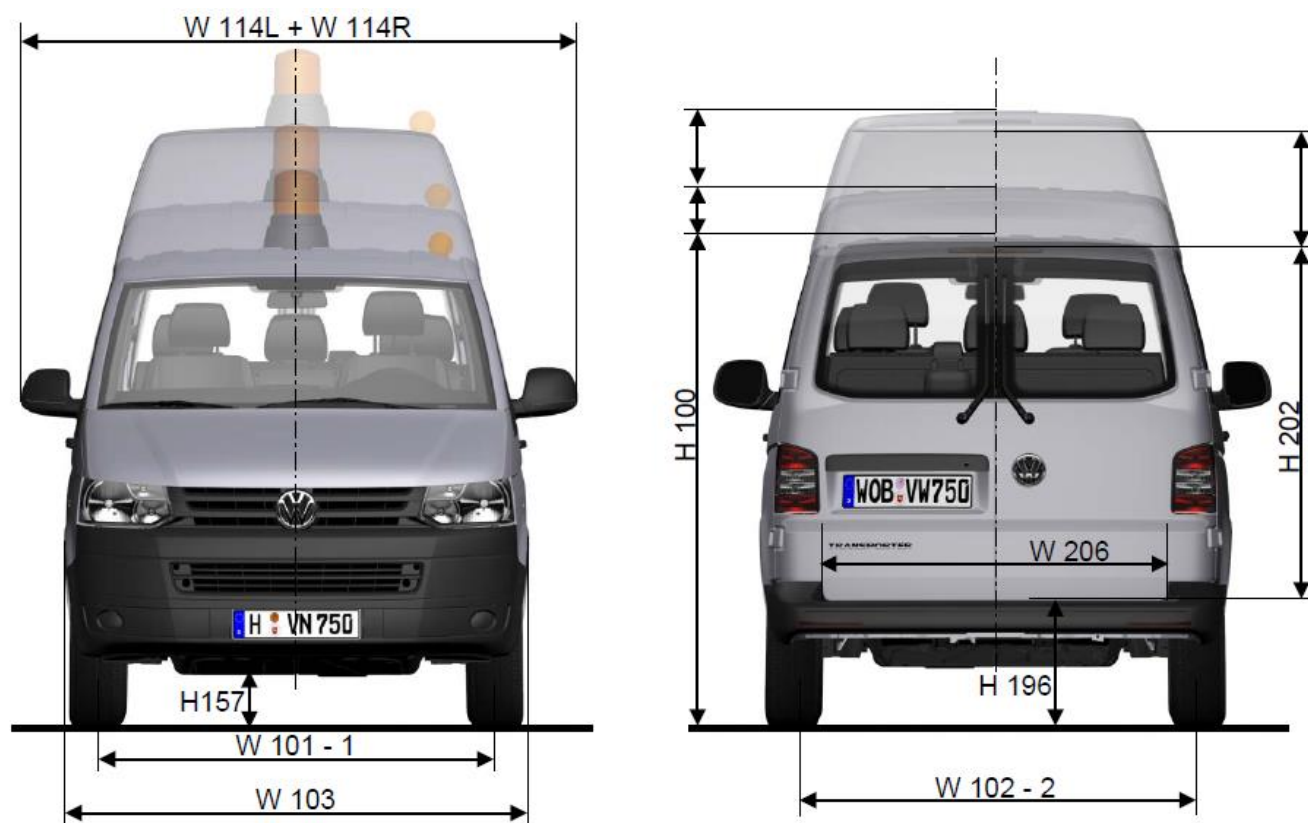


Fig. 3: Vehicle dimensions panel van/window van front and rear, short/long wheelbase (acc. to DIN 70020, P1)

* All three roof heights can be found in the basic data table under the term H100 and H202

Basic data T5 GP panel van/window van (all engines)			Panel van/window van short wheelbase [mm]	Panel van/window van long wheelbase [mm]
Dimensions	L101	Wheelbase	3000	3400
	L103	Vehicle length	4892	5292
	L102	Vehicle length with towing bracket (fixed / removable)	4991	5391
	L515	Centre of gravity position, loadspace, distance from front axle (FA), 3-seater	2746/ - - -	2946/ - - -
		Centre of gravity position, loadspace, distance from front axle (FA), 6-seater	3302/ - - -	3502/ - - -
	W103	Vehicle width (measuring point door handle)	1904	1904
	H100	Vehicle height body (normal roof)	1990	1990
		-> with identification light (normal roof)	2298	2298
		-> with GSM/GPS aerial (normal roof)	- - -	- - -
		-> with high-mounted roof turn signals (normal roof)	2066	2066

Basic data T5 GP panel van/window van (all engines)			Panel van/window van short wheelbase [mm]	Panel van/window van long wheelbase [mm]
Dimensions	H100	-> with priority vehicle light (normal roof)	2175	2175
		-> Vehicle height with roof ventilator (normal roof)	2103	2103
	H100	Vehicle height body (medium-high roof)	2176	2176
		-> with identification light (medium-high roof)	2456	2456
		-> with GSM/GPS aerial (medium-high roof)	2199	2199
		-> with priority vehicle light (medium-high roof)	2376	2376
		-> with high-mounted roof turn signals (medium-high roof)	2251	2251
		-> Roof ventilator (medium-high roof)	2304	2304
	H100	Vehicle height body (high roof)	---	2476
		-> with identification light (high roof)	---	2778
		-> with GSM/GPS aerial (high roof)	---	2514
		-> with priority vehicle light (high roof)	---	2676
		-> with high-mounted roof turn signals (high roof)	---	2564
		-> with roof ventilator (high roof)	---	2604
	L104	Front overhang length	896	896
	L105	Rear overhang length	996	996
		Rear overhang with towing bracket	1095	1095
	W101-1	Track, front		
		-> With wheel offset depth 50	1630	1630
		-> With wheel offset depth 51	1628	1628
		-> With wheel offset depth 52	1626	1626
		-> With wheel offset depth 55	1620	1620
		-> With wheel offset depth 56	1618	1618
	W102-2	Track, rear		
		-> With wheel offset depth 50	1630	1630
		-> With wheel offset depth 51	1628	1628
		-> With wheel offset depth 52	1626	1626
		-> With wheel offset depth 55	1620	1620
		-> With wheel offset depth 56	1618	1618
	WX 1	Maximum rear axle width	1890	1890
	H157*	Ground clearance between axles acc. to 70/156/EEC	165	165

Basic data T5 GP panel van/window van (all engines)			Panel van/window van short wheelbase [mm]	Panel van/window van long wheelbase [mm]
Dimensions	A117	Ramp breakover angle	--- /14°	--- /12°
	A116-1	Front overhang angle at full load, limited by spoiler	21°	21°
	A116-2	Rear overhang angle at full load, limited by bumper (with breakdown set)	17°	17°
		Rear overhang angle at full load, limited by spare wheel	13°	13°
Turning circle	D102	Minimum turning circle	11.9m	13.2m
Wheels / tyres.		Basic tyres*	Smallest tyre 215/60R17 C 109/107T Largest tyre 235/55 R17 103W XL	Smallest tyre 215/60R17 C 109/107T Largest tyre 235/55 R17 103W XL
Load compartment measurements	L214-1	Length of loadspace at height of top edge of driver's backrest	2353	2753
	L212	Luggage compartment length 1st seat row	2570	2970
		Luggage compartment length 2nd seat row	--- / 1600	--- / 2000
		Luggage compartment length 3rd seat row	--- / 750	--- / 1150
		Luggage compartment length 4th seat row	--- / ---	--- / 350
	F201-1	Loadspace area	4.3 m²	4.3 / 5 m²
	W200	Largest luggage compartment width	1692	1692
	W202	Smallest luggage compartment width	1244	1244
	H201*	Load height - panel van -> with normal roof -> with medium-high roof -> with high roof	1410 / -- 1626 / -- --- / --	1410/-- 1626/-- 1940/--
		Loadspace height - window van (normal roof) -> with Multivan floor -> with comfort headliner -> with Multivan floor and comfort headliner	--- / 1394 --- / 1379 --- / 1332 --- / 1317	--- / 1394 --- / 1379 --- / 1332 --- / 1317
		Loadspace height - window van (medium-high roof) -> with Multivan floor	--- / 1610 -- / 1595	--- / 1610 --- / 1595
	H201*	Loadspace height - window van (high roof) -> with Multivan floor	--- ---	--- / 1925 --- / 1910
		Load sill height above ground plane	566/572	571/572

Basic data T5 GP panel van/window van (all engines)			Panel van/window van short wheelbase [mm]	Panel van/window van long wheelbase [mm]
Load compartment measurements	H508	Clear opening height of sliding door	1284/1268	1284/1268
	L903	Clear opening width of sliding door	1020	1020
	H110	Maximum vehicle height		
		-> with normal roof	2298	2298
		-> with medium-high roof	2456	2456
	-> with high roof	- - -	2778	
		Vehicle height with tailgate open		
		-> with normal roof	2226	2226
-> normal roof with wing door		2049	2049	
H202	Body opening height			
	-> wing door normal/medium-high roof	1297 / 1295	1297 / 1295	
	-> wing door with high roof	- - - / - - -	1694 / 1692	
-> tailgate/wing door with moulded headliner	- - - / 1276	- - - / 1276		
W206	Largest width of rear opening	1486	1486	
Garage dimensions	W120-1	Vehicle width, front doors open	3845	3845
	W114	Y-coordinate of exterior mirror on driver side	1153	1153
	W115	Y-coordinate of exterior mirror on front passenger side	1130	1130
Interior dimensions	H61-1	Effective headroom – 1st seat row	1003	1003
	H61-2	Effective headroom – 2nd seat row	1038	1038
	H61-3	Effective headroom – 2nd seat row	- - - / 1037	- - - / 1037

* With lowered suspension -20 mm from the height figures in relation to the ground plane (except H157)

2.1.1.2 Basic data of T5 GP chassis/platform van (short + long wheelbase)

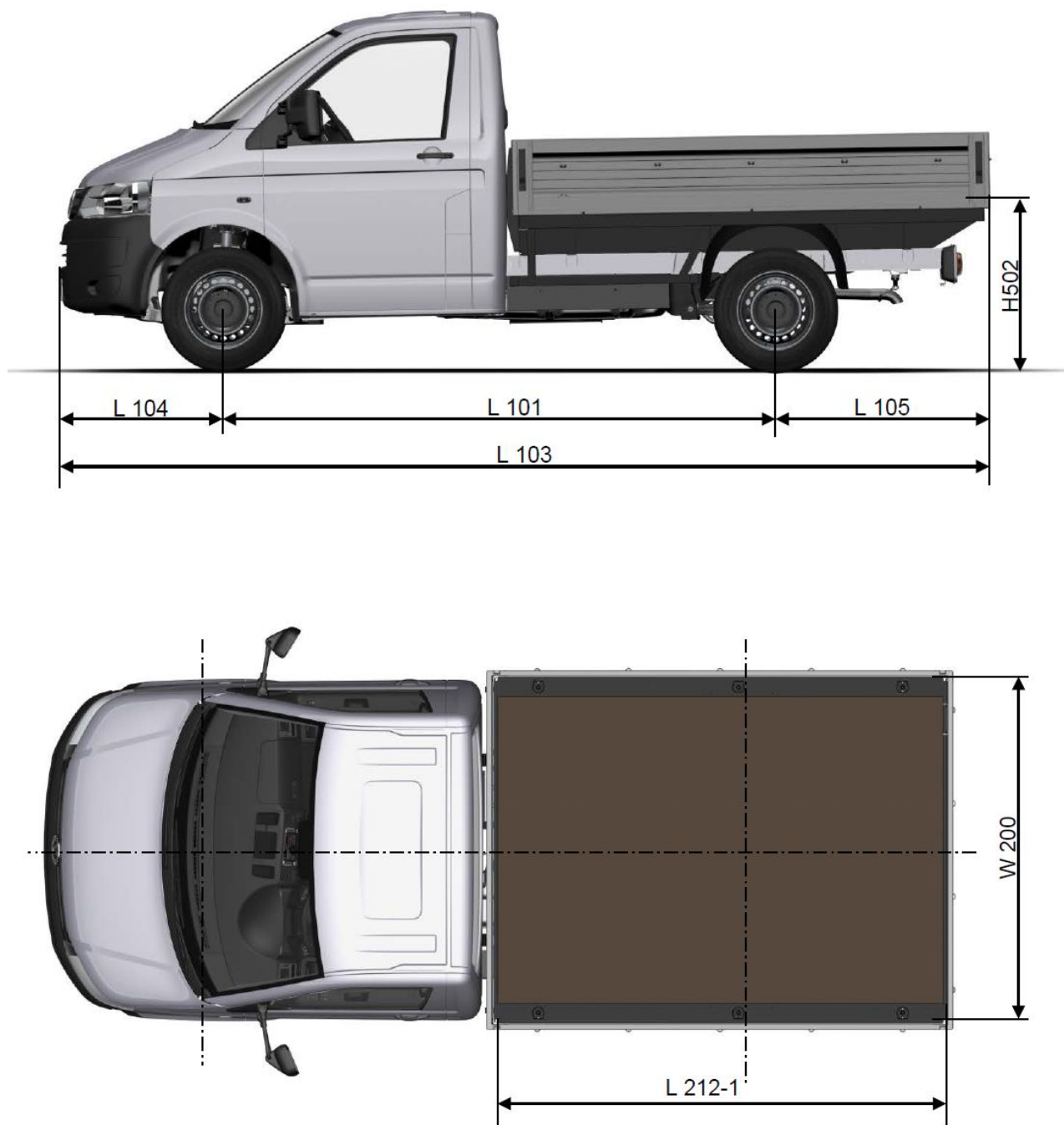


Fig. 4: Vehicle dimensions platform van (acc. to DIN 70020, P1)

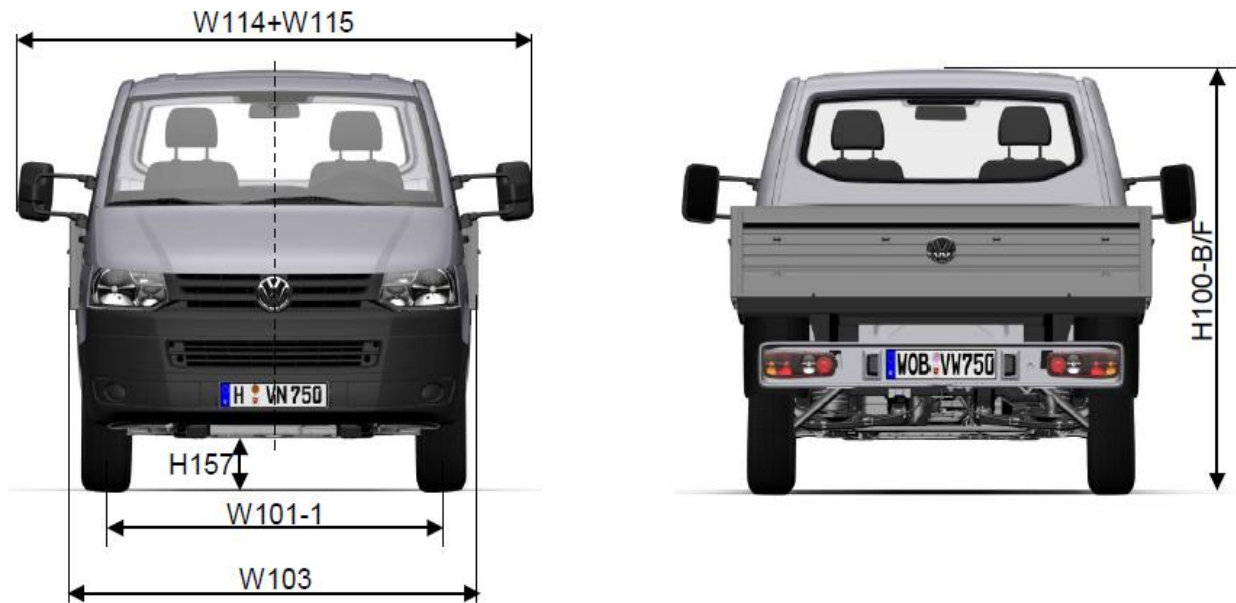


Fig. 5 Vehicle dimensions platform van short and long wheelbase

Basic data of T5 GP chassis and platform van (All engines)			Chassis/platform Short wheelbase [mm]	Chassis/platform Long wheelbase [mm]
Dimensions S	L101	Wheelbase	3000	3400
	L103	Vehicle length with cab	4892/5076	5292/5476
		Vehicle length with double cab	- - -	5292/5476
		Minimum permitted vehicle length	4890	5290
		Maximum permitted vehicle length with cab	5184	5756
		Maximum permitted vehicle length with double cab	- - -	5754
	W103	Vehicle width	1904/1994	1904/1994
		Minimum permitted vehicle width	1904	1904
		Maximum permitted vehicle width		
		- for small round bar mirror	2030	2030
		- for large round bar mirror	2200	2200
	H 100	Vehicle height body (cab)	1952	1949
		Vehicle height (cab) with identification light	2196	2196
		Vehicle height (cab) with priority vehicle light	2152	2149
		Vehicle height body (double cab)	- - -	1963

Basic data of T5 GP chassis and platform van (All engines)			Chassis/platform Short wheelbase [mm]	Chassis/platform Long wheelbase [mm]
Dimensions S	H 100	Vehicle height (double cab) with identification light	---	2194
		Vehicle height (double cab) with priority vehicle light	---	2163
	H431	Vehicle height (cab) with softtop frame and cover	--- / 2594	--- / 2575
		Vehicle height (double cab) with softtop frame and cover	--- / ---	--- / 2579
		Vehicle height (cab low-loader platform) with softtop frame and cover	--- / 2594	--- / 2446
		Vehicle height (cab) with ladder transport frame	--- / 2335	--- / 2332
		Vehicle height (double cab) with ladder transport frame	--- / ---	--- / 2332
		Vehicle height (cab low-loader platform) with ladder transport frame	--- / ---	--- / 2197
	H101	Vehicle height maximum (cab low-loader platform) with softtop frame and cover	--- / 2594	--- / 2575
		Vehicle height maximum (double cab) with softtop frame and cover	--- /	--- / 2579
	L104	Front overhang length	896	896
	L105	Rear overhang length	996/1180	996/1180
	W101-1	Track width at front with wheel offset depth 50	1630	1630
		51	1628	1628
		55	1620	1620
	W101-2	Track, rear With wheel offset depth 50	1630	1630
		51	1628	1628
		55	1620	1620
	WX 1	Maximum rear axle width	1890	1890
	H157	Ground clearance between axles acc. to 70/156/EEC	165	165
	A116-1	Front overhang angle at full load, limited by bumper	21°	21°
	A116-2	Rear overhang angle at full load, limited by rear cross member	22°	22°
	L212-1	Luggage compartment length 1st seat row	--- /2539	--- /2939
		Double cab	--- / ---	--- /2169
	W200	Largest luggage compartment width	--- /1940	--- /1940
	H502	Load sill height above ground plane	905	902

Basic data of T5 GP chassis and platform van (All engines)			Chassis/platform Short wheelbase [mm]	Chassis/platform Long wheelbase [mm]
Dimensions S	H202	Body opening height		
		Wing door normal/medium-high roof	1297	1297
		Wing door with high roof	---	1694
		Body opening height		
		Wing door normal/medium-high roof	--- / 1295	--- / 1295
		Tailgate/wing door with shaped headlining	--- / 1276	--- / 1276
		Wing door with high roof	--- / ---	--- / 1692
	W206	Largest width of rear opening	---	---
	D102	Minimum turning circle	11.9m	13.2m
Wheels / tyres.		Basic tyres	Smallest tyre 215/65 R16 C 106/104T Largest tyre 235/55 R17 103 W XL	Smallest tyre 215/65 R16 C 106/104T Largest tyre 235/55 R17 103 W XL
Garage dimensions	W120-1	Vehicle width, front doors open	--- /3845	--- /3845
	W114+W115	Vehicle width with exterior mirrors (left and right)		
		- Round bar mirror - Round bar mirror on large bar	2301 2494	2301 2494
Interior dimensions	H61-1	Effective headroom – 1st seat row	--- /1003	--- /1003
	H61-2	Effective headroom – 2nd seat row	--- / ---	--- /956
	H61-3	Effective headroom – 2nd seat row	--- / ---	--- / ---

2.1.1.3 Basic data T5 GP back-to-back cab

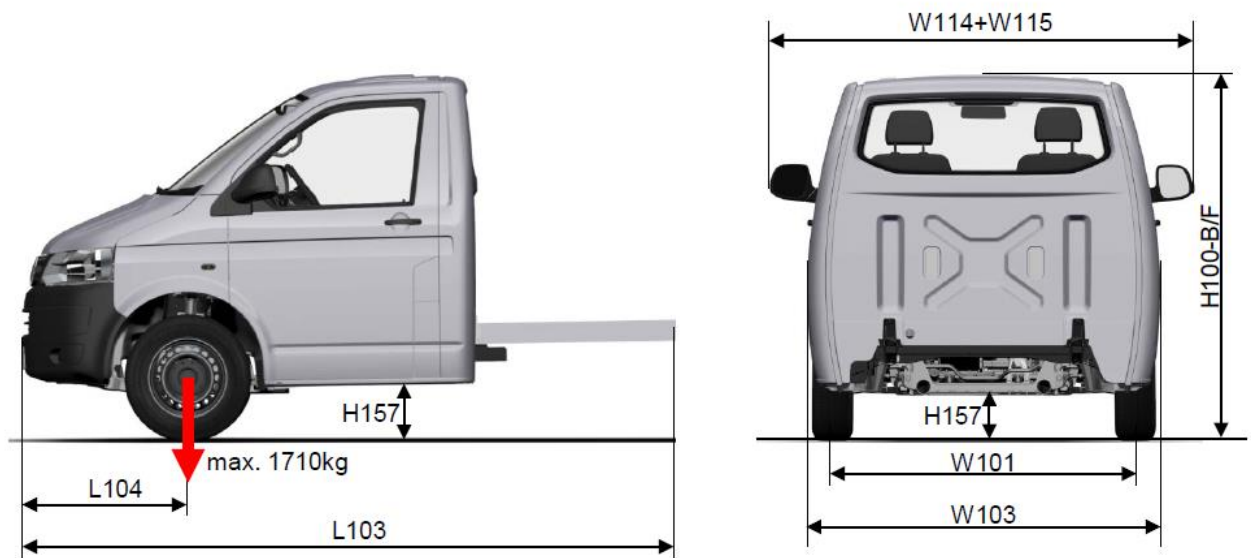


Fig. 6 Vehicle dimensions – back-to-back cab

Basic data T5 GP back-to-back cab			Back-to-back cab [mm]	Remarks
Dimensions	L101	Wheelbase		
	L103	Vehicle length with cab	3606	
	W103	Vehicle width	1904	
		Minimum permitted vehicle width	1904	
		Maximum permitted vehicle width		
		- housing mirror	1904	
		- for small round bar mirror	2030	
		- for large round bar mirror	2200	
	H100	Vehicle height body (cab)	1952	
		- Vehicle height (cab) with identification light	2196	
		- Vehicle height (cab) with priority vehicle light	2152	
	L104	Front overhang length	896	
	W101-1	Front track width with wheel offset depth 52 (16" 6 1/2Jx16) 56 (17" 7J x17)	1626 1618	Depending on load index of the tyres used
	WX 1	Maximum rear axle width	---	
	H157	Ground clearance with ML1	201	

Basic data T5 GP back-to-back cab			Back-to-back cab [mm]	Remarks
Dimensions	A116	Front overhang angle at full load, limited by bumper	21°	
	H502	Load sill height above ground plane	- - -	
Wheels/tyres		Basic tyres (front axle)	215/65 R16 C 106/104T 215/60 R17 C 109/107T	Depending on engine
Garage dimensions	W120-1	Vehicle width, front doors open	3845	
	W114 + W115	Vehicle width with exterior mirrors (left and right) - Exterior mirror (standard equipment) - Round bar mirror (optional equipment) - Round bar mirror on large bar (optional equipment)	2283 2301 2494	
	W115	Y-coordinate of exterior mirror on front passenger side	1130	
	H61-1	Effective headroom – 1st seat row	1003	
Interior dimensions				

Information

You will find additional technical data (dimensional drawings, weight information and emissions figures) on the T5 according to the engine and equipment variant on the Internet at:

<http://www.volkswagen-nutzfahrzeuge.de/de/downloads.htm>

Please also comply with the following chapters as part of the conversion:

- 2.2.1 "Permitted weights and unladen weights"
- 2.2.6 "Modifications to the brake system"
- 2.3.2 "Modifications to the body-in-white"
- 2.5.2.1 "Electrical cables and fuses"
- 2.5.2.3 "Retrofitting electrical devices"
- 2.6.3 "Fuel system"
- 2.6.4 "Exhaust system"
- 2.7 "Ancillary drives, engine/gearbox"
- 3.2.1 "Safety equipment"

2.1.2 Overhang angle and ramp angle



Fig. 1 Overhang and ramp angles, Transporter panel van/window van

The values for the overhang angle (A116) and the ramp angle A117 can be found in the basic data table
See chap. 2.1.1.1.

* The values for the overhang angle A116 differ for petrol and diesel engines due to different exhaust systems



Fig. 2 Overhang and ramp angles, Transporter platform van/chassis

The values for the overhang angle (A116) and the ramp angle A117 can be found in the basic data table.
See chap. 2.1.1.2.

* The values for the overhang angle A116 differ for petrol and diesel engines due to different exhaust systems.

2.1.3 Vehicle centre of gravity

2.1.3.1 Information about height of centre of gravity acc. to Directive 71/320/EEC

Since 1/1/1991, all commercial vehicles have had to comply with the "EC Brake Systems Directive 71/320/EEC". When this EC Directive was adopted into national legislation (e.g. the Road Traffic Regulations (StVZO) in Germany), the effect was that these technical regulations also had to be complied with for individual acceptance.

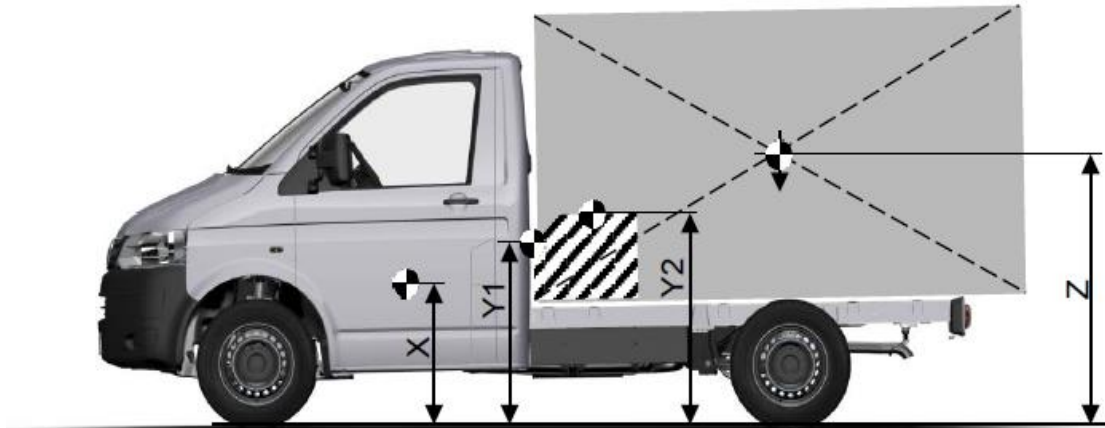


Fig. 1: Wheelbase 3000 mm

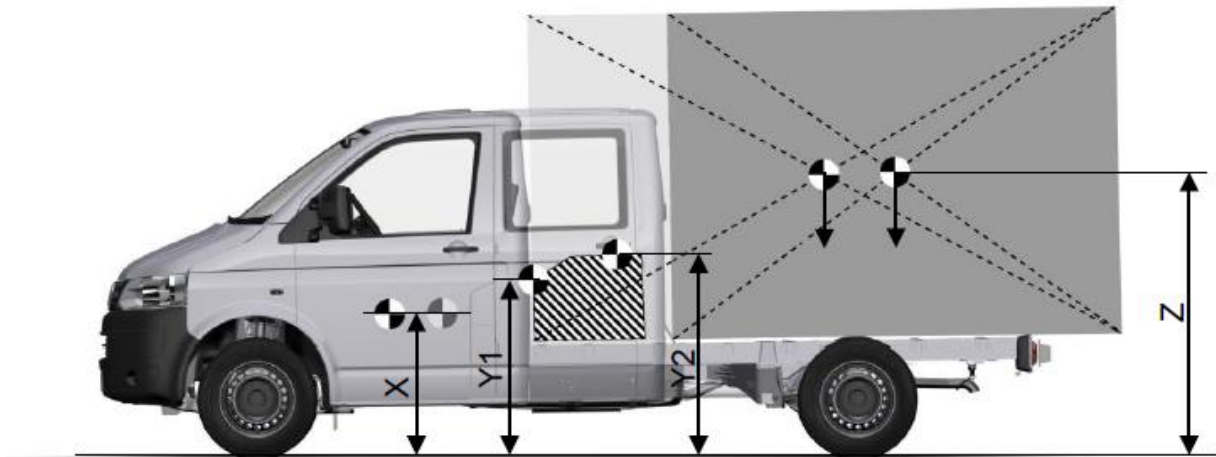


Fig. 2: Wheelbase 3400 mm

In all permitted weights, the centre of gravity height Y1 or Y2 is not allowed to be exceeded.

The following table shows which **centre of gravity height** is permitted at kerb weight **X** (standard equipment) and in vehicles laden up to the **relevant permitted gross vehicle weight Y**.

Version	GV WR	Anti-roll bars		Centre of gravity of the basic or unladen vehicle	Max. perm. centre of gravity height of the vehicle	Max. perm. centre of gravity height of the vehicle with reduced FA load	Max. perm. centre of gravity height of body and payload above the carriageway
	[t]	Front axle	Rear axle	X [mm]	Y1 [mm]	Y2 [mm]	Z [mm]
Panel van/ window van	2.6	Sv	Sh	730	840		1250
Panel van/ window van	2.8	Sv	Sh	730	890		1325
Platform/ double cab	2.8	Sv	Sh	680	890		1275
Running gear	2.8	Sv	Sh	620	890		1300
Panel van/ window van	2.85	Sv	Sh	730	900		1335
Platform/ double cab	2.85	Sv	Sh	680	900		1325
Running gear	2.85	Sv	Sh	620	900		1325
Platform/ double cab	3.0	Sv	Sh	680	920		1350
Running gear	3.0	Sv	Sh	620	920		1350
Panel van/ window van	3.0	Sv	Sh	730	920	990	1550
Panel van/ window van	3.2	2MG	2MG	730	950	990	1550
Platform	3.2	2MG	2MG	680	950	990	1500
Running gear	3.2	2MG	2MG	620	950	990	1525

2MG = 28 mm, anti-roll bar rear (Sh), anti-roll bar front (Sv)

The height of the centre of gravity Y2 can be used if the permitted front axle load is reduced by 40 kg

2.1.4 Bodies with a high centre of gravity

The driving properties of vehicles with a high body or with an elevated overall centre of gravity (> 920 mm) can be expected to be restricted. (See also chap. 2.2.6 "Brake system and brake control system ESP").

2.1.5 Determining centre of gravity

Volkswagen recommends having the centre of gravity determined by a recognised test institution with experience in this field (for example, DEKRA, TÜV or others).

For the body builder to determine the centre of gravity, we recommend following the procedures described under 7.1 Determining the centre of gravity.

2.1.6 Maximum dimensions

The dimensions of the chassis can be found in the build dimension drawings. Installation of reinforced springs, comfort springs or fitting tyre sizes other than the series production tyres can significantly alter the clearance dimensions of the vehicle and the frame above ground. Please take account of this equipment in your project planning.

Important notes:

- The minimum distance between the cab and body must be 30mm.
- The minimum distance between the cab roof and superstructure must be 30 mm.
- The front overhang of the body may not affect the view of traffic lights.

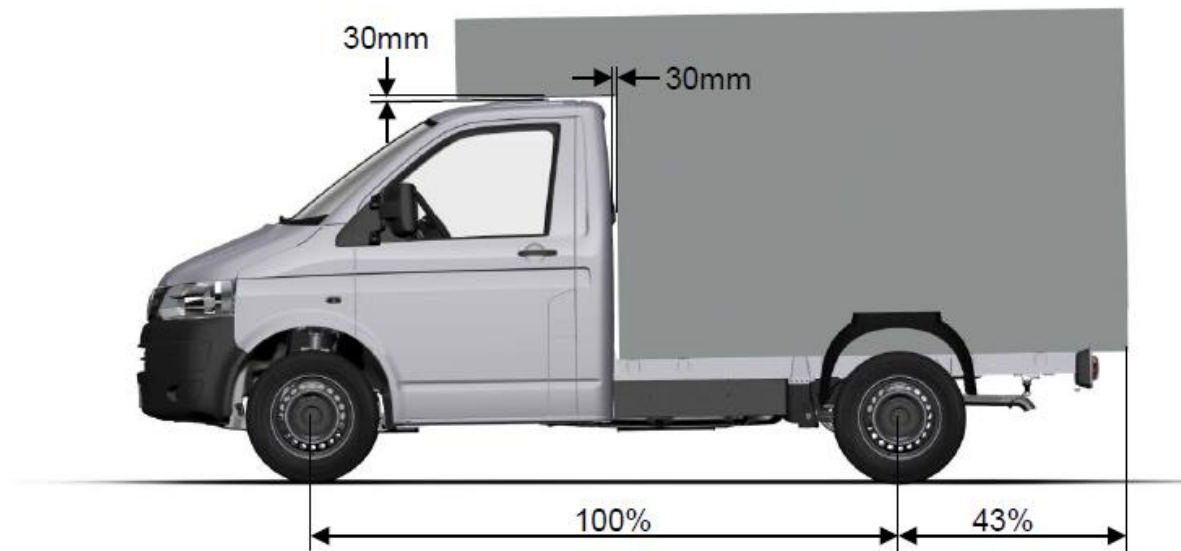


Fig. 1 Max. dimensions

Maximum permitted vehicle lengths

The rear overhang of the bodies is not allowed to exceed 43% of the wheelbase.

This length limitation means that the following exterior body lengths are not allowed to be exceeded:

	Wheelbase	Standard body length Interior	Max. exterior body length with 43% overhang
Chassis with cab	3,000 mm	2,539 mm	2,692 mm
Chassis with cab	3,400 mm	2,939 mm	3,264 mm
Chassis with Double cab	3,400 mm	2,169 mm	2,212 mm

Maximum permitted vehicle width

When selecting your base vehicle for your conversion, bear in mind the max. permitted body widths of the factory-fitted standard mirrors and headlights:

Vehicle model	Exterior mirrors	Max. vehicle width
Panel van, window van (Standard equipment)	Housing mirror	≤ 1904 mm
Chassis, platform (Standard equipment)	Short round bar mirror (PR-ZB1)	≥ 1900 mm to ≤ 2030mm
Chassis, platform (Optional equipment)	Long round bar mirror (PR-ZB2)	≥ 2022mm to ≤ 2200mm

The max. permitted vehicle width of the standard headlights in the installation position is:

Vehicle model	Version	Max. permitted vehicle width
Panel van, window van, chassis, platform van	Standard headlights	2200 mm

Comply with the dimension specifications in EC Directives 97/27/EC or 92/21/EEC with regard to vehicle registration in the EU:

Vehicle width	
General	2550 mm
Passenger vehicle	2500 mm

Vehicle height
4000 mm

Vehicle length
For details see RREC 97/27/EC, 92/21/EEC

Please note that in the completed (converted) vehicle, it is necessary to comply with the add-on regulations and dimensions of all technical lighting equipment acc. to ECE-R 48. (See also chap. 2.5.1 "Lighting".)

When installing bodies on chassis, the body builder is in particular responsible for attaching the rear and any side technical lighting equipment in accordance with the regulations.

Please also comply with the registration regulations of your specific country during the conversion.

2.1.7 Steerability - minimum front axle load

In all load situations, the front axle load must correspond to at least 38% of the actual gross vehicle weight. The permitted axle loads must be observed in all load situations.

Please also comply with the following chapters:

2.2.1 "Permitted weights and unladen weights"

2.2.6 "Brake system and brake control system ESP"

2.2.10 "Wheelbase and overhang extensions"

2.2 Chassis

2.2.1 Permitted weights and unladen weights

Warning note

ATTENTION! For conversions which result in an increased axle load on the base vehicle (e.g. increases to gross vehicle weight rating with unchanged kerb weight), the maximum gross axle weight ratings according to these body builder guidelines must be observed without fail. If these values are exceeded, the service life of all components, in particular the wheel hubs, must be checked and safeguarded through suitable measures.

Volkswagen AG offers vehicles with front-wheel drive and four-wheel drive such as panel vans, window vans, platform bodies with single and double cabs, in the following weight classes: 2,600 kg, 2,800 kg, 2,850 kg, 3,000 kg, 3,080 kg and 3,200 kg.

In addition, a back-to-back cab (chassis with 3.2 t single cab, without rear axle with shortened frame) is available. A gross vehicle weight rating of up to 4.6 t can be realised in combination with an external chassis provided certain prerequisites are observed (also see chapter 4.9 back-to-back cab).

The permitted axle loads listed in the weight tables (see chapters 6.5.1 to 6.5.4.4) must be observed.

Information

Load ratings depend on the engine. Equipment features can influence the payload or load weight by increasing/reducing the unladen weight. The weight values in the technical data refer to the standard, base vehicle equipment. Weight tolerances of +5% in production are permitted in accordance with DIN 70020 and must be taken into account if necessary. Installing standard and special equipment reduces the payload.

The actual payload of a vehicle that is calculated from the difference between the gross vehicle weight rating and unladen weight can only be determined by weighing an individual vehicle.

2.2.1.1 One-sided weight distribution

Warning note

The following weights shall not be exceeded under any circumstances:

- Gross vehicle weight rating
- Gross front axle weight rating
- Gross rear axle weight rating

(see chap. 2.2.1 "Permitted weights and unladen weights").

When planning add-ons/additions, make sure that a one-sided weight distribution is avoided – in particular involving permanently secured add-ons.

The difference in actual wheel load between the left and right wheels on an axle is not allowed to exceed 8% of the higher wheel load. The tyre load ratings must be observed.

For example:

Weighed axle load	1,680 kg
Wheel load left/right	806 kg / 874 kg
Difference in wheel load	68 kg
% deviation from higher value	7.8%

The front axle load is not allowed to be less than the minimum permitted load, in order to ensure adequate steerability of the vehicle and a satisfactory driving behaviour under all loading conditions. (see chap. 2.1.6 "Steerability - minimum front axle load")



Fig. 1: One-sided weight distribution (rear view)



Fig. 2: One-sided weight distribution (side view)

2.2.2 Turning circle

See the basic data table in chapter 2.1.1 "Vehicle dimensions".

2.2.3 Authorised tyre sizes

The Volkswagen owner's manual provides information about the wheel/tyre combinations authorised by Volkswagen AG in conjunction with snow chains (see the table of basic data in chapter 2.1.1 "Vehicle dimensions").

2.2.4 Modifications to axles

Modifications to the axles are not permitted, because they can lead to impairment of the driving properties and unstable driving behaviour.

2.2.5 Modifications to the steering system

Modifications to the steering system are not permitted.

Exceptions, e.g. conversions for people with disabilities, shall be approved by Volkswagen AG prior to the conversion.

Please contact us before starting your conversion (see chap. 1.2.1)

2.2.6 Brake system and brake control system ESP*

2. General information

Changes to the brake system are not allowed under any circumstances:

- If the modification to the brake system goes beyond the scope of the operating permit.
- If the air inflow and outflow to and from disc brakes are modified.

Please note that the brake cable of the parking brake (FBA) as well as its cable support bracket are safety-relevant parts, and form part of the type approval for the brake system. Any modification will require a new approval process.

Exceptions shall be approved by Volkswagen AG prior to the conversion, and shall be documented with an independent brake approval report.

Please contact us before starting your conversion (see chap. 1.2.1)

Warning note

Work performed improperly on brake hoses, lines and cables can impair their function.

This can lead to a failure of components or safety-relevant parts. Therefore, work on brake hoses, lines and cables should only be performed by a qualified specialist workshop.

Information

Since 1/1/1991, all commercial vehicles have had to comply with the "EC Brake Systems Directive 71/320/EEC". When this EC Directive was adopted into national legislation (e.g. the Road Traffic Regulations (StVZO) in Germany), the effect was that these technical regulations also had to be complied with for individual acceptance.

* Electronic Stabilisation Program

2.2.6.2 Vehicle stability and ESP*

When the vehicle with the body mounted is presented for approval, it is a requirement of the EC Brakes Directive 71/320/EEC and ECE R13 to provide mathematical proof of the height of the centre of gravity when the vehicle is loaded. Refer to chapter 2.1.3 "Vehicle centre of gravity" for the permitted centre of gravity heights.

Volkswagen does not make any statement about:

- driving characteristics
- Braking behaviour
- Steering response and
- ESP control response

in bodies for loads with an unfavourably positioned centre of gravity (e.g. rear, high and side loads), because these aspects are significantly influenced by body activities and consequently can only be assessed by the body builder.

Warning note

Whether for conversions and installation, and also in the ready-to-drive condition, the gross wheel and axle weight ratings as well as the gross vehicle weight ratings (see chapter 2.2.1) of the vehicle are not allowed to be exceeded under any circumstances. If the gross axle weight ratings are exceeded, the ESP system in vehicles with ESP will no longer be able to function correctly. This may result in the driver losing control of the vehicle and causing an accident.

Practical note

From November 2014, ESP* will be mandatory for all new vehicles registered in Europe. Vehicles can be exempted from this obligation in special, exceptional cases. Volkswagen Commercial Vehicles offers you specially adapted ESP data for various special vehicles (e.g. different wheelbases, centre of gravity heights as well as for 2 and 3-axle vehicles) so that the statutory requirement can be met and the safety standard can continue to be fulfilled.

* Electronic Stabilisation Program

2.2.6.3 Influence of vehicle conversions on the function of the ESP* brake regulation system

ESP sub-systems	Modification on the vehicle					
	Wheelbase modification	Extreme raising of centre of gravity >920mm	Modification of running gear (springs, dampers, anti-roll bars, wheels, tyres, track, steering)	Different rolling circumferences on individual axles	Modification to the brake (callipers, pads, design)	Conversion into tractor unit ²
ABS Anti-lock brake system	+	+	+	++ ³	++	+
Offroad ABS	+	+	+	++ ³	++	+
BAS Brake assist system	--	--	--	++ ³	++	--
EDL Electronic differential lock	+	+	+	++ ³	+++	+
Hill Start Assist	-	-	-	++ ³	++	-
TCS Traction control system	++	+	+	++ ³	-	+
ESP Electronic stabilisation program	++	+++ ¹	+++ ¹	+++ ³	+++ ¹	++++
Vehicle/trailer stabilisation	++	++	+++	++++ ³	+++	++++

1 In particular, a significantly increased risk of tipping over

2 Downgrading required

3 Hardware adaptation of the wheel speed sensors required

-- No effect

- Very little effect

+ Noticeable effect, can be adapted if necessary

++ Significant effect, can be adapted if necessary

+++ Very significant effect, can be adapted if necessary

++++ No technical solution

* Electronic Stabilisation Program

Warning note

Vehicles with add-ons, bodies, installed components or conversions in which the limit values of the specific vehicle (position of centre of gravity, axle loads, overhangs, etc.) are not complied with are regarded as problematical and can result in an impairment of driving behaviour.

Therefore, they should not be operated.

If specific basic conditions are met, overhang extensions, changes to the wheelbase and conversion into an articulated vehicle are possible to a limited extent.

2.2.6.4 Activating the ESP for special vehicles

Add-ons and conversion can be offered with all functions of the brake control system.

Volkswagen Commercial Vehicles provides special ESP data records for some special conversions in order to comply with the statutory ESP requirement (Europe).

Information

You can find more information on this subject in the "Electronic Stabilisation Program" document. The document is available on the body builder portal of Volkswagen AG under the "Additional technical information" menu item.

If necessary, the chassis and ESP shall be modified according to the specifications of Volkswagen AG.

The vehicle needs to be taken to Volkswagen AG for an inspection of the vehicle modifications.

Please contact us before starting your conversion (see chap. 1.2.1)

2.2.6.5 Downgrading ESP

When the ESP is downgraded, the vehicle software needs to be updated to downgrade to the basic functions of the ABS (anti-lock brake system) including offroad ABS, brake assist system and EDS (electronic differential lock).

The Hill Start Assist can still be used. The disabled ESP Off or ASR Off button needs to be replaced with a cap and the connectors in the vehicle electrical system secured.

If it is necessary to downgrade, please contact the responsible customer service consultant at your VW partner or importer.

Practical note

The body builder must check whether and for how long vehicles with downgraded ESP* can still be registered in the particular country of registration.

2.2.6.6 Routing additional lines along the brake hoses/brake lines

No other additional lines are allowed to be fastened to brake hoses and brake lines.

Additional lines must remain at a sufficient distance from brake hoses and brake lines under all operating conditions, and are not allowed to touch or chafe against such brake hoses/lines under any circumstances.

(see also chap. 2.5.2.1 Electrical cables/fuses)

2.2.7 Modification of springs, suspension mounting, dampers

The spring rates are never allowed to be modified.

We recommend using optimally matching springs from the Volkswagen delivery range for the vehicle with body.

Modifications to the springs must be assessed by a test centre/monitoring organisation/technical service responsible for this function, and can result in invalidation of the operating permit.

2.2.8 Wheel alignment settings

Changes to wheel alignment parameters are not permitted!

2.2.9 Wings and wheel houses

The required clearance for the wheels including snow chains must be complied with.

You will find more detailed information in the build dimension drawings.

In some bodies, it is necessary to ensure there is sufficient clearance for the wheel/tyre combination acc. to 92/23/EEC as well as for adequate wheel coverage based on EC Directive 78/549/EEC.

Please also comply with the following chapters:

- Drilling on the chassis frame (chap. 4.2.1)
- Welding on the chassis frame (chap. 4.2.2)
- Standard attachment points for special bodies (chap. 4.4)

2.2.10 Overhang extensions

Overhang extensions shall be approved by Volkswagen AG prior to the conversion.

Please contact us before starting your conversion (see chap. 1.2.1)

Please also comply with the following chapters:

- Maximum dimensions (chap. 2.1.5)
- Vehicle stability and ESP (chap. 2.2.6.2)

2.3. Body-in-white

2.3.1 Roof loads

2.3.1.1 Dynamic roof loads

Vehicle type	Max. roof load
Vehicles with normal roof (≥ 3 base carriers)	150 kg
Vehicles with normal roof (with 2 base carriers)	100 kg
Double cab (with 2 base carriers)	75 kg
Cab	50 kg
Pop-up roof (with 2 base carriers)	50 kg

See chapter 2.8.1 "Roof rack" regarding the fitting of roof racks

The limit value for the maximum centre of gravity position of the vehicle is not allowed to be exceeded.

Roof load increase

In the panel van/window van with normal roof, providing certain preconditions are met (roof rack preparation with higher number of mounting points on the roof and use of special roof racks) then it is possible to have a higher dynamic roof load up to 300 kg (see also chap. 2.8.1 Roof rack).

Please contact us for more information (see chapter 1.2.1.1 Contact in Germany and 1.2.1.2 International contact).

2.3.1.2 Static roof loads

The values in the table (see 2.3.1.1) refer to dynamic roof loads.

The static roof loads with the vehicle stationary (e.g. roof tent) must be set higher. The attachments must be configured accordingly.

Please also comply with chapters:

2.1.4 "Bodies with a high centre of gravity"

2.2.6.2 "Vehicle stability and ESP"

2.2.6.3 "Influence of vehicle conversions"

2.3.2 Modifications to the body-in-white

Changes to the body are not allowed to impair the function and strength of units and operating devices of the vehicle, neither may they reduce the strength of weight-bearing parts.

During vehicle conversions and installation of bodies, it is not permitted to make any modifications which impair the function and freedom of movement of the suspension (e.g. for maintenance and inspection work) or the accessibility to the same.

2.3.2.1 Screw connections

If series-production bolts / nuts have to be renewed, it is only permitted for bolts / nuts to be used which have the:

- same diameter.
- same strength.
- same bolt standard or bolt type.
- same surface coating (corrosion protection, coefficient of friction).
- same thread pitch.

Comply with VDI guideline 2862 during all installations.

Shortening the free clamping length, changing over to waisted shank and use of bolts with a shorter free thread proportion are not permitted.

Furthermore, take the settling behaviour of screw connections into account.

When attaching components to the base vehicle using screws, make sure that no panels or other components of the base vehicle are bent or damaged.

Use of Volkswagen tightening torques assumes that the total coefficient of friction is in the range $\mu_{tot} = 0.08$ to 0.14 for the particular items being bolted together.

If bolts are tightened by torque and angle at Volkswagen, no change of design is possible.

Risk of accident

No safety-relevant bolted connections, e.g. wheel guidance, steering and brake functions, are allowed to be modified. Otherwise the designated function may be impaired. This may result in the driver losing control of the vehicle and causing an accident. The new installation is to be carried out according to the instructions of VW Customer Service, using suitable standard parts. We recommend using genuine Volkswagen parts..

Information

Information about Volkswagen customer service instructions can be provided by any Volkswagen Customer Service.

2.3.2.2 Welding work

Incorrectly undertaken welding work can lead to a failure of safety-relevant components, and thus cause accidents. Therefore, the following safety measures must be complied with when welding work is performed:

- Welding work should only be undertaken by people with appropriate qualifications.
- Before starting welding work, it is necessary to remove components which might contain gases representing a fire or explosion hazard, e.g. fuel system, or else to protect them with a fireproof cover against airborne sparks. Gas containers which could be damaged by airborne sparks during welding work must be removed.
- Before welding work starts in the area of seat belts, airbag sensors or the airbag control unit, the components must be removed for the duration of the work. See 2.4 "Interior" for important information on handling, transporting and storing airbag units.
- Before starting welding work, cover springs and spring bellows to protect them against weld spatter. Springs are not allowed to be touched with welding electrodes or welding tongs.
- No welding is allowed on mechanical units such as the engine, gearbox, axles.
- Remove and cover the battery positive and negative terminal clamps.
- Directly connect the earth clamp of the welding machine to the part to be welded. The earth clamp is not allowed to be connected to mechanical units such as the engine, gearbox, axles.
- The housings of electronic components (e.g. control units) and electrical cables are not allowed to be touched with the welding electrode or earth clamp of the welding machine.
- The electrodes are only allowed to be used with direct current via the positive terminal for welding. Always weld from bottom towards the top.

Risk of injury

Welding in the area of the restraint systems (airbag or belts) can lead to these systems ceasing to function properly.

Welding in the area of restraint systems is therefore prohibited.

Practical note

Disconnect the battery prior to starting welding work. Airbags, seatbelts, the airbag control unit and airbag sensors shall be protected against weld spatter, and removed if necessary.

2.3.2.3 Welded connections

In order to achieve high-quality welds, the following basic recommendations are given:

- Thoroughly clean the areas to be welded.
- Apply several short weld beads, rather than one long one.
- Make symmetrical beads, in order to limit shrinkage.
- Avoid making more than three welds at any one point.
- Avoid welding in work-hardened areas.
- Spot welds and stitch welding should be offset.

2.3.2.4 Selection of welding process

The mechanical properties of welds depend on which welding process is selected, and on the geometry of the parts to be connected.

If welding overlapping metal panels, the welding process depends on the accessibility of the sides:

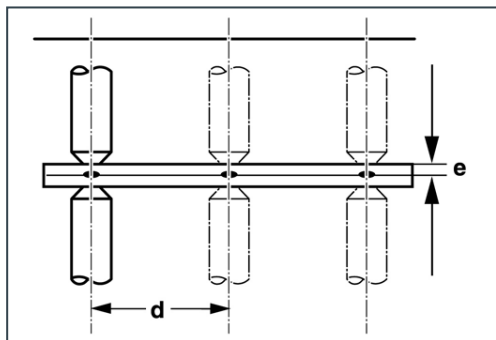
Accessible sides	Welding process
1	Shielding gas hole spot welding
2	Spot welding

2.3.2.5 Spot welding

Spot welding is used for overlapping parts with access on both sides. Avoid spot welding of more than two layers of metal panels.

Distance between spot welds:

In order to avoid shunt effects, the specified distances between the spot welds must be maintained ($d = 10e + 10 \text{ mm}$).



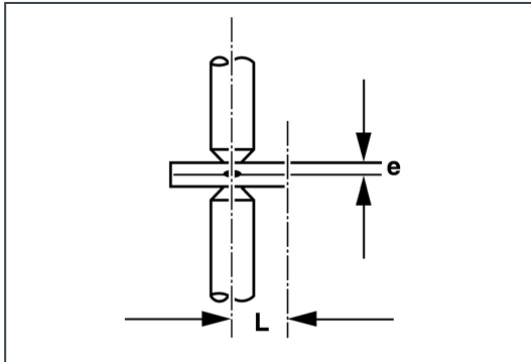
Ratio between panel thickness and distance between welds

d Distance between spot welds

e Panel thickness

Distance from the edge of the panel:

In order to avoid damage to the molten core, the specified distances from the edge of the panel must be maintained ($L = 3e + 2 \text{ mm}$).



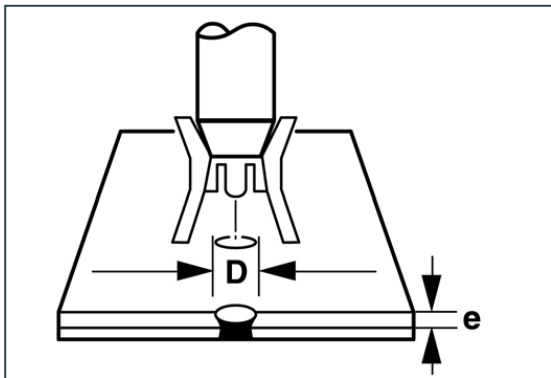
Ratio between panel thickness and distance from edge

e Panel thickness

L Distance from the edge of the panel

2.3.2.6 Shielding gas hole spot welding

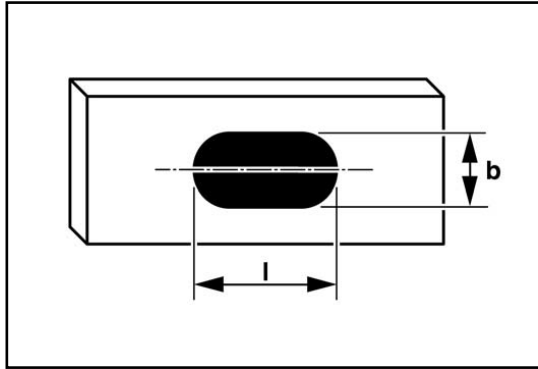
If overlapping panels can only be welded on one side, it is possible to achieve the connection by shielding gas hole spot welding or tacking. If the connection is achieved by punching or drilling and then spot welding the hole, the drilling area must be deburred before welding is carried out.



Ratio between panel thickness and hole diameter

D - hole diameter [mm]	4.5	5	5.5	6	6.5	7
e - panel thickness [mm]	0.6	0.7	1	1.25	1.5	2

The mechanical quality can additionally be improved by using slots ($l = 2 \times b$).



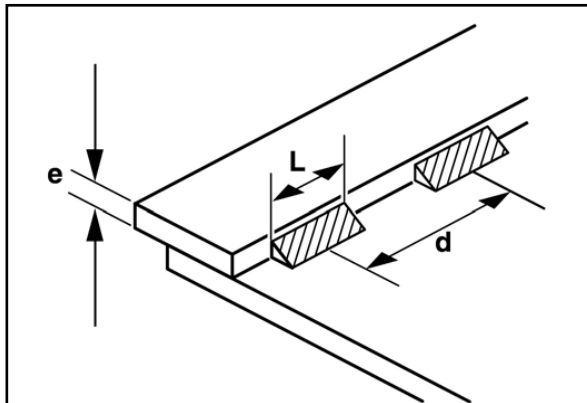
Ratio between width and length of slots

b Width of slot

l Length of slot

2.3.2.7 Tacking

If panels are > 2 mm thick, overlapping panels can also be connected by tacking
($30 \text{ mm} < L < 40 \times e$; $d > 2 L$).



Ratio between panel thickness and distance between welds

d Distance between tack welds

e Panel thickness

L Length of tack weld

2.3.2.8 Welding is not allowed

Welding is not allowed:

- On mechanical units such as the engine, gearbox, axles etc.
- On the chassis frame except if there is a frame extension.
- On the A- and B-pillars.
- On the upper and lower chords of the frame.
- In bend radii.
- In the area of airbags.
- Hole welding is only permitted in the vertical webs of the frame longitudinal member.

2.3.2.9 Corrosion protection after welding

After all welding work on the vehicle, it is necessary to comply with the specified corrosion protection measures
(See chapter 2.3.2.10 "Corrosion protection measures").

2.3.2.10 Corrosion protection measures

Following conversion and installation work on the vehicle, surface and corrosion protection shall be applied to the affected points.

Practical note

Only the corrosion protection agents tested and approved by Volkswagen are allowed to be used for all corrosion protection work.

2.3.2.11 Planning measures

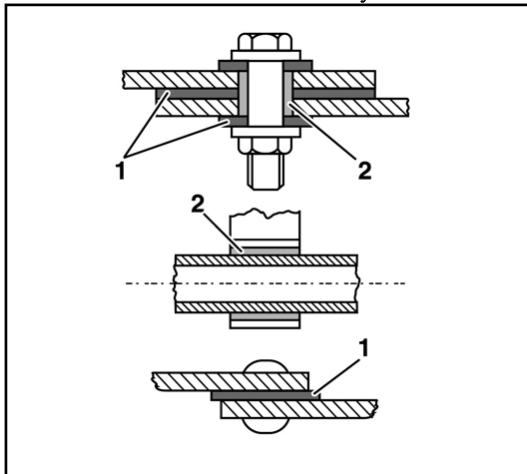
Corrosion protection should be taken into account in the planning and design in the form of a suitable material selection and component design.

Information

If two different metallic materials are connected together by an electrolyte (e.g. moisture from the air) then this will give rise to a galvanic connection. The result will be electrochemical corrosion, and the less noble metal will suffer damage. The electrochemical corrosion will be all the greater the further apart the metals in question are in the electrochemical series.

Therefore, the components must have a suitable treatment or insulation applied to them in order to prevent electrochemical corrosion, or the corrosion must be kept at a low level by a suitable choice of materials.

Avoidance of contact corrosion by electrical insulation



Avoidance of contact corrosion

1 Insulating washer

2 Insulating sleeve

Contact corrosion can be avoided by using electrical insulation such as washers, sleeves or tubes. Avoid welding work on inaccessible cavities.

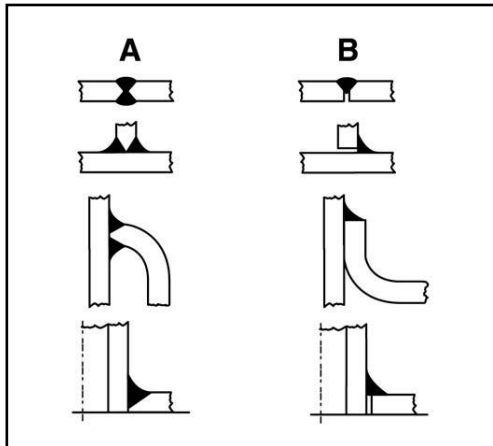
2.3.2.12 Component design measures

Design measures, in particular in the design of connections between the same or different materials, can be used for providing corrosion protection:

Corners, edges, beads and folds represent locations where dirt and moisture can collect.

Suitable surfaces, drains and the avoidance of gaps at component connections represent means by which corrosion can be counteracted by design measures.

Gaps at welded connections as a feature of the design, and how to avoid them.



Application examples of welded connections

A = Favourable	B = Unfavourable
(through-welded)	(gap)

2.3.2.13 Coating measures

By applying protective coatings (e.g. galvanizing, painting or high-temperature zinc application), it is possible to protect the vehicle against corrosion.

(See chap. 2.3.2.10 "Corrosion protection measures".)

2.3.2.14 Work on the vehicle

After all work on the vehicle:

- Remove drilling chips.
- Deburr edges.
- Remove scorched paint and thoroughly prepare the surfaces for painting.
- Apply a primer to all bare metal parts, and paint them.
- Apply a wax-based corrosion protection agent to cavities.
- Carry out corrosion protection measures on the underbody and frame components.

2.4 Interior

2.4.1 Modifications in the area of airbags

Modifications on the airbag system and the belt tensioner system as well as on and in the area of airbag components, the airbag sensors and the airbag control unit are not permitted. Please also note chapter 5.1 "Conversions for people with disabilities".

The interior fittings shall be designed so that the airbag deployment areas are left unobstructed. (See also chap. 3.2 "Interior".)

For information about the deployment zones of the airbags, refer to the owner's manual of the vehicle.

Warning note

Modifications or incorrectly performed work on seatbelts and seatbelt anchor points, belt tensioners or airbags or their cabling could impair the correct function of these components. They might be activated inadvertently or fail in the event of an accident.

2.4.2 Modifications in the area of seats

Modifications to the seat system or attachment of seats on the wheel house are not permitted, because the seats might be torn out of the anchoring points in the event of an accident.

The strength data for seats available ex-works is only valid in conjunction with the original attachment elements.

It is essential not to exceed the height of the centre of gravity (H-point) if retrofitting seats.

If reattaching seatbelts, make sure that the specified bolts are tightened with the original torque. (See also chapter 3.2.2 "Seat retrofitting/seats")

2.4.2.1 Belt anchors

The body builder is solely responsible for fitting additional belt points.

The necessary proof is to be provided by the body builder. The legal specifications and guidelines should be observed, for example, EU guideline 76/115/EEC.

2.4.3 Forced ventilation

Replacement measures must be created for vehicle modifications of any kind that can influence the standard forced ventilation.

This is important in several respects:

- Closing comfort of the doors
- Possible flow rate of the heating blower
- Pressure equalisation on airbag deployment

Ventilation slits must be installed in the partition wall in closed bodies with a partition wall.

In this case, make sure that the new forced ventilation cross sections are not smaller than the standard cross sections.

Air inlets and outlets are not allowed to be fitted in the immediate vicinity of sources of noise or exhaust gases.

2.4.4 Acoustic insulation

Pay attention to minimising interior noise levels as part of conversions, in order to avoid modifying the noise level of the vehicle.

The converted vehicle shall comply with the values for external noise given in EC Directive 70/157/EEC.

Specialists such as the manufacturer and suppliers of acoustic material should be contacted for advice on achieving the optimum acoustic protection for bodies.

2.5 Electrics/electronics

Incorrect interventions in electronic components and their software may result in these no longer functioning correctly. Due to the networking of electronics, systems that were not modified can be affected. Malfunctions to the electronics can significantly impair the operational safety of your vehicle.

Work on or modifications to electronic components, in particular work on safety-relevant systems, is only allowed to be performed by a qualified specialist workshop, and by qualified specialist personnel who have the necessary specialist knowledge and tools for performing the necessary work.

Interventions in the vehicle electrical system/vehicle electronics can result in invalidation of the warranty/operating permit.

If modifications are made to the electrical system, take the vehicle to a VW workshop in order to delete the error memory entries at the completion of work. If a VAS tester is available, the error memory can also be deleted by trained personnel of the body builder.

2.5.1 Lighting

2.5.1.1 Vehicle lighting devices

Comply with the registration provisions of the country in question with regard to the complete lighting devices (lighting and turn indicator devices). Failing to comply can result in the operating permit being invalidated.

Comply with the basic headlight setting (see type plate).

The use of LED lights instead of the original VW lights is not intended by the manufacturer.

Installing LED lights instead of the original VW lights can cause the bulb failure check to issue a warning because the lighting system is not configured for this. The bulb failure check function cannot be activated.

We recommend using Volkswagen Genuine rear lights or a product with E test symbol and conventional bulbs.

Please note that in the completed (converted) vehicle, it is necessary to comply with the add-on regulations and dimensions of all technical lighting equipment acc. to ECE Regulation ECE-R 48.

Applicable accordingly to all vehicle types:

ECE regulation:	Lighting equipment	Vehicle dimensions	Remarks
ECE-R 48, 6.12	Parking lights	Permitted for vehicle dimensions: Width: $\leq 2,000$ mm and Length: $\leq 6,000$ mm	The parking light is not prescribed. It is not permitted in longer and wider vehicles, and shall be deactivated if necessary.
ECE-R 48, 6.13	End-outline marker lamps	1) Only permitted for vehicles with a width: $\geq 1,800$ mm 2) Prescribed for vehicles with a width: $\geq 2,100$ mm	Applies to all T5 and Crafter models
ECE-R48, 6.18	Side marker lights	Prescribed for vehicles with a length: $\geq 6,000$ mm	Permitted for other vehicles.

ECE regulation:	Lighting equipment	Vehicle dimensions	Remarks
ECE-R48, 6.5	Side turn signals Category 6	Prescribed for N1/M2 vehicles with a length >6,000 mm and N2 vehicles	Also approved for other vehicles, any category 5 lights must be disabled.
ECE-R 48, section 6.7	3. Brake light		Since 1.11.2013, it is mandatory in Germany for M1 and N1 vehicles with a closed body!

When installing bodies on chassis, the body builder is in particular responsible for attaching the rear and any side technical lighting equipment in accordance with the regulations.

Category 5 side turn signals are installed on the Transporter T5 (in the front wings).

These lights are only permitted for vehicles in class M₁ as well as for vehicles in class N₁ or M₂, providing they are not more than six metres long.

This means the standard side turn signals are only sufficient for vehicles up to 3.5 t gross vehicle weight rating and up to 6 m in length.

As soon as body builder modifies a chassis / back-to-back cab into a class N₁ or M₂ vehicle more than 6 m in length or into a class N₂ vehicle (> 3.5 t gross vehicle weight rating), these category 5 side turn signals are no longer sufficient. These vehicles require more powerful side turn signals in category 6 (min. 50 cd).

2.5.1.1.1.Retrofitting 3rd Brake light

If a closed body is mounted on a chassis, it must have a 3rd brake light pointing backward.

We recommend using a type-tested 3rd brake light with LED technology with a max. power consumption of 1.8 W. These can be connected directly in parallel with the standard brake lights.

2.5.1.2 Special lights

2.5.1.2.1 Priority vehicle light, yellow light

It is possible to order optional equipment directly from Volkswagen AG, namely PR no. ZF7 priority vehicle light, yellow light.

For subsequent conversion, we recommend ordering the base vehicle with the "priority vehicle light preparation" optional equipment, PR no. 9LX. This includes the additional console, cable routing to the roof in all roof types as well as the switch in the additional console.

Please remember to comply with specific national registration regulations when installing special lights.

Please also comply with the following chapters during the conversion:

Chap. 2.2.1 "Permitted weights and unladen weights"

Chap. 2.5.4 "Vehicle battery"

Chap. 2.5.3 "Electrical interface for special vehicles"

Chap. 3.1 "Body-in-white/bodywork"

2.5.1.2.2 Roof turn signals

Roof turn signals for special conversions can be ordered directly ex-works for all roof heights as optional equipment with PR no. 9H1 "Roof turn signals, rear left and right".

Please note that it is no longer possible to use the last two roof mounting points for subsequent mounting of roof rack systems in combination with roof turn signals (9H1).

Comply with the registration provisions of the country in question when installing special lights.

Please also comply with the following chapters during the conversion:

Chap. 2.2.1 "Permitted weights and unladen weights"

Chap. 2.5.4 "Vehicle battery"

Chap. 2.5.3 "Electrical interface for special vehicles"

Chap. 3.1 "Body-in-white/bodywork"

2.5.1.3 Turn signals on excess width bodies

If special bodies have larger dimensions than the series production vehicle, it may be that the front turn signals are more than 400 mm distant from the sides. In this case, a new turn signal will be required inside the permitted area. The series production unit must be rendered inoperable as a result.

2.5.1.4 Additional load compartment light

If an additional load compartment light is required, we recommend installing an additional switch and separate wiring (see chap. 2.5.2.1 "Electrical cables / fuses"; chap. 2.5.2.2 "Additional circuits" and chap. 2.5.2.3 "Retrofitting electrical devices").

A solution using a relay with the original lighting wiring is not recommended because the interior light is dimmed and switched off by means of PWM (signal).

No additional wires may be connected to the existing lighting wiring fitted by Volkswagen AG. See also chapter 2.5.3 "Electrical interface for special vehicles".

2.5.2 Vehicle electrical system

2.5.2.1 Electrical cables/fuses

The following points shall be complied with if routing modifications are required:

- Avoid routing over sharp edges.
- Avoid routing inside excessively narrow cavities and close to moving parts.
- No additional lines are allowed to be fastened to brake hoses and brake lines.
- Additional lines must remain at a sufficient distance from brake hoses and brake lines under all operating conditions, and are not allowed to touch or chafe against such brake hoses/lines under any circumstances.
- Only lead-free PVC jacketed cables with an insulation limit temperature > 105 °C are allowed to be used.
- Connections shall be made professionally and water-tight.
- The cable shall be dimensioned according to the current drawn and protected by fuses.

Max. continuous current [A]	Rated current of fuse [A]	Wire cross-section [mm²]
0 - 4	51	0.35
4.1 - 8	101	0.5
8.1 - 12	151	1
12.1 - 16	201	1.5
16.1 - 24	301	2.5
24.1 - 32	402	4
32.1 - 40	502	6
40.1 - 80	100	10
80.1 - 100	125	16
100.1 - 140	175	25
140.1 - 180	225	35
180.1 - 240	300	50

1 Shape C; DIN 72581 blade-type connector

2 Shape E; DIN 72581 blade-type connector

Warning note

No additional electrical cables or other lines are allowed to be secured to existing lines such as brake or fuel lines or cables, because standard holders might otherwise be overloaded. An independent attachment solution must be found.

2.5.2.2 Additional circuits

If additional circuits are required, we always recommend using the electrical interface for external use (terminal strip in driver's underseat box, PR no. UFI) (see chap. 2.5.3 "Electrical interface for special vehicles").

Additional circuits shall be safeguarded against the main circuit by means of suitable fuses.

Cables shall be dimensioned according to the load, and protected against pulling off and the effects of impacts and heat. When unprotected cables are routed in the area of the battery, these cables must be protected with special anti-cut hoses in accordance with series production (e.g. Aramid hose/Kevlar).

Information about sources for obtaining anti-cut hoses can be provided if required.

Please contact us about this. (see chap. 1.2.1.1 "Contact in Germany" and chap. 1.2.1.2 "International contact")

2.5.2.3 Retrofitting electrical devices

Note the following for retrofitting additional electrical consumers:

- No further loads are allowed to be connected to occupied fuses.
- No additional cables are allowed to be connected to existing cables (e.g. with insulation-piercing terminals).
- Fuse consumers adequately by means of additional fuses.
- All installed electrical devices shall be checked acc. to EC Directive 72/245/EEC and shall bear the "e" mark.

2.5.2.4 Electromagnetic compatibility

Electromagnetic compatibility refers to the property of an electrical system to remain neutral whilst maintaining full functions in the presence of other systems.

Active systems in the surrounding area are not disrupted by the system, nor is system itself impaired.

Electrical interference in motor vehicle electrical systems is caused by the individual consumers. At Volkswagen AG, the factory-fitted electronic components have been checked for their electromagnetic compatibility in the vehicle.

When electrical or electronic systems are retrofitted, it is also necessary to check and demonstrate their electromagnetic compatibility.

Volkswagen does not issue a manufacturer's declaration for electromagnetic compatibility when additional devices are subsequently installed by body builders.

Devices that are regarded as "electrical/electronic subassemblies" (ESA) as defined by EC Directive 72/245/EEG in the current version shall be type-approved and shall bear the "e" mark.

2.5.2.5 Mobile communication systems

In order to avoid subsequent disruptions to operation, it is necessary to take account of the following points when retrofitting mobile communication systems (e.g. telephone, CB radio):

- The devices shall possess a type approval acc. to EC Directive 72/245/EEC in the current version, and shall bear the "e" mark.
- The maximum transmission power is not allowed to be exceeded.
- The devices and holders shall be located outside the deployment range of the airbags.
- They shall be permanently installed.
- Mobile devices within the cab are only allowed to be operated via an external aerial installed in such a way as to eliminate reflections.
- The transmitter shall be installed in a separate location from the vehicle electronics.
- The device shall be protected against moisture and severe mechanical shocks; comply with the permitted operating temperature.

2.5.2.6 CAN bus

Interventions in the CAN bus and connected components are not permitted

2.5.3 Electrical interface for special vehicles

In principle, there are two interfaces for external use in special vehicles and by body builders:

1. Terminal strip: 3 plugs with selected vehicle electrical system potentials
2. Multifunction control unit: control unit with access to the vehicle's CAN network

The interfaces can be ordered using the following equipment numbers (PR numbers):

PR numbers	Description
UF1	Terminal strip "Electrical interface for external use" (terminal strip in driver's underseat box)
UF8	Multifunction control unit "Multifunction control unit for external use" (front passenger's underseat box)
UF2	Terminal strip (UF1) and multifunction control unit (UF8) "Electrical interface and multifunction control unit for external use"

"" – sales designation

Note:

The multifunction control unit (MFG) with part number 7E0.907.427.B (can be ordered from WK10/2013 onwards) has a CANopen interface acc. to the CIA447 specification.

Multifunction control units with part number 7E0.907.427.A (before WK10/2013) without CANopen interface can be renewed by a multifunction control unit with CANopen interface.

A retrofit is not possible in vehicles without multifunction unit.

2.5.3.1 Location of the interfaces for special vehicles

Fitting of multifunction control unit (UF8) in the individual seat box (right)
 (UF8) in the double seat box (right)
 Fitting of terminal strip (UF1) in the coupling point in left seat box

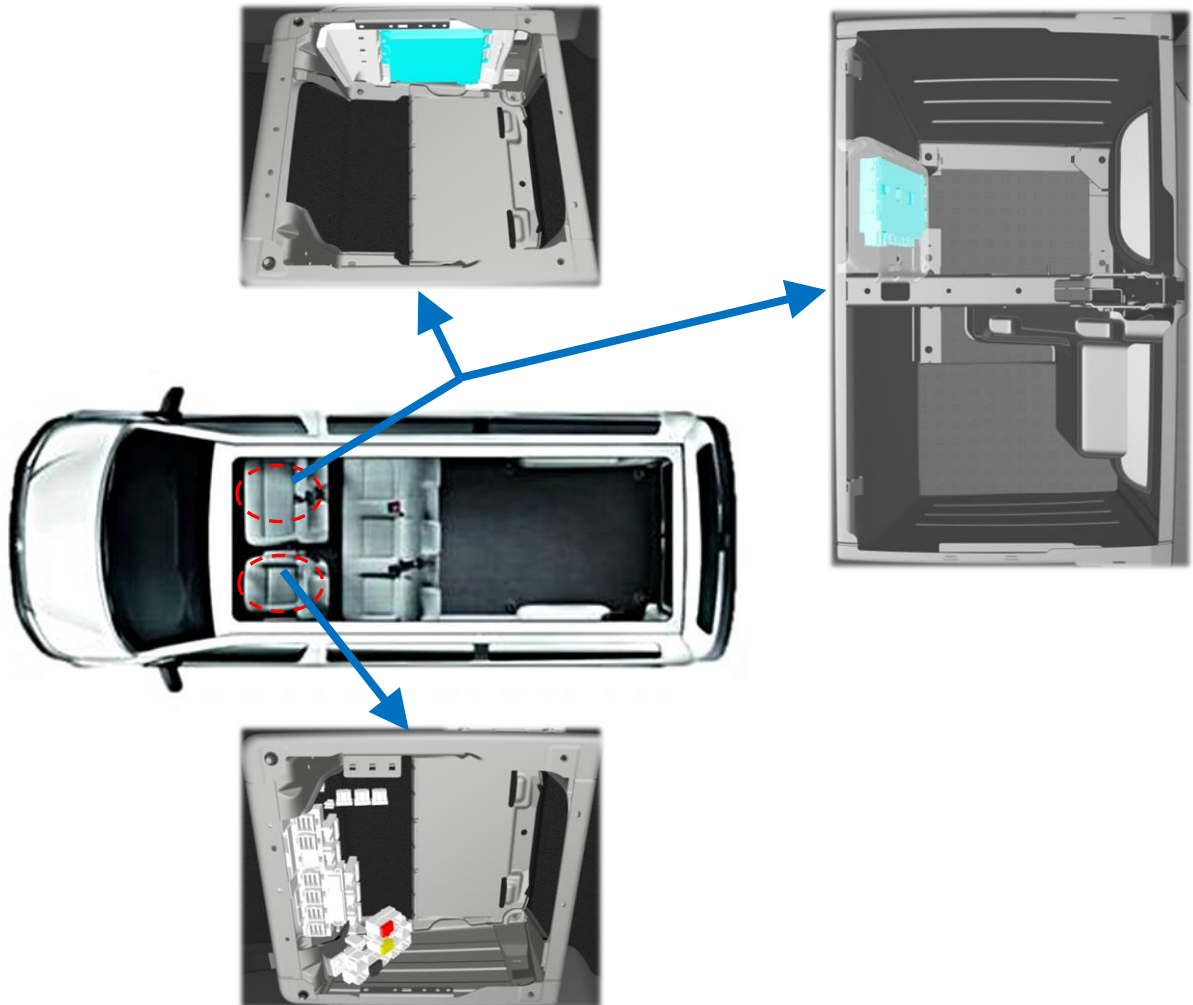


Fig. 1: Electrical interface for special vehicles

2.5.3.2 General notes on the interfaces for special vehicles, Transporter (from model year 2010 onwards)

Basic requirements for using the interface:

- These interfaces are only allowed to be used by authorised specialist personnel.
- Inappropriate interventions can result in damage to the vehicle and breakdowns, and may also invalidate the operating permit.
- The parameters of the special vehicle control unit are only allowed to be set in consultation with VW.
- Connections shall be made professionally and water-tight, in particular in the floor area of the driver seat box.
(see chap. 2.5.2.1 Electrical cables/fuses)

Subject to technical modifications.

The following points must be observed at all times:

- VDE guidelines for configuration and fitting of electrical cables and components (cable cross sections, fuses, etc.)
- Only components approved by Volkswagen are allowed to be used for adapting to the vehicle electrical system.
The part numbers of these components can be found in this description.
- Only the potential names normally used in VW are used in this description.
- It is not known what additional units will be connected, therefore the company fitting out the vehicle with the interface shall ensure a balanced current distribution.
- EMC safety for connections after the interface is the responsibility of the company fitting out the vehicle.
- The cable cross sections of the interfaces shall be maintained throughout the entire circuit, i.e. no cross-section reductions are permitted after the interface.
- Energy supply to the vehicle electrical system is only allowed to be done at potentials expressly provided for this purpose (see description) and shall be fused externally in accordance with VDE.
- For additional information, refer to the T5 customer service documents or the technical documentation of the terminal strip (UF1) or the multifunction control unit (UF8).
- All electrical cables connected to the vehicle electrical system shall be reliably and durably protected against overload to battery "+" and the body earth.
- Earth potential: The specified potentials always refer to the vehicle body earth.
Preferably, use the earth pin in the left seat box.
- Connecting additional lighting devices using the terminal strip can lead to malfunctions or failure of the bulb failure monitor in the vehicle (see also chap. 2.5.1 Lighting).

Information

The assignment and functions of the electrical interfaces for special vehicles depend on the equipment. The main difference concerns which version of the "body control module" (BCM for short) is installed. The following differentiation is made:

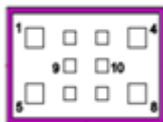
- BCM standard (part number: 7H0.937.086.x/.087.x)
- BCM max (part number 7H0.937.090.x).
- The following PR numbers will result in a BCM max being fitted:
 - 8K3 – "Automatic headlight activation, with daytime running lights, "Leaving home" function and manual "Coming home" function"
 - 8K8 – "Headlight assist (conditional automatic switch on/off) incl. "Coming home"/"Leaving home" function"
 - 7L6 – "Stop/start system with recuperation"

2.5.3.3 Assignment of the terminal strip (UF1)

Selected vehicle electrical system potentials are assigned to the 3 plugs. The interface assignment and the possibility of drawing or supplying current depend on the equipment.

Plug 1 (violet)

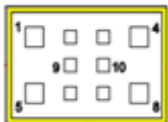
4F00.937.743.K



Pin	potential	Colour	Cross-section [mm²]	Max. current draw [A]	Max. current supply [A]	Quality control	Mating plug contact	Usage	Restrictions
A1	X _{RA}	Black / yellow	1.5	12.0	not permissible	F1 (15A) Centre console	N.906.845.01	X-contact	
A2	55	White / yellow	1.0	BCM std: 4.0 BCM max: 0.5	BCM std: 0.2 ¹ BCM max: not permitted	C17/2 (5A) Driver's seat box	N.103.358.01	Fog light	With BCM max: PWM signal, signal output even when left cornering lighting is activated
A3	RFS	Green / black	1.0	1.0	not permissible	No independent	N.103.358.01	Reversing light	With automatic gearbox or BCM max: PWM signal
A4	56bL	Yellow / black	0.35	1.0	not permissible	C44 (5A)	N.906.843.01	Dipped beam headlight	A4 and A5 are phys. connected
A5	56bR	Yellow	0.35	1.0	not permissible	C16/1 (5A) Triple fuse carrier seat box left	N.906.843.01	Dipped beam headlight	
A6	86S	Brown / red	0.5	0.5	not permissible	No independent	N.103.358.01	S-contact	
A7	58d	Grey / blue	0.35	2.0	-	C16/2 (3A) Triple fuse carrier seat box left	N.103.357.01	Instrument / switch lighting	When dimmer installed: PWM signal
A8	56aL	White / black	1.5	1.0	12.0 ¹	C16/3 (15A) Triple fuse carrier seat box left	N.906.845.01	Main beam headlight	Pin A8 and plug 2 pin A1 are phys. connected

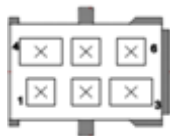
Pin	potential	Colour	Cross-section [mm²]	Max. current draw [A]	Max. current supply [A]	Quality control	Mating plug contact	Usage	Restrictions
A9	15A	Black / blue	0.5	2.0	not permissible	F36 (5A) Fuse box additional equip- ment	N.103.358.01	Terminal 15	
A10	58L/ 58	Grey / black	0.5	BCM std: 1.0 BCM max: 0.5	not permissible	Only BCM std. F11 (5A) Fuse box interior equipment	N.103.358.01	Side light	With BCM max: PWM signal; pick-off at left side light With BCM std.: pick-off from rotary light switch

Plug 2 (yellow)
4F00.937.743.C



Pin	potential	Colour	Cross-section [mm²]	Max. current draw [A]	Max. current supply [A]	Quality control	Mating plug contact	Usage	Restrictions
A1	56aR	White	1.5	1.0	12.0 ¹	C17/1 (15A) Triple fuse carrier seat box left	N.906.845.01	Main beam headlight	Pin A1 and plug 1 pin A8 are phys. connected
A2	V	White / violet	0.35	0.02 ²	-	No independent	N.103.357.01	Speed signal	
A3	L 49a	Black / white	0.35	0.2	Supply by connection to earth	No independent	N.103.357.01	Turn signal, left	Earth signal Stat. Turn signal status no timing signal
A4	50a	Black / blue	0.5	0.2 ³	-	No independent	N.906.844.01	Terminal 50	
A5	n.c.	-	-	-	-	-	n.c.	-	
A6	R 49a	Black / green	0.35	0.2	Supply by connection to earth	No independent	N.103.357.01	Turn signal, right	Earth signal Stat. Turn signal status no timing signal
A7	HB sig.	Blue / black	0.35	0.01 ⁴	not permissible	None	N.103.357.01	Handbrake check	Earth signal
A8	50a	Black / blue	0.5	0.2	-	No independent	N.906.844.01	Terminal 50	Pin A8 is only fitted with manual gearboxes: same signal as with pin A4
A9	n.c.	-	-	-	-	-	n.c.	-	
A10	71a	Black / yellow	1.5	0.5	not permissible	No independent	N.105.407.01	Horn momentary contact	Signal pick-off at vehicle horn

Plug 3 (grey)
4F00.937.731.G



Pin	potential	Colour	Cross-section [mm²]	Max. current draw [A]	Max. current supply [A]	Quality control	Mating plug contact	Usage	Restrictions
A1	54	Black / red	1	0.2 ⁵	not permissible	No independent	N.105.114.01	Brake light	Pin A1 and pin A2 are phys. connected
A2	54	Black / red	1	0.2	not permissible	No independent	N.105.114.01	Brake light	
A3	15	Black / yellow	2.5	-	25 max.	C17/3 (12A) Triple fuse carrier seat box left	N.105.118.01	Ignition bypass terminal 15 upholding	
A4	30A	Red / yellow	4	30 ⁶	not permissible	C14 (40A) Seat box left	N.105.119.01	Pick-battery positive potential	Connection to starter battery
A5	75	Black / red	2.5	not permissible	2.5 ⁷	F5 (10A) Fuse box additional equipment	N.105.115.01	Ignition bypass terminal 75 (X-contact) upholding	
A6	n.c.	-	-	-	-	-	n.c.	-	

1. An external fuse is required in case of external power supply. It is essential to take account of the effects on the vehicle electrical system

2. Note the specification of the instrument cluster interface

3. If the cable between pin 4 and pin 8 is disconnected (plug 2) then the ends of the cable must be insulated correctly. Note the necessary continuous current for the relay coil of ≥ 200 mA

4. Note the influence / feedback on the instrument cluster

5. If the cable between pin 1 and pin 2 is disconnected (plug 3) then the ends of the cable must be insulated correctly.

6. Note parallel operation of additional loads (load balance)

7. An external fuse is required directly before the interface

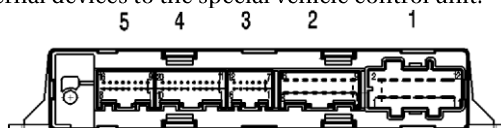
Information

For more information about the interface connections, refer to the "Documentation for electrical interface (UF1) in the T5GP (from 2010 onwards)" document. The document is available on the body builder portal of Volkswagen AG under the "Additional technical information" menu item

2.5.3.4 Contact assignment on the multifunction control unit (UF8)

Discrete signals with terminal 30 level can be picked off at all highside outputs of the multifunction control unit. Signals with terminal 31 level can be picked off at all lowside outputs. The outputs can be loaded up to the particular prescribed value. The inputs of the control unit must be connected to earth (low active) or to positive (high active), according to specification.

The following plugs and contacts must be used for connecting external devices to the special vehicle control unit:



	Plug 1	Plug 2	Plug 3	Plug 4	Plug 5
Part number	4B0.973.721	443,972,807	Not assigned	8E0.972.420	8E0.972.416.A
Contacts	Pin 1 - 8: 0.5 – 1 mm ² N.906.844.01 1.5 – 2.5 mm ² N.906.845.01	Pin 1 - 16: 0.5 – 1 mm ² N.101.905.01 1.5 – 2.5 mm ² N.101.906.01		Pin 1 – 20: 0.5 mm ² N.907.649.01	Pin 3 – 16: 0.5 mm ² N.907.649.01

Plug 1 assignment:

Pin	Designation	Type	Load capacity [A]	Function
1	A01	Output Highside / lowside ¹	6.5 / 3.8	Status of alternator charge check
2	A02	Output Highside / lowside ¹	6.5 / 3.8	Horn momentary contact; Status of the veh. horn
3	A03	Output Highside	5.0	Ignition bypass safety circuit Signals for the external supply of terminal 15 / 75
4	A04	Output Highside	5.0	Light signal; Status of the dipped beam / activation for intermittent dipped beam
5	A05	Output Highside	5.0	Light signal; Status of the left turn signal
6	A06	Output Highside	5.0	Light signal; Status of the right turn signal
7	A07	Output Highside	5.0	Light signal; Status of the main beam / activation for intermittent main beam
8	A08	Output Highside	5.0	Supply output with overload protection; The output is deactivated after expiry of a terminal S post-operation time which can be set in the parameters, or when a battery voltage threshold which can be set in the parameters is reached
9	Terminal 31			Connections are required for supplying the control unit, and are already available from series production.
10	Terminal 30			
11	Terminal 31			
12	Terminal 30			

Plug 2 assignment:

Pin	Designation	Type	Load capacity [A]	Function
1	A11	Output Highside	0.15	Light signal; Status of the side lights
2	A12	Output Highside	0.15	Light signal; Status of the brake light
3	A13	Output Highside	0.15	Status of the central locking OFF = Vehicle locked / safe ON = Vehicle opened
4	A14	Output Highside	0.15	Door status; Driver door
5	A15	Output Highside	0.15	Door status Passenger door
6	A16	Output Highside	0.15	Door status; Sliding door, left
7	A17	Output Highside	0.15	Door status Sliding door right
8	A18	Output Lowside	0.15	Ignition bypass circuit; Indicator lamp
9	A19	Output Lowside	0.15	Door status; Tailgate / wing doors
10	A20	Output Lowside	0.15	Door status; Bonnet
11	A21	Output Lowside	0.15	Crash signal; If a crash is detected (airbag / belt tensioner triggered), the output is switched ON until the next terminal change.
12	A22	Output Lowside	0.15	Speed signal / Display when a speed threshold which can be set in the parameters is exceeded ¹
13	A23	Output Lowside	0.15	Light signal; Status of fog lights
14	Pull-up (fl.30)			
15	Reserve			
16	Reserve			

Plug 4 assignment:

Pin	Designation	Type	Function
1	E01	Input / Low active	Activation of ignition bypass safety circuit
2	E02	Input / Low active	n.c.
3	E03	Input / Low active	Activation of the buzzer (gong) in the instrument cluster; The frequency and duration of the activation can be set in the parameters
4	E04	Input / Low active	Activation of front left electric window for opening the side window
5	E05	Input / Low active	Activation of front left electric window for closing the side window
6	E06	Input / Low active	Deactivation of the daytime running light (only with BCM max) ²
7	E07	Input / Low active	Activation of front right electric window for opening the side window
8	E08	Input / Low active	Activation of front right electric window for closing the side window
9	E09	Input / Low active	Activation of the hazard warning lights; The function only responds to the button. Press once = switch on, second press = switch off
10	E10	Input / Low active	Activation of the central locking; Momentary contact input for closing (safe) the central locking
11	E11	Input / Low active	Activation of the central locking; Momentary contact input for opening the central locking
12	E12	Input / Low active	n.c.
13	E13	Input / Low active	n.c.
14	E14	Input / Low active	Activation of the vehicle horn
15	E15	Input / Low active	Activation for the intermittent light / flasher unit By setting the parameters of the control unit, it is possible to define which bulbs should be activated ²
16	E16	Input / Low active	Deactivation of the engine start/stop system in the vehicle; Deactivation is continuous for as long as the input is activated (even after terminal change)
17	E17	Input / Low active	Activation of the interior lighting / suppression of the interior lighting ¹
18	E18	Input / Low active	n.c.
19	Reserve		
20	Reserve		

Plug 5 assignment:

Pin	Designation	Type	Load capacity [A]	Function
1	CAN high			Communication of the control unit with the vehicle; These connections are available from series production
2	CAN low			
3	Reserve			
4	LIN			Via the LIN interface, it is possible to connect a remote control drive assist; the control unit must have its parameters set accordingly for this
5	LIN gnd			
6	CANopen High			The multifunction control unit with part number 7E0.907.427.B features a CANopen interface acc. to the CIA447 specification – ("CANopen application profile for special-purpose car add-on devices"). The multifunction control unit functions as a gateway for this interface.
7	CANopen Low			
8	Reserve			
9	A09 C	Relays	0.5	n.c.
10	A09 NO	Relays	0.5	n.c.
11	A09 NC	Relays	0.5	n.c.
12	Reserve			
13	A10 C	Relays Input	0.5	Terminal 30
14	A10 NO	Relays	0.5	n.c.
15	A10 NC	Relays Output	0.5	Light signal; Reversing light status; when the reversing light is activated, the internally installed relay switches to output to the input A10 C (requires the terminal 30 potential on A10 C)
16	Reserve			

1 The function depends on the parameter settings of the control unit

2 Statutory regulations must be complied with

Information

For more information about the functions and parameter settings of the multifunction control unit, refer to the "Multifunction control unit in the Transporter T5" document. The document is available on the body builder portal of Volkswagen AG under the "Additional technical information" menu item

Information

For the following functions, it is necessary to have not only the multifunction control unit but also the electrical terminal strip (order code UF2):

- Ignition bypass safety circuit
- Intermittent light functions or flasher unit

2.5.3.5 Circuit diagrams for interface for special vehicles

Detailed information about the electrical interface for external use (UF1) and about the multifunction control unit for external use (UF8) can be found in the workshop manuals and circuit diagrams of Volkswagen AG.

Information

Volkswagen AG workshop manuals and circuit diagrams can be downloaded from the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

* Information system from Volkswagen AG, subject to payment

2.5.4 Vehicle battery

If a vehicle is not operated for an extended period, its battery gradually loses charge due to the electrical loads (clock, tachograph, 12 volt socket) and can suffer permanent damage.

To avoid this damage, the wiring harness is disconnected in the production facility using a connector and shall be reconnected during transfers or vehicle delivery services.

The connector shall be disconnected again if the vehicles are to be left unused at the body builder for some time.

To prevent damaging the battery terminal clamps, we recommend only tightening the terminal clamp screw in accordance with the workshop manuals. In this regard, please observe the tightening torques in the workshop manual (see chap. 1.2.1.3).

It is possible to obtain an uprated battery and an uprated alternator ex-works as optional equipment for the increased current draw of additional loads:

Order no. (PR no.)	Designation
NY1	Uprated battery and uprated alternator
NY2	Uprated battery

2.5.4.1 Installation of additional battery

When installing additional batteries, please note that this may only be done in conjunction with a battery isolation relay.

The additional battery may only be used for your specific additional consumers. Additional loads can include, for example: cooling units, auxiliary heaters, etc. If an additional battery is accommodated in the passenger compartment, it is necessary to provide sufficient ventilation.

We recommend that you order the additional battery ex-works (see also chap. 1.5.1 Selecting the base vehicle).

Optional equipment available ex-works includes an additional battery (2nd battery with isolation relay) with PR no. 8FB.

When installing an additional battery, make sure that batteries of the same battery type as the starter battery are used (AGM or conventional lead accumulators).

As a result, for optimum performance, use cycle-proof additional batteries (AGM) for vehicles with BlueMotion.

Warning note

When work is performed on the vehicle electrical system, the earth cables should always be disconnected from the battery and the additional battery. Only then should you disconnect the positive cables. Short-circuits could occur if this is not observed.

2.5.5 Subsequent installation of generators

If additional electrical consumers are retrofitted, the increased power requirement can be met by using more powerful alternators.

The following optional equipment is available from the factory for this purpose:

Order no. (PR no.)	Designation
NY1	Upated battery and uprated alternator
NY3	Upated alternator

If ancillaries are used, the factory-fitted ancillary drives should be used (see chap. 2.7 "Ancillary drives").

If other alternators are to be added, the following points should be observed:

Vehicle parts and their function should not be impaired by the installation of a generator.

- The capacity of the battery and power supplied by the alternator must be dimensioned sufficiently
- The alternator circuit requires additional fusing (see "Electrical cables / fuses").
- The cable cross-section should be dimensioned according to the current drawn (see chap. 2.5.2.1 "Electrical cables/fuses").
- The higher power requirement can make it necessary to replace the starter/alternator warning harness. We recommend Volkswagen genuine parts for this.
- Ensure that electrical wiring is routed correctly (see chap. 2.5.2.1 "Electrical cables / fuses")
- The accessibility of the ancillaries installed and simple maintenance possibilities may not be impaired.
- The necessary air supply and the engine cooling may not be impaired.
- The guidelines of the equipment manufacturer for the compatibility with the base vehicle should be observed.
- The Owner's Manual and the maintenance manual for the ancillaries should be handed over when the vehicle is delivered.

2.6 Engine peripherals/powertrain

In the event of modifications to noise-relevant components such as the engine, exhaust system, tyres, air intake system, etc., noise measurements shall be carried out acc. to EC directives. The permitted values are not allowed to be exceeded. The national regulations and directives apply.

Components for sound insulation that are installed as standard are not allowed to be modified or removed (see also chap. 2.4.4 "Acoustic insulation").

2.6.1 Engine/powertrain components

- No modifications to the engine air intake system are permitted.
- Subsequent solutions regarding engine speed control are not possible.
- Modifications to the cooling system (radiator, radiator grille, air ducts, etc.) are not permitted
- Keep cooling air intake areas clear.

2.6.2 Drive shafts

The correct configuration and implementation of a modified powertrain prevents noise and vibration, and should only be performed by a company which is qualified to build drive shafts.

Only genuine Volkswagen parts should be used.

2.6.3 Fuel system

No modifications are permitted to the fuel system, and any such modifications may result in invalidation of the vehicle's operating permit.

In the event that the fuel system must be modified, the body builder is solely responsible for the work being carried out correctly, including all the components and materials used.

A new operating permit must be applied for from the registration authority.

Comply with the following points if making any modifications to the fuel system:

- The whole system must be permanently leak-proof in all operating conditions.
- Ensure good quality refuelling if modifications are made to the tank filler pipe, and avoid any siphon effect in the pipe routing.
- All components that come into contact with fuel must be suitable for the particular type of fuel used (e.g. petrol/diesel/ethanol additive, etc.) and the ambient conditions in the installation location.
- Hoses must retain their shape and remain adequately stable throughout the service life, in order to ensure that there is no constriction in the cross section (e.g. hoses acc. to DIN 73379-1)
- Multi-ply hoses should be preferred.
- Install reinforcing support sleeves at the connections between hose sections so as to prevent any constriction at the clip connection and to guarantee leak-tightness.
- At the connections, use spring-type clips which automatically compensate for possible settling behaviour of the material and to maintain the preload. Hose clips with worm threads must be avoided.
- All parts of the fuel filler system must be routed at a sufficient distance from moving parts, sharp edges and components at high temperature, in order to avoid damage.
- Vehicles with a petrol engine have their activated charcoal container located at the rear end of the fuel tank. The position and attachment of the activated charcoal container are not allowed to be modified.
- Do not attach heat-conducting components or components that restrict the installation space.
- Modifications to the fuel pump, fuel line length and fuel line routing are not permitted. Modifications to these mutually matched components can impair the function of the engine.
- Modifications to the body in the area of the fuel tank require the fuel tank to be removed first.

- If the body builder replaces the standard tank with a different fuel tank, make certain that the ground clearance with the new tank is no less than with the standard one. Exceptions are possible for vehicles for special applications (e.g. vehicles for transporting people with disabilities). Please contact us (see chapter 1.2.1.1 Contact in Germany and 1.2.1.2 International contact).

Comply with the workshop manuals of Volkswagen AG.

Information

Volkswagen AG workshop manuals and workshop information can be downloaded from the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

2.6.4 Exhaust system

Modifications to the exhaust system up to the main silencer and in the area of the components for exhaust post-treatment (diesel particulate filter, catalytic converter, lambda probe, etc.) are never permitted.

If modifications are required to the exhaust system for the add-on/removal/conversion nevertheless, this can have effects which are relevant to registration. Please contact us in advance regarding the scope of your conversion so that we can advise you.

We recommend that you use VW genuine parts and comply with the workshop manuals of Volkswagen AG.

Information

You will find further information on installation and removal of the exhaust system on the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

Information

Country-related regulations and guidelines shall be complied with

Exceptions require the approval of Volkswagen AG before the conversion, and shall be documented in a registration report detailing the modifications and adjustments made.

Please contact us before starting your conversion (see chap. 1.2.1)

Warning note

Attention! Danger of fire!

The lengths and routings of the exhaust system have been configured optimally with regard to their temperature properties. Modifications may result in relatively high to extreme heating of the exhaust system and the surrounding components (drive shafts, tank, floor pan, etc.).

2.7 Ancillary drives, engine/gearbox

When planning the special vehicle, select the equipment of the base vehicle according to the requirements of the future application (see also chap. 1.5.1 "Selecting the base vehicle").

You can optimise your base vehicle in advance for the conversion by selecting the following optional equipment items:

- Up-rated alternator (e.g. 180A instead of 140A)
- Up-rated battery
- Battery for loads (e.g. cooling units and loads that should be operated with the vehicle stationary).
- Noise insulation for protecting the engine and ancillary drive against contamination and foreign bodies

Please note that auxiliary drives such as for generators, deep-freeze compressors and hydraulic pumps can only be fitted instead of the factory fitted refrigerant compressor. Please comply with the performance categories (see 2.7.1) and the installation space specifications.

For correct operation of the ancillary drive, we recommend that you use the refrigerant compressor provided ex-works for the base vehicle.

Further information is available in the following chapters:

1.5.1 Selecting the base vehicle

2.5.5 Subsequent installation of generators

2.5.4 Vehicle battery

2.5.4.1 Installation of additional battery

2.5.3 Electrical interface for special vehicles

2.7.1. Retrofitting air conditioning system

All installed electrical devices must be checked acc. to EC Directive 72/245/EEC and shall bear the "e" mark.

We recommend using Volkswagen genuine parts for subsequent installation of air conditioning systems.

Information about original refrigerant compressors:

Engine designation		Air conditioning system	Refrigerant compressor type
Petrol	2.0 l 85 kW SRE	Cab and passenger compartment	Sanden SD7V16 (160 cc) ¹⁾
	150 kW FSI	Cab	Denso-6SEU14 (140 cc) ²⁾
	150 kW FSI	Cab and passenger compartment	Denso-7SEU17 (170ccm)
Diesel	2.0 l TDI 62 kW to 2.0l TDI 132KW	Cab	Denso-6SEU14 (140 ccm)
	2.0 l TDI 62 kW to 2.0l TDI 132KW	Cab and passenger compartment	Denso-7SEU17 (170ccm)

1) Before model year 2011 (T5)

2) From model year 2011 (T5 GP)

If other air conditioning systems are to be retrofitted, the guidelines from the equipment manufacturer and for the system components should be observed. The body builder is then solely responsible for operating and road safety.

Subsequent installation or replacement of additional mechanical units such as the refrigerant compressor is only possible instead of the genuine refrigerant compressor in the main belt track.

(See chap. 2.7.3.1 Specification of genuine refrigerant compressor)

The following points should be observed for the compatibility with the base vehicle:

- Vehicle parts and their function should not be impaired by the installation of an air conditioning system.
- The capacity of the battery and power supplied by the alternator must be dimensioned sufficiently.
- Additional fuse protection of the air-conditioning system circuit (see chap. 2.5.2.1 "Electrical cables/fuses").
- The refrigerant compressors should be mounted on the provided assembly carriers.
- The weight of the ancillary is not allowed to exceed the weight of the series production refrigerant compressor (see table 2).
- The diameter and position of the drive pulley for the ancillary must correspond with that of the original refrigerant compressor. (see Fig. 2-6)
- There shall be adequate space for operating the ancillary.
- The track position of the poly V-belt must be identical to the original and the poly V-belt specifications must be observed (see table 4).
- The specifications for the belt pulleys must match the specifications for the poly V-belt exactly (identical width, number of grooves, e.g. 6PK).
- To ensure the belt is guided properly, "shouldered washers" (with leading edge) must be used.
- Ensure that lines (brake hoses/cables and wires) are routed correctly.
- The accessibility of the ancillaries installed and simple maintenance possibilities may not be impaired.
- The owner's manual and the maintenance manual for the ancillaries should be handed over when the vehicle is delivered.
- The necessary air supply and the engine cooling may not be impaired.
- When compact systems (evaporator, condenser and fan) are mounted on the cab roof, the permitted roof loads may not be exceeded (see chap. 2.3.1 "Maximum roof loads").
- Attachments to the roof require a safety certificate from the responsible department (see chap. 1.2.1).
- If the standard refrigerant system is modified, the fill volumes of refrigerant and refrigerant oil must be redefined and indicated accordingly on a plate in the vehicle.
- In order for a safety certificate to be issued, it is necessary to submit documentation relating to the design of the additional auxiliary drives, specifying the tolerance position, to Volkswagen AG.
- The specifications for the belt pulley must match the specifications for the poly V-belt exactly (identical width, number of grooves, e.g. 6PK).
- To ensure the belt is guided properly, "shouldered washers" (with leading edge) must be used.
- Series-standard dynamic belt tensioning units with spring/damper systems must be used. Rigid belt tensioning elements are not allowed to be used.
- It is of great important that the dynamic properties of the belt drive should be investigated in operation, or ideally that a belt dynamics measurement should be performed.

Practical note

Please note that subsequent modifications to the factory-fitted air conditioning system by the body builder are solely the responsibility of the body builder. In such cases, Volkswagen is unable to make any statement about the lubrication of the compressor and the effects on its service life.

As a result, Volkswagen AG does not offer any warranty for the compressor in this case.

In order for the warranty to be retained, it would be necessary for an extensive measurement of the oil circulation in the refrigerant circuit to be carried out.

Practical note

In vehicles without air conditioning, it is necessary to recode the engine control unit when an ancillary is retrofitted.

2.7.2 Preparation for load compartment cooling (fresh produce vehicles)

A preparation for loadspace cooling is available ex-works under order no. ZX9 (F0H) as optional equipment. It can be ordered for the T5 panel van as an option.

It is based on the "9AP" air conditioning system with the large externally controllable refrigerant compressor (DENSO-7SEU17).

In addition, the ZX9 selects an increased engine cooling power (large fan, 850 W) in order to achieve maximum cooling outputs even at low speed. It is the ideal preparation for retrofit load compartment cooling systems above zero degrees or load compartment air conditioning by body builders, e.g. for fresh produce vehicles.

Practical note

On BlueMotion Technology vehicles you should also note that the load compartment cooling system must be integrated into the BMT function so that shut-down of the engine is prevented during the cooling process (cooling system on and load compartment temperature not reached).

For ease of implementation of this requirement, we recommend also ordering the multifunction control unit (UF8). For further information, see chap. 2.5.3.4. E-cooling systems are excluded from BlueMotion vehicles.

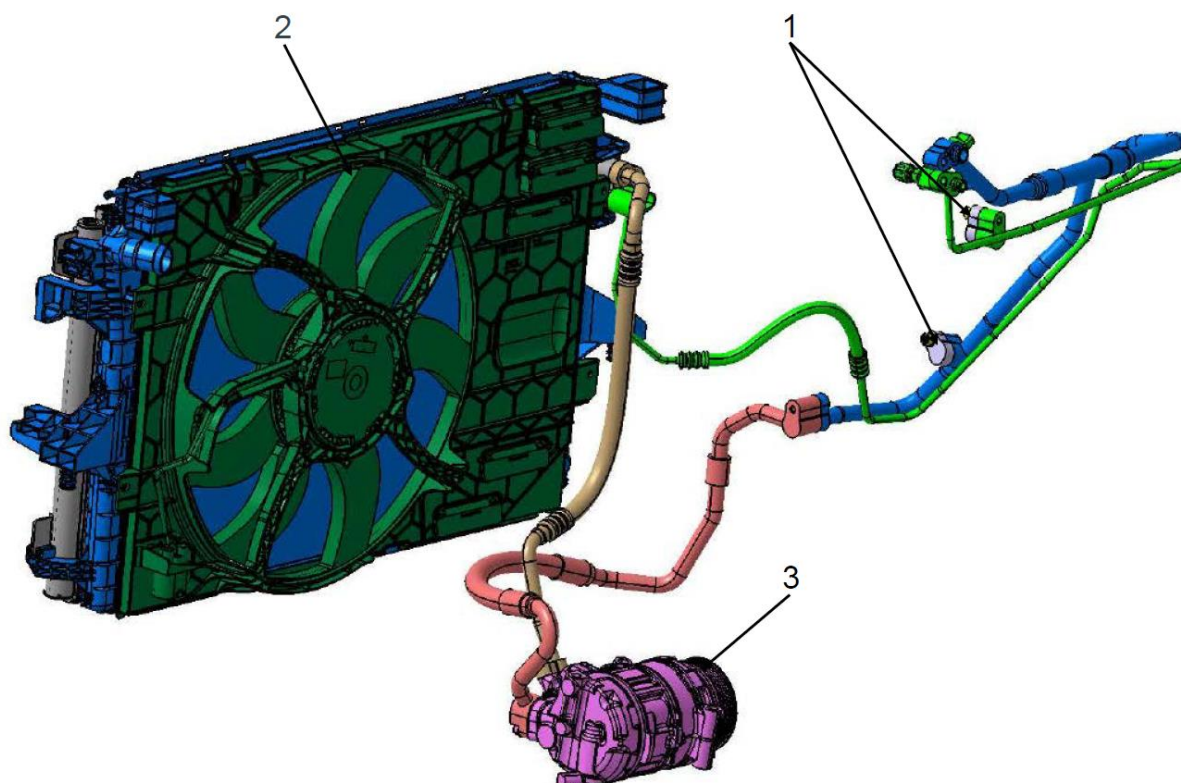


Fig.1: Preparation for load compartment cooling (refrigerated vehicle)

- 1 - Refrigerant lines with dummy plugs (for connecting loadspace cooling)
- 2 - Large fan, 850 W
- 3 - Large refrigerant compressor Denso-7SEU17 (170 cc)

2.7.3 Retrofit load compartment cooling system

Retrofitting or replacing ancillaries (for example, refrigerant compressor, pumps etc.) is only possible in place of the original component.

For subsequent loadspace cooling, we recommend using the genuine refrigerant compressor (see also chap. 2.7.2 and chap. 2.7.3.1 Specification of genuine refrigerant compressor):

Engine designation		Air conditioning system	Refrigerant compressor type
Petrol	2.0l 85 kW SRE	Cab and passenger compartment	Sanden SD7H15* (150 cc)
			Sanden SD7V16** (160 cc)
	2.0 l 150 kW FSI	Cab and passenger compartment	Denso-7SEU17 (170ccm)
Diesel	2.0 l TDI 62 kW to 2.0l TDI 132KW	Cab and passenger compartment	Denso-7SEU17 (170ccm)

* Series production refrigerant compressor for vehicles transporting fresh products, ** Series production refrigerant compressor for air conditioning for vehicle occupants

If other refrigerant compressors are to be fitted, the guidelines from the equipment manufacturer and for the system components should be observed. The body builder is then solely responsible for the operating and road safety of the refrigerant compressor and the air-conditioning system.

The points referred to above in chap. 2.7.1 on compatibility with the base vehicle must be complied with without fail. Please also note the information on the working range of the belt tensioner (see chapter 2.7.4 "Installation and removal of the poly V-belt").

Practical note

In vehicles without air conditioning, please note that it is necessary to recode the engine control unit when an ancillary is retrofitted.

2.7.3.1 Specifications of standard refrigerant compressor

Table 1: Maximum output of refrigerant compressor

Engine designation		Refrigerant compressor Type	Output "L" [kW]	Cooling output "Q" [kW]
Petrol	2.0l 85 kW SRE	SANDEN SD7H15	--- ²⁾	--- ²⁾
		SANDEN SD7V16	--- ²⁾	--- ²⁾
	2.0 l 150 kW FSI	DENSO-6SEU14	5.71 ¹⁾	8.32 ¹⁾
		DENSO-7SEU17	6.99 ¹⁾	9.93 ¹⁾
Diesel	2.0 l TDI 62 kW to 2.0l TDI 132KW	DENSO-6SEU14	5.71 ¹⁾	8.32 ¹⁾
		DENSO-7SEU17	6.99 ¹⁾	9.93 ¹⁾

1) Values on the refrigerant compressor at high pressure $P_d = 1.47$ MPaG, suction pressure $P_s = 0.196$ MPaG and rotation speed $N = 4000$ rpm, 2) Figures were not available at the copy deadline.

Table 2: Weight of refrigerant compressor

Engine designation		Refrigerant compressor type	Weight [kg]
Petrol	2.0l 85 kW SRE	SANDEN SD7H15	6.59
		SANDEN SD7V16	6.30
	2.0 l 150 kW FSI	DENSO-6SEU14	4.60
		DENSO-7SEU17	5.22
Diesel	2.0 l TDI 62 kW to 2.0l TDI 132KW	DENSO-6SEU14	4.60
		DENSO-7SEU17	5.22

Table 3: Belt pulley diameter of refrigerant compressor

Engine designation		Refrigerant compressor Type	Pulley diameter	Transmission ratio "i" (crankshaft / air conditioning compressor)
Petrol	2.0l 85 kW SRE	SANDEN SD7H15	120mm	--- ²⁾
		SANDEN SD7V16	120mm	--- ²⁾
	2.0 l 150 kW FSI	DENSO-6SEU14	100mm	1.38
		DENSO-7SEU17	100mm	1.38
Diesel	2.0 l TDI 62 kW to 2.0l TDI 132KW	DENSO-6SEU14	100mm	1.38
		DENSO-7SEU17	100mm	1.38

Table 4: Specifications of poly V-belt

Engine designation		Refrigerant compressor	Belt specification/part no.
Petrol	2.0l 85 kW SRE	SANDEN SD7H15	6DK 1195 / 06A.260.849.B
		SANDEN SD7V16	6DK 1195 / 06A.260.849.B
	2.0 l 150 kW FSI	DENSO-6SEU14	6PK 1577 / 06H.903.137.H
		DENSO-7SEU17	6PK 1577 / 06H.903.137.H
Diesel	2.0 l TDI 62 kW to 2.0l TDI 132KW	DENSO-6SEU14	6PK1555, SILENT GRIP / 03L.903.137.H
		DENSO-7SEU17	6PK1555, SILENT GRIP / 03L.903.137.H

2) Figures were not available at the copy deadline.

2.7.3.2 Connection dimensions of original refrigerant compressor

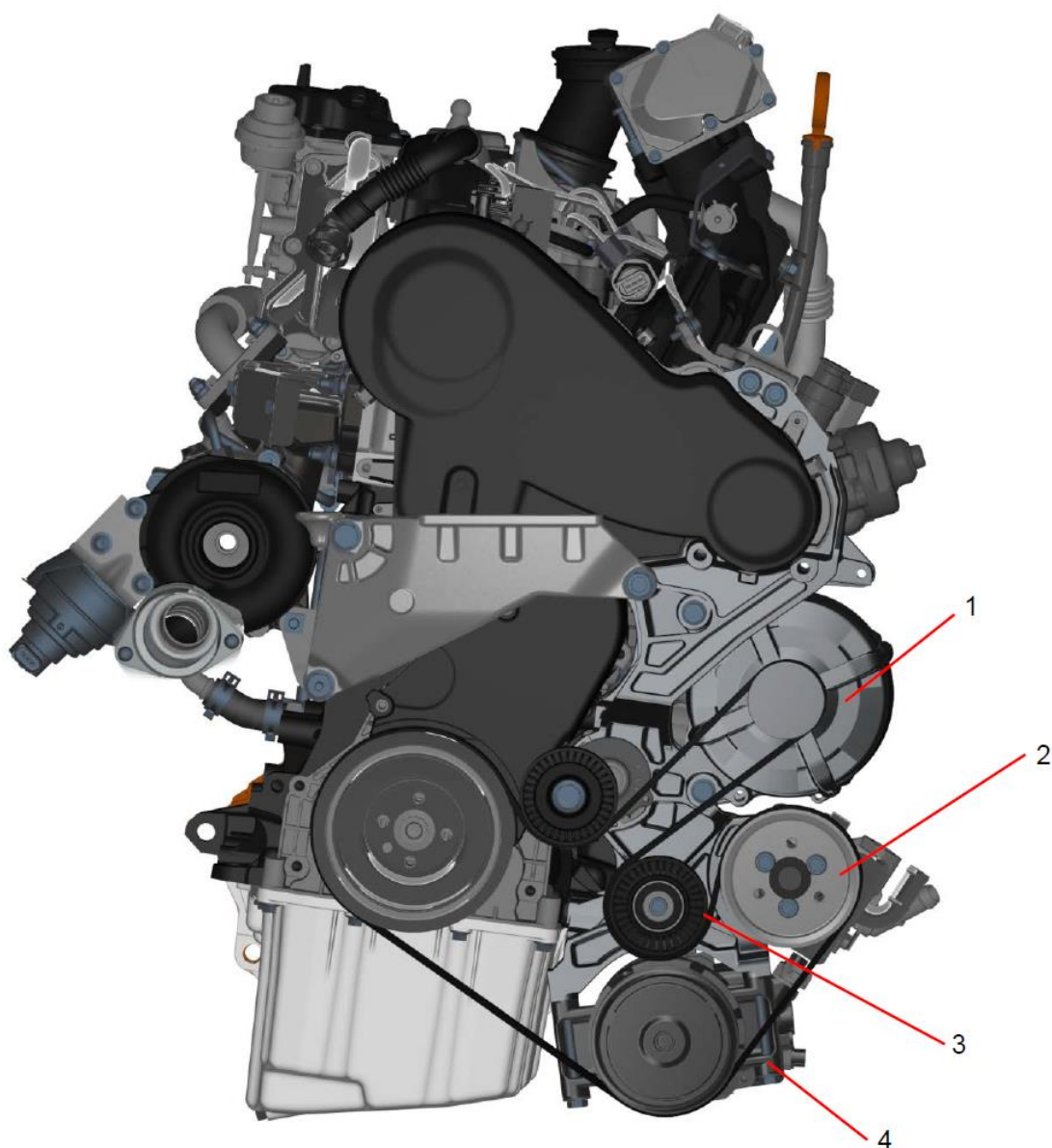


Fig. 2: Poly V-belt drive (TDI engine shown)

- 1 - Alternator
- 2 - Poly-V-belt pulley
- 3 - Reversing pulley
- 4 - Air-conditioning compressor assembly

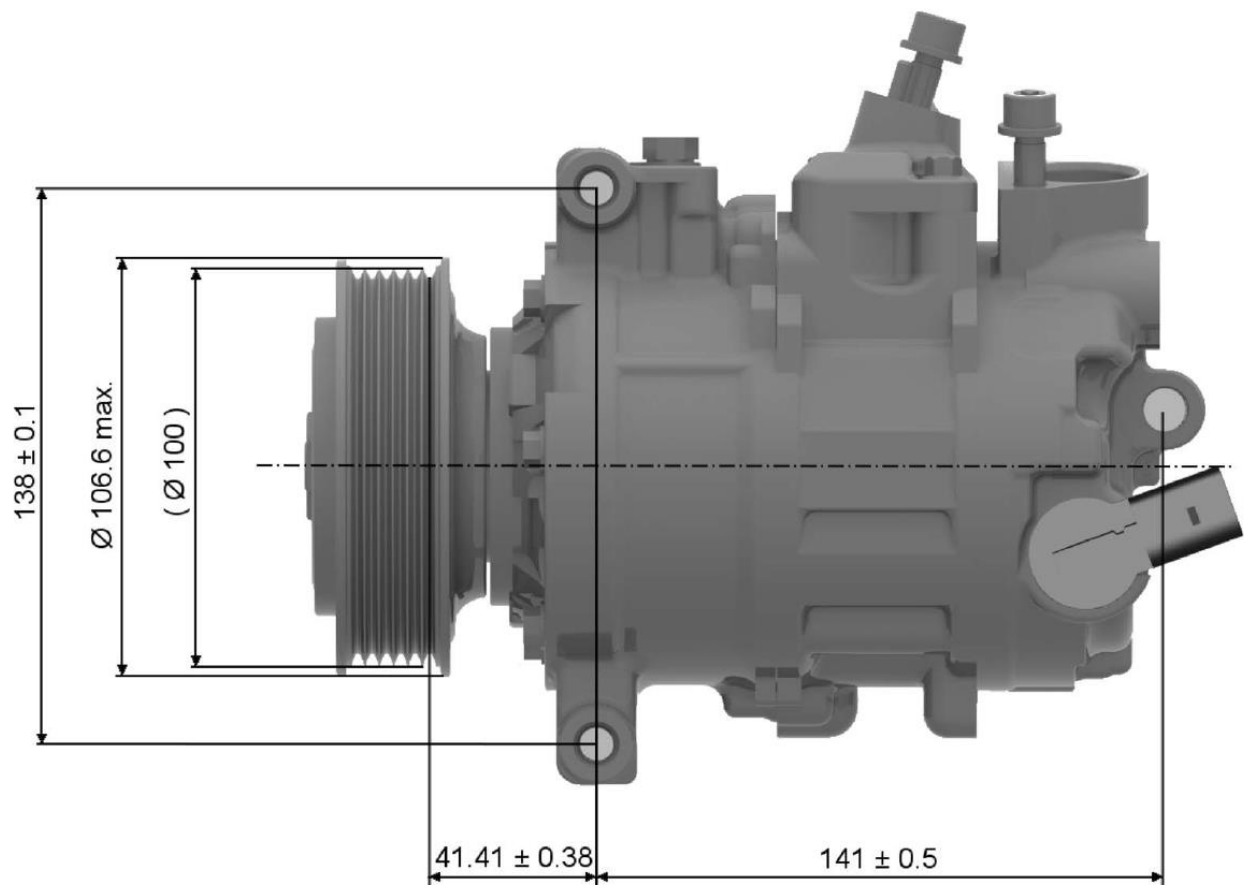


Fig. 3: Dimensions of air conditioner compressor DENSO-7SEU17 with pulley diameter 100 mm (side view)

1* Combi screw M8x28

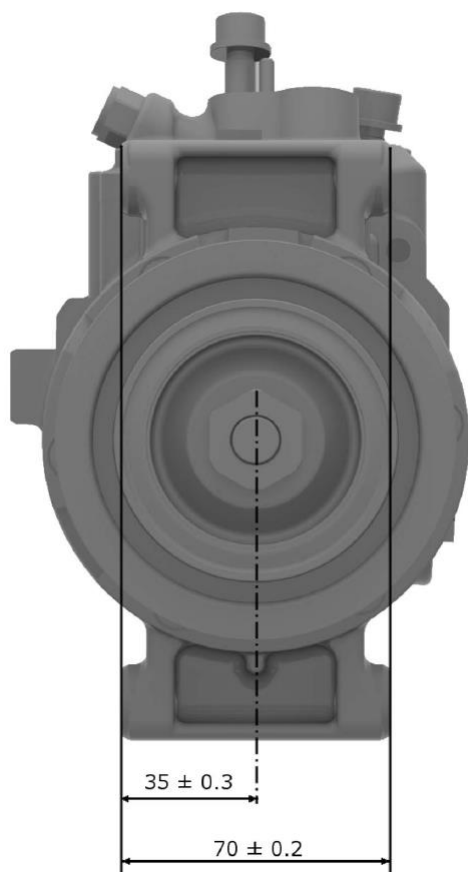


Fig. 4: Dimensions of air conditioner compressor DENSO-7SEU17 with pulley diameter 100 mm (front view)

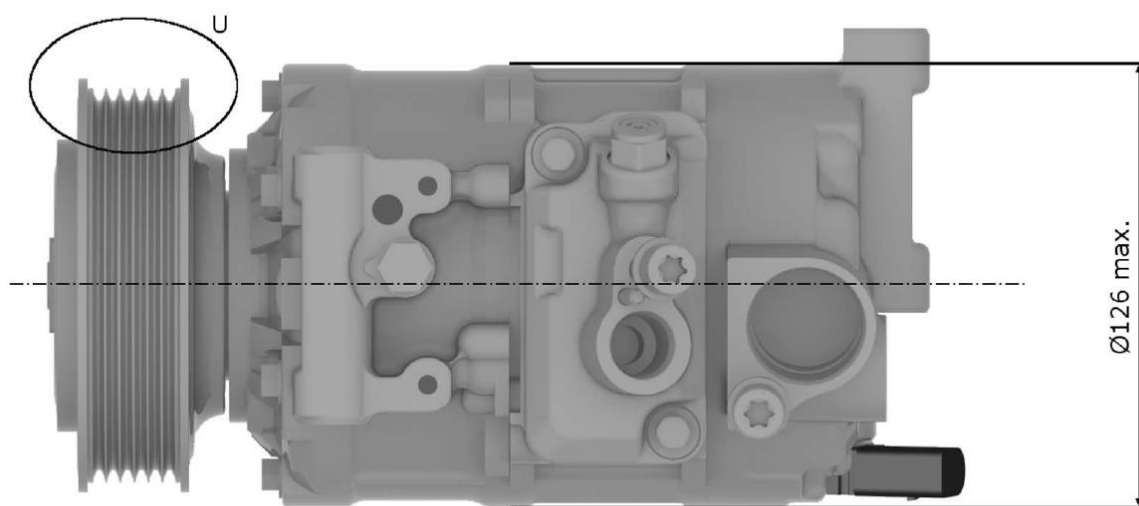


Fig. 5: Dimensions of air-conditioning compressor (top view)

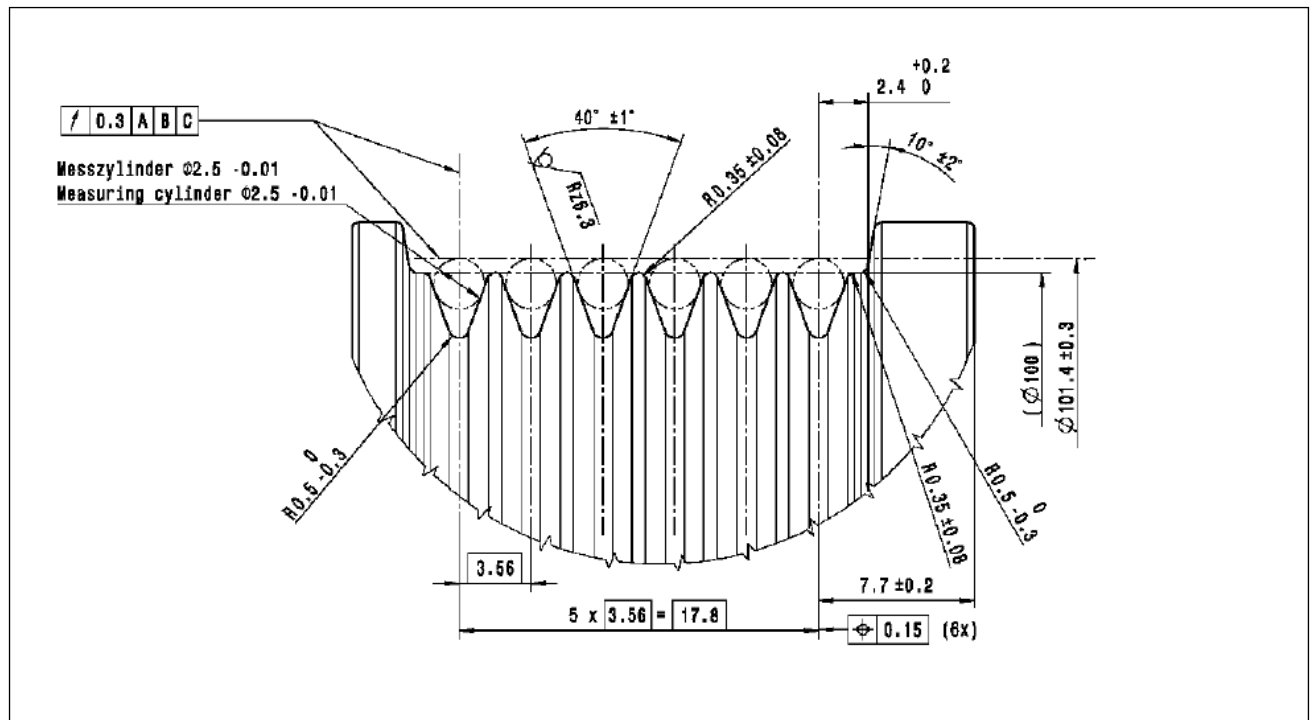


Fig. 6: Detail U - Drive pulley for air conditioner compressor DENSO-7SEU17

For more information about the conversion, refer to:

- Ancillaries (chap. 2.7.1)
- Vehicle battery (chap. 2.5.4)
- Electrical interface for special vehicles (chap. 2.5.2.3)

Please observe the installation and removal regulations of Volkswagen AG when performing conversions.

Information

For detailed instructions about the installation and removal, for example, of the poly V-belt, refer to the workshop manuals of Volkswagen AG on the Internet under **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):
<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

If ancillaries are used, the recommended ancillary drives should be used (see chapter 2.7 "Ancillary drives").

2.7.4 Installation and removal of the poly V-belt

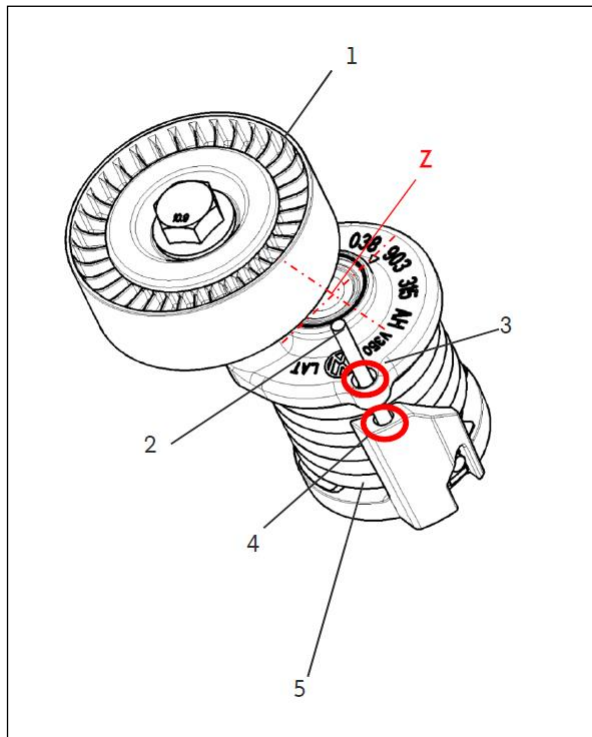


Fig. 7: Belt tensioner

- 1 - Belt tensioner
- 2 - Locking pin
- 3 - Moveable eye
- 4 - Fixed eye
- 5 - Spring
- Z - Midpoint of the central bolt

2.7.4.1 Removal of the belt

In order to remove the belt, it is necessary to turn the moveable eye "3" clockwise using a suitable tool until it overlaps with the fixed eye "4", and secure it with a locking pin "2" ($d = 5 \text{ mm}$). This means the spring pack of the belt tensioner is tensioned, the tension of the belt is removed and the belt can be removed. This position of the tensioner is referred to below as the **locking position**.

2.7.4.2 Installation of the belt

For installation, the belt must be guided over all units and reversing pulleys, and then finally placed over the belt tensioner. After the locking pin has been removed (which is only permitted in installed condition), the spring is released and turns the pulley anticlockwise and transfers the clamping force to the belt. You must ensure that the belt tensioner can operate within its defined working range by using a suitable **belt length** (in particular if this does not correspond to the initial equipment status). The position of the tensioner in the installed position at rest (engine off) is referred to below as the **nominal position**. From this position, the belt tensioner is capable of compensating for tolerances and belt stretching due to temperature, etc.

At the **lower limit stop**, the spring pack is slackened and cannot exert tension on the belt any longer.

2.7.4.3 Working range of the belt tensioner:

The following display (Fig. 8) shows various reference points of the working range and should make it easier to check that the belt tensioner is in the correct position.

This diagram does not provide any statement relating to the safety of a belt drive that is different from the series production status.

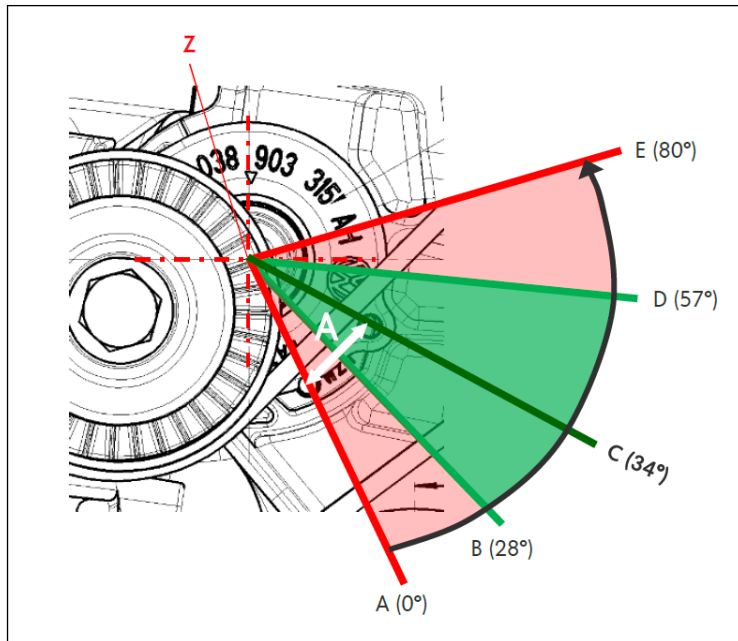


Fig. 8: Working range of the belt tensioner

A - Locking position 0° (overlap)

B - Start of working range 28°

C - Nominal position 34°

D - End of working range 57°

E - Bottom stop 80°

Angle [°]	Distance A [mm]	Position of the belt tensioner (abbreviation)
0	0	Locking position (A)
28	14.5	Start of working range (B)
34	17.5	Nominal position, NOM (C)
57	50.3	End of working range (D)

The angle is measured between the point of overlap (fixed eye) and the movable eye.

In the nominal position, it is 34°. It is not allowed to go beyond the working range from 28°-57°. For distance A, it is necessary to specify the actual dimension between the fixed eye and the moveable eye, assuming the moveable eye is in the working range. The distance in the nominal position is 17.5 mm.

Information

You will find further information in the Volkswagen AG workshop manuals on the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):
<http://erwin.volkswagen.de/erwin/showHome.do>

2.7.4.4 Belt routing

The function of the belt tensioner can be significantly impaired if the belt routing is changed from that of series production and passed over the idler roller of the belt tensioner. The bisector (1) between the arriving and departing sides of the belt should be almost at right angles ($\beta \approx 90^\circ$) to the lever arm of the belt tensioner in the working area. (Fig. 9)

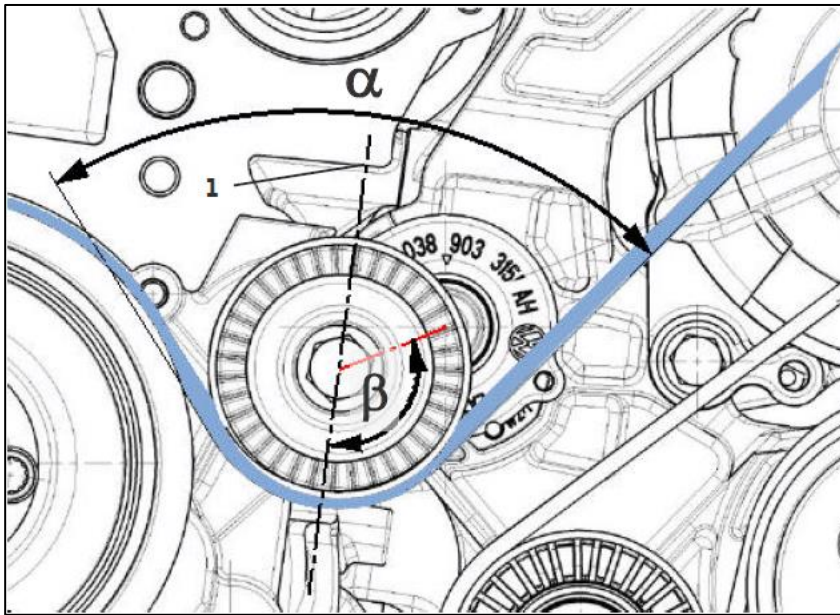


Fig.9: Belt routing around the belt tensioner

1 – Bisector of the arriving and departing sides of the belt around the belt tensioner

α – Angle of the belt routing around the belt tensioner

β – Angle between the bisectors of the arriving and departing sides of the belt in relation to the lever arm of the belt tensioner.

Information

You will find further information in the Volkswagen AG workshop manuals on the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

2.8 Add-ons/units

2.8.1 Roof rack

Roof loads raise the centre of gravity of the vehicle and lead to a high dynamic axle load shift. Also, there is greater body lean when driving on rough roads and when cornering. The driving characteristics are significantly impaired. For this reason, roof loads should be avoided if at all possible.

Depending on the load distribution, it is necessary to have at least 2 base supports which should be fitted in the areas of the pillars wherever possible.

In the panel van and the window van (short wheelbase), there are 4 mounting points on each side as standard.

In the long wheelbase, there are 5 mounting points as standard.

We recommend the preparation for movable roof load carriers (PR no. 3S4) if there will be frequent use with a roof carrier or for flexible positioning of a smaller roof carrier.

This provides additional mounting points on the roof. Please refer to the dimensional drawings for the positions/location of the mounting points.

In the panel van with normal roof, providing certain preconditions are met (higher number of mounting points on the roof and use of special roof racks) then it is possible to have a higher dynamic roof load. Please contact us for more information (see chapter 1.2.1.1 Contact in Germany and 1.2.1.2 International contact).

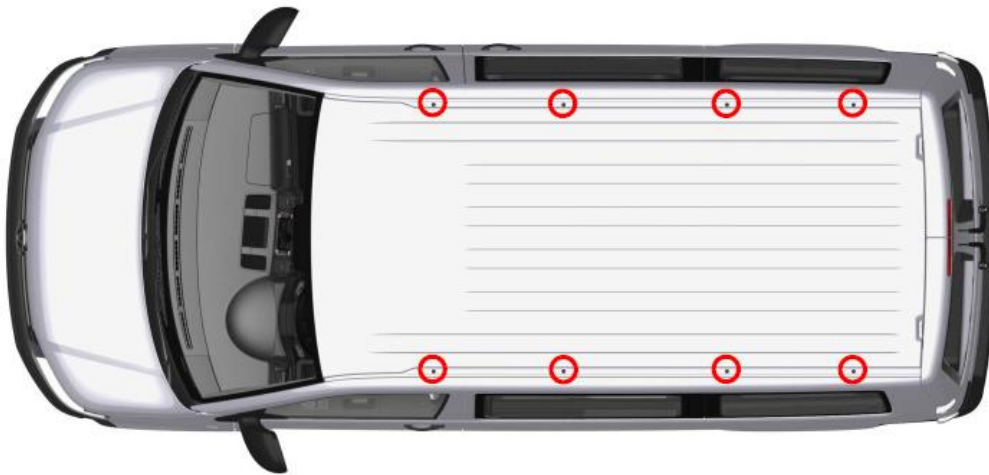


Fig. 1: Standard roof mounting points in panel van and window van (short wheelbase)

There are 2 mounting points in the roof on each side in the double cab.

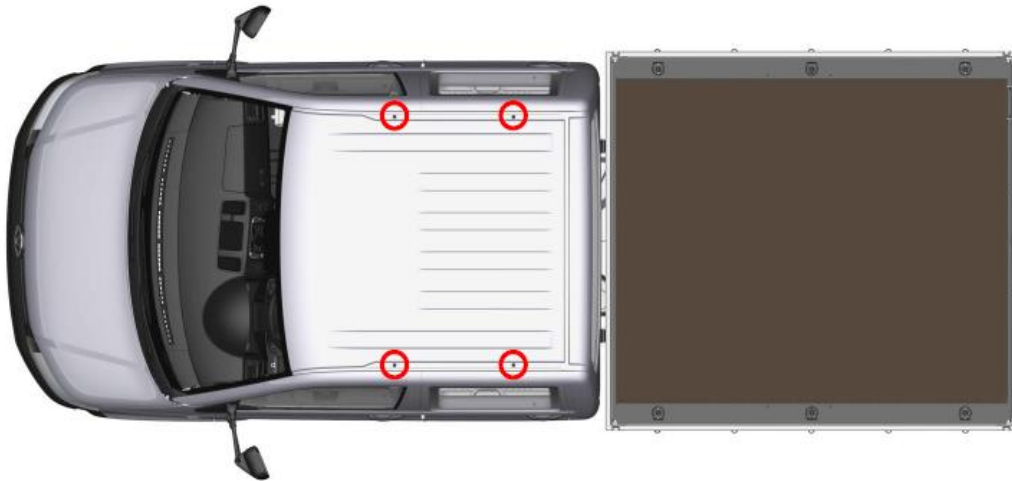


Fig. 2: Standard roof mounting points in double cab

There is 1 mounting point in the roof on each side in the platform van.



Fig. 3: Standard roof mounting points in platform van

For further information, see:

- Roof loads (see chap. 2.3.1)

2.8.2 Towing brackets/clearance acc. to DIN 74058

Only towing brackets approved by the factory are permitted to be used as hitches.

Towing brackets (ball hitches) can be ordered as additional equipment ex-works using the following PR no.:

- 1D1 (in combination with ESP including trailer stabilisation)
Trailer load max. 750 kg unbraked and 2,000 – 2,500 kg brakes (depending on engine) with 12% hill climbing ability.
- 1D2 (in combination with ESP including trailer stabilisation)
As above, but removable and lockable.

The permitted drawbar load is 100 kg.

The max. permitted gross combination weight specified in the papers is not allowed to be exceeded. The actual weight of the trailer load is not allowed to exceed the permitted gross weight of the towing vehicle.

Comply with the following points when retrofitting a towing bracket:

- Comply with the regulations of the country in question, in this regard see also ECE Regulation ECE-R 55 and EC Directive 94/20/EC (in the valid version).
- The necessary clearance of the trailer behind the towing vehicle must be guaranteed (DIN 74058).
- The vehicle shall be presented to a motor vehicle test centre with responsibility for this matter.
- No factory-fitted extension to the towing bracket is available.
- There are attachment points in the vehicle longitudinal members.
- Operation with the factory-fitted hitch may be excluded at a very low ride height or if there is a long body overhang, as well as after an extension of the overhang. No towing bracket extension is available from the manufacturer.
- The permitted gross combination weight (depending on the engine) must be ascertained prior to a retrofit.
- Unspecified details shall be selected in a reasonable manner.
- The test of dimensions and angles shall be undertaken with suitable length and/or angle measuring instruments.

For more information about the conversion, refer to:

- Maximum dimensions (chap. 2.1.5)
- Permitted weights and unladen weights (chap. 2.2.1)
- Vehicle battery (chap. 2.5.4)
- Electrical interface for special vehicles (chap. 2.5.3)

2.8.3 Mounting a liftgate

Notes for mounting liftgates:

- Before fitting a liftgate, perform a load distribution calculation to check for compliance with the permitted axle load and the minimum front axle load. (See chap. 2.2.1 and chap. 2.1.6.)
- Mounting a liftgate results in a load transfer away from the front axle and places a significant load on the rear axle. The minimum front axle load and the rear axle load shall be observed.
- Avoid overloading the axles.
- Stability must be guaranteed at all times, also during loading.
- If ordering the chassis for equipping with an electrohydraulic liftgate, we recommend using the additional battery (PR no.: 8FB) and an uprated alternator (see chap. 2.5.5)
- The chassis must be equipped with a mounting frame for mounting the liftgate (see note regarding the mounting frame).
- It is not permitted for a liftgate to be mounted on series production panel vans without special approval from the factory.

Information

For more information such as calculation examples, refer to chapter 7.2 Axle load calculation and the "Axle load calculation" document. The document is available from us on the body builder portal under the "Additional technical information" menu item.

Please also comply with the following chapters:

- Vehicle dimensions (chap. 2.1.1)
- Steerability (chap. 2.1.6)
- Permitted weights and unladen weights (chap. 2.2.1)
- Maximum dimensions (chap. 2.1.5)
- Vehicle battery (chap. 2.5.4)
- Electrical interface for special vehicles (chap. 2.5.3)
- Ancillary output engine / gearbox (chap. 2.7)
- Drilling on the chassis frame (chap. 4.2.1)
- Welding on the vehicle (chap. 4.2.2)
- Axle load calculation (chap. 7.2)

2.8.4 Accessories

You can purchase further extensive accessories for the Transporter through Volkswagen-Zubehör GmbH.

Information

For more information about this topic (Configurator, brochures and downloads), refer to the Volkswagen AG website:

<http://www.volkswagen-nutzfahrzeuge.de/>

and at:

<http://www.volkswagen-zubehoer.de/>

2.9 Lifting the vehicle

a) With lifting platforms

The vehicle is only allowed to be raised at the lifting points provided. Refer to the corresponding owner's manual for information about the lifting points.

b) With a jack

See the owner's manual for the procedure and jacking points on all vehicle variants.

Please note that the body builder must match the jack to the body.

The lifting points for lifting platforms on the ladder frame can be used (with large pads) and shall remain accessible even after the conversion. Alternative hard points must be created if this is not possible.

3 Modifications to closed bodies

3.1 Body-in-white/bodywork

3.1.1 Side wall cut-outs

The body and underbody form a self-supporting unit in the window van/panel van. Weight-bearing parts of this self-supporting unit are not allowed to be removed without replacement.

Partition walls do not have any weight-bearing function. They can be modified as far as removing them entirely.

Cut-outs for windows, doors, flaps, ventilation openings, etc. are only allowed to be made between the weight-bearing parts (pillars, roof frame and floor). Weight-bearing parts are not allowed to be cut into or weakened. The cut-outs must be provided with a continuous frame which has a force-locking connection to the adjacent weight-bearing parts.

Warning note

It is not permitted for the outer roof frame to be machined on vehicles with side head airbags!

Information

You will find further information on body assembly work on the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

3.1.2 Subsequent installation of windows

Subsequent installation of windows is complicated and costly. Therefore, it is advisable to order the required windows ex-works (see delivery range).

If windows are to be installed subsequently, proceed in accordance with the workshop manual for T5 model year 2011 (body assembly instructions, exterior, section 64 - Glazing/subsection 1.9 Side window, sliding door, panel van, postal and courier vehicles).

Information

For detailed instructions about the installation and removal of windows, refer to the workshop manuals of Volkswagen AG on the Internet under **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

Comply with the following points if smaller windows are to be installed:

- The cut-out is only allowed to be made between the pillars.

- No weight-bearing parts are allowed to be cut into or weakened.
- The cut-out must be provided with a continuous frame which has a force-locking connection to the adjacent weight-bearing parts.

3.1.3 Modifications to the roof of panel van/window van

The following points shall be observed if modifications are made to the roof structure of a panel van/window van:

- The all-round concept shall be retained, and adequate replacement rigidity shall be guaranteed.
- Impairments to the function of the rain/light sensor shall be avoided.
- Attachments similar to the roof rack are possible for subsequent attachment of add-ons.
- The vehicle constraints (strength, overall vehicle dimensions, registration, etc.) shall be considered with regard to attachments on the roof panel. (This does not apply to area illumination and spotlights.)
- The replacement rigidity of the new roof structure shall correspond to that of the standard roof.
- Following all conversion and installation work on the vehicle, surface and corrosion protection shall be applied to the affected points.

Information

You will find further information on body assembly work on the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

3.1.4 Roof cut-outs

Roof cut-outs as a preparation for subsequent mounting of tilting, pop-up and high roofs are currently not available ex-works.

Important note:

It is not permitted for the outer roof frame to be machined on vehicles with side head airbags!

3.1.4.1 Pop-up roof with large roof cut-out

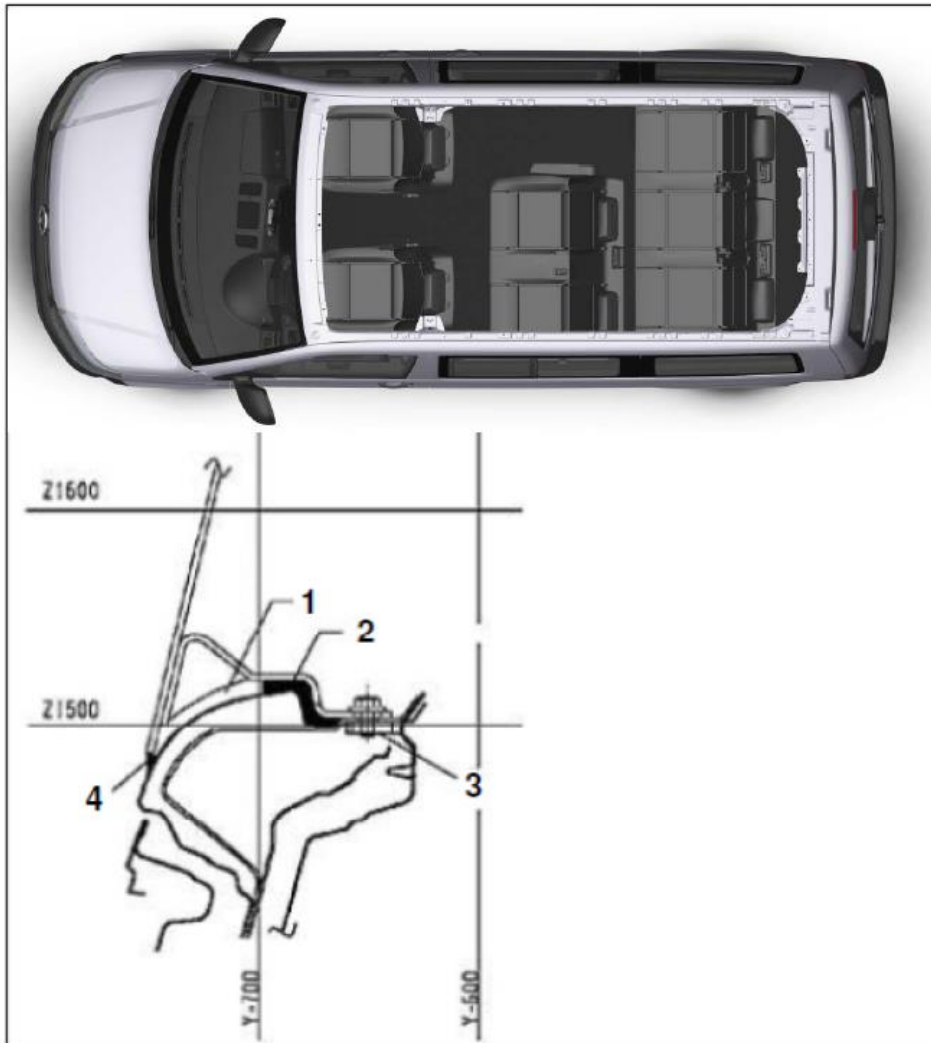


Fig. 1: Pop-up roof with large roof cut-out

- 1 - Mounting flange laminated all-round
- 2 - Bonding surface all-round
- 3 - Use the captive nuts of the roof carrier
- 4 - Seal

3.1.4.2 Subsequent mounting of a high roof

Volkswagen offers vehicles with a high roof ex-works for the 3,400 mm wheelbase.

If a high roof is installed subsequently by the body builder, the following conditions must be complied with:

1. The high roof shell must be made of 4 mm thick fibreglass-reinforced polyester and an attachment flange must be laminated into it all-round; this flange must be glued to the roof frame and screwed on.
2. The high roof must be mounted so it is sufficiently sturdy, and be sealed all-round.
For sealing, we recommend series production adhesive.
3. Roof height increases are only allowed to be made using integrated crossrails and reinforcement frames.
4. Roof crossrails or weight-bearing parts are not allowed to be removed without replacement or to be damaged.
5. The replacement rigidity of the new roof structure shall correspond to that of the standard roof.
6. The crossrails must be attached to the side walls in such a way that a force-locking connection is guaranteed (flexurally rigid connection between crossrails and roof frame).
7. Following all conversion and installation work on the vehicle, surface and corrosion protection shall be applied to the affected points.
8. The limit value for the maximum centre of gravity position (see chaps. 2.1.5 and 2.1.3) of the vehicle is not allowed to be exceeded.
9. Modifications on the rear gate and in the roof area must be avoided. If a tall sliding door or wing door is planned, an adequately firm replacement frame must be installed.

Information

For further information about general interior body repairs and series production adhesives, refer to the workshop manuals of Volkswagen AG on the Internet under **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

Information

In order to assess the operational strength of modified vehicles, we recommend, amongst other references, the VdTÜV code of practice 751:

"Assessment of design modifications to M and N vehicles with particular regard for operational strength; automotive engineering 751".

This can be obtained on the Internet at:

<http://www.vdtuev.de/publikationen/merkblaetter> **

** Subject to payment to VdTÜV

Please also comply with the following chapters:

2.1.3. "Vehicle centres of gravity"

2.1.5 "Maximum dimensions"

2.2.1 "Permitted weights and unladen weights"

2.2.6.3 "Influence of vehicle conversions"

2.3.1 "Roof loads"

2.3.2 "Modifications to the body-in-white"

2.3.2.10 "Corrosion protection measures"

2.4.1 "Modifications in the area of the airbag"

3.1.4.3 Subsequent roof cut-outs

Roof cut-outs are only possible between the roof crossrails and the side roof frames.

For details see Fig. 2.

No roof loads acc. to chap. 2.3.1 are possible if there is a roof cut-out.

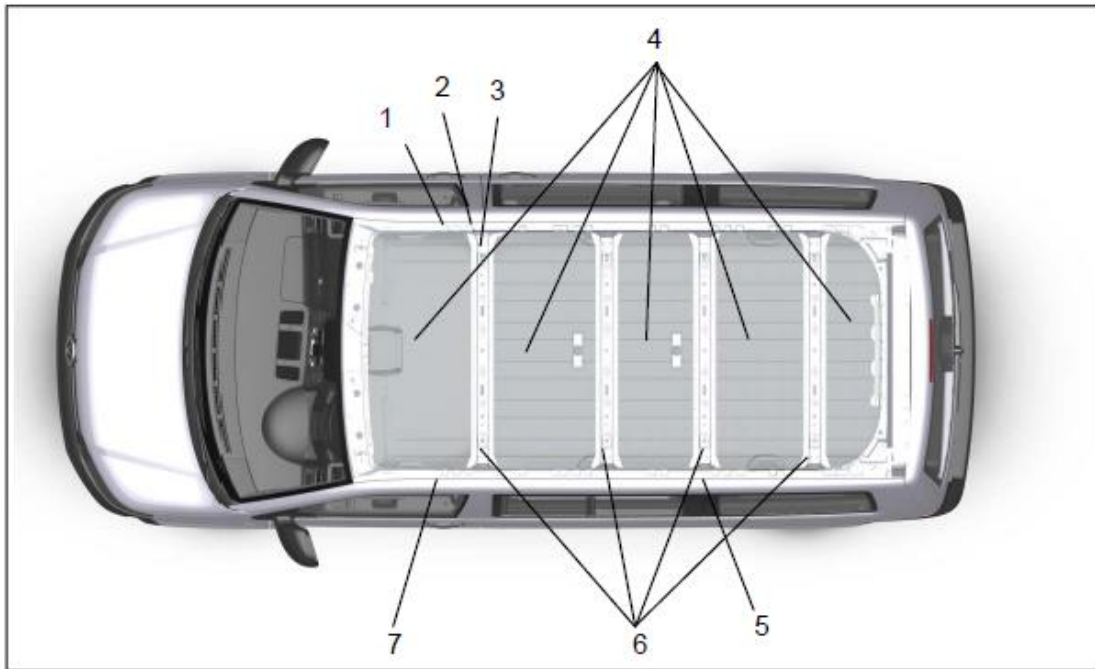


Fig. 2: Subsequent roof cut-outs

- 1 Roof frame right
- 2 B-pillar
- 3 Middle of roof frame
- 4 The cut-out shall be provided with an all-round frame having a force-locking connection with the adjacent, weight-bearing parts (crossrails and roof frame).
- 5 C-pillar
- 6 Roof bow
- 7 Roof frame left

For more information about the conversion, refer to:

- 2.1.3. "Vehicle centres of gravity"
- 2.1.5 "Maximum dimensions"
- 2.2.1 "Permitted weights and unladen weights"
- 2.9 "Lifting the vehicle"
- 3.1.1 "Side wall cut-outs"
- 3.1.2 "Subsequent installation of windows"
- 3.1.3 "Modifications to the roof of panel van/window van"
- 3.1.5 "Modifying the partition wall / forced ventilation"
- 4.2.1 "Drilling on the chassis frame"
- 4.2.2 "Welding on the chassis frame"

Information

You will find further information on body assembly work on the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):
<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

3.1.5 Modifying the partition wall / forced ventilation

Partition walls do not have any weight-bearing function. Partition walls can be removed entirely or in part in the panel van unless this is not allowed by accident prevention regulations or country-specific regulations. Any sharp edges resulting from removing the partition wall must be covered by taking suitable measures, e.g. edge protection sections. (See chapter 1.2.9 "Accident prevention")

The following partitions are available ex works as optional equipment for the panel van or window van:

PR no.	Description
ZZ3	Tall partition with fixed window as well as 8 load securing points (Transporter panel van)
ZZ4	Tall partition with sliding window as well as 8 load securing points (Transporter panel van)
ZZ2	Tall partition without window as well as 8 load securing points (Transporter panel van)
3CD	Partition, half-height (panel van, window van)
ZT7	Tall partition with fixed window (Transporter window van)
ZT8	Tall partition with sliding window (Transporter window van)
ZT6	Tall partition without window (Transporter window van)
YLG	Movable partition grille, infinitely variable in floor rails, tubular frame with metal grille (for Rockton Transporter)
3CU*	Partition wall preparation (Transporter panel van, normal roof, left-hand drive vehicle)

* Available for the Swedish market

You can obtain more information on optional equipment, depending on the vehicle model, from your Volkswagen customer service and from the Volkswagen Commercial Vehicles website at:
<http://www.volkswagen-nutzfahrzeuge.de/de/downloads.htm>

If installing non-original partitions, make sure that the selected forced ventilation cross sections correspond to those of the factory-fitted partition.

This is important in several respects:

- Closing comfort of the doors
- Possible flow rate of the heating blower
- Pressure equalisation on airbag deployment

The installed partition should have an type plate for clear identification.

If the partition is located behind the 1st row of seats (driver's compartment), then the potential seat adjustment range must be observed. (Comfort partition with larger bulge for the seat backrest)

If the genuine VW partition is not positioned behind the 1st row of seats (driver's compartment), the standard bolt-on points and bonding surface must be used to the greatest extent possible. (see chap. 3.1.6 "Partition connection points")
 You will find further information on the standard bolt-on points as well as installing and removing the standard partition in the Volkswagen AG workshop manuals.

Information

Volkswagen AG workshop manuals and workshop information can be downloaded from the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

The partition should be adequately stable and acoustically insulated with regard to acoustic comfort.

The strength of the partition shall be validated according to ISO 27956, irrespective of the country in which the vehicle is to be marketed. Although validation according to this standard is not legally binding, it is a requirement of the trade association if the vehicle is used for commercial purposes. This strength validation shall be documented if the objective is to achieve a premium partnership.

3.1.6 Partition connection points

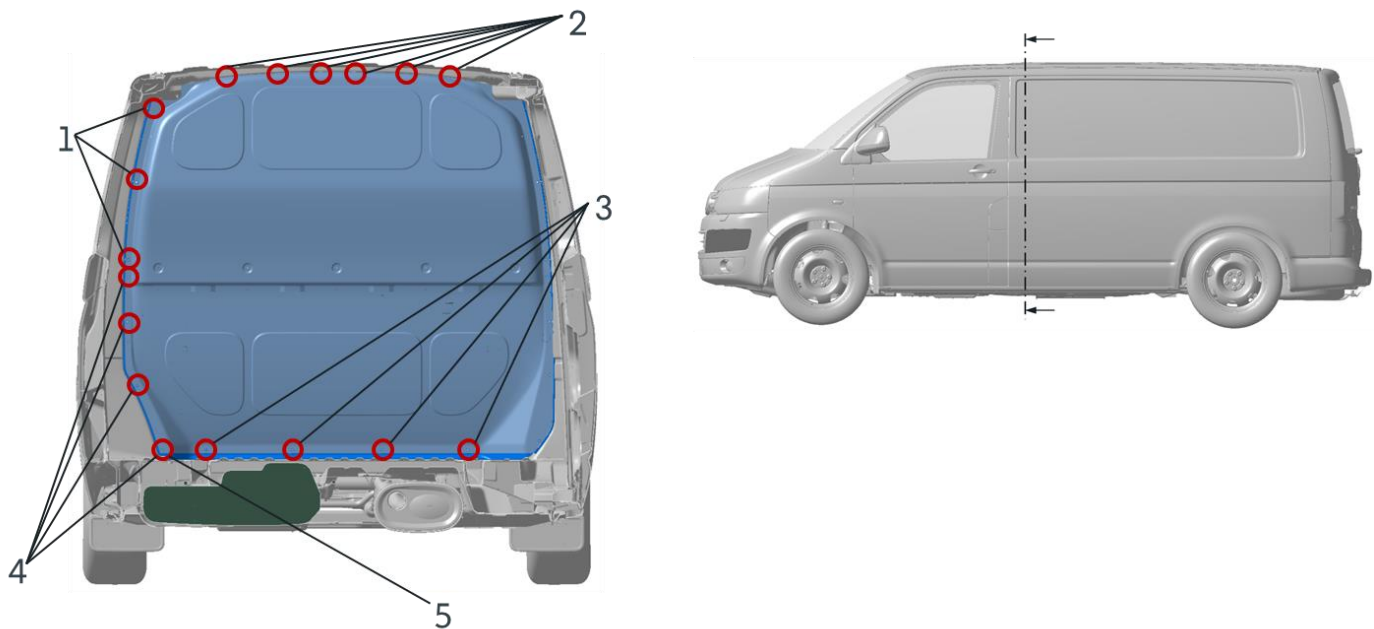


Fig. 1: Mounting points of the standard partition

Mounting points on the vehicle for the standard partition:

1. Top mounting brackets, on left and right each: 3x welded bolt M6
2. Roof bow (B-pillar area): 6x hexagonal hole WAF9, 7 mm suitable for pop rivet nut M6
3. Floor mounting bracket: 4x welded bolt M6
4. Bottom mounting brackets, on left and right each: 4x welded bolt M6
5. Floor mounting brackets, only left: 1x through-hole \varnothing 10 mm for using the welded bolt M6 of the mounting bracket at bottom left

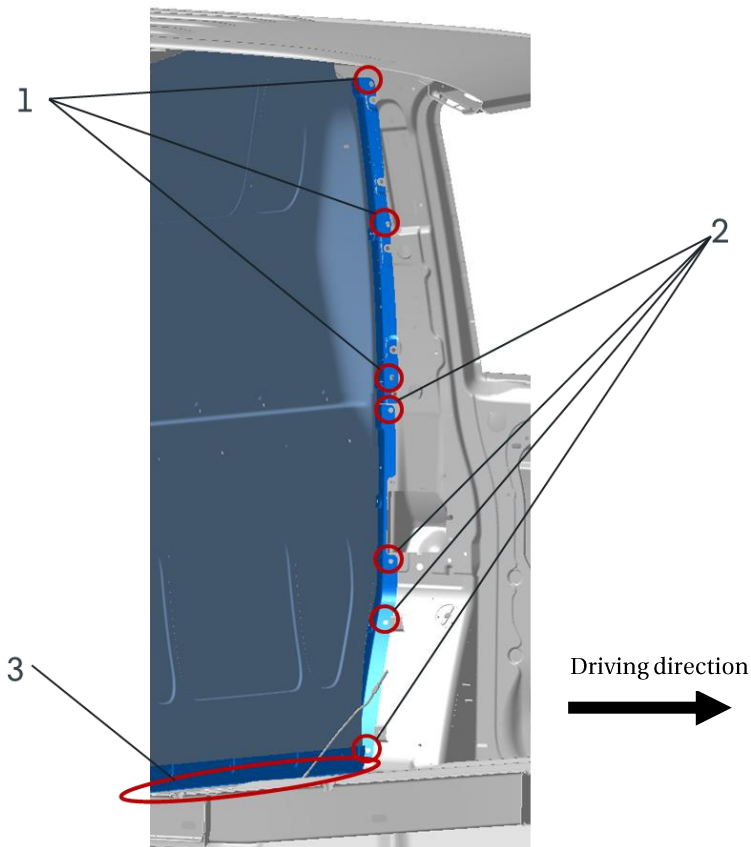


Fig. 2: Mounting points of the standard partition – view of driver's compartment left

Mounting points on the vehicle for the standard partition:

- 1.Side panel, left and right each: 3x hexagonal hole WAF9, 7 mm suitable for pop rivet nut M6
- 2.Bottom mounting brackets, on left and right each: 4x through-hole \varnothing 10 mm for hole welding on side panel
- 3.Floor mounting bracket welded onto floor panel

Practical note

The factory-fitted mounting points on the body for mounting the original partition wall (partition wall preparation PR no. 3CU) are only designed for this purpose and are exclusively allowed to be used for installing a fixed partition wall. Different use of the mounting points, e.g. attachment of net partition, installing shelves, etc. is not permitted.

3.2 Interior

The following points shall be observed without fail for conversions:

The driver and front passenger airbag units, the airbags and belt tensioners are pyrotechnical objects.

Their handling, transport and storage are subject to legislation on potentially explosive substances, and the responsible public authority or government agency shall therefore be notified. Purchase, transport, storage, installation and removal as well as disposal are only allowed to be performed by trained personnel in accordance with the corresponding safety regulations.

Modifications in the cockpit area and above the shoulder line shall be conducted in accordance with the criteria of the head impact tests acc. to ECE Regulation ECE-R 21 or EC Directive 74/60/EEC in the version 2000/4/EC. This applies in particular to the deployment areas of airbags (wood décor, additional installations, mobile phone holders, bottle holders, etc.).

Painting or surface treatment of the instrument panel, steering wheel impact absorber and the tear seams of the airbags is not permitted.

The permitted centre of gravity position and axle loads are not allowed to be exceeded.

The interior fitting-out shall be configured with soft edges and surfaces.

Installations shall be manufactured from flame-retardant materials, and be firmly installed.

Unhindered access to the seats shall be guaranteed.

No projecting parts, corners or edges that could cause injuries are allowed to be located in the area of the seats.

3.2.1 Safety equipment

Warning note

In case of interventions by the body builder in the structure of the vehicle, such as

- modifications to the seats and consequently altered kinematics of the occupants in case of a crash
- modifications to the front body
- installations of parts in the vicinity of the exit openings and the deployment range of the airbags (see owner's manual of the vehicle)
- installation of third-party seats
- modifications to the doors

the safe function of the front airbag, side airbag and belt tensioners is no longer guaranteed. This could result in personal injuries.

No vehicle components that give rise to vibration are allowed to be attached in the vicinity of the airbag control unit or the sensor installation locations.

Modifications to the floor structure in the area of the airbag control unit or the satellite sensors are not allowed either.

Important note:

Please note that deactivation of the side airbag causes the airbag warning light on the dashboard to light up continuously. For information about the deployment zones of the airbags, refer to the owner's manual of the vehicle.

3.2.2 Seat retrofitting / seats

Seat retrofits are exclusively possible in the window van, because this vehicle provides the corresponding seat reinforcements on the floor panel. Please refer to chapter 1.5.1 "Selection of the base vehicle" in this regard.

It is essential not to exceed the height of the centre of gravity (H-point) if retrofitting seats.

(See definition of H-point acc. to VW DIN 80310)

We recommend ordering equipment PR no. 2Q1, "modular seat attachment" from the start.

Refer to the build dimension drawings for more information and current documents about the position of the H-point.

If changes are made to the seat, it is necessary for the fuel tank to be removed if holes are drilled in the floor panel in the area of the fuel tank.

Comply with the workshop manuals of Volkswagen AG (see also chapter 2.6.3 "Fuel system").

The strength data for seats available ex-works is only valid in conjunction with the original attachment elements.

Warning note

When the seat belts and seats are re-fitted, the prescribed bolts must be used and tightened to the original torque.

You will find detailed information on torques in the workshop manuals.

When installing seat belts and belt locks, only components from the production supplier may be used:

If other seat belts and belt locks are installed than those available from the factory, ensure that all registration-related regulations (e.g. belt lock position) are observed. (Please also refer to chapter 2.4.2.1 "Belt anchor points".)

Practical note

Country-specific laws, directives and approval regulations shall be observed!

Information

Volkswagen AG workshop manuals and workshop information can be downloaded from the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):

<http://erwin.volkswagen.de/erwin/showHome.do>

*Information system of Volkswagen AG, subject to charges

Rear seats with 2 or 3-point seat belts differing from the standard seats must meet the requirements of EC Directive 76/115/EEC and 74/408/EEC.

Risk of injury

The attachment of seats to the wheel housing is not permitted. Otherwise the seats could be torn out of the anchoring points in the event of an accident.

Warning note

If seats other than those available from the factory are installed with factory seat belts, only belt locks may be used that fit with the buckles on the factory seat belts. Otherwise the seat belt cannot be locked in the belt lock as intended and persons could be injured in the event of an accident.

3.2.2.1 Seat retrofitting/seats cab

It is not possible subsequently to replace the individual front passenger seat for a double bench seat, because this requires extensive modifications to the base vehicle.

Please contact us before starting your conversion (see chap. 1.2.1)

3.2.2.2 Seat retrofitting/seats passenger compartment

When VW genuine parts and series production anchor points are used for seat retrofitting, this work must be undertaken with regard to STVZO 19/3 and the reference to the type test release of the vehicle manufacturer for the registration.

Practical note

Country-specific laws, directives and approval regulations shall be observed!

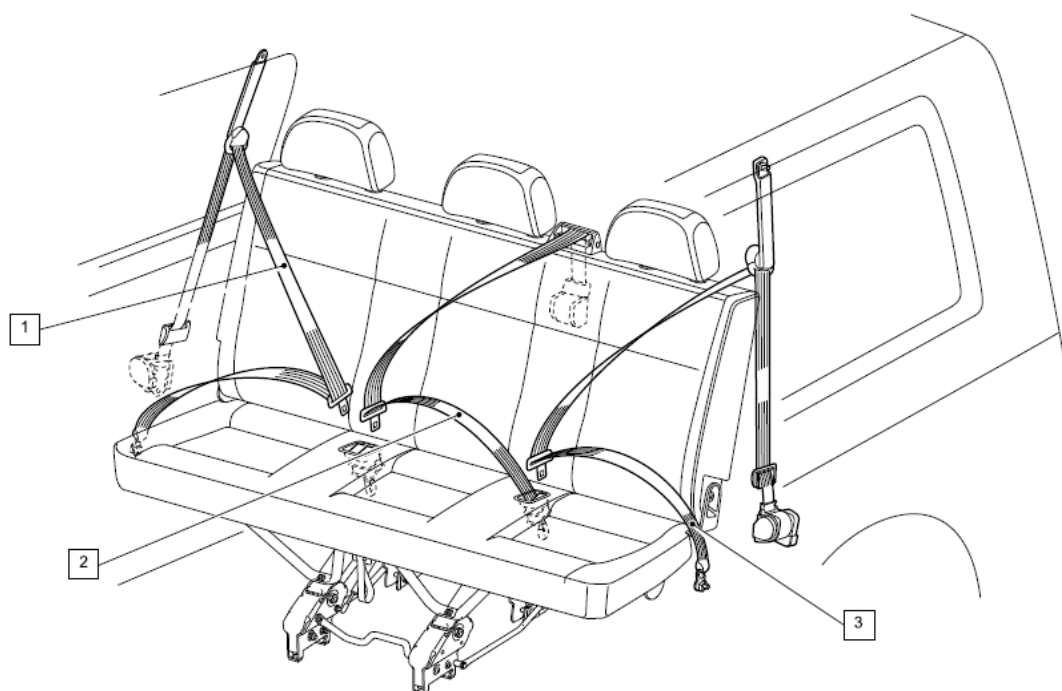


Fig. 1: 3-seat bench, window van long wheelbase, three-point seat belt on body and integrated three-point seat belt (2nd seat row)

1 Seat belt ASSY

2 Seat belt ASSY with clamp

3 Seat belt ASSY

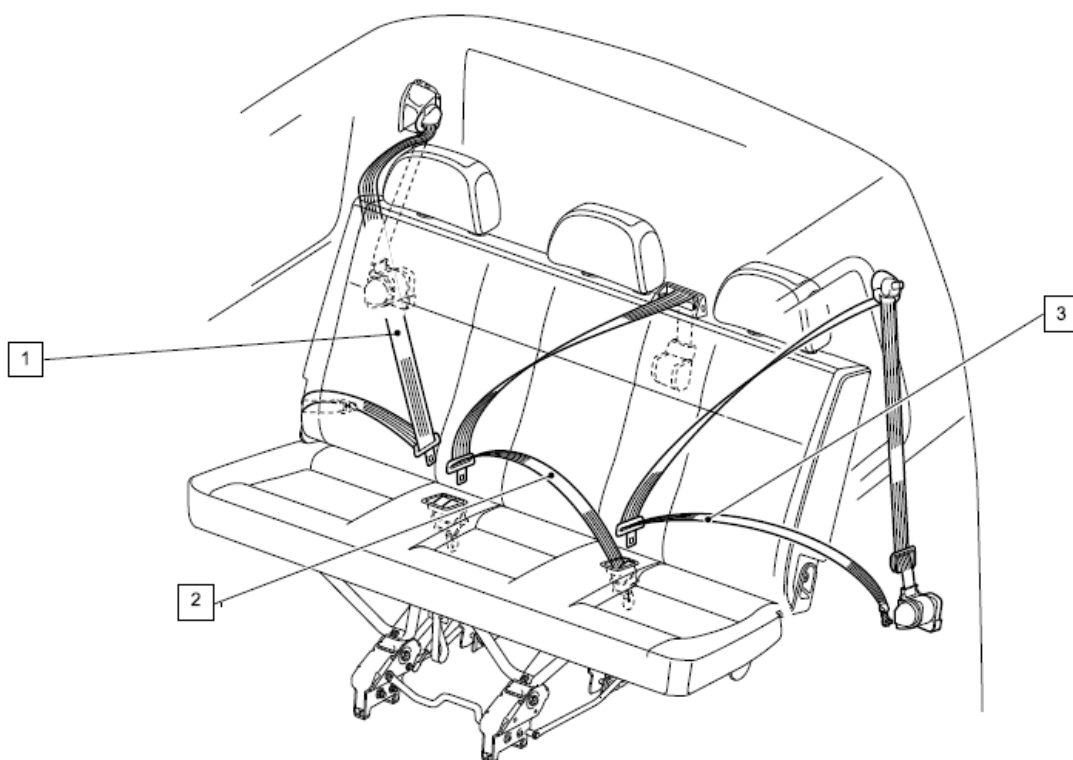


Fig. 2: 3-seat bench, window van long wheelbase, three-point seat belt on body and integrated three-point seat belt (3rd seat row)

1 Seat belt ASSY

2 Seat belt ASSY with clamp

3 Seat belt ASSY

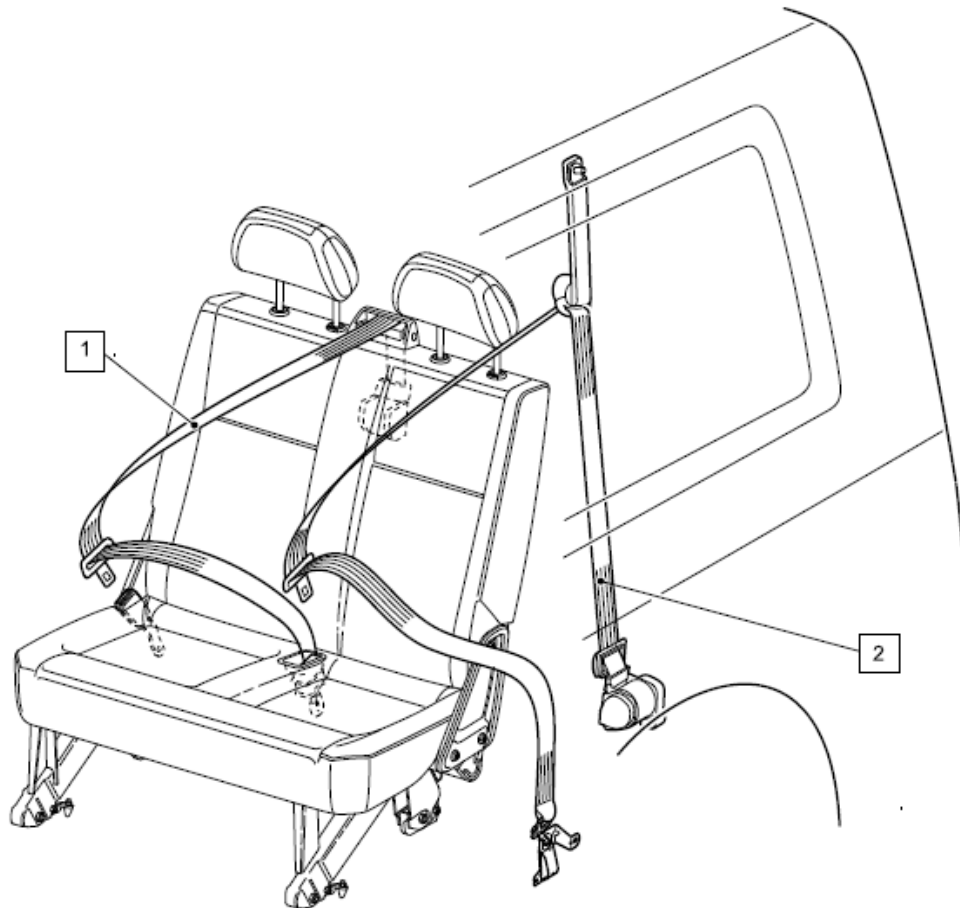


Fig. 3: 2-seater bench, window van long wheelbase, three-point seat belt on body and integrated three-point seat belt (2nd seat row)

1 Seat belt ASSY with clamp

2 Seat belt ASSY (also Easy Entry LOR and modular seat attachment system)

Procedure for retrofitting the seat bench:

- If fitted, removal of the floor covering
- Removal of the corresponding components on the underbody
- Drilling holes with a diameter of 12 mm in the floor panel through the holes in the flanges of the cross members, in which case the actual dimension of 110 mm must be complied with, in accordance with the distance between the bolts in the fastening rails.
- Corrosion protection then has to be carried out
- Make sure that the hole pairs belonging to a seat or sear bench, and thus the fastening rails, are arranged in parallel to one another
- Insert the fastening rails from above, note the installation direction
- Screw connection of the fastening rails using M10 nut with washer (WHT 003.219)
- Installation of the corresponding components on the underbody acc. to Volkswagen AG workshop manual and the associated reinforcements (assembly parts) acc. to Volkswagen directive. Please also comply with the reference to erWin* in this regard
- Lay the floor covering in the interior if necessary. In advance, if necessary, mark the hole pattern on the floor covering showing the layout of the fastening rails
- Install cover 7H0.883.087 and secure using the bolt N 906.487.02.
- Installation of the seat bench
- Installation of the seat belts

All belt attachment points are present in the vehicle. If the body builder undertakes its own solutions for seat attachment and belt anchoring, then the body builder bears sole responsibility.

The following EEC directives must be complied with for vehicle registration acc. to STVZO 19/3:

- Seat belts and anchoring:
 - + EEC 77/541 Safety belts and restraint systems
 - + EEC 76/115 Anchorages for safety belts
- Seats and anchoring:
 - + EEC 74/408 Seats and their anchorages

3.2.2.3 Seat retrofit / seat bench opposite to direction of travel

It is not possible subsequently to install a seat bench opposite to the direction of travel, because this requires extensive modifications to the base vehicle.

It is recommended for the equipment PR no. 3UK, 2nd seat bench opposite to direction of travel (with steep backrest), or 3UQ 2nd seat bench opposite to the direction of travel to be ordered right from the beginning.

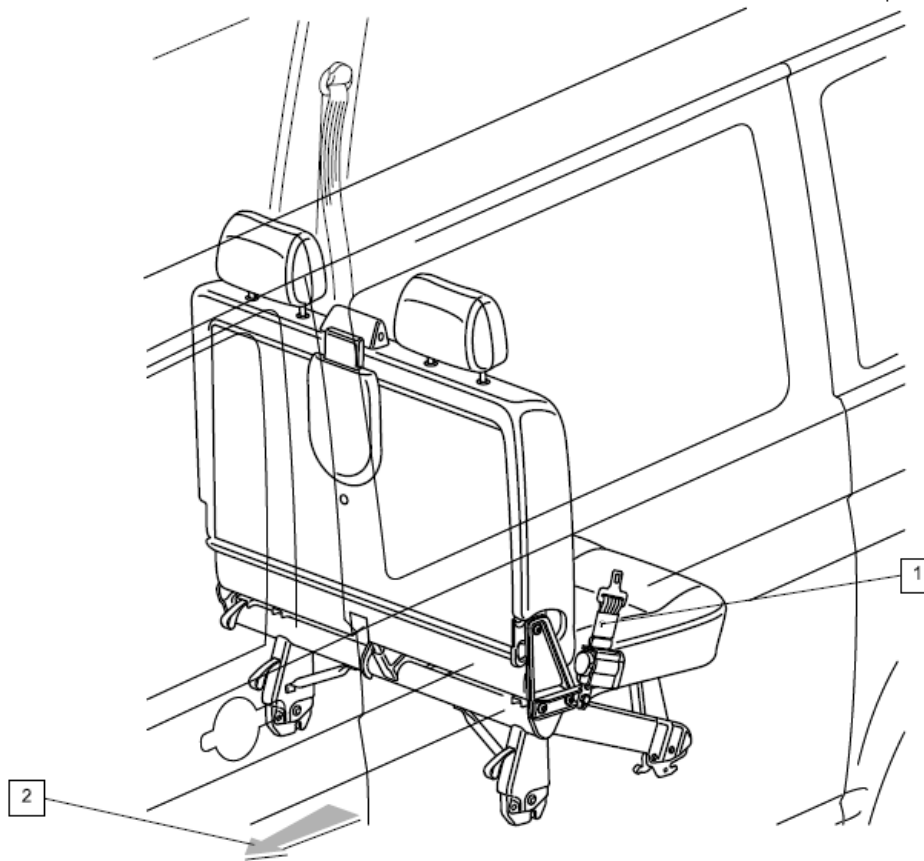


Fig. 4: 2nd seat bench window van long wheelbase, opposite to direction of travel, with three-point seat belt on the C-pillar and integrated three-point seat belt. (2nd seat row)

1 lap belt/retractor (2nd seat row)

2 Seat bench opposite to direction of travel

In order to clarify your technical questions on the base vehicle, we offer you the opportunity to use the contact form on the body builder portal to make direct contact with support for commercial vehicle body builders.

Please contact us before starting your conversion (see chap. 1.2.1)

Please also comply with the following chapters:

- 2.2.1 "Permitted weights and unladen weights"
- 2.3.2 "Modifications to the body-in-white"
- 2.4.1 "Modifications in the area of airbags"
- 2.4.2 "Modifications in the area of seats"
- 3.2.1 "Safety equipment"

3.3 Add-ons

3.3.1 Retrofitting rear luggage carrier/rear ladders

The following points must be complied with if rear luggage carriers or rear ladders are retrofitted:

They must be configured so that no static or dynamic loads are exerted on the bumpers after they have been fitted.

The maximum load on the tailgate is 75 kg.

Practical note

Rear wing doors are not allowed to be loaded with additional weight!

4 Modifications to open bodies

4.1 Delivery of chassis

Numerous regulations must be complied with regarding the delivery of chassis on their own wheels, e.g.:

- Wheel cover
- Ballast weight for braking
- Side impact protection
- Lighting equipment

These parts are not stocked; they would make delivery on the vehicle's own wheels unnecessarily expensive.

For this reason, purchaser-collection of chassis is no longer available. Delivery should be by rail/truck transport.

4.2 Chassis frame

4.2.1 Drilling on the chassis frame for additional mounting points for special bodies

The longitudinal members are hollow sections. If it is necessary to drill there, this is only permitted in the neutral zone (middle of longitudinal member, but sufficiently far away from the flange). In addition, spacer bushes must then be welded in (see Fig. 1).

Holes made at the factory in the upper and lower chords of the longitudinal members are not allowed to be drilled out or increased in size. Equally, these holes are not allowed to be used for attaching any units.

Holes for the passage of pipes, electric cables, control cables, etc. as well as for attaching add-on parts (clamps, etc.).

In exceptional circumstances, we can agree for holes to be made in the web of the longitudinal members or in the cross members. However, it is essential to contact us in this case.

When series production components are removed and subsequently installed, the torques specified in the "Installation guidelines for workshops" must be observed without fail.

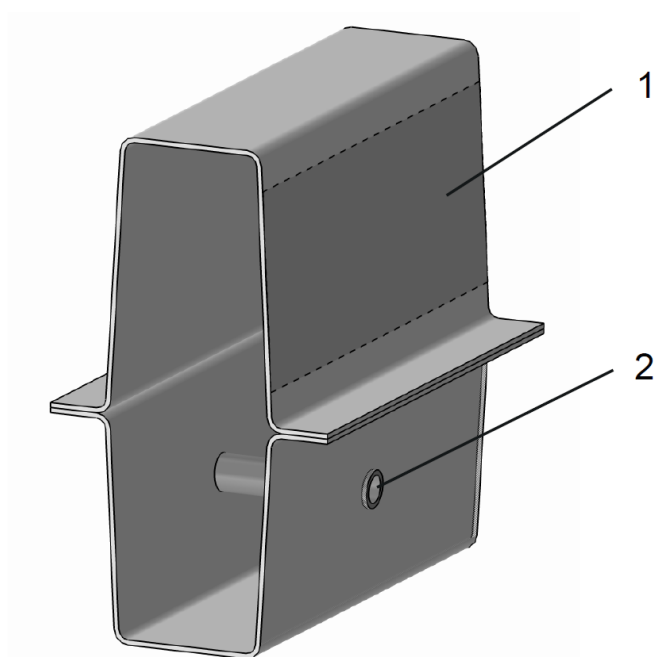


Fig. 1: Longitudinal member with spacer bush

1 Neutral zone

2 Welded bush

For more information about the conversion, refer to:

2.2.10 Wheelbase and overhang extensions

4.2.2 Welding on the chassis frame

4.3 Subframe for light commercial vehicles

4.4 Standard attachment points for special bodies

4.2.2 Welding on the vehicle

As little welding work as possible should be carried out on the vehicle frame, and only in exceptional circumstances.

Comply with the following points without fail:

- Disconnect the vehicle battery before conducting welding work on the vehicle.
- If concealed cables are damaged with the battery disconnected, this can result in serious damage due to short circuits.
- During electrical welding work, the earth terminal of the welding machine must be directly connected to the part of the vehicle that is to be welded. Otherwise, the powerful current and the high voltage peaks that arise could cause damage to the mechanical and electrical parts of the vehicle.
- Only inert gas welding methods should be used.
- In exceptional circumstances, well dried stick electrodes – 2.5 mm – with a lime-based shroud are also allowed to be used.
- When welding in additional brackets, etc., it is only permitted to weld in the "neutral zone".
Plug welding (see Fig. 2) must be preferred in all cases. Avoid making welds at right angles to the frame.
- Brackets for add-ons must be in accordance with the series production.

Note:

The anti-corrosion layer applied to the longitudinal members is destroyed by the heat occurring in the welding area during welding. Therefore, this must be restored by suitable measures.

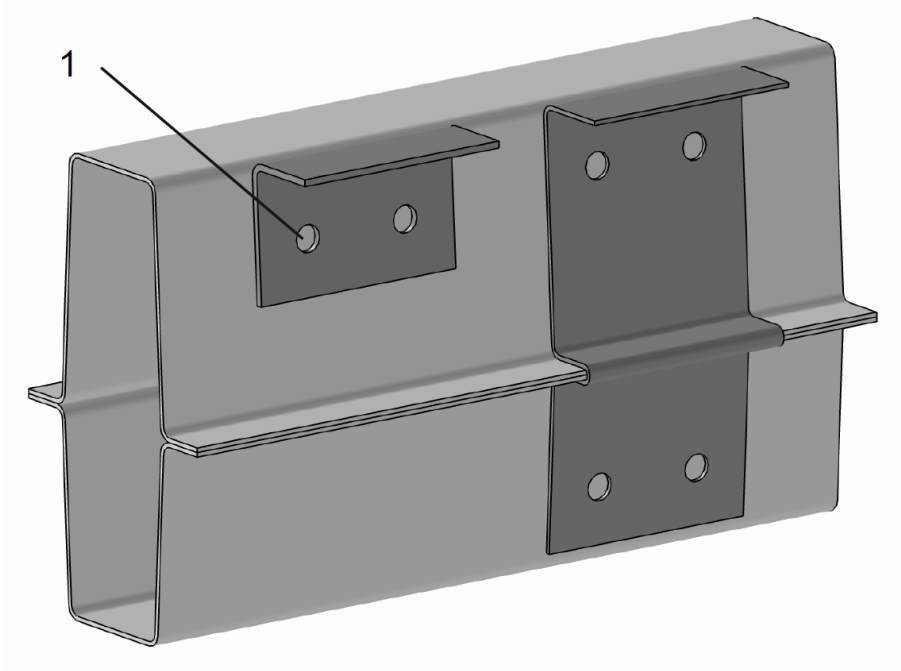


Fig. 2: Example of longitudinal member with additional brackets

1- Plug welding

For more information about the conversion, refer to:

2.2.10 Wheelbase and overhang extensions

4.3 Subframe for light commercial vehicles

4.2.1 Drilling on the chassis frame

4.4 Standard attachment points for special bodies

4.2.3 Extensions to the wheelbase and overhang

Please observe that changes to the wheelbase are only possible on vehicles without ESP (see chap. 2.2.6).

To satisfy the statutory ESP requirement (Europe), Volkswagen Commercial Vehicles provides special ESP data (e.g. different wheelbases, centre of gravity heights, as well as for 2 and 3-axle vehicles) for a number of special conversions. The vehicle needs to be taken to Volkswagen AG for an inspection of the vehicle modifications.

Please contact us before starting a conversion (see chap. 1.2.1).

If a wheelbase extension is required, the **long wheelbase** should be used as the starting point.

The max. permitted gross weights, axle loads, rear overhangs (the latter depending on the wheelbase), etc. shall be complied with (see chap. 2.2.1 "Permitted weights and unladen weights").

Example for the frame extension of the chassis (see Fig. 3):

- ST 1203 material
- Material thickness 2 – 3 mm

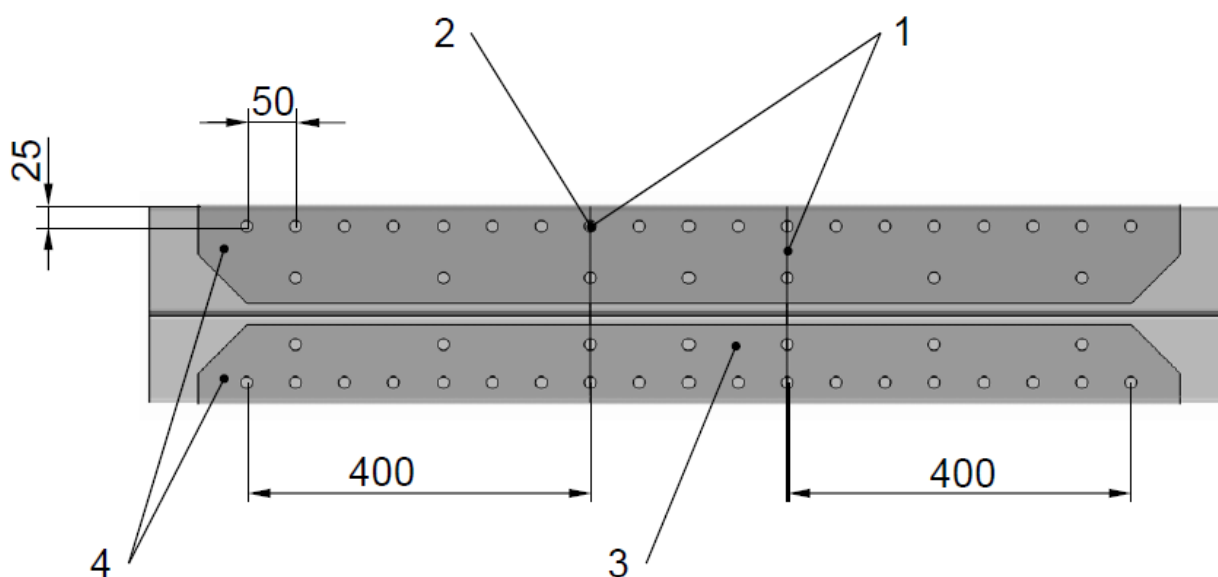


Fig. 3: Example for the frame extension of the chassis, side view

- 1 - Butt welded all-round
- 2 - Plug welded, $d = 12 \text{ mm}$
- 3 - Extension piece inserted into the main frame
- 4 - U-shaped connecting lugs passed over from above and below

For more information about the conversion, refer to:

2.1.5 Maximum dimensions

2.2.1 Permitted weights and unladen weights

2.2.6 Modifications to the brake system

2.9 Lifting the vehicle

4.2.1 Drilling on the chassis frame

4.2.2 Welding on the vehicle

4.3 Subframe (mounting frame)

4.4 Standard attachment points for special bodies

4.2.4 Sections of the chassis frame

Sections of the chassis frame can be seen in the build dimension drawings (see chap. 6.1 Build dimension drawings).

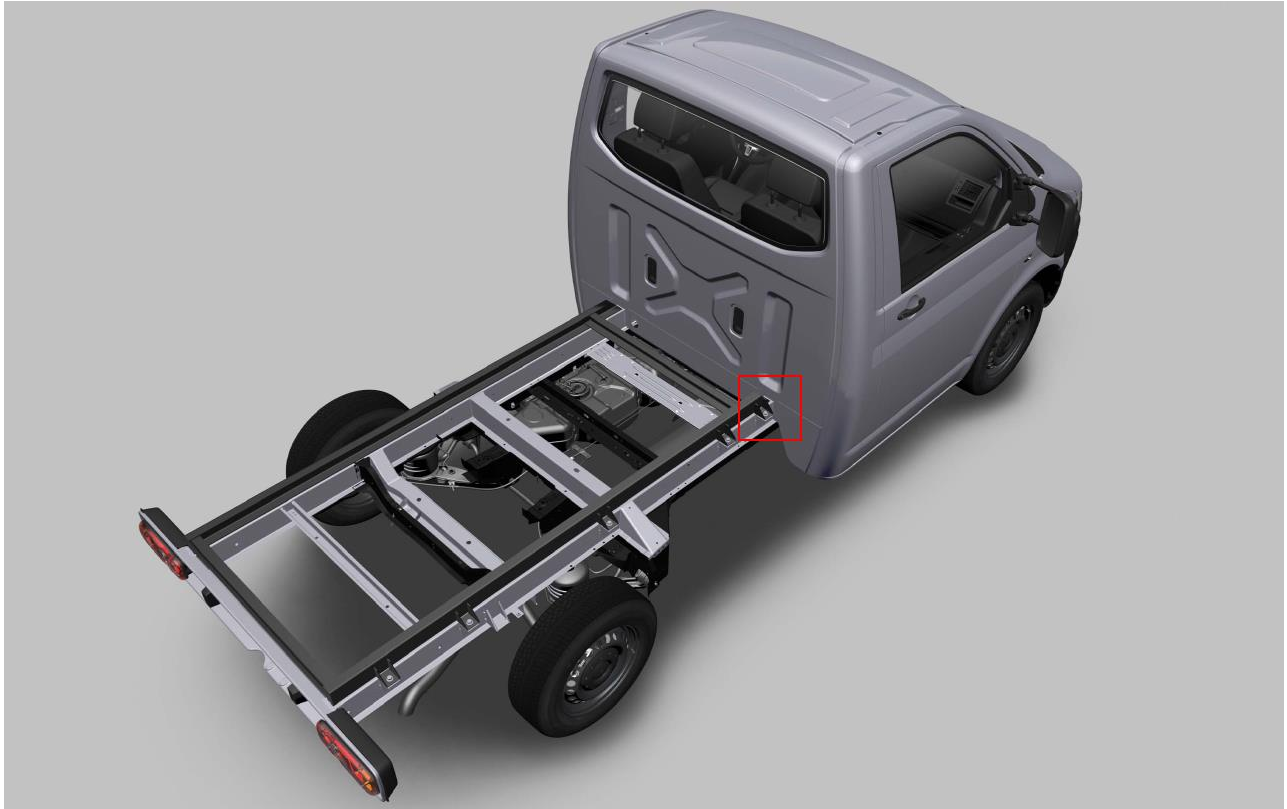
4.3 Subframe for light commercial vehicles

4.3.1 Configuration of the subframe

The purpose of the subframe or mounting frame is to distribute the applied point loads evenly over the vehicle frame.

Recommendation for configuring a flat subframe:

- Profile taper $\leq 45^\circ$
- Rounded under the profile edge at the end with radius $R = 0.5 t$
- Distance from cab wall $\geq 10 \text{ mm}$
- Wall thickness $t_{\text{subframe}} < t_{\text{main frame}}$



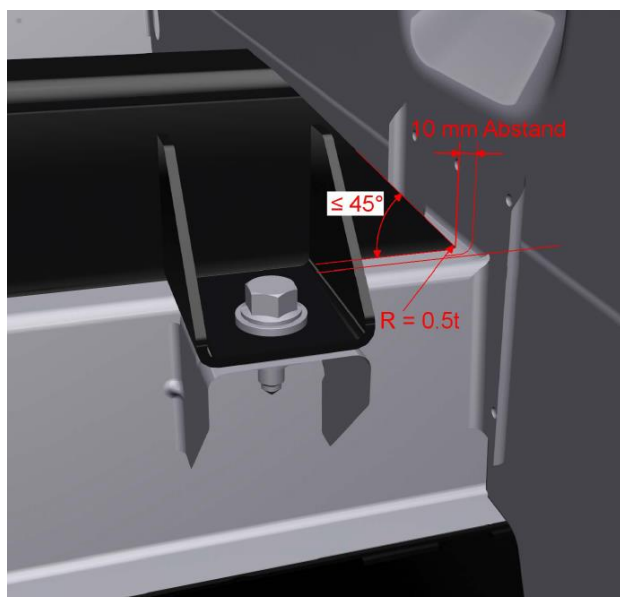


Fig. 1: Sample configuration of a mounting frame

t - wall thickness

R - radius

4.3.2 Material

The subframe shall be designed according to the load and the body requirement.

If alternative materials such as aluminium are used, the strength of the subframe shall at least correspond to that of a steel frame.

4.3.3 Longitudinal member

The subframe shall be configured as a ladder frame throughout (see Fig. 1) and extend from the rear end of the frame as far as the cab if at all possible.

In order to achieve a gradual transition in the profile strength, the front end of the subframe longitudinal member must be tapered at an angle $\leq 45^\circ$ or notched (see Fig. 2), in which case the front end of the subframe lower chord must be rounded with a radius ($R = 0.5 t$) towards the frame.

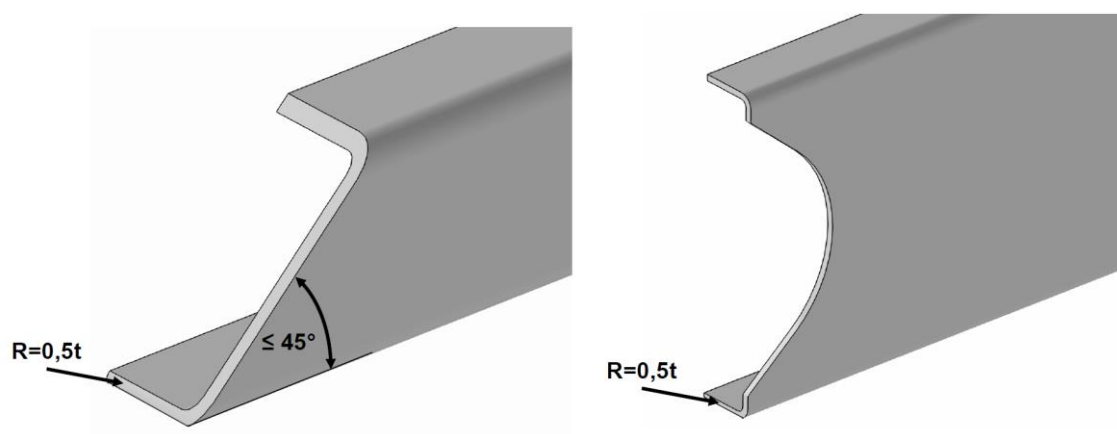


Fig. 2: Sample configuration of the subframe longitudinal member (front end)

4.3.4 Cross member

Cross members shall be provided at least in the front and rear areas to ensure the structure is torsionally rigid (see Fig. 1).

In general, the subframe is not allowed to be closed against the box section in the front area.

Cross members must be provided in order to stiffen the subframe; it is advantageous for these to be arranged at the mounting points on the subframe.

As a rule, the cross members are made from open (e.g. U-section) or closed sections for higher strength.

4.3.5 Attachment of the subframe

The subframe and self-supporting bodies shall be attached to the chassis using all available brackets.

For attachment, use bolts with strength class 10.9 in conjunction with the nuts that are welded into the brackets as standard.

If you do not wish to use the nuts welded in as standard, it is possible to drill out the internal threads of the nuts. In this case, the body builder must use suitable washers or sleeves to ensure that the counterpart of the screw connection makes good, flat contact. Responsibility for a screw connection differing in this manner lies fully with the body builder.

The position of the mounting points on the vehicle frame is shown in the build dimension drawing (see chap. 6.1 Build dimension drawings).

The subframe must make contact with the brackets (see Figs. 3 and 4). Direct contact between the subframe and frame does not have to be made, except at the bracket contact points.

Self-supporting bodies with adequate floor stiffness can be attached directly to the standard brackets on the frame by means of a base frame.

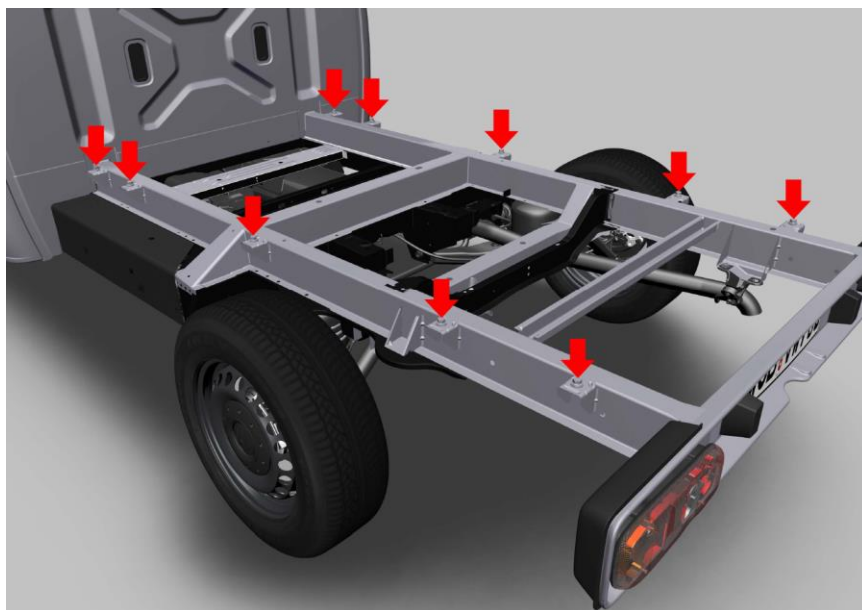


Fig. 3: Brackets on the vehicle frame

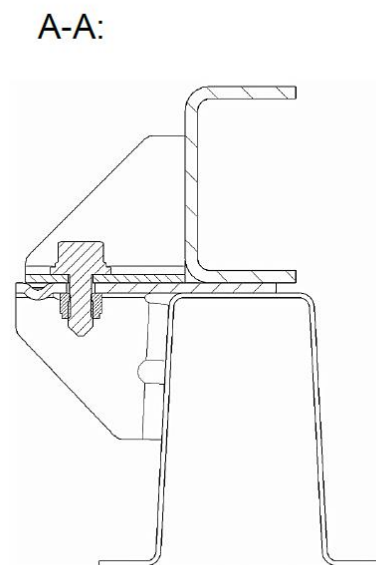
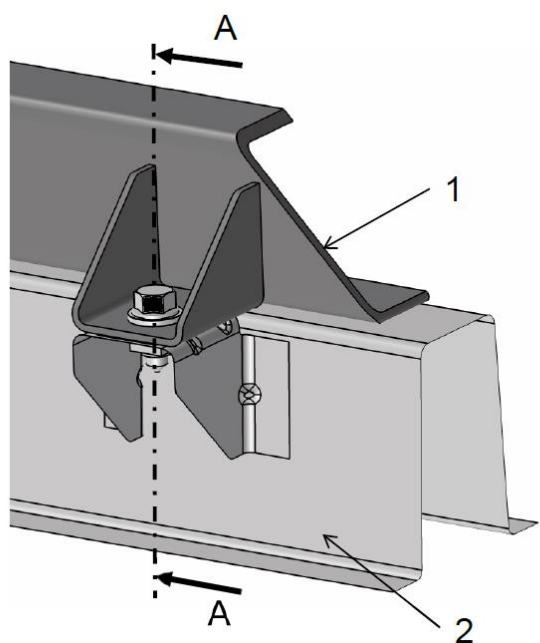


Fig. 4: Attachment of the subframe to the vehicle frame

1 - Subframe

2 - Chassis frame of the Transporter

For more information about the conversion, refer to:

1.5 Planning bodies

1.6 Optional equipment

2.1.5 Maximum dimensions

2.2.1 Permitted weights and unladen weights

2.2.10 Wheelbase and overhang extensions

2.8 Add-ons/units

2.9 Lifting the vehicle

4.2.1 Drilling on the chassis frame

4.2.2 Welding on the vehicle

4.4 Standard attachment points for special bodies

4.4 Standard attachment points for special bodies

The vehicle frame is a hollow section construction consisting of pressed sheet metal parts.

The precautions have been taken in the design to ensure that all the circumstances of attaching special installations are taken into account.

Brackets are welded onto the longitudinal members for attachment of the special installations.

Each bracket has a $D = 11.5$ mm hole in it. (See also chap. 4.3.5 "Attachment of the subframe")

Comply with the following points when mounting a body:

- The attachment between the body and vehicle frame should always use all brackets.
- The screw connection onto the brackets shall be force-locking.
- The gap between the brackets above the vehicle frame does not need to be filled in.

4.5. Cut-out on the rear cab wall

The max. cut-out is restricted by the B-pillars, the B-crossrail and the floor of the cab.

Important notes:

- Roof crossrails or weight-bearing parts are not allowed to be removed without replacement or to be damaged.
- The strength and rigidity of the cab structure are not allowed to be changed.
- It is necessary to comply with ECE-R14, EC Directive 76/115/EEC, 74/60/EEC and the "kerb test"
- The connection between the crossrail and the side wall must be flexurally rigid.
- If it becomes necessary to make a cut in the back wall of the cab in order to perform a conversion or to effect an installation then this is possible in conjunction with a frame around the outline of the cut. The replacement rigidity provided by the frame must be at least that of the original rigidity.
- Changes to the cab are not allowed to impair the function of any safety-relevant components (such as airbag units, sensors, pedals, selector lever, cables, lines and the like). This can lead to a failure of components and safety-relevant parts.
- The connection between the box body and the cab must be shape-locking and elastic. The connection is not allowed to be force-locking, but must be configured so that the torsional forces which occur between the box body and the cab are not directly transferred to the cab, but are absorbed within the connection instead.

For more information about the conversion, refer to:

2.2.1 Permitted weights and unladen weights

3.1.4 Roof cut-outs

4.2.1 Drilling on the chassis frame

4.2.2 Welding on the vehicle

4.4 Standard attachment points for special bodies

4.6 Bodies with a high centre of gravity

The information about max. height of centre of gravity given in chap. 2.1.3 must be complied with.

Please also comply with the following chapters:

2.1.3. Vehicle centres of gravity

2.1.5 Maximum dimensions

2.2.1 Permitted weights and unladen weights

2.2.6.3 Influence of vehicle conversions on the function of the brake control system ESP

2.3.2 Modifications to the body-in-white

4.7. Platform with tarpaulin and crossrail (ex-works)

The crossrails are not allowed to be loaded with additional weights, such as ladders, etc., adjacent to the tarpaulin.

For more information about the conversion, refer to:

2.1.1 Vehicle dimensions

2.1.5 Maximum dimensions

2.2.1 Permitted weights and unladen weights

2.2.6 Modifications to the brake system

2.5.1.3 Turn signals on excess width bodies

3.1.4 Roof cut-outs

4.4 Standard attachment points for special bodies

4.8. Information about mounting a loading crane

Due to the rarity of use, the conversion is not described further here.

We recommend contacting Volkswagen during the planning phase.

Please contact us before starting your conversion (see chap. 1.2.1)

Important notes:

No auxiliary drive from the gearbox is available; therefore the crane can only be operated with an electric pump unit or hydraulic pump.

Before fitting a loading crane, perform a load distribution calculation to check for compliance with the permitted axle loads and the minimum front axle load. (see chap. 7.2 Axle load calculation).

Information

For more information such as calculation examples, refer to chapter 7.2 Axle load calculation and the "Axle load calculation" document. The document is available from us on the portal under the "Additional technical information" menu item

If ordering a vehicle for equipping with a loading crane, we recommend using the additional battery (PR no.: 8FB).

The chassis must be equipped with a mounting frame for mounting the loading crane (see notes in chapter 4.3.1 "Configuration of the subframe").

Provide means of support for operation of the loading crane.

Please also comply with the following chapters:

- 2.1.5 "Maximum dimensions"
- 2.2.1 "Dimensions and weights"
- 2.5.4 "Vehicle battery"
- 2.5.3 "Electrical interface for special vehicles"
- 2.7 "Ancillary drives, engine/gearbox"
- 4.2.1 "Drilling on the chassis frame"
- 4.2.2 "Welding on the vehicle"
- 4.4 "Standard mounting points for special bodies"
- 7.2 "Axle load calculation"

4.9 Back-to-back cab

Contacting the Technical Body Builder Support is recommended for body builders intending to produce complete vehicles based on back-to-back cabs.

Please observe:

- Type of frame connection to the back-to-back cab
- Rear axle and rear wheel brake used (displacement, response pressure, brake force distribution)
- Interfaces to back-to-back cab
- Technical lighting equipment in accordance with the actual dimensions and the permitted total mass of the completed vehicle, etc.

5 Implementations of special bodies

5.1 Conversions for people with disabilities

Depending on the type of disabilities, a large number of driving aids are available as optional equipment from Volkswagen AG. For more information, please contact your Volkswagen partner.

Information

For more information, refer to the Volkswagen AG website at:

<http://www.volkswagen-nutzfahrzeuge.de/de/kundenloesungen/menschen-mit-behinderung.html>

5.1.0 Base vehicle equipment

When planning the special vehicle, select the equipment of the base vehicle according to the requirements of the future application (see also chap. 1.5.1 Selecting the base vehicle).

Please note that certain conversions are only allowed to be used by people with corresponding entries in their driving licence.

You can optimise your base vehicle in advance for the conversion by selecting the following optional equipment items:

- Upgraded battery and alternator.
- Sector-specific preparations.

Practical note

For ease of implementation, we recommend also ordering the multifunction control unit (UF8).

For further information, see chap. 2.5.3.4

5.1.1 Selection of steering box for conversions for people with disabilities

Please note that there is a choice of two different steering boxes in the Transporter. In addition to the standard power steering (PR no. 1N1), there is Servotronic steering (PR-NR 1N3) with speed-dependent steering support.

At higher speeds, Servotronic steering produces higher steering forces than the standard power steering.

Servotronic steering can be replaced by standard power steering subsequently if required.

5.1.2 Notes on conversion solutions for the wheelchair transporter

- If the routing of the exhaust system is modified or if sections of the pipe are cut out, it is necessary to ensure that there are adequate clearances to other components even when the exhaust system expands at operating temperature, and touching is avoided.
- The general certificate of roadworthiness of the whole vehicle will be invalidated if the exhaust system is modified. The wheelchair transporter is classified as a "special purpose" vehicle, which means the approval for the whole vehicle is retained. If a modified rear silencer is used, it is only necessary to provide verification of the noise level during "driving past at accelerated speed" for the vehicle.

- If modifications are made to the exhaust system and the fuel system, it is necessary to ensure adequate protection against fire by fitting heat shields.
- If the rear end is converted in order to create a flat loading ramp for driving the wheelchair in easily, it is necessary to ensure adequate floor clearance in the rear area so that an adequate exit angle can be achieved (e.g. ferry, multi-storey car park) with the permitted rear axle load.
- Any PDC sensors must remain in the original position; the function must be the same as in the standard vehicle.

5.1.3 Notes on installing manual operating devices for the service brake:

- Do not modify the brake pedal when installing manual operating devices. Select a clamped solution for connecting the manual operating device.
- The operating travel of the manual operating device must also be sufficient for a blocking braking, with reserve travel for a circuit failure.
- If a manual operating device is used for the accelerator and brake, the standard pedals must be covered by suitable means.

5.1.4 Deactivating airbags

In exceptional cases, e.g. drivers with a disability (entered accordingly in the driving licence), if there is insufficient distance from the steering wheel or if the steering wheel is too small with drivers in a wheelchair (self-drive), and no airbag can be installed, the customer service workshop can also deactivate the driver airbag.

For more information, please contact Volkswagen customer service.

Please also comply with the following chapters during your conversion:

- 1.5.1 Selecting the base vehicle
- 2.2.1 Permitted weights and unladen weights
- 2.3.2 Modifications to the body-in-white
- 2.5.2.1 Electrical cables and fuses
- 2.5.2.3 Retrofitting electrical devices
- 2.5.3 Electrical interface for special vehicles
- 2.5.4 Vehicle battery
- 2.5.4.1 Installation of additional battery
- 2.5.5 Subsequent installation of generators
- 2.6.3 Fuel system
- 2.6.4 Exhaust system
- 3.2.1 Safety equipment

5.2 Refrigerated vehicles

When planning the special vehicle, select the equipment of the base vehicle according to the requirements of the future application. (see also chap. 1.5.1 "Selecting the base vehicle" and 2.7 Ancillary drives, engine/gearbox).

You can optimise your base vehicle in advance for the conversion by selecting the following optional equipment items:

- Up-rated alternator (e.g. 180A instead of 140A)
- Up-rated battery
- Battery for loads (e.g. cooling units and loads that should be operated with the vehicle stationary).
- Noise insulation for protecting the engine and ancillary drive against contamination and foreign bodies
- For correct operation of the ancillary drive, we recommend that you use the additional units (e.g. refrigerant compressor) provided ex-works for the base vehicle.

To facilitate repair of the panel van, accessibility to the components of the door mechanism (e.g. guide rails and hinges) must be ensured.

Please note that the insulation in the panel van increases the weight of the doors, and therefore also on the hinges, carriage and lock systems.

For further information, see:

- 1.5.1 Selecting the base vehicle
- 2.2.1 Permitted weights and unladen weights
- 2.3.2 Modifications to the body-in-white
- 2.5.2.1 Electrical cables and fuses
- 2.5.2.3 Retrofitting electrical devices
- 2.5.3 Electrical interface for special vehicles
- 2.5.4 Vehicle battery
- 2.5.4.1 Installation of additional battery
- 2.5.5 Subsequent installation of generators
- 2.7 Ancillary drives, engine/gearbox
- 2.7.2 Preparation for loadspace cooling
- 3.1 Body-in-white/bodywork.
- 3.1.3 Modifications to the roof of panel van/window van

Practical note

On BlueMotion vehicles you should also note that the load compartment cooling system must be integrated into the BMT function so that shut-down of the engine is prevented during the cooling process (cooling system on and load compartment temperature not reached). For ease of implementation of this requirement, we recommend also ordering the multifunction control unit (UF8). For further information, see chap. 2.5.3.4.

E-cooling systems are excluded from BlueMotion vehicles.

5.3 Shelf installation/workshop vehicles

In the version with shelf installations, you should pay attention to the following points:

- Sufficiently stable and self-supporting design.
- Contact with the cross members and longitudinal members of the vehicle floor.
- Even distribution of forces.
- Attachment to load rails and load securing points or to the entire contact surface on the body-in-white in the same way as the series production rails.
- Possibly reinforced rear axle springs for compensating for the increased kerb weight on the rear axle.

For information about this, refer to the Volkswagen Commercial Vehicles sales range.

Practical note

To prevent damage to the side wall, attachments subject to force application only into the vehicle side wall must be avoided, as must individual force application points into the vehicle wall.

Please also comply with the following chapters for your conversion:

- 1.5.1 Selecting the base vehicle
- 2.2.1 Permitted weights and unladen weights
- 2.3.2 Modifications to the body-in-white
- 2.5.2.1 Electrical cables and fuses
- 2.5.2.3 Retrofitting electrical devices
- 2.5.3 Electrical interface for special vehicles
- 2.5.4 Vehicle battery
- 2.6.3 Fuel system
- 2.6.4 Exhaust system
- 3.2.1 Safety equipment

5.4 Emergency service vehicles

Please also comply with the following chapters as part of the conversion:

- 1.5.1 Selecting the base vehicle
- 2.2.1 Permitted weights and unladen weights
- 2.3.2 Modifications to the body-in-white
- 2.5.2.1 Electrical cables and fuses
- 2.5.2.3 Retrofitting electrical devices
- 2.5.3 Electrical interface for special vehicles
- 2.5.4 Vehicle battery
- 3.2.1 Safety equipment

Practical note

For ease of implementation, we recommend also ordering the multifunction control unit (UF8). For further information, see chap. 2.5.3.4

Information

For more information about this topic, refer to the Volkswagen AG website at:

<http://www.volkswagen-nutzfahrzeuge.de/de/kundenloesungen/blaulichtfahrzeuge.html>

5.5 Taxi

Please also comply with the following chapters for your conversion:

1.5.1 Selecting the base vehicle

2.2.1 Permitted weights and unladen weights

2.3.2 Modifications to the body-in-white

2.5.2.1 Electrical cables and fuses

2.5.2.3 Retrofitting electrical devices

2.5.3 Electrical interface for special vehicles

2.5.4 Vehicle battery

3.2.1 Safety equipment

Practical note

For ease of implementation, we recommend also ordering the multifunction control unit (UF8). For further information, see chap. 2.5.3.4

Information

For more information about this topic, refer to the Volkswagen AG website at:

<http://www.volkswagen-nutzfahrzeuge.de/de/kundenloesungen/gewerbekunden.html>

5.6 Leisure vehicles

Please also comply with the following chapters as part of the conversion:

- 1.5.1 Selecting the base vehicle
- 2.2.1 Permitted weights and unladen weights
- 2.3.2 Modifications to the body-in-white
- 2.5.2.1 Electrical cables and fuses
- 2.5.2.3 Retrofitting electrical devices
- 2.5.3 Electrical interface for special vehicles
- 2.5.4 Vehicle battery
- 2.6.3 Fuel system
- 2.6.4 Exhaust system
- 3.2.1 Safety equipment

Practical note

For ease of implementation, we recommend also ordering the multifunction control unit (UF8). For further information, see chap. 2.5.3.4

Information

For more information about this topic, refer to the Volkswagen AG website at:

<http://www.volkswagen-nutzfahrzeuge.de/de/models/california.html>

5.7 Vehicles for local and public authorities

Please also comply with the following chapters for your conversion:

- 1.5.1 Selecting the base vehicle
- 2.2.1 Permitted weights and unladen weights
- 2.3.2 Modifications to the body-in-white
- 2.5.2.1 Electrical cables and fuses
- 2.5.2.3 Retrofitting electrical devices
- 2.5.3 Electrical interface for special vehicles
- 2.5.4 Vehicle battery
- 2.6.3 Fuel system
- 2.6.4 Exhaust system
- 3.2.1 Safety equipment

Practical note

For ease of implementation, we recommend also ordering the multifunction control unit (UF8). For further information, see chap. 2.5.3.4

Information

For more information about this topic, refer to the Volkswagen AG website at:

<http://www.volkswagen-nutzfahrzeuge.de/de/kundenloesungen/kommunen-und-behoerden.html>

5.8 Articulated vehicles

Vehicles with ESP* are not suitable for use as articulated vehicles.

Otherwise the ESP system in vehicles with ESP will no longer function correctly and will fail. This may result in the driver losing control of the vehicle and causing an accident.

Downgrading ESP (see chapter 2.2.6.5 "Downgrading ESP") is always required when converting the T5 into an articulated vehicle.

Present the vehicle to Volkswagen AG in order to have the adaptation to the individual vehicle assessed.

Please contact us before starting your conversion (see chap. 1.2.1)

* Electronic Stabilisation Program

6 Technical data

6.1 Build dimension drawings

Information

Current build dimension drawings are available for downloading from the body builder portal of Volkswagen AG under the "Technical drawings" menu item.

6.1.1 Panel van (3,000/3,400 mm)

The individual dimension drawings are available in the formats DXF, TIF and PDF. All files (except PDFs) are packed as Zip archives. The files can be unpacked using Winzip (PC) or ZipIt (MAC).



6.1.2 Window van (3,000/3,400 mm)

The individual dimension drawings are available in the formats DXF, TIF and PDF. All files (except PDFs) are packed as Zip archives. The files can be unpacked using Winzip (PC) or ZipIt (MAC).



6.1.3 Short chassis (3,000 mm)

The individual dimension drawings are available in the formats DXF, TIF and PDF. All files (except PDFs) are packed as Zip archives. The files can be unpacked using Winzip (PC) or ZipIt (MAC).




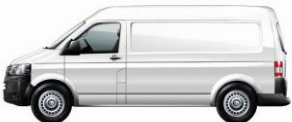











6.1.4 Chassis with double cab (3,400 mm)

The individual dimension drawings are available in the formats DXF, TIF and PDF. All files (except PDFs) are packed as Zip archives. The files can be unpacked using Winzip (PC) or ZipIt (MAC).



6.2 Diagrams (foil templates)

Designation	Image
Panel van short wheelbase Normal roof	
Panel van short wheelbase Medium-high roof	
Panel van long wheelbase Normal roof	
Panel van long wheelbase Medium-high roof	
Panel van long wheelbase High roof	
Window van short wheelbase Normal roof	

Designation	Image
Window van short wheelbase Medium-high roof	
Window van long wheelbase Normal roof	
Window van long wheelbase Medium-high roof	
Window van long wheelbase High roof	
Drop side Short wheelbase Single cab	
Drop side Long wheelbase Single cab	
Low-loader platform Single cab	

Information

Current diagrams are available for downloading from the body builder portal of Volkswagen AG under the "Foil templates" menu item.






Vehicle views in 1:20 scale are available for download in TIF, DXF and EPS format to help you create diagrams or stickers. All files are packed as Zip archives. The files can be unpacked using Winzip (PC) or ZipIt (MAC).

Click the corresponding link to save the selected file directly onto your computer. You can then view the dimension drawing using the corresponding software (such as a CAD system) and print it out.

6.2.1 Panel van (all views)**6.2.2 Chassis (all views)****6.2.3 Side view all derivatives**

To help you create diagrams, you can download the side views of all derivatives on the body builder portal of Volkswagen Nutzfahrzeuge AG.

The following side views are available:

Designation	Image
Drop side Double cab	
Back-to-back cab	
Chassis short wheelbase Single cab	
Chassis long wheelbase Single cab	
Chassis long wheelbase Double cab	

6.3 Circuit diagrams

For detailed information about this topic, refer to the workshop manuals and circuit diagrams of Volkswagen AG.

Information

Volkswagen AG workshop manuals and circuit diagrams can be downloaded from the Internet at **erWin*** (Electronic Repair and Workshop Information from Volkswagen AG):
<http://erwin.volkswagen.de/erwin/showHome.do>

* Information system from Volkswagen AG, subject to payment

6.4 CAD models

As a registered body builder, you can receive 3-D data models in the formats CATIA V.5/STEP/JT for design purposes.

Information

The available 3-D data can be found on the body builder portal of Volkswagen AG under the "CAD data" menu item.

6.5 Weight tables

6.5.1 Weight tables window van

(Kerb weights with driver, ready to drive with 90% tank fill)

6.5.1.1 Panel van 2.8 t (wheelbase: 3000/3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel SWB*	2.0 85 kW petrol	OWN	3000	2850	1500	1550	1729	1099	630	1121
	2.0 110KW TFSI	OWM	3000	2800	1550	1550	1824	1185	639	976
	2.0 150 kW TFSI	OWM	3000	2800	1550	1550	1824	1185	639	976
	2.0 150 kW TFSI with DSG	OWM	3000	2800	1550	1550	1836	1197	639	964
	2.0 150 kW TFSI with DSG 4MOTION	OWM	3000	2800	1600	1550	1958	1244	714	842
	2.0 62 kW TDI	OWM	3000	2800	1500	1550	1762	1130	632	1038
	2.0 75KW TDI	OWM	3000	2800	1500	1550	1762	1130	632	1038
	2.0 84 kW TDI (BlueMotion)	OWZ	3000	2700	1500	1450	1762	1130	632	938
	2.0 84 kW TDI (BlueMotion Technology)	OWM	3000	2800	1500	1550	1762	1130	632	1038
	2.0 103KW TDI	OWM	3000	2800	1550	1550	1797	1164	633	1003
	2.0 103 kW TDI with DSG	OWM	3000	2800	1550	1550	1809	1176	633	991
	2.0 132 kW bi-TDI	OWM	3000	2800	1550	1550	1844	1207	637	956
	2.0 132 kW bi-TDI with DSG	OWM	3000	2800	1550	1550	1856	1219	637	944
	2.0 103 kW TDI 4MOTION	OWM	3000	2800	1600	1550	1917	1209	708	883
	2.0 132 kW bi-TDI 4MOTION	OWM	3000	2800	1600	1550	1965	1252	713	835
	2.0 132 kW BITDI with DSG 4MOTION	OWM	3000	2800	1600	1550	1978	1266	712	822
Panel LWB	2.0 85 kW petrol	OWN	3400	2850	1525	1550	1780	1139	641	1070
	2.0 110KW TFSI	OWM	3400	2800	1575	1550	1875	1225	650	925
	2.0 150 kW TFSI	OWM	3400	2800	1575	1550	1875	1225	650	925
	2.0 150 kW TFSI with DSG	OWM	3400	2800	1575	1550	1887	1237	650	913
	2.0 150 kW TFSI DSG 4MOTION	OWM	3400	2800	1600	1550	2009	1284	725	791

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
	2.0 l 62 kW TDI	0WM	3400	2800	1525	1550	1813	1170	643	987
Panel LWB	2.0 l 75KW TDI	0WM	3400	2800	1525	1550	1813	1170	643	987
	2.0 l 84 kW TDI (BlueMotion)	0WZ	3400	2700	1525	1550	1813	1170	643	887
	2.0 l 84 kW TDI (BlueMotion Technology)	0WM	3400	2800	1525	1550	1813	1170	643	987
	2.0 l 103KW TDI	0WM	3400	2800	1575	1550	1848	1204	644	952
	2.0 l 103 kW TDI with DSG	0WM	3400	2800	1575	1550	1860	1216	644	940
	2.0 l 132 kW bi-TDI	0WM	3400	2800	1575	1550	1895	1247	648	905
	2.0 l 132 kW bi-TDI with DSG	0WM	3400	2800	1575	1550	1907	1259	648	893
	2.0 l 103 kW TDI 4MOTION	0WM	3400	2800	1600	1550	1968	1249	719	832
	2.0 l 132 kW bi-TDI 4MOTION	0WM	3400	2800	1600	1550	2016	1292	724	784
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WM	3400	2800	1600	1550	2029	1306	723	771

Release date: November 2014

6.5.1.2 Panel van 3.0t (wheelbase: 3000/3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel SWB	2.0 l 103KW TDI (BlueMotion)	0WP	3000	2900	1550	1450	1797	1164	633	1103
	2.0 l 110KW TFSI	0WQ	3000	3000	1550	1625	1824	1185	639	1176
	2.0 l 150 kW TFSI	0WQ	3000	3000	1550	1625	1824	1185	639	1176
	2.0 l 150 kW TFSI DSG	0WQ	3000	3000	1550	1625	1836	1197	639	1164
	2.0 l 150 kW TFSI DSG 4MOTION	0WQ	3000	3000	1600	1625	1958	1244	714	1042
	2.0 l 62 kW TDI	0WQ	3000	3000	1500	1625	1762	1130	632	1238
	2.0 l 75KW TDI	0WQ	3000	3000	1500	1625	1762	1130	632	1238
	2.0 l 84 kW TDI (BlueMotion Technology)	0WQ	3000	3000	1500	1625	1762	1130	632	1238
	2.0 l 103KW TDI	0WQ	3000	3000	1550	1625	1797	1164	633	1203
	2.0 l 103 kW TDI with DSG	0WQ	3000	3000	1550	1625	1809	1176	633	1191
	2.0 l 132 kW bi-TDI	0WQ	3000	3000	1550	1625	1844	1207	637	1156
	2.0 l 132 kW bi-TDI with DSG	0WQ	3000	3000	1550	1625	1856	1219	637	1144
	2.0 l 103 kW TDI 4MOTION	0WQ	3000	3000	1600	1625	1917	1209	708	1083
	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3000	3000	1600	1625	1965	1252	713	1035
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WQ	3000	3000	1600	1625	1978	1266	712	1022
Panel LWB	2.0 l 110KW TFSI	0WQ	3400	3000	1575	1625	1875	1225	650	1125
	2.0 l 150 kW TFSI	0WQ	3400	3000	1575	1625	1875	1225	650	1125
	2.0 l 150 kW TFSI DSG	0WQ	3400	3000	1575	1625	1887	1237	650	1113
	2.0 l 150 kW TFSI DSG 4MOTION	0WQ	3400	3000	1600	1625	2009	1284	725	991
	2.0 l 62 kW TDI	0WQ	3400	3000	1525	1625	1813	1170	643	1187
	2.0 l 75KW TDI	0WQ	3400	3000	1525	1625	1813	1170	643	1187

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel LWB	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1625	2016	1292	724	984
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WQ	3400	3000	1600	1625	2029	1306	723	971
	2.0 l 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1525	1625	1813	1170	643	1187
	2.0 l 103KW TDI	0WQ	3400	3000	1575	1625	1848	1204	644	1152
	2.0 l 103 kW TDI with DSG	0WQ	3400	3000	1575	1625	1860	1216	644	1140
	2.0 l 132 kW bi-TDI	0WQ	3400	3000	1575	1625	1895	1247	648	1105
	2.0 l 132 kW bi-TDI with DSG	0WQ	3400	3000	1575	1625	1907	1259	648	1093
	2.0 l 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1625	1968	1249	719	1032

Release date: November 2014

6.5.1.3 Panel van 3.2t (wheelbase: 3000/3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel SWB	2.0 l 110kW TFSI	OWR	3000	3200	1650	1720	1824	1185	639	1376
	2.0 l 150 kW TFSI	OWR	3000	3200	1650	1720	1824	1185	639	1376
	2.0 l 150 kW TFSI DSG	OWR	3000	3200	1650	1720	1836	1197	639	1364
	2.0 l 150 kW TFSI DSG 4MOTION	OWR	3000	3200	1710	1720	1958	1244	714	1242
	2.0 l 75kW TDI	OWR	3000	3200	1600	1720	1762	1130	632	1438
	2.0 l 84 kW TDI (BlueMotion Technology)	OWR	3000	3200	1600	1720	1762	1130	632	1438
	2.0 l 103kW TDI	OWR	3000	3200	1650	1720	1797	1164	633	1403
	2.0 l 103 kW TDI with DSG	OWR	3000	3200	1650	1720	1809	1176	633	1391
	2.0 l 132 kW bi-TDI	OWR	3000	3200	1650	1720	1844	1207	637	1356
	2.0 l 132 kW bi-TDI with DSG	OWR	3000	3200	1650	1720	1856	1219	637	1344
	2.0 l 103 kW TDI 4MOTION	OWR	3000	3200	1710	1720	1917	1209	708	1283
	2.0 l 132 kW bi-TDI 4MOTION	OWR	3000	3200	1710	1720	1965	1252	713	1235
	2.0 l 132 kW bi-TDI 4MOTION DSG	OWR	3000	3200	1710	1720	1978	1266	712	1222
Panel LWB	2.0 l 110kW TFSI	OWR	3400	3200	1650	1720	1875	1225	650	1325
	2.0 l 150 kW TFSI	OWR	3400	3200	1650	1720	1875	1225	650	1325
	2.0 l 150 kW TFSI DSG	OWR	3400	3200	1650	1720	1887	1237	650	1313
	2.0 l 150 kW TFSI DSG 4MOTION	OWR	3400	3200	1710	1720	2009	1284	725	1191
	2.0 l 84 kW TDI (BlueMotion Technology)	OWR	3400	3200	1600	1720	1813	1170	643	1387
	2.0 l 75kW TDI	OWR	3400	3200	1600	1720	1813	1170	643	1387
	2.0 l 103kW TDI	OWR	3400	3200	1650	1720	1848	1204	644	1352
	2.0 l 103 kW TDI with DSG	OWR	3400	3200	1650	1720	1860	1216	644	1340
	2.0 l 132 kW bi-TDI	OWR	3400	3200	1650	1720	1895	1247	648	1305
	2.0 l 132 kW bi-TDI with DSG	OWR	3400	3200	1650	1720	1907	1259	648	1293
	2.0 l 103 kW TDI 4MOTION	OWR	3400	3200	1710	1720	1968	1249	719	1232
	2.0 l 132 kW bi-TDI 4MOTION	OWR	3400	3200	1710	1720	2016	1292	724	1184
	2.0 l 132 kW bi-TDI 4MOTION DSG	OWR	3400	3200	1710	1720	2029	1306	723	1171

Release date: November 2014

6.5.1.4 Panel van 2.6 t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel SWB**	2.0 l 85 kW petrol	0WL	3000	2600	1450	1400	1729	1099	630	871
	2.0 l 62 kW TDI	0WL	3000	2600	1450	1400	1762	1130	632	838
	2.0 l 75kW TDI	0WL	3000	2600	1450	1400	1762	1130	632	838
	2.0 l 84 kW TDI (BlueMotion Technology)	0WR	3000	2600	1450	1400	1762	1130	632	838

Release date: November 2014

6.5.2 Weight tables platform / chassis

(Kerb weights with driver, ready to drive with 90% tank fill)

6.5.2.1 Platform / chassis 2.8* † (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Platform SWB*	2.0 l 85 kW petrol	OWN	3000	2850	1500	1550	1736	1148	588	1114
	2.0 l 110KW petrol	OWM	3000	2800	1550	1550	1766	1204	562	1034
	2.0 l 62 kW TDI	OWM	3000	2800	1500	1550	1736	1164	572	1064
	2.0 l 75KW TDI	OWM	3000	2800	1500	1550	1736	1164	572	1064
	2.0 l 84 kW TDI (BlueMotion Technology)	OWM	3000	2800	1500	1550	1736	1164	572	1064
	2.0 l 103KW TDI	OWM	3000	2800	1550	1550	1740	1187	553	1060
	2.0 l 103 kW TDI with DSG	OWM	3000	2800	1550	1550	1752	1199	553	1048
	2.0 l 132 kW bi-TDI	OWM	3000	2800	1550	1550	1783	1226	557	1017
	2.0 l 132 kW bi-TDI with DSG	OWM	3000	2800	1550	1550	1795	1238	557	1005
	2.0 l 103 kW TDI 4MOTION	OWM	3000	2800	1600	1550	1860	1232	628	940
	2.0 l 132 kW bi-TDI 4MOTION	OWM	3000	2800	1600	1550	1904	1271	633	896
	2.0 l 132 kW bi-TDI 4MOTION DSG	OWM	3000	2800	1600	1550	1917	1285	632	883
Chassis SWB	2.0 l 85 kW petrol	OWN	3000	2850	1500	1550	1571	1141	430	1279
	2.0 l 110KW petrol	OWM	3000	2800	1550	1550	1601	1197	582	1199
	2.0 l 62 kW TDI	OWM	3000	2800	1500	1550	1571	1157	414	1229
	2.0 l 75KW TDI	OWM	3000	2800	1500	1550	1571	1157	414	1229
	2.0 l 84 kW TDI (BlueMotion Technology)	OWM	3000	2800	1500	1550	1571	1157	414	1229
	2.0 l 103KW TDI	OWM	3000	2800	1550	1550	1575	1180	395	1225
	2.0 l 103 kW TDI with DSG	OWM	3000	2800	1550	1550	1587	1192	395	1213
	2.0 l 132 kW bi-TDI	OWM	3000	2800	1550	1550	1618	1219	399	1182
	2.0 l 132 kW bi-TDI with DSG	OWM	3000	2800	1550	1550	1630	1231	399	1170
	2.0 l 103 kW TDI 4MOTION	OWM	3000	2800	1600	1550	1695	1225	470	1105
	2.0 l 132 kW bi-TDI 4MOTION	OWM	3000	2800	1600	1550	1739	1264	475	1061
	2.0 l 132 kW bi-TDI 4MOTION DSG	OWM	3000	2800	1600	1550	1752	1278	474	1048

Release date: November 2014

6.5.2.2 Platform / chassis 3.0 t (3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Platform SWB	2.0 l 110KW TFSI	0WQ	3000	3000	1550	1680	1766	1204	562	1234
	2.0 l 62 kW TDI	0WQ	3000	3000	1500	1680	1736	1164	572	1264
	2.0 l 75KW TDI	0WQ	3000	3000	1500	1680	1736	1164	572	1264
	2.0 l 84 kW TDI (BlueMotion Technology)	0WQ	3000	3000	1500	1680	1736	1164	572	1264
	2.0 l 103KW TDI	0WQ	3000	3000	1550	1680	1740	1187	553	1260
	2.0 l 103 kW TDI with DSG	0WQ	3000	3000	1550	1680	1752	1199	553	1248
	2.0 l 132 kW bi-TDI	0WQ	3000	3000	1550	1680	1783	1226	557	1217
	2.0 l 132 kW bi-TDI with DSG	0WQ	3000	3000	1550	1680	1795	1238	557	1205
	2.0 l 103 kW TDI 4MOTION	0WQ	3000	3000	1600	1680	1860	1232	628	1140
	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3000	3000	1600	1680	1904	1271	633	1096
Chassis SWB	2.0 l 132 kW bi-TDI 4MOTION DSG	0WQ	3000	3000	1600	1680	1917	1285	632	1083
	2.0 l 110KW TDI	0WQ	3000	3000	1550	1680	1601	1197	404	1399
	2.0 l 62 kW TDI	0WQ	3000	3000	1500	1680	1571	1157	414	1429
	2.0 l 75KW TDI	0WQ	3000	3000	1500	1680	1571	1157	414	1429
	2.0 l 84 kW TDI (BlueMotion Technology)	0WQ	3000	3000	1500	1680	1571	1157	414	1429
	2.0 l 103KW TDI	0WQ	3000	3000	1550	1680	1575	1180	395	1425
	2.0 l 103 kW TDI with DSG	0WQ	3000	3000	1550	1680	1587	1192	395	1413
	2.0 l 132 kW bi-TDI	0WQ	3000	3000	1550	1680	1618	1219	399	1382
	2.0 l 132 kW bi-TDI with DSG	0WQ	3000	3000	1550	1680	1630	1231	399	1370
	2.0 l 103 kW TDI 4MOTION	0WQ	3000	3000	1600	1680	1695	1225	470	1305
	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3000	3000	1600	1680	1739	1264	475	1261
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WQ	3000	3000	1600	1680	1752	1278	474	1248

Release date: November 2014

6.5.2.3 Platform / chassis 2.8 t (wheelbase: 3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Platform LWB	2.0 l 85 kW petrol	OWN	3400	2850	1525	1550	1736	1164	572	1114
	2.0 l 110KW TFSI	OWM	3400	2800	1575	1550	1802	1238	564	998
	2.0 l 62 kW TDI	OWM	3400	2800	1525	1550	1741	1187	554	1059
	2.0 l 75KW TDI	OWM	3400	2800	1525	1550	1741	1187	554	1059
	2.0 l 84 kW TDI (BlueMotion Technology)	OWM	3400	2800	1525	1550	1741	1187	554	1059
	2.0 l 103KW TDI	OWM	3400	2800	1575	1550	1776	1221	555	1024
	2.0 l 103 kW TDI with DSG	OWM	3400	2800	1575	1550	1788	1233	555	1012
	2.0 l 132 kW bi-TDI	OWM	3400	2800	1575	1550	1818	1260	558	982
	2.0 l 132 kW bi-TDI with DSG	OWM	3400	2800	1575	1550	1830	1272	558	970
	2.0 l 103 kW TDI 4MOTION	OWM	3400	2800	1600	1550	1896	1266	630	904
	2.0 l 132 kW bi-TDI 4MOTION	OWM	3400	2800	1600	1550	1939	1305	634	861
	2.0 l 132 kW bi-TDI 4MOTION DSG	OWM	3400	2800	1600	1550	1952	1319	633	848
Chassis LWB	2.0 l 85 kW petrol	OWN	3400	2850	1525	1550	1551	1146	405	1299
	2.0 l 110KW TFSI	OWM	3400	2800	1575	1550	1617	1220	397	1183
	2.0 l 62 kW TDI	OWM	3400	2800	1525	1550	1556	1169	387	1244
	2.0 l 75KW TDI	OWM	3400	2800	1525	1550	1556	1169	387	1244
	2.0 l 84 kW TDI (BlueMotion Technology)	OWM	3400	2800	1525	1550	1556	1169	387	1244
	2.0 l 103KW TDI	OWM	3400	2800	1575	1550	1591	1203	388	1209
	2.0 l 103 kW TDI with DSG	OWM	3400	2800	1575	1550	1603	1215	388	1197
	2.0 l 132 kW bi-TDI	OWM	3400	2800	1575	1550	1633	1242	391	1167
	2.0 l 132 kW bi-TDI with DSG	OWM	3400	2800	1575	1550	1645	1254	391	1155
	2.0 l 103 kW TDI 4MOTION	OWM	3400	2800	1600	1550	1711	1248	463	1089
	2.0 l 132 kW bi-TDI 4MOTION	OWM	3400	2800	1600	1550	1754	1287	467	1046
	2.0 l 132 kW bi-TDI 4MOTION DSG	OWM	3400	2800	1600	1550	1767	1301	466	1033

Release date: November 2014

6.5.2.4 Platform / chassis 3.0t (wheelbase: 3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Platform LWB	2.0 110KW TFSI	0WQ	3400	3000	1525	1680	1802	1238	564	1198
	2.0 62 kW TDI	0WQ	3400	3000	1525	1680	1741	1187	554	1259
	2.0 75KW TDI	0WQ	3400	3000	1525	1680	1741	1187	554	1259
	2.0 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1525	1680	1741	1187	554	1259
	2.0 103KW TDI	0WQ	3400	3000	1575	1680	1776	1221	555	1224
	2.0 103 kW TDI with DSG	0WQ	3400	3000	1575	1680	1788	1233	555	1212
	2.0 132 kW bi-TDI	0WQ	3400	3000	1575	1680	1818	1260	558	1182
	2.0 132 kW bi-TDI with DSG	0WQ	3400	3000	1575	1680	1830	1272	558	1170
	2.0 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1680	1896	1266	630	1104
	2.0 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1680	1939	1305	634	1061
	2.0 132 kW bi-TDI 4MOTION DSG	0WQ	3400	3000	1600	1680	1952	1319	633	1048
Chassis LWB	2.0 110KW TFSI	0WQ	3400	3000	1575	1680	1617	1220	397	1383
	2.0 62 kW TDI	0WQ	3400	3000	1525	1680	1556	1169	387	1444
	2.0 75KW TDI	0WQ	3400	3000	1525	1680	1556	1169	387	1444
	2.0 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1525	1680	1556	1169	387	1444
	2.0 103KW TDI	0WQ	3400	3000	1575	1680	1591	1203	388	1409
	2.0 103 kW TDI with DSG	0WQ	3400	3000	1575	1680	1603	1215	388	1397
	2.0 132 kW bi-TDI	0WQ	3400	3000	1575	1680	1633	1242	391	1367
	2.0 132 kW bi-TDI with DSG	0WQ	3400	3000	1575	1680	1645	1254	391	1355
	2.0 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1680	1711	1248	463	1289
	2.0 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1680	1754	1287	467	1246
	2.0 132 kW bi-TDI 4MOTION DSG	0WQ	3400	3000	1600	1680	1767	1301	466	1233

Release date: November 2014

6.5.2.5 Double cab / double cab chassis 2.8 t (wheelbase: 3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Double cab LWB	2.0 110KW TFSI	OWM	3400	2800	1600	1550	1850	1244	606	950
	2.0 85kW	OWN	3400	2850	1600	1550	1756	1162	594	1094
	2.0 62 kW TDI	OWM	3400	2800	1600	1550	1789	1193	596	1011
	2.0 75KW TDI	OWM	3400	2800	1600	1550	1789	1193	596	1011
	2.0 103KW TDI	OWM	3400	2800	1600	1550	1824	1227	597	976
	2.0 103 kW TDI with DSG	OWM	3400	2800	1600	1550	1836	1239	597	964
	2.0 132 kW bi-TDI	OWM	3400	2800	1600	1550	1867	1266	601	933
	2.0 132 kW bi-TDI with DSG	OWM	3400	2800	1600	1550	1879	1287	601	921
	2.0 103 kW TDI 4MOTION	OWM	3400	2800	1600	1550	1944	1272	672	856
	2.0 132 kW bi-TDI 4MOTION	OWM	3400	2800	1600	1550	1988	1311	677	812
	2.0 132 kW bi-TDI 4MOTION DSG	OWM	3400	2800	1600	1550	2001	1325	676	799
DC chassis LWB	2.0 110KW TFSI	OWM	3400	2800	1600	1550	1700	1251	449	1100
	2.0 85kW	OWN	3400	2850	1600	1550	1606	1169	437	1244
	2.0 62 kW TDI	OWM	3400	2800	1600	1550	1639	1200	439	1161
	2.0 75KW TDI	OWM	3400	2800	1600	1550	1639	1200	439	1161
	2.0 103KW TDI	OWM	3400	2800	1600	1550	1674	1234	440	1126
	2.0 103 kW TDI with DSG	OWM	3400	2800	1600	1550	1686	1246	440	1114
	2.0 132 kW bi-TDI	OWM	3400	2800	1600	1550	1717	1273	444	1083
	2.0 132 kW bi-TDI with DSG	OWM	3400	2800	1600	1550	1729	1285	444	1071
	2.0 103 kW TDI 4MOTION	OWM	3400	2800	1600	1550	1794	1279	515	1006
	2.0 132 kW bi-TDI 4MOTION	OWM	3400	2800	1600	1550	1838	1318	520	962
	2.0 132 kW bi-TDI 4MOTION DSG	OWM	3400	2800	1600	1550	1851	1332	519	949

Release date: November 2014

6.5.2.6 Double cab / double cab chassis 3.0t (wheelbase: 3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Double cab LWB	2.0 I 110KW TFSI	0WQ	3400	3000	1600	1680	1850	1244	606	1150
	2.0 I 62 kW TDI	0WQ	3400	3000	1600	1680	1789	1193	596	1211
	2.0 I 75KW TDI	0WQ	3400	3000	1600	1680	1789	1193	596	1211
	2.0 I 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1600	1680	1789	1193	596	1211
	2.0 I 103KW TDI	0WQ	3400	3000	1600	1680	1824	1227	597	1176
	2.0 I 103 kW TDI with DSG	0WQ	3400	3000	1600	1680	1836	1239	597	1164
	2.0 I 132 kW bi-TDI	0WQ	3400	3000	1600	1680	1867	1266	601	1133
	2.0 I 132 kW bi-TDI with DSG	0WQ	3400	3000	1600	1680	1879	1278	601	1121
	2.0 I 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1680	1944	1272	672	1056
	2.0 I 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1680	1988	1311	677	1012
	2.0 I 132 kW bi-TDI 4MOTION DSG	0WQ	3400	3000	1600	1680	2001	1325	676	999
DC chassis LWB	2.0 I 110KW TFSI	0WQ	3400	3000	1600	1680	1700	1251	449	1300
	2.0 I 62 kW TDI	0WQ	3400	3000	1600	1680	1639	1200	439	1361
	2.0 I 75KW TDI	0WQ	3400	3000	1600	1680	1639	1200	439	1361
	2.0 I 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1600	1680	1639	1200	439	1361
	2.0 I 103KW TDI	0WQ	3400	3000	1600	1680	1674	1234	440	1326
	2.0 I 103 kW TDI with DSG	0WQ	3400	3000	1600	1680	1686	1246	440	1314
	2.0 I 132 kW bi-TDI	0WQ	3400	3000	1600	1680	1717	1273	444	1283
	2.0 I 132 kW bi-TDI with DSG	0WQ	3400	3000	1600	1680	1729	1285	444	1271
	2.0 I 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1680	1794	1279	515	1206
	2.0 I 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1680	1838	1318	520	1162
	2.0 I 132 kW bi-TDI 4MOTION DSG	0WQ	3400	3000	1600	1680	1851	1332	519	1149

Release date: November 2014

6.5.3 Weight tables panel van / window van

(Kerb weights with driver, ready to drive with 90% tank fill)

6.5.3.1 Panel van/window van 2.6 t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window SWB*	2.0 l 85 kW petrol	0WL	3000	2600	1500	1400	1976	1200	776	624
	2.0 l 62 kW TDI	0WL	3000	2600	1500	1400	1976	1238	738	624
	2.0 l 75KW TDI	0WM	3000	2600	1500	1400	1976	1238	738	624

Release date: November 2014

6.5.3.2 Panel van/window van 2.8t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window SWB*	2.0 l 85 kW petrol	OWN	3000	2850	1500	1500	1976	1200	776	874
	2.0 l 110KW TFSI	OWM	3000	2800	1550	1500	1956	1241	715	844
	2.0 l 150 kW TFSI	OWM	3000	2800	1550	1500	1956	1241	715	844
	2.0 l 150 kW TFSI with DSG	OWM	3000	2800	1550	1500	1956	1246	710	844
	2.0 l 150 kW TFSI DSG 4MOTION	OWM	3000	2800	1600	1500	2006	1248	758	794
	2.0 l 62 kW TDI	OWM	3000	2800	1500	1500	1976	1238	738	824
	2.0 l 75KW TDI	OWM	3000	2800	1500	1500	1976	1238	738	824
	2.0 l 84 kW TDI (BlueMotion Technology)	OWM	3000	2800	1500	1500	1976	1238	738	824
	2.0 l 103KW TDI	OWM	3000	2800	1550	1500	1976	1250	726	824
	2.0 l 103 kW TDI with DSG	OWM	3000	2800	1550	1500	1976	1255	721	824
	2.0 l 132KW TDI	OWM	3000	2800	1550	1500	1976	1263	713	824
	2.0 l 132KW TDI with DSG	OWM	3000	2800	1550	1500	1976	1268	708	824
	2.0 l 103 kW TDI 4MOTION	OWM	3000	2800	1600	1500	1985	1226	759	815
	2.0 l 132KW TDI 4MOTION	OWM	3000	2800	1600	1500	2013	1256	757	787
	2.0 l 132 kW TDI DSG 4Motion	OWM	3000	2800	1600	1500	2026	1270	756	774
Panel Caravelle SWB*	2.0 l 85 kW petrol	OWN	3000	2850	1500	1500	1976	1158	818	874
	2.0 l 110KW TFSI	OWM	3000	2800	1550	1500	2044	1226	818	756
	2.0 l 150 kW TFSI	OWM	3000	2800	1550	1500	2044	1226	818	756
	2.0 l 150 kW TFSI with DSG	OWM	3000	2800	1550	1500	2056	1238	818	744
	2.0 l 62 kW TDI	OWM	3000	2800	1500	1500	1982	1172	810	818
	2.0 l 75KW TDI	OWM	3000	2800	1500	1500	1982	1172	810	818
	2.0 l 84 kW TDI (BlueMotion Technology)	OWM	3000	2800	1500	1500	1982	1172	810	818
	2.0 l 103KW TDI	OWM	3000	2800	1550	1500	2017	1206	811	783
	2.0 l 103 kW TDI with DSG	OWM	3000	2800	1550	1500	2029	1218	811	771
	2.0 l 132KW TDI	OWM	3000	2800	1550	1500	2064	1248	816	736
	2.0 l 132KW TDI with DSG	OWM	3000	2800	1550	1500	2076	1260	816	724
	2.0 l 103 kW TDI 4MOTION	OWM	3000	2800	1600	1500	2137	1251	886	663

Release date: November 2014

6.5.3.3 Panel van/window van 3.0 t/panel van/Caravelle 3.0 t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window SWB*	2.0 l 110KW TFSI	0WQ	3000	3000	1550	1600	1956	1241	715	1044
	2.0 l 150 kW TFSI	0WQ	3000	3000	1550	1600	1956	1241	715	1044
	2.0 l 150 kW TFSI with DSG	0WQ	3000	3000	1550	1600	1956	1246	710	1044
	2.0 l 150 kW TFSI DSG 4MOTION	0WQ	3000	3000	1600	1600	2006	1248	758	994
	2.0 l 62 kW TDI	0WQ	3000	3000	1500	1600	1976	1238	738	1024
	2.0 l 75KW TDI	0WQ	3000	3000	1500	1600	1976	1238	738	1024
	2.0 l 84 kW TDI (BlueMotion Technology)	0WQ	3000	3000	1500	1600	1976	1238	738	1024
	2.0 l 103KW TDI	0WQ	3000	3000	1550	1600	1976	1250	726	1024
	2.0 l 103 kW TDI with DSG	0WQ	3000	3000	1550	1600	1976	1255	721	1024
	2.0 l 132 kW bi-TDI	0WQ	3000	3000	1550	1600	1976	1263	713	1024
	2.0 l 132 kW bi-TDI with DSG	0WQ	3000	3000	1550	1600	1976	1268	708	1024
	2.0 l 103 kW TDI 4MOTION	0WQ	3000	3000	1600	1600	1976	1221	755	1024
	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3000	3000	1600	1600	2013	1256	757	987
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WQ	3000	3000	1600	1600	2026	1270	756	974
Panel Caravelle SWB	2.0 l 110KW TFSI	0WQ	3000	3000	1550	1575	2044	1226	818	956
	2.0 l 150 kW TFSI	0WQ	3000	3000	1550	1575	2044	1226	818	956
	2.0 l 150 kW TFSI with DSG	0WQ	3000	3000	1550	1575	2056	1238	818	944
	2.0 l 150 kW TFSI DSG 4MOTION	0WQ	3000	3000	1600	1575	2178	1285	893	822
	2.0 l 62 kW TDI	0WQ	3000	3000	1500	1575	1995	1185	810	1005
	2.0 l 75KW TDI	0WQ	3000	3000	1500	1575	1995	1185	810	1005

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel Caravelle SWB	2.0 l 84 kW TDI (BlueMotion Technology)	0WQ	3000	3000	1500	1575	1995	1185	810	1005
	2.0 l 103KW TDI	0WQ	3000	3000	1550	1575	2017	1206	811	983
	2.0 l 103 kW TDI with DSG	0WQ	3000	3000	1550	1575	2029	1218	811	971
	2.0 l 132 kW bi-TDI	0WQ	3000	3000	1550	1575	2064	1248	816	936
	2.0 l 132 kW bi-TDI with DSG	0WQ	3000	3000	1550	1575	2076	1260	816	924
	2.0 l 103 kW TDI 4MOTION	0WQ	3000	3000	1600	1575	2137	1251	886	863
	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3000	3000	1600	1575	2185	1293	892	815
	2.0 l 132 kW BITDI DSG 4MOTION	0WQ	3000	3000	1600	1575	2198	1307	891	802

Release date: November 2014

6.5.3.4 Panel van/window van 3.2t/panel van/Caravelle 3.2t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window SWB	2.0 l 110KW TFSI	0WR	3000	3200	1650	1680	1956	1241	715	1244
	2.0 l 150 kW TFSI	0WR	3000	3200	1650	1680	1956	1241	715	1244
	2.0 l 150 kW TFSI with DSG	0WR	3000	3200	1650	1680	1956	1246	710	1244
	2.0 l 150 kW TFSI DSG 4MOTION	0WR	3000	3200	1700	1720	2006	1248	758	1194
	2.0 l 75KW TDI	0WR	3000	3200	1600	1680	1976	1238	738	1224
	2.0 l 84 kW TDI (BlueMotion Technology)	0WR	3000	3200	1600	1680	1976	1238	738	1224
	2.0 l 103KW TDI	0WR	3000	3200	1650	1680	1976	1250	726	1224
	2.0 l 103KW TDI	0WR	3000	3200	1650	1680	1976	1250	726	1224
	2.0 l 103 kW TDI with DSG	0WR	3000	3200	1650	1680	1976	1255	721	1224
	2.0 l 132 kW bi-TDI	0WR	3000	3200	1650	1680	1976	1263	713	1224
	2.0 l 132 kW bi-TDI with DSG	0WR	3000	3200	1650	1680	1976	1268	708	1224
	2.0 l 103 kW TDI 4MOTION	0WR	3000	3200	1700	1720	1976	1221	755	1224
	2.0 l 132 kW bi-TDI 4MOTION	0WR	3000	3200	1700	1720	2013	1256	757	1187
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WR	3000	3200	1700	1720	2026	1270	756	1174
Panel Caravelle SWB	2.0 l 110KW TFSI	0WR	3000	3200	1680	1650	2044	1226	818	1156
	2.0 l 150 kW TFSI	0WR	3000	3200	1680	1650	2044	1226	818	1156
	2.0 l 150 kW TFSI with DSG	0WR	3000	3200	1650	1680	2056	1238	818	1144
	2.0 l 150 kW TFSI DSG 4MOTION	0WR	3000	3200	1700	1720	2178	1285	893	1022
	2.0 l 75KW TDI	0WR	3000	3200	1600	1680	1982	1172	810	1218
	2.0 l 84 kW TDI (BlueMotion Technology)	0WR	3000	3200	1600	1680	1982	1172	810	1218
	2.0 l 103KW TDI	0WR	3000	3200	1650	1680	2017	1206	811	1183
	2.0 l 103 kW TDI with DSG	0WR	3000	3200	1650	1680	2029	1218	811	1171
	2.0 l 132 kW bi-TDI	0WR	3000	3200	1650	1680	2064	1248	816	1136
	2.0 l 132 kW bi-TDI with DSG	0WR	3000	3200	1650	1680	2076	1260	816	1124
	2.0 l 103 kW TDI 4MOTION	0WR	3000	3200	1700	1720	2137	1251	886	1063
	2.0 l 132 kW bi-TDI 4MOTION	0WR	3000	3200	1700	1720	2185	1293	892	1015
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WR	3000	3200	1700	1720	2198	1307	891	1002

Release date: November 2014

6.5.3.5 Panel van/window van 3.08t/panel van/Caravelle 3.08t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window SWB	2.0 150 kW TFSI DSG 4MOTION	OWS	3000	3080	1600	1600	2006	1248	758	1074
	2.0 103 kW TDI 4MOTION	OWS	3000	3080	1600	1600	1976	1221	755	1104
	2.0 132 kW bi-TDI 4MOTION	OWS	3000	3080	1600	1600	2013	1256	757	1067
	2.0 132 kW bi-TDI 4MOTION DSG	OWS	3000	3080	1600	1600	2026	1270	756	1054
Panel Caravelle SWB	2.0 150 kW TFSI DSG 4MOTION	OWS	3000	3080	1600	1575	2178	1285	893	902
	2.0 103 kW TDI 4MOTION	OWS	3000	3080	1600	1575	2139	1253	886	941
	2.0 132 kW bi-TDI 4MOTION	OWS	3000	3080	1600	1575	2185	1293	892	895
	2.0 132 kW bi-TDI 4MOTION DSG	OWS	3000	3080	1600	1575	2198	1307	891	882

Release date: November 2014

6.5.3.6 Panel van/window van 2.8 t/panel van/Caravelle 2.8 t (wheelbase: 3000/3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window LWB	2.0 l 85 kW petrol	0WN	3000	2850	1525	1500	1976	1234	742	874
	2.0 l 110KW TFSI	0WM	3400	2800	1575	1500	1956	1248	708	844
	2.0 l 150 kW TFSI	0WM	3400	2800	1575	1500	1965	1253	712	835
	2.0 l 150 kW TFSI with DSG	0WM	3400	2800	1575	1500	1965	1257	708	835
	2.0 l 62 kW TDI	0WM	3400	2800	1525	1500	1976	1244	732	824
	2.0 l 75KW TDI	0WM	3400	2800	1525	1500	1976	1244	732	824
	2.0 l 84 kW TDI (BlueMotion Technology)	0WM	3400	2800	1525	1500	1976	1244	732	824
	2.0 l 103KW TDI	0WM	3400	2800	1575	1500	1985	1262	723	815
	2.0 l 103 kW TDI with DSG	0WM	3400	2800	1575	1500	1976	1261	715	824
	2.0 l 132 kW bi-TDI	0WM	3400	2800	1575	1500	1976	1270	706	824
	2.0 l 132 kW BITDI with DSG	0WM	3400	2800	1575	1500	1985	1279	706	815
Panel Caravelle LWB	2.0 l 85 kW petrol	0WN	3000	2850	1525	1500	2013	1193	820	837
	2.0 l 62 kW TDI	0WM	3400	2800	1525	1500	2046	1224	822	754
	2.0 l 75KW TDI	0WM	3400	2800	1525	1500	2046	1224	822	754
	2.0 l 84 kW TDI (BlueMotion Technology)	0WM	3400	2800	1575	1500	2075	1270	805	725
	2.0 l 103KW TDI	0WM	3400	2800	1575	1500	2075	1258	817	725
	2.0 l 103 kW TDI with DSG	0WM	3400	2800	1575	1500	2075	1270	805	725

Release date: November 2014

6.5.3.7 Panel van/window van 3.0 t/panel van/Caravelle 3.0 t (wheelbase: 3400mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window LWB	2.0 110KW TFSI	0WQ	3400	3000	1575	1600	1956	1248	708	1044
	2.0 150 kW TFSI	0WQ	3400	3000	1575	1600	1956	1248	708	1044
	2.0 150 kW TFSI with DSG	0WQ	3400	3000	1575	1600	1956	1252	704	1044
	2.0 150 kW TFSI DSG 4MOTION	0WQ	3400	3000	1600	1600	2055	1293	762	945
	2.0 62 kW TDI	0WQ	3400	3000	1525	1600	1976	1244	732	1024
	2.0 75KW TDI	0WQ	3400	3000	1525	1600	1976	1244	732	1024
	2.0 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1525	1600	1976	1244	732	1024
	2.0 103KW TDI	0WQ	3400	3000	1575	1600	1976	1257	719	1024
	2.0 103 kW TDI with DSG	0WQ	3400	3000	1575	1600	1976	1261	715	1024
	2.0 132 kW bi-TDI BIT	0WQ	3400	3000	1575	1600	1976	1270	706	1024
	2.0 132 kW BITDI with DSG	0WQ	3400	3000	1575	1600	1976	1274	702	1024
	2.0 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1600	2027	1259	768	973
	2.0 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1600	2075	1301	774	925
	2.0 132 kW BITDI DSG 4MOTION	0WQ	3400	3000	1600	1600	2075	1315	760	925
Panel Caravelle LWB	2.0 110KW TFSI	0WQ	3400	3000	1575	1600	2108	1278	830	892
	2.0 150 kW TFSI	0WQ	3400	3000	1575	1600	2108	1278	830	892
	2.0 150 kW TFSI with DSG	0WQ	3400	3000	1575	1600	2120	1290	830	880
	2.0 150 kW TFSI DSG 4MOTION	0WQ	3400	3000	1600	1600	2242	1337	905	758
	2.0 62 kW TDI	0WQ	3400	3000	1525	1600	2046	1224	822	954
	2.0 75KW TDI	0WQ	3400	3000	1525	1600	2046	1224	822	954
	2.0 84 kW TDI (BlueMotion Technology)	0WQ	3400	3000	1525	1600	2046	1224	822	954
	2.0 103KW TDI	0WQ	3400	3000	1575	1600	2075	1258	817	925

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel Caravelle LWB	2.0 l 103 kW TDI with DSG	0WQ	3400	3000	1575	1600	2075	1270	805	925
	2.0 l 132 kW bi-TDI BIT	0WQ	3400	3000	1575	1600	2128	1300	828	872
	2.0 l 132 kW BITDI with DSG	0WQ	3400	3000	1575	1600	2140	1312	828	860
	2.0 l 103 kW TDI 4MOTION	0WQ	3400	3000	1600	1600	2201	1303	898	799
	2.0 l 132 kW bi-TDI 4MOTION	0WQ	3400	3000	1600	1600	2249	1345	904	751
	2.0 l 132 kW BITDI DSG 4MOTION	0WQ	3400	3000	1600	1600	2262	1359	903	738

Release date: November 2014

6.5.3.8 Panel van/window van 3.2t/panel van/Caravelle 3.2t (wheelbase: 3400mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window LWB	2.0 l 110KW TFSI	0WR	3400	3200	1675	1680	1956	1248	708	1244
	2.0 l 150 kW TFSI	0WR	3400	3200	1675	1680	1956	1248	708	1244
	2.0 l 150 kW TFSI	0WQ	3400	3000	1575	1600	2108	1278	830	892
	2.0 l 150 kW TFSI DSG 4MOTION	0WR	3400	3200	1700	1720	2055	1293	762	1145
	2.0 l 75KW TDI	0WR	3400	3200	1625	1680	1976	1244	732	1224
	2.0 l 84 kW TDI (BlueMotion Technology)	0WR	3400	3200	1625	1680	1976	1244	732	1224
	2.0 l 103KW TDI	0WR	3400	3200	1675	1680	1976	1257	719	1224
	2.0 l 103 kW TDI with DSG	0WR	3400	3200	1675	1680	1976	1261	715	1224
	2.0 l 132 kW bi-TDI	0WR	3400	3200	1675	1680	1976	1270	706	1224
	2.0 l 132 kW bi-TDI with DSG	0WR	3400	3200	1675	1680	1976	1274	702	1224
	2.0 l 103 kW TDI 4MOTION	0WR	3400	3200	1700	1720	2027	1259	768	1173
	2.0 l 132 kW bi-TDI 4MOTION	0WR	3400	3200	1700	1720	2075	1301	774	1125
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WR	3400	3200	1700	1720	2075	1315	760	1125
Panel Caravelle LWB	2.0 l 110KW TFSI	0WR	3400	3200	1675	1680	2108	1278	830	1092
	2.0 l 150 kW TFSI	0WR	3400	3200	1675	1680	2108	1278	830	1092
	2.0 l 150 kW TFSI with DSG	0WR	3400	3200	1675	1680	2120	1290	830	1080
	2.0 l 150 kW TFSI DSG 4MOTION	0WR	3400	3200	1700	1720	2242	1337	905	958
	2.0 l 75KW TDI	0WR	3400	3200	1625	1680	2046	1224	822	1154
	2.0 l 103KW TDI	0WR	3400	3200	1675	1680	2075	1258	817	1125
	2.0 l 103 kW TDI with DSG	0WR	3400	3200	1675	1680	2075	1270	805	1225
	2.0 l 132 kW bi-TDI	0WR	3400	3200	1675	1680	2128	1300	828	1072
	2.0 l 132 kW bi-TDI with DSG	0WR	3400	3200	1675	1680	2140	1312	828	1060
	2.0 l 103 kW TDI 4MOTION	0WR	3400	3200	1700	1720	2201	1303	898	999
	2.0 l 132 kW bi-TDI 4MOTION	0WR	3400	3200	1700	1720	2249	1345	904	951
	2.0 l 132 kW bi-TDI 4MOTION DSG	0WR	3400	3200	1700	1720	2262	1359	903	938

Release date: November 2014

6.5.3.9 Panel van/window van 3.08t/panel van/Caravelle 3.08t (wheelbase: 3400mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Panel window LWB	2.0 I 150 kW TFSI DSG 4MOTION	0WS	3400	3080	1600	1600	2055	1293	762	1025
	2.0 I 103 kW TDI 4MOTION	0WS	3400	3080	1600	1600	2027	1259	768	1053
	2.0 I 132 kW bi-TDI 4MOTION	0WS	3400	3080	1600	1600	2075	1301	774	1075
	2.0 I 132 kW BITDI DSG 4MOTION	0WS	3400	3080	1600	1600	2075	1315	760	1005
Panel Caravelle LWB	2.0 I 150 kW TFSI DSG 4MOTION	0WS	3400	3080	1600	1600	2242	1337	905	838
	2.0 I 103 kW TDI 4MOTION	0WS	3400	3080	1600	1600	2201	1303	898	879
	2.0 I 132 kW bi-TDI 4MOTION	0WS	3400	3080	1600	1600	2249	1345	904	831
	2.0 I 132 kW BITDI DSG 4MOTION	0WS	3400	3080	1600	1600	2262	1359	903	818

Release date: November 2014

6.5.4 Weight tables chassis

(kerb weights with driver, ready to drive with fuel tank 90% full)

6.5.4.1 Chassis 3.2 t (wheelbase: 3000 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Running gear	2.0 l 110KW TFSI	0WR	3000	3200	1650	1720	1601	1197	404	1599
	2.0 l 75KW TDI	0WR	3000	3200	1600	1720	1571	1157	414	1629
	2.0 l 84 kW TDI (BlueMotion Technology)	0WR	3000	3200	1600	1720	1571	1157	414	1629
	2.0 l 103KW TDI	0WR	3000	3200	1650	1720	1575	1180	395	1625
	2.0 l 103 kW TDI with DSG	0WR	3000	3200	1650	1720	1587	1192	395	1613
	2.0 l 132 kW bi-TDI	0WR	3000	3200	1650	1720	1618	1219	399	1582
	2.0 l 132 kW BITDI with DSG	0WR	3000	3200	1650	1720	1630	1231	399	1570
	2.0 l 103 kW TDI 4MOTION	0WR	3000	3200	1710	1720	1695	1225	470	1505
	2.0 l 132 kW bi-TDI 4MOTION	0WR	3000	3200	1710	1720	1739	1264	475	1461
	2.0 l 132 kW BITDI DSG 4MOTION	0WR	3000	3200	1710	1720	1752	1278	474	1448

Release date: November 2014

6.5.4.2 Chassis 3.2 t (wheelbase: 3400mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Running gear	2.0 l 110KW TFSI	0WR	3400	3200	1650	1720	1617	1220	397	1583
	2.0 l 75KW TDI	0WR	3400	3200	1600	1720	1556	1169	387	1644
	2.0 l 84 kW TDI (BlueMotion Technology)	0WR	3400	3200	1600	1720	1556	1169	387	1556
	2.0 l 103KW TDI	0WR	3400	3200	1650	1720	1591	1203	388	1609
	2.0 l 103 kW TDI with DSG	0WR	3400	3200	1650	1720	1603	1215	388	1597
	2.0 l 132 kW bi-TDI	0WR	3400	3200	1650	1720	1633	1242	391	1567
	2.0 l 132 kW BITDI with DSG	0WR	3400	3200	1650	1720	1645	1254	391	1555
	2.0 l 103 kW TDI 4MOTION	0WR	3400	3200	1710	1720	1711	1248	463	1489
	2.0 l 132 kW bi-TDI BIT 4MOTION	0WR	3400	3200	1710	1720	1754	1287	467	1446
	2.0 l 132 kW BITDI DSG 4MOTION	0WR	3400	3200	1710	1720	1767	1301	466	1433

Release date: November 2014

6.5.4.3 Double cab/chassis 3.2 t (wheelbase: 3400 mm)

Model	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
DC chassis	2.0 l 110KW TFSI	OWR	3400	3200	1650	1720	1700	1251	449	1500
	2.0 l 75KW TDI	OWR	3400	3200	1650	1720	1639	1200	439	1561
	2.0 l 84 kW TDI (BlueMotion Technology)	OWR	3400	3200	1650	1720	1639	1200	439	1561
	2.0 l 103KW TDI	OWR	3400	3200	1650	1720	1674	1234	440	1526
	2.0 l 103 kW TDI with DSG	OWR	3400	3200	1650	1720	1686	1246	440	1514
	2.0 l 132 kW bi-TDI	OWR	3400	3200	1650	1720	1717	1273	444	1483
	2.0 l 132 kW BITDI with DSG	OWR	3400	3200	1650	1720	1729	1285	444	1471
	2.0 l 103 kW TDI 4MOTION	OWR	3400	3200	1710	1720	1794	1279	515	1406
	2.0 l 132 kW bi-TDI 4MOTION	OWR	3400	3200	1710	1720	1838	1318	520	1362
	2.0 l 132 kW BITDI DSG 4MOTION	OWR	3400	3200	1710	1720	1851	1332	519	1349

Release date: November 2014

6.5.4.4 Window van 3.2 t Widder / Rockton Expedition (wheelbase 3000 mm)

Window van SWB	Engine & gearbox	PR no. (GVWR)	Wheelbase	Perm. weights			Unl. weight incl. driver			Load rating max. [kg]
				Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Gross vehicle weight (min.)	FA [kg]	RA [kg]	
Window van SWB	2.0 l 103 kW TDI 4Motion *	OWR	3000	3200	1710	1720	2425	1357	1068	775
	2.0 l 103 kW TDI 4Motion **	OWR	3400	3200	1710	1720	2425	1357	1068	775

*) Widder PR no. +F4D

**) Transporter Rockton Expedition PR no. +FOX

6.5.4.5 Back-to-back cab 3.2 t

Models	Engine & gearbox	PR no. (GVWR)	Perm. weights			Unl. weight incl. driver, tank 90%			Load rating max. [kg]
			Gross vehicle weight [kg]	Front axle load (FA)	Rear axle load (RA)	Total weight (min.)	FA [kg]	RA [kg]	
Back-to-back cab	2.0 l 75 kW TDI M5* MQ 250-5F	0WR	3200	1710	--	1351	1351	--	1849
	2.0 l 103 kW TDI M6** MQ 500-6F	0WR	3200	1710	--	1386	1386	--	1814
	2.0 l 103 kW TDI AG7*** DQ 500-7F	0WR	3200	1710	--	1398	1398	--	1802
	2.0 l 132KW TDI M6** MQ 500-6F	0WR	3200	1710	--	1433	1433	--	1767
	2.0 l 132KW TDI AG7*** DQ 500-7F	0WR	3200	1710	--	1445	1445	--	1755

Release date: November 2014

*) Total weight M5 = 4900 kg

**) Total weight M6 = 5200 kg

***) Total weight AG7 = 5300 kg

7 Calculations

7.1 Determining the centre of gravity

The overall centre of gravity height (vehicle with add-ons or complete body without load) should be kept as low as possible.

The centre of gravity in the vehicle longitudinal direction is given in relation to a vehicle axle. The centre of gravity height is related to the wheel hub or related to the road.

Volkswagen recommends having the centre of gravity determined by a recognised test institution with experience in this field (e.g., DEKRA, TÜV or others).

For the body builder to determine the centre of gravity, we recommend following the procedure described under 7.1.1 "Determining the centre of gravity in x-direction" and 7.1.2 "Determining the centre of gravity in z-direction" and using personnel with the corresponding qualifications to obtain usable results.

7.1.1 Determining the centre of gravity in x-direction

Procedure:

- The vehicle must be weighed with the add-ons or complete body without load.
- Inflate the tyres up to the tyre pressure that is specified for the respective maximum permitted axle load.
- Completely fill all fluid containers (fuel tank, washer fluid reservoir, if applicable, hydraulic tank, water tank etc.).
- Drive the vehicle onto the scales, switch off the engine, shift the gearbox to neutral and release the brakes.
- The vehicle must be standing horizontal and level for weighing.
- First weigh the individual axle loads (front and rear axle load) and then the gross weight of the vehicle.
- The measured values can be used to calculate the position of the centre of gravity in the vehicle longitudinal direction with the equations (3) and (4). The equation (2) should be used to check the results of (3) and (4).

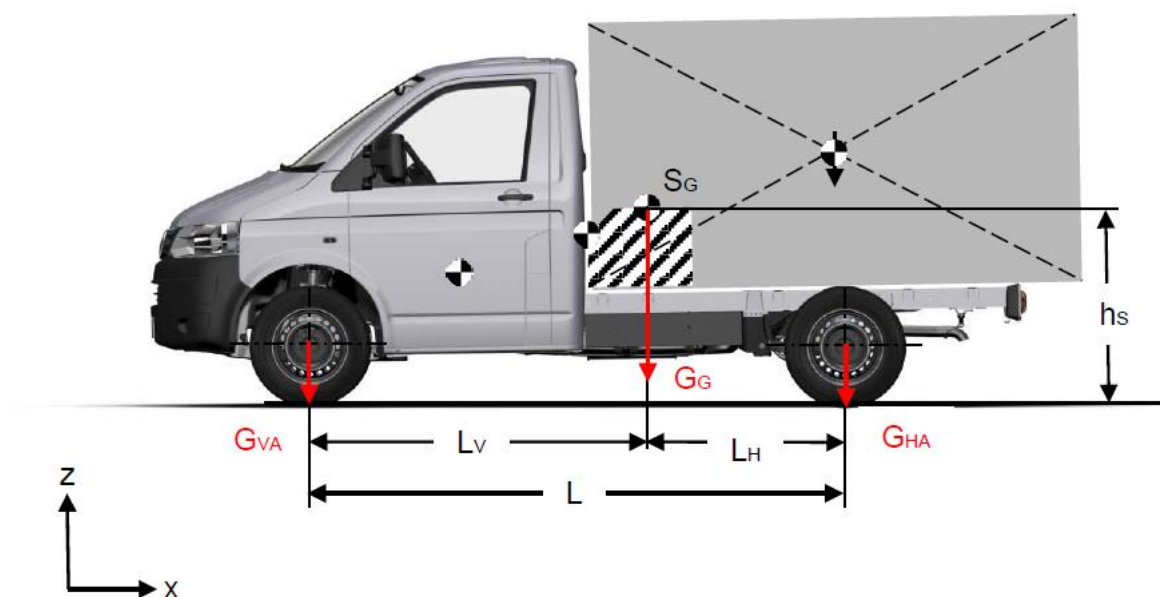


Fig. 1: Determining the position of the vehicle centre of gravity in x-direction

Determining the total weight of the unladen vehicle with add-ons and body.

$$G_G = G_{HA} + G_{VA} \quad (1)$$

Calculating the position of the overall centre of gravity S_G in x - direction

$$L = L_V + L_H \quad (2)$$

$$L_V = \frac{G_{HA}}{G_G} L \quad (3)$$

$$L_H = \frac{G_{VA}}{G_G} L \quad (4)$$

Abbreviations and parameters used:

G_G	-	Total weight of unladen vehicle
G_{VA}	-	Front axle load of unladen vehicle (specification or weighing of respective chassis)
G_{HA}	-	Rear axle load of unladen vehicle (specification or weighing of respective chassis)
S_G	-	Overall centre of gravity
L	-	Wheelbase
L_V	-	Distance from the overall centre of gravity of the empty vehicle to the front axle
L_H	-	Distance from the overall centre of gravity of the empty vehicle to the rear axle

Practical note

The practical determination of the centre of gravity height may only be performed by appropriately qualified personnel with the help of suitable and calibrated scales.

To reduce measuring errors, each measured value should be calculated at least three times and an average value calculated from the three results. This value is then used for calculating in accordance with the equations (3) and (4).

Information

The wheelbase "L" is defined by the vehicle prototype (see order) or should be defined by measuring the length in accordance with DIN 70020, part 1.

7.1.2 Determining the centre of gravity in z-direction

So that the body builder can determine the vehicle total centre of gravity height h_s (see Fig. 1), Volkswagen AG recommends the following procedure after completion of the whole vehicle:

- After conversion, the vehicle should be weighed on board scales or on suitable wheel load scales in two subsequent driving positions.
- When doing so, the measured axle loads shall be determined with the vehicle in a level state **GFA** and **GRA** (see 7.1.1 "Determining the centre of gravity in x-direction") and the axle loads on an axle **QRA** or **QFA** increased by the quantity h' .

The raising height h' should be as large as possible in accordance with the front and rear overhang angles of the vehicle (also known as entry or exit angles). The target value is > 600 mm.

- To reduce measuring errors, at least six individual measurements should be made in the axle load calculation for each axle: three per axle with vehicle level and three each with raised axle. The average value for each axle should be calculated from the three measurements for a state.
- The average value should be calculated from these three values and used in the calculations with the equations (5) to (9). To improve the accuracy of the final result, the axle load modification should be determined with raised rear axle and raised front axle.

Practical note

Observe the following to avoid incorrect measurements:

- The vehicle must be standing perfectly horizontal for weighing in level vehicle state. Height differences between the axles caused by scales should be compensated accordingly.
- When raising to the required lifting height, the axle being weighed should be locked to prevent suspension compression or extension.
- When raising to the required lifting height, no part of the vehicle may touch the ground.
- All vehicle wheels must be able to rotate freely: select neutral, release all brakes including handbrake and place chocks at sufficient distance from the wheels, if necessary.
- Move vehicle with own power (to weigh the respective other vehicle axle) to relieve any tension in the vehicle.
- Ensure that no objects inside the vehicle can move during the measurements.

If the vehicle suspension cannot be locked due to the body or available space, further axle load measurements must be carried out at different levels (for example, 600 mm, 700 mm and 800 mm). This also allows errors to be limited by averaging. The centre of gravity height results from the arithmetic average of the individual centre of gravity heights for each raising height.

Example of procedure

1. The vehicle must be weighed with the add-ons or complete body without load.
2. Inflate the tyres up to the tyre pressure that is specified for the respective maximum permitted axle load.
3. Completely fill all fluid containers (fuel tank, washer fluid reservoir, if applicable, hydraulic tank, water tank etc.).
4. On the scales, switch off the engine, set gearbox to neutral and release the brakes.
5. Position the vehicle with the rear axle (RA) horizontal and level on the scales and measure the axle load.
6. Raise the front axle (FA) by the value h' , at least 600 mm. A greater height h' taking the other vehicle-related conditions into consideration is more favourable for the final result. The value h' must be measured for all individual measurements with raised axle and should be as identical as possible. Alternatively to the raised height h' , the angle α between the wheel hubs can be defined.
7. Determine the axle load displacement Q_{RA} that occurs at the rear on the scales.
8. Lower and turn the vehicle around and perform the corresponding measurements on the front axle (first G_{FA} with level and then Q_{FA} with the rear axle raised by h').
9. Perform steps 4–7 a total of three times (with locked suspension).
10. The measured values can be used to calculate the height of the centre of gravity with the equations (5) to (9).
11. In the calculations using the equations (3) to (9), all length measurements should be in millimetres (mm) and all weight figures in decanewton (1 daN = 10 N).
12. Raised the raised axle further (by e.g. 100 mm) and measure the height of the centre of gravity again to confirm the measuring result.

Practical note

The practical determination of the centre of gravity height may only be performed by appropriately qualified personnel with the help of suitable and calibrated measuring systems and measuring tools.

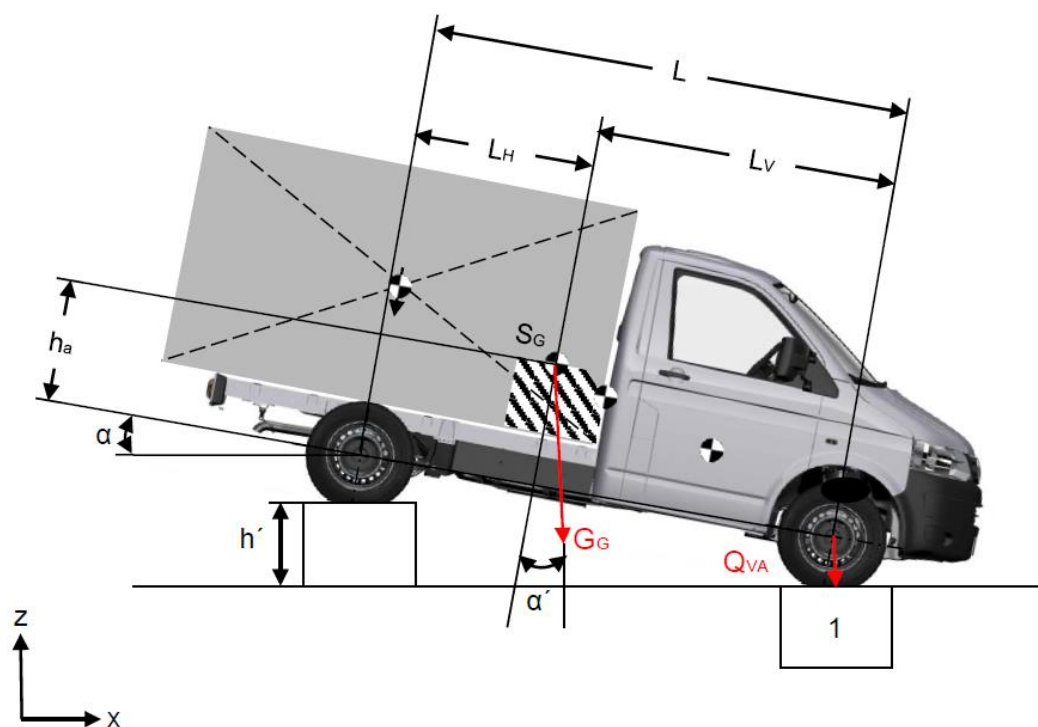
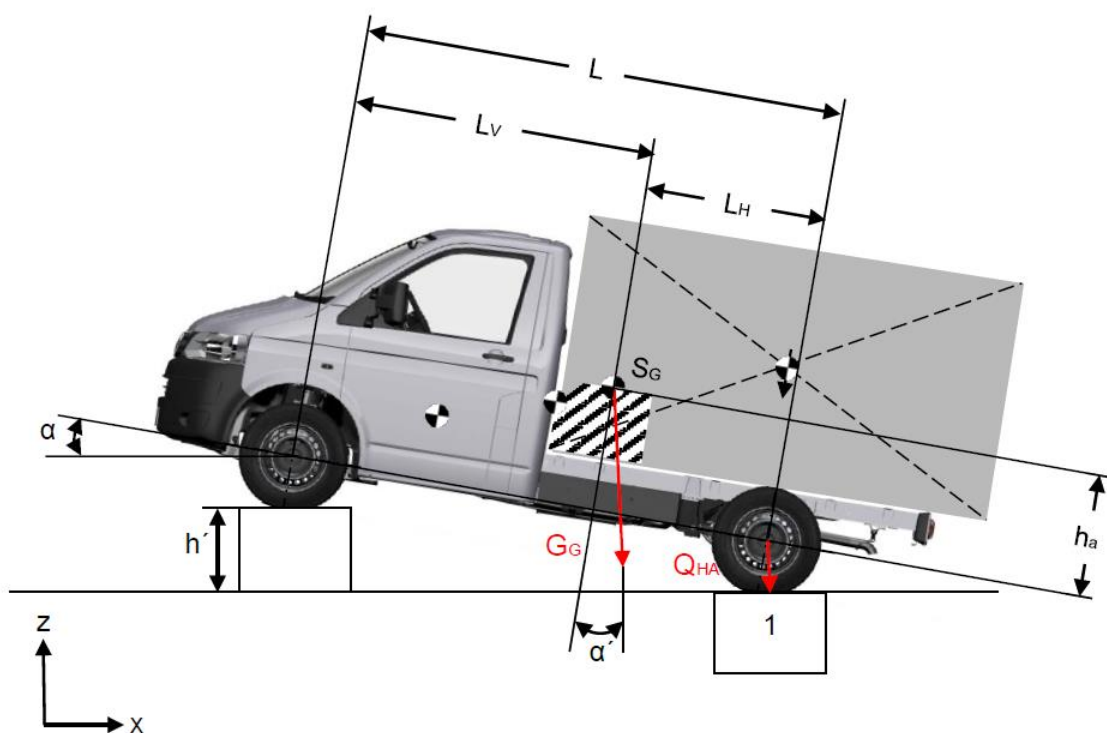


Fig. 2: Determining the position of the vehicle centre of gravity in z-direction

Determining the overall centre of gravity S_G in z-direction:

$$h_S = h_a + r_{stat} \quad (5)$$

Determining the overall centre of gravity S_G in z-direction for the raised front axle:

$$h_S = \left(\frac{Q_{HA} - G_{HA}}{G_G} \times L \times \frac{1}{\tan \alpha} \right) + r_{stat} \quad (6)$$

$$\sin \alpha = \frac{h'}{L} \quad (6a)$$

$$\alpha = \arcsin \left(\frac{h'}{L} \right) \quad (6b)$$

$$h_S = \left(\frac{1}{h'} \times \frac{Q_{HA} - G_{HA}}{G_G} \times \sqrt{L^2 - h'^2} \right) + r_{stat} \quad (7)$$

Determining the overall centre of gravity S_G in z-direction for the raised front axle:

$$h_S = \left(\frac{Q_{VA} - G_{VA}}{G_G} \times L \times \frac{1}{\tan \alpha} \right) + r_{stat} \quad (8)$$

$$\sin \alpha = \frac{h'}{L} \quad (8a)$$

$$\alpha = \arcsin \left(\frac{h'}{L} \right) \quad (8b)$$

$$h_S = \left(\frac{1}{h'} \times \frac{Q_{VA} - G_{VA}}{G_G} \times \sqrt{L^2 - h'^2} \right) + r_{stat} \quad (9)$$

Abbreviations and parameters used:

r_{stat}	-	Static tyre radius
Q_{VA}	-	Front axle load when vehicle raised at rear
Q_{HA}	-	Rear axle load when vehicle raised at front
G_G	-	Total weight of unladen vehicle
G_{VA}	-	Front axle load of unladen vehicle (specification or weighing of respective chassis)
G_{HA}	-	Rear axle load of unladen vehicle (specification or weighing of respective chassis)
L	-	Wheelbase
L_V	-	Distance from the overall centre of gravity of the empty vehicle to the front axle
L_H	-	Distance from the overall centre of gravity of the empty vehicle to the rear axle
h_S	-	Centre of gravity height over road
h_a	-	Centre of gravity height over centre of wheel
h'	-	Height by which the vehicle has been raised
1	-	Weighing system

Information

The wheelbase "L" is defined by the vehicle prototype (see order) or should be defined by measuring the length in accordance with DIN 70020, part 1.

Practical note

The measured centre of gravity may not exceed the limit values named in 2.1.3.1 "Maximum permitted centre of gravity".

7.2. Axle load calculation

An axle load calculation must be performed when a chassis is provided with a body, or if heavy add-on parts have been added or removed. The purpose is to establish whether the gross axle weight ratings will be exceeded when the vehicle is loaded evenly up to the permitted total mass.

Even loading means that the centre of gravity of the payload is in the geometrical midpoint of the loadbed. This corresponds to even loading of the loadbed, e.g. with sand (water load). The height of the centre of gravity above the carriageway (Z-direction) is not considered in the axle load calculation.

Furthermore, an axle load calculation can be carried out in advance of planning for bodies and heavy add-on parts (e.g. a tail lift) in order to define the optimum mounting position of these parts and to guarantee that the gross axle weight ratings are not exceeded. This is particularly important for add-on parts mounted ahead of the front axle (e.g. snowplough) or behind the rear axle (e.g. tail lift, rear luggage carrier).

The axle load calculation forms part of the acceptance of the converted or completed vehicle by the technical inspection centre or the technical service.

Abbreviations and parameters used:

G_{zul}	-	Gross vehicle weight rating of vehicle (kg, from type plate or vehicle registration documents)
G_{zulVA}	-	Gross front axle rating (kg, from type plate or vehicle registration documents)
G_{zulHA}	-	Gross rear axle rating (kg, from type plate or vehicle registration documents)
G_G	-	Gross weight of unladen vehicle (kerb weight incl. 75 kg driver)
G_{VA}	-	Front axle load of unladen vehicle (kg)
G_{HA}	-	Rear axle load of unladen vehicle (kg)
G_{MinVA}	-	Minimum front axle load (kg) (see body builder guidelines)
G_{NutzVA}	-	Payload component of front axle (kg)
G_{NutzHA}	-	Payload component of rear axle (kg)
S_G	-	Overall centre of gravity
L	-	Wheelbase (mm)
L_V	-	Distance from overall centre of gravity of empty vehicle to front axle (mm)
L_H	-	Distance from overall centre of gravity of empty vehicle to rear axle (mm)
L_{Ladefl}	-	Length of loadbed (mm)
$L_{\ddot{u}}$	-	Overhang, distance from middle of rear axle – rear edge of body (mm)
$Nutzlast$	-	Payload (kg)

7.2.1 Determining the axle load distribution in the complete vehicle

Procedure:

- The vehicle must be weighed with the complete add-ons and body, without load (payload).
- It is weighed without the driver. Later, 75 kg is added to take account of the driver.
- Inflate the tyres up to the tyre pressure that is specified for the respective axle load.
- Completely fill all fluid containers (fuel tank, washer fluid reservoir, if applicable, hydraulic tank, water tank etc.). The fuel tank is only filled 90% full. (If this is not possible, include the corresponding weights of the missing quantities of liquid in the subsequent calculation, distributed between the axles.)
- Switch off the engine when weighing, set the gearbox to neutral and release the brakes.
- The vehicle must be standing horizontal and level for weighing.
- First weigh the individual axle loads G_{VA} and G_{HA} then the gross weight G_G of the vehicle as a check.
- Measure the following linear dimensions on the vehicle:
 - + Length of loadbed L_{Ladefl}
 - + Wheelbase L (3,000 mm T5 SWB, 3,400 mm T5 LWB)
 - + Overhang $L_Ü$ (distance from middle of rear axle – rear edge of body)
- With the measured values, it is possible to check the distribution of the remaining payload between the axles and compliance with the gross axle weight ratings with full load.

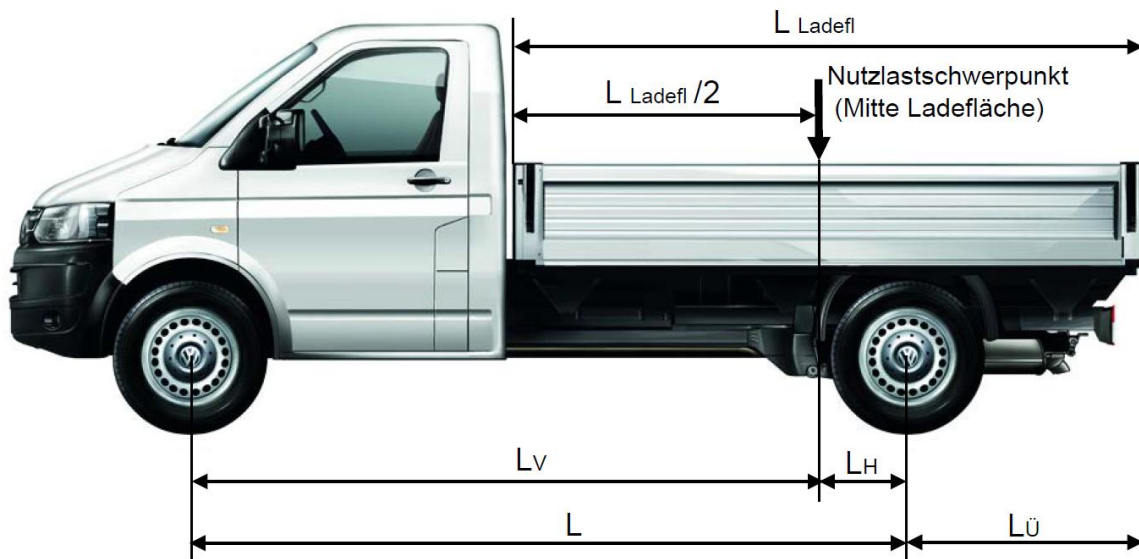


Fig. 1: Axle load calculation in the complete vehicle

Calculation procedure:

First, calculate the theoretical payload:

The payload is the gross vehicle weight rating of the vehicle less the kerb weight. Refer to the vehicle registration documents or the type plate for the gross vehicle weight rating.

The kerb weight was obtained by weighing. The kerb mass must always also include the driver at 75 kg and a 90% filled fuel tank. Furthermore, all parts supplied ex-works (e.g. spare wheel if provided) and all parts that are permanently connected to the vehicle such as bodies, liftgates, loading cranes, etc.)

$$Nutzlast = G_{zul} - G_G$$

Then calculate the distance from the centre of gravity of the payload to the rear axle L_H and to the front axle L_V with the load evenly distributed (middle of the loadbed).

$$L_H = \frac{L_{Ladefl}}{2} - L_{\ddot{U}}$$

$$L_V = L - L_H$$

The centre of gravity of the evenly distributed load is thus behind the front axle by the amount L_V and in front of the rear axle by the amount L_H . The centre of gravity of the payload may also be behind the rear axle under certain circumstances ($L_V > L$). In this case, L_H is negative.

The payload must be distributed proportionately between the front and rear axles:

$$G_{NutzVA} = \frac{Nutzlast}{L} L_H$$

$$G_{NutzHA} = \frac{Nutzlast}{L} L_V$$

These payload proportions for the front and rear axles must be added to the weighed kerb weights of the front and rear axles. The total amount in each case must not exceed the gross axle weight rating.

$$G_{VA} + G_{NutzVA} \leq G_{zulVA}$$

$$G_{HA} + G_{NutzHA} \leq G_{zulHA}$$

The payload must be reduced if the gross axle weight ratings are exceeded, with this even load distribution, before the vehicle has been loaded to the gross vehicle weight rating. Some registration countries accept compliance with the gross vehicle weight rating with an uneven load distribution. Other registration countries demand a reduction in the gross vehicle weight rating to the maximum possible value with even weight distribution.

7.2.2 Calculating the axle load when additional add-on parts are planned

It may also be necessary to calculate the axle load if heavy additional add-on parts are planned for a vehicle and it is required for their influence on the axle loads, the remaining payload and the steering properties of the vehicle (minimum front axle) to be checked in advance. Practical examples are liftgates, rear luggage carriers and add-on devices of all kinds at the front and rear.

Sample calculation for liftgate:

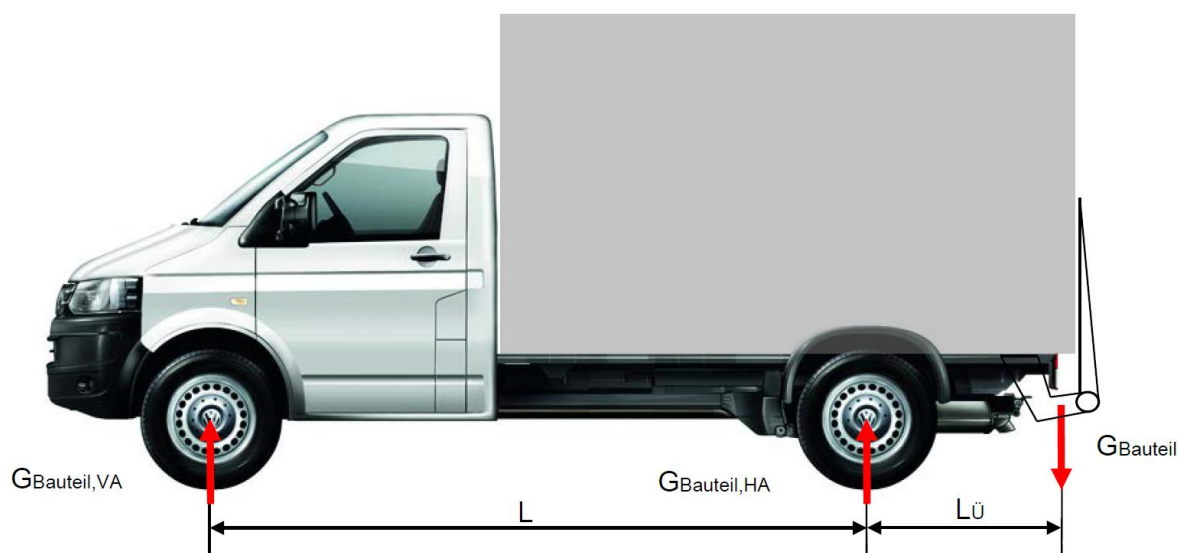


Fig. 2: Calculating the axle load when additional add-on parts are planned

Formulae for calculating the additional load on the axles due to the new component (liftgate):

$$G_{Bauteil} = G_{BauteilVA} + G_{BauteilHA}$$

Calculation example:

Weight of liftgate $G_{Bauteil}$:	= 150 kg
Wheelbase L :	= 3,000 mm
Overhang to centre of gravity of liftgate $L_{\ddot{U}}$:	= 1095 mm

Calculating the additional load on the rear axle due to the weight of the liftgate:

$$G_{BauteilHA} = \frac{(L + L_{\ddot{U}})}{L} G_{Bauteil} = \frac{(3.000 \text{ mm} + 1.095 \text{ mm})}{3.000 \text{ mm}} 150 \text{ kg} = 204.75 \text{ kg}$$

Calculating the change on load on the front axle due to the weight of the liftgate:

$$G_{BauteilVA} = G_{Bauteil} - G_{BauteilHA} = 150 \text{ kg} - 204,75 \text{ kg} = -54,75 \text{ kg}$$

(Negative result = reduction in load on the front axle)

The additional add-on part is not allowed to cause the load on the front axle of the vehicle to drop below its minimum value; neither is it permitted for the maximum gross axle weight ratings on the front and rear axles to be exceeded.

$$G_{MinVA} \geq G_{VA} + G_{NutzVA} + G_{BauteilVA} \leq G_{zulVA}$$

$$G_{HA} + G_{NutzHA} + G_{BauteilHA} \leq G_{zulHA}$$

Please note:

- Heavy add-on parts ahead of the front axle reduce the load on the rear axle and increase the front axle load to an increased extent.
- Heavy add-on parts behind the rear axle reduce the load on the front axle and increase the rear axle load to an increased extent.

8 Listings

8.1 List of changes

Changes to the body builder guidelines compared to the data status of May 2014

Chapter no.	Section heading	Scope of modification
1.	General	
1.1	Introduction	
1.1.1	Concept of these guidelines	
1.1.2	Means of representation	
1.1.3	Vehicle safety	
1.1.4	Operational safety	
1.2	General information	
1.2.1	Product and vehicle information for body builders	
1.2.1.1	Contact in Germany	Chapter revised
1.2.1.2	International contact	Chapter revised
1.2.1.3	Electronic Repair and Workshop Information from Volkswagen AG (erWin*) <small>*Information system from Volkswagen AG, subject to payment</small>	
1.2.1.4	Genuine parts online ordering portal	
1.2.1.5	Online owner's manual	
1.2.1.6	European Type Approval (ETA) and EC Certificate of Conformity (CoC)	Content of chapter revised
1.2.2	Body builder guidelines, consulting	
1.2.2.1	Safety certificate	
1.2.2.2	Application for the safety certificate	
1.2.2.3	Legal entitlements	
1.2.3	Warranty and product liability of the body builder	
1.2.4	Ensuring traceability	
1.2.5	Badges	
1.2.5.1	Position of vehicle rear	
1.2.5.2	Appearance of overall vehicle	
1.2.5.3	Non-Volkswagen trademarks	
1.2.6	Recommendations for vehicle storage	Chapter revised
1.2.7	Compliance with environmental rules and regulations	
1.2.8	Recommendations for inspection, maintenance and repair	
1.2.9	Accident prevention	
1.2.10	Quality system	
1.3	Delivery range	Values in table: figure in superscript corrected
1.4	Advantages of the concept	
1.5	Planning bodies	
1.5.1	Selection of base vehicle	Content of chapter revised
1.5.2	Chapter revised	
1.5.3	Vehicle acceptance	
1.6	Special equipment	

Chapter no.	Section heading	Scope of modification
2.	Technical data for planning	
2.1	Base vehicle	
2.1.1	Vehicle dimensions	
2.1.1.1	Basic data – panel van/window van short and long wheelbase	
2.1.1.2	Basic data – chassis/platform van short and long wheelbase	
2.1.1.3	Basic data – back-to-back cab	
2.1.2	Overhang angle and ramp angle	
2.1.3	Vehicle centre of gravity	
2.1.3.1	Information about height of centre of gravity acc. to Directive 71/320 EEC	Table (p. 46) supplemented
2.1.4	Bodies with a high centre of gravity	
2.1.5	Determining centre of gravity	
2.1.5.1	Determining the centre of gravity in x-direction	
2.1.5.2	Determining the centre of gravity in z-direction	
2.1.6	Maximum dimensions	
2.1.7	Steerability	
2.2	Chassis	
2.2.1	Permitted weights and unladen weights	Chapter revised
2.2.1.1	One-sided weight distribution	
2.2.2	Turning circle	
2.2.3	Authorised tyre sizes	
2.2.4	Modifications to axles	
2.2.5	Modifications to the steering system	
2.2.6	Brake system and brake control system ESP	
2.2.6.1	General information	
2.2.6.2	Vehicle stability and ESP	
2.2.6.3	Influence of vehicle conversions on the function of the brake control system ESP	
2.2.6.4	Activating the ESP for special vehicles	
2.2.6.5	Downgrading ESP	
2.2.6.6	Routing additional lines along the brake hoses/brake lines	
2.2.7	Modification of springs, suspension mounting, dampers	
2.2.8	Wheel alignment settings	
2.2.9	Wings and wheel houses	
02/02/2010	Overhang extensions	
2.3	Body-in-white	
2.3.1	Roof loads/vehicle roof	Chapter updated
2.3.1.1	Dynamic roof loads	
2.3.1.2	Static roof loads	
2.3.2	Modifications to the body-in-white	
2.3.2.1	Threaded connections	
2.3.2.2	Welding work	
2.3.2.3	Welded joints	
2.3.2.4	Selection of welding process	
2.3.2.5	Spot welding	
2.3.2.6	Shielding gas hole spot welding	

Chapter no.	Section heading	Scope of modification
2.3.2.7	Tacking	
2.3.2.8	Welding is not allowed	
2.3.2.9	Corrosion protection after welding	
2.3.2.10	Corrosion protection measures	
2.3.2.11	Planning measures	
2.3.2.12	Component design measures	
2.3.2.13	Coating measures	
2.3.2.14	Work on the vehicle	
2.4	Interiors	
2.4.1	Modifications in the area of airbags	
2.4.2	Modifications in the area of seats	
2.4.2.1	Belt anchors	
2.4.3	Forced ventilation	
2.4.4	Acoustic insulation	
2.5	Electrical/electronic systems	
2.5.1	Lights	
2.5.1.1	Vehicle lighting devices	Chapter revised
2.5.1.1.1	Retrofitting 3rd Brake light	
2.5.1.2	Mounting special lights	
2.5.1.2.1	Priority vehicle light preparation	
2.5.1.2.2	Identification light preparation	
2.5.1.3	Turn signals on excess width bodies	
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2.5.2	Vehicle electrical system	
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2.5.2.3	Retrofitting electrical devices	
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2.5.2.5	Mobile communication systems	
2.5.2.6	CAN data bus	
2.5.3	Electrical interface for special vehicles	
2.5.3.1	Position of the interface	
2.5.3.2	General information on the interfaces for special purpose vehicles (Transporter, from model year 2010)	
2.5.3.3	Assignment of the terminal strip	
2.5.3.4	Contact assignment on the multifunction control unit	
2.5.3.5	Circuit diagrams for the special interfaces	
2.5.4	vehicle battery	Chapter revised
2.5.4.1	Installation of additional battery	
2.5.5	Subsequent installation of generators	
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2.6.1	Engine/powertrain components	
2.6.2	Drive shafts	
2.6.3	Fuel system	
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2.7	Ancillary drives, engine/gearbox	

Chapter no.	Section heading	Scope of modification
2.7.1	Retrofitting air conditioning system	Chapter revised
2.7.2	Preparation for loadspace cooling (vehicles transporting fresh products)	
2.7.3	Retrofit load compartment cooling	
2.7.3.1	Specifications of standard refrigerant compressor	
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2.7.4	Assembly and disassembly of the poly V-belt	
2.7.4.1	Removal of the belt	
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2.7.4.3	Working range of the belt tensioner	
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3.2.2.3	Seat retrofit against direction of travel	
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4.	Modifications to open bodies	
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4.2	Chassis frame	
4.2.1	Drilling on the chassis frame	
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4.2.3	Wheelbase and overhang extensions	Chapter supplemented.
4.2.4	Sections of the chassis frame	
4.3	Subframe for light commercial vehicles	
4.3.1	Configuration of the subframe	
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Chapter no.	Section heading	Scope of modification
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4.8	Information about mounting a loading crane	
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5.	Implementation of special bodies	
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5.1.0	Base vehicle equipment	
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8.1	List of modifications	Updated

Body builder guidelines

The new Transporter

Body builder guidelines

Subject to amendment

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Internet:

www.volkswagen-nutzfahrzeuge.de

www.umbauportal.de

www.bb-database.com

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