The logo features a white stylized outline of a Sprinter van's roof and front profile, positioned above the word "SPRINTER" in a bold, white, italicized sans-serif font. The background is a vibrant blue with a grid of thin white lines and scattered small white squares, creating a technical or digital aesthetic.

SPRINTER

BODY BUILDER INFORMATION BOOK

Model series VB



DODGE



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1. Introduction

Chrysler LLC and Chrysler Vans LLC Body Builder Information Book

This is the 2007 -2008 Body Builders Information Book for Chrysler LLC (“**CLLC**”) and Chrysler Vans (“**CVLLC**”) Dodge Sprinter & Freightliner Sprinter vans and chassis cabs.

This publication provides Body Builders who modify or install equipment in Dodge Sprinters & Freightliner Sprinters (“**Sprinter**”) Engineering specifications and assists them with their regulatory responsibilities.

The specifications and descriptions contained in this book, including regulatory information, are believed to be accurate at time of publication. Nevertheless Body Builders should consult with legal counsel to ensure compliance of pertinent laws and regulations. Periodically, this book will be updated as new products are introduced and additional information regarding these products become available.

Upon written requests CLLC and CVLLC’s designee set forth below will provide certain additional technical data.

Sprinter Engineering & Compliance Support Team
USA/Canada (SECST)

Att: Sprinter Engineering & Compliance Support
Team
8501 Palmetto Commerce Parkway
Ladson, SC 29456
Fax: (843)695-5031

Prior to making any modifications to or installing any equipment in or on a Sprinter, read this Information Book, and if necessary consult with Sprinter Engineering & Compliance Support USA/Canada. Copies of this book may be obtained through the following website:

www.dodge.com/bodybuilder

1.1. The aim of the Body Builder Information Book

The Design of the Body Builder Information Book is divided into 10 interlinked sections to help find the required information more quickly:

1. Introduction
2. General
3. Planning of bodies
4. Technical Limit in values for planning
5. Damage prevention
6. Electrics/electronics
7. Modifications to the basic vehicle
8. Body types
9. Calculations
10. Technical details

Further information and technical data is available in the 2D drawings as separate documents in the aforementioned website.

The table of content in PDF format is linked to help find the required information more quickly.

Ensure that the limiting values selected in Section 4 are observed as design planning must be based on these values.

The sections entitled “Modifications to the basic vehicle” and “Body Design” are the main sources of technical information contained in this Body Builder Information Book.

A ‘**Sprinter (VB) Service Manual**’ including **wiring diagrams** is available through the following website:

www.techauthority.com

1.2. Vehicle Safety

Warning

Before installing bodies, attaching, mounting, installing or modifying assemblies, please read the relevant section of the detailed Operating Instructions concerning installation work. You could otherwise fail to recognize dangers, which may cause serious injury or death.

Notes on vehicle safety

We recommend that you only use parts, assemblies, conversion parts and accessories that have been recommended by CLLC & CVLLC for the type of vehicle concerned.

Any modifications to the vehicle that change the the vehicle's certification could endanger road users, or adversely affect exhaust emissions or noise.

The use of parts, assemblies, conversion parts or accessories that have not been recommended may jeopardize the safety of the vehicle.

Ensure that you comply with all applicable regulations as attachments, bodies, equipment on or modifications to the vehicle will change the vehicle and may invalidate the vehicle's certification.

1.3. Operating Safety

Warning

Work incorrectly carried out on equipment and its software could prevent this equipment from working. Since the electronic systems are networked, this might also affect systems that have not been modified.

Malfunctions in the electronic systems could seriously jeopardize the operating safety of the vehicle.

Have work on or modifications to electronic components carried out at a qualified specialist workshop which has the necessary expertise and tools to carry out the work required.

We recommend that you use an authorized Dodge Sprinter or Freightliner Sprinter Service Centers for this purpose. In particular, work relevant to safety or on safety related systems must be carried out by a qualified specialist workshop.

Some of the safety systems only function when the engine is running. For this reason, do not switch off the engine when the vehicle is in motion. Shutting the vehicle off while in motion impairs the vehicle brake system, driving stability and handling characteristics and may cause serious injury or death.

1.4. Regulatory Requirements:

The U.S and Canadian Governments have established emission standards and motor vehicle safety standards for new engines and/or new vehicles and equipment, under the provisions of the Clean Air Act, the Noise Control Act and the National Traffic and Motor Vehicle Safety Act in the U.S., and the Canadian Motor Vehicle Safety Act in Canada (“Acts”). The acts govern original equipment manufacturers of the Dodge Sprinter & Freightliner Sprinter vans, dealers, Body Builders and others engaged in the manufacturing and marketing of new motor vehicles and equipment.

Specifically, Part 568 of the Title 49 Code of Federal regulations (CFR) specify detailed regulatory requirements for vehicles manufactured in two or more stages, including Final Stage Manufactures. This document is intended to fulfill a part of Daimler AG’s obligations as the original equipment manufacturer or as an incomplete vehicle manufacturer. Section Emission and Safety (→ chapter 2.1), identifies regulatory requirements to assist Intermediate and Final Stage Manufacturers, in determining their obligations to conform to these standards.

Completed Sprinters “As Delivered”, are certified to comply with the aforementioned applicable standards. Compliance labels affixed to Sprinters and engines, provide the status of initial compliance at the date of manufactured by Daimler AG (“**DAG**”).

Body Builders and Dealers who make any modifications which may affect the final certification of the engine, vehicle or equipment assume the sole responsibility for the vehicle.

Body Builders should consult with legal counsel concerning the final certification status of the vehicle.

Further it is the Body Builder’s responsibility to ensure that such modifications do not affect the safety of the vehicle. Contact the Environment Protection Agency (U.S. EPA) & the California Air Resources Board (CARB) concerning the applicable U.S. & California exhaust emissions and noise standards, and the National Highway Traffic Safety Administration (NHTSA) concerning the applicable U.S. vehicle safety standards. For Canadian standards contact Environment Canada and Transport Canada respectively.

1. Upon completion of the modified vehicle, the Body Builder is required by law (Title 49 of the Code of Federal Regulations S567.7 in the United States, the Clean Air Act section 203(a), and under provisions of, EPA CFR Part 86 section 86.09911; Emissions standards for 1999 and later model year diesel heavy duty engines and vehicles) to certify that it continues to comply with all applicable Federal and Canada Motor Vehicle Safety standards/Regulations. In addition, the modified vehicle must continue to comply with all applicable Federal, Canada and/or California Emissions regulations. In the United States, sale of a non-complying new vehicle is illegal and is punishable by a fine of up \$25,000 (Federal) and \$5,000 (California) per vehicle for emissions non-compliance, \$1,000 per vehicle for safety non-compliance, plus a recall and other sanctions.

2. The Body Builder is responsible for certifying the altered vehicle pursuant to Title 49 of the Code of Federal Regulations S567.7 and S568.8 in the United States or to Section 9 of the Canadian Motor Vehicle safety Regulations in Canada.

3. Daimler AG makes no representations with regard to conformity of the altered vehicle to any other Federal or Canada Motor Vehicle Safety Standards or Regulations that may be affected by the vehicle alteration; it is the responsibility of the Body Builder to certify that the vehicle conforms to any other standards affected by the vehicle alteration.

1.5. Definitions

Body Builders include Final-Stage Manufactures, intermediate Manufacturers, incomplete Vehicle Manufacturers, Vehicle Alters and component suppliers.

Complete Vehicle means a vehicle that requires no further manufacturing operations to perform its intended function, other than the addition of readily attachable components, such as mirrors, tires or tire and rim assemblies, of finishing operations such as painting.

Completed Sprinters “As Delivered” means Sprinters manufactured by DAG reassembled if necessary by DAG’s designee, certified to comply with all applicable laws and regulations and delivered as a complete vehicle (Cargo & Passenger Vans, Chassis cab) to Dealers, Body Builders and others engaged in the manufacturing and marketing of new motor vehicles and equipment.

Daimler Group (“**DG**”) Parts means genuine parts, accessories for installation on or attached to vehicles, components, aggregates, assemblies, including those for exchange or replacement which are supplied by or through CLLC, CVLLC or any of its parent companies, affiliates or subsidiaries.

Dealers mean entities authorized by CLLC and CVLLC to sell and/or service Sprinters.

Final-Stage Manufacturer means a person who performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle.

Incomplete Vehicle means an assemblage consisting, as a minimum, of a frame and chassis structure. Power train, steering system, suspension, system and braking system, to the extent that those systems are to be part of the competed vehicle, that requires further manufacturing operations, other than the addition of readily attachable components, such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, to become a Completed Vehicle.

Incomplete Vehicle Manufacturer means a person who manufactures an incomplete vehicle by assembling components none of which, taken separately, constitute an incomplete vehicle.

Vehicle Alterer is a person or company who modifies a previously certified vehicle other than by the addition, substitution or removal of readily attachable components. Readily attachable components can mean mirrors, tire and rim assemblies, or minor finishing operations such as painting.

1.6. Warranty and Vehicle Safe Operation:

DAG requires the use of Genuine DG parts and DG replacement & conversion Parts, or replacement & conversion Parts and accessories expressly approved by the Sprinter Van Manufacturer in order for Body Builders to maintain regulatory compliance of these components or equipment as well as the durable and safe operation of Sprinters. In areas beyond regulatory compliance, Body Builders may elect to use other parts or conversion parts or accessories and assume the Manufacturers’ warranty of these parts themselves.

If these conversion parts cause damage to the original DG Parts, the warranty of these original DG Parts is void. It is the Body Builder’s responsibility to ensure that non-approved replacement conversion parts & accessories do not render the vehicle unsafe.

2. General

2.1. Emissions and safety information

A complete Sprinter Van "As Delivered" or a chassis cab, i.e. an incomplete vehicle, delivered by CLLC or CVLLC to Dealers or Body Builders is certified for by DAG for compliance with the U.S. and Canadian emissions and safety standards at the time of manufacture. If this vehicle is altered, after delivery by CLLC or CVLLC, Body Builders and/or Dealers assume the regulatory responsibility for certification

This section provides general information concerning applicable emissions and safety standards at the time of the vehicle manufacture. This section is written to assist Body Builders in understanding the U.S. EPA and the CARB exhaust emission and noise standards, Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS). SECST neither approves nor recommends any modifications or additions to the Sprinter vehicle, which may cause noncompliance with any EPA or FMVSS or CMVSS standards, or render the vehicle unsafe.

Questions concerning the content of this Section can be directed to CLLC or CVLLC's designee set forth below:

Michael D. Scott
Compliance Specialist
Sprinter Engineering & Compliance Support Team
USA/Canada
FAX: 843-695-5031

Engine calibrations such as fuel output settings, injection timings, emission control device calibration and location, charge air and cooling system calibration and locations are prohibited from any alterations from the certified configurations.

Provisions of the Clean Air Act also prohibit any persons, including but not limited to, Dealers or Body Builders to remove or render inoperative any devices or elements of design installed in a motor vehicle engine in compliance with the regulations. Please refer to Section Exhaust System (→ chapter [7.3.2](#)) for further information.

2.1.1. Vehicle noise emission control information

The Noise Control Act of 1972 and the 40 CFR Part 205 U.S. EPA regulations, "Transportation Noise Emission Controls", require new medium and heavy trucks over 10,000lbs. GVWR to comply with an exterior drive-by noise standard of 80 dB(A). In Canada, CMVSS 1106 Noise Emissions Standard requires an additional interior sound level certification at 90 dB(A).

All Sprinter vehicles come equipped with extensive NVH equipment.

Body Builder should, however, consult with an attorney concerning interpretations of the applicable laws and regulations and determine if the modification Body Builder made the Sprinter may affect the final certification of compliance of the vehicle. Further, it is the Body Builder's responsibility to ensure modifications do not render the vehicle unsafe.

2.1.2. Exhaust emission control information

The sprinter engines, Mercedes-Benz OM642 and M272, are certified with the U.S. EPA, and the Environment Canada and CARB, to comply with the heavy-duty diesel engine exhaust emission standards under Title II, Section 206 of the Clean Air Act and 40 CFR Part 86 regulations. Proof of this EPA certification is shown by an exhaust emission control label, i.e., an “important Engine information” label, (→ chapter [2.6](#)), affixed to the rocker cover of the engine for diesel powered vehicles and VEC I label affixed to the front cross member for gasoline power vehicles.

Provisions of the EPA regulations require that the emission-related components function in-use over the prescribed full useful life period as certified, i.e., 8 years or 110,000 miles, whichever occurs first. To be certain that these components function properly, the end users are required to use appropriate fuels and lubricants and maintain these components properly in accordance with the Operator’s Manual and Service Booklet.

In addition, applicable noise control packages, which were tested at over 100% reduction in noise levels below the aforementioned noise standards. Final Stage Manufactures should consult with their attorney concerning the compliance of their vehicles with appropriate regulations and laws, once they are altered or modified. The law and regulations prohibit tampering with noise control devices or components.

Specifically, the removal or rendering inoperative of any devices or elements of design incorporated into any new vehicle for the purpose of noise control is not permitted. Such devices or elements are identified as noise emission related components, such as engine calibrations including governor settings, exhaust system components, air induction system components, radiator, shield, fan/drive, noise shields or acoustical absorptive material, etc.

The regulations also require maintenance of the noise control performance in use, to comply with the U.S. EPA 40 CFR Part 202, or DOT 49 CFR part 325, Exterior Drive-By Noise Emission Standards for Interstate Motor Carrier.

2.2. Vehicle safety standards information

In the U.S. National Traffic and Motor Vehicle Safety Act of 1966 and NHTSA's FMVSS regulations and in Canada, Motor Safety Act of 1993 and Transport Canada's (TC) CMVSS, identify certain requirements and certification responsibilities for the various stages of vehicle manufacturing.

Therefore, Body Builders and Dealers need to review all regulatory requirements carefully to ensure compliance with applicable standards.

Please consult with an attorney to ensure compliance with applicable laws or standards.

2.2.1. FMVSS 101/CMVSS 101

This vehicle, when completed, will conform to Standard 101. Controls and Displays, provided that no alterations are made to the vehicle controls, which are installed on the vehicle and covered by the standard Alterations include location identification and/or illumination of the controls.

2.2.2. FMVSS 102/CMVSS 102

This vehicle, when completed, will conform to Standard 102, Transmission Shift Level Sequence, Starter Interlock and Transmission Braking Effect, if no alterations are made to the transmission, transmission controls, connecting linkages and cables, starting motor wiring or plumbing, neutral safety switch and ignition or equivalent switch and related wiring, or shift level position identifications.

2.2.3. FMVSS 103/CMVSS 103

This vehicle, when completed, will conform to Standard 103, Windshield Defrosting and Defogging Systems, if no alterations are made to the windshield defrosting and defogging systems, controls, wiring plumbing, vehicle heater assembly, or the airflow to the windshield.

2.2.4. FMVSS 104/CMVSS 104

This vehicle when completed will conform to Standard 104, Windshield Wiper and Washing System, if no alterations are made to the windshield wiper arms, blades, washer, control, wiring, or plumbing.

2.2.5. FMVSS 105/CMVSS 105

This vehicle, when completed, will conform to Standard 105, Hydraulic Brake System, if none of the gross axle (GAWR) or gross vehicle weight ratings (GVWR) are exceeded, and if no alterations are made to affect the braking system, hydraulic system components and fittings, the anti lock system components or electrical circuitry, tire size, or wheelbase. In addition, the center of gravity after modifications, or the combined centers of gravity of all added items by subsequent manufacturers must conform to requirements (→ chapter 9) of the Body builders Information Book on Calculation of Center of Gravity after Modifications.

2.2.6. FMVSS 106/CMVSS 106

This vehicle when completed will conform to Standard 106, Brake Hoses, if no alterations are made to the hydraulic brake hoses, brake hose assemblies, or the brake hose fittings including the labeling on these components.

2.2.7. FMVSS 108/CMVSS 108

This vehicle, when completed, will conform to Standard 108, Lamps, Reflective Devices, and Associated Equipment, if no alterations are made to lamp assemblies and/or their mountings, or Reflective devices and/or their mountings and no obstructions are installed which limit visibility of any items.

2.2.8. FMVSS 110/CMCSS 110

The completed Sprinter as delivered starting with production date of September 2004 conforms to standard 110, tire selection and rims specially concerning (→ chapter 4.2) placard requirement, if no alterations are made to affect tire, GVWR, seating capacity and combined weight of occupants and cargo.

2.2.9. FMVSS 111/CMVSS 111

This vehicle, when completed, will conform to Standard 111, Rearview Mirrors, if no alterations are made to mirrors, mounts, locations or cab structures, or no obstructions are installed which limits the full function of these mirrors.

2.2.10. FMVSS 113/CMVSS 113

This vehicle, when completed, will conform to Standard 113, Hood Latch Systems, if no alterations are made in the hood latches, including the attachments to the hood latches.

2.2.11. FMVSS 114/CMVSS 114

This vehicle, when completed, will conform to Standard 114, Theft Protection, if no alterations are made to the steering column lock, transmission shift linkage, ignition switch interlock or the audible key-left-in warning systems.

2.2.12. FMVSS 116/CMVSS 116

This vehicle, when completed, will conform to Standard 116, Motor Vehicle Brake Fluids, if no alterations, substitutions, or introduction of foreign materials are made to the brake fluid. Use only heavy duty fluid, DOT 4+, if additional fluid is needed.

2.2.13. FMVSS 118/CMVSS 118

If so equipped, this vehicle, when completed, will conform to standard 118, Power-Operated Window, Partition, and Roof Panel Systems, if no alterations are made to the power window and related electrical systems. Additional compliance with the Standard 118 is necessary, if subsequent alterations or installations are made.

2.2.14. FMVSS 119/CMVSS 119

This vehicle, when completed, will conform to Standard 119, New Pneumatic Tires for Motor Vehicles Other Than Passenger Cars, if tires maximum load ratings are not exceeded, and no alterations or substitutions of tires, including labeling are made.

2.2.15. FMVSS 120/CMVSS 120

This vehicle, when completed, will conform to Standard 120, Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars, if the GAWR or GVWR are not exceeded and no alterations or substitutions are made to tires, rims or labeling.

2.2.16. FMVSS 124/CMVSS 124

This vehicle, when completed, will conform to Standard 124, Accelerator Control Systems, if no alterations are made to any components of the throttle control or fuel metering system.

2.2.17. FMVSS 201/CMVSS 201

This vehicle, when completed, will conform to Standard 201, Occupant Protection in Interior Impact, if no alterations are made to the instrument panel, instrument panel interior compartment door, front door-mounted armrests, sun visors, seats and armrests, or other interior trims. Vehicles ordered with a D62 option, must be retrofitted with a partition wall to comply with this Safety Standard.

2.2.18. FMVSS 202/CMVSS 202

This vehicle, when completed, will conform to Standard 202, Head Restraints, if no alterations are made to the seat or heat restraint.

2.2.19. FMVSS 203/CMVSS 203

This vehicle, when completed, will conform to Standard 203, Impact protection for the driver from the steering control system, if no alterations are made to the steering control system or any of its components.

2.2.20. FMVSS 204/ CMVSS 204

This vehicle, when completed, will conform to Standard 204, Steering Control Rearward Displacement, if no alterations are made to the steering control system, including but not limited to steering wheel, steering column assembly, front structure, bumper and attaching parts, or any frontal components.

2.2.21. FMVSS 205/ CMVSS 205

This vehicle, when completed, will conform to Standard 205, Glazing Materials, if no alterations are made in the glazing material installed in the windshield, or windows of the cab, or of the passenger compartment.

2.2.22. FMVSS 206/ CMVSS 206

This vehicle, when completed, will conform to Standard 206, Door Locks and Door Retention Components, if no alterations are made to the door assembly, door latches, door hinges, door locks, door latch posts, door hinge posts, other attachments or supporting cab structure.

2.2.23. FMVSS 207/CMVSS 207

This vehicle when completed will conform to Standard 207, seating systems, if no alterations are made to the seats, seat tracks, and seat adjusters, restraining devices, release and adjustment controls, seat risers and supports, or the cab floor and supporting structure.

2.2.24. FMVSS 208/ CMVSS 208

This vehicle when completed will conform to Standard 208, Occupant Crash protection, if no alterations are made to the seat locations, seat belt assemblies, seat belt anchorages, seats, seating anchorages, cab and supporting structure, cab underbody, or if no change is made in the number of designated occupants' seating positions provided.

2.2.25. FMVSS 209/ CMVSS 209

This vehicle, when completed, will conform to Standard 209, Seat Belt Assemblies, if no alterations are made to the seat belt assemblies, seat belt anchorages and attachments, or the cab structure to which the anchorages are attached.

2.2.26. FMVSS 210/ CMVSS 210

This vehicle, when completed, will conform to Standard 210, Seat Belt Assembly Anchorages, if no additional occupant seats or seat belt assembly anchorages are installed, or if no alterations are made to the anchorages or related structure components.

2.2.27. FMVSS 212/ CMVSS 212

This vehicle, when completed, will conform to Standard 212, Windshield Mounting, if maximum unloaded vehicle weight does not exceed 6,600 lbs., or if no alterations are made to the windshield or the windshield mounting system.

2.2.28. FMVSS 214/CMVSS 214

The doors of the vehicle, when completed, will conform to Standard 214, Side Impact Protection, if no alterations are made to the doors, door frames, door latches, door hinges or mountings.

2.2.29. FMVSS 219/ CMVSS 219

This vehicle, when completed, will conform to Standard 219, Windshield Zone Intrusion, if maximum unloaded vehicle weight does not exceed 6,600 lbs., and if no alterations are made to the hood mounting system and the “protected zone” is not penetrated.

2.2.30. FMVSS 220/ CMVSS 220

This vehicle, when completed, will conform to Standard 220, School Bus Rollover Protection, if no alterations are made to the roof panel and its supporting structure. Including roof rails, front header, roof bows or roof pillars, the door window frames, the windshield or its mounting system or any window frame, subsequent to the delivery by DAG.

2.2.31. FMVSS 301/ CMVSS 301

This vehicle, when completed, will conform to Standard 301, Fuel System Integrity, if the maximum unloaded vehicle weight does not exceed 7,400 lbs., or if no alterations are made to the fuel system or fuel filler pipe assembly. This Standard is not applicable to Sprinters rated above 10,000 lbs. GVWR.

2.2.32. FMVSS 302/CMVSS 302

This vehicle, when completed, will conform to Standard 302, Flammability of Interior Materials, if no alterations are made to any interior materials or if no conforming interior materials are added to the interior of the vehicle.

2.3. Vehicle and model designations

DODGE Model	Freightliner Model	Description
VB2L13	VB6L13	Sprinter 2500 Van 144" WB
VB2L15	VB6L15	Sprinter 2500 Van 170" WB
VB2L17	VB6L17	Sprinter 2500 Van 170" WB Ext
VB3L13	VB7L13	Sprinter 3500 Van 144" WB
VB3L15	VB7L15	Sprinter 3500 Van 170" WB
VB3L17	VB7L17	Sprinter 3500 Van 170" WB Ext
VB2L53	VB6L53	Sprinter 2500 Passenger Van 144" WB
VB2L55	VB6L55	Sprinter 2500 Passenger Van 170" WB
VB2L57	VB6L57	Sprinter 2500 Passenger Van 170" WB Ext
VB3L03	VB7L03	Sprinter 3500 Chassis Cab 144" WB
VB3L05	VB7L05	Sprinter 3500 Chassis Cab 170" WB

Note:

All 3500 Sprinters come with Dual Rear Wheels as standard

Roof heights are sales codes

GVWR 11,030 lbs is sales code

2.4. Vehicle and model designation

2500 Sprinter with 8550 GVWR		
<p>VB2L13 / VB6L13 Gasoline / Diesel</p>		
<p>VB2L13 / VB6L13 (MWJ) Gasoline / Diesel</p>	<p>VB2L15 / VB6L15 (MWJ) Gasoline / Diesel</p>	<p>VB2L17 / VB6L17 (MWJ) Gasoline / Diesel</p>
<p>VB2L15 / VB6L15 (MX2) Gasoline / Diesel</p>		<p>VB2L17 / VB6L17 (MX2) Gasoline / Diesel</p>
<p>VB2L53 / VB6L53 Gasoline / Diesel</p>		
<p>VB2L53 / VB6L53 (MWJ) Gasoline / Diesel</p>	<p>VB2L55 / VB6L55 (MWJ) Gasoline / Diesel</p>	
3500 Sprinter with 9990 GVWR		
<p>VB2L13 / VB6L13 (MWJ) Diesel</p>	<p>VB2L15 / VB6L15 (MWJ) Diesel</p>	<p>VB2L17 / VB6L17 (MWJ) Diesel</p>

3500 Sprinter with 11030 GVWR		
<p>VB3L13 / VB7L13 (MWJ) Diesel</p>	<p>VB3L15 / VB7L15 (MWJ) Diesel</p>	<p>VB3L17 / VB7L17 (MWJ) Diesel</p>
		<p>VB3L17 / VB7L17 (MX2) Diesel</p>
<p>VB3L03 / VB7L03 Diesel</p>	<p>VB3L05 / VB7L05 Diesel</p>	

Roof heights are sales codes

Body code	Roof version
MWJ	Roof, high
MX2	Super-high roof

2.5. Vehicle Identification Number (VIN) Coding Summary

For MY 2007 / 2008 Dodge Sprinter / Freightliner Sprinter Vans

Manufacturer
Daimler AG, Stuttgart/Germany

VIN Position	Content
1-3	World Manufacturer Identification (WMI)
4	Chassis Configuration
5-6	Model, Wheelbase, GVWR
7-8	Engines, Brakes
9	Check Digit
10	Model Year
11	Plant of Manufacture
12-17	Vehicle Serial Number

VIN Positions 1, 2, & 3:			
Code	Manufacturer	Make	Type
WDX	Daimler AG	Dodge	Incomplete Vehicle
WD0	Daimler AG	Dodge	Truck
WD8	Daimler AG	Dodge	Multipurpose Passenger Vehicle
WDW	Daimler AG	Dodge	Bus
WDP	Daimler AG	Freightliner	Incomplete Vehicle
WDY	Daimler AG	Freightliner	Truck
WDR	Daimler AG	Freightliner	Multipurpose Passenger Vehicle
WCD	Daimler AG	Freightliner	Bus

Chassis Configuration - VIN Position 4:	
Code	Chassis Configuration / Intended Market
P	All 4x2 Vehicle Types / U.S.
B	All 4x2 Vehicle Types / Canada

Model, Wheelbase, GVWR - VIN Positions 5 & 6:

Code	Model	Wheelbase	Wheel Size	GVWR
E7	C2500/P2500	3665mm	16 in.	8,000lbs to 9,000 lbs. Class G
E8	C2500/P2500	4325mm	16 in.	8,000lbs to 9,000 lbs. Class G
F0	C3500	3665mm	16 in.	9,000lbs to 10,000 lbs. Class H
F1	C3500	4325mm	16 in.	9,000lbs to 10,000 lbs. Class H
F3	C3500/3500C	3665mm	16 in.	10,000lbs to 14,000 lbs. Class 3
F4	C3500/3500C	4325mm	16 in.	10,000lbs to 14,000 lbs. Class 3

Engines, Brake - VIN Positions 7 & 8:

Code	Engine	Fuel	Displ./Config.	Brake
45	MB OM642 (50-State)	Diesel	3.0L/V6	Hydraulic
46	MB M272 (50-State)	Gasoline	3.5L/V6	Hydraulic

Check Digit - VIN Position 9:

Calculated from a mathematical computation of all other VIN characters

Model Year - VIN Position 10:

Code	Model Year
7	2007
8	2008

Plant of Manufacture - VIN Position 11:

Code	Build Location
5	Duesseldorf, Germany
9	Ludwigsfelde, Germany

Vehicle Serial Number - VIN Position 12-17:

Sequentially assigned vehicle serial number at Plant of Manufacture

2.6. Labels

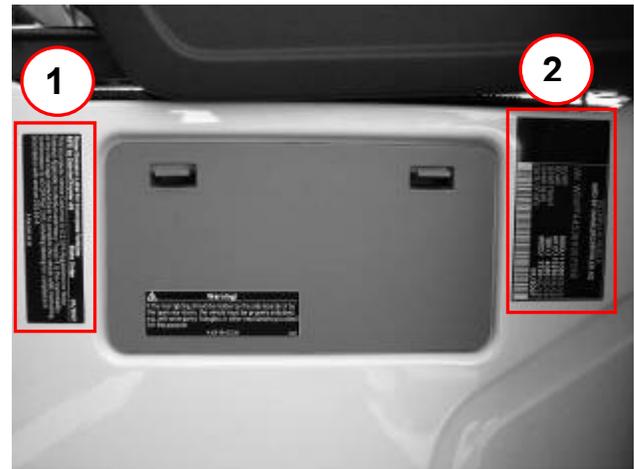
The following compliance labels are required is to be affixed at the locations noted in diagrams below.

1. VIN Plate
2. Safety Certification Label
3. Exhaust Emission Control Information Label
4. Complete Vehicle Certification Label
5. Incomplete Vehicle Certification Label
6. Air Bag Warning Label
7. Tire and Loading Information Label



1. VIN Plate

1. Vehicle Identification number
Location: left lower edge of windshield



2. Safety Certification Label

1. Incomplete Vehicle Certification Label
2. Type plate (vehicle identification number, permissible weights)
Location: below driver seat, outward facing

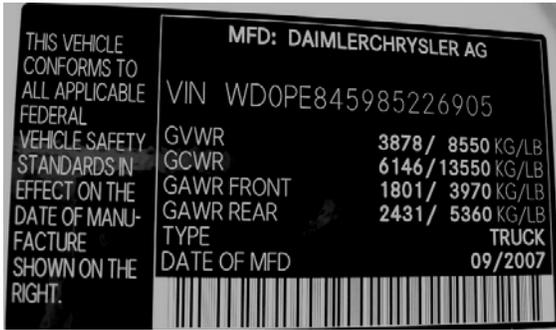
Important Vehicle/Engine Information

This is a LOW EMISSION VEHICLE engine and meets all applicable requirements as US EPA HDV, and CARB (California) as ULEV per CCR 1956.8 (50 State Certified).
DaimlerChrysler AG, Stuttgart, Germany

Mercedes-Benz Engine, Model Engine Family / Engine Code Exhaust Emission Control System Date of engine manufacture NOx + NMHC FEL Advertised output (SAE gr.) Fuel rate at advertised output Valve lash cold (ins.) Basic injection timing Idle speed	OM642 LA CID 182 8MBXH3.00DJB / Code1 TC,ECM,CAC,OC,EGR,PTOX 2008 1.22 g/bhp-hr 154 HP (115 KW) / 3400rpm 50-56 mm3 / stroke n.a. 6,5 +/-1 degrees BTDC 680 rpm
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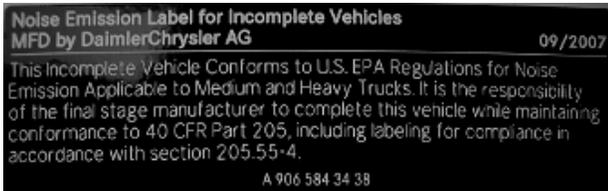
This vehicle and engine conforms to US EPA, CARP and Canada regulations applicable to 2008 Model Year. This vehicle and engine has a primary intended service application as a light HD diesel vehicle and engine, or California medium-duty vehicle and engine, OBD II certified. This engine is nit certified for use in an urban bus as defined at 40 CFR 86.093.-2. Sale of this engine for use in an urban bus is a violation of Federal Law under the Clean Air Act. This engine is certified to operate on diesel fuel.

3. Exhaust Emission Control Information Label
Location: on radiator cowling



4. Complete Vehicle Certification Label

Location: below driver's seat, outward facing



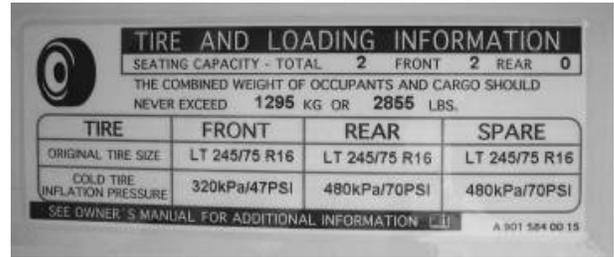
5. Incomplete Vehicle Certification Label

Location: below driver's seat, outward facing



6. Airbag Warning Label

Location: on sun riser



7. Tire and Loading Information

Location: on driver's door frame

NOTE: Data shown on label are for illustration purposes only. Load limit data and seating data are specific to each vehicle and may vary from data shown in the illustration. Refer to label on vehicle for actual data specific to your vehicle.

For Tire and Loading Information, (→ chapter [7.1.5](#))

2.7. Granting of body technical assistance

Modifications by Body Builders must not affect safety of the Sprinter. CLLC and CVLLC, through their designee, SECST will offer technical assistance concerning CLLC and CVLLC Sprinter vans, including technical data & drawing and product info brochures, but it is the responsibility of Body Builders to ensure modifications do not affect safety of the vehicle.

CLLC and CVLLC, through their designee, SECST, neither approves nor disapproves Sprinter modifications or equipment installations made by Body Builders, or Dealers nor others since CLLC, CVLLC, and their designee, SECST, do not control such Body Builders, manufacturing techniques nor assume the responsibility as the final stage manufacturer and consequential product liability.

To obtain technical assistance or information, please contact CLLC and CVLLC's designee:

SECST:
Sprinter Engineering & Compliance Support
8501 Palmetto Commerce Parkway
Ladson, SC 29456

Name:	Walther F. Bloch
	Manager
Dept:	Sprinter Engineering & Compliance
Telephone:	(843) 695-5053
Fax:	(843) 695-5031
E-mail:	walther.bloch@daimler.com

Name:	Andreas J. Brockmann
	Support Engineer
Dept:	Sprinter Engineering & Compliance
Telephone:	(843) 695-5052
Fax:	(843) 695-5031
E-mail:	andreas.j.brockmann@daimler.com

2.8. Body builder responsibilities

Each completed Sprinter "As Delivered" in the U.S. is certified for the U.S. EPA or CARB exhaust emissions in accordance with 40 CFR Part 86, or Title 13 of CCR, and an exhaust emission control information label is affixed thereto. While the complete Sprinter van "As delivered" is certified to comply with the applicable FMVSS safety regulations in accordance with 49 CFR Section 567.4 and a complete vehicle certification label is affixed thereto, the chassis cab is certified to comply with the applicable FMVSS safety regulations in accordance with 49 CR Section 567.5 and 568.4 and an incomplete vehicle certification label is affixed thereto.

In addition, every individual Sprinter chassis cab contains an incomplete vehicle documentation information packet. Sprinter vehicles intended for Canada are similarly certified and labeled in accordance with the Canadian regulations.

Once these Sprinter vehicles are altered or completed with the installation of additional equipment, Body Builders assume the responsibility of final certification to all applicable emissions and safety regulations, including labeling and documentation, affected by their modifications.

→ Chapter [2.2](#) of this Book provides Body Builder with general information concerning these modifications. Provisions of 49 CFR Sections 567.5 through 567.7, and 568.8 specifically set the regulatory responsibility for the Body Builders to comply with the vehicle safety standards. Body Builders should consult with legal counsel concerning these responsibilities.

Any alterations or installations by Body Builders must comply with the following:

- Do not alter or modify Sprinter components forward of the rear cab wall for chassis cab or forward of the seating reference point for Sprinters, unless modifications are approved component installations (such as air conditioning, radio, etc) which are manufactured, approved or endorsed by DAG, CLLC , CVLLC or their designee, SECST.
- Do not alter the location or impair functional reliability and or the clearance of all movable chassis components, i.e., axles, springs, drive shafts, steering systems, braking systems, gearshift linkages, exhaust systems, etc.
- Do not drill, alter, impair or damage the frame top and bottom flanges.
- Do not alter, damage, or relocate the Sprinter fuel system, seat belt assemblies and anchorages, braking system and steering.
- Do not impair the operational reliability, road worthiness and drivability of the Sprinter by body or accessory equipment installation of modification.

Body Builder is responsible for ensuring that modification or equipment installation does not affect the safety of the Sprinter. CLLC, CVLLC, and SECST are not responsible for any final certification or claims sounding in product liability or warranty claims, which result from any component, assembly, or system being altered, or which cause non-compliance with any of the emission control standards of motor vehicle safety standards, or which would otherwise cause the vehicle to be or become defective or unsafe.

2.9. Vehicle rollover stability information

Rollover stability is an important consideration in the safety design of a vehicle. Stability is influenced by many factors including chassis and body configuration, suspension, axle track width, tire size, tire pressure, etc. The cargo type and weight (payload), the body size, shape, and center of gravity height are particularly important. Therefore, alterations or installation of additional equipment to the Sprinter vehicles by any Body Builder or intermediate and/or Final-Stage Manufacturer may affect rollover stability of the vehicle.

The office of Vehicle safety Research at NHTSA has conducted research and established guidelines to improve rollover stability. Body Builders are advised to consult with that Office and / or visit the NHTSA website for more information.

3. Planning of Bodies

When designing bodies in addition to a user-friendly and maintenance friendly design, the careful choice of materials and, in consequence, the associated corrosion protection measures are of great importance.

3.1. Selecting the chassis

In order to ensure safe operation of the vehicle, it is essential to choose the chassis carefully in accordance with the intended use. Planning should therefore consider the following items in particular and adapt them to the intended use:

- Wheelbase
- Engine
- Axle
- Maximum permissible gross vehicle weight (GVWR)
- Position of the center of gravity

Before carrying out any work on the body or modification work, the delivered vehicle must be submitted to a check to verify whether it fulfills the necessary requirements.

For more information on the chassis and body variants, see the "Model designation" section (→ chapter [2.4](#)) or contact SECST.

3.2. Vehicle modifications

Before starting work on the body, the body builder must check whether:

- the vehicle is suitable for the planned body
- the chassis model and equipment are suitable for the operating conditions intended for the body

You can plan bodies by requesting 2D drawings from SECST, product information and technical data or you can retrieve this information from the communications system (→ chapter [1](#)). Furthermore, you must note the optional equipment that is fitted by the Manufacturer.

Federal laws, guidelines and registration regulations must be complied with.

Adequate clearances must be maintained in order to ensure the function and operational safety of assemblies.

Warning

Do not carry out any modifications to the steering or brake system. Any modifications may result in these systems malfunctioning and ultimately failing. The driver could then lose control of the vehicle and cause an accident and may cause serious injury or death.

Under no circumstances should modifications be made to the noise encapsulation.

3.3. Dimensions and weights

On no account should modifications be made to the vehicle width, vehicle height or vehicle length if they exceed the limiting values specified in the current version of the body builder information book for all dimension and weight specifications, please refer to the 2D drawings and technical data in the Sprinter Body Builder Website (→chapter 1) and to the technical limiting values (→ chapter 4).

They are based on a vehicle that is fitted with standard equipment. Items of optional equipment are not taken into consideration. Weight tolerances of up to +5% in production must be taken into consideration.

Do not exceed the gross axle weight rating (GAWR) and the gross vehicle weight rating (GVWR). Information about GAWR & GVWR is contained in the “Technical advice on the basic vehicle” section (→ chapter 4)

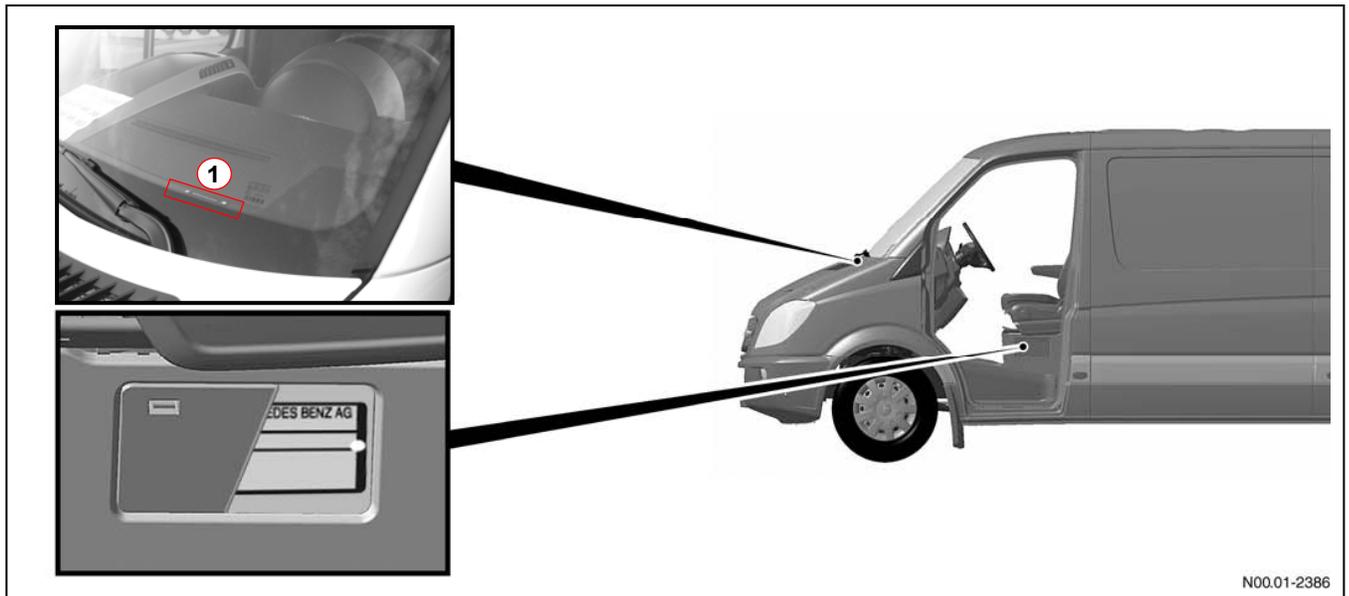
Warning

Make sure that you do not exceed the permissible axle loads. Doing so would prevent the ESP system from functioning correctly. Exceeding the permissible axle loads and / or gross vehicle weights significantly impairs the vehicle driving stability and handling characteristics and may cause serious injury or death.

Information about changes in weight is available from: SECST (→ chapter 2.7). All bodies must comply with the individual axle loads and the permissible gross vehicle weight.

3.4. Vehicle type identification date

The vehicle identification number (VIN) and the vehicle identification plate may neither be changed nor fitted to a different point on the vehicle. The vehicle identification number is on the lower windshield support member in the engine compartment. The type plate with the vehicle identification number and details of permissible weights is on the base of the driver's seat. Seat pedestal (→chapter 2.6)



N00.01-2386

Vehicle Identification Data

1. Vehicle Identification number

Location: below driver's seat, outward facing

Vehicle stability

For approval of the vehicle with body / equipment mounted, a calculation of the height of the center of gravity of the laden vehicle must be submitted in accordance with FMVSS / CMVSS standards.

You will find the permissible heights for the center of gravity in the “Technical limiting values for planning” section (→ chapter 4). SECST will make no statements concerning:

- driving characteristics
- braking characteristics
- steering characteristics, and
- behavior during ESP intervention

of bodies for payloads with an unfavorable located center of gravity (e.g. rear, high and side loads) as attachments, bodies, equipment and modifications will have a considerable impact on the above characteristics. Only the body builder is in a position to make an assessment.

Warning

In extreme driving conditions, the vehicle behaves like a vehicle without ESP. The permissible axle loads, gross weights and center of gravity positions must be complied with. Exceeding the permissible axle loads and / or gross vehicle weights significantly impairs the vehicle driving stability and handling characteristics and may cause serious injury or death.

Neither in curb condition nor with equipment installed nor with modifications having been carried out may the permissible wheel, axle, or gross vehicle weights ever be exceeded.

Warning

Make sure that you do not exceed the permissible axle loads. Doing so would prevent the ESP system from functioning correctly. Exceeding the permissible axle loads and / or gross vehicle weights significantly impairs the vehicle driving stability and handling characteristics and may cause serious injury or death. Further information regarding permissible weights is contained on the vehicle type identification plates on the vehicle itself (→ chapter 4).

3.5. Tires

The body builder must ensure that:

- there is always sufficient space between the tire and the mud guard or wheel well, even if snow or anti-skid chains are fitted and the suspension is fully compressed (also allowing for axle twist) and that the relevant data in the 2D drawings from website (→ chapter 1) are observed
- only permissible tires with the correct dimension & load rating documents

Warning

Make sure that you do not exceed the permissible tire loads. Doing so would prevent the ESP system from functioning correctly. Exceeding the permissible tire loads and / or gross vehicle weights significantly impairs the vehicle driving stability and handling characteristics and may cause serious injury or death.

3.6. Bolted and welded connections

3.6.1. Bolted connections

If it is necessary to replace standards bolts with longer bolts, use only bolts:

- of the same diameter
- of the same strength grade
- of the same type
- with the same thread pitch

Warning

Do not change any bolted connections that are relevant to safety, e.g. that are required for wheel location, steering and braking functions. They may otherwise no longer function correctly. The driver could then lose control of the vehicle and cause an accident and may cause serious injury or death. Parts must be refitted in accordance with DG after sales service instructions and using suitable standard parts. We recommended the use of genuine DG Sprinter parts.

- Federal and State regulation must be applied to all installation work.
- It is strictly prohibited to shorten the length of the free clamping bolt, change to the reduced shaft or use bolts with a shorter thread.
- No design modification is possible of bolts that are tightened to the required torque and angle by DAG.
- The settling behavior of bolted connections must be observed.

Information about the Sprinter after sales instructions is available from any authorized Sprinter dealer.

Additional parts must be of equal or greater strength than the preceding tensioned assembly.

The use of Sprinter Torque Values assumes coefficients of friction for the bolts in the tolerance range of (=0.08...0.14).

We recommend the use of original Sprinter spare parts.

3.6.2. Welded connections

General

In order to maintain the high standard of welding demanded by DAG, the work must only be carried out by appropriately qualified welders. The following is recommended in order to achieve high quality welds:

- clean the area to be welded thoroughly
- make several short welding beads rather than one long bead
- make symmetrical beads to limit shrinkage
- avoid more than three welds at any one point
- avoid welding in strain-hardened zones
- spot welds or step welds should be offset

The battery must be disconnected before all welding operations. Airbags, seat belts, the airbag control unit and airbag sensors must be protected from welding splashes or removed if necessary.

Parts of the floor or the roof are laser-welded. The paneling for the sidewall is laser-soldered with the roof edge paneling.

Choice of welding method

The mechanical properties of weld seams depend on selecting the adequate welding method and on the geometry of the elements to be joined. If overlapping sheets are to be welded, the choice of welding method will depend on whether only one or both sides of the work piece is/are accessible.

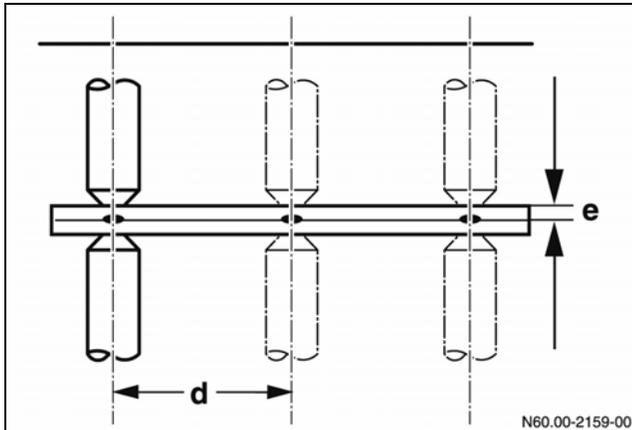
Accessible sides	1	Gas-shielded plug welding
	2	Resistance spot welding

Resistance spot welding

Resistance spot welding is used for welding overlapping parts which are accessible from both sides. Spot welding of more than two sheet layers must be avoided.

Distance between spot welds:

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

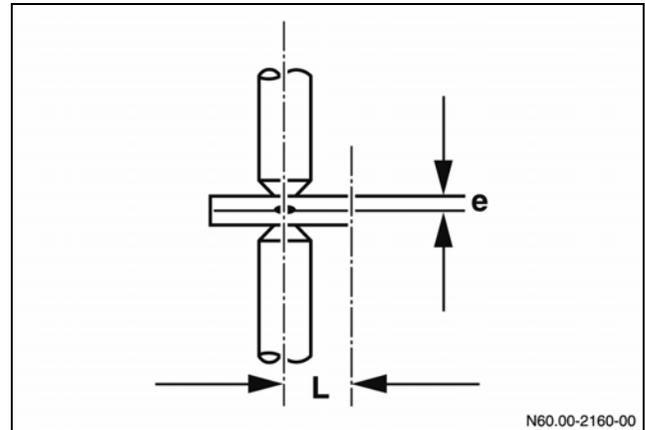


Ratio of sheet thickness to distance between spot welds

- d Distance between spot welds
- e Sheet thickness

Distance from sheet edge:

To avoid melting core damage, the specified distances to the sheet edge must be maintained ($L = 3e + 2\text{ mm}$).

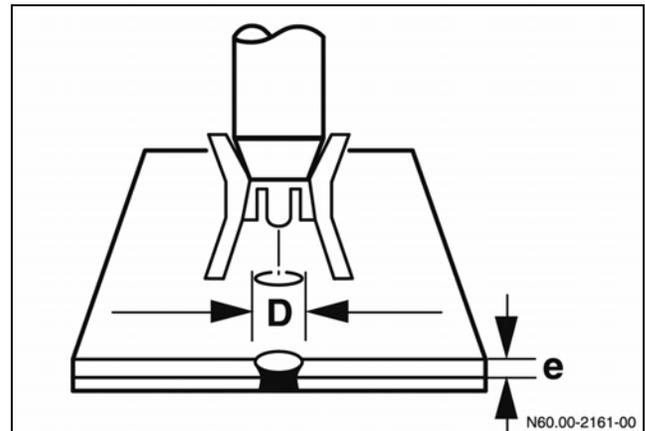


Ratio of sheet thickness to distance from the edge

- e Sheet thickness
- L Distance from sheet edge

Gas-shielded plug welding

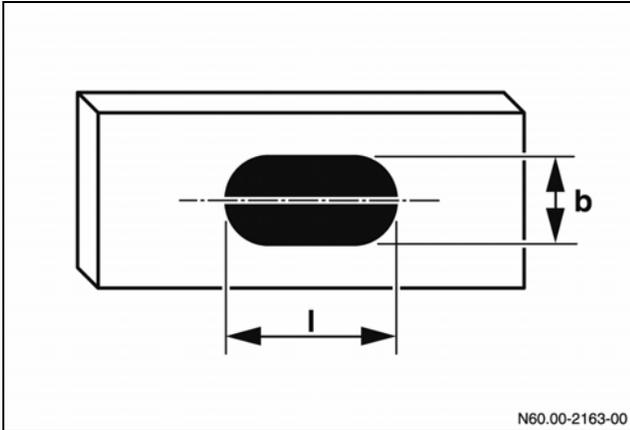
If overlapping sheets can only be welded from one side, use either inert gas plug welding or tack welding. If the joint is produced by stamping or drilling followed by plug welding, the drilled area must be de-burred before welding.



Ratio of sheet thickness to plug hole diameter

D = plug hole diameter (mm)	4.5	5	5.5	6	6.5	7
e = sheet thickness (mm)	0.6	0.7	1	1.25	1.5	2

Mechanical quality can be additionally improved by the use of slotted holes
 $(l = 2 * b)$.

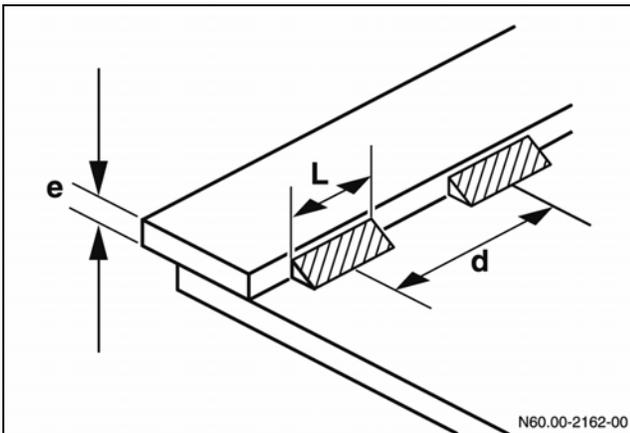


Ratio of width to length of slotted holes

- b Width of slotted hole
- l Length of slotted hole

Tack welding

If sheet thickness is $>2\text{mm}$ [$3/32$ in], overlapping sheets can also be joined by tack welding
 $(30\text{mm} < L < 40 * e; d > 2L)$
 $[1 \frac{1}{4} \text{ in} < L < 40 * e; d > 2L]$



Ratio of sheet thickness to distance between spot welds

- d Distance between tack weld centers
- e Sheet thickness
- l Length of tack weld

Do not perform welding work on:

- Assemblies such as the engine, transmission, axles, etc
- Chassis, except on chassis frame extensions

More information is contained in the “Limiting values for planning” (→ chapter 4) and “Damage prevention” (→ chapter 5) sections, the “body shell” (→ chapter 7) section and the **Sprinter (VB) Service Manual** available through.

www.techauthority.com

Anti-corrosion protection after welding

On completion of all welding work on the vehicle, it's important to comply with the specified corrosion protection measures (→ chapter 5.3).

When carrying out welding work, note the instructions specified “Damage prevention” (→ chapter 5) and “Modifications to the basic Vehicle” sections (→ chapter 7).

3.7. Noise Insulation

If modifications are carried out on any parts whose operations produces noise, e.g.

- engine
- exhaust system
- air intake system
- tires, etc

Sound level measurements must be made and Federal and State regulations and guidelines shall apply.

Do not remove or modify noise-insulating parts fitted to vehicle to prevent modifications from changing the vehicle's sound levels applicable to FMVSS/CMVSS regulations

Do not adversely affect the level of interior noise.

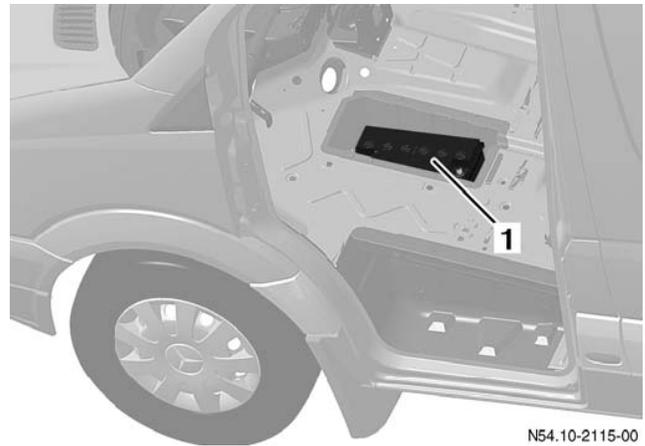
All modifications to the vehicle must comply with vehicle sound levels applicable to FMVSS/CMVSS regulations.

3.8. Maintenance and repairs

Maintenance and repair of the vehicle must not be hindered by the body, modifications or additional equipment. The Operating Instructions must be observed.

- Maintenance points and assemblies must remain easily accessible
- Stowage boxes must be fitted with maintenance flaps or removable rear panels.
- The battery compartment must be sufficiently ventilated, with provision for air to enter and exit.
- Check the condition and capacity of batteries and service them in accordance with the manufacturer's specifications (→ chapter 6.3)

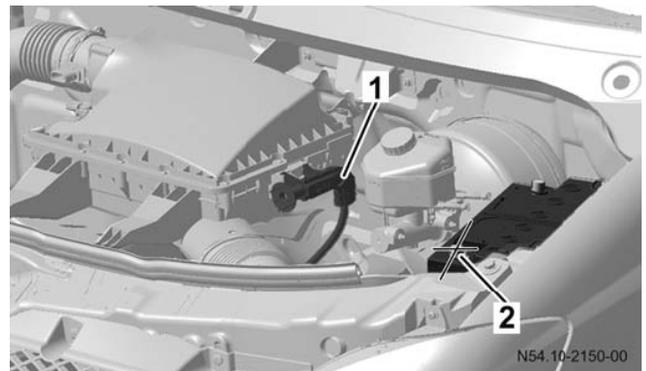
Leaving the vehicle parked up for long period of time can lead to battery damage. This can be avoided by disconnecting the battery and storing it. For more information consult the owner's manual.



N54.10-2115-00

Installation location of the main battery

1. Main battery



N54.10-2150-00

Installation location of the jump-starting / charging connection

1. Jump-starting / charging connection
2. Positive terminal, auxiliary battery – not suitable for jump-starting

The jump-starting connection for the main battery must be used if you intend to use an external power source to start or charge the vehicle's battery.

Do not use the auxiliary battery in the engine compartment for connection to an external power supply as this could result in damage to the vehicle.

DAG, CLLC and CVLLC are not responsible for the cost of any additional work made necessary by the body builder which has to be performed during warranty, maintenance or repair work.

The following must be observed by the body builder before delivery of the vehicle:

- Check the headlamp setting or have this checked at a qualified specialist workshop.
- SECST recommends and authorized Dodge Sprinter or Freightliner Sprinter Dealer.
- Retighten the wheel nuts to the specified torque.

The body builder must provide the vehicle with operating instructions and maintenance instructions for the body and any additional equipment installed.

3.8.1. Storing the vehicle

Storage in an enclosed space:

- Clean the entire vehicle
- Check the oil and coolant levels
- Inflate the tires to 0.5 bar / 7.25 PSI above the specified tire pressures
- Release the handbrake and chock the wheels
- Disconnect the battery and grease battery lugs and terminals

Storing the vehicle in the open (<1 month):

- Carry out the same procedure as for storing in an enclosed space
- Close all air inlets and set the heating system to "off"

Storing the vehicle in the open (>1 month):

- Carry out the same procedure as for storing in an enclosed space
- Fold the windscreen wipers away from the wind screen
- Close all air inlets and set the heating system to "Off"
- Remove the battery and store it in accordance with the battery manufacturer's specifications (→ chapter [6.3.3](#)).

Maintenance work on the stored vehicle (in storage for > 1 month)

- Check the oil level once a month
- Check the coolant once a month
- Check the tire pressures once a month

Removing the vehicle from storage

- Check the fluid levels in the vehicle
- Adjust the tire pressures to the manufacturer's specifications
- Check the battery charge and install the battery
- Clean the entire vehicle

3.8.2. Battery maintenance and storage

To avoid damage to the battery, disconnect the battery if the vehicle is to be parked up for a period longer than one week. If the vehicle is parked up for periods of longer than one month, remove the battery and store it in a dry place at temperatures of between 32°F to 86°F [0°C to 30°C]. Store the battery in an upright position. The battery charge must be kept above 12.55V at all times. If the voltage drops below 12.55V but not below 12.1V, the battery must be recharged.

If the battery voltage drops below 12.1V, the battery is damaged and it will have to be replaced.

3.8.3. Work before delivering the modified vehicle

Checking the entire vehicle

Check the vehicle for perfect condition. Damage must be repaired where necessary.

Checking the brake system

The brake fluid must be renewed every two years. If it is not known how long a vehicle equipped with a hydraulic brake system has been in storage, the brake fluid must be renewed. Check electrical and hydraulic lines for all types of damage and replace if necessary.

Checking the battery

Check, and correct if necessary, the battery charge before handing over the vehicle.

Checking the tires

Before delivering the vehicle, check that the tires are inflated to the specified pressure and check the tires for damage. Damaged tires must be replaced

Checking wheel alignment

We recommend that the wheel alignment be checked if modifications have been made by an authorized Dodge Sprinter or Freightliner Sprinter repair shop. More detailed information is contained in the Sprinter (VB) Service Manual.

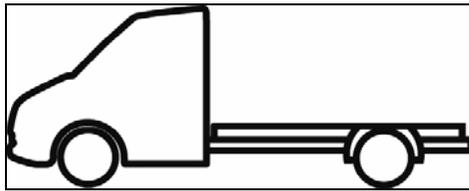
3.9. Optional Equipment

We recommend ordering available optional equipment from the factory. Information about all optional equipment available as an option is available from your authorized Dodge Sprinter and Freightliner Sprinter Dealer. Optional equipment (e.g. reinforced springs, frame reinforcement, anti-roll bars, etc.) or retrofitted equipment increases the un-laden weight of the vehicle. The actual vehicle weight and axle loads must be determined by weighing before mounting.

4. Technical limiting values for planning

4.1. Limiting values of the basic vehicle

This section contains the basic vehicle technical limiting values which are important for planning the vehicle's layout. In addition, you will find more information in the other sections of the current version of the Body Builder Information Book.



4.1.1. Steerability

- In all load states, the front axle load must represent at least the following proportion of the gross permissible weight:

With cargo lift	at least 30% of the gross vehicle weight
Without cargo lift	least 25% of the gross vehicle weight

Warning

Do not exceed the maximum Center of Gravity limits. Do not exceed the maximum axle or wheel loads. Failure to adhere to the maximum Center of Gravity limits, axle loads and wheel loads, may lead to an accident with injury or death.

4.1.2. Extreme permissible positions of center of gravity

y-axis:	Never exceed the maximum side to side difference of the laden / unladen vehicle of 4%. Do not exceed the maximum permissible wheel or axle loads.
---------	--

Center of gravity heights with ESP

Gross vehicle weight Rating (GVWR)	Center of gravity heights, z-axis
8,550 lbs	1300 mm [51.2 in]
9,990 lbs	1300 mm [51.2 in]
11,030 lbs	1300 mm [51.2 in]

4.1.3. Center of gravity Chassis Cab

Center of gravity of a Chassis Cab at curb weight (CW) without options.

Chassis Cab wheelbase mm / [inch]	Center of Gravity x / y / z CG [mm]
3665 / [144]	1203 / 0 / 650
4325 / [170]	1356 / 0 / 650

4.1.4. Vehicle dimensions Chassis Cab

Maximum Chassis Cab vehicle width:

Mirror OPTION	Max Vehicle width mm / [inch]
Standard (XZD)	90.5
XZE	96.0

Max vehicle height:	Never exceed the maximum center of gravity (CG).
---------------------	--

Wheelbase mm / [inch]	Max. Body length BL [in / ft]
3665 / [144]	155.2 / 13.0
4325 / [170]	194.1 / 16.2

4.2. Chassis limiting values

4.2.1. Permissible axle loads

Warning

Make sure that you do not exceed the permissible axle loads. Doing so would prevent the ESP system from functioning correctly on vehicles which are equipped with this feature. The driver could then lose control of the vehicle and cause an accident and may cause serious injury or death. In addition, overloading could damage the suspension system and load-bearing parts.

Information about axle loads and the maximum permissible gross vehicle weight is contained in the "Technical advice on the basic vehicle" section.

4.2.2. Approved tire sizes

Gross vehicle Weight [lbs]	Rim	Tire size	Load Index
8,550	6.5Jx16	245/75R16	120/116
9,990	5.5Jx16	215/85R16	115/112
11,030	5.5Jx16	215/85R16	115/112

4.2.3. Diameter of turning circle

Wheelbase (mm / in)	Diameter of turning circle (ft) curb to curb / wall to wall
3665 / 144	45.2 / 47.6
4325 / 170	52.5 / 54.6

4.2.4. Modifications to the Axles

No modifications whatsoever may be made to the suspension or the axles.

4.2.5. Modifications to the steering system

On no account may any modifications be made to the steering system (→ chapter [4.1.1](#))

4.2.6. Modifications to the brake system

On no account may any modifications be made to the brake system. On no account may any modifications be made to disc brake air inflow and air outflow.

4.2.7. Modifications to springs, spring mountings/shock absorbers

On no account should springs or shock absorbers be used if they do not correspond to the characteristics of standard parts or parts obtainable as optional equipment. We recommend the use of standard Dodge Sprinter & Freightliner Sprinter parts. On no account should modifications be made to the spring mountings (→ chapter [7.1.2](#))

4.2.8. Wheel alignment

No modifications whatsoever may be made to wheel alignment settings (→ chapter [7.1.5](#))

4.3. Body shell limiting values

4.3.1. Modifications to the body shell

Refer to the “Modifications to the basic vehicle” section (→ chapter 7).

- No modifications whatsoever may be made to the cross-member structure from the front of the vehicle back to, and including, the B-pillar.
- On no account should modifications be made to the rear door opening including the roof area
- In the event of modifications to the load-bearing structure, the total equivalent rigidity of the structure fitted by the body builder must at least equate to that of the standard vehicle.
- Clearances for fuel filler necks, fuel tank lines and fuel lines must be maintained
- It is not permissible to drill holes in or perform welding work on the A-pillar or B-pillar.
- If modifications are made to the sidewall of the panel van or the MPV, the rigidity of the modified body must be equal to that of the basic vehicle.

4.3.2. Limiting values of the vehicle frame

If modifications are made to the wheelbase or the frame is extended, the material of the extension element must have the same quality and dimensions as the standard chassis frame (→ chapter 7.2.3).

4.3.3. Vehicle overhang

The maximum vehicle overhang without exceeding the permissible axle loads and centers of gravity is:

Maximum overhang lengths	
Wheelbase I mm / [inch]	Overhang length mm / [inch]
3665 / [144]	1830 / [72.0]
4325 / [170]	2160 / [85.0]

Extensions to overhang lengths may make it necessary to reduce the maximum permissible trailer load or tongue weight. In such cases, we recommend that you consult SECST (→ chapter 2.7).

4.3.4. Attachment points on the frame

Attachment to the frame must be carried out as described in the “Attachment to the frame” section (→ chapter 7.2.2)

4.3.5. Vehicle roof/roof load

Maximum roof loads			
Standard roof Cargo kg [lbs]	High roof Cargo kg [lbs]	Mega Roof Cargo kg [lbs]	Chassis Cab kg [lbs]
300 [660]	150 [330]	0	100 [220]

Do not modify or remove roof bows structural parts

Wheelbase mm / [inch]	Quantity required
3665 / [144]	> 5 roof arches
4325 / [170]	> 6 roof arches

Roof arches	Position
1	to the rear of the front doors (B-pillar)
2	at the center of the load compartment sliding door (between the B- and C- pillars)
3	in the center of the vehicle behind the load compartment sliding door (C-pillar)
4-6	between the C-pillar and the rear end of the vehicle (rear pillar)

Roof height (mm)	Moment of inertia 1 per roof arch (mm)
< 250	> 40 000
< 400	> 65 000
< 550	> 86 000

4.4. Modifications of engine peripherals / drive train

4.4.1. Fuel system

Do not modify fuel system (→ chapter [7.3.1](#))

4.4.2. Modifications to the engine/drive train components

- Do not modify the engine air intake
- Do not modify the drive shaft
- Do not retrofit any engine speed regulation equipment, other than that which is available as optional equipment.
- Do not modify the exhaust system, exhaust gas after treatment components (diesel particle filter, catalytic converter, Lambda probe, etc)

4.4.3. Engine cooling system

Do not modify the cooling system including but not limited to radiator, radiator grille, air ducts, etc. (→ chapter [7.3.3](#))

The complete cross-section of the cooling air intake surfaces must remain unobstructed. This means:

- at least 11 dm² [170 in²] for the front grille (radiator and condenser)
- at least 7 dm² [109 in²] for the opening in the bumper (charge-air cooler flow)

4.5. Modification to the interior

4.5.1. Modifications to airbags and belt tensions

Warning

Do not modify the airbag system or the belt tension system. Modification to or work incorrectly carried out on a restraint system (seat belt and seat belt anchorages, belt pretensioner or airbag) or its wiring could cause the restraint systems to stop functioning correctly. This means, for example, that airbags or belt tensions may be activated inadvertently or may fail in the event of an accident even though the rate of deceleration exceeds the deployment threshold and may cause serious injury or death.

- Do not modify the airbag components or the vicinity of airbag components and sensors.
- Do not modify the roof trim or its attachment if the vehicle is equipped with window bags.
- Stay out of the airbag deployment areas (→ chapter [7.4.2](#))
- Do not modify areas around the airbag control unit

More information is contained in the “Modifications to the basic vehicle” section (→ chapter [7](#)).

4.5.2. Modifications to seats

Warning

It is not permitted to modify the seats or mounts seats on the wheel wells. In the event of an accident, the seats could become detached from their anchorages and may cause serious injury or death.

More information is contained in the “Modifications to the basic vehicle” (→ chapter [7](#)) and “Modifications to the interior” sections (→ chapter [8.3](#)).

If a rear bench seat with two- or three-point seat belts deviates from the standard seat design, it must comply with the FMVSS/CMVSS requirements.

4.6. Limits to Electrics / Electronics

Refer to the “Electrics / Electronics” section
(→ chapter 6)

4.6.1. Vehicle Marker and Clearance lamps

Vehicle marker and clearance lamps are required by law on all vehicles with total width of 80 inch or over according to FMVSS/CMVSS standards.

4.6.2. Retrofitting electrical equipment

All equipment fitted must meet FMVSS standards.

Comfort may be impaired in individual cases.

4.6.3. Mobile communication systems

Do not exceed the maximum transmission output

Waveband	Maximum transmission output (W)
Short wave < 50 MHz	100
4 m band	20
2 m band	50
70 cm band	35
25 cm band	10

4.6.4. CAN bus

Do not modify the CAN bus or the components connected to it. The programmable special module (Code XCF) can be used to access individual types of data available on the CAN bus.

4.6.5. Electronic Stability Program

Do not modify the location, position and mounting of the ESP yaw rate sensor.

Do not modify the wiring or ESP components.

Do not modify the wheel base.

4.7. Design Limits for additional equipment

If auxiliary equipment (e.g. additional air-conditioning compressors, pumps, etc) is retrofitted, the following must be observed:

- The operation of vehicle components must not be adversely affected
- The clearance to moving vehicle parts must be guaranteed in all driving situations.

4.8. Design Limits for attachments

The maximum load capacity of a lifting platform is 500kg [1100 lbs] on a fully enclosed model and 750kg [1650 lbs] on a Chassis Cab. Mounting in accordance with the “lifting platform” section (→ chapter 7.6.6) is imperative.

4.9. Design Limits for the body

Refer to the “Design of bodies” section.

4.9.1. Design Limits of the mounting frame

Required moment of resistance of mounting frame:

Up to maximum standard wheelbase	30 cm ³
Over maximum standard wheelbase	>34.5 cm ³

¹ Each individual mounting frame longitudinal member must have the moment of resistance specified.

For further information about mounting frames for dump bodies see (→ chapter [8.1](#))

Material quality of specified frame made of steel

Material	Tensile Strength (N/mm ²) Yield Strength (N/mm ²)
H240LA (DIN EN 10268-1.0480)	350-45 260-340
S235JRG2 (DIN EN 10025-1.0038)	340-510 >235

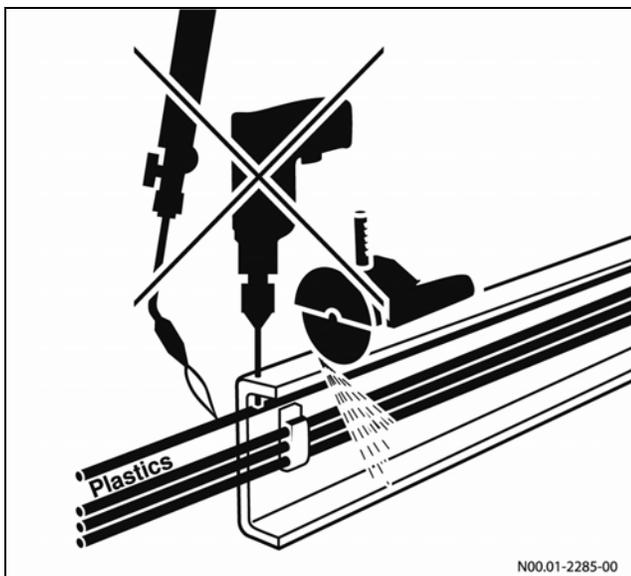
5. Damage prevention

Any work carried out on the vehicle must comply with accident prevention regulations

Comply with all FMVSS/CMVSS regulations and laws.

5.1. Brake hoses / cables and lines

Cover plastic lines and brake hoses before carrying out any welding, drilling and grinding work or before working with cutting discs. If necessary, the plastic lines and brake hoses should be removed.



Test each of the systems for pressure loss and leaks after installing compressed-air lines and hydraulic lines. No other lines may be attached to brake hoses. Lines must be protected from heat by means of insulation.

Warning

Work carried out incorrectly on the brake hoses or cables may impair their function. This may lead to the failure of components or parts relevant to safety and may cause serious injury or death.

5.2. Welding Work

Warning

Welding work that is not performed correctly could lead to failure of components relevant to safety. It would then not be possible to rule out the risk of an accident and may cause serious injury or death.

For this reason, the following safety precautions must always be observed during any work involving welding.

- Welding work on the frame may only be carried out by trained personnel and with prior approval of SECST.
- Do not weld on assemblies such as the engine, transmission, axles, etc.
- Disconnect the positive and negative terminals from the battery and cover them.
- Connect the welding-unit ground terminal directly to the part of the welded. Do not connect the ground clamp to assemblies such as the engine, transmission or axles.
- Do not touch electronic component housings (e.g control modules) and electric lines with the welding electrode or the ground contact clamp of the welding unit.
- Before welding operations in the vicinity of the seat belts, airbag sensors or the airbag control unit, these components must be removed for the durations of the work. You will find important information about handling, transporting and storing airbag units in the "Interior" (→ chapter 7.4)
- Before welding, cover springs and air bellows to protect them from welding spatter. Do not touch springs with welding electrodes or welding tongs.
- Cover the fuel tank and fuel system (lines, etc) before carrying out welding work.
- Use only completely dry lime basic jacket electrodes (2.5 mm diameter).
- The maximum current maybe 40 A per mm of electrode diameter.
- Weld only with electrodes connected to the positive pole of a direct current source. Always weld from bottom to top.

- MIG welding is permissible
- Only use welding wires with a thickness of between 1 and 1.2mm.
- The yield point and tensile strength of the welding material must be at least equal to that of the material to be welded.
- Plug welding is only permissible in the vertical webs of the longitudinal frame member.
- Welds must be ground down and reinforced with angular profiles to prevent notching from welding penetration.
- Avoid welds in bends
- There must be at least 15 mm [0.6 inch] between the weld and the outer edges.

You will find further information about welding operations in the “Planning of bodies” section (→ chapter 3), “Modifications to the basic vehicle” section (→ chapter 7) and the “Body shell” section (→ chapter 7.2). More information can be found in the Sprinter (VB) Repair Manual.

Warning

Welding in the vicinity of the restraint systems (airbag and belts) can cause these systems to no longer function correctly. Welding is therefore not permitted in the vicinity of the restraint systems. Welding near restraint system components may cause serious injury or death.

5.3. Corrosion protection

Surface and anti-corrosion protection measures must be carried out on the areas affected after modifications and installation work have been performed on the vehicle.

Only protective agents tested and approved by SECST may be used for anti-corrosion protection measures performed.

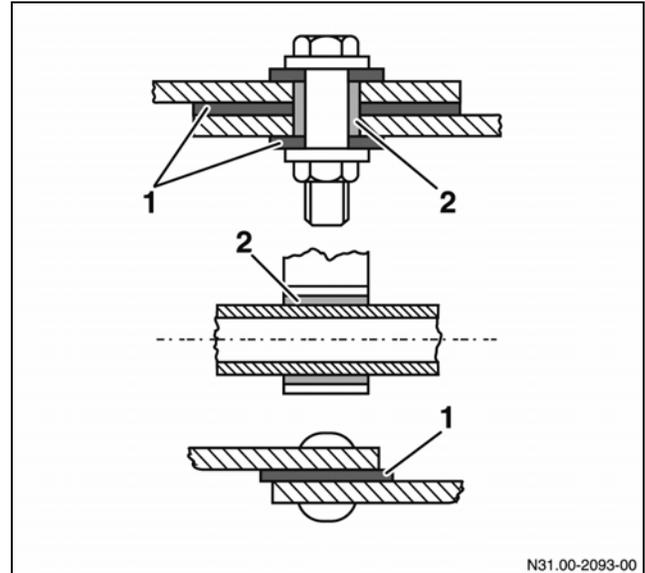
Planning Measures

Anti-corrosion protection measures should be included in the planning and design stages by selecting suitable materials and designing components accordingly.

A conductive connection occurs if two different metals are brought into contact with each other through an electrolyte (e.g. air humidity). This causes electrochemical corrosion and the less noble of the two metals is damaged. The further apart the two metals are in the electrochemical potential series, the more intense electrochemical corrosion becomes.

For this reason, electrochemical corrosion must be prevented by insulation or by treating the components accordingly, or it can be minimized by selecting suitable materials.

Preventing contact corrosion by means of electrical insulation



Preventing contact corrosion

1. Insulating washer
2. Insulating sleeve

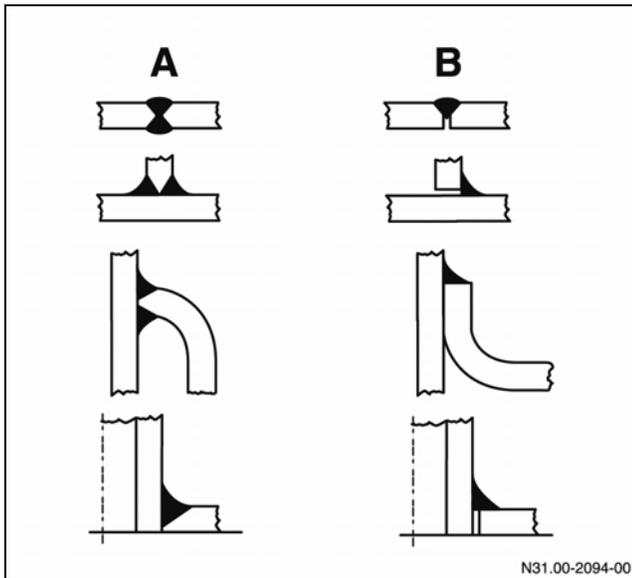
Contact corrosion can be prevented by using electrical insulation such as washers, sleeves or bushings.

Avoid welding work on inaccessible cavities.

Component design measures

Corrosion can be prevented by design measures, in particular the design of joints between different materials or the same kind of materials. There is a risk of dirt or humidity accumulating in corners, edges, beads and folds. Design measures for counteracting corrosion can be implemented using inclined surfaces and drains, and by avoiding gaps in the joints between components.

Gaps inherent in the design of welded connections and how to avoid them



Examples of types of welded connections

A = correct
(through-welded)

B = incorrect
(gap)

Coating Measures

The vehicle can be protected by applying protective coatings (e.g. galvanization, painting or zinc coating applied by flame).

After all work on the vehicle is completed:

- Remove drilling chips
- Deburr sharp edges
- Remove any burned paintwork and thoroughly prepare surfaces for painting
- Prime and paint all unprotected parts
- Preserve cavities with wax preservative
- Carry out corrosion protection measures on the underbody and frame parts

5.4. Painting work

Paintwork damaged by the body builder must be repaired by the body builder.

Observe the following points:

- DAG quality standards for initial painting and paintwork repairs must be adhered to
- Only painting materials tested and approved by DAG paint may be used for any paintwork which may be necessary
- The body builder must observe the coat thickness for each individual coat as specified by the factory.
- Paint compatibility must be guaranteed when repainting

You can obtain information on the paint materials and coat thicknesses used at the factory and Dodge Sprinter & Freightliner Sprinter paint numbers from any Dodge Sprinter & Freightliner Sprinter Service Center.

Mask the following areas before painting:

- Sealing surfaces
- Windows
- Contact areas between wheels and wheel hubs
- Contact areas for wheel nuts
- Vents on transmission, axles, etc.
- Disc brakes
- Door Locks
- Door retainers in the rear door hinges
- Contact surfaces on the guide rails for the sliding doors
- Door retainers and opening limiters in the center guide rails
- Moving parts of the sliding door carriage
- Airbags and seat belts
- Parktronic sensors (→ chapter [6.13](#))

To dry the paint, a temperature of 80°C [176°F] must not be exceeded because high temperatures can cause damage to the control units and other components.

5.5. Towing

Warning:

Before towing, please make sure that you read the “Towing” section in the detailed Owner’s Manual. You could otherwise fail to recognize dangers, which may cause serious injury or death.

Failure to observe the instructions in the Owner’s Manual can result in damage to the vehicle.

5.6. Storing and handling over the vehicle

Storing

To prevent any damage while vehicles are in storage, we recommend that they be serviced and stored in accordance with the manufacturer’s specifications (→ chapter [3.8](#))

Delivery

To prevent damage to the vehicle or to repair any existing damage, we recommend that the vehicle be subjected to a full function check and a complete visual inspection before it is delivered.

6. Electrics/Electronics

6.1. General Information

Warning

Work incorrectly carried out on equipment and its software could prevent this equipment from working correctly. Since the electronic systems are networked, this might also affect systems that have not been modified.

Malfunctions in the electronic systems could seriously jeopardize the operating safety of the vehicle.

Have work on or modifications to electronic components carried out at a qualified specialist workshop which has the necessary specialist knowledge and tools to carry out the work required.

We recommend that you use an authorized Dodge Sprinter or Freightliner Sprinter Service Center for this purpose.

In particular, work on systems relevant to safety must be carried out at a qualified specialist workshop. Some of the safety systems only function when the engine is running. For this reason, do not switch off the engine when the vehicle is in motion because it may cause an accident with serious injury or death.

A positive total charge balance must be ensured when additional electrical components are installed.

Do not release or remove the battery terminals when the engine is running.

Rapid-charge batteries only after disconnecting them from the vehicle's system. Both the positive and negative terminals must be disconnected.

- Electrical and electronic components must fulfill the test requirements of ISO 16750.
- Observe the directives in (→ chapter [6.3](#)) when installing additional batteries.
- Cables routed in the vicinity of exhaust systems must be insulated against high temperatures (→ chapter [7.3.2](#)).
- Cables must be routed in such a way that there are no chafing points.
- The batteries must be disconnected if the vehicle is not in use for extended periods (more than 20 days). The batteries must have sufficient charge when the vehicle is put into operation again (→ chapter [6.3](#)).
- Observe the Owner's Manual

You can obtain more information from SECST (→chapter [2.7](#)).

6.2. Electromagnetic compatibility (EMC)

Electromagnetic compatibility describes the ability of an electrical system to act neutrally in the vicinity of other systems when operating at full function. It does not interfere with any of the active systems in the vicinity, nor does it suffer any interference.

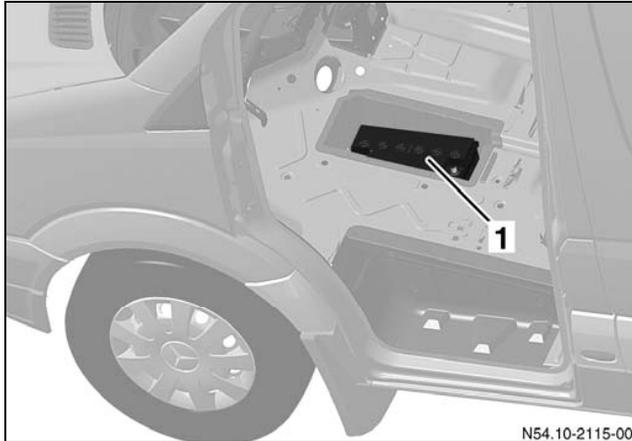
Electrical interference occurs in the vehicle electrical circuits because of the various components. At DAG, electronic components installed at the factory are checked for their electromagnetic compatibility in the vehicle. If subsequent modifications are made, this may cause discomfort in some cases. (e.g. radio noise).

When retrofitting electric or electronic systems, they must be tested for electromagnetic compatibility and this must be documented. The equipment must possess type approval and must bear the e mark. The following standards provide information on this:

- DIN 40839
- DIN 57879, Part 3
- VDE 0879, Part 3
- DC 10613 (EMC vehicle requirements)
- DC 10614 (EMC component requirements)

6.3. Battery

The main battery is located in the floor on the left-hand side, to the front of the driver's seat.



Location of the main battery

A 25 AMP current draw requires the use of the reinforced battery (Option BCY). An auxiliary battery must be used for more than 25 AMP current draw (OPTION BC1).

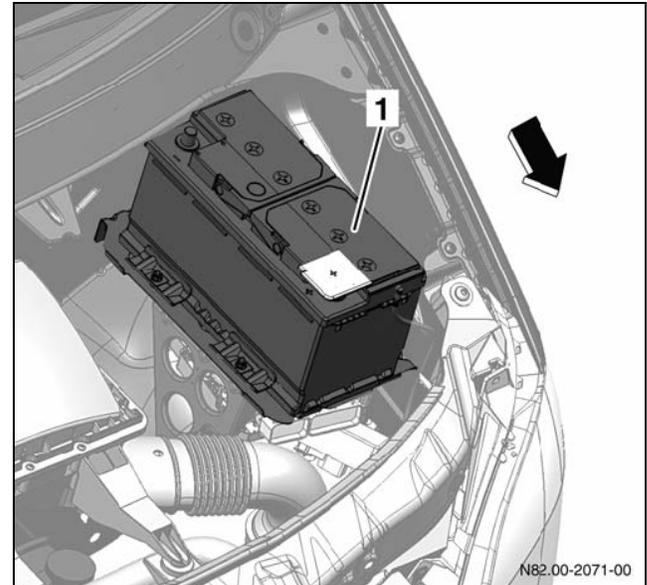
6.3.1. Retrofitting a battery isolating switch

You can obtain more information about optional equipment from your Dodge Sprinter & Freightliner Sprinter Service Center, SECST (→chapter 2.7) or in the "Optional equipment" section (→ chapter 3.9).

6.3.2. Retrofitting an additional battery

Batteries with a capacity over 100 Ah must not be connected directly to the vehicle's electrical system because this could cause damage to the basic vehicle.

We recommend the use of lead-antimony batteries fitted in the location provided in the engine compartment.



Location of the auxiliary battery

- 1 Auxiliary battery
Arrow Front of vehicle

If the auxiliary battery is located in the passenger compartment, battery gases must be vented to the outside via a central vent hose.

The auxiliary battery must only be fitted in conjunction with a cut-off relay and fuses suitable for the charge current.

The auxiliary battery may only be used to power auxiliary components such as the auxiliary heating, loading aids or electrical equipment in motor caravans (fridge, etc.).

If the vehicle is already equipped with an auxiliary battery, it not permitted to connect any more auxiliary batteries in parallel.

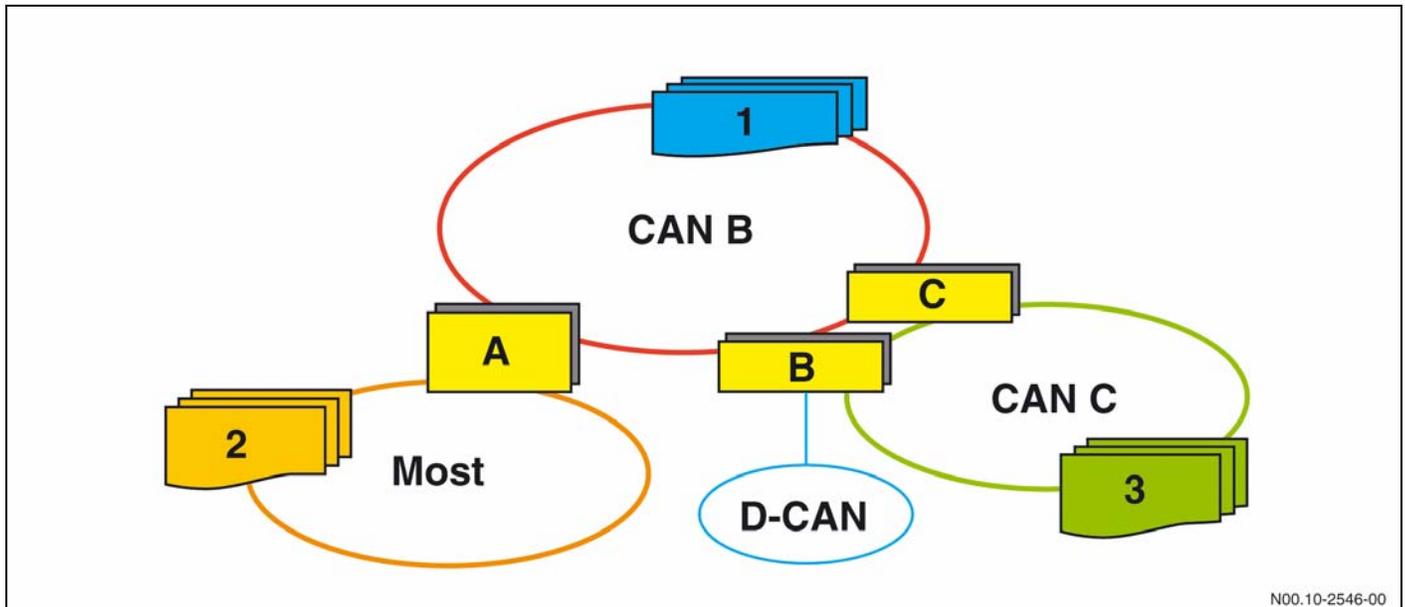
6.3.3. Battery maintenance and storage

Batteries must be checked regularly for voltage loss (self- discharge) even when removed. Only the electrolyte level check is not required with low-maintenance batteries.

You will find information on battery maintenance and storage in the "Planning of bodies" section (→ chapter 3).

6.4. Interfaces

6.4.1. CAN bus and networking



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1	2	3
I-CAN = interior CAN (CAN B, 83.333 kBit/s)	MST = optical bus	M-CAN = engine CAN (CAN C, 500 kBit/s) D-CAN = diagnostics CAN (500 kBit/s)
Tire pressure monitor ¹ Electronic restraint system Overhead control panel ¹ Signal acquisition and actuation module Door control unit Electric sliding door, left/right ¹ Fuel-fired heater booster ¹ Keyless Entry ¹ Upper control panel Trailer control unit ¹ Park-tronic ¹ Programmable special module ¹ Air-conditioning control ¹ PTC heater booster ¹ Auxiliary heating, water ¹	CD changer ¹ Telephone ¹	Brake system Jacket tube module Electronic selector lever module ¹ Transmission selector lever Module ¹ Transmission control unit ¹ Engine control unit Sensor cluster Ax/Ay/wz Diagnostic interface Reduction control unit ¹

- ¹ Optional equipment
- A Head unit/radio, interface between I-CAN and MOST
- B Electronic ignition switch, interface between I-CAN and M-CAN
- C Instrument cluster, interface between I-CAN and M-CAN

Warning

As all components are networked and internally monitored, no modifications should be made to the CAN bus (e.g. breaking, extending, or tapping). Any modifications to the length, cross-section or resistance of the wiring harness can lead to failure of safety-relevant components or to impaired comfort and may cause serious injury or death.

Internal and external vehicle diagnosis can be carried out by means of the OBD diagnostic socket (SAE 1962). All control units are capable of self-diagnosis and have an internal malfunction memory.

Communication with the relevant control unit can be established using the STAR SCAN Tester and the soft ware developed for this unit.

You can obtain more information from an authorized Sprinter Service Center.

6.4.2. Electric wiring/fuses

If the routing has to be altered, avoid routing across sharp edges and through narrow cavities or near moving components.

Only lead-free PVC-sheathed cables with an insulation limit temperature of > 105 °C [221°F] may be used. Connections must be made professionally and water-tight.

The line must be dimensioned in accordance with the current drawn and protected with fuses.

The following table applies with an insulating limit temperature of > 105 °C [221°F].

Max. permanent current intensity (A)	Fuse rating (A)	Conductor cross-section (mm ²)
0 - 4.9	5 ¹	0.5
5 - 9.9	10 ¹	1
10 - 18	20 ¹	2.5
19 - 28	30 ¹	4
29 - 35	40 ²	6
36 - 48	50 ²	10
49 - 69	70 ²	16
70 - 98	100	25
99 - 123	125	35
124 - 148	150	50

¹ Shape C; DIN 72581 blade connector

² Shape E; DIN 72581 blade connector

6.4.3. Additional power circuits

If additional power circuits are installed, they must be protected against the main power circuit by fuses of adequate rating. The dimensions of the wiring used must be adequate for the load and the wiring must be protected against the effects of tear, impact and heat.

6.4.4. Control Switches

There are a total of eight switch locations available for additional special purpose bodies and equipment.

6.4.5. Retrofitting electrical equipment

Please observe the following if auxiliary electrical components are retrofitted:

- Alternators with LIN technology approved by DAG must be used for high current draw requirements.
- Do not connect additional alternators to the onboard network.
- Do not connect additional components to fuses already assigned
- Do not connect additional wires (e.g. with insulation piercing devices) to existing wires.
- Provide components with adequate protection by means of additional fuses.

All equipment fitted must be tested in accordance with Electromagnetic Compatibility and must bear the E mark. Additional electrical components must be connected by means of the terminal strip for auxiliary components (EK1 connector) available from the factory as described in the "Power supply interfaces" section.

If the vehicle's electrics/electronics are modified or additional equipment is installed incorrectly, this may impair operating safety, cause damage to the vehicle's electrical system or the complete vehicle, and invalidate the vehicle's warranty/certification.

6.4.6. Retrofitting an alternator

If additional electrical components are retrofitted, the increased power requirement can be met by fitting higher rated alternators. The following alternators are available as optional equipment (option codes) from the factory:

Option	U (V)	I (A)
Standard	14.3	180
BAJ	14.3	220

If additional equipment is fitted, factory-fitted power take-offs must be used (→ chapter [7.5.3](#)).

For retrofitting alternators, we recommend option XF1 versions available from the factory as optional equipment.

The following points must be observed if you intend to have other alternators retrofitted:

- On no account should be installation an alternator impair vehicle parts or their function.
- The battery must have sufficient capacity and the alternator must generate sufficient power.
- The alternator circuit must be provided with additional fuse protection.
- The additional pulley, option LBS, is available from the factory as optional equipment for driving air conditioning compressors.
- Electrical lines must be routed correctly (→ chapter [7.3.5](#))
- There must be no impairment of the accessibility or easy maintenance of installed equipment.
- There must be no impairment of the required engine air supply and cooling (→ chapter [7.3.3](#)).
- The guidelines of the equipment manufacturer for compatibility with the basic vehicle must be observed.
- The operating instructions and the maintenance manual for the additional equipment must be supplied on handing over the vehicle.

A new generation of regulator is used in the new Sprinter. The alternator regulator is equipped with a LIN (Local Interface Network) interface.

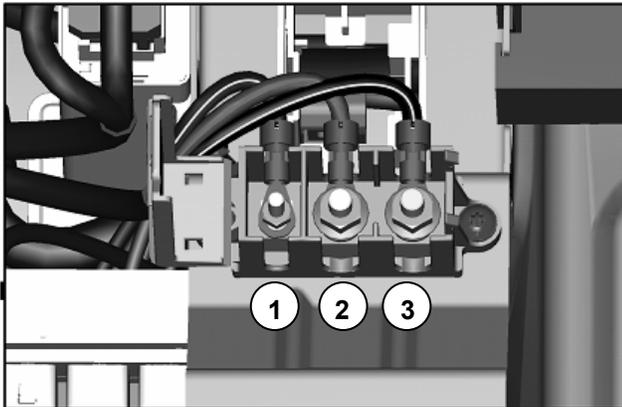
The characteristics of the LIN alternators are fixed in the engine control unit – for this reason **alternators can not be retrofitted** and a Sprinter should be ordered with the correct alternator from the factory!

The standard equipment for the Sprinter is 180A and an optional 220 A alternator (CODE BAJ) is available.

No D+ (engine running positive signal) output available at alternator with LIN Bus technology, only at Bodybuilder socket EK1/2EN under driver seat.

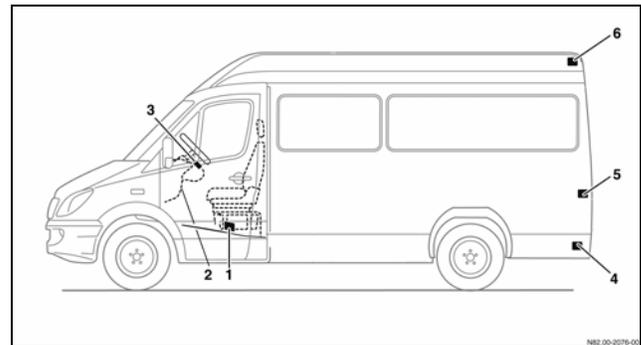
6.4.7. Power supply

Additional electrical components must be connected using an auxiliary electrical consumer terminal strip (EK1 / 3EN) standard from the factory. The terminal strip is installed inside the driver's seat base (at the front, on the left-hand side of the vehicle) and has three terminals:



Terminal	U [V] / I [A]	wire color
1 st terminal D+	12V / 10A	blue/yellow
2 nd terminal 30	12V / 25A	red/gray
3 rd terminal 15	12V / 15A	black/yellow

When installing electrical aftermarket equipment with an AMP draw of more than 25A it is necessary to use the optional aux battery 12V/100Ah (CODE BC1; lead-antimony, high cycle strength).



#	Option	Description
1	EK1 / 3EN	Terminal strip for electrical connections (standard)
2	JJJ	12 V socket in instrument panel (max. 15 A) (standard)
3	XZG	Connector for body int. lights (chassis cab only)
4	AHT	Electrics for trailer power socket
5	XGF	Extended tail lamp wiring harness (chassis cab only)
5	JKP	AUX 12 V Plug Rear Comp (Van only)
6	XZF	Additional electrical equipment

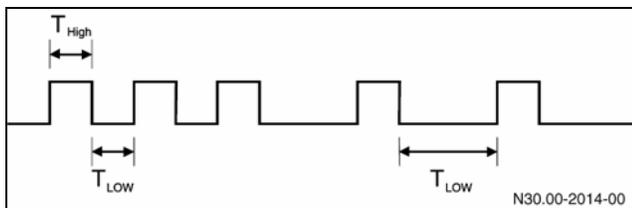
6.4.8. Speed Signal

The “Highline” and “Lowline” instrument clusters output an electronic speed signal at pin 9 of the instrument cluster connector.

The speed signal (positive to ground) acts as a distance and speed signal for external electronics, e.g. taximeters or speed-dependent volume controllers.

The signal is protected against short-circuit to ground and battery voltage and is not monitored. The signal is output at 4 pulses per meter. The pulse width is 4 ms.

At 112.5 km/h [70 miles/h], the pulse duration is the same as the pulse pause. This 1:1 ratio is maintained for higher speeds. This means that, at higher speeds, the pulse length and the pause length become shorter at the same time.



Ratio of pulse duration/pulse pause

Speed signal ($I_{max} = 20 \text{ mA}$):

$T_{high} U_a > = 8 \text{ V}$

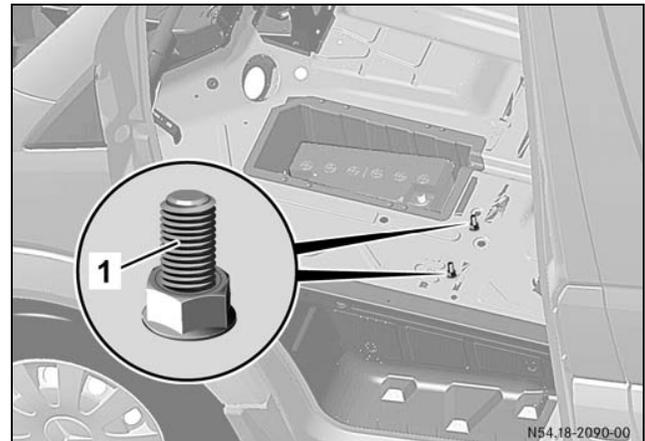
$T_{low} U_a < = 1 \text{ V}$

6.4.9. Ground Connections

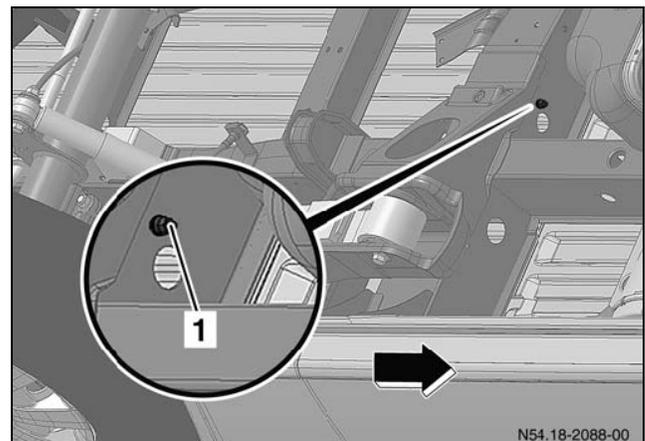
The ground bolts provided by the OEM for retrofitting electrical attachments or installations must be used to ensure the optimum ground connection with the basic vehicle. There are two M6 ground bolts in the seat base of the co-driver’s seat; there is a further M6 ground bolt on the underside of the vehicle on the cross member to the front of the rear axle.

- No more than 4 cable connectors may be screwed onto one ground bolt.
- The nuts must be tightened to a torque of 6 Nm / [4.4lft-lbs]
- The use of any other ground bolts may lead to malfunctions in safety systems.
- The ground bolts of the safety systems must not be used for bodies.

For other requirements, please consult with SECST (→ chapter 2.7)



Cab ground connection, co-driver’s seat body shell
1 ground bolt connection



Frame ground connection (8550 GVWR shown to the front of the rear axle)

- 1 Ground bolt connection
- Arrow Front of vehicle

6.5. Lighting

6.5.1. Adjusting the Headlamps

The headlamp basic setting must be observed (see vehicle identification plate). Only check the headlamp setting with the vehicle unloaded (ready to drive—full tank and with the driver or 165.3 lbs load).

- Park the vehicle on a level, horizontal surface.
- Align the headlamp beam adjuster and the vehicle at right angles to each other.
- Correct the tire pressures (refer to the tire pressure table).
- Switch on the headlamps.
- Check each headlamp separately; when doing so, cover the other headlamp and lights.

The light-dark boundary of the dipped-beam headlamp at a distance of 10 m [32.8ft] can be calculated from the height of the headlamp (center of headlamp to ground) minus the specified headlamp basic setting.

Bi-xenon headlamp basic setting

The basic setting on vehicles with bi-xenon headlamps must be adjusted by an authorized Sprinter Dealer using STAR Scan diagnostic tool.

Headlamp basic setting:

1% = 10 cm, 1.5% = 15 cm, 2% = 20 cm
 [1% = 3.9 in, 1.5% = 5.9 in, 2% = 7.9 in]

Warning

There is a risk of fatal injuries from the high voltage in the xenon headlamps. Do not touch any components under high voltage which may cause serious injury or death.

On no account may persons with electronic implants (e.g. pacemakers) carry out any work on xenon headlamps which may cause serious injury or death.

6.5.2. Tail lamps

Observe FMVSS/CMVSS standards.

The following optional equipment is available from the factory as option codes to carry out retrofitted modifications to the vehicle tail lamps.

Option	description	Description/function
LP9	Omission of tail lamps	Possible to retrofit other lamps and turn signals; the connectors and wiring harness are retained
XGF	Tail lamp wiring	The lengthened tail lamp wiring harness lengthened (approx. 2m [6 ft]) acts as provision for retrofitting tail lamps in a different location
XZF	Additional electrical equipment for turn signal lamps	On chassis cab the additional wiring at the vehicle rear end is provided for additional turn signal lamps on the body.

6.5.3. Marker Lamps

Vehicle clearance lamps/identification lamps

Clearance lamps increase passive safety and are required by law on vehicles with a width of 80 inches and wider. The clearance lamp option is available from the factory (Option LNM).

6.5.4. Exterior lamps

In order to ensure that the standard bulb failure monitor functions correctly, use only bulbs of the same type and same output rating as standard bulbs may be installed.

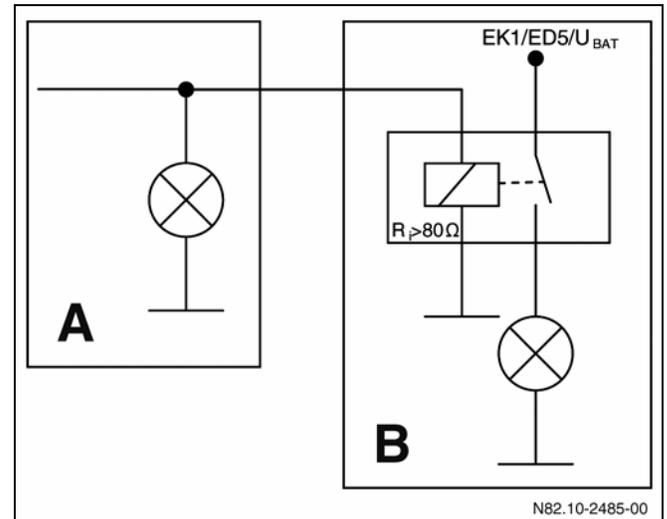
Lamp monitoring

The signal acquisition and actuation module (SAM) monitors all outputs for open load (wire break) and short circuit. If a lamp is not connected or is overloaded, a fault entry is stored in the memory of the SAM control unit.

The fault entry must be addressed by an authorized Dodge Sprinter & Freightliner Sprinter service dealer with a STAR Scan.

Additional Lamps

Additional lamps must be connected via the PSM or a separate cubic relay. A standard cubic relay ($R_i > 80 \text{ Ohms}$) can optionally be connected in parallel with the exterior lamps (with the exception of the third brake lamp, turn signals, license plate illumination side markers and perimeter lamps). This will not have any negative effect on lamp monitoring.



Connection of an additional lamp

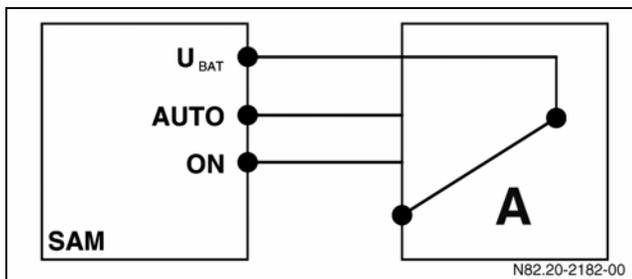
- A Scope of the basic vehicle
- B Scope of the body builder

A warning buzzer can be optionally connected in parallel with the reversing lamps. The current rating of the warning buzzer must be no more than 300 mA. We recommend the use of a warning buzzer with piezo technology.

The third brake lamp is an LED with a rating of approximately 1.8 W and cannot be replaced by an incandescent bulb.

6.5.5. Interior Lamps

All interior lamps can be replaced by other body-manufacturer-specific lamps. The interior lamps are operated via read-back switches networked by the SAM (signal acquisition and actuation module). Monitoring is only carried out for short circuits, maximum load 80W. Lamps are normally switched on dimmed. Dimming must be deactivated in the SAM if fluorescent lighting or load relief relays are used. This is achieved by means of the "Working Lamps" option (Option LC1). The read-back switch must always be connected to the SAM, otherwise the interior lamps cannot function.



Read-back switch switching principle

- U_{BAT} Interior lightning power supply (+ 12 V)
- AUTO Lightning controlled by SAM, e.g. when door opened
- ON Interior lamp permanently lit
- A Read-back switch (interior lighting)

6.5.6. Rain-light sensor

It is only permitted to fit the rain-light sensor (Option NHW) in conjunction with the standard/optional WSS variants provided. There is otherwise a risk of malfunction. The standard ceiling light has to be replaced by an overhead console with lights. The overhead control panel (DBE, Option CUN) must also be fitted (contains the interface).

6.6. Mobile communication systems

If mobile communication systems (e.g. telephone, CB radio) are retrofitted (→ chapter [4.6.3](#)), the following requirements must be fulfilled in order to avoid malfunctions developing on the vehicle at a later stage:

- All electronic equipment fitted requires type approval regarding electromagnetic compatibility and must bear the E mark.
- The ring-shaped MOST network uses a fiber-optic cable as a data carrier for transferring audio and control signals. This system supports the synchronous transfer of data at high baud rates, is insensitive to electromagnetic interference (EMC), does not itself cause electromagnetic interference and can transfer both audio and control data simultaneously. The system is available with the ignition OFF and is activated by a separate wake-up line.

The fiber-optic cable must not be kinked. The minimum bending radius is 25 mm [1.0 inch].

6.6.1. Equipment

- The maximum transmission output must not be exceeded.

Waveband	Maximum transmission output (W)
Short wave < 50 MHz	100
4 m band	20
2 m band	50
70 cm band	35
25 cm band	10

- The mobile communications systems and brackets must not be positioned in the deployment area of the airbags (→ chapter [7.4.2](#)).
- The equipment must be permanently installed. Mobile devices may only be operated inside the cab if they are connected to an exterior aerial which has been installed in such a manner that it is reflection free.
- The transmitter unit must be installed as far away from the vehicle's electronic system as possible.
- The equipment must be protected from humidity and severe mechanical vibrations; the

permissible operating temperature must be observed.

6.6.2. Connecting and routing the wiring for the aerial (radio)

- Comply with manufacturer's notes and installation instructions.
- The connection should be made directly to terminal 30 via an additional fuse. Disconnect the unit from the electrical system before jump-starting.
- The wiring routes must be kept as short as possible. The wires must be twisted and screened (coaxial cable). Chafing points must be avoided.
- Ensure that the system has a good ground connection to the body (aerial equipment).
- The antenna and connecting cables between the transmitter, receiver and operating panel must be routed separately from the vehicle wiring harness in the vicinity of the body ground.
- Route the aerial cable in such a way that it is not kinked or pinched.

6.7. Electronic ignition switch (EZS)

6.7.1. General Information

- The processes involved in the access authorization for the central locking (ZV) are verified and controlled by the signal acquisition and actuation module (SAM) and the door control unit (TF).
- When the key is inserted, infrared communication with the radio remote control key is achieved by inductive energy transmission.
- When the radio remote control values are transmitted to the drive authorization system III (FBS III), the electronic steering lock (ELV) and the engine control unit are released.
- When the radio remote control key is removed, the ELV is locked if the last recorded speed signal was <3 km/h [1.86 mph] and the key is withdrawn by at least 4 mm. If the last recorded speed signal was >3 km/h [1.86 mph], the ELV is only locked if the door contact switch signals that the driver's door has been open for longer than 1 second.
- The radio remote control key activates the individual terminals (15, 15R) depending on the position in the ignition lock to which it is turned.
- The radio remote control key is mechanically locked when turned.
- If key identification is unsuccessful (invalid key), the lifting solenoid in the electronic ignition switch prevents the radio remote control key from turning.
- If key identification is successful, the memory functions are assigned.
- The electronic ignition switch acts as an interface (gateway) between the interior CAN (CAN B) and the engine compartment CAN (CAN C) for data exchange between the two bus systems.
- The diagnostics CAN acts as a central diagnostic interface with all control units with diagnostics capability.
- An HF receiver is integrated.
- Where control units are networked, the electronic ignition switch sends global information such as the model series and the country variant to the CAN-B and CAN-C control units (global variant coding) on the network.

6.7.2. Central locking/rescue vehicle

To guarantee faultless operation, it is only permitted to use central locking elements supplied by DG. If these cannot be used, please consult with SECST (→ chapter [2.7](#)) for further information. By means of EZS variant coding, the doors can be programmed to be present or not present. Activating automatic locking using STAR Scan Tool.

- Speed (adjustable, default 15 km/h [9.4 mph]).
- Ignition ON
- Automatic locking when last open door is closed (post function)

Deactivating automatic unlocking using STAR Scan Tool. On emergency vehicles it is possible to deactivate automatic central unlocking. This is a function that can be set by means of variant coding in the EZS using STAR Scan Tool. You can obtain further information from SECST (→ chapter [2.7](#)).

Rescue vehicle fittings

The settings required for rescue vehicles, e.g. passive circuits for rear-door and sliding Door actuators, can be carried out using STAR Scan Tool and using the following settings:

Right-hand sliding door "not present"
Left-hand sliding door "not present"
Rear door "not present"
Common enable for control circuits 1 and 2
Co-driver's door "not present"

6.8. Windows and doors

6.8.1. Power windows/window hinges

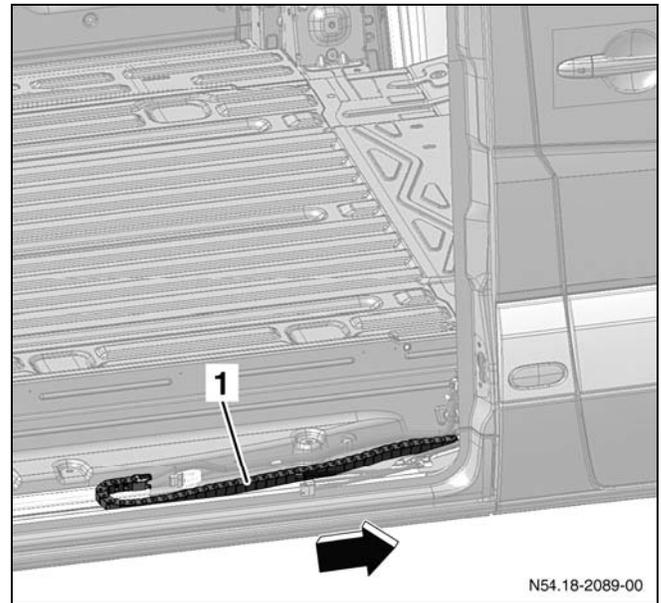
The gearing ratio for heavier windows must be adjusted to ensure that the motor draws the same electrical power. The time required to open/close the windows must not exceed 10 seconds. The motor is thermally protected i.e. the availability of the power window function may be restricted after long operating periods. The power windows and the window hinges can only be controlled using the door control panel. The switches are voltage coded and must only be replaced with equivalent genuine parts.

6.8.2. Load compartment sliding door

The electrical components of the load compartment sliding door. The cable track must be taken into consideration in the event of any modifications around the doorway. The cable track can be used for the requirements of the body builder following consultation with SECST (→ chapter 2.7). The system for the electric load compartment sliding door has been designed for a maximum door weight of 65 kg [143 lbs].

On no account should modifications be made to the door kinematics or the locks, rails, carriages, closing aids and trap guard strips.

Correct operation of the integrated trap guard (trap guard strip and path/time monitoring) must be ensured in the event of any modifications in this area, e.g. the window installation.



Load compartment sliding door with energy chain

- 1 Cable track (drag chain)
- Arrow Front of vehicle

6.8.3. Sliding sunroof

An OEM sliding sunroof can only be fitted in conjunction with an overhead control panel (DBE). The length of the wiring harness between the sliding sunroof motor and the DBE must not be more than 6 m [19.5 ft].

6.8.4. Windscreen wipers

We recommend the use of genuine DG wiper motors. If necessary, a second wiper motor can be connected via a load relief relay ($R_i > 80 \text{ Ohms}$). The wiper motor must be connected to the signal acquisition and actuation module (SAM) by means of a read back line. If only one wiper motor is connected, the SAM stores a fault in the malfunction memory.

6.8.5. Exterior mirrors

The output of the mirror heater (12 V / 20 W) is monitored by the door control unit. The mirror heating is deactivated if a fault entry is stored. The door control unit must be modified if different mirrors without a heater or with a different heater are used. The mirror adjustment is load switched and can be routed if required.

6.8.6. Windscreen heating/rear window heating

The original heaters can be replaced with heaters with the same power rating:

- Windscreen heating
 $P = 942 \text{ W} + 15\%$ at 13 V
- Rear window heating
 $P = 2 \times 151 \text{ W} + 15 \text{ W}$ at 13.5 V

If higher heat outputs are required, the relays, lines and fuses must be modified accordingly.

6.9. Electronic Stability Program (ESP)

ESP is a dynamic vehicle control system which controls both dynamic directional and transverse forces acting on the vehicle.

Greater driving stability is provided by ESP with an extended sensor system that constantly compares the current actual vehicle direction with the desired direction of movement.

ESP improves vehicle stability in all driving situations, e.g. when accelerating, braking and freewheeling, when driving in a straight line and cornering.

Together with the signals of other sensors, a processor monitors that the direction specified by the driver is maintained.

If the vehicle deviates from the correct path (over steering or under steering), The system produces a stabilizing counteraction by applying the brakes on individual wheels.

Warning

On no account may any of the following modifications be made to vehicles equipped with ESP:

- Modifications to the permissible gross vehicle weight
- Modifications to the wheelbase
- Modifications to the sensors (steering angle sensor, yaw rate sensor, wheel rotational speed sensor)
- Changes to the vibration characteristics at the installation location of the yaw rate sensor by modifications of the body.
- Changes to the position of components
- Modifications to the suspension
- Modifications to wheels and tires
- Modifications to the engine
- Modifications to the steering system
- Modifications to the brake system
- Conversion to a semi-trailer tractor vehicle

Modifications to vehicles with ESP may cause this system to stop functioning correctly and may lead to system shutdowns and incorrect control interventions. The driver could then lose control of the vehicle and cause an accident.

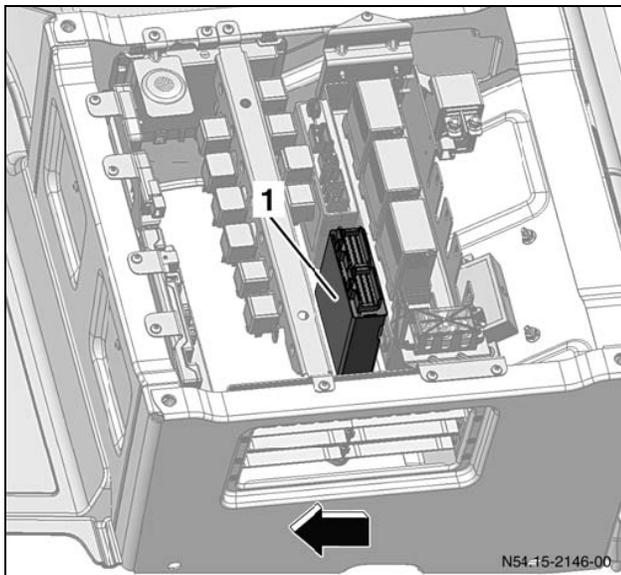
6.10. Programmable special module (PSM)

The PSM is the gateway to the CAN Bus. The PSM can be used to read and program vehicle functions.

The term “networking” refers to the interaction between different control units. These individual components are not linked by means of analogue connections but digitally by means of several networks:

- Two high-speed Controller Area Networks (HS CAN and engine CAN)
- One diagnostic CAN
- One low speed CAN (interior CAN)
- One digital, optical bus (MOST)

All subscribing control units can read the messages sent on the CAN bus and are programmed to support the CAN language, or CAN protocol. The PSM was developed to give body builders access to individual types of CAN bus data. The PSM is available under option XCF.



Location of the PSM

- 1 PSM with cable connector in driver's seat cushion
- Arrow Front of vehicle

The PSM is able to read the messages of the various bus data and then, for example, translate them into switching signals at the outputs provided (“high” or “low”) or PWM signals (pulse width modulation) or forward them to a specific body builder CAN (conforming to ISO11992-3). The electronics installed by the body builder then have access to the necessary signals.

The PSM provides a clearly defined, diagnostic-compatible and EMC-tested interface between the vehicle and the body.

Customer-specific requirements may be special inputs, or special outputs, such as pulse pause-modulated engine speed or CAN bus compatible control units in bodies or trailers.

The wiring on the vehicle must not be tampered with, as this would lead to fault messages from the other control units on the CAN bus.

The PSM is connected to the vehicle via the LS-CAN bus and therefore has access to all messages sent by the linked control units (e.g. idle contact active, parking brake active, speed C3, engine speed). In contrast, individual signals can be monitored or generated at analogue and digital inputs and outputs.

Example:

- The engine control unit sends the engine speed in a message, which can be read by the PSM. The PSM converts the engine speed information into a PPM signal and makes this available at an output.
- In the opposite direction, the PSM can convert the position of a hand throttle into an HS CAN message and thus request the desired engine speed of the engine.

The parameters of the PSM are programmed using STAR Scan Tool. Information about this can be obtained from your authorized Sprinter dealer or the relevant department:

Name:	Walther F. Bloch
Dept:	Sprinter Engineering
Telephone:	(843)-695-5053
Fax:	(843)-695-5031
E-mail:	walther.bloch@daimler.com

Name:	Andreas Brockmann
Dept:	Sprinter Engineering
Telephone:	(843)-695-5052
Fax:	(843)-695-5031
E-mail:	andreas.j.brockmann@daimler.com

When writing a standard coding, all previous parameters are deleted. We recommend backing up data beforehand.

6.10.1. PSM Functions

To read in data from the ICAN:

- Vehicle status
 - Terminal 15
 - Terminal 61
- Light status
 - LDS and LSS requirements (e.g. main-beam headlamps, turn signals, dipped-beam head lamps, front fog lamps, ...)
 - Hazard warning lamps OBF
- Window status
 - Windscreen and rear window wipers
 - Windscreen heating and rear window heating
- Central locking
 - Doors open/closed, unlocked/locked
- Engine CAN information
 - Wheel rotation speed
 - Road speed
 - Engine speed
 - Cruise control operation
 - Brakes applied
- Transmission
- Steering angle
- Equipment attributes
 - Door installation
 - Sliding sunroof
 - Transmission
- Output on ICAN
 - Light control
 - Parking lamps
 - Side lamps
 - Turn signals
 - Main-beam headlamps,
- Alarm functions
 - Alarm-triggered flashing of main-beam head lamps
 - Front fog lamps
 - Warning flashers
 - Horn
- Sliding sunroof
 - Opening and closing of the sliding sunroof at the rear
- Central locking function
 - Lock/unlock front, load compartment and entire vehicle
- Windscreen and rear window
 - Windscreen wipers and rear window wiper
 - Windscreen heating and rear window heating
- Miscellaneous functions
 - Control buzzer (in the MPV) and interior lighting
 - Charging active
- Warning signals
 - PSM defective
 - Under voltage

6.10.2. Mini-SPS

The mini-SPS (mini memory-programmable control unit) is a module with freely programmable and freely inter-connectable function blocks for creating any signal links that may be required:

- 16 AND/NAND/OR/EXOR/NOR/EXNOR
- 8 RS and D flip-flops
- 4 retriggerable / non-retriggerable timer stages
- 4 hysteresis links with adjustable thresholds
- 4 threshold value switches with 3 stages
- 4 counters

This Body Builder Information Book cannot describe in full the wide variety of capabilities of the PSM. You can obtain more information from SECST (→ chapter [2.7](#)).

6.11. Signal acquisition and actuation module (SAM)

The power circuit on the Sprinter – model series VB comprises the signal acquisition and actuation module (SAM) in conjunction with a fuse and relay block (SRB). This power circuit supplies the systems and control units with power, depending on the function sequence. Requirements are sent to the SAM either on the CAN or via directly read switches and sensors. The fuses on the fuse and relay blocks also provide protection for individual components. You will find information about other functions in the “Technical details” section.

6.12. Tire pressure monitoring system

Warning

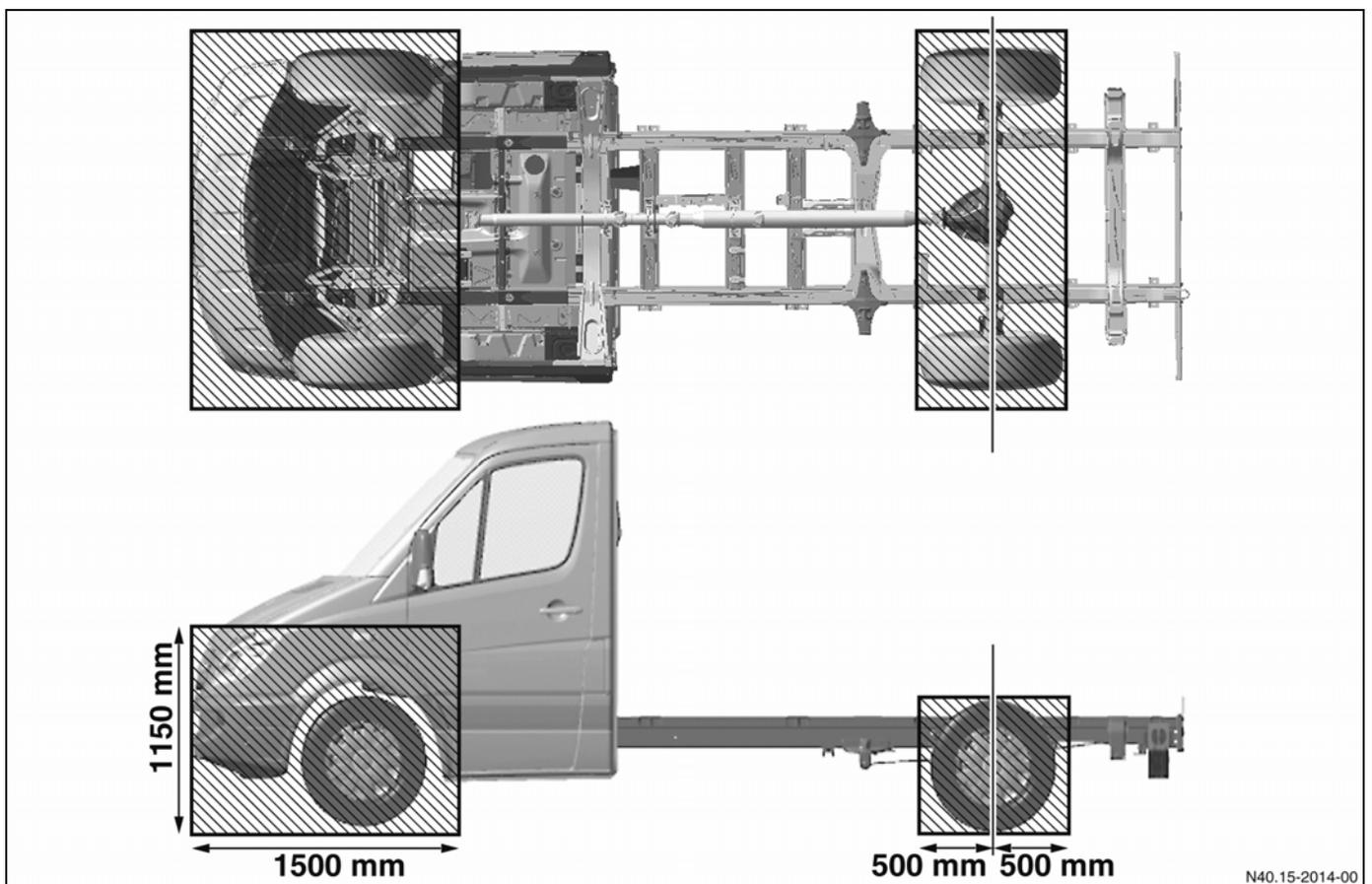
Do not carry out any modifications in the grey-shaded areas of the vehicle substructure (see illustration). Otherwise, the function may be compromised by the effect of reflections. This might result in the driver being unaware of any tire pressure loss, and could cause an accident that may cause serious injury or death. Furthermore the vehicle will lose its certification.

Tire Pressure Monitoring System is only available on Dodge Sprinter & Freightliner Sprinter 2500. Correct operation of the tire pressure monitor, or Tire Pressure Monitoring Systems (TPMS), can only be guaranteed if no modifications are made to the

underbody (as the effect of reflections cannot be correctly evaluated). Modifying the vehicle substructure may adversely affect the tire pressure monitoring system.

The antenna position for the front axle is in the front of the engine compartment on the right-hand longitudinal member near the jack take-up bracket and behind the right-hand headlamp on the inside of the A-pillar.

The antenna position for the rear axle is to the rear on the underbody between the wheels (Cargo Van and MPV) or on the left-hand longitudinal member near the axle (chassis cab). On low frame vehicles, the antennas are below the axle support. You can obtain more information about the tire pressure monitoring system from SECST (→ chapter [2.7](#)).



Restricted area for tire pressure monitoring system. TPMS only available on 2500 Sprinters. Picture above reflects 2500 Sprinter Chassis / Cab for illustration purposes only.

6.13. Parktronic

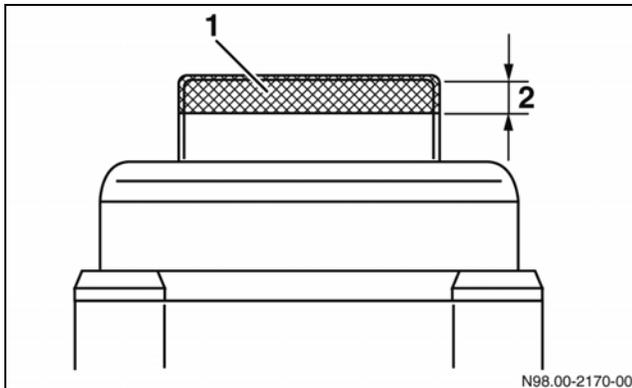
- If approved attachments are retrofitted, it is necessary to have Parktronic coded with the appropriate parameter record by DAG.
- After market painting of the bumper is not permitted with the Parktronic ultrasonic sensors fitted. The coat of paint impairs the emission and reception of the ultrasonic signals.

Sensors which are already painted must not be repainted or touched up. In order to ensure that they function correctly throughout their operating life, sensors must be painted before being installed. Unpainted sensors and sensors painted in a range of colors are available from your authorized Sprinter Dealer.

The maximum thickness the paint coat on the cover may have without impairing sensor operation is 120 µm. This also includes repeated painting applications and the coat of cathodic dip paint. The paint coat thickness is between 12µm and 25 µm.

It is therefore necessary to make spot checks of the paint thickness to ensure faultless operation of the sensors.

It is essential that not only the cover itself but also the cylinder edge of the sensor cover be coated with paint evenly all the way round and covering at least 2 mm.



Area of cylindrical edge of the sensor cover to be painted

- | | |
|---|--------------------------------|
| 1 | Area to be painted |
| 2 | Maximum coat thickness 120 µm. |

The coat of paint may not be ground off mechanically, as this could damage the chromate layer or the cathodic dip paint layer or the sensor covering.

If the surface has been cathodically electro primed, the paint must not be removed by chemical means as this could damage the cataphoretic electroprimer layer. A new layer cannot be applied afterwards. Nor is it permitted to touch up damaged areas chemically or mechanically.

Attachment parts fitted in the detection range of the sensors may impair operation of the parktronic system (e.g. trailer hitch, overhangs of bodies, wheel carriers, steps, brush guards).

6.14. Lifting platform connection

The following electrical components are available to install a lifting platform. Prewiring option XBE is available:

- Control current fittings
- On/off switch in the cab, which closes or opens the control current circuit of the lifting platform
- Main current fittings
- 35 mm [1 3/8 in] ground line, secured to the vehicle frame, with a blue 1-pin ITT Cannon main current connector on the lifting platform end
- 35 mm [1 3/8 in] positive line, with a 10 mm [3/8 in] cable shoe on the battery end of reconnecting the main current fuse directly to the positive terminal, with a red 1-pin ITT Cannon high current connector on the lifting platform end
- Both lines have an excess of 1000 mm [39.4 in] at the end of the right-hand longitudinal member. The loose lengths of line are tied back in the left-hand longitudinal member.

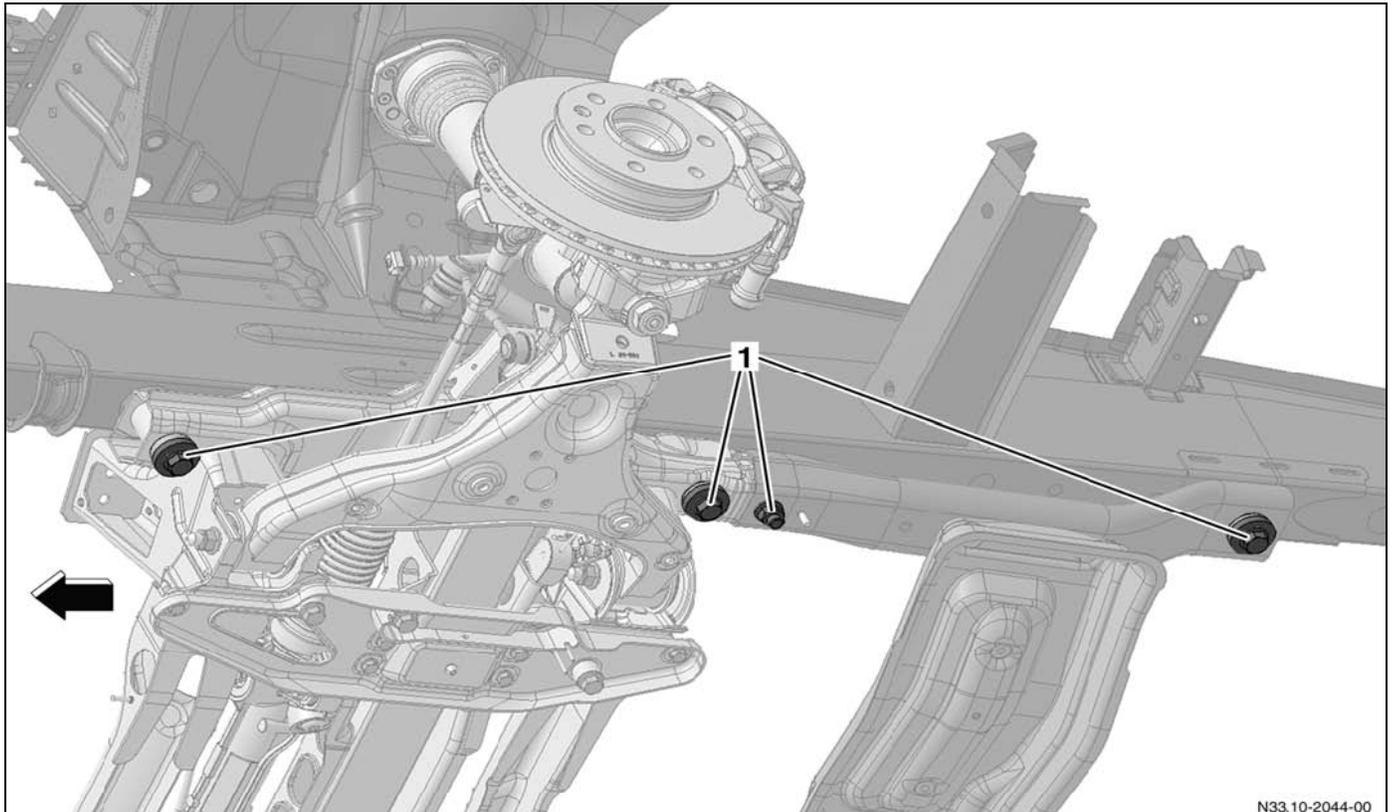
An alternator and a battery with higher capacity as well as an auxiliary must be fitted if an electro hydraulic lifting platform is fitted. Before the lifting platform is used for the first time, the body builder must insert a fuse in the appropriate location in the driver's seat base.

For notes on the mechanical connection, see the "Attachments to the rear frame section" (→ chapter [7.2.2](#)) and the "Lifting platform" (→ chapter [7.6.6](#)) sections.

7. Modifications to the basic vehicle

7.1.1. General information on the suspension

Additional attachment parts are not permitted to be secured to the bolting points on the front axle.



Front axle

1 Bolting points on the front axle

This is especially valid for:

- Front transverse link: Do not modify wheel position values
- Do not modify or use the front axle to mount additional equipment or make other modifications.

Arrow Front of vehicle

- Rigid rear axle: do not modify rear axle.
- Brakes: do not modify the brake system
- Do not modify: equipment, sensors, line routing for ESP/ABS.

Warning

Modifications to components of the suspension system can result in impaired and unstable vehicle handling characteristics. The driver may lose control of the vehicle and cause an accident that may cause serious injury or death. For this reason, no modifications whatsoever may be made to components of the suspension system.

Warning

Do not change any bolted connections that are relevant to safety, e.g. that are required for wheel alignment, steering or braking functions. They may otherwise no longer function correctly. The driver may lose control of the vehicle and cause an accident that may cause serious injury or death. Parts must be refitted in accordance with DG after sales service instructions and using suitable standard parts. We recommend the use of genuine DG Sprinter parts.

- It is strictly prohibited to shorten the length of the free clamping bolt, change to the reduced shaft or use bolts with a shorter thread.
- The settling behavior of bolted connections must be observed.

Information is available from any authorized Sprinter Service Center. Additional tensioned parts must be of equal or greater strength than the preceding tensioned assembly.

The use of DG tightening torques assumes coefficients of friction for the bolts in the tolerance range of (=0.08...0.14).

We recommend the use of standard DG Sprinter parts.

7.1.2. Springs/shock absorbers/anti-roll bars

Modifications to springs, shock absorbers and anti-roll bars can only be made in the combinations specified by DaimlerChrysler on the front and rear axle.

You can obtain more information from SECST (→ chapter [2.7](#)).

We recommend the use of genuine DG Sprinter springs

- Do not damage the surface or corrosion protection of the spring leaves during installation work
- Before carrying out welding work, springs must be covered to protect them against welding spatter.
- Do not touch springs with welding electrodes or welding tongs.

On no account should springs and shock absorbers be used if they do not correspond to the characteristics of standard parts or parts obtainable as optional equipment. We recommend the use of standard DG Sprinter parts.

Warning

On no account should springs and shock absorbers be used if they do not correspond to the characteristics of standard parts or parts obtainable as optional equipment. Otherwise, this system may no longer work correctly and could ultimately fail. The driver may lose control of the vehicle and cause an accident that may cause serious injury or death. Refer also to the optional equipment available as a option (→ chapter [3.9](#)).

7.1.3. Brake system

Warning

Work carried out incorrectly on the brake hoses, lines and cables may impair their function. This may lead to the failure of components or parts relevant to safety, the driver may lose control of the vehicle and cause an accident that may cause serious injury or death.

Have work on brake shoes, lines and cables only carried out by an authorized Sprinter dealer.

Warning

Do not modify brake system components e.g. discs, calipers, sensors, etc. Any modifications to brake components may result in these systems not functioning correctly and ultimately failing. The driver may lose control of the vehicle and cause an accident that may cause serious injury or death.

Routing lines

Warning

A sufficient distance must be maintained between brake lines and heat sources, sharp-edged or moving parts. Otherwise, the brake system function could be impaired or the brake system could suffer total failure as a result of bubbles forming in the brake fluid or from chafing points in the brake lines the driver may lose control of the vehicle and cause an accident that may cause serious injury or death.

Routing lines along the brake hoses

- No other lines may be attached to the brake hoses.

Brake cable for the parking brake

- Do not modify the length of the brake cable.

Disc brakes

- Do not impair cooling by attaching spoilers below the bumper, additional hub caps or brake disc covers, etc.

Warning

Do not modify air inflow and air outflow of the brake system. Any modifications may result in these systems not functioning correctly and ultimately failing. The driver may lose control of the vehicle and cause an accident that may cause serious injury or death.

Brake system overheating will not only impair braking ability, it can also cause tire damage. For this reason, make sure that there is a sufficient supply of cooling air at all times.

7.1.4. Wheels and tires

Warning

Only fit tires of a type and size approved for your vehicle and observe the tire load-bearing capacity required for your vehicle and the tire speed index. In particular, comply with FMVSS/CMVSS regulations concerning the approval of tires. These regulations may define a specific type of tire for your vehicle. If you have other wheels fitted:

- The brakes or components of the suspension system could be damaged
- Wheel and tire clearance can no longer be guaranteed
- The brakes or components of the suspension system can no longer function correctly

The driver may lose control of the vehicle and cause an accident that may cause serious injury or death.

Gross vehicle Weight [lbs]	Wheel	Tire size	Load Index
8,550	6.5Jx16	245/75R16	120/116
9,990	5.5Jx16	215/85R16	115/112
11,030	5.5Jx16	215/85R16	115/112

The body builder must ensure the following:

- There must be sufficient space between the tire and the mudguard or wheel arch even with snow chains fitted and the suspension completely compressed (allowing for axle twist). The relevant data (→ chapter [7.2.6](#)) must be observed.
- It is only permissible to fit approved tire sizes see the vehicle documents, 2D drawings website (→ chapter [1](#)) or the following table.
- It is only permissible to fit approved wheels with the correct dimension & load rating document.

You can obtain more information about tires and wheels from any authorized Sprinter dealer or in the “Optional equipment” section (→ chapter [3.9](#)).

7.1.5. Spare wheel

The SPRINTER - model series VB is equipped with a spare wheel. When mounting a spare wheel, observe the following:

- Fit under the frame, on the side of the frame or on the body in accordance with the chassis drawing.
- Observe legal requirements
- It must be easily accessible and easy to handle
- It must be double – secured against detachment.

7.2. Body shell / Body

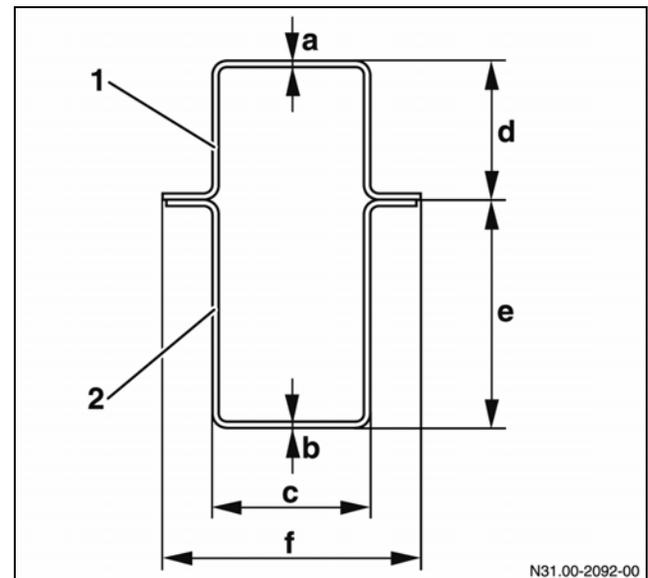
7.2.1. General information on the body shell/body

Modifications to the body must not have a negative effect on the function or strength of vehicle equipment or controls or on the strength of structural parts. In the case of vehicle conversions and mounting bodies, do not make modifications that affect the function or clearance of movement of chassis parts (e.g. during maintenance and inspection work) or accessibility to these parts.

Observe the following:

- The TPMS (Tire Pressure Management System) may malfunction if modifications are made in the direct proximity of the aerials and wheels.
- Do not modify the cross member structure from the front of the cross member through to the rear of the B-pillar.
- Do not modify the rear door opening or to the roof area.
- The clearance for the fuel filler neck, fuel tank and fuel lines must be maintained.
- Avoid sharp-edged corners.
- Do not drill holes in or perform welding work on the A-pillar or B-pillar.
- Do not cut in the C or D-pillar (rear door opening), including the associated roof arch.
- Do not exceed the maximum permissible axle loads.
- Trailer connections must be checked for correct operation.
- If a trailer hitch is installed, the necessary reinforcements must be present.
- Holes on the longitudinal frame member are the result of the production process and are not suitable for securing attachments, bodies, equipment and conversions as there is otherwise a risk of damage to the frame.

Section dimension of longitudinal frame members. (mm)

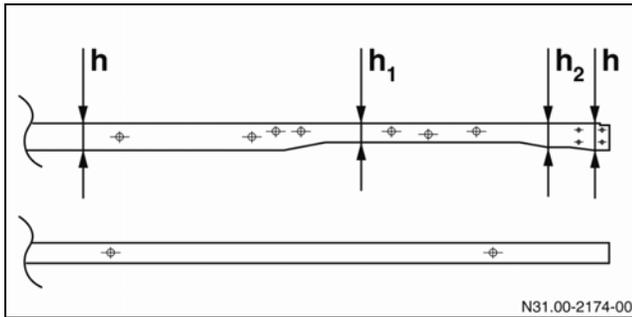


Dimensions of the upper chord and lower chord

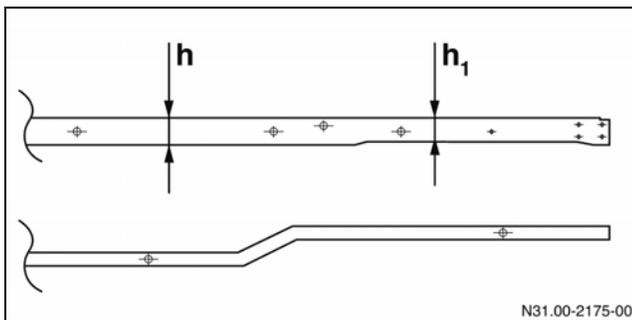
- 1 Upper chord
- 2 Lower chord

Permissible gross weight (lbs)	a	b	c	d	e	f
11,030 Chassis Cab model series	3	3	70	80	120 100 ¹	126
8,550 Cargo Van		1.5	70	-	120 85 ¹	93
9,990&11,030 Cargo Van		3	70	-	120 100 ¹	118

¹ In the area of the rear axle

8,550 Longitudinal frame member

Dimensions of the lower chord of the longitudinal frame member

h	120 mm
h1	85 mm
h2	110mm

9,990 & 11,030 longitudinal frame member

Dimensions of the lower chord of the longitudinal frame member

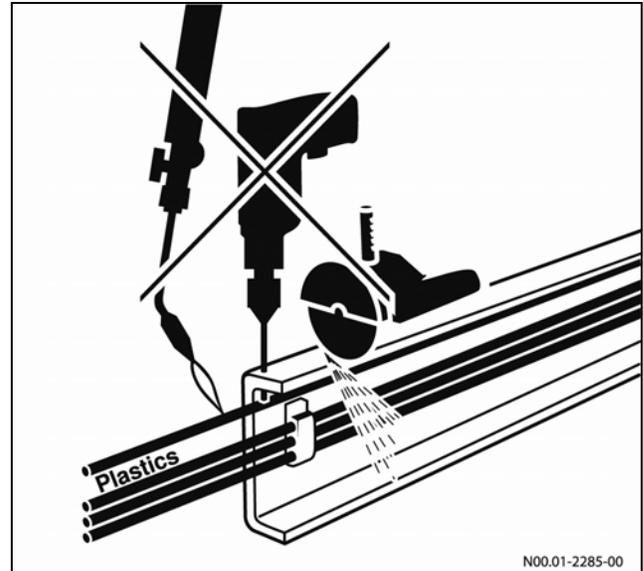
h	120 mm
h1	100 mm

Welding work on the body shell

Welding work may only be performed by skilled personnel.

You will find further information about welding operations in the “Planning of bodies” (→ chapter [3](#)), “Damage prevention” (→ chapter [5](#)) and “Body shell” (→ chapter [7.2](#)) sections and in the Sprinter (VB) Repair Manual.

Do not weld upper and lower chords of the chassis frame. Plug welding is only permissible in the vertical webs of the longitudinal frame member, contingent upon approval from SECST. Do not perform any welding work in bends.



Warning

Unauthorized drilling or welding work carried out in the area of deployment of the airbags could cause them to function incorrectly, e.g. they could be triggered unpredictably while the vehicle is in motion or they might fail completely and in case of an accident may cause serious injury or death. For this reason, do not weld or drill near air bags.

Drilling work on the frame

Existing holes in the longitudinal frame member result from the production process and may only be used if approved by SECST (→ chapter [2.7](#)).

On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter [5.3](#)).

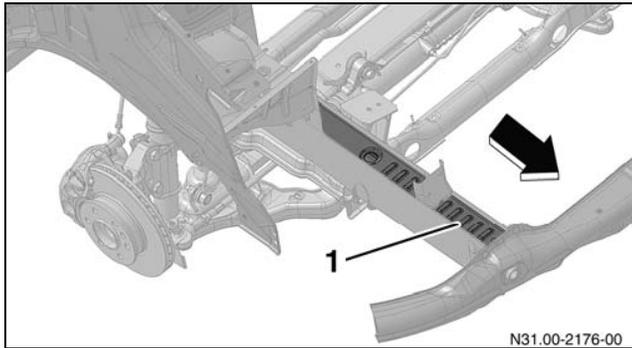
Do not drill holes:

- On the upper and lower chords of the frame (except if drill holes are at the rear end of the frame)
- In areas with a load-bearing function for the rear axle or parts fastened to the frame
- At load application points (e.g. spring supports, brackets, etc.)

7.2.2. Attachment to the frame

Attachment to the front frame section

On no account should assemblies, bars, etc. be secured near the frame fore-structure or the front axle as this may interfere with the necessary structure for passive safety.



Structure for passive safety

1 crumple zone on the sub-frame
 Arrow Front of vehicle

Warning

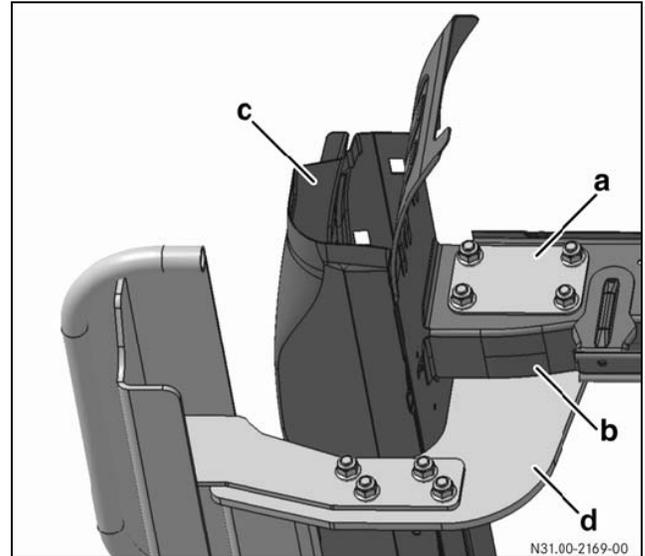
If attachments are mounted on the front frame section, the function of the forward impact structure and the airbag units may be impaired and in case of an accident and may cause serious injury or death.

For the aforementioned reasons, do not install assemblies & bars to the front structure of the Sprinter.

The modifications must not hinder possible repair work on the standard vehicle.

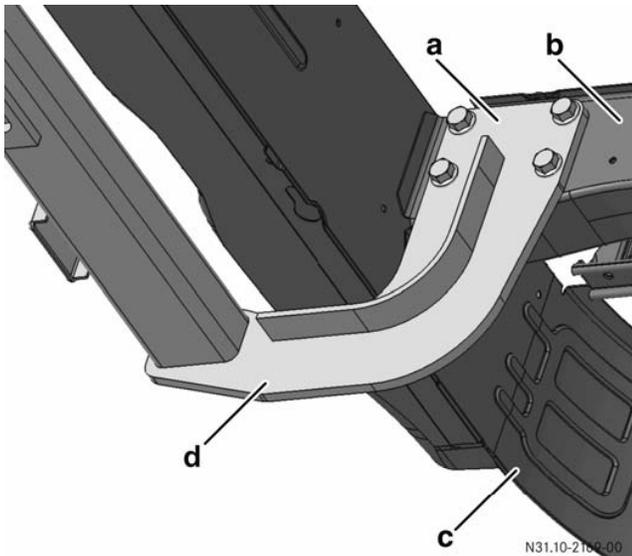
Attachment to the rear frame section

The attachment of additional equipment or bodies to the rear frame section must be equal to the attachment of the trailer hitch available as optional equipment. For the application of greater forces and moments, an additional support on the end frame cross member is required.



Exterior view

- a Attachment of mounting plate to the longitudinal frame member
- b Lower chord of the longitudinal frame member
- c End frame cross member
- d Mounting plate for the trailer hitch



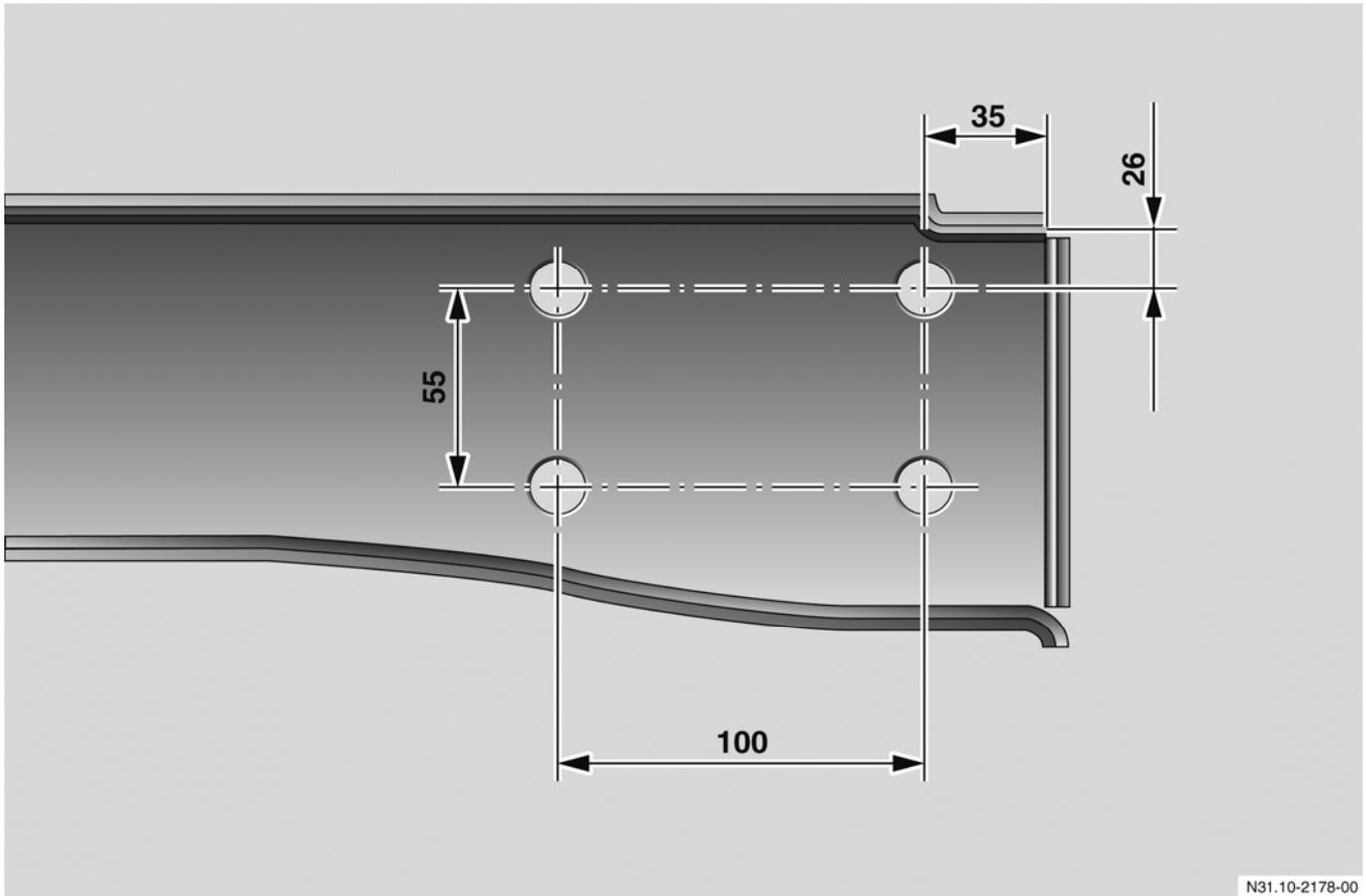
Interior view

- a Attachment of mounting plate to the longitudinal frame member
- b Lower chord of the longitudinal frame member
- c End frame cross member
- d Mounting plate for the trailer hitch

Attachments by means of body support brackets

The body support brackets fitted at the factory must be used for attaching bodies to the vehicle frame. More information is contained in the "Attachment to the frame" section (→ chapter [7.2.2](#)).

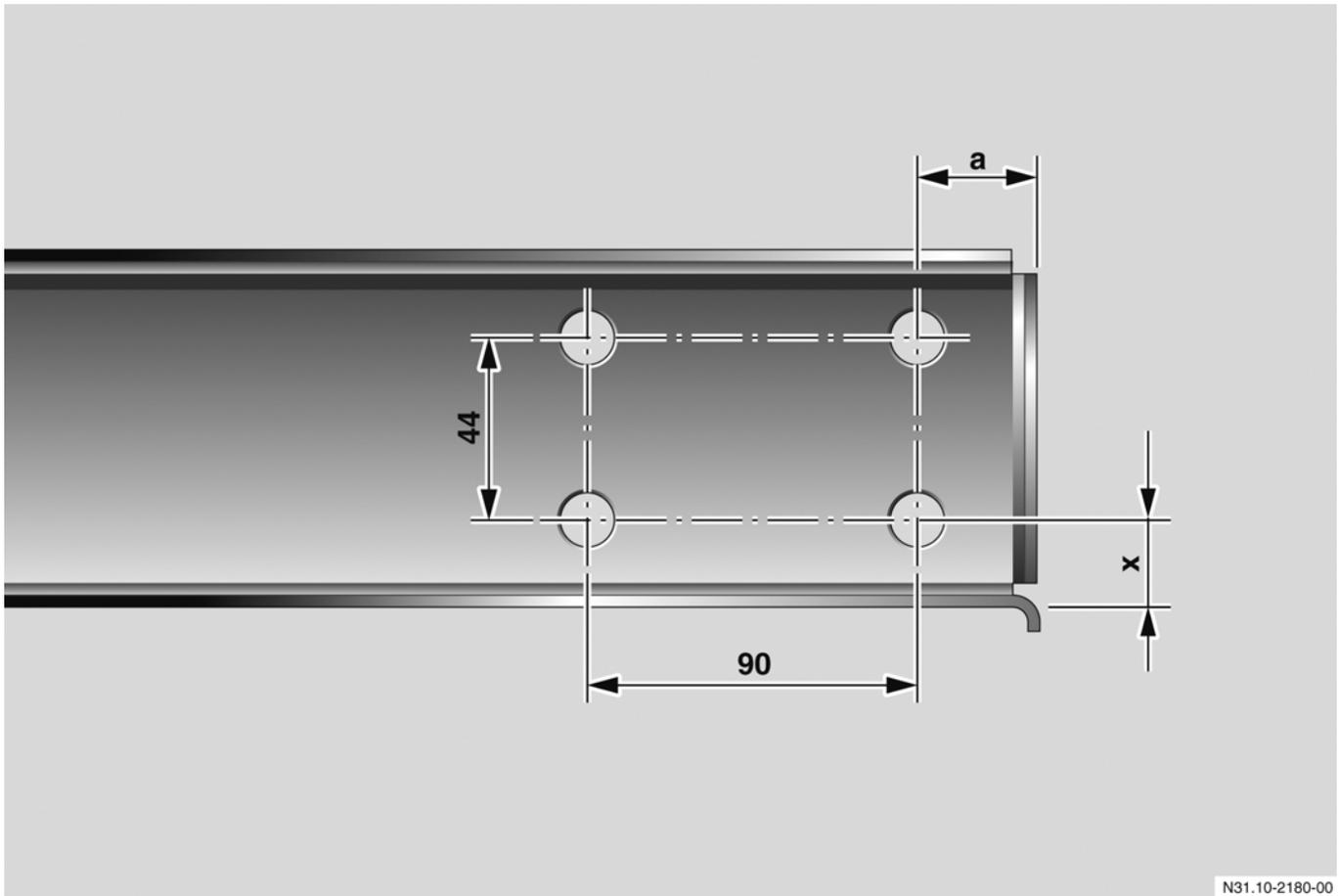
2500 and 3500 Sprinter Cargo and Wagon Vans



N31.10-2178-00

Vehicle type 2500 and 3500 cargo and wagon vans	Wheelbase 144 in 170 in	Dim a - -	Dim x - -	Overhang 1150 mm / 45.3 in 1250 mm / 49.2 in
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3500 Chassis Cab



Vehicle type 3500 Chassis Cab	Wheelbase 144 in 170 in	Dim a 27 mm / 1.1 in 27 mm / 1.1 in	Dim x 34 mm / 1.3 in 34 mm / 1.3 in	Overhang 1250 mm / 49.2 in 1350 mm / 53.2 in
----------------------------------	-------------------------------	---	---	--

7.2.3. Chassis frame material

If the frame is extended, the material of the extension element must have the same quality and dimensions as the standard chassis frame.

Material quality:	
Material	Tensile Strength (N/mm ²) Yield Strength (N/mm ²)
H240LA (DIN EN 10268-1.0480)	350-450 260-340
S235JRG2 (DIN EN 10025-1.0038)	340-510 >235

7.2.4. Overhang extension

Modifications to the vehicle overhang are possible for the Chassis cab and must always take the permissible axle loads and the minimum front axle load into account. On vehicles with a closed body (MPV or Cargo van), an overhang extension is not allowed.

- An additional cross member must be fitted if the frame extension exceeds 350mm [13.8in].
- Any additional frame cross members must have the same functionality as standard cross members.
- If the frame overhang is extended, the permissible trailer load specified in the vehicle registration document must be checked and, if necessary, be reduced or even omitted.
- The frame overhang must be reinforced accordingly.
- Make sure that you do not exceed the permissible axle loads.
- Ensure that you maintain the position of the center of gravity within the permissible limits.
- The minimum front axle load must be complied with in all load states.

You can obtain more information from SECST (→ chapter [2.7](#)).

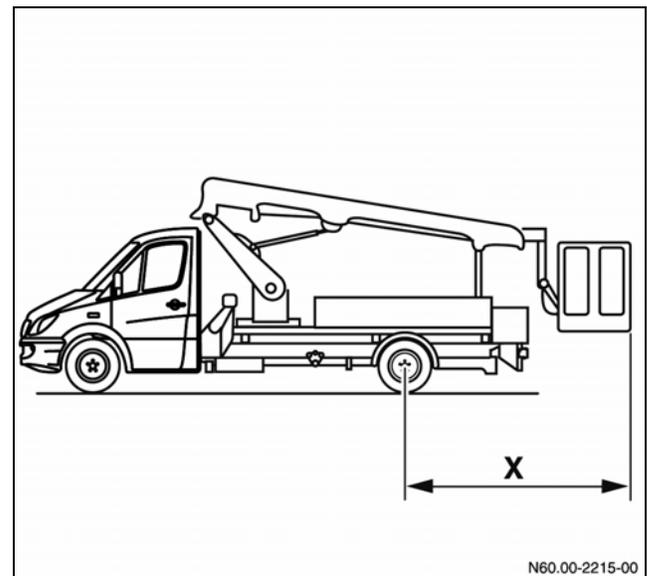
Maximum overhang lengths

If you stay within the limits of the following overhang lengths and the maximum rear axle load, the original trailer load still applies and ESP operation is not affected.

Wheelbase I (in)	Overhang length x(mm) [in]
144	1850 [72]
170	2200 [85]

The vehicle overhang length is part of the total overhang referring to the rear axle, including the frame overhang extension and the body and attachments.

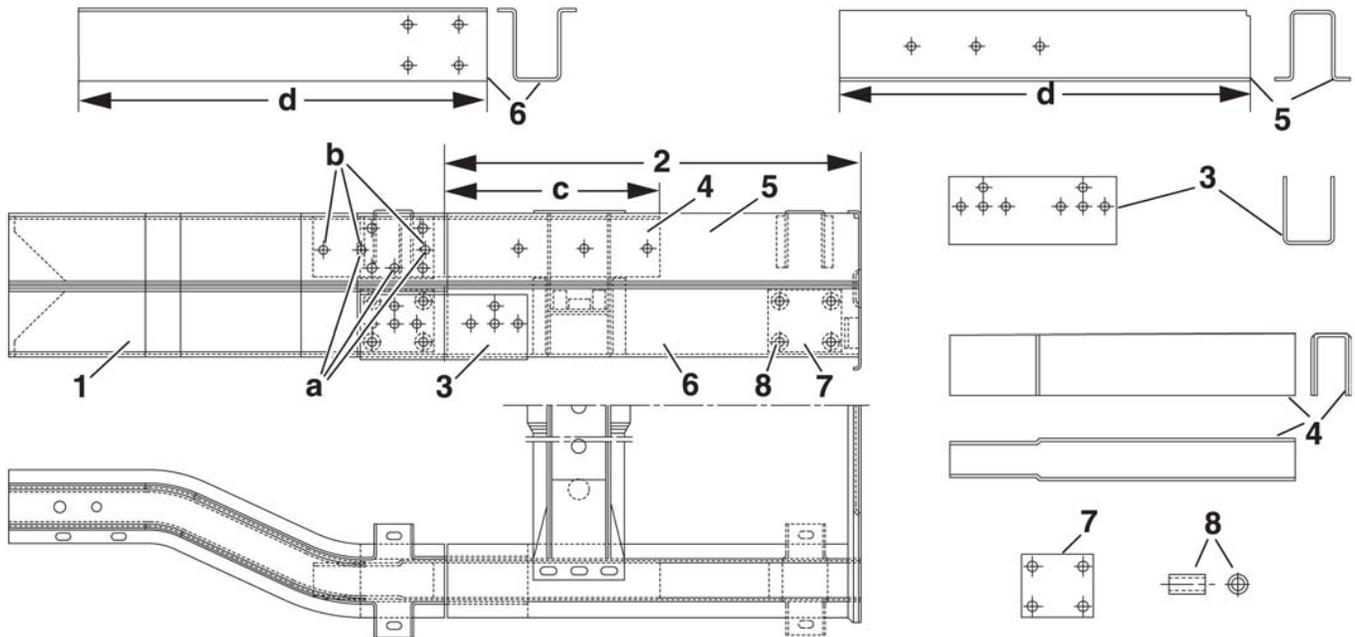
For information on the section dimensions of the longitudinal frame member see (→ chapter [7.2.1](#)).



Maximum overhang lengths (using a lifting work platform as illustration)

X Vehicle overhang

The illustration above depicts the implementation of a frame extension for an overhang extension. On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter [5.3](#)).

3500 Sprinter Chassis Cab 11,030 GVWR frame extension with overhang extension


N31.20-2068-00

Frame extension with overhang extension

- 1 Longitudinal chassis frame member
- 2 Frame extension
- 3 Outer reinforcement
- 4 Internal reinforcement (wall thickness on 5t: 3mm)
- 5 Body mounting frame extension
- 6 Chassis frame extension (wall thickness on 5t: 3mm)
- 7 Reinforcement plate minimum 2 mm
- 8 Spacer bush, tube 24x4 M steel or ST 35 NBK
- a Bore holes, 3665mm [144 in] wheelbase
- b Bore holes, 4325mm [170 in] wheelbase
- c 350mm (3665mm [144 in] wheelbase)
300mm (4325mm [170 in] wheelbase)
- d Dimension defined by body builder

Comply with all FMVSS / CMVSS guidelines and regulations

On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter 5.3).

Modifications to the cab roof

Warning

On no account should any subsequent modifications be made to the roof or the roof skin between the A-pillar and the B-pillar of the vehicle if the vehicle is equipped with window bags. Otherwise, the window bag may no longer be able to work correctly (e.g. window bag deployment is delayed or incomplete) which may lead in case of an accident to serious injury or death.

The “electric sliding sunroof”, (Option GWA / GW9), is available from the factory as optional equipment (→ chapter [7.5](#)).

The roof load-bearing capacity is limited.

Roof arches or supporting parts may not be removed or modified.

You will find information on over cab attachments and wind deflectors in the “Attachments” section (→ chapter [7.6](#)).

Observe the permissible center of gravity and the permissible axle loads must be maintained.

Modifying the cab rear panel

If it is necessary to cut through the cab rear panel, it is possible to do this in connection with a continuous surrounding frame. The equivalent rigidity of the frame must be at least equal to the original rigidity. Partitions may be totally or partially removed. Refer also to the “Modifications to closed panel vans” section (→ chapter [8.4](#)).

Warning

Do not modify the roof lining or the roof skin between the A-pillar and the B-pillar if the vehicle is equipped with window bags. Otherwise, the window bag may no longer be able to work correctly (e.g. window bag deployment is delayed or incomplete) which may lead in case of an accident to serious injury or death.

7.2.5. Side wall, windows, doors and flaps

Sidewall

Body structure or reinforcement conversions which alter the sidewall structure of the Cargo van or the passenger van, need written approval from SECST. The body builder assumes all FMVSS / CMVSS and warranty responsibility for those modifications. Do not modify the roof frame or structural components.

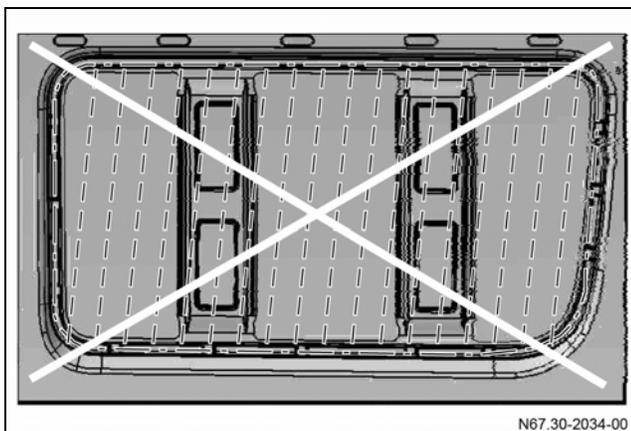
On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→chapter 5.3).

Windows

Do not retrofit windows on Cargo vans delivered without windows, except in the following areas: rear doors & sliding doors. For Cargo van conversions with specific application windows (RV, shuttle bus, etc.), you must order the Cargo van either with windows or option “window opening without glass” (Option XBA).

When installing windows in existing openings, ensure that the windows are installed with a stable frame. If modifications need to be carried out to the supporting structure of the basic vehicle (pillars, reinforcements, attachment of roof arches) in order to retrofit windows (panorama glazing), the rigidity of the modified body must be equal to that of the basic vehicle.

More information about modifications to the sidewall can be found in the “fitting shelving/installations” section.



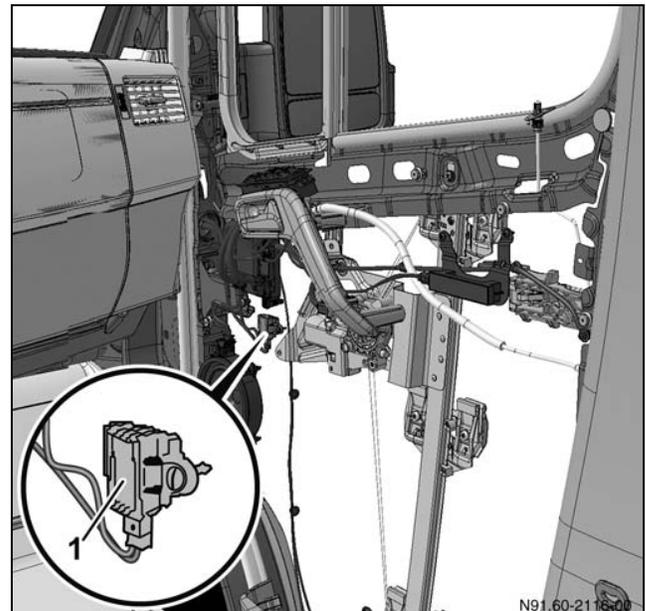
Doors and flaps

Body structure or reinforcement conversions to the supporting structure of the basic vehicle (frame cross members, pillars, reinforcements, attachment of roof arches) in order to retrofit doors, requires prior written approval from SECST.

The body builder assumes all FMVSS / CMVSS and warranty responsibility for those modifications. The rigidity of the modified body must be equal to that of the basic vehicle.

The trigger sensor of the occupant protection systems is located in the door body on vehicles with window or thorax bag.

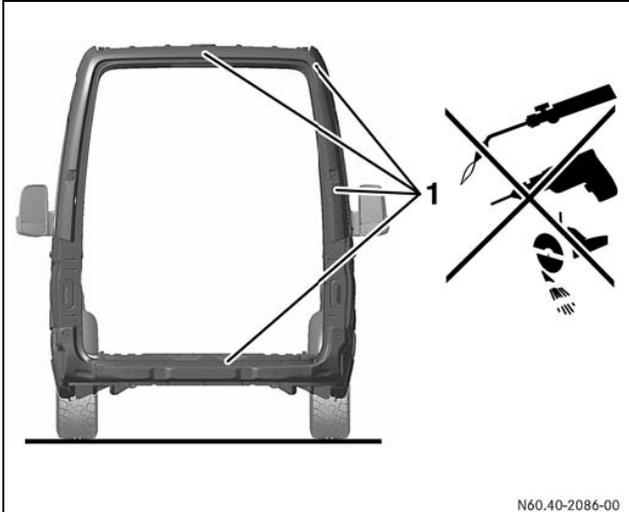
On no account should modifications be made to the door body (see illustration).



Door, showing sensor system

- 1 Pressure sensor (trigger sensor of the occupant protection systems)

Do not modify the rear door opening including the roof area.



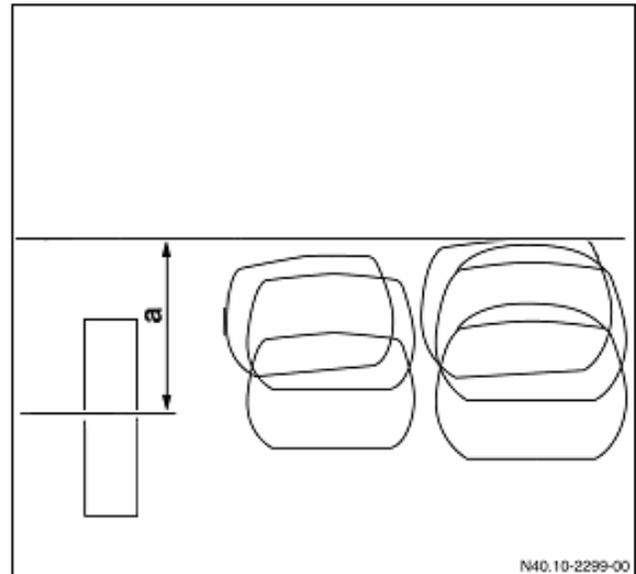
Rear door opening and roof area

- 1 Do not modify the above mentioned areas
 - Seats in the passenger compartment or cabin must be directly accessible from the outside by a door or from the cab.
 - It must be possible to open locked doors quickly and easily from the inside.
 - The doors must be open wide enough and the door entrances must be shaped in such a way as to enable persons to get in and out of the vehicle safely and comfortably.
 - The maximum permitted height of the bottom step above the road surface is 400mm [15.75 in].
 - Fittings must allow sufficient clearance to the interior door handles regardless of door position (trap guard).
 - Do not modify the central locking system or to the immediate area around the door or in the area of the pillars or cross members.

On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter [5.3](#)).

7.2.6. Mudguards and wheel jounce

Ensure that there is sufficient space between the tire and the mudguard or wheel wells with snow chains fitted and the suspension completely compressed (allowing for axle twist). Comply with the dimensional data in the 2D drawings.



Maximum wheel jounce

a required wheel jounce

The minimum required wheel clearance is measured from the closest body member to the upper and lower chord of the longitudinal frame member on Chassis cab vehicles including snow chain clearance on outer tire.

GVWR (lbs)	Tires	Dimension a mm / in
11,030	215/85R16	260/10.2

Including snow chain clearance on outer wheel. You can obtain more information from SECST (→ chapter [2.7](#)).

Warning

Do not install seats on the wheel wells. Otherwise, the vehicle could be damaged as a result (e.g. wheel wells and tires).

On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter [5.3](#)).

Modifications to the width of the wheel wells are not permitted.

7.2.7. End frame cross member

If special-purpose bodies are mounted, the end panel cross member acting as an under ride guard may be omitted at the factory (Option XWJ).

On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter [5.3](#)).

Comply with all FMVSS/CMVSS guidelines and regulations.

Warning

Do not modify the roof lining or the roof skin between the A-pillar and the B-pillar if the vehicle is equipped with window bags and thorax bags. Otherwise, the window bag and thorax bag deployment may be delayed or incomplete, in case of an accident it may lead to serious injury or death. The roof load-bearing capacity is limited (see table).

Do not remove or modify roof bows or roof structure.

Maximum roof loads		
Cargo Van kg / [lbs]	High Roof Cargo Van kg / [lbs]	Mega Roof Cargo Van kg / [lbs]
300 / 660	150 / 330	0

The limiting value of the vehicle's maximum center of gravity must not be exceeded.

7.3. Engine peripherals/drive train

Maintenance and repair of the vehicle must not be hindered by the body.

7.3.1. Fuel system

Do not modify the fuel system

- The active charcoal container is located on the rear end of the fuel tank on vehicles with gas engine. Do not modify the position or connection of the active charcoal container.
- Do not modify the fuel pump, fuel line length or fuel line routing. Modifications to these components could impair engine operation because these components are matched to each other.

The following must be observed if auxiliary Diesel powered generators are retrofitted:

- No sharp edges permitted
- Fuel lines must be secured
- Exhaust fumes must not be directed into the vehicle interior

For connections supplying fuel to the auxiliary power generator, pls. contact SECST.

A fuel tap is standard equipment on Diesel engines. Not available on gasoline engines

7.3.2. Exhaust system

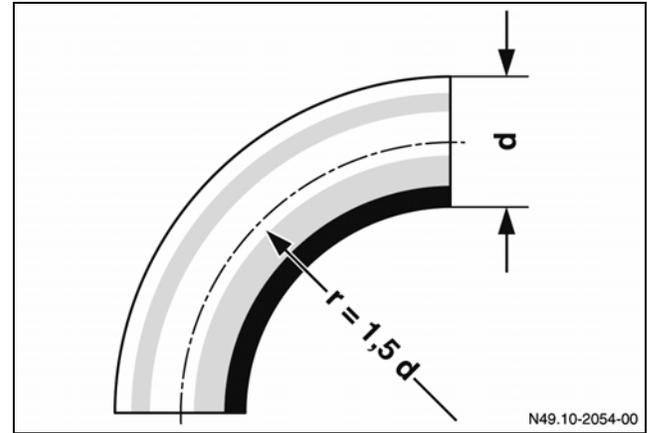
If modifications are made to the exhaust system, we recommend the use of genuine DG Sprinter parts. Comply with all FMVSS/CMVSS guidelines and regulations.

Warning

Modifications to the exhaust system can only be made at 2 ft after the last muffler. Do not reduce the cross-sectional area of the exhaust pipe behind the muffler.

Under extreme loads, the temperature between the exhaust system (diesel particle filter, catalytic converter or main silencer) and the floor panel may rise above 80°C [180°F]. For this reason, heat shields or insulation must be fitted to the substructure to reduce heat radiation.

- Pipe bend, maximum 90°
- Avoid the use of additional pipe bends
- Bending radii >1.5 d



Example of a pipe bend design

Minimum distance to plastic lines, electrical cables and spare wheels:

- 200mm [8 in] for exhaust systems without shielding
- 80mm [3.5 in] with sheet metal shielding
- 40 mm [2 in] with sheet metal shielding and additional insulation

On completion of all work on the vehicle, you must comply with the specified corrosion protection measures (→ chapter 5.3).

Additional shielding is required

- Near control panels
- Near assemblies, attachments and equipment, unless they are made of heat-resistant material

Warning

Modifications to the exhaust system as far as the main silencer are not permitted. The lengths and routings, e.g. between the diesel particle filter and the main silencer, are optimized with regards to temperature characteristics. Modifications could lead to higher or extreme temperatures in the exhaust system and surrounding components (propeller shafts, fuel tank, floor panel, etc.). The following exhaust system versions are available from the factory as optional equipment:

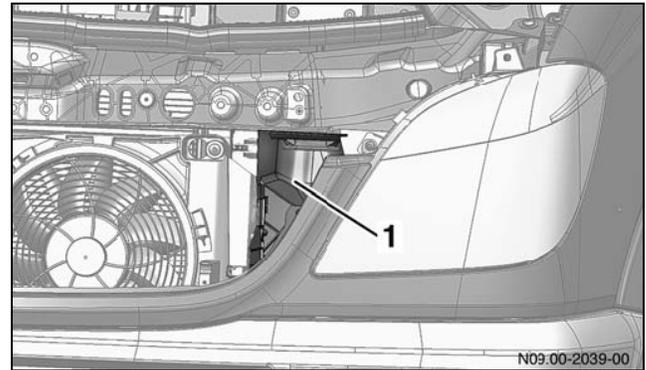
7.3.3. Engine cooling system

It is not permissible to modify the cooling system (radiator, radiator grille, air ducts, coolant circuit, etc.) because a sufficient flow of cooling air must be guaranteed. The complete cross-section of the cooling air intake surfaces must remain unobstructed. This means:

- at least 171 in² for the front grille (radiator and condenser)
- at least 109 in² for the opening in the bumper (charge air cooler flow)

Do not affix warning signs, labels or decorative objects in the area in front of the radiator. Provision for additional cooling equipment for assemblies shall be made for when the vehicle is stationary and if a high continuous output is demanded.

7.3.4. Engine air intake



Engine air intake opening

- 1 Area of engine air intake

Do not modify the area of engine air intake (See illustration).

The air cleaner is secured by two rubber mounted brackets in the front module.

The securing design of the air cleaner must be retained in the event of any modification to the front module.

Warm air

The intake of warm air will lead to a loss of engine power. A bulkhead between the intake point and the engine compartment is therefore essential. The intake temperature should not exceed the outside temperature by more than 50 °F.

Water

- Water running down the body, spray water or water from washing the vehicle must not flow directly past the intake points.
- Make sure that water cannot reach the intake points through any fresh-air inlets.

The flow rate at the intake points must not be increased by modifications to the opening of the intake points.

Dust / dirt

- Increased dust intake will lead to shorter maintenance intervals for the air cleaner.

7.3.5. Clearance for assemblies

Adequate clearances must be maintained in order to ensure the function and operating safety of assemblies (particularly of electrical lines, brake lines and fuel lines).

The dimensional data in the 2D drawings must be observed.

The distance between the cab and the body must be at least 50mm [2 inches].

7.3.6. Engine speed regulation

The engine must run specific speed in order to drive auxiliary equipment (e.g. pumps, compressors, etc.).

The “constant engine speed” optional extra, option XFM and NXF (variable), is available for diesel engines only. Further advice can be obtained from SECST.

The speed is freely adjustable across a speed range from 900 to 3,800 rpm, independently of the load.

Constant engine is not suitable for driving a generator if a constant frequency is required, as in the 220-V electricity supply network.

Retrofit solutions for regulating the engine speed are only possible with the “programmable special module” (PSM) optional equipment (apart from those retrofit solutions available as optional equipment (OPTION XFM). This optional equipment makes it possible to have the working engine speed regulation controlled externally.

7.4. Interior

7.4.1. General Information

The driver's and co-driver's airbag units, the window bags and thorax bags and the belt tensions are pyrotechnic components.

The purchase, transportation, storage, fitting, removal and disposal of potentially explosive substances may only be carried out by trained personnel and in accordance with the relevant safety regulations.

Modifications in the area of the dashboard and above the vehicle body waistline must satisfy the criteria of the head impact tests specified in CMVSS/FMVSS 201.

This applies in particular to the deployment areas of the airbags (wooden trim, additional fittings, mobile phone holders, bottle holders, etc.).

See the illustrations of the airbag deployment areas for more information (→ chapter [7.4.2](#)).

The permissible center of gravity and maximum permissible axle loads must not be exceeded.

You will find information on RV conversions in the RV section (→ chapter [8.11](#)).

The interior must be designated with soft edges and surfaces.

Fittings must be made of flame-resistant materials per FMVSS/CMVSS standards. Free access to the seats must be ensured. Avoid any protruding parts, edges or corners which could cause injury in the area of the seats.

Attachments with rigid connections to the front, side and rear of the vehicle at the height of possible accident zones could modify the characteristics of the vehicle's passive safety.

Warning

Do not modify airbag or the belt tensions system. Modifications to or work incorrectly carried out on a restraint system (seat belt and seat belt anchorages, belt tensions or airbag) or its wiring, could cause the restraint systems to stop functioning correctly, e.g. the airbags or belt tensions could be triggered inadvertently or could fail in accidents in which the deceleration force is sufficient to trigger the airbag and may lead to serious injury or death.

Warning

Reliable operation of the front airbag, window bag and thorax bag and belt tensions can no longer be guaranteed if modifications are made to the vehicle structure by the body builder, such as:

- Modifications to the seats and thus changes in the kinematics of the occupants in the event of an impact.
- Modifications to the frame front end
- Installation of parts in the vicinity of airbag inflation points or in airbag deployment areas
- Installation of non DG seats
- Modifications to the A-pillar and B-pillar, the roof frame and its lining
- Modifications to the doors

This could otherwise result in serious injury or death.

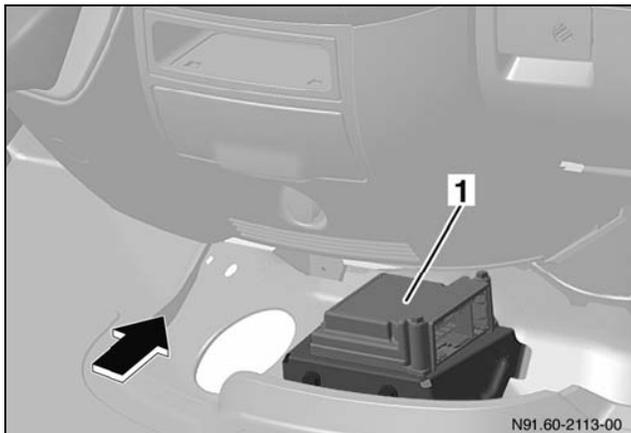
7.4.2. Safety equipment

Airbag control unit and sensors

Do not modify the installation location, installation position and attachment of occupant-safety airbag control units and satellite sensors by comparison with the standard vehicle on vehicles equipped with window bags and thorax bags. Never secure other vehicle components to the airbag control unit, the satellite sensors or the securing points.

Warning

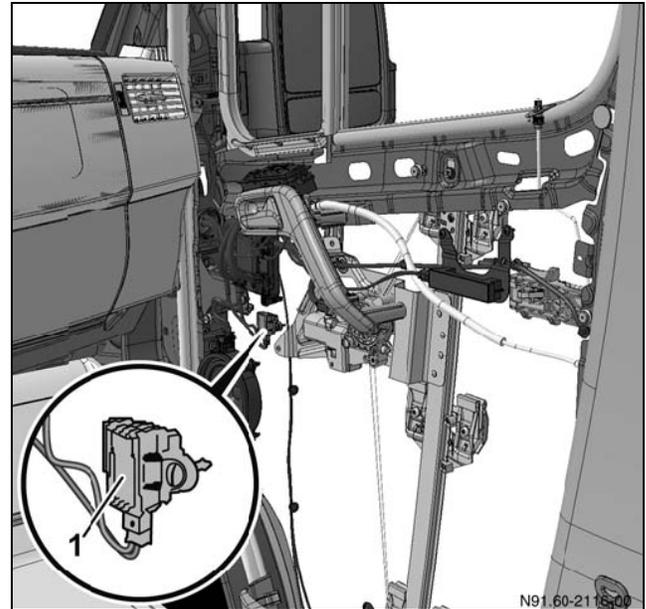
Never secure parts that create vibrations in the proximity of the airbag control unit or sensor installation locations and do not modify the floor structure in the proximity of the airbag control unit or the satellite sensors, otherwise operation of the front airbag, window bag and thorax bag and belt tensions may be jeopardized and there is consequently a risk of serious injury or death. The airbag control unit is located on the transmission tunnel under the center console.



Location of airbag control unit

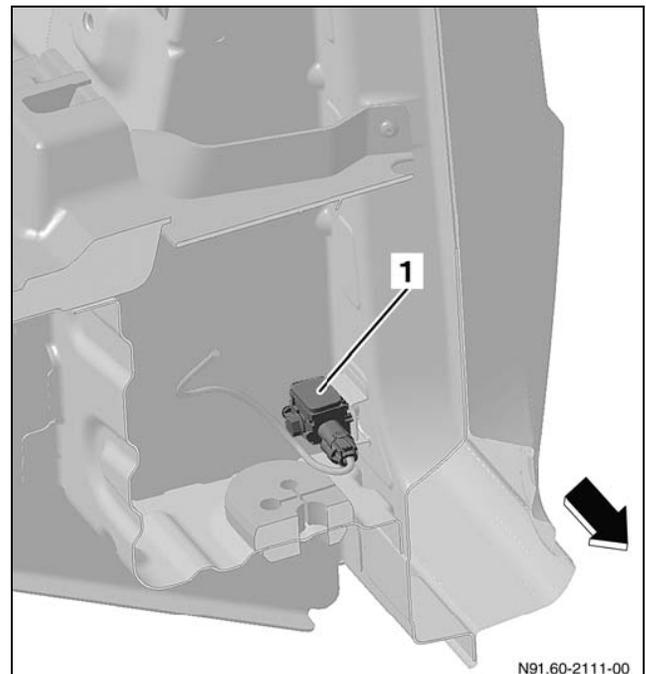
- 1 Airbag control unit
 Arrow Front of vehicle

The satellite sensors are located towards the bottom of the B-pillar behind the entrance trim in the driver's and co-driver's doorway compartment. The additional pressure sensors for vehicles equipped with window bags and/or thorax bags are fitted inside the doors.



Front pressure sensor

- 1 Pressure sensor (trigger sensor of the occupant protection systems)



Sectional view of left-hand doorway area, B-pillar

- 1 Satellite sensor
 2 (triggering sensor of the occupant protection systems)

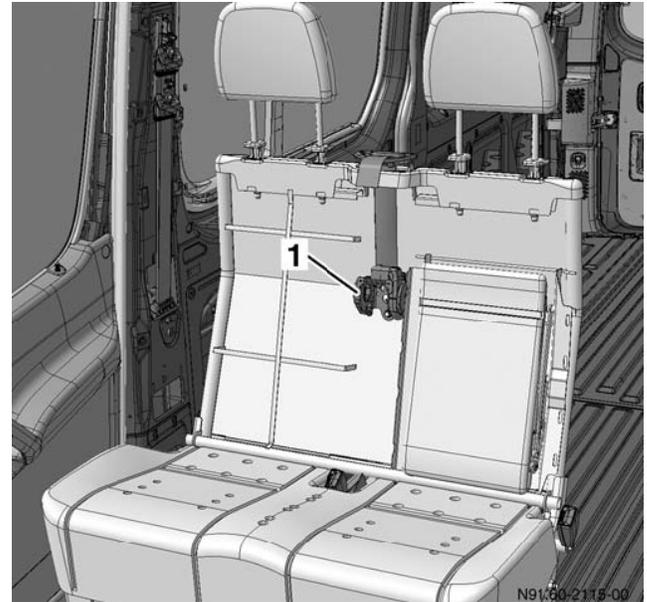
Seat belts and belt pretensioner

Warning

Never damage or soil parts relevant to safety such as seat belts or belt anchorages and pretensioner when work is carried out on the vehicle. Otherwise, these restraint systems may no longer function properly and may not provide adequate protection in the event of an accident leading to serious injury or death.

Use only the original seat belts otherwise the certification of the vehicle would be out of compliance. Seat belt anchorages must be tested in accordance with FMVSS/CMVSS standards.

All vehicles are equipped with pyrotechnic belt tensions in the retractors at the front seats. The retractors are located in the B-pillars. There is an additional retractor in the backrest of the bench seat on vehicles with two-seater co-driver's bench seat.



Co-driver's bench seat with retractors

- 1 Retractor

The legal requirements detailed in this section relate to current legislation. The relevant FMVSS/CMVSS legislation must be observed.

Warning

Never retrofit or replace front bench seats with individual seats. Otherwise, the restraint systems may no longer function properly and may not provide adequate protection in the event of an accident leading to serious injury or death.



Retractor with pyrotechnic belt pretensioner

- 1 Connector

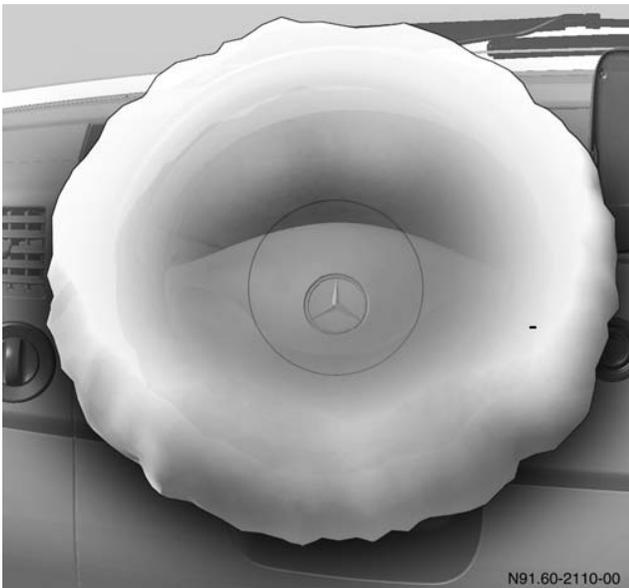
Front airbag

All airbag units are labeled “Airbag”

- The driver’s airbag unit is identified by the “Airbag” inscription on the steering wheel cover.
- The vehicle is equipped with a co-driver’s airbag. This unit is also identified by the “Airbag” inscription.
- If the vehicle is equipped with window bags, they are identified by the “Airbag” inscription on the cover
- If the vehicle is equipped with thorax bags, these are identified by the “SRS Airbag” inscription on the backrest.

Another identification feature is the red “SRS” indicator lamp in the instrument cluster.

The following illustrations show the location and deployment areas of the driver’s and co-driver’s airbags as well as that of window bag and thorax bag. The deployment areas shown are greater than the actual volume of the airbag because space is required for airbag rebound as it deploys.



Deployment area of driver’s airbag



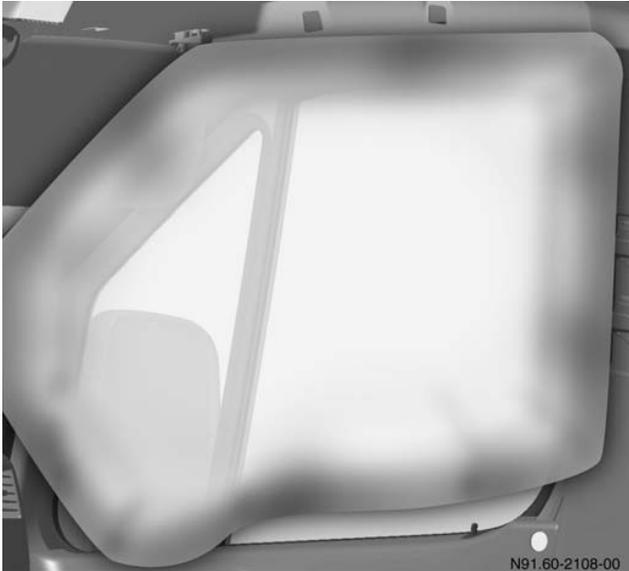
Deployment area of co-driver’s airbag

Side-impact airbags

Do not modify the B-pillar, door bodies, trim and seat upholstery.



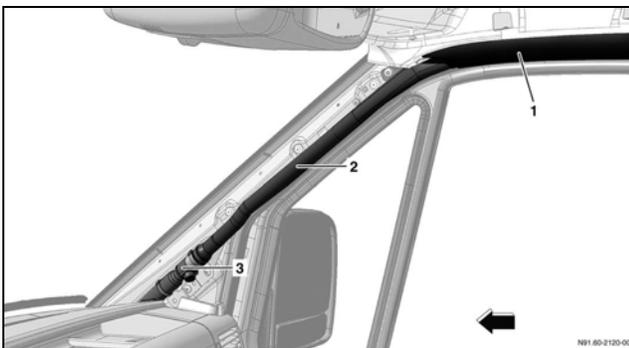
Deployment area of left-hand side thorax bag



Deployment area of right-hand window bag

Warning

Work on the A-pillar may cause damage to the window bag, which could cause the window bag to no longer function properly.



Window bag installation location

- 1 Cover
- 2 Window bag in protective sleeve
- 3 Gas generator in window bag
- Arrow Front of vehicle

Working with airbag and belt pretensioner units

Warning

Removed airbag units must always be stored in such a way that the upholstered side faces upwards. If the upholstered side faces downwards, the airbag unit will be catapulted through the air if it is triggered accidentally and may lead to serious injury or death. The airbag units fitted to the SPRINTER – model series VB include the driver's and co-driver's airbags as well as the optional window bag and thorax bag.

- Work involving removed airbag and belt pretensioner units, and testing and installation work, may only be carried out by trained personnel.
- The airbag and belt pretensioner units and the airbag control unit must be fitted without delay and immediately on removal from storage. The vehicle battery must have been disconnected, the negative pole or negative terminal covered and the test coupling/connection disconnected.
- If work is interrupted, the air bag and belt pretensioner units must be locked away again.
- The airbag and belt pretensioner units may not be treated with grease, cleaning agents or other similar products.
- The airbag and belt pretensioner units may not be exposed to temperatures above 100°C [212°F] even for a short period of time.

Airbags, belt pretensioner units, the sensors and control units, must be replaced if they are dropped from a height of more than 0.5 m [20 inches]. Airbag and belt pretensioner units may only be subjected to electrical tests using the specified testers when the airbag and pretensioner units have been fitted. We recommend that tests be carried out at an authorized Sprinter Service Center.

Disconnect the main battery by disconnecting the negative terminal covered and the test coupling / connection disconnected before the airbag and belt pretensioner unit are removed.

Transporting and storing airbag units and belt pretensioner units

Internal transport should always be carried out using the spare parts packaging and utilizing the vehicle luggage compartment or load compartment.

Never transport airbag in the passenger compartment. The airbag units fitted to the SPRINTER – model series VB include the driver's and co-driver's airbags as well as the optional window bag and thorax bag.

Warning

Airbag and belt pretensioner units must be disposed of by personnel who have undergone special training for this task. Accident prevention regulations must be observed otherwise it may lead to serious injury or death.

You will find information on retrofitting seats in the "Implementation of bodies" section.

Warning

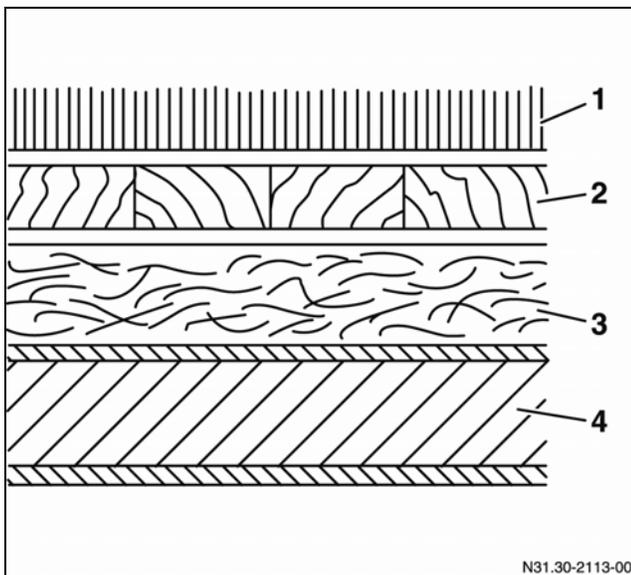
On no account may seats be mounted on the wheel wells. Otherwise, in an accident the seats may become loose and may lead to serious injury or death.

7.4.3. Reducing noise in the vehicle interior

To reduce the noise level in the vehicle interior, flame retardant noise insulating materials may be installed.

Floor area

A structure as shown in the illustration is recommended for insulation and soundproofing. An additional covering with heavy-duty insulating foil may be provided in the area of the wheel wells. Insulating foils, e.g. bituminous felt, have limited temperature resistance. They should therefore not be installed in the immediate vicinity of the engine or exhaust system.



- 1 Carpet (bonded underside)
- 2 Wooden floor (12mm - .5in plywood)
- 3 Heavy-duty insulation material (8 to 10kg/m² / 1.6 to 2lbs/ft²)
- 4 Supporting construction

Roof and side panels

Rock wool, glass wool, fibrous web or soft, open pore PE or PU – based foam are effective insulation materials. The inside must be covered with a sound-transmitting material (perforated card, plastic, fabric cover).

Warning

Do not modify the roof lining or the roof skin between the A-pillar and the B-pillar if the vehicle is equipped with window bags. Otherwise, the window bag may no longer work correctly (e.g. window bag deployment is delayed or incomplete). In case of an accident it may lead to severe injury or death.

Seals

Openings, gaps and slots between the engine compartment, the underside of the vehicle, the front bulkhead and the vehicle interior must be carefully sealed with anti-corrosion protection or a permanently elastic material following treatment. Air vents must not be fitted in the immediate vicinity of sources of noise or exhaust fumes.

In addition, manufacturers or suppliers of sound proofing materials should be consulted.

They will be able to provide you with suggestions on how to design optimum noise insulation for your particular body.

7.4.4. Ventilation

The passenger compartment and the driver's seat must have adequate ventilation with provision for air to enter and exit.

The windscreen and side window demisting function must remain operational, especially if the driver's area forms part of the passenger compartment or if the layout and design of the interior does not correspond to that of the standard equipment.

New vehicles can be supplied from the factory with the optional equipment "Controlled air conditioning/in addition in rear compartment" under options H08.

When retrofitting assemblies, please refer to the "additional Equipment" section (→ chapter [7.5](#)).

7.5. Additional equipment

If additional equipment is fitted, factory-fitted power take-offs must be used.

7.5.1. Retrofitting an air-conditioning system

All electrical equipment fitted must be tested in accordance with FMVSS/CMVSS standards and must bear the e mark.

When retrofitting air-conditioning systems, we recommend the “Controlled air-conditioning system” the “Rear-compartment air-conditioning system” option HBD which can be obtained from the factory as optional equipment.

The requirements of the equipment manufacturer concerned must be observed if you intend to retrofit any other air-conditioning system. The following points must be observed to ensure compatibility with the basic vehicle:

- On no account should the installation of an air-conditioning system impair vehicle parts or their function.
- The battery must have sufficient capacity and the alternator must generate sufficient power.
- Additional fuse protections for the air-conditioning power circuit
- Air-conditioning compressors must be attached using the equipment carrier provided.
- The additional equipment for driving air-conditioning compressors is available from the factory as optional equipment under Option LBS (maximum output 7kW).
Ensure that wires and electrical lines (→ chapter [7.3.5](#))
- are routed correctly.
- There should be no impairment of the accessibility or easy maintenance of installed equipment.
- The operating instructions and the maintenance manual for the additional equipment must be supplied on handing over the vehicle.
There should be no impairment of the required engine air supply and cooling
(→ chapter [7.3.3](#))

7.5.2. Auxiliary heating

The floor of the vehicle must be air-tight if exhaust gases are routed out under the vehicle. Openings in the vehicle floor provided for control elements must be sealed with rubber sleeves. The following auxiliary heating system is available from the factory as optional equipment:

Description	Option
auxiliary heater front	HDB
auxiliary heater rear	HDC

More information is contained in the Special Equipment Book from your authorized Sprinter dealer.

7.5.3. Power take-offs

General

Engine power-take off at the front Diesel engine only.

Power take-off versions available from the factory. These power take-offs can be obtained from the factory as optional equipment. The maximum power out is 7kW, 9.2Hp.

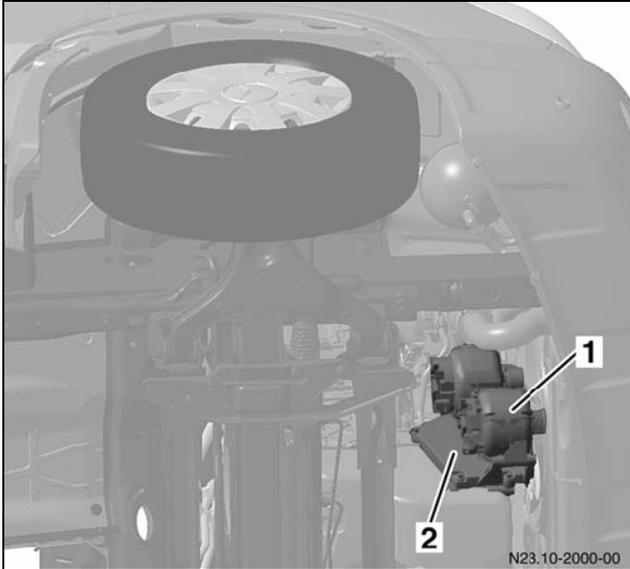
The additional pulley is located in the second belt plane (belt width 12.7mm, effective diameter 128.2mm).

Required diameters of the additional equipment pulleys:
XF1 Poly-V-belt pulley, 50 mm external diameter, 6 grooves.
LBS Poly-V-belt pulley, 120 mm external diameter, 6 grooves.

We recommend using the following genuine DG Sprinter belts

Diesel engine OM 642	MOPAR part # [MB part #]
XF1	68042744AA [MB # A001 997 58 92]
LBS	68004881AA [MB # A001 993 37 96]

Additional equipment can be mounted on an equipment carrier fixed to the engine.



Additional equipment on engine-resident equipment carriers

- 1 Additional equipment
- 2 Equipment carrier

7.6. Attachments

Make sure that you adhere to the permissible axle loads in all cases.

Attachments must not impair the function of vehicle parts.

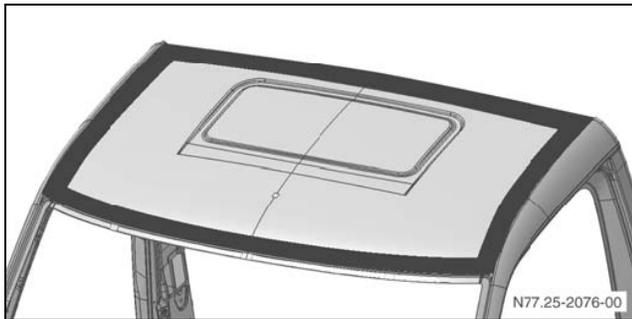
Comply with FMVSS/CMVSS requirements. Do not attach a winch to the front section of the frame.

Winches behind the cab

If winches are attached behind the cab, they must be mounted on a mounting frame of sufficient size and strength.

7.6.1. Wind deflectors

Wind deflectors may only be fitted onto the cab roof by applying high-strength adhesive to the whole area around the lateral roof frame, the front roof frame and the first roof arch (level with the B-pillar). The load applied by air resistance and contact pressure must be taken into consideration. The deflectors must only be fitted in such a way that the basic vehicle is not damaged.



Adhesive for fitting wind deflectors should be applied in the area shown

No further holes should be drilled in the cab roof for fixing additional attachments.

If other roof attachments are fitted, please consult with SECST.

7.6.2. Attachment above cab

- The permissible center of gravity location and the front axle load must be observed (→ chapter 4).
- The attachment to the roof must be designed as described in the “Bodyshell” section (panel van roof) (→ chapter 7.2).

7.6.3. Roof racks

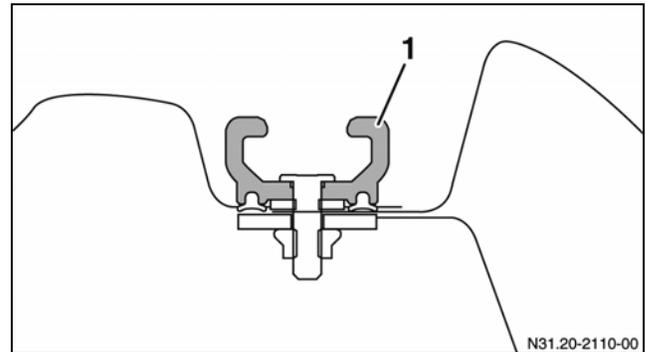
Sprinter – model series VB Cargo vans and passenger vans:

- Make sure that the load is distributed evenly across the entire roof area
- We recommend the use of an anti-roll bar at the front axle
- Support feet must be spaced at regular intervals. 110 lbs per pair of feet and strut is recommended as a basic rule.
- With shorter roof racks, the load must be reduced proportionally.

Roof rack limiting values (laden)

Maximum roof loads		
Cargo Van kg / [lbs]	High Roof Cargo Van kg / [lbs]	Mega Roof Cargo Van kg / [lbs]
300 / 660	150 / 330	0

To make it possible to fit roof racks, the Sprinter – model series VB is equipped with C-rails (Cargo Van only)



Roof rack mounting

- 1 C-rail (roof rack)

7.6.4. Fitted shelving/installations

Fitted shelving must:

- be sufficient strong and self-supporting
- rest on the cross and longitudinal members of the vehicle floor
- distribute forces evenly
- it is preferable to make attachments at the points of the load rails and lashing eyelets.

Do not transfer loads only to the vehicle side walls. For a favorable force transfer, we recommend the use of load rails available as optional equipment or their entire contact area in the body shell:

- Option XZK - on the roof frame
- Option CMD - on the waist rail



Load rails in the panel van

1 Load rails
 Arrow Front of vehicle

For further information about the side wall
 (→ chapter [7.2.5](#))

7.6.5. Loading cranes

The size of the crane must be selected in accordance with the chassis size.

Loading cranes must be secured on a mounting frame to relieve the load on the frame (→ chapter 8.1) The permissible axle loads must be verified by calculating a weight balance.

The vehicle's stability must be ensured by the body builder. The slewing range of the crane must be limited accordingly.

Loading cranes mounted on vehicles must comply with all applicable accident prevention regulations.

Comply with all legal requirements.

The mounting instructions of the crane manufacturer must be observed.

If additional platform or tipper bodies are mounted, the dimensions of the longitudinal mounting frame member must be taken from the table for platform bodies (→ chapter 8.5) or tipper bodies.

Outriggers must be provided for every loading crane. We recommend using hydraulic supports. The vehicle must not be raised using the outriggers, as this would damage the frame

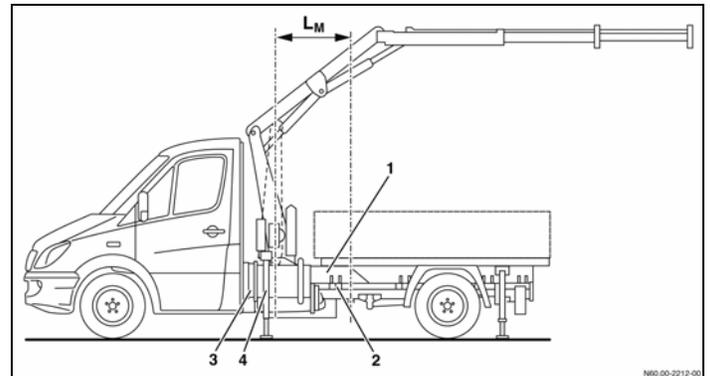
Loading cranes behind the cab

Loading cranes and outriggers must not impair the function of other equipment.

Mounting frame

- Maximum crane load moment (kN x l) / 25 kNm
- Moment of resistance (W_x) for longitudinal mounting frame members: 45cm^3 / $[2.75\text{ in}^3]$
- Section dimensions of mounting frame longitudinal members (→ chapter 7.2).
- While the crane is in operation, vehicle stability must be ensured by extending outriggers.
- Outriggers extending beyond the vehicle when stationary must be made easily distinguishable by conspicuous colors, reflectors and warning lights.
- The platform length depends on the position and weight of the loading crane and must take into consideration the permissible axle loads.

- The vehicle may only be used on flat, paved roads.
- Due to the vehicle's load distribution, a frame extension may be required.
- If a stronger mounting frame is required than for the body when a loading crane is mounted behind the cab, the loading crane can be secured on a shorter mounting frame (see illustration below). The short chamfered mounting frame must have a length of $L_M > 35\%$ of the wheel base.
- This attachment required approval from SECST.



Loading crane

- | | |
|-------|--|
| 1 | Loading crane mounting frame |
| 2 | Body support brackets |
| 3 | Loading crane attachment |
| 4 | Outrigger |
| L_M | Length of loading crane mounting frame |

Loading crane mounted at end of frame

Warning

The minimum front axle load (→ chapter 4) must be complied with in all load states. Otherwise, adequate driving stability is no longer guaranteed.

- Loading cranes must be secured to a mounting frame made of steel
- Maximum crane load moment (kN x l): 25 kNm
18,439ftlbs
- Moment of resistance (W_x) for longitudinal mounting frame members: 45 cm^3 $[2.75\text{ in}^3]$
- Section dimensions of mounting frame longitudinal members (→ chapter 7.2).
- While the crane is in operation, vehicle stability must be ensured by using extending outriggers.

7.6.6. Loading tailgate (lifting platform)

Please consult SEGST if you intend to retrofit a lifting platform to SPRINTER models. If a lifting platform is being fitted, observe the following:

An auxiliary battery (Option BC1) must be fitted if an electro-hydraulic lifting platform is fitted. An alternator with higher capacity (Option BAJ) and a battery with higher capacity (Option BCY) are highly recommended.

- Lifting platforms must comply with all applicable legal requirements
- The permissible rear axle load must not be exceeded
- The minimum front axle load must be complied with in all load states.
- Vehicle stability must be ensured by the body builder in all operating states.
- Calculate the vehicle's load distribution. This calculation must take all special equipment into consideration.
- If necessary, shorten the body length and the rear chassis overhang accordingly (Chassis Cab series).
- We recommend the use of only hydraulic supports.
- Maximum load distance 600mm [24 inches] relative to the standard rear portal / standard rear cross member.
- Vehicle stability when loading and unloading the vehicle must be ensured by the user.
- The maximum lifting force must not be exceeded when the vehicle is unloaded.

Lifting platform attachment

The attachment of a lifting platform must be designated as described in the "Attachment to the rear frame section" (→ chapter 7.2.2).

Additional torque support must be provided by means of at least two bolted connections fitted with spacer bushes (e.g. on the mounting frame).

- Extend the mounting frame as far forwards as possible and attach it with a non-positive connection to the chassis frame.
- No mounting frame is required on vehicles with a standard panel van body.

If modifications are required to the under ride guard due to the attachment of a lifting platform, the strength and bending strength of the under ride guard must not be changed. The vehicle must not be raised using the outriggers, as this would damage the frame.

Model	Wheel base [in]	Maximum lifting force (kN)/[lbs]		Minimum dimension of mounting frame longitudinal member (mm)/[in]
		Chassis Cab	Cargo	
Sprinter 2500 8550 GVWR	144	-	5 / [1124]	8 0x45x3 / [3.1x1.8x0.12]
	170	-	5 / [1124]	120x50x4 / [4.7x2x0.16]
	144	-	5 / [1124]	120x50x4 / [4.7x2x0.16]
	170	-	5 / [1124]	140x60x5 / [5.5x7.4x0.2]
Sprinter 3500 9990 & 11030 GVWR	144	5 / [1124]	5 / [1124]	80x45x3 / [3.1x1.8x0.12]
	170	5 / [1124]	5 / [1124]	120x50x4 / [4.7x2x0.16]
	144	7.5 / [1685]	5 / [1124]	120x50x4 / [4.7x2x0.16]
	170	7.5 / [1685]	5 / [1124]	140x60x5 / [5.5x2.4x0.7]
	144	10 / [2248]	5 / [1124]	140x60x5 / [5.5x2.4x0.2]
	170	10 / [2248]	5 / [1124]	160x60x5 / [6.2x2.4x0.2]

7.6.7. Trailer hitch

- We recommend the use of trailer hitches that have been approved by DG and attached to the special mounting points on the body shell (rear longitudinal member)
- Access to the space wheel must be guaranteed if a trailer hitch with non-detachable ball neck is fitted (especially with a fully laden vehicle).
- Fitting the trailer hitch must comply with all applicable regulations.

Never attach a trailer hitch to the end cross member of the frame.

Information is available from your authorized Sprinter dealer.

Clearance dimensions, trailer hitch

The height of the trailer hitch above the ground must be between 300mm [11.8 in] and 450mm [17.9 in] when the vehicle is laden to the permissible gross vehicle weight.

The reliable operation of the hitch must not be impaired.

Do not install an open-jaw hitch fitted to the front of the vehicle.

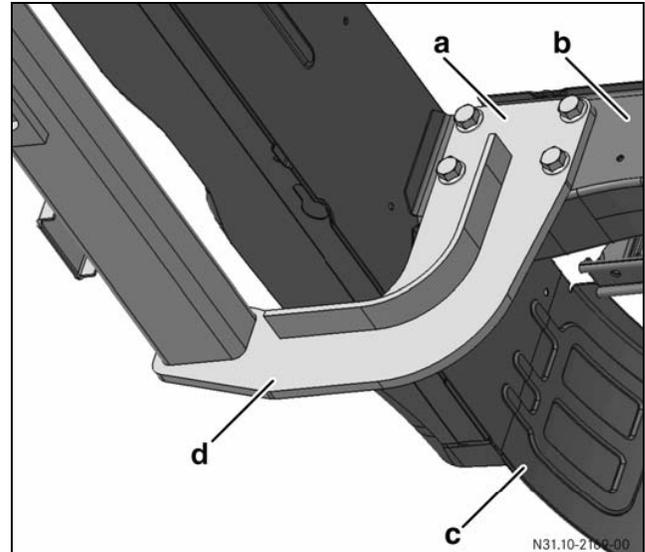
The specified clearances must be maintained.

Warning

If the towing vehicle is unladen, only an unladen trailer may be towed. If the trailer hitches have removable ball hitches, the operating instructions must be supplied in the vehicle and they must refer to the special features and operation of the hitch.

Attachment of the trailer hitch

Only secure trailer hitches and mounting plates to the special mounting points on the body shell (rear longitudinal member). In addition, panel vans require an additional attachment as support on the rear cross member of the vehicle frame.



Inside view

- a Attachment of mounting plate to the longitudinal frame member
- b Lower chord of the longitudinal frame member
- c End frame cross member
- d Mounting plate for the trailer hitch

If the frame needs extending, spacer bushings must be fitted to the frame to attach the mounting plate or the rear cross member. They may lead to a reduction in the towing weight or the nose weight.

You will find whole patterns with dimensions for securing the trailer hitch in the “Technical details” section.

Depending on the model series, the following optional equipment is available as an option from the factory to retrofit trailer hitches:

Chassis Cab

Option	Description
AHT	Complete trailer tow group
XFK	Complete trailer hitch wiring with 7 pin connector included at rear cross member
XEY	Complete trailer hitch wiring at rear cross member without connector, only wire plug

Cargo / Passenger Van

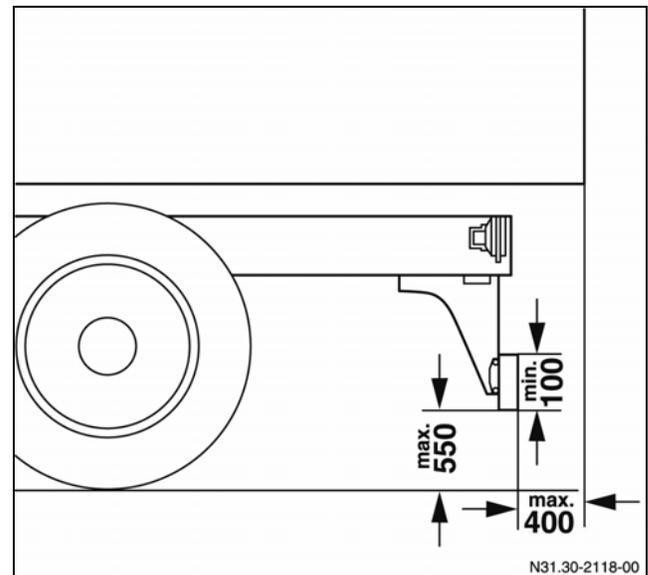
Option	Description
AHT	Complete trailer tow group

Note:

Option AHT can not be ordered with rear step bumper MBZ.

7.6.8. Underride guard

If an under ride guard is required, it must comply with applicable legal requirements and its design drawings submitted by the body builder. The under ride guard must be mounted as far back as possible.



Side view Dimensions

- Maximum height of under ride guard (unladen vehicle) above road surface: 550mm [22 in]
- Width:
 - Maximum = width of rear axle (outer tire edge)
 - Minimum = width of rear axle less 100mm [4 in] on each side. The decisive factor is the widest axle
- The cross member must have a section height of at least 4 in.
- Edge radius at least 2.5mm [0.1 in].

Modification to the underride guard

If the under ride guard needs to be repositioned due to the overhang extension, the attachment must be the same as that of the original vehicle. If modifications are required to the under ride guard (e.g. due to the attachment of a lifting platform), the strength and bending strength of the under ride guard must not be modified. Any modifications to the under ride guard must comply with applicable regulations.

8. Design of bodies

This section contains information concerning the body to be produced by the body manufacturer.

8.1. Mounting frame

All bodies require a mounting frame or a substructure that assumes the function of a mounting frame to ensure a reliable connection between the chassis and the body (except for self-supporting bodies and mounting frames acting as floor assemblies)

Attachment to the frame must run along the frame using the body support brackets attached to the frame at the factory (→ chapter [8.1.4](#)).

8.1.1. Material quality

Required moment of resistance¹ of mounting frame:

Up to maximum standard Wheelbase	30 cm 3/1.8 inches
Over maximum standard Wheelbase	>34.5 cm 3/2.1 inches 3

¹ Each individual mounting frame longitudinal member must have the moment of resistance specified here.

Material quality of specified mounting frame made of steel:

- Mounting frame with bracket mounting (non-positive) = H240LA or S235JRG2

- For H240LA or S235JRG2 steels complying with the DIN EN standard, analogous materials complying with the US SAE/ASTMJ403/J412/J413 standards, the Japanese JIS G3445 standards or the UK BS 970 standards can be used.

Material quality of specified frame made of steel

Material	Tensile Strength (N/mm ²) Yield Strength (N/mm ²)
H240LA (DIN EN 10268-1.0480)	350-45 260-340
S235JRG2 (DIN EN 10025-1.0038)	340-510 >235

- If high-strength steel is used for the mounting frames, their strength must be at least equivalent to that of steel mounting frames
- If aluminum mounting frames are used, their strength must be at least as great as that of steel mounting frames. Observe the specifications of the aluminum manufacturer.

8.1.2. Design

General

The mounting frame cross members must be located above the chassis frame cross members.

The mounting frame longitudinal members must extend as far towards the front of the vehicle as possible, to reinforce the point behind the cab which is critical with regard to bending stress, as well as to prevent vibration problems.

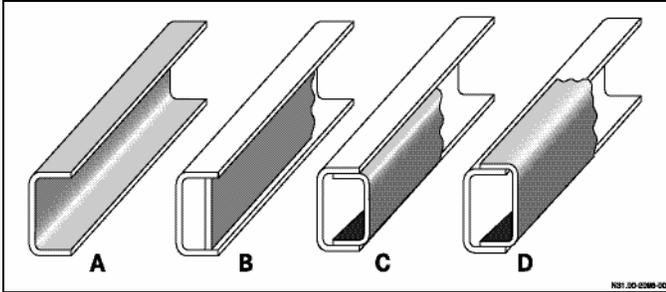
The body must have a torsion-free attachment to the body support brackets on the longitudinal frame member.

Place the vehicle on a flat, horizontal surface before mounting the body.

If very high longitudinal members are required or if the height of the frame needs to be small, the U-section can be designed as follows if the connections are non-positive:

- closed off like a box
- nested (inside overlapping U-section), or
- nested with an overlapping U-section

This increases the moment of resistance and torsional stability

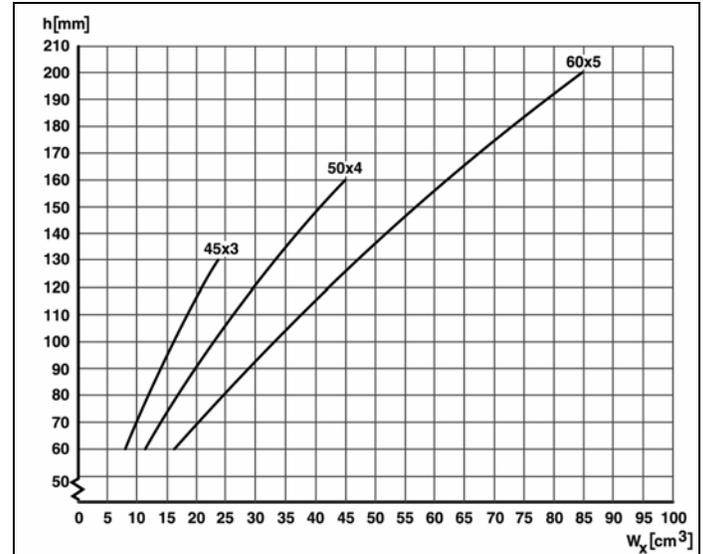


Frame profile

- A Open U-section
- B Closed U-section
- C Inside overlapping U-section
- D Overlapping U-section

Mounting frame with offset frame

On vehicles with an offset frame (permissible gross vehicle weight 11,030 lbs), the longitudinal mounting frame members can run continuously in a straight line.



Longitudinal member dimensioning

h : Section height in mm
 W_x : Moment of resistance in cm³

8.1.3. Section dimensions / dimensioning

For the longitudinal members, use flanged U-sections or commercially available U-sections for vehicle design (not rolled steel sections). Box sections are also permitted as longitudinal member section.

The dimensions of the longitudinal members are a function of the moment of resistance (W_x) required for the body and the chassis.

If more than one body is mounted on the same chassis (e.g. platform and lifting platform), the larger of the specified moments of resistance must be taken to determine the mounting frame.

The specified moments of resistance and section dimensions refer to longitudinal frame members subjected to identical loads on both sides.

Please refer to the table below for the section dimensions of mounting frame longitudinal members (open section).

The mounting frame and the chassis frame should have approximately the same flange with.

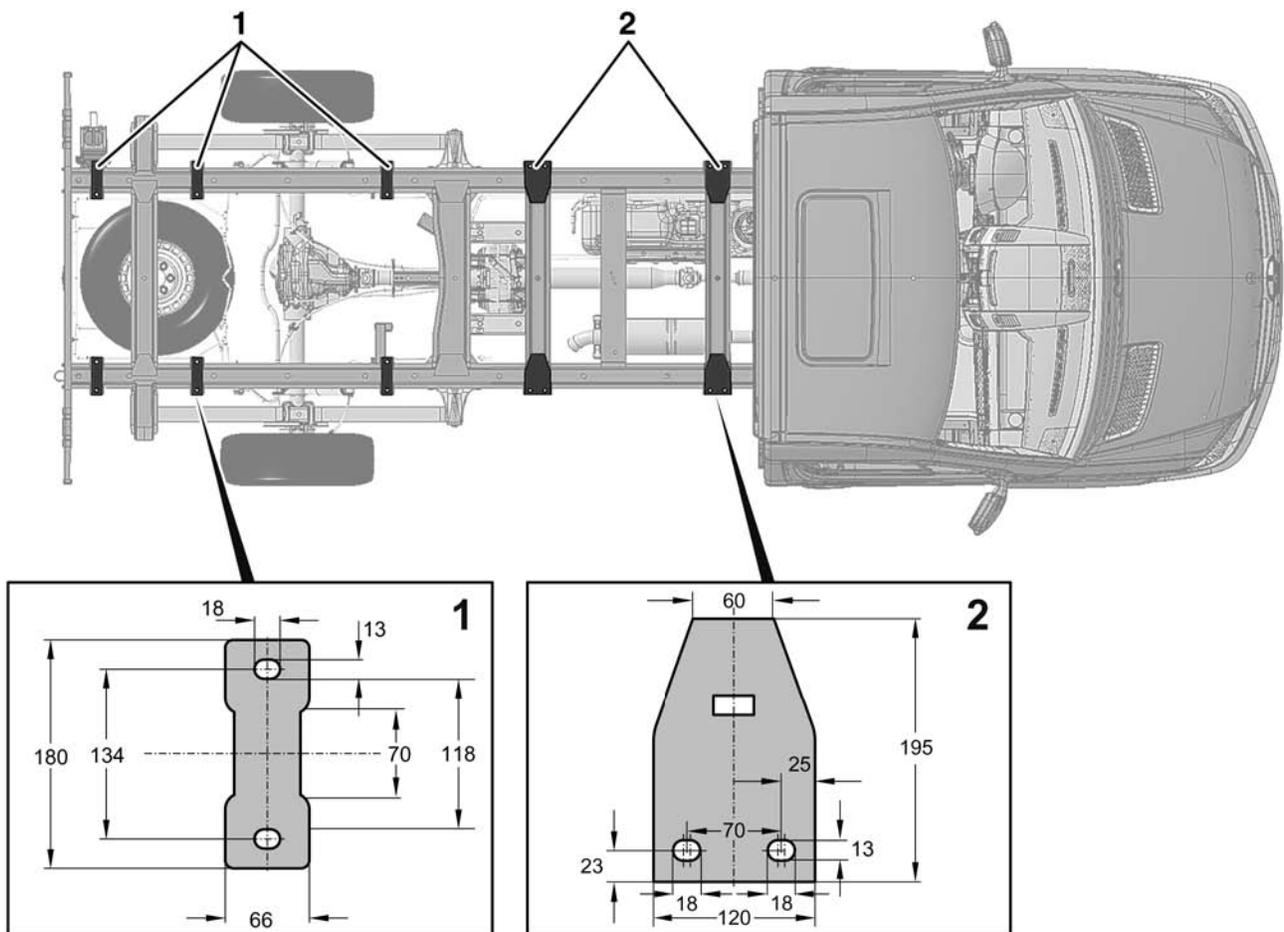
8.1.4. Attachment to the frame

The body support brackets fitted at the factory must be used for attaching bodies to the vehicle frame. The brackets are located on the longitudinal frame members and additional brackets may be fitted as required.

The minimum distance between the body and the cab must be >50mm [2 inches]. Single rear wheel Sprinter chassis cab are not available in the U.S or Canada and is for illustration purposes only.

If prefabricated mounting frames are used, the production tolerances of the chassis frame with (maximum +6/-3mm) [+0.24/-0.12 in] must be taken into consideration.

The positions for the body support brackets are indicated in the 2D drawings depending on the model series.



N60.00-2228-00

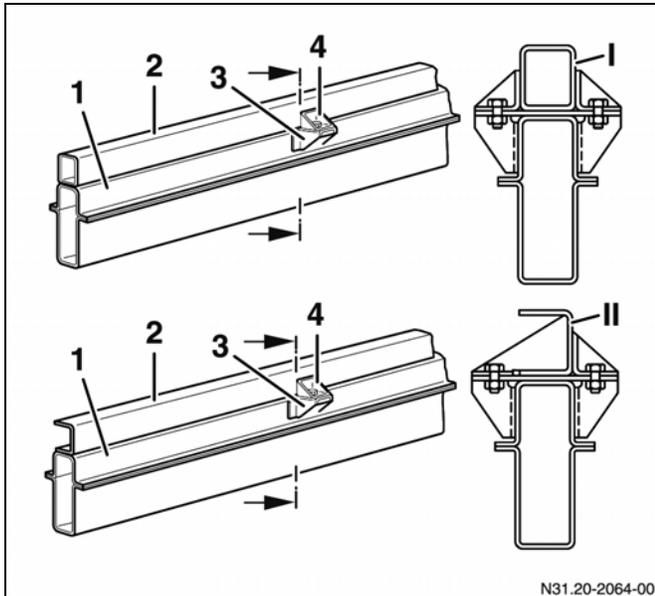
Types of fastening points on the frame (mm)

Additional body support brackets

If it is necessary to fit additional body support brackets, contact SECST for directives (→ chapter 2.7).

The body support brackets must be attached using two bolts for each body support bracket.

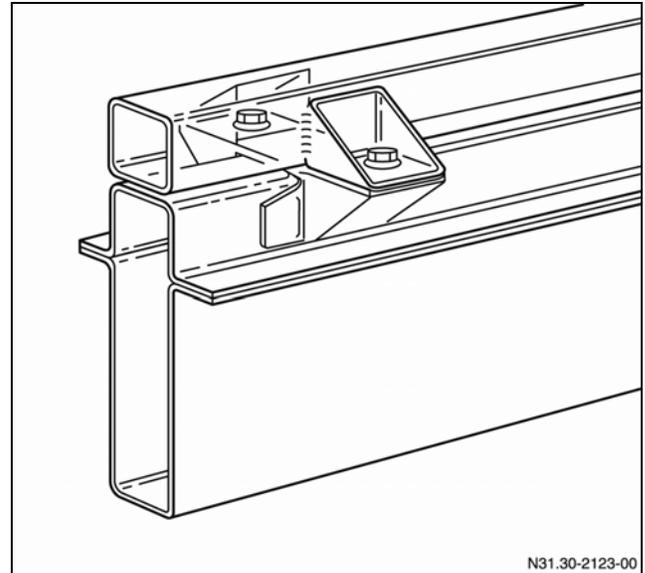
Attachment of the body support brackets



N31.20-2064-00

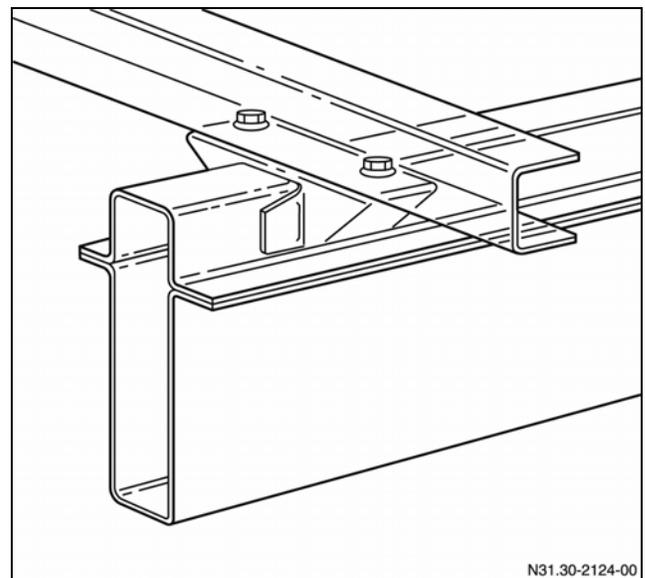
Example of a body bracket design

- I Box section
- II U-section
- 1 Chassis frame
- 2 Mounting frame
- 3 Standard mounting bracket
- 4 Bracket



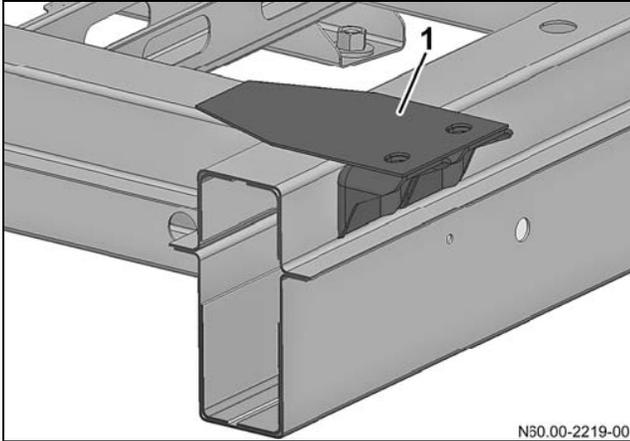
N31.30-2123-00

Attachment to a longitudinal member



N31.30-2124-00

Attachment to a cross member



Body bracket with external bolted connection

1 Body bracket

Select the number of attachments to ensure sufficient transfer of all longitudinal and lateral forces.

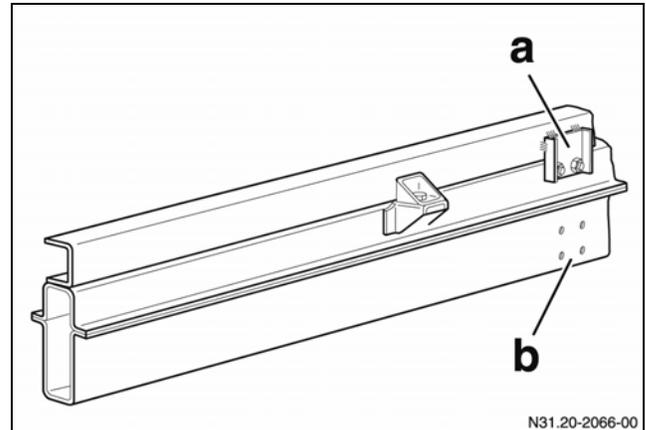
Correct attachment is a decisive factor for:

- vehicle handling and operating safety
- the service life of the chassis frame and the body

Rigid attachment

If the attachment is rigid, the mounting frame longitudinal member must be secured in both longitudinal and transverse directions. This will allow movement of the longitudinal mounting frame member only under specific conditions.

With rigid connections, a double support is required for each longitudinal frame member as depicted in the figure below.



Dual support (rigid connection)

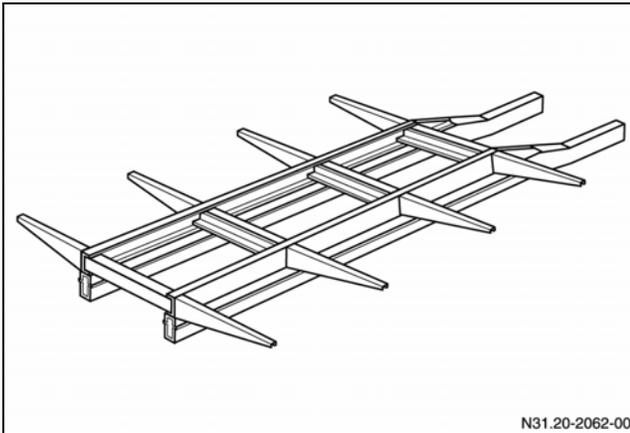
- a Rigid attachment at frame end
- b Standard holes at frame end

Elastic connection

On rigid bodies (e.g. panel vans), an elastic attachment must be provided behind the cab (e.g. by fitting cup springs or rubber mountings).

8.1.5. Mounting frame as floor assembly

A mounting frame with continuous longitudinal members is not required if the body floor assembly can assume the mounting frame function. The longitudinal members can also be integrated in the body. If the mounting frame longitudinal members are intersected by the cross members, the connection between the longitudinal and cross members must be rigid and resistant to torsion and bending.

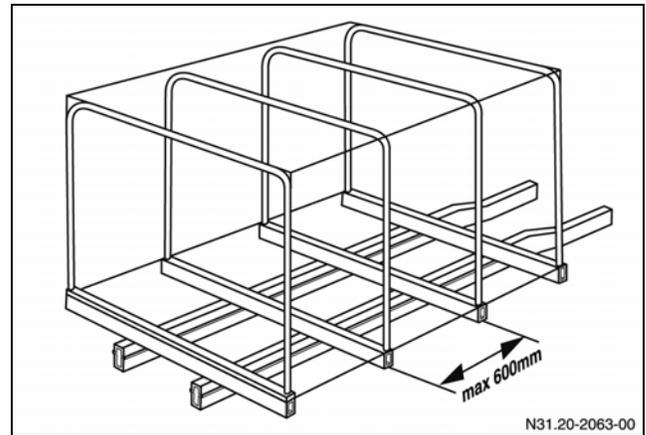


Example of a floor assembly

8.2. Self-supporting bodies

A mounting frame with continuous longitudinal members is not required if the body floor assembly can assume the mounting frame function.

Self-supporting bodies must have the same characteristics as the specified mounting frame. The body floor assembly must have the same rigidity and moment of resistance as a mounting frame.



Example of a body design

Spacing max 600mm [24inch]

8.3. Modifications to the interior

8.3.1. Retrofitting additional rear seats

When retrofitting rear seats, it is absolutely essential to keep to the H-point. You can obtain up-to-date documentation from SECST.

When re-installing seat belts, the specified bolts must be tightened to the original torque. 37NM / 27.3ftlbs

Warning

If seats other than those fitted at the factory are fitted in conjunction with seat belts available from the factory, only seat belt buckles that are compatible with the belt tongues of the factory-supplied seat belts may be used. Otherwise, the seat belt cannot engage in the seat belt buckle correctly and in the event of an accident occupants may suffer severe injury or death.

Only the components of DG may be used for the installation of safety belts and seat belt buckles.

All applicable regulations relevant to approval (e.g. seat belt buckle position) must be observed when fitting seat belts and seat belt buckles other than those available from the factory.

Passenger cabin/load compartment

On Cargo vans, the body shell floor assembly of the passenger van is available from the factory as optional equipment under Option CMZ (Passenger van floor assembly) for retrofitting bench seats. The number of mounting options for the passenger van floor assembly depends on the model series and the equipment and registration variants (the mounting shells for the bench seats are not included in the scope of delivery).

You can obtain more information on optional equipment Option CMZ from your authorized sprinter dealer, SECST (→ chapter [2.7](#)) or in the “Optional equipment” section (→ chapter [3.9](#)).

If a rear bench seat with two-or three-point seat belts deviates from the standard seat design, it must comply with the applicable requirements of FMVSS and CMVSS.

Warning

Never mount seats on the rear wheel wells. In the event of an accident, if the seats become detached from their anchorages may lead to severe injury or death.

8.4. Modifications to Cargo vans

Floor assembly/side panels

On Cargo vans, the body forms a self-supporting unit with the chassis frame. If body parts are modified or fitted, they must be welded if a bonded connection is not possible. For this reason, windows, roof hatches and vent openings must be mounted in a sturdy frame. The frame must then be joined by a non-positive attachment to other body elements.

Cab rear panel

If there is an opening in the cab rear panel, a sectional frame must be fitted in the opening. The remaining braces and pillars must be reinforced by additional gussets and connected to the sectional frame (e.g. by bonding). Refer also to the "Modifications to cab" section.

Partitions

Partitions in panel vans may be totally or partially removed. The following partitions are available as optional equipment from the factory:

Option	Description
CWC	Partition, continuous
XJW	Partition, continuous with window
XJ1	Partition, continuous with a sliding window
XJZ	Provision for retrofitting partition
XJY	Partition with sliding door
58W	Omission of partition

You can obtain more information about optional equipment from your authorized Sprinter dealer, SECST or in the "Optional equipment" section) (→ chapter 3.9).

Vehicle roof

More information about the roof is contained in the "Cargo van / Passenger van roof" section.

8.5. Platform bodies

To ensure the uniform loading of the chassis frame, the body must be attached to the chassis frame by means of a mounting frame (U-section longitudinal members). If the standard platform is subjected to point loads (e.g. for the transportation of cable drums, coils, etc), the substructure and the platform floor must be reinforced to support the load. Before mounting the body:

- Weigh the chassis and define the body length.
- Reflectors and lightning must be mounted on the body to comply with legal requirements per FMVSS/CMVSS regulations.

GVWR	Moment of resistance W_x for each longitudinal member in $\text{cm}^3 / [\text{in}^3]$
11,030 lbs	30 / [1.83]

For the section dimensions of the longitudinal mounting frame member, see the graph.

Where bodies include attachments which move independently, ensure that there is adequate clearance between the attachments and the basic vehicle, otherwise they may collide with the basic vehicle, resulting in damage.

8.6. Panel vans

To ensure the uniform loading of the chassis frame, the body must be attached to the chassis frame by means of a mounting frame (U-section longitudinal members). On rigid bodies such as Panel vans, the attachments behind the cab must be an elastic connection.

GVWR	Moment of resistance W_x for each longitudinal member in $\text{cm}^3 / [\text{in}^3]$
11,030 lbs	40 / 2.44

8.7. Refrigerated vehicles

Refer also to the following sections;

- “Retrofitting an air-conditioning system” (→ chapter [7.5.1](#))
- “Power take-offs” (→ chapter [7.5.3](#))
- “Attachment to the roof”
- “Retrofitting electrical equipment” (→ chapter [6.4.5](#))

With Cargo vans, easy access to the components of the door mechanism (e.g. guide rails and hinges) must be retained so as not to hinder possible repair work.

On Cargo vans, the insulation increases the weight of the doors and therefore the load on the hinges, carriages and locking systems.

8.8. Dump bodies

Vehicles and dump bodies must comply with all applicable regulations and laws.

Make sure that you do not exceed the permissible axle loads.

Pivots

- The rear pivot on three-way and rear-end dump bodies must be positioned as close to the rear axle as possible.
- When the side gates or tailgate are folded down, they must not strike against the frame end, the light fittings or the trailer hitch.
- The front pivot must be provided with guide brackets so that the pivots can be guided when the dump body is lowered.

Restraining facilities

- Comply with all applicable laws and regulations
- Fit a support (folding support) to prevent the dump body from lowering
- Secure operating devices against accidental operation
- Connect a “dump body” indicator lamp to provide a visual warning that the dump body has not folded back completely (in driving position)

Lifting press

- The press carrier is attached to cross members in the mounting frame.
- The cross members of the mounting frame and the chassis must be placed on top of each other as far as possible.
- On three-way dump bodies, the application point of the lifting press must be in front of the center of gravity of the body and the payload.

Mounting frame

If chassis are provided with dump bodies, the mounting frame must have the correct dimensions to support the high loads to which the vehicle will be subjected.

Observe the following points:

- Attach the mounting frame to the body support brackets as described in the “Attachment to the frame” (→ chapter [7.2.2](#)).
- Make sure that the steel longitudinal and cross members have the correct dimensions.
- Close off the rear area of the mounting frame towards the panel van and, if necessary, reinforce the mounting frame by installing a diagonal cross or by taking other appropriate measures.

Vehicles with dump bodies can only be used under normal operating conditions. **If the vehicle is to be used in heavy-duty operating conditions, we recommend that you contact SECST (→ chapter [2.7](#)).**

GVWR each	Moment of resistance Wx for longitudinal member in cm ³ /[in ³]
11,030 lbs	40 / [2.44]

8.9. Rescue vehicles

Vehicles with bodies for rescue or recovery equipment must be attached with mounting frames of adequate dimensions. In addition, the bodies must be fitted with two rigid connections on each longitudinal frame member.

Refer to the “Winches” section for information on attaching winches.

Also observe the “Side under ride guards”

8.10. Torsional rigidity of body types

The bodies and mounting frames for torsionally rigid bodies (e.g. municipal vehicles, fire-brigade panel vans or street-cleaning vehicles) must be attached by means of elastic elements at the front of the frame. The body support brackets fitted at the factory must be used.

If required, the mounting frame must be additionally reinforced at the rear by fitting a diagonal cross.

Refer also to the “Retrofitting electrical equipment” section (→ chapter [4.6.2](#)).

8.11. RV Conversion

Prior to conversion in an RV, please ensure the following important requirements:

- All applicable legal requirements are observed
- All applicable requirements for interior design and RV equipment are fulfilled
- Easy access to the components of the door mechanism (e.g. guide rails and hinges) must be retained so as not to hinder possible repair work.

Particular attention must be paid to the following sections of the body / equipment mounting directives:

- Dimensions and weights (→ chapter [4](#))
- Instructions on modifications to the basic vehicle
- Electrics/electronics (→ chapter [6](#))
- Mudguards and wheel wells (→ chapter [7.2.6](#))

Modifications of conversions to standard vehicles (e.g. the installation of a raised roof) may invalidate the certificate and warranty. Prior to convert a Dodge Sprinter or Freightliner Sprinter VB into an RV consult with SECST (→ chapter [2.7](#)).

Never exceed the center of gravity limits.

We recommend fitting an additional anti-roll bar on the rear axle. This is available from the factory as optional equipment under Option SDD (→ chapter [3.9](#)).

More information on electrics and additional equipment is contained in the “electrics/electronics” (→ chapter [6](#)) and “Additional equipment” sections (→ chapter [7.5](#)).

9. Calculating the center of gravity

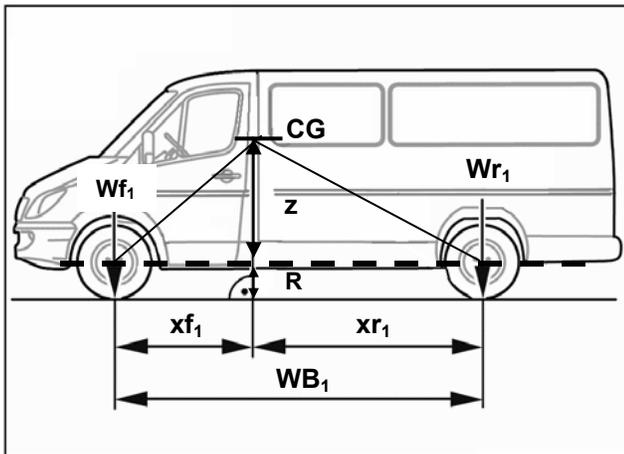
After installation or modification of the equipment, vehicles must be weighed on a scale in two different positions with a secured load appropriate to the area of vehicle applications.

The determined center of gravity must not exceed the specified limiting values (→ chapter 4).

Before the measurement is taken, the tires must be **inflated** to maximum pressure and the vehicle suspension at the front and rear axle must be **locked**.

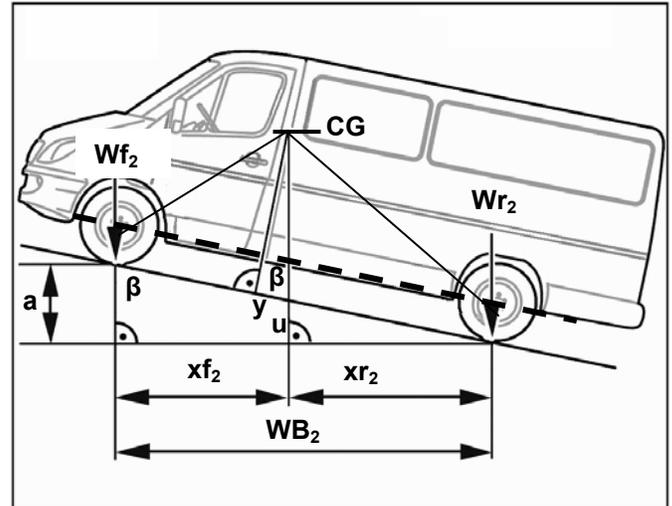
The axle loads must be weighed when the vehicle is horizontal (Wf_1 and Wr_1) and when one axle is raised by amount "a" (Wf_2 and Wr_2); we recommend $a = 500\text{mm}$ [20 in]. The wheelbase WB_1 (144.3 in or 170.3in) is defined by the vehicle model series (see ordering) or must be measured.

Measurement 1



Measurement with vehicle level

Measurement 2



Measurement with axle raised

Definitions:

CG	=	Center of Gravity
Wf	=	weight front
Wr	=	weight rear
W	=	total vehicle weight
WB	=	wheelbase
xf	=	distance from center to front axle
xr	=	distance from center to rear axle
z	=	Center of Gravity height
R	=	static radius height of front and rear wheels

$$z = R + \tan \left[\cos^{-1} \left(\frac{a}{WB_1} \right) \right] \cdot \left(\frac{Wf_1 \cdot WB_1}{W} - \frac{Wf_2 \cdot WB_1}{W} \right)$$

The sum of all moments about a point is zero.

Therefore:

$$Mr = 0$$

$$(Wf_1 + Wr_1) \cdot xr_1 = Wf_1 \cdot WB_1 \quad (1)$$

$$xr_1 = \frac{Wf_1 \cdot WB_1}{Wf_1 + Wr_1} = \frac{Wf_1 \cdot WB_1}{W} \quad (2)$$

The new wheelbase WB_2 after raising one axle is calculated as follows:

$$WB_2 = \sqrt{(WB_1^2 - a^2)} \quad (3)$$

xr_2 is calculated analogously to xr_1 :

$$xr_2 = \frac{Wf_2 \cdot WB_2}{Wf_2 + Wr_2} = \frac{Wf_2 \cdot WB_2}{W} \quad (4)$$

$$z = \tan \beta \cdot y \quad (5)$$

The unknown angle β can be calculated from:

$$\cos \beta = \frac{a}{WB_1} \quad (6)$$

Therefore, the following results for β :

$$\beta = \cos^{-1} \left(\frac{a}{WB_1} \right) \quad (7)$$

The required y is obtained from the equation:

$$y = xr_1 - \sqrt{(u^2 + xr_2^2)} \quad (8)$$

The values for xr_1 and xr_2 are already known from equation (2) and (4). The required u is calculated using:

$$\frac{a}{WB_2} = \frac{u}{xr_2} \quad (9)$$

The results in the following equation:

$$u = \frac{a \cdot xr_2}{WB_2} \quad (10)$$

If equations (7) and (10) are used in equation (5) and are referred back to the given/measured values a , WB_1 , Wf_1 , Wr_1 , Wf_2 and Wr_2 , the result for the height of the center of gravity z is:

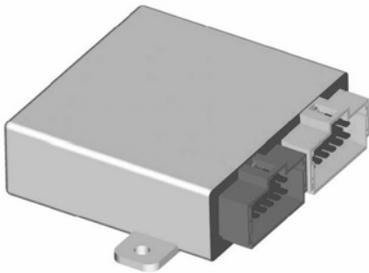
$$z = R + \tan \left[\cos^{-1} \left(\frac{a}{WB_1} \right) \right] \cdot \left(\frac{Wf_1 \cdot WB_1}{W} - \frac{Wf_2 \cdot WB_1}{W} \right)$$

10. Programmable special module (PSM)

10.1. General

The PSM (Programmable Special Module) control unit is the interface between the vehicle and the body builder. The PSM carries out functions specific to the body builder (e.g. engine-speed control) that are not implemented in other control units. This means that the PSM converts information received in CAN messages to discrete outputs or forwards the information to the ABH CAN, for example. In the same way, the PSM is able to forward discrete inputs or information from the ABH CAN to the interior CAN. The information, the inputs, the method and the direction are programmed by SECST and uploaded by your authorized Sprinter dealer.

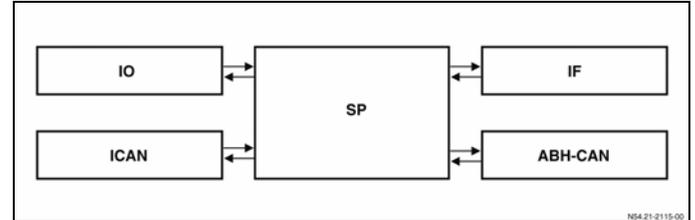
The PSM has 10 inputs and 20 outputs, which can also be used as inputs. There is only one PSM fitted in any one vehicle. Complex bodies requiring more inputs/outputs should be connected to the PSM via the ABH CAN.



NS4.21-2114-00

10.2. Signal concept and interfaces

10.2.1. Signal concept



NS4.21-2115-00

Simplified signal flow in the PSM

SP	Signal pool
IO	Digital inputs and outputs
ICAN	Interior CAN
IF	Internal functions
ABH-CAN	Body builder CAN

The diagram shows the simplified signal flow in the control unit. The signals are fed into a signal pool in the PSM. A signal may be dependent on other signals, e.g. from terminal 15. The I CAN, the discrete inputs and outputs, the internal functional units and the body builder CAN currently act as sources or outputs. Which signal is assigned to which output is determined by parameter programming. It is possible to assign any signal from the signal pool to a particular output.

Each signal in the signal pool has a unique identifier in the form of a signal number.

Signal pool input

Each signal has only one signal source

Signal pool output

A signal can be used internally or for one, more than one, or even no outputs

Use

How the signals are used is determined by the programming of the individual functions

Signal types

- Bit information (e.g. terminal 15 signal ID 1018)
- 1-byte information (e.g. vehicle speed signal ID 2014)
- 2-byte information (e.g. engine speed signal ID 3001)
- Multibyte information as pointers (e.g. VIN signal ID 4000)

Signal sources

- ICAN
- Diagnostics
- ABH CAN
- PSM after ICAN
- Discrete inputs
- AD converter
- Internal signals

Signal pool outputs (programmable)

- ICAN
- ABH CAN
- Discrete outputs
- Internal functional modules

Special signals, including

- inactive (0 x 1000)
- active (0 x 1001)
- deactivated (0 x 300B)

Signals (as at 17.01.2006)

Quantity: 550, of which

- Bit signals 444
- 1-byte signals 52
- 2-byte signals 41
- Multibyte signals 3
- PWM signals 10

10.2.2. Inputs

A total of 10 inputs are available: 3 high active, 3 low active and 4 analogue. The analogue inputs can also be used as digital inputs.

Inputs 1, 2 and 3 (high active)

- Switch to terminal 30, terminal 15 (+12V)
- Internal pull down resistor (with active control unit)
- Individually programmable wake-up capability
- Status stored in the signal pool

Inputs 4, 5 and 6 (low active)

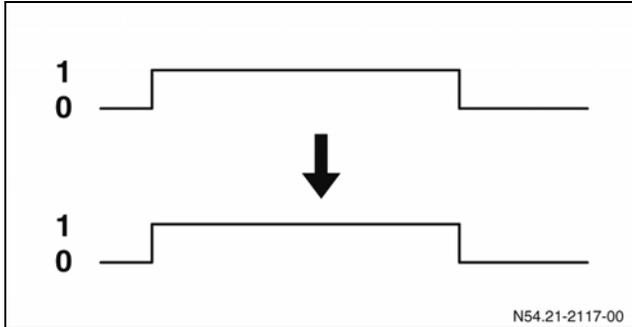
- Switch to terminal 31 (ground)
- Internal pull-up resistor, individually programmable
- Individually programmable wake-up capability
- Status stored in the signal pool

Inputs 7, 8, 9 and 10 (analogue)

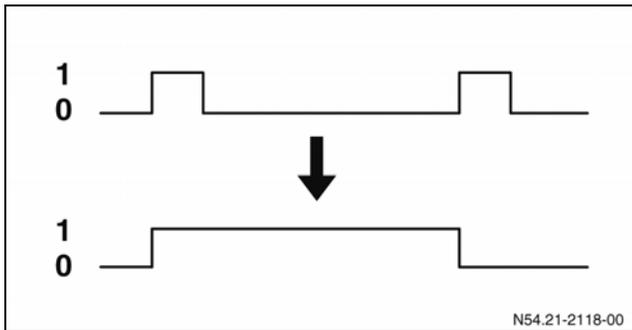
- Switch to terminal 30, terminal 15 (+12V)
- Switch to terminal 31 (ground)
- Internal pull-up resistor (100 k or 1,2 k with active PSM)
- Commonly programmable wake-up capability for input 7 and 8
- Digital value and analogue value information (related to terminal 30) is stored in the signal pool

Parameter option, switch/button

Switch: the status of the input is stored in the signal pool



Button: the signal in the signal pool is toggled with each 0-> 1 switch of the input.



10.3. Outputs

A total of 20 inputs are available: this includes terminal 30 (+12 volt) and ground switch lead-out in the range between 0.5A and 10A.

General

- Short-circuit detection
- Status of the outputs is in the signal pool
- In the case of high-side outputs, the load is applied by the PSM using terminal 30 (+12V), i.e. the ground must be connected to the body ground or battery ground.
- Parameter programming options
- Dependence on vehicle status
- Use as output or input

Outputs 1 and 2 (half bridge 5A)

- Parameter programming options
- use as low-side or high-side
 - Open-load detection

Outputs 3, 4, 5 and 6 (high-side 10A and 5A)

- Parameter programming options
- Internal pull-up
 - Wake-up capability
 - Open-load detection

Outputs 7 and 8 (high-side 5A)

- Parameter programming options
- Internal pull-up
 - Open-load detection

Outputs 9 and 10 (high-side 1A)

- Parameter programming options
- used as PWM output. For reasons of electro magnetic compatibility, the output should not be subjected to a load of more than 100mA during return to ground via the vehicle. The current load may be as much as 750mA if there is a return to ground via a low-active output of the PSM. Otherwise, it will be necessary to implement suitable shielding measures and carry out an EMC approval measurement/check.
 - Open-load detection
 - Pull-down (output 9 only)

Outputs 11 and 12 (low-side 1A)

- Parameter programming options
- Open-load detection

Outputs 13 – 20 (high/low-side 0.5A)

Global parameter programming options

- PSM configuration
- Global PSM run-on time (minutes) (after central locking locked by lock from outside)
- Global PSM under-voltage thresholds (100mV) and response times (100ms) (only for discrete and SPS outputs. Functional, hardware under voltage and over voltage is not cancelled)
- Power failure thresholds for outputs programmed with wake-up capability (for each of discrete outputs 3, 4, 5 and 6)

Programmable options of the outputs

- Open-load detection. This option can be used to configure an output in such a way that an open-load fault is stored if the load current falls below a threshold of approximately 5% of the nominal current. This function is only supported by outputs A01 to A12.
- Short-circuit monitoring. This function is supporting by all outputs and cannot be deactivated
- Wake-up capability and load detection. Outputs A03, A04, A05, and A06 can be programmed to have a wake-up capability. With wake-up capability programmed, the out-pit concerned is activated by a 1-0 edge and the PSM is woken if in sleep mode.
- Input/output. With this option, all outputs can also be used as discrete inputs. All high-side outputs become high active inputs, al low-side outputs become low-active inputs. Half bridge outputs 1 and 2 remain high active inputs at all times, regardless of their polarity.
- PWM soft start. If a PWM output is configured as a switch (no PWM signal but normal discrete output), it is possible to activate a soft start whereby an 80% PWM is initially output for approximately 150ms at switch-on before the output is subjected to maximum load. This function makes it possible for bulbs to switch on reliably and more softly, for example.
- PWM output. Configures a PWM-compatible output as a switch (0) or PWM output (1).
- High-side/low-side. This option can be used to select the desired switching direction for half bridge outputs A01 and A02.

- ICAN faults. The output is only active if no CAN faults are present. If the option is not set, outputs can remain active despite the presence of a CAN fault.
- Global PSM under voltage. The output is only active if no under voltage has been detected.
- Terminal 61. The output is only active when terminal 61 ON.
- Terminal 15. The output is only active when terminal 15 ON.
- Terminal 15R. The output is only active when terminal 15R ON.
- Terminal 15C. The output is only active when terminal 15C ON.
- Central locking unlocked. The output is only active when the “Central locking unlocked” status is set. “Central locking unlocked” is set when “Unlock from outside” is pressed or terminal 15C is active. “Central locking unlocked” is unset when terminal 15C is OFF and “Lock from outside” is pressed.
- Run-on The output remains active until the PSM run-on time has elapsed (programmable).
- Global run-on
- Parameter programming in PSM configuration
- Stay-awake function
- Function enabled by parameter programming in PSM configuration
- Stay awake is not the same as Wake ICAN

10.2.2.4 Interfaces

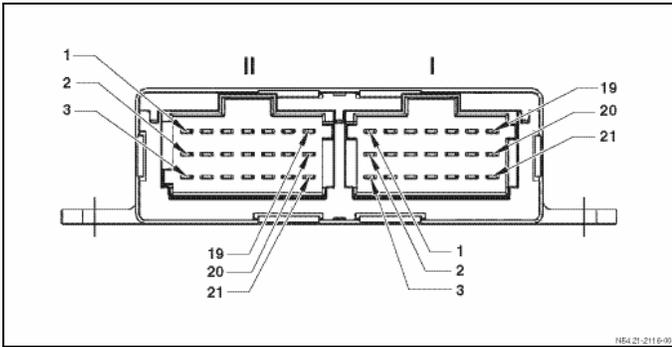
I-CAN

The interior CAN is the vehicle CAN bus system by which the convenience control units communicate with each other. Convenience control units include the instrument cluster, the overhead control panel, etc.

ABH CAN

- CAN Class C
- Programmable baud rate 125 kbaud/250 kbaud
- Extended identifier 29 bit
- Transceive fault-tolerant (TJA 1041)
- Terminator resistor 120 Ohm
- Nominal voltage 5V
- Standard DC software driver
- Programmable application:
- no ABH CAN/FMS/ISO11992/auxiliary

10.1.2.4 Contacts and pin allocation



I Connector 1

1 Pin 1

2 Pin 2

3 Pin 3

II Connector 2

19 Pin 19

20 Pin 20

21 Pin 21

Pin assignment

Connector 1

No.	Abbreviation	Use and alternative use
1		Not assigned/reserve
2	A18N005	Output 18 (negative/0.5A) or input, low-active
3	KL30.1	Terminal 30.1
4	A07P050	Output 7 (positive/5A) or input, high-active
5	A17N005	Output 17 (negative/0.5A) or input, low-active
6	KL30.1	Terminal 30.1
7	A08P050	Output 8 (positive/5A) or input, high-active
8	A09P010PWM	Output 9 (positive/1A, PWM-compatible) or input, high-active

Technical details

9	A16P005	Output 16 (positive/0.5A) or input, high-active
10	A05P050W	Output 5 (positive/5A, wake-up capability) or input, high-active
11	A10P010PWM	Output 10 (positive/1A, PWM-compatible) or input, high-active
12	A15P005	Output 15 (positive/0.5A) or input, high-active
13	A06P050W	Output 6 (positive/5A, wake-up capability) or input, high-active
14	A11N010	Output 11 (negative/1A) or input, low-active
15	A14P005	Output 14 (positive/0.5A) or input, high-active
16	A03P100W	Output 3 (positive/10A, wake-up capability) or input, high-active
17	A12N010	Output 12 (negative/1A) or input, low-active
18	KL30.2	Terminal 30.2
19	A04P100W	Output 4 (positive/10A, wake-up capability) or input, high-active
20	A13P005	Output 13 (positive/0.5A) or input, high-active
21	KL30.2	Terminal 30.2

Connector 2

No.	Abbreviation	Designation and alternative use	
1	E06N	Input 6	(low-active)
2	E04N	Input 4	(low-active)
3	KL31	Terminal 31	
4	E01P	Input 1	(high-active)
5	E05N	Input 5	(low-active)
6	E02P	Input 2	(high-active)
7	E03P	Input 3	(high-active)
8	E07A	Input 7	(analogue)
9	ICAN-L	Interior	CAN L
10	E09A	Input 9	(analogue)
11	E08A	Input 8	(analogue)
12	ICAN-H	Interior	CAN-H
13	A01B050	Output 1	(H-bridge/5A)
14	E10A	Input 10	(analogue)
15	ACAN-L	Body builder	CAN L
16	A02B050	Output 2	(H-bridge/5A)
17	A20N005	Output 20	(negative/0.5A) or input, low-active
18	ACAN-H	Body builder	CAN H
19	A19N005	Output 19	(negative/0.5A) or input, low-active
20	RS485P	RS485, positive (non-inverting)	input and output
21	RS485N	RS485, negative(inverting)	input and output

10.3.1. Vehicle functions

10.1.3.1 Gateway function for vehicle information

This section describes the basic vehicle information that can be picked up using the PSM.

- Vehicle status
- e.g. terminal 15, terminal 61, lock from outside, etc
- light status
- LDS and LSS requests (e.g. main-beam head lamps turn signals, etc)
- Light status of SAM (main-beam headlamps, turn signals, dipped-beam headlamps, front fog lamps, etc.)
- Hazard warning lamps from OBF

Window status

- Windscreen and rear window wipers
- Windscreen heating and rear window heating

Central locking

- Doors open/closed, unlocked/locked

Engine CAN information

- Wheel rotation speed, road speed, engine speed, etc
- Cruise control operation, brakes operated, etc.
- Transmission, clutch information, steering angle, etc.

Equipment attributes

- Door installation, sliding sunroof, transmission, etc.

Light control

- parking lamps, side lamps, etc.
- Turn signals, main-beam headlamps, etc.

Alarm functions

- Alarm-triggered flashing/flashing of main-beam headlamps, front fog lamps, hazard warning lamps, horn

Sliding sunroof

- Opening and closing of the sliding sunroof at the rear

Central locking functions

- Lock/unlock front, load compartment and entire vehicle

Windscreen and rear window

- Windscreen wipers and rear window wiper
- Windscreen and rear window heating

Miscellaneous functions

- Control buzzer (in the MPV) and interior lighting
- Charging active

Warning signals

- Under voltage

10.1.3.2 Control of vehicle functions

Parameter programming options for vehicle functions. The following parameter programming options are available for specific ICAN functions:

- Alarm-triggered flashing. This option is used to define the priority and wake-up capability of alarm functions.
- Steering angle reset. This bit can be used with the turn signal outputs to activate the function whereby the turn signals are reset via the steering angle.
- Switch/button evaluation. With some ICAN functions, this can be used to program whether input signals should be evaluated as buttons or switches.

The following functions can be controlled using the PSM:

Light functions

- Left-hand parking lamps
- Right-hand parking lamps
- Automatic lights
- Lights off
- Side lamps
- Dipped-beam headlamps
- Front fog lamps
- Rear fog lamp
- Hazard warning lamps (w)
- Headlamp flasher
- Main-beam headlamps
- Right-hand turn signals
- Left-hand turn signals
- Front interior lighting ON
- Rear interior lighting ON
- Horn

Alarm functions

- Front fog lamps and main-beam headlamps synchronous
- Hazard warning lamps
- Main-beam headlamps
- Interior lighting ON
- Front fog lamps
- Horn

Instrument cluster warning signals

- Global PSM under voltage
- ADR indicator lamp ON
- ADR defective indicator lamp ON

Sliding sunroof

- Close sliding sunroof automatically
- Close sliding sunroof manually
- Open sliding sunroof automatically
- Open sliding sunroof manually
- Lower sliding sunroof automatically
- Lower sliding sunroof manually
- Raise sliding sunroof automatically
- Raise sliding sunroof manually
- Close rear sliding sunroof automatically
- Close rear sliding sunroof manually
- Open rear sliding sunroof automatically
- Open rear sliding sunroof manually
- Lower rear sliding sunroof automatically
- Lower rear sliding sunroof manually
- Raise rear sliding sunroof automatically
- Raise rear sliding sunroof manually

Central locking

- Lock entire vehicle
- Unlock entire vehicle
- Lock load compartment
- Unlock load compartment
- Lock front compartment
- Unlock front compartment

Wipe and heat windscreen/rear window

- Front wipers, position III
- Front wipers, position II
- Front wipers, position I
- Front wipers, wash
- Front wipers, single wipe
- Heat windscreen
- Heat rear window
- Rear window wiper, wash
- Rear window wiper, intermittent

Miscellaneous

- Buzzer ON
- Intermittent buzzer ON
- Charging active