Mercedes-Benz Upfitter Days 2024

Connectivity

Austin Michalke | Connectivity | 09/16/2024

Vans Features At a Glance

B2C Highlights

- Remote Lock/Unlock
- Vehicle Locator
- Vehicle Status

B2B Highlights

- Fleet Monitoring
- Remote Software Updates
- Accident and Breakdown Management
- Maintenance Management
- Cabin Preconditioning and Charging Management (eSprinter Only)

B2C RV and Personal

Remote Lock/Unlock

- Check Lock status and lock the vehicle if necessary
- Great for RV customers who can easily unlock the vehicle if keys are left in the RV portion of the vehicle

Vehicle Locator

- See vehicle location on a map
- Great for large parking lots or RV parks

Vehicle Status

• View the latest data from the Van, including mileage, fuel level, tire pressure, and more

Maintenance Management/Telediagnosis

- Get reminders of upcoming services and vehicles issues, and call a local dealer to book a service appointment.
- Funnels customers through the correct channels for service





B2B Small Business and Fleet



Fleet Monitoring

- Locate fleet vehicles and ensure they are locked and secured remotely
- Great for business owners who want to protect their assets

Remote Software Updates

- Get the latest software installed over the air (OTA), so the Van is optimized with the most current information from Mercedes-Benz
- Reduces downtime and dealer visits \rightarrow Time is money

Accident and Breakdown Management

• In the event of an accident, your vehicles data and position will be relayed to the Roadside Assistance Center for immediate assistance

Maintenance Management

- Get reminders of upcoming services
- Improves efficiency to be able to see maintenance needs in real time and prevent vehicle downtime

Cabin Preconditioning and Charging Management (eSprinter Only)

• Remotely Pre-Condition the cabin while the vehicle charges to make sure range is reserved for productivity





Mercedes me connect Store

What are Digital Extras?

- Mercedes me connect offers customers a variety of Digital Extras to ensure they have the most luxurious and convenient experience. Some features included* are:
 - Vehicle software updates
 - Live Traffic Information
 - Remote access to the vehicle (e.g. checking vehicle status)
 - Vehicle monitoring (e.g. parking position of vehicle)

Digital Extras are continually improving and new features are being developed for customers constantly. The store is available for both B2C and B2B customers

https://shop.mbusa.com/en-us/connect

Mercedes-Benz	0 ± 1
Welcome to the Mercedes me connect Store. Discover and purchase Digital Extras for your Mercedes Berl? Available for your 2 Digital Extras.	
Mercedes-Benz Connect Package Depending on the vehicle, the number of Digital Extras included may vary.	
Mercedes-Benz Connect Includes 28 Digital Extras Discover the Mercedes me connect services available for your vehicle. Services available may vary, depending on your vehicle's equipment.	
Mercedes-Benz	() ±
Home > Mercedes-Benz Navigation	Mercedes-Benz Navigation on-demand feature For a fast and safe arrival: latest-generation Mercedes-Be Navigation Add to basket Login
At a glance • Revolutionary voice control with natural speech recognition	

Mercedes-Benz Upfitter Days 2024

EVS – R&D

David Scharmann & Pete DeMayo | EVS - R&D | 09/16/2024

Vans Features At a Glance

- 1. Power tapping
- 2. Fuel tapping
- 3. Suspension modification & body lifts
- 4. Front & rear bumper modification
- 5. MPM/PSM and E5M extension harness
- 6. J1V Blind spot assist prep. for Cab Chassis
- 7. FR3/FR7 + F84/F85: Cameras + digital review mirror
- 8. H88: Auxiliary Heating & cooling line tie-in

David Scharmann & Pete DeMayo | EVS – R&D | 09/16/2024

1.1 Power tapping - Sprinter General technical requirement

DO NOT connect to the starter battery.

Issues if not followed:

- Parasitic draw, CAN bus issues, Failures in the instrument cluster, Dealer diagnostic service issues.



consumer

1.2 Power tapping - SprinterWiring overview in driver seat box



1.3 Power tapping - Sprinter up to 25A | Only when ignition is on/engine running

- Terminal 2: You (The Upfitter) must ensure less then 1 mA when the ignition is off.
- Idling is not recommended due to Diesel Particulate Filter (DPF) filling.

	Terminal	Voltage/fuse rating
1	Terminal D+	12V/10A
2	Terminal 30T	12V/25A
3	Terminal 15	12V/15A







1.4 Power tapping - Sprinter Auxiliary fuse box overview



1. Open slot (max. 100A Fuse)

2. Open slot (max. 250A Fuse)

3. E2I/E2M Auxiliary battery

4. E36 Cut-off relay (Supply from relay)

5. Factory occupied slot (Depending on option codes)

6. Factory occupied slot (Depending on option codes)



- E36 is designed to transfer a maximum of 80A.
- Exceeding 80 A may damage the vehicle.
- E36 is <u>not retrofittable</u>. <u>Aftermarket cut-off relays</u> must not be used due to <u>lag of Battery Management System (BMS) integration</u>.

1.5 Power tapping - SprinterIf less, then 80A are transferred over E36



E36 is designed to transfer a maximum of 80A:

- <u>A maximum of 80 A in total must be ensured by</u> <u>the Upfitter.</u>
- Upfitter installed electrical consumer <u>PLUS</u> Mercedes-Benz factory consumers <u>must be less</u> <u>then 80 A.</u>
- If total Amperage draw might exceed 80 A, a <u>current limitation system</u> with a maximum of 80 A must be installed. (see next slide)

NOTE: Always refer to the BEG for more in depth information.

Upfitter installed

1.6 Power tapping – Sprinter If total Amp draw might exceed 80 A→ A current limiter must be installed.



E36 is designed to transfer a maximum of 80A:

- If total Amperage draw might exceed 80 A, a <u>current limitation system (DC-DC converter)</u> with a maximum of 80 A must be installed.
- A current limiter allows for the installation of additional auxiliary batteries.
- Additional auxiliary batteries will support "Zero-Idle".
- Idling is not recommended due to Diesel Particulate Filter (DPF) filling.

NOTE: Always refer to the BEG for more in depth information.

Fechnical Upfitter Support | R&D | MBVans, LLC | Charleston | September 20

1.7 Power tapping – Sprinter Current limiter WARNING for eSprinter → Maximum 40A + testing required.



echnical Upfitter Support | R&D | MBVans, LLC | Charleston | September 2024

1.8 Power tapping - Sprinter Any Amperage and more then 90Ah | Separate Upfitter solution



- 1. Only Mercedes-Benz genuine parts must be used for the N62 assembly including the bracket, engine mounted belt pulley, eccentric belt tensioner and belt.
- Only alternators with a freewheel alternator pulley are permitted. Outside diameter: 50 mm/ 1.97 in
- 3. Do not transfer power from the engine while the engine is running below 1200 rpm.
- 4. Do not transfer more then 8.5 KW while engine is running above 1200 rpm.
- 5. Do not install an alternator assembly with a weight higher than 16.1 lbs.
- 6. 6. Optimum belt alignment and belt tension must be ensured by positioning the centerline and pulley of the auxiliary alternator correctly. Mercedes-Benz provides a 3D-model of the N62 assembly includes an example alternator for eXpertUpfitter on the upfitter portal.
- WIS retrofit instructions must be used when retrofitting the N62 assembly. Please consult our Mercedes-Benz Service Partner.

Upfitter installed Generator to <u>match</u> geometry and <u>position of model generator</u> shared via www.upfitterportal.com

1.9 Power tapping - Sprinter Sustained idling is critical \rightarrow On-board power storage systems required.



WARNING:

Sustained idling of diesel engines can lead to damage to the Diesel Particulate Filter (DPF). Idling for extended periods prevents the DPF from reaching the high temperatures necessary to burn off accumulated soot, leading to blockages, reduced engine performance, increased fuel consumption and costly repairs.

The DPF regeneration will start automatically when driving the vehicle. The DPF cannot be regenerated while the vehicle is parked.

Please check the DPF gauge fill level in the instrument cluster and pay close attention to DPF fill level warnings. Please keep in mind that if the DPF is not regenerated in time, the vehicle may go into "limp mode." In such event, the vehicle would then need to be examined by a Mercedes-Benz Service Partner for DPF maintenance or DPF replacement if already damaged.

Upfitter solution proposal: Install a high-capacity onboard power battery system or diesel generator.

2. Fuel tapping - Sprinter Auxiliary diesel heater connected to KL1





Connect fuel powered diesel heaters to KL1:

- Add software code J52 Fuel gauge, adapted for additional fuel tapping.
- Do not install diesel generators with a fuel return into the Mercedes-Benz fuel system.
- Diesel generators require a separate fuel system and fuel return into an Upfitter installed separate fuel tank. Please ensure FMVSS compliance.

3. Suspension modification & body lifts - Sprinter Factory suspension variants

Suspension package overview

Description
Suspension for comfort and load protection
Stabilization level I - roll stabilization with high body damping
Stabilization level II - enhanced roll stabilization with higher body damping compared to CB7
Stabilization level III - maximum roll stabilization with higher body damping compared to CB8
Rear spring vibration absorbers
Front axle reinforced
Raised rear body mounts

Contents of the suspension packages

Code	Benefit
CB1	Enhanced comfort due to adapted damper characteristics and the use of progressive
	spring characteristics.
CB7	CB7 compensates for rolling behavior due to high centers of gravity of loads or bodies. Torsion
	bars with an increased diameter are added to the front and rear axles. Furthermore, shock absorbers
	with an adapted characteristic are installed.
CB8	Additional roll stabilization and body damping compared to CB7. Increases torsion bar diameters at
	the front and rear axles and provides an adapted shock absorber characteristic. Furthermore, rear axle
	springs with increased rigidity are installed.
CB4	Suspension with maximum roll stabilization for upfitted vehicles. CB4 includes the stabilization stage
	II (CB8) with adapted springs/shock absorbers, stabilizer bar characteristics and the use of a progres-
	sive spring characteristic.
CT1	Includes vibration absorbers fitted on the left and right rear spring and lowers the resonant vibrations
	of the rear springs, thus hindering noise development.
A50	Includes an increased load capacity of the front axle, such that heavier bodies and equipment can be
	fitted. The higher capacity front axle caters for heavier cabs and special equipment (e.g. for fire-fighting
	vehicles and ambulances).
CE8	Raised body on rear axle (35mm). For RV only.

 Suspension configurations are available for customization purposes alongside the base suspension.

WARNING

Modifications to suspension system components can result in impaired and unstable vehicle handling characteristics. This could cause the driver to lose control of the vehicle.

There is risk of an accident and danger to life and limb!

For this reason, no modifications whatsoever may be made to components of the suspension system.

4. Front & rear bumper modification – Sprinter Added weight (Suspension sag) or paint can impact Radar sensors.



WARNING

Depending on the type and thickness, paints or films can cause damping of radar waves. This could lead to malfunctions or system failure. This could cause the driver to lose control of the vehicle.

There is risk of an accident and danger to life and limb!

The area of or around the sensor must not be painted or covered with a film.

WARNING

Any modifications to the front radar, its attachment to the vehicle and surrounding area, as well as any bodies, installations or conversions that affect the functionality of the front radar, are impermissible.

Otherwise, driving assistance systems may no longer work as intended.

There is danger to life and limb!

Front radar Sensor adjustment is mandatory if the if vehicle suspensions sags due to higher vehicle weight after Upfit.

5. PSM/MPM Physical connection via option code E5M – extension harness.

Output 20



- E5M to ensure a proper connection to the PSM and.
- E5M is not retrofittable.
- Upfitters who are connecting to the PSM without E5M must modify the wiring harness to match the new connectors and pin assignment of the new MY25 PSM.

6. J1V Cab chassis prep. For Blind Spot Sensor installation



Permissible range for the installation position of the radar sensors in the X and Z directions (schematic)

1 Example of any upfitter-specific body

2 Permissible range for the installation position



Permissible range for the installation position of the radar sensors in the Y and Z directions (schematic)

- 1 Example of any Upfitter-specific body
- 2 Permissible range for the installation position on the outer surfaces of the body or on a structural part
- 3 Vehicle/body width
- 4 Maximum deviation ±1.9 in (50 mm) from the vehicle/ body width



Permissible tolerance of the alignment of the radar sensor in all directions max. $\pm 1^{\circ}$, by way of example on left side of vehicle, for details see 3D design data

7. FR3/FR7 and F84/F85 Analog and digital review mirror camera installation

Code	Equipment ¹⁾
FR3	Analog reversing camera with inside rearview
	mirror display
FR8	Digital reversing camera with display via cen-
	tral display
FV 1	Pre-installation for analog reversing camera
	with inside rearview mirror display
FR7	Pre-installation for digital reversing camera
	with display via central display

 This description is intended as an explanation and is not the same as the code designation.

Available special equipment

Code	Description		
F84	Digital inside rearview mirror for cargo and		
	crew vans		
F85	Pre-installation of digital inside rearview mir-		
	rors for digital rearview mirror		





Permissible range for the installation position of the reversing camera in the Y and Z directions (schematic)

- 1 Example of any upfitter-specific body
- 2 Permissible range for the installation position
- 3 Minimum height above roadway: 21.25 in (540 mm)
- 4 Maximum height above roadway: 11.81 in (3000 mm)
- 5 Maximum deviation ± 7.87 in (±200 mm) relative to the center of the vehicle

8. H88 Auxiliary Heating & Engine Tie In



Code H88 (Preparation for additional heat exchanger), available as special equipment ex factory, allows an aftermarket auxiliary heat exchanger to be connected to the existing heater circuit (including the stationary heater). The mechanical and electrical requirements, including adjustment of the coolant quantity for reliable engine operation, must be taken into account.

I NOTE

Do not modify the cooling system or splice into the coolant lines of the engine. Coolant line modification might have a negative impact on the coolant flow leading to engine overheating or to not reaching the coolant temperature required for optimum engine operation. Risk of engine damage!

9. VC4/V42 No-drill solution for shelf mounting.



- The codes V42 and VC4 can be retrofitted if not installed ex-factory.
- V42 and VC4 offer a flexible mounting solution for mounting shelving or other upfits.
- The vertical support structure of the shelving must be standing on the vehicle floor.
- The threaded holes of the tie-down eyes (D-rings) can be used to mount the shelving to the vehicle floor.
- The tie-down eyes must be reinstalled to comply with the technical standard DIN ISO 27956 for cargo security measures.
- The shelving must be mounted to the lower load rail (V42) and upper load rail (VC4) using threaded bolt double stud fittings.
- It is recommended to design a shelving thats prevents cargo from moving (sliding forward) in case of emergency braking.
- Do not connect the shelving to the roof/roof bows.



Example: L-Track double lug threaded stud fitting 3/8" to fit V42 and VC4.

Mercedes-Benz Upfitter Days 2024

Product Session

Mercedes-Benz USA LLC | Product Update | Upfitter Event 2024





Oliver Plate

Senior Manager Product and Upfitter Management



Ishas Jolly

Sales Engineer Product and Upfitter Management

01

Sprinter Product Update – MY25



Mercedes-Benz USA LLC | Product Update | Upfitter Event 2024

What does the Sprinter bring?



MY25 Product Update Moving Off Information System (JF7)





- Monitors area directly in front of (~12 ft/3.7m) and next to (~1.6 ft/0.5m) the Sprinter up to speeds of 6 mph/10 kph
- Includes a front camera as well as six ultra-sonic sensors and automatically active once vehicle has started
- If road user is detected in the monitored area, driver is first informed by a visual information signal
- If collision imminent, an acoustic and visual warning signal is generated – no braking process initiated
- Can be deactivated via instrument cluster/MBUX

5

Sideguard Assist (JT7)



- Warns driver when road user (e.g bicycle, pedestrians) is detected in the defined blue information or red warning zone on passenger side
- If object enters blue zone, LED in exterior mirror (same as blind spot) illuminates
- If an object enters red warning zone and turn signal is used, LED flashes and driver warned by acoustic sound and visual display
- Passive system no braking process

6

Can be deactivated via instrument cluster/MBUX

Child Detection in Vehicle (SK6)

Do Not Leave People or Animals in the Vehicle

- Warning system reminding drivers of people/animals in the rear
- Standard on crew and passenger vans
- > Warning populated if:
 - Rear door/sliding door open (>12 seconds) + journey of 3 mins
 - Rear door/sliding door open (>12 seconds) + vehicle stationary + ignition ON for > 3 mins
- > No warning if ignition OFF at journey end AND:
 - Rear door open (>2 seconds) OR
 - Vehicle is locked

7

Active Brake Assist (BA3)





- ➤ Enhanced brake accuracy avoiding collisions with stationary vehicles in front (speeds ≤ 50 mph) - previously 37 mph
- New: supports braking process in vertical crossing (speeds ≤ 37 mph) and turning (speeds ≤ 25 mph)
- New: supports braking process with opposing lane vehicles (speeds ≤ 44 mph)

Active Lane Keeping Assist (JB4)





On <u>and not</u> ready	On <u>and</u> ready both side	On <u>and</u> ready one side	Steering intervention	Warning (red element flashing)	Off	System failure
≯:∖*	7:5	7 1	7 🔨	7 🔨		

- Initiate targeted, lane-correcting interventions via ESP
- Does not brake back into lane, but steers it by selectively braking individual wheels
- Enhanced detection accuracy for road edges (lines, grass, curb etc.)
- Visual and acoustic warnings coupled with steering wheel vibrations

3D Surround View with 360° camera (JB6)





- Expands existing parking package with 360° camera functionality – better assessment of surrounding
- Image shown in head unit and can be rotated and scrolled
- PARKTRONIC integrated into image, shown by blue 'fence'
- > Operates at speeds up to 6 mph

MY25 Product Highlight

Key Geometrical Change #1



3D CAD available on <u>www.upfitterportal.com</u>

- Enhanced measure for passengers
- Additional striker on B-pillar by sliding door, mated with additional latch under sliding door handle
- Latch opens automatically when door opened
- Standard on passenger and crew vans, available as option on cargo vans
- Check for interference!


MY25 Product Highlight

Key Geometrical Change #2



MY24 Sprinter

MY25 Sprinter

3D CAD available on www.upfitterportal.com



MY25 Product Highlight

Outside Paint - Iridium Silver phased out





New: Hightech Silver

Phase out: Iridium Silver

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Product Highlight

Cab Chassis 3500XD/4500



144"/170" Wheelbase



11,030 lbs/12,125 lbs GVWR



Up to 7,506 lbs payload



15,250 lbs GCWR



AWD version available with increased ground clearance



Product Highlight

Cab Chassis 3500XD/4500 – Cab Customization



FW1 – Rear wall deletion



F28 – Rear wall and roof deletion



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Product Highlight

Cab Chassis 3500XD/4500 - Dimensional Considerations



- The maximum box height is 109 in (measured from the top of the chassis frame to the top of the box) or 138 in (measured from the ground level).
- If roof mounts on top of the box exceeds the height of 157 in (measured from the ground level), then option code JA8 needs to be deactivated by activating option code JAO. (Please reach out to the nearest local dealer for deactivation).





The following diagrams and tables show the general and the maximum side surface areas of Sprinter cab chassis vans. he point of origin for the dimensions as well as for the 3D data (available for eXpertUpfitters on www.UpfitterPortal.com) located in the middle of the front axle.

	Dimension		Comment		
	144"	170"			
g	3665 mm/144 in	4325 mm/170 in	Wheelbase		
h	1850 mm/73 in	2200 mm/87 in	Maximum permissible overhang for vehicles equipped without option code X2R. Does not require an UPFITTER MANAGE- MENT VANS review.(See chapter 6.2.4 Overhang extension (→ page 118))		
1	2200 mm/87 in 2600 mm/102 in		Maximum permissible overhang for vehicles equipped with option code X2R. The overhang value does not include small rear protru ing components (e.g. spare tire, bike rack attachments). Does require an UPFITTER MANAGEMENT VANS review. Visit www.UpfitterPortal.com (See chapter 6.2.4 Overhang extension (→ page 118))		
J	1300 mm/52 in	1300 mm/52 in	Maximum permissible height of center of gravity (4.1.2 Maximum permissible position of the center of gravity (→ page 62) For vehicles with center of gravity height greater than 1,000 mm, please refer to section 4.2.1 'Suspension of Sprinter - BR907' (→ page 72).		

02

eSprinter Overview

Mercedes-Benz USA LLC | Product Update | Upfitter Event 2024

MY24 All-New eSprinter

The Future of Electric is Here



MY25 All-New eSprinter

The Future of Electric is Here





*Based on full charge. Demonstrated range reflecting current capability is based on testing consistent with US EPA MCT drive cycle methodology (www.fueleconomy.gov/feg/pdfs/EPA test procedure for EVs-PHEVs-11-14-2017.pdf). The actual range varies with conditions as it depends on the individual driving style, road and traffic conditions, outside temperature, use of climate control/heating system, etc.

Charging Components Overview

--DC Contact Box

Controls charging plug and manages communication to and from onboard charger. Separates charging plug circuit and other HV components in a collision event to immediately shut down system.



Charging Plug ------

Combined Charging Socket Type 1 (J1772 type) located in front behind Mercedes-Benz star. AC and DC charging with the bottom 2 poles

-----AC Onboard Charger

Converts AC voltage (Level 2 charging up to 9.6 kW) to HV DC for batteries.

HV Cables

Orange cables signaling 400V lines – only authorized personnel should handle.



---DC/DC Converter

Down-rates voltage from HV battery to support 12V consumers (replaces classic alternator in ICE vehicle)



High Voltage Battery – Lithium Iron Phosphate (LFP)



Coolant Lines -----

Active thermal management includes waterbased heating/cooling lines ensuring battery operation is optimal.



Crash Structure Protection Battery body installed underneath van – no cargo space limitations. Rigid structure mounts to frame Additional 5 mm/0.2" aluminum protection plate around battery.

HV Battery Masterbox Intelligent battery control that is connected directly to DC Contact Box

Rear Axle + Motor



--Support Frame Modular carrier for electric drive on rear

axle

GFP Spring Leaf Fiberglass rear spring enhancing rigidity and reducing weight



Electric Powertrain

Contains electric motor (two variants available 100/150 kW), transmission and power electronics

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Additional Electric Components



Electric Vacuum Pump

Ensures operation of brake booster by creating an additional vacuum pressure. Located next to the DC contact box.



Sound Generator (Front)

Increases sound for other road users due to EV silent operation. Active up to 18 mph and switches off once speed is over. Sound is heard at standstill or in 'N'. Located in the frame directly under driver cabin.



Sound Generator (Rear)

Increases sound for other road users due to EV silent operation. Active up to 18 mph and switches off once speed is over. Sound is heard at standstill or in 'N'. Located in front of electric powertrain

Driving Programs Standard - eSprinter



Balanced between Full power/electrical Focus on maximizing power/torque and consumer capability range comfort Comfort Max Range Eco

Range

*both motors are technically capable of 400 Nm/395 ft-lb ensuring that if max. power is requested via kick down (start up on a hill, entering a freeway via ramp etc.) it will be provided

Torque

Regenerative Braking Standard - eSprinter



Functionality

- Different levels are selected via the paddle shifters on the steering wheel
- Brake lights are activated with D, D- modes and at regenerative speeds of -1.2 m/s² or greater
- Regenerative braking strength depends on various factors (e.g. vehicle weight, driving situation etc.)
- D auto provides unique functionality with an automatic adjustment of regeneration based on radar and live map data

Benefits

Variety of regenerative braking modes provide maximum flexibility to driver

eSprinter Assistance Systems



03

MY25 Commissioning Process

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Mercedes-Benz USA LLC | Product Update | Upfitter Event 2024

MY25 Commissioning Process Updated Process

- Commissioning process established to ensure proper function of factory ADAS systems (blind spot, DISTRONIC etc.) with an upfitted body attached to chassis frame
- Required on all cab chassis units
- "Commissioning by body manufacturer incomplete" illuminated until commissioning process is completed
- Requires XENTRY Diagnosis kit or can be carried out at Mercedes-Benz authorized dealership



MY25 Commissioning Process Updated Process

- Step 1: Systematic procedure ensuring vehicle data card is documented with upfit (length, width, height, additional doors etc.) – O codes
- Step 2: Depending on vehicle specification, individual control units must be configured
- XENTRY kit has step by step instructions on each control unit
- Upfitter responsible for ensuring that the documented equipment (O-code) in the vehicle data card corresponds to actual body condition of the vehicle





04

MY25 PSM



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Mercedes-Benz USA LLC | Product Update | Upfitter Event 2024

MY25 PSM Update Updated generation



MY24 and previous models PSM





MY25 PSM







Increased PLC groups, logic modules



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MY25 PSM Update Current custom programs need to be re-created/converted

Scenario 1

Upfitter connection at PSM module (ED5) directly

Harness needs to be <u>re-designed</u> due to PSM pin and connector block changes – PSM custom file request

Submit PSM request via upfitter portal (PSM file request) Time consuming and longer lead times





Scenario 2



THANK YOU

Mercedes-Benz Upfitter Days 2024

Upfitter Management

Brock Duwel & Danielle Schaefer | Upfitter Management | 09/16/2024

Welcome!



Agenda

eXpertUpfitter Program Overview

eXpertUpfitter Program Benefits

Upfitter Portal Highlights

2025-2026 eXpertUpfitter Program Reapplication

Brock Duwel & Danielle Schaefer | Upfitter Management | 09/16/2024

01

eXpertUpfitter Program Overview

Brock Duwel & Danielle Schaefer | Upfitter Management | 09/16/2024

eXpertUpfitter Overview





6







eXpertUpfitter Program Mission



This program offers tools that assist in the development of solutions to match the quality of a Mercedes-Benz vehicle. Through this program, our goal is to offer the highest level of customer satisfaction when purchasing eXpertUpfitted Mercedes-Benz Vans.



QUALITY BEG Compliance

Customer Experience



SERVICE Information MBUSA Liaison





02

eXpertUpfitter Program Benefits

Brock Duwel & Danielle Schaefer | Upfitter Management | 09/16/2024

eXpertUpfitter Program Benefits

Delayed Start Warranty





Technical Resources

Drop Ship







eXpertUpfitter Program Benefits: Delayed Start Warranty

Terms

Matched Limited Warranty

- 3 year / 36,000 mile limited factory warranty for van + upfit* Limitations
- Must begin within 24 months or 3,500 miles from factory production date of the van **Warranty Start Date**
- Begins when vehicle sold to end customer. Default warranty start date = original retail date

Eligibility

eXpertUpfitter

At time of MBUSA retail, upfitter needs to be in good standing in Program **STB Code**

- MBUSA dealer must add Sale To Bodybuilder code ("STB") prior to retail date via Netstar **eXpertUpfitter Entry**
- eXpertUpfitters are responsible for submitting DSW start requests via UpfitterPortal
- Must use assigned Token Code

* NOTE: Not all eXpertUpfitters match our factory warranty, please check with your MB USA Sales Representative for specific details.

eXpertUpfitter Program Benefits: Delayed Start Warranty



24 Month Activation Window

If end customer sale occurs after Activation Window, DSW start date begins 24mos after van production *STILL MUST SUBMIT DSW FORM



 * NOTE: Not all eXpertUpfitters match our factory warranty, please check with your MB USA Sales Representative for specific details.

eXpertUpfitter Program Benefits: Delayed Start Warranty

Navigation

1		
-		
-		

2

3

upfitterportal.com (no login required)

"Resources" (top toolbar)

"Delayed Warranty Form" *(dropdown menu)*



By Submitting this Form on Date of 8/31/2022

- I understand that all information regarding this vehicle (e.g., Recail and Field Service Campaigns, etc.) will be mailed to the above (Customer) name and address. I acknowledge receipt of the applicable Owner's Service and Warranty Information book and accept the terms and conditions set forth therein including the Limited Warranty, Warrant
- Licentify that I have received the applicable Maintenance Manual and the Operator's Manual
- I acknowledge that I have been instructed on how to correct fifth wheel operation (if applicable
- I acknowledge that the Federal Safety Standards and Emission stickers are affixed to the driver's door frame.

Data Entry

Token

Enter assigned token. Located in Profile

Vehicle Info

- "Date of Service" Sale date to end customer. Documents warranty start date
- Mileage cannot exceed 3,500

Customer Info

 Customer receives automated message with warranty details

Customer Info Update

- Email above information to:
 - mercedes_benz@mailca.custhelp.com

eXpertUpfitter Program Benefits: Drop Ship





Delivery to your facility + additional alternate locations

Cost and Time Efficient



U Code Requests Email to upfitterinfo@mbusa.com: Location Contact Info Model Family

eXpertUpfitter Program Benefits: Technical Resources



Dealer Publications

BEG + Bulletins Dealer Ordering Guide Equipment Book



2D & 3D Imaging

All Models/Model Years Special Requests



Engineering Support

Priority Inquiries Upfitter Impact Study (UIS)

eXpertUpfitter Program Benefits: Marketing

Social Media



MBUSA Marketing Integration Broad Visibility

Special Events



Brand Ambassador Promotions & Tradeshows

Upfitter Portal



Upfitter Profile Page eXpertUpfitter Locator


Upfitter Portal Highlights



15

Brock Duwel & Danielle Schaefer | Upfitter Management |

Upfitter Portal: Inquiries

Navigate

• Select ASK A QUESTION on home screen top menu bar

Contact Info

• Enter your company information

Topic

• Select appropriate category from dropdown menu

- Vehicle Info

- Details will help with accurate, speedy resolution
- Additional fields will populate based on the topic selected
- Program related topics will provide a free text box to enter details related to the inquiry

	HNICAL INFO SUPPORT		
Company*	Contact Name*	Contact Name Position*	I have a question regarding* Select an Option
			Product Management
Phone Number*	Email Address*		Product (Van Specifications, Dimension, Option Codes etc)
			Upfitting: Electrical
I have a question regarding*	\sim		Lights
Select an Option			Connectivity
	-		Power Supply
Model Year*	Family*	Build Un*	Other Electrical
2021	▼ Select an Option ▼	Select an Option	Upfitting: Mechanical
Tonnage*	Length*	Engine incl. drivetrain*	3D Data Request
Select an Option	▼ Select an Option ▼	Select an Option	Body / Chassis
Roof*			Measurements
Select an Option	•		Other Mechanical
Detailed Brief of Your Inquiry*			Upfitting: PSM
			PSM Inquiry
			Program
			Delayed Start Warranty Activation
			eXpertUpfitter Program
		0 / 500 characters used	Aftersales
	The second se		Retrofitting an option / Needing a part

Other

The Upfitter Portal is secure. Please maintain communication in Portal vs, email?

Upfitter Portal: Upfitter Impact Study (UIS)



Definition

• In-depth Mercedes-Benz Engineering review of a proposed modification that doesn't conform to the BEG

Criteria

- Outside scope of BEG
- Meaningful business case
- Conformity to Federal & State regulations



Upfitter Portal: eXpertUpfitter Locator

Search Enhancements

- eXpertUpfitter Name
- Nationwide search by company name

Distribution Network

• Display independent contracted distributors

Alternate Locations

• Display all satellite upfit facilities (not just primary/HQ location)

Templates emailed October 2024



Upfitter Portal: eXpertUpfitter Profile



Test	Edit Profile
mbvans.com/upfitter	Administrator Updates
Profile Build	Contact Details
Metris and Sprinter	test Sales
Sell Sheets and Brochures	8438888888 test@test.com
Download	resignes.com
Company Overview	Upfit Industries
test	Address
Detail Information	test drive
test	test, South Carolina I United States
Photo Galleny	

Update

Contacts Industries/Segments Addresses

Maximize visibility across dealer network

2025-2026 eXpertUpfitter Program Reapplication



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Brock Duwel & Danielle Schaefer | Upfitter Management |

eXpertUpfitter Program Reapplication



Reapplication prompt upon October 1 login

 Review/Update
 Download New
 Officer eSign &
 New Certificate

 Profile
 Agreement
 Return via
 Generated

 Email
 Email
 Email



Thank you!



Mercedes-Benz Upfitter Days 2024

Vans Service Engineering

E. Handly, C. Darby, and J. Vnuk Vans Service Engineering | 09/5/2024

Agenda

1.	Introductions	ALL
2.	Startekinfo Portal	E. Handly
3.	Maintenance and Storage	C. Darby
4.	Lift points	E. Handly
5.	Wheel/Tire Best Practices	C. Darby
6.	Electrical repair	J. Vnuk
7.	OBD2 and CAN modifications	J. Vnuk
8.	Front Radar Sensor Adjustment	ALL
	• Total: 45min (15min Q&A)	



2

Vans Service Engineering Team Introduction



Vans Service Engineering Team



Startekinfo Portal





What is the Startek Info Portal?

The portal is a website front end for independent service providers that is managed by MBUSA Service Engineering but hosted by Mercedes-Benz GSP. The ISP portal provides the possibility to subscribe to the below applications. The user can purchase hardware (Xentry Diagnosis) and subscribe to information systems (TIS, Xentry WIS, XPPI, Xenty operation time, Xentry TIPS).

MBUSA ISP Portal About-Site

🖋 What's New?	DTS Search	CV Bulletins	CV Wiring
CV Intro	Øperator Manuals	Diagnostic Info	🕜 Legacy Data
CV Workshop Resources	C VeDoc	Daimler Special Tools	Daimler Equipment
Maintenance Sheets	Pre-Delivery Inspection	Warranty Information	Temporary Postings
🕑 Help	XENTRY/XSF/DAS4/pXD	Upfitter Section	Theft Relevant Parts Info

What is the Xentry Ecosystem

Product Line



*Xentry devices are available for purchase with 42mo Software. All device Start key software subscriptions can be renewed after initial period ends.

**Xentry App subscriptions offered individually for annual, monthly or weekly fee

***Pass Thru Software offered as 12mo subscription to function on J2534 interface device

Application Details

Available App subscriptions



Technical Information System: MBUSA Literature and Manuals (Startekinfo)



Xentry Parts Information: Online Parts Catalog



Xentry WIS: Workshop Information System for Work Instructions



Xentry Operation Time: Xentry Damage Code



Xentry TIPS: Local Information Service Bulletins (TSB)



XFLASH Xentry Role

a chaical Information for Drahlam Colving) provides access to worldwide to chaical information

(Technical Information for Problem Solving) provides access to worldwide technical information, LI bulletins and solutions for a very wide range of complaints across all service levels.

Gives the user the ability to SCN code and program control units. Examples: Camera Installation, PSM Programing, Distronic Calibration, MY25 Commissioning, Blind Spot assist installation, Digital rear view mirror

submissions.

Technical Information subscription contains our local contents information, including Star Wiring, Star Bulletins, Star Intro, Operators Manuals, Diagnostic Info, MB Workshop Resources, MB Special Tools, Telematics, Maintenance Sheets and Pre-delivery Inspection Sheets.

Description

Spare parts documentation for Mercedes-Benz cars, Vans and smart vehicles sold in the USA. This is the same application used by Authorized Mercedes-Benz Dealers worldwide to specify spare parts.

Repair, diagnosis and maintenance documents, Wiring diagrams, tightening torque, fluid specs, tools, safety information, forms and documents

Can be used to view labor operation times and look up the damage code for warranty claim

Maintenance and Storage



Storage Best Practices (non-operational time greater than 4 weeks)

Preparation for Storage Charge batteries to 12.55 Increase tire pressures to Fill fuel tank Remove keys Inspect paint protection S S R R ш RIE volts with 'smart' battery ERIO ш 68 psi EXTERIO preservation material Do not store with Bio-Diesel Open air vents IR charger Cover tires to prevent UV (greater than B5) ш Disconnect 12 volt batteries damage E INT (ICE vans only) \triangleleft HV battery (eSprinter) m maintain 30-50% SoC at all times Maintenance During Storage Charge Batteries every 4 Move vehicle every month Drive vehicle every month Inspect for signs of rodents, Inspect paint and paint S S S ERAL R RIE weeks with a 'smart' battery ш to prevent flat spots LL I to remove brake rotor pests, or environmental protection preservation \bigcirc BRAKI RIC $\boldsymbol{\alpha}$ surface rust damage material's expiration date charger Check tire pressures every ш Do not idle van to charge EN ш 3 months EXT batteries <u>ר</u>) HV battery (eSprinter) m maintain 30-50% SoC at all times Taking Vehicle Out of Storage Charge batteries with Correct tire pressure Replace/flush brake Check engine coolant Wash vehicle S S Ц S ш ERIE Z Т Т ERIO ш level & condition 'smart' battery charger fluid if van parked > 6 Lubricate rear door Road test and check R ENG] months \triangleleft Do not idle van to for vibrations Change engine oil & hinges \mathbf{r} Check brakes for filter if parked > 12 charge batteries EXT \mathbf{m} months corrosion 4 Check condition of m batteries, replace if Road test, check Replace AdBlue[®] (DEF) if parked > 12 months operation necessary

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eSprinter High Voltage Battery Charging Guidelines

To guarantee a maximum service life for the high voltage battery and to avoid any consequential damage, the upfitter should <u>maintain a high voltage battery State of Charge (SoC) between 30% to 50% at all times</u>. Do not disconnect 12 volt battery.

HANDOVER SoC REQUIREMENTS

Depending upon the vehicles' final destination, the following SoC levels should be maintained prior to transport



Lift Points



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Lifting Sprinter vs eSprinter

References AH00.60-P-0100-01TS Special instructions for lifting and supporting vehicle

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Sprinter Cargo/MPV Lift points

Must access the leaf spring mount at rear and pinch weld reinforcement at front



eSprinter Cargo Lift points

Must access the rear axle carrier mount at rear and pinch weld reinforcement at front

Tire & Wheel Best Practices



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New Tire Pressure Monitor System for 2025:

Tire Pressure Control (dual rear wheel) (**RY2**)

- Tire pressure monitor system is now available for dual rear wheel vehicles in all tires.
- New system uses new orange tire pressure sensors (A000-905-28-16)
- Vehicles with SA code RY2, the spare wheel is also equipped with a pressure sensor. The spare tire sensing is activated after replacing the damaged tire.
- Some aftermarket wheels may not be compatible and could damage sensors.



ID Code

ID code is located next to the part number

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Field Topic: Super Single Wheels

Super Single (R9A)

- Sprinter 3500/3500XD's equipped with the super single rear axle (SA code R9A) have larger, higher load capacity rear wheels and tires.
- A temporary-use adapter is provided so the spare tire can be used on the front or rear for emergency use only.
- Wheels designed for use on the front axle must not be permanently installed on the rear axle due to a difference in load rating of the wheels.
- These wheels have cracked from an overload condition when used on the rear.



Gross mass	Equipment	Tire size
Reference: 1500/2500		LT245/75 R16 120/116Q
	2	LT245/75 R16 120/116Q
Reference: 3500/3500XD	1 (on front axle)	225/75 R16 C 121/120R (122L)
Super Single	1 (on rear axle)	285/65 R16 C 131R
	1 (as spare wheel)	225/75 R16 C 121/120R (122L)
Reference:		LT215/85 R16 115/112Q
3500/3500XD/4500	2	LT215/85 R16 115/112Q



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Field Topic: Aftermarket Wheel Balancing

Technical Background

Complaint: Vibration while driving

Mercedes-Benz Vans dealers must be able to balance wheels & tires in order to properly diagnose vibration complaints.

MB Vans dealers use an OEM-specific Haweka wheel adapter to balance OEM wheels.

Some aftermarket wheels have inconsistent bore dimensions making balancing with the Haweka adapter impossible.

Some MB Dealers may not be able to balance these aftermarket wheels.



Field Topic: Aftermarket Wheel Dimensions

Technical Details

Complaint: Tire vibration while driving

Cause: The clearance between the inner diameter of the aftermarket wheels is too close to the brake caliper, causing the wheel weights to be knocked off and damage to brake calipers.



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6.1.5 Wheels/tires

 Only fit wheels or tires of a type and size approved by Mercedes-Benz for your vehicle model and observe the tire load capacity required for your vehicle and the tire speed rating.

In particular, comply with national regulations concerning the approval of tires. These regulations may define a specific type of tire for the vehicle or may forbid the use of certain tire types which are approved in other countries.

If you have other wheels or tires (not approved by Mercedes-Benz) fitted,

- wheel brakes and components of the suspension system may be damaged
- wheel and tire clearance can no longer be guaranteed
- wheel brakes or components of the suspension system may no longer function correctly

The upfitter must ensure that:

- there is always sufficient space between the tire and the fender or wheel arch, even when snow or anti-skid chains are fitted and the suspension is fully compressed (also allowing for axle twist)
 (→ page 114) and that the relevant data in the 2D chassis drawings (offer drawings) (→ page 18) are observed.
- only wheels and tires approved by Mercedes-Benz are used (see vehicle registration document, 2D chassis drawings (offer drawings) (→ page 70) or the table below).
- More information about tires and wheels is available from any Mercedes-Benz Service Center or under 3.12 Special equipment (→ page 55).

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Electrical Repair



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Reasons for harness repair:

- Physical damage to harness
- Physical damage to electrical connection
- Physical damage to connector housing

Standards for wire harness repair:

- Follow repair methods using available resources such as WIS, XP
- Use only MB tools approved for wire harness repair
- Use MB original parts and materials to repair damage
 - Pin terminals, connectors, fabric tape, shrink tubing, etc.
- Wire harness repair up to Mercedes-Benz factory standards!
- No difference in function or quality to brand new harness!





Please see WIS Document AR00.19-D-0100A on general repair methods of wiring harness repair

General repair notes:

- If more than 10 wires per harness branch-off are damaged the harness should be replaced
 - Open Upfit for second opinion if wiring harness replacement is questionable
 - Complete wire overlay does not count toward 10-wire rule
- Shielded wires and sheathed cables cannot be repaired
- Wires \geq 6mm² cannot be repaired
- SRS related components have separate specialized repair procedures
 - Plugs/Connectors with yellow, orange, green or red colored housings
- Pin terminals not available separately may be supplied as pigtail
 - Pin terminals are crimped on cable ends

Mercedes-Benz Upfitte	r Days 2024
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AR00.19-D-0100	A General repair methods for	r wiring harness	14.01.202
Model all (H	leavy transporter, Light transporter)		
<u> </u> Caution	Risk of injury caused by burns to skin and eyes, risk of poisoning caused by inhaling fumes during soldering.	Wear protective gloves, protective clothing and safety glasses. Ensure that the work area is adequately ventilated. Secure power supply cables. Avoid sources of fire in working area.	AS00.19-Z-0002-01A
A Caution	Risk of injury caused by burns to skin and eyes. Risk of poisoning caused by inhaling fumes when working with heat- shrinkable tubing.	Work in well ventilated rooms only. Wear safety glasses with side protection and protective gloves.	AS00.19-Z-0001-01A
Warning	Risk of injury. Skin or eye injuries may result when handling hot or glowing objects.	Wear protective gloves, protective clothing and safety glasses, if necessary.	AS00.00-Z-0002-01A
Topical note	Notes on replacement of safety-relevant and special components		AH00.19-P-1000-08A
	Repair wiring harness		
1	Expose repair point	 Remove insulating tubing, corrugated hose or fabric tape. Disassemble electrical connector and remove contact if necessary. 	
2.1	Repair wiring harness using connector sleeve	Where several lines are connected.	4P00 10 D 0100 004
		9 Adapter	220 589 01 99 42
		S Reflector	220 589 01 99 42
		9 Wire stripper	220 589 01 99 40
		9 Welding bead catcher	129 589 01 98 00
2.2	Repair wiring harness by means of axial solder connectors	When replacing or inserting line sections.	125 385 61 56 66
			AR54.18-D-0100-06A
		(g) Adapter	220 589 01 99 42
		g Reflector	220 589 01 99 41
		g wire stripper	220 589 01 99 40
		g welding bead catcher	129 589 01 98 00
2.3	Repair wiring harness by crimping	For example, for damaged or oxidized contacts	
		condets.	AR00.19-D-0100-03A
		1 gr JPT crimping set listed	
		representative for all [3] crimping sets.	
		C cimping set	220 589 01 99 05
		Crimping Set overview Of Wire stripper	220 589 04 99 01
		9 Crimo pliers	220 569 01 99 40
		9 Crimp set overview	000 589 13 99 01
		S New passenger car wiring harness	220 589 04 99 00
		repair kit	
		g Wiring harness repair kit, basic	000 589 13 99 00
2.4	Repair wiring harness by crimping with watertight connections	For damaged or oxidized contacts in wet environments.	AP00 19-D-0100-044
		1 9 JPT crimping set listed	100-0100-04A
		representative for all 🛐 crimping sets.	
		191 IPT crimping set	220 589 01 99 05
			220 303 01 33 03
		Crimping set overview	220 589 04 99 01
		③ Crimping set overview ③ New passenger car wiring harness renair kit	220 589 04 99 01 220 589 04 99 00
		Crimping set overview Provide the set overview New passenger car wiring harness repair kit Wire stripper	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40
		Crimping set overview Yow passenger car wiring harness repair kit Wire stripper Y Crimp pilers	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40 220 589 01 99 10
		Crimping set overview Solver passenger car wiring harness repair kit Wire stripper Crimp pilers Of Crimp set overview	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40 220 589 01 99 10 000 589 13 99 01
		Crimping set overview Crimping set overview Pow passenger car wiring harness repair kit Wire stripper Crimp pilers Crimp set overview Wirg harness repair kit, basic	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40 220 589 01 99 10 000 589 13 99 01 000 589 13 99 00
2.5	Repairing cable harness by soldering	Image: Crimping set overview Image: Crimping set overview Image: Crimp pilers Image: Crimp set overview Image: Wiring harness repair kit, basic When using soldering eyes.	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40 220 589 01 99 40 000 589 13 99 01 000 589 13 99 00 AR00.19-D-0100-05A
2.5	Repairing cable harness by soldering	⑦ Crimping set overview ⑦ New passenger car wiring harness repair kit ⑦ Wire stripper ⑦ Crimp pilers ⑦ Crimp set overview ⑦ Wire paress repair kit, basic When using soldering eyes. ⑦ Wire stripper	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40 220 589 01 99 10 000 589 13 99 01 000 589 13 99 00 AR00.19-D-0100-05A 220 589 01 99 40
2.5	Repairing cable harness by soldering	Crimping set overview Crimping set overview Point Total Total Crimp pilers Crimp pilers Crimp set overview When using soldering eyes. When using soldering eyes. Wing harmesr epair kit, basic	220 589 04 99 01 220 589 04 99 00 220 589 01 99 40 220 589 01 99 40 220 589 01 99 10 000 589 13 99 01 000 589 13 99 00 AR00,19-0100-05A 220 589 01 99 40 129 589 01 99 40

ercedes-Benz AG, printed: 2024-09-16, P/09/24, , AR00.19-D-0100A

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Wiring Harness Repair Methods

- Raychem End Solder Connector Sleeve
- Raychem Axial Solder Connector Sleeve
- Terminal (pin) Replacement
- "Pigtail" Repair Harness
- Harness Replacement



Wiring Harness Repair Tools

Wiring Harness Repair Kit

- Universal Crimping Tool
- Crimping Die Set
- Wire Stripper
- Pin Terminal Removal Tools
- Pin Terminals
- Insulation Stripping Tool









- SRS systems wiring harness repair is regulated under separate rules
- Plugs & Connectors with yellow, orange, green or red colored housings are reserved for SRS systems
- Perform repairs only on de-energized vehicle
 - Ignition off & key removed
 - System, starter, and/or backup battery disconnected
- Only **ONE** pin terminal may be removed from housing at any given time (remove one, insert, then remove next)
 - i.e. Repairing several wires on one connector or replacing housing



SRS repairs allowed:

- Damaged wire
 - Repair needs to be at least 100mm (approx. 4 inches) away from SRS ECU connector

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- Damaged housing or pin terminals of X connectors at:
 - Cockpit
 - Doors
 - Seats
 - Frame floor system wiring (interior harness)
- Damaged housing or pin terminals of component plug at:
 - Clock spring
 - Sidebag / Up-front sensors
 - Seat recognition / Child seat recognition sensor
- Damaged plug or pin terminal at an SRS Airbag or Seatbelt squib element:
 - A repair harness solution is offered for these cases

SRS repairs not allowed:

• Damaged housing or pin terminal at SRS control unit:

Complete wire harness replacement is required due to risk of incorrect pin terminal placement Note: Outside housing / connector lock may be replaced

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- Pigtail repair solution on wire leading to SRS control unit connector:
 - Complete wire harness replacement is required
- Damages that results in very complex repairs

SRS repair options:

- Pin terminal replacement
 - ONLY use Gold (AU) plated pin terminals
 - Follow same procedure as with general repair
- Raychem Solder Connector Sleeve
 - Use two Raychem solder connectors & extra wiring to add length to reduce stress if needed
 - Only allowed option to repair damaged wiring
 - Use of Raychem Axial solder connector sleeve is not desirable
- Pigtail solution in combination with Raychem solder connector
 - Pigtail with gold (AU) plated pin terminals

SRS squib plug repair harness option:

- Repair harness can only be ordered with a vehicle VIN
 - Same procedure / documentation as other safety relevant components
- Repair harness consist of plug and about 6 ft. of cabling
 - Plug differences among systems make XP look-up necessary
 - Connect repair harness using Raychem Solder connector
 - General Raychem repair rules apply
 - Place Raychem solder connectors within 100mm 1000mm of plug
- Identify repair harness installation wrapping yellow tape around cable on squib plug side
 - Yellow Tape available commercially
 - If subsequent repair is necessary previous repair must be removed

Install Yellow Tape indicating repair



Wrap fabric tape around repaired section

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XENTRY Parts (XP)

XENTRY Parts supports wiring harness repair by offering the following:

- Pin Terminal information
- Connector information
- Tools applicable for pin terminal extraction and crimping
- Pigtails





07 OBD2 and CAN modifications



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Diagnostic errors due to additional electronics

- > Engine control units support a standardized diagnostic interface for engine and vehicle data due to OBD legislation (SAE J1979, ...)
- > Device manufacturers use this OBD interface to transfer vehicle data because it works in every vehicle, regardless of the manufacturer,
- Fleet Management Systems
- Vehicle Tracker
- Telematics systems, data loggers
- Additional immobilizers, remote start systems
- OBD Dongle (Bluetooth)
- Connection:
- Parallel to the diagnostic box (Y-cable) 1
- "Power thief" at the diagnostic CAN behind the diagnostic box 2
- CAN Distributor



Diagnostic errors due to additional electronics

- Diagnostic sessions with higher privileges are required for certain diagnostic functions (Extended Session, Flash Session, Access Permission, ...)
- > Engine control units can only communicate with one tester at a time.
- > If another device starts a diagnostic session with normal rights, the XENTRY diagnostic session loses its higher privileges. Next: Calls to diagnostic services that require higher privileges fail
- Effected:
- Commissioning operations (flashing, SCN coding)
- Delete fault memory (within test sequences)
- Teach-in processes



Diagnostic errors due to additional electronics

Measure 1: Diagnostic session

- Explicitly start an Extended Session before calling relevant diagnostic services
- → Risk of auxiliary electronics resetting the diagnostic session is minimized
- e.g. delete fault memory

Action 2: Hint

Notification screen before each commissioning process

	> <u>Di</u> > N3/40	- Motor electroni	cs 'MRD1' for comb	ustion engir	e 'OM654' (CDI)	(c টা 12.0V	Ignition ON	- 🗶 🏮	🕽 🐴 i		t
	Special procedures List			t of fault codes Tests		Troubleshooting via complaints or symptoms					
佡	Version	Error co	odes / Events	Ac	tual values	Actuations	Adapta	ations	Contro	ol unit log	
	Selection Commissioning Control unit up Updating of Configuration Teach-in proces	date control unit softwa SCN coding sses	re Tre Tre Tre Tre Tre Tre Tre T	ng of SCN of tant note hally installed tic processe rol unit initia ating of contr ating of SCN of problems n of the diagr e: enmanagem racke matik-System -Dongle (Blu ote start fund e installation nostic conne D (Diagnost potential dis	eoding I electronic devices s. Communication startup ol unit software coding please check wh nostic session. entsysteme r, b, Datenlogger etooth) tion, Engine run- locations: ctor (Y-distributor c CAN) tributor (CAN C (I	es that do not corres with the control un ether additional ele on) Drive CAN),CAN C1	spond to the stand it 'Engine' can tak ctronic devices are (Engine CAN),CAI	ard version (e place in pa installed ar	can interfere wil arallel. nd deactivate th pherals CAN))	th em for the	^
			Press b	utton 'Contir	ue' to continue.						~
			~							Continue	

Field Topic: High Idle / Remote Start

Fechnical Background

The use of the High Idle/Remote Start product prevented Model Year 2019 & 2020 Software Update and Model Year 2019 – 2022 Park Lock" recall campaigns. Several Mercedes-Benz dealers reported the use of the noted non-compliant "high idle" and "remote start" aftermarket solutions.

The use of these non-compliant, aftermarket solutions when trying to perform these mandatory Safety Campaigns is leading to increased vehicle downtime (as the software updates DO NOT work with these solutions installed), increased labor cost (the dealers then have to trouble shoot the vehicle to find the source of the failed install) to Mercedes Benz.

This is also creating a customer perception that this is a MBUSA created issue.





The parameterizable special module (PSM / MPM, code ED5) can be used to access individual types of data available on the CAN bus (→ page 296).

08

Front Radar Sensor Adjustment



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Content



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Background B92/1 Active Distance Assist Controller Unit

- Better known as 'Active Brake Assist ABA'
- Multi Range Radar Sensor that detects traffic situations in front of the vehicle
- Detection range of sensor is 40m @ 45[°] and 160m @ 7.5[°]
- Processes data for the implementation of:
 - Autonomous partial and maximum full stop braking
 - Distance control Collision warning
- Controller unit uses the following inputs:
 - Operating condition of engine/drivetrain
 - Driving stage engaged
- Vehicle speed
- Active transmission mode Seat Recognition
- Parking brake status

WIS Reference Documents: GF30.30-D-0020TSA & GF30.30-P-9891A





Background

Active Brake Assist/Collision Prevention– Warning Stages

No ris	No risk	Information	Partial braking	Emergency braking			
Dynamic	c Warning (<u>visual anc</u>	<u>d audible</u>):	Impending collision				
Partial b	oraking:		Vehicle autonomous brakes with limited brake force (approximately 30%)				
Emerger	ncy braking:		Vehicle autonomous br vehicle at standstill to consequences	akes to speed of vehicle ahea prevent a collision or mitigate	ad/		

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Background Pedestrian/Cyclist - Warning Stages



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Fully autonomous braking system for crossing *pedestrians/cyclists*

- Active up to 37.28 mph (60km/h)
- Warning and emergency braking carried out simultaneously

Content



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Front Bumper Paint

- Sensors located behind the bumpers might be affected by exterior surfaces and must be accounted for when repair/re-painting is completed (must comply to all Mercedes-Benz Standards)'
- Depending on type/thickness, paints or films can cause attenuation of radar waves
- Radar Sensor are sensitive to:
 - Thickness of paint layers
 - Relative permittivity of the paint (electromagnetism)
 - Amount of conductive materials in the paint (e.g. metals, graphite, etc.)



Front Bumper Paint

- Paint thickness gages are available for automotive plastic bumpers/fascia's including those with Advanced Driver Assistance Systems
 - Normal paint thickness meter for metallic surfaces will not work on plastics
- See the MBUSA Standard Service Equipment website for more information and purchasing
 - www.MBUSASSEP.com
- For further information on painting techniques and processes... Please see the <u>Sprinter 907: Body and Equipment Guidelines manual</u>





Sensor Bracket

- Imperative that the front radar sensor (B92) bracket is installed correctly and not damaged
 - 3 possible installation positions of sensor within bracket that can affect the sensor angle (installed center hole from factory) – each hole represents 4 °angle change
 - Recently updated P/N (New: A910 880 56 00 Old: A910 880 38 01) due to locating pin at bottom of bracket easily damaged/broken off... pay close attention if vehicle has been involved in front end collision
- In higher ambient temperature climates, there have been reports that the sensor brackets warp due to excessive heat
 - Imperative to inspect bracket for any type of deformation or damage
 - As a result, excessive horizontal and vertical sensor angles will be displayed in actual values





Blind Eye Conditions

- Customer concern of the 'Active Brake Assist Functions Limited' warning message in the cluster during long drives... likely caused by 'Blind Eye' condition
 - Parameters of fault defined as 1+hour without sensor activation from landmark, another vehicle, etc.
 - Likely during long drives down straight roads with large shoulders and medians (mid-west/west highways)
 - Fault may not reset after key cycle, possible system reactivation after self correction (vehicle driving and recognizing landmarks or other vehicles)



Content

Background
 Requirements and Limitations
 Sensor Adjustment and Calibration

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Mercedes-Benz Upfitter Days 2024

Height, Angle, and Calibration

- When ride height is significantly altered (i/e heavily laden Box Vans or Motor Homes), the angle of the sensor is changed in longitudinal direction of more than 1.5° plus or minus... service calibration using the Xentry tool must be performed
 - If not completed, intermittent or permanent failure of the Active Brake Assist and Active Distance Assist can be expected in subsequent operations.
- The sensor will compensate for temporary load changes
 - i/e loading the cargo area with anything heavy causing front end height change
- Sensor height will not adapt after an upfit (i/e Motorhome install), when the ride height is changed... considered 'New Normal'
 - Must manually measure the sensor height and add new values into the controller unit via Xentry tool



Position of Active Brake Assist sensor (front view)

- Position of sensor
- Sensor holder
- 3 Signal funnel



Manual Height Measurement

- Step 1: Determine exact center of radar sensor with bumper installed (can also be completed with the bumper removed)
 - With bumper installed measured spec is 52.5mm





Manual Height Measurement

- Step 2: For the most accurate results, recommend use of laser level and small tripod in conjunction with a metric tape measure... Adjust the laser line to the center point of the sensor within the front bumper
 - Ensure the vehicle is on even level surface (If this task is completed on an alignment four post lift, ensure the measured values are appropriately compensated for the height of the ramps)
- Step 3: Measure from the floor to the laser line, this is the exact installed radar sensor height
 - Example shown is @ 64.5cm



Height, Angle, and Calibration

Step 4: Enter the measured values within ABA sensor 'Adaptations' menu

Selection		Installation height of radar sensor			
 Initial startup Control unit update Teach-in processes Calibration by means of test drive Calibration by means of test drive (Valid with code FHT) Calibration with calibration aid (Production) Installation height of radar sensor 		easure installation height of component part 'B92 . ctive Brake Assist controller unit)'.			
		Name Installation height of radar sensor (Variant coding) • The actual value is read from the variant coding 'B92 (Active Brake Assist controller unit)'. Next steps • Perform measurement from ground to center of sensor. (See picture) • The radar sensor, which is installed in the lower 'B92 (Active Brake Assist controller unit)', is loca the plastic cover in the bumper. • Enter measurement value in unit 'cm' in input field in the lower 'B92' (Active Brake Assist controller unit)', is locat the plastic cover in the bumper.	Actual value 0.62 m ng of the control unit of plastic cover of radar ver part of control unit cated centrally behind field. 2' on vehicle:		
'Adaptions' tab of the B92- Active Brake Assist (ABA) control unit		Continue with button 'Continue'			Anone view

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Height, Angle, and Calibration

B92 – Active Brake Assist (ABA) control unit 'Actual Values' tab

- Xentry specifications for sensor angle is -3.0 °to +3.0 ° (recommended spec is -1.5 ° to 1.5 °)
- Value is extremely important when conducting the 'Calibration Test Drive'

Adjustment	values			
Actual valu	es			
No.	Name	Actual value	Specified value	
295	Status of sensor calibration	SUCCESSFULLY ENDED	SUCCESSFULLY ENDED	^
307 🕤	Progress of adjustment	0%	[0 100]	
040 🕦	Vertical misalignment angle (Current value)	0.79°	[-3.80 3.80]	
811 🕤	Vertical misalignment angle (Stored value)	0.39°	[-3.00 3.00]	
758	Horizontal misalignment angle (Current value)	0.26°	[-3.80 3.80]	
246 🕤	Horizontal misalignment angle (Stored value)	-0.31°	[-3.00 3.00]	

Height, Angle, and Calibration

- If the sensor bracket 'Azimuth Angle (side to side)' is incorrect, it is possible to shim the bracket to a sideward (only) angle to allow for more movement
 - To accomplish, add washers under the top bracket bolts on either the left or right sides to adjust azimuth angle
 - One (1) mm shim/washer = One (1) ° angle change of the bracket sideward



Thank you