



# Conversion Guideline

## Vivaro [X82]

### PART 4 - 6



Edition: April 2017

GME Engineering  
Special Vehicle Development / Light Commercial Vehicles  
Rüsselsheim / Germany



## Conversion Guideline - Part 4 - 6

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\* = This chapter is new or was modified in this edition.



## 4. ELECTRICS / ELECTRONICS

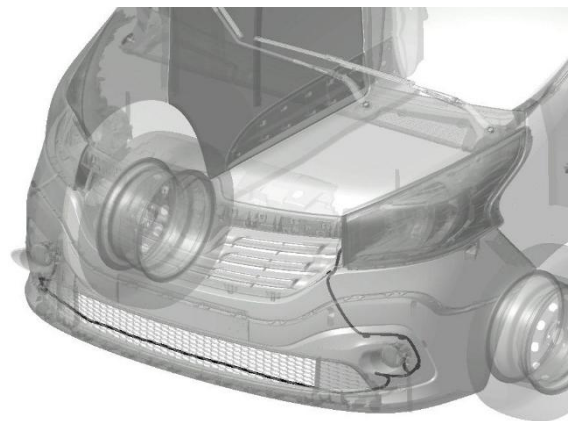
### 4.1. LOCATION OF WIRING / GROUNDS / COMPONENTS

#### 4.1.1. ELECTRICAL WIRING ROUTING

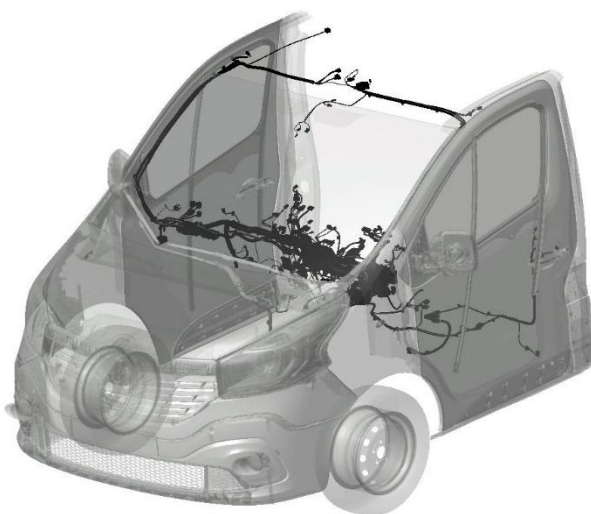
Engine wiring



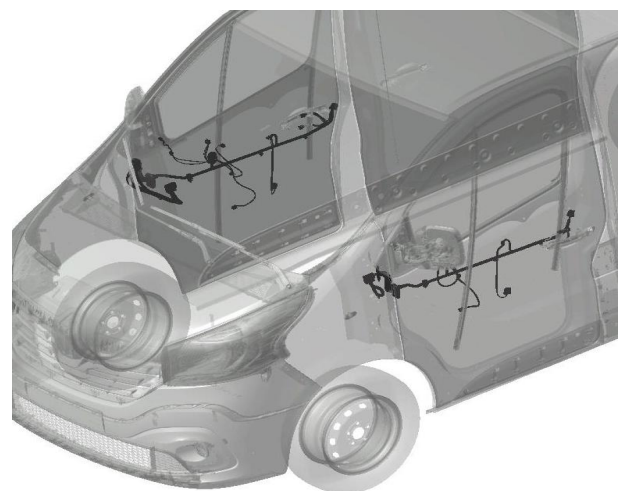
Front end wiring



Dashboard wiring



Front door wiring



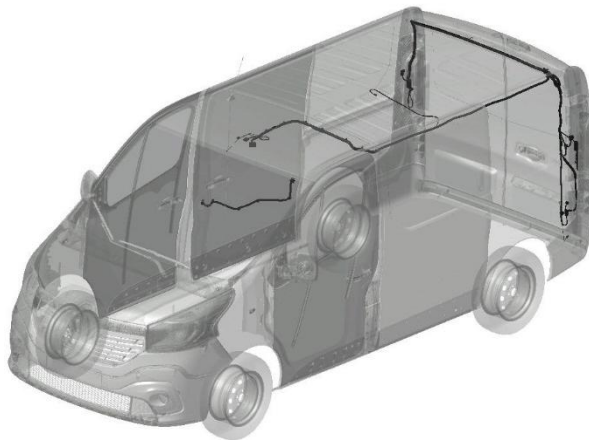
VIVARO (X82)  
4.1 – LOCATION OF WIRING / GROUNDS / COMPONENTS



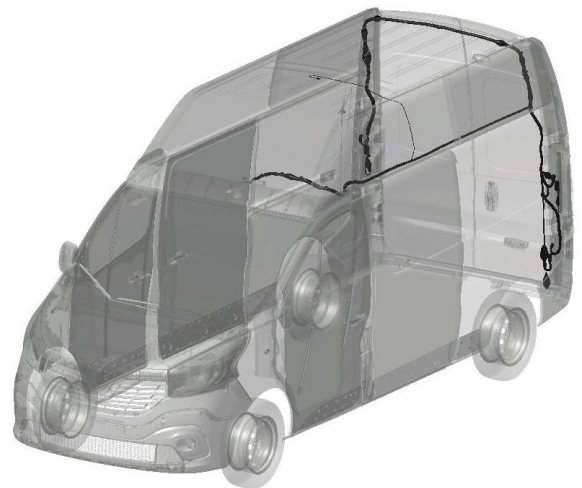
Sliding side door wiring and PANEL VAN mono-bloc wiring

Wiring on rear attachment ring protected by vertical duct

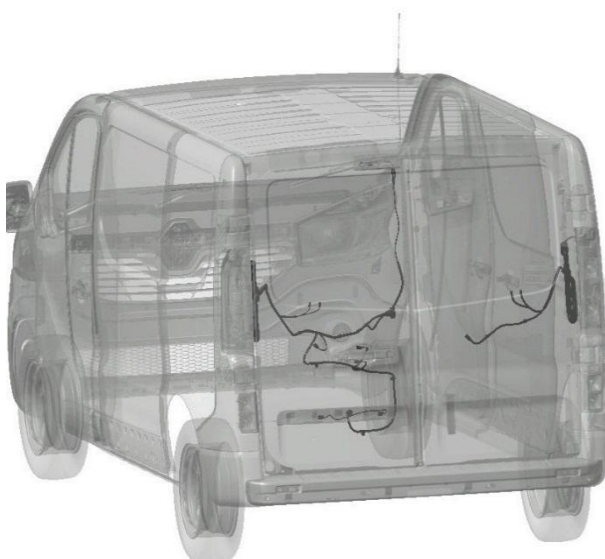
Mono-bloc wiring H1



Mono-bloc wiring H2



Hinged door wiring



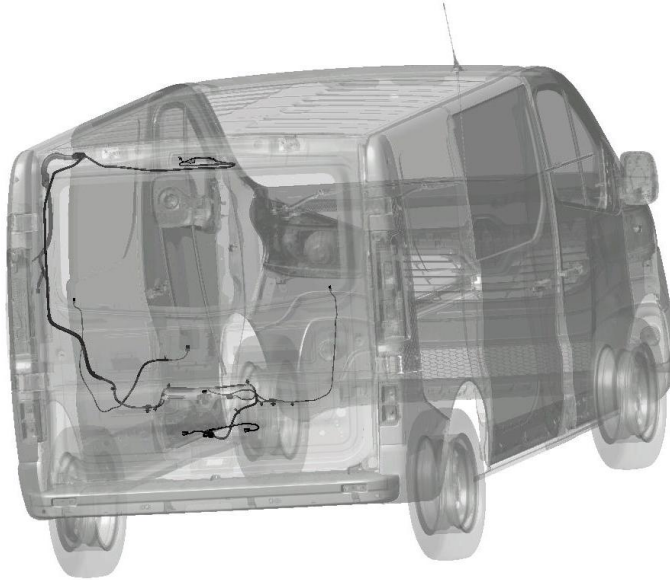
Hinged door wiring H2



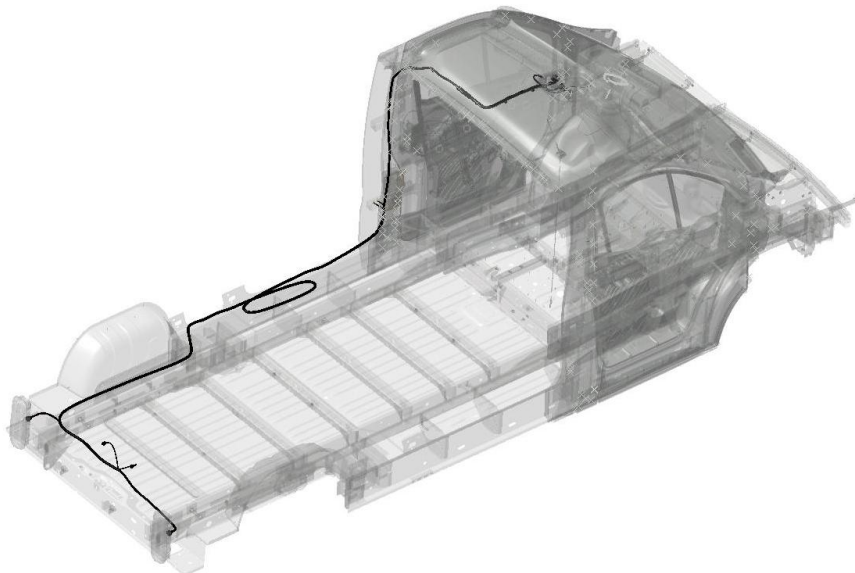
VIVARO (X82)  
4.1 – LOCATION OF WIRING / GROUNDS / COMPONENTS



Tailgate wiring



Platform Cab Wiring



**Note:** *To obtain more specific diagrams, refer to the workshop repair manual using the type and serial number of the vehicle.*

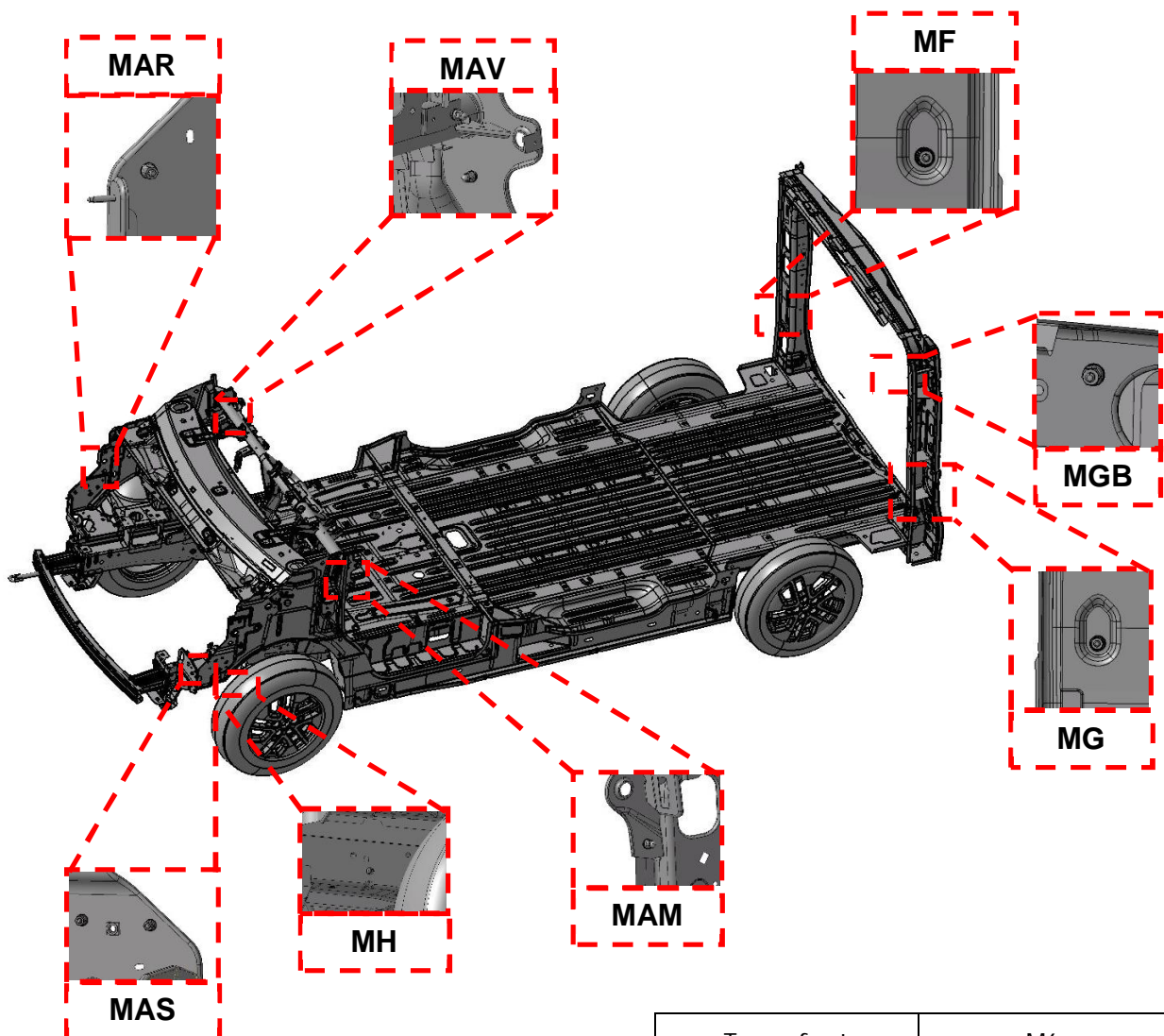


### 4.1.2. LOCATION OF GROUNDS

For grounding on an existing nut, stud or screw, the rules in the General Technical Conversion Guide should be followed, given in the section specific to the subject.

**Note:** *It is highly recommended to use the electrical grounds shown below.*

#### Bare body



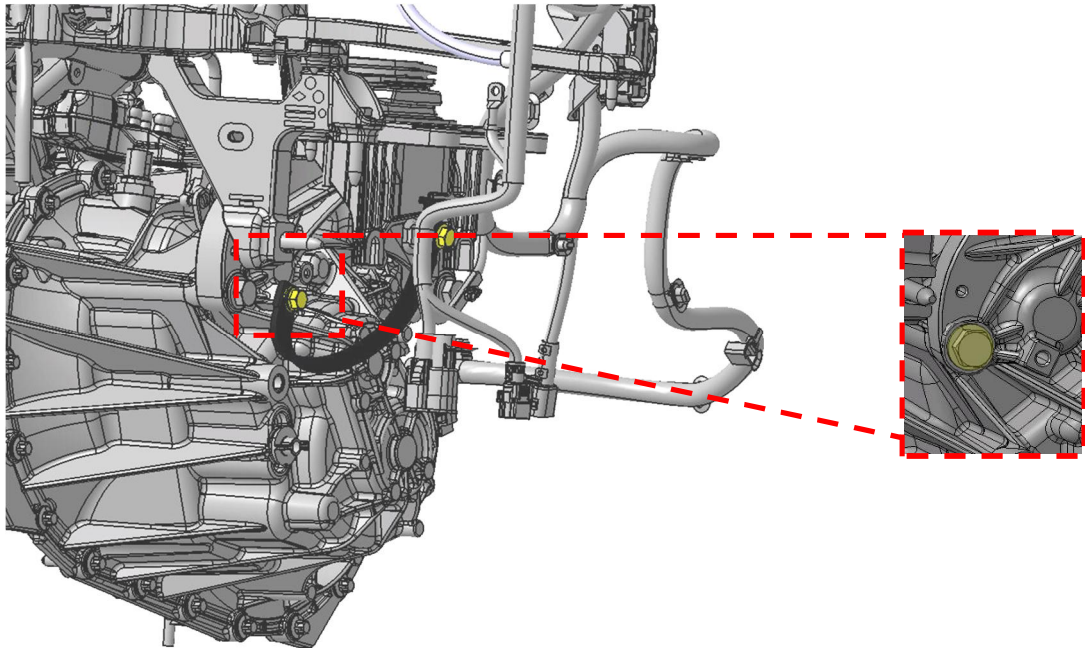
Type of nut	M6
Tightening torque	8Nm ±15%

It is vital that the tightening torques of the ground points be complied with in order to meet the safety and/or regulatory requirements.



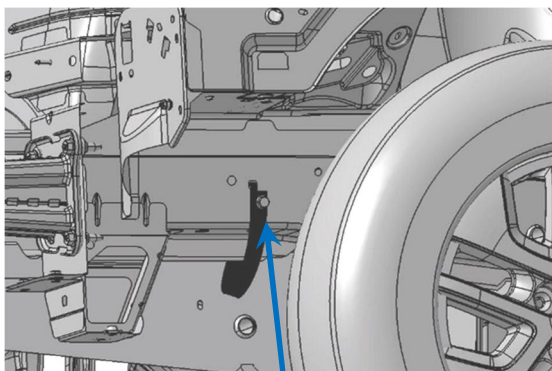
## ENGINE COMPARTMENT GROUNDS

### Gearbox



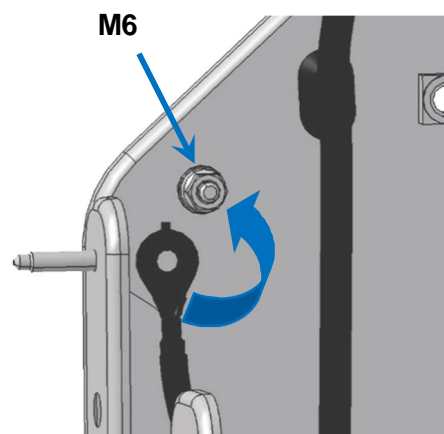
For gearbox: Tightening of the terminals must be done with an M8 self-tapping screw, [redacted] and a tightening torque of 21 Nm. (The tightening torque must be increased from 21 to 24 Nm for stacked terminals).

Gearbox/Side member: MH



**M8**

Front right-hand pillar lining: MAR

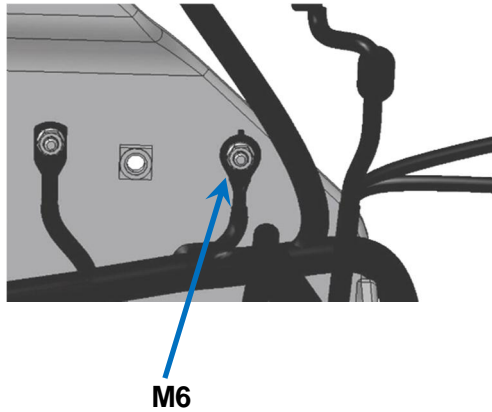


**M6**

VIVARO (X82)  
4.1 – LOCATION OF WIRING / GROUNDS / COMPONENTS

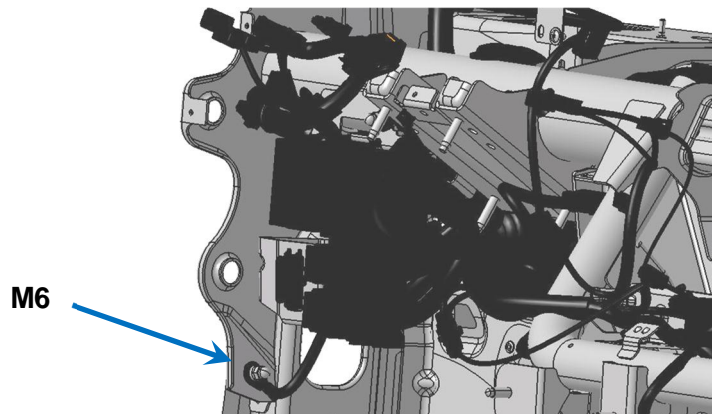


Front left-hand pillar lining: MAS

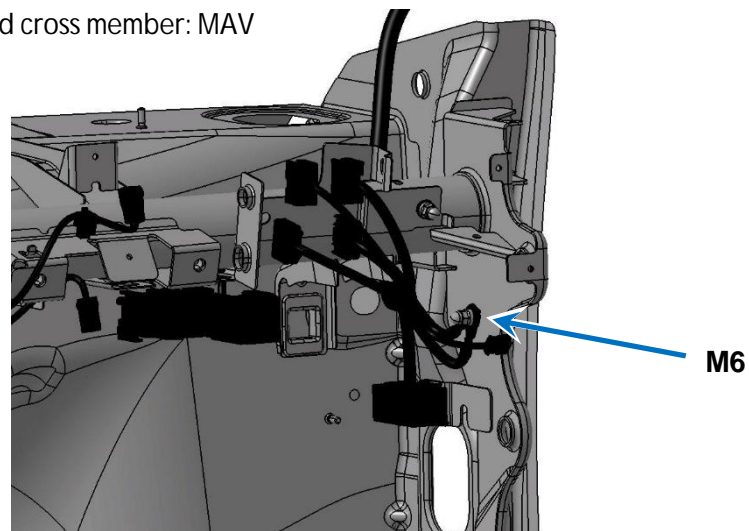


DASHBOARD GROUNDS

Left-hand dashboard cross member: MAM



Right-hand dashboard cross member: MAV





VIVARO (X82)  
4.1 – LOCATION OF WIRING / GROUNDS / COMPONENTS

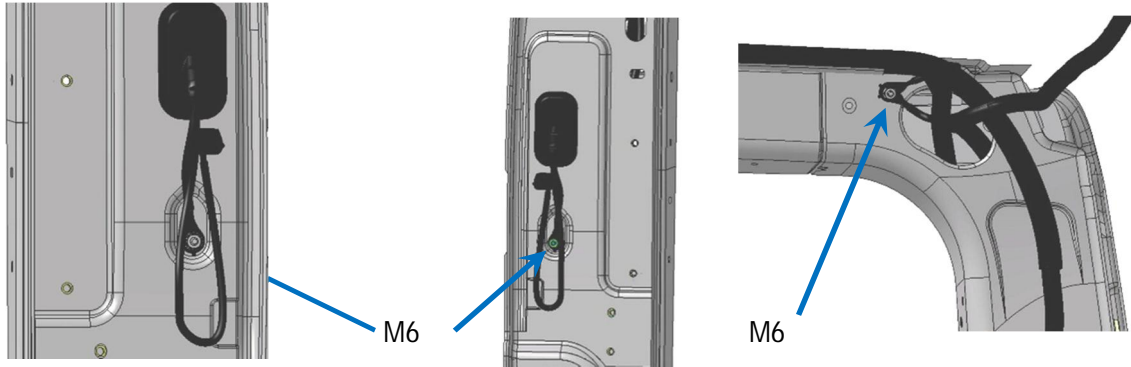


REAR AREA GROUNDS

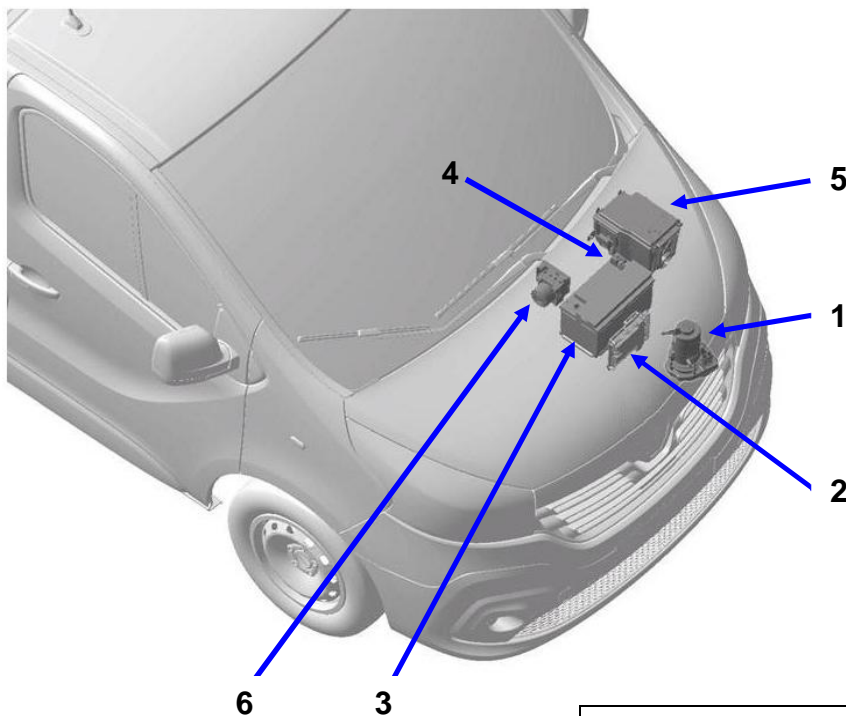
Right-hand: MF

Left-hand side: MG

Left-hand side: MGB



4.1.3 LOCATION OF ELECTRICAL COMPONENTS

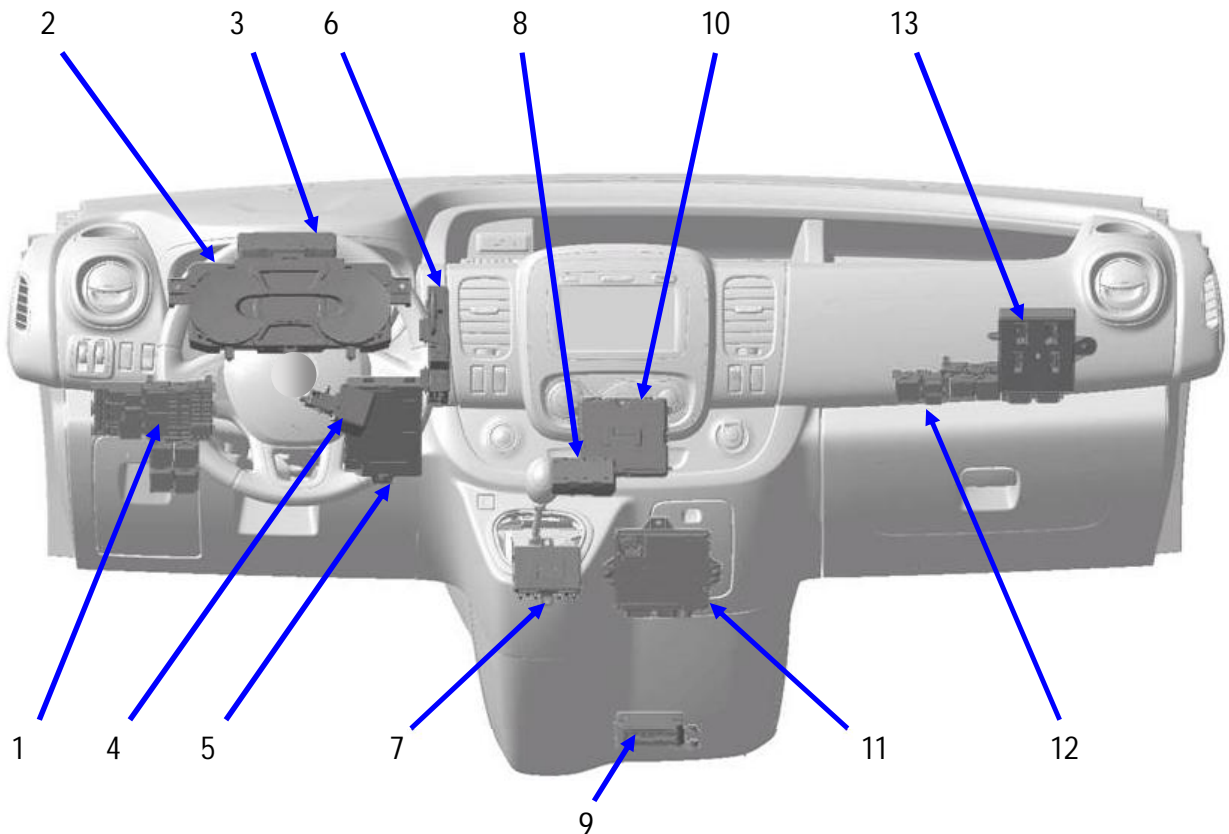


- \* ABS = Anti-lock Braking System
- ASR = Active Traction Control System
- ESP = Electronic Stability Program

1:	Power steering electro-pump assembly
2:	Fuel injection computer
3:	Battery
4:	Current sensor
5:	Engine connection unit
6:	ABS/ASR/ESP hydraulic unit *



LEFT-HAND DRIVE DASHBOARD AREA

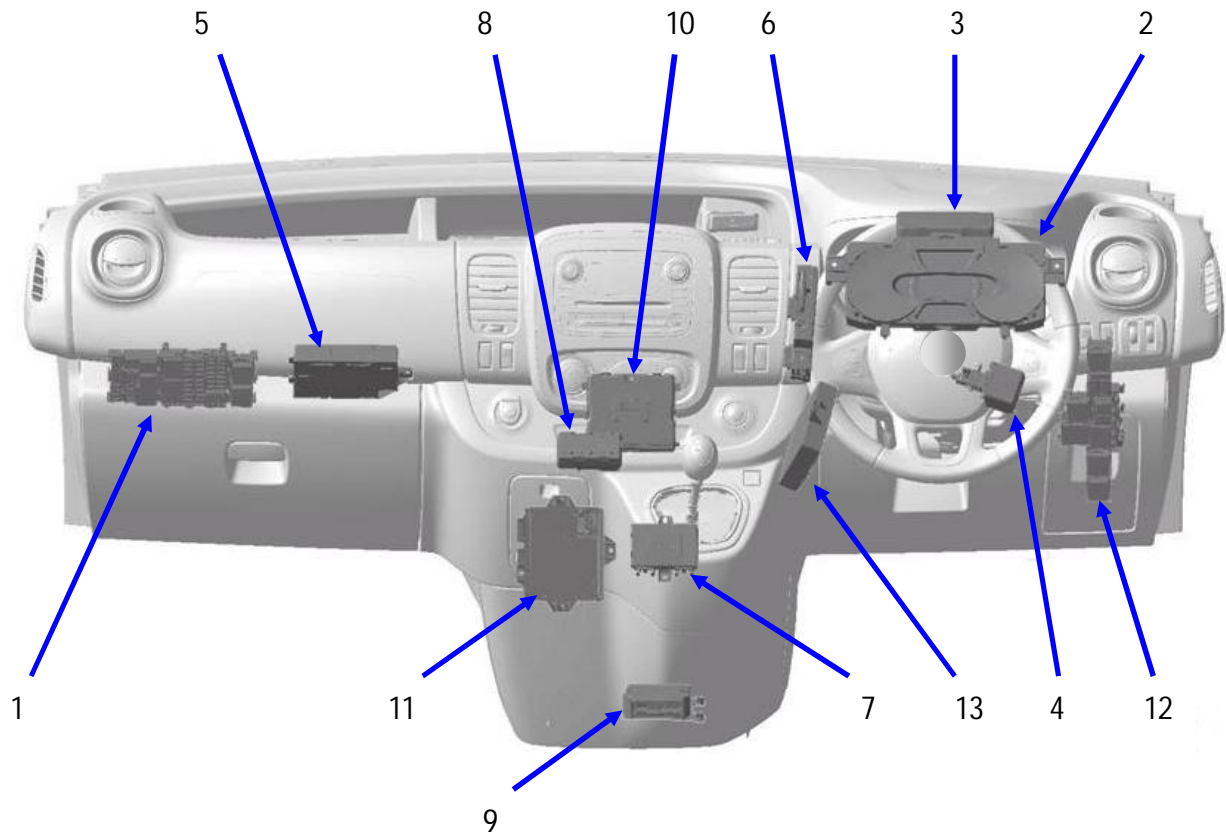


1: BFRH: Passenger compartment Relay and Fuse Box
2: Instrument panel
3: TCU: Telematic Control Unit
4: Electric anti-theft system
5: BCM : Body Control Module UCH: Passenger Compartment Central Unit
6: HFM card reader
7: BIC: Display Interface Unit

8: SSPP: Tyre Pressure Monitoring System
9: Airbag computer
10: A/C Box: Air Conditioning Box
11: Approved Conversions Unit
12: BFRO: Optional Relay and Fuse Box
13: EMM : Energy Management Module



RIGHT-HAND DRIVE DASHBOARD AREA

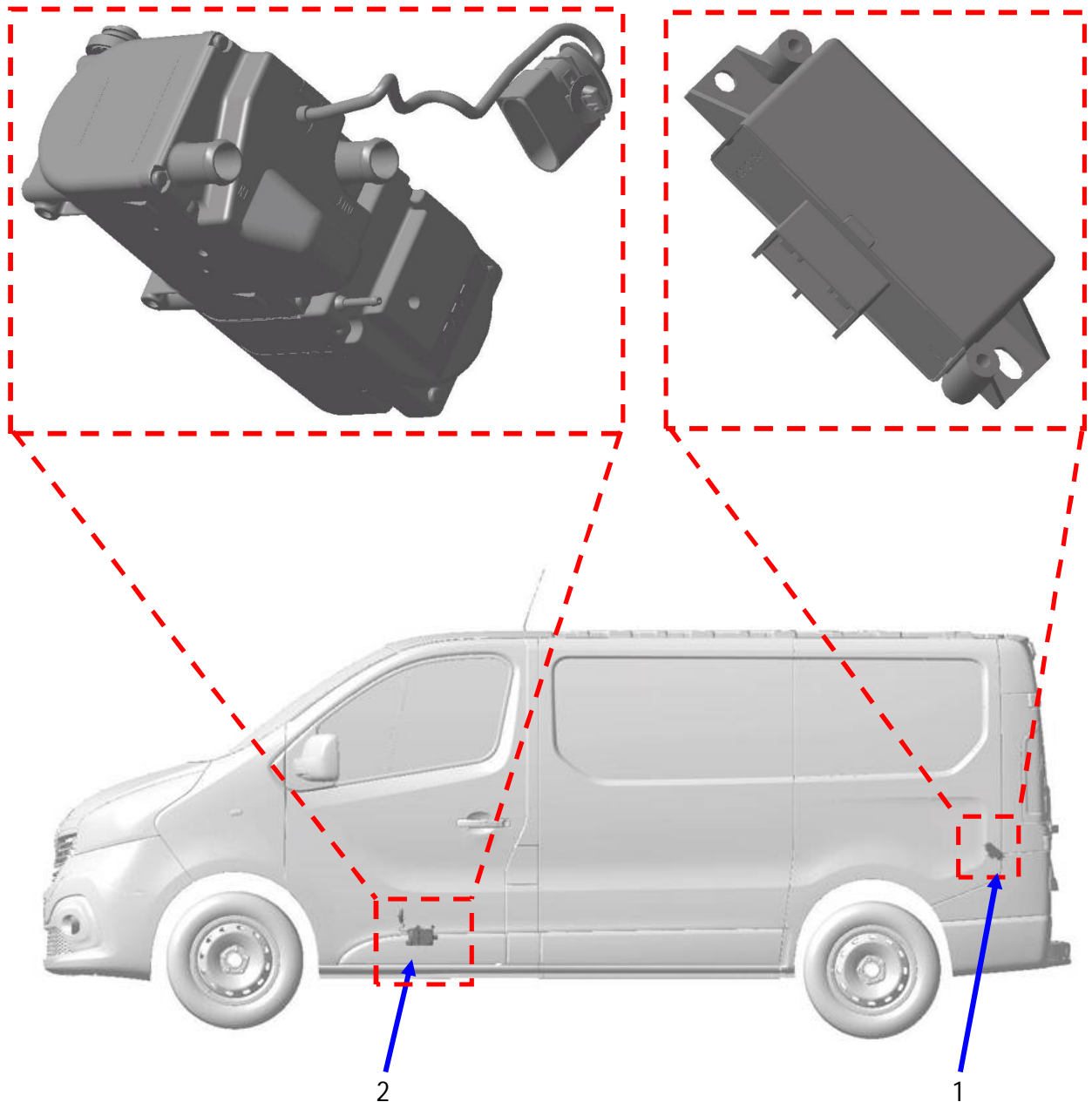


1: BFRH: Passenger compartment Relay and Fuse Box
2: Instrument panel
3: TCU: Telematic Control Unit
4: Electric anti-theft system
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8: SSPP: Tyre Pressure Monitoring System
9: Airbag computer
10: A/C Box: Air Conditioning Box
11: Approved Conversions Unit
12: BFRO: Optional Relay and Fuse Box
13: EMM : Energy Management Module



OTHER AREAS



1: Rear parking distance control ECU on lining of left-hand body side
2: Additional heater ECU on underbody

## 4.2. RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT

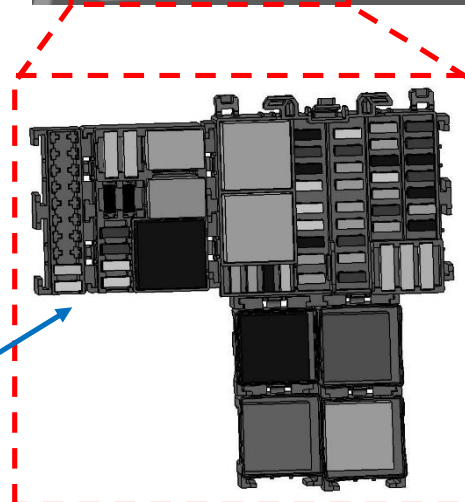
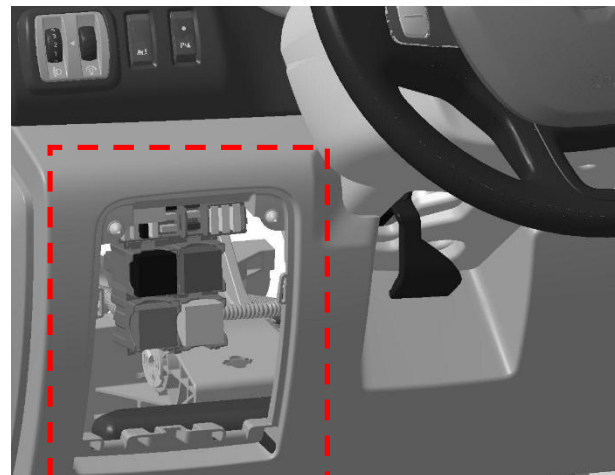
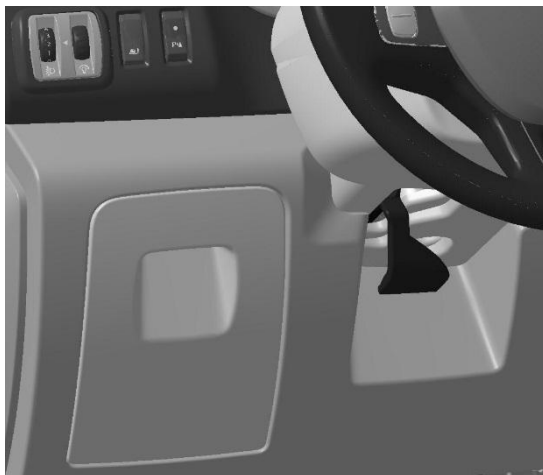
### 4.2.1. PASSENGER COMPARTMENT RELAY / FUSE BOX (BFRH)

This unit, also known as the BFRH (Passenger Compartment Relay/Fuse Box), is located under the dashboard, on the left. A second unit is located to the right of the dashboard.

Depending on the equipment version and the options, some fuses or relays may not be present.

### LOCATION OF PASSENGER COMPARTMENT RELAY / FUSE BOX ON LHD VEHICLES

#### Driver's side



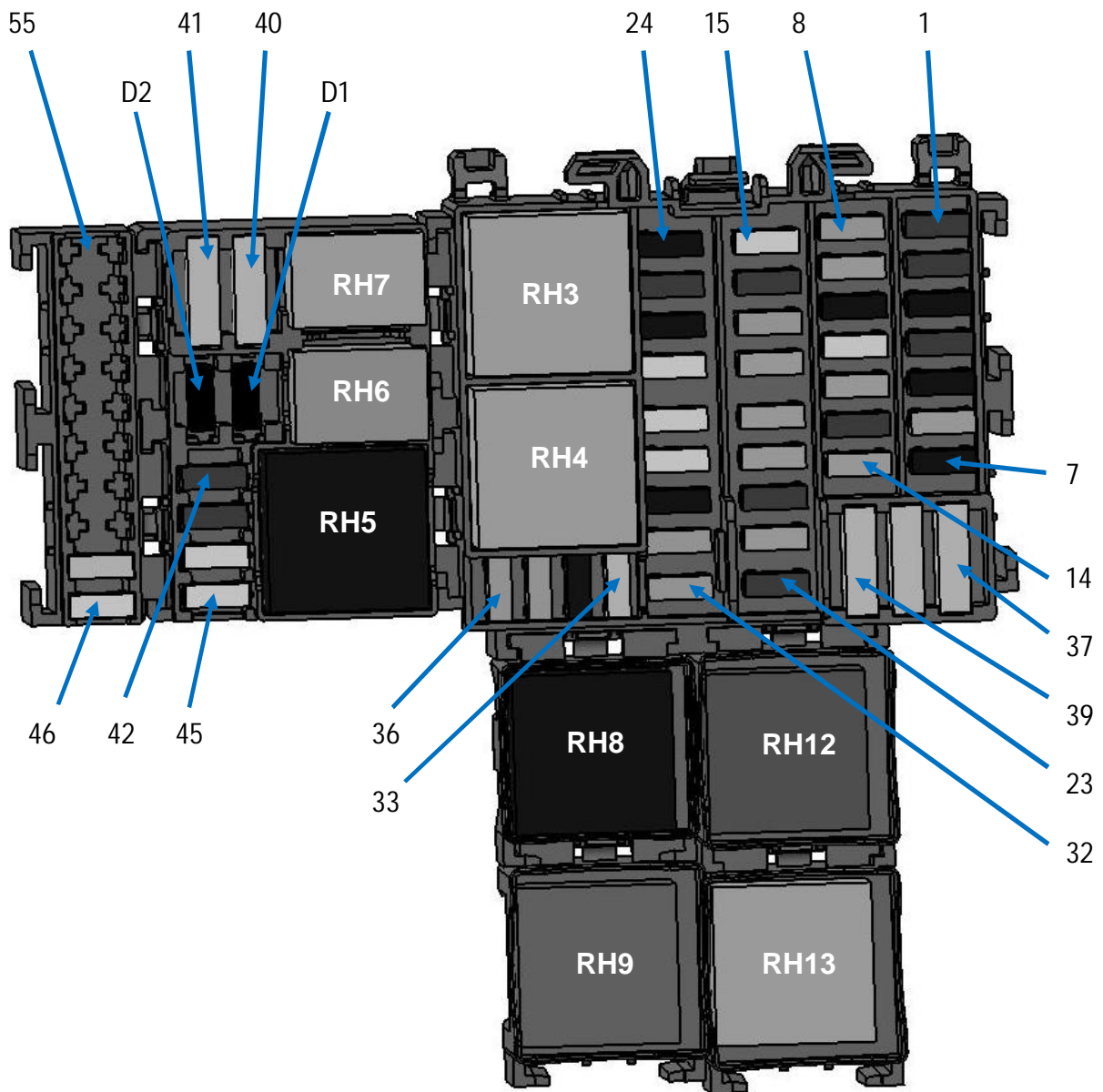
Passenger compartment  
relay/ fuse box



# VIVARO (X82)

## 4.2 - RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT

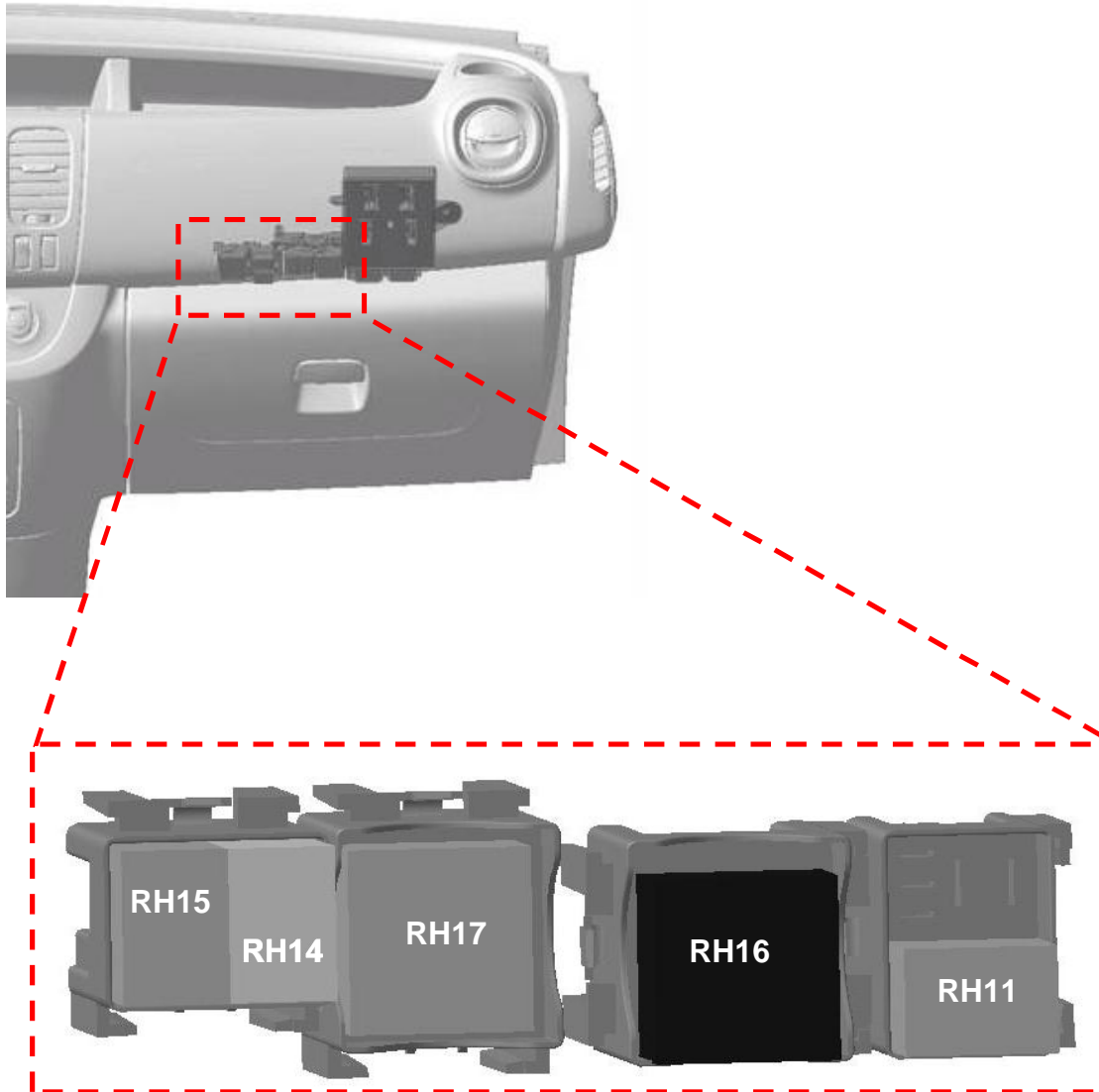
### Detail of passenger compartment relay / fuse box on driver's side (LHD)



VIVARO (X82)  
4.2 – RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT



Passenger compartment relay / fuse box on passenger's side (LHD)

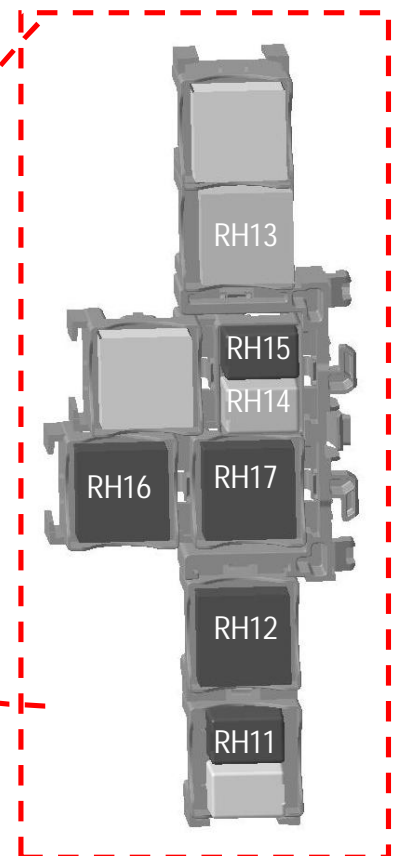
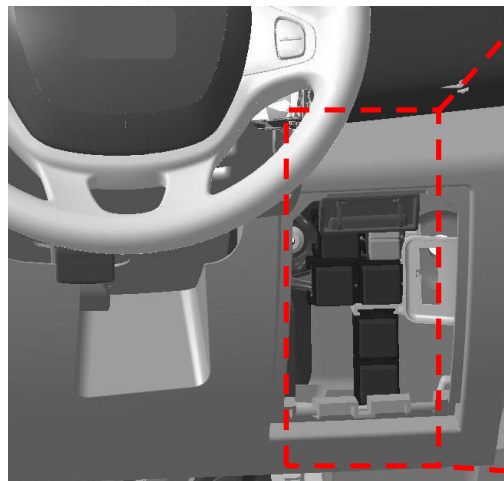




LOCATION OF PASSENGER COMPARTMENT RELAY/ FUSE BOX ON RHD VEHICLES

Driver's side

The box is located behind the flap

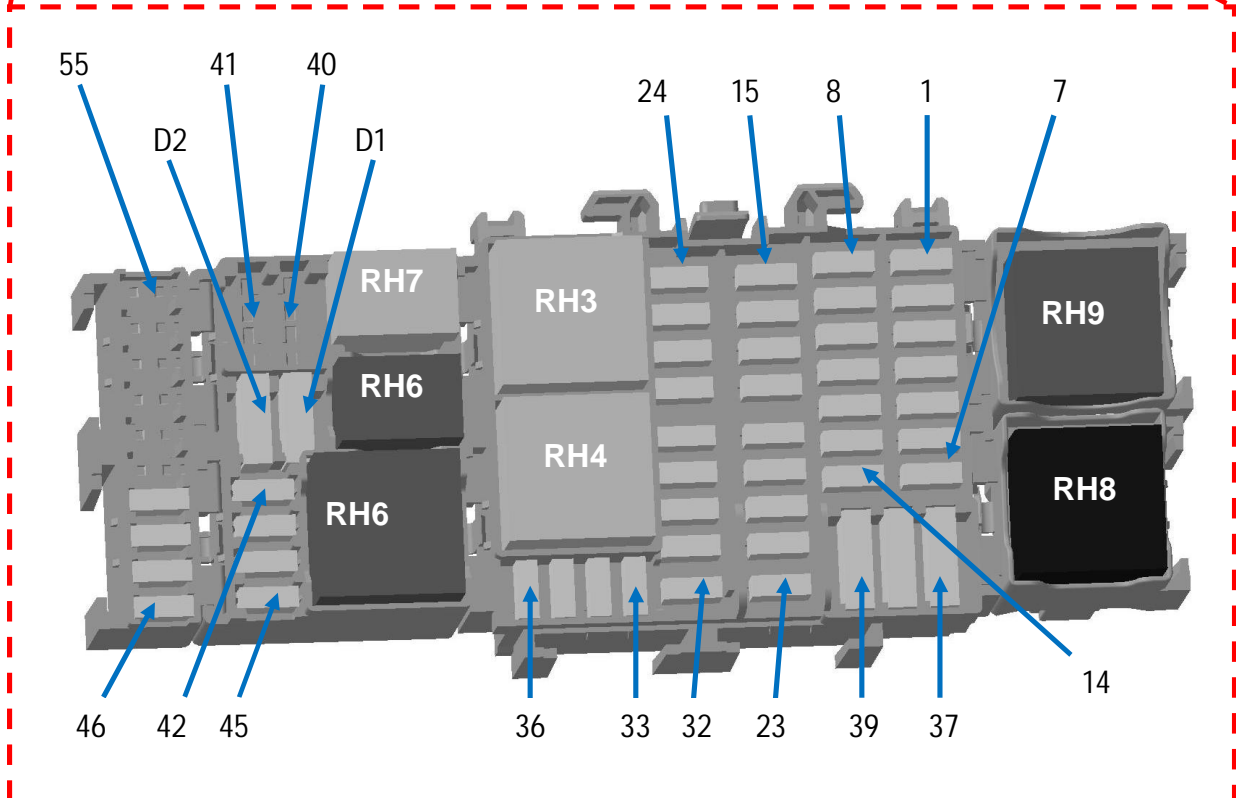
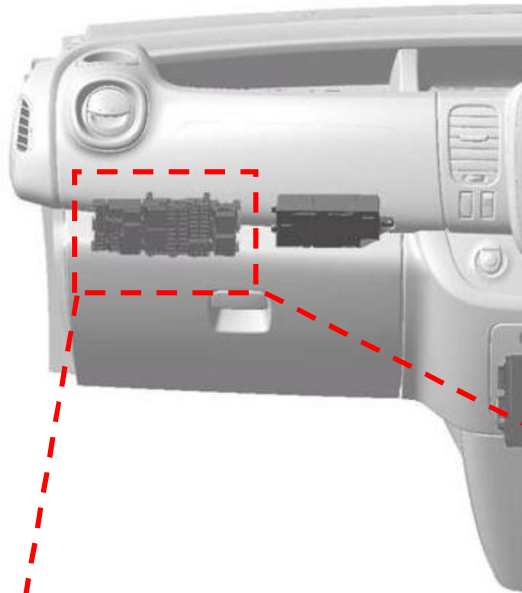






VIVARO (X82)  
4.2 - RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT

Detail of passenger compartment relay/ fuse box on passenger's side (RHD)





### Definition of fuses

FUSE	TYPE	RATING	FUNCTION
F1	Mini fuse	30A	+ battery feed rear window wiper
F2	Mini fuse	10A	Main electromagnetic horn
F3	Mini fuse	15A	+ battery feed boot accessories socket
F4	Mini fuse	30A	+ battery feed driver's window lift motor time delay
F5	Mini fuse	15A	+ current distribution rear accessories socket
F6	Mini fuse	5A	BCM start-up +
F7	Mini fuse	15A	+ after ignition feed heated seats
F8	Mini fuse	5A	+ EMM battery feed (after ignition feed charge on VSC) AVS, AUO
	Mini fuse	15A	+ EMM battery feed (after ignition feed charge on VSC)
F9	Mini fuse	5A	+ overall current distribution
F10	Mini fuse	15A	+ cigarette lighter socket or front accessory socket current distribution
F11	Mini fuse	25A	+ EMM battery feed (R daytime running lights, front position, R main beam headlights, L dipped beam headlights)
F12	Mini fuse	5A	+ timed battery feed brake lights, ABS, transponder
F13	Mini fuse	10A	+ timed battery feed interior lights and air conditioning
F14	Mini fuse	5A	+ timed battery feed steering wheel angle Stop and Start keyless vehicle
F15	Mini fuse	25A	+ After ignition feed rear window wiper, window washer pump, horn
F16	Mini fuse	10A	Overall + after ignition feed
F17	Mini fuse	5A	+ after ignition feed reverse gear lights
F18	Mini fuse	5A	+ after ignition feed stop switch
F19	Mini fuse	5A	+ after ignition feed injection, starter relay, BCM
F20	Mini fuse	5A	+ after ignition feed airbag, column lock
F21	Mini fuse	30A	+ after ignition feed passenger window lift switch
F22	Mini fuse	5A	+ after ignition feed power steering pump assembly

VIVARO (X82)

4.2 – RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT



FUSE	TYPE	RATING	FUNCTION
F23	Mini fuse	10A	+ EMM battery feed brake lights
F24	Mini fuse	15A	+ battery feed BCM (+ timed battery feed)
F25	Mini fuse	10A	+ battery feed BCM, electronic calculation units tyre pressure monitoring system and keyless vehicle
F26	Mini fuse	15A	+ battery feed BCM for hazard warning and direction lights
F27	Mini fuse	25A	+ battery feed BCM for locking of opening elements
F28	Mini fuse	25A	+ EMM battery feed for L daytime running lights, rear position, L main beam headlights, R dipped beam headlights
F29	Mini fuse	25A	+ EMM battery feed number plate position, front and rear fog lights
F30	Mini fuse	15A	+ battery feed single lever, alarm, horn
F31	Mini fuse	5A	+ battery feed dashboard
F32	Mini fuse	5A	+ battery feed single lever,
F33	Mini fuse	20A	+ battery feed tow bar socket pre-equipment (supplied in tow bar kit)
F34	Mini fuse	15A	+ battery feed circuit breaker radio, multimedia, mirrors, fault finding socket
F35	Mini fuse	5A	+ feed mirror heater
F36	Mini fuse	5A	+ timed battery feed electric mirrors, additional adapter unit UCE
F37	Ato fuse	10A	+ battery feed circuit breaker tachygraphy
F38	Ato fuse	40A	+ battery feed windscreen wiper
F39	Ato fuse	40A	+ battery feed current distribution relay 1 (heating, air conditioning)
F40	Ato fuse	20A	+ current distribution feed pre-equipment additional adaptations
F41	Ato fuse	15A	+ battery feed heater
F42	Mini fuse	10A	+ feed engine running additional adaptation
F43	Mini fuse	10A	+ feed engine running heater
F44	Mini fuse	25A	+ after ignition feed additional air conditioning unit
F45	Mini fuse	25A	+ after ignition feed additional passenger compartment heating

## VIVARO (X82)

### 4.2 – RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT



FUSE	TYPE	RATING	FUNCTION
F46	Mini fuse	25A	+ after ignition feed relayed for keyless vehicle
F47	Mini fuse	20A	+ EMM battery feed for non-load shed current distribution relay
F48	Stock area		<i>Not used</i>
F49	Stock area		<i>Not used</i>
F50	Stock area		<i>Not used</i>
F51	Stock area		<i>Not used</i>
F52	Stock area		<i>Not used</i>
F53	Mini fuse	25A	after ignition feed relayed for keyless vehicle
F54	Mini fuse	20A	+ EMM battery feed for non-load shed current distribution relay
F55	Mini fuse	20A	+ urea injection battery [EURO 6]

#### Relay definition

RELAYS	RATING	FUNCTION
RH3 -(1040)	40A	Windscreen wiper relay
RH4 - (315)	40A	Windscreen wiper 2 <sup>nd</sup> speed relay
RH5 - (751)	40A	+ after ignition feed relay heating and rear air conditioning
RH6 - (599)	20A	Support relay water pump heater matrix
RH7 - (2342)	20A	Driver's door electrical unlocking relay (SDO)
RH8 - (1155)	70A	+ current distribution relay no. 1
RH9 - (1389)	40A	+ current distribution relay no. 2
RH11 - (471)	20A	Electric window lift relay
RH12 - (235)	40A	Mirrors + rear window heater relay
RH13 - (1041)	40A	Rear window wiper relay
RH14 - (2341)	20A	Door central locking relay
RH15 - (1762)	20A	Electric window lift relay



## VIVARO (X82)

### 4.2 – RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT

RELAYS	RATING	FUNCTION
RH16 - (752)	40A	After ignition feed relay no. 2 (hands-free card vehicles)
RH17 - (1615)	40A	Engine running + relay
RH18		<i>Not used</i>
RH19		<i>Not used</i>
RH20		<i>Not used</i>

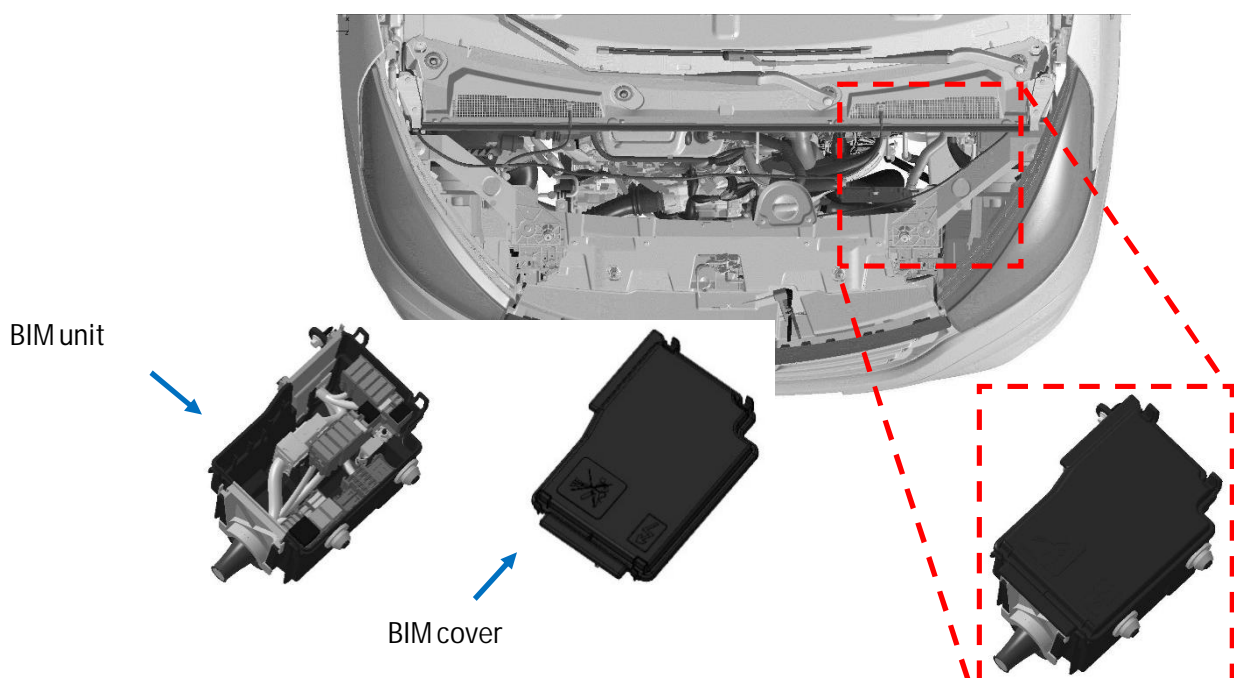
#### Diode definition

DIODE	RATING	FUNCTION
D1		<i>Not used</i>
D2		<i>Not used</i>

#### 4.2.2. ENGINE COMPARTMENT CONNECTION UNIT

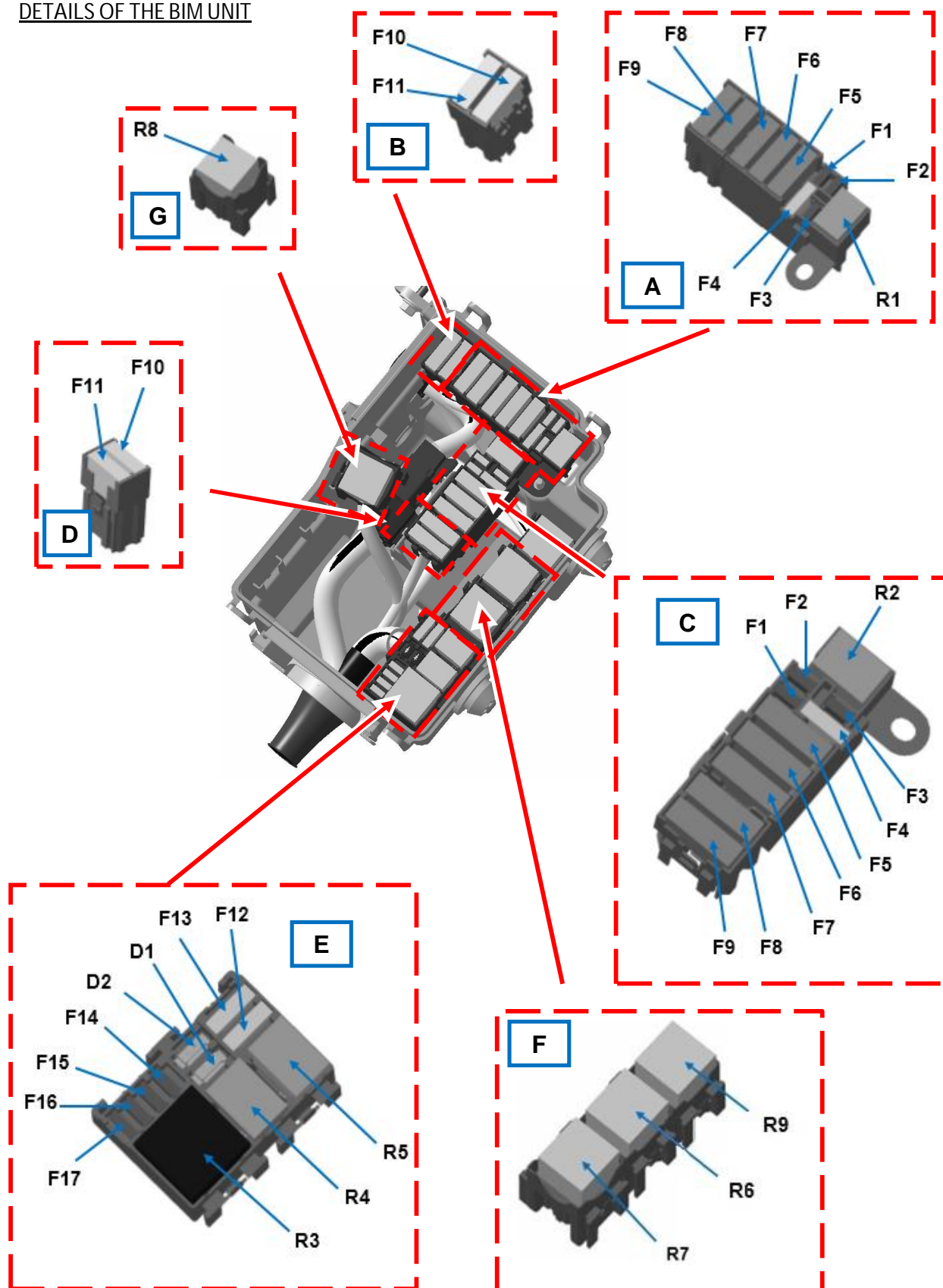
The engine compartment connection unit can be found to the left of the engine compartment in front of the shock absorber mounting. This unit contains the panels of the power supply fuses and relays.

#### LOCATION OF THE BIM UNIT



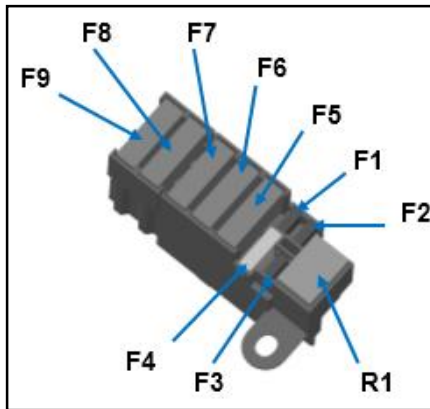


DETAILS OF THE BIM UNIT

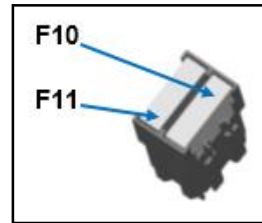




FUSE AND RELAY SUPPORT MODULES (A) AND (B)



**A**

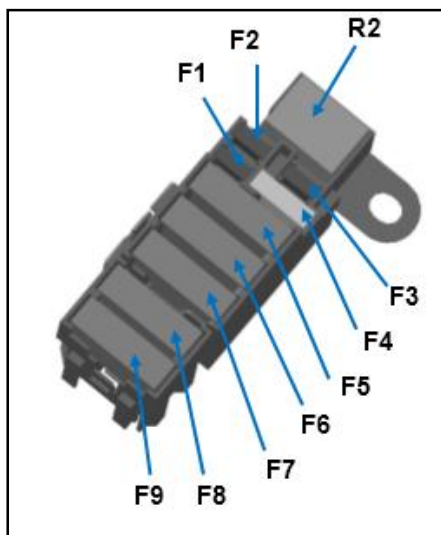


**B**

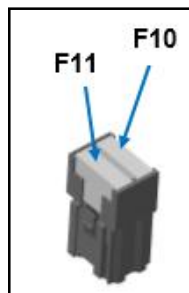
	Fuse	Type	Rating	Function
A	F1	Mini fuse	15A	+ urea injection battery [EURO 6]
	F2	Mini fuse	20A	+ urea injection battery [EURO 6]
	F3	Mini fuse	25A	ABR / ESP
	F4	Ato fuse	30A	Starter
	F5	Maxi fuse	70A	Passenger compartment 1
	F6	Mini fuse	70A	Passenger compartment 3
	F7	Mini fuse	50A	ABR / ESP
	F8	Mini fuse	60A	Passenger compartment 2
	F9	Mini fuse	20A	Mirrors heater
		Mini fuse	40A	Rear window + mirrors heater
B	F10	Mini fuse	50A	+ urea injection battery [EURO 6]
	F11	Maxi fuse		Not used
	Relay	Type	Rating	Function
	R1	Resistance micro-relays	20A	Starting



FUSE AND RELAY SUPPORT MODULES (C) AND (D)



**C**

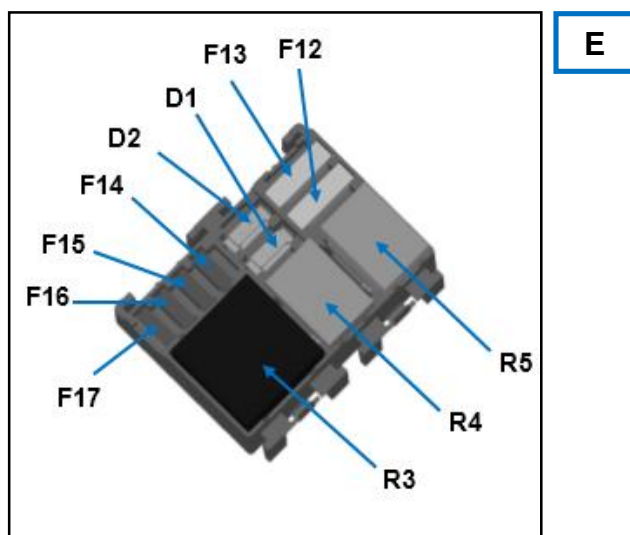


**D**

	Fuse	Type	Rating	Function
C	F1	Mini fuse		Not used
	F2	Mini fuse		Not used
	F3	Mini fuse	15A	+ battery feed air conditioning compressor
	F4	Ato fuse	15A	Fuel pump
	F5	Maxi fuse	70A	Heater control unit
	F6	Maxi fuse	60A	Heating element unit
	F7	Maxi fuse	60A	Heating element unit
	F8	Mini fuse	40A	Engine suffix *408 and air conditioning or 450 and heating Motor-driven fan assembly 1
		Mini fuse	50A	Engine suffix *408 and heating or 450 and air conditioning Motor-driven fan assembly 1
F9	Mini fuse	40A	Engine suffix *408 and air conditioning or 450 Motor-driven fan assembly 2	
D	F10	Maxi fuse		Not used
	F11	Maxi fuse		Not used
	Relay	Type	Rating	Function
C	R2	Micro relay	20A	Fuel pump relay



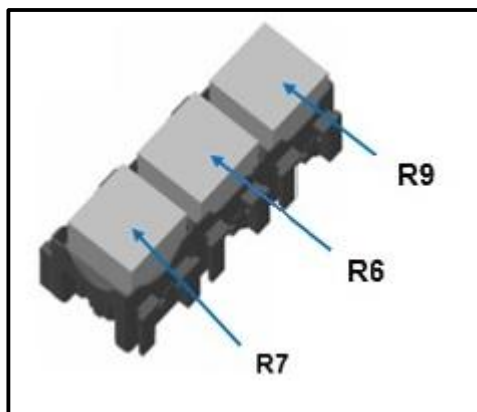
FUSE AND RELAY MODULES (E)



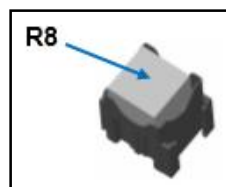
	Fuse	Type	Rating	Function
E	F12	<i>Ato fuse</i>		<i>Not used</i>
	F13	<i>Ato fuse</i>		<i>Not used</i>
	F14	<i>Mini fuse</i>		<i>Not used</i>
	F15	Mini fuse	25A	Diesel heater
	F16	Mini fuse	20A	Engine injection system
	F17	Mini fuse	15A	Engine injection system
	Relay	Type	Rating	Function
E	R3	Relays ISO	40A	Injection supply relay
	R4	Micro relay	20A	Compressor control relay
	R5	<i>Micro relay</i>		<i>Not used</i>
	Diodes	Type	Rating	Function
E	D1	Diode	1N 4004	Air conditioning compressor
	D2	<i>Diode</i>		<i>Not used</i>



FUSE AND RELAY MODULES (F) AND (G)



**F**



**G**

	Relay	Type	Rating	Function
F	R6	ISO relay	70A	High speed (Motor-driven fan assembly 1)
	R7	ISO relay with rest switch	40A	Low speed (Motor-driven fan assembly)
	R9	ISO relay without rest switch	40A	Urea injection ECU [EURO 6]
G	R8	ISO relay without rest switch	40A	High speed (Motor-driven fan assembly 2)

VIVARO (X82)

4.3 – SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)



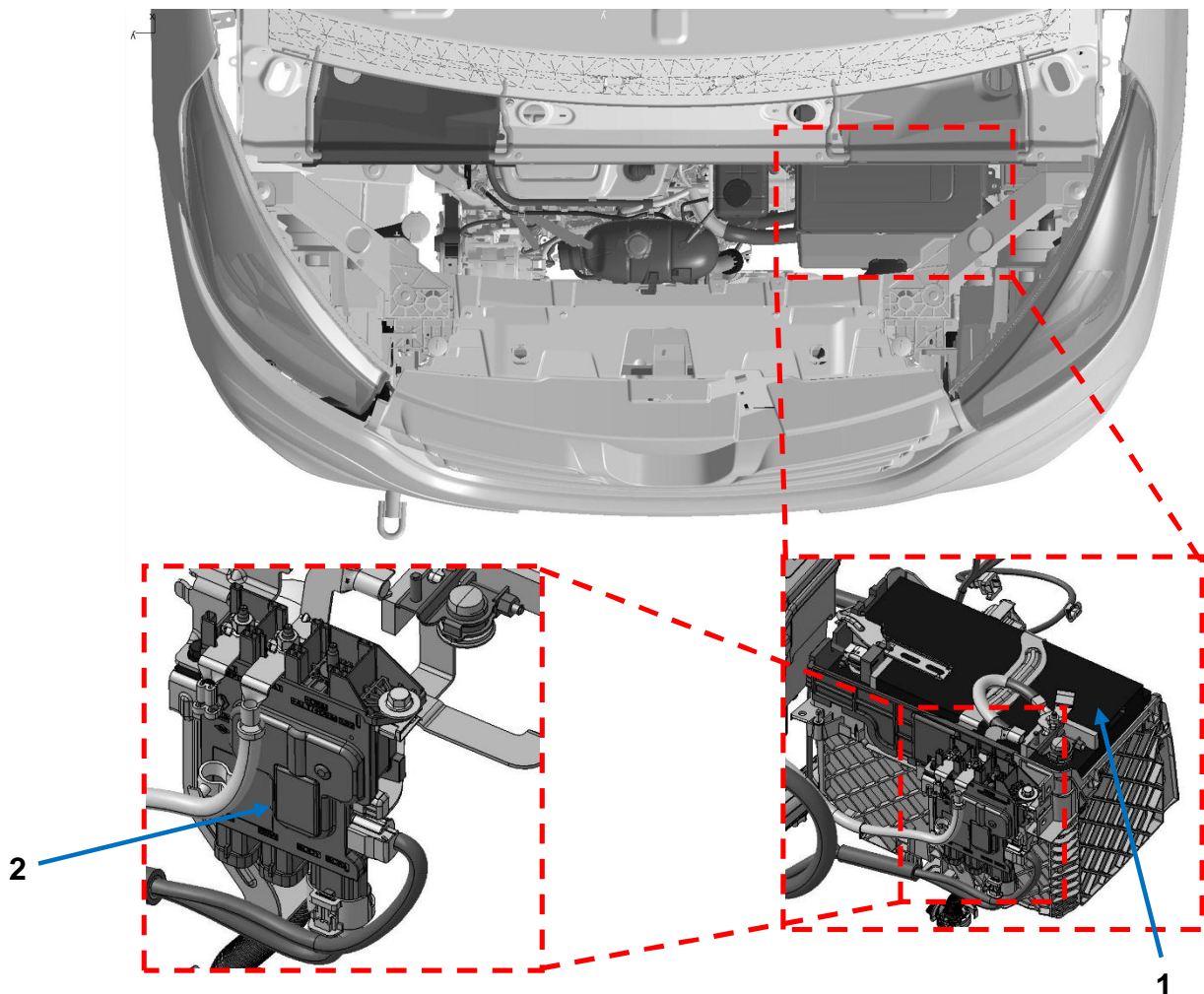
### 4.3. SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)

#### 4.3.1. SERVICE BATTERY

Several types of battery are available depending on the vehicle criteria

Battery location.

The battery is located inside the engine compartment on the left-hand side between the shock absorber turret and the headlight.



1 : Battery

2 : Electrical distribution unit

## VIVARO (X82)

### 4.3 – SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)

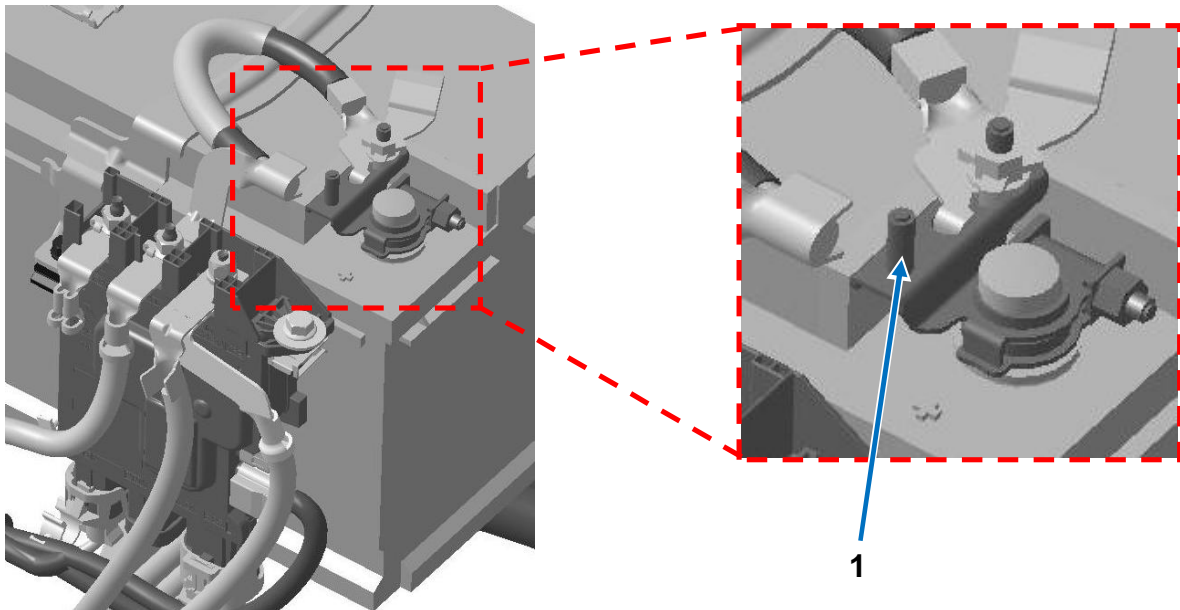


#### Battery versions

Type	START / STOP.	Temperate	Grand froid
L3 / 720A	without	x	
L4 / 800A	with	x	
L4 / 760A	without		x

#### 4.3.2. BATTERY POSITIVE TERMINAL (+)

Presence of an electrical distribution unit called the "BDU" with built-in fuses.



**Caution: Battery output is not protected by a fuse, to be fitted close to the terminal**

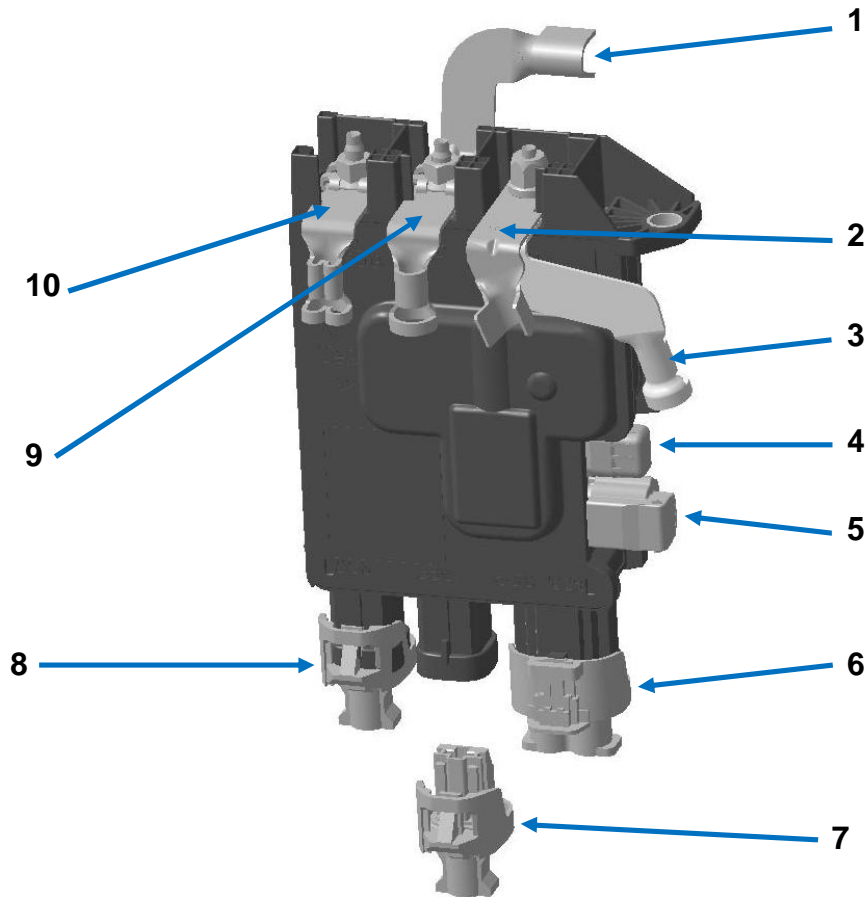
1: M6 high power free nut (current above 40 A)

## VIVARO (X82)

### 4.3 – SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)



#### Electrical distribution unit (BDU)



1:	Battery protection supply wiring	
2:	Engine wiring (Alternator)	300A
3:	Engine wiring (starter motor)	300A
4:	Mini fuse with cap (Start/Stop)	5A
5:	Cab wiring (Start/Stop)	
6:	Cab wiring (conversion KPD and KC6 options or trailer tow bar)	50A
7:	<i>Reserved for purpose-body builder Conversions</i>	*
8:	Engine wiring (engine management)	35A
9:	Engine Connection Unit	
10:	Cab wiring (power steering)	120A

Connector (7) is available to bodybuilders.

\* The 80 A fuse is unable to withstand more than 43 A permanent. For values greater than 40 A, the Pin on the battery positive (+) terminal should be used (see § 3.1)

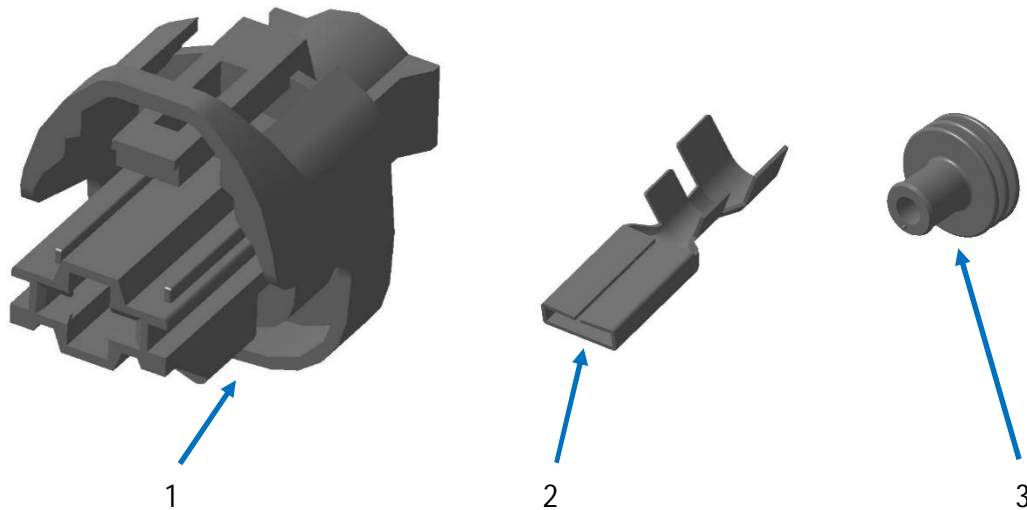
## VIVARO (X82)

### 4.3 – SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)



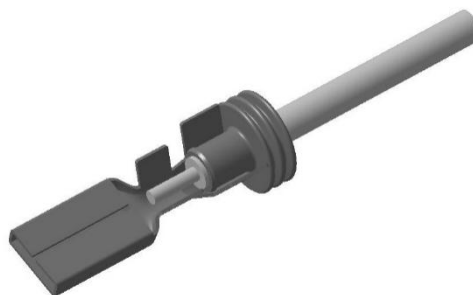
#### Details of bodybuilder connector (7)

Connector (7) is available to bodybuilders from the OPEL / VAUXHALL network. Only one maximum current of 43 A can be taken.



	Parts		TYCO	Function
1:	Clip holder		1544680-1	One-way connector clip holder
2:	Clip 8 MM NG1		1544227-1	Range 3 to 6 mm <sup>2</sup>
			1544228-1	Range 7 to 10 mm <sup>2</sup>
3:	Single wire joint		1544316-1	Ø Insulation 3.1 to 4.2 mm
			1544316-2	Ø Insulation 4.6 to 5.7mm
4:	Wire			

#### Detail before crimping the clip and seal



## VIVARO (X82)

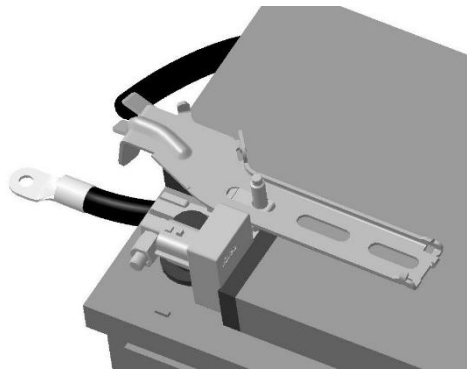
### 4.3 – SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)



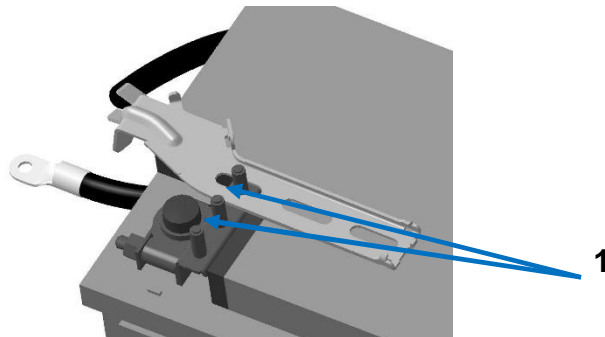
#### 4.3.3. BATTERY NEGATIVE TERMINAL (-)

With START / STOP.

All batteries with the Start/Stop option are prohibited to pick up an earth on the negative terminal



Without START / STOP.



	Negative terminal (-)	Tightening torque Nut on terminal
1 :	(x2) M6 free studs	8Nm $\pm$ 15%

- Depending on the electrical assessment, the electrical power take-off may be conditioned with the engine running information.
- The wiring must be red and supported inside the battery tray and as close to the terminal block as possible in order to avoid any vibration that could lead to damage of a terminal block or loosening of the nut. A red insulating sleeve is necessary for the terminal.

## VIVARO (X82)

### 4.3 – SERVICE BATTERY / POSITIVE TERMINAL (+) / NEGATIVE TERMINAL (-)



#### Wiring protection

There must be no contact between the wiring and the brake or fuel pipes.

Use a category 3 resin, lightweight felt or tape-type protection in the engine compartment and on the underbody and category 1 to 3 for the other sections not subjected to high temperatures (see "Wiring" data sheet).

As the split-grooved sleeve type protection is abrasive and may cause corrosion (paint wear) and noise (in hollow body sections) it must be immobilised.

If the original wiring is near to a split-grooved sleeve, a spacer (double adjustment bracket) must be added in order to avoid any contact (risk of wear and short circuit).



4.4. CAN-MULTIPLEX NETWORKS

Vehicle CAN (Controller Area Network) architecture: for information purposes only.  
Any modifications to the CAN network are prohibited.

The multiplex network allows the various computers to exchange their data (see diagram above). The network is connected to the diagnostic socket and satisfies the CAN protocol

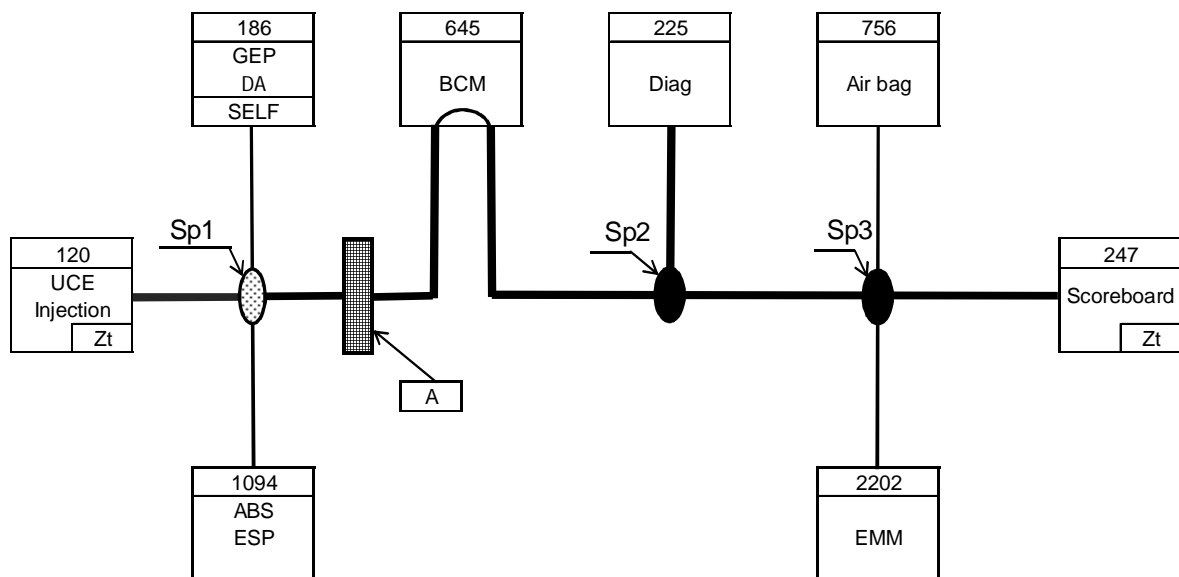
A CAN-BUS Interface modul for Conversion is available as an option on all versions. This module can be used to recover certain information that is available on the multiplexed network (see also Chapter 4.10)

Note:

- A check of the multiplex network can only be carried out using the OPEL / VAUXHALL diagnostic tool.
- If one of the ECUs is replaced, configuration needs to be carried out using the OPEL / VAUXHALL diagnostic tool

CAN diagrams

Entry level version

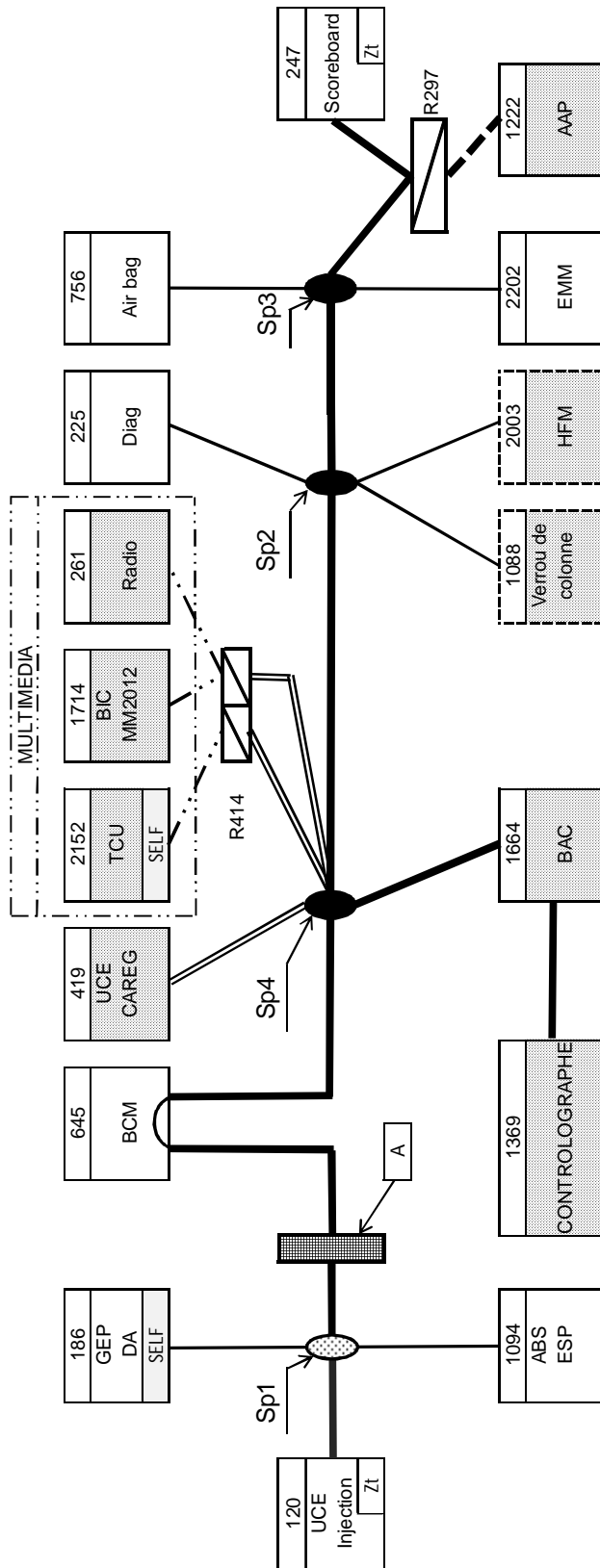


Légende des Schémas

	multimedia		Unit and computer codes
	Splicing		optional ECU
	Bulkhead bushing		wiring multimedia
	Wiring rear left		wiring cockpit



Top-of-the-range version



Légende des Schémas

	multimedia	Unit and computer codes
	Splicing	optional ECU
	Bulkhead bushing	wiring multimedia
	Wiring rear left	wiring cockpit



Legend of Components

AAP	Parking distance control
UCE	Injection computer
EEM	Electrical Energy Management
ABS / ESP	Anti-lock Braking System / Electronic Stability Program
Scoreboard	Instrument panel
BCM	UCH : Passenger Compartment Central Unit
CAREG	Climate control
HFM	Hands-free access
Airbag	Airbag ECU
TCU	Telematic Communication Unit
BIC	CAN interface unit
BAC	Approved Conversions Unit
GEP / DA	Power steering electro-pump assembly
Diag	Diagnostic socket

#### 4.5. AVAILABLE ELECTRICAL CURRENT

All vehicles that comply with the Euro6 or Euro VI standard (fitted with adblue type emission control system) are fitted with 185 A alternators.

All other vehicles that comply with previous standards depending on configuration are fitted with 150 A or 185 A alternators.

These alternators are combined with their battery as described below:

- Ø 150 A alternator with a VRLA battery of 70 Ah and 720 A
- Ø 185 A alternator with a VRLA battery of 80 Ah and 800 A

Example of alternator applications

##### Alternator 150A

- Ø On all R9M GEN1 (Single Turbo) Euro4 and Euro5 PANEL VANS
- Ø On all R9M GEN2 (Bi- Turbo) Euro4 and Euro5 PANEL VANS equipped with a heater and therefore with the following options:
  - C60 & K08 Manual front air-conditioning + Auxiliary heater,
  - CJ5 & K08 Manual front/rear air-conditioning + Auxiliary heater,
  - C68 & K08 Regulated front air-conditioning + Auxiliary heater,
  - CJ4 & K08 Regulated front/rear air-conditioning + Auxiliary heater,
  - C41 & K08 Heater system, outside air, with fan + Auxiliary heater

##### Alternator 185A

- Ø On all Combis
- Ø On all Euro6 PANEL VANS
- Ø On all R9M GEN2 (Bi- Turbo) PANEL VANS not equipped with a heater and therefore without the above-mentioned options.



Note:

- The heater allows the participation of the 4 thermo plungers to be reduced, hence its impact on the power balance and the alternator type.
- It is possible to replace the 150 A alternator against a 185 A alternator by the customer service.

VIVARO (X82)  
4.5 – AVAILABLE ELECTRICAL CURRENT



Available current

The tables below show the different electrical currents available (in ampere) according to whether a 150 A or 185 A alternator is used.

With the engine off, consumption (on the main battery) higher than that of the base vehicle is not permitted.

<u>with 150A alternator</u>						
	Powertrain	Version	Without fast idle 900	With fast idle		
				1000	1100	1300
Van	Single Turbo Gen 1	Without AC	15A	22A	25A	32A
		AC				
	Bi-Turbo Gen 2	Without AC	11A	18A	21A	28A
		AC				

Combi	Single Turbo Gen 1	Without AC	8A	15A	18A	25A
		AC				
	Bi-Turbo Gen 2	Without AC	4A	11A	14A	21A
		AC				

<u>with 185A alternator</u>						
	Powertrain	Version	Without fast idle 900	With fast idle		
				1000	1100	1300
Van	Single Turbo Gen 1	Without AC	59A	70A	74A	81A
		AC	41A	52A	56A	63A
	Bi-Turbo Gen 2	Without AC	37A	48A	52A	59A
		AC				

Combi	Single Turbo Gen 1	Without AC	34A	45A	49A	56A
		AC				
	Bi-Turbo Gen 2	Without AC	30A	41A	45A	52A
		AC				

AC = Air Condition



Note:

- Any electrical equipment added must be fused. These fuses must have a value appropriate to the equipment's consumption and the cross section of the wiring.



Attention:

- The value given is the average value available when the engine is running and in the worst-case fuel consumption conditions.
- The electrical equipment added is given priority over the vehicle's basic additional electric heating (thermoplungers) and may thus jeopardise the vehicle's comfort level.

### Power voltage management strategy

Various alternator voltage variation management strategies are applied to ensure optimized fuel consumption.

- Floating management    è without START / STOP.
- ESM                            è with    START / STOP.



Important :

- make sure there is voltage compatibility with the consumers added (including computers)
- make sure there is voltage compatibility with the coupling of additional batteries (see battery coupling sheet)



On vehicles without START / STOP

The voltage of the electrical network fluctuates between 13.5 V and 14,8 V during the engine running phases. This voltage management may be deactivated in the OPEL / VAUXHALL network via the Clip diagnostic tool.

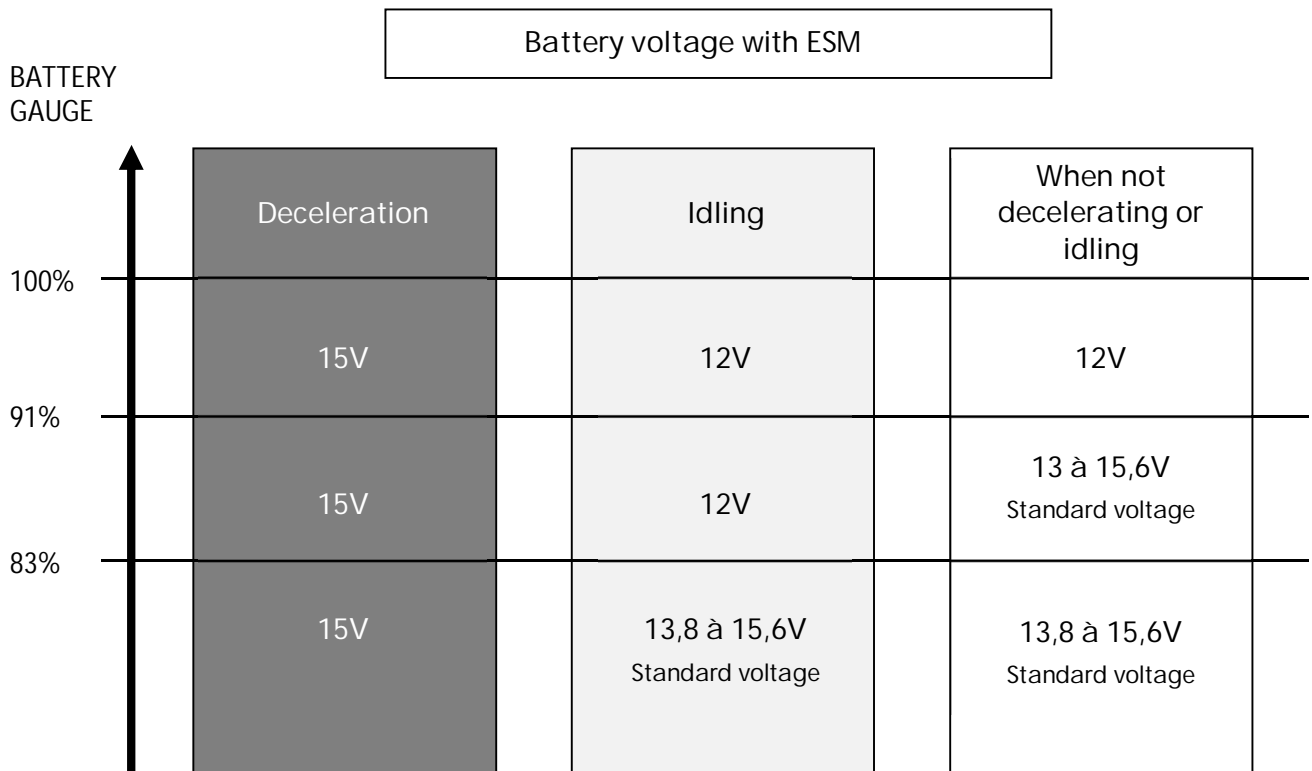
On vehicles with START / STOP

Under normal conditions, the battery voltage can vary from 12 V to 15.6 V depending on the vehicle battery charge rate.

During the deceleration phase, the voltage delivered by the alternator is 15 V.

Voltage of computers with START / STOP

When the vehicle is started, the voltage can fall to 6.4 V. This should be considered by the bodybuilder when he is adding control units.

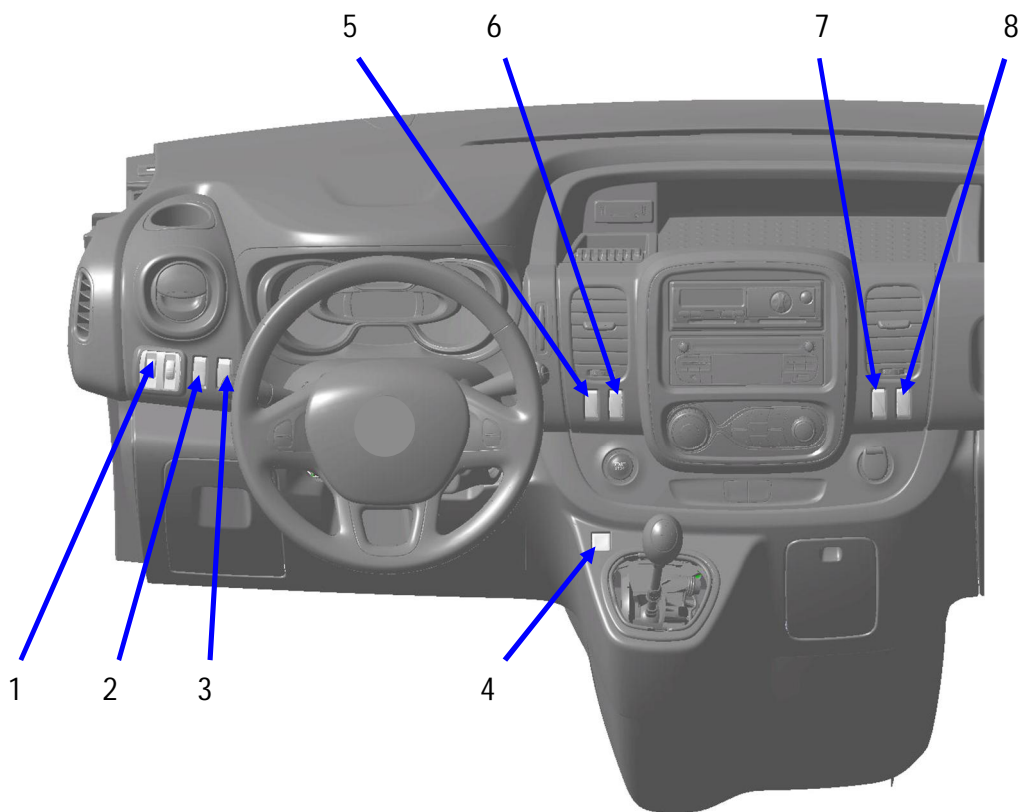


#### 4.6. INSTALLATION OF SWITCHES

Depending on version, five spaces for switches may be provided on the dashboard.

Switch for parking distance control (3), switch for cruise control/speed limiter (5) switch to override Start/Stop (6) switch for rear de-icing (7) and switch for fast idle (8).

Switches on left-hand drive version



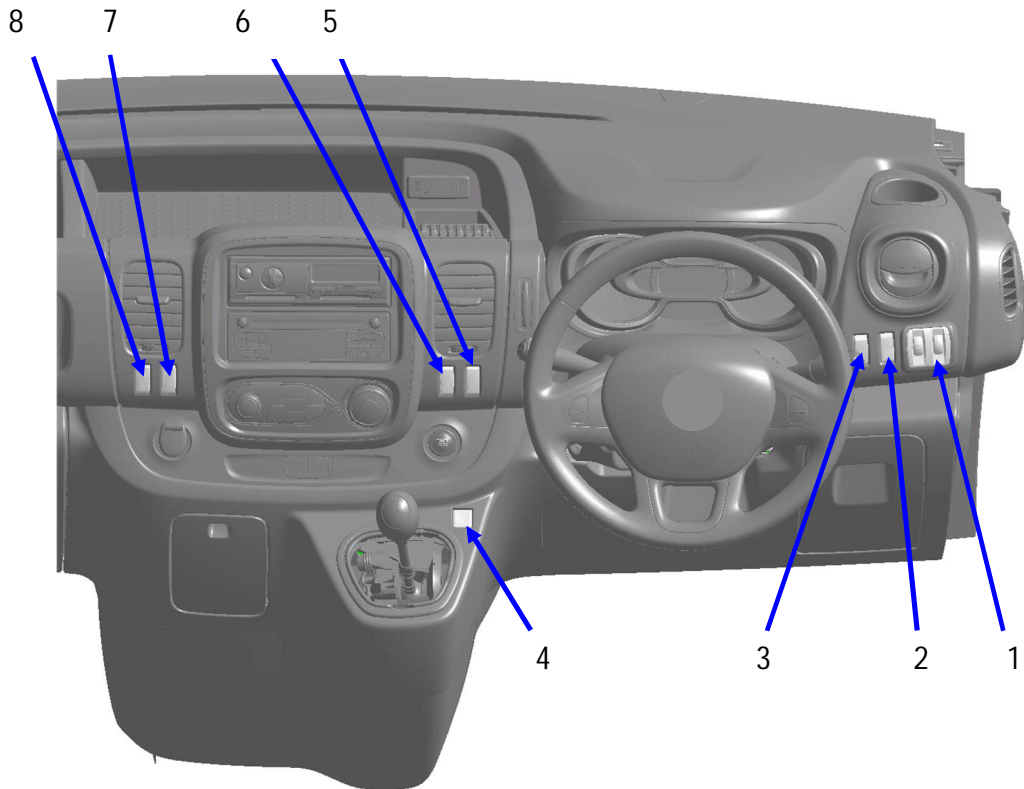
Reference	Function	Reference	Function
1 :	Headlight height adjustment and adjustment of instrument panel brightness	5 :	Cruise control/Speed limiter (Standard on Combi and optional on panel van)
2 :	Traction control	6 :	Start/Stop (option)
3 :	Rear parking distance control (option)	7 :	De-icing/demisting of rear screen and rear-view mirrors (option )
4 :	ECO mode	8 :	Fast idle (option)



VIVARO (X82)  
4.6 – INSTALLATION OF SWITCHES



Switches on right-hand drive version



Reference	Function	Reference	Function
1 :	Headlight height adjustment and adjustment of instrument panel brightness	5 :	Cruise control/Speed limiter (Standard on Combi and optional on panel van)
2 :	Traction control	6 :	Start/Stop (option)
3 :	Rear parking distance control (option)	7 :	De-icing/demisting of rear screen and rear-view mirrors (option )
4 :	ECO mode	8 :	Fast idle (option)

## 4.7. START / STOP

The START/STOP option controls the automatic stopping of the engine when the vehicle stops and automatic restarting when a deliberate restart is detected, in order to optimise fuel consumption and reduce emissions.

### Note :

*When an automatic stop occurs, the following pictogram appears on the instrument panel:*



*The automatic switch off of the engine cannot be permanently disabled*

*The START/STOP option can be deactivated temporarily via a switch (the function is automatically reactivated each time the engine is switched on)*

### Special case of the fast idle :

*As the fast idle is activated, START/STOP function is disabled automatically. (For example: power take off with refrigeration compressor)*

*Automatic restart by pressing the clutch pedal after engine stop is not locked.*

When the engine is in auto Stop phase, activating fast idle does not restart the engine. See Fast Idle chapter 4.9 .

### Operating conditions

#### To cause the engine to stop automatically

- Clutch pedal released
- AND vehicle in neutral
- AND speed threshold OR distance threshold exceeded since the last automatic stop
- AND no parking manoeuvres (reverse gear not engaged)
- AND Minimum speed of the vehicle
- AND doors, tailgate and engine bonnet closed
- AND minimum battery charge level
- AND within external temperature range
- AND thermal comfort reached (only with Climate Control option)
- AND engine temperature reached
- AND driver on seat with seat belt fastened (version keyless vehicle)



## Restart conditions

### Automatic restart:

- The clutch pedal AND neutral or clutch pedal fully pushed down when gear is engaged
- START/STOP switch pressed
- Vehicle speed (during acceleration on a slope or when the vehicle is pushed)

### Technical restart:

- Repeated on the brake pedal and / or need support of the braking system
- Failure detected in certain components (ABS, neutral, speed ....)
- Thermal comfort (automatically with a time delay)
- Battery charge status

Note:     *For more details, refer to the Vehicle User Manual*

### Impacts related to the START/STOP system

Loss of function following too many frequent stops. If the battery is not sufficiently charged, the "START/STOP" deactivates itself.

The engine restarts automatically after an auto stop for safety reasons (to maintain brake assistance vacuum, battery charge level, etc.) or thermal comfort.

For key vehicles, if no driver door opening is detected, START/STOP is deactivated after 15 missions (Key On, Key Off), making it necessary to return to the dealership to reactivate the system.

Variation in the voltage supplied by the alternator (see data sheet No. 4.5 – Available currents)

## CONVERSION RECOMMENDATIONS AND PROHIBITIONS

### Vehicle servicing

Before carrying out any servicing on the vehicle, the battery must be disconnected (to prevent the Stop and Start causing the engine to start unexpectedly).

### Sensors

It is prohibited to modify the information issued by the sensors connected to the START/STOP system (particularly for opening elements).

It is permitted to take the information from the bonnet sensor for alarms.

### Recommended vehicle versions

Whenever possible, it is recommended to take vehicles without the START/STOP option for conversions requiring constant energy (electrical or mechanical) from the vehicle, or for conversions with the addition or modification of opening elements through which the driver may leave the vehicle.

When the base vehicle comes with START/STOP, it is recommended to use the fast idle function for conversions requiring the engine to run during intermediate stops (traffic jams, traffic lights, stop signs, etc.).

On vehicles where conversions are only used with the vehicle stopped (e.g. rescue vehicles). Engine restarting will no longer be followed by an automatic Stop for as long as the vehicle remains stationary.

### Conversion prohibition and obligations



It is forbidden to make contact between the control unit of the conversion and the base vehicle's Stop & Start activation/deactivation (*button on the dashboard*), *to restart the engine when required*;

*Risk of engine automatically restarting while the driver has exited the vehicle during the auto Stop phase.*



*It is forbidden to consume additional current during the Auto Stop phase (engine not running) above the value given in 'available current' sheet 4.5*

*There is a risk of a fault occurring on the vehicle's computers if excess current is consumed during the engine start-up phase).*

### Conversions with modification or addition of opening elements



It is prohibited to remove the vehicle's opening element closure switches from the vehicle or to add additional opening elements through which the driver may get out and whose opening would not be recognised by the vehicle. *Risk of failure to detect the driver exiting the vehicle and automatic restarting of the engine after an automatic stop.*

The driver's door must remain the main way out of the vehicle for the driver so as not to disrupt operation of the START/STOP (see paragraph on "related impacts").



It is forbidden to remove the bonnet sensor (opening detection must remain operational).

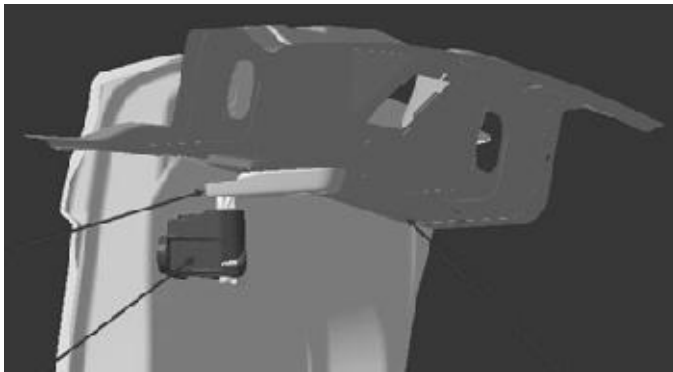


### Panel van vehicle (without partition)

If a side opening which can be used to exit the vehicle is added, it is necessary to take a base vehicle with a sliding side door, so as to maintain the door wiring and switch.

If the opening elements are modified, it is necessary to retain the electrical information of the opening element switch.

It is essential to remove the left-hand door retaining system for vehicle versions fitted with them.



### Open vehicle (platform cab)

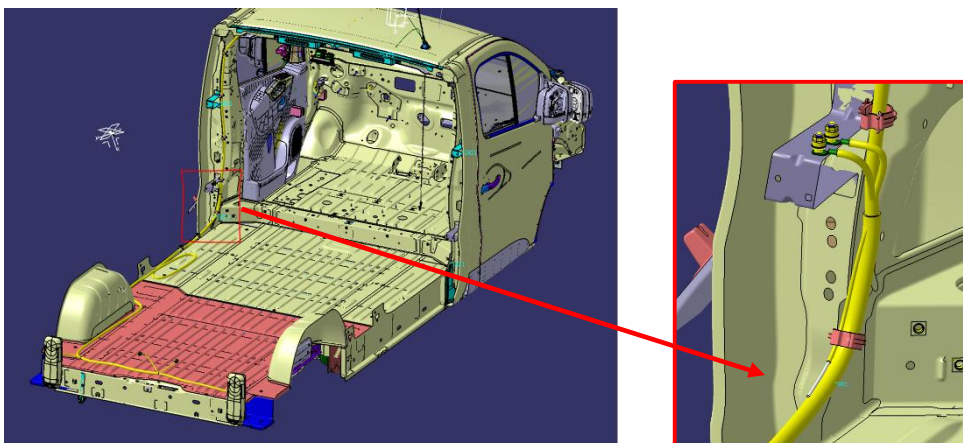
If an opening element which can be used to exit the vehicle is added, it is recommended to use original OPEL / VAUXHALL locks and the associated switches.

The spare wire (connection 87T) located near to the 2 earth terminals MFA-A and MGA is connected at its other end to the 36-pin connector 297-3A in the roof, via pin C8; it must be connected to the locking switch of the opening element that was added.

The earthing of the spare wire gives the information of an open opening element.

Where several opening elements are added, the related switches must be connected in series.

If the driver's door is modified, the basic vehicle's door switch information must be retained.



## 4.8. REAR DOOR CENTRAL LOCKING / PARKING BRAKE INFORMATION

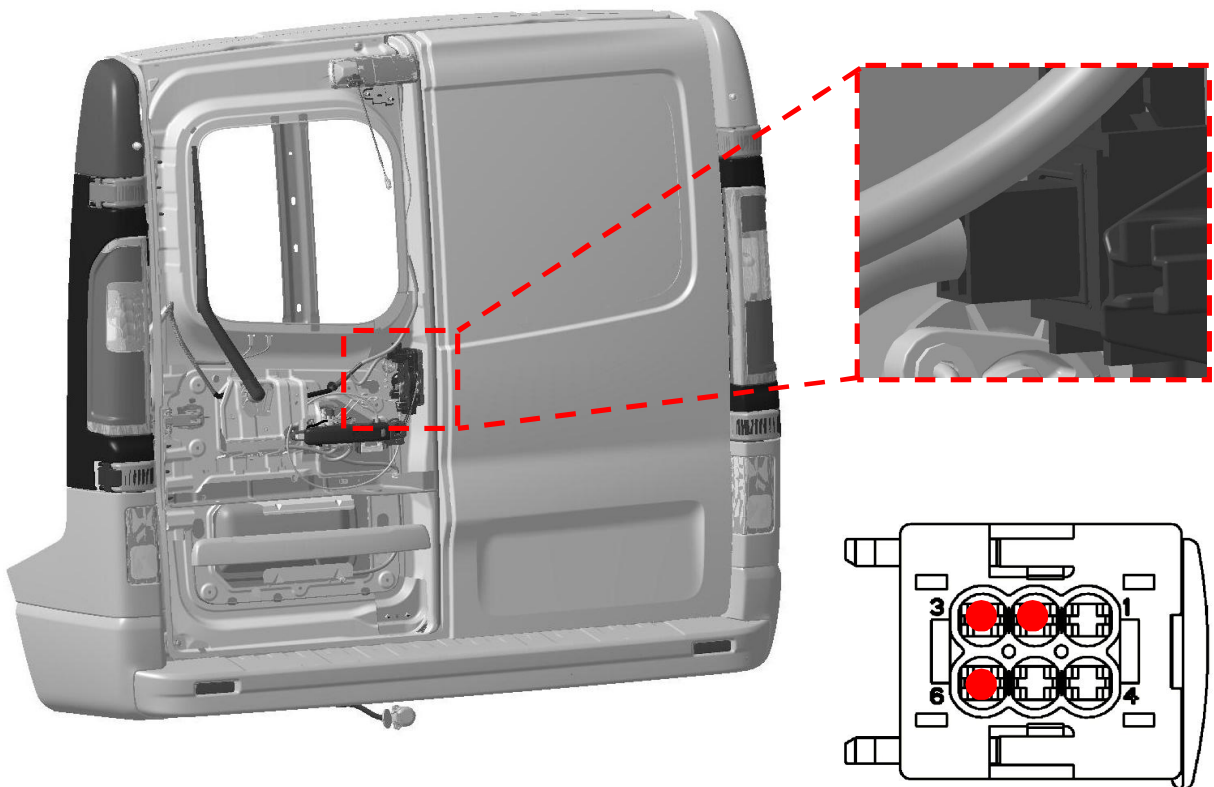
### 4.8.1. REAR DOOR CENTRAL LOCKING

Some conversions may require the removal of the loading area's hinged rear door or tailgate central locking feature.

To avoid generating a fault in the computer that manages the locks, closing of the rear lock has to be simulated via the electrical connector below:

*Important: This operation is not permitted for vehicles with a hands-free card.*

#### Left-hand hinged door, version



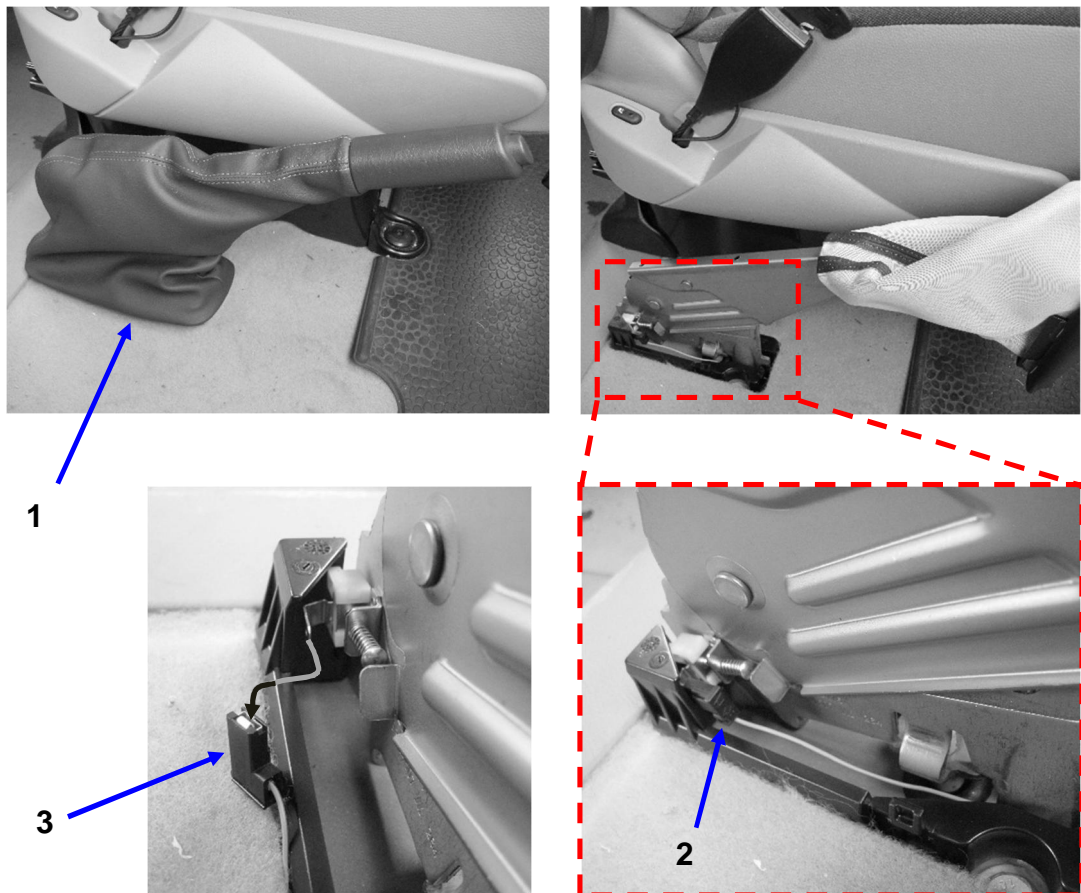
Remove ways 2, 3 and 6 from the hinged door lock 6-way connector.



### 4.8.2. PARKING BRAKE INFORMATION

Before working on the vehicle, refer to the "Electrical Connections" data sheet.

The parking brake information is earthed when the brake is applied. This connection can be accessed on the hand brake.



1:	Hand brake
2:	Hand brake wiring
3:	Hand brake wiring disconnected

VIVARO (X82)  
4.8 – REAR DOOR CENTRAL LOCKING / PARKING BRAKE INFORMATION

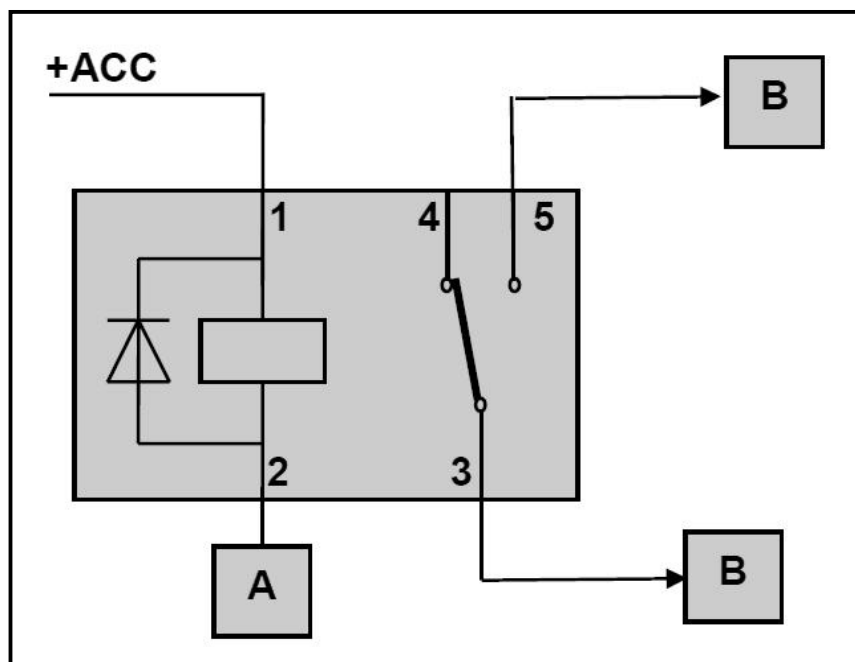


To retrieve this information, it must be sent using a relay equipped with a free wheel diode.

For example, the following relay can be used:

- 40 Amp relay,
- 20 Amp relay,

CONNECTION DIAGRAM



A : Handbrake information
B : Dry contact to recover handbrake information
+ACC : +Accessories power supply, 1 <sup>st</sup> notch on the ignition key

Note: *relay power supply must not be connected directly to the battery positive terminal*





## 4.9. WIRING LOOM FOR CONVERSIONS OPTION "KPD" / FAST IDLE OPTION "V66"

### 4.9.1. WIRING LOOM FOR CONVERSIONS OPTION "KPD"

This option manages the vehicle's power for the addition of an electrical consumer and avoids the risk of battery discharge (a fault likely to keep the vehicle off the road).

#### General information

The option "KPD" contains a 6-way connector and a 2-way connector.

#### 6-way Connector

The 6-way connector (1) is accessible on the left-hand side of the dashboard behind the Passenger Compartment Fuse and Relay Box.

- "Engine running" information
- Activation of a fast idle
- + 12 V load shedding current distribution power supply
- "Side Light" information
- "Hand brake" information

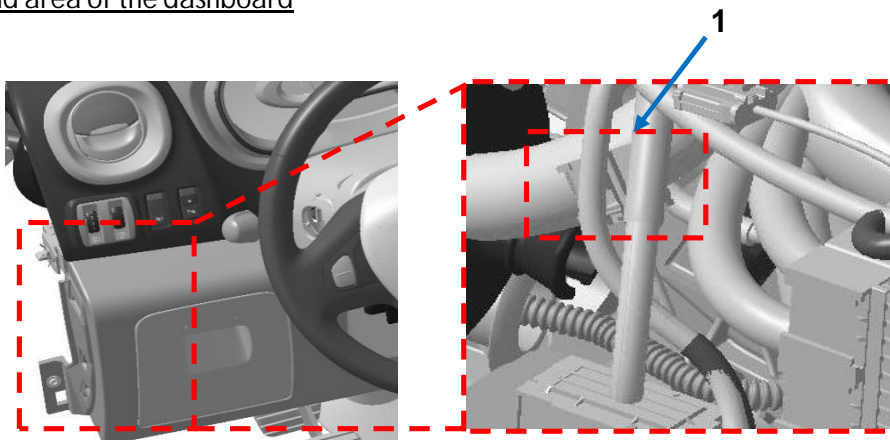
#### 2-way Connector

The 2-way connector (2) is accessible on the left-hand side underneath the seat.

- 12 V power supply with max. current of 40 A

#### Location of the 6-way connector

#### Left-hand area of the dashboard



The option "KPD" 6-way connector (1) is accessible on the left-hand side of the dashboard behind the Passenger Compartment Fuse and Relay Box.

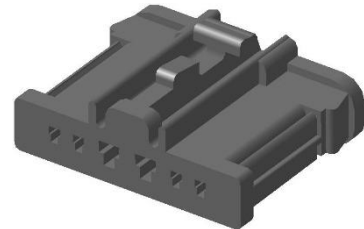
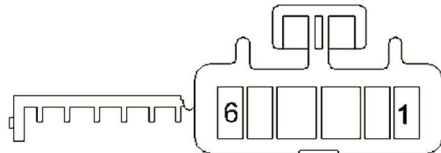
It is secured on the dashboard wiring using a tear-off link. Extra length is provided for the connection.

## VIVARO (X82)

### 4.9 – WIRING LOOM FOR CONVERSIONS OPTION “KPD” / FAST IDLE OPTION “V66”



#### 6-way Connector



Ways	Connections	Allocations
1 :	BMT2	+ 12V "engine running" information (max. 8 A/wire section 1 mm <sup>2</sup> )
2 :	3ADA	Fast idle control (500 mA max. wire section 0.35 mm <sup>2</sup> )
3 :	SBP4	+12 V load shedding (max. 16 A/wire section 1.5 mm <sup>2</sup> )
4 :	LPH	+ 12 V Side lights (lamp) (max. 500 mA/wire section 0.35 mm <sup>2</sup> )
5 :	H1	"Ground" information with hand brake applied (max. 500 mA/wire section 0.35 mm <sup>2</sup> )
6 :	MAN	Ground (section large enough to adapt to the +12 V current distribution) (wire section 1.5 mm <sup>2</sup> )

The counterpart to this connector is available from the OPEL / VAUXHALL network

#### CONNECTION KIT



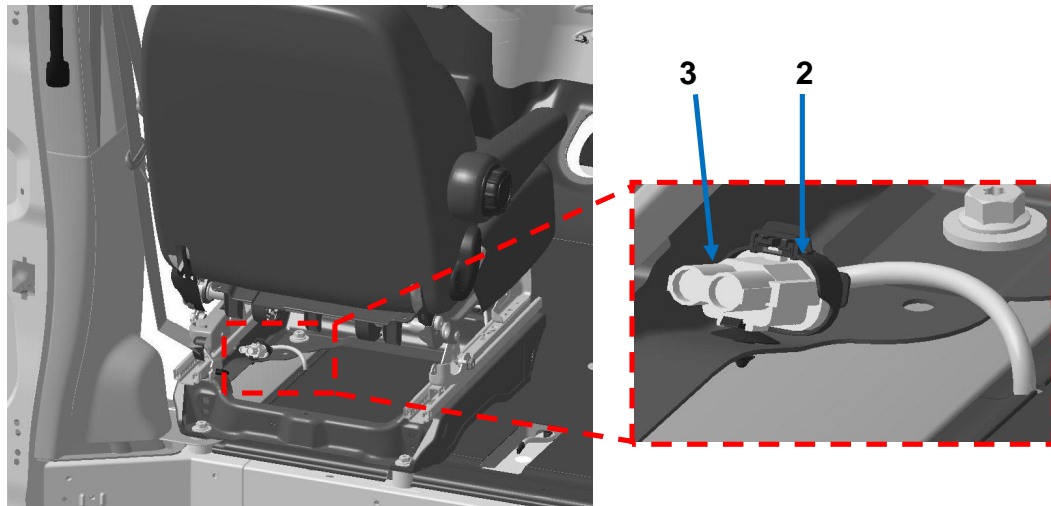


## VIVARO (X82)

### 4.9 – WIRING LOOM FOR CONVERSIONS OPTION “KPD” / FAST IDLE OPTION “V66”

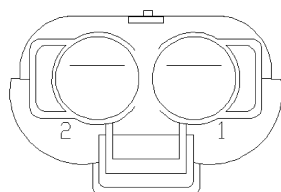
Location of the 2-way connector

Left-hand area of floor panel underneath the seat (symmetrical for right-hand drive)



The 2-way connector (2) is accessible on the left-hand side underneath the driver's seat. It is waiting to be used along with its counterpart (3), but it is necessary to obtain the contacts

#### 2-way Connector



Way	Allocation
Way 1 (BP23)	+12 V direct battery power supply for maximum consumption of 40 A (wire section 7 mm <sup>2</sup> ). Protected by a 50 A fuse,
Way 2 (MAN)	Ground (wire cross-section 7 mm <sup>2</sup> large enough to adapt to the battery +12 V current).

**Note:** *The maximum permanent current of this power supply must not exceed 40 A and should be shared with the AAM unit for vehicles with “KC6” or “VR2” option. (for info, the max. current needed for the tow bar is around 12A).*

*This line is protected by the 50 A fuse fitted in the electrical distribution unit (BDU).*

**Important:** *This power supply is connected directly to the battery. The vehicle is therefore not protected by the energy management system. Risk of battery discharge.*

## VIVARO (X82)

### 4.9 – WIRING LOOM FOR CONVERSIONS OPTION “KPD” / FAST IDLE OPTION “V66”



#### 2-way connector interface contacts



CONNECTOR			
Wire section		Supplier reference	Supplier
3 to 6 mm <sup>2</sup>		P790861	TYCO
7 to 10 mm <sup>2</sup>		P790862	TYCO

#### 4.9.2. FAST IDLE OPTION “V66”

*The fast idle function is not possible on a vehicle that does not have the option “V66 ” or option “ KPD ” or option “KC6”*

##### General information

The fast idle speed and PTO Provision are only available together.

Fast idle function is used to increase the idle speed of the vehicle to provide more power and/or electrical energy.

The standard vehicle idle speed is 850 rpm.

The fast idle default value is 1000 rpm. This value can be set to between 1000 and 2000 rpm in increments of 100 rpm. And also a value of 860 rpm. This operation is carried out in the OPEL / VAUXHALL network using the “Clip” diagnostic tool.

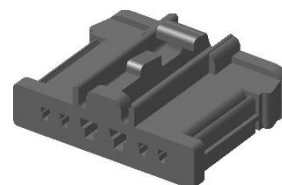
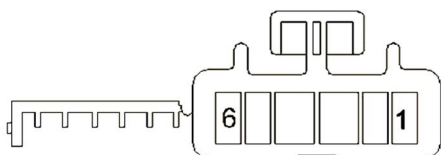
On the manual gearbox it is possible to re-program the prohibited “V66” (idle) speed using the CLIP diagnostic tool.

## VIVARO (X82)

### 4.9 – WIRING LOOM FOR CONVERSIONS OPTION “KPD” / FAST IDLE OPTION “V66”



#### Option “KPD” connector



Ways	Connections	Allocations
1 :	BMT2	+ 12V "engine running" information (max. 8 A/wire section 1 mm <sup>2</sup> )
2 :	3ADA	Fast idle control (500 mA max. wire section 0.35 mm <sup>2</sup> )
3 :	SBP4	+12 V load shedding (max. 16 A/wire section 1.5 mm <sup>2</sup> )
4 :	LPH	+ 12 V Side lights (lamp) (max. 500 mA/wire section 0.35 mm <sup>2</sup> )
5 :	H1	"Ground" information with hand brake applied (max. 500 mA/wire section 0.35 mm <sup>2</sup> )
6 :	MAN	Ground (section large enough to adapt to the +12 V current distribution) (wire section 1.5 mm <sup>2</sup> )

#### Operation and safety

The driver controls the operation of the fast idle by pressing a button on the dashboard.

The fast idle is activated approximately 4 seconds after the engine starts, even if the button is in the ON position when the engine is started.

The function is deactivated if the coolant temperature warning light or any other engine warning light comes on.

By default, the vehicle is configured with a deactivation speed of almost zero (around 0.5 km/h)

For a fast idle below 1,300 rpm, the deactivation speed can be set up to 30 km/h

For a fast idle above 1,300 rpm, it is not possible to change the deactivation speed. The vehicle cannot drive with fast idle.

Pressing the clutch pedal deactivates the fast idle.



# VIVARO (X82)

## 4.9 – WIRING LOOM FOR CONVERSIONS OPTION “KPD” / FAST IDLE OPTION “V66”

### Injection computer (euro4 & 5)

For R9M Euro4 & 5 engines, the computer in question is the EDC17C42, and the operating principle is as follows:

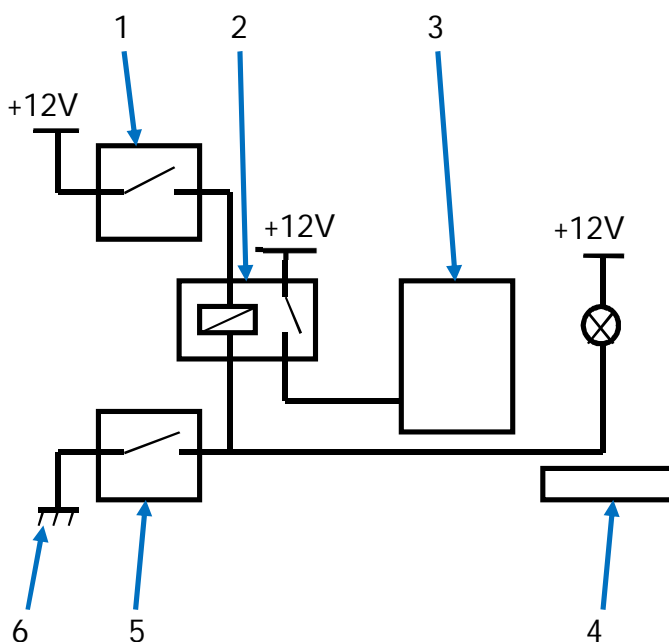
- Use of an injection computer input +12 V supply on the corresponding pin of connector B pin G2 (see table below)

PIN	B-G2																																																																																																																																																																		
Connector	B																																																																																																																																																																		
	Connector C	Connector B	Connector A																																																																																																																																																																
	<table border="1"> <tr><td>M</td><td>L</td><td>K</td><td>J</td><td>H</td><td>G</td><td>F</td><td>E</td><td>D</td><td>C</td><td>B</td><td>A</td></tr> <tr><td>4</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>3</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>2</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>1</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> </table>	M	L	K	J	H	G	F	E	D	C	B	A	4	o	o	o	o	o	o	o	o	o	o	o	3	o	o	o	o	o	o	o	o	o	o	o	2	o	o	o	o	o	o	o	o	o	o	o	1	o	o	o	o	o	o	o	o	o	o	o	<table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td><td>G</td><td>H</td><td>J</td><td>K</td><td>L</td><td>M</td></tr> <tr><td>1</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>2</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>3</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>4</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> </table>	A	B	C	D	E	F	G	H	J	K	L	M	1	o	o	o	o	o	o	o	o	o	o	o	2	o	o	o	o	o	o	o	o	o	o	o	3	o	o	o	o	o	o	o	o	o	o	o	4	o	o	o	o	o	o	o	o	o	o	o	<table border="1"> <tr><td>H</td><td>G</td><td>F</td><td>E</td><td>D</td><td>C</td><td>B</td><td>A</td></tr> <tr><td>4</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>3</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>2</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> <tr><td>1</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td><td>o</td></tr> </table>	H	G	F	E	D	C	B	A	4	o	o	o	o	o	o	o	3	o	o	o	o	o	o	o	2	o	o	o	o	o	o	o	1	o	o	o	o	o	o	o
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### Parking brake switch:

For safety reasons, some conversions may require activation of the fast idle to be combined with the parking brake applied information as follows:

### Fast idle diagram



1: Fast idle control
2: Relay
3: Injection computer
4: Instrument panel warning light
5: Hand brake switch
6: Earth

## VIVARO (X82)

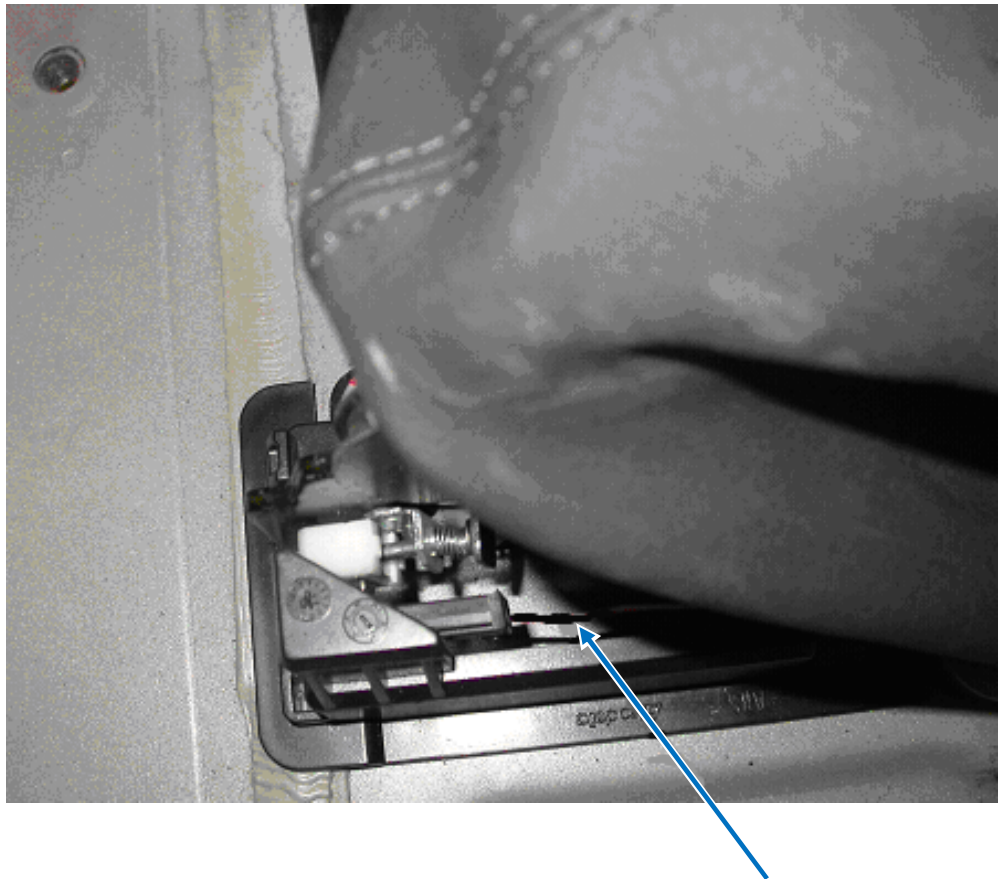
### 4.9 – WIRING LOOM FOR CONVERSIONS OPTION “KPD” / FAST IDLE OPTION “V66”



#### Parking brake information

##### Cab area

- This connection is grounded when the brake is applied and can be accessed via the hand brake connector device 156AA.
- Requires the use of a crimp sleeve on connection H1
- This information must be controlled by a single relay.



H1 connection of hand brake connector 156AA

#### 4.10. CAN – BUS INTERFACE, OPTION “KC6”

The CAN - bus interface unit is available as an option on all versions. This unit is used to retrieve certain information available on the multiplex network.

The unit is mounted on the dashboard cross member behind the centre console for both left-hand drive and right-hand drive vehicles.



**Attention:**

- The use of output signals is entirely new.

The Additional Adapter Unit is available as an option on all versions. This unit is used to retrieve certain information available on the multiplex network.

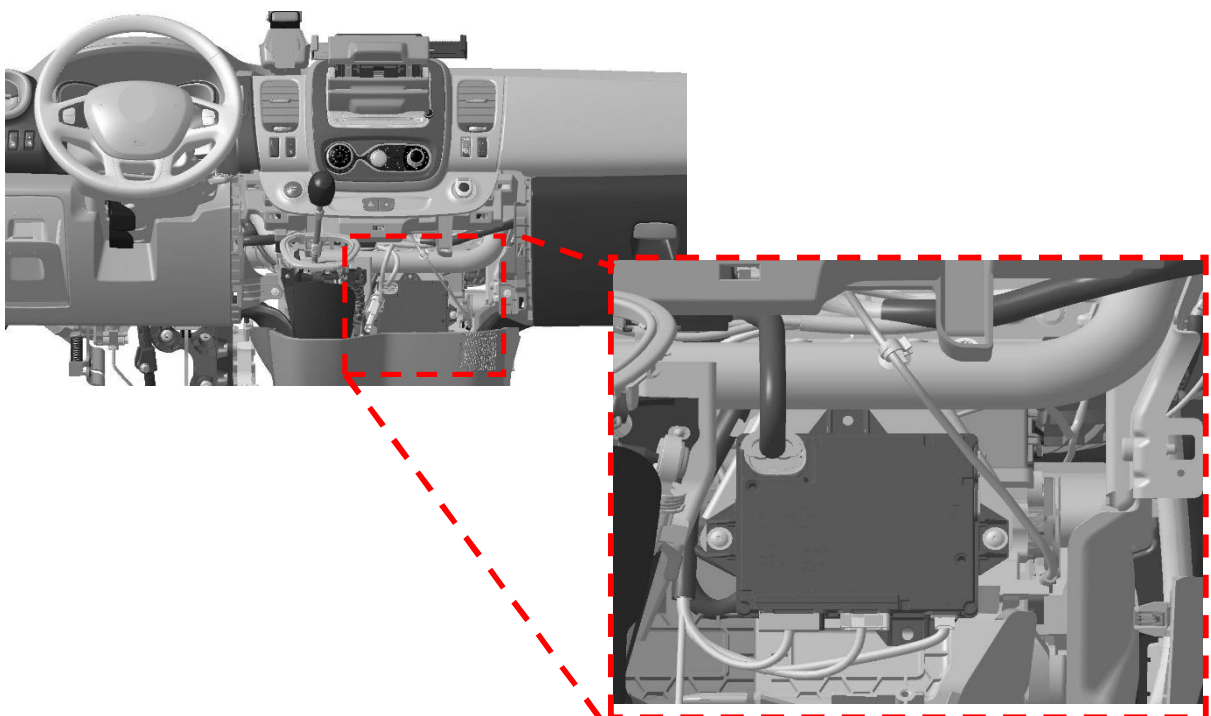
The unit is mounted on the dashboard cross member behind the centre console for both left-hand drive and right-hand drive vehicles.



**Note:**

- The unit cannot be fitted at post-equipment.
- On vehicles without the KC6 option, this function is available:
  - with the tow bar option (ATREM), provided the vehicle is taken to the Opel/Vauxhall network to activate the logical outputs.
  - With the tachograph option, except speed info.

#### Location CAN - bus interface





VIVARO (X82)  
4.10 – CAN-- BUS INTERFACE, OPTION "KC6"

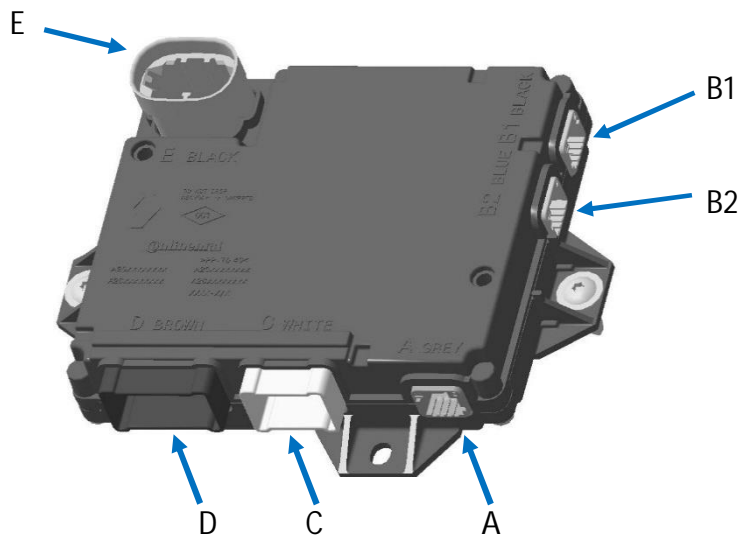


Details CAN - bus interface unit



Note:

- Connectors "A", "E" and "C" are strictly for Opel/Vauxhall use.
- Connectors "B1" and "B2" are specifically for coach builders (CAN and logic outputs).
- Connector "D" is available for coach builders (power outputs) if the vehicle does not have the "VR2" option (tow bar).
- Connector "D" is strictly for Opel/Vauxhall use if the vehicle has the "VR2" option.



tow bar version „VR2“

In this case, the connector (D) is not available for coach builders. It is used to supply the tow bar socket. The vehicle needs to be taken to the Opel/Vauxhall network to activate the logical outputs.

Power output use (D),

Possible on vehicles that do not have the tow bar option.

Supply the shunt (1)

To be able to use the AAM unit's power outputs (connector D), disconnect (D) and (C) and reconnect them respectively on the shunt's connectors.

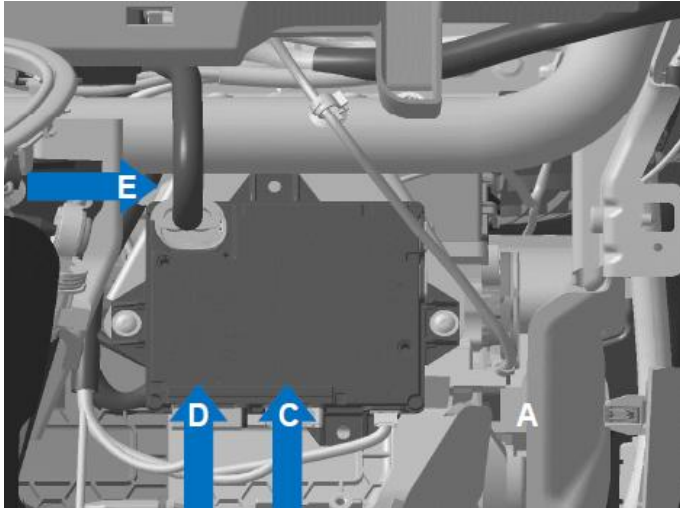
Put foam on each connector (see photo):





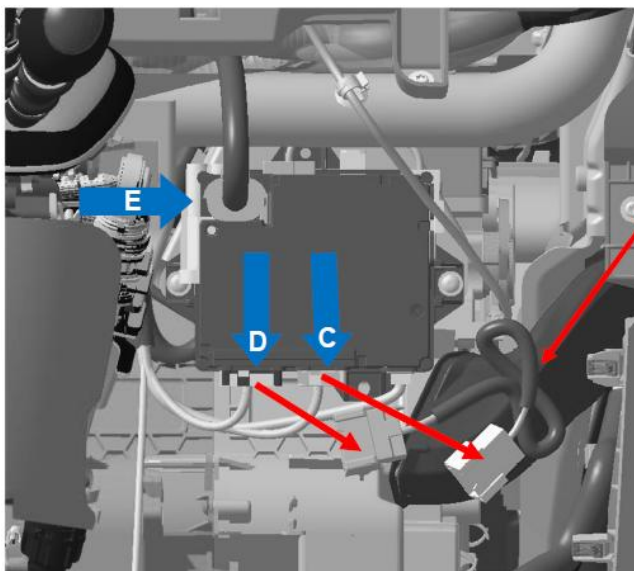
VIVARO (X82)  
4.10 – CAN-- BUS INTERFACE, OPTION “KC6”

Base C will then remain not connected  
The 12 ways of base D are available..



Attention:

- Given the proximity of the cup holder (risk of splashing of water)
- For any additional connection on the computer area, the coach builder must provide protection (vertical flap type, covering all of the connectors in the left-hand driver and right-hand drive computer area).

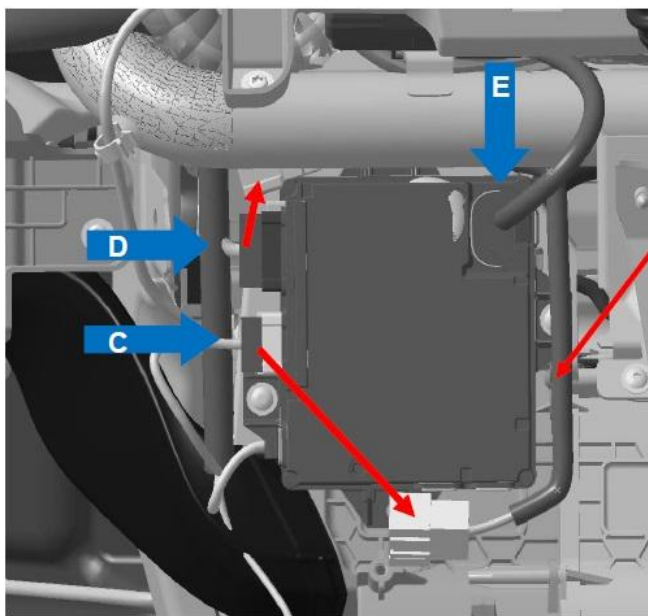


Left-hand drive: installation  
of the shunt

Disconnect connector D and connect it to the shunt's connector behind the dashboard cross member. Then disconnect connector C and connect it to the shunt's connector at the bottom of the unit.  
Released in this way, base D of the unit can be used by the adapter.  
Clear the excess length of the shunt, the link (shrink ring) of which will not have to be removed, by attaching it to the air duct using a Colson type strap.

Right-hand drive: installation of the shunt

The link (shrink ring) needs to be removed from the shunt (the length of the wiring therefore passes from 150 to 280 mm approximately for right-hand drive application) and the clips on the 2 connectors.



Right-hand drive: installation of the shunt

Disconnect connector D and connect it to the shunt's connector behind the dashboard cross member. Then disconnect connector C and connect it to the shunt's connector at the bottom of the unit. Released in this way, base D of the unit can be used by the adapter.



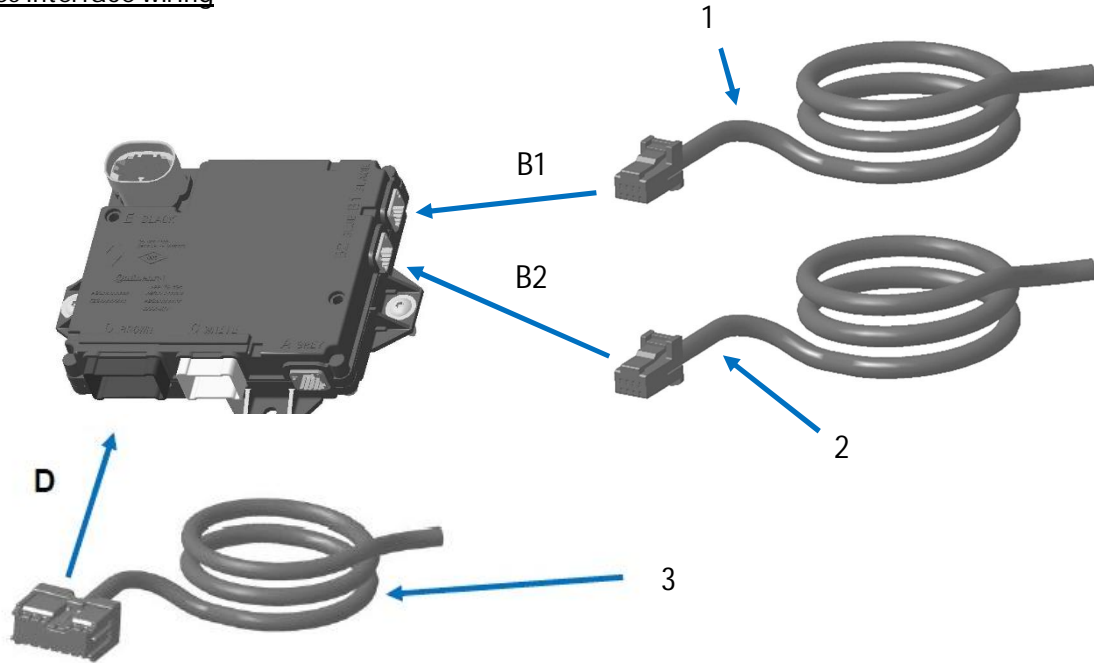
Note:

- The orientation of the unit is different in: Left-hand drive and Right-hand drive vehicles.

VIVARO (X82)  
4.10 – CAN-- BUS INTERFACE, OPTION “KC6”



After-sales interface wiring



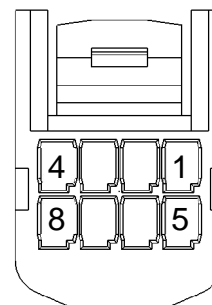
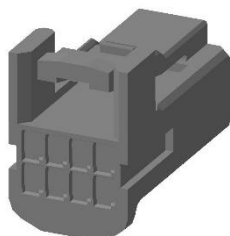
	Connector number	No. of pins	Connector colour	OPEL Part No.
1 :	B1	8	black	95 519 283
2 :	B2	8	Blue	95 519 284
3 :	D	12	Brown	

\* Reprogramming in the OPEL/VAUXHALL network

Door switch	Neutral	Active trajectory control
Ignition contact switch	Auto gearbox fault warning light on	Trajectory control fault
Door locking	Side lights	Gear engaged
Direction indicators	Main beam headlights	
Brake check	Marker lights	
Engine status	Front fog lights	
Air conditioning compressor	ESP activation status indicator light	
Start-up	Hand brake switch	
Clutch switch	ABS operation	
Reverse gear	ABS operating fault	



Details of Black connectors B1 / 5 (8 way)



Connector	Part number	Function	Signal	Pins
B1 BLACK	TYCO 0-1379659-1	CAN ADAP2 500K	CANHS_L3	1
		CAN ADAP2 500K	CANHS_H3	5
		Brake position	O_LOG_1	4
		Engine running	O_LOG_2	7
		Clutch position	O_LOG_3	3
		Door opening/closing	O_LOG_6	6
		ABS regulation	O_LOG_7	2
		<i>Not connected</i>	NC1	8



Note:

- Ways 2, 3, 4, 6, and 7 are able to supply other information\* (See Chapter 3.2 ) via a reprogramming operation carried out within the OPEL/VAUXHALL network.
- Ways 1 and 2 specific to the CAN for bodybuilders (See table on pages 6, 7, 8 and 9).

Connector	Part number	Function	Signal	Pins
B2 BLUE	TYCO 0-137-9659-3	Ignition key position	O_LOG_4	4
		Door opening signal	O_LOG_5	3
		ESP regulation	O_LOG_8	7
		Neutral signal	O_LOG_9	2
		Hand brake switch	O_LOG_10	6
		Fast idle control	INTCNX_ADAP_VEH	8
		Vehicle speed	O_PWM_1	1
		Engine speed	O_PWM_2	5

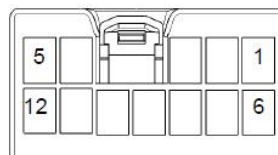
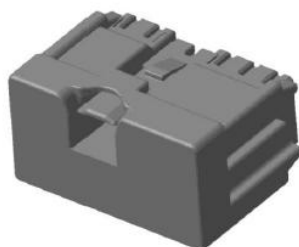


Note:

- Pins 2, 3, 4, 6, and 7 are able to supply other information\* via a reprogramming operation carried out within the OPEL/VAUXHALL network.



Details of connector D (12-way)



Connector	Max. Power	Input/ Output	Ways
D Brown	Max. 2 x 21 W (Lmax = 2 mH)	Output	1
	Max. 2 x 21 W (Lmax = 2 mH)	Output	2
	Max. 21 W (Lmax = 2 mH)	Output	3
	Max. 3 x 21 W (Lmax = 1 mH)	Output	4
	Max. 21 W + 5 W (Lmax = 2 mH)	Output	5
	Max. 2 x 21 W	Output	6
	Max. 21 W (Lmax = 2 mH)	Output	7
	Max. 6 x 5 W (Lmax = 3 mH)	Output	8
	Max. 21 W (Lmax = 2 mH)	Output	9
	Max. 21 W + 5 W (Lmax = 2 mH)	Output	10
	Max. 6 x 5 W (Lmax = 3 mH)	Output	11
	Lmax = 2 mH	Output	12



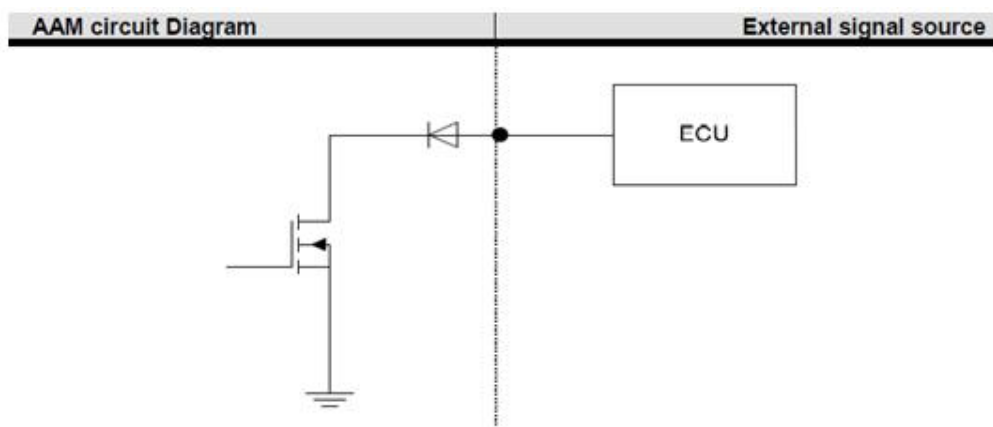
Note:

- The maximum permanent current of these power supplies must not exceed a total of 40A shared with the KPD option.
- This line is protected by the 50 A F2 fuse fitted in the electrical distribution unit (BDU).
- In the event of accidental overload on one way, this is deactivated. To reactivate, the vehicle must be set to standby (after ignition feed off/lights off/vehicle locked. On standby for 2 min. 20 s after locking)
- \*Ways 1 and 2 specific to the CAN for converters (See table below)



## CURRENT TYPES

### Logical outputs and PWM outputs

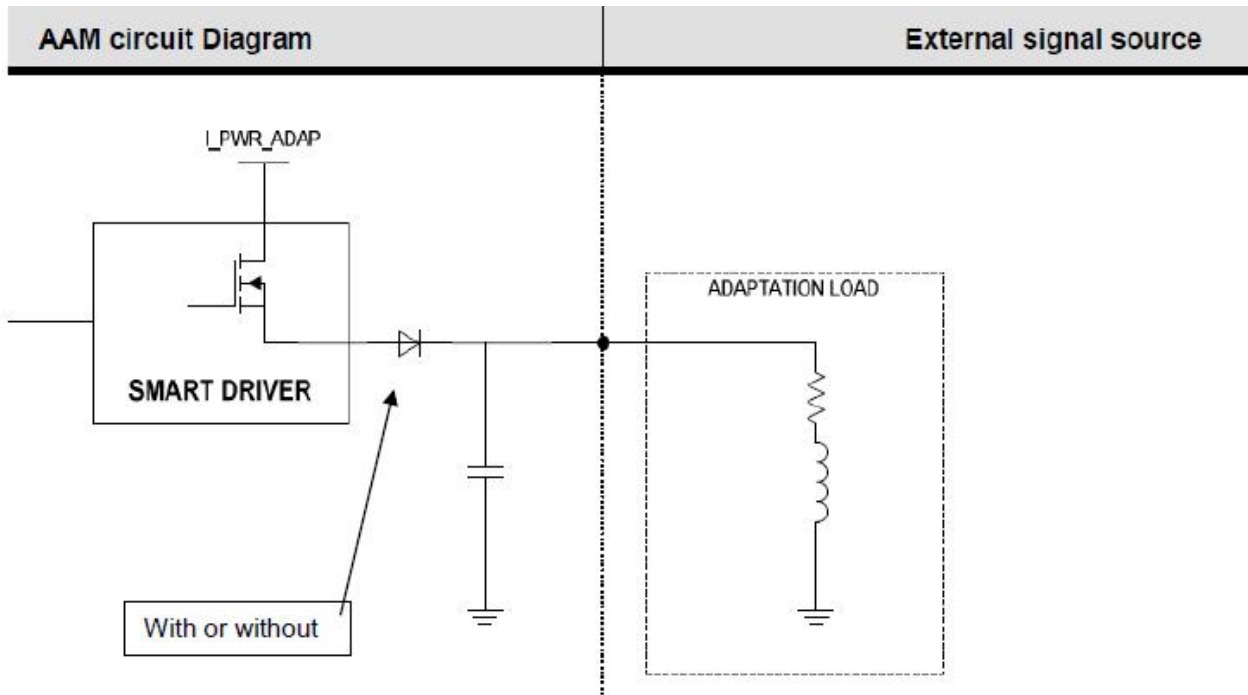


LOGICAL OUTPUTS					
PARAMETERS		MIN	Type	MAX	Unit
Operating supply voltage	Vbat	8		16	V
Low level output voltage	VOL			1,25	V
Output operating current	IOL	500		950	mA
Current limitation	ILIM			950	mA
Open state leakage current	IOZH			0,1	mA
High level input current (ECU Vbat grounded)	IZL			0,1	mA
Low level input current (ECU GND connected to Vbat)	-IZL			0,015	mA
Clamping Voltage	VCUT	41		54	V
Demagnetisation energy	ECUT	13			mJ
Range of output frequency	FSO				Hz
Rise time	tr			100	µs
Fall time	tf			100	µs

PWM OUTPUTS					
PARAMETERS		MIN	Type	MAX	Unit
Operating supply voltage	Vbat	6		16	V
Low level output voltage	VOL			0,3	V
Output operating current	IOL	500		950	mA
Current limitation	ILIM			950	mA
Open state leakage current	IOZH			0,015	mA
High level input current (ECU Vbat grounded)	IZL			0,015	mA
Low level input current (ECU GND connected to Vbat)	-IZL			Vbat/Ext Load	mA
Rise time	tr			100	µs
Fall time	tf			100	µs
Output capacitance	Clo		15	20,1	Hz



Power outputs (adaptations)



POWER OUTPUT O_POWER_1, 2, 3, 4, 8, 9, 10					
PARAMETERS		MIN	Type	MAX	Unit
Range of battery voltage	Vbat	8		16	V
Dropout voltage	V		0,1		V
Range of output current	Iout	0,1		2	A
Maximum allowable current	LAI			7	A
Pulse rise time	Tr		20		µs
Pulse fall time	Tf		45		µs
Maximum allowable transient current	LAIot			38	A
Surge clamp voltage	Vcut			44	V
Leakage current	Ile			100	µA
Thermal shutdown temp	Heat treat	150			°C
Inductive load sw off	E			40	mJ



Note:  
 · Way 12 is empty.





POWER OUTPUT O_POWER_5, 7					
PARAMETERS		MIN	Type	MAX	Unit
Range of battery voltage	Vbat	8		16	V
Dropout voltage	V		0,125		V
Range of output current	Iout	0,14		5	A
Maximum allowable current	LAI			11	A
Pulse rise time	Tr		20		µs
Pulse fall time	Tf		40		µs
Maximum allowable transient current	LAIot			60	A
Surge clamp voltage	Vcut			44	V
Leakage current	Ile			100	µA
Thermal shutdown temp	Heat treat	150			°C
Inductive load sw off	E			40	mJ

POWER OUTPUT O_POWER_6					
PARAMETERS		MIN	Type	MAX	Unit
Range of battery voltage	Vbat	8		16	V
Dropout voltage	V		1		V
Range of output current	Iout	0,1		2	A
Maximum allowable current	LAI			7	A
Pulse rise time	Tr		20		µs
Pulse fall time	Tf		45		µs
Maximum allowable transient current	LAIot			38	A
Surge clamp voltage	Vcut			44	V
Leakage current	Ile			100	µA
Thermal shutdown temp	Heat treat	150			°C
Inductive load sw off	E			40	mJ

POWER OUTPUT O_POWER_11					
PARAMETERS		MIN	Type	MAX	Unit
Range of battery voltage	Vbat	8		16	V
Dropout voltage	V		0,08		V
Range of output current	Iout	0,26		8	A
Maximum allowable current	LAI			30	A
Pulse rise time	Tr			500	µs
Pulse fall time	Tf			60	µs
Maximum allowable transient current	LAIot			60	A
Surge clamp voltage	Vcut			40	V
Leakage current	Ile				µA
Thermal shutdown temp	Heat treat	150			°C
Inductive load sw off	E			40	mJ

VIVARO (X82)  
4.10 – CAN-- BUS INTERFACE, OPTION “KC6”



TABLE OF INFORMATIONS CAN :

INPUT			OUTPUT				Configuration (customization), Logical, Power and PWM Actions	
Information Part	Information Needs	By Means of	Frame Name	Parametres	Id (hex) Can ADAP2	MSB position	LSB position	Period CAN
Engine (Moteur)	Engine speed (Régime moteur)	CAN and PWM	ADAP_Base1	EngineRPM	0E7	Byte N° 1 - Bit N° 7	Byte N° 2 - Bit N° 0	40
Pedal (Pédalier)	State accel pedal (Etat pédale accé)	CAN	ADAP_Base1	DriverRequest	0E7	Byte N° 3 - Bit N° 0	Byte N° 3 - Bit N° 0	40
		CAN	ADAP_Base1	EngineCoolantTemp	0E7	Byte N° 4 - Bit N° 7	Byte N° 4 - Bit N° 0	40
		CAN	ADAP_Base1	FuelConsumption	0E7	Byte N° 5 - Bit N° 7	Byte N° 5 - Bit N° 0	40
Brakes (Freinage)	Speed Information (Information vitesse)	CAN and PWM	ADAP_Base1	VehicleSpeed	0E7	Byte N° 6 - Bit N° 7	Byte N° 7 - Bit N° 0	40
Engine (Moteur)	Engine running (Moteur tournant)	CAN, log and Power	ADAP_Base2	EngineStatus	0E8	Byte N° 1 - Bit N° 7	Byte N° 1 - Bit N° 7	40
Lights pedals (Eclairage Pédalier)	brake lights brake pedal (Feux Stop Pédale de frein)	CAN, log and Power	ADAP_Base2	BrakeSwitchEngine Control	0E8	Byte N° 1 - Bit N° 6	Byte N° 1 - Bit N° 6	40
Air-Condition (Clim)	AC active (AC actif)	CAN, log and Power	ADAP_Base2	ACCompressorAuthorized	0E8	Byte N° 1 - Bit N° 5	Byte N° 1 - Bit N° 5	40
Pedal (Pédalier)	Clutch (embrayage)	CAN, log and Power	ADAP_Base2	ClutchSwitch	0E8	Byte N° 1 - Bit N° 4	Byte N° 1 - Bit N° 4	40
Door (Porte)	Inb open door (Info porte ouverte)	CAN, log and Power	ADAP_Base2	DoorSwitches	0E8	Byte N° 1 - Bit N° 3	Byte N° 1 - Bit N° 3	40

Note: Subject to errors and technical amendments. The electronic version of the body guidelines is the decisive source of up-to-date data on body guidelines (online body guidelines). Data status June 2016

VIVARO (X82)

4.10 – CAN-- BUS INTERFACE, OPTION “KC6”



INPUT			OUTPUT				Configuration (customization), Logical, Power and PWM Actions			
Information Part	Information Needs	By Means of	Frame Name	Parametres	Id (hex) Can ADAP2	MSB position	LSB position	Period CAN	Processing gateway from CANV parameters to CANV parameters to CAN_ADAP2	Processing gateway from CANV parameters to logical, PWM and Power outputs parameters
vehicle state (Etat véhicule)	position of Ignition Switch (position de de contact (ACC, APC))	CAN, log and P power	ADAP_Base2	IgnitionSwitch	0E8	Byte N° 1 - Bit N° 2		40		If CAN V value > or = 0100 and < or = 1001 Driver value = 1 else if CAN V value < 0100 Driver value = 0 Else value = safe value = 0
Door (Porte)	Info locked doors (Info conda/ decondes porte)	CAN, log and P power	ADAP_Base2	DoorsLocked	0E8	Byte N° 1 - Bit N° 1		40		If CAN V value = 0 Value = 0 If CAN V value = 1 then Value = 1
Lights (Eclairage)	direction indicator lamp left and right (Clignobant G et D)	CAN, log and P power	ADAP_Base2	FlashingIndicators	0E8	Byte N° 1 - Bit N° 0		40		If CAN V value = 001 or 010 Driver value = 1 else Driver value = 0
Lights (Eclairage)	hazard warning system (Warning)	CAN	ADAP_Base2	HazardLight	0E8	Byte N° 2- Bit N° 7		40		If CAN V value = 011 Driver value = 1 then Driver value = 0
*****	*****	*****	ADAP_Base2	***** Fixed to zero *****	0E8	Byte N° 2- Bit N° 6	Byte N° 2- Bit N° 0	40	***** Fixed to zero *****	
vehicle state (Etat véhicule)	Stop AutoState	CAN, log and P power	ADAP_Base3	AutoStart	0E9	Byte N° 4- Bit N° 6		100		If CAN V value = 1000 Driver value = 1 else Driver value = 0
		CAN	ADAP_Base6	AIRBAGMalfunction	0EC	Byte N° 1- Bit N° 0		100		copy CANV value into CAN_ADAP2 value
		CAN	ADAP_Base6	DriverSafetyBeltReminder	0EC	Byte N° 1- Bit N° 1	Byte N° 1- Bit N° 2	100		copy CANV value into CAN_ADAP2 value

Note: Subject to errors and technical amendments. The electronic version of the body guidelines is the decisive source of up-to-date data on body guidelines (online body guidelines). Data status June 2016

VIVARO (X82)  
4.10 – CAN-- BUS INTERFACE, OPTION “KC6”



INPUT			OUTPUT				Configuration (customization), Logical, Power and PWM Actions	
Information Part	Information Needs	By Means of	Frame Name	Paramètres	Id (hex) Can ADAP2	MSB position	LSB position	Period CAN
Lights - gearbox (Eclairage - Boite de vitesse)	Reversing lights and rear gear into (Feux de recul - Info marche AR)	CAN, log and Power	ADAP_Base6	Rear Gear Engaged	0EC	Byte N° 1 - Bit N° 3		100
		00 not used 01 Rear Gear not Engaged 10 Rear Gear Engaged 11 unavailable						If CAN V value = 01 Driver value = 0 If CAN V value = 10 then Driver value = 1 If CAN V value = 00 or 11
Gearbox (Boite de vitesse)	Neutral (Point mort (selon DT véhicule))	CAN, log and Power	ADAP_Base6	Neutral Contact	0EC	Byte N° 1 - Bit N° 5		100
		00 not used 01 neutral contact not reached 10 neutral contact reached 11 unavailable						If CAN V value = 01 Driver value = 0 If CAN V value = 10 then Driver value = 1
Gearbox (Boite de vitesse)	Failure (Défaut BV (BVR))	CAN, log and Power	ADAP_Base6	AT_Level2 Failure Display Request	0EC	Byte N° 2 - Bit N° 7		100
		00 Not used 01 No warning 10 AT major failure warning (Level 2) 11 Unavailable value						If CAN V value = 01 Value = 0 If CAN V value = 10 then Value = 1
vehicle state (Etat véhicule)	Key / Keyless (VAC/VSC)	CAN	ADAP_Base6	Key Vehicle	0EC	Byte N° 2 - Bit N° 0	Byte N° 2 - Bit N° 1	100
		00 Keyless vehicle 01 Unavailable 10 Not used 11 Key vehicle						copy CANV value into CAN_ADAP2 value
Lights (Eclairage)	Position light (Feux de position)	CAN, log and Power	ADAP_Base6	Position Lights Display	0EC	Byte N° 2 - Bit N° 2		100
		0 position lights display not requested 1 position lights display requested						If CAN V value = 0 Driver value = 0 If CAN V value = 1 then Driver value = 1
Lights (Eclairage)	High beam (Feux de route)	CAN, log and Power	ADAP_Base6	High Beam Display	0EC	Byte N° 2 - Bit N° 3		100
		0 High beam display not requested 1 High beam display requested						If CAN V value = 0 Driver value = 0 If CAN V value = 1 then Driver value = 1
Lights (Eclairage)	Low beam (Feux de croisement)	CAN, log and Power	ADAP_Base6	Low Beam Display	0EC	Byte N° 2 - Bit N° 4		100
		0 low beam display not requested 1 low beam display requested						If CANV value = 0 Value = 0 If CAN V value = 1 then Value = 1
Lights (Eclairage)	Fog lights (Feux de brouillard)	CAN, log and Power	ADAP_Base6	Front Fog Lights Display/EMM	0EC	Byte N° 2 - Bit N° 5		100
		0 front fog lights display not requested 1 front fog lights display requested						If CAN V value = 0 Driver value = 0 If CAN V value = 1 then Driver value = 1
Brakes (Freinage)	ESP on/off (ESP actif/inactif)	CAN, log and Power	ADAP_Base6	ESP Activation State For Display	0EC	Byte N° 3 - Bit N° 7		100
		0 ESP deactivated 1 ESP activated						If CAN V value = 0 Driver value = 0 If CAN V value = 1 then Driver value = 1
Engine (Moteur)	Cruise Control (Coupure RVL/V)	CAN	ADAP_Base6	Free Shift	0EC	Byte N° 3 - Bit N° 6	Byte N° 3 - Bit N° 5	100
								copy CANV value into CAN_ADAP2 value
			ADAP_Base6	Cruise Control Status Display	0EC	Byte N° 3 - Bit N° 0	Byte N° 3 - Bit N° 2	100
			ADAP_Base6	Diesel Filter Water Detection	0EC	Byte N° 3 - Bit N° 4	Byte N° 3 - Bit N° 4	100
			ADAP_Base6	Engine Control Failure Level 1	0EC	Byte N° 3 - Bit N° 3		100
			ADAP_Base6	Engine Control Failure Level 2	0EC	Byte N° 4 - Bit N° 7		100
			ADAP_Base6	Warning Water Temp	0EC	Byte N° 4 - Bit N° 6		100
			ADAP_Base6	Mill Lamp	0EC	Byte N° 4 - Bit N° 1	Byte N° 4 - Bit N° 4	100
								copy CANV value into CAN_ADAP2 value

Note: Subject to errors and technical amendments. The electronic version of the body guidelines is the decisive source of up-to-date data on body guidelines (online body guidelines). Data status June 2016

VIVARO (X82)  
4.10 – CAN-- BUS INTERFACE, OPTION “KC6”



INPUT			OUTPUT				Configuration (customization), Logical, Power and PWM Actions			
Information Part	Information Needs	By Means of	Frame Name	Paramètres	Id (hex) Can ADAP2	MSB position	LSB position	Périod CAN	Processing gateway from CANV parameters to CAN_ADAP2	Processing gateway from CANV parameters to logical, PWM and Power outputs parameters
Pedal (Pédalier)	Parking brake (Frein de parking)	CAN, log and Power	ADAP_Base6	HandBrakeSwitch	0EC	Byte N° 5 - Bit N° 0		100	If CAN V value = 01 Value = 0 If CAN V value = 10 Value = 1	
Brakes (Freinage)	ABS control (Régulation ABS)	CAN, log and Power	ADAP_Base6	ABS in Regulation	0EC	Byte N° 5 - Bit N° 2		100	If CAN V value = 0 Value = 0 If CAN V value = 1 then Value = 1	
Brakes (Freinage)	ABS Malfunction (ABS en défaut)	CAN, log and Power	ADAP_Base6	ABS Malfunction	0EC	Byte N° 5 - Bit N° 3		100	If CAN V value = 0 Value = 0 If CAN V value = 1 then Value = 1	
		CAN	ADAP_Base6	Mean Effective Torque	0EC	Byte N° 6 - Bit N° 0	Byte N° 5 - Bit N° 4	100	copy CANV value into CAN_ADAP2 value	
		CAN	ADAP_Base7	ABS_WarningRequest	0ED	Byte N° 5 - Bit N° 0	Byte N° 5 - Bit N° 1	100	copy CANV value into CAN_ADAP2 value	
		CAN	ADAP_Base7	ASR in Regulation	0ED	Byte N° 1 - Bit N° 0		100	copy CANV value into CAN_ADAP2 value	
Brakes (Freinage)	ESP control (Régulation ESP)	CAN, log and Power	ADAP_Base7	AYC in Regulation	0ED	Byte N° 1 - Bit N° 1		100	If CAN V value = 0 Value = 0 If CAN V value = 1 then Value = 1	
		CAN	ADAP_Base7	MSR in Regulation	0ED	Byte N° 1 - Bit N° 2		100	copy CANV value into CAN_ADAP2 value	
Brakes (Freinage)	ESP Malfunction (ESP en défaut)	CAN, log and Power	ADAP_Base7	AYC Malfunction	0ED	Byte N° 1 - Bit N° 3		100	If CAN V value = 0 Driver value = 0 If CAN V value = 1 then Driver value = 1	
Gearbox (Boîte de vitesses)	Info gearbox settings (Information rapport engagé (BVR))	CAN, log and Power	ADAP_Base7	TransmRangeEngaged Current	0ED	Byte N° 4 - Bit N° 1		100	If CAN V value = 0000 or 1010 or 1011 or 1111 Value = 0 If CAN V value ≥ 0001 and ≤ 1001 then Value = 1	
Brakes (Freinage)	Odometer (odomètre)	CAN	ADAP_Base8	DistanceTotalizer	0EF	Byte N° 1 - Bit N° 0		100	copy CANV value into CAN_ADAP2 value	
		CAN	ADAP_Base8	DisplayeOilLevel	0EF	Byte N° 5 - Bit N° 0		100	copy CANV value into CAN_ADAP2 value	
		CAN	ADAP_Base9	VehicleID	0F0	Byte N° 1 - Bit N° 0		100	copy CANV value into CAN_ADAP2 value	
		CAN	ADAP_Base9	VehicleSpeed	0F0	Byte N° 6 - Bit N° 1		100	copy CANV value into CAN_ADAP2 value	
Door (Porte)	Tailgate status (cmd conda/déconda (GPEAR))	Log and Power	ADAP_Base11	TailGateStatus	0F2	Byte N° 1 - Bit N° 0		100	If CAN V value = 01 Value = 1 else Value = 0	

Note: Subject to errors and technical amendments. The electronic version of the body guidelines is the decisive source of up-to-date data on body guidelines (online body guidelines). Data status June 2016



## 4.11. REAR LIGHTS / INTERIOR LIGHTING INFORMATION

### 4.11.1. REAR LIGHTS INFORMATION

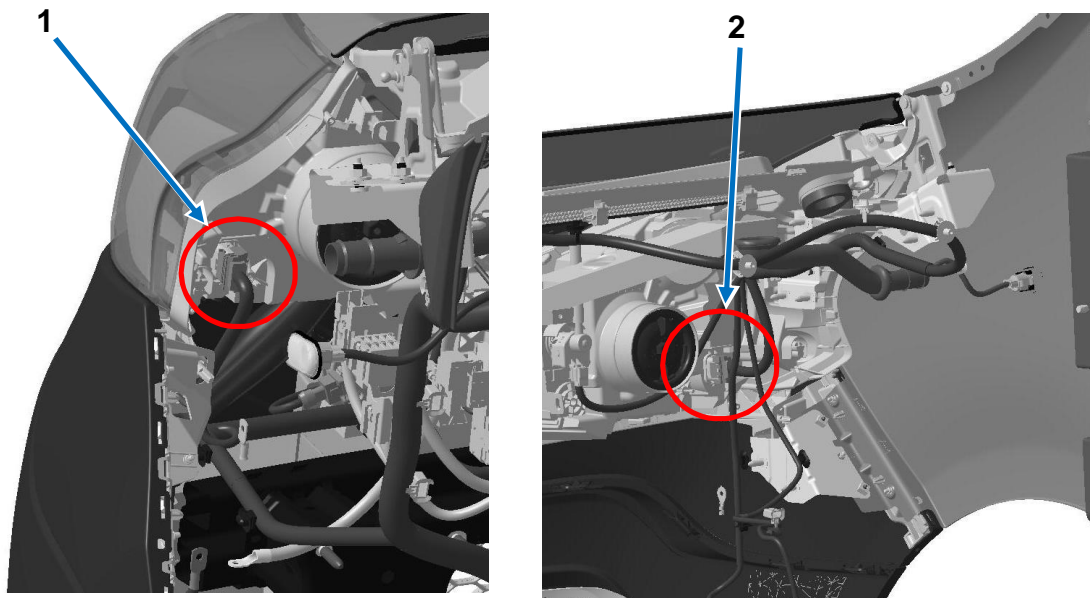
**Important:** *the vehicle electronic system is not authorised to supply power-consuming devices other than those fitted to the vehicle.*

This information is available at several locations on the vehicle:

- Engine compartment
- Cabin area
- Rear area

Engine compartment

#### Details of connector positions

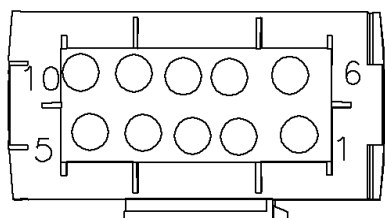


1: 10-way connector  
(left-hand side)

2: 10-way connector  
(right-hand side)

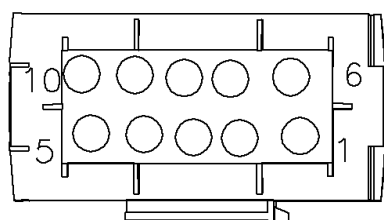


Front left-hand headlight connection (227AA)



Way	Connections	Allocations
1 :	MAS	Ground
2 :	RPG	+ Right-hand main beam headlight
3 :	CPG	+ Right-hand dipped beam headlight
4 :		
5 :		
6 :	11T	+ Right-hand daytime running lights (DRL)
7 :	64C	+ Right-hand direction indicator
8 :	LPAV	+ Front side light
9 :		
10 :		

Front right-hand headlight connection (226AA)

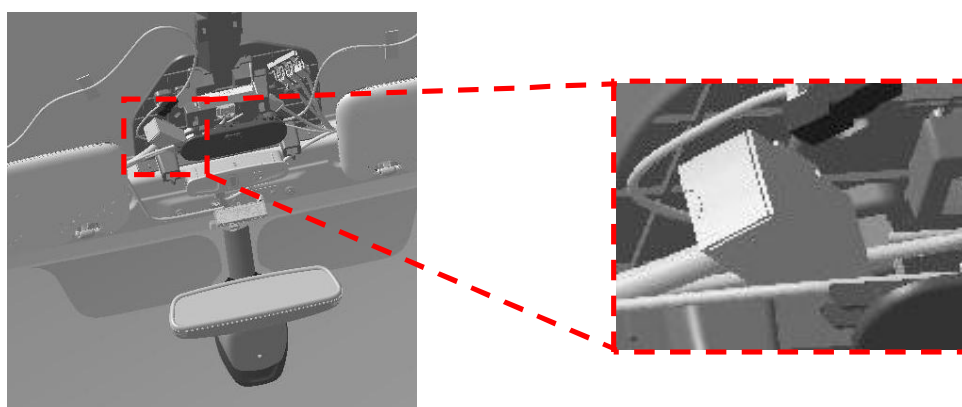


Way	Connections	Allocations
1 :	MAR	Ground
2 :	RPD	+ Right-hand main beam headlight
3 :	CPD	+ Right-hand dipped beam headlight
4 :		
5 :		
6 :	11S	+ Right-hand daytime running lights (DRL)
7 :	64D	+ Right-hand direction indicator
8 :	LPAV	+ Front side light
9 :		
10 :		

Cabin area

Above the windscreen in the centre area of the vehicle behind the roof lining, are the connecting connectors and wiring for the rear area.

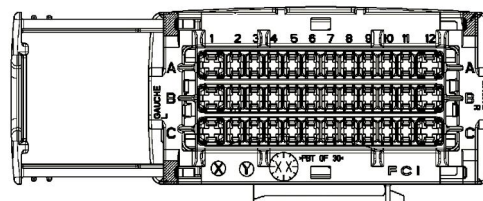
Position details of the 36-way connector



VIVARO (X82)  
4.11 – REAR LIGHTS / INTERIOR LIGHTING INFORMATION



Details of the 36-way connector

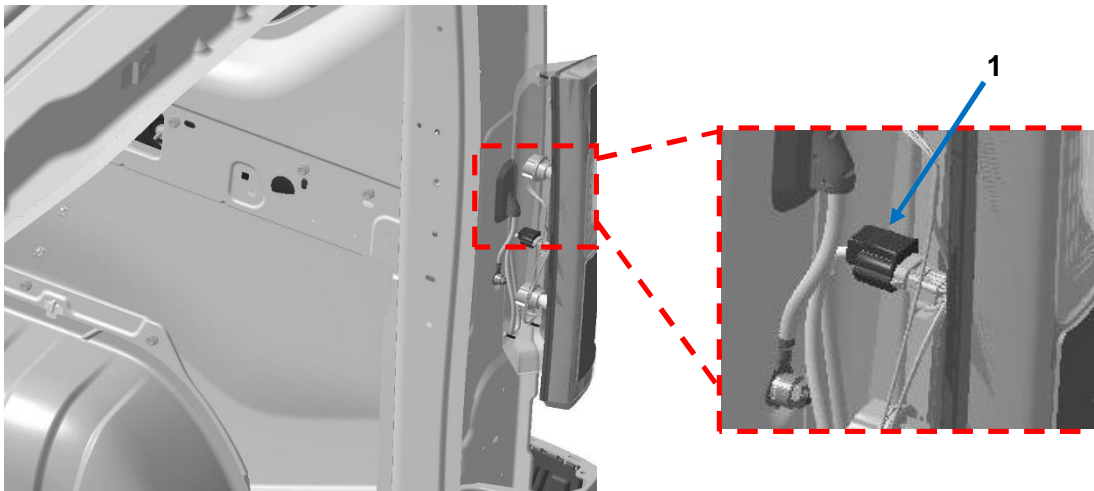


Ways	Connections	Allocations
A1 :	15LP	Rear screen de-icing/demisting control
A2 :	9BC	Trailer fog light control via towing module
A3 :	38MN	One-speed blower for rear additional heater
A4 :	38MP	Two-speed blower for rear additional heater
A5 :	38MQ	Three-speed blower for rear additional heater
A6 :	AP41	+ APC fuse protection air conditioning ECU
A7 :	34D	+ Signal Rear right-hand speaker
A8 :	34C	- Signal Rear right-hand speaker
A9 :	34B	- Signal Rear left-hand speaker
A10 :	34A	+ Signal Rear left-hand speaker
A11 :	65AA	+ Control trailer brake light via towing module
A12 :	SP4A	+ Protected relay & + Combi rear accessory socket (J82)
B1 :	BMT4	+ Bat engine running Accessory socket Panel van loading area (F82)
B2 :	H66P	+ Control reversing light
B3 :	LPAR	Protected rear side light
B4 :	LPDB	Right-hand trailer side light via towing module
B5 :	65G	+ Brake lights
B6 :	LPH	Side lights Number plate lights
B7 :	20S	Authorised power, tailgate or compartment door opening motor
B8 :	9P	+ Control protected rear fog light
	9BA	+ Control Rear right-hand fog light control via towing module
B9 :	64DA	Rear right-hand indicator light control via towing module
	64D	Right-hand direction indicator control
B10 :	64CA	Rear left-hand vehicle direction indicator light control via towing module
	64C	Left-hand direction indicator control
B11 :	20D	+ Control electric door locking
B12 :	BP47	+ Protected battery & + Trailer (pre-equipped for after-sales)
C1 :	36E	+ Control rear screen wiper time-delay
C2 :	36A	+ Control rear screen wiper
C3 :	13E	- Control ceiling light time-delay (EMPT20)
C4 :		
C5 :	13 <sup>E</sup>	- Control ceiling light time-delay (EMPT10)
C6 :	BPT2	+ Protected battery ceiling light time-delay
C7 :	20AR	Compartment door super-locking motor control
C8 :	87T	Ignition switch 1 notch signal compartment door or tailgate
C9 :	151T	Caravan present signal
C10 :	133B	Instrument panel CANH signal Electric Central Unit
C11 :	133C	Instrument panel CANL signal Electric Central Unit
C12 :	AP9	+ Protected after ignition rear screen wiper.



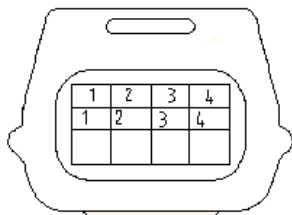
Rear upper section area

This information is also available for the rear right-hand and left-hand lights.



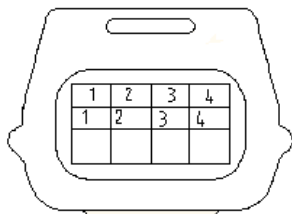
1: 4-way connector (right-hand side)

Light connection rear right-hand upper section (1)



Way	Connection	Allocations
1:	MF	Ground
2:	LPAR	Side light
3:	65G	Brake light
4:	64D	Direction indicator lights

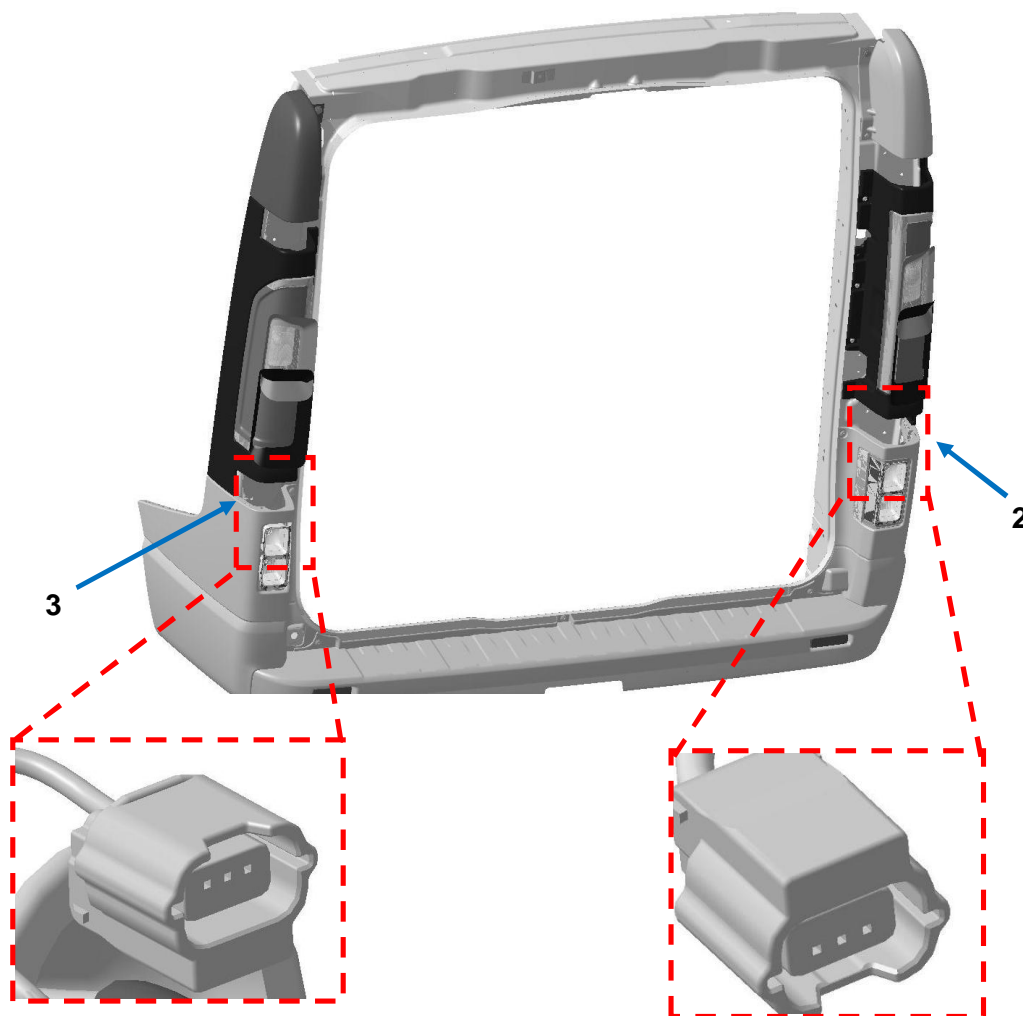
Light connection rear left-hand upper section (1)



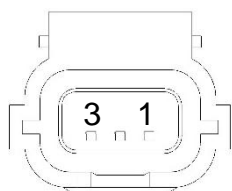
Way	Connection	Allocations
1:	MG	Ground
2:	LPAR	Side light
3:	65G	Brake light
4:	64D	Direction indicator lights



Rear lower section area

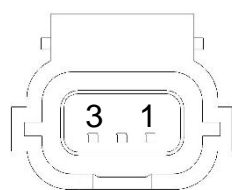


Lower rear right-hand light connection (2)



Way	Connection	Allocations
1:	MG	Ground
2:	9P	Rear fog light
3:	H66P	Reversing light

Lower rear left-hand light connection (2)



Way	Connection	Allocations
1:	MG	Ground
2:	9P	Rear fog light
3:	H66P	Reversing light



#### Electrical currents available for the rear lights

- Vehicles with towing socket: each of these connections must be used to control a single relay (no power available).
- Vehicles without towing socket: it is possible to connect onto each link a consuming unit with power equal to that of the bulbs on the towing device, i.e.:
  - Left-hand side light connection: 1 x 5W consumer
  - Right-hand side light connection: 1 x 5W consumer
  - Brake light link: 2 x 21W consumer (or 1x consumer of 42W)
  - Reversing light connection: 1 x 21W consumer
  - Left-hand direction indicator: 1 x 21W consumer
  - Right-hand direction indicator: 1 x 21W consumer
  - Fog light: 1 x 21W consumer

#### 4.11.2. INTERIOR LIGHTING: ADDING OR MODIFYING

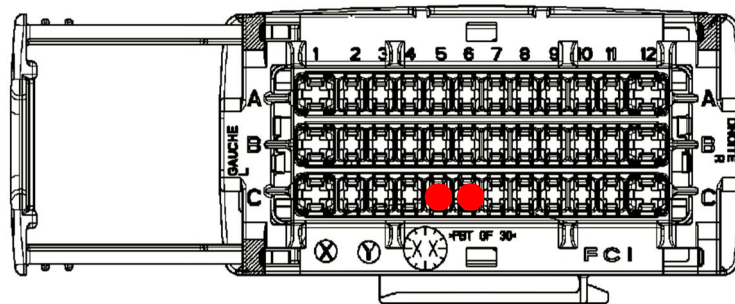
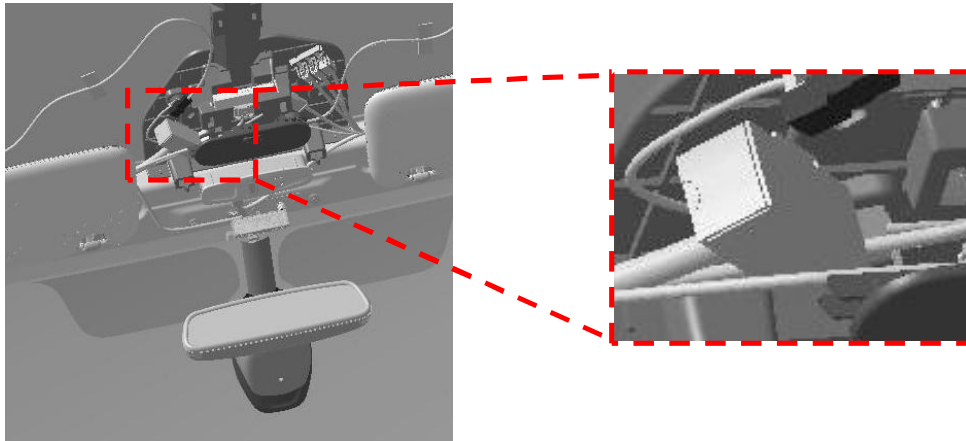
##### Energy recovery conditions

- The total number of electrical consumers must not exceed 30 W
- The progressive ground is a timed analogue signal. Under no circumstances may this signal be relayed.
- Each of these wires may be lengthened by 3 metres (max.) and an over-consumption not exceeding 500 mA (6 W) may be taken from each.
- In the event of over-consumption exceeding 500 mA (6 W):
  - The timed power supply should control a relay that will control another power supply.
  - A specific ground should be used (the progressive ground will no longer be usable).
  - If open door information is required, a panel switch should be added. The door switches built into the locks are not capable of powering the ceiling lights



Electrical information from the ceiling lights

Above the windscreen in the centre area of the vehicle behind the roof lining, are the 36-way connectors and wiring for the rear area.

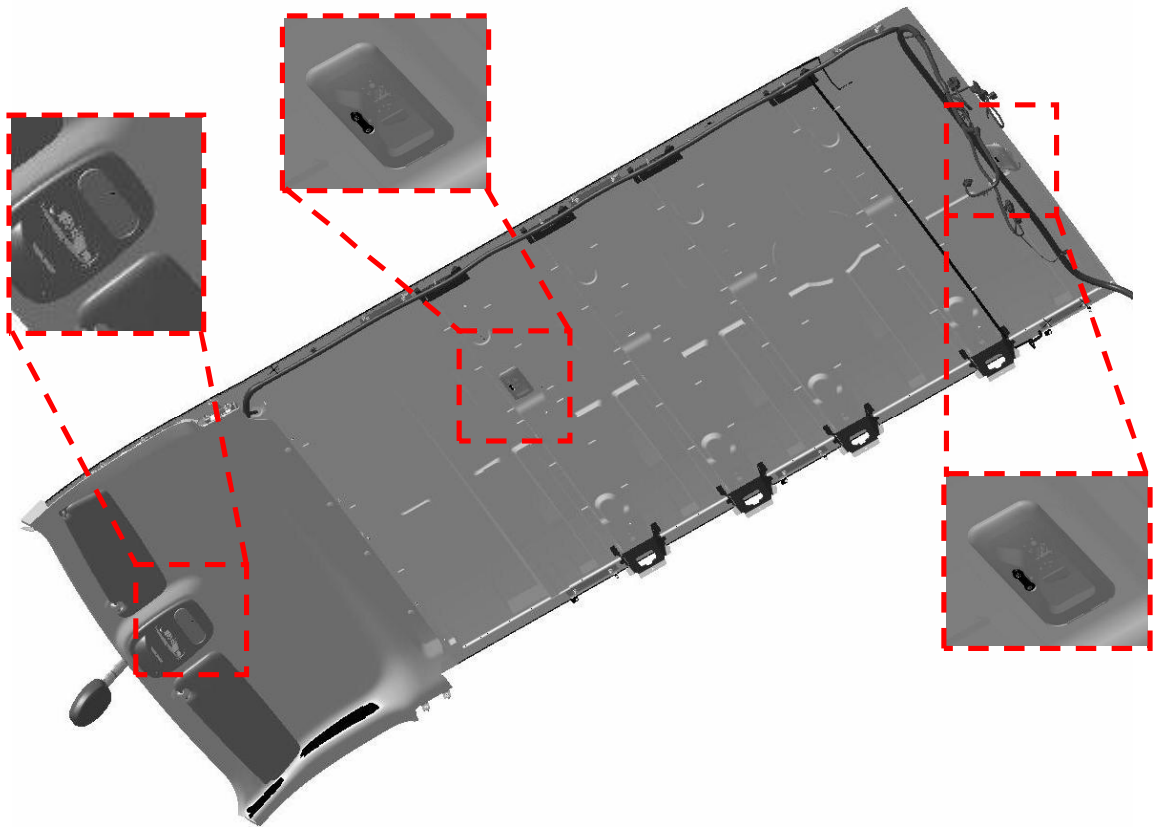


Way	Connection	Allocation
C5	13E	Progressive active ground when door opens and degressive when door closes or +APC.
C6	BPT2	+12V Timed



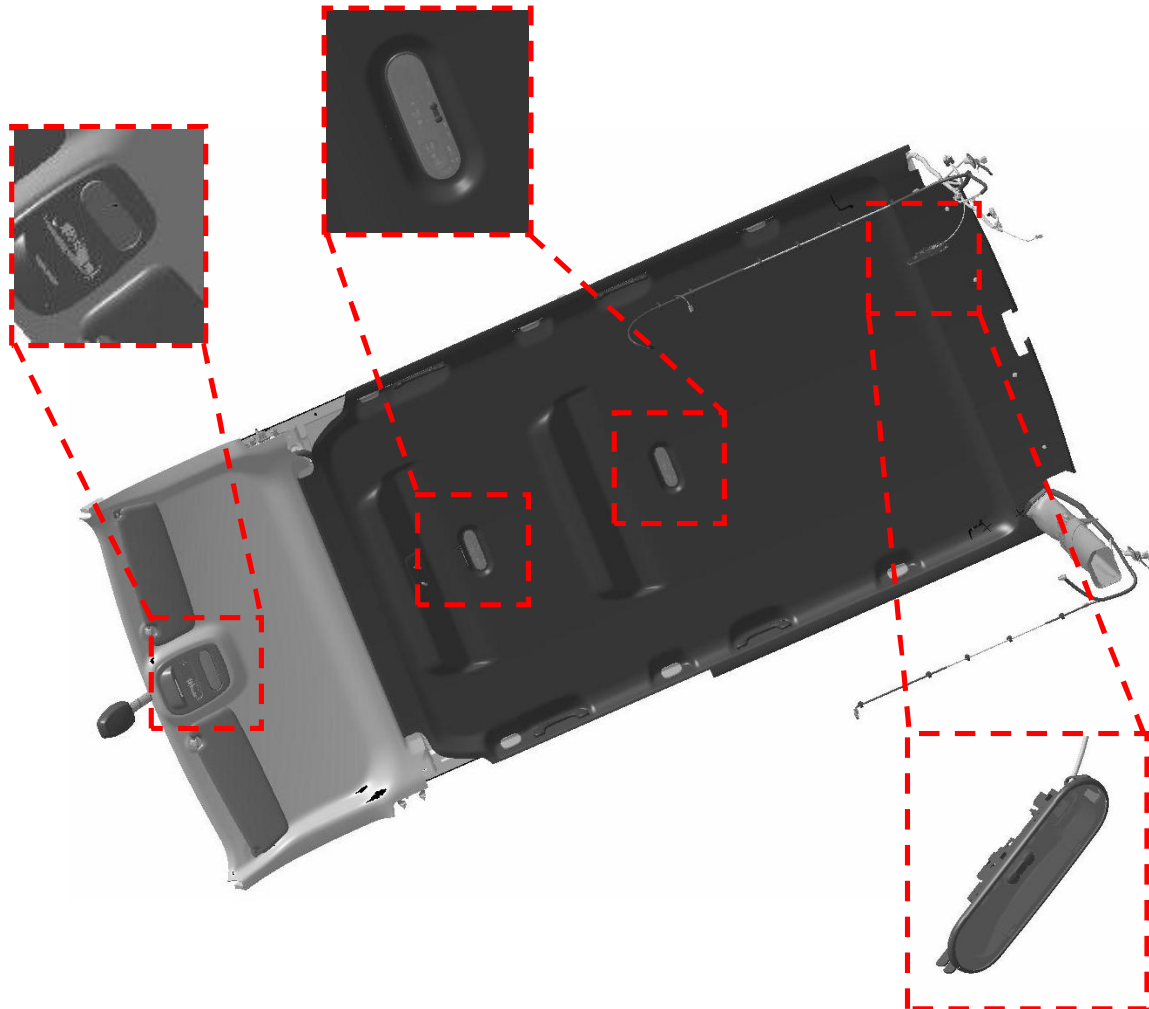
Distribution of ceiling lights

Panel Van

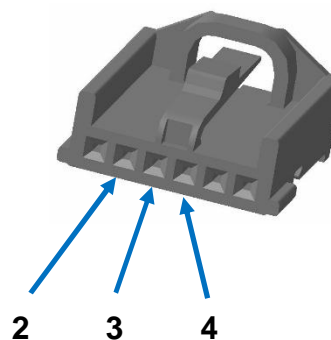




Combi



Ceiling lights connector excluding cab



Way	Connection	Allocation
2	13E	Progressive active ground when door opens and degressive when door closes or +APC
3	M*	Permanent ground
4	BPT2	+12V Timed

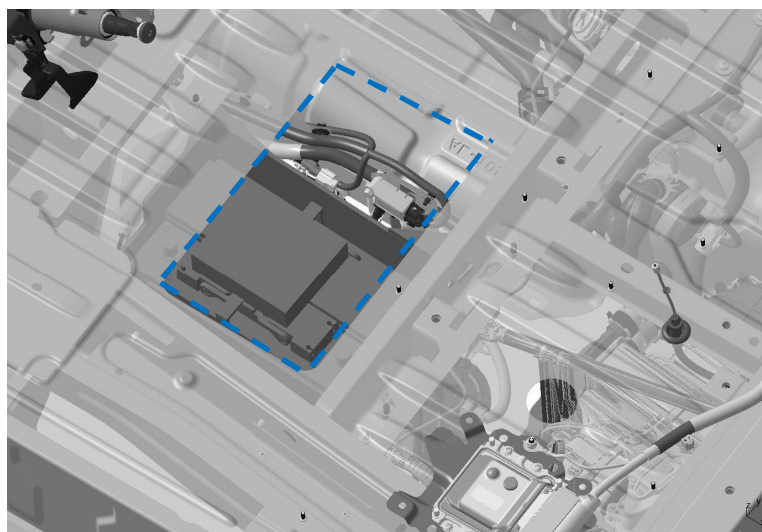
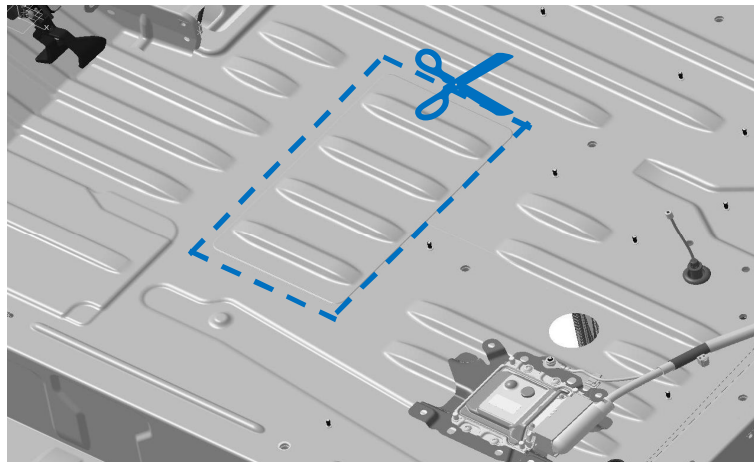
## 4.12. ADDITIONAL BATTERY

There is a space between the side panels underneath the driver's side floor panel on the left-hand drive version and underneath the passenger side floor panel on the right-hand-drive version to fit an additional battery (L4 maximum = 315 mm).

### ADDITIONAL BATTERY LOCATION

Cabin area

Cut out the floor panel in the flat area as shown and create a flap in the floor panel for access to the terminals of the additional battery.



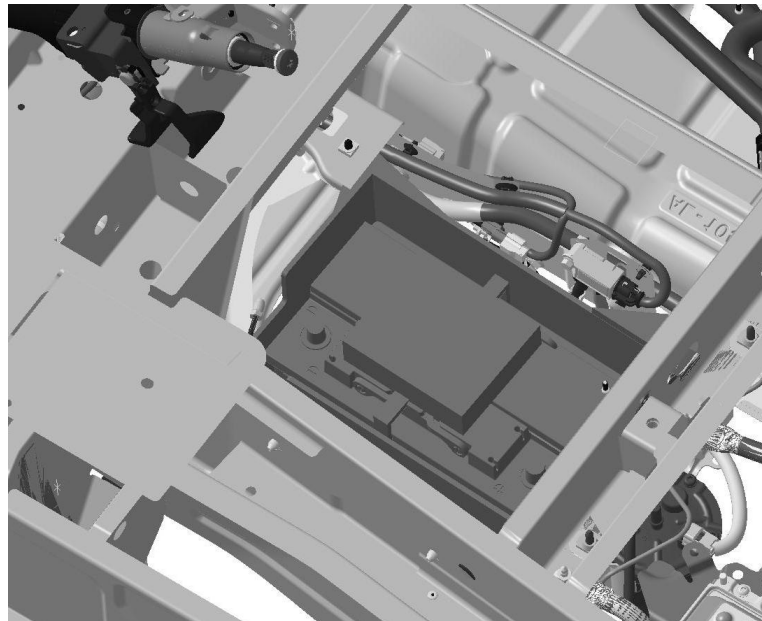
VIVARO (X82)  
4.12 – ADDITIONAL BATTERY



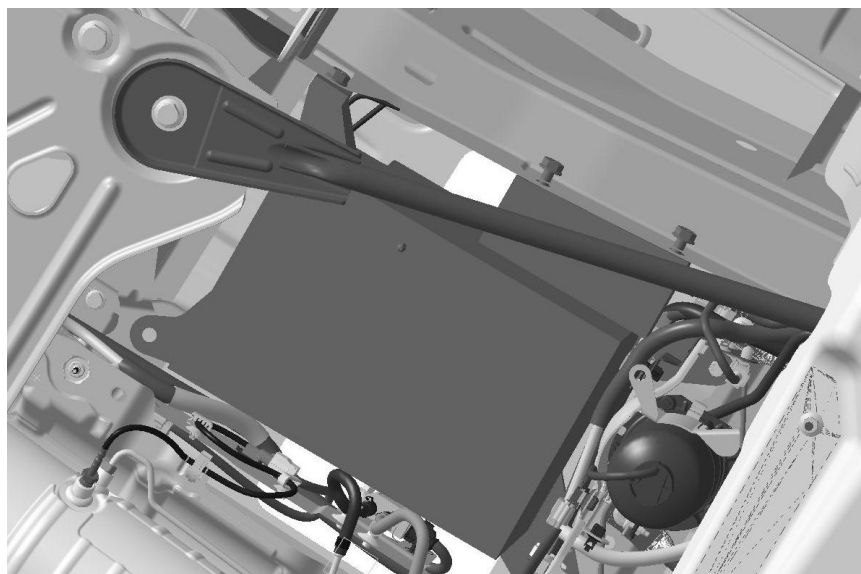
ADDITIONAL BATTERY POSITION

The battery tray and its fixings are shown for example only and remain the responsibility of the converter.

Floor panel view



View from underneath the vehicle

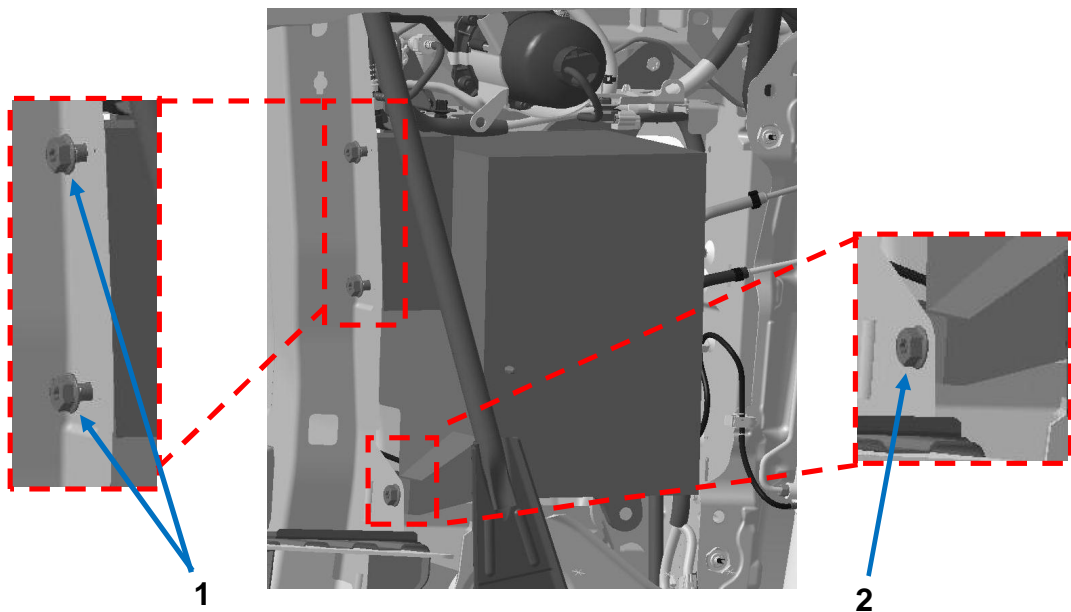




### ADDITIONAL BATTERY INTERFACES AND FIXINGS

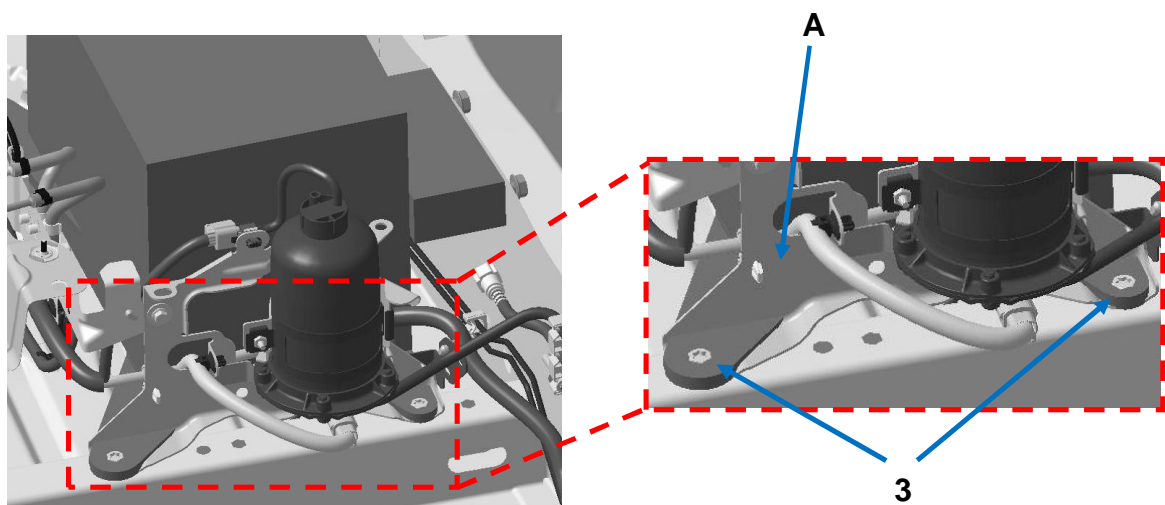
Shown below are various fixing points that can be used for making and securing an additional battery tray, given as an example.

Left-hand side member side



Fixing points (1) and (2) using the existing holes on the left-hand side member

Rear side on fuel filter bracket support

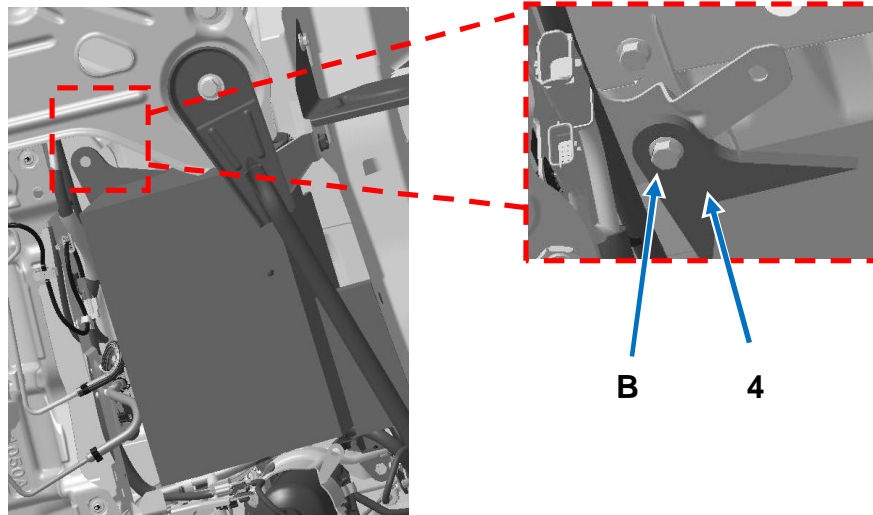


For these two fixings, it is necessary to remove the fuel filter support bracket (A) in order to sandwich-fit the battery tray fixings (3)

VIVARO (X82)  
4.12 – ADDITIONAL BATTERY

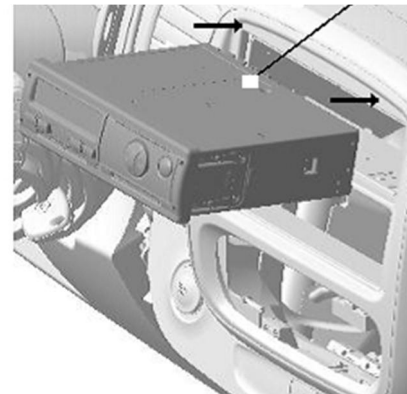


Front side on cross member



Remove the fixing (B) from the front left-hand heat shield support bracket to re-use the battery tray fixing (4)

### 4.13. TACHOGRAPH (TGP)



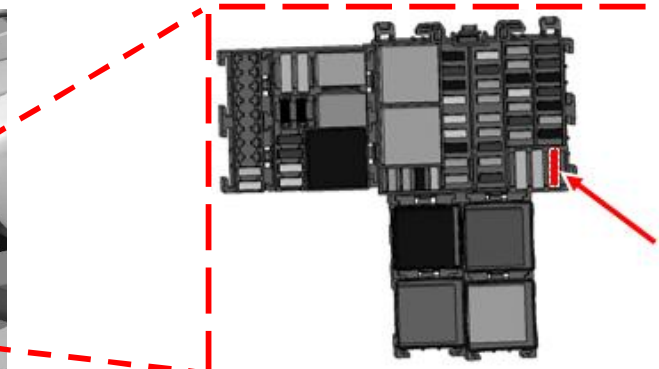
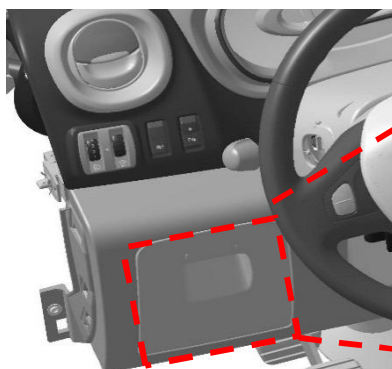
The tachograph is optionally available on all versions.  
The retrofitting is not possible.  
It is located in the center of the dashboard.



**Note:** the tachograph has a significant residual consumption (10mA); this can drain the battery when the vehicle is stationary for a long period.  
From the factory, the CTL fuse is removed and placed in the glove compartment of the vehicle, glued to the inside of the fuse box.



*During the preparation of the vehicle (before delivery), this fuse should be returned to its location in the fuse box located under the dashboard.*



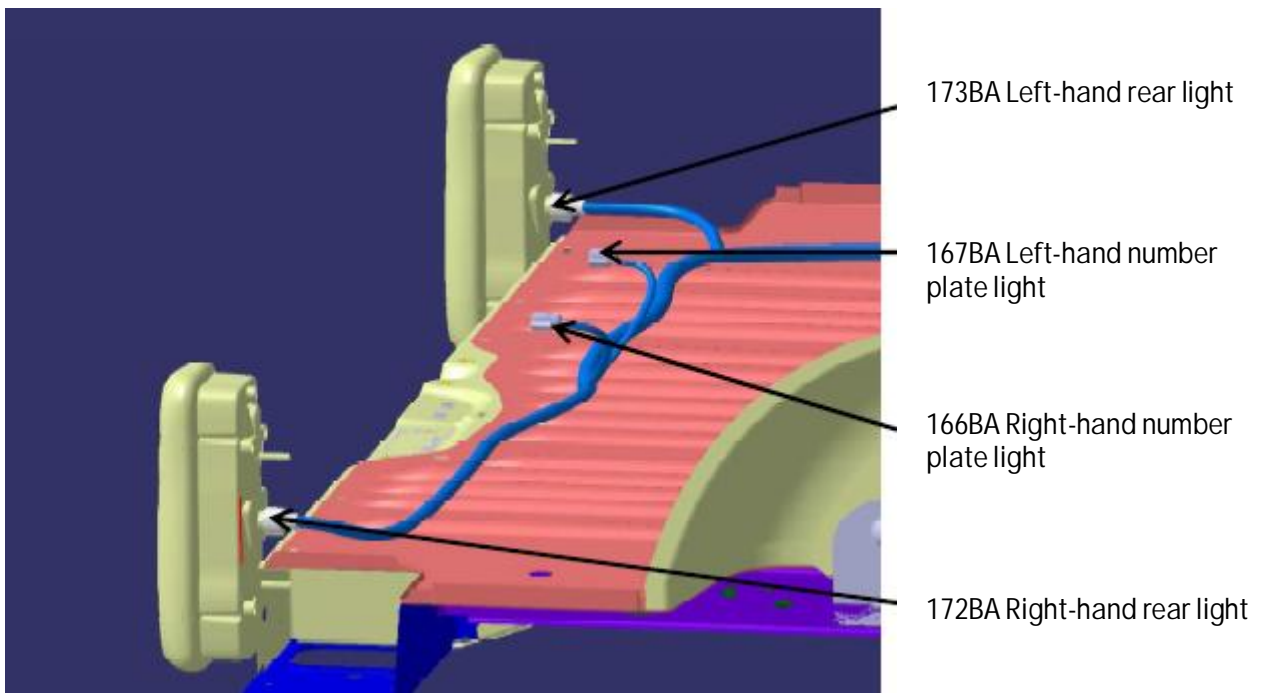
*If the converter receives a vehicle with fuse, he should remove the fuse (red 10A) for the duration of the transformation. Before the delivery of the vehicle, the converter should insert the fuse again,*



4.14. PLATFORM CAB: electrical connections

4.14.1 REAR LIGHT

On leaving the plant, the vehicle is equipped with temporary rear lights whilst awaiting the number plate.

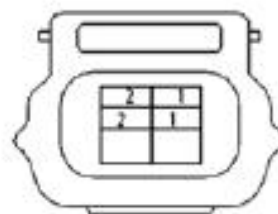


Number plate and rear light connectors

Connector for number plate light:

- 166BA – Right-hand
- 167BA – Left-hand

Way	Function
1	Earth
2	light supply



		SUPPLIER
connector on the vehicle wiring side	black RH 2-way clip holder	YAZAKI 7283-8851-30
counterpart	black RH 2-way tab holders	YAZAKI 7282-8851-30

VIVARO (X82)  
4.14 – PLATFORM CAB: ELECTRICAL CONNECTIONS



Connector for rear light:

- 172BA Right-hand
- 173BA Left-hand

Way	Function
	Earth
2	Sidelight
3	Reverse light
4	flasher
5	Stop light
6	Rear fog light



		SUPPLIER
connector on the vehicle wiring side	1.5 mm 7-way socket holder	TYCO 0-0967650-1
counterpart	1.5 mm 7-way spindle holder	TYCO 0-15444676-1



Note:

An additional brake light, supplied by the original brake light currents is possible but should not exceed 21 W (2A).

#### 4.14.2 ADDING DOORS:

1- Open door detection contact switch

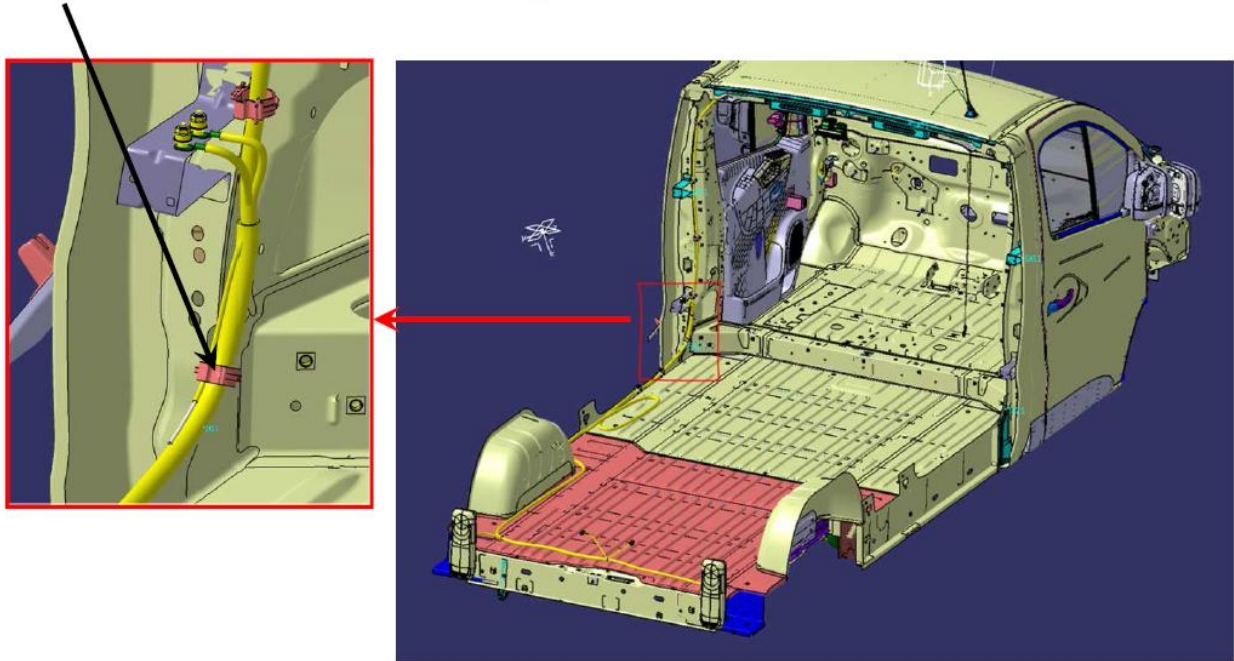
For the START/ STOP version, detection (open door) of the opening elements added (through which you can exit the driver's position) is mandatory.



Attention:

A door operated light switch must be installed; it must be of the "open door earthing"

A standby wire is provided for the connection.



The standby wire is connected to its other end on the 36-way connector 297-3A of the roof in way C8 (connection T mentioned in Chapter 4.14.7).



**Note:**

The vehicle does not need to be reconfigured to activate the function.

Connection of the additional door operated light switch, in series on the driver's door is not recommended because a splice is required on the wiring and circuit (which has a low current capacity) from which power must not be taken.

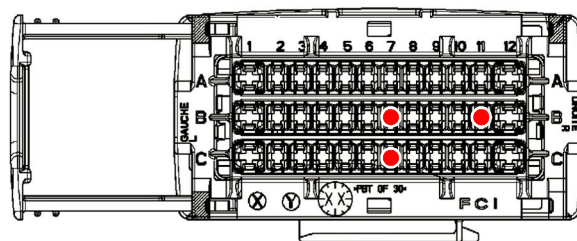
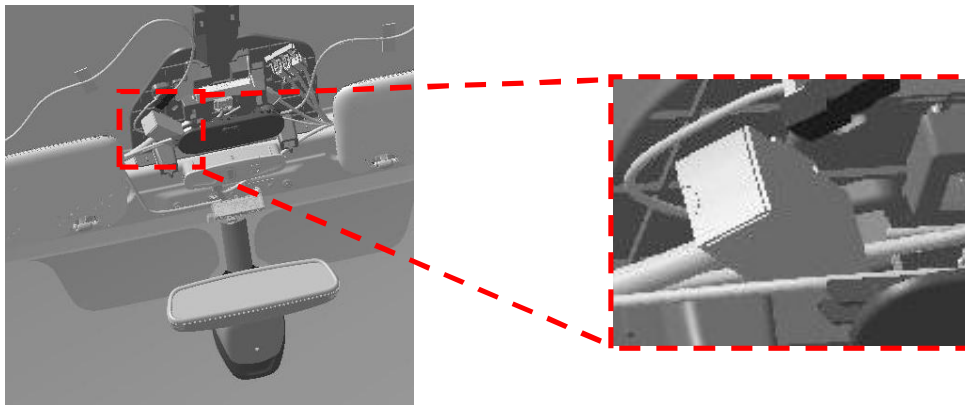
On the converted vehicle, the driver's door must remain the vehicle's main opening element; risk of transmission of faults if ever used.



## 2- Central locking

The opening elements added can be centrally locked via the 36-way connector located under the central courtesy light in the cockpit roof area.

Opel /Vauxhall Panel Van locks are recommended, in particular the electric central lock.



Way	Connection	Function
B11	20D	+ Control electric door locking
B7	20S	Supply authorised for boot lid opening
C7	20 AR	Boot lid deadlocking engine control



Note:

The vehicle does not need to be reconfigured to activate the function.



#### 4.14.3 INTERIOR LIGHTING: added in rear area

##### Energy recovery conditions

The total amount for electrical lights added for the rear area must not exceed 25 W.

The progressive earth is a timed analogue signal. Under no circumstances may this signal be relayed.

In the event of consumption exceeding 25 W

- the timed power supply should control a relay that will control another power supply.
- a specific earth should be used (the progressive earth will no longer be usable).
- if open door information is required, a panel switch should be added.

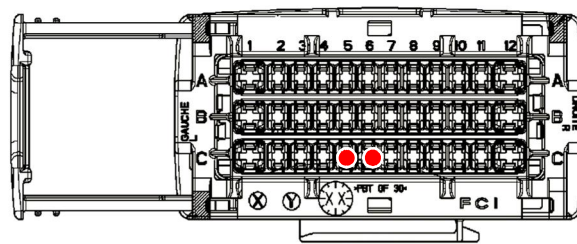


Note:  
No contraindications if led used.

Transmission of electricity information for timed internal lighting.

The information will be taken from the 36-way connector.

Allocation of the ways for additional courtesy light control.



Way	Connection	Function
C5	13E	Progressive active earth when door opens and degressive when door closes or + after ignition feed.
C6	BPT2	Timed +12 V





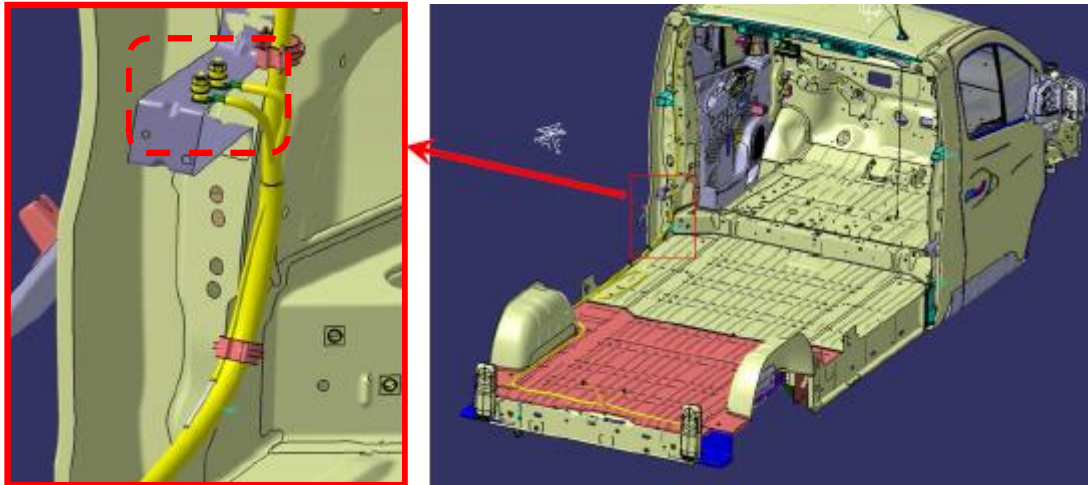
## VIVARO (X82)

### 4.14 – PLATFORM CAB: ELECTRICAL CONNECTIONS

#### 4.14.4 LOCATION OF EARTHS

A single earth connection area for the rear part

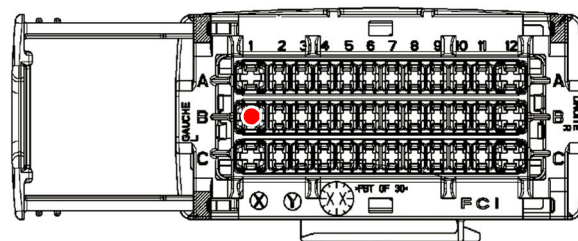
- MFA-A earth: M6 for right rear light
- MGA-A earth: M6 for left rear light



#### 4.14.5 +12 V ENERGY RECOVERY

With the CABADP option: 40A max. with addition of engine running info for condition of use essential.

With the  option: 8A max., for an accessories socket the information (+) will be taken from the 36-way connector.



PIN	Way	Function
B1	BMT4	+ 12 V accessory (current distribution) engine running

#### 4.14.6 ADDITION OF REAR SPEAKERS

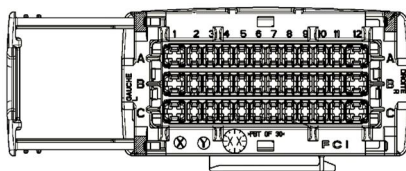
Rear speakers must be connected at the back of the radio (no wiring available in the vehicle).

The radio must be configured in 4HP version via the clip case.

VIVARO (X82)  
4.14 – PLATFORM CAB: ELECTRICAL CONNECTIONS



4.14.7 SUMMARY OF INFORMATION AVAILABLE ON THE 36-WAY CONNECTOR



Way	Connection	Function	Without wired output	With wired output
A1	15LP			
A2	9BC			
A3	38MN			
A4	38MP			
A5	38MQ			
A6	AP41			
A7	34D			
A8	34C			
A9	34B			
A10	34A			
A11	65AA			
A12	SP4A			
B1	BMT4	+ Engine running bat - Optional accessories socket (F82)	X	
B2	H66P	+ Control reversing light		In rear area
B3	LPAR	Protected rear side light		In rear area
B4	LPDB			
B5	65G	+ Brake lights		In rear area
B6	LPH	Side lights Number plate lights		In rear area
B7	20S	Authorised power, tailgate or compartment door opening motor		
B8	9P	+ Control protected rear fog light		In rear area
	9BA			
B9	64DA			
	64D	Right-hand direction indicator control		In rear area
B10	64CA			
	64C	Left-hand direction indicator control		In rear area
B11	20D	+ Control electric door locking		
B12	BP47	Protected battery & + Trailer (pre-equipped for after-sales)		
C1	36E			
C2	36A			
C3	13E			
C4				
C5	13E	- Control timed courtesy lighting (EMPT10)	X	
C6	BPT2	+ Protected battery timed courtesy lighting	X	
C7	20AR	Boot lid deadlocking engine control - in right-hand drive series	X	
C8	87T	Ignition switch 1 notch signal compartment door or tailgate		At cab exit
C9	151T	Caravan present signal		
C10	133B			
C11	133C			
C12	AP9			



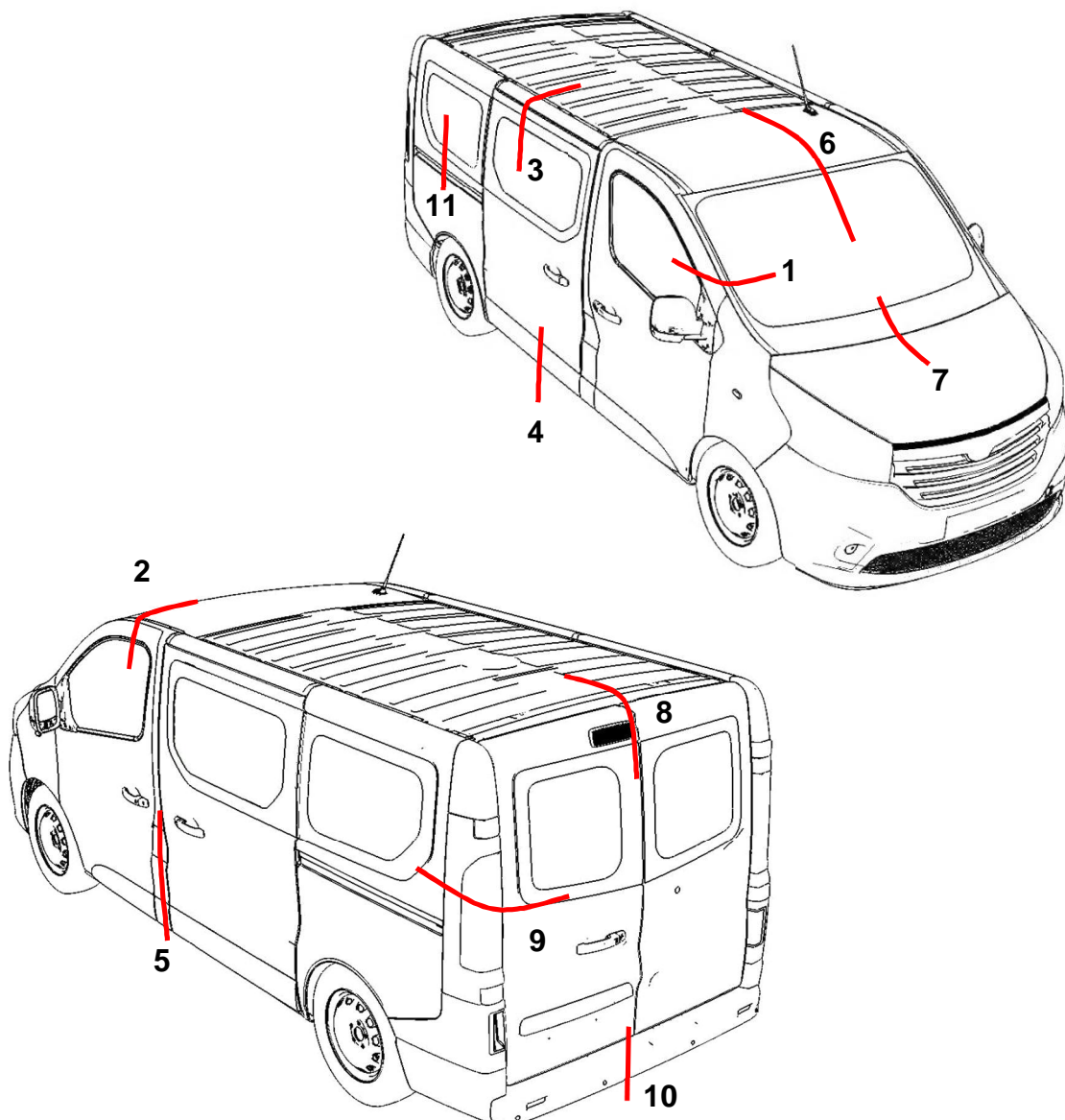
5. FOR BODYWORK CONVERSIONS

5.1. DESIGN STRUCTURE / GLAZED AND SOLID SIDE PANELS

5.1.1. DESIGN STRUCTURE

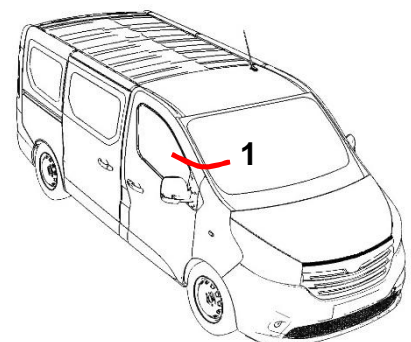
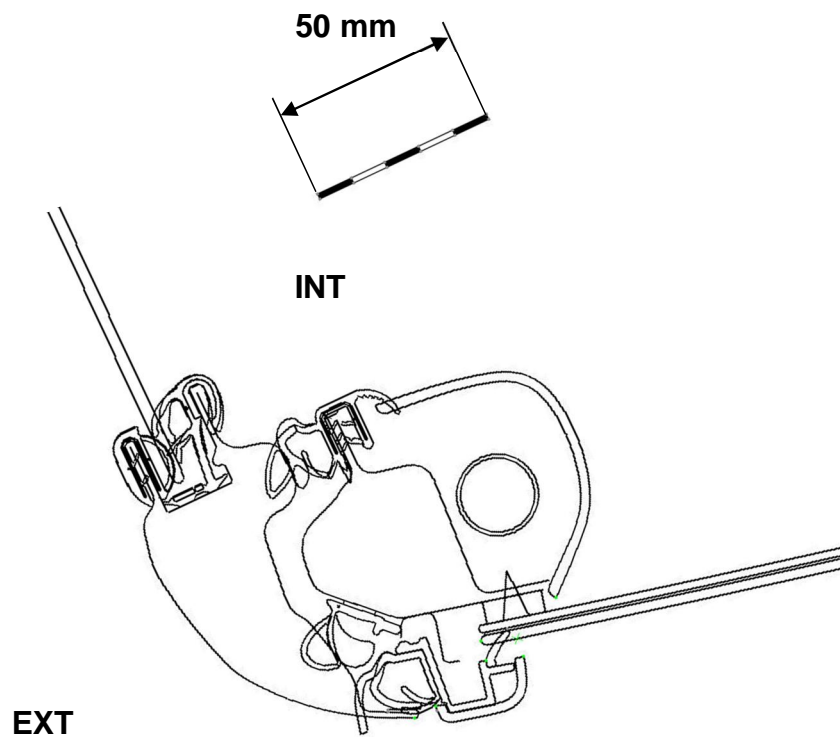
The various standard sections of the van are shown on the diagram below.

STANDARD SECTION OF BASIC PANEL VAN



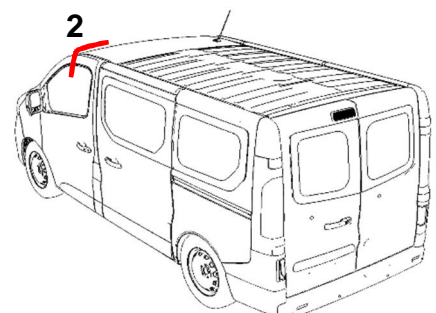
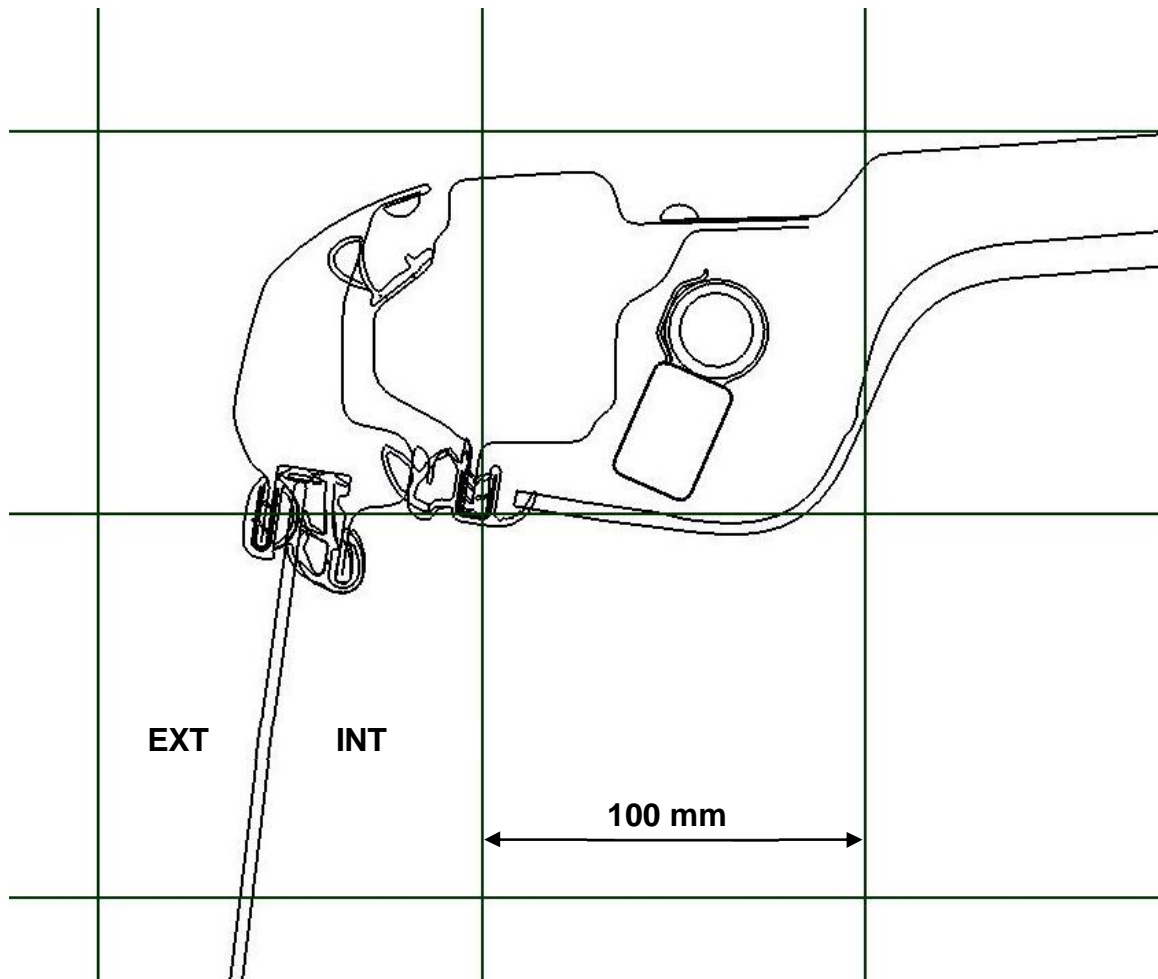


SECTION 1  
"WINDSCREEN PILLAR"



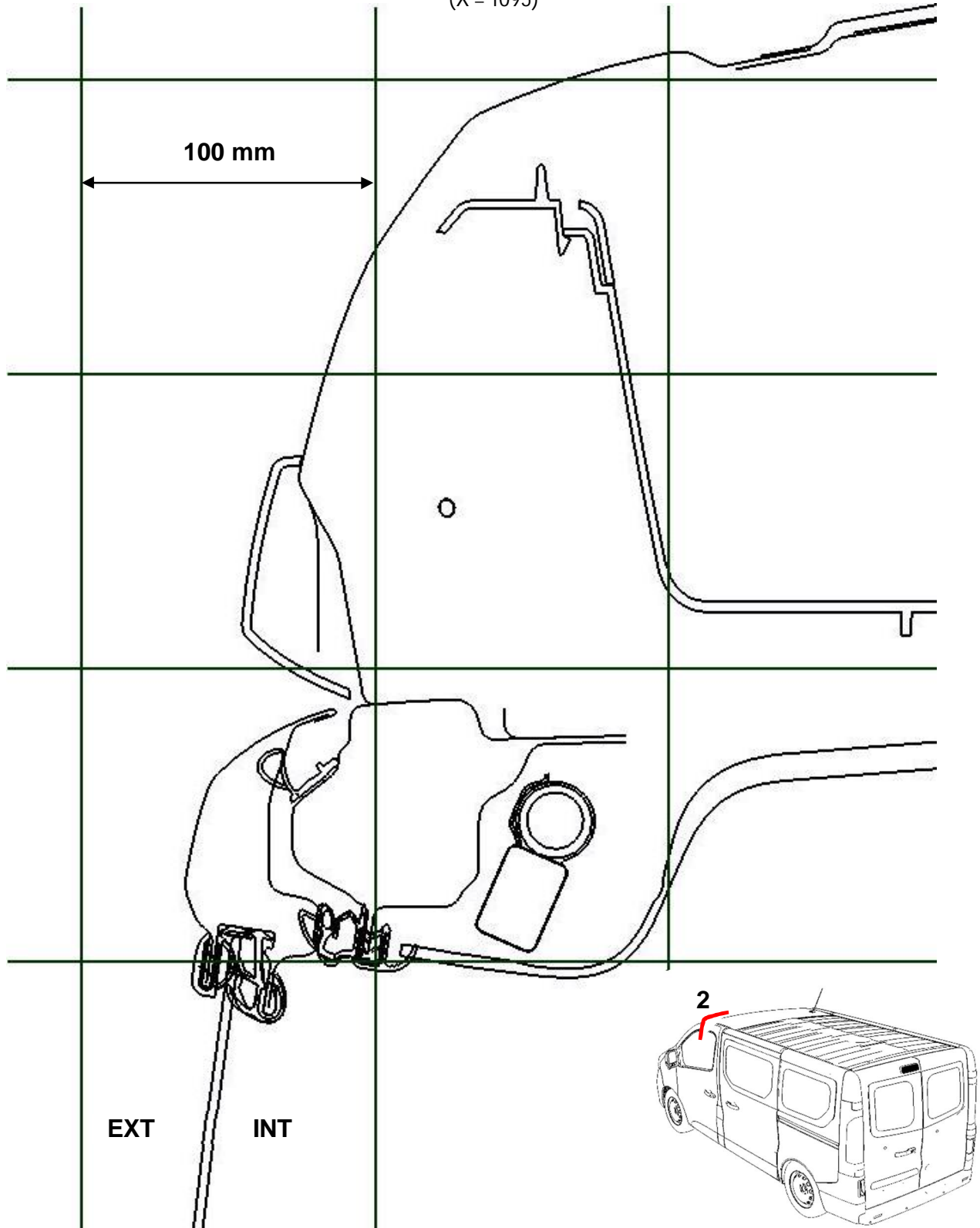


SECTION 2  
"SIDE ROOF RAIL OF FRONT DOOR – VERSION H1"  
(X = 1095)



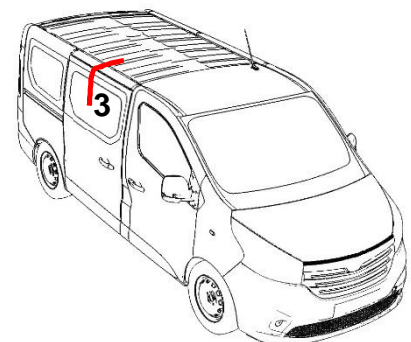
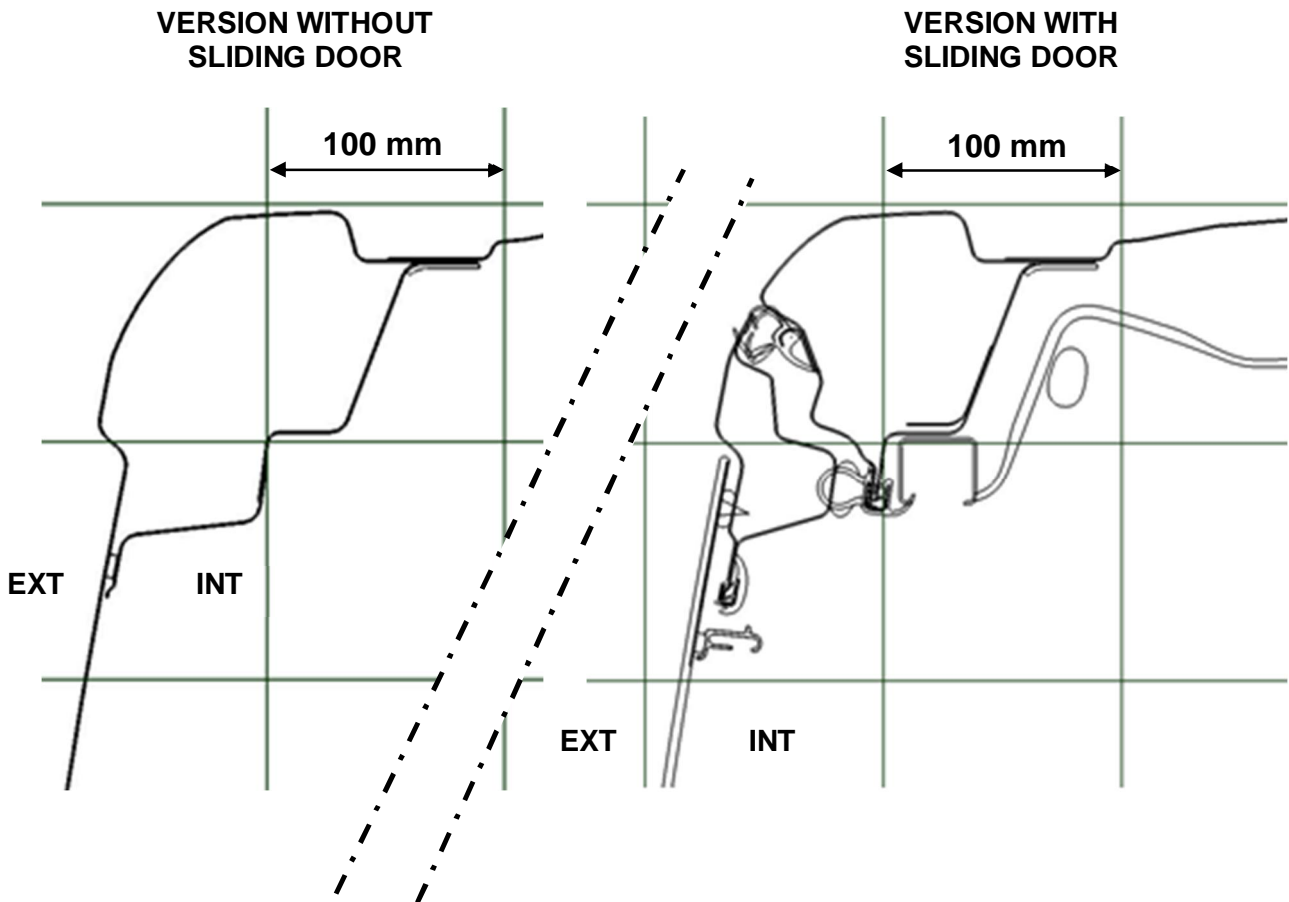


SECTION 2  
"SIDE ROOF RAIL OF FRONT DOOR - VERSION H2"  
(X = 1095)



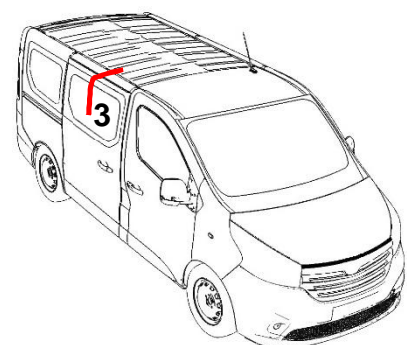
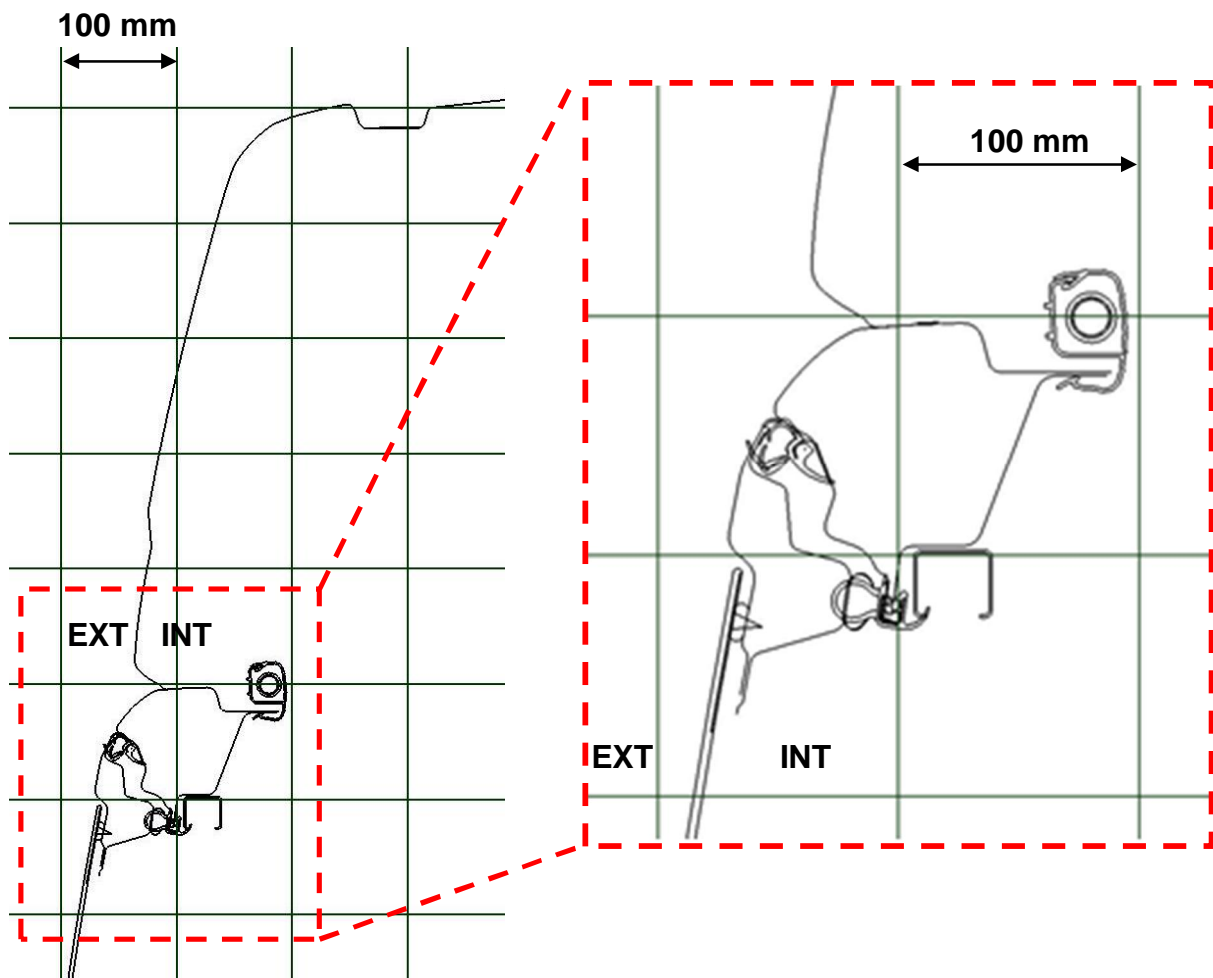


SECTION 3  
"REAR SIDE ROOF RAIL – VERSION H1"  
(X = 2056)





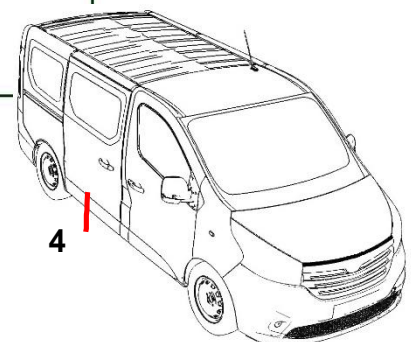
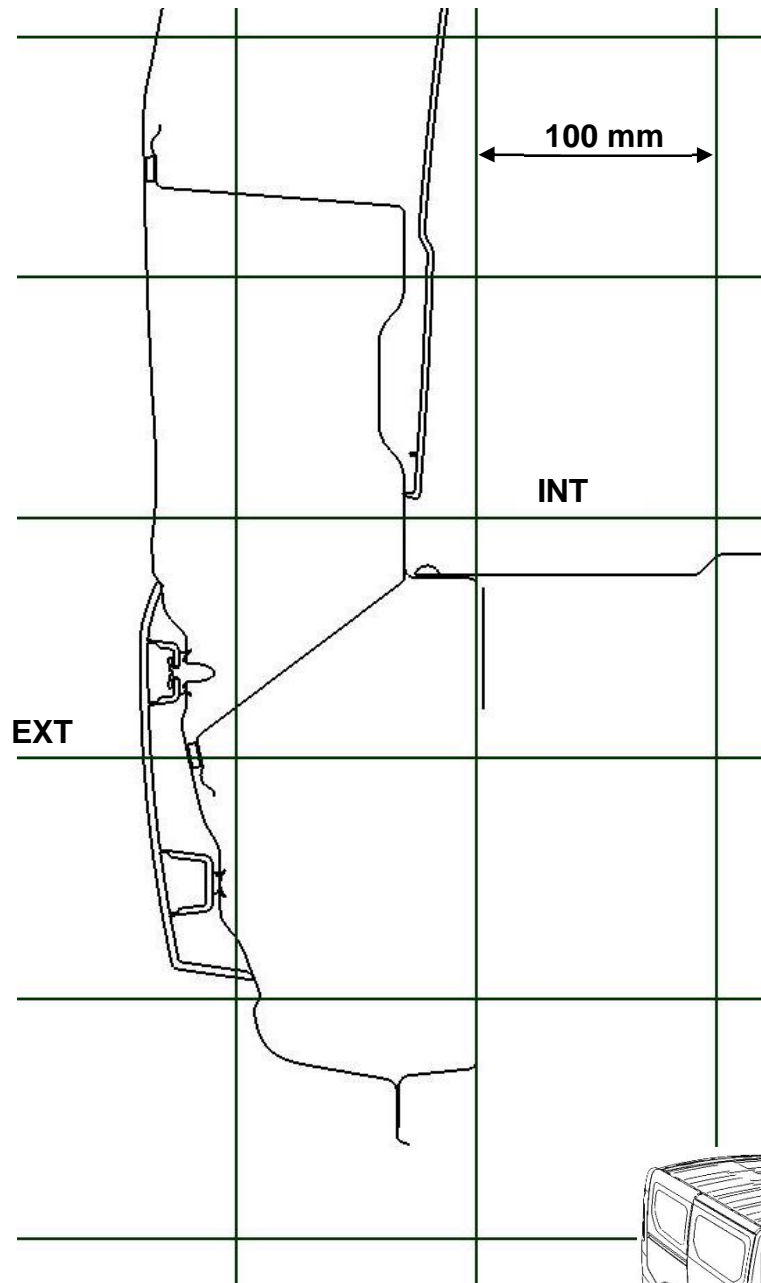
SECTION 3  
"REAR SIDE ROOF RAIL - VERSION H2"  
(X = 2056)





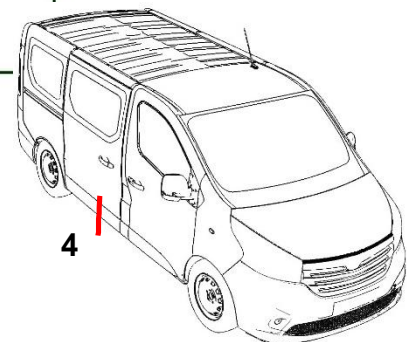
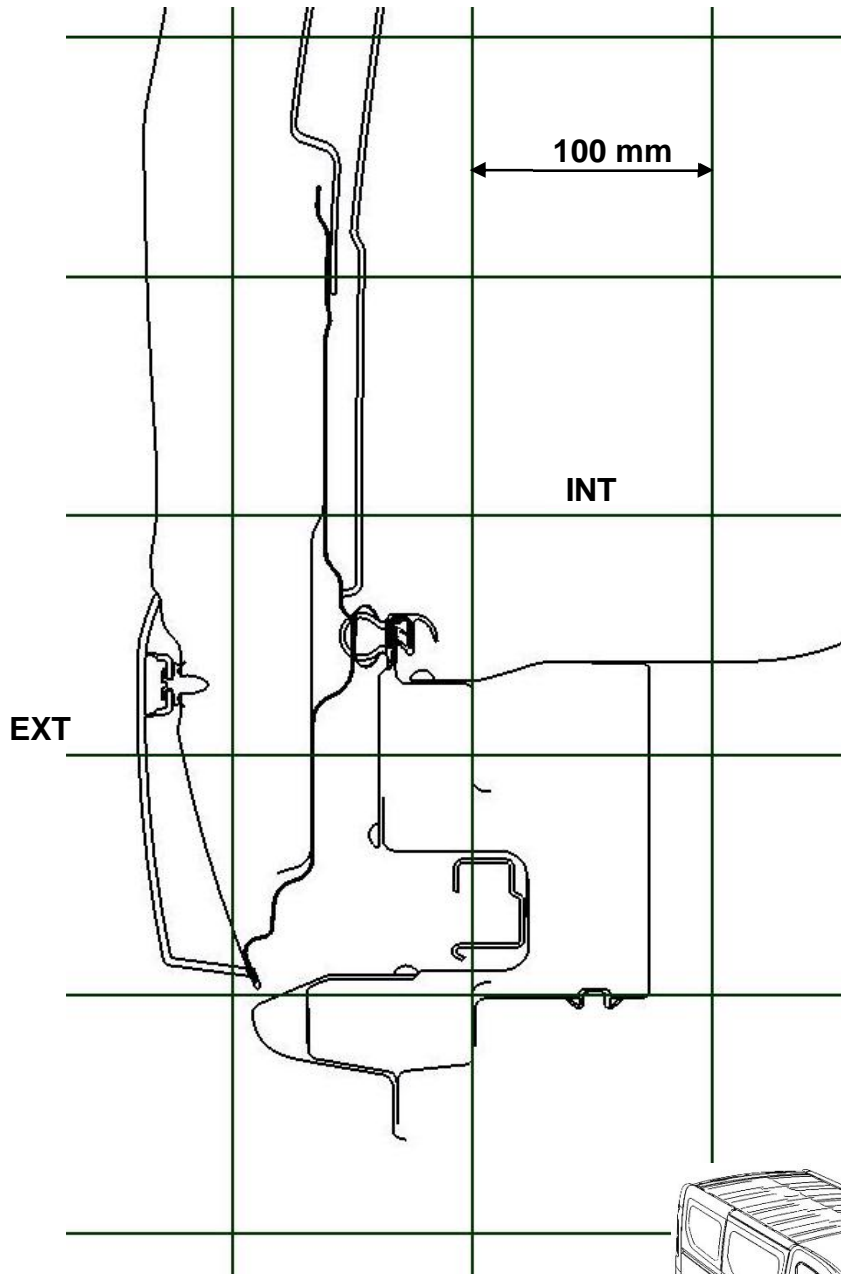


SECTION 4  
"LOWER SIDE SILL, FIXED SIDE PANEL"  
(X = 2075)



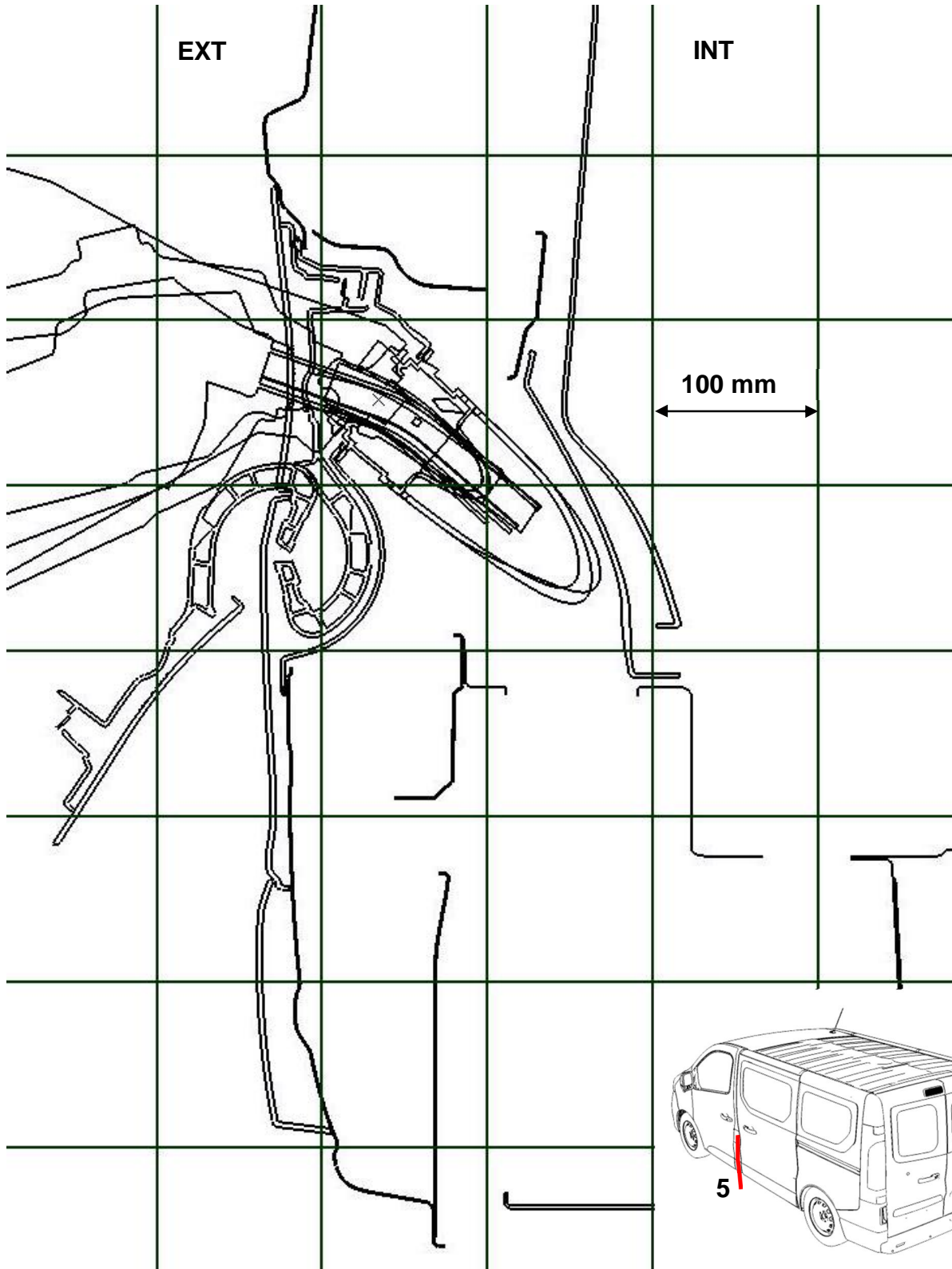


SECTION 4  
"LOWER SIDE SILL, SLIDING SIDE DOOR"  
(X = 1670)



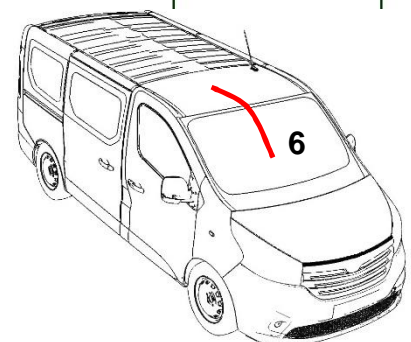
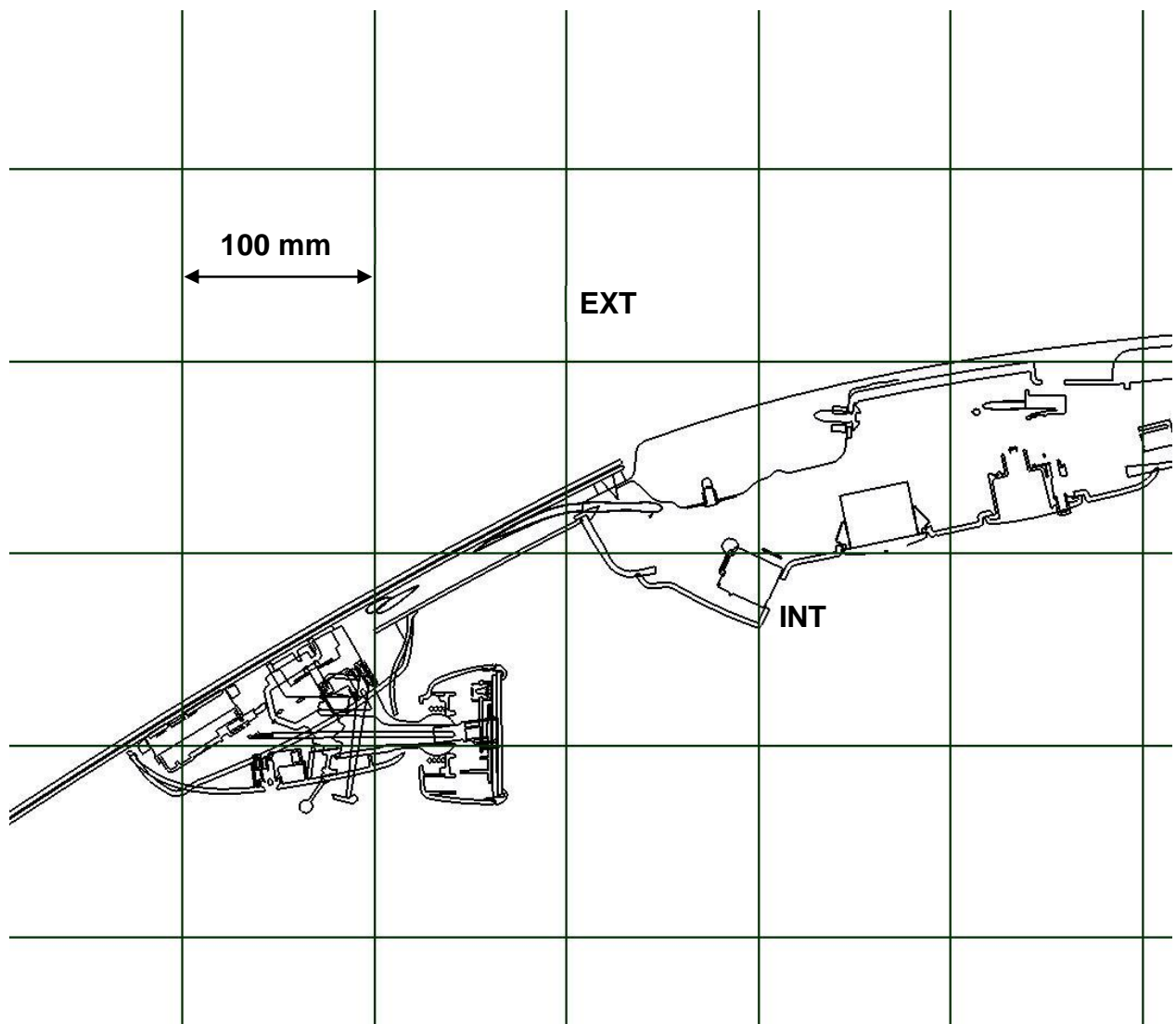


SECTION 5  
"FUEL FILLER FLAP"  
(X = 1388.1)



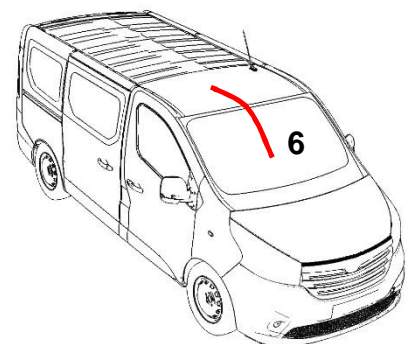
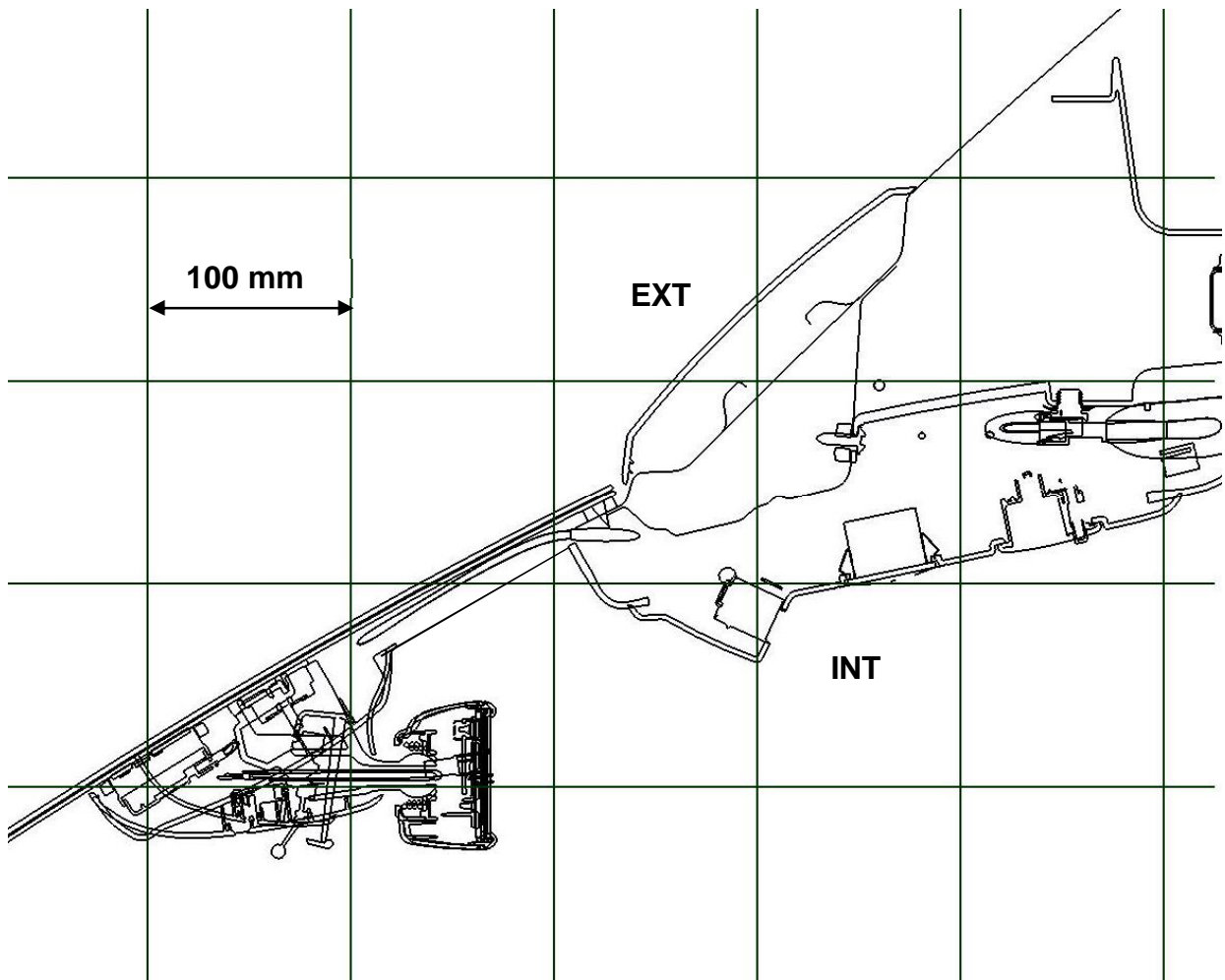


SECTION 6  
"ROOF PANEL - VERSION H1"  
(Y = 0)



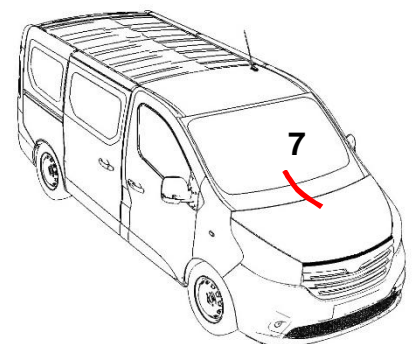
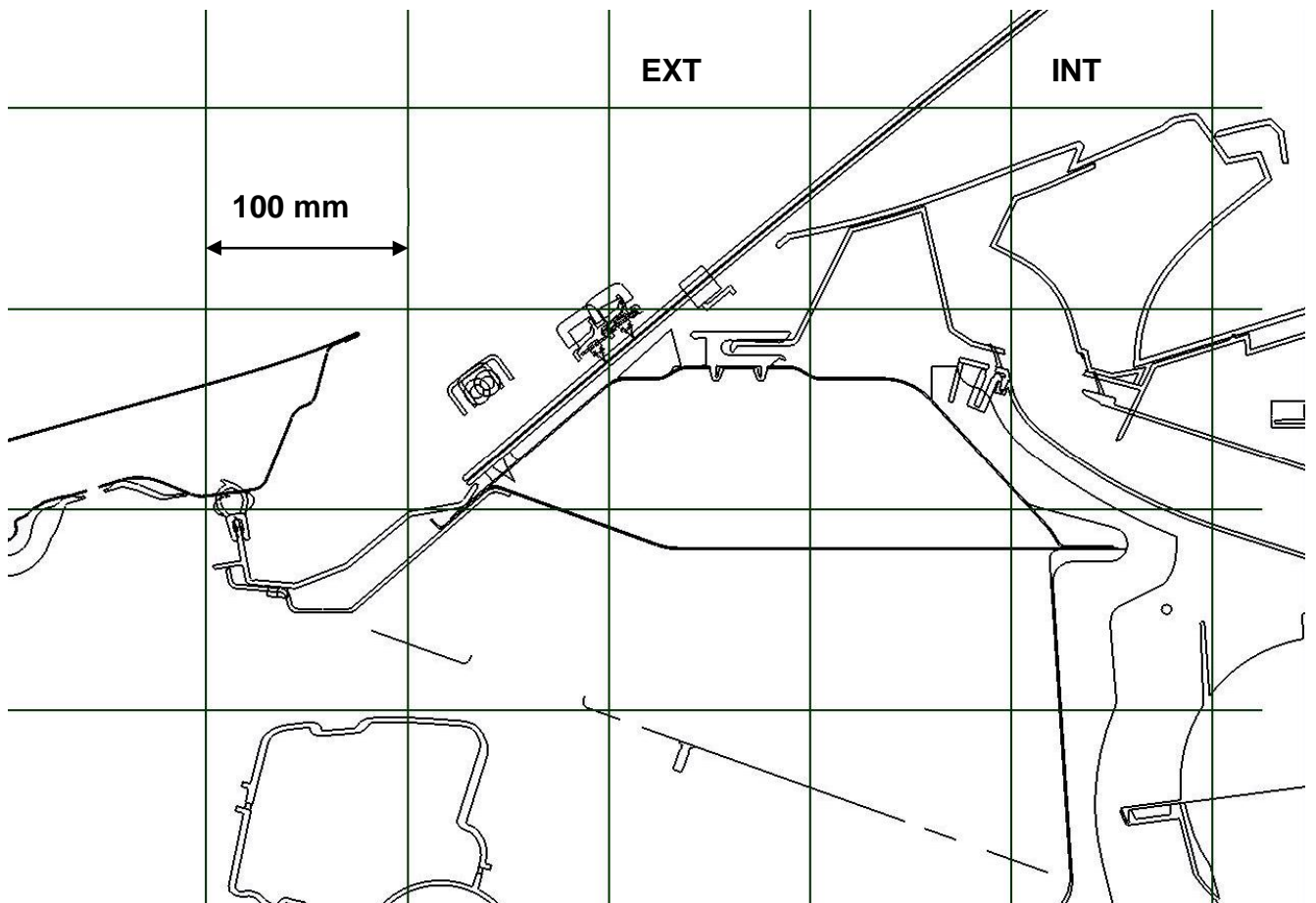


SECTION 6  
"ROOF PANEL - VERSION H2"  
(Y = 0)



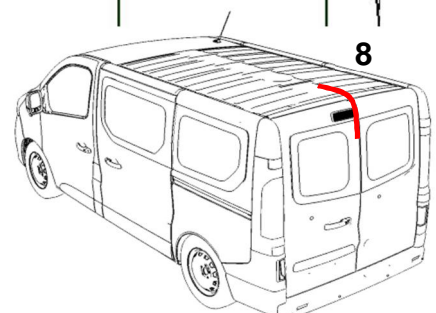
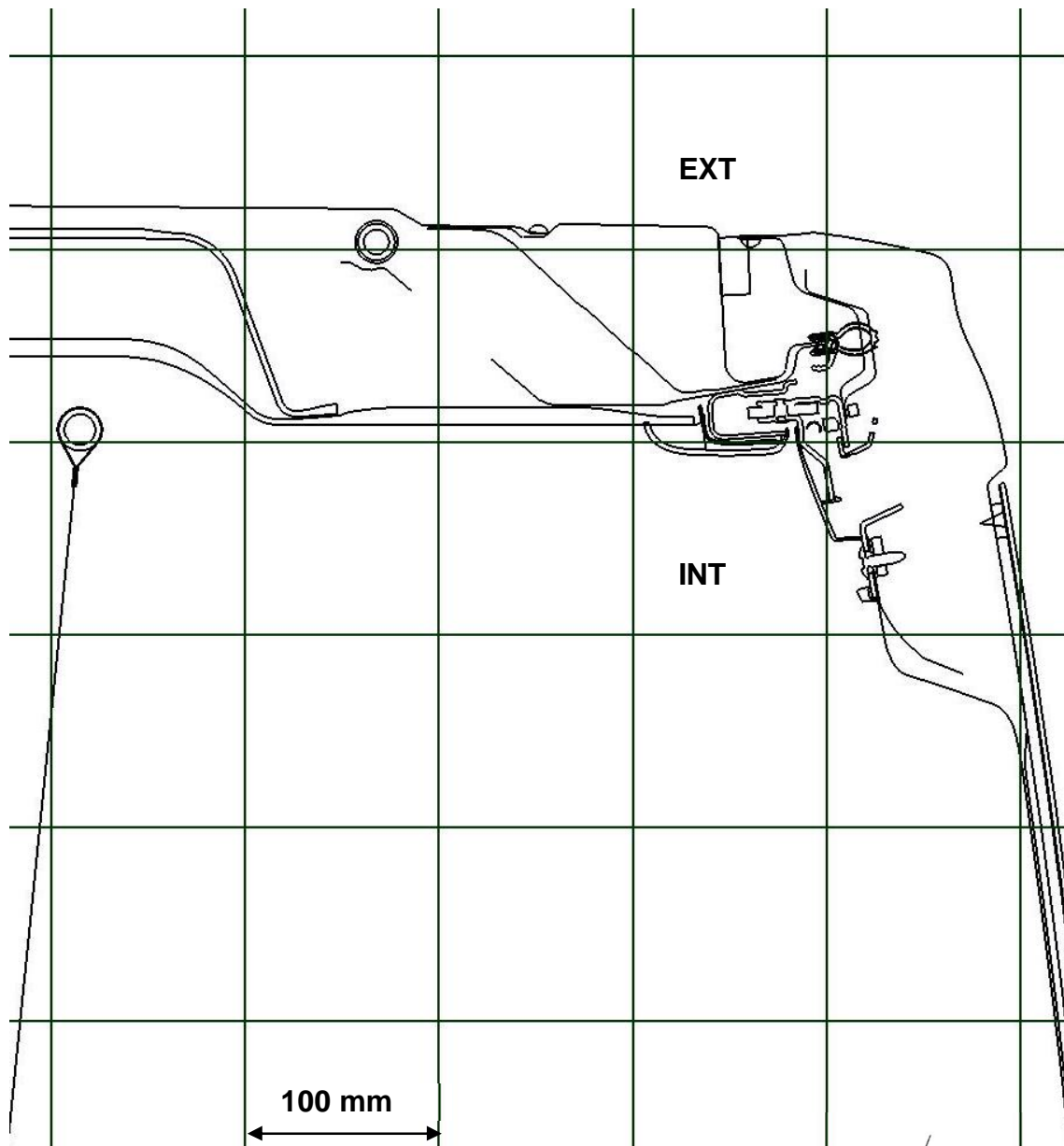


SECTION 7  
"AREA BELOW WINDSCREEN"  
(Y = 0)



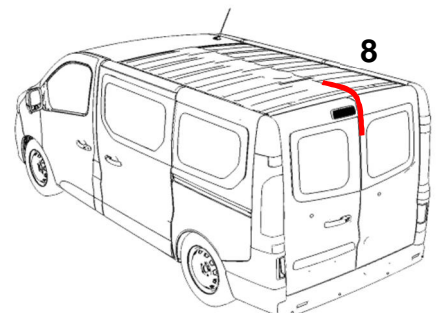
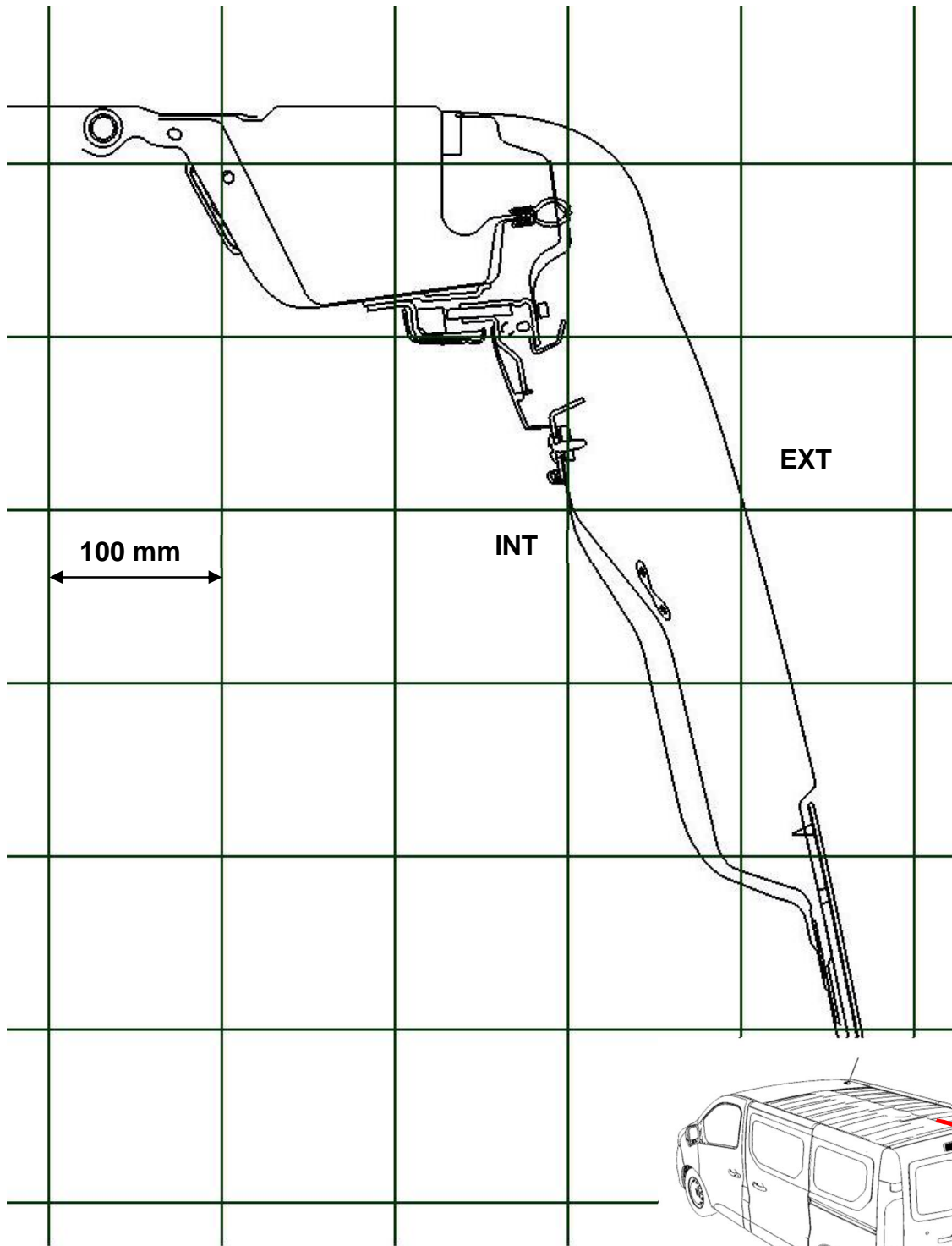


SECTION 8  
"REAR UPPER CROSS MEMBER – VERSION H1"  
(Y = 42)





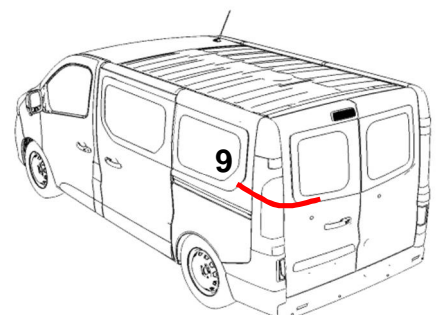
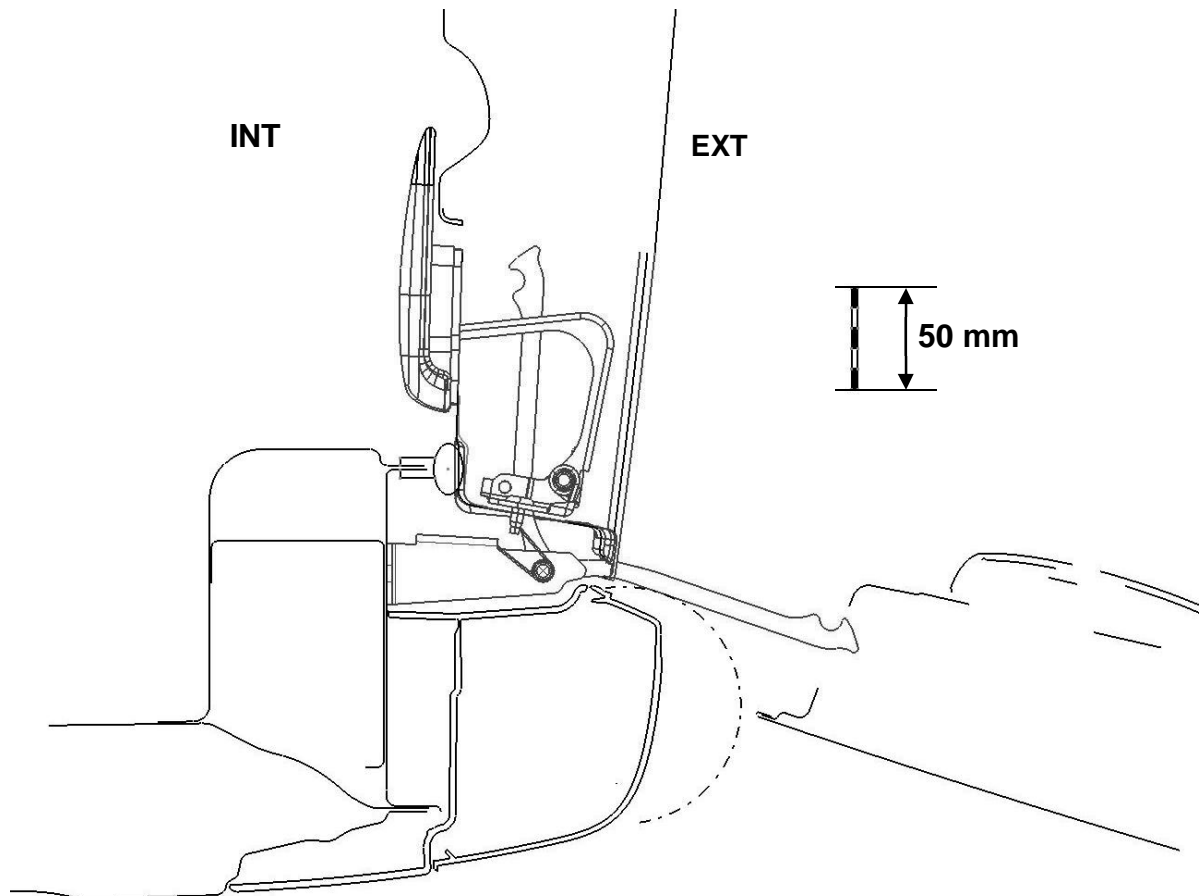
SECTION 8  
"REAR UPPER CROSS MEMBER – Version H2"  
(Y = 65)





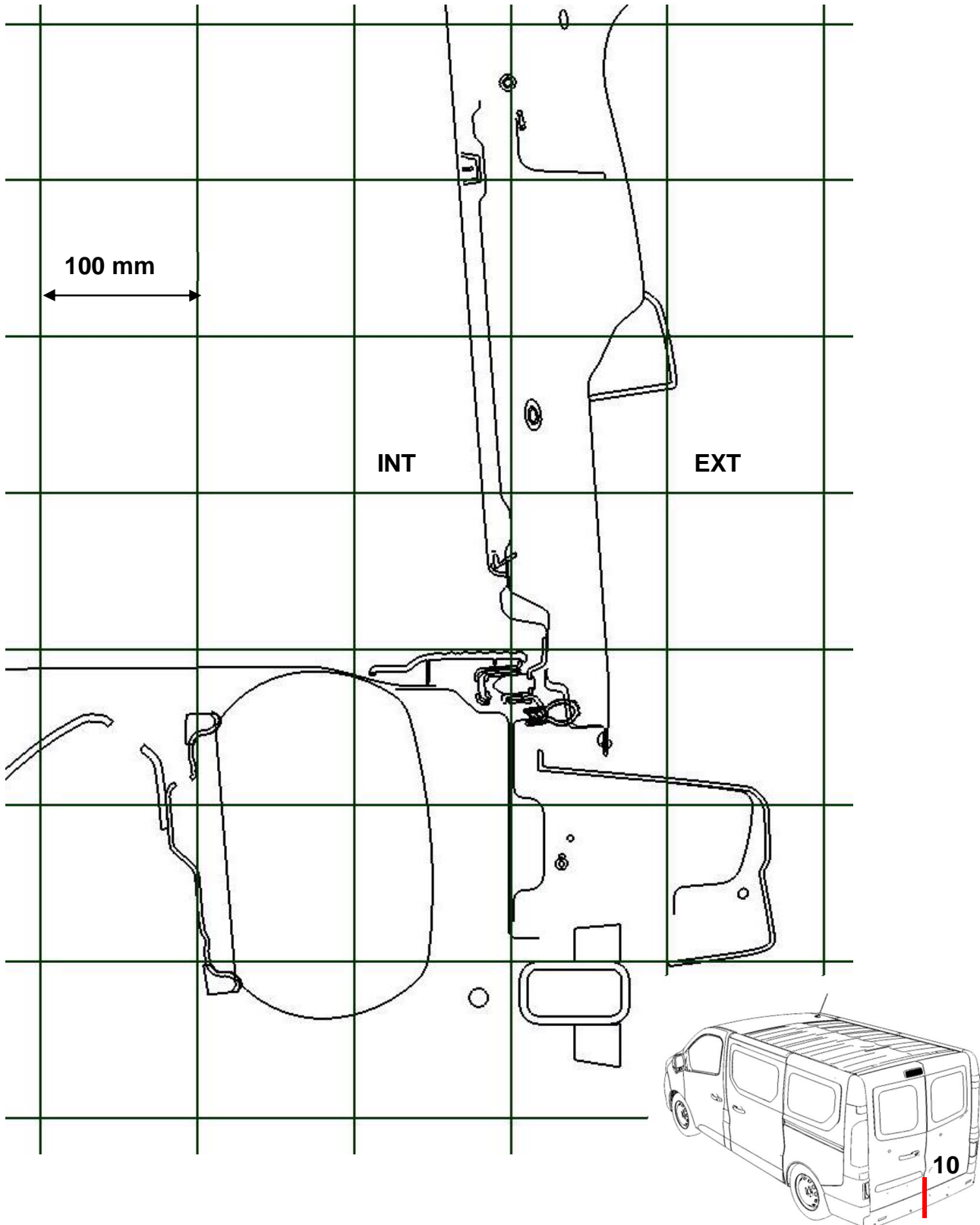


SECTION 9  
"REAR LIGHT/DOOR STOP"



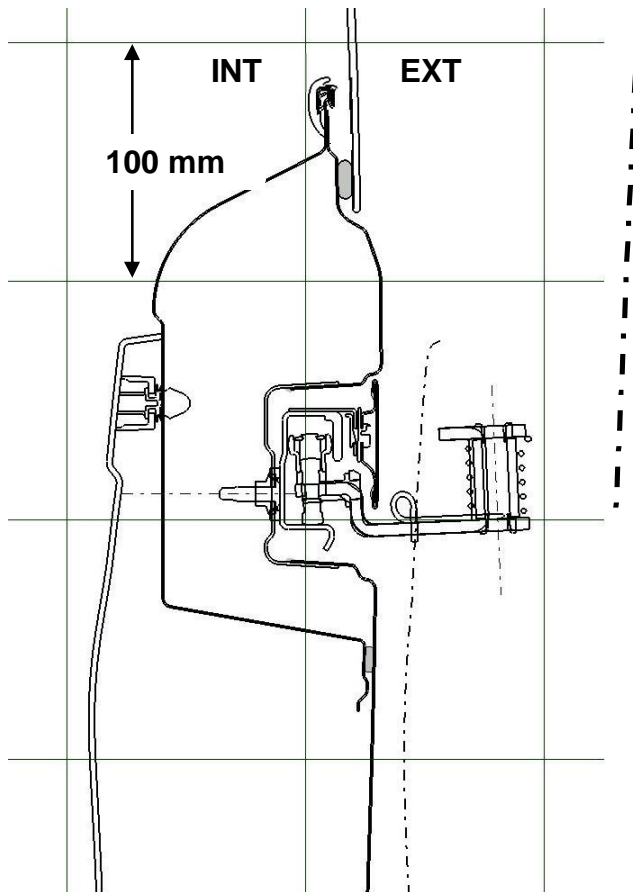


SECTION 10  
"REAR LEFT-HAND DOOR LOWER DOOR STOP" (Y = -127)

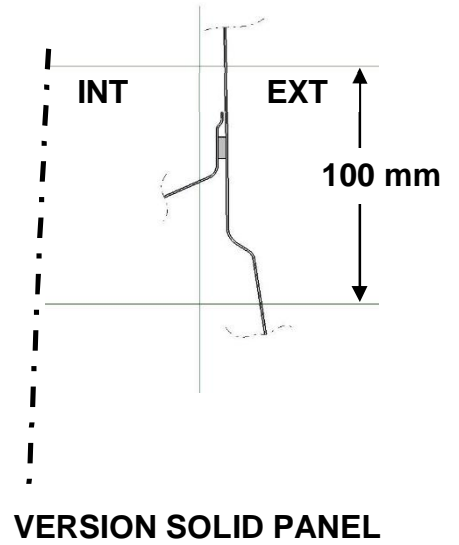




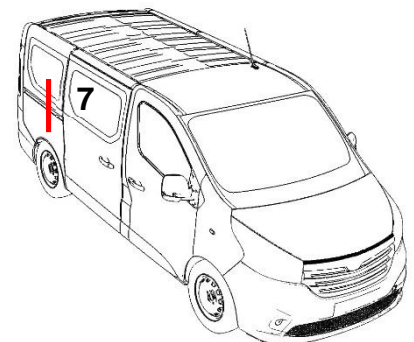
SECTION 11  
"SLIDING SIDE DOOR CENTRE RAIL"  
(X = 3101)



**VERSION GLAZED**



**VERSION SOLID PANEL**





### 5.1.2. GLAZED AND SOLID SIDE PANEL INSERTS

To add glass panels to a panel van, it is recommended to:

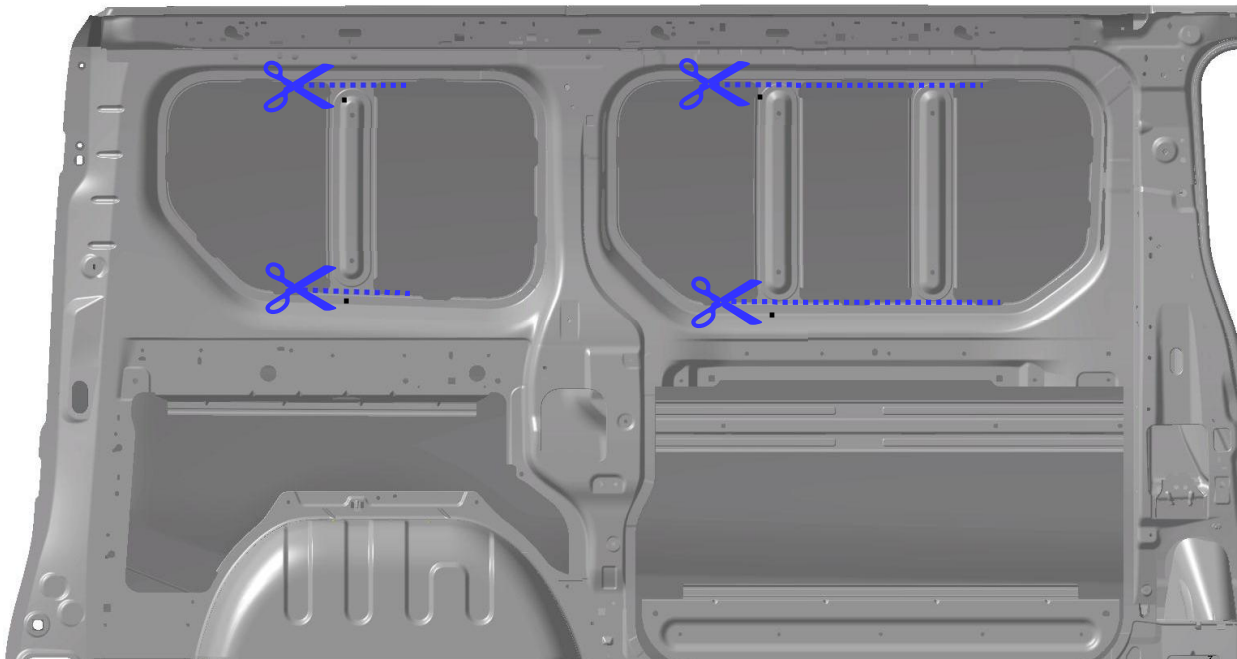
- cut out the vertical stiffeners,
- cut out an opening in the side panel in the shape of the glazed versions of the VIVARO for bonded glass panels or the shape of the glass panel for fitted windows.
- protect the cut-out sections from corrosion. Please refer to the "Anti-corrosion" data sheet

Local reinforcement of the frame structure may be required.

Warning:

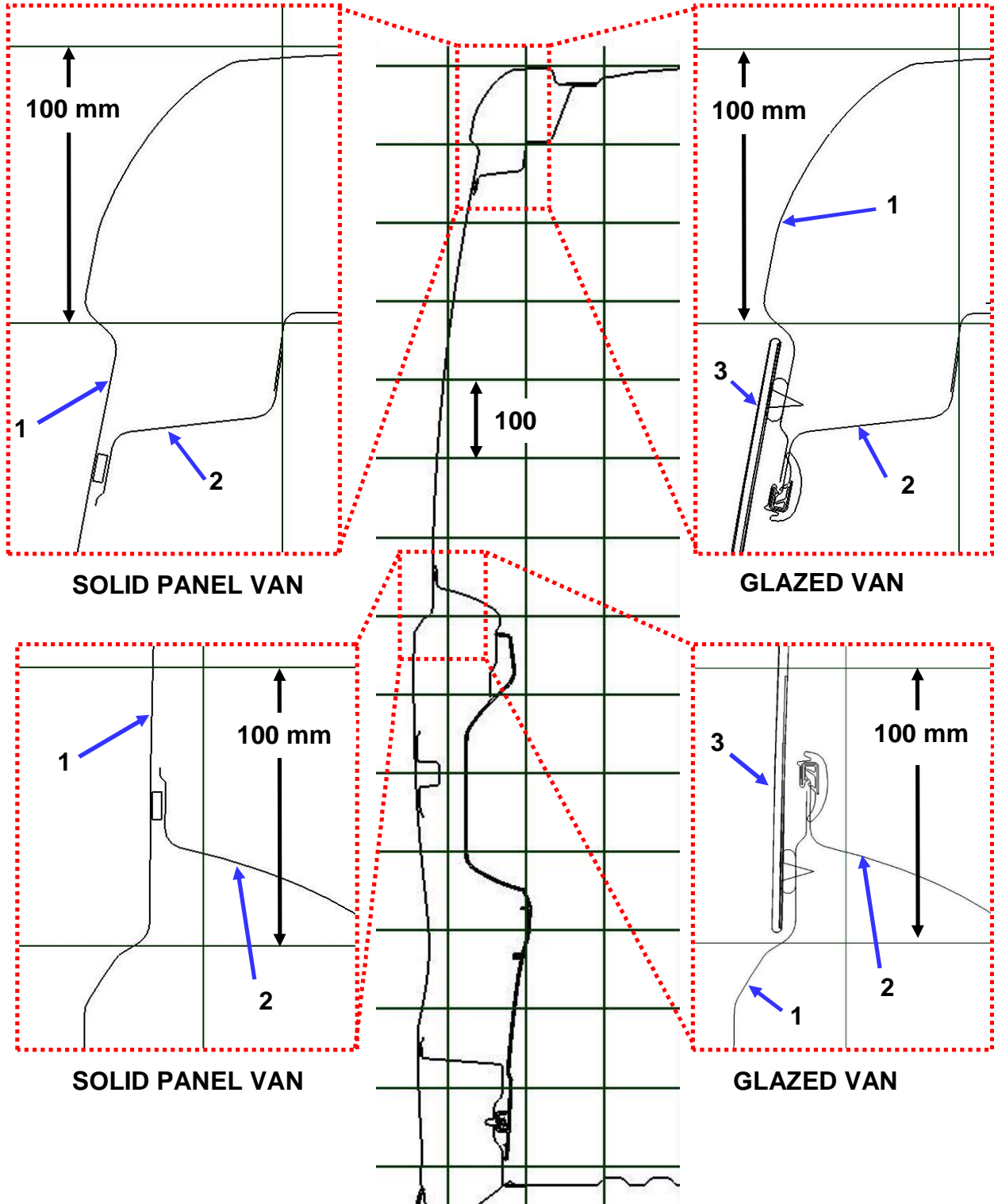
*Under no circumstances must the vertical seal of the side bodywork panels be cut out.*

#### LOCATION OF CUT-OUTS





SOLID PANEL VAN/GLAZED VAN CROSS-SECTIONS



1:	Body side exterior panel
2:	Body side exterior panel lining
3:	Bonded glass panel



## 5.2. BULKHEAD DRILLING AREAS / FLOOR PANEL DRILLING AREAS

### 5.2.1. BULKHEAD DRILLING AREAS

***Important** Before any drilling is performed, take note of the various elements such as wiring, brake pipes, soundproofing, hand brake cables, etc.*

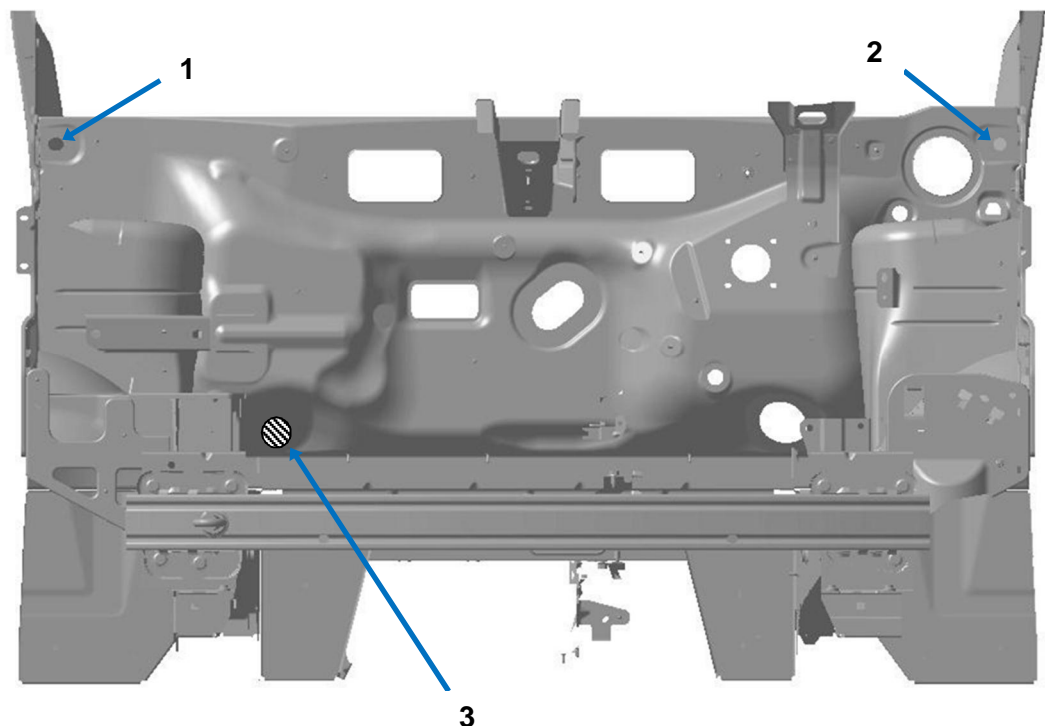
Location of areas on the bulkhead


The bulkhead cross member ring for routing wiring from the engine compartment area to the cab area does not allow the routing of another cable.

Consequently, it is strictly prohibited to drill into this bulkhead cross member ring. The locations shown below should be used (1, 2 and 3).

Sealing must always be ensured using a grommet and silicone seal, making sure that the routing of the wire(s) is thermally protected in areas where the temperature is high.

Left-hand drive (engine compartment side)



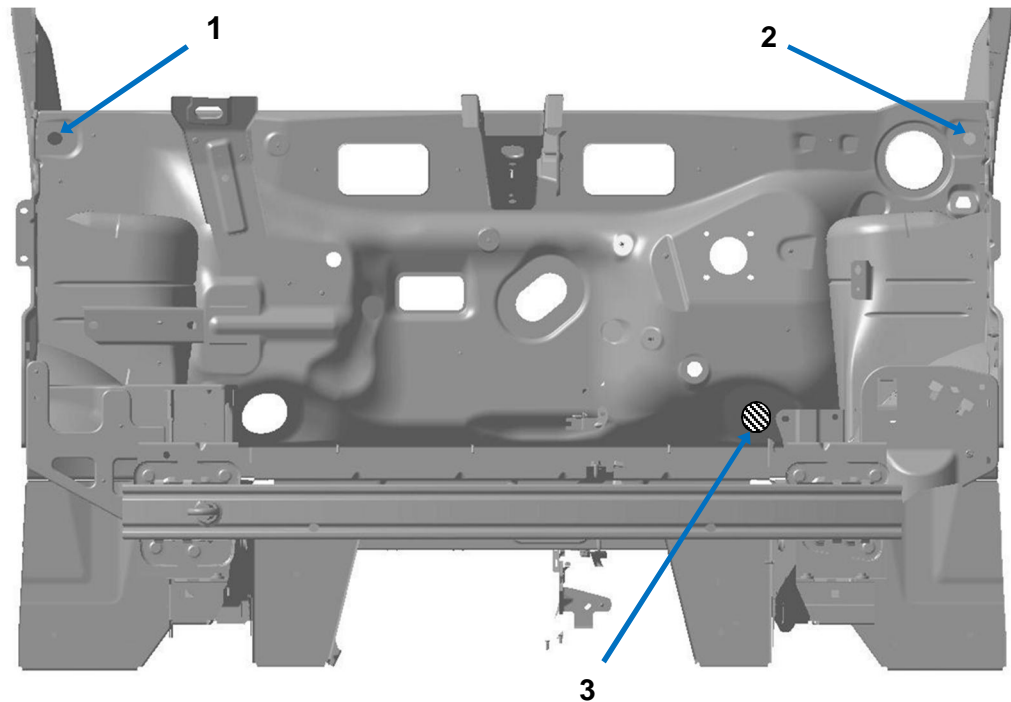
 Recommended areas for routing wiring


1:	Sunroof routing area 24.5 mm x 20.5 mm (existing hole)
2:	Routing area, maximum diameter 20.5 mm (existing hole)
3:	Drilling area, maximum diameter 40 mm

VIVARO (X82)  
5.2 – BULKHEAD DRILLING AREAS / FLOOR PANEL DRILLING AREAS



Right-hand drive (engine compartment side)



 Recommended areas for routing wiring

1:	Sunroof routing area 24.5 mm x 20.5 mm (existing hole)
2:	Routing area, maximum diameter 20.5 mm (existing hole)
3:	Drilling area, maximum diameter 40 mm



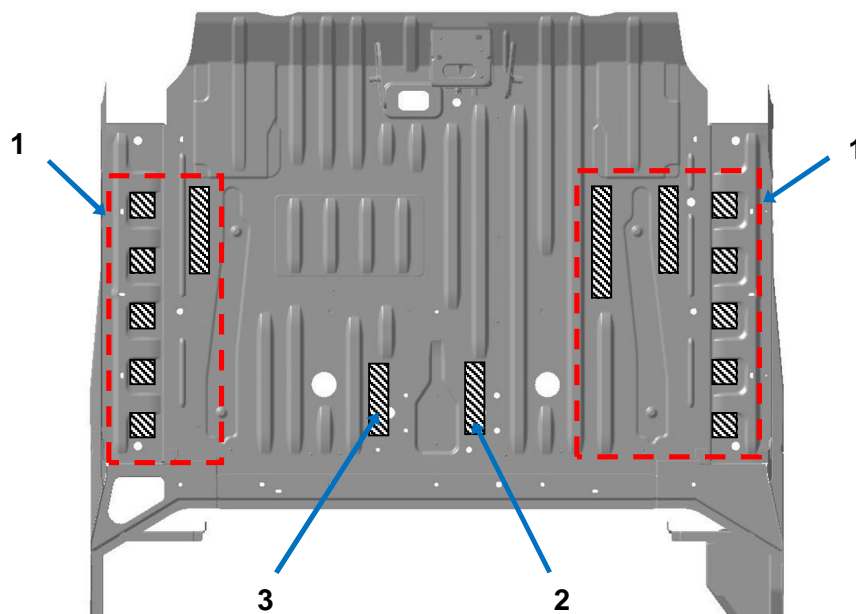
### 5.2.2. FLOOR PANEL DRILLING AREAS


*Important:* Before any drilling is performed, take note of the various elements such as wiring, brake pipes, soundproofing, hand brake cables, etc.

Location of areas on the cab floor panel

Spaces have been defined between the driver seat and the cab partition for left-hand and right-hand drive.

Sealing must always be ensured using a grommet and silicone seal, making sure that the routing of the wire(s) is thermally protected in areas where the temperature is high.



 Recommended areas for routing wiring

1:	All types
2:	Area valid for left-hand drive versions only
3:	Area valid for right-hand drive versions only



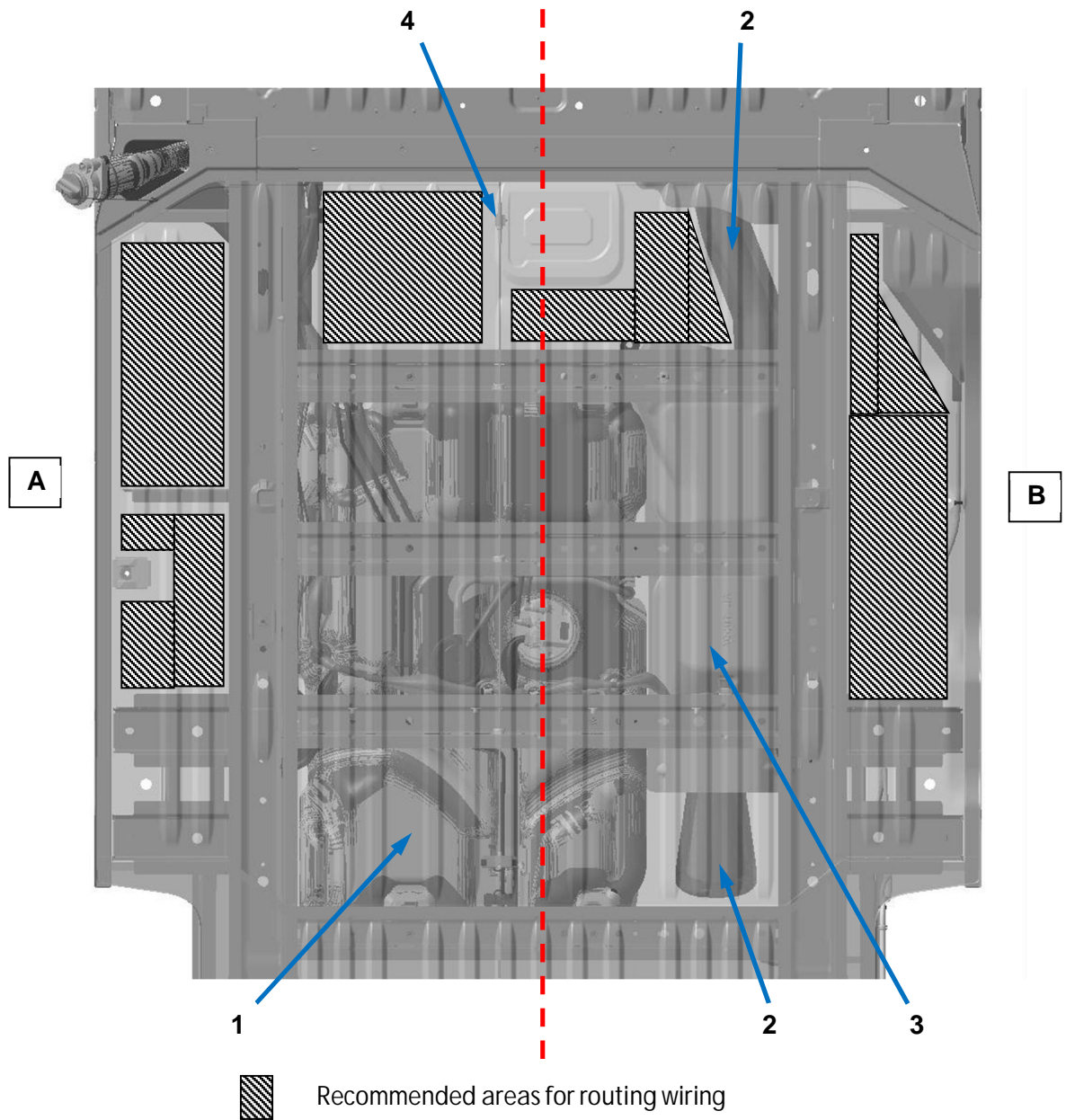
VIVARO (X82)  
5.2 – BULKHEAD DRILLING AREAS / FLOOR PANEL DRILLING AREAS



Location of areas on the panel van floor

Sealing must always be ensured using a grommet and silicone seal, making sure that the routing of the wire(s) is thermally protected in areas where the temperature is high.

Version L1

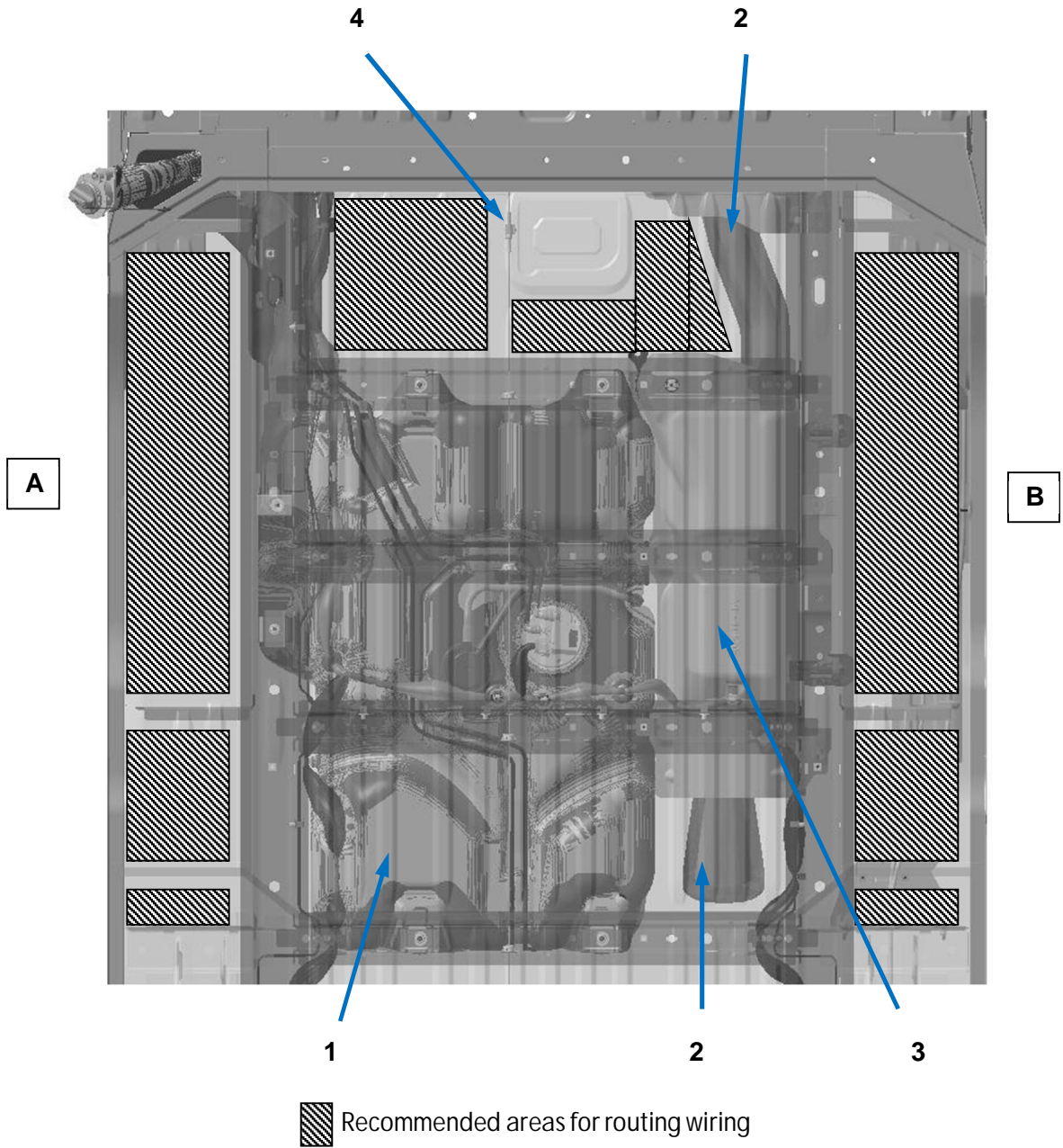


A : Area for version without side door	B : Area for version with side door
1 : Fuel tank	2 : Exhaust system
3 : Heat shield	4 : Hand brake cable

VIVARO (X82)  
5.2 – BULKHEAD DRILLING AREAS / FLOOR PANEL DRILLING AREAS



Version L2



A: Area for version without side door	B: Area for version with side door
1: Fuel tank	2: Exhaust system
3: Heat shield	4: Hand brake cable

### 5.3. ROOF PANEL CUT-OUT

Roof panel cut-outs must be made by taking account of the maximum dimensions shown below and, if necessary, by adjusting the reinforcements

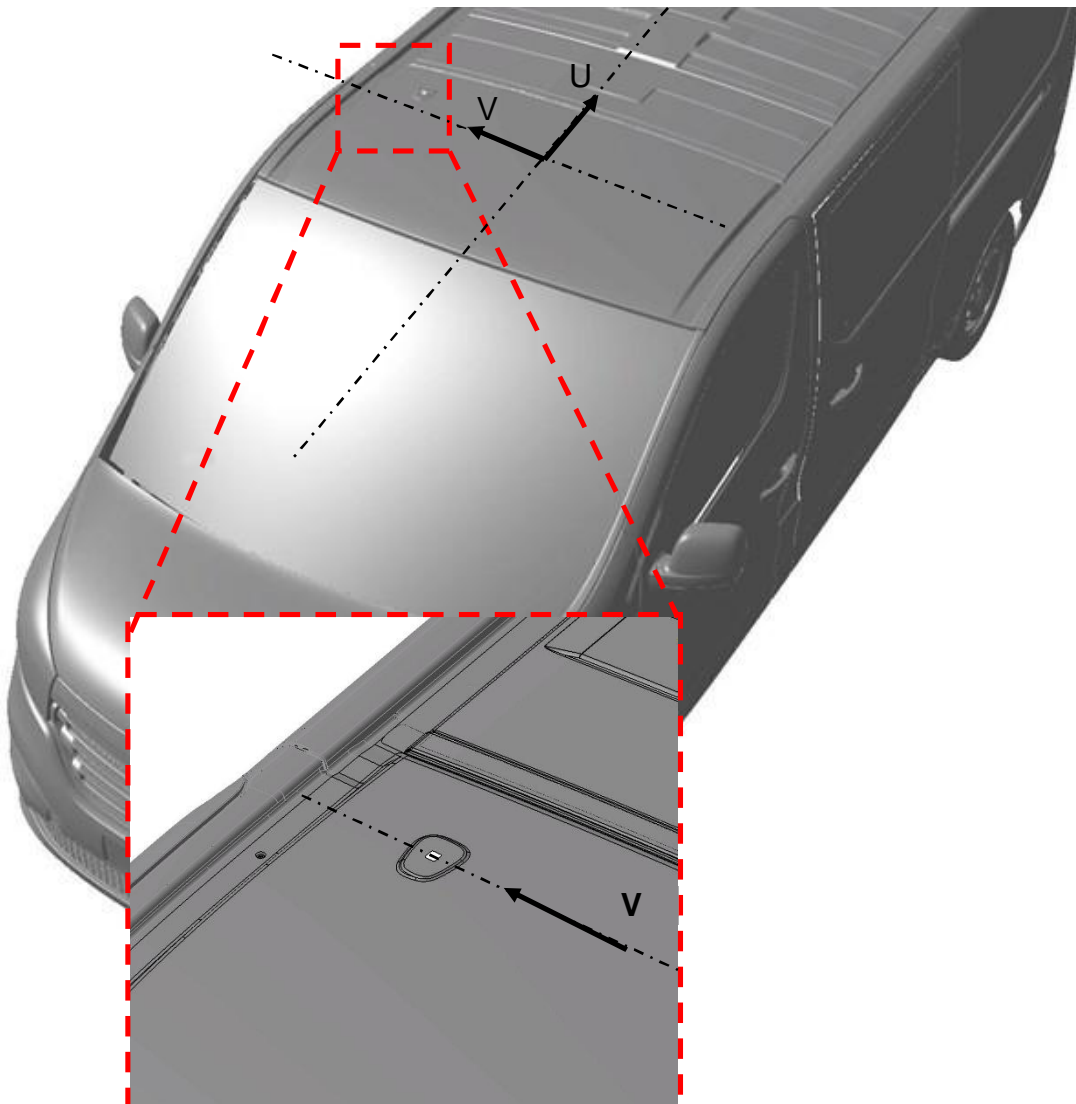


Important:

All cutting angles must be carried out with minimum radii of 75 mm.

#### Roof cut-out plan reference guide

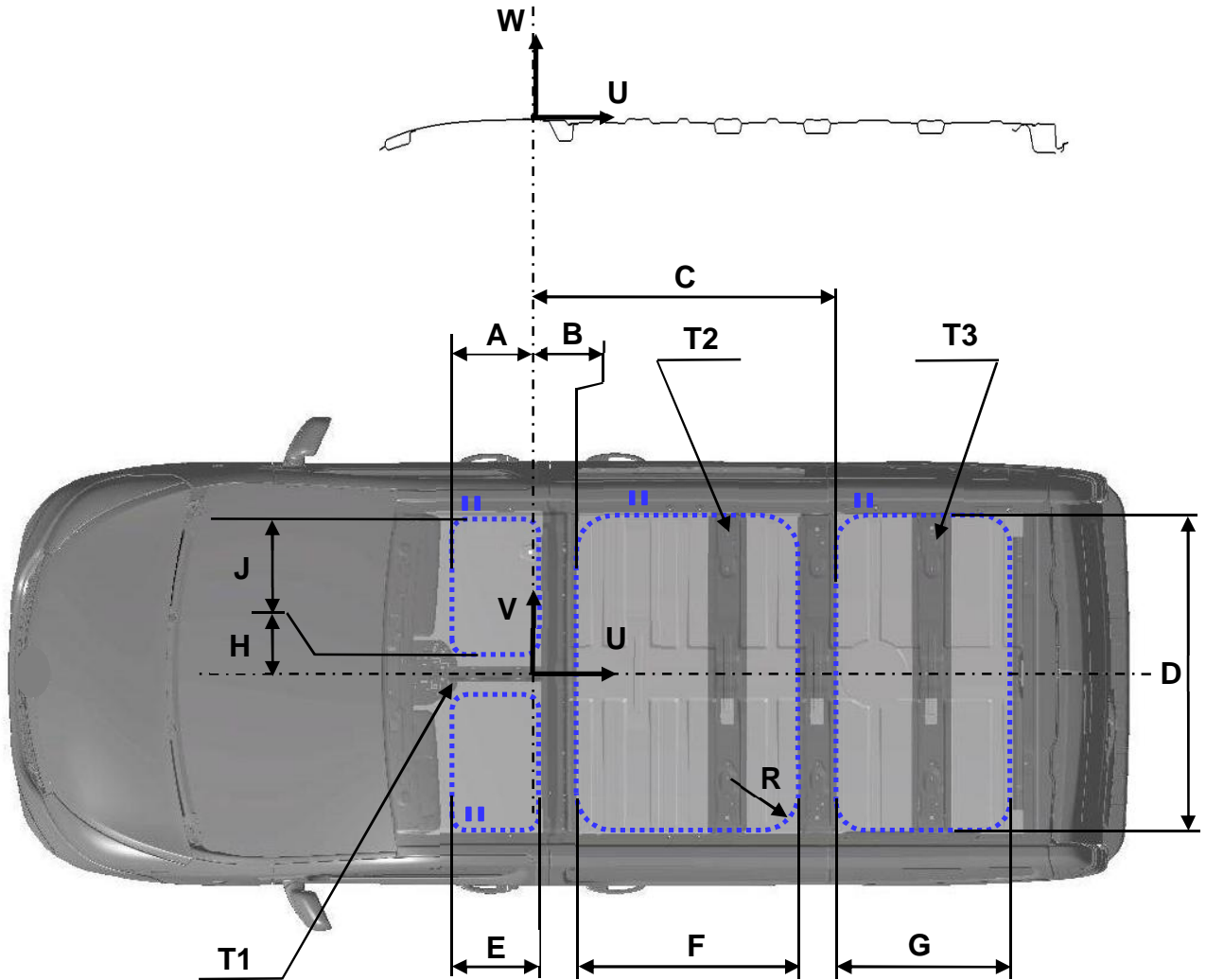
All the cutting dimensions use the edge of the square aerial opening and the symmetrical axis of the vehicle as a starting reference.



VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



Version Van L1



VALUES

A:	400	E:	440	J:	600
B:	202	F:	985	R:	75
C:	1361	G:	786		
D:	1420	H:	110		

CABLE DUCT AND CROSS MEMBERS

T1: Cable duct to be retained

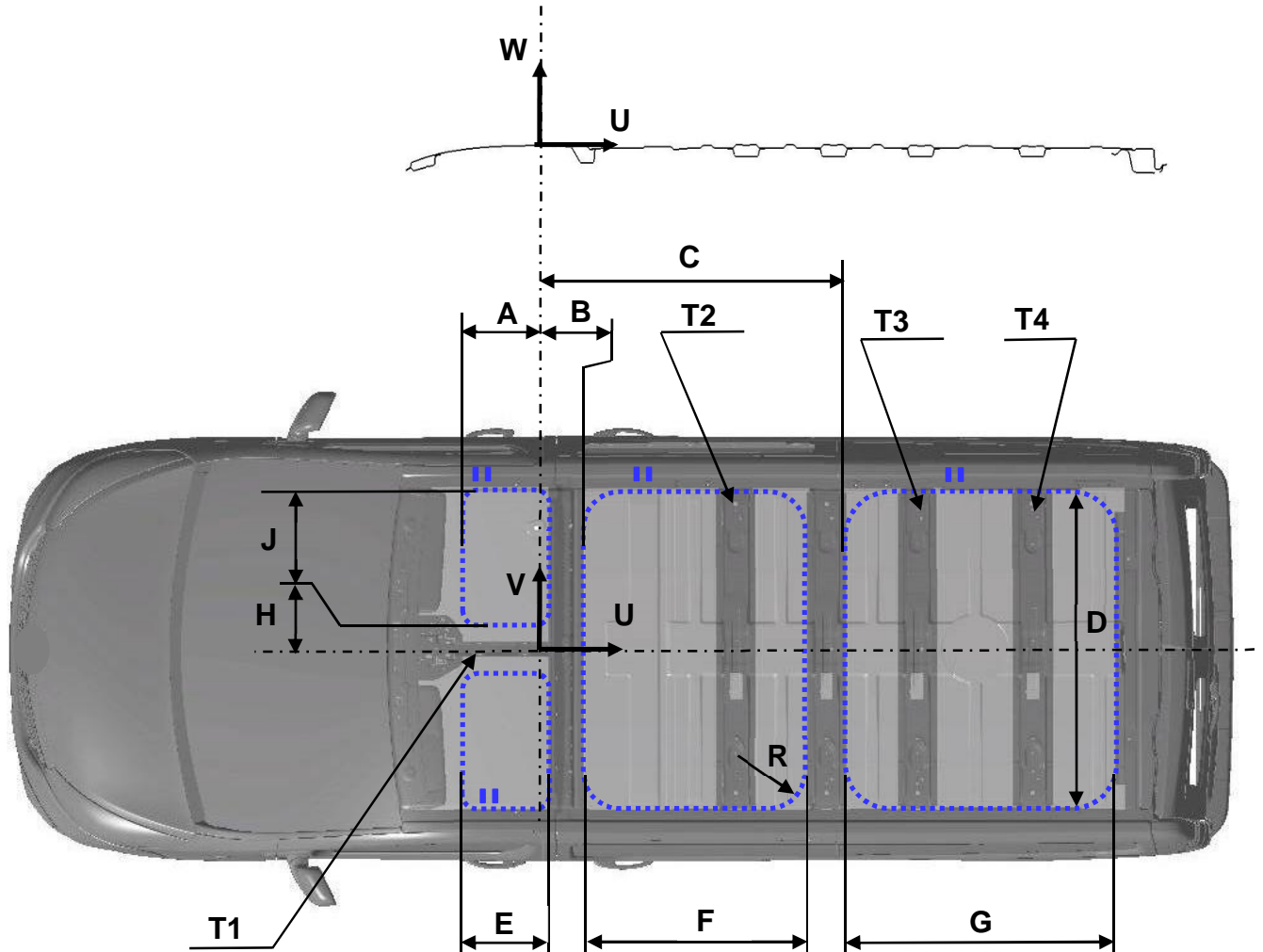
T2: Cross member to remove

T3: Cross member to remove

VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



Version Van L2



VALUES

A:	400	E:	440	J:	600
B:	202	F:	985	R:	75
C:	1361	G:	1186		
D:	1420	H:	110		

CABLE DUCT AND CROSS MEMBERS

- |     |                           |
|-----|---------------------------|
| T1: | Cable duct to be retained |
| T2: | Cross member to remove    |
| T3: | Cross member to remove    |
| T4: | Cross member to remove    |

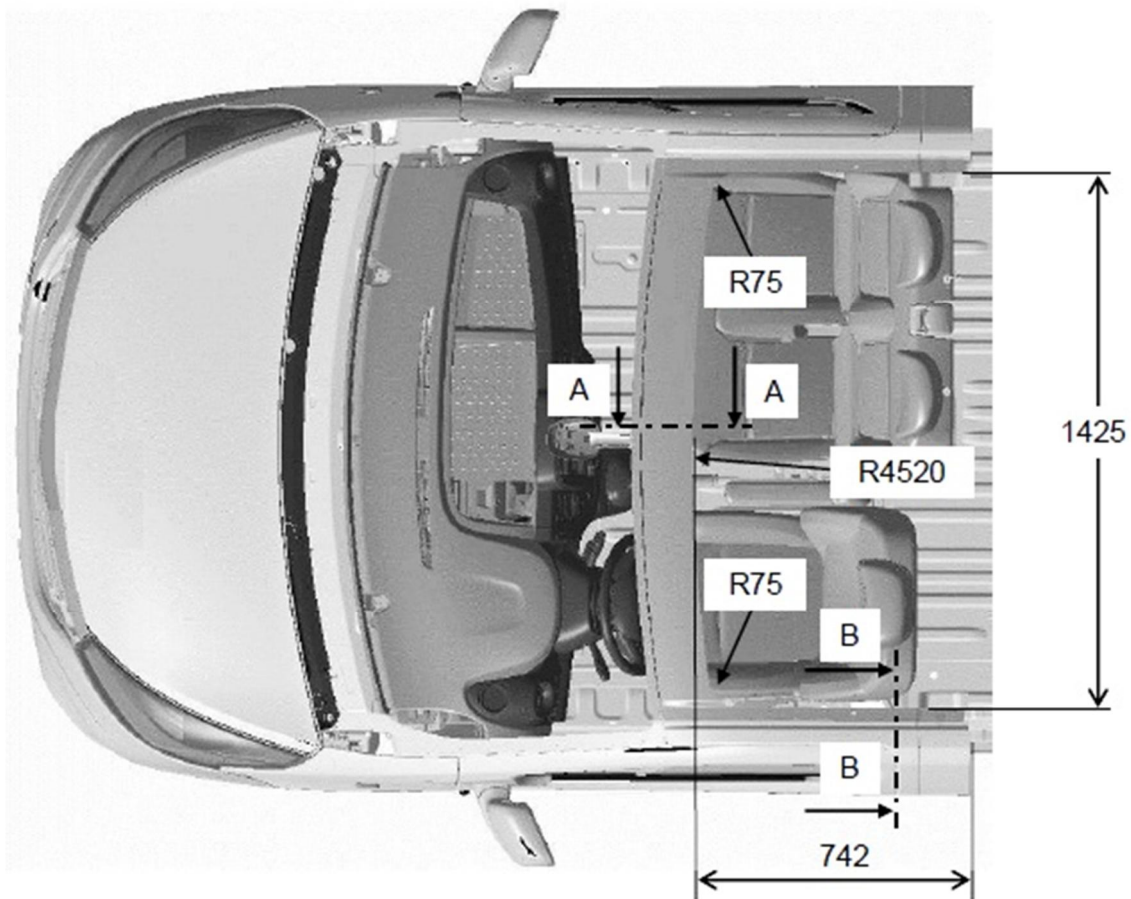
### 5.3.2 PLATFORM CAB VERSION

The cut-out area information and procedure are given by way of indication.

In all cases, the body cut and/or the structure added must ensure compliance with the regulations on seat belt anchor points (ECE 14 or other equivalent local regulations).

It is up to the coach builder to carry out tests.

#### Roof cut-out



**Important:**

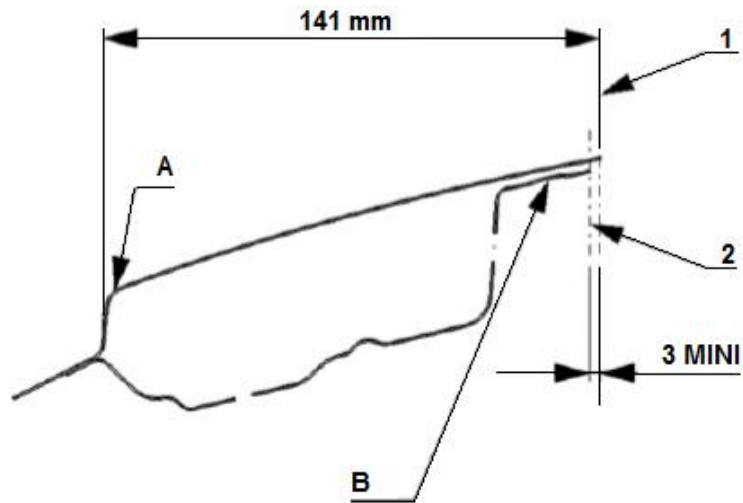
Cutting of the roof is prohibited if the vehicle has the curtain airbag option.

The converter must ensure compliance with the regulations on seat belt anchor points (ECE 14 or other equivalent regulations).

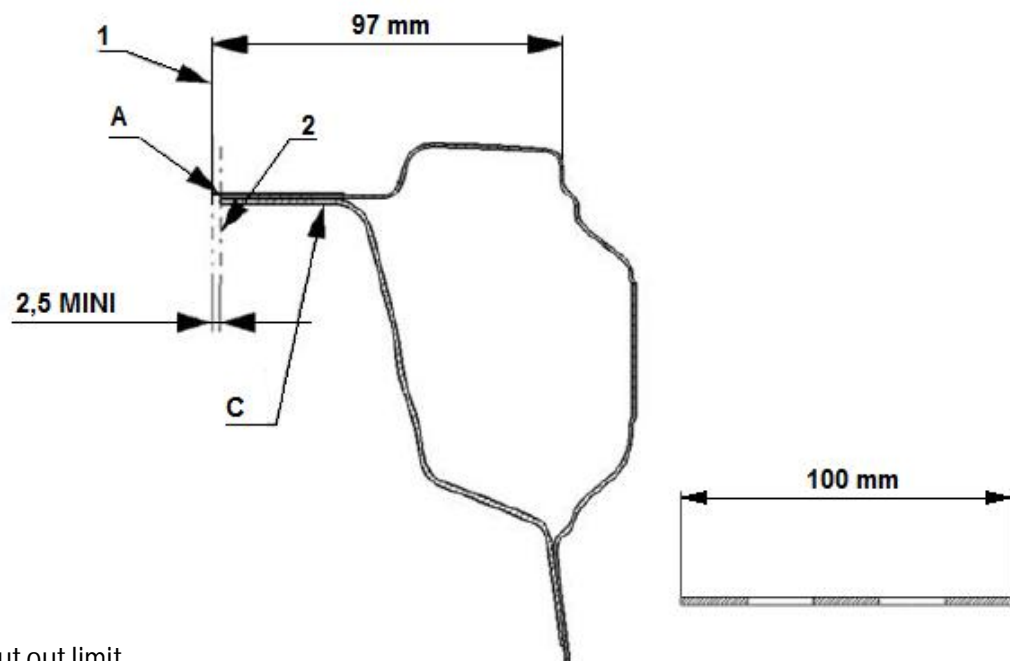
VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



SECTION A-A



SECTION B-B



- 1: Roof cut out limit
- 2: Clearance with front cross member roof rebate
- A: Roof
- B: reinforcement sheet of cross member
- C: reinforcement sheet of side member

VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT

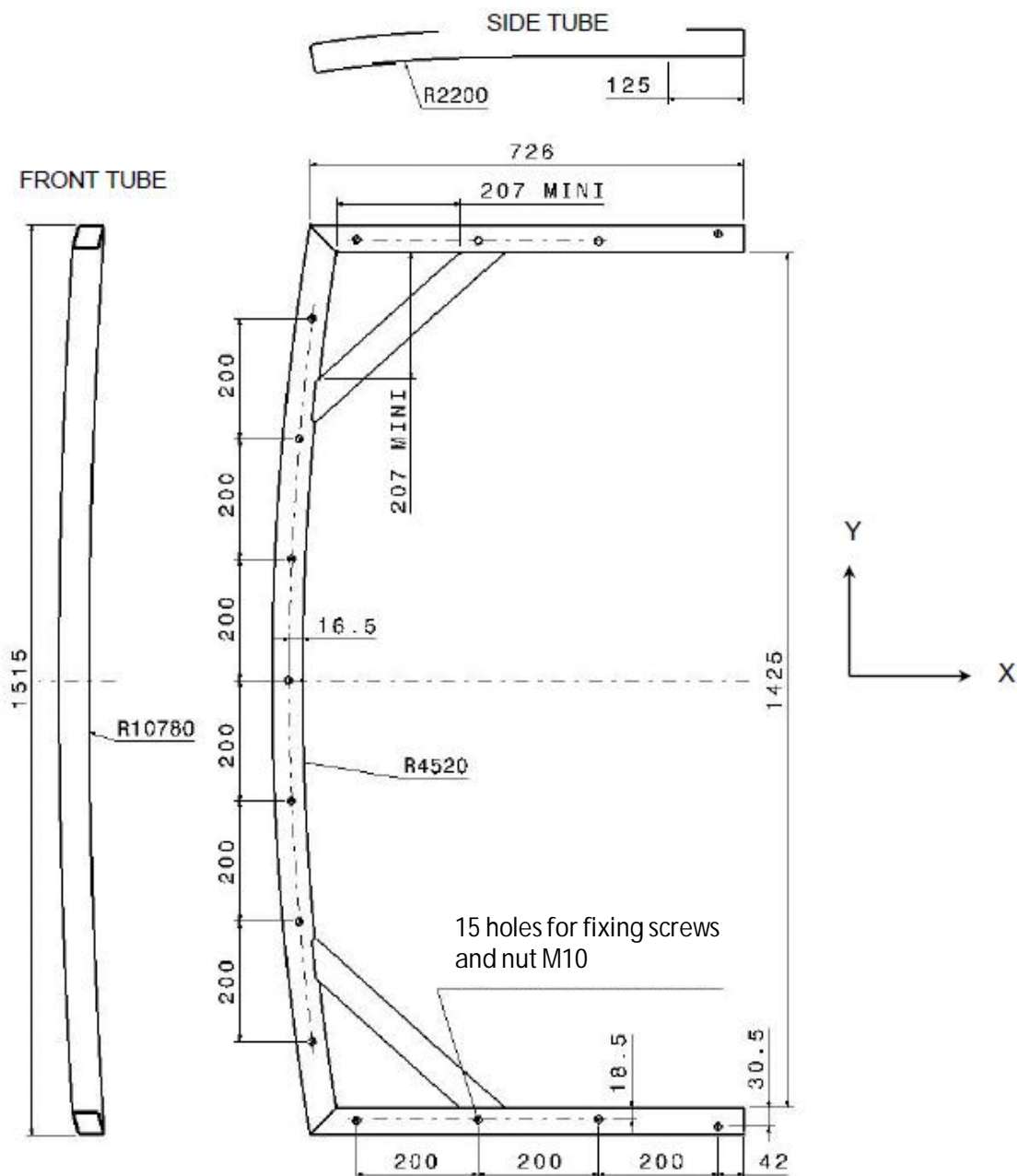


Example of roof cut-out reinforcement

When cutting out the roof, the coach builder must reinforce the structure to ensure compliance with standard ECE 14 (or equivalent).

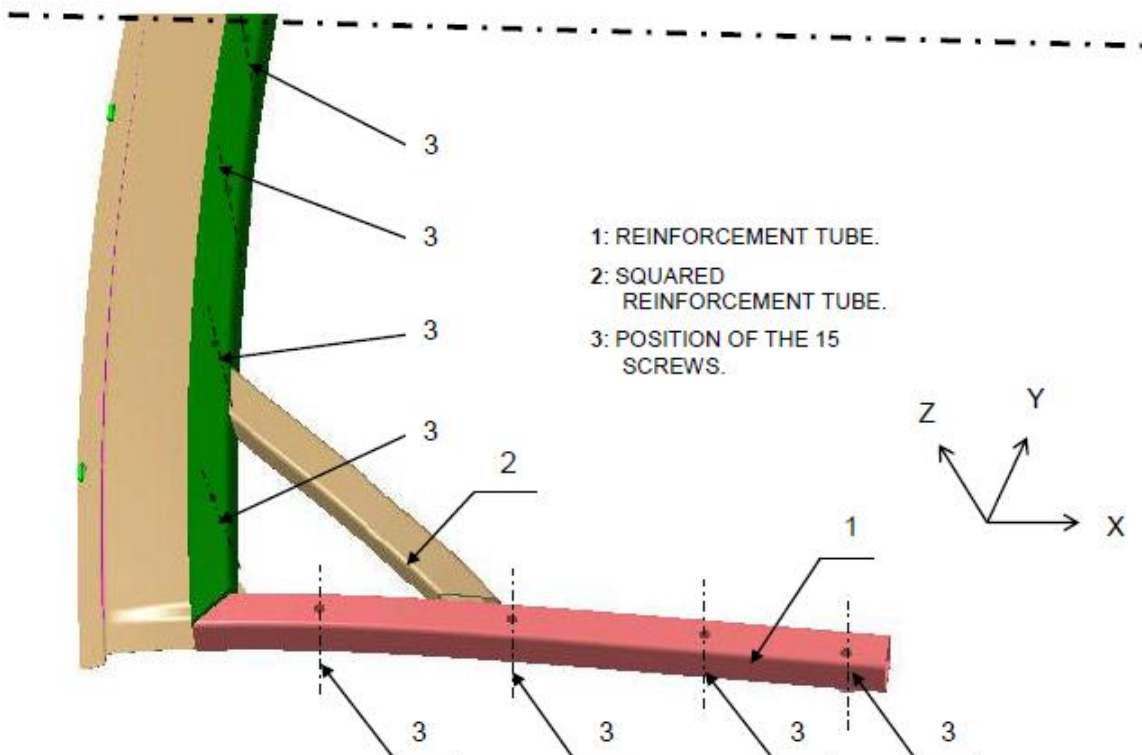
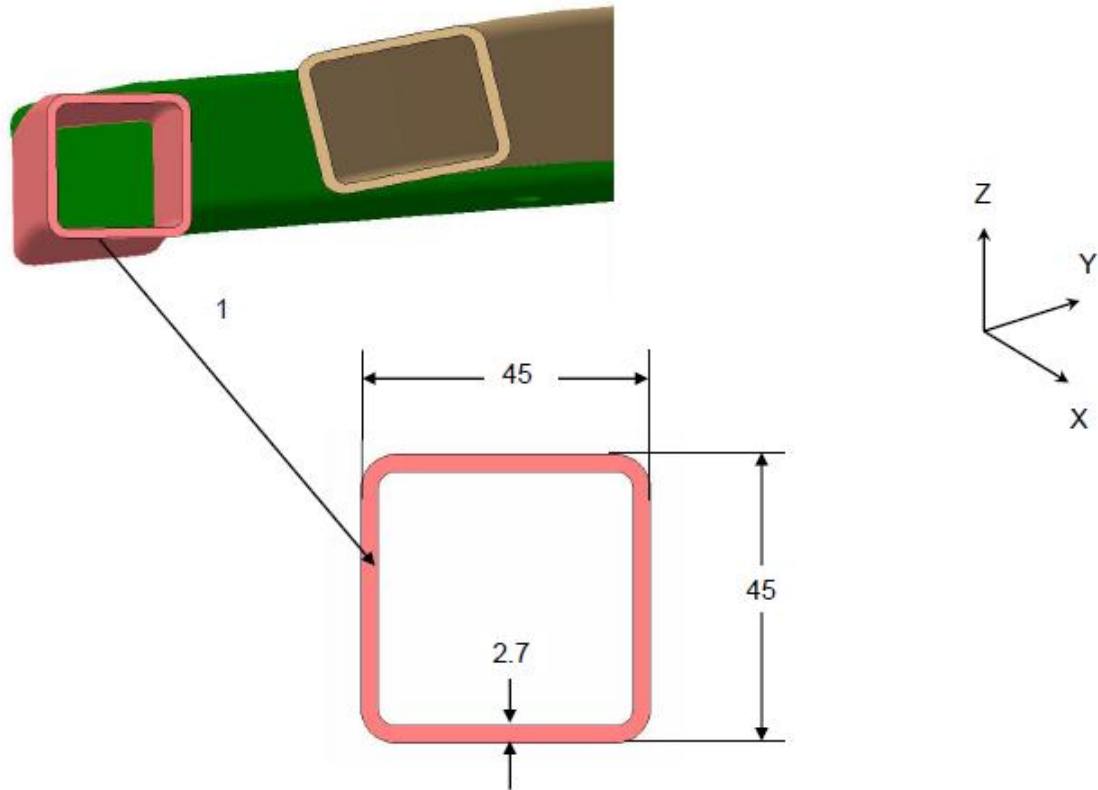
Design work has been carried out on the reinforcement solution, resulting in the possibility of adding a 45x45 2.7 mm XE tube, squared at the front cross-member.

This frame should be attached using M10 bolts 200 mm apart, except at the central pillar B, where four screws are screwed into the cross-belt strut for additional reinforcement (see below).

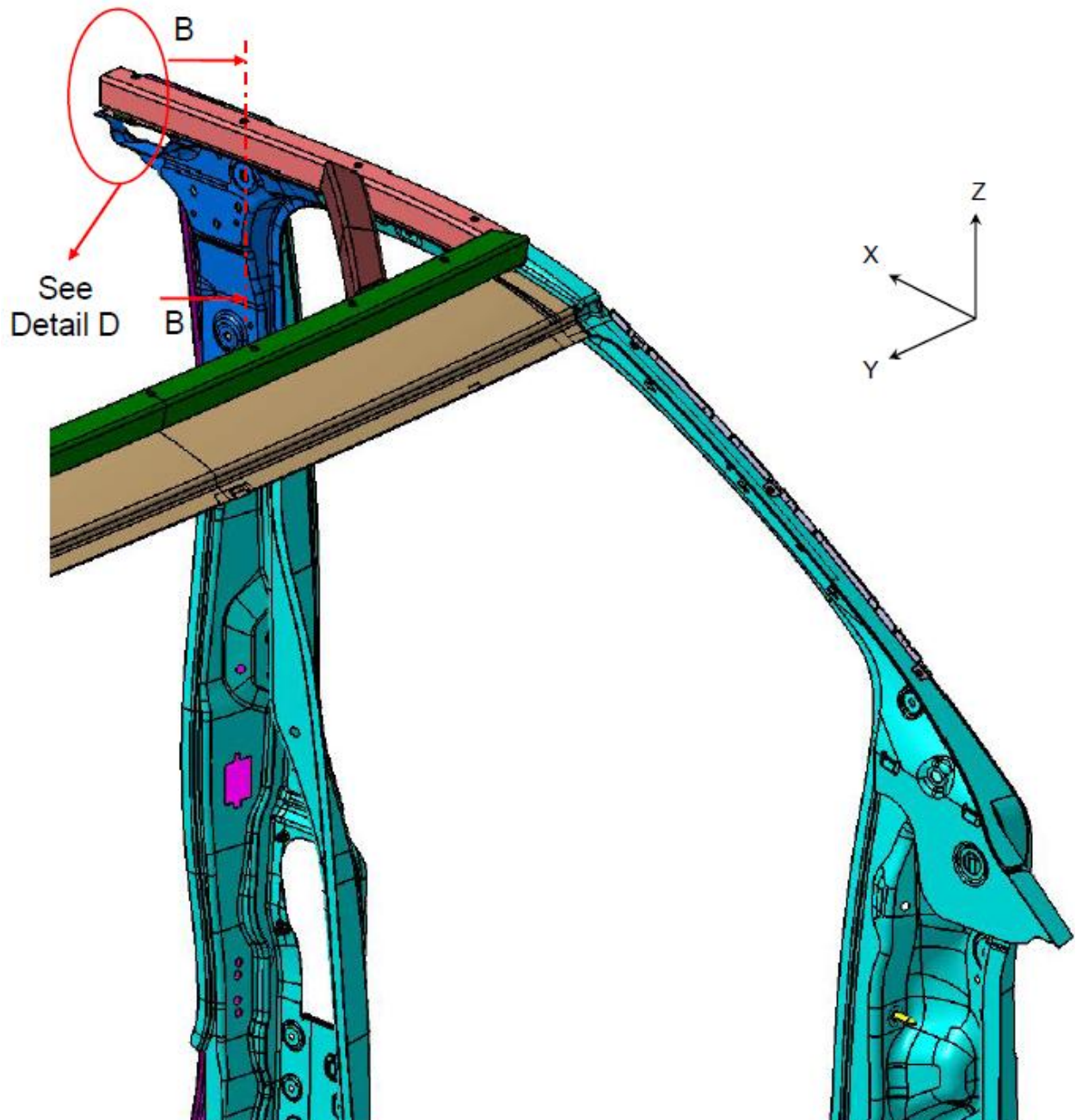




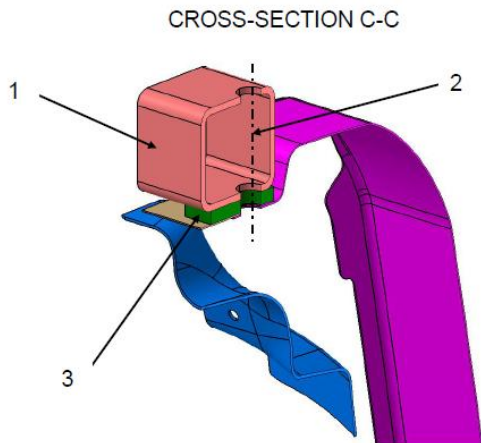
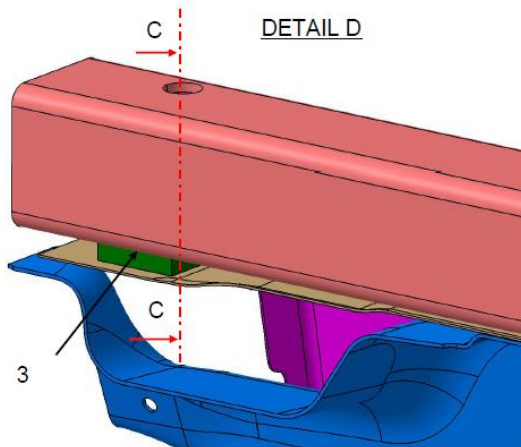
VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



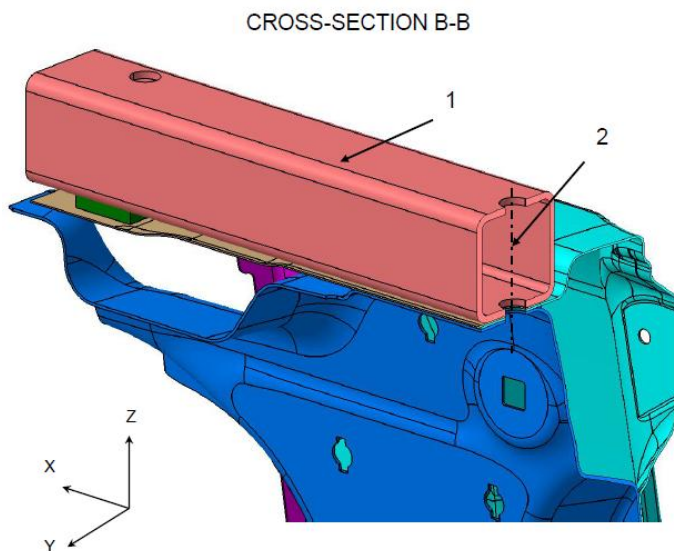
VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT

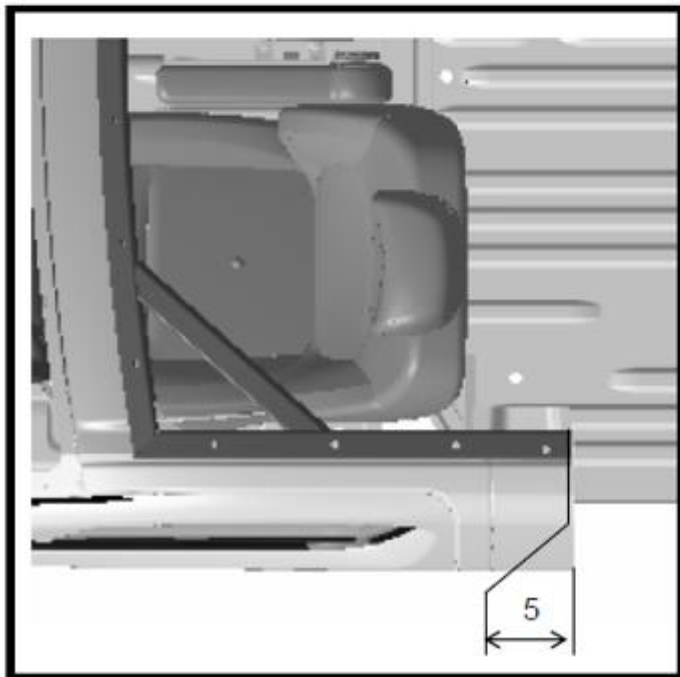
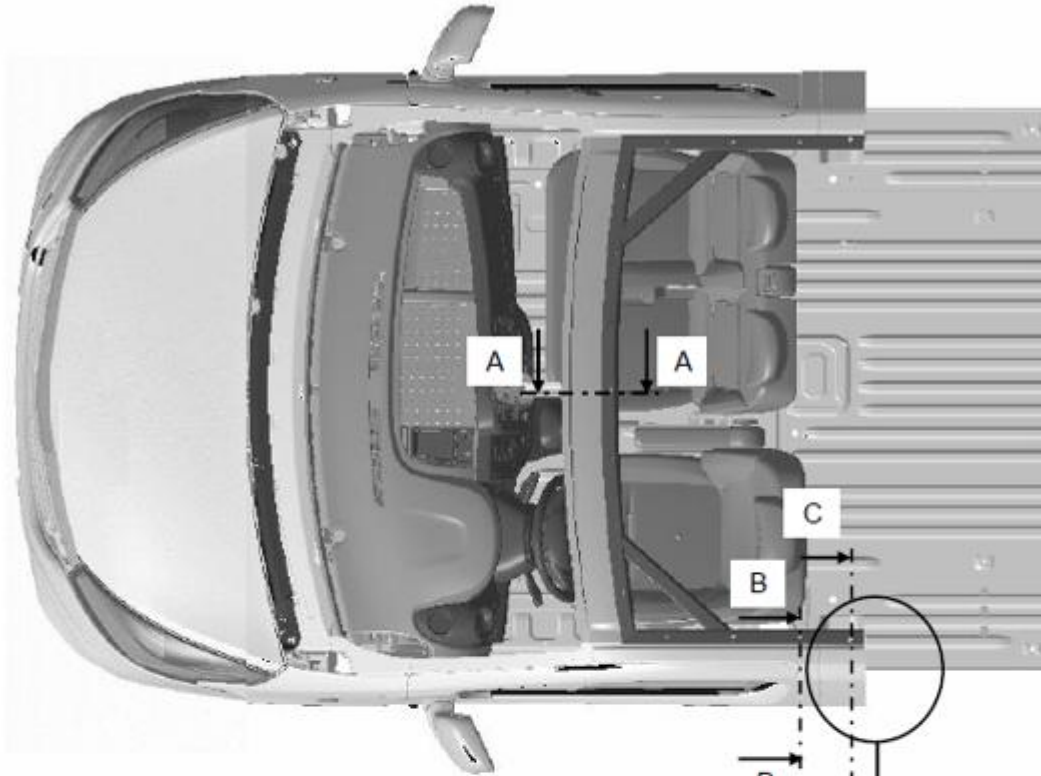


- 1: REINFORCEMENT TUBE.
- 2: POSITION OF THE SCREW.
- 3: SPACER TO TAKE UP THE GAP BETWEEN THE METAL SHEETS (THICKNESS: 6 mm).



- 1: REINFORCEMENT TUBE.
- 2: POSITION OF THE SCREW

VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



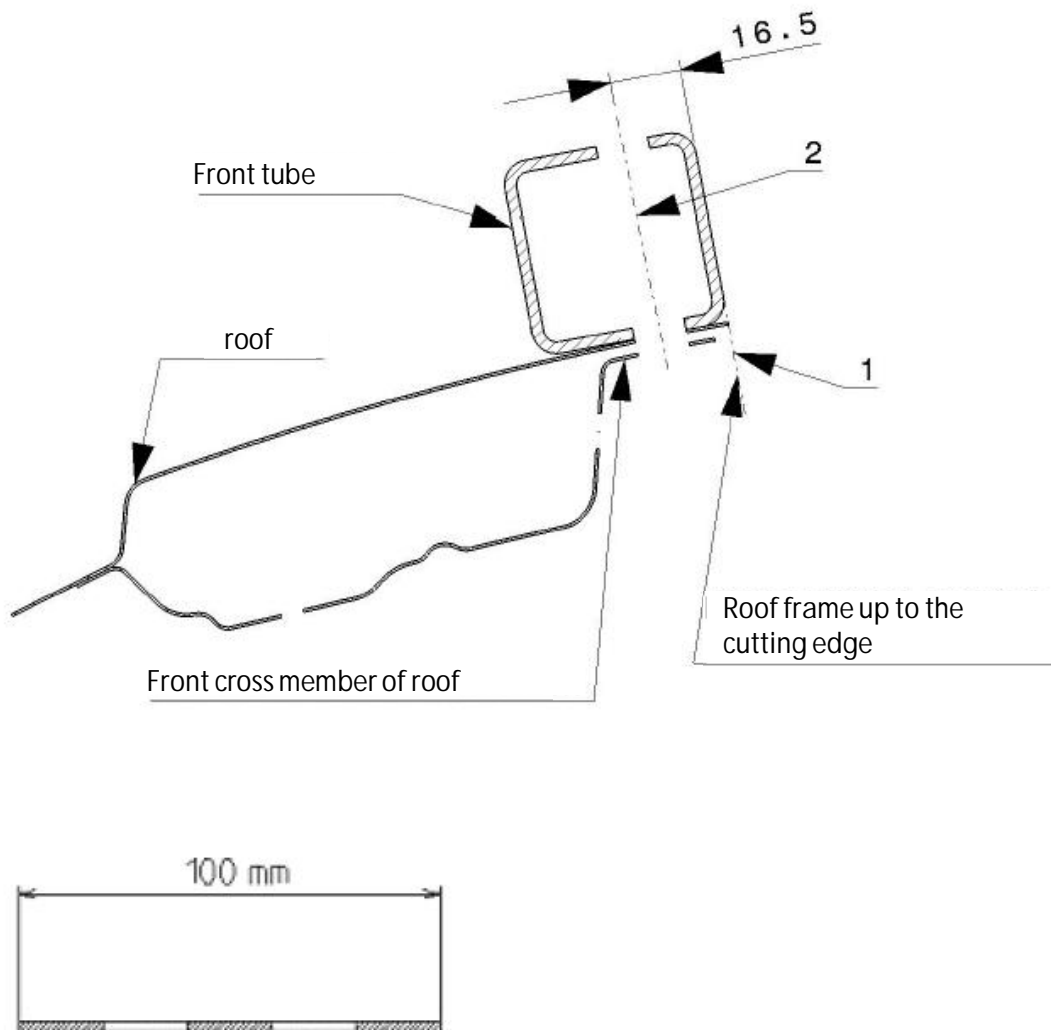
**DETAIL D**

The frame must be off-set by 5 mm  
in relation to the partition.

VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



SECTION A-A



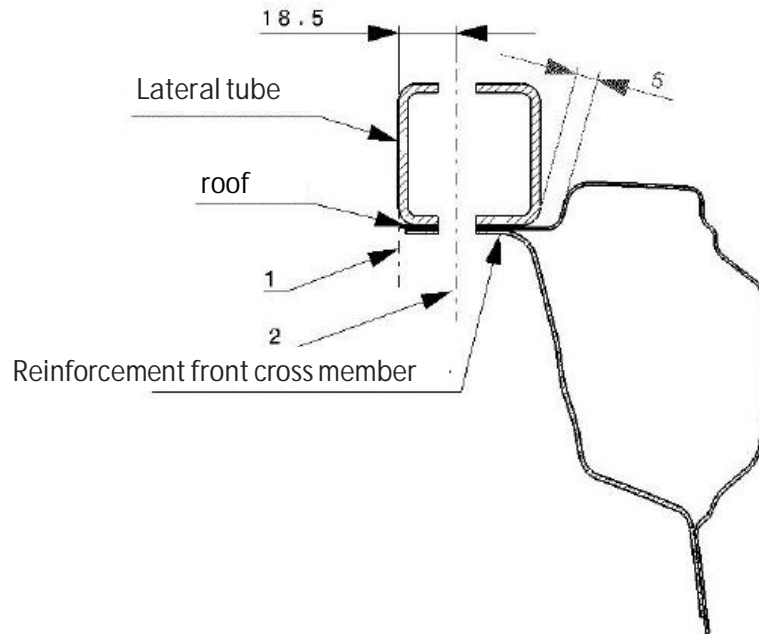
1: ROOF CUT-OUT LIMIT.

2: CONNECTING PIN.

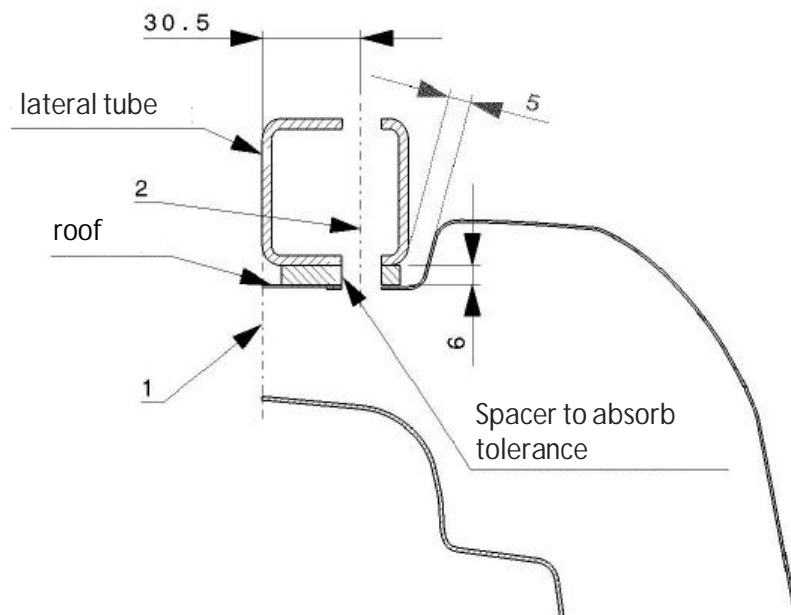
VIVARO (X82)  
5.3 – ROOF PANEL CUT-OUT



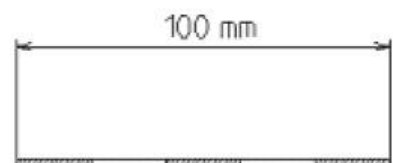
SECTION B-B



SECTION C-C



- 1: ROOF CUT-OUT LIMIT.
- 2: CONNECTING PIN.



## 5.4. PLATFORM CAB

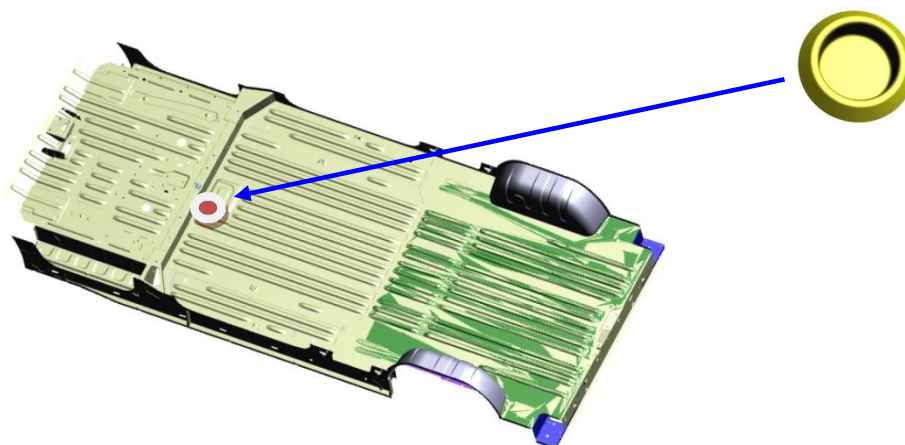
### 5.4.1. CONDITION ON DELIVERY

- 1- The vehicle is protected by a cowl (passenger compartment protection) which must be removed in order to carry out the conversion.



- 2- There is a hole in the rear floor (water drainage before conversion) which **MUST** be plugged; a plug is supplied in the "on-board kit bag" with the other equipment (aerial twig, wheel trims, etc.)

If it is lost, it can also be obtained from after-sales.



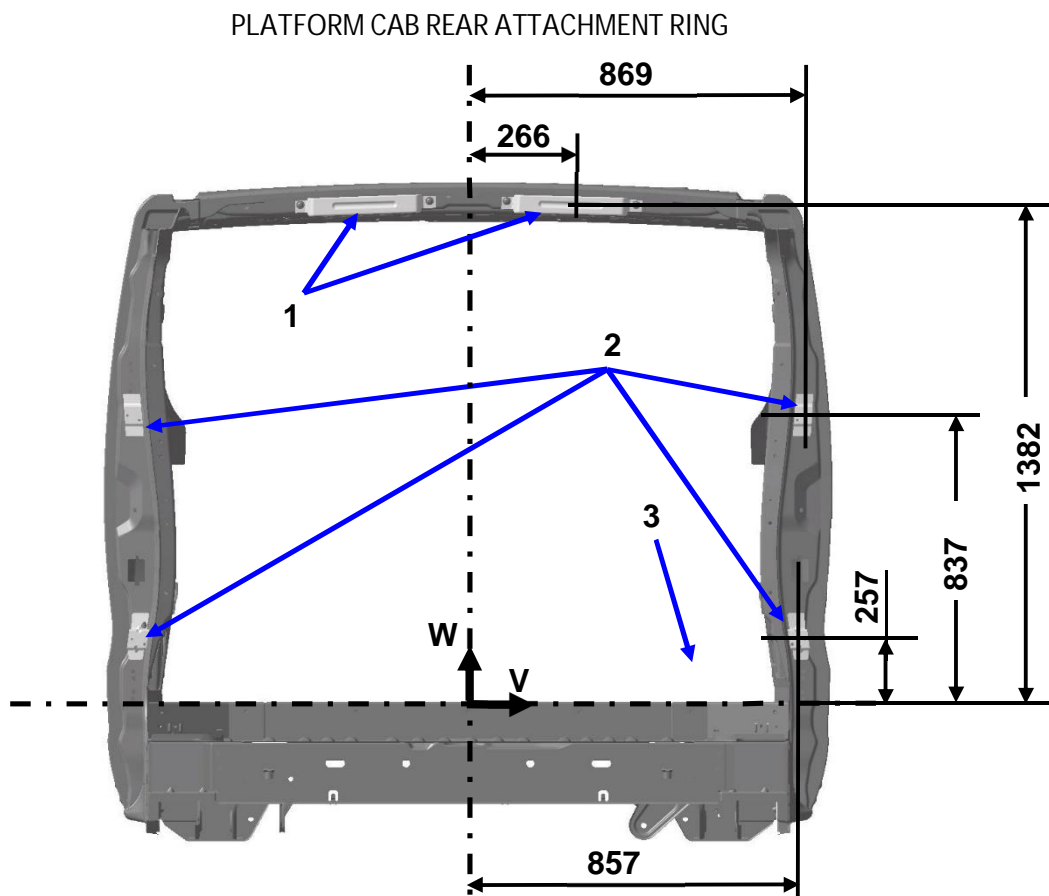
*Note: for the electrical wiring (arranged in a harness for certain functions), see chapter 4.8 and 4.11*

5.4.2. CONNECTION TO BODYWORK, POSITION OF BRACKETS

Platform cabs are fitted with a body attachment ring as standard. Added to this ring are six body brackets: Four welded on the B posts and two screwed onto the roof panel centre cross member.

The six body brackets must be used. After drilling the body brackets, apply an anti-corrosion treatment product: refer to the "Specific Corrosion Guidelines" data sheet.

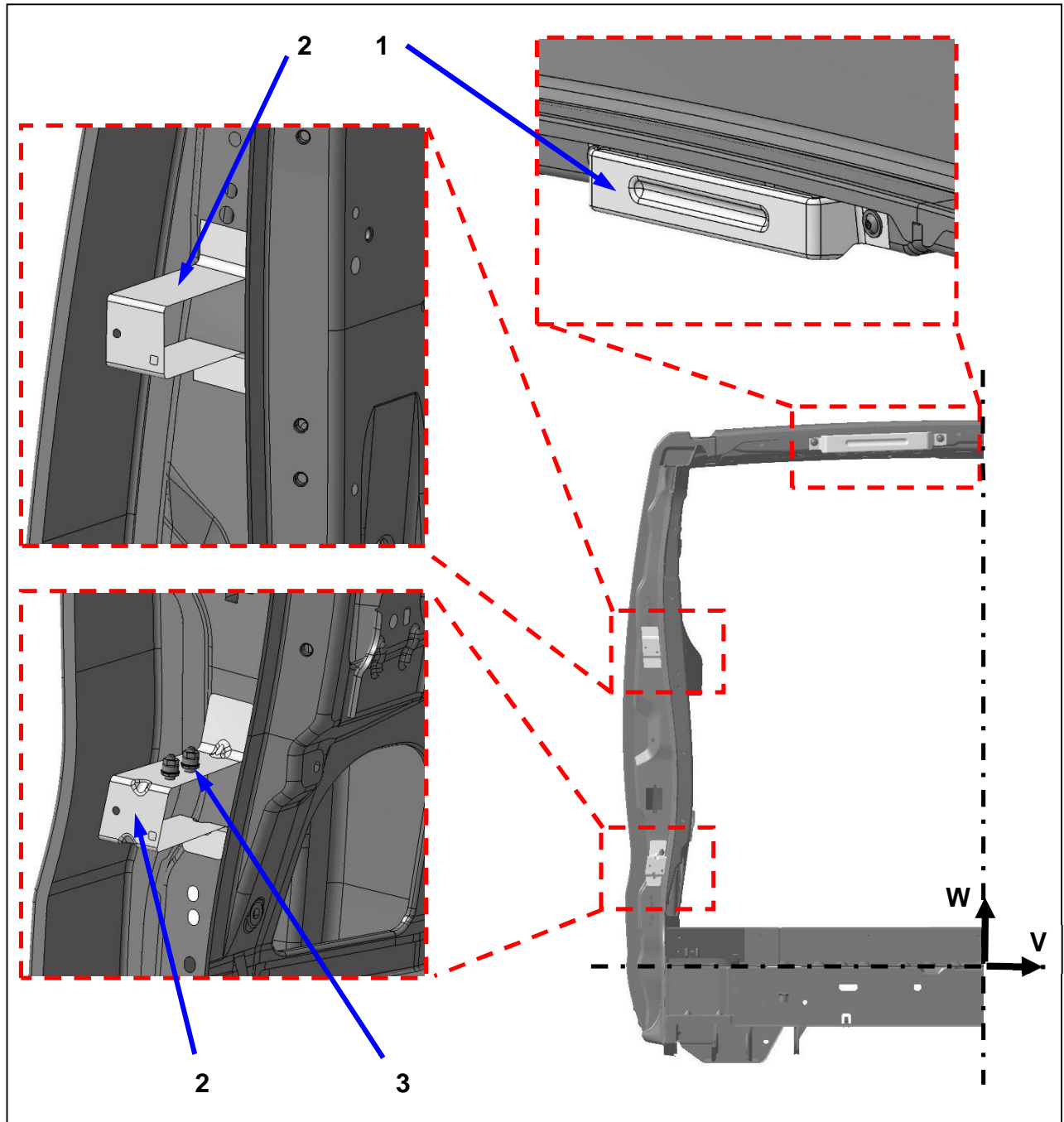
The body bracket positioning interval is +/- 3 mm. It would be prudent to test out any bodywork attachment in practice.



1:	Upper body brackets(x2)
2:	Side body brackets(x4)
3:	Platform cab
V:	Reference guide: vehicle symmetrical axis
W:	Reference guide: load floor panel on ribs



DETAILS OF LEFT-HAND SIDE BODY BRACKETS



1:	Upper body brackets(x2)
2:	Side body brackets(x4)
3:	Electrical earth pins on left-hand side only (x2)
V:	Reference guide: vehicle symmetrical axis
W:	Reference guide: load floor panel on ribs



### 5.4.3. CONVERSION LIMIT

For all conversions it is necessary to comply with:

1. The maximum and minimum weights on the axles ⇒ Data sheet no. 2.2
2. The constraints relating to the correct operation of the ESP ⇒ Data sheet 3.2
3. The permitted dimensions below
4. The recommendations for "Reconstruction of Opening Panels" ⇒ Data sheets 3.3 and 4.8



*Any modification of the wheelbase (extension or reduction) is prohibited.*

Modifying the overhang is acceptable under the conditions described below.

1. Modification of the rear overhang

Modifying the rear overhang will significantly alter the load distribution on the vehicle axles.

Full allowance must be made for this before the overhang is extended to ensure that the maximum loads per axle are not exceeded.

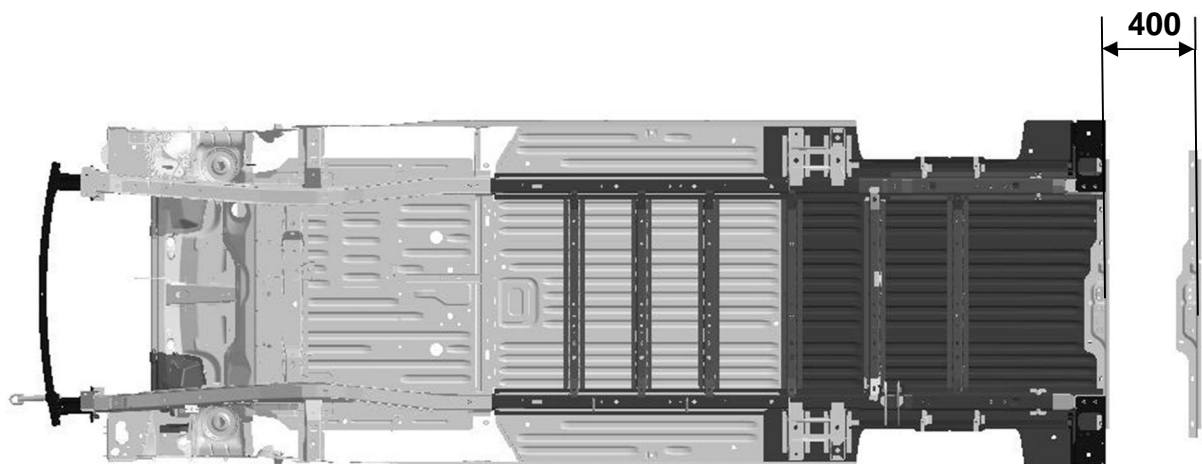
Modification of the rear overhang must be done in such a way as to ensure continuity in the vehicle's structural stiffness and avoid concentrations of stress.

The extension of the rear overhang (817 mm to begin with) may be a maximum of 400 mm, i.e. 1217 mm overall; values given in the dimensions table (appendix 1 of data sheet 2.1).

A rear towing ring must be recreated, to comply with regulatory requirements.

A tow-bar modified in this way must be submitted for approval.

The spare wheel carrier securing points must be moved to maintain proper access to the spare wheel.





2. Maximum extended dimensions

		E 82 - L2	Comments
Rear overhang	Base	817	
	Maximum extension	1217	X83+110mm
Overall length	Base	5248	
	Maximum extension	5648	
Height	Base without accessories	1953	Vehicle in running order on average surface
	Maximum extension	2700	as X83
Width	Base without rear-view mirror	1956	
	Base with rear-view mirrors (long arm)	2283	
	Maximum extension	2150	



## 5.5. EXTRACTOR RECOMMENDATION

Air must be extracted from the interior (cab, loading area, etc.) to achieve satisfactory performance when closing the doors (front, side, rear), activating the heating and ventilation systems and in airbag deployment.

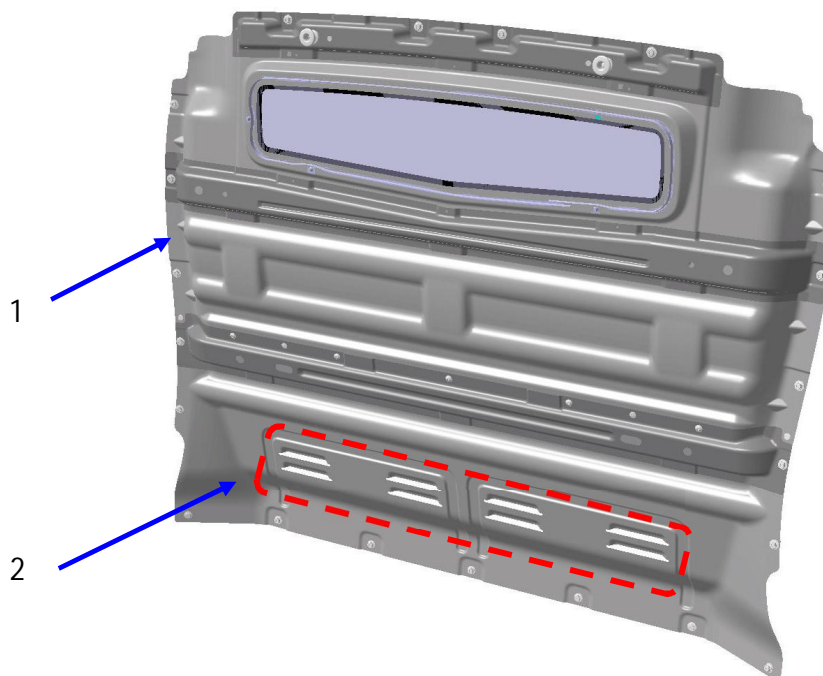
After any modification to the extraction system, the air extraction surface area must be equivalent to the original system. The modified system must not let water, outside air, dust or mud in. It must also reduce noise levels. It must not compromise the integrity of the vehicle (where necessary, fit vent glass to prevent access to the door opening controls, etc.). It must be protected from potential impacts (stones thrown up from the road, etc.).

On the panel van version, the air extractors are located on either side of the rear bumper. The surface area of each air extractor is 9740 mm<sup>2</sup>.

*Note: Openings in the partition are provided to promote air circulation between the cab and the loading area.*

Van Area

### Partition between cab and loading area



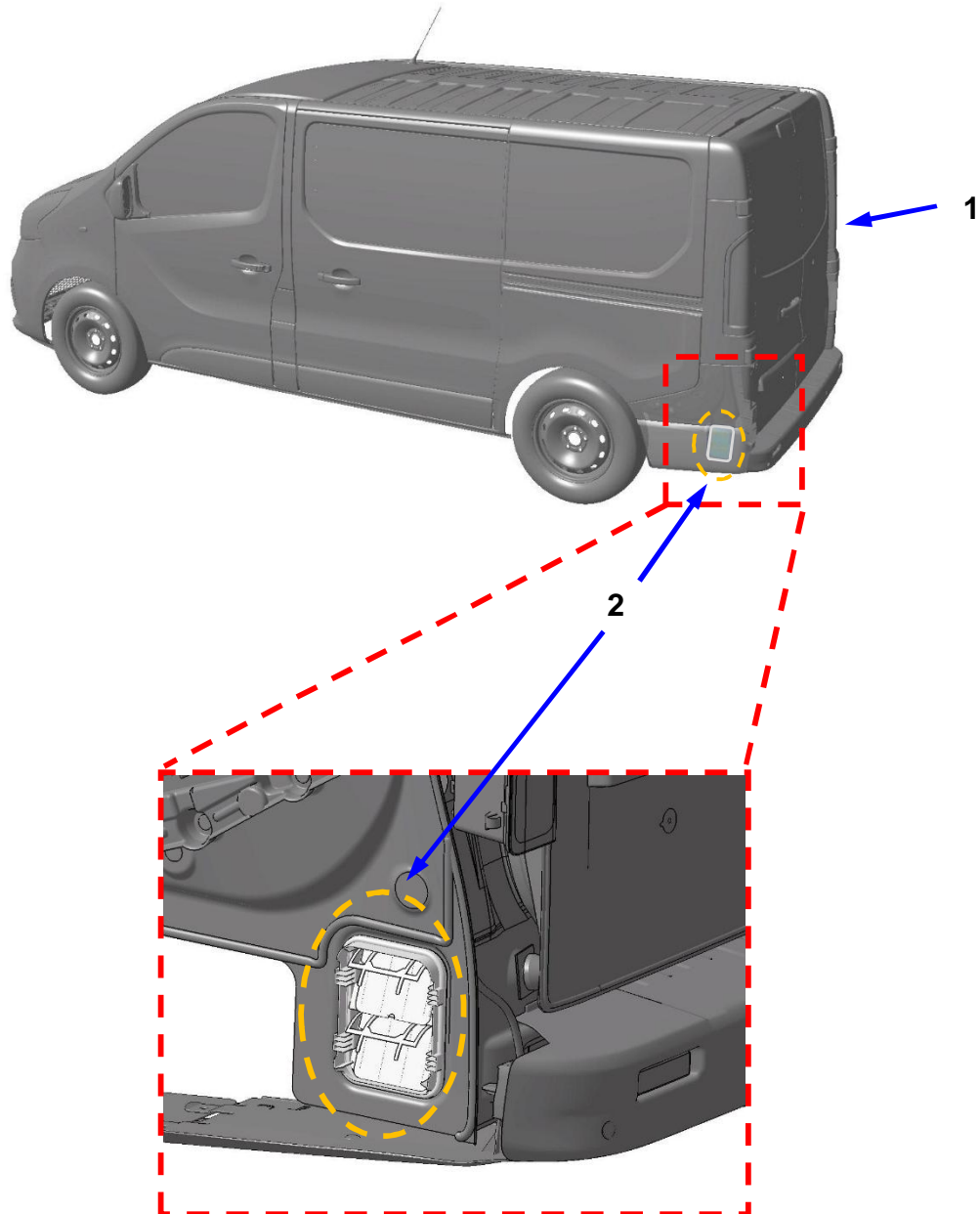
1: Partition

2: Openings area

VIVARO (X82)  
5.5 – EXTRACTOR RECOMMENDATION



Vehicle rear end



1: Vehicle rear end	2: Air extractor
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Note: *The extractors are located symmetrically in relation to the vehicle axis.*

## 6. MECHANICAL CONVERSIONS

### 6.1. POWER TAKE OFF PROVISIONS, OPTION "V66"

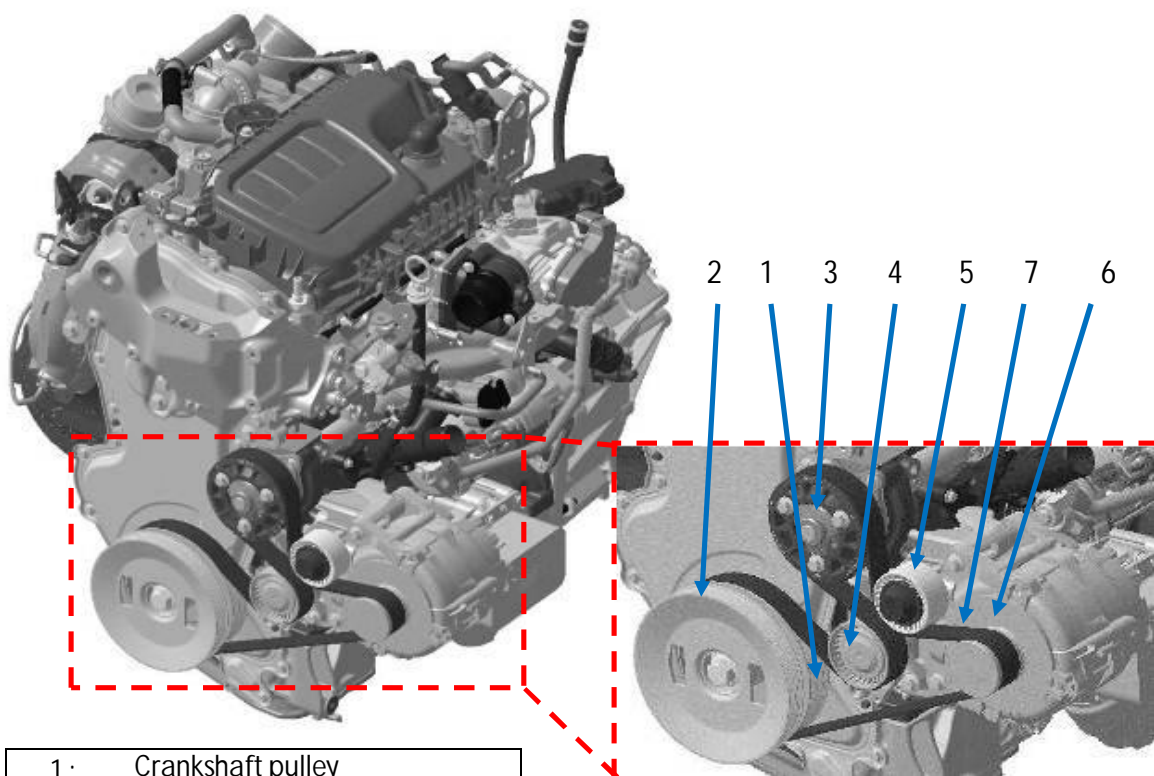
It is recommended to select an entry level vehicle without Start/Stop for vehicles having this type of conversion.

However, with Start/Stop vehicles, conversion is possible subject to activating a fast idle, controlled by the conversion activation (see chapter 4.7 - "START/STOP" and chapter 4.9 "FAST IDLE").

The V66 option (4PK pulley on crankshaft pulley) with or without air conditioning offers the possibility of driving a refrigeration compressor-type component or other components using a rubber belt, etc.

*Note: Component maximum power rating 8.3 kW with an engine running at 4500 rpm.*

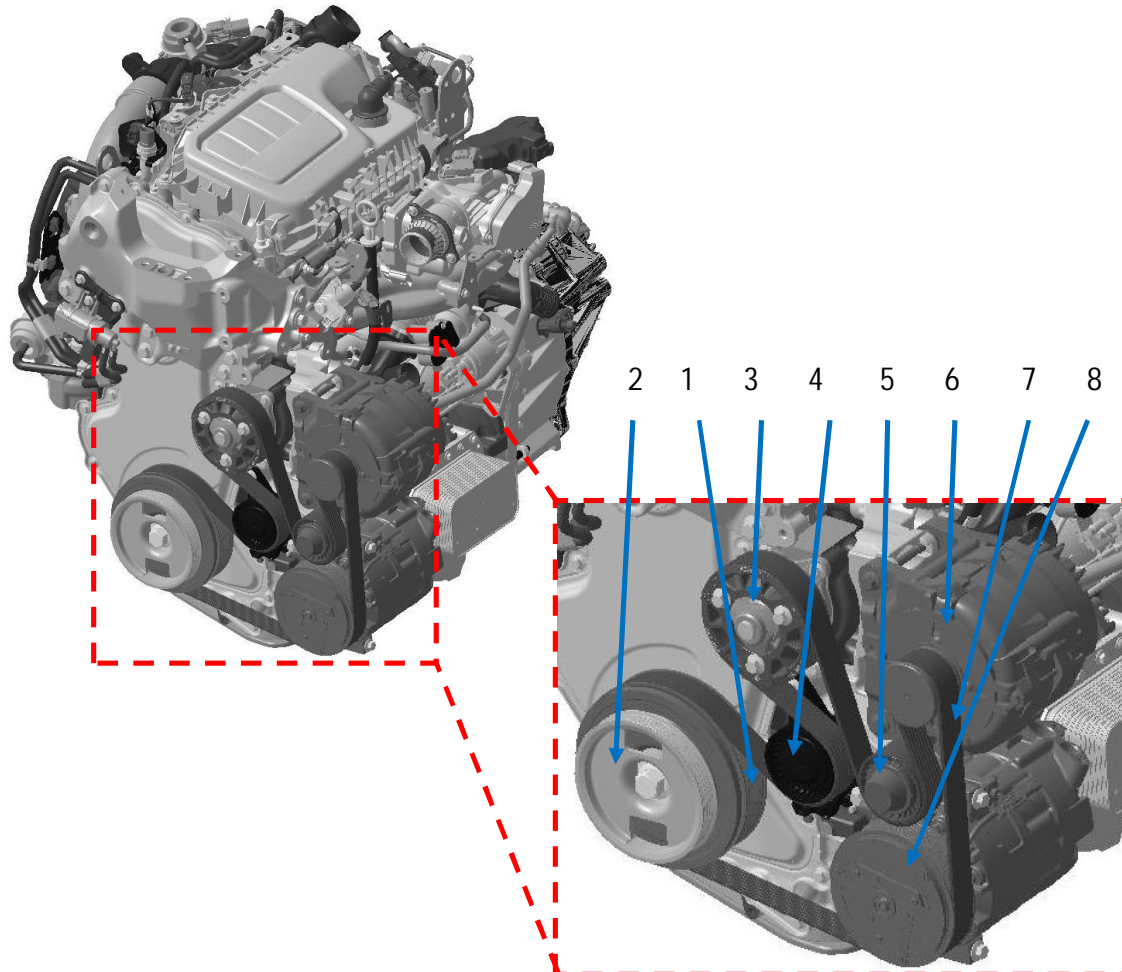
R9M engine with V66 option and "without air conditioning"



1:	Crankshaft pulley
2:	V66 pulley (4 V)
3:	Water pump pulley
4:	Dynamic tensioner
5:	Retractor roller
6:	Alternator pulley
7:	Accessories belt (7 V)



R9M engine with V66 option and "with air conditioning"



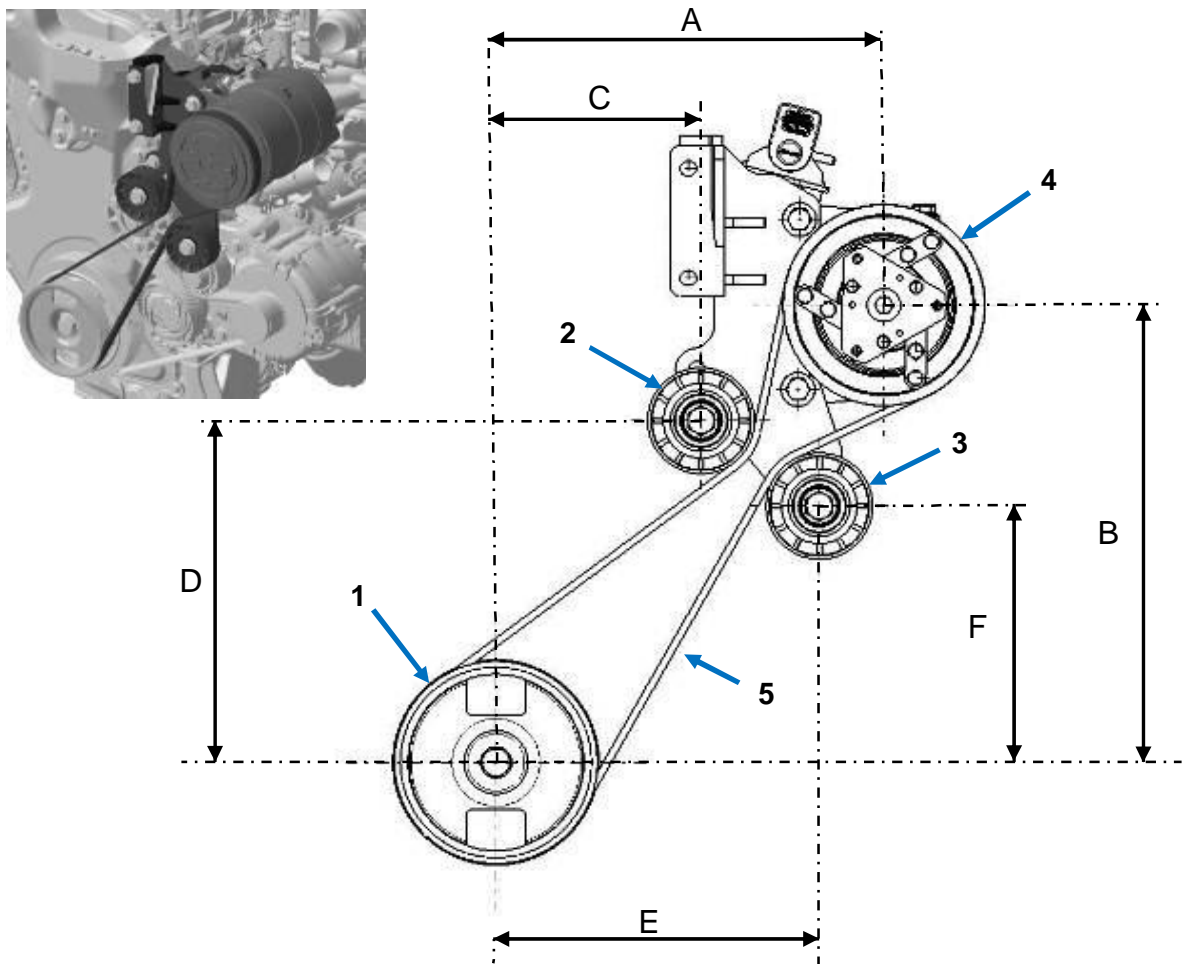
1:	Crankshaft filtering pulley
2:	V66 pulley (4V)
3:	Water pump pulley
4:	Dynamic tensioner
5:	Retractor roller
6:	Alternator pulley
7:	Accessories belt (7V)
8:	Air conditioning compressor

Component installation diagram

Warning:

The following points must be scrupulously complied with by bodybuilders who wish to avoid the need for technical approval and who wish to carry out an assembly without affecting engine reliability.

- The pitch diameter of the accessory drive pulley (3) is calculated based on maximum engine speed.
- The position dimensions of the various drive components must approach or match those in the table below.
- Alignment of the belt ridges between the crankshaft pulley and the component pulley.



1: Ø119 Crankshaft pulley, 4V (adaptation)		
2: Ø65 Retractor rollers		
3: Ø65 Tensioning rollers (eccentric)	A : 236,7	D : 209,25
4: Ø119 Component pulley	B : 280	E : 197,3
5: Rubber belt, 4V	C : 125	F : 157





CHANGE DESCRIPTION

<i>Date</i>	<i>Chapter</i>	<i>Major Changes</i>
01/2015	4.02	New chapter "RELAY / FUSE BOX: ENGINE COMPARTMENT CONNECTION UNIT"
01/2015	4.05	EXAMPLE OF ALTERNATOR APPLICATIONS chapter reworded GEN1 & GEN2 changed to SINGLE TURBO & TWIN TURBO
01/2015	4.06	References 8 updated in table
01/2015	4.07	Conversion specifications on Platform Cab added Engine running information and Rear doors switch - removal of platform cab elements added
01/2015	4.09	Connection kit (counterpart) added Info robotised gearbox deleted Option code changed from UF3 to V66
01/2015	4.10	General update of the chapter
01/2015	4.13	New chapter "TACHOGRAPH"
01/2015	6.01	changed numbering of « Component installation diagram" belt was elastic & Tensioning roller was retractor roller
03/2015	5.4	Change Titel of chapter to "PLATFORM CAB" Added Infos to 5.4.1. - CONDITION ON DELIVERY 5.4.3. - CONVERSION LIMIT
06/2016	4.02	Changes in FUSE BOX (BFRH) of the dashboard F53- F55 EURO 6 Changes in BIM Unit for EURO 6 <ul style="list-style-type: none"> <li>• Module F - Relay R9</li> <li>• Module A - fuses F1 + F2</li> <li>• Module B - Fuse F10</li> </ul>
06/2016	4.05	Information added to EURO 6 Table "Available current" been completely revised.
06/2016	4.10	Added information and pictures to CAN - bus Interface Moduls
06/2016	4.13	replaced picture of fuse box
06/2016	4.14	New chapter "PLATFORM CAB: electrical connections"
06/2016	5.03	New paragraph "5.3.2 PLATFORM CAB VERSION" Information and procedure for cut-out area on platform cab.