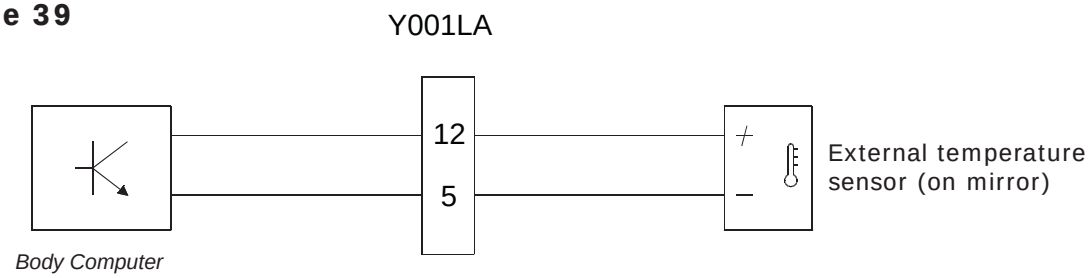
5.3.4 External temperature sensor

Figure 39



If the original New Ducato mirrors are not fitted, it is necessary to use an NTC thermistor with the following specifications:

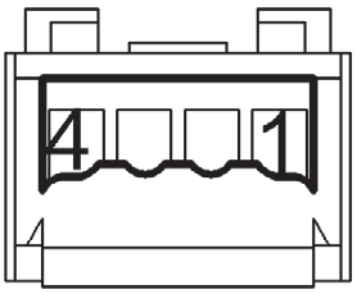
T_{oper} (°C)	R_T/R_{25}
–40	33.21
–35	23.99
–30	17.52
–25	12.93
–20	9.636
–15	7.250
–10	5.505
–5	4.216
0	3.255
5	2.534
10	1.987
15	1.570
20	1.249
25	1.000
30	0.8059
35	0.6535
40	0.5330
45	0.4372
50	0.3605
55	0.2989
60	0.2490
65	0.2084
70	0.1753
75	0.1481
80	0.1256
85	0.1070
90	0.09154
95	0.07860
100	0.06773
105	0.05858
110	0.05083
115	0.04426
120	0.03866
125	0.03387

Parametro	Valore
Resistenza a 25°C (R25)	10 kΩ
Tolleranza su R25	±3%
Dissipazione massima	500 mW
Tempo di risposta	1,2 s
Range operativo di temperatura	da -40 a +125 °C
Categoria climatica	40/125/56

NOTE: In vehicles fitted with automatic climate control (option 140) and/or robotised gearbox (option 407), it is necessary to fit an exterior temperature sensor.

Connector Y116LA (4-way) – Passenger side door (opt)
3D view of connector

Figure 40

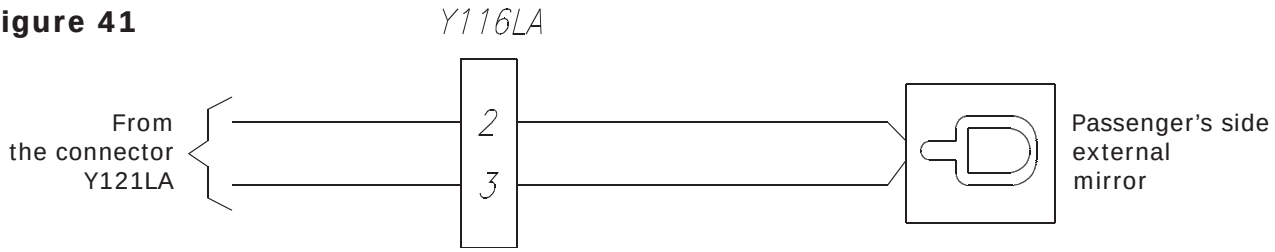


Description of connector functions

Pin	Function/Connector part number	Minimum cable section [mm²]	Cable colour	Notes
	4-way Tyco connector p/n 174929-1 Counterpart: Tyco p/n 174922-1 (by coach-builder)			
1	Not connected			
2	P.S. ext. mirror deflection	0,5	HM	External mirror electric deflection
3	P.S. ext. mirror restore	0,5	N	External mirror electric deflection
4	Not connected	-	-	

External rear view mirror deflection

Figure 41



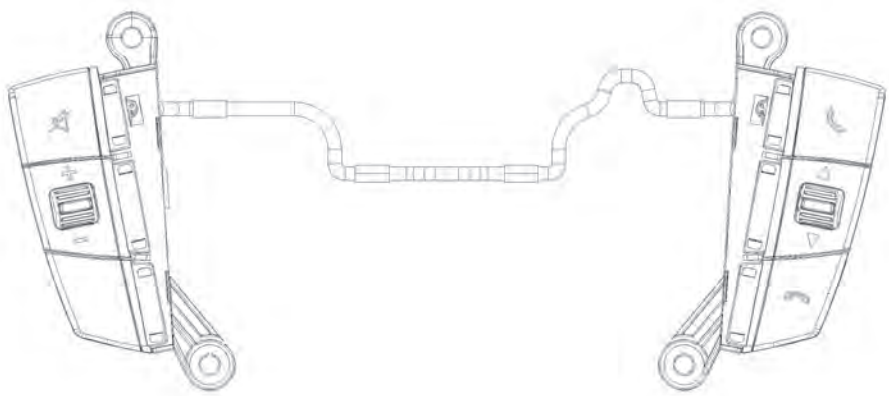
Procedure for setting radio switching off time after key-off (applicable in presence of opt 7BY, 7BZ, 6Q2, 6Q3, 6Q8, 6Q9 only)

1. Switch on the radio.
2. 4. Press MENU to access the menu.
5. Select “System Settings” and press OK button.
6. Thick the “Power OFF” # min. Delay” checkbox, where # is the PROXI set value (180 minutes).

Radio VP1

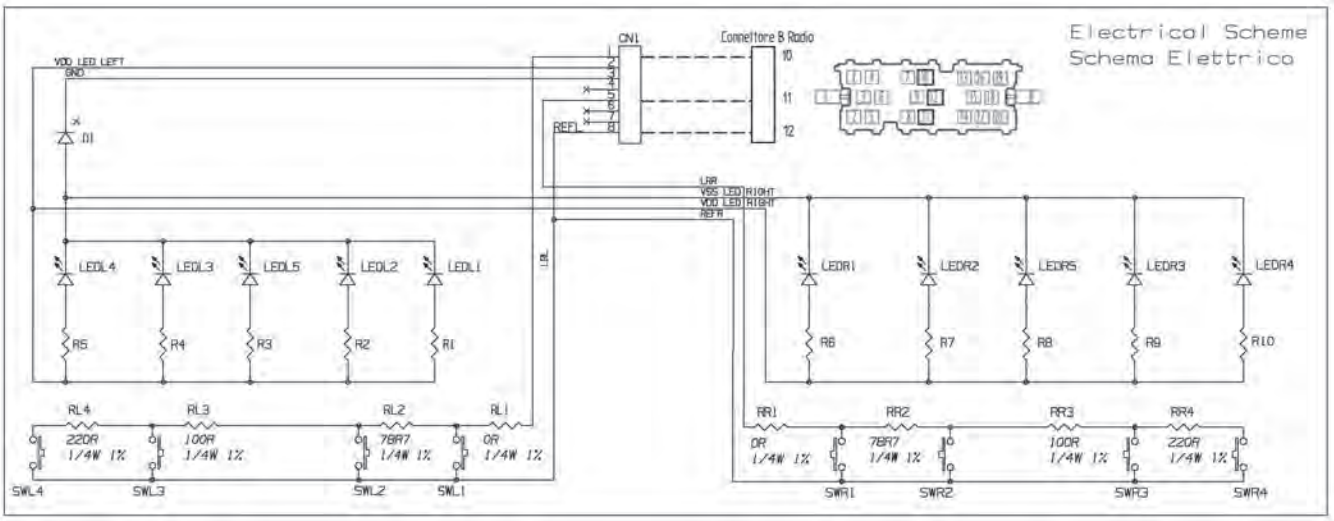
Radio VP2

Vehicles provided with “5BH” - Steering wheel controls for Upfitters



The connector in the radio compartment where the pins of these commands are located is connector B 1/08847/87 20-way FCI.

The resistance coding of Ducato radio controls is as follows:



The pins concerned are:

Signal A: pin 10
Signal B: pin 11
Ground: pin 12

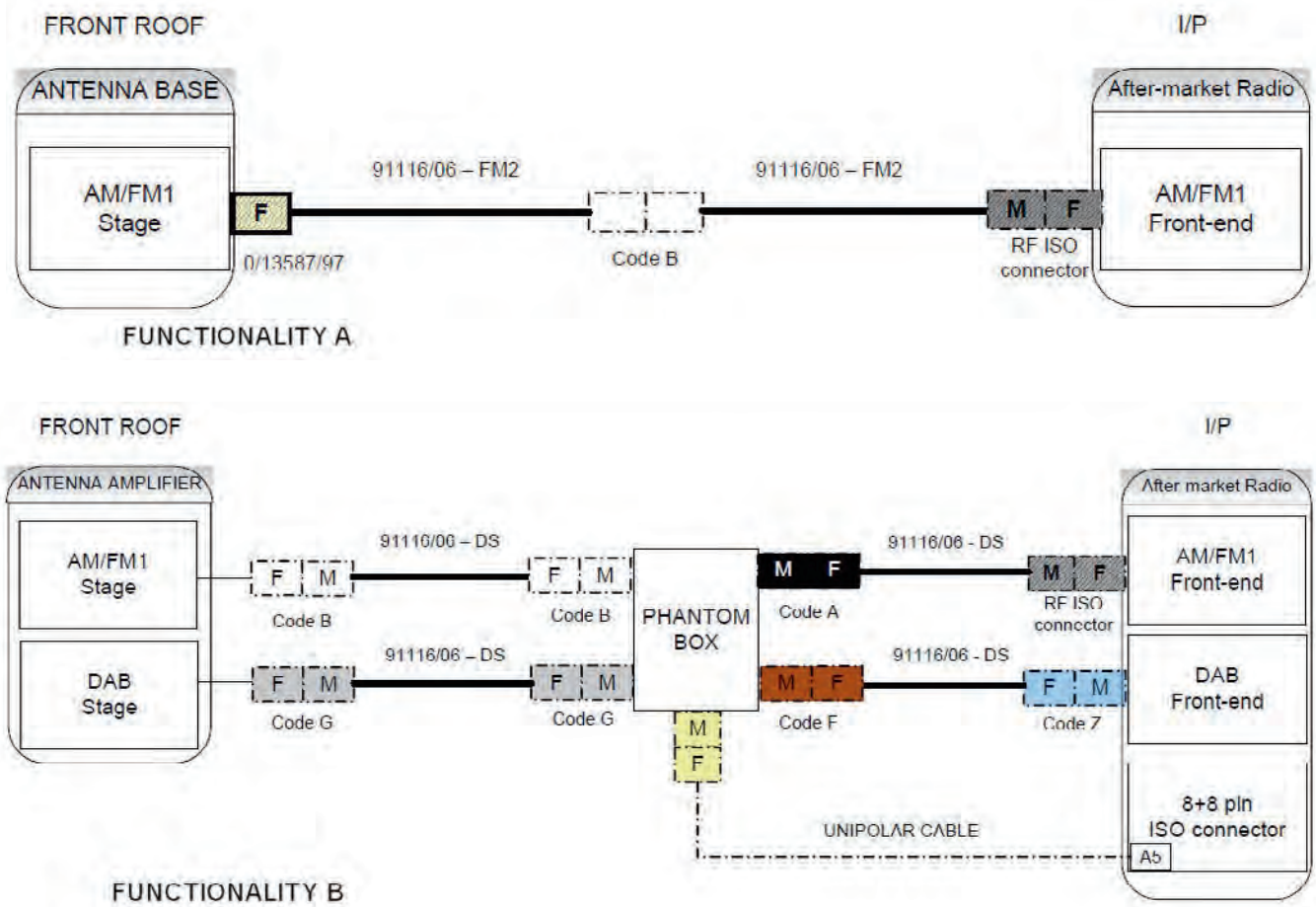
Consequently, it is important to ensure that the radio uses the same resistance coding.

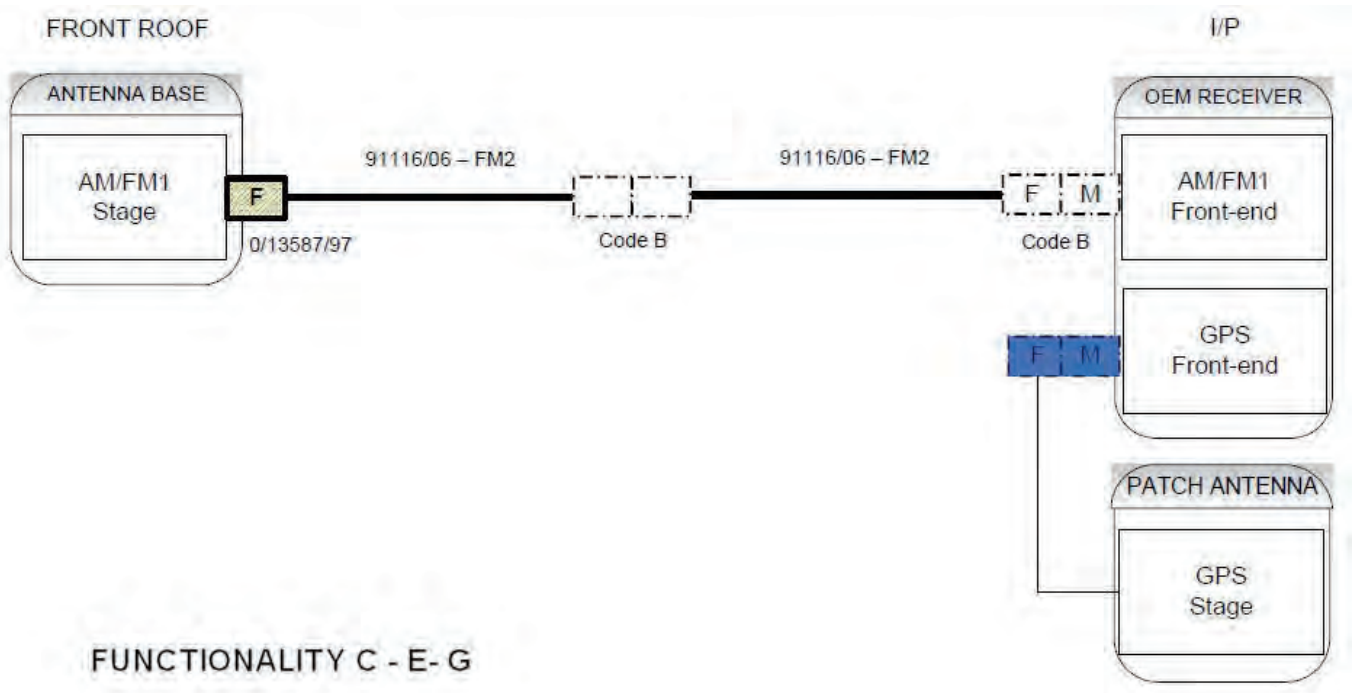
Connector XO50PA (1-pin) – AM/FM radio aerial

According to option configuration, the following type of antenna can be fitted:

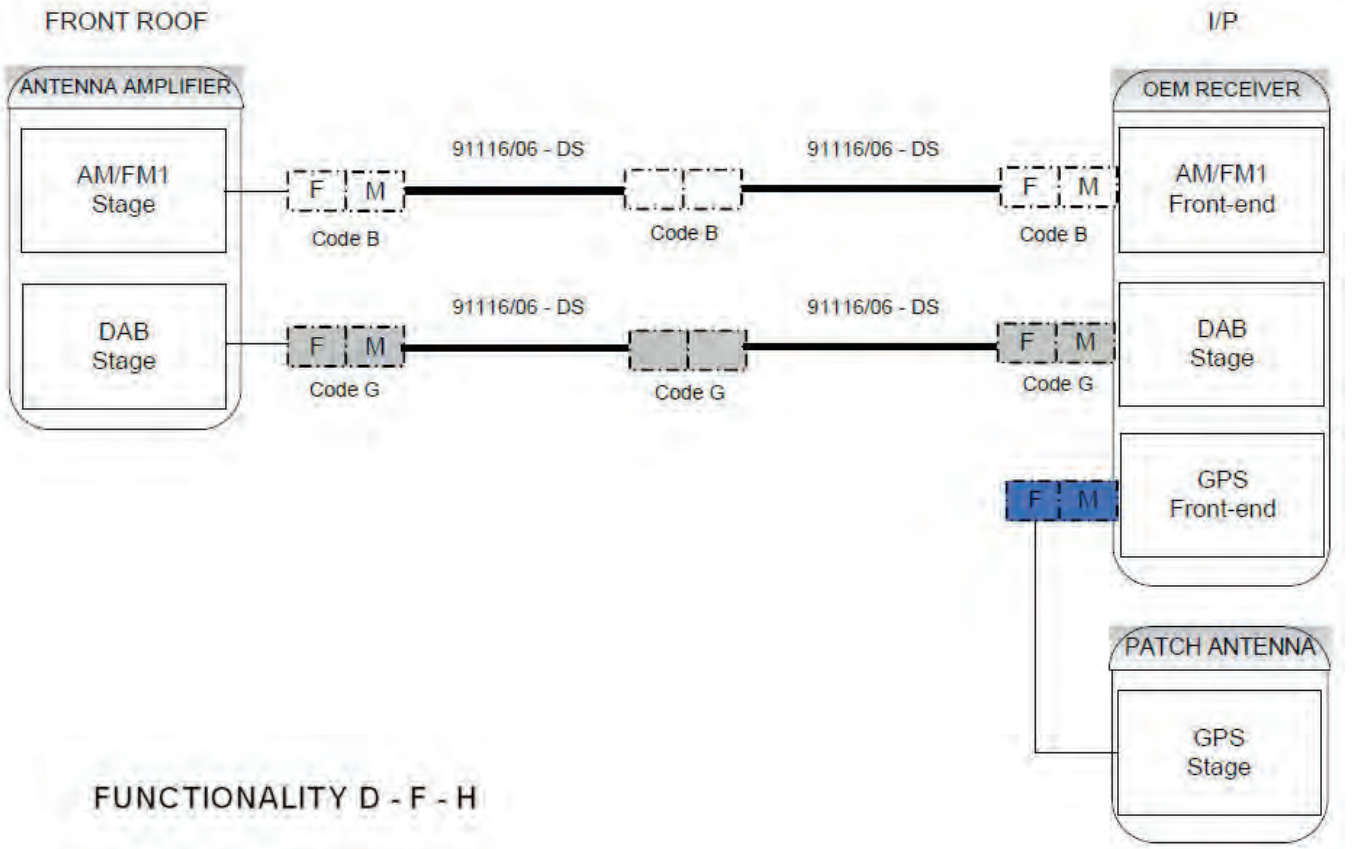
Item	Opt code	Feature	Market
A	082 or 085	Preparation for aftermarket radio (w/ or w/o speakers)	ECE/ROW
B	6QD or 6GD	Preparation for aftermarket DAB radio (w/ or w/o speakers)	ECE
C	6S3	RRM base: AM/FM	ECE, ROW
D	6S4	RRM DAB: AM/FM + DAB	ECE
E	6Q2	LTM base: AM/FM	ECE/ROW
F	6Q3	LTM DAB: AM/FM + DAB	ECE
G	6Q8	LTM NAV: AM/FM + GPS	ECE/ROW
H	6Q9	LTM NAV DAB: AM/FM + GPS + DAB	ECE
I	5AO	AM/FM Side Mirror antenna set	ECE/ROW
J	54Q	AM/FM/DAB Side Mirror antenna set	ECE/ROW

Figure 42

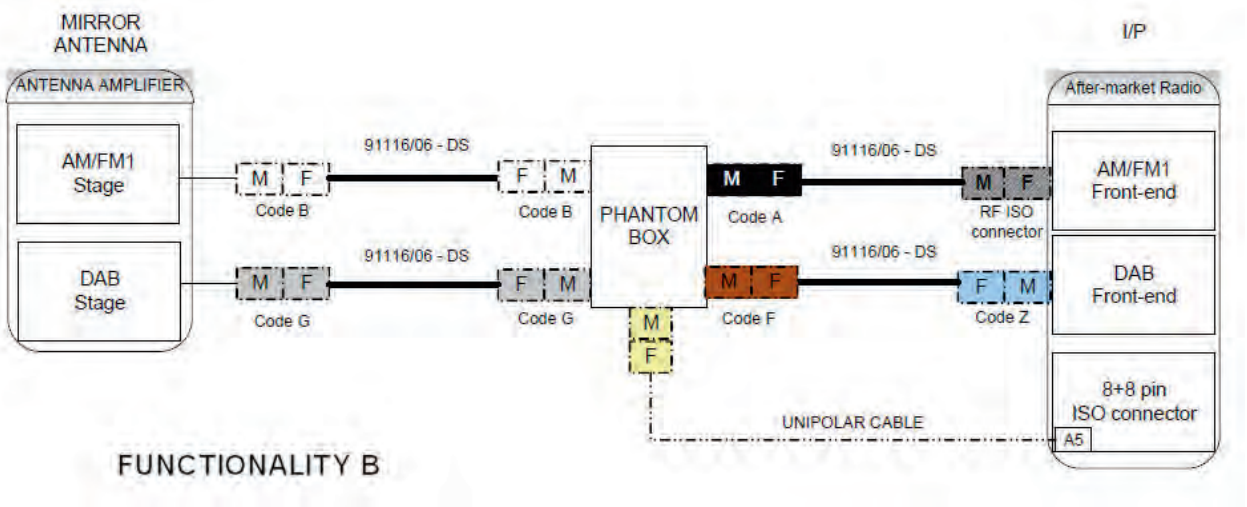




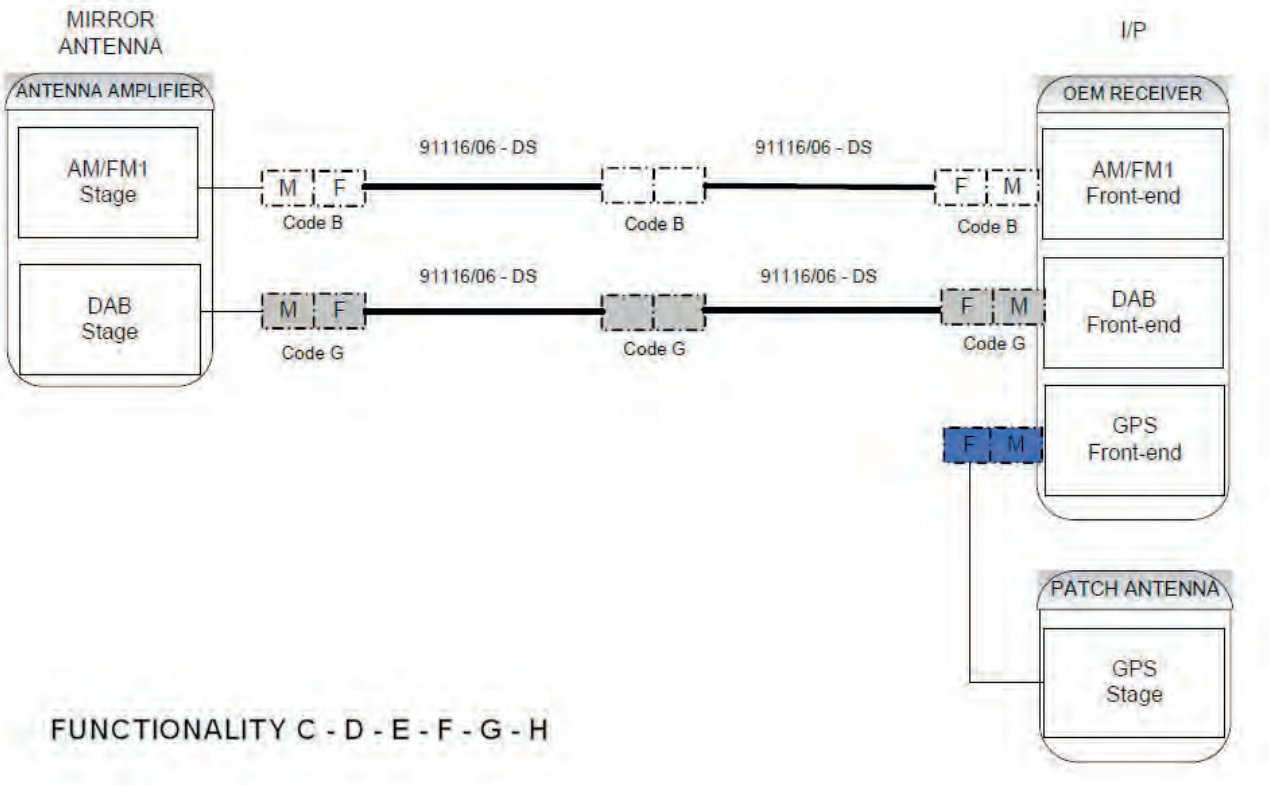
FUNCTIONALITY C - E- G



FUNCTIONALITY D - F - H



FUNCTIONALITY B



FUNCTIONALITY C - D - E - F - G - H

FAKRA antenna connectors

Polarizzazione *Coding*	Colore *Color*	Part Number Fornitore *Supplier Part Number*
Z *Z*	Azzurro *Light blue*	59Z113-000-Z
A *A*	Nero *Black*	59Z113-000-A
B *B*	Bianco *White*	59Z113-000-B
C *C*	Blu *Blue*	59Z113-000-C
F *F*	Marrone *Brown*	59Z113-000-F
G *G*	Grigio *Grey*	59Z113-000-G

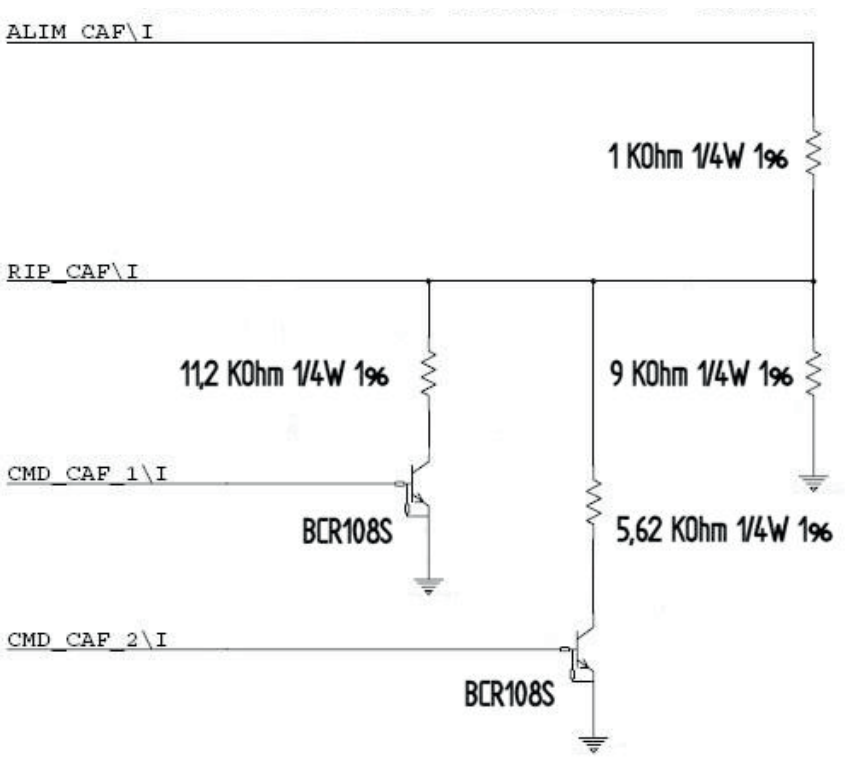
Pin	Function/ Connector Part number	Notes
	Shielded connector ASK p/n COMA Y050PA Counterpart: ASK p/n COFE (by upfitter)	
1	AM/FM radio aerial signal	AM/FM aerial on roof or in door mirror

Phantom Box

TBD

Headlight Alignment Corrector

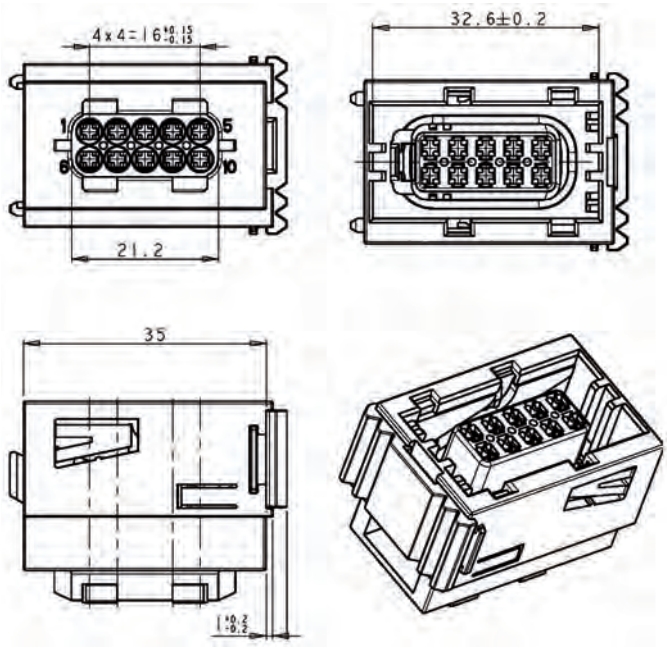
The resistance coding of the Headlight Alignment Corrector (CAF) of Ducato is as follows:



Consequently, it is important to ensure that the headlights use the same resistance coding.

GENUINE NEW DUCATO COMPONENTS
Locks
3D view of connector

Figure 47



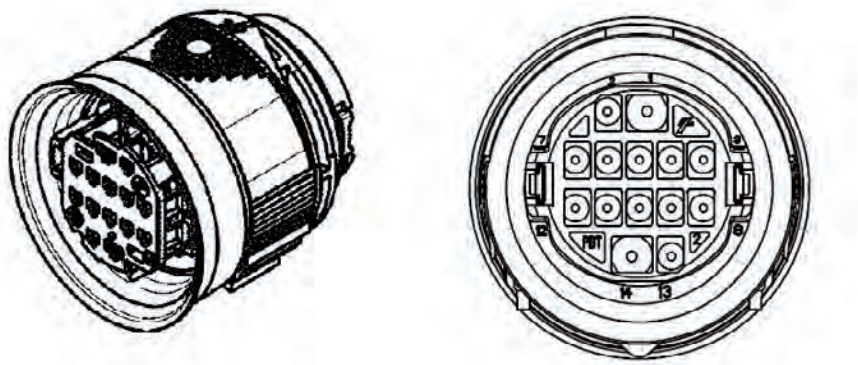
Interface connector with genuine New Ducato locks

Description of connector functions

Pin	Function/Connector part number	Minimum cable section [mm²]	Notes
	10-way Tyco connector on wiring p/n 6-1355688-1		
1	Not connected	-	
2	Lock/unlock signal from knob	0,35	CTRL_GND from FT_DRV_Door_Limit_SW
3	Switch ground	0,35	GND from FT_driver_DR_SW
4	Door open switch	0,35	CTRL_GND from FT_DRV_Door_Ajar_SW
5	Not connected	-	
6	Door lock control	1,0	Max 15A (For actuation times see tab. page 3.16)
7	Door unlock control	1,0	Max 15A (For actuation times see tab. page 3.16)
8	Dead-lock power	1,0	
9	Not connected	-	
10	Not connected	-	

Front lights
2D and 3D view of connector

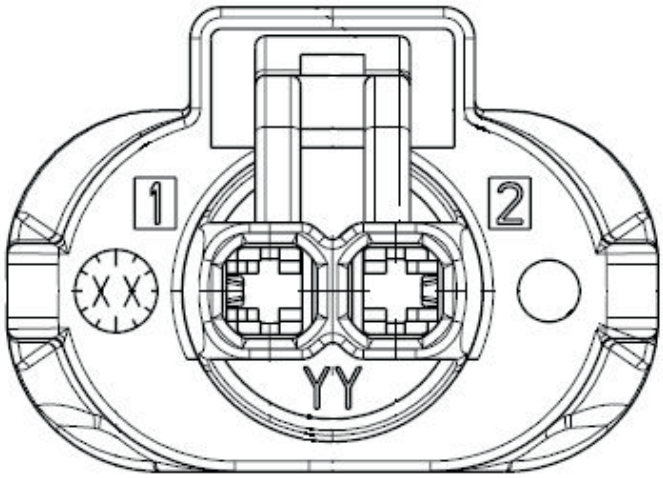
Figure 48



Description of connector functions

Pin	Operation/Part number Connector	Minimum cross-section area wire [mm²]	Wire colour (LH headlight)	Wire colour (RH headlight)
	14-pin connector Fiat code Fiat 1/05285/87 tb 91349/40 (Fci 17261405B)			
1	Dipped beam supply	0,5	VN	VB
2	Turn lights supply	0,35	LB	LN
3	-	-		
4	Parking lights supply	0,35	GV	GH
5	DRL supply form driver #1	0,35	LG	LG
6	Dipped beam signal for levelling	0,35	BC	BC
7	-	-		
8	-	-		
9	DRL supply form driver	0,5	VG	VG
10	Ground	0,5	NV	NV
11	Headlight levelling signal	0,35	CB	LG
12	-	-		
13	Main beam supply	0,5	HN	H
14	Ground	1,5	N	N

1.23 Fog lights



Pin	Operation/Part number Connector	Wire cross-section area [mm²]	Wire colour LH	Wire colour RH
	Connector 2 v. p/n 1/11039/97 Tab.91337/55 FCI240PC023S4019			
1	Supply	0,75	MN	MR
2	Earth	0,75	NZ	NZ

Connessione fendinebbia

Collegando fendinebbia di tipo diverso da quelli di produzione, e di conseguenza non utilizzando i cavi paraurti previsti di produzione per alimentare correttamente la funzione DRL nel proiettore principale (ove presente) occorre ponticellare i pin 3-4 tra di loro nel connettore di collegamento briglia fendinebbia presente sul cavo anteriore, come da schema seguente.

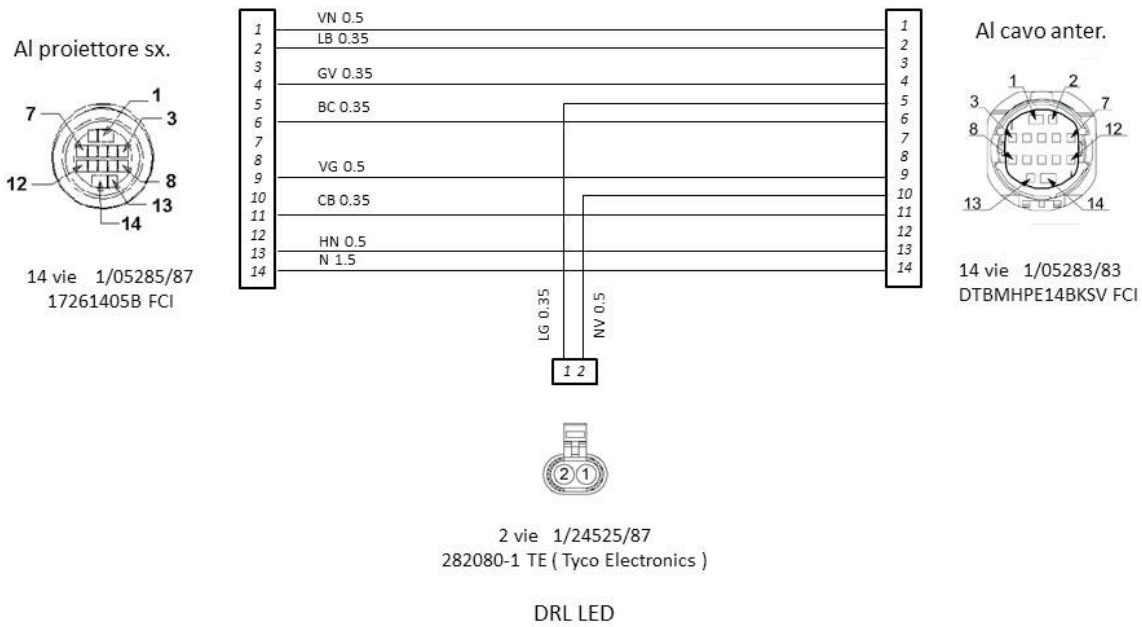
Pin out
1 – Positivo Fendinebbia
2 – Negativo Fendinebbia
3 – Ponticello DRL con pin 4
4 – Ponticello DRL con pin 3

DA TRADURRE IN INGLESE

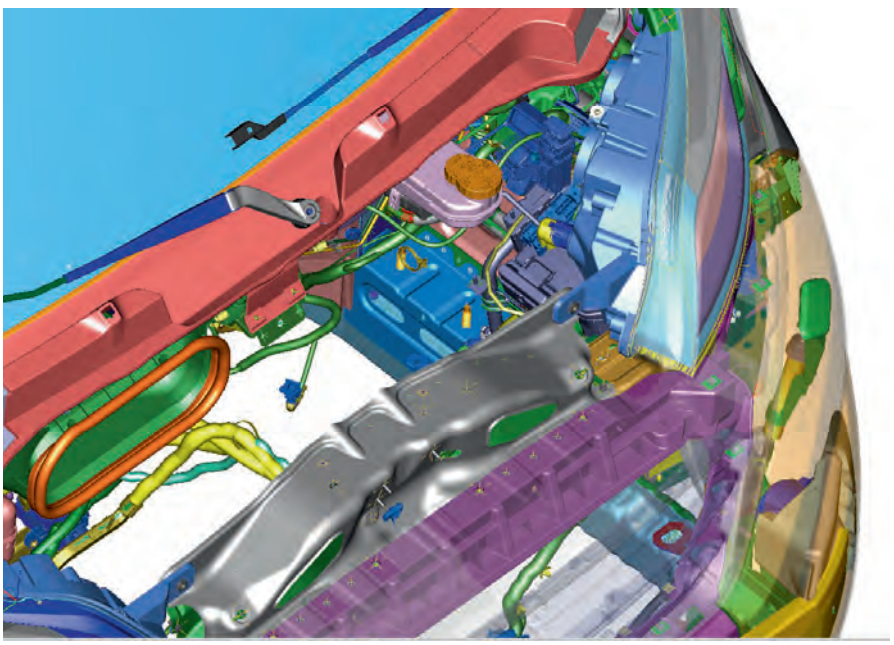
DA TRADURRE IN INGLESE

1.1 Aftermarket LED DRL System configuration

Luci DRL a LED di terze parti possono venire installate in alternativa a quelle originali escludendo queste e deviandone l'alimentazione per alimentare i nuovi gruppi ottici. Tale circuitazione viene realizzata con l'inserzione della briglia sotto indicata che viene fornita di primo impianto richiedendo l' Opt. 75N (schema briglia in allegato). L'omologazione è a carico del carrozziere.

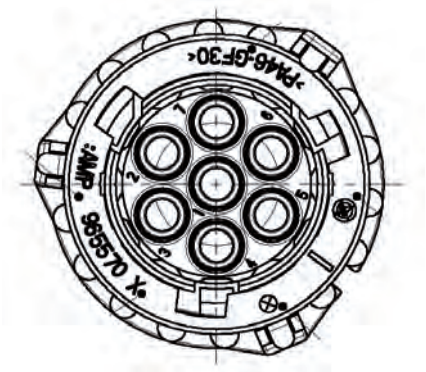


DRL LED



1.25 Taillights for chassis-cabs/cowls 2D view of connector

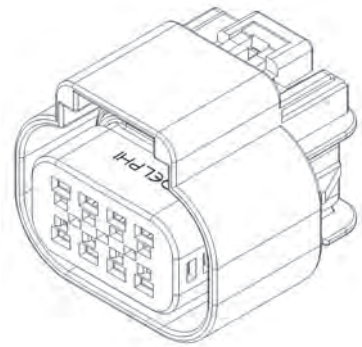
Figure 49

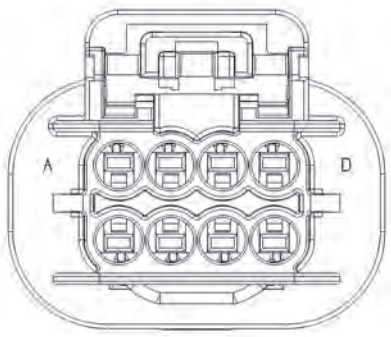


6.4.2 Description of connector functions

Pin	Function/Connector part number		Notes
	LH light – 7-way Tyco connector on wiring p/n 967650-1		
1	Bulb ground	1	
2	Rear fog warning light	0,5	
3	Stop light	0,5	
4	Direction indicator	0,5	
5	Not connected	-	
6	Side marker light	0,5	
7	Not connected	-	
	RH light – 7-way Tyco connector p/n 967650-1		
1	Bulb ground	1	
2	Not connected	-	
3	Stop light	0,5	
4	Direction indicator	0,5	
5	Reversing light	1	
6	Side marker light	0,5	
7	Not connected	-	

Taillights for vans
2D view of connector





Pin	Function / Connector part number	Colour	Minimum cable section [mm²]	Notes
	LH lighting cluster – 8-pin DELPHI 13545280 connector			
A	Parking light	GV	0,35	
B	Stop	VN	0,5	
C	Turn light	LB	0,5	
D	Not connected			
E	Not connected			
F	Fog light	MN	0,5	
G	Reverse light	BV	1	
H	Ground	N	1	
	RH lighting cluster – 8-pin DELPHI 13545280 connector			
A	Parking light	GV	0,35	
B	Stop	VN	0,5	
C	Turn light	LB	0,5	
D	Not connected			
E	Not connected			
F	Fog light	MN	0,5	
G	Reverse light	BV	1	
H	Ground	N	1	

Windscreen wiper
3D view of connector on windshield wiper motor

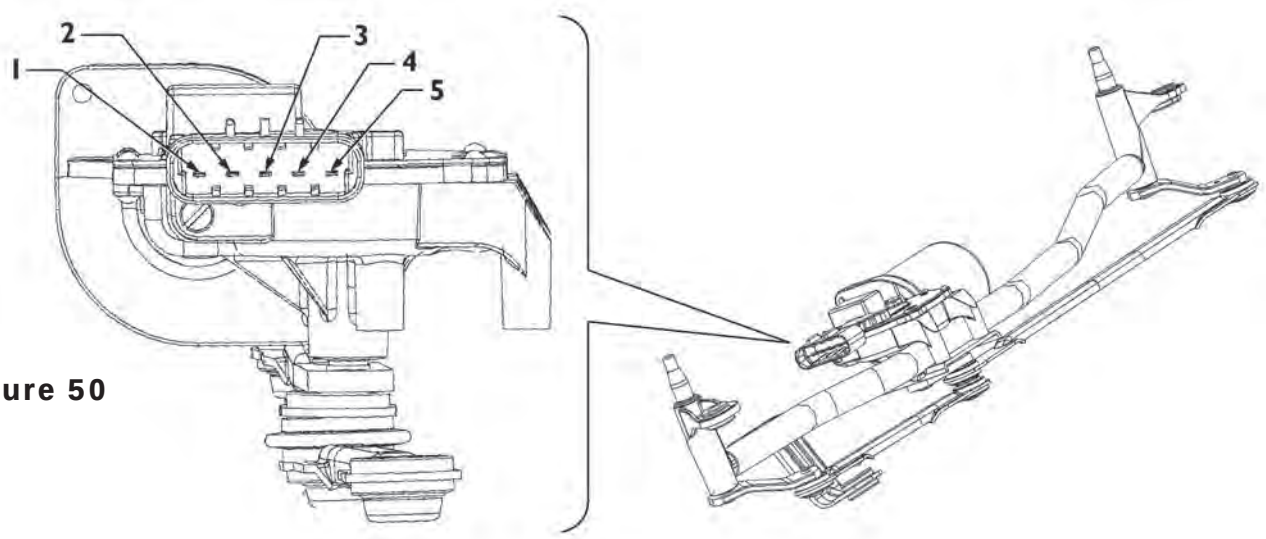
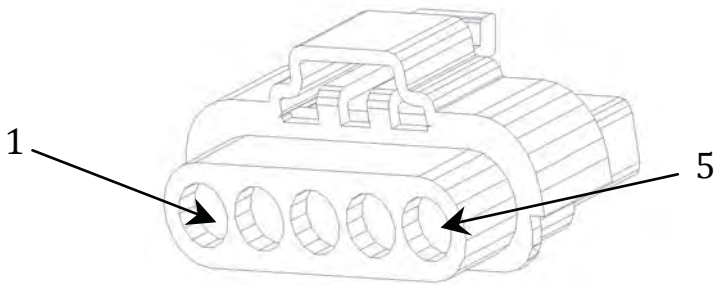


Figure 50

3D view of connector on wiring

Figure 51



Description of connector functions

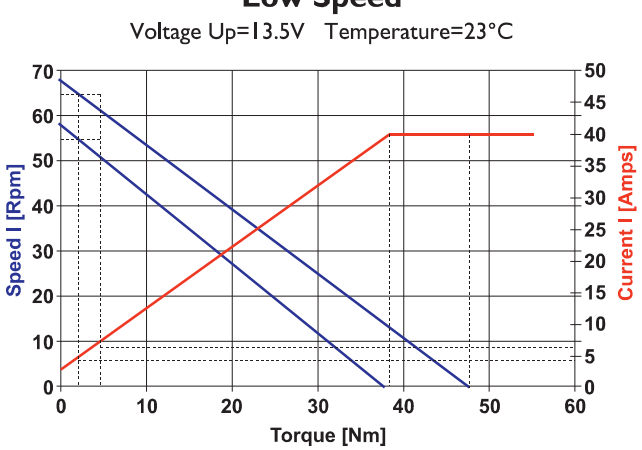
Pin	Function/Connector part number	Minimum cable section [mm²]	Notes
	5-way Delphi connector p/n 15342484	-	Riferimento a schema M012AA
1	Ground	2,5	
2	Power supply	2,5	
3	Speed selector	0,35	
4	On/off	0,35	
5	Parking contact	0,35	

Windscreen wiper motor specifications

Nominal voltage	12V
Working voltage	9 - 16V
Intermittence	10 - 18
Number of cycles (speed I)	45 ± 5
Number of cycles (speed II)	65 ± 5

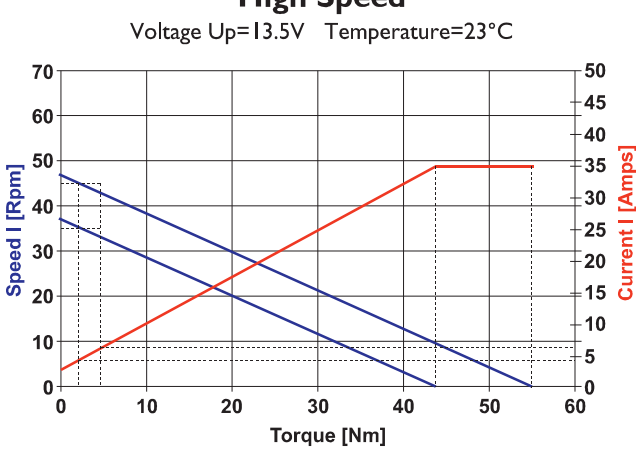
NOTE: In case of windscreen wiper group installation, the converter has to fit a group with the same electrical specifications as the original Fiat Chrysler Automobiles S.p.A. group.

Figure 52



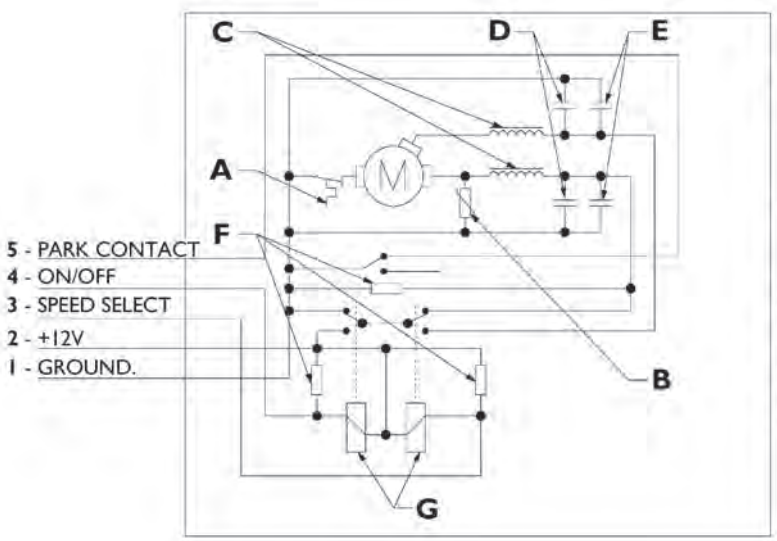
Torque [Nm]	Speed [RPM]	Current [A]
2	60±5	<4.5
5	>50	<6.5
34.7-44.5	5	<40
38-48	0	<40

Figure 53



Torque [Nm]	Speed [RPM]	Current [A]
2	40±5	<3
5	>30	<5
38.9-49.1	5	<35
45-55	0	<35

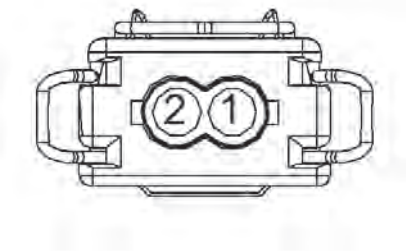
Figure 54



A - THERMAL PROTECTION
TYPE 6AP00720W
(TEXAS INSTRUMENT)
B - VARISTOR SEN 270 KD 07
Vac = 17V
Vdc = 22V
V2.5A = 53V
ENERGIE = 1J/1 impulse
C=2200 pF
C - CHOKE:
NOMINAL VOLTAGE: UP TO 60V
NOMINAL CURRENT: 6A
INDUCTION: 5.7±10% microH
D - CAPACITOR CF1,
5 microaF/63V
E - CERAMIC CAPACITOR
2n2/100V Z5U
F - RESISTOR
500 Ohm/0.5W
G - RELAY FBR512ND12W1
NOMINAL VOLTAGE: 12V(DC)
COIL RESISTANCE (±10% AT 20°C): 240 Ohm
MUST OPERATE VOLTAGE:
7.3V (DC) AT 20°C, 9.2V (DC) AT 85°C
THERMAL RESITANCE: 73° C/W

Windscreen washer pump
2D view of connector

Figura 55

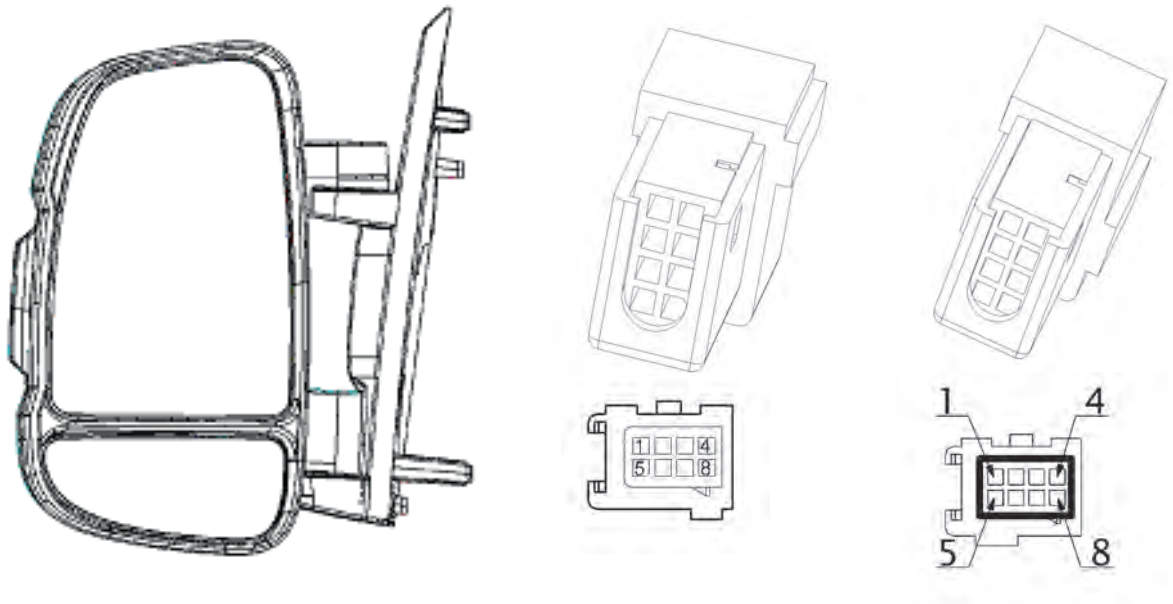


Description of connector functions

Pin	Function/Connector part number	Minimum cable section [mm²]	Notes
	2-way Delphi connector on wiring p/n 12185025 (401589)	-	
1	Power supply	1,5	
2	Ground	1,5	

Left hand external rear view mirror
3D view of connectors

Figure 56



NOTE: The figure shows the counter-connectors.

Description of connector functions

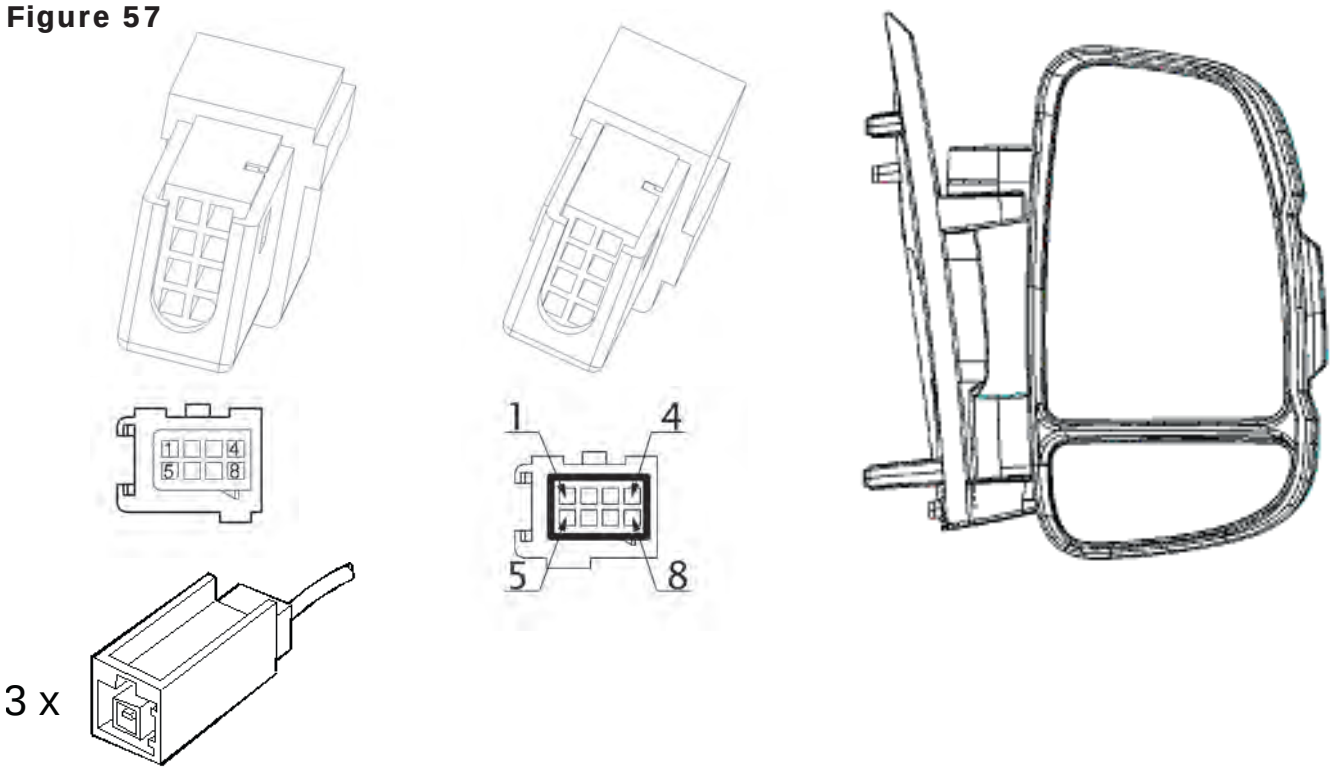
Pin	Function / Connector part number	Minimum cable section [mm²]	Notes
	8-way Tyco connector on mirror p/n 1745000-1 Counterpart: Tyco p/n 284869-1		BLACK colour
1	Direction indicator power supply	0,5	1 16W - 12V bulb
2	Direction indicator and defroster ground	0,75	
3	Main mirror servo right/left control	0,5	
4	Main mirror servo up/down control	0,5	
5	Auxiliary mirror servo right/left control	0,5	
6	Auxiliary mirror servo up/down control	0,5	
7	Mirror servos common connection	0,5	
8	Defroster power supply	0,75	

Pin	Function/Connector part number	Minimum cable section [mm²]	Notes
	8-way Tyco connector on mirror p/n 1745000-2 Counterpart: Tyco p/n 284869-2		GREY colour
1	External temperature sensor (ref)	0,5	-
2	External temperature sensor (signal)	0,5	-
3	Deflector servo control	0,5	-
4	Deflector servo ground	0,5	-
5	Not connected	-	-
6	Not connected	-	-
7	Not connected	-	-
8	Not connected	-	-

NOTE: if Fiat Chrysler Automobiles S.p.A. rear view mirrors are used, refer to the connections described in the preceding paragraphs of this document.

Right hand external rear-view mirror 3D view of connectors

Figure 57



NOTE: The figure shows the connector counterparts.

Description of connector functions

Pin	Function/Connector part number	Minimum cable section [mm²]	Notes
	8-way Tyco connector on mirror p/n 1745000-1 Counterpart: Tyco p/n 284869-1		BLACK colour
1	Direction indicator power supply.	0,5	1 Lampada da 16W - 12V
2	Direction indicator and defroster ground	0,75	
3	Main mirror servo left/right control	0,5	
4	Main mirror servo up/down control	0,5	
5	Auxiliary mirror servo left/right control	0,5	
6	Auxiliary mirror servo up/down control	0,5	
7	Mirror servos common connection	0,5	
8	Defroster power supply	0,75	
	8-way Tyco connector on mirror p/n 1745000-2 Counterpart: Tyco p/n 284869-2		GREY colour
1	Radio aerial power supply	0,5	
2	Not connected	-	
3	Deflector servo control	0,5	
4	Deflector servo ground	0,5	
5	Not connected	-	
6	Not connected	-	
7	Not connected	-	
8	Not connected	-	

NOTE: if Fiat Chrysler Automobiles S.p.A. rear view mirrors are used, refer to the connections described in the preceding paragraphs of this document.

Ceiling light
2D view of connector

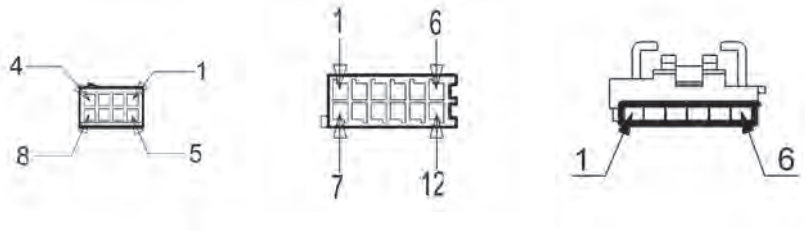
Figure 58

Description of connector functions

Pin	Function/Connector part number	Minimum cable section [mm²]	Notes
	3-way Tyco connector on wiring p/n 282627-1	-	
1	Bulb ground	0,5	
2	Power supply +30 (SBMT)	0,5	
3	Negative control	0,5	

Driver's side door control pad
2D view of connectors

Figure 59

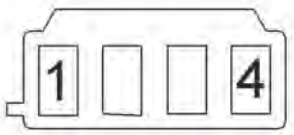


Description of connector functions

Pin	Operation/Part number Connector	Wire cross-section area [mm²]	Wire colour LHD	Wire colour RHD
	8-way connector p/n Tyco 1/08807/97	-		
1	not connected	0,35	HN	HV
2	not connected	0,35	BH	BH
3	Earth	0,35	NZ	NZ
4	not connected	0,35	SZ	SZ
5	LH electric window up/down control	0,35	HM	HR
6	LH electric window enablement control	0,35	BL	BL
7	not connected	0,35	HR	HM
8	RH electric window up/down control	0,35	HV	HN
	12-way connector p/n 1/08402/07 Tab. 91300 (Tyco 1534100 Cover 1534093)	-		
1	Earth	0,5	N	N
2	RH main mirror UP/DOWN	0,35	MN	BH
3	LH secondary mirror LH/RH	0,35	SZ	BV
4	LH main mirror LH/RH	0,35	HM	BR
5	Power supply/lighting	0,5	BL	BL
6	LH secondary mirror up/down	0,35	SV	BZ
7	Supply	0,5	BL	BL
8	Mirror motor common	0,35	HN	HN
9	LH main mirror up/down	0,35	BH	MN
10	RH secondary mirror LH/RH	0,35	BV	SZ
11	RH secondary mirror up/down	0,35	BZ	SV
12	RH main mirror LH/RH	0,35	BR	HM
	6 pin connector p/n Tyco 284802-1	-		
1	Earth	0,75	NS	NS
2	RH mirror folding motor control	0,75	HM	HM
3	RH mirror folding motor earth	0,5	N	N
4	LH mirror folding motor positive control	0,5	NZ	NZ
5	LH mirror folding motor earth	0,5	HB	HB
6	Supply	0,5	BL	BL

Passenger side door control pad
2D view of connector

Figure 60

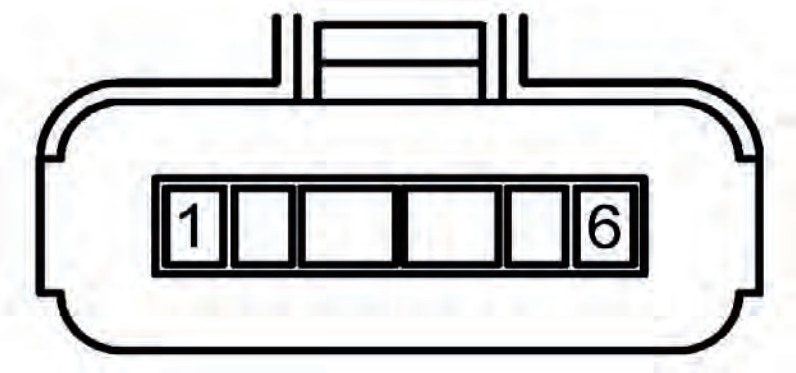


Description of connector functions

Pin	Operation/Part number Connector	Wire cross-section area [mm²]	Wire colour
	4-way connector 1/08332/07 Tab. 91353		
1	Passenger's side window down control	0,35	HR
2	Supply/lighting	0,35	BL
3	Earth	0,35	NZ
4	Passenger's side window up control	0,35	HV

Electric windows
2D view of connector

Figure 61

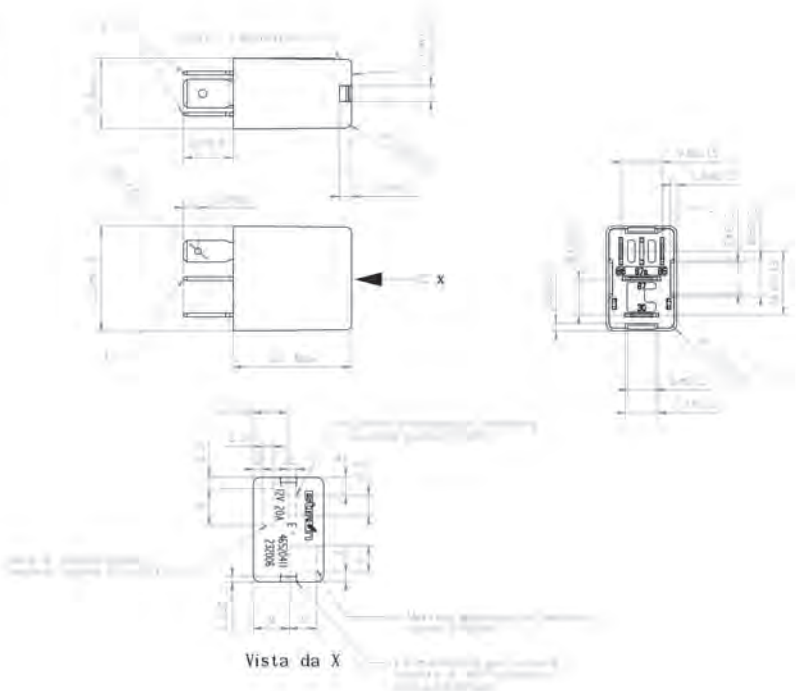


Description of connector functions

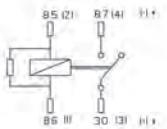
Pin	Operation/Part number Connector	Wire cross-section area [mm²]	Wire colour
	6-way connector p/n 1/01538/97 Tab. 91337/45		
1	-	-	-
2	-	-	-
3	Window up supply	1,5	R
4	Window down supply	1,5	NZ
5	-	-	-
6	-	-	-

Standard Fiat Chrysler Automobiles S.p.A. Component drawings
20a micro relay switch

DATI CARATTERISTICI	
TENSIONE NOMINALE	12V
CORRENTE NOMINALE A 80°C	20A
PROTEZIONE AMBIENTALE (IP) NORMA IEC 529	IP 54
TEMPERATURA DI ESERCIZIO TMIN/TMAX	-40°C/125°C
AFFIDABILITA' A 0 KM	20PPM
DISPOSITIVO PARALLELO 85/86	680 Ohm
RESISTENZA EQUIVALENTE 85/86 A 23°C	73±5 Ohm
MAX INDUTTANZA BOBINA	24 mH
MIN TENSIONE DI SCARICA	1000 V/1"
MIN RESISTENZA DI ISOLAMENTO	10 M Ohm
CADUTA DI TENSIONE 30/87 A 23°C A NUOVO	MAX 3mV/A
MAX TENSIONE INDUTTIVA RILASCIO	110V
MAX CORRENTE IN CHIUSURA 87	110V
MAX CORRENTE IN APERTURA 87	20A
MAX CORRENTE CONTINUATIVA 87 A 23°C	20A
MAX CORRENTE CONTINUATIVA 87 A TMAX	20A
MAX SOVRATEMPERATURA TERMINALE 30	40°C
MAX TENSIONE CHIUSURA MAGNETICA A 23°C	7.5V
MAX TENSIONE CHIUSURA MAGNETICA A TMAX	9.6V
MIN TENSIONE DI RILASCIO A 23°C	2V
MIN TENSIONE DI RILASCIO A TMAX	2V
MAX TEMPO DI RIMBALZO 87	100 micr. s.
TEMPO DI CHIUSURA MIN/MAX 87	4/6 ms
TEMPO DI APERTURA MIN/MAX 87	6/8 ms



SCHEMA ELETTRICO



*: POLARITA' CONSIGLIATA

TABELLA DEI MATERIALI

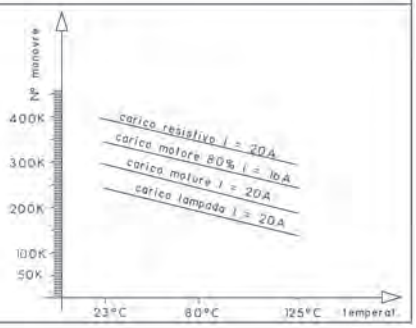
	DENOMINAZIONE	MATERIALE			TRATTAMENTO	
		TABELLA	SIGLA	CLASSE	SIGLA	CAPITOL.
1	COPERCHIO COLORE NERO	55235	PE 60.30	PLASTICI *		
2	BASAMENTO COLORE NERO	55235	PE 60.30	PLASTICI *		
3	SPINE LAMELLARI SECONDO NORMA FIAT 91319 6.3 X 0.8		Cu ETP	LEGHE METALL.	Superf. Ag	
4	SPINE LAMELLARI SECONDO NORMA FIAT 91319 4.8 X 0.8	53441	POT 67 LMT H10	LEGHE METALL.	Cu/Sn/A	9.57422

*) Raggi non quotati +-0.5

PRESTAZIONI

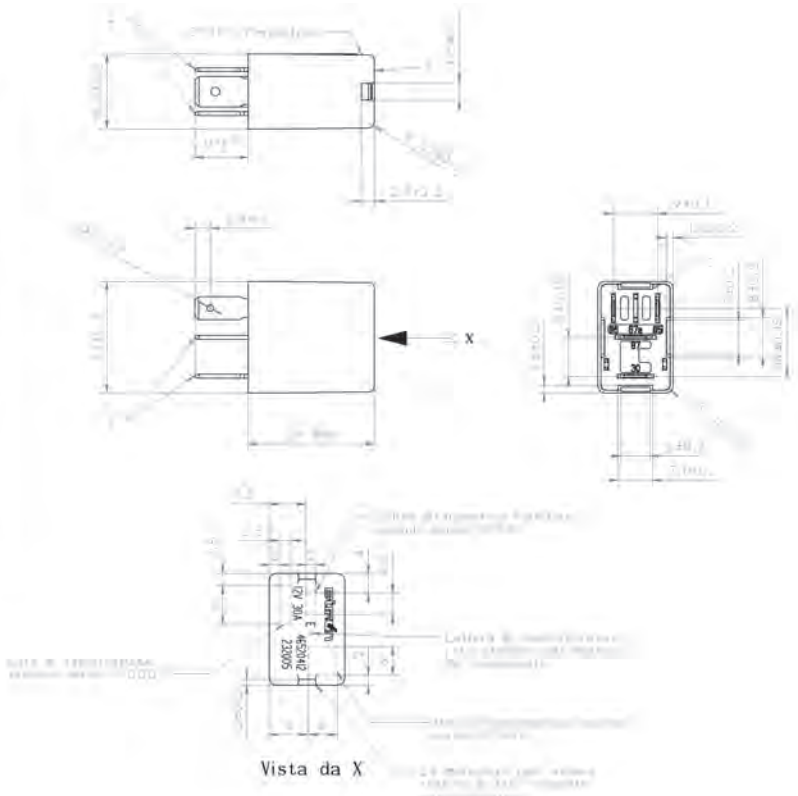
NUMERO DI MANOVRE
IN FUNZIONE DELLA TEMPERATURA E DEL CARICO

TIPOLOGIA CARICO	I	23° C	80° C	125° C
RESISTIVO	20A	400K	350K	300K
MOTORE = I NOMIN. CONTINUA A 80°C	20A	300K	250K	200K
MOTORE = 80% I NOMIN.	16A	350K	300K	250K
LAMPADA	20A	250K	200K	150K

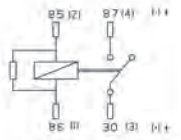


1.36 30A micro relay switch

DATI CARATTERISTICI	
TENSIONE NOMINALE	12V
CORRENTE NOMINALE A 80°C	30A
PROTEZIONE AMBIENTALE (IP) NORMA IEC 529	IP 54
TEMPERATURA DI ESERCIZIO TMIN/TMAX	-40°C/125°C
AFFIDABILITA' A 0 KM	20PPM
DISPOSITIVO PARALLELO 85/86	680 Ohm
RESISTENZA EQUIVALENTE 85/86 A 23°C	73±5 Ohm
MAX INDUTTANZA BOBINA	24 mH
MIN TENSIONE DI SCARICA	1000 V/1'
MIN RESISTENZA DI ISOLAMENTO	10 M Ohm
CADUTA DI TENSIONE 30/87 A 23°C A NUOVO	MAX 3mV/A
MAX TENSIONE INDUTTIVA RILASCIO	110V
MAX CORRENTE IN CHIUSURA 87	165A
MAX CORRENTE IN APERTURA 87	30A
MAX CORRENTE CONTINUATIVA 87 A 23°C	30A
MAX CORRENTE CONTINUATIVA 87 A TMAX	30A
MAX SOVRATEMPERATURA TERMINALE 30	40°C
MAX TENSIONE CHIUSURA MAGNETICA A 23°C	7.5V
MAX TENSIONE CHIUSURA MAGNETICA A TMAX	9.6V
MIN TENSIONE DI RILASCIO A 23°C	2V
MIN TENSIONE DI RILASCIO A TMAX	2V
MAX TEMPO DI RIMBALZO 87	100 micr. s.
TEMPO DI CHIUSURA MIN/MAX 87	4/6 ms
TEMPO DI APERTURA MIN/MAX 87	6/8 ms



SCHEMA ELETTRICO



*) POLARITA' CONSIGLIATA

TABELLA DEI MATERIALI

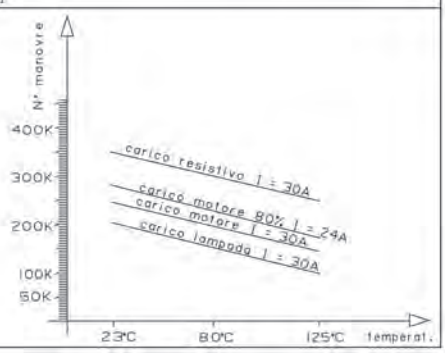
	DENOMINAZIONE	MATERIALE			TRATTAMENTO	
		TABELLA	SIGLA	CLASSE	SIGLA	CAPITOL.
1	COPERCHIO COLORE ROSSO	55235	PE 60.30	PLASTICI *		
2	BASAMENTO COLORE NERO	55235	PE 60.30	PLASTICI *		
3	SPINE LAMELLARI SECONDO NORMA FIAT 91319 6.3 X 0.8		Cu ETP	LEGHE METALL.	Superf. Ag	
4	SPINE LAMELLARI SECONDO NORMA FIAT 91319 4.8 X 0.8	53441	POT 67 LMT H10	LEGHE METALL.	Cu/Sn/A.	9.57422

*) Raggi non quotati +- 0.5

PRESTAZIONI

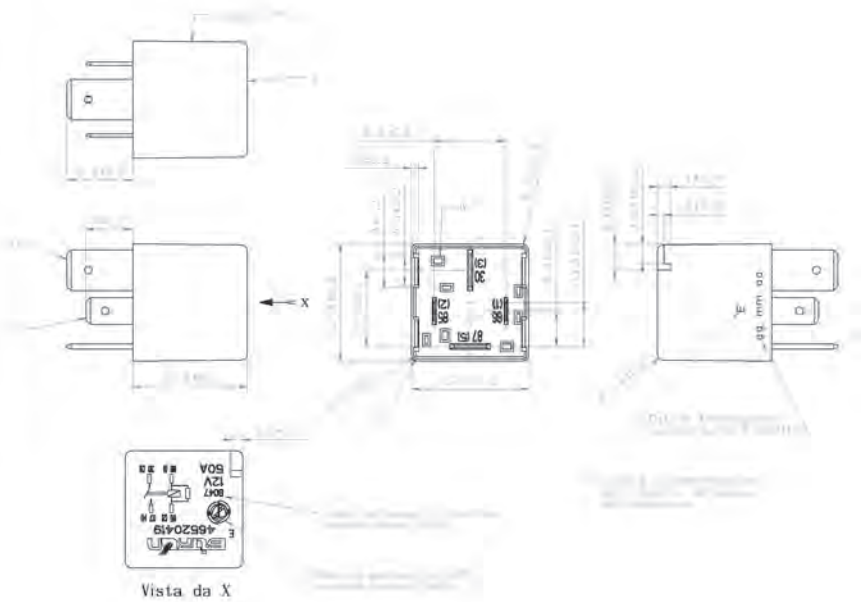
NUMERO DI MANOVRE
IN FUNZIONE DELLA TEMPERATURA E DEL CARICO

TIPOLOGIA CARICO	I	23°C	80°C	125°C
RESISTIVO	30A	350K	300K	250K
MOTORE : I NOMIN. CONTINUA A 80°C	30A	250K	200K	150K
MOTORE : 80% I NOMIN.	24A	270K	220K	170K
LAMPADA	30A	200K	150K	100K



1.37 T 50A maxi relay switch

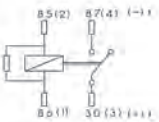
DATI CARATTERISTICI	
TENSIONE NOMINALE	12V
CORRENTE NOMINALE A 80°C	50A
PROTEZIONE AMBIENTALE (IP) NORMA IEC 529	IP 54
TEMPERATURA DI ESERCIZIO TMIN/TMAX	-40°C/125°C
AFFIDABILITA' A 0 KM	20PPM
DISPOSITIVO PARALLELO 85/86	680 Ohm
RESISTENZA EQUIVALENTE 85/86 A 23°C	75±5 Ohm
MAX INDUTTANZA BOBINA	22 mH
MIN TENSIONE DI SCARICA	1000 V/1'
MIN RESISTENZA DI ISOLAMENTO	10 M Ohm
CADUTA DI TENSIONE 30/87 A 23°C A NUOVO	MAX 3mV/A
MAX TENSIONE INDUTTIVA RILASCIO	100V
MAX CORRENTE IN CHIUSURA 87	200 A
MAX CORRENTE IN APERTURA 87	70A
MAX CORRENTE CONTINUATIVA 87 A 23°C	70A
MAX CORRENTE CONTINUATIVA 87 A TMAX	50A
MAX SOVRATEMPERATURA TERMINALE 30	40°C
MAX TENSIONE CHIUSURA MAGNETICA A 23°C	7.5V
MAX TENSIONE CHIUSURA MAGNETICA A TMAX	9.6V
MIN TENSIONE DI RILASCIO A 23°C	2V
MIN TENSIONE DI RILASCIO A TMAX	2V
MAX TEMPO DI RIMBALZO 87	80 micr. s.
TEMPO DI CHIUSURA MIN/MAX 87	4/6 ms
TEMPO DI APERTURA MIN/MAX 87	4/8 ms



Vista da X

TABELLA DEI MATERIALI						
	DENOMINAZIONE	MATERIALE			TRATTAMENTO	
		TABELLA	SIGLA	CLASSE	SIGLA	CAPITOL.
A	COPERCHIO COLORE NERO	55235	PE 60.30	PLASTICI		
B	BASAMENTO COLORE NERO	55235	PE 60.30	PLASTICI		
C	SPINE LAMELLARI SECONDO NORMA FIAT 91319 6.3 X 0.8	53441	POT 67 LMT H10	LEGHE METALL.	Cu/Sn/A	9.57422
D	SPINE LAMELLARI SECONDO NORMA FIAT 91319 9.5 X 1.2		Cu ETP	LEGHE METALL.	Superf. Ag	

SCHEMA ELETTRICO

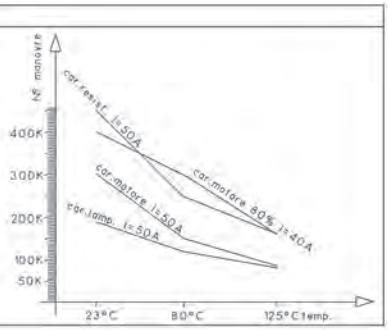


*: POLARITA' CONSIGLIATA

PRESTAZIONI

NUMERO DI MANOVRE IN FUNZIONE DELLA TEMPERATURA E DEL CARICO

TIPOLOGIA CARICO	I	23° C	80° C	125° C
RESISTIVO	50A	450k	350k	160k
MOTORE = I NOMIN. CONTINUA A 80°C	50A	300k	150k	85k
MOTORE = 80% I NOMIN.	40A	400k	300k	160k
LAMPADA	50A	180k	120k	80k



Tips for installation
Refrigerator power supply

Having to power the refrigerator in parallel to the auxiliary battery charger circuit, in order to reduce voltage drop, we recommend one of the following solutions:

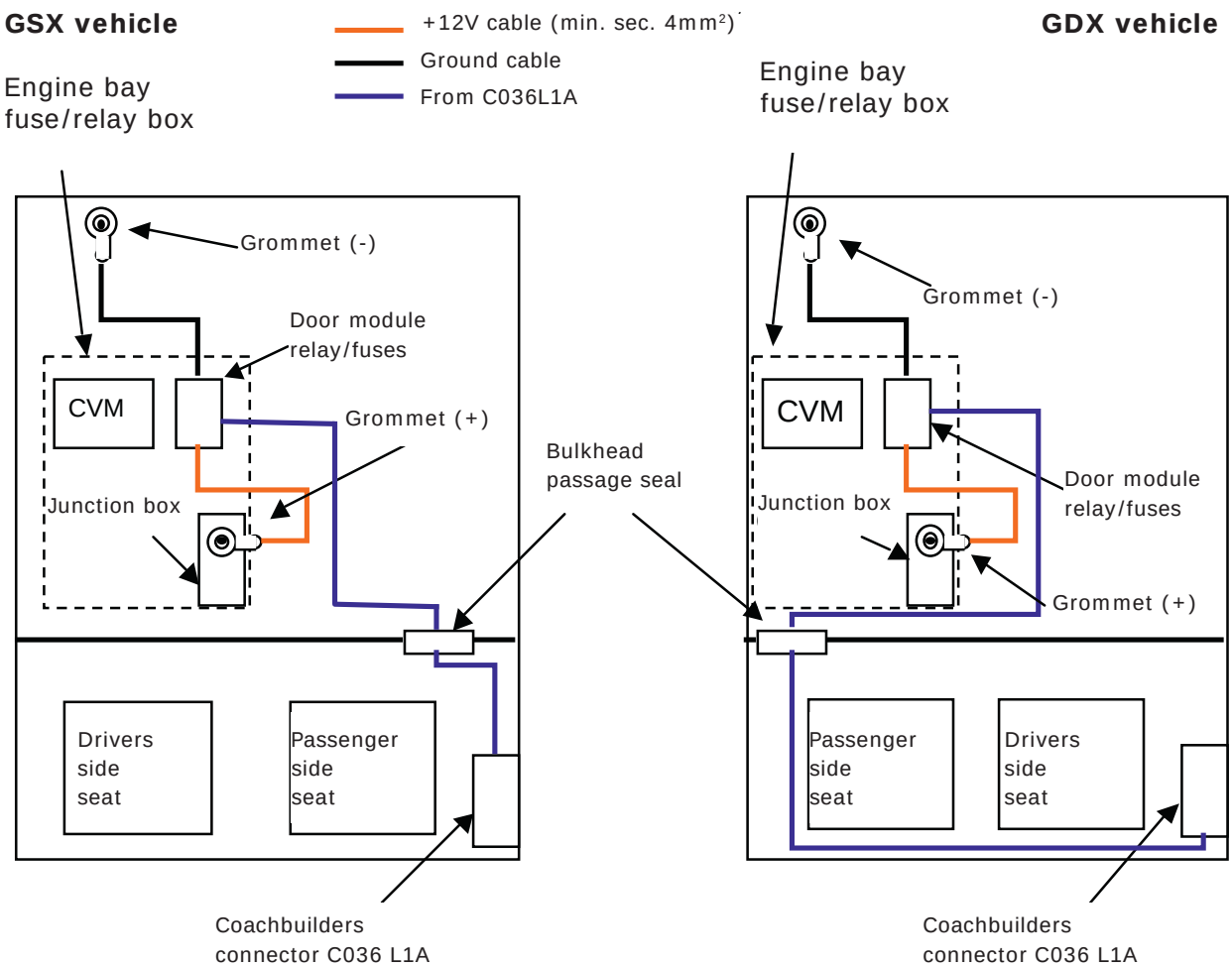
a - Double the main power supply (+30) starting from connector C036L1C with an 8mm² (for the battery) and with a 6mm² cable (for the fridge) clamped together.

b - Use a 16mm² section cable from connector C036L1C and for the entire section of common line.

In both cases it is a good idea to make the fridge negative terminal connection with a high cross-section cable that is as short as possible (using a ground point chosen between A, B, C or pin 2 of connector C036L1C).

Coachbuilders socket in engine bay

This paragraph describes the solution for arranging specific power supplies in the engine bay (for example for the Xenon lights control unit). The diagram below shows the correct layout of the additional wiring that has to be installed by the coachbuilder.



List of materials:

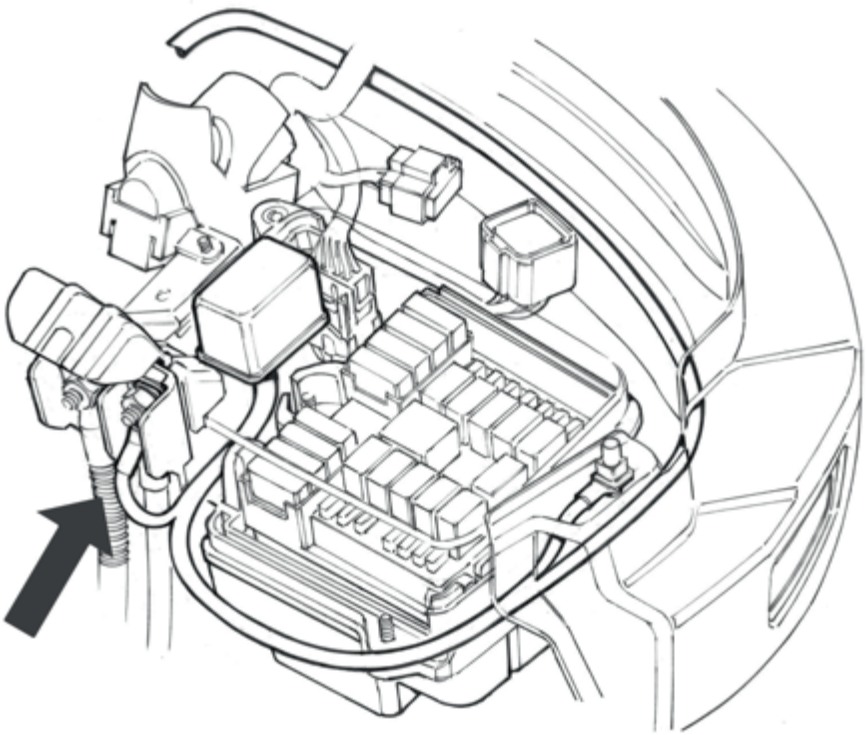
- Door module relay/fuse box: MTA p/n 03.01560
- Module mounting bracket: MTA p/n 03.00475
- Bulkhead passage seal: SUMITOMO drawing number 1334413080
- Grommet (+): MTA p/n 17.06711 (M8 hole)
- Grommet (-): M8 hole
  (for cable sections from 1 to 2.5 mm^2 recommended MTA p/n 17.06731)
- M8 nut: M8 hexagonal nut with nylon ring

Description of installation procedure:

- Remove the relay/fuse box cover in the engine bay by removing the nuts.
- Unscrew the nut from the junction box pin (see figure 62), overlay the grommet (+) on the one already present (ATTENTION, vice-versa not permitted), then re-tighten the nut to torque of 15Nm ± 10%.
- Connect the grommet (-) to the ground pin present in the frontal area (see figure 63), after which apply an M8 nut, tightening it to torque of 15Nm ± 10%.
- Insert the door module relay/fuse box in the seat in the box in the engine bay.

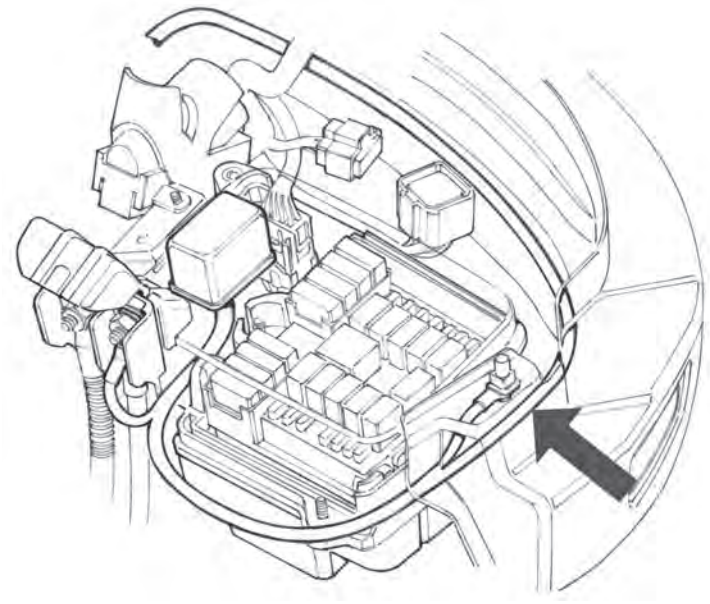
- Replace the box cover paying attention to the correct arrangement of the cables.
- Lay the cables as shown in figure 64 using the retainer clips of the main wiring harness already installed on the vehicle.
- Drill through the flame bulkhead and remove the closing plug of the passage toward the cabin.
- Fit the bulkhead seal paying attention to correctly fasten it to the sheet metal to prevent infiltration into the cabin.
- Lay the cables in the cabin following the route shown in figure 65.

Figure 62



Engine bay – CVM box and view of junction box

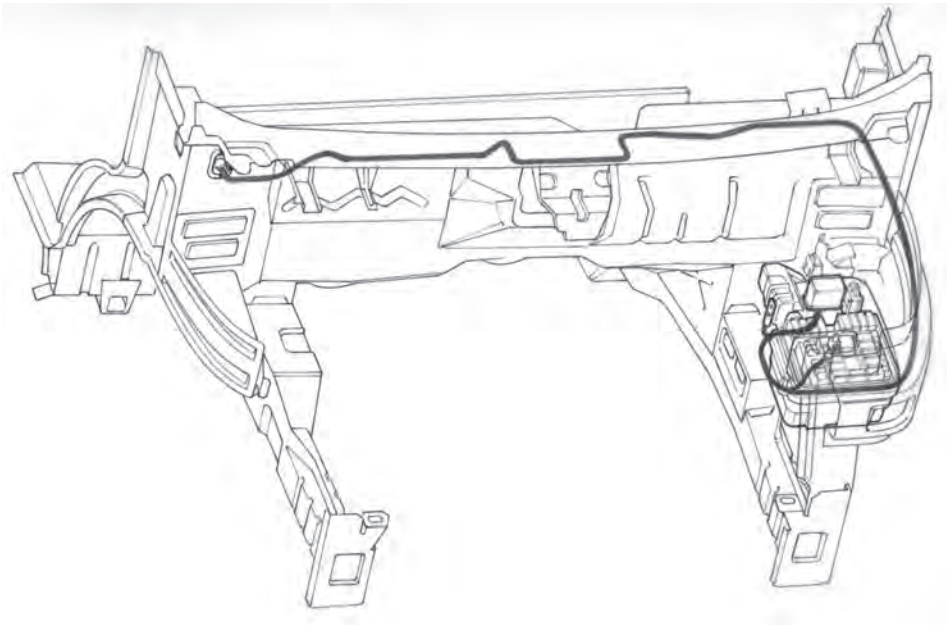
Figure 63



Engine bay – view of ground pin

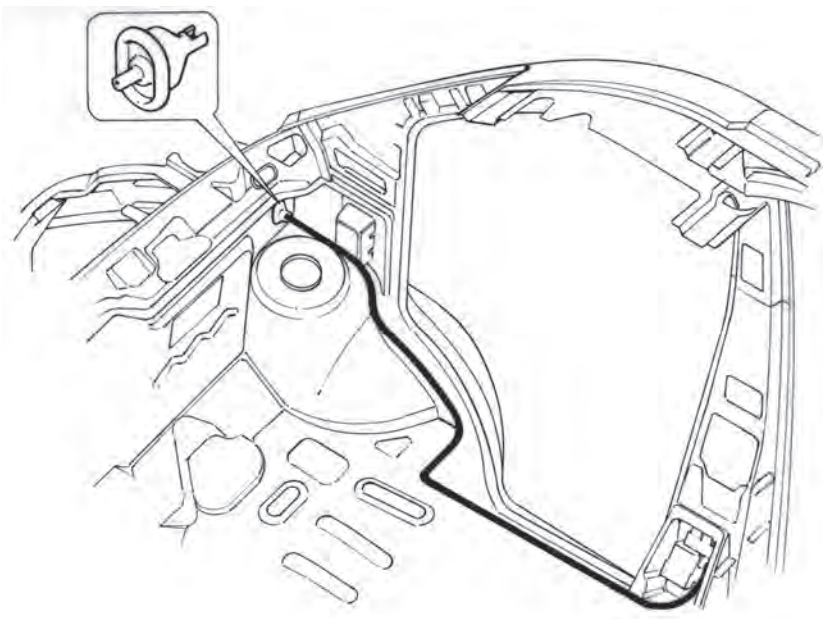
CAUTION: for emergency starter ground use a screw that allows to connect the booster cables.

Figure 64



Engine bay – front view of GSX cable layout

Figure 65



Cabin – view of GSX cable layout

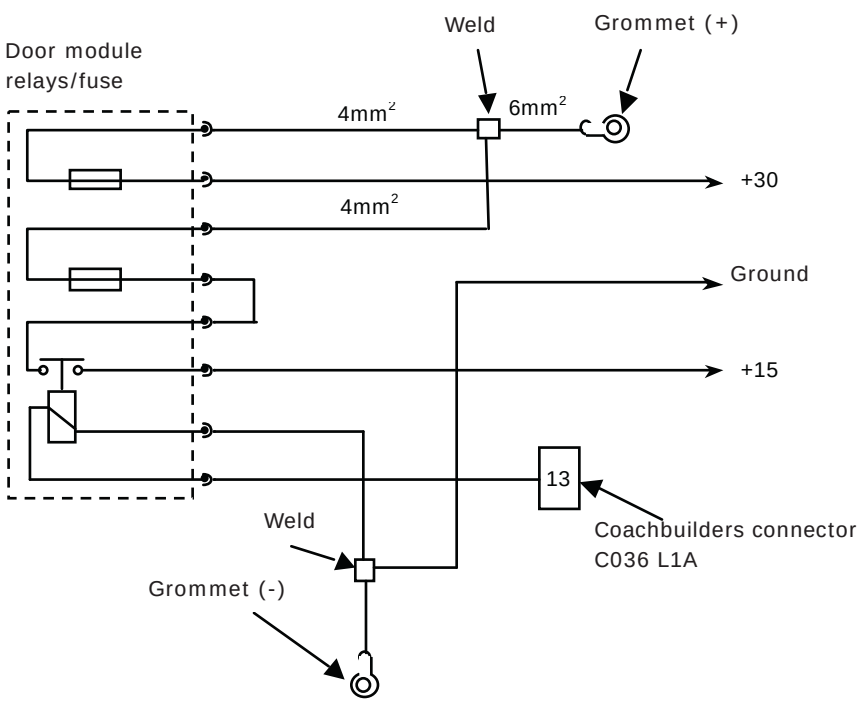
The wiring realised by the coachbuilder must be adequately protected by means of abrasion resistant tape with same performance as COROPLAST 880X o with a corrugate hose of proper section.

NOTES:

1. **The insulating material of the flame bulkhead is predisposed for drilling in the vicinity of the hole.**
2. **In vehicles equipped with chrono-tachograph, the bulkhead passage is already present. The sealing tape already present has to be removed, the cables passed along with those of the chrono-tachograph and a new sealing tape applied.**
3. **In vehicles with automatic gearbox, the relay/fuse block is already present in the CVM box, in this case to fit the additional fuses and relays it is possible to use the free positions in the block.**

Example of circuit for +30 and +15 power supplies in engine bay:

Figure 66



NOTES:

1. **The fuses must be correctly sized according to the minimum section of the protected wires.**
2. **The relays must be Fiat Chrysler Automobiles S.p.A. standard type (see chapter 7)**

Anti-theft system

If an anti-theft system has to be installed, we recommend using the original kit p/n 50926750 by the Accessories Line, made by an official Fiat Chrysler Automobiles S.p.A. supplier:

Metasystem S.p.A.

Via Galimberti, n°8
42100 Reggio Emilia (Italy)
Telephone
Switchboard: +39 0522 364 111
Fax
Switchboard: +39 0522 364 150
Web
Information at: info@metasystem.it
Web site: www.metasystem.it

Trailer

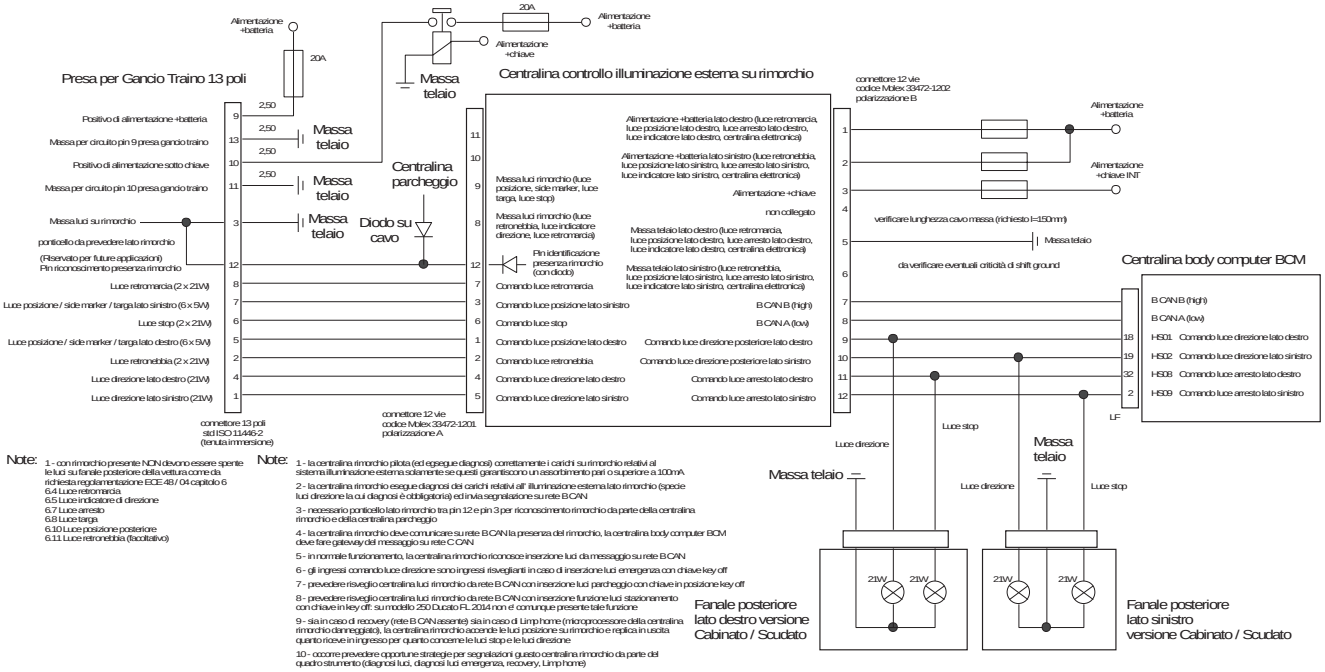
Insertion of non-conforming control units into the main circuit of the New Ducato to control additional lights may cause a malfunction in the vehicle electrical/electronic system, for this reason Fiat Chrysler Automobiles S.p.A. recommends using original Accessory Line components. Any customisation can be agreed with the official suppliers of the component (see list below).

Westfalia-Automotive GmbH & Co. KG

Am Sandberg 45
Postfatch 26 40
33354 Rheda Wiedenbrück
Telephone
Switchboard: +49 5242 907 0
Fax
Switchboard: +49 5242 907 195
Web
Web site: www.westfalia-automotive.de

Opt. Towing Hook scheme

250 Ducato FL 2014 versione Cabinato / Scudato - Interfaccia elettrica gancio traino



Note:

1 - con rimorchio presente NON devono essere spente le luci su fanale posteriore della vettura come da richiesta regolamentazione ECE 48 / 04 capitolo 6
6.4 Luce retromarcia
6.5 Luce indicatore di direzione
6.7 Luce arresto
6.8 Luce targa
6.10 Luce posizione posteriore
6.11 Luce retronebbia (facoltativo)

Note:

1 - la centralina rimorchio pilota (ed eseguе diagnosi) correttamente i carichi su rimorchio relativi al sistema illuminazione esterna solamente se questi garantiscono un assorbimento pari o superiore a 100mA
2 - la centralina rimorchio esegue diagnosi dei carichi relativi all' illuminazione esterna lato rimorchio (specie luci direzione la cui diagnosi è obbligatoria) ed invia segnalazione su rete B CAN
3 - necessario pontichello lato rimorchio tra pin 12 e pin 3 per riconoscimento rimorchio da parte della centralina rimorchio e della centralina parcheggio
4 - la centralina rimorchio deve comunicare su rete B CAN la presenza del rimorchio, la centralina body computer BCM deve fare gateway del messaggio su rete C CAN
5 - in normale funzionamento, la centralina rimorchio riconosce inserzione luci da messaggio su rete B CAN
6 - gli ingressi comando luce direzione sono ingressi risvegliantiin caso di inserzione luci emergenza con chiave key off
7 - prevedere risveglio centralina luci rimorchio da rete B CAN con inserzione luci parcheggio con chiave in posizione key off
8 - prevedere risveglio centralina luci rimorchio da rete B CAN con inserzione funzione luci stazionamento con chiave in key off: su modello 250 Ducato FL 2014 non e' comunque presente tale funzione
9 - sia in caso di recovery (rete B CAN assente) sia in caso di Limp home (microprocessore della centralina rimorchio danneggiato), la centralina rimorchio accende le luci posizione su rimorchio e replica in uscita quanto riceve in ingresso per quanto concerne le luci stop e le luci direzione
10 - occorre prevedere opportune strategie per segnalazioni guasto centralina rimorchio da parte del quadro strumento (diagnosi luci, diagnosi luci emergenza, recovery, Limp home)

Robotised gearbox

When the robotised gearbox (opt 407) is installed on chassis cowl vehicles, or in any case without original cab doors, the external temperature sensor (see par. 5.3.4) and driver's door status switch (see par. 5.1.4) must also be installed.

COMPONENT : TUM - TRUCK UPFITTER MODULE

Part number : 1374095080
Type of vehicle : FIAT Ducato
Version : 250FL
Timing : 20’

TUM - TRUCK UPFITTER MODULE

TUM - TRUCK UPFITTER MODULE
This document describes the component called Truck Upfitter Module (TUM) and explains its installation.
The TUM is an electronic control unit that operates as a gateway from the vehicle's high and low-speed CANs to an external high-speed network that uses protocol J1939 and sends messages according to the Fleet Management System (FMS) version 2.0 standard. The messages available on the FMS network are described in Annex 1. For a complete description of the standard, visit the consortium[1] website.

[1] http://www.fms-standard.com

KIT COMPOSITION

ID	Component name	Quantity
A	ECU	TUM 1
B	ECU	TUM 1

Figure 1 - TUM Electronic Control Unit

Figure 2 - Connection harness

INSTALLATION STEPS

Disconnect the negative battery terminal.
Locate the box containing the fuses in the dashboard area, in the compartment under the steering wheel (this information is found in the owner handbook).
Remove the passenger compartment fuse box cover.
Having removed the cover, you will find the fuses right in front of you and you can locate **termination C.**

Figure 3 - Passenger compartment fuse box

After locating termination C, remove connector D.

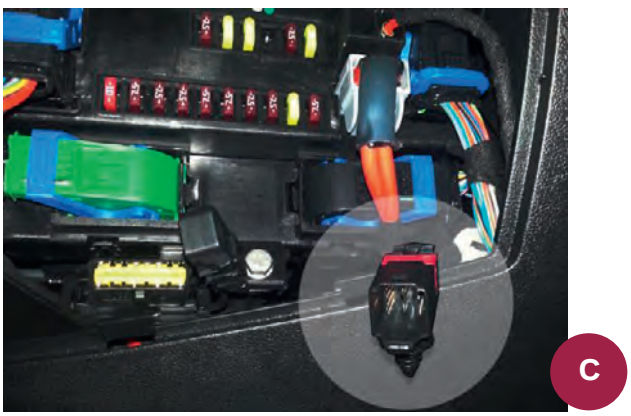


Figure 4 - Connector ready for connecting harness B

Figure 5 - Termination connector

Secure **termination B5** of the connection harness to termination C.

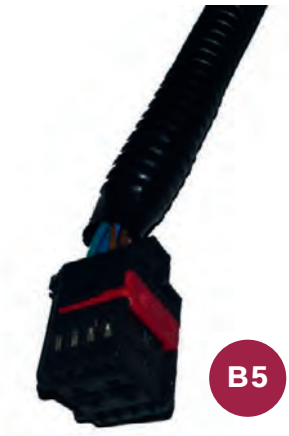


Figure 6 - Termination of the connection harness

Secure terminations **B1, B2, B3** to connectors **A1, A2, A3** of the TUM, respectively

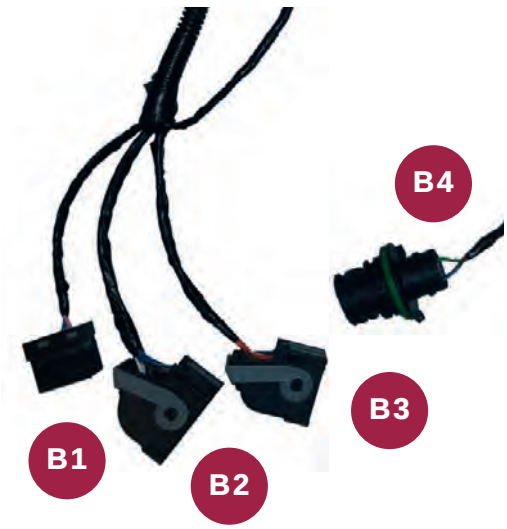


Figure 7 - Terminations of the connection harness

Figure 8 - TUM control unit connectors

After connection, the previously removed parts of the car can be reassembled.
Final positioning and fastening of the control unit is at the converter's discretion.

INSTALLATION REQUIREMENTS AND RECOMMENDATIONS

The control unit is not waterproof and must therefore be installed in a dry area, preferably in the passenger compartment.
Make provision for two fastening points 136 mm apart.
The space occupied by the control unit (size) is: 150 mm x 110 mm x 40 mm.

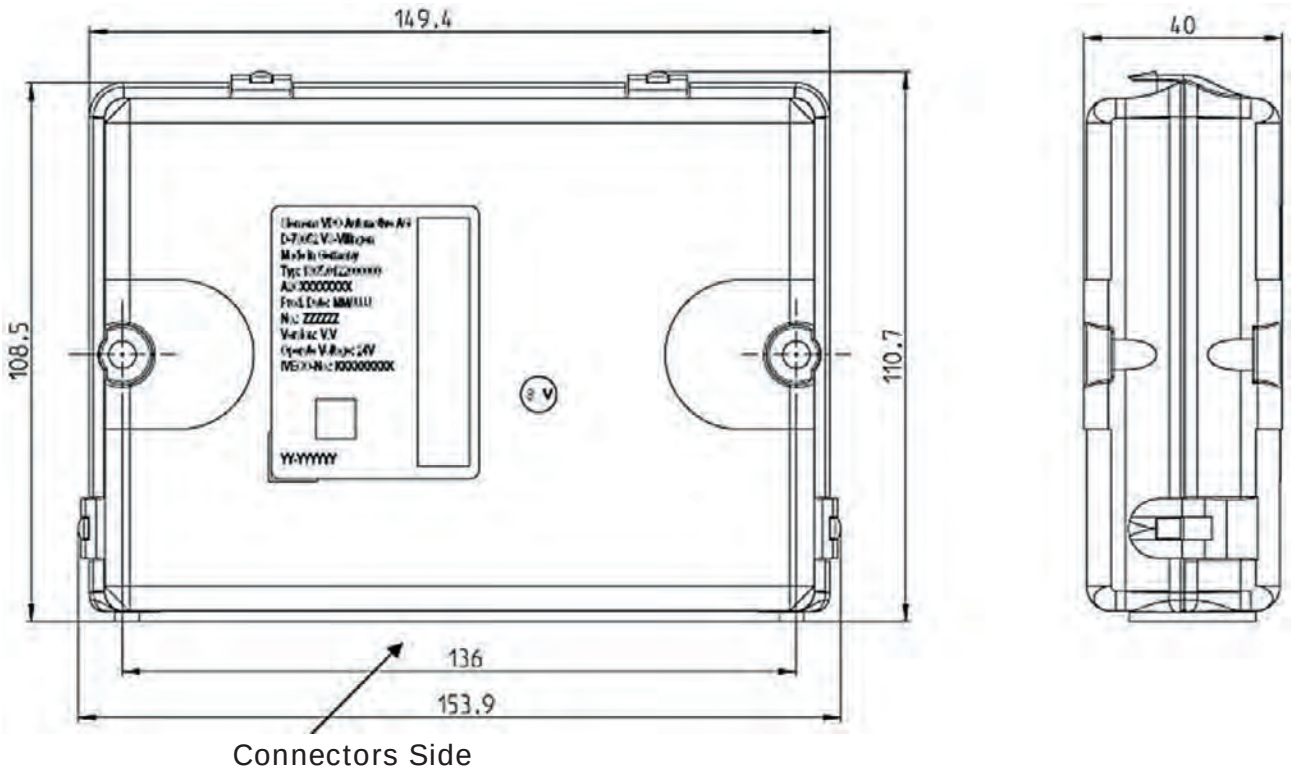
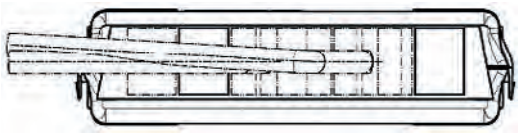


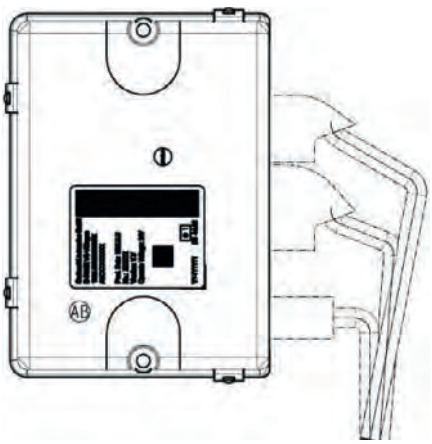
Figure 9 - TUM control unit dimensions

It is advisable to secure the control unit onto a flat surface, using one of the following positions.

1. Horizontal (Connections seen from the front)
   Direction of the output wiring: toward the left side.



2. Vertical
   (Connections seen on the right side)
   Direction of the output wiring:
   downwards.



3. Vertical
   (Connections seen at the bottom)
   Direction of the output wiring:
   toward the left side.

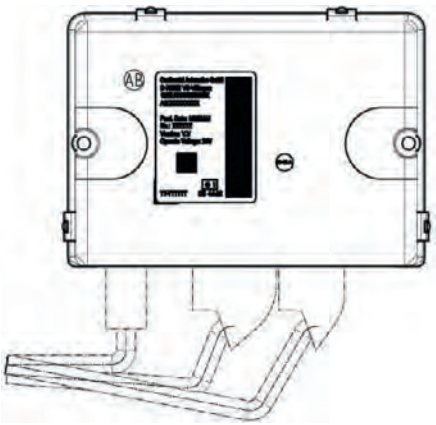


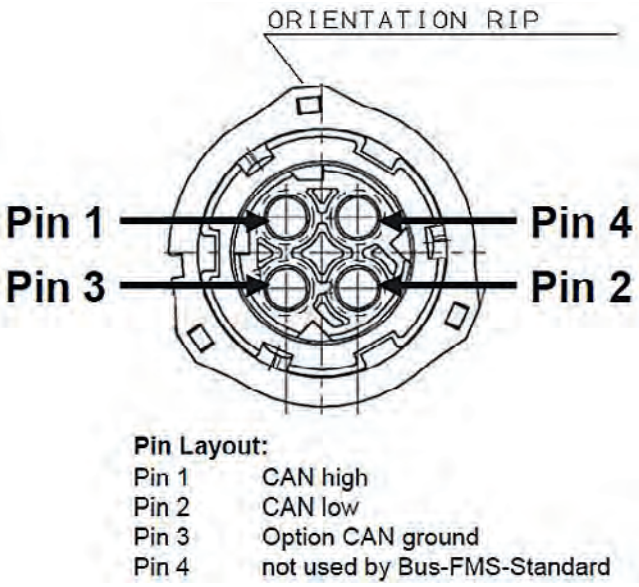
Figure 10 - Recommended positions for securing the TUM control unit

Connector B4 is a standard connector used by the control unit users to collect the vehicle's information, so it is advisable to ensure it is located at an easily accessible point to facilitate its use.

Figure 11 - Standard connector for users

The connector Pin Out for the users is defined and set by the FMS standard. An extract of the standard with a description of its outputs is provided below. For a complete description of the standard, visit the consortium[1] website.

[1]http://www.fms-standard.com



Pin Layout:

Pin 1	CAN high
Pin 2	CAN low
Pin 3	Option CAN ground
Pin 4	not used by Bus-FMS-Standard

DIN 72585 connector
4-Pin male type (vehicle side)

AMP	**Chassis part (vehicle)**	**Coding 1 (black)**
	Housing w/o pin/socket locking	1-967402-1
	Pin (Sn plated) 0-929974-1	0-929974-1
	Seal 828920-1	828920-1
	Cap (for not used connector)	1394277-2
AMP	**FMS side (cable)**	
	Housing	1-967325-1
	Socket (Sn plated)	0-929967-1
	Seal	828920-1
GH	**Chassis part (vehicle)**	
	Housing	18337.000.000
	Pin/socket locking	16052.598.613
	Pin (Sn plated)	26634.201.184
	Seal	14414.627.626
	Cap (for not used connector)	N/A
GH	**FMS side (cable)**	
	Housing	17984.000.002
	Pin/socket locking	16052.598.613
	Socket (Sn plated)	26570.201.184
	Seal	14414.627.626

Figure 12 – Connector Pin Out for the users (*)
***Extract of the FMS standard**

NOTE FOR USERS

The terminal resistance is currently not activated on the TUM control unit. If necessary, an internal terminal resistance of 120 Ω may be activated by short circuiting pins 10 and 17 of connector B3 of the connection harness (see Figure 7).

TRUCK UPFITTER MODULE (TUM) FUNCTIONS

The TUM supports the following FMS standard versions:
- FMS-Standard Interface description Vers. 02 (available on http://www.fms-standard.com/Truck/index.htm)
- Bus FMS-Standard Interface description Vers. 02 (available on http://www.fms-standard.com/Bus/index.htm)

All the signals available to the control units that interface with the TUM are listed in the following table.

Message	Signal	Description
CCVS	Parking Brake Switch	Indicates that the parking brake is engaged
	Wheel based speed	Indicates the vehicle speed
	Clutch switch	Indicates that the clutch pedal is pressed
	Brake switch	Indicates that the brake pedal is pressed
	Cruise control active	Indicates that the cruise control is enabled
EEC2	Accelerator pedal position 1	Indicates the accelerator pedal position
	Engine Percent Load At Current Speed	Indicates the ratio between the percentage of engine torque and the maximum torque indicated at current engine speed
LFC	Engine total fuel used	Indicates the total fuel consumed during vehicle operation
DD	Fuel Level	Indicates the ratio of fuel volume out of the total tank volume
EEC1	Engine speed	Indicates the engine speed
VDHR	High resolution total vehicle distance	Indicates the total distance travelled by the vehicle
ET1	Engine coolant temperature	Indicates the engine coolant temperature
AMB	Ambient Air Temperature	Indicates the temperature outside the vehicle
LFE	Fuel Rate	Indicates the quantity of fuel consumed by the engine by time unit
	Instantaneous Fuel Economy	Indicates the ratio between quantity of fuel consumed and current vehicle speed
SERV	Service distance	Indicates the distance that can be travelled by the vehicle before the scheduled servicing
HOURS	Total engine hours	Indicates the total engine operation time
DC1	Position of doors	Indicates the current door status
AS	Alternator Status 1	Indicates the current alternator status
ETC2	Selected Gear (1)	Indicates the next expected gear ratio
	Current Gear (1)	Indicates the current gear ratio
TD	Minutes	Indicates the minutes
	Hours	Indicates the hours
	Month	Indicates the month
	Day	Indicates the day
	Year	Indicates the year

FMS1[2]	High beam, main beam	Indicates the active status of the main beam headlights
	Low beam	Indicates the active status of the low beam headlights
	Turn signals	Indicates the active status of the direction indicators
	Hazard warning	Indicates the active status of the hazard warning lights
	Parking Brake	Indicates that the parking brake is engaged
	Brake failure/brake system malfunction	Indicates a failure of the braking system
	Hatch open	Indicates that the rear door is not closed
	Fuel level	Indicates that the fuel reserve warning light is on
	Engine coolant temperature	Indicates that the maximum engine coolant temperature warning light is on
	Battery charging condition	Indicates that the low battery charge warning light is on
	Engine oil	Indicates that the low engine oil pressure warning light is on
	Position lights,side lights	Indicates the active status of the position lights
	Front fog light	Indicates the active status of the fog lights
	Rear fog light	Indicates the active status of the rear fog lights
	Engine / Mil indicator	Indicates that the EOBD/injection system warning light is on
	Service, call for maintenance	Indicates that the scheduled servicing indicator is displayed
	Transmission failure/malfunction	Indicates a failure on the transmission system
	Anti-lock brake system failure	Indicates that the ABS system failure warning light is on
	Worn brake linings	Indicates that the brake pad wear warning light is on
	Malfunction/general failure	Indicates that the general failure warning light is on
	Height Control (Levelling)	Indicates that the active suspension indicator is displayed
	Engine Emission system failure (Mil indicator)	Indicates that the particle filter blocked warning light is on
	ESC indication	Indicates that the stability control system warning light is on
TCO1	Tachogr. vehicle speed [3]	Indicates the vehicle speed stored by the tachograph
DC2	Open Status Door 1	Indicates the status of the driver's door
	Open Status Door 2	Indicates the status of the passenger's door
	Open Status Door 3 [4]	Indicates the status of the rear door(s)
	Open Status Door 4 [4]	Indicates the status of the sliding side doors
	Open Status Door 5 [4]	Indicates the status of the sliding side doors
FMS	Requests supported	Indicates whether the TUM is able to respond to the requests made by the external FMS module
	Diagnostics supported	Indicates whether the TUM supports the requests to send diagnostic information
	FMS-standard SW-version supported	Indicates the version of the FMS Standard supported by the TUM

[1] Available in the vehicle versions with robotised gearbox
[2] The signal values come from the information displayed on the instrument panel
[3] The car speed signal is available even if there is no tachograph
[4] The transmitted signal takes the closed value if there is no content

DUCATO 250 –Truck Upfitter Module installation

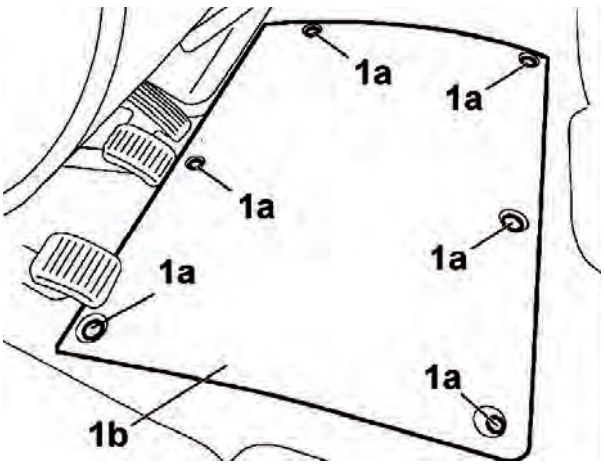
Installation details

Adobe Acrobat Document

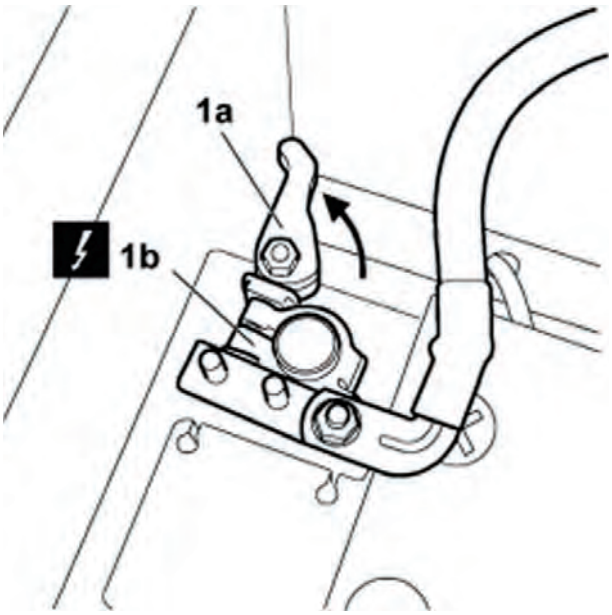
Installation cycle

- Turn the key on STOP and remove it.
- Slide completely backward the driver seat.

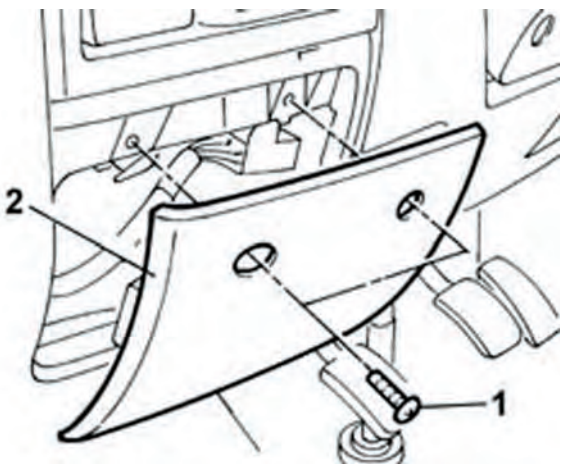
1. Remove fixing buttons (1a) and remove cover (1b).



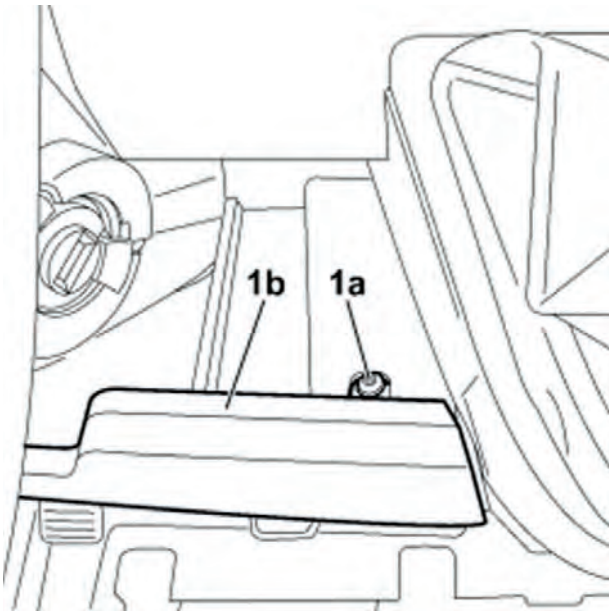
1. Rotate the lever (1a) as illustrated and disconnect the negative terminal (1b) from the battery.



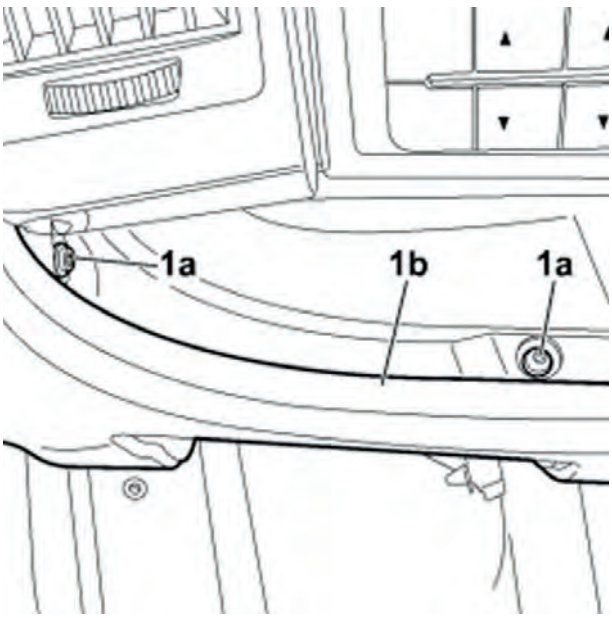
2. Undo the fixing screws.(1).
3. Remove the fuse access cover (2).



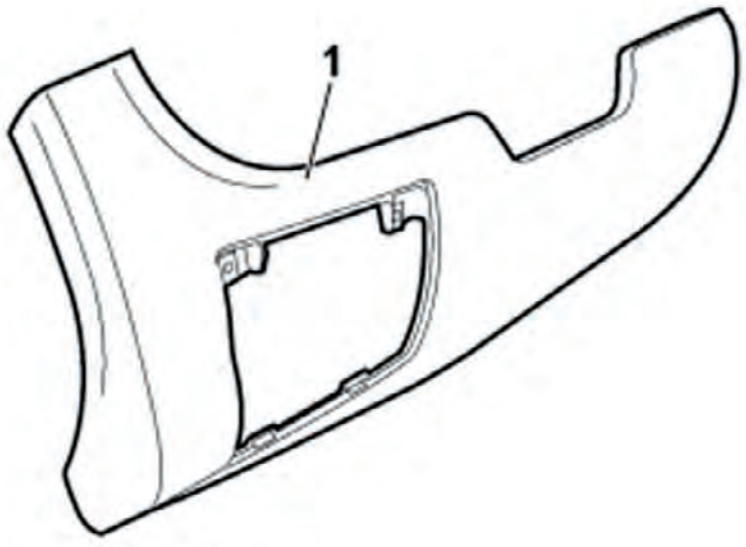
4. Undo the screw (1a) fixing the lower left trim of the dashboard (1b) located to the right of the steering wheel.



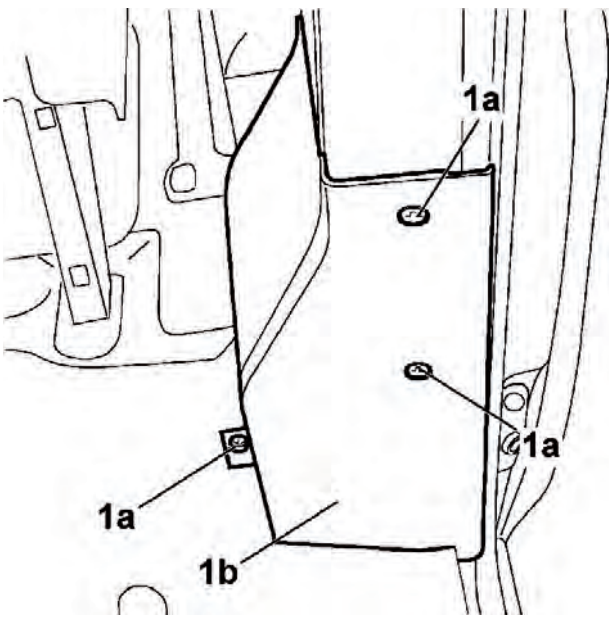
5. Undo the screws (1a) fixing the lower left trim of the dashboard (1b) located to the left of the steering wheel.



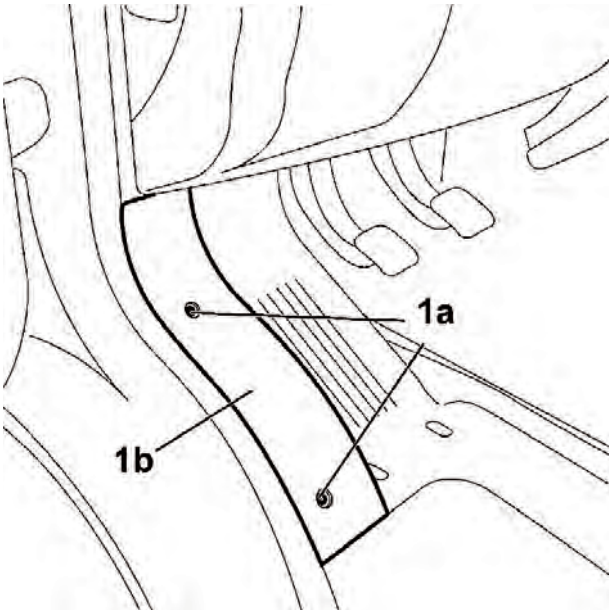
6. Remove the lower left trim of the dashboard from the vehicle.



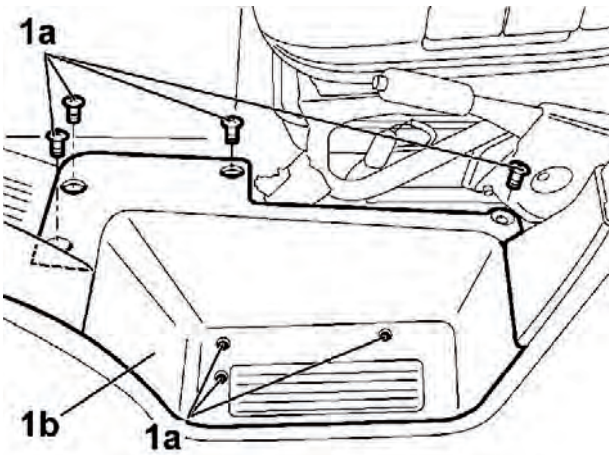
7. Undo the fixing screws (1a) for the centre pillar trim lower element (1b).



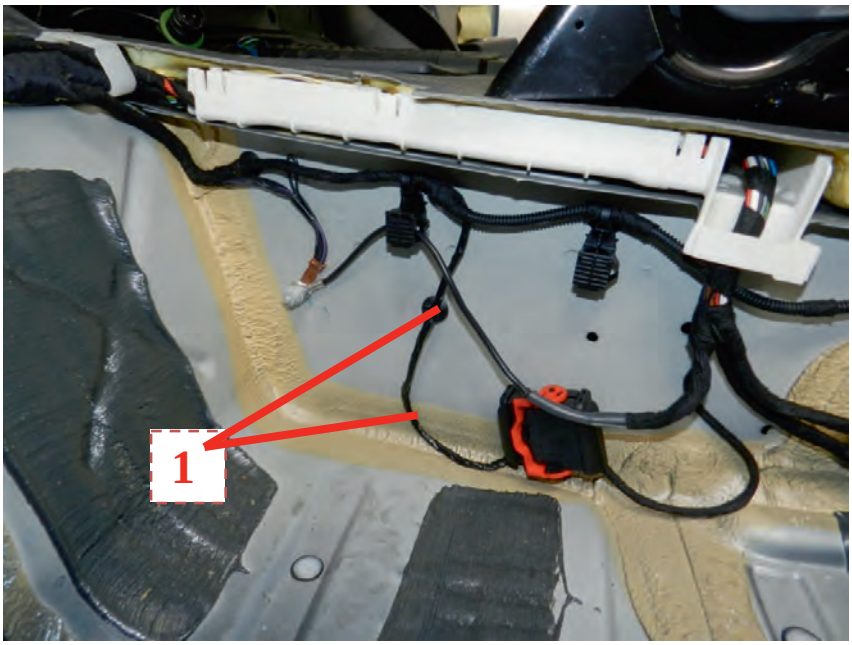
8. Undo the fixing screws (1a) and remove the kick plate connector (1b).



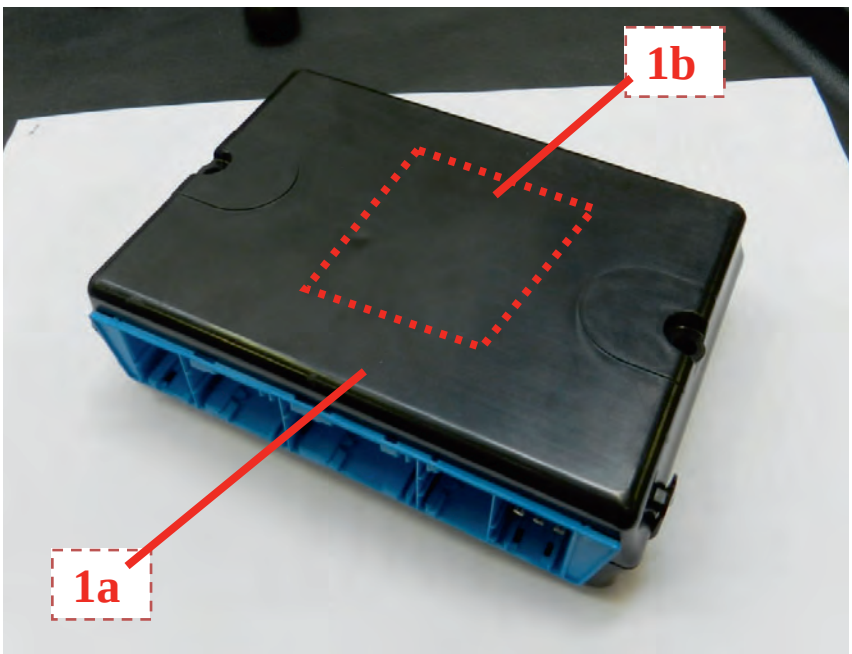
9. Undo the fixing screws (1a) and remove the kick plate (1b).



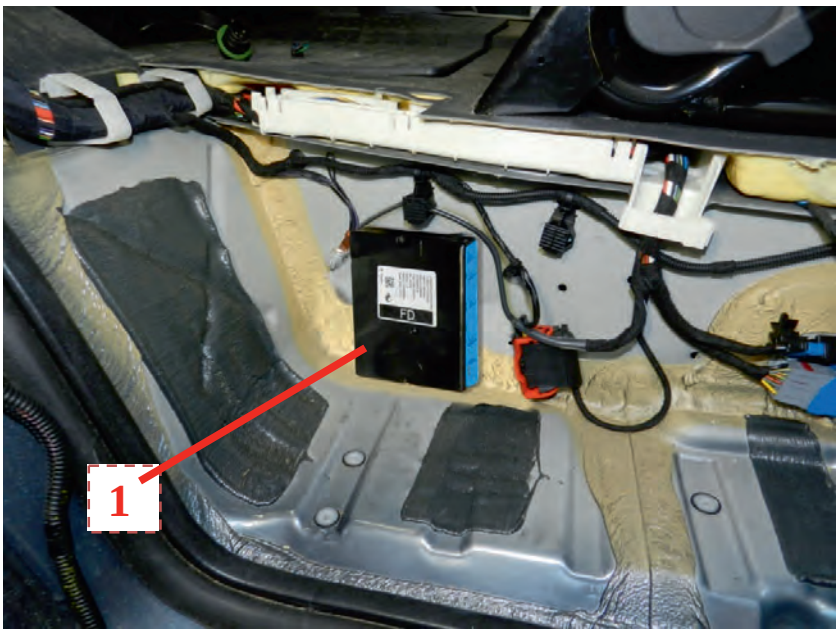
10. Remove the wiring retaining button and move it to the side (1).



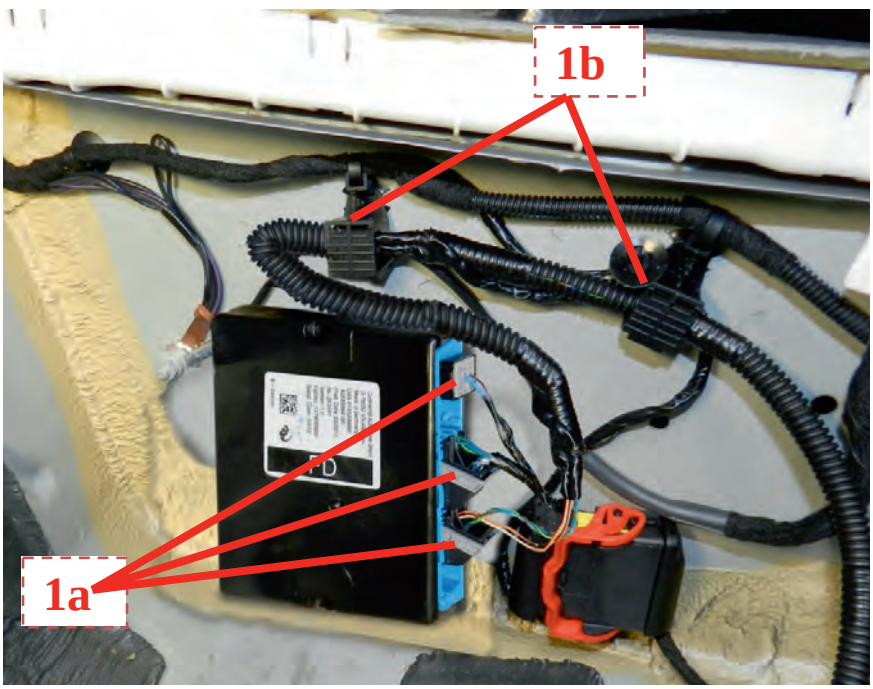
11. Thoroughly grease the rear surface of the control unit (1a) with heptane (or isopropyl alcohol) and apply a Velcro cutting (1b) of a size that ensures that the control unit remains secured.



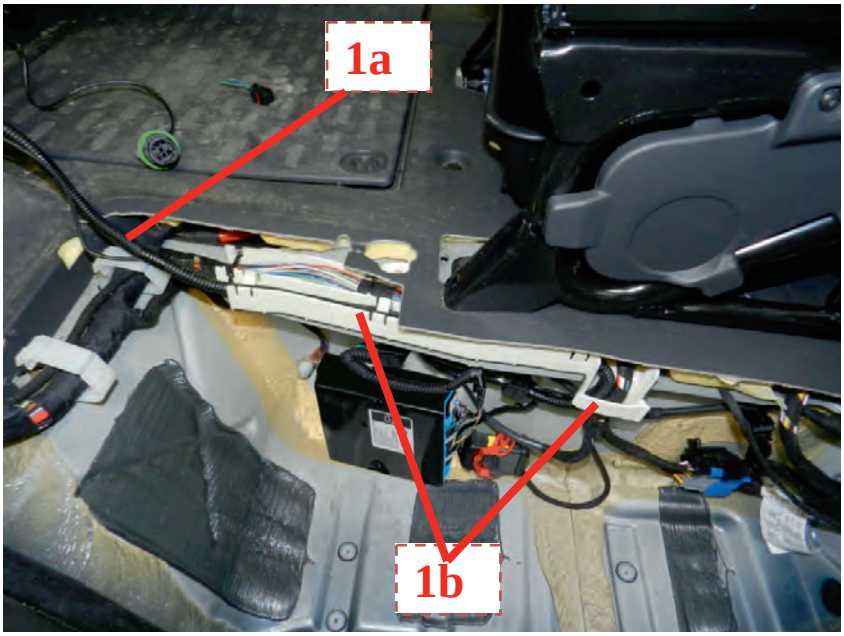
12. Thoroughly grease the surface of the body where the control unit will be positioned with heptane (or isopropyl alcohol). Remove the protective film of the adhesive surface from the Velcro, then position the control unit on the vehicle as shown in the figure, making sure it is firmly secured.



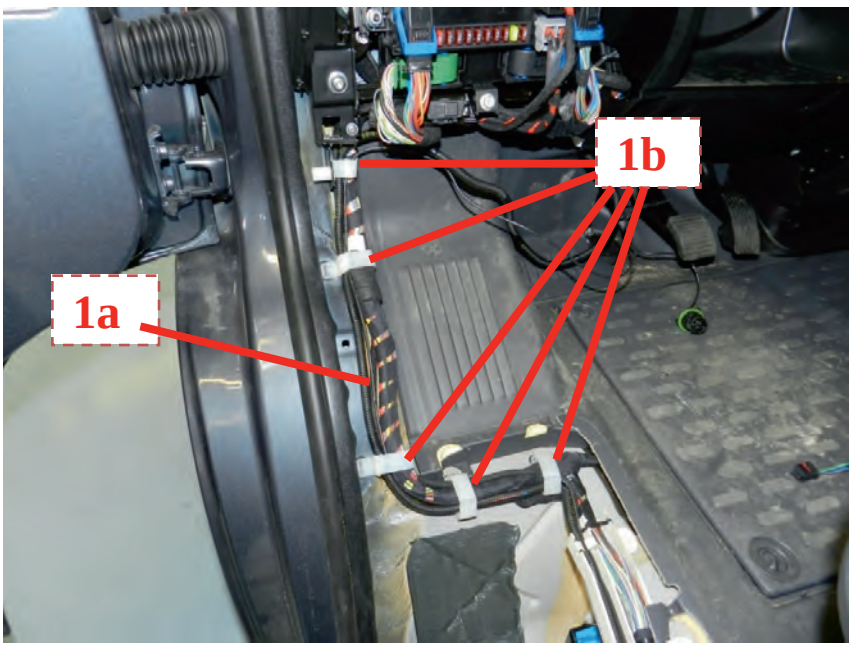
13. Take the wiring supplied in the kit and connect the electrical connections (1a) to the control unit, then use the bands (1b) on the vehicle to secure the control unit wiring and that of the vehicle previously unfastened.



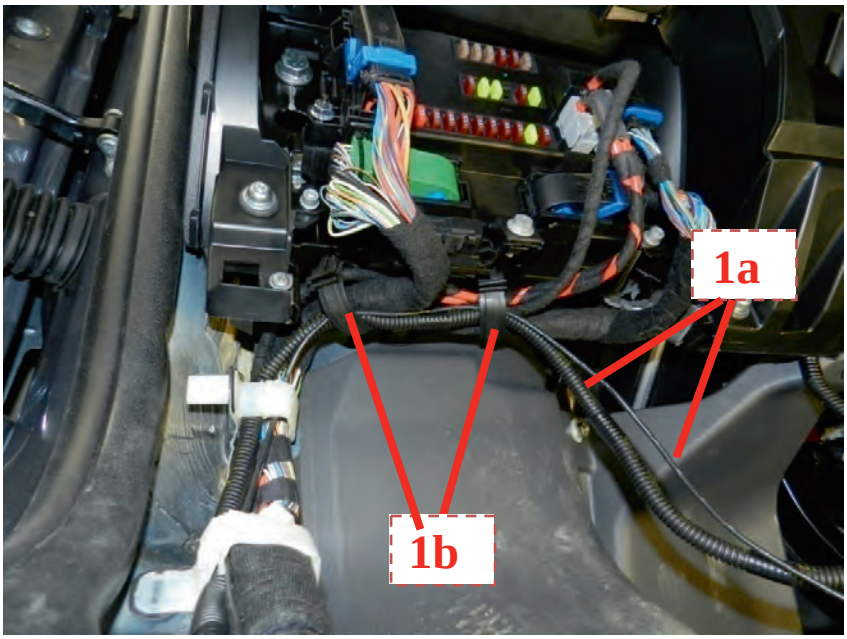
14. Place the wiring (1a) of the control unit inside the cable duct (1b) positioned on the vehicle, then secure using the clips provided.



15. Place the wiring (1a) of the control unit inside the retaining clips (1b) of the vehicle wiring.

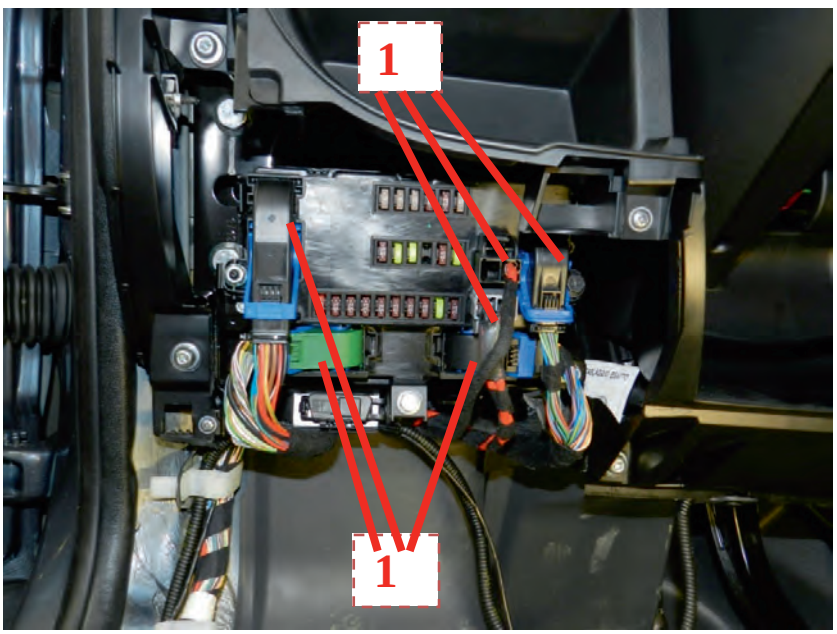


16. Place the wiring (1a) of the control unit inside the retaining clips (1b) of the vehicle wiring.

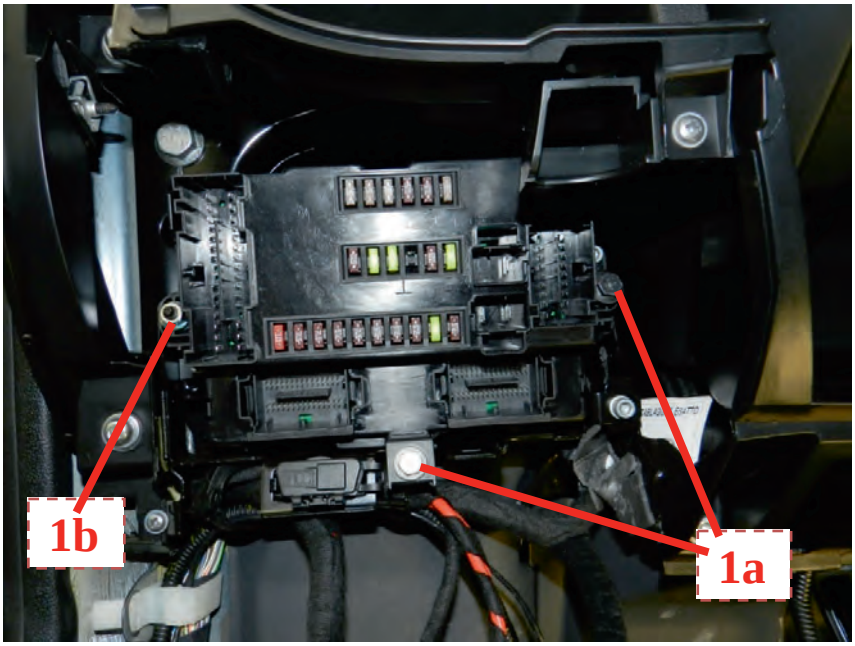


NOTE: If the wiring cannot be inserted in the duct and/or retaining clips as previously explained, it should be placed beside the original wiring of the vehicle and secured to it using plastic bands.

17. Disconnect the Body Computer.



18. Undo the screws (1a) and the nut (1b) securing the Body Computer.



19. Remove the Body Computer being careful not to damage the wiring-harness.