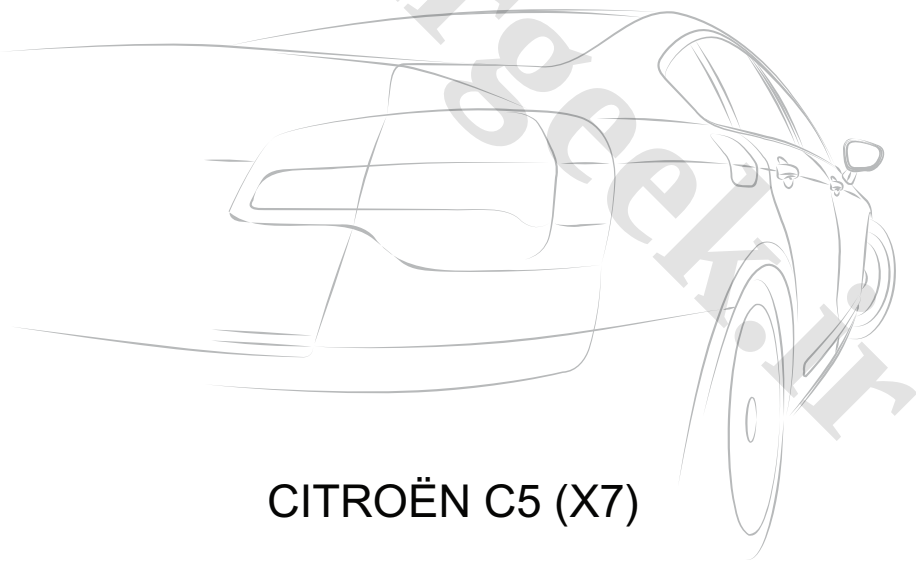
MULTIPLEX LAYOUT
C5 (X7)

CITROËN

Citroën Training Department

Contents



CITROËN C5 (X7)

Foreword

Note:

- All of the variants and values given in this document are for information only (but which are subject to change) and will not be updated.

- To see the values for the vehicle, you must refer to the technical after-sales documentation.

Multiplex layout

Networks:

The vehicle is FULL CAN. It has a Built-in Systems Interface (BSI) which forms the link between the networks. It centralises and processes information from the various networks.

The multiplex layout consists of:

An intersystems HS CAN: 500 Kbit/s high speed CAN connecting the BSI and the dynamic ECUs.

The intersystems HS CAN is not "Fault Tolerant", in other words it will not operate in the event of a break or short circuit on one of the two wires.

A 120 Ohm terminal line resistor is incorporated into the BSI and the engine management ECU.

A BODY LS CAN: 125 Kbit/s low speed CAN connecting the BSI and the ECUs of the bodywork network.

A COMFORT LS CAN: 125 Kbit/s low speed CAN connecting the BSI and the ECUs of the comfort network.

The BODY and COMFORT LS CANs are "Fault Tolerant", in other words they will operate in downgraded mode in the following cases:

- A wire break,
- Short circuit of one wire to supply,
- Short circuit of one wire to earth,
- Short circuit between two wires of the LS CAN.

In this case, the network becomes more sensitive to interference and may, under certain conditions, become non operational.

Several LINs: LIN with specific speed of 19.2 Kbits/s connecting:

- The BSI to the Battery Charge Status Unit (1031) as well as the seat belt reminder LED unit (4746),
- The headlamp beam correction ECU (6606) to the two headlamps,
- The lateral trajectory monitoring ECU (7550) to the six sensors,
- The switch module at the steering wheel (CV00) to the Fixed-Centred Controls Steering Wheel (VCCF),
- The engine compartment fuse and relay plate (PSF1) to the two windscreen wiper motors,
- The driver's door switch panel (6036) to the four electric window motors as well as to the passenger's door mirror lighting and memorising unit (6404).

- Diagnostics:

The intersystems DIAG CAN (500 Kbits/s) is used to:

- Download (in several minutes) the software for ECUs on the intersystems HS CAN,
- Provide the information required for the EOBD standard (European On Board Diagnosis) allowing emissions control information to be monitored.

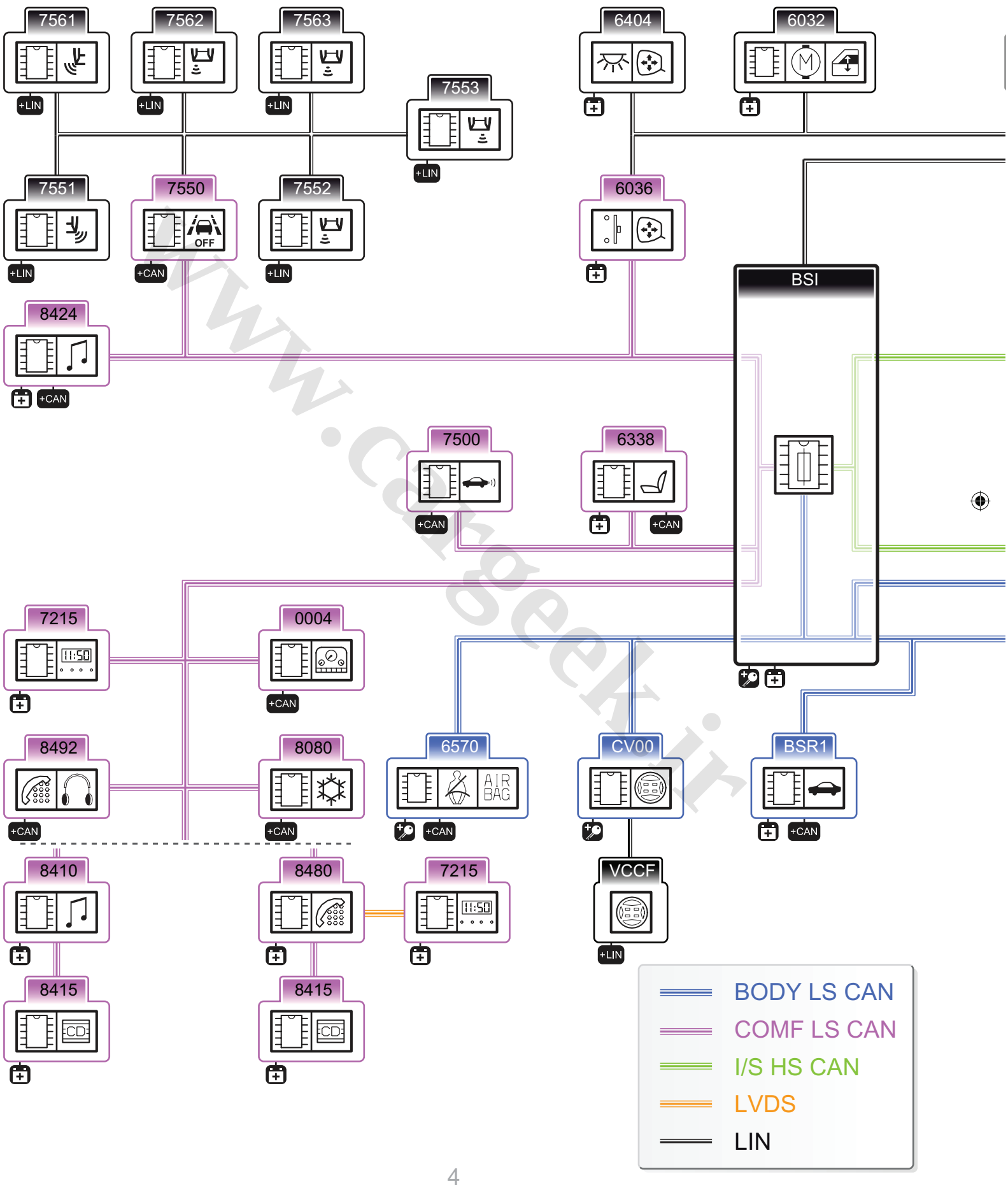
The DIAG ON CAN (500 Kbits/s) is used to:

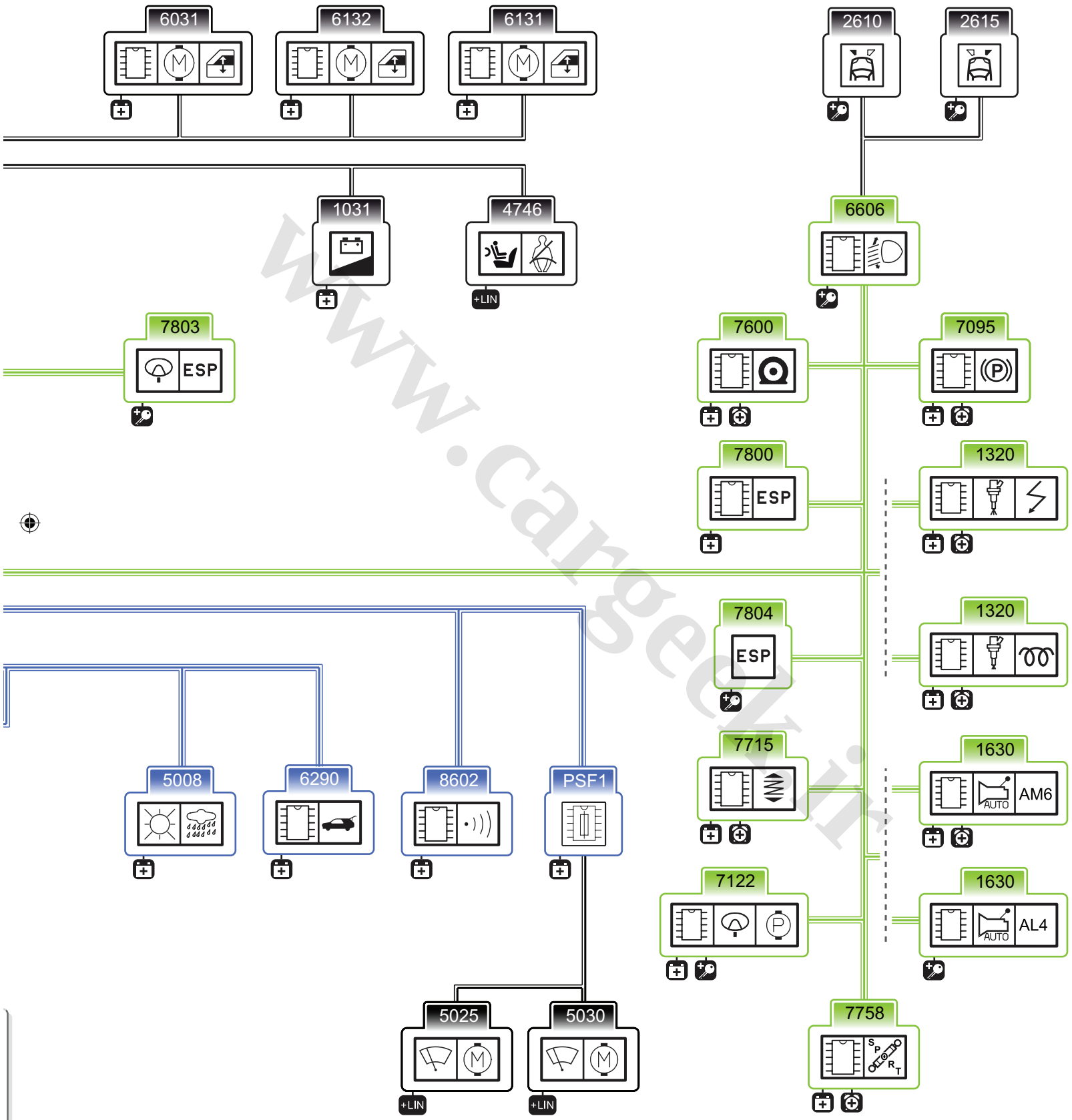
- Perform diagnostics on the ECUs of the various networks,
- Download software for ECUs on the BODY CAN and COMFORT CAN, as well as the BSI,
- Configure ECUs.

The K diagnostic line (10.4 Kbits/s) is used to:

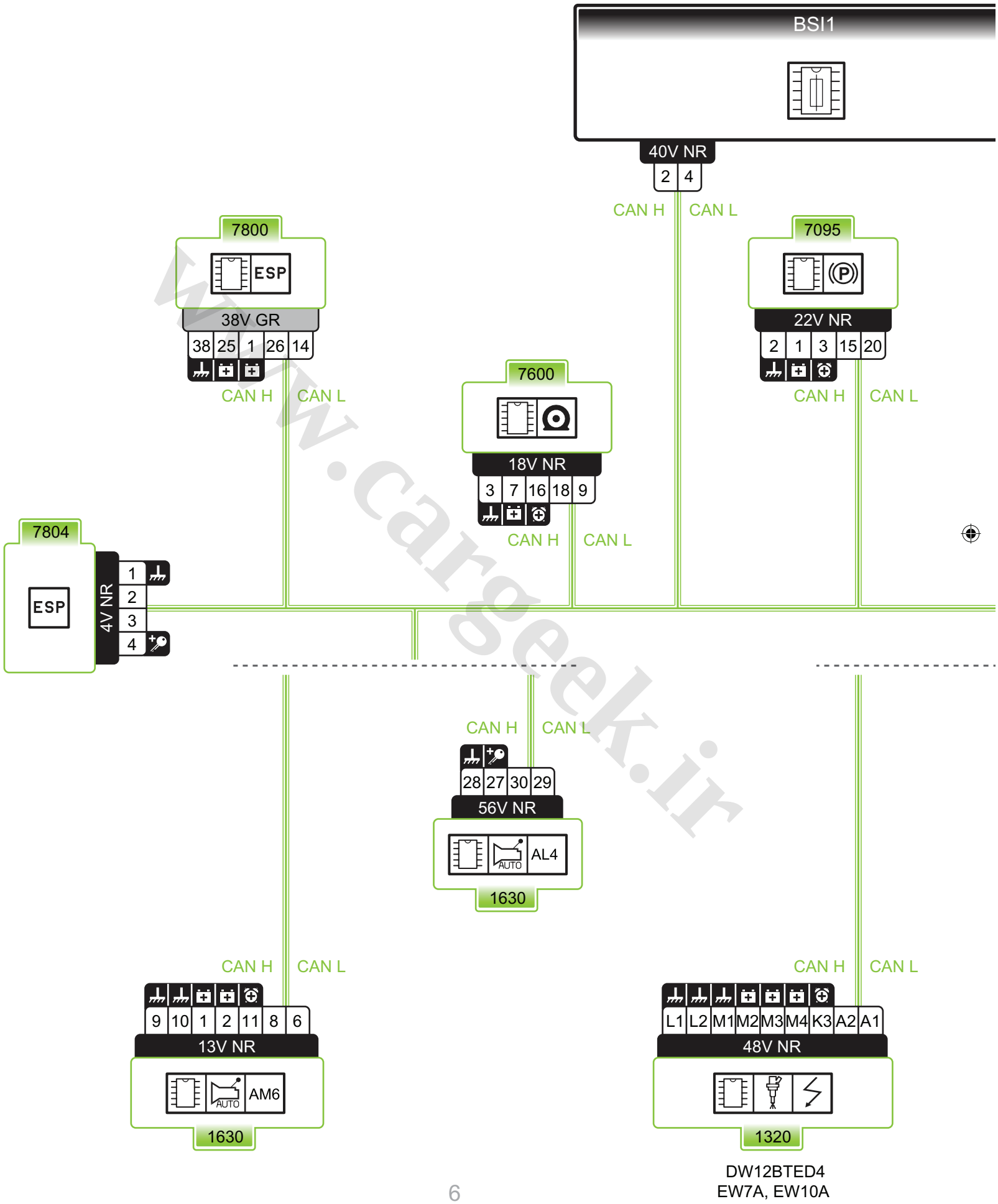
- Diagnose faults on ECUs of the intersystems HS CAN not notified by the Intersystems DIAG CAN ("scan tool" type).

General network layout

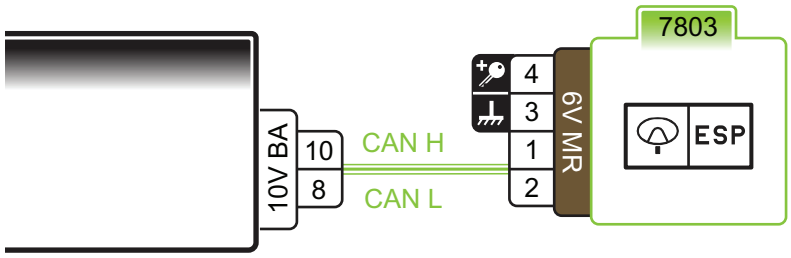


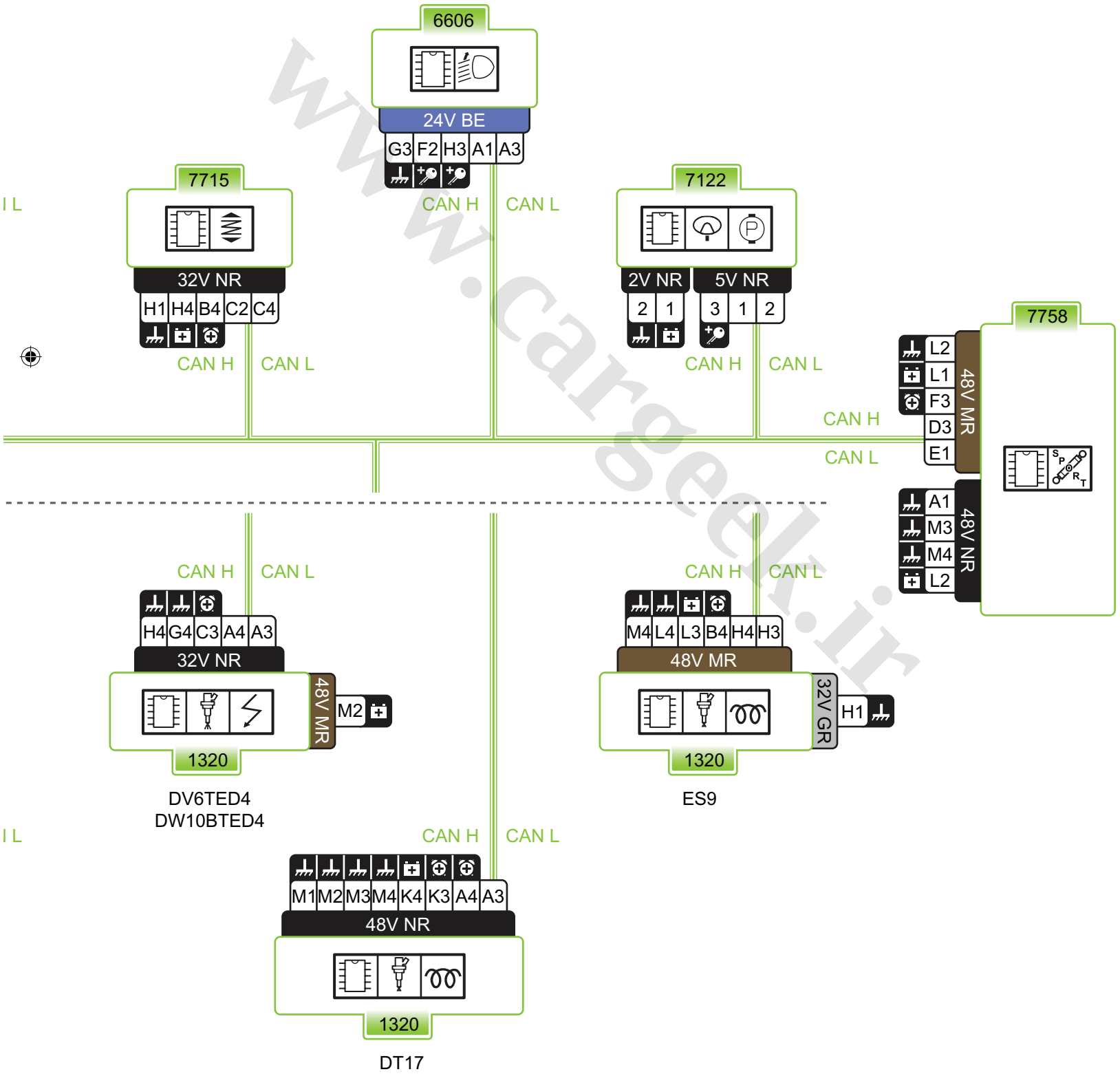


- Details of the intersystems HS CAN

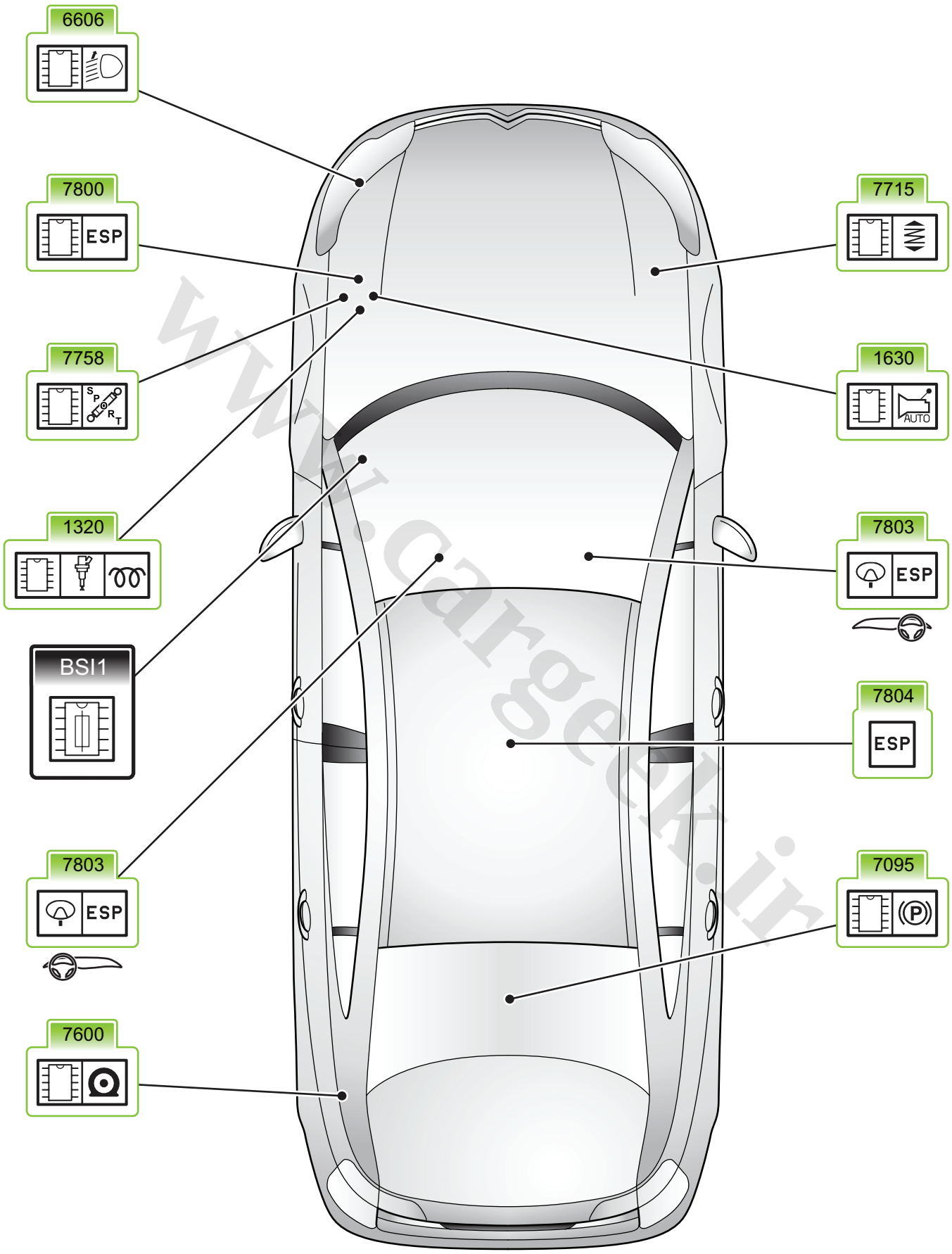


DW12BTED4
EW7A, EW10A

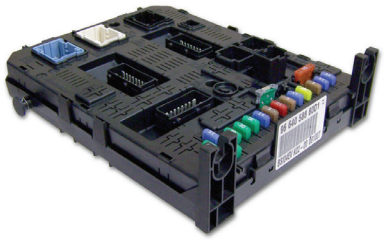
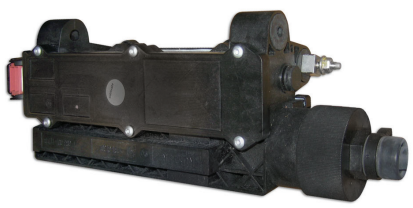




Layout of the intersystems HS CAN



▪ Intersystems HS CAN

	BSI1	Built-in Systems Interface
	1320	management ECU Engine
	1630	ECU Automatic gearbox
	6606	correction ECU Headlamp beam
	7095	brake ECU Electric parking
	7122	unit ECU steering electric pump Power
	7600	detection ECU Tyre deflation

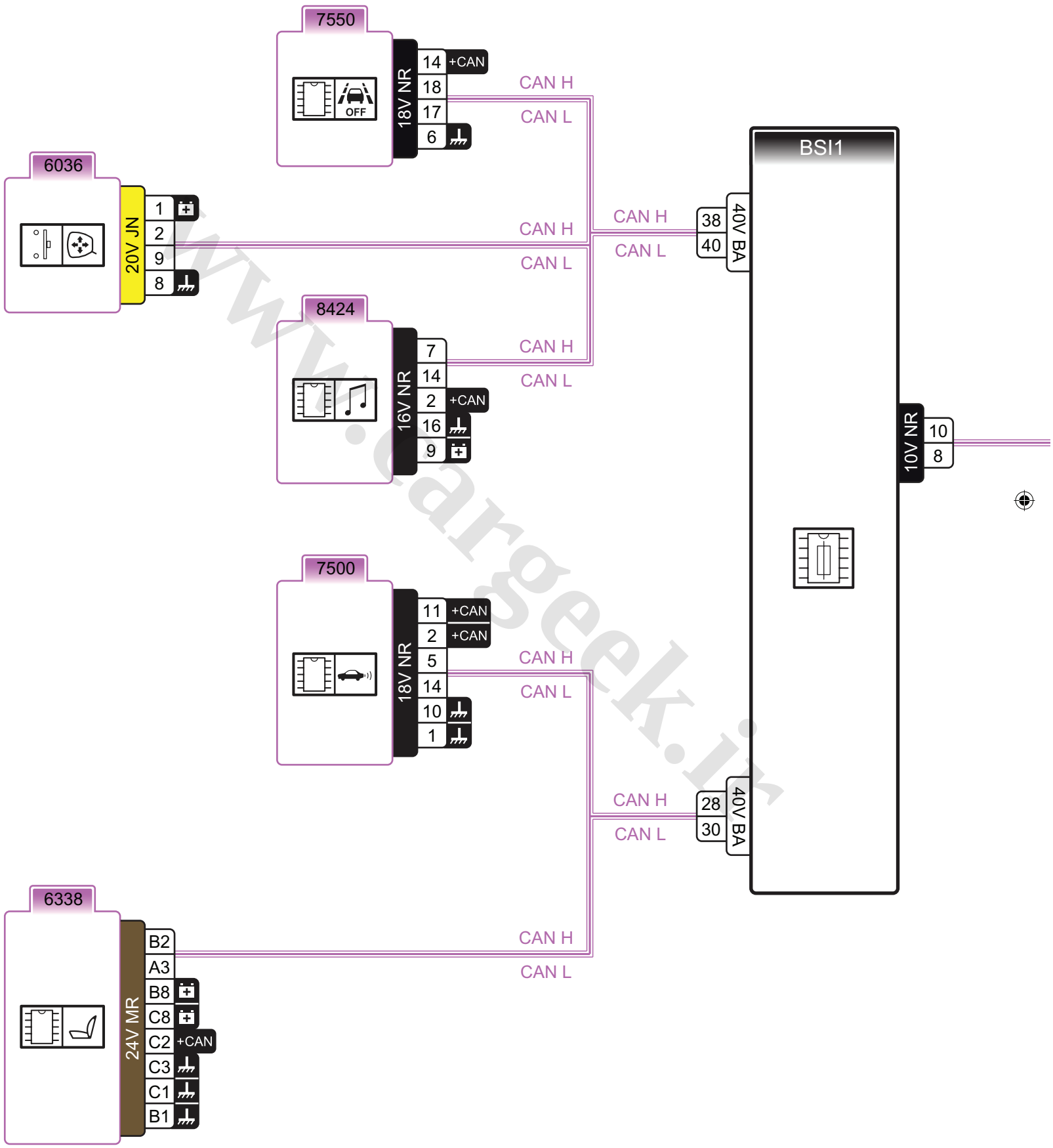
Layout of the intersystems HS CAN

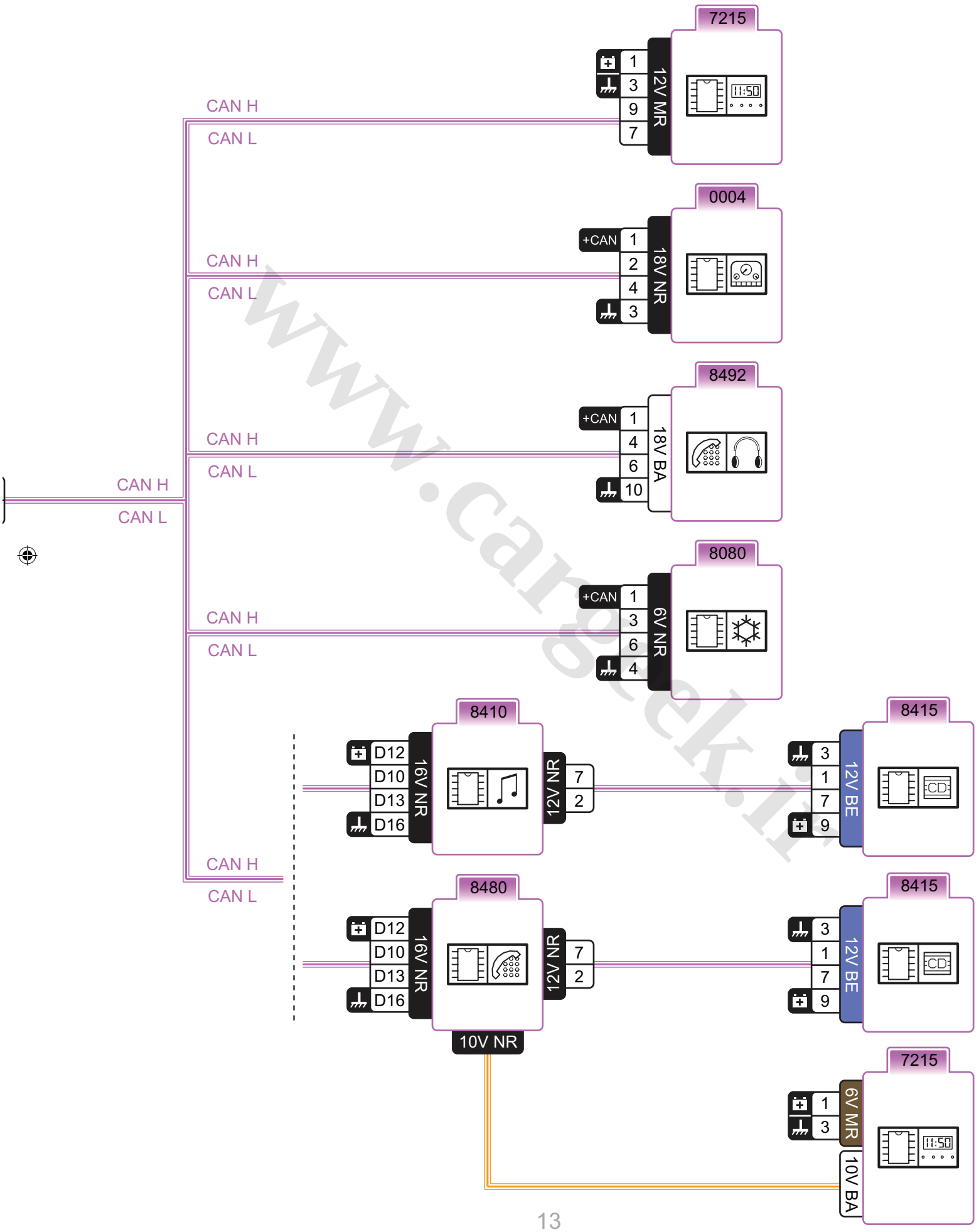
Intersystems HS CAN

	7715	suspension ECU
	7758	suspension ECU Variable damping
	7800 ESP	control ECU Traction
	7803 ESP	ESP steering wheel angle sensor
	7804 ESP	gyrometer triple sensor ESP accelerometer

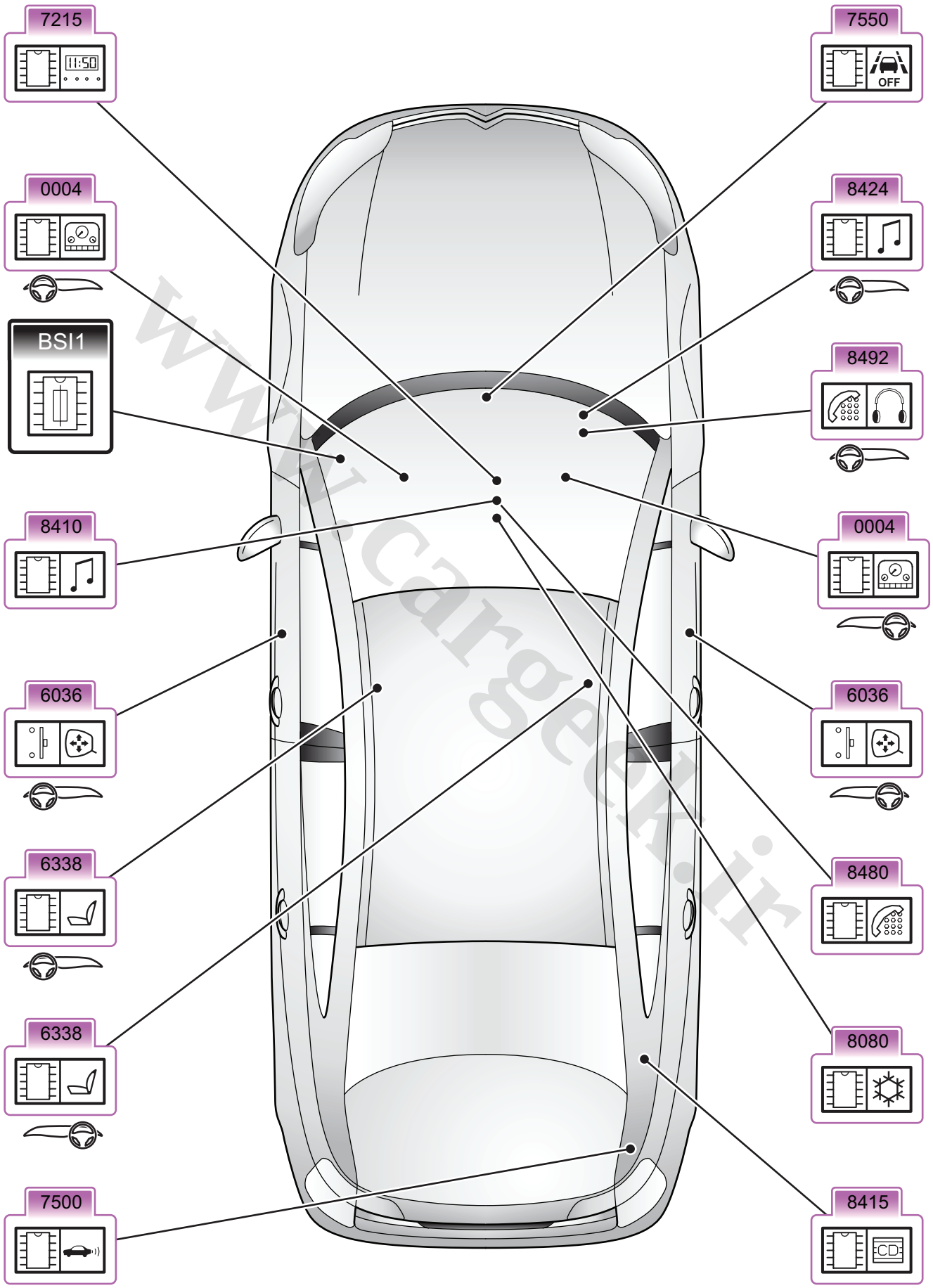
Notes

Details of the COMFORT LS CAN

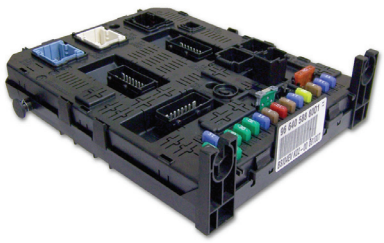




Layout of the COMFORT LS CAN

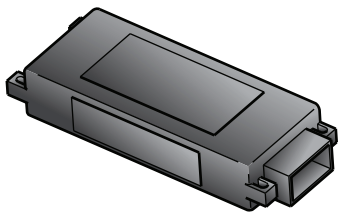


▪ COMFORT LS CAN

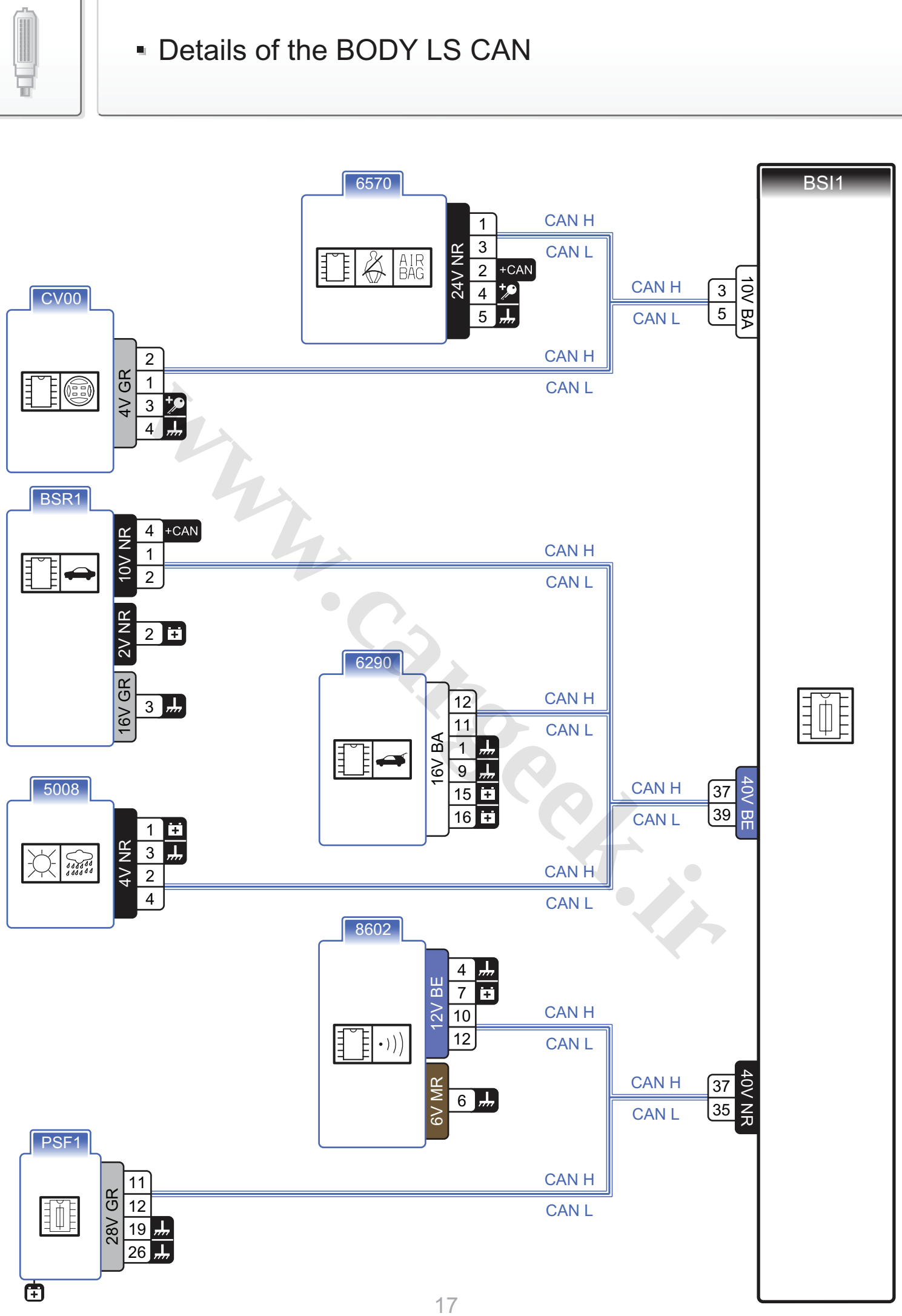
	BSI1	Built-in Systems Interface
	0004	Control panel
	6036	Driver's door switch panel
	6338	Seat memorising unit
	7215	Multifunction display (monochrome or colour)
	7500	assistance ECU Parking (front and rear)
	7550	monitoring ECU Lateral trajectory

Layout of the COMFORT LS CAN

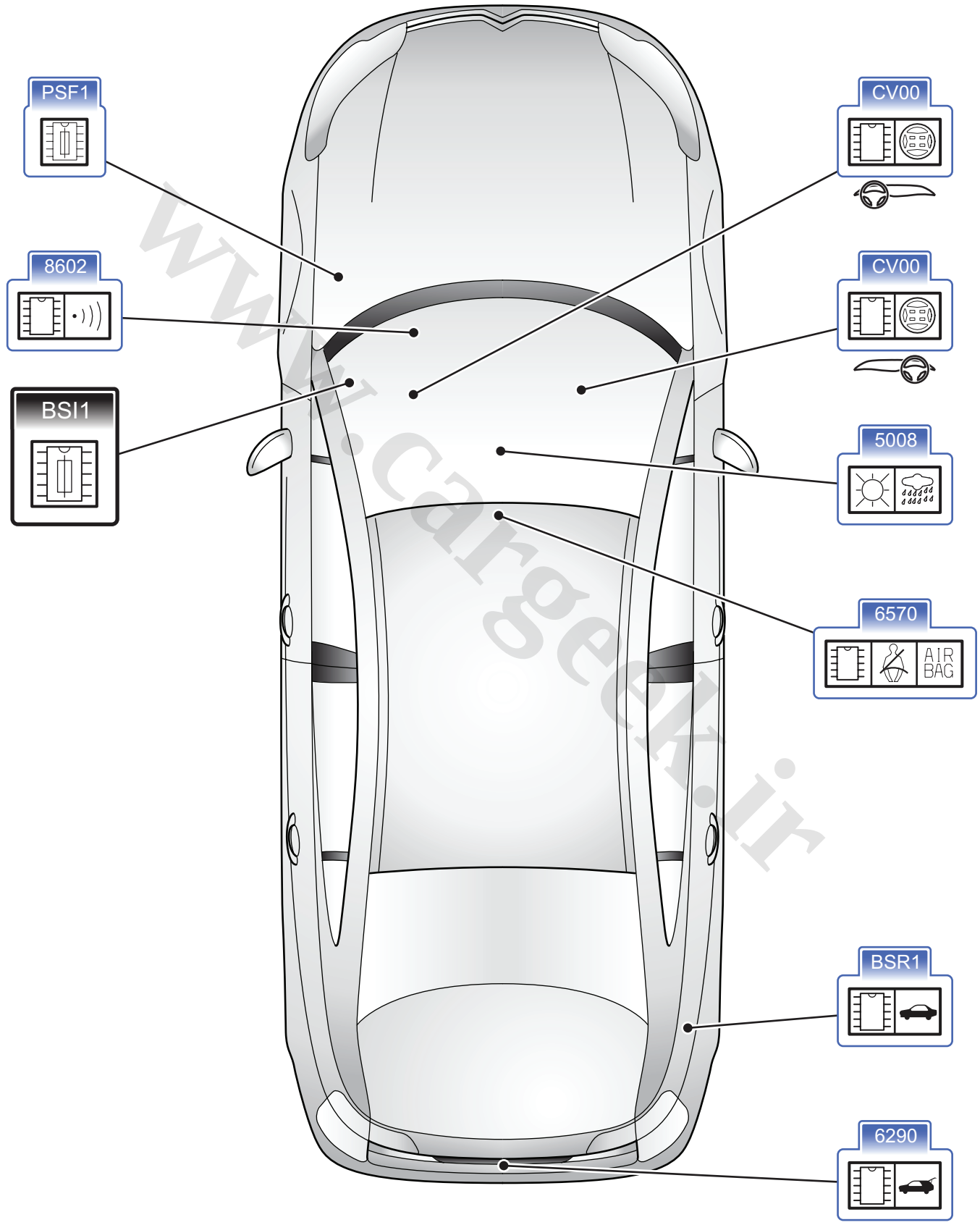
COMFORT LS CAN

	8080	ECU Air conditioning (mono or dual zone panel)
	8410	Radio
	8415	CD changer
	8424	Audio amplifier
	8480	receiver transmitter Telematic (RT4)
	8492	Hands free kit "Bluetooth"'

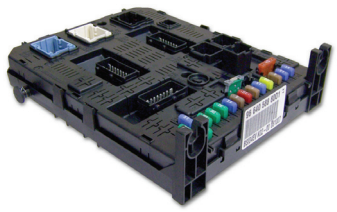
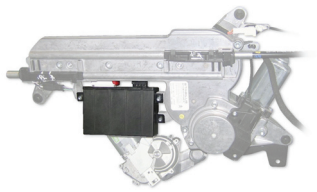
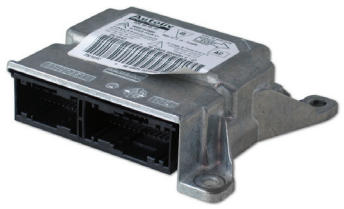
Details of the BODY LS CAN



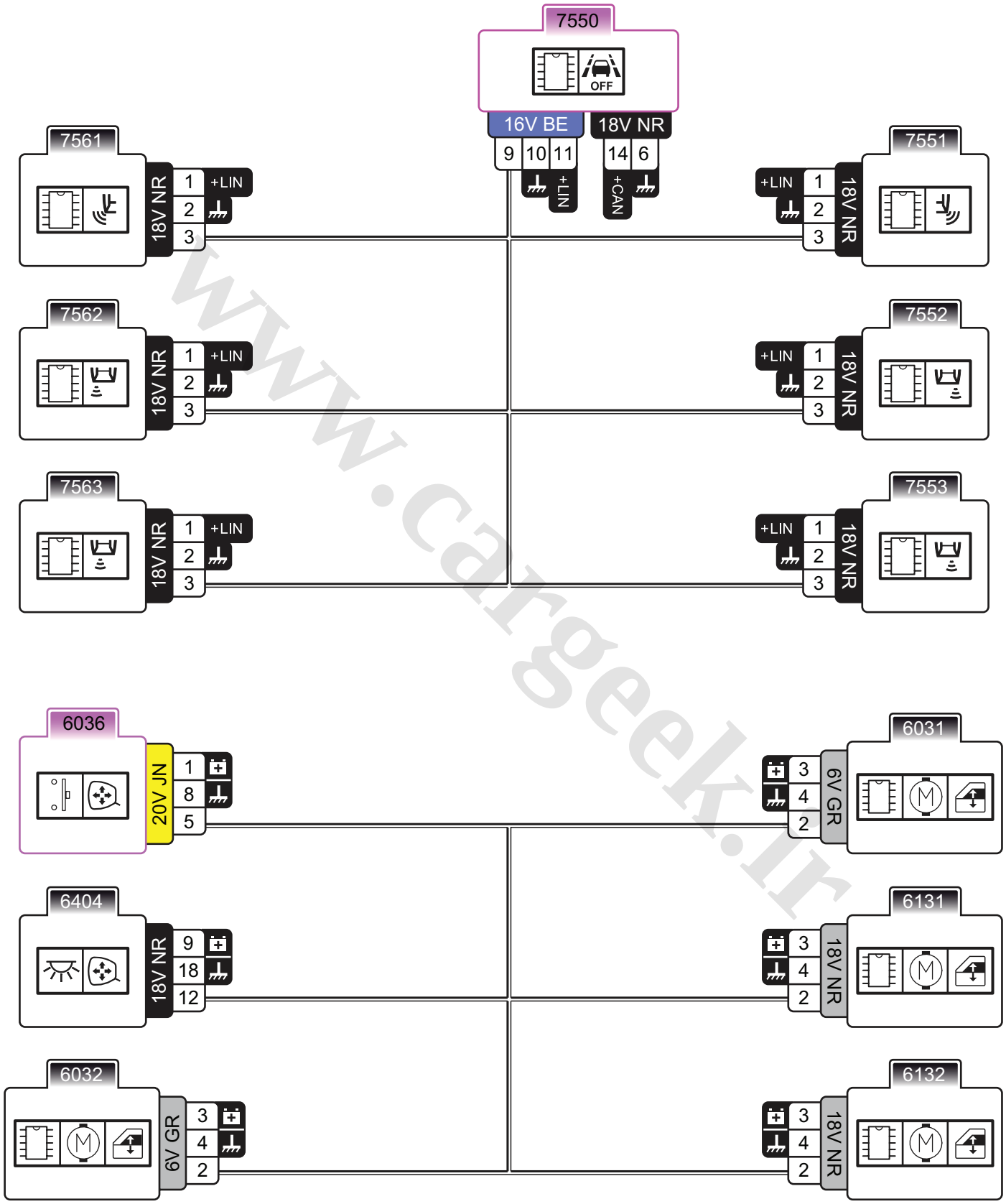
Layout of the BODY LS CAN

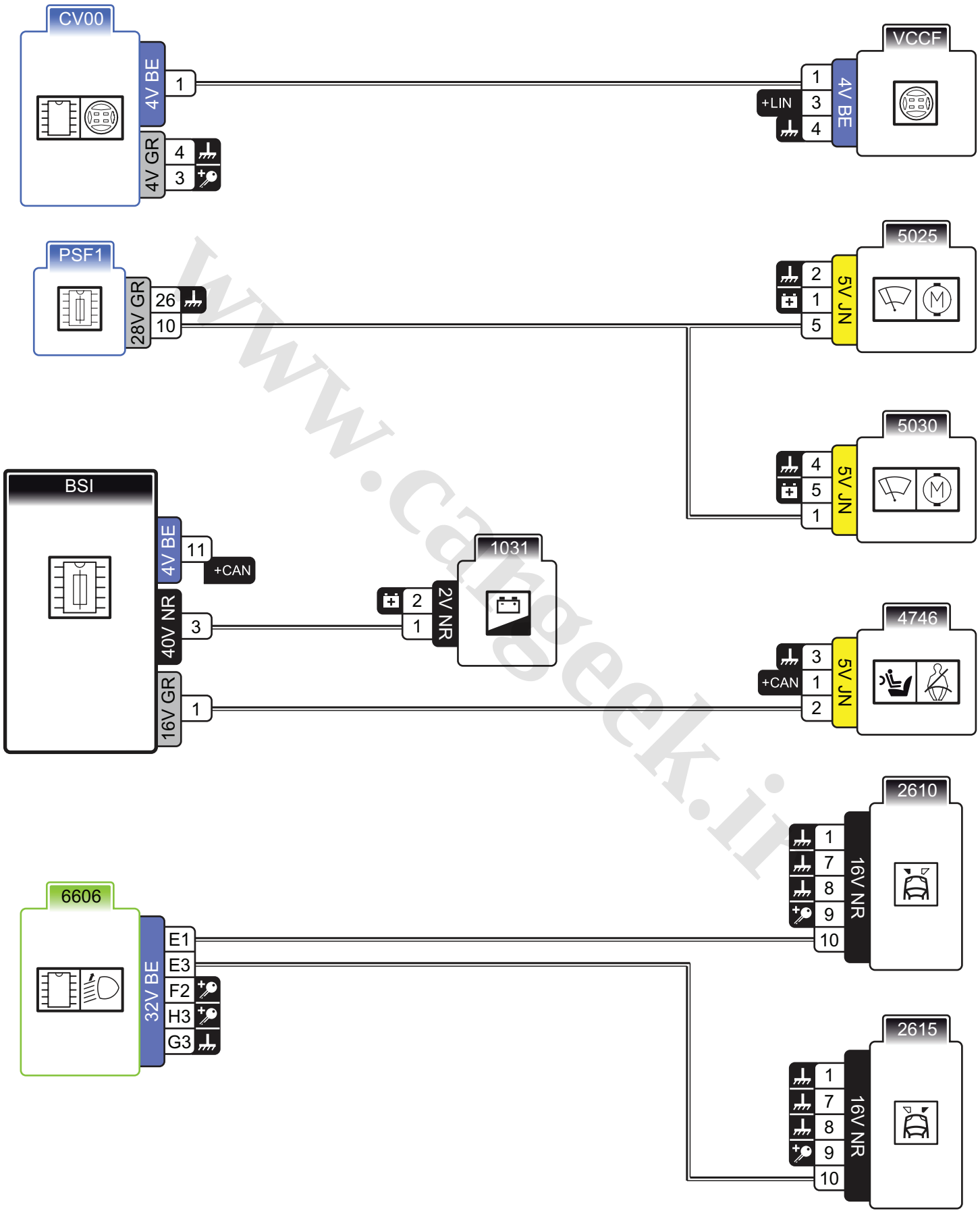


BODY LS CAN

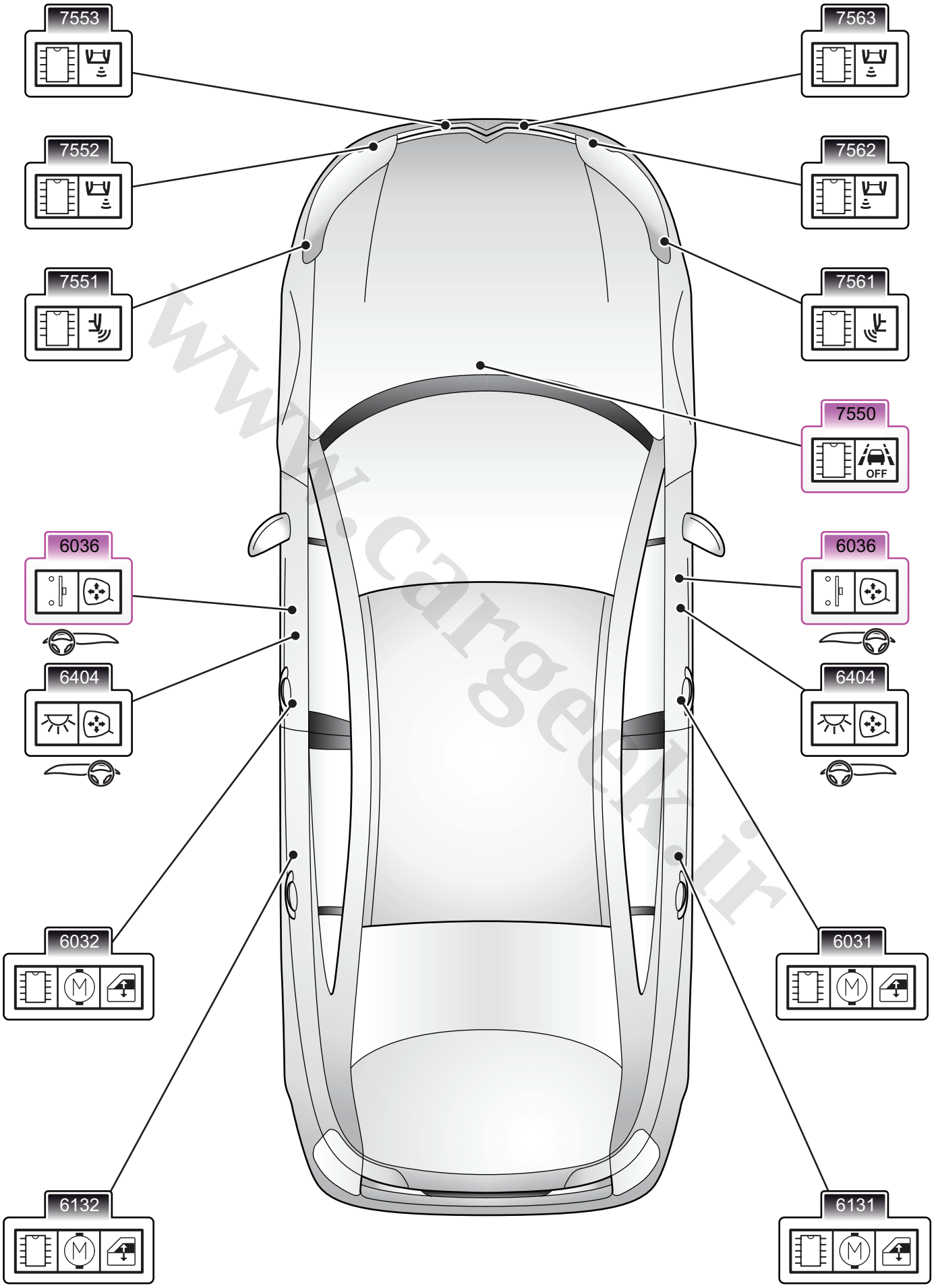
	BSI1	Built-in Systems Interface
	BSR1	relay unit Trailer
	CV00	Switch module at the steering wheel
	PSF1	and relay unit compartment fuse Engine
	5008	and rain sensor Brightness
	6290	boot ECU Motorised
	6570	Airbag ECU
	8602	Alarm unit

Details of the LIN

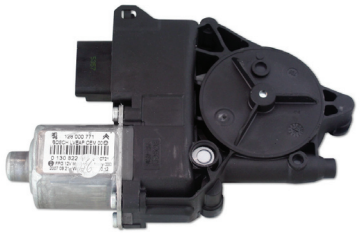
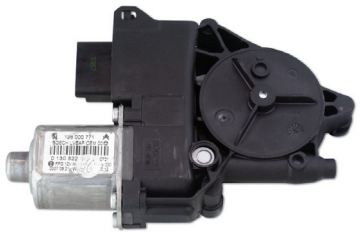




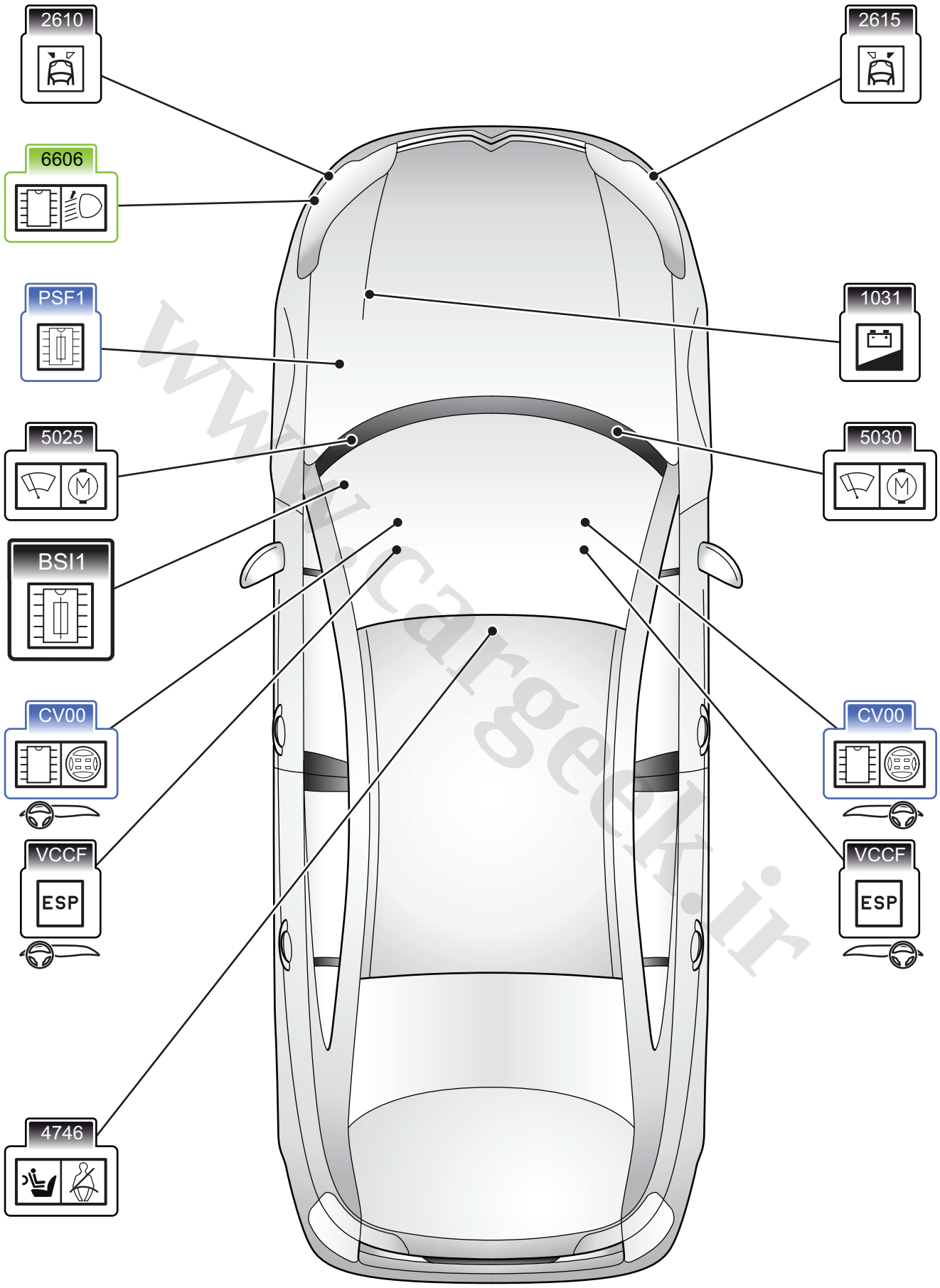
- Layout of the LIN



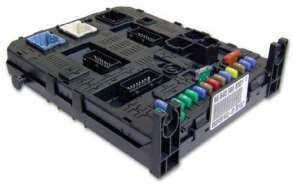
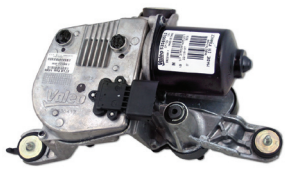
LIN

	7550 OFF	monitoring ECU Lateral trajectory
	7551 / 7552 / 7553	LH monitoring sensors Lateral trajectory
	7561 / 7562 / 7563	RH monitoring sensors Lateral trajectory
	6036	Driver's door switch panel
	6404	Lighting and memorising unit Passenger's door mirror
	6031 / 6032	unit and motor assembly Front RH electric window (6031) and front LH (6032)
	6131 / 6132	unit and motor assembly Front RH electric window (6131) and front LH (6132)

Layout of the LIN

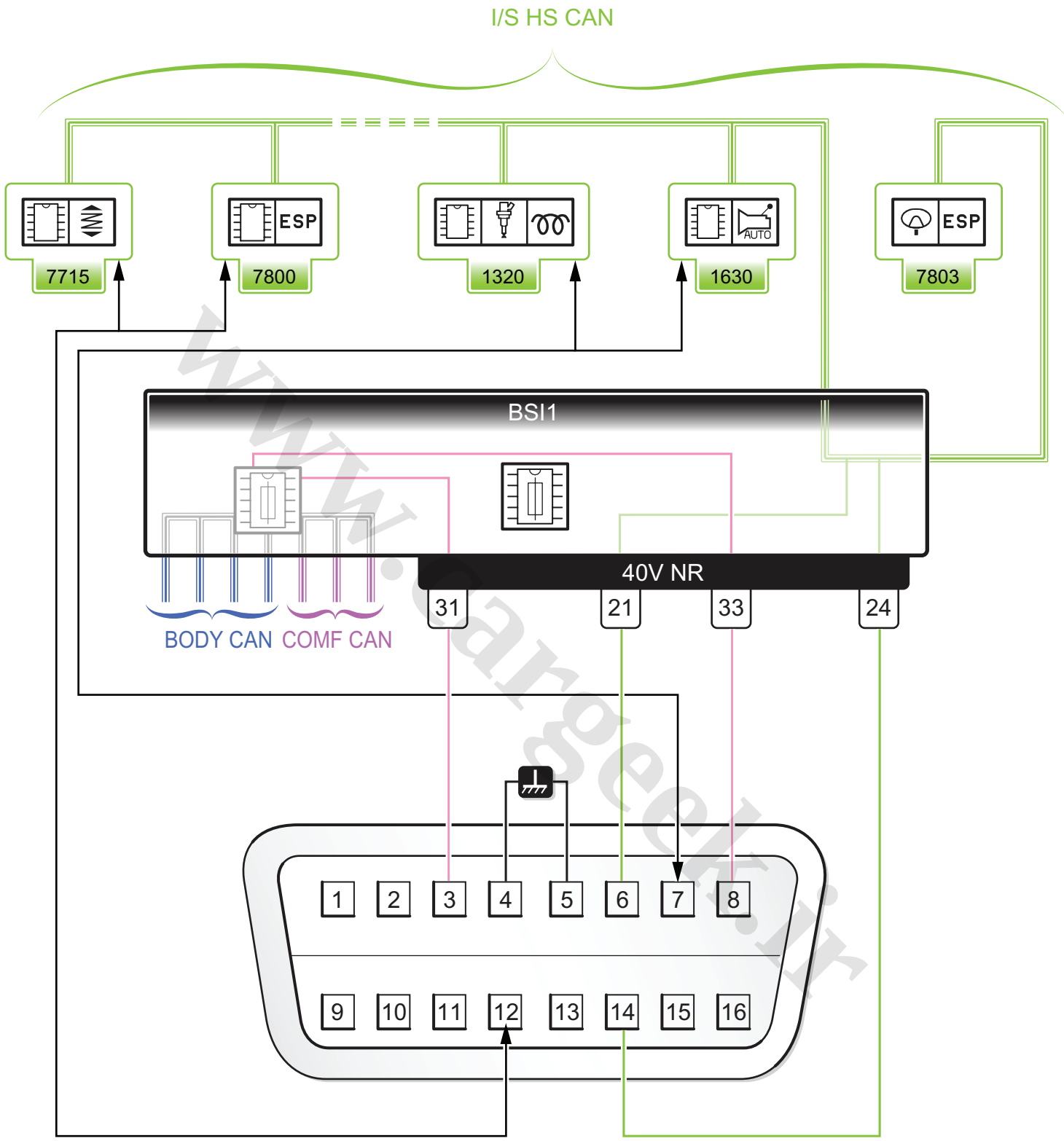


LIN

	BSI1	Built-in Systems Interface
	1031	charge status unit Battery
	4746	reminder LED unit Seat belt
	CV00	Switch module at the steering wheel
	VCCF ESP	controls steering wheel Fixed-centred
	6606	correction ECU Headlamp beam
	2610 / 2615	RH and LH headlamps
	PSF1	and relay unit compartment fuse Engine
	5025 / 5030	and LH windscreen wiper motors RH

Notes

- Details of the diagnostics network



BODY LS CAN
COMF LS CAN
I/S HS CAN
I/S DIAG CAN
DIAG ON CAN
I/S HS CAN

Various stages of multiplex networks

The BSI controls the wake-up and stand-by of the various networks.

Network wake-up:

CAN ECUs have two wake-up states:

Main wake-up:

In this condition, the CANs are active and all ECUs communicate with each other.

Intersystems HS CAN:

When the ignition is switched on, the RCD ECUs are woken up by the BSI by permanently sending +12 Volts on the RCD line and a main wake-up frame.
For the other ECUs (non RCD), the BSI or the PSF1 provides a +IGN.

LS CAN:

When the ignition is switched on, the ECUs are woken up when the +CAN appears controlled by the BSI.
At the same time, the BSI sends a main wake-up frame on the BODY CAN and COMFORT CAN

Partial wake-up:

This wake-up is used to communicate with certain ECUs on the CAN in order to anticipate certain operating phases.

Intersystems HS CAN:

When the ignition is off, the BSI partially wakes up the RCD ECUs by sending a +12 Volts sur la ligne RCD et une trame de réveil partiel.

LS CAN:

There are two types of wake-up for the LS CANs:

Wake-up by direct BSI input:
For this wake-up, the BSI activates the +CAN and sends wake-up frames on the LS CANs.
Wake-up by indirect BSI input:
ECUs capable of waking up LS CANs have a +BAT.
In this condition, these ECUs can also send frames to ask the BSI to wake up the LS CANs.

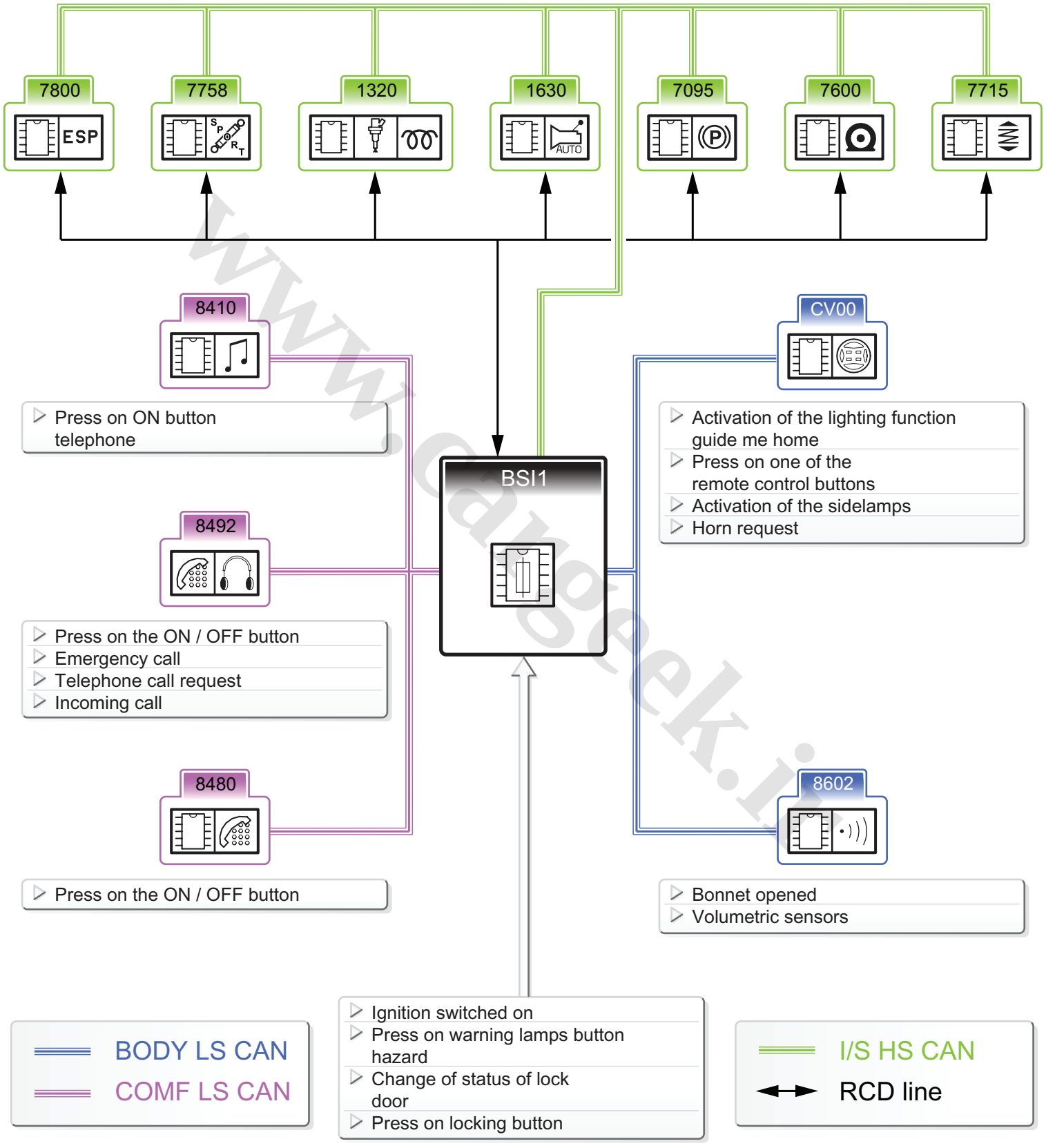
Stand-by:

If no wake-up request is activated:

- The BSI sends a "stand-by" message on the CAN bus.
- After one minute 15 seconds, the CAN bus switches to stand-by.
- The ECUs no longer communicate.
- The BSI switches off the +CAN supply.
- One minute later, the BSI switches to stand-by.

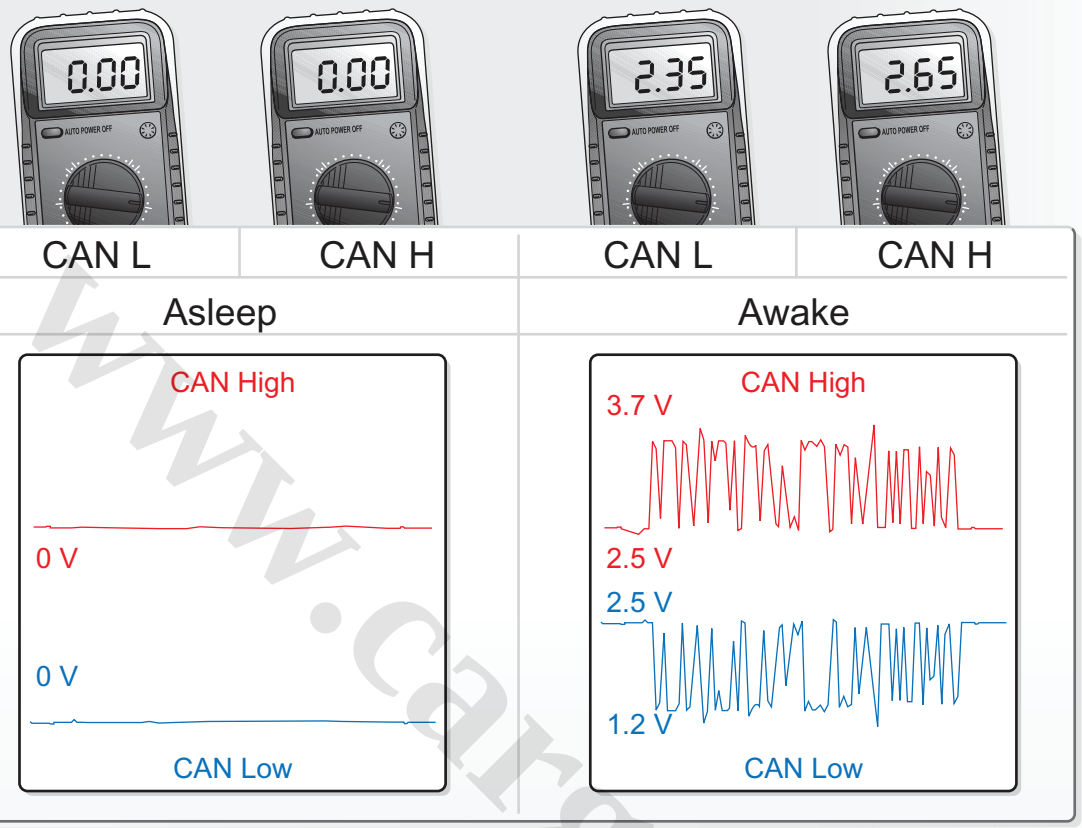
Various stages of multiplex networks

- Wake-up conditions:

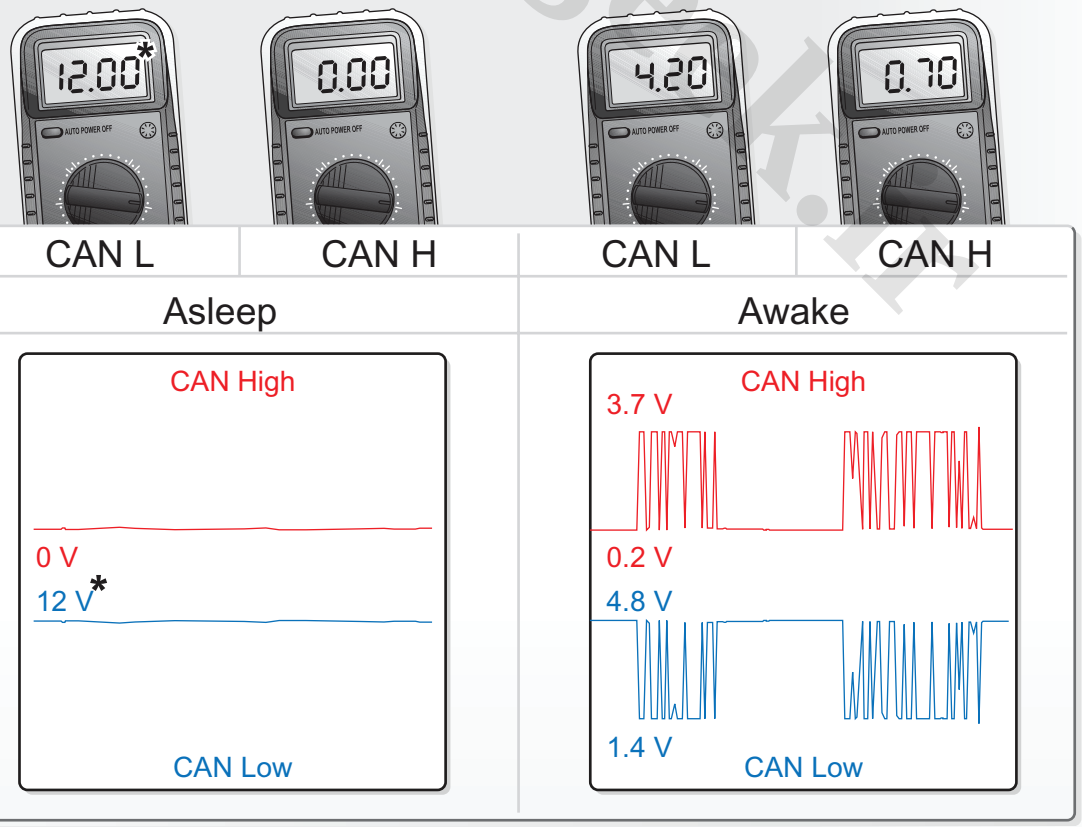


- Network activity during the various phases (average values +/- 0.1 V):

I/S HS CAN



BODY CAN / COMF CAN



*battery voltage

Wiring diagram

Battery (BB00):

This is located on the front left hand side, under the bonnet for all engines, except the 2.7 HDI engine where the battery is located on the rear left hand side of the vehicle in the boot, behind the side trim.

Wiring diagram:

Electrical distribution and protection is performed by the following components:

From Battery Fuse Box (BFDB) (front battery)

Located under the bonnet behind the LH headlamp, it distributes and protects the supplies of the following electrical components:

- Electric-pump unit Built-in Hydraulics Interface
- Pre-post heating unit
- Engine cooling fan unit
- and switching unit Protection (3 relays)
- Trailer Relay Unit
- Boot 12 V socket
- Fog lamps
- Additional heater
- Electric parking brake

Battery cable protection unit (BPCB) (rear battery)

Located above the battery, it distributes and protects the supplies to the electrical components following:

- Starter motor
- Alternator
- Engine Compartment Relay Plate - Fuse Box
- Boot 12 V socket
- Electric parking brake

Front fuse module unit (MFAV) (rear battery)

Located under the bonnet behind the LH headlamp, it distributes and protects the supplies of the following electrical components:

- Pre-post heating unit
- Engine cooling fan unit
- Interference suppressor (capacitor)
- Protection and switching unit (3 relays)

Engine compartment fuse and relay unit (PSF1)

Located under the bonnet behind the LH headlamp, it distributes and protects the supplies of the electrical components in the engine compartment.

It also supplies the BSI and the two fuse boxes
passenger compartment.

Built-in Systems Interface (BSI)

Located under the dashboard on the LH side, it distributes and protects the supplies to the electrical components in the passenger compartment and on the body.

Passenger compartment 5 fuse box (BFH5)

Located on the BSI housing, it distributes and protects the supplies to the following electrical components:

- AM6 type automatic gearbox
- AL4 type automatic gearbox
- Day running lights
- Diagnostic socket
- Electronic stability program (ESP) ECU
- suspension ECU
- Brake dual function switch

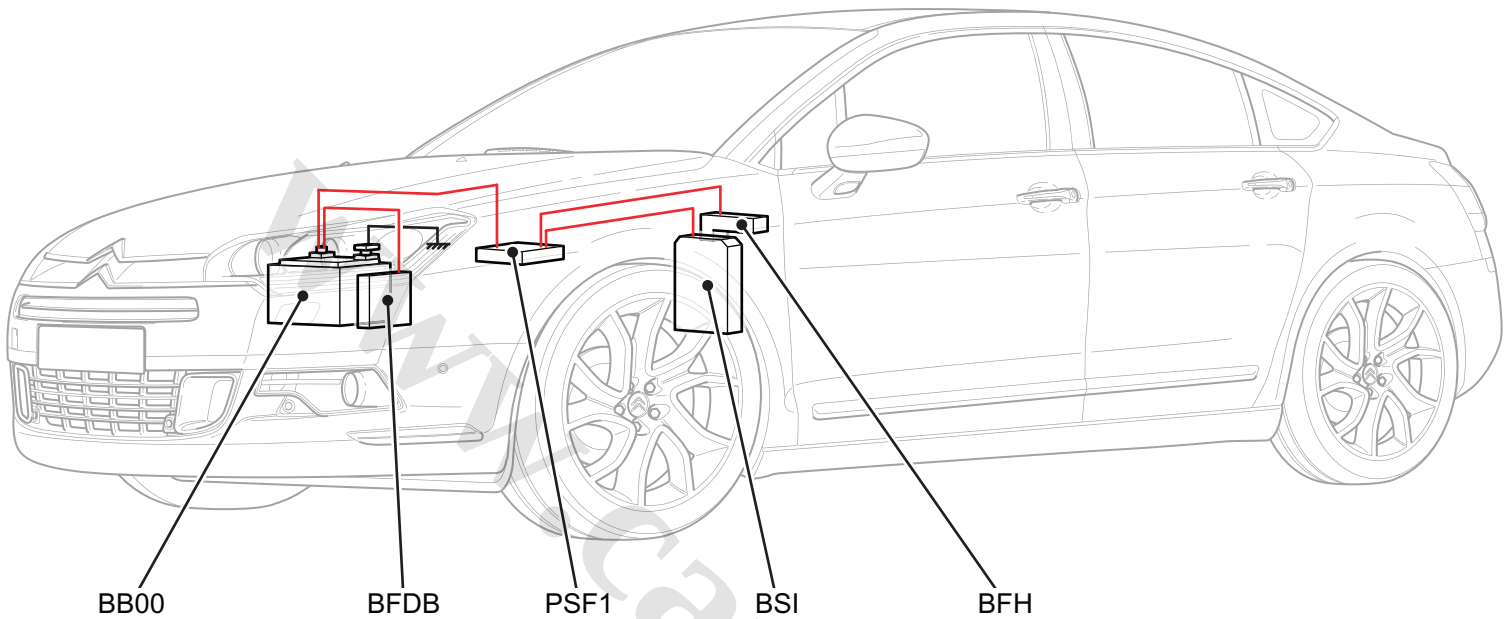
Passenger compartment 12 fuse box (BH12)

Located on the BSI housing, it distributes and protects the supplies to the following electrical components:

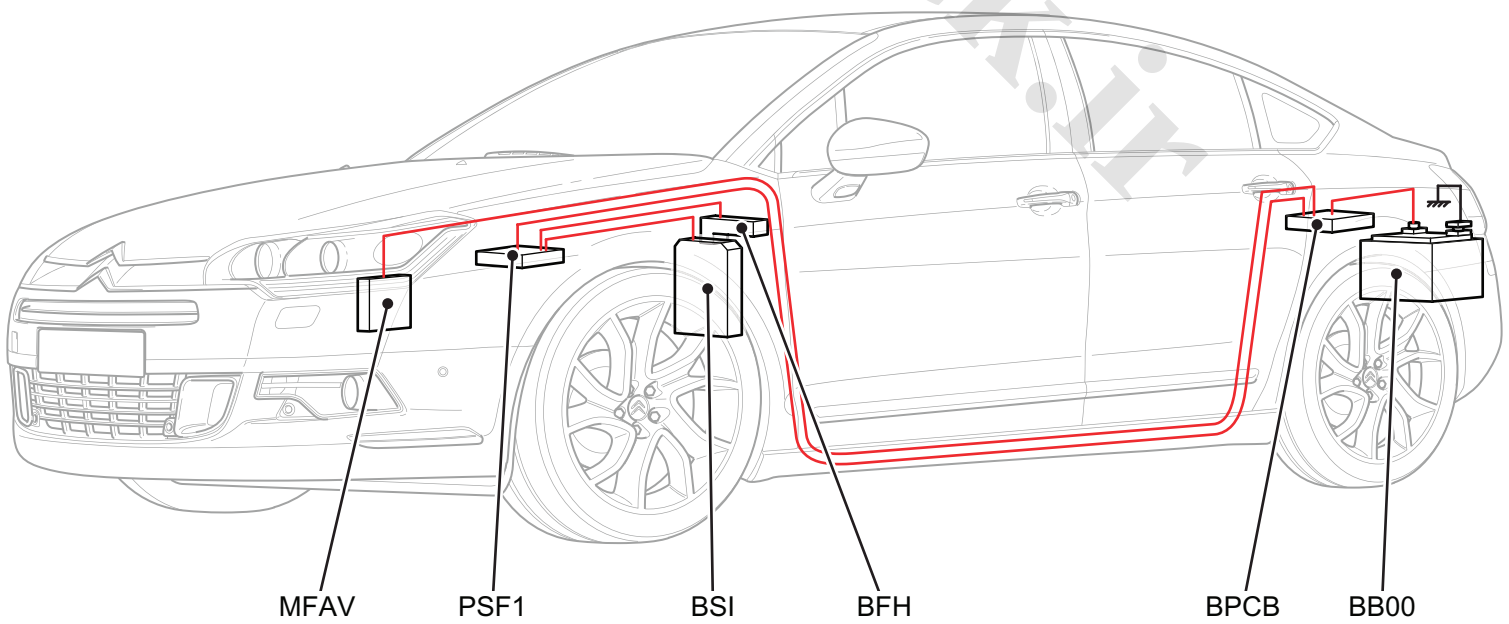
- Trailer Relay Unit
- JBL amplifier
- and lighting unit
  Passenger's memorising
- Electric seat unit
- Heated seats
- Motorised tailgate (estate)
- Sunroof
- Screen
- Electrochrome rear view mirrors
- not fastened LED display
  Seat belt
- Rain and brightness sensor
- Heated door mirrors

Wiring diagram

- Front battery:



- Rear battery:



Glossary

Symbol	Abbreviation	Definition
	+BAT	Permanent battery positive supply
	+IGN	Positive after ignition supply
	+RCD	Remote controlled wake-up supply of the HS CAN
	+CAN	LS CAN supply
	+LIN	LIN supply
	LHD	LH drive
	RHD	RH drive

Notes

Notes