

MULTIPLEXED BSI OPERATING PRINCIPLE FOR THE XSARA PICASSO AND XSARA

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DOCUMENT SUMMARY

MULTIPLEXED BSI OPERATING PRINCIPLE for the XSARA PICASSO AND XSARA

The aim of this document is to explain certain functions of the BSI (Built-in Systems Interface).

After presenting multiplexing, the following subjects will be dealt with:

Electrical functions of the XSARA and XSARA PICASSO.

- Signalling.
- Interior lighting.
- Driver's information.
- Visibility.
- Locking and unlocking.
- Automatic climate control.
- Immobilisation.
- Radio system.

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MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

PART 1

MULTIPLEXING / BSI

XSARA AND XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

MULTIPLEXING

I - BRIEF DEFINITION

Multiplexing is different from previous electrical technology in that it involves transmitting several items of digital information between various devices on a single transmission channel, in the form of 2 wires.

II - PURPOSE OF MULTIPLEXING

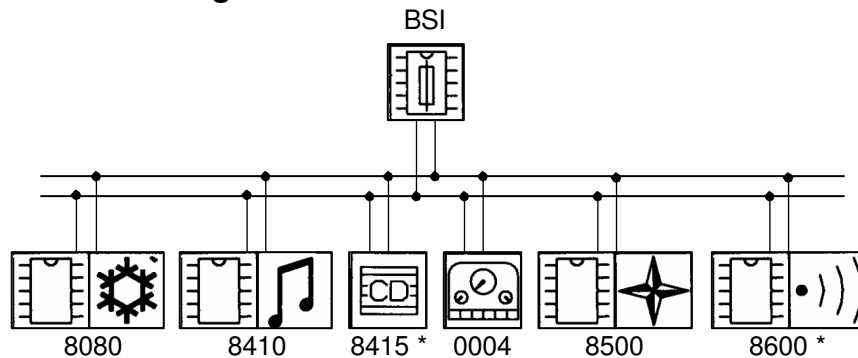
Multiplexing is used to:

- simplify electrical harnesses,
- increase functions (for the same number of wires).

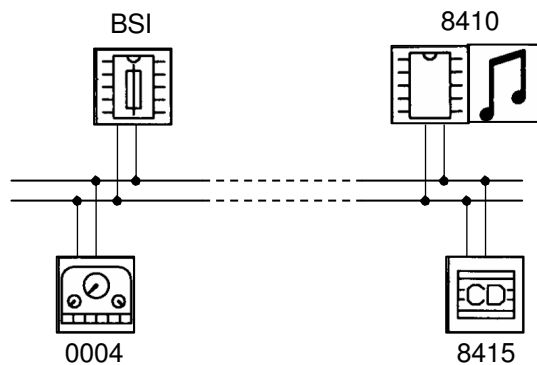
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

III - DESIGN OF THE XSARA PICASSO AND XSARA MULTIPLEXED NETWORK

XSARA PICASSO design



XSARA design



Key: The dotted lines represent a connection used only by the diagnostic function.

| | | | |
|------|--------------------------------------|------|------------|
| * | Available as an accessory | 8410 | Radio |
| BSI | Built-in Systems Interface | 8415 | CD changer |
| 0004 | Control panel / Multifunction screen | 8500 | Navigation |
| 8080 | Automatic climate control | 8600 | Alarm |

For the XSARA Picasso, a MultiFunction Screen is incorporated into the control panel:

- MultiFunction Screen type B,
- MultiFunction Screen type C (for navigation option).

There is no MultiFunction Screen on the XSARA.

A communications protocol defines the rules and format of the exchanges between the various ECUs. The communications protocol used on the XSARA and XSARA PICASSO is the VAN.

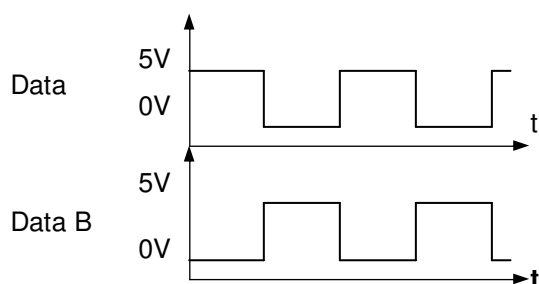
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IV - THE VAN PROTOCOL

The network consists of 2 wires, called:

- Data,
- Data B (Data bar).

The Data B wire is so called because the voltage at its terminals is always opposite to the voltage on Data.



Two current levels are used to encode two distinct logical states.

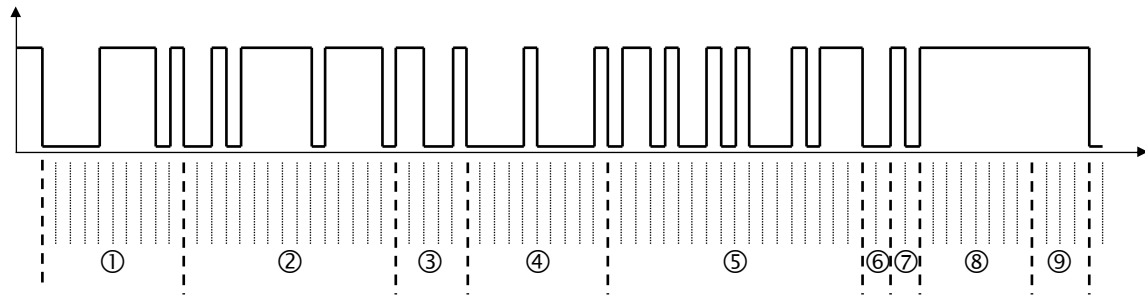
This process is used to:

- limit the radiation given off,
- provide good resistance to interference.

There is an advantage in using these two wires and electronic circuits for emitting and receiving signals. It allows operation in downgraded mode if one of the wires is broken or short circuited to +12V or to earth.

If a wire breaks, the electronics compares the current level of the signal compared to a reference. The electronics signals the data line faults.

Format of the communications message (frame): Only the rate of the Data line is represented as the Data B line is the opposite.



A message in a multiplexed device is unambiguous. It is therefore not possible for an error to occur regarding the recipient nor the nature of the command to be performed.

A frame consists of 9 fields:

- ① a start of message identifier used to locate the start of the message.
- ② an arbitration identification field used to specify the recipient or recipients of the message.
- ③ this field specifies whether an acknowledgement request from the receiver is required, depending on whether it involves a request for or distribution of information.
- ④ a field containing the data of the message.
- ⑤ a validity control field for the message in order to check the integrity of the data upon arrival.
- ⑥ a field marking the end of the actual data to indicate that the message is finished.
- ⑦ an acknowledgement field which allows the receiver to confirm that the message has been correctly received.
- ⑧ an end of frame field.
- ⑨ a frame separator which allows the next frame to use the same sequence of 9 fields.

The electrical signals conveyed by the two wires are square and follow an information encoding sequence. Only the ECUs of the system can interpret them.

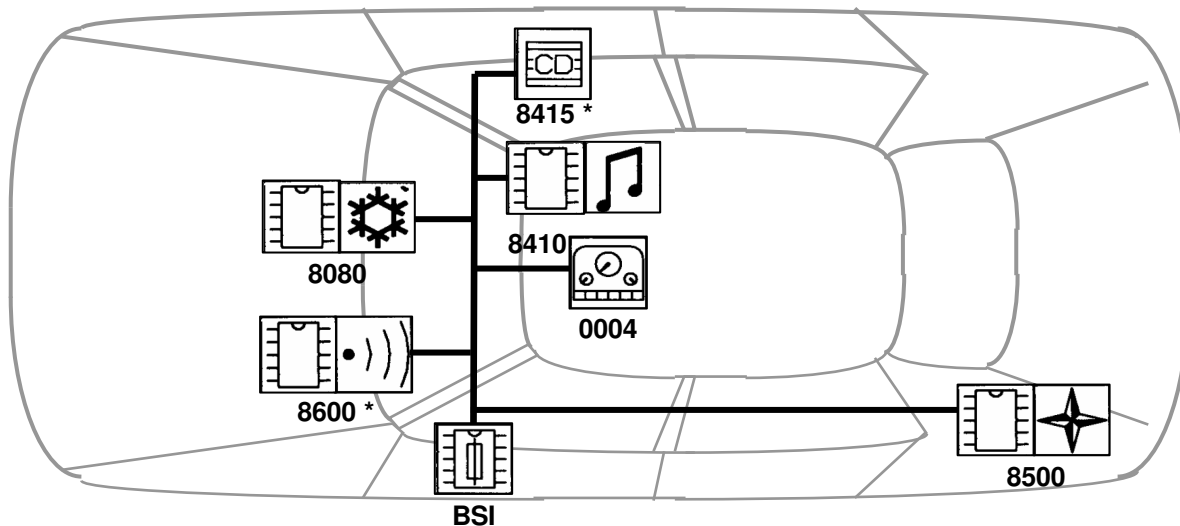
IMPORTANT: It is forbidden to connect a measuring device (multimeter, etc) to the VAN network.

Data and Data B wires can be repaired using Raychem connectors.

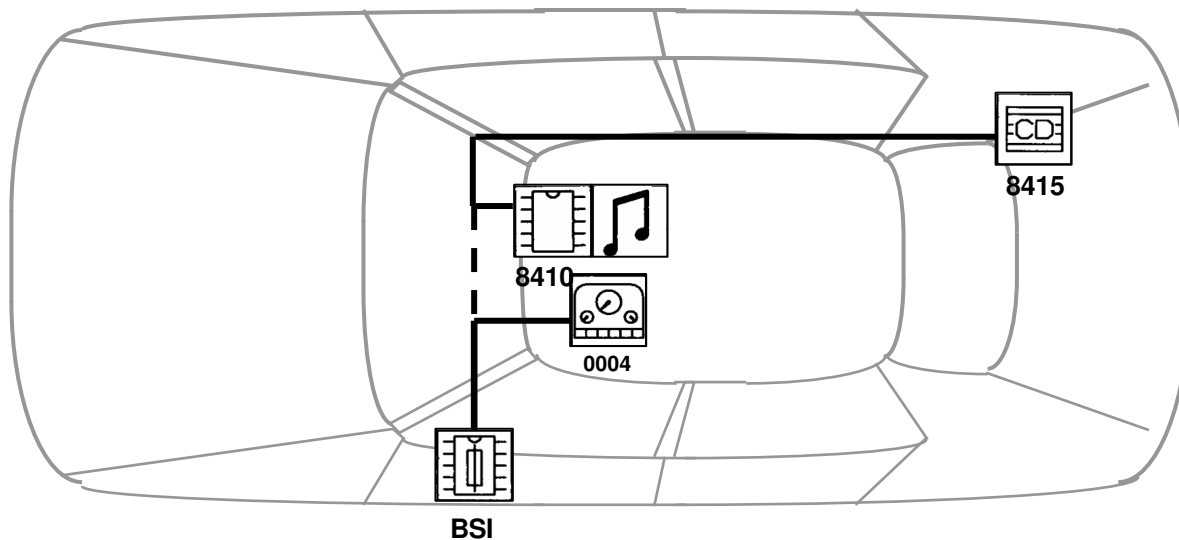
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

V - LOCATION OF MULTIPLEXED ECUS

XSARA PICASSO



XSARA



| | | | |
|------|--------------------------------------|------|------------|
| * | Available as an accessory | 8410 | Radio |
| BSI | Built-in Systems Interface | 8415 | CD changer |
| 0004 | Control panel / Multifunction screen | 8500 | Navigation |
| 8080 | Automatic climate control | 8600 | Alarm |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

BUILT-IN SYSTEMS INTERFACE

The Built-in Systems Interface (BSI) is an ECU which incorporates:

- **Interface electronics** (relays, fuses, diagnostic socket, HF receiver)
- **Control electronics:** The BSI is one of the masters of the VAN network, on which it controls communications between the ECUs
- **Calculation electronics:** this controls the basic functions in an autonomous manner (locking of the doors, signalling, visibility, interior lighting, engine immobiliser, etc).
- **Information about the vehicle** for the anti-theft protection (vehicle's VIN code, key codes, HF remote control code, radio identification, etc)
- **A program** which is used to control the system and perform diagnostics and configuration procedures.

The BSI acts as a gateway between the VAN network and the diagnostic tool.

In addition, it helps with energy management by controlling reduced consumption modes for itself and the other multiplexed ECUs.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

I - FUNCTIONS CONTROLLED BY THE BSI ON THE XSARA PICASSO AND THE XSARA

| FUNCTION | DETAILS | XSARA PICASSO | XSARA |
|------------------------|--|------------------|-------|
| Signalling | Indicator control | X | X |
| | Hazard warning lamps button acquisition | X | X |
| | Blown bulb detection | X | X |
| | Illumination of indicators in the event of an impact | X* | |
| | Signalling of the locked status of the vehicle | X | X |
| Locking | Locking / unlocking using the plip | X | X |
| | Locking / unlocking using the interior button | X | |
| | Unlocking in the event of an impact | X* | |
| | Rebound function | X | X |
| | Boot opening button | X | |
| | Locking motor protection | X | X |
| | Automatic re-locking after 30 seconds of no action | X | X |
| | Deadlocking | | X |
| | Unlocking whilst driving a deadlocked vehicle | | X |
| | Signalling of the locking status by a system status LED | X | |
| Vehicle immobilisation | Encrypted code transponder function | X | X |
| | BSI - engine management ECU wire connection | X | X |
| | Signalling of engine ECU locked by system status LED | X | |
| | Non multiplexed alarm | | X |
| | Self-powered multiplexed alarm | X | X |
| Interior lighting | Timed interior lamps upon opening doors | X | X |
| | Progressive extinguishing, progressive illumination | X | X |
| | Illumination upon removing the key | X | X |
| Windows | Timed supply to electric windows and sunroof | X | |
| Visibility | Control of normal commands (windscreen washer, etc) | X | X |
| | Intermittent wiper function when stationary | X | |
| | Reduction in wiper speed when stationary | X | |
| | Rear wiper linked to reverse gear and to windscreen wiper mode | X | |
| | Automatic windscreen and rear wipers with rain sensor | | X |
| | Control of wiper parked position | X | X |
| | Protection of windscreen and rear wiper motors | X | X |
| | Timed de-icing of rear screen and door mirrors | X | X |
| | Timed headlamp washers | | X |
| | Timed extinguishing of headlamps | X | |

* Suppressed but may be reinstated

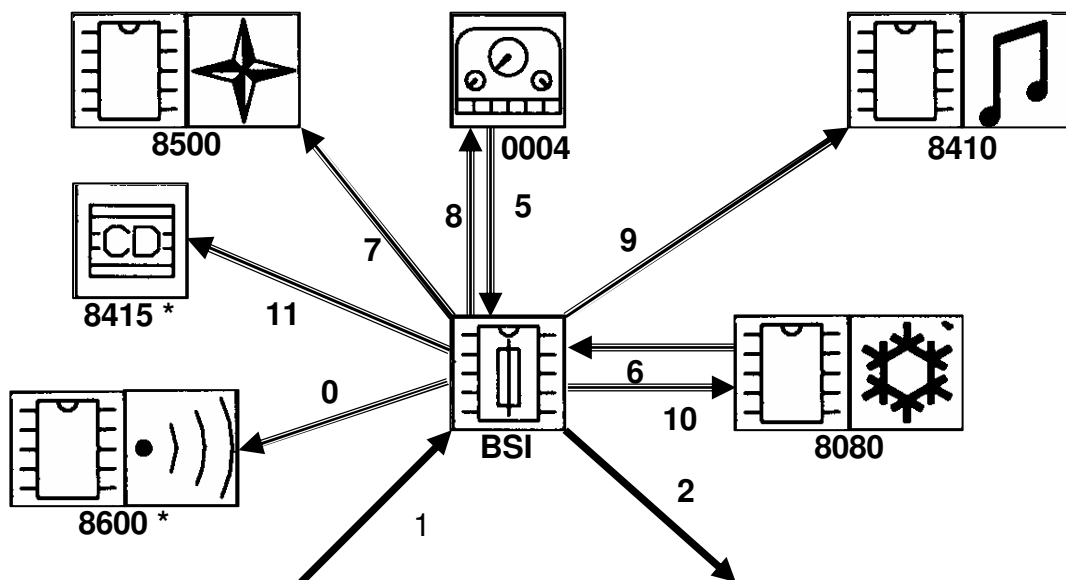
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

| FUNCTION | DETAILS | XSARA PICASSO | XSARA |
|----------------------|---|------------------|-------|
| Driver's information | Programmable maintenance indicator (through connection on BSI) | X | X |
| | Acquisition of external temperature | X | |
| | Time base | | X |
| | Signalling of door status | X | X |
| | Sidelamps on and key in ignition reminder | X | X |
| | Automatic gearbox safety warning | | X |
| | Overspeed warning | X | * |
| | HF remote control battery worn warning | X | X |
| | Transponder fault warning | X | X |
| | Driving school pedal set warning | | X |
| | Battery charge, alternator excitation fault warning | X | X |
| | Acquisition by BSI and transmission of speed information to the control panel | X | X |
| | Memorising of mileage in the control panel and BSI | X | X |
| | Memorising of the VIN code and Diagnostic code | X | X |
| | On-board ECU | X | |
| Air conditioning | Automatic climate control (RFTA) | X | |
| | Air conditioning | X | X |

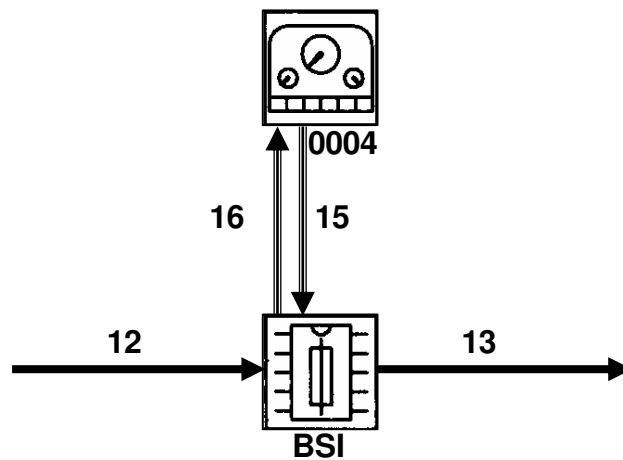
RTFA = Refrigeration - Totally Automatic

II - BSI LAYOUTS ON THE XSARA PICASSO AND XSARA



XSARA PICASSO



MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

XSARA

Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection.

| | | | |
|------|--------------------------------------|------|------------|
| * | Available as an accessory | 8410 | Radio |
| BSI | Built-in Systems Interface | 8415 | CD changer |
| 0004 | Control panel / Multifunction screen | 8500 | Navigation |
| 8080 | Automatic climate control | 8600 | Alarm |

Note: The connection numbers are used to associate these diagrams to the input-output tables for the XSARA Picasso (XsP) and the XSARA (Xs).

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

III - BSI INPUTS

A - SUPPLIES

| DESCRIPTION | EMITTER | TYPE | XSP | XS |
|---|---|--------------------------|-----|----|
| + accessories information Supply to + accessories track for windscreen / rear wash / wipe steering wheel stalk | Ignition switch - accessories - ignition position | All or Nothing Supply | 1 | 12 |
| +ALT permanent power supply | Alternator | Supply | 1 | 12 |
| - +ignition on information - Electronic redundant supply | Ignition switch - ignition - cranking positions | Supply All or Nothing | 1 | 12 |
| +BAT permanent electronic supply, cut off when parked by removing the shunt from the Passenger Compartment Fuse Box | Battery | Supply | 1 | 12 |
| +BAT permanent power supply | Battery | Supply | 1 | 12 |
| +BAT permanent power supply for smartpowers | Battery | Supply | 1 | 12 |
| - Headlamp information - Electrical redundant supply, track for number plate, lighting of buttons | Lighting / headlamp signalling steering wheel stalk | Supply All or Nothing | 1 | 12 |
| Analogue earth for sensors on passenger compartment harness | | Earth | 1 | 12 |
| Analogue earth for sensors on main harness | | Earth | 1 | 12 |
| ECU earth | | Earth | 1 | 12 |
| Power earth | | Earth | 1 | 12 |

B - WIRE INPUTS

| DESCRIPTION | ORIGIN | TYPE | XSP | XS |
|--|---|----------------|-----|----|
| Battery charge / alternator excitation (Input-Output) | Alternator | Analogue | 1 | 12 |
| Air conditioning compressor engaging authorisation | Engine management ECU | All or Nothing | 1 | 12 |
| Rear wiper motor parked position information | Rear wiper motor | All or Nothing | 1 | 12 |
| Windscreen wiper motor parked position information | Windscreen wiper motor | All or Nothing | 1 | 12 |
| Engine coolant temperature warning information | Coolant Temperature Management Unit FRIC Engine management ECU Thermoswitch | All or Nothing | 1 | 12 |
| Impact detection information | Inertia switch | All or Nothing | 1 | 12 |
| Right hand indicators request | Lighting / signalling steering wheel stalk | All or Nothing | 1 | no |
| Left hand indicators request | Steering wheel stalk | All or Nothing | 1 | 12 |
| Boot or tailgate not closed switch | Boot switch | All or Nothing | 1 | no |
| Central locking request button | Locking information (on dashboard) | All or Nothing | 1 | 12 |
| Driver's door internal opening contact | Driver's door lock | All or Nothing | 1 | 12 |
| Front passenger's door internal opening contact | Passenger's door lock | All or Nothing | 1 | 12 |
| Rear right hand passenger's door open switch | Rear right hand door open switch | All or Nothing | 1 | 12 |
| Rear left hand passenger's door open switch | Rear left hand door open switch | All or Nothing | 1 | 12 |
| Driver's door open switch | Front left hand door open switch | All or Nothing | 1 | 12 |
| Front passenger's door open switch | Front right hand door open switch | All or Nothing | 1 | 12 |
| Bonnet not closed switch | Bonnet switch | All or Nothing | no | 12 |
| Fuel flow information | Engine ECU | Frequency | 1 | 12 |
| Engine ECU fault information | Engine ECU | All or Nothing | 1 | 12 |
| On-board ECU scroll request | Steering wheel stalk | | 1 | 12 |
| Heated rear screen and door mirrors de-icing request (except RFTA climate control) | De-icing button | All or Nothing | 1 | 12 |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

| DESCRIPTION | ORIGIN | TYPE | XSP | XS |
|--|-----------------------------------|----------------|-----|----|
| Hazard warning lamps request | Hazard warning lamps button | All or Nothing | 1 | 12 |
| Rear wiper request | Wipers steering wheel stalk | All or Nothing | 1 | 12 |
| Windscreen wipers high speed request | Wipers steering wheel stalk | All or Nothing | 1 | 12 |
| Windscreen wipers intermittent request | Wipers steering wheel stalk | All or Nothing | 1 | 12 |
| Rear screen wash request | Wipers steering wheel stalk | All or Nothing | 1 | 12 |
| Windscreen wash request | Wipers steering wheel stalk | All or Nothing | 1 | 12 |
| Boot open request | Boot opening button | All or Nothing | 1 | 12 |
| Diesel pre-heating information | Engine ECU | All or Nothing | 1 | 12 |
| Air con refrigerant safety information | Pressure switch | All or Nothing | 1 | 12 |
| Windscreen wipers slow speed request | Wipers steering wheel stalk | All or Nothing | 1 | 12 |
| - Reverse gear information | Reverse gear contact | All or Nothing | 1 | 12 |
| - Supply to REVERSE track for reversing lamps | | | | |
| Engine speed information | Engine ECU | Frequency | 1 | 12 |
| Air conditioning request (for air con) | Air conditioning panel | All or Nothing | 1 | 12 |
| Locking/unlocking request through lock | Front lock contacts | All or Nothing | 1 | 12 |
| External air temperature information | External air temperature sensor | Analogue | 1 | 12 |
| Engine coolant temperature information (not PSA2000 engine ECU and without FRIC) | Engine coolant temperature sensor | Analogue | 1 | 12 |
| Engine coolant temperature information (PSA2000 engine ECU and with FRIC) | Engine ECU | Frequency | 1 | 12 |
| Air conditioning evaporator temperature information | Evaporator temperature sensor | Analogue | 1 | 12 |
| Vehicle speed information | Speed sensor | Frequency | 1 | 12 |
| Diagnostic serial connector (Input/Output) | Diagnostic tool | | 1 | 12 |

C - MULTIPLEXED INPUTS

| DESCRIPTION | ORIGIN | XSARA PIC. | XSARA |
|--|---------------------------|------------|-------|
| Multifunction Screen requests | | | |
| Request to reset journey counters | Multifunction screen | 5 | no |
| Request to reset tripometers | Multifunction screen C | 5 | no |
| Request to maintain +VAN comfort | Multifunction screen | 5 | no |
| Control panel status | | | |
| Oil pressure warning | Control panel | 5 | 15 |
| Night driving mode | Control panel | 5 | no |
| Parking brake | Control panel | 5 | 15 |
| Control panel brightness level | Control panel | 5 | 15 |
| Low fuel information | Control panel | 5 | 15 |
| ABS fault | Control panel | 5 | 15 |
| Electronic brakeforce distribution fault | Control panel | 5 | 15 |
| Brake fluid fault | Control panel | 5 | 15 |
| Automatic gearbox fault | Control panel | no | 15 |
| Gross fuel level | Control panel | 5 | 15 |
| Dipped beam | Control panel | 5 | 15 |
| Control panel reading | | | |
| Stored mileage | Control panel | 5 | 15 |
| Air conditioning requests | | | |
| Air conditioning request | Automatic climate control | 6 | no |
| Heated rear screen and door mirrors de-icing request | Automatic climate control | 6 | no |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

IV - BSI OUTPUTS

A - WIRE OUTPUTS

| DESCRIPTION | RECEIVER | TYPE | XSP | XS |
|---|---|----------------|-----|----|
| + accessories supply for windscreen/rear wash/wipe steering wheel stalk | Steering wheel stalk | All or Nothing | 2 | 13 |
| Air conditioning compressor authorisation | Engine ECU | All or Nothing | 2 | 13 |
| Rear right hand indicator control | Rear right hand indicator | All or Nothing | 2 | 13 |
| Rear left hand indicator control | Rear left hand indicator | All or Nothing | 2 | 13 |
| Front right hand indicator control | Front right hand indicator | All or Nothing | 2 | 13 |
| Front left hand indicator control | Front left hand indicator | All or Nothing | 2 | 13 |
| Right hand repeater indicator control | Right hand repeater indicator | All or Nothing | 2 | 13 |
| Left hand repeater indicator control | Left hand repeater indicator | All or Nothing | 2 | 13 |
| Transponder clock signal | Transponder | Frequency | 2 | 13 |
| Air conditioning compressor clutch control | Air conditioning compressor clutch relay | All or Nothing | 2 | 13 |
| Locking actuator control | Door locks | All or Nothing | 2 | 13 |
| Unlocking actuator control | Door locks | All or Nothing | 2 | 13 |
| Rear wiper motor control | Rear wiper motor | All or Nothing | 2 | 13 |
| Windscreen wiper motor high speed control | Windscreen wiper motor | All or Nothing | 2 | 13 |
| Supply: number plate, button lighting, etc | Items illuminated at night | All or Nothing | 2 | 13 |
| Heated rear screen control | Heated rear screen | All or Nothing | 2 | 13 |
| Supply: front electric window motors, sunroof, rear electric window relay control | Electric window motors, rear electric window relays | All or Nothing | 2 | 13 |
| Low fuel information | Engine ECU | All or Nothing | 2 | 13 |
| Engine running information | Engine running relay | All or Nothing | 2 | 13 |
| Boot opening actuator control | Boot opening lock | All or Nothing | 2 | 13 |
| Rear interior lamp control | Rear interior lamp switch | All or Nothing | 2 | 13 |
| Front interior lamp control | Front interior lamp switch | All or Nothing | 2 | 13 |
| Windscreen wiper motor slow speed control | Windscreen wiper motor | All or Nothing | 2 | 13 |
| Reversing lamps supply | Reversing lamps | All or Nothing | 2 | 13 |
| Sidelamps relay control | Sidelamps relay | All or Nothing | 2 | no |
| Heated door mirrors control | Door mirrors relay | All or Nothing | 2 | 13 |
| Engine ECU resupply command for engine immobiliser | Engine ECU double relay | All or Nothing | 2 | 13 |
| Heated rear screen and door mirror lamp control (except RFTA climate control) | De-icing switch | All or Nothing | 10 | no |
| Hazard warning lamps button lamp control | Hazard warning lamps button lamp | All or Nothing | 2 | 13 |
| System status LED control | System status LED | All or Nothing | 2 | no |
| Supply: VAN bus power on passenger compartment harness | VAN network | All or Nothing | 2 | 13 |
| Supply: VAN bus power on main harness | VAN network | All or Nothing | 2 | 13 |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

B - MULTIPLEXED OUTPUTS

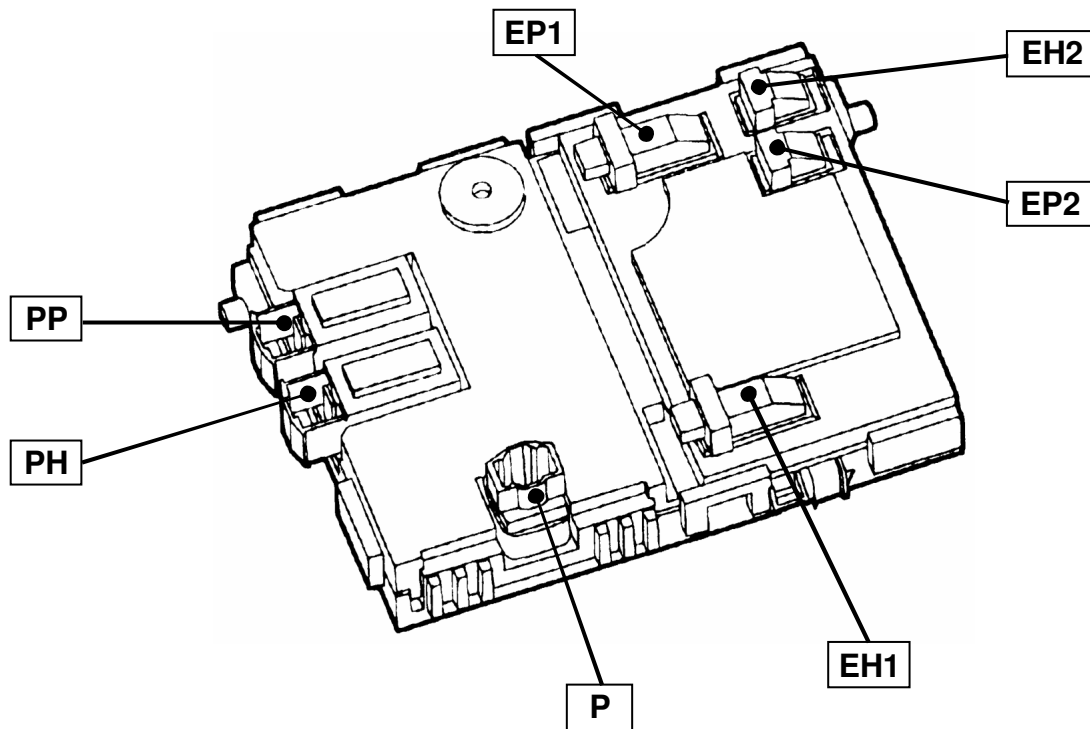
| DESCRIPTION | RECEIVER | XSARA PIC. | XSARA |
|---|---|--------------|----------|
| Fast BSI data | | | |
| Engine speed | Control panel/MFS | 8 | 16 |
| Instantaneous vehicle speed | Control panel/MFS, Air conditioning, Radio CD | 8, 9, 10 | 16 |
| Mileage | Control panel/MFS | 8 | 16 |
| Fuel consumption | Control panel/MFS | 8 | 16 |
| Slow BSI data | | | |
| Day / Night status | Control panel/MFS, Air conditioning, Radio | 8, 9, 10, 11 | no |
| Night driving mode | Control panel/MFS, Air conditioning | 8, 10 | no |
| Control panel brightness level (Alarm on stand-by) | Control panel/MFS, Air conditioning Alarm (accessory) | 8, 10 0 | no no |
| Factory / Customer mode | MFS, Radio, CD changer | 8, 9, 11 | 16 |
| Reverse gear | Navigation | 7 | no |
| Economy mode | Control panel/MFS, Air conditioning, Radio CD | 8, 9, 10 | 16 |
| Set to stand-by in 5 seconds | Control panel/MFS, Air conditioning, Radio, CD changer | 8, 9, 10, 11 | 16 |
| Engine running | Control panel/MFS, Air conditioning | 8, 10 | 16 |
| Position of ignition key | Control panel/MFS, Air conditioning | 8, 10 | 16 |
| Coolant temperature | Control panel/MFS | 8 | 16 |
| Vehicle mileometer | Control panel/MFS | 8 | 16 |
| External temperature | Control panel/MFS, Air conditioning | 8, 10 | no |
| BSI configuration | | | |
| VIN | Radio | 9 | no |
| BSI display | | | |
| Coolant temperature warning | Control panel/MFS | 8 | 16 |
| Brake fluid / hydraulic level warning | Control panel/MFS | 8 | 16 |
| Door(s) open, engine running warning | Control panel/MFS | 8 | 16 |
| Oil pressure warning | Control panel/MFS | 8 | no |
| Electronic brakeforce distribution fault | Control panel/MFS | 8 | no |
| ABS fault | Control panel/MFS | 8 | 16 |
| EOBD fault | Control panel/MFS | 8 | 16 |
| Battery charging fault | Control panel/MFS | 8 | 16 |
| Headlamps left on reminder signal | Control panel/MFS | 8 | 16 |
| Key in ignition reminder signal | Control panel/MFS | 8 | 16 |
| Overspeed signal | Control panel/MFS | 8 | 16 |
| Parking brake | Control panel | 8 | 16 |
| HF plip battery worn | MFS | 8 | no |
| Impact sensor signal | MFS | 8 | no |
| Electric engine immobiliser system fault | Control panel/MFS | 8 | 16 |
| Vehicle locking status | Control panel/MFS | 8 | no |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

| DESCRIPTION | RECEIVER | XSARA PIC. | XSARA |
|---|---------------------------|------------|-------|
| BSI CPL displays | | | |
| Front right hand door open | MFS | 8 | no |
| Front left hand door open | MFS | 8 | no |
| Rear right hand door open | MFS | 8 | no |
| Rear left hand door open | MFS | 8 | no |
| Boot open | MFS | 8 | no |
| Consumption invalid (flowmeter fault) | MFS | 8 | no |
| Range invalid (sender fault) | MFS | 8 | no |
| Range calculation impossible (fuel level too low) | MFS | 8 | no |
| Distance travelled insufficient (less than 400 m since resetting) | MFS | 8 | no |
| Journey distance insufficient (less than 400 m since resetting) | MFS C | 8 | no |
| Status of on board ECU scroll button | MFS | 8 | no |
| Average speed travelled | MFS | 8 | no |
| Average journey speed | MFS | 8 | no |
| Filtered speed | MFS | 8 | no |
| Cumulative distance travelled | MFS | 8 | no |
| Average consumption | MFS | 8 | no |
| Cumulative journey distance | MFS C | 8 | no |
| Average journey consumption | MFS C | 8 | no |
| Instant consumption | MFS | 8 | no |
| Remaining range | MFS | 8 | no |
| BSI event | | | |
| Main event present | MFS | 8 | no |
| Secondary event present | MFS | 8 | no |
| Source of the event | MFS | 8 | no |
| Change of signals and modes | MFS | 8 | no |
| Change of door status | MFS | 8 | no |
| Change of on board ECU data | MFS | 8 | no |
| Control panel functions | | | |
| Activation of control panel | Control panel | 8 | 16 |
| Pre-heating | Control panel | 8 | 16 |
| Hazard warning lamps | Control panel | 8 | 16 |
| Right hand indicator | Control panel | 8 | 16 |
| Left hand indicator | Control panel | 8 | 16 |
| Air conditioning information | | | |
| Air conditioning activation | Automatic climate control | 10 | no |
| Compressor authorisation | Automatic climate control | 10 | no |
| Heated rear screen operating status | Automatic climate control | 10 | no |
| Compressor status | Automatic climate control | 10 | no |
| Coolant pressure/temperature, evaporator safety | Automatic climate control | 10 | no |
| Evaporator temperature | Automatic climate control | 10 | no |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

V - LOCATION AND TYPE OF THE CONNECTORS ON THE BSI



| CONNECTOR | DESCRIPTION | CHANNELS | COLOUR |
|-----------|---|----------|--------|
| P | Power Supply Connector to main harness | 2 | GREY |
| PP | Power Connector to main harness | 16 | GREEN |
| PH | Power Connector to passenger compartment harness | 16 | BLACK |
| EP1 | Electronic Connector to main harness | 26 | YELLOW |
| EP2 | Electronic Connector to main harness | 12 | BROWN |
| EH1 | Electronic Connector to passenger compartment harness | 26 | BLUE |
| EH2 | Electronic Connector to passenger compartment harness | 12 | BLUE |

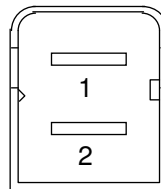
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

VI - CHANNEL ALLOCATION ON THE BSI

BSI inputs/outputs

Power part.

- Allocation of pins of the Grey 2-way NG1 connector of the main harness.

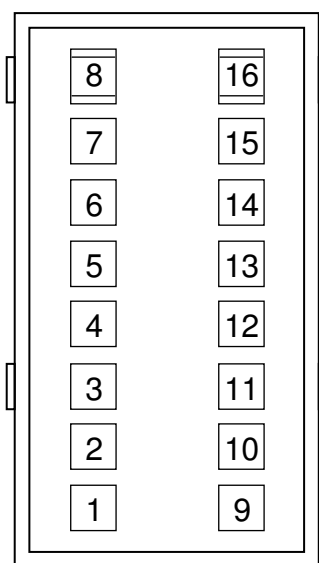


1 - + permanent

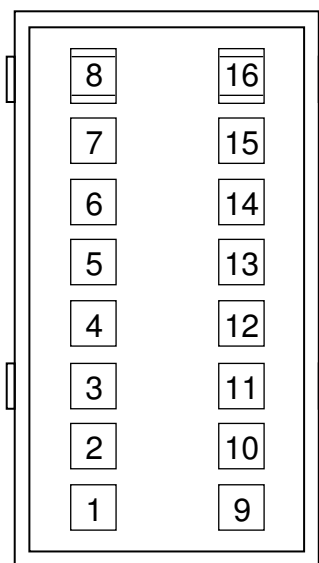
2 - + alternator

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

- Allocation of pins of the Green 16-way SIGMA connector of the main harness.



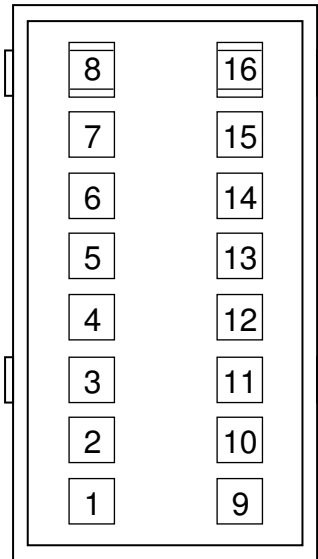
- 8 - Output: Power supply of the VAN bus on main harness
- 7 - Output: Front left hand indicator control
- 6 - Output: Front right hand indicator control
- 5 - Output: + accessories for wash/wipe stalk
- 4 - Input: Lamps
- 3 - Input: Reverse gear switch
- 2 - Power earth
- 1 - Output: Windscreen wiper slow speed motor control



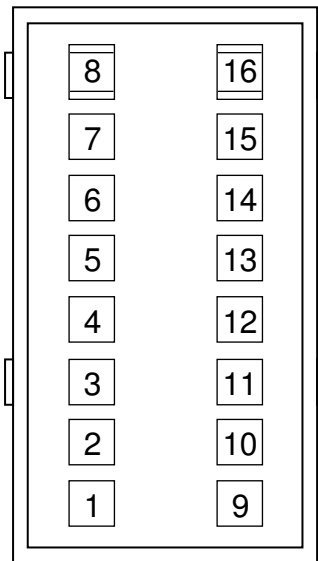
- 16 - + permanent
- 15 - Output: Right hand repeater indicator control
- 14 - Output: Left hand repeater indicator control
- 13 - Output: Air conditioning compressor control
- 12 - Power earth
- 11 - Spare
- 10 - Spare
- 9 - Output: Windscreen wiper high speed motor control

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

- Allocation of pins of the Black 16-way SIGMA 2 connector of the passenger compartment harness.



- 8 - Output: Front electric window supply
- 7 - Output: Left hand repeater indicator control
- 6 - Output: Right hand repeater indicator control
- 5 - Output: Rear wiper control
- 4 - Output: Locking motors control
- 3 - Output: Unlocking motors control
- 2 - Output: Heated door mirrors control
- 1 - Output: Heated rear screen control



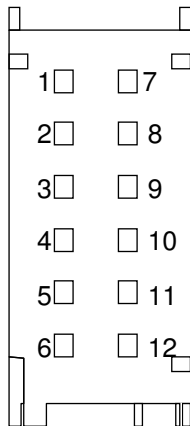
- 16 - Output: Power supply of the VAN bus on passenger compartment harness
- 15 - Output: Rear left hand indicator control
- 14 - Output: Rear right hand indicator control
- 13 - + accessories
- 12 - Output: Lamps
- 11 - Output: Reversing lamps
- 10 - Output: Deadlocking motors control
- 9 - Output: Heated rear screen control 2

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

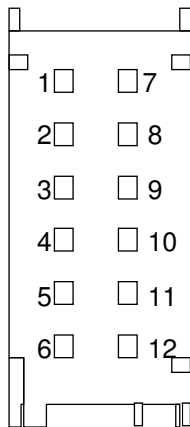
- | | | | | |
|----|--|---|----|--|
| 1 | | □ | 14 | 1 - K diagnostic line serial connection |
| 2 | | □ | 15 | 2 - Input: Vehicle speed information |
| 3 | | □ | 16 | 3 - Input: Engine ECU serial connection for engine immobiliser |
| 4 | | □ | 17 | 4 - Input: Engine speed information through engine ECU |
| 5 | | □ | 18 | 5 - Output: Heated rear screen and door mirrors lamp control (except RFTA VAN) |
| 6 | | □ | 19 | 6 - Output: Engine ECU resupply control for engine immobiliser |
| 7 | | □ | 20 | 7 - Input: Windscreen wash control |
| 8 | | □ | 21 | 8 - Input: Wash/wipe control intermittent mode (no rain sensor) auto mode (with rain sensor) |
| 9 | | □ | 22 | 9 - Output: Low fuel level to engine ECU |
| 10 | | □ | 23 | 10 - Input: Rear screen wash control |
| 11 | | □ | 24 | 11 - Input: Rear wiper |
| 12 | | □ | 25 | 12 - Input: Right hand indicator control |
| 13 | | □ | 26 | 13 - Input: Windscreen wiper motor parked information |
-
- | | | | | |
|----|--|---|----|---|
| 1 | | □ | 14 | 14 - Input/Output: Battery charge/alternator excitation |
| 2 | | □ | 15 | 15 - Output: Transponder clock signal |
| 3 | | □ | 16 | 16 - Output: Engine ECU serial connection for engine immobiliser |
| 4 | | □ | 17 | 17 - Transponder aerial serial connection for engine immobiliser |
| 5 | | □ | 18 | 18 - Input: Coolant temperature info by FRIC engine ECU (PWM) |
| 6 | | □ | 19 | 19 - Input: Windscreen wiper high speed control |
| 7 | | □ | 20 | 20 - Input: Windscreen wiper slow speed control |
| 8 | | □ | 21 | 21 - Input: Diesel preheating information |
| 9 | | □ | 22 | 22 - Input: Inertia switch information |
| 10 | | □ | 23 | 23 - Input: Coolant temperature warning information through thermoswitch |
| 11 | | □ | 24 | 24 - Input: Engine ECU fault information |
| 12 | | □ | 25 | 25 - Input: De-icing button |
| 13 | | □ | 26 | 26 - Input: Left hand indicator control |

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- Allocation of pins of the Brown 12-way MQS connector of the main harness.

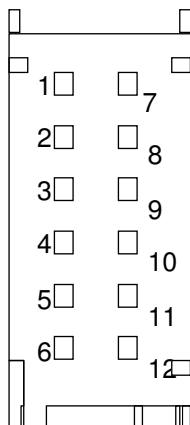


- 1 - Input: On board ECU scroll request
- 2 - Input: Navigation recall last message request
- 3 - For supplier use
- 4 - Output: Headlamp washer relay control
Output: Sidelamp relay control (timed illumination)
- 5 - Output: Air conditioning compressor authorisation request to engine ECU
- 6 - Input: Air conditioning compressor authorisation through engine ECU



- 7 - Analogue earth
- 8 - Input: Evaporator temperature information
- 9 - Input: Fuel flow information through engine ECU
- 10 - Input: Coolant temperature information through thermistor (analogue)
- 11 - Input: Refrigerant pressure safety information
- 12 - Input: Air conditioning request

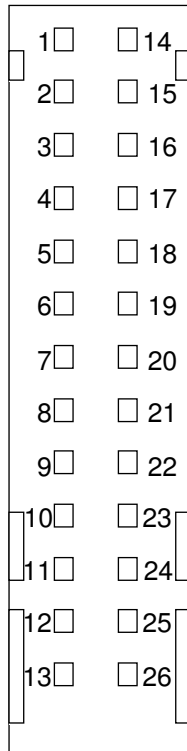
- Allocation of pins of the Blue 12-way MQS connector of the passenger compartment.



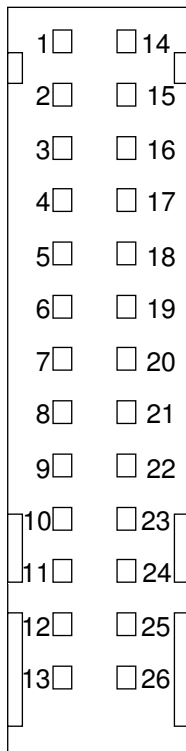
- 1 - Output: Ultra sound module supply
- 2 - Input: Bonnet switch
- 3 - Input/Output: Siren serial connection
- 4 - Output: Close electric windows request when (dead)locking
- 5 - Input: Alarm request through ultrasound module
- 6 - Input: Volumetric suppression request button
- 7 - 12 - Spare

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

- Allocation of pins of the Blue 26-way MQS connector of the passenger compartment harness.



- 1 - Output: Engine running
- 2 - Input: Locking request through lock
- 3 - Input: Unlocking request through lock
- 4 - Input: Hazard warning lamps request button
- 5 - Input: Front right hand door locking button control
- 6 - Input: Rear left hand door switch
- 7 - Input: Tailgate or boot switch
- 8 - Input: Front left hand door locking button control
- 9 - Output: System status LED (locking/transponder/alarm function)
- 10 - Input: Rear wiper motor parked information
- 11 - Input: Front right hand door switch
- 12 - Input: Rear right hand door switch
- 13 - Input: Front left hand door switch



- 14 - Input/Output: Rain sensor serial connection
- 15 - Output: Door sill lighting control
- 16 - Output: Rear interior lamp control
- 17 - Output: Front interior lamp control
- 18 - Output: Hazard warning lamps button LED control
- 19 - DATA of the SCREEN/COMFORT VAN bus
- 20 - Input: External air temperature information
- 21 - DATA B of the SCREEN/COMFORT VAN bus
- 22 - + ignition on
- 23 - + permanent
- 24 - Analogue earth of the passenger compartment harness
- 25 - Earth
- 26 - Earth

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

VII - OPERATING MODES

A - NOMINAL MODE OR CUSTOMER MODE

All functions are operational. This is the operating mode designed for normal vehicle use.

B - STAND-BY MODE

In this mode, there is no communications activity and ECU consumption is minimal. The BSI scans its wake-up inputs. Each multiplexed device is able to wake up the network. In each case, it re-supplies all the ECUs by a positive called the +VAN.

| ACTION | WAKE-UP NETWORK |
|--------------|--|
| IF condition | Ignition on (+accessories or + ignition on) |
| OR condition | Lamps or hazard warning lamps illuminated |
| OR condition | HF remote control used |
| OR condition | Driver's door opened |
| OR condition | Data B earthed |
| OR condition | Request to wake-up network by VAN device (radio) |

| ACTION | SET NETWORK TO STAND-BY |
|---------------|--------------------------------|
| IF condition | Ignition not on |
| AND condition | No timer |
| AND condition | No request to maintain network |

C - ECONOMY MODE

The BSI cuts the supply to the ECUs (+VAN signal), there are no more communications on the network. Electrical consumption is therefore greatly reduced.

| | |
|------------------------|---|
| Entry into mode | Engine switched off for more than 30 minutes and +VAN present |
| Exit from mode | Starting of the engine |

Note: A network device can be active and/or communicating, even if it does not appear to be working.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

VIII - AFTER-SALES OPERATIONS, ACCESSORIES

A - GENERAL

In the factory, an initialisation procedure is performed at the end of vehicle assembly in order to allow the various devices to recognise each other:

- ignition key with integrated transponder and BSI,
- HP remote controls and BSI,
- engine management ECU and BSI,
- radio and BSI.

B - ACCESSORIES

All new devices which have not undergone a programming procedure are not recognised by the system and are therefore not operational. It is therefore essential to declare all accessories which are added to or removed from the vehicle. All programming procedures require the use of a diagnostic tool. They must be performed on the vehicle.

Note: The multiplexed self-powered alarm must be disconnected when performing a diagnostic procedure on the vehicle.

| | ACCESSORIES | PROGRAMMING IF ADDING/REMOVING |
|----------------------|-----------------|---|
| XSARA PICASSO | CD changer | YES > Programming of the control panel |
| | Alarm | YES > Deactivation of signalling when locking: BSI programming |
| XSARA | Accessory alarm | YES > BSI programming + deactivation of signalling when locking |

C - CUSTOMISATION OF CERTAIN FUNCTIONS

Upon the customer's request, the BSI can be programmed to activate the function or not.

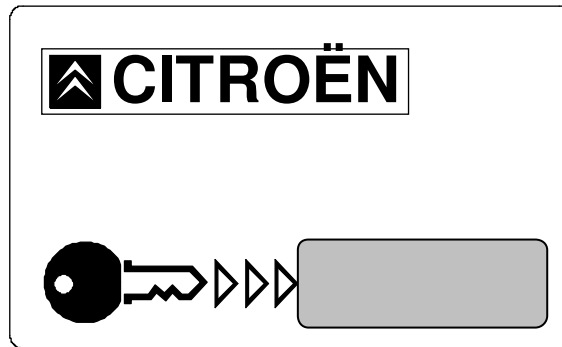
Radio volume linked to vehicle speed: Programming of the radio.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

D - REPLACEMENT OPERATIONS

1 - Customer confidential card

The access code (4 characters) is given to the customer on a confidential card. It can be seen after removing the masking strip on the card. It is required for all maintenance procedures on the system.



IMPORTANT: Before adding or replacing parts, ensure that the customer is still in possession of his confidential card.

2 - Loss of access code

The access code is linked to a chassis number and managed by the CITROËN network.

3 - Ordering parts

| PART TO BE ORDERED | TO BE OBTAINED FROM THE CUSTOMER | TO BE SUPPLIED |
|---|---|-------------------------------------|
| BSI | confidential card vehicle registration document form of identity faulty BSI | BSI access code vehicle VIN code |
| Engine ECU | confidential card vehicle registration document form of identity Faulty engine ECU | BSI access code vehicle VIN code |
| Key with integrated transponder | 1 key | mechanical key code |
| Key with integrated transponder and HF remote control | 1 key | mechanical key code |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

4 - Repairs

| ITEM TO BE REPLACED | ESSENTIAL ITEMS | OPERATIONS TO BE PERFORMED |
|------------------------------------|---|--|
| BSI ONLY * | Customer's confidential card. All vehicle keys. New BSI. Diagnostic tool. | Programming of access code. Programming of keys and HF remote controls. |
| ENGINE ECU ONLY | Customer's confidential card. New engine ECU. Diagnostic tool. | Programming of engine ECU code. |
| KEYS AND/OR REMOTE CONTROLS | Customer's confidential card. All vehicle keys. Diagnostic tool. | Programming of keys and HF remote controls. |
| BSI * + ENGINE ECU | Customer's confidential card. All vehicle keys. New BSI + engine ECU. Diagnostic tool. | Programming of access code. Programming of keys and/or HF remote controls. Programming of engine ECU code. |

* Remember to configure the BSI according to the correct customisation of the functions and accessories fitted on the vehicle.

5 - Interchanging parts

WARNING: Interchanging the BSI and engine ECU with one (or several) components from a different vehicle is strictly forbidden.

The transponder keys, HF remote controls, BSI and engine ECU are linked to the vehicle's VIN.

E - DIAGNOSTIC

The BSI acts as a gateway for the diagnostic tool which is used to identify the faults in certain components of the system.

A fault may be:

- a short circuit to earth or to +12V,
- an open circuit (broken wire),
- an operating fault (invalid value sent by a sensor),
- an ECU which no longer communicates on the network: network isolated or faulty ECU.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

Below is a list of faults which can be returned by the BSI on the XSARA and the XSARA PICASSO:

| FAULT | XSARA | XSARA PICASSO |
|--|--------------|--------------------------|
| +Accessories stuck on 0 | X | X |
| Ultrasound unit supply - short circuit to earth | X | |
| Alternator | X | X |
| +ignition on stuck on 0 | X | X |
| Rain sensor | X | |
| Air conditioning – Air conditioning compressor - Authorisation | X | X |
| De-icing - Lamp output short circuited to earth | X | X |
| Lighting - right hand indicators | X | X |
| Lighting - left hand indicators | X | X |
| Engine ECU - error code received | X | X |
| Engine ECU - reception fault | X | X |
| Engine ECU - Relays - Short circuited to earth | X | X |
| Engine ECU or EOBD | X | X |
| Hazard warning lamps - Input (request) stuck on 1 | X | X |
| Hazard warning lamps - Button LED - Short circuited to earth | X | X |
| Low fuel - Short circuited to +BAT | X | X |
| Plip - battery in current key worn | X | X |
| EEPROM problem | X | X |
| Engine speed | X | X |
| Locking motors - Permanent request from ignition key | X | X |
| Unlocking motors - Permanent request from ignition key | X | X |
| Siren | X | |
| Evaporator sensor - Short circuit | X | X |
| Coolant temperature | X | X |
| Transponder - Short circuit on connection with ring | X | X |
| Transponder - Identification | X | X |
| COMFORT VAN - BSI mute | X | X |
| COMFORT VAN - Air conditioning mute | X | X |
| COMFORT VAN - Communication on Data | X | X |
| COMFORT VAN - Communication on Data B | X | X |
| COMFORT VAN - Multifunction screen mute | X | X |
| COMFORT VAN - Wake-up by network prohibited due to short circuit on Data B | | X |
| Vehicle speed - invalid value or sensor connection problem | X | X |
| System status lamp - Short circuited to +BAT | X | X |
| COMFORT VAN – Communications fault counter on DATA | | X |
| COMFORT VAN – Communications fault counter on DATA B | | X |
| COMFORT VAN – Frames not sent counter - BSI mute | | X |
| COMFORT VAN – Control panel counter missing | | X |
| COMFORT VAN – Multifunction screen counter missing | | X |
| COMFORT VAN – Air conditioning counter missing | | X |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

I - LAYOUT DIAGRAM



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II - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
| 2300 | - Danger signal switch |
| 2340 | - Left hand side repeater |
| 2345 | - Right hand side repeater |
| 2610 | - Left hand headlamp |
| 2615 | - Right hand headlamp |
| 2630 | - Rear left hand lamp on body |
| 2635 | - Rear right hand lamp on body |
| 3010 | - Front interior lamp |
| 3020 | - Rear interior lamp |
| 3050 | - Lighting rheostat |
| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermost switch (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
- 8030 - Passenger compartment air thermistor
- 8031 - Coolant thermistor
- 8045 - Blower control module (if separate)
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- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

PART 2

SIGNALLING

XSARA AND XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

GENERAL

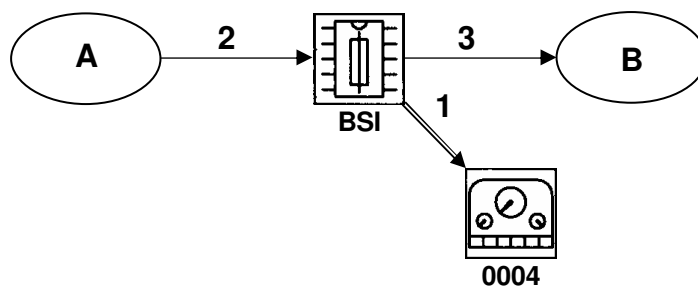
I - FOREWORD



The left and right hand indicators and side repeaters can be controlled simultaneously or independently in the following order of priority:

| | |
|----------|--|
| 1 | Automatic illumination of hazard warning lamps in the event of an impact (XSARA PICASSO only). |
| 2 | Locking / unlocking using the HF remote control or the key. |
| 3 | Hazard warning lamps. |
| 4 | Indicators. |

The BSI incorporates the flasher unit and the internal relays. The indicators are therefore connected **DIRECTLY** to an output of the BSI. The LEDs and buzzer on the control panel are activated through the Comfort VAN network.

II - GENERAL LAYOUT



Key:  single arrow = wire connection
 triple arrow = multiplexed connection

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

| COMPONENTS | |
|-------------------|---------------------------------|
| BSI | Built-in Systems Interface |
| 0004 | Control panel |
| A | Steering wheel stalk |
| | Hazard warning lamps button |
| | Inertia switch |
| B | Indicators and side repeaters |
| | Hazard warning lamps button LED |

| CONNECTIONS | | |
|--------------------|---|----------------|
| N° | SIGNAL | TYPE |
| 1 | Control of the lamp and buzzer | VAN |
| 2 | Indicators activation request | All or Nothing |
| | Hazard warning lamps activation request | All or Nothing |
| | Impact detection | All or Nothing |
| 3 | Indicators and side repeaters control | All or Nothing |
| | Hazard warning lamps button LED control | All or Nothing |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

OPERATING PRINCIPLE

I - INDICATOR FUNCTION

Function

The BSI controls the direction indicators, the side repeaters and the LEDs on the control panel.

Functional description

The driver's request is acquired by the right or left hand indicator contacts when the ignition is on.

II - HAZARD WARNING LAMPS FUNCTION

A - ILLUMINATION OF THE HAZARD WARNING LAMPS BY PRESSING THE HAZARD WARNING LAMPS BUTTON

Function:

The BSI controls the direction indicators, the side repeaters, the danger signal warning LED and the LEDs on the control panel.

Functional description:

The driver's request is acquired by the hazard warning lamps button contact, located on the instrument panel. The function can always be activated, whether the ignition is on or off, except for the LEDs on the control panel which are only activated if the + accessories or + ignition are on.

Note: Pressing this button can wake up the VAN network.

Display:

The danger warning LED is activated by connecting an output of the BSI to +BAT.

The LED on the control panel will not be activated if the + accessories is not on.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

B - AUTOMATIC ILLUMINATION OF HAZARD WARNING LAMPS IN THE EVENT OF AN IMPACT

Note: This function is only available on the XSARA PICASSO

Function:

The BSI controls the hazard warning lamps when an impact is detected.

Functional description:

| | |
|----------------------|--|
| Action | Illumination of hazard warning lamps. |
| IF condition | the ignition is on |
| AND condition | the impact detection input is activated (connected to +BAT). |

The impact is detected by the inertia switch mounted on a rigid part of the vehicle's structure (mechanical switch). The hazard warning lamps can be switched off after an impact by pressing the button.

Note: This function is not totally reliable. It depends on the size and type of the impact. The fact that the hazard warning lamps have illuminated in the event of an impact should therefore not be communicated.

III - FAULTY BULB DETECTION FUNCTION

Function:

The aim of this function is to double the illumination frequency of the indicators (left or right hand) if at least one blown bulb is detected.

Functional description:

Detection is performed whilst the indicators and side repeaters (left or right hand) are operating, by reading the control current of the indicators.

If the current supplied by the BSI is greater than the current consumed by an indicator or a side repeater bulb, operation is normal. If not, the illumination frequency is doubled.

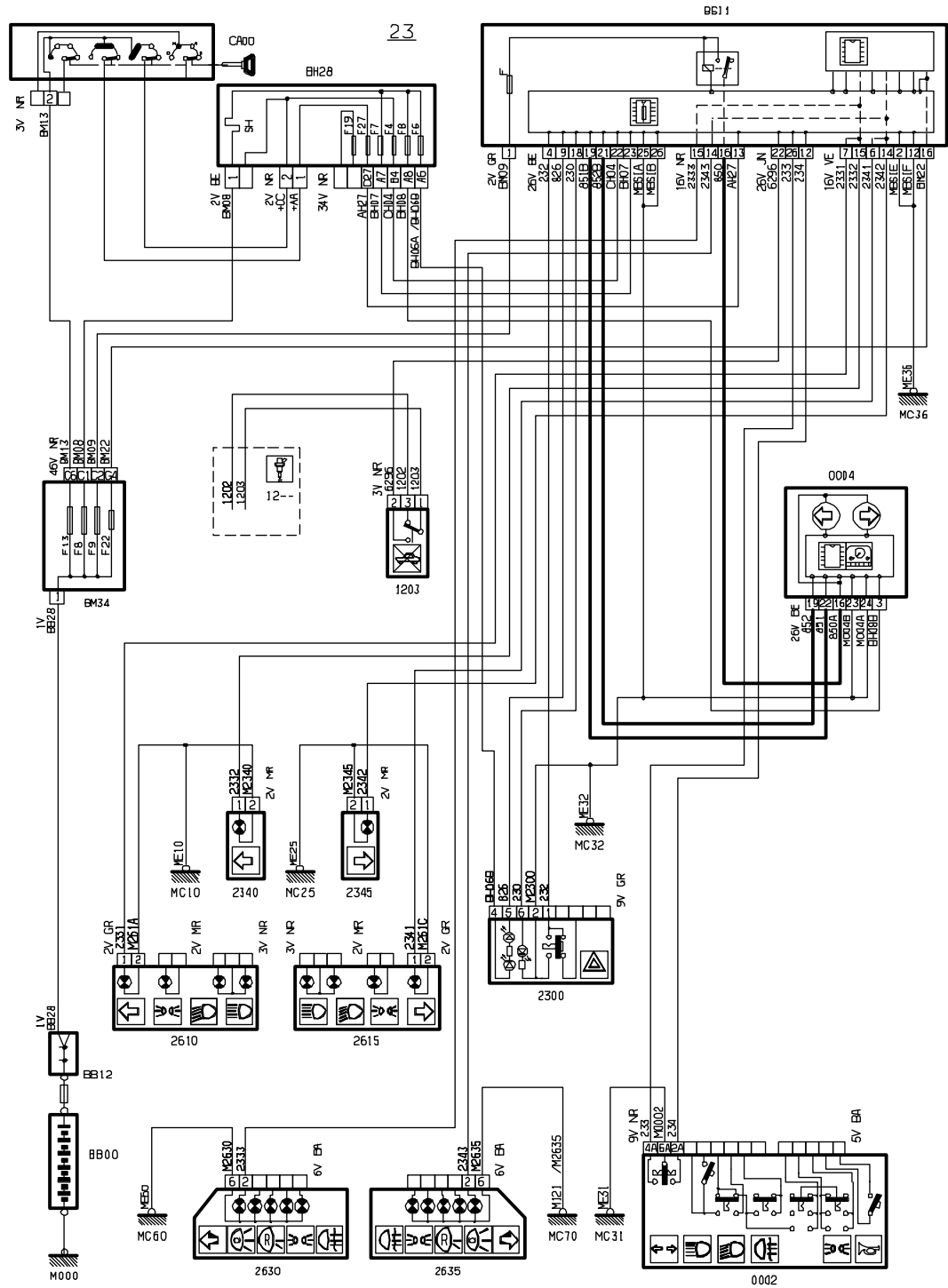
All operating faults are recorded by the BSI so that they can be read by the diagnostic tool.

Note: When a tow bar is fitted, 2 bulbs must have blown for detection to occur.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

ELECTRICITY

I - LAYOUT DIAGRAM



PFM002P

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

II - PARTS LIST

- BB00 - Battery
- BB12 - + battery connection terminal
- BH12 - 12 fuse box (passenger compartment)
- BH28 - 28 fuse box (passenger compartment)
- BM34 - 34 fuse engine relay unit
- BSI1 - Built-in systems interface
- C001 - Diagnostic connector
- CA00 - Ignition switch
- CT00 - Rotary connector
- 0002 - Signalling/lighting stalk
- 0004 - Control panel
- 0005 - Wiper stalk
- 1010 - Starter motor
- 1020 - Alternator
- 1203 - Inertia switch
- 1211 - Fuel sender pump
- 1220 - Engine coolant temperature sensor
- 1313 - Engine speed sensor
- 1320 - Engine management ECU
- 1620 - Vehicle speed sensor
- 2300 - Danger signal switch
- 2340 - Left hand side repeater
- 2345 - Right hand side repeater
- 2610 - Left hand headlamp
- 2615 - Right hand headlamp
- 2630 - Rear left hand lamp on body
- 2635 - Rear right hand lamp on body
- 3010 - Front interior lamp
- 3020 - Rear interior lamp
- 3050 - Lighting rheostat
- 3054 - Ashtray lighting
- 3105 - Boot (or tailgate) lighting

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermoswitch (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
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- 8435 - Loud speaker (rear right hand)
- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 2

PART 3

INTERIOR LIGHTING

XSARA AND XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

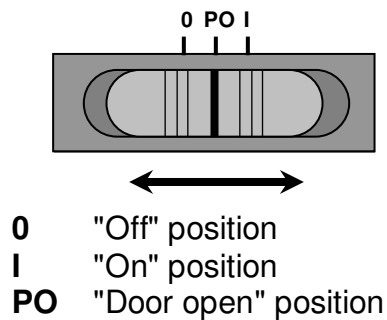
GENERAL

I - FOREWORD

The interior lighting consists of 2 interior lamps. They are activated by:

- the 4 vehicle doors,
- the tailgate on the XSARA PICASSO,
- the interior lamp switches.

Positions of an interior lamp switch:



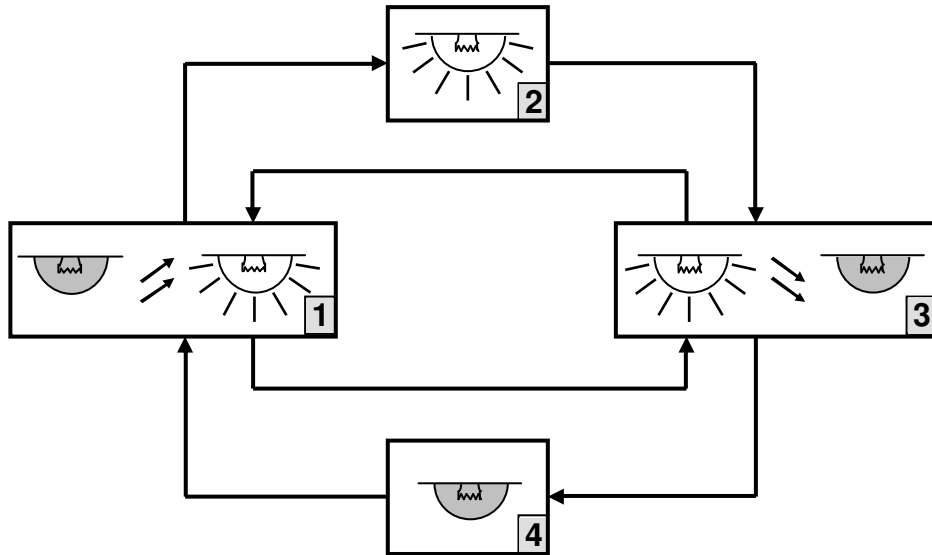
Progressive illumination and extinguishing of the interior lamps

The interior lamps always illuminate and extinguish progressively. The aim of this function is to protect passengers against a sudden change in lighting.

Layout diagram:

Below is the illumination and extinguishing cycle for each interior lamp:

- transitions to an illuminated state have priority,
- progressive illumination / extinguishing transitions are possible,
- there is no perceptible discontinuity.

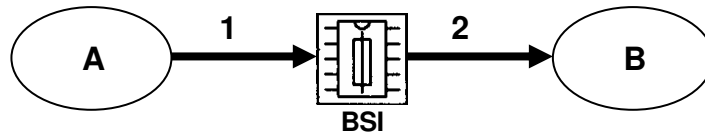




| KEY | |
|-----|--|
| 1 | Progressive illumination of interior lamp |
| 2 | Interior lamp illuminated |
| 3 | Progressive extinguishing of interior lamp |
| 4 | Interior lamp extinguished |

| ACTION | TIMER |
|---------------------------|-----------|
| Progressive illumination | 1 second |
| Progressive extinguishing | 4 seconds |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

II - GENERAL LAYOUT



Key:  single arrow = wire connection
 triple arrow = multiplexed connection

| COMPONENTS | |
|------------|---|
| BSI | Built-in Systems Interface |
| A | Switches of the 4 doors (and tailgate on the Xsara Picasso). Interior lamp switches Ignition switch |
| B | Front and rear interior lamps |

| CONNECTIONS | | |
|-------------|--|----------------|
| N° | SIGNAL | TYPE |
| 1 | Status of doors/tailgate | All or Nothing |
| | Change of interior lamp status request | ----- |
| | Presence of ignition key | All or Nothing |
| | Presence of + accessories | All or Nothing |
| 2 | Timed illumination control | Analogue |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

OPERATING PRINCIPLE

Interior lamp timer

Function:

To control:

- the illumination duration of the interior lamps (10 minutes or 10 seconds),
- the extinguishing of the interior lamps.

Functional description:

| | 10 minute timer | | 10 second timer | | | Extinguishing | | | | | | | | |
|-------------------------|-----------------|---------|-----------------|-----|---------|---------------|----------|--------|--------|---------|--------|--------|--------|-----------------|
| Door/tailgate status | X | opening | X | X | closing | X | closed | closed | closed | closing | closed | closed | closed | X |
| + accessories | X | X | X | X | missing | X | + ACC on | X | X | present | X | X | X | X |
| Locking | X | X | X | X | X | X | X | yes | X | X | X | X | X | X |
| Unlocking | X | X | yes | X | X | X | X | X | X | X | X | X | X | X |
| Switch position | X→a | X | X | X | b | X | b | b | b | b | a→b | a→c | X | X |
| Removal of ignition key | X | X | X | yes | X | X | X | X | X | X | X | X | X | X |
| 10 second timer | X | X | X | X | X | no | X | X | end | X | X | X | X | X |
| 10 minute timer | X | X | X | X | X | end | X | X | no | X | X | X | X | X |
| Economy mode | no | no | no | no | X | X | X | X | X | X | X | X | X | Entry into mode |

X = Neutral status.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

I - LAYOUT DIAGRAM



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II - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
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| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

- 3110 - Glove box lighting switch
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- 8500 - Navigation ECU

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 3

PART 4

DRIVER'S INFORMATION

XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

GENERAL

I - FOREWORD

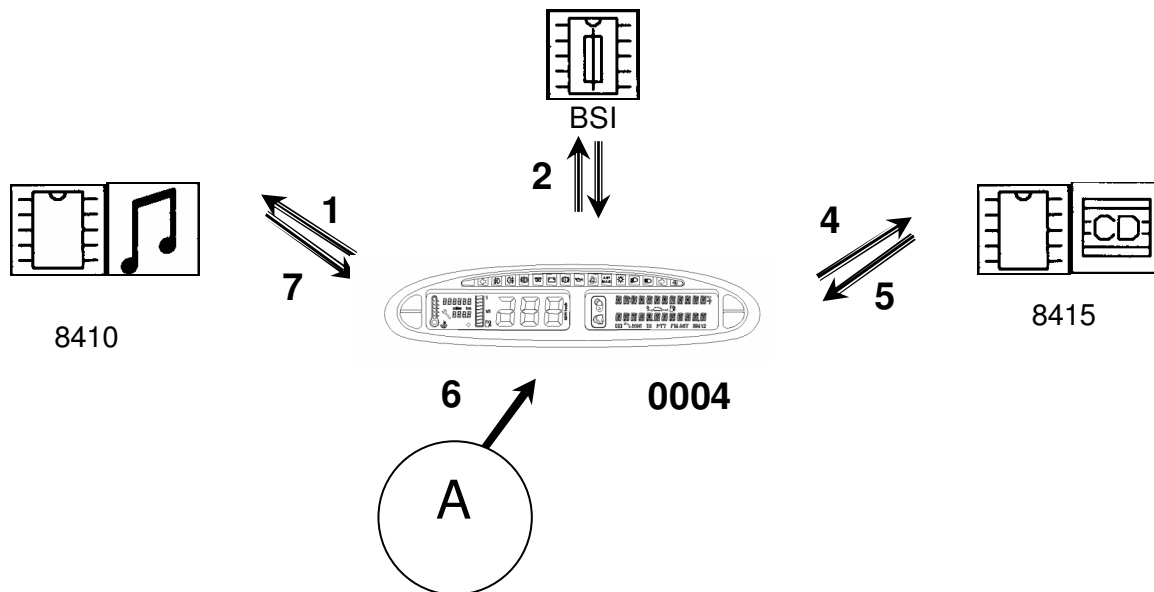
This function is shared between four sub-functions:



- Instrumentation function,
- Messages and Warnings function,
- Lighting function,
- On-board ECU function.

The control panel is at the centre of the Driver's Information function. The basic control panel (type B) is described in this section.

II - LAYOUT

The control panel receives information along the wires and by communicating with the ECUs via the VAN network.



Key:  single arrow = wire connection
 triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---|
| BSI | Built-in Systems Interface |
| 0004 | Control panel / MFS (LEDs + microprocessor) |
| 8410 | Radio |
| 8415 | CD changer available as an option |
| A | pressure switch |
| | electrodes |
| | Parking brake switch |
| | Steering wheel stalk |
| | Airbag ECUs |
| | Fuel sender |
| | Child safety switch |
| | ABS valve block |
| | Brake fluid gauge |
| | + rheostat button |
| | - rheostat button |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

A - INPUTS TO THE CONTROL PANEL/MULTIFUNCTION SCREEN (MFS)

Wire inputs

| DESCRIPTION | ORIGIN | TYPE | N° |
|--|----------------------|---|----|
| Low coolant level | Level sensor | All or nothing | 6 |
| Parking brake status | Switch | All or nothing | |
| Mainbeam status | Steering wheel stalk | All or nothing | |
| Dipped beam status | Steering wheel stalk | All or nothing | |
| Side airbags fault | Side airbags ECUs | All or nothing | |
| Front airbag fault and passenger's airbag status | Airbag ECU | All or nothing and frequency depending on fault | |
| Fuel level | Fuel sender | Analogue | |
| RH and LH child safety | Child safety switch | All or nothing | |
| ABS fault | ABS valve block | Lamp active | |
| Electronic brakeforce distributor fault | ABS valve block | All or nothing | |
| Radio and CD changer status change request | Steering wheel stalk | All or nothing Analogue | |
| Front and rear fog lamps control | Steering wheel stalk | All or nothing | |
| Brake fluid level | Brake fluid gauge | All or nothing | |
| Increase brightness | Rheostat | All or nothing | |
| Decrease brightness | Rheostat | All or nothing | |
| Min oil pressure | Pressure sensor | All or nothing | |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

Multiplexed inputs

BSI ⇒ CONTROL PANEL MFS

Fast BSI data

| DESCRIPTION | N° |
|-----------------------------|----|
| Engine speed | 3 |
| Instantaneous vehicle speed | |
| Distance travelled | |
| Fuel consumption | |

Slow BSI data

| DESCRIPTION | N° |
|----------------------------------|----|
| Day / night status | 3 |
| Night driving mode | |
| Control panel brightness level | |
| (Alarm on stand-by) | |
| Factory / Customer mode | |
| Reverse gear | |
| Economy mode | |
| Set to stand-by within 5 seconds | |
| Engine running | |
| Position of ignition key | |
| Coolant temperature | |
| Vehicle mileometer | |
| External temperature | |

BSI configuration

| DESCRIPTION | N° |
|-------------|----|
| VIN | 3 |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

BSI display

| DESCRIPTION | N° |
|---|----|
| Coolant temperature warning | 3 |
| Brake fluid / hydraulic level warning | |
| Door(s) open warning, engine running | |
| Oil pressure warning | |
| Electronic brakeforce distributor (EBD) fault | |
| ABS fault | |
| EOBD fault | |
| Battery charge fault | |
| Headlamps left on reminder warning signal | |
| Key left in ignition reminder warning signal | |
| Overspeed warning signal | |
| Parking brake | |
| HF plip battery worn | |
| Impact sensor warning signal | |
| Electric engine immobiliser system fault | |
| Vehicle locking status | |

BSI events

| DESCRIPTION | N° |
|-----------------------------|----|
| Main event present | 3 |
| Secondary event present | |
| Source of the event | |
| Change of signals and modes | |
| Change of door status | |
| Change of on board ECU data | |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

Additional BSI display

| DESCRIPTION | N° |
|---|----|
| Front right hand door open | 3 |
| Front left hand door open | |
| Rear right hand door open | |
| Rear left hand door open | |
| Boot open | |
| Consumption invalid (flowmeter fault) | |
| Range invalid (sender fault) | |
| Range calculation impossible (fuel level too low) | |
| Distance travelled insufficient (less than 400 m since resetting) | |
| Journey distance insufficient (less than 400 m since resetting) | |
| Status of on board ECU scroll button | |
| Average speed travelled | |
| Average journey speed | |
| Filtered speed | |
| Cumulative distance travelled | |
| Average consumption | |
| Cumulative journey distance | |
| Average journey consumption | |
| Instantaneous consumption | |
| Remaining range | |

Control panel functions

| DESCRIPTION | N° |
|-----------------------------|----|
| Activation of control panel | 3 |
| Pre-heating | |
| Hazard warning lamps LED | |
| Right hand indicator | |
| Left hand indicator | |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

CD changer ⇒ CONTROL PANEL/MFS

| DESCRIPTION | N° |
|-------------------|----|
| CD changer event | 5 |
| CD changer status | |

Radio ⇒ CONTROL PANEL/MFS

| DESCRIPTION | N° |
|-----------------------|----|
| Radio event | 7 |
| General radio status | |
| Specific radio status | |

Multiplexed outputs

Control panel/MFS ⇒ BSI

Control panel status

| DESCRIPTION | N° |
|---|----|
| Oil pressure warning | 7 |
| Night driving mode | |
| Parking brake | |
| Control panel brightness level | |
| Low fuel information | |
| ABS fault | |
| Electronic brakeforce distributor (EBD) fault | |
| Brake fluid fault | |
| Automatic gearbox fault | |
| Gross fuel level | |
| Dipped beam | |

Control panel reading

| DESCRIPTION | N° |
|---------------|----|
| Saved mileage | 2 |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

MFS request

| DESCRIPTION | N° |
|--------------------------------------|----|
| Request to reset cumulative distance | 2 |
| Request to reset cumulative journeys | |
| Request to maintain + comfort VAN | |

MFS/CONTROL PANEL ⇒ radio

| DESCRIPTION | N° |
|---------------|----|
| Radio control | 1 |

MFS/CONTROL PANEL ⇒ CD changer

| DESCRIPTION | N° |
|--------------------|----|
| CD changer control | 4 |

III - XSARA PICASSO CONTROL PANEL

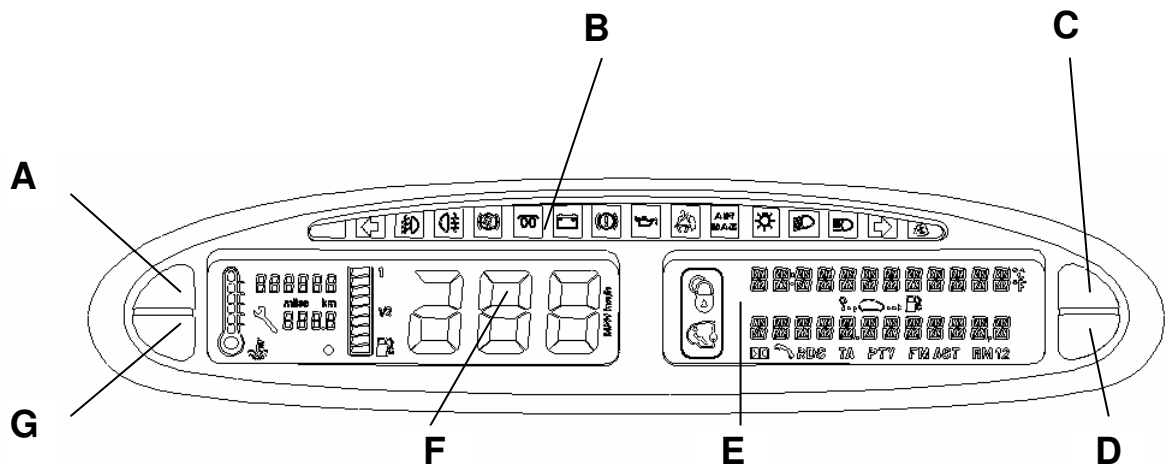
A - FUNCTION

The control panel has the following functions:

- Acquisition of information from the sensors and VAN network,
- Sending of data on the VAN network,
- Display of on board ECU parameters on the multifunction screen (type B),
- Warning to the driver of the vehicle status (noise, message, maintenance information, LEDs),
- Operation of radio and CD changer,
- Storing of distance travelled,
- Overspeed detection.

B - GENERAL DESCRIPTION

The control panel consists of the following components:

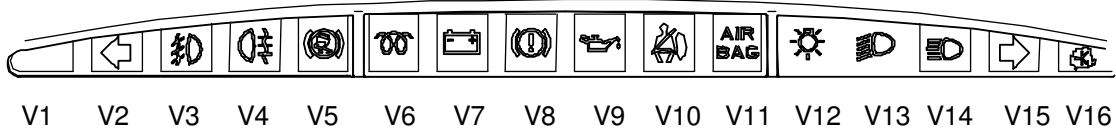


- Strip of LEDs; zone "b",
- Instrumentation screen; zone "f",
- Multifunction screen, type B; zone "e",
- Integrated buzzer,
- "Night driving" push button; button "a",
- "Tripometer" reset push button; button "g",
- "Access to adjustment menu" push button; button "c",
- "Incrementation in adjustment menu" push button; button "d"

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

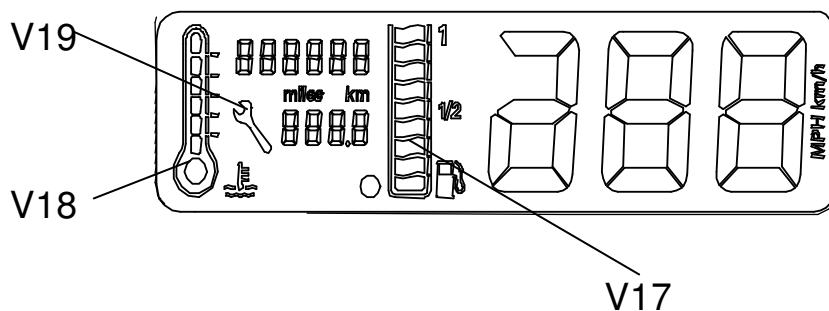
C - LEDS

The control panel contains the following strip of LEDs:



| LED | FUNCTION |
|-----|---|
| V1 | Not used |
| V2 | Left hand indicator LED |
| V3 | Front fog lamp |
| V4 | Rear fog lamp |
| V5 | ABS fault |
| V6 | Diesel pre-heating |
| V7 | Battery charge |
| V8 | Brake fault |
| V9 | Oil pressure |
| V10 | Diagnostic: side AIRBAG |
| V11 | Front AIRBAG + pyrotechnic seatbelts diagnostic or passenger AIRBAG deactivated |
| V12 | Headlamps |
| V13 | Dipped beam |
| V14 | Main beam |
| V15 | Right hand indicator LED |
| V16 | Engine management LED |

D - INSTRUMENTATION SCREEN

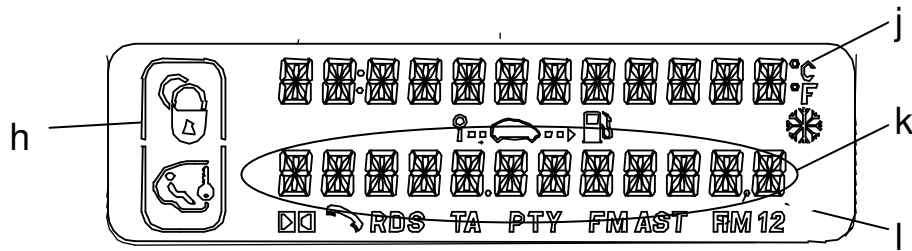


The instrumentation screen includes:

- A speedometer,
- A mileometer (incorporating the main mileometer, tripometer and maintenance indicator LED V19 functions),
- A coolant temperature gauge with a coolant temperature warning (LED V18),
- A fuel level gauge with a low fuel warning (LED V17).

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

E - MULTIFUNCTION SCREEN, TYPE B



The display is divided into four zones:

Zone "j": display of the time and external temperature and other messages,

Zone "k": display of the audio, CD changer and on board ECU settings,

Zone "h": display of the "central locking" and "child safety" symbols,

Zone "l": display of the symbols linked to the radio information.

The functions associated to the multifunction screen B are:

- Display of the time, date and external temperature,
- Display of the information linked to the radio and CD changer,
- On board ECU,
- Vehicle warnings.

F - INTEGRATED BUZZER

The buzzer integrated into the control panel produces 5 types of sound:

- "Flashing" type sound **D1**,
- "Overspeed" type 2 tone sound **D2.a**,
- "Headlamps left on" type 2 tone sound **D2.b**,
- "Key left in ignition" type 3 tone sound **D2.c**,
- "Warning beep" type sound **D3**.

A sound is emitted in the following situations:

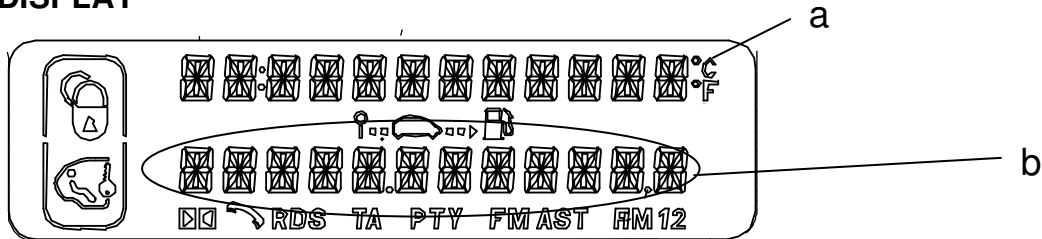
- when certain messages appear on the multifunction screen,
- when certain LEDs illuminate,
- when a warning not associated to a message or an LED appears.

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MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

MESSAGES AND WARNINGS FUNCTION

I - DISPLAY



Long messages are displayed in two stages in zones "a" and "b". Sequence 1 (called SEQ1) is displayed followed by sequence 2 (called SEQ2).

The time for which the messages are displayed depends on their appearance priority.

II - PRIORITY LEVELS

Three display priorities are defined for warnings on the control panel:

- P0: Warning which cannot be acknowledged by the driver, displayed until the fault disappears or the ignition is switched off,
- P1: Warning which can be acknowledged by the driver, displayed until the fault disappears or the ignition is switched off or by pressing one of the buttons on the control panel,
- P2: Timed warning, displayed until the fault disappears or the ignition is switched off or the end of the 6 second timer or by pressing one of the buttons on the control panel. This degree of priority is only valid if the associated warning is unique.

III - WARNINGS FROM WIRE INFORMATION

| TYPE OF WARNING | SEQ | ASSOCIATED MESSAGE | | LED PRIORITY; BUZZER | APPEARANCE CONDITIONS |
|--|--------|----------------------|--------------|---|--|
| | | ZONE "a" | ZONE "b" | | |
| Brake fluid / hydraulic level warning | 1 2 | TOP_UP | BRAKE_FLUID | P1;V8;D3 single sound | +ig on* (V≥0) AND fluid level low |
| Oil pressure warning | 1 2 | STOP OIL_PRESSURE | LOW | P1;V9;D3* repetitive sound | +ig on* AND Oil pressure low |
| Brake distributor fault | | WARNING | BRAKE_FAULT | P1;V8;D3 single sound | +ig on* AND braking system faulty |
| Passenger's AIRBAG deactivated | | | | P1;V11;D3 single sound | +ig on* (V≥0) AND passenger's airbag deactivated by key |
| Parking brake on | | PARKING | BRAKE | P1;V8;D3 repetitive sound 10s max | +ig on* AND parking brake on AND V> 10 Km/h |
| Coolant level warning (DW10 engine only) | | TOP_UP | WATER_LEVEL | P1;D3 single sound | +ig on* AND coolant level low |
| Low fuel | | WARNING | LOW_FUEL | P2;V17 | +ig on* AND low level reached |
| Front airbag fault | | | | P1;V11;D3* single sound | +acc/+ig on* AND airbag fault |
| Side airbag fault | | | | P1;V10;D3* single sound | +acc/+ig on* AND airbag fault |
| ABS fault | | ABS_FAULT | NON_FUNCTION | P1;V5;D3 single sound | +ig on* AND ABS fault |
| Maintenance | | ARRANGE | SERVICE | P2;V19 | +acc AND key flashing |
| External temperature warning | | RISK | OF_ICE | P2;D3 single sound | +acc AND -3°C<T<+3°C |
| Overspeed warning | | PROG_SPEED | XXX_KM/H | P2;D2a single | V≥130 Km/h (programmable) |

* Engine running or not

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IV - WARNINGS FROM THE VAN FRAMES

| TYPE OF WARNING | SEQ | ASSOCIATED MESSAGE | | LED PRIORITY; NOISE | APPEARANCE CONDITIONS |
|---------------------------------------|--------|--------------------|-----------------|--|--|
| | | ZONE" a" | ZONE" b" | | |
| Coolant temperature warning | 1 2 | STOP ENGINE | TEMPERATURE | P1;V18;D3 (repetitive sound) | +acc/+ig on* AND $T \geq 118^{\circ}\text{C}$ |
| Battery charging fault | 1 2 | BATTERY | FAULT | P1;V7;D3* | +acc/+ig on*/+cranking AND +EXC \leq +BAT-2.5V |
| Boot open | | BOOT | OPEN | P1;D3* | Boot open AND +acc/+ig on* |
| Rear RH door open | | RR RH DOOR | OPEN | P1;D3* | |
| Rear LH door open | | RR LH DOOR | OPEN | P1;D3* | |
| Bonnet open | | BONNET | OPEN | P1;D3* | |
| Front RH door open | | FT RH DOOR | OPEN | P1;D3* | |
| Front LH door open | | FT LH DOOR | OPEN | P1;D3* | |
| Engine immobiliser system fault | 1 2 | ENGINE IMMOBILISER | FAULT | P1 | +ig on/+cranking AND system faulty |
| HF plip battery worn | | CHANGE REMOTE | BATTERY CONTROL | P1 | +acc/+ig on* AND battery low |
| Impact sensor | 1 2 | RE-ARM INERTIA | SENSOR | P0 | +acc/+ig on AND impact detected |
| Headlamps left on reminder warning | | HEADLAMPS | LEFT ON | P1;V12;D2b (repetitive sound emitted 10 min max) | Headlamps on AND Driver's door open (+acc/+ig on missing) |
| Key left in ignition reminder warning | | KEY LEFT IN | IGNITION | P1;D2c repetitive | Key present (+acc/ +ig on missing 2s) AND Driver's door open |
| Overspeed warning active | 1 2 | WARNING SPEED | ACTIVE | P1 | Overspeed activation in on-board ECU |
| Overspeed warning inactive | 1 2 | WARNING SPEED | INACTIVE | P1 | Overspeed deactivation in on-board ECU |
| "Economy mode" active | | ECONOMY MODE | ACTIVE | P1 | The engine does not run for 30 mins |

- engine running or not

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INSTRUMENTATION FUNCTION

I - COOLANT TEMPERATURE GAUGE AND WARNING FUNCTION

A - GENERAL

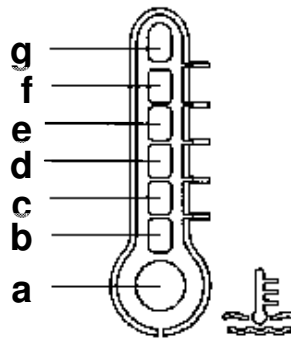


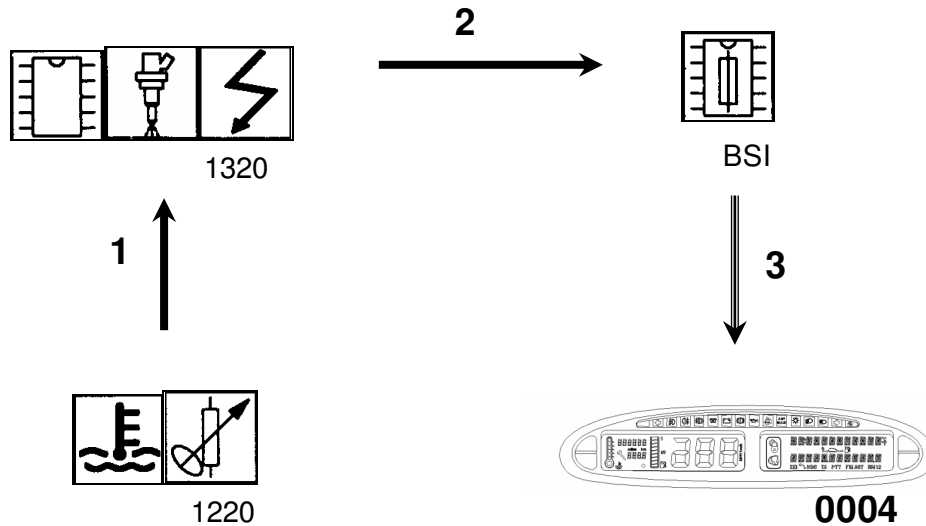
Table of correspondence between Coolant temperature / zone illuminated:

| ZONE | a | b | c | d | e | f | g |
|----------------|-------|-------------|-------------|--------------|--------------|--------------|--------------|
| TEMPERATURE °C | FIXED | $T \geq 60$ | $T \geq 75$ | $T \geq 100$ | $T \geq 110$ | $T \geq 115$ | Warn- ing |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

B - LAYOUTS

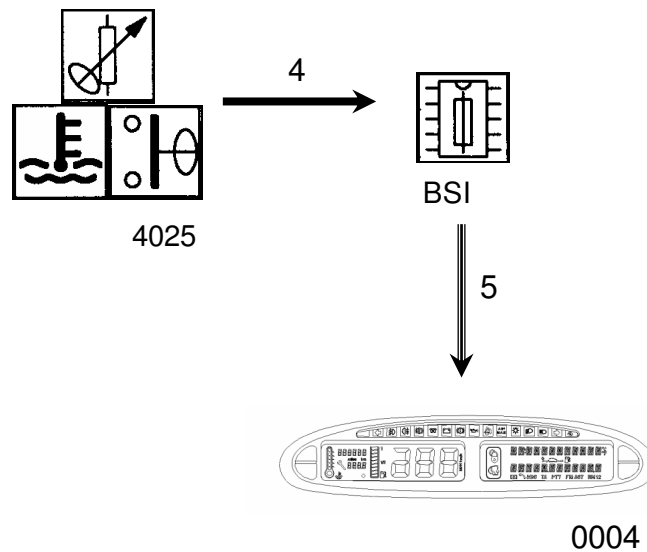
1 - EW7J4, DW10TD and TU5JPL4 engines

**Signal type:**



- 1 - Current depending on temperature.
- 2 - Square signal (PWM) for the temperature and All or nothing for the warning.
- 3 - VAN frame containing the temperature and possibly the warning information.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

2 - TU5JPL3 engine without air conditioning



Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| 4025 | Temperature sensor + coolant thermoswitch |

Signal type:

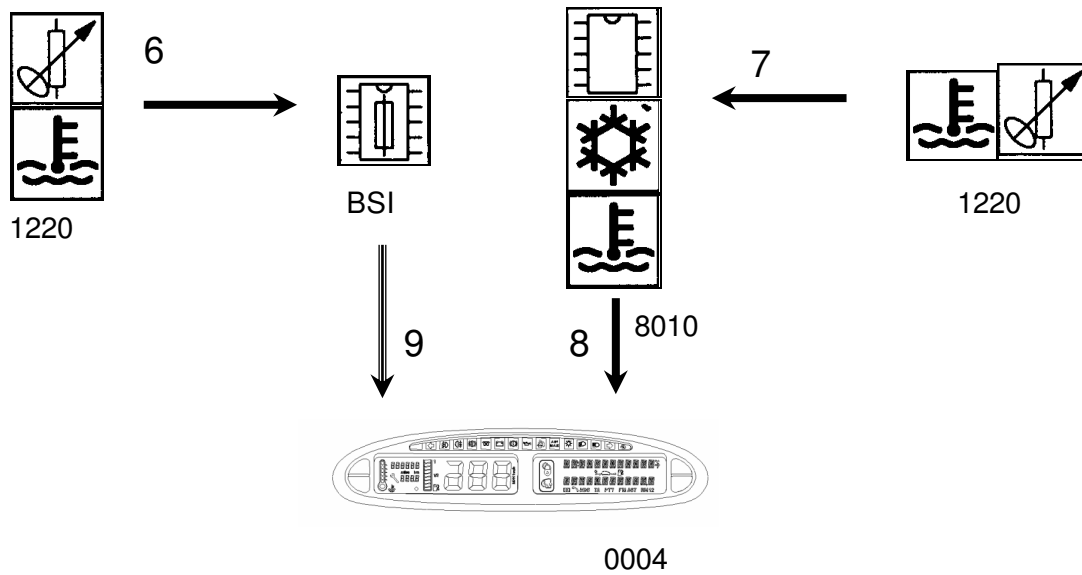
4 - Current depending on temperature.

All or nothing signal (possible warning).



5 - VAN frame containing the temperature and possibly the warning information.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

3 - TU5JPL3 engine with air conditioning



Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---------------------------------------|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| 1220 | Temperature sensor |
| 8010 | Coolant temperature housing |

Signal type:

- 6 - Current depending on temperature
- 7 - Current depending on temperature
- 8 - All or nothing signal (warning)
- 9 - VAN frame containing the temperature information

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

C - OPERATING MODES

1 - Operating phases

Nominal operation: see layouts and correspondence table.

- DW10TD, EW7J4 and TU5JPL4 engines:

The engine coolant temperature sensor (variable resistor) is connected to the engine management ECU. This converts the signal from the sensor into a variable frequency signal and sends it to the BSI. The engine management ECU also transmits the warning signal to the BSI.

The BSI encodes this information in a VAN frame to be sent to the control panel.

The coolant temperature gauge illuminates the corresponding temperature segments.

- TU5JPL3 engine

The temperature sensor supplies its current directly to the BSI. In AIR CONDITIONING mode, the temperature warning is given by an engine coolant temperature management unit.

2 - Specific operating cases

- Overheating warning

The BSI encodes a sound and a warning message in the VAN frame in addition to the temperature.

The 6 zones and the warning LED "g" are illuminated, a "warning beep" type sound is emitted repeatedly and the following message is displayed "STOP ENGINE TEMPERATURE".

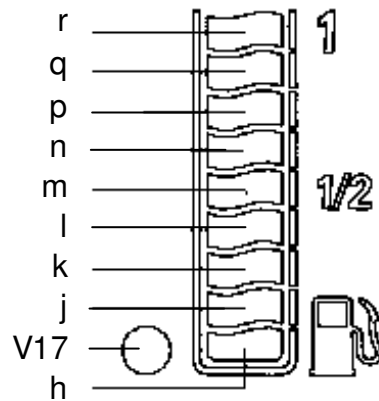
- Downgraded mode

If the temperature sensor develops a fault, the BSI places a specific temperature code value in the VAN frame.

In the event of an invalid value, the control panel only illuminates zone "a".

II - FUEL LEVEL GAUGE FUNCTION

A - GENERAL



The following table gives the amount of fuel remaining as a function of the segment illuminated on the gauge:

⇒ petrol vehicle

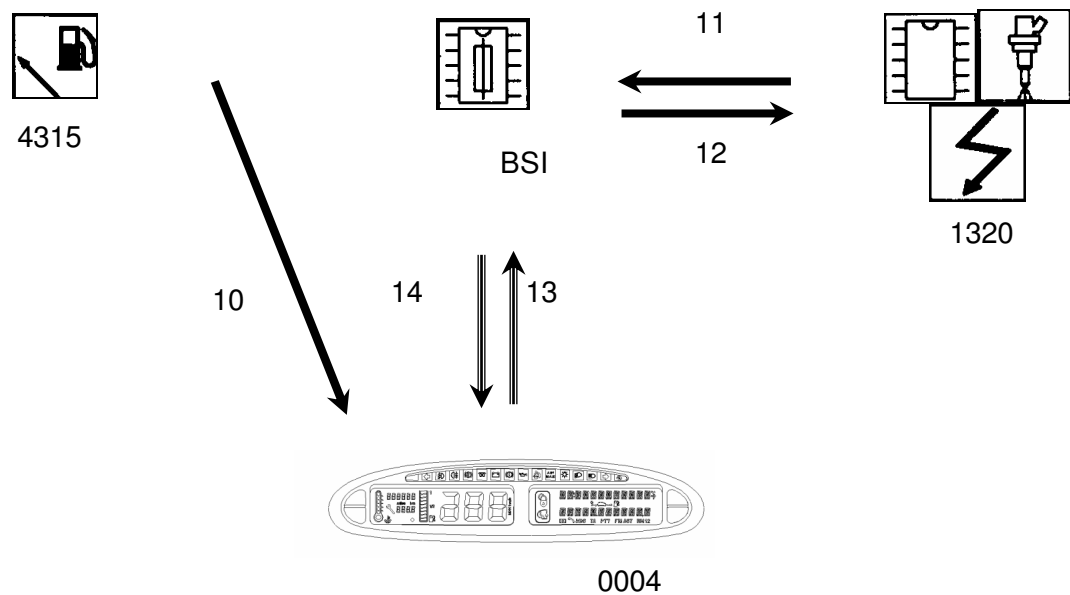
| ZONE | h | V17: WARNING | j | k | l |
|--------|---------------|---------------|---------------|---------------|---------------|
| LITRES | $0 \leq V$ | $V < 6$ | $6 \leq V$ | $12.5 \leq V$ | $18.5 \leq V$ |
| ZONE | m | n | p | q | r |
| LITRES | $24.5 \leq V$ | $30.5 \leq V$ | $36.5 \leq V$ | $42.5 \leq V$ | $49 \leq V$ |

⇒ diesel vehicle



| ZONE | h | V17: WARNING | j | k | l |
|--------|---------------|---------------|--------------|---------------|---------------|
| LITRES | $0 \leq V$ | $V < 5$ | $6.5 \leq V$ | $13.5 \leq V$ | $20 \leq V$ |
| ZONE | m | n | p | q | r |
| LITRES | $26.5 \leq V$ | $33.5 \leq V$ | $40 \leq V$ | $46.5 \leq V$ | $53.5 \leq V$ |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

B - LAYOUT



Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---------------------------------------|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| 1320 | Engine management ECU |
| 4315 | Fuel sender |

Signal type:

- 10 - Current depending on level of fuel in the tank
- 11 - Variable frequency signal depending on fuel flow
- 12 - Low fuel information signal
- 13 - VAN frame containing the gross fuel level given by the sender, the fuel level calculated by the control panel and the low fuel information
- 14 - VAN frames containing the vehicle consumption information

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

C - OPERATING MODES

1 - Operating phases

- When the ignition is switched on.

The control panel compares the last fuel level displayed with the level indicated by the fuel sender (variable resistor fitted with a float).

In the event of a significant difference, the gross level information is displayed otherwise the last fuel level displayed is given.

- When driving.

The fuel sender is no longer used.

The engine management ECU supplies the fuel flow information to the BSI.

The BSI calculates the vehicle's fuel consumption and encodes this information in a VAN frame.

The control panel takes this consumption information into account in order to calculate the fuel level. Finally, it transmits this level to the BSI via the VAN.

2 - Specific operating cases

- Low fuel warning

From a certain sender value, the control panel transmits the low fuel information to the BSI via the VAN in addition to the fuel level with the aim of warning the engine management ECU.

In addition, it displays the warning message "WARNING LOW FUEL". LED V17 is illuminated.

Note: The fuel capacity can be programmed depending on the vehicle engine (petrol or diesel).

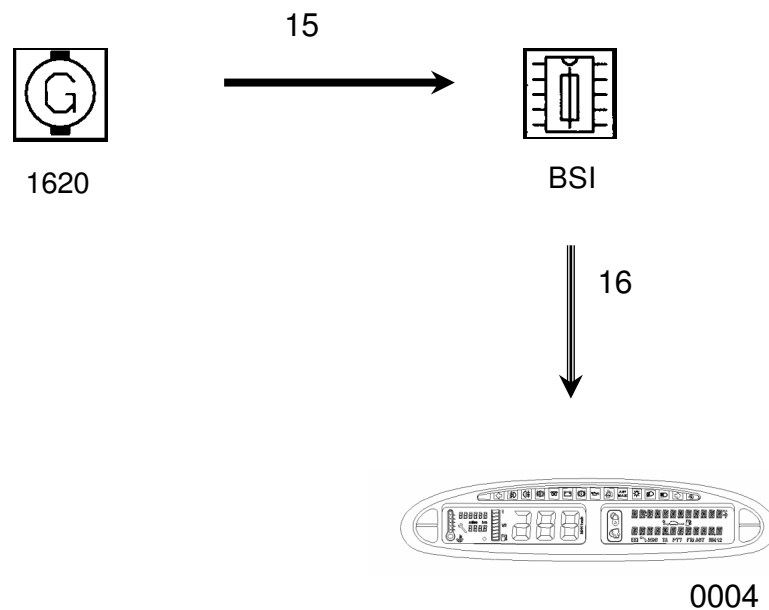
III - SPEEDOMETER FUNCTION

A - GENERAL

The instantaneous speed of the vehicle is displayed on the digital displays of the instrumentation screen.

The driver can access the choice of measurement units (KM/H or MILES). The units are changed using the menu of the multifunction screen (refer to the Clock/Date/Temperature function). The units selected by the driver are stored and recalled the next time the ignition is switched on.

B - LAYOUT



Key:

single arrow = wire connection
 triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---------------------------------------|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| 1620 | Vehicle speed sensor |

Signal type:

15 - variable frequency signal proportional to the speed of the front wheels.

16 - VAN frame containing the instantaneous speed information.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

C - OPERATING MODE

1 - Operating phase

Nominal operation: see layout

The speed sensor (located on the gearbox) supplies the BSI with a variable frequency signal.

The BSI calculates the instantaneous speed of the vehicle and encodes it in a VAN frame.

The control panel takes this information from the VAN network and displays it.

Specific operating cases

2 - Overspeed warning

The driver can access the choice of overspeed limit and does this using the menu of the multifunction screen on the control panel.

When the vehicle reaches this speed, the multifunction screen on the control panel displays the message: "PROG_SPEED XXX_KM/H". A two tone sound is emitted.

Note: this function is deactivated by default.

IV - MILEOMETER FUNCTION

A - GENERAL

Role: mileometer

The mileometer consists of two digital displays:

- the main mileometer,
- the tripometer.

B - LAYOUT

Refer to the speedometer layout.

C - OPERATING MODE

The BSI calculates the total distance travelled since the vehicle was first used from a signal supplied by the speed sensor. It then encodes the value in a VAN frame and sends it to the control panel.

The main mileometer displays the total distance travelled. The control panel calculates the distance travelled by the vehicle since the last time the tripometer was reset and displays this on the tripometer.

Note: The tripometer is reset when the ignition is on by pressing the button at the bottom left of the control panel (RESET).

D - SAVING THE DISTANCE TRAVELLED

The distance travelled is memorised in the control panel.

When the ignition is switched on, the BSI reads the distance memorised in the control panel and compares it with its own stored mileage. The BSI and the control panel store the largest of the two figures.

| |
|---|
| IMPORTANT: it is forbidden to perform diagnostics by substituting parts! |
|---|

V - MAINTENANCE INDICATOR FUNCTION

A - GENERAL

1 - Role

The aim of the maintenance indicator is to improve the service to the customer by automatically showing when the next servicing operation is due.

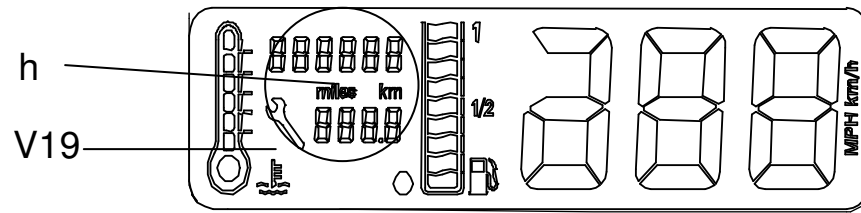
Interval between maintenance operations.

| Engine | Usage mode | frequency of maintenance operations* |
|------------|------------|--------------------------------------|
| Petrol | Normal | 20000 Km or 12500 miles or 1 year |
| | Severe | 15200 Km or 10000 miles or 1 year |
| Diesel HDI | Normal | 20000 Km or 12500 miles or 1 year |
| | Severe | 15200 Km or 10000 miles or 1 year |

* The frequency of maintenance operations (in distance or time) can be programmed by the diagnostic tool.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

2 - Display



Zone "h": maintenance indicator.

Every time the engine is started, the distance remaining is displayed on the mileometer. LED V19 either illuminates or not.

| | Service interval >2000 Km | | Service interval <2000 Km | | Service interval exceeded | |
|--------------------------------|------------------------------|------|------------------------------|------|------------------------------|------|
| | 0 - 2s | More | 0 - 5s | More | 0 - 5s | More |
| Display | | | | | | |
| Mileometer and tripometer | | X | | X | | X |
| Distance remaining or exceeded | X | | X | | X | |
| Key (LED V19) | X | | X | | X (flashing) | X |
| Message | X | | X | X | X | X |

Note: The message can be acknowledged by the driver or disappears itself 12 seconds after LED V19 starts flashing.

B - LAYOUT

Refer to the speedometer layout.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

C - OPERATING MODES

1 - Nominal mode

The BSI calculates the total distance travelled from the signal supplied by the speed sensor. It then encodes the value in a VAN frame and sends it to the control panel.

The control panel calculates the distance remaining to be travelled before the next service using the following parameters:

- the maintenance frequency stored in the control panel (this is decremented as miles are driven),
- the time elapsed (incrementation of the number of days).

As soon as one of these parameters (time or remaining miles) becomes due, the multifunction screen indicates that the servicing date has been exceeded (LED V19 flashes, remains illuminated and the message remains displayed).

2 - Configuring the usage mode

The following procedure is used to select the Severe or Normal usage mode of the vehicle.

- 1 - Press the Tripometer reset button.
- 2 - Switch on the ignition.
- 3 - Release the button within 10 seconds.

The instrumentation screen displays a key (LED V19) and the current configuration of the vehicle, directly displaying the frequency of maintenance operations.

Pressing the reset button briefly switches between the configuration modes.

- 4 - Press for 10 seconds to validate.

The procedure exits automatically.

- 5 - Switch off the ignition.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

3 - Initialising the maintenance indicator

The initialisation procedure is used to assign a new mileage value and a new time value to the system.

The procedure is as follows:

1 - Press the Tripometer reset button.

2 - Switch on the ignition.

The display shows a key (LED V19) and a 10 second counter starts to count down.

3 - Keep the Reset button pressed during these 10 seconds.

The key disappears and the reading "=0" appears. The operation is validated.

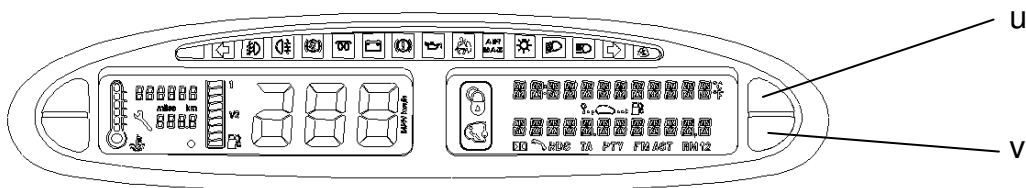
4 - Switch off the ignition to quit initialisation.

VI - CLOCK / DATE / TEMPERATURE FUNCTION

A - GENERAL

When these parameters are lost (i.e. after disconnecting the battery), the time displayed starts at "12: 00 PM" and the date displayed by default is 01 - 01 - 99. Each item (time and/or date) flashes until adjustment mode has been selected. By default, the language is French and the units are degrees Celsius and KM/H.

B - ADJUSTING SCREEN B



Buttons "u" and "v" located on the right hand side of the control panel are used to do this.

When the display is normal (no warnings, etc), pressing button "u" briefly changes the display to the date.

Pressing this button at any time for a long period returns to adjustment mode.

Every time this button is pressed again briefly, the parameter to be adjusted changes until adjustment mode is exited.

Conditions for exiting adjustment mode:

- Button not pressed for 6 seconds,
- Pressing button "u" for a long time.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

Parameters (in the scrolling order):

| Parameters | Description of the parameter to be displayed | Value of the parameter to be displayed |
|--|---|--|
| Languages | FRANCAIS; ENGLISH; DEUTSCH; ITALIANO; ESPANOL; etc. | |
| Hours (tens then units): 0 (or 12 AM depending on configuration) | HOUR | 12 AM (or 12 for 24H configuration) |
| Minutes (tens then units): 00 | MINUTES | 01 |
| Year (tens then units) 1998 (parameter: 98) | YEAR | 2000 |
| Month (tens then units): 01 | MONTH | 01 |
| Day (tens then units): 01 | DAY | 01 |
| Time format (12h / 24h) | 12H/24H | 12H (or 24H) |
| Temperature units (°C / °F) | °C/°F | °C (or °F) |
| Speedometer and mileometer units (KM/H - MPH) | KM/H-MPH | KM/H (or MPH) |
| Exit adjustment mode | | |

After the language has been selected, the HOUR, MINUTES, YEAR, MONTH and DAY parameters will be displayed in the configured language.

The possible languages are:

French, Spanish, Italian,
English, Portuguese, German,
Dutch.

Every time button "v" is pressed, the parameter to be adjusted is incremented.

Note: For the YEAR parameter, switching from 1900 to 2000 will occur automatically for all parameter values less than 99.

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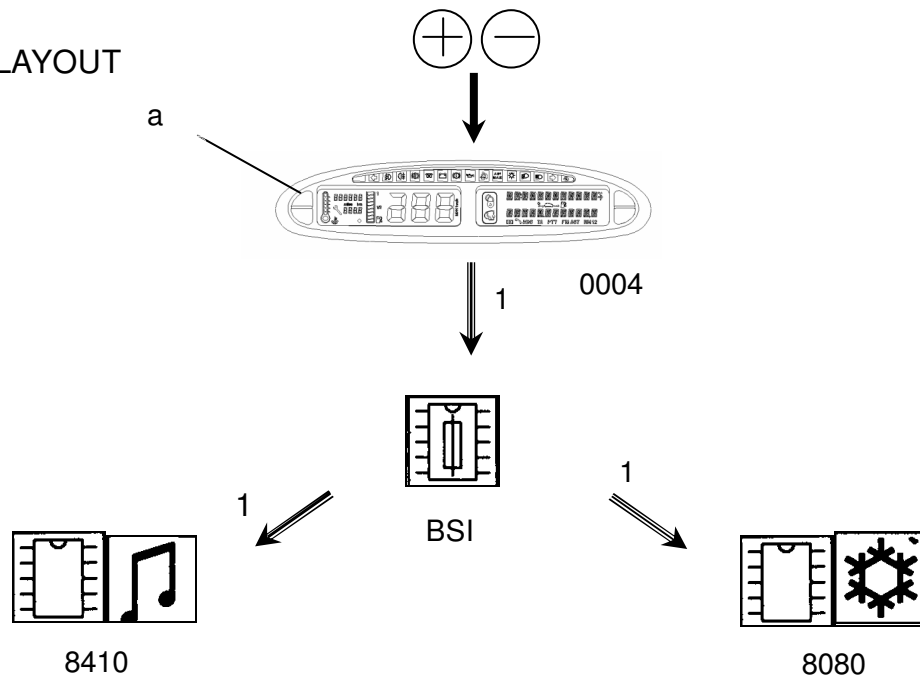
LIGHTING FUNCTION



I - RHEOSTAT FUNCTION

A - GENERAL

The + and - rheostat buttons are used to vary the brightness level of the lighting of the displays, except that of the warning LEDs.

B - LAYOUT



Key:  single arrow = wire connection
 triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---------------------------------------|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| 8080 | Air conditioning compressor |
| 8410 | Radio |
| a | "Night driving" push button |

Signal type:

1 - VAN frames containing the brightness status of the LEDs

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

C - OPERATING MODES

1 - Principle

The control panel encodes the brightness level in a VAN frame to be sent to the BSI.

The BSI transmits the information to the air conditioning and radio ECUs (RD2 only).

2 - downgraded mode

If one of the buttons is jammed, an intermediate brightness level is used by default.

II - NIGHT DRIVING FUNCTION

A - GENERAL

This function is used to extinguish all the LEDs on the control panel as well as the air conditioning display which generate light which may be tiring at night. Only the vehicle speed remains illuminated.

Warnings automatically cause the corresponding LED to illuminate.

B - LAYOUT

Refer to the rheostat function layout.

C - OPERATING MODES

- PRINCIPLE

The control panel encodes the status of the night driving function in a VAN frame to be sent to the BSI.

The BSI transmits the information to all the ECUs involved.

- ACTIVATION

This function is activated using button "a".

- **DEACTIVATION**

If an event occurs, this causes the zone in question to be re-illuminated in accordance with the table below:

| EVENT | DISPLAY | DURATION |
|--|---|---|
| Brief press on one of the 4 buttons (user request) | All information on the control panel and multifunction screen | Until button "a" is pressed again |
| Engine overheating | Coolant temperature gauge | event duration |
| Fuel level < 15 litres | Fuel level gauge | Until the ignition is switched off or fuel added |
| Warning | Screen message without displaying the time, temperature, etc | Until the ignition is switched off or end of message timer (see message function) |
| Action on radio | Screen display | Timed for 6 seconds after last user action |
| Action on on-board ECU | Screen display | Timed for 6 seconds after last user action |

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ON-BOARD ECU FUNCTION

I - GENERAL

A - ROLE

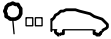


The on-board ECU controls the display of the following information:

- Instantaneous consumption,
- Average consumption,
- Range,
- Average speed,
- Total distance travelled,
- Overspeed warning.

B - DISPLAY

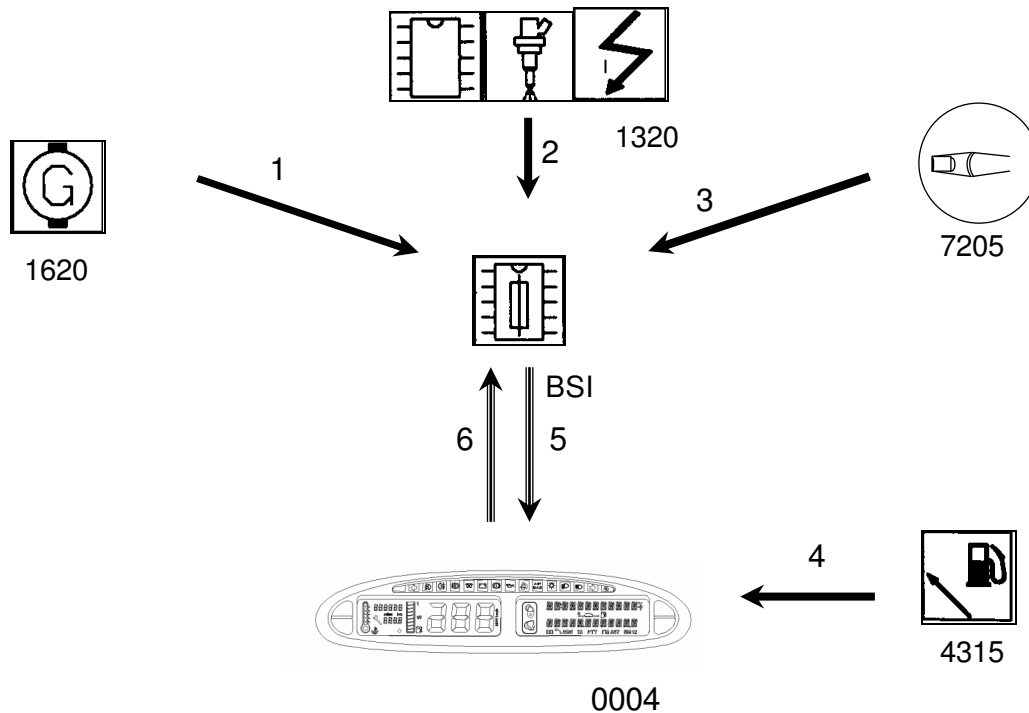
Pressing the on-board ECU button briefly (located on the end of the stalk on the steering wheel) is used to switch to the next display.

The display is in digital form combined with a combination of icons on the multifunction screen to specify the type of information displayed.

| ICONS | DESCRIPTION |
|---|--|
|  | a vehicle coming from a round sign showing the last time the parameters were reset for the journey parameters (average speed, average consumption) |
|  | a vehicle going towards a petrol pump for the range |
|  | a vehicle on its own for the instantaneous consumption |

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II - LAYOUT



Key:

→ single arrow = wire connection

≡→ triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---------------------------------------|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| 1320 | Engine management ECU |
| 1620 | Speed sensor |
| 4315 | Fuel sender |
| 7205 | On-board ECU scroll switch |

Signal type:

- 1 - variable frequency signal proportional to the speed of the front wheels
- 2 - variable frequency signal depending on fuel flow
- 3 - all or nothing signal
- 4 - current depending on gross fuel level
- 5 - VAN frames containing information from the on-board ECU for display
- 6 - VAN frame containing the fuel level.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

III - OPERATING MODES

Nominal operation:

The BSI calculates the "range" with the fuel consumption and the amount of fuel remaining supplied by the control panel.

After acquiring the signal from the speed sensor, the BSI calculates the following parameters:

- "journey distance" since last reset,
- "average journey consumption" since last reset,
- "instantaneous consumption" with fuel flow information supplied by the engine management ECU,
- "average journey speed" since last reset,
- the BSI encodes this information in VAN frames to be sent to the control panel. The multifunction screen displays them.

Reset:

Pressing the on-board ECU switch for a long time on the steering wheel stalk resets the journey counters.

The BSI encodes this status on a VAN frame to be sent to the multifunction screen of the control panel.

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I - LAYOUT DIAGRAM

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II - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
| 2300 | - Danger signal switch |
| 2340 | - Left hand side repeater |
| 2345 | - Right hand side repeater |
| 2610 | - Left hand headlamp |
| 2615 | - Right hand headlamp |
| 2630 | - Rear left hand lamp on body |
| 2635 | - Rear right hand lamp on body |
| 3010 | - Front interior lamp |
| 3020 | - Rear interior lamp |
| 3050 | - Lighting rheostat |
| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermostatic switch (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
- 8030 - Passenger compartment air thermistor
- 8031 - Coolant thermistor
- 8045 - Blower control module (if separate)
- 8050 - Blower motor (if separate)
- 8065 - Mixing flap reduction motor
- 8070 - Air input flap reduction motor
- 8071 - Distribution flap reduction motor
- 8220 - Analogue module transponder
- 8410 - Radio
- 8413 - Radio control
- 8415 - Compact disc changer
- 8420 - Loud speakers on front door (driver's side)
- 8425 - Loud speakers on front door (passenger's side)
- 8430 - Loud speaker (rear left hand)
- 8435 - Loud speaker (rear right hand)
- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 4

PART 5

DRIVER'S INFORMATION

XSARA

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

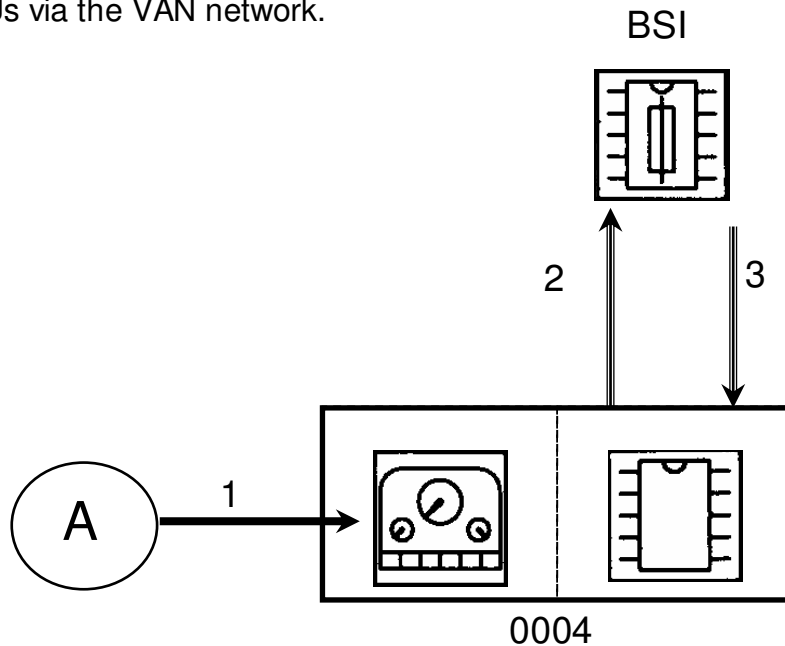
GENERAL

I - FOREWORD



The control panel is normal in appearance but several of its functions are multiplexed (mileometer, etc). Refer to the tables corresponding to the layout.

II - LAYOUT

The control panel receives information along the wires and by communicating with the ECUs via the VAN network.



Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---------------------------------------|
| BSI | Built-in systems interface |
| 0004 | Control panel (LEDs + microprocessor) |
| A | Pressure switch |
| | Oil level sensor |
| | Controls at the steering wheel |
| | Central airbag ECUs |
| | Side airbag ECUs |
| | Presence of water sensor |
| | Brake pad sensor |
| | Seatbelt contact |
| | Oil temperature sensor |
| | Oil level sensor |
| | Fuel sender |
| | Brake fluid sender |
| | Parking brake contact |
| | ABS valve block |
| | Automatic gearbox ECU |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

| CONNECTIONS | | |
|-------------|--|---------------------------|
| N° | Signal | Type |
| 1 | Low oil pressure | All or nothing |
| | Low coolant level | All or nothing |
| | Sidelamps status | All or nothing |
| | Dipped beam status | All or nothing |
| | Front airbag fault | All or nothing |
| | Side airbag fault | All or nothing |
| | Front and rear fog lamps control | All or nothing |
| | Water in diesel* | All or nothing |
| | Brake pad wear / Stop lamps | All or nothing (2 inputs) |
| | Presence of driver's seatbelt | All or nothing |
| | LPG level | analogue |
| | Brake fluid hydraulic level | All or nothing |
| | Oil level | Analogue |
| | Parking brake status | All or nothing |
| | ABS fault | LED active |
| | Electronic brakeforce distribution fault | All or nothing |
| | Auto gearbox selector position information | Square |
| 2 | Low fuel | VAN |
| | Filtered fuel level | VAN |
| | Gross fuel level | VAN |
| | ABS fault | VAN |
| | Auto gearbox fault | VAN |
| | Brake fluid fault | VAN |
| | Oil temperature | VAN |
| | Parking brake | VAN |
| | Dipped beam | VAN |
| | Saved journey distance | VAN |
| | Low oil pressure | VAN |
| | Electronic brakeforce distributor fault | VAN |
| | Control panel brightness level | VAN |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

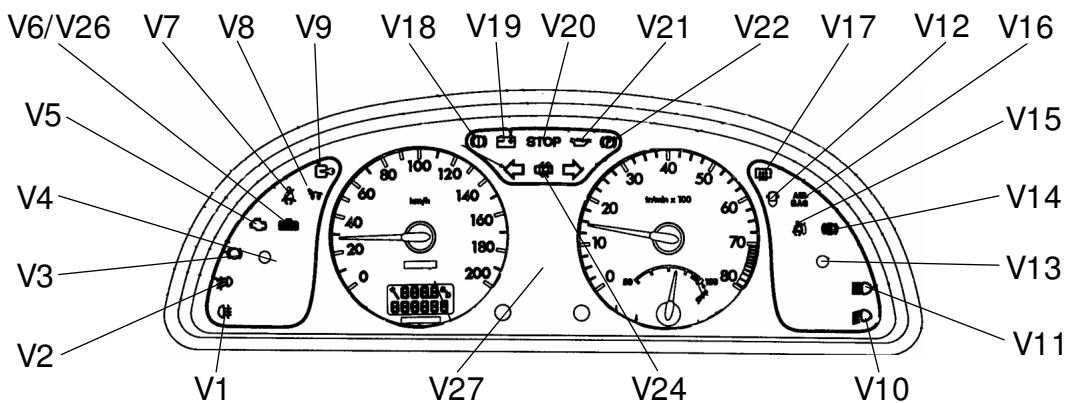
| CONNECTIONS | | |
|-------------|--|------|
| N° | Signal | Type |
| 3 | Engine speed information | VAN |
| | Vehicle speed information | VAN |
| | Distance information | VAN |
| | Coolant temperature information | VAN |
| | Factory/customer mode | VAN |
| | Ignition key position | VAN |
| | Economy mode | VAN |
| | Engine running | VAN |
| | Coolant temperature warning | VAN |
| | Door open, engine running | VAN |
| | EOBD/Engine management fault | VAN |
| | Battery charge fault | VAN |
| | Electronic engine immobiliser system fault | VAN |
| | Illumination of indicator LEDs | VAN |
| | Lamps on reminder warning | VAN |
| | Key in ignition reminder warning | VAN |
| | Overspeed warning | VAN |
| | Day/night status | VAN |
| | Brightness level | VAN |
| | Set to stand-by in 5 seconds | VAN |
| | Activation of control panel | VAN |
| | Pre-heating information | VAN |
| | Auto gearbox safety warning | VAN |
| | Total mileage | VAN |
| | Heated rear screen activated | VAN |

* depending on equipment

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

WARNING FUNCTION

I - LIST OF LEDS



| LED | FUNCTION |
|-----|-------------------------------|
| V1 | Rear fog lamp |
| V2 | Front fog lamp |
| V3 | Brake pad wear indicator* |
| V4 | Coolant temperature warning |
| V5 | Engine management diagnostic |
| V6 | Coolant level |
| V7 | Seatbelt |
| V8 | Diesel pre-heating |
| V9 | Transponder fault |
| V10 | Dipped beam |
| V11 | Main beam |
| V12 | Water in diesel |
| V13 | Low fuel warning |
| V14 | ABS |
| V15 | Side airbag |
| V16 | Front airbag |
| V17 | Rear screen |
| V18 | Brake fault |
| V19 | Battery charge |
| V20 | Stop |
| V21 | Oil pressure |
| V22 | Parking brake |
| V23 | Left hand indicator |
| V24 | Doors open |
| V25 | Right hand indicator |
| V26 | LPG operation |
| V27 | Auto gearbox position display |

* depending on equipment

Note 1: All possible LEDs are represented on the control panel above but this model of control panel does not actually exist.

Note 2: The LEDs cannot be replaced. If a bulb blows, replace the control panel.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

II - INTEGRATED BUZZER

The buzzer integrated into the control panel produces 4 types of sound:

- "Relay clicking" type sound N1,
- "Intermittent" type sound N2,
- "Continuous" type sound N3,
- "Intermittent sound at twice the speed of N2" type sound N4.

III - WARNING APPEARANCE CONDITIONS

A - WARNINGS FROM WIRE INFORMATION

| LED; NOISE | TYPE OF WARNING | APPEARANCE CONDITIONS |
|--------------|--|---|
| N3 only | Low oil level | +acc/+ig on |
| key | Maintenance key | +acc AND service imminent |
| V6 | Coolant level warning | +ig on* AND coolant level low |
| V13 | Low fuel | +ig on* AND low fuel reached |
| V15 | Side airbag fault | +ig on* AND airbag fault |
| V16 | Front airbag fault | +ig on* AND airbag fault |
| V16 | Passenger's AIRBAG deactivated | +ig on* AND passenger's airbag deactivated |
| V14; N3 only | ABS fault | +ig on* AND ABS fault |
| V18; N3 only | Brake fluid / hydraulic level warning | +ig on* AND fluid level low |
| V18; N3 only | ABS fault | +ig on* AND ABS fault |
| V18; N3 only | Electronic brakeforce distributor fault | +ig on* AND braking system faulty |
| V20; N4 | Low oil pressure warning | +ig on* AND oil pressure low |
| V21; N4 | Low oil pressure warning | +ig on* AND oil pressure low |
| V22; N3 | Parking brake | +ig on* AND parking brake on AND V > 10 Km/h |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

B - WARNINGS FROM VAN FRAMES

| LED; NOISE | TYPE OF WARNING | APPEARANCE CONDITIONS |
|-----------------------------------|----------------------------------|---|
| N2 | Lamps on reminder warning | Headlamps on AND driver's door open (+acc/+ig on missing) |
| N2 | Key in ignition reminder warning | Key present (+acc/+ig on missing) AND driver's door open |
| N2 | Auto gearbox position warning | Key in position S or not inserted AND driver's door open AND lever in position other than P |
| N3 | Overspeed warning | $V \geq 130$ Km/h (programmable in the BSI) |
| V4 | Coolant temperature warning | +ig on* AND T° too high |
| V5 | Engine management / EOBd fault | +ig on AND engine ECU fault |
| V8 | Diesel pre-heating | +ig on AND pre-heating in progress |
| V9; N3 | Unknown transponder fault | +ig on/+cranking AND faulty system (unknown transponder) |
| V17 | Heated rear screen | +ig on*/+cranking AND heated rear screen activated |
| V19; N3 | Battery charging fault | +ig on* AND $+EXC \leq +BAT - 2.5V$ |
| V20 flashing N4 active for 10s | Coolant temperature warning | +acc/+ig on* AND T° too high |
| V24; N3* | RRH door open | 1 door open AND +acc/+ig on* |
| V24; N3* | RLH door open | |
| V24; N3* | FRH door open | |
| V24; N3* | FLH door open | |
| V27 | Auto g/b position indicator | +ig on*/+cranking |

* Engine running or not

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

INSTRUMENTATION FUNCTION

When the ignition is switched on, the digital display shows:

- for 2 seconds: the maintenance indicator
- for 5 seconds maximum: the oil level gauge
- and finally: the mileometer (until the ignition is switched off)

I - MAINTENANCE INDICATOR

A - GENERAL

1 - Interval between maintenance operations

| Engine | Usage mode* | frequency of maintenance operations |
|--------------------|-------------|-------------------------------------|
| Petrol/diesel HDI | Normal | 20000 Km or 12500 miles or 1 year |
| | Severe | 15000 Km or 10000 miles or 1 year |
| | Customised | Multiples of 500 Km or 1 month |
| Diesel (excl. HDI) | Normal | 15000 Km or 10000 miles or 1 year |
| | Severe | 10000 Km or 6000 miles or 1 year |
| | Customised | Multiples of 500 Km or 1 month |

2 - Case of more than 2000 km to service

- The maintenance indicator shows the distance remaining for 2 seconds.
- The "key" symbol illuminates for 2 seconds then disappears.

3 - Case of less than 2000 km to service

- The maintenance indicator shows the distance remaining for 5 seconds.
- The "key" symbol illuminates for 5 seconds then disappears.

4 - Case of interval exceeded

- The maintenance indicator shows a zero distance remaining.
- The "key" symbol flashes for 5 seconds then disappears.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

B - FUNCTIONAL DESCRIPTION

The BSI calculates the total distance driven from the signal supplied by the speed sensor. It then sends this to the control panel via the VAN network.

The control panel calculates the distance remaining to be travelled before the next service using:

- the maintenance frequency stored in the control panel (this is decremented as miles are driven),
- the time elapsed (incrementation of the number of days).

As soon as one of these parameters (time or remaining miles) becomes due, the multifunction screen indicates that the servicing date has been exceeded (the key flashes).

Note 1: When the time reaches one year, the maintenance indicator behaves as if the distance remaining were zero (the "key" symbol flashes).

Note 2: If the battery is disconnected, the time is no longer incremented.

C - INITIALISING THE MAINTENANCE INDICATOR

The procedure is as follows:

- 1 - Press the left hand button (Tripometer reset button).
- 2 - Switch on the ignition.

The display shows a key and a 10 second counter starts to count down to 0.

- 3 - Keep the button pressed until 0 is reached then release it.

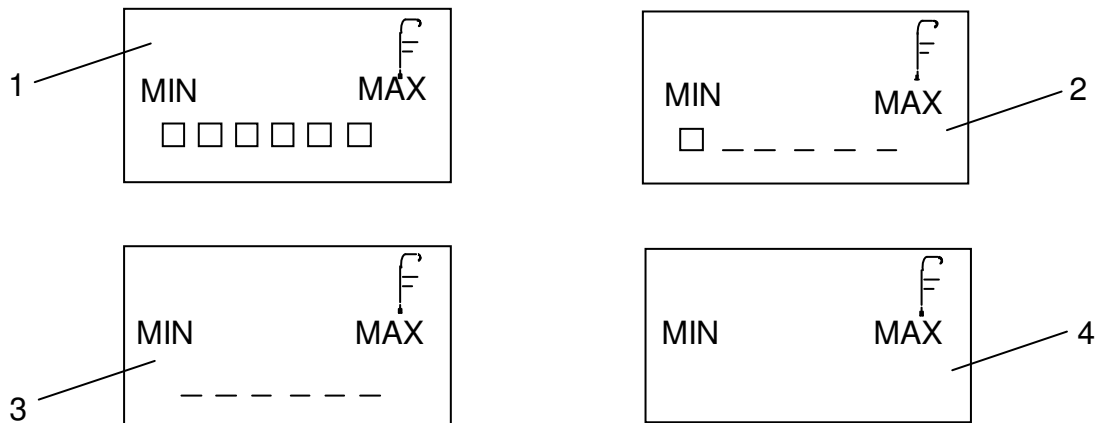
The maintenance indicator displays the mileage to be travelled before the next service (it is equal to the maintenance frequency). The key disappears.

- 4 - Switch off the ignition to quit initialisation.

II - OIL LEVEL GAUGE

General

The amount of oil left in the engine is displayed in accordance with the graphics below for a maximum of 5 seconds:



The number of squares illuminated is proportional to the potential difference at the terminals of the oil level sensor:

| SCREEN | COMMENT | DISPLAY | CORRESPONDING POTENTIAL DIFFERENCE |
|--------|--|---|------------------------------------|
| 1 | Max level | 6 squares illuminated | $\Delta U = 90\text{mV}$ |
| 2 | Min level | 1 square illuminated | $\Delta U = 440\text{mV}$ |
| 3 | Level < min | No squares illuminated. 6 lines flash, warning beep N3, word MIN | $\Delta U > 440\text{mV}$ |
| 4 | Oil level sensor short circuited or disconnected | Screen flashes for 5 seconds | |

Functional description

- The control panel sends a current of 195 mA (for approximately 2 seconds) into the oil level sensor.
- The control panel measures the potential difference (noted ΔU) at the sensor terminals.
- The control panel converts this potential difference into a number of squares to be displayed.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

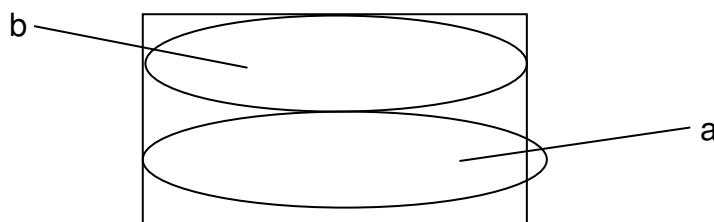
III - MILEOMETER

A - GENERAL

The control panel has two mileometer lines

- 2 tripometers called a and b (zone "b").
 - switch from a to b by briefly pressing the left hand button,
 - reset them by pressing and holding the left hand button.
- 1 main mileometer (zone "a").

Screen



B - FUNCTIONAL DESCRIPTION

The BSI acquires the signal supplied by the speed sensor located on the gearbox. It then calculates the total number of miles and sends it to the control panel via the VAN network.

The control panel displays this mileage value on the main mileometer. From this value, it increments the tripometers a and b.

Note: On vehicles fitted with control panels in miles, the control panel converts the kilometres into miles.

C - SAVING THE DISTANCE TRAVELLED

The distance travelled is memorised in the control panel.

When the ignition is switched on, the BSI reads the distance memorised in the control panel and compares it with its own stored mileage. The BSI and the control panel store the largest of the two figures.

IMPORTANT: it is forbidden to perform diagnostics by substituting parts!
(storing of highest mileage)

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

REPAIRING THE CONTROL PANEL

I - READING AND ERASING FAULTS

Using the diagnostic tool, the following points can be read:

- identification of the PSA N° and the development index of the control panel,
- communications faults on the multiplexing,
- wire and multiplexed input faults on the control panel.

II - PROGRAMMING THE MAINTENANCE TYPE

Using the diagnostic tool, the following points can be programmed in the maintenance indicator:

- normal or severe configuration,
- customisation of the maintenance frequency as a distance (multiplies of 500 km),
- customisation of the maintenance frequency as a duration (multiples of 1 month),
- activation/deactivation of the maintenance indicator.

III - ACTUATOR TEST

Using the diagnostic tool, the following functions can be tested:

- mileometer (main mileometer and tripometer),
- speedometer,
- rev counter,
- fuel sender,
- coolant temperature gauge,
- oil temperature gauge,
- automatic gearbox position indicator,
- oil level,
- LEDs and symbols,
- the buzzer,
- change in lighting.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

IV - READING THE FOLLOWING PARAMETERS

Control panel:

- viewing the activation status of certain LEDs (ABS, automatic gearbox, AIRBAG),
- viewing the maintenance type (missing/present, classic/developed, normal/severe).
- fuel sender and coolant temperature sender table.

All or nothing and other inputs on the control panel:

- oil min level/min pressure warning,
- oil temperature,
- side/front airbag LED,
- coolant level warning,
- driver's seatbelt,
- parking brake,
- Electronic Brakeforce Distributor fault/ABS fault,
- automatic gearbox fault,
- brake fluid level,
- fuel level,
- low fuel information,
- brightness level,
- dipped beam,
- change in status of all or nothing inputs

Control panel buttons:

- rheostat button,
- tripometer reset button.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 5

PART 6

VISIBILITY

XSARA AND XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

GENERAL

I - FOREWORD

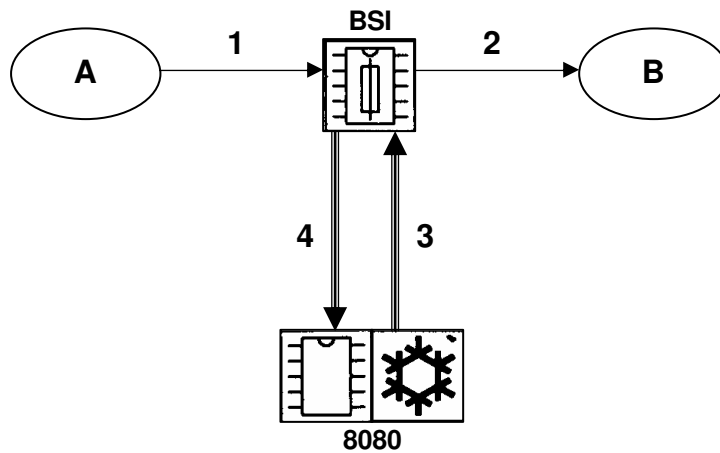
The Built-in Systems Interface controls the visibility function:

| FUNCTION | XSARA PICASSO | XSARA |
|--|------------------|-------|
| Control of the windscreen wipers linked to the vehicle speed without rain sensor | X | |
| Windscreen wipers with rain sensor | | * |
| Intermittent wipe mode of the rear wiper linked to vehicle speed and windscreen wiper mode | X | |
| Management of wiper parked positions | X | X |
| Protection of wiper motors | X | X |
| De-icing of heated rear screen | X | X |
| Timer for headlamp washers | | * |

* = Depending on equipment

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

II - GENERAL LAYOUT



| COMPONENTS | |
|------------|--|
| BSI | Built-in Systems Interface. |
| 8080 | Automatic climate control (RFTA) on XSARA PICASSO only. |
| A | Heated rear screen switch (without RFTA) |
| | Windscreen wiper motor. |
| | Rear screen wiper. |
| | Steering wheel stalk |
| | Rain sensor (XSARA only) |
| B | Windscreen wiper motor |
| | Rear wiper motor |
| | De-icing LEDs of the heated rear screen and door mirrors (without RFTA climate control). |
| | Steering wheel stalk |
| | Windscreen and rear screen washer |
| | Headlamp washer (XSARA only) |
| | Heated rear screen and door mirrors. |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

| CONNECTIONS | | |
|-------------|---|----------------|
| n° | Signal | Type |
| 1 | Heated rear screen activation request (without RFTA) | All or nothing |
| | Parked position information of windscreen wiper motor | All or nothing |
| | Parked position information of rear wiper motor | All or nothing |
| | Windscreen washer request | All or nothing |
| | Rear screen washer request | All or nothing |
| | Windscreen wiper intermittent wipe request | All or nothing |
| | Windscreen wiper slow speed request | All or nothing |
| | Windscreen wiper high speed request | All or nothing |
| | Rear wiper request | All or nothing |
| | Supply (+ accessories) | Supply |
| | Rain detection information (XSARA only) | Analogue |
| | | |
| 2 | Windscreen wiper motor high speed control | All or nothing |
| | Windscreen wiper motor slow speed control | All or nothing |
| | Rear wiper motor control | All or nothing |
| | De-icing and heated door mirrors LED control (except RFTA climate control). | All or nothing |
| | Accessories position output for steering wheel stalk, windscreen and rear screen washer | All or nothing |
| 3 | Heated rear screen activation request (RFTA only) | VAN |
| 4 | Heated rear screen functional status (RFTA only) | VAN |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

OPERATING PRINCIPLE

I - WINDSCREEN WIPER FUNCTION

A - BASIC FUNCTIONS

Function:

The wiper stalk for the windscreen wiper function provides the driver with the choice between several control options:

| CONTROL | DESCRIPTION |
|--|--|
| Windscreen wash/wipe control | Used to wipe the screen continuously when the screen washer is activated. |
| Windscreen wiper one touch control | Used to activate the wipers at slow wipe speed. If the request is maintained, the wipers will wipe continuously at slow speed. |
| Intermittent / automatic wiper control | Without rain sensor: used to wipe the screen at regular intervals, at slow speed. A single wipe cycle is controlled between two parked positions. This timer is linked to the vehicle speed on the XSARA PICASSO |
| | With rain sensor: used to select automatic mode on the XSARA |
| Slow speed wiper control | The wiper control is activated continuously at slow speed |
| High speed wiper control | The wiper control is activated continuously at high speed |

Note: Windscreen wiper requests are only taken into consideration by the BSI when the ignition is on.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

B - CONTROLLING THE WINDSCREEN WIPERS LINKED TO VEHICLE SPEED WITHOUT RAIN SENSOR

This function contains 2 sub-functions which relate *only* to the XSARA PICASSO:

| FUNCTION | OPERATION |
|---|---|
| Intermittent mode linked to vehicle speed | When the windscreen wipers are operating at intermittent speed, the vehicle speed information is used to adjust the parked time between 2 wipe cycles. |
| Reduction in wipe speed, vehicle stationary | This function consists of reducing the wipe speed when the vehicle is stationary. If operating at high speed, slow wipe speed is used. If operating at slow speed, intermittent wipe speed is used. |

Wipe speed reduction occurs from 16 km/h when decelerating. The initial speed is returned to upon reaccelerating.

C - WINDSCREEN WIPER WITH RAIN SENSOR

The BSI controls the windscreen wipers depending on the requests from the rain sensor (in the base of the interior rear view mirror), on the Xsara only. The ignition must be on and the control initialised. Communications between the rain sensor and the BSI are by means of a serial link.

IMPORTANT: When washing the vehicle, ensure that the windscreen wipers or the ignition are off to prevent them being triggered by the rain sensor.

Note: If the rain sensor is covered, the windscreen wipers will perform an initialisation wipe cycle.

D - WINDSCREEN WASHER FUNCTION

The windscreen washer pump is not controlled by the BSI. The windscreen washer control comes directly from the washer pump. The BSI controls a delayed wipe cycle of the wipers (so as not to wipe when dry). When the driver stops pressing the washer control, the wipers perform a maximum of 3 complete wipe cycles before stopping.

Note: The washer control is only taken into consideration when the ignition is on.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

II - REAR WIPER FUNCTION

On the Xsara and Xsara Picasso, the BSI controls a standard rear wiper (single motor).

A - BASIC FUNCTIONS

Function:

The rear wiper function has 3 operating modes:

| OPERATING MODE | DESCRIPTION |
|--------------------------------------|---|
| Wash / wipe control | Used to wipe the screen continuously when the rear washer is activated. |
| Intermittent wipe control | Used to wipe the screen at regular intervals. This timer is linked to vehicle speed on the XSARA PICASSO. |
| Wiper control linked to reverse gear | Used to wipe the rear screen when reverse gear is engaged (XSARA PICASSO). |

B - INTERMITTENT REAR WIPER MODE LINKED TO VEHICLE SPEED AND WINDSCREEN WIPER MODE

Function:

When the rear wiper control is requested, the BSI controls the rear wiper in intermittent mode. The parked time between 2 wipe cycles depends on the vehicle speed and the wiping speed of the windscreen wipers (XSARA PICASSO only).

C - REAR WASHER FUNCTION

Function:

The rear washer pump is not controlled by the BSI. The rear washer control controls the washer pump directly and leads to a rear screen wipe request to the BSI. When the driver stops operating the washer control, the wiper performs another 3 complete wipe cycles before stopping.

Note: The washer control is only taken into consideration when the ignition is on.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

III - MANAGEMENT OF WIPER PARKED POSITIONS

Function:

| CONDITION | FUNCTION |
|-----------------------------------|---|
| Ignition on | When the wipers are switched off, all wipe cycles in progress are completed. The wipers are systematically returned to the parked position at slow speed. |
| When the ignition is switched off | The windscreen or rear wipers stop immediately, regardless of the position of the wipers and the wiper stalk at the steering wheel. |
| When the ignition is switched on | If the wipers are not in the parked position, the BSI controls the wiper motors at slow speed until the wipers are in the parked position. |

IV - WIPER PROTECTION

Function:

The BSI is used to protect the windscreen and rear wiper motors against overheating in the event of the wipers being blocked, regardless of the operating mode requested by the user. The controls are stopped if there has not been a change in the value of the parked position after a certain time.

V - DE-ICING

Function:

When the engine is running (and alternator charging), to de-ice the heated rear screen and the door mirrors, depending on vehicle equipment.

To protect the relay, when the voltage exceeds 15 volts, the de-icing request is no longer taken into account.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

VI - HEADLAMP WASHER TIMER

This function exists on the **XSARA only**.

Function:

When the windscreen washer control is activated and if the dipped beam headlamps are on, the BSI controls the headlamp washer operating timer.

The dipped beam information is distributed on the Comfort VAN network by the control panel.

The headlamp washer pump is controlled by earthing a relay outside the BSI.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

I - LAYOUT DIAGRAM



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II - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
| 2300 | - Danger signal switch |
| 2340 | - Left hand side repeater |
| 2345 | - Right hand side repeater |
| 2610 | - Left hand headlamp |
| 2615 | - Right hand headlamp |
| 2630 | - Rear left hand lamp on body |
| 2635 | - Rear right hand lamp on body |
| 3010 | - Front interior lamp |
| 3020 | - Rear interior lamp |
| 3050 | - Lighting rheostat |
| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

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- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermoswitch (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
- 8030 - Passenger compartment air thermistor
- 8031 - Coolant thermistor
- 8045 - Blower control module (if separate)
- 8050 - Blower motor (if separate)
- 8065 - Mixing flap reduction motor
- 8070 - Air input flap reduction motor
- 8071 - Distribution flap reduction motor
- 8220 - Analogue module transponder
- 8410 - Radio
- 8413 - Radio control
- 8415 - Compact disc changer
- 8420 - Loud speakers on front door (driver's side)
- 8425 - Loud speakers on front door (passenger's side)
- 8430 - Loud speaker (rear left hand)
- 8435 - Loud speaker (rear right hand)
- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

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MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 6

PART 7

LOCKING / UNLOCKING

XSARA AND XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

GENERAL

I - FOREWORD

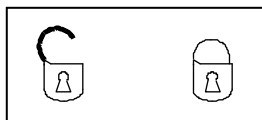
Control devices:

| XSARA PICASSO | XSARA |
|--|--|
| BSI with integrated HF receiver | BSI with integrated HF receiver |
| Declutchable locks on both front doors | Declutchable locks on both front doors |
| One main key with transponder | One main key with transponder |
| One key with remote control and transponder | One key with remote control and transponder |
| Central locking button on dashboard | Door locking buttons |
| Electric boot opening button (external) | One garage key with transponder (does not open boot nor glovebox) on XSARA saloon |
| Unlocking by internal opening control on 4 doors | Unlocking by internal opening control on 2 front doors |
| Deactivation of internal opening of rear doors by rotary button on door panel (child safety) | Deactivation of internal opening of rear doors by rotary button on door panel (child safety) |
| Doors open detection contacts | Doors open detection contacts |

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Viewing device:

- "System status LED" for viewing the locked status, ignition off (in the hazard warning lamps button, on the XSARA PICASSO only),
- use of indicators,
- symbol for viewing the locking status, ignition on (XSARA PICASSO only),



- symbol for viewing the child safety status on the XSARA PICASSO.

**Definitions:**

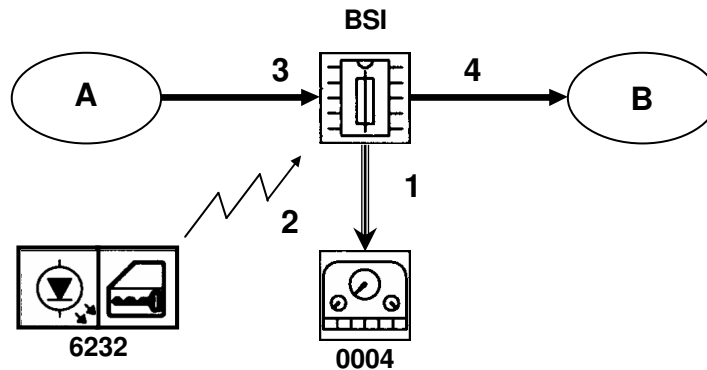
- a door is said to be closed if it is closed on the 2nd notch,
- the door open information is present when the + accessories is on,
- the fuel filler flap is locked with the key,
- a locking rebound consists of locking then unlocking the locks if a locking request was performed and if one of the doors is open (indicators do not illuminate),
- no locking buttons on the doors on the XSARA PICASSO.

The BSI controls the locking / unlocking function:

| FUNCTION | XSARA PICASSO | XSARA |
|---|--------------------------|--------------|
| Locking / unlocking using internal button | X | |
| Opening of boot using electric button | X | |
| Unlocking in the event of an impact | X | |
| Deadlocking using the key | | X |
| Deadlocking using the plip | | X |
| Rebound function | X | X |
| Automatic locking | X | |
| Locking / unlocking using the key | X | X |
| Locking / unlocking using the plip | X | X |
| Protection of lock motors | X | X |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

II - GENERAL LAYOUT



| COMPONENTS | |
|-------------|--|
| BSI | Built-in Systems Interface with integrated HF receiver |
| 0004 | Control panel |
| 6232 | High frequency emitter for locking doors. |
| A | Boot opening button |
| | Central locking button |
| | Switches of the 4 doors (door status) |
| | Boot switch |
| | Inertia switch (Xsara Picasso) |
| | Contacts of 2 front locks (key) |
| | Interior opening control of front doors (+ locking buttons on the doors on the XSARA). |
| B | Locking actuators. |
| | Unlocking actuators. |
| | Deadlocking actuators |
| | Boot opening actuators |
| | Indicators (front, rear, left hand, right hand, side repeaters) |
| | System status LED. |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

| CONNECTIONS | | |
|-------------|---|----------------|
| n° | Signal | Type |
| 1 | Vehicle locking status information (for symbol on the instrument panel) | VAN |
| | HF plip batteries worn warning | VAN |
| | Door open, engine running warning | VAN |
| | Door status information | VAN |
| | Control of indicators | VAN |
| 2 | Locking / unlocking / deadlocking request by plip | Encrypted HF |
| 3 | Boot opening request | All or nothing |
| | Locking / unlocking request by button | All or nothing |
| | Door status information | All or nothing |
| | Boot opening status information | All or nothing |
| | Impact detection input (Xsara Picasso) | All or nothing |
| | Locking / unlocking request by key | All or nothing |
| 4 | Locking actuators control | All or nothing |
| | Unlocking actuators control | All or nothing |
| | Deadlocking actuators control | All or nothing |
| | Boot opening actuator control | All or nothing |
| | Indicators control (front, rear, left hand, right hand, side repeaters) | All or nothing |
| | System status LED control | All or nothing |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

OPERATING PRINCIPLE

I - LOCKING / UNLOCKING

A - LOCKING / UNLOCKING USING THE KEY

Function:

This function consists of locking or unlocking the vehicle using the key by operating the locks of the front doors.

Functional description:

| FUNCTION | LOCKING | UNLOCKING |
|----------------------|---|--|
| Action | the BSI controls locking | the BSI controls unlocking |
| IF condition | locking order through the front locks | unlocking order through the front locks |
| AND condition | the vehicle is unlocked | the vehicle is locked |
| AND condition | the ignition has been off for more than 3 seconds | |
| AND condition | the doors are closed (otherwise, rebound occurs) | |
| Display | Illumination of indicators and side repeaters for 2 seconds. Illumination of system status LED | Flashing of indicators and side repeaters for 2 seconds. Extinguishing of system status LED |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

B - LOCKING / UNLOCKING USING THE PLIP

Function:

This function consists of locking or unlocking the vehicle, when the ignition is off, following an order from the HF remote control (plip).

Functional description:

| FUNCTION | LOCKING | UNLOCKING |
|----------------------|--|---|
| Action | the BSI controls locking | the BSI controls unlocking |
| IF condition | locking order from the plip | unlocking order from the plip |
| AND condition | the vehicle is unlocked | the vehicle is locked |
| AND condition | the ignition has been off for more than 3 seconds | |
| AND condition | the doors are closed (otherwise, rebound occurs) | |
| Display | Illumination of indicators and side repeaters for 2 seconds. Illumination of system status LED. | Flashing of indicators and side repeaters for 2 seconds. Extinguishing of system status LED. |

Note: Two locking / unlocking orders from the HF remote control will only be performed if there is a minimum of 0.6 seconds between them.

C - LOCKING / UNLOCKING USING THE INTERIOR BUTTON

Function:

This function consists of locking the vehicle following a request from the user by pressing the locking button located on the dashboard. All the doors and tailgate/boot will be alternately locked or unlocked every time the button is pressed.

Functional description:

| FUNCTION | LOCKING | UNLOCKING |
|----------------------|--|------------------------------------|
| Action | the BSI controls locking | the BSI controls unlocking |
| IF condition | locking order from the button | unlocking order from the button |
| AND condition | the vehicle is unlocked | the vehicle is locked |
| AND condition | the doors are closed (otherwise, rebound occurs) | |
| Display | Illumination of system status LED or symbol on control panel (depending on key position) | Extinguishing of system status LED |

Display:

- permanent correspondence between the locking status of the doors and the symbol on the control panel (if the ignition is on).
- flashing of the system status LED (ignition off) .

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

D - OPENING THE BOOT USING THE ELECTRIC BUTTON

Function:

This function consists of controlling the boot lock actuator by pressing the electric boot opening control button (located on the boot).

Functional description:

| FUNCTION | UNLOCKING THE BOOT USING THE BUTTON |
|----------------------|--|
| Action | the BSI controls unlocking of the tailgate, then illuminates the boot lamp |
| IF condition | unlocking order from the boot button |
| AND condition | the vehicle is unlocked |
| AND condition | the speed has not exceeded 5 km/h since the last time a door was opened |
| AND condition | the boot is closed |

The lock is fitted with a device for opening the boot from the inside, should an operating fault occur. To do this, insert a rod into the hole at the bottom left of the lock from inside the boot.

E - REBOUND FUNCTION

Function:

A rebound upon locking consists of locking then unlocking the locks if a locking request is made and if one of the doors is open (no illumination of indicators).

Functional description:

| FUNCTION | REBOUND |
|----------------------|--|
| Action | the BSI controls locking, then unlocking of the doors |
| IF condition | a locking request is made (from any source) |
| AND condition | the vehicle is unlocked |
| AND condition | one of the doors is not closed to the 2 nd notch |
| Display | no illumination of indicators (since locking does not occur) |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

F - AUTOMATIC RE-LOCKING

Function:

This function consists of preventing the vehicle from being left unlocked due to negligence.

Functional description:

| FUNCTION | RE-LOCKING |
|---------------------|---|
| Action | the BSI automatically relocks the vehicle |
| IF condition | no door has been opened within 30 seconds of unlocking the vehicle. |

G - UNLOCKING IN THE EVENT OF AN IMPACT

Function:

This function consists of unlocking the vehicle in the event of an impact. It is prohibited after locking using the plip or the key.

Functional description:

The impact is detected by an inertia switch mounted on a rigid part of the vehicle structure (mechanical switch).

| FUNCTION | UNLOCKING IN THE EVENT OF AN IMPACT |
|----------------------|--|
| Action | the BSI controls unlocking of the doors if an impact is detected |
| IF condition | the impact detection input is activated |
| AND condition | the vehicle is locked |
| AND condition | the ignition is on |
| Display | change in status of the symbol on the control panel |

Note: This function is not totally reliable. It depends on the size and type of the impact. The fact that unlocking has occurred in the event of an impact must therefore not be communicated within the system.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

H - PROTECTION OF LOCK MOTORS

Function:

To prevent overheating, the BSI protects the lock actuators (doors and boot).

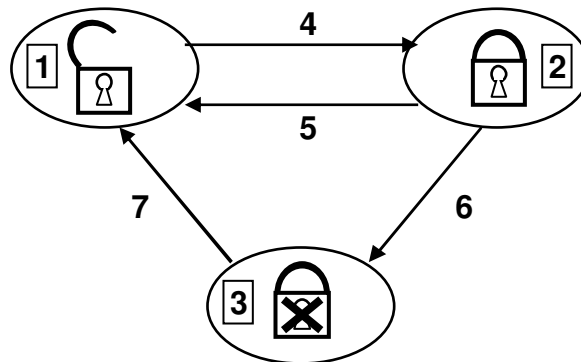
Functional description:

The vehicle is unlocked during the motor protection function.

| FUNCTION | PROTECTION OF LOCK MOTORS |
|---------------------|---|
| Action | The lock actuators are prevented from operating for 30 seconds |
| IF condition | 10 successive locking/unlocking operations have been performed in less than 2 minutes |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

II - DEADLOCKING



| KEY | | | |
|-----|-------------------|---|-------------|
| 1 | Unlocked status | 4 | Locking |
| 2 | Locked status | 5 | Unlocking |
| 3 | Deadlocked status | 6 | Deadlocking |
| | | 7 | Unlocking |

Note: It is not possible to switch from the deadlocked status to the locked status.

A - DEADLOCKING USING THE KEY

Function:

This function consists of deadlocking the vehicle, using the key, after locking it by operating the front door locks when the ignition is off.

Functional description:

| FUNCTION | DEADLOCKING USING THE KEY |
|----------------------|---|
| action | the BSI deadlocks the vehicle |
| IF condition | the door lock contact is operated for at least 0.7 seconds (definable) |
| AND condition | the vehicle has been locked for less than 5 seconds (definable) |
| AND condition | all the doors are closed |
| AND condition | the ignition is off |
| Display | illumination of indicators for 2 seconds (extinguished for 0.5 s beforehand if they were illuminated) |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

B - DEADLOCKING USING THE PLIP

Function:

This function consists of deadlocking the vehicle after locking it, when the ignition is off, following an order from the HF remote control.

Functional description:

| FUNCTION | DEADLOCKING USING THE PLIP |
|----------------------|---|
| Action | the BSI deadlocks the vehicle |
| IF condition | the locking button on the HF remote control is pressed |
| AND condition | the vehicle has been locked for less than 5 seconds (definable) |
| AND condition | all the doors are closed |
| AND condition | the ignition is off |
| Display | illumination of indicators for 2 seconds (extinguished for 0.5 seconds beforehand if they were illuminated) |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 7

PART 8

AUTOMATIC CLIMATE CONTROL XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

GENERAL

I - FOREWORD

The automatic climate control system allows the user to control the operation of the air conditioning-heating system automatically, by adjusting:

- the air flow (blower motor),
- the air temperature (mixing),
- the distribution of air in the passenger compartment (distribution),
- the air inlet (recycling),
- the air conditioning function.

The desired temperature is obtained by setting the mixing flap, controlled by a stepper motor, to the correct position.

The heating is provided by a heater matrix in the engine coolant circuit.

The cold air is produced by a traditional cooling system through an evaporator.

The air flow is provided by a blower motor.

The distribution and air inlet are adjusted by flaps controlled by stepper motors.

The control panel also includes the control for the heated rear screen (this is totally independent to the other air conditioning functions).

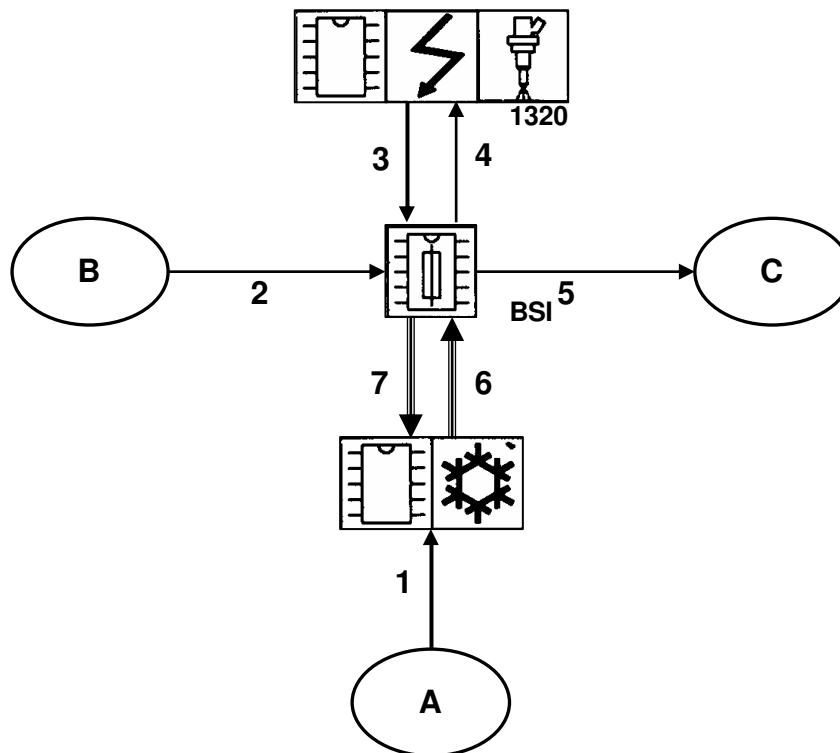
There are two types of air conditioning management, depending on the engine:

| | 1.6i (TU5JP engine) | 1.8i (EW7J4 engine) | 2.0 TD (DW10TD engine) |
|--------|---------------------|---------------------|------------------------|
| Type C | X | | |
| Type D | | X | X |



Type C: the engine management ECU does not control the engine cooling. The engine ECU is called "non FRIC". The coolant temperature warning signal is sent to the BSI by the air conditioning management unit.

Type D: the engine management ECU controls the engine cooling. The engine ECU is called "FRIC". The coolant temperature warning signal is sent to the BSI by the engine management ECU.

II - GENERAL LAYOUT



Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

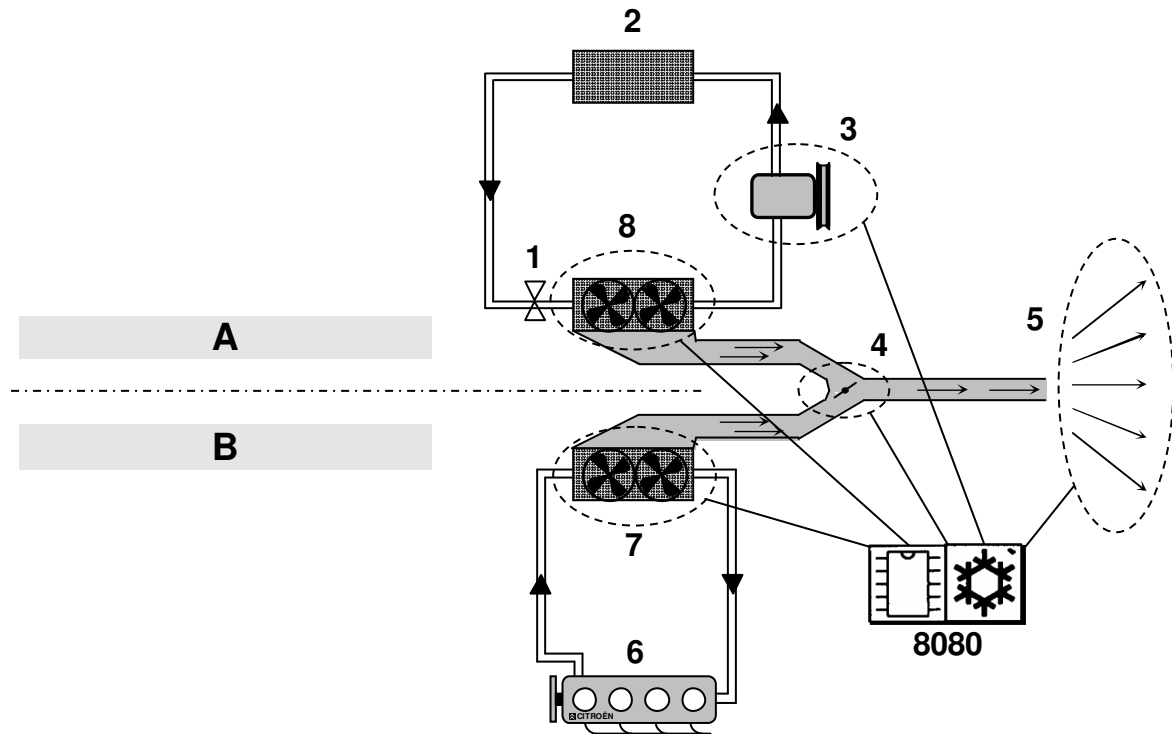
| COMPONENTS | |
|-------------------|--|
| BSI | Built-in Systems Interface |
| 1320 | Engine management ECU |
| 8080 | Automatic climate control (RFTA) |
| A | Heater matrix coolant temperature sensor |
| | Passenger compartment temperature sensor |
| B | Refrigerant pressure sensor |
| | Evaporator temperature sensor |
| | Alternator |
| | External air temperature sensor |
| | Engine coolant temperature sensor |
| | Vehicle speed sensor |
| | Heated rear screen |
| | Heated door mirrors |
| | Air conditioning compressor |
| C | Heated rear screen relay |
| | Heated door mirrors |
| | Air conditioning compressor |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

| CONNECTIONS | | |
|-------------|--|----------------|
| n° | Signal | Type |
| 1 | Heater matrix coolant temperature | Analogue |
| | Passenger compartment temperature | Analogue |
| | User instructions (temperature, operating mode) | All or nothing |
| 2 | Refrigerant pressure | Analogue |
| | Evaporator temperature | Analogue |
| | Alternator output voltage (engine running information) | Analogue |
| | External air temperature | Analogue |
| | Coolant temperature (for non FRIC engine ECU) | Analogue |
| | Vehicle speed | Frequency |
| 3 | Compressor authorisation | All or nothing |
| | Coolant temperature (for FRIC engine ECU) | Frequency |
| 4 | Air conditioning compressor engaging request | All or nothing |
| 5 | Heated rear screen relay control | All or nothing |
| | Heated door mirrors control | All or nothing |
| | Compressor control | All or nothing |
| 6 | Compressor activation request | VAN |
| | Recycling information | VAN |
| | Heated rear screen activation request (for engine running) | VAN |
| 7 | Compressor status | VAN |
| | Air conditioning activation | VAN |
| | Compressor authorisation | VAN |
| | Coolant temperature/pressure safety, evaporator | VAN |
| | Heated rear screen operating status | VAN |
| | Engine running information | VAN |
| | External air temperature | VAN |
| | Evaporator temperature | VAN |
| | Brightness level | VAN |
| | Day / night status | VAN |
| | Black Panel status | VAN |
| | Economy mode | VAN |
| | Set to stand-by within 5 seconds | VAN |
| | Position of ignition key | VAN |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

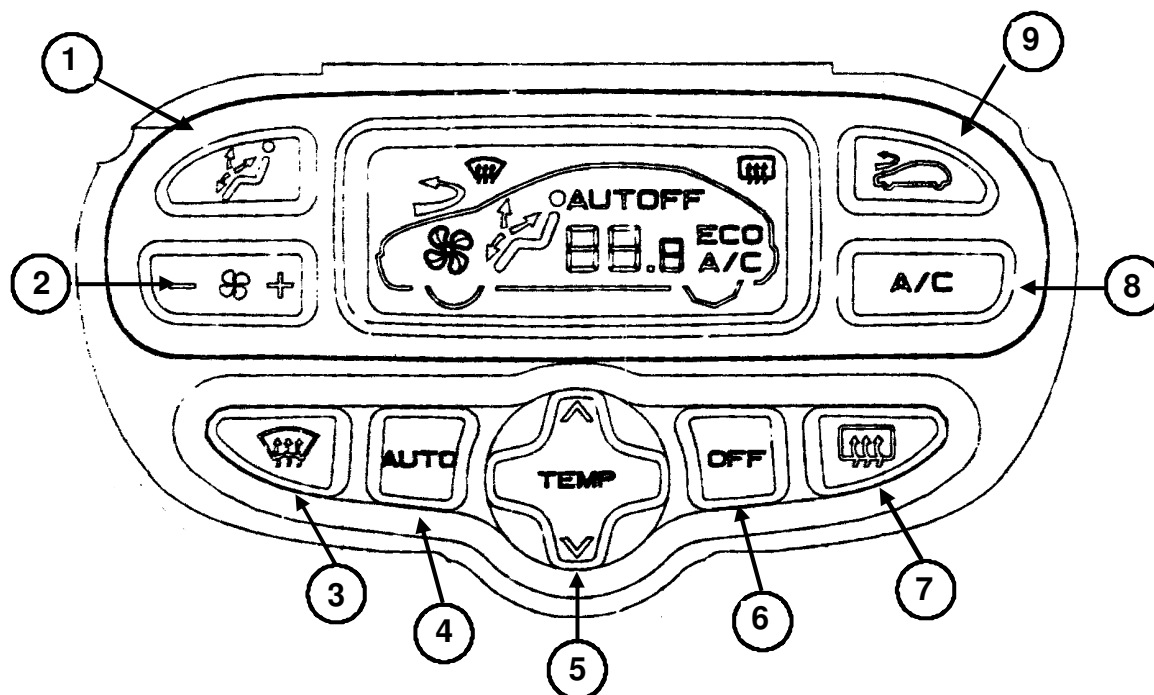
III - LAYOUT DIAGRAM



| KEY | | | |
|-------------|-----------------------|----------|-------------------------------------|
| A | Cold air circuit | 4 | Temperature adjustment |
| B | Warm air circuit | 5 | Air distribution in passenger comp. |
| 8080 | Air conditioning | 6 | Engine |
| 1 | Pressure relief valve | 7 | Heater matrix |
| 2 | Capacitor | 8 | Evaporator |
| 3 | Compressor | | |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

IV - DESCRIPTION OF THE USER DISPLAY AND CONTROLS



A - USER CONTROLS

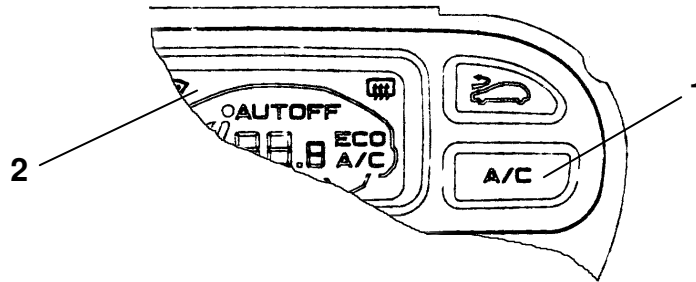
| N° | CONTROL | DESCRIPTION |
|----|---------------|--|
| 1 | Distribution | Used to adjust the distribution of air using one of the various preset flap positions (footwells, footwells-face, face, footwells-demisting, windscreen) |
| 2 | Blower motor | Controls the power of the air blower motor |
| 3 | Visibility | Switching to automatic mode aimed at visibility, when one of the parameters (except the blower motor) is adjusted manually, the other settings switch to AUTO mode |
| 4 | Auto | The system automatically controls the climate for the passengers, one of the parameters can be adjusted manually without affecting the other automatic settings. |
| 5 | Temperature | Allows the user to adjust the reference temperature |
| 6 | Off | Switches the system off |
| 7 | Rear de-icing | Heated rear screen de-icing request |
| 8 | A/C | Switches the air conditioning on or off (with ECO displayed on the display) |
| 9 | Air inlet | Used to recirculate air internally |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

B - DISPLAY

The display is incorporated into the air conditioning control panel. It is used for:

- viewing the user choices and system status,
- providing feedback about the actions performed to the user,
- warning of any system faults.



Brightness of the LEDs (1)

The displays have a fixed brightness by day which can be dimmed at night.

The symbols are only illuminated at night (with fixed brightness).

Display (2)

During night driving, the display is not lit. It illuminates for 10 seconds when any buttons on the control panel are operated.

Note: The Black Panel does not extinguish for as long as the heated rear screen and/or visibility are active.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

OPERATING PRINCIPLE

I - COMPRESSOR MANAGEMENT FUNCTION

The compressor is controlled by the BSI. It takes into account:

- the compressor engaging request (A/C),
- the icing up safety of the evaporator,
- the air conditioning pressure,
- the engine speed,
- the engine coolant temperature,
- the dialogue with the engine management ECU.

A - COMPRESSOR ENGAGING REQUEST

The request to engage the compressor is sent from the air conditioning control panel to the compressor control management electronics via the VAN network.

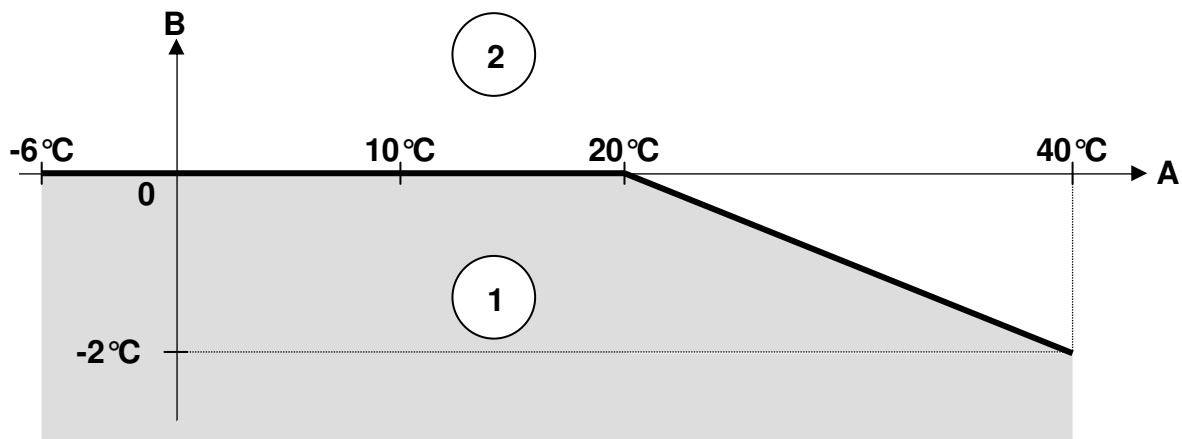
| | |
|----------------------|-----------------------------------|
| Action | the request is taken into account |
| IF condition | the engine is running |
| AND condition | the blower motor is activated |

B - EVAPORATOR ICING UP SAFETY DEVICE

The evaporator icing up safety device defines the rules for engaging and cutting off the compressor depending on:

- evaporator temperature,
- external temperature.

Evaporator temperature as a function of external temperature:



| KEY | |
|----------|--------------------------|
| A | External air temperature |
| B | Evaporator temperature |
| 1 | Compressor forbidden |
| 2 | Compressor authorised |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

C - AIR CONDITIONING PRESSURE SAFETY DEVICE

The BSI cuts off the compressor in the event of:

- high pressure (risk of damaging the circuit),
- low pressure (probability of a leak).

Detection is performed by a 4 level pressure switch.

To prevent the compressor from being successively engaged, waiting times are set:

| COMPRESSOR CUT-OFF | WAITING TIME |
|---|--------------|
| 1 st cut-off | 1 minute |
| 2 nd cut-off | 4 minutes |
| 3 rd and subsequent cut-offs | 16 minutes |

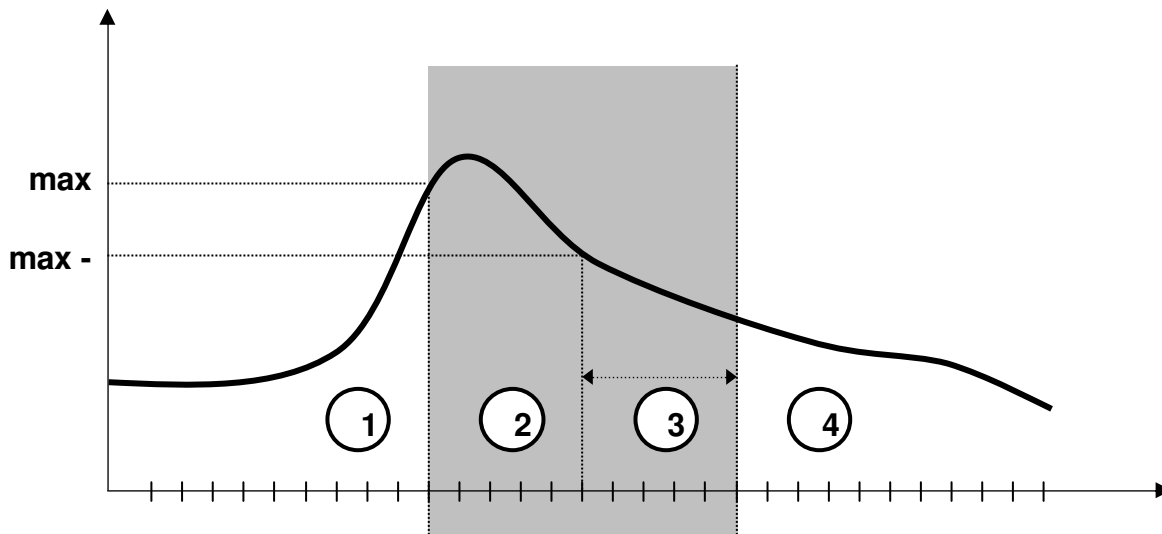
The timer is reset when the engine running information disappears.

D - ENGINE SPEED SAFETY DEVICE

To ensure the compressor is sufficiently protected at high engine speeds, a request to cut off the compressor is made if the engine speed is above 6250 rpm.

The compressor is authorised to re-engage if the engine speed falls below 5650 rpm. A cut-off time of at least 5 seconds is used.

Example: Engine speed as a function of time.



| KEY | |
|--------------|-----------------------------------|
| max + | Engine speed = 6250 rpm |
| max - | Engine speed = 5650 rpm |
| | Compressor forbidden |
| 1 | Compressor engaged |
| 2 | Compressor cut-off |
| 3 | 5 second timer before re-engaging |
| 4 | Compressor engaged |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

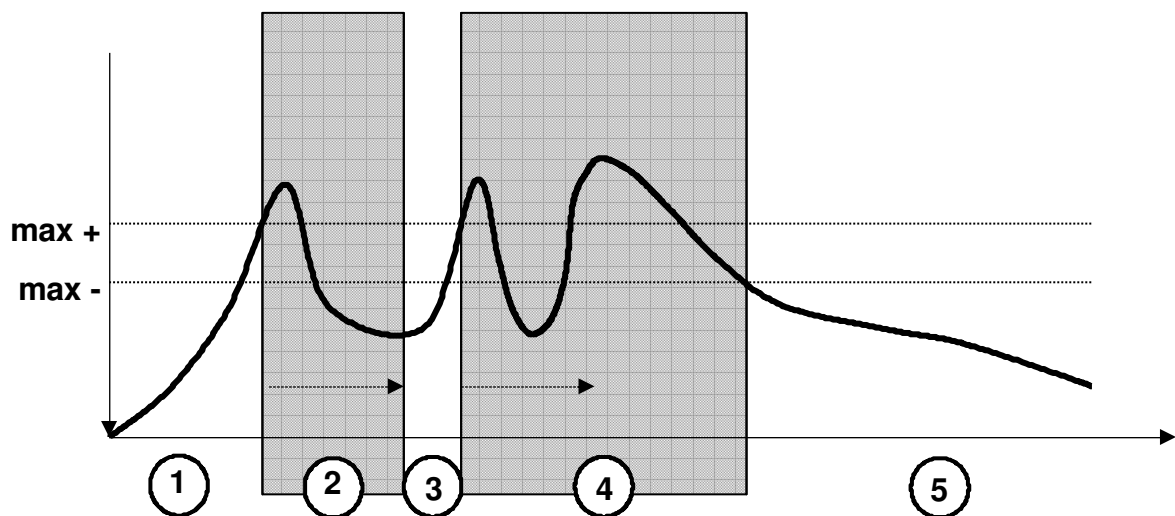
E - ENGINE COOLANT TEMPERATURE COMPRESSOR CONTROL

If the engine coolant temperature is too high, compressor operation is controlled by the BSI.

The compressor is forbidden for a coolant temperature above 112°C.

It is authorised to re-engage if the coolant temperature is below 109°C and if the previous cut-off due to coolant temperature was more than one minute ago.

Example: coolant temperature as a function of time.



| KEY | |
|--------------|---|
| max + | Coolant temperature = 112° |
| max - | Coolant temperature = 109° |
| | Compressor forbidden. |
| 1 | The compressor is engaged. |
| 2 | The maximum temperature has been exceeded: the compressor is cut off |
| 3 | The compressor is re-engaged as the temperature is valid after the one minute timer. |
| 4 | The maximum temperature has once again been exceeded: the compressor is cut off. |
| 5 | The compressor is re-engaged when the temperature returns to normal after more than one minute. |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

II - ADDITIONAL ELECTRIC HEATING FUNCTION

Function:

For DW10TD engines (HDI), heating resistors are placed in the engine cooling circuit. This allows a sufficient heat source to be obtained to operate the air conditioning, despite the slow rise in engine temperature.

Functional description:

The engine ECU requests the additional heating depending on the following information:

- coolant temperature,
- external temperature (through engine inlet).

Note: an additional heater is available as an option.

III - DE-ICING FUNCTION

Function:

To de-ice the heated rear screen and the heated door mirrors depending on:

- user request,
- energy management (12 minute timer),
- engine running information.

Functional description:

| | |
|----------------------|---|
| Action | De-icing of the rear screen and door mirrors for 12 minutes |
| IF condition | The user requests de-icing |
| AND condition | The engine is running |
| Display | Illumination of the de-icing LED |

Case of switching off the engine during the timer

- If the engine is started again within one minute after switching it off:
De-icing is reactivated to finish the timer.
- If the engine is started again more than one minute after switching it off:
De-icing is not reactivated.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

IV - DOWNGRADED MODES

Faults in the components below lead to a system operation which, depending on the case:

- bypasses the faulty component,
- prevents certain functions.

An ECU considers there to be a fault when the value transmitted by one of the components is outside fixed limits. These values are set for normal vehicle usage, plus a certain margin.

| FAULT ORIGIN | BEHAVIOUR ADOPTED |
|-----------------------------------|---|
| Evaporator temperature sensor. | Compressor prevented from engaging. |
| External temperature sensor. | The compressor cut-off only depends on the evaporator temperature, with a suitable limit. |
| Air conditioning pressure sensor. | Compressor prevented from engaging. |
| Coolant temperature information. | Compressor prevented from engaging. |

V - DIAGNOSTICS

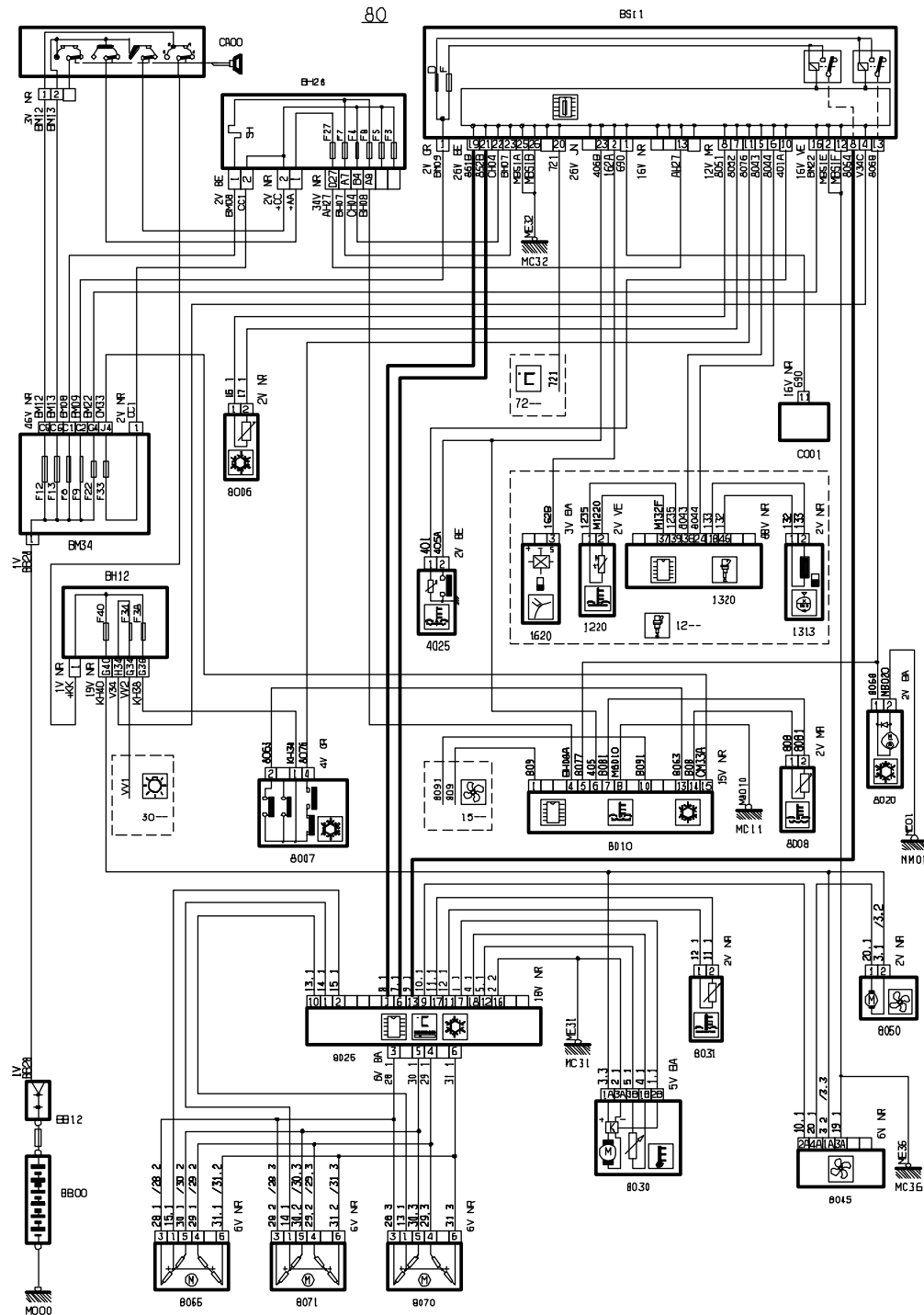
Below are the components which can undergo a diagnostic procedure and the data received:

| COMPONENT ACCESSIBLE BY DIAGNOSTICS | DATA RECEIVED |
|---|--|
| Evaporator sensor output | Open circuit Short circuit |
| Air conditioning pressure safety input | Short circuit to earth |
| Air conditioning pressure signal | Open circuit Signal validity |
| Coolant temperature range | Open circuit (TU5JP) Short circuit (TU5JP) Broken connection (EW7J4 and DW10TD) Signal outside range (EW7J4 and DW10TD) |
| Compressor engaging request (BSI to engine ECU) | Signal value Short circuit to +12V |
| Compressor engaging authorisation (engine ECU to BSI) | Signal value |
| Compressor control output | Open circuit Short circuit to earth |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

ELECTRICITY

I - LAYOUT DIAGRAM - TU5JP



PFM008P

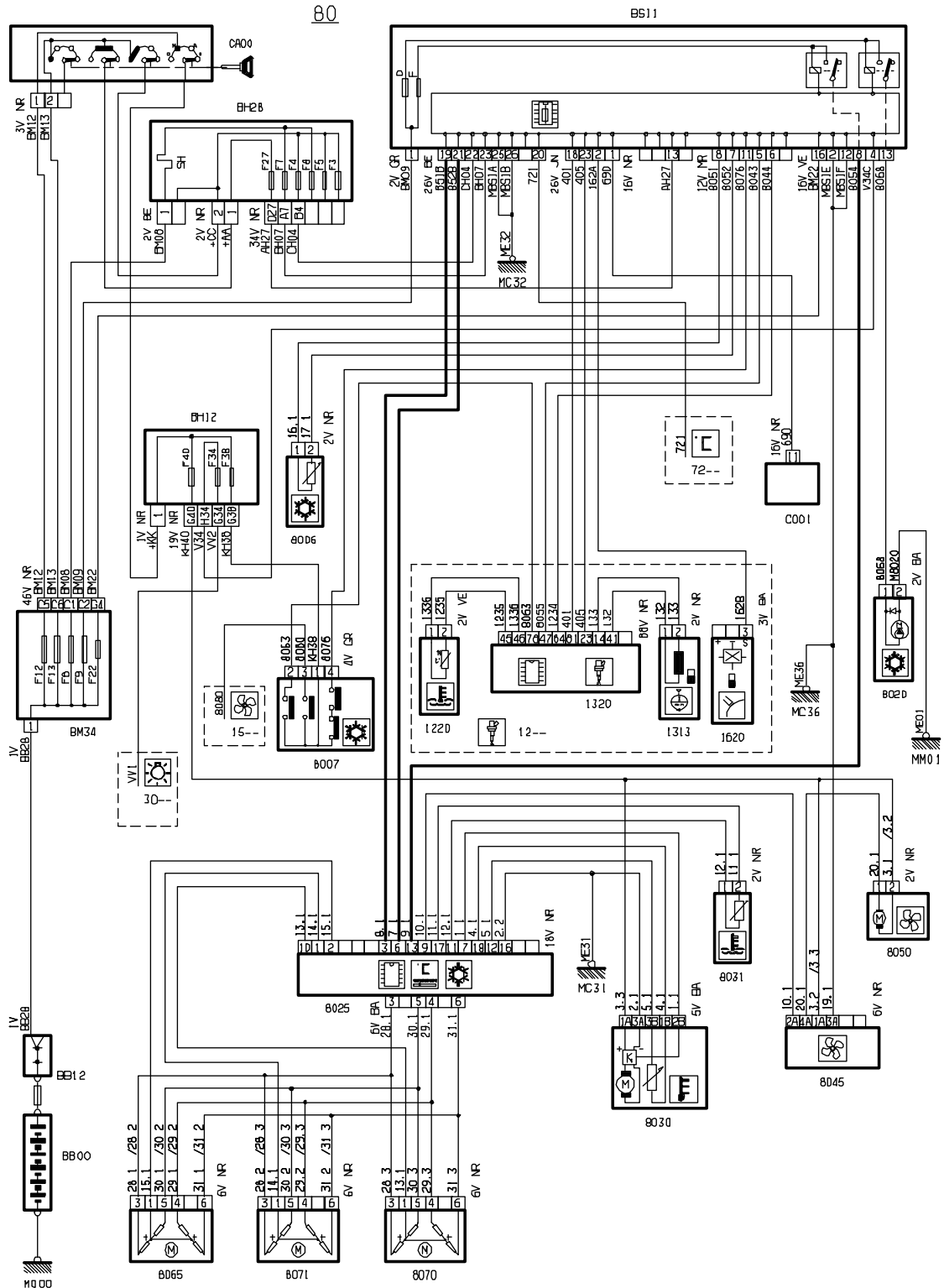
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

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V - LAYOUT DIAGRAM - DW10



IV - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
| 2300 | - Danger signal switch |
| 2340 | - Left hand side repeater |
| 2345 | - Right hand side repeater |
| 2610 | - Left hand headlamp |
| 2615 | - Right hand headlamp |
| 2630 | - Rear left hand lamp on body |
| 2635 | - Rear right hand lamp on body |
| 3010 | - Front interior lamp |
| 3020 | - Rear interior lamp |
| 3050 | - Lighting rheostat |
| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermostats (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
- 8030 - Passenger compartment air thermistor
- 8031 - Coolant thermistor
- 8045 - Blower control module (if separate)
- 8050 - Blower motor (if separate)
- 8065 - Mixing flap reduction motor
- 8070 - Air input flap reduction motor
- 8071 - Distribution flap reduction motor
- 8220 - Analogue module transponder
- 8410 - Radio
- 8413 - Radio control
- 8415 - Compact disc changer
- 8420 - Loud speakers on front door (driver's side)
- 8425 - Loud speakers on front door (passenger's side)
- 8430 - Loud speaker (rear left hand)
- 8435 - Loud speaker (rear right hand)
- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 8

PART 9

VEHICLE IMMOBILISATION XSARA AND XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

TRANSPONDER SYSTEM OPERATING PRINCIPLE

I - FOREWORD

The role of this function is to protect the vehicle:

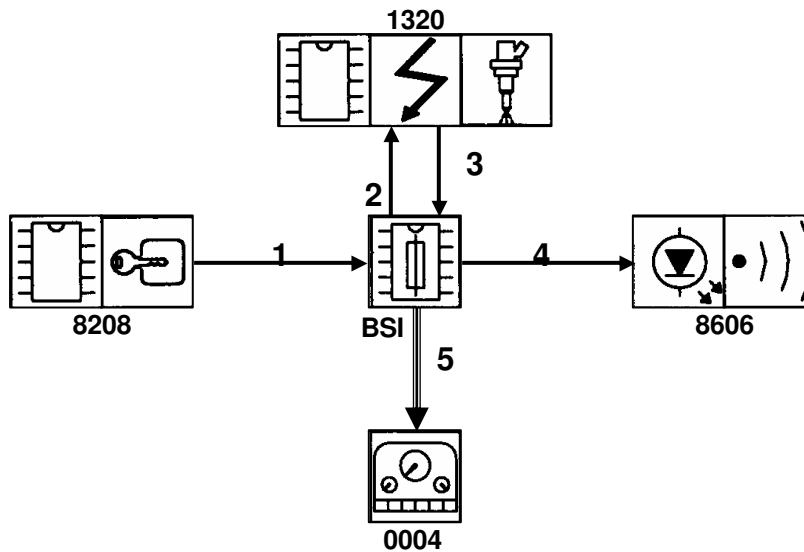
- by electronically locking the engine management ECU - on petrol and HDi engines,
- by electronically locking the diesel pump electrovalve - on XUD engines.

The system consists of:



- an analogue unit located in the top of the ignition switch,
- a responder label located in the ignition key,
- a Built-in Systems Interface (BSI) which authorises unlocking or not,
- an engine management ECU or a diesel pump electrovalve (depending on engine),
- a Multifunction Screen (MFS) for displaying messages (XSARA PICASSO only).

Note: For simplification purposes, only petrol and HDI engines are dealt with as the general operation is the same for XUD engines.

II - GENERAL LAYOUT



Key:

-  single arrow = wire connection
-  triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|----------------------------------|
| BSI | Built-in Systems Interface (BSI) |
| 0004 | Multifunction Screen (MFS) |
| 1320 | Engine management ECU |
| 8208 | Key-transponder assembly |
| 8606 | "System status" LED |

| CONNECTIONS | | |
|-------------|---|----------------|
| n° | Signal | Type |
| 1 | Position of the ignition key | All or nothing |
| | Encrypted code | Analogue |
| 2 | Engine ECU locking or unlocking control | Digital |
| 3 | Engine ECU locking status | Digital |
| 4 | Vehicle immobilisation status | All or nothing |
| 5 | Fault message to be displayed | VAN |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

III - OPERATION

A - SYSTEM COMPONENTS

Transponder:

An analogue unit, located in the top of the ignition switch, sends a signal to the ignition key. This is fitted with a responder label which disrupts the signal emitted by the analogue unit. The modification to the signal allows the analogue unit to transmit the key code (responder label) to the BSI.

Built-in Systems Interface:

The BSI decodes the signal sent by the label. It considers the key to be valid or not, depending on the signal received from the key.

It then controls the display on the MultiFunction Screen (XSARA PICASSO) or on the control panel (XSARA) and the locking/unlocking of the engine management ECU.

Engine management ECU:

This can be locked or unlocked by the BSI. When locked, its functions are prohibited (ignition, injection, etc). On diesel engine vehicles, the diesel pump electrovalve is locked in the same way.

MultiFunction Screen (XSARA PICASSO only):

This displays the message "ENGINE IMMOBILISER FAULT" if it was not possible to unlock the engine.

Case of engine locked: There is a communications problem or the engine ECU has not unlocked itself after receiving the request from the BSI.

Case of unknown transponder: The key has not been recognised or has not been reprogrammed after the last programming.

Control panel (XSARA only):

There is an LED on the control panel which shows the status of the transponder.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

B - LOCKING FUNCTION

Functional description:

| ACTION | THE BSI CONTROLS LOCKING |
|---------------------|--|
| IF condition | the key is removed from the ignition switch |
| | AND the ignition has been off for > 10 secs. |
| OR condition | the key is in the OFF position |
| | AND the ignition has been off for > 2 mins. |

C - UNLOCKING FUNCTION

Functional description:

| FUNCTION | THE BSI CONTROLS UNLOCKING |
|----------------------|-----------------------------------|
| IF condition | the key is present |
| AND condition | the key is recognised |
| AND condition | the ignition is on |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

OPERATING PRINCIPLE OF THE FACTORY FITTED ANTI-INTRUSION ALARM

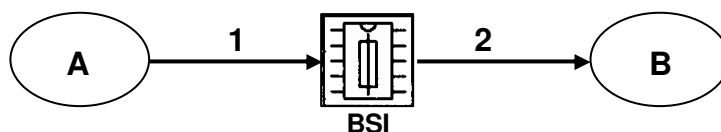
I - FOREWORD

*Note: The factory fitted alarm is **only available on the XSARA**.*

The role of this function is to protect the vehicle against intrusions. Protection is provided by *Perimetric and Volumetric* monitoring.

This alarm is not multiplexed as it is inside the BSI. All the sensors and actuators for this function are therefore connected *directly* to the unit.

II - GENERAL LAYOUT



| COMPONENTS | |
|------------|--------------------------------|
| A | Door, bonnet and boot switches |
| | Volumetric suppression button |
| | Ultra sound unit |
| | HF remote control |
| B | Indicators and side repeaters |
| | System status LED |
| | Siren |
| | Ultra sound unit |
| | Display LED |

| CONNECTIONS | | |
|-------------|--|-------------------|
| n° | Signal | Type |
| 1 | Door status information | All or nothing |
| | Volumetric suppression request | All or nothing |
| | Siren prohibition request | All or nothing |
| | Intrusion information by volumetric monitoring | All or nothing |
| | Locking / unlocking request | HF |
| 2 | Indicators and side repeaters control | All or nothing |
| | Siren control | Serial connection |
| | Ultra sound unit control | Supply |
| | LED control | All or nothing |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

III - OPERATION

A - OPERATING MODES

The anti-intrusion alarm has 3 operating modes:

| MODE | DESCRIPTION |
|----------------|-------------------------|
| Armed mode | Vehicle protected |
| Disarmed mode | Vehicle not protected |
| Triggered mode | Signalling an intrusion |

B - ARMING / DISARMING

Arming

The vehicle is protected only when it is deadlocked using the HF remote control.

When armed, an intrusion or cutting the supply will cause the alarm to be triggered for 30 seconds. At the end of this time, or when the supply is reconnected, the alarm returns to the armed state.

Disarming

Whether the alarm is triggered or not, the alarm is disarmed by:

- unlocking the vehicle with the HF remote control,
- the key being recognised when the ignition is switched on (after unlocking with the key).

C - PERIMETRIC PROTECTION

This protection monitors:

- the doors,
- the boot,
- the bonnet,
- the + accessories position,
- the + ignition on position,
- the + battery position.

Perimetric protection is active 5 seconds after the alarm is armed.

Case of one of the doors or boot or bonnet not correctly closed

- The siren emits a sound for 0.2 seconds.
- A timer is started: the user has 45 seconds to close the door, boot or bonnet. After this, perimetric monitoring is active.

Triggering perimetric protection

| ACTION | TRIGGERING OF THE ALARM |
|---------------------|--|
| IF condition | change in status of one of the doors, boot or bonnet |
| OR condition | disappearance of the + battery |
| OR condition | ignition switched on |

D - VOLUMETRIC PROTECTION

This protection monitors the volume of the passenger compartment. It is active 45 seconds after the alarm is armed.

1 - Triggering volumetric protection:

An intrusion is detected by the ultra sound sensor module. All significant variations in passenger compartment volume trigger the alarm.

a - Prohibiting volumetric protection

- Voluntary prohibition

After the ignition is switched off, this protection can be prohibited voluntarily, by pressing the volumetric suppression switch for at least 1 second. This request must be made within 5 minutes before the alarm is armed, otherwise it is ignored.

- Automatic prohibition

Volumetric protection is prohibited after the alarm has been triggered 3 times within the same arming period.

E - TRIGGERING THE ALARM

If an intrusion attempt is detected when the alarm is armed, the alarm will:

- operate the self powered alarm for 30 seconds,
- operate the indicators and side repeaters,
- memorise the fact that the alarm has been triggered,
- count the number of times the alarm has been triggered due to the volumetric protection.

After 30 seconds, the alarm returns to armed mode. It can only be triggered again after being armed for at least 5 seconds.

The case of the supply being cut is controlled directly by the self powered siren.

F - PROHIBITING THE SIREN

The siren can be prohibited by pressing the volumetric suppression switch for at least 2 seconds, within 10 seconds after the ignition is switched on.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

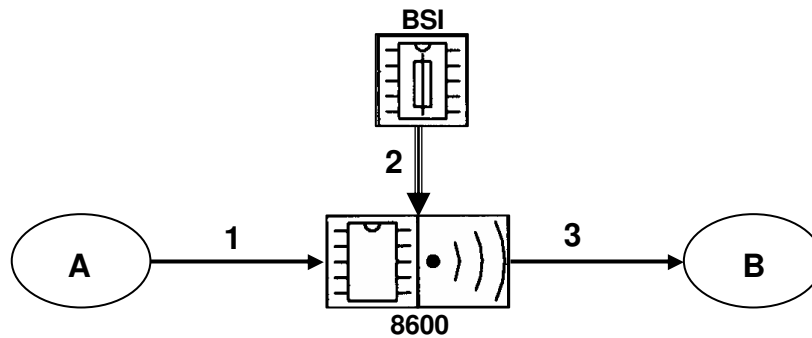
OPERATING PRINCIPLE OF THE AFTER-SALES FITTED ANTI-INTRUSION ALARM

I - FOREWORD



The aim of this function is to be able to incorporate an after-sales anti-theft alarm into the vehicle (Xsara or Xsara Picasso). The BSI communicates with the alarm unit via the VAN network.

This alarm offers the same protection as the factory fitted alarm (optional on the XSARA).

II - GENERAL LAYOUT



Key:

 single arrow = wire connection
 triple arrow = multiplexed connection

| COMPONENTS | |
|-------------|---|
| BSI | Built-in Systems Interface |
| 8600 | Autonomous alarm unit |
| A | Boot opening switch (Xsara only) |
| | Bonnet opening switch |
| | Volumetric suppression button |
| | Ultra sound sensors |
| | Connector to the BSI controlling the interior lamps |
| | Ignition switch |
| B | Indicators and side repeaters |
| | Siren |
| | Display LED |

| CONNECTIONS | | |
|-------------|--|----------------|
| n° | Signal | Type |
| 1 | Information about the status of the doors, boot and bonnet | All or nothing |
| | Volumetric suppression request | All or nothing |
| | Information about modification to pass. comp. volume | All or nothing |
| | + ignition on signal | All or nothing |
| 2 | Request to arm or disarm the alarm | VAN |
| 3 | Indicators control | All or nothing |
| | Siren control | All or nothing |
| | Display LED control | All or nothing |
| | Siren supply | Supply |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

III - OPERATION

A - PERIMETRIC PROTECTION

The information about the status of the doors, bonnet and boot is acquired by the interior lamp control: if, after a time, the interior lamp or lamps are extinguished, the vehicle is considered to be closed.

If the bulbs in the interior lamps are missing or faulty, the alarm is not affected: the information is taken from the command sent by the BSI.

If a door remains open after the alarm is armed, the siren sounds for 30 seconds, up to 10 consecutive times. It is no longer triggered after this.

B - VOLUMETRIC PROTECTION

Volumetric protection is active 45 seconds after the alarm is armed.

If movements are detected before the end of this timer, volumetric activation is delayed, several times if necessary.

Volumetric protection can be prohibited in the same way as for the factory fitted alarm.

Note: Tests on the volumetric protection must be performed with the doors and windows closed.

C - DISPLAY

An LED for this purpose is incorporated into the dashboard.

The LED operates in the same way for both vehicles:

| STATUS | DISPLAY |
|-----------------------------------|---|
| Armed | flashing at 1 Hz |
| Volumetric protection prohibition | permanently illuminated until armed |
| Siren triggering prohibition | flashing at 1 Hz when armed |
| Triggering | flashing when monitoring is disarmed, until the memory is erased. |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

2 - Arming

The LED flashes during the volumetric protection timer at a frequency of 25 Hz, then at a frequency of 1 Hz until it is disarmed. If volumetric protection is cancelled, the LED flashes immediately at a frequency of 1 Hz until it is activated.

a - Triggering

To view the reason why the alarm was last triggered, the vehicle must be locked and then unlocked quickly. The LED flashes in accordance with the table below:

| REASON FOR TRIGGERING | NUMBER OF FLASHES |
|-------------------------|-------------------|
| Volumetric | 2 |
| Opening of doors | 3 |
| Opening of boot | 5 |
| Opening of bonnet | 6 |
| Attempt to start engine | 7 |

D - SPECIFIC OPERATIONS

IMPORTANT: When fitting an after-sales alarm, the BSI must be programmed to prevent the indicators from being controlled when the doors are locked/unlocked. In this case, the alarm controls signalling.

Opening the vehicle with the key:

If the vehicle is opened using the key, the alarm is triggered. To disarm the alarm, the following procedure must be performed: enter the "EMERGENCY CODE".

Entering the "EMERGENCY CODE":

A 5 figure code is given on a card supplied with the alarm system. Example: 43125.

| STEP | ACTION | EFFECT |
|------|--|-----------------------|
| 1 | Open the door. | The siren is set off. |
| 2 | Switch on the ignition. | |
| 3 | Switch off the ignition immediately. | |
| 4 | Switch on the ignition immediately. | |
| 5 | Allow the LED to flash 4 times (1 st figure of the code). | |
| 6 | Switch off the ignition. | The siren stops. |

Repeat the procedure from step 2 to step 6 for the other 4 figures. If the code is recognised, the alarm is disarmed.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

Fitting / removing the alarm:

When fitting the alarm, disconnect the battery. After the operation:

- Reconnect the battery,
- Enter the "EMERGENCY CODE",
- Switch on the ignition for 10 seconds,
- Switch off the ignition.

The siren is activated.

IMPORTANT: When working on the alarm, the battery must be disconnected throughout the operation.

Switching off the self powered siren:

- Disarm the alarm,
- Disconnect the connector from the siren.

Diagnostic:

Diagnostics cannot be performed on the autonomous after-sales fitted alarm and it must be disconnected during the diagnostics procedure.

IMPORTANT: When performing diagnostics on the vehicle, the after-sales alarm must be disconnected.

OPERATING PRINCIPLE OF THE SYSTEM STATUS LED

Note: The system status LED is only fitted on the XSARA PICASSO.

I - FUNCTION

Visible from the outside of the vehicle, the system status LED is used to view the protection status of the vehicle depending on:

- the locking status of the vehicle
- the immobiliser system

II - FUNCTIONAL DESCRIPTION

A - CONDITION ABOUT THE LOCKING STATUS OF THE VEHICLE

| ACTION | VIEWING THE LOCKING STATUS OF THE VEHICLE |
|----------------------|---|
| IF condition | the vehicle is locked or deadlocked |
| AND condition | the ignition is off |

B - CONDITION ABOUT THE STATUS OF THE IMMOBILISER SYSTEM

| ACTION | VIEWING THE STATUS OF THE IMMOBILISER SYSTEM |
|----------------------|--|
| IF condition | the key is missing |
| AND condition | the engine management ECU is locked |

C - DISPLAY OF THE 2 PREVIOUS STATUSES

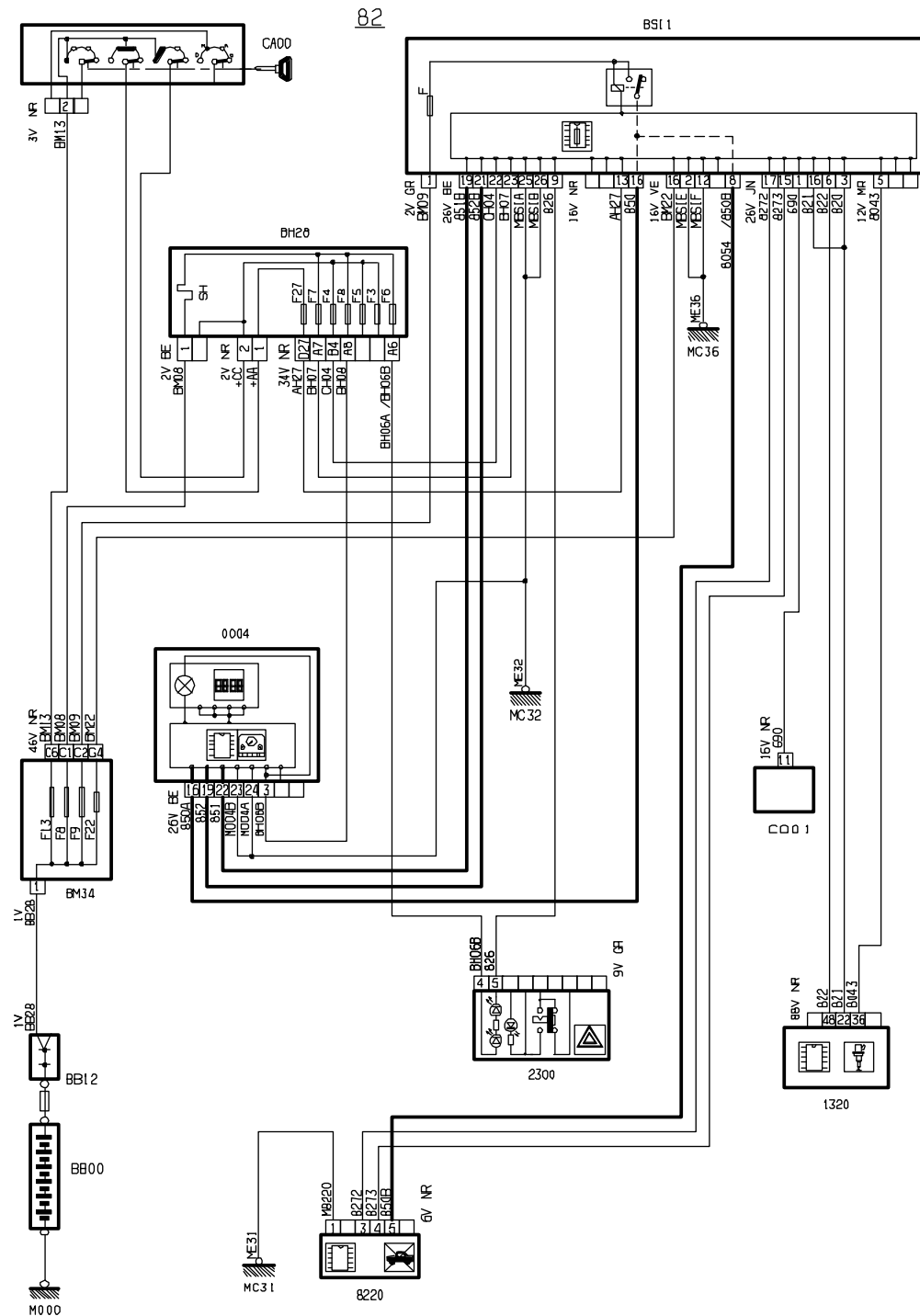
When the 2 previous statuses are fulfilled, the BSI controls the flashing of the LED (frequency 1 Hz, cyclic ratio 1/20).

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

ELECTRICITY

I - LAYOUT DIAGRAM

TRANSPONDER



PFM011P

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

II - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
| 2300 | - Danger signal switch |
| 2340 | - Left hand side repeater |
| 2345 | - Right hand side repeater |
| 2610 | - Left hand headlamp |
| 2615 | - Right hand headlamp |
| 2630 | - Rear left hand lamp on body |
| 2635 | - Rear right hand lamp on body |
| 3010 | - Front interior lamp |
| 3020 | - Rear interior lamp |
| 3050 | - Lighting rheostat |
| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermostats (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
- 8030 - Passenger compartment air thermistor
- 8031 - Coolant thermistor
- 8045 - Blower control module (if separate)
- 8050 - Blower motor (if separate)
- 8065 - Mixing flap reduction motor
- 8070 - Air input flap reduction motor
- 8071 - Distribution flap reduction motor
- 8220 - Analogue module transponder
- 8410 - Radio
- 8413 - Radio control
- 8415 - Compact disc changer
- 8420 - Loud speakers on front door (driver's side)
- 8425 - Loud speakers on front door (passenger's side)
- 8430 - Loud speaker (rear left hand)
- 8435 - Loud speaker (rear right hand)
- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 9

PART 10

RADIO AND COMPACT DISC CHANGER

XSARA PICASSO

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 10

GENERAL

I - FOREWORD

The XSARA PICASSO has 2 types of radio:

RB2 = Radio receiver fitted with a Basic mechanical cassette plate with split screen

RD2 = Radio receiver fitted with a Compact Disc player with split screen

- They have a split screen located in the control panel.
- They receive operating requests from the MultiFunction Screen for the functions performed using the remote controls at the steering wheel.
- All information relating to the display is communicated to the network and controlled by the screen.

Note: All radios can be fitted with a Compact Disc Changer (CDC).

The only compatible CD changer is the 6 disc changer available as a CITROËN accessory.

Note: Only engraved CDs can be read.

Configuration:

The following parameters can be configured using the diagnostics tool:

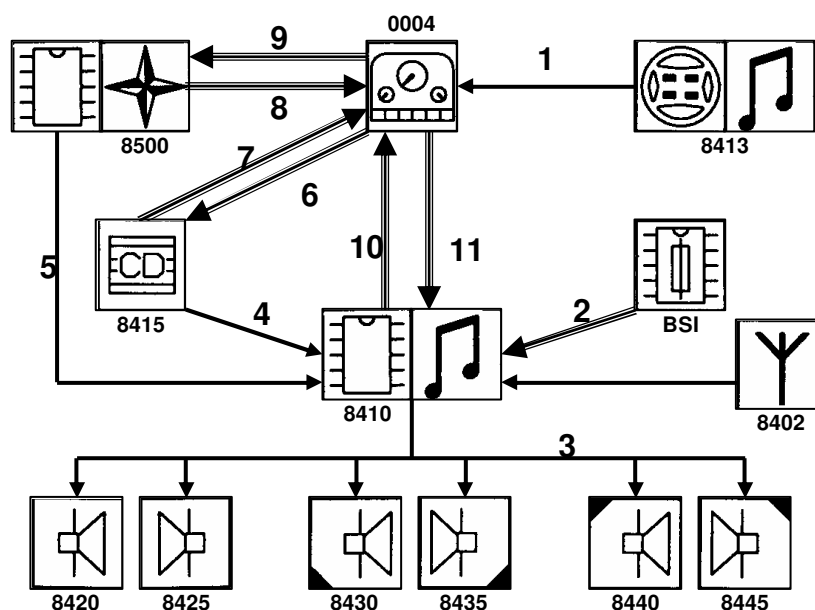
- Fader deactivated / activated.
- Geographical areas for the TUNER.
- Volume automatically linked to speed (RD2 and RB2).
- HI-FI version (activation of the output line) or not.

When leaving the FACTORY / in after-sales (= supplier FACTORY exit configuration), the radios are configured as followed:



- Fader active.
- TUNER: Western Europe.
- Volume automatically linked to speed: OFF.
- Hi-Fi version for RD2, non Hi-fi for RB2.

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 10

II - GENERAL LAYOUT



Key:

 single arrow = wire connection
 triple arrow = multiplexed connection

| COMPONENTS | | | |
|-------------|-------------------------------|-------------|----------------------------------|
| BSI | Built-in Systems Interface | 8420 | Speaker on front left hand door |
| 0004 | MultiFunction Screen | 8425 | Speaker on front right hand door |
| 8402 | Aerial | 8430 | Speaker on rear left hand door |
| 8410 | Radio | 8435 | Speaker on rear right hand door |
| 8413 | Steering wheel remote control | 8440 | Front left hand tweeter |
| 8415 | CD changer | 8445 | Front right hand tweeter |
| 8500 | Navigation | | |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 10

| CONNECTIONS | | |
|-------------|--|----------------|
| n° | Signal | Type |
| 1 | Request to change radio and CD changer status | All or nothing |
| 2 | Vehicle speed + VIN + brightness/contrast level | VAN |
| 3 | Output signal (possibly function of vehicle speed) | Analogue |
| 4 | CD audio input | Analogue |
| 5 | Navigation audio input | Analogue |
| 6 | Change of status of CD changer | VAN |
| 7 | CD changer status | VAN |
| 8 | Navigation status | VAN |
| 9 | Change of status of navigation | VAN |
| 10 | Radio status | VAN |
| 11 | Change in status of radio | VAN |

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 10

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 10

RADIO OPERATING PRINCIPLE

I - SWITCHING ON / OFF

A - GENERAL DESCRIPTION

The radio is switched on and off by:

- pressing the "ON" button on the front of the radio,
- switching the ignition on or off*,
- inserting a CD when the + accessories is present (RD2).

* If the radio was on before the ignition was switched off (vehicle stationary), the radio will work when the + accessories reappears.

B - SUPPLY MANAGEMENT

The MultiFunction Screen controls the supply to the radio:

- When the +VAN is present.

The radio sends on and off requests to the MultiFunction Screen.

The MultiFunction screen decides whether to switch the radio on or off, depending on the case.

- When the +VAN is missing.

The radio can wake up the VAN network to request that it be switched on. It switches itself off after a 30 minute timer.

II - RADIO ANTI-THEFT FUNCTION

The radios do not have an LED which flashes when the vehicle is stationary.

The anti-theft protection device is provided in the form of an identification code. It consists of the last 8 characters of the VIN, memorised by the BSI and the radio.

Note: Radios are supplied by the Replacement Parts Division with a memorised VIN code.

When operating, the radio's VIN code is compared with that of the BSI. If they do not correspond, the radio switches to scrambled mode.

Note: The VIN code cannot be reprogrammed in the BSI.

Consequently, the radio VIN code must be changed using the diagnostics tool if a new radio is fitted.

III - CONTROLLING THE BRIGHTNESS

The RD2 alters its brightness as a function of the value given by the BSI.

The brightness of the RB2 cannot be adjusted.

IV - VOLUME AUTOMATICALLY LINKED TO VEHICLE SPEED

RB2 and RD2 radios automatically correct the volume as a function of speed if the following 2 conditions are fulfilled:

- the configuration via the "Volume automatically linked to speed" diagnostic is ON,
- the user has activated, via the radio menu, the automatic volume correction (VOLUME_AUTO = ON).

This function does not affect the volume displayed on the screen and is controlled within the radio.

Note: The values of the volume are transmitted to the multifunction screen during adjustment.

It is still possible to adjust the volume manually using the "ON/VOL" button or the steering wheel remote control at any time and is independent to automatic correction.

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V - THERMAL PROTECTION

The radios have dynamic maximum volume limitation strategies, which depend on the rise in temperature in the units.

Note: RD2 radios limit the volume without altering the volume displayed on the screen.

RB2 radios only display the change in volume if the user performs a voluntary action (reduction in maximum volume from 30 to xx).

VI - CONFIGURATION

All new systems which have not been programmed will not be recognised by the system and will therefore not work. It is therefore essential to declare all radios and/or CD changers which are added or removed. All programming procedures require the use of a diagnostics tool. They must be performed on the vehicle.

| ACCESSORIES | CONFIGURATION IN THE EVENT OF ADDING/REMOVING |
|----------------------|--|
| CD changer | Configuration of control panel + BSI |
| Factory fitted radio | Configuration of control panel + BSI |

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ELECTRICITY

I - LAYOUT DIAGRAM

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II - PARTS LIST

| | |
|------|---------------------------------------|
| BB00 | - Battery |
| BB12 | - + battery connection terminal |
| BH12 | - 12 fuse box (passenger compartment) |
| BH28 | - 28 fuse box (passenger compartment) |
| BM34 | - 34 fuse engine relay unit |
| BSI1 | - Built-in systems interface |
| C001 | - Diagnostic connector |
| CA00 | - Ignition switch |
| CT00 | - Rotary connector |
| 0002 | - Signalling/lighting stalk |
| 0004 | - Control panel |
| 0005 | - Wiper stalk |
| 1010 | - Starter motor |
| 1020 | - Alternator |
| 1203 | - Inertia switch |
| 1211 | - Fuel sender pump |
| 1220 | - Engine coolant temperature sensor |
| 1313 | - Engine speed sensor |
| 1320 | - Engine management ECU |
| 1620 | - Vehicle speed sensor |
| 2300 | - Danger signal switch |
| 2340 | - Left hand side repeater |
| 2345 | - Right hand side repeater |
| 2610 | - Left hand headlamp |
| 2615 | - Right hand headlamp |
| 2630 | - Rear left hand lamp on body |
| 2635 | - Rear right hand lamp on body |
| 3010 | - Front interior lamp |
| 3020 | - Rear interior lamp |
| 3050 | - Lighting rheostat |
| 3054 | - Ashtray lighting |
| 3105 | - Boot (or tailgate) lighting |

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- 3110 - Glove box lighting switch
- 3115 - Glove box lighting
- 4010 - Engine coolant level switch
- 4025 - Temperature sensor - engine coolant thermoswitch (gauge)
- 5015 - Windscreen wiper motor
- 5115 - Windscreen/rear screen washer pump
- 6202 - Front door lock assembly driver's side
- 6207 - Front door lock assembly passenger's side
- 6260 - Boot locking motor
- 8006 - Evaporator thermistor (if separate)
- 8007 - Pressure switch
- 8008 - Air conditioning engine coolant temperature thermistor
- 8010 - Coolant temperature unit
- 8020 - Air conditioning compressor
- 8025 - Air conditioning control panel (if separate)
- 8030 - Passenger compartment air thermistor
- 8031 - Coolant thermistor
- 8045 - Blower control module (if separate)
- 8050 - Blower motor (if separate)
- 8065 - Mixing flap reduction motor
- 8070 - Air input flap reduction motor
- 8071 - Distribution flap reduction motor
- 8220 - Analogue module transponder
- 8410 - Radio
- 8413 - Radio control
- 8415 - Compact disc changer
- 8420 - Loud speakers on front door (driver's side)
- 8425 - Loud speakers on front door (passenger's side)
- 8430 - Loud speaker (rear left hand)
- 8435 - Loud speaker (rear right hand)
- 8440 - Front left hand tweeter speaker
- 8445 - Front right hand tweeter speaker
- 8500 - Navigation ECU

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