

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.

CONTENTS

PARTS 1

MULTIPLEXING / BSI XSARA AND XSARA PICASSO

CHAPTER 1 : MULTIPLEXING	PAGE	1
I - BRIEF DEFINITION.....	PAGE	1
II - PURPOSE OF MULTIPLEXING	PAGE	1
III - DESIGN OF THE XSARA PICASSO AND XSARA MULTIPLEXED NETWORK.....	PAGE	2
IV - THE VAN PROTOCOL	PAGE	3
V - LOCATION OF MULTIPLEXED ECUS	PAGE	5
CHAPTER 2 : BUILT-IN SYSTEMS INTERFACE	PAGE	7
I - FUNCTIONS CONTROLLED BY THE BSI ON THE XSARA PICASSO AND THE XSARA	PAGE	8
II - BSI LAYOUTS ON THE XSARA PICASSO AND XSARA.....	PAGE	9
III - BSI INPUTS.....	PAGE	11
IV - BSI OUTPUTS	PAGE	13
V - LOCATION AND TYPE OF THE CONNECTORS ON THE BSI	PAGE	16
VI - CHANNEL ALLOCATION ON THE BSI	PAGE	17
VII - OPERATING MODES	PAGE	23
VIII - AFTER-SALES OPERATIONS, ACCESSORIES.....	PAGE	24
CHAPTER 3 : ELECTRICITY	PAGE	29
I - LAYOUT DIAGRAM	PAGE	29
II - PARTS LIST	PAGE	30

CONTENTS

PART 2 SIGNALLING XSARA AND XSARA PICASSO

CHAPTER 1 : GENERAL	.....	PAGE	33
I - FOREWORD	.....	PAGE	33
II - GENERAL LAYOUT	.....	PAGE	33
CHAPTER 2 : OPERATING PRINCIPLE	.....	PAGE	35
I - INDICATOR FUNCTION	.....	PAGE	35
II - HAZARD WARNING LAMPS FUNCTION	.....	PAGE	35
III - FAULTY BULB DETECTION FUNCTION	.....	PAGE	36
CHAPTER 3 : ELECTRICITY	.....	PAGE	37
I - LAYOUT DIAGRAM	.....	PAGE	37
II - PARTS LIST	.....	PAGE	38

PART 3 INTERIOR LIGHTING XSARA AND XSARA PICASSO

CHAPTER 1 : GENERAL	.....	PAGE	41
I - FOREWORD	.....	PAGE	41
II - GENERAL LAYOUT	.....	PAGE	43
CHAPTER 2 : OPERATING PRINCIPLE	.....	PAGE	45
CHAPTER 3 : ELECTRICITY	.....	PAGE	47
I - LAYOUT DIAGRAM	.....	PAGE	47
II - PARTS LIST	.....	PAGE	48

CONTENTS

PART 4 DRIVER'S INFORMATION XSARA PICASSO

CHAPTER 1 : GENERAL	PAGE 53
I - FOREWORD	PAGE 53
II - LAYOUT	PAGE 54
III - XSARA PICASSO CONTROL PANEL	PAGE 61
CHAPTER 2 : MESSAGES AND WARNINGS FUNCTION	PAGE 65
I - DISPLAY	PAGE 65
II - PRIORITY LEVELS	PAGE 65
III - WARNINGS FROM WIRE INFORMATION	PAGE 66
IV - WARNINGS FROM THE VAN FRAMES	PAGE 67
CHAPTER 3 : INSTRUMENTATION FUNCTION	PAGE 69
I - COOLANT TEMPERATURE GAUGE AND WARNING FUNCTION..	PAGE 69
II - FUEL LEVEL GAUGE FUNCTION	PAGE 74
III - SPEEDOMETER FUNCTION.....	PAGE 77
IV - MILEOMETER FUNCTION	PAGE 79
V - MAINTENANCE INDICATOR FUNCTION.....	PAGE 80
VI - CLOCK / DATE / TEMPERATURE FUNCTION.....	PAGE 84
CHAPTER 4 : LIGHTING FUNCTION	PAGE 87
I - RHEOSTAT FUNCTION.....	PAGE 87
II - NIGHT DRIVING FUNCTION.....	PAGE 88
CHAPTER 5 : ON-BOARD ECU FUNCTION	PAGE 91
I - GENERAL	PAGE 91
II - LAYOUT	PAGE 92
III - OPERATING MODES	PAGE 93
CHAPTER 6 : ELECTRICITY	PAGE 95
I - LAYOUT DIAGRAM	PAGE 95
II - PARTS LIST	PAGE 98

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

CONTENTS

PART 5 DRIVER'S INFORMATION XSARA

CHAPTER 1 : GENERAL	PAGE 103
I - FOREWORD	PAGE 103
II - LAYOUT	PAGE 104
CHAPTER 2 : WARNING FUNCTION	PAGE 107
I - LIST OF LEDS	PAGE 107
II - INTEGRATED BUZZER	PAGE 108
III - WARNING APPEARANCE CONDITIONS	PAGE 108
CHAPTER 3 : INSTRUMENTATION FUNCTION.....	PAGE 111
I - MAINTENANCE INDICATOR.....	PAGE 111
II - OIL LEVEL GAUGE	PAGE 113
III - MILEOMETER.....	PAGE 114
CHAPTER 4 : REPAIRING THE CONTROL PANEL	PAGE 115
I - READING AND ERASING FAULTS	PAGE 115
II - PROGRAMMING THE MAINTENANCE TYPE.....	PAGE 115
III - ACTUATOR TEST	PAGE 115
IV - READING THE FOLLOWING PARAMETERS	PAGE 116

CONTENTS

PART 6 VISIBILITY XSARA AND XSARA PICASSO

CHAPTER 1 : GENERAL	PAGE 119
I - FOREWORD	PAGE 119
II - GENERAL LAYOUT	PAGE 120
CHAPTER 2 : OPERATING PRINCIPLE	PAGE 123
I - WINDSCREEN WIPER FUNCTION	PAGE 123
II - REAR WIPER FUNCTION	PAGE 125
III - MANAGEMENT OF WIPER PARKED POSITIONS	PAGE 126
IV - WIPER PROTECTION	PAGE 126
V - DE-ICING	PAGE 126
VI - HEADLAMP WASHER TIMER	PAGE 127
CHAPTER 3 : ELECTRICITY	PAGE 129
I - LAYOUT DIAGRAM	PAGE 129
II - PARTS LIST	PAGE 130

PART 7 LOCKING / UNLOCKING XSARA AND XSARA PICASSO

CHAPTER 1 : GENERAL	PAGE 135
I - FOREWORD	PAGE 135
II - GENERAL LAYOUT	PAGE 138
CHAPTER 2 : OPERATING PRINCIPLE	PAGE 141
I - LOCKING / UNLOCKING	PAGE 141
II - DEADLOCKING	PAGE 147

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

CONTENTS

PART 8

AUTOMATIC CLIMATE CONTROL XSARA PICASSO

CHAPTER 1 : GENERAL	PAGE 151
I - FOREWORD	PAGE 151
II - GENERAL LAYOUT	PAGE 152
III - LAYOUT DIAGRAM	PAGE 155
IV - DESCRIPTION OF THE USER DISPLAY AND CONTROLS.....	PAGE 156
CHAPTER 2 : OPERATING PRINCIPLE	PAGE 159
I - COMPRESSOR MANAGEMENT FUNCTION.....	PAGE 159
II - ADDITIONAL ELECTRIC HEATING FUNCTION.....	PAGE 164
III - DE-ICING FUNCTION.....	PAGE 164
IV - DOWNGRADED MODES	PAGE 165
V - DIAGNOSTICS	PAGE 166
CHAPTER 3 : ELECTRICITY	PAGE 167
I - LAYOUT DIAGRAM - TU5JP	PAGE 167
III - LAYOUT DIAGRAM - EW7	PAGE 168
V - LAYOUT DIAGRAM - DW10	PAGE 169
IV - PARTS LIST	PAGE 170

CONTENTS

PART 9

VEHICLE IMMOBILISATION XSARA AND XSARA PICASSO

CHAPTER 1 : TRANSPONDER SYSTEM OPERATING PRINCIPLE	PAGE 175
I - FOREWORD	PAGE 175
II - GENERAL LAYOUT	PAGE 176
III - OPERATION.....	PAGE 177
CHAPTER 2 : OPERATING PRINCIPLE OF THE FACTORY FITTED ANTI-INTRUSION ALARM.....	PAGE 179
I - FOREWORD	PAGE 179
II - GENERAL LAYOUT	PAGE 180
III - OPERATION.....	PAGE 181
CHAPTER 3 : OPERATING PRINCIPLE OF THE AFTER-SALES FITTED ANTI-INTRUSION ALARM.....	PAGE 185
I - FOREWORD	PAGE 185
II - GENERAL LAYOUT	PAGE 186
III - OPERATION.....	PAGE 187
CHAPTER 4 : OPERATING PRINCIPLE OF THE SYSTEM STATUS LED.....	PAGE 191
I - FUNCTION	PAGE 191
II - FUNCTIONAL DESCRIPTION	PAGE 191
CHAPTER 5 : ELECTRICITY	PAGE 193
I - LAYOUT DIAGRAM	PAGE 193
II - PARTS LIST	PAGE 194

CONTENTS

PART 10 RADIO AND COMPACT DISC CHANGER XSARA PICASSO

CHAPTER 1 : GENERAL	PAGE 199
I - FOREWORD	PAGE 199
II - GENERAL LAYOUT	PAGE 200
CHAPTER 2 : RADIO OPERATING PRINCIPLE	PAGE 203
I - SWITCHING ON / OFF	PAGE 203
II - RADIO ANTI-THEFT FUNCTION	PAGE 204
III - CONTROLLING THE BRIGHTNESS	PAGE 204
IV - VOLUME AUTOMATICALLY LINKED TO VEHICLE SPEED	PAGE 204
V - THERMAL PROTECTION	PAGE 205
VI - CONFIGURATION	PAGE 205
CHAPTER 3 : ELECTRICITY	PAGE 207
I - LAYOUT DIAGRAM	PAGE 207
II - PARTS LIST	PAGE 208

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

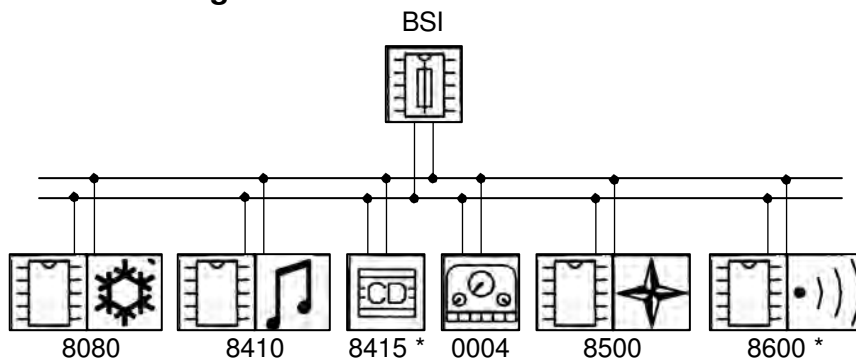
Multiplexing is used to:

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

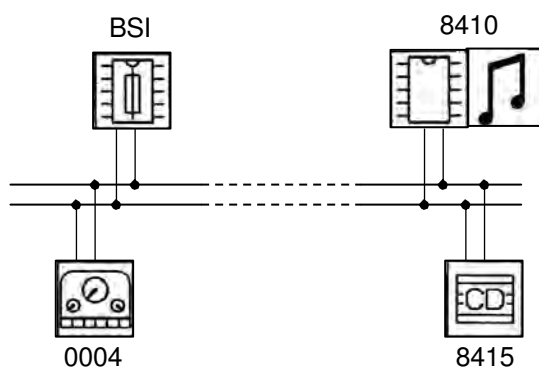
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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.

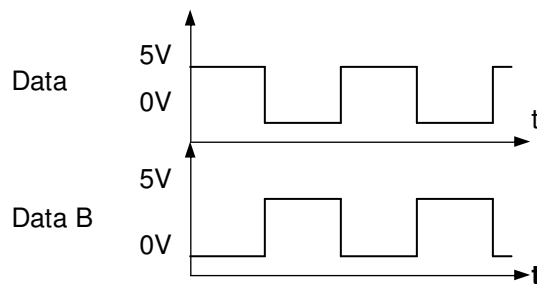
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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.

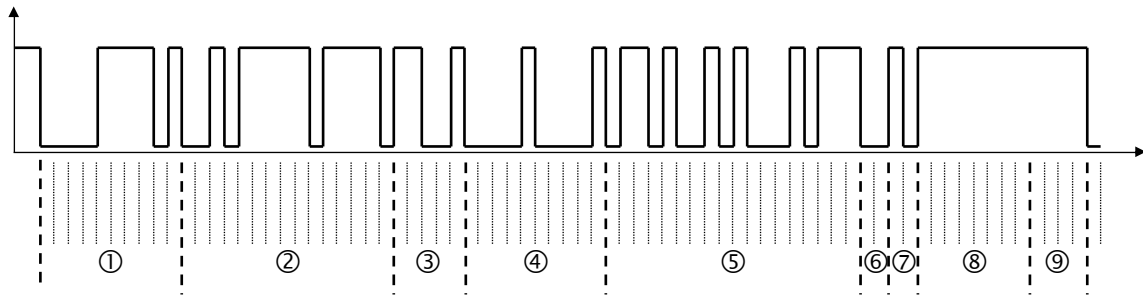
This process is used to:

- 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.

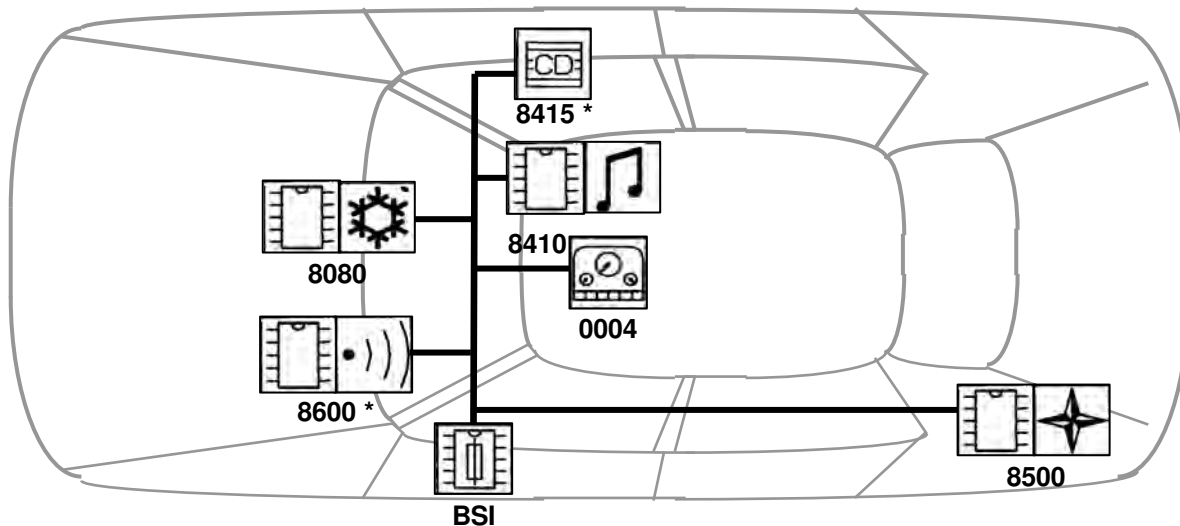
IMPORTANT: It is forbidden to connect a measuring device (multimeter, etc) to the VAN network.

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

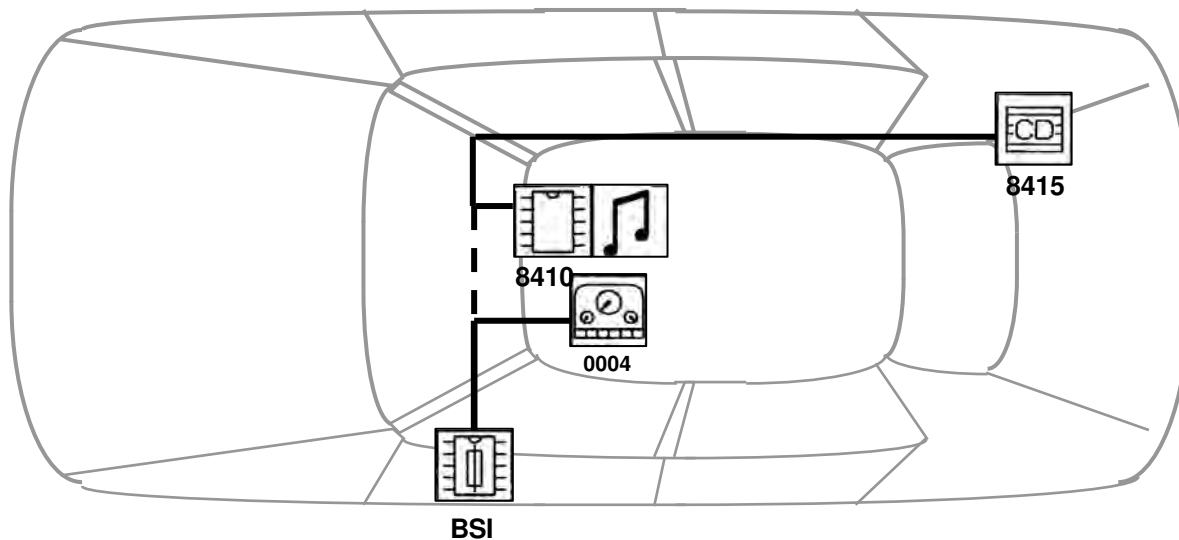
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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.

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*	
Locking	Signalling of the locked status of the vehicle	X	X
	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
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

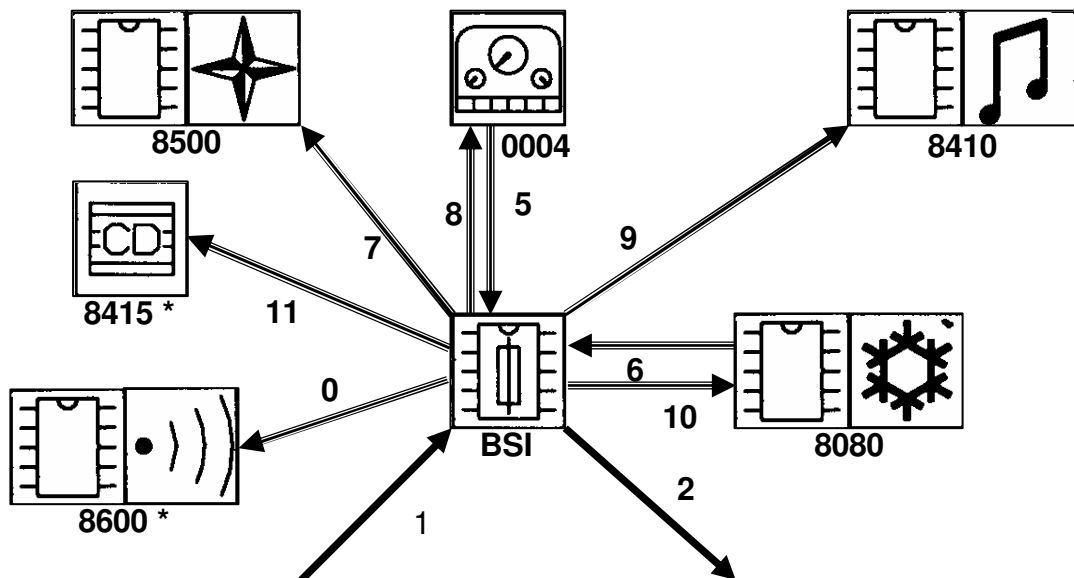
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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 (RTFA)	X	
	Air conditioning	X	X

RTFA = Refrigeration - Totally Automatic

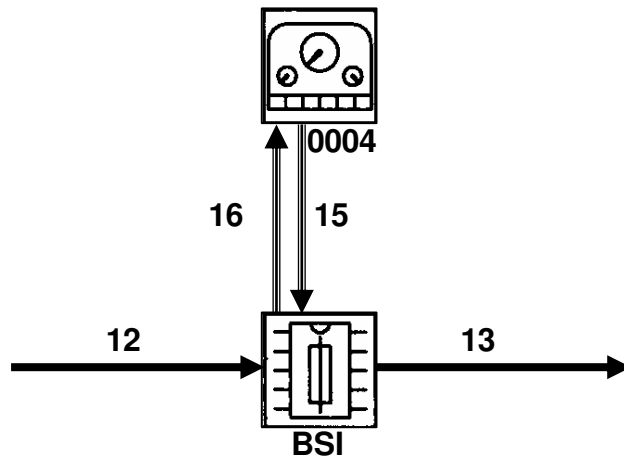
II - BSI LAYOUTS ON THE XSARA PICASSO AND XSARA

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 - Supply to REVERSE track for reversing lamps	Reverse gear contact	All or Nothing	1	12
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

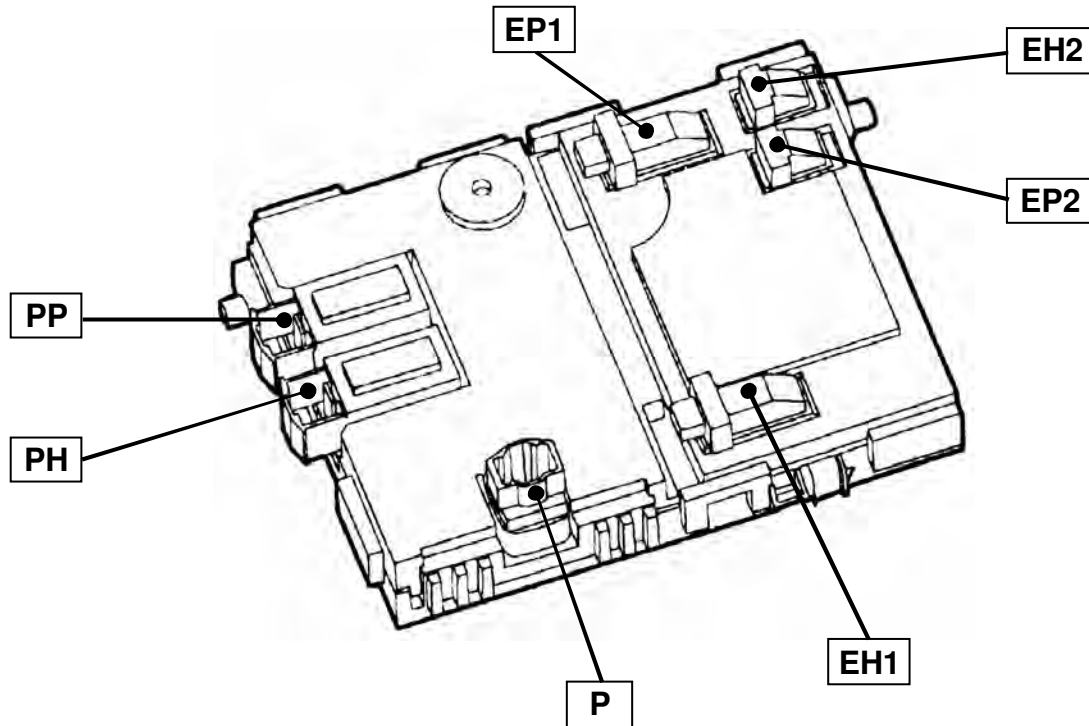
DESCRIPTION	RECEIVER	XSARA PIC.	XSARA
Fast BSI data			
Engine speed	Control panel/MFS	8	16
Instantaneous vehicle speed	Control panel/MFS, Air conditioning, Radio CD	8, 9, 10	16
Mileage	Control panel/MFS	8	16
Fuel consumption	Control panel/MFS	8	16
Slow BSI data			
Day / Night status	Control panel/MFS, 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

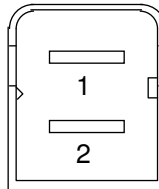
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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.

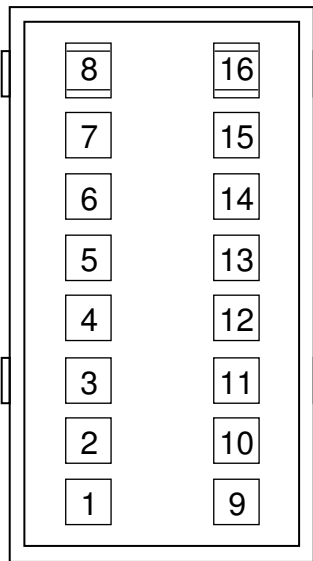


1 - + permanent

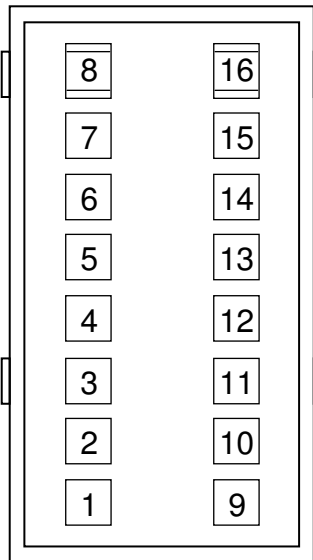
2 - + alternator

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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



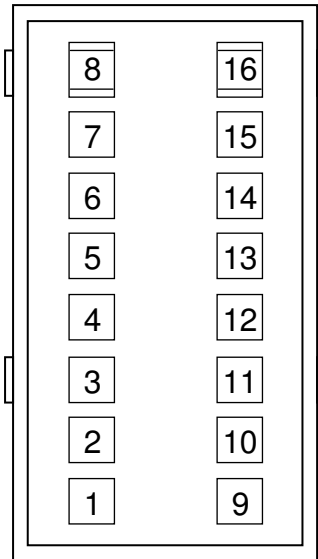
- 8 - Output: Power supply of the VAN bus on main harness
- 7 - Output: Front left hand indicator control
- 6 - Output: Front right hand indicator control
- 5 - Output: + accessories for wash/wipe stalk
- 4 - Input: Lamps
- 3 - Input: Reverse gear switch
- 2 - Power earth
- 1 - Output: Windscreen wiper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



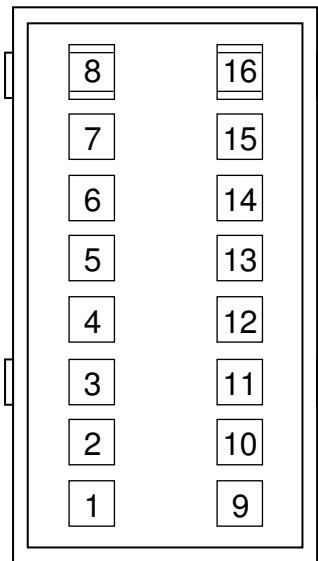
- 16 - + permanent
- 15 - Output: Right hand repeater indicator control
- 14 - Output: Left hand repeater indicator control
- 13 - Output: Air conditioning compressor control
- 12 - Power earth
- 11 - Spare
- 10 - Spare
- 9 - Output: Windscreen wiper high speed motor control

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

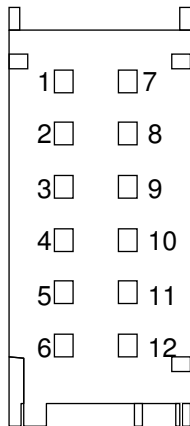
MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

- Allocation of pins of the Yellow 26-way MQS 26 connector of the main harness.

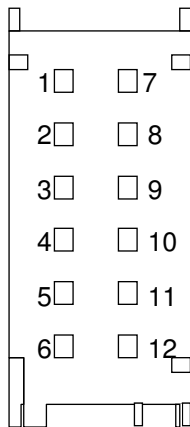
1	14	1 - K diagnostic line serial connection
2	15	2 - Input: Vehicle speed information
3	16	3 - Input: Engine ECU serial connection for engine immobiliser
4	17	4 - Input: Engine speed information through engine ECU
5	18	5 - Output: Heated rear screen and door mirrors lamp control (except RFTA VAN)
6	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

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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

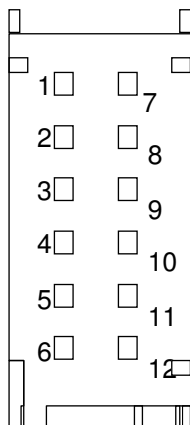


- 1 - Input: On board ECU scroll request
- 2 - Input: Navigation recall last message request
- 3 - For supplier use
- 4 - Output: Headlamp washer relay control
Output: Sidelamp relay control (timed illumination)
- 5 - Output: Air conditioning compressor authorisation request to engine ECU
- 6 - Input: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

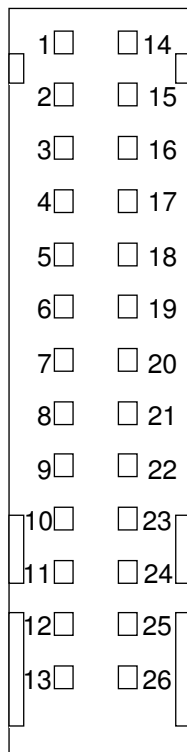
- Allocation of pins of the Blue 12-way MQS connector of the passenger compartment.



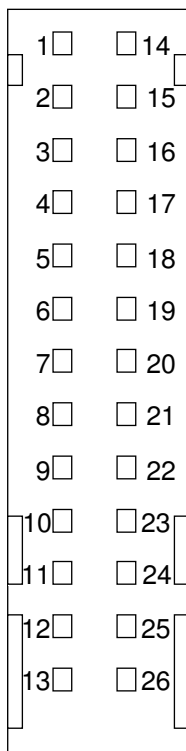
- 1 - Output: Ultra sound module supply
- 2 - Input: Bonnet switch
- 3 - Input/Output: Siren serial connection
- 4 - Output: Close electric windows request when (dead)locking
- 5 - Input: Alarm request through ultrasound module
- 6 - Input: Volumetric suppression request button
- 7 - 12 - Spare

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.

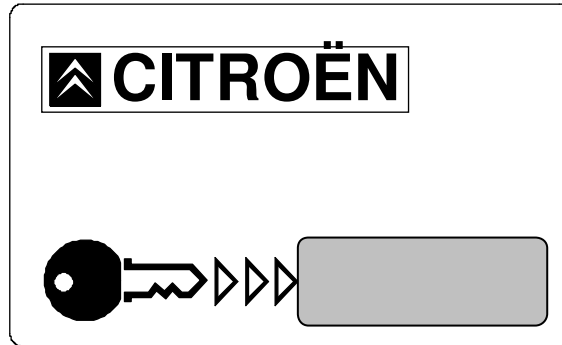
Radio volume linked to vehicle speed: Programming of the radio.

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:

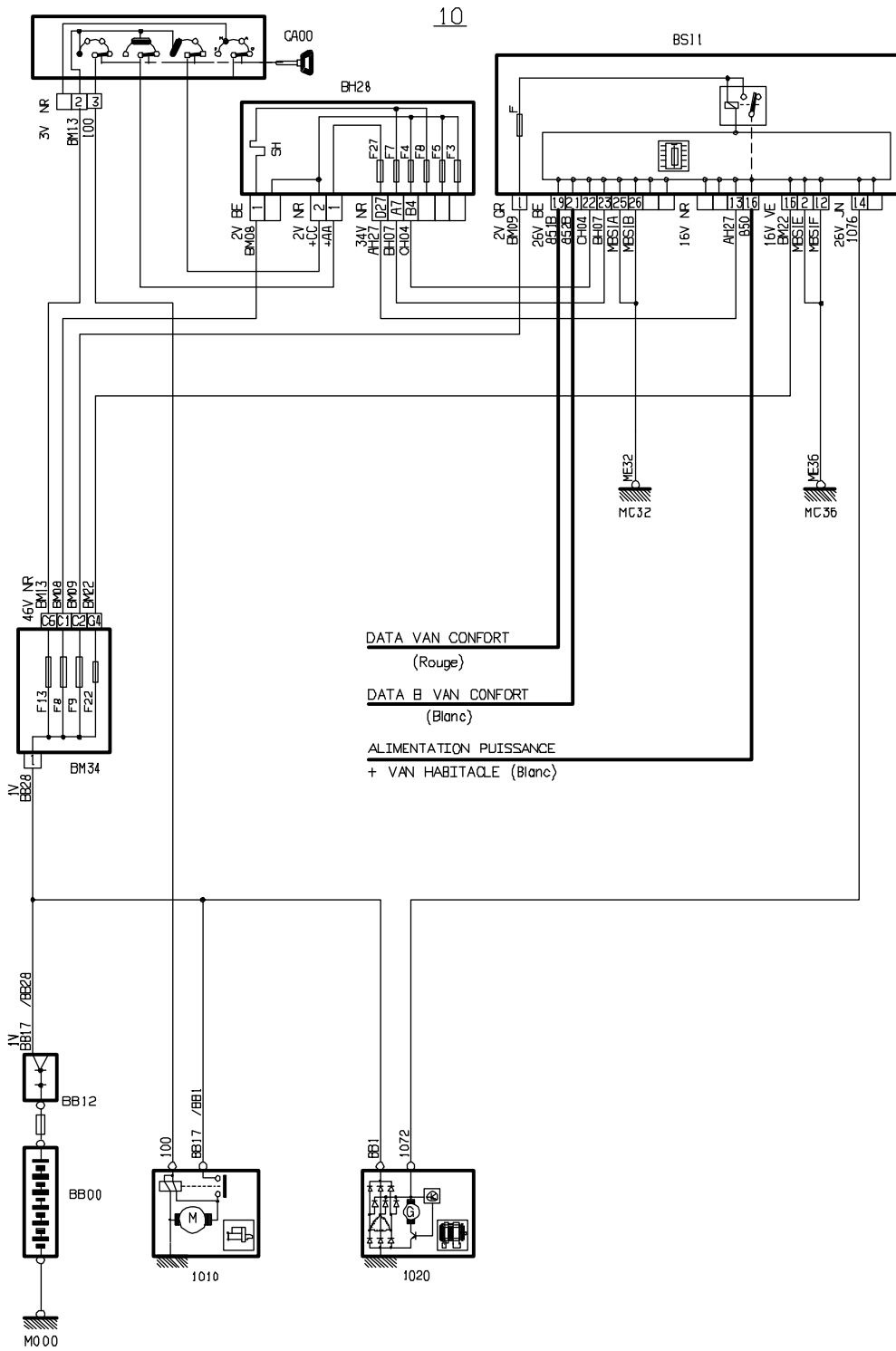
FAULT	XSARA	XSARA PICASSO
+Accessories stuck on 0	X	X
Ultrasound unit supply - short circuit to earth	X	
Alternator	X	X
+ignition on stuck on 0	X	X
Rain sensor	X	
Air conditioning – Air conditioning compressor - Authorisation	X	X
De-icing - Lamp output short circuited to earth	X	X
Lighting - right hand 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

ELECTRICITY

I - LAYOUT DIAGRAM



PFM001P

MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

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 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 1

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).

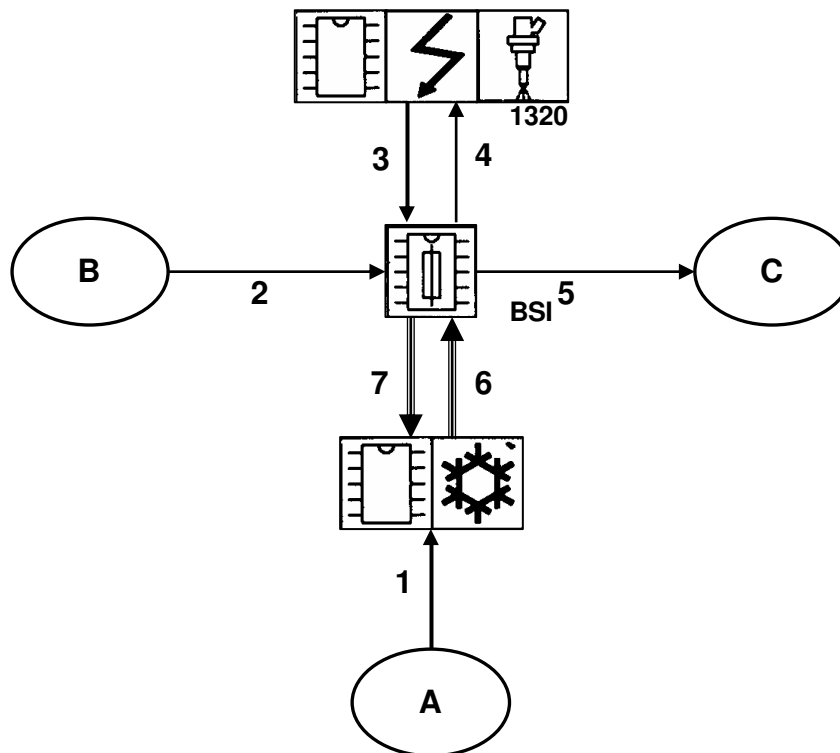
There are two types of air conditioning management, depending on the engine:

	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

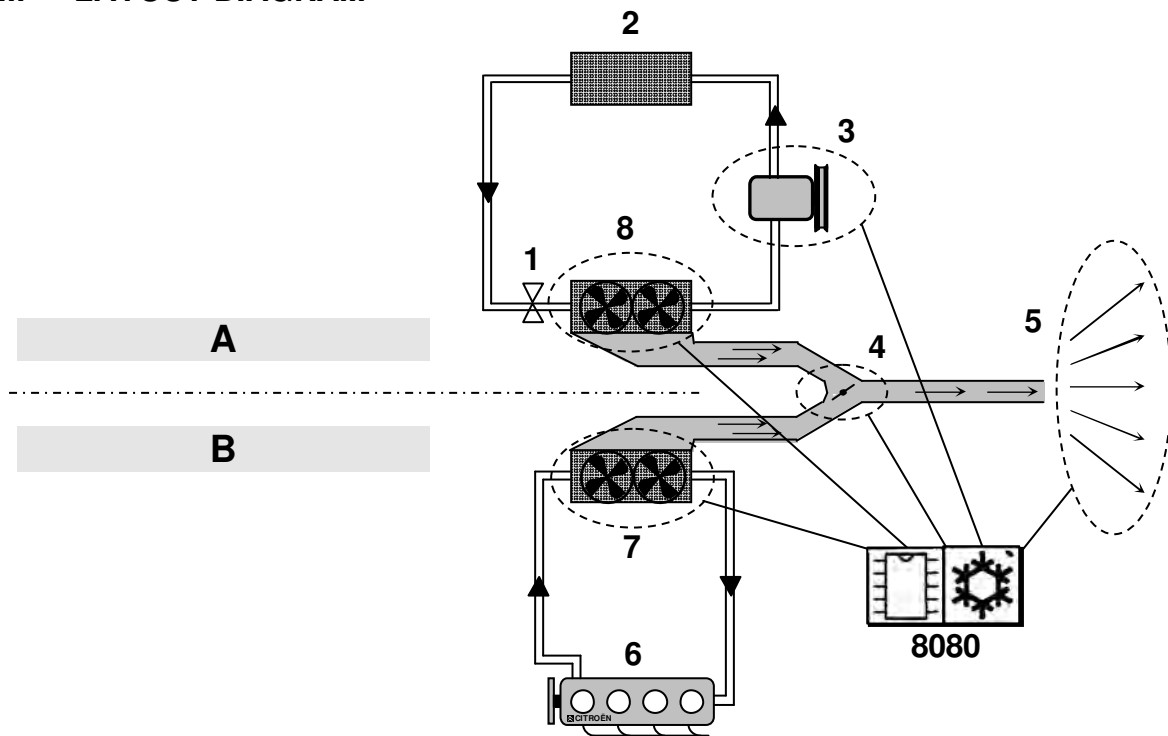
COMPONENTS	
BSI	Built-in Systems Interface
1320	Engine management ECU
8080	Automatic climate control (RFTA)
A	Heater matrix coolant temperature sensor
	Passenger compartment temperature sensor
B	Refrigerant pressure sensor
	Evaporator temperature sensor
	Alternator
	External air temperature sensor
	Engine 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

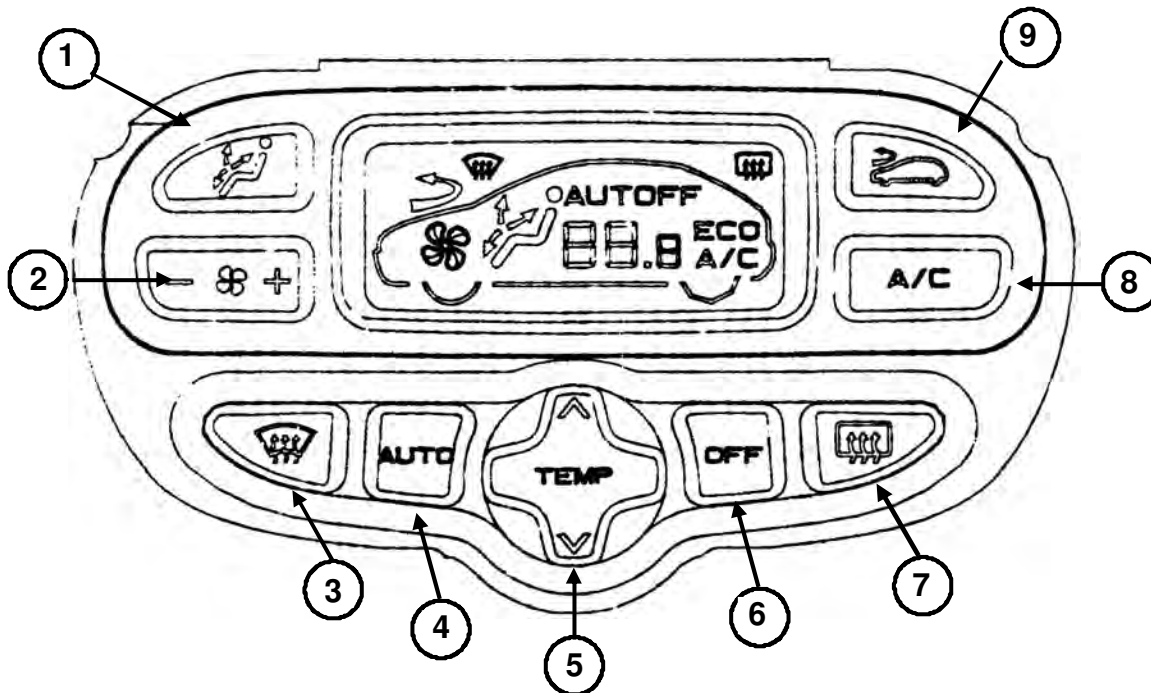
III - LAYOUT DIAGRAM



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

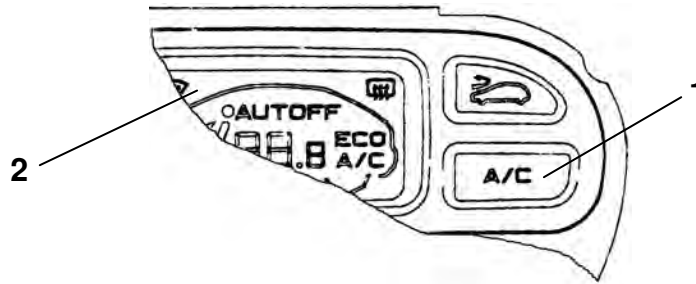
N°	CONTROL	DESCRIPTION
1	Distribution	Used to adjust the distribution of air using one of the various preset flap positions (footwells, footwells-face, face, footwells-demisting, windscreen)
2	Blower motor	Controls the power of the air blower motor
3	Visibility	Switching to automatic mode aimed at visibility, 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.

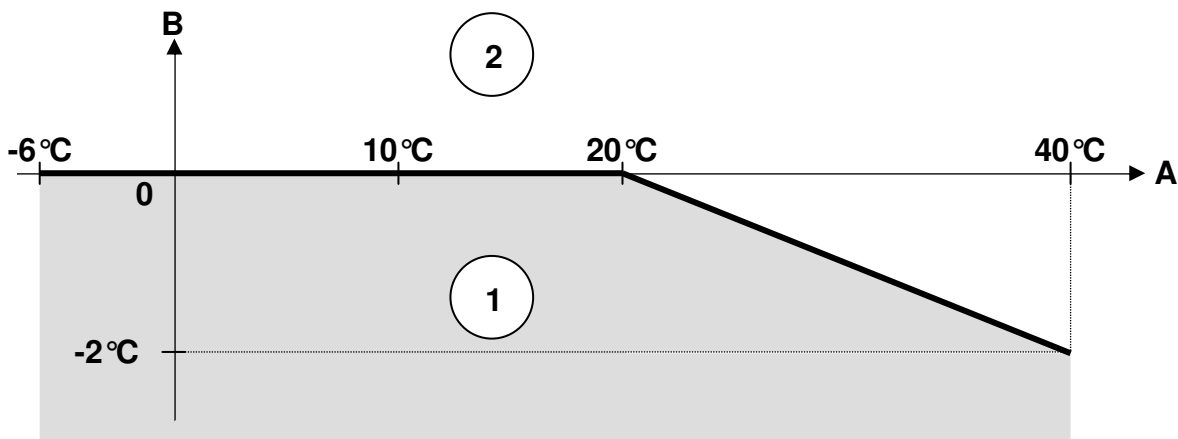
Action	the request is taken into account
IF condition	the engine is running
AND condition	the blower motor is activated

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

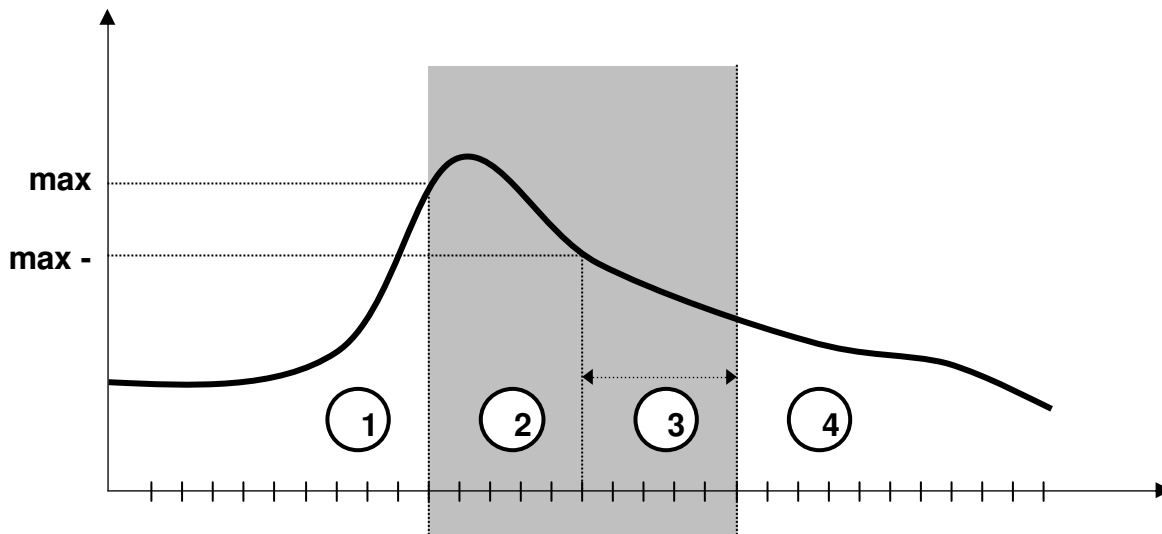
The timer is reset when the engine running information disappears.

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

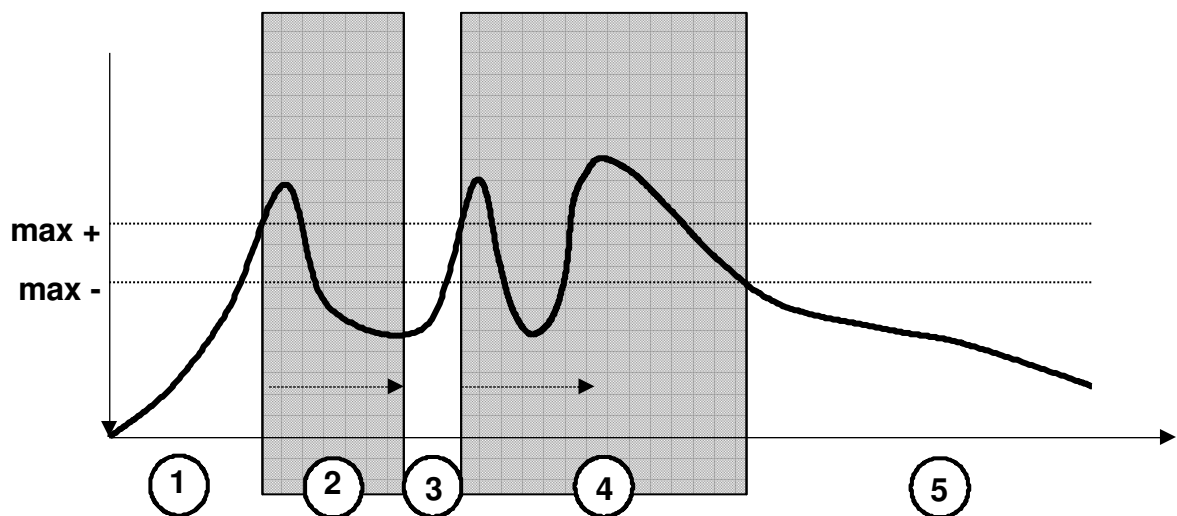
E - ENGINE COOLANT TEMPERATURE COMPRESSOR CONTROL

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

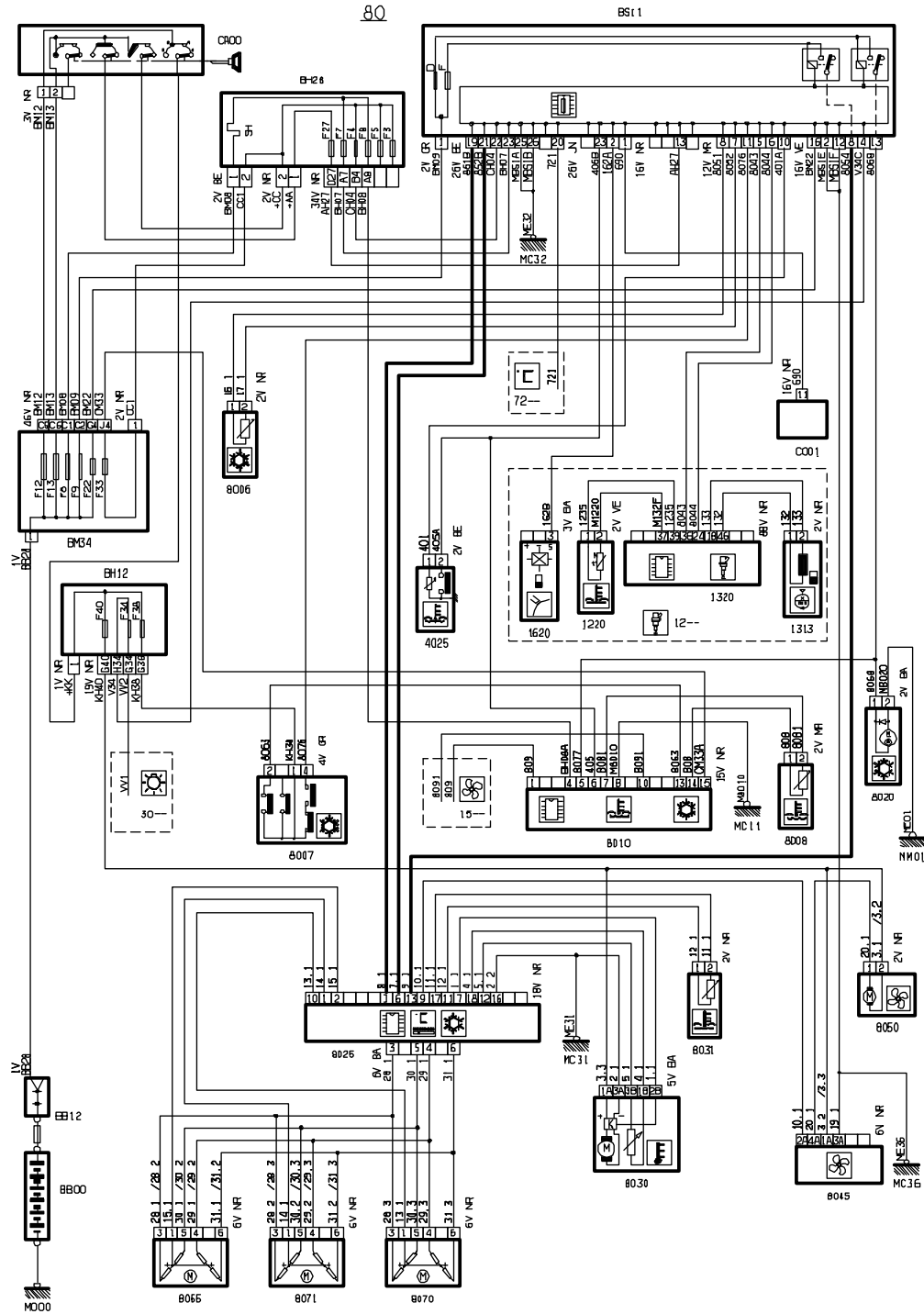
Below are the components which can undergo a diagnostic procedure and the data received:

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

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