Description and Operation

General

The instrumentation for the Scorpio ’95 is housed in either a high-series or low-series facia panel.

The main differences of the high-series instrument panel over the low-series are the additions of a trip computer in the instrument cluster and the heater control panel which has driver and passenger temperature selection switches. Other differences include switches and indicator/warning lights associated with options fitted to high-series vehicles.

The instrument clusters have a printed circuit which connects into the main vehicle wiring loom via multiplugs.

The Scorpio ’95 is fitted with an electronic speedometer head which receives signal information from the vehicle speed sensor. The tachometer senses from the low tension side of the ignition circuit in petrol variants and from the phase terminal on the alternator for diesel variants.

The air-cored fuel and temperature gauges are operated by sender units located in the fuel tank and cylinder head, respectively.

NOTE: The only parts of the instrument cluster that can be renewed are the instrumentation bulbs and glass/lens. Should any other part need renewing then the complete instrument cluster must be replaced.

The fuel tank sender unit consists of a float and a rheostat. The float is attached to a hinged arm which is connected to the rheostat moving contacts. As the float rises or falls according to the fuel level, the resistance of the rheostat varies and thus the voltage applied to the fuel gauge also varies to indicate the quantity of fuel in the tank.

Fuses and relays for the electrical systems are housed either in the central junction box located in the engine compartment on the driver’s side or the auxiliary junction box located In the engine compartment on the passenger’s side. For other relays not housed in these electrical boxes refer to the appropriate wiring diagram.

The hazard flashers, direction indicators and heated rear window and other high amperage circuits are wired through relays to reduce the required electrical capacity of the switches.

The multifunction switches mounted on the steering column incorporate on the left-hand switch the direction indicators, headlamp flasher and main/dipped beam and on the right-hand switch the front and rear wipers and washers, and headlamp wash when fitted.

A remote control switch/stalk is fitted on the left-hand side adjacent to the direction indicator switch for vehicles fitted with remote radio facility.

The hazard flasher switch is mounted on top of the steering column shroud and is an integral part of the multifunction switch for the direction indicator.

The front and rear fog lamp switches are incorporated in the headlamp/side lamp switch as a multifunction switch.

The fuel tank sender unit for vehicles fitted with a trip computer incorporates two resistance tracks to operate the fuel gauge/low fuel warning and the trip computer.

The resistance track for the trip computer gives a resistance measured between ground and the output terminal which is proportional to the volume of the fuel in the tank.

Trip Computer

The trip computer fitted to Scorpio ’95 variants is contained within the instrument cluster.

The trip computer contains a microcomputer which has been programmed to run the whole system. It accepts data from the vehicles sensors and instructions from the driver, via the push buttons, and computes the appropriate information for the digital display selected.

The microcomputer makes extensive use of both data programmed into its memory during manufacture and temporary data obtained from the push buttons and sensors. Data concerning fuel and distance is continually updated from information obtained from the EEC V PCM, the fuel tank sender unit and the speed sensor. The computer has the ability to react quickly to any sudden variations in driving conditions and patterns.

The following function can be selected by pressing the function selection button:

- Range (distance to empty)
- Average speed

– Exterior temperature
– Instantaneous fuel economy
– Average fuel economy

The trip computer forms part of a complete fuel monitoring system consisting of:

– Speed sender unit
– Fuel tank sender unit
– EEC V PCM
– Display controls
– Interface module

Low Air Temperature Warning Sender Unit

The low air temperature warning sender unit supplies temperature information to the trip computer. The sender unit is mounted behind the front bumper assembly.

The low air temperature warning sender unit is a negative temperature coefficient thermistor. This is a resistor made of material with the property of reducing its resistance as the temperature increases. An 11k ohms resistor is wired in parallel with the thermistor to keep the range of resistance change to that which the trip computer can accommodate.

Interface Module

The interface module performs various tasks in different systems.

The module provides an audible beep for low distance to empty warnings and button press acknowledgement for the trip computer system.

Fuel Flow

The EEC V PCM itself generates a fuel flow signal. This is used by the fuel computer.

Multiplex System

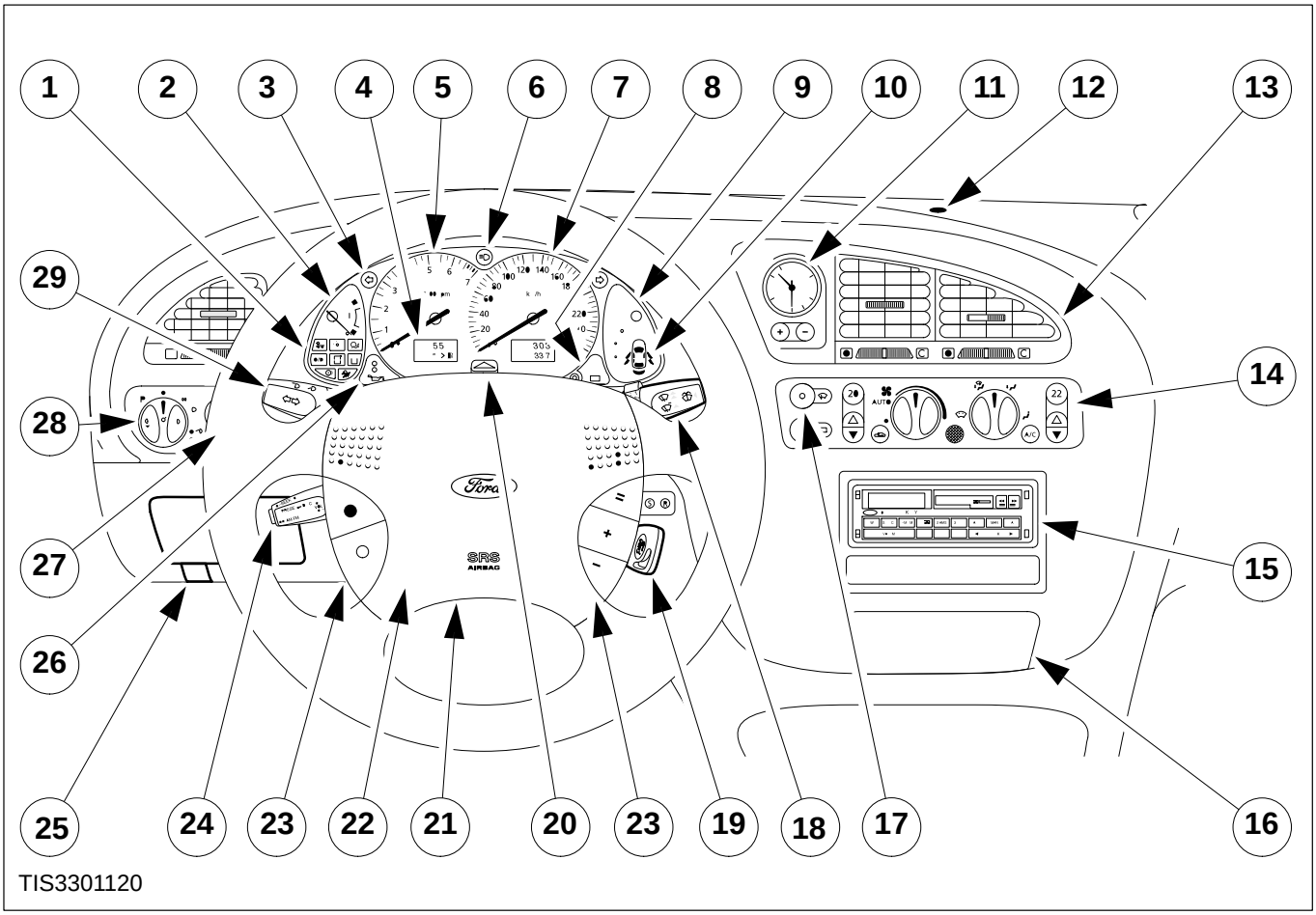
The multiplex system fitted to Scorpio ’95 consists of up to four modules (dependent on equipment level).

– Central Control Module
– Driver’s Door Module
– Passenger Door Module
– Driver’s Seat Module

Each module carries out specific functions in response to commands received from and provided to the central control module.

These commands are sent to and from modules via two common interconnecting wires. These wires carry coded information, known as ‘Messages’, for specific module(s) action. These messages are responded to or ignored depending on the identification code, allowing a number or functions to be carried out simultaneously.

Component Location



TIS3301120

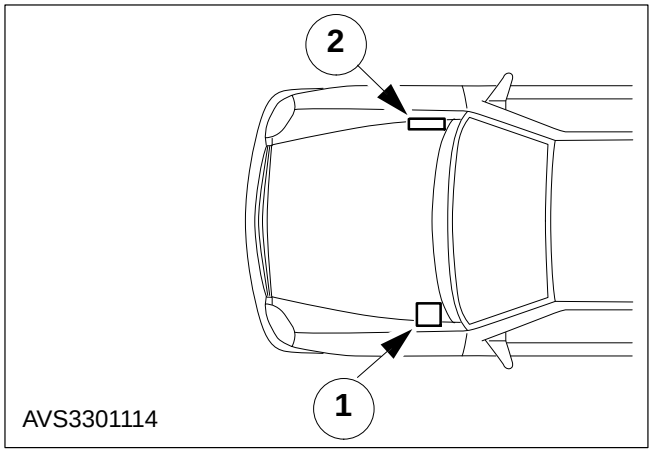
Item	Description
1	Warning and control lights
2	Temperature gauge
3	Direction indicator light
4	Trip computer
5	Tachometer
6	Main beam indicator light
7	Speedometer/odometer
8	Low fuel level/ignition warning light
9	Fuel gauge
10	Auxiliary warning display

11	Clock
12	Anti-theft system control light
13	Ventilation vents
14	Heating, ventilation and air conditioning
15	Audio system
16	Ashtray, cigar lighter
17	Switch/control lights: Heated front windscreen and rear window
18	Wiper control switch
19	Ignition switch

20	Hazard flasher switch
21	Horn switch
22	Steering wheel adjustment
23	Speed control
24	Radio remote control
25	Hood release lever

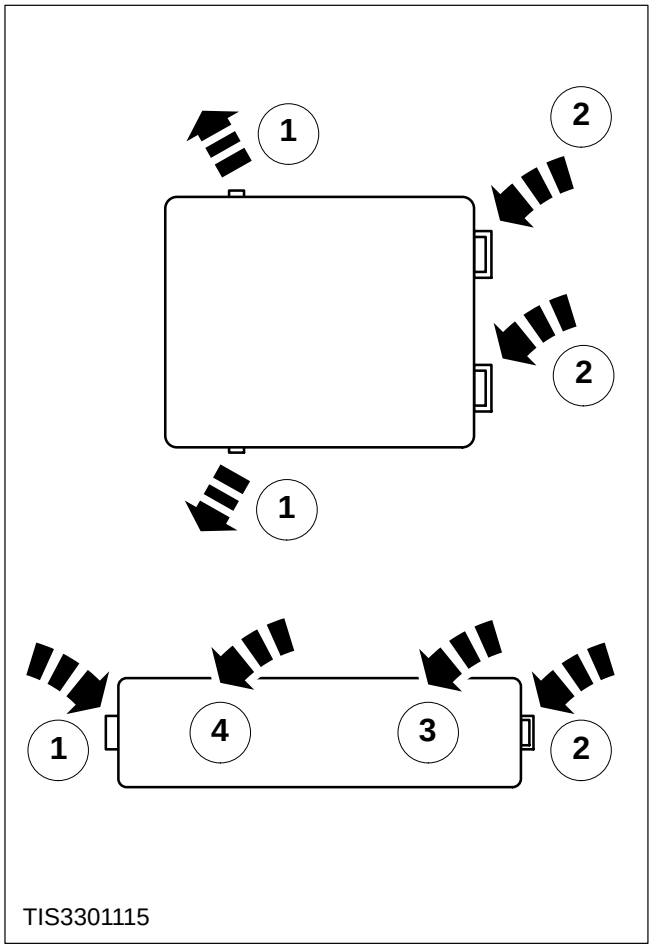
26	Brake system/oil pressure warning lights
27	Headlamp levelling switch
28	Exterior lighting switch
29	Exterior lights/direction indicator/headlamp flasher

Fuses and Relays



WARNING: Any unauthorised alterations to the vehicles electrical system could have adverse effects on vehicle performance and constitute a fire hazard.

The central junction box (1) is located in the engine compartment on the driver's side, the battery junction box (2) on the passenger's side (left-hand drive vehicle shown).



WARNING: Switch off the ignition and all the electrical equipment before changing a fuse or relay.

Always renew a faulty fuse with a new one of the same rating.

The junction boxes contain the main fuses and relays. The circuits protected are identified by numbers on the junction box and additionally with symbols on the inside of the cover.

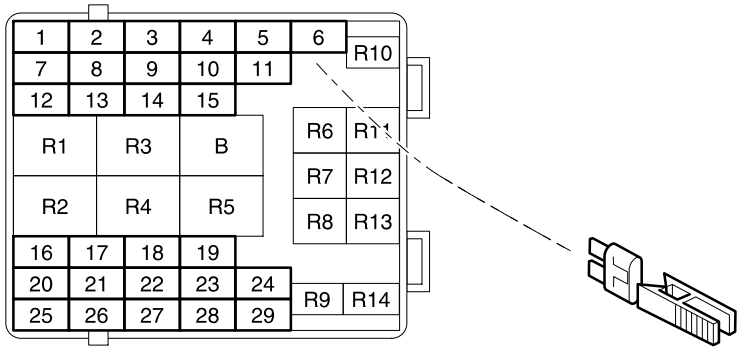
To check or renew a fuse or a relay unlock the catches (1) of the cover and lift it off. A blown fuse can be identified by a break in the wire. All fuses are a push fit. Use the fuse puller attached to the cover of the junction box.

To close the central junction box insert the cover lugs (2) and press them in until the catches (1) engage audibly.

To close the battery junction box insert the cover lug (2) and depress the cover first in area (3) and then in area (4) until the catch (1) engages audibly.

Five spare fuses with different current ratings are attached to the inside of the cover of the battery junction box.

Fuses in the Central Junction Box

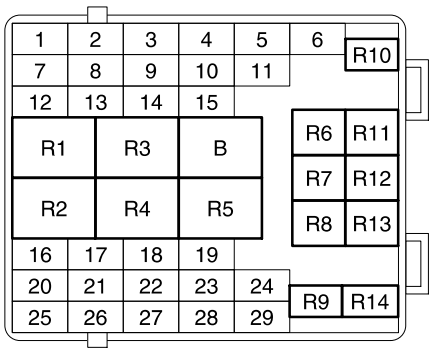


AVS3301116

Fuse No.	Rating (Amps)	Circuits protected
1	15	Front fog lights, heated exterior mirrors
2	5	Parking light LHD, licence plate light
3	10	Exterior light switch
4	10	Dipped beam right-hand side, headlamp levelling
5	10	Dipped beam left-hand side
6	30	Electrically adjustable seats
7	25	Wiper motors, washer pumps
8	5	Radio
9	15	Horn
10	10	Main beam left-hand side
11	10	Main beam right-hand side
12	5	Parking light RHD
13	20	Ignition lock
14	15	Tail lights, direction indicators, brake lights
15	7,5	Rear fog lights
16	7,5	Electronics
17	7,5	Electronics
18	10	Dim/dipped light RHD
19	20	Headlamp washer
20	20	Heated rear window

21	10	Heated exterior mirrors
22	20	Door locking modules
23	5	Instrument panel light
24	15	Interior lights, audio systems
25	30	Power window
26	30	Power window front
27	10	Air bag, ABS
28	30	Power sunroof, power rear windows
29	25	Heater blower motor

Relays in the Central Junction Box



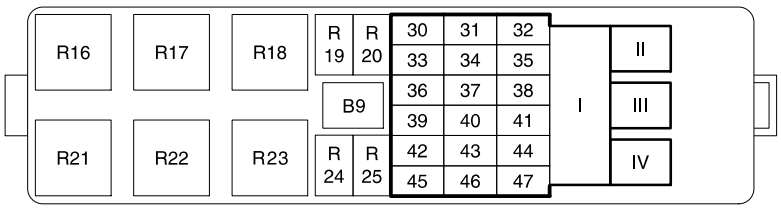
AVS3301117

Relay No.	Circuits Protected
R1	Rear window wiper
R2	Intermittent wiping (windscreen)
R3	Dipped beam
R4	Heated rear window
R5	Heated rear window
R6	Main beam
R7	Dim/dip light (GB)
R8	Not used
R9	Fog light
R10	Horn
R11	Start inhibitor (automatic transmission)
R12	Rear door locking
R13	Bridge
R14	Daytime running lights (S, N, DK, SF)

Power interruption power windows or electrically adjustable seats

Overloading can cause a temporary interruption of the operation of the power windows or the electrically adjustable seats. In case of permanent interruption check the corresponding fuse.

Fuses in the Battery Junction Box

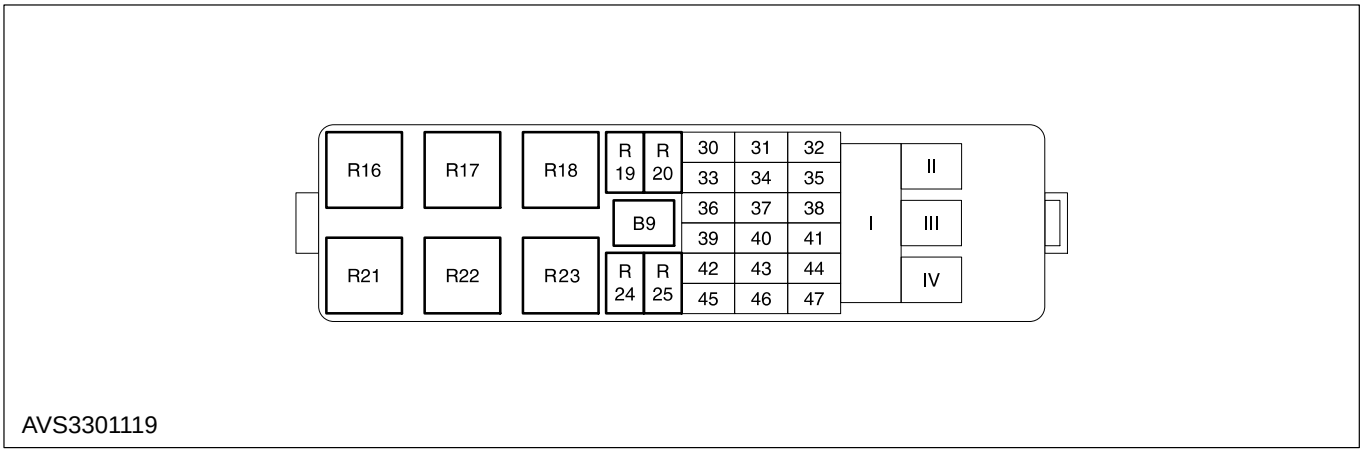


AVS3301118

Fuse No.	Rating (Amps)	Circuits protected
30	20	Self-levelling suspension
31	10	EEC V PCM
32	–	Not used
33	20	Ignition timing
34	15	Engine management system
35	30	Air conditioning compressor
36	10	Power saver (battery)
37	20	Engine management system
38	30	Heated windscreen right-hand side
39	30	Cooling fan (1/1+2)
40	20	HO2S
41	30	Heated windscreen left-hand side
42	15	Fuel pump
43	20	Cigar lighter, electrically heated seats
44	30	Cooling fan (2)
45	10	Hazard flasher
46	30	ABS module
47	30	ABS module
I	80	Power supply central junction box
II	60	Power supply central junction box

III	60	Power supply central junction box
IV	50	Diesel glow plug

Relays in the Battery Junction Box



Relay No.	Colour	Circuits protected
R16	–	Power saver (battery)
R17	Green/Violet	Fuel injection pump
R18	Black	Heated windscreen
R19	Brown	Engine management system
R20	Brown	Self-levelling suspension
R21	Black	Ignition lock
R22	–	Bridge
R23	–	Bridge
R24	Green	Air conditioning
R25	–	Not used

Auxiliary Relays and their Location

Relay No.	Colour	Circuits protected	Location
R26	Yellow	Heated seats	Centre console
R27	–	Power sunroof	Sunroof
R28	Yellow	Heater blower motor	Retainer behind the glove compartment
R29	Black	Direction indicators	Adjacent to the steering column
R30	Brown	“Trip” Switch (windows)	Driver’s door

R31	Blue	Headlamp washer	Retainer behind the glove compartment
R32	Black	Diesel glow plug	Engine compartment
R33	Orange	Rear window wiper interval	Adjacent to the steering column
R34	Dark green	Engine cooling fan	Engine compartment
R35	White	Front fog lights (NL,S)	Underneath the instrument panel
R36	–	Not used	–
R37	Green	Speed control system	Retainer behind the glove compartment
R38	Yellow	Air compressor	Retainer behind the glove compartment