



TECHNICAL BULLETIN

S415-02v2

06/2002

Subject

AUDIO SYSTEM MANUAL AERIAL SERVICE FIX

Model: S-TYPE

Year: 1999 to 2002

VIN L00001 to M44997

Section: 415

Audio System

Sub-Section: 415-03

Antenna

Summary

To address customer complaints of poor radio reception on AM and FM bands.

This Technical bulletin has been issued for the change in part number and is a replacement for Technical Bulletin S415-02. Please destroy all copies of S415-02 and replace it with this Technical Bulletin S415-02v2.

Action

Diagnostic checks have been developed to assist dealers in checking AM and FM radio reception issues. With all diagnostic checks carried out and with a 'No Fault Found' (NFF) situation, a roof-mount manual aerial service fix option may be offered to reduce multipath (interference caused by signals rebounding back of buildings) and improve reception. On a customer complaint basis only, follow the workshop procedure outlined in this Technical Bulletin.

S-TYPE – AM/FM Audio Interference Diagnostic Checks

The following Technical Bulletin is designed to provide a quick check for specific AM/FM reception interference issues.

Check the history of vehicle to ascertain whether actions described in Technical Bulletin S415-01 (AM reception interference concerns have been carried out on vehicles between VIN L00267 to L77674). If not do this first.

Check Frequently Asked Questions (FAQs) 1215, 1219, 2581.

For AM/FM reception issues on vehicles within the VIN range of L77675 to M44997, refer to the following items:

AM-Specific issue

Concern - Standard Corporate Protocol (SCP) network interference, evident with the ignition in auxiliary position I, and engine run position II. Noise does not increase with engine RPM. The noise exhibits itself as a ticking and is primarily due to inadequate screening of the antenna circuitry.

At VIN M20244 the antenna module to screen harness was screened. Between VIN L77675 to M20244, if this concern is identified, check the antenna lead to see if it has already been replaced with the latest screened condition. To check, carry out the following workshop procedure.

- 1 Remove the left hand side rear quarter trim panel to expose the Antenna Module. (See Workshop Manual, JTIS CD ROM, section: 501-05)

- 2 Carefully unclip the antenna harness (As indicated at 1 Fig. 1) from the screen connections and disconnect from the antenna module. (As indicated at 2 Fig. 1)

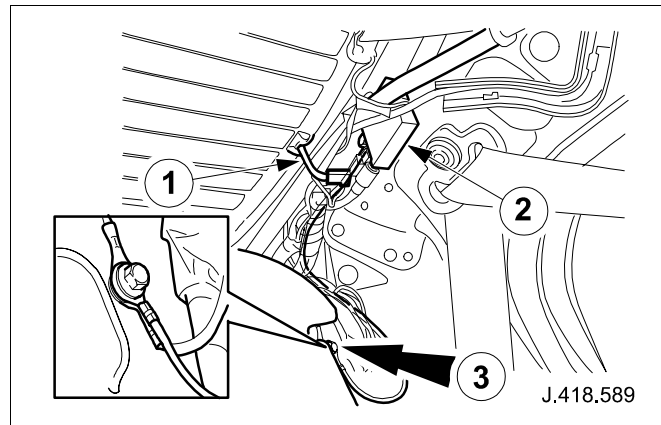


Fig. 1

- 3 Carefully pull back the harness insulation tape at the connector and check to see if there is a braided cable situated between the two harness cables. If not fitted, install new modified cable, part number: XR8 36434. (See Fig. 2)

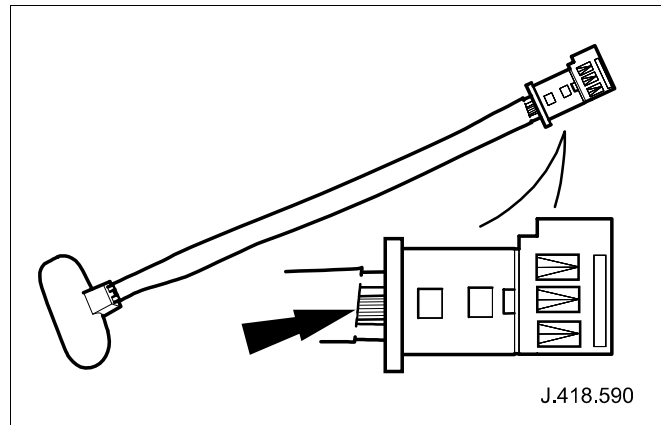


Fig. 2

Note: When refitting the screened lead to the terminal, the black wire with white tracer should be connected to the upper screen terminal.

Should the concern persist with a screened harness fitted check the antenna module earth circuit.

- 4 Check if fixing bolt securing the antenna module bracket to the D-post is tight. If loose tighten to 6.2Nm.
- 5 Disconnect antenna module coax connector from the module. (Using a suitable multimeter with appropriate ohm setting). Connect one probe to earth point on the antenna module and the other probe to the local earth point on the rear bulkhead behind the seat squab trim. (As indicated at 3 Fig. 3)

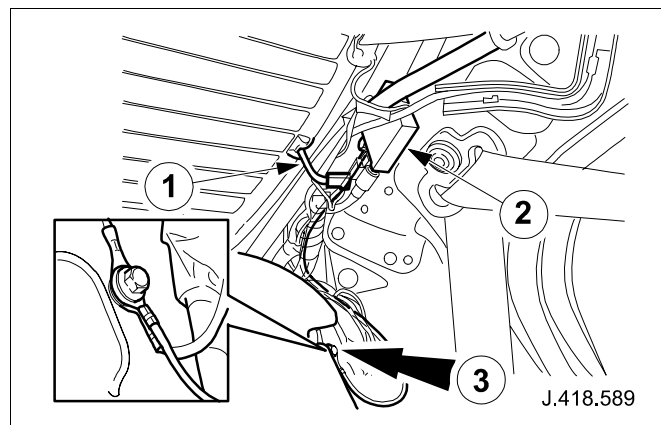


Fig. 3

Note: Do not connect the multimeter probe to the fixing bolt for antenna module.

- 6 If a high resistance reading is present a concern with the antenna module earth connection exists. The earth path for this is through a dedicated cage nut on the rear bulkhead. Loosen the fixing bolt to the cage nut and re-torque to 6.2Nm to re-establish the correct earth path.

Concern - No AM reception but possibly some FM station coverage. Assuming the radio unit is powering up and operating correctly, the fault could be caused by the loss of 12-volt supply to the antenna module.

- 7 Using a suitable multimeter, check voltage at electrical connection CA20 at the antenna module, if there is no voltage, check voltage at the intermediate electrical connection FC40 pin 4. This electrical connector is located at the left hand side of the facia assembly behind the A-post cover. If there is voltage at FC40 pin 4 electrical connection then the fault is within the rearward electrical harness section to the antenna module.
- 8 Check all electrical terminals and wires are secure and connected correctly. If satisfactory the fault is within the electrical harness.
- 9 If there is no voltage present at FC40 pin 4 remove radio and check voltage output from electrical connector FC71 pin 7 (on some wiring diagrams this connector is FC73 pin 7). If there is no voltage at FC71 pin 7 check battery/ignition inputs and fuses.

Circuitry details as below:

Standard Ice Radio

| | Radio | Splices | Primary Junction Box | Fuse |
|-----------|------------|---------|----------------------|--------|
| Battery+ | FC71 pin 1 | N/A | FC37 pin 4 | 20 amp |
| Ignition+ | FC71 pin 3 | N/A | FC37 pin 18 | 10 amp |

Premium Ice Radio

| | | | | |
|-----------------|------------|------|-------------|--------|
| Battery+ | FC71 pin 1 | N/A | FC37 pin 4 | 20 amp |
| Ignition+ | FC71 pin 3 | FCS3 | FC37 pin 18 | 10 amp |
| With Navigation | | | | |
| Non Navigation | FC71 pin 3 | N/A | FC37 pin 18 | 10 amp |

Radio Unit Grounds

FC71 pin 2
FC75 pin 3
FC71 pin 6

Ground Stud- FC38 is located behind the center control console/center console trim.

AM/FM Combined Issues

Concern- Overall poor radio reception, increased multipath issues on FM broadcasts.

- 10 Remove left hand side quarter-trim panel to expose antenna module. (See Workshop Manual, JTIS CD ROM, section: 501-05)
- 11 Carefully unclip the antenna harness from the screen connections.
- 12 Using a suitable multimeter with appropriate ohm setting selected, place one probe on the upper screen stud and the other probe on the lower stud. The expected reading should be '0' ohms. If there is a high resistance reading then check for solder splash between the two screen studs or screen sealant on the studs. If contamination is present this should be carefully removed with a suitable blade or implement.
- 13 If there is interference only when the Heated Rear Window (HRW) is switched on, affecting AM frequencies and weaker FM bands, possibly caused a break in the circuit of the HRW. Install new screen.

Note: If the screen is damaged it is not covered under warranty.

FM Issues

Concern- Poor radio reception all frequencies.

- 14 Remove left hand side quarter-trim panel to expose antenna module. (See Workshop Manual, JTIS CD ROM, section: 501-05)
- 15 Carefully unclip the antenna harness from the screen connections.

- 16 Using a suitable multimeter with appropriate ohm setting selected, place one probe on upper screen stud and second probe onto heated rear window buzz bar, the reading should be 6 ohm plus or minus 1ohm. If the reading is higher than 6 ohm this will indicate that there is a break somewhere in the screen element circuitry. Install new screen.

Note: If the screen is damaged it is not covered under warranty.

General Information

Concern- AM/FM poor radio reception.

If the customer has a non-Jaguar phone, and glass whip aerial installed on the rear screen. The location of the aerial, if in contact or close to the rear screen elements could compromise radio reception signals. Even if the glass whip aerial is disconnected, the actual presence of the aerial on the screen could be a factor.

Note: If any of the diagnostic checks require repair, carry out a separate warranty claim. This Technical Bulletin only covers the interference diagnostic checks and the installation of the roof mounted manual aerial.

Workshop Procedure

Install roof mounted manual aerial

- 1 Open luggage compartment lid.
- 2 Disconnect battery (see Workshop Manual, JTIS CD ROM, section: 414-01).

CAUTION: ENSURE THE RADIO CODE IS AVAILABLE BEFORE DISCONNECTING THE BATTERY.

- 3 Remove facia left hand end cover. (See Fig. 4)

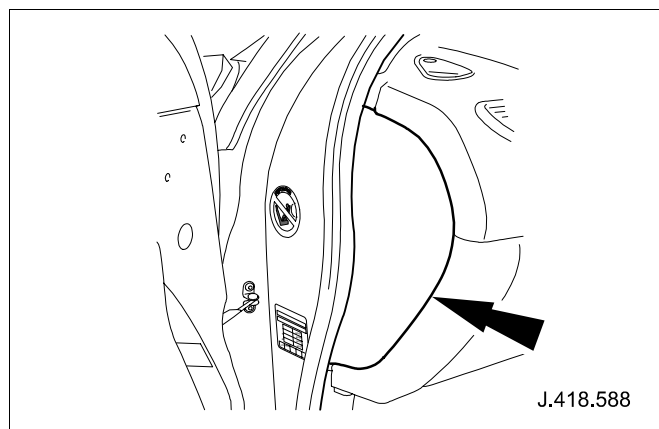


Fig. 4

Vehicles with sliding roof only.

- 4 Remove headlining (see Workshop Manual, JTIS CD ROM, section: 501-05).
- 5 Undo and remove the five forward most sliding roof to body securing screws.
- 6 Carefully reposition front of sliding roof assembly downwards for access.

- 7 Install suitable block of wood between front of sliding roof and body. (See Fig. 5)

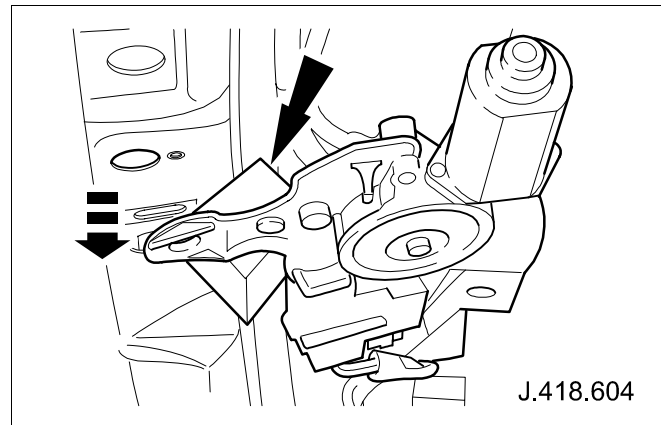


Fig. 5

Note: Suitable block of wood to be approximately 35mm thick.

Vehicles without sliding roof.

- 8 Remove A-post upper trim pads (see Workshop Manual, JTIS CD ROM, section: 501-05).
 9 Remove B-post upper trim pads (see Workshop Manual, JTIS CD ROM, section: 501-05).
 10 Remove front grab handles.
 11 Remove roof console.
 12 Remove sun visor blocks.
 13 Remove sun visor (see Workshop Manual, JTIS CD ROM, section: 501-05).

Note: Throughout complete operation, be very careful not to damage headlining.

- 14 Reposition headlining downwards from front door aperture seals and grab-handle fixing blocks.

Note: Reposition headlining downwards only sufficient to carry out following operations.

- 15 Displace and reposition roof console bulb holder assembly rearwards above headlining aperture rear edge.
 16 Using masking tape, secure bulb holder to headlining. (See Fig. 6)

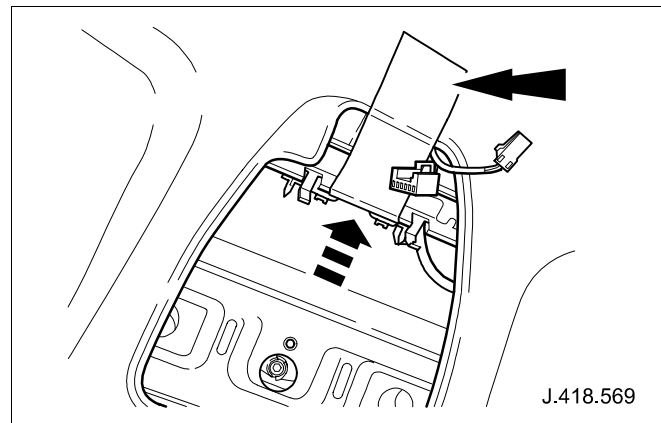


Fig. 6

- 17 Place suitable protective covering over vehicle interior below area of roof to be drilled.

Vehicles with and without sliding roof.

From outside of vehicle.

- 18 Adhere masking tape centrally to roof outer panel adjacent to windshield finisher.
 19 Measure centerline of roof outer panel from each side of vehicle.

- 20 Using a sharp lead pencil, mark centerline on masking tape. (See Fig. 7)

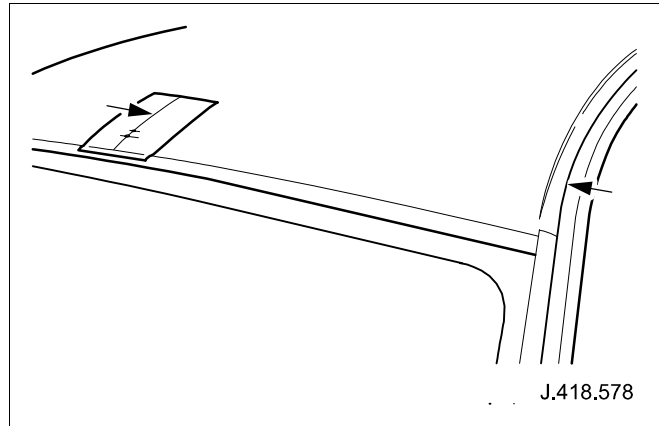


Fig. 7

- 21 Using a sharp lead pencil, Centrally measure and mark 32mm rearward from top edge of windshield finisher. Centrally, measure and mark off 14mm rearwards from the 32mm marked position. (See Fig. 8)

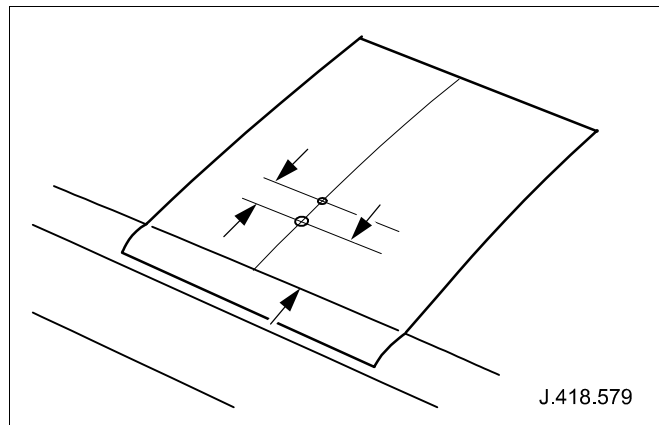


Fig. 8

- 22 Carefully drill 3mm diameter pilot hole through roof panel at previously marked 32mm position. (See Fig. 9)

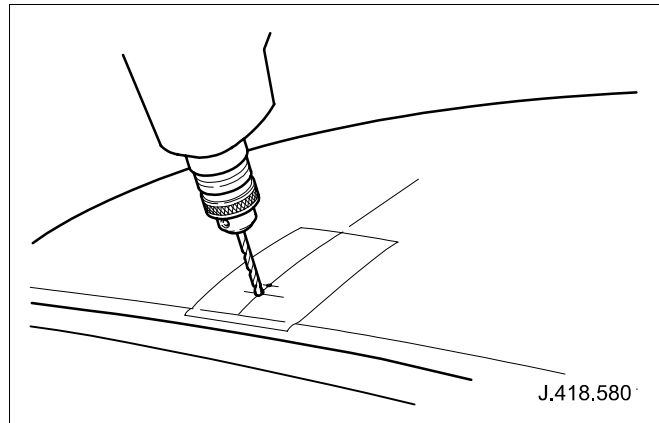


Fig. 9

CAUTION: THROUGHOUT DRILLING OPERATION TAKE CARE NOT TO DISTORT OUTER ROOF PANEL.

Note: During following operation ensure drill is at right angles to roof panel outer contour.

- 23 Continue to drill 3mm diameter pilot hole through panel inner strengthening panel.
 24 Select suitable 25mm diameter hole saw.
 25 Dismantle hole saw and remove the twist drill.
 26 Cut and finish steel rod of suitable length and diameter for following operation.

- 27 Assemble hole saw, using a rod of the same diameter as removed drill to protrude 10mm from the saw face. (See Fig. 10)

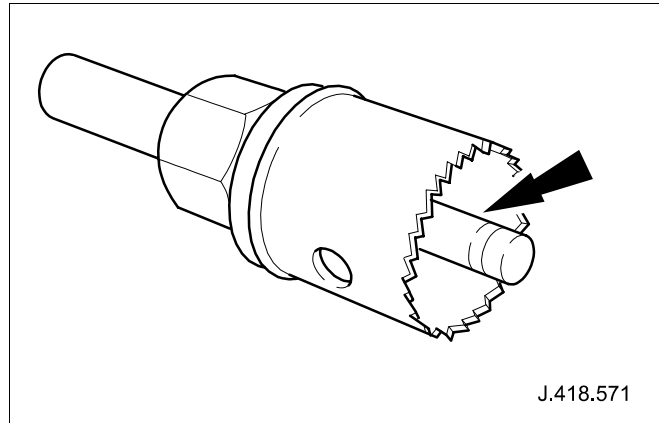


Fig. 10

From inside vehicle.

CAUTION: DURING THE NEXT OPERATION, ENSURE DRILL BIT DOES NOT CONTACT OUTER ROOF PANEL. A SUITABLE DRILL STOP IN THE FORM OF A RUBBER SLEEVE WILL AID PREVIOUS OPERATION.

- 28 Using the drill removed from the hole saw, open up pilot hole in strengthening panel. (See Fig. 11)

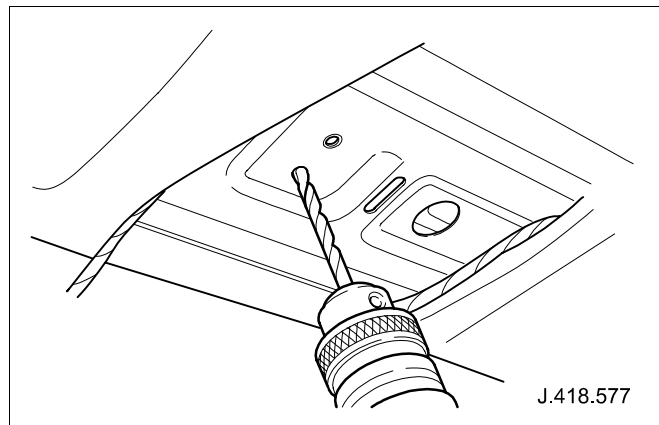


Fig. 11

- 29 Using 25mm diameter hole saw with plain rod pilot cut through roof panel strengthening skin. (See Fig. 12)

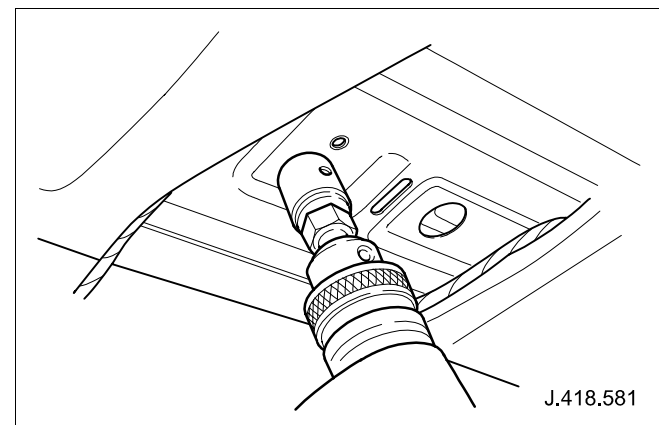


Fig. 12

CAUTION: ON VEHICLES WITH A SLIDING ROOF THE HOLE WILL NEED TO BE CUT AT A SLIGHT ANGLE TO AVOID THE SLIDING ROOF FRONT MOUNTING. DURING PREVIOUS OPERATION TAKE CARE NOT TO DAMAGE ROOF OUTER PANEL.

From outside of vehicle.

CAUTION: THROUGHOUT DRILLING OPERATION BE VERY CAREFUL NOT TO DISTORT OUTER ROOF PANEL.

- 30 Open out 3mm diameter pilot hole in roof outer panel to 10mm diameter.
 31 Verify marked 14mm position is still 14mm from center of drilled 10mm hole.
 32 Carefully drill 3mm diameter pilot hole through roof panel at previously marked 14mm position.

- 33 Open out 3mm pilot hole to 4.8mm.
From inside vehicle.
- 34 Using suitable handgrips bend edge of roof intermediate strengthening panel downwards. (See Fig. 13)

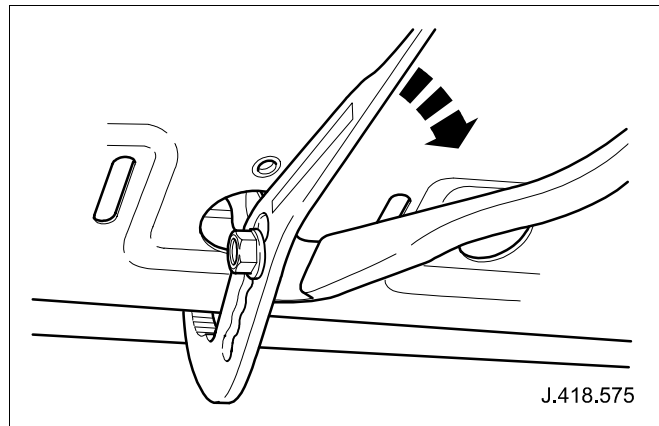


Fig. 13

Note: Bend edge of roof intermediate strengthening panel downwards only sufficient, for aerial base connector access.

From inside and outside vehicle.

- 35 Deburr drilled holes/sharp edges.
- 36 Remove protective covering from vehicle interior.
- 37 Clean any remaining drilling swarf from vehicle.
- 38 Apply suitable zinc enriched paint to bare metal surfaces created during process and allow to dry.

From inside vehicle.

- 39 Remove and discard six plastic clips from antenna cable.
- 40 Remove three metal clips from antenna cable, discard two and retain one for further use.
- 41 Install metal clip to left-hand side of roof strengthening panel aperture. (See Fig. 14)

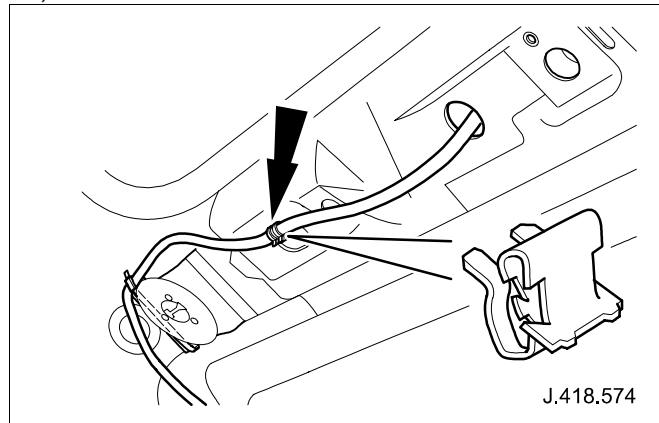


Fig. 14

- 42 Cut, remove and discard push-in-plug from antenna lead.
- 43 Unwrap felt tape from cut end of antenna lead and retain for further use.

Note: Antenna lead must be routed from 25mm cut hole towards left hand side of vehicle.

- 44 Route antenna lead through 25mm diameter cut hole, intermediate panel hole, and strengthening panel hole.

Note: Suitable long nosed pliers will aid in the following two operations.

- 45 Loop antenna cable between intermediate and strengthening panel holes. (See Fig. 15)
Note: Previous operation will prevent acute bend in antenna lead routing.

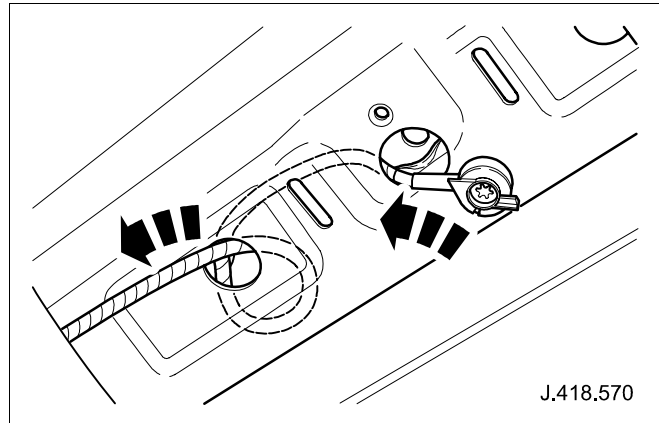


Fig. 15

- 46 Align and fully seat base connector into roof panel 10mm diameter drilled hole. (See Fig. 16)
Note: Base connector plastic isolator and fixing screw must remain captive at all times.

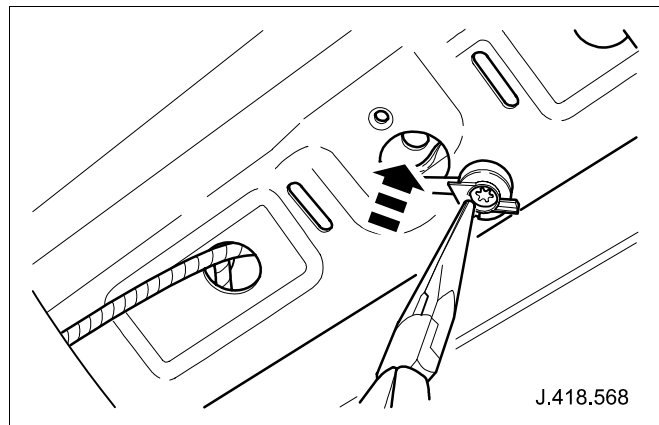


Fig. 16

- 47 Route antenna lead over top of left hand sun visor body mounting bracket.
 48 Using tie strap secure antenna lead to sun visor mounting bracket. (See Fig. 17)

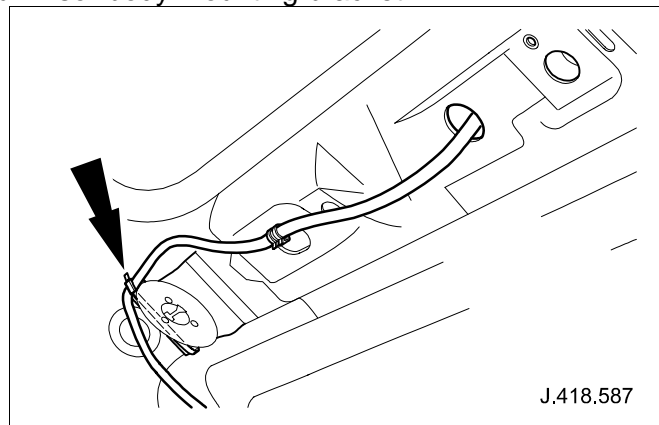


Fig. 17

- 49 Cut and remove protruding tail from tie strap.
 50 Route antenna lead downwards along left hand A-post past corner area into facia end aperture.

- 51 Using tie straps secure antenna lead to left hand A-post harness at four places. (See Fig. 18)

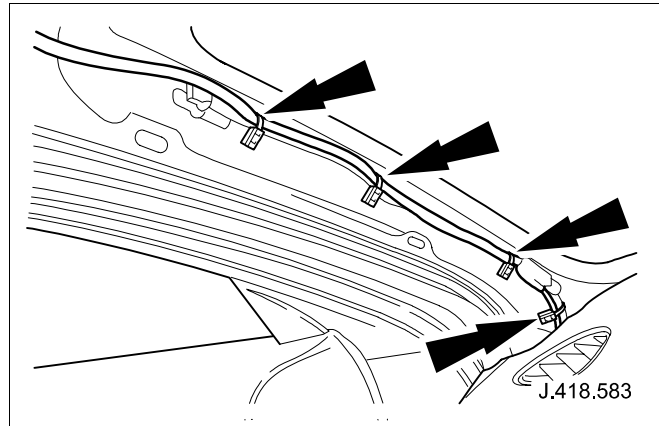


Fig. 18

- 52 Cut and remove protruding tales from tie straps.
 53 Place antenna mount/mast assembly to front.
 54 Ensure rubber seal is seated in antenna mount base.
 55 With the aid of another person install new antenna mounting base/mast assembly to outer roof panel.
 56 Tighten antenna lead base connector to mounting base/mast-securing screw. (See Fig. 19)

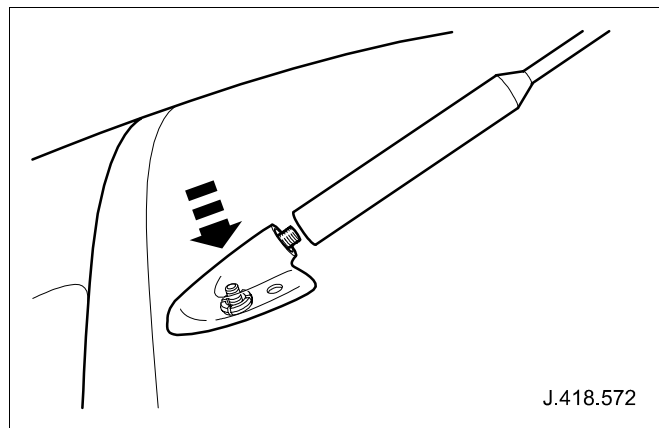


Fig. 19

- 57 Measure 250mm along new antenna lead from facia end aperture top front corner. (See Fig. 20)

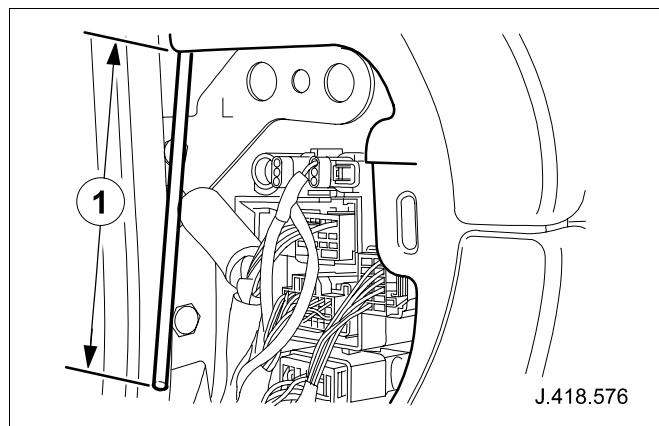


Fig. 20

- 58 Cut, remove and discard excess lead at measured position.
 59 Wrap felt tape removed and retained previously on to new antenna lead.
 60 Dismantle supplied lead plug to its basic components and undo center terminal grub screw.
 61 Place supplied lead plug terminal aside.
 62 Prepare new lead for fitment of supplied lead plug.
 63 Install lead plug end cap onto new lead.

- 64 Measure off 50mm from cut end of new antenna lead. (1 Fig. 21)

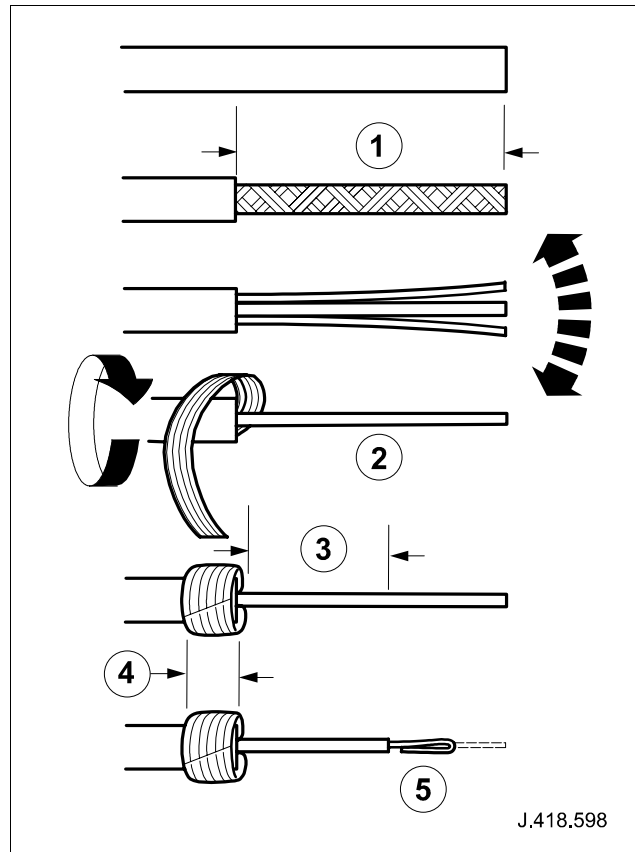


Fig. 21

- 65 Cut and remove outer insulation at measured position.
 66 Splay open new antenna lead earth braiding.
 67 Spiral-wrap earth braiding around new antenna lead outer insulation. (2 Fig. 21)
 68 Measure off 25mm along new antenna lead inner insulation from earth braiding. (3 Fig. 21)
 69 Cut and remove inner insulation at measured position.
 70 Twist together strands of new antenna lead center cable.
 71 Fold back on itself new antenna lead center cable. (5 Fig. 21)
 72 Install lead plug earth clasp onto new antenna lead earth braiding.
 73 Install plug center terminal to new antenna lead center cable.
 74 Tighten center supplied lead plug grub screw.
 75 Install lead plug plastic body.
 76 Tighten lead plug plastic end cap.

Note: Ensure good contact between earth clasp and earth braiding.

- 77 Disconnect Jaguar antenna lead plug from Jaguar radio link lead socket. (See Fig. 22)

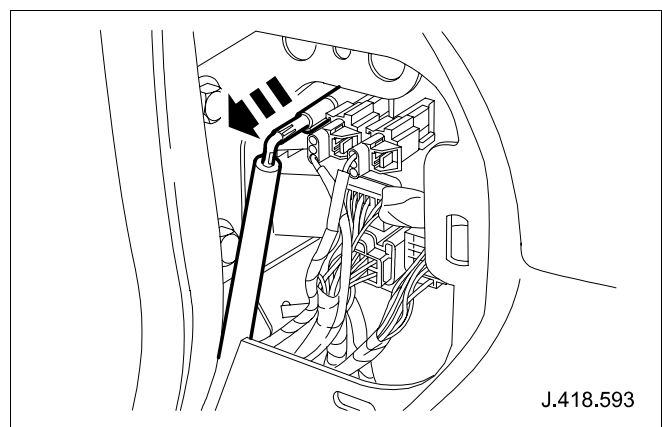


Fig. 22

- 78 Displace Jaguar link lead socket plastic fir tree clip from multi plug plastic support. (See Fig. 23)

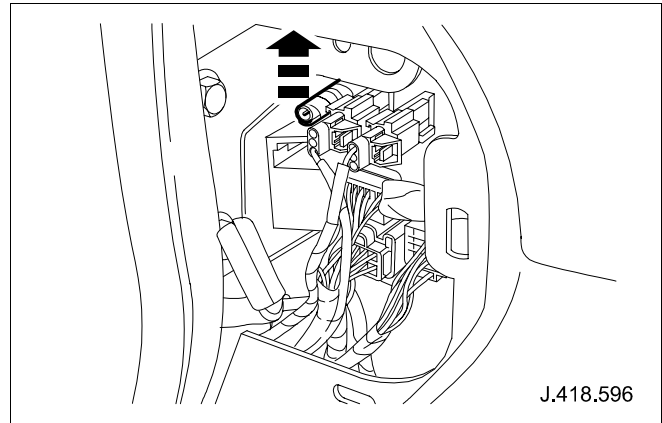


Fig. 23

- 79 Reposition Jaguar link lead for access.
 80 Unwrap and remove tape securing plastic fir tree clip to Jaguar link lead socket.
 81 Remove plastic fir tree clip and retain for further use.
 82 Cut, remove and discard socket from Jaguar link lead at cable end. (See Fig. 24)

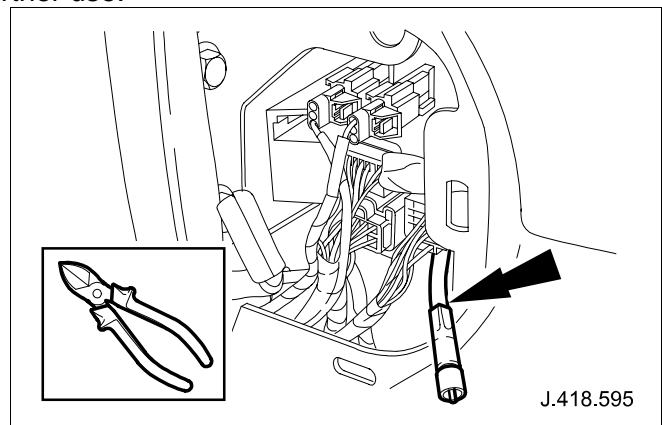


Fig. 24

- 83 Dismantle supplied lead socket to its basic components and undo center terminal grub screw.

Note: Ensure earth tube remains correct way round in plastic body at all times.

Note: Supplied lead socket center terminal is designed to fit into the deepest half of socket earth tube. If socket earth tube is fitted wrong way round it will not contact earth clasp.

- 84 Place lead socket center terminal aside.
 85 Prepare Jaguar link lead for fitment of lead socket.
 86 Install supplied lead socket end cap onto Jaguar link lead.

- 87 Measure off 15mm from cut end of Jaguar link lead. (1 Fig. 25)

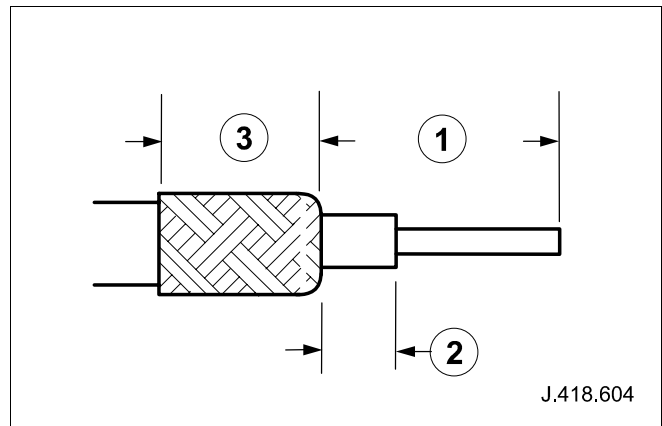


Fig. 25

- 88 Cut and remove outer insulation at measured position.
 89 Fold back earth braiding over Jaguar link lead outer insulation. (3 Fig. 25)
 90 Measure off 4mm along Jaguar link lead inner insulation from earth braiding. (2 Fig. 25)
 91 Cut and remove inner insulation at measured position.
 92 Install lead socket earth clasp onto Jaguar link lead earth braiding.
 93 Install lead socket center terminal to Jaguar link lead center wire.
 94 Tighten lead socket center terminal grub screw.
 95 Install lead socket plastic body and earth tube.
 96 Tighten lead socket plastic end cap.

Note: Ensure good contact between earth clasp and earth braiding.

- 97 Install plastic fir tree clip (removed and retained previously) to Jaguar link lead socket. (See Fig. 26)

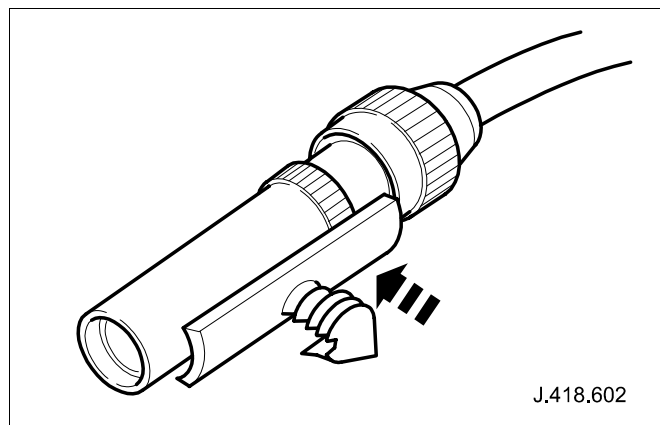


Fig. 26

- 98 Using suitable adhesive tape, secure plastic fir tree clip to the socket in two places. (See Fig. 27)

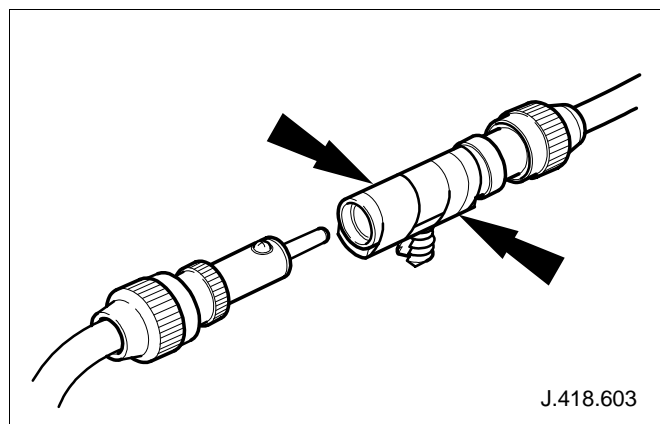


Fig. 27

- 99 Reposition Jaguar link lead to connector plastic support.
 100 Secure Jaguar radio link lead plastic fir tree clip to connector plastic support.
 101 Connect lead plug to Jaguar link lead socket.

- 102 Cut foam in half (from squeak and rattle kit JLM 21204 part number JLM 21205) and place one half aside.
- 102 Remove backing paper from retained piece of foam.
- 103 Wrap adhesive foam around redundant Jaguar antenna lead plug. (See Fig. 28)

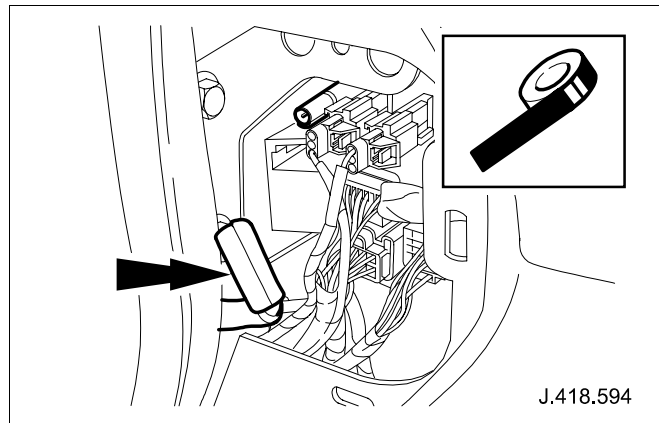


Fig. 28

- 104 Using suitable ratchet strap, secure foam covered plug/lead to vehicle harness. (See Fig. 29)

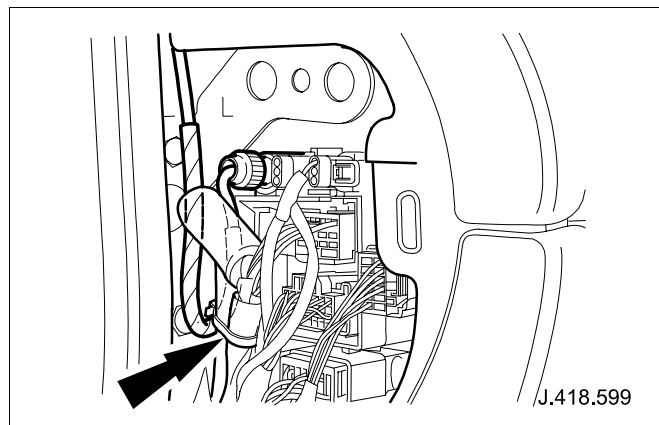


Fig. 29

- 105 Cut and remove protruding tail from tie strap.

Vehicles with sliding roof only.

- 106 Remove block of wood from between front of sliding roof and body.
- 107 Install and tighten the five forward most sliding roof to body securing screws.
- 108 Install headlining (see Workshop Manual, JTIS CD ROM, section: 501-05).

Vehicles without sliding roof.

- 109 Remove and discard masking tape securing roof console bulb holder to headlining.
- 110 Reposition and secure center console bulb holder to body.
- 111 Reposition and align headlining to front grab-handle fixing blocks.
- 112 Reposition front door aperture seals over headlining edges.
- 113 Secure headlining Velcro fixings to roof panel.
- 114 Install sun visor (see Workshop Manual, JTIS CD ROM, section: 501-05).
- 115 Install sun visor blocks.
- 116 Install roof console.
- 117 Install front grab handles.
- 118 Install B-post upper trim pads (see Workshop Manual, JTIS CD ROM, section: 501-05).
- 119 Install A-post upper trim pads (see Workshop Manual, JTIS CD ROM, section: 501-05).

Vehicles with and without sliding roof.

- 120 Install facia left hand end cover.
- 121 Connect battery (see Workshop Manual, JTIS CD ROM, section: 414-01).
- 122 Install boot floor carpet to original condition.
- 123 Close luggage compartment lid.

Parts Information

The following parts must be ordered via Jaguar Cars Parts Operations.

| Description | Part Number | Quantity |
|-----------------------------------|--------------------|-----------------|
| Aerial lead plug/socket connector | XR8 41125 | 1 |
| Aerial lead plug/socket connector | XR8 41126 | 1 |
| Aerial rod | XR8 36433 | 1 |
| Aerial rod base | XR8 36432 | 1 |
| Coax cable | XR8 36431 | 1 |
| Screened lead assembly | XR8 36434 | 1 |

Warranty Information

| Description | SRO | Labor Time Allowance | Warranty Code | Causal Part |
|---|-------------|-----------------------------|----------------------|--------------------|
| Install manual aerial | 86 93 01 | 3.1 Hours | PB-GM-42 | XR8 36433 |
| Install manual aerial with sliding roof | 86 93 01/01 | 3.7 Hours | PB-GM-42 | XR8 36433 |