



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS
(Sierra) 32

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AND WINDSCREEN WIPERS

EXTERIOR LIGHTS, DIRECTION INDICATORS,
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Service and Repair Operations	Contained in Operation	Page
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TECHNICAL DATA

EXTERIOR LIGHTS, DIRECTION INDICATORS, HORN AND WINDSCREEN WIPERS

Exterior Lights

Headlamp type Rectangular, aligned by adjusting the reflector

NOTE: On vehicles fitted with the electrical headlamp levelling system the basic headlamp alignment must only be carried out in switch position '0'.

Setting X for headlamps 12 cm/10 m = 0 degrees 41 minutes = 1,2%

(see Operation No. 32 113 0)

Setting X for foglamps 22 cm/10 m = 1 degree 16 minutes = 2,2%

(see Operation No. 32 113 0)

Bulb Chart - 12V

Lamp	Fitting/Type	Wattage
Halogen headlamp	H4	60/55
Halogen auxiliary lamp	H3	55
Halogen fog lamp	H3	55
Side lamps	Glass base	5
Parking lamp side lamps	Glass base	5
Front direction indicators	Bayonet	21
Rear direction indicators	Bayonet	21
Brake lamps	Bayonet	21
Reversing lamps	Bayonet	21
Rear fog/tail lamps	Bayonet	21/4
Licence plate lamps	Glass base	5

Wipers

Windscreen wiper motor type Electric, three-speed, self-parking with intermittent wipe facility

Headlamp wiper motor type Electric, single-speed, self-parking - functions only when headlamp washers are operated with dipped beam switched 'on'.

Washers

Windscreen Electric pump
Headlamps Electric pump

NOTE: The electric washer pumps are mounted on the front of the common reservoir.

Tightening Torques

	Nm
Screws - Windscreen wiper motor to bracket (M6 x 18)* ..	8,0 to 10,0
* Initial fixture when a new motor is fitted	10,0 to 12,0
Screws - Wiper motor bracket to bulkhead	6,0 to 7,0
Nut - Link to motor shaft (M6)	14,0 to 16,0
(M8)	23,0 to 24,0
Nut Wiper arm to output shaft	17,0 to 18,0 **
Screws - reservoir (5 litres) to vehicle	1,8 to 2,8
Nut - Headlamp wiper arm	2,5 to 3,5
Screws - Wiper motor to headlamp housing	4,7 to 6,3

** NOTE: Tighten the nut to the indicated torque, wet the screen, operate the wipers at speeds 1 and 2 and tighten the nut to the indicated torque again.

Lubricant

Bushes - windscreen wiper linkage grease, Ford Specification SAM-1C-9111-A
Bush - pivot shaft grease, Ford Specification SAM-1C-9111-A



GENERAL DESCRIPTION

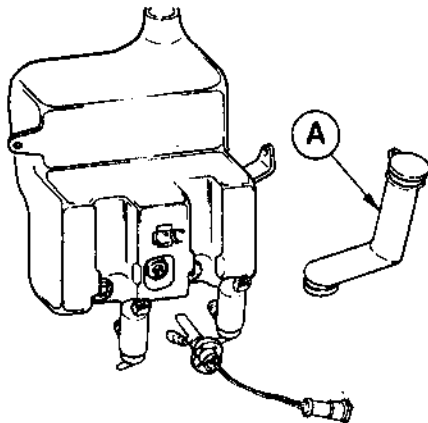
EXTERIOR LIGHTS, DIRECTION INDICATORS,
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Differences between the SIERRA COSWORTH '86 and other Sierra variants up to Model Year 1987 are not covered by the following description, nor are any Service and Repair Operations applicable to the SIERRA COSWORTH '86.

Figs.A - D in this part show features of the SIERRA COSWORTH '89 which differ from SIERRA '87 variants. This section only contains service operations for the SIERRA COSWORTH from model year '88 onwards.

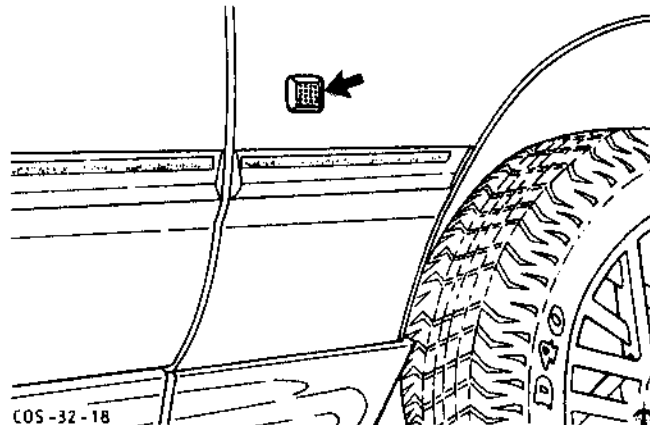
Different features:

- New design of screen washer reservoir with a detachable filler (up to April '88) - the filler is no longer detachable from April '88.
- Side indicator lamps
- Fog light moulding
- Twin horns



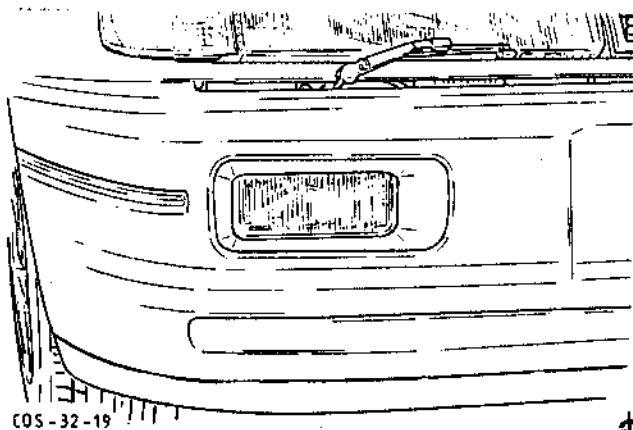
COS-32-17

Fig.A. Windscreen/headlamp washer reservoir.
A - Removable filler tube



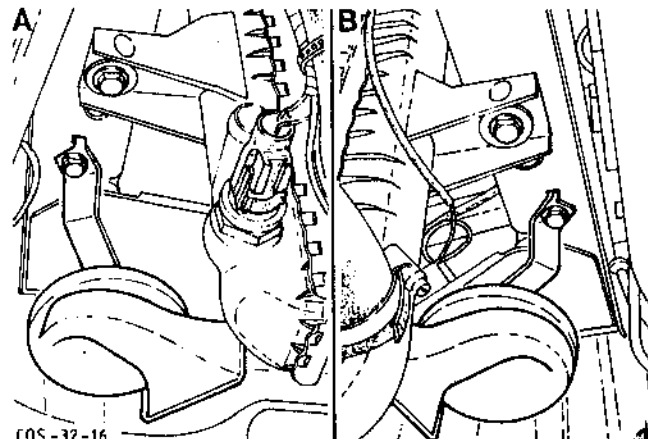
COS-32-18

Fig.B. Side indicator lamp.



COS-32-19

Fig.C. Foglight.



COS-32-16

Fig.D. Twin horns.
A - Left hand horn
B - Right hand horn

GENERAL DESCRIPTION (cont'd)

EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

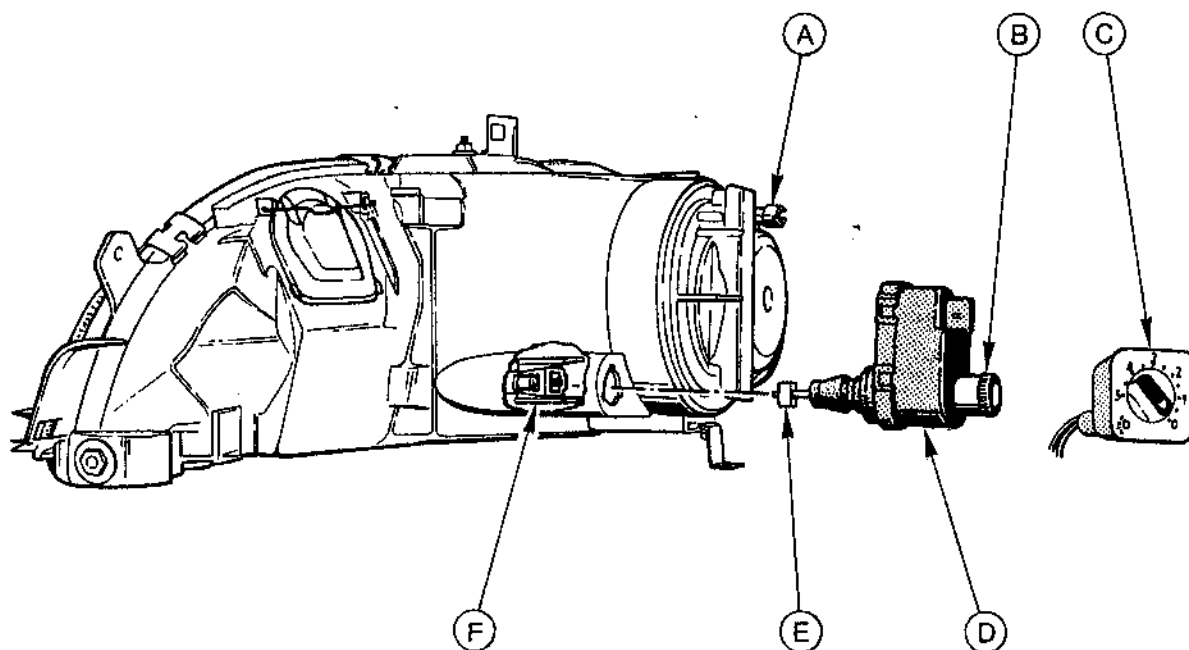
With effect from model year '90 in some territories some Sierra Cosworth variants are fitted with an electrical headlamp levelling system to comply with statutory requirements. To avoid dazzling oncoming traffic, the required range of the headlamp beams can be adjusted infinitely according to the load in the vehicle while switched to dipped beams by means of a switch in the fascia. Each lamp unit has a motor which is activated electrically when the switch is turned and moves the pivotably mounted headlamp to the desired setting by means of an adjusting spindle.

The headlamp levelling switch has two stops. The switch engages in switch position '0', the basic setting. The headlamps tilt to their maximum angle in switch position '5'.

The headlamp levelling system operates by means of DC motors controlled by frequency. A certain frequency (required setting) is set in the headlamp levelling switch by the movement of an iron core in a coil. Working on the same principle, the control element in the motor produces a frequency contingent on the position of the adjusting spindle (actual setting). The integral electronics compare the required setting (switch position) with the actual setting (position of the adjusting spindle). The headlamps are swivelled up or down according to the difference in frequency until the two values are the same.

The basic alignment of the headlamps must always be carried out in switch position '0'. The adjusting screw for the basic vertical alignment is located on the back of the adjusting motor.

The correct range of adjustment of the adjusting spindle between switch positions '0' and '5' is $5,0 \pm 0,5$ mm.



COS-32-20

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Fig.E. Electrical headlamp levelling system (right hand headlamp shown).

- | | |
|--|----------------------------------|
| A - Adjusting screw for horizontal alignment | D - Headlamp levelling motor |
| B - Adjusting screw for basic vertical alignment | E - Adjusting spindle |
| C - Headlamp levelling switch | F - Socket for adjusting spindle |



GENERAL DESCRIPTION (cont'd)

EXTERIOR LIGHTS, DIRECTION INDICATORS,
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The following changes have also been made to the SIERRA COSWORTH for the model year '90:

- The front direction indicators now have white lenses.
- The rear lamps are black.

The procedure for removing and fitting the direction indicators and rear lamps remains the same.

- The windscreen washer nozzles are heated electrically. The heating works continuously while the engine is running.

The temperature at the nozzle is regulated according to the ambient temperature by a semi-conductor resistor (PTC) incorporated in the nozzle.



SERVICE CHECKS AND ADJUSTMENTS

EXTERIOR LIGHTS, DIRECTION INDICATORS, HORN AND WINDSCREEN WIPERS

At prescribed service intervals or after repairs the following points must be checked and the corresponding adjustments carried out as necessary.

1. Align the headlamps as indicated in Operation 32 113 0.
2. Check the operation of the screen washer system and the headlamp washers.
3. If necessary, top up the screen washer reservoir.
4. Check the operation of all the exterior lights, horn and wipers. Also check the wiper blades for wear and damage.
5. Checking the operation of the headlamps with the electrical levelling system:

The headlamp levelling system only operates when the headlamps are dipped.

Check the basic headlamp alignment in switch position '0' and rectify it as necessary (headlamp alignment setting X = 12 cm / 10 m - 0 degrees 41 minutes).

Once the basic alignment of the headlamps has been carried out to specification, the headlamp levelling system is operating correctly if the beam-setting equipment indicates a headlamp inclination of at least 50 cm / 10 m or 2 degrees 52 minutes when the screen of the beam-setting equipment is set to the light/dark boundary in switch position '5'.

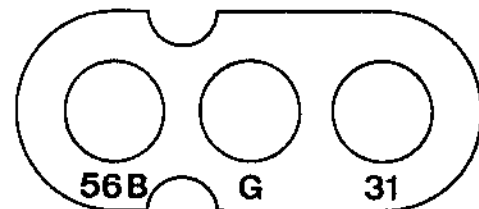
If this value is not obtained, the voltage and resistance must be checked at the plug of the headlamp levelling motor, Fig.1.

Min. voltage between
terminal 56b and 31 12V

Resistance between
terminal G and 31 100 - 120 ohms

Both measurements are independent of the switch position.

If there is no break in the circuit and the specified resistance is not obtained, the headlamp levelling switch is faulty.



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ACM

Fig.1. Plug of headlamp levelling motor.

SERVICE CHECKS AND ADJUSTMENTS cont'd

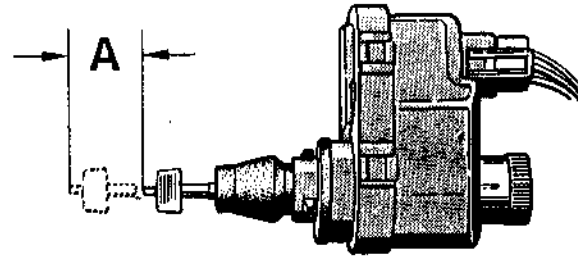
EXTERIOR LIGHTS, DIRECTION INDICATORS,
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If there is no break in the circuit but the specified resistance is obtained, the headlamp levelling motor must be removed and the range of adjustment of the adjusting spindle between switch positions '0' and '5' must be measured, Fig.2.

Range of adjustment of
adjusting spindle $5 \pm 0,5 \text{ mm}$

If the specified range of adjustment of the adjusting spindle is not obtained, replace the headlamp levelling motor.

Align the headlamps and check that they operate correctly.



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Fig.2. Headlamp levelling motor.

A - Range of adjustment of adjusting spindle
($5 \pm 0,5 \text{ mm}$)

SERVICE AND REPAIR OPERATIONS

EXTERIOR LIGHTS, DIRECTION INDICATORS,
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32 113 0 HEADLAMPS - ALIGN

Align the headlamps with optical beam-setting equipment, following the operating instructions supplied by the equipment manufacturer. The vehicle must be parked on level ground. The vehicle and the beam-setting equipment must be lined up as specified by the equipment manufacturer.

NOTE: Before aligning the headlamps, check them for faulty lenses and reflectors and blackened bulbs and fit replacements as necessary.

Headlamp alignment requirements:

Check the tyre pressures and rectify them if necessary.

Bounce the front and rear suspension several times or roll the vehicle a few metres to settle the suspension.

The vehicle must be unladen and have a full fuel tank. If the tank is only half full or less, place a 25 kg weight in the luggage compartment. In addition, have a person or alternatively a 75 kg weight in the driver's seat.

NOTE: On vehicles fitted with the electrical headlamp levelling system the basic headlamp alignment must only be carried out in switch position '0'.

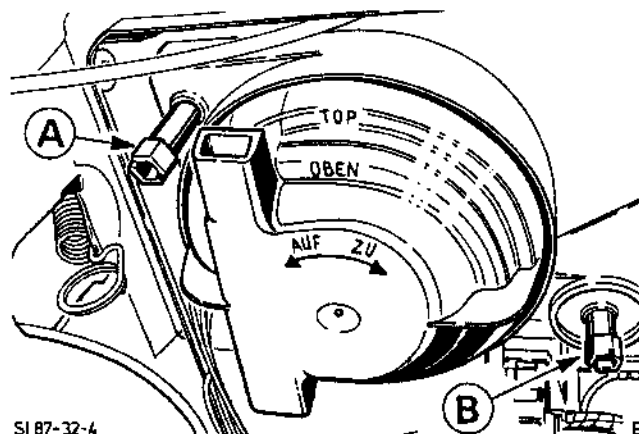
Headlamp dipped beam alignment:

Set up the screen of the beam-setting equipment to adjust the dipped beams to the following headlamp alignment setting (X):

$$X = 12 \text{ cm} / 10 \text{ m} = 0 \text{ degrees } 41 \text{ minutes} = 1,2\%$$

Switch on the dipped beams and align the headlamps by turning the adjusting screws, Figs.1 and 2.

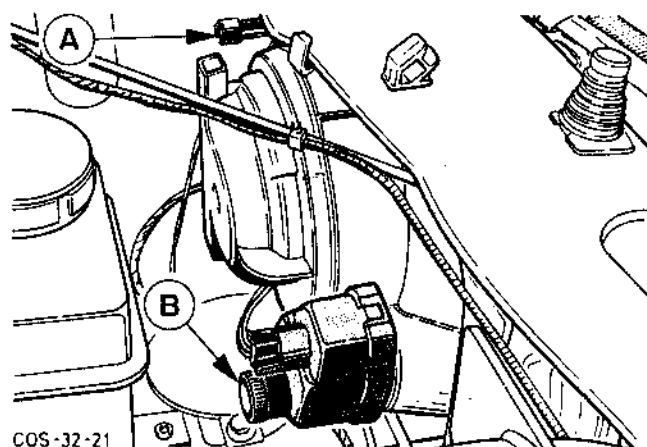
NOTE: On vehicles fitted with the electrical headlamp levelling system the air cleaner cover and the protective cap over the headlamp bulbs must be removed to carry out the basic alignment of the right hand headlamp.



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Fig.1. Headlamp without electrical levelling system.

A - Horizontal adjusting screw
B - Vertical adjusting screw



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Fig.2. Headlamp with electrical levelling system.

A - Horizontal adjusting screw
B - Vertical adjusting screw

32 113 0

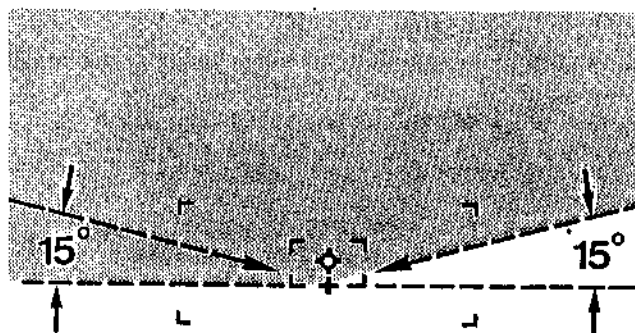
EXTERIOR LIGHTS, DIRECTION INDICATORS,
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Adjust the dipped beams so that the light/dark boundary touches the horizontal - and the 15 degrees - boundary line at the common point of intersection (lower alignment cross), Fig.3. For RHD variants use the 15 degrees boundary line to the left of the alignment cross in Fig.3.

Some equipment manufacturers use screens without the 15 degrees boundary line. In this case a perpendicular line through the alignment cross gives the reference point.

Align the headlamps so that the beams do not go above the horizontal boundary line at any point.

Aligning the dipped beams also aligns the main beam.



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Fig.3. Screen of beam-setting equipment (light/dark boundary for dipped beams of LHD variants).

Fog lamp alignment:

The same requirements apply as indicated previously for the basic headlamp alignment. However, set up the screen of the beam-setting equipment to the fog lamp alignment setting (X):

$$X = 22 \text{ cm} / 10 \text{ m} = 1 \text{ degree } 16 \text{ minutes} = 2,2\%$$

Remove the fog lamp trim (1 crosshead screw).

Switch on the fog lamps and align the fog lamps by turning the adjusting screw, Fig.4(A).

Align the beams of the fog lamps so that the light/dark boundary touches the horizontal boundary line, Fig.5.

Refit the fog lamp trim (1 crosshead screw).

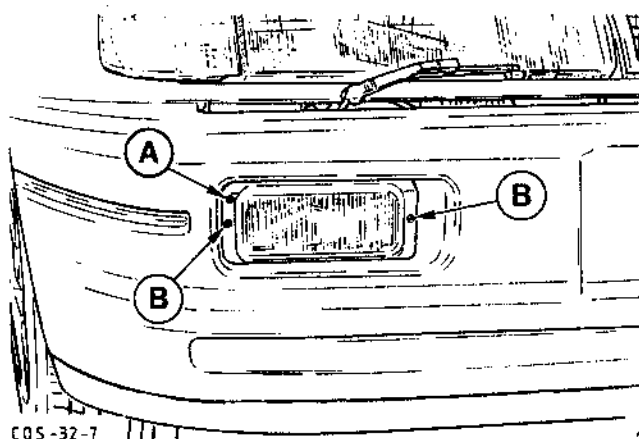
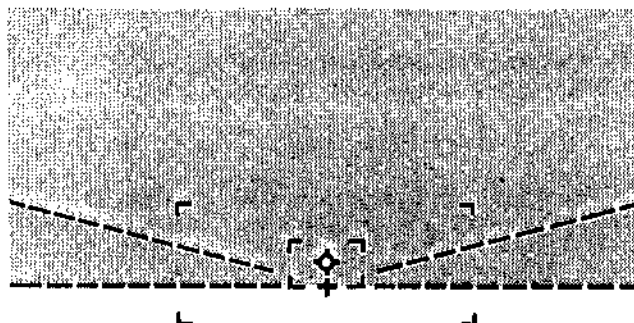


Fig.4. Fog lamp.
A - Adjusting screw
B - Retaining screws



BE13-32-45

Fig.5. Screen of beam-setting equipment (light/dark boundary for fog lamps).



EXTERIOR LIGHTS, DIRECTION INDICATORS,
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32 115 0 HEADLAMP ASSEMBLY - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

NOTE: Do not touch the glass of H3 or H4 bulbs with bare fingers.

To Remove

1. Remove the headlamp wiper arm as described in Operation No. 32 654 0 (sub-operation 1).
2. Unscrew the radiator grille (2 cross head screws). Pull the radiator grille out of the guide at the side (in the fender) and remove the upper and lower parts of the radiator grille together, Fig.1.

Remove the filler of the screen washer fluid reservoir (only on vehicles up to build month April '89).
3. Unscrew the wiper motor bracket from the headlamp housing (2 hex. head screws) and slide the motor rearwards out of the guide, Fig.2.
4. Pull off the headlamp wiring multiplug next to the protective cap on the back of the headlamp. Undo the headlamp retaining screws (2 hex. head screws) and undo the nut on the side mounting, Fig.3. Pull the headlamp assembly forwards and swivel it out sideways.

5. Remove the headlamp bulb as described in Operation No. 32 147 0.
6. Remove the side lamp bulb as described in Operation No. 32 207 0.
7. Remove the auxiliary lamp bulb as described in Operation No. 32 277 0.

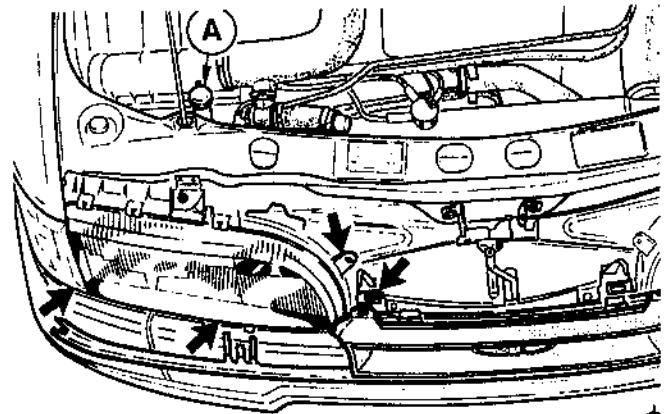


Fig.1. Radiator grille attachment points.
A - Washer reservoir filler tube

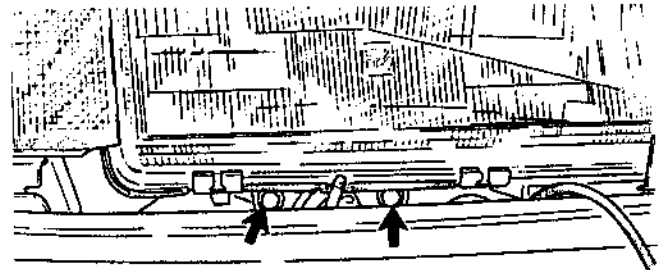


Fig.2. Headlamp wiper motor fixture.

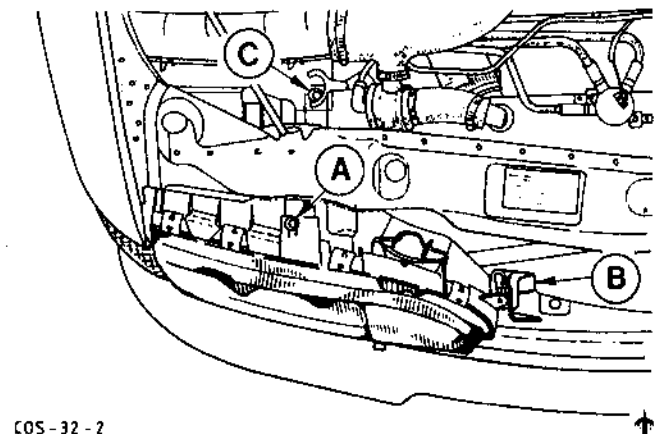


Fig.3. Headlamp fixture.
A - Upper mounting
B - Side mounting
C - Rear mounting

32 115 0

EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

To Install

8. Refit the bulbs as described in the Operations detailed in sub-operations 5 to 7.
9. Locate the headlamp assembly in position. Guide the locating pin on the outside of the headlamp housing sideways into the headlamp mounting panel, swivel the headlamp assembly inwards into the mounting, Fig.4, and align it (clearance), closing the hood to do so. Tighten the nut on the side mounting. Open the hood, insert and tighten the upper and lower retaining screws.

10. Connect the multiplug to the headlamp.
11. Fit the wiper motor as described in Operation No. 32 654 0 (sub-operation 7).
12. Locate both upper and lower parts of the radiator grille together in its mounting (in the fender). Hook the radiator grille retaining lugs into the slots to the side and at the bottom of the headlamp housing and fit the screws at the top (2 cross head screws). Insert the filler of the screen washer fluid reservoir and clip it in place (only on vehicles up to build month April '88).
13. Fit the wiper arm as described in Operation 32 654 0 (sub-operation 9).
14. Check the operation of the headlamp washers and check the free hose length.
15. Check the operation of the headlamp while switched to dipped beams and align as indicated in Operation 32 113 0.

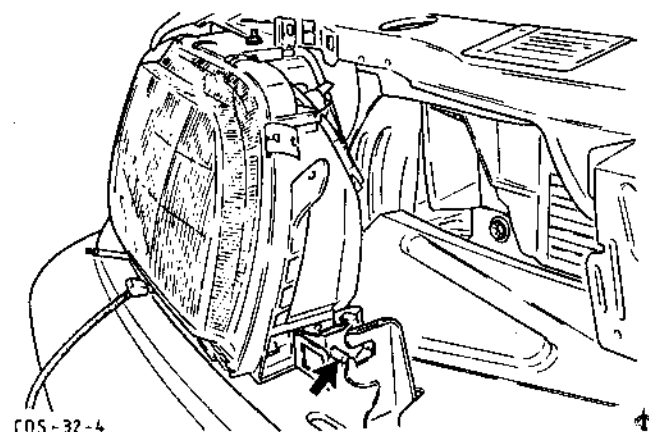


Fig.4. Install headlamp assembly.

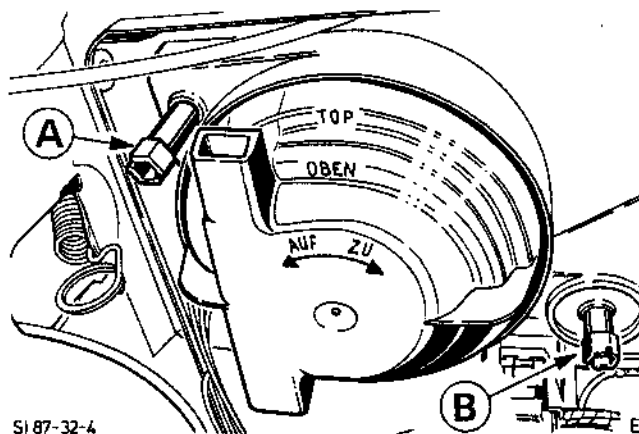


Fig.5. Headlamp alignment screws.
A - Horizontal alignment screw
B - Vertical alignment screw

NOTE: If the fender is damaged in an accident, the headlamp mounting panel must be realigned.

- 1) Install the direction indicator, ensuring that it is seated correctly in relation to the fender.
- 2) Locate the headlamp mounting panel over the direction indicator guides and secure it.
- 3) Screw the white spacer bolt against the housing of the direction indicator; the direction indicator must remain in its position.
- 4) Install the headlamp assembly as described in Operation No. 32 115 0.

32 145 0 LENS - HEADLAMP - REPLACE

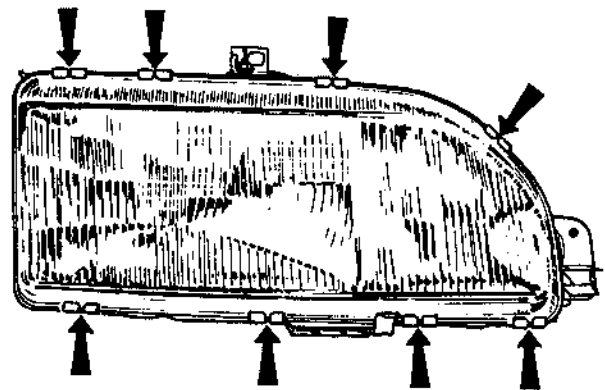
SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Remove the headlamp assembly as described in Operation No. 32 115 0 (sub-operations 1 to 4).
2. Insert a suitable screwdriver in the opening in the spring clips on the side of the housing and lever the clips off (8 off), Fig.2(A).
3. Remove the damaged headlamp lens and remove the gasket.

To Install

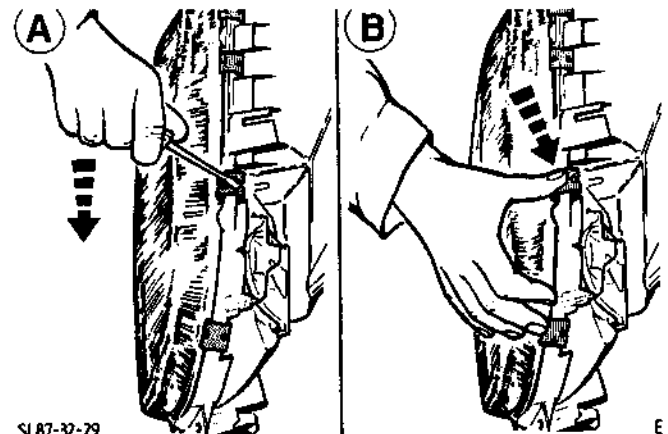
4. Fit the gasket and new headlamp lens. Make sure that the gasket is seated correctly.
5. Locate the spring clips (8 off) in the correct positions around the edge of the lens and press them over the edge of the housing (without using a tool), Fig.2(B).
6. Install the headlamp assembly as described in Operation 32 115 0 (sub-operations 9 to 15).
7. Check operation.



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Fig.1. Location of spring clips around headlamp lens.



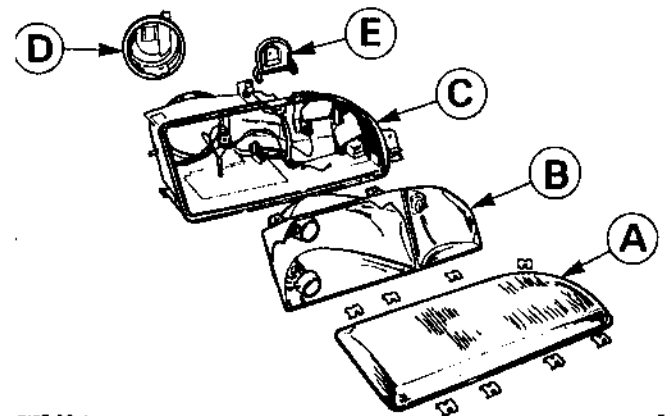
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Fig.2. Headlamp lens spring clips.
A - Spring clip removal
B - Spring clip fitting

Fig.3. Headlamp assembly - exploded view.

- A - Headlamp lens with spring clips
- B - Reflector
- C - Headlamp housing
- D - Protective cap for headlamp bulbs
- E - Protective cap for auxiliary lamps (when fitted).



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E

Fig.3. Headlamp assembly - exploded view.

EXTERIOR LIGHTS, DIRECTION INDICATORS,
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32 147 0 BULB - HEADLAMP - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

NOTE: Do not touch the bulb glass with bare fingers.

To Remove

1. Twist the protective cap over the headlamp bulbs anti-clockwise and remove it. Pull the multiplug from the base of the bulb.

NOTE: On vehicles from model year '90 the air cleaner cover must be removed (5 retaining clips) to remove the protective cap of the right hand headlamp.

2. Compress the spring retainer and swing it back. Grasp the bulb by its contacts and carefully withdraw it.

To Install

3. Insert the new bulb correctly in the holder and secure it with the spring retainer. Connect the multiplug to the bulb.
4. Fit the protective cap over the headlamp bulbs and turn it clockwise until it engages. The words 'OBEN' or 'TOP' on the cap must be exactly at the top.

NOTE: On vehicles from model year '90 refit the air cleaner cover (5 retaining clips).

5. Check operation.

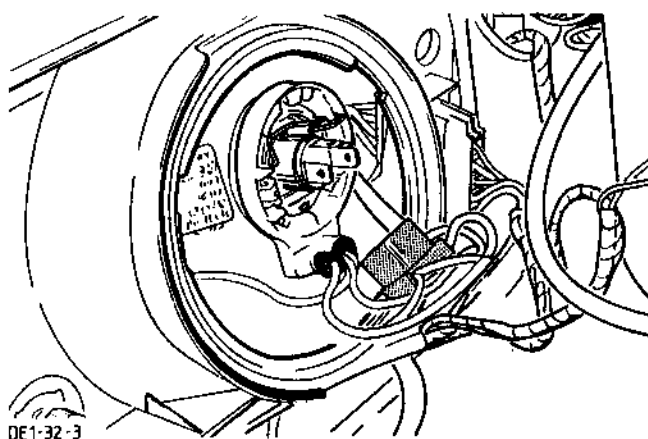


Fig.1. Bulb multiplug disconnected.

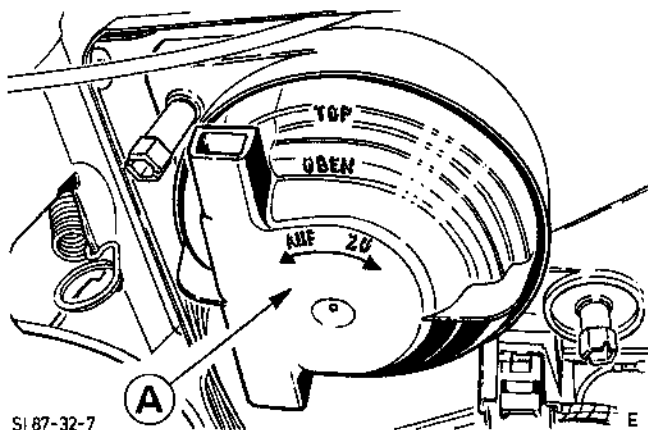


Fig.2. Protective cap fitted over headlamp bulbs.
A - Protective cap



32 207 0 BULB - SIDE LAMP - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Turn the protective cap over the headlamp bulbs anti-clockwise and remove it.

NOTE: On vehicles from model year '90 the air cleaner cover must be removed (5 retaining clips) to remove the protective cap of the right hand headlamp.

2. Withdraw the holder with the sidelamp bulb and pull the bulb out of the holder (push fit).

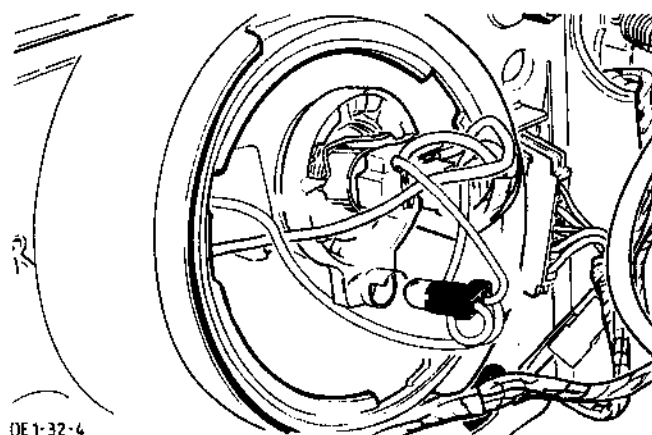


Fig.1. Side lamp bulb and holder.

To Install

3. Place the new bulb in the holder and press the holder and bulb into position in the opening in the reflector.
4. Fit the protective cap over the headlamp bulbs and turn it clockwise until it engages properly.

NOTE: On vehicles from model year '90 refit the air cleaner cover (5 retaining clips).

5. Check operation.



EXTERIOR LIGHTS, DIRECTION INDICATORS,
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32 225 0 INDICATOR ASSEMBLY - FRONT - REMOVE
AND INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Unhook the retaining spring on the back of the indicator assembly from the apron panel, Fig.1, and remove the indicator assembly from the side.
2. Twist the bulb holder anti-clockwise and remove it from the indicator assembly.

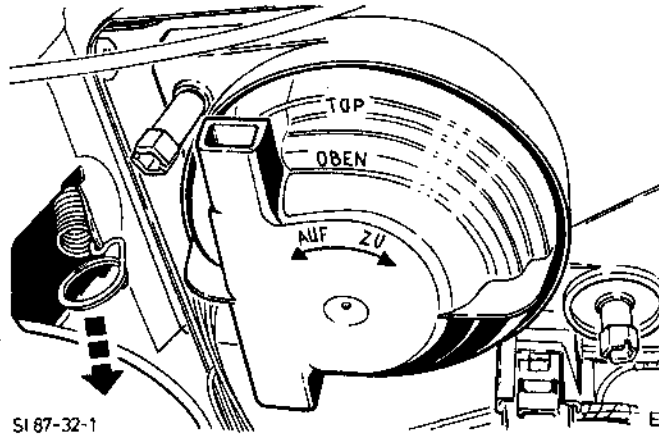


Fig.1. Indicator retaining spring.

To Install

3. Insert the bulb holder in the indicator assembly and secure by turning it clockwise,
4. Insert the indicator assembly in the fender, guiding the plain indicator locating pins into the associated locating holes in the headlamp mounting panel. Secure the indicator assembly by attaching the retaining spring to the apron panel.
5. Check operation of indicator.

32 228 0 INDICATOR LAMP - SIDE - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Twist the indicator lamp a quarter of a turn clockwise and pull it out, Fig.2.
2. Twist the bulb holder a quarter of a turn anti-clockwise and remove it from the indicator lamp.

To Install

3. Insert the bulb holder into the indicator lamp and secure by turning it a quarter of a turn clockwise.
4. Correctly insert the indicator lamp in the cut-outs and secure by turning a quarter of a turn anti-clockwise.

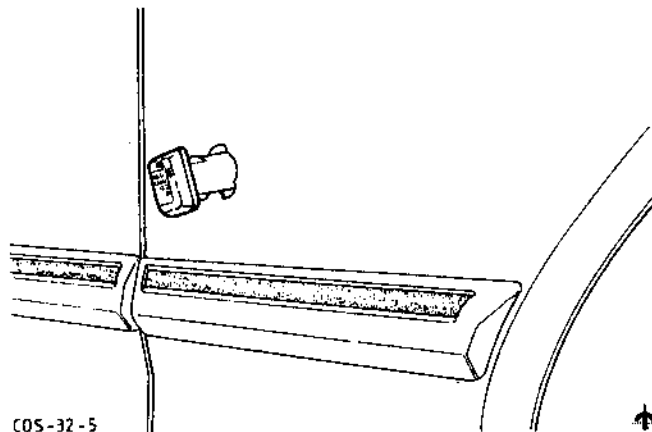


Fig.2. Side indicator lamp (pulled out).



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 237 0 BULB - FRONT INDICATOR - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Remove the indicator assembly as described in Operation No. 32 225 0.
2. Release the bulb holder by pressing it in and turning it clockwise and then remove the bulb from the holder.

To Install

3. Insert the bulb in the holder. Secure the bulb holder by turning it clockwise.
4. Install the indicator assembly as described in Operation No. 32 225 0.
5. Check operation.

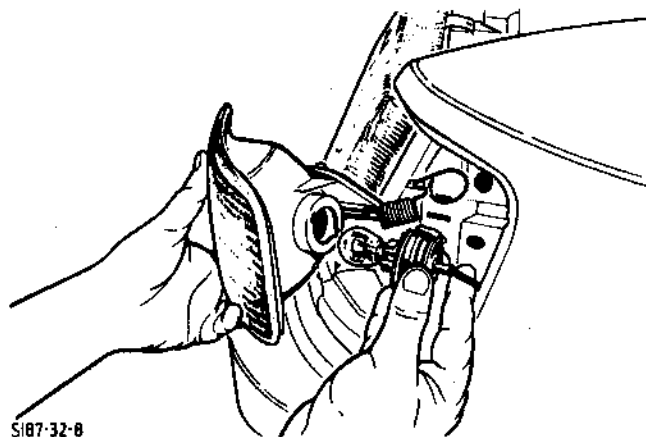


Fig.1. Insert indicator bulb and holder.

32 277 0 BULB - AUXILIARY LAMP - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Release the retainer securing the protective cap, lift and detach the cap. Disconnect the wiring to the bulb.
2. Press the spring retainer down, release it and swing it upwards. Remove the bulb.

To Install

3. Insert the bulb in the holder and secure it by engaging the spring retainer. Connect the wiring.
4. Fit the protective cap and secure it with the retainer.
5. Check operation of auxiliary lamp.

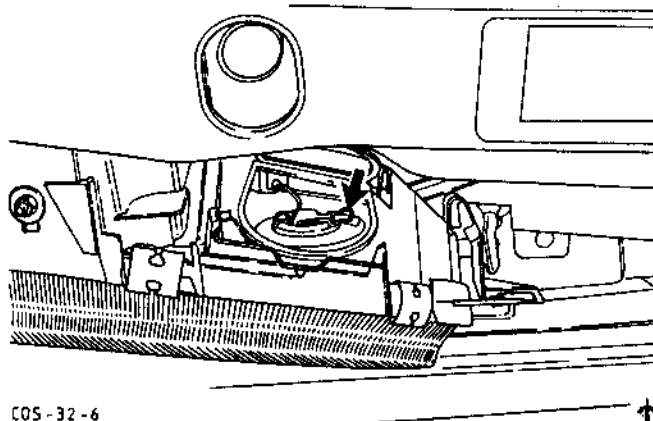


Fig.2. Spring retainer securing auxiliary lamp bulb.



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 281 0 LAMP ASSEMBLY - FOG - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Remove the moulding (1 cross head screw).
2. Undo the retaining screws (slotted/Torx - 2 off) and withdraw the fog lamp assembly from the mounting, Fig.1, with the aid of the screws inserted halfway into the screw holes. Disconnect the two leads, Fig.2.

3. Release the spring retainer and pull the bulb out of the holder.

To Install

4. Insert the bulb correctly in the bulb holder (cut-outs) and secure with the spring retainer.
5. Connect the two wiring connectors, insert the fog lamp in its mounting and secure it with the 2 screws.

Align the fog lamp as described in Operation 32 113 0.

Fog lamp alignment setting $X = 22 \text{ cm}/10 \text{ m} = 1$ degree 16 minutes.

NOTE: Replace the gasket if replacing the fog lamp assembly complete.

6. Fit the moulding.
7. Check operation of fog lamp.

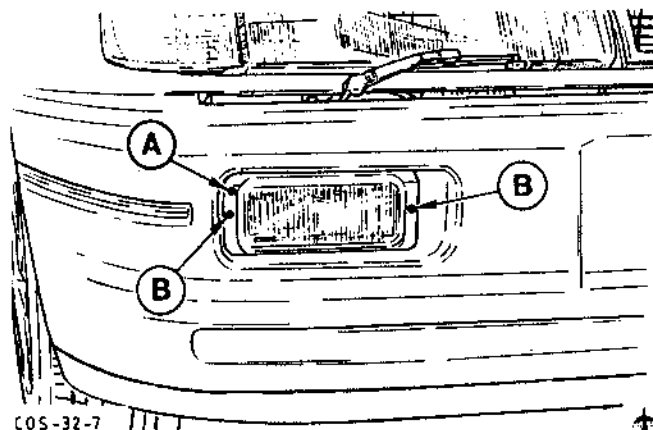


Fig.1. Fog lamp.
A - Alignment screw
B - Retaining screws

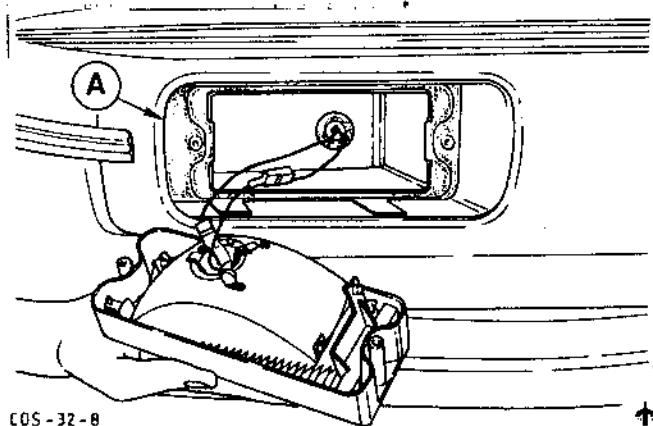


Fig.2. Fog lamp with wiring connections.



32 305 0 LAMP ASSEMBLY - REAR - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Open the luggage compartment lid. Release the bulb holder and remove the bulb holder. Pull off the multiplug.
2. Detach the rear lamp assembly (6 nuts) and remove the gasket, Fig.1.

To Install

3. Place the gasket over the rear lamp assembly and fit the rear lamp assembly (6 nuts).
4. Connect the multiplug to the bulb holder and insert the bulb holder.
5. Check operation of rear lamps.

32 317 0 BULB - REAR LAMP - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Remove the bulb holder as described in Operation No. 32 305 0. The bulbs have bayonet fittings.
2. Twist the bulb(s) anti-clockwise and remove.

To Install

3. Insert the bulb(s) in the bulb holder.
4. Fit the bulb holder and check the operation of the bulb(s).

NOTE: One bulb doubles as rear fog lamp and tail lamp.

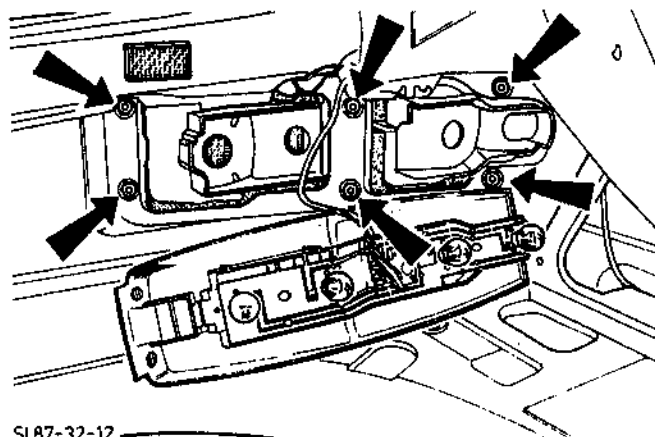
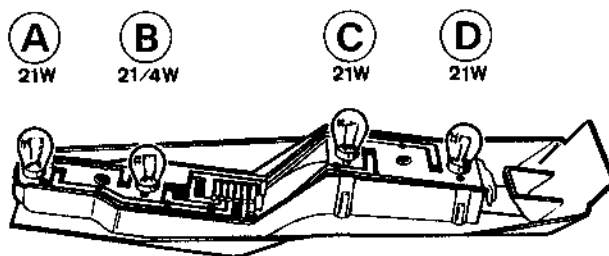


Fig.1. Locations of rear lamp retaining nuts.



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Fig.2. Rear lamp bulbs
A - Direction indicator
B - Rear fog/tail lamp
C - Reversing lamp
D - Brake lamp



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 365 0 LICENCE PLATE LAMP - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. The licence plate lamp is held in the bumper by two spring clips. Insert a suitable screwdriver in the groove, press it in, lever the licence plate lamp upwards out of the bumper and withdraw it. Pull the plug off the bulb holder, Fig.1.

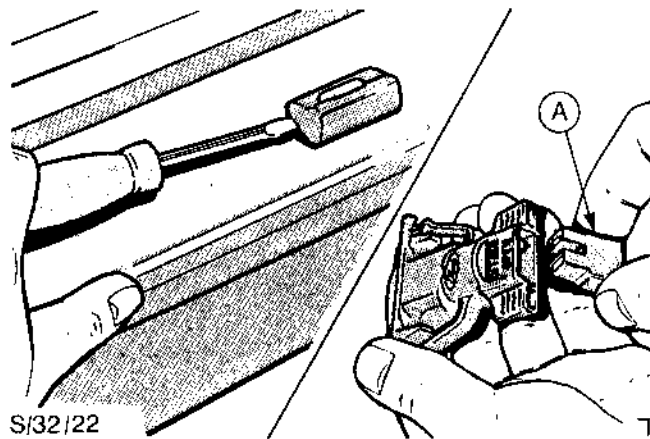


Fig.1. Remove licence plate lamp.
A - Plug

To Install

2. Connect the plug to the bulb holder and press the lamp assembly into the bumper.

32 377 0 BULB - LICENCE PLATE LAMP - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Remove the licence plate lamp from the bumper as described in Operation 32 365 0.
2. Twist the bulb holder anti-clockwise and pull it out. The bulb is a push-fit.

To Install

3. Insert the new bulb and insert the bulb holder in the lamp housing. Install the lamp assembly in the bumper and check operation.

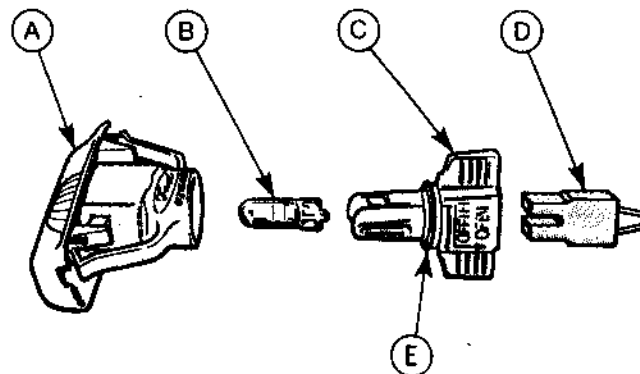


Fig.2. Licence plate lamp - exploded view.

- A - Housing with lens
- B - Bulb
- C - Bulb holder
- D - Plug
- E - O-ring

GL/32/33

Fig.2. Licence plate lamp.



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

35 524 0 MOTOR - WINDSCREEN WIPER - REMOVE
AND INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Switch on the wiper motor and switch off with the linkage in a position in which all the retaining screws are accessible. Disconnect the battery earth cable.
2. Unscrew the link from the motor shaft (1 nut), Fig.1(8).
3. Unscrew the motor from the bracket on the vehicle (3 screws), remove the motor and disconnect the multiplug.
4. Remove the cover from the wiper motor (push fit).

To Install

During installation, tighten nuts and bolts to the torque specified in Technical Data.

5. Fit the cover to the wiper motor. Connect the multiplug.
6. Insert the wiper motor and attach it to the bracket with the three screws.
7. Attach the link to the motor shaft (1 nut), making sure that the locating lug on the link is seated correctly in relation to the groove on the motor shaft.
8. Connect the battery. Check wiper operation.

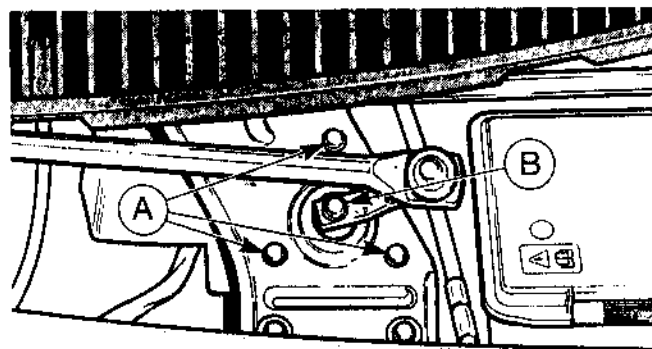


Fig.1. Wiper motor.

A - Wiper motor retaining bolts
B - Shaft retaining nut

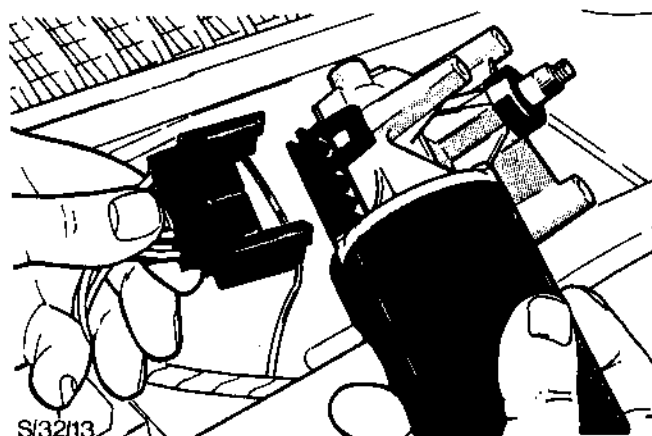


Fig.2. Remove wiper motor.



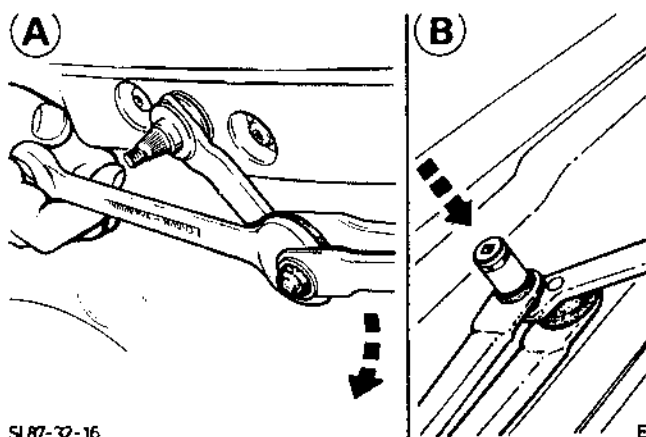
EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 554 0 LINKAGE - WINDSCREEN WIPER - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Open the hood. Using a suitable open-ended spanner, carefully lever the windscreen wiper linkage off at the pivots and remove it, Fig.1(A).



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Fig.1. Windscreen wiper linkage.

A - Removal
B - Installation

To Install

2. Pack the windscreen wiper linkage bushes with grease (see Technical Data), locate the linkage on the spherical pivots and clip it into place with an appropriate socket, Fig.1(B).

32 563 0 PIVOT SHAFT - WIPER - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Lift the plastic cap over the wiper arm pivot. Detach the wiper arms (1 nut and 1 washer in each case).
2. Detach the cowl grille (3 plastic screws with clips and 2 cross head screws). Pull the nozzles forwards so that they disengage, and pull off the hoses.
3. Remove the wiper motor with the bracket and linkage (7 hexagon head screws), Fig.2. Disconnect the multiplug.
4. Detach the link (1 nut) and the bracket (3 screws) from the wiper motor.
5. Using a suitable open-ended spanner, carefully lever the wiper linkage off at the pivots and remove it.
6. Remove the circlip from the pivot shaft and withdraw the pivot shaft from the housing, Fig.3.

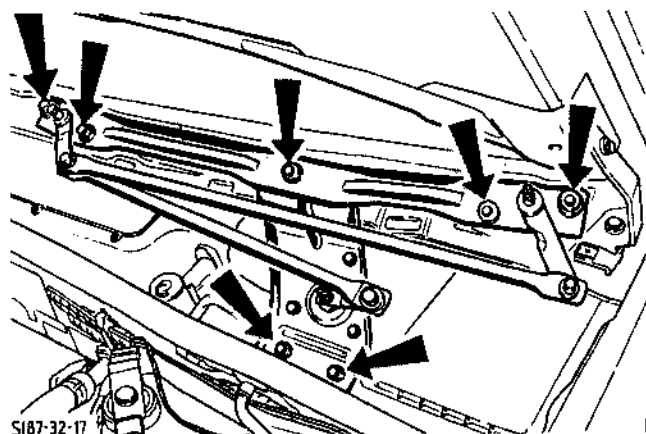
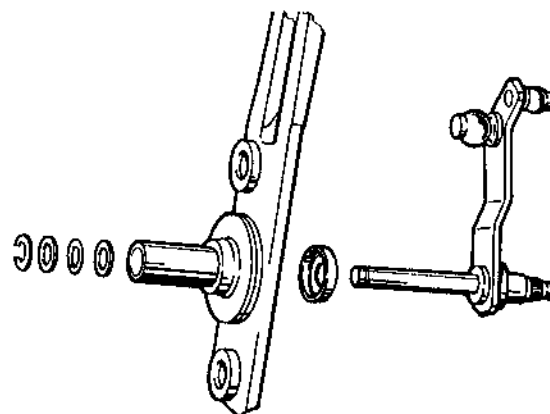


Fig.2. Screws securing wiper motor bracket.



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Fig.3. Wiper pivot shaft - exploded view.

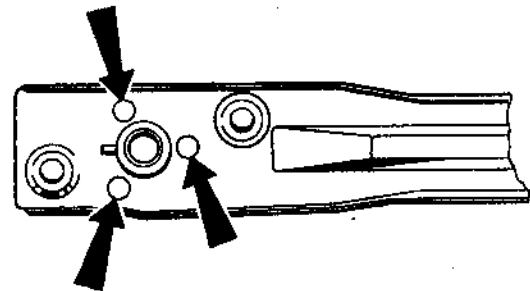
32 563 0

EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

7. Drill out the three rivets securing the pivot shaft housing.

To Install

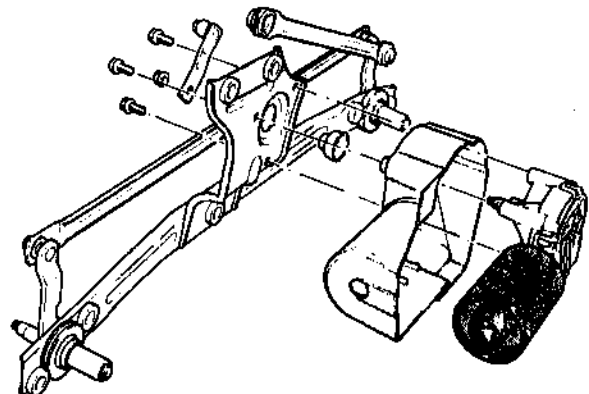
8. Insert the pivot shaft housing in the bracket and rivet it in place (3 rivets), Fig.4.
9. Pack the pivot shaft bush with grease (see Technical Data). Fit the corrugated washer and the plain washer to the shaft in the correct order, secure them with the circlip and slide the rubber insulator onto the housing.
10. Pack the windscreen wiper bushes with grease, (see Technical Data). Position the wiper linkage on the pivots and clip it into place.
11. Attach the windscreen wiper motor to the bracket (3 screws) and connect the link to the motor shaft (1 nut) ensuring that the locating lug on the link is positioned correctly in relation to the groove on the motor shaft.
12. Connect the multiplug to the wiper motor.
13. Insert the wiper motor complete with the bracket and linkage and secure it (7 hex. head screws).
14. Fit the cowl grille (3 plastic screws with clips and 2 cross head screws). Attach the hoses to the nozzles and insert the nozzles in the cowl grille.
15. Fit the wiper arms (1 washer and 1 nut in each case).



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Fig.4. Locations of rivets securing pivot shaft housing.



S-32-38N

Fig.5. View of wiper motor with linkage.



32 584 0 BLADE - WIPER - REPLACE

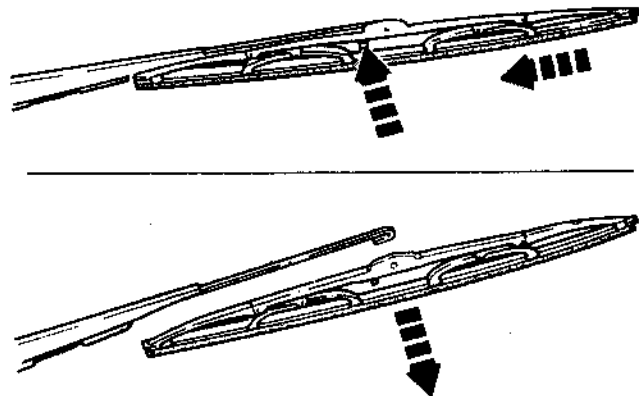
SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Lift the wiper arm clear of the windscreen, press in the spring at the wiper blade mounting, simultaneously draw the wiper blade rearwards out of the hook on the wiper arm and remove it, Fig.1.

To Install

2. Guide the new wiper blade over the hook on the wiper arm, slide it up and engage it.



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ACM

Fig.1. Detach wiper blade.

32 586 0 RUBBERS - WIPER BLADE - REPLACE

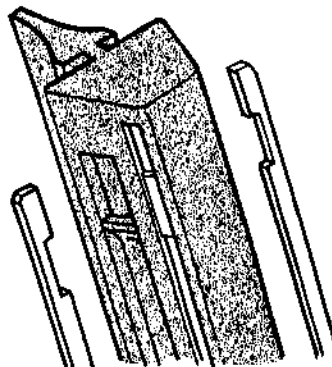
SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Remove the wiper blade as described in Operation No. 32 584 0.
2. Lubricate the rubber and the two spring strips with soap, disengage them from the claw-shaped retainer on the wiper blade and pull them out of the frame of the blade.

To Install

3. Fit the spring strips in the new wiper rubber. The cut-outs in the spring strips must be aligned with one another, Fig.2. Slide the rubber into the frame of the blade and engage it in the claw-shaped retainer.
4. Fit the wiper blade as described in Operation No 32 584 0.



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Fig.2. Cut-outs in strips must be aligned with one another.

32 622 0 RESERVOIR - WASHER - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

NOTE: The windscreen washer and headlamp washer are supplied from a common reservoir.

To Remove

1. Syphon the water from the reservoir. Remove the reservoir filler (only up to build month April '88). Disconnect the hoses from the pumps.
2. Unclip and disconnect the warning system sender unit multiplug. Press in the pump multiplug retaining springs and disconnect the multiplugs from both pumps.
3. Undo the three screws securing the reservoir and remove the reservoir, Fig.2.
4. Lever the pumps out of the reservoir using a screwdriver.
5. Press the rubber grommets from the pumps and warning system sender unit out of the reservoir.

To Install

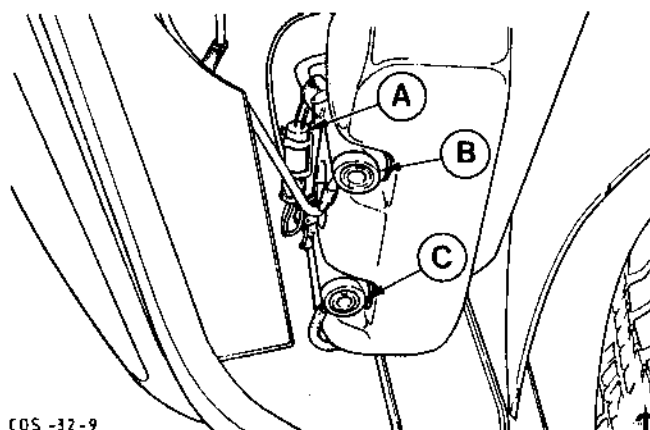
6. Fit the rubber grommets, pumps and warning system sender unit in the reservoir.
7. Locate the reservoir in place and secure with the three screws. Connect the multiplugs to both pumps and to the warning system sender unit. Ensure safety clips are seated correctly. Clip the warning system multiplug in place.

NOTE: White multiplug connects to headlamp washer pump.

8. Connect the hoses to the pumps. Insert the reservoir filler (only up to build month April '88).
9. Fill the reservoir with water and check the operation of the washer system.

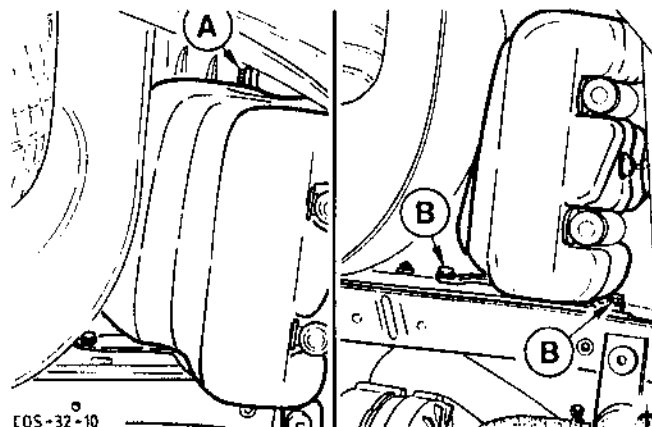
Fig.3. Washer reservoir.

- A - Windscreen washer pump
- B - Warning system sender unit
- C - Headlamp washer pump
- D - Rubber grommets
- E - Clip - warning system multiplug



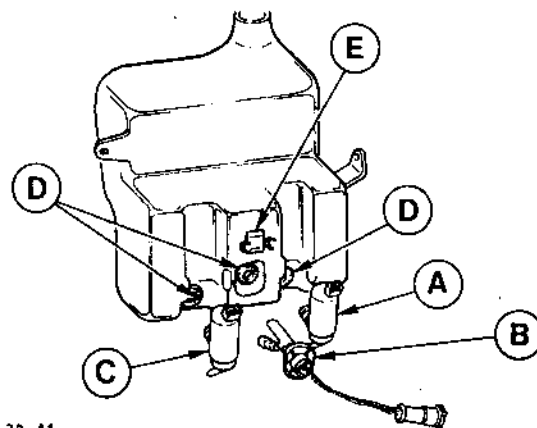
COS-32-9

Fig.1. A - Warning system sender unit multiplug
B - Headlamp washer pump multiplug
C - Windscreen washer pump multiplug



COS-32-10

Fig.2. Washer reservoir attachment bolts.
A - Right
B - Left



COS-32-11

Fig.3. Washer reservoir.

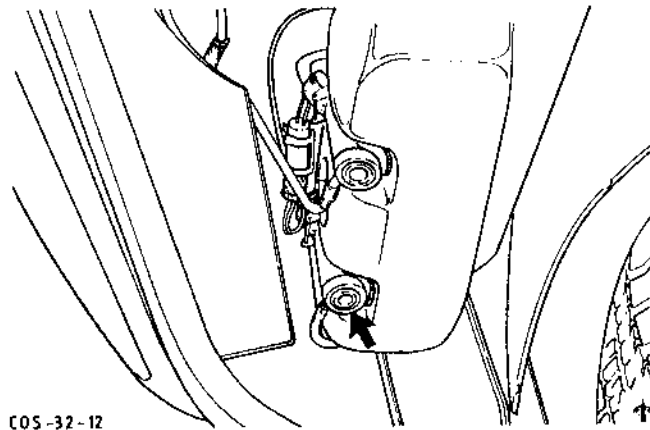


32 624 0 PUMP - WINDSCREEN WASHER - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Syphon the water from the reservoir.
2. Disconnect the multiplug and pull off the hose.
3. Lever the pump out of the reservoir with a screwdriver.
4. Remove the rubber grommet from the reservoir.



COS-32-12

Fig.1. Windscreen washer pump.

To Install

5. Fit the rubber grommet and pump in the reservoir.
6. Connect the multiplug and hose.
7. Fill the reservoir with water and check the operation of the pump.



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 634 0 NOZZLE - WINDSCREEN WASHER - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Disconnect the multiplug of the heated nozzle (from model year '90), Fig.1.
2. Pull the nozzle forwards, Fig.2, or lift the nozzle with the aid of a screwdriver in the lower slot at the front so that it disengages.

3. Pull off the hose and remove the nozzle.

To Install

4. Connect the hose and press the nozzle into the cowl panel grille until it engages.
5. Connect the multiplug of the heated nozzle (from model year '90).
6. Check the operation and adjust the nozzle as necessary, Fig.3.

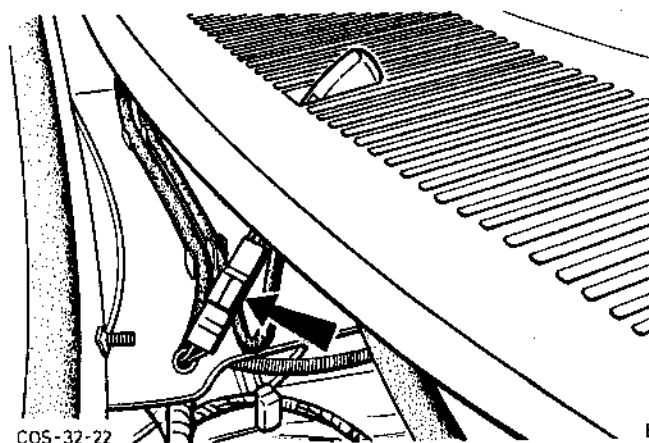


Fig.1. Multiplug of heated nozzle.

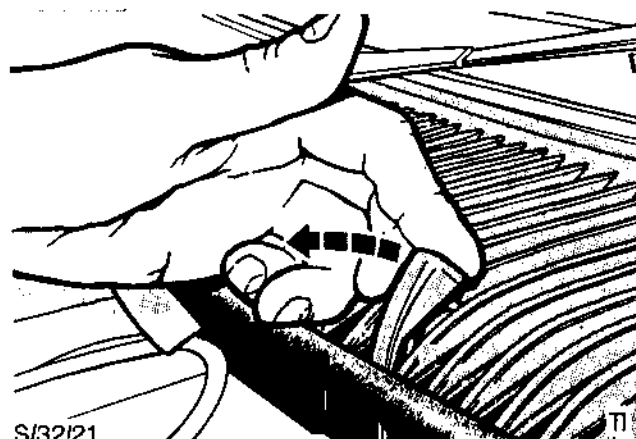


Fig.2. Remove nozzle.

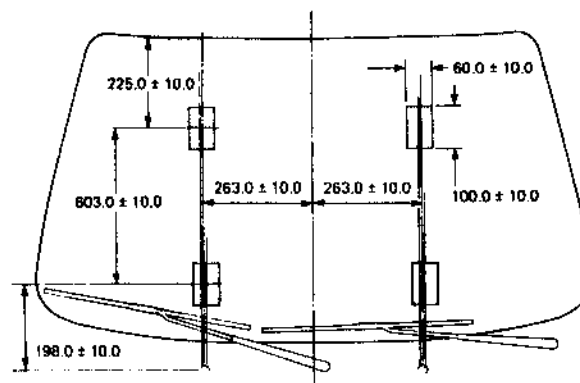


Fig.3. Windscreen nozzle alignment diagram
(dimensions in mm).

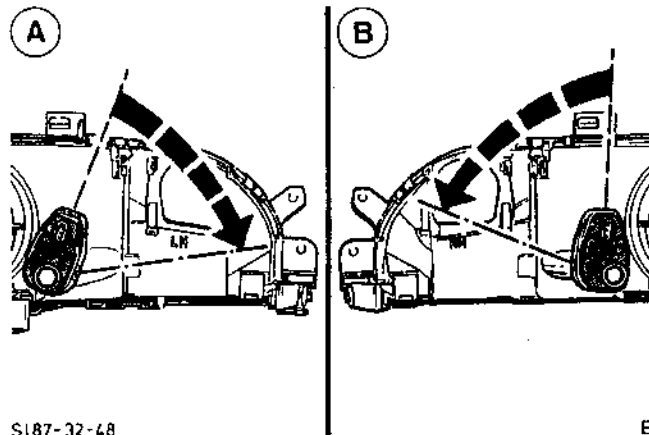
EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 650 0 MOTOR - HEADLAMP LEVELLING - REMOVE
AND INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Disconnect the battery earth cable.
2. Remove the headlamp assembly as indicated in Operation 32 115 0 (sub-operations 1 to 4).
3. Remove the protective cap from the headlamp.
4. Press the headlamp levelling motor in and turn it away from the headlamp until the bayonet fitting disengages, Fig.1.



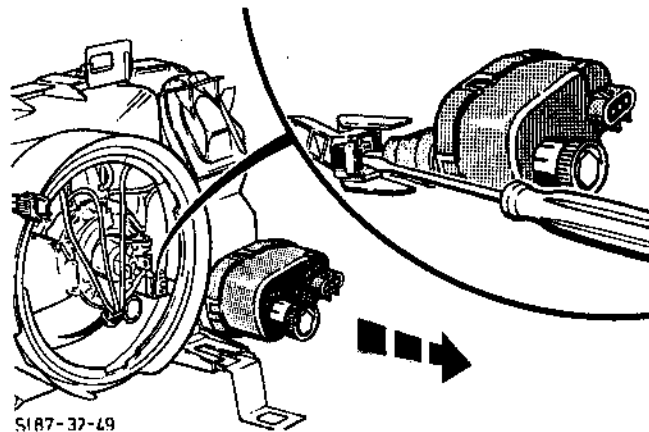
SI87-32-48

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Fig.1. Turn headlamp levelling motor until bayonet fitting disengages.

A - Left hand headlamp
B - Right hand headlamp

5. Insert a suitable screwdriver through the opening in the headlamp housing, release the adjusting spindle and withdraw the headlamp levelling motor, Fig.2.



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Fig.2. Release adjusting spindle and withdraw headlamp levelling motor.

To Install

6. Fit the headlamp levelling motor in the headlamp housing with the adjusting spindle aligned with the socket. Press the headlamp levelling motor in and turn it towards the headlamp housing until the bayonet fitting engages.
7. Pull the headlamp reflector back until the adjusting spindle engages fully in the socket.
8. Refit the protective cap to the headlamp.
9. Install the headlamp assembly as indicated in Operation 32 115 0 (sub-operations 9 to 14).
10. Reconnect the battery earth cable and check the operation of the headlamp levelling system while switched to dipped beams. Align the headlamp as indicated in Operation 32 113 0.

EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 515 0 SWITCH - HEADLAMP LEVELLING - REMOVE
AND INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Disconnect the battery earth cable.
2. Pull the knob off the headlamp levelling switch, Fig.1.
3. Pull the switch light housing out of the fascia.
4. Compress the retaining lugs of the headlamp levelling switch and pull the switch out of the fascia, Fig.2.
5. Disconnect the multiplug from the headlamp levelling switch.

To Install

6. Connect the multiplug to the headlamp levelling switch.
7. Fit the headlamp levelling switch in the fascia (the retaining lugs must engage).
8. Fit the switch light housing in the fascia.
9. Refit the knob to the headlamp levelling switch.
10. Reconnect the earth cable.
11. Check the operation of the headlamp levelling system while switched to dipped beam.

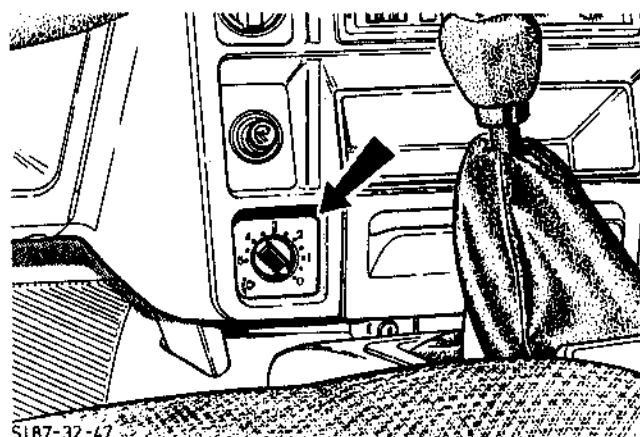


Fig.1. Location of headlamp levelling switch.

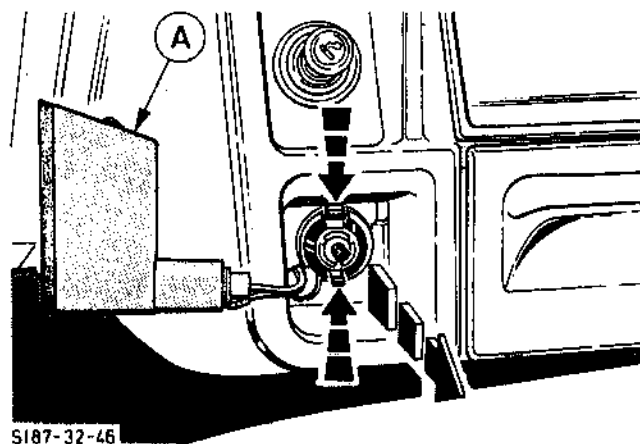
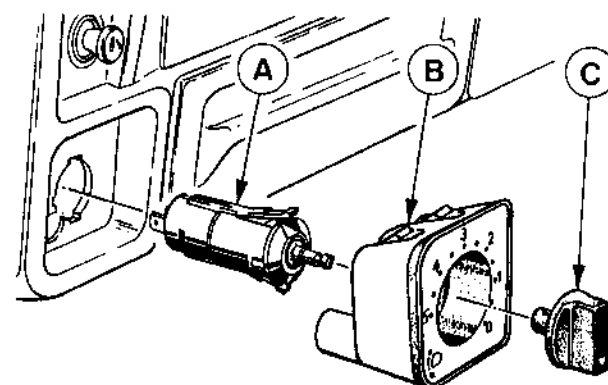


Fig.2. Remove headlamp levelling switch.
A - Switch light housing



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Fig.3. Individual parts of headlamp levelling switch.
A - Switch
B - Switch light housing
C - Switch knob



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 654 0 MOTOR - HEADLAMP WIPER - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Lift the plastic cap over the wiper arm pivot. Pull the hose off the nozzle and out of the retaining loop. Unscrew the wiper arm retaining nut, remove the washer and wiper arm, Fig.1.

2. Pull the water hose and retaining hose off the motor shaft.

Fig.1. Headlamp wash/wipe system.

- A - Wiper arm retaining nut
- B - Wiper blade stop
- C - Plastic cap on wiper arm
- D - Nozzle

3. Using a 1/4" drive socket and extension inserted through the gap between headlamp and bumper, unscrew the wiper motor bracket from the headlamp housing (2 hexagon head screws), Fig.2. Remove the wiper motor from the mounting on the headlamp housing (accessible from the wheelarch).

4. Disconnect the wiper motor multiplug.

To Install

5. Connect the multiplug.

6. Insert the wiper motor bracket in the mounting on the headlamp housing and secure it (2 screws) through the gap between headlight and bumper. Slide the water hose and retaining hose over the motor shaft.

7. Screw the wiper arm in place in the parked position and press the cap down. Push the hose through the retaining loop and attach the hose to the nozzle on the wiper arm.

8. Adjust the free length of hose between the retaining hose and the nozzle in line with the wiping movement.

9. Check the headlamp washers operate correctly.

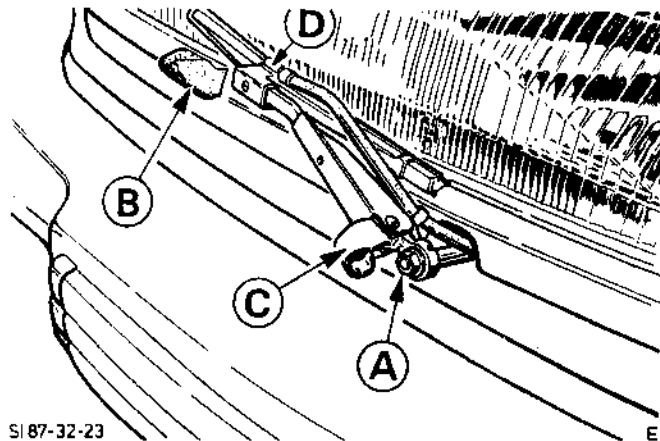


Fig.1. Headlamp wash/wipe system.

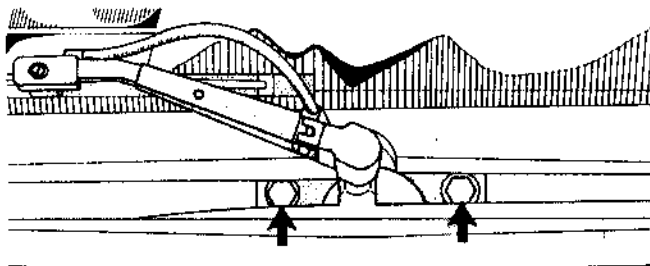


Fig.2. Wiper motor bracket screws.

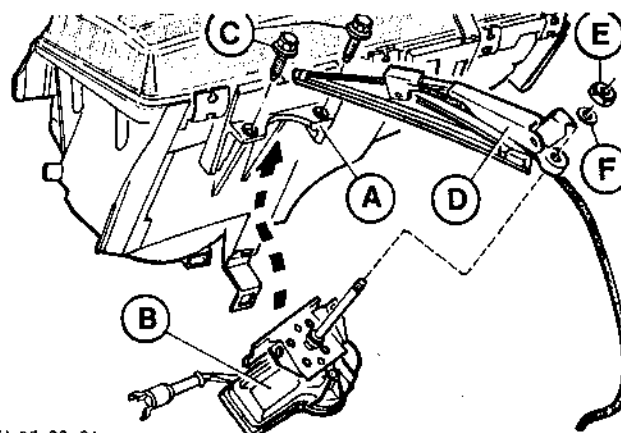


Fig.3. Headlamp washer system - exploded view.

- A - Mounting on headlamp housing
- B - Wiper motor
- C - Retaining screws
- D - Wiper arm
- E - Nut
- F - Spring washer



EXTERIOR LIGHTS, DIRECTION INDICATORS,
HORN AND WINDSCREEN WIPERS

32 672 0 BLADE - HEADLAMP WIPER - REPLACE

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Swing the wiper arm clear of the headlamp lens.
2. Hold the wiper arm and lever the wiper blade, Fig.1, out of the mounting (on the wiper arm).

To Install

3. Press the wiper blade into the mounting and engage it. Place the wiper arm against the headlamp lens in the parked position.
4. Check operation.

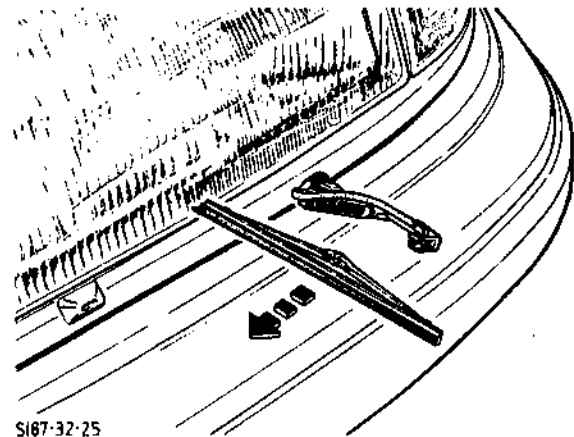


Fig.1. Headlamp wiper blade.

32 676 0 PUMP - HEADLAMP WASHER - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Siphon the water from the reservoir.
2. Disconnect the multiplug and pull off the hose.
3. Remove the pump, levering the pump out of the reservoir with the aid of a screwdriver.
4. Remove the rubber grommet from the reservoir

To Install

5. Fit the rubber grommet and pump in the reservoir.
6. Connect the multiplug and hose.
7. Fill the reservoir with water and check the operation of the pump.

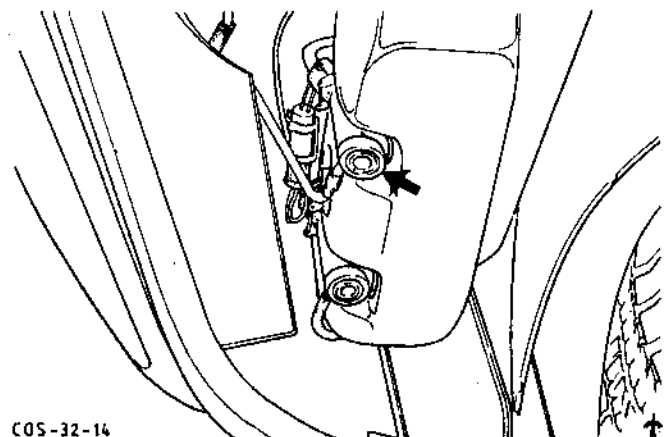


Fig.2. Headlamp washer pump.

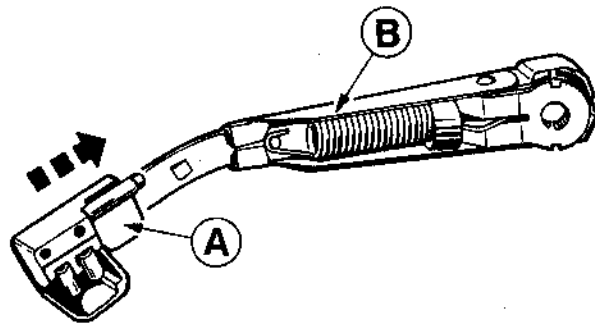


32 678 0 NOZZLE - HEADLAMP WASHER - REPLACE.

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Detach the wiper blade as described in Operation 32 672 0.
2. Remove the hose from the nozzle.
3. Pull the combined wiper blade mounting and nozzle off the wiper arm with a suitable tool (screwdriver, pliers).



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To Install

4. Fit the nozzle/wiper blade mounting on the wiper arm (until it engages audibly), Fig.1.
5. Fit the wiper blade as described in Operation 32 672 0.
6. Check that the headlamp wash/wipe system operates correctly.

Fig.1. Fit headlamp washer nozzle.

A - Nozzle and wiper blade mounting
B - Wiper arm

NOTE: The nozzle is not adjustable.

32 816 0 HORN - REMOVE AND INSTALL (BOTH)

SPECIAL SERVICE TOOLS REQUIRED: NONE

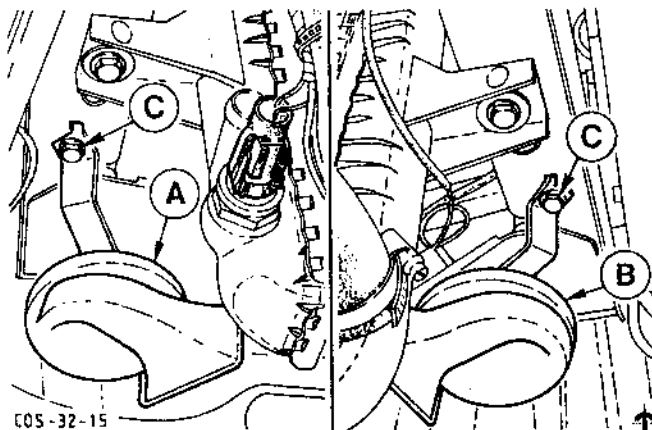
NOTE: Only replace the horn complete with the bracket.

To Remove

1. Pull off the cable plug and unscrew the horn bracket retaining bolt. Remove the horn and bracket.
2. Repeat sub-operation 1 for the other horn.

To Install

3. Secure the horn to the bracket. Fit the horn complete with bracket, align and secure. Connect the cable plug.
4. Repeat sub-operation 3 for the other horn.
5. Check the operation of the horns.



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Fig.2. Remove horn.

A - Left hand horn
B - Right hand horn
C - Retaining bolt

